

DTC	B1413	EVAPORATOR TEMPERATURE SENSOR CIRCUIT
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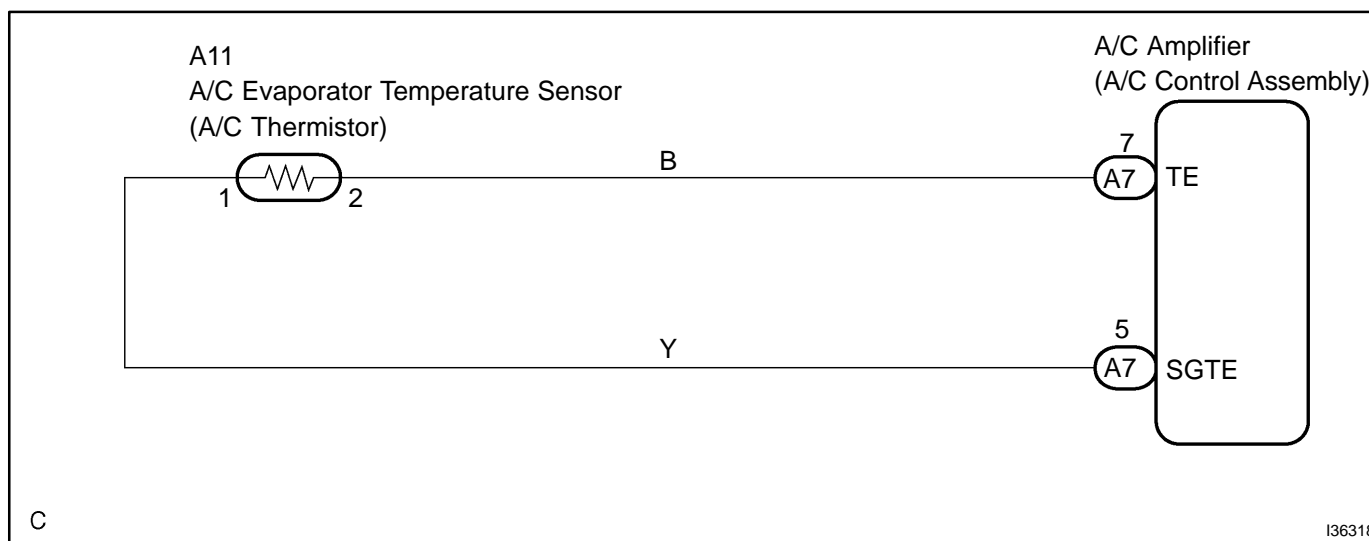
CIRCUIT DESCRIPTION

The A/C evaporator temperature sensor (A/C thermistor) is installed on the evaporator in the air conditioner unit to detect the cooled air temperature that has passed through the evaporator and control the air conditioning . It sends appropriate signals to the A/C amplifier. The resistance of the A/C evaporator temperature sensor (A/C thermistor) changes in accordance with the cooled air temperature that has passed through the evaporator. As the temperature decreases, the resistance increases. As the temperature increases, the resistance decreases.

The A/C amplifier assy applies voltage (5V) to the A/C evaporator temperature sensor (A/C thermistor) and reads voltage changes as the resistance of the A/C evaporator temperature sensor (A/C thermistor) changes. This sensor is used for frost prevention.

DTC No.	Detection Item	Trouble Area
B1413	Open or short in evaporator temperature sensor circuit.	<ul style="list-style-type: none"> • A/C evaporator temperature sensor (A/C thermistor) • Harness or connector between A/C evaporator temperature sensor and A/C amplifier • A/C amplifier

WIRING DIAGRAM



INSPECTION PROCEDURE

1 READ VALUE ON HAND-HELD TESTER

- (a) Connect the hand-held tester to DLC3.
 (b) Turn the power switch ON and push the hand-held tester main switch ON.
 (c) Select the item below in the DATA LIST, and read the display on the hand-held tester.

DATA LIST / AIR CONDITIONER:

Item	Measurement Item/Display (Range)	Normal Condition	Diagnostic Note
EVAP TEMP	Evaporator temperature sensor / min.: -29.7°C (-21.46°F) max.: 59.55°C (139.19°F)	Actual evaporator temperature is displayed	Open in the circuit: -29.7°C (-21.46°F) Short in the circuit: 59.55°C (139.19°F)

OK:

The display is as specified in the normal condition.

Result:

NG	A
OK (Checking from the PROBLEM SYMPTOM TABLE)	B
OK (Checking from the DTC)	C

B

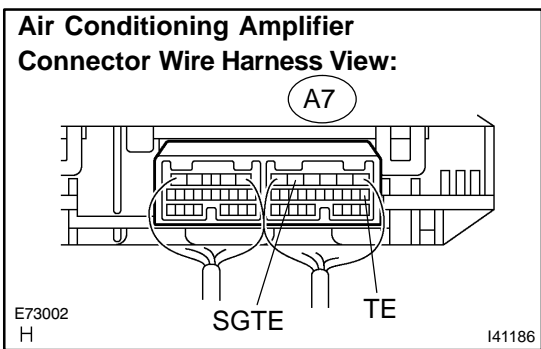
PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE (SEE PAGE 05-1268)

C

REPLACE AIR CONDITIONING AMPLIFIER (SEE PAGE 55-47)

A

2 INSPECT AIR CONDITIONING AMPLIFIER(TE - SG)



- (a) Remove the A/C amplifier with connectors still connected.
- (b) Measure the voltage according to the value(s) in the table below.

