MASSACHUSETTS
VEHICLE CHECK
Cleaner Air • Safer Roads

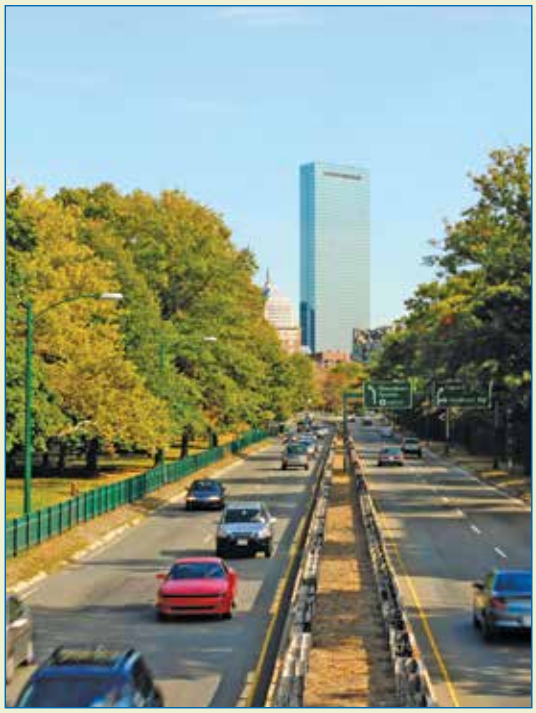
INSPECTION UPDATE

Volume 14, Issue 2 Summer 2013

Contents

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.

EPA Proposes Cleaner Vehicle and Fuels Standards



EPA has proposed tighter standards for future new cars and trucks based on extensive input from auto manufactures, refiners, and states. The new standards, known as Tier 3, will help lower automobile pollution by a significant margin. Tier 3 would set new vehicle emissions standards starting with 2017 model year vehicles, and lower the sulfur content of gasoline. Compared to current Tier 2 emissions standards, the proposed tailpipe standards for cars represent approximately an additional 80 percent reduction from today's fleet average for ozone causing pollution.

Tier 3 requirements would also increase emission control system useful life standards to 150,000 miles, up from the current 120,000 miles. This is expected to benefit consumers by providing longer-lasting emissions control components, reducing long-term operating costs.

The proposed standards, together with California's clean cars and fuels program, will create a harmonized nationwide vehicle emissions program that enables automakers to sell the same vehicles in all 50 states. The proposal is designed to be implemented over the same timeframe as the next phase of EPA's national program to reduce greenhouse gas (GHG) emissions from 2017 model year cars and light trucks. Together, the federal and California standards will maximize reductions in GHGs, air pollutants and air toxics from cars and light trucks while providing automakers regulatory certainty and streamlining compliance. For information on EPA's notice of proposed rulemaking, visit: http://www.epa.gov/otaq/tier3.htm

Massachusetts Governor Deval Patrick supports this proposed rulemaking: "I applaud President Obama and the EPA for issuing this new rule, which is a significant step forward in reducing air pollution from vehicles. This rule means cleaner cars and cleaner fuels, which in turn means healthier communities across the country. This common sense regulation is a victory for a cost-effective and sensible way to clean our air."

Canada's Environment Minister has announced his country will adopt the United States Tier 3 emissions standards for passenger vehicles. Canada's move to adopt Tier 3 has the support of the Global Automakers of Canada, an industry association comprised of 15 different manufacturers, and the Canadian Fuels Association.

Registered Repair Technician Updates

▶ Repair Data Entry Update

At the beginning of 2013, the Massachusetts Vehicle Check Program introduced its Repair Data Entry web application to begin collecting vehicle emissions repair information. Registered repair shops can securely enter vehicle emissions repair data so that the program can assign each shop an Emissions Repair Success Rating (ERSR). ERSRs will be generated on a quarterly basis once the program has collected six months worth of repair data.

