28-17

Individual ignition coil system, checking

Ignition coils, checking

Notes:

- *Measuring the primary resistance of the ignition coils is normally not necessary for this test (primary resistance approx. 0.4 to 0.6 Ω, measured between coil terminals 1 and 15).*
- *A high tension isolation diode is installed in the secondary circuit of the ignition coil. Measuring the resistance of the secondary coil is therefore not possible with conventional measuring instruments.*

Required special tools and test equipment

- Multimeter US 1119 (Fluke 83 or equivalent)
- VW 1594 connector test kit

Test conditions

- No fuel injector malfunction stored in DTC memory

Checking

- Check DTC memory ⇒ Page 01-15 .

There must be no malfunctions stored

- If DTC memory is not clear, make necessary repairs and erase DTC memory, stop engine and start engine again, road test, check and erase DTC memory again.

- By briefly disconnecting fuel injector connectors with engine running, check which cylinder is misfiring, or not firing at all.

Note:

A misfiring cylinder can also be isolated by pulling the spark plug connectors (carbon-fouled plug).

- Check spark plug connector resistance.

  Specified value: approx. 2 kΩ

If resistance is NOT OK:

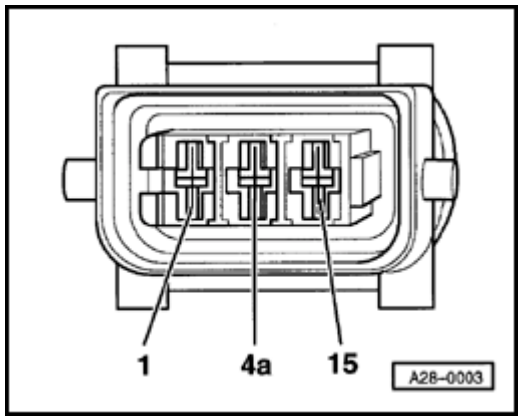
- Reconnect spark plug connector.

- Interchange spark plug with one from cylinder that is OK.

- If other cylinder now misfires, replace faulty spark plug.

- If same cylinder misfires, interchange ignition coil with one from cylinder that is OK.

- If other cylinder now misfires, replace faulty



coil.

- If original cylinder still misfires, check secondary circuit ground connection for open circuit between coil connector terminal 4a and engine Ground.
- If Ground connection is OK, check:
  - Primary wiring and power supply ⇒ Page 28-19
  - Final output stage for ignition coils ⇒ Page 28-21

28-19

Wiring for primary coil and power supply, checking

Required special tools and test equipment

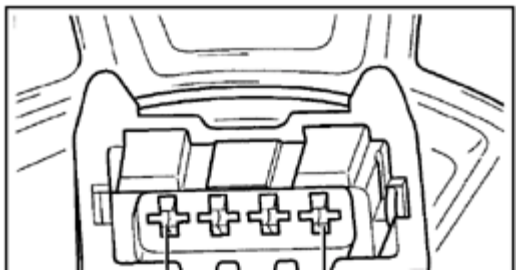
- VAG 1527B LED voltage tester
- VW 1594 connector test kit
- Wiring diagrams

Test conditions

- Fuse for ignition coils OK

Checking

- Disconnect 4-pin harness connector from power output stage.
- Switch ignition on.



- Connect VAG 1527B LED voltage tester in turn between 4-pin connector terminals 1, 2, 3 and 4, and engine ground.

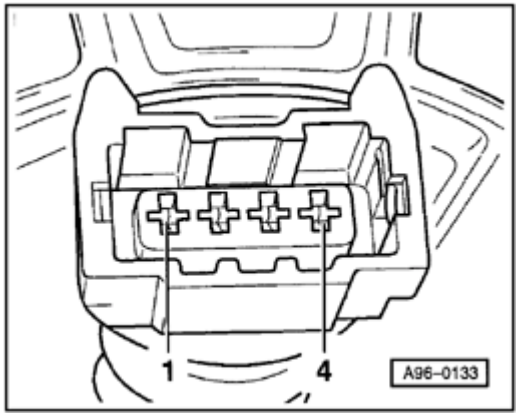
  LED must light up for all 4 terminals

Note:

The power supply for the primary circuit is measured via the fuse and primary coil of the ignition coil.

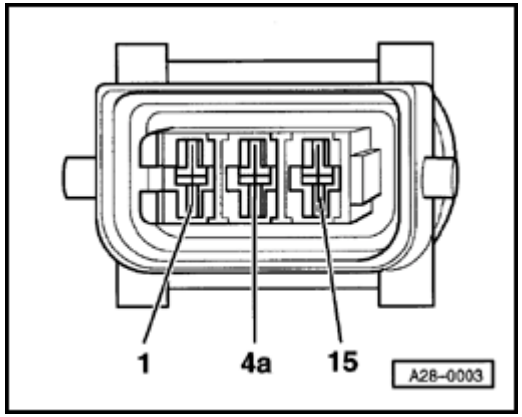
28-20

If the LED in the tester does not light up:



- Check wiring for open circuits between power output stage and terminal 1 at each coil connector, according to table.

