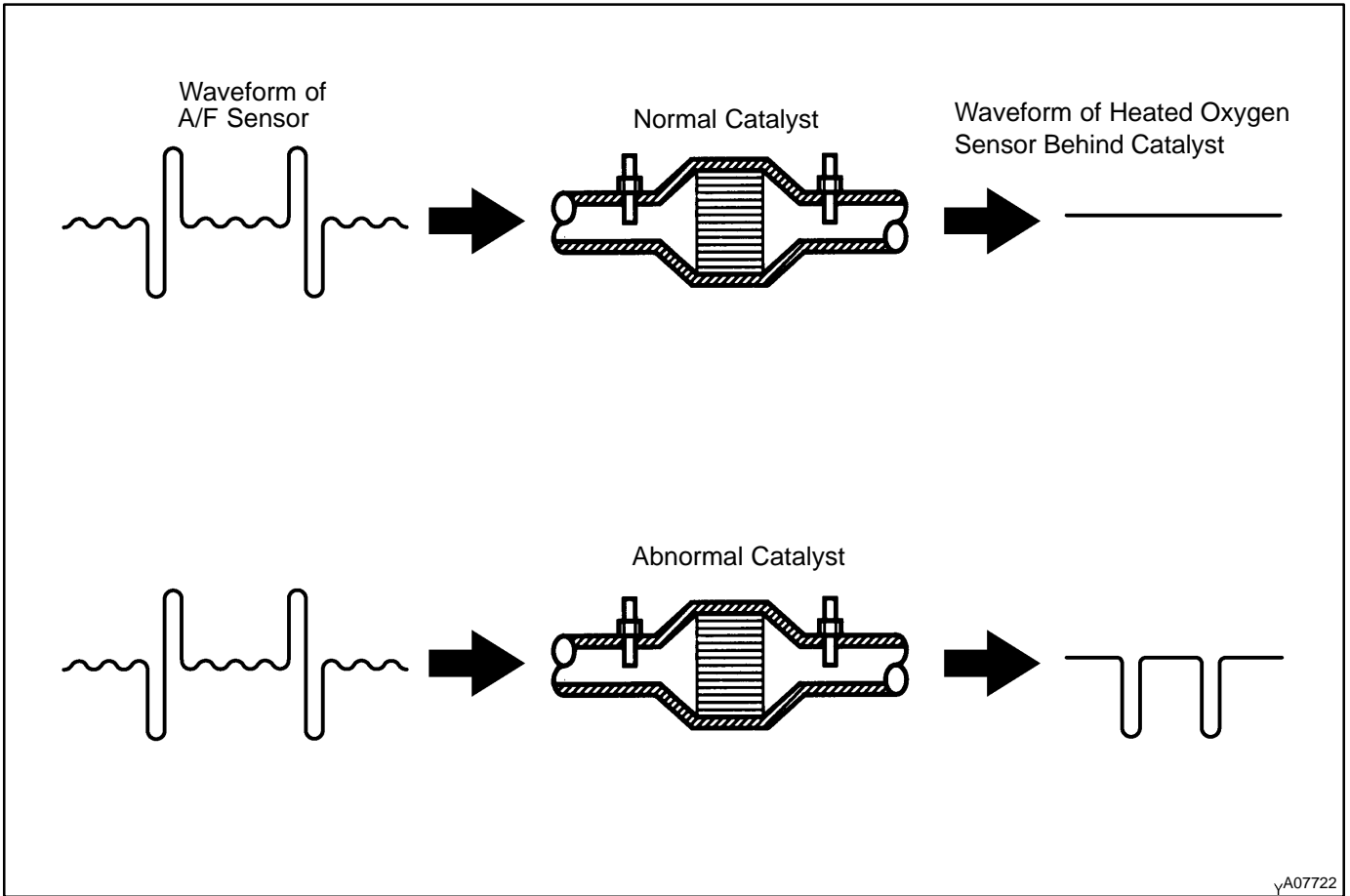


<b>DTC</b>	<b>P0420</b>	<b>Catalyst System Efficiency Below Threshold (Bank 1)</b>
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**CIRCUIT DESCRIPTION**

