

The Analyzer

WISCONSIN VEHICLE INSPECTION PROGRAM

WIVIP HELP LINE
(866)623-8378

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Waiver Repair Cost Limit To Increase July 1st

The repair cost limit for all model year vehicles subject to emissions testing will increase from \$868 to \$872, effective July 1, 2016. This figure is adjusted annually by the DNR per NR 485.045.

Vehicles subject to emissions testing that continue to fail may be eligible for a cost waiver if actual costs of emission related repairs exceed the repair cost limit. Only repairs that are related to the vehicle's cause of failure can be used to apply for a cost waiver. Costs covered by any warranty or costs to repair/replace emission control equipment that has been removed, modified or disconnected are excluded.

The owner must have emission related repairs on the vehicle at a recognized repair facility to qualify for waiver consideration.

A list of [recognized repair facilities](http://www.wisconsinvip.org) can be found on the program website: www.wisconsinvip.org.

Trans 131.02(39) includes franchised NEW car dealerships as recognized repair facilities

Inside this issue:

TECH TIPS—DPF	2
DIESEL SMOKE SIGNALS	3
DIESEL READINESS MONITORS	4
EMISSION REPAIR BOOK INSTRUCTIONS	5
REPAIR FACILITY PROFILE	7

February Technician Seminar Focused on Diesel Repairs

Nearly 40 technicians attended a technician seminar on February 24th to learn more about the challenges of diesel emission repairs. Harrison Keyes, Technical Assistance Center Diagnostic Technician at Jerry's Automotive Service, Waukesha, presented information on common diesel related emission failures and associated repair strategies.

Some of the topics covered during the seminar included: Variable Geometry Turbocharger, Diesel Oxidation Catalyst, Case Studies from Diesel Vehicles with TAC appointments, Readiness Monitor Issues and the VW diesel issues.

Information in the following pages is all diesel related.



Harrison Keyes presents material on diesel emission repair issues to over 40 technicians at a WIVIP sponsored seminar.

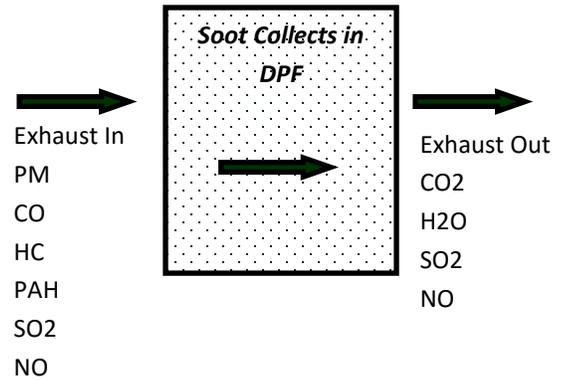
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TECH TIPS

A Look At Diesel Particulate Filters

Diesel Particulate Filters (DPF) are present on all 2007 and newer diesel vehicles. The purpose of a DPF is to capture soot particles that are a byproduct of the diesel combustion engine. At some point, the DPFs fill up with soot and create too much backpressure. In order to reduce the amount of collected soot, DPFs have the ability to regenerate themselves (incinerate collected soot). At some point, the DPFs must be removed and cleaned or they must be replaced.



DPF is a honeycomb structure that exhaust must pass through to collect particulates (soot). The DPF is capable of removing more than 90% of particulate matter from the exhaust.

DPFs are capable of removing more than 90% of particulate matter from the exhaust

There are two types of regeneration: passive and active. In passive regeneration, the DPF temperatures are high enough to burn the soot from the DPF without needing extra fuel.

This only occurs under high load situations. Active regeneration is initiated by the power control module (PCM) or by a scan tool. Under this process, extra fuel is added to the exhaust to raise the DPF temperatures to approximately 1000°F to 1400°F.

Active regenerations are needed when the soot load reaches a calibrated limit. On a new Dodge 6.7L, that level is 47 grams or an internal reaches 24,000 counts. General Motors vehicles have similar specifications. In Ford and Mercedes, active regeneration is needed when the "DPF Load" reaches 100%. The PCM fires the injectors on the exhaust stroke or a dedicated "exhaust injector" is used. The unburned fuel ignites the Diesel Oxidation Catalyst (DOC) and the fire warms up the DPF to turn the soot into ash. Note: P0420/P244C can set if the DPF is unable to reach target temperatures.

