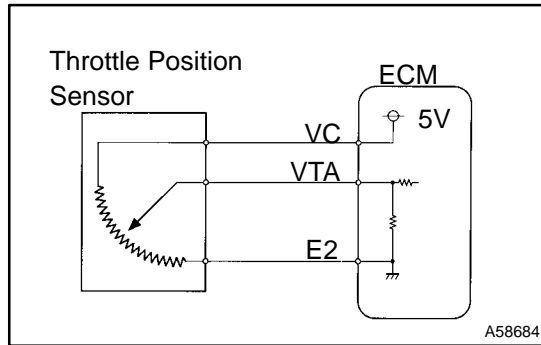


<b>DTC</b>	<b>P0120</b>	<b>THROTTLE/PEDAL POSITION SENSOR/SWITCH "A" CIRCUIT MALFUNCTION</b>
------------	--------------	--

**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, a voltage of approximately 0.3 – 1.0 V is applied to terminal VTA of the ECM. The voltage applied to the terminals 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 terminal VTA, uses it as one of the conditions for deciding the air-fuel ratio correction, power increase correction and fuel-cut control etc.

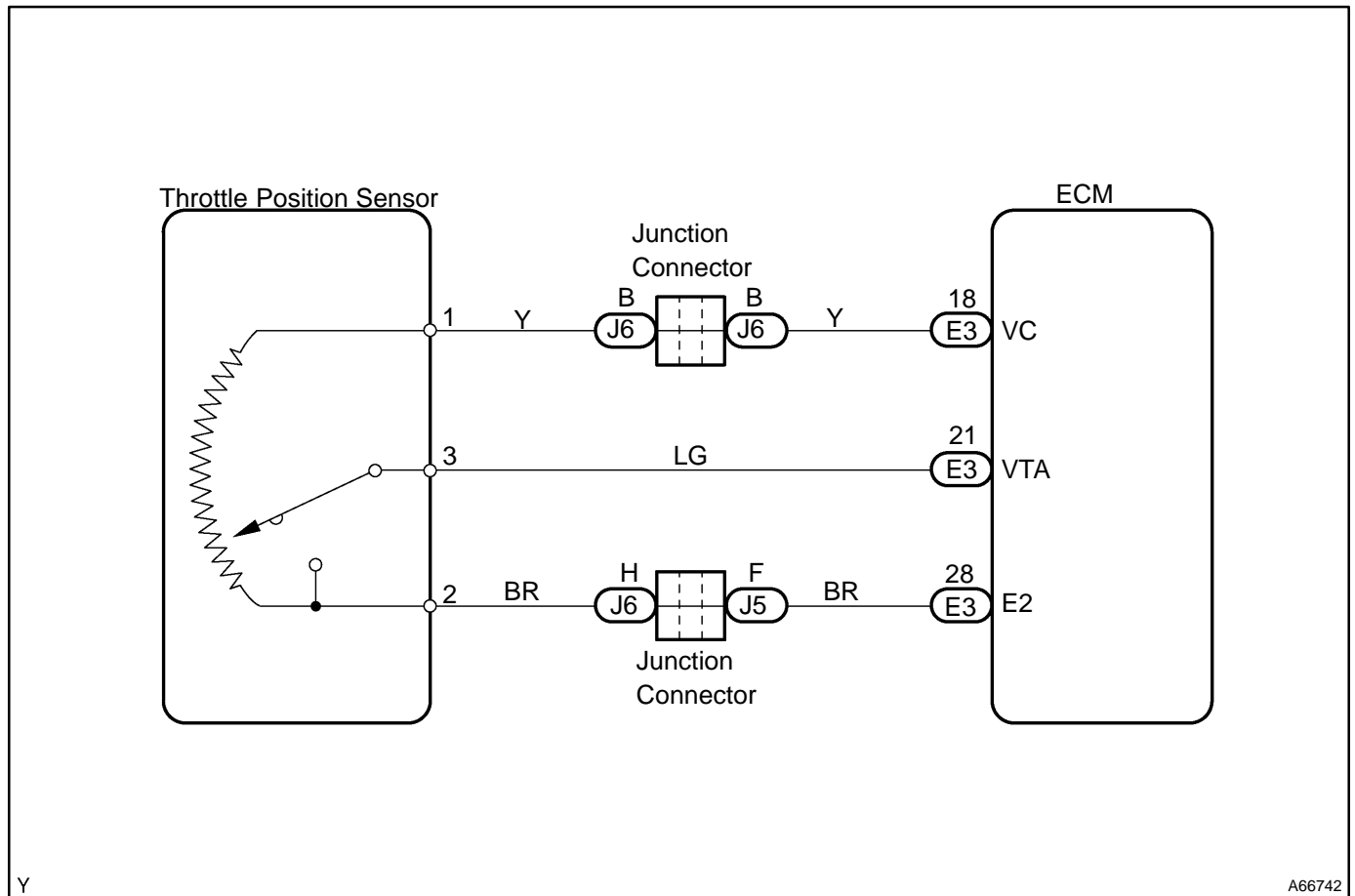
DTC No.	DTC Detecting Condition	Trouble Area
P0120	Condition (1) or (2) continues with more than 5 sec.: 1. VTA < 0.1 V 2. VTA > 4.9 V	<ul style="list-style-type: none"> <li>• Open or short in throttle position sensor</li> <li>• Throttle position sensor</li> <li>• ECM</li> </ul>

