AIR CONDITIONING

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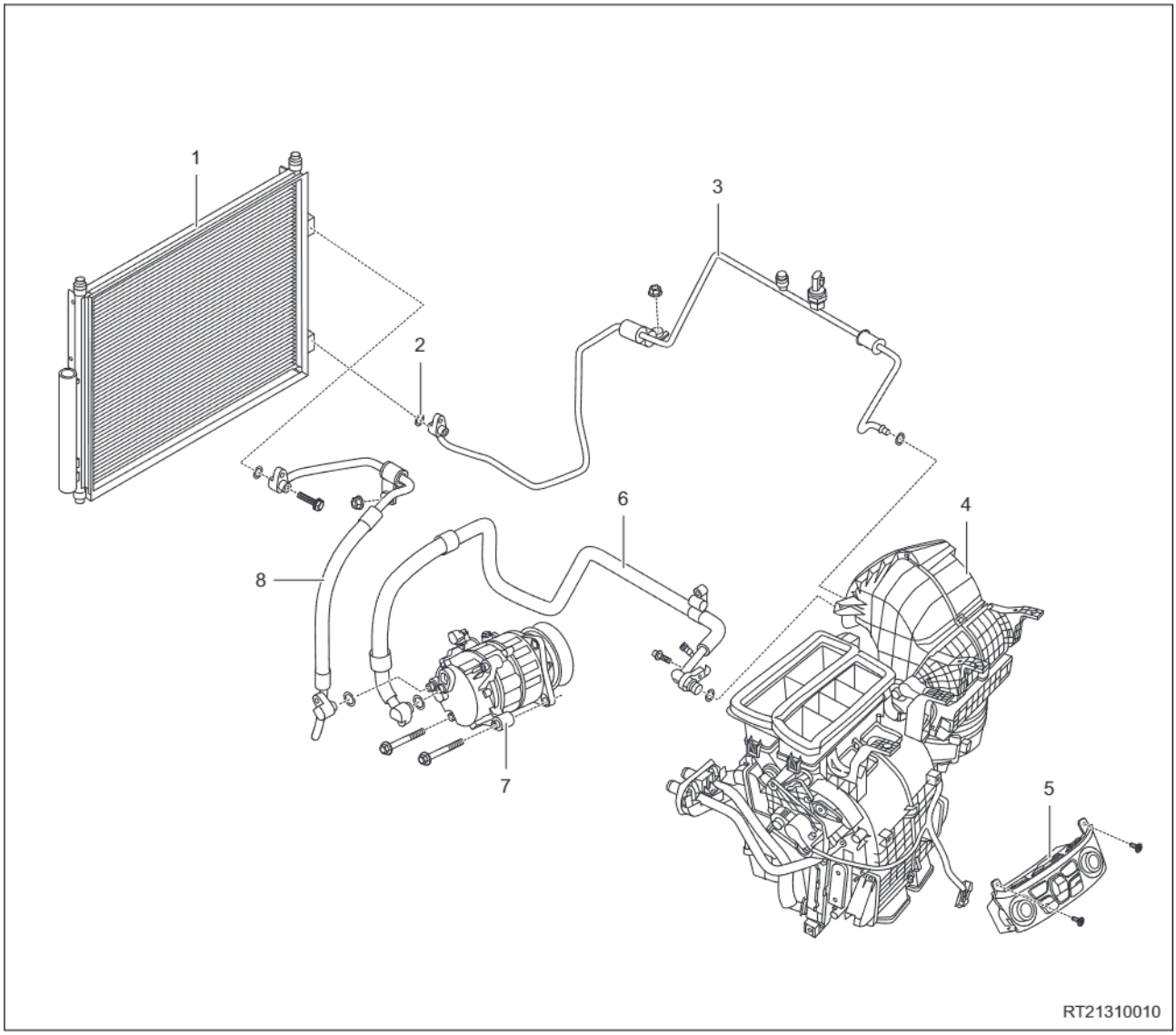
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GENERAL INFORMATION

Description



1 - Condenser Assembly (w/Receiver Drier)	2 - O-ring
3 - Condenser to Evaporator Line Assembly	4 - HVAC Assembly
5 - A/C Control Panel Assembly	6 - Evaporator to Compressor Line Assembly
7 - Compressor Assembly	8 - Compressor to Condenser Line Assembly

1. System composition

This model is equipped with two types of A/C: electrical A/C and automatic A/C. The A/C system consists of the following four parts:

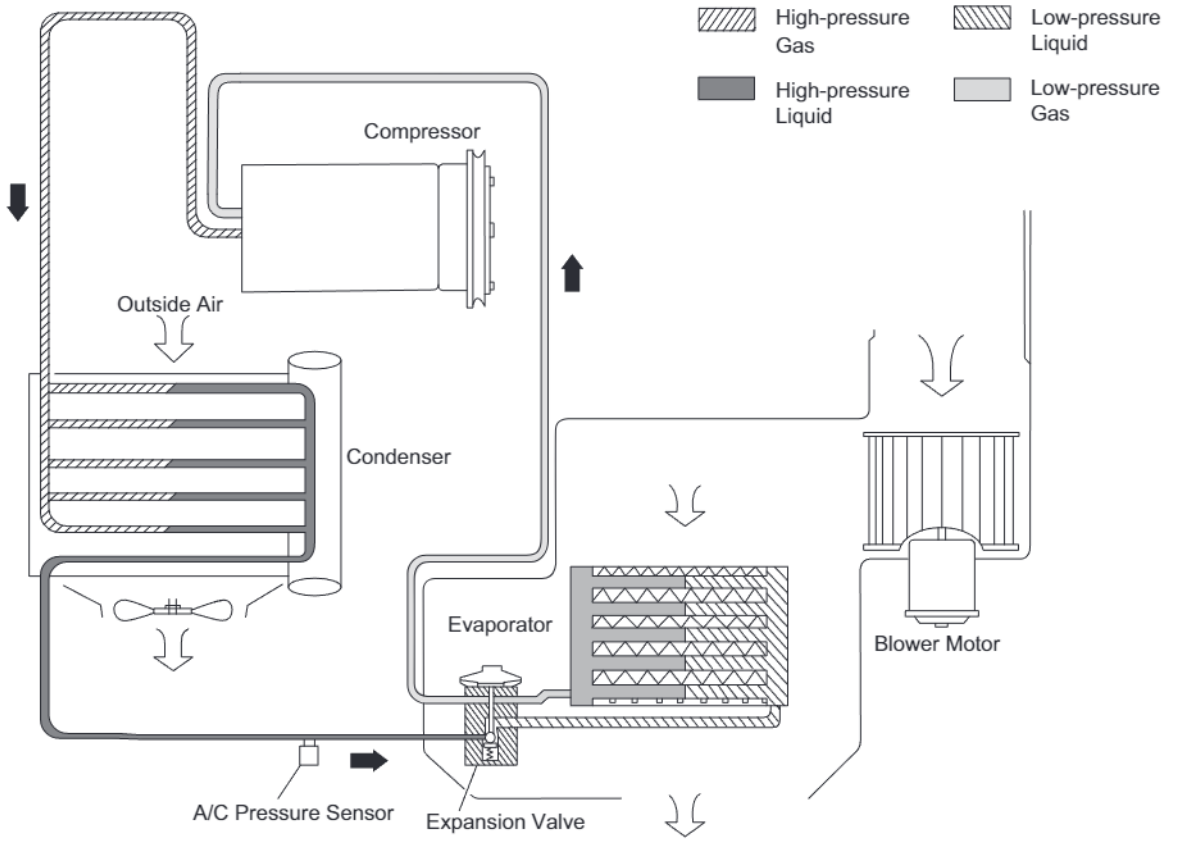
Air conditioning and distribution system: air mixing and distributor part of HVAC, inner/outer circulation inlet, outlet and air filter.

Control system: A/C control panel assembly, inner/outer circulation damper motor, mode damper servo motor, mix damper servo motor, blower, blower speed resistor, A/C pressure sensor, evaporator temperature sensor, heater core sensor (for automatic A/C), room temperature sensor (for automatic A/C), outside temperature sensor (for automatic A/C) and sun sensor.

Heating system: heater core assembly, heating inlet hose, heating outlet hose and engine cooling circulation system.

Cooling system: compressor assembly, condenser assembly (w/receiver drier), expansion valve, evaporator core assembly and A/C high/low pressure line.

2. Operation



Outside fresh air enters the air inlet filter assembly through the cowl top opening at the right side of windshield base. Fresh air flows through the evaporator core and heater core, and then enters the vehicle through the outlets on the instrument panel and the floor. The intake air volume can be adjusted by the blower speed switch on the A/C control panel assembly. Turn on the compressor assembly by pressing the A/C switch on the A/C control panel. The refrigerant is compressed by the compressor assembly and converted into high temperature - high pressure gas, which is then condensed into high pressure liquid in the condenser. Then the liquid is filtered and dried by the receiver drier and delivered to the expansion valve and becomes low-pressure liquid through throttling and depressurization. Finally the liquid enters the evaporator in vehicle, absorbs the heat and evaporates, thus refrigeration is achieved. A/C heating is realized by the engine coolant circulation system. Heater core is the main component of the heating

system. With the engine running, engine coolant flows from the engine water pump to the heater core, the heater core transmits the heat from engine coolant to the air that flows through the heater core. At this time, the A/C switch is off. The air flowing through the heater core becomes hot wind through the heat exchanger, thus providing heating. The temperature adjustment control mechanism can be controlled by rotating the temperature adjustment knob, and the mix damper closes when temperature adjustment knob is rotated counterclockwise to MAX COOL position. If the airflow does not flow through the heater core, the heat transmission will not occur. When rotating the temperature adjustment knob clockwise from MAX COOL position, the mix damper will open slowly, allowing air flows through the heater core. Most of the airflow is heated in this way and the discharged air becomes warm. When the temperature adjustment knob is rotated counterclockwise to MAX HOT position, the mix damper is opened fully and all the air flows through the heat core, thus the air is heated. Mode buttons on the A/C control panel are used to direct temperature adjusted air through selected outlets.

Specifications

Torque Specifications

Description	Torque (N·m)
A/C Control Panel Assembly Fixing Screw	2.5 ± 0.5
Coupling Bolt Between A/C High/Low Pressure Line and Expansion Valve	7 ± 1
Fixing Nut Between HVAC Assembly and Instrument Panel Crossmember Assembly	7 ± 1
Fixing Bolt Between HVAC Assembly and Instrument Panel Crossmember Assembly	4 ± 1
Fixing Bolt Between HVAC Assembly and Body	7 ± 1
Air Inlet Assembly Right Fixing Screw	2.5 ± 0.5
Air Inlet Assembly Left Fixing Screw	2.5 ± 0.5
Air Inlet Assembly Rear Fixing Screw	2.5 ± 0.5
Left Foot Fan Shield Fixing Screw	2.5 ± 0.5
Right Foot Fan Shield Fixing Screw	2.5 ± 0.5
Coupling Bolt Between Expansion Valve and Expansion Valve Mounting Pressure Plate	7 ± 1
Blower Case Assembly Upper Fixing Screw	2.5 ± 0.5
Blower Case Assembly Lower Fixing Screw	2.5 ± 0.5
Evaporator Case Assembly Fixing Screw	2.5 ± 0.5
Heater Core Line Pressure Plate Fixing Screw	2.5 ± 0.5
Heater Core Line Cover Plate Fixing Screw	2.5 ± 0.5
Mode Damper Adjustment Mechanism Set Fixing Screw	2.5 ± 0.5
Coupling Nut Between A/C High/Low Pressure Line Fixing Bracket and Body	7 ± 1
Fixing Bolt Between A/C Low Pressure Line and Compressor Assembly	25 ± 2.5
Fixing Bolt Between A/C High Pressure Line and Compressor Assembly	25 ± 2.5

Description	Torque (N·m)
Fixing Nut Between A/C High Pressure Line I and Condenser Assembly	7 ± 1
Fixing Nut Between A/C High Pressure Line II and Condenser Assembly	7 ± 1
Coupling Bolt Between Rear Mounting Cushion Assembly and Rear Mounting Bracket	70 ± 5
Coupling Nut Between Rear Mounting Cushion Assembly and Rear Mounting Bracket	70 ± 5
Coupling Bolt Between Front Mounting Cushion Assembly and Front Mounting Bracket	70 ± 5
Coupling Nut Between Front Mounting Cushion Assembly and Front Mounting Bracket	70 ± 5
Coupling Bolt Between Right Mounting Cushion Assembly and Right Mounting Bracket	80 ± 6
Coupling Nut Between Right Mounting Cushion Assembly and Right Mounting Bracket	80 ± 6
Coupling Bolt Between Right Mounting Cushion Assembly and Body	70 ± 5
Fixing Bolt Between Compressor Assembly and Mounting Bracket	40 ± 5
Fixing Bolt Between Condenser Assembly and Tank Upper Crossmember Fixing Bracket	7 ± 1

Refrigerant Charging Specification

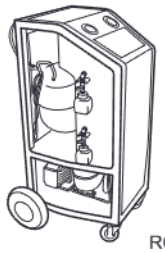
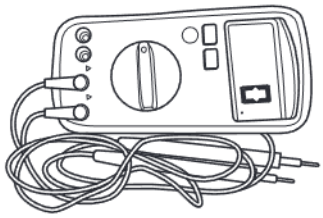
Description	Charging Capacity (g)
R134a Refrigerant	600 ± 10

