28-1

Ignition system, checking

General notes on ignition system

Note:

- *The battery should only be disconnected and reconnected when the ignition is turned off, since otherwise the Engine Control Module (ECM) can be damaged.*
- *For the electric components to work properly, a voltage of at least 12.7 V is required.*
- *It is possible that the control module will recognize a malfunction and store a DTC during some tests. After completing all tests and repairs, DTC memory should therefore be checked and erased if necessary.*
- *If the engine only starts briefly and then turns off again after troubleshooting, repair or checking of the components, it may be that the immobilizer is blocking the Engine Control Module (ECM). DTC memory must then be checked and if necessary, control module must be adapted.*

Safety precautions

To reduce the risk of personal injury and/or damage to the fuel injection and ignition system, always observe the following:

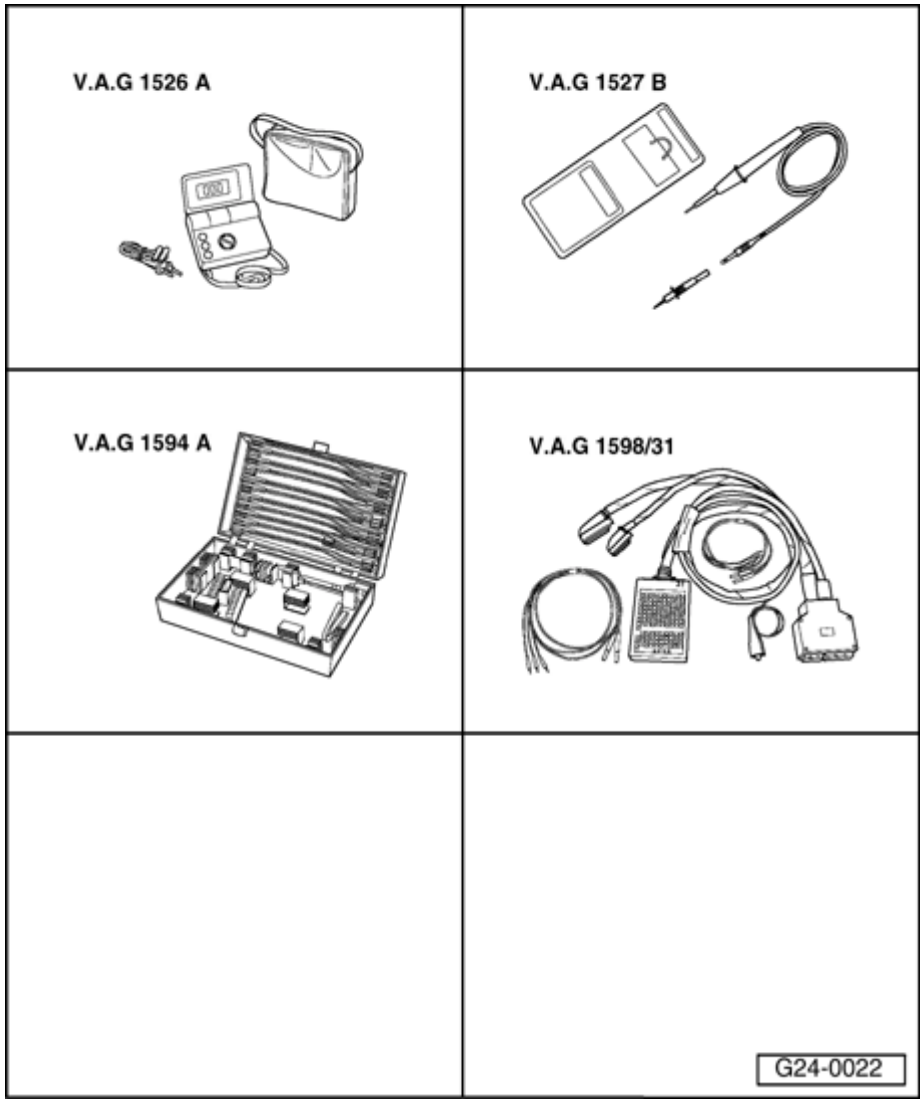
- Do not touch or disconnect ignition wires when engine is running or turning at starting RPM.
- Always switch ignition off before disconnecting or reconnecting wires for the injection and ignition system, including high voltage wiring and test leads.
- If engine is to be cranked at starting RPM without starting (e.g. for compression testing), disconnect connector from ignition coils and from fuel injectors.
- It is possible that the control module will recognize a malfunction and store a DTC during some tests. After completing all tests and repairs, DTC memory should therefore be checked and erased if necessary. Readiness code must be generated after DTC memory is erased ⇒ Page 01-73 .
- Always switch ignition off before cleaning engine.

28-3

Technical data

Engine identification	ATW (1.8 L / 5V/ 110 kW engine)
Idle speed Engine speed cannot be adjusted, it is regulated by idle stabilization	Front Wheel Drive (FWD): 740 to 860 RPM All-Wheel Drive Vehicles: 800 to 920 RPM
Engine speed (RPM) limitation Via fuel injector shut-off	 about 6800 RPM
Ignition timing is determined in the control module It is not possible to adjust the ignition timing	
Ignition system	Single coil ignition system with 4 ignition coils (power output stages integrated) that are connected directly to spark plugs via the ignition cables.
Spark plugs	Tightening torque 30 Nm.
Firing sequence	1-3-4-2

28-4

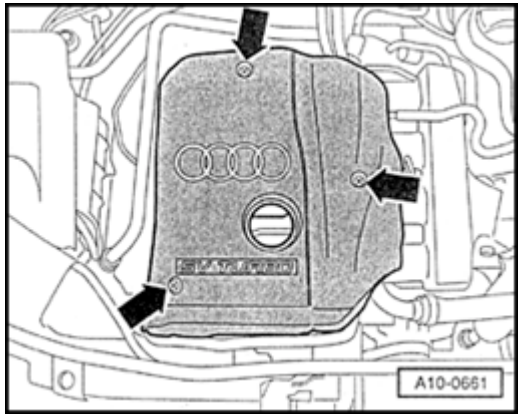


Ignition coils with power output stages, checking

Special tools and equipment

- VAG1526A
- VAG1527B
- VAG1594A
- VAG1598/31

28-5



Test sequence

Note:

The ignition coil and power output stage are combined in one complete component.

- Remove engine cover (arrows).

Recognize a non-functional or misfiring cylinder as follows:

- Check misfire recognition ⇒ Page 28-51 .

If misfires were recognized:

- Continue with test at indicated cylinder ⇒ "If faulty cylinder is recognized".

If no misfires were recognized:

- Disconnect connectors from fuel injectors in sequence with engine running and observe engine operation.

or

- Compare spark plugs from all cylinders to each other. Check electrodes for carbon fouling..

If faulty cylinder is recognized:

- Switch spark plug from faulty cylinder with one from another cylinder.

28-6

If malfunction follows the spark plug:

- Replace spark plug.

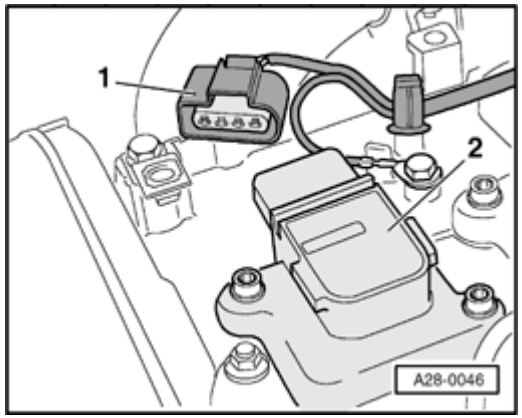
If malfunction remains at original cylinder:

- Switch ignition coil from faulty cylinder with one from another cylinder.

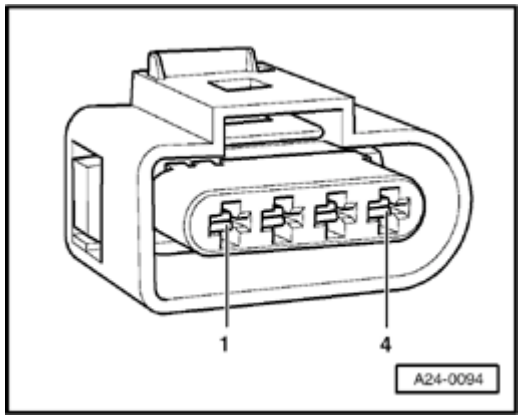
If malfunction follows the ignition coil:

- Replace ignition coil.

Check Ground (GND) connection



- Disconnect 4-pin harness connector -1- at ignition coil -2-.



- Connect VAG1527B voltage tester as follows:

Harness connector Terminal	Measure to
2	B+
4	B+

♦ LED must light up.

If LED does not light up:

- Check wire connections.

⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations*

If LED lights up:

- Check voltage supply

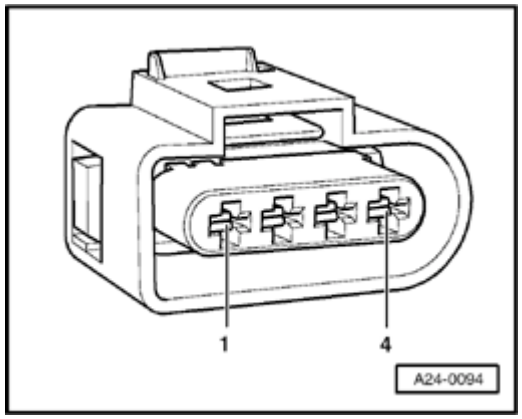
Checking voltage supply

Test requirement:

- Fuses for engine electronics OK

⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations*

28-8



- Connect multimeter for voltage measurement as follows:

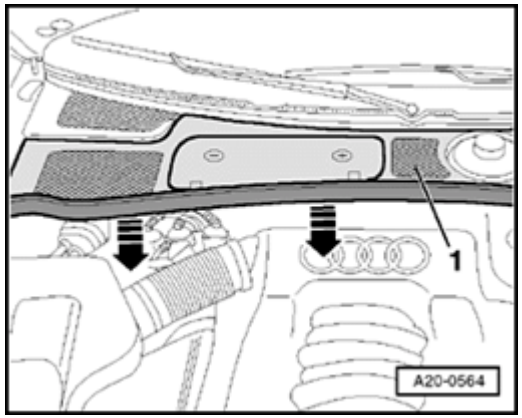
Harness connector Terminal	Measure to
1	Engine Ground (GND)

- Switch ignition on.
  - ♦ Specification: approx. battery voltage

If specified value is obtained:

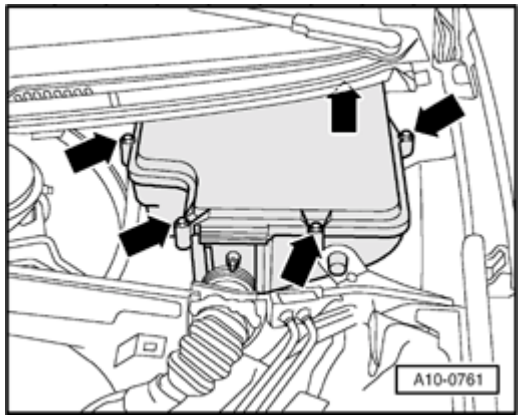
- Check activation of power output stages ⇒ Page 28-10 .