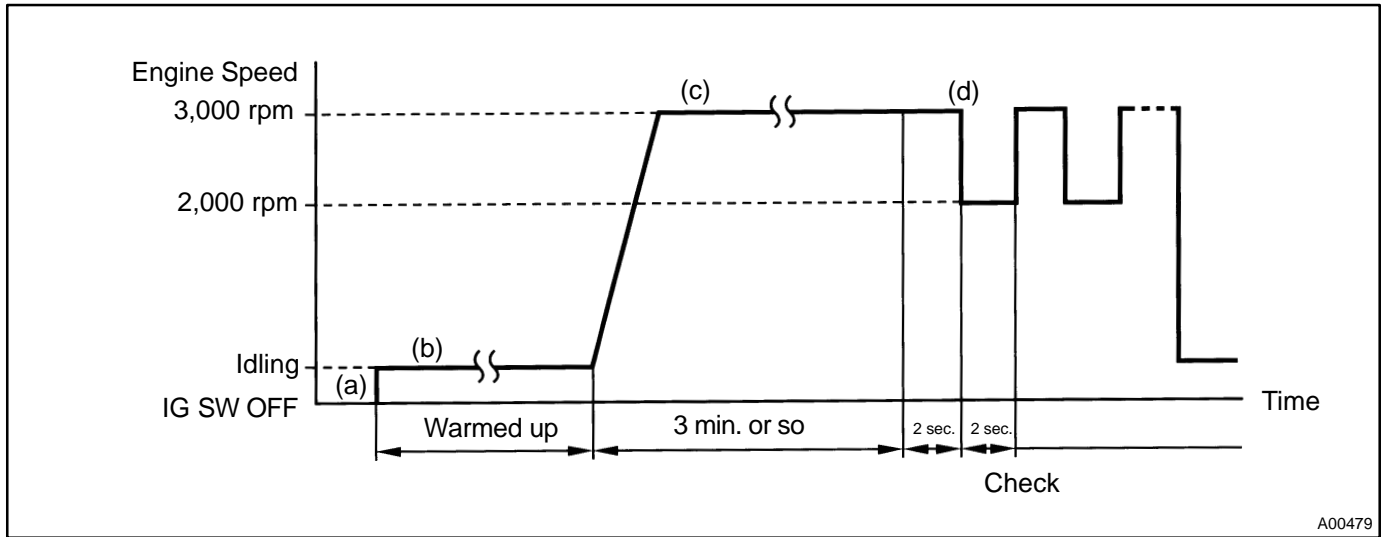
The ECM observes the waveform of the heated oxygen sensor located behind the catalyst to determine whether the catalyst is performance has deteriorated. If the catalyst functions normally, the waveform of the heated oxygen sensor located behind the catalyst switches back and forth between rich and lean much more slowly. When the waveform of the heated oxygen sensor located behind the catalyst alternates flatteringly between rich and lean, it indicates the catalyst performance has deteriorated.



γA07722

DTC No.	DTC Detection Condition	Trouble Area
P0420	After engine and catalyst are warmed up, and while vehicle is driven within set vehicle and engine speed range, waveform of heated oxygen sensor (bank 1 sensor 2) alternates flatteringly between rich and lean (2 trip detection logic)	<ul style="list-style-type: none"> <li>• Gas leak on exhaust system</li> <li>• A/F sensor (bank 1 sensor 1)</li> <li>• Heated oxygen sensor (bank 1 sensor 2)</li> <li>• Three-way catalytic converter</li> </ul>

**CONFIRMATION ENGINE RACING PATTERN**



- (a) Connect the OBD II scan tool or TOYOTA hand-held tester to the DLC3.
- (b) Start the engine and warm it up with all the accessories switched OFF until the water temperature is stable.
- (c) Race the engine at 2,500 - 3,000 rpm for about 3 minutes.
- (d) When racing the engine at 3,000 rpm for 2 seconds and 2,000 rpm for 2 seconds alternately, check the waveform of the heated oxygen sensor (bank 1 sensor 2).

**INSPECTION PROCEDURE**

HINT:

Read freeze frame data using TOYOTA hand-held tester or OBD II scan tool, as freeze frame data records the engine conditions when a malfunction is detected. When troubleshooting, it is useful for determining whether the vehicle was running or stopped, the engine was warmed up or not, the air-fuel ratio was lean or rich, etc. at the time of the malfunction.

<b>1</b>	<b>Are there any other codes (besides DTC P0420) being output?</b>
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<b>YES</b>	<b>Go to relevant DTC chart (See page <a href="#">DI-156</a> ).</b>
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**NO**

<b>2</b>	<b>Check gas leak on exhaust system.</b>
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<b>NG</b>	<b>Repair or replace.</b>
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**OK**

<b>3</b>	<b>Check A/F sensor (bank 1 sensor 1) (See page <a href="#">SF-51</a> ).</b>
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<b>NG</b>	<b>Repair or replace.</b>
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<b>OK</b>
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<b>4</b>	<b>Check heated oxygen sensor (bank 1 sensor 2) (See page <a href="#">SF-53</a> ).</b>
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<b>NG</b>	<b>Repair or replace.</b>
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<b>OK</b>
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<b>Replace three-way catalytic converter.</b>
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