Refrigerant Oil Charging Specifications

Description	Charging Capacity (ml)
Compressor Assembly Replacement	It is necessary to pour out 50 ml of refrigerant oil from the new compressor assembly
Condenser Replacement	50
Evaporator Replacement	50
A/C Line Replacement	10

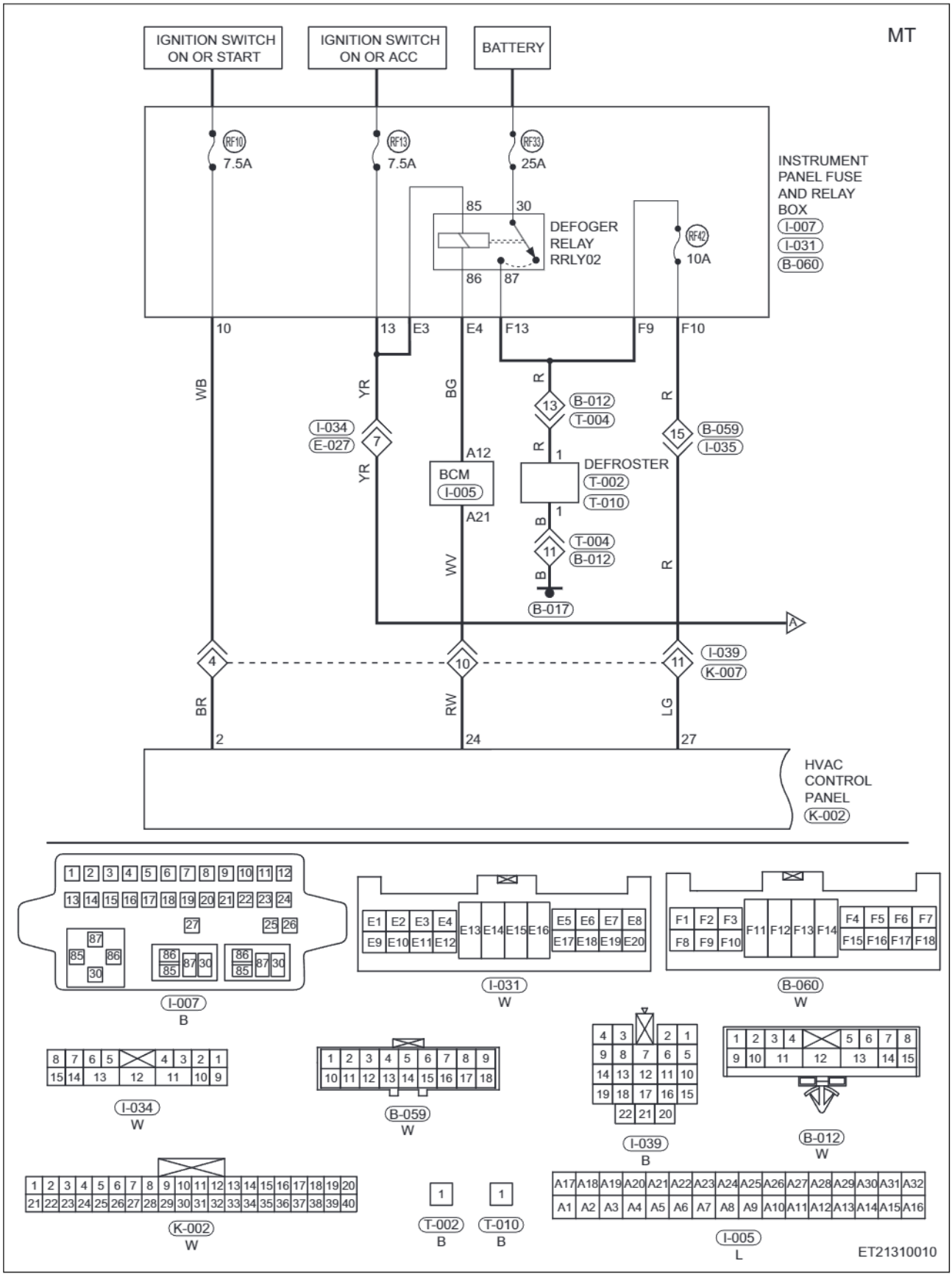
Tools

General Tools

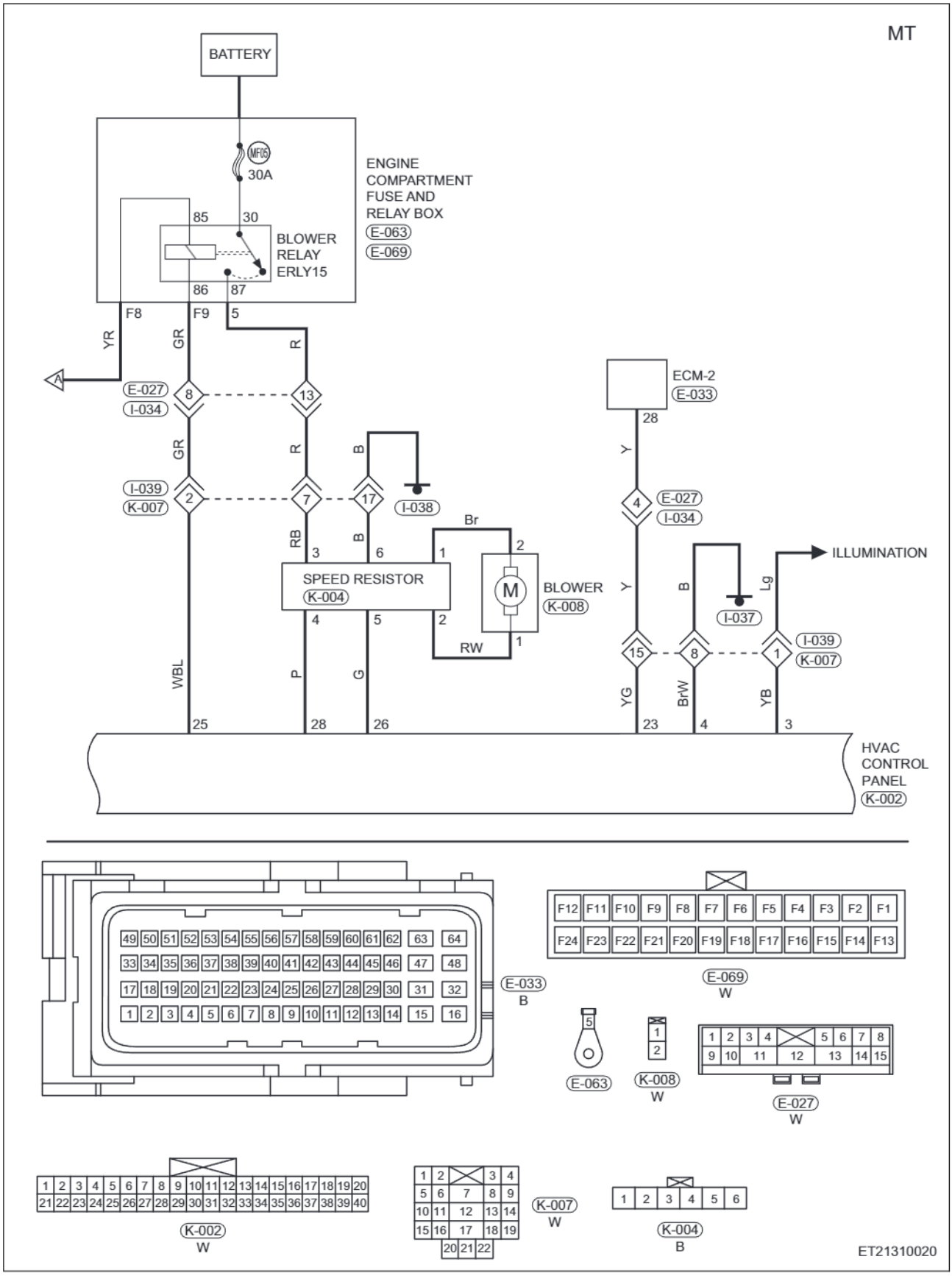
Refrigerant Recycling Machine	 RCH0000046
Digital Multimeter	 RCH0000002

Circuit Diagram

Electrical A/C System (Page 1 of 3)

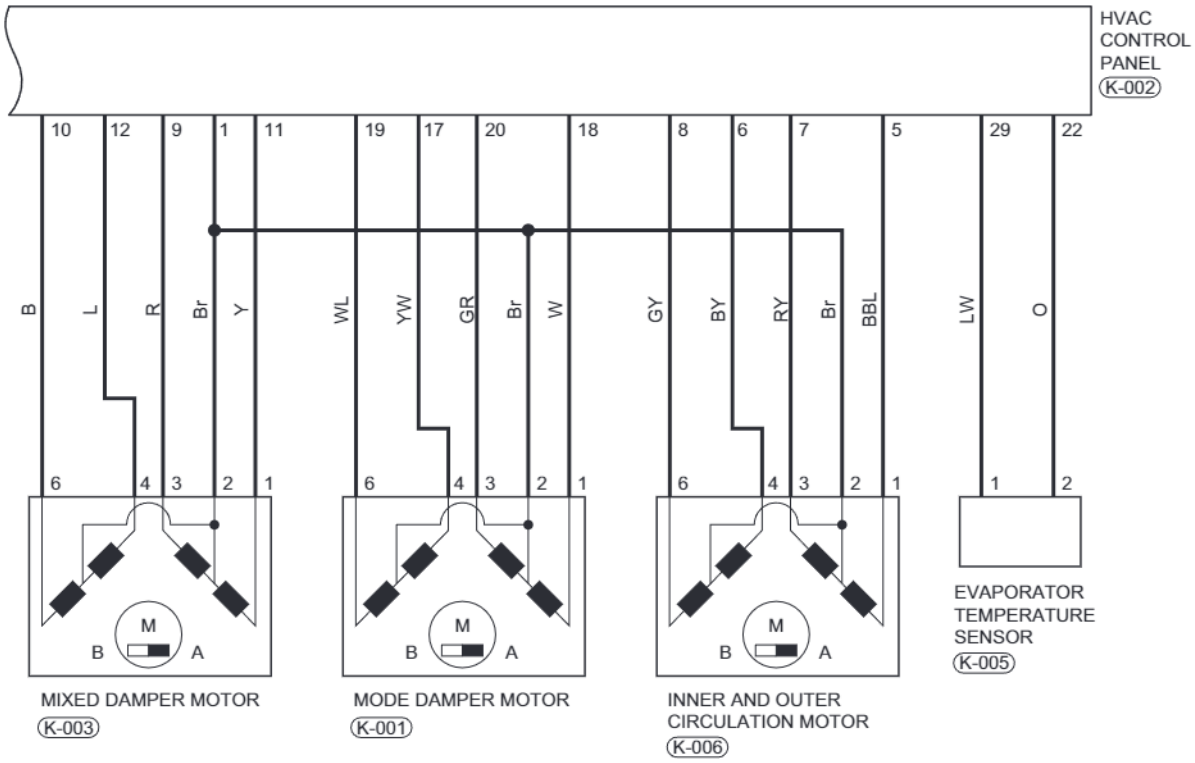


Electrical A/C System (Page 2 of 3)



Electrical A/C System (Page 3 of 3)

