

DTC	P0325	Knock Sensor 1 Circuit Malfunction (Bank 1)
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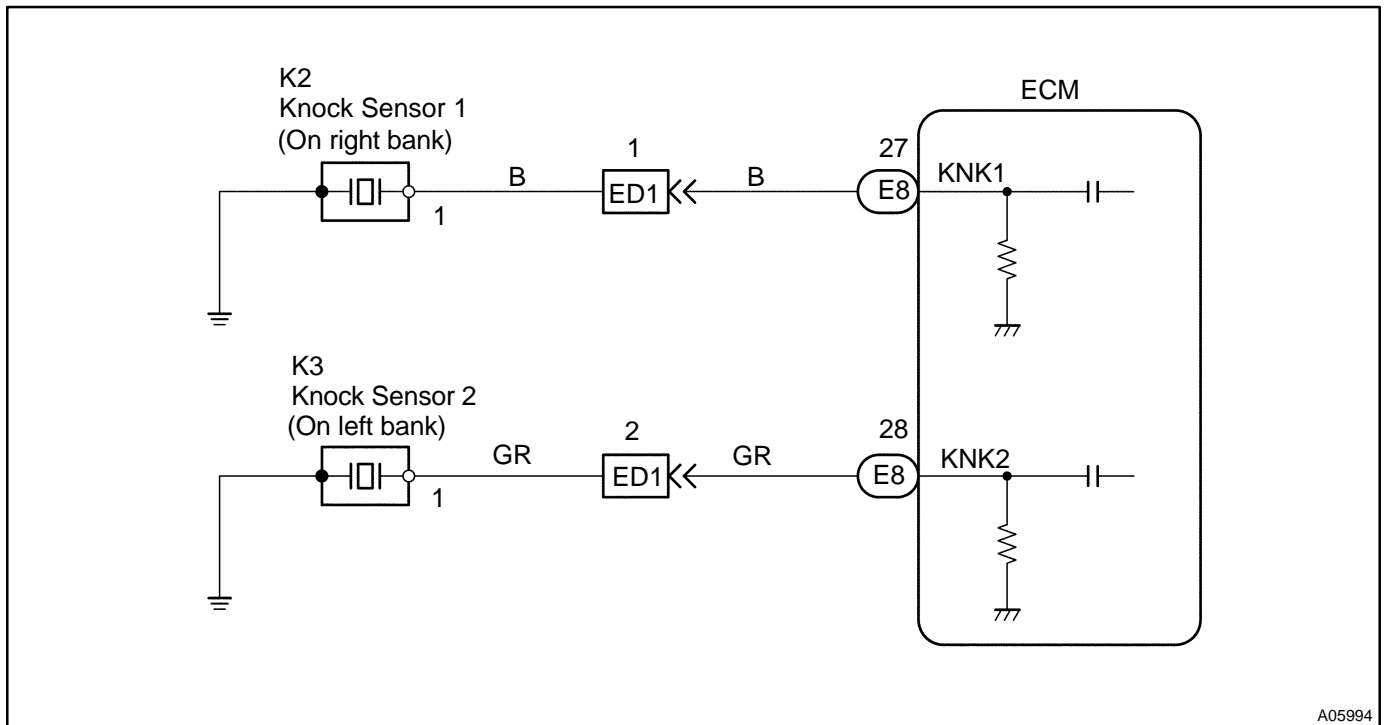
DTC	P0330	Knock Sensor 2 Circuit Malfunction (Bank 2)
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CIRCUIT DESCRIPTION

Each knock sensor is fitted to the right bank and left bank of the cylinder block to detect engine knocking. This sensor contains a piezoelectric element which generates a voltage when it becomes deformed, which occurs when the cylinder block vibrates due to the knocking. If engine knocking occurs, ignition timing is retarded to suppress it.

