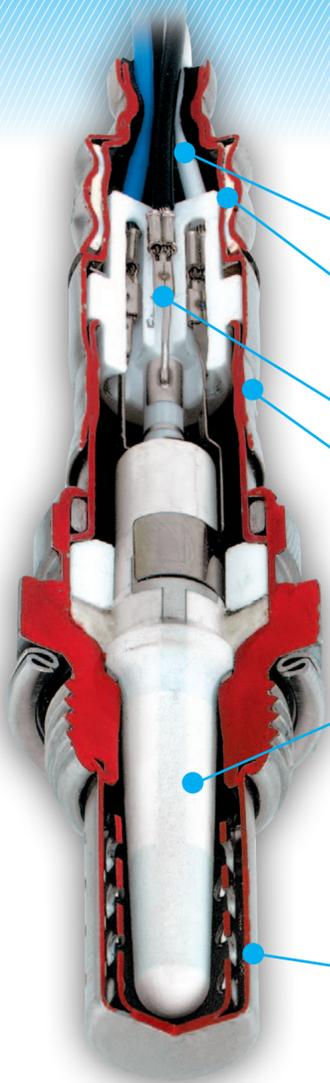


# DENSO Lambda Sensors

Discovering superior DENSO technology



## Characteristics

The superior design of DENSO Lambda Sensors reduces harmful emissions, maximises fuel efficiency and enhances engine performance – the perfect recipe for longer engine life.

**Steel core in wires:** The Teflon isolated wires have a core of stainless steel strands for extra strength, surrounded by nickel coated copper wires for good conductivity and low resistance.

**Porous PTFE filter:** Allows atmospheric oxygen to enter the Sensor without permitting water or engine contaminants to seep into the casing.

**Robotic laser welded connection:** Ensures long and reliable operation.

**Stainless steel housing:** Resists corrosion and contamination with a rugged, watertight body.



**Aluminium-oxide double trap layer:** DENSO Lambda Sensors feature a unique protective coating of aluminium oxide on the ceramic element to help ensure the Sensor takes accurate measurements and ensure a long lifetime. The coating helps to:

- > Filter contamination out of the exhaust gases
- > Keep unwanted pollution away from the ceramic element
- > Prevent an early clogging of the Sensor element and/or damage to the platinum electrode (of particular value for cars running with low quality fuel).

The aluminium oxide trap layer therefore plays an active role in delivering optimal emissions, fuel economy, engine performance and prevention of engine damage.



**Double protection cover:** Maintains proper unit temperature for quicker response times and protects the ceramic element against silicone and lead poisoning.

DENSO Lambda Sensors are available in a broad range of applications

- > Zirconia Sensors Both Thimble and Planar types
- > A/F Sensors Both Thimble and Planar types
- > Titania Sensors

## Fault analysis | Check regularly, replace timely

To assess whether a Lambda Sensor is performing correctly, it is essential to conduct a full visual inspection as well as performance tests.

1. Check the connector and lead wire to ensure no damage has occurred. Damage of any kind will affect the Sensor signal.
2. Check the Sensor's protection sleeve for signs of damage that could indicate a dent or crack inside. It is important that the Sensor element is intact in order to work correctly.
3. Check that the connector is clean, intact and water-tight; and that there are no signs of grease, lubricants or chemicals on it. These can affect the Sensor's delicate output signals which are highly sensitive to contamination.



**Normal**  
**Appearance:**  
 > Sensor is free of any residue, and is dull in colour.  
**Cause:**  
 > Clean engine burning as a result of proper preventative engine maintenance.



**Antifreeze contamination**  
**Appearance:**  
 > Excessive grainy white-grey colour, sometimes greenish deposits.  
**Cause:**  
 > Contamination due to the presence of coolant fluid in the engine cylinders.  
**Solution:**  
 > Check the engine coolant system, especially the head gasket, for leakage and repair if required.  
 > Replace the Sensor.



**Oil contamination**  
**Appearance:**  
 > Excessive dark grey/black deposits.  
**Cause:**  
 > Contamination due to excessive oil consumption.  
**Solution:**  
 > Check the engine for oil leakage or wear, and repair if required.  
 > Replace the Sensor.



**Rich fuel contamination**  
**Appearance:**  
 > Excessive dark brown or black soot.  
**Cause:**  
 > Contamination due to incorrect, rich, Air/fuel mixture. This can be caused by a damaged Sensor heater or a faulty fuel system.  
**Solution:**  
 > Check the fuel system and measure exhaust gas.  
 > Check the Lambda Sensor heater control, and the Sensor heater, in case of a heated Sensor (3 or more wires).  
 > Repair the defect.  
 > Replace the Sensor.



**Additive contamination**  
**Appearance:**  
 > Excessive red or white deposits.  
**Cause:**  
 > Contamination due to use of excessive or harmful additives. Certain ingredients of fuel additives can contaminate the Sensor element. When burned in the engine, they cause fumes that will contaminate and/or clog the Sensor element.  
**Solution:**  
 > Clean the engine and/or fuel system to remove the additives.  
 > Replace the Sensor.



**Lead contamination**  
**Appearance:**  
 > Shiny, dark grey deposits.  
**Cause:**  
 > Contamination due to use of leaded fuel.  
 > Lead attacks the Platinum which is present both on the Sensor element and in the catalyst.  
**Solution:**  
 > Remove the leaded fuel from the vehicle, and refill with lead-free fuel.  
 > Replace the Sensor.

**IMPORTANT: Follow-up check.** In all cases, a contaminated Lambda Sensor must be replaced. After replacing the Sensor, however, it is also important to check the function of the Catalytic Converter. Contamination can also damage the Converter by reducing its capacity.