



INSPECTION UPDATE

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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 Commercial Technology Group, Inc.

EPA Report Finds Clean Air Act is Successful in Protecting Public Health

A report released March 1, 2011, by the U.S. Environmental Protection Agency (EPA) highlights the major health, economic and environmental benefits associated with the 1990 Clean Air Act. According to the study, the direct benefits of reducing fine particle and ground level ozone pollution under the Clean Air Act will reach approximately \$2 trillion in 2020, while saving 230,000 people from early death in that year alone.

The Massachusetts Vehicle Check program is specifically designed to reduce both fine particle and ground level ozone pollution from gasoline- and diesel-powered vehicles. Licensed inspectors and registered emissions repair technicians contribute to the improvement of local and regional air quality by performing accurate inspections and providing cost-effective repair services for their customers.



EPA studied the effects of the Clean Air Act on the economy, public health and the environment between 1990 and 2020. The EPA report received extensive review and input from the Council on Clean Air Compliance Analysis, an independent panel of distinguished economists, scientists and public health experts established by Congress in 1991.

"The Benefits and Costs of the Clean Air Act from 1990 to 2020" shows that the benefits of the Clean Air Act — avoiding early death, preventing heart attacks and asthma attacks, and reducing the number of sick days for employees — far exceed the costs of implementing clean air protections. These benefits lead to a more productive workforce and enable consumers and businesses to spend less on health care — all of which help strengthen the economy.

In 2010 alone, the nationwide reductions in fine particle and ozone pollution from the 1990 Clean Air Act amendments prevented more than:

- 160,000 cases of premature mortality
- 130,000 heart attacks
- 13 million lost work days
- 1.7 million asthma attacks

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Clean Air Act Protects Public Health

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The study projects that by 2020, the annual benefits should be even greater, preventing an estimated:

- 230,000 cases of premature mortality
- 200,000 heart attacks
- 17 million lost work days
- 2.4 million asthma attacks

The report is the third in a series of EPA studies required under the 1990 Clean Air Act amendments that estimate the benefits and costs of the act. The reports are intended to provide Congress and the public with comprehensive, up-to-date, peer-reviewed information on the Clean Air Act's social benefits and costs, including improvements in human health, welfare and ecological resources, as well as the impact of the act's provisions on the U.S. economy.

More information and a copy of the summary report:
www.epa.gov/air/sect812/prospective2.htm

Answers to Your MassDEP Compliance Questions

It can be a challenge to keep up with all the requirements that apply to your motor vehicle inspection and/or repair business: What do I need to know about generating, accumulating and labeling hazardous waste and waste oil? Is the floor drain in my inspection or repair bay legal? How often do I need to inspect the underground storage tanks and Stage II Vapor Recovery System?

Find answers to these and other questions about environmental rules and best practices at MassDEP's new Motor Vehicle Fueling, Service & Repair web page:
www.mass.gov/dep/recycle/hazardous/vehicles.htm.

EPA Approves New Coolant for Car Air Conditioning Systems

The U.S. Environmental Protection Agency (EPA) has issued final approval of a new refrigerant for use in motor vehicle air conditioning systems that helps protect the environment and human health.

The new chemical, HFO-1234yf, which does not deplete the ozone layer, may now be used in air conditioning for new cars and light trucks. When used appropriately, this chemical can reduce the environmental impact of motor vehicle air conditioners and has a global warming potential that is 99.7 percent less than the current chemical (HFC-134a) used in most car air conditioners.

“This new chemical helps fight climate change and ozone depletion. It is homegrown, innovative solutions like this that save lives and strengthen our economy.”

— Gina McCarthy, assistant administrator for
EPA's Office of Air and Radiation.

EPA assists in the transition to green technologies by identifying alternatives that are better for people's health and the environment.

Before HFC-134a became commercially available, car air conditioners generally used CFC-12, a potent greenhouse gas and ozone-depleting substance. Depleting the stratospheric ozone layer leads to higher levels of ultraviolet (UV) radiation that can reach the Earth's surface. UV radiation can cause a variety of harmful health effects, including skin cancer, cataracts, immune system suppression, premature aging and wrinkling of the skin.