**HINT:**

After confirming DTC P0120, use the hand-held tester or OBD II scan tool to confirm the throttle valve opening percentage.

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

## WIRING DIAGRAM

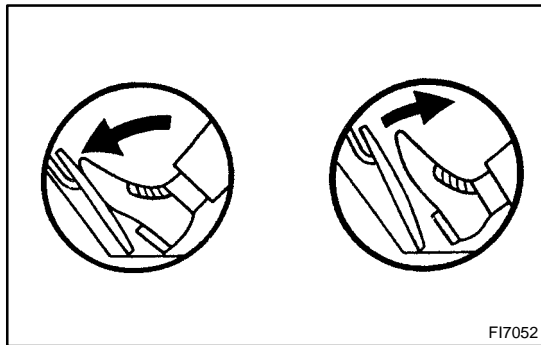


## INSPECTION PROCEDURE

### HINT:

- Read freeze frame data using hand-held tester or OBD II scan tool. Because freeze frame records the engine conditions when the malfunction is detected, when troubleshooting it is useful for determining whether the vehicle was running or stopped, the engine warmed up or not, the air-fuel ratio lean or rich, etc. at the time of the malfunction.
- If DTC P0100 (Mass Air Flow Meter Circuit Malfunction), P0110 (Intake Air Temp. Circuit Malfunction), P0115 (Engine Coolant Temp. Circuit Malfunction), P0120 (Throttle/Pedal Position Sensor/Switch "A" Malfunction) are output simultaneously, E1, E2 (Sensor Ground system) may be open.

**1 READ VALUE OF OBD II SCAN TOOL OR HAND-HELD TESTER(THROTTLE VALVE OPENING PERCENTAGE)**



(a) Read the throttle valve opening percentage.

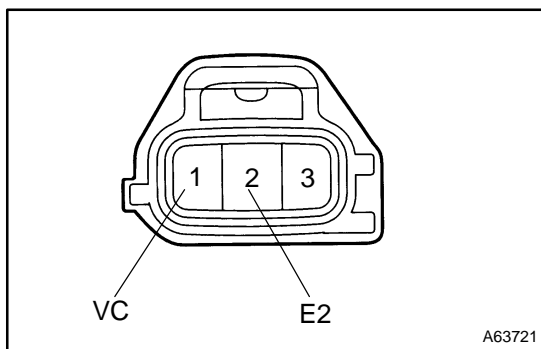
**Result:**

Throttle valve	Throttle valve opening position expressed as percentage
Fully open	Approx. 70 %
Fully closed	Approx. 10 %

