

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.

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](#) .

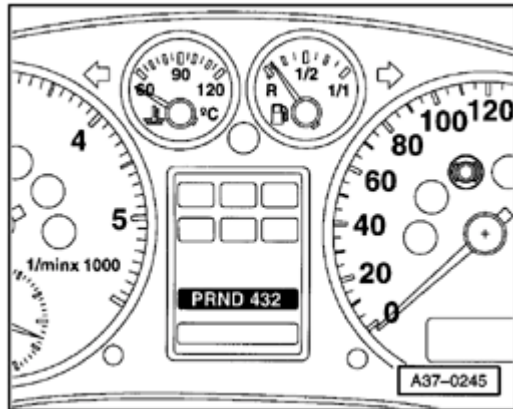
Security functions of the Transmission Control Module (TCM)

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").



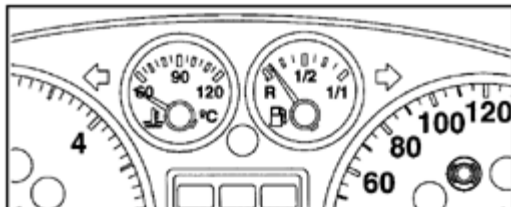
- All segments of the transmission range selector lever display light up.

- 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



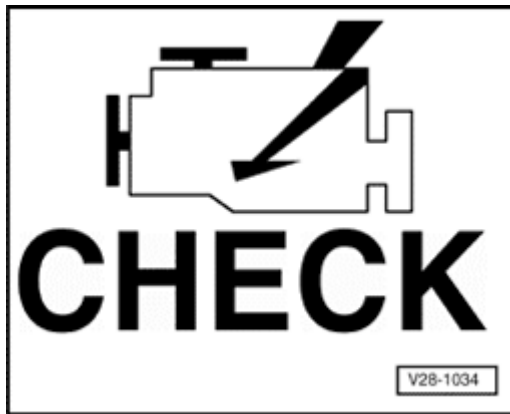
4

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).

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.*

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](#) .

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.

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](#)

On Board Diagnostic II (OBD II), functions

Note:

The following modes can be selected via address word 33:

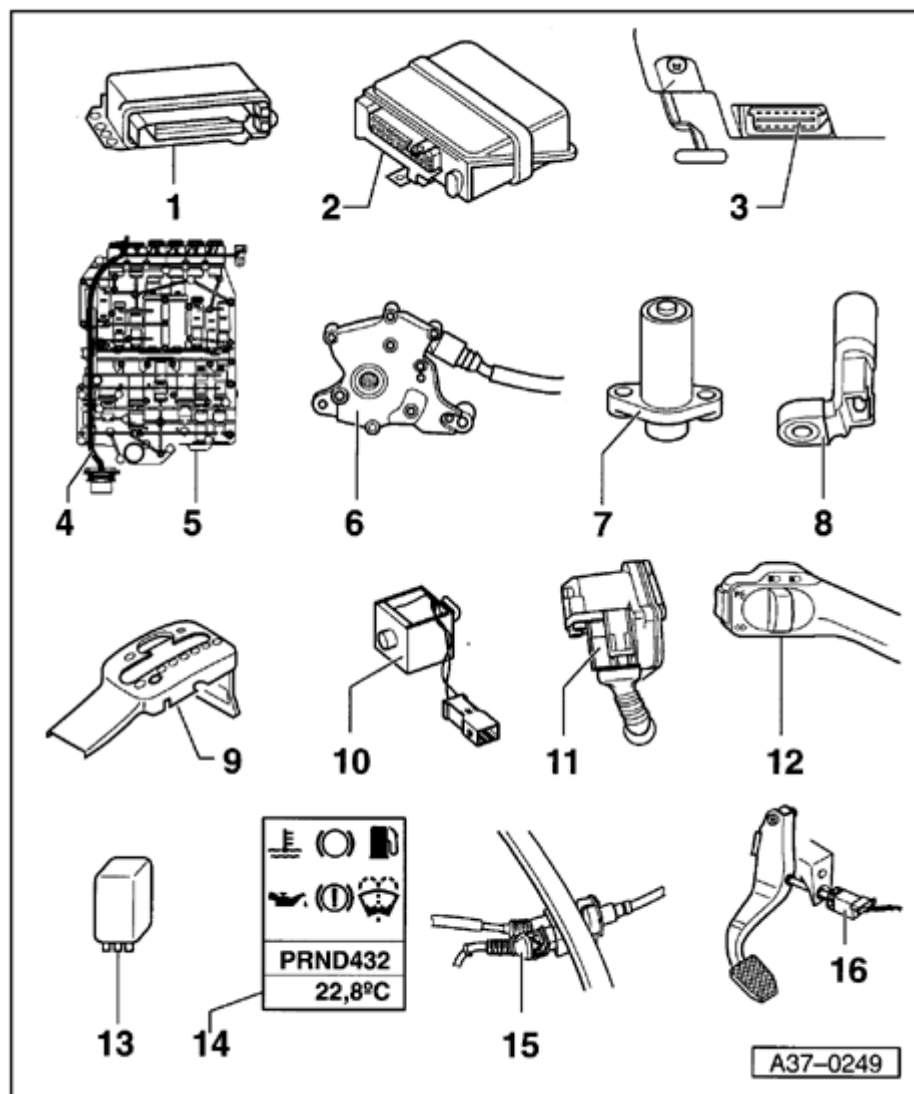
Mode	Function
1	Transmit diagnostic data: ◆ Only certain individual test values can be read. Read the the measuring value block by using address word 02, function 08.
2	Not applicable
3	Check DTC memory: ◆ Only emissions-influencing malfunctions are indicated immediately or after two driving cycles (Dcy), 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.

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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.



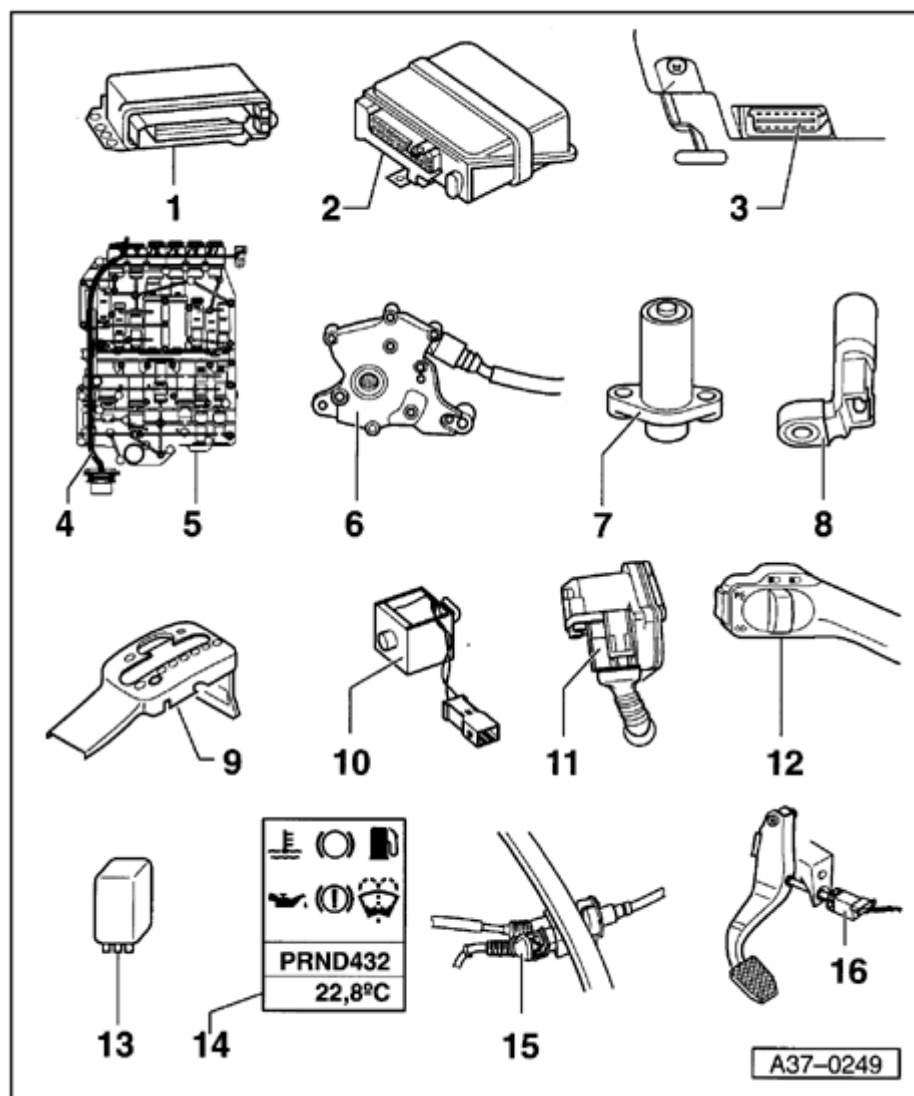
Electrical/electronic components and locations

1 - Automatic Transmission Control Module (TCM) -J217-

- ◆ Location ⇒ [Fig. 1](#) , ⇒ [Page 01-20](#)
- ◆ Removing ⇒ [Fig. 2](#) , ⇒ [Page 01-21](#)
- ◆ Installing ⇒ [Fig. 3](#) , ⇒ [Page 01-22](#)
- ◆ Control modules are checked via On Board Diagnostic (OBD) ⇒ [Page 01-34](#) Initiating On Board Diagnostic (OBD)

2 - Engine Control Module (ECM)

- ◆ Location ⇒ [Fig. 4](#) , ⇒ [Page 01-23](#)
- ◆ Control modules are checked via On Board Diagnostic (OBD) ⇒ [Page 01-34](#) Initiating On Board Diagnostic (OBD)



3 - Data Link Connector (DLC)

- ◆ Location ⇒ [page 01-24](#) , ⇒ [Fig. 5](#)

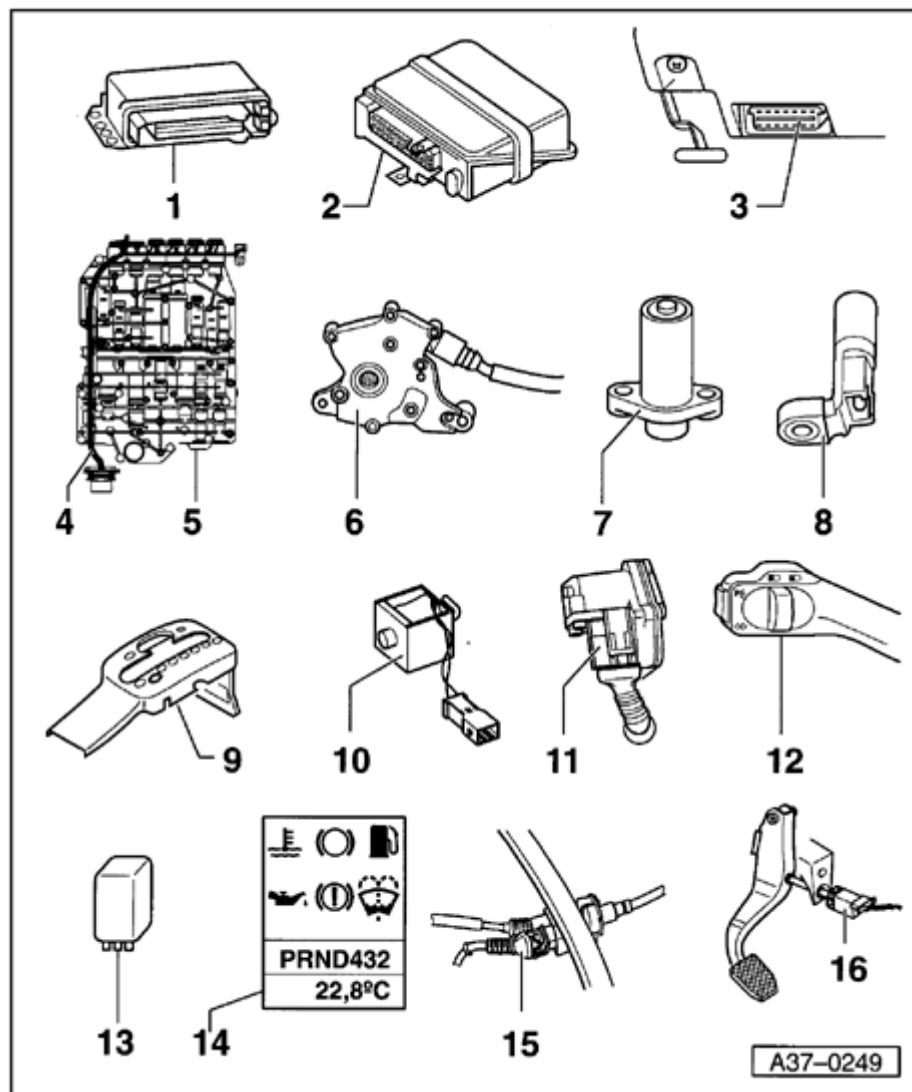
4 - Conductor strip with Transmission Fluid Temperature (ATF) Sensor -G93-

- ◆ Location ⇒ [page 01-26](#) , ⇒ [Fig. 7](#)
- ◆ -G93- is checked via On Board Diagnostic (OBD)

5 - Valve body

- ◆ Location ⇒ [page 01-25](#) , ⇒ [Fig. 6](#)
- ◆ The solenoid valves -N88-, -N89-, -N90-, -N91-, -N92-, -N93- and -N94- are attached to the valve body
- ◆ Components are checked via OBD

01-13



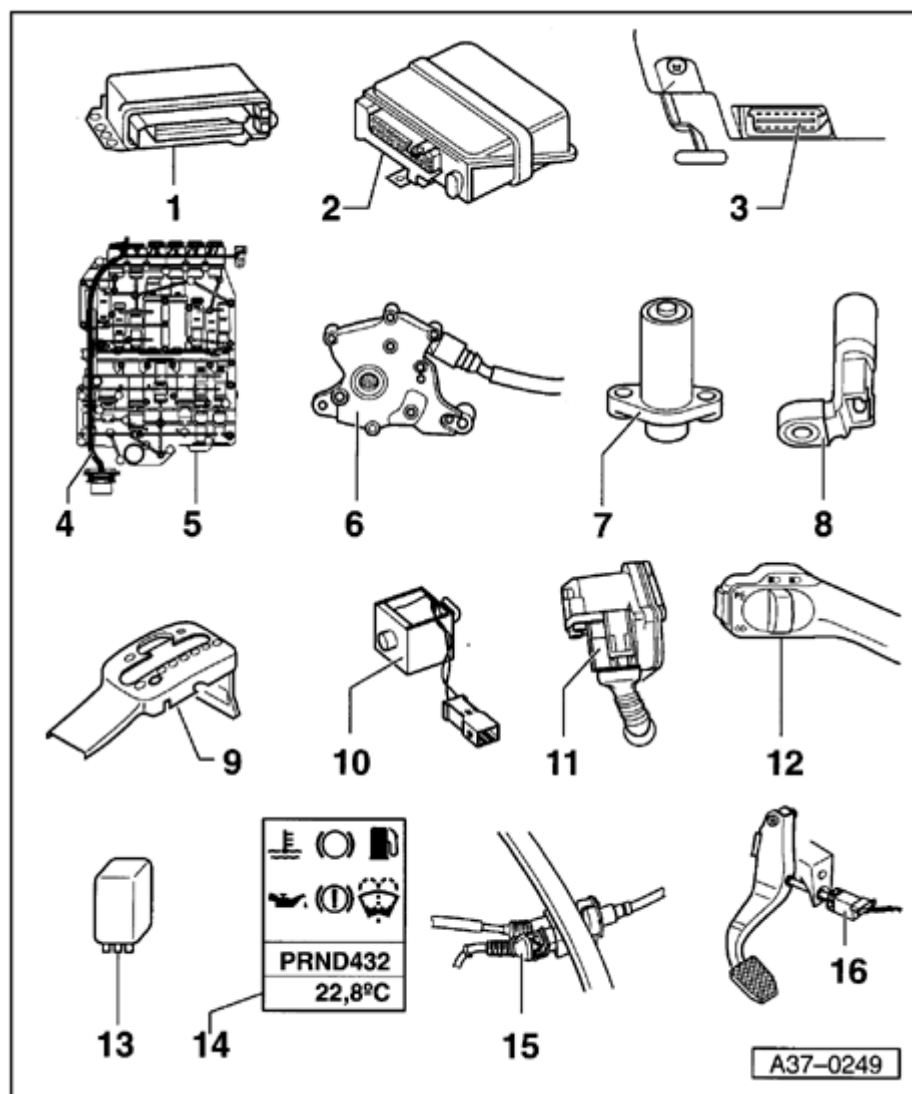
6 - Multi-function Transmission Range (TR) switch -F125-

- ◆ Location, removing and installing ⇒ [page 01-27](#) , ⇒ [Fig. 8](#)
- ◆ Checked via On Board Diagnostic (OBD)

7 - Sensor for Transmission RPM -G182-

- ◆ Location, removing and installing ⇒ [page 01-29](#) , ⇒ [Fig. 11](#)
- ◆ Checked via OBD

01-14

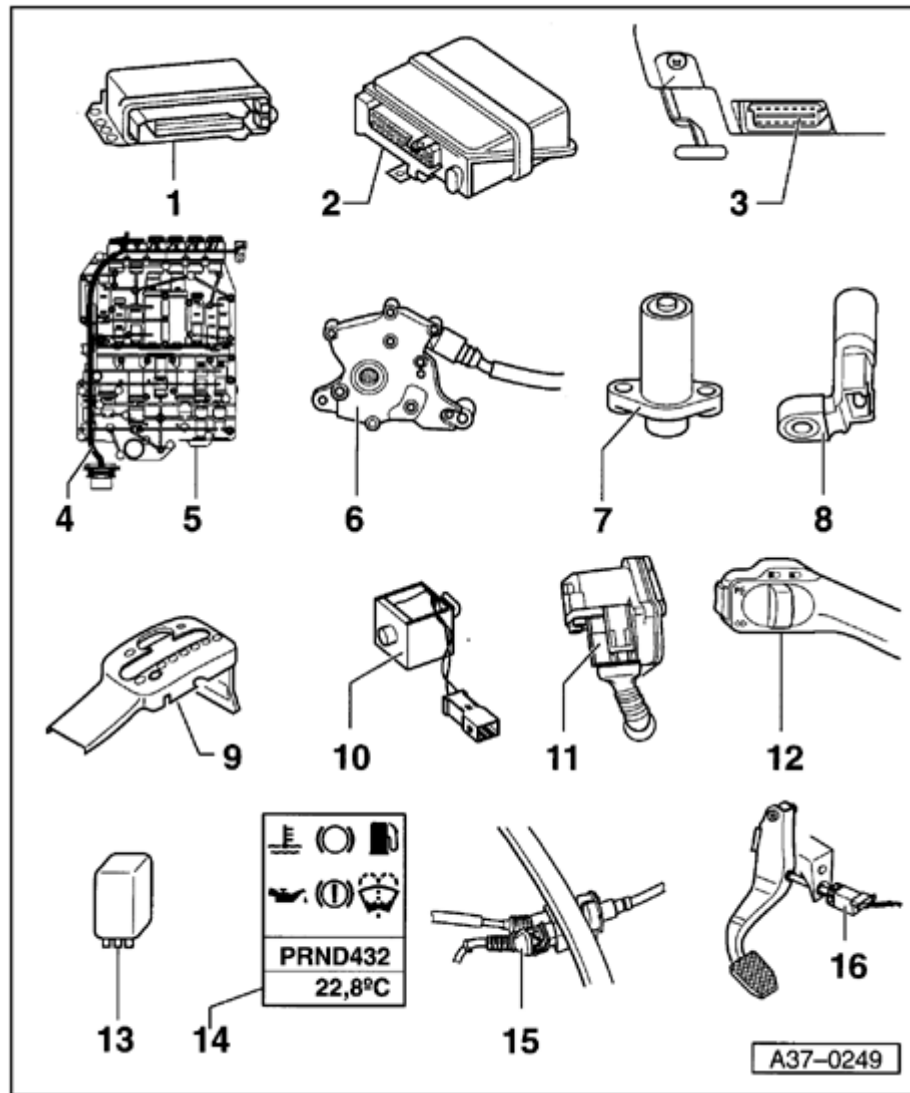


8 - Transmission Vehicle Speed Sensor (VSS) -G38- (also referred to as Sensor for Transmission Output RPM -G195-)

- ◆ Location, removing and installing ⇒ [page 01-28](#) , ⇒ [Fig. 10](#)
- ◆ Checked via On Board Diagnostic (OBD)
- ◆ Records the transmission output speed

9 - Tiptronic switch -F189-

- ◆ Location, removing and installing ⇒ [page 01-27](#) , ⇒ [Fig. 9](#)
- ◆ The switch can be checked in, read measured value block ⇒ [page 01-186](#) and in the electrical check ⇒ [page 01-273](#)

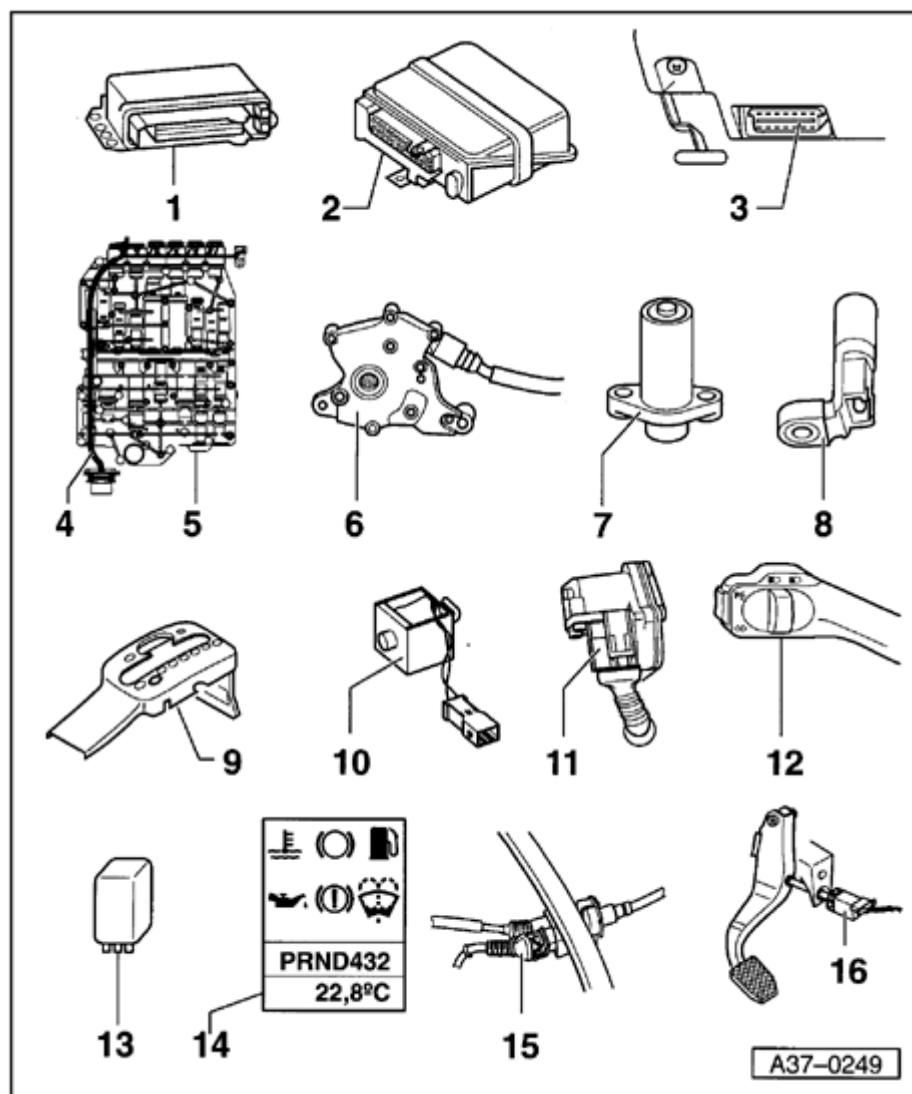


10 - Shift lock solenoid -N110-

- ◆ Location ⇒ [page 01-30](#) , ⇒ [Fig. 12](#)
- ◆ Removing and installing

⇒ [Repair Manual, 5 Spd. Automatic Transmission 01V, Repair Group 37](#)

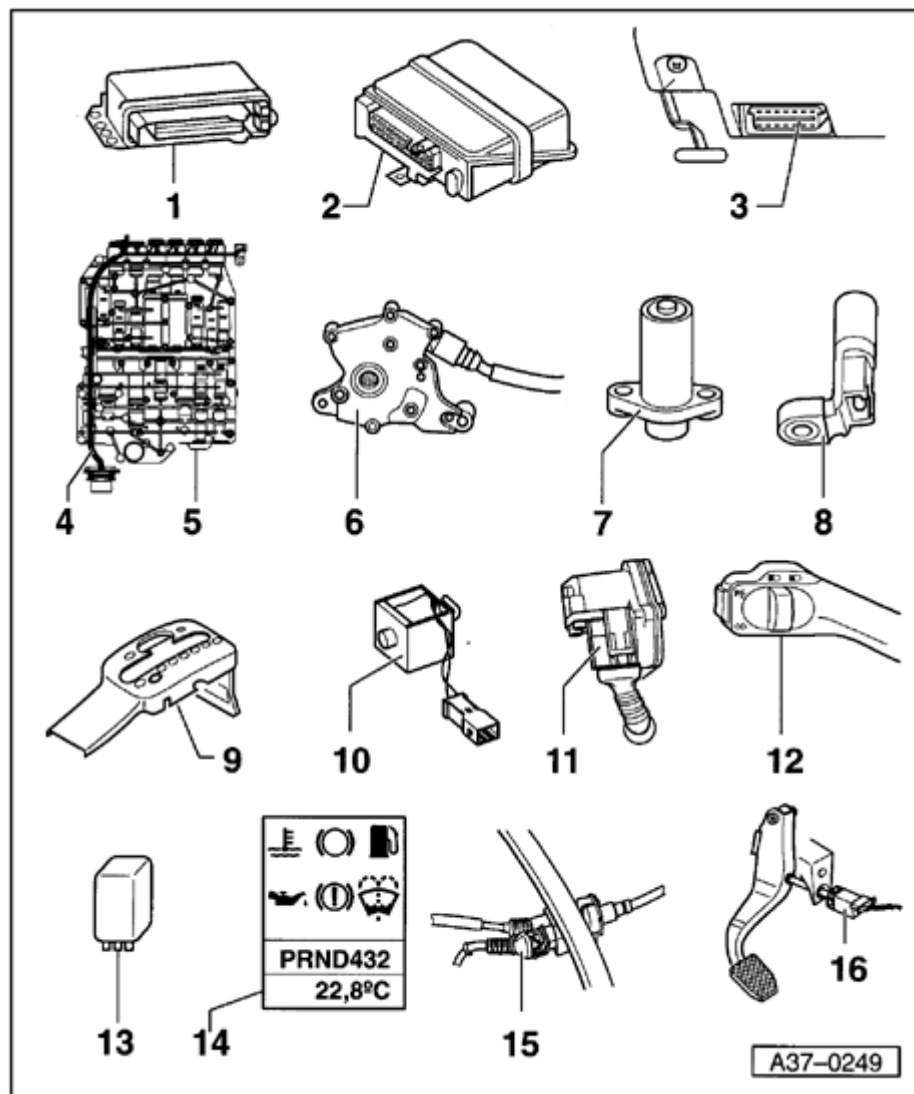
- ◆ Can be checked electrically ⇒ [page 01-273](#) and via reading measured value block ⇒ [page 01-186](#)



11 - Throttle Position (TP) sensor -G69-

- ◆ Location ⇒ [page 01-30](#) , ⇒ [Fig. 13](#)
- ◆ The TP sensor signal will be checked via On Board Diagnostic (OBD)
- ◆ The TP sensor signal is transmitted to the transmission control module via the engine control module. The signal can only be checked in measured value block ⇒ [Page 01-186](#) . If OBD indicates a malfunction in the TP sensor, perform OBD for the Engine Control Module.

