



INSPECTION UPDATE

Volume 13, Issue 4

Winter 2012

Contents

Summer Registered
Repair Technician
Ongoing Training Recap 2

The Year in Review 2

Registered Repair
Technician Updates 3

Motorist Assistance
Center (MAC) Repair
Technician Reminders 4

Inspection Update
Profile 5

Inspection Procedure
Reminders 6

Inspection Update is a publication produced by Massachusetts Vehicle Check; a joint program of the Massachusetts Department of Environmental Protection (MassDEP), the Registry of Motor Vehicles (RMV) and Parsons Environment and Infrastructure Group, Inc.

New Program Changes Beginning January 1, 2013

► Windshield Sticker Changes

In late November, the Massachusetts Vehicle Check program began shipping the first deliveries of red 2013 VIR and windshield stickers to all inspection stations. This first shipment should cover approximately three months of vehicle inspections. Stations will automatically receive additional sticker shipments when their inventories indicate they have only one pack of stickers remaining.

Stations that have not received their sticker shipment by December 28, or that have any questions about the new red 2013 stickers, should contact the Technical Help Desk at 877-834-4677.

Unopened sticker books should be kept in their shrink-wrapped packaging and in a secure location until they are needed. Remember to always load the workstation with the lowest sticker book number.

All unused green 2012 stickers should be set aside and kept in a secure location until they are collected by the Massachusetts Department of Transportation – Registry of Motor Vehicles Division.

► Program Changes

Effective Jan. 1, 2013, all 1998 model year light-duty vehicles up to 10,000 pounds Gross Vehicle Weight Rating (GVWR) are exempt from the on-board diagnostics (OBD) emissions testing requirement. However, all 1998 model year vehicles are still subject to annual safety inspections. All 1998 model year medium- and heavy-duty diesel-powered vehicles over 10,000 pounds GVWR are still subject to the opacity emissions inspection requirement. Additionally, the Massachusetts Vehicle Check emissions waiver and economic hardship repair extension minimums have increased to the following:

Vehicle Age	Emissions Waiver Spending Minimum	Economic Hardship Repair Extension Estimate Minimum
Five model years old or newer	\$840	\$1,260
Six to 10 model years old	\$740	\$1,110
Greater than 10 model years old	\$640	\$960

(Continued on page 2)

► Workstation Changes

(Continued from page 1)

The program will be releasing several workstation software updates in early 2013. Upcoming changes include the following:

- Revised motorist messaging for the changes in waiver spending limits;
- Improved vehicle identification number (VIN) and fuel type decoding for multiple makes and models;
- Improved sticker inventory and printing management; and
- For Licensed Class B, C, D and E stations, improved opacity meter software that will shorten calibration warm-up times.

When your workstation indicates that a new version of software is available, please take the time to download and install the update so that you have the most current version. Once the installation is complete, perform a Data File Refresh before starting a new vehicle inspection. If you have any questions about downloading or installing these software updates, please contact the Technical Help Desk at 1-877-834-4677.

Summer Registered Repair Technician Ongoing Training Recap

In September, the Massachusetts Vehicle Check program offered a Registered Repair Technician ongoing training module titled “Crank and Camshaft Position Diagnostic Trouble Codes (DTCs).”

Instructor “G” Truglia taught 73 repair technicians at four Motorist Assistance Centers (MACs) about effective diagnostics and repairs on vehicles that have failed their emission inspections because of Crankshaft and Camshaft diagnostic trouble code problems.



On September 19, 2012, “G” Truglia instructed registered repair technicians at the West Springfield MAC on how to diagnose and repair crankshaft and camshaft DTCs.

