DTC	19(2)	ACCEL. POSITION SENSOR CIRCUIT (IDL SW/RANGE)

CIRCUIT DESCRIPTION

HINT:

This is repair procedure of "accelerator pedal position sensor".

Refer to DTC 19 (1) on page 05–454.

DTC No.	DTC Detecting Condition	Trouble Area
19(2)	Either the ECM sensor completed learning and when the electric potential difference of No. 1 and No. 2 sensors has become more than 1.2 V or less than 0.4 V.	• Open or short in accelerator pedal position sensor circuit • Accelerator pedal position sensor • ECM
	Either one of the followings continues more than 2.0 seconds. (a) When the electrical potential difference of No. 1 and No. 2 sensors is beside the specified value. (b) VPA2 ≧ 4.9 V (c) Accelerator idling criterion voltage of No. 1 and No. 2 is less than 0.04 V.	

WIRING DIAGRAM

Refer to DTC 19 (1) on page 05–454.

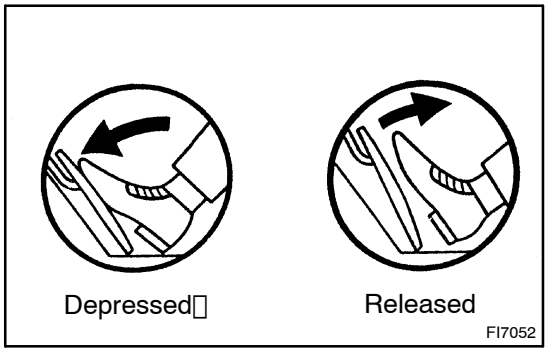
INSPECTION PROCEDURE

HINT:

Read freeze frame data using the hand–held tester, as freeze frame 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, etc. at the time of the malfunction.

When using hand–held tester:

1	READ VALUE OF HAND–HELD TESTER(ACCEL POS #1 AND ACCEL POS #2)



(a) Turn the ignition switch ON.

(b) Select the item "DIAGNOSIS/ENHANCED OBD II/DATA LIST/ETCS/ACCEL POS #1 and ACCEL POS #2" and read its value displayed on the hand–held tester.

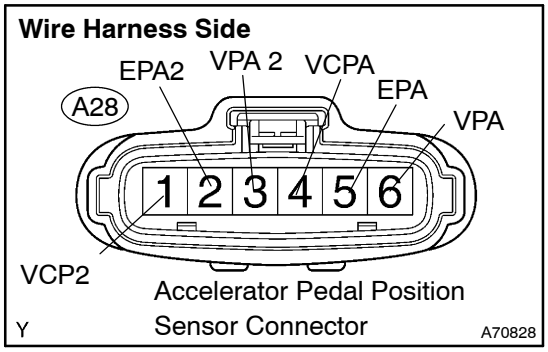
Standard:

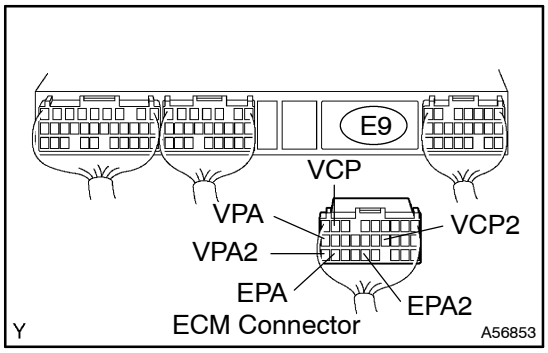
Accelerator pedal	ACCEL POS #1	ACCEL POS #2
Released	0.5 – 1.1 V	0.9 – 2.3 V
Depressed	3.0 – 4.6 V	3.4 – 5.0 V

OK → **CHECK AND REPLACE ECM**

NG

2	CHECK HARNESS AND CONNECTOR(ECM – ACCELERATOR PEDAL POSITION SENSOR)





(a) Disconnect the accelerator pedal position sensor connector.
(b) Disconnect the ECM E9 connector.
(c) Check the continuity between the wire harness side connectors.

