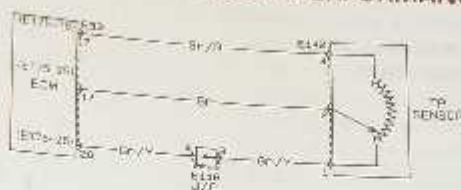


DTC P0121 THROTTLE POSITION CIRCUIT PERFORMANCE PROBLEM

ENGINE 6-61

WIRING DIAGRAM



NOTE
Terminal in () parenthesis is applicable to A/T vehicle only.

CIRCUIT DESCRIPTION

Refer to SECTION 6E1.

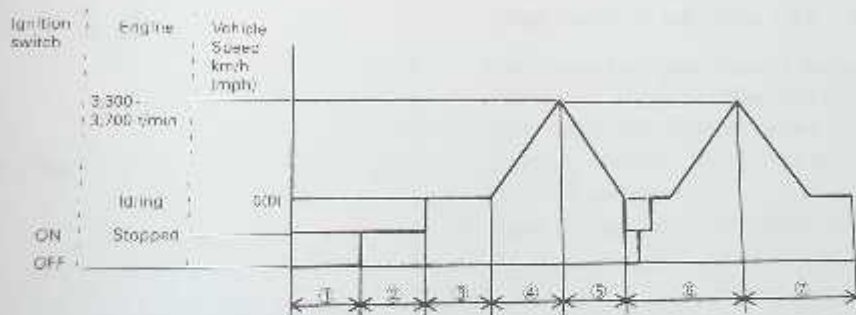
DTC DETECTING CONDITION	TP sensor ECM
Throttle opening is detected as small while engine is running under high load and high speed conditions or as large while it is running under low load and low speed conditions.	

DTC CONFIRMATION PROCEDURE

NOTE:

Check to make sure that following condition is satisfied when using this DTC CONFIRMATION PROCEDURE.

- Atmospheric pressure : higher than 540 mmHg (Altitude : lower than 2,790m (9,150 ft))
- Connect scan tool to DLC with ignition switch OFF.
- Turn ON ignition switch and clear DTC, pending DTC and freeze frame data by using scan tool.
- Start engine and warm up it completely.
- Increase vehicle speed till engine speed is reached 3,300--3,700 r/min.
- Release accelerator pedal, stop vehicle, run engine at idle speed for 5 sec. and turn OFF ignition switch.
- Turn ON ignition switch, start engine and repeat step (4).
- Release accelerator pedal, stop vehicle, run engine at idle speed for 5 sec. and check DTC by using scan tool.



VA-4-057

A gift from Germany.

12/06/2013

TROUBLESHOOTING

NOTE:

Troubleshoot DTC P0122 or 123 first when either one was displayed together with DTC P0121.

Inspect TP sensor referring to p.6-63.
Is it in good condition?

YES

Substitute a known-good ECM referring to p.6-30 and recheck.

NO

Adjust or replace TP sensor.

12/06/2013



THROTTLE POSITION SENSOR (TP SENSOR)

Inspection [Using SUZUKI scan tool]

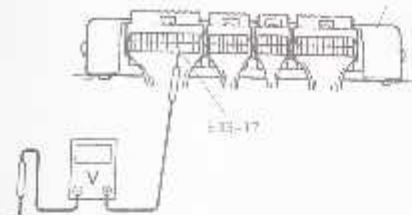
- 1) Connect SUZUKI scan tool to DLC with ignition switch OFF.
- 2) Warm up engine and stop it when its temperature has reached normal operating temperature (Check to make sure that they have some clearance between fast idle cam and cam follow lever).
- 3) Check "THROT POS SENSOR" value displayed on scan tool under following condition.

When throttle is fully close : 0.50 ± 0.15 V

When throttle is fully open : 4.0 ± 0.5 V

If measured value is out of above specified range, adjust installation angle of TP sensor referring to Section 6E1. Also check that "THROT POS SENSOR" value varies according to throttle valve opening linearly. If not, it is possible that TP sensor has failed. Replace.