The 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 repair information, visit this page and click the link that opens the Repair Data Entry application, or visit this page directly: https://repairdata.massvehiclecheck.com/rde/.

▶ Summer 2013 Ongoing Training Courses

The Summer 2013 Registered Emissions Repair Technician ongoing training seminar will be the next opportunity for Registered Repair Technicians to complete their annual training requirement. Parsons is offering this seminar from 6:00 PM to 10:00 PM at the following Motorist Assistance Centers: Braintree (September 16), Fall River (September 17), Shrewsbury (September 18), and West Springfield (September 19).

The summer seminar will focus on Diagnosing P0420 and P0430 Catalyst Below Threshold Diagnostic Trouble Codes (DTCs). More than 81,000 vehicles have failed the on-board diagnostics (OBD) test with at least one catalytic converter DTC since the Massachusetts Vehicle Check Program began. The training will concentrate on effective diagnostics and repair of vehicles that have failed emissions tests with catalytic converter DTC problems.

The cost of the seminar is $150, and payment may be made by either check or credit card. The application for this course is available at http://www.massvehiclecheck.state.ma.us/inspection_ongoing.html. Should you require assistance registering or have any questions regarding the course, please do not hesitate to contact our Registered Repair Coordinator at (781) 794-2961. It is important to sign up as soon as possible, as space is limited to 35 per class.

Repair technicians asked G Truglia questions during the OBD II Evaporative Essentials ongoing training module at the Pocasset MAC.

▶ Spring 2013 Registered Repair Technician Ongoing Training Recap

In June, the Massachusetts Vehicle Check program offered a Registered Repair Technician ongoing training module titled "OBD II Evaporative Essentials." Instructor "G" Truglia taught 25 repair technicians at four Motorist Assistance Centers (MACs) about effective diagnostics and repairs on vehicles that have failed emission inspections because of evaporative emissions control system DTC problems.

▶ Prospective Registered Emissions Repair Technicians

If you would like to become a Registered Repair Technician, please visit http://www.massvehiclecheck.state.ma.us/inspection_repair_tech.html and review the application and training requirements.

The next OBD Diagnosis and Repair Training Class will be offered in October (see the schedule below). Application forms can be downloaded from the program website at this address: http://www.massvehiclecheck.state.ma.us/inspection_forms.html. If fewer than six repair technicians enroll by the week before a class begins, Parsons may cancel the class.

If you have any questions about the OBD Diagnosis and Repair Training Course, please contact our Registered Repair Coordinator at (781) 794-2961.

Fall 2013 OBD Diagnosis and Repair Training Schedule

Braintree MAC (Day Class)

Monday to Wednesday, October 7-9 – 8:00 AM to 5:00 PM Classroom/Hands-On Training

Thursday, October 10 – 8:00 AM to 12:00 PM Hands On Training/Exam

Inspection Procedure Reminders

▶ Inspection Sticker Guidance

All inspectors are reminded that it is their responsibility to handle windshield stickers properly at all times. Here are two steps to follow to eliminate most sticker handling problems:

1. Never scrape the inspection sticker off a windshield until you have the replacement sticker in your possession (printed and scanned from the workstation).
2. Always follow the complete workstation end of test procedure to obtain a new sticker. Any deviation from the workstation process may void the sticker, thereby ruining a completed inspection. Anytime you have sticker printing problems, please contact our Help Desk at (877) 834-4677 for guidance.

▶ Summer Temperatures and Humidity Levels

Summer heat and humidity bring an increase in the number of phone calls to the Help Desk regarding Vehicle Inspection Reports (VIR) printing issues. To prevent multiple sheets of paper from sticking together, inspectors should make sure there is sufficient air flow to the workstation cabinet to minimize heat buildup. When inserting a new book of VIR stock, inspectors should remove the shrink wrap and fan the paper before inserting it into the printer tray.

