MASSACHUSETTS
VEHICLE CHECK
Cleaner Air • Safer Roads

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 Environment and Infrastructure Group, Inc.

Program Transitioning to New Contractor This Fall

The Massachusetts Vehicle Check Program is preparing for its next chapter. The current contract with Parsons Environment & Infrastructure Group expires on September 30, 2017, and the inspection network contract transitions to Applus+ Technologies (Applus) on the following day, October 1.

As part of the contract development process, the Massachusetts Department of Transportation Registry of Motor Vehicles Division (MassDOT/RMV) and Department of Environmental Protection (MassDEP) issued a Request for Information in August 2014 on the state of the technology for emissions and safety testing. A number of parties provided the agencies with valuable "state of the art" input that helped shape the contract development process.

MassDOT/RMV and MassDEP also conducted six regional town hall-style meetings with the inspection and repair communities in November 2014. In developing requirements and specifications for the new contract, the agencies gave substantial weight to the industry input they received at these listening sessions.

As a result, some of the program changes you can expect under the new contract will include:

- An OBD scan tool that meets California Bureau of Automotive Repair (BAR) certification standards, including requirements for durability and communication;
- A revised sticker design that eliminates rolls of adhesive and employs separate sticker and vehicle inspection report (VIR) printers to reduce problems with the current sticker/VIR combination;
- A larger computer monitor with the aim of getting all non-commercial vehicle safety items on a single screen;

Source: www.applustech.com

- The option for wireless OBD scan tools and bar code scanners to reduce the number of cords coming from the workstation;
- Hand-held cameras to aid in correctly identifying vehicles being inspected and documenting obvious safety defects;
- In-bay cameras to identify inspectors and monitor inspection quality;
- The ability to interrupt inspections in-progress with two-way communications with Motorist Assistance Center (MAC) staff when unusual test results are encountered;
- Enhanced training opportunities for repair technicians, including no-cost training to help them keep current with OBD systems; and
- Staffing of ten MACs with two Registered Emissions Repair Technicians each, to help inspection and repair professionals across Massachusetts.

(Continued on page 4)

Volkswagen to Recall 83,000 Vehicles, Fund Mitigation Projects to Settle Allegations of Emissions Test Cheating

In a second partial settlement announced last December by the U.S. Environmental Protection Agency (EPA), the Department of Justice (DOJ) and the State of California, automakers Volkswagen AG, Audi AG, Porsche AG and related entities (collectively referred to as Volkswagen), agreed to recall 83,000 model year 2009 through 2016 3.0 liter diesel vehicles sold or leased in the U.S. that are alleged to be equipped with "defeat devices" to cheat emissions tests, in violation of the Clean Air Act and California law. Volkswagen is also required to offer to buy back or terminate the leases of older vehicles, and also to offer an emissions modification to substantially reduce emissions if one is proposed by Volkswagen and approved by regulators. If Volkswagen demonstrates it can make newer vehicles compliant with certified exhaust emission standards, it will have to fix the vehicles but will not be required to buy them back. Volkswagen has agreed to spend $225 million to fund projects that will reduce emissions of nitrogen oxide (NOx).

Affected older vehicles (referred to as "generation 1" vehicles) are the 2009 through 2012 Volkswagen Touareg and Audi Q7 diesel models. Affected newer vehicles (referred to as "generation 2" vehicles) are 2013 through 2016 Volkswagen Touareg diesels, 2013 through 2015 Audi Q7 diesels, 2013 through 2016 Porsche Cayenne diesels, and 2014 through 2016 Audi A6 quattro, A7 quattro, A8, A8L and Q5 diesel models.

This partial settlement does not resolve any pending claims for civil penalties, nor does it address any potential criminal liability. The settlement also does not resolve any consumer claims, claims by the Federal Trade Commission, or claims by individual owners or lessees who may have asserted claims in the ongoing multidistrict litigation. The state of California has secured a separate resolution for the 3.0 liter violations that addresses issues specific to vehicles and consumers in California.

