DI6V9-04

DTC	P0325	Knock Sensor 1 Circuit Malfunction

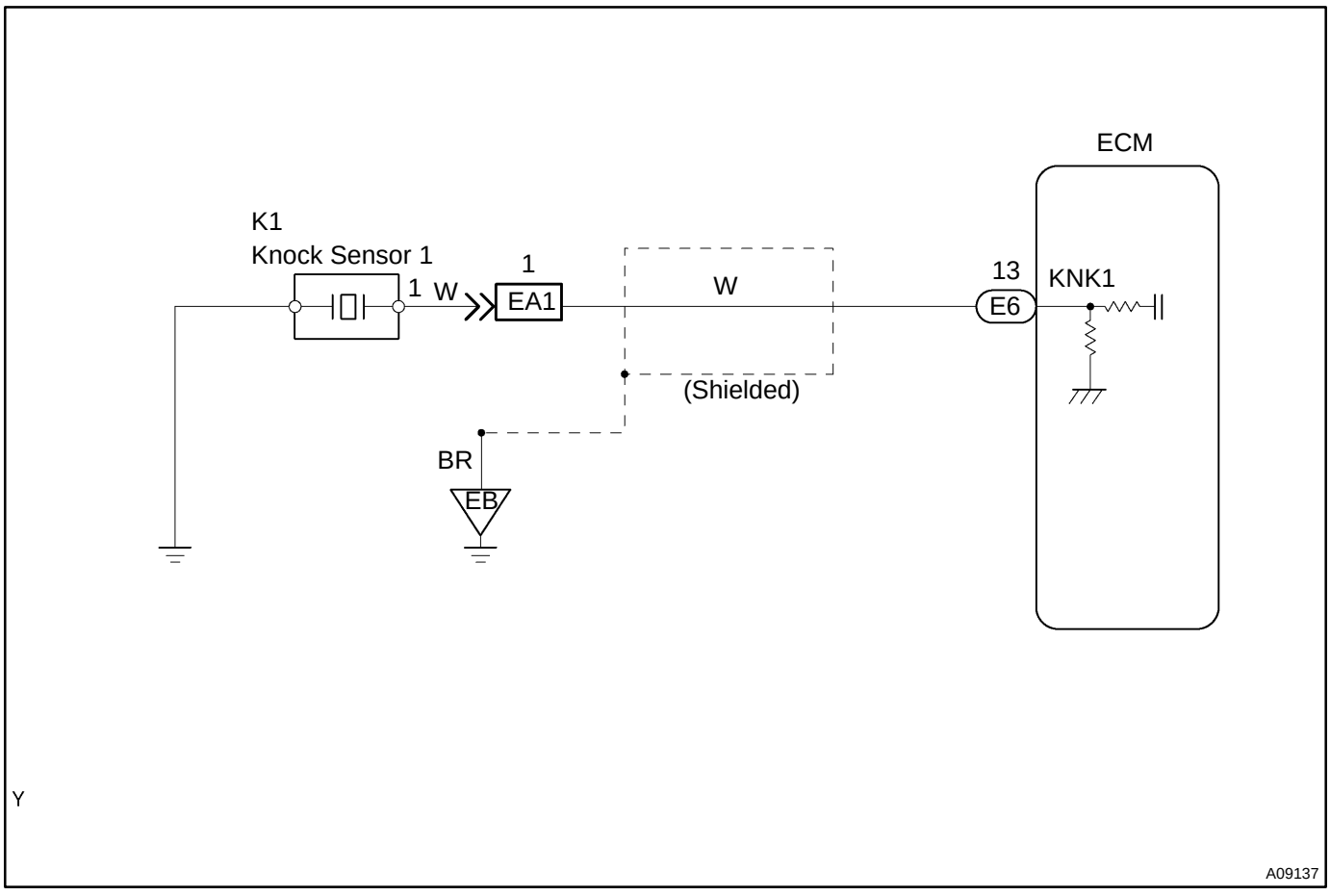
CIRCUIT DESCRIPTION

The knock sensor is fitted to 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 Detecting Condition	Trouble Area
P0325	No knock sensor 1 signal to ECM with engine speed, 2,000 rpm or more	• Open or short in knock sensor 1 circuit • Knock sensor 1 (looseness) • ECM

HINT:
If the ECM detects above diagnosis conditions, it operates the fail safe function in which the corrective retard angle value is set to the maximum value.