DTC No.	DTC Detection Condition	Trouble Area
P0325	No signal of knock sensor 1 to ECM with engine speed between 2,000 rpm and 5,600 rpm	<ul style="list-style-type: none"> • Open or short in knock sensor 1 circuit • Knock sensor 1 (looseness) • ECM
P0330	No signal of knock sensor 2 to ECM with engine speed between 2,000 rpm and 5,600 rpm	<ul style="list-style-type: none"> • Open or short in knock sensor 2 circuit • Knock sensor 2 (looseness) • ECM

WIRING DIAGRAM



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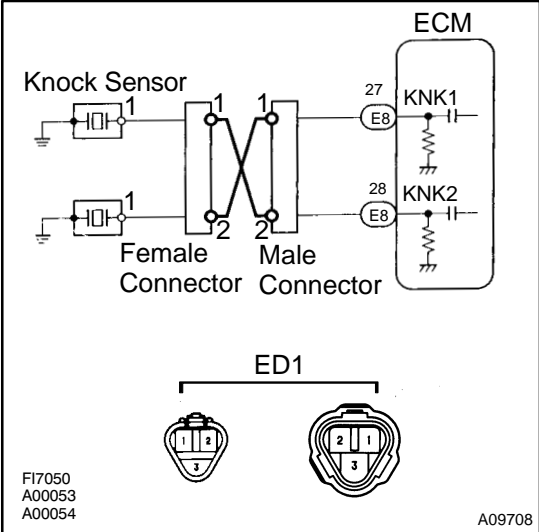
INSPECTION PROCEDURE

HINT:

- DTC P0325 is for the right bank knock sensor circuit.
- DTC P0330 is for the left bank knock sensor circuit.

- 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.

1 Connect OBD II scan tool or TOYOTA hand-held tester, and check knock sensor circuit.



PREPARATION:

- Connect the OBD II scan tool or TOYOTA hand-held tester to the DLC3.
- Disconnect the wire to wire connector ED1.
- Connect the terminals of the disconnected ED1 male connector and ED1 female as follows.

Male connector - Female connector
Terminal 1 - Terminal 2
Terminal 2 - Terminal 1

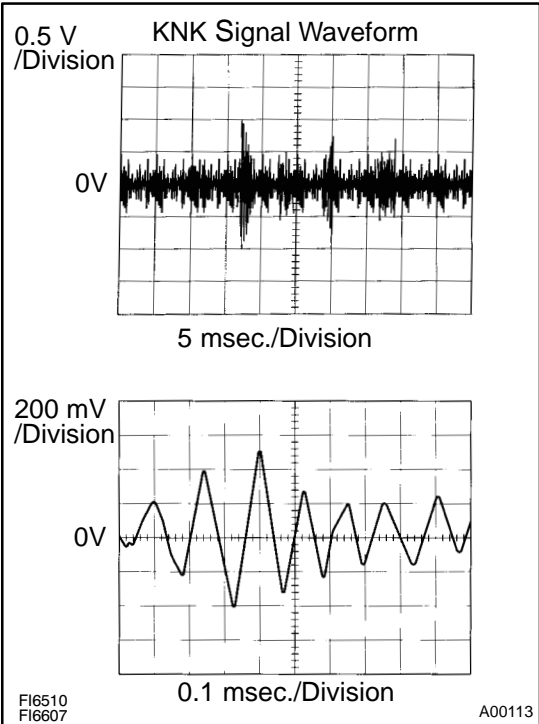
- Turn ignition switch ON and push the OBDII scan tool or TOYOTA hand-held tester main switch ON.
- After the engine is warmed up, perform quick racing to 4,000 rpm three times.

CHECK:

Check the DTC.

RESULT:

Type I	DTC same as when vehicle brought in P0325 → P0325 or P0330 → P0330
Type II	DTC different to when vehicle brought in P0325 → P0330 or P0330 → P0325



Reference: INSPECTION USING OSCILLOSCOPE

- With the engine racing (4,000 rpm), check the waveform between terminal KNK1, KNK2 of the ECM connector and the body ground.

HINT:

The correct waveform is as shown.

- Spread the time on the horizontal axis, and confirm that period of the wave is 0.141 msec. (Normal mode vibration the frequency of knock sensor: 7.1 kHz)

HINT:

If the normal mode vibration frequency is not 7.1 kHz, the sensor is malfunctioning.

Type II	Go to step 3.
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Type I

2	Check for open and short in harness and connector between ED1 connector and ECM (See page IN-28).
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NG**Repair or replace harness or connector.****OK****Check and replace ECM (See page [IN-28](#)).**

3	Check for open and short in harness and connector between ED1 connector and knock sensor (See page IN-28).
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HINT:

- If DTC P0325 has changed to P0330, check the knock sensor circuit on the right bank side.
- If DTC P0330 has changed to P0325, check the knock sensor circuit on the left bank side.

NG**Repair or replace harness or connector.****OK****Replace knock sensor.**