

GENERIC · POWERTRAIN

P2053

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P2053

Reductant Injector Circuit/Open (Bank 1 Unit 2)

P2053 indicates that the powertrain control module (PCM) has detected an open circuit or excessive resistance in the electrical path for the reductant injector on bank 1 unit 2 of the selective catalytic reduction (SCR) system. This injector is responsible for spraying diesel exhaust fluid (DEF) into the exhaust stream to reduce nitrogen oxide (NOx) emissions, and the code sets when the PCM's commanded current or voltage does not match the expected value for that injector.

SYSTEM

Powertrain

CODE TYPE

Generic (all makes)

SEVERITY

Medium

FIX DIFFICULTY

Intermediate

AREA

Fuel and air metering and auxiliary emission controls

Symptoms you may notice

- Illumination of the check engine light, often with no other noticeable symptoms.
- Reduced engine power or limp mode may be activated to protect the emissions system.
- A message on the dashboard indicating low DEF level or a fault in the emissions system.
- Increased DEF consumption if the injector is partially clogged or leaking.
- Rough running or misfire under load if the injector is completely open and DEF is not being dosed properly.
- Possible white exhaust smoke or ammonia odor from unburned DEF if the injector is stuck open.

Common causes, most likely first

- 1 Open or damaged wiring harness between the PCM and the reductant injector, including chafed or corroded connectors.
- 2 Failed reductant injector solenoid coil (open winding).
- 3 Blown fuse or relay supplying power to the reductant injector circuit.
- 4 Corroded or loose electrical connector at the injector or PCM.
- 5 PCM internal driver failure for the injector circuit (rare but possible).
- 6 Aftermarket or damaged DEF fluid causing injector clogging and subsequent circuit fault.
- 7 Poor ground connection for the injector circuit.



How to diagnose and fix it

- 1 Perform a visual inspection of the reductant injector, its connector, and the wiring harness for damage, corrosion, or loose pins.
- 2 Check the fuse and relay that supply power to the reductant injector circuit and replace if faulty.
- 3 Measure the resistance of the reductant injector solenoid with a multimeter and compare to the manufacturer's specification; replace the injector if out of range.
- 4 Backprobe the injector connector to check for battery voltage on the power side with the key on and engine off.
- 5 Check for continuity and short to ground on the control circuit between the PCM and the injector; repair any open or shorted wiring.
- 6 Clear the diagnostic trouble codes and perform a road test to verify the repair; if the code returns, further diagnose the PCM and injector driver circuit.
- 7 If all electrical checks pass, consider that the injector may be mechanically clogged and require replacement or cleaning.

Common oversights when diagnosing P2053

- A clogged or crystallized DEF injector nozzle can cause an open circuit code because the PCM detects no current flow when the injector is commanded on, even though the coil is intact.
- The reductant injector on bank 1 unit 2 is often the second injector in a dual-injector SCR system, and its wiring may be routed near hot exhaust components, leading to heat damage that is not obvious during a cold inspection.
- Technicians sometimes replace the injector without checking the power supply fuse or relay, which can be shared with other circuits and cause a recurring open circuit.
- The PCM may set P2053 if the DEF fluid level is critically low, as some systems disable the injector to protect it, so always verify DEF level and quality before condemning electrical parts.
- Aftermarket DEF fluid or contamination can cause injector failure and set this code, so fuel and DEF quality should be checked as part of the diagnostic process.

Can I keep driving with P2053?

You can usually continue driving with P2053, but the vehicle may enter limp mode or limit speed, and prolonged driving with a faulty reductant injector can lead to increased emissions and potential damage to the SCR catalyst. Avoid heavy loads and long trips until the fault is repaired, and do not ignore the code if the check engine light is flashing.



Tools that help

- OBD-II scan tool with live data capability
- Digital multimeter
- Wiring diagram for the specific vehicle
- Socket set and trim removal tools
- DEF refractometer (to check fluid quality)

Reading P2053

- P** Powertrain: engine, transmission and emissions.
- 2** Generic (SAE) code: it means the same thing on every OBD-II vehicle.
- 0** Fuel and air metering and auxiliary emission controls.
- 53** The exact fault within that area.

Often seen with

P2052 Reductant Injector Circuit High (Bank 2 Unit 1) · **P2054** Reductant Injector Circuit Low (Bank 1 Unit 2) · **P2055** Reductant Injector Circuit High (Bank 1 Unit 2) · **P20B9** Reductant Heater A Control Circuit/Open · **P20BA** Reductant Heater A Control Performance

See it working

Watch the animated explainer [How a Catalytic Converter Works: 3D Cutaway](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p2053/>

