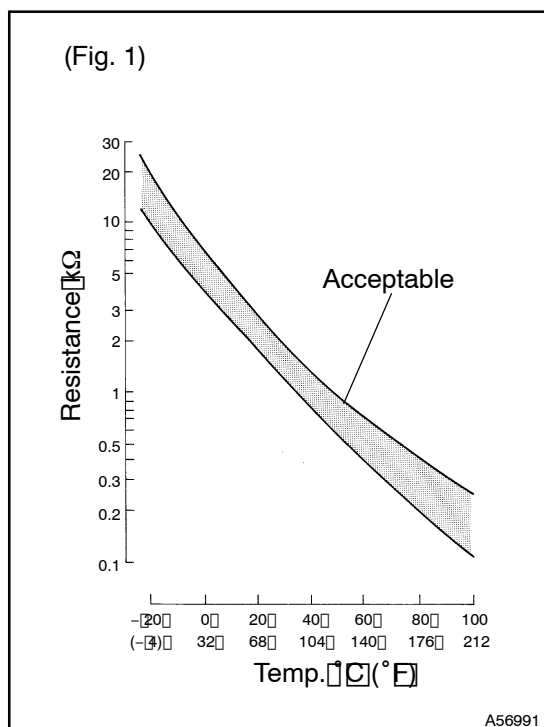


DTC	24(2)	ATMOSPHERIC TEMP. SENSOR CIRCUIT MALFUNCTION
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CIRCUIT DESCRIPTION



The atmospheric temperature sensor is built into the air flow meter and senses the atmospheric temperature. A thermistor built in the sensor changes the resistance value according to the atmospheric temperature. The lower the atmospheric temperature, the greater the thermistor resistance value, and the higher the atmospheric temperature, the lower the thermistor resistance value (See Fig. 1).

The atmospheric temperature sensor is connected to the ECM. The 5V power source voltage in the ECM is applied to the atmospheric temperature sensor from terminal THAF via a resistor R. That is, resistor R and the atmospheric temperature sensor are connected in series. When the resistance value of the atmospheric temperature sensor changes. Based on this signal, the ECM increases the fuel injection volume to improve drivability during cold engine operation.

DTC No.	DTC Detection Condition	Trouble Area
24	Open or short in atmospheric temp. sensor circuit for 0.5 sec. or more	<ul style="list-style-type: none"> • Open or short in atmospheric temp. sensor circuit • Atmospheric temp. sensor (built into air flow meter) • ECM

HINT:

After confirming DTC 24, use the hand-held tester to confirm the atmospheric temperature from the CURRENT DATA.

Temperature Displayed	Malfunction
- 40°C (- 40°F)	Open circuit
140°C (284°F) or more	Short circuit

WIRING DIAGRAM

Refer to DTC 31 on page 05-206.

INSPECTION PROCEDURE

HINT:

- If DTC 22, 24, 35 and 39 displays, E2 (sensor ground) may be open.
- Read freeze frame data using hand-held tester, as freeze frame data records the engine conditions when a malfunction is detected. When troubleshooting it is useful for determining whether the vehicle was running or stopped, the engine was warmed up or not, etc. at the time of the malfunction.

When using hand-held tester:

1 READ VALUE OF HAND-HELD TESTER (ATMOSPHERIC TEMP.)

- (a) Read temperature value on the hand-held tester.
Temperature: The same as actual atmospheric air temperature

Result:

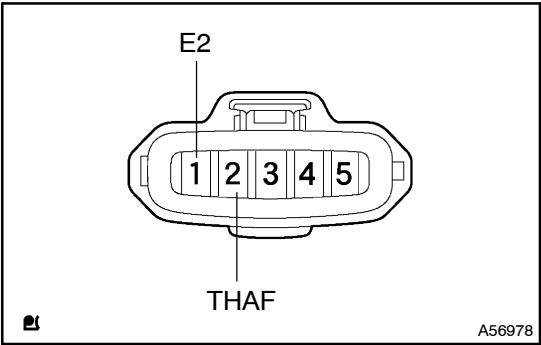
A	B	C
-40°C (-40°F)	140°C (284°F) or more	OK

B Go to step 4

C CHECK FOR INTERMITTENT PROBLEMS
(See page 05-156)

A

2 CHECK HARNESS AND CONNECTOR (CHECK FOR OPEN)

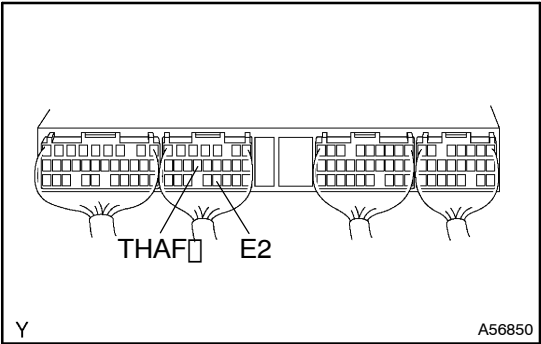


- (a) Disconnect the air flow meter connector.
(b) Connect the terminals E2 with THAF of atmospheric temperature sensor harness side connector.
(c) Turn the ignition switch ON.
(d) Read the temperature value on the hand-held tester.
Temperature: 140°C (284°F) or more