⇒ *Repair Manual, Fuel Injection & Ignition, Repair Group 01*



12 - Cruise control switch -E45-

- ◆ Location: The cruise control switch is on the steering column
- ◆ Removing and installing:

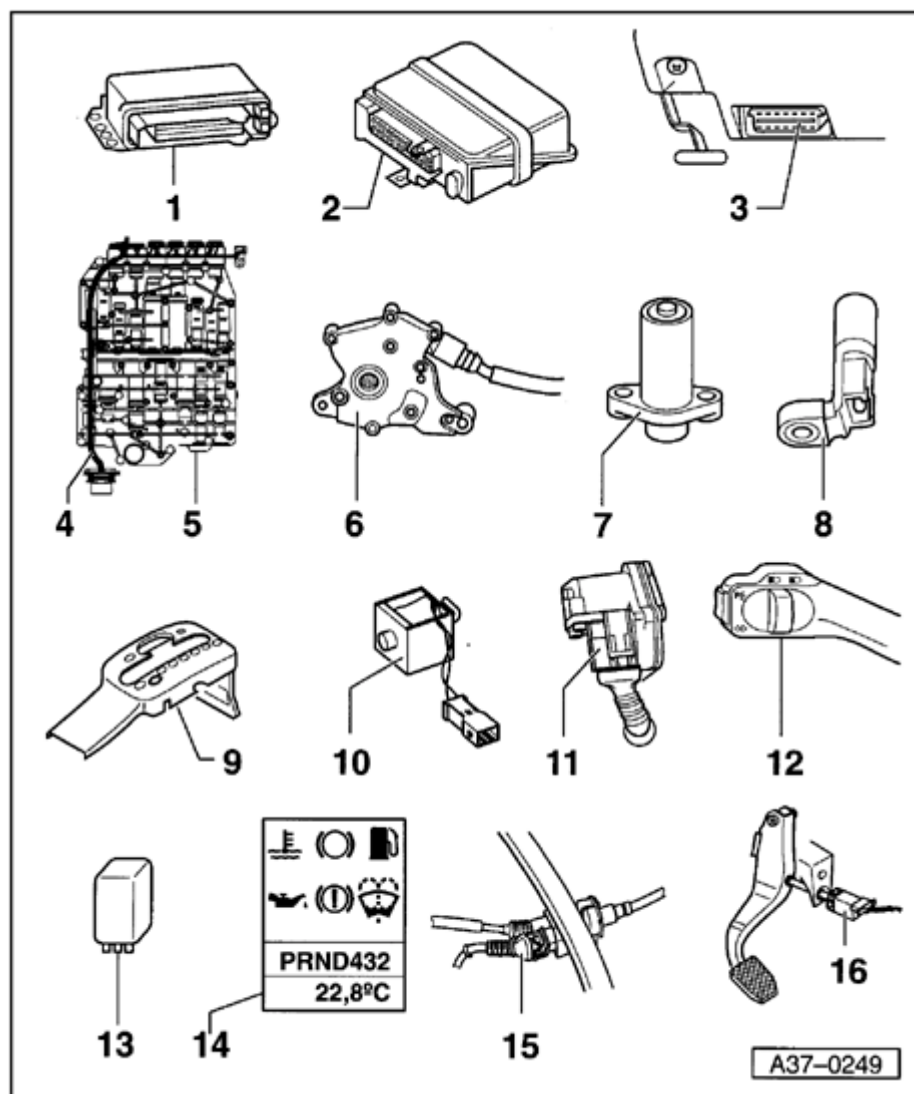
⇒ [Repair Manual, Repair Manual, Electrical Equipment, Repair Group 94](#)

- ◆ Can be checked during electrical test ⇒ [page 01-273](#)

13 - Starting interlock relay -J207-

- ◆ Location ⇒ [page 01-31](#) , ⇒ [Fig. 14](#)

⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations*

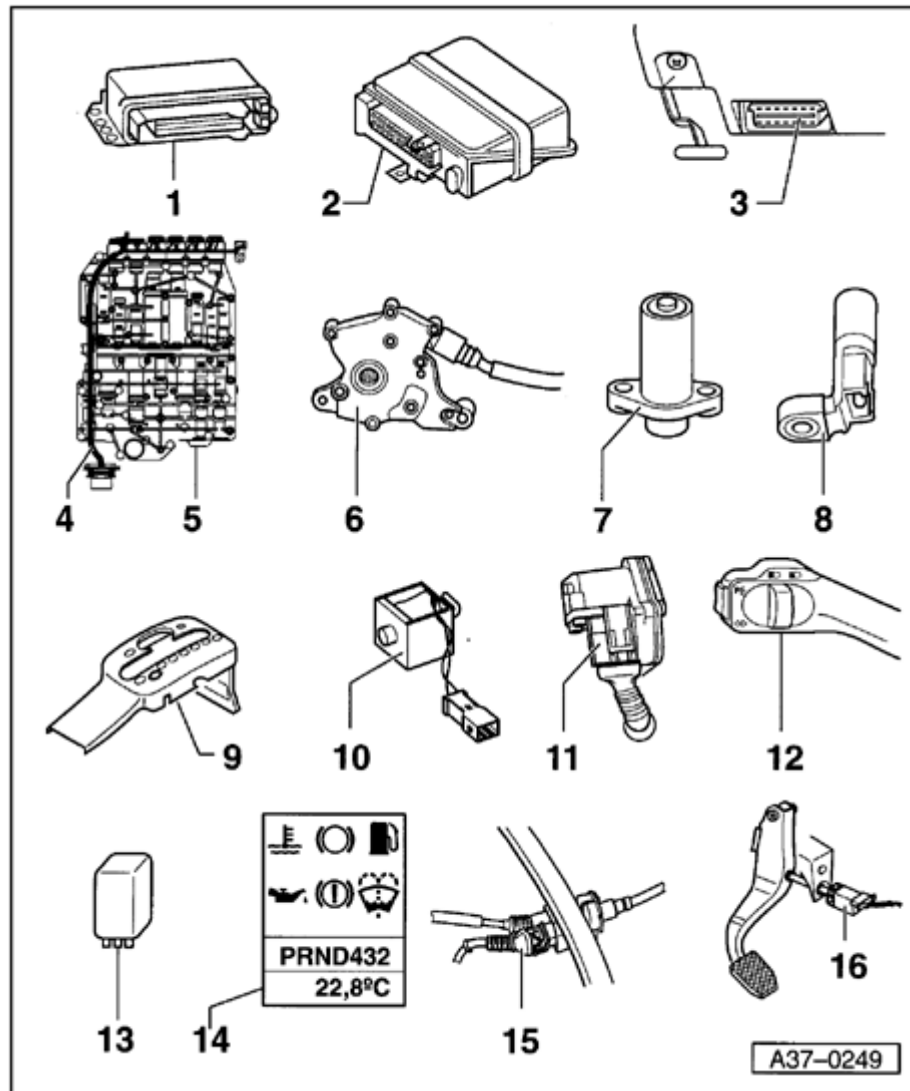


14 - Transmission Range (TR) Selector Lever Display -Y6-

- ◆ Location ⇒ [page 01-31](#) , ⇒ [Fig. 15](#)
- ◆ When the TR Selector Lever Display does not light up, it indicates that the transmission is in emergency running mode with the Transmission Control Module (TCM) inactive.
- ◆ All segments of the TR Selector Lever Display light up, it indicates that the transmission is in emergency running mode with the TCM active.

15 - Kick down switch -F8-

- ◆ Location ⇒ [page 01-32](#) , ⇒ [Fig. 16](#)
- ◆ Can be checked electrically ⇒ [page 01-273](#) and via reading measured value block ⇒ [page 01-186](#)



16 - Brake Light Switch -F-

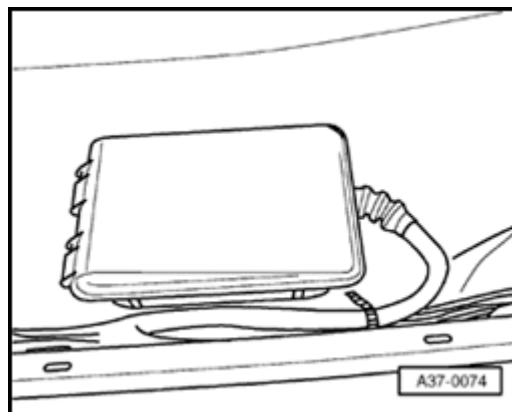
◆ Location: ⇒ [page 01-33](#) , ⇒ [Fig. 17](#)

◆ Removing and installing

⇒ [Repair Manual, Brake System, Repair Group 46](#)

◆ Can be checked electrically ⇒ [page 01-273](#) and via reading measured value block
⇒ [page 01-186](#)

01-20

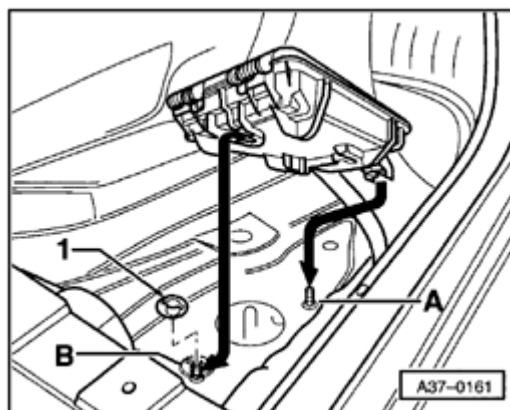


A

**Fig. 1 Location of automatic Transmission Control Module (TCM)
-J217-**

The control module is located in front of the right front seat under the carpet in the foot well.

01-21



A

Fig. 2 Automatic Transmission Control Module (TCM) -J217-, removing and installing

Removing

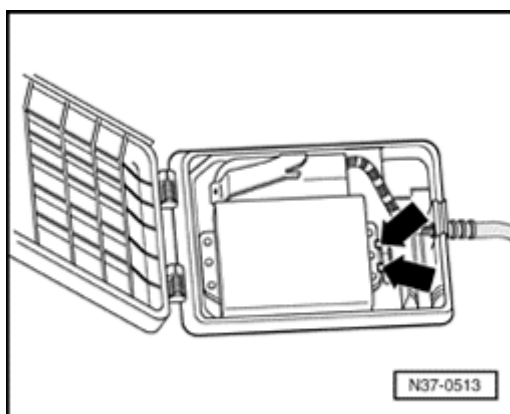
- Remove lower right A-pillar trim and right front door sill trim.

⇒ [Repair Manual, Body-Interior, Repair Group 70](#)

- Detach carpeting from right inside door sill, and raise carpeting approx. 20 cm.
- Unclip box at -A- by pulling it upward.
- Unclip box at -B- as shown.

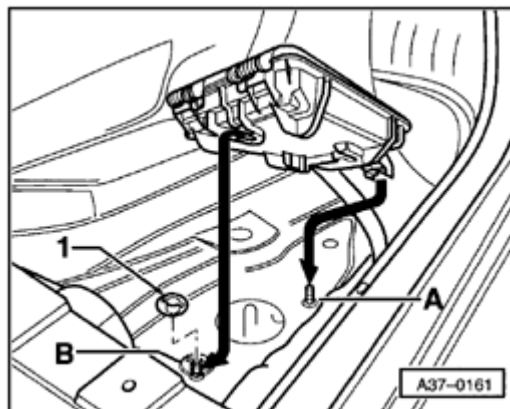
A

- Unclip TCM from box (arrows).
- Release catch on multi-pin connector and disconnect connector from TCM ⇒ [Fig. 3](#)

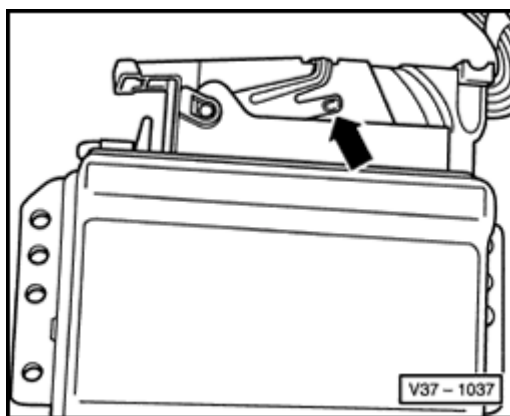


Installing:

Install in reverse order of removal, with the following additional steps:



- A**
- Check that clip nut -1- is properly secured.

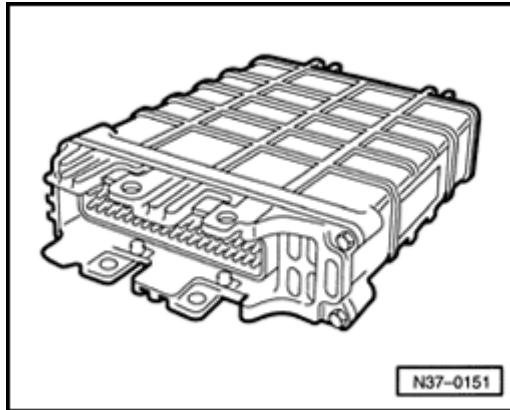


A

Fig. 3 TCM -J217-, disconnecting

- Switch ignition off and wait approx. 30 seconds.
- Release connector by pressing catch in direction of arrow.

Connect in reverse order of disconnecting.



A

Fig. 4 Engine Control Module (ECM)

Location: in electronics box (E-box) in plenum chamber (left side).

ECM, removing and installing

⇒ *Repair Manual, Fuel Injection & Ignition, Engine, Groups 01, 23 or 24*

01-24

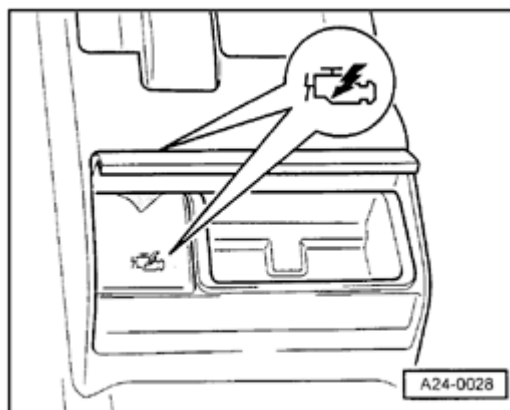
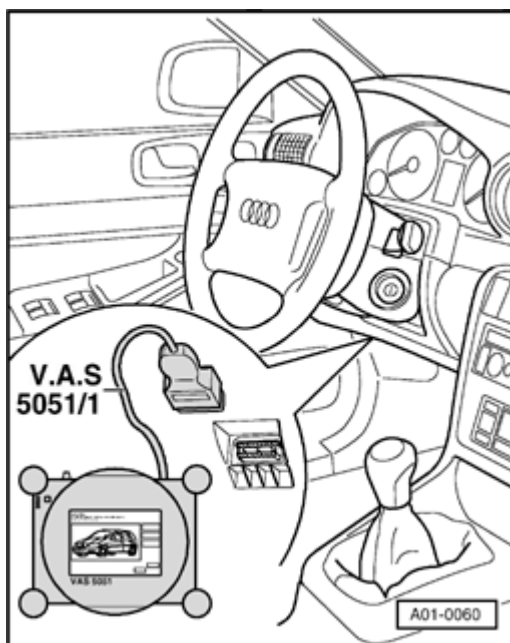


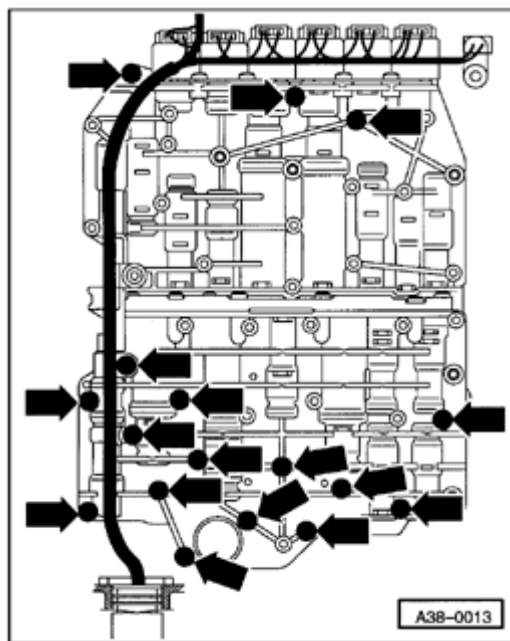
Fig. 5 Data Link Connector (DLC)

Location: Up to m. y. 2000, the Data Link Connector (DLC) is located under the rear ashtray (center console).



As of m. y. 2001, the DLC is located under the kneebar left of the steering wheel.

- Connect VAS 5051 tester with VAS5051/1 diagnostic wire, or connect V.A.G 1551 Scan Tool with VAG 1551/3 adapter.
- Enter address word "02 transmission electronics" and continue switching until "selecting function XX" appears on display ⇒ [page 01-36](#).



A

Fig. 6 Valve body

Location: The valve body is bolted to the underside of the transmission housing inside the oil pan.

The Solenoid Valves -N88-, -N89-, -N90-, -N91-, -N92-, -N93- and -N94- are attached to the valve body. The solenoid valves -N91-, -N92-, -N93- and -N94- are also referred to as pressure control valves 1 (-N215-), 2 (-N216-), 3 (-N217-) and 4 (-N218-).

Removing and installing

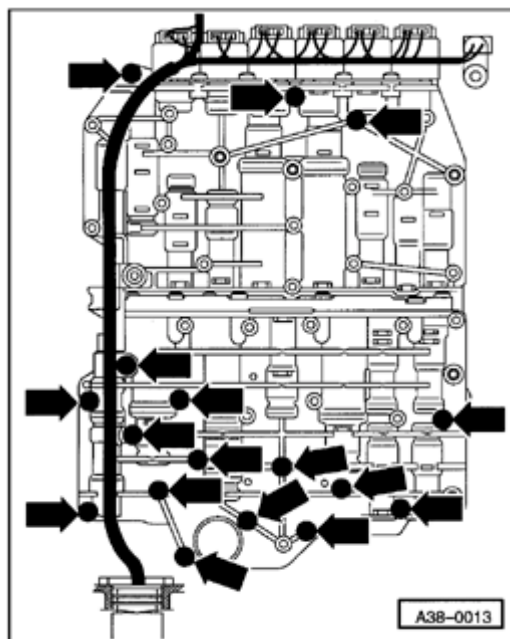
⇒ [Repair Manual, 5 Spd. Automatic Transmission 01V, Repair Group 38](#)

There are two types of transmissions:

- ◆ For transmissions with hydraulic regulation -E17-, the transmission input speed sensor (inductive sensor) is secured to the underside of the valve body.
- ◆ For transmissions with hydraulic regulation -E18/2-, the transmission input speed sensor (camshaft position sensor) is secured behind valve body at transmission housing.

Information about which transmission is installed:

⇒ [Repair Manual, 5 Spd. Automatic Transmission 01V, Repair Group 00](#)



A

Fig. 7 Wiring harness with integrated Transmission Fluid Temperature Sensor -G93-

Location: The wiring harness is secured to the valve body.

The wiring harness can be removed with the valve body removed and the transmission installed.

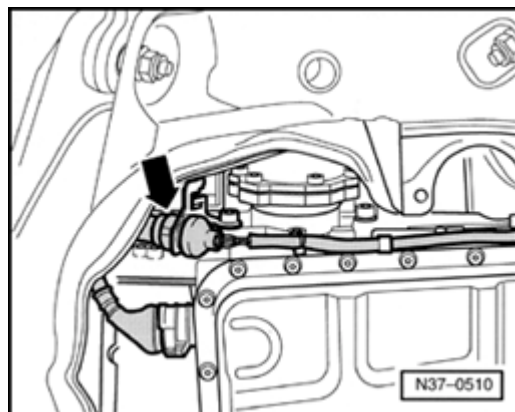
Wiring harness in transmission, removing and installing

⇒ [*Repair Manual, 5 Spd. Automatic Transmission 01V, Repair Group 38*](#)

ATF Temperature Sensor -G93-, removing and installing

⇒ [*Repair Manual, 5 Spd. Automatic Transmission 01V, Repair Group 38*](#)

01-27



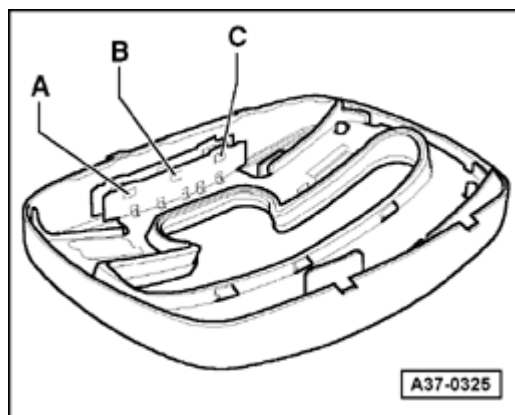
A

Fig. 8 Multi-function Transmission Range (TR) switch -F125-

Location: The multi-function switch -1- is located on left at transmission;
Multi-pin connector for multi-function switch -arrow-.

Multi-function TR switch, removing and installing

⇒ [Repair Manual, 5 Spd. Automatic Transmission 01V, Repair Group 38](#)



A

Fig. 9 Tiptronic switch -F189-

Installation location: The tiptronic switch is integrated into the conductor strip of the symbol insert in the cover of the shift mechanism.

Note:

This switch is not installed on shift mechanisms without tiptronic function.

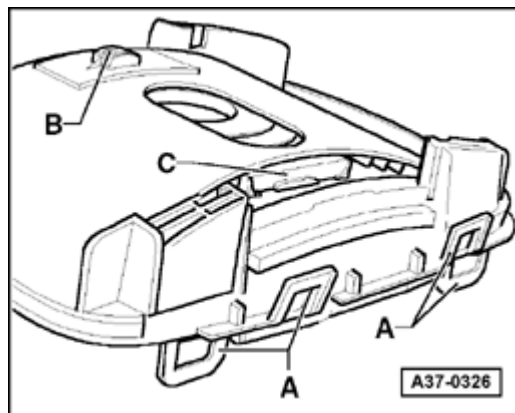
The switch consists of 3 hall-effect sensors (-A-, -B-, -C-), which are activated via a magnet on the lateral gate cover of the gate cover.

A - Sensor for down-shift

B - Sensor for Tiptronic-recognition

C - Sensor for up-shift

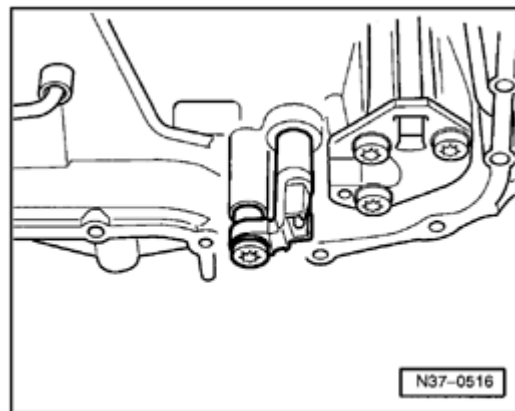
- If malfunctions occur, the switch for tiptronic must be checked for interference in Read measuring value block ⇒ [page 01-186](#) and during the electrical test ⇒ [page 01-273](#).



- ⚠ In case of problems, first check the magnet at the lateral gate cover -C- of the gate cover is properly attached, replace gate cover, if necessary. Only replace the symbol insert with integrated conductor strip after checking the wires. For vehicles with tiptronic-sport steering wheel, also check the buttons at steering wheel and their wire connections.

Tiptronic switch -F189-, removing and installing

⇒ [Repair Manual, 5 Spd. Automatic Transmission 01V, Repair Group 37; repairing shift mechanism](#)

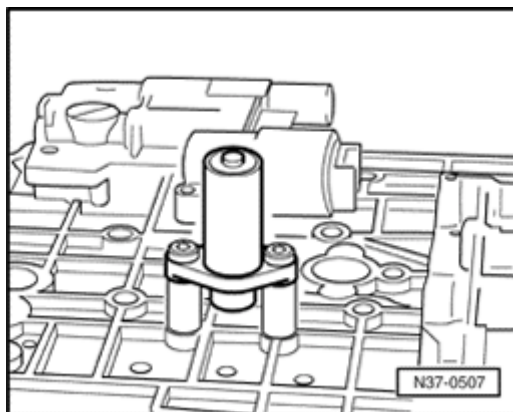


⚠ Fig. 10 Transmission Vehicle Speed (VSS) Sensor -G38-

Location: The transmission vehicle speed sensor is located at right rear in the transmission. It is also referred to as the Sensor for Transmission Output RPM -G195-.