To prevent multiple sheets of paper from sticking together, fan the paper when inserting a new book of VIR stock or if the humidity levels are high.

▶ Inspectors: Use the workstation's scan tool to make proper determinations about OBD readiness

In the Massachusetts Vehicle Check Program, many vehicles receive inspection turn-aways because not enough of their on-board diagnostic (OBD) monitors are ready. Possible reasons for this include a motorist's resistance to follow procedures, a vehicle-specific problem and, in some cases, the vehicle inspectors themselves.

The Massachusetts Vehicle Check Program has taken steps to assist with OBD readiness monitor issues, but unless inspectors follow the defined workstation procedures for *all* vehicles, they can unknowingly prevent these steps from solving the problems these steps are intended to address.

All attempts to re-test a vehicle should be carried out on the Inspection Workstation by utilizing the Vehicle Inspection menu option. The inspection process should be followed through to completion. Checking the readiness status with your hand-held scanner or aborting an inspection attempt will prohibit some of the behind-the-scenes support provided to you.

The current readiness thresholds for most of the vehicles we inspect are:

- 2001 MY and newer vehicles are allowed one non-continuous monitor to be *not ready*
- 2000 MY and older vehicles are allowed two non-continuous monitor to be *not ready*
- For the retest for any vehicle that failed its initial inspection for a catalyst efficiency code (e.g. P0420, P0421, P0430, P0431 etc.), the catalyst monitor must be *ready*.

By using the workstation scan tool for each vehicle, you help the program to capture unique or reoccurring OBD readiness issues that can be investigated with either vehicle manufacturers or the workstation software.

For all OBD vehicles that continue to be *not ready*, the program also helps by automatically referring vehicles to Motorist Assistance Centers (MACs). If program procedures are followed, that vehicle will be automatically referred to a MAC if it has not passed three retest attempts over a span of two weeks. MAC staff will work with the motorist until the vehicle monitors are *ready*. The Refer to MAC status will be removed, and the vehicle will then need to return to your facility one more time to complete the inspection process. Motorists can contact the Motorist Hotline at (866) 941-6277 to make an appointment at the nearest MAC.

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Inspection Procedure Reminders

(Continued from page 3)

▶ Repair Technicians: Use your OBD scan tool to check for OBD readiness after vehicle repairs

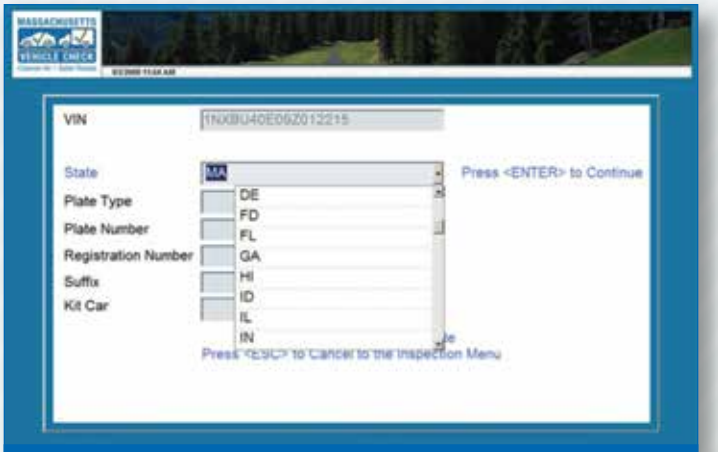
As repair technicians, it is important to work with your customers to ensure their vehicle's OBD monitors are *ready* when they return for their retest. Any vehicle that initially failed for a catalytic convertor efficiency code must have the catalyst monitor ready upon re-inspection. If this vehicle undergoes a re-inspection with one monitor *not ready* and that monitor is the catalyst, the vehicle will be turned away. After addressing a Catalyst diagnostic trouble code (DTC), use your hand-held scan tool to check the vehicle and see whether the Catalyst monitor is *not ready*. If it is, the vehicle is not ready to pass a re-inspection.

