



# VOLKSWAGEN AG

## Vehicle Self-Diagnosis (OBD) VAS 505x (5051, 5051B, 5052, 5053)

Reference Manual, Vehicle Self-Diagnosis (OBD)  
V1.01 04/06

**VAS 5052**  

Vehicle diagnostic-, and service information system  
Version -USA/CDN- / V10.01.00 27/06/2006

**VAS 5053**  
Administration  
Technical

**Vehicle self-diagnosis**  
System selection  
Select a system:

**On Board Diagnostic (OBD)**  
LT2 On Board Diagnostic (OBD)  
LT3 On Board Diagnostic (OBD)

**WORKSHOP EQUIPMENT**

Vehicle Self-Diagnosis  
OBD  
Guided Fault Finding  
Guided Functions  
Administration

Print ? !

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## Contents

<b>1</b>	<b>General Information</b>	<b>4</b>
1.1	General notes	4
1.2	Using the reference manual	4
<b>2</b>	<b>Basic functions</b>	<b>4</b>
2.1	Overview	4
2.2	User interface elements	5
2.2.1	Left and right information window	5
2.2.2	Work window	5
2.2.3	Navigation bar	6
2.2.4	Multiple selection	8
2.3	Screen keypad	9
2.4	Start Vehicle Self-Diagnosis	9
2.5	Start OBD	11
<b>3</b>	<b>Vehicle On Board Diagnostic/OBD</b>	<b>11</b>
3.1	Select vehicle system	11
3.1.1	Gateway installation list (CAN diagnosis)	12
3.1.2	Compiling services	14
3.1.2.1	Checking DTC memory – complete system	15
3.1.2.2	Erasing DTC memory – complete system (CAN diagnosis)	15
3.1.2.3	Switching transport mode on or off (CAN diagnosis)	15
3.1.3	Vehicle system “01 – Engine electronics”	16
3.1.4	Vehicle system “31 – Engine electronics network”	16
3.2	Select diagnostic function	17
3.2.1	Diagnostic functions	19
3.2.2	Show all diagnostic functions	19
3.2.3	Identification services	19
3.2.4	DTC memory content	21
3.2.4.1	Checking DTC memory	22
3.2.5	Output diagnostic test mode	27
3.2.6	Basic setting	29
3.2.7	Code	30
3.2.7.1	Short code	30
3.2.7.2	Sub-bus system code	31
3.2.7.3	Read/write long code	31
3.2.7.4	Coding LT3 (Crafter)	32
3.2.8	Measured values	33
3.2.9	Adaptation	34
3.2.10	Access authorization	36
3.2.11	Safety	37
3.2.11.1	Challenge read out immobilizer	37
3.2.11.2	Immobilizer activation	37
3.2.11.3	Component protection	38
3.2.12	Data transfer/update programming	38
3.2.13	Special functions	39
3.2.14	End output	40



3.2.15	LT3 (Crafter) control module reset	40
3.3	OBD	40
<b>4</b>	<b>Attachment</b>	<b>43</b>



## 1 General Information

### 1.1 General notes

This reference manual contains the information necessary for using Vehicle Self-Diagnosis in the workshop tester VAS 505x from installation CD version 10.

The content of the screens shown may differ slightly from the screens displayed on the tester.

### 1.2 Using the reference manual

The reference manual may also be available on the tester in electronic format. If so, the reference manual can be accessed in the Self-Diagnosis application by pressing the “?” button.

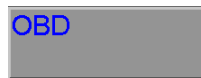
## 2 Basic functions

### 2.1 Overview

In the “Vehicle Self-Diagnosis” operating mode, the user can communicate with the vehicle systems available on the diagnostic bus when a diagnostic cable is connected and the ignition switched on. Select the desired vehicle system using the dialog screens. There, the user can start possible diagnostic functions for this vehicle system and, for example, retrieve measurement results, perform an output diagnostic test, etc.



**Note**



The “OBD” buttons guides the user out of the start screen and directly to the list of OBD functions, see section 3.3.

The accompanying repair manual is needed when working with Vehicle Self-Diagnosis. If a vehicle system that is not installed in the connected vehicle is selected, a message is displayed:

***Vehicle system not present.***

A message is also received if a diagnostic function is that is unknown to the vehicle is selected or if this function cannot be executed at the moment.

***Function unknown or cannot be executed at this time.***



**Note for VAS  
5051/5051B**

Selected Vehicle Self-Diagnosis measurements can also be displayed there after switching to the “Measurements” operating mode.



## 2.2 User interface elements

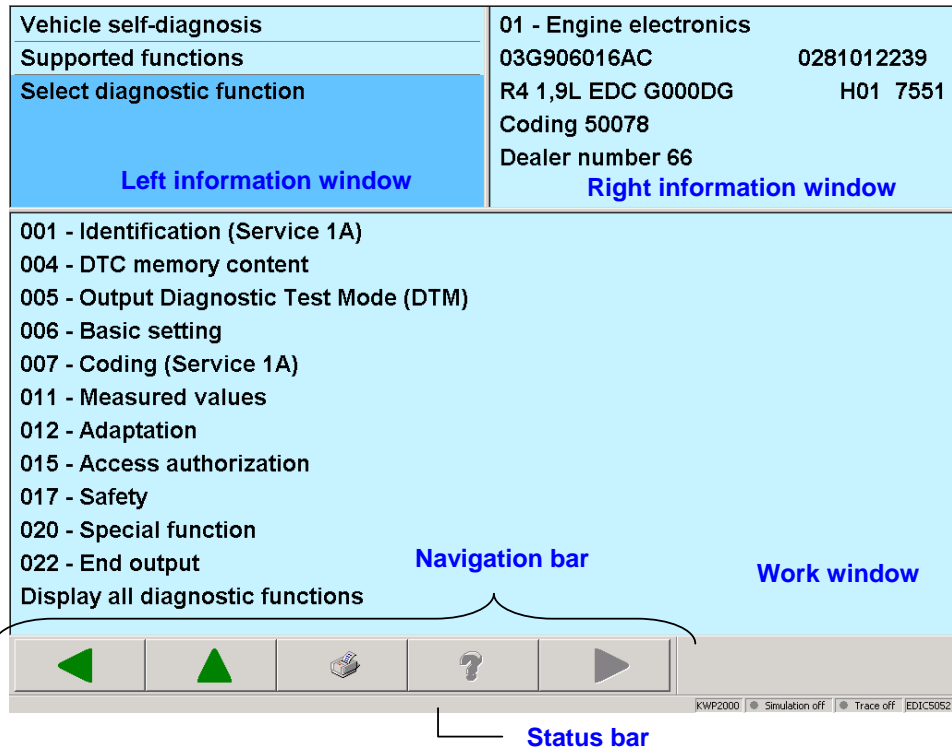


Illustration 2-1 VAS505x user interface

### 2.2.1 Left and right information window

Most screens contain two information windows (Illustration 2-1 VAS505x user interface ) that are located above the work window.

The left information window gives the following information:

**1st line:** Name of operating mode (Vehicle Self-Diagnosis, Administration)

**2nd line:** Name of the function activated in the operating mode (example: Establishing communication, vehicle identification, etc.).

**3rd and 4th lines:** Operating instructions (example: Select diagnostic function), status display (example: function not available) or more information on the function displayed.

The right information window displays the results of the previously selected selection. After establishing a connection with a vehicle system, the results of the vehicle identification are displayed.

With connected vehicle systems, one element from a list of individual control modules can be selected (for examples, with engine network, see section 3.1.4).

### 2.2.2 Work window

The work window (Illustration 2-1 VAS505x user interface ) is the largest part of the screen. Program and diagnostic functions and their results are displayed here.



### 2.2.3 Navigation bar

In the Vehicle Self-Diagnosis screens, the user can navigate to other available operating modes and, if necessary, switch to Measurements using the buttons in the navigation bar (See Illustration 2-2 Navigation bar)

With the operating modes, this requires that the user has first switch out of them into Vehicle Self-Diagnosis.

The navigation bar buttons are described in the following section.



Illustration 2-2 Navigation bar

#### Go to button



Illustration 2-3 "Go to" button

Using the "Go to" function, the user can cancel the operating mode, end it or switch to other running applications.

#### Next button



Illustration 2-4 "Next" button

Using the "Next" button, the currently marked list entry can be implemented.

#### Back button



Illustration 2-5 "Back" button

Using the "Back" button, the user can leave the screen currently shown and go back to the previous screen.

#### Help button



Illustration 2-6 "Help" button

The help file (in Acrobat PDF format) is opened when this button is pressed.



### Print button



Illustration 2-7 "Print" button

If the OBD log is not filled yet, the **Print** button is not available until communication with the vehicle system is established.

VIN and code can be entered under the menu item "File -> VIN and code (XML data)..." The data are transferred to the OBD log and displayed there.

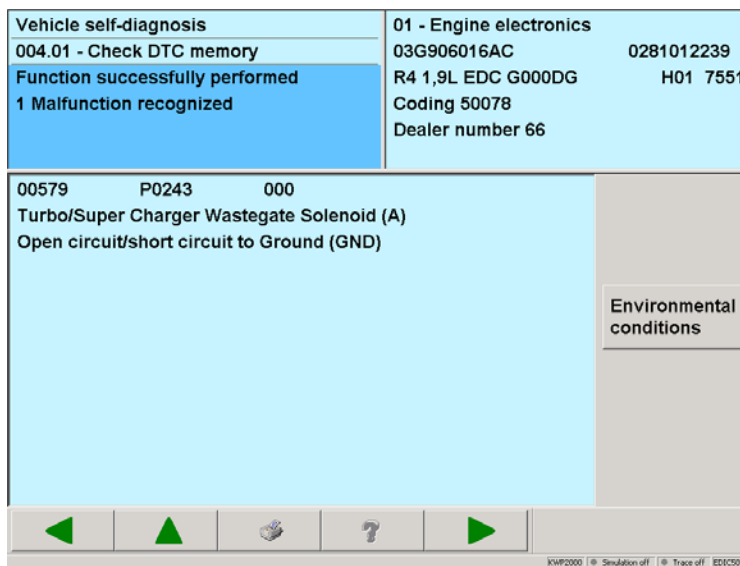


Illustration 2-8 "Print" button context menu

The **Print** button context menu offers the following menu entries (Illustration 2-8 "Print" button context menu)

**Fill OBD log:** After establishing communication, the current screen contents can be transferred to the OBD log using this function. Each time it is accessed, the new screen contents are added to the existing OBD log.

If a new vehicle system is selected before selecting the "Fill OBD log" function and a log is already available, an inquiry appears and asks if it should be deleted. If "Yes" is selected, the old data is overwritten. If "No" is selected, the new data is added to the old.

Using the "Back" button, the user exits the OBD log and continues working with the last function used.

**Show OBD log:** After ending communication with the vehicle system, the OBD log can be displayed on the screen using this function.

**Save OBD log:** After being filled, the OBD log can be saved using this function. If the VIN and code were not entered, a window appears with a chance to enter them.



**Print OBD log:** An existing OBD log can be printed at any time on the installed standard printer using the “Print OBD log” function.

**Screen (printer) or screen (removable storage device):** Output of current screen content on printer or as a file on the removable storage device. The output medium (printer or removable storage device) can be defined using the “Select output medium” function.

**OBD log (printer) or OBD log (removable storage device):** Output of OBD log on printer or as a file on the removable storage device. The output medium (printer or removable storage device) can be defined using the “Select output medium” function.

**Select output medium:** Selection of the output medium on which the screenshot or OBD log will be displayed.

**Enter VIN code:** Before the protocol output, the VIN and code of the currently diagnosed vehicle can be entered using the superimposed alphanumeric keypad so that they are included in the log and a clear allocation is possible later. The VIN also appears in the file name when saving logs on the removable storage device and their input is required for the storage process. These data are deleted after ending the operating mode.

