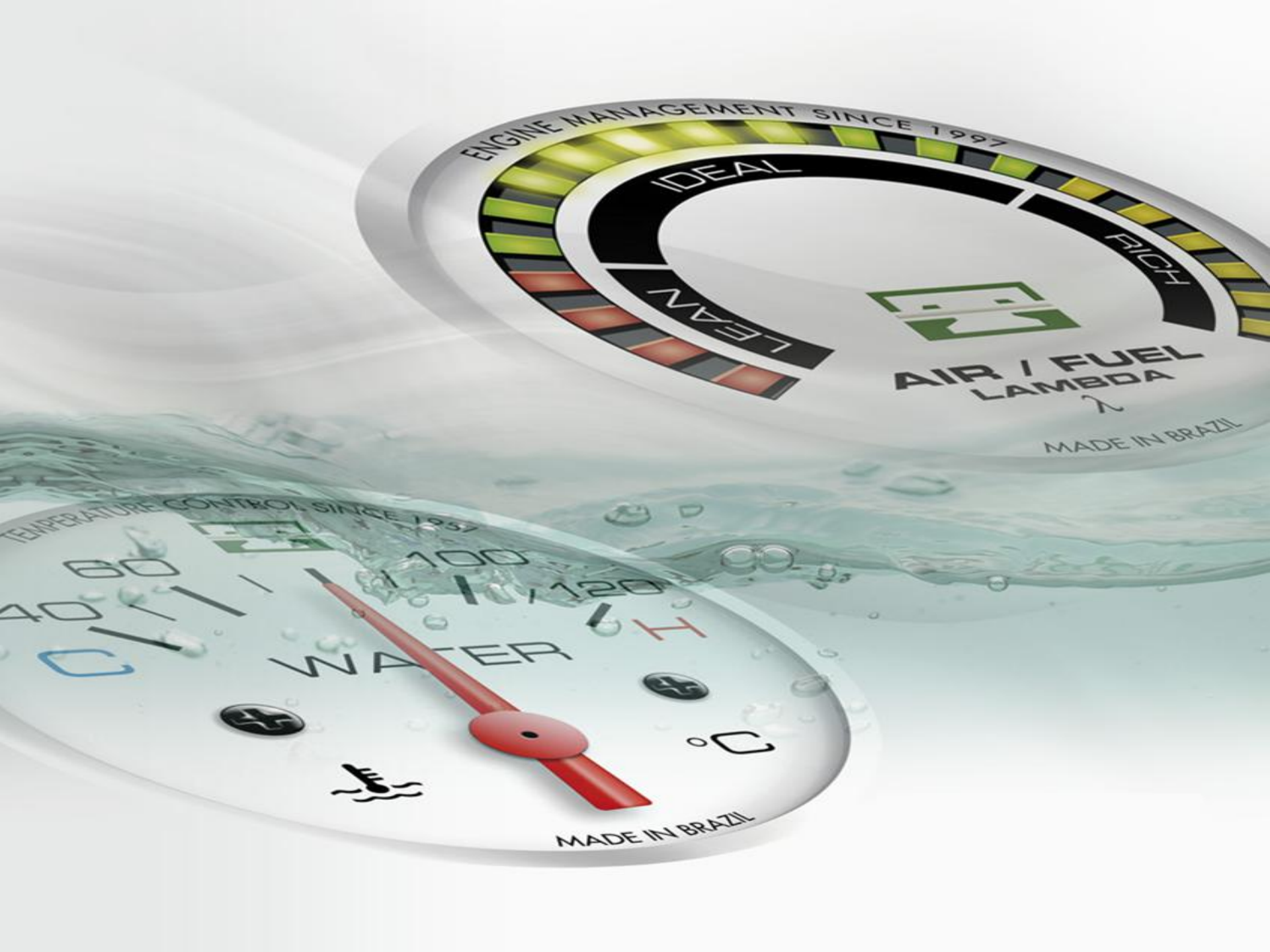

ENGINE MANAGEMENT SINCE 1997
IDEAL
LEAN
RICH
AIR / FUEL
LAMBDA
λ
MADE IN BRAZIL
TEMPERATURE CONTROL SINCE 1997
40
60
80
100
120
C
H
WATER
°C
MADE IN BRAZIL

Technical Information

MTE-THOMSON

Lambda Sensor

Why do cars have Lambda Sensor?

MTE-THOMSON

Engine works closer to Stoichiometric Mixture

Less CO2 emission

Reduction of Fuel consumption

Storage Requirements

MTE-THOMSON

Relative Humidity : *0 to 60 %*

Stock Time : *maximum 2 years*

Stock Temperature : *- 40ºC to + 100 ºC*

Handle with care.
The Sensors have fragile ceramic internal components.