For a very small group of diesel-powered vehicles subject to the OBD test, the Nitrogen Oxide (NOx) Aftertreatment readiness monitor is excluded from the total readiness monitor status count. This exclusion is specific for the vehicles listed in the table below. Even though these diesel vehicles are 2010 and newer model years, the program allows two readiness monitors to be *not ready*, as long as one of the monitors is the NOx Aftertreatment Monitor.

If you use your hand-held scan tool to check readiness monitors on these vehicles, if there were two monitors *not ready*, one of which is the NOx Aftertreatment monitor, you could mislead your customers into thinking the vehicle is *not ready* to re-inspect. However, the workstation software already identifies these vehicles and is programmed to include or exclude the exact monitor dependant on the vehicle configuration. The inspector's responsibility is to ensure that they identify the vehicle correctly by entering the correct vehicle information in the appropriate fields. The workstation's software will do the rest.

▶ Vehicles Registered in Other States Needing Massachusetts Inspections

If a motorist is visiting Massachusetts for an extended period of time, such as a college student or a visiting professional, and their out-of-state vehicle registration is about to expire, the motorist may be required to have their vehicle inspected in Massachusetts, which will be recognized by the respective state. This type of inspection is called an out-of-state reciprocal inspection. Once the vehicle is inspected in Massachusetts, the motorist will use the Vehicle Inspection Report as proof of a completed inspection to keep the registration current.



When inspecting an out-of-state vehicle, use the State drop-down menu to select the correct state.

Inspectors should be prepared for motorists with vehicles registered in other states presenting their vehicles for inspection. When this occurs, you should start the inspection as if it were a Massachusetts vehicle but when entering the vehicle data in to the workstation, simply change the state selection from "MA" to the state where the vehicle is registered. Conduct the remainder of the inspection as if it were a Massachusetts vehicle, including scanning and applying the inspection sticker to the window, providing the VIR, and charging the inspection fee.

The only Massachusetts regulations that are not applicable for an out-of-state reciprocal inspection are 540 CMR 4.04(8)(g) Window Tint regulations. In other words, not every state has window tint regulations, so out-of-state vehicles are not subject/cannot be failed for improper window tinting.

List of Diesel Vehicles with NOx Aftertreatment Monitor Excluded from Total Readiness Monitor Status Count

Make	Model Years	Models	Fuel Type	Engine Displacements
Audi	2010 and newer	A3, A8, Q7	Diesel	2.0L, 3.0L
Dodge	2010, 2011	Ram Pickup	Diesel	6.7L
Ram	2012 and newer	Ram Pickup	Diesel	6.7L
Volkswagen	2010 and newer	Beetle, Golf, Jetta, Passat	Diesel	2.0L
Volkswagen	2010 and newer	Touareg	Diesel	3.0L

Inspection Update Profile

Jim Bumann, Owner, Tech Auto Service
Woburn, MA

From left to right, the Tech Auto Service team members include repair technician Brian Leininger and owners Jim and Tracey Bumann.

Q: What services does Tech Auto Service offer?

A: We are a full-service vehicle maintenance facility. We do everything from oil changes to engines and in between. This includes servicing timing belts, A/C and all aspects of maintenance. Most recently, we upgraded our inspection station license to a Class B license, which allows us to inspect any vehicle with a Gross Vehicle Weight Rating (GVWR) up to 26,000 pounds.

Q: What are your roles and responsibilities as owner?

A: As the owner of Tech Auto Service, I oversee everyday shop operations, as well as all diagnosing and servicing vehicles in the bays.

Q: How many employees do you have?

A: We have three employees: myself, my wife Tracey, who is the office administrator, and our technician, Brian Leininger, who has been with the company for over 15 years.