OK REPLACE INTAKE AIR FLOW METER SUB-ASSY

NG

3 INSPECT ECM (CHECK FOR OPEN)



- (a) Connect between terminals THAF and E2 of the ECM connector.
(b) Turn the ignition switch ON.
(c) Read the temperature value on the hand-held tester.
Temperature: 140°C (284°F) or more

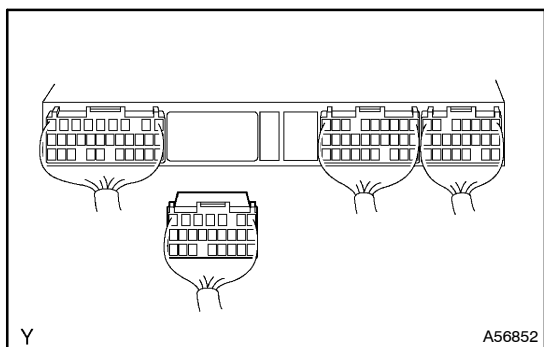
OK REPAIR OR REPLACE HARNESS AND CONNECTOR

NG

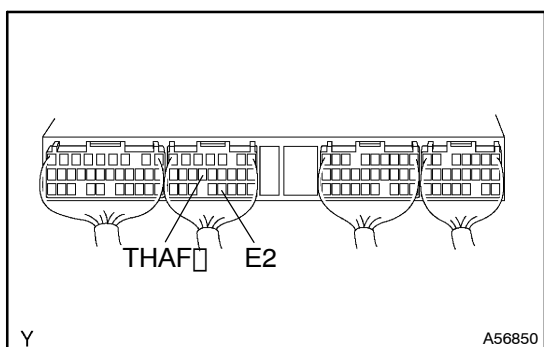
CHECK AND REPLACE ECM

4 CHECK HARNESS AND CONNECTOR (CHECK FOR SHORT)

- (a) Disconnect the air flow meter connector.
- (b) Turn the ignition switch ON.
- (c) Read the temperature value on the hand-held tester.

Temperature: -40°C (-40°F)**OK****REPLACE
INTAKE AIR FLOW METER SUB-ASSY****NG****5 INSPECT ECM (CHECK FOR SHORT)**

- (a) Disconnect the ECM E10 connector.
 - (b) Turn the ignition switch ON.
 - (c) Read the temperature value on the hand-held tester.
- Temperature: -40°C (-40°F)**

OK**REPAIR OR REPLACE
HARNESS AND CONNECTOR****NG****CHECK AND REPLACE ECM****When not using hand-held tester:****1 INSPECT ECM**

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

Voltage:

Atmospheric Temperature	Voltage
20°C (68°F) (Engine is cool)	0.2 – 3.8 V
80°C (176°F) (Engine is hot)	0.1 – 1.5 V

OK**CHECK FOR INTERMITTENT PROBLEMS
(See page 05-156)****NG**

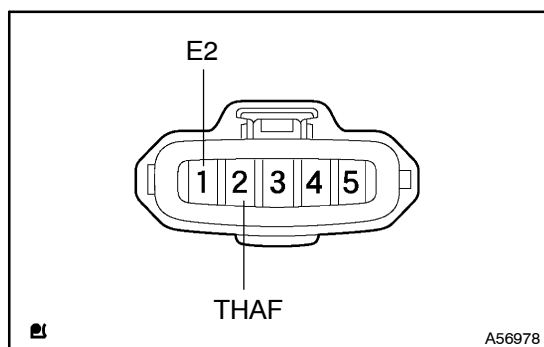
2 INSPECT INTAKE AIR FLOW METER SUB-ASSY (See page 10-9)

NG

**REPLACE
INTAKE AIR FLOW METER SUB-ASSY**

OK

3 CHECK HARNESS AND CONNECTOR (ECM-ATMOSPHERIC TEMP. SENSOR)



- (a) Disconnect the air flow meter connector.
- (b) Disconnect the ECM E10 connector.
- (c) Check for open between the terminals THAF of the ECM E10 connector and THAF of the air flow meter harness side connector.

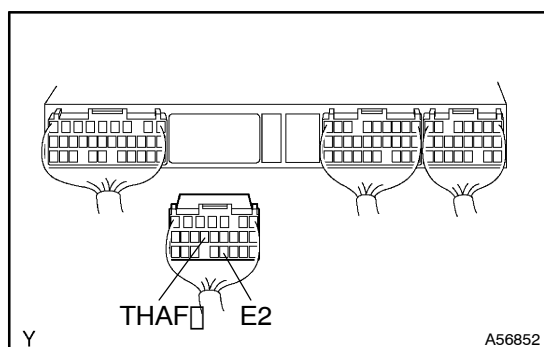
Resistance: 1 Ω or less

- (d) Check for open between the terminals E2 of the ECM E10 connector and E2 of the air flow meter harness side connector.

Resistance: 1 Ω or less

- (e) Check for short between the terminals THAF and E2 of the ECM E10 connector.

Resistance: 1 M Ω or more



NG

**REPAIR OR REPLACE
HARNESS AND CONNECTOR**

OK

CHECK AND REPLACE ECM