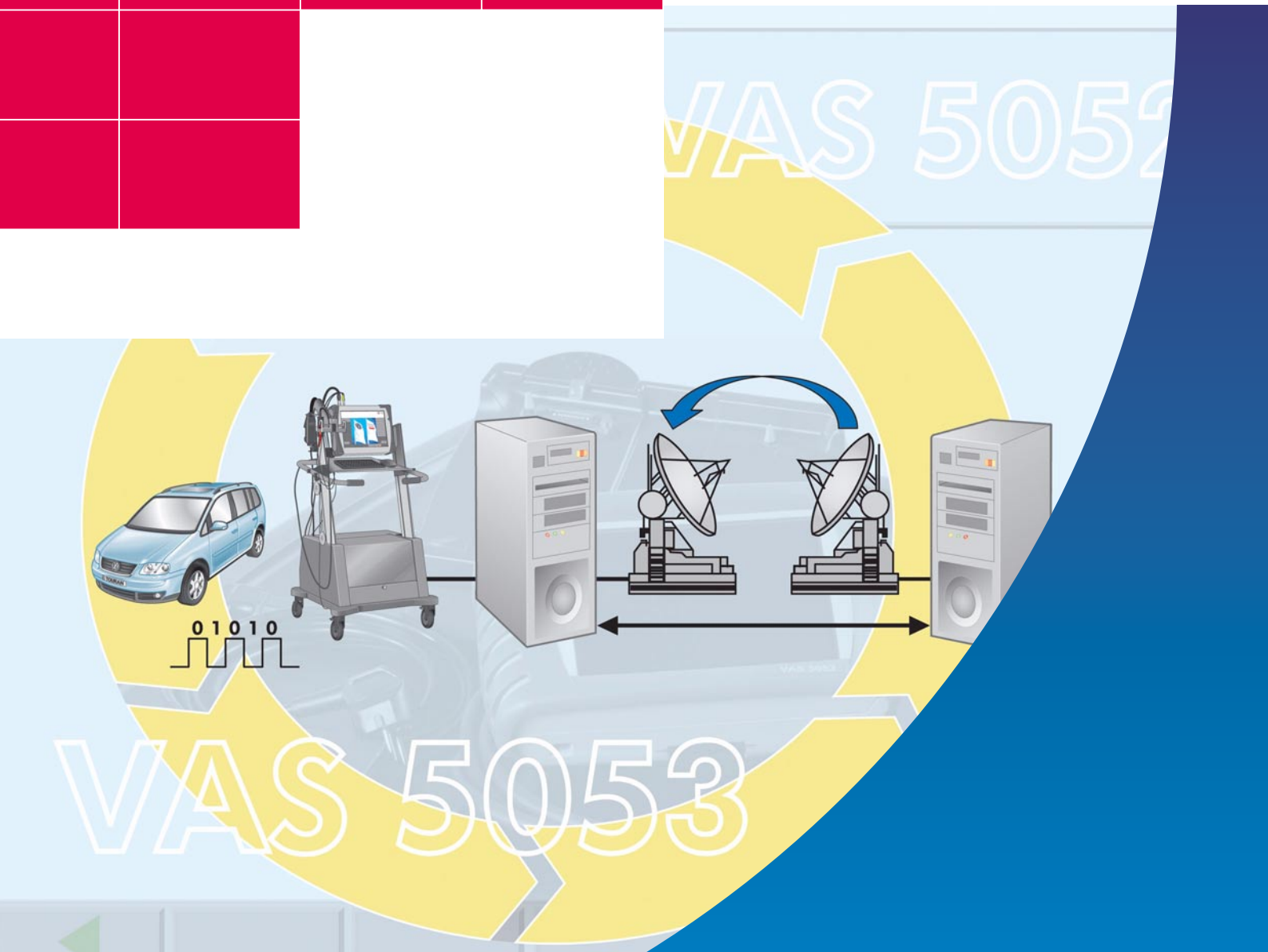
Service Training

Self-study Programme 295

Diagnosis with VAS 5051, VAS 5052 and VAS 5053

Procedures and Function

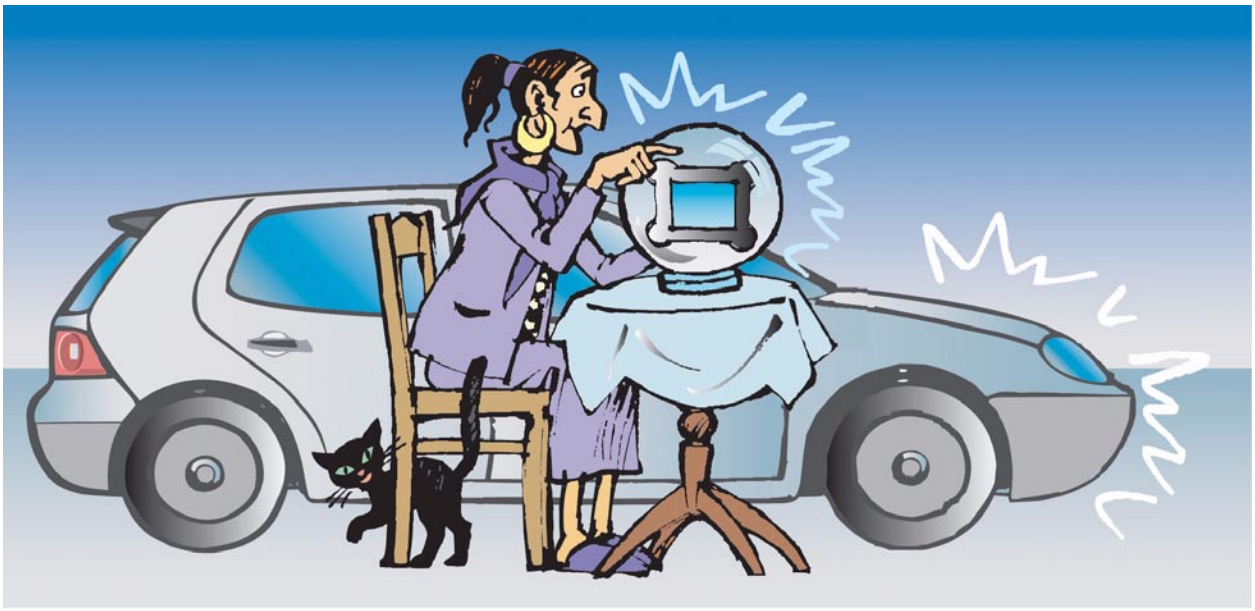


There are constantly new innovations in vehicles. Simple tools are not suitable for diagnosis on these vehicles, therefore increasingly complex diagnosis systems are required.

Diagnosis in Volkswagen and Audi vehicles was originally performed with the V.A.G 1550 tester and has been further developed with the V.A.G 1551 and V.A.G 1552 testers.

However, today's vehicles have electronic equipment that requires extensive diagnosis functions.

This self-study program should help you use the VAS 5051 vehicle diagnosis, measuring and information system, the VAS 5052 vehicle diagnosis and service information system and the VAS 5053 vehicle diagnosis system properly in the service core process and the diagnosis process.



S295_001

This self-study program looks at innovations in diagnosis systems. Please refer to the operating manuals for the latest information on use of these diagnosis systems. The screenshots are examples and may differ from the screen content of the diagnosis systems. The number of screenshots has been reduced to the essential for reasons of clarity.

NEW

Important Note

The self-study programme shows the design and function of new developments.
The contents will not be updated.

For current testing, adjustment and repair instructions, refer to the relevant service literature.

Contents

Introduction

Core Service Activities in Networked Dealerships

The intermeshing of core service activities and all networking components ensures trouble-free procedures.

Appointment preparation

Thanks to the current expansion of the Volkswagen Audi workshop system VAWS to the second module in the service core process, staff handling appointments will be able to prepare orders in full.
An order can then be opened quickly when the vehicle is received without the help of the service assistant.

- Recognised work items from the ELSA are listed
- Prices are imported from PASS
- Packages are automatically set in order
- Required parts are automatically checked for availability in the parts warehouse and any orders are made
- Any further additions to the order are entered

Making appointments

When appointments are made, all customer, vehicle and replacement vehicle data should be entered.
The order data is then assigned manually and automatically to the respective work areas and required diagnosis and measuring equipment. Staff qualifications are also taken into consideration.

Receipt of vehicle

The service assistant receiving/ handing over the vehicle has all relevant data on his PC screen. If unexpected problems or questions arise, the service assistant can forward all new information and data straight to the workshop, to the spare parts department and to the dealership organisation. Querying the fault memory with the VAS 5052 and VAS 5053 allows the necessary repair work to be assessed in case of a complaint.

Creating an order

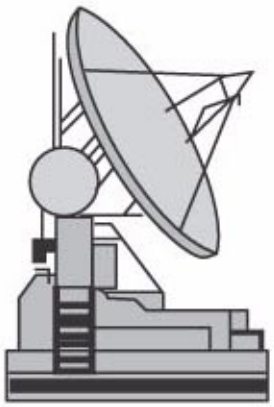
The customer order is created on a blank order sheet in the DMS and is forwarded to ELSA. ELSA ensures display and selection of the order and forwards it to the asanetwork. From there, the tasks are forwarded to the workshop equipment. After the order has been processed, feedback is sent to ELSA and DMS. This rules out the risk of losing information.

Post-processing

During post-processing by the call centre, you can access the system-supported appointment management again. All questions are sorted out with the customer, his remarks can easily be recorded.
The customer and vehicle data can be recorded completely from the first to the last customer contact.

Return of the vehicle/bill

The return of the vehicle/billing also benefits from the networking as all order data is transferred back to VAUDIS. Diagnosis and repair protocols, displays and the order text are available to the service assistant.
All customer questions can be answered directly and clearly. The bill is itemised and clear.



Creating repair and service orders

The precise preliminary work allows fast and reliable completion of the order. At the beginning of the order, the mechanic is informed which special tools and which spare parts are required. The observation of all agreements and order points ensure customer satisfaction. The VAS tester is used to carry out the repair, for example, the “Guided Fault Finding”, the service work and the “Guided Functions”.

Quality control / preparation of the vehicle return

It follows on immediately from the repair and service creation. In the networked dealership, the repair procedure can be referred to after the final check. In future, it will be possible for the service assistant to check the order status on the progress monitor.

S295_002

Introduction

The Diagnosis, Testing and Information System VAS 5051, the Diagnosis and Service Information System VAS 5052 and the Diagnosis System VAS 5053 in the service core process

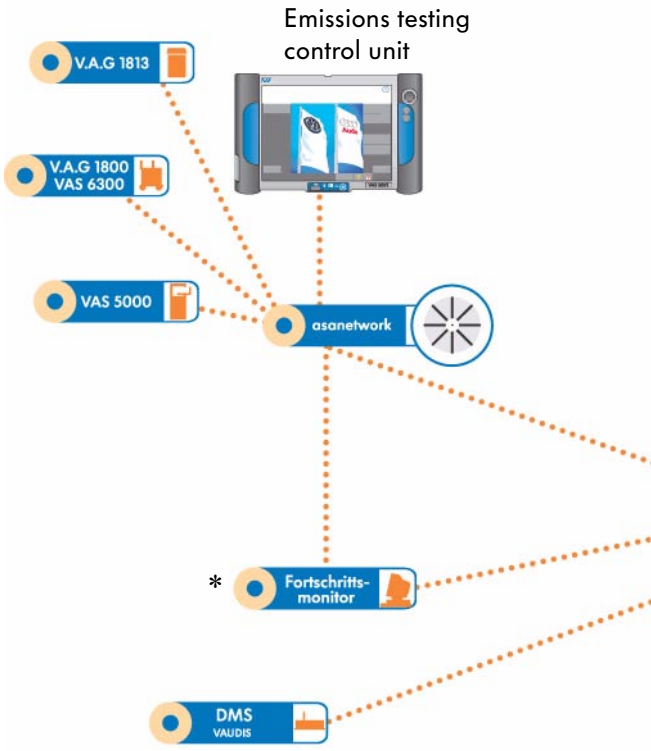
Creating repair and service orders

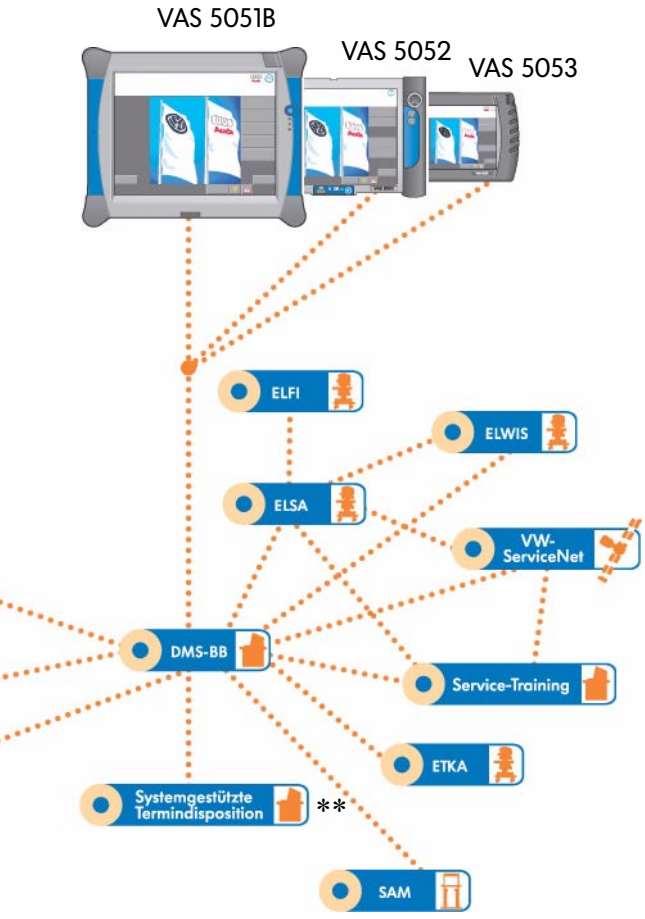
A large part of the repair work involves diagnosing faults.
The diagnosis is supported by the ELSA as well as the systems VAS 5051, VAS 5052 and VAS 5053. They can be used in all networked workstations and provide direct access to the latest literature (e.g. HST/TPL) as well as support from the manufacturer (e.g. SVM/Telediagnosis).

Data flow in the workshop

- During diagnosis, all customer and vehicle data is forwarded to the connected equipment e.g. VAS 5051, VAS 5052, V.A.G 1813 and can automatically be called up at any workstation.
- During a repair, technical problem solutions can be checked or additional information can be called up on a daily basis on the VW ServiceNet® or Audi-ServiceNet®.
- Connecting to the network allows functions like:
  - Software updates for control units
  - Secret and component protection (GeKo)
  - Software version management (SVM)
  - Transferring diagnosis protocols
  - Telediagnosis
  - Software-supported procedures
  - and many other future functions
- The ELSA electronic service information system is available with the latest data.

Networking overview





S295_003

* Progress monitor
** System-supported appointment management

Data exchange between the sales areas and the workshop

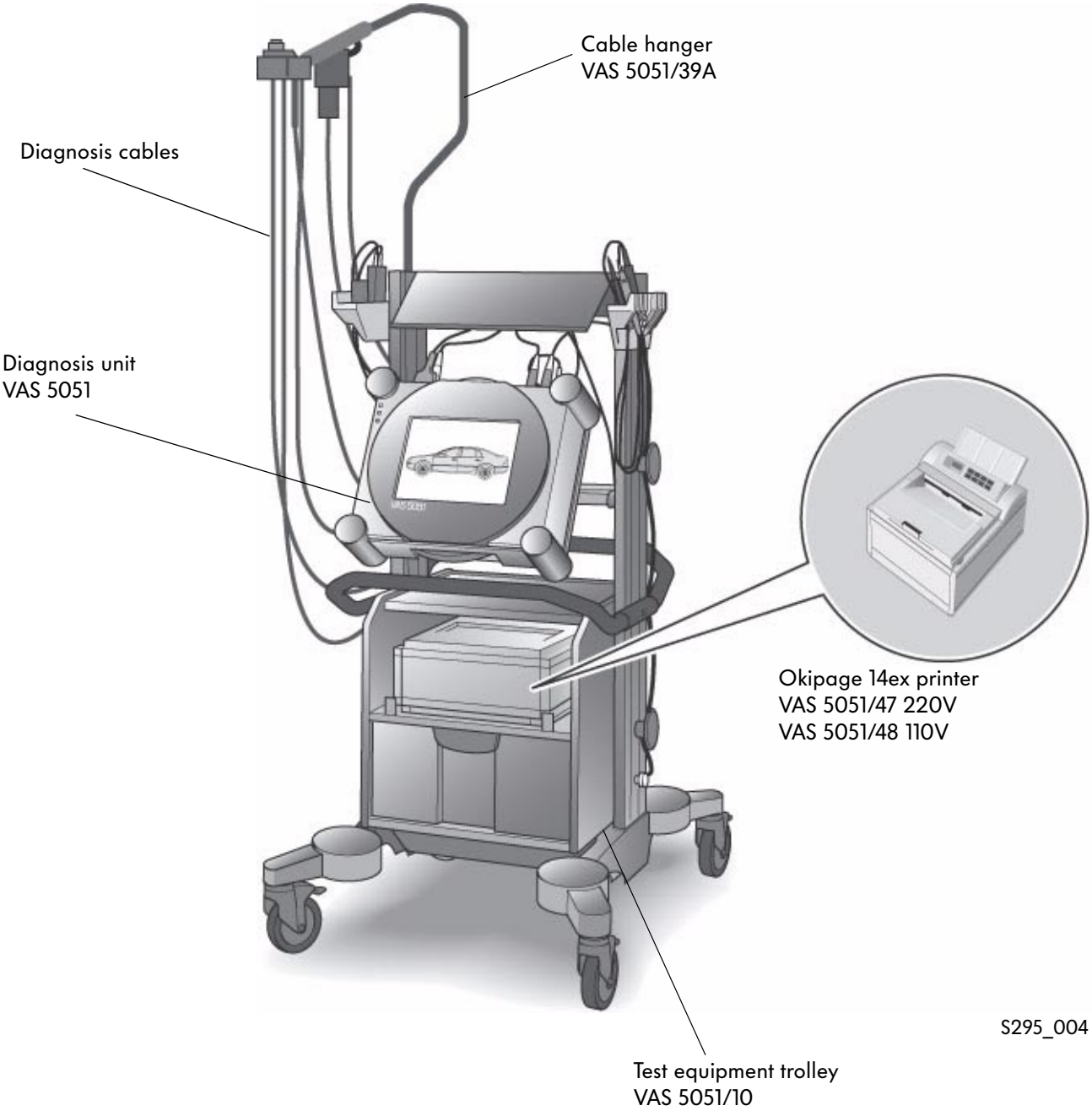
- Data on the workshop capacity for making/preparing the appointment
- Data on the making/preparing the appointment and creating the order in the workshop area:
  customer, vehicle and appointment data
- Feedback on the latest repair data from the workshop via the progress monitor:
  The service assistant is informed about the repair progress and can intervene in the current process if necessary.
- Data return from the workshop to the dialog transfer for the quality control and the invoicing:
  The data on necessary work time and work positions as well as the spare parts required are is made available.

Data flow between the workshop and the spare parts service

- The spare parts service is integrated in the service process from appointment preparation:
  In the service support process, the spare parts competence centres ensure that the parts flow is trouble-free in both directions.

The Vehicle Diagnosis, Testing and Information System VAS 5051

Equipment



Please refer to the latest equipment catalogue for the exact content.

VAS 5051

The Diagnosis, Testing and Information System VAS 5051 is a PC-based test unit and has the following modes:

- Vehicle self-diagnosis
- OBD (on-board diagnosis)
- Test Instruments
- Guided fault finding
- Guided functions
- Administration
- Applications

S295_006

Diagnosis Systems

The Vehicle Diagnosis, Testing and Information System VAS 5051B

New diagnosis unit
Follow-up unit for VAS 5051 with additional functions and higher speed

Equipment

S295_007

Please refer to the latest equipment catalogue for the exact content.

VAS 5051B

The VAS 5051B vehicle diagnosis, testing and information system has the following modes:

- Vehicle self-diagnosis
- OBD (on-board diagnosis)
- Test Instruments
- Guided fault finding
- Guided functions
- Administration
- Applications
- Elsa Win (not included)

Properties

- Compatibility with existing units
- Use of existing trolleys and measuring leads
- Full network capability
- Same operating system as previous units

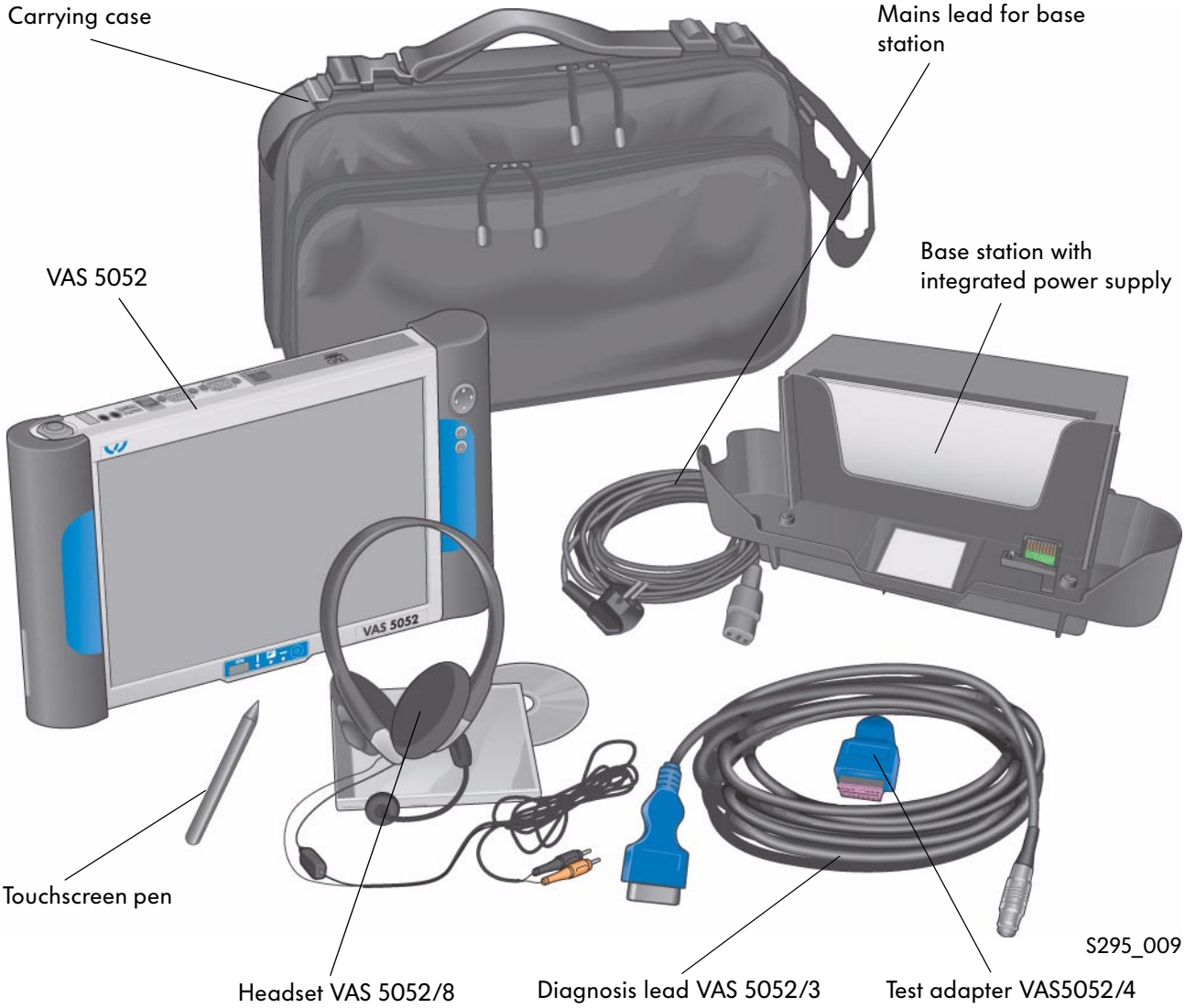
S295_008

New technical features in the VAS 5051B Vehicle Diagnosis, Testing and Information System

- 15” display
- “Elsa Win” compatible
- Modern processor performance
- Expansion options via standard interfaces, e.g. USB printer
- Battery operation approx. 3 hours
- DSO measurement with a sampling rate of 40MHz with single-channel measurement 20MHz for two-channel measurement

Vehicle Diagnosis and Service Information System VAS 5052

Equipment



Please refer to the latest equipment catalogue for the exact content.

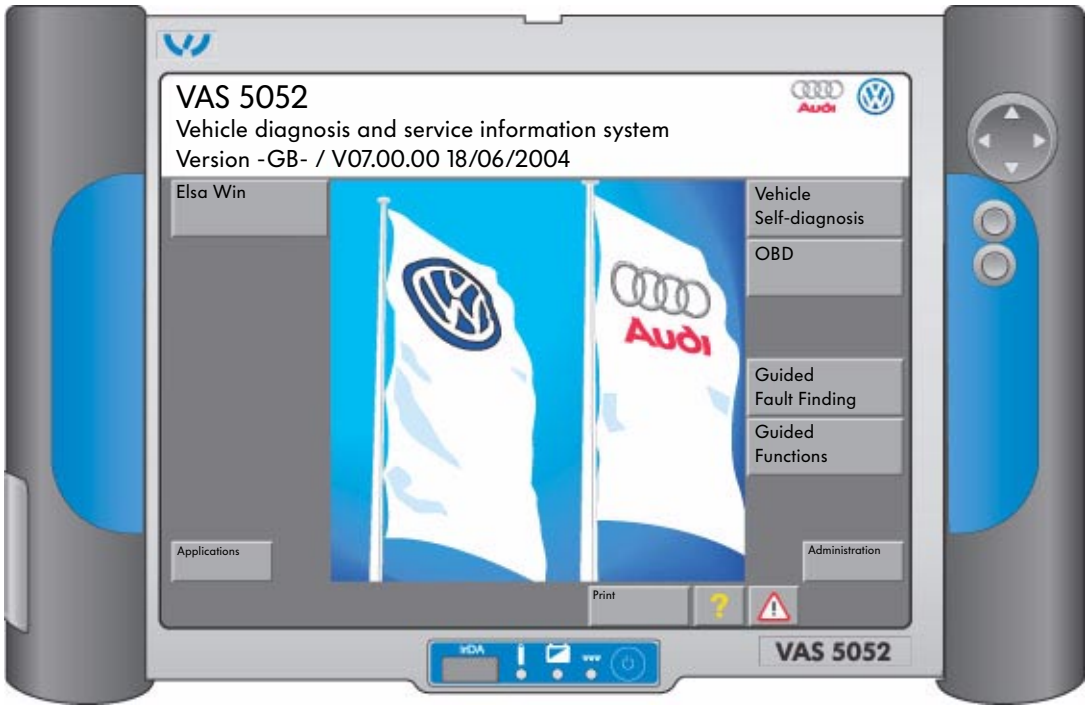
VAS 5052

The VAS 5051B vehicle diagnosis and service information system has the following modes:

- Vehicle self-diagnosis
- OBD (on-board diagnosis)
- Guided fault finding
- Guided functions
- Elsa Win
- Administration
- Applications

Description

The VAS 5052 has been updated using the basic CD V06.00.00.
If necessary, the data for the operating modes “Guided Fault Finding” and “Guided Functions” can be installed.
The measuring information is recorded using external units and subsequent manual input. The guided fault finding can thus be used above all for mobile diagnosis and test drives.

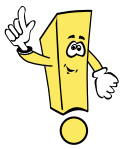


S295_010

All new information and the complete functions are only available when the unit is used on the dealership network.

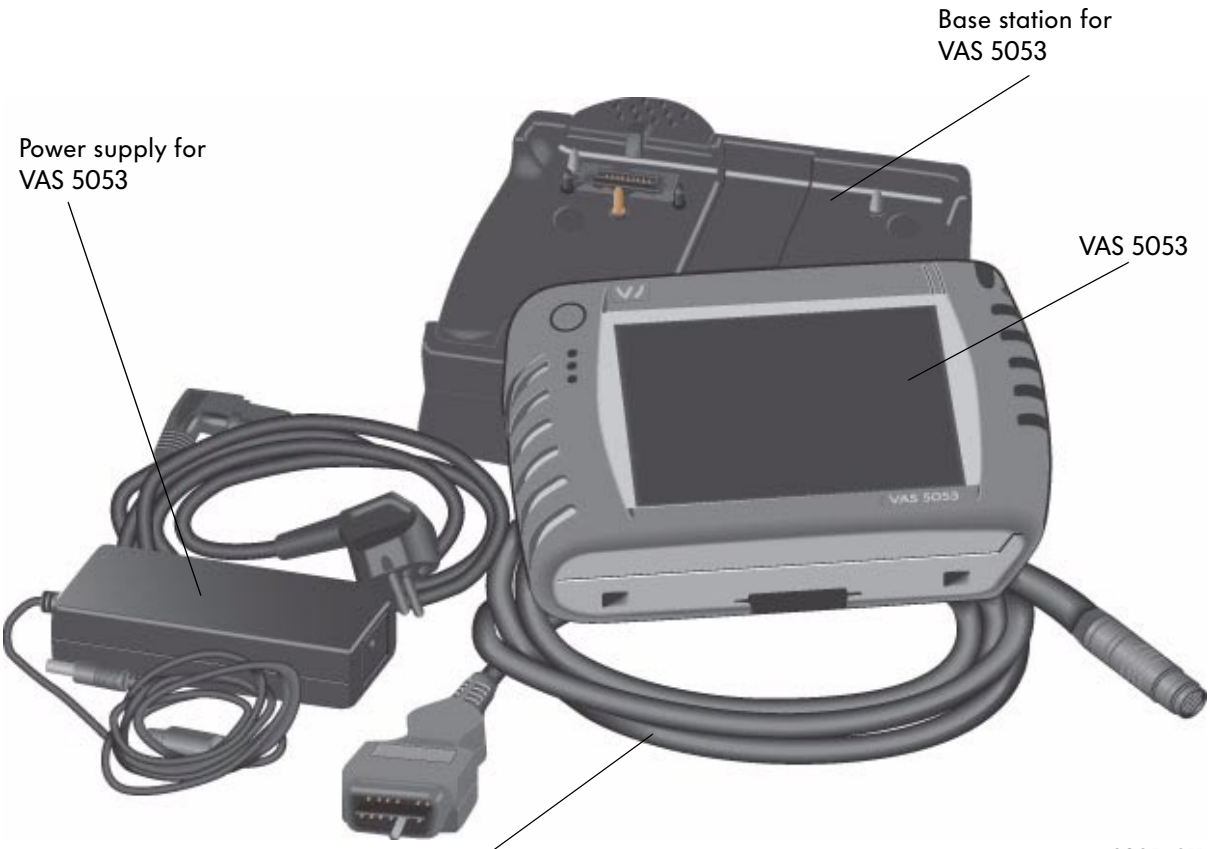
Diagnosis Systems

VAS 5053 Vehicle Diagnosis System



New diagnosis unit
Compact for vehicle receipt, vehicle service and mobile use.

Equipment



Please refer to the latest equipment catalogue for the exact content.

VAS 5053

The VAS 5053 vehicle diagnosis system has the modes:

- Vehicle self-diagnosis
- OBD
- Guided functions
- Administration
- Applications

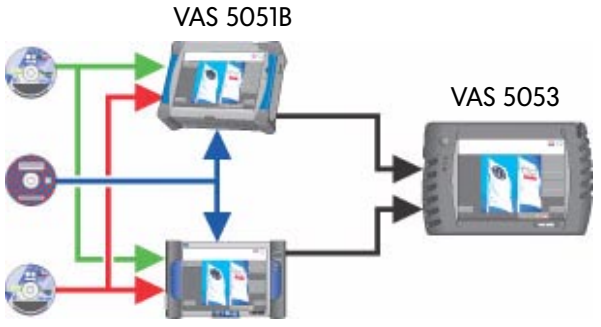
S295_012

Technical data for vehicle diagnosis system VAS 5053

- 6.5” TFT colour display
- “Elsa Win” compatible
- Modern processor performance
- Interfaces on tester:
  1 x USB, 1 x LAN, PC-CARD, Compact Update
- Interfaces on the base station:
  2 x USB
  1 x LAN
  Power supply connection
- Battery operation approx. 3 hours

Software installation

The installation or update of the software is performed using the VAS 5051B, VAS 5052 or a standard PC together with the included USB cable.



S295_137

Accessories for communication with the vehicle systems

Various diagnosis leads are required to communicate with the systems (control units) installed in the vehicle.

Diagnosis leads VAS 5051/5A and 6A

The diagnosis leads VAS 5051/5A and 6A for the VAS 5051 allow diagnosis via diagnosis CAN (Controller Area Network) and the US standard J1850.

They replace the previous diagnosis leads VAS 5051/1 (EU) and VAS 5051/5 (USA).

Connector colour: grey
Lead length: 3 m (5A) and 5 m (6A)

S295_013

Only the diagnosis leads VAS 5051/5A and 6A are suitable for diagnosis on vehicles with Diagnosis Controller Area Network.
When the diagnosis lead VAS 5051/5A is used, the voltage for the VAS 5051 is supplied via the diagnosis connector in the vehicle (vehicle battery) if it is not connected to the 230V mains.

Diagnosis lead VAS 5052/3

The diagnosis lead VAS 5052/5A for the VAS 5052 allows diagnosis via diagnosis CAN (Controller Area Network) and the US standard J1850.
If the VAS 5052 not connected to the base station, the voltage supply via the diagnosis connection in the vehicle (vehicle battery).

Connector colour: blue
Length: 5m

S295_014

K-lead adapter VAS 6017B

The new K-lead adapter VAS 6017B is required for the Audi A4 2001 >, Audi A4 2005 >and the Audi A6 July 2001 >
to exchange data with all control units that are connected to the diagnosis connector T16 via various K-leads or CAN data bus lines. It should be plugged in before the respective diagnosis line. It is reverse compatible and replaces the previous K-lead adapter VAS 6017A.
The yellow LED illuminates while the control unit is addressed.