The Year In Review

October 2012 marked the four-year anniversary of the Massachusetts Vehicle Check program. Congratulations to all who contributed to another successful year! The following is a summary of program statistics* from Year Four:

Number of paid vehicle inspections.....	4,698,157
Number of inspectors receiving initial training	1,706
Number of inspectors re-certified.....	3,573
Number of active Inspection Stations	1,802
Number of active Registered Emissions Repair Shops.....	308
Number of Motorist Hotline calls.....	14,101
Number of Technical Helpdesk calls.....	31,671
Number of registered vehicles in Massachusetts	4.7 million
Average age of vehicles in Massachusetts	9.23 years
Number of registered hybrid vehicles	55,619
Number of registered diesel vehicles.....	151,590
Number of registered flexible fuel vehicles.....	22,057

Communities with the most registered vehicles:

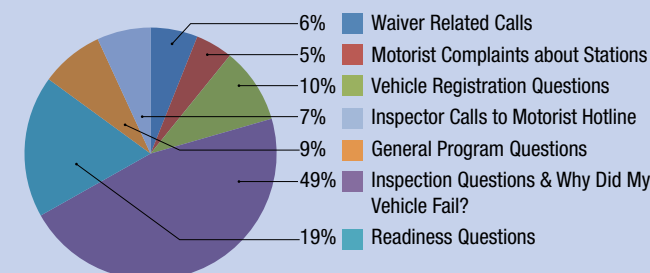
1. Boston 319,266
2. Worcester..... 106,116
3. Springfield..... 89,302

Communities with oldest average vehicle age:

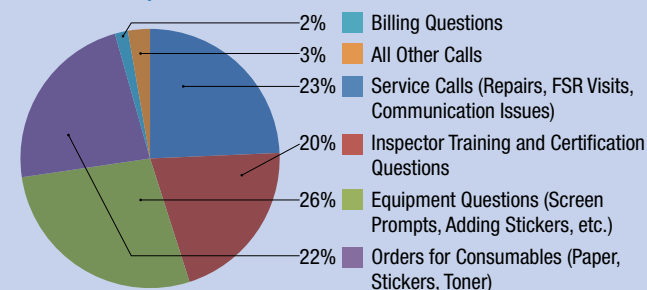
1. Aquinnah..... 14.27 yrs
2. Chilmark..... 14.18 yrs
3. Mount Washington 12.79 yrs

*Statistics as of September 30, 2012

Motorist Hotline Calls:



Technical Helpdesk Calls:



Registered Repair Technician Updates

► Repair Data Entry Begins in January 2013

The Massachusetts Vehicle Check Program will begin collecting vehicle emissions repair information in January 2013 with the introduction of the Repair Data Entry web application on the program website. Registered Repair Shops can securely enter vehicle emissions repair data so that the program can assign each shop an Emissions Repair Success Ratings (ERSRs). Once the program has collected six months worth of repair data, ERSRs will be generated on a quarterly basis.

The new repair data entry website link is: http://www.massvehiclecheck.state.ma.us/inspection_repair_data_entry.php. From this page, you can print and fill out a blank Repair Data Entry form for each vehicle repair. When you are ready to enter vehicle repairs, visit this page and click the link that opens the Repair Data Entry application.

Registered Repair Shops are responsible for entering their own data for any given month by the tenth day of the following month. Each vehicle repair entered will count towards the total number of repairs in the reporting period. If the entered vehicle repair is associated with a passing vehicle reinspection, then that repair will be counted as a Retest Pass. If the vehicle repair entered is associated with a failing vehicle reinspection, or if the repaired vehicle is turned away for unset readiness monitors, then that repair will be considered a Retest Fail. Vehicles that received waivers or hardship extensions and whose test results were aborted will not be counted.

Registered emissions repair shops will receive an ERSR based upon the ratio of Retest Passes to Total Repairs. These ratios will then be converted to an ERSR score with a five-star rating system, with five stars representing the shops with the best repair success ratio.

► October 2012 Registered Repair Technician Deadline Reminders

Registered Repair Technicians who either A) did not pass the 50-question Mass Module Exam with a score of 100 percent or B) did not submit a new Registered Repair Technician application by the October 1, 2012, deadline have been moved to an Inactive status. The Registered Repair Shops where those technicians are employed have likewise been moved to an Inactive status as of December 12th.

