

## Frequently Asked Questions - On-Board Diagnostics (OBDII)

### What is OBDII?

On-Board Diagnostics, Generation II (OBDII) is an advanced computer system installed on all 1996 and newer cars and light duty trucks (8,500 pounds or less in Gross Vehicle Weight Rating). OBDII is an early-warning system that monitors the vehicle's emissions-control devices and other engine-related components to ensure that they are functioning properly. OBDII systems provide valuable emissions information that allows motorists to invest in needed repairs and preventive maintenance to ensure that their vehicle continues to perform efficiently.

The Gateway Vehicle Inspection Program tests 1996 and newer gasoline powered vehicles and 1997 and newer diesel powered vehicles using on-board diagnostic equipment. This advanced computer inspection system determines whether 1996 and newer vehicles pass or fail the emissions inspection.

Vehicles failing the OBDII test must be repaired to pass the vehicle emissions test. Model year vehicles 1995 and older will be exempt from all emissions test requirements in the ozone nonattainment area (St. Louis City, Jefferson, St. Charles and St. Louis counties).

### What are the advantages of OBDII testing?

OBDII is an early-warning system that identifies current and developing emissions-related issues. The system continually monitors, tracks and stores information about a vehicle's emissions-control devices and drive train components. The OBDII system helps ensure the emissions-control system is operating correctly and detects problems that may not be noticeable upon visual inspection. Many component failures can be electrical or even chemical in nature. Early detection and repair minimizes the chance of more serious emissions-related problems developing.

When a vehicle is OBDII tested, motorists will receive a Vehicle Inspection Report. This detailed report identifies any areas of concern allowing a trained repair technician to make quicker and more effective repairs. The report will contain the specific diagnostic trouble codes that the vehicle is experiencing at the time of the test. (See the "What are Diagnostic Trouble Codes?" on page 3 for more information). These codes allow repair technicians to quickly identify areas of concern and perform repairs before more costly problems arise. This approach can save the motorist time and money.

After the vehicle emissions testing station connects to a vehicle's OBDII system, a reading is received within a matter of seconds. The quickness and accuracy of the OBDII test enables the inspector to minimize the time it takes to complete an inspection.

### **What does OBDII have to do with clean air?**

Motor vehicles are a significant source of air pollution in the St. Louis area. Newer vehicles are polluting less due to newer technology and emissions-control devices. However, emissions are only kept to a minimum when all these systems are in proper working order. When an engine is not running as designed, performance is lost, fuel is wasted and exhaust pollutants are increased.

Studies show those most affected by poor air quality are those with respiratory illnesses. When passenger vehicle emissions react with heat and sunlight, ground-level ozone is formed. Because ground-level ozone is highly reactive, high concentrations can cause throat irritation, congestion, chest pains, nausea, and labored breathing for anyone exposed to this pollution. Ozone can also aggravate the breathing of those with lung or heart conditions. Performing repairs on the vehicle before emissions issues worsen will help reduce ground-level ozone. Everyone benefits from improved air quality when the release of excessive vehicle emissions are prevented.

### **How is OBDII technology used in emissions testing?**

The OBDII system is highly sophisticated. It is designed to identify components that are malfunctioning or in the process of deteriorating to the point of failure. The system monitors engine components and stores information that is downloaded at the licensed inspection stations. Information collected cannot be altered, and no information can be added to the vehicle's computer during the inspection or as a result of the inspection.

### **How are drivers notified of an OBDII concern?**

As soon as an emissions concern is detected, the OBDII system notifies drivers by illuminating an orange-colored warning light on the dashboard. Technically known as a malfunction indicator light, it is commonly referred to as the "Check Engine" or "Service Engine Soon" light. The on-board computer identifies a problem well before the driver may notice it. These problems include poor fuel economy, lack of performance and/or increased emissions.

### **What does it mean if the malfunction indicator light is on?**

The vehicle's OBDII computer illuminates a malfunction indicator light when it finds a fault that may cause high tailpipe or evaporative emissions. In some cases, it means that immediate service is needed to prevent expensive damage and excessive emissions. If the light is blinking or flashing, have your vehicle serviced immediately. Expensive damage to the catalytic converter may result if the problem is left unattended. A trained technician should evaluate a vehicle any time a malfunction indicator light is lit for more than one month.

### **Why is it important to respond quickly if the "check engine" light is blinking?**

A prompt response to the malfunction indicator light may save you money. If the light is blinking, the OBDII System has detected an emissions problem that will ruin the catalytic converter, the most expensive emissions-control component on the vehicle. Early diagnosis and repair can prevent costly repairs. Responding to this light in a timely manner will reduce vehicle emissions, helping to improve overall air quality in the region.

### **What should I do if the malfunction indicator light is on?**

There are circumstances when a vehicle's OBDII system will automatically shut off a malfunction indicator light if the problem is not detected again. If the OBDII system evaluates a component or system three consecutive times and if it no longer detects the

initial concern, the warning light will turn off on its own. If the malfunction indicator light continues to be illuminated after several driving trips, it is recommended that a trained repair technician evaluate the vehicle. The OBDII system stores information that tells repair technicians what is wrong with the vehicle.