**Safely remove hardware:** If the user would like to remove the removable storage device from the tester, this function must be performed first. It ensures that all data has been written to the storage device before it is removed. After selecting the function, the removable storage device is no longer available and must be reinserted before using again.

If the OBD log was not yet saved or printed when the tester is closed, a note appears prompting printing. With **Yes**, the OBD log is printed out on the standard printer. With **No**, Self-Diagnosis is left without printing the OBD log. The OBD log is automatically saved and can be printed the next time Self-Diagnosis is opened.

If the OBD log is filled the next time Self-Diagnosis is used, a message appears asking if the old OBD log should be erased. If **Yes** is selected, the old OBD log is erased and a new one is created and filled with the current screen contents. The VIN and code must be reentered. If **No** is selected, the OBD log is kept and the current screen contents are added.



**Note**

The logs on the VAS 505x are output in XML format with an associated format file “Format.xml”. With the output of data to the removable storage device, a suitable viewing option, e.g. Internet Explorer 6.0, is necessary to display the data on a PC. With multiple log outputs, the format file is only written to the removable storage device once and determines the format of the display pages.

## 2.2.4 Multiple selection

In some screens, it is possible to select several entries in the work window (for example, when combining measurements or adaptation values). By pressing an entry on the screen, it is selected. Selected entries are shown with a dark background. To remove the marking from a selected entry, press the entry again.





### 2.3 Screen keypad

Many diagnostic functions require the user to enter numerical values. The tester makes a screen keypad available for this. Values can be entered using the number keys. Incorrect entries can be corrected using the “C” button. The entered value is accepted using the “Q” button.

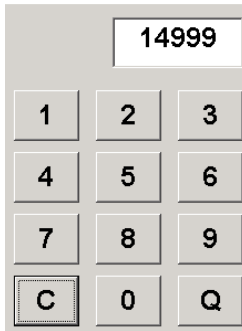


Illustration 2-9 Screen keypad

### 2.4 Start Vehicle Self-Diagnosis

The “Vehicle Self-Diagnosis” operating mode is accessed from the start screen by pressing the “Vehicle Self-Diagnosis” button (see Illustration 2-10 Start screen, accessing “Vehicle Self-Diagnosis”

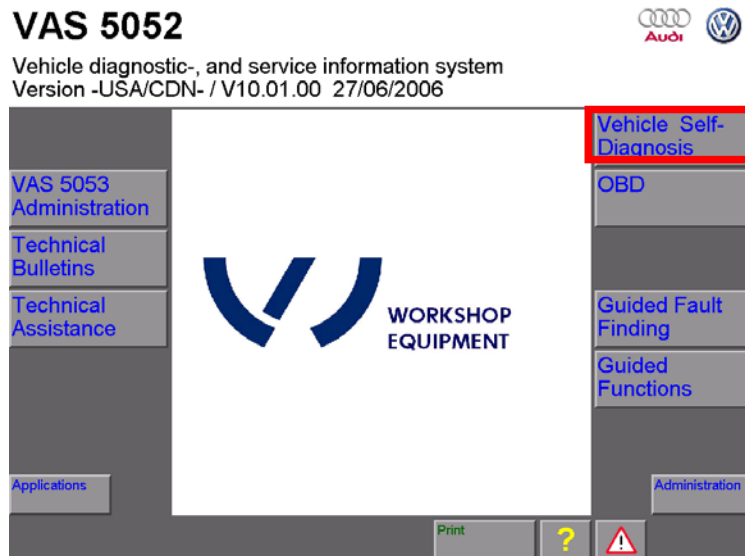


Illustration 2-10 Start screen, accessing “Vehicle Self-Diagnosis”

If this button is pressed on the start screen, the tester offers a list of diagnostic operating modes (see Illustration 2-11 “System selection” screen

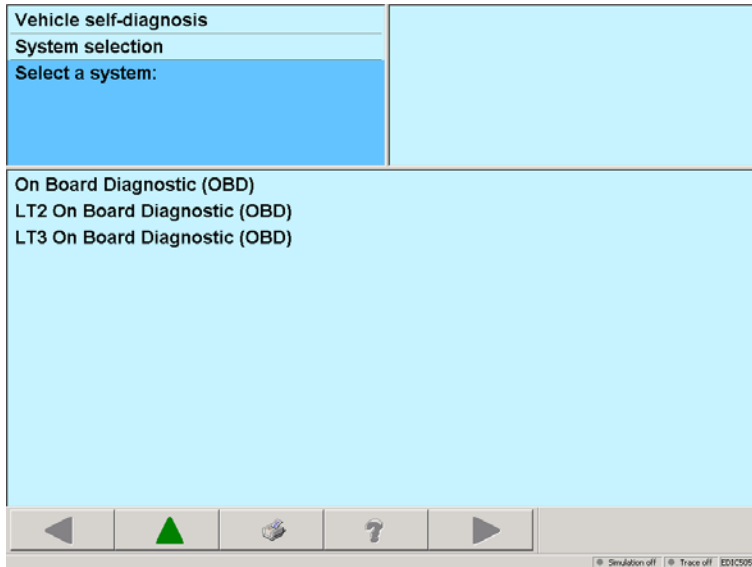


Illustration 2-11 "System selection" screen

- Select list entry On Board Diagnostic (OBD) for all vehicles except LT2 and LT3 (Crafter) light-duty vans.
- For LT2 light-duty vans, use LT2 On Board Diagnostic (OBD) list entry. With LT2 vehicle systems, only LT functions or OBD functions can be used. The LT diagnostic cable available as optional equipment is required.
- For LT3 (Crafter) light-duty vans, use the LT3 (Crafter) On Board Diagnostic (OBD) list entry.

After pressing the desired diagnostic operating mode, the tester provides a list of all known vehicle systems (see Illustration 3-1 "Select vehicle system" screen for On Board Diagnostic (OBD) operating mode

This does not mean that these are actually available in the vehicle to be diagnosed.

Vehicle On Board Diagnostic (OBD) is designed for protocols KW1281, KW2000, KW6000 and OBD. The CAN, SAE J1850 and K-line physical interfaces are available via the diagnostic cable.

The VAS 505x automatically recognizes the protocol used by the vehicle system.

### Self-Diagnosis application administration

In this way, additional functions on the tester can be activated for service and development purposes.



## 2.5 Start OBD

The OBD functions are available for communication with vehicle systems that support the “SAE J1979: 1991-12 E/E Diagnostic Test Modes” standard (in accordance with ISO/DIS 14230-4(KWP2000) and ISO/DIS 11519-4(SAE J1850) and respond to the collectively used address 33H.

The OBD operating mode is accessed using the appropriate button on the start screen (see Illustration 2-12 Start screen, accessing “OBD”

A selection of the screens for OBD functions is covered in section 3.3.

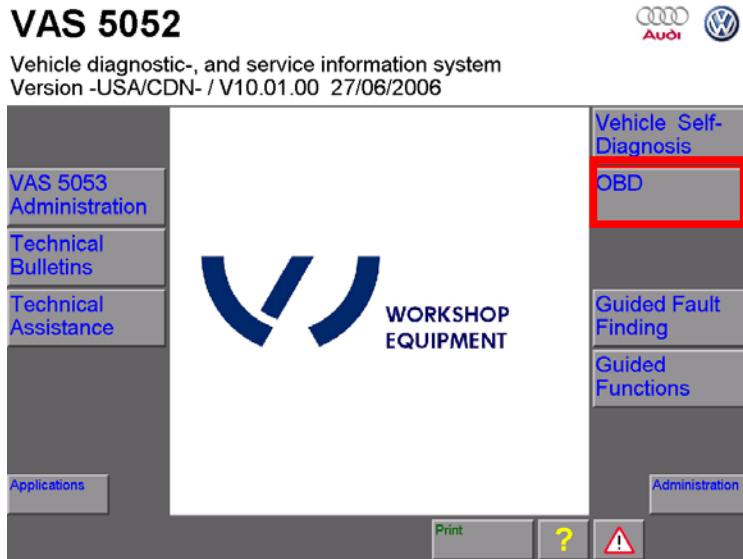


Illustration 2-12 Start screen, accessing “OBD”

## 3 Vehicle On Board Diagnostic/OBD

### 3.1 Select vehicle system

After selecting the diagnostic operating mode, the “Select vehicle system” screen appears. It contains a list of all established vehicle systems and tester-specific functions (see Illustration 3-1 “Select vehicle system” screen for On Board Diagnostic (OBD) operating mode

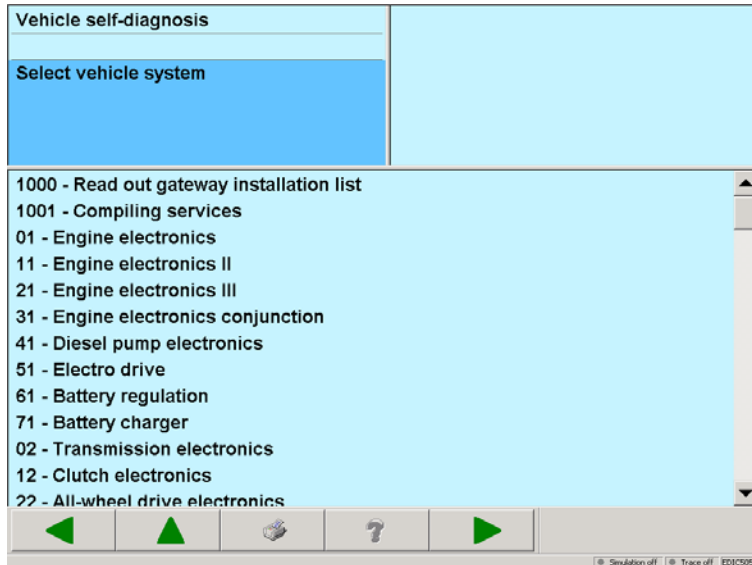


Illustration 3-1 "Select vehicle system" screen for On Board Diagnostic (OBD) operating mode

By selecting a line, any vehicle system or function can be accessed. As soon as a vehicle system has been selected, communication via the diagnostic bus is established. The procedure is reported in the left information window with the text **"Establishing communication"**.

After establishing communication, the control module identification is read out and shown constantly in the right information window (see section 3.2).



**Note**

The following functions are only possible in the On Board Diagnostic (OBD) operating mode, not in LT2 and LT3 (Crafter) OBD via CAN diagnosis.

- Gateway installation list
- Erasing DTC memory – complete system
- Transport mode on, transport mode off

These functions are marked with "CAN diagnosis" in the reference manual.



**Note**

With safety-related functions, it may be necessary to first transmit an identification number to the control module using the "015/016 – Access authorization" function so that it activates this function (e.g. adaptation, coding). Use the superimposed numerical keypad for this.

### 3.1.1 Gateway installation list (CAN diagnosis)

This function reads the current list (and the status) of all installed control modules from a CAN Gateway control module, the so-called "Databus diagnostic interface". The tester also accesses this number from an engine control module that supports access to the VIN and displays it in the right information window.



**Note**

This function is not available for LT2 and LT3 (Crafter) On Board Diagnostic (OBD) operating modes.

