

DTC	P0420	Catalyst System Efficiency Below Threshold
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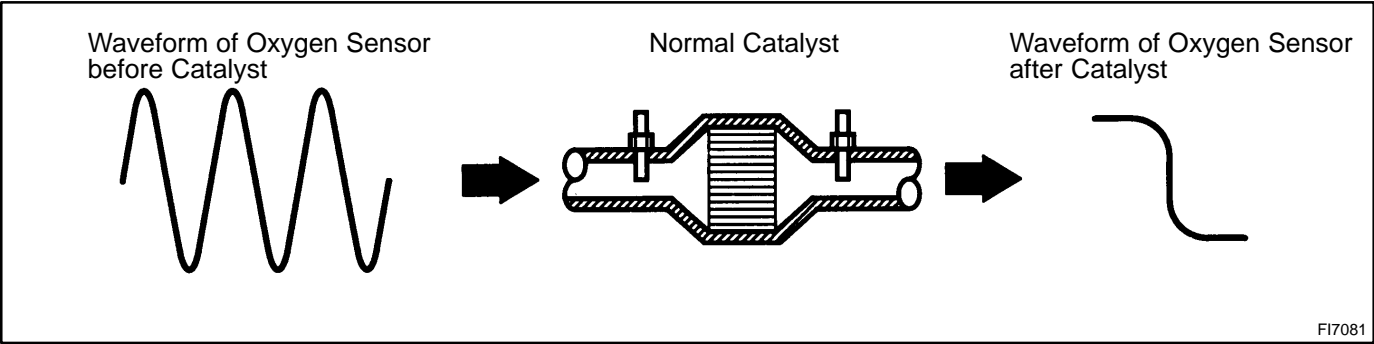
CIRCUIT DESCRIPTION

The ECM compares the waveform of the oxygen sensor located before the catalyst with the waveform of the oxygen sensor located after the catalyst to determine whether or not catalyst performance has deteriorated.

Air-fuel ratio feedback compensation keeps the waveform of the oxygen sensor before the catalyst repeatedly changing back and forth from rich to lean.

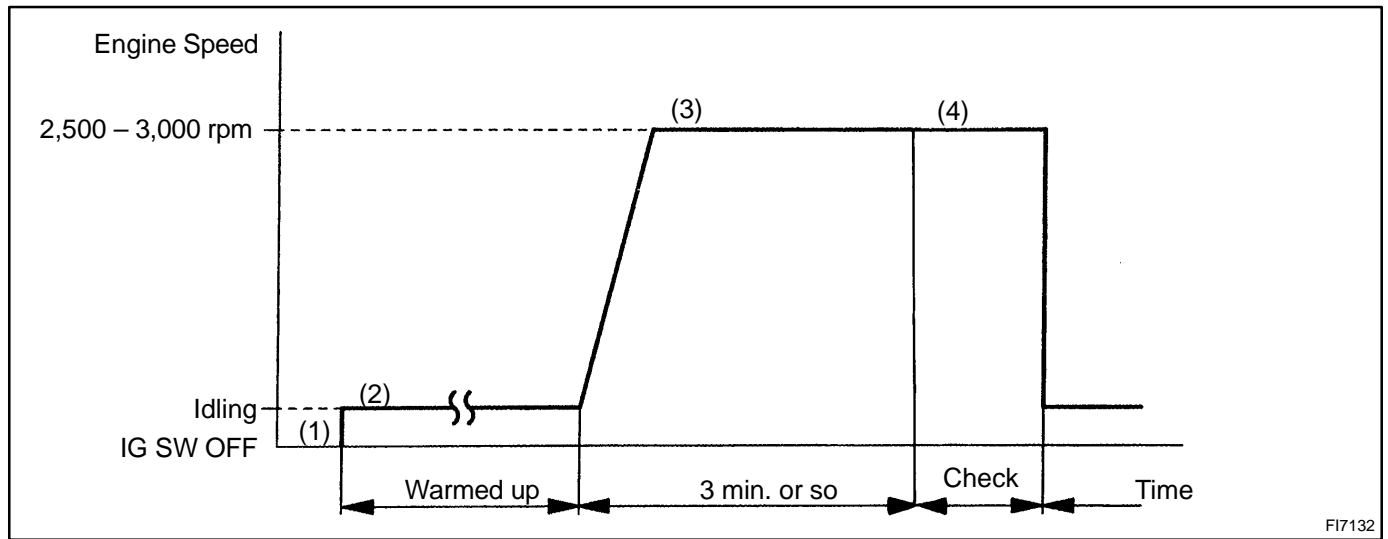
If the catalyst is functioning normally, the waveform of the oxygen sensor after the catalyst switches back and forth between rich and lean much more slowly than the waveform of the oxygen sensor before the catalyst.

But when both waveforms change at a similar rate, it indicates that catalyst performance has deteriorated.



DTC No.	DTC Detecting Condition	aTrouble Area
P0420	After the engine and the catalyst are warmed up, and while the vehicle is driven within the set vehicle and engine speed range, the waveforms of the heated oxygen sensors (bank 1, 2 sensor 1 and bank 1 sensor 2) have the same amplitude (2 trip detection logic)	<ul style="list-style-type: none">• Three-way catalytic converter• Open or short in heated oxygen sensor circuit• Heated oxygen sensor

CONFIRMATION ENGINE RACING PATTERN

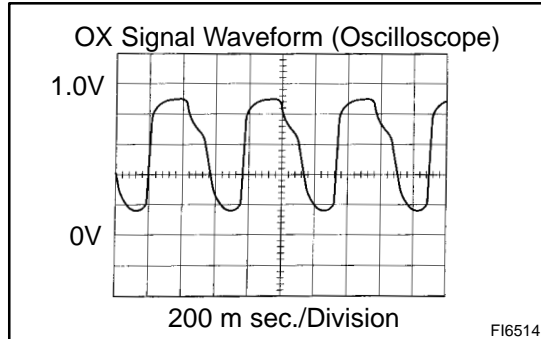


- (1) Connect the LEXUS hand-held tester to the DLC3, or connect the probe of the oscilloscope between terminals OX1, OX2, OX3 and E1 of ECM.
- (2) Start engine and warm it up with all accessories switched OFF until water temperature is stable.
- (3) Race the engine at 2,500 – 3,000 rpm for about 3 min.
- (4) After confirming that the waveforms of the heated oxygen sensors, bank 1, 2 sensor 1 (OX1, OX2), oscillate around 0.5 V during feedback to the ECM, check the waveform of the heated oxygen sensor, bank 1 sensor 2 (OX3).

HINT:

If there is a malfunction in the system, the waveform of the heated oxygen sensor, bank1 sensor 2 (OX3), is almost the same as that of the heated oxygen sensors, bank 1, 2 sensor 1 (OX1, OX2), on the left.

There are some cases where, even though a malfunction exists, the MIL may either light up or not light up.



INSPECTION PROCEDURE