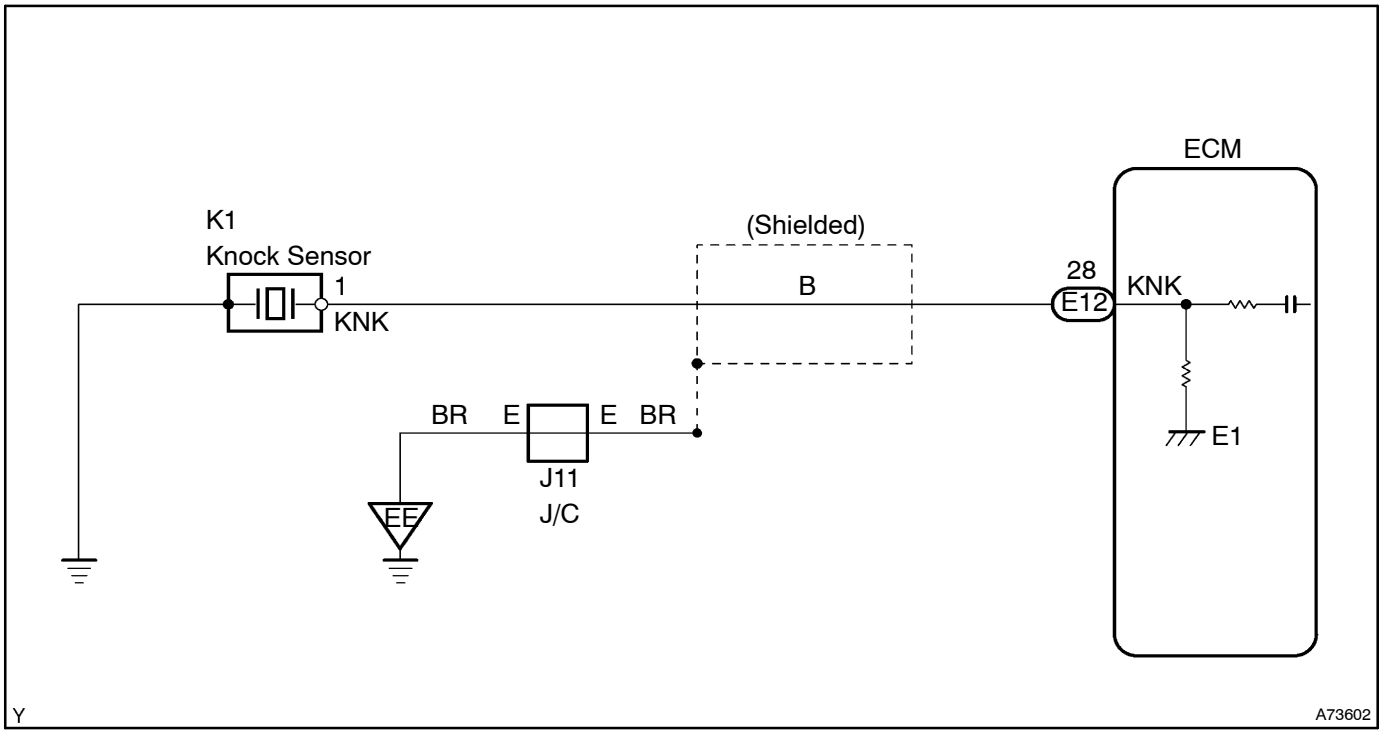
DTC	P0325/52	KNOCK SENSOR 1 CIRCUIT (BANK 1 OR SINGLE SENSOR)

CIRCUIT DESCRIPTION

The knock sensor is fitted on the cylinder block to detect the engine knocking.
This sensor contains a piezoelectric element which generates a voltage when it becomes deformed, witch 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 Detecting Condition	Trouble Area
P0325/52	No knock sensor signal to ECM with engine speed between 1,800 and 5,000 rpm	• Open or short in knock sensor circuit • Knock sensor (looseness) • ECM

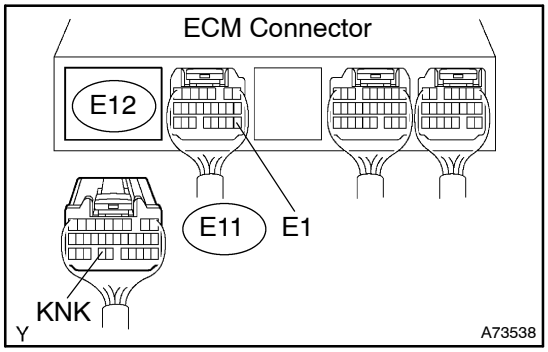
WIRING DIAGRAM



INSPECTION PROCEDURE

HINT:
Read freed frame data using hand–held tester, 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.

