

Zafira with a persistent lean fault

This Zafira came into the workshop with a continuing issue of P0171 (System Too Lean (Bank 1)) trouble code. It had been previously diagnosed, with Lambda sensor 1 identified as the culprit. The sensor was replaced, and the system reset. A short road test revealed the same pending code P0171, and the long-term fuel trim was showing a high positive reading of 15% at engine idle.

The usual issue to look for would be an air leak in the intake system, causing an under-reading MAF sensor. And on this model, it is very common for the Evaporative system control valve to be stuck open. We set about testing the EVAP valve, then did a MAF calculation on the engine at idle. All of the data proved to be perfect.

On removing the heat shield from the exhaust manifold, we found micro fractures that could

potentially be the cause of the fault code, by possibly drawing in air, upstream of the lambda sensor.

The exhaust manifold was replaced. And the test drive repeated after system adaptations were cleared. The P0171 lean mixture condition was still pending. So now we needed to change to a different leak checking process.



The leak was in the flex section of the exhaust pipe

There were no obvious exhaust leaks, so we decided to smoke test the system from the tailpipe. We used the Thinkcar PLD212. The Thinkcar has a higher-pressure output, 16 psi, compared with most

other smoke machines. Within seconds, we discovered a leak in front of the lambda sensor. We replaced the front section of the exhaust system, cleared emissions related data, and road tested the vehicle.

The Long-term fuel trim values had settled to 1.5% with the engine at idle, and there were no pending codes logged in EOBD.

Without the smoke machine to identify the leak, this fault could have taken much longer to diagnose.

Additionally, looking at the problem from a different prospective gave us the final solution.

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