

eAir REPAIR

December 2009 edition



Training and Determination Pay Off

By: Scott Lettow (Field Trainer) Car-X Associates Corp



Pictured, left to right: Dan Calabrese; Pedro De La Torre; and others in Dan's crew at Car-X Auto Service, 5418 S. Pulaski, Chicago.

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Every day brings a challenge in the automotive repair business. "Committing to repairs has been paying off for us," says Dan Calabrese, store owner of Car-X Auto Service at 54th and Pulaski in Chicago. Dan has been in the auto repair business for over 40 years and started his career as a muffler installer.

Dan and his crew are committed to training at the Car-X Training Center and the seminars offered by the Illinois EPA.

They had a 1999 Concord with a 2.7-liter engine come in with a P0420 DTC. No surprise, this vehicle had failed for a CAT code and now was rejected from the Illinois Air Team because the CAT monitor had not set to ready. This was a high mileage vehicle. The shop followed the guidelines of TSB # 18-29-98 from ALLDATA. The post-CAT O2 sensor was transitioning from lean to rich. They found it to be a mirror image of the engine control O2 sensor. The fix was easy. They replaced the CATs and took the vehicle out to run the monitor.

Running the monitor was not easy. After reviewing the drive cycle instructions and the pretest and enabling conditions, they drove the vehicle through two drive cycles without setting the CAT monitor to COMPLETE.

Dan and Pedro attended a free seminar sponsored by the Illinois EPA at Moraine Valley Community College at the same time this vehicle was in their shop. The class was taught by Scot Manna and addressed readiness monitor challenges. Scot had emphasized in that class how important it was to make sure to run inside the parameters for any drive cycle.

Catalyst monitor pretest conditions

- MIL is off.
- No emission related diagnostic trouble codes (DTC's) are present.
- Catalyst temperature range from 0 - 2,500° F.
- ECT signal from 131 - 260°F.
- Engine speed range between 1,440 - 2,016 RPM in drive.
- MAP sensor signal from 12.9 - 17.6" Hg.
- Open throttle time from 1.5 - 13.9 minutes.
- RPM speed ratio from 25 - 255 RPM.

- VSS range between 35 - 100 MPH (typically runs at a speed of 45 - 60 MPH).

Catalyst monitor enabling conditions

- Catalyst temperature range from 0 - 2,500° F.
- Engine speed range from 1,440 - 2,016 RPM in drive.
- Exhaust time between 1.5 - 13.9 minutes.
- MAP signal from 11.7 - 17.6" Hg.

They returned to their shop the next morning and re-ran the CAT monitor. They teamed up, as anybody should do, to allow the driver to concentrate on the driving. The MAP sensor signal parameters on this drive cycle need to be between 12.9 and 17.6" Hg. They realized that the road they were using had enough grade that it forced them to come out of range for a brief period and prohibited the monitor from completing. They used a different route and got it to run successfully.

I guess the advice to anybody would be to focus on the center of the parameter range. It will take a couple of people to do it. As proven by this tough drive cycle, it does not take a lot of change in road grade to have the MAP sensor come out of range.

This clearly shows that it takes patience and drive to be successful in emission repairs. It also shows the value of training. It has been paying off for Dan and his crew. It also shows where he wants to be in the future!

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When My Phone Rings

By: Dave Alder from Applus Technologies, Inc.



Transmission Codes and "U" Codes

The phone calls I want to share with you this month are in regards to "P" codes. I had a couple calls from technicians asking why the vehicle failed because it had a P07xx code. This also applies to P17xx codes. The technician argued that these were transmission codes and were not emission related.