If specified value is not obtained:

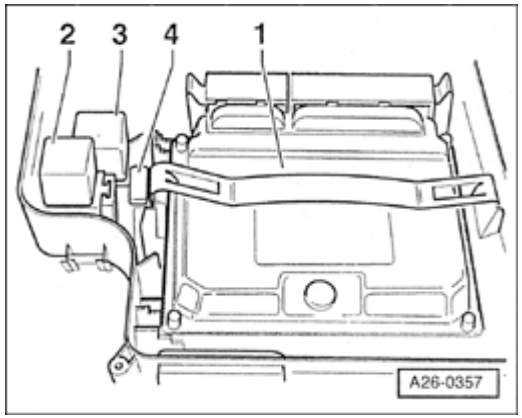


- Pull off rubber seal of plenum chamber cover in direction of arrow.
- Remove cover -1- toward front.

28-9

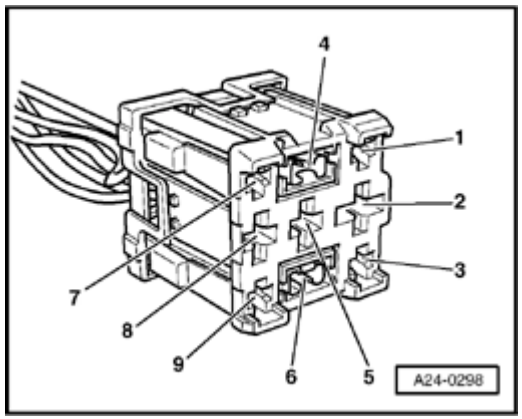


- Remove Heater Core E-box cover (arrows).



- Disconnect voltage supply relay -3-.

28-10



- Perform following tests marked with dots:

- Check wire connection from 3-socket relay carrier, position 2, terminal 6 to harness connector at ignition coil terminal 1.
- Check motronic Engine Control Module (ECM) power supply relay - J271- ⇒ Page 28-13 .

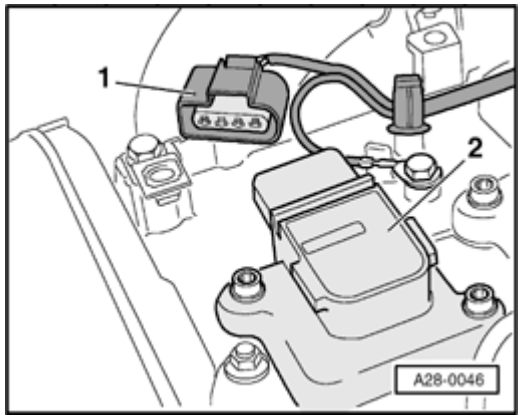
Checking activation of power output stages

- Remove all harness connectors to injectors.

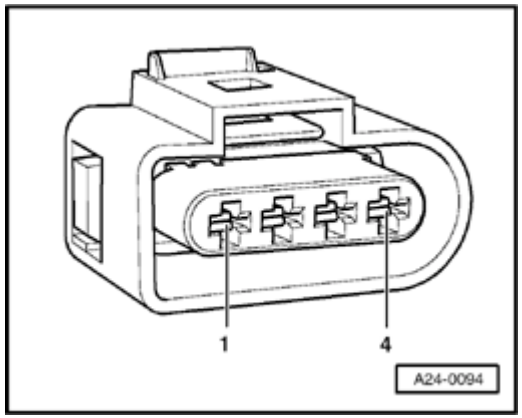
Note:

Fuel must not be injected during the test to avoid damaging catalytic converter. Connectors must therefore be disconnected from fuel injectors.

28-11



- Disconnect 4-pin harness connector -1- at ignition coil -2-.

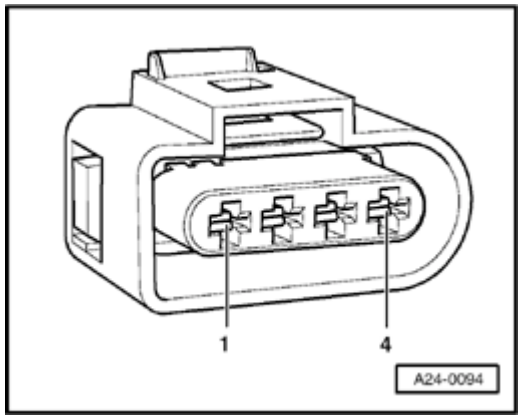


- Connect VAG1527B voltage tester to connector terminals 2 and 3.
- Operate starter briefly.
  - ♦ LED must blink (brief blink signal).

If specified values are not obtained:

- Connect VAG1598/31 test box at wiring harness to Engine Control Module (ECM), do not connect ECM ⇒ Page 24-19 .

28-12



- Check following wire connections for open circuit and short circuit to Ground (GND) and B+:

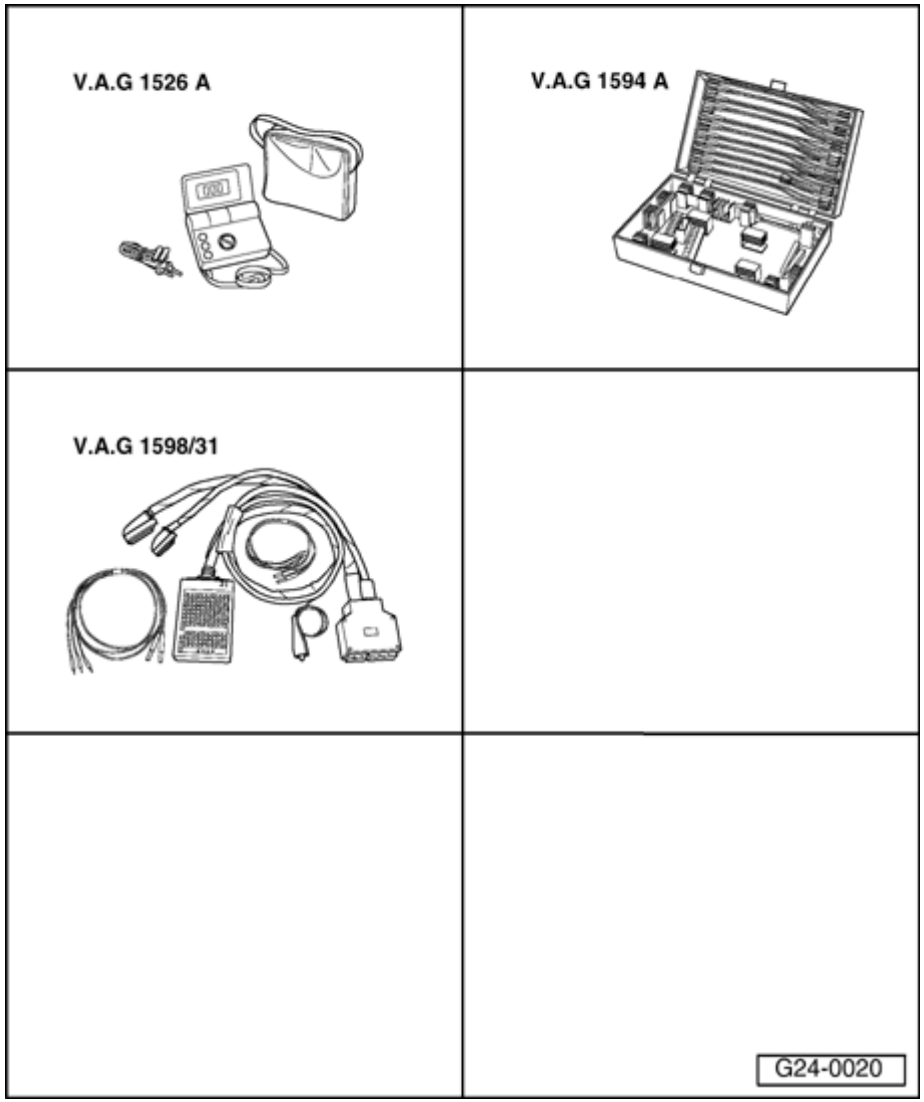
Harness connector Terminal	VAG1598/31 test box Socket
3 (Cyl. 1)	102
3 (Cyl. 2)	95
3 (Cyl. 3)	103
3 (Cyl. 4)	94

- Repair open circuit or short circuit if necessary.

If no malfunctions are found in wires:

- Replace combined component, ignition coil with power output stage.

28-13



Motronic Engine Control Module (ECM) power supply relay -J271-, checking

Special tools and equipment

- VAG1526A
- VAG1594A
- VAG1598/31

28-14

Note:

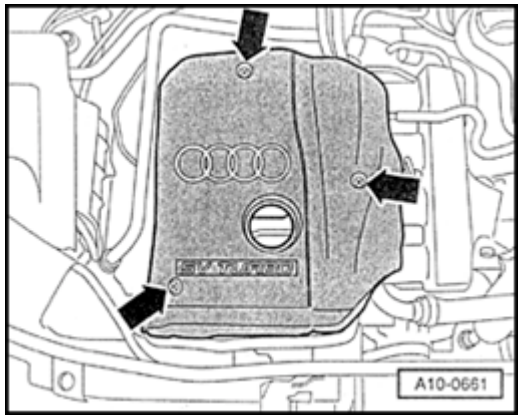
The motronic Engine Control Module (ECM) power supply relay -J271- supplies voltage to the ignition coils with power output stages and the Engine Control Module (ECM) at pin 121.

