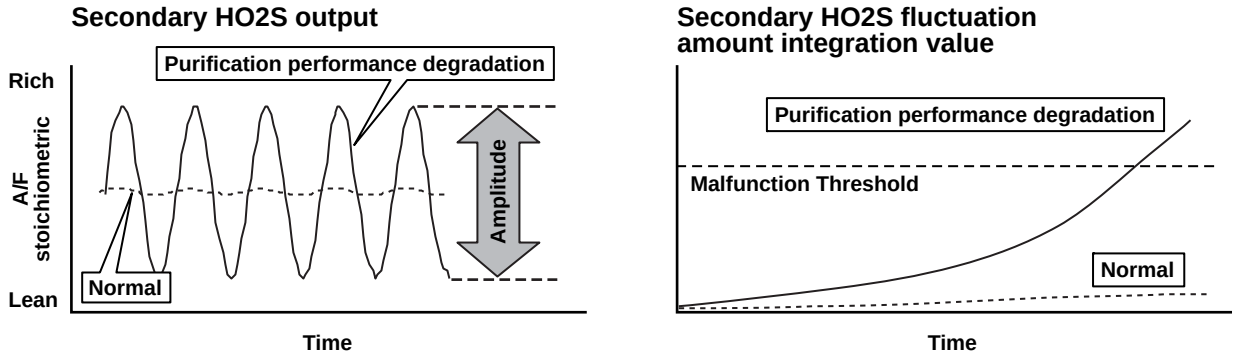
Advanced Diagnostics

DTC P0420: Catalyst System Efficiency Below Threshold



Degradation failure of catalyst is detected by monitoring amplitude of secondary HO2S output.

P0420-0770

General Description

The warm up three way catalytic converter (WU-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 engine control module (ECM)/powertrain control module (PCM) fluctuates the air/fuel ratio temporarily to detect the performance of the WU-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 ECM/PCM detects a malfunction and stores a DTC.

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

Execution	Once per driving cycle
Sequence	None
Duration	7.5 seconds or more
DTC Type	Two drive cycles, MIL on
OBD Status	PASSED/FAILED/EXECUTING/OUT OF (TEST) CONDITION

Enable Conditions

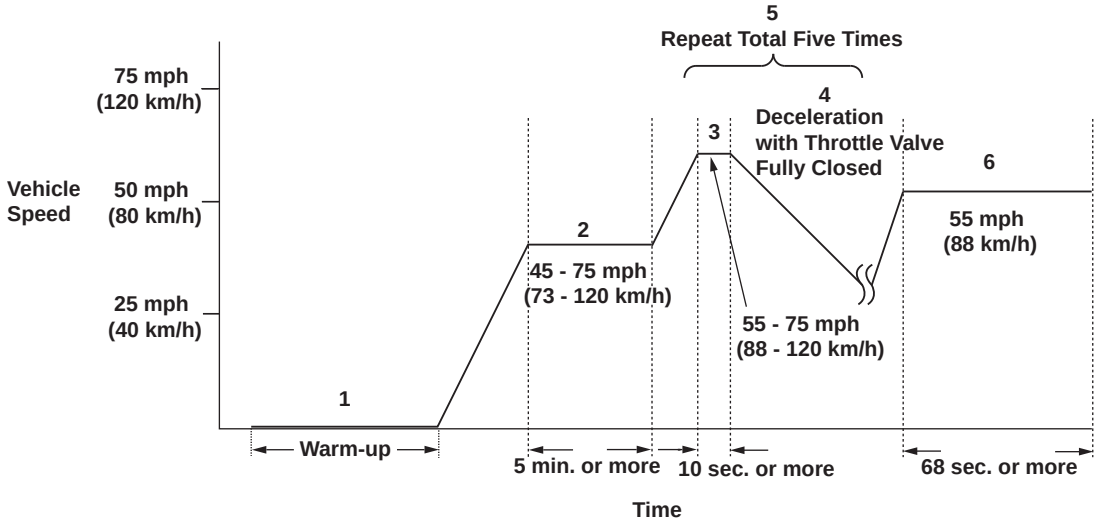
Condition	Minimum	Maximum
Elapsed time that secondary HO2S activity is not monitored after starting the engine	15 seconds	—
Engine coolant temperature	156 ºF (69 ºC)	—
Intake air temperature	-13 ºF (-25 ºC)	—
Estimated TWC temperature	1,058 ºF (570 ºC)	—
Vehicle speed	26 mph (41 km/h)	—
Fuel trim	0.69	1.47
Fuel feedback	Closed loop at stoichiometric	
Monitoring priority	P0133, P219A	
No active DTCs set (prevents monitor from running)	P0101, P0102, P0103, P0107, P0108, P0112, P0113, P0117, P0118, P0122, P0123, P0133, P0134, P0135, P0137, P0138, P0139, P0141, P0171, P0172, P0201, P0202, P0203, P0204, P0222, P0223, P0300, P0301, P0302, P0303, P0304, P0335, P0339, P0351, P0352, P0353, P0354, P0400, P0401, P0404, P0443, P0496, P0497, P060A*1, P1109, P1128, P1129, P1157, P1172, P145C, P1659, P2101, P2118, P2122, P2123, P2127, P2128, P2135, P2138, P2176, P2195, P219A, P2227, P2228, P2229, P2238, P2252, P2270, P2413, P2646, P2647, P2648, P2649, P2A00	
Other	Has record of deceleration at least once	
	Cruise load or more	

*1: A/T model

Malfunction Threshold

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

Driving Pattern



P0420-1050

1. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) 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 (88 - 120 km/h) for at least 10 seconds.
4. Decelerate with the throttle valve fully closed.
5. Repeat Driving Pattern steps 3 through 4, four times.
6. Set a vehicle speed of 55 mph (88 km/h) on the cruise control, and drive for at least 68 seconds.

- After disconnecting the 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.

Diagnosis Details

Conditions for setting the DTC

When a malfunction is detected during the first drive cycle, a Pending DTC is stored in the ECM/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 battery.