BOSCH
Invented for life

Oxygen Sensors

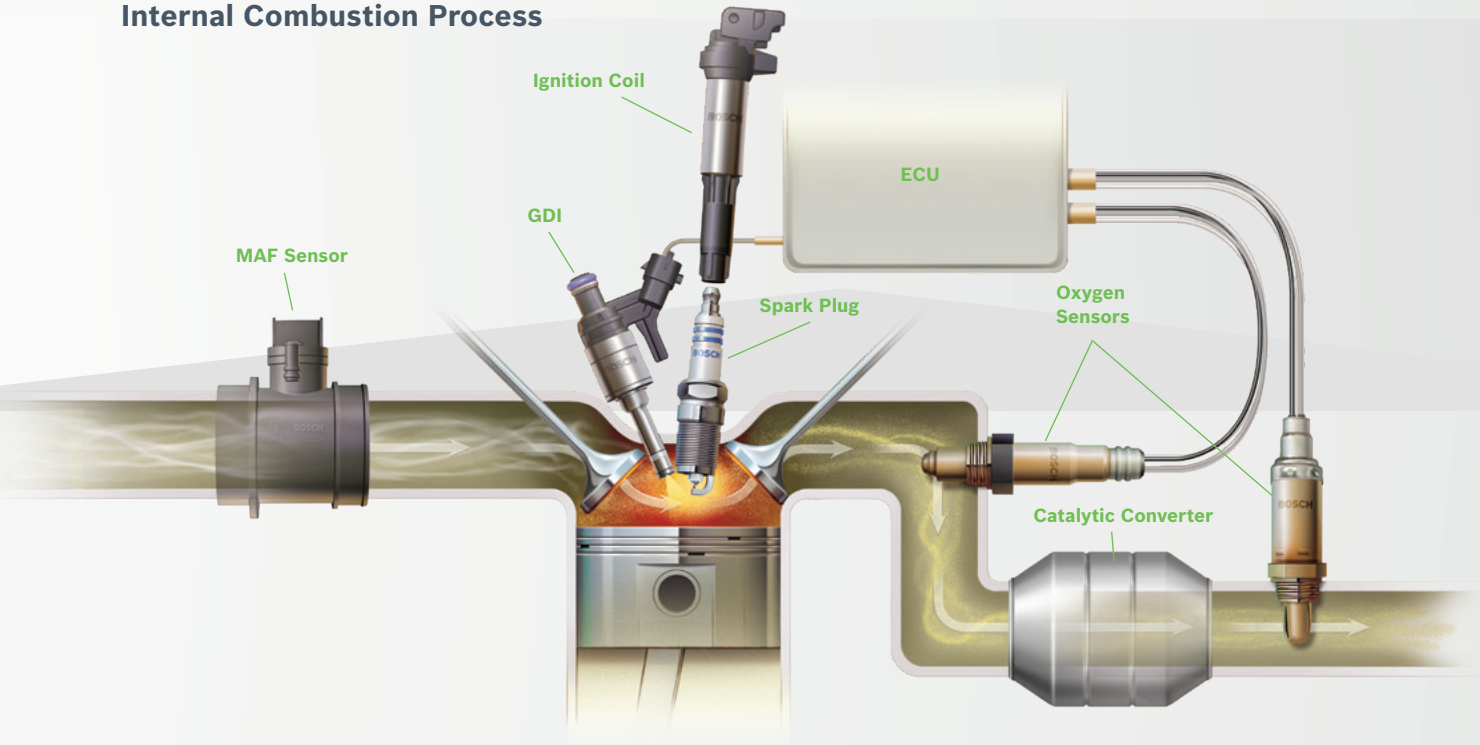
Bosch is the World's Leading Supplier of Oxygen Sensors

It's been more than 40 years since Bosch invented the Oxygen Sensor and began series production in 1976. Today Bosch is the world's largest manufacturer, market leader and the No.1 aftermarket supplier of oxygen sensors in North America.

The main Bosch oxygen sensor plant is domestically located in Anderson, SC. Stateof-the-art manufacturing technology and quality control systems ensure that all Bosch Premium Oxygen Sensors meet or exceed OE specifications.

