DTC	P2121/19	THROTTLE/PEDAL POSITION SENSOR/SWITCH ”D” CIRCUIT RANGE/PERFORMANCE

HINT:
This DTC relates to the accelerator pedal position sensor.

CIRCUIT DESCRIPTION

Refer to DTC P2120 on page 05–154.

DTC No.	DTC Detection Condition	Trouble Area
P2121/19	Conditions (a) and (b) continue for 0.5 seconds: (a) Difference between VPA1 and VPA2 exceeds threshold (b) IDL is OFF	• Accelerator pedal position sensor circuit • Accelerator pedal position sensor • ECM

HINT:
When DTC P2121 is detected, check the output voltage of the accelerator pedal position sensor by selecting Powertrain / Engine and ECT / Data List / Accelerator POS No.1 and Accelerator POS No.2 on the intelligent tester II.

Reference:

Trouble Area	Accelerator Pedal Position (Voltage Output)			
	Accelerator Pedal Released		Accelerator Pedal Depressed	
	Accelerator POS No.1	Accelerator POS No.2	Accelerator POS No.1	Accelerator POS No.2
Normal condition	0.5 to 1.1 V	1.2 to 2.0 V	2.6 to 4.5 V	3.4 to 5.0 V
VCP circuit open	0 to 0.2 V	0 to 0.2 V	0 to 0.2 V	0 to 0.2 V
Open or ground short in VPA1 circuit	0 to 0.2 V	1.2 to 2.0 V	0 to 0.2 V	3.4 to 5.0 V
Open or ground short in VPA2 circuit	0.5 to 1.1 V	0 to 0.2 V	2.6 to 4.5 V	0 to 0.2 V
EPA circuit open	4.5 to 5.0 V	4.5 to 5.0 V	4.5 to 5.0 V	4.5 to 5.0 V

Accelerator pedal position is expressed as voltages.

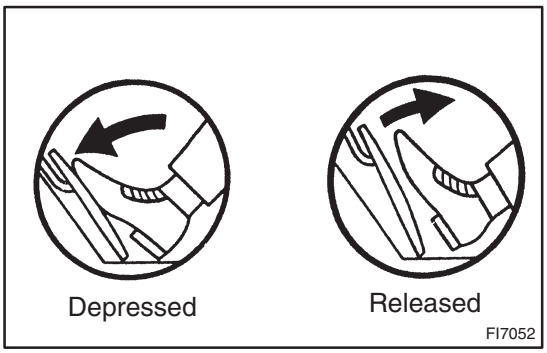
WIRING DIAGRAM

Refer to DTC P2120 on page 05–154.

INSPECTION PROCEDURE

HINT:
Read freeze frame data using the intelligent tester II. Freeze frame data record the engine condition when malfunctions are detected. When troubleshooting, freeze frame data can help determine if the vehicle was moving or stationary, if the engine was warmed up or not, if the air–fuel ratio was lean or rich, and other data from the time the malfunction occurred.

1	READ VALUE OF INTELLIGENT TESTER II(ACCELERATOR PEDAL POSITION SENSOR)



(a) Connect the intelligent tester II to the DLC3.
(b) Turn the ignition switch to ON and turn the intelligent tester II ON.
(c) Select the following menu items: Powertrain / Engine and ECT / Data List / Accelerator POS No.1 and Accelerator POS No.2.
(d) Read the value.

Standard:

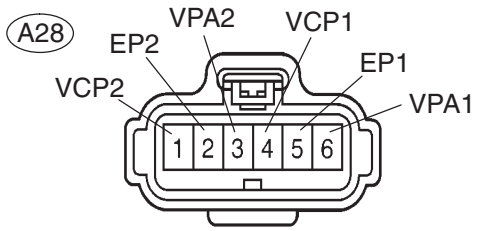
Accelerator Pedal	Accelerator POS No.1	Accelerator POS No.2
Released	0.5 to 1.1 V	1.2 to 2.0 V
Depressed	2.6 to 4.5 V	3.4 to 5.0 V

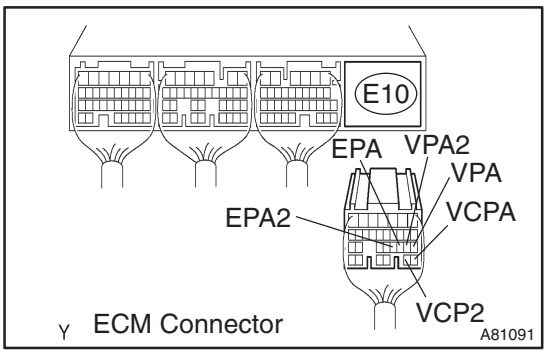
OK	Go to step 4

NG

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

Wire Harness Side:





(a) Disconnect the A28 accelerator pedal position sensor connector.
(b) Disconnect the E10 ECM connector.
(c) Measure the resistance according to the value(s) in the table below.