Some field service tips on DPF Cleaning:

- The catalyst monitor will not set until it sees that a regeneration has occurred.
- If the soot load is high enough, it may take multiple regenerations to bring the soot load down to acceptable levels.
- After a manual regeneration, let the vehicle idle until the temperatures drop since the soot is still burning.
- Some manufacturers recommend changing the oil after a manual regeneration.
- There are firms in the area that will clean a DPF for you. Cleaning a DPF filter requires removing the filter from the vehicle and placing it in a machine that blows trapped ash out of the filter.

The takeaway from the DPF discussion is that this is a component of a diesel vehicle's emission control system that must be monitored and serviced when it fills with soot.

Diesel Smoke Signals

The color of a diesel vehicle's exhaust smoke, once the engine is at normal operating temperature, can help a technician determine the cause of engine trouble. Here are some suggested causes for different smoke colors:

White Smoke: Gray to white smoke emitted from an engine at normal operating temperature indicates that part of the fuel in the combustion chamber has not been properly ignited. This may be caused by low compression due to broken piston rings, leaking valves or misadjusted valves, commonly known as Valve Lash Adjustment.

Verify the cause. Check cylinder pressure, blow by and valve adjustment. If the engine has a misfire, locate the missing cylinder first! Then check the injectors and nozzles. There may be a leaking fuel nozzle, the opening pressure may be too low, or the injector orifices may be enlarged. The injection timing may be too late or the injectors may be misadjusted.

Gray or White Smoke: Another cause for light colored smoke may excessive coolant leak into the combustion chamber.

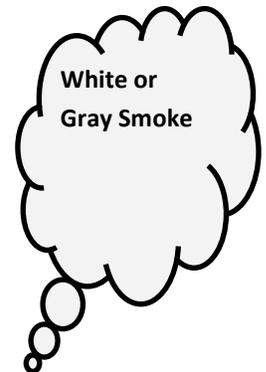
Blue Gray Smoke: This color indicates the engine is burning excessive crankcase oil. Check the crankcase oil for proper consistency and level. The crankcase oil may be too light for the ambient temperature or the crankcase may have been overfilled. Excessive oil is then thrown onto the cylinder walls and the piston rings are unable to contain it. Worn main bearings and connecting rod bearings, as well as excessive oil pressure, can also cause oil to pass by the piston rings. Excessive oil in the air cleaner or worn guides and seals can create a dangerous situation, allowing oil to be drawn in the combustion chamber during the intake stroke; the engine could easily run away. Other possible sources of blue gray smoke are worn turbochargers, supercharges and oil seals.

Black Smoke: This indicates that fuel is being injected into the combustion chamber and not burned completely. This may be caused by three basic conditions in the cylinder: 1) Poorly atomized; 2) Insufficient cylinder temperatures; 3) Poor air turbulence.

Check the injector timing, injector adjustment or injection pump timing. Check the governor or fuel rack adjustment. If necessary, check the injector opening pressure and spray pattern. Poorly atomizing fuel can cause an increase in smoke density.

Excessive carbon build up in the combustion chamber can cause quenching. Quenching occurs when the fuel injected into the combustion chamber is saturated into the carbon build up. The flame is then cooled, prohibiting a complete burn. Any of these mechanical or operating conditions can cause black smoke.

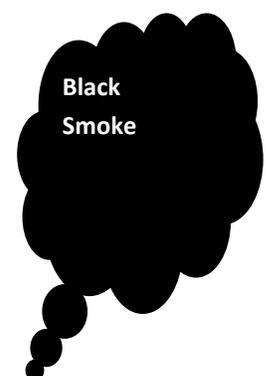
Learning how to "read" the color of an exhaust plume, combined with traditional diagnostic methods, can help the observant technician achieve the correct diagnosis of the emission related issue.