Inventor of the Automotive Oxygen Sensor

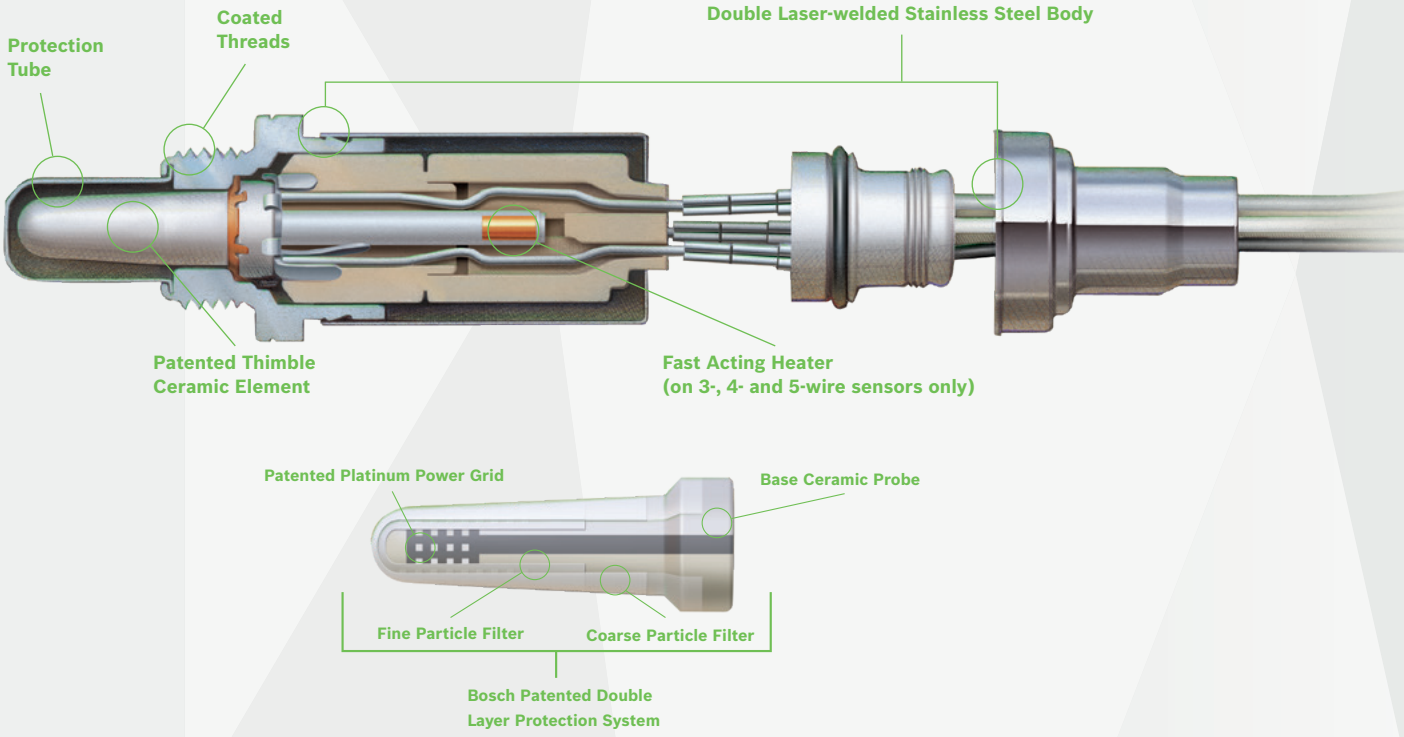
Internal Combustion Process



The oxygen sensor market has been continually growing and changing since manufacturers first began installing them on vehicles in the mid 1970s. The introduction of OBDI in the early 1990s, and later OBDII, responded to progressively stricter EPA emissions standards by monitoring automotive systems and components. As a result, vehicles built since 1996 have required multiple oxygen sensors, positioned both before (upstream) and after (downstream) the catalytic converter.

Bosch continues to be the most well known and preferred oxygen sensor brand in the Independent Aftermarket by automotive repair shop technicians. From the first thimble type sensors to today's Wideband/Air-Fuel sensors, Bosch has consistently led the way as the ***market leader*** in oxygen sensor technology and innovation.

Bosch Thimble Oxygen Sensors



Bosch Thimble Type Oxygen Sensors

Patented thimble ceramic element, featuring the Bosch patented platinum power grid for optimized sensing and peak performance at high temperatures.

