



P2B2F

Fan 1 Performance/Stuck Off

P2B2F indicates that the powertrain control module (PCM) has commanded the engine cooling fan (Fan 1) to run, but the fan circuit feedback indicates the fan is not turning or is stuck in the off position. The PCM monitors the fan control circuit and often the fan's actual operation via a feedback signal, and it sets this code when the commanded state and the actual state do not match.

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 (malfunction indicator lamp) on the dashboard.
- Engine coolant temperature may rise above normal, especially in traffic or hot weather, because the fan is not running.
- The cooling fan may never turn on, even when the engine is hot or the air conditioning is engaged.
- Possible overheating warning message or gauge reading in the red zone if the fault is severe.
- Often no symptoms besides the warning light, especially if the vehicle is moving and natural airflow keeps the engine cool.

Common causes, most likely first

- 1 Failed cooling fan motor (open winding, seized bearing, or worn brushes).
- 2 Blown fuse or melted fuse element in the fan circuit.
- 3 Damaged or corroded wiring, connectors, or ground connections in the fan control circuit.
- 4 Faulty fan relay or fan control module (solid-state relay) that does not close when commanded.
- 5 PCM software issue or internal driver failure preventing the fan command signal.
- 6 Open or shorted fan control solenoid or actuator (if equipped with a variable-speed fan).



How to diagnose and fix it

- 1 Verify the fan does not run when commanded by the PCM using a scan tool bidirectional control; if it runs, the fault is likely in the feedback circuit or PCM logic.
- 2 Check the fan circuit fuse and relay; replace any blown fuse and test the relay for proper operation.
- 3 Inspect the fan motor connector and wiring for corrosion, damage, or loose pins; repair as needed.
- 4 Measure resistance across the fan motor terminals; an open circuit or very high resistance indicates a failed motor.
- 5 Apply battery voltage directly to the fan motor to confirm it operates; if it does not, replace the fan assembly.
- 6 Test the fan control circuit from the PCM to the relay or control module for continuity and short to ground or power.
- 7 If all electrical checks pass, suspect the PCM; reprogram or replace only after confirming all other components are good.

Fan feedback circuits can fool you

- A fan that runs when commanded with a scan tool but does not run under normal PCM control often points to a faulty feedback signal rather than a bad motor.
- Corroded ground connections at the fan motor or chassis can cause intermittent no-run conditions that set this code without a hard failure.
- Some vehicles use a pulse-width modulated (PWM) fan control module; a failed module can command the fan off even when the PCM requests full speed.
- The code can be set by a fan that is physically blocked by debris or a failed fan clutch on mechanical fan setups, not just electrical faults.
- After repairs, clear the code and verify the fan operates through several drive cycles, as some PCMs only set the code after multiple failed command cycles.

Can I keep driving with P2B2F?

You can usually drive short distances with this code if the engine temperature remains normal, but avoid prolonged idling, heavy traffic, or hot ambient conditions that rely on the fan. If the temperature gauge climbs above normal, pull over and stop the engine to prevent overheating damage.

Tools that help

- OBD-II scan tool with bidirectional control capability
- Digital multimeter
- Test light
- Fuse puller and replacement fuses
- Jumper wires with alligator clips
- Service manual or wiring diagram for the specific vehicle



Reading P2B2F

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

Often seen with

P0480 Cooling Fan 1 Control Circuit Malfunction · **P0481** Cooling Fan 2 Control Circuit Malfunction · **P0482** Cooling Fan 3 Control Circuit Malfunction · **P0483** Fan Rationality Check · **P0691** Fan 1 Control Circuit Low

See it working

Watch the animated explainer [How a Radiator Fan Relay Circuit Works](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p2b2f/>