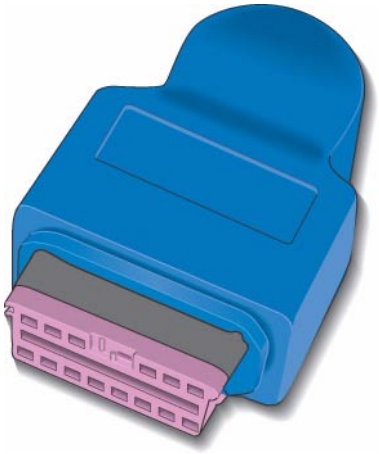
As soon as the control unit responds, the yellow LED and the corresponding green LED (K1 and K2) illuminates.
(See also SSP 254 Audi A4 '01 - Technology)

S295_015

Test adapter VAS 5052/4

The test adapter is used to check the VAS 5052/3 diagnosis lead and the tester interface. When the self-test is carried out, the test adapter VAS 5052/4 needs to be connected to the VAS 5052/3 diagnosis lead to test the VAS 5052/3 diagnosis lead.

The self-test is required if no diagnosis communication is possible. It is called up via the "Administration" menu item on the VAS 5052 and asks you to connect the test adapter during the program procedure. The further procedure appears as a mask on the screen.



S295_016

Diagnosis Systems

The Software Structure

The software required for the diagnosis systems is split between two CDs.

Basic CDs

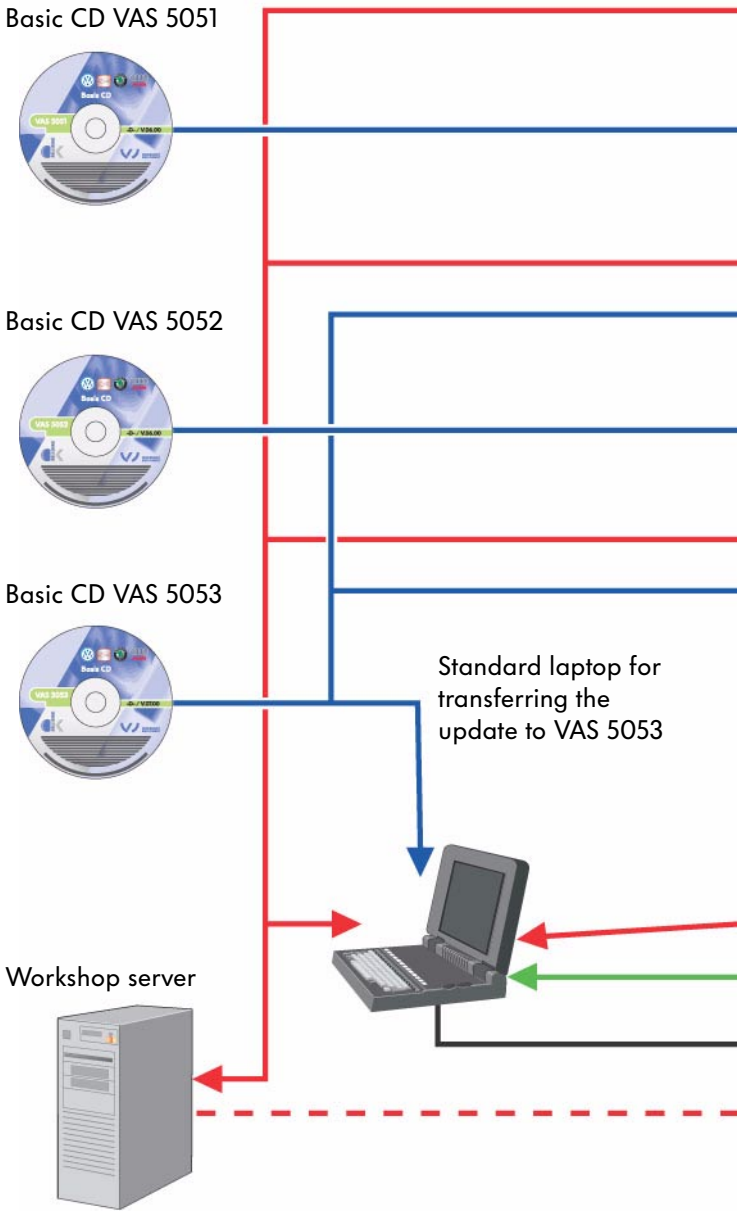
The basic CDs contain the operating system and the procedure software as well as the software for the operating modes:

- Self-Diagnosis
- OBD
- Test Instruments
- Administration
- Applications
- Guided Fault Finding (only procedure)
- Guided Functions (only procedure)

The basic CDs cover all brands and provide a platform for all brands. They are required to run the brand CDs and need to be installed first.

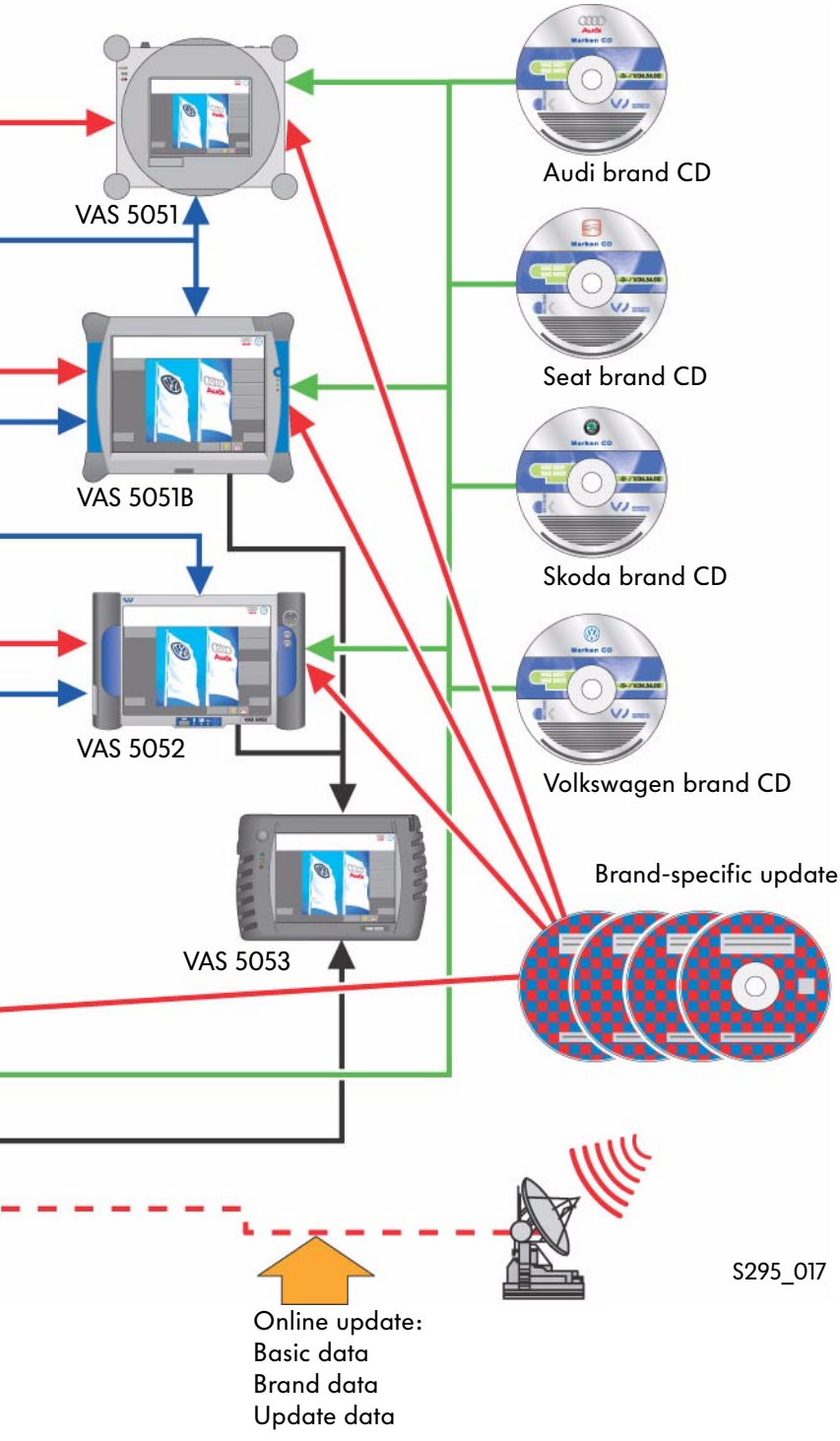
Once the basic CD has been installed, the number of the software version before the point is changed. A compatible brand CD has to be installed next so that the “Guided Fault Finding” and “Guided Functions” modes are available again.

The basic CDs for the diagnosis systems VAS 5051, VAS 5052 and VAS 5053 are different and only work with the respective diagnosis systems they are intended for. Incorrect use can lead to the equipment not functioning.



Brand CDs

The brand CDs include the data for the modes:



- Guided fault finding
- Guided functions
  They are brand-specific and cannot run without a basic CD.

Since 1 July 2004, it has been possible in Germany to download updates of brand-specific functions and new versions.
There are therefore no more brand and update CDs.

Operating modes

Overview

The diagnosis functions of the VAS diagnosis units are subdivided into individual modes. Operation in the individual modes is identical with all systems.

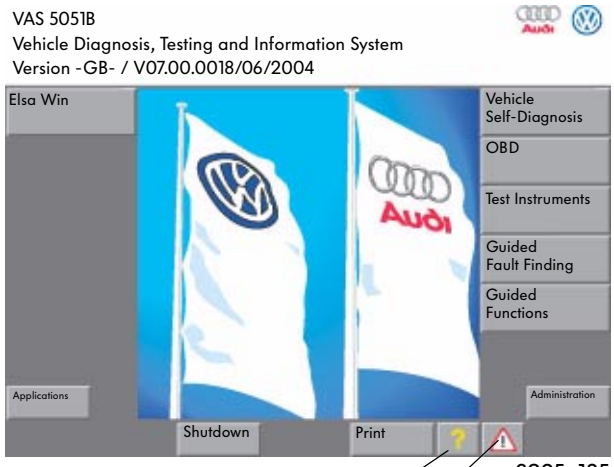
VAS 5051 modes

- Vehicle Self-Diagnosis
- OBD (on-board diagnosis)
- Test Instruments
- Guided Fault Finding
- Guided Functions
- Administration
- Applications

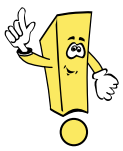
VAS 5051B modes

- Vehicle Self-Diagnosis
- OBD (on-board diagnosis)
- Test Instruments
- Guided Fault Finding
- Guided Functions
- Administration
- Applications
- ELSA Win (not included)

S295_018



S295_135



New keys from basic-CD 7.00

- Help
- Notes

Please refer to the operating manual for the exact functions.

VAS 5052 modes

- Vehicle Self-Diagnosis
- OBD (on-board diagnosis)

- Guided Fault Finding
- Guided Functions
- Administration
- Applications
- Elsa Win (not included)

VAS 5053 modes

- Vehicle Self-Diagnosis
- OBD (on-board diagnosis)

- Guided Functions
- Administration
- Applications

S295_019

S295_136

Test Instruments

If electrical measured values are required, they will have to be entered as substitute values using a virtual keyboard.
If a measurement with the DSO is necessary, a message will appear stating that this measurement is only possible with the VAS 5051. Stored specified curves are displayed.

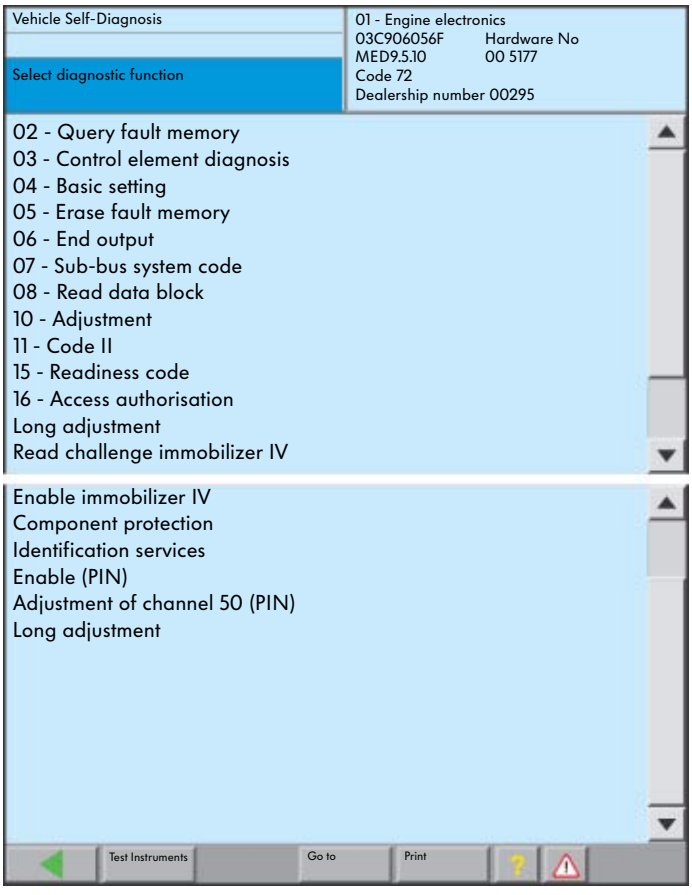
S295_138/S295_178

Vehicle Self-Diagnosis

The diagnosis functions in the VAS 5051, 5051B, VAS 5052 and VAS 5053

Overview

After selecting the “Vehicle Self-Diagnosis” mode and choosing a vehicle system, the possible diagnosis functions of the vehicle system are queried once the communication between the VAS diagnosis system and the vehicle system is set up.
If the vehicle has a diagnosis interface for data bus, only the diagnosis functions that are actually possible for the respective vehicle system will be displayed on the mask. On vehicles without a data bus diagnostic interface, all diagnosis functions that are possible with the VAS diagnosis system will be listed.

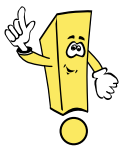


S295_020

The necessary information on the repair group 01 vehicle self-diagnosis is only available in the ELSA in vehicles up to model year 1997.

In vehicles from model year 1998, this information is available in the “Guided Fault Finding” or the “Guided Functions”.

After selecting the “Vehicle Self-Diagnosis” mode, the new functions “Collection Services” and “Gateway Component List” as well as ambient conditions are available depending on whether a data bus diagnosis interface is present.



New functions:

- Collection Services
- Gateway Component List
- Ambient Conditions

Collection Services

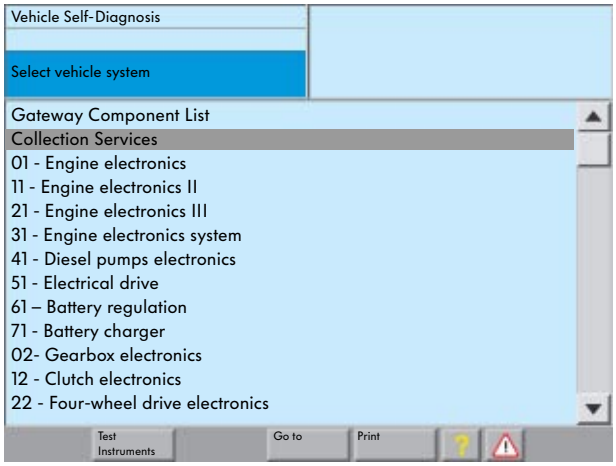
After selecting the “Collection Services” function, the following diagnosis functions are available depending on whether a data bus diagnosis interface is present:

- Query fault memory - Whole system
  This function allows you to query the fault memories of all systems installed in the vehicle.

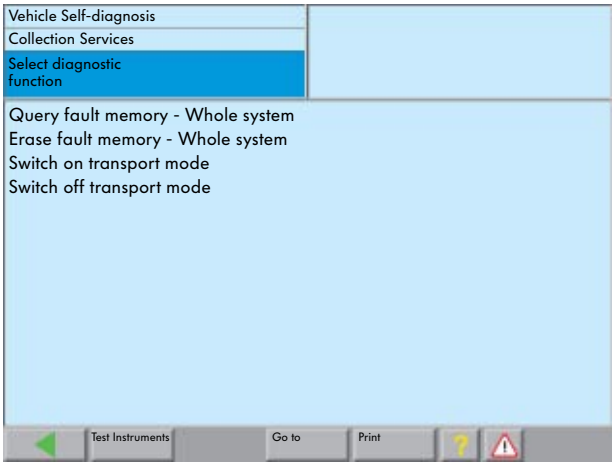
- Query fault memory - Whole system*
  The fault memories of all vehicle systems entered in the screen mask “Select vehicle system” are deleted in succession.

- Switch on transport mode*
  In transport mode, almost all convenience functions are switched off so the maximum period out of operation without battery discharge is guaranteed.

- Switch off transport mode*
  This function is used to switch the convenience functions on again.



S295_021



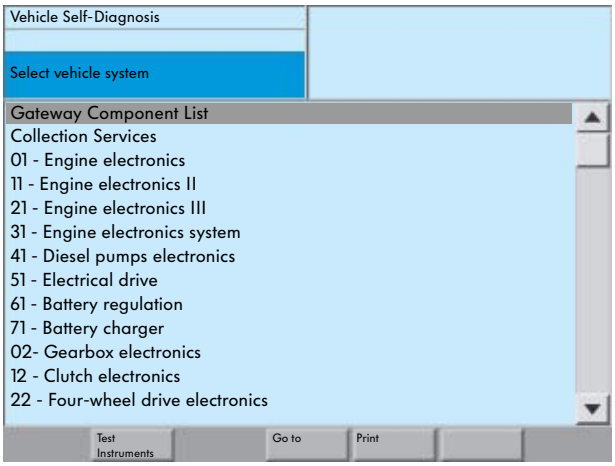
S295_022

* Only for vehicles with diagnosis interface for data bus

Vehicle Self-diagnosis

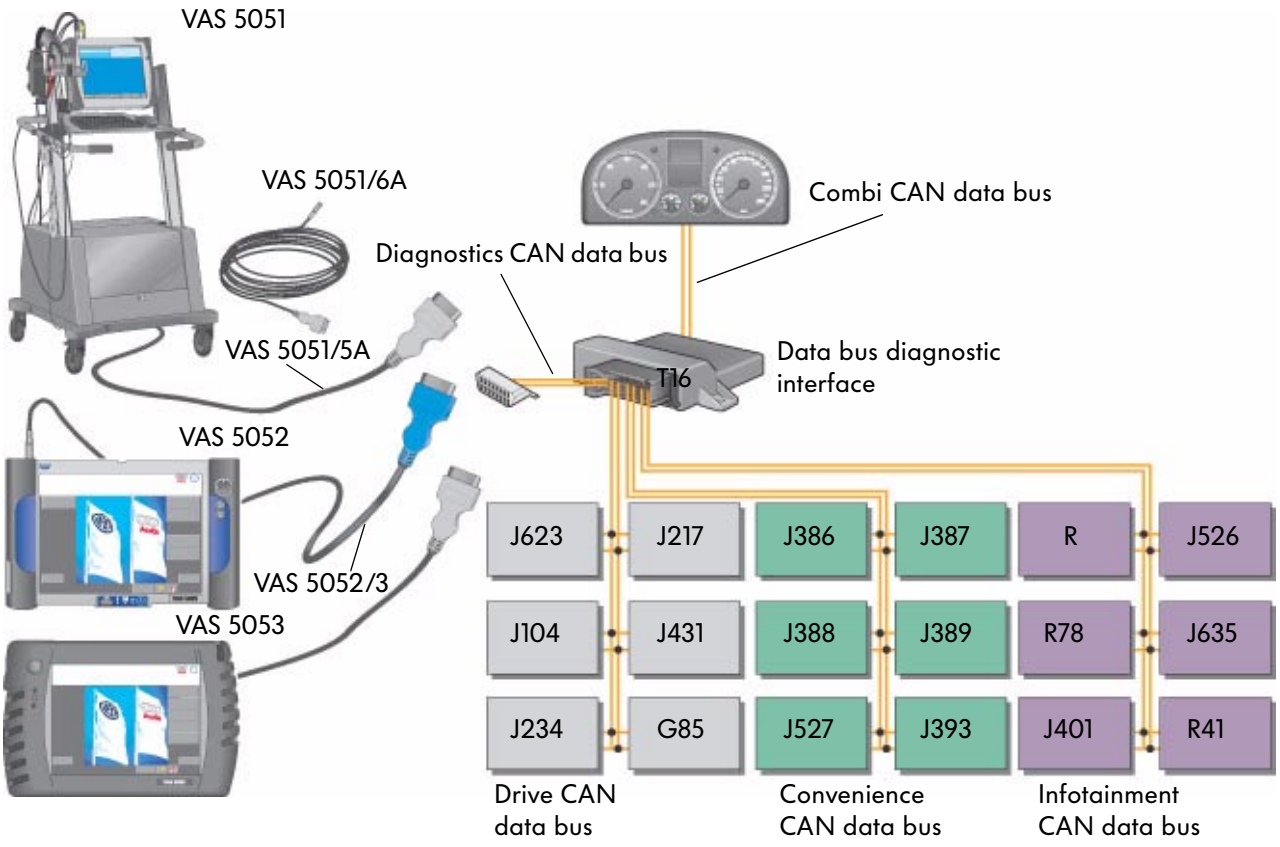
Gateway Component List

After selecting the operating mode “Vehicle Self-Diagnosis”, the diagnosis function “Gateway Component List” is available for vehicles with diagnosis communication via the CAN data bus and the diagnosis interface for data bus (e.g. Audi A8 2003 >, VW Touran 2003 >, VW Golf 2004 >).



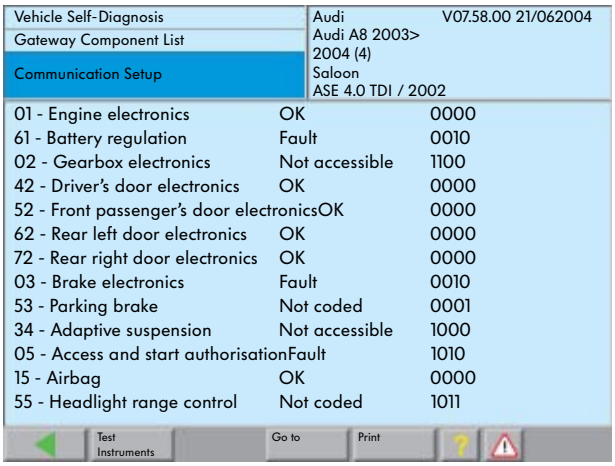
S295_023

Diagnosis communication via the data bus diagnostic interface



S295_025

When starting via the function “Gateway Component List”, a detailed list of the vehicle systems and their current status is read from the data bus diagnostic interface.



S295_024

Status table

Display in the Gateway Component List	Meaning	Bit sequence
OK	The control unit takes part in the data bus communication. No faults are stored in the control unit.	0000
Cannot be accessed or no communications	The control unit is logged onto the gateway (coded), but there is no communication with the control unit.	Static 11xx Sporadic 1000
Fault	An error has been stored in the corresponding control unit. You can select the control unit and export the fault memory by touching the screen.	x010
Not logged in or not coded	The control unit is installed in the vehicle and takes part in data communication, but is not logged onto the data bus diagnostic interface (coded).	X0X1

Several statuses cannot be shown at the same time for each vehicle system.
Positions with an “X” are not evaluated and can display the values 0 or 1.

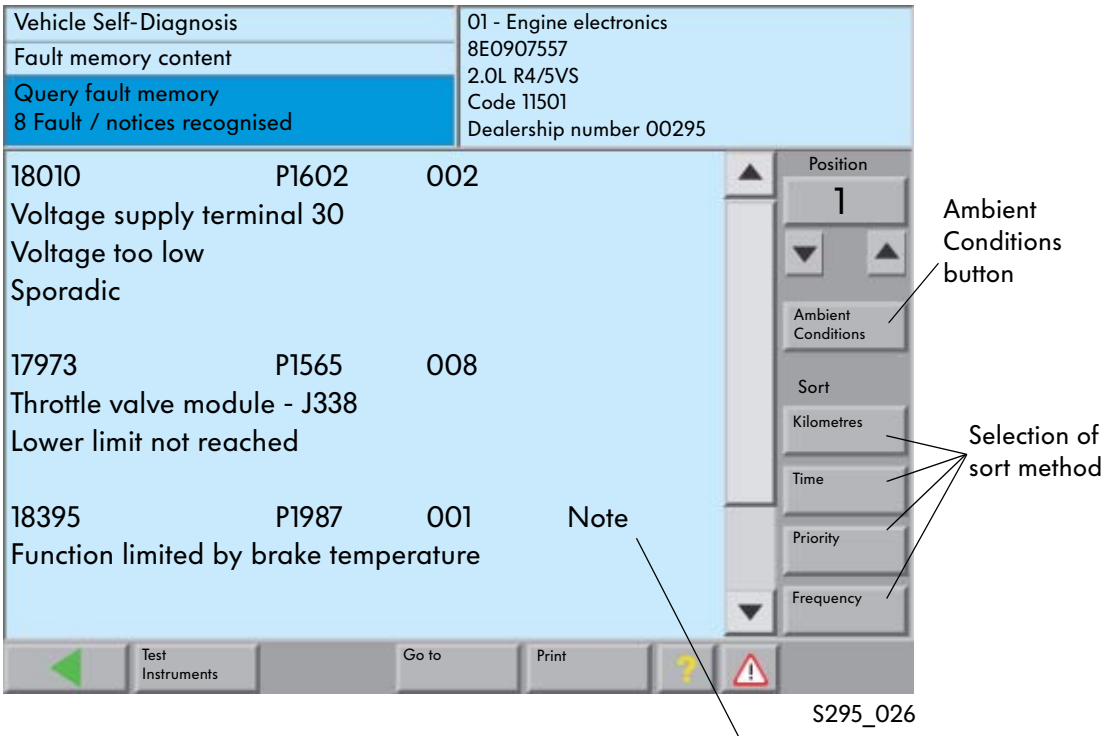
Vehicle Self-Diagnosis

Displaying the ambient conditions

Some control units also store ambient conditions in addition to the fault memory entries.

The ambient conditions can be displayed with the “Ambient Conditions” button if they are present in the “Read Fault Memory” diagnostic function.

The “Ambient Conditions” button is only displayed if ambient conditions are actually stored.



S295_026

Sort method

The ambient conditions can be sorted manually according to the following categories:

- km reading
- Time
- Priority
- Fault frequency

A “Note” label for the fault entry only appears from fault priority 6.
The fault does not have to originate from the internal system.

From basic CD 7.0
If no standard ambient conditions are stored, the screen colour may change.

Composition

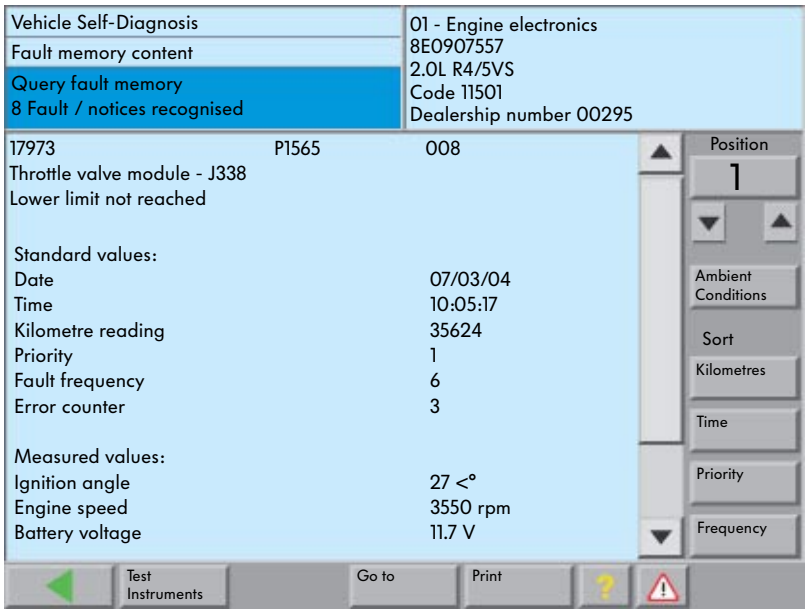
The ambient conditions are made up of standard ambient conditions and specific ambient conditions.

Standard ambient conditions

- Date of first storage
- Time of first storage
- km reading for first stored fault
- Priority: Rating 1-8
- Fault frequency: Counter up to 255 Number of definite cases since first occurrence

Specific ambient conditions

- Measured values specific to control unit



Standard ambient conditions

Specific ambient conditions

S295_027

Priority list

Priority	Meaning for the vehicle
1	Fault with great influence on the vehicle availability, the vehicle should be stopped immediately.
2	Fault that requires direct visit to workshop.
3	Fault that does not require an immediate visit to the workshop, but can be combined with a service appointment.
4	Faults that lead to a required action, the vehicle availability may be limited in some cases (e.g. increased bias current)
5	Fault without influence on the vehicle availability or not relevant to customer service.
6	Note: Fault with long-duration influence on the vehicle availability and thus relevant to customer service (e.g. filling level, wear, ageing)
7	Note: The fault has an influence on the convenience function, but no influence on the vehicle availability and is not relevant to customer service.
8	General note

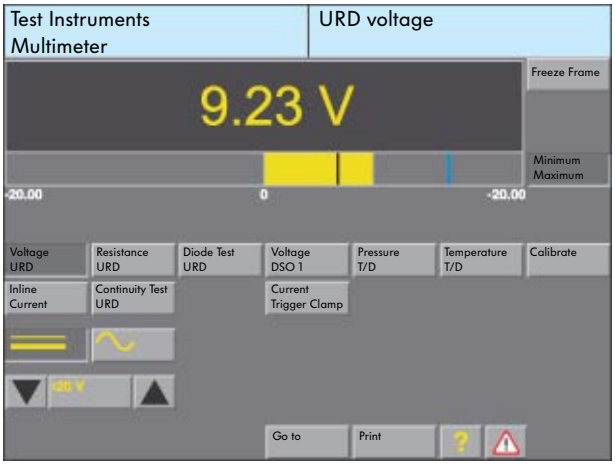
Test Instruments

Test instruments in the VAS 5051

The VAS 5051 has the “Test Instruments” mode.

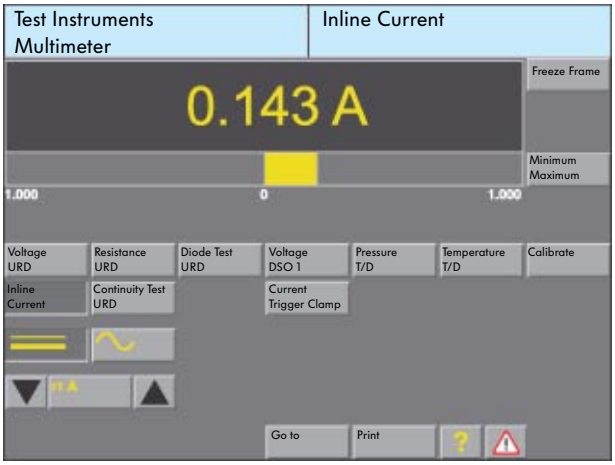
All measurements on pages 28 and 29 are described in SSP 202 “Vehicle Diagnosis, Testing and Information System VAS 5051” and can be checked there. They are only listed here for the sake of completeness.