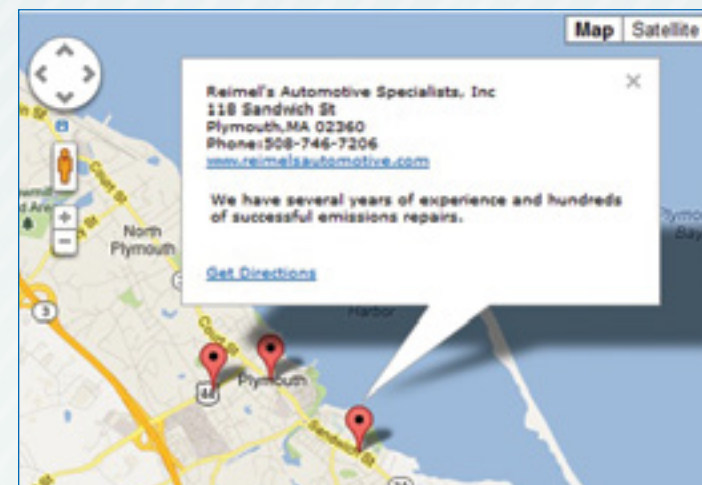
STEP 3 Once you have completed Steps 1 and 2, you are ready to take the Mass Module Exam. You may refer to the Mass Module content while taking the exam. The exam consists of 50 questions, and you must answer every question correctly.

CLICK HERE TO BEGIN EXAM

Clicking this link will open new browser windows. If you do not see a new window open up, please turn off any pop-up blockers and click the exam link again.

Registered Repair Technicians can take the Mass Module Exam on the program website at any time by clicking the “Click Here to Begin Exam” button.

As a result, 136 Registered Repair Shops lost their active status and no longer receive free promotion by being listed on the vehicle inspection reports of vehicles that fail an OBD emissions test or on the Repair Shop Locator, found on the Massachusetts Vehicle Check website at http://www.massvehiclecheck.state.ma.us/find_emissions_repair.php.



Example of search results for Registered Repair Shops located in Plymouth, MA.

Any Registered Repair Technicians who would like to have their registration status changed to Active just need to take and pass the Mass Module exam, which is available at http://www.massvehiclecheck.state.ma.us/inspection_mass_module.php and/or submit a new application to Parsons. The application form can be printed from http://www.massvehiclecheck.state.ma.us/inspection_repair_tech.html. As soon as the Repair Technician passes the Mass Module Exam or Parsons processes a new Repair Technician application, his or her registration will be re-activated, and their repair shop will be listed on the vehicle inspection reports of vehicles that fail OBD emissions tests and on the Repair Shop Locator webpage.

► Winter 2013 Ongoing Training Courses

All current Registered Emissions Repair Technicians are required to attend one four-hour ongoing training module by March of each year to maintain their registration in the Massachusetts Vehicle Check Program.

The final opportunity for Registered Repair Technicians to complete this annual ongoing training requirement will be the Winter 2013 Registered Emissions Repair Technician ongoing training seminar. If you have already taken an ongoing training seminar in 2012, you may take this seminar to comply with the next year's training requirement.

Parsons is offering this seminar from 6:00 PM to 10:00 PM at the following Motorist Assistance Centers (MACs): Medford (March 13), Pocasset (March 14), Shrewsbury (March 25), and West Springfield (March 26).

(Continued on page 7)



Motorist Assistance Center (MAC) Repair Technician Reminders

A motorist owned a 2002 Dodge Grand Caravan 3.3L flex-fuel vehicle that initially failed inspection in August 2011 with three diagnostic trouble codes (DTC): P0601 Powertrain Control Module (PCM) internal controller failure, P0134 Bank one Sensor one Oxygen (B1S1 O2) sensor, and P0135 B1S1 O2 sensor heater (O2SH) circuit malfunction.



2002 Dodge Grand Caravan. Source: Edmunds.com.

The repair shop replaced the PCM and the B1S1 O2 sensor. After repairs, the repair shop had a difficult time setting the Evaporative (EVAP), O2SH and exhaust gas recirculation (EGR) monitors, so the vehicle received several reinspection turnaways before receiving an automatic MAC referral. The repair shop contacted the Tewksbury MAC L-1 technician, Phil Hughes, and made an appointment to drive the vehicle on the dynamometer to look for any conditions that might have been preventing the monitors from running.

When Hughes completed the vehicle's drive cycle on the dynamometer, the malfunction indicator lamp (MIL) was off, there were no pending diagnostic trouble codes, and all the readiness monitors were ready except for the EVAP and O2SH monitors.

