



Camshaftsensor

General

Camshaft sensors have the function, in coordination with the crankshaft sensor, to define N^o 1 cylinder compression/firing stroke. This information is needed for a) commencement of injection on sequential injections system, b) the control signal of the magnetic valve used by the pump jet injection system, c) cylinder-selective knock detection system.

Function

The camshaft sensor works using the hall principle. It is activated by a sensor ring or moulding on the camshaft. Through the rotating sensor ring, hall voltage of the hall IC inside the sensor is changed. This changing signal voltage is sende to the ECU. The ECU calculates the necessary output signal for the relevant component.



Effects of failure

A faulty camshaft sensor can cause the following:

- Warning light illumination
- Storing a fault/trouble code
- ECU switches to limp mode
- Injection reverts to simultaneuos mode

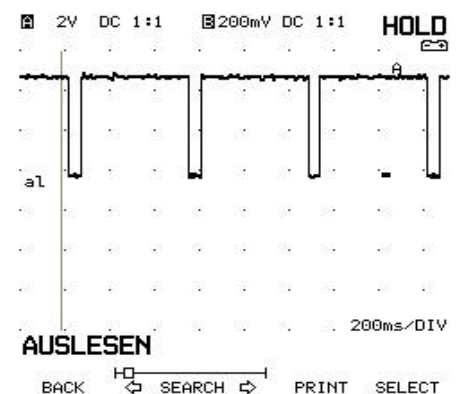
Causes of failure:

- Mechanical damage
- Fracture of the sensor ring/moulding
- Internal short circuit
- Gap between ring and sensor incorrect (critical)
- Open circuit or short circuit to earth in wiring between sensor and ECU



Diagnostics

- Check sensor for mechanical damage
 - Read out trouble codes
 - Check electrical leads of the sensor wiring, the plug and the sensor for correct fitting, fracture and corrosion
1. Check every connection between the sensor and the ECU for continuity (wiring diagram needed for pin definition). Remove the sensor and the ECU plug. Measurement with a ohmmeter, measured value: ~ 0 ohm
 2. Check the connections for a short circuit to earth. Measurement between the sensor plug and vehicle ground, ECU plug removed. Measured value: > 30 Mohm
 3. Check the operation voltage from the ECU to the sensor. ECU plug connected, ignition on.
 4. Check the signal voltage, connect channel line of the oscilloscope at the sensor and star the engine. On the oscilloscope a square wave signal should be seen.



Signal hall sensor

Directions for fitting

Ensure correct gap between sensor and ring and correct size of gasket (when fitted).