

GENERIC · POWERTRAIN

P2C77

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P2C77

Active Grille Air Shutter D Control Circuit Range/Performance

P2C77 indicates that the engine control module (ECM) has detected an out-of-range or performance fault in the control circuit for the active grille air shutter 'D'. The ECM commands the shutter to a specific position and monitors the circuit for expected voltage or current feedback; when the feedback does not match the command within a calibrated range, this code is stored.

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.
- Often no symptoms besides the warning light, as the shutter may default to a fixed position.
- Slightly reduced fuel economy due to the shutter not closing at highway speeds.
- Possible overheating in hot weather if the shutter fails to open when needed.
- Aerodynamic noise or whistle from the front grille area if the shutter is stuck partially open.
- In some vehicles, a message indicating reduced engine power or a service soon alert.

Common causes, most likely first

- 1 Faulty active grille air shutter actuator or motor for shutter 'D'.
- 2 Damaged or disconnected wiring harness or connector at the shutter 'D' assembly.
- 3 Corrosion or water intrusion in the shutter 'D' electrical connector.
- 4 Mechanical binding or obstruction preventing shutter 'D' from moving freely.
- 5 Failed position sensor or feedback circuit within the shutter 'D' assembly.
- 6 Software calibration issue in the ECM requiring reprogramming.
- 7 Rarely, a faulty ECM driver for the shutter control circuit.



How to diagnose and fix it

- 1 Perform a visual inspection of shutter 'D' for debris, damage, or mechanical binding, and verify free movement.
- 2 Check the electrical connector at shutter 'D' for corrosion, loose pins, or water intrusion, and clean or repair as needed.
- 3 Use a scan tool to command shutter 'D' through its full range and observe live data for position feedback and circuit voltage.
- 4 Measure resistance and voltage on the control circuit between the ECM and shutter 'D' to check for opens, shorts, or high resistance.
- 5 If the actuator motor or position sensor is faulty, replace the shutter 'D' assembly or actuator as per manufacturer procedure.
- 6 Reprogram the ECM with the latest calibration if a software update is available for this fault.
- 7 Clear the diagnostic trouble codes and perform a road test to verify the repair and ensure the code does not return.

Common misdiagnosis traps for P2C77

- A stuck or binding shutter 'D' due to road debris or ice is often overlooked, leading to unnecessary replacement of the actuator or ECM.
- The code can be set by a momentary glitch in the feedback signal, so always check for intermittent wiring issues before condemning the shutter assembly.
- On some vehicles, the active grille shutter system shares power or ground with other circuits, so a fault elsewhere can trigger P2C77.
- After replacing the shutter 'D' assembly, some manufacturers require a calibration or learn procedure with a scan tool; skipping this step can cause the code to reappear.
- A weak battery or charging system issue can cause voltage spikes that mimic a shutter circuit fault, so always verify battery health first.

Can I keep driving with P2C77?

It is generally safe to continue driving with P2C77, but avoid sustained high-speed driving or heavy load conditions that could cause overheating if the shutter remains closed. Monitor engine temperature and have the fault diagnosed promptly to prevent potential engine damage.

Tools that help

- OBD-II scan tool with bidirectional control and live data capability
- Digital multimeter
- Service information for the specific vehicle
- Basic hand tools (sockets, screwdrivers, trim removal tools)
- Inspection mirror and flashlight



Reading P2C77

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

Often seen with

P2C75 Active Grille Air Shutter Module C Over Temperature · **P2C76** Active Grille Air Shutter D Stuck On · **P2C78** Active Grille Air Shutter Module D Over Temperature · **P2C79** NOx Adsorber - Sulfur Limit Exceeded · **P2C7A** SCR NOx Catalyst Efficiency Below Threshold Bank 1 Catalyst

See it working

Watch the animated explainer [How a Rotary Engine Works: Wankel in X-Ray](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p2c77/>