Standard (Check for open):

Symbols (Terminal No.)	Specified condition
VCP2 (A28 – 1) ⇔ VCP2 (E9 – 13)	Continuity
EPA2 (A28 – 2) ⇔ EPA2 (E9 – 24)	
VPA2 (A28 – 3) ⇔ VPA2 (E9 – 28)	
VCPA (A28 – 4) ⇔ VCP (E9 – 8)	
EPA (A28 – 5) ⇔ EPA (E9 – 27)	
VPA (A28 – 6) ⇔ VPA (E9 – 19)	

Standard (Check for short):

Symbols (Terminal No.)	Specified condition
VCP2 (A28 – 1) or VCP2 (E9 – 13) ⇔ Body ground	No continuity
EPA2 (A28 – 2) or EPA2 (E9 – 24) ⇔ Body ground	
VPA2 (A28 – 3) or VPA2 (E9 – 28) ⇔ Body ground	
VCPA (A28 – 4) or VCP (E9 – 8) ⇔ Body ground	
EPA (A28 – 5) or EPA (E9 – 27) ⇔ Body ground	
VPA (A28 – 6) or VPA (E9 – 19) ⇔ Body ground	

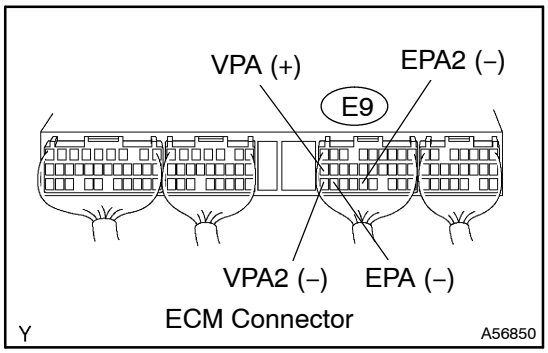
NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

REPLACE ACCELERATOR PEDAL ROD ASSY

When not using hand–held tester:

1	INSPECT ECM(VPA AND VPA2 VOLTAGE)



(a) Turn the ignition switch ON.
(b) Measure the voltage between the terminals of the ECM E9 connector.

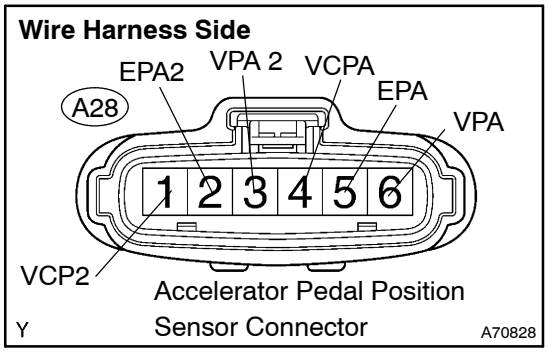
Standard:

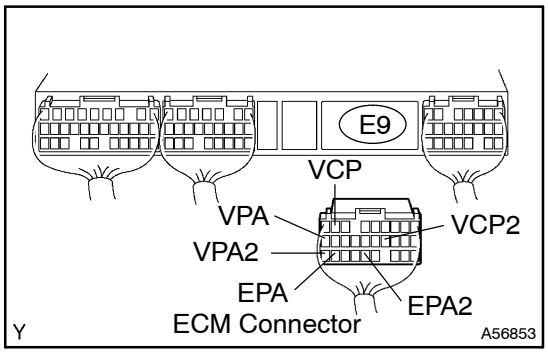
Accelerator pedal position	Symbols (Terminal No.)	Symbols (Terminal No.)
	VPA (E9 – 19) ⇔ EPA (E9 – 27)	VPA2 (E9 – 28) ⇔ EPA2 (E9 – 24)
Released	0.5 – 1.1 V	0.9 – 2.3 V
Depressed	3.0 – 4.6 V	3.4 – 5.0 V

OK	CHECK AND REPLACE ECM

NG

2	CHECK HARNESS AND CONNECTOR(ECM – ACCELERATOR PEDAL POSITION SENSOR)





(a) Disconnect the accelerator pedal position sensor connector.
(b) Disconnect the ECM E9 connector.
(c) Check the continuity between the wire harness side connectors.

Standard (Check for open):

Symbols (Terminal No.)	Specified condition
VCP2 (A28 – 1) ⇔ VCP2 (E9 – 13)	Continuity
EPA2 (A28 – 2) ⇔ EPA2 (E9 – 24)	
VPA2 (A28 – 3) ⇔ VPA2 (E9 – 28)	
VCPA (A28 – 4) ⇔ VCP (E9 – 8)	
EPA (A28 – 5) ⇔ EPA (E9 – 27)	
VPA (A28 – 6) ⇔ VPA (E9 – 19)	

Standard (Check for short):

Symbols (Terminal No.)	Specified condition
VCP2 (A28 – 1) or VCP2 (E9 – 13) ⇔ Body ground	No continuity
EPA2 (A28 – 2) or EPA2 (E9 – 24) ⇔ Body ground	
VPA2 (A28 – 3) or VPA2 (E9 – 28) ⇔ Body ground	
VCPA (A28 – 4) or VCP (E9 – 8) ⇔ Body ground	
EPA (A28 – 5) or EPA (E9 – 27) ⇔ Body ground	
VPA (A28 – 6) or VPA (E9 – 19) ⇔ Body ground	

NG	REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

REPLACE ACCELERATOR PEDAL ROD ASSY