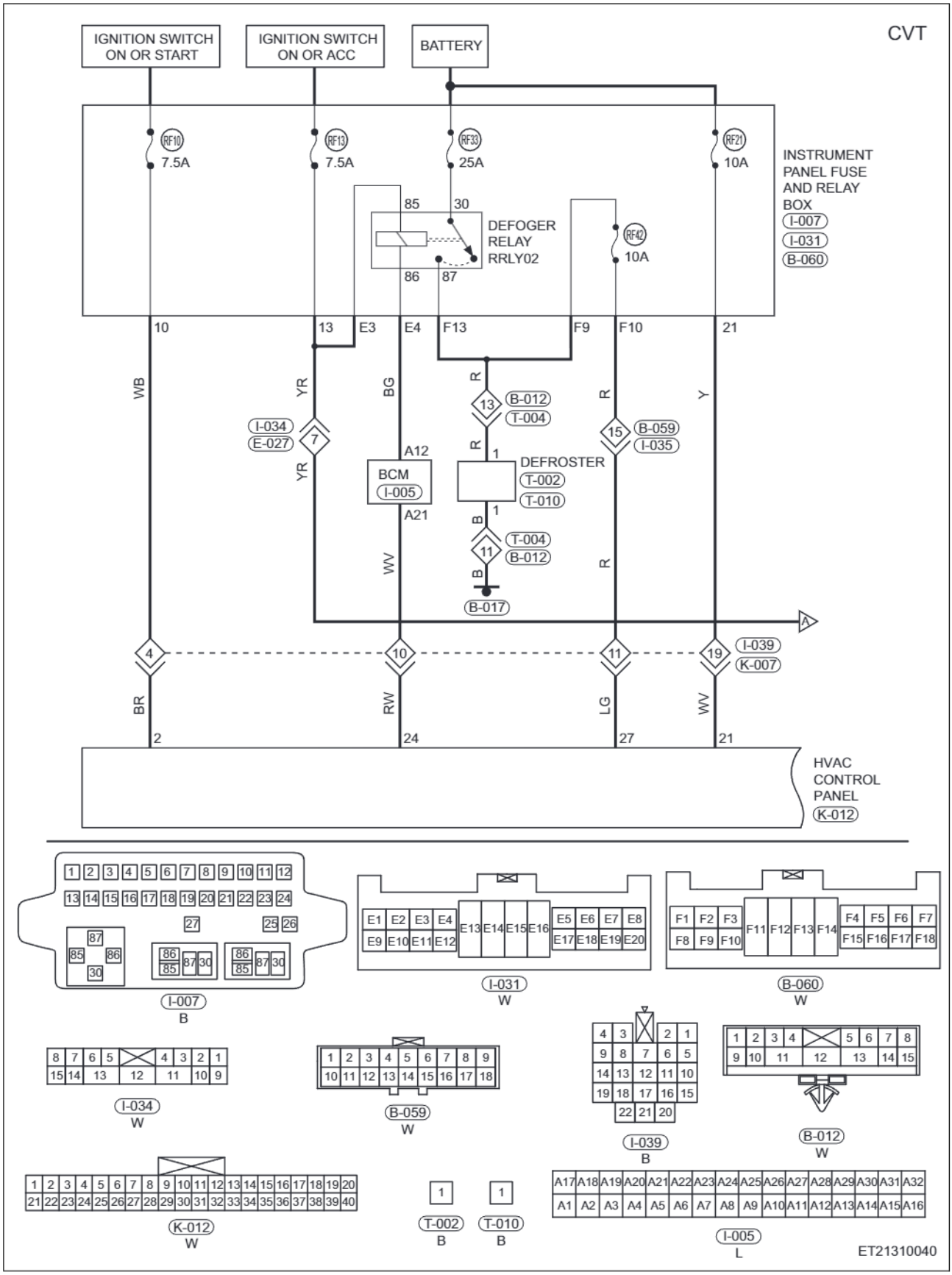
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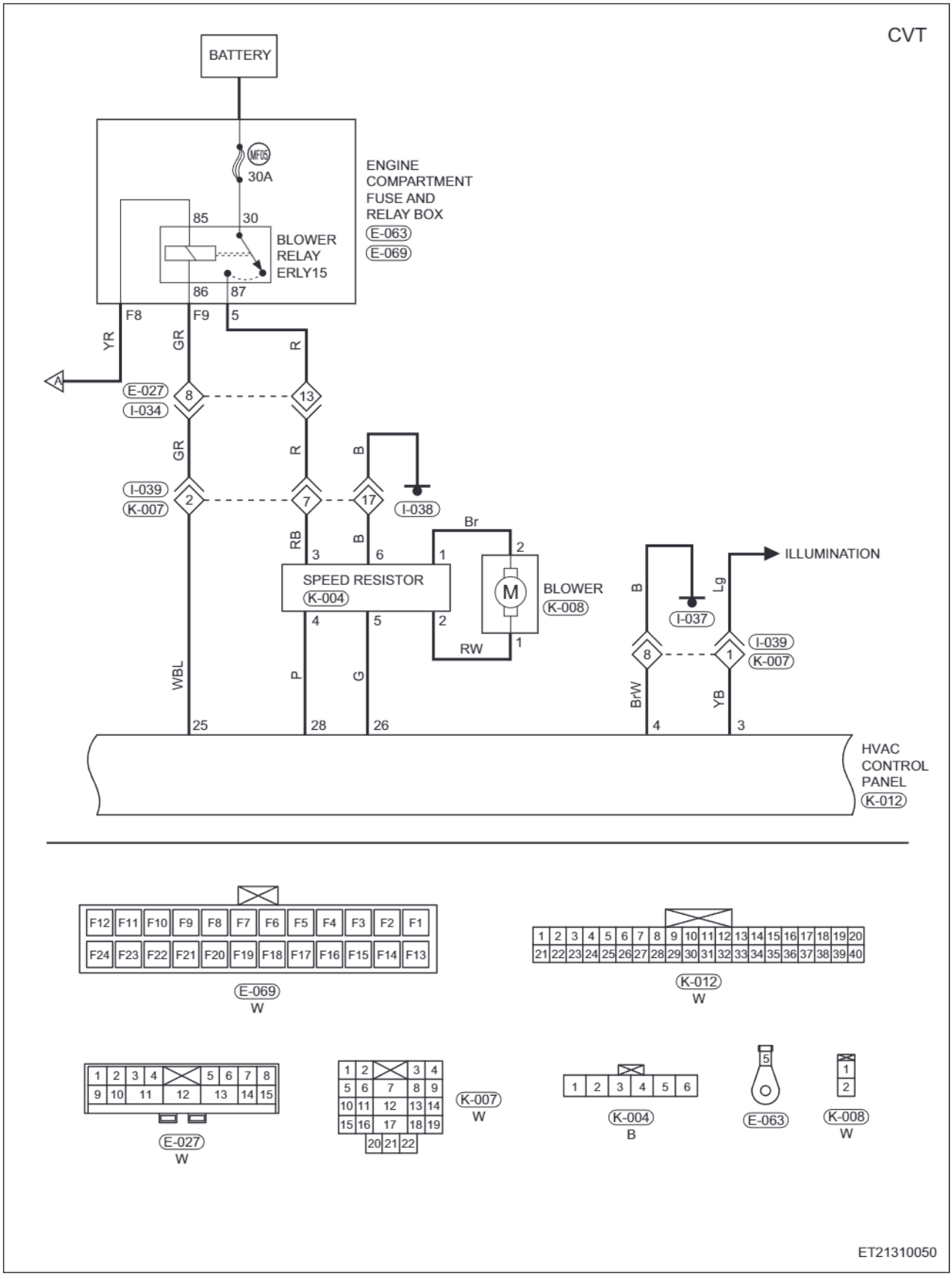


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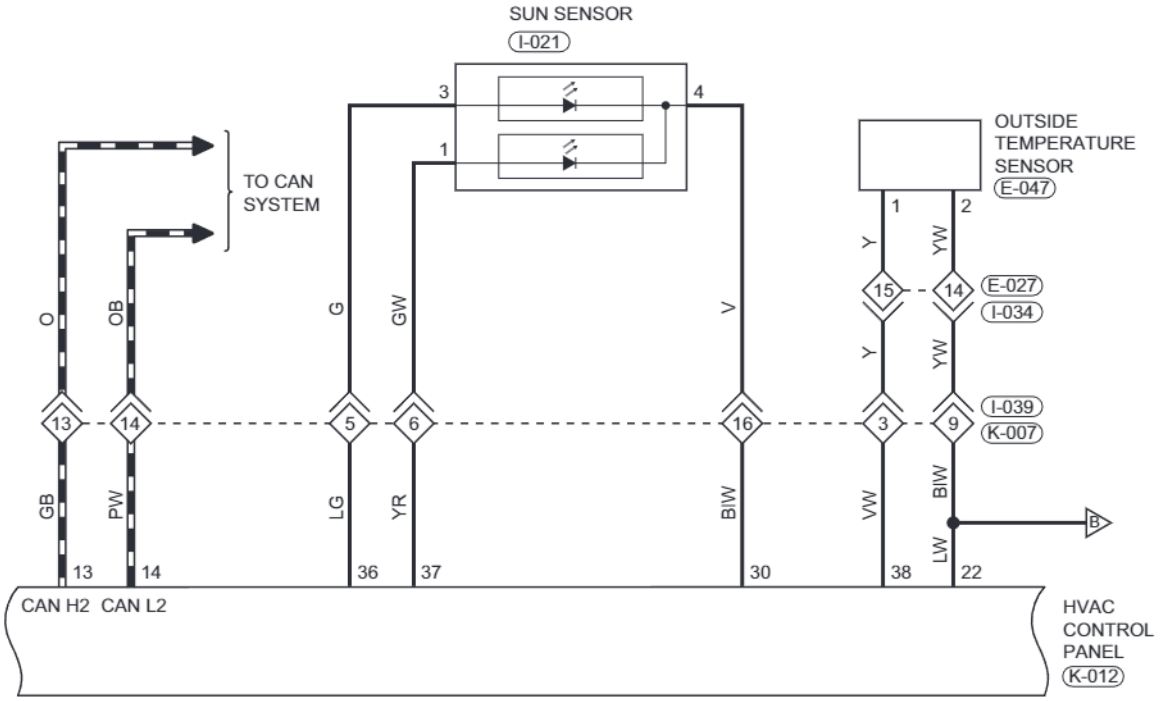


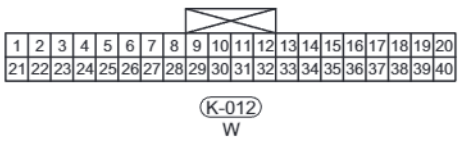
Automatic A/C System (Page 2 of 4)

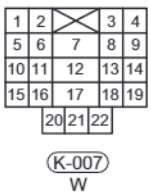


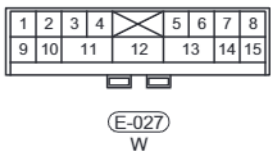
Automatic A/C System (Page 3 of 4)

CVT

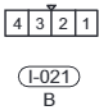








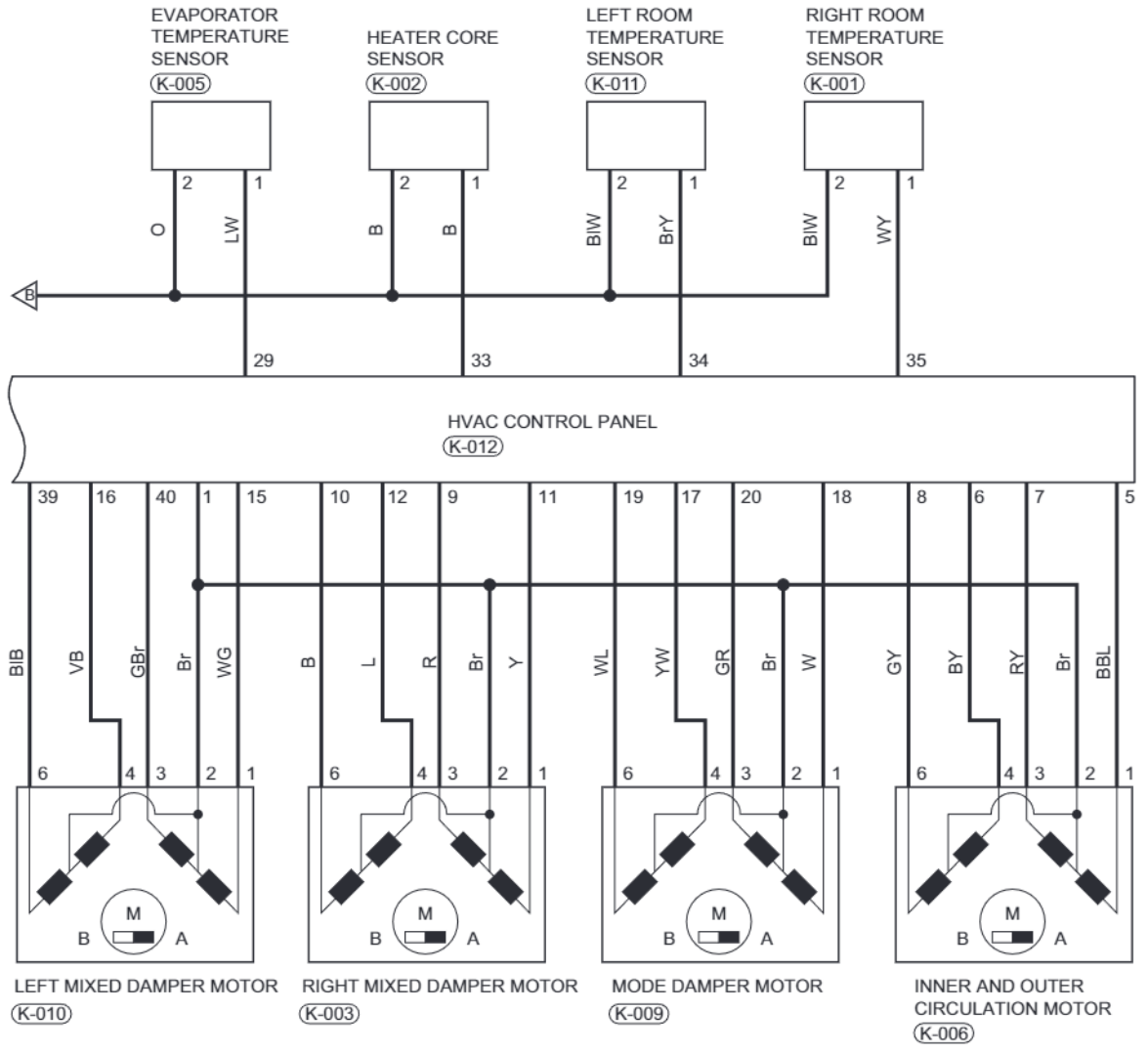


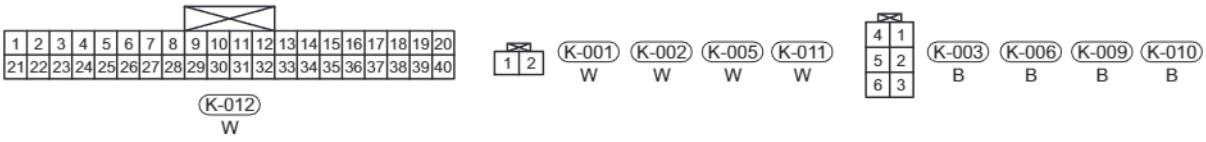


ET21310060

Automatic A/C System (Page 4 of 4)

CVT





ET21310070

DIAGNOSIS & TESTING

Problem Symptoms Table

HINT:
Use the table below to help determine the cause of problem symptoms. Check each suspected area in sequence. Repair or replace the faulty components, or adjust as necessary.

