DTC	19 (1)	ACCEL. POSITION SENSOR CIRCUIT (OPEN/SHORT)

CIRCUIT DESCRIPTION

The accelerator pedal position sensor is mounted on the accelerator pedal and detects the accelerator pedal opening angle. When the accelerator pedal is fully closed, a voltage of approximately 0.9 V is applied to terminals VA and VAS of the ECM. The voltage applied to terminals VA and VAS of the ECM increases in proportion to the opening angle of the accelerator pedal and becomes approximately 3.8 V when the accelerator pedal is fully opened. The ECM judges the vehicle driving conditions from these signals input from terminals VA and VAS and uses them as one of the conditions to control the injection volume and diesel throttle valve position. The idle switch is mounted in the accelerator pedal position sensor and sends an IDL signal to the ECM when accelerator pedal is fully closed.

This system has 2 way accelerator pedal position sensor and accelerator pedal closed position switch for fail safe.

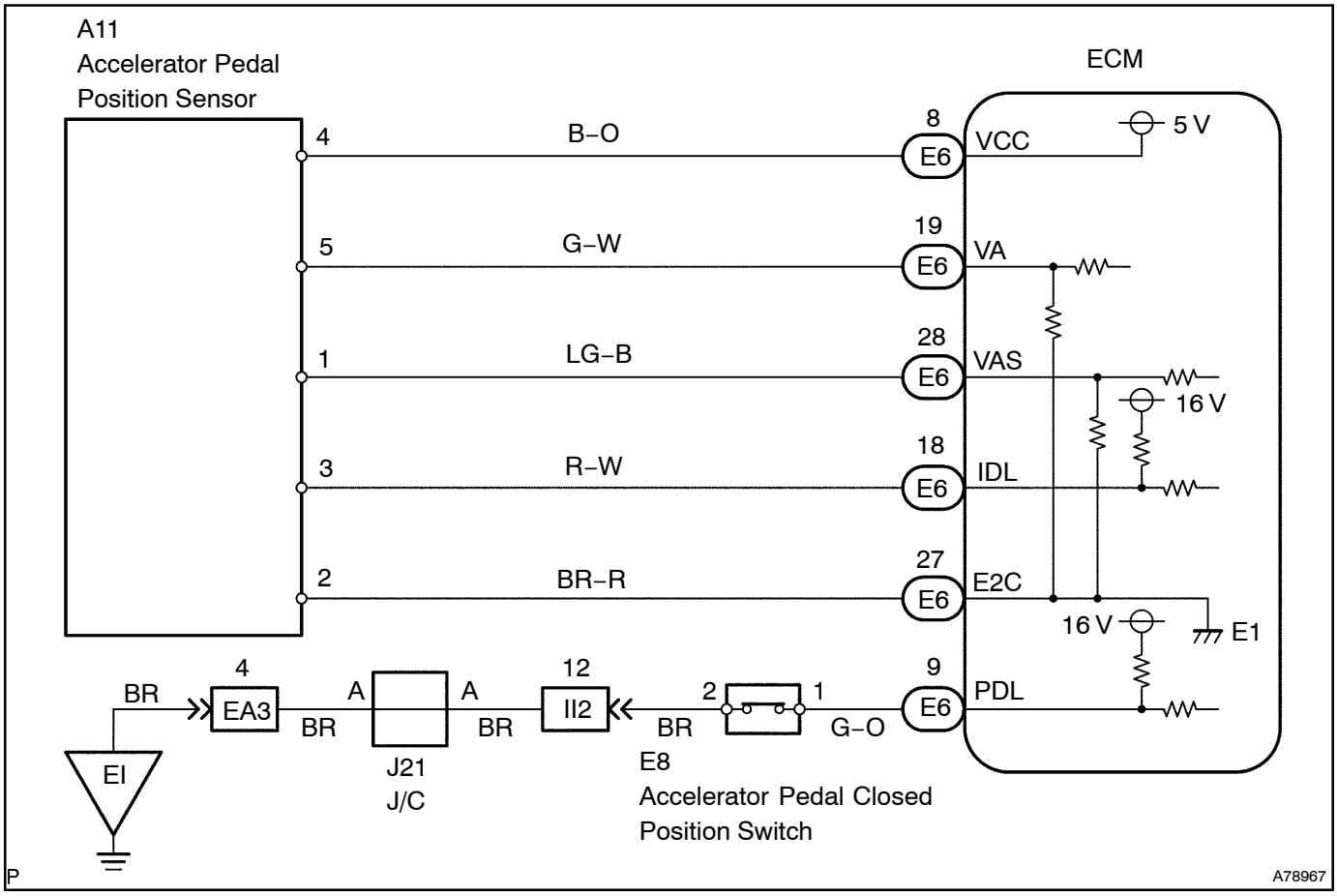
DTC No.	DTC Detection Condition	Trouble Area
19 (1)	Open or short in accelerator pedal position sensor circuit for 0.05 sec. or more	• Open or short in accelerator pedal position sensor circuit • Accelerator pedal position sensor • ECM