Transmission VSS sensor -G38-, removing and installing

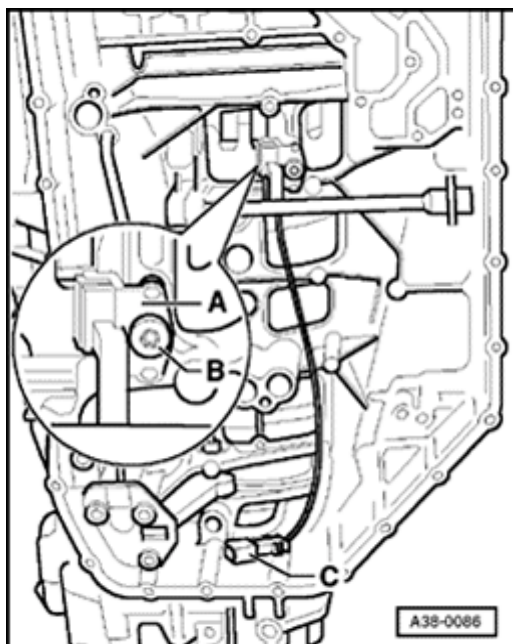
⇒ [Repair Manual, 5 Spd. Automatic Transmission 01V, Repair Group 38](#)



A

Fig. 11 Sensor for Transmission RPM -G182-**Installation location:**

On transmissions with hydraulic regulation -E17-, the Sensor for Transmission RPM is secured to the underside of the valve body (see illustration). For these transmissions the sensor is an inductive sensor.



A

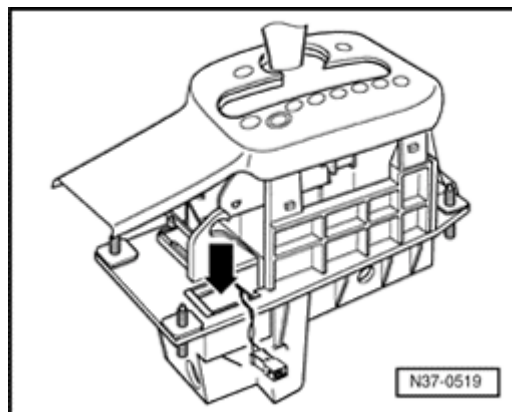
On transmissions with hydraulic regulation -E182-, the transmission input speed sensor -A- is secured behind the valve body at the transmission housing. On these transmissions the sensor is a hall effect sensor.

Information about which transmission is installed

⇒ [Repair Manual, 5 Spd. Automatic Transmission 01V, Repair Group 00](#)

Sensor for Transmission RPM -G182-, removing and installing

⇒ [Repair Manual, 5 Spd. Automatic Transmission 01V, Repair Group 38](#)



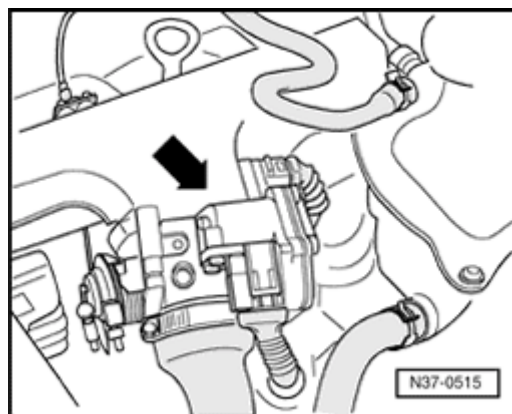
A

Fig. 12 Shift Lever Lock Solenoid -N110-

The Shift Lever Lock Solenoid is located in the shift lever housing -arrow-.

Shift Lever Lock Solenoid, removing and installing

⇒ [Repair Manual, 5 Spd. Automatic Transmission 01V, Repair Group 37](#)



A

Fig. 13 Throttle Position (TP) Sensor -G69-

Location: integrated in Throttle Valve Control Module -J338- -arrow-.

The location is described in the applicable engine repair manual under repair Group 01, 23 or 24.

01-31

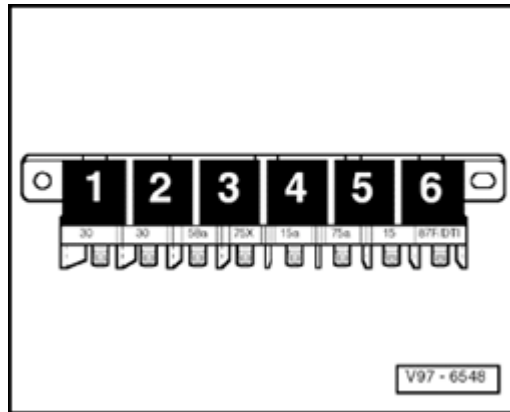


Fig. 14 Starting interlock relay -J207

The relay is located on the central electric.

For relay assignment

⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations*

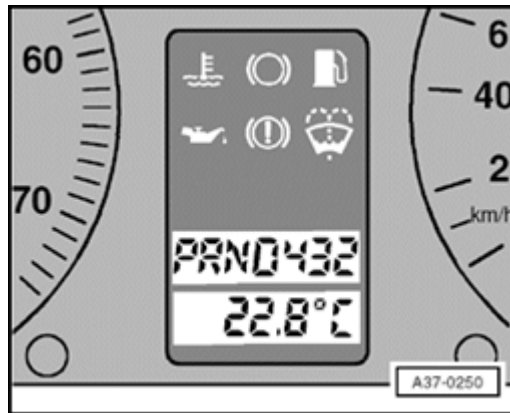
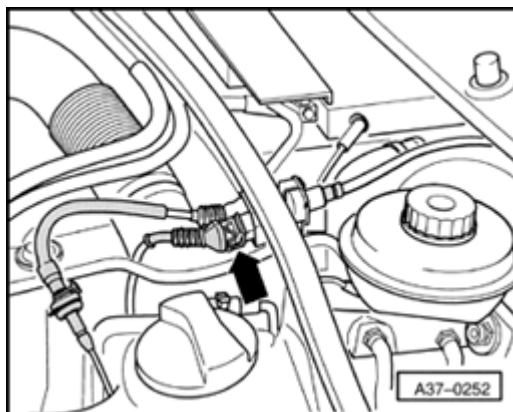


Fig. 15 Transmission range selector lever display -Y6-

Located in instrument cluster

Removing and installing transmission range selector lever display

⇒ [Repair Manual, Electrical Equipment, Repair Group 90](#)



A

Fig. 16 Kick-down switch -F8-**Engines without E-Gas:**

The kick-down switch is integrated in the accelerator cable in the plenum chamber, behind bulkhead -arrow-.

Engines with E-gas:

The kick-down switch is integrated in the throttle position sensor and Sensor 2 for Accelerator Position (-G79-, -G185-).

A learning procedure must be performed for the shift point of the kick down switch for engines with E-gas. If the throttle position sensor (-G79-, -G185-) is removed, exchange the engine control module or disconnect the battery. Learning procedure can be found in ⇒ Repair Manual, Fuel Injection & Ignition, Repair Group 24; Kick down shift point, checking.

Kick-down switch, removing and installing

- To remove and install the kick down switch, the accelerator cable must be removed and installed and then adjusted or the throttle position sensor (38-G79-, -G185-) must be replaced.

⇒ [Repair Manual, Fuel Supply System, Repair Group 20, accelerator pedal mechanism, repairing Front and All Wheel Drive](#)

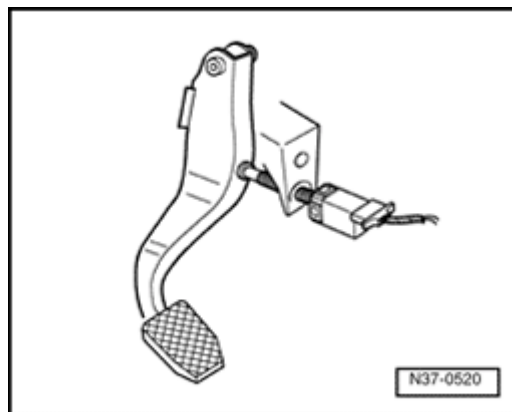


Fig. 17 Brake light switch -F-

The brake light switch -arrow- is located on the pedal cluster.

Brake light switch, removing and installing

⇒ [Repair Manual, Brake System, Repair Group 46](#)

Note:

For engine with E-gas, the brake light signal is transmitted from the engine control module to the transmission control module via the CAN-Bus.

01-34

On Board Diagnostic (OBD), initiating

Additional information

- ◆ Audi A4 Repair Manual, 5 Spd. Automatic Transmission 01V,
- ◆ Electrical Wiring Diagrams, Troubleshooting & Component Locations
- ◆ Parts catalog

Safety precautions

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

WARNING!

- ◆ *Always secure test and measuring instruments to the rear seat and have it operated by a second person from that location.*
- ◆ *If test and measuring equipment is operated from the passenger seat, the passenger-side airbag could be activated in case of an accident and could lead to injury to the person sitting there.*

To reduce the risk of personal injury and/or damage of electric and electronic components, always observe the following:

- ◆ Always switch the ignition off before connecting or disconnecting testers or measurement tools.
- ◆ It is possible that the control module will recognize a malfunction and store a DTC during some tests. After completing all tests and repairs, check DTC memory and erase the memory.
- ◆ Always switch ignition off before disconnecting and connecting the battery to avoid damaging the transmission control module.

Vehicle Diagnosis, Measuring and Information System VAS 5051 or V.A.G 1551 scan tool, connecting and selecting functions

Test requirements

- Selector lever in "P" position and parking brake applied.
- Vehicle voltage supply OK
- Power supply and fuses for respective system OK

⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations*

- Ground (GND) connections and Ground point for transmission OK

⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations*

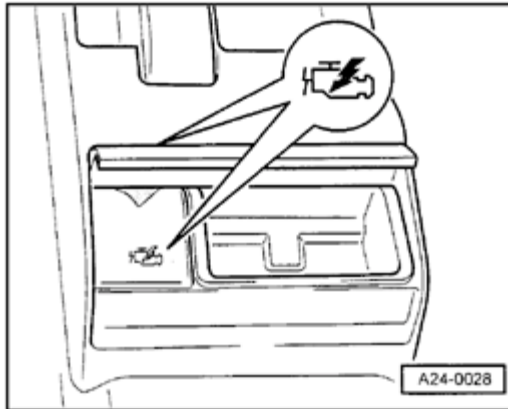
- Check Ground connections for corrosion and

damage and repair if necessary.

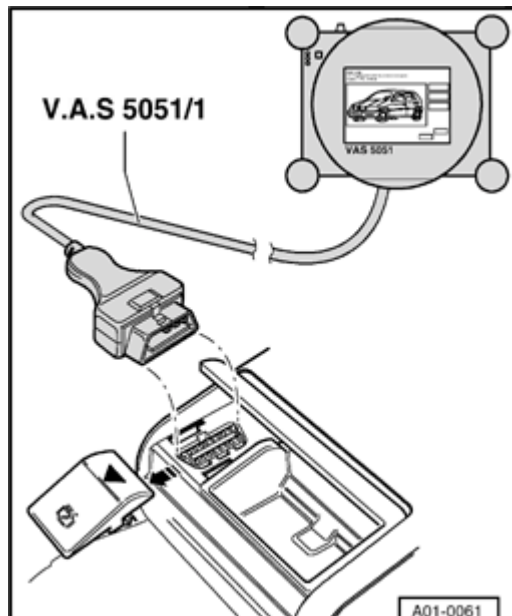
- Check battery Ground (GND) strap and Ground strap between battery and transmission.

01-37

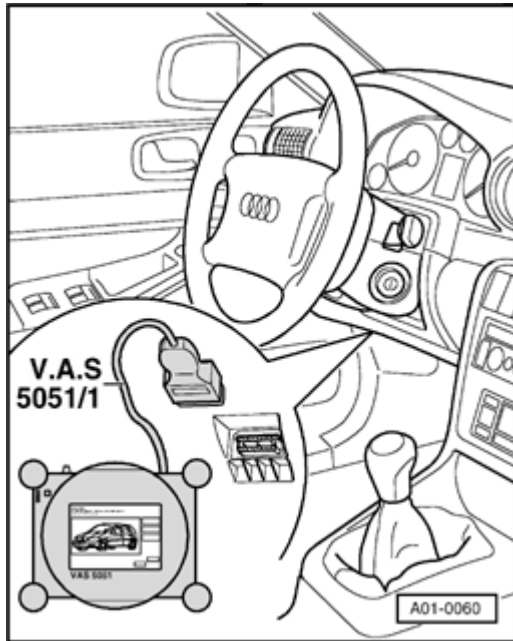
- Switch ignition off.

For vehicles up to m. y. 2000**A**

- The Data Link Connector (DLC) is located behind the cover in the rear ash tray (center console) for vehicles up to m. y. 2000
- Open rear ashtray (center console) and remove cover for DLC.

**A**

- Connect VAS5051 tester to vehicle with VAS5051/1 diagnostic cable. Alternately, V.A.G1551 Scan Tool can also be used, using VAG1551/3 adapter.

For vehicles from m. y. 2000**A**

- The Data Link Connector (DLC) is located below the kneebar left of the steering wheel. for vehicles up to m. y. 2000
- Connect VAS 5051 tester to vehicle with VAS 5051/1 diagnostic cable. Alternately, V.A.G 1551 Scan Tool can also be used, using VAG 1551/3 adapter.

CAUTION!

- ♦ ***When performing road tests with testers and measuring equipment, such equipment must only be operated from the rear seat.***
- ♦ ***Observe all safety precautions listed on page 01-34***

Note:

The following description applies to the V.A.G 1551 Scan Tool. For the Vehicle Diagnosis, Measuring and Information System VAS 5051 please refer to the operating instructions.

VAG - On Board Diagnostic HELP

1 - Rapid data transfer

2 - Blink code output

Indicated on display ¹⁾¹⁾ Operating modes 1 and 2 are displayed alternately**Notes:**

- ◆ *Get additional operating instructions by pressing the HELP key of V.A.G 1551.*
- ◆ *Use the → key to advance within the program sequence.*
- ◆ *An automatic check (keys 00) can be done in operating mode 1 "Rapid data transfer". This way all vehicle control modules will be checked automatically.*

⇒ Scan tool V.A.G 1551 operating instructions.

- Switch on ignition.
- Switch on printer with the Print key (indicator lamp in key lights up).
- Press key 1 for "Rapid data transfer" mode.

Rapid data transfer

HELP

Enter address word XX



Indicated on display:

- Press keys 0 and 2. (Enter the address word "transmission electronics" with 02.)

Rapid data transfer

Q

02 Transmission electronics



Indicated on display:

- Press Q button to confirm entry.

8D0927156BT AG5 01V 2.81V USA 1416 →
Coding 00002 WSC 00000



Appears on display:

The control module identification is displayed:

Control module identification

Depending on the software version, the control module may indicate a different control module identification as shown in this example. Allocation of control module ⇒ Parts catalog.

- ◆ 8D0927156BT: Part number
- ◆ AG5 01V: 5-speed automatic transmission 01V
- ◆ 2.8l 5V: Engine version
- ◆ USA: (country), USA and CANADA
- ◆ 1416: 14 = program version; 16 = data version
- ◆ Coding 00002: Coding ⇒ [page 01-180](#)
- ◆ WSC 00000: Dealer number of V.A.G 1551, with the last coding was performed

Control module does not answer! HELP



Indicated on display:

- By pressing the HELP key, a list of possible malfunction is printed out.
- After eliminating the possible causes of malfunctions, enter address word 02 for "transmission electronics" and confirm.

01-41

Control module does not answer! HELP

If again "Control module does not answer!" appears:



Indicated on display:

Check control module voltage supply.

- Perform test step 1 ⇒ [page 01-273](#) , Electrical check.
- Check wiring connections to diagnostic connectors

⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations*

- Replace control module if necessary

Location and removing and installing of control module ⇒ [page 01-273](#) , item 1

- Press → key.

Rapid data transfer

HELP

Select function XX



Indicated on display:

- After the HELP key is pressed, a list of possible functions is printed out.

01-42

List of selectable functions

	Page
01 Check control module version ⇒ - On Board Diagnostic (OBD), initiating	⇒ Page 01-34
02 Check DTC memory -	⇒ Page 01-43
03 Output Diagnostic Test Mode -	⇒ Page 01-163
05 Erase DTC memory -	⇒ Page 01-178
06 End output -	
07 Code control module -	⇒ Page 01-180
08 Read measured value block -	⇒ Page 01-186

Disregard functions, which can be printed out by pressing the HELP key.

- After checking a function the V.A.G 1551 returns to the following start position:

Rapid data transfer

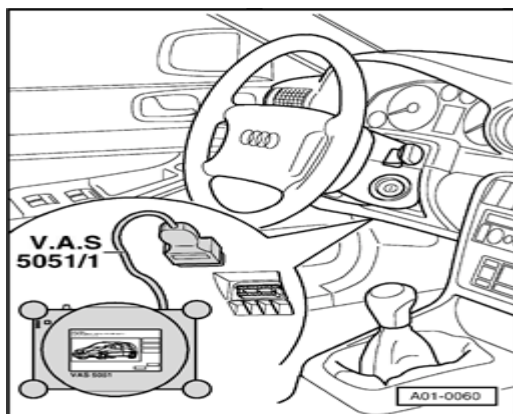
HELP

Select function XX



Indicated on display:

DTC Memory, checking



Rapid data transfer **HELP**
Select function XX

Rapid data transfer **Q**
02 - Check DTC memory

X DTCs recognized!

- - Connect Vehicle Diagnosis, Measuring and Information System VAS 5051 to vehicle using VAS 5051/1 diagnostic wire, or use V.A.G 1551 Scan Tool with VAG 1551/3 adapter.
- Advance until "Select function XX" appears in the display ⇒ [page 01-36](#).

- Indicated on display:
 - Press keys 0 and 2. (The function "Check DTC memory" is selected with 02).

- Indicated on display:
 - Press Q button to confirm entry.

- The number of malfunctions stored or "No DTC recognized!" will be shown on the display.

- Press the → key.

Stored DTCs will be displayed and printed out one after the other.

- Repair malfunctions, after displaying and printing out the last

malfunction according to DTC table ⇒ [page 01-45](#) .

- Press the → key.

01-44

Rapid data transfer

HELP

Select function XX



Indicated on display:

Note:

After DTC memory has been checked and malfunctions have been repaired:

- Erase DTC memory

Diagnostic Trouble Code (DTC) table

Important:

Note:

- ◆ *In the following, all possible malfunctions are listed in ascending order of DTC. These malfunctions can be recognized by the transmission control module -J217-. They are then displayed on the VAS 5051 tester or V.A.G 1551 scan tool when checking DTC memory content ⇒ [page 01-53](#) .*
- ◆ *Starting on the next page is a list of all DTCs with all MIL conditions.*
- ◆ *The DTC is only printed out in the "Rapid data transfer" operating mode when the printer of the V.A.G 1551 ST is switched on. Example: DTC 16987 P0603*
- ◆ *If malfunctions only occur sometimes, or if the DTC memory was not erased after malfunction repair, these malfunctions are displayed as "sporadic malfunctions" for a pre-determined time period. Malfunction recognition of transmission control module, ⇒ [page 01-1](#) .*
- ◆ *If components are indicated as being faulty during the check of the DTC memory, test the wiring to the components for short and open circuit according to wiring diagram.*

⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations*

List of all DTCs with the Malfunction Indicator Light (MIL) condition

Notes:

- ◆ Dcy = Driving cycle, conditions for recognition of a Dcy ⇒ [page 01-7](#).
 - ◆ Explanation of the Malfunction indicator Lamp (MIL) ⇒ [page 01-5](#).
 - ◆ The "MIL" column in the DTC table indicates the condition for which the Malfunction Indicator Lamp (MIL) would be switched on. If, for example, "2 Dcy" is indicated in the table, the MIL would light up after two driving cycles. If "Off" is indicated, the malfunction has no influence on the MIL. If "On" is indicated, the MIL will light up immediately after the malfunction occurs.
 - ◆ "Hydraulic control" column: What transmission has what hydraulic control can be found in Repair Manual:
- ⇒ [Repair Manual, 5 Spd. Automatic Transmission 01V, Repair Group 00; Code numbers, Aggregate allocation, gear ratios, equipment](#)

V.A.G1551 Scan Tool print out	Condition of MIL	Hydraulic Control	Possible malfunction cause and corrective action
00258 P0753	2 Dcy	E17	DTCs starting at ⇒ page 01-53
00260 P0758	2 Dcy	E17	
00262 P0763	2 Dcy	E17	
00264 P1813	2 Dcy	E17	

00266 P1818	2 Dcy	E17	
00268 P1823	2 Dcy	E17	
00270 P1828	2 Dcy	E17	

01-47

V.A.G1551 Scan Tool print out	Condition of MIL	Hydraulic Control	Possible malfunction cause and corrective action
00293 P0705	2 Dcy	E17	DTCs starting at ⇒ page 01-53
00296 P1704	Off	E17	
00297 P0722	On	E17	
00300 P0712	Off	E17	
00300 P0713	Off	E17	
00518 P0121	Off	E17	
00526 P0703	2 Dcy	E17	
00529 P0727 with CAN-Bus	2 Dcy	E17	
00529 P0727 without CAN-Bus	Off	E17	
00532 P1746	Off	E17	
00543 P0726	Off	E17	
00545 P0702	2 Dcy	E17	
00545 P1781	Off	E17	
00545 P1782	Off	E17	
00638 P0702	Off	E17	

01-48

V.A.G1551 Scan Tool print out	Condition of MIL	Hydraulic Control	Possible malfunction cause and corrective action
00638 P1767	Off	E17	DTCs starting at ⇒ page 01-53
00652 P0732	On	E17	
00652 P0733	On	E17	
00652 P0734	On	E17	
00652 P0735	On	E17	
00668 P0560	Off	E17	
01044 P1749	Off	E17	
01192 P0741	Off	E17	
01196 P1625	2 Dcy	E17	
01236 P1760	Off	E17	
16987 P0603	On	E18/2	
16989 P0605	2 Dcy	E18/2	
17087 P0703	Off	E18/2	
17090 P0706	2 Dcy	E18/2	
17094 P0710	Off	E18/2	

01-49

V.A.G1551 Scan Tool print out	Condition of MIL	Hydraulic Control	Possible malfunction cause and corrective action
17095 P0711	Off	E18/2	DTCs starting at ⇒ page 01-53
17096 P0712	Off	E18/2	
17097 P0713	Off	E18/2	
17100 P0716	2 Dcy	E18/2	
17101 P0717	On	E17	
17105 P0721	2 Dcy	E18/2	
17114 P0730	2 Dcy	E18/2	
17115 P0731	2 Dcy	E18/2	
17116 P0732	2 Dcy	E18/2	
17117 P0733	2 Dcy	E18/2	
17118 P0734	2 Dcy	E18/2	
17119 P0735	2 Dcy	E18/2	
17125 P0741	2 Dcy	E18/2	
17135 P0751	2 Dcy	E18/2	
17136 P0752	2 Dcy	E18/2	

01-50

V.A.G1551 Scan Tool print out	Condition of MIL	Hydraulic Control	Possible malfunction cause and corrective action
17137 P0753	2 Dcy	E18/2	DTCs starting at ⇒ page 01-53
17140 P0756	2 Dcy	E18/2	
17141 P0757	2 Dcy	E18/2	
17142 P0758	2 Dcy	E18/2	
17145 P0761	2 Dcy	E18/2	
17146 P0762	2 Dcy	E18/2	
17147 P0763	2 Dcy	E18/2	
17968 P1560	2 Dcy	E18/2	
18112 P1704	Off	E18/2	
18141 P1733	Off	E17 and E18/2	
18147 P1739	Off	E17 and E18/2	
18152 P1744	Off	E17 and E18/2	
18153 P1745	2 Dcy	E18/2	
18155 P1747	2 Dcy	E18/2	

01-51

V.A.G1551 Scan Tool print out	Condition of MIL	Hydraulic Control	Possible malfunction cause and corrective action
18156 P1748	2 Dcy	E18/2	DTCs starting at ⇒ page 01-53
18157 P1749	Off	E18/2	
18158 P1750	2 Dcy	E18/2	
18159 P1751	2 Dcy	E18/2	
18169 P1761	Off	E18/2	
18170 P1762	Off	E18/2	
18171 P1763	Off	E18/2	
18179 P1771	Off	E17	
18180 P1772	Off	E17	
18192 P1784	Off	E17	
18193 P1785	Off	E17	
18222 P1814	2 Dcy	E18/2	
18223 P1815	2 Dcy	E18/2	
18227 P1819	2 Dcy	E18/2	
18228 P1820	2 Dcy	E18/2	
18232 P1824	2 Dcy	E18/2	

01-52

V.A.G1551 Scan Tool print out	Condition of MIL	Hydraulic Control	Possible malfunction cause and corrective action
18233 P1825	2 Dcy	E18/2	DTCs starting at ⇒ page 01-53
18237 P1829	2 Dcy	E18/2	
18238 P1830	2 Dcy	E18/2	
18242 P1834	2 Dcy	E18/2	
18243 P1835	2 Dcy	E18/2	
18249 P1841	2 Dcy	E18/2	
18258 P1850	Off	E18/2	
18259 P1851	Off	E18/2	
18262 P1854	Off	E18/2	
18263 P1855	Off	E18/2	
18264 P1856	2 Dcy	E17 and E18/2	
18265 P1857	Off	E17 and E18/2	
18269 P1861	Off	E18/2	
65535	On	E17	

Output Diagnostic Test Mode (DTM) (scan tool function 03)

Note:

There are two different transmissions:

- ◆ *Transmission with hydraulic controls -E17-, on which the transmission input speed sensor (inductive sensor) is secured to the underside of the valve body.*
- ◆ *Transmission with hydraulic regulation -E18/2-, on which the transmission input speed sensor (camshaft position sensor) is secured behind the valve body at the transmission housing.*

For information on which transmission is installed, refer to tables from the following Repair Manual:

⇒ [Repair Manual, 5 Spd. Automatic Transmission 01V, Repair Group 00](#)

**Output Diagnostic Test Mode (DTM) for transmission with hydraulic regulation -E17-
⇒ [page 01-164](#)**

Output Diagnostic Test Mode (DTM) for transmission with hydraulic regulation -

E18/2- ⇒ [page 01-171](#)

Output Diagnostic Test Mode (DTM) (scan tool function 03), transmissions with hydraulic regulation -E17-

Note:

- ◆ *The Output Diagnostic Test Mode (DTM) can only be performed when the ignition is switched off, the selector lever is in position "P", the engine is not running, and the vehicle is stationary.*
- ◆ *DTM will be terminated when the engine is started.*
- ◆ *The function of solenoid valves 1 -N88-, 2 -N89-, 3 -N90- and the solenoids for the selector lever lock are checked acoustically during the DTM. Avoid noise in the surrounding area during the acoustic check, because the switching noise (clicking) of the actuators is very quiet.*
- ◆ *The solenoid valves 4 -N91-, 5 -N92-, 6 -N93- and 7 -N94- are activated during the DTM. A direct functional check of these valves is not possible. But possible electrical faults which occur during the activation, will be recognized by the On Board Diagnostic (OBD) and stored in the DTC memory.*

- ◆ *When performing the Output Diagnostic Test Mode (DTM), the individual actuators will be activated until the → button is pressed.*
- ◆ *Only one complete DTM is possible after switching the ignition on. To repeat DTM, the ignition must be switched off and on again.*

Activation sequence
1. Solenoid Valve 1 -N88-
2. Solenoid Valve 2 -N89-
3. Solenoid Valve 3 -N90-
4. Shift Lock solenoid -N110-
5. Solenoid Valve 4 -N91-
6. Solenoid Valve 5 -N92-
7. Solenoid Valve 6 -N93-
8. Solenoid Valve 7 -N94-
9. Kick-down Switch -F8- (Kick-down for air conditioner)
10. Solenoid Valve Relay

Test sequence

- Connect VAS 5051 tester or V.A.G 1551 scan tool and enter address word 02 for "Control module for Transmission electronics" ⇒ [page 01-40](#) .