- Voltage measurement direct voltage max. 50 V



S295_028

- Current measurement
  Inline direct and alternating current measurement (measuring instrument connected in series) max. 10 A

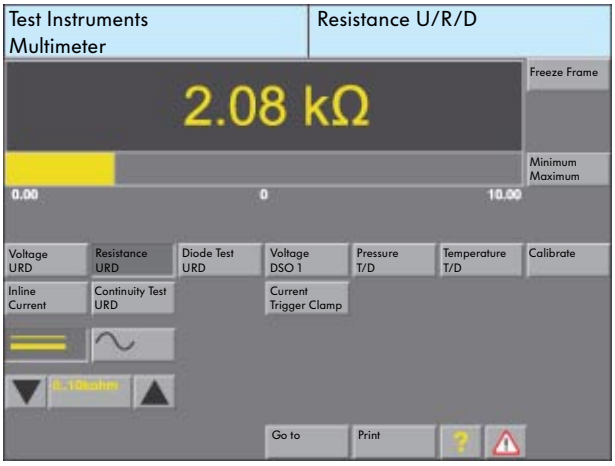


S295_029

- Current measurement
  Direct and alternating current measurement with trigger clamp 50 A, 100 A, 500 A or 1000 A

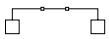
S295_030

- Resistance measurement
  Automatic or manual measuring range selection

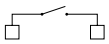


S295_031

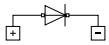
- Continuity test
  Graphical display of results
  Connection

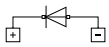
  Open circuit

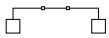
- Diode test
  Graphical display of results
  Diode in conducting direction

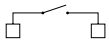
  Diode in blocking direction

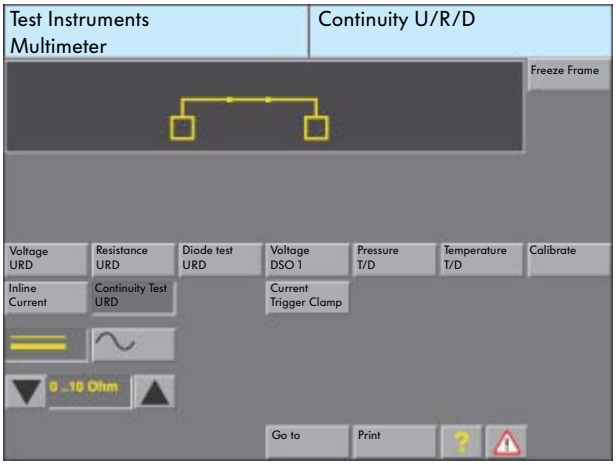
  

  Short-circuit

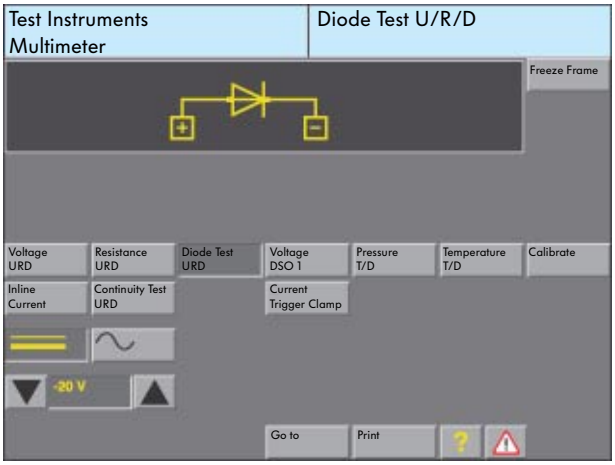
  

  Open circuit



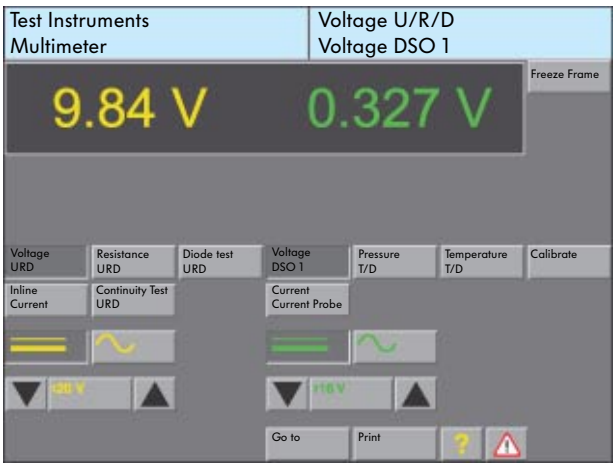
S295_032



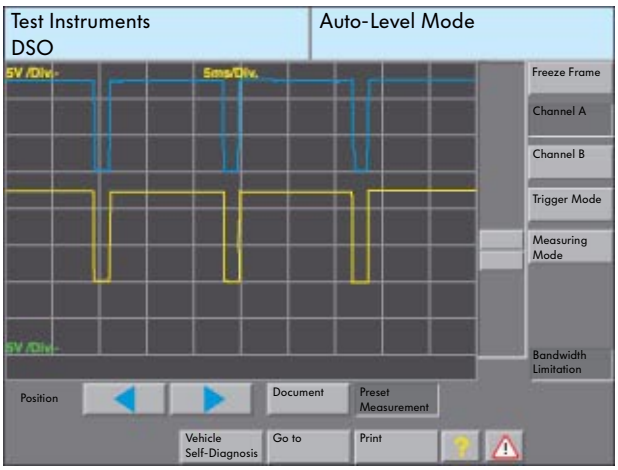
S295_033

- Voltage measurement with additional
  DSO probe (digital storage oscilloscope)
  up to +/- 400 V

- Digital storage oscilloscope (DSO)

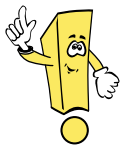


S295_034



S295_035

Test Instruments



In the “Test Instruments” mode, new extensions are available.

Parallel operation of the modes “Test Instruments”, “Vehicle Self-Diagnosis” and “OBD”

It is possible to use the modes “Test Instruments”, “Vehicle Self-Diagnosis” and “OBD” parallel. Measured values from the “Vehicle Self-Diagnosis” and “OBD” modes can also be displayed cyclically in the masks “Multimeter” and “DSO” , the “Test Instruments” modes in addition to the measuring data and measuring curves.

The following combinations are possible:

- Measured values or measured curves from the “Test Instruments” mode and measured values from the “Read Data Block” function from the “Vehicle Self-Diagnosis” mode
- Measured values or measured curves from the “Test Instruments” mode and measured values from the “Basic Setting” function from the “Vehicle Self-Diagnosis” mode
- Measured values or measured curves from the “Test Instruments” mode and measured values from the “Control Element Diagnosis” function from the “Vehicle Self-Diagnosis” mode
- Measured values or measured curves from the “Test Instruments” mode and measured values from the “OBD” mode

The following functions are still recorded in the “Test Instruments” mode:

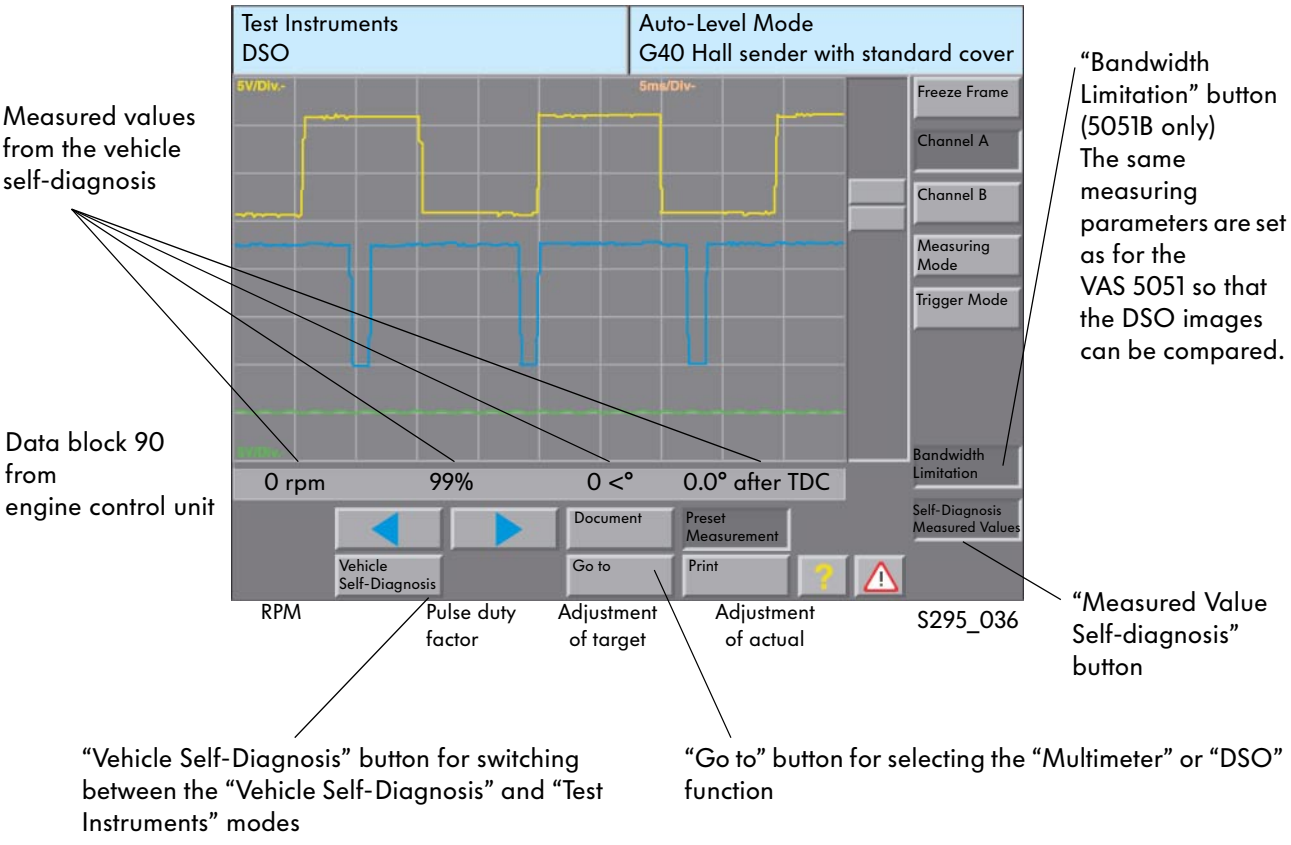
- Min and max display in the “DSO” function
- Current measurement with the trigger clamp in the “DSO” function
- Long-time measurement in the “DSO” function

You no longer switch over to the “DSO” function with the “DSO” button, but with the “Go to” button and then by selecting “DSO”.

Display of measured value blocks from the “Vehicle Self-Diagnosis” mode to the “Test Instruments” mode, “Multimeter” or “DSO” function

So that the measured values from the “Read Data Block” and “Basic Setting” self-diagnosis functions are displayed in the “Test Instruments” mode, the “Read Data Block” or “Basic Setting” function and then a channel (e.g. 90) have to be selected in the “Vehicle Self-Diagnosis” mode.
You then switch to the “Test Instruments” mode with the “Test Instruments” button. The “Multimeter” function is displayed automatically. The “DSO” function can be selected using the “Go to” button.
After pressing the “Measured Value Self-Diagnosis” button, up to four measured values are displayed.

“DSO” mask with display of a measured value block from the “Vehicle Self-Diagnosis”



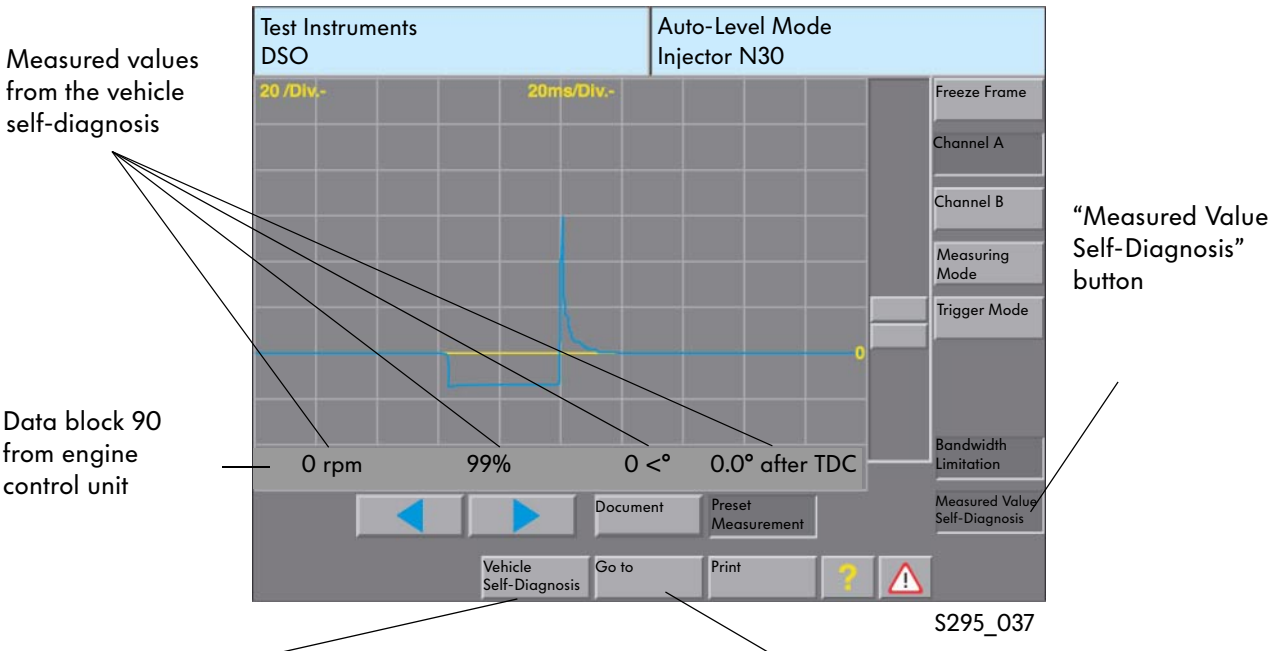
If the measured values are not selected in “Vehicle Self-Diagnosis” mode, no measured values will be displayed in “Test Instruments” mode.

Test Instruments

Display of control element value from the “Vehicle Self-Diagnosis” mode “Test Instruments” mode, “Multimeter” or “DSO” function

To display values from the “Control Element Diagnosis” it is necessary to start the “Vehicle Self-Diagnosis” mode.
Then you switch to the “Test Instruments” mode. In the “Multimeter” or “DSO” mask, you have to press the “Measured Value Self-Diagnosis” button.
After returning to the “Vehicle Self-Diagnosis” mode, the control element of the required system can be started. Switching to the “Test Instruments” mode again displays the values obtained from the control element diagnosis.

“DSO” mask with displayed values from control element diagnosis from the “Vehicle Self-Diagnosis”



To select the next control element, return to “Vehicle Self-Diagnosis”.

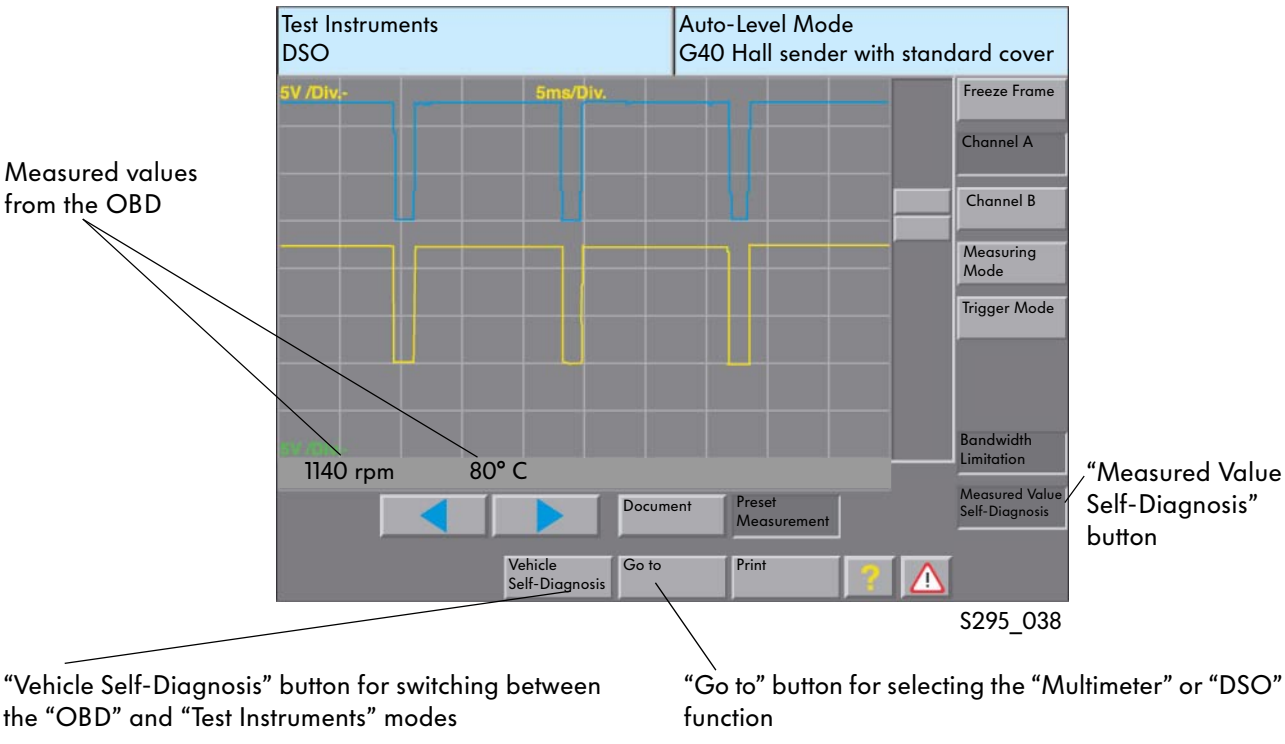
Display of values from the “OBD” mode in the “Test Instruments” mode, “Multimeter” or “DSO” function

The same rules apply as for the display of values from the mode “Vehicle Self-Diagnosis”, “Read Data Block” and “Basic Setting” function.

There are, however, the following limitations:

- Only the first four values are displayed when more than four OBD values are measured
- Only the actual values without target value details are displayed

“DSO” mask with display values from the OBD

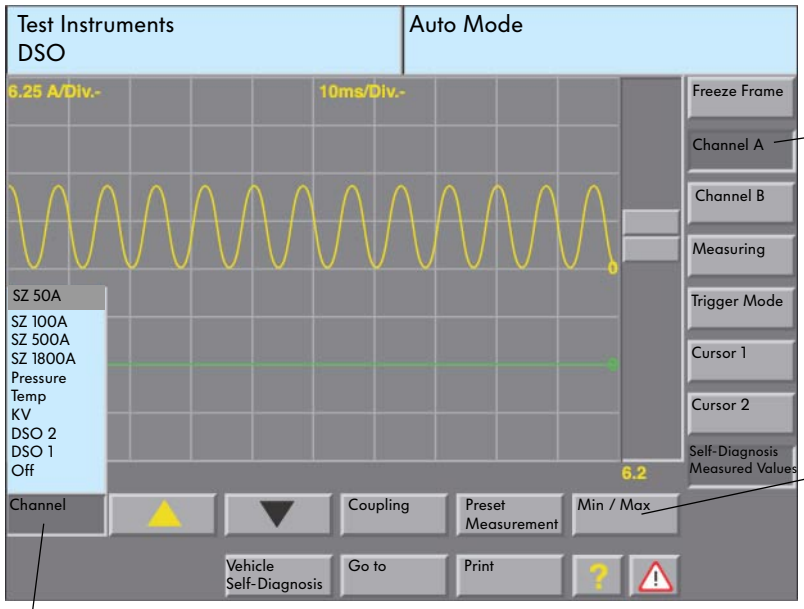


Test Instruments

Current measurement with the trigger clamp in the “Test Instruments” mode, “DSO” function

The “DSO” function has been added to the test instruments. This expansion allows current values to be measured with the trigger clamp in the “DSO” function.
The measuring range for the connected trigger clamp is set automatically by the VAS 5051. The recognition occurs via the coding resistor in the respective connector.
The measurement can be in the DSO channel A or B, a parallel voltage measurement is possible using the channel that is not being used.

“DSO” trigger clamp selection for current measurement



S295_039

Button: Channel A for current measurement in the DSO Channel A

Button: Min/max for displaying the minimum and maximum values at the bottom of the oscillogram

Button: Channel for selection the test connection

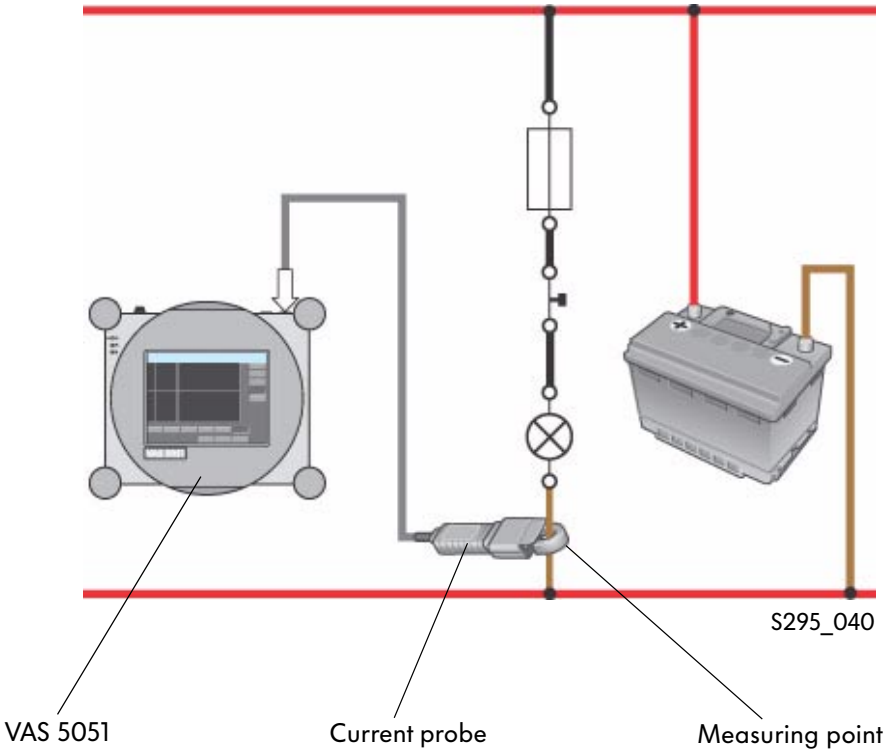
- Off	Channel disabled
- DSO 1	DSO 1 measuring lead
- DSO 2	DSO 2 measuring lead
- KV	Kilo-Volt probe (optional)
- Temp.	Temperature sensor (optional)
- Pressure	Pressure sensor (optional)
- SZ 1800A	Trigger clamp 1800 A (optional)
- SZ 500A	Trigger clamp 500 A (optional)
- SZ 100A	Trigger clamp 100 A
- SZ 50A	Trigger clamp 50 A

You will find further information on use of the “Digital Storage Oscilloscope” function in SSP 202 “Vehicle Diagnostic, Testing and Information System VAS 5051” or in the operating manual for the VAS 5051.

Connecting the trigger clamp

The line to be measured is held in the trigger clamp.
To avoid incorrect measurements, the trigger clamp should be closed properly.

Connecting the trigger clamp



Before carrying out a trigger clamp measurement, the trigger clamp has to be calibrated. This is automatic when you select a trigger clamp. The trigger clamp needs to be relieved, i.e. a cable cannot be held.

Test Instruments

Long-time measurement in the “Test Instruments” mode, “DSO” function

In the “Test Instruments” mode, function “DSO”, a long-duration measurement can be made in “Writer” measuring mode. Using the long-time measurement, voltage or current values can be recorded over several hours. This is recommended, for example, to test the sleep mode for CAN data bus systems, to check the bias current or other signals.
The long-duration measurement is only possible in “Writer” measuring mode.
It is selected by pressing the “Measuring Mode” button and the “Writer” button.

“DSO” mask with button for setting the long-duration measurement

S295_041

Settings

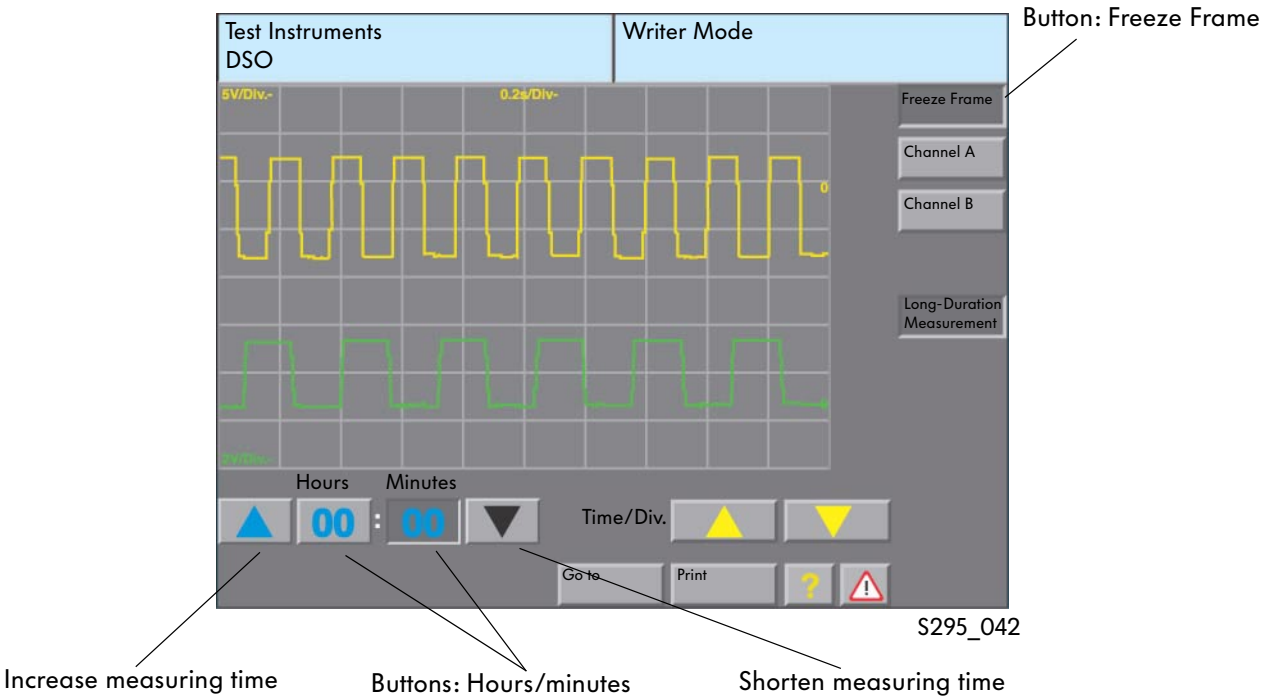
The long-duration measurement needs to be started manually. It can be stopped manually or after a specific time.

Start/stop long-duration measurement

The long-time measurement is started and stopped with the “Freeze Frame” button.

- Start
  Deactivating the “Freeze Frame” button starts the long-duration measurement.
  The “Freeze Frame” button is deactivated when the button colour is light grey.
- Stop
  Activating the “Freeze Frame” button stops the long-duration measurement.
  The “Freeze Frame” button is activated when the button colour is dark grey.

“DSO” mask with setting elements for long-duration measurement



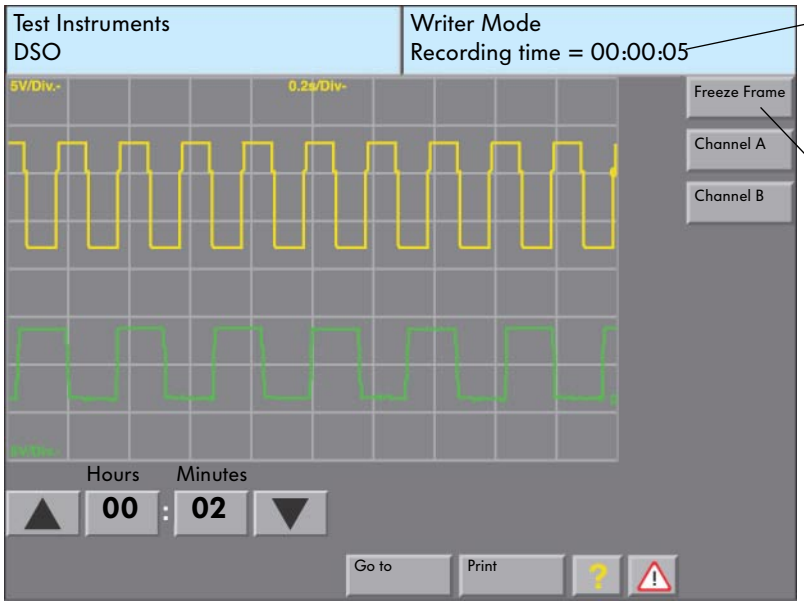
Measuring time

The “Hours” and “Minutes” buttons can be used to set the running time of the long-duration measurement.
During the measurement, the remaining time for the measurement is displayed in these buttons.

Long-duration measurement procedure

During the measurement in writer mode, the running time is displayed at the top right of the mask. No changes can be made to the measurement settings. It can only be cancelled early by pressing the “Freeze Frame” button.

“DSO” mask with setting elements for long-duration measurement



S295_043

The measuring time

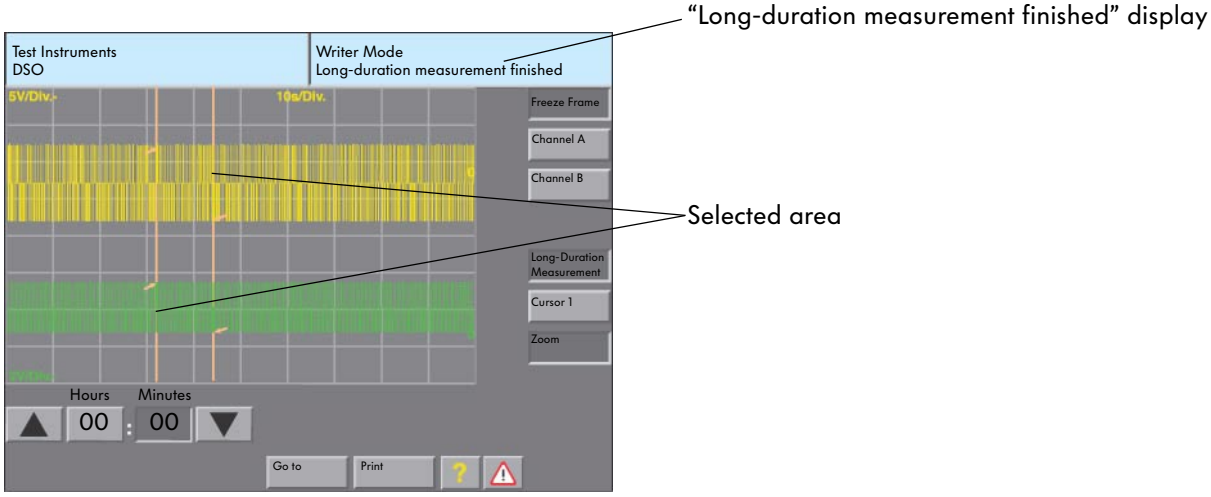
The measuring time is limited depending on the resolution of the time axis.

Resolution time axis	Sampling rate	Recording time duration in hh:mm
10 s/Div.	5 Hz	55:33
5 s/Div.	10 Hz	27:46
2 s/Div.	25 Hz	11:06
1 s/Div.	50 Hz	05:33
0.5 s/Div.	100 Hz	02:46
0.2 s/Div.	250 Hz	01:06
0.1 s/Div.	500 Hz	00:33
50 ms/Div.	1 kHz	00:16
20 ms/Div.	2.5 kHz	00:06
10 ms/Div.	5 kHz	00:03
5 ms/Div.	10 kHz	00:01

End of long-duration measurement

The long-duration measurement ends once the set time has expired. The freeze frame function is switched on automatically and the signal pattern is displayed in the mask compressed.
For a more precise assessment, a special area can be selected.

“DSO” mask after ending the long-duration measurement



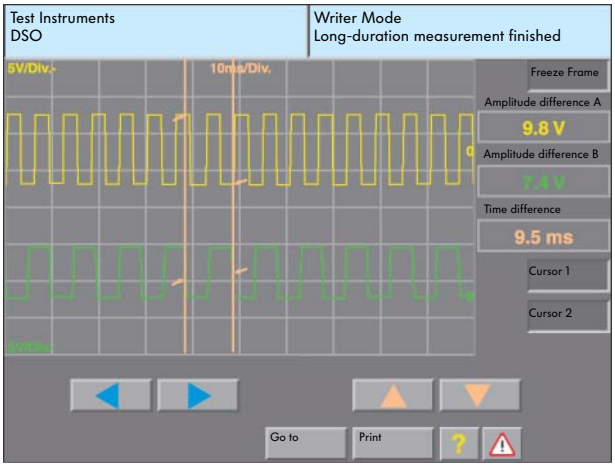
S295_044

Selecting the area to be enlarged

By marking (tapping or touching) an area on the mask (screen) and then pressing the “Zoom” button, a section of the signals can be enlarged. When you press the button again, the zoom function is switched off.

The cursors mark out the selected area. You can enlarge or reduce the area by moving the cursor.

“DSO” with zoomed display

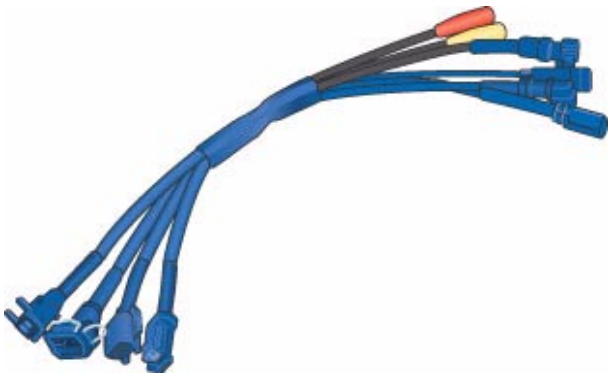


S295_045

Test Instruments

Test instrument adapters

The adapters are used in conjunction with the VAS 5051 as well as the V.A.G 1715 and V.A.G 1526/1526A multimeters for simple, fast and safe detection of a wide range of electrical and electronic signals from components.



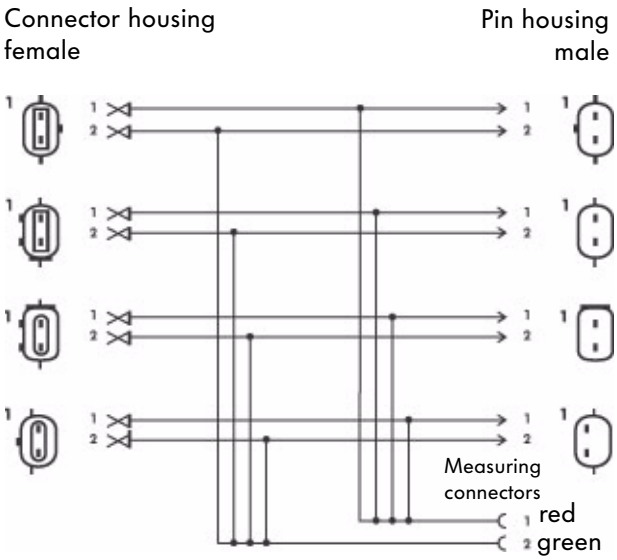
S295_051

Test instrument adapter/DSO (2-pole) VAS 5255

Use:
Measurements

- on injection valves
- on the solenoid valve for the activated charcoal filter system

Circuit diagram



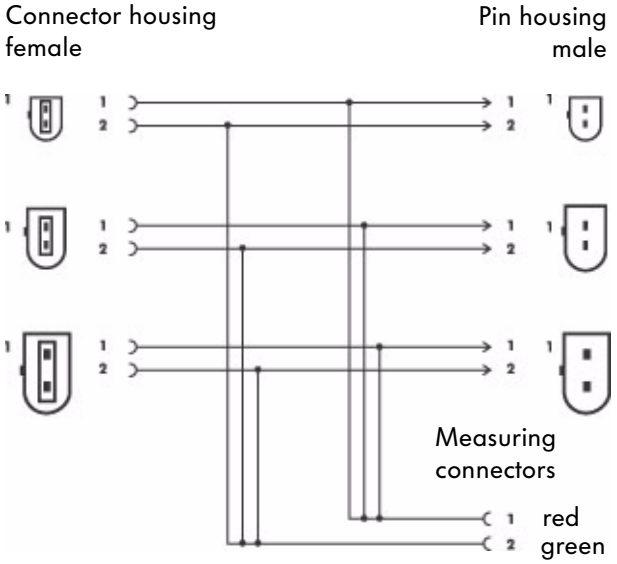
S295_046

Test instrument adapter/DSO (2-pole) VAS 5256

Use:
Measurements

- on ABS speed senders (inductive)
- on ABS speed senders (Hall sender)

Circuit diagram



S295_047

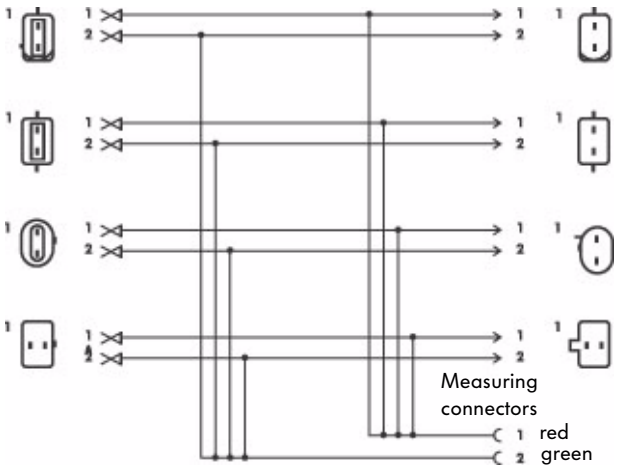
Test instrument adapter/DSO (2-pole) VAS 5256/1

Due to the wide range of different ABS connectors, it was necessary to split the VAS 5256 adapter into the VAS 5256 and VAS 5256/1 adapters.

