



Environmental Fact Sheet

Frequently Asked Questions About On-Board Diagnostics

The Environmental Protection Agency (EPA) has regulations in place establishing requirements for on-board diagnostic (OBD) systems on light-duty vehicles and light-duty trucks beginning with the 1994 model year. The purpose of the OBD system is to assure proper emission control system operation for the vehicle's lifetime by monitoring emission-related components and systems for deterioration and malfunction.

What is OBD And How Does It Work?

By the early 1980's, numerous vehicles were using electronics and on-board computers to control many of the engine's control systems, such as fuel and ignition. Vehicle manufacturers had to develop ways to diagnose problems generated by the new electronic hardware found under the hood. Thus, the first OBD systems were developed by auto manufacturers in the early 1980's as electronic systems replaced mechanical systems.

The engines in today's vehicles are largely electronically controlled. Sensors and actuators sense the operation of specific components (e.g., the oxygen sensor) and actuate others (e.g., the fuel injectors) to maintain optimal engine control. An on-board computer, known sometimes as a "powertrain control module" or an "engine control unit," controls all of these systems. With proper software, the on-board computer is capable of monitoring all of the sensors and actuators to determine whether they

are working as intended. It can detect a malfunction or deterioration of the various sensors and actuators, usually well before the driver becomes aware of the problem through a loss in vehicle performance or driveability. The sensors and actuators, along with the diagnostic software in the on-board computer, make up what is called “the OBD system.”

What Is The Connection Between OBD And Vehicle Emissions?

The purpose of the OBD system is to assure proper emission control system operation for the vehicle’s lifetime by monitoring emission-related components and systems for deterioration and malfunction. There are circumstances under which the vehicle computer will detect a system problem before the driver notices a driveability problem. Furthermore, OBD can detect problems that may not be noticeable upon visual inspection because many component failures that impact emissions can be electrical or even chemical in nature. By detecting these emission-related failures and alerting the driver to the need for potential repair, EPA hopes that vehicles will be properly repaired before emissions become a problem.

How Does OBD Inform Drivers Of Problems?

When the OBD system determines that a problem exists, a corresponding “Diagnostic Trouble Code” is stored in the computer’s memory. The computer also illuminates a dashboard light indicating

“Service Engine Soon” or “Check Engine” or displays an engine symbol. This light, usually yellow in color, serves to inform the driver that a problem has been detected and vehicle service is needed. When the car is delivered to the repair shop, a service technician can quickly retrieve the stored diagnostic trouble codes from the computer memory of the vehicle using newly developed diagnostic tools. Since the diagnostic trouble codes will specifically identify the problem, the service technician can more quickly and accurately make the proper repair.

It is important to note that an illuminated dashboard light, as described here, is intended to inform the driver of the need for service, NOT of the need to stop the vehicle. However, service should be sought as soon as possible. Drivers also may wish to consult a repair shop or their vehicle owner’s manual for further guidance.

Why Does The Dashboard Light Blink Or Flash?

Under certain conditions, the dashboard light will blink or flash. This indicates a rather severe level of engine misfire. When this occurs, the driver should reduce speed and seek service as soon as possible. Severe engine misfire over only a short period of time can seriously damage emission control system components, especially the catalytic converter, which is typically the most expensive to replace. Drivers should also consult their vehicle owner’s manual for manufacturer specific information.

How Can The Dashboard Light Be Turned Off?

After fixing the problem, the service technician will turn off the dashboard light. There are also situations under which the vehicle's OBD system can turn off the dashboard light automatically if the conditions that caused a problem are no longer present. If the OBD system evaluates a component or system three consecutive times and no longer detects the initial problem, the dashboard light will turn off automatically. As a result, drivers may see the dashboard light turn on and then turn off.

For example, if the gas cap is not properly tightened after refueling, the OBD system can detect the vapor leak that exists from the cap not being completely tightened. If the gas cap is subsequently tightened, the dashboard light should be extinguished within a few days. ***This is not an indication of a faulty OBD system.*** In this example, the OBD system has properly diagnosed the problem and accordingly alerted the driver by illuminating of the dashboard light.

How Does OBD Help The Environment?

The intent of OBD systems is to assure proper emission system operation of each and every vehicle and light truck for its lifetime by monitoring emission-related components and systems for malfunction and/or deterioration. An important aspect of OBD is its ability to notify the driver of a problem ***before*** the vehicle's emissions have increased significantly. If the vehicle is taken to a repair shop in a timely fashion,

it can be properly repaired before any significant emission increase occurs. OBD systems will also provide automobile manufacturers with valuable feedback from their customers' vehicles that can be used to improve vehicle and emission control system designs.

How Does OBD Help Consumers?

OBD systems are designed to alert drivers when something in the emission control system begins to deteriorate or fails. Early diagnosis followed by timely repair can often prevent more costly repairs on both emission control systems and other vehicle systems that may affect vehicle performance such as fuel economy. For example, a poorly performing spark plug can cause the engine to misfire, a condition sometimes unnoticed by the driver. This engine misfire can, in turn, quickly degrade the performance of the catalytic converter. With OBD detection of the engine misfire, the driver would be faced with a relatively inexpensive spark plug repair. However, without OBD detection, the driver could be faced with an expensive catalytic converter repair in addition to the spark plug repair.

In addition, manufacturers have increased incentive to build a higher quality vehicle with better performance, reduced emissions, and more efficient powertrains to prevent problems that can lead to OBD detection. OBD systems will also provide far more information than ever before to help auto technicians diagnose and properly repair vehicles during their first visit to the repair shop, saving time and money for consumers.

Are OBD-Related Repairs Covered By Warranty?

Federal law requires that the emission control systems on 1995 and later model year vehicles be warranted for 2 years or 24,000 miles. Many auto makers provide extended warranty coverage beyond what is currently required by federal law. Federal law also requires that the on-board computer and the catalytic converter on 1995 and later model year vehicles be warranted for 8 years or 80,000 miles.

Can Anyone Service An OBD-Related Problem?

Only qualified, trained technicians equipped with the newest diagnostic and repair equipment should conduct OBD related service. All dealerships and independent repair shops should have qualified personnel for conducting OBD related repairs. Vehicle owners should ask their dealer and independent repair shops if their technicians have received proper training and have access to the necessary equipment to properly service OBD equipped vehicles.

Will Aftermarket Parts Work With OBD?

Most aftermarket parts should work with OBD systems, but there is no guarantee. It is the responsibility of aftermarket parts manufacturers to ensure that their parts work properly with the vehicle for which they are designed. This is even more true for OBD. The OBD regulations have required manufacturers to devise technolo-

gies and monitoring strategies that didn't previously exist. However, EPA is confident that aftermarket part manufacturers who do a thorough job of replicating original equipment manufacturer parts and those who carefully develop speciality parts will be able to produce parts that work with the OBD system.

For More Information:

For more information on federal on-board diagnostic regulations please contact:

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