24-164

Auxiliary signals, checking

Signal from A/C compressor, checking

Required special tools and test equipment

- VAG1551 or VAG1552 Scan Tool (ST) with VAG1551/3 adapter cable
- VAG1598/22 test box
- Multimeter US1119 (Fluke 83 or equivalent)
- VW1594 connector test kit
- Wiring diagrams

Test conditions

- A/C functions OK
- A/C is switched off
- Vehicle at room temperature-above 15 ° C (59 ° F)

  No malfunctions stored in Diagnostic Trouble

- Code (DTC) memory ⇒ page 01-16 .

Checking

- Connect VAG1551 or VAG1552 scan tool and press buttons -0- and -1- to insert "Engine Electronics" address word 01 (with engine running at idle) ⇒ page 01-8 .

Rapid data transfer **HELP**

Select function XX

Indicated on display

- Press buttons -0- and -8- to select "Read Measuring Value Block" function 08, and press -Q- button to confirm input.

Read Measuring Value Block **HELP**

Input display group number XXX

Indicated on display

- Press buttons -0-, -5- and -0- to input display group number 50 (050), and press -Q- button to confirm input.

Read Measuring Value Block 50 →

1 2 3 4

Indicated on display (1-4 = display fields)

- Switch on A/C (lowest temperature and highest fan position).

- Compare display with specified values for A/C (in display field 4).

	Display fields			
	1	2	3	4
Display group 50: Signals to Engine Control Module (ECM)				
Display	xxxx RPM	xxxx RPM	A/C-LOW A/C-HIGH	Compr. ON Compr. OFF
Indicates	Actual engine speed (in 10 RPM steps)	Specified engine speed (in 10 RPM steps)	IAC boost	A/C compressor status
Range	0 - 2550 RPM	---	---	---
Specified value	620 - 740 RPM (all-wheel drive) or 740 - 860 RPM (front-wheel drive)	680 RPM (all-wheel drive) or 800 RPM (front-wheel drive)	A/C-LOW (all-wheel drive) or A/C-HIGH (front-wheel drive)	Compressor on: Comp. ON Compressor off: Comp. OFF
	---	---	---	If not as specified ⇒ page 24-167 , Continuation

Notes:

- *The A/C compressor is switched off during acceleration when the car is stationary or at slow speed.*
- *At wide open throttle the A/C compressor is switched off by the Transmission Control Module (TCM) (via the kick down switch).*

24-167

Continuation

If the displayed values are NOT OK:

- Connect VAG1598/22 test box to ECM harness connector ⇒ page 01-67 .

- Check wiring for open circuit, short circuit to B+ or short circuit to Ground between ECM/test box terminal 8 and either A/C control head -E87- or Transmission Control Module (TCM).

⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations binder*

If the wiring is OK:

- Check function of A/C control head -E87-.

⇒ *Repair Manual, Heating & Air Conditioning, Repair Group 01*

- Carry out electrical testing of automatic transmission.

⇒ Repair Manual, 5 Spd. Automatic Transmission 01V, Repair Group 01

- Check readiness code ⇒ page 01-70 . If Diagnostic Trouble Code (DTC) memory has been erased, or ECM was disconnected, generate new readiness code ⇒ page 01-73 .

24-168

Vehicle speed signal, checking

Required special tools and test equipment

- VAG1551 or VAG1552 Scan Tool (ST) with VAG1551/3 adapter cable
- Multimeter US1119 (Fluke 83 or equivalent)
- VW1594 connector test kit
- Wiring diagrams

Test conditions

- Vehicle Speed Sensor (VSS) OK; checking:

⇒ *Repair Manual, Electrical Equipment, Repair Group 90*

Notes:

- *To check Vehicle Speed Sensor -G68-, the vehicle must be driven. A second technician is required to operate the scan tool during the road test.*