Symptom	Suspected Area	See page
A/C no heating	Blower fuse (damaged)	51-34
	Blower relay (damaged)	51-34
	Blower speed switch (damaged)	31-70
	Blower motor (damaged)	31-73
	Mix damper control mechanism (stuck or damaged)	31-80
	Mix damper control knob (stuck or damaged)	31-70
	Warm air water pipe (blocked or damaged)	31-78
	Heater core assembly (blocked or damaged)	31-80
	Wire harness or connector (open or short)	-
A/C no cooling	Leak in system	31-64
	Refrigerant (overcharged)	31-66
	A/C pressure sensor (damaged)	-
	Evaporator temperature sensor (damaged)	31-80
	A/C switch (damaged)	31-70
	Compressor assembly fuse (damaged)	51-34
	Compressor assembly relay (damaged)	51-34
	Compressor assembly belt (loose)	31-99
	Compressor assembly (damaged)	31-99
	Condenser assembly (blocked or damaged)	31-102
	Expansion valve (blocked or frosted)	31-80
	Evaporator core assembly (blocked or damaged)	31-80
	Wire harness or connector (open or short)	-
A/C intermittent cooling	Moisture in system	-

Symptom	Suspected Area	See page
A/C insufficient cooling	Leak in system	31-64
	Refrigerant (insufficient)	31-66
	Refrigerant (overcharged)	31-66
	Air in refrigerant	31-67
	Moisture in refrigerant	-
	Condenser (dirty or blocked)	31-102
	Expansion valve (dirty or blocked)	31-80
	Evaporator core (dirty or blocked)	31-80
	A/C high/low pressure line (dirty or blocked)	31-94
	Blower speed switch (damaged)	31-70
	Blower motor (damaged)	31-73
	Compressor assembly belt (loose)	31-99
Too much noise in system	Compressor assembly belt (slip)	31-99
	Compressor assembly clutch bearing (worn and excess clearance)	-
	Compressor assembly solenoid coil (faulty or loose joint)	-
	Compressor assembly belt (over tightened)	31-99
	Compressor assembly mounting bolt (loose)	31-99
	Cooling fan blade (distorted)	-
	Refrigerant oil (too low)	31-68
Pressure on low pressure side switches between normal and vacuum during operation	Moisture in refrigerant (excessive)	-
Pressure is low on both low and high pressure sides, cooling performance is insufficient	A/C system (leaked)	31-64
	Refrigerant (insufficient)	31-66
Pressure is low on both low and high pressure sides, frost exists on line from condenser to A/C unit	Condenser (dirty or blocked)	31-102
Vacuum occurs on low pressure side, and pressure on high pressure side is too low, frost exists on lines on both sides of condenser or expansion valve	Moisture in refrigerant (excessive)	-
	Expansion valve (dirty or blocked)	31-80
	A/C line (leaked)	31-94
	Condenser (dirty or blocked)	31-102
Pressure is too high on both low and high pressure sides	Expansion valve (faulty)	-
	Refrigerant oil (excessive)	31-68

Symptom	Suspected Area	See page
Pressure on low pressure side is normal or slightly low, and pressure on high pressure side is too high	Surface of condenser (dirty)	31-102
	Cooling fan (not operating)	-
	Refrigerant (overcharged)	31-66
	Air in refrigerant	31-67
	Engine (overheating)	-
Pressure on low pressure side is too high, and pressure on high pressure side is too low	Compressor assembly belt (slip)	31-99
	Compressor assembly (faulty)	31-99
Pressure on low pressure side is too low, and pressure on high pressure side is too high	A/C high pressure line (blocked)	31-96
	Expansion valve (faulty)	-

Diagnosis Procedure

HINT:

Use the following procedures to troubleshoot the A/C system.

1	Vehicle brought to workshop

NEXT

2	Check battery voltage

Standard voltage: 11 to 14 V

If voltage is below 11 V, recharge or replace the battery before proceeding to next step.

NEXT

3	Customer problem analysis

NEXT

4	Check panel diagnosis

a. Check each actuator and sensor code (See page 31-19).

- Indicator inspection
- Sensor inspection

NEXT

5	Check and clear DTCs, then read DTCs again

DTC occurs → For current DTC, go to step 7

No DTC → For history DTC, go to step 8

6	Overall analysis and troubleshooting

a. On-vehicle inspection

b. Inspection

NEXT

7	Troubleshoot according to Diagnostic Trouble Code (DTC) chart, then go to step 9

NEXT

8	Troubleshoot according to Problem Symptoms Table, then go to step 9

NEXT

9	Confirm troubleshooting and perform test

NEXT

10	End

A/C System Function

1. Self-checking Operation
   a. Turn ignition switch ON.
   b. Press the A/C + rear defogger button on A/C control panel for 10 seconds and A/C begins self-checking. The self-checking takes about 15 seconds, during which the A/C cannot work.

   HINT:
   If it is unable to determine whether A/C has begun self-checking, turn on the blower before performing self-checking and push the A/C + rear defogger button. If no air comes out, it indicates A/C is performing self-checking.

2. Self-diagnosis Function
   a. Electrical A/C

   Self-diagnosis operation: Press the A/C + outer circulation button for more than 5 seconds.

   Malfunction display: Malfunction is indicated by flashing indicator. A/C indicator flash indicates the ten digit and rear defogger indicator flash indicates the single digit. The interval of flashes for ten digit and single digit is 0.5 seconds, and the interval of flashes between ten digit and single digit is 2 seconds. If there are more than one malfunctions, the ten digit and single digit indicators will display (as the first DTC) again 5 seconds after the single digit indicator turns off. The ten digit and single digit indicators remain on for 3 seconds at the same time after the single digit indicator goes off for 2 seconds, which indicates self-diagnosis is completed and it has exited the system (power on or turn on/off A/C controller can both force the diagnosis function to end). System enters the state before diagnosis after exiting self-diagnosis mode.

   Detail correspondence of codes and malfunction is as follows:

Code	Content	Code	Content
00	No malfunction, system operates properly	12	Circulation damper motor malfunction (invalid adjustment)
01	Reserve	13	Mode damper motor malfunction (invalid adjustment)
02	Reserve	14	Reserve
03	Reserve	15	Reserve
04	Reserve	16	Mix damper motor malfunction (invalid adjustment)
05	Reserve	17	Reserve
06	Reserve	18	Reserve
07	Reserve	19	Reserve
08	Evaporator temperature sensor malfunction (short or open)	20	Reserve
09	Reserve	21	Reserve
10	Reserve	22	Communication with BCM malfunction
11	Blower malfunction (invalid adjustment)		

b. Automatic A/C

Self-diagnosis operation: press the A/C + inner/outer circulation button for more than 5 seconds.

Malfunction display: Switch DVD to FM mode, set the driver A/C temperature to 29.5°C and long press the A/C + inner/outer circulation button for more than 5 seconds to enter self-diagnosis mode. Automatic controller background automatically performs self-checking, runs the A/C system actuators and sensors, and then shows the malfunction code by DVD screen (other information is not shown).The system automatically exits self-checking after displaying the code for 5 seconds (power on can force the diagnosis function to end). If there is no malfunction, it will display 00, and 5 seconds later, it will exit self-diagnosis mode. System enters the state before diagnosis after exiting self-diagnosis mode.

Detail correspondence of codes and malfunction is as follows:

Code	Content	Code	Content
00	No malfunction, system operates properly	12	Circulation damper motor malfunction (invalid adjustment)
01	Outside temperature sensor malfunction (open or short)	13	Left mode damper motor malfunction (invalid adjustment)
02	Left room temperature sensor malfunction (open or short)	14	Reserve
03	Right room temperature sensor malfunction (open or short)	15	Left mix damper motor malfunction (invalid adjustment)
04	Left sun sensor malfunction (open or short)	16	Right mix damper motor malfunction (invalid adjustment)
05	Right sun sensor malfunction (open or short)	17	Reserve
06	Reserve	18	Reserve
07	Reserve	19	Reserve
08	Evaporator temperature sensor malfunction (short or open)	20	Reserve
09	Heater core sensor malfunction (short or open)	21	Control panel CAN communication malfunction (CAN communication interrupted)
10	Reserve	22	Communication with BCM malfunction
11	Blower malfunction (invalid adjustment)		

3. Malfunction Compensation Function

To guarantee the proper work of A/C system, when the controller detects an invalid or defect sensor in A/C system, the system will work based on the sensor failure alternative value.

Definition of sensor failure alternative value is as follows:

Description	Failure Alternative Value	Description	Failure Alternative Value
Outside Temperature Sensor	25°C	Heater Sensor	85°C
Room Temperature Sensor	25°C	Evaporator Sensor	0°C
Sun Sensor	0 W/m2	Vehicle Seed Sensor	10 km/h

DTC Confirmation Procedure

Confirm that the battery voltage is normal before performing the following procedures.

- Turn ignition switch to LOCK.
- Connect X-431 3G diagnostic tester (the latest software) to Data Link Connector (DLC).
- Turn ignition switch ON.
- Using X-431 3G diagnostic tester to record and clear the DTCs stored in the A/C control module assembly.
- Turn ignition switch to LOCK and wait for a few seconds.
- Using X-431 3G diagnostic tester to select "Read Code".
- If DTC is detected, the malfunction indicated by the DTC is current. Go to the diagnosis procedure - Step 1.
- If DTC is not detected, the malfunction indicated by the DTC is intermittent. Please refer to Intermittent DTC Troubleshooting.

Intermittent DTC Troubleshooting

If the malfunction is intermittent, perform the followings:

- Check if connectors are loose.
- Check if wire harnesses are worn, pierced, pinched or partially broken.
- Wiggle related wire harnesses and connectors and observe if signal is interrupted in the related circuit.
- If possible, try to duplicate the conditions under which the DTC was set.
- Look for the data that has changed or the DTC to be reset during the wiggle test.
- Look for broken, bent, protruded or corroded terminals.
- Inspect the A/C system sensors and mounting areas for damage, foreign matter, etc. that will cause incorrect signals.
- Check and clean all wire harness connectors and grounding parts related to the current DTC.
- Remove the A/C control panel assembly from the malfunctioning vehicle and install it to a new vehicle and perform a test. If DTC cannot be cleared, the A/C control panel assembly is malfunctioning. If DTC can be cleared, reinstall the A/C control panel assembly to original vehicle.
- If multiple trouble codes were set, refer to the circuit diagrams to look for any common ground circuit or power supply circuit applied to the DTC.
- Refer to Technical Bulletin that is applied to the malfunction.

Ground Inspection

Groundings are very important to the proper operation of circuits. Ground points are often exposed to moisture, dirt and other corrosive environments. Corrosion (rust) can increase load resistance. This situation may change the way in which a circuit works.