M/T vehicle



Inspection [Not using SUZUKI scan tool]

- 1) Remove ECM referring to Section 6E1.
- 2) Warm up engine and stop it when its temperature has reached normal operating temperature (Check to make sure that they have some clearance between fast idle cam and cam follow lever).
- 3) Using voltmeter, check voltage at "E33-17 (E175-25)" terminal under following each condition.

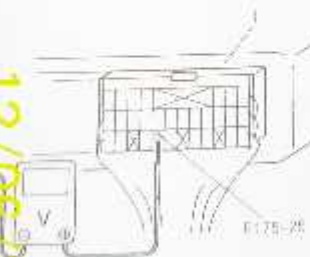
When throttle is fully close : 0.50 ± 0.15 V

When throttle is fully open : 4.0 ± 0.5 V

If measured voltage is out of above specified range, adjust installation angle of TP sensor referring to Section 6E1. Also check that voltage varies according to throttle valve opening linearly. If not, it is possible that TP sensor has failed. Replace.

- 4) Upon completion of checking, install ECM.

A/T vehicle



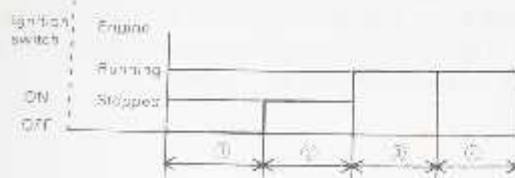
DTC P0122 THROTTLE POSITION CIRCUIT LOW INPUT**WIRING DIAGRAM/ CIRCUIT DESCRIPTION**

Refer to previous page (DTC P0121).

DTC DETECTING CONDITION	TROUBLE AREA
Following condition is detected for 1 sec, continuously. TP sensor output voltage < 0.1V	• TP sensor circuit open or short • TP sensor • ECM

DTC CONFIRMATION PROCEDURE

- ① Connect scan tool to DLC with ignition switch OFF.
- ② Turn ON ignition switch and clear DTC, pending DTC and freeze frame data by using scan tool.
- ③ Start engine and run it for 10 sec.
- ④ Check DTC by using scan tool.



VA-R 042

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TROUBLESHOOTING

1. Disconnect TP sensor coupler with ignition switch OFF.
2. With ignition switch ON, is voltage applied to "Gr/R" wire terminal of TP sensor coupler about 4-5 V?



VA-6-256

YES

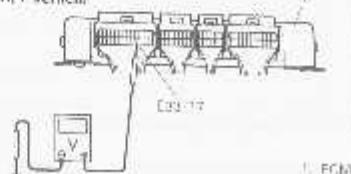
1. Connect TP sensor coupler with ignition switch OFF.
2. Remove ECM and connect ECM couplers with ignition switch OFF.
3. Check voltage between E33-17 (E175-25) terminal and body ground with ignition switch ON while throttle valve moves idle to full open position.

NO

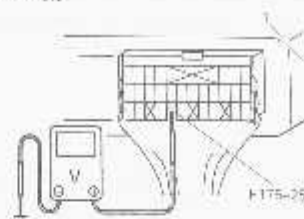
"Gr/R" wire open, "Gr/R" wire shorted to ground circuit or "Gr/Y" wire, or prior E33-7 (E175-18) connection.

If wire and connections are OK, substitute a known good ECM and recheck.

M/T vehicle



A/T vehicle



VA-6-259

E33-17 (E175-25) terminal voltage is:
 0.50 ± 0.15 V at throttle valve is fully close
 4.0 ± 0.5 V at throttle valve is fully open.

Substitute a known-good ECM referring to p.6-30 and recheck.

E33-17 (E175-25) terminal voltage is about 0.1 V continuously.

"Gr" wire shorted to "Gr/Y" wire circuit or ground.