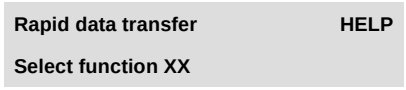
- *Read safety precautions for test driving vehicles while using test equipment ⇒ page 24-9 .*

- *The speed signal is generated by the vehicle speed sensor (at the transmission), and processed at the speedometer/odometer in the instrument cluster.*

24-169

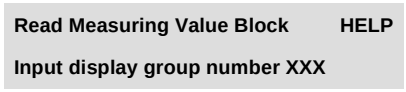
Test procedure

- Connect VAG1551 or VAG1552 scan tool and press buttons -0- and -1- to insert "Engine Electronics" address word 01 (with engine running at idle) ⇒ page 01-8 .



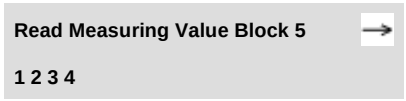
Indicated on display

- Press buttons -0- and -8- to select "Read Measuring Value Block" function 08, and press -Q- button to confirm input.



Indicated on display

- Press buttons -0-, -0- and -5- to input display group number 5 (005), and press -Q- button to confirm input.



Indicated on display (1-4 = display fields)

- Road test and compare indicated vehicle speed with value in display field 3 (2nd technician required, ⇒ Safety precautions ⇒ page 24-9).

	Display fields			
	1	2	3	4
Display group 5: General engine data				
Display	xxx RPM	xx.xx ms	xxx km/h	Idle Part throt Full throt Decel Enrich
Indicates	Engine speed (in 40 RPM steps)	Engine load	Vehicle speed	Operating condition
Range	0 - 6800 RPM	0.00 - 12.75 ms	0 - 326 km/h	---
Specified value	---	---	Approx. vehicle speed	---
	---	---	If no vehicle speed is displayed ⇒ page 24-171 , Continuation	---

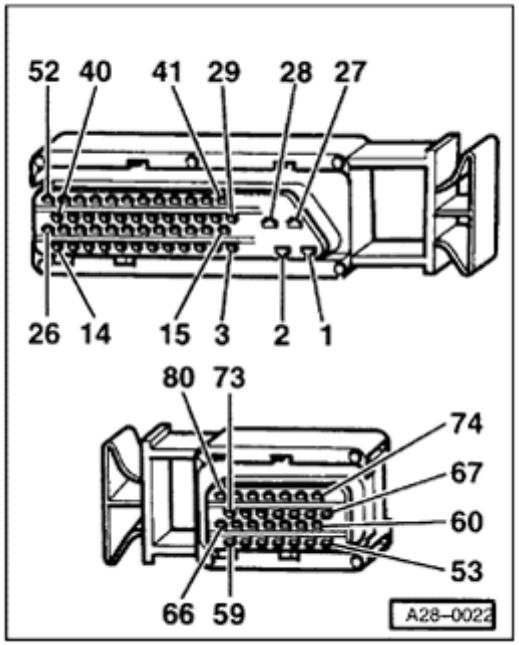
If displayed value is OK:

- Press → button.

- Press buttons -0- and -6- to select "End Output" function 06, and press -Q- button to confirm input.

- Switch off ignition.

24-171



Continuation

If no speed was indicated:

- Connect VAG1598/22 test box to ECM harness connector ⇒ page 01-67 .
- Connect VAG1527B LED voltage tester between ECM/test box sockets 3 (B+) and 20 (signal).
- Lift vehicle at left-front until wheel is free.
- Switch ignition on and rotate left-front wheel by hand.

  LED must blink (very brief blink)

Notes:

- *The right-front wheel must not rotate; block it if necessary.*
- *For LEDs with little voltage consumption, the LED lights up at half strength when the ignition is switched on.*

If the LED does not blink:

- Check wiring from ECM connector, terminal 20 to instrument cluster for open circuit or short circuit ⇒ Electrical Wiring Diagrams, Troubleshooting & Component Locations binder.

