

P2004: INTAKE MANIFOLD RUNNER CONTROL STUCK OPEN BANK 1

OVERVIEW

Severity	:	Medium
DIY Difficulty Level	:	Advanced
Repair Cost	:	\$50-\$1850
Can I Still Drive?	:	Yes

What Does The P2004 Code Mean?

A stored code P2004 in your OBD II equipped vehicle means that the powertrain control module (PCM) has detected that the intake manifold runner control (IMRC) actuator for engine bank one is stuck in the open position. Bank 1 denotes that the problem has occurred in the bank of the engine that contains the number one cylinder.

The IMRC system is controlled by the PCM to manage and fine tune air flow as it enters the lower intake manifold, cylinder heads, and the combustion chambers. The runner control solenoid opens/closes metal flaps which fit snugly into the intake port of each cylinder. The runner flaps are bolted to a thin metal rod that runs the length of each cylinder head and through each intake port. All of the flaps can be opened at the same time and with one motion but this also means that all the flaps may be rendered inoperative if one of them is stuck or binding. The IMRC actuator is attached to the rod with a mechanical arm or a gear. Some models use a vacuum diaphragm operated actuator. An electronic solenoid (controlled by the PCM) regulates intake vacuum to the IMRC actuator in this type of system.

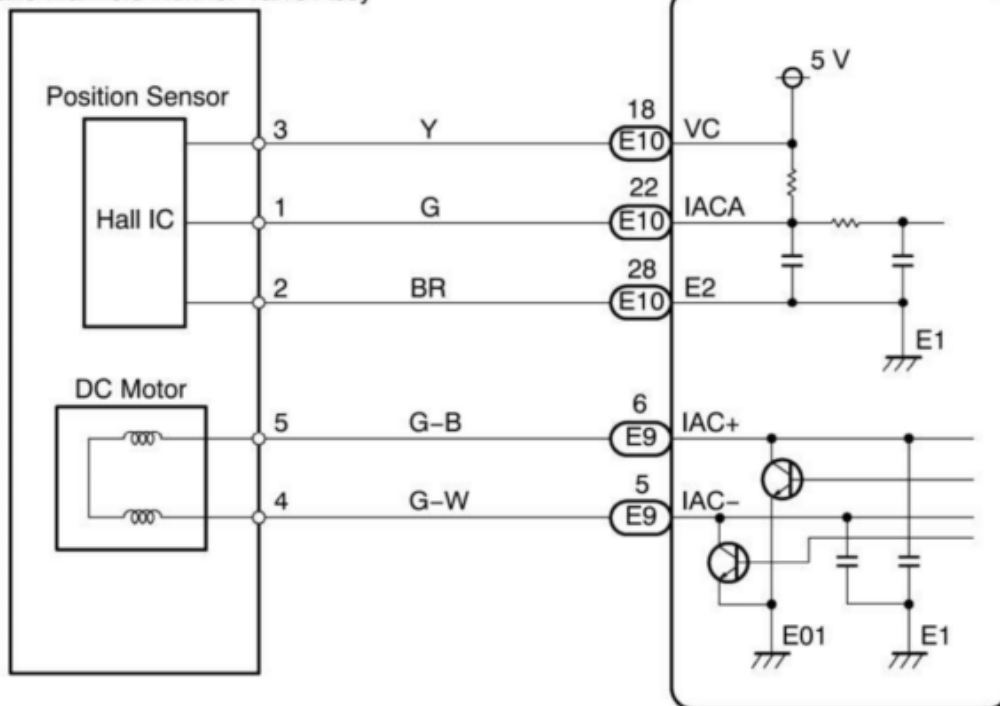
A swirling effect is created by channeling and restricting the air flow as it is drawn into the engine. Research shows that the swirling effect helps the air/fuel mixture to be atomized more completely. More thorough atomization helps to reduce exhaust emissions, improve fuel efficiency, and optimize engine performance. Automakers utilize different IMRC methods. Consult your vehicle

information source (All Data DIY is a good one) for the specifics of the IMRC system with which the vehicle in question is equipped. Theoretically, the IMRC runners are partially closed during starting/idling conditions and opened fully when the throttle plate is opened.

To make sure that the IMRC actuator is functioning properly, the PCM monitors input 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 mass airflow (MAF) sensor (among others).

As engine drivability data is input to the PCM, and calculated, the PCM monitors actual runner flap position and adjusts it accordingly. If the PCM doesn't see a significant enough change in MAP or manifold air temperature, in accordance with desired repositioning of the flaps (by the IMRC actuator), a code P2004 will be stored and a malfunction indicator lamp may be illuminated. Multiple ignition cycles, with an IMRC actuator failure, will often be required for the MIL to be illuminated.