Test requirement:

- Fuses for engine electronics OK

⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations*

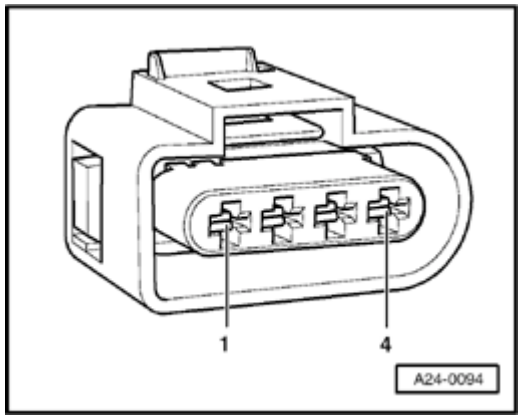
Test sequence



➢ - Remove engine cover (arrows).

➢ - Disconnect 4-pin harness connector -1- at one of ignition coils -2-.

28-15



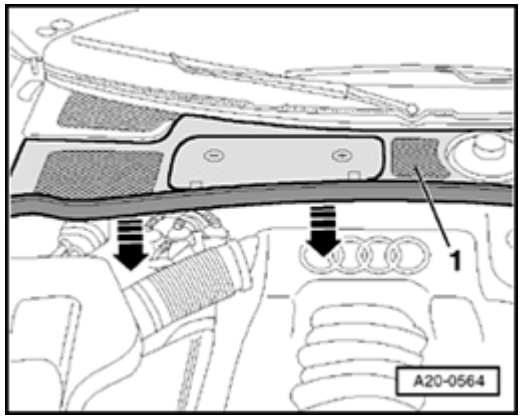
- Connect multimeter for voltage measurement as follows.

Harness connector Terminal	Measure to
1	Engine Ground (GND)

- Switch ignition on.
  - ♦ Specification: approx. battery voltage

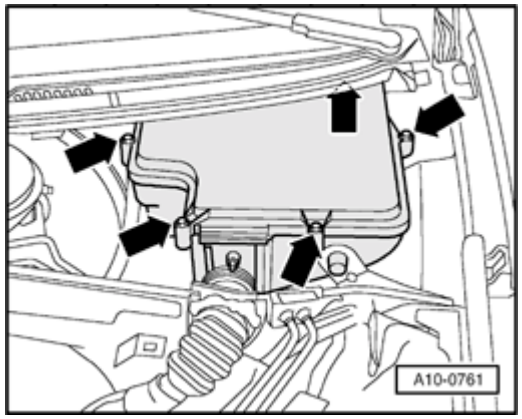
If specified value is not obtained:

- Switch ignition off.

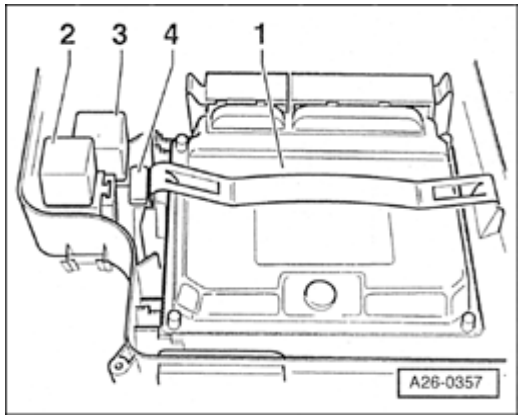


- Pull off rubber seal of plenum chamber cover in direction of arrow.
- Remove cover -1- toward front.

28-16

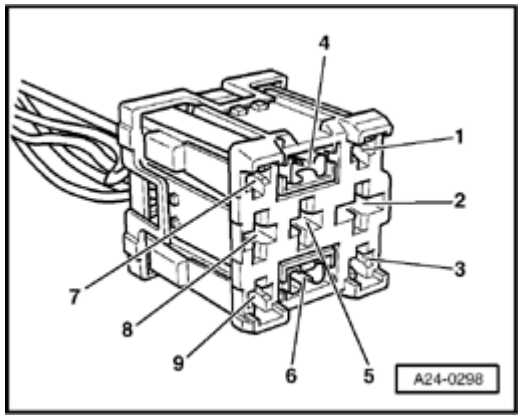


- Remove Heater Core E-box cover (arrows).



- Disconnect voltage supply relay -3-.

28-17



- Check following connection for open circuit according to wiring diagram:

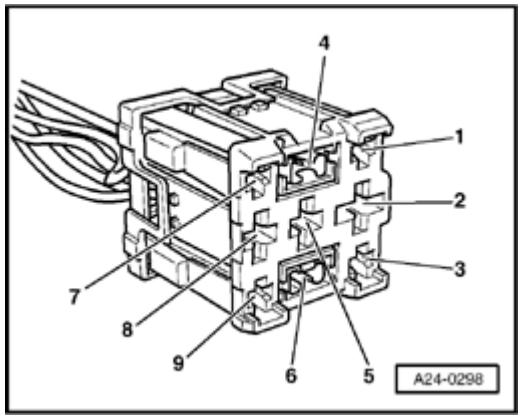
3-socket relay carrier in E-box, plenum chamber, position 2 Terminal	Harness connector at ignition coils Terminal
6	1

- Repair open circuit if necessary.

If wire connection is OK:

- Check voltage supply of motronic Engine Control Module (ECM) power supply relay -J271- ⇒ Page 28-18 .
- Check activation of motronic Engine Control Module (ECM) power supply relay -J271- ⇒ Page 28-19 .

28-18



Checking voltage supply

- Connect multimeter for voltage measurement as follows.

3-socket relay carrier in E-box, plenum chamber, position 2 **Terminal**	**Measure to**
2	Engine Ground (GND)
9	Engine Ground (GND)

♦ Specification: approx. battery voltage

If specified value is not obtained:

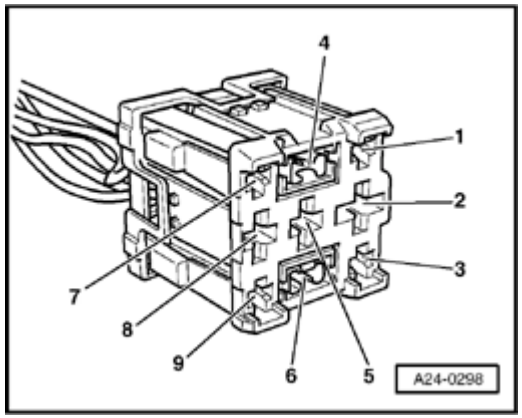
- Check wire connection between central electronics and voltage supply relay for open circuit.

⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations*

If no malfunctions are found in wires:

- Replace central electrics.

28-19



Checking activation

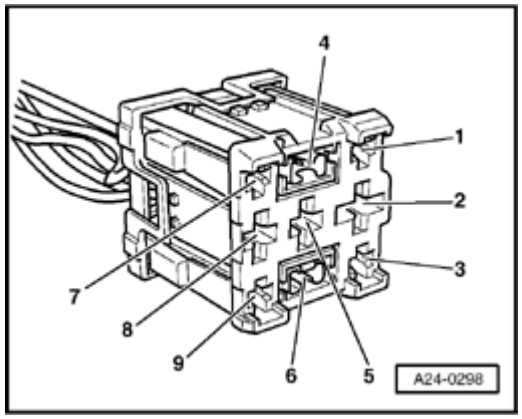
- Connect multimeter for voltage measurement as follows.

3-socket relay carrier in E-box, plenum chamber, position 2 Terminal	Measure to
4	B+

- Switch ignition on.
  - ♦ Specification: approx. battery voltage

If specified value is not obtained:

- Switch ignition off.
- Connect VAG1598/31 test box at wiring harness to Engine Control Module (ECM), do not connect ECM ⇒ Page 24-19 .



- Check following wire connection for open circuit and short circuit to Ground (GND) and B+:

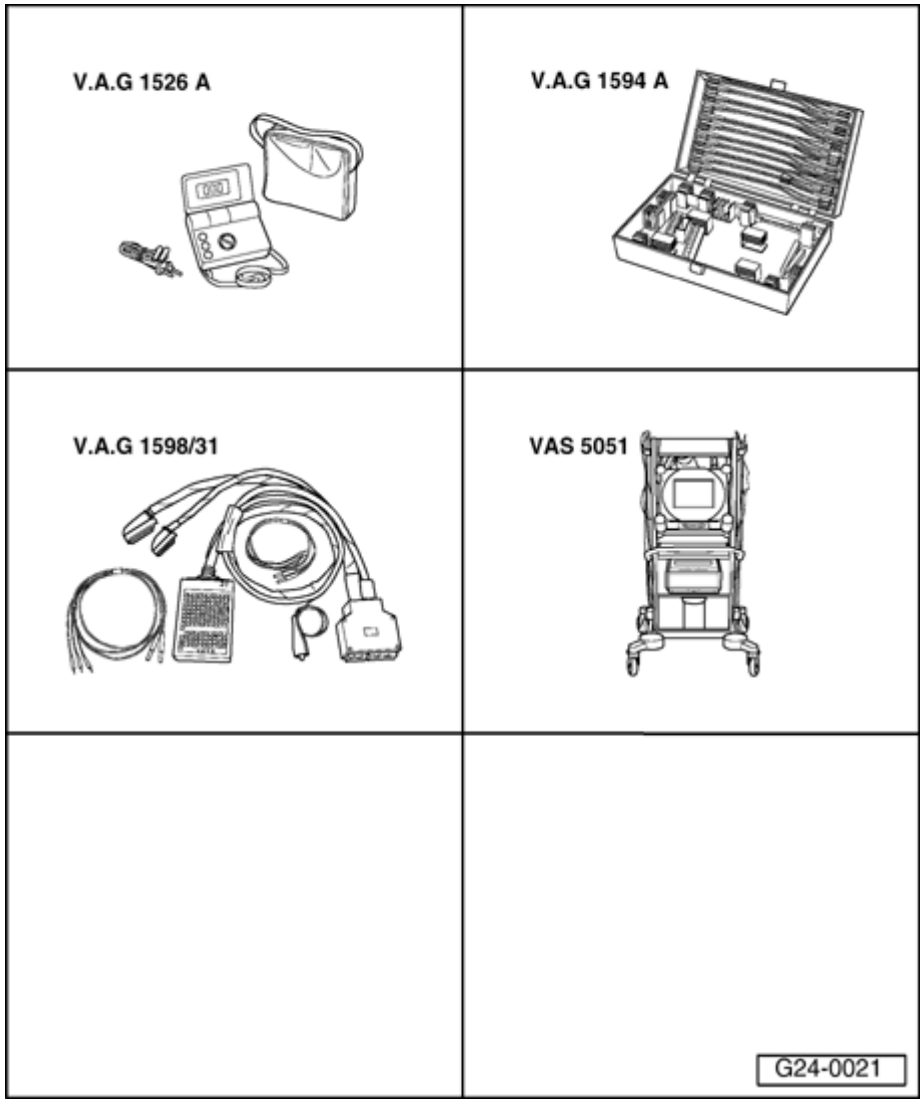
Relay carrier below left cover, at bulkhead Terminal	VAG1598/31 test box Socket
4	21

- Repair open circuit or short circuit if necessary.

