01-1

On Board Diagnostic (OBD), function

The automatic transmission is controlled electro-hydraulically.

The automatic Transmission Control Module (TMC) -J217- receives information from components that effect the selection of gears. It passes the information on to solenoid valves that control the solenoid valves in the valve body. The solenoid valves convey the fluid pressure generated by the ATF pump to the appropriate clutches and brakes to be engaged.

Transmission Control Module (TMC) -J217- malfunction recognition

The term "On Board Diagnostic (OBD)" applies specifically to the electronic/electric control.

The control module is equipped with a Diagnostic Trouble Code (DTC) memory so in the event of an electronic/electrical component failure or on open circuit, the malfunction can be determined quickly. Malfunctions are recognized by electrical signals and stored in the DTC memory together with an indication of the type of malfunction and malfunction location.

The control module recognizes malfunctions during vehicle operation and stores them in a DTC memory. This information will remain

available even if the system voltage fails.

The control module distinguishes between permanent malfunctions that have occurred and sporadic malfunctions.

01-2

If a malfunction is no longer present after a certain time or a long drive, it will be converted to a sporadic (SP) DTC.

A malfunction will also be converted to sporadic when the DTC memory is not erased after repairs.

Malfunctions which are stored in the memory as sporadic malfunctions, will be displayed as "sporadic DTCs" when checked by the scan tool V.A.G 1551. In such cases "SP" appears on the right of the display. If the printer is switched on, the print-out will show "sporadic DTC" after the identification of the malfunction.

If the sporadic DTC does not occur again after 40 cold engine starts and subsequent transmission warm-up, the malfunction in DTC memory will be automatically erased.

The possibilities offered by On Board Diagnostic can only be used with the Vehicle Diagnostic, Testing and Information System VAS 5051 or the V.A.G 1551 scan tool (mode 1, rapid data transfer).

Available functions of Vehicle Diagnostic, Testing and Information System VAS 5051 or the V.A.G1551 scan tool ⇒ page 01-42 .

01-3

Security functions of the Transmission Control Module (TCM)

When one or more components or sensors fail, the Transmission Control Module (TCM) -J217- activates the appropriate alternate functions or emergency programs. This ensures destruction-free operation of the automatic transmission with some effect on the function and quality of shifting.

When critical malfunctions occur with an active TCM, the current selected gear will be held. "Mechanical emergency running mode with the control module active" is activated by the TCM as soon as the driving situation regarding transmission security and engine security permits it.

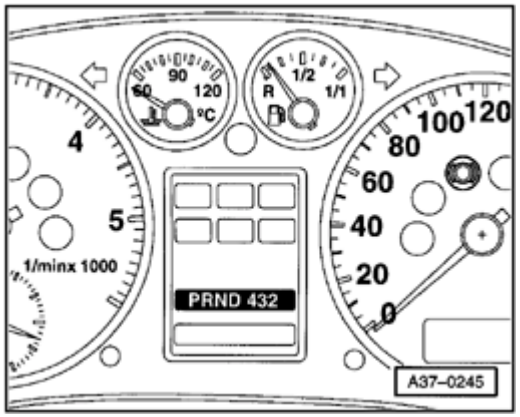
Mechanical backup with active control module

- The transmission shifts out of all forward gears into hydraulic 4th gear. The torque converter clutch is unlocked (not applied). All solenoid valves are de-energized.

- Maximum shift pressure is applied to the power-transmitting elements.

- Reverse gear can be engaged. The shift lock

solenoid is active (in "P" and "N").



- All segments of the transmission range selector lever display light up.

01-4

- The Multi-function Indicator Light (MIL) lights up after 2 driving cycles (Dcy); check DTC memory (⇒ page 01-43 and compare with DTC table ⇒ page 01-45).

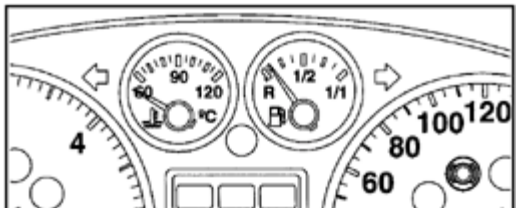
If the TCM -J217- malfunctions (e.g. if the power supply is faulty or the connector becomes disconnected), the transmission will immediately switch to "mechanical back-up mode with inactive control module" and continue to operate.

