

DTC	P0325	KNOCK SENSOR 1 CIRCUIT (BANK 1 OR SINGLE SENSOR)
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DTC	P0330	KNOCK SENSOR 2 CIRCUIT (BANK 2)
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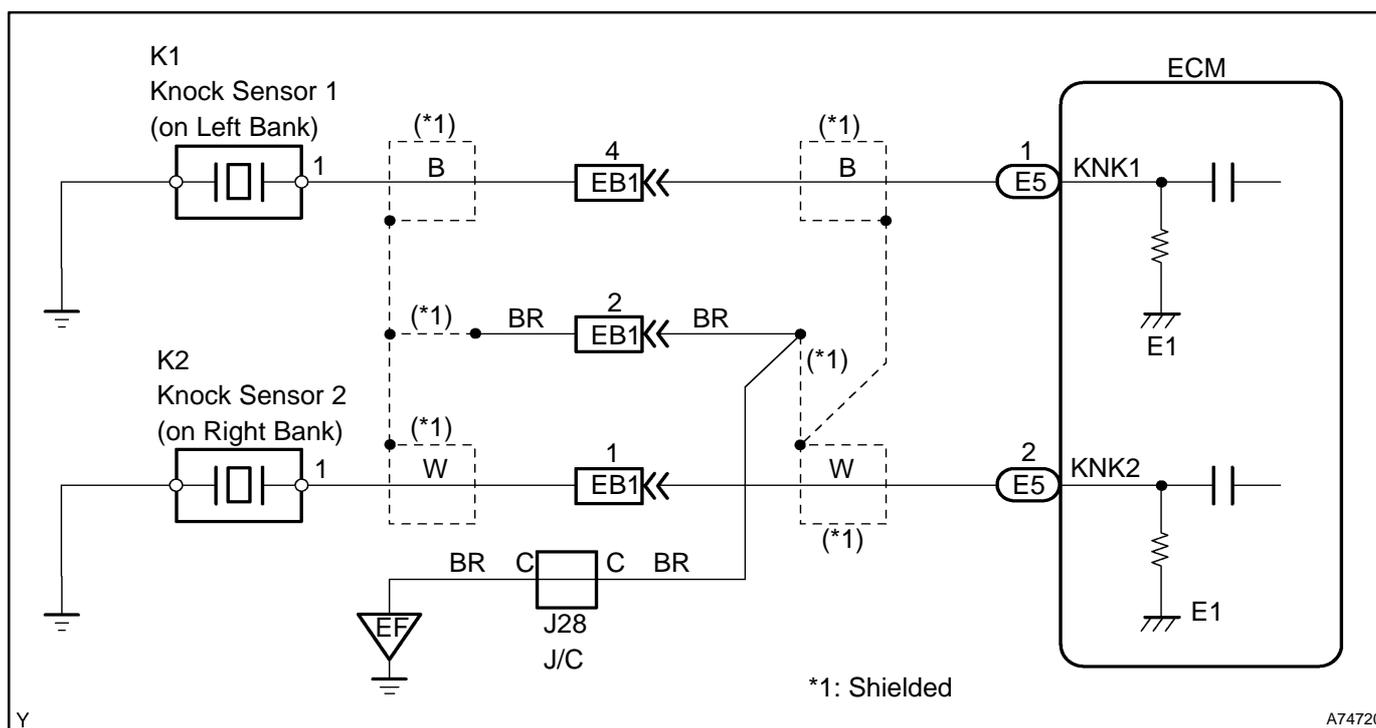
CIRCUIT DESCRIPTION

The each knock sensors are fitted on the right bank and left bank of the cylinder block to detect the engine knocking.

Each 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 the engine knocking occurs, the ignition timing is retarded to suppress it.