If no malfunctions are detected:

- Replace motronic Engine Control Module (ECM) power supply relay - J271-.

28-21



Intake Air Temperature (IAT) sensor -G42-, checking

Special tools and equipment

- VAG1526A
- VAG1594A
- VAG1598/31
- VAS5051 with VAG5051/1

- or

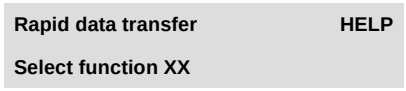
- VAG1551 with VAG1551/3A

28-22

Component location ⇒ Overview of component locations ⇒ Page 24-5

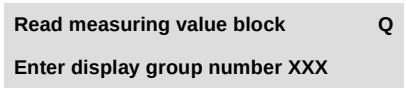
Test sequence

- Connect VAS5051 tester or VAG1551 scan tool and select control module for engine electronics using "address word" 01 ⇒ Page 01-10 . Engine must run at idle.



➢ When indicated on display

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



➢ When indicated on display

- Press buttons -0-, -0- and -4- to select "display group number 004" and press -Q- button to confirm input.

➢ Indicated on display

- Check specified value for Intake Air Temperature (IAT) sensor in display field 4:

28-23

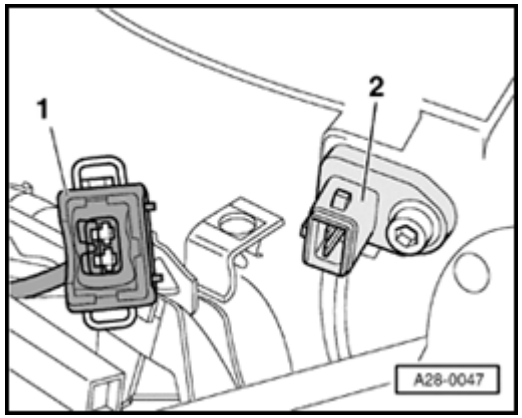
	Display fields			
	1	2	3	4
Display group 004: Intake Air Temperature (IAT), engine at idle				
Display	xxxx/min	xx.x volts	xxx.x °C	**xxx.x °C**
Indicated	Engine speed (RPM)	Battery voltage	Coolant temperature	**Intake Air Temperature (IAT)**
Functional range				**-48.0 to 143.0 °C**
Specified value	xxxx/min	12.0 to 15.0 V	80.0 to 110.0 °C	**From ambient temperature up to 110 °C[1)]**

1) If a temperature is indicated which differs greatly from ambient temperature of sensor, check sensor and sensor wires for contact resistances and open circuit.

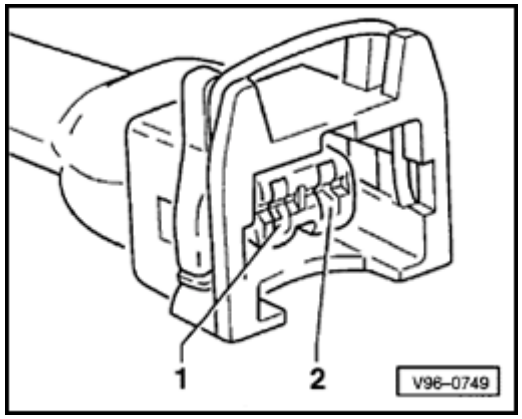
28-24

Checking wire connections

- Connect VAG1598/31 test box at wiring harness to Engine Control Module (ECM), do not connect ECM ⇒ Page 24-19 .



- Disconnect connector -1- at Intake Air Temperature (IAT) sensor -G42- (item no. 2).

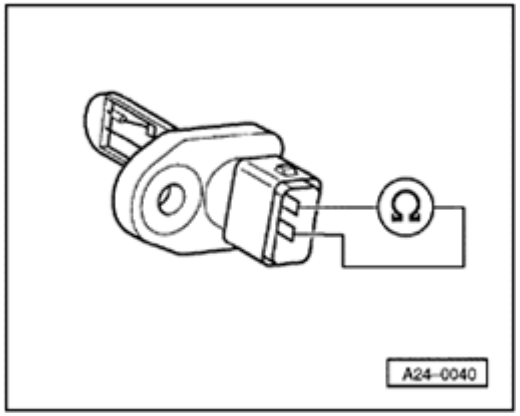


- Check following wire connections for open circuit and short circuit to Ground (GND) and B+:

Harness connector Terminal	VAG1598/31 test box Socket
1	85
2	108

- Check both wires to each other for short circuit.
- Repair open circuit or short circuit if necessary.

28-25



If no malfunctions are found in wires:

Check sensor:

- Connect multimeter at sensor for resistance measurement.

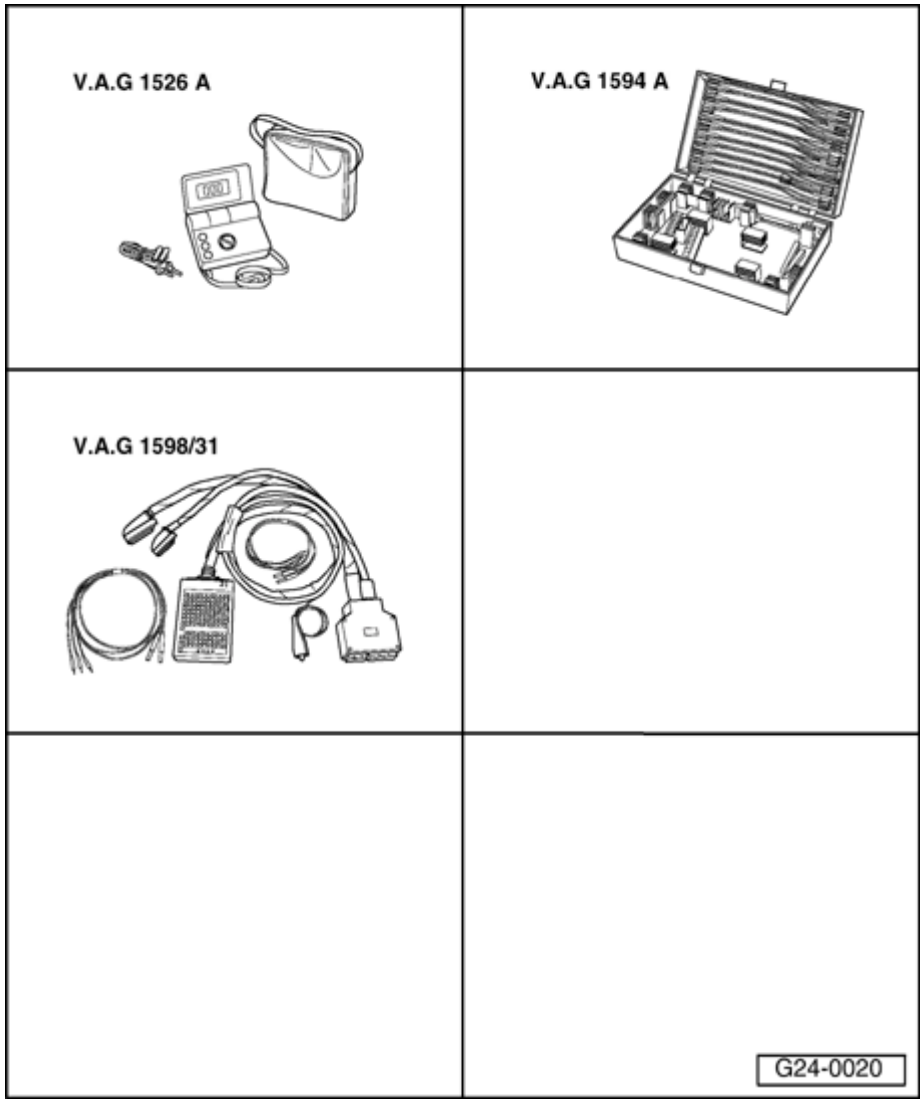
Specified values

Temperature °C	Resistance kΩ
-20	approx. 13.8
0	approx. 5.5
20	approx. 2.4
40	approx. 1.1
60	approx. 0.6

If specified value is not obtained:

- Replace Intake Air Temperature (IAT) sensor.

28-26



Engine speed (RPM) sensor -G28-, checking

Special tools and equipment

- VAG1526A
- VAG1594A
- VAG1598/31

28-27

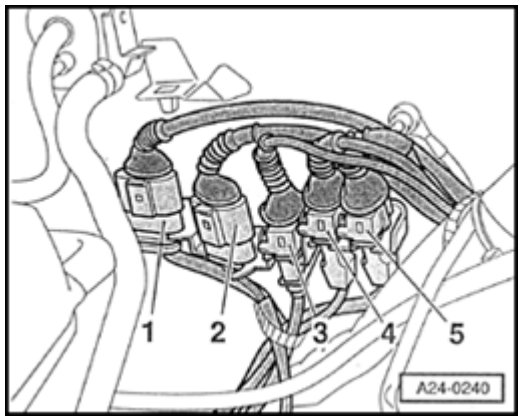
Component location ⇒ Overview of component locations ⇒ Page 24-5

Note:

The engine speed (RPM) sensor detects RPM and reference marks. The engine cannot be started without a signal from the engine speed (RPM) sensor -G28-. If the engine speed (RPM) sensor -G28- signal fails while the engine is running, the engine will stop immediately.