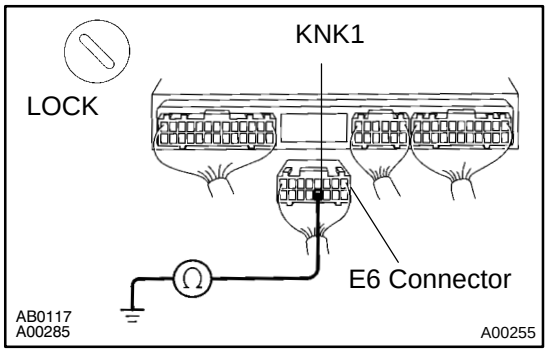
WIRING DIAGRAM



INSPECTION PROCEDURE

HINT:
Read freeze frame data using TOYOTA hand-held tester or OBD II scan tool. 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 warmed up or not, the air-fuel ratio lean or rich, etc. at the time of the malfunction.

1	**Check continuity between terminal KNK1 of ECM connector and body ground.**



PREPARATION:
(a) Remove the connector cover from the ECM.
(b) Disconnect the E6 connector of the ECM.

CHECK:
Measure resistance between terminal KNK1 of the ECM connector and body ground.

OK:
Resistance: 1 MΩ or higher

OK → **Go to step 3.**

NG

2	**Check knock sensor 1 (See page SF-58).**

NG → **Replace knock sensor 1.**

OK

3	**Check for open and short in harness and connector between ECM and knock sensor 1 (See page IN-29).**

NG → **Repair or replace harness or connector.**

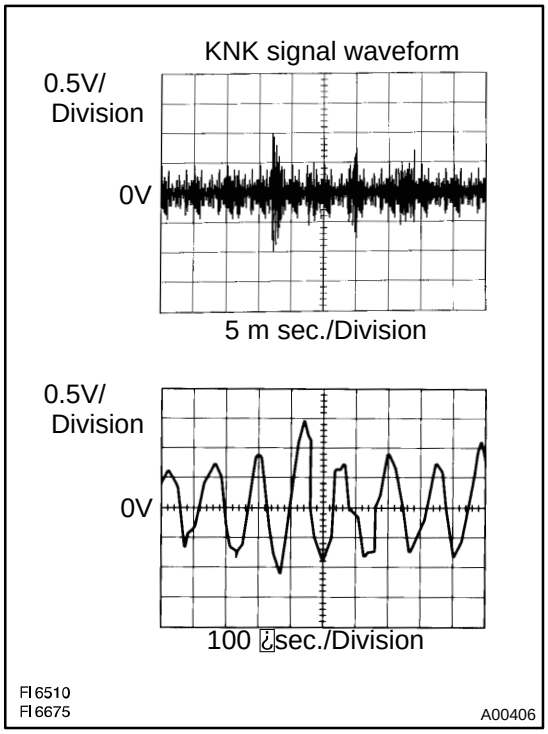
OK

4	**Does malfunction disappear when a good knock sensor 1 is installed?**

YES → **Replace knock sensor 1.**

NO

Check and replace ECM (See page IN-29).



Reference: INSPECTION USING OSCILLOSCOPE

- With the engine racing (4,000 rpm) measure between terminal KNK of the ECM connector and body ground.

HINT:
The correct waveforms are as shown.

- Spread the time on the horizontal axis, and confirm that period of the wave is 132 µ sec.
  (Normal mode vibration frequency of knock sensor: 7.6 kHz)

HINT:
If normal mode vibration frequency is not 7.6 kHz the sensor is malfunctioning.