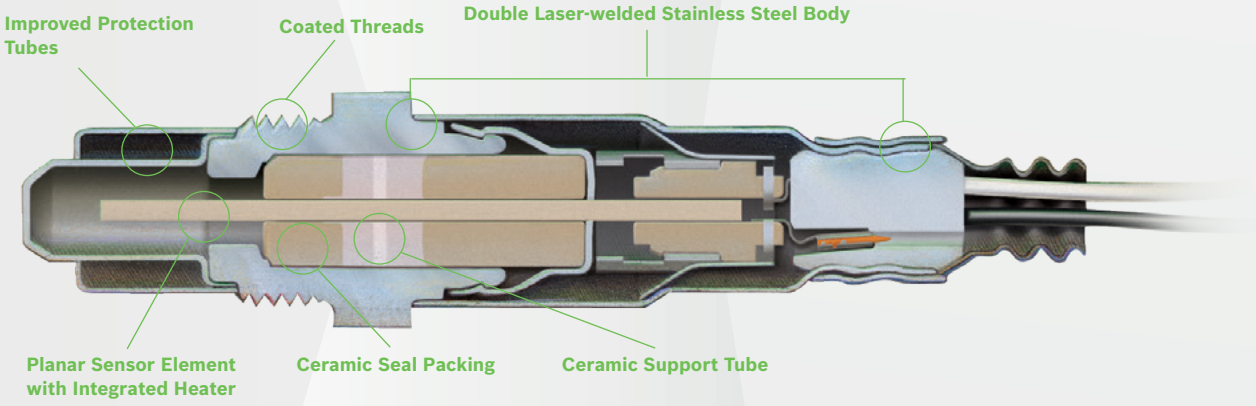
Protection tube is seared as a result of a 100% percent fully functional quality test, which ensures sensor quality and performance.

Exclusive double laser-welded stainless steel body is totally submersible and sealed tight to protect against contamination from exhaust emissions — ensuring longer sensor service life.

Fast-acting heater (on 3-, 4-, and 5-wire sensors only) allows the oxygen sensor to reach its operating temperature quicker – within seconds – for optimum performance.

Pre-coated threads with conductive anti-seize compound right out of the box for easy installation.

