

On-Board Diagnostics (OBD) Readiness Monitors August 2011

All 1996 and newer light-duty vehicles sold in the United States are equipped with On-Board Diagnostic systems, known as OBD II. The primary purpose of these systems is to monitor and evaluate the vehicle's emissions controls. Using this on-board evaluation, OBD helps to maintain low emissions levels and notifies the vehicle operator of problems before they become catastrophic failures.

In order for emissions systems to be properly evaluated, certain engine and transmission operating parameters must be met before the diagnostics begin. This is the function of "Readiness Monitors."

WHAT IS A "READINESS MONITOR?"

A monitor is not a physical device. It is a computer routine (program) designed to determine if an emission system is ready to be interrogated. Monitors are required to make certain that systems are not checked that have not reached proper operating temperature or other parameters that could allow false readings.

HOW MANY OF THESE "MONITORS" ARE THERE?

All OBD II equipped vehicles have three "continuous" monitors. They are misfire, fuel trim and comprehensive components checks system sensors and actuators. Manufacturers may use more distinctive names for some monitors.

In addition, there are eight other "non-continuous" monitors for catalytic converter, EGR system, evaporative emissions system, oxygen sensor system, oxygen sensor heater system, secondary air injection, air conditioning system, and heated catalyst. Some of these monitors may be absent if the vehicle is not equipped with certain systems.

WHAT CAUSES A MONITOR TO BE "NOT READY"?

When the vehicle diagnostic computer runs the evaluation routine, it is looking for specific conditions

programmed into the monitor that tells the computer that the monitored system is functional and at the programmed condition. If the system is not yet at the predetermined conditions, the monitor will register "not ready."

WHAT TRIGGERS A MONITOR TO "READY"?

Once all the predetermined conditions have been met, the monitor is triggered to report a "ready" condition for the system it is monitoring. Reaching these predetermined conditions is done using a set of vehicle operating functions known as a "drive cycle." In early systems, 1996-1999, the drive cycle was often very simplistic, consisting of engine start, warm-up, local driving and highway driving. Newer models have much more detailed drive cycles, which have caused many people to believe that certain monitors will not set to ready. This is untrue; it just requires a more thorough drive cycle procedure.

CAN A VEHICLE BE EMISSIONS TESTED WITH "NOT READY" MONITORS?

According to the U.S. Environmental Protection Agency guidelines, vehicles may not pass an OBD test if the monitors show the emissions system(s) to be "not-ready". A vehicle of model year 1996-2000 will be rejected from testing if it is presented to a test station with more than two of the monitors reporting "not-ready". Model year 2001 and newer vehicles may not have more than one "not-ready" monitor.

A vehicle that is rejected two consecutive times for having excessive monitors that are "not-ready" will not be retested at the emission test station unless you contact ADEQ first at the numbers listed below.

HOW IS THE READINESS OF THE MONITORS KNOWN?

At emissions test stations and repair facilities, emissions systems are interrogated using a "Scan Tool." This device can read the information stored in the on-board emissions computer. The scan tool looks for

the monitors first to determine if the systems are ready to be tested. If too many monitors display a not-ready status, the vehicle will be rejected or failed.

CAN THE HOME MECHANIC LOOK AT THESE MONITORS AND DETERMINE VEHICLE READINESS?

The method used to determine vehicle "readiness" is to use a hand held scan tool designed for that purpose. Scan tools communicate with the vehicle's computer to determine the status of the monitors. There is no other easy way to determine monitor readiness. ADEQ recommends that you speak to a trained service technician about what should be done to prepare for retesting your vehicle.

WHAT ELSE COULD BE WRONG?

Troubleshooting the not-ready status of one or more monitors should include looking for diagnostic trouble codes (DTCs) stored in the vehicle's computer. If this has not been done, or if the "Check Engine" light is on, scan for any remaining codes that are present. There may be emission related problems remaining that have not been resolved.

It is good diagnostic practice to scan for DTCs following any engine service, and following the failure of any monitors to reset. Remember that emissions

systems are complex, and correcting one problem (such as a stuck EGR valve) may cause a change in other emissions levels. A code that did not show up previously may have been set during the drive cycle, indicating a new, intermittent or remaining problem.

ARE MONITOR PROBLEMS COVERED BY WARRANTY?

While the monitors are actually diagnostic programs designed to evaluate emissions systems on the vehicle, underlying problems or part failures may be covered under your vehicle's emissions warranty. Remember that the emissions warranty often extends beyond the vehicle comprehensive warranty. Always check your owner's manual or your dealer for more warranty information.

WHERE CAN I GET MORE INFORMATION?

ADEQ offers two Web sites that can provide most of the information needed to find an inspection station, repair facility, test fees and much more: www.azdeq.gov/environ/air/vei/index.html or www.myazcar.com.

For vehicle specific information, contact Vehicle Emissions Inspection Program staff in Phoenix at (602) 771-3950 or in Tucson at (520) 745-4536.