Test sequence

- Before performing test, check sensor for proper installation and proper fitting.

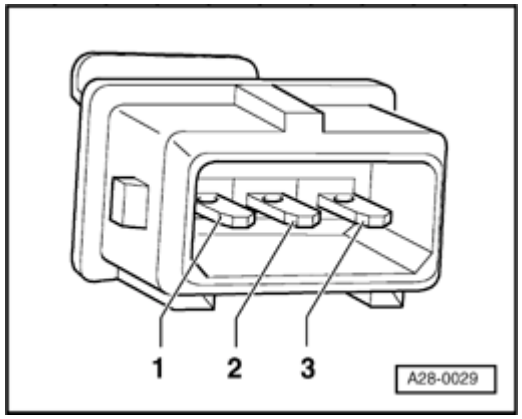


- Disconnect harness connector for engine speed (RPM) sensor -G28- (item no. 3) in engine compartment.

Note:

Coolant reservoir screws must be removed and coolant reservoir must be placed to side in order to access the harness connector. The coolant hoses can remain connected.

28-28



- Connect multimeter between terminal 1 and 2 for resistance measurement.
  - Specification: 730 to 1000

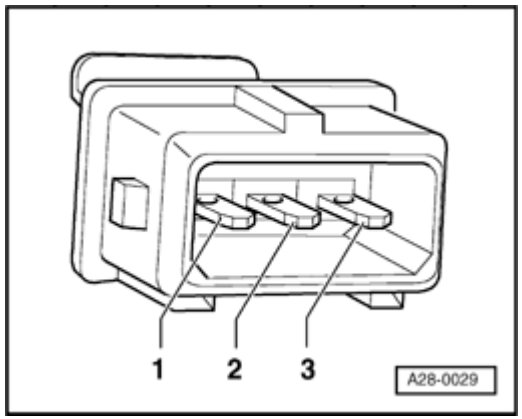
Note:

Resistance value of the engine speed (RPM) sensor is based on a temperature of 20° C. Resistance increases as temperature increases.

If specified value is not obtained:

- Replace engine speed (RPM) sensor.

If specified value is obtained:

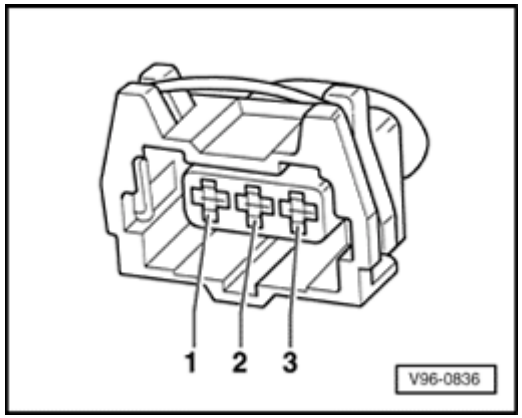


- Connect multimeter to terminals 1 and 3 (shielding) and to terminals 2 and 3 (shielding) for resistance measurement.
  - Specification: ∞ each (no continuity)

If specified value is not obtained:

- Replace engine speed (RPM) sensor.

28-29



If specified value is obtained:

- Connect VAG1598/31 test box at wiring harness to Engine Control Module (ECM), do not connect ECM ⇒ Page 24-19 .

- Check following wire connections for open circuit and short circuit to Ground (GND) and B+:

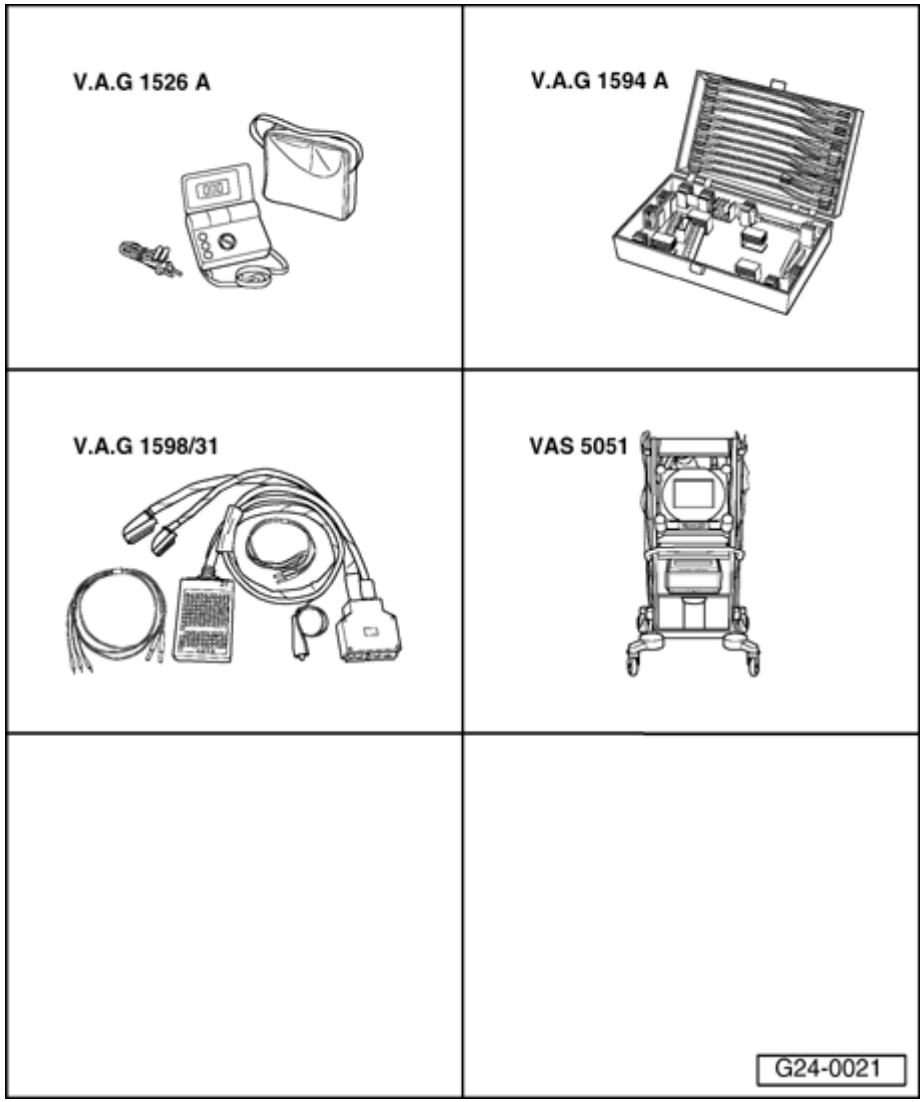
Harness connector Terminal	VAG1598/31 test box Socket
1 (signal)	82
2 (Ground -GND-)	90
3 (shielding)	108

- Repair open circuit or short circuit if necessary.

If no malfunctions are found in wires:

- Replace Engine Control Module (ECM) ⇒ Page 24-23

28-30



Engine Coolant Temperature (ECT) sensor -G62-, checking

Special tools and equipment

- VAG1526A
- VAG1594A
- VAG1598/31
- VAS5051 with VAG5051/1

- or

- VAG1551 with VAG1551/3A

28-31

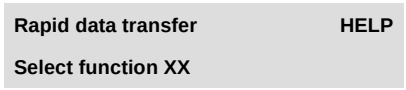
Component location ⇒ Overview of component locations ⇒ Page 24-5

Test requirement:

- Engine cold

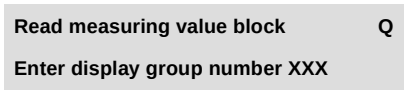
Test sequence

- Connect VAS5051 tester or VAG1551 scan tool and select control module for engine electronics using "address word" 01 ⇒ Page 01-10 . Engine must run at idle.



When indicated on display

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



When indicated on display

- Press buttons -0-, -0- and -4- to select "display group number 004" and press -Q- button to confirm input.

Indicated on display

- Check indication in display field 3.

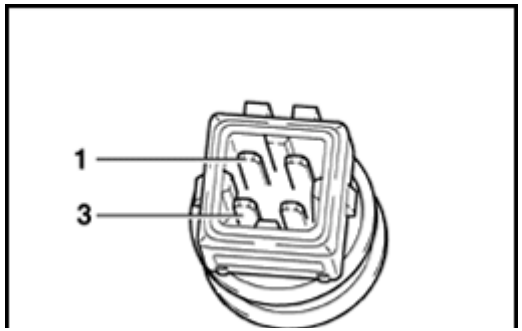
28-32

	Display fields			
	1	2	3	4
Display group 004: Coolant temperature, engine at idle				
Display	xxxx/min	xx.x volts	**xxx.x °C**	xxx.x °C
Indicated	Engine speed (RPM)	Battery voltage	**Coolant temperature**	Intake Air Temperature (IAT)
Functional range			**-48.0 to 143.0 °C**	
Specified value	xxxx/min	12.0 to 15.0 V	**Temperature value must rise evenly**	From ambient temperature up to 110 °C

If display field 3 does not have a realistic indication:

- Disconnect connector at coolant temperature sensor.

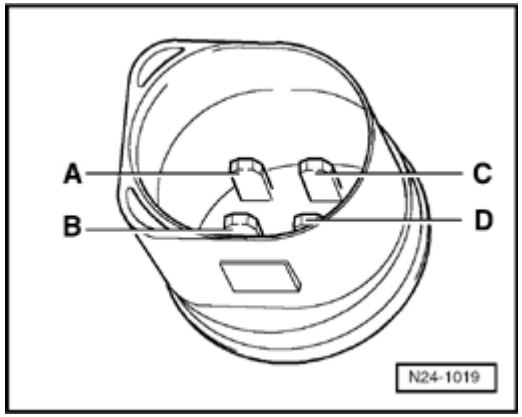
Coolant temperature sensor with square connector:



- Connect multimeter between terminal 1 and 3 of sensor for resistance measurement.