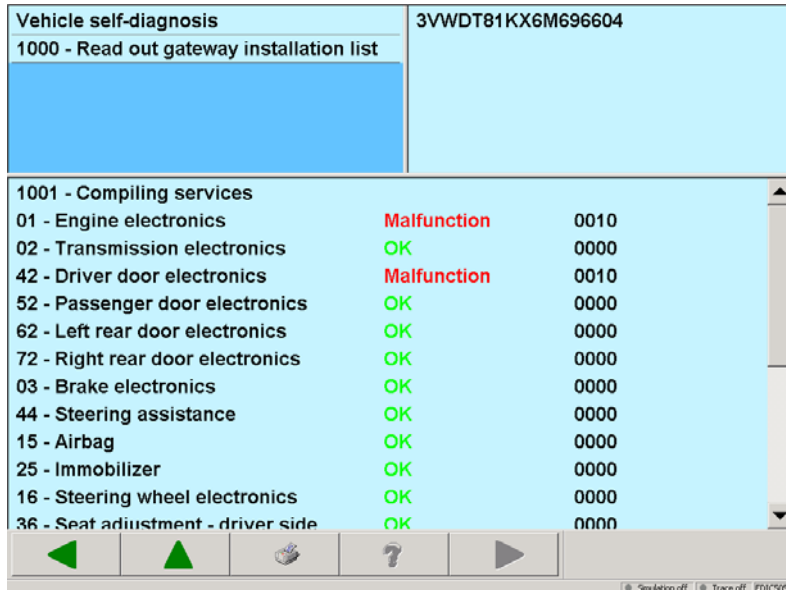


Illustration 3-2 "Gateway installation list" screen

If the user selects the "Gateway installation list" entry in the "Select vehicle system" screen (see Illustration 3-1 "Select vehicle system" screen for On Board Diagnostic (OBD) operating mode and there is a Gateway control module in the connected vehicle, the following screen appears.

Using this function, the "Select vehicle system" list can be reduced to the control modules that report to the Gateway control module. In addition, the tester reads the malfunction status of all vehicle systems from the Gateway installation list and displays it. If possible, the VIN is also read out and displayed in the right information window.

Malfunction status	Status value	Meaning
OK	0000	Communication OK. DTC memory is empty.
OK	1000	Malfunctions are stored in the Gateway control module due to sporadic communications malfunctions
cannot be accessed	11xx	Static communications malfunction
Malfunction	x010	DTC memory is not empty
not reporting	0001	Control module is not coded

Table: Malfunction status in Gateway control module

### Checking DTC memory – complete system (CAN diagnosis)

The "Compiling services" function is available in the first line of the Gateway device list. After selecting, the available services are shown in the following screen. Using the "Checking DTC memory – complete system" function; only the control modules that are entered in the device list are read out. The DTC memory is read out for all vehicle systems one after another that were entered in the "Select vehicle system" screen, if available, and their contents are displayed with the number of saved malfunctions (see Illustration 3-3 "Checking DTC memory – complete system" for Gateway installation list



Vehicle self-diagnosis	
1001.01 - Checking DTC memory - complet	
Function ended	

System	Status
01 - Engine electronics	1 Malfunction
02 - Transmission electronics	✓
42 - Driver door electronics	1 Malfunction
52 - Passenger door electronics	✓
62 - Left rear door electronics	✓
72 - Right rear door electronics	✓
03 - Brake electronics	✓
44 - Steering assistance	✓
15 - Airbag	✓
25 - Immobilizer	✓
16 - Steering wheel electronics	✓
36 - Seat adjustment - driver side	✓

Illustration 3-3 “Checking DTC memory – complete system” for Gateway installation list

The function can be cancelled with the “Back” button, whereupon all DTC entries identified up to that point are displayed.

After reading out the DTC memory, more detailed descriptions of the individual malfunctions can be viewed using the “Next” button.

The following functions are available as additional compiling services:

- Erasing DTC memory – complete system (only on vehicles with Gateway control module)
- Switching transport mode on (only on vehicles with CAN control module)
- Switching transport mode off (only on vehicles with CAN control module)

In this case, they only apply to the control modules listed in the Gateway device list. The functions are explained in the following chapter.

### 3.1.2 Compiling services

When this function is selected, the tester checks whether a Gateway control module is available. The correct diagnostic cable must be connected in order to do this. An LT diagnostic cable (required for LT2 On Board Diagnostic (OBD)) is rejected with an error message.

Depending on the presence of a Gateway control module, the tester makes the following functions available:

- Checking DTC memory – complete system
- Erasing DTC memory – complete system (only on vehicles with Gateway control module)
- Switching transport mode on (only on vehicles with CAN control module)
- Switching transport mode off (only on vehicles with CAN control module)



### 3.1.2.1 Checking DTC memory – complete system

Unlike the function with the same name in the Gateway device list (see section 3.1.1), this function can be used for all vehicles including those that communicate via the K-line. It checks all vehicle systems in regard to availability and displays their malfunction status.

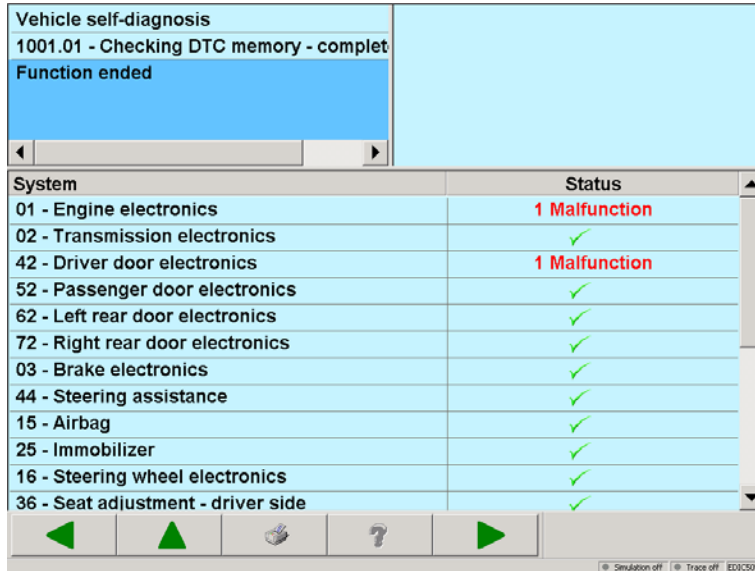


Illustration 3-4 "Checking DTC memory – complete system" screen

### 3.1.2.2 Erasing DTC memory – complete system (CAN diagnosis)

With a CAN Gateway control module, all vehicle systems entered in the "Select vehicle system" screen are deleted one after another using the "Erasing DTC memory – complete system" function. To a large extent, it corresponds to the diagnostic function "04.10 – Erasing DTC memory" (see section 3.2.4.3). Previous checking of the DTC memory is not required.



**Note**

This function is not available for LT2 and LT3 (Crafter) On Board Diagnostic (OBD) operating modes.

### 3.1.2.3 Switching transport mode on or off (CAN diagnosis)

Switching transport mode on: This function serves to deactivate a vehicle to minimize energy consumption. In this condition, vehicles are stored or transported over long distances, for example, overseas.

Switching transport mode off: This function serves to reactivate the vehicle.



**Note**

This function is not available for LT2 and LT3 (Crafter) On Board Diagnostic (OBD) operating modes.



### 3.1.3 Vehicle system “01 – Engine electronics”

These and the other secure and optionally installed vehicle systems provide a predetermined selection of diagnostic functions. The most important of them are described in section 3.2.

### 3.1.4 Vehicle system “31 – Engine electronics network”

When a network control module is activated directly (e.g. via selection “01 – Engine electronics”), a message appears:

***The selected vehicle system works in conjunction with other vehicle systems.***

***Should the work be continued with the individual vehicle systems?***

***The diagnostic scope is restricted with the individual vehicle systems.***

If an engine control module is selected individually rather than via the network, a star symbol is shown after the system name in the right information window to identify a network.

After selecting function “31 – Engine electronics network”, the control module version data is automatically transmitted and displayed in a screen in the work area. The function selection is entered with the “Next” button.

The diagnostic function “003 – Identification” lists all network control modules in the work window.

Diagnostic function “004.01 – Checking DTC memory” (see section 3.2.4.1) picks up errors from all control modules and lists them in the sequence of the control modules read. Each diagnostic function starts with the first control module detected when accessing. Only the supported functions of the selected network are displayed.

With diagnostic functions “005 – Output diagnostic test mode (DTM)” (see section 3.2.5), “006 – Basic setting”, “011 – Measured values” (see section 3.2.8) and “012 – Adaptation” (see section 3.2.8), all detected control modules are displayed in a list in the right information window (see Illustration 3-5 Selection in right information window). Switching from control module to control module can be done in this list by selecting the appropriate lines. The selected control module is marked with the selector bar.

The diagnostic function “007 – Coding control module” automatically codes all control modules in the network and lists them according to code in the work window with new data – unlike with individual control modules in the right information window.



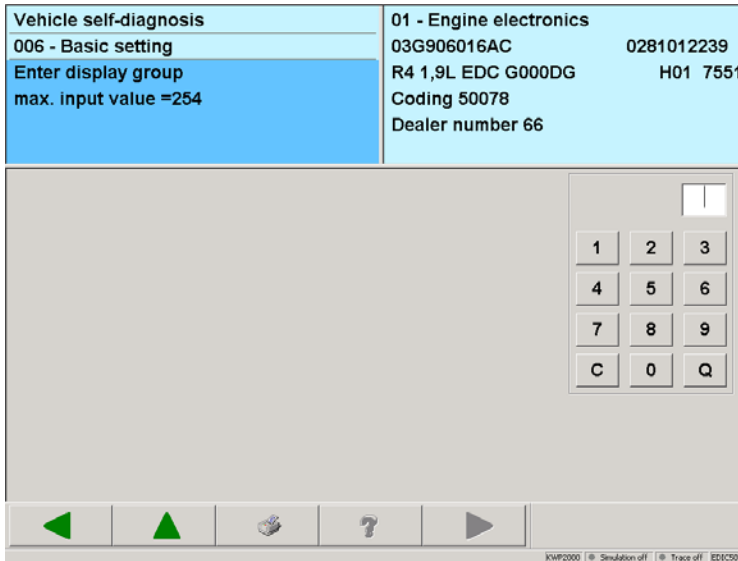


Illustration 3-5 Selection in right information window

### 3.2 Select diagnostic function

The overview of diagnostic functions (see Illustration 3-7 Select diagnostic function (example))

Is shown if a vehicle system was selected in the previous screen and communication via the diagnostic bus was successful.

In the screen, a selection of diagnostic functions (applications) compatible with the vehicle system is shown in the work window and the control module identification read out from the vehicle system is displayed in the right information window.

#### Example:

Vehicle system	01 - Engine electronics	*** In network, otherwise empty
Software part number	03G906016AC      0281012239	Hardware part number
System ID	R4 1,9L EDC G000DG      H01 7551	Software version
Coding	Coding 50078	Hardware version
Operating number	Dealer number 66	

Illustration 3-6 Vehicle system identification information in On Board Diagnostic (OBD) operating mode (right information window)



### Control module network with sub-systems

Several vehicle systems can also work together in a network. These systems can be situated within a housing or as separate units. They are divided into a main system and sub-systems (for example, the access and start authorization and immobilizer form a network).

Main systems – even when selecting a sub-system – are always displayed in the right information window during vehicle OBD. The sub-systems are displayed in their own screen that is shown before the diagnostic function selection.

The tester sends all diagnostic functions to the main system. It forwards them to the desired sub-system, if necessary, and collects results from there. The “Coding Sub-bus systems” (section 3.2.7.2) with which all systems can be selected individually is an exception to this.

For additional details on the engine network, see section 3.1.4.

### Diagnostic bus faulty

If a **Diagnostic bus faulty** error message is received instead of the diagnostic function, it is probably because a diagnostic cable is not connected, the ignition is not switched on or the vehicle battery voltage is too low. Correct the cause and repeat the function.

### End communication

Communication with the vehicle system is maintained until either diagnostic function “022 – End output” is selected in the “Select diagnostic function” screen, the “Back” button is used to return to the “Select vehicle system” screen or vehicle OBD is ended.