Circuit diagram

Connector housing female

Pin housing male



S295_048

Test instrument adapter/DSO (3-pole) VAS 5257

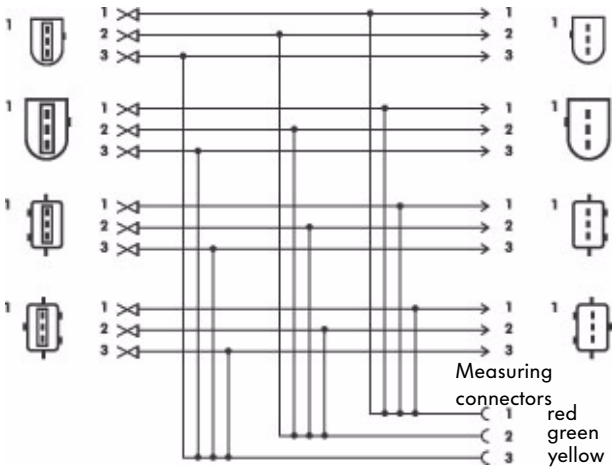
Use:
Measurements

- on engine speed sender
- on Hall sender

Circuit diagram

Connector housing female

Pin housing male



S295_049

Test instrument adapter/DSO (4-pole) VAS 5258

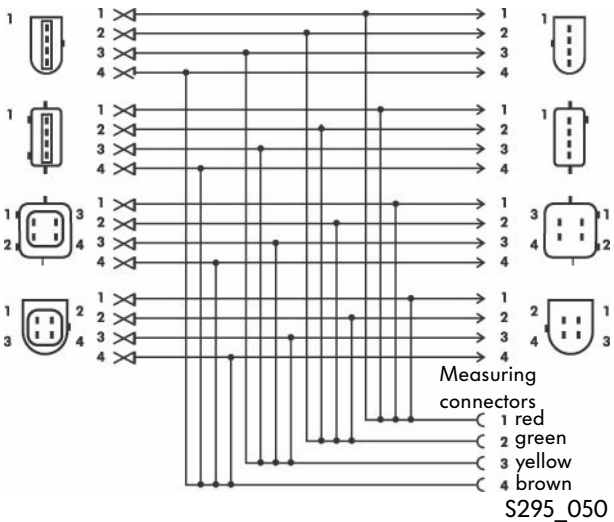
Use:
Measurements

- on coolant temperature sender

Circuit diagram

Connector housing female

Pin housing male

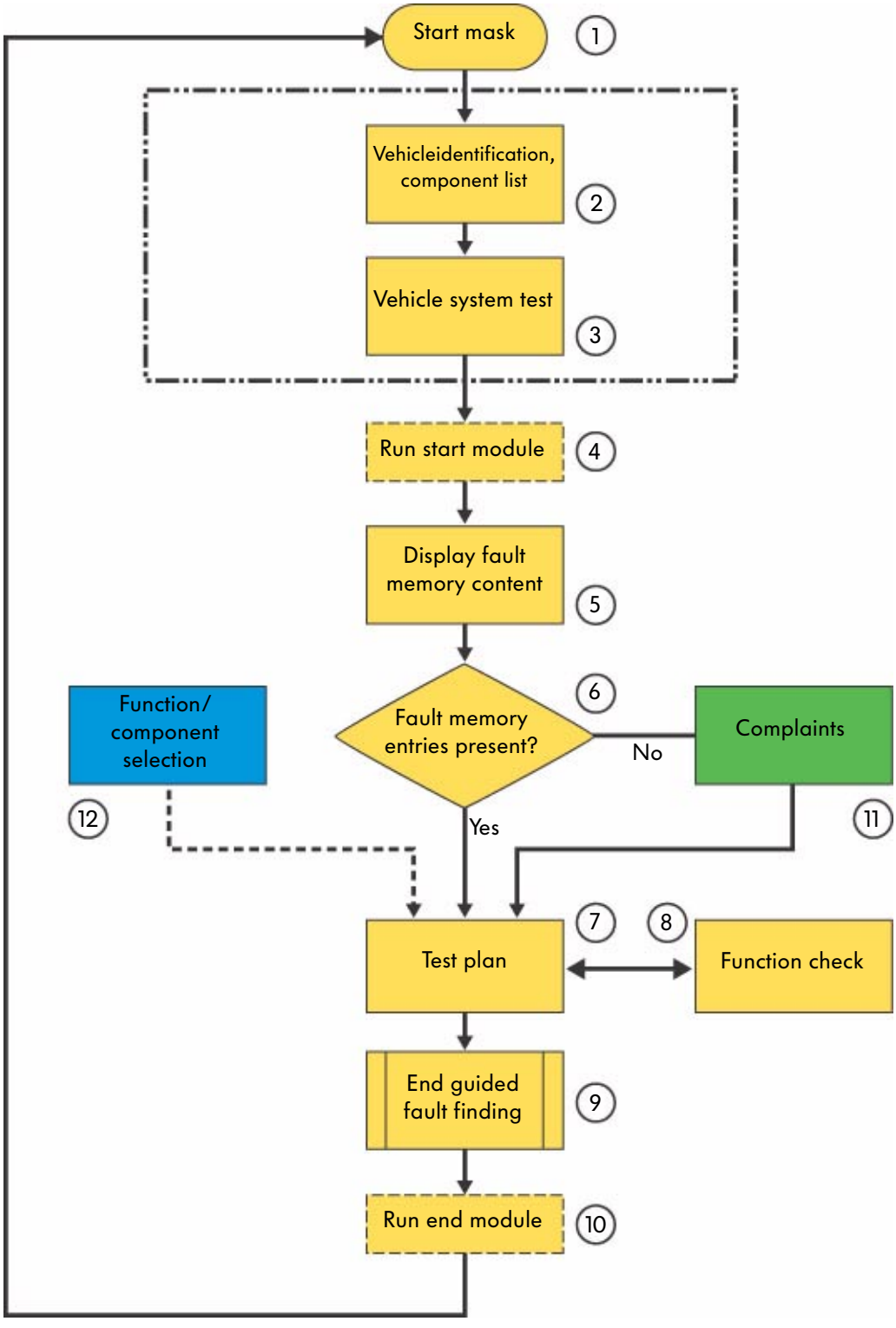


S295_050

Guided Fault Finding

The basic procedure for guided fault finding

Procedure diagram



S295_052

Guided Fault Finding

The “Guided Fault Finding” allows you to repair faults that are entered in the fault memory as well as sort out complaints that should be rectified on the basis of perceptions. You are guided through the VAS diagnosis system and extensive tools are provided as required.

Explanation

1 Start mask
The guided fault finding is started from the start mask.

2 Vehicle identification
The guided fault finding starts with selection of the brand. There is then a check to see whether the vehicle has a data bus diagnostic interface and therefore the specified component list can be read. The vehicle is then identified.

3 Vehicle identification, vehicle system test
The vehicle system test follows. In a mask, all electronic vehicle systems that can occur under the basic features of the specific vehicle are displayed.
Using the vehicle communications, there is a check to see which vehicle systems and variants are installed in the connected vehicle and their fault memories are read.

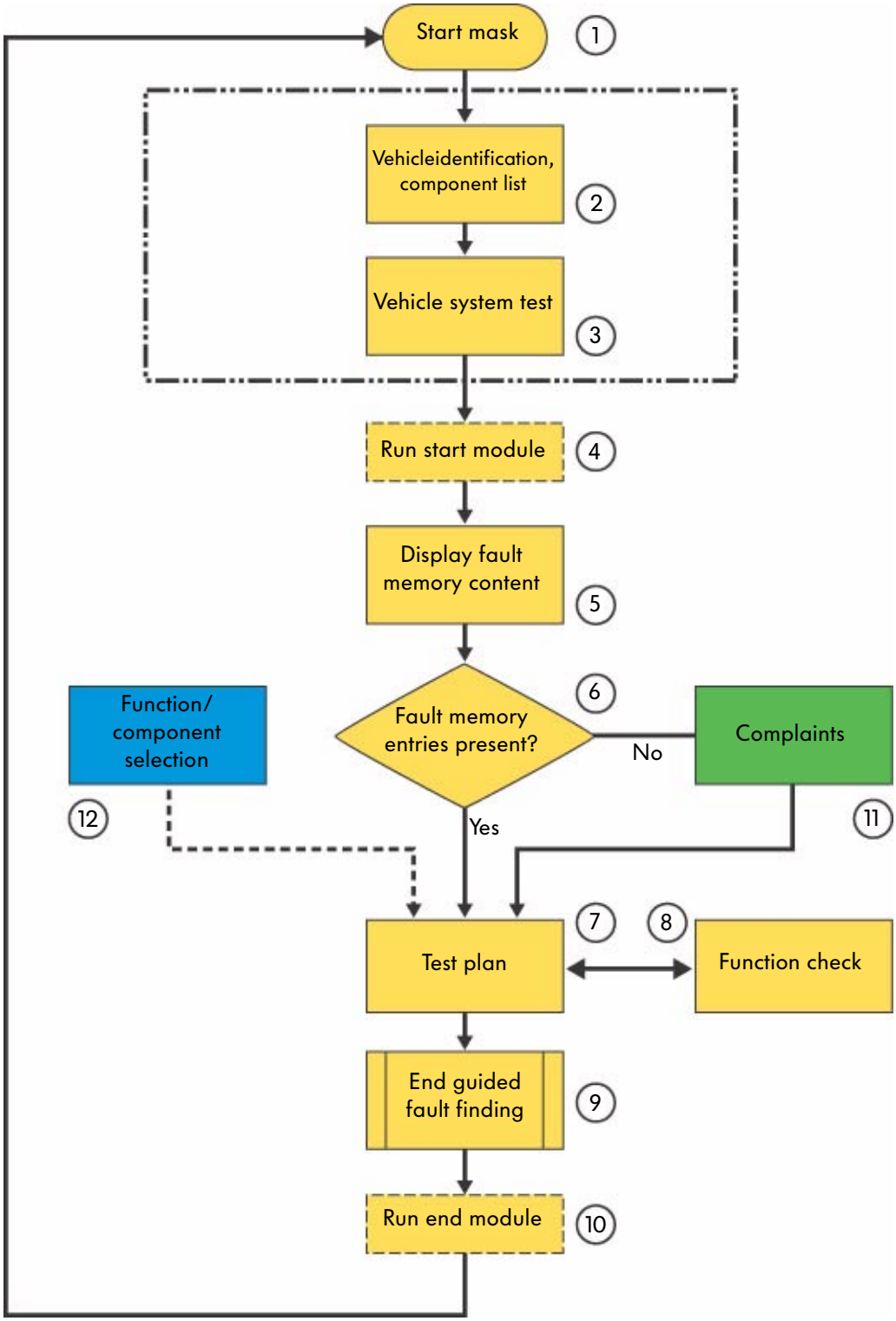
4 Run start module
The start module can be started automatically in the “Guided Fault Finding” and before the fault memory entries are displayed. It can, for example, check the update status of control units and, if necessary, automatically initiate update programming or sendresults from the vehicle system test to the vehicle manufacturer via an online connection.

5 Fault memory content
In this mask, the fault memory content and the associated fault text are listed according to control unit.

6 Fault memory entries
If fault memory entries are present, the procedure will branch to the test plan or to the “Complaint Report” mask.

Guided Fault Finding

Procedure diagram



S295_052

7 Test plan
When you switch to the “Test Plan” the results from the previous “Fault Memory Content” and “Complaint Reports” masks that have already been run through are evaluated and the system test plan is then created automatically. A separate test plan can also be created with the “Function and Component Selection”. Both test plans are displayed as a list.
The result of a function check leads to a new assessment of the test plan. The list of function tests may grow here.

8 Function check
A function check is a series of test steps to localise a fault to the level of individual components, cables and connectors or control units. As a result, the test program provides a statement on the state of the tested vehicle functions, modules or parts. The function test uses guide dialogs as an interface between the use and the diagnosis system and uses all functions of the vehicle self-diagnosis.
The VAS 5051 incorporates the internal measuring instruments in the function test. When you are using the VAS 5052, these measurements have to be carried out with external test instruments. The respective function check dialogs allow you to enter substitute values manually.

9 Exiting “Guided Fault Finding”
You exit the “Guided Fault Finding” with the “Go to” button. Among other things, it allows “Pause”, “Cancel” or “Exit” of the “Guided Fault Finding”.

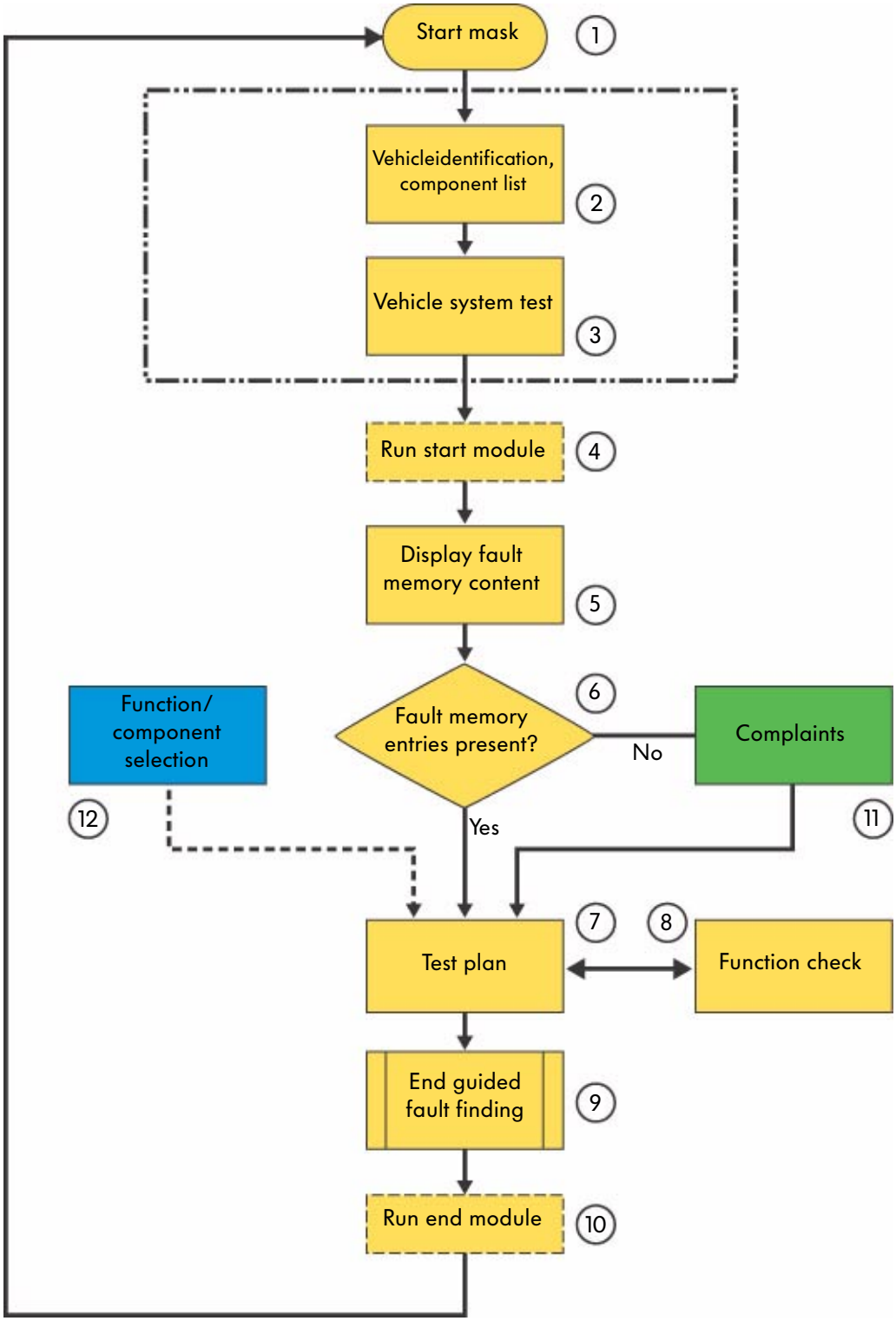
Pause
This function allows you to pause or store the diagnostic steps briefly.

Cancel
The “Guided Fault Finding” mode is ended without being completed. You are taken back to the “Select Brand” mask. The fault memories are queries and erased.

Exit
This function ends the “Guided Fault Finding”. The fault memories of the vehicle systems are erased and then read again. If there are still error memory entries or new ones have been added, this will be displayed and the guided fault finding can be continued or cancelled. When the “Guided Fault Finding” is ended in OBD vehicles, there is a warning that the Readiness Code may have been deleted and you have the option of creating it again.

Guided Fault Finding

Procedure diagram



S295_052

10 Run end module
The end module is automatically started when you exit the “Guided Fault Finding” and can include one or more function checks that are carried out outside the test plan and are not entered there. Supports, for example, the automatic transfer of the diagnosis protocols via an online connection to the vehicle manufacturer. It is listed before the return to the start mask.

11 Technical problem solving/complaint
If a fault is not recognised in the vehicle system test, the “Guided Fault Finding” will automatically switch to the selection of complaints. A symptom will have to be selected. Next the selected complaint is transferred to the test plan. You can switch to this step at any time by pressing the “Go to” button and selecting the fault memory symptom.

12 Function/component selection
Here you can select functions or components that could be the source of the fault from experience. The selected functions and/or components are entered in the “User-Defined Test Plan” and the test can be started from there. If you press the “Go to” button and select “Document”, you can call up a document associated with the function or component.

Guided Fault Finding

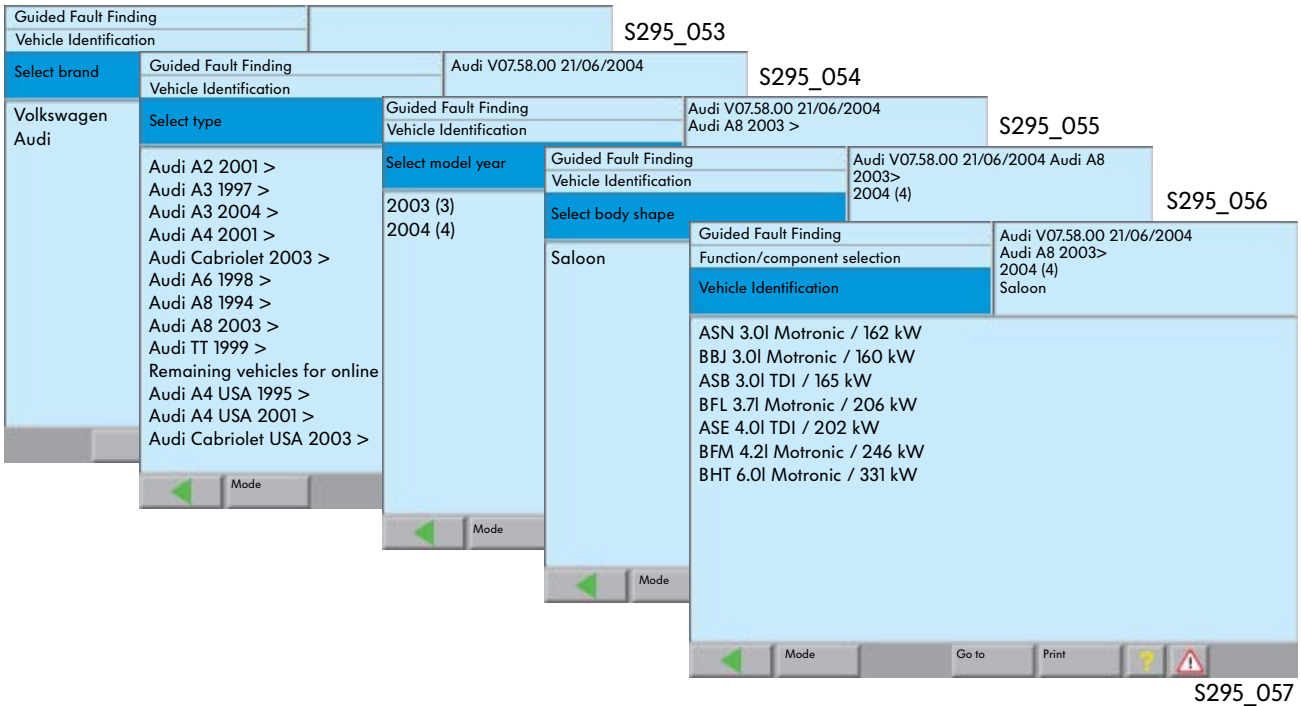
The contents of the guided fault finding in the vehicle diagnosis, testing and information system VAS 5051 as well as in the vehicle diagnosis and service information system VAS 5052

Overview

Guided fault finding allows

- vehicle specific query of the fault memory,
- determining the cause of the fault with a dynamic fault finding program,
- fault finding for a complaint related to the repair group or perception (HST/TPL),
- the components and the function check via the “Go to” button,
- the work time determination for the fault finding using the diagnosis protocol,
- carrying out online functions and (e.g. software update of control units etc.),
- erasing all fault memories upon exit. If there are still fault memory entries or new ones have been added, they will be displayed. If a fault was stored in the engine control unit of OBD vehicles, the readiness code will be deleted.

Entry via the vehicle selection

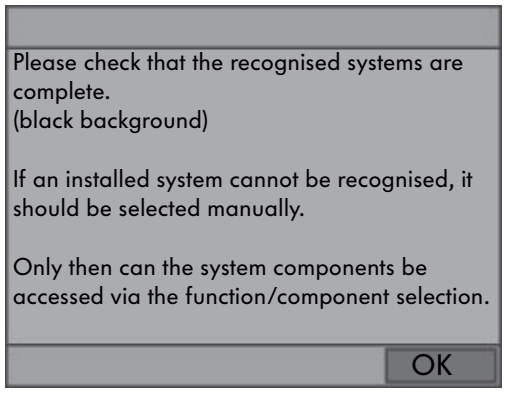


Querying all fault memories

When the vehicle identification is targeted and correct, all electronic vehicle systems (control units) that could occur in the identified vehicle are displayed.
In the communication with the vehicle, there is a check of which vehicle systems and variants are present and their fault memory is queried.

All queried systems are indicated with a black bar.

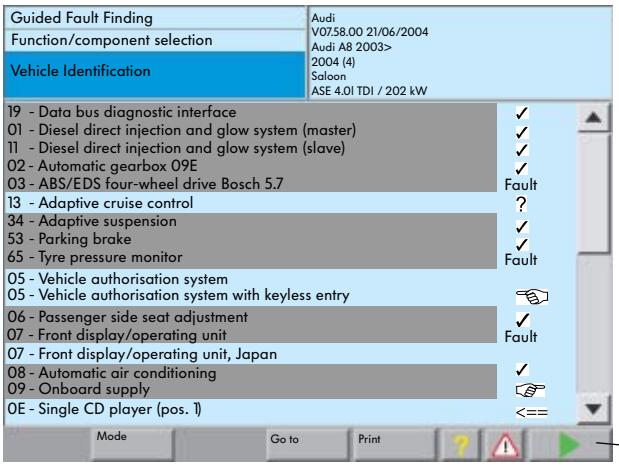
Once the query has been completed the following message appears:



S295_059

By pressing the “OK” and “Continue”, the fault memory content is displayed.

Fault memory query



S295_077

“Continue” button

Status symbols in the vehicle system test

Symbol	Meaning
Vehicle system display	
Normal text	Control unit not identified or deselected
Inverted text (black bar)	Control unit identified
Status line	
✓	Fault memory empty — no fault set
?	The control unit entered in the data bus diagnosis interface could not be recognised.
Fault	Fault set in the fault memory
☜	Control unit does not have a communication interface
☞	Control unit selected manually
☜	Control unit deselected manually
<==	Control unit being queried

On some vehicles, after the fault memory has been queried, you are requested to send the fault memory content to the Audi SVM via an online connection.

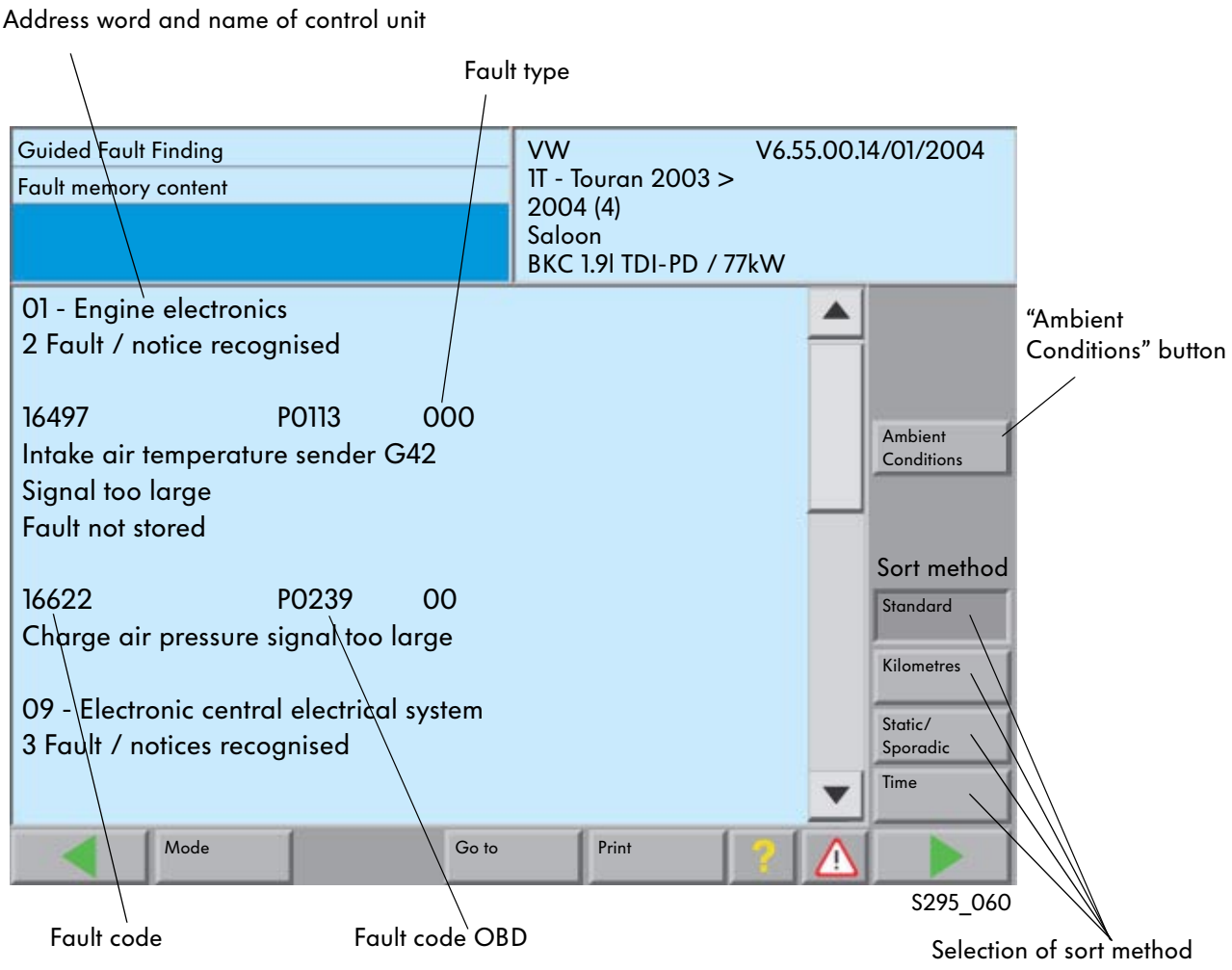
Guided Fault Finding

Fault memory content

The fault memory content of the individual control units are displayed after switching to the “Fault Memory Content” mask.

The fault code and the fault type are displayed in a standard company text.

Using the “Ambient Conditions” button, standard and vehicle-specific conditions that occur when the fault occurs can be displayed.



On the basic CD 7.0, it is possible to sort the fault order according to the standard ambient conditions stored in the control unit if the control unit supports this function. Faults for which no ambient conditionshave been stored are placed at the end and have a violet background.

Position

You can switch between the individual faults with the UP and DOWN buttons.
The order of the faults can change depending on the sort criterion.

Sort method

Standard
Fault display in ascending address word order.

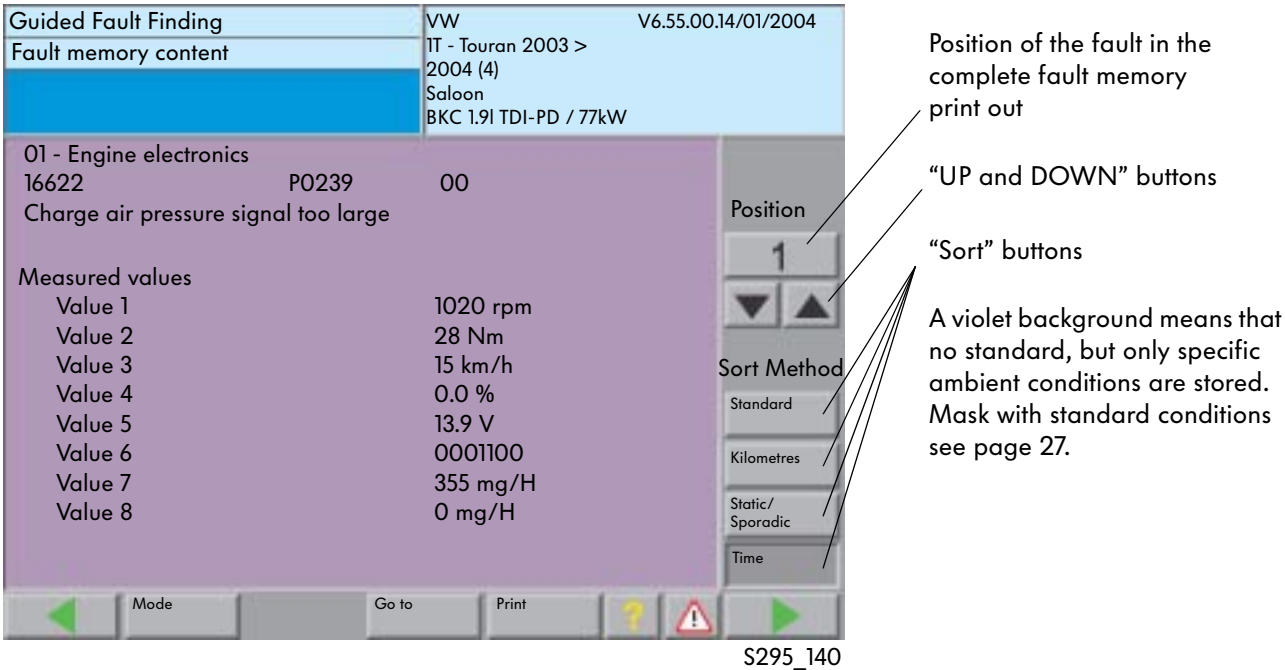
Static/sporadic
Faults are separated according to their status. Static (higher priority) are displayed at the top with a dark blue background, sporadic below them with a light blue background.
Inside the status (colour), the fault frequency is taken as the second sort criterion (high counter figures first).

Kilometres
Sort method according to the km reading when the fault first occurred. The low readings first.

Time
Faults are listed chronologically according to when they first occurred. To allow better assignment, the fault that happened within the same minute are combined in coloured groups (alternately light and dark blue).

Ambient conditions

In the “Guided Fault Finding”, ambient conditions can be displayed using the “Fault Memory Contents” mask from basic CD 7.0. The vehicle system does need to support this function, however. After selecting the ambient conditions, the mask background colour changes depending on the type of fault, the sort method and the type of ambient conditions (standard or specific).



