

GENERIC · CHASSIS

C05F6

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

C05F6

4WD/AWD Range Actuator Control Circuit Performance

The C05F6 code indicates that the four-wheel-drive (4WD) or all-wheel-drive (AWD) range actuator control circuit is not performing as expected, meaning the computer has detected an abnormal electrical condition or unexpected response from the actuator that shifts the transfer case between ranges. The powertrain control module (PCM) or a dedicated control module monitors the circuit and sets this code when the actuator fails to move, moves too slowly, or the circuit voltage is out of specification.

SYSTEM

Chassis

CODE TYPE

Generic (all makes)

SEVERITY

Medium

FIX DIFFICULTY

Intermediate

AREA

Brakes, steering and suspension

Symptoms you may notice

- The 4WD or AWD warning light illuminates on the dashboard.
- The vehicle may be stuck in two-wheel drive and unable to engage four-wheel drive.
- The transfer case may not shift between high and low range, or may shift harshly.
- A grinding or clicking noise may be heard from the transfer case area when attempting to shift.
- The vehicle may exhibit reduced traction or stability control intervention on slippery surfaces.
- Often no symptoms besides the warning light, especially if the fault is intermittent.

Common causes, most likely first

- 1 A faulty range actuator motor or its internal position sensor.
- 2 Damaged, corroded, or disconnected wiring or connectors in the actuator control circuit.
- 3 A blown fuse or relay supplying power to the actuator circuit.
- 4 A binding or mechanically stuck transfer case shift mechanism.
- 5 A failed transfer case control module (TCCM) or PCM.
- 6 Low transfer case fluid level or contaminated fluid causing increased resistance.
- 7 A weak or failing vehicle battery or charging system affecting circuit voltage.



How to diagnose and fix it

- 1 Verify the battery voltage and charging system are within specification, as low voltage can trigger false codes.
- 2 Inspect the actuator circuit wiring and connectors for damage, corrosion, or loose pins, and repair as needed.
- 3 Check the fuse and relay for the actuator circuit and replace if faulty.
- 4 Perform a bidirectional actuator test with a scan tool to command the actuator and observe its operation.
- 5 Measure resistance and voltage at the actuator connector to compare with manufacturer specifications.
- 6 If electrical checks pass, remove the actuator and inspect the transfer case shift mechanism for binding or wear.
- 7 Replace the range actuator motor if it fails electrical or functional testing, then clear codes and verify proper operation.

Actuator circuit faults often misdiagnosed

- A common mistake is replacing the transfer case actuator without first checking the wiring harness for chafing or corrosion, which can mimic an actuator failure.
The code can be set by a mechanically binding shift rail inside the transfer case, so electrical tests alone may not reveal the root cause.
- Intermittent faults may only appear during temperature extremes or after the vehicle has been driven for a while, making live data monitoring essential.
- Some vehicles require a relearn or calibration procedure after actuator replacement, and skipping it can cause the code to return.
A weak battery or poor ground connection can cause voltage drops that trigger this code even when the actuator itself is healthy.

Can I keep driving with C05F6?

You can usually drive the vehicle in two-wheel drive if the warning light is on and the transfer case remains engaged, but avoid relying on four-wheel drive and do not attempt to shift ranges until the fault is repaired. If the vehicle is stuck in four-wheel drive or exhibits strange handling, have it inspected promptly.

Tools that help

- OBD-II scan tool with bidirectional control capability
- Digital multimeter
- Test light
- Basic hand tools (sockets, wrenches, screwdrivers)
- Service information for circuit specifications and actuator testing



Reading C05F6

- C** Chassis: brakes, steering and suspension.
- 0** Generic (SAE) code: it means the same thing on every OBD-II vehicle.
- 5** Brakes, steering and suspension.
- F6** The exact fault within that area.

Often seen with

P1870 Transmission Component Slipping · **C05F5** 4WD/AWD Range Actuator Control Circuit/Open · **C05F7** 4WD/AWD Range Actuator Control Circuit Low · **C05F8** 4WD/AWD Range Actuator Control Circuit High · **U0102** Lost Communication with Transfer Case Control Module

See it working

Watch the animated explainer [How an Automatic Transmission Works, Gear by Gear](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/c05f6/>