Vehicle self-diagnosis	01 - Engine electronics	
Supported functions	03G906016AC	0281012239
Select diagnostic function	R4 1,9L EDC G000DG	H01 7551
	Coding 50078	
	Dealer number 66	
<b>001 - Identification (Service 1A)</b> _____ Section 3.2.3		
004 - DTC memory content _____ Section 3.2.4		
005 - Output Diagnostic Test <b>Mode (DTM)</b> _____ Section 3.2.5		
006 - Basic setting _____		
007 - Coding (Service 1A) _____ Section 3.2.7		
011 - Measured values _____ Section 3.2.8		
012 - Adaptation _____ Section 3.2.9		
015 - Access authorization _____ Section 3.2.10		
017 - Safety _____ Section 3.2.11		
020 - Special function _____		
022 - End output _____ Section 3.2.6		
Display all diagnostic functions _____ Section 3.2.2		

Illustration 3-7 Select diagnostic function (example)



#### Note

Selected examples of diagnostic functions are described in additional text.



### 3.2.1 Diagnostic functions

For KWP2000 via K-line and CAN, only functions that the identified vehicle system recognizes are offered. With KW1281, all diagnostic functions are generally shown unfiltered.

If a function that does not occur in the respective vehicle system is selected, the tester responds in the left information window with the message:

***Function unknown or cannot be executed at this time.***

### 3.2.2 Show all diagnostic functions

If the diagnostic functions are not displayed correctly with vehicle systems under KWP2000, this function can show all occurring diagnostic functions in the selection list. In this way, a malfunction diagnosis is possible even if not all of the functions shown are recognized by the respective vehicle system.

### 3.2.3 Identification services

Depending on the selected vehicle system and diagnostic operating mode, the tester offers different scopes of functions and descriptions for identification services.

#### 001 - Identification (Service 1A)

This identification service is provided for KW1281 and KWP2000 control modules that do not support service 22 yet.

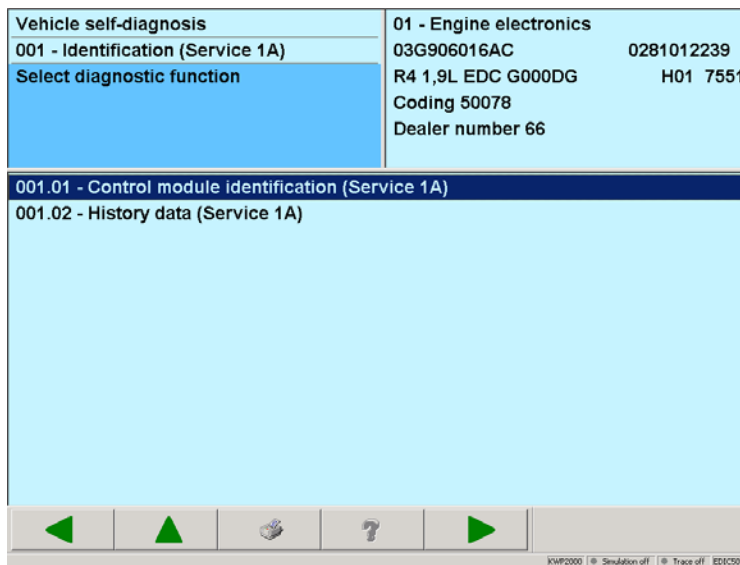


Illustration 3-8 "Identification" screen

When entry "001.01 – Control module identification (service 1A)" is selected, a list of possible identifications that can be selected appears in the work window. The following selections are available:



- **Flash status:**  
The status of the flash memory is read out from the control module.
- **Software version:**  
The software version of each software module is read out. It is not necessarily identical to the software version of the entire control module as it is shown in the right information window.
- **Hardware part number:**  
The original part number of a programmable control module is read out.
- **Advanced identification:**  
Additional data for control module identification are identified, e.g.: control module production date, manufacturer number, etc.
- **VIN:**  
The VIN is established from the control module identification.
- **Engine or serial number**
- **Certification number**

When the entry "001.02 – History data (service 1A)" is selected, the history data are displayed in the work window.

If a vehicle system does not support a selected identification service, a corresponding note appears in the lower area of the left information window.

### **002 - Identification (Service 22)**

If the vehicle system supports the new UDS services (service 22), the identification services are offered under the following menu items:

- Control module identification
- History data
- Identification services

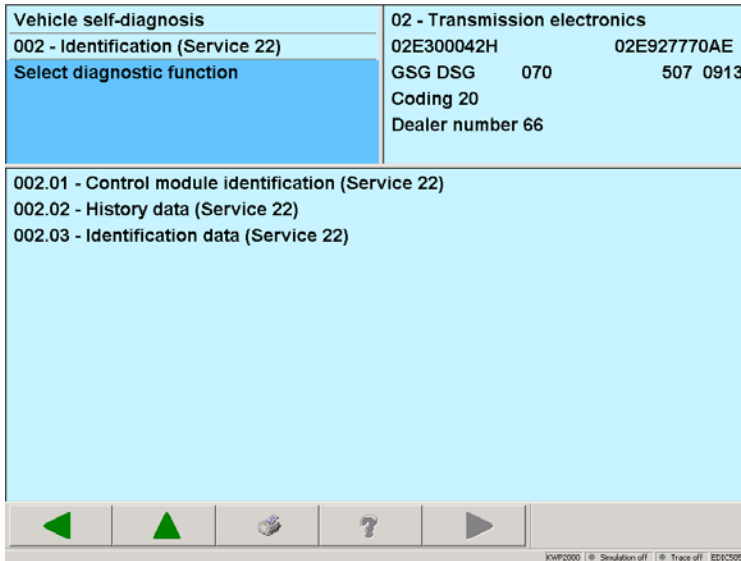


Illustration 3-9 "Identification service 22" screen with a control module that supports service 22

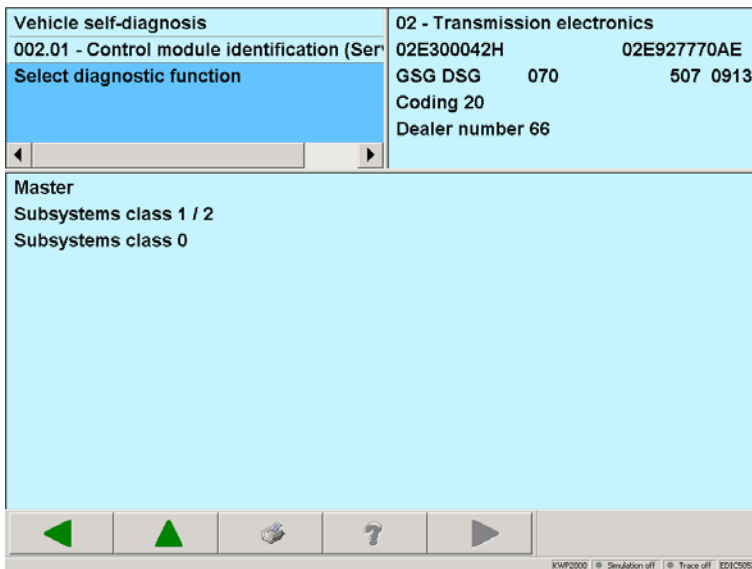


Illustration 3-10 "Control module identification (service 22)" screen

### LT3 (Crafter) identification

- Not supported in North America at this time

### 3.2.4 DTC memory content

In the "Select diagnostic function" screen (see Illustration 3-7 Select diagnostic function (example))

The DTC memory functions are reached by selecting entry "004 – DTC memory content".



The following functions are offered:

- Checking DTC memory
- Checking diagnostic status of all malfunction paths
- Erasing DTC memory

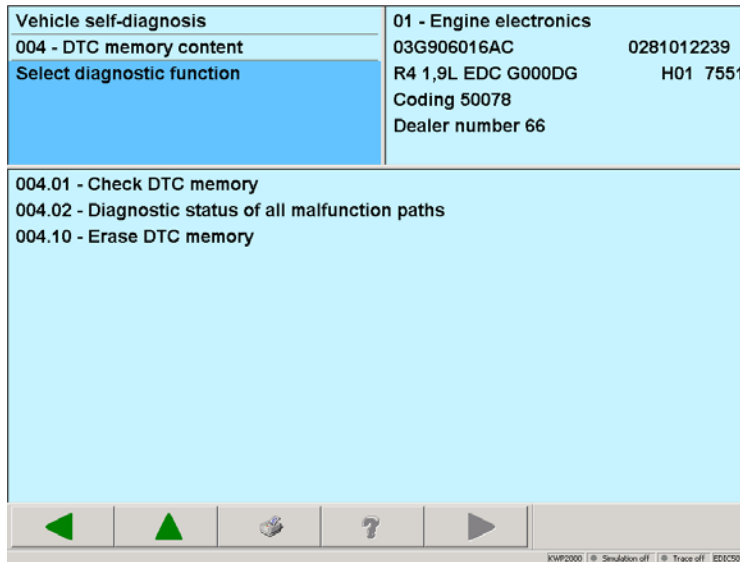


Illustration 3-11 DTC memory content screen

### 3.2.4.1 Checking DTC memory

When the entry “004.01 – Checking DTC memory” is selected in the “DTC memory content” screen (see Illustration 3-11 DTC memory content screen) the tester reads out the content of the DTC memory from the vehicle system shown, prepares this data and displays it in plain text. There is a differentiation made between malfunctions and notes: It identifies the latter with the additional text “Note” to the right of the malfunction code display.

If environmental conditions are also saved with a malfunction, these can also be displayed. Environmental conditions give more information on a malfunction, for example, when it was set (date, time) and certain measurements at the time it was set (Lambda value, etc.).

The scope and structure of the data displayed depends on the construction level of the control module. The following describes the DTC memory content display for OBD operating modes.



### On Board Diagnostic (OBD) operating mode

#### Number of malfunctions

The number of DTC memory entries that - {} -are read out is at the bottom of the left information window.

#### Malfunction code

Example: 19461 P3005 035 001 Note

This is a five-digit malfunction code with a consecutive code number in accordance with the SAE Standard, malfunction type 1, malfunction type 2 and the possible identification "Note". Not all blocks are displayed with each malfunction code.

- **Malfunction code**  
The five-digit malfunction code indicates the malfunction location, e.g. "Preheating Coolant, High Heat Output Relay J360".
- **SAE Number**  
A code number in accordance with the SAE standard may be provided with the malfunction code.
- **Malfunction type 1**  
The three-digit malfunction type 1 identifies the malfunction symptom more closely, e.g. "Short circuit to ground", "Implausible signal", "Lower threshold not met", etc.
- **Malfunction type 2**  
Malfunction type 2 describes the type, how the malfunction occurs, for example "static" or "sporadic". If an entry for malfunction type 2 is present in the screen, the malfunction type is "static".
- **Note**  
This DTC memory entry does not stand for a malfunction, but rather for a note.

With vehicle systems that also supply environmental conditions, this can be shown at the side of the work window using the "Environmental conditions" button.

Vehicle self-diagnosis	01 - Engine electronics	
004.01 - Check DTC memory	03G906016AC	0281012239
Function successfully performed	R4 1,9L EDC G000DG	H01 7551
1 Malfunction recognized	Coding 50078	
	Dealer number 66	

00579	P0243	000
Turbo/Super Charger Wastegate Solenoid (A)		
Open circuit/short circuit to Ground (GND)		

Environmental conditions

KWP2000 | Simulation off | Trace off | EDC5052



Illustration 3-12 "Checking DTC memory" screen, example with "Environmental conditions" button

If this button is pressed without selecting a malfunction, the tester displays any possible saved standard values and/or measurements for the malfunction entry.

If a malfunction is selected first and then the "Environmental conditions" button is pressed, only this selected malfunction and its accompanying environmental conditions is displayed.