S295_140

Position of the fault in the complete fault memory print out

“UP and DOWN” buttons

“Sort” buttons

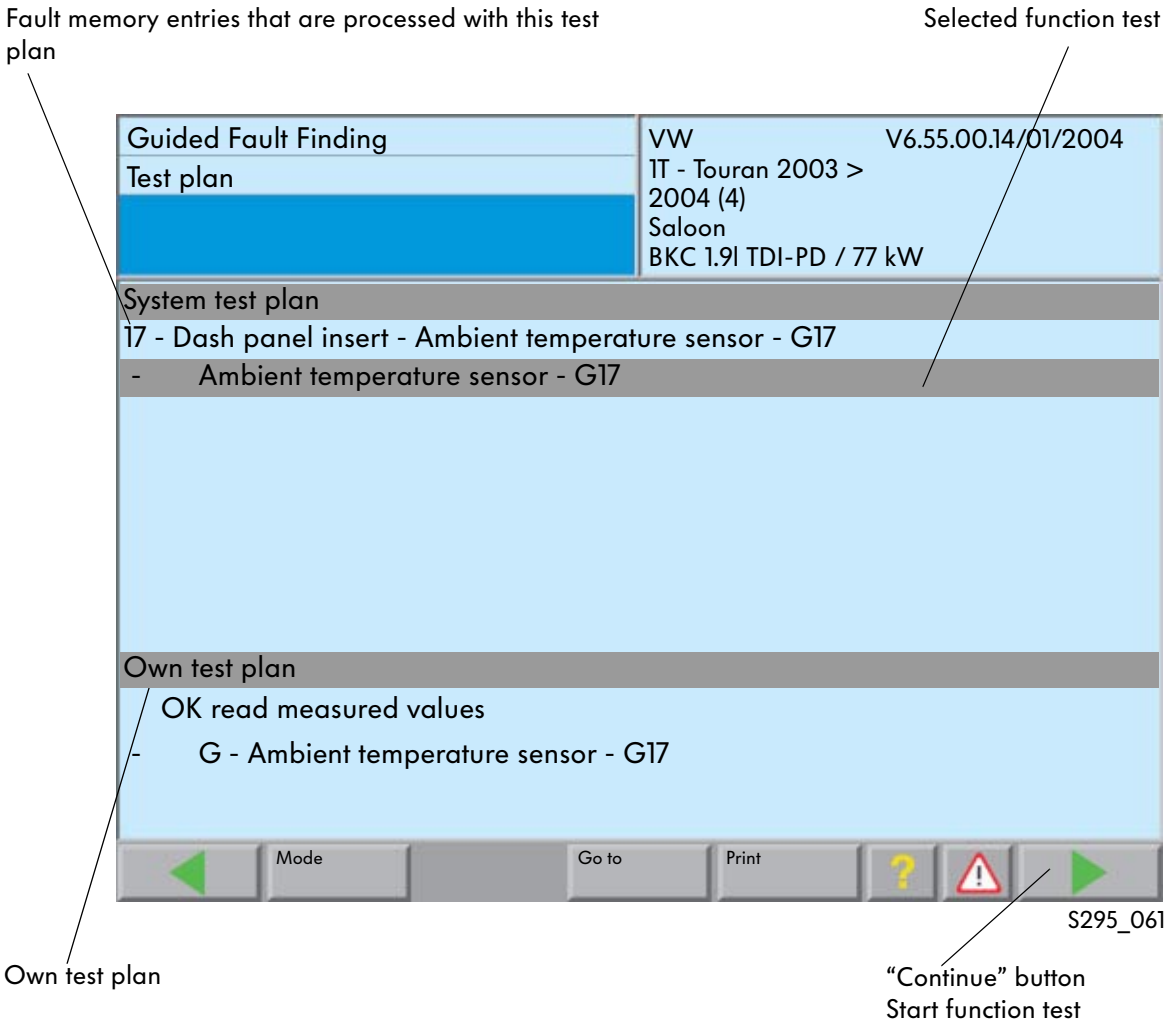
A violet background means that no standard, but only specific ambient conditions are stored. Mask with standard conditions see page 27.

Guided Fault Finding

Test plan

If you continue, you can access the system test plan that is created by the VAS 5051 or by the VAS 5052.
You can select a function check from the system test plans.

The selected function test has a black background.
The function check is started with the “Continue” button. The order is freely selectable if there are several function checks.



System test plan

The “System Test Plan” is created automatically using the fault memory entries and/or complaint.

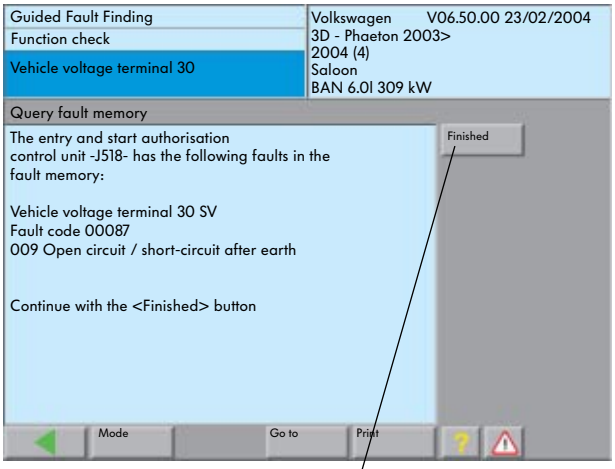
User-defined test plan

The “User-Defined Test Plan” can be created by the user via the function and component selection dialog.

Function test procedure

The information and instructions required to rectify the fault are displayed to the operator in the form of message windows.

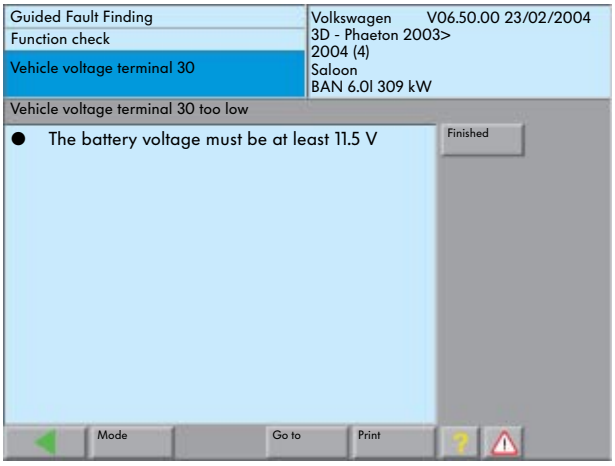
The operator will be informed if he needs to continue manually.



S295_062

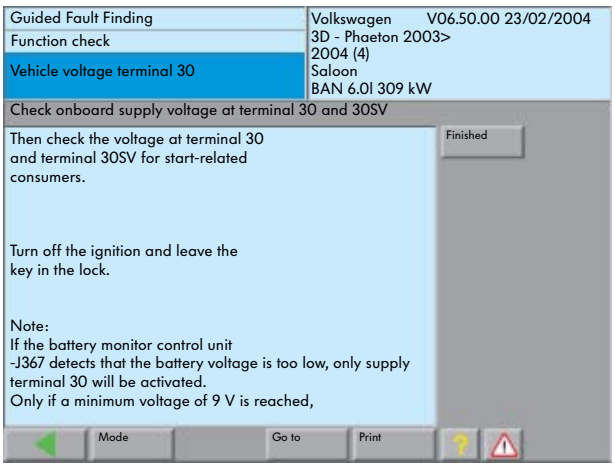
"Finished" button

The remaining test procedure is function-guided.



S295_063

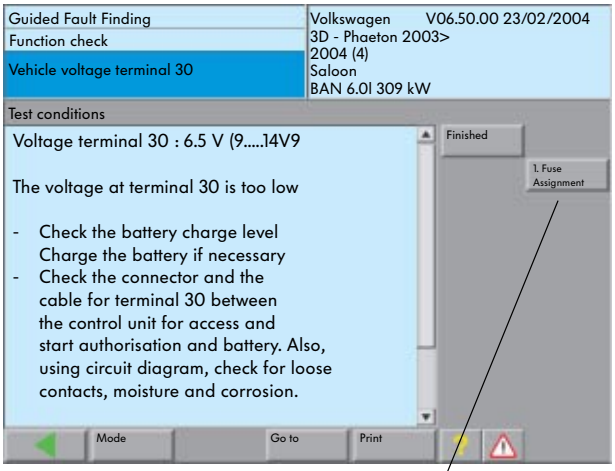
It contains instructions and information on the activities to be performed.



S295_064

Guided Fault Finding

In the function checks, the necessary control unit information is incorporated in the “Guided Fault Finding”.
This can be depicted on the display or also in the background by incorporating the basic conditions (e.g. measured values, state terminal 15 etc.).

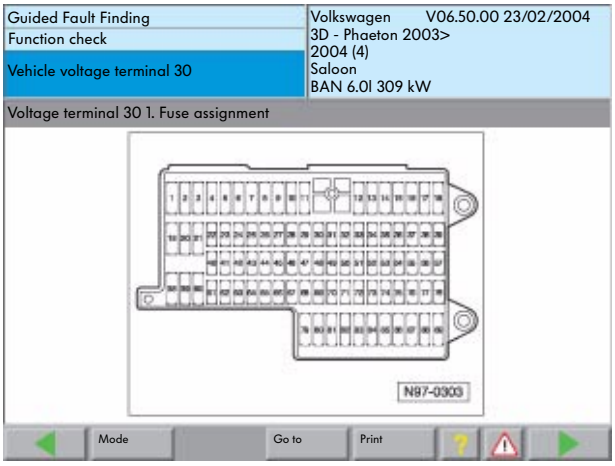


S295_065

Additional button

Supporting literature

Using an additional button that is only displayed when required, supporting information is displayed.
The title of the documentation type is the same as the button label (e.g. Fuse Assignment).



S295_066

For further information on “Guided Fault Finding”, use the CD “Guided Fault Finding with the Vehicle Diagnosis, Testing and Information System VAS 5051” and the operating manuals.

Diagnosis protocol

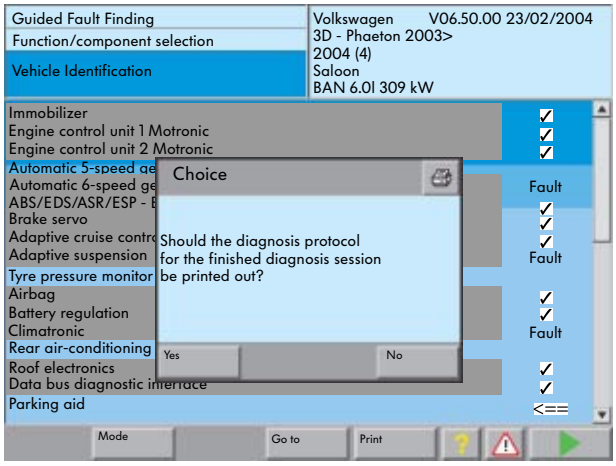
A diagnosis protocol is created during each fault memory query or fault search in “Guided Fault Finding” mode.

This protocol can be stored on the diagnosis system or sent online to the manufacturer database.
Stored diagnosis protocols are sent automatically if the diagnosis system is connected to the network.

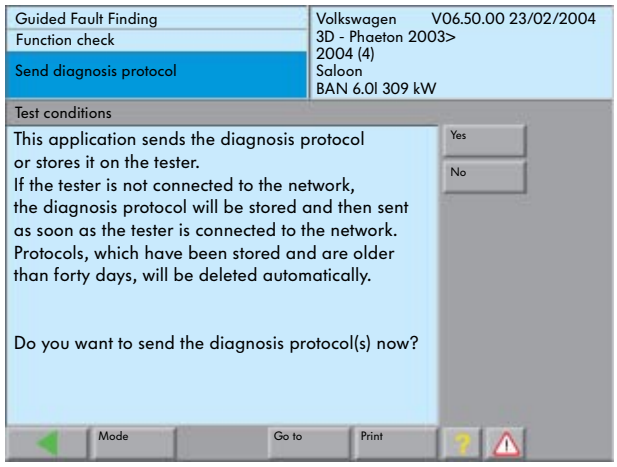
Protocols that are older than forty days are deleted.

The sent protocols are evaluated and frequently occurring fault memory entries can thus be recognised.
This process is provides feedback information for the research and development department as well as for quality assurance

To send the protocol, the diagnosis system needs to be connected to the network.

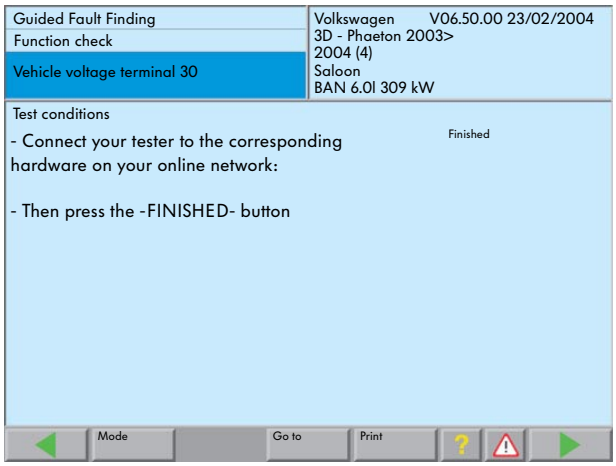


S295_177/S295_179



S295_160

Various vehicle and operating data as well as information on the repair then need to be entered.
Menus guide you through these entries.

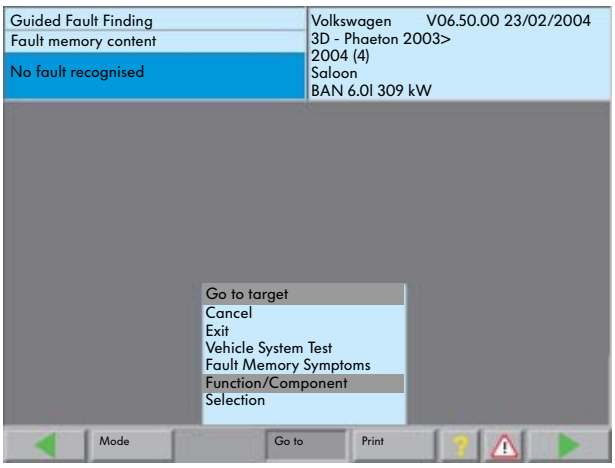


S295_161

Guided Fault Finding

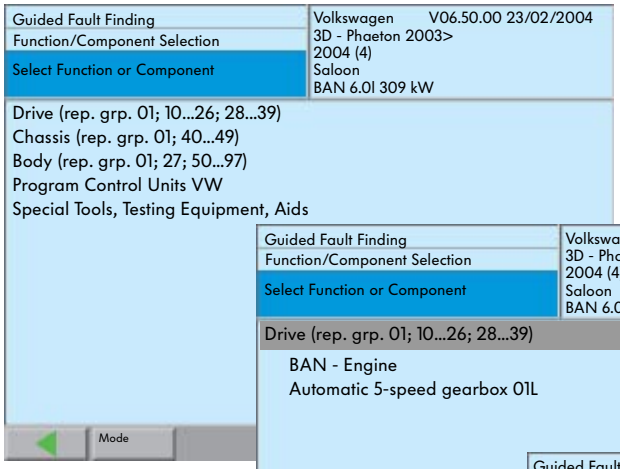
Function/component selection

In “Guided Fault Finding” mode, user-defined function or component checks can be selected via the “Go to” button and “Function/Component Selection”.

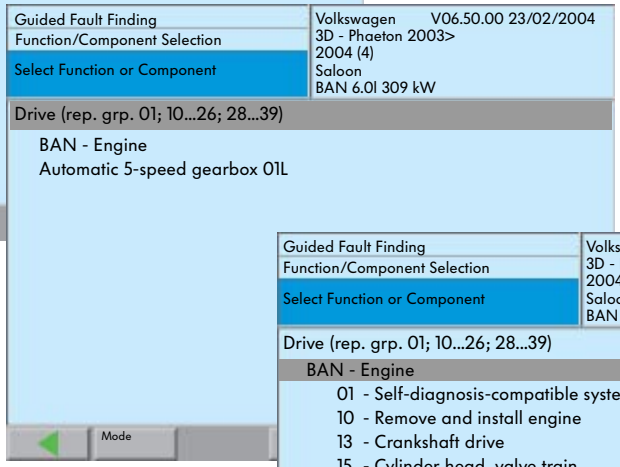


S295_067

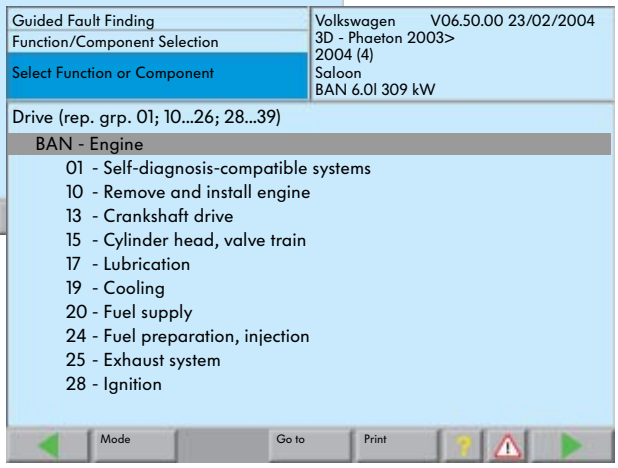
The selected functions or components are sorted according to repair group. After selecting the repair group, the individual systems for which function and component checks can be carried out are displayed.



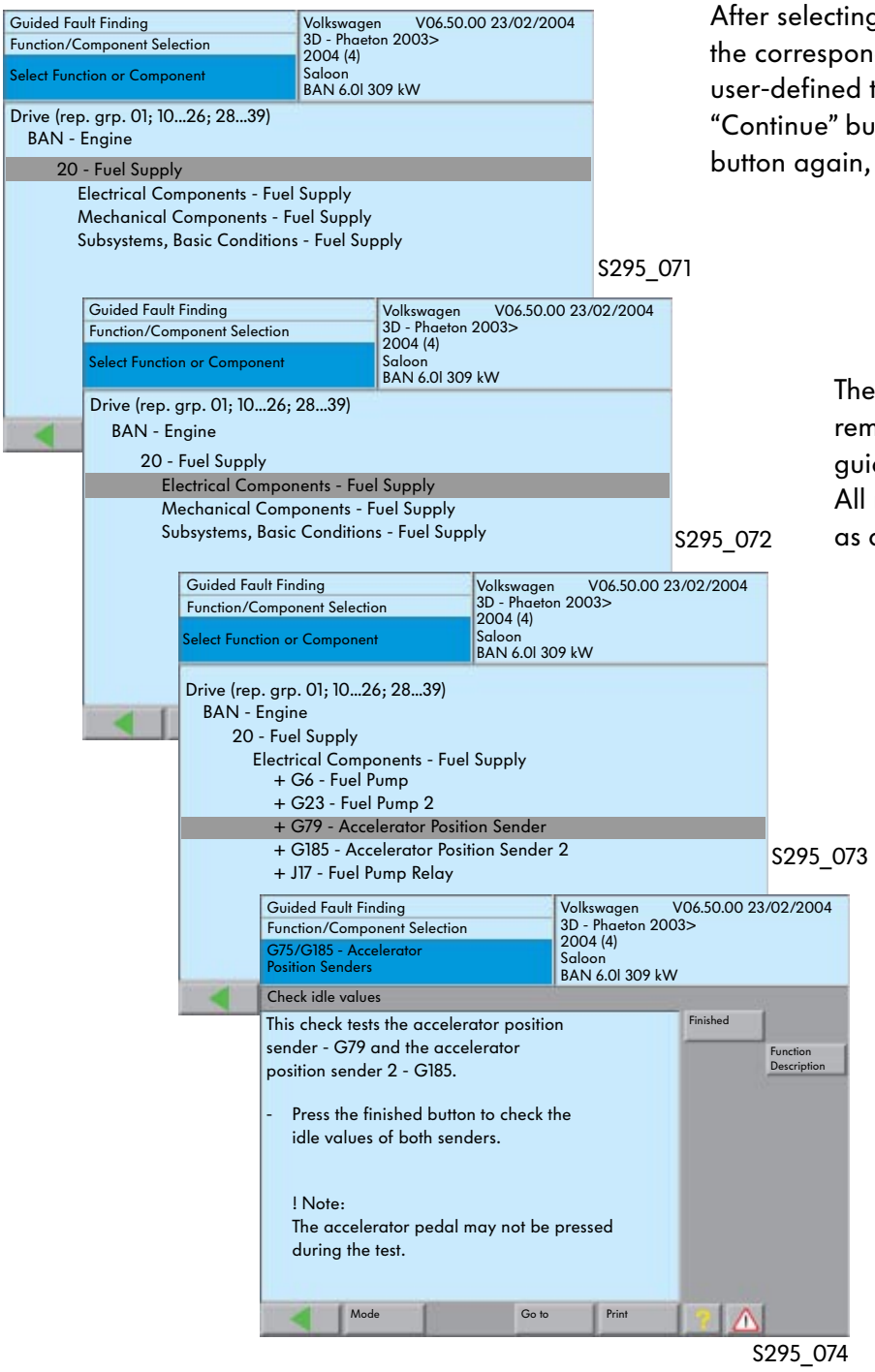
S295_068



S295_069



S295_070



S295_071

S295_072

S295_073

S295_074

After selecting a component or a function, the corresponding check is entered in the user-defined test plan once you press the “Continue” button. If you press the “Continue” button again, the test will be started.

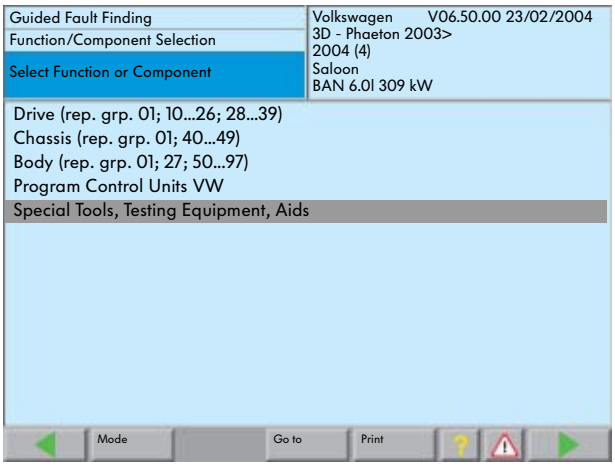
The system is then opened. The remaining procedure is menu-guided.
All necessary instructions appear as a mask on the diagnosis system.

Components marked with a “+” have further submenu items that can be selected.

Guided Fault Finding

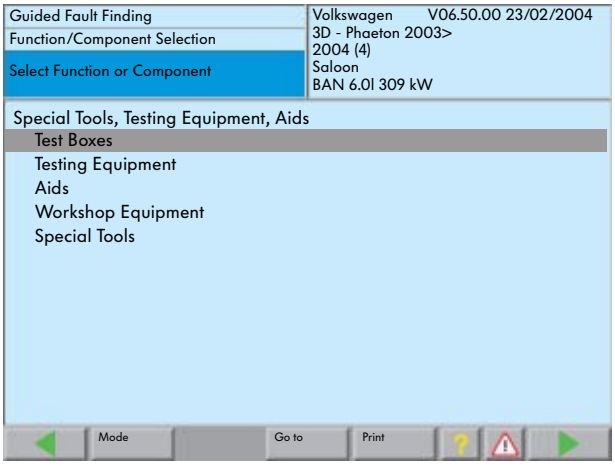
Access to tools

You select tools using “Special Tools, Testing Equipment, Aids” and then selecting the required tool group.



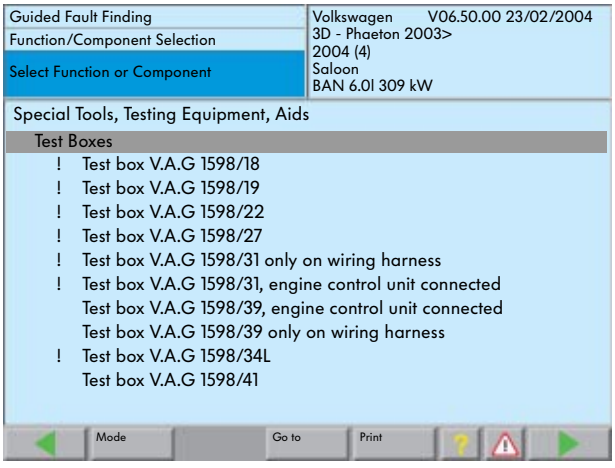
S295_081

The required tool group is selected by touching the mask.



S295_082

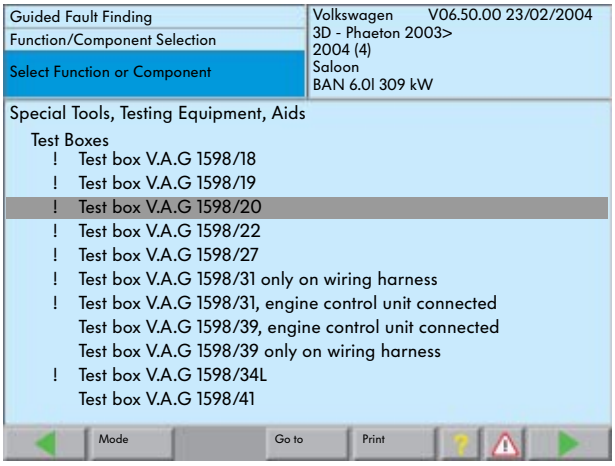
The required special tool, testing equipment or aids can then be selected.



S295_083

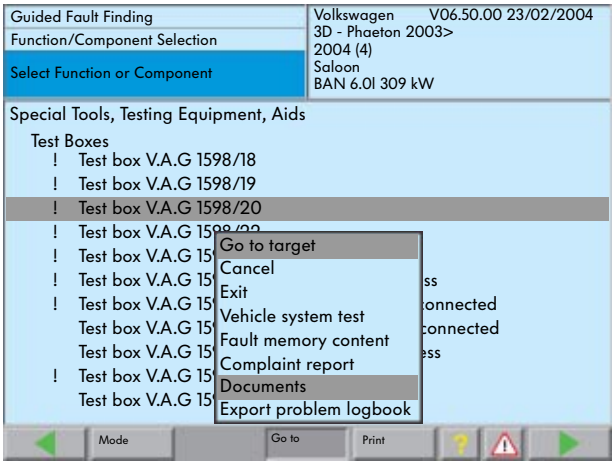
In the function checks of the “Guided Fault Finding”, this information is provided whenever necessary.

The selected object has a black background.



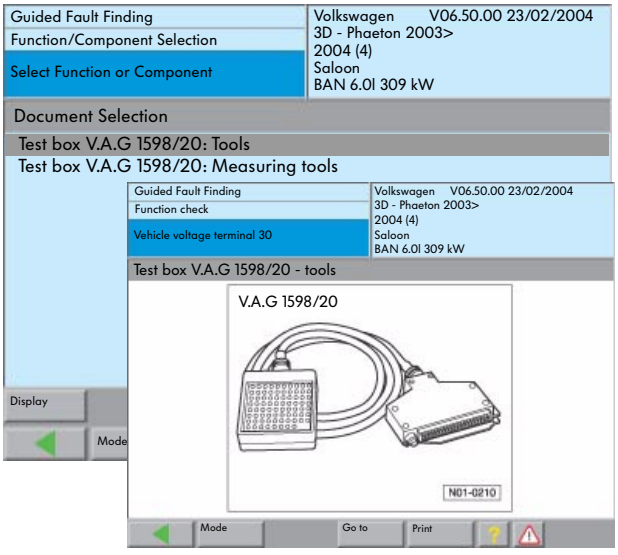
S295_084

If you press the “Go to” button and then select “Documents”, the document selection dialog will appear.



S295_085/S295_110

After selecting the document and pressing the “Display” button, the graphic for the selected special tool, testing equipment or aid is displayed on the screen.



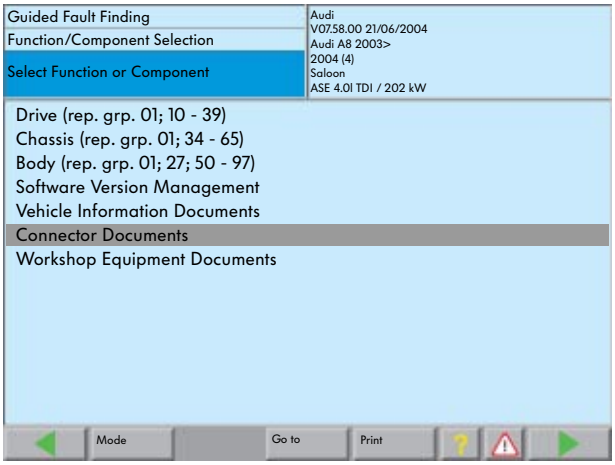
S295_087/S295_088

Guided Fault Finding

Accessing documents for Audi vehicles

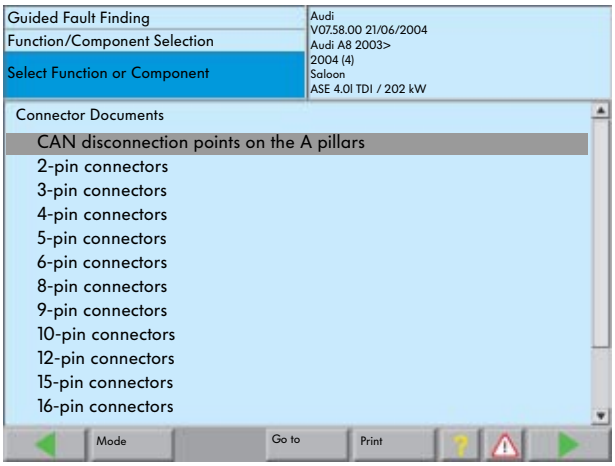
A range of documents are stored in the VAS 5051 and VAS 5052 as user information.

All documents are accessed in the same way. Access to the documents for the connectors is used as an example here.



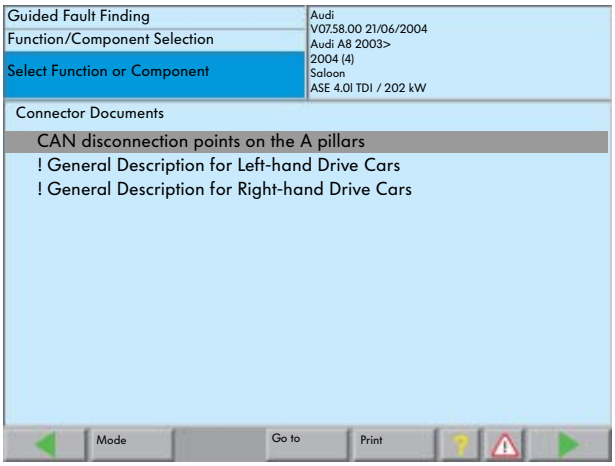
S295_103

This is opened by touching the selected document group.



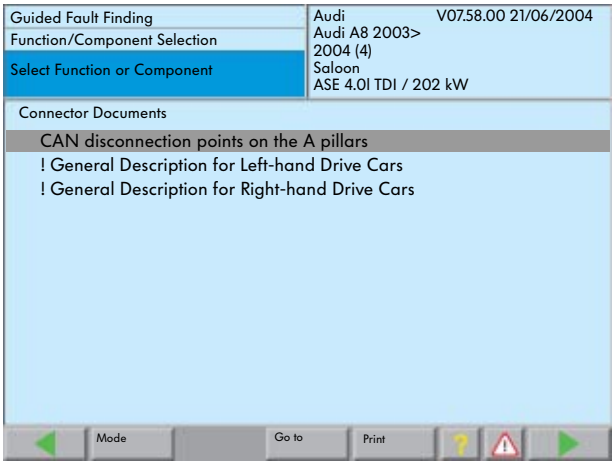
S295_104

The subgroups are displayed after you select the document group.



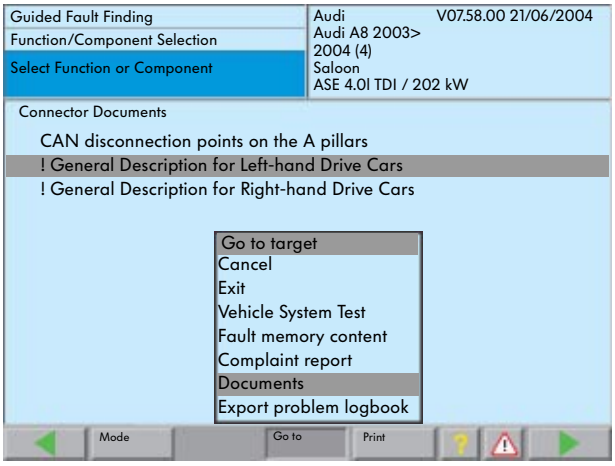
S295_105

The required subgroup can then be selected.



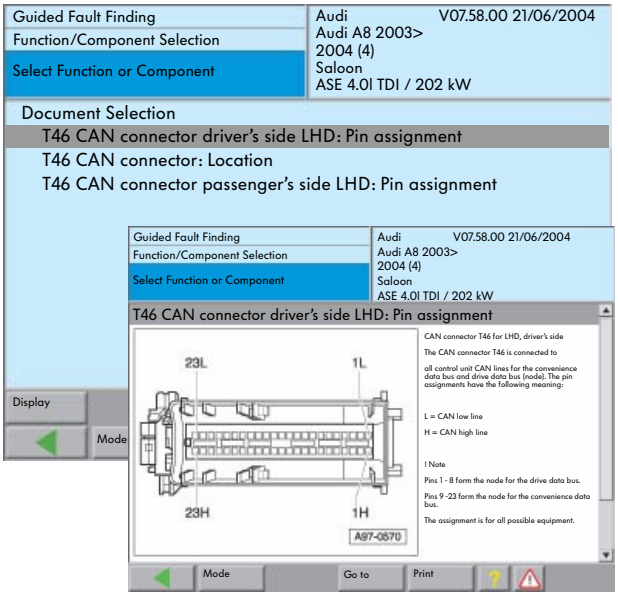
S295_106

After selection, a further subgroup is displayed with the “Go to” and “Documents” button.



S295_107/S295_110

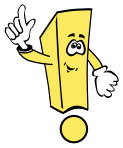
The document will appear after you touch the component for which you require information and press the “Display” button.



S295_107/S295_110

Guided Fault Finding

Read Measured Values

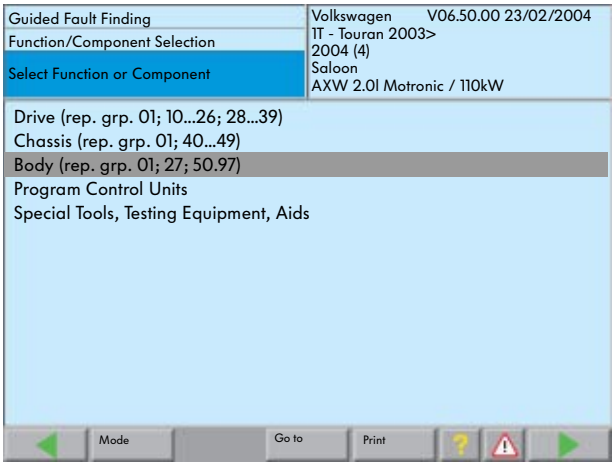


New procedure

Measured values can be read in the “Guided Fault Finding” and “Guided Functions” modes at Volkswagen and Audi using the basic CD 7.0. The measured values can be compiled from different display groups and the target and actual values are then displayed. The selection can be made by the user or, if necessary, by the function check.

