

Sensors

Knock Sensor



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 emissions 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 accelerometers 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 sensors do not just offer high performance levels of functionality, but are small, light and easy to install.

Operating principle

- ◉ A piezo-electric element is translating the vibrations into an electric signal proportional to the acceleration
- ◉ 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 (single or multi head).

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.

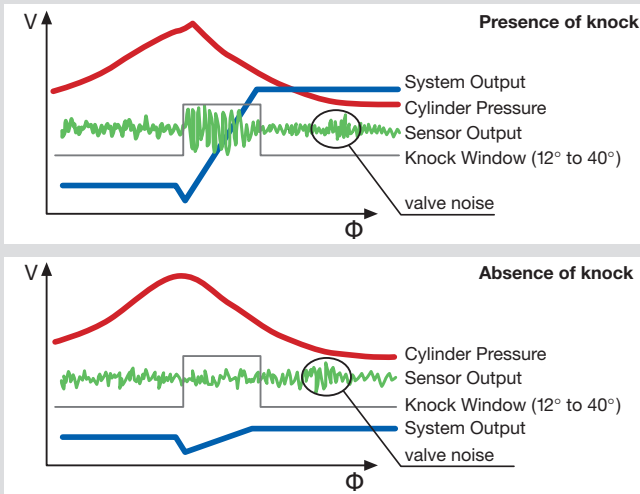
Technical data see back page

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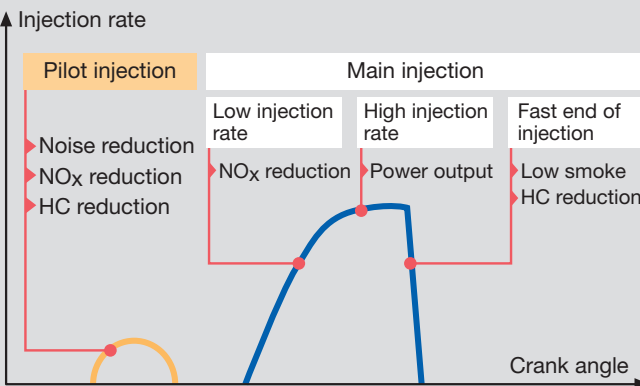
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Product applications

Gasoline applications



Diesel applications



Operating Conditions / Typical Technical Data

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

Continental Automotive GmbH
 Powertrain
 Business Unit Sensors & Actuators
 www.continental-corporation.com

New Generation

Improved design

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

Product benefits

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

Specific to the improved design

- Higher signal to noise ratio avoids death cylinder issue
- Better controls the sensitivity level
- Offers a widely extended frequency range
- Improves linearity of sensitivity also in high frequency
- 30 % height reduction
- Shows low temperature drift
- Can be used in low frequency applications other than engine management ones (chassis vibrations, shock...).

Our Sensors division has become market leader in recent years. Through innovations like our new pressure, position and exhaust sensors, we supply the 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.

Siemensstrasse 12
 93055 Regensburg, Germany
 E-mail: automotivesensorsactuators@continental-corporation.com