





Checking ignition coils and output stages on vehicles with engine code "AJK", "ARE" and "AZA"



Note

Misfiring is monitored by the self-diagnosis, except for vehicles with engine code "AJK". This means that a cylinder which is not firing is stored in the fault memory together with the appropriate cylinder number. The advantage of this is that fault finding can, for example, be started from a specific cylinder in the case of fault. Therefore interrogate the engine control unit before starting this test.

<p>V.A.G 1526 A</p> 	<p>V.A.G 1527 B</p> 
<p>V.A.G 1594 A</p> 	<p>V.A.G 1598/31</p> 
	<p style="text-align: right;">G24-0022</p>

Special tools and workshop equipment required

- ◆ Hand-held multimeter -V.A.G 1526 A- or -V.A.G 1526 B-
- ◆ Voltage tester -V.A.G 1527 B-
- ◆ Adapter set -V.A.G 1594 A- or -V.A.G 1594 C-
- ◆ Adapter cable, 121-pin -V.A.G 1598/31- (test box)

Procedure

- No faults stored relating to any of the injectors.

The procedure for identifying an inoperative or misfiring cylinder is as follows:

- Check misfiring detection on vehicles with engine code "ARE" and "AZA" → [Chapter](#).

If misfiring has been detected:

- Continue with testing at cylinder indicated ⇒ "When defective cylinder has been identified".

If no misfiring has been detected:

- With engine running, unplug connectors at injectors one after the other and observe how the engine runs.
- Or compare the spark plugs of all cylinders, and look for soot deposits on electrodes.

When defective cylinder has been identified:

- Connect multimeter to spark plug connector to measure resistance.



Note

The spark plug connector can be detached from the ignition coil.

- Specification: approx. 2 kΩ.

If specification is not obtained:

- Renew spark plug connector.

If reading matches specification:

- Exchange spark plug of defective cylinder with that of another cylinder. Before exchanging spark plug, perform visual check of spark plug for damage (ceramic section of spark plug may have cracked).

If the fault now occurs at the other cylinder:

- Renew the spark plug.

If the fault remains in the same cylinder:

- Exchange ignition coil of defective cylinder with that of another cylinder. Before fitting the ignition coil, check it for damage (the ignition coil may be cracked or ruptured).

If the fault now occurs at the other cylinder:

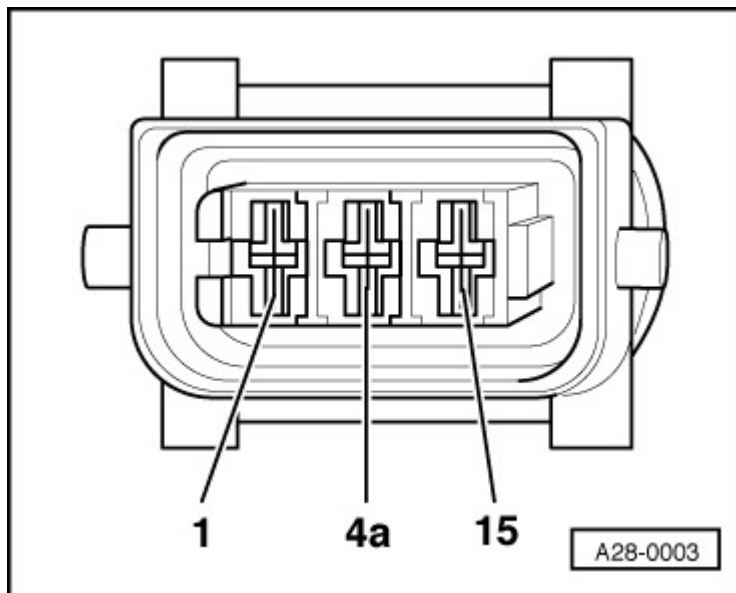
- Renew ignition coil.

If the fault remains in the same cylinder:

- Check earth connections.

