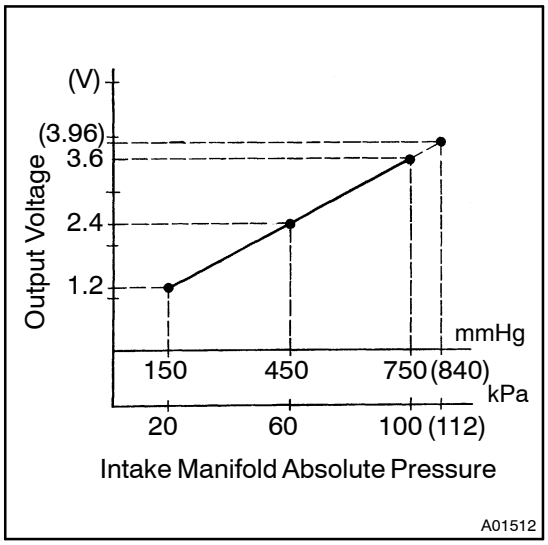
DI32H–03

CIRCUIT INSPECTION

DTC	P0105/31	Vacuum Sensor Circuit Malfunction

CIRCUIT DESCRIPTION



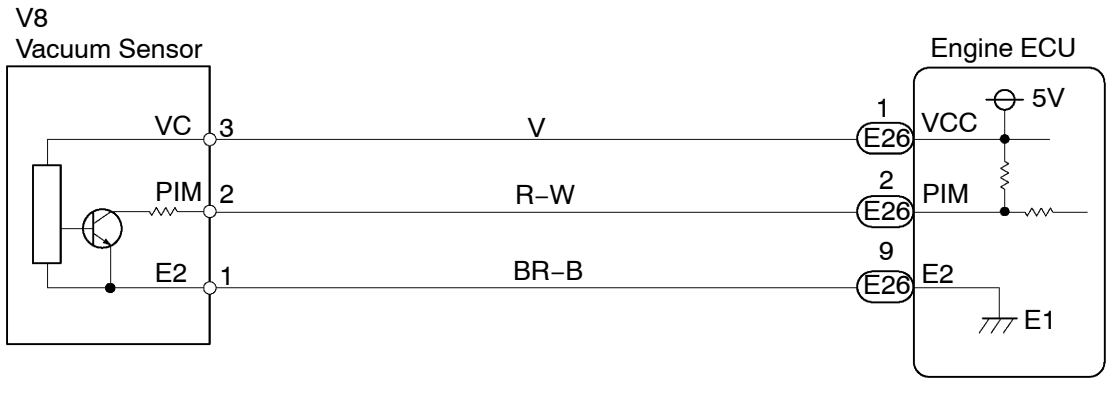
By a built–in sensor unit, the vacuum sensor detects the intake manifold pressure as a voltage. The engine ECU then determines the basic injection duration and basic ignition advance angle based on this voltage.
Since the vacuum sensor does not use the atmospheric pressure as a criterion, but senses the absolute pressure inside the intake manifold (the pressure in proportion to the preset absolute vacuum 0), it is not influenced by fluctuations in the atmospheric pressure due to high altitude and other factors. this permits it to control the airfuel ratio at the proper level under all conditions.

DTC No.	DTC Detecting Condition	Trouble Area
P0105/31	Open or short in vacuum sensor circuit	• Open or short in vacuum sensor circuit • Vacuum sensor • Engine ECU

HINT:After confirming DTC P0105/31, use the hand–held tester to confirm the manifold absolute pressure from ”CURRENT DATA”.

Manifold Absolute Pressure (kPa)	Malfunction
Approx. 0	• PIM circuit short
130 or more	• VC circuit open or short • PIM circuit open • E2 circuit open

WIRING DIAGRAM



INSPECTION PROCEDURE

HINT:

- If DTC P0105/31 (Vacuum Sensor Circuit Malfunction), P0110/24 (Intake Air Temp. Circuit Malfunction), P0115/22 (Water Temp. Circuit Malfunction), P0120/41 (Throttle Position Sensor Circuit Malfunction) are output simultaneously, E2 (sensor ground) may be open.
- 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 warmed up or not, the air–fuel ratio lean or rich, etc. at the time of the malfunction.

When using hand–held tester

1	**Connect the hand–held tester, and read value of manifold absolute pressure.**

PREPARATION:

(a) Connect the hand–held tester to the DLC3.

(b) Turn ignition switch ON and hand–held tester main switch ON.

CHECK:

Read value of manifold absolute pressure on the hand–held tester.