If the MIL is commanded on for a transmission code, it is emissions related. OBD is required to monitor all powertrain components that effect emissions, or provide diagnostic input, or receive commands from the PCM. The transmission controls the amount of power going from the engine to the wheels. If the transmission is not working properly, the efficiency of the power transfer will be degraded. Simply stated, the engine of a vehicle with a malfunctioning transmission will have to work harder to provide the same amount of vehicle speed. A harder working engine will require more fuel which will result in higher emissions. If the sensors that monitor the transmission are not functioning properly, the PCM cannot determine if the transmission is working properly, resulting in a "Command On" status, illuminating the MIL. The decision to include these sensors is made by the manufacturers. If the MIL is commanded "on" for an active "P" code, the vehicle will fail.

Another call I had this month was a little strange. A CAN bus vehicle failed with a "U" code. The vehicle had multiple "U" codes for CAN "C" bus failure. The technician who diagnosed the vehicle said it was the anti-lock brake module shorting the bus and caused a communication failure. He said this cannot possibly be an emissions failure. I explained to the technician that although an ABM is not a traditional emissions repair, if the PCM cannot communicate with the bus because of a bad ABM, the ABM needs to be fixed. Not all emissions-related repairs are straight forward and actually sometimes a little weird.

That s it for this month. Please call me at (847) 616-6064 if you have any questions. If you have a good question, it may appear in a future issue to share with fellow technicians and shop owners!

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Don't Overlook Engine Temperature

By: Matt Weber from Clark's Car Care

With the winter months approaching, we remember seeing many cars, especially Chrysler minivans, not setting the emissions monitors due to engine temperature. These vehicles would generally come into the shop with no failure codes set and the thermostats opening properly. Don't let new technology confound you, remember your old diagnostic techniques. Just like in the old days, try putting a piece of cardboard in front of the radiator to help prevent cold air going into the engine compartment and secure what heat is there. We have done this, and the monitors ran quickly.

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January – June 2010 Seminar Schedule

"TENTATIVE DATES"

All seminars are from 6 pm – 10 pm on dates below.
They are sponsored by the Illinois EPA for the repair industry and they are free!

[2010 Complete Seminar Schedule](#)

OBD Code Repair Using Lab Scopes

This seminar is devoted to helping technicians develop a plan for successfully repairing OBD emission failures using labscope testing strategies. OBD testing will be reviewed and actual failure case studies will be looked at to help understand the test capabilities of scopes and probes. Using computerized information systems and code charts will be discussed to make diagnosing OBD code problems easier.

Presented by: [Scot Manna](#)

ID	Date	Location
M701	January 27, Wednesday	McHenry County College
M702	February 9, Tuesday	Moraine Valley Community College
M703	April 7, Wednesday	Oakton Community College

OBD Repairs Using Scan Tools

This seminar will show repair technicians the capabilities and enhanced functions of a variety of aftermarket and factory scan tools for system testing and OBD vehicle repair. Emphasis will be placed on bi-directional controls for testing and diagnosis found in many of the scan tools available today. Graphing, scan data analysis, and testing strategies will be discussed. The goal is to get the most from these tools and shorten diagnostic times. Actual vehicle case studies will be shown to illustrate these points.

Presented by: [Scot Manna](#)

ID	Date	Location
M801	January 28, Thursday	McHenry County College
M802	February 10, Wednesday	Moraine Valley Community College
M803	April 8, Thursday	Oakton Community College

Communication Protocol Testing for OBD Failures

This seminar will review proper testing techniques for communication issues with the PCM and various modules as it relates to OBD failures. The communication topology that will be discussed will focus on GM, Ford, and Chrysler systems. This is a "must attend seminar" for serious OBD repair technicians.

Presented by: [Ken Zanders](#)

ID	Date	Location
Z501	February 2, Tuesday	Joliet Junior College
Z502	March 3, Wednesday	Technology Campus of DuPage
Z503	May 3, Monday	McHenry County College

Enhanced Toyota EVAP Systems (NEW)

Toyota enhanced EVAP systems are significantly different than the systems found on domestic vehicles. This seminar will explain the operation of the most common Toyota OBD EVAP systems, both early and later systems. The seminar will also cover the new Key Off Vacuum Pump system and will discuss in detail the system operation and most importantly the system testing. Testing techniques will include the use of a scan tool, manometers, smoke machine, and a lab scope. Scan tool bi-directional controls will be covered as well as manual test methods.

