

The first Lambda Sensors were developed in the early 1980s, and NTK were and still are pioneers in this research.

**Now NTK is the world leader in Lambda Sensor Technology, supplying more vehicle manufacturers than any other company.**

NTK sensors always match the vehicle manufacturers specification.

NTK vehicle specific sensors have factory fitted O.E. compatible connectors for fast, reliable fitment.

All NTK sensors are factory tested.

**NTK Lambda Sensors are supplied to major vehicle manufacturers, including:**

Alfa Romeo	Mitsubishi
Aprilia	Moto Guzzi
Aston Martin	Nissan
Audi	Opel
BMW	Peugeot
Chevrolet	Renault
Citroen	Rover
Daihatsu	Saab
Ducati	Seat
Fiat	Skoda
Ford	Smart
Honda	Suzuki
Hyundai	Toyota
Jaguar	Triumph
Lancia	TVR
Land Rover	Vauxhall GM
Mazda	Volkswagen
MG	Volvo
Mini	



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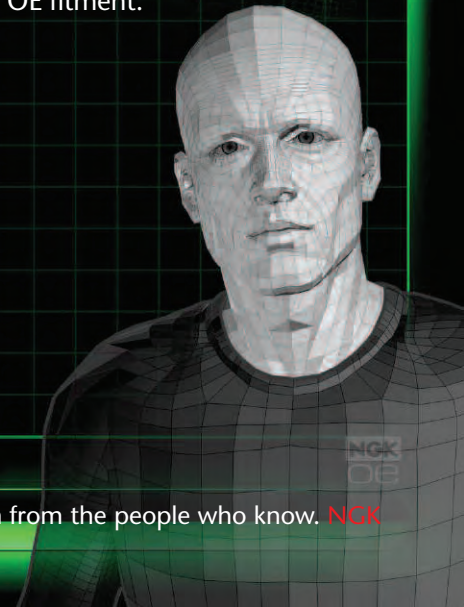
POCKET GUIDE



# Lambda Sensors

The Key to Effective  
Catalytic Converter  
Pollution Control

Never settle for second best,  
always insist on NGK,  
the world's No.1  
OE fitment.



World leaders in Lambda Sensor Technology

Technical Perfection from the people who know. **NGK**

The Lambda Sensor is a vital component in emission control and efficient engine operation.

Its function is to precisely measure the concentration of oxygen present in the exhaust gases and send a signal to the electronic control unit.

This information is required by the fuel management system to ensure that the engine is receiving the correct air/fuel mixture at all times and under all conditions.

This strict control of the fuel/air mixture going into the engine is also vital in ensuring that the three-way catalyst is provided with exhaust gases in the correct proportions. Without this the catalyst cannot convert the major harmful pollutants into more environmentally friendly gases.

## What is a Lambda Sensor?

As part of the pollution control legislation now in force new vehicles have an additional sensor installed downstream of the catalytic converter which monitors its ability to reduce emissions.

If the emissions are outside the design limits the sensor will illuminate a malfunction indicator lamp warning the driver of the need for repairs. This is part of the EOBD system.

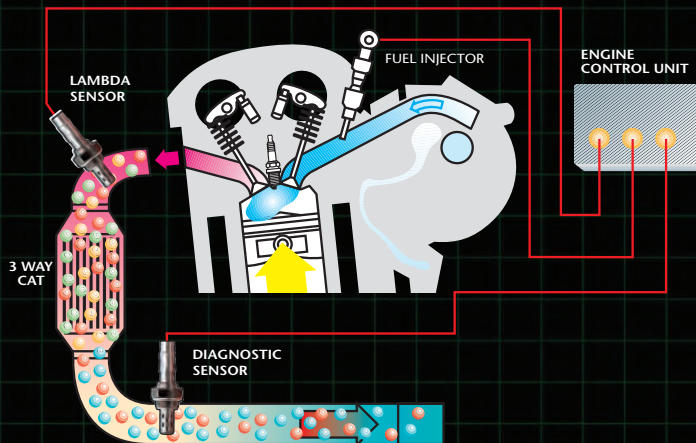
Current stringent emission control regulations known as Euro IV and the considerably tighter Euro V regulations due in 2009 emphasise the importance of Lambda Sensors now and for the future.



At the heart of a Lambda Sensor is a ceramic element made from either Zirconium Oxide or Titanium Oxide. This is enclosed in a metal tube for protection. As sensors do not start to function until they reach 300°C most types now incorporate a heating element to provide virtually instant control of the fuelling system.

- Zirconia Sensors possess the special property in that they can produce a measurable voltage by comparing the concentration of oxygen in the exhaust gas with that of ambient air.
- Titania Sensors have a similar property but a change in electrical resistance results from a change in oxygen levels. Titania sensors do not need to compare the exhaust gas with ambient air.

## How Does it Work?



In either case information about oxygen levels is continuously relayed to the engine management system, which regulates the air/fuel mixture. This is known as closed-loop control.

As you can imagine sensors operate in an extremely hostile environment and are subject to extremes of temperature, vibration and chemical attack.

- NTK sensors are designed to withstand these conditions for an extended period of time however it is essential that they be tested regularly as part of the vehicles maintenance schedule – ideally every 20,000 miles or whenever the exhaust system is examined.

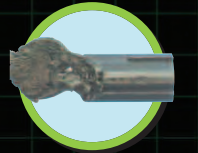
## How Often Should Sensors be Replaced?

Sensors will eventually wear out, and the use of leaded fuel or some fuel additives will poison the ceramic element and render it useless.

A worn or failed sensor could result in drastically reduced control of the fuelling system.

This might make itself apparent by increased fuel consumption, uneven running, generally poor performance or failure of an exhaust emission test.

Cables and plugs melted by contact with exhaust...



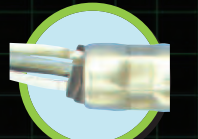
Replace with new sensor.

Frayed or broken cables...



Replace with new sensor.

Cable seal is loosened. Water may enter the sensor...



Replace with new sensor.

Sensor is bent...



Replace with new sensor.

Water in the connector...



Replace with new sensor. Check connections and seal.

Soot deposits are blocking the openings of the protective sleeve...



Diagnose and correct fault. Note: Excessive deposits of soot and oil on the protective sleeve are not caused by the sensor itself.