

When a vehicle detects a system malfunction it generates a diagnostic trouble code (DTC), which will alert the driver via a warning light or other indicator on the vehicle's dashboard. DTC codes help you understand what needs to be fixed so you can keep your vehicle safe and healthy.

Understanding DTCs

DTC's (Diagnostic Trouble Codes) are codes used to notify you about internal issues with a vehicle. When the vehicle detects an issue, it will activate the corresponding trouble code. Each code corresponds to a fault detected in the vehicle.

Pending vs. Active vs. Passive

Pending

Pending codes are also referred to as maturing codes. Pending codes are caused by intermittent faults or faults the PCM needs to see happen in two consecutive warm-up cycles to set the code. If the fault does not reappear within forty (40) warm-up cycles, the code will be cleared from memory.



Note. Pending DTCs will often be reported by the diagnostic device but are unable to be confirmed when using a scantool.

Active

A DTC state becomes Active if a Pending DTC's fault conditions persist long enough for it to be confirmed or if a Previously Active DTC's fault conditions return.

Passive

Passive faults are DTCs that can be cleared after reading the trouble codes without changing vehicle parts. Conversely, active faults cannot be cleared without fixing or changing a vehicle part.

Code Types

DTC codes are five characters long, and are categorized into four different types.

First Character: Letter

DTC codes start with a letter that shows which part of the vehicle has an issue:

- **P - Powertrain:** Includes engine, transmission, and associated accessories.
- **C - Chassis:** Covers mechanical systems and functions: steering, suspension, and braking.
- **B - Body:** Parts mainly found in the passenger compartment area.
- **U - Network & vehicle integration:** Functions managed by the onboard computer system.

Enterprise

Link: <https://help.gpsinsight.com/deep-dive/what-are-dtcs/> Last Updated: January 26th, 2021

Second Character: Number

The first letter is followed by a number, usually 0 or 1.

- **0** - Standardized or generic code - sometimes called global.
- **1** - Manufacturer-specific code - sometimes called enhanced.

Third Character: Number

For powertrain codes, this number tells you which vehicle subsystem has a fault.

- **0** - Fuel and air metering and auxiliary emission controls
- **1** - Fuel and air metering
- **2** - Fuel and air metering - injector circuit
- **3** - Ignition systems or misfires
- **4** - Auxiliary emission controls
- **5** - Vehicle speed control, idle control systems and auxiliary inputs
- **6** - Computer and output circuit
- **7** - Transmission

Fourth & Fifth Character(s): Number

The final piece of a DTC is a number that defines the exact problem that you're experiencing. It can be a number between zero and 99.

Complete code example: **P0782** means powertrain, generic, transmission, 2-3 shift malfunction.



Note. For other families of codes, refer to the definitions provided by your manufacturer.

DTC Alerts

If you have any devices that report diagnostic data, you can run a DTC alert on your fleet's vehicles. This alert allows you to stay up-to-date on any vehicle diagnostic issues. Visit the [Portal Alerts](#) page to setup your DTC alert.



Note. For more information on how to create an alert, see [Creating an Alert](#).

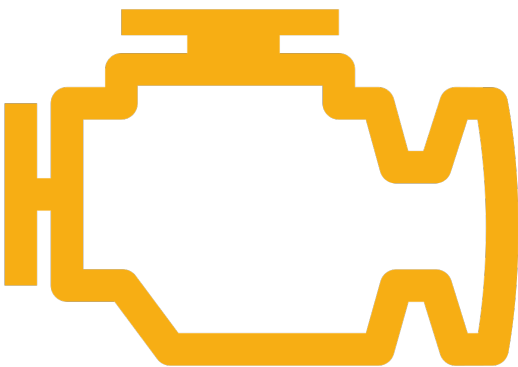
How DTCs are Reported

Supported devices report DTCs in two ways depending on the **MIL status** (see below):

- While the vehicle is active, if a DTC is reported where the MIL lamp is active then the event is immediately reported to the server, triggering any alerts scheduled to receive DTCs.
- At the end of each trip, upon Ignition Off, the device will report all DTCs reported from the vehicle, no matter Active or Passive, and no matter MIL status. This data is what informs ad-hoc and scheduled DTC reports.

Understanding MIL

The Malfunction Indicator Lamp (MIL), also known as the check engine lamp (CEL), is a warning light found on the instrument panel of the vehicle. This lamp/light indicates almost anything from a loose gas cap to a serious engine failure. When the MIL is active, the vehicle stores and reports a DTC that coincides with the fault code that triggered the lamp status.



DTC Alerts with Active MIL

As an option within the generic DTC alert, users can be alerted only when a DTC is triggered and the MIL is active. This feature helps limit alerts to vehicle faults that can be considered most serious and time-sensitive.

Lamp On: Only when check engine light is on



Note. Not all devices or vehicles support the ability to alert based on MIL status. Supported Devices: LTE-capable PNPs & GPSI-5000s. Users who schedule alerts with the Lamp On option enabled may not receive any alerts if the device(s) and/or vehicle(s) are incapable of reporting this data.