Ignition must be switched off during this process.

Rapid data transfer **HELP**
Select function XX



Indicated on display:

- Press keys 0 and 3. (03 selects the function "Output Diagnostic Test Mode").

Rapid data transfer **Q**
03 - Output Diagnostic Test Mode



Indicated on display

- Press Q- button to confirm entry.

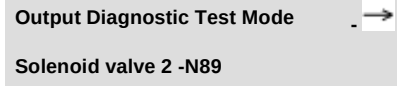
Output Diagnostic Test Mode 
Solenoid valve 1 -N88



Indicated on display

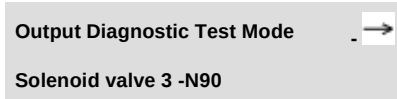
- Valve is activated (clicks). To switch to next actuator press → key.
- If valve does not click, perform electrical check ⇒ [Page 01-273](#) .
- ◆ Malfunction is stored in DTC memory, see DTC table ⇒ [Page 01-45](#) .

01-167



◀ Indicated on display

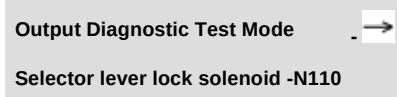
- Valve is activated (clicks) To switch to next actuator press → key.
- If valve does not click, perform electrical check ⇒ [Page 01-273](#) .



◀ Indicated on display

- Valve is activated (clicks). To switch to next actuator press → key.
- If valve does not click, perform electrical check ⇒ [Page 01-273](#) .

Malfunction is stored in DTC memory, DTC table ⇒ [Page 01-45](#) .



◀ Indicated on display

- Solenoid is activated (clicks). Switch to next actuator press → key.
- If solenoid does not click, perform electrical check ⇒ [Page 01-273](#) .
- ◆ Malfunction is stored in DTC memory, DTC table ⇒ [Page 01-45](#) .

01-168

Output Diagnostic Test Mode 
Solenoid valve 4 -N91



Indicated on display

- Valve is activated (clicks). To switch to next actuator press → key.

Electrical malfunctions will be stored in DTC memory. See DTC table ⇒ [Page 01-45](#) .

Output Diagnostic Test Mode 
Solenoid valve 5 -N92



Indicated on display

- Valve is activated (clicks). To switch to next actuator press → key.

Electrical malfunctions will be stored in DTC memory. See DTC table ⇒ [Page 01-45](#) .

Output Diagnostic Test Mode 
Solenoid valve 6 -N93



Indicated on display

- Valve is activated (clicks). Switch to the next actuator press → key.

Electrical malfunctions will be stored in DTC memory. See DTC table ⇒ [Page 01-45](#) .

01-169

Output Diagnostic Test Mode



Solenoid valve 7 -N94



Indicated on display

- Valve is activated (clicks). To switch to next actuator press → key.

Electrical malfunctions will be stored in DTC memory. See DTC table ⇒ [Page 01-45](#) .

Output Diagnostic Test Mode



Kick-down switch -F8



Indicated on display

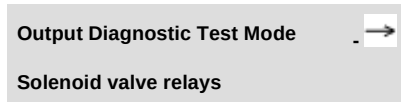
Notes:

- ◆ *It is not the kick-down switch -F8-, but the switch-off function for the air conditioner in transmission control module -J217- which is activated.*
- ◆ *If the kick-down switch is operated, the Transmission Control Module (TCM) grounds the output to air conditioner. This briefly switches off the air conditioner compressor.*
- ◆ *Can be disregarded here.*
- ◆ *The signal can be checked in measured value block 011 ⇒ [01-186](#) .*
- ◆ *For checking function of Kick-down switch -F8- ⇒ [Page 01-273](#) Electrical check.*

⇒

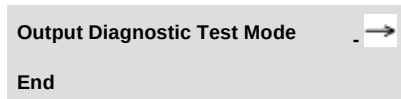
- Press → key to switch to the next actuator.

01-170



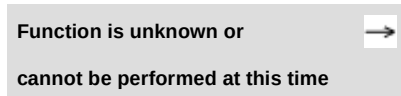
◀ Indicated on display

- Solenoid valves activated in position "P" are activated (click), press → key to switch to the next actuator.
- ◆ Can be disregarded.
- Press → key.



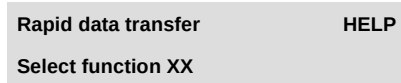
◀ Indicated on display

- Press → key



◀ Indicated on display

- Pressing the → key will terminate the Output Diagnostic Test Mode.



◀ Indicated on display:

- To repeat Output Diagnostic Test Mode, the ignition must be switched off and then on again. Now select function 03 - Output Diagnostic Test Mode again.

01-171

Output Diagnostic Test Mode (DTM) (scan tool function 03), transmissions with hydraulic regulation -E18/2-

Note:

- ◆ *The Output Diagnostic Test Mode (DTM) can only be performed when the ignition is switched off, the selector lever is in position "P", the engine is not running, and the vehicle is stationary.*
- ◆ *DTM will be terminated if the engine is started.*
- ◆ *The function of solenoid valves 1 -N88-, 2 -N89-, 3 -N90- and the solenoids for the shift lock are checked acoustically during DTM. Avoid noise in the surrounding area during the acoustic check, because the switching noise (clicking) of the final controls is very quiet.*
- ◆ *The pressure control valves 1 -N215-, 2 -N216-, 3 -N217- and 4 -N218- are activated during DTM. A direct functional check of these valves is not possible. But possible electrical faults which occur during the activation will be recognized and stored in DTC memory.*

01-172

- ◆ *When performing the Output Diagnostic Test Mode (DTM) the individual actuators will be activated until the → button is pressed.*
- ◆ *Only one complete DTM is possible after switching the ignition on. To repeat DTM, the ignition must be switched off and on again.*

Activation sequence
1. Solenoid Valve 1 -N88-
2. Solenoid Valve 2 -N89-
3. Solenoid Valve 3 -N90-
4. Shift Lock solenoid -N110-
5. Pressure Control Valve -1- for Auto. Transmission -N215-
6. Pressure Control Valve -2- for Auto. Transmission -N216-
7. Pressure Control Valve -3- for Auto. Transmission -N217-
8. Pressure Control Valve -4- for Auto. Transmission -N218-
9. Voltage supply for solenoid valves

01-173

Test sequence

- Connect VAS 5051 tester or V.A.G 1551 scan tool and enter address word 02 for "Control module for transmission electronics" ⇒ [page 01-40](#) .

Ignition must be switched off during this process.

Rapid data transfer HELP
Select function XX



Indicated on display:

- Press keys 0 and 3. (03 selects function "Output Diagnostic Test Mode").

Rapid data transfer Q
03 - Output Diagnostic Test Mode



Indicated on display

- Confirm entry with Q button.

Output Diagnostic Test Mode (DTM)
Shift valve 1 ⇒ Solenoid Valve 1 -N88



Indicated on display:

- Valve is activated (clicks), to switch to the next actuator press → key.
- If valve does not click, perform electrical check ⇒ [Page 01-273](#) .
- ♦ Malfunction is stored in DTC memory, see DTC table ⇒ [Page 01-45](#)

01-174

Output Diagnostic Test Mode (DTM)

Shift valve 2 ⇒ Solenoid Valve 2 -N89



Indicated on display:

- Valve is activated (clicks) To switch to next actuator press → key.
- If the valve does not click, perform electrical check ⇒ [Page 01-273](#) .
- ◆ Malfunction is stored in DTC memory, see DTC table ⇒ [Page 01-45](#)

Output Diagnostic Test Mode (DTM)

Shift valve 3 ⇒ Solenoid Valve 3 -N90



Indicated on display:

- Valve is activated (clicks). To switch to the next actuator press → key.
- If valve does not click, perform electrical check ⇒ [Page 01-273](#) .
- ◆ Malfunction is stored in DTC memory, see DTC table ⇒ [Page 01-45](#)

Output Diagnostic Test Mode (DTM)

Shift lock Solenoid -N110



Indicated on display:

- Solenoid is activated (clicks). To switch to the next actuator press →key.
- If solenoid does not click, perform electrical check ⇒ [Page 01-273](#) .
- ◆ Malfunction is stored in DTC memory, DTC table ⇒ [Page 01-45](#)

Output Diagnostic Test Mode (DTM)

Press. control valve -1- for auto. trans. -N215



Indicated on display:

- Pressure control valve -N215- is activated (clicks). To switch to the next actuator press → key.
- ◆ Electrical malfunctions will be stored in DTC see DTC table ⇒ [Page 01-45](#) .

Output Diagnostic Test Mode (DTM)

Press. control valve -2- for auto. trans. -N216



Indicated on display:

- Pressure Control valve -N216- is activated (clicks). To switch to the next actuator press → key.
- ◆ Electrical malfunctions will be stored in DTC, see DTC table ⇒ [Page 01-45](#) .

Output Diagnostic Test Mode (DTM)

Press. control valve -3- for auto. trans -N217



Indicated on display:

- Pressure Control valve -N217- is activated (clicks). To switch to the next actuator press → key.
- ◆ Electrical malfunctions will be stored in DTC, see DTC table ⇒ [Page 01-45](#) .

01-176

Output Diagnostic Test Mode (DTM)

Press control valve -4- for auto. trans. -N218



Indicated on display:

- Pressure Control valve -N218- is activated (clicks) To switch to next actuator press → key.

◆ Electrical malfunctions will be stored in DTC memory, see DTC table ⇒ [Page 01-45](#)

Note:

"Pressure Regulating Valve -5- for Automatic Transmission -N233-" could now be displayed erroneously due to a software error, even though it does not exist. Disregard this display. Press → button to switch to the next actuator.

Output Diagnostic Test Mode (DTM)

Press reg. valve -5- for auto trans. -N233

Output Diagnostic Test Mode (DTM)

Voltage supply for solenoid valves



Indicated on display:

Solenoid valves activated in position "P" are activated (click). Press → key to switch to the next actuator.

◆ Can be disregarded.

- Press → key.

01-177

Function is unknown or



cannot be carried out at the moment



Indicated on display

- Pressing the → key will terminate Output Diagnostic Test Mode.

Rapid data transfer

HELP

Select function XX



Indicated on display:

- To repeat Output Diagnostic Test Mode, switch ignition off and then on again. Now select function 03 - Output Diagnostic Test Mode again.

DTC Memory, erasing (scan tool function 05)

Requirement:

- DTC memory checked ⇒ [page 01-43](#) .

After DTC memory has been checked:

Rapid data transfer HELP
Select function XX



Indicated on display:

- Press keys 0 and 5. (With function 05 "Erase DTC memory" is entered)

Rapid data transfer Q
05 Erase DTC memory



Indicated on display:

- Confirm entry with Q button.

WARNING!
DTC memory was not checked



Indicated on display:

Note:

If the ignition was switched off e.g. between checking the DTC memory and erasing DTC memory, the DTC memory is then not erased.

- *Exactly follow the work sequence. The DTC memory must first be checked.*

01-179

Rapid data transfer



DTC memory is erased!



Indicated on display:

(The DTC memory will be erased approx. 5 seconds. after the display appears.)

The DTC memory is now erased.

Note:

Wait about 1 minute before checking the DTC memory again.

System cannot be checked!



Indicated on display:

1 Fault recognized !

00811 3333

System cannot be checked



Print out with printer switched on:

Transmission Control Module (TCM) -J217- was not given sufficient time to recognize faults.

- Wait about 1 minute before checking the DTC memory again.
- After checking and erasing DTC memory, test drive the car and check DTC memory again.

When the DTC memory is being checked, the following display should appear:

"No DTC recognized!"

01-180

Transmission Control Module (TCM), coding (scan tool function 07)

Procedure

- Connect VAS5051 tester or V.A.G1551 scan tool and select Transmission Control Module (TCM) using "address word" 02 ⇒ [page 01-40](#) .

Ignition must remain switched on.

Rapid data transfer

HELP

Select function XX



Indicated on display

Print out control module identification:

- Switch on printer by pressing print button (indicator lamp in button lights up).
- Press buttons -0- and -1-.
- Press -Q- button to confirm input.

8D0927156BT AG5 01V 2.8l 5V USA 1416

Coding 00002

WSC 00000



Indicated on display

Control module identification is displayed:

Depending on the control module version (software version), the control module may indicate a different identification than shown in this example. For allocation of control module

⇒ *Parts catalog*

01-181

Explanation of display:

- ◆ 8D0927156BT: Part number
- ◆ AG5 01V: Automatic Transmission, 5-speed 01V
- ◆ 2,8l 5V: Engine type
- ◆ USA: Market, USA and Canada
- ◆ 1416: 14 = software version, 16 = data version
- ◆ Coding 00002: Coding (see Coding tables ⇒ [page 01-184](#))
- ◆ WSC 00000: Factory identification of V.A.G1551, with the last coding that was performed

- Press → button.

TCM identification can only be printed out when printer is switched on.

Rapid data transfer

HELP

Select function XX



Indicated on display

Note:

Read Transmission Control Module (TCM) identification to determine which transmission/engine combination is present in this case, see explanation above. Then use coding table to determine whether the appropriate code was entered.

- Press buttons -0- and -7-. This selects "Coding Control Module", function 07.

01-182

Note:

*Coding can only be performed with ignition on and selector lever in position "P" or "N".
Accelerator pedal must be in idle position.
Vehicle must be stationary and engine must not be started.*

Rapid data transfer Q
07 Code control module



Indicated on display

- Press -Q- button to confirm input.

Code control module HELP
Input code number XXXXX



Indicated on display

- Enter code

Note:

Find control module identification in coding tables starting on ⇒ [page 01-184](#) and enter it into tester. The Dynamic Shifting Program (DSP) should remain on at all times if possible.

- Press -Q- button to confirm input.

Note:

DTC memory in the control module is automatically erased following coding.

- Press → button.

Rapid data transfer

HELP

Select function XX



Indicated on display

- Check TCM version (press buttons -0- and -1-), confirm input with Q button and check coding ⇒ [page 01-34](#) .

01-183

DTC



Coding XXXXX not accepted



When indicated on display: An attempt was made to enter a code that is not valid or unrecognized by the control module.

Note:

- ◆ *If a wrong code was entered, the control module will retain the old code.*

8D0927156BT AG5 01V 2.8l 5V USA 1416

Coding 00002

WSC 00000



Indicated on display

Note:

- ◆ *A control module identification that has been wrongly entered is only indicated alongside the old coding for older V.A.G1551 tester cards.*

Function is unknown or cannot be



carried out at the moment



When indicated on display:

An attempt was made to perform coding in an unauthorized coding condition, e.g. with the vehicle was being driven.

01-184

Coding tables

For vehicles without E-gas

Code	Transm. Code	Engine	Dynamic Shift Program (DSP)	Market
00000	DDT	All valid engine/transmission combinations without E-gas	DSP active	Rest of world and USA FWD and Quattro
	DKB	This information is in the following repair manuals:		
	DRD	⇒ Repair Manual, 5 Spd. Automatic Transmission 01V, Repair Group 00, engine codes, engine/transmission allocation, ratios, equipment		
	DRN			
	DTV			

01-185

For vehicles with E-gas

Code	Engine	Dynamic Shift Program (DSP)	Market
00000	Not permitted code		
00001	All valid engine/transmission combinations with E-gas	DSP active	Rest of world Quattro
00002	This information is in the following repair manuals:	DSP active	USA Quattro
00003	⇒ Repair Manual, 5 Spd. Automatic Transmission 01V, Repair Group 00, engine codes, engine/transmission allocation, ratios, equipment	DSP active	Rest of world FWD
00004		DSP active	USA FWD

01-186

Read Measuring Value Block (scan tool function 08)

Notes:

There are two types of transmissions:

- ◆ 1. *Transmissions with hydraulic control -E17-:
The sensor for transmission RPM (inductive sensor) is secured to the bottom of the valve body.*
- ◆ 2. *Transmissions with hydraulic control -E18/2-:
The sensor for transmission RPM (hall effect sensor) is secured to the transmission housing behind the valve body.*

Information about which transmission is installed

⇒ [Repair Manual, 5 Spd. Automatic Transmission 01V, Repair Group 00, engine codes, engine/transmission allocation, ratios, equipment](#)

Read measuring value block for transmission with hydraulic control -E17- ⇒ [page 01-187](#)

Read measuring value block for transmission with hydraulic control E18/2 ⇒ [page 01-228](#)

01-187

Read Measuring Value Block (scan tool function 08) for transmissions with hydraulic control -E17-

Note:

*For transmissions with hydraulic control -E18/2-,
"Read Measuring Value Block" ⇒ [page 01-228](#)*

WARNING!

***To avoid accidents during measuring and test
drives, observe safety precautions ⇒ [page
01-34](#) .***

Procedure

- Connect VAS 5051 tester or V.A.G 1551 Scan Tool (ST) and select Transmission Control Module (TCM) using "address word" 02 ⇒ [page 01-36](#) . Ignition must remain switched on.

Rapid data transfer

HELP

Select function XX



Indicated on display

- Press PRINT button to turn on ST printer. Indicator lamp in button must light up.
- Press buttons -0- and -8- to select "Read Measuring Value Block" and press -Q- button to confirm input.

01-188

Read measuring value block Q
Enter display group number XXX



When indicated on display:

- Enter desired display group number, display group overview, ⇒ [page 01-189](#).
- Press Q button to confirm input.

Read measuring value block 1 →
1 2 3 4



Indicated on display (example) for display group 001:

Notes:

- ◆ *Explanation of values in the individual display fields ⇒ [Test table page 01-194](#).*
- ◆ *Display can be printed out when printer is switched on.*
- ◆ *To switch to a different display group, proceed as follows:*

Display group	V.A.G 1551	VAS 5051 tester
Higher	Press button -3-	Press ▲ button.
Lower	Press button -1-	Press ▼ button.

- If specified values are obtained in all display fields, press → button.

Rapid data transfer HELP
Select function XX



Indicated on display (function selection):

01-189

Overview of selectable display group numbers for transmission with hydraulic control -E17-

Indicated on display (example)			
Display fields: 1 2 3 4 J J J	Display group no.	Display field	Description
Read measuring value block 1 → 0 RPM 0 RPM 0 RPM 4	001	1 2 3 4	Engine speed (RPM) Sensor for Transmission RPM -G182- Transmission Vehicle Speed Sensor -G38- Driving range selected
Read measuring value block 2 → 0 0 % 0 RPM 4	002	1 2 3 4	Dynamic code number Throttle valve value Transmission Vehicle Speed Sensor -G38- Driving range selected
Read measuring value block 3 → PN active 0 km/h 12.8 V	003	1 2 3 4	Brake "P" "N" lock Speed Supply voltage pin 54, 55

01-190

Indicated on display (example)			
Display fields: 1 2 3 4 	Display group no.	Display field	Description
Read measuring value block 4 → 21.0 ° C P 1000	004	1 2 3 4	ATF temperature Selector lever position Multi-function switch position On Board Diagnostic (OBD) ¹⁾ information Request for engine intervention ²⁾
Read measuring value block 5 → 0 0 0 4	005	1 2 3 4	Solenoid valve 1 -N88- Solenoid valve 2 -N89- Solenoid valve 3 -N90- Driving range selected
Read measuring value block 6 → 0.747A 0.747A 0.747A 4	006	1 2 3 4	Specified current of solenoid valve 4 -N91- Specified current of solenoid valve 5 -N92- Specified current of solenoid valve 6 -N93- Driving range selected

1) Only for vehicles with CAN-bus. For information about which vehicles are equipped with CAN-bus

⇒ [Repair Manual, 5 Spd. Automatic Transmission 01V, Repair Group 00, engine codes, engine/transmission allocation, ratios, equipment](#)

2) Only for vehicles without CAN-bus. For information about which vehicles are equipped with CAN-bus

⇒ [Repair Manual, 5 Spd. Automatic Transmission 01V, Repair Group 00, engine codes, engine/transmission allocation, ratios, equipment](#)

01-191

Indicated on display (example)			
Display fields: 1 2 3 4 	Display group no.	Display field	Description
Read measuring value block 7 → 21.0 ° C 0.747A TC on 0 RPM	007	1 2 3 4	ATF temperature Specified current of solenoid valve 7 -N94- Torque converter clutch Torque converter slip speed
Read measuring value block 8 → 0 % 5 %	008	1 2 3 4	Kick down switch Throttle valve value Engine torque in Nm ¹⁾ Throttle valve duty cycle in % ²⁾ Deceleration mode/engine under load
Read measuring value block 9 → 100 Nm 350 Nm 0 RPM 0%	009 ¹⁾	1 2 3 4	Engine torque (actual) Maximum torque Engine speed (RPM) Throttle valve value

1) Only for vehicles with CAN-bus. For information about which vehicles are equipped with CAN-bus

⇒ [*Repair Manual, 5 Spd. Automatic Transmission 01V, Repair Group 00, engine codes, engine/transmission allocation, ratios, equipment*](#)

2) Only for vehicles without CAN-bus. For information about which vehicles are equipped with CAN-bus

⇒ [*Repair Manual, 5 Spd. Automatic Transmission 01V, Repair Group 00, engine codes, engine/transmission allocation, ratios, equipment*](#)

01-192

Indicated on display (example)			
Display fields: 1 2 3 4 	Display group no.	Display field	Description
Read measuring value block 9 → 100 Nm 0 RPM 0 % 0.00 ms	009 ²⁾	1 2 3 4	Engine torque (actual) Engine speed (RPM) Throttle valve value Fuel consumption signal
Read measuring value block 10 → 0,00 0 RPM 4	010	1 2 3 4	Torque increase in torque converter Engine speed (RPM) Gear selected Anti-Slip Regulation (ASR)
Read measuring value block 11 → D M-switch up button Compr. ON	011	1 2 3 4	Selector lever position Tiptronic recognition Tiptronic Switch -F189- Air conditioning kick down

²⁾ Only for vehicles without CAN-bus For information on which vehicles are equipped with CAN-bus

⇒ [Repair Manual, 5 Spd. Automatic Transmission 01V, Repair Group 00, engine codes, engine/transmission allocation, ratios, equipment](#)

01-193

Notes:

◆ *When the printer is switched on, the contents of the display will be printed out on the scan tool log.*

◆ *If specified values are not obtained in all display fields:*

- Press → button.



Indicated on display

Rapid data transfer

HELP

Select function XX

01-194

Test table for transmissions with hydraulic control -E17-

Display group No.	Display field	Description	Test requirements	Spec. Value on V.A.G 1551 display	Corrective actions
001	1	Engine speed (RPM)	with engine running	approx. 0...8200 RPM	- Perform electrical test ⇒ page 01-273 - Check identification of Transmission Control Module (TCM) ⇒ page 01-273 , replace if necessary - Check DTCs of Engine Control Module (ECM) and if necessary check identification
	2	Sensor for transmission RPM - G182-	while driving, with gear selected ¹⁾	RPM	- see DTC table, DTC number 17100 / P0716 ⇒ page 01-45
	Continue ▼		R	approx. 0...10	
			1M	approx. 0...10	

¹⁾ While driving, a second mechanic is required to read specifications.

01-195

Only for transmission with hydraulic control -E17-

Display group No.	Display field	Description	Test requirements	Spec. value on V.A.G 1551 display	Corrective actions
001	2	Sensor for Transmission RPM -G182-	1 With engine under load	approx. 0...10	- Perform electrical test ⇒ page 01-273 - Read measuring value block, Display group number 007 and determine which elements are faulty or not activated while driving
			1 In deceleration mode	approx. 0...300	
			2	approx. 0...4000 ¹⁾	
			3	approx. 0...8200 ¹⁾	
			4	approx. 0...8200 ¹⁾	
			5	approx. 0...8200 ¹⁾	
Continue ▼					

¹⁾ Indication should mimic the current engine speed in display field 1, i.e. when engine speed increases or decreases, transmission input RPM should increase or decrease.

01-196

Only for transmission with hydraulic control E17

Display group No.	Display field	Description	Test requirements	Spec. value on V.A.G 1551 display	Corrective actions
001	3	Transmission Vehicle Speed (VSS) sensor -G38- ²⁾	While driving, with gear selected ¹⁾	... RPM ³⁾	- See appropriate DTC for Transmission Vehicle Speed Sensor (VSS) -G38- (also called sensor for transmission output RPM -G195-) ²⁾
			R	approx. 0...2000	- Perform electrical test ⇒ page 01-273
			1M, 1	approx. 0...1200	
			2	approx. 0...4000	
			3	approx. 0...5800	
			4	approx. 0...8200	- Read measuring value block, display group number 007
			5	approx. 0...8200	- Determine while driving which elements are faulty and which aren't active
Continue ▼					

Notes and footnotes for display field 1 to 3 of display group number 001 are on the next page.

01-197

- 1) While driving, a second mechanic is required to read specifications.
- 2) Also referred to as the sensor for transmission output RPM -G195-.
- 3) Indication should mimic the engine speed in display field 1, i.e. when engine speed increases or decreases, transmission RPM (output RPM) should increase or decrease.

Notes for display group number 001, display field 1 to 3;

- ◆ *Test conditions: Shifting process must be finished. Vehicle must not be in deceleration mode (no down-hill driving or engine braking).*

01-198

Only for transmission with hydraulic control -E17-

Display group No.	Display field	Description	Test requirements	Spec. value on V.A.G 1551 display	Corrective actions
001	4	Gear selected	while driving ¹⁾	Selector lever position	- Check solenoid valves. See display group number 005 and 006
				"N"	- See DTC table, DTC numbers of appropriate solenoid valves
				"R"	- Check selector lever position. Display group number 004
				"D"	
				"4"	
				"3"	
				"2"	

Notes and footnotes for display field 4 of display group number 001 are on the next page.

01-199

- 1) While driving, a second mechanic is required to read specifications.
- 2) Transmission Control Module (TCM) is equipped with an automatic gear follower. The forward gear is indicated that the TCM would activate in selector lever position "D".