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

A: I bought my first vehicle before I even had my first driver's license. After working on my own truck, I decided that my niche was going to be the automotive industry. I started working at a couple of shops in Burlington, MA, and eventually bought Tech Auto Service and moved the shop to its current Woburn location. We are proud of the fact that we have been in business for 25 years.

Q: Have you attended any of the Motorist Assistance Center (MAC) training seminars? How else do you keep up with changes in vehicle technology and emerging technologies in the Industry?

A: In this industry, it is key to keep up with technological advancements, so I attend as many trainings and seminars as I possibly can, including the seminars at the Medford MAC. We are also an ACDelco Professional Service Center, so I attend their seminars, as well as any others that I can reasonably reach. I supplement this training with ALLDATA® for OEM service and repair information, as well as General Motors (GM) Service Information.

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

A: I am a Registered Repair Technician. My employee Brian and I are both L-1 ASE certified technicians.

Q: How has being a RRT helped your business?

A: Being a RRT, I receive a lot of referrals from the MAC closest to my shop. We also receive referrals if motorists fail their inspections, and are referred to Tech Auto Service via their Vehicle Inspection Reports (VIR). Finally, we maintain a website: http://www.trustthisbiz.com/tech_auto. Overall, I gain a lot of new customers because we run a safe, clean, honest and professional business.

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

A: All vehicle repairs these days are challenging because of the complex vehicle technology and systems, including multiple diagnostic trouble codes for each system. Also diagnosing vehicles with no diagnostic trouble codes is another reason why it is so important to keep up with advances in motor vehicle technology.

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

A: Motorists should move forward with their regular maintenance and oil changes, as well as check their vehicles' belts and hoses during A/C season when under hood temperatures increase. They should also have their vehicles' coolant levels and, equally as important, the integrity of the coolant itself checked. With all of the extended driving that motorists do in the summer, they should also check tire tread depth and overall tire condition.

Q: How do you advertise your business?

A: Most of my business is referral-based. We are accredited by the Better Business Bureau (BBB), and regularly receive referrals from the BBB website. As an ACDelco Professional Service Center, some of their websites also bring us traffic.

Q: What is your business motto?

A: Our business motto is simple—we strive to keep our customers happy and safe.

EPA Report Shows Significant Gains in Fuel Economy for 2012

The U.S. Environmental Protection Agency (EPA) recently released its annual report concerning the fuel economy of vehicles sold in the United States. This report underscored the major improvements made in the fuel efficiency of the vehicles Americans drive, reducing gasoline and diesel consumption and cutting carbon emissions. According to the report, EPA estimates that between 2007 and 2012, fuel economy values increased by 16 percent while carbon dioxide (CO2) emissions have decreased by 13 percent. The report indicated a significant one year increase of 1.4 miles per gallon (mpg) for cars and trucks in 2012.

"We are making strides toward saving families money at the pump, reducing greenhouse gas emissions and cleaning up the air we breathe," said Gina McCarthy, Assistant Administrator for EPA's Office of Air and Radiation. "The historic steps taken by the Obama administration to improve fuel economy and reduce our dependence on foreign oil are accelerating this progress, will spur economic growth and will create high-quality domestic jobs in cutting edge industries across America."

The 1.4 mpg improvement in 2012 is based on sales estimates provided by automakers to EPA, whose projections show a reduction in CO2 emissions to 374 grams per mile and an increase in average fuel economy to 23.8 mpg, the largest annual improvements since EPA began reporting on fuel economy.

EPA's annual "Light-Duty Automotive Technology, Carbon Dioxide Emissions, and Fuel Economy Trends: 1975 through 2012" attributes the improvements to the rapid adoption of more efficient technologies, the increasing number of high fuel economy choices for consumers, and the fact that many automakers are already selling vehicles that can meet more stringent future fuel economy and greenhouse gas emissions standards. The report indicates that the projected gains for 2012 more than make up for a slight dip in fuel economy in 2011.