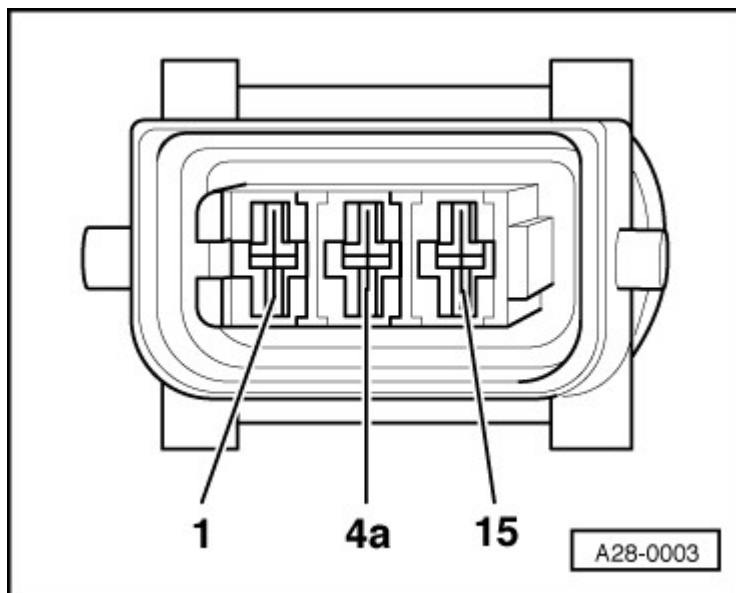
Checking earth connections

- Unplug 3-pin electrical connector on ignition coil.
- Use current flow diagram to check earth connection between contact -4a- of connector and earth for open circuit and short to positive.
- Specification: Wire resistance: max. 1.5 Ω .
- Repair wiring connection if necessary.



If the earth connection is OK:

- Connect multimeter (voltage measuring range) between contact -15- of connector and earth.
- Unplug electrical connector at injector of cylinder to be checked.
- Operate starter.
- Specification: approx. battery voltage



If specification is not obtained:

- Use current flow diagram to check wiring for open circuit and short to positive.

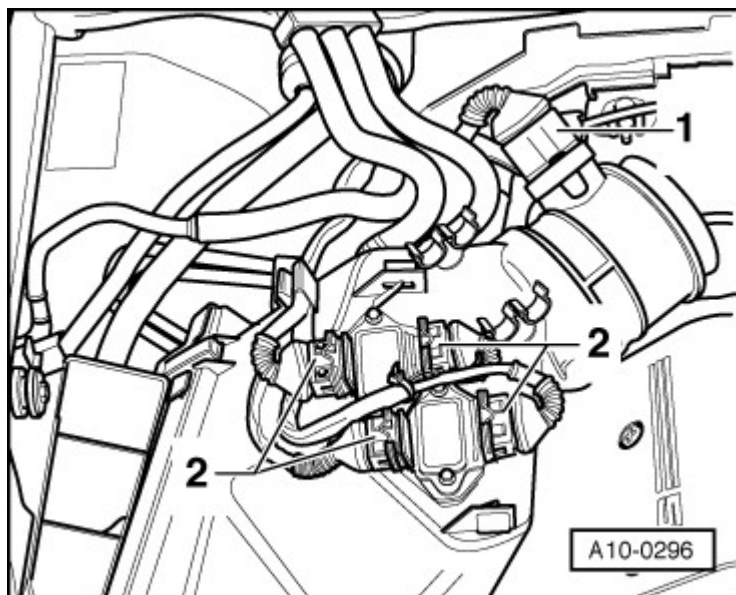
If reading matches specification:

- Unplug 3-pin electrical connectors -2- on output stages for ignition coils.



Note

Disregard -item 1-.



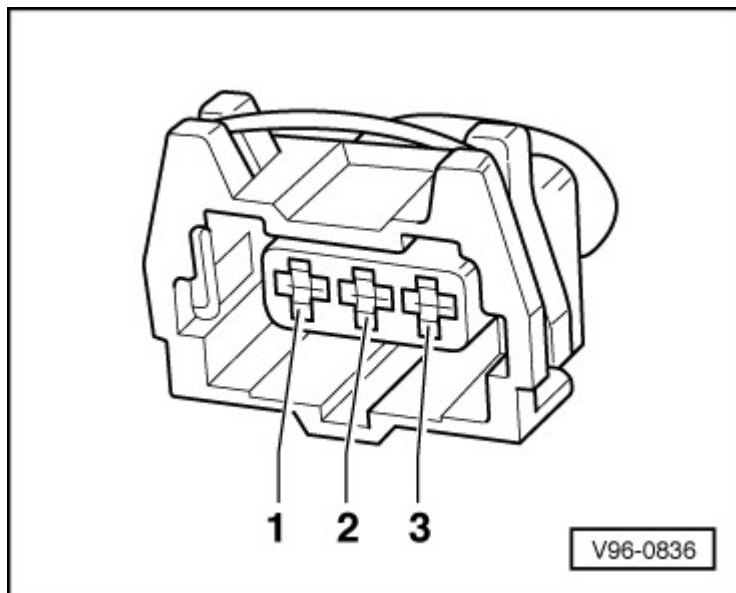
- Consecutively connect voltage tester - V.A.G 1527 B- between contacts -1-, -2-

- and -3- on 3-pin connectors of both output stages and earth. Then operate starter for a few seconds.

