

P0534: AIR CONDITIONER REFRIGERANT CHARGE LOSS

OVERVIEW

Severity :  Medium

DIY Difficulty Level :  Intermediate

Repair Cost : **\$200-\$300**

Can I Still Drive? : **Yes**

What Does The P0534 Code Mean?

When a code P0534 is stored, it means that the powertrain control module (PCM) has detected a low freon condition in the air conditioning (A/C) system.

The automotive a/s system is lubricated with a mixture of specially designed oil and freon. Even if the correct amount of the appropriate oil were present in the a/c system, without the freon it could not be circulated to vital areas.

Without this mixture, the compressor would suffer catastrophic failure and the condenser would be filled with a form of gummy metallic debris. In order to protect the compressor and other expensive a/c components, pressure sensors are positioned in certain areas of the system.

A high-pressure cutoff switch in the back of the compressor (or in a discharge line) may protect the a/c system from an extreme over pressure condition. This type of condition would likely be caused by a lack of airflow across the condenser or an overheating engine.

To protect the a/c system from a low freon condition, a low pressure cutoff switch is positioned in the suction side of the system near the accumulator or expansion valve (depending upon the a/c system configuration).

The a/c low pressure cutoff switch is made with a pressure sensitive contact that closes when a/c

pressure exceeds the targeted level (usually above 30 psi). It typically threads onto a schrader valve on the suction hose or accumulator of the a/c system.

As long as a/c system pressure remains within the programmed specifications, the contact in the low pressure switch remains closed and the a/c compressor clutch power circuit is completed as desired. When a/c system pressure falls below the minimum threshold, the contact in the low pressure switch opens and voltage to the compressor clutch is interrupted.

The a/c low pressure cutoff switch also provides the PCM with an on/off signal. If the PCM detects a signal from the low pressure cutoff switch that indicates a low freon condition, a code P0534 will be stored and a malfunction indicator lamp (MIL) may be illuminated.

In most cases, multiple failures will be required for the code to be stored and for MIL illumination.

What Are The Symptoms Of The P0534 Code?

Symptoms of a P0534 diagnostic code may include:

- The a/c will not blow cold air
- The a/c compressor switch may flash
- The compressor clutch may cycle on and off repeatedly
- A/C compressor clutch engagement may be disabled

What Are The Potential Causes Of The P0534 Code?

Causes for this P0534 code may include:

- Freon leak (low freon) in the a/c system
- Bad low pressure cutoff switch
- Open or shorted circuit or connector in the a/c system

How Can You Fix The P0534 Code?

When a code P0534 is stored, a general performance check of the a/c system is recommended. Be aware that handling certain types of freon requires a federally mandated certification in many areas. Furthermore, the a/c system should be serviced only by qualified individuals. Freon under high pressure can be dangerous in quite a number of ways and the a/c system can be damaged if the correct amount of freon is not used.

Before beginning your diagnosis, the a/c system must be filled to the correct level with the appropriate (amount and type) freon and oil. If charging specifications are not visible in the underhood area, check a reliable source of vehicle information.

A set of automotive a/c gauges, a vacuum pump, and some type of an oil dispenser will be required

to service the a/c system. If the system has a small leak, an ultraviolet leak detection dye injection is also recommended. This will help you diagnose a leak if the freon leaks out again.

Once the a/c system has been serviced and is full of freon, it may be necessary to clear the code before power can be restored to the a/c compressor clutch coil. Connect the scanner to the vehicle diagnostic connector and retrieve all stored codes and freeze frame data. Write all this down before clearing the codes. With the a/c system full of freon, operate it and see if the P0534 is reset.

If the code is reset, use a digital volt/ohmmeter (DVOM) to check the low pressure cutoff switch. This can be done by starting the engine and turning the a/c on max with the fan on high. Use caution when working around moving parts and connect the negative test lead of the DVOM to a known good ground. Use the positive test lead to probe the wires of the low pressure switch connector.

This will be carried out with the low pressure cutoff switch connector plugged in. All wires (usually three) should have battery voltage..

None Of The Circuits Have Voltage

- Check system fuses with the DVOM
- Check the a/c on/off switch
- Check the low pressure switch connector
- Check the a/c compressor relay

One Of The Circuits Has Voltage; The Others Do Not

- The low pressure switch may be defective
- Jumper the switch and see if the compressor clutch is activated
- If the clutch is activated with the connector jumped, the low pressure cutoff switch is bad
- Low freon conditions are the leading cause of a P0534 being stored. Make sure that the a/c system is full of freon before diagnosing this code

Severity Description

A stored code P0534 pertains exclusively to the a/c system and does not affect engine drivability. It should not be classified as severe.

Reference Sources

[Diagnostic Trouble Code \(DTC\) Guide for P0534](#) - Ominitek Advanced Technologies, pages 116-117.