Compared to five years ago, consumers today have twice as many hybrid and diesel vehicle choices, a growing set of plug-in electric vehicle options, and a six-fold increase in the number of car models with combined city/highway fuel economy of 30 mpg or higher.

The new report can be found at: http://www.epa.gov/otaq/fetrends.htm.

Summertime Still Brings Occasional Smog

Despite the many air quality gains in Massachusetts, smog – a mix of ground-level ozone and fine particles – can still form on some hot summer days. Smog is a health concern for everyone, particularly children and people with asthma and other respiratory problems. It's important for people to limit strenuous outdoor activity on smoggy days.

The Department of Environmental Protection (MassDEP) and U.S. Environmental Protection Agency (EPA) provide daily air quality forecasts and alerts to let the public know when smog levels are high. For current conditions, visit the MassDEP web site at http://public.dep.state.ma.us/MassAir/ or call the agency's Air Quality Hotline at 1-800-882-1497. You may also sign up to receive air quality alerts by email or text message when high concentrations of ground-level ozone or fine particles are predicted in your area: http://www.enviroflash.info/signup.cfm.

Because motor vehicles, small engines, and power plants are among the major emitters of ozone-forming pollutants, MassDEP and EPA recommend that you take the following steps on smoggy days:

- Use public transportation or combine errands to reduce vehicle trips;
- Turn air conditioners down and lights, TVs and computers off when not in use; and
- Avoid using lawn mowers, chain saws and other equipment with small gasoline-powered engines.

Massachusetts Vehicle Check Contract Extension Update

Throughout Spring 2013, the Massachusetts Department of Transportation (MassDOT) Registry of Motor Vehicles (RMV) Division and Department of Environmental Protection (MassDEP) continued discussions with Parsons regarding the second two-year contract extension option and related changes in costs to the agencies and the inspection industry. This option would extend the existing contract's end date from September 30, 2015, to September 30, 2017.

Parsons has proposed a pricing structure that would maintain the costs for the first two-year extension through the end of the contract. This provides cost stability for the inspection industry for the final four years of the contract. The Parsons proposal has received approval from the MassDOT Board of Directors, and an extension agreement is pending.

Website Updates

This spring, the Massachusetts Department of Environmental Protection (MassDEP) website underwent a major makeover and is now part of the larger Mass.Gov "portal" site. While the MassDEP home page can still be found at http://www.mass.gov/dep/, links to many other pages may no longer work, so you should update your browser bookmarks or favorites.

In addition, the Massachusetts Vehicle Check Program reorganized its Inspection and Repair Industry Downloadable Forms page to improve the use of this page. Please visit the new webpage at: http://www.massvehiclecheck.state.ma.us/inspection_forms.html.

Motorist Assistance Center Repair Technician's Corner

▶ OBD Vehicle Networks

Fully-functional vehicle networks allow modules and scan tools to interact whenever the vehicle is in the KOEO (Key On Engine Off) or KOER (Key On Engine Running) position, including sharing information and sending commands to actuators.

This type of network controls many vehicle functions and checks the vehicle for faults. When data is broadcast over the network, special software regulates message traffic to prevent data collisions. (Think of it as watching a TV program when everyone is speaking at once. If they don't take turns speaking, it is impossible to understand the words coming out of their mouths.) A bus is the highway that transmits data messages and network message regulation is referred to as bus arbitration.

Ford's Standard Corporate Protocol (SCP) network is one example of a high speed data highway. It uses a communication protocol running at 41.6 kbps and operates whenever the vehicle is running, allowing constant crosstalk among various vehicle sensors, actuators, and modules. The SCP network data bus is made of two wires twisted together, known as a twisted pair.

Others, like the new Chrysler PCI network, transmit data over a single wire bus. Twisted pairs protect the bus from stray signals that might be induced into the bus wiring by high voltage electrical interference. This is particularly important when bus wires run close to a high voltage wiring harnesses or to secondary ignition cables.