28-33

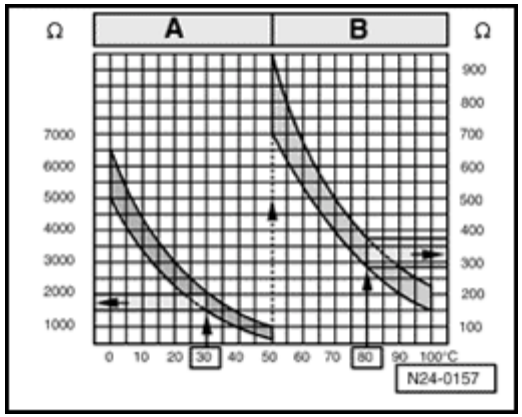
Coolant temperature sensor with oval connector:



- Connect multimeter between terminal C and D of sensor for resistance measurement.

All models:

Range A shows the resistance values for the temperature range from 0-50 °C, and range B shows the values for the temperature range from 50-100 °C.



Read-out examples:

- 30 °C corresponds to a resistance of 1500 to 2000 Ω
- 80 °C corresponds to a resistance of 275 to 375 Ω

If specified value is not obtained:

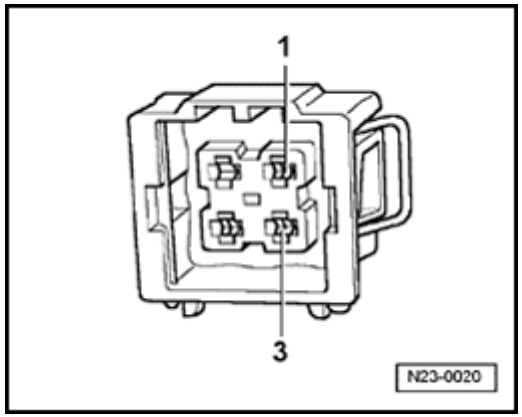
- Replace coolant temperature sensor.

28-34

If specified value is obtained:

- Connect VAG1598/31 test box at wiring harness to Engine Control Module (ECM), do not connect ECM ⇒ Page 24-19 .

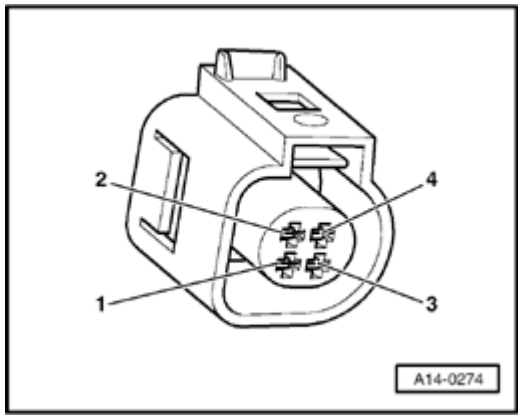
Coolant temperature sensor with square connector:



- Check following wire connections for open circuit and short circuit to Ground (GND) and B+:

Harness connector Terminal	VAG1598/31 test box Socket
1 (signal)	93
3	108

Coolant temperature sensor with oval connector:



- Check following wire connections for open circuit and short circuit to Ground (GND) and B+:

Harness connector Terminal	VAG1598/31 test box Socket
3	108
4 (signal)	93

28-35

All models:

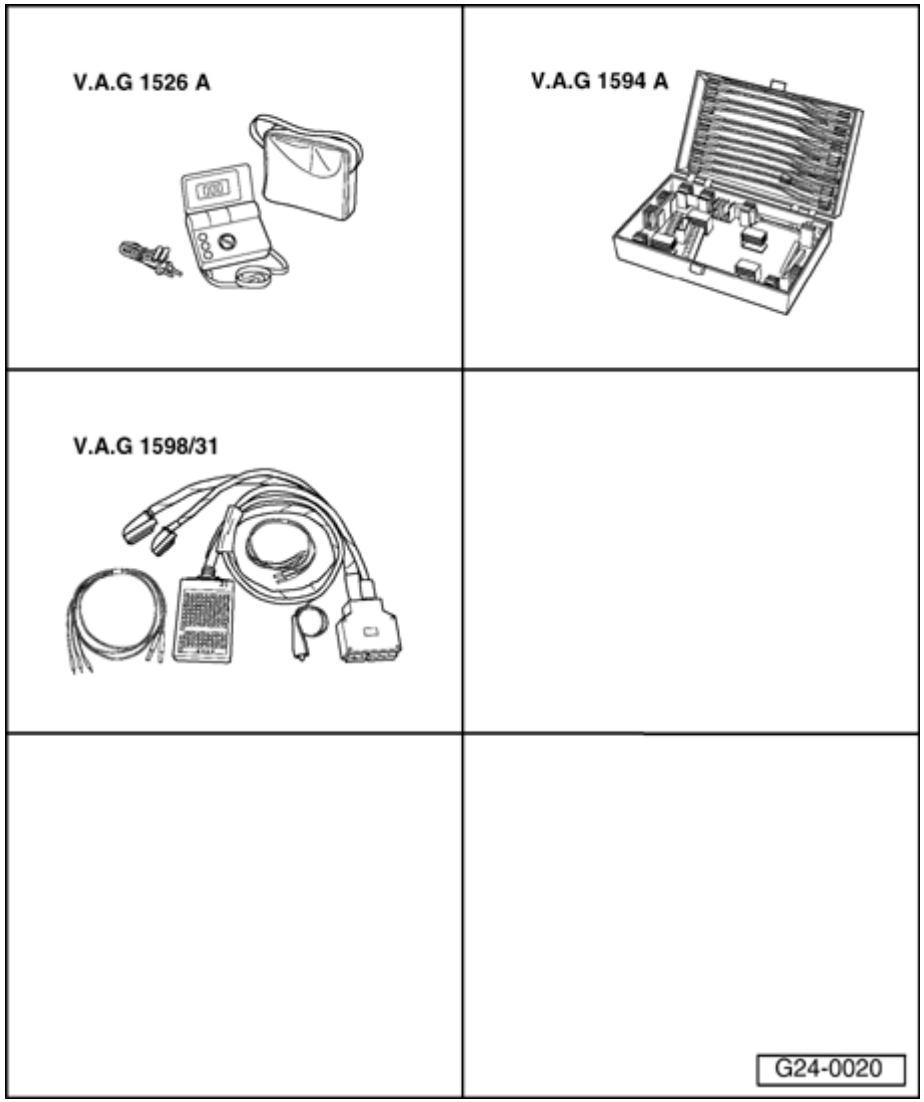
- Check both wires to each other for short circuit.

- Repair open circuit or short circuit if necessary.

If no malfunctions are found in wires:

- Replace Engine Control Module (ECM) ⇒ Page 24-23

28-36



Voltage supply for control module, checking

Special tools and equipment

- VAG1526A
- VAG1594A
- VAG1598/31

28-37

Test requirements:

- Fuses for engine electronics OK

⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations*

- Battery voltage at least 12.7 V

- Generator OK

Test sequence

- Connect VAG1598/31 test box at wiring harness to Engine Control Module (ECM), do not connect ECM ⇒ Page 24-19 .

- Switch ignition on.

Note:

- *The plus voltage supply for the Engine Control Module (ECM) travels via terminal 3 and 121 (terminal 15) as well as terminal 62 (terminal 30).*

- *Ground (GND) supply of the Engine Control Module (ECM) travels via connector terminal 1 and terminal 2.*

28-38

- Connect multimeter for voltage measurement as follows:

VAG1598/31 test box Socket	Measure to
1	B+
2	B+
62	Engine Ground (GND)

- Specification: approx. battery voltage

- Connect multimeter for voltage measurement as follows:

VAG1598/31 test box Socket	Measure to
3	Engine Ground (GND)

- Switch ignition on.

- Specification: approx. battery voltage

If specified values are not obtained:

- Check wire connections.

⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations*

28-39

- Connect multimeter for voltage measurement as follows:

VAG1598/31 test box Socket	Measure to
121 [1)]	Engine Ground (GND)

[1)] The motronic Engine Control Module (ECM) power supply relay -J271- continues to direct current to terminal 121 of the Engine Control Module (ECM) for up to 15 minutes after ignition is switched off.

- Switch ignition on.

  - Specification: approx. battery voltage

If specified value is not obtained:

- Check wire connections.

⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations*

- Check motronic Engine Control Module (ECM)

power supply relay -J271- ⇒ Page 28-13 .

28-40

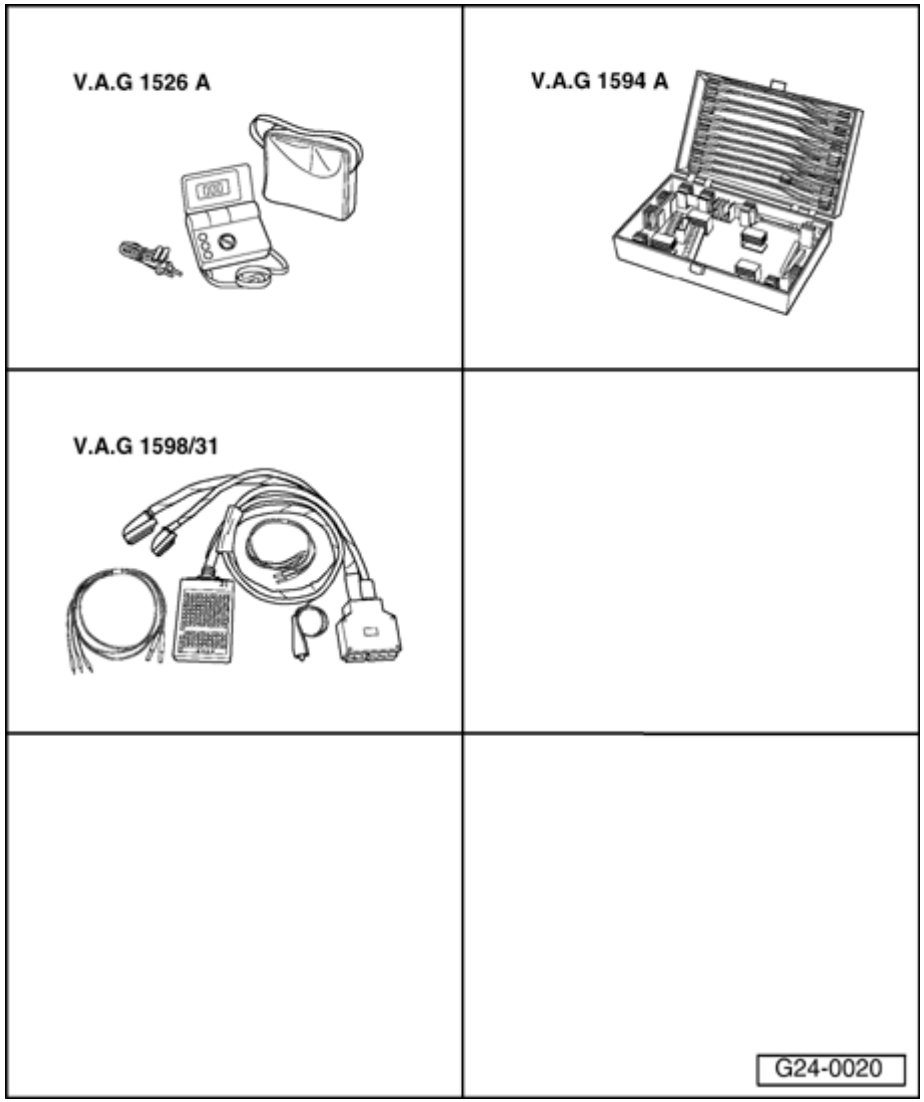
Knock recognition control stop, checking

