OBDII INSPECTION GUIDE

Texas Department of Public Safety

September 2002

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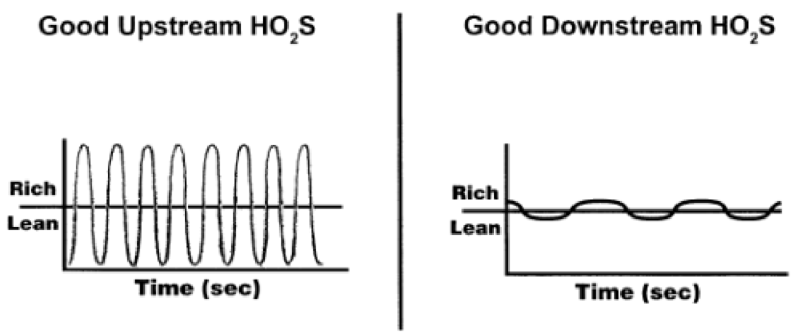
GLOSSARY OF OBDII TERMS

Catalyst Monitor

The hardware and software used to monitor the conversion efficiency of the catalytic converter (see definition of monitor).

The three-way catalytic converter is used to convert the primary exhaust pollutants (HC, CO and NOx) into carbon dioxide (CO2), water (H2O) and nitrogen. During the conversion process, NOx gas is separated into nitrogen and oxygen. The oxygen is used for the secondary oxidation of HC and CO into H2O and CO2. The nitrogen exits as a non-reactive gas.

The cat monitor diagnoses the catalytic converter by comparing the signal between the upstream and downstream oxygen sensors (HO_2S). A correctly operating cat system will show slight swings in oxygen sensor voltage for the downstream sensor, while wide swings are found in the upstream sensor.



The catalytic converter is monitored on a non-continuous basis, after the vehicle completes an appropriate drive cycle. The cat monitor is usually executed once per trip.

Comprehensive Components Monitor

The hardware and software used to monitor electronic components.

The on-board system must check for malfunctions in any electronic component or system that either provides input to, or receives commands from the PCM for emissions control. These components or systems are referred to as “comprehensive components”. Like fuel trim, comprehensive components are continuously monitored.

Sensor inputs are to be tested for, at a minimum, lack of circuit continuity and rationality (out of range values). Lack of circuit continuity includes any type of electrical circuit fault, (open circuit, short to voltage or ground) switch or sensor failures, (opens, internal shorts, shorts to ground or voltage) and PCM internal problems.

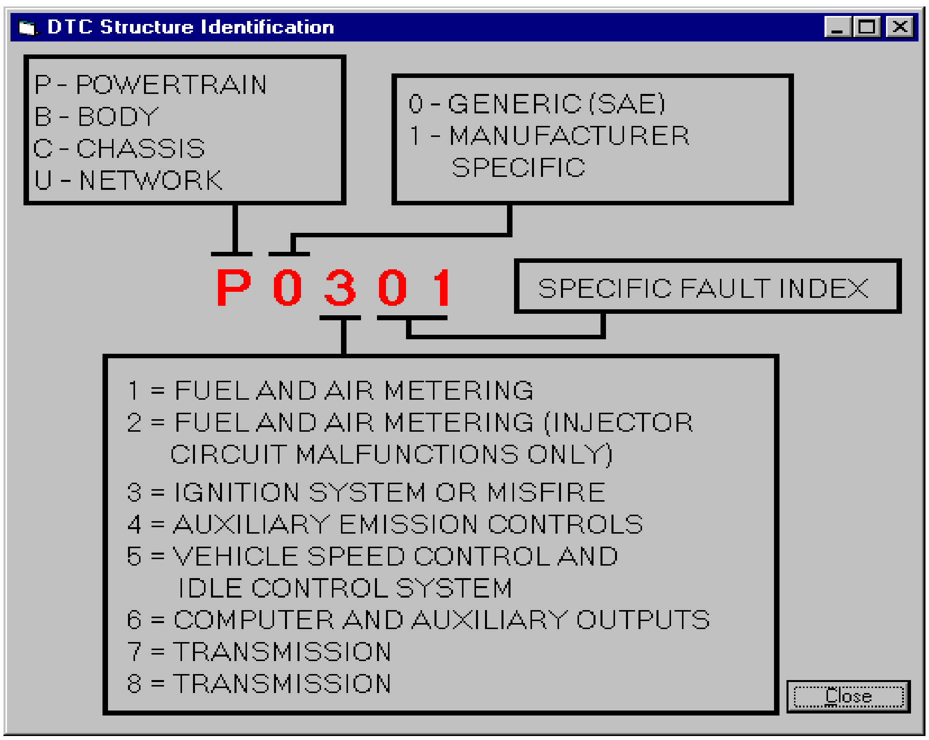
The Throttle Position Sensor will be used as an example of a rationality check. If the engine speed is high, engine load indication is high and airflow is high, but the Throttle Position signal indicates a closed throttle condition, then the OBDII system must detect the fault and set an appropriate DTC.