According to the civil complaint against Volkswagen filed by the Justice Department on behalf of EPA on January 4, 2016, and amended on October 7, 2016, Volkswagen allegedly equipped its 3.0 liter diesel vehicles with illegal software that detects when the car is being tested for compliance with EPA or California emissions standards and turns on required emissions controls only during that testing process. During normal driving conditions, the software renders these emissions control systems inoperative or reduces their effectiveness, resulting in increased emissions. By using this "defeat device," these cars meet emissions standards in the laboratory, but emit up to nine times or more above the EPA-compliant levels for NOx during normal on-road driving conditions. The Clean Air Act requires manufacturers to certify to EPA that vehicles will meet federal emissions standards. Vehicles with defeat devices cannot be certified.

Because Volkswagen cannot modify the affected 2009 through 2012 Volkswagen Touareg and Audi Q7 generation 1 diesel vehicles to meet EPA-certified exhaust emissions standards, the settlement requires Volkswagen to offer owners of generation 1 vehicles the option of having the company buy back their cars and lessees the option of cancelling their leases at no cost. If a plan is proposed by Volkswagen and approved by EPA and CARB to substantially reduce emissions from the generation 1 vehicles, Volkswagen will also have to offer that as an option for consumers.

Volkswagen will recall and fix generation 2 vehicles so they meet their certified exhaust emissions standards, after the technical solution is approved by regulators. If after extensive testing the solution does not perform as expected and is not approved, Volkswagen must offer to buy these vehicles back. In that case, the company can also seek approval of an emissions modification plan to substantially reduce emissions and, if approved, can offer that as an additional option for generation 2 vehicles.

Under the terms of the settlement, Volkswagen must achieve an overall recall rate of at least 85% for each of the generation 1 and generation 2 vehicle recall programs or pay additional sums into the mitigation trust fund. The buyback and lease termination program for generation 1 vehicles will begin within 30 days following court approval of the settlement. Vehicle modifications will become available to eligible owners and lessees once the modifications are approved by regulators.

Vehicle owners and lessees will receive updated information from Volkswagen, Audi, and Porsche concerning their available buyback or modification options after the settlement is approved by the court, and can also obtain information about these options at: http://www.vwcourtsettlement.com and http://www.audicourtsettlement.com/.

For more information: https://www.epa.gov/enforcement/volkswagen-clean-air-act-partial-settlement.

Inspection Procedure Reminders

▶ Lighting Devices Reminders

The Registry of Motor Vehicles would like to remind all inspectors of the following:

1. The regulation for Lighting Devices and Reflectors is 504 CMR 4.04 (10)(d), available at http://www.mass.gov/rmv/inspect/540cmr400.pdf. Per this regulation, all vehicle lighting devices must conform with Federal Motor Vehicles Safety Standard (FMVSS) 108.
2. Any vehicle with aftermarket lighting devices inconsistent with the FMVSS 108 regulation needs to be either rejected or repaired by replacing the aftermarket lighting devices with the proper lighting devices.
3. Original Equipment Manufacturer (OEM) HID lighting systems are approved for use. For vehicles not originally equipped with High Intensity Discharge (HID) headlights, HID conversion kits are prohibited, because conversion kits do not meet the same functional specifications as OEM systems. If you detect a HID conversion kit on the vehicle, you must fail the vehicle.
4. All lighting devices need to be securely attached to the vehicle and capable of performing their design functions. Lenses must be intact, clean, unobstructed, and free from cracks. The use of adhesive tape to repair lenses is prohibited.
5. Please remind your customers of the following lighting requirements, located on page 72 of the Massachusetts Driver's Manual (available at http://www.massrmv.com/Portals/30/docs/dmanual/Drivers_Manual.pdf):