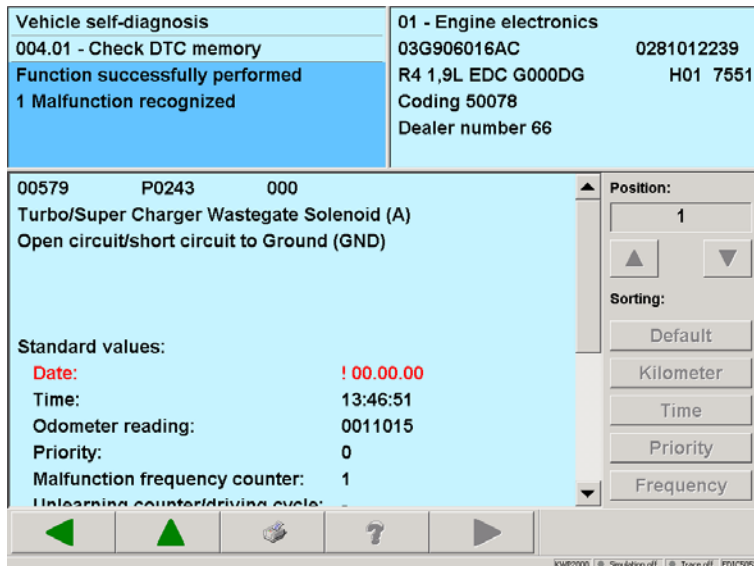


Illustration 3-13 "Checking DTC memory" screen, environmental conditions display

The following environmental conditions can be displayed:

- **Standard values** (if assigned)  
The following environmental conditions are included under this:
  - **Date, time:** Timestamp and date of malfunction detection.
  - **Mileage:** Indicates at which mileage the malfunction was detected.
  - **Priority:** The priority can have a value from 0 to 15:  
0 - 5: Malfunction identification with decreasing priority,  
5 = lowest-order malfunction  
6 - 8: Note, no malfunction.
  - **Malfunction frequency counter:** The counter can have a value from 0 to 254.  
Each time the malfunction occurs (over all drive cycles), the counter increases by 1.
  - **Non-detection counter/driving cycle:** Indicates the current counter status of the non-detection counter. If a malfunction occurs, the non-detection counter is set to a value specific to the control module and malfunction code, e.g. 40. If the malfunction does not occur again during the next driving cycle, it is identified as "sporadic". With each malfunction-free driving cycle, the non-detection counter is decreased by 1.





- **Measured values** (if assigned – advanced environmental conditions)  
Additional or exclusive measured values can also be displayed for the individual malfunction codes. The up to eight environmental conditions can consist of one standard value and up to seven measured values each or up to eight measured values each with no standard value.

The display can be navigated using the buttons in the right area of the work window:

- **Position**  
The first malfunction in the list displayed is in position 1 with its environmental conditions. Navigation between the malfunctions can be carried out using both arrow buttons.
- **Sorting**  
When entering the screen, “Standard” is always set. However, the sorting can be changed to other criteria using the buttons displayed:

**Sorting by Standard:**

If the “Standard” button is pressed, the malfunctions are sorted in increasing order according to

- Malfunction code
- Time
- Mileage
- Priority
- Frequency

**Sorting by time:**

If the “Time” button is pressed, the malfunctions are sorted according to timestamp, beginning with the oldest. Malfunctions without a complete timestamp (date, time) appear at the end of the list in the sequence in which they were read from the DTC memory.

**Sorting by mileage:**

If the “Kilometer” button is pressed, the malfunctions are sorted by the registered mileage, beginning with the lowest. Malfunction codes without mileage appear at the end of the list in the sequence in which they were read from the DTC memory.

**Sorting by static/sporadic:**

If this button is pressed, the malfunctions are sorted with the static ones first and then the sporadic ones. In the static malfunction group, the tester sorts according to the frequency with which the malfunction frequency counter changes, beginning with the lowest value (malfunction barely changes to sporadic, that is, the behavior is all but static). With sporadic malfunctions, the sorting begins with the highest value. Malfunctions without a malfunction frequency counter or with “0” value are added to those with a designation in the frequency counter.

**Sorting by priority:**

If the “Priority” button is pressed, the malfunctions are sorted beginning with the highest priority (by increasing values). Malfunction codes without a priority designation appear at the end of the list in the sequence in which they were read from the DTC memory.

**LT3 (Crafter) On Board Diagnostic (OBD) operating mode**

- Not supported in North America at this time



### 3.2.4.2 Diagnostic status of all malfunction paths

With the “Diagnostic status of all malfunction paths” function, all malfunction paths of the selected vehicle system and their status are displayed.

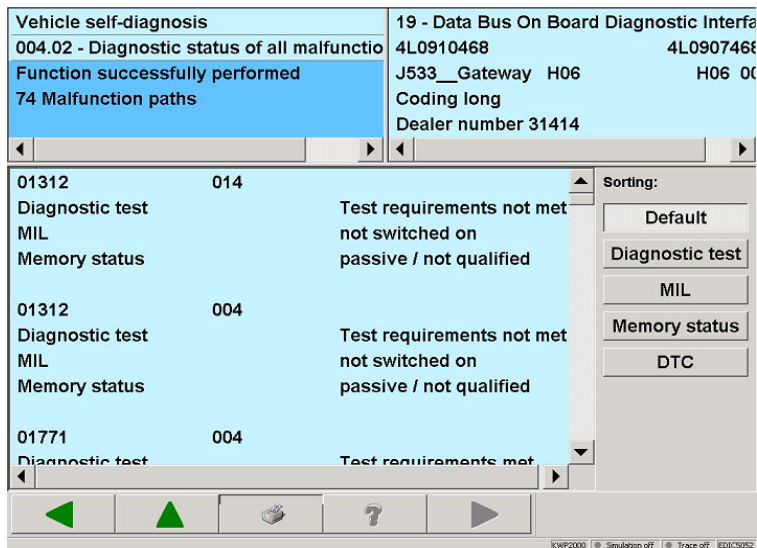


Illustration 3-14 “Diagnostic status of all malfunction paths” screen On Board Diagnostic (OBD)

### 3.2.4.3 Erasing DTC memory

The “004.10 – Erasing DTC memory” application erases the DTC memory for the selected vehicle system. When the function is called up, the tester displays a dialog box with the following note:

***Should the function be performed?***

***Note: The data will be erased.***

Press the “Cancel” button if the function was called up by mistake or the “OK” button to perform the deletion (it cannot be undone). The left information window confirms that the command is being carried out:

***DTC memory erased***



**Note**

The DTC memory can only be deleted if it has already been read out using the “Checking DTC memory” function (see section 3.2.4.1). In this way, the tester prevents important information about malfunctions that have occurred from being lost.

The “Erasing DTC memory” function is automatically followed by the “Checking DTC memory” function. If the malfunction in the vehicle has not been corrected and the malfunction code has once again been recognized and saved, the tester displays the contents of the DTC memory again. The left information window then says:



### ***DTC memory erased***

In addition, the malfunction information is displayed in the work area.

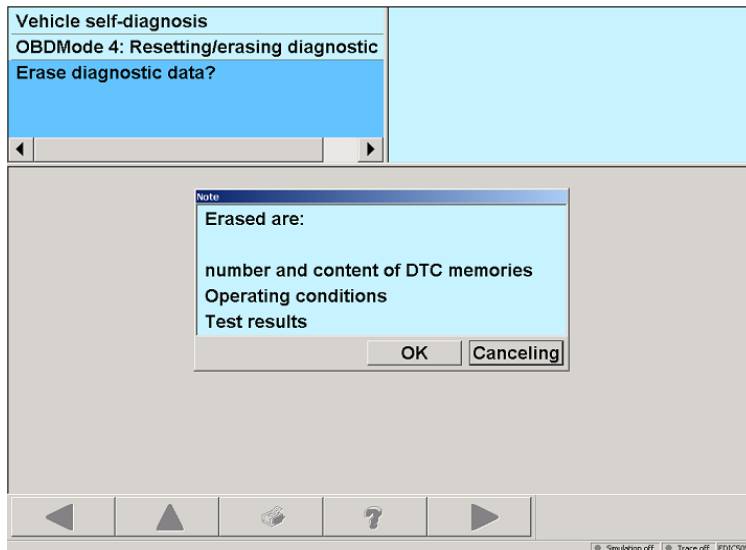


Illustration 3-15 "Erasing DTC memory" screen On Board Diagnostic (OBD)

## **3.2.5 Output diagnostic test mode**

### **Output diagnostic test mode in OBD**

If function "005 – Output diagnostic test mode" is selected in the "Select diagnostic function" screen (see Illustration 3-7 Select diagnostic function (example))

The tester activates the first actuator. The note "Actuator test waiting, switching required" appears in the left information window. After pressing the "Next" button, measured values for the respective actuator are displayed in the lower portion of the display window and "Actuator test in progress, switching permitted" is displayed in the left information window.

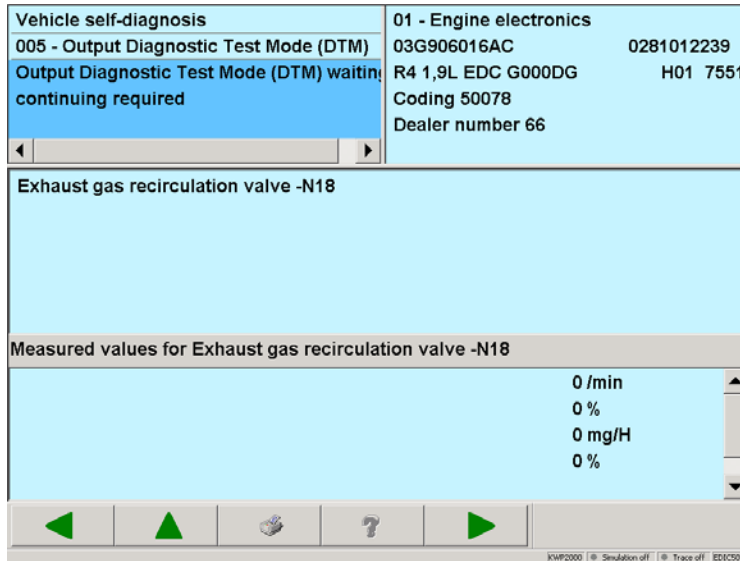


Illustration 3-16 "Output diagnostic test mode"

In some cases, the procedures can be observed visually (for example, indicator lights) or acoustically (for example, relay).

Switching from vehicle On Board Diagnostic (OBD) to Measurements offers the possibility that the activated actuator and the results from that can be checked, for example with the multimeter or oscilloscope.

The next actuator can be called up and displayed using the "Next" button. The output diagnostic test mode is cancelled with the "Back" button.

In certain cases, actions in the vehicle or on the actuators are necessary when output diagnostic test mode is executed. Additional information can be found in the repair manual. With control modules with KW1281 protocol, no measured values are shown for the actuators.



**Note for VAS 5051/5051B**

Measured values for this diagnostic function can also be displayed in the "Measurements" operating mode screens.

**Output diagnostic test mode for LT3 (Crafter) vehicle systems**

- Not supported in North America at this time



### 3.2.6 Basic setting

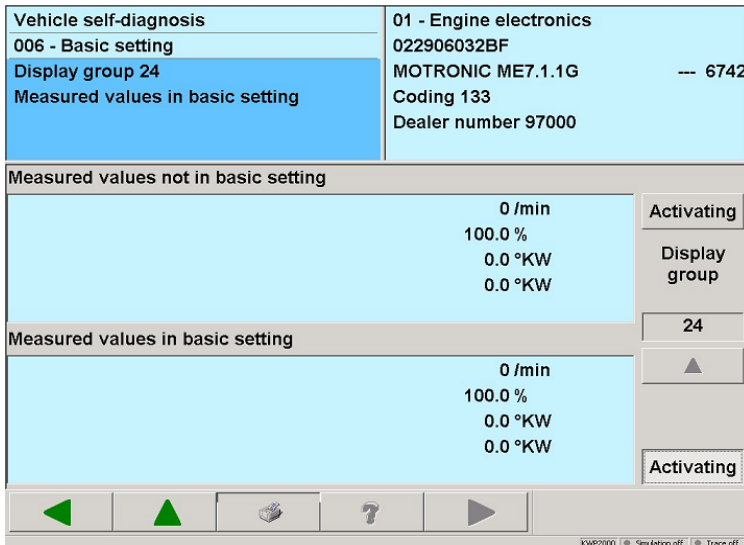


Illustration 3-17 "Basic setting" screen for KWP2000 control modules

After selecting the menu item "006 – Basic setting", enter the desired display group. Confirm the entry with the "Q" button on the screen key pad. In the "Basic setting" screen, measured values in basic setting and measured values not in basic setting can be displayed in the respective screen areas using the "Activate" button.