On this particular vehicle, the EVAP monitor will typically only run after a cold start. The likelihood of setting the EVAP monitor with a warm engine is very low; even running a fan on the engine to cool it down and waiting several hours will probably not set the monitor. In contrast, the O2SH monitor doesn't need a cold start. It can be set by following these steps: Drive the vehicle at 55 miles per hour (mph) for five to ten minutes, stop the vehicle, shut the engine off for 15 minutes, and recheck monitor status; the O2SH monitor should be ready.

When Hughes drove the vehicle on the dyne, this time at 55 mph, the MIL came on with a code P0401 EGR system failure DTC. The repair shop mechanic then shared with Hughes that, after they had completed the PCM replacement, the

vehicle had set an EGR DTC, so they had replaced the EGR valve with a new one. Hughes was puzzled why the P0401 DTC had been set since the EGR valve had already been replaced. He also noted that the vehicle had not set a pending EGR code; the P0401 DTC had set in one trip.

Hughes stopped the vehicle and performed a visual inspection of the EGR system. The EGR valve was brand new, but the manifold vacuum hose for the backpressure transducer was missing. Further inspection did not reveal a vacuum hose obviously disconnected.

So Hughes checked the Vehicle Emissions Control Information (VECI) label, which is required to be affixed under the hood of all vehicles sold in the United States, where an interesting fact came to light. The VECI label stated that the minivan had sequential fuel injection (SFI), two heated oxygen sensors (HO2S), and a three-way catalyst (TWC), *but there was no mention of the vehicle having an EGR system.*

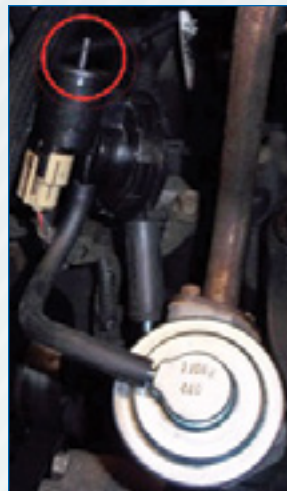
Some VECI labels also have convenient vacuum diagrams on them. Looking at the vacuum diagram revealed something even more interesting to Hughes. It showed the vacuum line that would go to the EGR backpressure transducer, but it was a dotted line with a notation of "(Not Functional)." The EGR valve also had a note next to it that said "(When Equipped)."



This VECI label indicates that the vehicle was not manufactured with an EGR system monitor.

So Hughes had to determine why the VECI label and the PCM were in conflict; the vehicle had an EGR valve installed, the PCM was obviously testing the EGR system, and the VECI label confirmed that there should not be a vacuum line to the transducer. But how could the EGR

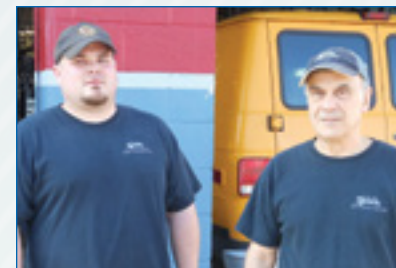
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Even though the EGR valve is brand new, the backpressure transducer is not connected to a manifold vacuum hose.

Inspection Update Profile

Louis Farkas, Owner, Hub Starters



Brian and Louis Farkas, owners of Hub Starters in Malden, MA

Q: What services does Hub Starters offer?

A: Hub Starters is the only AAA-approved auto repair shop in Malden. We offer complete car and light-duty truck repair. We perform Massachusetts Vehicle Check

Inspections and service

brakes, front-end exhaust, heating/air conditioning, electrical starters and batteries. We provide starter and alternator rebuilding for classic cars and to cities and towns, and we also sell new starters and alternators upon request. Finally, we buy and sell used vehicles.

Q: How many owners does your business have? What are the roles and responsibilities of each?

A: I own the shop with my son Brian, who also runs our used car business. I perform the diagnostic work; in that role, I work with vehicles that have failed emissions. When this interview was conducted, I was actually in the midst of diagnosing a failed vehicle for one of my customers.

Q: How many employees do you have?

A: We have eight employees total, including six full-time and two part-time employees.

Q: How did you get your start in the automotive industry? What made you want to open your own business?