Presented by: [John Thornton](#)

ID	Date	Location
T301	February 4, Thursday	Technology Campus of DuPage
T302	March 25, Thursday	Lake County High School Tech Campus
T303	April 1, Thursday	Kennedy-King College
T401	May 6, Thursday	Prairie State College

Using Mode \$06 Data for OBD Diagnosis and Repair (NEW)

Monitors are the key to OBD emissions testing success. Mode \$06 displays the monitors' results beyond a simple pass or fail. Using Mode \$06 data can expedite some emissions repairs and can even make diagnosis of some readiness rejects possible. This class starts with a brief overview of Mode \$06 data and how to decipher its meanings. Time will be spent on the do's and don'ts including the grey areas of invalid data. Many actual vehicle case studies will be used to illustrate the practical applications of using Mode \$06 data for successful OBD diagnosis and repair. Different scan tools and information resources will also be discussed.

Presented by: [Scott Shotton](#)

ID	Date	Location
S901	February 16, Tuesday	Truman College
S902	March 9, Tuesday	Prairie State College
S903	April 20, Tuesday	Lake County High School Tech Campus
S904	May 25, Tuesday	Kennedy-King College

Diagnostic Techniques for OBD Failures

This seminar will focus on the use of OBD scan data, freeze frame, and failure records as a means to a successful OBD repair. The Illinois "Dashboard" website will also be included in the diagnostic process. The overall goal of this presentation is to emphasize efficiency in testing and repair techniques for OBD failures.

Presented by: [Ken Zanders](#)

ID	Date	Location
Z201	March 1, Monday	McHenry County College
Z202	April 5, Monday	Joliet Junior College
Z203	May 4, Tuesday	Moraine Valley Community College
Z204	June 9, Wednesday	Technology Campus of DuPage

Mass Airflow and Fuel Trim Diagnostics (NEW)

This seminar will help the driveability and emission technician make accurate decisions regarding diagnosing Mass Airflow sensor problems and fuel trim issues. A three-step procedure for testing Mass Airflow sensors will be illustrated. Fuel trim operation and strategies will be discussed as well as using fuel trim values to help diagnose driveability problems. Vehicle repair case studies will be used to enhance understanding.

Presented by: [Scot Manna](#)

ID	Date	Location
M601	March 22, Monday	Truman College
M602	April 28, Wednesday	State of Illinois Complex, Collinsville
M603	May 11, Tuesday	Oakton Community College
M604	June 17, Thursday	Kennedy-King College

Advanced Communication Protocol Testing for OBD Failures (NEW)

This seminar will take a more in-depth look into communication issues. Case studies will be reviewed with a strong emphasis on labscope and advanced techniques leading to repair. This class was designed for the serious emission and driveability specialists.

Presented by: [Ken Zanders](#)

ID	Date	Location
Z101	June 7, Monday	State of Illinois Complex, Collinsville

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Dashboard Tip of the Month

From: the Illinois EPA Repair Industry Outreach Team

Seminar Registration

It is simple to register for a seminar. Click on "Register for FREE Seminar" then click on "Register". That s it! You will receive two email reminder notices before the seminar.

To unregister click on "You are Registered for this Seminar. Click here to Unregister".

To view seminars you have attended and to print a certificate of attendance click on "Certificate". Shop owners and managers can view seminars their technicians attended by clicking on "My Shop Detail" then click on the user ID.

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Articles Needed for eAir Repair

From: the Illinois EPA Repair Industry Outreach Team

We are always looking for short articles of interest for eAir Repair. Many of you have gathered information for successful emissions repairs. It is time to share those tips with your fellow technicians. Please help us out by writing a brief story (a couple of paragraphs) about your success or fix.

Those tips can be e-mailed to epa.repair.outreach@illinois.gov.

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