**OK** → **CHECK FOR INTERMITTENT PROBLEMS**

**NG**

**2 CHECK HARNESS AND CONNECTOR(CHECK VOLTAGE)**

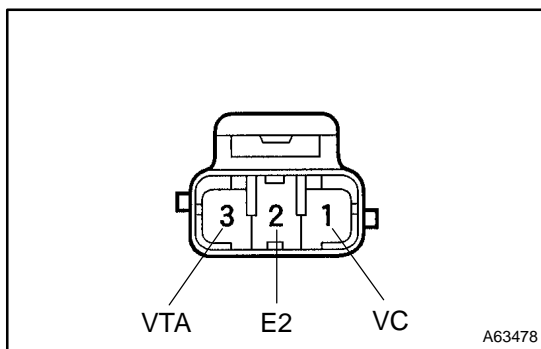


- (a) Disconnect the throttle position sensor connector.
- (b) Turn the ignition switch ON.
- (c) Measure voltage between terminals VC and E2 of the throttle position sensor connector.  
**Voltage: 4.5 – 5.5 V**

**NG** → **Go to step 6**

**OK**

**3 INSPECT E.F.I. THROTTLE POSITION SENSOR**



- (a) Disconnect the throttle position sensor connector.
- (b) Measure resistance between the terminals VC and E2 of the throttle position sensor.
- (c) Measure resistance between the terminals VC and VTA of the throttle position sensor.

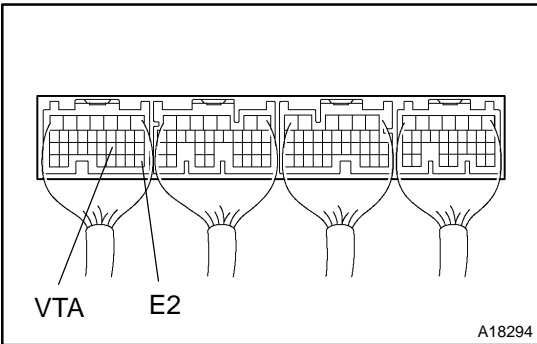
**Resistance:**

Terminals	Throttle valve	Resistance kΩ
1 – 2	—	2.5 – 5.9
1 – 3	Fully closed	0.2 – 5.7
1 – 3	Fully open	2.0 – 10.2

**NG** → **REPLACE E.F.I. THROTTLE POSITION SENSOR**

**OK**

**4 INSPECT ECM(CHECK VOLTAGE)**



- (a) Turn the ignition switch ON.
- (b) Measure voltage between the terminals VTA and E2 of the ECM connector.

