Gateway Clean Air Program

Gateway Air Repair

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ALL Enabling Criteria Must Be Present to Run Monitors

By Jeff Katz,Owner; Katz Automotive, Elgin
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Many techs are seeing monitors that can be very difficult to complete. With persistence and following enabling criteria exactly, we've found that enough monitors can be completed in order to take an OBDII emission test. Our shop recently encountered a 3.0 liter 1996 Caravan with some very stubborn monitors. The van originally failed with a P0443 (evap purge solenoid circuit). It was tested and failed six months later with the same code. We always baseline any emission repair before doing anything, and the odd thing we noticed was that the CAT monitor was incomplete. All other monitors were completed and our code P0443 was in memory. A P0443 code indicates a problem in the purge solenoid circuit. This vehicle does not have a leak detection pump, and purge is monitored similar to an OBD-I vehicle. Evap is not supported on this vehicle; it is monitored by the comprehensive monitor.

Damage done by 1996 Caravan transmission linkage rod.

Our problem was that a transmission linkage rod rubbed through the wiring harness and power feed wire to the evap purge solenoid. We repositioned the harness and soldered the wire back together. We did have to disconnect the battery because the wiring repair was directly underneath it. This resets all monitor status and clears codes. No matter what we did, we could not get this van to complete enough monitors to take the test. The supported non-continuous monitors on this vehicle are the CAT, O2, O2 Heater, and EGR. The O2 Monitor would set to complete as soon as the van was started, leaving us needing one monitor to run to take the emission test.

We have a specific route that we drive to run monitors. It usually takes about fifteen to twenty minutes and includes both city and highway driving. We look up the drive traces in the NCVECS CD or Alldata, set the scanner to monitor status, and drive until we pass enough monitors to take the test. Eleven test drives later nothing else would complete. I got in touch with a Chrysler representative who helped us out. His advice was to put the van on a lift, run it up to highway speeds, and let it coast all the way down to idle without touching the brake. He said sometimes the monitors would run during this long decel. We were a little apprehensive about doing it because it had 150,000 miles on it and one of the issues was a small cooling leak in the area of the water pump. You guessed it, at about 55 mph the timing belt let go. During the repair the tech noticed that the thermostat was also stuck open.

I wondered why a van would run a monitor on the lift but not the highway. This van's temperature gauge stayed in the middle throughout the test drive; but we never actually checked engine temperature during the test drive. One of the enabling criteria for the EGR monitor was an engine temperature of above 170 degrees F. So our next test drive we set the scan tool to data list and recorded it. We only needed one monitor to run.

continued on page 2

How Important is Wiring?

By Pat Weber, Owner, Weber Automotive, Glenview, IL

A frustrated customer came into my shop with an OBDII fail because of no communication. Another shop had been unable to get it to communicate. Because I had little repair history on this vehicle, a 1996 Jeep, I asked the customer for a history. He did inform me that the vehicle had been in an accident. He had very little problems with the vehicle and it was well-maintained. I'm glad I found out the vehicle had been in an accident as I wouldn't have even suspected it. The body job was one of the best I have ever seen, and I probably wouldn't have thought to look for other damage that could have an effect on an emissions test.

Damaged wiring affecting 1996 Jeep OBDII test.

Upon further investigation, I found that the body shop missed a few important items such as missing ground connections and wiring harness damage. So I spent a few hours fixing damaged and ungrounded wiring.

The result was we got the vehicle to pass the test after another repair facility was unable to find the problems. The lesson learned from this experience is that spending time with the customer to get a history of the vehicle can give clues as to how to go about approaching the problem.

