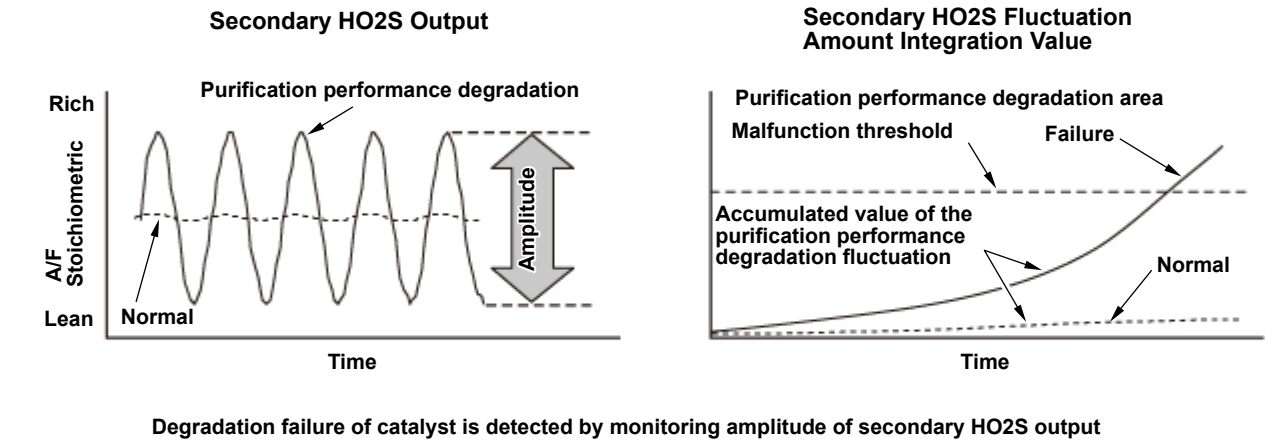


DTC P0420:Catalyst System Efficiency Below Threshold

General Description



The three way catalytic converter (TWC) converts hydrocarbons (HC), carbon monoxide (CO), and oxides of nitrogen (NOx) in the exhaust gas to water vapor, carbon dioxide (CO₂), and dinitrogen (N₂). The powertrain control module (PCM) fluctuates the air/fuel ratio temporarily to detect the performance of the TWC and measures the degree of fluctuation in the secondary heated oxygen sensor (secondary HO2S (sensor 2)) output. If the accumulated value for a set time is too great, deterioration of the performance of the catalyst is detected, the PCM detects a malfunction and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type

Execution	Once per driving cycle
Sequence	None
Duration	7.5 seconds or more
DTC Type	Two drive cycles, MIL on

Enable Conditions

Condition	Minimum	Maximum
Elapsed time that secondary HO2S activity is not monitored after starting the engine	15 seconds	—
Engine coolant temperature [ECT Sensor 1]	156 °F (69 °C)	—
Intake air temperature [IAT Sensor (1)]	-13 °F (-25 °C)	—
Estimated TWC temperature	1022 °F (550 °C)	—
Vehicle speed [Vehicle Speed]	30 mph (48 km/h)	—
Fuel trim	0.69	1.47
Fuel feedback	Closed loop at stoichiometric	
Monitoring priority	P0133	
Other	Has record of deceleration at least once	
	Cruise load or more	

[]: HDS Parameter

Malfunction Threshold

The secondary HO2S (sensor 2) fluctuation integration value is 3.0 V or more for at least 7.5 seconds.

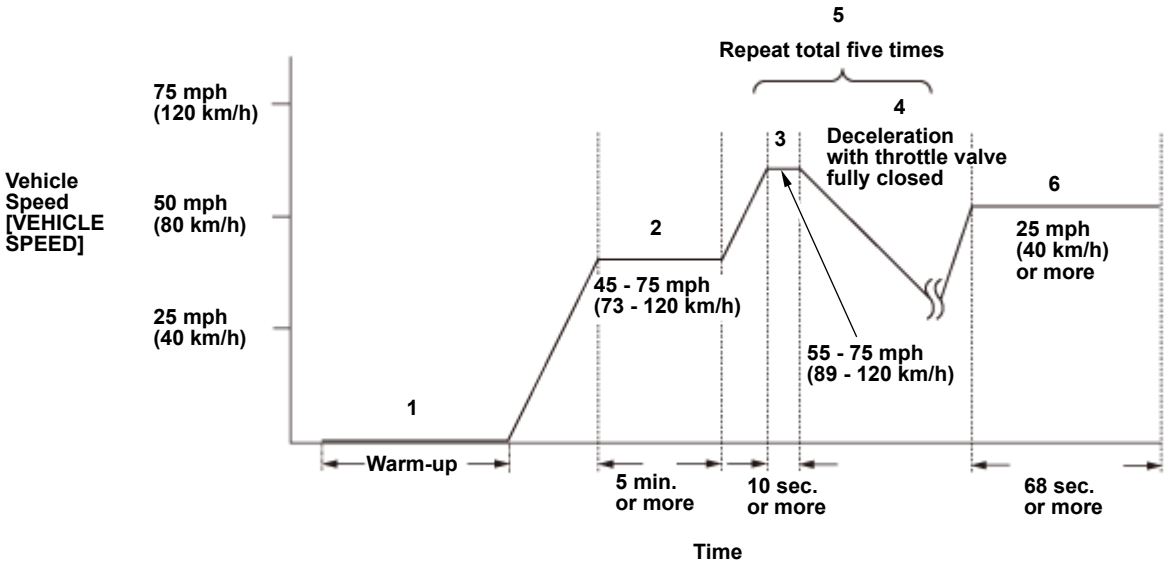
Possible Cause

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

- TWC purification performance deterioration
- Secondary HO2S (sensor 2) line electrical noise overlapped
- Secondary HO2S (sensor 2) connector loose connection
- Exhaust system change (non-genuine part)

Confirmation Procedure

Operating Condition



1. Enter the maintenance mode, than 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 45 - 75 mph (73 - 120 km/h) for at least 5 minutes, to warm up the TWC.
3. Drive at a steady speed between 55 - 75 mph (89 - 120 km/h) for at least 10 seconds.
4. Decelerate with the throttle valve fully closed.
5. Repeat driving pattern steps 3 through 4, five times.
6. Drive at steady speed 25 mph (40 km/h) or more for at least 68 seconds.

- After disconnecting the 12 volt battery, extend Driving Pattern step 6 to 4 minutes or longer.
- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

[]: HDS Parameter

With the HDS

None.

Diagnosis Details

Conditions for setting the DTC

When a malfunction is detected during the first drive cycle, a Pending DTC is stored in the PCM memory. If the malfunction returns in the next (second) drive cycle, the MIL comes on and a Confirmed DTC and the freeze data are stored.

Conditions for clearing the DTC

The MIL is cleared if the malfunction does not return in three consecutive trips in which the diagnostic runs. 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 12 volt battery.