With KW1231 control modules, the display group can be switched using the "Arrow up or down" buttons (Illustration 3-18 "Basic setting" screen for KW1281 control modules

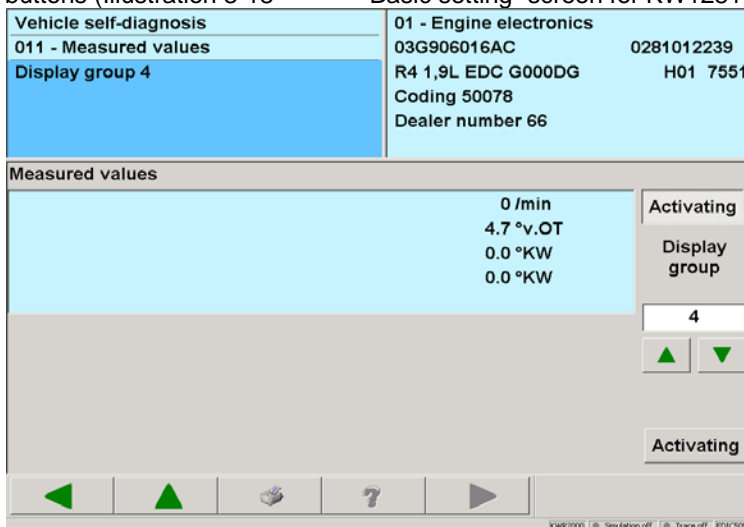


Illustration 3-18 "Basic setting" screen for KW1281 control modules



### 3.2.7 Code

#### 3.2.7.1 Short code

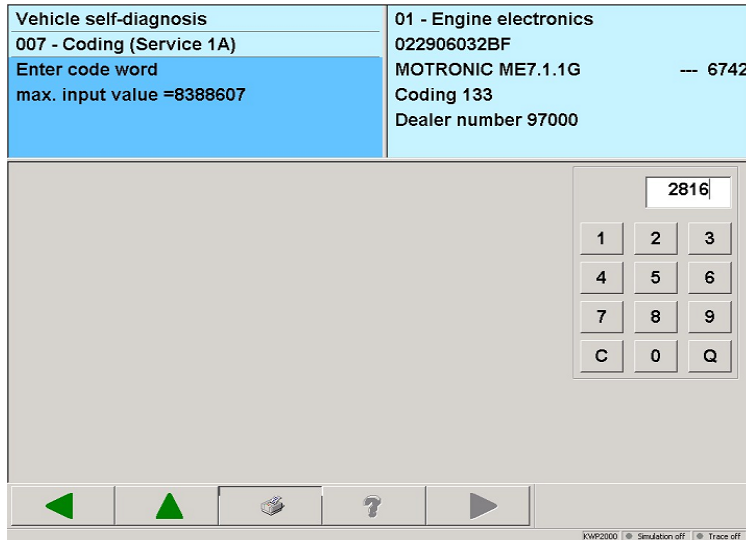


Illustration 3-19 "Enter short code" screen

After establishing the connection to a vehicle system, the current code is shown in the right information window. To change the code, select the entry "Code" in the "Select diagnostic function" screen (see Illustration 3-7 Select diagnostic function (example))

Then, enter the new code value using the screen keypad and accept with the "Q" button (see Illustration 3-19 "Enter short code" screen). The new code value is displayed in the right information window and the previous code is behind it in parentheses (see Illustration 3-20 "Enter short code" screen)

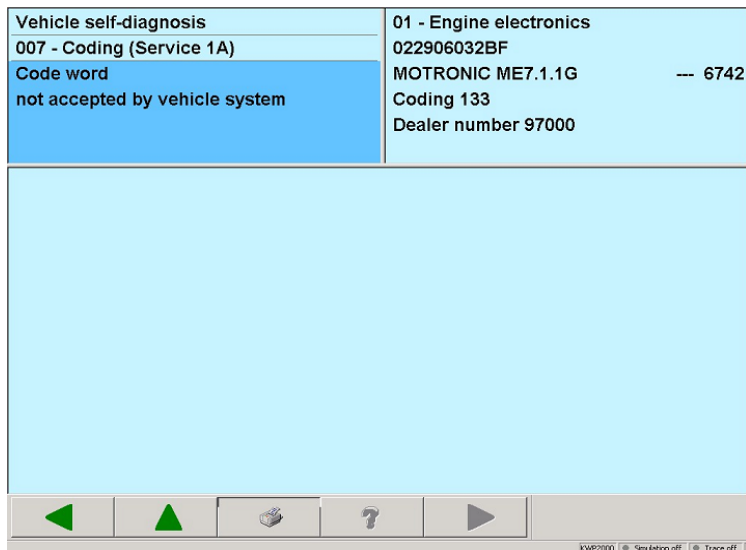


Illustration 3-20 "Enter short code" screen



### 3.2.7.2 Sub-bus system code

If a sub-bus is connected with the vehicle system to additional vehicle systems, the identification data for control modules connected to the sub-bus system are displayed (for example: access and start authorization, immobilizer, etc.).

When an identified control module is selected, the “Next” button can be used to go to the actual code. After coding, the “Code” screen appears again. Additional systems can then be selected there for coding as needed.

### 3.2.7.3 Read/write long code

If the tester recognizes during control module identification that there is a control module with a long code, then “Long code” is displayed in the right information window instead of the code display. The “Read/write long code” diagnostic function appears at the end of the selection list in the “Select diagnostic function” screen only in this case. (Illustration 3-7 Select diagnostic function (example))

The “Read/write long code” function serves to code control modules in addition to the “007 – Code control module” function. The long code can contain a maximum of 255 Bits.

#### General information on control module long coding

Directly enter the code value to be changed here. The code is shown line-by-line per byte. The display can switched back and forth between hexadecimal and binary.

- Editing a byte:  
Select the corresponding byte and change it using the superimposed virtual keypad.
- Adding a byte:  
Marking the blank line under the empty byte and add an additional byte using the virtual keypad. Bytes cannot be skipped.
- Deleting a byte:  
Select the corresponding line and press the “Remove byte” button.

When the “Next” button is pressed, all changes are accepted.



### Long code Gateway

The code for a Gateway control module is different from that of another control module.

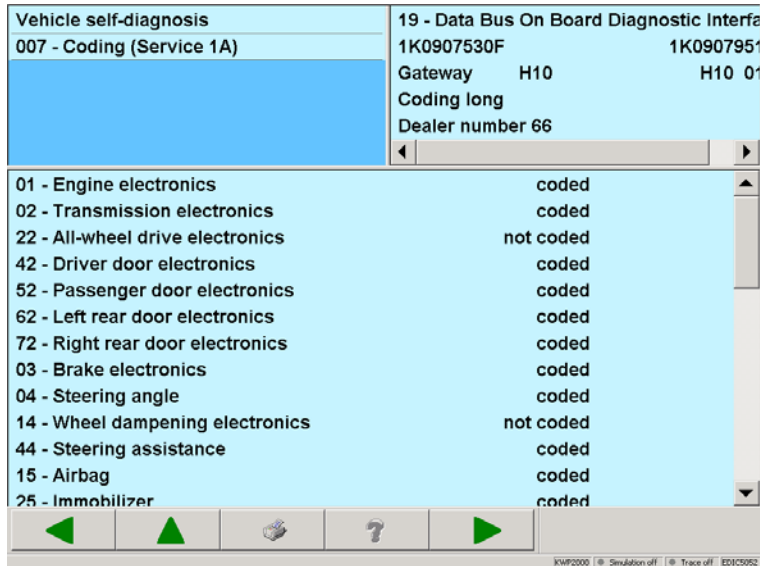


Illustration 3-21 "Read/write long code" screen for a Gateway control module

All diagnostic-capable control modules existing in a vehicle are registered (coded) in a Gateway (can be selected via vehicle system "19 – Databus diagnostic interface"). For each vehicle system installed, a bit is placed in the respective code value of the Gateway control module. The lowest-order bit corresponds to the control module coding (see also section 3.1.1).

To code the systems installed, the tester displays the list present in the Gateway of possible control modules and their current coding. Proceed as follows:

1. Select one after another the systems whose setup should be changed. The entry is changed from "not coded" to "coded" and vice versa.
2. The accept the new code, press the "Next" button.
3. Depending on the type of Gateway control module, separate code tables for entering the vehicle equipment versions can now be displayed using the "Next" button. The versions are coded using plain text screens:
  - Brand (VW, Audi, Seat, etc.)
  - Derivative (hatchback, wagon, etc.)
  - Right/left hand drive
  - Four-door (< 4 doors, >= 4 doors)

Then a safety inquiry appears to confirm the code. The code is now written into the Gateway. The message "Coding performed in vehicle system" is shown in the left information window.

#### 3.2.7.4 Coding LT3 (Crafter)

- Not supported in North America at this time





### 3.2.8 Measured values

If the entry "011 – Measured values" is selected in the "Select diagnostic function" screen (see Illustration 3-7 Select diagnostic function (example)

a measured value block can be read out of the vehicle system and displayed in cycles. To do this, the desired display group ("Display group number" in repair manual) is entered and the appropriate measured values are obtained).

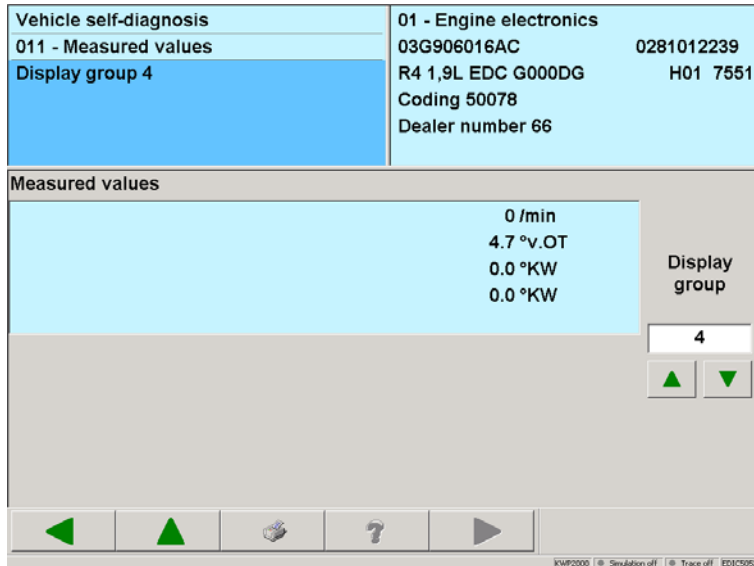


Illustration 3-22 "Measured values" screen

By default, display groups from 1 and up with measured values #1 through #4 (display fields 1 through 4, if present) including their physical unit are displayed. The number of display groups can be changed using the "Arrow up" or "Arrow down" buttons.



### Display with KW1281

With KW1281, besides the measured value block, the basic setting can also be displayed in the screen (see Illustration 3-23 "Read measured value block" screen with KW1281

Select the "Basic setting" button to do so.