If the wiring is OK and the LED does not blink:

⇒ *Repair Manual, Electrical Equipment, Repair Group 90*

- Check readiness code ⇒ page 01-70 . If Diagnostic Trouble Code

(DTC) memory has been erased, or ECM was disconnected, generate new readiness code ⇒ page 01-73 .

24-172

CAN-Bus, checking

When a CAN-Bus malfunction is indicated during a check of DTC memory of the Engine Control Module (ECM), refer to the following test to eliminate the malfunction.

Note:

- *The information exchange occurs between the Engine Control Module (ECM) and the Transmission Control Module (TCM) via a CAN-Bus.*
- *All signals are carried by 2 wires between the ECM and the TCM.*

Required special tools and test equipment

- VAG1551 or VAG1552 Scan Tool (ST) with VAG1551/3 adapter cable
- VAG1598/22 test box
- VW1594 connector test kit
- Wiring diagrams

24-173

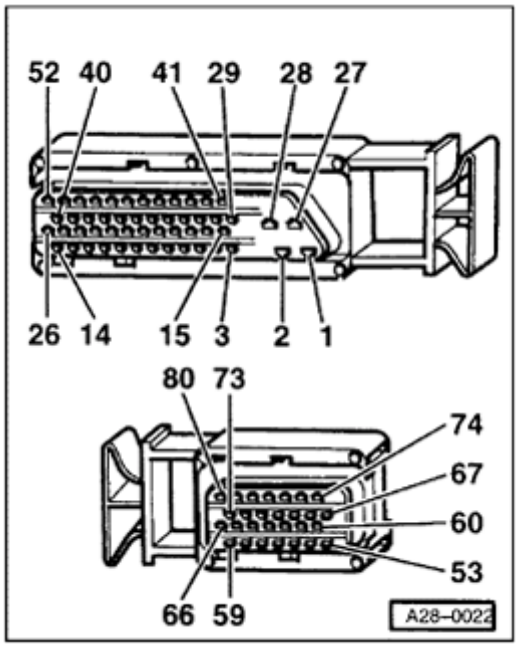
Checking

- Check DTC memory of Transmission Control Module (TCM).

⇒ Repair Manual, 5 Spd. Automatic Transmission 01V, Repair Group 01

If a DTC regarding the CAN-Bus wire is also stored in the TCM:

- Switch ignition off.



- Connect VAG1598/22 test box to ECM harness connector ⇒ page 01-67 .
- Check wires from terminal 29 and terminal 41 of test box to transmission control module for open or short circuit per wiring diagram.

⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations binder*

If wiring is OK:

- Replace Transmission Control Module (TCM) and Engine Control Module (ECM) as necessary and in sequence.

24-174

Rough road signal from ABS/EDL control module, checking

Notes:

- *When the ABS/EDL control module senses a wheel spinning, it produces the rough road signal. When the ECM recognizes the rough road signal, the misfire recognition is switched off.*

- *Check the rough road signal only when the trouble code 18014 "Rough Road Spec Engine Torque ABS-ECU Electrical Malfunction" is stored. The possible "Misfire" malfunction is in this case a subsequent malfunction that can be disregarded.*

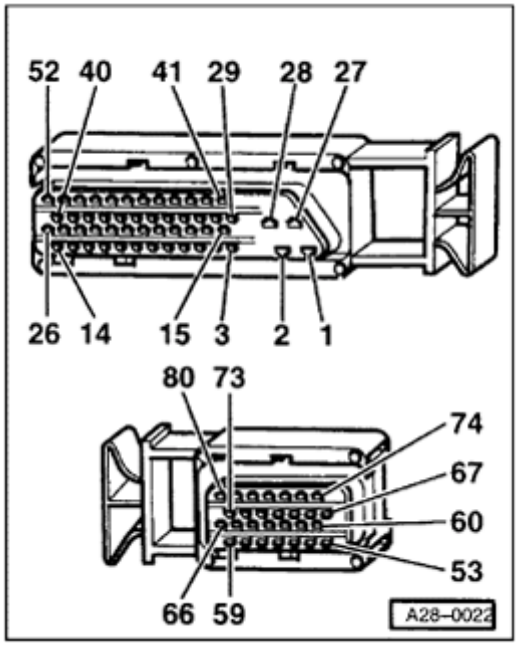
- *The wiring and the rough road signal are monitored by the ECM.*

