

### Accelerator Pedal Position Sensor

Vehicles with older technology are equipped with a throttle cable (Bowden cable) in order to command the throttle valve (butterfly valve) by a direct flexible mechanical linkage. As we push the accelerator pedal, the throttle cable pulls a lever that opens the throttle valve. A counteracting spring arranges to close back the valve when we stop pushing the pedal.

In modern vehicles the throttle valve control is electronically performed by a "drive-by-wire system". This system is consisted of the throttle position sensor, the electronic throttle control, the ECU of the engine and of course of the accelerator pedal position sensor (usually it consists of a number of sensors-potentiometers integrated in the pedal unit/module). In a system like this, the driver does not have direct control over the throttle valve. By pushing the accelerator pedal, the pedal position sensor sends a signal to the ECU, which calculates the correct throttle position (taking into account also other data of the vehicle's engine and dynamics) and by means of a suitable actuator (electric motor for electronic throttle control) sets the throttle to the required position.

This new system is used to reduce consumption, emissions and for a more correct engine management and drivability of the vehicle. In fact the sudden or unnecessary throttle opening in older systems has a negative impact on fuel economy and engine wear over time. Also the "drive-by-wire" systems facilitate applications such as cruise control, traction control and vehicle stability systems.

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