

GENERIC · POWERTRAIN

P2BB2

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P2BB2

Alternative Fuel Tank Empty

P2BB2 indicates that the powertrain control module has determined the alternative fuel tank is empty, based on a fuel level input that has fallen below the calibrated empty threshold for the alternative fuel system. The computer sets this code when the alternative fuel level sensor or calculation reports no usable fuel remaining in that tank.

SYSTEM	CODE TYPE	SEVERITY	FIX DIFFICULTY	AREA
Powertrain	Generic (all makes)	Medium	Intermediate	Hybrid propulsion

Symptoms you may notice

- Illumination of the check engine light or a dedicated alternative fuel warning lamp
- The vehicle may automatically switch back to gasoline operation and refuse to run on the alternative fuel
- A message on the driver information display indicating the alternative fuel tank is empty
- Reduced power or a limp-home mode if the vehicle cannot transition smoothly to the secondary fuel
- Often no symptoms besides the warning light if the vehicle has already switched to gasoline

Common causes, most likely first

- 1 The alternative fuel tank is genuinely empty and the driver has not refueled it
- 2 A faulty alternative fuel level sensor or sending unit that reports empty when fuel is present
- 3 Wiring damage, corrosion, or a poor connection in the fuel level sensor circuit
- 4 A stuck or failed fuel level float inside the alternative fuel tank
- 5 Incorrect fuel level calibration or a software issue in the powertrain control module
- 6 A failed alternative fuel tank pressure or temperature sensor that skews the level calculation

How to diagnose and fix it

- 1 Verify the alternative fuel tank actually contains fuel before any diagnosis, since an empty tank is the most common cause
- 2 Connect a scan tool and read live data for the alternative fuel level sensor to compare the reported value against actual tank contents
- 3 Inspect the fuel level sensor connector and wiring for corrosion, chafing, or loose pins, and repair as needed
- 4 Test the fuel level sensor resistance or voltage output across its full range and replace it if it does not change smoothly
- 5 Check for technical service bulletins or software updates for the powertrain control module that address fuel level calibration
- 6 Clear the code after repairs and verify the fuel level reading updates correctly during a test drive and refueling event



When the tank is not actually empty

- A common misdiagnosis is replacing the fuel pump or tank when the real fault is a chafed wire in the level sensor circuit near the tank mounting point.
- Some vehicles set P2BB2 after a refueling event if the fuel level sensor does not see the expected rise, so the code can appear immediately after filling up.
- The code does not always mean the sensor has failed; a poor ground connection at the tank can cause the same empty reading.
- On bi-fuel vehicles, the powertrain control module may set this code when the alternative fuel system is disabled or not commissioned, which is a configuration issue rather than a hardware fault.
- A failing alternative fuel tank pressure sensor can skew the calculated fuel level on systems that use pressure and temperature to estimate remaining fuel.

Can I keep driving with P2BB2?

You can usually continue driving on gasoline if the vehicle has switched over, but avoid relying on the alternative fuel system until the fault is repaired. Do not attempt long trips on the alternative fuel with this code stored, as the vehicle may stall or refuse to restart on that fuel.

Tools that help

- OBD-II scan tool with live data capability
- Digital multimeter
- Wiring diagram for the alternative fuel level sensor circuit
- Basic hand tools for trim and tank access
- Fuel pressure gauge or level sensor test harness

Reading P2BB2

P	Powertrain: engine, transmission and emissions.
2	Generic (SAE) code: it means the same thing on every OBD-II vehicle.
B	Hybrid propulsion.
B2	The exact fault within that area.

Often seen with

P0461 Fuel Level Sensor Circuit Range/Performance · **P0462** Fuel Level Sensor Circuit Low Input · **P0463** Fuel Level Sensor Circuit High Input · **P2BB3** Fuel Pump Secondary Circuit Performance · **P2BB4** Engine Coolant Temperature Sensor 4 Circuit Intermittent/Err



See it working

Watch the animated explainer [How a Six-Speed Manual Gearbox Works](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p2bb2/>