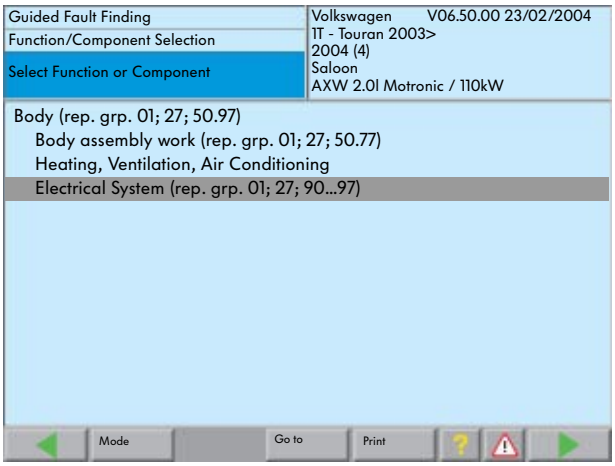
Selection by the user

The selection is made from the function “Function/Component Selection” or “Guided Functions”.

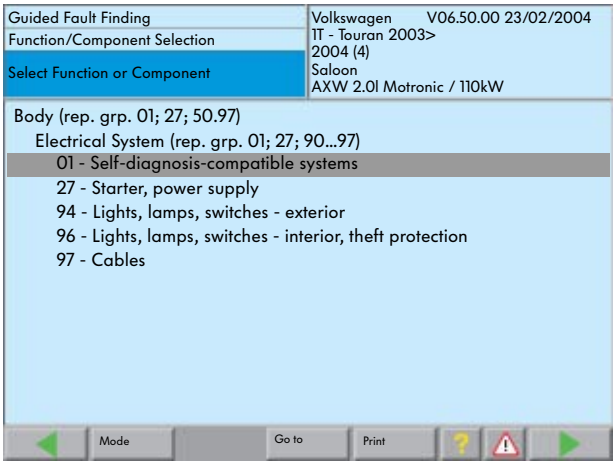


S295_141

First the corresponding repair group containing the vehicle system from which the measured values should be read should be selected.

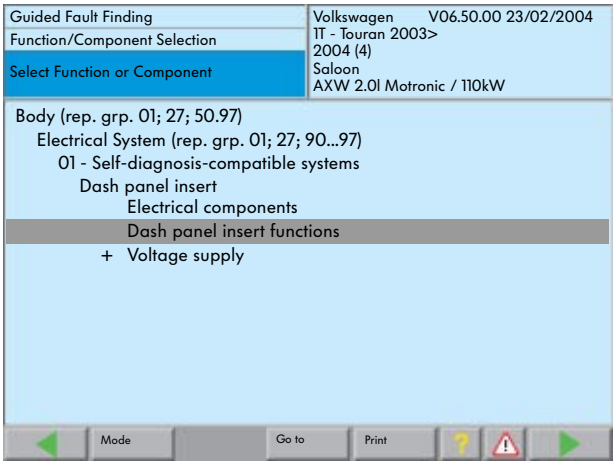


S295_142



S295_143

After opening the mask, the vehicle system, from which the measured values should be read, can be selected.

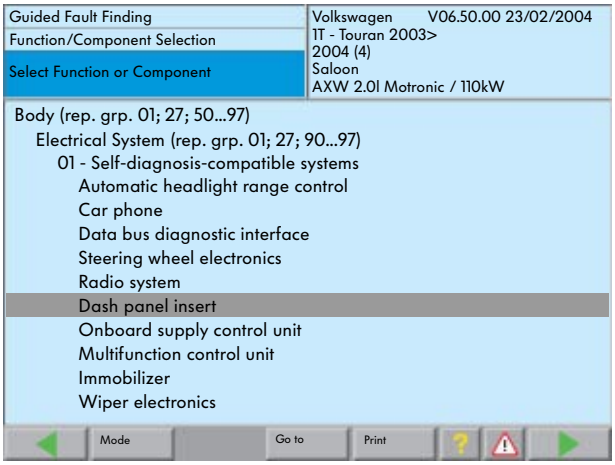


S295_144

The available vehicle system functions can then be selected.

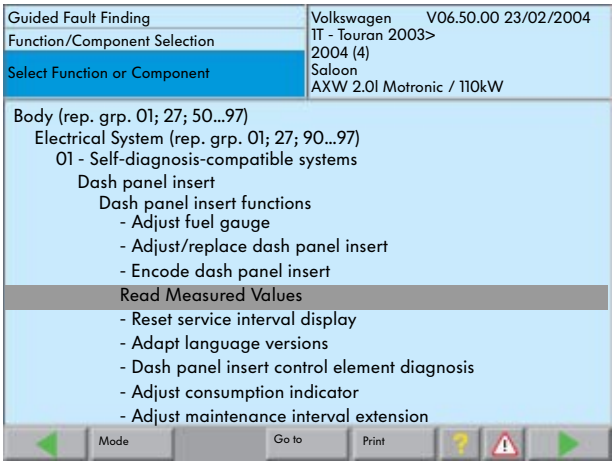
The available functions depend on the vehicle system and may therefore differ.

Next select the “01 - Self-diagnosis-compatible systems” function.



S295_145

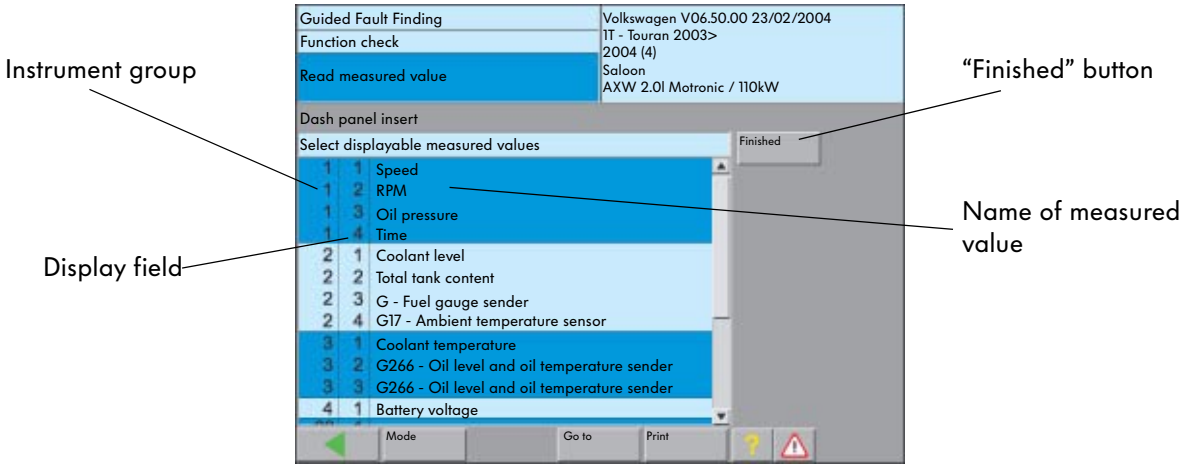
The “Read Measured Value” function is a submenu of the “Functions” selection dialog for the respective system.



S295_146

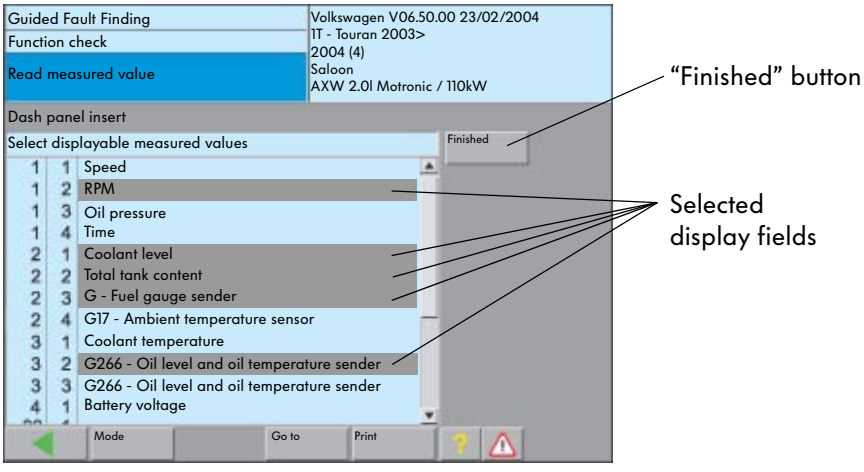
Guided Fault Finding

After selecting the “Read Measured Values” function, an overview of the available measured values (data blocks) is displayed.



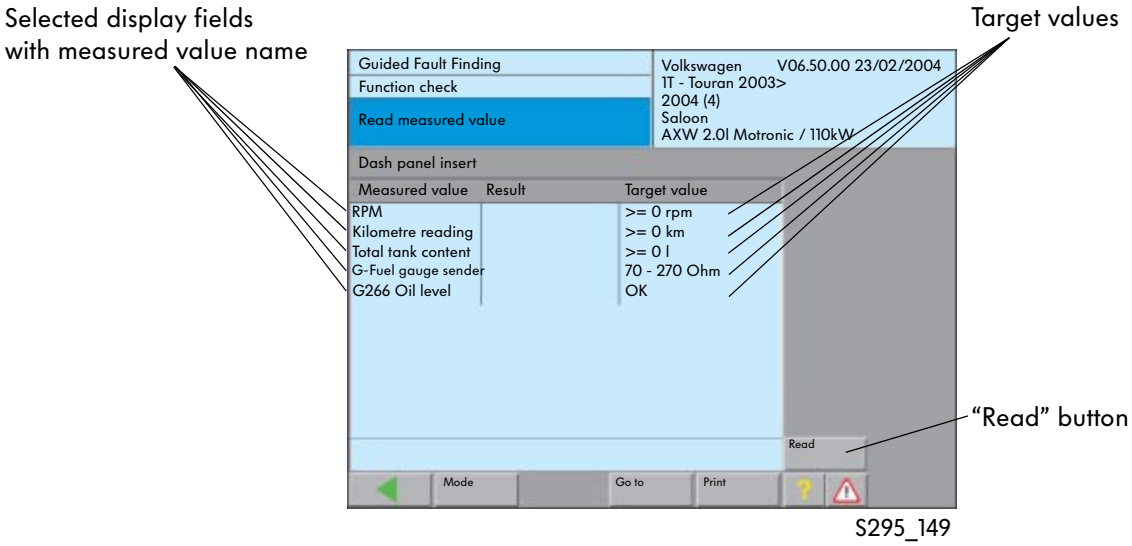
S295_147

Press the individual display fields to select the measured values that are to be read.



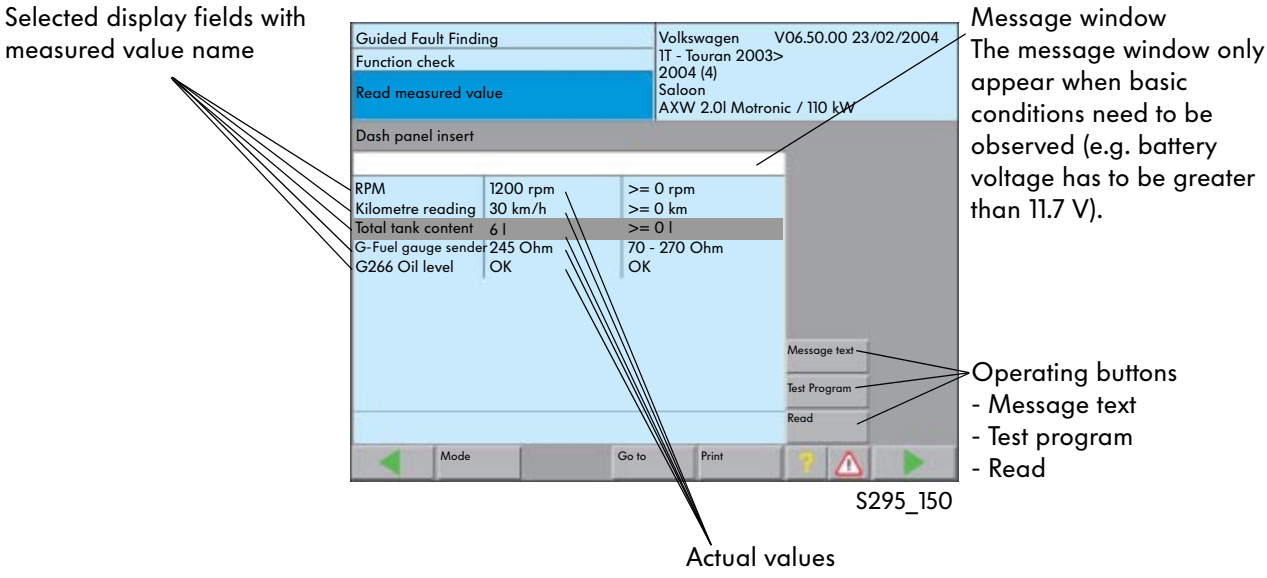
S295_148

The next mask shows the selected display fields with the measured value names as well as the accompanying target values, if available.



S295_149

The current measured values are only displayed parallel when the "Read" button is pressed.



S295_150

If a display field/measured value is selected, message texts can, if possible, be displayed using the "Message Text" button and stored test programs using the "Test Programs" button.

Guided Fault Finding

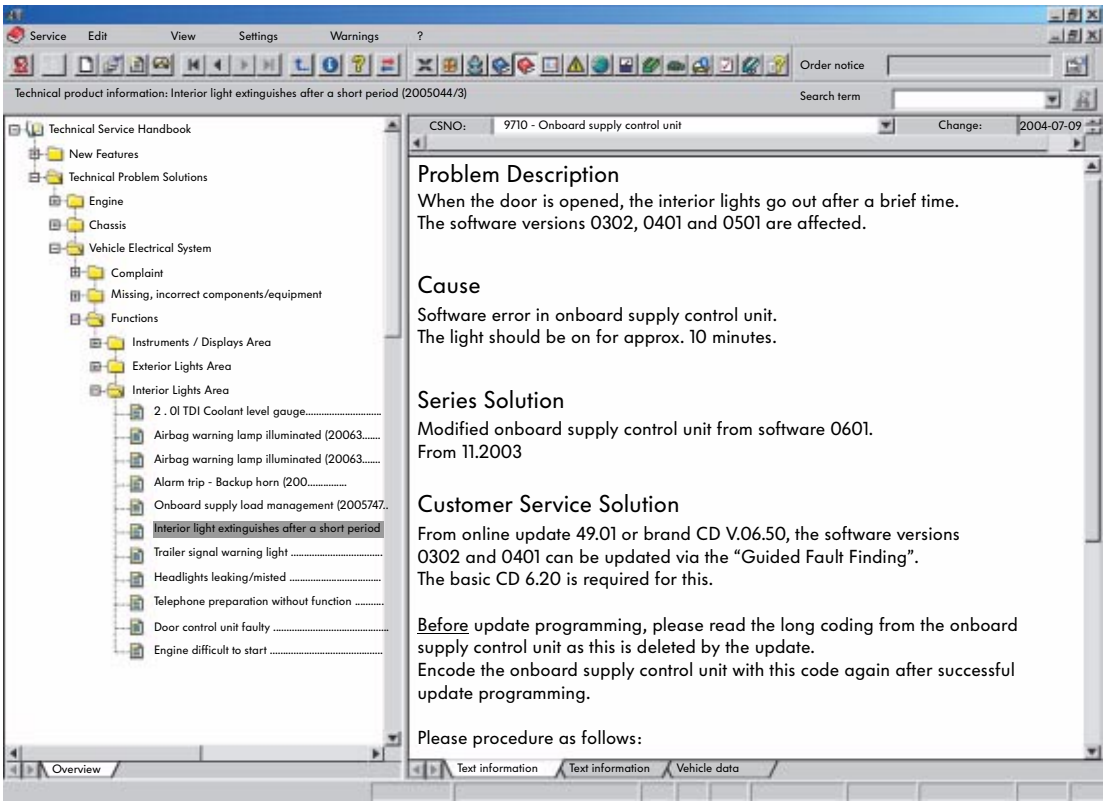
Software Version Management VW (SVM-VW)

The SVM-VW manages information and data about the control units that are in the field.
It compares the vehicle data with the current software and hardware versions and, if necessary, sends an update instruction or requests a hardware exchange.
The guided fault finding procedure automatically takes you through the control unit programming.
Next the current equipment state is returned to the SVM-VW.

Control unit update process

If a software update is required for a control unit, the problem is indicated in the “Technical Problem Solution” section of the ELSA along with a note about the fault search and the necessary update as a customer service solution.

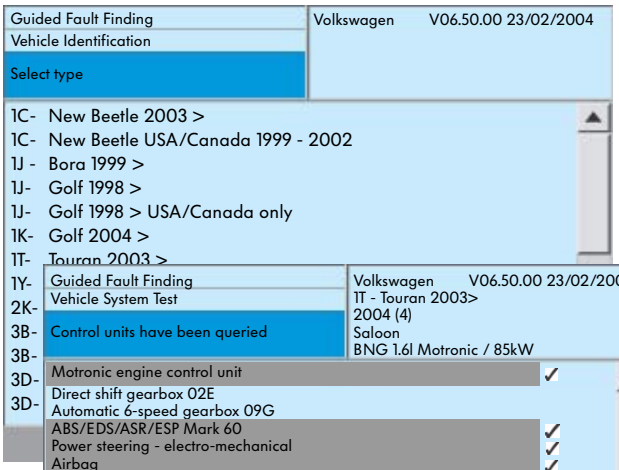
Software version management may only be carried out as a customer service solution if an instruction is available in the ELSA, in the HST, in the TPL or from the TSC.
This is very important as control unit programming cannot be reversed.
Old software cannot be reloaded.



S295_075

Start the control unit update process

The complete update programming is carried out in the “Guided Fault Finding” procedure. It starts with vehicle identification.



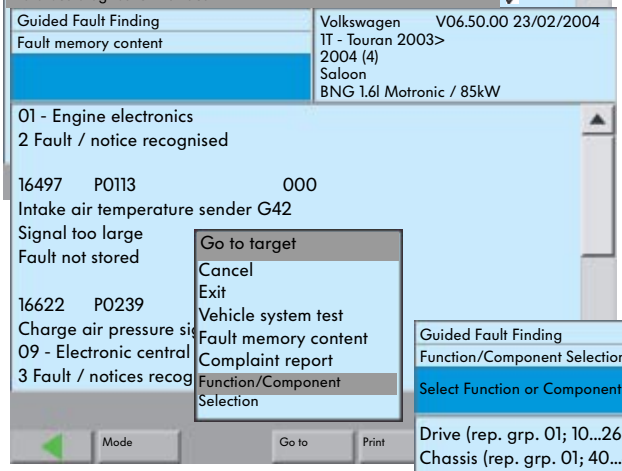
Using the vehicle component list or the vehicle system test, all installed vehicle systems are determined.

S295_076

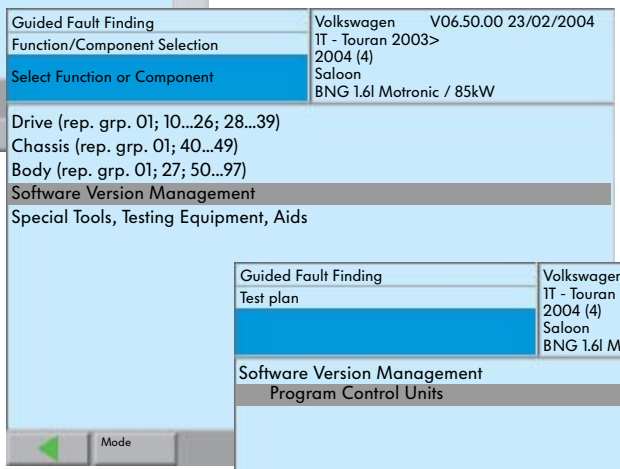
It is important that this process is run through completely. It may not be cancelled.

S295_077

Use the “Go to” button to select the “Function/ Component Selection” go-to target.

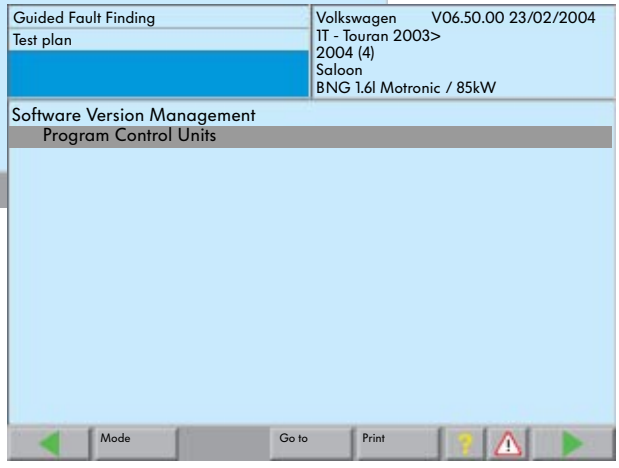


S295_078/S295_079



S295_080

The software version management is started in the “Function/ Component Selection” mask.

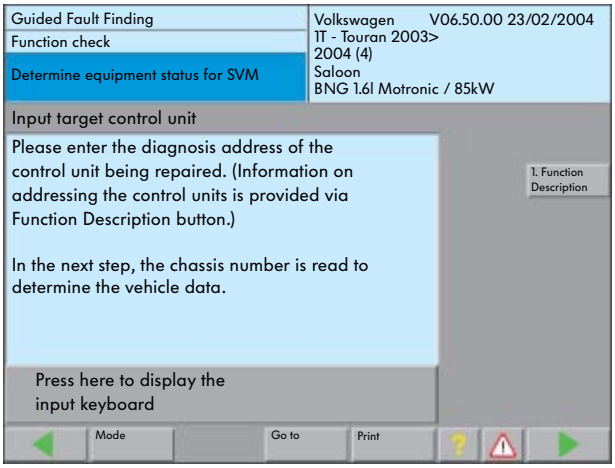


S295_151

You will find the latest information on the SVM-VW in the VW-ServiceNet®.

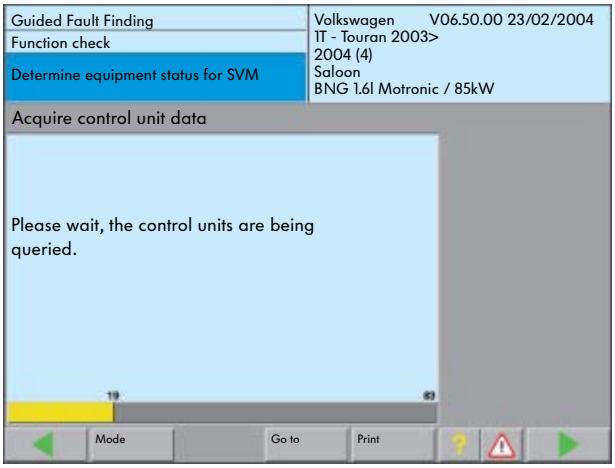
Guided Fault Finding

The vehicle data for the SVM is compiled first.

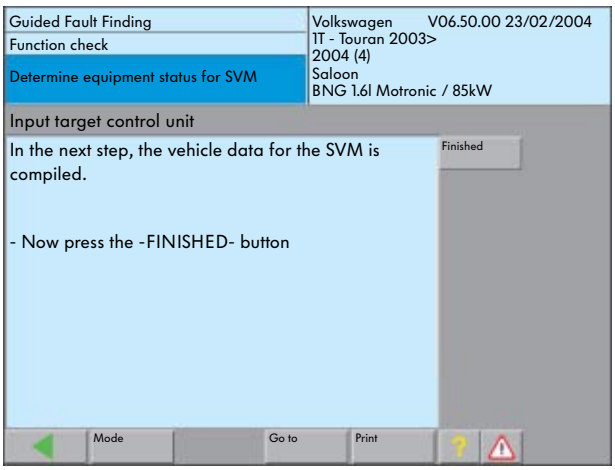


S295_153

The diagnosis system then records the vehicle system data (control unit) and reads the chassis number.

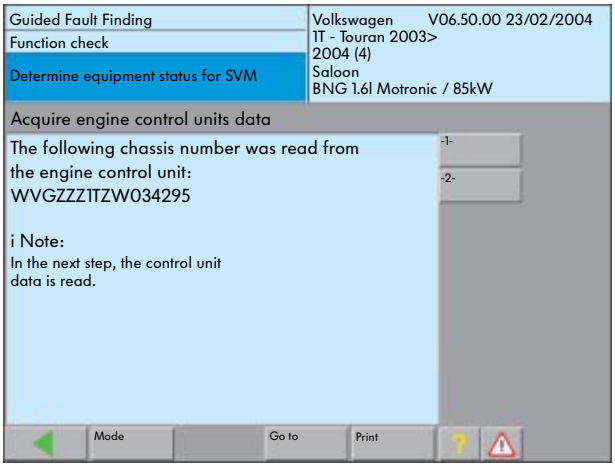


S295_155



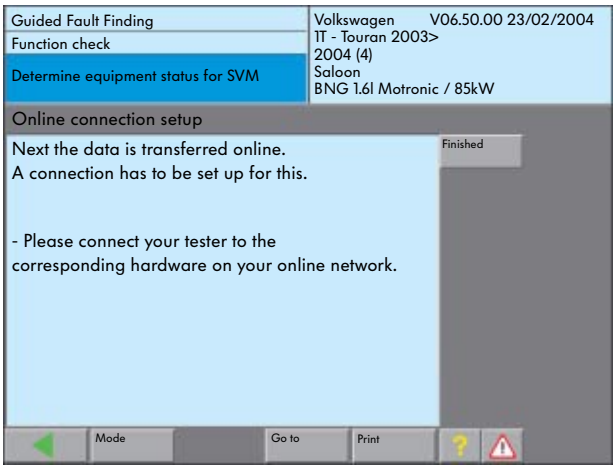
S295_152

Next the diagnostic address of the control unit to be repaired needs to be entered.



S295_154

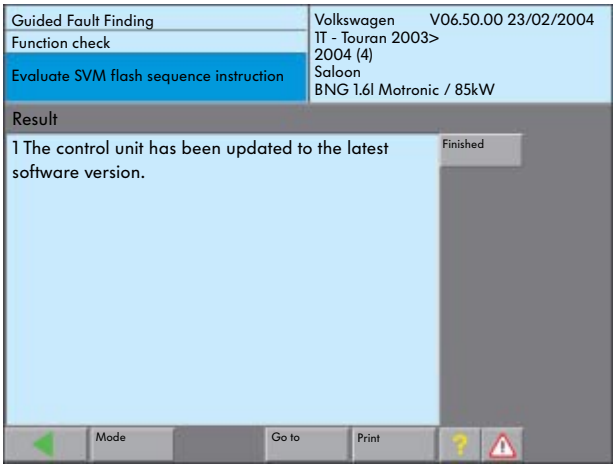
Once the chassis number has been confirmed, the data of the systems installed in the vehicle is queried and sent to the manufacturer.



S295_157

A login and a password is required to send the extracted data to the SVM.

The password and login are issued by the system administrator at the respective dealership and can only be used there.



S295_158

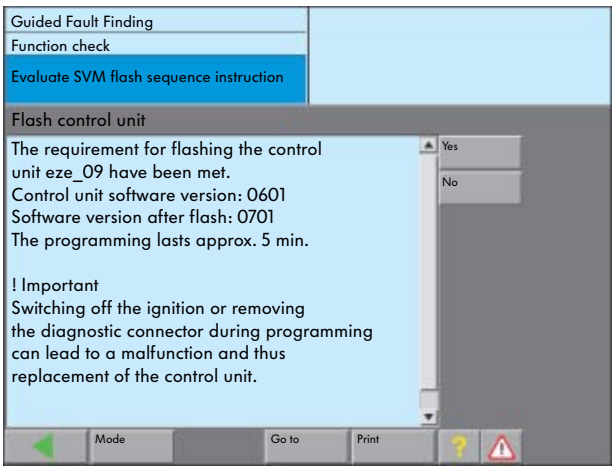
The final message indicates whether the process was successful. After a update, the updated equipment status is sent to and confirmed by the SVM.

The diagnosis system then sends the data via an online connection to the vehicle manufacturer database.

The diagnostic system needs to have a connection to the dealership network.

S295_156

The manufacturer database checks the incoming data and sends the latest control unit software to the vehicle system via the online connection.

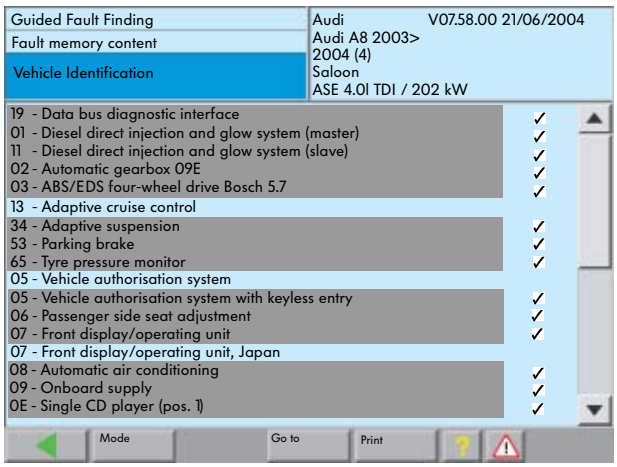


S295_159

Guided Fault Finding

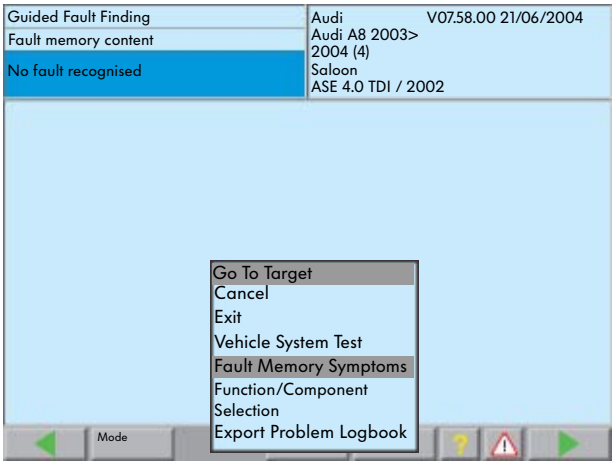
Audi software version management

Audi software version management is possible via an online connection to the diagnosis with Audi vehicles from model year 2003.



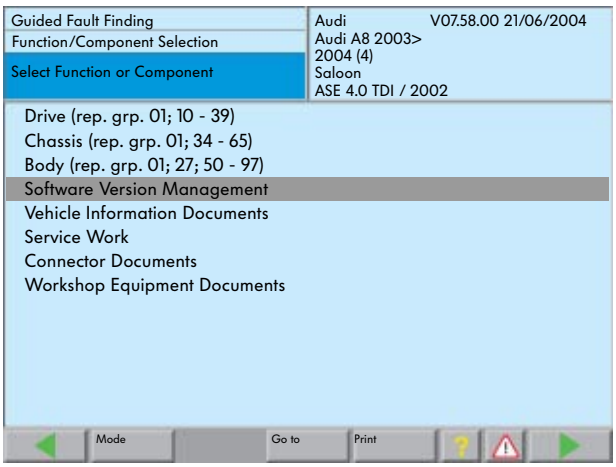
S295_089

From the “Fault Memory Content” mask, you can select the “Function/Component Selection” mask with the “Go to” button.



S295_090/S295_079

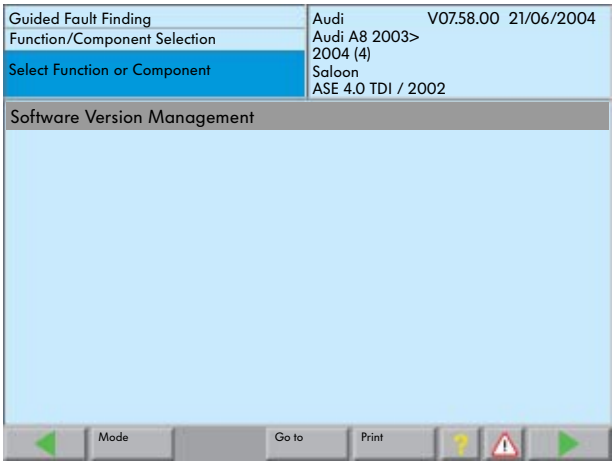
The “Software Version Management” function can be selected in the “Function/Component Selection” mask.



S295_091

The Audi software version management comprises:

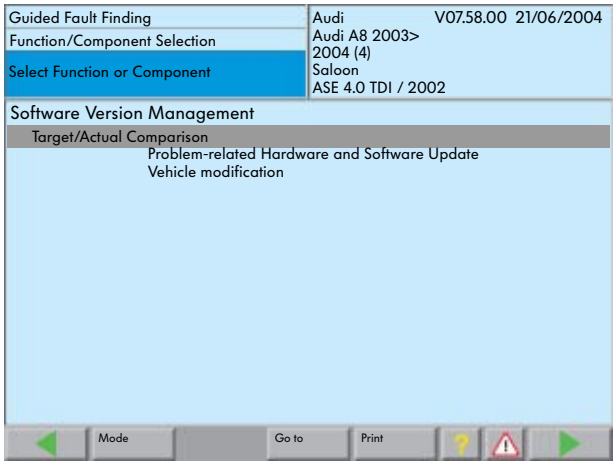
- Target/actual comparison
- Problem-related hardware and software update
- Vehicle modification



S295_094

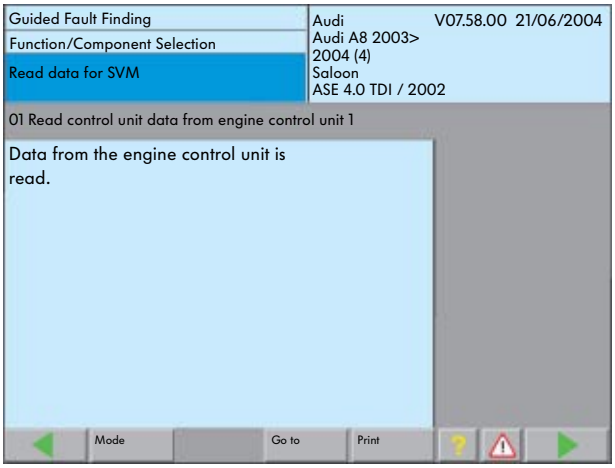
Target/Actual Comparison

The target actual comparison is used to check the control unit configuration before a repair is started.
The current control unit configuration is documented in the SVM database at Audi in Ingolstadt.