Lambda Concept

MTE-THOMSON

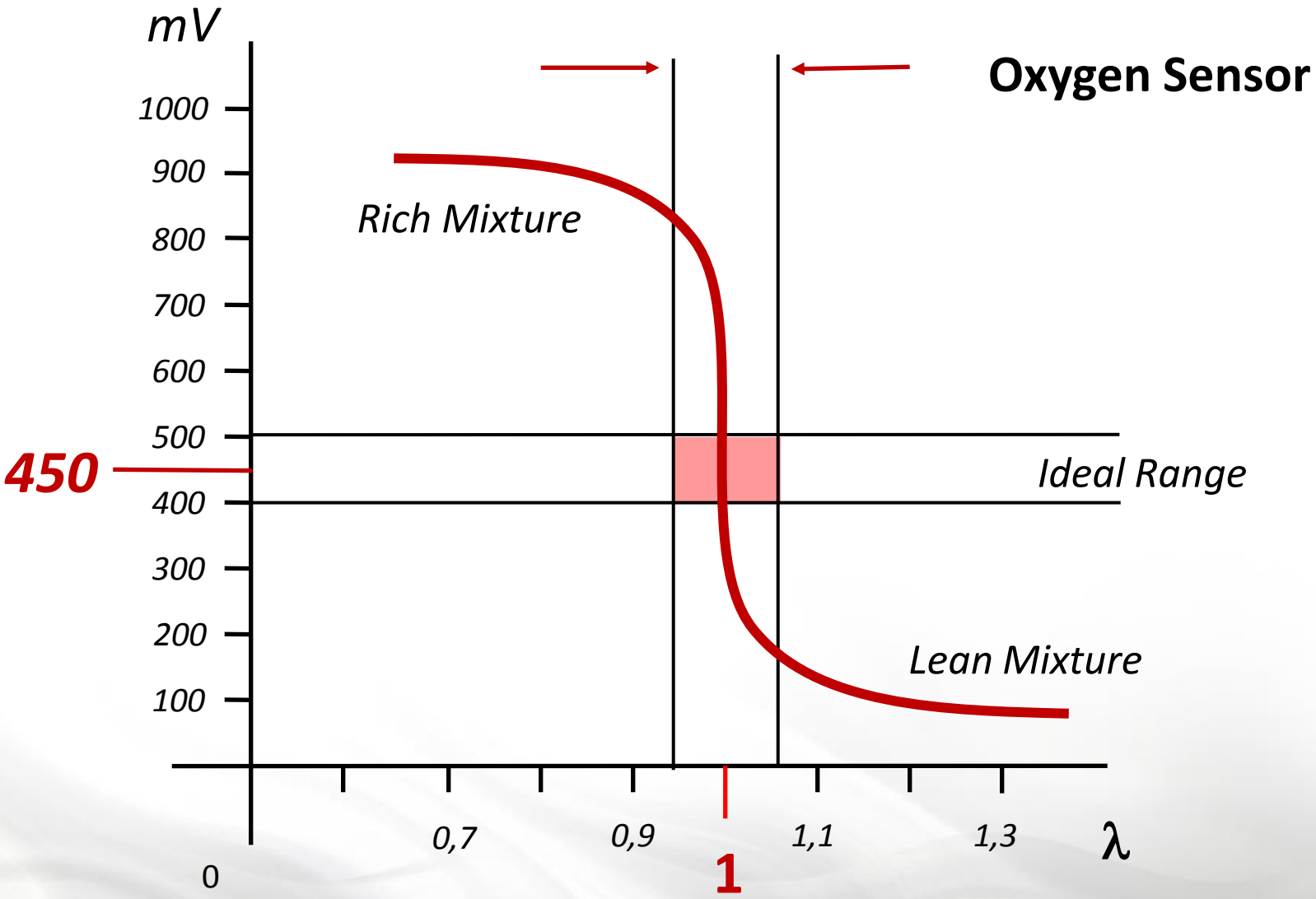
$$\text{Lambda } (\lambda) = \frac{\text{Instantaneous A/F ratio}}{\text{Stoichiometric A/F ratio}}$$

$\lambda = 1$	→	*ideal*	*(signal = 450mV)*
$\lambda < 1$	→	*Lean mixture*	*(signal below 450mV)*
$\lambda > 1$	→	*Rich mixture*	*(signal above 450mV)*

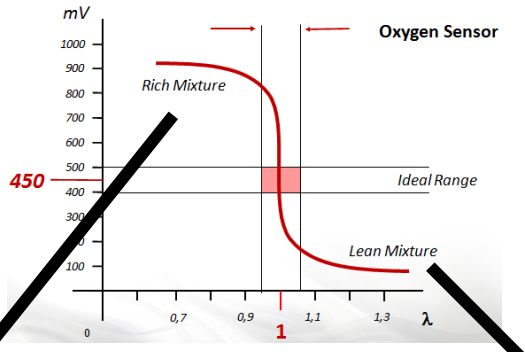
Stoichiometric A/F ratio for different fuels:

