PRODUCT INFORMATION
IDLE SPEED ACTUATOR

- → Precise Airflow Regulation: The ISC valve precisely regulates airflow to keep the engine running efficiently and maintain a stable idle speed, preventing the engine from stalling, especially under varying loads
- → OEM Quality Standards: The product is manufactured to original equipment manufacturer (OEM) quality, which helps ensure a perfect fit, reliable performance, and a hassle-free, direct replacement installation
- → Durability: HELLA ISC valves are designed to withstand extreme temperatures and engine vibrations, contributing to long-lasting and dependable performance
- → Improved Fuel Efficiency: By optimizing airflow during idle conditions, the component helps improve overall fuel efficiency

PRODUCT FEATURES

The idle speed actuator is a bypass air valve. The idle speed actuator shown as an example consists of a closed cast housing with flange-mounted solenoid valve servo unit. Attached to this is a nozzle holder, which releases different air cross sections by moving the servo unit, and can therefore control the air mass flow when the throttle valve is closed.

The idle speed actuator is responsible for regulating the engine speed as part of the overall idle-speed control of the engine management system. If there is a sudden change to the engine load condition when in idle mode (e.g. air-conditioning system being switched on, creep speed in 1st gear, or activation of another electrical consumer), air and fuel are also required in order to prevent the engine from stopping. If the engine speed falls below a certain critical value, which is stored as a constant in the control unit memory, the solenoid valve is activated and an increased air flow rate is achieved. The opening time of the injection valves is simultaneously extended and adapted to the engine's requirements.

Function:

- → **Maintain Stable Idle:** Regulate airflow to keep engine RPM constant when the accelerator isn't pressed, handling varying loads (A/C, lights, power steering).
- → **Optimize Fuel Economy & Emissions:** Keep RPM as low as possible without causing instability, saving fuel and reducing emissions.
- → **Prevent Stalling:** Add necessary air when electrical consumers turn on to stop the engine from bogging down and stalling.
- → **Smooth Operation:** Ensure quiet, vibration-free idling, even during warm-up or when shifting gears.

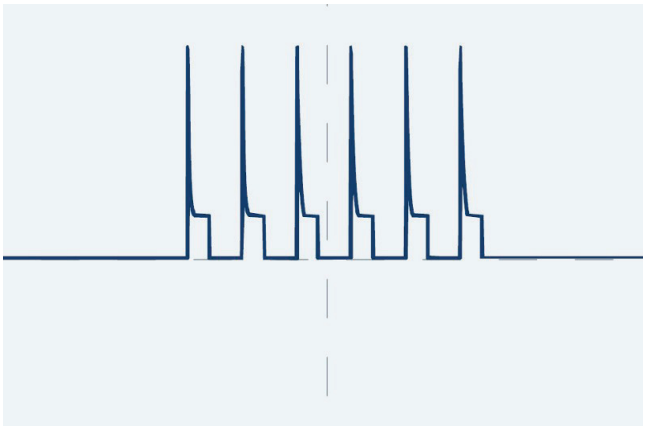
IDLE SPEED ACTUATOR

Symptoms of a faulty idle speed controller
→ A faulty idle speed actuator can manifest itself as follows:

→ Fluctuating idle speed
→ Engine stops running at idle speed
→ Engine stops running at idle speed and activation of additional consumers
→ Engine indicator lamp comes on

Causes for faulty idle speed controllers
Causes for failure of the idle speed actuator can be:

→ Contamination / resin formation
→ Short circuits in the coil
→ Electric magnetic drive becomes stuck
→ No voltage supply from the engine management control unit



Optimal pattern

Troubleshooting

1. Checking the voltage supply
Check the voltage supply with the ignition switched on.
Measured value: 11 – 14 V.
Note: An Ohm measurement must only be carried out in a de-energized state (plug connection removed).

2. Measuring the coil resistance
Use the multimeter to measure the coil resistance between the two connection pins of the idle speed actuator.

Reference value = approx. 10 ohms (observe manufacturer's specifications).

3. Checking the coil for winding short circuit
Check the coil for a winding short circuit between the two connection pins.

Measured value in the event of a short circuit = 0 ohms.

4. Checking the coil for winding interruption
Check the coil for a winding interruption between the two connection pins.

Measured value in the event of an interruption = >30 MOhm.

5. Checking the coil for short circuit to frame
Check the coil for short circuit to frame – between pin 1 and component housing, and between pin 2 and component housing.

Measured value in the event of an unimpaired coil = >30 MOhm.

6. Mechanical check
Unscrew the servo unit from the housing. Visual check to determine whether the bypass opens and closes when the valve rod is actuated.

7. Read out fault code
Read out fault code.

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