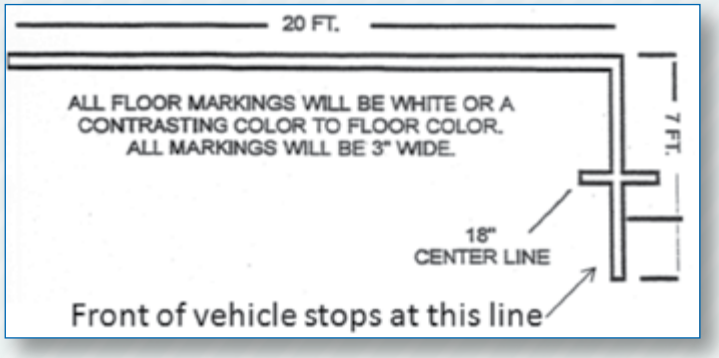
You must use your headlights (*new law in 2015):

- From one-half hour after sunset until one-half hour before sunrise
- *When you cannot clearly see people or vehicles 500 feet ahead due to insufficient light or weather conditions
- *Whenever you use your windshield wipers
- In rain, snow, fog, or other weather that makes it hard to see
- Anytime you have trouble seeing other vehicles
- To alert another driver to turn on his/her headlights
- While driving through a tunnel

▶ Headlight Inspection Procedure Reminders

When inspecting headlights, please follow these procedures:

1. Position the vehicle so that it is square with the aiming screen and with the front of the headlamps directly over a reference line which has been painted on the floor. Locate the center line on the floor so that it is in line with the center of the vehicle. Move the vehicle as needed until it is in alignment with these two points.



2. With the approved 48-inch measuring stick, take two measurements:

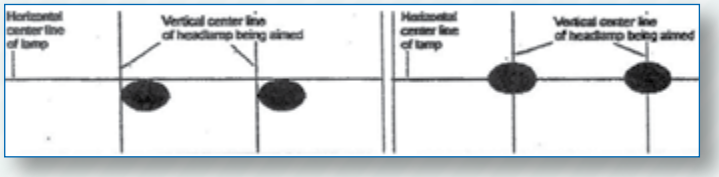
(1) From the center of the vehicle to the center of the bulb

(2) From the ground to the center of the bulb.

Inspection Procedure Reminders

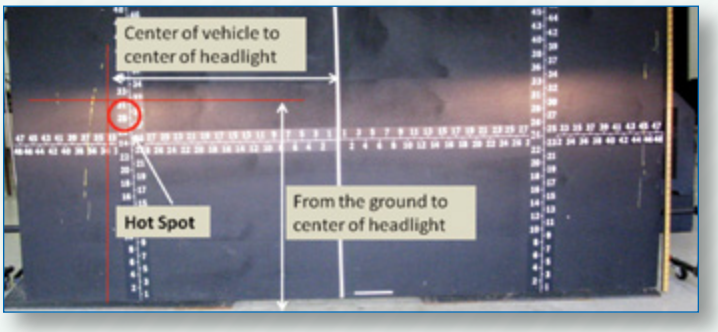
(Continued from page 3)

3. Apply these figures to the headlight board. To aim the low beam, the hot spot should fall two inches down and two inches to the right of the intersecting lines. To aim the high beam, the hot spot should be centered on the intersecting lines.



Low Beam Hot Spot **High Beam Hot Spot**

A slight deviation of up to two inches to the left or right, or below is acceptable. Depending on the design of the vehicle's headlamps, you may or may not have to check the alignment of the high beams. If the vehicle uses separate bulbs and housings for high beams, a second measurement and alignment for the high beam headlamps will be needed.



Program Transitioning to New Contractor This Fall

(Continued from page 1)

Applus is rolling out a web site dedicated to the transition process that stations can use to submit forms and equipment payments electronically, and to learn about equipment financing options. The new site provides details on critical dates, including when equipment will need to be ordered so it can be installed and ready by October 1.

Inspectors can use the web site to enroll in orientation sessions that they will be required to attend before they may conduct inspections after October 1. Orientation is free, and will not affect an inspector's current two-year recertification schedule.