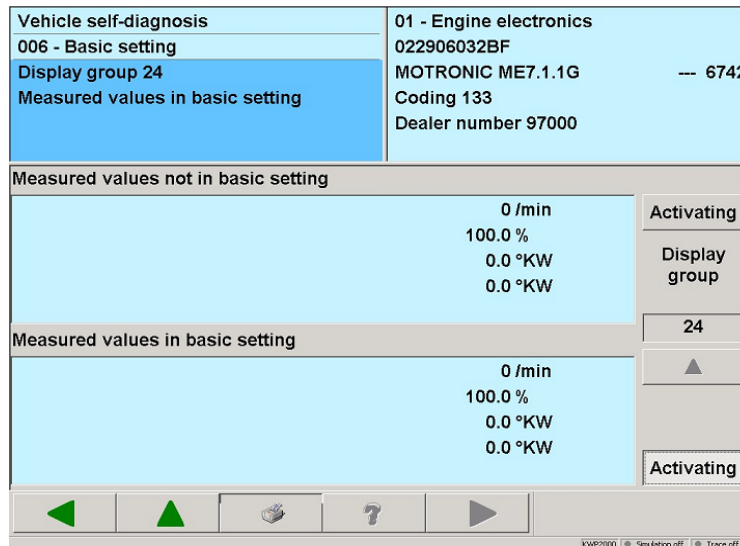


Illustration 3-23 "Read measured value block" screen with KW1281



#### Note

Measured values for this diagnostic function can also be displayed in the "Measurements" operating mode screens.

### Measured values in LT3 (Crafter) On Board Diagnostic (OBD)

- Not supported in North America at this time

### 3.2.9 Adaptation

The diagnostic function "012 – Adaptation" serves to read, test and save vehicle system adjustment values (adaptation values). An example of this is the exact adjustment of the fuel gauge reserve display, which is described in greater detail in the repair manual.



### **On Board Diagnostic (OBD) operating mode**

First, select the channel number on the superimposed number keypad. The tester reads the current adaptation value and displays it. Whether or not measured values are shown in the work window depends on the vehicle system and selected channel number.

Adaptation values can be changed using a virtual keypad (accesses using “Keypad” button) or slide control. When the slider is moved all the way to the right, the set values range doubles, e.g. from 8 to 16, etc. Adjustments made can be tested for their effect on the vehicle without using the “Save” button.

When the correct adaptation value is found, confirm it with the “Save” button. The test first shows the old and then the new adaptation value; the new value is only saved in the vehicle system when the “Accept” button has been pressed.

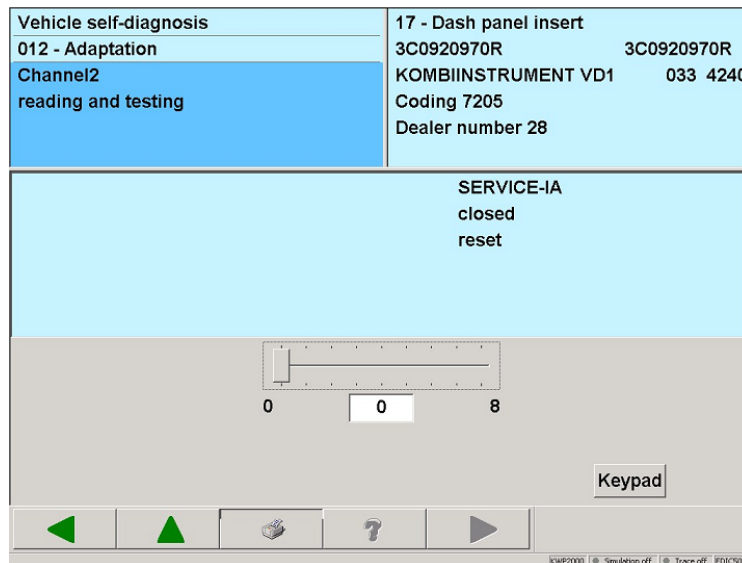


Illustration 3-24 "Adaptation" screen

### **Erasing programmed values**

By entering channel number “0” in the selection, all programmed values saved in the vehicle system can be deleted. The tester reacts with the following message in the left information field:

***Channel 0  
Erase programmed values?***

Press the “Next” button to erase the saved values or the “Back” button to cancel the function and return to the “Select diagnostic function” screen Illustration 3-7 Select diagnostic function (example)



If the values are erased, the tester confirms this in the left information window.

### **LT3 (Crafter) On Board Diagnostic (OBD) operating mode**

- Not supported in North America at this time

#### **3.2.10 Access authorization**

For KW1281 control modules, a Security Access (automatically) is performed when the menu item "015 – Access authorization" is selected.

The following functions available under menu item "015 – Access authorization":

- Coding2
- Security Access (automatic)

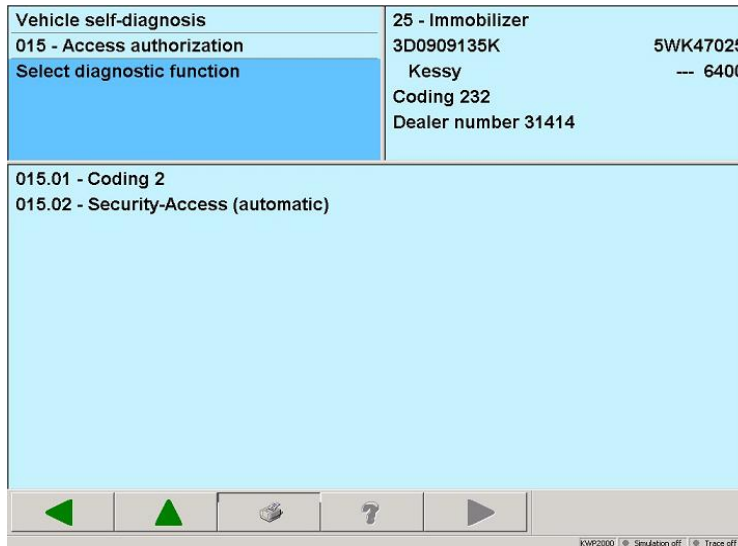


Illustration- 3-45 "Access authorization" screen



### 3.2.11 Safety

#### 3.2.11.1 Challenge read out immobilizer

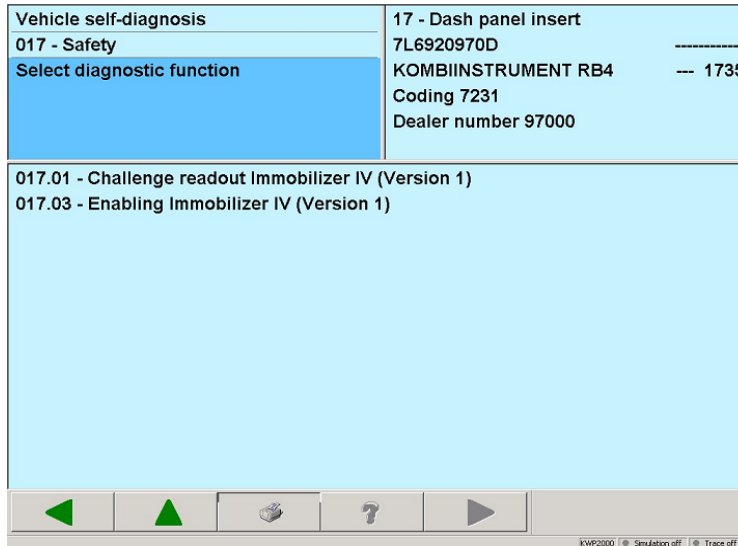


Illustration- 3-25 "Challenge read out immobilizer" screen

This function affects vehicle systems such as:

- 05 – Access and start authorization
- 25 - Immobilizer
- 17 – Instrument cluster

If entry "17 – Safety" is selected in the "Select diagnostic functions" screen (see Illustration 3-7 Select diagnostic function (example))

and "017.01 – Challenge read out immobilizer IV (version1)" is selected in the subsequent screen, the tester reads data out of the control modules and displays it in the work window in hexadecimal (see Illustration- 3-25 "Challenge read out immobilizer" screen)

This data is required to obtain the immobilizer data for activating the immobilizer IV (see section 3.2.11.2).

#### 3.2.11.2 Immobilizer activation

This function affects vehicle systems such as:

- 05 – Access and start authorization
- 25 - Immobilizer
- 17 – Instrument cluster

If the entry "017 – Safety" is selected in the "Select diagnostic function" screen (see Illustration 3-7 Select diagnostic function (example))



and "017.03 Activating immobilizer IV (version1) is selected in the subsequent screen, the necessary data can be entered using the superimposed virtual keypad:

- VIN: 17-digit, alphanumeric
- Immobilizer serial number: 14-digit, alphanumeric
- Immobilizer data: 28-byte hexadecimal

Select "Entry encrypted by FAZIT" if the immobilizer data should be encrypted. The immobilizer data can be obtained from the FAZIT database. The result of the activation is displayed in the left information window with the message:

**Activation necessary**

### 3.2.11.3 Component protection

An online connection is necessary for this function. If the "Component protection" entry is selected in the "Select diagnostic function" screen (see Illustration 3-7 Select diagnostic function (example)

, the individual components of the connected vehicle can be activated. For anti-theft protection reasons, a special activation for that particular vehicle may be required for individual components. The required data are accesses from an external database, entered in the screen and transferred to the control module.

Enter the components for activation:

- Secret number (seven-digit figure when encrypting, otherwise up to 5 digits)
- Identification data (8-digit hexadecimal)
- Entry encrypted by FAZIT (indication of whether data is entered encrypted or unencrypted)



**Note**

Always enter the encryption identifier first because the entry length of the secret number depends on it.

### 3.2.12 Data transfer/update programming

#### Update programming in On Board Diagnostic (OBD) operating mode

If the "Update programming" entry is selected in the "Select diagnostic function" screen (in Illustration 3-7 Select diagnostic function (example)

not shown), the program version of the vehicle system can be updated with the tester.

#### **Select diagnostic function**

The selection for this diagnostic function only appears when a programming update can be performed with this vehicle system and a more current version of the program is available either in the tester or on the CD inserted before the vehicle system was selected. If a programming update has been performed successfully for a vehicle system, the diagnostic function is no longer offered for it.



**Note**

Note the information on update programming accompanying the flash CD.

The diagnostic function can be started by selecting "Update programming". The necessary prerequisites are not fulfilled in the vehicle system, a warning message appears. Establish the prerequisites displayed and start update programming again.

The procedure is navigated by dialog through several screens:

- A note text with the new version number is superimposed. Follow its instructions.
- The new update program is loaded into the vehicle system. This procedure last several minutes. The progress is displayed continuously using a bar; after completion, the programming log information appears on the screen.
- Switch the ignition off and on.
- The DTC memory for all vehicle systems can also optionally be deleted using a request.

If a malfunction occurs during this, the vehicle system is no longer ready for use. The malfunction is displayed, in the diagnostic function selection (Illustration 3-7 Select diagnostic function (example)

. Only the "Update programming" function is still visible. Repeat the programming update.

### **OBD log**

During the procedure, the results can be entered in the OBD log. The log provides, for example, the version of the vehicle system before and after the programming update and the programming status.

### **Help**

After selecting the diagnostic function, additional assistance is provided through the "Help" function.

### **Update programming in the LT3 (Crafter) On Board Diagnostic (OBD) operating mode**

- Not supported in North America at this time

### **3.2.13 Special functions**

Various special functions are collected under this menu item. Depending on the vehicle system, the following functions are displayed:

- Readiness code
- Selective output diagnostic test mode
- Assign VIN
- Bleed ABS
- Channel 50 PIN adaptation
- PIN activation
- Channel 50 hidden adaptation
- Hidden key adaptation



### 3.2.14 End output

If the user would like to end On Board Diagnostic (OBD) for the selected vehicle system, select function “022 – End output” in the “Select diagnostic function” screen (see Illustration 3-7 Select diagnostic function (example))

or press the “Back” button there until the “Select vehicle system” screen is reached. The user can then end “Vehicle On Board Diagnostic (OBD)” operating mode and return to the start screen via the Go to menu and selecting “End”.

### 3.2.15 LT3 (Crafter) control module reset

- Not supported in North America at this time

## 3.3 OBD

If the “OBD” entry is selected in the start screen, the following screen appears. In this screen, the user can select between OBD operating modes 1 through 9.

