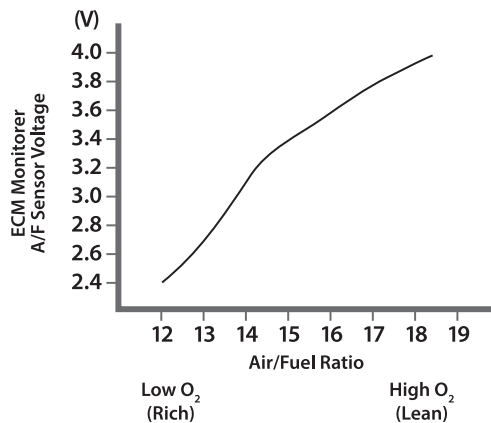
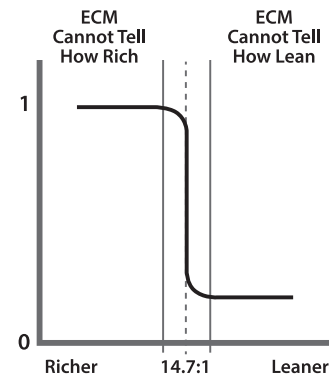




Oxygen Sensors – Technology, Types, and Evolution

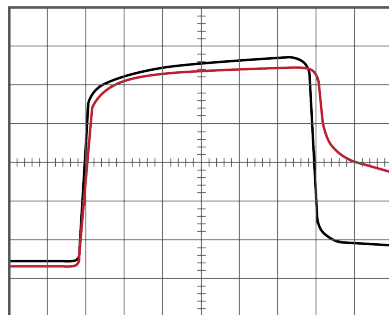
Since the implementation of OBDII, the oxygen sensor has been a main staple of engine management systems. Modern oxygen sensors are much faster and more accurate than their older counterparts. This allows the engine to enter closed loop control faster which decreases emissions and fuel usage by as much as 15-20%.

O₂ sensors are separated into two main types, narrow band and wideband. Narrow band oxygen sensors react with the oxygen molecules in the exhaust. If the gas mixture is rich, the oxygen content will be low, and the sensor will send a rich signal to the ECU. This will decrease the amount of fuel added to the cylinder. If the gas is lean, the oxygen content is higher, and the sensor will send a lean signal.



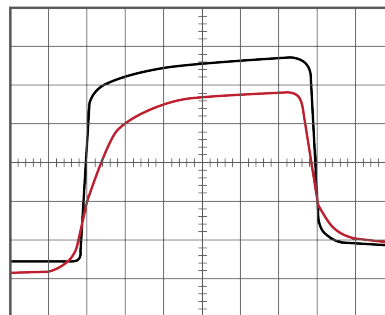
Wideband sensors are the newest technology. These sensors have an additional chamber called the pump cell that accurately measures the oxygen concentration on a complete lambda scale. Electronic circuitry must be used to maintain voltage supplies to maintain a consistent cell temperature and stoichiometric balance inside the measurement chamber. The balance is maintained by the pump cell which ‘pumps’ oxygen ions in and out of the measurement chamber. The control circuit measures how hard the pump cell is working and determines the air fuel ratio.

Most vehicles have two oxygen sensors installed in the exhaust system; at least one in front of the catalytic converter (upstream) and one after the converter (downstream). The purpose of the upstream sensor is to manage the closed loop performance of the engine. The downstream sensor is used to monitor the condition of the catalytic converter.



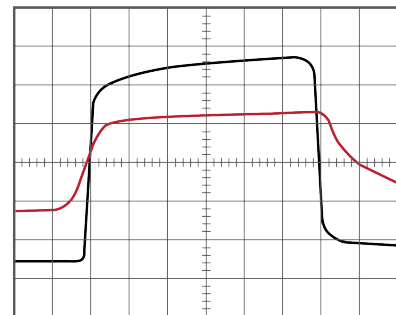
BLACK LINE: WALKER SENSOR RED LINE: BRAND A

*Condition: The Rich to Lean Switch is Very Slow
Symptoms: Possible cold start hesitation or stalling problems*



BLACK LINE: WALKER SENSOR RED LINE: BRAND B

*Condition: The Lean to Rich Switch is Slower
Symptoms: Could result in poor fuel economy in many applications*



BLACK LINE: WALKER SENSOR RED LINE: BRAND C

*Condition: Peak Amplitude is Lower
Symptoms: Probable "Check Engine" Light & may result in shorter sensor life*

It's important to have proper functioning oxygen sensors. Without proper readings the vehicle might experience a check engine light, poor fuel economy, rough engine idle, misfiring, and performance drop. Walker Products is one of the leading oxygen sensor suppliers. We not only provide excellent quality, if there is a better sensor for your vehicle, we find it. We determine what works better by our thorough testing and qualification methods.