

## What is OBD and how does it work?

On board diagnostic systems (OBD) were developed in the 1980's by vehicle manufacturers to help technicians diagnose and service the computerized engine management systems of modern vehicles. A new generation of these systems is present on 1996 and newer vehicles. All 1996 and newer vehicles, regardless of make, now monitor the same components, use the same computer "language," and the same criteria for evaluating the powertrain systems and indicating problems to the driver and the repair technician. The information in this brochure relates to the OBD systems in 1996 and newer vehicles.

OBD monitors all components that make up the engine management system. It can detect a malfunction or deterioration of these various components usually well before the driver becomes aware of the problem through decrease in performance or mechanical damage. When a problem that could cause a substantial increase in air emissions is detected the OBD system turns on a dashboard warning light to alert the driver of the need to have the vehicle checked by a repair technician.

## What does this have to do with vehicle air emissions?

Motor vehicles are the largest source of toxic and smog forming air pollutants in Vermont and North America. Modern vehicles are getting cleaner due to newer engine management technology and emission control components - but the emissions are only low when all these systems are in proper working order. When an engine is not running as efficiently as possible, performance is lost, fuel is wasted, and air emissions increase. OBD can detect problems that may not be noticeable upon visual inspection because many component failures can be electrical or even chemical in nature. By detecting component deterioration and/or failures, and alerting the driver to the need for potential repair, vehicles will be properly serviced before emissions become a problem, and before more serious and expensive problems develop.

## Does OBD help consumers too?

OBD systems are designed to alert drivers when something in the engine management or emission control systems begins to deteriorate or fails. Early diagnosis followed by timely repair can often prevent more costly repairs to either electronic or mechanical powertrain components. 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

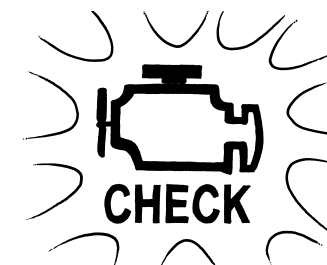


plug repair. However, without OBD detection, the driver could be faced with an expensive catalytic converter repair in addition to the spark plug repair. In addition, manufacturers have increased incentive to build a higher quality vehicle with better performance, reduced emissions, and more efficient powertrains to prevent problems that can lead to OBD detection.

A vehicle identified by the OBD system as having a problem is running inefficiently - resulting in poor fuel economy and vehicle performance while shortening the life of the engine. OBD systems 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.

## How does the driver know there is a problem?

When the OBD system determines that a problem exists, a corresponding "Diagnostic Trouble Code" is stored in the computer memory. The computer also illuminates a dashboard light indicating "Service Engine Soon" or "Check Engine" or displays an engine symbol. This light serves to inform the driver that a problem has been detected and vehicle service is needed. By law this dashboard light can only be used to indicate an actual problem. It cannot be used for example, as a reminder for regularly scheduled maintenance.



(The *illuminated* dashboard light is intended to inform the driver of the need for service as soon as possible. Certain **severe** engine malfunctions may cause the light to *blink* or *flash* - indicating the need for a reduction in speed and immediate service. Consult the dealer or your vehicle owners manual for further guidance)

## Then what?

When the car is delivered to the repair shop, a service technician can quickly retrieve the stored diagnostic trouble codes from the computer memory using a computer "Scan Tool." By using this information, the technician can more quickly and accurately identify the problem and make the proper repair.

## 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 the dashboard light.

## Can anyone service an OBD related problem?

Only qualified, trained technicians equipped with the appropriate diagnostic and repair equipment should conduct OBD related service. With the population of modern technology cars growing, all dealerships and independent repair shops should have qualified personnel for this service. Vehicle owners should ask at their service facility if the 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. It is the responsibility of aftermarket parts manufacturers to ensure that their parts work properly with the vehicle for which they are designed. Aftermarket parts manufacturers who do a thorough job of replicating original equipment manufacture parts and those who carefully develop specialty parts will be able to produce parts that work with the OBD system.

### THE FINE PRINT

Federal law requires that the emission control systems on 1995 and newer model year vehicles be warranted for a minimum of 2 years or 24,000 miles. Warrantee coverage for the on board computer and catalytic converter (only) is extended to 8 years or 80,000 miles for these same vehicles. Many auto makers provide extended warranty coverage beyond that required by law. So, depending on the model year and mileage of your vehicle, emission system repairs may be covered by the manufacturer.

***Thank you for your cooperation  
and helping do your part to clean  
up the air.***

### Questions?

For more information about OBD or other Air Pollution issues, or to receive additional copies of this pamphlet, call the Air Pollution Control Division at (802) 241-3840

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## Air Pollution Control In Vermont

# On Board Diagnostics (OBD)

