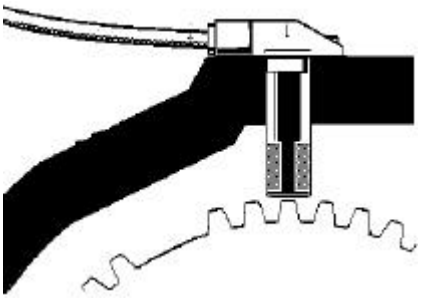
Crankshaft Sensor

General

Crankshaft sensors record the engine speed and crankshaft position. The fitting position is near the flywheel ring gear. More they are found on the engine block with the sensor ring bolted onto the crankshaft There are two different types of crankshaft sensors, a hall sensor and an inductive pick up.

Function

Their function is to send voltage signals produced by changing magnetic fields developed by the rotating ring gear to the ECU, for calculating the crankshaft speed and position. These are important signals for the fuel injection and ignition timing.



Effects of failure

A faulty crankshaft sensor can cause the following:

- Engine will not start
- The engine is misfiring
- Engine stalls
- Storing a fault/trouble code

Causes of failure:

- Internal short circuit
- Wire short circuit/open circuit
- Mechanical damage of the ring gear
- Soiling through metal abrasion
- Short circuit to vehicle ground

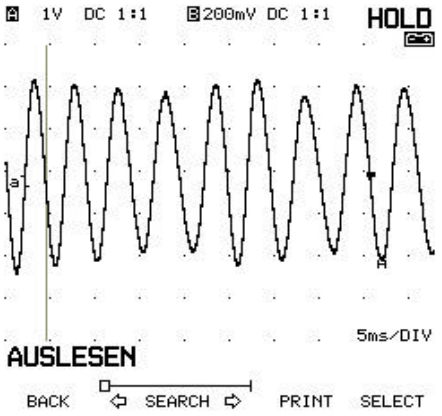
Diagnostics

For fault recognition consider the following system tests:

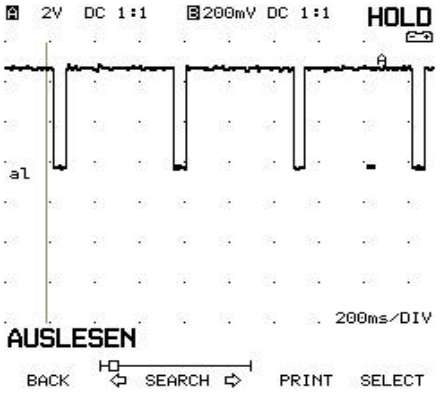
- Read out fault/trouble codes
- Check electrical leads and plugs for correct fitting and contact
- Check for soiling and damage

The checking of the crankshaft sensor can be difficult when the sensor type is unknown. Before checking it must be differentiate between a hall sensor or an inductive pick up. It is impossible to differentiate between them by sight every time. When they have tree pins in the plug it is not sure which type it is, for that you need specific manufacturer's data and details from the parts catalogue. If the type is not clearly identified don't use an ohmmeter because it can destroyed the sensor.

When the sensor has a two pin plug it is usually an inductive pick up. With the inductive pick up you can check the internal resistor, a short circuit to earth and the signal. For this remove the sensor plug and check the internal resistance, if it is between 200 and 1000 ohm (according the given value) the sensor is okay, if it is 0 ohm there is a short circuit and by Mohm there is a open circuit. For checking a short circuit to earth measure each pin of the sensor to vehicle ground, measured value > 30 Mohm. Measurement with an oscilloscope must have a strong enough sinus signal. AC voltage can be checked by measuring across the pins and spinning the wheel. With hall sensor you can only check the signal voltage (rectangular signal) and the operating voltage.



signal inductive pick up



signal hall sensor