Gasoline	*1 4.7 : 1*	*(14.7 parts of air to 1 part of gasoline)*
Ethanol	*9 : 1*	*(9 parts of air to 1 part of ethanol)*
Diesel	*15.2 : 1*	*(15.2 parts of air to 1 part of diesel)*

Sensor Signal for Lambda Factor

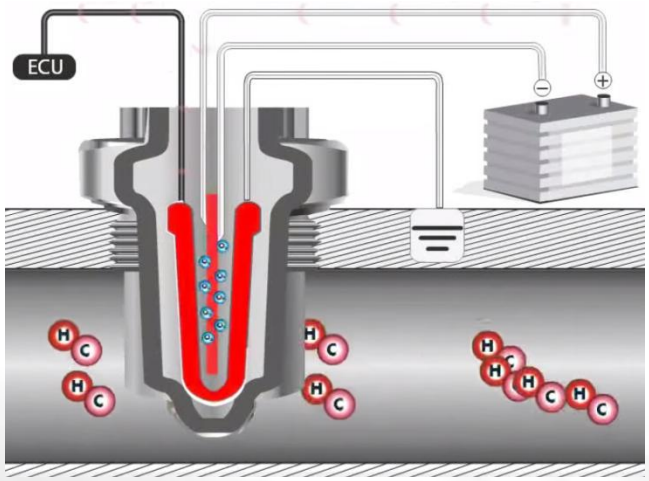


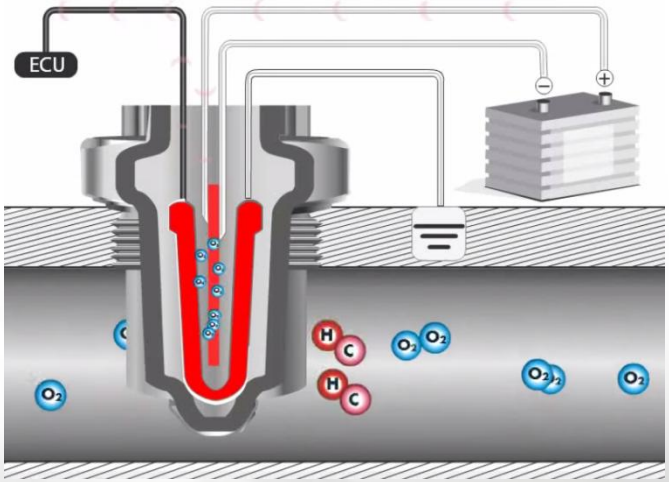