DLC

Data Link Connector. This is the physical connector/electrical interface between the vehicle's on-board computer system and off-board diagnostic equipment. The DLC is required to be located between the driver's end of the instrument panel and approximately one foot beyond the vehicle centerline, on or below the instrument panel. On most vehicles, the connector is located beneath the instrument panel, near the steering column. Also, on most vehicles the connector is exposed, but on some vehicles the connector is behind a small panel which must be opened to gain access. On a few vehicles, the connector may be more difficult to locate.

DTC

Diagnostic Trouble Code. Trouble codes are how OBDII identifies and communicates to technicians where and what on-board problems exist. The first number in the DTC indicates whether the code is an SAE standard code (applies to all OBDII systems) or is specific to the vehicle manufacturer. The remaining three numbers provide information regarding the specific vehicle system and circuit. An analysis of a typical OBDII code is shown below.



EGR Monitor
The hardware and software used to monitor the Exhaust Gas Recirculation (EGR) system (see definition of monitor).

The purpose of an EGR system is to lower combustion chamber temperature, thereby reducing NOx emissions. The EGR system recirculates non-combustible exhaust gases back into the cylinder to dilute the incoming air/fuel charge. This process reduces temperatures in the combustion chamber. By lowering combustion temperatures, NO_x emissions are reduced. Besides creating excessive NO_x emissions, high combustion chamber temperatures can cause the fuel to ignite prematurely. This results in spark knock and can lead to serious engine damage.

The components of the EGR system include:

- EGR Valve
- EGR Solenoid
- EGR Backpressure Tube
- Electronic EGR Transducer (EET)
- Connecting Hoses

The EGR system on OBDII equipped vehicles is monitored for high and low flow rates and other parameters. If the EGR monitor fails the system check, the Malfunction Indicator Lamp (MIL) will illuminate and a DTC with Freeze Frame data will be stored. The EGR system is monitored on a non-continuous basis, after the vehicle completes an appropriate drive cycle.

Enabling Conditions
These are specific circumstances that must occur in order for a monitor to run.

EVAP Monitor
The hardware and software used to monitor the evaporative emissions control (EVAP) system (see definition of monitor).

The purpose of the EVAP system is to prevent the release of hydrocarbon (HC) vapors into the atmosphere. Fuel vapors from the tank are stored in a charcoal canister until the PCM commands that the system be purged. Small leaks in the EVAP system can increase evaporative emissions by a factor of 30 or more. OBDII systems must monitor the EVAP system.

The EVAP monitor is designed to detect a level of HC loss equal to or greater than an opening in the system of 0.040 inch in diameter. By 2004, all vehicles must detect a HC loss equal to or greater than an opening in the system of 0.020 inch in diameter. Additionally, the EVAP monitor is used to verify proper airflow throughout the system. The MIL will illuminate and a DTC will be stored when potential problems are detected. Loose gas caps are a frequent cause of MIL illumination. The EVAP system is monitored on a non-continuous basis, after the vehicle completes an appropriate drive cycle.

Freeze frame

OBDII regulations require that when an emissions related malfunction occurs, vehicle-operating parameters are to be stored in the powertrain control module (PCM-OBDII terminology for the onboard computer). This is typically referred to as "freeze frame" data. Only emissions related DTCs are stored in freeze frames. The specific engine parameters that are recorded include, but are not limited to, the following:

- engine rpm
- vehicle speed
- air flow
- engine load
- fuel pressure
- fuel trim value (i.e., rich or lean)
- engine coolant temperature
- intake manifold pressure
- open or closed loop status

Freeze frame data can be valuable to technicians because they record the conditions during which the engine system malfunctioned.