Standard (Check for open):

Tester Connection	Specified Condition
VPA1 (A28–6) – VPA (E10–18)	Below 1 Ω
EP1 (A28–5) – EPA (E10–20)	Below 1 Ω
VCP1 (A28–4) – VCPA (E10–26)	Below 1 Ω
VPA2 (A28–3) – VPA2 (E10–19)	Below 1 Ω
EP2 (A28–2) – EPA2 (E10–21)	Below 1 Ω
VCP2 (A28–1) – VCP2 (E10–27)	Below 1 Ω

Standard (Check for short):

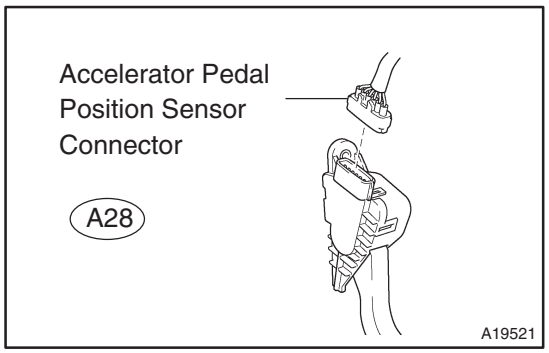
Tester Connection	Specified Condition
VPA1 (A28–6) or VPA (E10–18) – Body ground	10 kΩ or higher
EP1 (A28–5) or EPA (E10–20) – Body ground	10 kΩ or higher
VCP1 (A28–4) or VCPA (E10–26) – Body ground	10 kΩ or higher
VPA2 (A28–3) or VPA2 (E10–19) – Body ground	10 kΩ or higher
EP2 (A28–2) or EPA2 (E10–21) – Body ground	10 kΩ or higher
VCP2 (A28–1) or VCP2 (E10–27) – Body ground	10 kΩ or higher

(d) Reconnect the accelerator pedal position sensor connector.
(e) Reconnect the ECM connector.

NG	REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

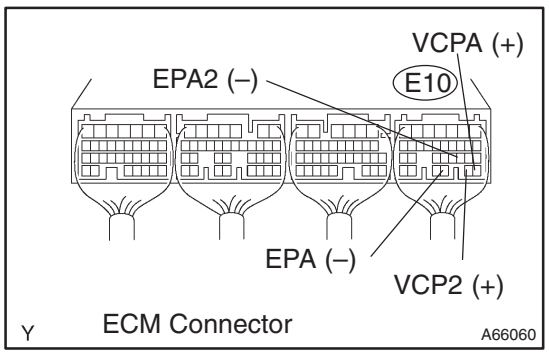
3	INSPECT ECM(VCPA AND VCP2 VOLTAGE)



(a) Disconnect the A28 accelerator pedal position sensor connector.
(b) Turn the ignition switch to ON.
(c) Measure the voltage according to the value(s) in the table below.

Standard:

Tester Connection	Specified Condition
VCPA (E10–26) – EPA (E10–28)	4.5 to 5.0 V
VCP2 (E10–27) – EPA2 (E10–21)	4.5 to 5.0 V



NG → **REPLACE ACCELERATOR PEDAL ROD ASSY (See page 10–13)**

OK

4	REPLACE ACCELERATOR PEDAL ROD ASSY (See page 10–13)

NEXT

5	CHECK IF DTC OUTPUT RECURS(ACCELERATOR PEDAL POSIION SENSOR DTCS)

(a) Connect the intelligent tester II to the DLC3.
(b) Turn the ignition switch to ON and turn the intelligent tester II ON.
(c) Clear DTCs (see page 05–18).
(d) Start the engine.
(e) Run the engine at idling speed for 15 seconds or more.
(f) Select the following menu items: Powertrain / Engine and ECT / DTC.
(g) Read DTCs (see page 05–18).

Result:

Display (DTC Output)	Proceed To
P2120, P2121, P2122, P2123, P2125, P2127, P2128 and/or P2138	A
No output	B

B → **SYSTEM OK**

A

REPLACE ECM (See page 10–12)