A: I always knew that I wanted an automotive career, so I first attended auto school, then went on to attend Northeastern and graduated with a B.A. in Management. I started working for an auto repair shop in Chelsea. After 12 years, I decided that I wanted to run my own shop. I started Hub Starters over 30 years ago in Malden with a partner who has since retired, but I have been at this exact same location since we opened.

Q: Have you attended any of the MAC Open Houses? How else do you keep up with changes in vehicle technology and emerging technologies?

A: We do attend MAC Open Houses, which are helpful. We also take online courses through the [ACDelco Professional Service Center](http://www.acdelco.com). I also use several online tools, such as [Identifix](http://www.identifix.com), which helps connect technicians with knowledge on diagnosing and repairing vehicles and Mitchell1 [OnDemand5™](http://www.ondemand5.com). But before I use these online resources, I usually call Paul Jannoni, the

Medford Motorist Assistance Center L-1 Technician, because he is both a knowledgeable Massachusetts Vehicle Inspector trainer and a Registered Repair Technician.

Q: Are you a Registered Repair Technician (RRT)?

A: Hub Starters has two RRTs on-site. I am an ASE-certified Advanced Level Specialist (L-1) and Certified ASE Master Automotive Technician, and we employ another L-1 technician.

Q: How has being a RRT helped your business?

A: One of the biggest advantages to being an RRT is that when vehicles fail their inspections, Hub Starters is listed on the Vehicle Inspection Report as a recommended Malden-area repair shop, which causes motorists to seek us out. These referrals have been a great resource for our business.

Q: What are some of your most challenging vehicle repairs?

A: Some of our most challenging repairs are the catalytic converter diagnostic trouble codes, like the P0420 Catalyst System Efficiency Below Threshold (Bank 1). A catalytic converter is so expensive that you have to be sure of your diagnosis before you tell a motorist that it has to be replaced.

Q: What should motorists begin to do to ready their vehicles for winter?

A: Today's cars run so well that it's hard to say exactly what motorists should do for winter, but I always advise customers to check the battery and charging system and, if they haven't done so in the past couple of years, to have their cars winterized. I also tell them to beware of turning everything electrical on in a snowstorm, because doing so can overload the vehicle's alternator.

Q: How do you advertise your business?

A: We advertise through our website <http://www.hubstarters.com>, and we use a printing company to help us run local ads throughout the community. But most of our business is word-of-mouth and has been for about 25 years.

Q: What is your business motto?

A: We stand behind every repair, and we are always as honest as possible with our customers. I personally keep track of each job that comes into our shop, because I want my customer's vehicles diagnosed accurately and repaired correctly. Most importantly, I want our customers to leave our shop happy.

Inspection Procedure Reminders

► Commercial Vehicle Inspector License Requirements

On November 2, 2012, the Registry of Motor Vehicles (RMV) mailed a letter to all vehicle inspectors with a Commercial Driver's License (CDL). All licensees who are renewing or obtaining a new CDL must inform the RMV of the "type of commerce" in which they are operating or intend to operate (Self-Certification). They must also provide the RMV with a copy of their US DOT Medical Certificate, if/when required to obtain this certificate.

The RMV is aware that some Commercial Vehicle Inspectors either:

- A) Do not meet the federal medical fitness standards for holding a CDL,
- B) Hold a CDL for purposes of Vehicle Inspection only, or
- C) Do not otherwise operate any CDL-required vehicles.

If you hold a CDL and believe that you fall into one of these categories, you may wish to consider self-certifying for the "EA – Excepted Intrastate" category. This category will allow you to use your CDL license to inspect commercial vehicles in Massachusetts. However, if you make this restricted "EA" selection, you may not engage in most interstate and intrastate commercial transportation.

You can download and mail in the CDL self-certification form from the RMV website, <http://www.massrmv.com/rmv/forms/21893.pdf>, or pick one up at any RMV branch office.

► Proper Procedure When Vehicle Fails to Communicate With Workstation

When an on-board diagnostics (OBD) emissions test begins, the workstation performs two checks. First, it requires the vehicle to provide battery voltage for power. Then, it requests specific information from the vehicle's OBD malfunction indicator light (MIL) status, diagnostic trouble codes (DTCs), monitors supported and the status of the monitors. The workstation scan tool expects to receive a response from the vehicle's computer within a certain amount of time.

