

Camshaft Position Sensors, Checking

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.

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.



Note

- ◆ Camshaft Position (CMP) Sensor 2 -G163- is located at rear of left cylinder block (bank 2).
- ◆ Camshaft Position (CMP) Sensor -G40- is located at front of right cylinder block (bank 1).
- ◆ Component locations of Hall sensors → [Chapter](#).

Activation, Checking

Cables from connector test kit -VAG1594- must be used for the following tests.

- Slide back rubber grommet on connector of respective Hall sensor.
- Connect voltage test lamp -VAG1527- between terminal 1 (B+) and 2 (Hall sensor signal) from rear to Hall sensor connector (connector remains connected to Hall sensor).



Note

Connector sockets are numbered respectively on the rear side of the connector.

- Operate starter for a few seconds.

Diode test lamp must blink briefly at every second engine rotation.

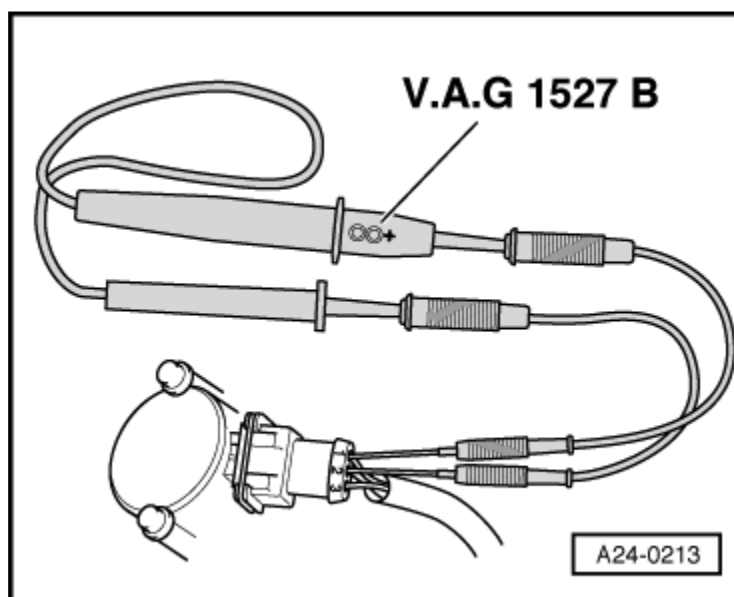


Note

Diode test lamps 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 voltage test lamp does not blink, check voltage supply.

Voltage Supply, Checking



- Disconnect connector at respective Camshaft Position (CMP) sensor.
- Switch ignition on.
- Connect portable multimeter -VAG1526- to socket 1 of connector and engine Ground (GND) for voltage measurement.

Specified value: approx. 5 Volts.

Signal Wire, Checking

- Switch ignition on.
- Connect portable multimeter -VAG1526- between socket 2 of respective connector and engine Ground (GND) for voltage measurement.

Specified value: approx. battery voltage

Ground Wire, Checking

- Connect portable multimeter -VAG1526- between socket 3 of connector and engine Ground (GND) for resistance measurement.

Specified value: Continuity

Wire resistance: max. 1.5 Ω

If all specified values are being reached and diode test lamp does not blink (measured between terminal 1 and 2 with starter and connector connected).