Please bookmark the following web site and check in often for important announcements and program-related information: www.MassVehicleCheck2017.com.

Registered Repair Technician Updates

▶ Emissions Repair Success Ratings Reminder

For Registered Emissions Repair Shops that have entered repair data, the Fourth Quarter 2016 Emissions Repair Success Ratings are now available on Vehicle Inspection Reports and on the Repair Shop Locator, found at:

http://www.massvehiclecheck.state.ma.us/find_emissions_repair.php.

Each repair shop is responsible for entering its vehicle repair information for any given month by the tenth day of the following month. For more information about repair data entry, visit: http://www.massvehiclecheck.state.ma.us/inspection_repair_data_entry.php

▶ Winter 2017 Training Recap

In March 2017, the Massachusetts Vehicle Check program offered a Registered Repair Technician ongoing training module titled "Labscope Usage and Interpreting Waveforms." Instructor Jerry "G" Truglia trained a total of 26 Registered Repair Technicians and two non-Registered Repair Technicians who attended the seminars at the Medford and Shrewsbury Motorist Assistance Centers (MACs).

▶ 2017 Ongoing Training Courses

All current Registered Emissions Repair Technicians are required to attend one four-hour ongoing training seminar each year to maintain their status in the Massachusetts Vehicle Check Program. In the next six months, Parsons is offering two 2017 quarterly seminars from 6:00 PM to 10:00 PM at Motorist Assistance Centers (MACs) located across the state.

Ongoing Training Seminar	Locations and Dates
Spring 2017 – OBD II Diagnostics and Trouble-shooting	Braintree MAC - June 5 Pocasset MAC - June 6 Shrewsbury MAC - June 7 West Springfield MAC - June 8
Summer 2017 – Gasoline Direct Injection (GDI) Driveability and Diagnostics	Medford MAC – September 11 Fall River MAC – September 12 Shrewsbury MAC – September 13 West Springfield MAC – September 14

All Training Seminars for Registered Repair Technicians are offered free of charge. The applications for these courses are available at http://www.massvehiclecheck.state.ma.us/inspection_ongoing.html.

Should you need help registering or have any questions, please contact our Registered Repair Coordinator at (781) 794-2961. Space is limited to 35 technicians per class; please enroll as soon as possible to secure a place.

Inspection Update Profile

Matt Lamontange, Manager
Leo & Sons Auto Repair, Lawrence, MA

Left to right: Matthew Lamontange, manager, Leo Lamontange, owner, and Edwin "Bud" Dzioba.

Q: What services does Leo & Sons offer?

A: Leo & Sons performs repairs and maintenance for all makes and models, and specializes in emissions diagnosis and hybrid vehicles. We have grown our hybrid repair business especially over the past three years and on top of being an L-1 ASE Master Tech, I also have my L-3 Light Duty Hybrid/Electric Vehicle Advanced Certification. We are also an AAA Auto Approved Repair Facility and provide towing and plowing services to our customers.

Q: What are your roles and responsibilities?

A: As Lead Technician and Manager, I perform all complex diagnosis and repair jobs, and oversee business operations and all the work that comes in and out of the shop on a daily basis.

Q: How many employees do you have? What are their roles?

A: We have three employees, including myself. My father, Leo Lamontange, is our main service writer and performs general repairs. My father has long been the face of the business and is very involved in the local community. Edwin "Bud" Dzioba, is an ASE-Certified Technician and performs diagnosis and general repairs. Bud has been with our company for over 30 years and brings a wealth of experience to the shop. All three of us perform state inspections. We are a collaborative shop and work as a team to give our customers the best service.

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

A: My father opened Leo's Auto in 1975 and later changed the name to Leo & Sons Auto after my brother and I were born. We grew up at the shop and I started working after school and summers from the age of 12 through high school. I graduated from WyoTech (https://www.wyotech.edu/) in 2007 and have been working as a technician ever since.