DTC No.	DTC Detection Condition	Trouble Area
P0325	No knock sensor 1 signal to ECM with engine speed between 1,700 rpm and 5,400 rpm	<ul style="list-style-type: none"> • Open or short in knock sensor 1 circuit • Knock sensor 1 (looseness) • ECM
P0330	No knock sensor 2 signal to ECM with engine speed between 1,700 rpm and 5,400 rpm	<ul style="list-style-type: none"> • Open or short in knock sensor 2 circuit • Knock sensor 2 (looseness) • ECM

WIRING DIAGRAM

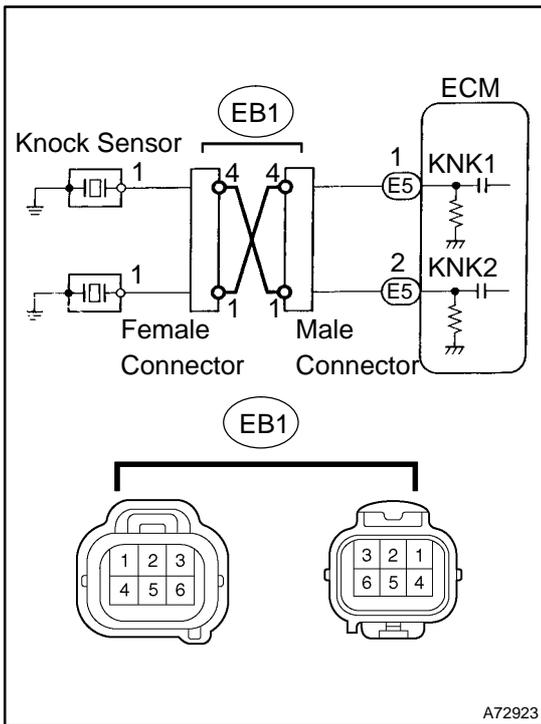


INSPECTION PROCEDURE

HINT:

- DTC P0325 is for the left bank knock sensor circuit.
- DTC P0330 is for the right bank knock sensor circuit.
- Read freeze frame data using the hand-held tester or the 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 READ OUTPUT DTC(CHECK KNOCK SENSOR CIRCUIT)

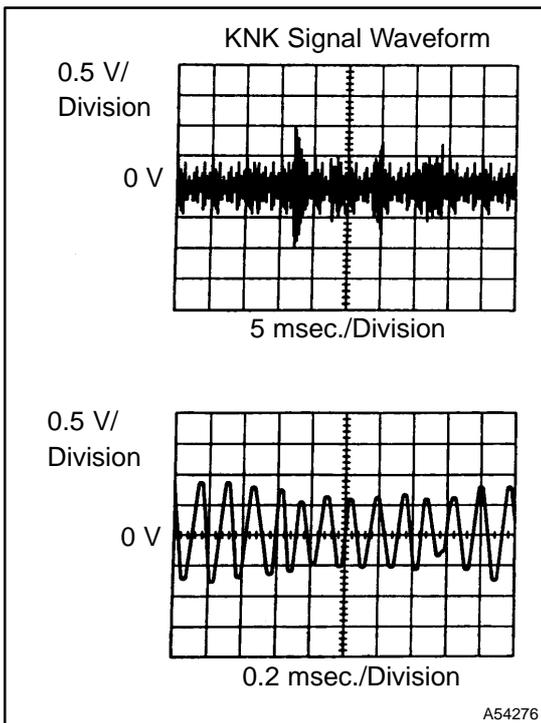


- (a) Disconnect the EB1 connector.
- (b) Using lead wires, connect the EB1 connectors as follows.

Male connector ↔ Female connector
Terminal 4 ↔ Terminal 1
Terminal 1 ↔ Terminal 4

- (c) Warm up the engine.
- (d) Perform a quick racing to 4,000 rpm 3 times.
- (e) Check the DTC.

Display	Proceed to
DTC same as when vehicle brought in P0325 → P0325 or P0330 → P0330	A
DTC different from when vehicle brought in P0325 → P0330 → P0325	B



- (f) Reference (Using an oscilloscope):
- (1) Check the waveform between the terminals KNK1/KNK2 of the ECM connector and body ground at 4,000 rpm.

Standard: Refer to the illustration.

