DI1IJ–05

DTC	P0325/52	Knock Sensor 1 Circuit Malfunction (Bank 1)

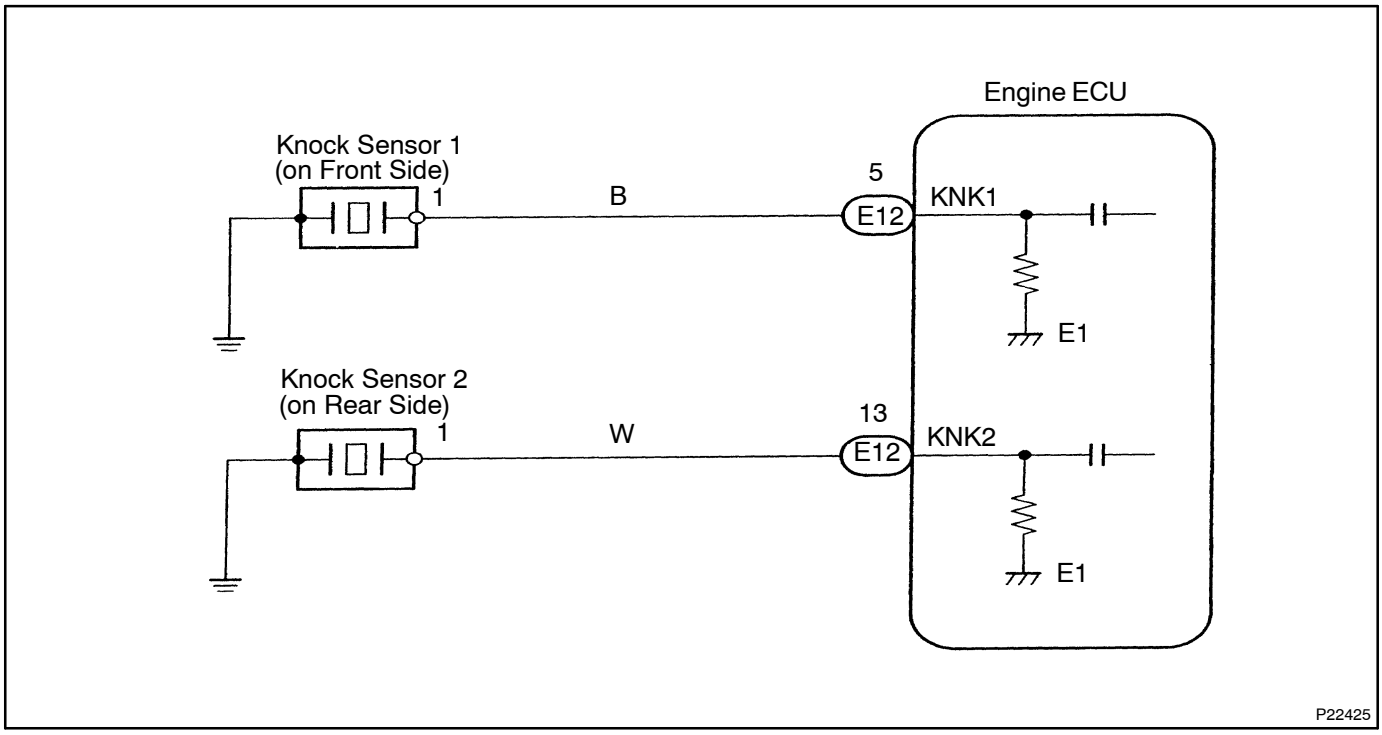
DTC	P0330/55	Knock Sensor 2 Circuit Malfunction (Bank 2)

CIRCUIT DESCRIPTION

Each of knock sensor is fitted to the front side and rear 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 knocking.
If engine knocking occurs, ignition timing is retarded to suppress it.

DTC No.	DTC Detection Condition	Trouble Area
P0325/52	No knock sensor 1 signal to engine ECU with engine speed between 1,800 rpm and 5,200 rpm	• Open or short in knock sensor 1 circuit • Knock sensor 1 (looseness) • Engine ECU
P0330/55	No knock sensor 2 signal to engine ECU with engine speed between 1,800 rpm and 5,200 rpm	• Open or short in knock sensor 2 circuit • Knock sensor 2 (looseness) • Engine ECU

WIRING DIAGRAM



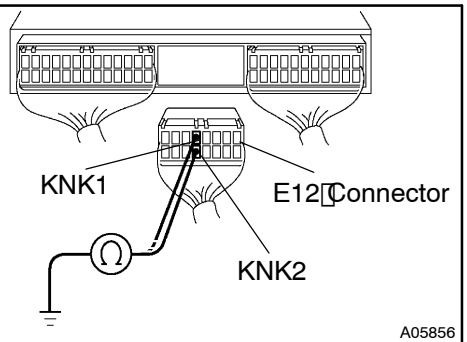
INSPECTION PROCEDURE

HINT:

- Read freeze frame data using hand–held tester. Because freeze frame records the engine conditions when the 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.
- DTC P0325/52 is for the knock sensor 1 circuit on the front side.

• DTC P0330/55 is for the knock sensor 2 circuit on the rear side.

1	**Check continuity between terminal KNK1, KNK2 of engine ECU connector and body ground.**



PREPARATION:

(a) Remove the glove compartment (See page IN–19).

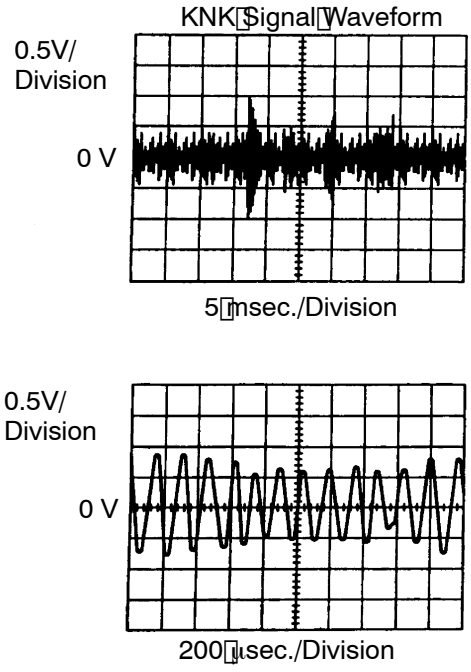
(b) Disconnect the E12 connector from the engine ECU.

CHECK:

Measure the resistance between terminals KNK1, KNK2 of the engine ECU connector and body ground.

OK:

Resistance: 1 MΩ or higher



Reference: INSPECTION USING OSCILLOSCOPE

• With the engine racing (4,000 rpm), check the waveform between terminals KNK1, KNK2 of the engine ECU connector and body ground.

HINT:

The correct waveform is as shown.

• Spread the time on the horizontal axis, and confirm that period of the wave is 164 µsec. (Normal mode vibration frequency of knock sensor: 6.1 kHz).

HINT:

If normal mode vibration frequency is not 6.1 kHz, the sensor is malfunctioning.

OK → **Go to step 3.**

NG

2	**Check knock sensor (See Pub. No. RM321E, page EG–279).**

NG → **Replace knock sensor.**

OK

3	Check for open and short in harness and connector between engine ECU and knock sensor (See page IN–19).

NG → Repair or replace harness or connector.

OK

4	Does malfunction disappear when a good knock sensor is installed?

YES → Replace knock sensor.

NO

Check and replace engine ECU (See page IN–19).