S295_095

The VAS 5051/VAS 5052 reads the software versions, the hardware and software parts numbers, the serial number as well as the coding of the control units installed in the vehicle and transfers it to the SVM database via the online connections.



S295_096

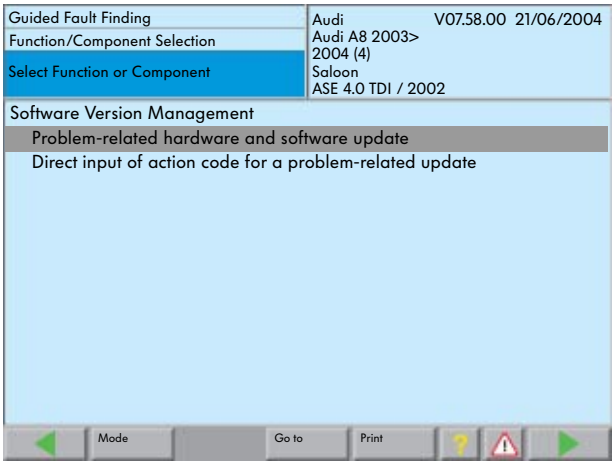
Guided Fault Finding

Problem-related hardware and software update

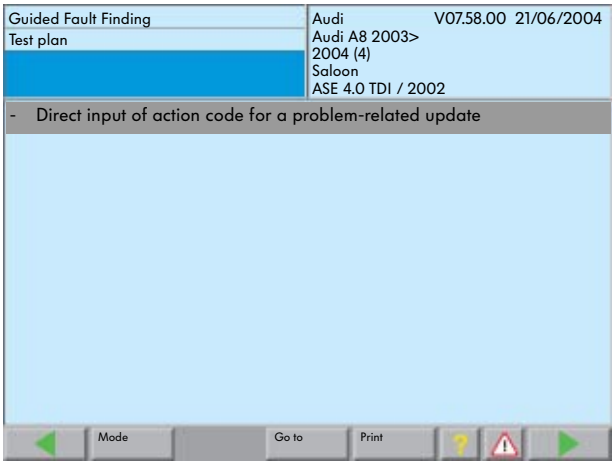
The problem-related hardware and software update is used to control problems that are described in the TPL and do not generally lead to recalls.

Before the repair is started, the hardware needed according to the TPL needs to be ordered through spare parts. If a software problem is involved that can be rectified with an update, a control unit does not need to be ordered.

At the end of the repairs, the current control unit configuration is documented in the SVM database.

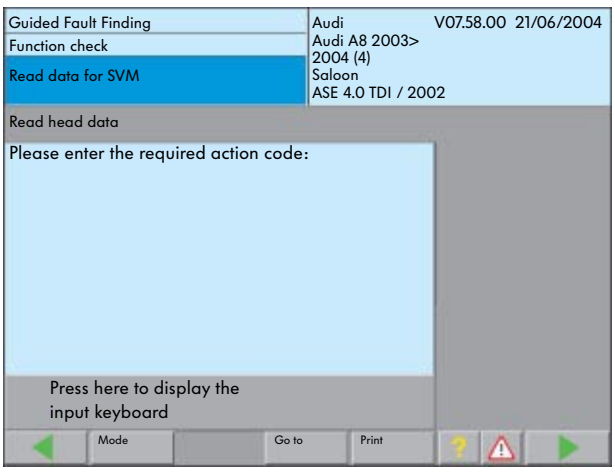


S295_097



S295_098

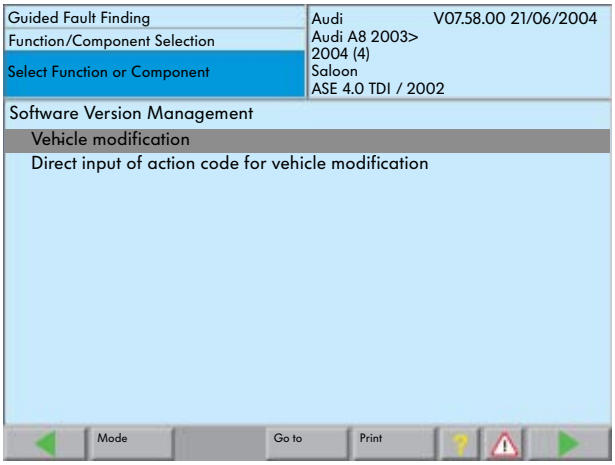
Before the update is started, the action code needs to be entered according to the instruction in the TPL.
The further procedure is displayed as a mask on the screen.



S295_099

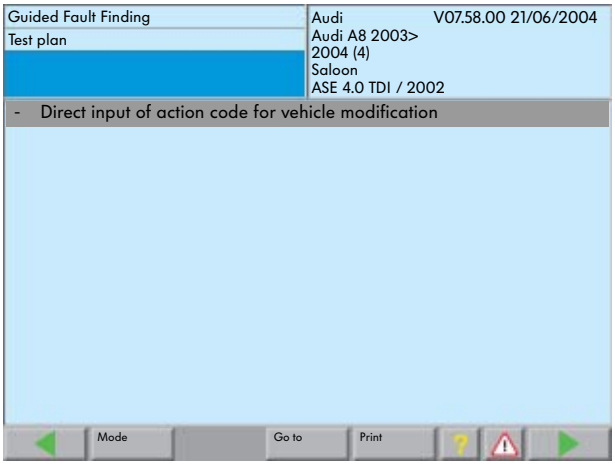
Vehicle modification

If modules have been retrofitted (e.g. auxiliary heating, tow bar), the modified control unit configuration will be sent to the SVM database and documented.



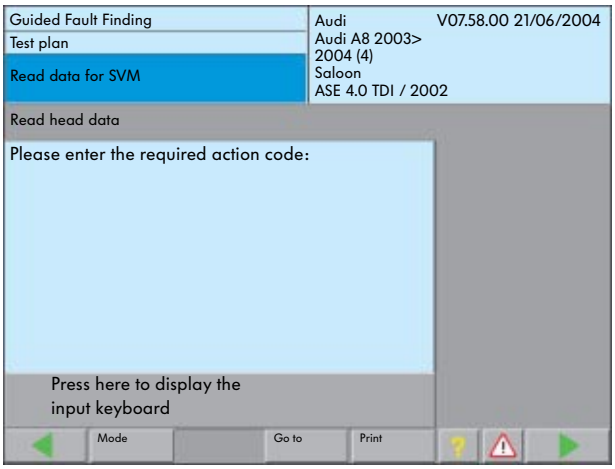
S295_100

Pressing the “Continue” button twice will open the screen for inputting the action code.



S295_101

So that the necessary configuration can be carried out, the action code given in the installation or modification description needs to be entered.



S295_102

You will find the latest information on the SVM-Audi in the Audi-ServiceNet®.

Guided Functions

The contents of the guided functions in the vehicle diagnosis, testing and information system VAS 5051, in the vehicle diagnosis and service information system VAS 5052 as well as in the vehicle diagnosis system VAS 5053

Advantages of the “Guided Functions”

- Fast access to functions used on a daily basis
- Complete vehicle system test not needed
- Available throughout the VAS diagnosis systems
- Usage date with the basis CD V06.00.00 and the Volkswagen brand CD V06.42.00 or the Audi brand CD V06.47.00

Overview

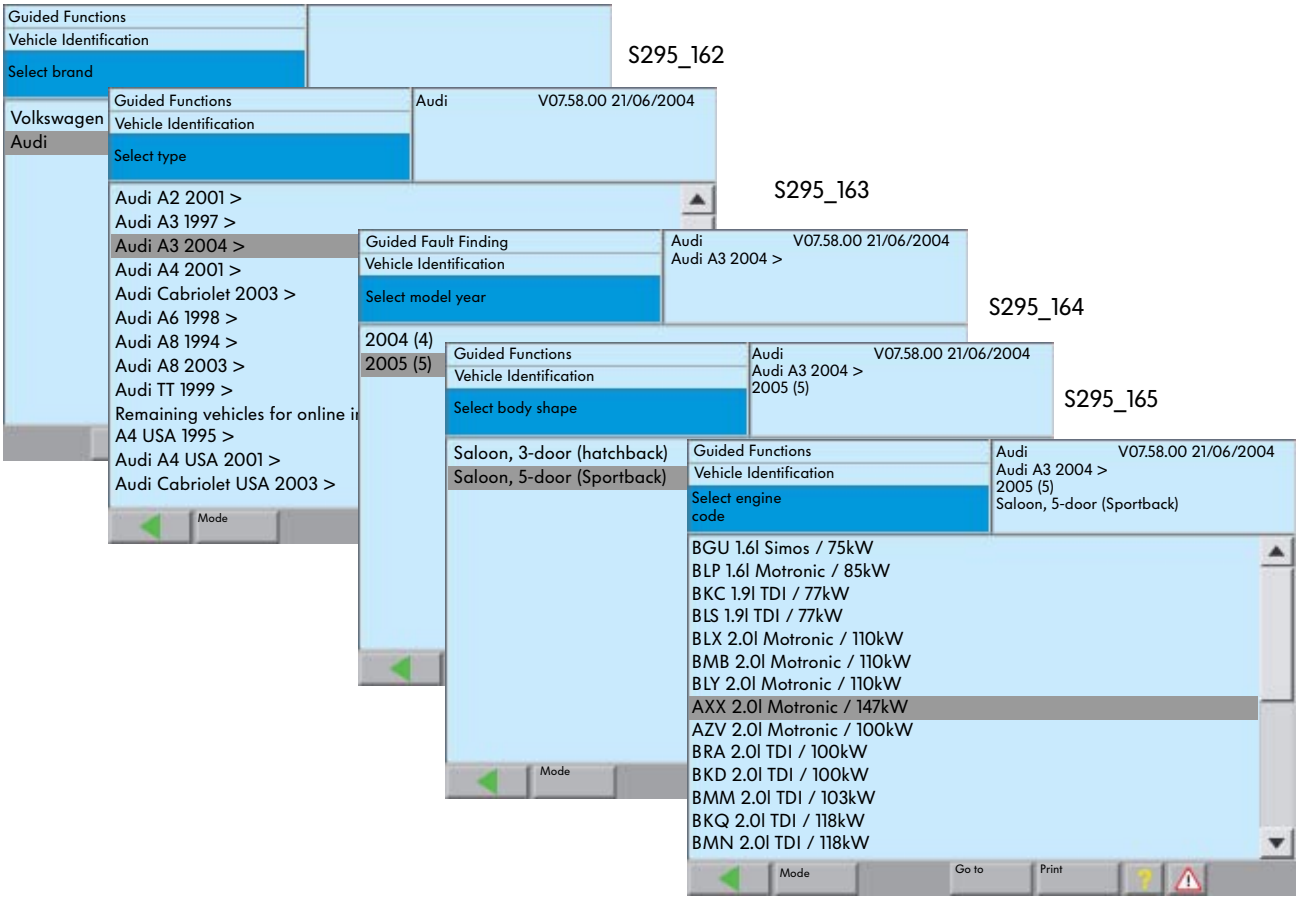
Among other things, the “Guided Functions" allow

- vehicle keys to be adapted,
- the service interval display to be reset,
- help to be provided with the replacement of control units,
- the coding and adjustment of control units,
- control element diagnosis to be performed,
- data blocks to be read,
- general system descriptions to be called up,
- component tests to be carried out on electronic systems and
- fault memory entries to be read. If there is a fault entry, direct entry into the guided fault finding is possible using the “Mode” button.

S295_139

Entry

Entry is via the vehicle selection as with the “Guided Fault Finding”.



S295_162

S295_163

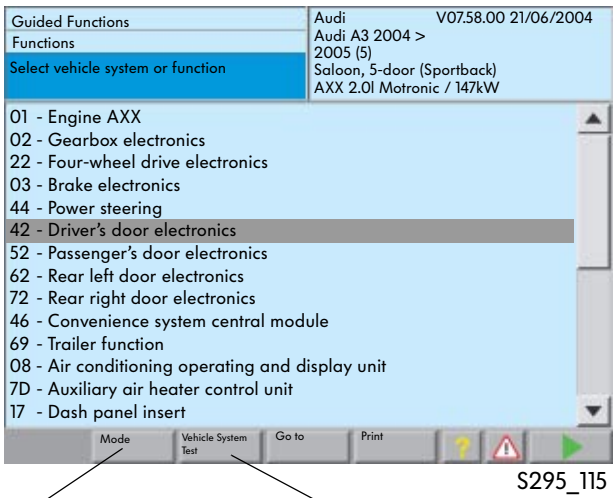
S295_164

S295_165

S295_166

Once the vehicle and the engine variant has been selected, you can select the required system by touching the screen.

- A fault memory query is possible during the maintenance is possible using the “Vehicle System Test” button. If a fault has been stored, direct entry into the guided fault finding is possible using the “Mode” button.



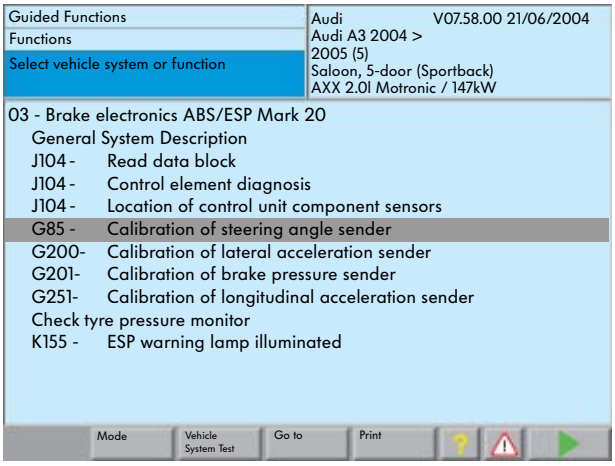
S295_115

Press the “Mode” button to switch to the “Guided Fault Finding”. When you return, the fault memory is not erased.

Activation of vehicle system test, query only of the systems that are possible in this vehicle type.

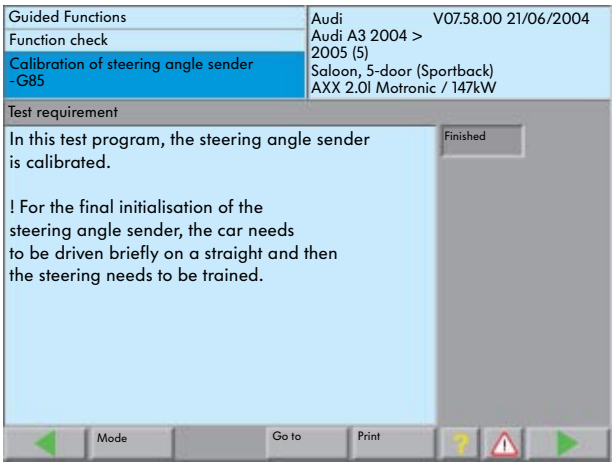
Guided Functions

The possible testing and diagnosis steps are then shown for the selected system.



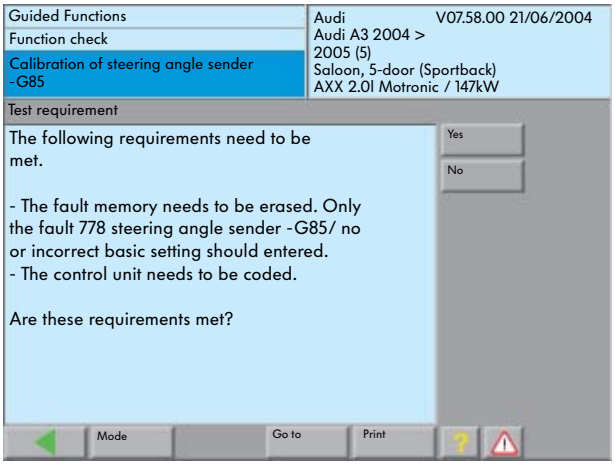
S295_116

Pressing the “Continue” button twice opens the test program.



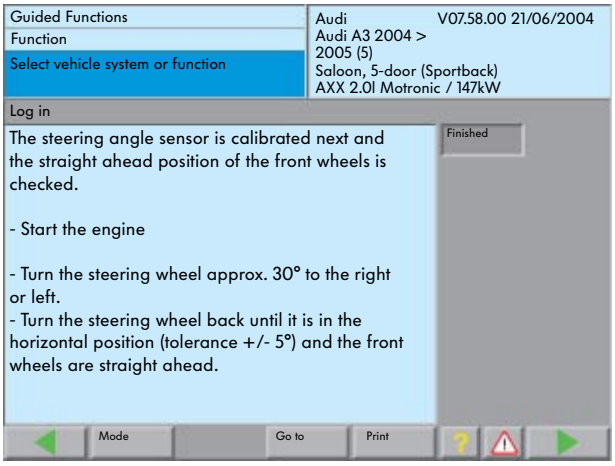
S295_172

The further procedure for the function test is menu-guided.



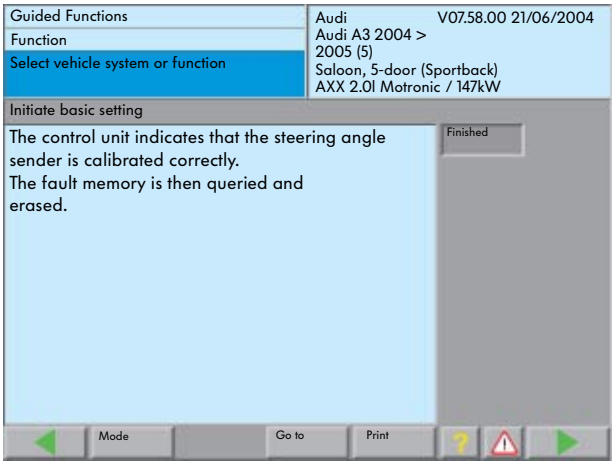
S295_171

Instructions for carrying out operating steps on the vehicle are provided for the user on screen in the mask.

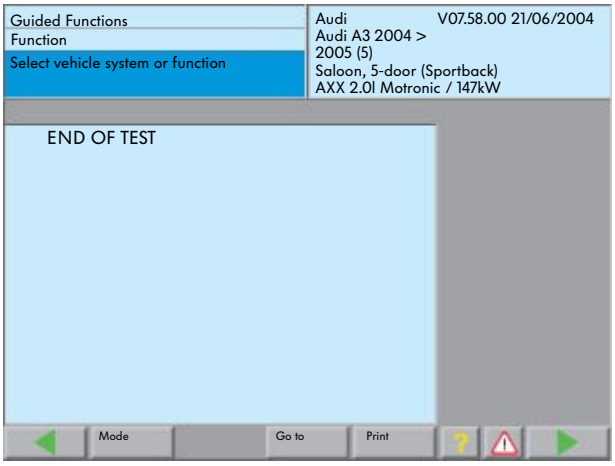


S295_173

The mask shows the respective latest progress of the function test.



S295_174



S295_175

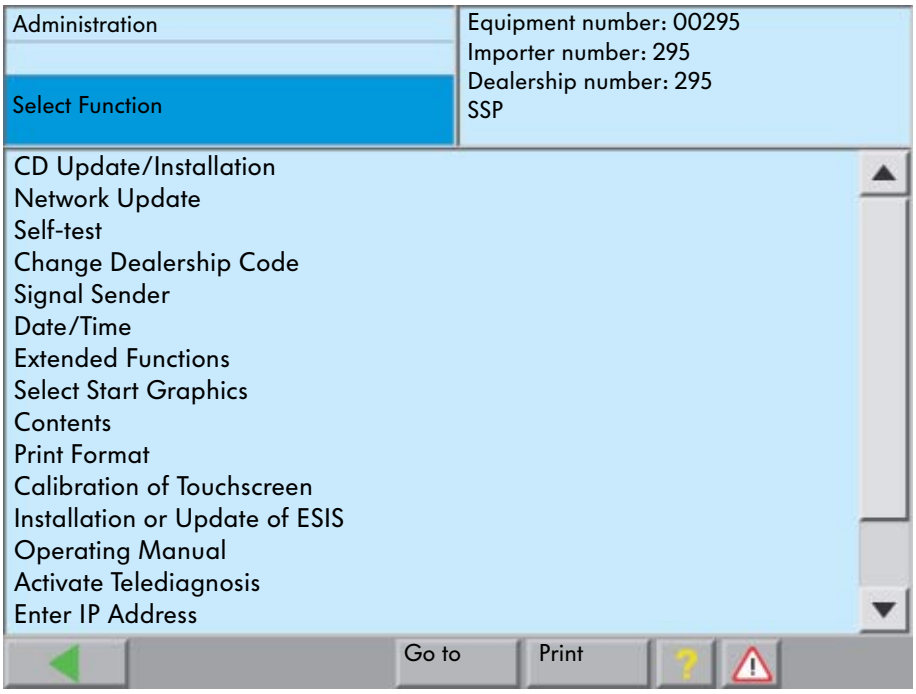
Administration

The contents of the administration in the vehicle diagnosis, testing and information system VAS 5051 as well as in the vehicle diagnosis and service information system VAS 5052

Starting Administration

The Administration is started from the start mask by pressing the “Administration” button.

It provides the functions for internal administration of the tester.



S295_118

This selection provides just an overview of the functions in the Administration mode. You will find a detailed description in the operating manual for the vehicle diagnosis, testing and information system VAS 5051 and in the operating manual for the vehicle diagnosis and service information system VAS 5052.

Functions	
CD Update/Installation	Basic and brand CDs can be installed using this function.
Network Update	When this menu item is selected, the test unit searches for a software update under the corresponding URL address.
Self-test	This function carries out a self-test of the vehicle diagnosis connector in the test unit including the diagnostic cable and the internal test instrument unit (only VAS 5051).
With first installation: Enter workshop code then: Change dealership code	This function is used to enter the sales/importer number, dealership number and dealership code. After confirming the entry, this data is blocked. Next only the name and the address of the dealership can be changed.
Signal Sender	This function allows you to change the duration and pitch of the acoustic signal.
Date/Time	After selection, the date and the time can be adjusted. The date can, however, only be changed with first installations or when a new basic CD is installed.
Extended Functions	This can only used with a special key CD.
Select Start Graphics	The function allows you to select the start graphics.
Contents	After selecting this item, the installed basic and brand CDs are displayed with their respective version number. After selecting a CD, it's contents appear.
Print Format	This function allows you to set different paper formats with the accompanying software printer drivers for screenshots and print styles.
Screen Calibration	This function allows the touch screen to be calibrated. (VAS 5051 only after first installation or after installation of a new basic CD)
Installation or Update of ESIS	This function allows you to install "Electronic Service Information System". (US market only)
Operating Manual	This function displays the operating manual.
Activate or Deactivate Telediagnosis	This function allows remote access to the test unit via a network.
ELSA Installation	This function allows you to install the procedure system for the "Electronic Service Information System". (Not VAS 5051 and VAS 5053)
Application Statistics	The selection shows statistics on how often and how long the individual modes have been used.
Application Installation	Other applications can be installed with this function, for example, data CD for update programming and multimedia training CDs from service training.
Network Settings	After selecting this function, another mask appears where you can make network settings.

Time Management

Time Recording

Calculation of diagnosis times

The group has been using the VAS 5051 since 1996, the VAS 5052 since 2001 and the VAS 5053 since 2004.
In these systems, the test steps are added in the “Guided Fault Finding” and the “Guided Functions” using specially developed parameters.

The labour items (AP) with times for the single reading (01 29 00 00) and repeated reading (01 29 00 50) of error memories have the following content structure:

1 Query fault memory before repair (including connecting and disconnecting diagnostic system)

2 Erase fault memory (01 29 00 00)

3 Carry out any repairs

4 Query fault memory again after repairs and then erase (01 29 00 50)

New customer service number for vehicles from model year 2003

From model year 2003, the customer service number 01 50 00 00 for the “Guided Fault Finding” and the “Guided Functions” is available.
The customer service number is initially without time.
The time from the diagnosis protocol is entered in the DMS.
All required work, for example, reading the fault memory or programming control units are covered by the labour item AP 01 50 00 00.

The diagnosis protocol, which is included with the order, provides proof. The time that is given on the print out is only the time that the mechanic spent on the vehicle with the diagnosis system. In addition, all removal and installation work, fetching special tools and other work have to be added to this.

This is then invoiced together.

Diagnosis protocol

After diagnosis, the necessary times are calculated and can therefore be checked.

These times are displayed in the diagnosis protocol and can be invoiced together with the times for removal and fitting of the faulty part.

VAS 5051 **Diagnosis Protocol** **15/06/2004 13:37**

Workshop code:
12345678

Version:
V07.58.00 21/06/2004

Dealership code
Jones Cars

Car registration
SSP 295

Vehicle ID no.
WVWZZZSSP295

Diagnosis **time: 85 time units**

S295_119

Online Connection

Networked Workshops

Changing services

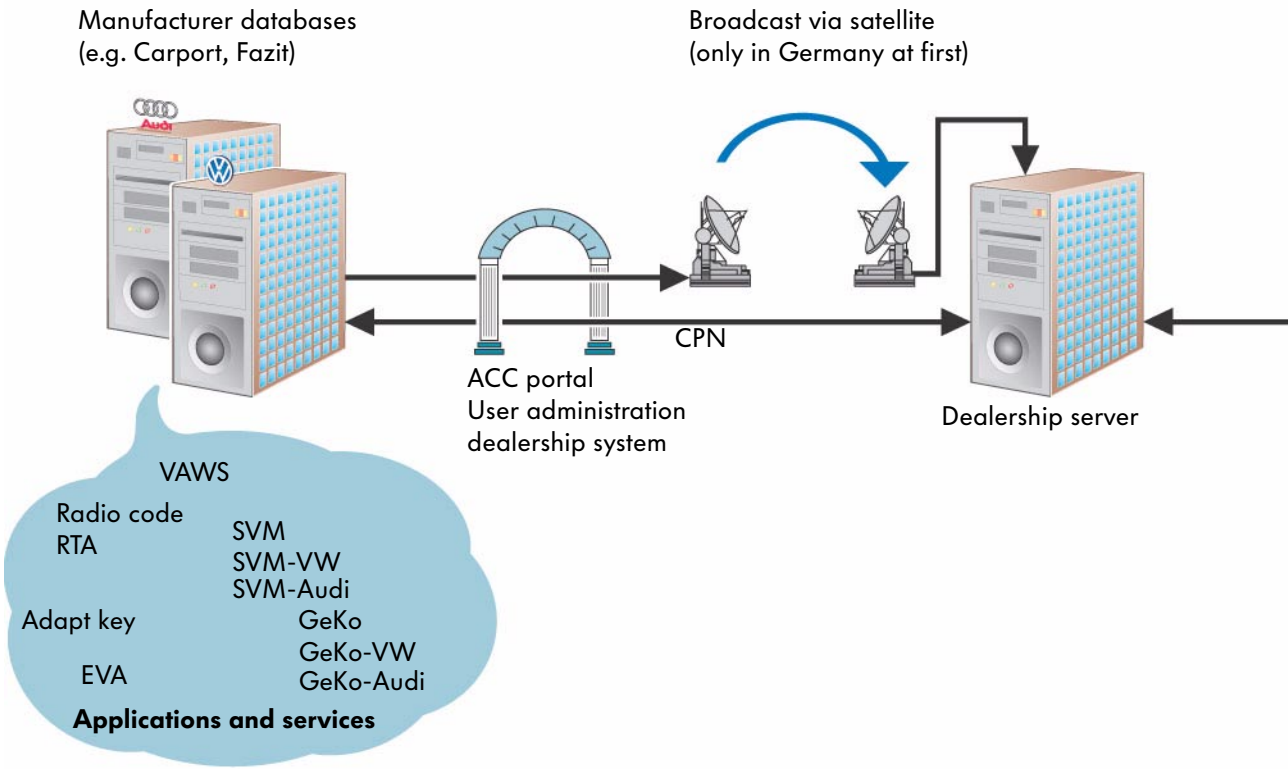
As in many other industries, the use of networked diagnosis systems is also inevitable in vehicle services.

Service and diagnosis work

The following service and diagnosis work is only possible in a network:

- Software version management
- Secret and component protection
- Software updates for control units
- Telediagnosis
- Software-supported performance of actions
- Adapt key (GeKo)
- Enable radio code

Data transfer via online connection



The Standard

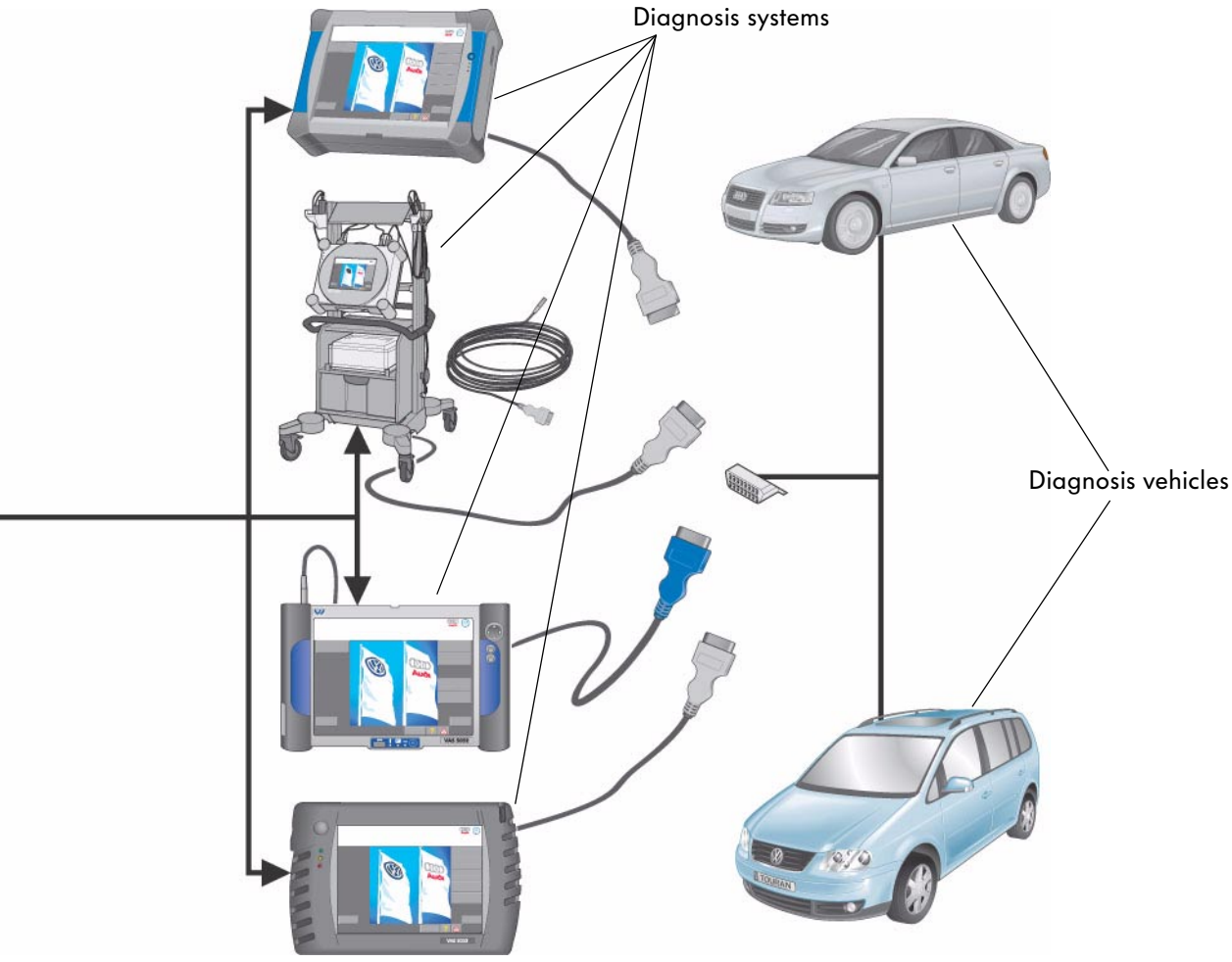
Required hardware

To use network communication, the VAS diagnosis systems require a network card and a network connection in the workshop.
The VAS 5051B, VAS 5052 and VAS 5053 systems have an internal network card. An Ethernet PCMCIA can added to the VAS 5051.
An IP address is also required for each diagnosis system (see page 89).

Data transfer

The data transfer occurs via the CPN partner network.

- Radio code and immobilizer code query no longer via dealership online access
- Vehicle keys are supplied pre-coded
- Online connection may not be interrupted during any GeKo adjustments and coding



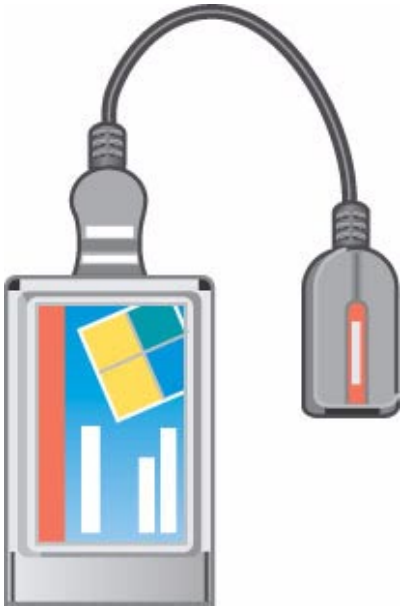
S295_120

Online Connection

Accessories for connection to a network

VAS 5051 network connection

The VAS 5051 also requires an Ethernet PCMCIA card for network communication.