Operation



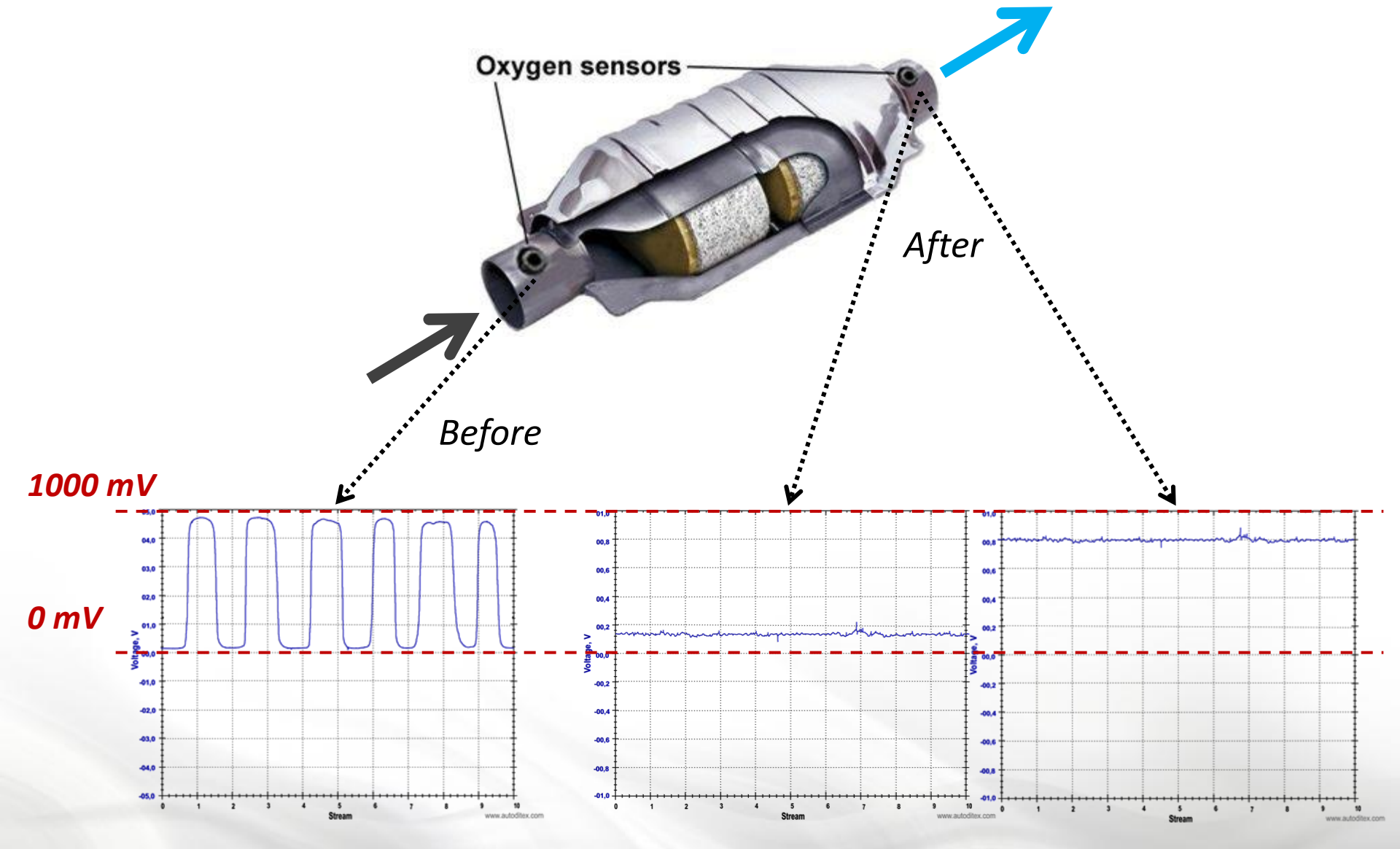
Rich Mixture

Lean Mixture



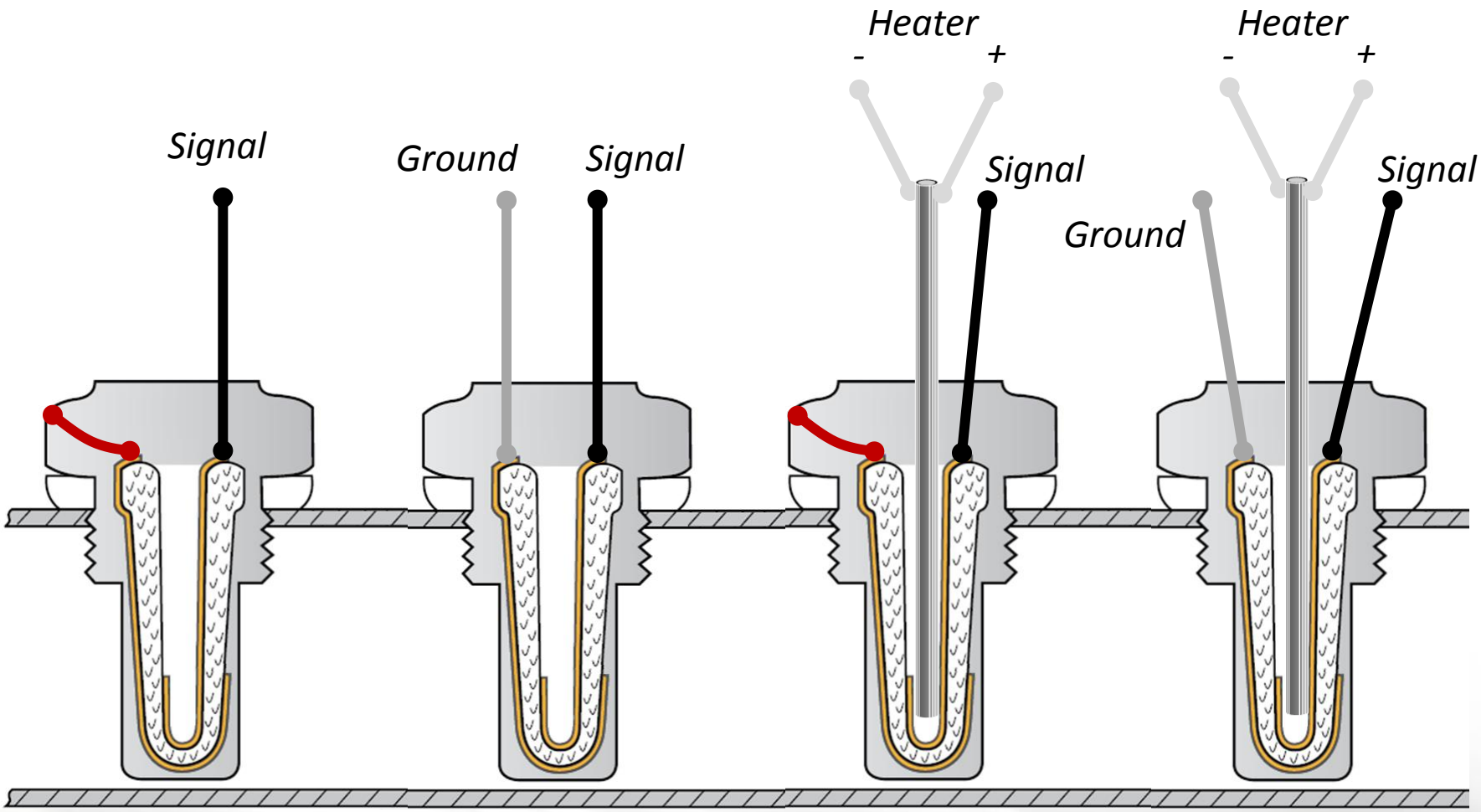


Installing Positions related to Catalytic Converter

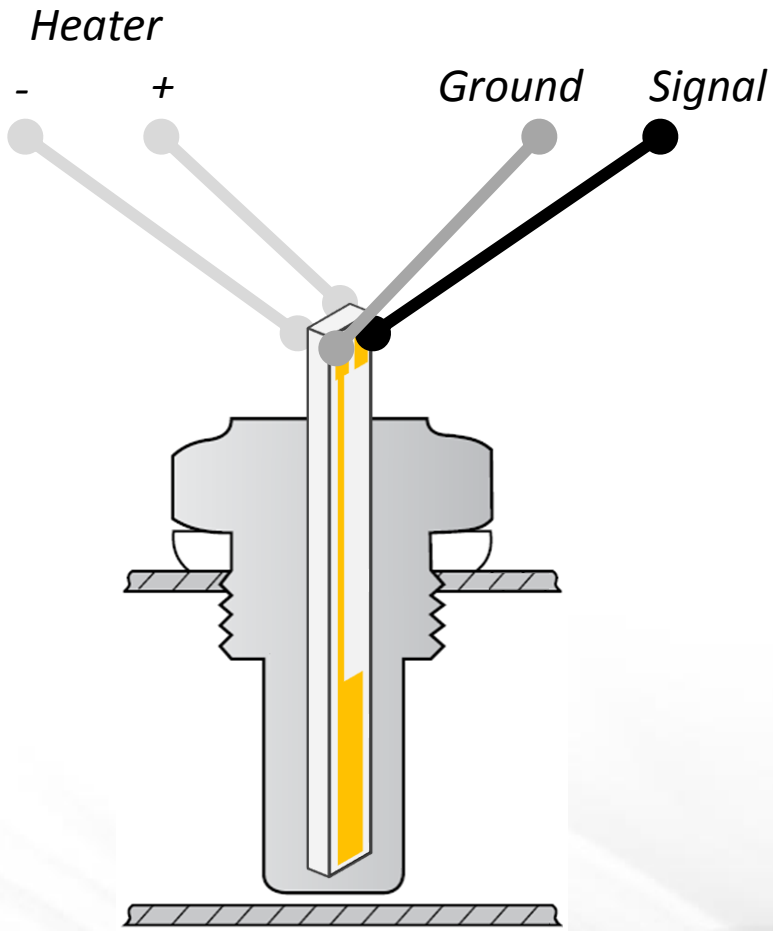


Finger Sensor : 1, 2, 3 or 4 Cables

MTE-THOMSON

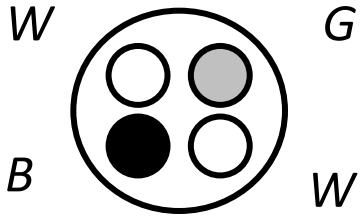


Planar Sensor : 4 Cables

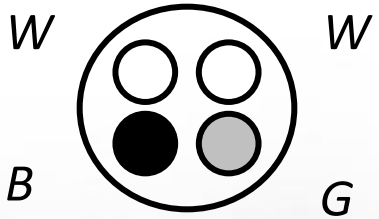


External differences - Finger X Planar

Finger



Planar



Electrical differences - HEATER

Finger

Separated Heater

Resistance : 3 to 6 Ohms

(Some Toyota and Honda cars: 12 to 14 Ohms)

