Fact Sheet

# On-Board Diagnostics

### What is OBD and how does it work?

On-board diagnostic systems (OBD) were developed in the 1980's to help technicians diagnose and service the computerized engine systems of modern vehicles. A new generation of these systems is present on 1996 and newer vehicles. These new systems, regardless of the type of vehicle, now monitor the same components, use the same computer "language," and have the same criteria for evaluating the systems and indicating problems to the driver and the repair technician.

OBD monitors the components that make up the emission system and key engine components. It can usually detect a malfunction or deterioration of these components before the driver becomes aware of the problem. 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 smog forming air pollutants in Oregon. Modern vehicles are getting cleaner due to newer technology and emission control components, but the emissions are only low when all the 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. By detecting emission control component deterioration and/or failures, and alerting the driver to the need for potential repair, vehicles can be properly serviced before more serious and expensive problems develop.

### How does DEQ Test OBD?

DEQ will do an OBD test on 1996 and newer gasoline powered vehicles up to a gross vehicle weight (GVWR) of 14,000 lbs and 1997 and newer diesel vehicles up to a GVWR of 8,500 lbs. The test consists of a plug that connects to the vehicle's computer and downloads emission system information. **The test does not change or affect the computer in any way, it only reads emission system information.**

### Why is the OBD test better?

This test is quicker and more effective than both the basic and enhanced emissions tests. It can also lower repair costs if there is a malfunction because the test is more specific about the problem and can help save troubleshooting time.

*The OBD test consists of a scan tool that plugs directly into the vehicle's computer, giving an instant reading on the status of the emission systems.*

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

### 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 informs the driver that a problem has been detected and vehicle service is needed.

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Last Updated: 12/00
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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, a qualified repair technician, or your vehicle owner's manual for further guidance.

### 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, many repair shops should have qualified personnel for this service. Vehicle owners should ask if the technicians have received proper training and have access to the necessary equipment to properly service OBD equipped vehicles.

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 identify the problem and make the proper repair.

### What does "not ready" mean?

Your vehicle's computer reviews the status of its emission systems within the vehicle. After most repair procedures, the service technician will turn off the dashboard check engine light, which resets the status of all the vehicle's emission system components to "not ready". This may also occur by disconnecting the battery. The status stays "not ready" until the vehicle's computer reviews that component. If more than two components are detected by DEQ as "not ready", the vehicle will fail the test.

### How do I make the statuses "ready"?

After resetting trouble codes or disconnecting the battery, the repair technician may be able to drive the vehicle through a special driving cycle and review the readiness status using a scan tool. If there are less than three "not ready" statuses, the vehicle is ready to be tested. If you do your own repairs and have reset the trouble codes or disconnected the battery, you should drive the vehicle in normal fashion, both at cruising speeds and "stop and go" driving for a week before coming to the test. This will give the computer a chance to review most of the systems and, if the vehicle was properly repaired, reset the statuses to "ready".

### 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.

### How do I know if my vehicle is covered under warranty?

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. Warranty coverage for the on board computer and catalytic converter (only) is extended to 8 years or 80,000 miles for these same vehicles. Many automakers provide extended warranty coverage beyond that required by law. Depending on the model year and mileage of your vehicle, emission system repairs may be covered by the manufacturer. Consult your vehicle's warranty documents for more information.