WISCONSIN VEHICLE INSPECTION PROGRAM

The Analyzer

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Don't Trip Over Readiness Monitors

So you've done the repairs for a 1996 or newer vehicle that failed an OBDII test and sent the customer on their way. Unfortunately, some customers return to your repair facility with the bad news – not that the vehicle failed the retest inspection but that the vehicle was turned away from testing because too many readiness monitors were not set. While a reject is not a fail, the result is an unhappy customer that can not get his/her vehicle retested until the readiness monitors are reset.

A vehicle's OBDII system checks the status of up to 11 emission control related subsystems by performing either continuous or periodic functional tests of specific components and vehicle conditions. When a vehicle is scanned at a WIVIP inspection station, the vehicle's monitors can appear as either "ready" (meaning the monitor in question is being evaluated), "not ready" (meaning the monitor has not yet been evaluated) or "not supported" meaning that the vehicle is not equipped with the component monitor in question.

It is important to emphasize that the lack of readiness is a special status that is unique to OBDII systems and does not automatically mean that the vehicle is producing excessive emissions. Rather, the vehicle's emissions status is officially "Unknown" due to the failure to meet certain monitoring conditions prior to inspection.

Recognizing that some monitors are difficult to set, the WiVIP has adopted the following USEPA recommended criteria to determine whether a vehicle will receive an OBDII inspection.

Criteria For Readiness			
Model Year	Readiness Criteria	Initial Test	Re-Test
1996 – 2000 vehicles	Over 2 monitors for "not ready" status	Defaults to tailpipe test	Unable to test (Test result = Reject)
2001 and newer vehicles	Over 1 monitor for "not ready" status	Defaults to tailpipe test	Unable to test (Test result = Reject)

Continuous versus Non-Continuous Monitors

There are two types of monitors, continuous and non-continuous. Continuous monitors are ready all the time and non-continuous monitors require a certain series of operating conditions before they set. In all OBDII equipped vehicles, there are three continuous monitors that check for system defects all the time. The continuous monitors present in all OBDII vehicles are:

- Engine Misfire
- Fuel System
- Comprehensive Component (checks the circuits and computer)

While few vehicles will have all the following listed non-continuous monitors, most vehicles have anywhere from five to 10 non-continuous monitors. The most common non-continuous monitors that periodically check emission components are:

- Catalytic Converter
- Evaporative System
- Oxygen Sensor
- Air Conditioner System
- Secondary Air System
- Heated O2 Sensor
- Heated Catalyst

Supported Monitors And Their Status

Those monitors incorporated into vehicle manufacturer's emissions control design are referred to as being "Supported." Supported monitors need to be evaluated by the vehicle's power control module (PCM). When the vehicle's PCM's monitor completes testing, the readiness system status will be reported as "Ready" or "Complete." Once a monitor is set as "Ready" or "Complete" it will remain in this state unless diagnostic trouble codes (DTCs) are cleared by a scan tool or if the PCM's short term memory is erased by a power failure (i.e., disconnecting the battery). Since the three continuous monitors are constantly evaluating, they will be reported as "Ready" all of the time. If testing of a particular supported non-continuous monitor has not been completed, the monitor status will be reported as "Not Complete" or "Not Ready."

The chart below shows the non-continuous monitors that are looked at during the inspection to determine readiness status. This information was taken from all OBDII tests either completed or not completed due to readiness monitor issues in 2005 and 2006. The chart illustrates that there are certain monitors that are more frequently "Not Ready", such as the EVAP and Catalytic Converter readiness monitors.

Non-Continuous Monitors	Not Supported	Supported	Not-Ready	% of Supported Not Ready
Oxygen Sensor	7,226	797,416	19,864	2%
Catalytic Converter	8,577	769,223	46,706	6%
EGR	257,455	547,648	19,403	4%
EVAP	163,759	608,925	51,822	9%
Heated Cat	824,496	8	2	25%
Heated O2 Sensor	18,251	788,071	18,184	2%
Secondary Air	776,418	45,921	2,159	5%
Air Conditioning System	824,432	70	4	6%

What Prevents Readiness Monitors From Setting?

