

DTC	P1120	ACCELERATOR PEDAL POSITION SENSOR CIRCUIT MALFUNCTION
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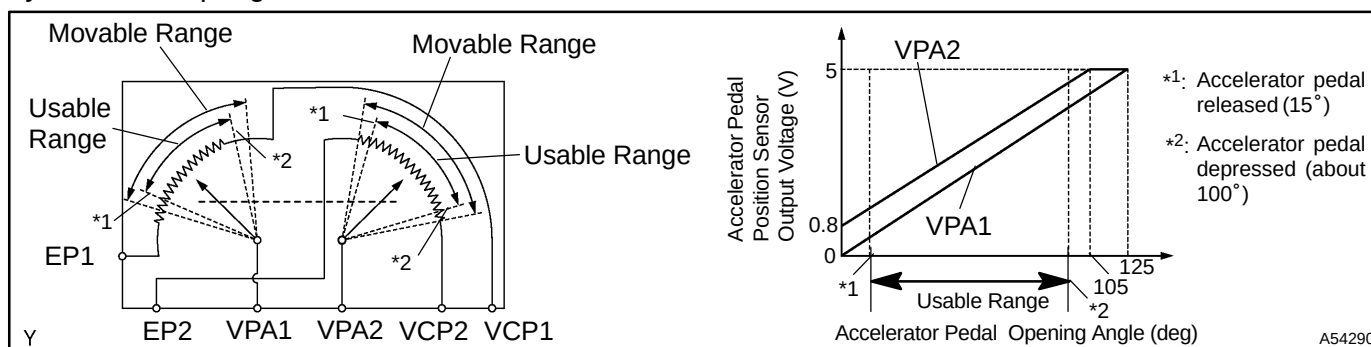
CIRCUIT DESCRIPTION

Accelerator pedal position sensor is mounted on the accelerator pedal bracket and it has 2 sensors to detect the accelerator position and a malfunction of the accelerator position's own.

The accelerator pedal position sensor is the voltage applied to the terminals VPA1 and VPA2 of the ECM changes between 0 V and 5 V in proportion to the opening angle of the accelerator pedal.

The ECM judges the current opening angle of the accelerator pedal from these signals input from terminals VPA1 and VPA2 and the ECM controls the throttle motor based on these signals.

If this DTC is stored, the ECM shuts down the power for the throttle motor, and the throttle valve is fully closed by the return spring.