- *Emissions testing on a front-wheel drive vehicle with ABS/EDL, during which only the front wheels turn while the rear wheels are stationary, can result in the DTC 18014 being stored in DTC memory. Therefore, the fuse for the ABS/EDL control module must be removed. After the test, check DTC memory for the ABS/EDL control module and the ECM. Then erase DTC memory.*

Required special tools and test equipment

- VAG1551 or VAG1552 Scan Tool (ST) with VAG1551/3 adapter cable
- VAG1598/22 test box

24-175



Test requirements

- ECM coding OK ⇒ page 01-14

Test sequence

- Switch ignition off.

- Connect VAG1598/22 test box to ECM harness connector ⇒ page 01-67 .

- Check signal wiring between ECM/test box terminal 45 and ABS control module for short circuit or open circuit.

⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations binder*

If the wiring is OK:

- Replace ABS control module.

If the malfunction occurs again after the ABS control module has been replaced:

- Replace Motronic ECM -J220- ⇒ page 01-68 .
- Carry out adaptation of throttle valve control module to ECM ⇒ page 24-150 .
- Check readiness code ⇒ page 01-70 . If Diagnostic Trouble Code

(DTC) memory has been erased, or ECM was disconnected, generate new readiness code ⇒ page 01-73 .

24-176

Fuel level signal, checking

Notes:

- *If there is too little fuel in the fuel reservoir (less than 2 gallons) combustion misfiring and/or fuel system malfunctions could occur. In this case the malfunction "Fuel level too low" is stored in the DTC memory (SAE P1250 / VAG 17658).*
- *This malfunction always occurs with combustion misfiring or fuel system malfunctions.*
- *In general eliminate all other malfunctions first.*

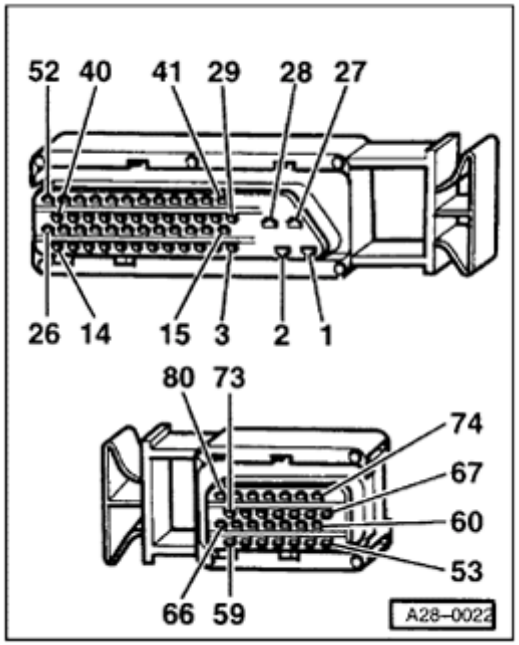
- Fill fuel tank of vehicle (at least 20 ltr, or 5.25 gal).
- Check and then erase DTC memory ⇒ page 01-16 .
- Check readiness code ⇒ page 01-70 .
- Generate new readiness code ⇒ page 01-73 .

24-177

- Conduct a test drive (⇒ Safety precautions ⇒ page 24-9).

- Check DTC memory of ECM ⇒ page 01-16 .

If only the DTC "Fuel level too low" (SAE P1250 / VAG 17658) is stored in the DTC memory.



- Connect VAG1598/22 test box to ECM harness connector ⇒ page 01-67 .
- Check wire from terminal 21 of test box to instrument cluster for open circuit or short circuit per wiring diagram.

⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations binder*