P0485: COOLING FAN POWER/GROUND CIRCUIT MALFUNCTION

OVERVIEW

Severity	:	Medium
DIY Difficulty Level	:	Advanced
Repair Cost	:	**$250-$450**
Can I Still Drive?	:	**Yes** (Short-term only)

What Does The P0485 Code Mean?

This generic powertrain/engine diagnostic trouble code typically applies to all OBDII equipped engines, but shows up more often in certain Mazda and Mercedes Benz vehicles.

The Cooling Fan Module is usually found mounted behind the radiator in front of the engine. The Cooling Fan Module is typically controlled by the Powertrain Control Module (PCM) based upon inputs wired to it.

The PCM receives these inputs via voltage signals to determine engine coolant and intake air temperature, air conditioner pressures, and vehicle speed. This code is set if these inputs do not match normal operating voltages stored in the PCM's memory, or if the cooling fan operation does not match the predetermined information stored in the PCM.

P0485 is set when abnormal voltages are detected during normal fan operation on the power side/ground side of the cooling fan circuit. This can occur during low, medium or high speed operation. This also includes those vehicles utilizing fan relays to operate the cooling fans. This code is only concerned with electrical issues (failed cooling fan circuit), including intermittent problems.

Troubleshooting steps may vary depending upon manufacturer, type of cooling fan module and wire colors.

Related cooling fan trouble codes include:

- P0480 – Cooling Fan 1 Control Circuit Malfunction
- P0481 – Cooling Fan 2 Control Circuit Malfunction
- P0482 – Cooling Fan 3 Control Circuit Malfunction
- P0483 – Cooling Fan Rationality Check Malfunction
- P0484 – Cooling Fan Circuit Over Current

What Are The Symptoms Of The P0485 Code?

Symptoms of a P0485 trouble code may include:

- Malfunction Indicator Light On
- Engine Overheating
- A/C system not functioning properly

What Are The Potential Causes Of The P0485 Code?

Typically the causes for this code to set are:

- Open / short to power on the fan control circuit between the cooling fan module and the PCM – possible
- Short to ground on the fan control circuit to the cooling fan module – possible
- Cooling fan module faulty – most likely
- Faulty PCM – least unlikely

How Can You Fix The P0485 Code?

Step 1

A good starting point is always a technical service bulletin (TSB) search for your particular vehicle. The vehicle manufacturer may have a PCM flash/reprogram to cover this issue, and it pays to check on this before you find you've gone down a long/wrong path.

Step 2

Next, locate the cooling fan module on your particular vehicle. The Cooling Fan Module (cooling fans) is usually found mounted behind the radiator in front of the engine. Once located, visually inspect the connectors and wiring. Look for scraping, rubbing, bare wires, burn spots or melted plastic.

Pull the connectors apart and carefully inspect the terminals (the metal parts) inside the connectors. See if they look burned or have a green tint indicating corrosion. Use electrical contact cleaner and a plastic bristle brush if cleaning of the terminals is needed. Let dry and apply electrical

grease where the terminals contact.

Step 3

If you have a scan tool, clear the diagnostic trouble codes from memory, and see if P0485 returns. If it does not, then the connections were most likely your problem.

For this particular code, this is the most common area of concern, as are the relays / connections to the relays.

If the code does return, we will need to test the fans and their associated circuits. Typically, there are 2 wires at each cooling fan in the module. First, disconnect the harness going to the cooling fan module. With a Digital Volt Ohm Meter (DVOM), connect one lead of the meter to one terminal of one of the fans.

Connect the remaining meter lead to the other fan terminal. It should not be open or shorted. Verify the resistance specifications for your particular vehicle. If the fan motor is either open or shorted (infinite resistance or no resistance/0 ohms), replace the cooling fan module or if available, the cooling fan motor.

Step 4

If that test passes, with a DVOM, check to make sure you have 12V to the cooling fan module power supply circuit (Red lead to the fan power supply circuit, black lead to a good ground). With a scan tool that can activate the cooling fans, turn on the cooling fans. If there is no 12 volts to the fan, repair the wiring from the PCM or relay to the fan, or possibly a bad PCM.

Step 5

If that's OK, check to make sure you have a good ground at the cooling fan module. Connect a test light to 12V battery positive (red terminal) and touch the other end of the test light to the ground circuit going to the Cooling fan module circuit ground. Using the scan tool to actuate the cooling fan module, see if the test light comes on each time the scan tool actuates the fan.

If the test light does not light up, this would indicate the problem circuit. If it does light up, wiggle the wiring harness going to the fan to see if the test light flickers, indicating an intermittent connection.

Step 6

If all tests have passed so far, and you continue to get a P0485 code, this would most likely indicate a failed cooling fan module, although a failed PCM could not be ruled out until the fan had been replaced. If unsure, seek assistance from a trained automotive diagnostician. PCMs must be

programmed, or calibrated to the vehicle in order to be installed correctly.

Severity Description

Severity depends upon the failure. With an electrical failure, it may not be considered as severe, as the PCM can compensate for it, unless the engine begins to overheat. While the PCM is compensating, the temperature gauge must be monitored during all drive cycles. Typically, the fans operate all the time (100 % duty cycle).

Reference Sources

P0485 Cooling Fan Power/Ground Circuit Malfunction, OBD-Codes.