Note on selected gear :

- ◆ *Faulty solenoid valves or other diagnostic malfunctions can prevent the selection of certain gears.*

01-200

Only for transmission with hydraulic control -E17-

Display group No.	Display field	Description	Test requirements		Spec. value on V.A.G 1551 display	Corrective actions
002	1	Dynamic code number (of dynamic shifting program)	Under normal driving conditions ¹⁾	Min. value (very economical)	0	Determined by driving style and street conditions (acceleration, accelerator pedal movement, speed and load)
				Max. value (very sporty)	240	High values move shift points to higher engine speeds
			Warm-up program is active		241	Shifting avoided whenever possible
			Anti-Slip Regulation (ASR) active		242	
			Tiptronic recognition activated		243	- See appropriate DTCs for Tiptronic Switch -F189-
			Cruise control system characteristic map		244	Only for USA, not applicable yet

- 1) While driving, a second mechanic is required to read specifications.

01-201

Only for transmission with hydraulic control -E17-

Display group No.	Display field	Description	Test requirements	Spec. value on V.A.G 1551 display	Corrective actions
002	2	Throttle valve value	While standing idle	0...1 %	When accelerating from idle to Wide Open Throttle (WOT), %-value increases steadily.
			Wide Open Throttle (WOT)	99...100 %	- Perform electrical test ⇒ page 01-273 - See respective DTCs of Throttle Position (TP) sensor - G69-
	3	Transmission Vehicle Speed (VSS) sensor - G38- ²⁾	While driving ¹⁾	0...8200	- See appropriate DTC for VSS -G38- (-G195-) ²⁾ - See display group number 001
	4	Gear selected	See display group number 1, display field 4		

¹⁾ While driving, a second mechanic is required to read specifications.

²⁾ Also referred to as sensor for transmission output RPM -G195-.

01-202

Only for transmission with hydraulic control -E17-

Display group No.	Display field	Description	Test requirements		Spec. value on V.A.G 1551 display	Corrective actions
003	1	Brake light switch -F-		Brake not operated	-	- See appropriate DTCs for brake light switch -F-
				Brake activated	Brake	- Perform electrical test ⇒ page 01-273
	2	Shift lock solenoid -N110- ²⁾	While standing	brake not operated	P N active	- See appropriate DTC for shift lock solenoid -N110- ²⁾
				brake activated	P N not selected	- Check shift lock solenoid -N110-. Perform electrical test ⇒ page 01-273
	3	Speed	While driving ¹⁾		...km/h	Speedometer display and value on V.A.G1551 may deviate slightly from each other. - If necessary, check Speedometer Vehicle Speed sensor (VSS) -G22-
Continue						

▼					
---	--	--	--	--	--

- 1) While driving, a second mechanic is required to read specifications.
- 2) Shift lock solenoid -N110- is also referred to as shift lock $\Rightarrow$ solenoid -N110-.

01-203

Only for transmission with hydraulic control -E17-

Display group number	Display field	Description	Test requirements	Spec. value on V.A.G 1551 display	Corrective actions
003	4	Supply voltage, terminal 15	While standing	min. 10.0 V	- Perform electrical test ⇒ page 01-273 - See DTC table, DTC 00532 ⇒ page 01-45
				max. 16.0 V	
004	1	ATF temperature	While standing with engine running.	... °C	- Perform electrical test ⇒ page 01-273 - See appropriate DTCs for Transmission Fluid (ATF) Temperature sensor -G93-
Continue ▼					

Notes for ATF temperature:

◆ Recognized temperature of minus 50° C indicates a short circuit to Ground (GND)

- ◆ *Recognized temperature of minus 180° C indicates a short circuit to B+ or an open circuit*

01-204

Only for transmission with hydraulic control -E17-

Display group No.	Display field	Description	Test requirements	Spec. value on V.A.G 1551 display	Corrective actions
004	2	Selector lever position - (Multi-function Transmission Range (TR) switch -F125-)	While standing	P	- Check TR switch -F125-. Display group no. 004
			Selector	R	- Perform electrical test ⇒ page 01-273
			lever	N	Check for agreement with indication in instrument cluster
			in	D	
				4	
				3	- If necessary adjust selector lever bowden cable
				2	⇒ Repair Manual, 5 Spd. Automatic Transmission 01V, Repair Group 37, shift mechanism, repairing
Continue ▼					

01-205

Only for transmission with hydraulic control -E17-

Display group No.	Display field	Description	Test requirements		Spec. value on V.A.G 1551 display	Corrective actions
004	3	Multi-function Transmission Range (TR) switch -F125-	while standing	Selector lever position	L1 L2 L3 L4	- See appropriate DTC for TR switch -F125- ¹⁾
				P	1000	- Check TR switch -F125-
				R	0100	- Perform electrical test ⇒ page 01-273
				N	1110	- If necessary adjust selector lever bowden cable ⇒ Repair Manual, 5 Spd. Automatic Transmission 01V, Repair Group 37, shift mechanism, repairing
				D	1011	
				4	0111	
				3	0001	
				2	0010	
Continue ▼						

01-206

Notes for display field 3 of display group number 004:

- ◆ *Input signals of Multi-function Transmission Range (TR) switch -F125- can be checked at the Transmission Control Module (TCM).*

	Display field 3: (from left to right)			
	L 1	L 2	L 3	L 4
Wiring connection to TCM - J217-	Terminal 36 of - J217-	Terminal 8 of -J217-	Terminal 37 of - J217-	Terminal 9 of -J217-

01-207

Only for transmission with hydraulic control -E17-

Display group number	Display field	Description	Test requirements	Spec. value on V.A.G 1551 display	Corrective actions
004 without CAN-bus	4	Engine intervention (ignition intervention)	While driving ¹⁾ Engine speed signal OK		- See DTC table, DTC 00545, 18192 and 18193 ⇒ page 01-45
			is switched on	Engine interv.	- Perform electrical test ⇒ page 01-273 - Check wire connection to Engine Control Module (ECM)
			is switched off	-	- Only replace Transmission Control Module (TCM) -J217- if necessary ⇒ page 01-11

¹⁾ While driving, a second mechanic is required to read specifications.

Notes for display field 4 of display group number 004 are on the next page:

Notes for display field 4 of display group number 004:

- ◆ *This display field 4 is only valid for vehicles without CAN-bus, refer to next page for vehicles with CAN-bus. A)*
- ◆ *Engine intervention is only activated during the shifting process. Depending on the driving situation, engine intervention may only be activated briefly, i.e. the relatively slow data transfer to the V.A.G1551 can miss this brief engine intervention under certain driving conditions.*

A) There is a distinction made between vehicles with and without CAN-bus. For information on which vehicles are equipped with CAN-bus

⇒ [Repair Manual, 5 Spd. Automatic Transmission 01V, Repair Group 00, engine codes, unit allocation, ratios, equipment](#)

01-209

Only for transmission with hydraulic control -E17-

Display group number	Display field	Description	Test requirements	Spec. value on V.A.G 1551 display	Corrective actions
004 with CAN-bus	4	Information of On Board Diagnostic (OBD)	While driving ¹⁾		not applicable
		Indicated on display from left to right			
		Malfunction display	switched on	1	
			switched off	0	
		Trip	completed	1	
			not completed	0	
		Transmission warm-up	completed	1	
			not completed	0	
		Engine start	recognized	1	
			not recognized	0	

¹⁾ While driving, a second mechanic is required to read specifications.

Notes for display field 4 of display group number 004 ⇒ see next page

01-210**Notes for display field 4 of display group number 004:**

- ◆ *This display field 4 is only valid for vehicles with CAN-bus, refer to previous display field 4 for vehicles without CAN-bus.*
A)

A) There is a distinction made between vehicles with and without CAN-bus. For information on which vehicles are equipped with CAN-bus

⇒ [Repair Manual, 5 Spd. Automatic Transmission 01V, Repair Group 00, engine codes, aggregate allocation, ratios, equipment](#)

01-211

Only for transmission with hydraulic control -E17-

Display group No.	Display field	Description	Test requirements		Spec. value on V.A.G 1551 display	Corrective actions
005	1	Solenoid valve 1 - N88- ²⁾	while driving ¹⁾	Gear selected		- See appropriate DTC for solenoid valve 1 -N88- ²⁾
				R, 5, 2, 1, 1M	1	
				3, 4	0	
	2	Solenoid valve 2 - N89- ³⁾	while driving ¹⁾	Gear selected		- See appropriate DTC for solenoid valve 2 -N89- ³⁾
				3, 2, 1	1	
				R, 1M, 4, 5	0	
Continue ▼						- Perform electrical test ⇒ page 01-273

¹⁾ While driving, a second mechanic is required to read specifications.

²⁾ Solenoid valve 1 -N88- is also referred to as shift valve 1 ⇒ solenoid valve 1 -N88-

³⁾ Solenoid valve 2 -N89- is also referred to as shift valve 2 ⇒ solenoid valve 2 -N89-

01-212

Only for transmission with hydraulic control -E17-

Display group No.	Display field	Description	Test requirements	Spec. value on V.A.G 1551 display	Corrective actions
005	3	Solenoid valve 3 - N90- ²⁾	While driving ¹⁾ Gear selected		- See appropriate DTC for solenoid valve 3 -N90- ²⁾
				3, 4, 5	
				R, 1, 1M, 2	0
	4	Gear selected	See display group number 1, display field 4		

¹⁾ While driving, a second mechanic is required to read specifications.

²⁾ Solenoid valve 3 -N90- is also referred to as shift valve 3 ⇒ solenoid valve 3 -N90-

Notes for display group number 5, display field 1 to 3;

◆ Un-switched solenoid valves are indicated with "0", switched solenoid valves are indicated with "1".

◆ Variable switching solenoid valves are indicated with "X".

01-213

Only for transmission with hydraulic control -E17-

Display group No.	Display field	Description	Test requirements	Spec. value on V.A.G 1551 display	Corrective actions
006	1	Specified current of solenoid valve 4 -N91- ²⁾	While driving ¹⁾		- See DTC table, DTC 00264 ⇒ page 01-45
				min. 0.1 A	- Perform electrical test ⇒ page 01-273
				max. 0.8 A	
	2	Specified current of solenoid valve 5 -N92- ³⁾	While driving ¹⁾		- See DTC table, DTC 266 ⇒ page 01-45
				min. 0.1 A	- Perform electrical test ⇒ page 01-273
				max. 0.8 A	
Continue ▼					

¹⁾ While driving, a second mechanic is required to read specifications.

²⁾ Solenoid valve 4 -N91- is also referred to as pressure control valve 1 for auto. transmission -N215-.

³⁾ Solenoid valve 5 -N92- is also referred to as pressure control valve 2 for auto. transmission -N216-.

01-214

Only for transmission with hydraulic control -E17-

Display group No.	Display field	Description	Test requirements	Spec. value on V.A.G 1551 display	Corrective actions
006	3	Specified current of solenoid valve 6 -N93- ²⁾	While driving ¹⁾		- See DTC table, DTC 268 ⇒ page 01-45
				min. 0.1 A	- Perform electrical test ⇒ page 01-273
				max. 0.8 A	
	4	Gear selected	See display group number 1, display field 4		

¹⁾ While driving, a second mechanic is required to read specifications.

²⁾ Solenoid valve 6 -N93- is also referred to as pressure control valve 3 for auto. transmission -N217-.

Notes for specified current of solenoid valves:

◆ Faulty solenoid valves or clutches or other malfunctions can prevent shifting into certain gears.

01-215

Only for transmission with hydraulic control -E17-

Display group No.	Display field	Description	Test requirements	Spec. value on V.A.G 1551 display	Corrective actions
007	1	ATF temperature	While standing with engine running. When temperature sensor is faulty, a replacement value is transmitted.	... °C	- Check Transmission Fluid (ATF) Temperature sensor - G93-; perform electrical test ⇒ page 01-273
	2	Specified current of solenoid valve 7 -N94- ²⁾	While driving ¹⁾	min.	- See DTC table, DTC 270 ⇒ page 01-45
				max	- Perform electrical test ⇒ page 01-273
	3	Torque converter lock-up clutch	While driving ¹⁾	TC open	- See DTC table, DTC 1192 ⇒ page 01-45
				TC control	- Perform electrical test ⇒ page 01-273
				TC closed	
Continue ▼					

- 1) While driving, a second mechanic is required to read specifications.
- 2) Solenoid valve 7 -N94- is also referred to as pressure control valve 4 for auto. transmission -N218-.

01-216

Only for transmission with hydraulic control -E17-

Display group No.	Display field	Description	Test requirements		Spec. value on V.A.G 1551 display	Corrective actions
007	4	Torque converter slip speed	hile driving 1)	TC open	0.....standstill RPM	- See DTC table, DTC 00297, 00660 and 01192 ⇒ page 01-45
				TC control (last shift operation at least 20 sec ago)	20...120 RPM	- Determine which element is faulty or not activated, transmission with shift elements ⇒ Repair Manual, 5 Spd. Automatic Transmission 01V, Repair Group 37, transmission with shift elements
				TC closed	0...10 RPM	- Check plausibility between engine, transmission input- and transmission speed; Display group number 001

1) While driving, a second mechanic is required to read specifications.

Notes for display field 4 of display group number 004 are on the next page:

01-217***Test requirements for torque converter slip speeds:***

- ◆ *"TC closed": Shifting process must be complete (wait at least 1 sec.), the Torque Converter (TC) must be closed and the accelerator pedal value must be constant.*
- ◆ *"TC control": Indicated values are valid for the regulating condition of the throttle converter (control). Under inconvenient conditions (e.g. accelerating on a hill), this condition is not reached until 20 seconds after the shifting process has been completed. During this regulating phase, slip values of up to 350 RPM can be reached.*
- ◆ *Excessive torque slip speeds can also indicate slipping clutches or non-activated shifting elements.*

01-218

Only for transmission with hydraulic control -E17-

Display group No.	Display field	Description	Test requirements		Spec. value on V.A.G 1551 display	Corrective actions
008	1	Kick down switch -F8-	Kick-down	activated	Kick down	- Check kick down switch, perform electrical test ⇒ page 01-273
				not operated	-	
	2	Throttle valve value ¹⁾	while standing	idle	0...1 %	When accelerating from idle to Wide Open Throttle (WOT), %-value increases steadily. - Perform electrical test ⇒ page 01-273 - See DTC table, DTC 00518 and 00638 ⇒ page 01-45
				Wide Open Throttle (WOT)	99...100 %	
Continue ▼						

01-219

Only for transmission with hydraulic control -E17-

Display group No.	Display field	Description	Test requirements	Spec. value on V.A.G 1551 display	Corrective actions
008	3 ³⁾ without CAN-bus	Throttle valve duty cycle	While idle standing	smaller than 30%	When accelerating from idle to Wide Open Throttle (WOT), %-value increases steadily. - Perform electrical test ⇒ page 01-273 - See DTC table, DTC 00518 and 00638 ⇒ page 01-45
			Wide Open Throttle (WOT)	more than 70%	
	3 ²⁾ with CAN-bus	Engine torque	While driving ¹⁾	Nm	The signal for actual engine torque is transmitted by the Engine Control Module (ECM) to the Transmission Control Module (TCM) via the CAN-bus wiring.
Continue ▼					

Notes and footnotes for display group number 008 are on the next page.

01-220

Only for transmission with hydraulic control E17

Display group number	Display field	Description	Test requirements		Spec. value on V.A.G 1551 display	Corrective actions
008	4	Signal for deceleration/engine under load	While driving 1)	Deceleration mode	Deceleration	For declines or delay (engine brake)
				Engine under load	-	Engine is under load in normal driving conditions.

1) While driving, a second mechanic is required to read specifications.

2) Only for vehicles with CAN-bus For information on which vehicles are equipped with CAN-bus

⇒ [Repair Manual, 5 Spd. Automatic Transmission 01V, Repair Group 00, engine codes, unit allocation, ratios, equipment](#)

3) Only for vehicles without CAN-bus For information on which vehicles are equipped with CAN-bus

⇒ [Repair Manual, 5 Spd. Automatic Transmission 01V, Repair Group 00, engine codes, unit allocation, ratios, equipment](#)

01-221

Only for transmission with hydraulic control -E17-

Display group number	Display field	Description	Test requirements	Spec. value on V.A.G 1551 display	Corrective actions
009 with CAN-bus	1	Engine torque (actual)	while driving ¹⁾	...Nm	The signal for actual engine torque is transmitted by the Engine Control Module (ECM) to the Transmission Control Module (TCM) via the CAN-bus wiring.
	2	Maximum torque	while driving ¹⁾	...Nm	The engine torque required (reduced) by the TCM during the shifting process ²⁾
	3	Engine RPM	with engine running	approx. 0...8200 RPM	- See DTC table, DTC 529 and 543 ⇒ page 01-45
	4	Throttle valve value	while standing Idle ¹⁾	0...1 %	When accelerating from idle to WOT, %-value increases steadily.
			Wide Open Throttle (WOT)	99...100 %	- See DTC table, DTC 518 ⇒ page 01-45

Notes and footnotes for display group number 009 for vehicles with CAN-bus are on the next page.

01-222

- 1) While driving, a second mechanic is required to read specifications.
- 2) While driving in one gear, the indicated shifting torque remains constantly high, since no torque reduction is required.

Notes for display group number 009;

◆ *This display group number 009 is only valid for vehicles with CAN-bus, refer to display group number 009 on next page for vehicles without CAN-bus. A)*

A) There is a distinction made between vehicles with and without CAN-bus. For information on which vehicles are equipped with CAN-bus

⇒ [Repair Manual, 5 Spd. Automatic Transmission 01V, Repair Group 00, engine codes, unit allocation, ratios, equipment](#)

01-223

Only for transmission with hydraulic control E17

Display group number	Display field	Description	Test requirements	Spec. value on V.A.G 1551 display	Corrective actions
009 without CAN-bus	1	Engine torque (actual)	While driving ¹⁾	Nm	Engine torque is calculated by the Transmission Control Module (TCM) based on fuel consumption signal and engine speed signal.
	2	Engine RPM	With engine running	approx. 0...8200 RPM	- See DTC table, DTC 529 and 543 ⇒ page 01-45 - Perform electrical test ⇒ page 01-273
	3	Throttle valve value	See display group number 2, display field 2		
	4	Fuel consumption signal (high time)	While driving ¹⁾	ms	Not applicable

¹⁾ While driving a second mechanic is required to read specifications.

Notes for display group number 009 ⇒ see next page;

01-224**Notes for display group number 009;**

- ◆ *This display group number 009 is only valid for vehicles without CAN-bus, refer to previous display group number 009 for vehicles with CAN-bus. A)*
- ◆ *For vehicles with motronic injection and ignition systems, engine torque is transmitted by the Engine Control Module (ECM). For these vehicles, the fuel consumption display is omitted or always indicates "00ms".*

A) There is a distinction made between vehicles with and without CAN-bus. For information on which vehicles are equipped with CAN-bus

⇒ [Repair Manual, 5 Spd. Automatic Transmission 01V, Repair Group 00, engine codes, aggregate allocation, ratios, equipment](#)

01-225

Only for transmission with hydraulic control -E17-

Display group number	Display field	Description	Test requirements	Spec. value on V.A.G 1551 display	Corrective actions
010	1	Torque increase in torque converter	While driving ¹⁾	1...2,17	Calculated by the Transmission Control Module (TCM) from the torque converter slip speed
	2	Engine speed (RPM)	With engine running	approx. 0...8200 RPM	- Perform electrical test ⇒ page 01-273 - See DTC table, DTC 529 and 543 ⇒ page 01-45
	3	Gear selected	See display group number 1, display field 4		
	4	Anti-Slip Regulation (ASR)	While driving ¹⁾ activated not activated	ASR active -	Only activated by the ASR control module when necessary

¹⁾ While driving, a second mechanic is required to read specifications.

01-226

Only for transmission with hydraulic control -E17-

Display group number	Display field	Description	Test requirements	Spec. value on V.A.G 1551 display	Corrective actions
011	1	Selector lever position	See display group number 004, display field 2		
	2	Tiptronic Switch - F189-	Selector lever in tiptronic gate	M switch	- Perform electrical test ⇒ from page 01-273
			Selector lever not in tiptronic gate	-	
	3	Tiptronic Switch - F189-	Selector lever in tiptronic gate, select gears Shift up ³⁾ Shift down ²⁾		- Perform electrical test ⇒ from page 01-273
				Up switch	
				Down switch	
	4	Air conditioning kick down	While driving ¹⁾ activated not activated	Comp. OFF	A/C compressor switch-off is only activated following kick-down for down-shift
				Comp. ON	

Notes and footnotes for display group number 11 are on the next page.

01-227

- 1) While driving, a second mechanic is required to read specifications.
- 2) Operate down-switch (-) by shifting selector lever toward rear. For vehicles equipped with a tiptronic sport steering wheel, down switch must also be operated by pressing the lower left or right button (-) on the steering wheel in order to check it's function.
- 3) Operate up-switch (+) by shifting selector lever toward front. For vehicles equipped with a tiptronic sport steering wheel, up-switch must also be operated by pressing the upper left or right button (+) on the steering wheel in order to check it's function.

01-228

Read Measuring Value Block (scan tool function 08) for transmissions with hydraulic control -E18/2-

Notes:

*For transmissions with hydraulic control -E17-,
"Read Measuring Value Block" can be found ⇒
[page 01-187](#)*

CAUTION!

*To avoid risk of accidents during measuring
and test drives, note safety precautions ⇒
[page 01-34](#) .*

Procedure

- Connect VAS 5051 tester or V.A.G 1551 scan tool and select Transmission Control Module (TCM) using "address word" 02 ⇒ [page 01-36](#) .

Ignition must remain switched on for this procedure.

Rapid data transfer

HELP

Select function XX



Indicated on display

- Press PRINT button to turn on Scan Tool (ST) printer. Indicator lamp in button must light up.

- Press buttons -0- and -8- to select "Read Measuring Value Block" and press -Q- button to confirm input.

Read measuring value block **Q**
Input display group number XXX



When indicated on display:

- Enter desired display group number ⇒ [page 01-230](#) display group overview.
- Confirm input using the -Q- button.

Read measuring value block 1 
1 2 3 4



Indicated on display (example) for display group 001:

Notes:

- ◆ *Explanation of values in individual display fields test table ⇒ [page 01-234](#).*
- ◆ *Display can be printed out when printer is switched on.*
- ◆ *To switch to a different display group, proceed as follows:*

Display group	V.A.G 1551	VAS5051 tester
Higher	Press button -3-	Press ▲ button.
Lower	Press button -1-	Press ▼ button.

- If specified values are obtained in all display fields, press → button.

Rapid data transfer **HELP**
Select function XX



Indicated on display (function selection):

01-230

Overview of selectable display group numbers for transmission with hydraulic control -E18/2-

Indicated on display (example)			
Display fields: 1 2 3 4 	Display group no.	Display field	Description
Read measuring value block 1 → 0 RPM 0 RPM 0 RPM 4	001	1 2 3 4	Engine speed (RPM) Sensor for transmission RPM -G182- Sensor for transmission output RPM -G195- Gear selected
Read measuring value block 2 → DS 0 % 0 RPM 4	002	1 2 3 4	Actual program Throttle valve value or accelerator pedal position Sensor for transmission output RPM -G195- Gear selected
Read measuring value block 3 → PN active 0 km/h 12.8 V	003	1 2 3 4	Brake light switch "P" "N" lock Speed Voltage supply

Read measuring value block 4 → 21.0 ° C P 1000 0101	004	1	ATF temperature
		2	Selector lever position
		3	Multi-function switch position
		4	Information of On Board Diagnostic (OBD)

01-231

Indicated on display (example)			
Display fields: 1 2 3 4 	Display group no.	Display field	Description
Read measuring value block 5 → 0 0 0 4	005	1	Solenoid valve 1 -N88-
		2	Solenoid valve 2 -N89-
		3	Solenoid valve 3 -N90-
		4	Gear selected
Read measuring value block 6 → 0.747 A 0.747 A 0.747 A 0	006	1	Specified current of Pressure Control Valve 1 for auto. transmission -N215-
		2	Specified current of Pressure Control Valve 2 for auto. transmission -N216-
		3	Specified current of Pressure Control Valve 3 for auto. transmission -N217-
		4	not applicable
Read measuring value block 7 →	007	1	ATF temperature

21.0 ° C 0.747 A TC on 0 RPM		2	Specified current of Pressure Control Valve 4 for auto. transmission -N218-
		3	Torque converter lock-up clutch
		4	Torque converter slip speed
Read measuring value block 8 → 0 % Deceleration	008	1	Kick down switch
		2	Throttle valve value or accelerator pedal position
		3	Deceleration mode/engine under load
		4	

01-232

Indicated on display (example)			
Display fields: 1 2 3 4 	Display group no.	Display field	Description
Read measuring value block 9 → 100 Nm 0 RPM 0 %	009	1 2 3 4	Engine torque (actual) Engine speed (RPM) Throttle valve value or accelerator pedal position
Read measuring value block 10 → 0.00 0 RPM 4	010	1 2 3 4	Torque increase in torque converter Engine speed (RPM) Gear selected
Read measuring value block 11 → D M-switch up-switch	011	1 2 3 4	Selector lever position Tiptronic recognition Tiptronic Switch -F189-

Read measuring value block 12 → E 56 80 45	012	1	Type of drive, load
		2	Dynamic code number
		3	Drive resistance index
		4	Driver evaluation
Read measuring value block 125 → 1 0	125	1	Reception of engine messages via CAN-bus
		2	Reception of ABS messages via CAN-bus
		3	
		4	

01-233

Notes:

- ◆ *When the printer is switched on, the contents of the display will be printed out .*
- ◆ *If specified values are not obtained in all display fields:*

- Press → button.



Indicated on display

Rapid data transfer

HELP

Select function XX

01-234

Test table for transmissions with hydraulic control -E18/2-

Display group number	Display field	Description	Test requirements	Spec. value on V.A.G1551 display	Corrective actions
001	1	Engine RPM	With engine running	approx. 0...8200 RPM	- See DTC table, DTC 17968 / P1560 ⇒ page 01-45
	2	Sensor for transmission RPM -G182-	While driving, with gear selected ¹⁾ R	RPM	- See DTC table, DTC number 17100 / P0716 ⇒ page 01-45 - Read measuring value block, display group number 006 or 007 and determine which elements are faulty or not activated while driving
				approx. 0...8200	
			1. 1m	approx. 0...2000	
			2	approx. 0...8200	
			3	approx. 0...8200	
	Continue 				

¹⁾ While driving, a second mechanic is required to read specifications.