  Specified value: max. 1.5 Ω



- Ignition coil connector terminal identification

Black 4-pin connector terminal number (power output stage)	Ignition coil terminal 1 at connector for cylinder number:
1	1
2	2
3	3
4	4

If the wiring is OK:

- Check wiring for open circuit between each coil terminal 15 and fuse and power supply, according to wiring diagram.

  Specified value: max. 1.5 Ω

28-21

Power output stage for ignition coils, checking

Required special tools and test equipment

- VAG 1598/22 test box
- Multimeter US 1119 (Fluke 83 or equivalent)
- VAG 1527B LED voltage tester
- VW 1594 connector test kit
- Wiring diagrams

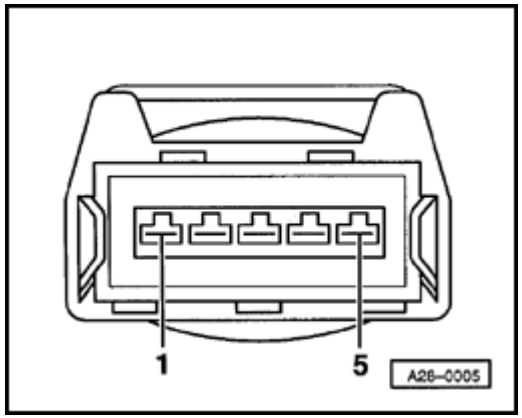
Note:

To check power output stage, disconnect all connectors for fuel injectors and then erase DTC memory.

28-22

Checking signal for power output stage

- Disconnect 5-pin harness connector from power output stage.

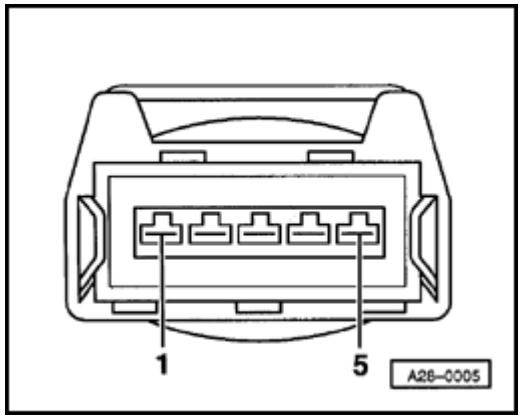


- Connect VAG 1527B LED voltage tester in turn between 5-pin connector terminals 1, 2, 4 and 5, and engine ground.
- Crank starter for a few seconds in each case.

  LED must blink all 4 times

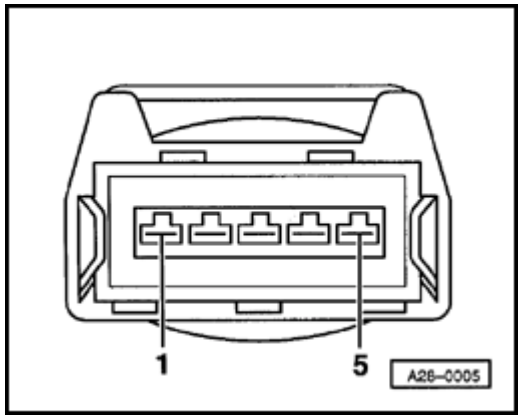
If the LED in the tester does not blink:

- Connect VAG 1598/22 test box to ECM harness connector ⇒ Page 01-56 .



- Check wiring for open circuit between ECM/test box and 5-pin harness connector, according to wiring diagram.
  - Connector terminal 1 to ECM/test box socket 70
  - Connector terminal 2 to ECM/test box socket 78
  - Connector terminal 4 to ECM/test box socket 77
  - Connector terminal 5 to ECM/test box socket 71
  - Specified value: max. 1.5 Ω

28-23



If the wiring is OK:

- Check for open circuit between 5-pin connector terminal 3 and engine Ground.

  Specified value: max. 1.5 Ω

If the wiring is OK, but the LED in the tester did not blink:

- Replace Motronic ECM -J220- ⇒ Page 01-57 .
- Carry out adaptation of throttle valve control module to ECM ⇒ Page 24-119 .
- Check readiness code ⇒ Page 01-59 . If Diagnostic Trouble Code (DTC) memory has been erased, or ECM was disconnected, generate new readiness code ⇒ Page 01-62 .

Checking power output stage

- Signals to power output stage OK ⇒ Page 28-22 .

- Disconnect 4-pin harness connector from power output stage.

- Connect VAG 1527B LED voltage tester between Battery Positive Voltage (B+) and, in turn, each terminal of power output stage 4-pin connector.

- Crank starter for a few seconds in each case.

  LED must blink all 4 times

If the LED in the tester does not blink for all terminals:

- Replace power output stage.

Note:

LED testers with very little power consumption glow slightly before cranking the engine. During cranking they will get brighter or darker.