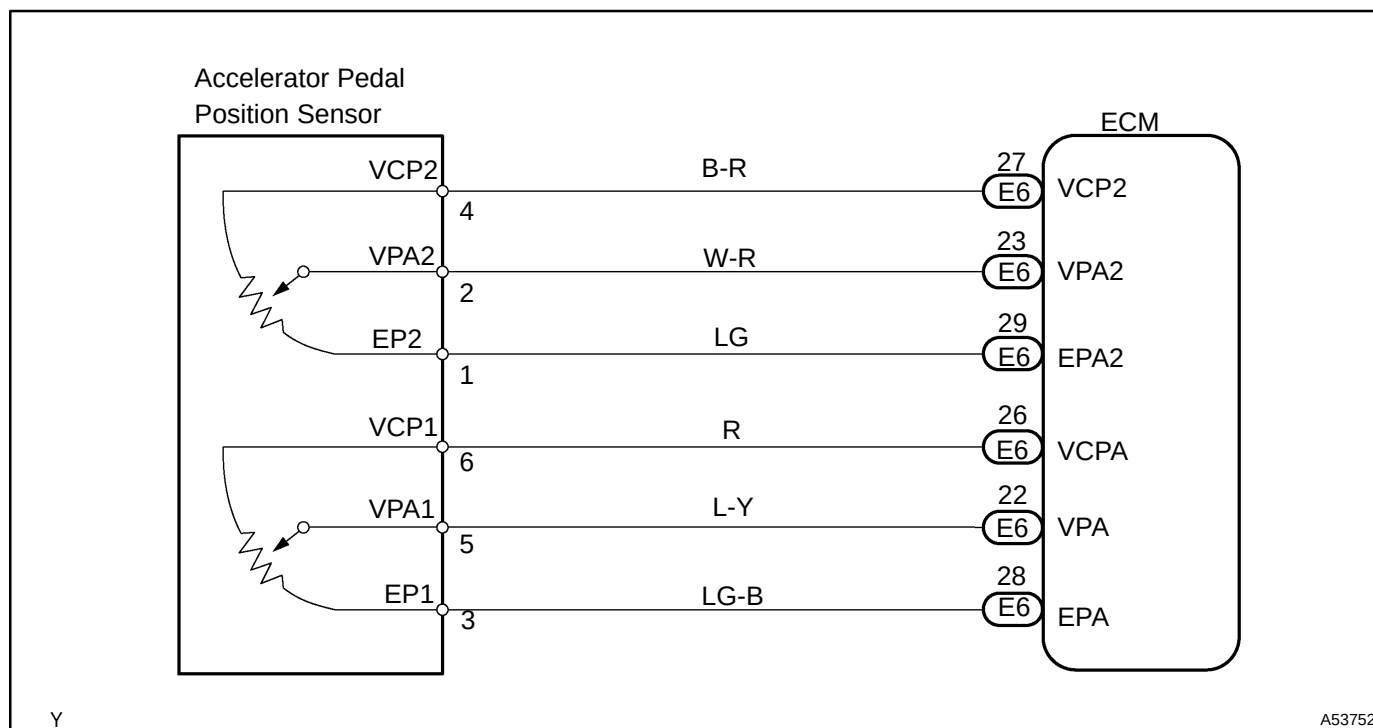


DTC No.	DTC Detecting Condition	Trouble Area
P1120	Condition (a), (b), (c), (d) or (e) continues for 0.5 seconds: (IDL ON: 10 seconds) (a) $VPA1 \leq 0.2 \text{ V}$ (b) $VPA2 \leq 0.5 \text{ V}$ (c) $VPA1 \geq 4.8 \text{ V}$ (d) When $VPA1 \geq 0.2 \text{ V}$ and $\leq 3.45 \text{ V}$, and $VPA2 \geq 4.8 \text{ V}$ (e) $VPA1 - VPA2 \leq 0.02 \text{ V}$ (f) IDL is OFF	• Open or short in accelerator pedal position sensor circuit • Accelerator pedal position sensor • ECM
	Condition (a) or (b) continues for 2.0 seconds: (a) $VPA1 \leq 0.2 \text{ V}$ and $VPA2 \leq 0.5 \text{ V}$	

After confirming DTC P1120, use the OBD II scan tool or hand-held tester to confirm the throttle valve opening percentage.

Accelerator pedal position expressed as voltage				Trouble area
Accelerator pedal released		Accelerator pedal depressed		
ACCEL POS #1	ACCEL POS #2	ACCEL POS #1	ACCEL POS #2	
0 V	0 V	0 V	0 V	VCcircuit open
0 V	0.9 - 2.3 V	0 V	3.4 - 5.0 V	VPA1 circuit open or ground short
0.5 - 1.1 V	0 V	3.0 - 4.6 V	0 V	VPA2 circuit open or ground short
5 V	5 V	5 V	5 V	E2 circuit open

WIRING DIAGRAM



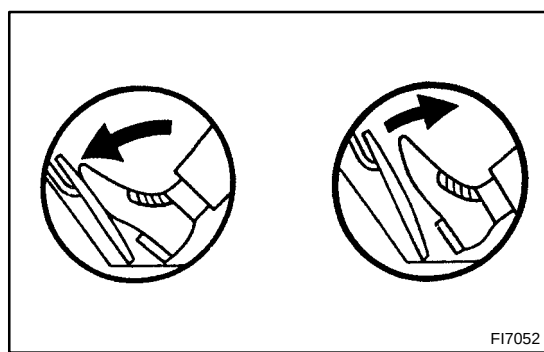
INSPECTION PROCEDURE

HINT:

Read freeze frame data using hand-held tester or OBD II scan tool, 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.

Hand-held tester:

1 READ VALUE OF HAND-HELD TESTER



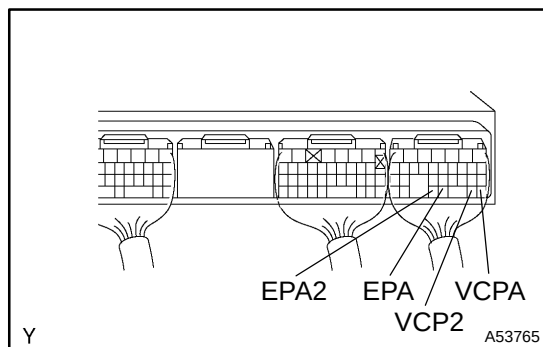
- (a) Select the item "ACCEL POS #1" and "ACCEL POS #2" in the DATA LIST and read its value displayed on the hand-held tester.

Accelerator pedal	VPA	VPA2
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

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2 INSPECT ECM(VCPA - EPA, VCP2 - EPA2)

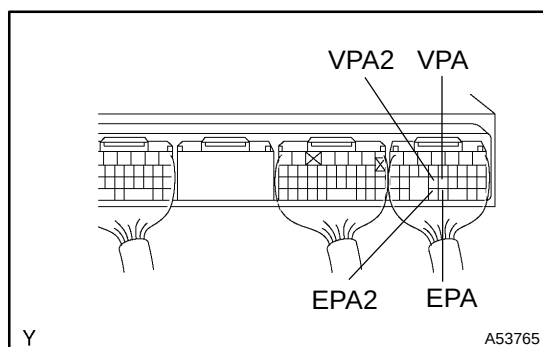
- (a) Measure the voltage between terminals VCPA and EPA, VCP2 and EPA2 of the ECM connector.