Other

Maladjusted TP sensor or faulty TP sensor.

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DTC P0123 THROTTLE POSITION CIRCUIT HIGH INPUT

WIRING DIAGRAM/ CIRCUIT DESCRIPTION

Refer to previous page (DTC P0121).

DTC DETECTING CONDITION	TROUBLE AREA
Following condition is detected for 1 sec. continuously. TP sensor output voltage > 4.8 V	- TP sensor circuit open or short - TP sensor - ECM

DTC CONFIRMATION PROCEDURE

Refer to previous page (DTC P0122).

TROUBLESHOOTING

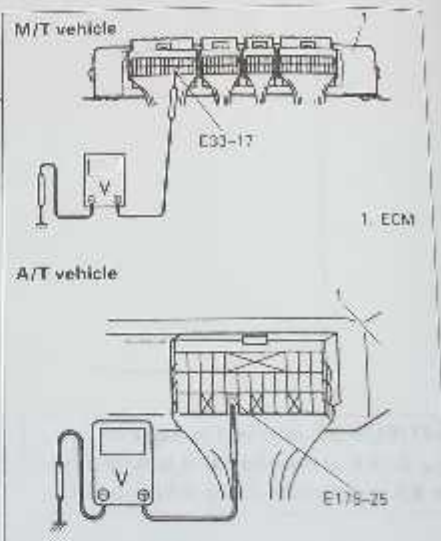
1. Disconnect TP sensor coupler with ignition switch OFF.
2. Check voltage between "Gr/R" wire terminal and "Gr/Y" wire terminal of disconnected TP sensor coupler with ignition switch ON.
3. Is it about 4-5 V?

YES

1. Connect TP sensor coupler with ignition switch OFF.
2. Remove ECM and connect ECM couplers with ignition switch OFF.
3. Check voltage between E33-17 (E175-25) terminal and body ground with ignition switch ON while throttle valve moves idle to full open position.

NO

"Gr/Y" wire open, poor E33-20 (E175-26) connections, poor J/C E116 connection or "Gr/R" wire shorted to power circuit.



VA-6-159

E33-17 (E175-25) terminal voltage is:
 0.50 ± 0.15 V at throttle valve is fully close
 4.0 ± 0.5 V at throttle valve is fully open.

Poor E33-17 (E175-25) connection.
If connect OK, substitute a known good ECM referring to p.6-30 and re-check.

E33-17 (E175-25) terminal voltage is about 4-5 V continuously.

"Gr" wire open or shorted to "Gr/R" wire circuit or poor TP sensor coupler connection.

Other

Maladjusted TP sensor or faulty TP sensor.

ECM SUBSTITUTION

When substituting a known-good ECM, check for following conditions. Neglecting this check may cause damage to known-good ECM.

- Resistance value of all relays, actuators is as specified respectively.
- MAF sensor, manifold differential pressure sensor, TP sensor and fuel tank pressure sensor are in good condition and none of power circuits of these sensors is shorted to ground.

INSPECTION OF ECM AND ITS CIRCUITS

ECM and its circuits can be checked at ECM wiring couplers by measuring voltage and resistance.

CAUTION

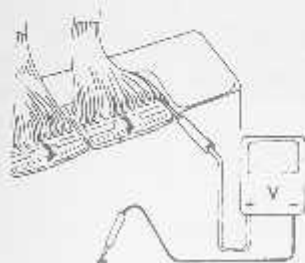
ECM cannot be checked by itself. It is strictly prohibited to connect voltmeter or ohmmeter to ECM with couplers disconnected from it.

VOLTAGE CHECK

- 1) Remove ECM from body referring to Section 6E1.
- 2) Connect ECM couplers to ECM.
- 3) Check voltage at each terminal of couplers connected.

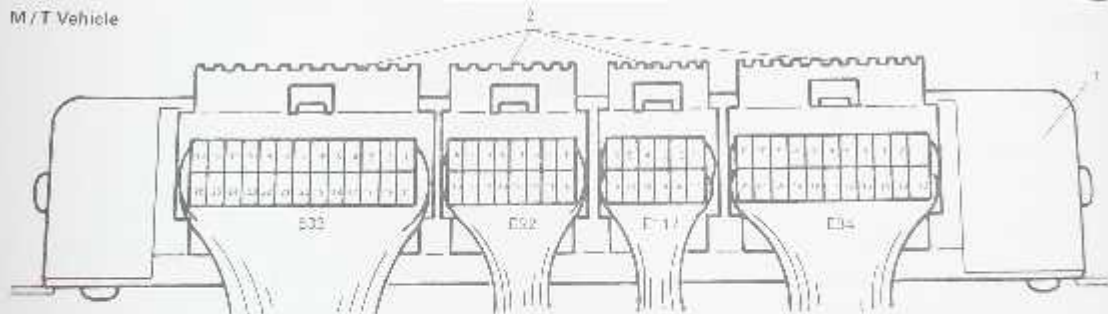
NOTE:

As each terminal voltage is affected by the battery voltage, confirm that it is 11V or more when ignition switch is ON.

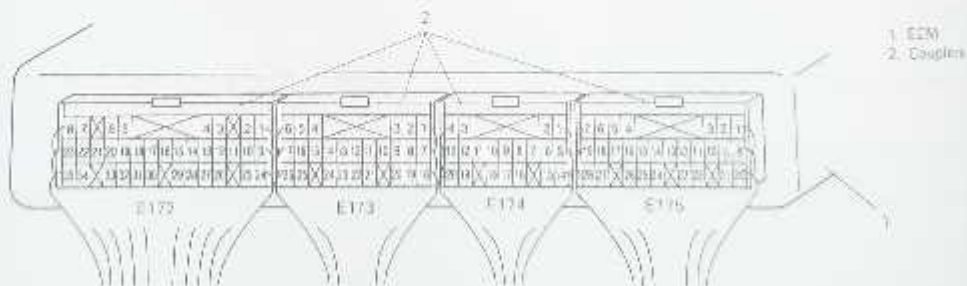


VAEC-6

M/T Vehicle



4-A/T Vehicle



12/06/2013

THROTTLE POSITION SENSOR (TP SENSOR)

Adjustment

- 1) Warm up engine to normal operating temperature.
- 2) Check to make sure that fast idle cam and cam follower lever are not in contact with each other. If they are, check fast idle control system.

3) Loosen TP sensor screws.

4) Remove ECM as previously outlined and with couplers connected to ECM, connect digital type voltmeter as shown.

5) Turn TP sensor clockwise or counterclockwise and tighten TP sensor screw at a position where voltage as specified below is obtained at coupler terminal E33-17 (E175-25).

NOTE:

If tech 1 and cartridge are available, it is not necessary to remove ECM. Make an adjustment by using tech 1 while observing TP sensor voltage.

TP sensor voltage when throttle is fully close : 0.50 ± 0.15 V

Tightening Torque

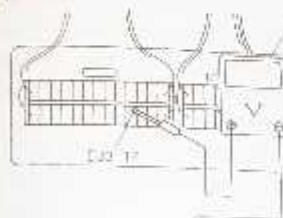
(a) : $2.5 \text{ N} \cdot \text{m}$ (0.25 kg-m, 1.8 lb-ft)

6) Check to make sure that when throttle is fully open TP sensor voltage is as shown below.

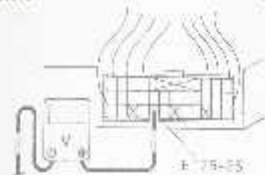
TP sensor voltage when throttle is fully open : 4.0 ± 0.5 V

7) Install ECM.

M/T Vehicle



A/T Vehicle



1. Digital type voltmeter

Voltmeter



Tech 1