Raw diesel in exhaust



Excessive oil is being burnt



Poor and incomplete fuel combustion

The Analyzer

Diesel Readiness Monitors

Readiness monitors function the same way in diesel fueled vehicles as in gasoline fueled. If the communication is established with the vehicle computer, then the OBD test can proceed unless unset readiness monitors exceed the testing requirements. For 1996 - 2000 model year vehicles, a vehicle can have up to 2 readiness monitors unset; for 2001 and newer vehicles, only 1 readiness monitor can be unset. If the unset readiness monitors exceed the requirements, the vehicle will be rejected from further testing until this condition is corrected.

The following chart lists the readiness monitors for diesel fueled vehicles. It is divided into two sections because beginning with MY2010, there were different emission control systems on diesel vehicles. Newer diesel vehicles are equipped with increasing numbers of emission controls because tailpipe emission standards have become more stringent. Accordingly, more diagnostics have been incorporated into OBD systems to monitor the various controls.

Monitor Number	Readiness Monitor Assignments for all Gasoline and for Diesel through MY 2009	New Readiness Monitor Assignments for Diesel from MY 2010 and newer
1	Misfire	Misfire
2	Fuel System	Fuel System
3	Comprehensive Components	Comprehensive Components
4	Catalyst	NMHC
5	Heated Catalyst	NOx/SCR Aftertreatment
6	Evaporative System	(Reserved for future)
7	Secondary Air	Boost Pressure
8	A/C	(Reserved for future)
9	O2 Sensor	Exhaust Gas Sensor
10	Heated O2 Sensor	PM Filter
11	EGR/VVT	EGR/VVT

Source: "Best Practices for Addressing OBD Readiness in IM Testing of Diesel Vehicles Under 14,000 Pounds Gross Vehicle Weight Rating", 3/7/2013, USEPA Office of Radiation

Quick Testing Tip:

Salvage vehicles have VINs ending in "WI". Enter the salvage VIN without the WI and call Opus New Berlin office (262-641-5217) with TIN (result either pass or weight waiver) so motorist can renew their vehicle registration.



Introducing the Repair Book

Fast, Easy and Good For Business

It is now easier for your facility to receive credit for repair activity of vehicles that failed their emissions inspection. Once registered, repair technicians can access the Repair Book reporting website and log emission-related repairs. Your success rate in repairing vehicles will be posted on the www.wisconsinvip.org website. It is a great way to inform past, current and future customers about your success in performing emission-related repairs.

STEP 1: IS YOUR BUSINESS ALREADY REGISTERED WITH THE WISCONSIN VEHICLE INSPECTION PROGRAM?

- a) Verify if your business is already registered with the program. The easiest way to check is to look at the Inspection Facility, Recognized Repair Facility or Non-Recognized Repair Facility listings on the program website at www.wisconsinvip.org.
- b) If your facility is already registered, go to step 2.
- c) If your facility has not registered with the program, complete the profile form found on the program website in the "Recognized Repair Facilities" section.
- d) Once registered, your facility's repair activity can be reported on www.wisconsinvip.org, which is the official program website. The more effective you are at repairing vehicles that had failed the emission test, the better your repair score!

Repair Grade: 100%

Sample listing:

Facility Name	Address	City	Phone	Zip Code	REI	Web Site
YOUR GARAGE NAME	123 MAIN ST	ANYTOWN	(XXX) XXX-XXXX	53XXX	100.0	url hyperlink

STEP 2: TECHNICIAN REGISTRATION FOR THE REPAIR BOOK?

- a) At the sign-in screen, select register.
- b) Choose the station you are currently employed and select continue.

NOTE: If you change locations, please complete an updated Emission Repair Facility profile and submit it to Opus.

- c) Complete the registration information.



Wisconsin Repair Book

Tuesday, Dec 30, 2014



First Name

Job Title

User ID

Middle Name

Email

Password

Last Name

Verify Email

Re-enter Password

Do you own an ASE L1 (or Higher) or WISETECH certification?