In the OBD screens, all vehicle systems that support the OBD standard are shown simultaneously in the right information window. The vehicle systems and associated results are displayed in different colors for easier differentiation.

If a given diagnostic mode contains several functions, several lines can be selected in the list displayed. If the “Next” button is pressed, all selected functions are implemented.

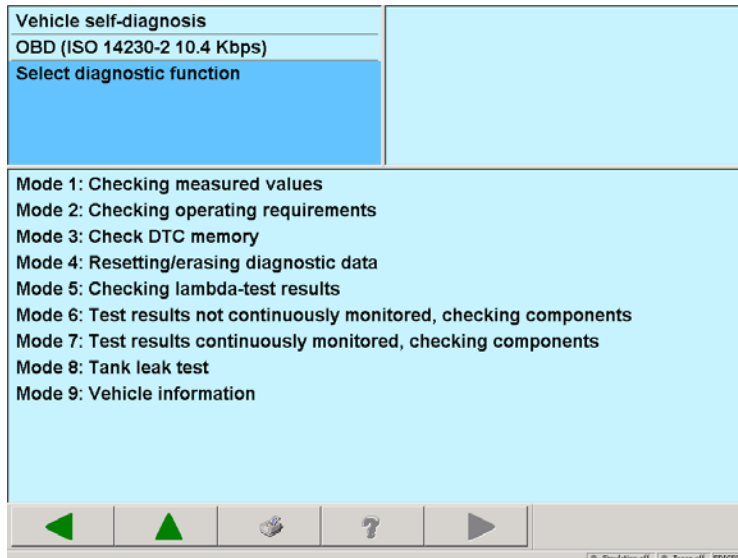


Illustration 3-26 OBD, “Select diagnostic function” screen





**Caution!**

Diagnostic testers VAS 505x were designed for vehicles in the Volkswagen group. Vehicle damage can result if vehicles from other manufacturers are connected directly to the tester.

In order to test non-group vehicles using the general applicable OBD functions, the OBD adapter cable VAS 5052/16 must be connected between the diagnostic cable and vehicle diagnostic connection (with several wiring connections).

- **Diagnostic mode 1: Retrieve measured values**  
The user has the ability to retrieve emissions-related information such as analog and binary measured values and system status information.
- **Diagnostic mode 2: Retrieve operating conditions**  
The first time a sub-system malfunction occurs, in addition to recording the malfunction, the current available operating conditions must be saved in the vehicle system. The user can read out these operating conditions and come to a conclusion about further actions in a repair based on it.
- **Diagnostic mode 3: Checking DTC memory**  
The user can read out and display the saved emissions-related malfunction codes for all vehicle systems.
- **Diagnostic mode 4: Reset/erase diagnostic data**  
The emissions-related information in the vehicle system can be erased or reset.

Erasing refers to:

- Erasing the number of malfunction codes
- Erasing the malfunction codes
- Erasing the "Freeze Frame Data" malfunction codes
- Erasing the "Oxygen sensor monitoring values"
- Resetting the monitoring status
- Manufacturer-specific information

It is only possible to erase the data if the DTC memory was already read (Diagnostic mode 3).

- **Diagnostic mode 5: Retrieve Lambda test results**  
The user can have the results of the oxygen sensor monitoring from the vehicle side displayed.
- **Diagnostic mode 6: Retrieve test results of components that are not continuously monitored**  
The test results from components that are not continuously monitored can be displayed.
- **Diagnostic mode 7: Retrieve test results of continuously monitored components**  
The test results from components that are continuously monitored can be displayed.
- **Diagnostic mode 8: Tank leak test**  
The user can display the test results from the tank leak test.
- **Diagnostic mode 9: Vehicle information**  
Data for the connected vehicle can be retrieved and displayed.



**Note**

Measured values for this operating mode can also be displayed in the measurements screens.



**Example for mode 1 screen sequence: Retrieve measured values:**

In the screen shown below, the user can select the measured values to be read out of the vehicle system.

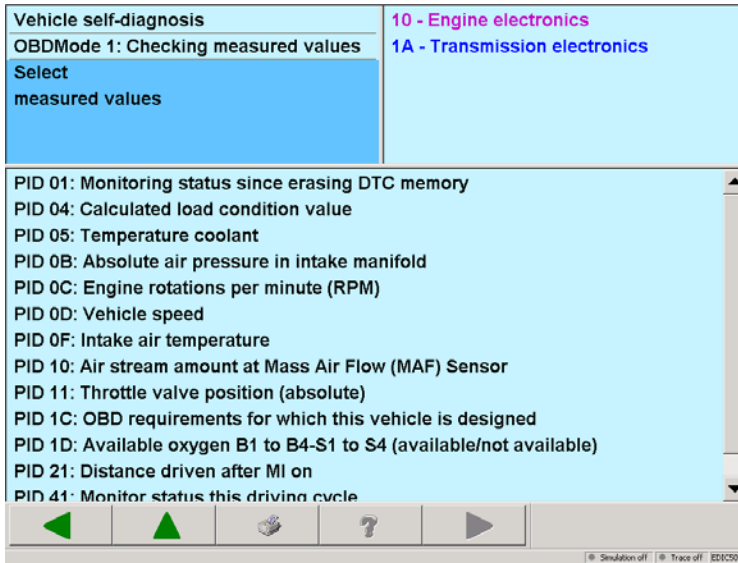


Illustration 3-27 OBD, "Select measured values" screen

The following screen (see Illustration 3-28 OBD, "Display measured values" screen) shows the results in which the allocation of measurement results/vehicle systems is done using colored text.

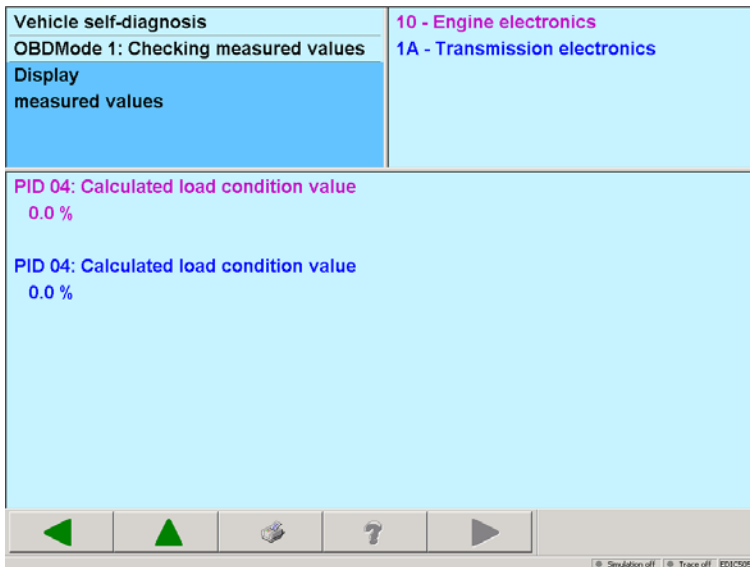


Illustration 3-28 OBD, "Display measured values" screen



## 4 Attachment

### List of diagnostic functions for all protocols

Designation from Base CD 10	Designation through Base CD 8
<b>001 Identification (service 1A)</b>	
001.01 Control module identification (service 1A)	<b>Identification services</b>
001.02 Service life data (service 1A)	<b>Identification services</b> – service life data
<b>002 Identification (service 22)</b>	<i>not implemented</i>
002.01 Control module identification (service 22) 002.01.01 Master 002.01.02 Sub-system class 1/2 002.01.03 Sub-system class 0	<i>not implemented</i>
002.02 Service life data (service 22)	<i>not implemented</i>
002.03 Identification data (service 22)	<i>not implemented</i>
<b>003 Identification for LT3 (Crafter) and engine network</b>	<i>not implemented</i>
<b>004 DTC memory content</b>	
004.01 Checking DTC memory	<b>02 – Checking DTC memory</b>
004.02 Diagnostic status of all malfunction paths	<i>not implemented</i>
004.03 Diagnostic status of all active malfunctions	<i>not implemented</i>
004.10 Erasing DTC memory	<b>05 – Erasing DTC memory</b>
<b>005 Output diagnostic test mode</b>	<b>03 – Output diagnostic test mode</b>
<b>006 Basic setting</b>	<b>04 – Basic setting</b>
<b>007 Coding (service 1A)</b>	<b>07 – Code control module Sub-bus system code Read/write long code</b>
<b>008 Coding (service 22)</b>	<i>not implemented</i>
<b>009 Coding (for LT3 (Crafter) and KWP 1281)</b>	<b>07 – Code control module</b>



Designation from Base CD 10	Designation through Base CD 8
	<i>Coding for LT3 (Crafter) not implemented</i>
<b>010 Measured values</b> (KWP1281)	
010.01 Read measured value	<b>09 – Read individual measured value</b>
010.02 Read measured value block	<b>08 – Read measured value block</b>
<b>011 Measured values</b> (for other than KWP1281)	<b>08 – Read measured value block</b>
<b>012 Adaptation</b>	<b>10 - Adaptation</b>
<b>013 Programmed values</b>	<i>not implemented</i>
	<b>Long adaptation</b>
<b>015 Access authorization</b>	<b>16 – Access authorization</b>
015.01 Code 2	<b>11 - Code II</b>
015.02 Security Access (automatic)	<b>16 – Access authorization</b>
<b>016 Access authorization for KWP 1281, corresponds to Security Access (automatic)</b>	<b>16 – Access authorization</b>
<b>017 Safety</b>	
017.01 Challenge read out immobilizer IV (Version 1)	<b>Challenge read out immobilizer IV</b>
	<b>Challenge read out immobilizer IV</b>
017.03 Immobilizer IV activation (Version 1)	<b>Immobilizer IV activation</b>
017.04 Immobilizer IV activation (Version 2)	<b>Immobilizer IV activation</b>
017.05 Component protection (Generation 1)	<b>Component protection</b>
017.06 Component protection (Generation 2)	<b>Program GFA component protection Program IKA component protection</b>
<b>018 Data transfer</b>	
018.10 Update programming	<b>Update programming</b>
018.11 Parameterizing	<i>not implemented</i>
not implemented	<b>Read flash EPROM</b>
<b>019 Update programming</b> for LT3 (Crafter), or if 'Update programming' were to be a single entry in 18	<b>Update programming Update programming for LT3 (Crafter) not implemented</b>



Designation from Base CD 10	Designation through Base CD 8
<b>020 Special functions</b>	
020.01 Readiness code	<b>15 – Readiness code</b>
020.02 Selective output diagnostic test mode	<i>not implemented</i>
020.03 Transfer VIN	<i>not implemented</i>
020.04 Bleed ABS	<i>not implemented</i>
020.05 Channel 50 PIN adaptation	<i>not implemented</i>
020.06 PIN activation	<b>Activation (PIN)</b>
020.07 Channel 50 hidden adaptation	<b>Channel 50 (PIN) adaptation</b>
020.08 Hidden key adaptation	<i>not implemented</i>
<b>021 User-defined application</b>	<b>24 – User-defined application</b>
<b>022 End output</b>	<b>06 – End output</b>
<b>024 Reset LT3 (Crafter) control modules</b>	<i>not implemented</i>

**Control module selection**

Designation from Base CD 10	Designation through Base CD 8
<b>1000 Gateway device list</b>	<b>Gateway device list</b>
<b>1001 Collected services</b>	<b>Collected services</b>
1001.01 Checking DTC memory – entire system	Checking DTC memory – entire system
1001.02 Erasing DTC memory – entire system	Erasing DTC memory – entire system
1001.03 Switch transport mode on	Switch transport mode on
1001.04 Switch transport mode off	Switch transport mode off

**Notes:**

The differentiation between “KWP 2000 mode and “KWP 1281 mode” have been omitted because only “KWP 1281 mode” is implemented in the control modules.