THE DRIVEABILITY GUYS

RANDOM MISFIRE

The Quarterly E-Newsletter for the Automotive Repair Industry

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EVAPORATIVE MYTHOLOGY

I was asked to teach a short class on EVAP for an ASA-ILL chapter meeting. They asked for a class that would give steps for leak testing that could be used on any vehicle. When talking to one of the guys, he made comment that an EVAP class going into winter might not be the best thing.

I understood his concern, since we all know that most EVAP monitors won't run below 40˚. I also know that we've all had vehicles come in with a leak code in the dead of winter.

All of this got me thinking. I started contemplating the idea that a vehicle that was in a garage all night could meet the 40˚ criteria. So, I decided to do some testing with my Jeep to see if I could get it to set a leak code on a day that was well below the temperature of the monitor criteria.

First, I checked the criteria for the EVAP monitor. According to Motor, the ambient temp needs to be between 40 and 90 degrees F. The ECT (engine coolant temp.) is within 10˚ of ambient temperature at start up and fuel level is between 15 and 85% of full. I also notice that Motor says the monitor will run with KOEO. Since I know that the engine needs to run for the LDP to work, I decide to double check the criteria.

Gas cap off, 8 miles and 2 key cycles. The PCM still set an EVAP code even though the ambient air temperature was 20 degrees Fahrenheit , 20 degrees less than the criteria...

Next, I check the temp outside when I wake up, it's 20˚. I then remove the gas cap, and start the engine. At this time I check the ambient temp in the garage, it's 43˚. I drive 6 miles to work before shutting the engine off. I look at the DIC (driver information center) and notice that the temp is 20˚. After a grueling day of work, I start the engine and let it warm a little for the drive home. About 2 miles into my drive home the MIL illuminates. A quick scan tells me that a P0455 for a gross leak has indeed been flagged.

So, how can a 2 trip code set on a 20˚ day? I understand that the first trip started at 43˚, so that could account for a pending code. I was thinking that I would have had to wait until the next morning the get a hard code, knowing that the garage would be warm enough to meet the enabling criteria. So, how was the criteria met when I could clearly see the temp displayed on the DIC was only 20 degrees?

What I was thinking, like many people, is ambient of the vehicle not the engine. The IAT (intake air temp.) was above the 40 degree mark relatively quickly.

Moral of this story is that EVAP testing is year round no matter where you live. If you are in the northern states or Canada, don't dismiss EVAP leaks in the cold weather.

Inside this issue:

Points of interest:

- Join our mailing list—go to: www.driveabilityguys.com
- Free Driveability Guys classes—Watch for the Air Repair newsletter from the Illinois EPA
- We'll be back at KC Vision and Autowares / BTB Tech Expos again in 2009. See you there!

THE DRIVEABILITY GUYS TRAINING FOR THE ILLINOIS EPA IN 2009

During the first four months of 2009, ***THE DRIVEABILITY GUYS*** will be teaching "Service Advisor Techniques" at locations around the Chicago land area. Our overall goal is to help owners and service writers to understand the Illinois emissions testing program, communicate better with their customers, and increase the number of emissions repairs you bring into your shop. These classes are FREE, all you have to do is register.

The image to the right is a tentative schedule for these seminar offerings, but please check with the Illinois EPA for up to date schedules, or to register.

For details on this FREE seminar, and others, go to:

https://www.ildashboard.com
or call (847) 758-3434

Service Advisor Techniques *The Driveability Guys*		
D100	Jan 13, Tues	Universal Technical Institute
D101	Jan 22, Thur	Oakton Community College
D102	Jan 27, Tues	Joliet Junior College
D103	Feb 5, Thur	Truman College
D104	Feb 10, Tues	Morton College
D105	Feb 19, Thur	McHenry County College
D106	Feb 26, Thur	Moraine Valley Community College
D107	Mar 5, Thur	Collinsville
D108	Mar 10, Tues	Kennedy-King College
D109	Mar 19, Thur	Prairie State College
D110	Mar 24, Tues	College of DuPage
D111	Apr 2, Thur	Lake County HS Technology Campus
D112	Apr 7, Tues	Truman College
D113	Apr 16, Thur	Oakton Community College
D114	Apr 21, Tues	Moraine Valley Community College

THE LESS COMMON P0172 / P0175

We are all familiar with the common P0171 and P0174 lean codes, but what about their rich counterparts P0172 and P0175?

The lean family could be caused by a variety of issues ranging from poor fuel volume to vacuum leaks or even false inputs such as a bad mass airflow sensor.