Mechanical backup with non-active control module

- The transmission shifts out of all forward gears into hydraulic 4th gear. The torque converter clutch is unlocked (not applied). All solenoid valves are de-energized.

- Maximum shift pressure is applied to the power-transmitting elements.

- Reverse gear can be engaged. The shift lock solenoid is active (in "P" and "N").



- All of the segments transmission range selector lever display are dark.
- The MIL lights up when the Engine Control Module (ECM) has recognized a CAN-bus malfunction (missing data exchange between engine and transmission control modules) (after 2 Dcy); check DTC

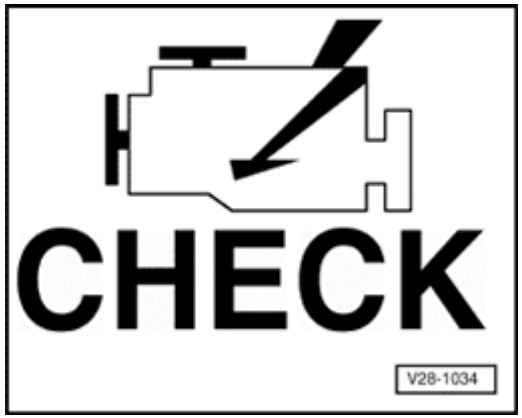
memory of the control module.

- Transmission Control Module (TCM) -J217- does not function at all, i.e. it cannot be checked via On Board Diagnostic (OBD).

01-5

Malfunction Indicator Lamp (MIL) function, checking

If emissions malfunctions are recognized by the TCM, the Malfunction Indicator Lamp (MIL) will be switched on.



Location of the MIL: integrated in speedometer in instrument cluster

Notes:

When the MIL is switched on, it will either blink or light continuously. The DTC memory for the TCM must be checked ⇒ page 01-43 .

- *MIL flashing: there is a malfunction that could damage the Three Way Catalytic Converter (TWC). In this case, drive only with reduced power.*
- *MIL continuously on: there is a malfunction that degrades emissions. Check DTC memory of the Engine Control Module (ECM) or the TCM.*
- *If there are driveability problems (e.g. a customer complaint) and the MIL is not on, perform the MIL functional because malfunctions can be stored that do not switch the MIL on.*

01-6

MIL functional check

- Switch ignition on: MIL must come on.

  If the MIL does not come on when the ignition is switched on (with the engine not running): Check DTC memory ⇒ page 01-43 . If necessary, check wiring per wiring diagram or replace light bulb.

- Start engine and let idle: MIL must switch off after several seconds.

  If the MIL does not switch off after the engine is started: Check DTC memory ⇒ page 01-43 .

01-7

Conditions for recognition of a driving cycle (Dcy)

A driving cycle (Dcy) is complete when the ignition is switched on one time, the engine starts, the engine start is recognized by the control module, and the ignition is switched off.

01-8

On Board Diagnostic (OBD), technical data

Memory	
♦ Permanent memory	yes
Data output	
Rapid data transfer	yes
Blink code output	no
Output Diagnostic Test Mode	yes
Basic setting	no
Coding control module	yes
Read measuring value block	yes

Electrical/electronic component locations ⇒ **Page 01-11**

01-9

On Board Diagnostic II (OBD II), functions

Note:

The following modes can be selected via address word 33:

Mode	Function
1	Transmit diagnostic data: ♦ Only certain individual test values can be read. Read the the measuring value block by using address word 02, function 08.
2	Not applicable
3	Check DTC memory: ♦ Only emissions-influencing malfunctions are indicated immediately or after two driving cycles (Dcy), depending on the malfunction, via the corresponding P-codes. Check DTC memory by using address word 02, function 02.
4	Erase DTC memory: ♦ DTC memory can be erased, even if it has not previously been read. Erase DTC memory by using address word 02, function 05.
5	Not applicable
6	Not applicable
7	OBD test results, continuously monitored: ♦ Emissions-related malfunctions can be read, even if these malfunctions have not existed long enough for the MIL to be switched on.

01-10

Mode	Function
8	• Not applicable
9	This mode only applies as of model year 2000. • The first value indicates the Part No. and the program or data status of the Transmission Control Module (TCM). • The second value indicates a checking summation, for instance A357. This value is calculated internally and can be disregarded.

Note:

There is no further detailed information about OBD in this section.