

SUBARU · POWERTRAIN

P1520

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P1520 · Subaru

Radiator Fan Relay 1 Circuit High Input

P1520 on a Subaru means the engine control module (ECM) has detected an abnormally high voltage on the control circuit for radiator fan relay 1, which usually points to an open circuit or a relay coil that is not completing the ground path. The ECM commands the relay by pulling its control wire low; when that wire stays at or near battery voltage instead of dropping, the ECM flags the circuit as high.

SYSTEM	CODE TYPE	SEVERITY	FIX DIFFICULTY	AREA
Powertrain	Subaru specific	Medium	Intermediate	Vehicle speed, idle control and auxiliary inputs

Symptoms you may notice

- The check engine light or service engine soon light is illuminated on the dashboard.
- Often no symptoms besides the warning light, especially in cool weather when the fan is not needed.
- Engine coolant temperature may climb above normal in traffic or during extended idling because the primary radiator fan does not run.
- The air conditioning may blow warm at a standstill because the condenser fan is not being commanded on.
- In some cases the cooling fan may run continuously at full speed if the relay is stuck or the control circuit is shorted to voltage.
- A stored P1520 may be accompanied by a pending P1521 or P0480 if the ECM also sees a problem with the fan circuit.

Common causes, most likely first

- Open or damaged wire in the control circuit between the ECM and radiator fan relay 1, often from chafing or corrosion.
- Failed radiator fan relay 1, typically an open coil or corroded internal contacts.
- Poor connection at the relay socket or ECM connector, including backed-out pins or terminal fretting.
- Blown fuse or fusible link that supplies power to the relay coil, though this usually sets a low-input code instead.
- Corroded or broken ground for the relay coil if the relay is ground-side controlled.
- Faulty ECM driver for the fan relay circuit, which is rare but possible after water intrusion or a shorted harness.
- Aftermarket alarm or remote-start wiring tapped into the fan circuit, creating an intermittent open or high-resistance path.



How to diagnose and fix it

- 1 Clear the code and verify it returns; check for any related pending codes and freeze-frame data to confirm the fault is active.
- 2 Inspect the radiator fan relay 1, its socket, and the wiring harness for corrosion, loose pins, or chafed insulation, and repair as needed.
- 3 Test the relay coil resistance and confirm it clicks when bench-tested; replace the relay if it is open or out of specification.
- 4 Check the control wire from the ECM to the relay for continuity and for a short to voltage; repair any open or shorted section.
- 5 Verify the relay coil power supply and ground paths with a test light or multimeter while the ECM commands the fan on.
- 6 If the circuit and relay test good, back-probe the ECM connector and confirm the driver pulls the control wire low when commanded; replace the ECM only if the driver is confirmed faulty.
- 7 After repair, clear codes, run the engine to operating temperature with the A/C on, and confirm the fan cycles and no codes return.

What a high fan relay input really means

- A high input on a relay control circuit almost always means the ECM is seeing battery voltage on a wire it expects to pull low, so the fault is usually an open control wire or a failed relay coil rather than a shorted power feed.
- Many Subaru fan relay circuits are ground-side controlled, so a relay that tests fine on the bench can still set P1520 if the ground path through the ECM or chassis is compromised.
- Technicians sometimes replace the fan motor or the coolant temperature sensor when the real problem is a \$20 relay or a corroded connector pin, so always verify the control circuit before condemning expensive parts.
- A P1520 can be intermittent and only set during a cold start or when the A/C is first turned on, so a wiggle test of the harness while watching live data is often more useful than a static meter check.
- Aftermarket remote starters and alarm systems frequently splice into the fan relay control wire, and a poor splice can create the high-resistance condition that sets this code.

Can I keep driving with P1520?

You can usually drive a short distance to a repair shop, but avoid heavy traffic, long idles, and towing because the primary cooling fan may not run and the engine can overheat. If the temperature gauge climbs above normal or the A/C stops cooling at a standstill, pull over and let the engine cool before continuing.



Tools that help

- OBD-II scan tool with live data and bidirectional control
- Digital multimeter with min/max and continuity functions
- Test light or logic probe
- Wire piercing probes and back-probe pins
- Relay puller and terminal pick set
- Factory service information or wiring diagram for the specific Subaru model

Reading P1520

P Powertrain: engine, transmission and emissions.

1 Manufacturer-specific code (Subaru): 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 · **P1521** Transmission Engaged At High Throttle Angle · **P1521** Transmission Engaged At High Throttle Angle · **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

See it working

Watch the animated explainer [Engine Cooling System Trainer: How Engines Stay Cool](#) on Auto Veteran to see the parts involved moving.

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