HINT:

After confirming DTC 19 (1), use the hand–held tester to confirm the accelerator pedal opening percentage and accelerator pedal close position switch condition.

Accelerator pedal opening position expressed as percentage		Trouble area
Accelerator pedal fully closed	Accelerator pedal fully opened	
0 %	0 %	• VCC circuit open • VA, VAS circuit open or short
Approx. 100 %	Approx. 100 %	• E2C circuit open

WIRING DIAGRAM



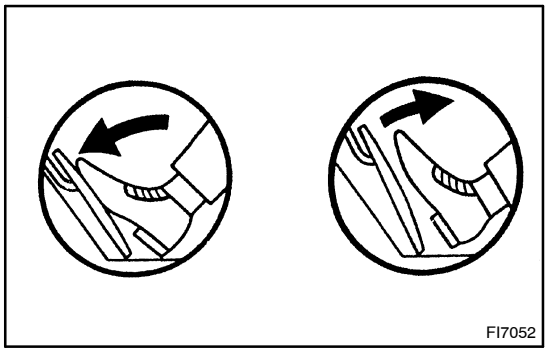
INSPECTION PROCEDURE

HINT:

Read freeze frame data using the 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.

When using hand–held tester:

1	READ VALUE OF HAND–HELD TESTER



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

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

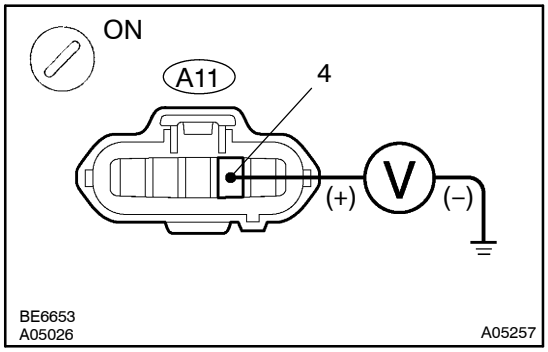
Standard:

Accelerator Pedal	Accelerator pedal opening position expressed as percentage
Fully opened	Approx. 65 %
Fully closed	Approx. 18 %

OK → **CHECK FOR INTERMITTENT PROBLEMS**

NG

2	CHECK VOLTAGE

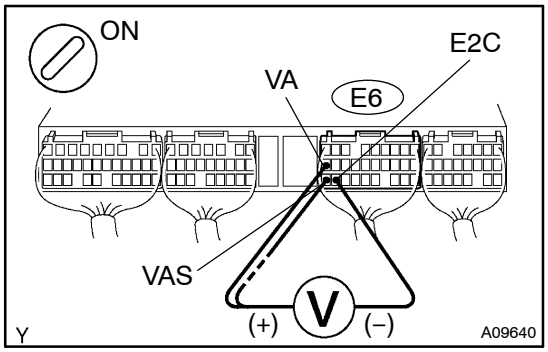


(a) Disconnect the A11 accelerator pedal position sensor connector.
(b) Turn the ignition switch ON.
(c) Measure the voltage between terminal 4 of the A11 accelerator pedal position sensor connector and the body ground.
Voltage: 4.5 – 5.5 V

NG → **Go to step 5**

OK

3	CHECK ECM



(a) Turn the ignition switch ON.
(b) Check the voltage between the terminals of shown in the table and illustration.
Voltage:

Accelerator Pedal	Voltage
Fully closed	0.6 – 1.3 V
Fully opened	3.0 – 4.5 V

OK → **CHECK AND REPLACE ECM**

NG

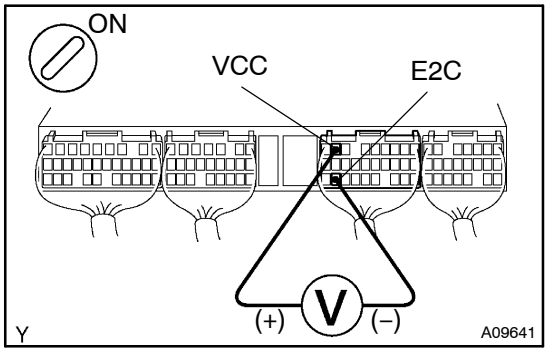
4	CHECK WIRE HARNESS (VA AND VAS CIRCUIT FOR ECM ⇔ ACCELERATOR PEDAL POSITION SENSOR) (See page 01–27)

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

OK

REPLACE ACCELERATOR PEDAL

5	CHECK ECM



(a) Turn the ignition switch ON.
(b) Check the voltage between the terminals of shown in the table and illustration.
Voltage: 4.5 – 5.5 V

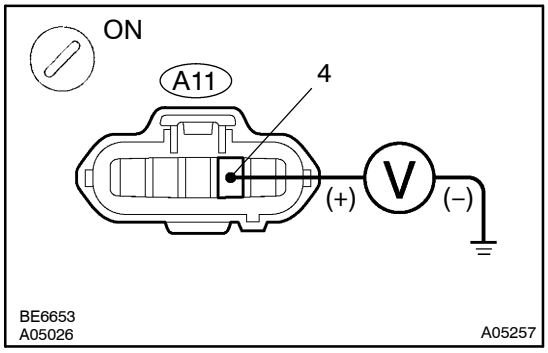
NG → **CHECK AND REPLACE ECM**

OK

CHECK WIRE HARNESS (VCC CIRCUIT FOR ECM ⇔ ACCELERATOR PEDAL POSITION SENSOR) (See page 01–27)

When not using hand–held tester:

1	CHECK VOLTAGE

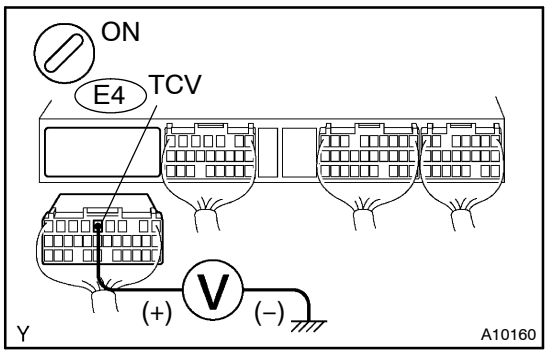


(a) Disconnect the A11 accelerator pedal position sensor connector.
(b) Turn the ignition switch ON.
(c) Measure the voltage between terminal 4 of the A11 accelerator pedal position sensor connector and the body ground.
Voltage: 4.5 – 5.5 V

NG → **Go to step 4**

OK

2	CHECK ECM



(a) Turn the ignition switch ON.
(b) Check the voltage between the terminals of shown in the table and illustration.
Voltage:

Accelerator Pedal	Voltage
Fully closed	0.6 – 1.3 V
Fully opened	3.0 – 4.5 V

OK → **CHECK AND REPLACE ECM**

NG

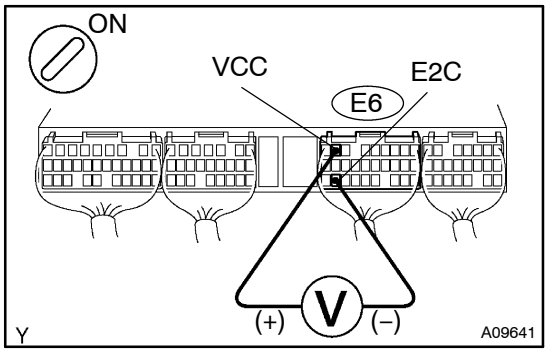
3	CHECK WIRE HARNESS (VA AND VAS CIRCUIT FOR ECM ⇔ ACCELERATOR PEDAL POSITION SENSOR) (See page 01–27)

NG → REPAIR OR REPLACE HARNESS AND CONNECTOR

OK

REPLACE ACCELERATOR PEDAL

4	CHECK ECM



(a) Turn the ignition switch ON.
(b) Check the voltage between the terminals of shown in the table and illustration.
Voltage: 4.5 – 5.5 V

NG → CHECK AND REPLACE ECM

OK

CHECK WIRE HARNESS (VCC CIRCUIT FOR ECM ⇔ ACCELERATOR PEDAL POSITION SENSOR) (See page 01–27)