Voltage: 4.5 - 5.5 V

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CHECK AND REPLACE ECM

OK

3 INSPECT ECM(VPA - EPA, VPA2 - EPA2)

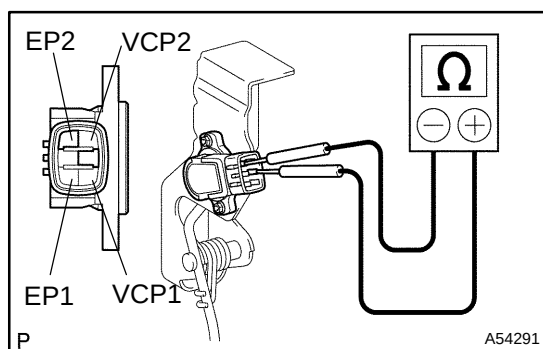
- (a) Measure the voltage between terminals VPA and EPA, and VPA2 and EPA2 of the ECM connector.

Accelerator pedal	Voltage	
	VPA - EPA	VPA2 - EPA2
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

4 INSPECT ACCELERATOR PEDAL ASSY(POSITION SENSOR)

- (a) Disconnect the accelerator pedal position sensor connector.
 (b) Using an ohmmeter, measure the resistance between each terminals.

Resistance: at 20°C (68°F)

Terminals	Resistance
VCP1 - EP1 VCP2 - EP2	2.25 - 4.75 kΩ

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REPLACE ACCELERATOR PEDAL ASSY

OK

5 CHECK AND REPLACE HARNESS AND CONNECTOR(ECM - ACCELERATOR POSITION SENSOR)

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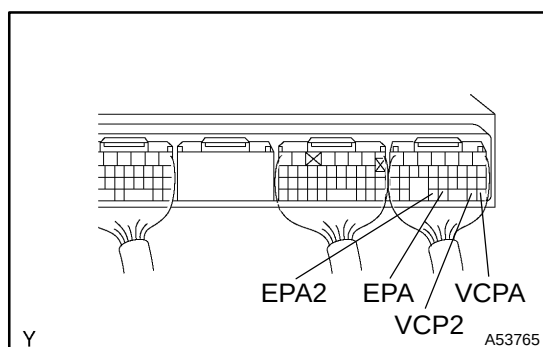
REPAIR OR REPLACE HARNESS AND CONNECTOR

OK

CHECK AND REPLACE ECM

OBD II scan tool (excluding hand-held tester):

1 INSPECT ECM(VCPA - EPA, VCP2 - EPA2)



- (a) Measure the voltage between terminals VCPA and EPA, VCP2 and EPA2 of the ECM connector.

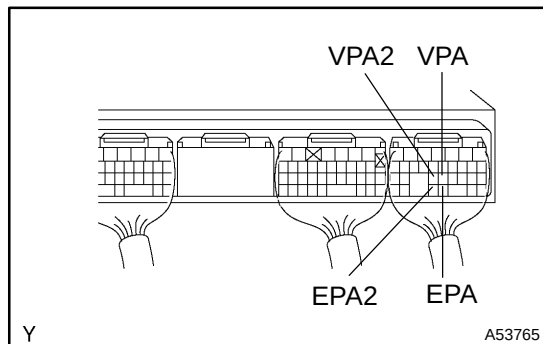
Voltage: 4.5 - 5.5 V

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CHECK AND REPLACE ECM

OK

2 INSPECT ECM(VPA - EPA, VPA2 - EPA2)



- (a) Measure the voltage between terminals VPA and EPA, and VPA2 and EPA2 of the ECM connector.

Accelerator pedal	Voltage	
	VPA - EPA	VPA2 - EPA2
Released	0.5 - 1.1 V	0.9 - 2.3 V
Depressed	3.0 - 4.6 V	3.4 - 5.0 V

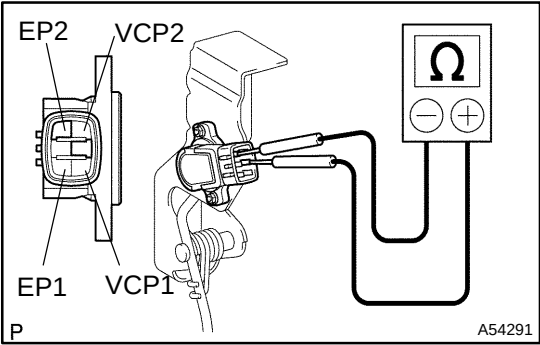
OK

CHECK AND REPLACE ECM

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INSPECT ACCELERATOR PEDAL ASSY(POSITION SENSOR)



- (a) Disconnect the accelerator pedal position sensor connector.
- (b) Using an ohmmeter, measure the resistance between each terminals.

Resistance: at 20°C (68°F)

Terminals	Resistance
VCP1 - EP1	2.25 - 4.75 kΩ
VCP2 - EP2	

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REPLACE ACCELERATOR PEDAL ASSY

OK

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CHECK HARNESS AND CONNECTOR(VCPA,VPA - EPA VCP2,VPA2 - EPA2)

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REPAIR OR REPLACE HARNESS AND CONNECTOR

OK

CHECK AND REPLACE ECM