Circuits are very sensitive to proper grounding. A loose or corroded ground may seriously affect the control circuit. The operations to check the ground points are as follows:

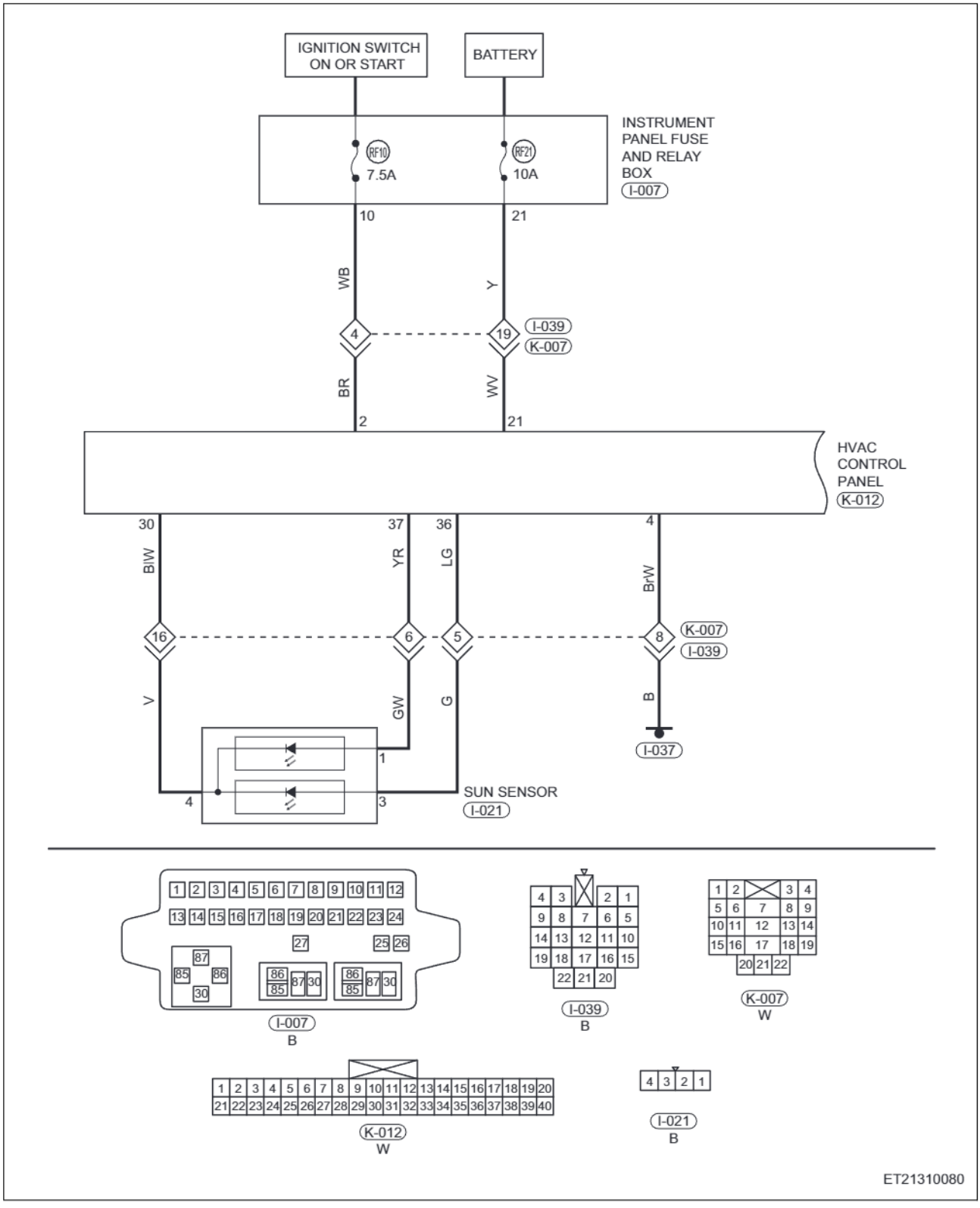
1. Remove the ground bolt or nut.
2. Check all contact surfaces for tarnish, dirt, rust, etc.
3. Clean as necessary to ensure that contacting is in a good condition.
4. Reinstall the ground bolt or nut securely.
5. Check if add-on accessories interfere with the ground circuit.
6. If several wire harnesses are crimped into one ground terminal, check if they are installed correctly. Make sure all wire harnesses are clean, securely fastened and providing a good ground path.

Diagnostic Trouble Code (DTC) Chart

DTC Code	DTC Definition
B2133	AC Solar Sensor Short to Ground or Open Circuit (Left Side)
B2134	AC Solar Sensor Short to Ground or Open Circuit (Right Side)
B2120	AC in Car Temperature Sensor Short to Ground or Open Circuit (Left Side)
B2121	AC in Car Temperature Sensor Short to Ground or Open Circuit (Right Side)
B2126	AC Ambient Temperature Sensor Short to Ground or Open Circuit
B2127	AC Evaporator Temperature Sensor Short to Ground or Open
B2135	AC Heater Core Sensor Short to Ground Or Open Circuit
B2160	Error of AC Mix Actuator (Left Side)
B2163	Error of AC Mix Actuator (Right Side)
B2166	Error of AC Mode Actuator
B2169	Error of AC Blower Actuator
B2172	AC Recirculation Actuator

DTC	B2133	AC Solar Sensor Short to Ground or Open Circuit (Left Side)

DTC	B2134	AC Solar Sensor Short to Ground or Open Circuit (Right Side)



DTC Code	DTC Definition	DTC Detection Condition	Possible Cause
B2133	AC Solar Sensor Short to Ground or Open Circuit (Left Side)	Ignition switch ON	• Sun sensor • Wire harness and connector • HVAC control panel
B2134	AC Solar Sensor Short to Ground or Open Circuit (Right Side)		

CAUTION

- When performing electrical equipment diagnosis and test, always refer to the circuit diagram for related circuit and component information.

Diagnosis Procedure

1	Check wire harness and connector

Use the circuit diagram as a guide to perform the following procedures:

a. Turn ignition switch to LOCK.
b. Disconnect the negative battery cable.
c. Disconnect the HVAC control panel assembly connector K-012 and sun sensor connector I-021.
d. Disconnect the A/C wire harness connector K-007 and instrument panel wire harness connector I-039.
e. Check if wire harnesses are worn, pierced, pinched or partially broken.
f. Look for broken, bent, protruded or corroded terminals.
g. Check if related connector pins are in good condition.

NG → **Repair or replace related wire harness and connector**

OK ↓

2	Check sun sensor

a. Remove the sun sensor.
b. Install the new sun sensor to vehicle.
c. Use X-431 3G diagnostic tester to check if DTCs are still output.

NO → **Replace sun sensor**

YES ↓

3	Check wire harness and connector (HVAC control panel assembly - sun sensor)

a. Turn ignition switch to LOCK.

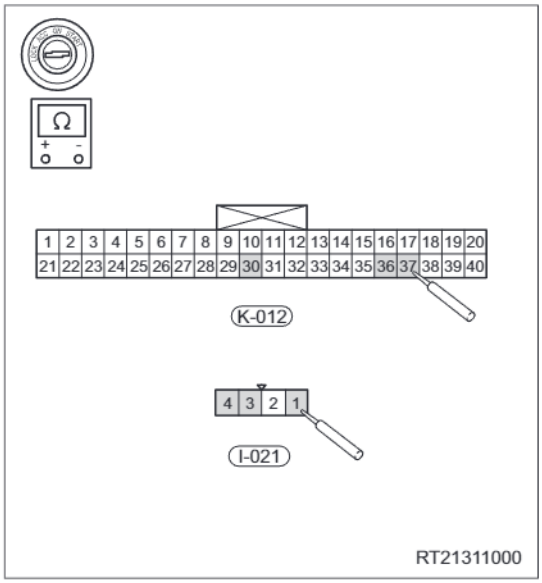
b. Disconnect the negative battery cable.

c. Disconnect the HVAC control panel assembly connector K-012 and sun sensor connector I-021.

d. Using a digital multimeter, check for continuity between terminals of connector K-012 and connector I-021 to check if there is an open in system according to the table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
K-012 (36) - I-021 (3)	Always	Continuity
K-012 (37) - I-021 (1)	Always	Continuity
K-012 (30) - I-021 (4)	Always	Continuity

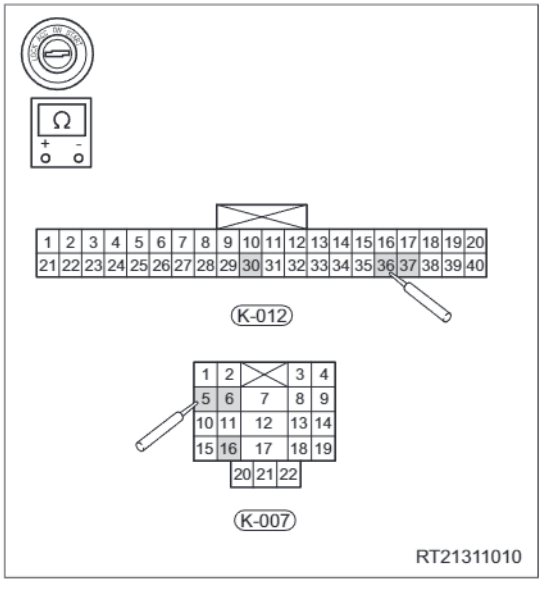


e. Disconnect the A/C wire harness connector K-007 and instrument panel wire harness connector I-039.

f. Using a digital multimeter, check for continuity between terminals of connector K-012 and connector K-007 to check if there is an open in system according to the table below.

Standard Condition

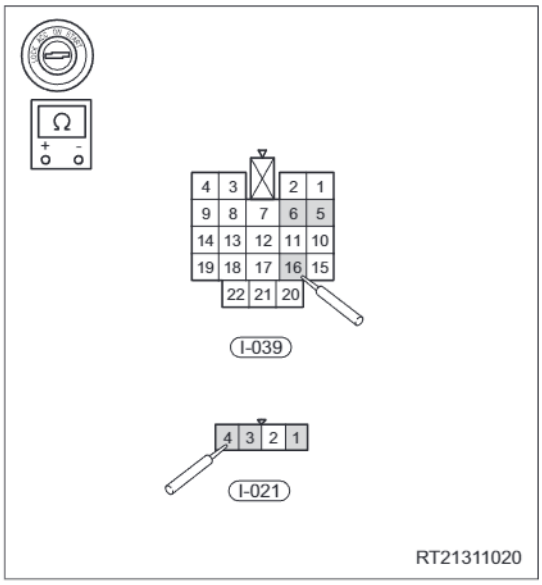
Multimeter Connection	Condition	Specified Condition
K-012 (36) - K-007 (5)	Always	Continuity
K-012 (37) - K-007 (6)	Always	Continuity
K-012 (30) - K-007 (16)	Always	Continuity



g. Using a digital multimeter, check for continuity between terminals of connector I-039 and connector I-021 to check if there is an open in system according to the table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
I-039 (5) - I-021 (3)	Always	Continuity
I-039 (6) - I-021 (1)	Always	Continuity
I-039 (16) - I-021 (4)	Always	Continuity



NG → **Repair or replace related wire harness and connector**

OK

4 Check wire harness and connector (HVAC control panel assembly - body ground)

a. Turn ignition switch to LOCK.

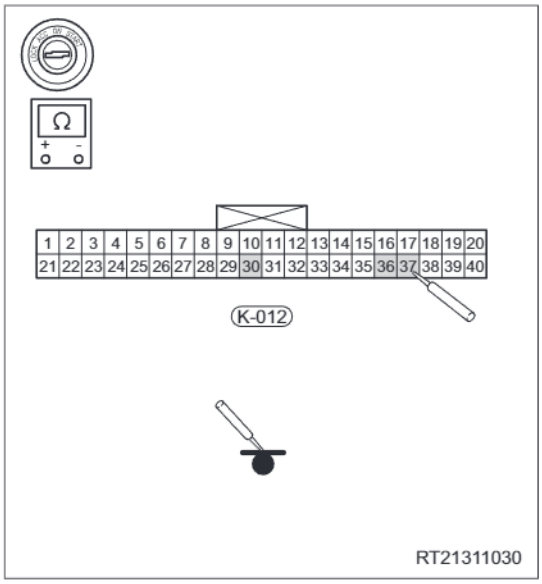
b. Disconnect the negative battery cable.

c. Disconnect the HVAC control panel assembly connector K-012.

d. Using a digital multimeter, check for continuity between connector K-012 and body ground to check if system is short to ground according to the table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
K-012 (36) - Body ground	Always	No continuity
K-012 (37) - Body ground	Always	No continuity
K-012 (30) - Body ground	Always	No continuity



NG → **Repair or replace A/C wire harness and connector**

OK

5	Reconfirm DTCs

a. Reconnect all disconnected connectors securely.
b. Connect the negative battery cable.
c. Turn ignition switch ON.
d. Use X-431 3G diagnostic tester (the latest software) to record and clear DTCs stored in the HVAC control panel assembly.
e. Turn ignition switch to LOCK and wait for a few seconds.
f. Turn ignition switch ON.
g. Use X-431 3G diagnostic tester to read DTCs stored in the HVAC control panel assembly again.