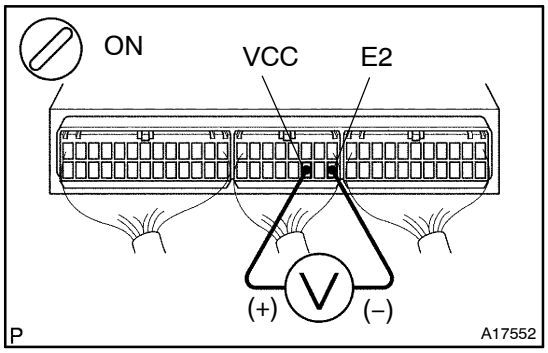
OK:

Same as atmospheric pressure.

OK → **Check for intermittent problems (See page DI–4).**

NG

2	**Check voltage between terminals VCC and E2 of engine ECU.**



PREPARATION:

(a) Remove the side trim bracket (See page FU–48).

(b) Turn the ignition switch ON.

CHECK:

Measure voltage between terminals VCC and E2 of engine ECU.

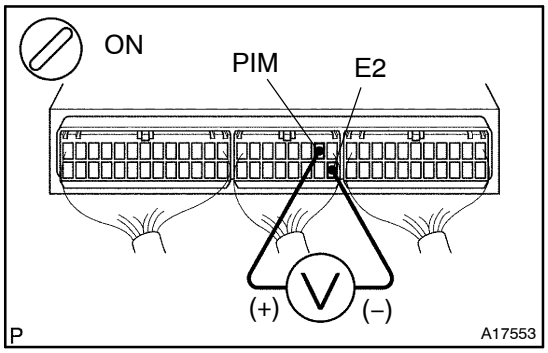
OK:

Voltage: 4.5 – 5.5 V

NG → **Check and replace engine ECU (See page IN–20).**

OK

3	Check voltage between terminals PIM and E2 of engine ECU connector.



PREPARATION:

(a) Remove the side trim bracket (See page FU–48).

(b) Turn the ignition switch ON.

CHECK:

Measure voltage between terminals PIM and E2 of engine ECU.

OK:

Voltage: 3.3 – 3.9 V

OK	Check and replace engine ECU (See page IN–20).

NG

4	Check for open and short in harness and connector between vacuum sensor and engine ECU (See page IN–20).

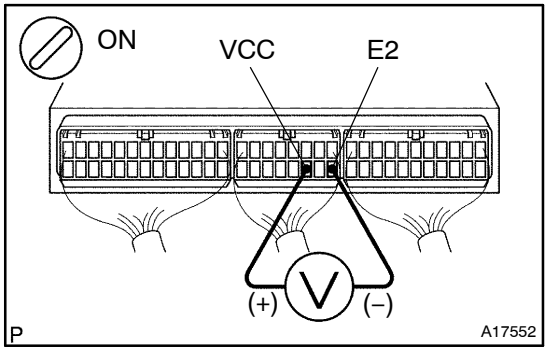
NG	Repair and replace harness or connector.

OK

Replace vacuum sensor.

When not using hand–held tester

1	**Check voltage between terminals VCC and E2 of engine ECU connector.**



PREPARATION:
(a) Remove the side trim bracket (See page FU–48).
(b) Turn ignition switch ON.

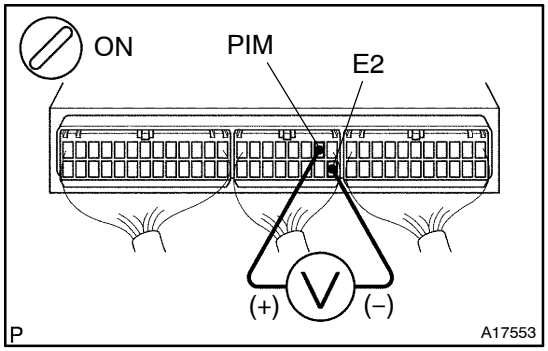
CHECK:
Measure voltage between terminals VCC and E2 of engine ECU.

OK:
Voltage: 4.5 – 5.5 V

NG → **Check and replace engine ECU (See page IN–20).**

OK

2	**Check voltage between terminals PIM and E2 of engine ECU connector.**



PREPARATION:
(a) Remove the side trim bracket (See page DI–99).
(b) Turn ignition switch ON.

CHECK:
Measure voltage between terminals PIM and E2 of engine ECU.

OK:
Voltage: 3.3 – 3.9 V

OK → **Check and replace engine ECU (See page IN–20).**

NG

3	**Check for open and short in harness and connector between engine ECU and vacuum sensor (See page IN–20).**

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

OK

Replace vacuum sensor.