Using HFO-1234yf is one option available to automakers for adopting a chemical with less climate impact as a cost-effective way to meet the new greenhouse gas standards. For more information on this new coolant, please visit:
www.epa.gov/ozone/snap/
www.epa.gov/sunwise/uvindex.html



Motorist Assistance Center (MAC) Success Story

This readiness case and MAC success story is about a 2005 Toyota Camry V-6 with a 3.0L engine. The vehicle was purchased used in December 2010 with approximately 97,000 miles on it. The vehicle failed its initial inspection with the catalyst and evaporative monitors reading “not ready” (incomplete). While the motorist was driving the vehicle to get it “ready,” the Malfunction Indicator Lamp (MIL) came on with a P0420 diagnostic trouble code (DTC) stored. The vehicle was diagnosed and repaired by replacing the Bank 1 catalytic converter, Bank 1 and Bank 2 upstream air/fuel (A/F) ratio sensors, and Bank 1 and Bank 2 downstream oxygen sensors. The repairer replaced all parts with Toyota original equipment parts.

The repairer cleared the P0420 DTC, which also reset all the monitors to “not ready.” The vehicle was then driven over 2,000 miles, and the only monitor that would get “ready” was the O2 sensor heater monitor.

To pass inspection, 2001 and newer model year vehicles are allowed only one unset readiness monitor. The vehicle’s monitor status was retested several times during the 2,000 miles of driving, and the vehicle eventually received a ‘Refer to MAC’ Vehicle Inspection Report for readiness assistance.

This referral was triggered by an automatic process activated in October 2010 to offer motorists (and their repair technicians) the opportunity to receive MAC assistance before the 60-day inspection window closes. Referrals are not meant to be an intrusion; they are offered as a service to motorists whose vehicles are having chronic difficulty in successfully completing an emissions test.



From L-R: Dan Deroy, Pocasset MAC L-1, Mike Shanahan, Shrewsbury MAC L-1, and Steve Shea, Fitchburg MAC L-1, provide expert diagnostic assistance to motorists and repairers across the state.

After the motorist contacted the hotline and was referred to the MAC for assistance, the L-1 technician checked the vehicle’s readiness monitor status. Although only the oxygen heater monitor was “ready,” the MIL functioned properly, and there were no DTCs. Next, the L-1 used an OBDII generic scan tool to check for pending codes that may have been preventing the monitors from completing, but there were no pending DTCs present.

Toyota Diagnostic Tip

Toyota has begun to put actual voltage values in the data stream for the lean A/F ratio sensors. These sensors have the capability to show a signal from 0-5 V, but should usually be around 3.3 V. Prior to this improvement, the vehicle powertrain control module (PCM) substituted a 0-1 V signal in the data stream for the Toyota models that use A/F sensors.

The L-1 technician then reviewed the data stream for any oddities that may have been causing the monitor issue. The Bank 1 air/fuel (A/F) ratio sensor was running steady at 3.2 Volts (V) with very minor fluctuations between 3.1 and 3.3 V. The Bank 2 A/F ratio sensor was constantly bouncing between 1.5 and 5 V. The fuel trim on Bank 2 was also running around +11 percent. The vehicle was operating without any drivability issues, the “check engine” light was not on, and there were no DTCs. Then the L-1 disconnected the Bank 2 upstream sensor and checked the data stream, which showed a steady 3.3 V on Bank 2 A/F sensor.

The MAC L-1 technician shared his findings with the repair shop and, discovered that one of the replacement part numbers did not match the vehicle specifications. The MAC L-1 called a Toyota dealer and confirmed that, when all of the other repairs were made, the A/F sensor installed on Bank 2 was for a 2001-2003 Highlander 3.0L, not a 2005 Camry 3.0L.

Based on this finding, the repair shop installed the correct A/F sensor, and the vehicle returned to the MAC for a readiness check. All monitors except for the evaporative monitor were “ready,” and the vehicle received a passing sticker.

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Spring 2011 Motorist Assistance Center (MAC) Open House for Registered Emissions Repair Technicians



At the Shrewsbury Motorist Assistance Center Open House on April 24, 2011, G Truglia instructed over 35 repair technicians on how to perform effective repairs for evaporative emissions control system diagnostic trouble codes.

MAC Success Story

(Continued from page 3)

Several repair lessons can be taken from this case:

- If you have a vehicle that has an uncommon problem, such as a 2005 Toyota that won't complete its monitors, then do some checking. You need to identify the problem.
- Just telling motorists to "drive the vehicle" is not always going to help them. Every manufacturer has specific drive cycles—some vehicles run monitors more easily than others. If the motorist returns multiple times with a "not ready" vehicle, it may be time to start looking up a drive cycle.
- Check all repair parts when they come out of the box before installing them; incorrectly boxed parts can and do happen. Catching incorrectly boxed parts before you return the vehicle to the owner can save you lots of headaches and might even prevent you from losing a customer.
- The Bank 2 lean A/F sensor that was bounding between 1.5 and 5 V was within specifications because it was allowed to vary between 0 and 5 V. Remember that not all OBDII problems will illuminate the MIL.
- If this was an earlier Toyota model whose PCM substituted a value for the actual voltage in the data stream, it would have been missed using only an OBDII generic scan tool. In that case, Toyota enhanced software on your scan tool or a lab scope/Digital Volt-Ohm Meter (DVOM) would have been necessary to identify the problem.