01-235

Display group number	Display field	Description	Test requirements		Spec. value on V.A.G1551 display	Corrective actions
001	2		While driving ¹⁾	With gear selected	RPM	- See previous page
				4	approx. 0...8200	
				5	approx. 0...8200	
	3	Sensor for transmission output RPM -G195-	While driving, with gear selected ¹⁾	R	approx. 0...2000	- See DTC table, DTC number 17105 / P0721 ⇒ page 01-45 - Read measuring value block, display group number 006 or 007 - Determine while driving which elements are faulty and which aren't active
				1. 1m	approx. 0...2000	
				2	approx. 0...4000	
				3	approx. 0...5800	
Continued ▼						

¹⁾ While driving, a second mechanic is required to read specifications.

01-236

Display group number	Display field	Description	Test requirements	Spec. value on V.A.G1551 display	Corrective actions
Continued ▼			4	approx. 0...8200	
			5	approx. 0...8200	

Notes for display group number 001, display field 1 to 3;

- ◆ *Test conditions: Shifting process must be finished. Vehicle must not be in deceleration mode (no decline driving or engine brake).*

01-237

Display group number	Display field	Description	Test requirements	Specification for display on V.A.G1551	Corrective actions
001	4	Gear selected	While driving ¹⁾	Selector lever position	- Check solenoid valves. See display group numbers 005, 006 and 007 - See DTC table, DTC of respective solenoid valves ⇒ page 01-45 - Check selector lever position. Display group number 004
				"N"	
				"R"	
				"D"	
				"4"	
				"3"	
				"2"	

¹⁾ While driving, a second mechanic is required to read specifications.

²⁾ Transmission Control Module (TCM) is equipped with an automatic gear follower. The forward gear is indicated that the TCM would activate in selector lever position "D".

Notes for display field 4 of display group number 001:

♦ Faulty solenoid valves or other DTCs can prevent the selection of certain gears.

01-238

Display group number	Display field	Description	Test requirements	Spec. value on V.A.G1551 display	Corrective actions
002	1	Actual program	In normal driving conditions ¹⁾		Determined by driving style and street conditions (acceleration, accelerator pedal movement, speed and load)
			Dynamic shift program is active	DS	Shifting avoided whenever possible
			Warm-up program is active	WL	Up-shifting occurs faster to avoid high RPM.
			Anti-Slip Regulation (ASR) active	AS	- Check display group number 004
			Tiptronic recognition activated	TT	- See DTC table, DTC 18141/P1733 to 18152/P1744 ⇒ page 01-45
Continue ▼					

¹⁾ While driving, a second mechanic is required to read specifications.

01-239

Display group number	Display field	Description	Test requirements	Spec. value on V.A.G1551 display	Corrective actions
002	2	Throttle valve value or value from accelerator pedal position	While standing Idle	0...1 %	When accelerating from idle to Wide Open Throttle (WOT), %-value increases steadily.
			Wide Open Throttle (WOT)	99...100 %	- Perform electrical test ⇒ page 01-273 - See DTC table, DTC 18269 / P1861 ⇒ page 01-45
	3	Sensor for transmission output RPM -G195-	While driving ¹⁾	0...8200	- See DTC table, DTC number 17105 / P0721 ⇒ page 01-45 - See display group number 001
	4	Gear selected	See display group number 1, display field 4		

¹⁾ While driving, a second mechanic is required to read specifications.

01-240

Display group number	Display field	Description	Test requirements		Spec. value on V.A.G1551 display	Corrective actions
003	1	Brake light switch -F-		activated	Brake	- See DTC table, DTC 17087 / P0703 ⇒ page 01-45
				not activated	-	- Perform electrical test ⇒ page 01-273
	2	Shift lock solenoid -N110-	While standing in P, N	Brake not operated	P N active	- See DTC table, DTC 18170/P1762 and 18196 / P1761 ⇒ page 01-45
				Brake activated	P N not selected	- Check shift lock solenoid - N110-. Perform electrical test ⇒ page 01-273
Continue ▼						

01-241

Display group number	Display field	Description	Test requirements	Spec. value on V.A.G1551 display	Corrective actions
003	3	Speed	While driving ¹⁾	km/h	- If necessary, check speedometer vehicle speed sensor (VSS) -G22-
	4	Supply voltage, terminal 15	While standing	min. 10.0 V	- Perform electrical test ⇒ page 01-273 - See DTC table, DTC 18158/P1750 and 18159 / P1751 ⇒ page 01-45
				max. 16.0 V	

¹⁾ While driving, a second mechanic is required to read specifications.

Note for display field 3, speed:

Display of the speedometer and values at VAS 5051 or V.A.G 1551 may deviate slightly from each other.

01-242

Display group number	Display field	Description	Test requirements	Spec. value on V.A.G1551 display	Corrective actions
004	1	ATF temperature	While standing with engine running	° C	- Perform electrical test ⇒ page 01-273 - See DTC table, DTCs 17094 / P0710, 17095 / P0711, 17096 / P0712 and 17097 / P0713 ⇒ page 01-45
Continue ▼					

Notes for ATF temperature:

- ◆ Temperature of minus 50° C indicates a short circuit to Ground (GND),
- ◆ Temperature of minus 180° C indicates a short circuit to B+ or an open circuit,

01-243

Display group number	Display field	Description	Test requirements	Spec. value on V.A.G1551 display	Corrective actions
004	2	Selector lever position (Multi-function Transmission Range (TR) switch -F125-	While standing P	P	Check for agreement with indication in instrument cluster - Check display field 3
			Selector lever	R	
				N	
			in	D	
				4	
				3	
				2	
	Continue ▼				

01-244

Display group number	Display field	Description	Test requirements		Spec. value on V.A.G1551 display	Corrective actions
004	2 ¹⁾	Selector lever position - (Multi-function Transmission Range (TR) switch -F125-) Between positions at selector lever mechanism	While standing, selector lever between	P and R	Z1	- Check multi-function Transmission Range (TR) switch -F125-. display group number 004, display field 3 - Perform electrical test ⇒ page 01-273 - If necessary adjust selector lever bowden cable ⇒ Repair Manual, 5 Spd. Automatic Transmission 01V, Repair Group 37 , shift mechanism, repairing, selector lever cable, checking and adjusting
				or R and D		
				N and D	Z2	
				D and 4	Z3	
Continue ▼				4 and 3	Z4	
				or 3 and		

				2		
--	--	--	--	---	--	--

¹⁾ This display field is not displayed until model year 2000 (May 1999)

Note on in-between positions:

When the selector lever is shifted into one of the in-between positions, the Scan Tool indicates "Z1", "Z2", "Z3" or "Z4". Display in instrument cluster must not indicate a gear selected, i.e. PRND432 is indicated without any particular gear highlighted.

01-245

Display group number	Display field	Description	Test requirements		Spec. value on V.A.G1551 display	Corrective actions
004 Continue ▼	3	Multi-function Transmission Range (TR) switch -F125-	While standing	Selector lever position	L1 L2 L3 L4	- See DTC table, DTC 17090 / P0706 ⇒ page 01-45
				P	1000	- Check multi-function Transmission Range (TR) switch -F125-
				R	0100	- Perform electrical test ⇒ page 01-273
				N	1110	- If necessary adjust selector lever bowden cable ⇒ Repair Manual, 5 Spd. Automatic Transmission 01V, Repair Group 37, shift mechanism, repairing
				D	1011	
				4	0111	
				3	0001	
				2	0010	

01-246

Notes for display field 3 of display group number 004:

- ◆ *The input signals of the Multi-function Transmission Range (TR) switch -F125- can be checked at the Transmission Control Module (TCM).*

	Display field 3: (from left to right)			
	L 1	L 2	L 3	L 4
Wiring connection to Transmission Control Module (TCM) -J217-	Terminal 36 of - J217-	Terminal 8 of -J217-	Terminal 37 of - J217-	Terminal 9 of -J217-

01-247

Display group number	Display field	Description	Test requirements	Spec, value on V.A.G1551 display	Corrective actions
004	4	Information of On Board Diagnostic (OBD)	While driving ¹⁾		Not applicable
		Indicated on display from left to right			
		Malfunction display	Switched on	1	
			Switched off	0	
		Trip	Completed	1	
			Not completed	0	
		Transmission warm-up	Completed	1	
			Not completed	0	
		Engine start	Recognized	1	
			Not recognized	0	

¹⁾ While driving, a second mechanic is required to read specifications.

01-248

Display group number	Display field	Description	Test requirements	Spec. value on V.A.G1551 display	Corrective actions
005	1	Solenoid valve 1 -N88-	While driving ¹⁾ Gear selected		- Check whether display is the same as on shift lever display
			R. N, D, (1 and 2 (1 gear), Shift-down from 5 to 4 gear	X	
			D (3 and 4 gear)	0	
	2	Solenoid valve 2 -N89-	While driving ¹⁾ Gear selected		- Perform electrical test ⇒ page 01-273
			N, D (1, 2 and 3 gear)	X	
			R, D (4 and 5 gear) D, down-shift 5 to 4	0	
Continue ▼					

¹⁾ While driving, a second mechanic is required to read specifications.

Notes for display group number 5, display field 1 to 3;

◆ Unswitched solenoid valves (inactive) are indicated with "0", switched solenoid valves (active) are indicated with "1".

01-249

Display group number	Display field	Description	Test requirements	Spec. value on V.A.G1551 display	Corrective actions	
005	3	Solenoid valve 3 -N90-	While driving ¹⁾	Gear selected		- See DTC table, DTC 17145/P0761, 17146/P0762 and 17147/P0763 ⇒ page 01-45
				D (down-shift 5 to 4 gear)		
				D (3, 4. and 5 gear)	x or 0 ²⁾	- Perform electrical test ⇒ page 01-273
				R, N, D (1 and 2 gear) 2 (1 gear)	0	
	4	Gear selected	See display group number 001, display field 4			

¹⁾ While driving, a second mechanic is required to read specifications.

²⁾ The solenoid valve is switched momentarily while driving, meaning that the mode changes from display "0" to "X" and then again to "0". This switching in these gears is not relevant.

Notes for display group number 5, display field 1 to 3;

◆ Unswitched solenoid valves (inactive) are indicated with "0", switched solenoid valves (active) are indicated with "1".

01-250

Display group number	Display field	Description	Test requirements	Spec. value on V.A.G1551 display	Corrective actions
006	1	Specified current of Pressure Control Valve 1 for auto. transmission -N215-	While driving ¹⁾		- See DTC table, DTC 18222/P1814 and 18223 / P1815 ⇒ page 01-45
				min. 0.0 A	- Perform electrical test ⇒ page 01-273
				max. 2.0 A	
	2	Specified current of Pressure Control Valve 2 for auto. transmission -N216-	While driving ¹⁾		- See DTC table, DTC 18227/P1819 and 18228 / P1820 ⇒ page 01-45
				min. 0.0 A	- Perform electrical test ⇒ page 01-273
				max. 2.0 A	
Continue ▼					

¹⁾ While driving, a second mechanic is required to read specifications.

01-251

Display group number	Display field	Description	Test requirements	Spec. value on V.A.G1551 display	Corrective actions
006	3	Specified current of Pressure Control Valve 3 for auto. transmission -N217-	While driving ¹⁾		- See DTC table, DTC 18232/P1824 and 18233 / P1825 ⇒ page 01-45
				min. 0.0 A	- Perform electrical test ⇒ page 01-273
				max. 2.0 A	
	4				Not yet applicable

¹⁾ While driving, a second mechanic is required to read specifications.

Notes for specified current of solenoid valves:

- ◆ *Faulty solenoid valves or pressure control valves or clutches or other malfunctions can prevent shifting into a specific gear.*

01-252

Display group number	Display field	Description	Test requirements	Spec. value on V.A.G1551 display	Corrective actions
007	1	ATF temperature	See display group number 1, display field 4		
	2	Specified current of Pressure Control Valve 4 for auto. transmission -N218-	While driving ¹⁾	min. 0.0 A	- See DTC table, DTC 18237/P1829 and 18238 / P1830 ⇒ page 01-45
				max 2.0 A	- Perform electrical test ⇒ page 01-273
	3	Torque converter (TC) lock-up clutch	While driving ¹⁾	TC open	- See DTC table, DTC 17125 / P0741 ⇒ page 01-45
				TC control	- Perform electrical test ⇒ page 01-273
				TC closed	
Continue ▼					

¹⁾ While driving, a second mechanic is required to read specifications.

01-253

Display group number	Display field	Description	Test requirements	Spec. value on V.A.G1551 display	Corrective actions
007	4	Torque converter (TC) slip speed	While driving ¹⁾ TC open	0.....standstill RPM	- Check ATF oil level ⇒ Repair Manual, 5 Spd. Automatic Transmission 01V, Repair Group 37,
			TC control (last shift process at least 20 seconds ago)	20...120 RPM	- Determine which element is faulty or not activated, transmission with shift elements ⇒ Repair Manual, 5 Spd. Automatic Transmission 01V, Repair Group 37,
			TC closed	0...20 RPM	- Check plausibility between engine RPM, transmission input RPM and transmission RPM, display group number 001

¹⁾ While driving, a second mechanic is required to read specifications.

Note:

◆ *Test requirements for torque converter slip speeds ⇒ next page*

Test requirements for torque converter slip speeds:

- ◆ *"TC closed": Shifting process must be complete (wait at least 1 sec.), the Torque Converter (TC) must be closed and the accelerator pedal value must be constant.*
- ◆ *"TC control": Indicated values are valid for the "regulating condition" of the throttle converter (control). Under inconvenient conditions (e.g. accelerating on a hill), this condition is not reached until 20 seconds after the shifting process has been completed. During this regulating phase, slip values of up to 350 RPM can be reached.*
- ◆ *Excessive torque slip speeds can also indicate slipping clutches or non-activated shifting elements.*

01-255

Display group number	Display field	Description	Test requirements		Spec. value on V.A.G1551 display	Corrective actions
008	1	Kick down switch -F8-	Kick-down	operated ²⁾	Kick-down	- Check kick-down switch, perform electrical test ⇒ page 01-273
				not operated	-	
	2	Throttle valve value or value from accelerator pedal position	While standing	idle	0...1 %	When accelerating from idle to Wide Open Throttle (WOT), %-value increases steadily. - See DTC table, DTC 18269 / P1861 ⇒ page 01-45 - See also display group number 002, display field 2
				Wide Open Throttle (WOT)	99...100 %	
	3	Signal for deceleration/engine under load	While driving ¹⁾	Deceleration mode	Deceleration	For down-hill or delay (engine braking)
				Engine under load	-	Engine is under load during normal driving conditions.

- 1) While driving, a second mechanic is required to read specifications.
- 2) Operate kick-down means that the accelerator pedal needs to be depressed to stop. Display must simultaneously indicate "100%" in display field 2.

01-256

Display group number	Display field	Description	Test requirements	Spec. value on V.A.G1551 display	Corrective actions
009	1	Engine torque ²⁾	While driving ¹⁾	Nm	- See DTC table, DTC 18265 / P1857 ⇒ page 01-45
Continue ▼	2	Engine RPM	With engine running	approx. 0...8200 RPM	- See DTC table, DTC 17968 / P1560 ⇒ page 01-45

¹⁾ While driving, a second mechanic is required to read specifications.

²⁾ While driving in one gear, the indicated shift torque remains constantly high, since no engine torque reduction is required.

Note for display field 1:

The signal for actual engine torque is transmitted by the Engine Control Module (ECM) to the Transmission Control Module (TCM) via the CAN-bus wiring.

01-257

Display group number	Display field	Description	Test requirements	Spec. value V.A.G1551 display	Corrective actions
009	3	Throttle valve value or value from accelerator pedal position	While standing idle	0...1 %	When accelerating from idle to Wide Open Throttle (WOT), %-value increases steadily.
			Wide Open Throttle (WOT)	99...100 %	- See DTC table, DTC 18269 / P1861 ⇒ page 01-45 - See also display group number 002, display field 2
	4 ²⁾	Transmission input torque	While driving ¹⁾	Nm	Should be like display field 1.

¹⁾ While driving, a second mechanic is required to read specifications.

²⁾ This display field is not displayed until model year 2000 (May 1999)

01-258

Display group number	Display field	Description	Test requirements	Spec. value on V.A.G1551 display	Corrective actions
010	1	Torque increase in torque converter	While driving ¹⁾	0...3.2	Calculated by the Transmission Control Module (TCM) from the torque converter slip speed
	2	Engine speed (RPM)	With engine running	approx. 0...8200 RPM	- See DTC table, DTC 17968 / P1560 ⇒ page 01-45
	3	Gear selected	See display group number 1, display field 4		
	4 ²⁾	Vehicle acceleration (actual)	While driving ¹⁾ Min.	-10 m/s ²	

¹⁾ While driving, a second mechanic is required to read specifications.

²⁾ This display field is not displayed until model year 2000 (May 1999)

01-259

Display group number	Display field	Description	Test requirements	Spec. value on V.A.G1551 display	Corrective actions
011	1	Selector lever position	See display group number 4, display field 2		
	2	Tiptronic Switch - F189-	Selector lever in tiptronic gate	M-shift	- Perform electrical test ⇒ page 01-273
			Selector lever not in tiptronic gate	-	
	3	Tiptronic Switch - F189- (up/down shift)	Selector lever in tiptronic gate, select gears Shift up ¹⁾ Shift down ²⁾		- Perform electrical test ⇒ page 01-273
				Up-shift	
				Down-shift	

¹⁾ Operate up-shift (+) by shifting selector lever toward front. For vehicles equipped with a tiptronic sport steering wheel, up-shift must also be operated by pressing the upper left or right button (+) on the steering wheel.

²⁾ Operate down-shift (-) by shifting selector lever toward rear. For vehicles equipped with a tiptronic sport steering wheel, down-shift must also be operated by pressing the lower left or right button (-) on the steering wheel.

01-260

Display group number	Display field	Description	Test requirements	Spec. value on V.A.G1551 display	Corrective actions
012	1	Type of drive, load	Driving without load, e.g. driving on flat surface	E	not yet applicable
			Driving under load, e.g. uphill driving	B	
	2	Dynamic code number	Calculated from drive resistance index and driver evaluation	0...256	
	3	Drive resistance index	Necessary for calculation of dynamic code number	0...256	
	4	Driver evaluation	Necessary for calculation of dynamic code number	0...256	

01-261

Display group number	Display field	Description	Test requirements	Spec. value on V.A.G1551 display	Corrective actions
013 ¹⁾	1	CAN-bus normalizing torque	While standing with ignition switched on	Nm	
	2	CAN-bus engine code		0 ... 63	- See DTC table, DTC 18157/P1749 and 18249 / P1841 ⇒ page 01-45
	3	CAN-bus Transmission code		1	- Check coding of Engine Control Module (ECM)
	4	CAN-bus software version code		0 ... 63	- See DTC table, DTC 18263 / P1855 ⇒ page 01-45

¹⁾ This display group number is not displayed until model year 2000 (May 1999)

Notes for display group number 013;

- ◆ *Display field 2 and 4: When replacing the ECM, the same indication that appeared for the old control module should appear after installation. If this is not the case, the wrong ECM was installed, or it is wrongly coded.*

01-262

Display group number	Display field	Description	Test requirements	Spec. value on V.A.G1551 display	Corrective actions
125	1	Reception of an engine message via the CAN-bus	While driving ¹⁾ Received	1	- See DTC table, DTC 18258 / P1850 ⇒ page 01-45
			Not received	0 ²⁾	- Perform electrical test ⇒ page 01-273
	2	Reception of an ABS message via the CAN-bus	While driving ¹⁾ Received	1	- See DTC table, DTC 18259 / P1851 ⇒ page 01-45
			Not received	0 ²⁾	- Perform electrical test ⇒ page 01-273

¹⁾ While driving, a second mechanic is required to read specifications.

²⁾ If "0" is shown and there are no DTCs stored in memory, the relevant control module is not CAN capable (or is faulty).

01-263

CAN-bus, function

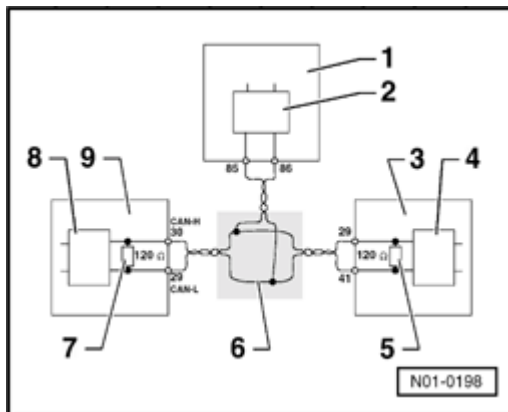
Bus:

The term "bus" refers to a system that transports and distributes data.

CAN:

The Controller Area Network is a bus system that uses two wires. These are called bus wires. Data is transferred to the connected control modules serial (one after the other) across the bus wires.

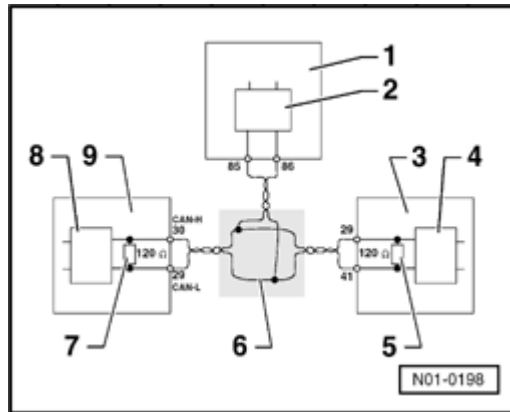
These control modules communicate with each other via the CAN-bus.



Overview of power train data-BUS

- 1 - Transmission Control Module (TCM) -J217-
- 2 - Driver for BUS
- 3 - Motronic Engine Control Module (ECM) -J220-
- 4 - Driver for BUS
- 5 - Termination resistance

01-264



6 - Power train data-BUS (CAN-bus, twisted 2 line wire)

7 - Termination resistance

8 - Driver for BUS

9 - ABS Control Module -J104-

Two-wire bus system, checking

If the DTC table indicates to check the bus:

- Use the applicable wiring diagram, determine how many control modules communicate with each other via the bus.
- Press the -0- button twice to select the function "Automatic test sequence".
- Before checking the bus wires, make sure that none of the control modules connected are malfunctioning.

A malfunction will disrupt communication to other control modules.

Is there a malfunction?

- Fix the malfunction before proceeding.
- Note malfunction and erase DTC memory of all control modules ⇒ Checking and erasing DTC memory of the relevant control module.

- Press buttons -0- and -6- to select "End Output" function 06. Press -Q- button to confirm input.
- End output of scan tool by selecting the function "end output" ⇒ [page 01-42](#) .
- Refer to the DTC table in the applicable repair manual for help in repairing the malfunction.

When necessary repairs have made:

- Check bus wires if communication to the control modules is still faulty. If yes, check bus wires.

There can be two situations:

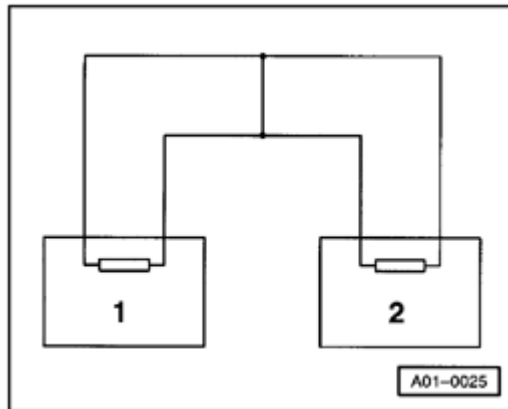
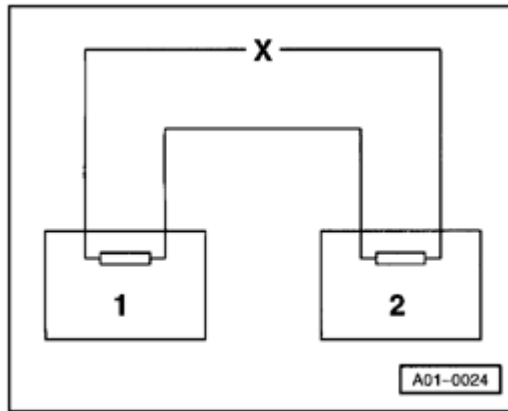
- ◆ Two control modules communicate via a "two-line bus system"
- ◆ Three or more control modules communicate via a "two-line bus system"

01-267

Two control modules communicate via a "two-line bus system"

- Switch ignition off.
- Disconnect both control modules.
- Check bus wires for open circuit.

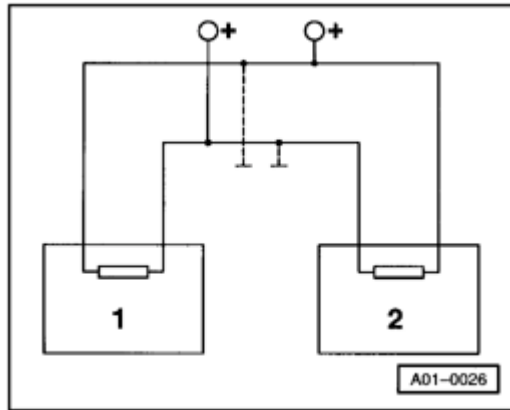
⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations*



- Check whether there is a short circuit between bus wires.

⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations*

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A

- Check bus wires for short circuit to B+ or Ground (GND).

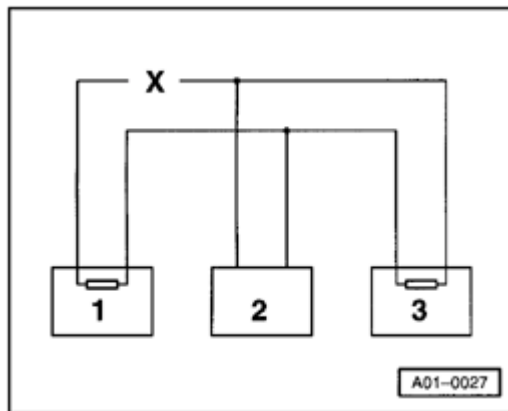
If there are no malfunctions in the bus wires:

- As a test, replace one of the control modules. Select a control module that will take the least amount of time to replace and cost the least amount of money.
- If communication between the control modules across the bus is still interrupted, replace the second control module.

01-269

Three or more control modules are communicating across a "two-line bus system"

- Analyze DTCs stored in the memories of the control modules.

**Example 1:**

From the DTCs stored in the memories, determined that control module 1 is not communicating with control modules 2 and 3.

