

|            |              |                                                   |
|------------|--------------|---------------------------------------------------|
| <b>DTC</b> | <b>P0420</b> | <b>Catalyst System Efficiency Below Threshold</b> |
|------------|--------------|---------------------------------------------------|

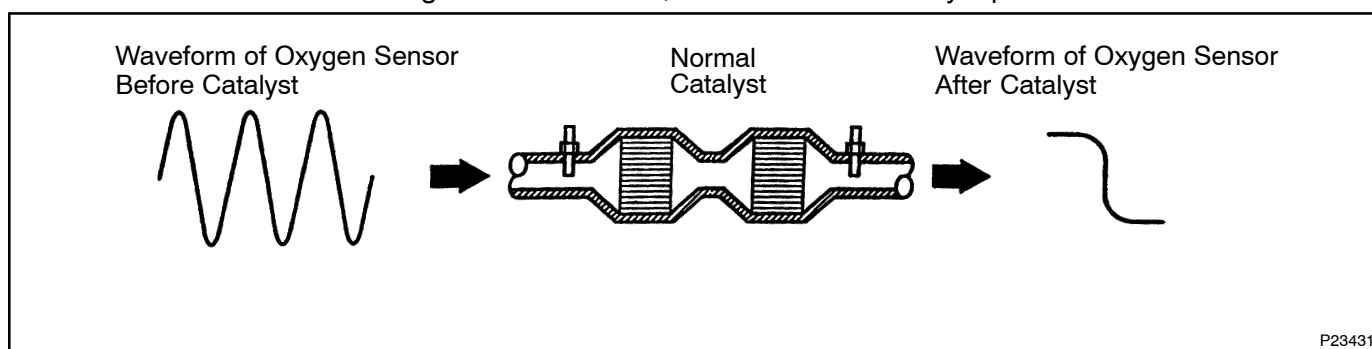
## CIRCUIT DESCRIPTION

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.

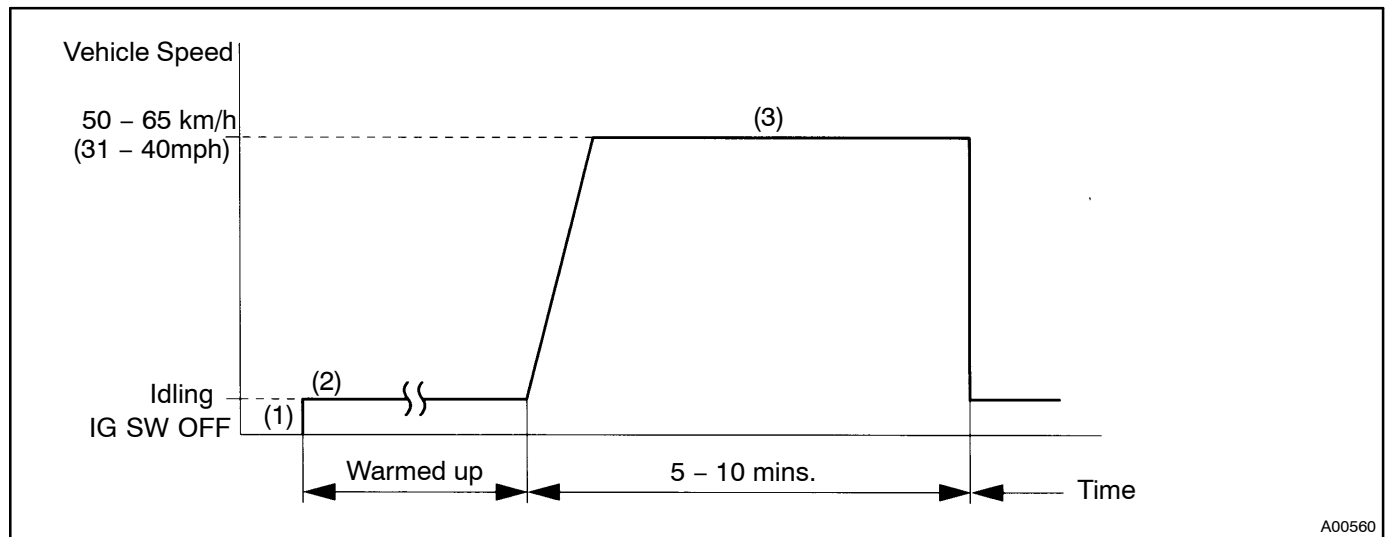
If the catalyst is functioning normally, the waveform of the oxygen sensor after the catalyst switches back and forth between rich and lean much more slowly than the waveform of the oxygen sensor before the catalyst.

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



| DTC No. | DTC Detecting Condition                                                                                                                                                                                 | Trouble Area                                                                                                                                         |
|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| P0420   | After the engine is warmed up and the vehicle driven for 6 mins. at 30 – 83 km/h (19 – 52 mph), the waveforms of the heated oxygen sensors, bank 1 sensor 1 and bank1 sensor 2, have the same amplitude | <ul style="list-style-type: none"> <li>• Front exhaust pipe (front catalyst) and rear TWC (rear catalyst)</li> <li>• Heated oxygen sensor</li> </ul> |

## CONFIRMATION ENGINE RACING PATTERN



(1) Connect the OBDII scan tool or TOYOTA hand-held tester to the DLC 3.

(2) Start and warm up the engine with all accessories switched OFF.

(3) Run the vehicle at 50 - 65 km/h (31 - 40 mph) for 5 - 10 mins.

HINT:

If a malfunction exists, the MIL will light up during step (3).

**INSPECTION PROCEDURE**

|          |                                                                    |
|----------|--------------------------------------------------------------------|
| <b>1</b> | <b>Are there any other codes (besides DTC P0420) being output?</b> |
|----------|--------------------------------------------------------------------|

**YES**

Go to relevant DTC chart.

**NO**

|          |                                                                                       |
|----------|---------------------------------------------------------------------------------------|
| <b>2</b> | <b>Check heated oxygen sensor (bank 1 sensor 1) (See page <a href="#">SF-64</a>).</b> |
|----------|---------------------------------------------------------------------------------------|

**NG**

Repair or replace.

**OK**

|          |                                                                                       |
|----------|---------------------------------------------------------------------------------------|
| <b>3</b> | <b>Check heated oxygen sensor (bank 1 sensor 2) (See page <a href="#">SF-64</a>).</b> |
|----------|---------------------------------------------------------------------------------------|

**NG**

Repair or replace.

**OK**

**Replace front exhaust pipe (front catalyst) and rear TWC (rear catalyst) (See page [EM-110](#)).**