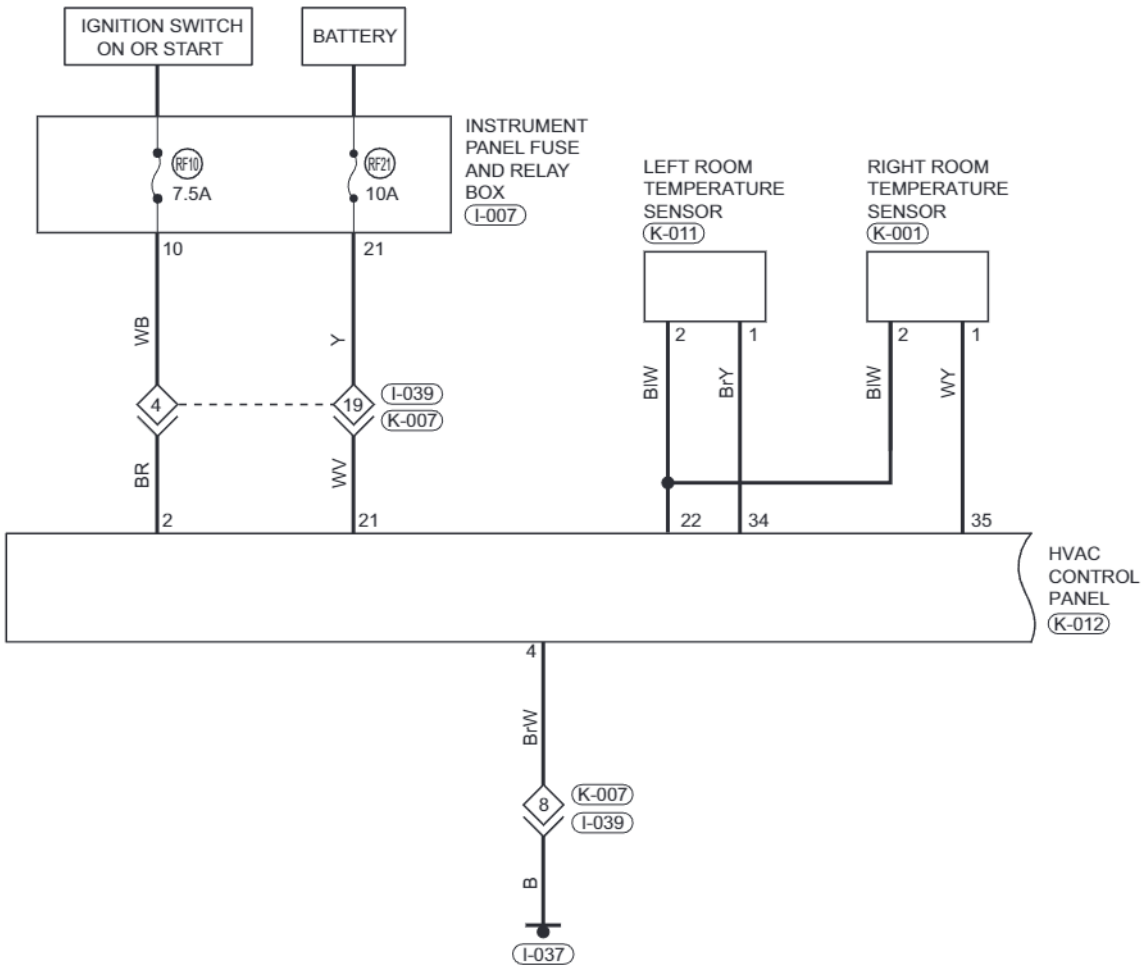
NG → **Replace HVAC control panel assembly**

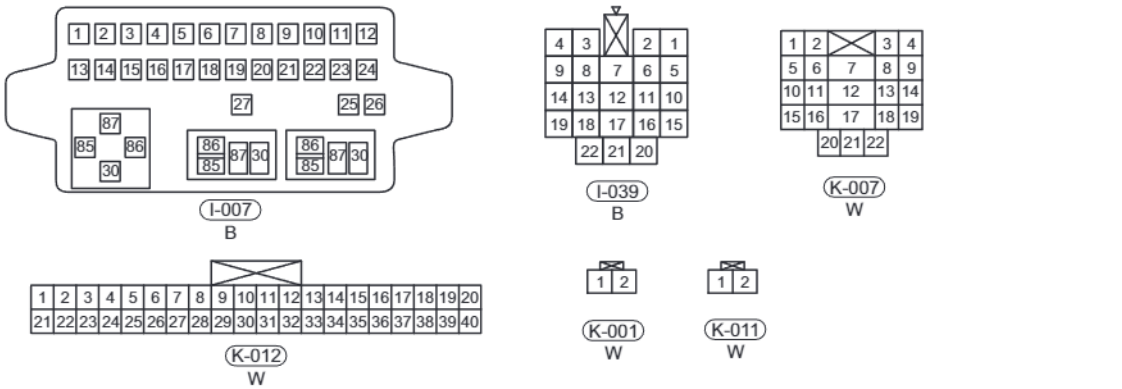
OK

System operates normally

DTC	B2120	AC in Car Temperature Sensor Short to Ground or Open Circuit (Left Side)

DTC	B2121	AC in Car Temperature Sensor Short to Ground or Open Circuit (Right Side)





ET21310090

DTC Code	DTC Definition	DTC Detection Condition	Possible Cause
B2120	AC in Car Temperature Sensor Short to Ground or Open Circuit (Left Side)	Ignition switch ON	• Room temperature sensor • Wire harness and connector • HVAC control panel
B2121	AC in Car Temperature Sensor Short to Ground or Open Circuit (Right Side)		

CAUTION

- When performing electrical equipment diagnosis and test, always refer to the circuit diagram for related circuit and component information.

Diagnosis Procedure

1	Check wire harness and connector

Use the circuit diagram as a guide to perform the following procedures:

a. Turn ignition switch to LOCK.
b. Disconnect the negative battery cable.
c. Disconnect the HVAC control panel assembly connector K-012.
d. Disconnect the left room temperature sensor connector K-011 and right room temperature sensor connector K-001.
e. Check if wire harnesses are worn, pierced, pinched or partially broken.
f. Look for broken, bent, protruded or corroded terminals.
g. Check if related connector pins are in good condition.

NG → **Repair or replace A/C wire harness and connector**

OK ↓

2	Check room temperature sensor

a. Remove the room temperature sensor.
b. Install the new room temperature sensor to vehicle.
c. Use X-431 3G diagnostic tester to check if DTCs are still output.

NO → **Replace room temperature sensor**

YES ↓

3	Check wire harness and connector (HVAC control panel assembly - room temperature sensor)

a. Turn ignition switch to LOCK.

b. Disconnect the negative battery cable.

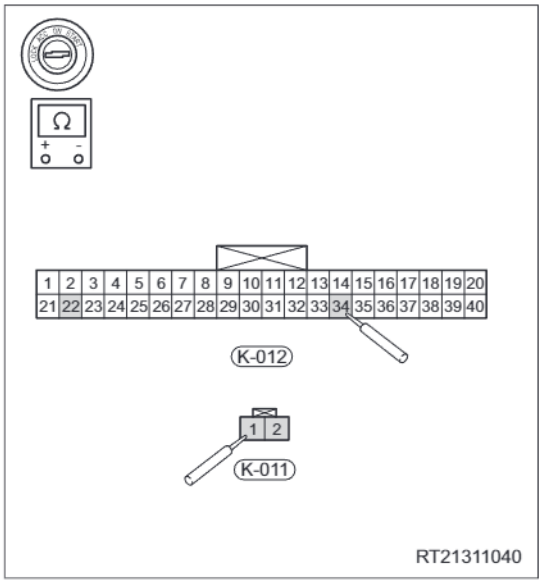
c. Disconnect the HVAC control panel assembly connector K-012.

d. Disconnect the left room temperature sensor connector K-011 and right room temperature sensor connector K-001.

e. Using a digital multimeter, check for continuity between terminals of connector K-012 and connector K-011 to check if there is an open in left room temperature sensor according to the table below.

Standard Condition

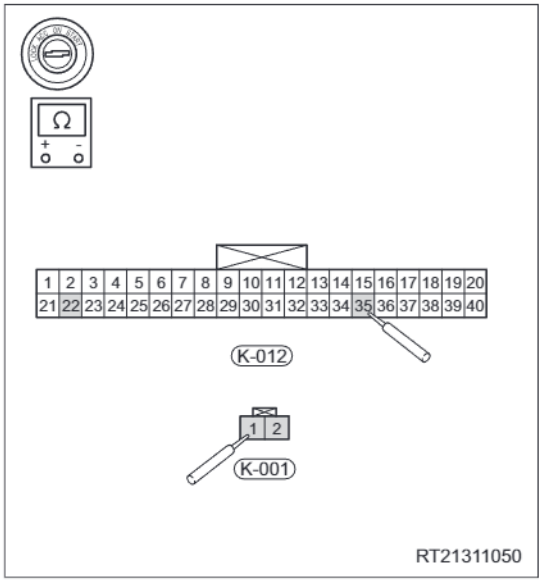
Multimeter Connection	Condition	Specified Condition
K-012 (22) - K-011 (2)	Always	Continuity
K-012 (34) - K-011 (1)	Always	Continuity



f. Using a digital multimeter, check for continuity between terminals of connector K-012 and connector K-001 to check if there is an open in right room temperature sensor according to the table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
K-012 (22) - K-001 (2)	Always	Continuity
K-012 (35) - K-001 (1)	Always	Continuity



NG → **Repair or replace A/C wire harness and connector**

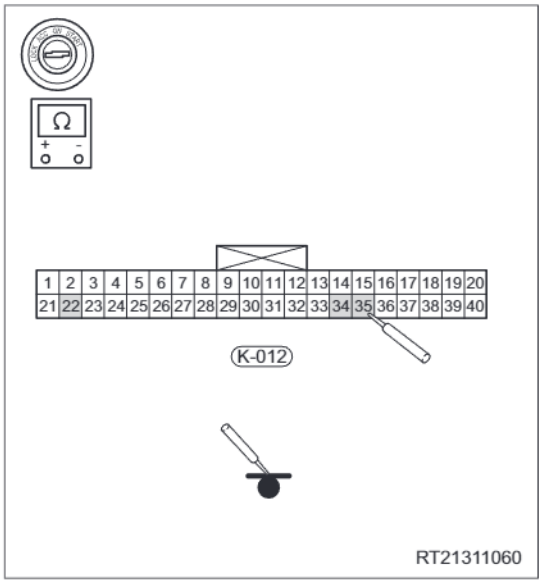
OK

4	Check wire harness and connector (HVAC control panel assembly - body ground)

a. Turn ignition switch to LOCK.
b. Disconnect the negative battery cable.
c. Disconnect the HVAC control panel assembly connector K-012.
d. Using a digital multimeter, check for continuity between connector K-012 and body ground to check if system is short to ground according to the table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
K-012 (22) - Body ground	Always	No continuity
K-012 (34) - Body ground	Always	No continuity
K-012 (35) - Body ground	Always	No continuity



NG → **Repair or replace A/C wire harness and connector**

OK

5	Reconfirm DTCs

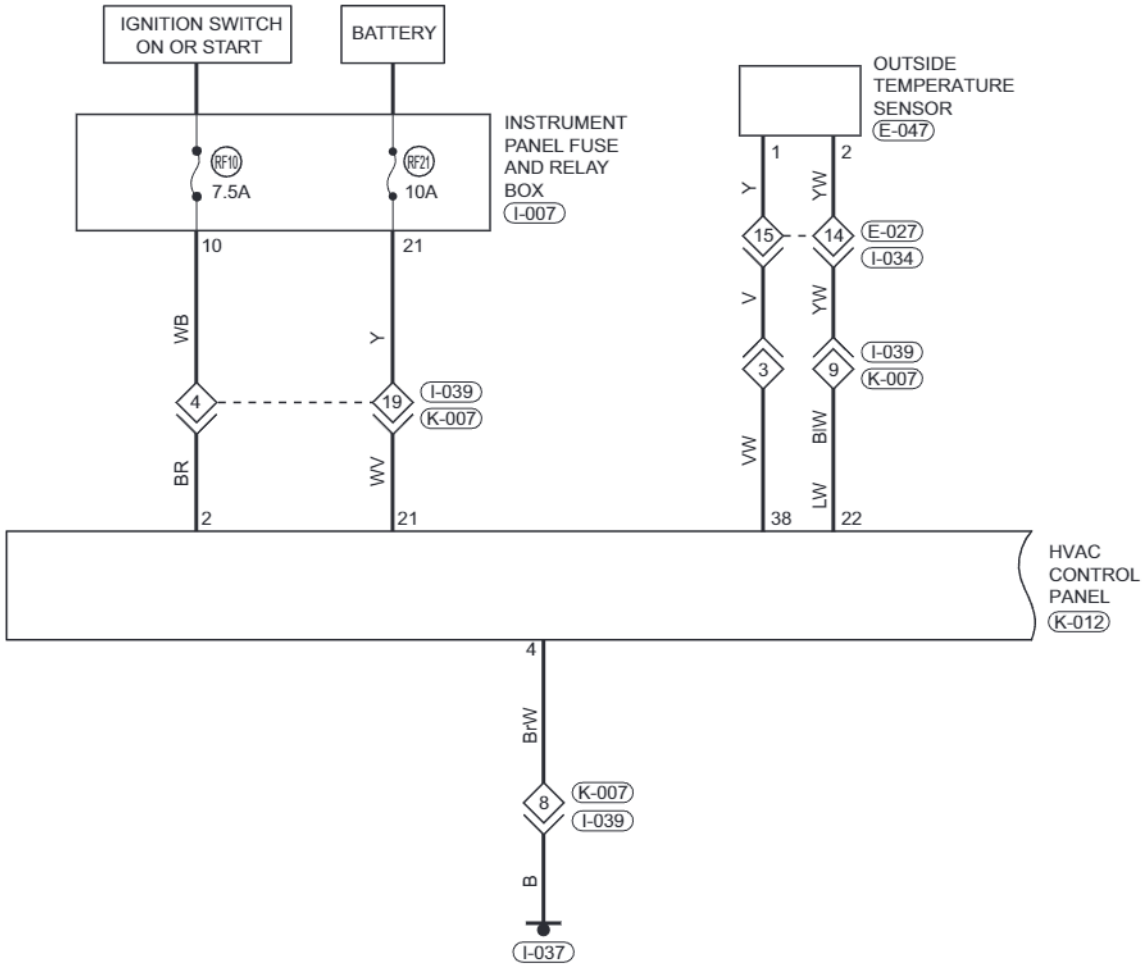
a. Reconnect all disconnected connectors securely.
b. Connect the negative battery cable.
c. Turn ignition switch ON.
d. Use X-431 3G diagnostic tester (the latest software) to record and clear DTCs stored in the HVAC control panel assembly.
e. Turn ignition switch to LOCK and wait for a few seconds.
f. Turn ignition switch ON.
g. Use X-431 3G diagnostic tester to read DTCs stored in the HVAC control panel assembly again.