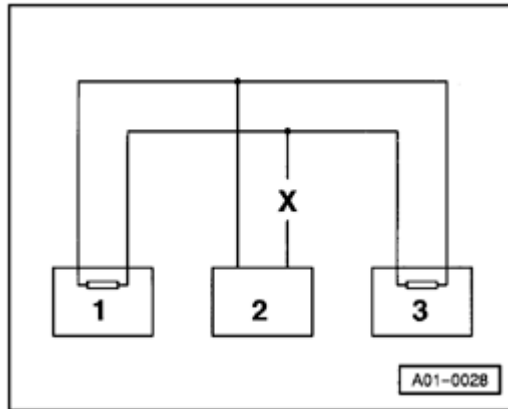
Control module	DTCs stored in DTC memories:
1	◆ Missing signal from control module 2 ◆ Missing signal from control module 3
2	◆ Missing signal from control module 1
3	◆ Missing signal from control module 1

- Switch ignition off.
- Disconnect the control modules connected across the bus wires and check bus wires for open circuit.

⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations*

- Replace control module 1 if bus wires are OK.

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**Example 2:**

From the DTCs stored in the memories, determined that control module 2 is not communicating with control modules 1 and 3.

Control module	DTCs stored in DTC memories:
1	♦ Missing signal from control module 2
2	♦ Missing signal from control module 1 ♦ Missing signal from control module 3
3	♦ Missing signal from control module 2

- Switch ignition off.
- Disconnect the control modules connected across the bus wires and check bus wires for open circuit.

⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations*

- Replace control module 2 if bus wires are OK.

01-271

Example 3:

Using DTCs stored in the memories, determined that none of the control modules are sending or receiving signals.

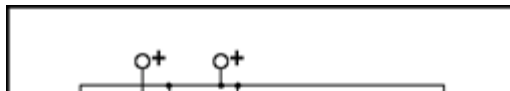
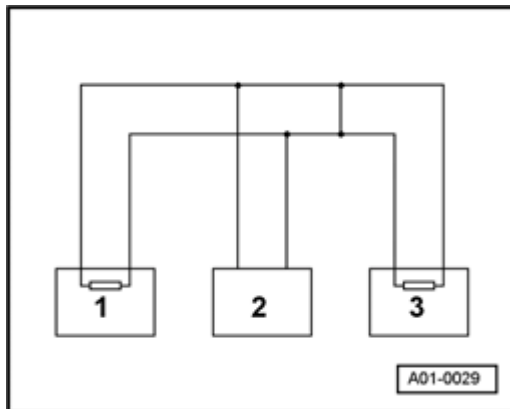
Control module	DTCs stored in DTC memories:
1	◆ Hardware faulty
2	◆ Hardware faulty
3	◆ Hardware faulty

- Switch ignition off.



- Disconnect the control modules connected across the bus wires and check for a short circuit between the bus wires.

⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations*



- Check bus wires for short circuit to B+ or Ground (GND).

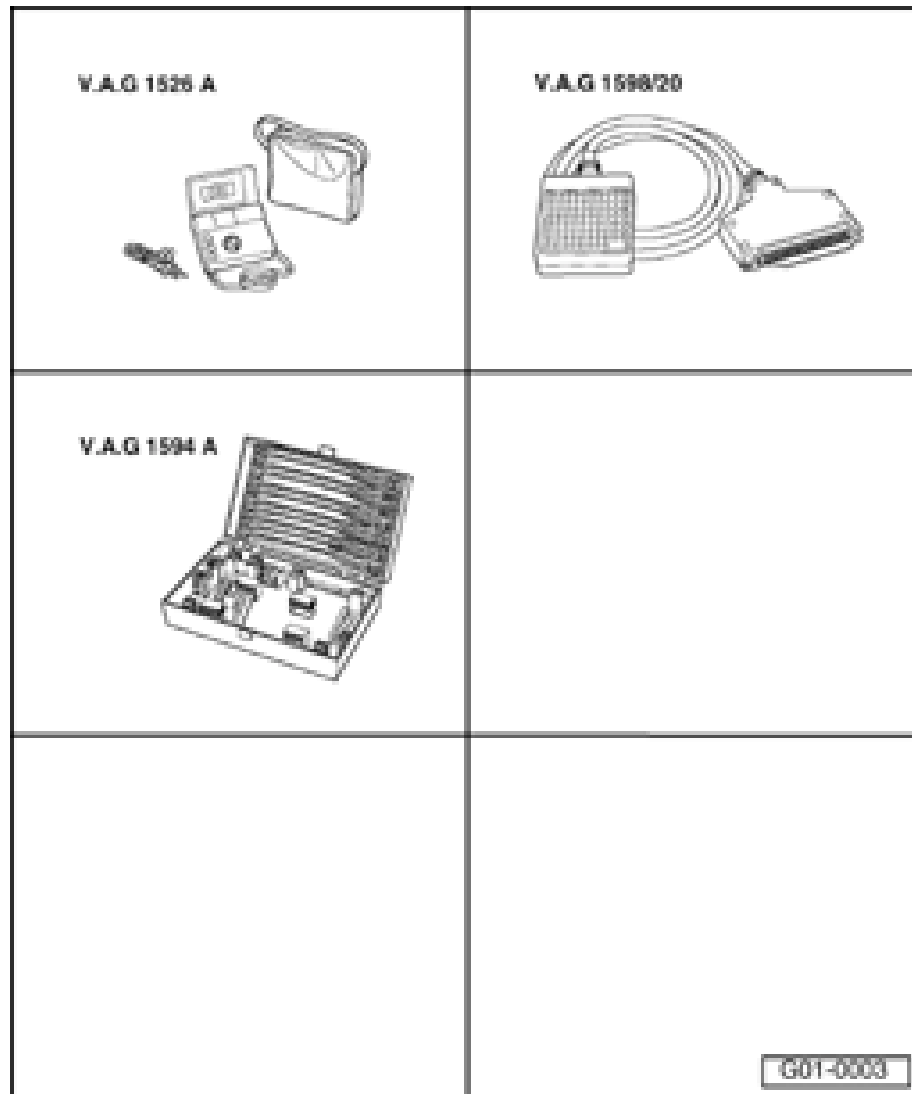
01-272

- If there are no malfunctions found in the bus wires, check whether one of the control modules is responsible for a short circuit of the bus wires to each other, to B+ or to Ground (GND).

Disconnect each of the control modules connected via the bus wires one at a time and check whether the malfunction "Hardware faulty" has been eliminated.

If it was eliminated, replace the control module that is currently disconnected. If malfunction was not eliminated, re-connect that control module and disconnect the next control module connected via the bus wires.

01-273



Electrical testing

Special tools and test equipment:

- ◆ VAG1526A multimeter
- ◆ VAG1598/20 test box
- ◆ VAG1594A connector test kit

Additional information

- ◆ Repair Manual, 5 Spd. Automatic Transmission 01V,
- ◆ Electrical Wiring Diagrams, Troubleshooting & Component Locations"

Notes:

- ◆ *Use VAG1526A multimeter for the test. The tables list which measures range needs to be selected before taking each measurement.*
- ◆ *The specified values are valid for an ambient temperature of 0 to 40° C (32 to 104° F).*
- ◆ *If the values obtained differ from the specified values, determine the malfunction using the applicable wiring diagram.*
- ◆ *If the measured values only deviate slightly from the specified values clean sockets and connectors of testers and repeat test. Before replacing a component, check wires and connections. If the specified values are below 10 Ω , repeat the resistance measurement on the component.*

- ◆ *Use VAG1598/20 adapter to connect test equipment.*

01-275

- ◆ *The contact numbers of the connector and the socket numbers of VAG 1598/20 test box match up ⇒ [page 01-277](#) .*
- ◆ *To check the multi-function switch, it is not necessary to connect test box VAG 1598/20 because first the connectors for the multi-function switch are checked.*

CAUTION!

To avoid permanent damage of electronic components, select the appropriate measuring range on tester before connecting the measuring leads.

Test requirements

- Battery voltage OK
- Fuses for Transmission Control Module (TCM) OK

⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations*

- Fuses for component being tested OK. The fuse holder is behind a cover on the side of

the instrument cluster.

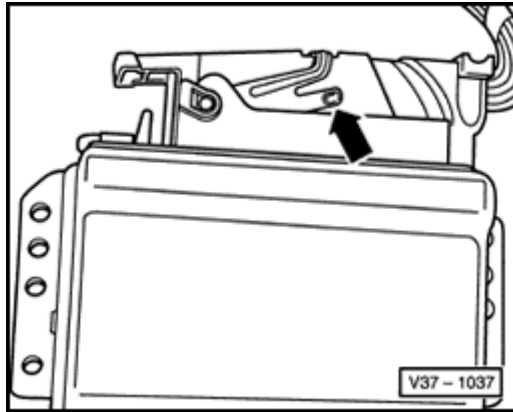
- Ground (GND) connections OK:

Check battery Ground (GND) strap and Ground (GND) strap between body and transmission.

Check Ground (GND) connections for Transmission Control Module (TCM).

⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations*

01-276



A

- For all test steps, switch ignition off, disconnect multi-pin connector for Transmission Control Module (TCM) -J217- (located in front of passenger seat under carpet in foot well ⇒ [page 01-11](#)) and connect VAG1598/20 adapter to wiring harness connector.
- If measuring values do not match specifications, follow instructions in right-hand column of test table (labelled "Corrective action") ⇒ [page 01-11](#) .
- Always perform all steps indicated in the "Corrective action" column.
- Only perform test steps recommended in the DTC table (selective troubleshooting).

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88-pin connector for Transmission Control Module (TCM) -J217- (sockets on VAG1598/20)

1- Solenoid valve 5 -N92-	18- Kick-down switch -F8- (not for E-gas and V6-TDI)
2- Shift lock solenoid -N110-	19- Control input to transmission from ABS control module
3- Vacant	20- Engine intervention (via ignition timing) ¹⁾
4- Solenoid valve 7 -N94-	21- ATF temperature sensor -G93-
5- Solenoid valve 4 -N91-	22- ATF temperature sensor -G93-
6- Ground (GND) for power consumers, term. 31	23- Sensor for transmission RPM -G182- (shielding)
7- Vacant	24- Vacant
8- Multi-function TR switch -F125-, L2	25- Selector lever display (not for Highline combi)
9- Multi-function TR switch -F125-, L4 supply voltage for cruise control system	26- Supply voltage (terminal 30) with or without fuses depending on model ⇒ wiring diagram
10- Brake light switch -F- (not for E-gas and V6-TDI)	27- Kick-down for air conditioning ¹⁾
11- Vacant	28- Ground (GND) for electronics (terminal 31) ⁴⁾
12- Vacant	29- Solenoid valve 6 -N93-

13- Tiptronic recognition	30- Solenoid valve 1 -N88-
14- Transmission VSS -G38-	31- Vacant
15- Transmission VSS -G38- (shielding)	32- Solenoid valve 3 -N90-
16- Sensor for transmission RPM -G182-	33- Solenoid valve 2 -N89-
17- Signal for malfunction monitor (OBD II - request) ¹⁾ ²⁾	34- Ground (GND) for power consumers (terminal 31)

01-278

35- Fuel consumption signal (engine torque, actual) ¹⁾	54- Supply voltage (terminal 15)
36- Multi-function TR switch -F125-, L1	55- Supply voltage (terminal 15)
37- Multi-function TR switch -F125-, L3	56- Vacant
38- Vacant	-
39- Vacant	-
40- Engine speed (RPM) signal ¹⁾	-
41- Throttle position value (load signal) ¹⁾	-
42- Transmission VSS -G38-	-
43- Vacant	-
44- Sensor for transmission RPM -G182-	- Terminals 57 - 83 are vacant
45- Vacant	-
46- Tiptronic upshift switch	-
47- Tiptronic downshift switch	-
48- Vacant	-
49- Vacant	84- Vacant
50- Vacant	85- CAN-bus ³⁾
51- Upshift/downshift signal (for engine torque reduction)	86- CAN-bus ³⁾

52- Supply voltage for solenoid valves	87- Vacant
53- Supply voltage for solenoid valves	88- K-wire for On Board Diagnostic (OBD)

1) Only for vehicles without a CAN-bus.

⇒ [*Repair Manual, 5 Spd. Automatic Transmission 01V, Repair Group 00; Code letters, engine/transmission applications, ratios, equipment*](#)

2) Signal is transmitted to Transmission Control Module (TCM) via the Engine Control Module (ECM) and can only be checked in read measured value block ⇒ [page 01-186](#) .

3) Only for vehicles with a CAN-bus. Further information for CAN-BUS on the CAN-bus ⇒ [page 01-263](#)

⇒ [*Repair Manual, 5 Spd. Automatic Transmission 01V, Repair Group 00; Code letters, engine/transmission applications, ratios, equipment*](#)

4) Pin 28 at the control module is vacant for vehicles with 10-pin connector of multi-function switch -F125-.

List of test steps (88-pin connector)

◆ Only perform test steps for the relevant component, as listed in DTC and Read Measuring Value Block tables.

Item checked		Item checked	
Supply voltage for TCM -J217-	- Perform test steps 1 and 7	Solenoid valve 5 -N92- (Pressure control valve -2- -N216-)	- Perform test steps 13 and 8
Shift lock solenoid -N110-	- Perform steps 2, 6 and 16	Solenoid valve 6 -N93- (pressure control valve -3- -N217-)	- Perform test steps 14 and 8.
Brake light switch -F-	- Perform test step 3.	Solenoid valve 7 -N94- (pressure control valve -4- -N218-)	- Perform test steps 15 and 8.
Supply voltage for cruise control system	- Perform test step 4.	Transmission VSS -G38- (Sensor for transmission output RPM -G195-)	- Perform test step 18.
Kick-down switch -F8- (not for E-gas)	- Perform test steps 5 and 17	Sensor for transmission RPM -G182-	- Perform test step 19.
Multi-function TR switch (driving range sensor) -F125-	- ⇒ page 01-322	ATF temperature sensor -G93-	- Perform test step 20.
Solenoid valve 1 -N88-	- Perform test steps 8 and 9	Wiring connection to ECM ¹⁾	- Perform test steps 21, 22, 23, 24, and 25

¹⁾ Signal is transmitted to Transmission Control Module (TCM) via the Engine Control Module (ECM). Test is only for vehicles without CAN-bus.

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Item checked		Item checked	
Solenoid valve 2 -N89-	- Perform test steps 10 and 8	Tiptronic switch - F189-	- Perform test steps 26 and 27
Solenoid valve 3 -N90-	- Perform test steps 11 and 8	CAN-bus ²⁾	- Perform test step 28 and check CAN-bus system ⇒ page 01-265 .
Solenoid valve 4 -N91- (Pressure control valve -1- -N215-)	- Perform test steps 12 and 8		

²⁾ Only for vehicles with CAN-bus

⇒ [Repair Manual, 5 Spd. Automatic Transmission 01V, Repair Group 00; Code letters, engine/transmission applications, ratios, equipment](#)

⇒ [Repair Manual, 5 Spd. Automatic Transmission 01V, Repair Group 00; Code letters, engine/transmission applications, ratios, equipment](#)

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Electrical test table

Voltage measurement: Switch multimeter to 20 V measuring range					
Test step	VAG 1598/20 sockets	Test of	- Test conditions - Additional steps	Specified value	Corrective action
1	55 + 6 55 + 6 54 + 28 1)	Supply voltage for Transmission Control Module (TCM) -J217-	Ignition switched on	approx. battery voltage	- Check wiring per wiring diagram. - Check wiring from terminals 6, 34 and 28 to Ground - Check wiring from terminals 54 and 55 to terminal 15 of central electric.
	54 + 55			0 V	
	26 + 6 26 + 34	Voltage of electr. system (term. 30) for TCM -J217-	Ignition switched off	approx. battery voltage	- Check wiring per wiring diagram.
2	2 + 6	Shift lock solenoid -N110- 2)	Ignition switched on	approx. battery voltage	- Check wiring per wiring diagram. - Test multi-function TR switch - F125- for short circuit. - Test shift lock solenoid -N110- for short circuit.

					- Perform test steps 6 and 16
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- 1) Pin 28 at the control module is vacant for vehicles with 10-pin connector of multi-function switch -F125-.
- 2) Solenoid for shift lock -N110- is also referred to as shift lock solenoid -N110-

01-283

Voltage measurement: switch multimeter to 20 V measuring range					
Test step	VAG 1598/20 sockets	Test of	- Test conditions - Additional steps	Specified value	Corrective action
3 ¹⁾ not for E-gas engines	10 + 6 10 + 28 ²⁾	Brake light switch -F-	- Ignition switched on - Brake pedal not depressed	less than 1 V	- Check wiring per wiring diagram. - Replace and adjust brake light switch -F-.
			- Brake pedal depressed	approx. battery voltage	⇒ Repair Manual, Brake System, Repair Group 47
4	9 + 6 9 + 28 ²⁾	Supply voltage for Cruise Control, Control Module -J213-	- Ignition switched on - Selector lever in D, 4 and 3	approx. battery voltage	- Check wiring from terminals 6 and 28 to Ground. - Check wiring from terminal 9 to terminal 15 of central electrics. - Check wiring to cruise control, control module -J213- - Check multi-function switch - F125- ⇒ page 01-322
			Selector lever in P, R, N, and 2	less than 5 V	- Check fuse 31

- 1) This test cannot be performed on vehicles with E-gas. The signal is transmitted from brake light switch or brake test switch to Engine Control Module (ECM). The ECM then forwards the signal to the Transmission Control Module via the CAN-Bus.
- 2) Pin 28 at the control module is vacant for vehicles with 10-pin connector of multi-function switch -F125-.

01-284

Voltage measurement: switch multimeter to 20 V measuring range					
Test step	VAG 1598/20 sockets	Test of	- Test conditions - Additional steps	Specified value	Corrective action
5 ¹⁾ not for E-gas engines	18 + 54	Kick-down switch -F8-	- Ignition switched on - Depress accelerator to kick-down	approx. battery voltage	- Check wiring per wiring diagram. - Adjust or replace accelerator pedal cable. ⇒ <i>Repair Manual, General, Engine, Repair Group 20</i> - Perform test step 17.

¹⁾ This test cannot be performed on vehicles with E-gas. The kick-down switch -F8- in this case is integrated in the Throttle Position (TP) Sensor (-G79-, -G185-).

01-285

Voltage measurement: switch multimeter to 20 V measuring range					
Test step	VAG 1598/20 sockets	Test of	- Test conditions - Additional steps	Specified value	Corrective action
6	2 + 54 2 +55	Shift Lock Solenoid - N110- ¹⁾	Ignition switched off	14 to 28 Ω	- Check wiring per wiring diagram. - Check multi-function switch -F125- $\Rightarrow$ Page 01-306 - Check Shift Lock Solenoid -N110- for short circuit - Perform test steps 2 and 16.

¹⁾ Solenoid for shift lock -N110- is also referred to as shift lock $\Rightarrow$ solenoid -N110-

01-286

Resistance measurement: switch multimeter to 200 Ω measuring range					
Test step	VAG 1598/20 sockets	Test of	- Test conditions - Additional steps	Specified value	Corrective action
7	6 + 34 28 ¹⁾ + 34	Ground (GND) connection of Transmission Control Module (TCM) -J217-	- Ignition switched off	smaller than 1 Ω	- Check wiring per wiring diagram.
	34 + battery ground (GND)			smaller than 1 Ω	
8	52 + 53	Voltage supply to solenoid valves	Ignition switched off	smaller than 1,5 Ω	- Check wiring per wiring diagram. - Perform test step 1 - Check wiring between TCM and 16-pin connector $\Rightarrow$ page 01-302 . - Perform test step 1 - Check harness in transmission according to wiring diagram

¹⁾ Pin 28 at the control module is vacant for vehicles with 10-pin connector of multi-function switch -F125-.

01-287

Resistance measurement: switch multimeter to 200 Ω measuring range					
Test step	VAG 1598/20 sockets	Test of	- Test conditions - Additional steps	Specified value	Corrective action
9	52 + 30	Solenoid Valve 1 -N88-	Ignition switched off	25 to 35 Ω	- Check 16-pin connector to transmission for contact corrosion - Perform test step 8
	30 + 34			infinity Ω 1)	
10	52 + 33	Solenoid Valve 2 -N89-	Ignition switched off	25 to 35 Ω	- Check wiring connection from 88-pin connector to 8-pin connector $\Rightarrow$ page 01-302 - Check wiring harness in transmission according to wiring diagram, replace if necessary.
	33 + 34			infinity Ω 1)	
11	52 + 32	Solenoid Valve 3 -N90-	Ignition switched off	25 to 35 Ω	- Remove and install valve body $\Rightarrow$ Repair Manual, 5 Spd. Automatic Transmission 01V, Repair Group 38
	32 + 34			infinity Ω 1)	
12	52 + 5	Solenoid Valve 4 -N91-	Ignition switched off	6 to 8 Ω	
	5 + 34			infinity Ω	

				1)	
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1) Adjust VAG 1526 to highest resistance (Ω) range

01-288

Resistance measurement: switch multimeter to 200 Ω measuring range					
Test step	VAG 1598/20 sockets	Test of	Test conditions - Additional steps	Specified value	Corrective action
13	52 + 1	Solenoid valve 5 -N92- ²⁾	Ignition switched off	6 - 8 Ω	- Check for contact corrosion on 16-pin connector to transmission.
	1 + 34			infinite Ω ₁₎	- Perform test step 8.
14	52 + 29	Solenoid valve 6 -N93- ³⁾	Ignition switched off	6 - 8 Ω	- Check wiring between 88-pin connector for TCM and 8-pin connector ⇒ page 01-302 .
	29 + 34			infinite Ω ₁₎	- Check wiring harness in transmission according to current wiring diagram; replace if necessary.
15	52 + 4	Solenoid valve 7 -N94- ⁴⁾	Ignition switched off	6 - 8 Ω	- Remove and install valve body ⇒ Repair Manual, 5 Spd. Automatic Transmission 01V, Repair Group 38
	4 + 34			infinite Ω ₁₎	

1) Switch VAG1526 to highest resistance (Ω) measuring range.

2) Solenoid Valve 5 -N92- is also called Pressure Valve 2 -N216-.

3) Solenoid Valve 6 -N92- is also called Pressure Valve 3 -N217-.

4) Solenoid Valve 7 -N92- is also called Pressure Valve 4 -N218-.

01-289

Resistance measurement: switch multimeter to 200 Ω measuring range					
Test step	VAG 1598/20 sockets	Test of	- Test conditions - Additional steps	Specified value	Corrective action
16	2 + 36	Shift lock solenoid -N110-3)	- Ignition switched off - Selector lever in P	14 - 28 Ω	- Check wiring per wiring diagram. - Check Multi-function Transmission Range (TR) switch $\Rightarrow$ page 01-306 - Perform test step 2 and 6 - Replace shift lock solenoid -N110-. $\Rightarrow$ Repair Manual, 5 Spd. Automatic Transmission 01V, Repair Group 37
17 ²⁾ not for E-gas engines	18 + 34	Kick-down switch -F8-	- Ignition switched off - Accelerator pedal not depressed	infinite Ω ¹⁾	- Check wiring per wiring diagram. - Adjust or replace accelerator pedal cable. $\Rightarrow$ Repair Manual, General, Engine, Repair Group 20
			- Depress accelerator pedal to kick-down.	less than 1.5 Ω	

- 1) Switch VAG1526 to highest resistance (Ω) measuring range.
- 2) This test cannot be performed on vehicles with E-gas. The kick-down switch -F8- in this case is integrated in the Throttle Position (TP) Sensor (-G79-, -G185-).
- 3) Solenoid for shift lock -N110- is also referred to as shift lock solenoid -N110-

01-290

Resistance measurement: switch multimeter to 20 K Ω measuring range					
Test step	VAG 1598/20 sockets	Test of	• Test conditions - Additional steps	Specified value	Corrective action
18	14 + 42	Transmission VSS - G38- ²⁾	• Ignition switched off min. max.	0.8 K Ω	- Check wiring per wiring diagram.
	1.2 K Ω				
	14 + 34			infinite Ω ¹⁾	- Replace transmission VSS -G38-, $\Rightarrow$ Fig. 10, Page 01-28 .
	14 + 54				
	42 + 54				
	42 + 34				
	15 + 34	Shielding for -G38-	• Ignition switched off	infinite Ω ¹⁾	- Check wiring per wiring diagram.
15 + 54					

1)

 Switch VAG1526 to highest resistance (Ω) measuring range.

2)

 Transmission Vehicle Speed Sensor (VSS) -G38- is also referred to as Sensor for Transmission Output RPM -G195-.

01-291

Resistance measurement: switch multimeter to 20 K Ω measuring range					
Test step	VAG 1598/20 sockets	Test of	- Test conditions - Additional steps	Specified value	Corrective action
19 Only for hydraulic control -E17- ²⁾	16 + 44	Sensor for transmission RPM - G182-	Ignition switched off	min. 0.23 K Ω	- Check wiring per wiring diagram.
				max. 0.30 K Ω	
	44 + 34			infinite Ω ¹⁾	- Replace sensor for transmission RPM -G182- , $\Rightarrow$ Fig. 11, Page 01-29 .
	44 + 54				
	16 + 54	Shielding for -G182-	Ignition switched off	infinite Ω ¹⁾	- Check wiring per wiring diagram.
	16 + 34				
	23 + 34				
	23 + 54				
¹⁾ Switch VAG1526 to highest resistance (Ω) measuring range. ²⁾ This test step can only be performed on transmission with hydraulic control E17. For information regarding the transmission installed:					

⇒ [Repair Manual, 5 Spd. Automatic Transmission 01V, Repair Group 00; Code letters, engine/transmission applications, ratios, equipment](#)

01-292

Resistance measurement: switch multimeter to 2 M Ω measuring range					
Test step	VAG 1598/20 sockets	Test of	- Test conditions - Additional steps	Specified value	Corrective action
20	21 + 22	Transmission Fluid (ATF) Temperature sensor -G93-	- Ignition switched off - ATF temperature		- Check wiring between 88-pin connector on TCM and 8-pin connector $\Rightarrow$ page 01-302 . - Check wiring harness in transmission; replace if necessary.
				approx. 20° C	approx. 0.83 K Ω ²⁾
				approx. 60° C	approx. 1.28 K Ω ²⁾
				approx. 120° C	approx. 1.88 K Ω ²⁾
	21 + 34 22 + 28 ³⁾		Ignition switched off	infinite Ω ¹⁾	- Remove and install valve body $\Rightarrow$ Repair Manual, 5 Spd. Automatic Transmission 01V, Repair Group 38

21 + 54		infinite Ω ¹⁾
22 + 54		

¹⁾ Switch VAG1526 to highest resistance (Ω) measuring range.

²⁾ Permissible tolerance: $\pm 0.1 \text{ K}\Omega$

³⁾ Pin 28 at the control module is vacant for vehicles with 10-pin connector of multi-function switch -F125-.