Vehicle Window Tint Safety Reminders

Window tint regulations and exemptions raise many questions from inspectors and from motorists. Here are a few reminders to help you inspect vehicle glass and glazing properly.

The Tint Regulation, as defined in Massachusetts General Laws (M.G.L.) chapter 90, section 9D(3), prohibits the operation of a motor vehicle if certain window surfaces are covered by signs, posters or stickers that obstruct, impede or distort the window vision of the operator.

The regulation also prohibits operation if aftermarket window tinting makes glazing (glass) areas in any way nontransparent or obscured from either the interior or exterior. Vehicles with aftermarket window tinting should be rejected if the following conditions exist:

- The windshield is tinted beyond the AS-1 line (usually located in the upper six inches of the windshield).
- If the windows immediately adjacent to the operator and front passenger seat, the windows immediately to the rear of the operator and front passenger seat; and the rear window have a tint meter reading of less than 35 percent.
- Aftermarket tinting to the rear window is only allowed for vehicles with two outside mirrors.

There are a number of exemptions to the tint regulation. The three exemptions listed below pertain to vehicles owned by law enforcement, watch guard, university and hospital police agencies. For the vehicle inspection, the exemptions mean:

- Federal, state and local law enforcement agencies are exempt from the window tinting prohibitions for vehicles used by their law enforcement officers while in the regular performance of their duties. The vehicle must be registered to the agency and operated by a law enforcement officer of the agency. (Note: The law states that the law enforcement agencies are exempt from the window tinting provision. The law does not exempt a vehicle owned and operated by a law enforcement officer utilizing his/her own vehicle in the regular performance of police duties.)
- Watch guard or patrol agencies licensed under the provisions of M.G.L. chapter 147, section 25 (including a licensed Private Investigator) are exempt from the window tinting prohibition for vehicles used in the regular performance of their duties. The qualifying vehicle must be registered to such agency and operated by an

(Continued on page 7)



Inspectors must use a tint meter when measuring window tint.



Hingham Police Officer James Foss and K-9 dog Axel on duty.
SOURCE: Wicked Local Cohasset

Inspection Update Profile with Mark McKeen, Auto Service & Tire

Q: What services does Auto Service and Tire, Inc. offer motorists?

A: Auto Service and Tire is a full-service repair shop with four technicians on staff. We specialize in front-end brakes and diagnosing emissions failures. We also have a full-service auto body shop and towing company on-site.

Q: How has Auto Service and Tire grown from a one-person shop into the successful family owned and operated business that it is today?

A: In 1956, my father, Bill McKeen, took over the Jenney Gas Station in Mattapan Square. The station was a small two-bay shop. He worked on cars and pumped gas for 16 hours a day, seven days a week. In 1976, he moved the business across the street to where the old Delaney Chevrolet dealership once was, and the shop has been growing ever since. My parents had a total of nine children; all six boys work in the business, while one of my three sisters helps the shop with marketing.

Q: How did the name Auto Service and Tire come about?

A: My father wanted a name for the shop that would describe his no-nonsense, direct approach to business. He simply called it Auto Service & Tire, Inc. When my brothers and I were old enough to work, we started to contribute full-time to the success of the family business. We run our shop today with that same no-nonsense philosophy.

Q: You have a lot of second- and third-generation customers. Do they tend to keep their cars longer and hand them down to family members?

A: Yes, we have a lot of customers who turn their cars over to their kids who are moving out of state or off to college. These are typically well-maintained vehicles that have lasted throughout the years. Some of our most loyal customers have been with us since 1975.

Q: What are some of the common repairs that you make to older model vehicles that fail the Massachusetts Vehicle Check inspection?

A: Lately we've seen a lot of catalytic converter (CAT) failures and cracked exhaust pipes. We've also seen a lot of worn out oxygen sensors, but the CAT and cracked exhaust pipe seem to be the most common repairs.



**Mark McKeen, Owner
and Registered Emissions
Repair Technician,
Auto Service & Tire, Inc.**

Q: How has being both an inspector and registered repair tech benefited your customers and your business?