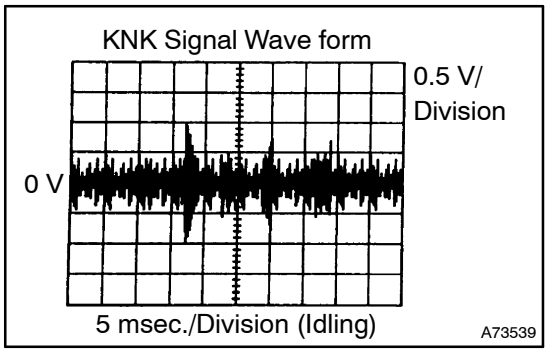
1 CHECK HARNESS AND CONNECTOR (CHECK FOR SHORT)



(a) Check for short on the wire harness between the knock sensor and ECM.
(1) Disconnect the E12 ECM connector.
(2) Check the continuity between the terminals of the E11 and E12 ECM connector.

Standard (Check for short):

Symbols (Terminal No.)	Specified condition
KNK (E12–28) ⇔ E1 (E11–17)	No continuity



(b) Reference (using the oscilloscope).
(1) During cranking or idling, check the waveform between the terminals of the E11 and E12 connectors.

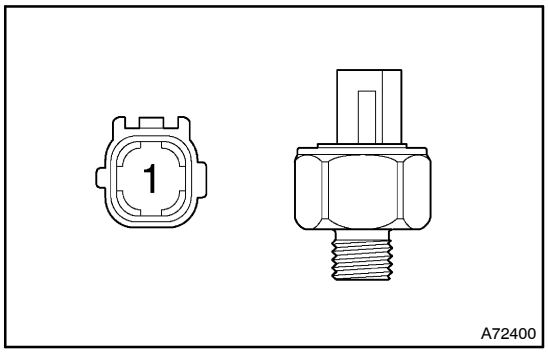
Standard:

Symbols (Terminal No.)	Specified condition
KNK (E12–28) ⇔ E1 (E11–17)	Correct waveform is as shown

OK → **Go to step 3**

NG

2 INSPECT KNOCK SENSOR



(a) Check the continuity between the terminal and body.

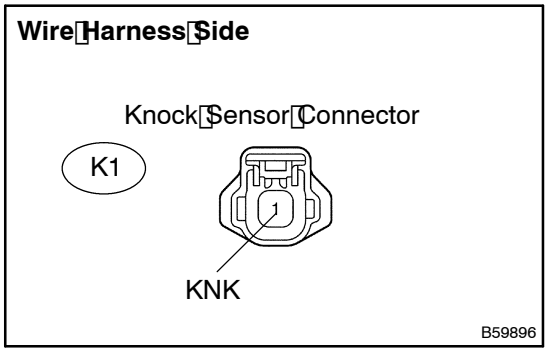
Standard:

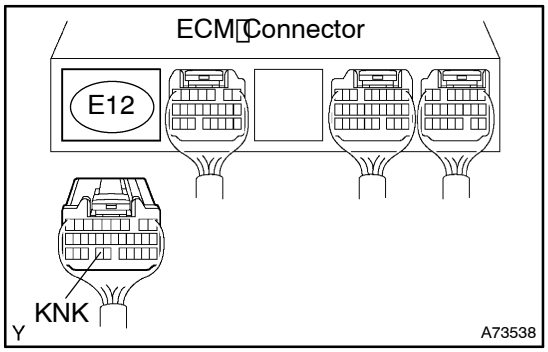
Terminal No.	Specified condition
1 ⇔ Body	No continuity

NG → **REPLACE KNOCK SENSOR** **(See page 10–13)**

OK

3 CHECK HARNESS AND CONNECTOR (KNOCK SENSOR ⇔ ECM)





(a) Disconnect the K1 knock sensor connector.
(b) Disconnect the E12 ECM connector.
(c) Check the continuity between the wire harness side connectors.

Standard (Check for open):

Symbols (Terminal No.)	Specified condition
KNK (K1–1) ⇔ KNK (E12–28)	Continuity

Standard (Check for short):

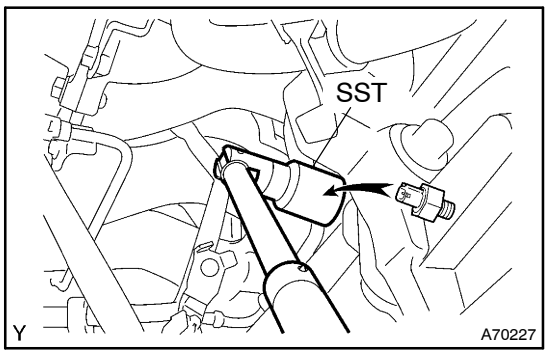
Symbols (Terminal No.)	Specified condition
KNK (K1–1) or KNK (E12–28) ⇔ Other terminals and body ground	No continuity

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

OK

4 CONFIRM THE MALFUNCTION DISAPPEAR WHEN A GOOD KNOCK SENSOR IS INSTALLED

SST 09816–30010



(a) Using SST, replacement the knock sensor.
Torque: 44 N·m (450 kgf·cm, 33 ft·lbf)
(b) Perform the driving test.
(c) Read the DTC.

Result:

Result	Proceed to
P0325/52 is output	A
P0325/52 is not output	B

B → **SYSTEM OK**

A

CHECK AND REPLACE ECM (See page 01–36)