Q: Are you a Registered Repair Technician?

A: Yes, since 2010.

Q: How has being a Registered Repair Technician (RRT) helped your business?

A: The Registered Repair Shop program has demonstrated to our customers our dedication to diagnosing and fixing the difficult repairs right the first time. We have found that being a Registered Repair Shop has generated numerous leads that led to jobs we may not have received otherwise.

Q: Have you attended any of the Registered Repairer Training Seminars? How else do you keep up with changes in vehicle technology and emerging technologies in the Industry?

A: I attend all the Registered Repairer Training Seminars in my area. I also regularly attend training seminars through ATG, AutoPlus, O'Reilly's, Federated, WorldPac, TST Seminars, and NESSARA, and will be attending Vision Hi-Tech Training in Kansas City. I am a firm believer that there is no such thing as too much training.

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

A: I find intermittent complaints to be the most challenging. When a customer experiences an issue periodically and the vehicle doesn't act up while I'm testing, it's difficult to nail down a cause. We use all the diagnostics equipment and service information available, but if we can't definitively condemn a vehicle component, we don't recommend a repair to the customer until we can pinpoint the issue.

Q: As Spring approaches, what maintenance do you advise motorists to consider?

A: As with the change of any season, we recommend that our customers have their vehicle checked for any necessary maintenance, including the condition of fluids, filters and other wear items. Specifically for spring, with an increase in pollen we recommend checking a vehicle's cabin air filter to ensure our customers and their passenger are breathing clean air and keeping allergies at bay.

Q: How do you advertise your business?

A: We advertise on Yelp, Facebook, Google AdWords as well as local church bulletins and charity events. We have strong roots in our community and are members of the Merrimack Valley Chamber of Commerce and the Mill City and Merrimack Valley chapters of Business Network International.

Q: What is your business motto?

A: "The type of car you drive is your own business, how well it runs is ours."

Motorist Assistance Center Repair Technician's Corner

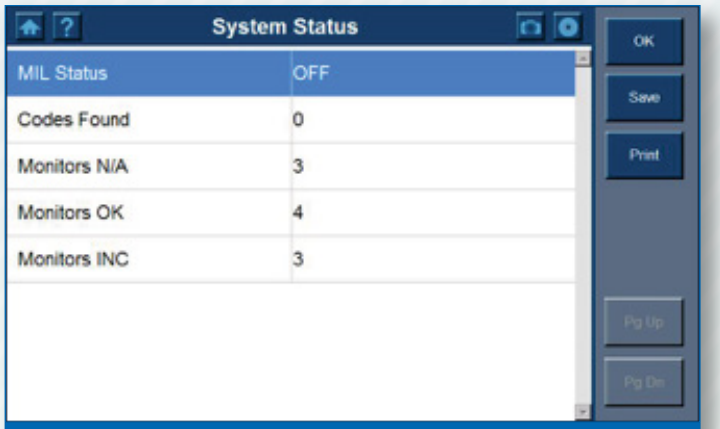
▶ Diagnostics with OBD II Generic Information Isn't Enough

A 2006 Ford Expedition with a 5.4 liter V8 engine failed its initial inspection for readiness with three readiness monitors not ready: Catalyst, Oxygen (O2) sensor, and O2 heater monitor. The vehicle received three readiness turn away inspection results, which resulted in a referral to the Tewksbury Motorist Assistance Center (MAC) for readiness monitor setting assistance.

Caption: 2006 Ford Expedition. Source: www.cargurus.com

The vehicle owner told the MAC L-1 technician that the transmission had been replaced only three weeks earlier, and that the vehicle had not been driven very much after that repair. The L-1 advised the motorist of the specific drive cycle to reset the monitors to ready and cleared the MAC referral flag. The motorist drove the vehicle for several days, but was unsuccessful in getting the monitors to complete and continued to be turned away from inspection.

