



P2C2F

Turbocharger/Supercharger Bypass Valve B Driver Current/Temperature Too High

P2C2F means the powertrain control module (PCM) has detected that the driver circuit for the turbocharger or supercharger bypass valve 'B' is reporting excessive current or an excessively high temperature. The computer monitors the electrical load and thermal condition of that output circuit, and when either exceeds the calibrated limit it stores this code and usually commands the bypass valve to a safe default position.

SYSTEM	CODE TYPE	SEVERITY	FIX DIFFICULTY	AREA
Powertrain	Generic (all makes)	Medium	Intermediate	Hybrid propulsion

Symptoms you may notice

- Illumination of the check engine light, often with no other noticeable symptoms besides the warning light
- Reduced engine power or a limp-home mode as the PCM limits boost to protect the bypass valve circuit
- Poor acceleration or sluggish throttle response because the bypass valve cannot be commanded normally
- Rough idle or stalling after throttle release if the bypass valve sticks partially open
- In rare cases, a burning smell or visible heat damage near the bypass valve actuator or wiring

Common causes, most likely first

- 1 A shorted or partially shorted bypass valve actuator solenoid winding, which draws excessive current and overheats
- 2 Chafed, pinched or internally shorted wiring in the bypass valve driver circuit, often near hot exhaust or turbo components
- 3 Corroded or loose electrical connector pins at the bypass valve or PCM, raising resistance and heat at the terminal
- 4 A failed or sticking bypass valve mechanism that forces the actuator to work harder and draw more current
- 5 A faulty PCM driver output stage that can no longer regulate current to the bypass valve
- 6 Aftermarket or incorrect bypass valve components with wrong resistance or current draw
- 7 Heat soak or debris blocking the bypass valve actuator, causing it to overheat during normal operation



How to diagnose and fix it

- 1 Scan all modules and record freeze-frame data for P2C2F, then clear the code and verify whether it returns immediately or only after a drive cycle
- 2 Inspect the bypass valve actuator and its connector for corrosion, loose pins, melted plastic or signs of overheating
- 3 Measure the resistance of the bypass valve actuator solenoid with a multimeter and compare it to the manufacturer's specification
- 4 Perform a voltage drop test on both the power and ground sides of the bypass valve driver circuit while commanding the valve with a scan tool
- 5 Check the wiring harness for chafing, pinches or short-to-ground conditions along the route from the PCM to the bypass valve
- 6 If electrical checks pass, remove and inspect the bypass valve for mechanical binding or carbon buildup, and test it with a known-good actuator
- 7 Only after all circuit and component tests pass, consider PCM driver diagnosis or replacement following the manufacturer's diagnostic flow chart

What the bypass valve driver circuit hides

- A partially shorted actuator winding can pass a simple resistance check at room temperature but fail and draw excessive current once the engine bay heat soaks the valve after a drive.
- Technicians often replace the bypass valve only to find the real fault is a chafed harness section routed too close to the turbocharger or exhaust manifold, where heat damage is hidden under looming.
- This code can set intermittently from a poor ground connection at the bypass valve or engine block, which raises circuit resistance and causes the driver to overheat without any hard failure.
- A sticking bypass valve mechanism that is not electrically faulty can still trigger P2C2F because the actuator draws higher current trying to move against mechanical binding.
- Do not assume the PCM is bad until every wire, connector and actuator test has been completed, because PCM driver failures are far less common than harness and valve faults.

Can I keep driving with P2C2F?

You can usually drive the vehicle to a repair shop, but avoid heavy throttle and sustained boost because the bypass valve may be stuck and the circuit is already overheating. If the engine enters limp mode or you smell burning, stop driving and have the vehicle towed to prevent further damage.



Tools that help

- OBD-II scan tool with bidirectional control and live data capability
- Digital multimeter with resistance and voltage drop functions
- Wiring diagram and manufacturer's diagnostic flow chart for the bypass valve circuit
- Hand tools for connector and component removal
- Infrared thermometer to check actuator temperature after a drive cycle

Reading P2C2F

P	Powertrain: engine, transmission and emissions.
2	Generic (SAE) code: it means the same thing on every OBD-II vehicle.
C	Hybrid propulsion.
2F	The exact fault within that area.

Often seen with

P0045 Turbo/Super Charger Boost Control Solenoid Circuit/Open · **P0243** Turbocharger Wastegate Solenoid A Malfunction · **P2C2D** Turbocharger/Supercharger Bypass Valve B Position Exceeded L · **P2C2E** Turbocharger/Supercharger Bypass Valve B Supply Voltage Low · **P2C30** Ignition Coil Primary Circuit Fuse A

See it working

Watch the animated explainer **Four-Stroke Engine Cutaway: Intake to Exhaust** on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p2c2f/>

