

DTC Advanced Diagnostics: P0300, P0301, P0302, P0303, P0304, P0305, P0306

DTC P0300:Random Misfire Detected

DTC P0301:No. 1 Cylinder Misfire Detected

DTC P0302:No. 2 Cylinder Misfire Detected

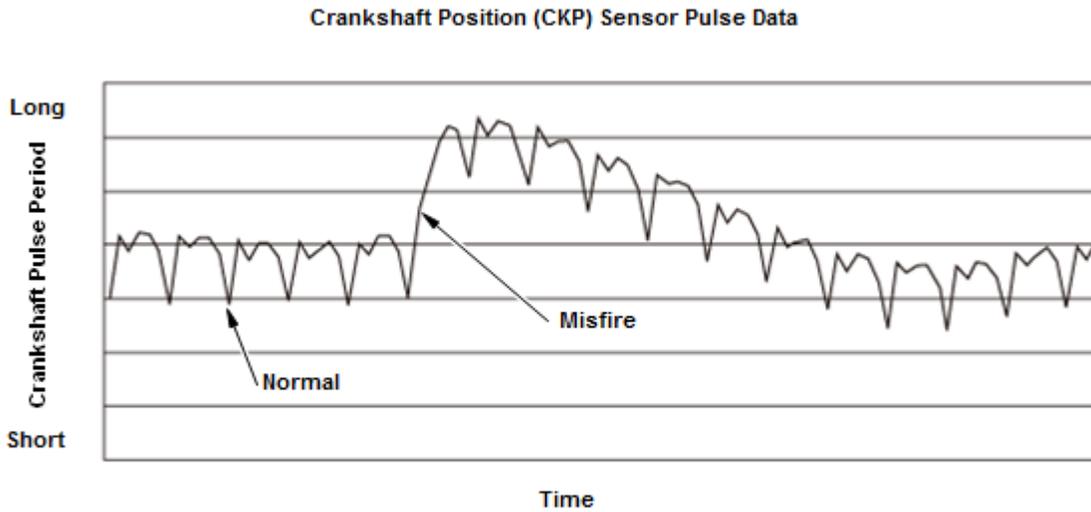
DTC P0303:No. 3 Cylinder Misfire Detected

DTC P0304:No. 4 Cylinder Misfire Detected

DTC P0305:No. 5 Cylinder Misfire Detected

DTC P0306:No. 6 Cylinder Misfire Detected

General Description



The crankshaft vibrates slightly when each cylinder fires. If a misfire occurs, the crankshaft rotation speed changes rapidly. The powertrain control module (PCM) monitors the crankshaft rotation speed based on the output pulses from the crankshaft position (CKP) sensor. By monitoring changes in the crankshaft rotation speed, the PCM counts the number of misfires and determines which cylinder is misfiring.

- P0300: If more than one DTC from P0301 through P0306 has been stored while misfires in multiple cylinders are detected, a malfunction is detected and a DTC is stored.
- P0301, P0302, P0303, P0304, P0305, P0306: If a misfire is detected, a DTC is stored.

There are two types of misfire detection:

- Type 1: When the number of misfires per 200 engine revolutions reaches the level that can damage the warm up three way catalyst (WU-TWC), a DTC is stored and the MIL blinks.
- Type 2: When the number of misfires per 1,000 engine revolutions reaches the level that affects FTP mode exhaust emissions, a DTC is stored and the MIL comes on.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status

Execution	Continuous	
Sequence	None	
Duration	Type 1	Per 200 revolutions
	Type 2	Per 1,000 revolutions
DTC Type	Two drive cycles, MIL on	
OBD Status	PASSED/FAILED/EXECUTING/OUT OF (TEST) CONDITION	

Enable Conditions

Condition		Minimum	Maximum
Elapsed time after monitor finishing condition except immediate starting the engine		1.0 second	–
Elapsed time of reversion to pausing cylinders monitor		1.0 second	–
Engine coolant temperature [ECT SENSOR 1]		None, unless the initial engine coolant temperature is 14 °F (-10 °C) or less, in which case the monitor will not run until the engine coolant temperature reaches 68 °F (20 °C)	
Engine speed [ENGINE SPEED]* ¹		500 rpm	6,800 rpm
Engine speed [ENGINE SPEED]* ²		500 rpm	4,500 rpm
MAP value [MAP SENSOR]*	650 rpm	24 kPa (7.1 inHg, 180 mmHg)	–
	2,250 rpm	20 kPa (6.0 inHg, 150 mmHg)	–
Fuel feedback		Other than during fuel cut-off operation	
No active DTCs set (prevents monitor from running)* ³		P0069, P0107, P0108, P0117, P0118, P0122, P0123, P0222, P0223, P0335, P0339, P1109, P2073, P2074, P2228, P2229	
No active DTCs set (prevents monitor from running)* ⁴		P0069, P0107, P0108, P0117, P0118, P0122, P0123, P0222, P0223, P0335, P0339, P2073, P2074, P2227, P2228, P2229	
Other		Test-drive on a flat road to avoid misdetection	

*1: USA and Canada models

*2: Mexico models

*3: 2016 model

*4: 2017 model on and after

* : Varies with driving conditions.

