

On the Line

A Simple Diagnostic Solution For Some Frustrating Engine Performance Symptoms

Difficult to diagnose symptoms often have a simple diagnostic solution. It is important that you perform some basic tests concerning the overall health of the engine before you dive too deep into the diagnostics. It can save the customer a lot of money and the technician a lot of frustration.

Was it possible to have two 2001 Ford trucks at different shops with totally different symptoms, but the same component failure? The owner of the first vehicle complained of a high and erratic idle condition. The second vehicle owner claimed that his eight cylinder engine was running on four cylinders. When the troubleshooting was finalized it would prove that the same defective component could cause different driveability symptoms. It was amazing how the symptoms had eluded the technicians in their diagnostic efforts. They were too focused on something computer or sensor related and failed to make some basic checks.

HIGH ERRATIC IDLE

The owner of the first vehicle complained of a high and erratic idle condition. The days of turning a screw to make an adjustment in the idle rpm are long past, as computers and idle air control valves and motors now perform that function. Idle speed control problems have been an ongoing saga, and they continue to elude many good technicians. When you get a vehicle in for an idle speed symptom, chances are great the minimum air rate screw has been tampered with, which can further complicate the idle speed condition. Intake and throttle body contamination can promote a high or low idle speed condition, stalling, or put the system into a hunting mode. Some idle speed concerns must be corrected by re-programming the powertrain control module (PCM).

In this case, numerous attempts had been made to reduce the idle speed. The intake and throttle body had been cleaned and the linkage and throttle plate was not sticking or binding. Numerous components and sensors had been replaced, including a new idle air control valve (IAC). Ford warranty department claims that 95% of the IAC valves returned under warranty are not defective. The throttle position sensor had been checked and then replaced. The air charge and coolant temperature sensors were replaced. The EGR valve was confirmed to be operating properly. Fuel injector leakage had been eliminated. The PCV valve was functioning properly, and blocking

off the PCV valve had no effect on the idle speed. The vehicle was about to receive a new computer when an old timer walked over and with one hand pinpointed the cause of the high idle condition with a procedure learned forty-five years ago. Read on to determine how his simple technique solved the mystery of the high idle condition.



By Larry Hammer
Technical Services

RUNNING ON FOUR CYLINDERS

The second vehicle was plagued with a poor engine performance condition. It appeared the vehicle was running on four of its total eight cylinders. A compression test revealed good compression on each cylinder. The symptoms started two days after filling the gas tank, and he was convinced that the problem was fuel related. A fuel sample did not reflect fuel contamination and the fuel pressure was right on spec. The ignition system incorporates a coil on plug arrangement, and it was unlikely that four of the total eight coils were defective. The technician was leaning toward a fuel injector or injector driver related problem. With a noid light, he confirmed current pulse to each injector, and it was unlikely that four injectors were defective. At this point, where would you go with the diagnosis? Back to basics would be an excellent place to start.

THE SOLUTION

Case 1: With the first vehicle, the older gentleman restricted all air flow through the throttle body with his hand and a shop towel. It had no effect on the idle speed, which confirmed a major vacuum leak. The engine was pulling air from another source, which turned out to be a blown intake manifold gasket.

Case 2: When the airflow through the throttle body was restricted on the second vehicle, there was no change in the performance of the engine. It should have stalled from the loss of intake airflow. A leak check revealed a leaking intake manifold gasket. Replacing the gasket restored the engine performance, and it was now running on all eight cylinders.

Two like vehicles with the same failed intake gasket and totally opposite symptoms. The location and severity of the vacuum leak determined whether the symptom was a high idle or misfire condition.



NORM, THE NEW TECH, FORGETS THAT DAY IN SHOP CLASS WHEN THE INSTRUCTOR WARNED, "DO NOT PERFORM THE VACUUM LEAK TEST ON DIESELS!"