What's an Engine Code Got to do with my Transmission!!!!

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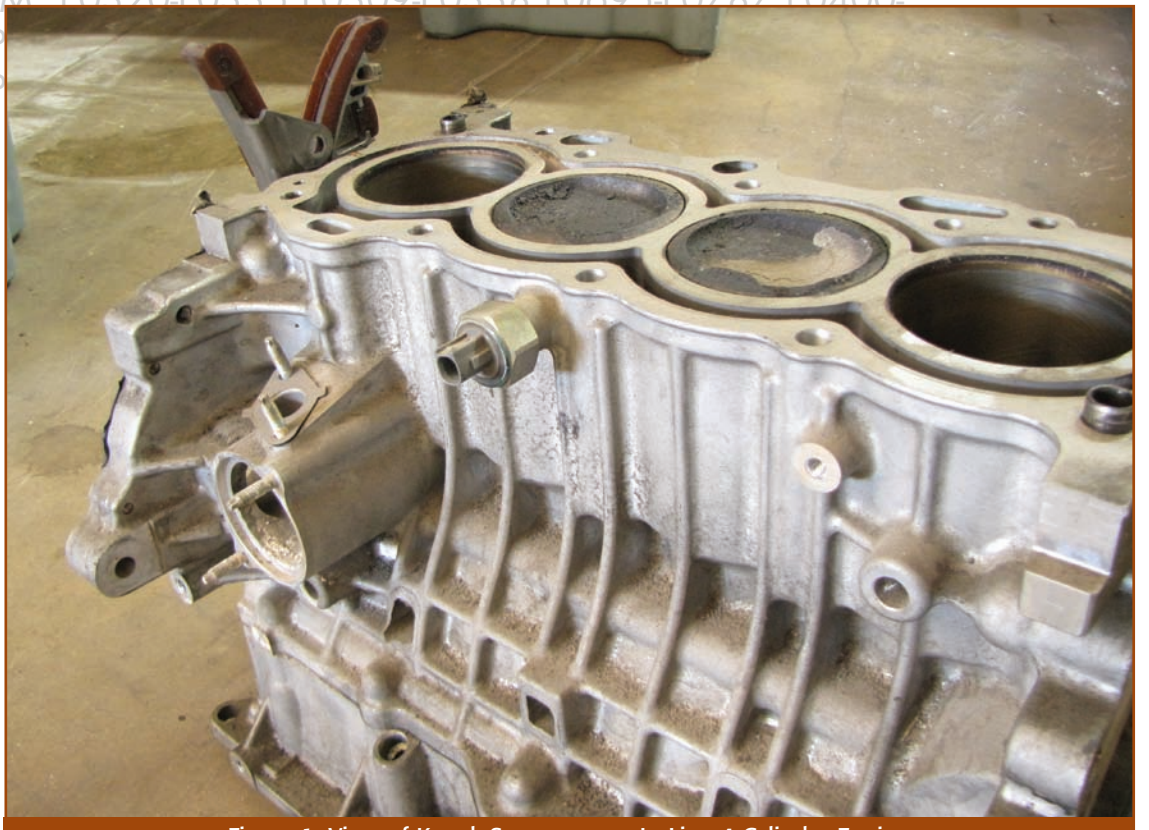

Figure 1: View of Knock Sensor on an In-Line 4 Cylinder Engine

"Suddenly my transmission isn't working right… and I just had it serviced!"

This and similar comments aren't uncommon. Actually this situation is an excellent way to build more trust with your customer. After all, if you did just service the transmission, you should have brought any problems you discovered — such as a MIL (Malfunction Indicator Light) being on — to the customer's attention.

It's important that you understand these engine and transmission control systems, so you can address the root cause of certain transmission problems, and you can explain them to your customers.

Keep in mind that, today's automatic transmissions depend on a computer to control shift timing and quality. Any engine related codes can cause transmission like symptoms.

In an effort to maximize performance and economy, and reduce emissions, the engineers who designed those vehicles programmed the computer to adjust for every possible driving condition you're likely to see.

Inputs, such as the TPS (throttle angle) and VSS (vehicle speed), will have an obvious effect on the transmission. But things have changed. As manufacturers look for better performance and economy, they've made the computer more sensitive to many other devices and operating conditions.

When everything's working right, today's cars run terrific. But when something goes out of specs, you need to be able to explain why that problem will affect transmission operation.

Let's look at three engine-related issues that will affect the transmission and why.

P0320-P0335 Knock Sensor Code

One of the reasons newer vehicles have been able to increase engine horsepower is due to the lowly knock sensor. Its purpose is to allow the computer to detect knock vibrations within the combustion chambers.

As long as the combustion is normal, the computer will increase ignition timing, which lets the engine create

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more horsepower. But if the sensor detects a ping or knock — chances are the customer won't even hear it — the computer retards the ignition timing to prevent damaging the engine. If the ping or knock were allowed to continue, the engine could be destroyed.

[Figure 1 View of Knock Sensor on an In-Line 4 Cylinder Engine]

When a knock sensor code sets, the computer goes into a default mode for engine timing to protect the engine. Since a faulty knock sensor affects engine power, fuel economy, and emissions, the computer will light the MIL (Malfunction Indicator Light).

But why is this important to the transmission? Since the ignition timing is retarded, the computer also changes the transmission operating strategy to prevent lugging the engine. This may include not shifting the transmission into overdrive or preventing the converter from locking up. And to protect the transmission even further, the computer also commands higher line pressure, causing firmer shifts.

