On Board Diagnostic (OBD)

On Board Diagnostic (OBD), technical data

Equipment

- Data is transmitted between the control module and the VAS5051 tester or VAG1551 Scan Tool (ST) via operating mode "On Board Diagnostic (OBD)".
- DTC memory is designed for permanent memory and is therefore not dependent on voltage supply.
- Display of stored DTCs occurs after initiation of display mode ⇒ Page 01-12 .
- DTC memory must be erased after malfunction is repaired ⇒ Page 01-12 .

Important:

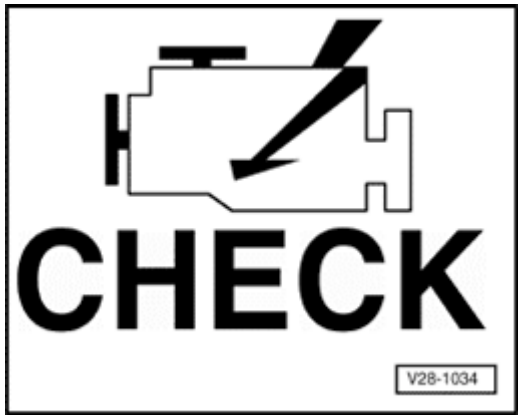
- Readiness code must be re-generated after every time DTC memory is erased ⇒ Page 01-84 .

- If the ECM recognizes malfunctions that lead to a worsening of emissions values, it indicates them by lighting the Malfunction Indicator Lamp (MIL) -K83- in the instrument cluster. Meaning of exhaust MIL ⇒ Page 01-3 .

- "E-Gas"-relevant malfunctions are also indicated by the warning lamp for Electronic Power Control ("EPC warning lamp") in the instrument cluster.

Malfunction Indicator Lamp (MIL), significance

If the ECM recognizes malfunctions that lead to a worsening of emissions values, it indicates them by lighting the exhaust Malfunction Indicator Lamp (MIL).



Installation location of exhaust Malfunction Indicator Lamp (MIL)

The Engine Control Module (ECM) switches on the exhaust Malfunction Indicator Lamp (MIL) after ignition is switched on. Shortly after engine is started, the exhaust MIL will go out. This requires, first of all, that the Engine Control Module (ECM) does not detect a malfunction that worsens the emissions values and, secondly, that activation of the lamp by the Engine Control Module (ECM) is OK.

If malfunctions that worsen emissions are recognized during operation of the engine, the ECM switches on the exhaust MIL in instrument cluster. (These malfunctions are listed in the DTC table). An entry is made in DTC memory at the same time.

The Malfunction Indicator Lamp (MIL) can blink or remain lit continuously. DTC memory should be checked in either case ⇒ Page 01-12 .

Continuously lit:

There is a malfunction that causes increased emissions. Check DTC memory for Motronic ECM and automatic transmission (if installed).

Check DTC memory if there is a driveability problem or a customer complaint, but the exhaust Malfunction Indicator Lamp (MIL) is not lit. There may be DTCs stored that do not cause the exhaust MIL to light up immediately, but only after engine is started again and malfunction is recognized again.

Blinking:

There is a malfunction that causes damage to the catalytic converter in this driving condition (e.g. combustion misfire). In this case, vehicle must only be driven at reduced power!

Note:

Catalytic converter must be checked after malfunction is repaired.

Malfunction Indicator Lamp (MIL), checking

Function test of warning lamp

- Switch ignition on.
  - ♦ Exhaust MIL must light up
- Start engine.
  - ♦ Shortly after engine is started, the Malfunction Indicator Lamp (MIL) will go out if there are no malfunctions stored in DTC memory that relate to the E-gas system

Note:

The switch-on signal for Malfunction Indicator Lamp (MIL) is transfered from the Engine Control Module (ECM) to the instrument cluster via CAN-bus. Check data exchange between Engine Control Module (ECM) and other CAN capable control modules ⇒ *Page 24-178*

Safety precautions

If special testing equipment is required during road test, note the following:

WARNING!

- ***Test equipment must always be secured to the rear seat and operated from there by a second person.***

- ***If test and measuring equipment is operated from the passenger seat, the person seated there could be injured in the event of an accident involving deployment of the passenger-side airbag.***

VAS 5051 tester, connecting and selecting functions

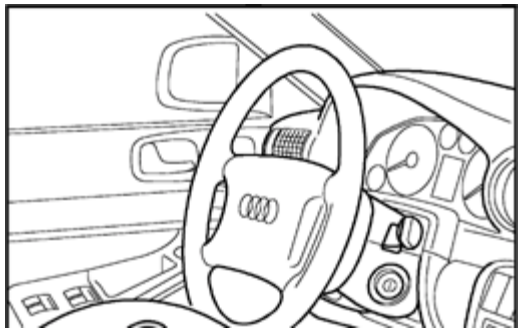
Test requirements:

- Fuses for engine electronics OK

⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations*

- Fuel Pump (FP) relay OK; checking ⇒ Page 24-52 .
- Battery voltage at least 12.7 V
- Ground (GND) connections at engine and transmission OK

Procedure



- Connect VAS5051 tester to vehicle with VAS5051/1 diagnostic wire.

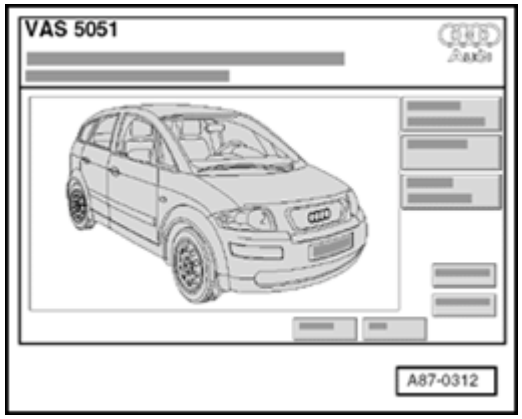
WARNING!