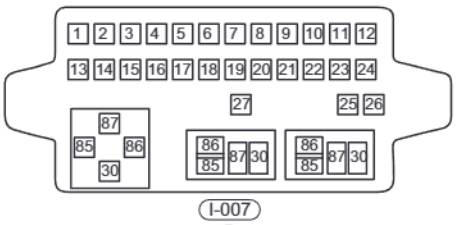
NG → **Replace HVAC control panel assembly**

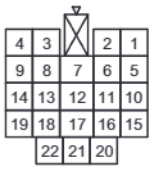
OK

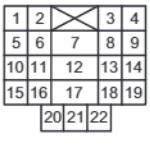
System operates normally

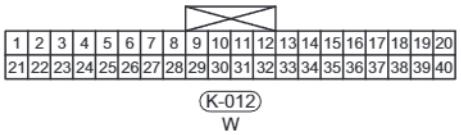
DTC	B2126	AC Ambient Temperature Sensor Short to Ground or Open Circuit

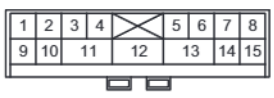














ET21310100

DTC Code	DTC Definition	DTC Detection Condition	Possible Cause
B2126	AC Ambient Temperature Sensor Short to Ground or Open Circuit	Ignition switch ON	• Outside temperature sensor • Wire harness and connector • HVAC control panel

CAUTION

- When performing electrical equipment diagnosis and test, always refer to the circuit diagram for related circuit and component information.

Diagnosis Procedure

1	Check wire harness and connector

Use the circuit diagram as a guide to perform the following procedures:

a. Turn ignition switch to LOCK.
b. Disconnect the negative battery cable.
c. Disconnect the HVAC control panel assembly connector K-012 and A/C wire harness connector K-007.
d. Disconnect the instrument panel wire harness connectors I-039 and I-034.
e. Disconnect the engine compartment wire harness connector E-027 and outside temperature sensor connector E-047.
f. Check if wire harnesses are worn, pierced, pinched or partially broken.
g. Look for broken, bent, protruded or corroded terminals.
h. Check if related connector pins are in good condition.

NG → **Repair or replace related wire harness and connector**

OK ↓

2	Check outside temperature sensor

a. Remove the outside temperature sensor.
b. Install the new outside temperature sensor to vehicle.
c. Use X-431 3G diagnostic tester to check if DTCs are still output.

NO → **Replace outside temperature sensor**

YES ↓

3	Check wire harness and connector (HVAC control panel assembly - outside temperature sensor)

a. Turn ignition switch to LOCK.

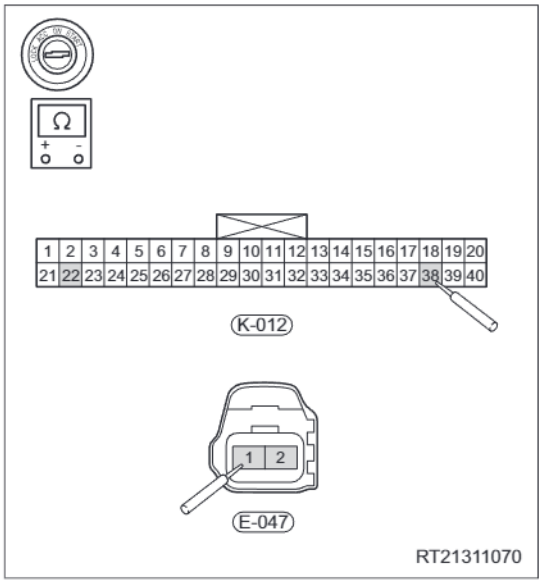
b. Disconnect the negative battery cable.

c. Disconnect the HVAC control panel assembly connector K-012 and outside temperature sensor connector E-047.

d. Using a digital multimeter, check for continuity between terminals of connector K-012 and connector E-047 to check if there is an open in system according to the table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
K-012 (38) - E-047 (1)	Always	Continuity
K-012 (22) - E-047 (2)	Always	Continuity



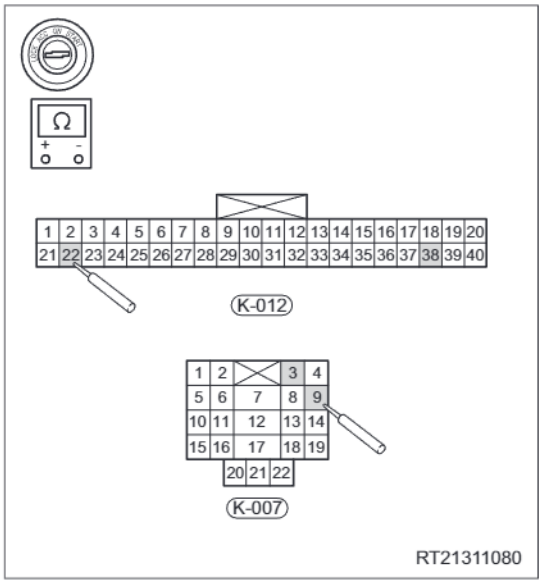
e. Disconnect the instrument panel wire harness connectors I-039 and I-034.

f. Disconnect the engine compartment wire harness connector E-027 and A/C wire harness connector K-007.

g. Using a digital multimeter, check for continuity between terminals of connector K-012 and connector K-007 to check if there is an open in system according to the table below.

Standard Condition

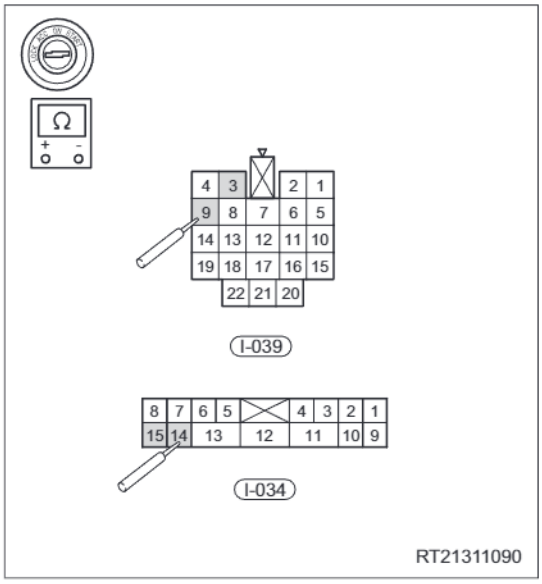
Multimeter Connection	Condition	Specified Condition
K-012 (38) - K-007 (3)	Always	Continuity
K-012 (22) - K-007 (9)	Always	Continuity



h. Using a digital multimeter, check for continuity between terminals of connector I-039 and connector I-034 to check if there is an open in system according to the table below.

Standard Condition

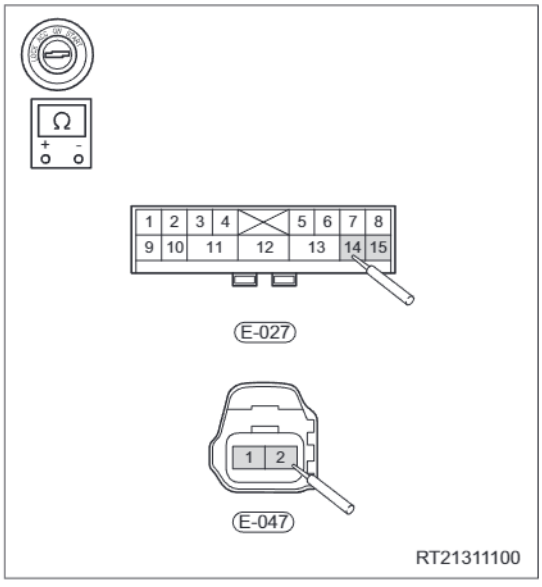
Multimeter Connection	Condition	Specified Condition
I-039 (3) - I-034 (15)	Always	Continuity
I-039 (9) - I-034 (14)	Always	Continuity



i. Using a digital multimeter, check for continuity between terminals of connector E-027 and connector E-047 to check if there is an open in system according to the table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
E-027 (15) - E-047 (1)	Always	Continuity
E-027 (14) - E-047 (2)	Always	Continuity



NG → **Repair or replace related wire harness and connector**

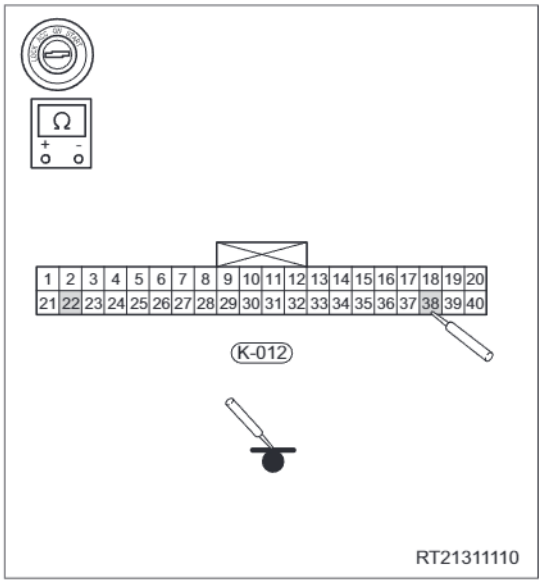
OK

4	Check wire harness and connector (HVAC control panel assembly - body ground)

a. Turn ignition switch to LOCK.
b. Disconnect the negative battery cable.
c. Disconnect the HVAC control panel assembly connector K-012.
d. Using a digital multimeter, check for continuity between connector K-012 and body ground to check if system is short to ground according to the table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
K-012 (38) - Body ground	Always	No continuity
K-012 (22) - Body ground	Always	No continuity



NG → **Repair or replace A/C wire harness and connector**

OK ↓

5	Reconfirm DTCs

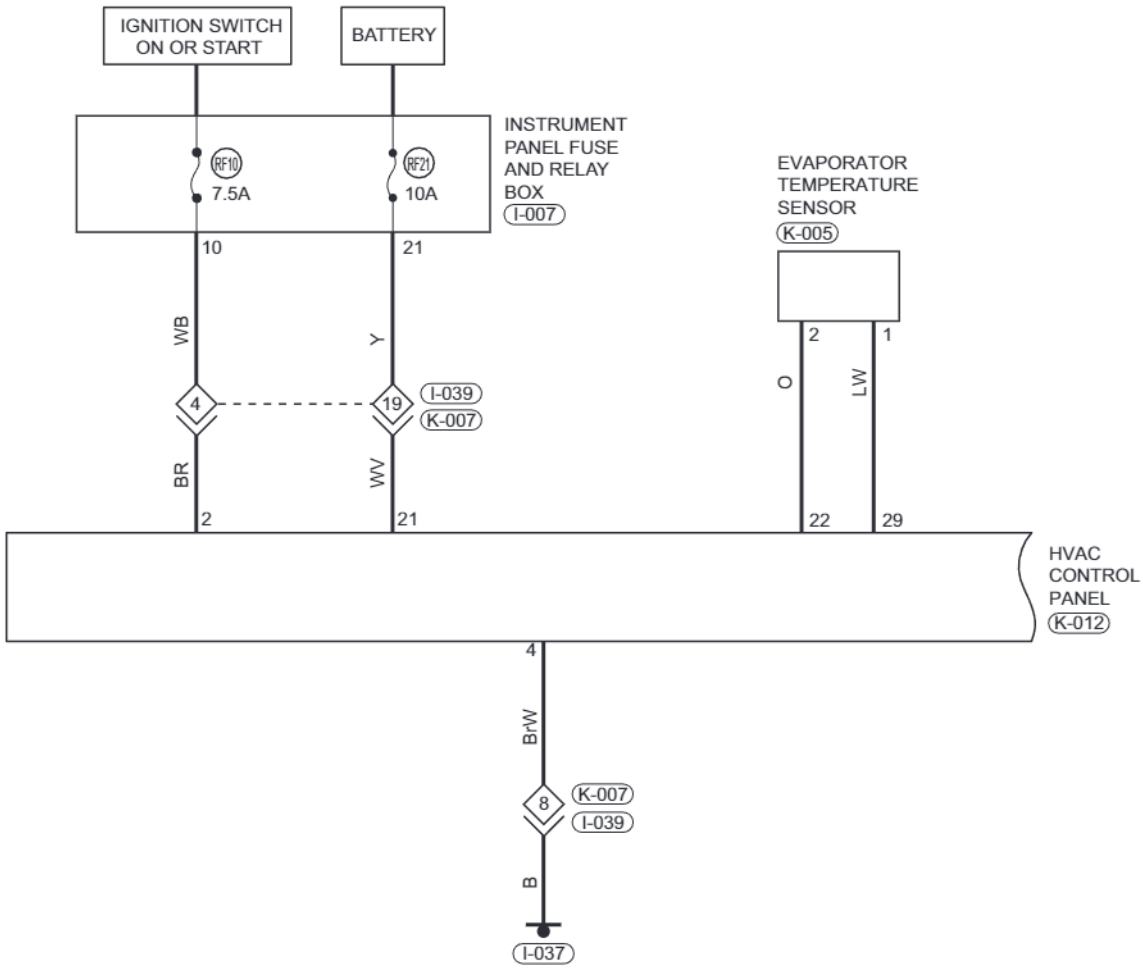
a. Reconnect all disconnected connectors securely.
b. Connect the negative battery cable.
c. Turn ignition switch ON.
d. Use X-431 3G diagnostic tester (the latest software) to record and clear DTCs stored in the HVAC control panel assembly.
e. Turn ignition switch to LOCK and wait for a few seconds.
f. Turn ignition switch ON.
g. Use X-431 3G diagnostic tester to read DTCs stored in the HVAC control panel assembly again.