01-293

Resistance measurement: switch multimeter to 2 M Ω measuring range					
Test step	VAG 1598/20 sockets	Test of	- Test conditions - Additional steps	Specified value	Corrective action
21 A)	41 + 28 ³⁾	Wiring to ECM (throttle signal)	- Ignition switched off - ECM disconnected	infinite Ω ¹⁾	- Check wiring per wiring diagram.
	41 + 34 41 + 55 41 + 26 41 + xx ²⁾			less than 1.5 Ω	

¹⁾ Switch VAG1526 to highest resistance (Ω) measuring range.

²⁾ Corresponding terminal assignment at Engine Control Module (ECM)

⇒ *Electrical wiring diagrams Troubleshooting & Component Locations*

A) Signal is transmitted to Transmission Control Module (TCM) via the Engine Control Module (ECM). Test is only for vehicles without CAN-Bus

⇒ [Repair Manual, 5 Spd. Automatic Transmission 01V, Repair Group 00; Code letters, engine/transmission allocation, ratios, equipment](#)

3) Pin 28 at the control module is vacant for vehicles with 10-pin connector of multi-function switch -F125-.

01-294

Resistance measurement: switch multimeter to 2 M Ω measuring range					
Test step	VAG 1598/20 sockets	Test of	- Test conditions - Additional steps	Specified value	Corrective action
22 A)	35 + 28 ¹⁾	Wiring to ECM (fuel consumption/load signal)	- Ignition switched off - ECM disconnected	more than 40 K Ω	- Check wiring per wiring diagram. - Disconnect connections to other components which also receive this signal and repeat measurement.
	35 + 34				
	35 + 55				
	35 + 26				
	35 + xx ²⁾		Change measuring range to 20 V	less than 1.5 Ω	- Check these components for short circuit if necessary (e.g. on-board computer).
				Measure Voltage	
					⇒ Repair Manual, Electrical Equipment, Repair Group 01
	35 + 34		- Ignition switched on - ECM disconnected	Approx. 5 V	
	35 + 28 ¹⁾				

¹⁾ Pin 28 at the control module is vacant for vehicles with 10-pin connector of multi-function switch -F125-.

2) Corresponding terminals at Engine Control Module (ECM).

⇒ *Electrical Wiring Diagrams & Component Locations*

A) Signal is transmitted to Transmission Control Module (TCM) via the Engine Control Module (ECM). Test is only for vehicles without CAN-Bus

⇒ [Repair Manual, 5 Spd. Automatic Transmission 01V, Repair Group 00; Code letters, engine and transmission allocation, ratios, equipment](#)

01-295

Resistance measurement: switch multimeter to 2 M Ω measuring range					
Test step	VAG 1598/20 sockets	Test of	- Test conditions - Additional steps	Specified value	Corrective action
23 A)	40 + 28 ₃₎	Wiring to ECM (engine RPM signal)	- Ignition switched off - ECM disconnected	15 - 80 K Ω	- Check wiring per wiring diagram. - Check on-board computer.
	40 + 34				
	40 + xx ₂₎			less than 1.5 Ω	
24 A)	20 + 28 ₃₎	Wiring to ECM (torque reduction)	- Ignition switched off - ECM disconnected	infinite Ω ¹⁾	- Check wiring per wiring diagram.
	20 + 34				
	20 + 55				
	20 + 26				
	20 + xx ₂₎			less than 1.5 Ω	

1) Switch VAG1526 to highest resistance (Ω) measuring range.

2) Corresponding terminal assignment at Engine Control Module (ECM).

⇒ *Electrical Wiring Diagrams & Component Locations binder*

A) Signal is transmitted to Transmission Control Module (TCM) via the Engine Control Module (ECM). Test is only for vehicles without CAN-Bus

⇒ [Repair Manual, 5 Spd. Automatic Transmission 01V, Repair Group 00; Code letters, aggregate allocation, ratios, equipment](#)

3) Pin 28 at the control module is vacant for vehicles with 10-pin connector of multi-function switch -F125-.

01-296

Resistance measurement: switch multimeter to 2 M Ω measuring range					
Test step	VAG 1598/20 sockets	Test of	- Test conditions - Additional steps	Specified value	Corrective action
25 A)	51 + 28 ₃₎	Wiring to ECM (upshift/downshift signal)	- Ignition switched off - ECM disconnected	infinite Ω ¹⁾	- Check wiring per wiring diagram.
	51 + 34				
	51 + 55				
	51 + 26				
	51 + xx ₂₎			less than 1.5 Ω	

¹⁾ Switch VAG1526 to highest resistance (Ω) measuring range.

²⁾ Corresponding terminal assignment at Engine Control Module (ECM).

⇒ *Electrical Wiring Diagrams & Component Locations*

A) Signal is transmitted to Transmission Control Module (TCM) via the Engine Control Module (ECM). Test is only for vehicles without CAN-Bus

⇒ [Repair Manual, 5 Spd. Automatic Transmission 01V, Repair Group 00; Code letters, aggregate allocation, ratios, equipment](#)

3) Pin 28 at the control module is vacant for vehicles with 10-pin connector of multi-function switch -F125-.

01-297

Voltage measurement: switch multimeter to 20 V measuring range					
Test step	VAG	Test of	- Test conditions - Additional steps	Specified value	Corrective action
26	13 + 34 13 + 6	Tiptronic switch - F189-	- Ignition switched on - Selector lever in D but not in tiptronic gate	approx. 10 V	- Check wiring according to wiring diagram.
			- Ignition switched on - Selector lever tiptronic gate	approx. 20 mV	- Check magnet on lateral gate cover ¹⁾ - Repair shift mechanism, if necessary replace gate cover or circuit board with Tiptronic switch -F189 ¹⁾ ⇒ Repair Manual, 5 Spd. Automatic Transmission 01V, Repair Group 38 - Perform test step 29

¹⁾ The Tiptronic Switch -F189- receives its tiptronic gate recognition information or tiptronic up- and down-shift information via the large magnet which is mounted on the lateral gate cover of the gate cover. If the switch has become detached, the gate cover must be replaced.

01-298

Voltage measurement: switch multimeter to 20 V measuring range					
Test step	VAG	Test of	- Test conditions - Additional steps	Specified value	Corrective action
27	1598/20sockets	Tiptronic Switch - F189-	- Ignition switched off - Selector lever in Tiptronic gate	less than 1.5V	With the Tiptronic Switch the driver can manually select the desired driving range ²⁾
	46 + 54 46 + 55		- Ignition switched on - Selector lever in Tiptronic gate and up-shift switch actuated	approx. battery voltage	- Check wiring according to wiring diagram. If installed also check wiring to Tiptronic steering wheel
	46 + 34 46 + 6		- Ignition switched on - Selector lever in D - Selector lever in Tiptronic gate - Selector lever in Tiptronic gate and downshift switch activated	approx. 12V	- Check magnet on lateral gate cover ¹⁾ - Repair shift mechanism, if necessary replace gate cover or circuit board with Tiptronic switch - F189- ¹⁾ ⇒ Repair Manual, T5 Spd. Automatic Transmission 01V, Repair Group 37
			- Ignition switched on - Selector lever in	approx. 15mV	- Perform test step 28
Continued ▼					

			Tiptronic gate and up-shift switch activated		
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01-299

Voltage measurement: switch multimeter to 20 V measuring range					
Test step	VAG1598/20sockets	Test of	• Test conditions - Additional steps	Specified value	Corrective action
27 cont'd	47 + 34 47 + 6	Tiptronic Switch - F189-	• Ignition switched on - Selector lever in D - Selector lever in Tiptronic gate - Selector lever in Tiptronic gate and up - shift switch activated	approx. 12V	With the Tiptronic Switch the driver can manually select the desired driving range ²⁾ - Check wiring according to wiring diagram. If installed also check wiring to Tiptronic steering wheel
			• Ignition switched on - Selector lever in Tiptronic gate and down-shift switch activated	approx.15 mV	- Check magnet on lateral gate cover ¹⁾
	46 + 54 47 + 55		• Ignition switched off - Selector lever in Tiptronic gate	less than 1.5V	- Repair shift mechanism, if necessary replace gate cover or circuit board with Tiptronic switch -F189- ¹⁾
			• Ignition switched off - Selector lever in Tiptronic gate and	approx. battery voltage	⇒ Repair Manual, 5 Spd. Automatic Transmission 01V, Repair Group 37
Continued ▼					

			down-shift switch activated		- Perform test step 28
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Notes and footnotes for test step 27 are on the next page.

01-300

- 1) The Tiptronic Switch -F189- receives its tiptronic gate recognition information or tiptronic up- and down-shift information via the large magnet which is mounted on the lateral gate cover of the gate cover. If the switch has become detached, the gate cover must be replaced.
- 2) If the selector lever in the Tiptronic gate is pressed toward the rear (-) or on vehicles with Tiptronic sport steering wheel one of the minus (-) buttons on steering wheel is pressed, a manual shift-down can be performed (down-shift). If the selector lever in the Tiptronic gate is pressed toward the front (+) or on vehicles with Tiptronic sport steering wheel one of the plus (+) buttons on steering wheel is pressed, a manual up-shift-can be performed (up-shift).

01-301

Resistance measurement					
Test step	VAG 1598/20 sockets	Test of	- Test conditions - Additional steps	Specified value	Corrective action
28 A)	85 + 28 ₃₎	Wiring connection of TCM to ECM (CAN-bus)	- Ignition switched off - ECM disconnected	infinite Ω ¹⁾	- Check wiring per wiring diagram. Further information on CAN-bus ⇒ page 01-263
	85 + 34				
	86 + 28 ₃₎				
	86 + 34				
	85 + xx ₂₎			less than 1.5 Ω	
	86 + xx ₂₎				

¹⁾ Switch VAG1526 to highest resistance (Ω) measuring range.

²⁾ Applicable terminal assignment at Engine Control Module (ECM).

⇒ *Repair Manual, Fuel Injection & Ignition, Repair Group 24*

A) Testing only for vehicles with a CAN-bus

⇒ [Repair Manual, 5 Spd. Automatic Transmission 01V, Repair Group 00; Code letters, engine/transmission applications, ratios, equipment](#)

3) Pin 28 at the control module is vacant for vehicles with 10-pin connector of multi-function switch -F125-.

01-302

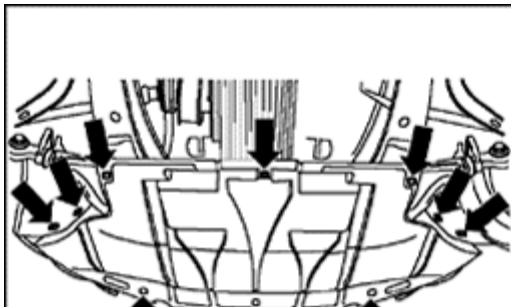
Wiring between transmission and 88-pin connector for Transmission Control Module (TCM) -J217-, testing

Perform if:

- ◆ Output Diagnostic Test Mode (DTM) or
- ◆ Electrical test indicates malfunctions in the transmission, the TCM -J217-, or in the corresponding wiring.

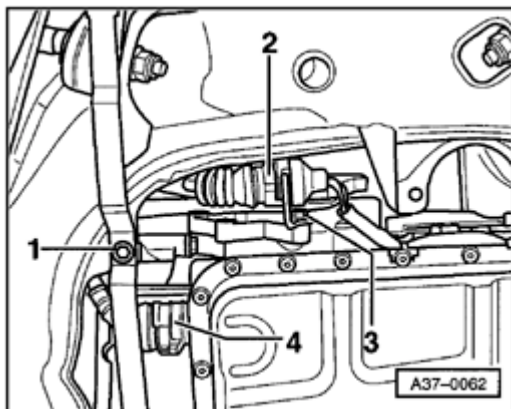
Test conditions

- ◆ Ignition switched off
 - ◆ Connect VAG1598/20 adapter only to 88-pin connector of transmission wiring harness.
 - ◆ Perform measurements with VAG1598/20 adapter on the outside of the vehicle
- 4
- Remove noise insulation panel.
 - Remove bracket -1- for noise insulation panel.

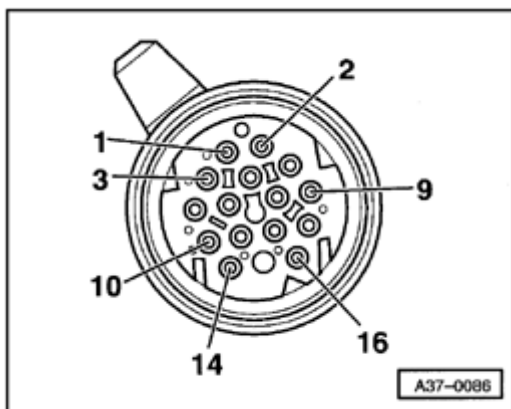


01-303

Wiring to 16-pin connector on transmission, testing



- Turn 16-pin connector -4- on transmission to release bayonet catch.



- Use multimeter (Fluke 83 or equivalent) to test for continuity between terminals of 16-pin connector and sockets on VAG1598/20 adapter. Resistance specifications ⇒ [table, page 01-304](#) .

01-304

Resistance specifications

Terminal on 16-pin connector	Socket on VAG1598/20 adapter	Specification	Corrective action
1	42	$\leq 1.5 \Omega$	- Repair open circuit according to current wiring diagram. Check connectors for: - contact corrosion - ingress of water - leaks
2	5	$\leq 1.5 \Omega$	
3	1	$\leq 1.5 \Omega$	
4	32	$\leq 1.5 \Omega$	
5	16	$\leq 1.5 \Omega$	
6	44	$\leq 1.5 \Omega$	
7	29	$\leq 1.5 \Omega$	
8	30	$\leq 1.5 \Omega$	
9	33	$\leq 1.5 \Omega$	
10	14	$\leq 1.5 \Omega$	
11	4	$\leq 1.5 \Omega$	

12	52	$\leq 1.5 \Omega$	
13	22	$\leq 1.5 \Omega$	

01-305

Terminal on 16-pin connector	Socket on VAG1598/20 adapter	Specification	Corrective action
14	21	$\leq 1.5 \Omega$	- Repair open circuit according to current wiring diagram. - Check connectors
15	Vacant		
16	53	$\leq 1.5 \Omega$	

Notes:

◆ *If the readings in these tests match the specifications, check the wiring harness in the transmission.*

⇒ [Repair Manual, 5 Spd. Automatic Transmission 01V, Repair Group 38; removing and installing valve body](#)

◆ *Only replace relevant solenoid valves if there are no faults found in the wiring harness in the transmission.*

⇒ [Repair Manual, 5 Spd. Automatic Transmission 01V, Repair Group 38, valve body removing and installing](#)

Multi-function Transmission Range (TR) switch, checking

Note:

- ◆ *Check the measuring value block for the TR-switch display group number 004 ⇒ [page 01-203](#) before checking the TR-switch.*
- ◆ *Be sure that selector lever cable is properly adjusted.*

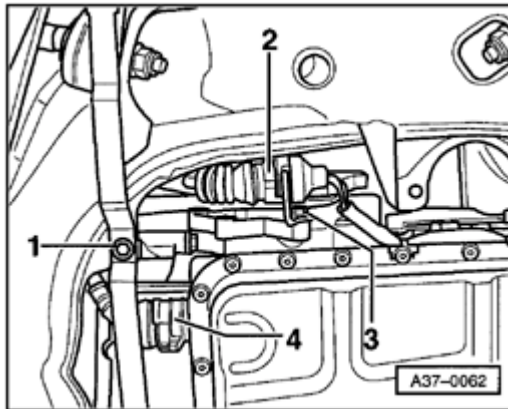
Two different multi-function switches were used in production:

1. *Multi-function switch with 8 - pin connector checking starting ⇒ [page 01-308](#) .*
2. *Multi-function switch with 10 - pin connector checking starting ⇒ [page 01-319](#) .*

01-307

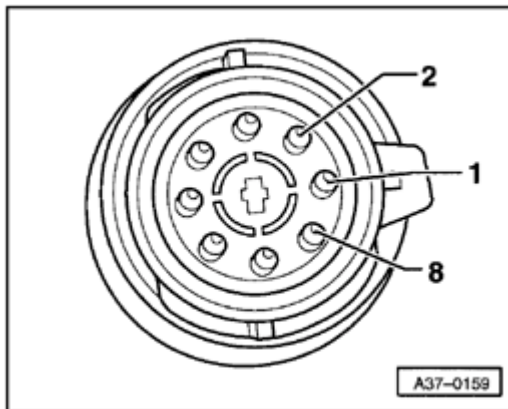
Multi-function Transmission Range (TR) switch -F125- (8-pin connector), testing

1. Function test



A

- Release spring catch securing 8-pin connector -2- to connector on wiring to multi-function TR switch.
- Unclip connector to multi-function TR switch from retainer or remove retainer together with connector from transmission to gain better access to the pins in the connector.



A

- Pin assignment for 8 - pin connector of Multi-function (TR) switch - F125-
- Use multi-meter VAG 1526A or Vehicle Diagnosis, Measuring and Information System VAS 5051.

01-308

Transmission with Multi-function Transmission Range (TR) switch -F125- with 8 - pin connector, checking

Resistance measurement: switch multimeter to 2 M Ω measuring range					
Test step	Connector pins at F 125	Test of	- Test conditions - Additional steps	Specified value	Corrective action
1	1 + 7 1 + 6	Multi-function TR switch - F126-	- Ignition switched off - Selector lever in P, R, N, D, 4, 3, and 2	infinite Ω 1)	- Check connector on multi-function TR switch for corrosion, water ingress or loose connection
	1 + 2		- Ignition switched off - Selector lever in P, N, and D	smaller than 2 Ω	- If necessary adjust selector lever cable ⇒ Repair Manual, 5 Spd. Automatic Transmission 01V, Repair Group 37
			- Selector lever in R, 4, 3, and 2	infinite Ω 1)	
	1 + 3		- Ignition switched off - Selector lever in R, N, and 4	smaller than 2 Ω	
			Ignition switched off	infinite Ω 1)	- Replace multi-function TR switch ⇒ Repair Manual, 5 Spd. Automatic
Continue ▼					

			- Selector lever in P, D, 3, and 2		<i>Transmission 01V, Repair Group 38</i>
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1) Switch VAG1526 to highest resistance (Ω) measuring range.

01-309

Transmission with Multi-function Transmission Range (TR) switch -F125- with 8 - pin connector, checking

Resistance measurement: switch multimeter to 2 M Ω measuring range					
Test step	Connector pins at F 125	Test of	- Test conditions - Additional steps	Specified value	Corrective action
Continued 1	1 + 4		- Ignition switched off - Selector lever in N, D, 4, and 2	infinite Ω ¹⁾	- Check connector on multi-function TR switch for corrosion, water ingress or loose connection
	1 + 5		- Selector lever in P, R, and 3	infinite Ω ¹⁾	- If necessary adjust selector lever cable
			- Ignition switched off - Selector lever in D, 4, and 3	smaller than 2 Ω	$\Rightarrow$ Repair Manual, 5 Spd. Automatic Transmission 01V, Repair Group 37
	1 + 8		- Selector lever in P, R, N, and 2	infinite Ω ¹⁾	
Continue			- Ignition switched off - Selector lever in R	smaller than 2 Ω	
			- Selector lever in P,	infinite Ω	- Replace multi-function TR switch

▼			N, D, 4, 3, and 2	1)	⇒ Repair Manual, 5 Spd. Automatic Transmission 01V, Repair Group 38
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1) Switch VAG1526 to highest resistance (Ω) measuring range.

01-310

Transmission with Multi-function Transmission Range (TR) switch -F125- with 8 - pin connector, checking

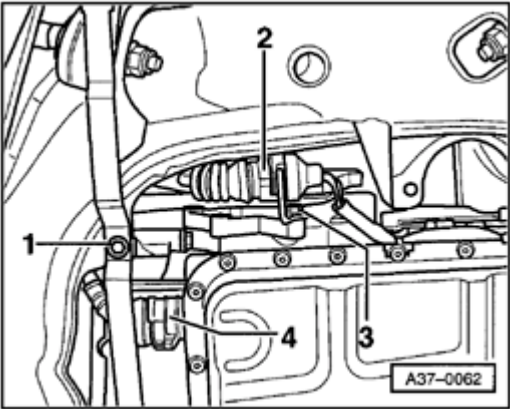
Resistance measurement: switch multimeter to 2 M Ω measuring range					
Test step	Connector pins at F 125	Test of	- Test conditions - Additional steps	Specified value	Corrective action
Continued to 1	6 + 7	Part No. signal of Multi-function TR switch	- Ignition switched off - Selector lever in R, D, 4, 3, and 2	infinite Ω 1)	- Replace multi-function TR switch ⇒ Repair Manual, 5 Spd. Automatic Transmission 01V, Repair Group 38 The Part No. signal for the Engine Control Module (ECM) is being checked
			- Ignition switched off - Selector lever in P, and N	less than 2 Ω	

1) Switch VAG1526 to highest resistance (Ω) measuring range.

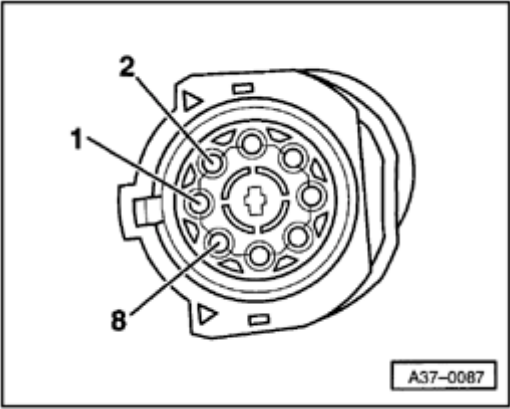
Note:

◆ If function check was OK, check voltage supply to Multi-function TR switch -F125- ⇒ [page 01-311](#)

2. Multi-function Transmission Range (TR) switch -F125- (8-pin connector), testing



- Release spring catch securing 8-pin connector -2- to connector on wiring to Multi-function TR switch.
- Check at connector with spring clips (cavities) to Transmission Control Module (TCM)



- Pin assignment for 8 - pin connector of multi-function (TR) switch - F125- (to TCM)
- Use multi-meter VAG 1526A or Vehicle Diagnosis, Measuring and Information System VAS 5051

Voltage measurement: switch multimeter to 20 V measuring range

Cavity in connector	Test condition	Specified value
1 + 6	Ignition switched on	Approx. battery voltage

01-312

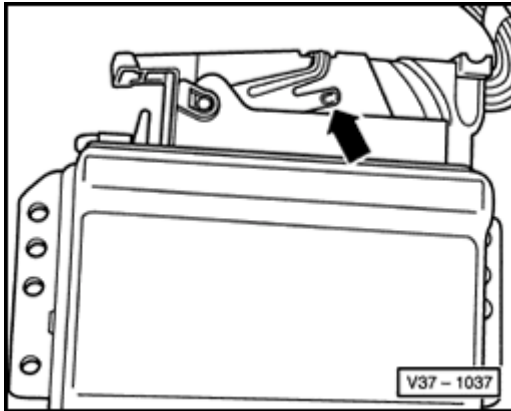
- If the specified value is not read, check fuses and wiring connectors according to wiring diagram and make necessary repairs.

Note:

If the check results and the voltage supply to the Multi-function TR switch were OK, check wiring connections from Transmission Control Module (TCM) -J217- to Multi-function Transmission Range (TR) switch ⇒ [page 01-316](#)

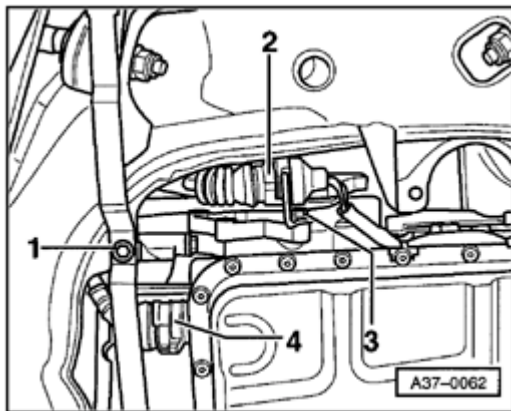
01-313

3. Wiring from Transmission Control Module (TCM) -J217- to Multi-function Transmission Range (TR) switch -F125- (8-pin connector), checking



A

- Switch off ignition.
- Disconnect connector from TCM -J217-, located in front of right seat under the cover in the footwell ⇒ [page 01-20](#) .
- Connect test box VAG 1598/20 to harness connector.



A

- Connect both 8-pin connectors -2- to multi-function switch -F125- as shown in the illustration.
- Use multi-meter VAG 1526A or Vehicle Diagnosis, Measuring and Information System VAS 5051

01-314

Transmission with Multi-function Transmission Range (TR) switch -F125- with 8 - pin connector, checking

Voltage measurement: switch multimeter to 20 V measuring range					
Test step	VAG 1598/20 sockets	Test of	• Test conditions - Additional steps	Specified value	Corrective action
1	36 + 34 36 + 6	Multi-function Transmission Range (TR) switch -F125-	• Ignition switched on	Approx. 12 V	- Check connector at multi-function switch for corrosion
			- Selector lever in P, N, and D		- Check wiring per wiring diagram
	- Selector lever in R, 4, 3, and 2		Less than 1 V	- Check fuses	
				- Check voltage supply to -F125- ⇒ page 01-311 .	
	8 + 34 8 + 6		• Ignition switched on	Approx. 12 V	- Check wiring from 88-pin control module to 8-pin connector ⇒ page 01-319 .
			- Selector lever in R, N, and 4		
	- Selector lever in P, D, 3, and 2	Less than 1 V			
37 + 34 37 + 6	- Selector lever in N, D, 4, and 2	Approx. 12 V			

			- Selector lever in P, R, and 3	Less than 1 V	
	9 + 34 9 + 6		- Selector lever in D, 4, and 3	Approx. 12 V	
			- Selector lever in P, R, N, and 2	Less than 1 V	

01-315

Transmission with Multi-function Transmission Range (TR) switch -F125- with 8 - pin connector, checking

Resistance measurement: switch multimeter to 2 M Ω measuring range					
Test step	VAG 1598/20 sockets	Test of	• Test conditions - Additional steps	Specified value	Corrective action
2	36 + 8	Multi-function Transmission Range (TR) switch -F125	• Ignition switched off - Selector lever in N	less than 26 Ω	- Check connector at multi-function switch for corrosion
			- Selector lever in P, R, D, 4, 3, and 2	infinite Ω ¹⁾	- Check wiring from 88-pin control module to 8-pin connector ⇒ page 01-319 .
	37 + 9		• Ignition switched off - Selector lever in D and 4	less than 26 Ω	- Perform test steps 6 and 27.
			- Fuse 31 removed ²⁾ - Selector lever in P, R, N, 3 and 2	infinite Ω ¹⁾	
			37 + 36	• Ignition switched off	

			- Selector lever in N, and D		
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