### **Can the malfunction indicator light be turned off?**

A qualified repair technician can turn the malfunction indicator light off following service. There are also situations where the vehicle will turn off the light automatically if the conditions that caused the initial problem are no longer detected by the vehicle's OBDII system.

### **What happens if my vehicle shows an unset readiness monitor when an emissions test is performed?**

An OBDII system constantly monitors individual emissions-control devices. Readiness monitors indicate if these components have been fully evaluated or whether system components have experienced any problems that prevent the vehicle from operating as designed.

If the vehicle is in the process of resetting itself, the readiness monitor is said to be "Not Ready." Not ready monitors may be caused by a recently disconnected vehicle battery, a low or dead battery, or as a result of work performed on the vehicle. Readiness monitors remain not ready until the vehicle's computer has had adequate time while the vehicle is being driven to review the component or system.

The presence of "Not Ready" readiness monitors means that the vehicle cannot be OBDII tested, as the information needed to make a pass/fail determination is not yet available. Vehicles will fail the OBDII test if too many monitors are unset at the time of testing. For 1996-2000 vehicles, three or more unset monitors will result in a test failure. For 2001 and newer vehicles, two or more unset monitors will result in a test failure. Additionally, if a vehicle fails the OBDII test with a catalytic converter Diagnostic Trouble Code, the vehicle will fail the retest if the catalyst monitor is not set to "Ready".

To set the monitors to "Ready" the vehicle must complete its appropriate drive cycle. Drive cycles are unique and specific to each make and model. Check your owner's manual or contact the vehicle manufacturer or a qualified service provider for more information about drive cycles.

### **What are Diagnostic Trouble Codes?**

When a vehicle's emissions-control system detects an emissions-related problem it generates diagnostic trouble codes. These codes are stored in the vehicle's computer and indicate a specific system or component that might be malfunctioning. A detailed report listing the codes found during the OBDII test is provided on the Vehicle Inspection Report to owners at the conclusion of the test. Diagnostic trouble codes assist trained repair technicians in pinpointing areas of concern, allowing quicker and more effective repairs that save both time and money for the motorist.

Just because the Vehicle Inspection Report lists a particular diagnostic trouble code does not mean that the component described should be automatically replaced or repaired. Repairs should only be performed after a thorough diagnosis of the reason for the setting of the code in the vehicle's computer has been made. If the problem that caused the diagnostic trouble code to be stored isn't properly repaired, then the code that caused the vehicle to fail its emissions test will return, and the vehicle will remain unrepaired. For this reason, the Gateway Vehicle Inspection Program encourages all motorists to enlist a trained repair technician to perform this diagnostic service prior to beginning any repair work. This diagnosis is required if the vehicle owner applies for a cost-based emissions waiver.

**Does my warranty cover OBDII repairs?**

Federal law requires that emissions-control systems on 1995-and-newer vehicles be covered by warranty for two years or 24,000 miles, whichever comes first. Many auto manufacturers provide extended warranty coverage beyond what is required by federal law. Federal law also requires that the on-board computer and catalytic converter on 1995-and-newer vehicles be covered for eight years or 80,000 miles. Consult your vehicle owner's/warranty manual for warranty coverage information.

**For more information call or write:**

**Missouri Department of Natural Resources**

**Gateway Vehicle Inspection Program**

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## OBD-II PASS/FAIL TEST CRITERIA (ON-BOARD DIAGNOSTICS, GENERATION II)

### PASS

- Bulb Check for Malfunction Indicator Light (MIL)
  - MIL illuminated in KOEO – key-on/engine-off condition
  - MIL not illuminated in KOER – key-on/engine running condition
- Readiness status OK
- MIL not commanded on

### FAILURE

- Bulb Check for Malfunction Indicator Light (MIL)
  - MIL does not illuminate in KOEO – key-on/engine-off condition
  - MIL illuminated in KOER – key-on/engine running condition
- MIL commanded on
- DLC missing, tampered or inoperable
- No communication/response from vehicle
- Too many unset readiness monitors

### READINESS

#### 1996-2000 Model Year

Allowed 2 non-continuous monitors not set to ready (3 or more and vehicle will fail)

#### 2001 & Newer Model Year

Allowed 1 non-continuous monitor not set to ready (2 or more and vehicle will fail)

- A vehicle with an OBD test failure for any catalyst code (P0420-P0439) must have the catalyst monitor set to ready for retest
- All gasoline-powered vehicles must have the oxygen sensor and catalyst monitor supported.

<b>KOEO</b>	<b>KOER</b>			
<b>BULB CHECK</b>	<b>MIL COMMANDED</b>	<b>CODES PRESENT</b>	<b>REQUIRED # OF MONITORS SET TO READY</b>	<b>PASS/FAIL</b>
<b>OFF</b>	—	—	—	<b>FAIL</b>
<b>ON</b>	<b>ON</b>	—	—	<b>FAIL</b>
<b>ON</b>	<b>OFF</b>	—	<b>NO</b>	<b>FAIL</b>
<b>ON</b>	<b>OFF</b>	<b>PREVIOUS CATALYST CODE</b>	<b>CATALYST MONITOR NOT SET TO READY</b>	<b>FAIL</b>
<b>ON</b>	<b>OFF</b>	<b>NO</b>	<b>YES</b>	<b>PASS</b>