A: I strive to get motorists the right information when their vehicle needs certain repairs in order to pass the inspection. Unfortunately, we get a lot of customers who have been misinformed by inspection stations and are left to wander from station to station trying to fix problems on their own.

Q: What is the most surprising vehicle emissions repair that you have made recently?

A: The one that really surprised me is a recent 1996 Lexus* that came in for repair. The car was so big that at first it seemed a little intimidating. However, once I gathered my diagnostic information, I found that the exhaust gaskets were leaking. I patched the leaks with exhaust repair sealer to confirm the diagnosis, cleared the code and test drove the vehicle. All of the monitors went ready and there were no pending or hard codes reset. When I retested the CAT efficiency, there were great improvements in its performance. What seemed intimidating at first turned out to be a simple repair, and I have a new customer as a result.

Q: With your business located in such a high-traffic area, how does your shop handle the volume of vehicles that come in for service?

A: We basically try to adhere to a schedule, but we are located in a fast-paced area. We try to take all of our scheduled customers and walk-ins. We've built our business on the motto: "You come in, and we'll try to fix it!" We strive to get vehicles properly diagnosed and out the door repaired as quickly as we can.

Q: What advice do you have for others who are new to the industry or trying to grow their businesses?

A: Training is the most important thing that you can have in this industry. You should seek training every day and get as much knowledge as you can. Knowledge is king.

Q: How often do you get in touch with the Motorist Assistance Centers (MACs) near your facility? In what way has the MAC staff helped your customers?

A: The MAC has referred several vehicles to us lately. I've been seeing a vehicle two or three times a month from the Fall River MAC. The last MAC referral was a Jeep Liberty that was referred by the Dedham MAC. The customer had tried a street mechanic, who put in new oxygen sensors when all the vehicle had was a hole in the exhaust pipe and a loose oxygen sensor. I welded the exhaust pipe right back. That was an easy repair.

**Editor's Note: Even though 1996 model year vehicles have been legally exempted from annual emissions inspection requirements after January 1, 2011, motorists are still encouraged to seek emissions repairs whenever their vehicles' "Check Engine" lights turn on.*

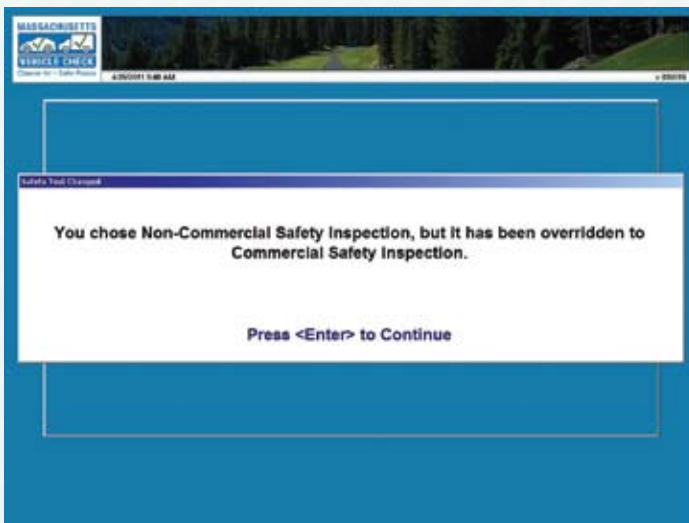
Inspection Equipment Updates

► New Workstation Changes Began April 28, 2011

On Thursday, April 28, the Massachusetts Vehicle Check program released new workstation software to improve the inspection process for inspectors, repairers and motorists.

This new software has several improvements for inspectors to be aware of:

- The 1D and 2D Barcode scanner calibration process has been improved by separating and labeling the barcodes to ensure inspectors scan the correct barcodes during the calibration routine.
- The On-Board Diagnostic (OBD) emissions test for certain vehicles has been streamlined to eliminate the bulb check test if the vehicle passes the OBD communications test.
- If the vehicle fails the OBD communications test, you will be required to try three more times to get the workstation to communicate with the vehicle. If you complete three attempts and the workstation still doesn't communicate with the vehicle, use the new workstation screens that have been clarified with separate instruction screens that more clearly describe the OBD loop back tester process. Please follow these new prompts closely.
- The vehicle safety test selection process has been improved to provide an indication to inspectors when the safety test type selected is overridden by the software's programming (pictured below).



- The sort order of the 10 nearest Registered Emissions Repair Shops printed on the Vehicle Inspection Reports has been standardized so that the printed list will appear consistently for all Registered Emissions Repair Shops.