If a DTC is stored regarding "Knock control regulation limit reached":

- Perform following tests:

	Possible cause	Corrective action
DTC for all cylinders or Cylinder 1/2 or 3/4	♦ Poor fuel quality	- Change fuel quality ⇒ *Operating instructions*
	♦ Knock sensor tightened to incorrect torque	- Loosen knock sensors and tighten to 20 Nm
	♦ Knock sensor faulty	- Check knock sensor ⇒ Page 28-41
	♦ Corrosion at harness connector	- Check harness connector
	♦ Engine accessories loose	- Secure engine accessories
DTC for one Cylinder	♦ Engine damage	- Check compression pressure
	♦ Engine accessories loose	- Secure engine accessories

28-41



Knock sensors, checking

Special tools and equipment

- VAG1526A
- VAG1594A
- VAG1598/31

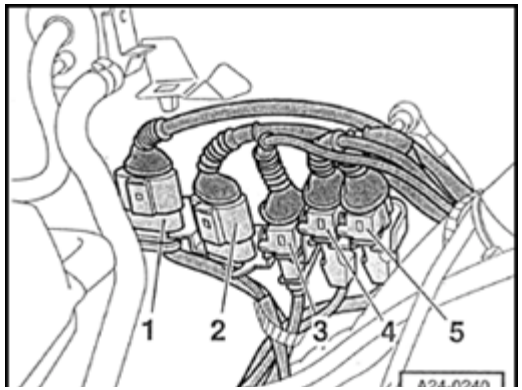
28-42

Component location ⇒ Overview of component locations ⇒ Page 24-5

Note:

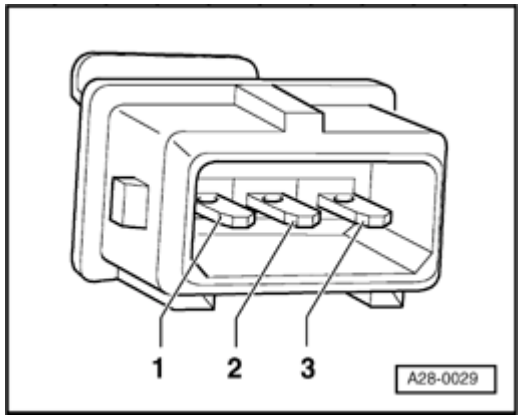
- *Knock Sensor (KS) 1 -G61- and Knock Sensor (KS) 2 -G66- themselves cannot be electrically tested.*
- *Use only gold-plated terminals when servicing harness connector for knock sensors.*
- *For the knock sensors to function properly, it is important that tightening torque be exactly 20 Nm.*
- *Check harness connector from knock sensor to wiring harness for corrosion.*

Checking knock sensor wiring



- Disconnect harness connector for Knock Sensor (KS) 1 -G61- (item no. 5) or Knock Sensor (KS) 2 -G66- (item no. 4) in engine compartment.

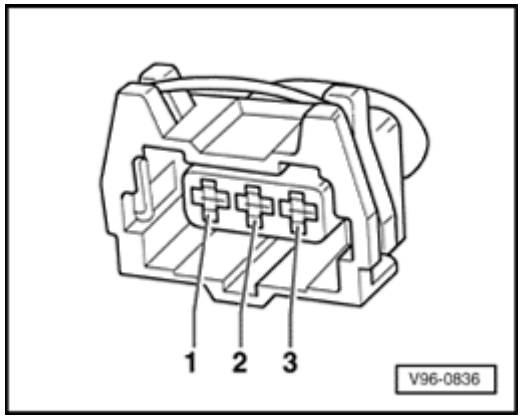
28-43



- Check all three terminals at knock sensor connector for short circuit to each other (terminal 1+2, 1+3, 2+3).
  - ♦ Specification: ∞ (no continuity) - the wires must not have any connection to each other
- If there is no connection , replace knock sensor.
- If no short circuit is detected, check knock sensor wires:

Check wires from knock sensors to Engine Control Module (ECM).

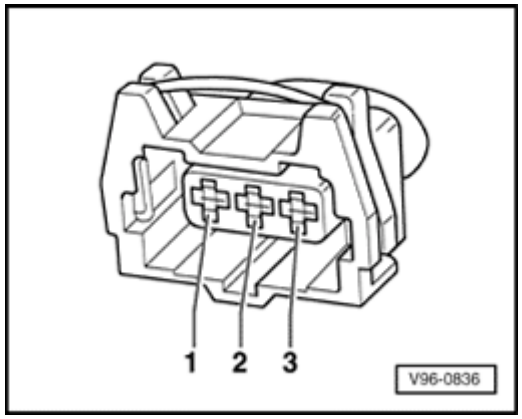
- Connect VAG1598/31 test box at wiring harness to Engine Control Module (ECM), do not connect ECM ⇒ Page 24-19 .
- Check following wire connections for open circuit and short circuit to Ground (GND) and B+:



- Knock Sensor (KS) 1 -G61- (cylinder 1/2)

Harness connector Terminal	VAG1598/31 test box Socket
1 (signal)	106
2 (Ground -GND-)	99
3 (shielding)	108

28-44

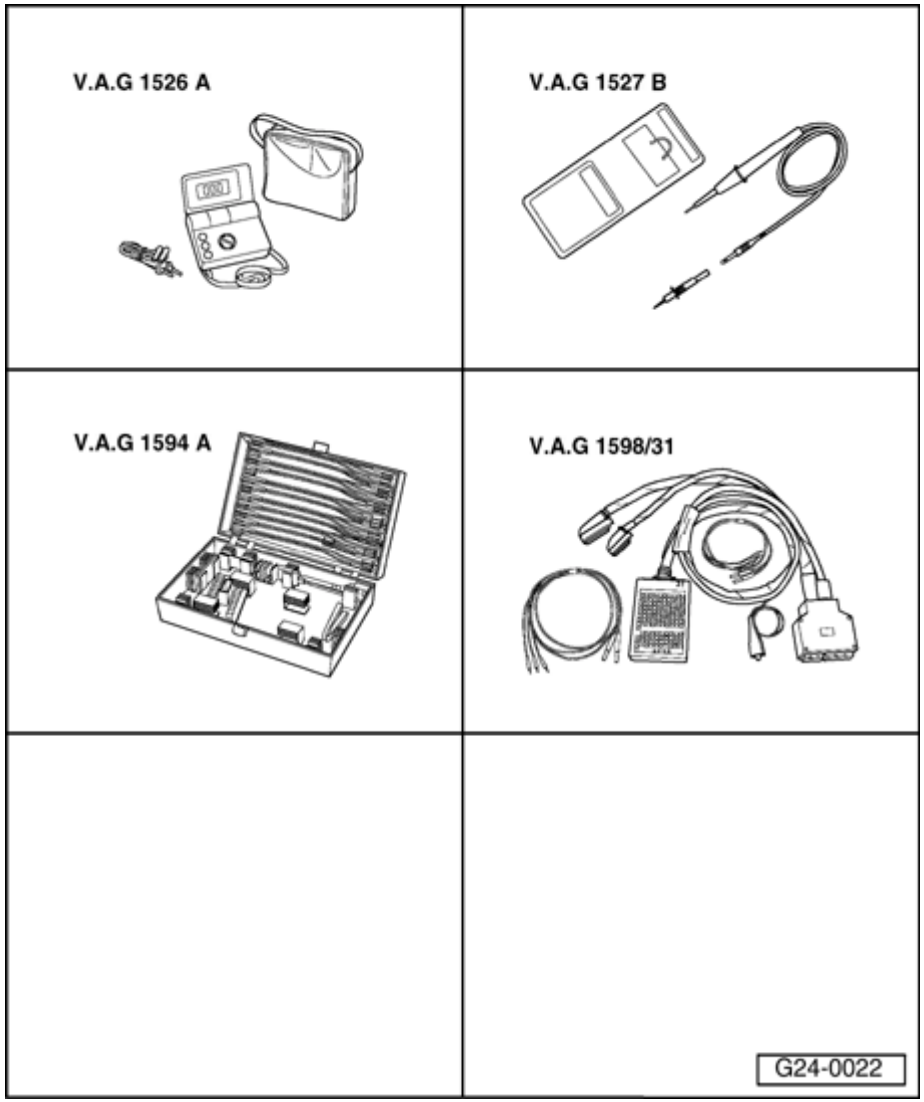


- Knock Sensor (KS) 2 -G66- (cylinder 3/4)

Harness connector Terminal	VAG1598/31 test box Socket
1 (signal)	107
2 (Ground -GND-)	99
3 (shielding)	108

- Repair open circuit or short circuit if necessary.

