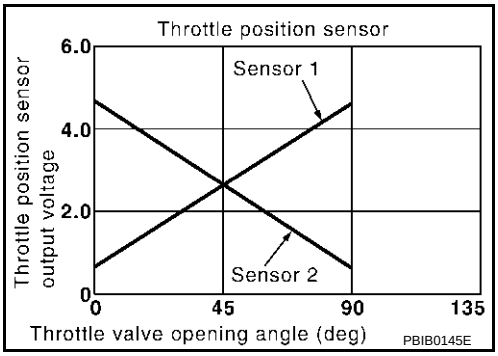
DTC P2135 TP SENSOR

Component Description

INFOID:0000000004409018

Electric throttle control actuator consists of throttle control motor, throttle position sensor, etc. The throttle position sensor responds to the throttle valve movement.
The throttle position sensor has two sensors. These sensors are a kind of potentiometers which transform the throttle valve position into output voltage, and emit the voltage signal to the ECM. The ECM judges the current opening angle of the throttle valve from these signals and controls the throttle valve opening sngle in response to driving conditions via the throttle control motor.



CONSULT-III Reference Value in Data Monitor Mode

INFOID:0000000004409019

Specification data are reference values.

MONITOR ITEM	CONDITION		SPECIFICATION
TP SEN 1-B1 TP SEN 2-B2*	• Ignition switch: ON (Engine stopped)	Accelerator pedal: Fully released	More than 0.36 V
	• Selector lever: D (CVT), 1st (M/T)	Accelerator pedal: Fully depressed	Less than 4.75 V

*: Throttle position sensor 2 signal is converted by ECM internally. Thus, it differs from ECM terminal voltage signal.

On Board Diagnosis Logic

INFOID:0000000004409020

This self-diagnosis has the one trip detection logic.
NOTE:
If DTC P2135 is displayed with DTC P0643, firs t perform the trouble diagnosis for DTC P0643.
Refer to EC-1496.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P2135 2135	Throttle position sensor circuit range/performance	Rationally incorrect voltage is sent to ECM compared with the signals from TP sensor 1 and TP sensor 2.	• Harness or connector (TP sensor 1 or 2 circuit is open or shorted.) • Electric throttle control actuator (TP sensor 1 or 2)

FAIL-SAFE MODE

When the malfunction is detected, the ECM enters fail-safe mode and the MIL illuminates.

Engine operation condition in fail-safe mode
The ECM controls the electric throttle control actuator in regulating the throttle opening in order for the idle position to be within +10 degrees. The ECM regulates the opening speed of the throttle valve to be slower than the normal condition. So, the acceleration will be poor.

DTC Confirmation Procedure

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NOTE:
If DTC Confirmation Procedure has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.
TESTING CONDITION:
Before performing the following procedure, confirm that battery voltage is more than 8 V at idle.

1. Start engine and let it idle for 1 second.
2. Check DTC.
3. If DTC is detected, go to EC-1580, "Diagnosis Procedure".

Wiring Diagram

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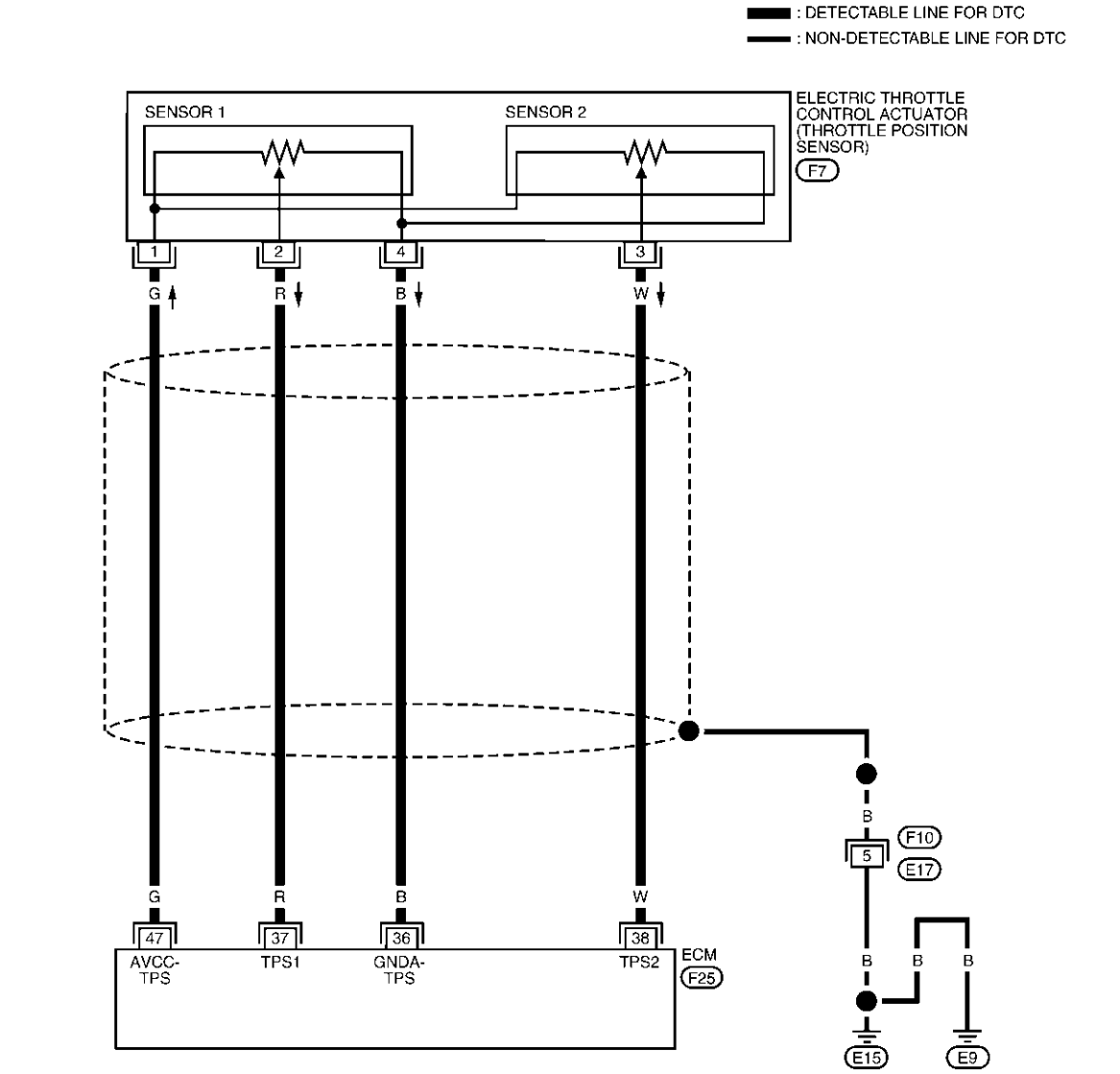
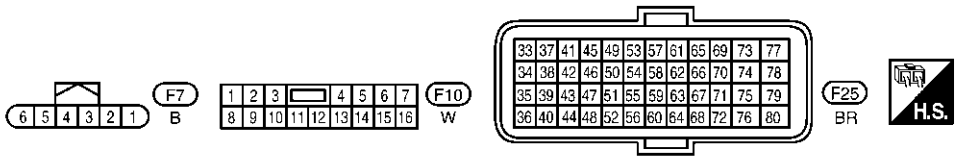
EC-TPS3-01





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Specification data are reference values and are measured between each terminal and ground.

CAUTION:

Never use ECM ground terminals wh en measuring input/outp ut voltage. Doing so may result in damage to the ECM's transistor. Use a ground ot her than ECM terminals, such as the ground.

TER-MI-NAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
36	B	Sensor ground (Throttle position sensor)	[Engine is running] • Warm-up condition • Idle speed	Approximately 0 V
37	R	Throttle position sensor 1	[Ignition switch: ON] • Engine stopped • Selector lever: D (CVT), 1st (M/T) • Accelerator pedal: Fully released	More than 0.36 V
			[Ignition switch: ON] • Engine stopped • Selector lever: D (CVT), 1st (M/T) • Accelerator pedal: Fully depressed	Less than 4.75 V
38	W	Throttle position sensor 2	[Ignition switch: ON] • Engine stopped • Selector lever: D (CVT), 1st (M/T) • Accelerator pedal: Fully released	Less than 4.75 V
			[Ignition switch: ON] • Engine stopped • Selector lever: D (CVT), 1st (M/T) • Accelerator pedal: Fully depressed	More than 0.36 V
47	G	Sensor power supply (Throttle position sensor)	[Ignition switch: ON]	Approximately 5 V

Diagnosis Procedure

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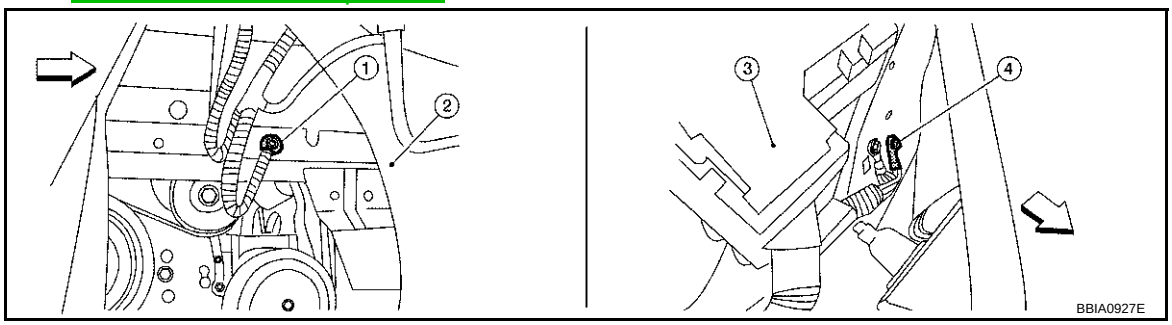
1.CHECK GROUND CONNECTIONS

1. Turn ignition switch OFF.
2. Loosen and retighten ground screws on the body.
   Refer to EC-1218, "Ground Inspection".



⇦: Vehicle front

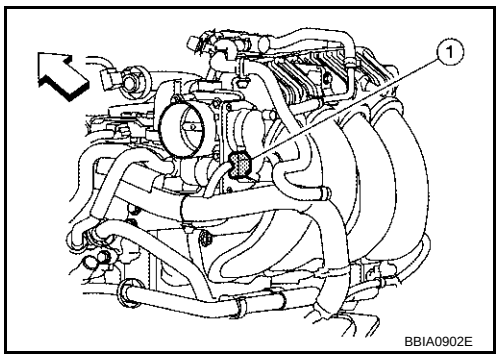
1. Body ground E9 (view with front wheel RH and fender protector RH removed.)
2. Washer tank
3. Fuse and fusible link box
4. Body ground E15

OK or NG

OK >> GO TO 2.
NG >> Repair or replace ground connections.

2.CHECK THROTTLE POSITION SENSOR POWER SUPPLY CIRCUIT

1. Disconnect electric throttle control actuator harness connector (1).
- ⇦: Vehicle front
2. Turn ignition switch ON.

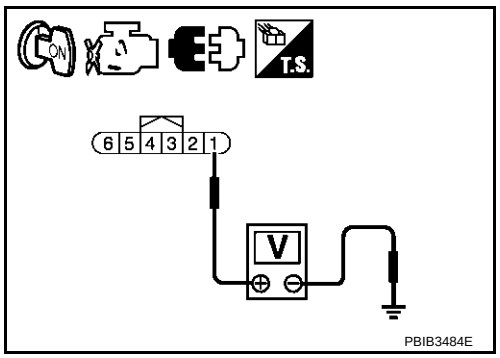


3. Check voltage between electric throttle control actuator terminal 1 and ground with CONSULT-III or tester.

Voltage: Approximately 5 V

OK or NG

OK >> GO TO 3.
NG >> Repair open circuit or short to ground or short to power in harness or connectors.



3. CHECK THROTTLE POSITION SENSOR GROUND CIRCUIT FOR OPEN AND SHORT

1. Turn ignition switch OFF.
2. Disconnect ECM harness connector.
3. Check harness continuity between electric throttle control actuator terminal 4 and ECM terminal 36. Refer to Wiring Diagram.

Continuity should exist.

4. Also check harness for short to ground and short to power.

OK or NG

OK >> GO TO 4.
NG >> Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK THROTTLE POSITION SENSOR INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

1. Check harness continuity between the following;
electric throttle control actuator terminal 2 and ECM terminal 37,
electric throttle control actuator terminal 3 and ECM terminal 38.
Refer to Wiring Diagram.

Continuity should exist.

2. Also check harness for short to ground and short to power.

OK or NG

OK >> GO TO 5.
NG >> Repair open circuit or short to ground or short to power in harness or connectors.

5. CHECK THROTTLE POSITION SENSOR

Refer to EC-1582, "Component Inspection".

OK or NG

OK >> GO TO 7.
NG >> GO TO 6.

6. REPLACE ELECTRIC THROTTLE CONTROL ACTUATOR

1. Replace the electric throttle control actuator.
2. Perform EC-1159, "Throttle Valve Closed Position Learning".

3. Perform EC-1159, "Idle Air Volume Learning".

>> INSPECTION END

7. CHECK INTERMITTENT INCIDENT

Refer to EC-1212.

>> INSPECTION END

Component Inspection

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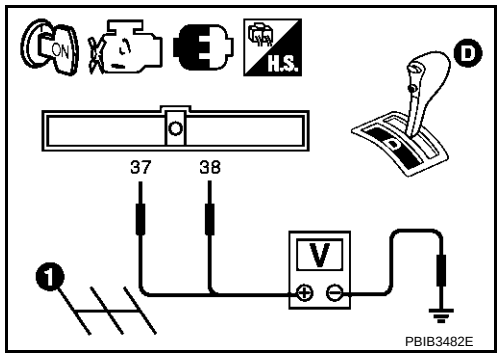
THROTTLE POSITION SENSOR

1. Reconnect all harness connectors disconnected.
2. Perform EC-1159, "Throttle Valve Closed Position Learning".
3. Turn ignition switch ON.
4. Set selector lever to D position (CVT) or 1st position (M/T).
5. Check voltage between ECM terminals 37 (TP sensor 1 signal), 38 (TP sensor 2 signal) and ground under the following conditions.

Terminal	Accelerator pedal	Voltage
37 (Throttle position sensor 1)	Fully released	More than 0.36 V
	Fully depressed	Less than 4.75 V
38 (Throttle position sensor 2)	Fully released	Less than 4.75 V
	Fully depressed	More than 0.36 V



6. If NG, replace electric throttle control actuator and go to the next step.
7. Perform EC-1159, "Throttle Valve Closed Position Learning".
8. Perform EC-1159, "Idle Air Volume Learning".

Removal and Installation

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ELECTRIC THROTTLE CONTROL ACTUATOR

Refer to EM-133.