If the DLC cannot provide power or doesn't return the requested data fast enough, the vehicle will fail the OBD emissions test for

communications. Each vehicle inspection will allow up to three attempts to retrieve the required information from the vehicle. If the vehicle hasn't communicated with the workstation after three attempts, the workstation will ask the inspector to perform the OBD scan tool functionality self-check to ensure that the workstation is not the source of the problem. If the workstation passes the OBD scan tool functionality self-check, then the vehicle will fail the OBD test. This result will be listed on the Vehicle Inspection Report as: "OBD Communication Result Fail."

The key reminder for all inspectors is that you should always follow the workstation screen prompts. Even if the vehicle doesn't communicate with the workstation, you should not assume that your workstation is at fault and abort the inspection. If you follow the workstation screen prompts, you will be able to confirm whether your workstation's OBD cable is working properly and complete the inspection.

For more information about this type of failure, see "Diagnosing and Repairing Pin 16 Voltage Problems," Inspection Update Newsletter, Volume 9, Issue 4, pages five and six, available at <http://www.massvehiclecheck.state.ma.us/newsletters/08Dec.pdf>, and "Shop Talk: Failures for OBD Communication," Inspection Update Newsletter, Volume 10, Issue 1, pages two and three, available at <http://www.massvehiclecheck.state.ma.us/newsletters/09Mar.pdf>.

► Verify Inspection Data prior to Completing Inspection

The Registry of Motor Vehicles (RMV) reminds all inspectors to verify the following information while completing each inspection.

- Registration information matches the vehicle being inspected;
- Odometer reading;
- Vehicle/vehicle use information requested by workstation; and
- Vehicle Inspection Report sticker number matches sticker number that is affixed to the vehicle's windshield.

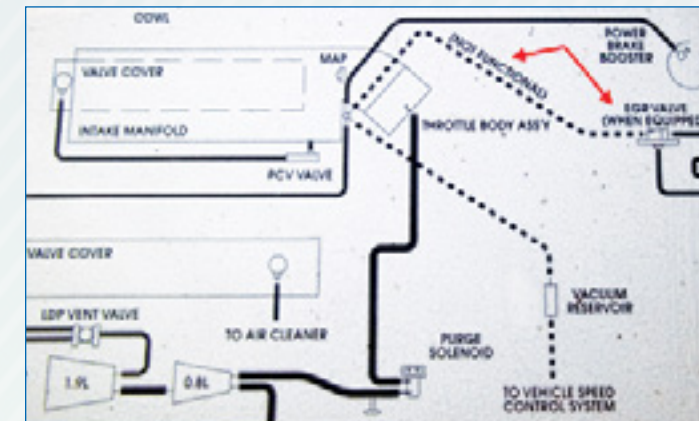
Data verification is a continuous process. Prior to starting an inspection, inspectors should match the vehicle presented with the vehicle registration provided by the motorist. While inputting data into the workstation, inspectors should ensure that the vehicle data, such as the model year, fuel type, and Gross Vehicle Weight Rating, are accurate. At the conclusion of the inspection, inspectors should verify that the information on the printed sticker matches the vehicle being inspected, because the motorist is subject to possibly being cited if an improper certificate is displayed on the vehicle's windshield.

If the RMV identifies vehicle inspection records that are inaccurate, you and your station will be subject to enforcement procedures.

MAC Success Story

(Continued from page 4)

system work without a vacuum supply to the backpressure transducer? Without vacuum, the backpressure transducer could not perform its intended function.



So Hughes checked manufacturer technical service bulletins (TSBs) concerning EGR systems, and found a TSB #18-026-01 titled "EGR System Elimination." According to this TSB, depending on the build date, assembly plant and VIN, the minivan could have been manufactured with an EGR valve even though the EGR readiness monitor in the PCM is disabled. After checking the vehicle's manufacturing information on the VECI label, Hughes determined that the vehicle should have a disabled EGR system monitor. Just to be sure, he reviewed the Caravan's previous vehicle inspections, where the EGR monitor had been previously recorded as not supported. In other words, ever since the PCM had been replaced to correct the P0601 DTC, the EGR monitor in the new PCM was showing as a supported readiness monitor, which meant that the PCM that was installed was programmed incorrectly.