There are only a few situations that exist when a vehicle is not ready for OBD testing. Either the vehicle hasn't met all the enabling criteria for readiness or something is interfering with the criteria being met. An example of a situation preventing an evaporative monitor from resetting would be a faulty fuel sensor. One of the criteria for resetting an evaporative monitor is to have the fuel tanks at least one-quarter full. If the fuel level sensor is faulty, then the evaporative monitor can't reset.

Enabling criteria are a set of conditions that must be met before a monitor will run. Each monitor has its own set of enabling criteria. A "trip" is a set of driving conditions that provide the enabling criteria needed to run a monitor including an engine on-key off procedure. Since each monitor has its own set of enabling criteria, the definition of a trip varies for each monitor. A collection of "trips" to set the monitors for a specific vehicle is called the "drive cycle". The requirements for the monitors can vary considerably from one vehicle manufacturer to another, so there is no "universal" drive cycle that will guarantee all the monitors will set.

Tried and True Tips for Setting Readiness Monitors

- After performing OBDII repairs, remind your customers not to drive directly from your repair facility to the emission testing station. Most vehicles will need to be driven a few days through various city and highway driving conditions to meet all the enabling criteria necessary to reset all the readiness monitors.
- Sometimes a specific monitor or group of monitors will not run, despite your best efforts. If the vehicle has unset readiness monitors, there could be a component malfunction that hasn't "matured" into a DTC yet. Since many of the components are interrelated, a problem with one component could prevent the readiness monitor of another to remain "not ready". An earlier example was the faulty fuel sensor that prevented the EVAP monitor from running. Readiness monitor problems are not always what they seem.
- Check to see if there are any Technical Service Bulletins (TSB) or Recalls for the vehicle associated with readiness monitors. If there are common problems associated with resetting monitors on that specific vehicle make/year/model, there should be a TSB.
- Resist the urge to erase the DTCs, reset the PCM memory and reset the monitors. Instead of clearing the codes after completing repairs, consider driving the vehicle through the drive cycle as an option to reset the readiness monitors and allow the PCM to turn off the MIL. If the repair has been performed successfully and there are no other problems with the emission components, the monitors should reset .
- Verify that the vehicle's PCM software is the most current version. Sometimes there are updates that correct the readiness monitor issues. Also verify that there are no modifications to the PCM or an unauthorized reflash to the OBDII system that would alter the original programming, design or function.

Technical Assistance Centers

A good source for help for readiness monitor problems are the Technical Assistance Centers. The diagnostic technicians can provide you with drive trace information, Technical Service Bulletins or other technical information related to the program. Here's some contact numbers to speak to a diagnostic technician at one of the Technical Assistance Centers:

TAC-North: 800-335-5088

TAC-North: 414-358-3905

Exhaust System Repair Guidelines

Don't put yourself or your repair facility in jeopardy of getting hefty fines for performing repairs upon a vehicles exhaust system that are considered tampering. The consequences of not putting a properly configured converter on a vehicle to match the original OEM configuration are high. For instance, the first offense could cost your repair facility up to $2,500 in penalties.

There are both federal and state laws that guide the repairs of emission control equipment. For instance, Wisconsin law (section NR 485.06, Wisconsin Administrative Code) states that:

> No person may tamper with or fail to maintain in good working order any air pollution control equipment which has been installed on a motor vehicle by the manufacturer prior to sale unless the person repairs or restores the equipment or replaces the equipment with new identical or comparable tested replacement equipment.

In the case of catalytic converters, state law requires that they be original equipment or EPA-certified equipment. Any person may replace the catalytic converter with aftermarket or remanufactured equipment certified by the U.S. Environmental Protection Agency (EPA) on the following categories of vehicles:

1. All vehicles of model year 1994 or earlier.

2. For vehicles of model year 1995 or later, those vehicles which are at least 8 model years older than the current model year, or those vehicles with more than 80,000 miles on the odometer.