Bosch Planar Type Oxygen Sensors



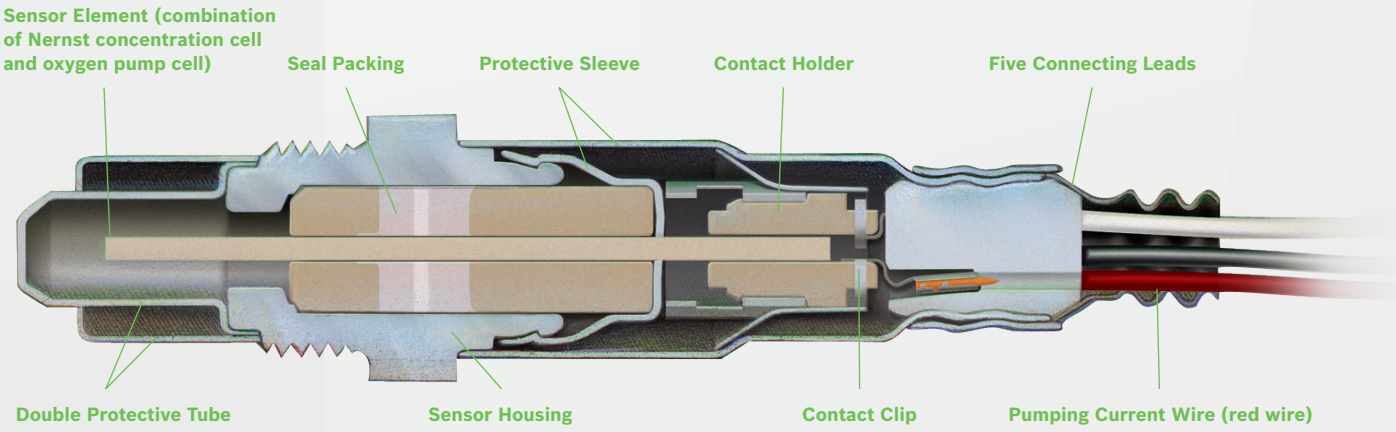
Bosch Planar Type Oxygen Sensors

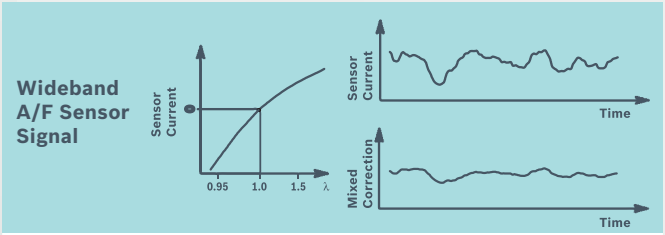
Planar sensor element with integrated heater requires less power to activate and reaches operating temperature quicker than a conventional thimble element, which reduces harmful emissions during the cold-start phase.

Improved protection tube design provides increased thermal resistance for longer service life.

Pre-coated threads with conductive anti-seize compound right out of the box for easy installation.

Bosch Wideband/Air-Fuel Oxygen Sensors





Note: The signal from the wideband sensor does *not* toggle around 450 mV!

Bosch Wideband/Air-Fuel Oxygen Sensors

Wideband/Air-Fuel sensors perform the same function as a regular oxygen sensor but they precisely measure the exact amount of oxygen in the exhaust gas rather than just switching between rich (too much fuel, not enough oxygen) and lean (too much oxygen, not enough fuel).

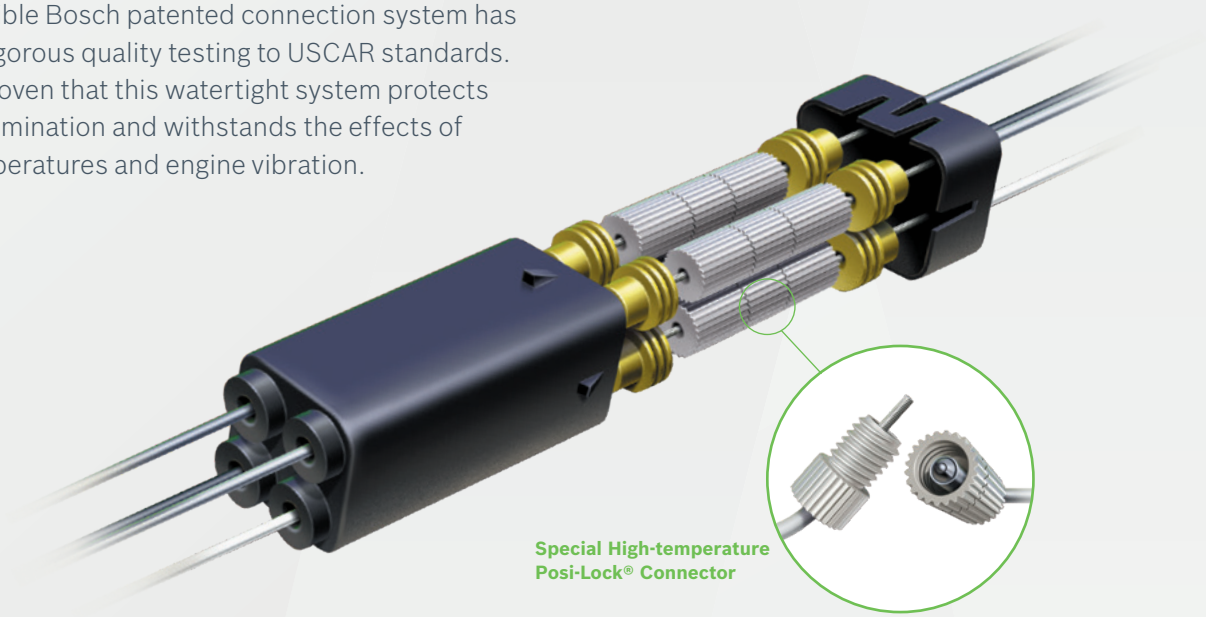
Wideband sensors provide a signal to the vehicle's engine control unit (ECU) that is proportional to the amount of oxygen in the exhaust. This allows the ECU to precisely control the air/fuel ratio to maintain the optimal combustion.

