

P2009: INTAKE MANIFOLD RUNNER CONTROL CIRCUIT LOW BANK 1

OVERVIEW

Severity	:	<div><div>Medium</div></div>
DIY Difficulty Level	:	<div><div>Advanced</div></div>
Repair Cost	:	\$50-\$1850
Can I Still Drive?	:	Yes (Short-term only)

What Does The P2009 Code Mean?

I know from experience that a stored code P2009, means that the powertrain control module (PCM) has detected an intake manifold air control (IMRC) actuator circuit voltage (for engine bank one) that is lower than expected. Bank 1 points me to a malfunction that is related to the bank of the engine that contains the number one cylinder.

The IMRC system is electronically controlled by the PCM. It is used to manage and fine tune air as it flows into the lower intake manifold, cylinder heads, and the combustion chambers. Specially shaped metal flaps, which fit tightly into the intake manifold port of each cylinder, are opened and closed by an electronic runner control actuator. The thin metal runner flaps are secured (with small bolts or rivets) to a metal rod that extends the length of each cylinder head and passes through the center of each intake port.

The flaps are opened with one motion, permitting all of the flaps to be rendered inoperative if one of them is stuck or binding. A mechanical arm or gear usually secures the IMRC actuator to the rod. Some models use a vacuum diaphragm to operate the actuator. The PCM controls an electronic solenoid, which regulates intake vacuum to the IMRC actuator, when a vacuum operated actuator is utilized.

Research has shown us that a swirling (air flow) effect helps the air/fuel mixture to be atomized more completely. More thorough atomization helps to decrease exhaust emissions, improve fuel

efficiency, and optimize engine performance.

Channeling and restricting the air flow, as it is drawn into the engine, creates this swirling effect but different manufacturers use varying IMRC methods. Consult your vehicle information source (All Data DIY is an excellent resource) for the particulars of the IMRC system with which the vehicle in question is outfitted. Typically, the IMRC runners are nearly closed during starting/idling conditions and opened most of the way when the throttle plate is opened.

In order to ensure that the IMRC system is operating as designed, the PCM monitors input data signals from the IMRC runner position sensor, manifold absolute pressure (MAP) sensor, manifold air temperature sensor, intake air temperature sensor, throttle position sensor, the oxygen sensors, and the mass airflow (MAF) sensor (among others).

The PCM monitors actual runner flap position and adjusts it according to engine drivability data. A malfunction indicator lamp may be illuminated, and a code P2009 will be stored, if the PCM doesn't see a significant change in MAP or manifold air temperature as expected. In some cases, multiple failure cycles will be required for MIL illumination.

What Are The Symptoms Of The P2009 Code?

Symptoms of a P2009 code may include:

- Hesitation upon acceleration
- Reduction in engine performance, especially at low RPM levels
- Rich or lean exhaust
- Diminished fuel efficiency
- Engine surge

What Are The Potential Causes Of The P2009 Code?

Possible causes for this engine code include:

- Loose or binding intake manifold runners
- Defective IMRC actuator solenoid
- Bad intake manifold runner position sensor
- Open or shorted wiring in the IMRC actuator solenoid control circuit
- Carbon buildup on the IMRC flaps or intake manifold ports
- Faulty MAP Sensor
- Corroded IMRC actuator solenoid connector face

How Can You Fix The P2009 Code?

When attempting to diagnose a code P2009, a diagnostic scanner, a digital volt/ohmmeter (DVOM),

and a reliable vehicle information source will be instrumental. It is a wise practice to check technical service bulletins (TSB) for the particular symptoms, stored code/s, and vehicle make and model before any diagnosis. If you find a related TSB, the information will often help in diagnosing the code in question as TSBs are created from many thousands of repairs.

A fantastic starting point for any diagnosis is a visual inspection of system wiring and connector faces. Knowing that IMRC actuator connectors are prone to corrosion, and that this could cause an open circuit, one might focus attention on that area.

You might continue by connecting the scanner to the vehicle diagnostic connector and retrieving all stored codes and freeze frame data. Writing this information down, just in case this is an intermittent code, is a good practice. Now, clear the codes and test-drive the vehicle to see if the code is reset.

Proceeding, I would gain access to the IMRC actuator solenoid and IMRC runner position sensor, if the code is reset. Consult your vehicle information source for testing specifications and use the DVOM to perform resistance tests on both the solenoid and the sensor. If either of these components fails to comply with specs, replace it and retest the system.

In order to prevent PCM damage, disconnect all related controllers before testing circuit resistance with the DVOM. Use the DVOM to test resistance and continuity on all system circuits if actuator and sensor resistance levels are in compliance with manufacturer's specifications. Shorted or open circuits will need to be repaired or replaced as needed.

Additional diagnostic notes:

- Carbon coking inside the intake manifold walls can cause IMRC flaps to bind
- Use caution when handling small screws or rivets in or near intake manifold openings
- Test for IMR flap binding with the actuator disconnected from the shaft
- The screws (or rivets) that secure the flaps to the shaft may loosen or fall out causing the flaps to bind

Reference Sources

[P2009 Intake Manifold Runner Control Circuit Low Bank 1](#), OBD-Codes.