Fuel System Monitor

The hardware and software used to monitor the fuel metering system (see definition of monitor).

Using feedback from the oxygen and other sensors, the PCM manages the fuel system to optimize engine combustion conditions. OBDII regulations require that the fuel system be continuously monitored. The MIL is to be illuminated if fuel system cannot be controlled by the PCM.

KOEO

Key On Engine Off, a specific state of the vehicle where the ignition key is turned to the "on" position but the engine is not started. When the vehicle is in the KOEO state, the inspector can check to see if the MIL bulb is working.

KOER

Key On Engine Running, a state of the vehicle where the engine has been started and allowed to run. OBDII system download and a visual check of the MIL occurs during the KOER state.

Malfunction

The inability of an emissions-related component or system to remain within design specifications.

Further, malfunction refers to the deterioration of any of the (emission) components or systems to a degree that would likely cause the emissions of an average vehicle to exceed the emissions standards by 1.5 % times.

MIL

Malfunction Indicator Lamp (MIL) is a term used for the light on the instrument panel, which notifies the vehicle operator of an emission related problem. The MIL is required to display the phrase “check engine” or “service engine soon”. The ISO engine symbol also may be used as a substitute for the word “engine”.

The MIL illuminates when a failure occurs which could cause vehicle emissions to exceed 1.5 times their designed standard. The MIL also illuminates when a problem is detected in a component that is used as part of the diagnostic strategy for any other monitored system or component. The purpose of the MIL is to alert the driver to the malfunction so service can be performed in a timely manner.

The MIL can only be used to indicate actual problems in the emissions control system. It cannot be used as a maintenance reminder, e.g., change oil.

Illumination of the MIL is subject to the following conditions:

- When severe misfire occurs that could damage the catalytic converter, the MIL is required to flash on and off once per second. Flashing is intended to discourage vehicle operation.

- Constant illumination of the MIL (i.e., it is not flashing) indicates that a problem has been detected and the vehicle should be serviced as soon as possible.

The vehicle onboard diagnostic system can turn the MIL off if the problem does not reoccur for three consecutive trips. For some monitors, the vehicle must be operated under similar conditions to those that occurred when the vehicle originally illuminated the MIL before the MIL can be turned off.

Misfire Monitor
The hardware and software used to detect engine misfire (see definition of monitor).

Engine misfire is a condition that results from either a lack of combustion (total misfire), or an instability that occurs during the combustion process (partial misfire). When an engine misfires, raw fuel enters the exhaust. This situation not only raises hydrocarbon emissions, but the temperature of the catalytic converter as well. Monitoring misfires and identifying offending cylinders is a requirement of OBDII. This is typically accomplished by monitoring crankshaft deceleration. The monitor looks for a change in crankshaft speed as indicated by a change in the pulse width or frequency outputted by the crankshaft position sensor. Misfire is monitored continuously.

Monitors
A principal part of a vehicle’s OBDII system is the diagnostic monitors. These are periodic tests run on specific systems and components to ensure that they are performing within their prescribed range. The OBDII inspection consists of checking the results of the continuous self-tests that have occurred while the vehicle was driven prior to the time of inspection. **Unlike a tailpipe test, the vehicle does not have to be warmed-up or pre-conditioned to perform an OBDII inspection,.**

Most diagnostic monitors do not turn the MIL on when the vehicle fails a test for the first time. Instead a “pending code” is set along with the corresponding freeze frame data. If the test fails on a second consecutive trip, however, the MIL is illuminated and a DTC is stored.

Continuous Monitors -- Some of the vehicle components or systems are continuously tested by the vehicle’s OBDII system, while others are tested only under specific vehicle operating conditions. The continuously monitored components listed below are always ready:

- X Misfire
- X Fuel System
- X Comprehensive Components

Once the vehicle is running, the OBDII system is continuously checking the above components, monitoring key engine sensors, watching for engine misfire, and monitoring fuel demands. For example, if a wire on the throttle position sensor were to break, the OBDII system would "see" the fault and command the MIL on.

Non-Continuous Monitors -- Unlike the continuous monitors, many emissions and engine system components require the vehicle to be operated under specific conditions before the monitor is ready (see definition of readiness). These monitors are termed non-continuous monitors and are listed below:

- X EGR System
- X 02 Sensors
- X Catalyst
- X Evaporative System
- X Others if vehicle is so equipped (secondary air system, heated catalyst, and A/C system)

On board diagnostics (OBD)

A program that assesses the condition of the system, including the sensors and the computer itself and communicates its findings to the technician by means of diagnostic trouble codes.