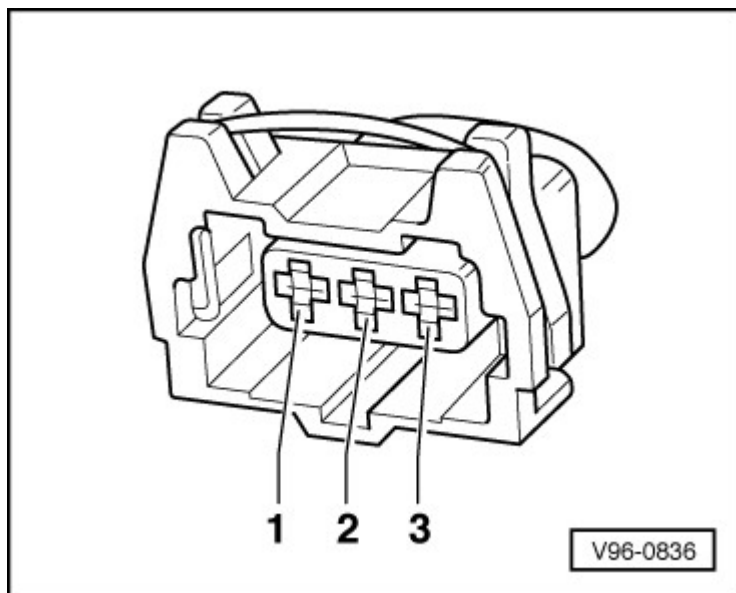
- The LED lamp should light up in each case

If the specifications are not obtained:

- Switch off ignition.
- Check for open circuit and short to positive or earth in the following wiring:



Contact assignment on 3-pin connector of output stage



Component	3-pin connector of output stage Contact	3-pin connector of ignition coil Contact -1-
Black connector of output stage -N122 -	-1-	Cylinder 1
	-2-	Cylinder 2
	-3-	Cylinder 3
Brown connector of output stage 2 - N192-	-1-	Cylinder 4
	-2-	Cylinder 5
	-3-	Cylinder 6

Contact assignment of 3-pin connector on ignition coil

- Specification: Wire resistance: max. 1.5 Ω.

- Repair wiring connection if necessary.

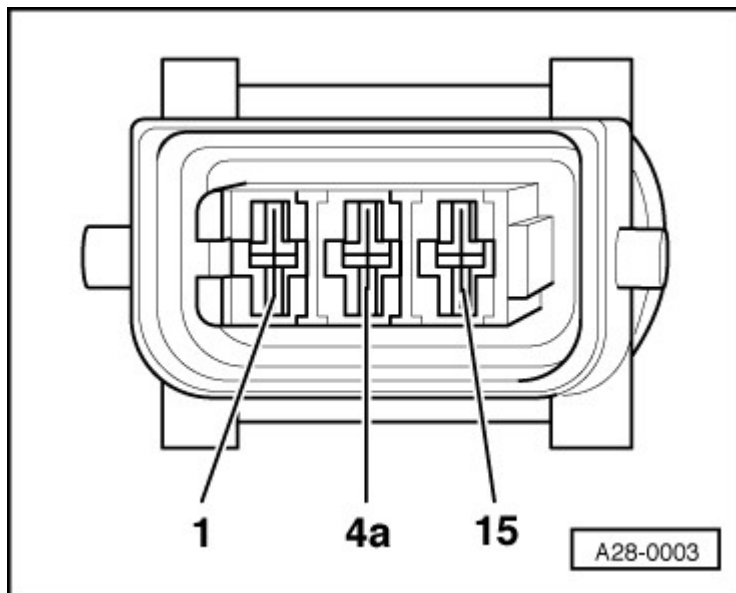
Checking output stages of ignition coils

Note

- ◆ Output stage -N122- (black connector) activates the ignition coils for cylinder bank 1 (cylinders 1 to 3).
- ◆ Output stage -N192- (brown connector) activates the ignition coils for cylinder bank 2 (cylinders 4 to 6).