[]: HDS Parameter

Malfunction Threshold

The number of misfires versus engine revolutions is equal to or greater than the values in the table.

Misfire Type	The number of engine revolutions	The number of misfires
Misfire Type 1 (Severe)	Per 200 revolutions	26 - 89 times**
Misfire Type 2 (Light)	Per 1,000 revolutions	77 times* ¹ (134 times)* ²

** : Depending on engine speed and load.

Possible Cause

NOTE: The causes shown may not be a complete list of all potential problems, and it is possible that there may be other causes.

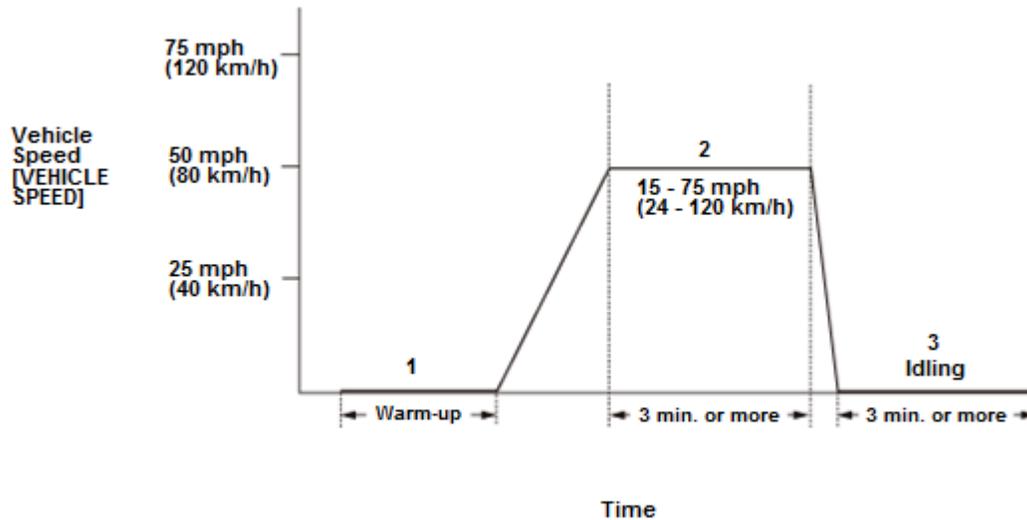
- Ignition system failure
- Fuel supply system failure
- Intake air system failure

Confirmation Procedure

With the HDS

None.

With the Driving Pattern



1. Start the engine. Hold the engine speed [ENGINE SPEED] at 3,000 rpm without load (in P or N) until the radiator fan comes on.
 2. Drive the vehicle at a speed between 15 - 75 mph (24 - 120 km/h) for at least 3 minutes.
 3. Stop the vehicle, and let the engine idle for at least 3 minutes.
- When freeze data is stored, drive the vehicle under those conditions instead of Driving Pattern step 2 or 3.
 - When you have difficulty duplicating the DTC because of road conditions and traffic situations, repeat the driving pattern several times.
 - Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details

Conditions for setting the DTC

Misfire Type 1:

- If a type 1 misfire (catalyst damaging) occurs once, the MIL blinks once per second, a Pending DTC is stored, and the high rpm fuel injection stop system activates. The fuel injection stops, at high rpm only, on the cylinder that has the highest misfire counts. The MIL then continues to blink and the fuel injection stays off at high rpm, until the drive is completed.
- If a type 1 misfire occurs during a second drive cycle, the MIL and fuel injection behave the same and a Confirmed DTC is stored.
- After a type 1 misfire has been detected during two drive cycles, the MIL comes on and stays on beginning with the third drive cycle, unless the Pending DTC has been cleared by the PCM***. Even if the MIL is on, it will start blinking if a type 1 misfire occurs.
- If the malfunction returns in the next (second) drive cycle, the MIL comes on and a Confirmed DTC and the freeze data are stored.

Misfire Type 2:

- If a type 2 misfire (emission-related but not severe enough to immediately damage the catalyst) occurs, a Pending DTC is stored, but the MIL does not come on or blink. If a type 2 misfire occurs during a second drive cycle, the MIL comes on and stays on unless the Pending DTC has been cleared by the PCM***.

*** The Pending DTC is erased if either of these conditions is met:

- The vehicle is operated at least once under the same driving conditions as the first misfire detection, and no misfire is detected.
- 80 drive cycles, regardless of driving conditions, are completed with no misfire detected.

Conditions for clearing the DTC

The MIL is cleared if the malfunction does not return in three consecutive drive cycles in which the engine conditions are similar to the first time the malfunction was detected. The MIL, the Pending DTC, the Confirmed DTC, and the freeze data can be cleared with the scan tool Clear command or by disconnecting the battery.