



PRODUCT INFORMATION

TPS - THROTTLE POSITION SENSOR

- **OEM Quality & Reliability:** HELLA transfers its extensive original equipment (OE) expertise to the aftermarket, meaning their sensors meet the high standards of leading car manufacturers.
- **Enhanced Performance:** Provides real-time, accurate throttle position data to the Engine Control Unit (ECU) for better fuel injection and ignition timing, improving acceleration and engine response.
- **Smoother Driving:** Reduces hesitation, sputtering, and rough idling by giving the ECU accurate input, leading to a more stable idle and smoother power delivery.
- **Improved Drivetrain Efficiency:** Precision monitoring helps optimize fuel usage and overall engine efficiency.

PRODUCT FEATURES

The throttle valve potentiometer informs the engine control unit about the opening angle of the throttle valve. The signal from this sensor is required to calculate the injection quantity, for example. This page explains the design and function of the throttle valve potentiometer. We will also show you which symptoms could indicate a fault in the sensor and how it can be checked in the workshop with simple means.

Function:

The throttle valve potentiometer determines the opening angle of the throttle valve. This information is then forwarded to the control unit and used as a parameter for calculating the necessary fuel quantity. It is mounted directly on the throttle valve shaft.

The throttle valve potentiometer is an angle transmitter with a linear characteristic curve. It converts the respective throttle valve opening angle into a proportional voltage ratio. When the throttle valve is actuated, a rotor connected to the throttle valve shaft slides over resistance tracks with its sliding contacts, which converts the throttle valve position into a voltage ratio.

How to identify a throttle potentiometer faulty?

A defective throttle valve potentiometer can manifest itself as follows:

- Engine jolts and/or splutters
- Engine accelerates poorly
- Poor starting behaviour
- Increased fuel consumption

Causes of a faulty throttle potentiometer

Causes of throttle valve potentiometer failure can be:

- Contact fault at the plug connection
- Internal short circuits caused by contamination (humidity, oil)
- Mechanical damage

CHECKING THE THROTTLE POTENTIOMETER

The following test steps should be considered during troubleshooting:

1. Check the throttle valve potentiometer

Check the throttle valve potentiometer for damage

2. Check the plug connection

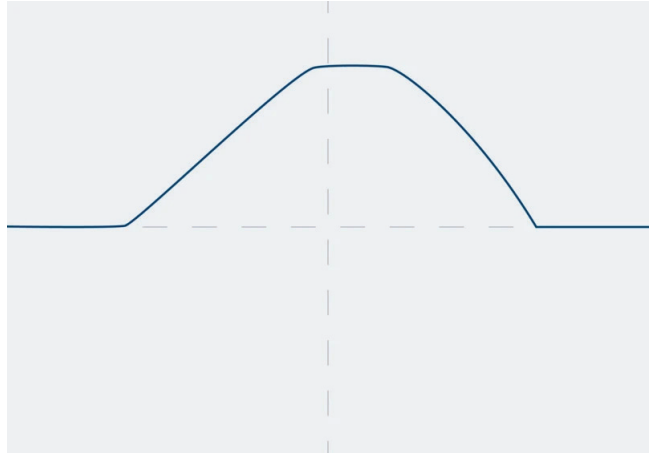
Check the plug connection to ensure it is fitted correctly and for any contamination

3. Measure the resistance

Measure the resistance at the throttle valve potentiometer (circuit diagram required for pin assignment). Connect the ohmmeter and check the resistance with the throttle valve closed; slowly open the throttle valve and monitor the change in the resistance (an interruption to the sliding contact can be identified during the measurement). Check the resistance with the throttle valve fully open (observe the manufacturer's specifications).

4. Check the cable connections

Check the cable connections to the control unit for continuity and a short circuit to frame (circuit diagram required for pin assignment). Check the continuity of the individual cables with removed control unit plug and component plug; reference value approx. 0 ohms. Also check each cable against vehicle ground for a short circuit to frame; reference value approx. >30 MOhm. largely outside the influence of the ambient temperature



Throttle valve potentiometer – example OK

Product features, specifications and availability are subject to change without notice.

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