

# Bosch Oxygen Sensors

Glossary of Terms



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<b>Term</b>	<b>Definition</b>
<b>Air/Fuel Ratio</b>	In combustion, the amounts (in mass) of air and fuel involved in the combustion. For gasoline engines, the ideal Air/Fuel ratio is 14.7:1.
<b>Air/Fuel (A/F) Sensor</b>	See Wideband A/F Sensor. The term used by some sensor and vehicle manufacturers to differentiate wideband oxygen sensors from switching oxygen sensors.
<b>Closed Loop Operation</b>	Closed loop operation for an engine occurs when the ECM is receiving inputs from all sensors. In closed loop operation, the ECM is able to vary the cycle time for the injectors based on the inputs of throttle position, air mass, and the amount of free oxygen in the exhaust stream. Typically, oxygen sensors are the last sensors to become operational, since they must be heated to an operating temperature of at least 350° C. Until the oxygen sensors become operational, the ECM uses presets to determine the injector cycle times.
<b>Control Sensor</b>	Same as pre-catalyst sensor.
<b>Diagnostic Sensor</b>	Same as post-catalyst sensor.
<b>Downstream Sensor</b>	Same as post-catalyst sensor.
<b>ECM or ECU</b>	Engine Control Module or Electronic Control Unit; the computer that receives sensor input and controls injector timing.
<b>Emissions–California</b>	Vehicles certified for sale in California have an underhood emissions label stating that the vehicle conforms to U.S. EPA regulations and to California regulations applicable to the vehicle model year. Several states in the northeast, including Maine, Massachusetts, New York, and Vermont have adopted the California standards. Therefore, if there is a difference in oxygen sensor part numbers for California (Calif.) vehicles in this catalog, that difference may also apply to vehicles sold in these northeastern states.
<b>Emissions–Federal</b>	Vehicles with “49-State Emissions” certification have an underhood emissions label stating that the vehicle conforms to U.S. EPA regulations applicable to the vehicle model year. The label also states that the vehicle does not meet the emissions requirements for California or, “a state that has adopted California standards.”
<b>Heated Sensor</b>	A three or four wire sensor that includes a resistive element to bring the oxygen sensor to its operating temperature much more quickly than can be achieved using the hot exhaust gases alone.