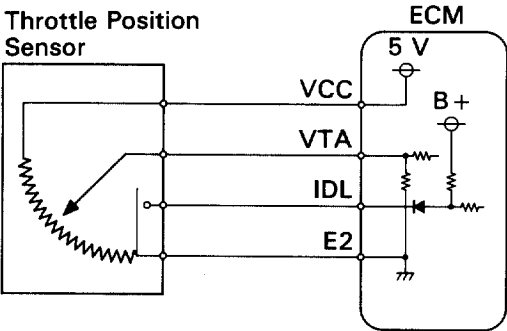


DTC P0120 Throttle Pedal Position Sensor Switch “A” Circuit Malfunction

CIRCUIT DESCRIPTION

The throttle position sensor is mounted in the throttle body and detects the throttle valve opening angle. When the throttle valve is fully closed, the IDL contacts in the throttle position sensor are on, so the voltage at the terminal IDL of the ECM becomes 0 V. At this time, a voltage of approximately 0.3 ~ 0.8 V is applied to terminal VTA of the ECM. When the throttle valve is opened, the IDL contacts go off and thus the power source voltage of approximately 12 V in the ECM is applied to the terminal IDL of the ECM. The voltage applied to the terminal VTA of the ECM increases in proportion to the opening angle of the throttle valve and becomes approximately 3.2 ~ 4.9 V when the throttle valve is fully opened. The ECM judges the vehicle driving conditions from these signals input from terminals VTA and IDL, and uses them as one of the conditions for deciding the air–fuel ratio correction, power increase correction and fuel–cut control etc.



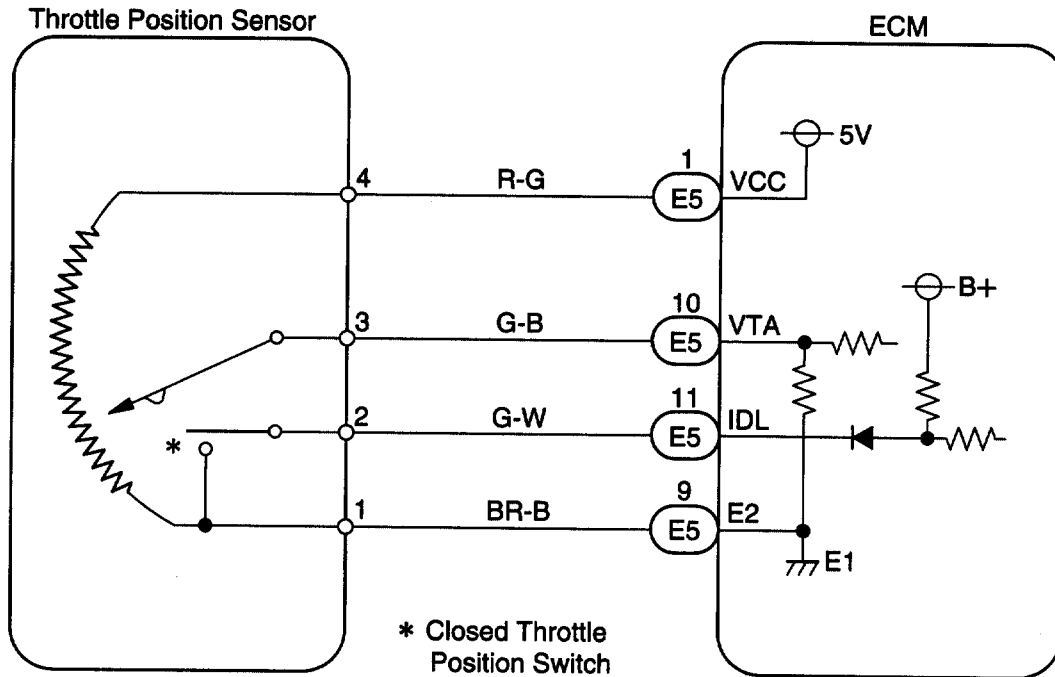
FI6571

DTC No.	Diagnostic Trouble Code Detecting Condition	Trouble Area
P0120	Condition (a) or (b) continues: (a) VTA < 0.1 V, and closed throttle position switch is OFF (b) VTA > 4.9 V	- Open or short in throttle position sensor - Throttle position sensor - ECM

- HINT:
- If there is open circuit in IDL line, diagnostic trouble code P0120 does not indicate.
 - After confirming DTC P0120 use the OBD II scan tool or TOYOTA hand-held tester to confirm the throttle valve opening percentage and closed throttle position switch condition.

Throttle valve opening position expressed as percentage		Trouble Area
Throttle valve fully closed	Throttle valve fully open	
0%	0%	VCC line open VTA line open or short
Approx. 99%	Approx. 100%	E2 line open

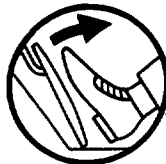
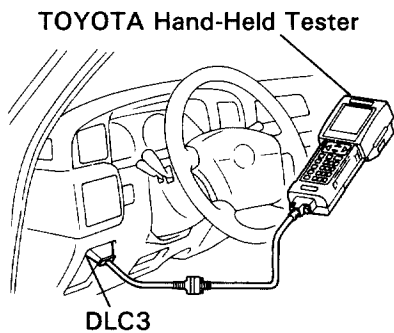
WIRING DIAGRAM



INSPECTION PROCEDURE

HINT: If diagnostic trouble codes P0110, P0115, and P0120 are output simultaneously, E2 (sensor ground) may be open.

