



P1721 · Mazda

Gear 1 Incorrect Ratio

P1721 on Mazda vehicles means the transmission control module (TCM) has calculated an incorrect gear ratio for first gear, based on the difference between engine speed and transmission output speed. The TCM expects a specific ratio when first gear is commanded, but the actual ratio falls outside the acceptable range, indicating slip or a mechanical fault.

SYSTEM	CODE TYPE	SEVERITY	FIX DIFFICULTY	AREA
Powertrain	Mazda specific	High	Professional	Transmission

Symptoms you may notice

- Illumination of the check engine light or transmission warning light, often with no other noticeable symptoms.
- Harsh or delayed engagement when shifting from park or neutral into drive.
- Slipping sensation during acceleration from a stop, as if first gear is not fully engaging.
- Transmission may enter limp mode, holding a single gear and limiting vehicle speed.
- Abnormal engine RPM flare when starting off, especially under light throttle.
- Poor fuel economy or increased engine noise due to higher-than-normal RPM in first gear.

Common causes, most likely first

- 1 Low or degraded automatic transmission fluid (ATF), leading to insufficient hydraulic pressure and clutch slip.
- 2 Worn or burnt first gear clutch packs, causing inadequate torque transfer and ratio deviation.
- 3 Faulty shift solenoid or valve body issue preventing proper first gear engagement.
- 4 Sticking or contaminated valve body spool valves affecting hydraulic control.
- 5 Damaged transmission speed sensors (input or output) sending incorrect signals to the TCM.
- 6 Internal transmission mechanical damage, such as a broken band or planetary gear set.
- 7 Electrical issues in the solenoid circuit, including wiring or connector problems.

How to diagnose and fix it

- 1 Check transmission fluid level and condition; top off or replace fluid if degraded.
- 2 Perform a diagnostic scan to read live data and compare actual versus commanded gear ratio.
- 3 Inspect wiring and connectors at the transmission solenoids and speed sensors for damage or corrosion.
- 4 Test shift solenoids for proper resistance and operation; replace if faulty.
- 5 Remove and inspect the valve body for sticking valves or debris; clean or rebuild as needed.
- 6 Conduct a hydraulic pressure test to verify line pressure and clutch apply pressure.
- 7 If internal damage is confirmed, remove and overhaul the transmission, replacing worn clutch packs and bands.



Before you replace the transmission

- A low fluid level or a clogged transmission filter can mimic a failed first gear clutch, so always verify fluid condition and level first.
- The TCM may set P1721 due to a faulty output speed sensor, which is often misdiagnosed as an internal transmission failure.
- In some Mazda models, a software update to the TCM can correct false ratio calculations without any hardware replacement.
- Intermittent electrical faults in the solenoid harness can cause sporadic ratio errors that do not appear during a short test drive.
- A sticking valve body spool valve can cause first gear slip only when cold, leading to misdiagnosis if the transmission is tested warm.

Can I keep driving with P1721?

Driving with P1721 is not recommended because first gear slip can worsen internal damage and lead to a complete transmission failure. If you must move the vehicle, drive slowly and avoid heavy acceleration, and have it diagnosed by a professional as soon as possible.

Tools that help

- OBD-II scan tool with live data and transmission capabilities
- Transmission fluid level dipstick or inspection tool
- Digital multimeter for electrical testing
- Hydraulic pressure gauge kit
- Socket and wrench set for valve body removal

Reading P1721

P	Powertrain: engine, transmission and emissions.
1	Manufacturer-specific code (Mazda): its meaning depends on the make.
7	Transmission.
21	The exact fault within that area.

Often seen with

P0715 Input/Turbine Speed Sensor Circuit Malfunction · **P0720** Output Speed Sensor Circuit Malfunction · **P0731** Gear 1 Incorrect Ratio · **P0732** Gear 2 Incorrect Ratio · **P0741** Torque Converter Clutch Circuit Performance or Stuck Off



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/mazda-p1721/>