Observe safety precautions ⇒ ***Page 01-6*** ***.***

Note:

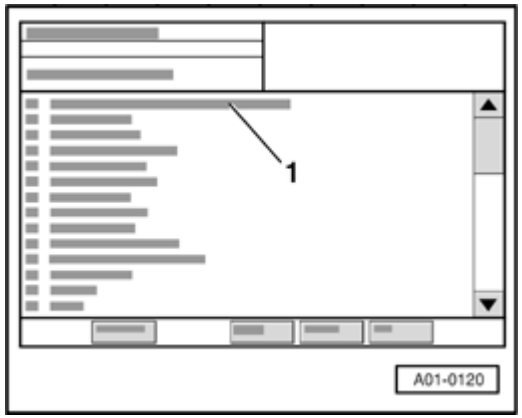
If a malfunction indication is displayed:

⇒ *Operating instructions for the VAS 5051 tester*



➢ Display on VAS5051:

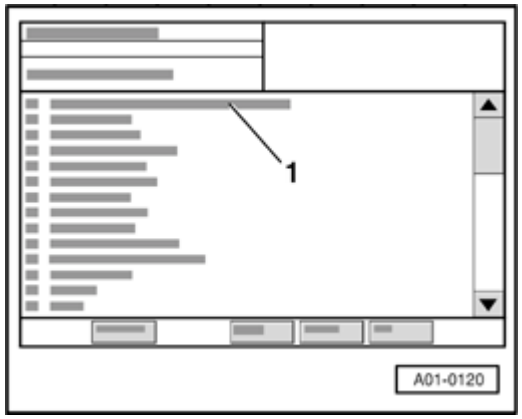
- Press the "Guided fault finding" button.



➢ Display on VAS5051:

Note:

Selecting "00 - Check DTC memory - entire system" in selection -1- initiates the automatic test sequence, i.e. it results in a DTC check on all OBD capable systems in the vehicle.



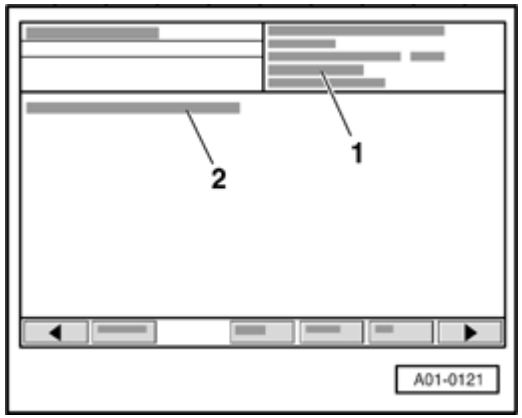
➢ Display on VAS5051:

Depending on desired function ⇒ Table "diagnostic functions", ⇒ Page 01-11 :

- Switch ignition on.

or

- Start engine.
- Press selection -1- of vehicle system "01 - Engine electronics".
- Wait until the next indication appears on display.



➢ Display on VAS5051:

1 - Control module identification of Engine Control Module (ECM) ⇒ Page 01-10

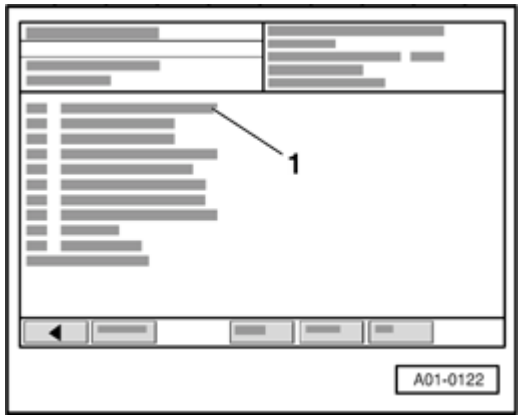
2 - Control module identification of immobilizer ⇒ Page 01-10

Engine Control Module (ECM) identification (example)	
01 - Engine electronics	Vehicle system
4B0906018M	part number; allocation ⇒ *Parts Catalog*
1.8L 1) R4/5VT 2) G 3) 0002 4)	1) Engine displacement 2) Inline engine, 4 cylinders/5-valve turbo 3) ♦ G = cruise control system enabled ♦ no indication = no cruise control system or cruise control system not enabled Data version (software version) of control module 4)
Coding 16501	Control module coding (checking ⇒ Page 01-71)
Workshop code 12345	Workshop identification of VAG1551, with which the last coding was performed

Control module identification, immobilizer (example)	
WAUZZZ8DZA1004321 1) AUZ7Z0X1137197 2)	1) 17 digit VIN (Vehicle Identification Number) 14-digit identification number of immobilizer 2)

01-11

- Click on ▶ - button



Display on VAS5051:

1 - Selection of diagnostic functions:

Diagnostic functions	Ignition on,engine off	Engine running at idle	Vehicle in drive mode	page
02 Check DTC Memory	No	Yes	Yes	⇒ Page 01-12
03 Output Diagnostic Test Mode (DTM)	Yes	No	No	⇒ Page 01-51
04 Basic Setting	Yes	Yes	Yes	⇒ Page 01-66
05 Erase DTC Memory	Yes	Yes	Yes	⇒ Page 01-12
06 End Output	Yes	Yes	Yes	⇒ Page 01-16
07 Code control module	Yes	No	No	⇒ Page 01-71

08	Read measuring value block	Yes	Yes	Yes	⇒ Page 01-74
09	Read Individual Measuring Value	No	No	No	-
10	Adaptation	No	No	No	-
11	Login procedure	No	No	No	-