If the catalytic converter is replaced, the owner of the vehicle must provide a receipt or other evidence showing that the replacement converter has been certified by EPA. This documentation, usually a warranty card, would be included in the replacement catalytic converter packaging.

The following chart gives some guidelines to assist you in keeping you and your shop on the legal side of exhaust system repairs.

If you have any questions regarding what is considered a legal repair, call the Technical Assistance Hotline at 414-358-3905 or 1-800-335-5088.

Can the vehicle leave the shop in the following conditions?

Condition of exhaust entering shop	Stock exhaust with converter	Stock exhaust with test pipe	Dual exhaust with converters	Dual exhaust without converters
Stock exhaust with converter	YES	NO	NO	NO
Stock exhaust, no converter, test pipe in its place	YES	NO	NO	NO
Stock exhaust, no converter, gap in exhaust system (no test pipe)	YES	NO	NO	NO
No exhaust system past manifold or headers	YES	NO	NO	NO
Dual non-stock exhaust with no converters	YES	NO	YES**	NO
Dual non-stock exhaust with converters	YES	NO	YES**	NO

*** The USEPA has exercised its enforcement discretion by not pursuing enforcement action against facilities for this type of repair work, although it could be considered tampering. Please consult with State officials regarding applicable State laws. Shops are encouraged to convince the vehicle owner to restore the exhaust system back to its original configuration.*

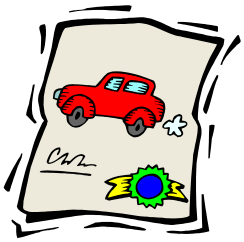
Wisconsin dealers required to process electronically

A new law passed in July 2005 requires that all licensed motor vehicle dealers electronically process title and registration applications for their customers by June 30, 2007.

- If you sold 48 or fewer vehicles in 2006, you may be exempt from the electronic processing requirement. If you are exempt and choose not to electronically process you must pay an additional $15.00 per application.
- If your dealership is not exempt you will be assessed a surcharge for each application submitted to DMV for processing that can be completed electronically. This surcharge cannot be passed on to the customer.
- It is to your advantage to learn an electronic system prior to the implementation of the new law. We are pleased to offer three choices for electronic titling:
  - CVR: Pat Sands, 1-800-668-2332, ext. 1333
  - TriVIN: Kim Winskell, 1-800-876-2312, ext. 4242
  - e-MV11: www.dot.wisconsin.gov/business/dealers/emv11
    WisDOT Customer Service Unit, 608-266-1425

Training Classes

As an ongoing service to the repair industry, The WIVIP Analyzer will publish a list of private and public training centers that offer courses in automotive repair technology. The following is just a sampling of training courses available to you. The WIVIP Analyzer is not recommending any specific course and would encourage you to contact us at 414-358-3905 if you are aware of other training opportunities.



WISETECH PROVIDERS

Margie Zamorski
Milwaukee Area Technical College
5555 West Highland Road
Mequon, WI 53092
262/238-2449

Ken Dotzler
Gateway Technical College
Racine Campus
1001 South Main Street
262/770-1713

Steve Hirshfeld
WisDOT
608-266-2267

Other Training

Tim Houghtaling
Automotive Seminars Inc.
800/450-0402

Wells Technical Services
Wells Manufacturing Corporation
920/929-6258
Technician Hotline (Free)
1-800-558-9770 Press 3

AUTOMOTIVE RELATED WEB SITES

WWW.CCAR-GREENLINK.ORG
WWW.I-ATN.COM
WWW.AUTO-TALK.COM
WWW.STS.SAE.ORG
WWW.ASTTRAINING.COM

Wisconsin Technical Assistance Hotline

414-358-3905
800-335-5088

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