Early (pre-1996) Onboard Diagnostic Systems - To assist technicians in diagnosing problems in electronically controlled engine systems, manufacturers equipped them with onboard diagnostics (OBD). The first OBD systems appeared on 1980 model year vehicles. These systems are often referred to as OBDI technology. Although OBDI systems were not standardized, most OBDI systems were designed to monitor fuel, ignition, and emissions system components to determine if they are operating correctly. When a system was found to be operating out of specification, a fault code was stored in the computer. In some cases, a “check engine light” illuminates. Technicians could connect to the computer through a diagnostic link connector (DLC) and download fault codes.

Despite the advantages offered by the OBDI systems, they presented several practical problems in actual use:

- The DLC connectors were not standardized. Technicians need a wide variety of interfaces to properly connect to OBDI systems on different vehicles.
- Fault codes were not consistent among vehicle manufacturers. Technicians need vehicle specific information to be able to interpret the results of OBDI tests.
- Names for different emission control and engine systems were not standardized. Technicians must be familiar with vehicle specific terminology.
- The criteria to illuminate the check engine light or malfunction indicator light (MIL) was not consistent among the vehicle manufacturers.
- The type of information stored to assist technicians in diagnosing problems in the vehicles varied significantly among the different manufacturers.

OBDII Systems – Recognizing the importance of onboard diagnostic systems in maintaining the emission control performance of a vehicle, the federal government established regulations that required all vehicles to meet specific and consistent requirements for OBD systems. This second generation of onboard diagnostics is termed OBDII. This second generation was phased in starting in model year 1994 and by the 1996 model year; all light-duty vehicles sold in the United States met OBDII standards. The primary purpose of OBDII is to insure that vehicles emit the minimum amount of pollutants through their useful life.

OBDII regulations require manufacturers to equip vehicles with onboard diagnostic systems that have the following features:

- Standardized protocols for communicating with offboard diagnostic equipment (scan tools) through a standardized diagnostic link connector (DLC) located in an easily accessible location
- Standardized terminology for vehicle emission control components
- Standardized diagnostic trouble codes (DTCs)
- Freeze frame -- automatic storing of engine parameters at the time that a DTC is set
- Standardized requirements for illumination of the malfunction indicator light (MIL) when malfunctions occur which could cause emissions to increase
- Determination and recording of readiness status of emission control system monitors

Oxygen Sensor Monitor
The hardware and software used to monitor the oxygen sensor (see definition of monitor).

The oxygen sensors used on an OBDII system have distinct roles. The pre-cat oxygen sensor(s) is used for fuel control, while the post-cat oxygen sensor is used to monitor the performance of the catalytic converter.

The Oxygen Sensor Monitor consists of two tests which involve both pre-cat and post-cat sensors:

- X Sensor signal test
- X Sensor heater test

The PCM monitors the oxygen sensor's signal when the sensor is at operating temperature. In this test, the amplitude and response of the sensor output is checked. The MIL is illuminated if amplitude and response do not meet minimum criteria.

The PCM checks the performance of the oxygen sensor's heating element to assure that it is heating the sensor during cold start conditions.