Standard:

Tester connection	Condition	Specified condition
A7-7 (TE) - A7-5 (SGTE)	Power switch ON (ON) at 0 °C (32 °F)	2.0 to 2.4 V
A7-7 (TE) - A7-5 (SGTE)	Power switch ON (ON) at 15 °C (59 °F)	1.4 to 1.8 V

HINT:

As the temperature increases, the voltage decreases.

Result:

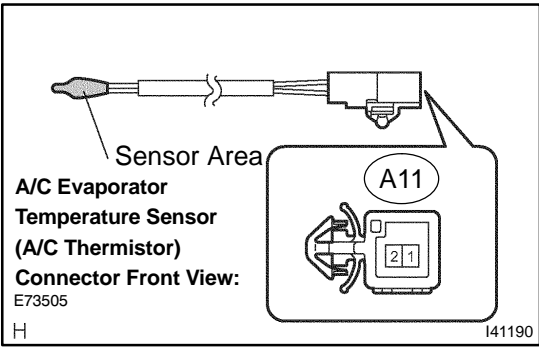
NG	A
OK (Checking from the PROBLEM SYMPTOMS TABLE)	B
OK (Checking from the DTC)	C

B → **PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE (SEE PAGE 05-1268)**

C → **REPLACE AIR CONDITIONING AMPLIFIER (SEE PAGE 55-47)**

A

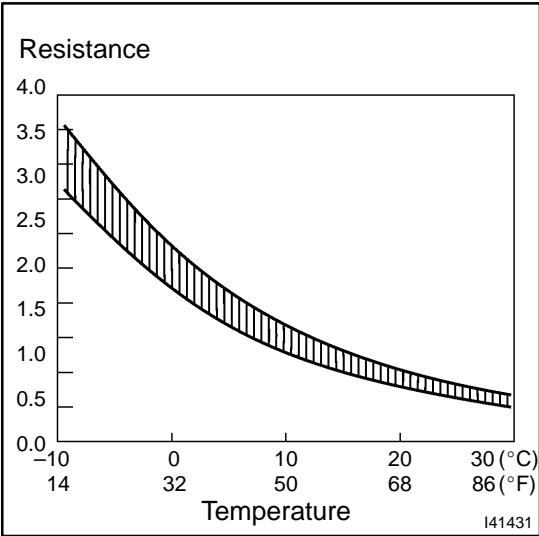
3 INSPECT A/C EVAPORATOR TEMPERATURE SENSOR(A/C THERMISTOR)



- (a) Remove the A/C evaporator temperature sensor (A/C thermistor).
- (b) Disconnect the connector from A/C evaporator temperature sensor (A/C thermistor).
- (c) Measure the resistance according to the value(s) in the table below.

Standard:

Tester connection	Condition	Specified condition
A11-1 - A11-2	-10°C (14°F)	7.30 to 9.10 kΩ
A11-1 - A11-2	-5°C (23°F)	5.65 to 6.95 kΩ
A11-1 - A11-2	0°C (32°F)	4.40 to 5.35 kΩ
A11-1 - A11-2	5°C (41°F)	3.40 to 4.15 kΩ
A11-1 - A11-2	10°C (50°F)	2.70 to 3.25 kΩ
A11-1 - A11-2	15°C (59°F)	2.14 to 2.58 kΩ
A11-1 - A11-2	20°C (68°F)	1.71 to 2.05 kΩ
A11-1 - A11-2	25°C (77°F)	1.38 to 1.64 kΩ
A11-1 - A11-2	30°C (86°F)	1.11 to 1.32 kΩ



NOTICE:

- Even slightly touching the sensor may change the resistance value. Be sure to hold the connector of the sensor.
- When measuring, the sensor temperature must be the same as the ambient temperature.

HINT:

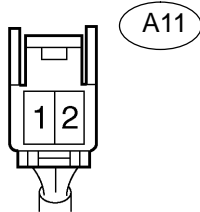
As the temperature increases, the resistance decrease (see the graph below).

NG → **REPLACE A/C EVAPORATOR TEMPERATURE SENSOR(A/C THERMISTOR)**

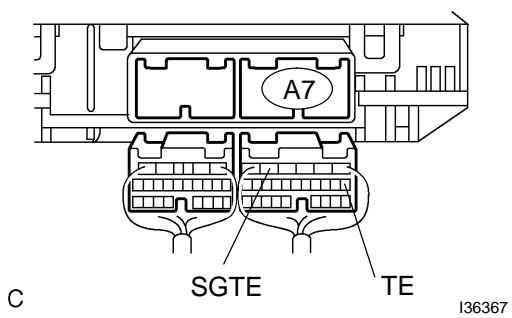
OK

4 CHECK HARNESS AND CONNECTOR(A/C EVAPORATOR TEMPERATURE SENSOR(A/C THERMISTOR) – AIR CONDITIONING AMPLIFIER) (SEE PAGE 01-47)

A/C Evaporator Temperature Sensor (A/C Thermistor) Front View:



Air Conditioning Amplifier Wire Harness View:



- (a) Disconnect the connector from A/C evaporator temperature sensor (A/C thermistor) and A/C amplifier.
- (b) Measure the resistance according to the value(s) in the table below.

Standard:

Tester connection	Condition	Specified condition
A7-7 (TE) – A11-2	Always	Below 1 Ω
A7-5 (SGTE) – A11-1	Always	Below 1 Ω
A7-7 (TE) – Body ground	Always	10 kΩ or higher
A7-5 (SGTE) – Body ground	Always	10 kΩ or higher

NG REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

REPLACE AIR CONDITIONING AMPLIFIER (SEE PAGE 55-47)