The MAC L-1 asked the motorist to bring the vehicle back to the Tewksbury MAC to check for any pending codes, identify any odd scan tool data readings, and if necessary drive the vehicle on the MAC dynamometer to try to identify the problem. Setting Ford vehicle OBD monitors to ready is generally an easy process, provided the vehicle doesn't have one stubbornly unset monitor and the drive cycle has been performed correctly.



OBD II Generic Scan Data indicated that there were no diagnostic trouble codes present, but that three monitors were still incomplete (INC).

When the Ford owner returned, the L-1 technician checked for codes in OBD II Generic mode; there were no current or pending codes set, and the Check Engine light was off. A quick scan of OBD II Generic scan data did not reveal any anomalies or oddities. At this point, it did not make sense that Catalyst, O2 and O2 heater monitors had not run to completion during the driving that the motorist had done.

Next, the MAC L-1 decided to check for codes using enhanced Ford software. This is the normal software most shops use when checking vehicles rather than relying on OBD II Generic data. When checking under the enhanced OBD II scan tool data, he found two diagnostic trouble codes (DTCs) stored: P1000 and P1233.

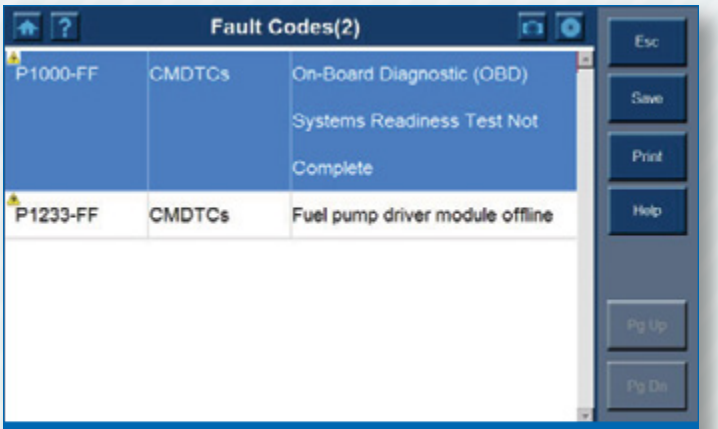
(Continued on page 7)

Date of Inspection	Test Counter	Odometer	Overall Inspection Result	MIL Results	Catalyst	O2	O2 Heater	EVAP	EGR
12/01/2016	1	142,045	Fail	P	N	N	N	R	U
12/08/2016	2	142,862	Turnaway	P	N	N	N	R	U
12/15/2016	2	142,150	Turnaway	P	N	N	N	R	U
12/30/2016	2	142,481	MAC	P	N	N	N	R	U
2/09/2017	2	142,760	Turnaway	P	N	N	N	R	U
2/10/2017	2	142,762	Turnaway	P	N	N	N	R	U
2/10/2017	2	142,796	Turnaway	P	N	N	N	R	U
2/10/2017	2	142,826	Turnaway	P	N	N	N	N	U
2/10/2017	2	142,845	Turnaway	P	N	N	N	N	U
2/11/2017	2	142,897	Turnaway	P	N	N	N	R	U
2/13/2017	2	142,794	Turnaway	P	N	N	N	R	U
2/14/2017	2	143,003	Pass	P	R	R	R	R	U

OBD Inspection History for 2006 Ford Expedition, showing the status of all non-continuous monitors for each inspection. N means Monitor is Not Ready. R means Monitor is Ready. U means Monitors is Unsupported.

Motorist Assistance Center Repair Technician's Corner

(Continued from page 6)



OBD II Ford Enhanced Scan Data indicated that there were two DTCs present. The P1233 DTC was preventing the Catalyst, O2 and O2 heater monitors from running to completion.

The P1000 DTC was not helpful, because it only indicated that the vehicle had not set all of its monitors to ready. However, the P1233 DTC was informative. A P1233 DTC is stored when the Powertrain Control Module (PCM) has lost communication with the Fuel Pump Driver Module (FPDM).