Computer modules require accurate information from multiple sensors to operate reliably. Without precise, dependable sensor inputs, control modules make errors and send bad commands to actuators. To borrow a saying from the computer industry, "Garbage in equals garbage out."

Since multiple modules regularly share inputs from multiple sensors, there needs to be a way to provide sensor information to any module that needs it. Connecting a separate wire from each sensor to each module is impractical and consumes a lot of wire, making the vehicle heavier and more expensive to manufacture. And as we all know from experience, the more complicated things are, the more likely they are to break.

Here's a list of modules that might need the (VSS) Vehicle Speed Sensor input for their calculations:

- Engine Control Module (ECM)
- Transmission Controller (TCM)
- Cruise Control
- Speedometer/Odometer
- Speed Sensitive Wipers
- Audio System Volume Control
- Speed Sensitive Automatic Door Locks
- Trip Computer

Our Vehicle Speed Sensor (VSS) is connected to each module by a separate wire. While this gets the job done, it just isn't practical when you consider that there are dozens of shared sensor inputs in modern vehicles.

The VSS is only one of many sensors in the vehicle. In certain highly accessorized vehicles, it could take miles of additional wire to connect all shared sensors this way. Repeating this process for every sensor in the vehicle would require miles of wire, adding several pounds to the total vehicle weight.

The Society of Automotive Engineers (SAE) defines three types of data networks, categorized by transmission speed. For reference, data speed is measured in bps (bits per second) or kbps (kilobits, or 1000 bits per second).

- Class A - Slowest of the group, Class A crawls along at speeds below 10 kbps. Now outdated, an example of this protocol is pre-OBD II GM UART, transmitting at 8192 bps.
- Class B - Faster Class B data speeds fall into a range between 10 and 125 kbps. Class B includes all four current OBD II data protocols, but at 10.4 kbps each, ISO 9141, Keyword 2000, and the VPW version of the J1850 protocol aren't apt to be pulled over for speeding. The PWM J1850 version used by Ford is four times faster at 41.6 kbps.
- Class C - This high speed class blasts data at rates between 125 and 1000 kbps. While higher data transmission speed initially costs more to build into the system, it has a lot going for it. For instance, fast data improves powertrain control and diagnostics, becoming more important as electrically operated throttles, steering, and brakes go from the drawing board to production vehicles.

What is the bottom line? None of the current OBD II protocols approaches "real time" data transmission speeds. In other words, there is a noticeable delay between the time the data is sent and the time it is actually displayed on a scan tool. This is a real limitation when you are trying to see a circuit problem as it is happening (in real time).

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MA Vehicle Check Program Website Update and Inspection Procedure Reminders Inside!

Massachusetts Vehicle Check Program At A Glance

Program at a Glance	Count	Failure Rate
Non-Commercial Safety Inspections	1,012,764	5.5%
Commercial Safety Inspections	37,980	4.7%
7D Safety Inspections	5,251	1.7%
OBD Emissions Inspections	814,907	7.1%
Opacity Emissions Inspections	21,338	1.7%
Emissions Waivers Issued	0	
Repair Hardship Extensions Issued	13	

Enforcement Statistics	Count
Violations Issued to Inspectors	101
Violations Issued to Stations	113
Inspector Privileges Revoked	1
Inspector Required to Retrain	2
Inspectors Suspended	21
Stations Suspended	33
Penalties Assessed	$31,625

Hotline and Training Statistics	Count
Motorist Calls Received	3,117
Inspection Station Calls Received	7,317
Initial Non-Comm. Inspectors Trained	298
Initial Commercial Inspectors Trained	99
Initial 7D Inspectors Trained	30
Initial Motorcycle Inspectors Trained	29

Licensed Stations	Count
Class A Stations	1,203
Class B Stations	189
Class C Stations	29
Class D Stations	304
Class E Stations	9
Reg. Emissions Repair Shops	195

For period 01/01/2013 through 03/31/2013