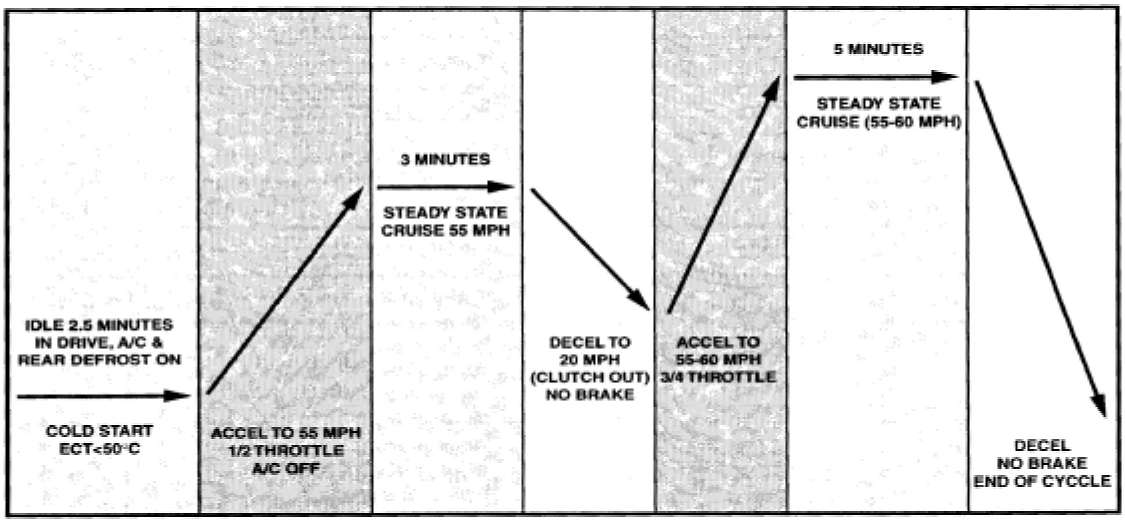
Results of both tests are recorded in the PCM. Oxygen sensors are monitored on a non-continuous basis, after the vehicle completes an appropriate drive cycle.

PCM
Powertrain Control Module – the on-board computer controlling the engine systems. Some vehicles may have electronic transmission functions as part of the PCM responsibilities.

Readiness Status
OBDII systems must indicate whether or not the onboard diagnostic system has monitored each component. Components that have been diagnosed are termed “ready”, meaning they were tested by the OBDII system. The purpose of recording readiness status is to allow inspectors to determine if the vehicle’s OBDII system has tested all the components and/or systems.

The powertrain control module (PCM) sets a monitor to “ready” after an appropriate drive cycle has been performed within one key-on, engine-run, key-off cycle. The drive cycle that enables a monitor and sets readiness codes to “ready” varies for each individual monitor. Once a monitor has been set to “ready”, it will continue to indicate “ready” unless the vehicle’s battery is disconnected or codes are cleared, with a few exceptions. After a vehicle is repaired (and DTCs are cleared) or if the battery or PCM has been disconnected, the Readiness Status for each non-continuous diagnostic monitor will be “Not Ready”. THIS MEANS THAT THE VEHICLE MUST BE OPERATED THROUGH A COMPLETE DRIVE CYCLE BEFORE IT CAN BE REINSPECTED.

Typical Drive Cycle Routine



Normally, the readiness status of all components or systems will be "ready". However, if the vehicle's battery has been recently disconnected, or if DTCs have been recently cleared with a scan tool, all non-continuous components or systems will be set to "not ready". Also, if the driving habits of the vehicle owner or environmental conditions are such that an appropriate drive cycle has not been completed, that monitor will not be ready. As an example, the catalytic converter will generally only be monitored when the vehicle is fully warm, at highway speed, and under light load. A vehicle that never sees these conditions will never be ready, since the cat monitor will never run.

SAE
Society of Automotive Engineers – an organization that sets standards and promotes research for the automotive industry.

Scan tool
A hand held computer that is plugged into a vehicle's data link connector allowing the technician to read diagnostic trouble codes, freeze frame data and other information.

Secondary Air Injection Monitor
The hardware and software used to monitor the secondary air injection system (see definition of monitor).

About one-fourth of the vehicles are equipped with air injection systems. These systems inject air into the exhaust manifold while the engine is warming up to reduce cold start emissions. If the vehicle is equipped with an air injection system then this system must be monitored for proper operation.

Sensor
An electrical device used to provide a computer with input information about engine operating parameters.

Trip
Vehicle operation (following an engine off period suitable to power down the PCM) of duration and driving mode such that a component and system is monitored at least once by the diagnostic system.

OBDII INSPECTION GUIDE

INTRODUCTION

On-board diagnostic systems (OBDII) on 1996 and newer vehicles will be checked as part of Texas' annual vehicle inspection program. OBDII systems were mandated to help technicians diagnose and service the computerized engine management systems of modern vehicles. OBDII systems monitor all components that make up the engine management system. They can detect malfunctions or deterioration of these components usually well before the motorist becomes aware of any problem. When a problem that could cause a significant increase in 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. All 1996 and newer vehicles use the same type of connector, use common computer "languages" and use the same criteria for evaluating the powertrain systems and indicating problems to the driver and the repair technician.