28-45



Camshaft Position (CMP) sensor 2 -G40-, checking

Special tools and equipment

- VAG1526A
- VAG1527B
- VAG1594A
- VAG1598/31

28-46

Component location ⇒ Overview of component locations ⇒ Page 24-5

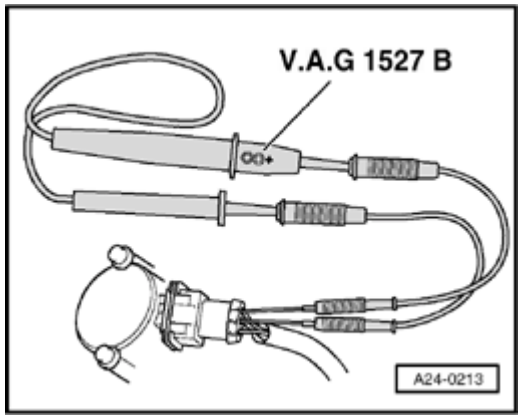
The Camshaft Position (CMP) sensor provides the ignition position for cylinder 1.

For failure, knock control is switched off and the ignition angle is retarded slightly since a cylinder allocation is no longer possible. In addition, the boost pressure of the turbocharger is decreased.

Engine will continue to run without Camshaft Position (CMP) sensor signal and can also be restarted:

- When a malfunction is recognized, the Engine Control Module (ECM) initiates one ignition spark per cylinder for each crankshaft rotation.
- The offset of one engine rotation will have no noticeable effect on the injection. Instead of occurring with intake valves open, injection will be "pre-loaded" (in front of closed intake valve). This has only a minor effect on the quality of the mixture preparation.

28-47



Checking activation

- If installed, slide back rubber grommet on connector for Camshaft Position (CMP) sensor, but leave connector connected.

- Connect VAG1527B voltage tester between sockets 2 (CMP sensor signal) and 1 (B+).

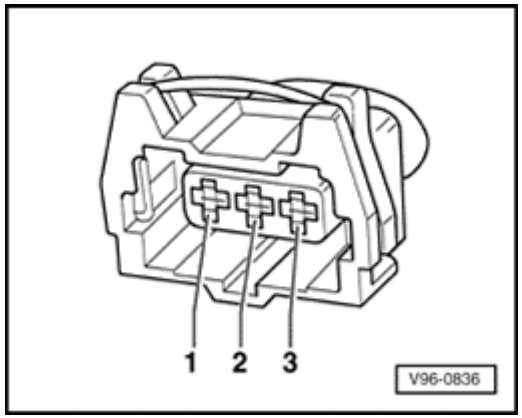
Note:

Connector socket numbers are shown on the rear side of the connector.

- Operate starter for a few seconds.
  - ♦ LED must blink.

Note:

Voltage testers do not go out completely during low current pick-up between activations by the ECM, but rather continue to glow a little and then get significantly brighter during activation.



If LED does not blink:

Checking voltage supply

- Disconnect connector at Camshaft Position (CMP) sensor.

- Connect multimeter for voltage measurement as follows:

Harness connector Terminal	Measure to
1	Engine Ground (GND)

- Switch ignition on.
  - Specification: about 5 V

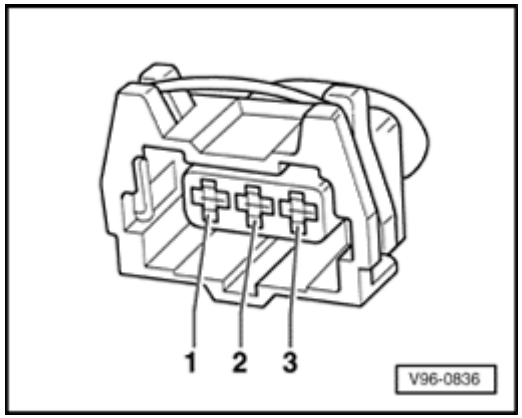
Checking signal wire

- Connect multimeter for voltage measurement as follows:

Harness connector Terminal	Measure to
2	Engine Ground (GND)

- Switch ignition on.
  - Specification: approx. battery voltage

28-49



Checking Ground (GND) wire

- Check following wire connection for open circuit and short circuit to B+:

Harness connector Terminal	Measure to
3	B+

- Repair open circuit or short circuit if necessary.

If all specified values are being reached and the LED does not blink (measured between terminal 1 and 2 with starter and connector connected):

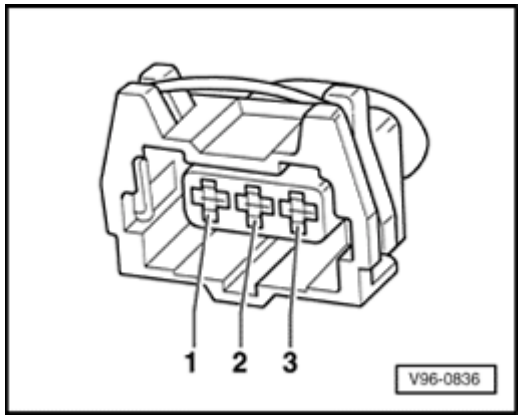
- Replace Camshaft Position (CMP) sensor.

If specified values are not obtained:

Checking wire connections between Camshaft Position (CMP) sensor and Engine Control Module (ECM)

- Connect VAG1598/31 test box at wiring harness to Engine Control Module (ECM), do not connect ECM ⇒ Page 24-19 .

28-50



- Check following wire connections for open circuit and short circuit to Ground (GND) and B+:

Harness connector Terminal	VAG1598/31 test box Socket
1 (B+)	98
2 (signal)	86
3 (Ground -GND-)	108

- Repair open circuit or short circuit if necessary.

If, after erasing the DTC memory for a test, a DTC relating to the Camshaft Position (CMP) sensor (hall sensor) is indicated again, even though all previous tests were OK, the following malfunction is possible:

- ♦ Shutter wheel for Camshaft Position (CMP) sensor is not aligned properly.

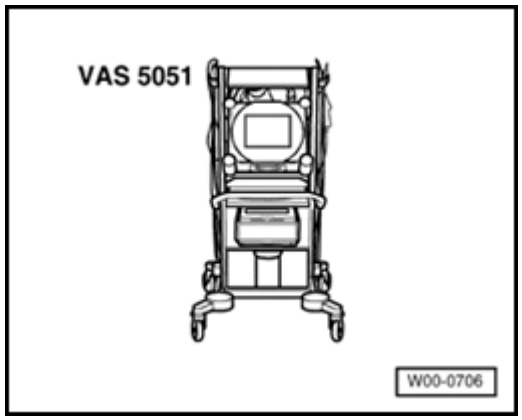
- Unscrew Camshaft Position (CMP) sensor and check whether shutter wheel is mounted properly at camshaft (if mounted improperly, locking lug will get squished when mounting bolt is tightened).
- If position of shutter wheel is OK, check allocation of crankshaft/camshaft.

⇒ *Repair Manual, 1.8 Liter 4-Cyl. 5V Turbo Engine Mechanical, Engine Code(s): AEB, ATW, Repair Group 15; Valvetrain, servicing*

28-51

Misfire recognition, checking

Special tools and equipment



- VAS5051 with VAG5051/1

  or

- VAG1551 with VAG1551/3A

Test sequence

- Connect VAS5051 tester or VAG1551 scan tool and select control module for engine electronics using "address word" 01 ⇒ Page 01-10 . Engine must run at idle.

Rapid data transfer	HELP
Select function XX	

When indicated on display

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

Read measuring value block	Q
Enter display group number XXX	

When indicated on display

- Press buttons -0-, -1- and -4- to select "display group number 014" and press -Q- button to confirm input.

Read Measuring Value Block 14	→
1 2 3 4	

When indicated on display

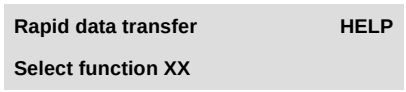
- Check misfire recognition.

28-52

	Display fields			
	1	2	3	4
Display group 014: Misfire recognition				
Display	xxx /min	xxx %	**xxx**	**---**
Indicated	Engine speed (RPM)	Load	**Number of ignition misfires**	**Misfire recognition**
Functional range				**activated** **locked**
Specified value	xxxx/min	15 to 33 %	**0**	**activated**
Note			**If the specified value is exceeded: Check combustion misfires of individual cylinders ⇒ Page 28-53**	**If ignition misfires are to be expected due to operation conditions (e.g. warm-up, deceleration shut-down), misfire recognition is deactivated**

If specified value is obtained:

- Press→button.



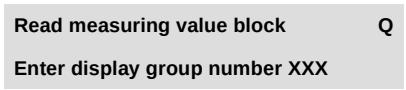
Indicated on display (function selection):

If specified value is not obtained:

- Press -C- button.

28-53

Check misfire recognition of the individual cylinders.



- When indicated on display

  - Press buttons -0-, -1- and -5- to select "display group number 015" and press -Q- button to confirm input.

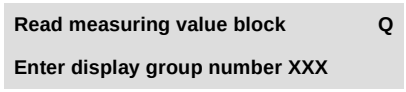
- When indicated on display

  - Check misfire recognition in display fields 1 to 4.

	Display fields			
	1	2	3	4
Display group 015: Misfire recognition of cylinders 1, 2 and 3				
Display	**xxx**	**xxx**	**xxx**	**---**
Indicated	**Number of combustion misfires, cylinder 1**	**Number of combustion misfires, cylinder 2**	**Number of combustion misfires, cylinder 3**	**Misfire recognition**
Functional range				**activated** **locked**
Specified value	**0**	**0**	**0**	**activated**
Note	**If the specified value is exceeded: Evaluation ⇒ Page 28-55**			**---**

28-54

- Press -C- button.



When indicated on display

- Press buttons -0-, -1- and -6- to select "display group number 016" and press -Q- button to confirm input.

When indicated on display

- Check misfire recognition in display fields 1 and 4:

	Display fields			
	1	2	3	4
Display group 016: Misfire recognition of cylinder 4				
Display	**xxx**			**---**
Indicated	**Number of combustion misfires, cylinder 4**			**Misfire recognition**
Functional range				**activated** **locked**
Specified value	**0**			**activated**
Note	**If the specified value is exceeded: Evaluation ⇒ Page 28-55**			**---**

28-55

Evaluation display group 014, display field 3 and display group 015 and 016, display fields 1, 2 and 3.

Display field: 3	Possible cause	Corrective action
Larger than 0	♦ spark plug faulty ♦ spark plug connector faulty ♦ Ignition coil or power output stage faulty	- Check spark plugs and ignition wires with connector - Ignition coils with power output stages. Checking ⇒ Page 28-4
	♦ Fuel injector faulty	- Check fuel injectors ⇒ Page 24-38