Knowing that the vehicle had been in an accident, we checked for ground and power, which are needed to establish communication. As OBDII vehicles age, accidents and a vehicle's wiring will be areas that will need to be checked more thoroughly.

continued from page 1

When we started the test drive we were at 178 degrees F; once on the road the engine quickly cooled off to 136 degrees F, preventing the monitors from running. Remember, we have to maintain 170 degrees F coolant temperature. After a new thermostat, the engine maintained a steady 194 degrees F on the road. The odd thing is that the CAT monitor completed on the first test drive. The van passed the OBDII emission test without completing the EGR or O2 Heater monitors.

Ten days later the van returned for some additional maintenance. We rechecked it, and all of the monitors were completed with no new codes. The customer did mention that the van heated up faster and the heater worked better. Watching the enabling criteria closer would have saved a lot of time. We don't know why the O2 Heater initially wouldn't complete since that monitor was supposed to run within ten minutes after the engine was shutdown. We also don't know why the O2 Monitor set to complete without the O2 Sensor even getting hot. And finally, why did the monitors seem to run out of order? But engine temperature was a critical factor for this vehicle to run enough monitors to pass the test. Remember ALL enabling criteria must be present in order to run the monitors.

Tips for Repairing Top Ten DTCs

OBDII testing was implemented on a pass/fail basis on June 6, 2005. In the November 2005 issue of the Gateway Air Repair (volume 7, number 6), the top ten DTCs from OBDII pass/fail implementation date through September 2005 were published. The top ten DTCs by make for October, November and December 2005 are as follows:

October 2005

Make	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10
General Motors	P0440	P0420	P1870	P0300	P0141	P0401	P0113	P0171	P0410	P0133
Daimler-Chrysler	P0134	P0442	P0403	P0455	P0420	P0132	P0300	P0432	P0401	P0171
Ford	P0401	P0171	P1443	P0420	P0174	P0430	P0340	P0133	P0455	P1131
Honda/Acura	P0420	P0401	P1491	P0135	P0141	01457	P0108	P0117	P0301	P0302
Nissan/Infiniti	P0325	P0400	P0440	P0446	P1320	P0420	P0130	P1441	P0135	P0171
Toyota/Lexus	P0420	P0171	P0440	P0446	P0430	P0441	P0135	P0325	P0401	P0125
Other Japanese	P0420	P0421	P0401	P1195	P0325	P0400	P0455	P0300	P0301	P0403
Korean	P0442	P0455	P0100	P0112	P0133	P0134	P0141	P0171	P0422	P0440
German	P0118	P0410	P0455	P0705	P0133	P0170	P0171	P0173	P0301	P0302
Swedish	P0410	P0455	P0705	P1624	N/A	N/A	N/A	N/A	N/A	N/A
English	P0140	P0141	P0150	P0161	P0174	P0455	P1172	P1174	P1175	P1185

November 2005

Make	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10
General Motors	P0420	P0440	P0171	P0401	P0133	P0300	P0442	P1870	P0113	P0174
Daimler-Chrysler	P0134	P0403	P0300	P0401	P0442	P0455	P0420	P0132	P0441	P0138
Ford	P0401	P0171	P1443	P0340	P0174	P0420	P0133	P0430	P0402	P0141
Honda/Acura	P0420	P0401	P1457	P0141	P0325	P0135	P0171	P0505	P1166	P1167
Nissan/Infiniti	P0325	P0400	P0440	P0420	P0430	P0100	P0120	P0138	P0217	P0300
Toyota/Lexus	P0446	P0401	P0420	P0171	P0130	P0133	P0300	P0773	P0135	P0430
Other Japanese	P0171	P0325	P0401	P0420	P0400	P0421	P0402	P1195	P0141	P0117
Korean	P0133	P0141	P0422	P0138	P0304	P0100	P0300	P0301	P0302	P0303
German	P0411	P0118	P0172	P0341	P1128	P0134	P0420	P0430	P0442	P0455
Swedish	P0410	P0172	P0300	P0301	P0302	P0303	P0304	P0455	P0107	P0130
English	P0171	P0174	P0455	P0734	P1496	N/A	N/A	N/A	N/A	N/A

continued on page 4