Oxygen sensors need a reference air sample to compare against the exhaust gas to be able to produce a signal. This sample is drawn into the oxygen sensor from the outside, but there are different methods to get this air into the sensor. **Bosch Oxygen Sensors are the only sensors that draw air from the connector and through the wires** to ensure the reference air sample is clean and to keep contaminates out. We believe this makes our oxygen sensors more robust, so that you only have to do the job once.

Bosch Universal SmartLink™ Oxygen Sensors

Revolutionary Patented Connection System

The submersible Bosch patented connection system has undergone rigorous quality testing to USCAR standards. Tests have proven that this watertight system protects against contamination and withstands the effects of extreme temperatures and engine vibration.



USCAR is a consortium of Chrysler, Ford and General Motors.

Posi-Lock® is a registered trademark of Swenco Products.

Bosch Universal SmartLink™ Oxygen Sensors

Bosch patented, fully submersible connection system has undergone rigorous quality testing to ensure that it can withstand the effects of extreme temperatures and engine vibration.

The Bosch OE specific universal program offers 10 different 4-wire sensors and 4 different 3-wire sensors to provide the closest match to OE sensor performance.

No special tools are required for installation. Special, high-temperature Posi-Lock® connectors can be reconnected in case of a wiring mistake. Competitive universal sensors may use butt connectors, which are permanently deformed during crimping, making them unsuitable for use.

Why should you change an oxygen sensor?

It's critical that oxygen sensors are replaced at the suggested intervals provided by vehicle manufacturers before the sensor fails. Following the recommendations will prevent long term damage to a vehicle's engine, reduce harmful carbon dioxide (CO_2) emissions and save money when refueling your vehicle.

An oxygen sensor's service life varies: oxygen sensors with 1 – 2 wires have a typical service life between 30,000 – 50,000 miles; while 3 – 5 wire sensors have a life span of up to 100,000 miles. Checking and replacing worn out oxygen sensors has become a critical part of regular vehicle maintenance.

A worn out oxygen sensor can cause

- Engine performance issues
- Lower fuel efficiency
- Excessive harmful exhaust emissions
- Catalytic converter damage

Replacing a worn oxygen sensor

- Improves engine performance
- Reduces harmful emissions
- Optimizes fuel delivery for maximum miles per gallon
- Prevents catalytic converter failure

Oxygen sensors are important engine components – indispensable for reliable engine function and correct emission values. But oxygen sensor performance can be jeopardized by many factors:

- Environmental influences, such as salt and dirt
- Large temperature fluctuations
- Poor-quality fuel
- Soot and oil residues in the exhaust gas

How to diagnose

State of oxygen sensor:
Greenish, grainy discoloration.

Possible cause:
Antifreeze has escaped and entered the combustion chamber.

Measure:
Replace the oxygen sensor. Check the engine block, cylinder head, intake manifold and head gasket for wear and cracks.

State of oxygen sensor:
Blackened, with oily contamination.

Possible cause:
Excessive oil consumption.

Measure:
Check the valve guides and seals, which may be worn. Replace the oxygen sensor.

State of oxygen sensor:
Dark brown discoloration.

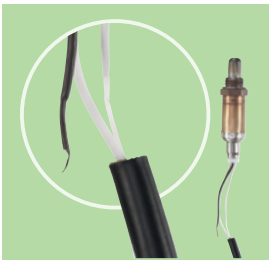
Possible cause:
Air-fuel mixture too rich.

Measure:
Check the fuel pressure.
Replace the oxygen sensor.

State of oxygen sensor:
Reddish or white discoloration.

Possible cause:
Fuel additives in the gasoline.

Measure:
Do not use fuel additives.
Replace the oxygen sensor.



State of oxygen sensor:
Broken cable.

Possible cause:
Excessive cable tension.

Measure:
Replace the oxygen sensor.
Route the new cable without tension.

State of oxygen sensor:
The molded cable tubing is damaged.

Possible cause:
Impact by stone chippings.

Measure:
Replace the oxygen sensor.

What drives you, drives us.

The Automotive Aftermarket division provides the aftermarket and repair shops worldwide with a complete range of diagnostic and repair shop equipment and a wide range of spare parts – from new and exchange parts to repair solutions – for passenger cars and commercial vehicles. Its product portfolio includes products made as Bosch original equipment, as well as aftermarket products and services developed and manufactured in-house.

Ask us about our Point-of-Sale materials.

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