OBDII technology benefits motorists, technicians, and our environment. It's good for motorists because it monitors the vehicle's performance every time it is driven and identifies problems immediately, allowing service to be done before more serious problems develop. It's good for technicians because it helps them accurately diagnose problems, allowing for efficient and proper repairs. And it's good for our environment and our health because it identifies problems that cause vehicle emissions to increase. The purpose of this manual is to familiarize motor vehicle inspectors with how to inspect OBDII systems and what it means when a vehicle fails the inspection.

MOTOR VEHICLE CONTRIBUTION TO AIR POLLUTION IN TEXAS

Motor vehicles emit toxic air pollutants and contribute to the formation of ground level ozone. A 'typical' vehicle emits a half ton of air pollution annually. A malfunctioning vehicle emits many times that amount.

Motor vehicle related smog (ground-level ozone) damages lung tissue and aggravates respiratory disease. Ozone is formed by atmospheric reactions between hydrocarbons (HC) and oxides of nitrogen (NO_x). Motor vehicles are the largest source of HC and NO_x in Texas. Motor vehicles also are the largest source of toxic compounds in Texas. Toxic compounds emitted by mobile sources threaten human health even at very low levels.

In addition to direct effects, air pollution from motor vehicles contributes to the formation of acid rain and global warming.

The number of vehicles and miles driven has doubled in the last 20 years. Over 100 billion vehicle miles are driven annually in Texas. So even though today's new cars are cleaner, there are more of them and they are driven more miles. The primary purpose of OBDII is to insure that vehicles emit the minimum amount of pollutants through their useful life.

OBD INSPECTION PROCEDURE

The OBDII inspection consists of checking the results of the self-tests that have occurred while the vehicle was driven **before** the time of inspection. **Unlike a tailpipe test, the vehicle does not have to be warmed-up or pre-conditioned to perform an OBDII inspection,** The Texas OBDII test procedure consists of the following:

1. Determine Applicability

Confirm that vehicle is model year 1996 or newer gasoline powered vehicles with a GVWR. (gross vehicle weight rating) of 8,500 pounds or less. OBDII systems were phased in starting in model year 1994, and by the 1996 model year all light-duty vehicles sold in the United States met OBDII standards.

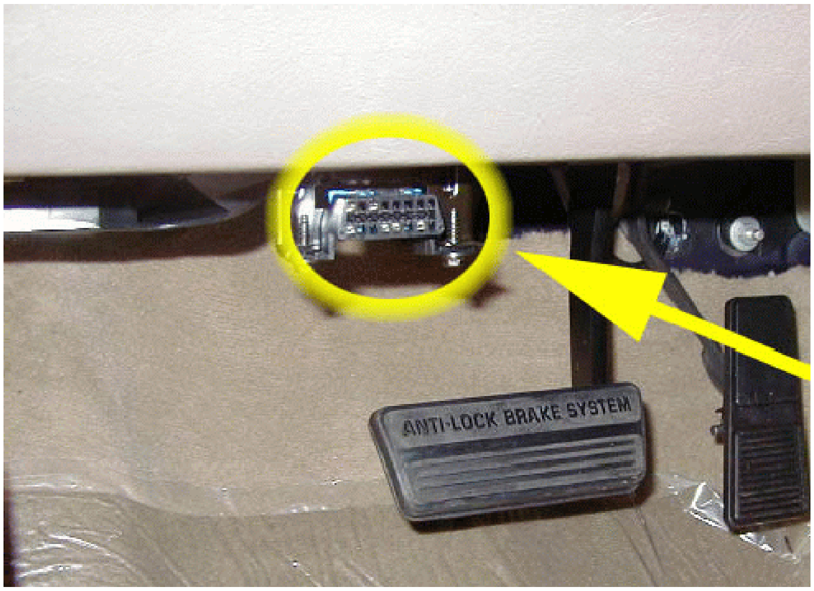
2. Connect the Inspection System to the vehicle's OBD system

With the ignition key off, locate the vehicle's diagnostic link connector (DLC) and plug the OBDII test lead into DLC.

All 1996 and newer vehicles are equipped with a standardized diagnostic connector. This is to allow a generic inspection tool to be used on all OBDII equipped systems. Inspectors must connect the inspection system to the DLC and download information from the OBDII system.