Checking activation of output stages

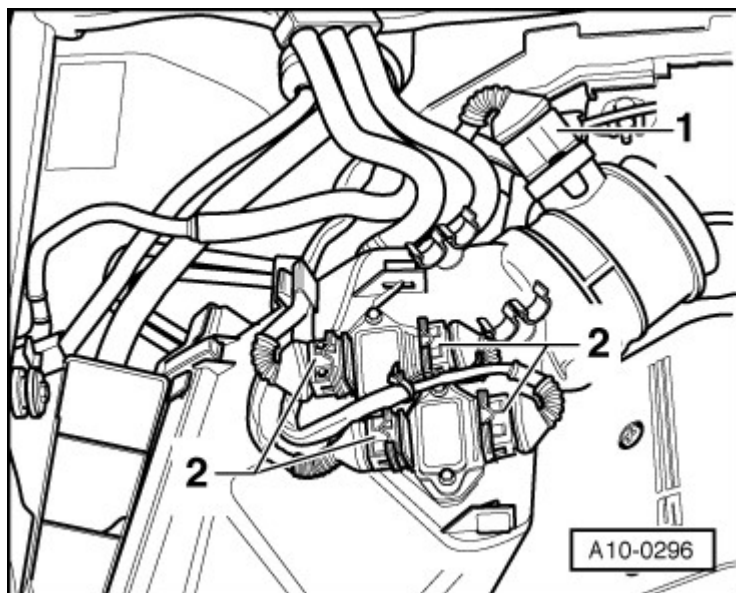
- Disconnect electrical connectors on all six injectors to ensure no fuel is injected during the test, as this could damage the catalytic converter.



- Unplug 4-pin electrical connectors -2- on output stages for ignition coils.

Note

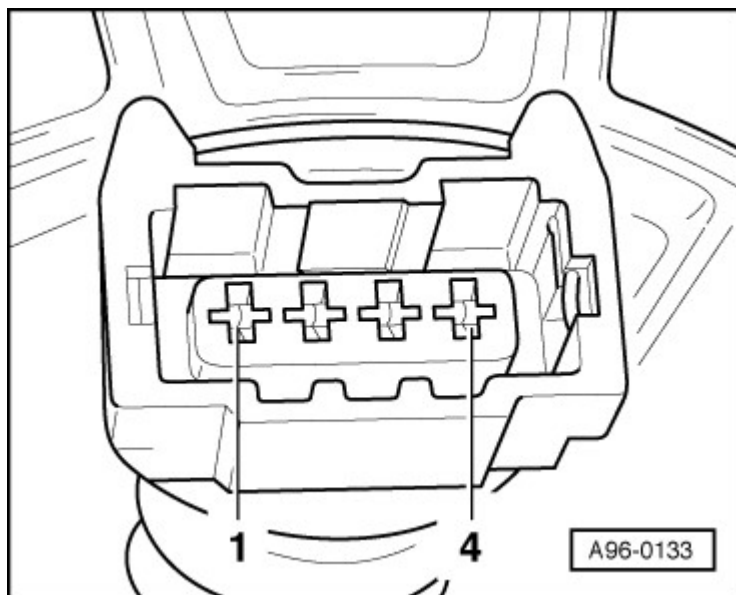
Disregard -item 1-.



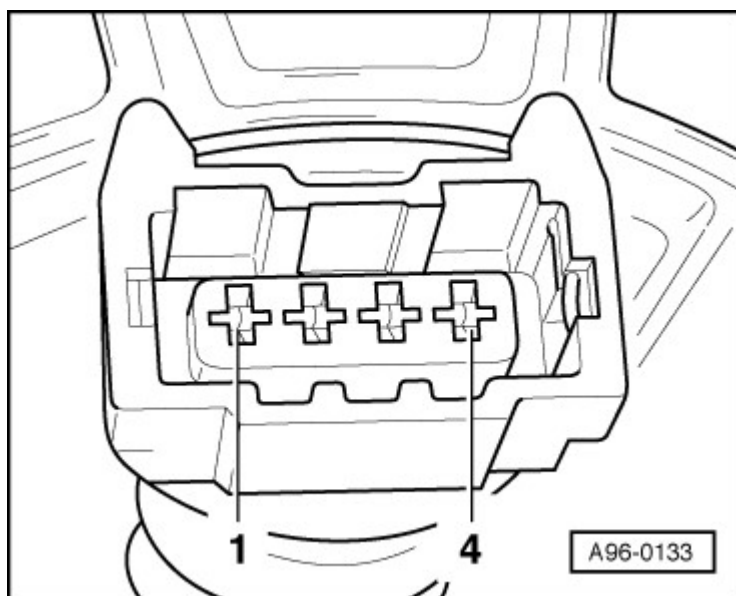
- Consecutively connect voltage tester - V.A.G 1527 B- between contacts -1-, -3- and -4- on 4-pin connectors of both output stages and earth. Then operate starter for a few seconds.
- LED lamp should flash each time (brief impulse).

If specifications are not obtained:

- Switch off ignition.
- Connect adapter cable, 121-pin -V.A.G 1598/31- (test box) to wiring harness to engine control unit, but do not connect actual engine control unit → Chapter.