I18
Intake Manifold Runner Valve Assy

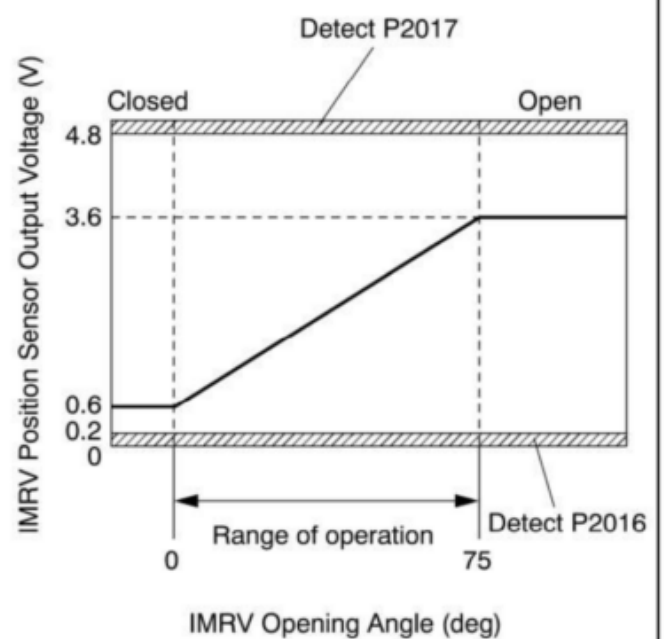
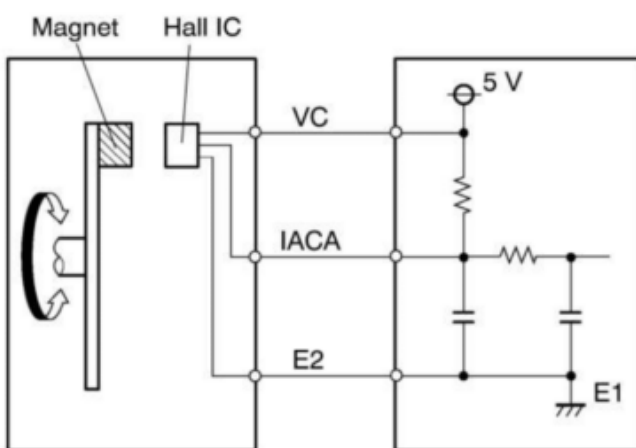


Y

A76831

IMRV Position Sensor

ECM



Y

A76830

P2004 wiring diagram

What Are The Symptoms Of The P2004 Code?

Symptoms of a P2004 code may include:

- Reduction in engine performance, especially at low RPM levels
- Diminished fuel efficiency
- Engine surge

What Are The Potential Causes Of The P2004 Code?

Possible causes for this engine code include:

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

How Can You Fix The P2004 Code?

Preparation

When attempting to diagnose a code P2004, a diagnostic scanner, a digital volt/ohmmeter (DVOM), and a reliable vehicle information source such as All Data DIY will be required.

Check technical service bulletins (TSB) for the particular symptoms, stored code/s, and vehicle make and model before beginning your diagnosis. If a related TSB is located, the information therein may help you in diagnosing the P2004 in your vehicle.

Step 1

I like to start my diagnosis with a visual inspection of system wiring and connector faces. It seems that IMRC actuator connectors are prone to corrosion that could cause an open circuit, so pay particular attention to these.

Step 2

Next, I normally connect the scanner to the vehicle diagnostic connector and retrieve all stored codes and freeze frame data. I prefer to write this information down just in case this is an intermittent code; then I'd clear the codes and test-drive the vehicle to see if the code is reset.

Step 3

If the code is reset, gain access to the IMRC actuator solenoid and IMRC runner position sensor. Consult your vehicle information source for testing recommendations for these components. Using the DVOM, perform a resistance test on both components. If either the actuator or the position sensor fails to comply with manufacturer's recommendations, replace the defective part and retest the system.

Step 4

If actuator resistance and sensor resistance both comply with manufacturer's specifications, use the DVOM to test resistance and continuity on all system circuits. To avoid controller damage, disconnect all related controllers before testing. Repair or replace shorted or open circuits as needed.

Additional diagnostic notes:

- 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
- Carbon coking inside the intake manifold walls can cause binding

Reference Sources

[Diagnostic Trouble Code \(DTC\) Charts and Descriptions for P2004](#) - Pages 128-129.