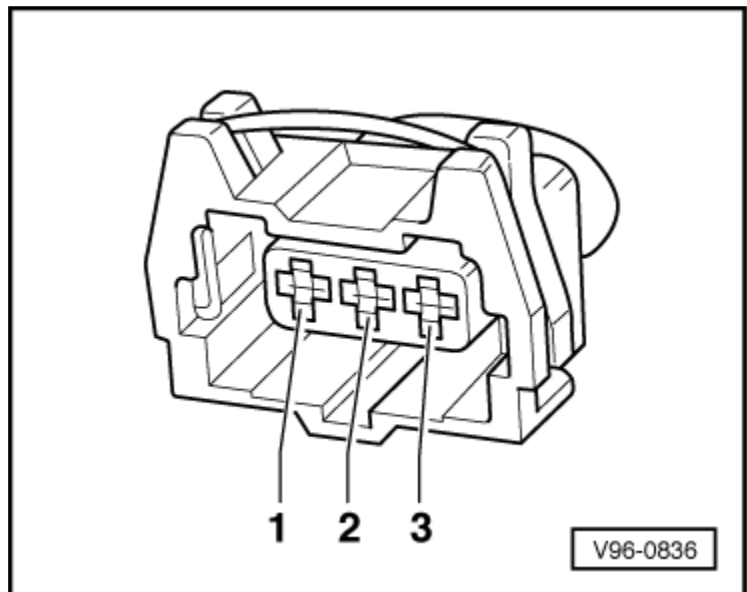
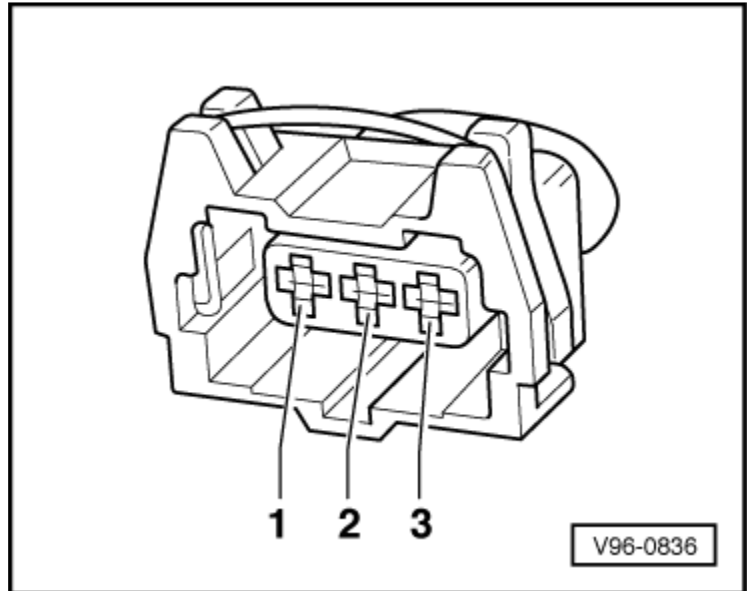
- Replace respective Camshaft Position (CMP) sensor.

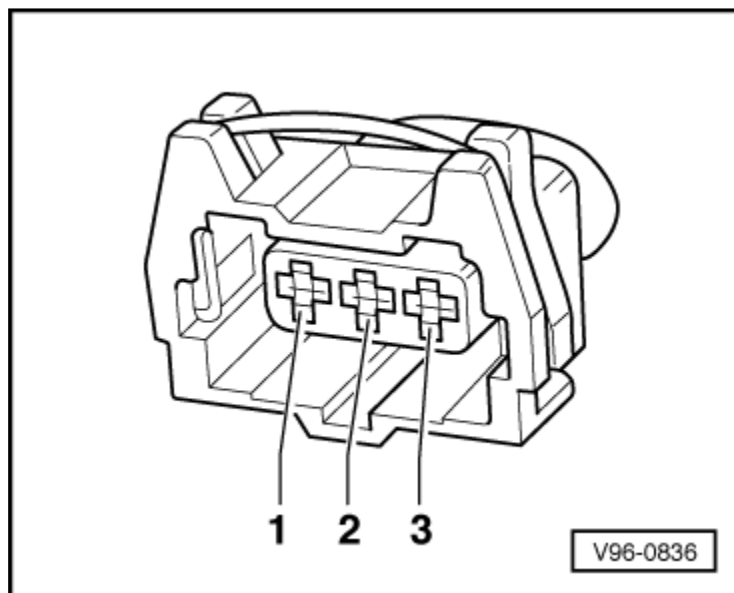
If specified values are not reached, check wire connections.

Wire Connections between CMP Sensor and ECM, Checking

- Connect test box -VAG1598/31- at wiring harness to Engine Control Module (ECM), do not connect ECM → **Chapter**.
- Check wire connection from Camshaft Position (CMP) Sensor...
- to Engine Control Module (ECM) for wiring open circuit as well as short circuit to B+ and to Ground (GND).

CMP Sensor, Bank 1





3-pin connector at wiring harness, socket	Test box -VAG1598/31-, socket
1 (B+)	98
2 (signal)	87
3 Ground (GND)	108

CMP Sensor, Bank 2

3-pin connector at wiring harness, socket	Test box -VAG1598/31-, socket
1 (B+)	98
2 (signal)	86
3 Ground (GND)	108

Wire resistance: max. 1.5 Ω

- Repair open circuit in wiring or short circuit if necessary.
→ [Wiring diagrams, Troubleshooting & Component locations](#)
- If, after erasing DTC memory for the sake of the 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:
 - ◆ If specified values are not reached, unscrew Camshaft Position (CMP) sensor and check whether shutter wheel is mounted properly at camshaft (if mounted improperly, locking lug will be pressed flat when mounting bolt is tightened).
 - ◆ Check engine timing.
- Read readiness code → [Chapter](#). If DTC memory was erased, readiness code must be generated again → [Chapter](#).