

GENERIC · POWERTRAIN

P0645

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P0645

A/C Clutch Relay Control Circuit

P0645 means the powertrain control module (PCM) has commanded the air conditioning (A/C) clutch relay on, but the relay control circuit is not responding as expected. The PCM monitors the voltage on the control wire and sets this code when the circuit stays outside the expected range, indicating an open, short, or faulty relay.

SYSTEM	CODE TYPE	SEVERITY	FIX DIFFICULTY	AREA
Powertrain	Generic (all makes)	Low	Intermediate	Computer and output circuits

Symptoms you may notice

- The A/C compressor clutch never engages, so the air blows warm even when A/C is selected.
- The A/C clutch may engage briefly and then disengage, or cycle rapidly.
- Often no symptoms besides the warning light, because the PCM may default to disabling the A/C clutch to protect the circuit.
- A clicking or chattering sound from the relay box when the A/C is turned on.
- Blower motor may still work normally, but vent air stays at ambient temperature.
- In some vehicles, the engine cooling fans may run constantly or not at all if the same relay controls them.

Common causes, most likely first

- Failed A/C clutch relay (most common).
- Open or damaged wire in the relay control circuit between the PCM and the relay.
- Corroded or loose connector terminals at the relay or PCM.
- Shorted relay coil or short to ground in the control wire.
- Faulty PCM driver for the relay control circuit (rare but possible).
- Blown fuse or poor ground for the relay coil circuit.
- Aftermarket alarm or remote start wiring tapped into the A/C circuit.



How to diagnose and fix it

- 1 Check the A/C clutch relay by swapping it with an identical relay from a non-critical circuit and see if the code returns.
- 2 Inspect the relay socket and PCM connector for corrosion, loose pins, or pushed-out terminals.
- 3 Use a multimeter to check for battery voltage at the relay coil control wire when the A/C is commanded on.
- 4 Check the control wire for continuity to ground and for shorts to ground or battery voltage with the relay removed.
- 5 Verify the PCM ground and power feeds are clean and tight, since a poor ground can mimic a driver fault.
- 6 If the control wire and relay test good, suspect the PCM driver and perform a pinpoint test with a scan tool to confirm the command signal.
- 7 Clear the code and road-test with the A/C on to confirm the repair before returning the vehicle.

Why the relay is not always the culprit

- A failed A/C clutch relay is the most common cause, but a corroded terminal in the relay socket can set the same code and be missed during a quick swap.
- The PCM may set P0645 even when the A/C clutch itself is good, because the code monitors the control circuit, not the clutch coil resistance.
- Some vehicles use the same relay for the A/C clutch and the cooling fan, so a fan that runs constantly or not at all can point to this circuit.
- A shorted A/C clutch coil can draw excessive current and damage the relay driver over time, so always check clutch coil resistance before replacing the PCM.
- Aftermarket wiring for alarms or remote starters often taps into the A/C relay control wire and can introduce intermittent opens or shorts that set this code.

Can I keep driving with P0645?

You can drive the vehicle safely because the A/C clutch is disabled, but avoid using the A/C until the fault is repaired to prevent further circuit damage. In hot weather, keep windows open and monitor engine temperature if the cooling fans share the same relay.

Tools that help

- OBD-II scan tool
- Digital multimeter
- Relay puller or small screwdriver
- Test light
- Wiring diagram for the A/C clutch relay circuit



Reading P0645

- P** Powertrain: engine, transmission and emissions.
- 0** Generic (SAE) code: it means the same thing on every OBD-II vehicle.
- 6** Computer and output circuits.
- 45** The exact fault within that area.

Often seen with

P0530 A/C Refrigerant Pressure Sensor 'A' Circuit · **P0532** A/C Refrigerant Pressure Sensor 'A' Circuit Low · **P0533** A/C Refrigerant Pressure Sensor 'A' Circuit High · **P0646** A/C Clutch Relay Control Circuit Low · **P0647** A/C Clutch Relay Control Circuit High

See it working

Watch the animated explainer [Manual Car Driving Simulator: Learn Clutch Control](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p0645/>