1 Connect the OBDII scan tool or TOYOTA hand-held tester and read the throttle valve opening percentage.



BE6653
P22692
FI7052

NG

- P** (1) Remove the fuse cover on the instrument panel.
- (2) Connect the OBDII scan tool or TOYOTA hand-held tester to the DLC 3.
- (2) Turn ignition switch ON and OBD II scan tool or TOYOTA hand-held tester main switch ON.

C Read the throttle valve opening percentage.

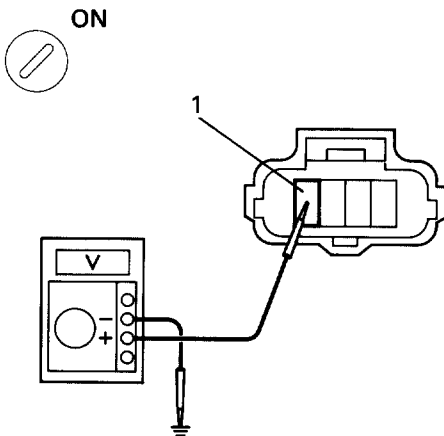
OK

Throttle valve	Throttle valve opening position expressed as percentage
Fully open	Approx. 75%
Fully closed	Approx. 10%

OK

Check for intermittent problems (See page EG-231).

2 Check voltage between terminal 1 or wire harness side connector and body ground.

BE6653
FI7158

OK

- P** (1) Disconnect the throttle position sensor connector.
(2) Turn ignition switch ON.

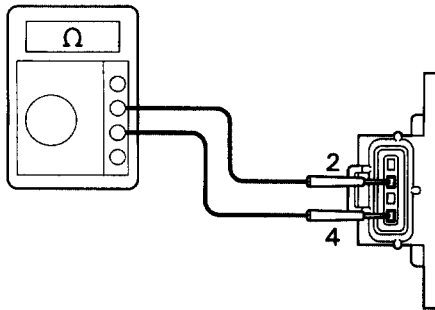
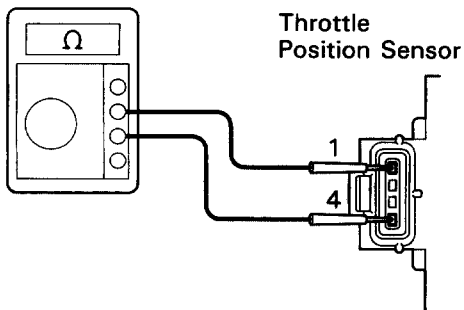
C Measure voltage between terminal 1 of wire harness side connector and body ground.

OK Voltage: 4.5 ~ 5.5 V

NG

Go to step **5**.

3 Check throttle position sensor.

FI7159
FI7160

OK

P Disconnect the throttle position sensor connector.

C Measure resistance between terminals 1, 2 and 4 of throttle position sensor.

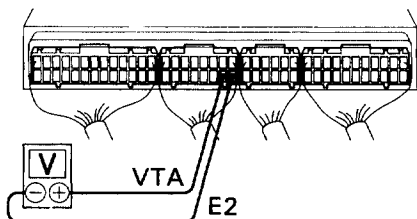
OK

Terminals	Throttle valve	Resistance
1 - 4	—	2.5 ~ 5.9 kΩ
2 - 4	Fully closed	0.2 ~ 5.7 kΩ
	Fully open	2.0 ~ 10.2 kΩ

NG

Replace throttle position sensor.

4 Check voltage between terminals VTA and E2 of ECM.



- P** (1) Remove instrument panel speaker No. 1 panel (See page [EG-173](#)).
 (2) Turn ignition switch ON.

- C** Measure voltage between terminals VTA and E2 of ECM.

OK

Throttle Valve	Voltage
Fully closed	0.3 ~ 0.8 V
Fully open	3.2 ~ 4.9 V

BE6653
P22163

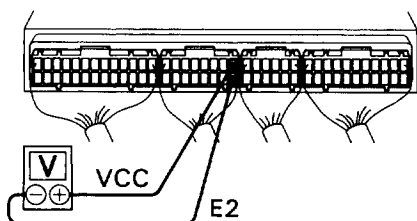
OK

NG

Check for open and short in harness and connector between ECM and throttle position sensor (VTA line) (See page [IN-26](#)).

Check for replace ECM (See page [IN-31](#)).

5 Check voltage between terminals VCC and E2 of ECM.



- P** (1) Remove instrument panel speaker No. 1 panel (See page [EG-173](#)).

- C** Measure voltage between terminals VCC and E2 of engine control module connector.

OK Voltage: 4.6 ~ 5.5 V

BE6653
P22164

OK

NG

Check for replace ECM (See page [IN-31](#)).

Check for open in harness and connector between ECM and sensor (VCC line) (See page [IN-26](#)).