Planar

Integrated Heater

Resistance : 8 to 10 Ohms

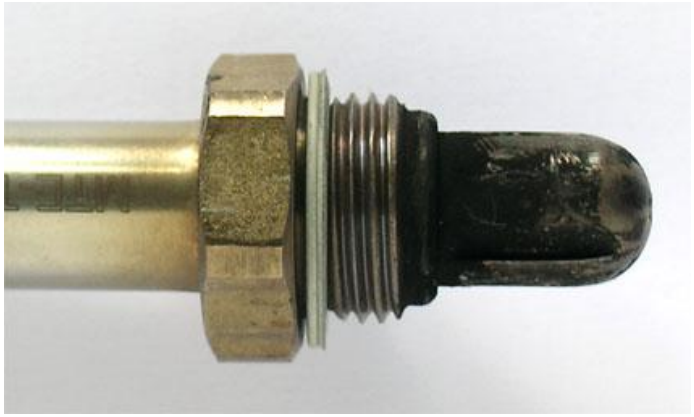
Connections

COMPLETE *with Connector*

UNIVERSAL *without Connector*

CONTAMINATION

Carbonized Sensor



RICH MIXTURE

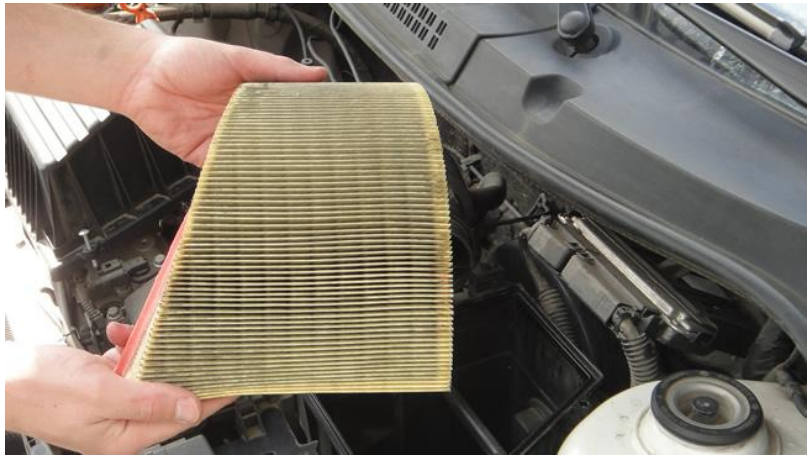
Why?

- *Coolant Sensor Failure*
- *Engine Misfiring*
- *Spark Plug Wire Failure*
- *Spark Plugs Failure*
- *Any Fuel Injection Malfunction*
- *Valve Dripping*
- *Fuel Pressure Regulator*
- *Low Fuel Pump Flow*
- *Ignition Timing not in Synch*

CONTAMINATION - RICH MIXTURE

MTE-THOMSON

- *Clogged Air Filter*



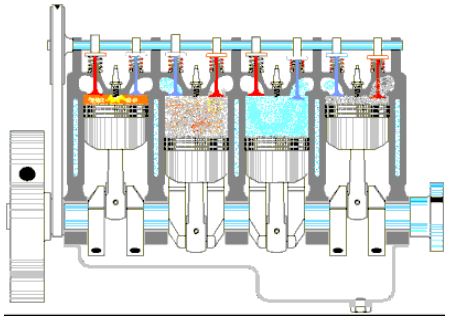
- *Bad Spark Plug*
- *Bad Spark Cables*
- *Coil with misfire*