The rich family of trouble codes are not caused by vacuum leaks or fuel pumps, however that does not mean that they cannot be caused by issues as simple as these.

This issue's example is a General Motors truck with poppet valve style fuel injectors. Further details are not important in this case because the symptoms, and the fix, apply to a range of applications.

What we have is a MIL illuminated complaint with P0172 and P0175 stored. Fuel trims confirm that the conditions to set this code exist, in the freeze frame and in the live data. An early check of fuel pressure yielded 62 psi at idle. The spec is 55—60 psi and 66 psi at wide open throttle. Given the close proximity to spec and my old, and quite possibly inaccurate gage, I viewed the results as acceptable. So I moved on to check other issues.

Analyzing further data, and performing other tests, lead me nowhere other than confirming other components were in fact functioning properly. At this point I had to return to the basics, mainly the fuel pressure.

Double checking fuel pressure with multiple gages showed that it was in fact a couple psi high. Could only a few psi cause substantial enough shifts in trim to set a code? And more importantly, what would cause only a 2 psi increase? The fuel pressure regulator was my number one suspect but that didn't seem too likely by the way it was behaving. I have seen regulators leak or dead head the fuel pump, but never such cause such a slight increase.

Not knowing what I would find I pulled the plenum and the regulator. When I saw the problem it was obvious: the screen in the regulator was restricted with debris. The restriction reduced the amount of fuel allowed to leave through the return line and increased fuel pressure.

Lesson: Don't be afraid to question your results and double check them to ensure certainty. Otherwise skimming over the basics too quickly could extend your diagnosis.

WANTED: Camshaft and Compression Specifications

The Driveability Guys are always trying to better themselves and stay on top of current diagnostic issues. An example of this would be the recent influx of E85 compatible vehicles that resulted in the co-operation with EMS on their gas analyzer software, as well as the release of DECS software, that account for different fuel types as they pertain to lambda calculations.

Our efforts in such technical areas have proven beneficial. But, we are not content letting one advancement carry us for a lifetime. We have a passion for this industry and intend to continue exploring avenues that benefit us as technicians and other technicians as well.

Timing, @ 0.150 mm [0.006 in] Lift, Intake Opens	0°
Intake Centerline	122° ATDC
Intake Closes	251° ATDC
Exhaust Opens	225.5° BTDC
Exhaust Centerline	106° BTDC
Exhaust Closes	20.5° ATDC

That being said, The Driveability Guys would like to include you in our next effort. We would like to build a database, and potentially a calculator, that simplifies camshaft timing issues when observed through a pressure transducer. Other more complex issues may be added, but only time will tell.

What we are looking for are published camshaft timing specifications. Compression ratio details and specifications would be a plus, but are only requested as a potential future advancement to the research.

The deal is simple: contribute to the effort and receive the finished product for free. Yes, FREE! Contribute your research and get back the research of others.

Information included in contributions should be similar to the information depicted in the image included in this article.

If you submit information, records of the source would be appreciated for the purpose of verifying authenticity.

Please include a valid email, or snail mail, address to receive the finished product. As the database grows a beta version of our research will be provided to all who contribute.

Get a FREE month subscription to D-Tips.com

Over the past year ***THE DRIVEABILITY GUYS*** email list has grown substantially. Because of the great support we have been receiving from many in the industry, we have spoken to D-Tips.com and have arranged another free one month membership for anyone who would like to try the site. Consider it our, and D-Tips, new years gift to you!

D-Tips.com is a site designed for technicians and contains a multitude of technical information.

So... enter the promo code SB42 when you sign up and snoop around for a month free.

DiagnosticTips D-tips .com

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LAST ISSUE'S "ANY GUESSES"

Of all the people who chimed in, only two hit the nail on the head... no pun intended. It was obvious there was a cylinder head issue, but a clue was actually in the title: "Someone shouldn't have been working on this car." The actual cause of combustion leaking into the cooling system was due to the cylinder head bolts not being torque down, or should I say not even tight. Morale: take extra care when diagnosing something that "has been touched."

JUST FOR FUN...

I WAS JUST DRIVING MY JEEP AND SOMETHING WENT BANG!

It's hard for me to believe something wasn't making noise before this happened. Whatever the case, there are more than a few parts that are going to require replacement.

You know what they say: "It's a Jeep thing... If you have to ask you wouldn't understand." I think I'll refrain from asking because I'm comfortable not understanding.