S295_121

VAS 5015/45 Ethernet

The Ethernet PCMCIA card allows communication with other computer systems via an online connection.

Required software

The necessary software components are supplied with the update CDs for the VAS 5051.

VAS 5052, VAS 5051B and VAS 5053 network connection

The diagnosis systems have an internal network card and therefore required a network cable to network communication.

S295_122

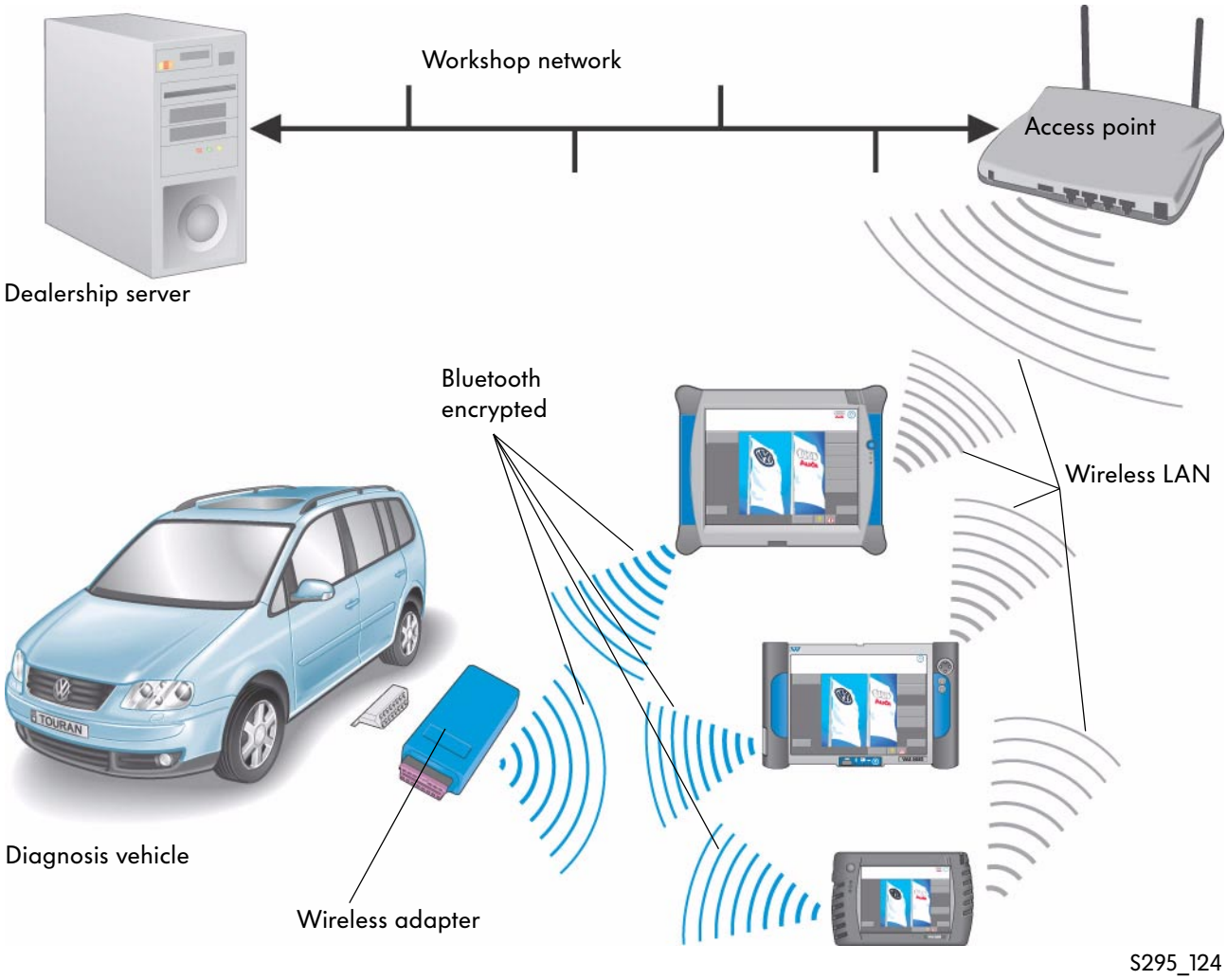
Further information on the installation of network, the network and on the versions of the basic and brand CDs for the diagnosis systems are available in ServiceNet®.

Diagnosis wireless adapter 5054

In future, to meet the increasing demands for convenience, the data transfer between the vehicle and the diagnosis systems will also be possible via a wireless connection in addition to the diagnosis lead.

A wireless adapter that can be used as an intermediate storage medium is connected to the diagnosis socket.

Data Transfer



Telediagnosis

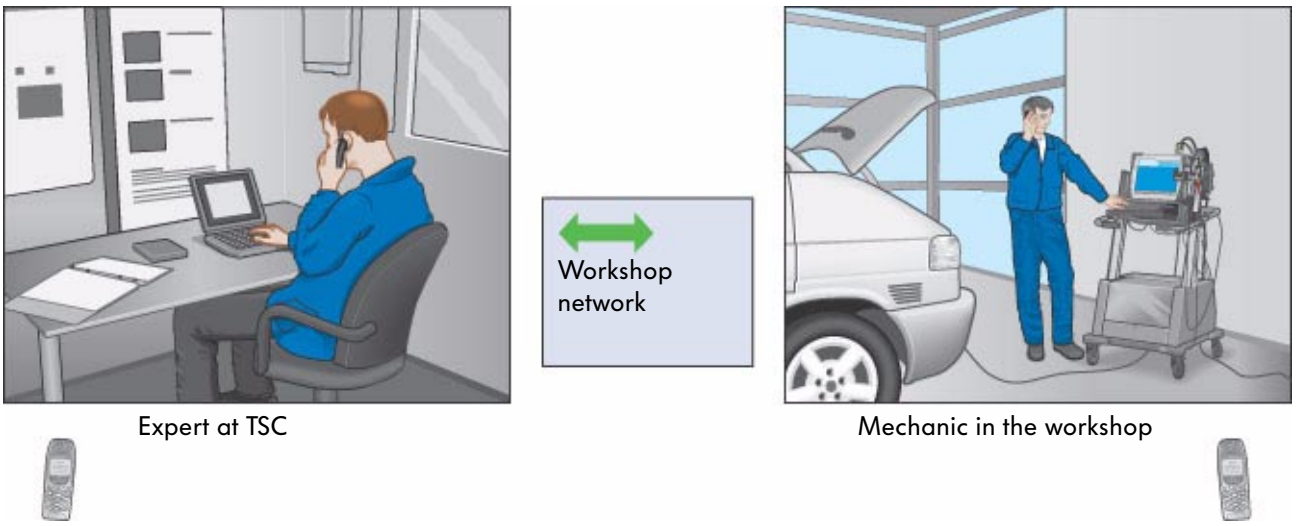
Diagnosis with Support

General description

To support diagnosis on the vehicle, the VAS diagnosis systems can be operated from a central point (e.g. experts at the TSC, at the importer, in the factory) via an online connection.

The expert can see the data read from the vehicle on his screen and can support the mechanic.
The mechanic and the expert communicate by telephone.

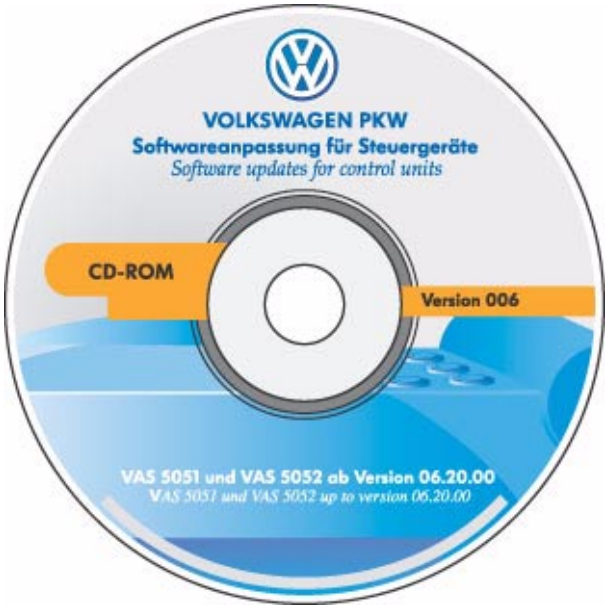
Telediagnosis



S295_125

Software requirements for workshop

All VAS 5051s with the basic CD version 2. 10 and all VAS 5052s with the basic CD V06.00.00 and higher have the telediagnosis function.



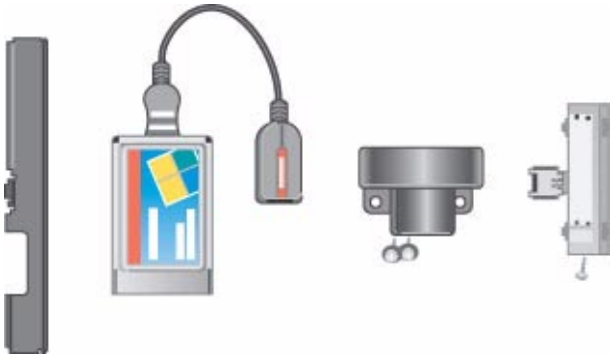
S295_126

VAS 5015/45 Ethernet telediagnosis

When used in a workshop or dealership network, the Ethernet PCMCIA card is required.

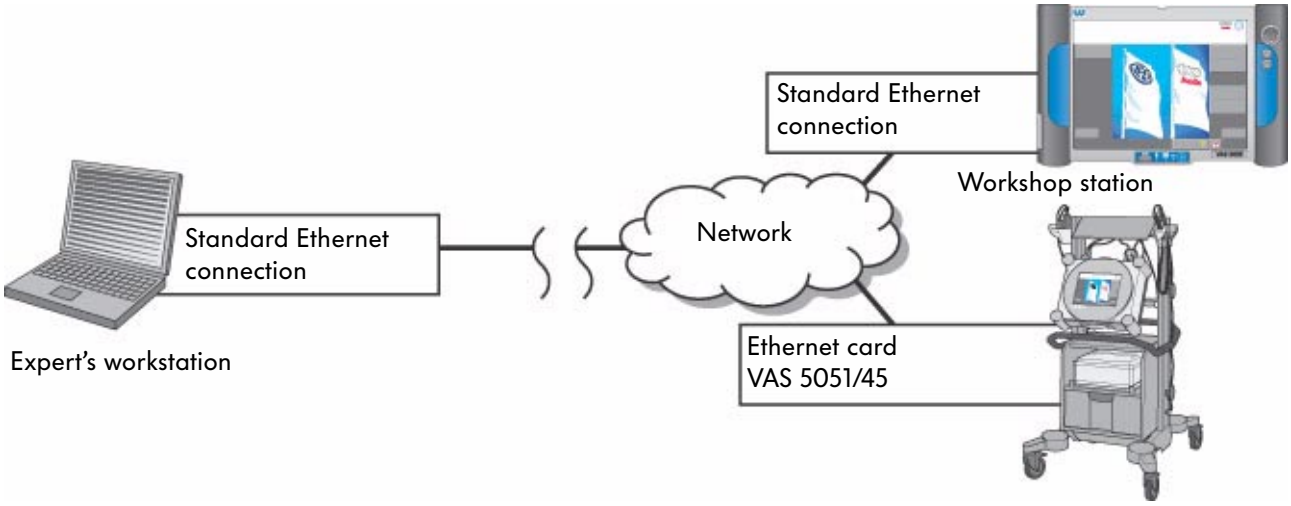
Contents:

- EMC plate with cable holder
- PCMCIA Ethernet card with connection lead
- Trim
- 10 m connection lead
- Protective cap
- Installation instructions



S295_127

Ethernet Connection



S295_128

The VAS 5051 as well as the VAS 5052 are networked within the workshop and can communicate with the expert's workstation via an online connection.
The administrator on site or at the sales centre assigns an IP address and subnet mask to the VAS 5051 and VAS 5052.

The "Telediagnosis" function can only be used with the VAS 5051 diagnosis systems in a workshop or dealership network with the original VAS 5051/45 package for technical and licensing reasons.

Telediagnosis

VAS 5015/38 ISDN telediagnosis

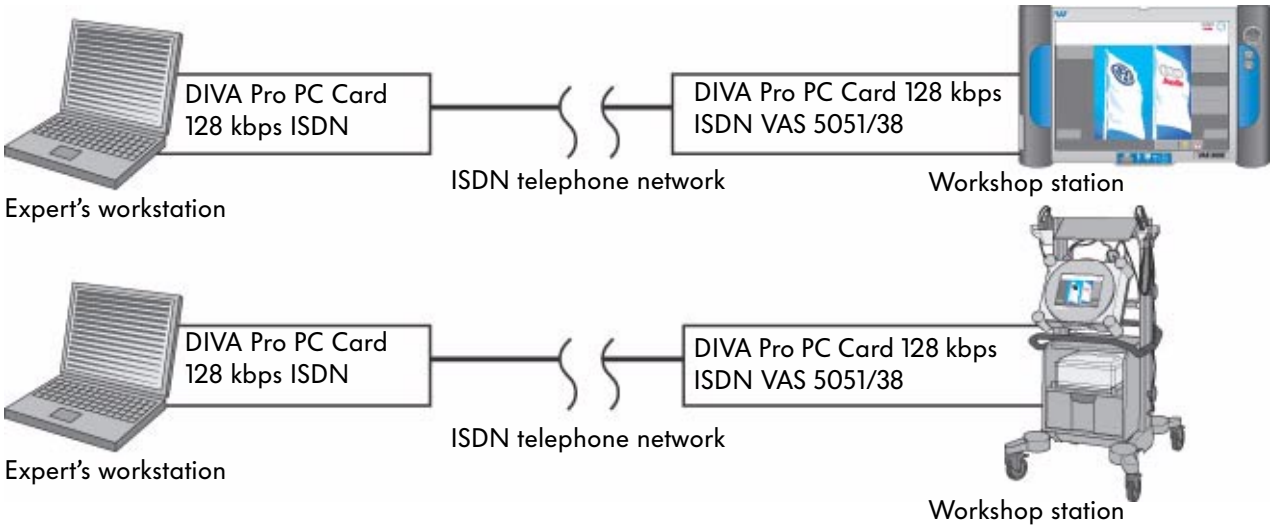
If the system is not used in a workshop or dealership network, an ISDN card is required for telediagnosis.

Contents:

- EMC plate with cable holder
- ISDN card with connection lead
- Trim
- 10 m connection lead
- Protective cap
- Installation instructions
- An ISDN connection on site

S295_129

ISDN Connection



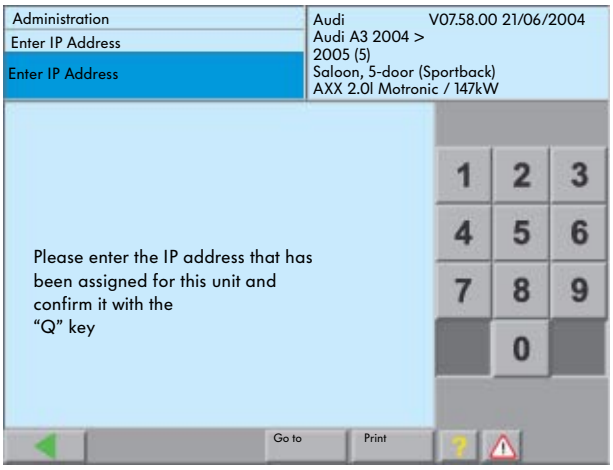
S295_130

The "Telediagnosis" function can only be used with the ISDN card from the original VAS 5051/38 package for technical and licensing reasons.

The retail dealership concept prevents simultaneous use of an ISDN connection on systems that are connected to a workshop or dealership network.
In markets with standardised workshop networking, only the Ethernet card VAS 5051/45 may be used.

Function

Before a data connection to the TSC, importer or factory (expert workstation) can be set up with the VAS 5051 or the VAS 5052, you should make sure that the network card or the standard Ethernet connection in the diagnosis system is connected.



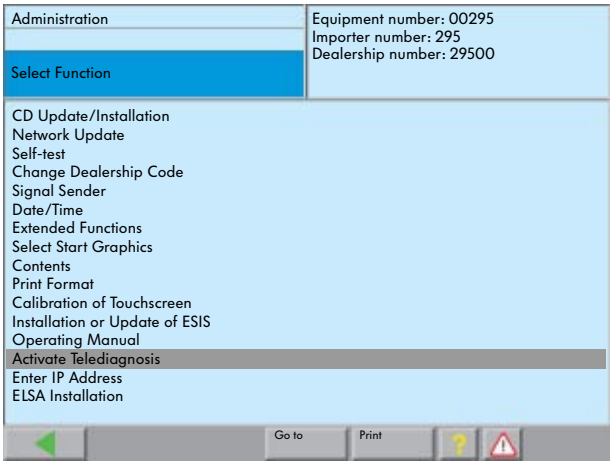
S295_131

Entering the IP address

An IP address needs to be entered for systems that are connected via a workshop or dealership network.

It is entered by pressing the "Administration" button on the start screen and then selecting the "Enter IP Address" function.

The IP address is issued by the system administrator at the dealership in accordance with Volkswagen Group guidelines.



S295_132

Activate Telediagnosis

The "Activate Telediagnosis" function is started from the "Administration" menu item in the VAS 5051 or VAS 5052.

The connection can then be set up from the expert's workstation.

Once the connection between both stations has been set up, the workshop unit switches to "slave mode". The expert's workstation takes on the master function.
Operation can occur on both units as agreed. The screens are identical on both stations.
The mechanic and the expert communicate by telephone.
The data connection is set up from the expert's workstation.

Emissions Testing Station

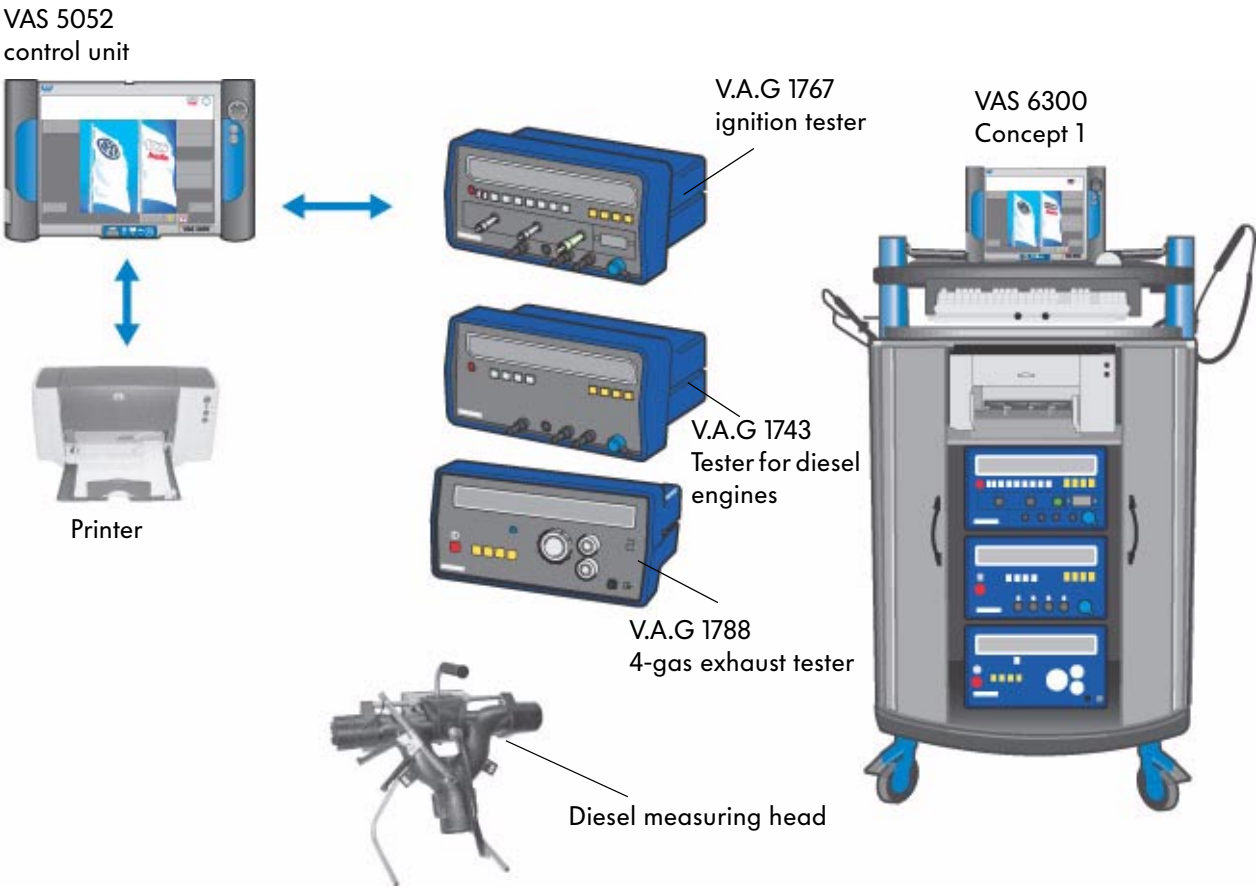
VAS 6300 Emissions Testing Station

Emissions testing station control unit

The VAS 5052 vehicle diagnosis and service information system is used as an operating and display unit together with the 6300/2 software/hardware package. It controls the devices connected in concept 1 or 2 via an interface distributor and communicates with the vehicle control units

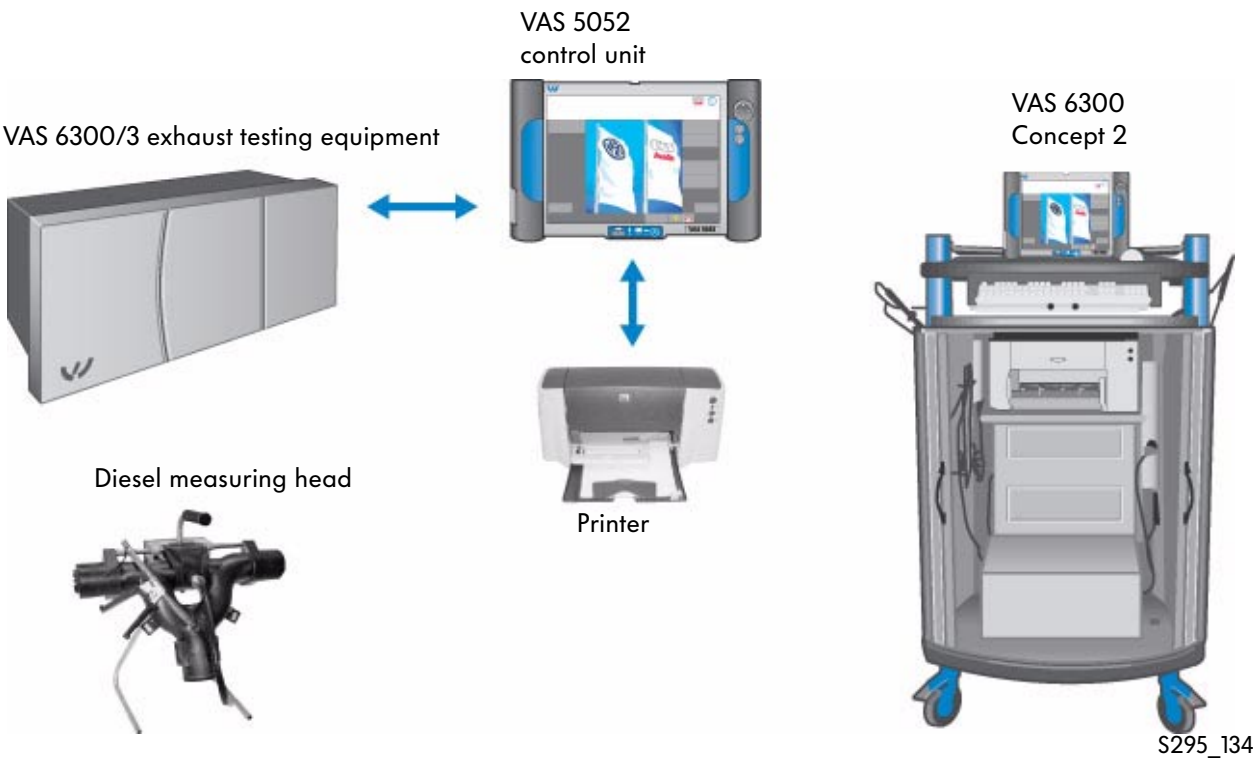
Concept 1

In addition to the control unit, concept 1 uses the ignition tester V.A.G 1767, the exhaust tester V.A.G 1787 or 1788 and the diesel tester V.A.G 1743.



Concept 2

In addition to the control unit, concept 2 comprises the exhaust testing equipment VAS 6300/3, a state-of-the-art testing instrument that can be used across the world.



You will find further information on the CD VAS 6300 Multimedia Training supplied with the emission testing station. This CD also contains the emissions testing software required for the VAS 5052.

Glossary

A		
API	Current product information	Information on problems, new features (videos etc.)
APOS	Labour position activities, time units	
ASANET	Data exchange protocol	Defined protocol for transfer of information to a wide range of workshop equipment that link the asanetwork
ASC	Audi Service Circle	
AU	German emissions test	
AVUS	Automatic Vaudis Update System	
B		
DC	Dealership Concept	The equipment, structure, hardware and software which the dealership can install
Bluetooth		Wireless data transfer
C		
CAN	Controller Area Network	Network for control unit communication in the vehicle
CICSA	Mainframe carrier system	Black screen, green font, PESOS runs on this, for example.
CPIS	Central Partner	Hardware and software inventory of all partners,
	Information System	automatic reporting to central system about which components are installed. (Drops/Vaudis/Elsa/ServiceNet®)
CPN	Central Partner Network	Closed network segment, which all Volkswagen and Audi partners can access

D

DBC	Data Broadcast	Data transfer via satellite
DISS	Direct Information System	Special info tool in Elsa Win from 3.0, can be called up from Service SAGA2. Problems that cannot be solved are coded according to query schemes (which car, which symptom) and sent to the manufacturer.
DMS	Dealer Management System	In Germany mainly VAUDIS DOSYS translation of dealer online access for importers
DMS-BB	Dealer Management System Backbone	Standardised interface for order, customer and vehicle data to the DMS

E

EA	Expert Advisor	Support system for IS-Handel
ELFI	Electronic vehicle identification	Chassis number is sent, equipment is returned (100% coverage for vehicles from Golf V), integrated in ELSA
ELSA	Electronic service information system	Electronic repair guide
ELSA WIN	Electronic service information system	Electronic repair guide ELSA on Windows basis
ELWIS	Electronic workshop information system	
ERWIN	Electronic repair and workshop information	ELSA for non-VW-Audi dealerships and interested private persons
ESIS	Electronic Service Information System	ELSA-equivalent on North American market
ETKA	Electronic parts catalogue	Follow-up to microfilm
EVA	Electronic sales assistant	multimedia vehicle configuration, Cash sale calculation, leasing, financing

Glossary

F

FAZIT	Vehicle information and central identification tool	Database, in which all theft-related data for the immobilizer and component protection is stored.
FISH	Individual vehicle service notes	Related to vehicle identification. Integrated in ELSA
FISS	Field information high-speed system	Customer complaints, workshop discoveries

G

GW	Guarantee	
GeKo	Secret and component protection	System for adapting the immobilizer, querying the radio code and enabling the component protection with the VAS testers. The user requires system authorisation.

H

HC	Hotline Channel	Knowledge database / problem solutions
Holz	Dealer online access	
HOT server	Server at dealership (via satellite)	HOT = name of company that introduced this technology
HSO	Handbook Service Organisation	Process descriptions within a dealership
HST	Handbook Service Technology	Workshop literature of the dealership, see TPL

K

KD	Customer service	

L

LIVAS	Literature administration and processing system	Repair guides, text systems

M

Module		Complex assembly that has a special function and is configured for a specific complete system.

P

PS	Product Support	
PROFI	Product field information	Further development or improvement of Field information high-speed system (FISS)

R

RESERVE	Repair service results	All repair data for a vehicle
RG	Repair guide	
RSC	Regional Service Centre	
RTA	Radio transponder code query	
RVS	Computer network system	

S

SAM	Service Auto-Mat	Automatic system for dropping off and picking up vehicles
SG	Control unit	
SN(K)	Damage numbers (catalogue)	
SSP	Self-Study Programme	
SVM	Software Version Management	

Glossary

T

TCC	Trade Care Centre	Manufacturer-supported market coordination
TD	Telediagnosis	
TPL	Technical problem solving	Problems known to manufacturer, their solutions and explanations for customers
TPL Archive	Technical problem solution archive	
TSC	Technical Service Centre	

V

VAUDIS	Volkswagen/Audi Diskette System	
VAWS	Volkswagen Audi Workshop System	Starting with appointment management, handles the service core process systematically and supports all parts of the process.
VCS	VAG Computer Service Vesis	
VK	Sales customer service	

W

WFS	Immobilizer	
WIV	Maintenance interval extension	
WT	Maintenance tables	

Z

ZSB	Assembly	

Test Yourself

1. How can the VAS 5053 software be updated?

☐ a) On the network via the workshop server.

☐ b) Via the VAS 5051.

☐ c) Via the VAS 5051B.

2. What is the standard sort method for the faults immediately after query of the fault memory in "Self-diagnosis" mode?

☐ a) According to address words

☐ b) In the order that they were stored in the fault memory of the control unit.

☐ c) According to the kilometre reading

3. A DSO image can be displayed together with a data block after following which procedure?

☐ a) By entering the "Testing Instruments" mode and calling up the data block with the "Measured Value Self-Diagnosis" button.

☐ b) By entering the "Vehicle Self-Diagnosis" mode and then switching to the "DSO" function in the "Testing Instruments" mode.

☐ c) By entering the "Vehicle Self-Diagnosis" mode, "Read Data Block" function and then switching to the "Testing Instruments" mode and pressing the "Measured Value Self-Diagnosis" button.

4. What are the sort buttons in the "Fault Memory Content" mask of the "Guided Fault Finding" mask used for?

☐ a) The system test plans are listed in the order of the sort criterion.

☐ b) The sort option organises the faults in order of occurrence for the user.

☐ c) User-defined test plans are listed in the order of the selected sort method.

5. How can the sampling rate be set for a long-duration measurement?

☐ a) By adjusting the time/div. setting using the buttons.

☐ b) In trigger mode, the sampling frequency can be set in kHz steps.

☐ c) The sampling rate depends on the set recording time.

6. Does a control unit that is not recognised, but is installed have to be selected later in the vehicle system test?

☐ a) Yes, otherwise the system components in the function/component selection cannot be accessed.

☐ b) No, if the system was not recognised, it is also not present and any further work on this system is not necessary.

☐ c) Yes, as the accessibility of the system is the actual fault and further diagnostic steps are necessary.

7. In what context does the "Note" label appear?

☐ a) This is a particularly serious fault that must be solved with top priority.

☐ b) The label is an indication to the mechanic for further processing later on.

☐ c) The entry is stored in the fault memory, but has low priority and should not be seen as a fault of the reporting system.

8. What does the diagnosis protocol provide information on?

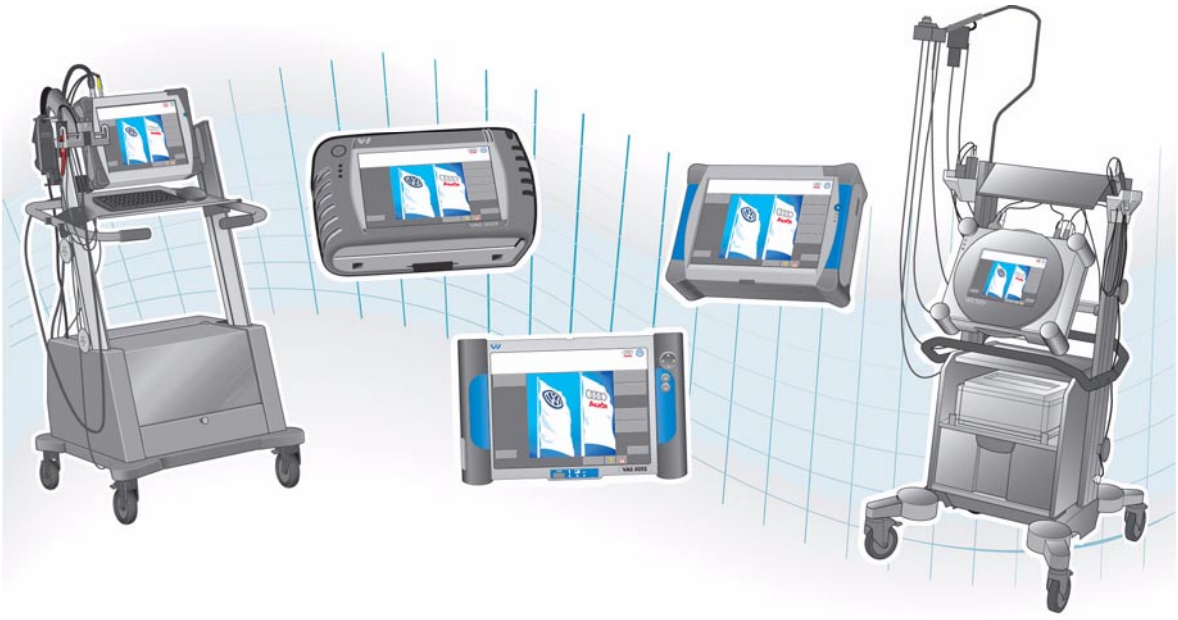
☐ a) About the number of installed systems without their sub-bus subscriber.

☐ b) It provides information on the processed system and user-defined test plans.

☐ c) About the total time required for all steps performed on the diagnostic tester.

Answers: 1) a,c; 2)a; 3) c; 4) b; 5) c; 6) a,c; 7)c; 8) b,c;

295



000.2811.15.20 Technical status 09/04