

FORD · POWERTRAIN

P1520

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P1520 · Ford

Intake Manifold Runner Control Circuit Fault

P1520 on Ford vehicles indicates that the powertrain control module (PCM) has detected an electrical fault in the intake manifold runner control (IMRC) circuit, which manages airflow tumble flaps in the intake manifold. The PCM monitors the IMRC actuator circuit for expected voltage or current and sets this code when the signal falls outside the normal range, often due to a wiring or actuator problem.

SYSTEM

Powertrain

CODE TYPE

Ford specific

SEVERITY

Medium

FIX DIFFICULTY

Intermediate

AREA

Vehicle speed, idle control and auxiliary inputs

Symptoms you may notice

- Illumination of the check engine light, often with no other noticeable symptoms
- Slight hesitation or stumble during light acceleration at low engine speeds
- Reduced engine power or sluggish throttle response in certain rpm ranges
- Rough idle or uneven running when the engine is cold
- Occasionally, a noticeable loss of fuel economy over time

Common causes, most likely first

- 1 Broken, chafed, or disconnected wires in the IMRC actuator circuit
- 2 Failed IMRC actuator motor or solenoid
- 3 Corroded or loose electrical connector at the IMRC actuator
- 4 Sticking or binding IMRC flap linkage, causing the actuator to draw excessive current
- 5 Faulty PCM driver circuit (rare but possible after other causes are ruled out)
- 6 Intake manifold carbon buildup restricting flap movement



How to diagnose and fix it

- 1 Use a scan tool to retrieve all codes and verify P1520 is current; check for related codes that might indicate a different root cause.
- 2 Visually inspect the IMRC actuator connector and wiring harness for damage, corrosion, or loose pins; repair as needed.
- 3 Measure resistance across the IMRC actuator motor and compare to factory specifications; replace the actuator if out of range.
- 4 Check the IMRC flap linkage for free movement and clean any carbon buildup that may cause binding.
- 5 Backprobe the IMRC circuit at the PCM and actuator to check for voltage drops or open circuits while commanding the actuator with a scan tool.
- 6 If wiring and actuator are good, test the PCM driver circuit with a noid light or oscilloscope; replace the PCM only if confirmed faulty.
- 7 Clear codes and perform a road test to verify the repair and ensure the IMRC system operates through its full range.

IMRC circuit faults often misdiagnosed

- A stuck or carbon-fouled IMRC flap can mimic a circuit fault by causing the actuator to overheat and fail, so always check flap movement before replacing electrical parts.
- The IMRC actuator on many Ford engines is not serviceable separately from the intake manifold, but aftermarket repair kits exist; confirm part availability before condemning the manifold.
- Intermittent P1520 codes can be caused by a chafed wire near the engine mount or exhaust heat shield, so wiggle-test the harness while watching live data.
- Some Ford models use a vacuum-operated IMRC rather than an electric actuator; a vacuum leak or failed solenoid can set a circuit code even though the wiring is intact.
- A weak battery or poor ground can cause spurious IMRC codes; check charging system and grounds before diving into the actuator circuit.

Can I keep driving with P1520?

You can usually drive with P1520, but avoid heavy acceleration and sustained high-speed driving until repaired, as the engine may enter a reduced-power mode. If the check engine light flashes or you notice severe misfiring, stop driving and seek professional diagnosis.



Tools that help

- OBD-II scan tool with live data and bidirectional control
- Digital multimeter
- Wire probe set or backprobe pins
- Socket and ratchet set
- Torque wrench
- Vacuum gauge (for vacuum-operated IMRC systems)

Reading P1520

P	Powertrain: engine, transmission and emissions.
1	Manufacturer-specific code (Ford): its meaning depends on the make.
5	Vehicle speed, idle control and auxiliary inputs.
20	The exact fault within that area.

Often seen with

P1521 Intake Manifold Changeover Valve 2 Circuit Electrical Malfun · **P1518** Main Relay Circuit Short To B+ · **P1519** Intake Camshaft Control Bank 1 Malfunction · **P1518** Starter Switch Circuit Low Input · **P1519** IAC Valve Circuit Failure · **P1519** IAC Valve Circuit Failure · **P1518** Throttle Actuator Control (TAC) Module Serial Data Circuit · **P1521** Transmission Engaged At High Throttle Angle · **P1519** Electronic Throttle Module Low Volts Communication Disable · **P1518** Intake Manifold Runner Control Fault Stuck Open · **P1519** Intake Manifold Runner Control Stuck Open · **P1519** Electronic Throttle Module Low Volts Communication Disable · **P1521** Transmission Engaged At High Throttle Angle · **P1518** Throttle Actuator Control (TAC) Module Serial Data Circuit · **P1519** A Camshaft Position Actuator Bank 1 · **P2004** Intake Manifold Runner Control Stuck Open (Bank 1) · **P2005** Intake Manifold Runner Control Stuck Open (Bank 2)

See it working

Watch the animated explainer [How a Knock Sensor Works: Spark Timing and Octane](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/ford-p1520/>

