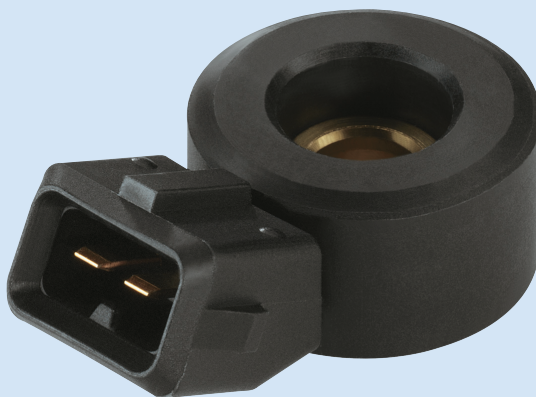


Knock Sensor



www.siemensvdo.com

Our innovative sensors are helping customers meet increasing global performance requirements and emission regulations.

Product application

Our knock sensors are used in both gasoline and diesel engines.

In gasoline applications advanced engines with high compression, ratios are needed to meet the requirement for lower fuel consumption, better performance and respect the emission regulations. However, such designs lead to increase knock that damages the engine.

Our knock sensors constantly measure structural vibrations in the internal combustion engine to continuously adjust the ignition parameters during operation.

Our knock sensors are broadband vibration sensors which are increasingly replacing resonance sensors.

In diesel applications high pressure common rail diesel engines are now reaching low noise operation thanks to the tight control of the pilot injection. Information on the combustion of the pilot injection is provided to the ECU by a knock sensor.

These broadband vibration sensors do not just offer high levels of functionality, but are small, light and easy to install.

Operating principle

- I A piezo-electric element is translating the vibrations into an electric signal proportional to the acceleration
- I Due to the vibration, a counter weight inside the sensor is applying pressure on the piezo element, this pressure creates an electric charge in the piezo element:
This is the output signal of the sensor.

For a knock application on a gasoline engine, the ECU adjusts the spark timing and on a diesel application the ECU controls the pilot injection quantity.

Versions

Integrated connector or cable versions.

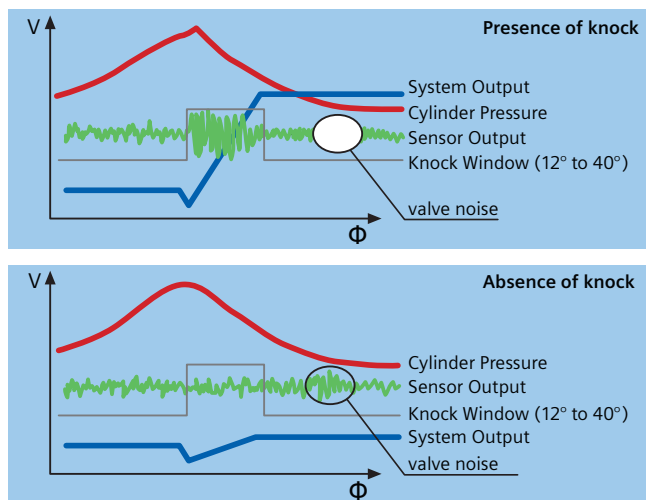
Options

Different options are available such as integrated resistor for discharge, captured bolt, nested bolt...
A wide range of connectors and cable types is also available.

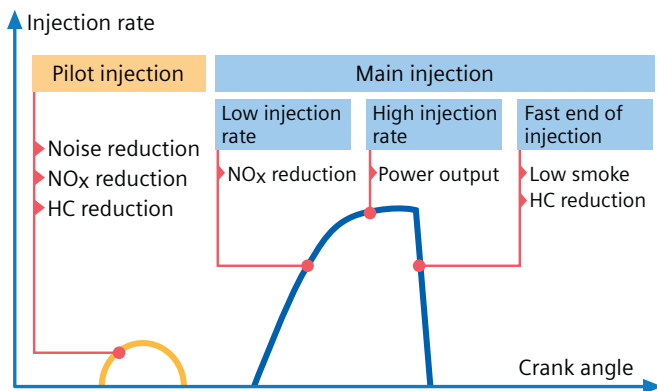
Knock Sensor

Product applications

Gasoline applications



Diesel applications



Operating Conditions / Typical Technical Data

- Standard Temperature Range: [-40°C, +150°C]
- Storage Temperature: [-40°C, +150°C]
- Frequency Range: 30 Hz – 25 kHz
- Typical Sensitivity at 5 kHz: 35 +/- 8 mV/g
- Capacitance value: 1000 pF +/- 150pF

New Generation

Improved design

A new generation of knock sensor is using adhesive to glue the parts together while the assembly of the current sensor is based on the static force applied by an internal nut.

Product benefits

- l Fits high temperature range
- l Available in different connectors (8 integral and 11 cable type)
- l Option to integrate a discharge resistor
- l Shows an outstanding quality level (2 ppm)
- l Is produced in high volumes in different countries in the world

Specific to the improved design

- l Leads to a better control of the knock by improving signal to noise ratio which avoids death cylinder issue
- l Better control of sensitivity level
- l Offers a widely extended frequency range
- l Improves linearity of sensitivity also in high frequency
- l Is reduced in height by 30 %
- l Shows low temperature drift
- l Can be used in low frequency applications other than engine management ones (chassis vibrations, shock...).

Our Sensors have become market leader in recent years. Through innovations like our new pressure, position and exhaust sensors, we supply all kind of special vehicle industry with essential components for modern powertrain management.

Continuous development has resulted in engine, transmission, chassis and carbody sensors that are smaller, lighter and more flexible. Superior in quality, they can be integrated in a broad range of systems.

Wherever there is a need for performance, reliability, comfort, safety, and environmental protection, you will find our sensors.