CONTAMINATION - RICH MIXTURE

MTE-THOMSON

- *Problems in the Electronic Injection*

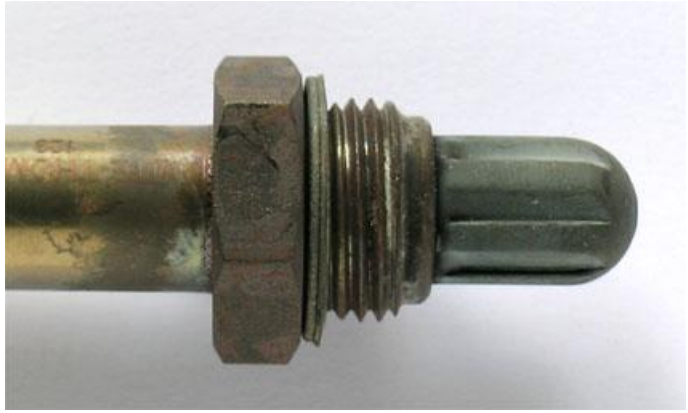
- *Misfires*



- *Defective MAF or MAF Sensors*

CONTAMINATION

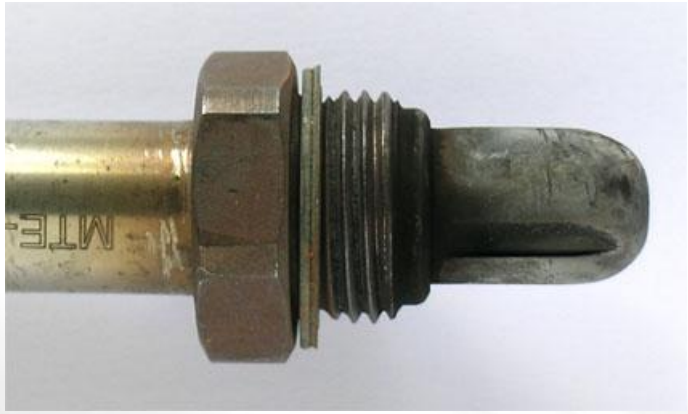
Silicon Poisoning



Why?

- *Fuel Contamination*
- *Lead (Pb)*
- *Indicates Lean Mixture*
- *Increased HC/CO emissions*

Oil saturation



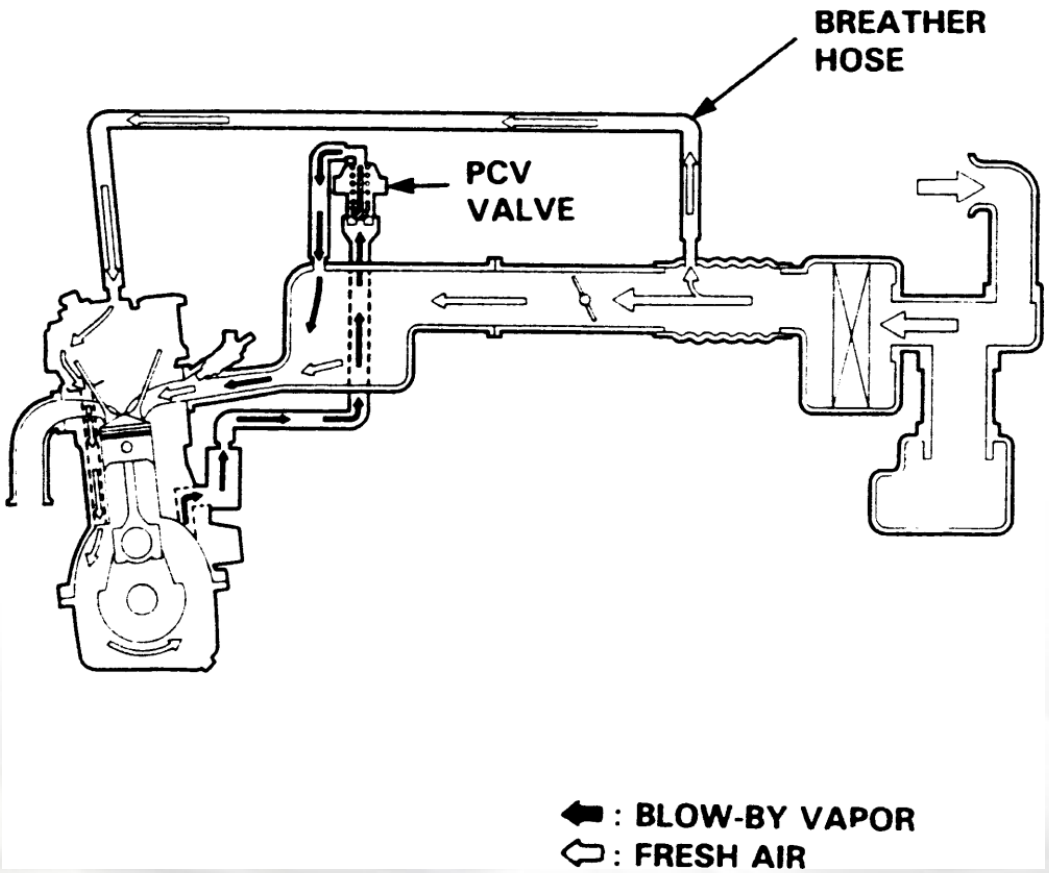
Why?

- *Piston Rings Leaking*
- *Blocked Air Filter*
- *Delayed Lub Oil Exchange ?*
- *Consumption above 0.7 L / 1.000 km*

CONTAMINATION - OIL SATURATION

MTE-THOMSON

- *Clogged Breather (PCV) or Blow-by*



CONTAMINATION

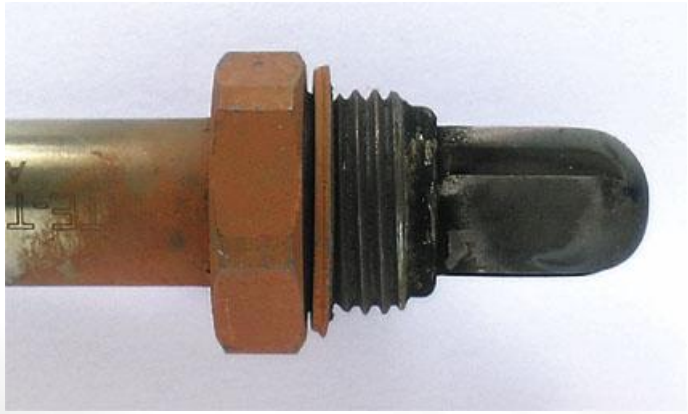
Anti-Freezing Poisoning

Why?