Based on this information, the Tewksbury MAC L-1 technician contacted the repair shop and advised them of his findings. Once the vehicle was returned to the repair shop, the repair shop installed a replacement PCM that had the correct software version according to the TSB, and the vehicle was finally able to pass inspection with all of the correct monitors ready.

Here are some valuable lessons repair technicians can learn from this vehicle's case study:

- Replacing emissions-related parts based on a DTC description without performing basic diagnosis will eventually get you into trouble. The OBDII system is fairly intelligent, so 70 to 80 percent of the time, if you replace a part based on a component-related DTC, you will fix the problem. But if you use this approach all the time, in 20 to 30 percent of your repairs, the MIL will turn on again. To avoid this embarrassment, you must

be able to correctly diagnose and identify not-so-obvious broken wires or bad grounds without replacing expensive components improperly.

- Be aware that PCM replacements can introduce new variables and bring about new diagnostic challenges. You need to be familiar with the information on the VECI labels and have access to manufacturer TSBs to be sure that the PCM programming and the vehicle's emissions control components match. In this day and age, it is important to use all the information resources commercially available so you can be as cost-efficient and confident in the accuracy of your repairs as possible.

Ongoing Training Courses

(Continued from page 3)

The winter seminar will focus on Diagnosing P0420 and P0430 Catalyst Below Threshold Diagnostic Trouble Codes (DTCs). Since the Massachusetts Vehicle Check Program began, more than 73,000 vehicles have failed on-board diagnostics (OBD) tests with at least one catalytic converter DTC. The training will concentrate on effective diagnostics and repair of vehicles that have failed their emissions tests with catalytic converter DTC problems.

The cost of the seminar is \$150 and payment may be made by check or credit card. Applications for this course are available at http://www.massvehiclecheck.state.ma.us/inspection_ongoing.html. If you need help registering for or have questions about this course, please call our Registered Repair Coordinator at (781) 794-2961. Space is limited to 35 per class, so it is important to sign up as quickly as possible.

Get Local Approval, Notify MassDEP before Heating with Waste Oil

Waste oil is combustible and may pose a fire hazard if not handled properly. It also can be contaminated with heavy metals, gasoline, chlorinated solvents and other toxics, which is why the Massachusetts Department of Environmental Protection (MassDEP) enforces specific handling, storage, transportation, recycling and disposal requirements. If you are planning to install a space heater that burns waste oil in your business, be sure to choose equipment that meets MassDEP standards and notify the agency before you begin using the system. You will also need to obtain local fire department approval to store waste oil fuel and comply with MassDEP rules for handling it. See the MassDEP fact sheet at <http://www.mass.gov/dep/recycle/laws/spacehtr.pdf> for additional information.



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Commercial Vehicle Inspector License and Repair Data Entry Announcements Inside!

Massachusetts Vehicle Check Program At A Glance

Program at a Glance			Count
Non-Commercial Safety Inspections	1,221,688	5.0%	
Commercial Safety Inspections	42,187	5.4%	
7D Safety Inspections	39,072	3.6%	
OBD Emissions Inspections	990,658	6.5%	
Opacity Emissions Inspections	27,115	1.8%	
Emissions Waivers Issued	1		
Repair Hardship Extensions Issued	23		
Hotline and Training Statistics			Count
Motorist Calls Received	3,693		
Inspection Station Calls Received	8,791		
Initial Non-Comm. Inspectors Trained	317		
Initial Commercial Inspectors Trained	91		
Initial 7D Inspectors Trained	19		
Initial Motorcycle Inspectors Trained	4		
Enforcement Statistics			Count
Violations Issued to Inspectors			69
Violations Issued to Stations			77
Inspector Privileges Revoked			4
Inspector Required to Retrain			4
Inspectors Suspended			14
Stations Suspended			15
Penalties Assessed			\$32,000
Licensed Stations			Count
Class A Stations			1,216
Class B Stations			186
Class C Stations			29
Class D Stations			304
Class E Stations			9
Reg. Emissions Repair Shops			274

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