- Check for open circuit and short to positive or earth in the following wiring:



Component	Connector Contact	-V.A.G 1598/31- Socket
4-pin black connector on output stage -N122 -	-1-	94
	-3-	110
	-4-	102
4-pin brown connector on output stage 2 - N192-	-1-	95
	-3-	111
	-4-	103

- Specification: Wire resistance: max. 1.5 Ω.
- Repair wiring connection if necessary.

If wiring is OK:

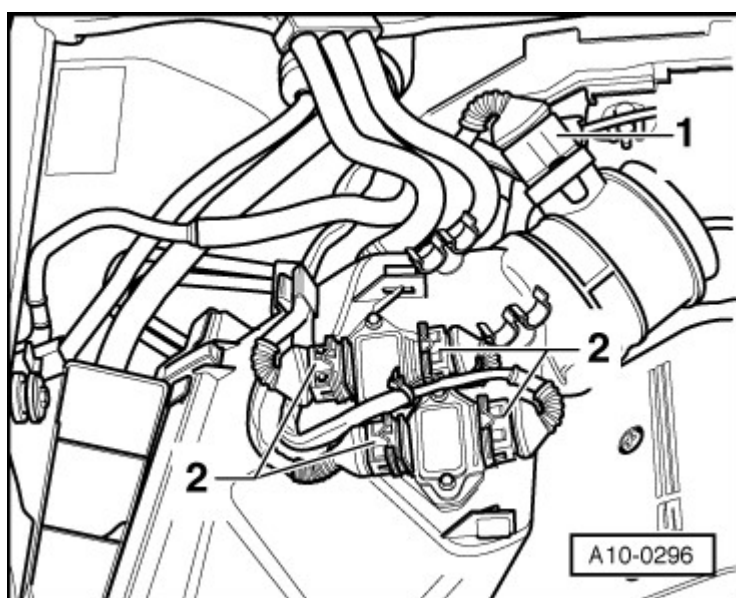
- Connect 4-pin connectors -2- to both output stages.



Note

Disregard -item 1-

- Disconnect 3-pin connectors from output stages.



- Consecutively connect voltage tester - V.A.G 1527 B- between contacts -1-, -2- and -3- on 3-pin connectors of both

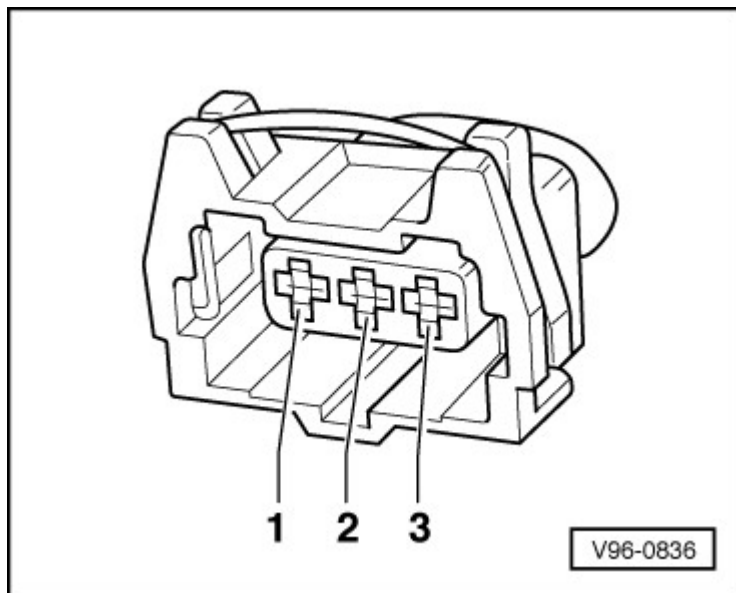
output stages and battery plus (+).
Then operate starter for a few seconds.

- The LED lamp should flash each time.

If the LED lamp does not flash when checking one or more of the contacts:

Check the earth connections for the output stages as follows:

- Disconnect 4-pin connectors from output stages; fitting locations → Chapter.
- Consecutively connect voltage tester - V.A.G 1527 B- between contact -2- on 4-pin connectors of both output stages and battery plus (+).
- The LED lamp should light up in each case.



If the diode test lamp does not light up:

- Use current flow diagram to check wiring for open circuit.

If the diode test lamp lights up:

- Renew output stage.

 **Note**

Before installing, apply a coat of heat conductor paste -G 052 170 A1- to the metallic side of the new output stage. The function of the paste is to prevent corrosion between the output stage and the threaded mounting and to conduct away the heat generated by the output stage.