The DLC is required to be located between the driver's end of the instrument panel and approximately one foot beyond the vehicle centerline, on or below the instrument panel. On most vehicles, the connector is located beneath the instrument panel, near the steering column. Also, on most vehicles the connector is exposed. Some vehicles have hard to find DLCs; the connector is behind a small panel which must be opened to gain access or in a non-standard location. Information on hard-to-find DLCs will be provided to inspection stations in a separate manual.

Typical DLC Location



Not So Typical DLC Location

3. Visual Inspection of Malfunction Indicator Light (MIL)

a. Determine if the instrument panel Malfunction Indicator Light (MIL) illuminates when the ignition key is turned to the "key on, engine off" position. The inspector will be given the following prompt:

TURN THE IGNITION KEY TO THE 'ON' POSITION, BUT DON'T START THE ENGINE. LOCATE THE MIL (MALFUNCTION INDICATOR LIGHT) ON THE DASHBOARD. (This is termed the key-on engine-off, KOEO test)

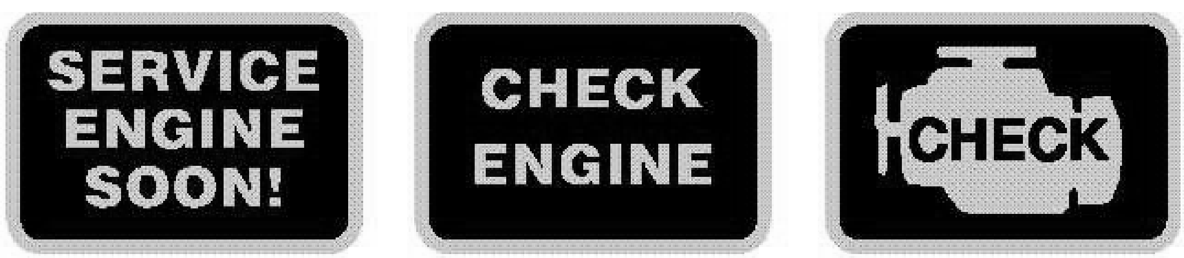
DID THE MIL TURN ON? Note: MIL may stay on continuously or go out after only a few seconds. (CHOOSE THE CORRECT SENTENCE)

YES, the MIL did come on.

NO, the MIL did <u>NOT</u> come on at all.

The Malfunction Indicator Light (MIL) is the official term for the warning light that is illuminated by the vehicle's OBD system when a malfunction occurs. Depending on the vehicle make, the MIL may display any of the following: "Service Engine Soon," "Check Engine," the international engine symbol along with the word "Check," or some combination of these.

Typical MIL Symbols



The MIL illuminates when a failure occurs which could cause vehicle emissions to exceed 1.5 times their designed standard. The purpose of the MIL is to alert the driver to the malfunction so service can be performed in a timely manner.

The MIL must come on when the ignition key is turned to the "key on, engine off" position. This is to allow technicians to check that the MIL is capable of illuminating if a malfunction were to occur. On most vehicles, the MIL will stay illuminated as long as the key is in the "key on, engine off" position. However, on some vehicles, e.g., Chryslers and Hondas, the MIL will illuminate very briefly when the key is turned to the "key on, engine off" position and then will go out. This is acceptable.

Be sure to be watching for the MIL to illuminate when you turn the key to the "key on, engine off" position, or you may miss it.

b. Start the engine and allow it to idle. Determine if the MIL is illuminated while the engine is running. The inspector will be given the following prompt:

DID THE MIL TURN OFF? (CHOOSE THE CORRECT SENTENCE) (This is termed the key-on engine-running, KOER test)

Yes, the MIL turned off.

No, the MIL stayed on.

If the MIL is on while the engine is running, the vehicle's OBD system has determined that there is a problem with the vehicle. In this case, there should be one or more diagnostic trouble codes (DTCs) stored in the vehicle's computer.

4. OBDII System Download

Start the engine and allow it to idle. Test system will communicate with on-board computer. If communication cannot be established, system will prompt inspector to recheck connection and try again. After communication is made, test system automatically does the following:

Downloads readiness codes -- *OBDII systems must indicate whether or not the onboard diagnostic system has monitored each component. Components that have been diagnosed are termed "ready", meaning they were tested by the OBDII system.*

The purpose of the readiness status check is to determine if the vehicle's OBD system has tested all emissions control components or systems. Some of the components or systems are continuously tested by the vehicle's OBD system, while others are tested only under specific vehicle operating conditions. Once testing of a component or system by the vehicle's OBD system is complete, the readiness status for that particular component or system will be set to "ready".