- *Cylinder Head Gasket ?*
- *Internal Coolant Leakages*

Simptoms:

- *Indicates Rich Mixture*
- *Reduces Signal Frequency*



Why?

- *Leaded Fuel*

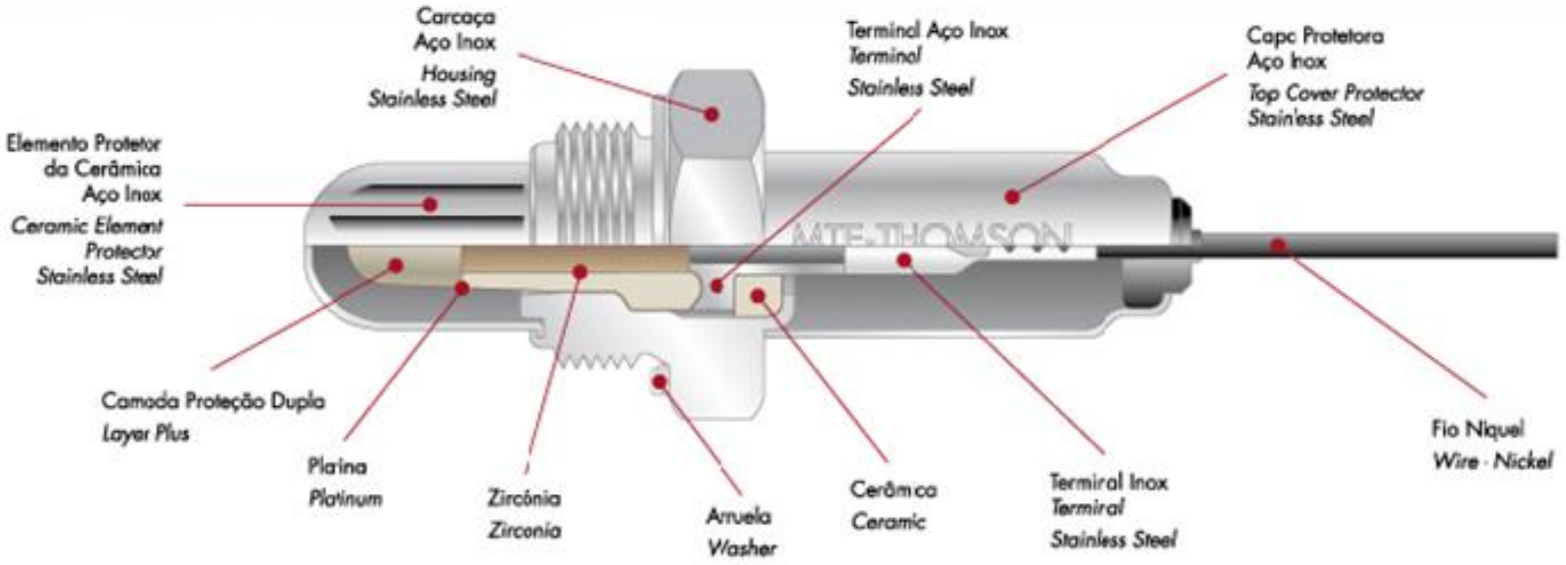
LIFE TIME WARRANTY

MTE-THOMSON

Checking period = 40.000 km
Useful Life Span = 100.000 km*

** The Lambda sensors are designed to last a Life Span of 200.000 Km in Cars with optimal condition Engines.*

Main Components



Exclusive Design

Exclusive Design

MTE-THOMSON

COBERTURA TOTAL PARA TODOS OS VEÍCULOS DO MUNDO *FULL COVERAGE OF DIRECT-FIT SENSORS*

QUALIDADE OEM NOS CONECTORES E TERMINAIS

OE QUALITY CONNECTORS AND TERMINALS

AÇO INOX PARA ALTA TEMPERATURA

HIGH TEMPERATURE STAINLESS STEEL FOR INCREASED THERMAL RESISTANCE

ROSCA COM GRAXA PARA ALTA TEMPERATURA *COATED THREADS*

MTE-THOMSON

The End