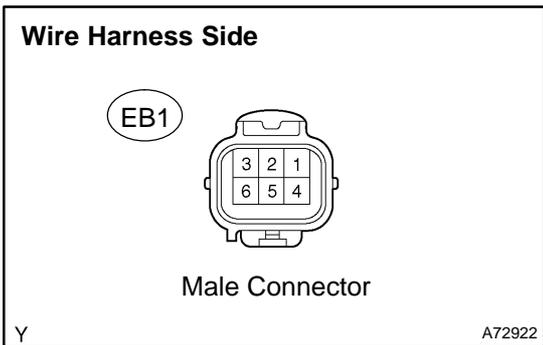
- (2) Spread the time on the horizontal axis and confirm that period of the wave is 0.123 msec. (Normal mode vibration frequency of knock sensor: 8.1 kHz)

If the normal mode vibration frequency is not 8.1 kHz, the sensor is malfunctions.

A

B Go to step 3

2 CHECK HARNESS AND CONNECTOR(EB1 CONNECTOR - ECM)



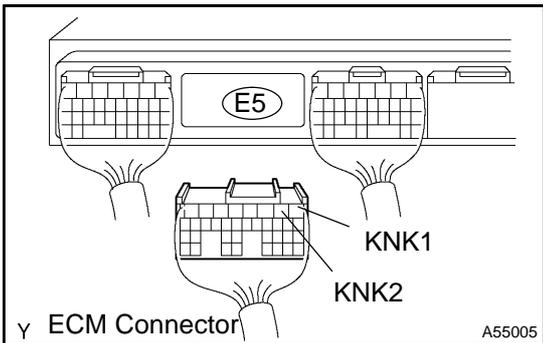
- (a) Disconnect the EB1 connector.
- (b) Disconnect the E5 ECM connector.
- (c) Check the continuity between the wire harness side connectors.

Standard (Check for open):

Symbols (Terminal No.)	Specified condition
EB1 male connector 4 ↔ KNK1 (E5-1)	Continuity
EB1 male connector 1 ↔ KNK1 (E5-2)	

Standard (Check for short):

Symbols (Terminal No.)	Specified condition
EB1 male connector 4 or KNK1 (E5-1) ↔ Body ground	No Continuity
EB1 male connector 1 or KNK2 (E5-2) ↔ Body ground	



OK CHECK AND REPLACE ECM (See page 01-35)

NG

REPAIR OR REPLACE HARNESS OR CONNECTOR

3 CHECK HARNESS AND CONNECTOR(EB1 CONNECTOR - KNOCK SENSOR)

HINT:

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

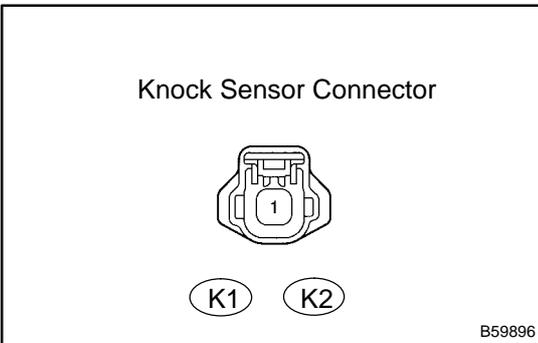
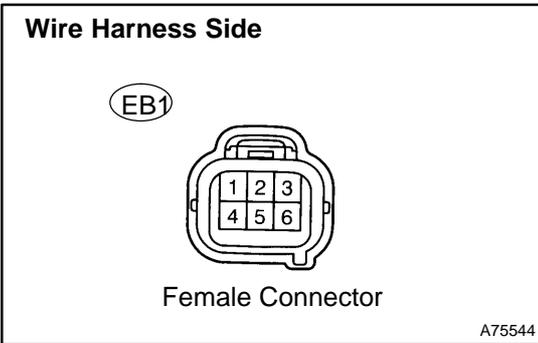
- (a) Disconnect the EB1 connector.
- (b) Disconnect the K1 and K2 knock sensor connectors.
- (c) Check the continuity between the wire harness side connectors.

Standard (Check for open):

Terminal No.	Specified condition
EB1 female connector 4 ↔ K1-1	Continuity
EB1 female connector 1 ↔ K2-1	

Standard (Check for short):

Terminal No.	Specified condition
EB1 female connector 4 or K1-1 ↔ Body ground	No continuity
EB1 female connector 1 or K2-1 ↔ Body ground	



NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

REPLACE KNOCK SENSOR