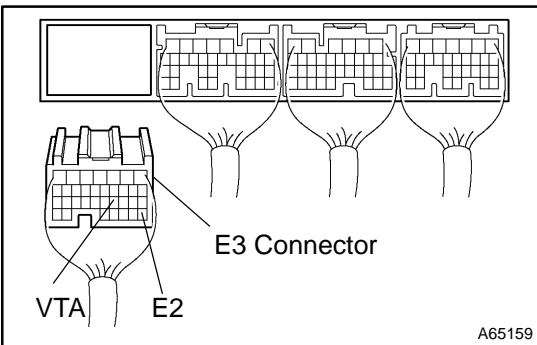
**Voltage:**

Throttle valve	Voltage V
Fully closed	0.3 - 1.0
Fully open	2.7 - 5.2

**OK** → **CHECK AND REPLACE ECM**

**NG**

**5 CHECK HARNESS AND CONNECTOR(ECM-THROTTLE POSITION SENSOR)**

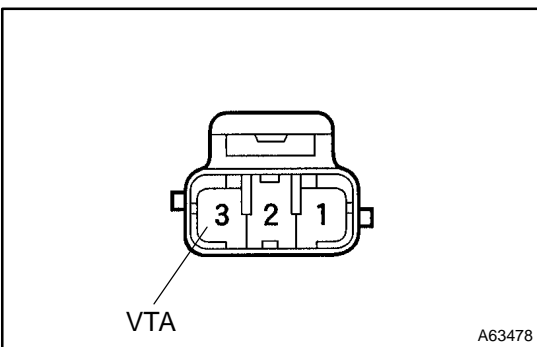


- (a) Disconnect the throttle position sensor connector.
- (b) Disconnect the ECM E3 connector.
- (c) Check continuity between the terminals VTA of the ECM connector and VTA of the throttle position sensor connector.

**Resistance: 1 Ω or less**

- (d) Check for short between the terminals VTA and E2 of the ECM connector.

**Resistance: 1 MΩ or more**

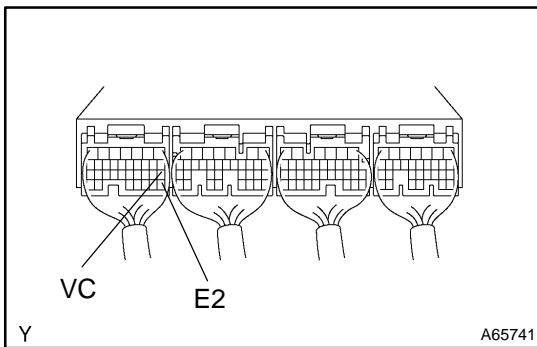


**NG** → **REPAIR OR REPLACE HARNESS AND CONNECTOR**

**OK**

**CHECK AND REPLACE ECM**

## 6 INSPECT ECM(CHECK VOLTAGE)



- Turn the ignition switch ON.
- Measure voltage between terminals VC and E2 of the ECM connector.

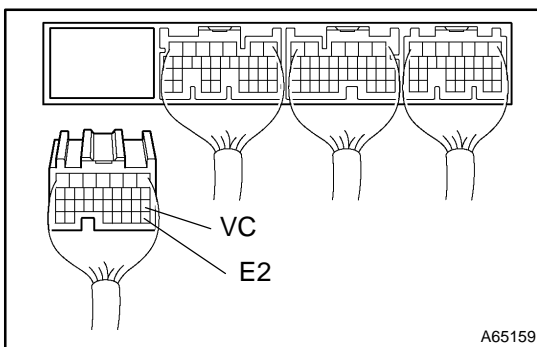
**Voltage: 4.5 – 5.5 V**

OK

CHECK AND REPLACE ECM

NG

## 7 CHECK HARNESS AND CONNECTOR(ECM-THROTTLE POSITION SENSOR)

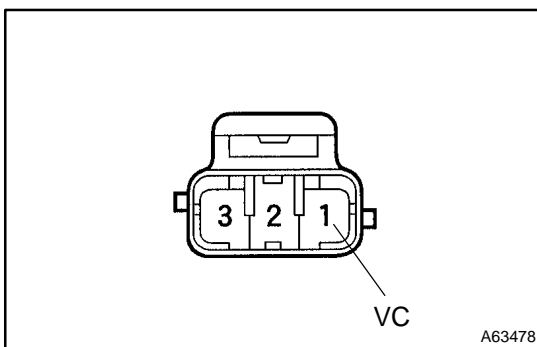


- Disconnect the throttle position sensor connector.
- Disconnect the ECM E3 connector.
- Check continuity between the terminals VC of the ECM connector and VC of the throttle position sensor connector.

**Resistance: 1 Ω or less**

- Check for short between the terminals VC and E2 of the ECM connector.

**Resistance: 1 MΩ or more**



OK

CHECK AND REPLACE ECM

NG

REPAIR OR REPLACE HARNESS AND CONNECTOR