Password must be between 6 and 10 characters

Password must be between 6 and 10 characters

Introducing the Repair Book

STEP 3: DATA ENTRY PROCESS FOR EMISSION RELATED REPAIRS

Certified Repair Info			
Owner Repair?	Yes <input type="radio"/> No <input type="radio"/>	Total Parts Cost	Total Labor Cost
For three dollars and thirty cents enter 3.30. For three hundred and thirty dollars enter 330			
The following should be completed only if NOT repaired by owner:			
Work Order #	Facility of Person Performing Repair	Apply to REI? <input type="checkbox"/>	
Phone#			
City	State	Zip	
Repair Date			

- Complete the information requested.
- Select whether it is an owner repair.
- Enter parts and labor cost. (Example: For three dollars and thirty cents, enter 3.30. For three hundred and thirty dollars, enter 330.)
- If not the owner, complete the section requesting more information on repairs.
- Indicate whether you want the repair record applied to your Repair Book (REI) Score.
- Select the repairs performed on the vehicle.

Vehicle Repair Data							
For reinspection or waiver qualification, the person performing the repairs must complete this form. Please place one "X" per item in the box to indicate which component has been (A) repaired, (B) replaced, or (C) repairs were recommended but not performed.							
1. Air Filter Element	A <input type="radio"/>	B <input type="radio"/>	C <input type="radio"/>	None <input type="radio"/>	15. Air Injection System	A <input type="radio"/>	B <input type="radio"/>
2. Thermostatic Air Cleaner System	A <input type="radio"/>	B <input type="radio"/>	C <input type="radio"/>	None <input type="radio"/>	16. Positive Crankcase Ventilation System	A <input type="radio"/>	B <input type="radio"/>
	C <input type="radio"/>	None <input type="radio"/>				C <input type="radio"/>	None <input type="radio"/>

- Once the data is entered, select continue.
- If you see the screen below, you have successfully entered the data.

Success
Congratulations! The repair data has been saved! This data may be used in the determination of your facilities REI. Continue

QUESTIONS? 262-641-5217



5470 South Westridge Dr
 New Berlin, WI 53151
 262-641-5217 (voice)
 262-641-5095 (fax)

**EMISSION REPAIR FACILITY
 PROFILE**

(please circle one)

UPDATE **NEWLY REGISTERED**

If you wish to register your repair facility with the vehicle inspection program or need to update your business record, please provide the following information for your repair facility. Mail the completed form with technician certifications to address above, or fax it to 262-641-5095, or scan to sue.krueger@opusinspection.com. A recognized repair facility is one that employs at least one technician with ASE L1 certification, WISETECH training, or other equivalent training. Please attach copies of documentation for each technician's training or certifications.

FACILITY INFORMATION:

Facility Name: _____

Street Address: _____

City: _____ State: _____ ZIP: _____

Main Business Phone #: () _____ E-Mail: _____

Owner or Manager: _____ County: _____

TECHNICIAN INFORMATION

Name: _____ (First Name) _____ (Last Name)

Certifications:

Circle & Indicate Expiration Date	ASE	Expiration Date	ASE	Expiration Date	WISETECH	Date Graduated	School
	L1	_____	L2	_____	_____	_____	_____

Other: (Explain) _____

DIESEL CERTIFICATIONS: Please indicate if you have diesel certification for a specific make (Honda, Ford) of vehicle(s) you are certified to work on. List all that apply and attach diesel certification documentation to this application:

TECHNICIAN INFORMATION

Name: _____ (First Name) _____ (Last Name)

Certifications:

Circle & Indicate Expiration Date	ASE	Expiration Date	ASE	Expiration Date	WISETECH	Date Graduated	School
	L1	_____	L2	_____	_____	_____	_____

Other: (Explain) _____

DIESEL CERTIFICATIONS: Please indicate if you have diesel certification for a specific make (Honda, Ford) of vehicle(s) you are certified to work on. List all that apply and attach diesel certification documentation to this application:

VERIFICATION

As owner/manager of this repair facility, I verify that my facility is actively engaged in the automotive repair business and that information provided is accurate. I understand that it is my responsibility to notify the Wisconsin Vehicle Inspection Program if my profile information changes.

_____ Repair Facility Owner/Manager _____ Date

OFFICIAL USE ONLY:

Recognized: YES NO Registration Number: _____