

Oxygen Sensors Technical Information

Bosch Recommended Check/Replace Intervals



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Many vehicle manufacturers do not provide recommended check/replacement intervals for oxygen sensors, because it is hard to predict when an oxygen sensor will fail.

OEM oxygen sensor manufacturers, such as Bosch, work hard to ensure that oxygen sensors last as long as possible. The latest designs can last over 100,000 miles under laboratory bench-testing conditions! But out on the road, sensors are subject to very difficult conditions which can cause sensors to fail earlier than they do under laboratory conditions.

For example, oxygen sensors can fail when the sensor's ceramic element is exposed to certain types of silicone compounds or when an oil-burning engine leads to the sensor becoming oil-fouled. Also, a small amount of poorly refined gasoline can kill an oxygen sensor, as can the use of some over-the-counter fuel additives which are not "oxygen sensor safe."

These failures can occur either: 1) instantaneously at the time the contaminant contacts the oxygen sensor, causing a dead (totally nonfunctional) sensor, or 2) gradually over a period of time. Gradual deterioration results in a "slow" sensor which does not react as quickly as it should, thus causing the catalytic converter to perform less efficiently. This can lead to premature failure of the catalytic converter, which is an expensive item to replace. Under conditions of gradual deterioration, "slow" sensors eventually become "dead" sensors.

"Slow" PRE-OBII oxygen sensors will cause a drop in fuel economy of 10-15% (costing the average driver about \$100 per year in extra fuel costs), while also causing excessive exhaust emissions (air pollution). Poor driveability (hesitating or surging) may also result in some cases.

Unfortunately, the symptoms of a "slow" or even "dead" oxygen sensor are not always obvious to the vehicle owner, unless the vehicle fails an emissions test, a decline in fuel economy is noticed, or if driveability problems occur.

Furthermore, while a "dead" sensor can be detected by the do-it-yourselfer with a relatively inexpensive digital volt-ohmmeter, a "slow" sensor can only be diagnosed by a more expensive oscilloscope or scope meter. Thus, the do-it-yourselfer will probably not be able to spot an oxygen sensor problem until it is too late, and the catalytic converter is already well on its way to failure.

As part of a sensible preventive maintenance program, we recommend that either:

1. oxygen sensors be checked on a lab scope or scope meter by a professional automotive technician at intervals specified in this catalog, or
2. oxygen sensors be replaced by the do-it-yourselfer at the intervals specified in this catalog.