If you have any questions about these changes, please contact the Technical Helpdesk at 1-877-834-4677.

► Removing Inspectors From Your Workstation

The Massachusetts Vehicle Check Program encourages all inspection stations to delete inactive inspectors from their workstation. If you have any inspectors assigned to your workstation that no longer work at your location, please contact the Technical Helpdesk at 1-877-834-4677 and request that they be deleted from your workstation.



Massachusetts Vehicle Check salutes the Boston Bruins, the 2011 Stanley Cup Champions. SOURCE: mjbssportsnetwork.com

West Springfield MAC Facility Destroyed by Tornado

On the afternoon of June 1, 2011, the West Springfield Motorist Assistance Center (MAC) was destroyed by one of the tornados that touched down in the Springfield area. One Parsons employee was present when the building was struck. He sought shelter in a corridor with steel doors at each end, and held on until the tornado passed. He was injured by flying debris, but released from a nearby hospital after receiving treatment. As a result of this storm, the West Springfield MAC will be closed until further notice. Parsons, MassDEP and the Registry of Motor Vehicles are working to relocate the MAC facility as quickly as possible. For more information about this or any other MAC, please visit our Web site: www.vehicletest.state.ma.us/motorist_emissions.html#mac

Vehicle Window Tint Safety Reminders

(Continued from page 4)

employee engaged in watch guard or patrol activities (as applicable). A vehicle used by a Massachusetts licensed Private Investigator (PI) must be registered accordingly. For instance, if the PI has a corporation license, the vehicle must be registered to the corporation.

- College, university and hospital police agencies appointed under the provision of M.G.L. chapter 22C, section 63 utilizing K-9 teams in a motor vehicle while in the regular performance of their duties, are also exempt from the window tinting prohibitions. The vehicle must be registered to such college, university, or hospital police agency and must be operated by an employee engaged in K-9 patrol activities. (Note: A vehicle registered to such institution that is used by its police in non-K-9 patrol activities is not exempt from the tinting prohibitions).

Additional window tint exemptions include the following:

- Vehicles registered out of state.
- Vehicles for which a medical exemption has been issued by the Registry of Motor Vehicles.
- All windows to the rear of the operators seat on vehicles used for public livery, except taxi cabs.
- All window tinting provided by the original manufacturer that is in compliance with applicable Federal Motor Vehicle Safety Standards.

Enjoy the rest of your Summer!



Change of Address/Save a Tree



Please keep us up to date with current information to help us ensure that you continue to receive this Inspection Update. If you have moved or would prefer to receive the newsletter by e-mail, please check the appropriate box and send this information to:

Massachusetts Vehicle Check Program
55 Messina Drive, Unit C
Braintree, MA 02184.

You may also fax changes to (866) 873-8932 or e-mail them to info@massvehiclecheck.state.ma.us.

- ☐ Change of Address
- ☐ Save a Tree, use E-mail
- ☐ New Repair Shop
- ☐ Phone Number Change

Station Name _____

Name _____

Address _____

City, State, Zip _____

Phone _____

Fax _____



Inspection Update
Massachusetts Vehicle Check Program
 55 Messina Drive, Unit C
 Braintree, MA 02184

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Toyota Camry Repair Case Study and Window Tint Inspection Reminders Inside!

Massachusetts Vehicle Check Program At A Glance

Program at a Glance			Count	Failure Rate	Enforcement Statistics	Count
Non-Commercial Safety Inspections			978,533	6.8%	Violations Issued to Inspectors	114
Commercial Safety Inspections			37,377	5.8%	Violations Issued to Stations	130
7D Safety Inspections			4,942	3.6%	Inspector Privileges Revoked	2
OBD Emissions Inspections			804,151	8.0%	Inspector Required to Retrain	0
Opacity Emissions Inspections			21,240	2.2%	Inspectors Suspended	17
Emissions Waivers Issued			1		Stations Suspended	19
Repair Hardship Extensions Issued			14		Penalties Assessed	\$175,250
Hotline and Training Statistics			Count		Licensed Stations	Count
Motorist Calls Received			3,528		Class A Stations	1,204
Inspection Station Calls Received			7,570		Class B Stations	181
Initial Non-Comm. Inspectors Trained			285		Class C Stations	35
Initial Commercial Inspectors Trained			38		Class D Stations	274
Initial 7D Inspectors Trained			43		Class E Stations	9
Initial Motorcycle Inspectors Trained			34		Registered Emissions Repair Shops	303

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