Normally, the readiness status of all components or systems will be "ready". However, if the vehicle's battery has been recently disconnected, or if diagnostic trouble codes (DTCs) have been recently cleared with a scan tool, components or systems will be set to "not ready".

The powertrain control module (PCM-OBDII terminology for the onboard computer) sets a monitor to "ready" after an appropriate drive cycle has been performed. Normal driving usually sets a monitor to ready in a *couple of days. The dealer or qualified technician has the best information on how to get a vehicle ready.*

Downloads MIL status and diagnostic trouble codes (DTCs) -- *The purpose of checking MIL status using the inspection system is to determine if the vehicle's OBD system has commanded the MIL to turn on based on a malfunction. This allows you to determine if there is a malfunction, even if the MIL is not actually illuminated because of a problem with the MIL itself, or due to tampering with the MIL. If the MIL is commanded-on, the system will download diagnostic trouble codes (DTCs.) DTCs describe the specific problem identified by the OBDII system (see definition in glossary).*

If the system fails to communicate, the inspector will be given the following prompt:

THE OBD II CONNECTION CANNOT BE CONFIRMED – CHOOSE THE NEXT ACTION

1. BACK TO PREVIOUS SCREEN

2. CONNECTOR CANNOT BE LOCATED

3. CONNECTOR IS MISSING, DAMAGED, OR TAMPERED.

4. CONNECTOR IS OBSTRUCTED OR INACCESSIBLE AND CONNECTION IS NOT POSSIBLE.

5. COMMUNICATION FAILED, AND OBD II PORT IS ATTACHED TO CONNECTOR.

PASS/FAIL CRITERIA

If any of the following conditions are met, the vehicle fails the OBD inspection, and the owner or operator must be advised to have the vehicle serviced:

1) The MIL does not illuminate at all when the ignition key is turned to the "key on, engine off" position.

A vehicle fails the inspection if the MIL does not illuminate when the ignition key is turned to the "key on, engine off", because the vehicle's OBD system cannot alert the driver to a problem when it detects a malfunction.

2) The MIL is illuminated while the engine is running.

The reason this is a failure is because the vehicle's OBDII system has detected a malfunction and turned on the MIL to alert the driver. If the MIL is on while the engine is running, the vehicle's OBDII system has determined that there is a problem with the vehicle. In this case, there should be one or more diagnostic trouble codes (DTCs) stored in the vehicle's computer.

3) The MIL status, as indicated by the scan tool, is ON.

The reason this is a failure is because the vehicle's OBDII system has detected a malfunction and turned on the MIL to alert the driver. If the vehicle's OBD system has commanded the MIL to turn on based on a malfunction, the MIL should also be illuminated when the engine is running. However, even if the MIL is not illuminated with the engine running, the vehicle still fails because the inspection system shows that the vehicle's OBD system tried to turn the MIL on as a result of a malfunction. The MIL may not be illuminated because of a problem with the MIL itself, or due to tampering with the MIL.

4) More than the allowable numbers of monitors are not ready.

If the vehicle's battery has been recently disconnected, or if DTCs have been recently cleared with a scan tool, components or systems will be set to "not ready". This may have been done to temporarily extinguish the MIL for the inspection. The car must be driven to reset the monitors. Some manufactures advertise driving procedures while others do not. The vehicle manufacture or qualified service technician is the best source for this information.

5) DLC missing or damaged/communication failure

The reason this may be a failure is because the vehicle could not be tested because the DLC is damaged or communication could not be established with the scan tool. If the inspector cannot locate the DLC, the inspection cannot be completed. The customer should be directed to the dealership for help in finding the DLC or getting a valid test.

Until May 1, 2002, vehicles failing the OBD test will be given a two-speed idle (TSI) test. If they fail the TSI test, they must be repaired. After May 1, 2002, compliance with OBD test will be mandatory.

VEHICLE TEST REPORT

Customer receives a **vehicle test report** that includes information required by EPA and Texas' regulations including the following:

X The MIL illumination check results.
X If MIL is illuminated, DTC numbers and descriptions
X Readiness results
X If the vehicle fails the test, an appropriate alert statement is provided: