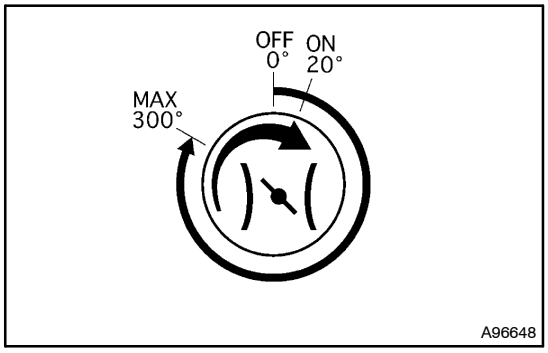
DTC	P1143/19	IDLE VARIABLE RESISTOR SWITCH CIRCUIT MALFUNCTION (SHORT)

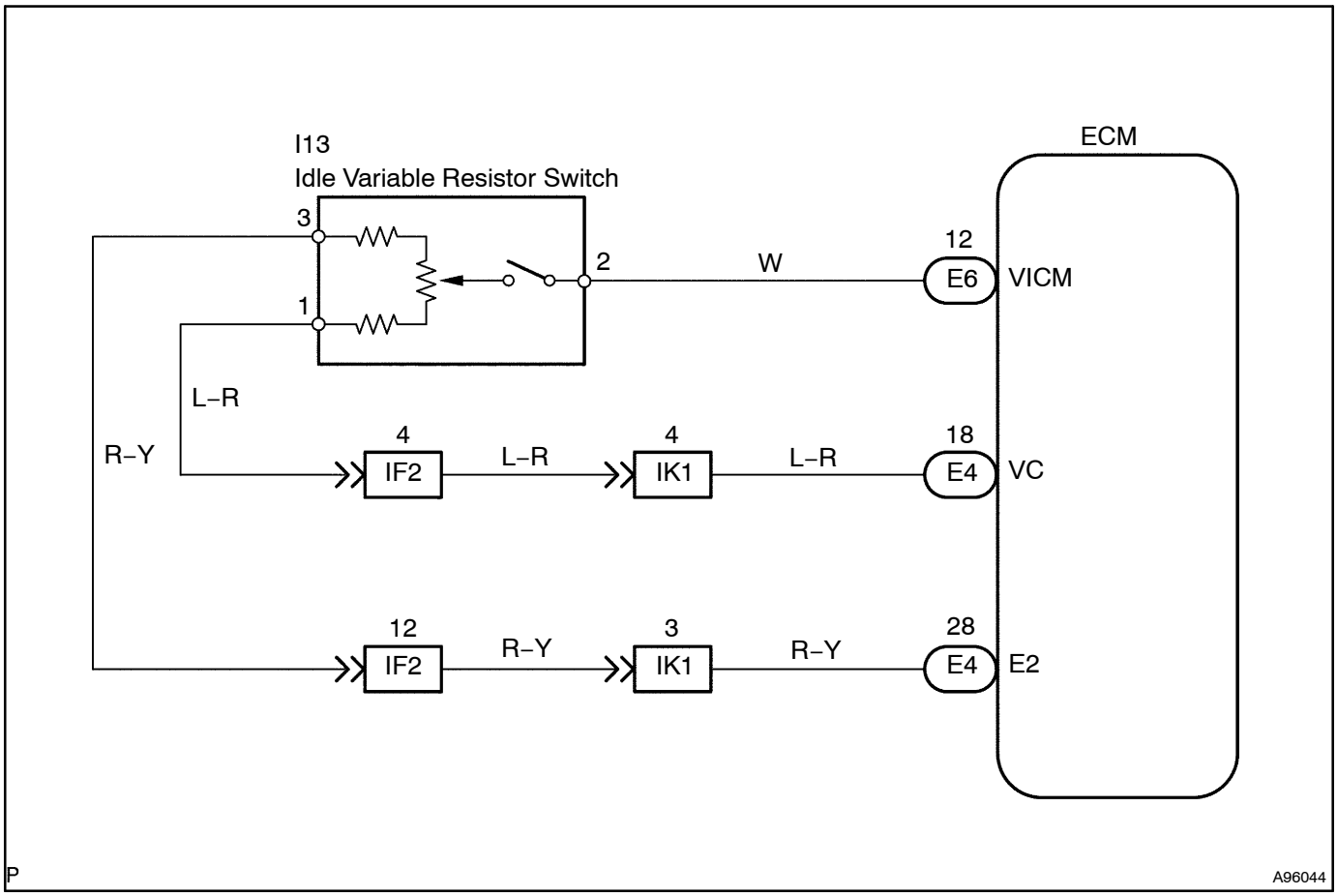
CIRCUIT DESCRIPTION



The throttle knob (idle variable resistor switch) is on the instrument panel. The drives use the knob to idle up the engine with manual operation. Turn the switch 20° clockwise to start idling. When turning the switch 300° clockwise, the idling will become the maximum speed.
If the switch circuit is shorted, DTC P1143/19 will be output.

DTC No.	DTC Detection Condition	Trouble Area
P1143/19	Conditions (a) and (b) continue for 3 seconds or more: (a) Ignition switch ON (b) Short in idle variable resistor switch circuit	• Short in idle variable resistor switch circuit • Idle variable resistor switch • ECM

WIRING DIAGRAM



INSPECTION PROCEDURE

HINT:
Read freeze frame data using the hand–held tester. Freeze frame data records the engine conditions when a malfunction is detected. When troubleshooting, freeze frame data can help determine if the vehicle was running or stopped, if the engine was warmed up or not, if the air–fuel ratio was lean or rich, and other data from the time the malfunction occurred.

When using hand–held tester:

1	READ VALUE OF DATA LIST

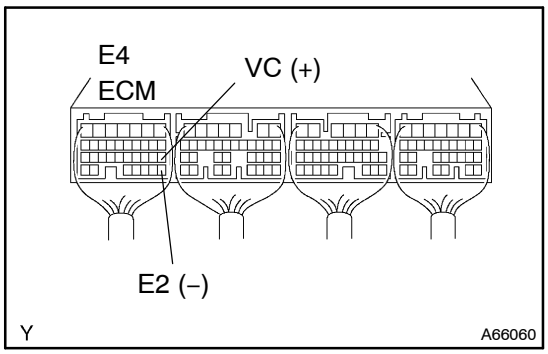
(a) Connect the hand–held tester to the DLC3.
(b) Start the engine.
(c) Turn the hand–held tester ON.
(d) On the hand–held tester, enter the following menus: DIAGNOSIS / OBD/MOBD / DATA LIST / ALL / THROTTLE KNOB. Read the values.
Standard:

Idle Variable Resistor Switch Condition	Specified Condition
ON → MAX	0.5 to 0.9 V → 4.0 to 4.5 V (voltage changes constantly)

OK → **CHECK FOR INTERMITTENT PROBLEMS (See page 05–10)**

NG

2	CHECK ECM (VC VOLTAGE)



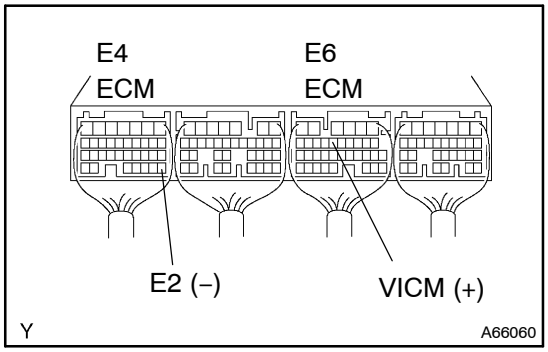
(a) Turn the ignition switch ON.
(b) Measure the voltage of the ECM connector.
Standard:

Tester Connection	Specified Condition
E4–18 (VC) – E4–28 (E2)	4.5 to 5.5 V

NG → **REPLACE ECM (See page 10–10)**

OK

3 CHECK ECM (VICM VOLTAGE)



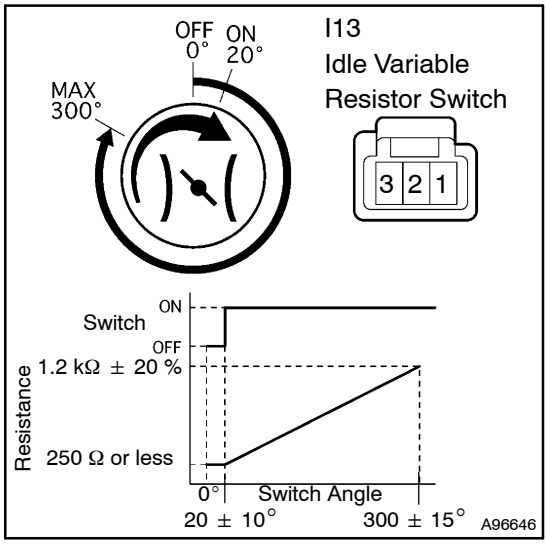
(a) Turn the ignition switch ON.
(b) Measure the voltage of the ECM connectors.
Standard:

Tester Connection	Idle Variable Resistor Switch Condition	Specified Condition
E6–12 (VICM) – E4–28 (E2)	ON	0.5 to 0.9 V
E6–12 (VICM) – E4–28 (E2)	MAX	4.0 to 4.5 V
E6–12 (VICM) – E4–28 (E2)	ON → MAX	0.5 to 0.9 → 4.0 to 4.5 V (voltage changes constantly)

OK → **REPLACE ECM (See page 10–10)**

NG

4 INSPECT IDLE VARIABLE RESISTOR SWITCH



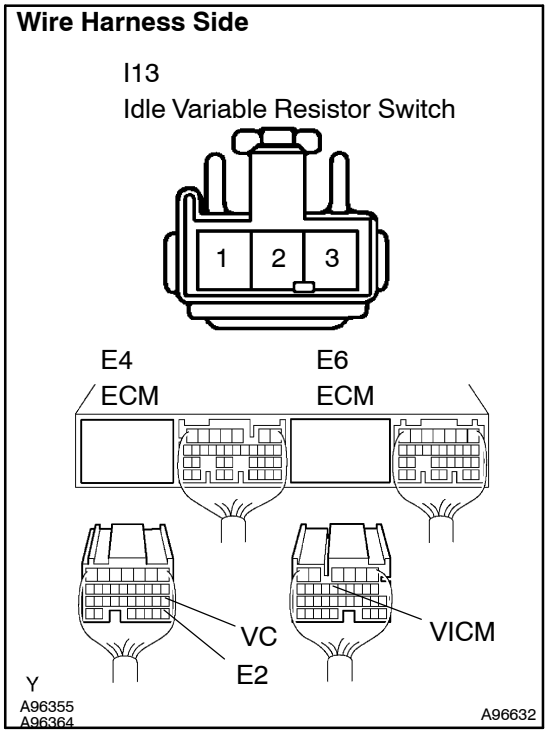
(a) Disconnect the I13 switch connector.
(b) Measure the resistance of the switch.
Standard:

Tester Connection	Idle Variable Resistor Switch Condition	Specified Condition
I13–2 – I13–3	ON	250 Ω
I13–2 – I13–3	MAX	1.2 kΩ
I13–2 – I13–3	ON → MAX	Resistance changes constantly

NG → **REPLACE IDLE VARIABLE RESISTOR SWITCH**

OK

5	CHECK WIRE HARNESS (ECM – IDLE VARIABLE RESISTOR SWITCH)



(a) Disconnect the I13 switch connector.
(b) Disconnect the E4 and E6 ECM connectors.
(c) Measure the resistance of the wire harness side connectors.

Standard:

Tester Connection	Specified Condition
E4–18 (VC) – I13–1 E4–28 (E2) – I13–3 E6–12 (VICM) – I13–2	Below 1 Ω
E4–18 (VC) or I13–1 – Body ground E4–28 (E2) or I13–3 – Body ground E6–12 (VICM) or I3–2 – Body ground	10 kΩ or higher

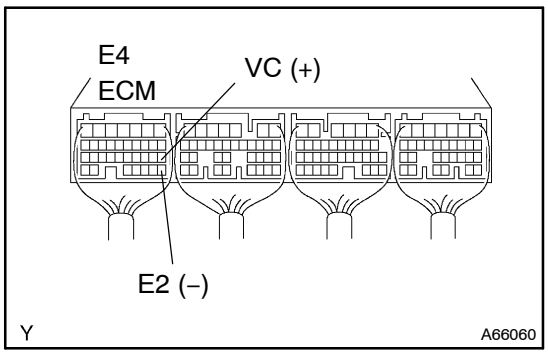
NG → **REPAIR OR REPLACE HARNESS AND CONNECTOR**

OK

REPLACE ECM (See page 10–10)

When not using hand–held tester:

1	CHECK ECM (VC VOLTAGE)



(a) Turn the ignition switch ON.
(b) Measure the voltage of the ECM connector.

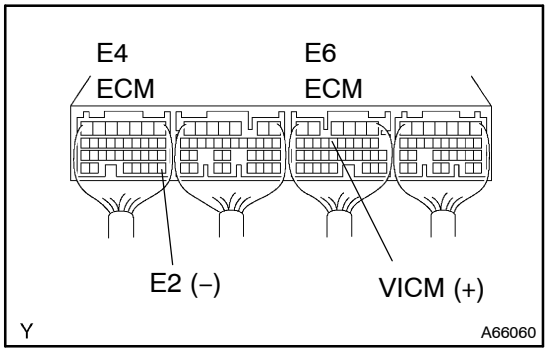
Standard:

Tester Connection	Specified Condition
E4–18 (VC) – E4–28 (E2)	4.5 to 5.5 V

NG → **REPLACE ECM (See page 10–10)**

OK

2 CHECK ECM (VICM VOLTAGE)



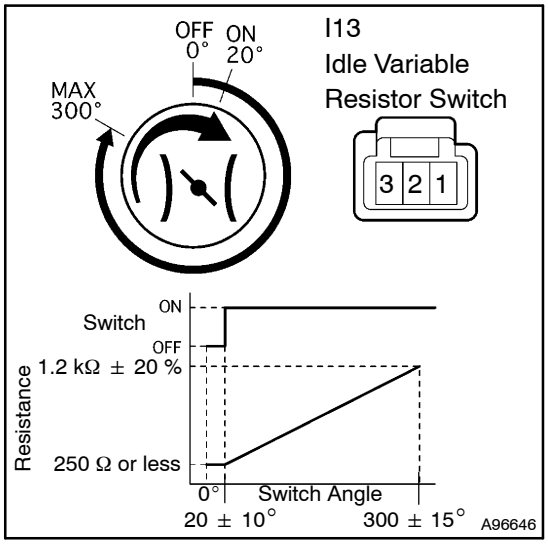
(a) Turn the ignition switch ON.
(b) Measure the voltage of the ECM connectors.
Standard:

Tester Connection	Idle Variable Resistor Switch Condition	Specified Condition
E6–12 (VICM) – E4–28 (E2)	ON	0.5 to 0.9 V
E6–12 (VICM) – E4–28 (E2)	MAX	4.0 to 4.5 V
E6–12 (VICM) – E4–28 (E2)	ON → MAX	0.5 to 0.9 → 4.0 to 4.5 V (voltage changes constantly)

OK → **REPLACE ECM (See page 10–10)**

NG

3 INSPECT IDLE VARIABLE RESISTOR SWITCH



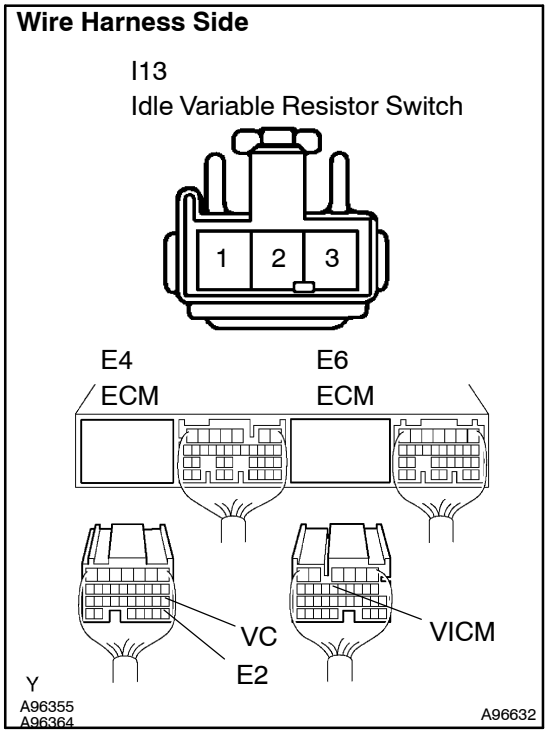
(a) Disconnect the I13 switch connector.
(b) Measure the resistance of the switch.
Standard:

Tester Connection	Idle Variable Resistor Switch Condition	Specified Condition
I13–2 – I13–3	ON	250 Ω
I13–2 – I13–3	MAX	1.2 kΩ
I13–2 – I13–3	ON → MAX	Resistance changes constantly

NG → **REPLACE IDLE VARIABLE RESISTOR SWITCH**

OK

4 CHECK WIRE HARNESS (ECM – IDLE VARIABLE RESISTOR SWITCH)



(a) Disconnect the I13 switch connector.
(b) Disconnect the E4 and E6 ECM connectors.
(c) Measure the resistance of the wire harness side connectors.

Standard:

Tester Connection	Specified Condition
E4 – 18 (VC) – I13 – 1 E4 – 28 (E2) – I13 – 3 E6 – 12 (VICM) – I13 – 2	Below 1 Ω
E4 – 18 (VC) or I13 – 1 – Body ground E2 (E4 – 28) or I13 – 3 – Body ground VICM (E6 – 12) or I3 – 2 – Body ground	10 kΩ or higher

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

OK

REPLACE ECM (See page 10–10)