Based on the MAC L-1's experience, he was familiar with a known issue on Ford and Lincoln vehicles that have externally mounted FPDMs. Ford mounted these modules under the bed or body on a frame rail somewhere in the back of vehicles, where they frequently can be exposed to water, sand, salt and other chemicals on New England roadways in the winter months. A quick glance under the Expedition revealed that the FPDM was severely corroded and starting to disintegrate.

The L-1 advised the motorist to visit a Registered Emissions Repair Shop for complete diagnosis and repair of the FPDM. The motorist followed this advice and took his Ford to a nearby Registered Repair Shop. When the Registered Repair Technician removed the FPDM, he found it had a large hole in it. He replaced the FPDM and the Expedition passed its re-inspection the following day.

When the PCM sees that it has no communication with the FPDM, it knows that it is no longer able to request fuel pressure changes. Therefore, the PCM goes into a backup or default fuel delivery mode. During this backup operation, certain readiness monitors are suspended from running. So because this Expedition's FPDM was offline, the motorist couldn't drive his vehicle to set the monitors because the PCM had suspended them from running. Once the FPDM was replaced, the PCM enabled the monitors to run and start testing again.

To fully understand this repair case, you might be asking why, if the vehicle had a P1233 DTC stored, wasn't the Malfunction Indicator Lamp (MIL) commanded on? OBD regulations require that the PCM command the MIL to turn on when a fault occurs that could cause the vehicle's emissions to exceed the certification standards for that particular emission platform. So in this case, Ford had already determined that this FPDM failure does not increase the Expedition's tailpipe or evaporative emissions, so they didn't program the PCM to turn on the MIL when the P1233 DTC is recorded.

For most emissions problems turning on an MIL, you can get most of the information that you need to fix the car by just using an OBD II Generic scan tool; however, there will be times that you also need to use a scan tool with factory-enhanced software in it. Especially on European vehicles, it is not uncommon for repair technicians to find one or two codes using OBD II Generic mode, but then find many more additional manufacturer-specific codes using enhanced software that can aid in your diagnosis.

Above is a picture of a FPDM mounted to the rear frame rail from another Ford, courtesy of Matt Lamontange from Leo and Sons Auto in Lawrence, MA. The red arrows indicate the area that has completely rotted away, and illustrates how badly these FPDMs can corrode. Due to the frequency of this problem, Ford has redesigned the FPDM to include spacers so that it is no longer mounted flat against the frame rail, allowing moisture and chemicals to restart the destructive process.

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Inspection Update
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Volkswagen Recall Information and Lighting Devices/Headlight Aiming Reminders Inside!

Massachusetts Vehicle Check Program At A Glance

Program at a Glance	Count	Failure Rate
Non-Commercial Safety Inspections	1,080,987	4.4%
Commercial Safety Inspections	39,351	4.9%
7D Safety Inspections	6,324	2.0%
OBD Emissions Inspections	868,686	5.4%
Opacity Emissions Inspections	21,159	1.6%
Emissions Waivers Issued	1	
Repair Hardship Extensions Issued	9	

Enforcement Statistics	Count
Violations Issued to Inspectors	113
Violations Issued to Stations	142
Inspector Privileges Revoked	5
Inspector Required to Retrain	6
Inspectors Suspended	21
Stations Suspended	41
Penalties Assessed	$0

Hotline and Training Statistics	Count
Motorist Calls Received	2,287
Inspection Station Calls Received	6,364
Initial Non-Comm. Inspectors Trained	416
Initial Commercial Inspectors Trained	87
Initial 7D Inspectors Trained	9
Initial Motorcycle Inspectors Trained	10

Licensed Stations	Count
Class A Stations	1,163
Class B Stations	197
Class C Stations	29
Class D Stations	304
Class E Stations	9
Reg. Emissions Repair Shops	150

For period 10/1/2016 through 12/31/2016