NOTE: In some cases, if you clear a knock sensor code, it comes right back. Here's why: Whenever you start the engine, the computer advances the ignition timing until it receives a knock signal from the knock sensor. Once this happens the computer knows the sensor is working properly. If it doesn't see a knock signal the computer immediately sets the code.

Any code related to a knock sensor problem needs to be repaired. But be aware that most knock sensors are located under the intake manifold on V-type engines, or near exhaust manifolds on inline engines.

P0400-P0435 EGR Related Circuits

EGR (Exhaust Gas Recirculation) is a very important system which helps control oxides of nitrogen (NOx) emissions. This chemical forms under the extreme heat inside the combustion chamber. The EGR system reduces combustion temperature, which reduces NOx production.

To reduce the combustion temperature, the EGR system redirects a small amount of exhaust back into the intake. Most EGR systems today include the EGR valve and a device that monitors

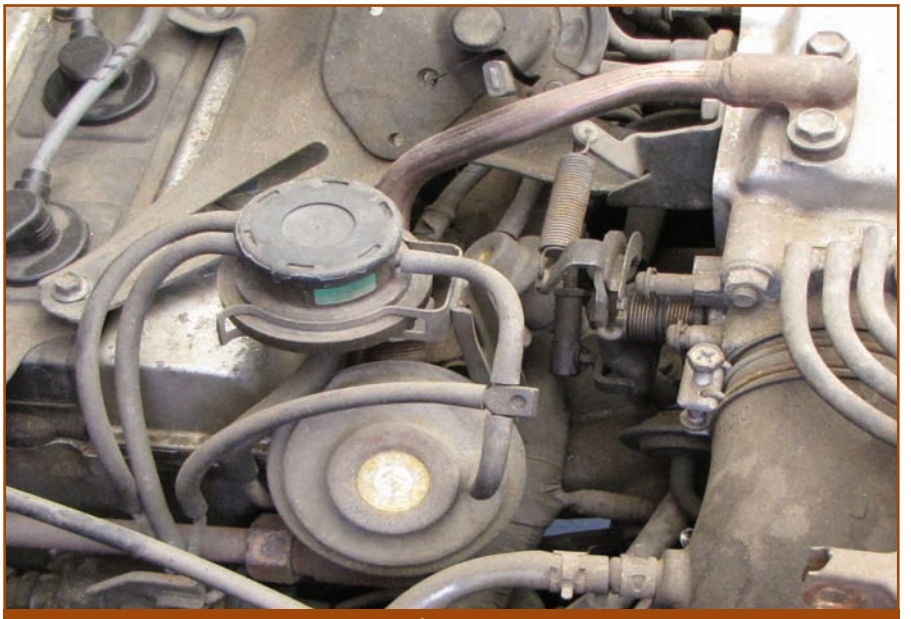

Figure 2

EGR flow. If the EGR system fails, NOx emissions increase. The catalytic converter has only limited ability to clean this pollutant.

Why an EGR Code Affects the Transmission

If the computer detects a fault in the EGR system, the computer lights the MIL and makes the transmission shift hard. Since the transmission is shifting hard and the MIL is on, it's only natural for the consumer to head to his local transmission specialty shop.

Once you retrieve the code and explain how important the EGR system is, your next step is to reassure the customer that even though EGR isn't specifically a transmission problem, you have the experience and knowledge to repair it.

EGR faults are generally very easy to troubleshoot and service. On some vehicles the EGR valve itself is operated with vacuum from a solenoid. The EGR flow monitoring device detects changes in pressure or temperature within the intake manifold. Other vehicles use an EGR system that includes the valve and flow detector in one device.

P0300 Random or Multiple Misfires

Let's be clear: If a vehicle has an obvious misfire, the driver will probably take his car to a general repair shop. But suppose the MIL is on, and the engine seems to be running just fine. So what keeps the driver from ignoring the MIL and just continue driving?

Depending on the manufacturer, some computers will prevent certain features on the vehicle from working. These might include overdrive, kick-down, cruise control, or the MIL will flash.

CAUTION: A flashing MIL indicates the condition will damage the catalytic converter if you keep driving the vehicle.

If your customer's vehicle sets a P0300 code, clear it and test drive the vehicle. If everything begins working normally, ask the customer when the MIL lit and about his driving habits. A common response may sound something like this: "I usually drive short trips around town. This time I was on a longer trip, and the MIL came on while I was driving up a hill."

If this sounds eerily familiar, suspect deposits have built up on the fuel injectors or intake valves. This would be a good time to suggest a fuel system service to clean up those deposits and get the system flowing properly again.

Remember, not every customer is going to need a transmission every time they reach your driveway. That's okay: Today's transmission shops have to fix more than just transmissions… they have to fix the car, whatever that means. And once you take care of what the customer thought was a transmission problem, you can be sure he'll remember you the next time his car isn't running right.

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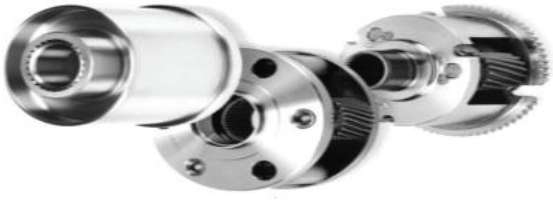

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