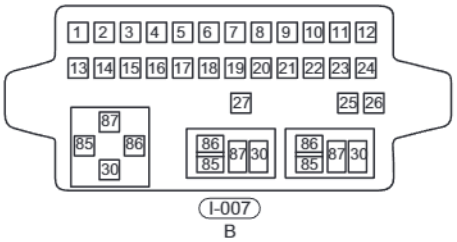
NG → **Replace HVAC control panel assembly**

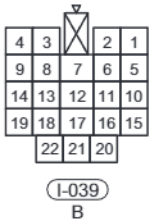
OK ↓

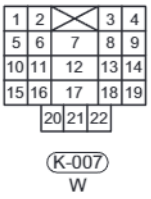
System operates normally

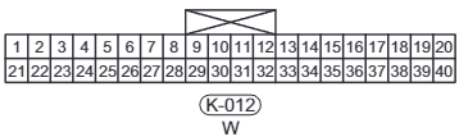
DTC	B2127	AC Evaporator Temperature Sensor Short to Ground or Open













ET21310110

DTC Code	DTC Definition	DTC Detection Condition	Possible Cause
B2127	AC Evaporator Temperature Sensor Short to Ground or Open	Ignition switch ON	• Evaporator temperature sensor • Wire harness and connector • HVAC control panel

CAUTION

- When performing electrical equipment diagnosis and test, always refer to the circuit diagram for related circuit and component information.

Diagnosis Procedure

1	Check wire harness and connector

Use the circuit diagram as a guide to perform the following procedures:

a. Turn ignition switch to LOCK.
b. Disconnect the negative battery cable.
c. Disconnect the HVAC control panel assembly connector K-012 and evaporator temperature sensor connector K-005.
d. Check if wire harnesses are worn, pierced, pinched or partially broken.
e. Look for broken, bent, protruded or corroded terminals.
f. Check if related connector pins are in good condition.

NG → **Repair or replace A/C wire harness and connector**

OK

2	Check evaporator temperature sensor

a. Remove the evaporator temperature sensor.
b. Install the new evaporator temperature sensor to vehicle.
c. Use X-431 3G diagnostic tester to check if DTCs are still output.

NO → **Replace evaporator temperature sensor**

YES

3	Check wire harness and connector (HVAC control panel assembly - evaporator temperature sensor)

a. Turn ignition switch to LOCK.

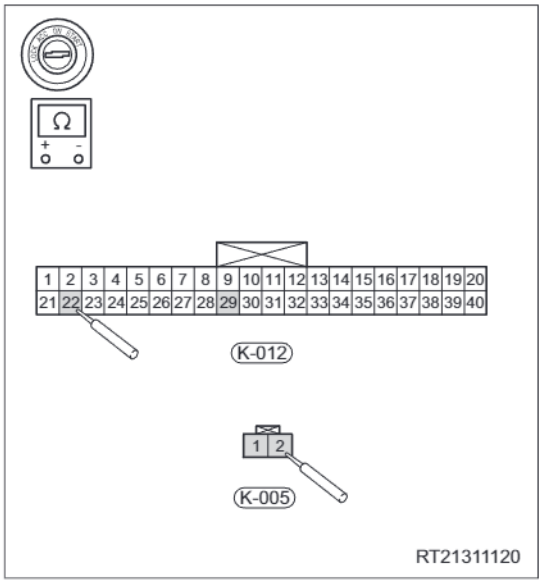
b. Disconnect the negative battery cable.

c. Disconnect the HVAC control panel assembly connector K-012 and evaporator temperature sensor connector K-005.

d. Using a digital multimeter, check for continuity between terminals of connector K-012 and connector K-005 to check if there is an open in system according to the table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
K-012 (22) - K-005 (2)	Always	Continuity
K-012 (29) - K-005 (1)	Always	Continuity



NG → **Repair or replace A/C wire harness and connector**

OK

4	Check wire harness and connector (HVAC control panel assembly - body ground)

a. Turn ignition switch to LOCK.

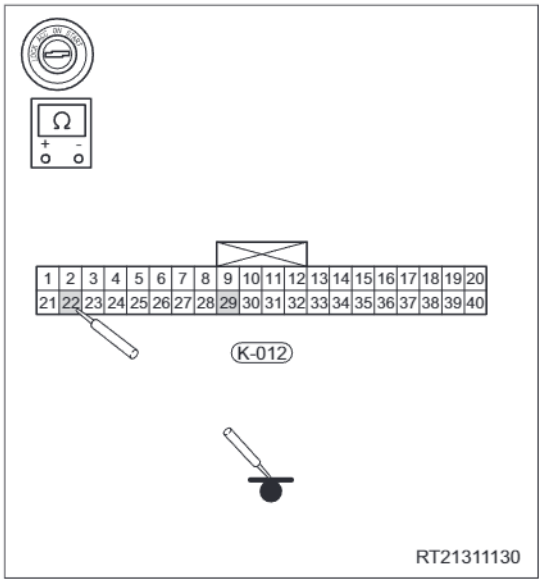
b. Disconnect the negative battery cable.

c. Disconnect the HVAC control panel assembly connector K-012.

d. Using a digital multimeter, check for continuity between connector K-012 and body ground to check if system is short to ground according to the table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
K-012 (22) - Body ground	Always	No continuity
K-012 (29) - Body ground	Always	No continuity



NG → **Repair or replace A/C wire harness and connector**

OK

5	Reconfirm DTCs

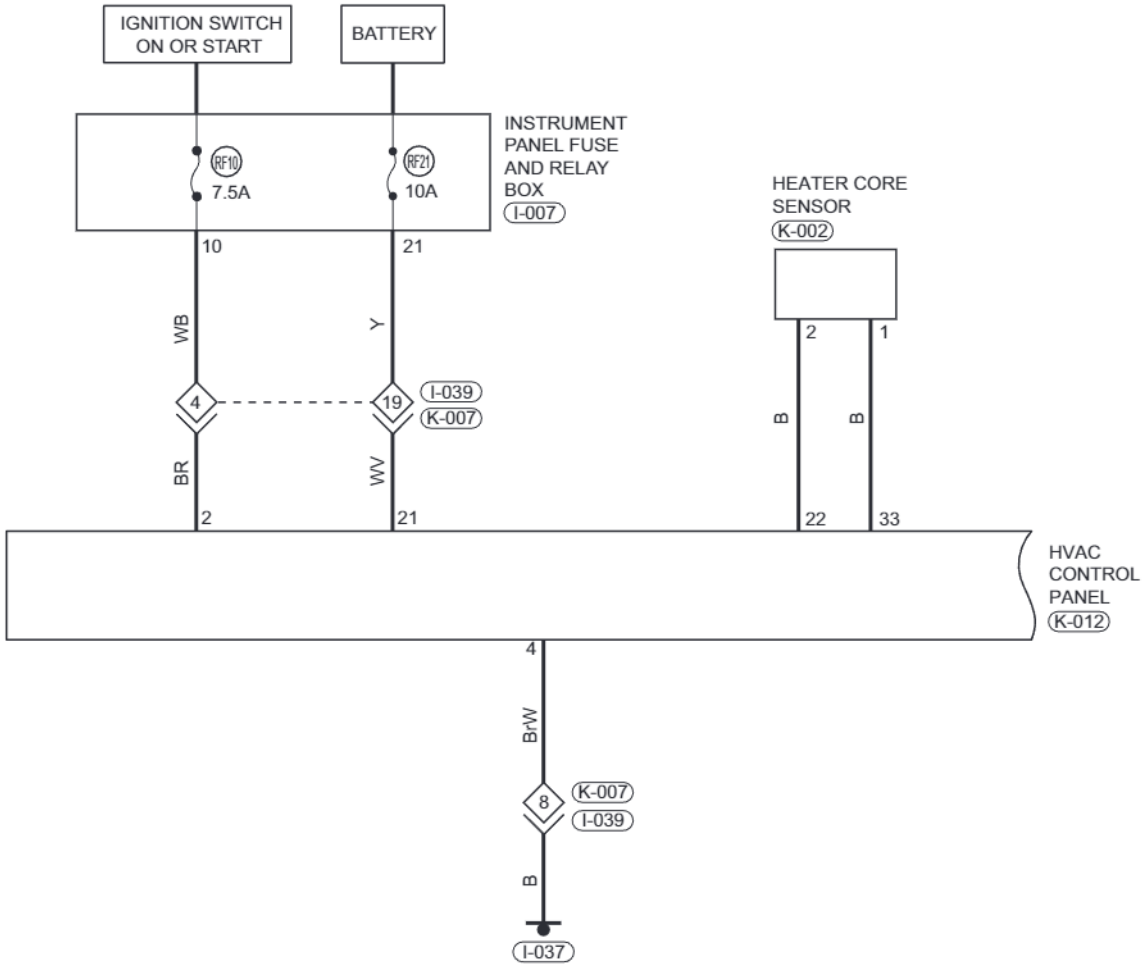
a. Reconnect all disconnected connectors securely.
b. Connect the negative battery cable.
c. Turn ignition switch ON.
d. Use X-431 3G diagnostic tester (the latest software) to record and clear DTCs stored in the HVAC control panel assembly.
e. Turn ignition switch to LOCK and wait for a few seconds.
f. Turn ignition switch ON.
g. Use X-431 3G diagnostic tester to read DTCs stored in the HVAC control panel assembly again.

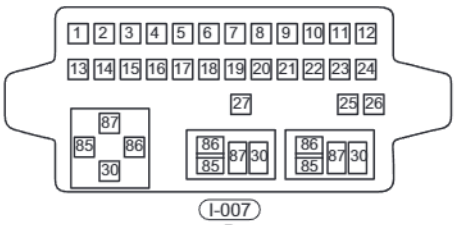
NG → **Replace HVAC control panel assembly**

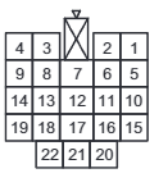
OK ↓

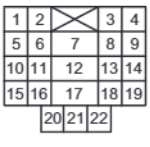
System operates normally

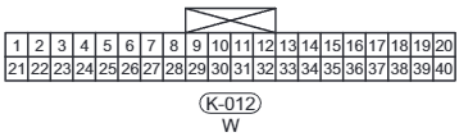
DTC	B2135	AC Heater Core Sensor Short to Ground Or Open Circuit













ET21310120

DTC Code	DTC Definition	DTC Detection Condition	Possible Cause
B2135	AC Heater Core Sensor Short to Ground Or Open Circuit	Ignition switch ON	• Heater core sensor • Wire harness and connector • HVAC control panel

CAUTION

- When performing electrical equipment diagnosis and test, always refer to the circuit diagram for related circuit and component information.

Diagnosis Procedure

1	Check wire harness and connector

Use the circuit diagram as a guide to perform the following procedures:

a. Turn ignition switch to LOCK.
b. Disconnect the negative battery cable.
c. Disconnect the HVAC control panel assembly connector K-012 and heater core sensor connector K-002.
d. Check if wire harnesses are worn, pierced, pinched or partially broken.
e. Look for broken, bent, protruded or corroded terminals.
f. Check if related connector pins are in good condition.

NG → **Repair or replace A/C wire harness and connector**

OK ↓

2	Check heater core sensor

a. Remove the heater core sensor.
b. Install the new heater core sensor to vehicle.
c. Use X-431 3G diagnostic tester to check if DTCs are still output.

NO → **Replace heater core sensor**

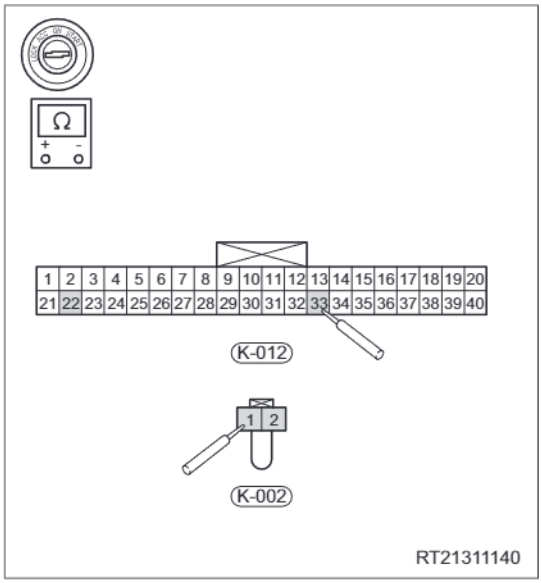
YES ↓

3	Check wire harness and connector (HVAC control panel assembly - heater core sensor)

a. Turn ignition switch to LOCK.
b. Disconnect the negative battery cable.
c. Disconnect the HVAC control panel assembly connector K-012 and heater core sensor connector K-002.
d. Using a digital multimeter, check for continuity between terminals of connector K-012 and connector K-002 to check if there is an open in system according to the table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
K-012 (22) - K-002 (2)	Always	Continuity
K-012 (33) - K-002 (1)	Always	Continuity



NG → **Repair or replace A/C wire harness and connector**

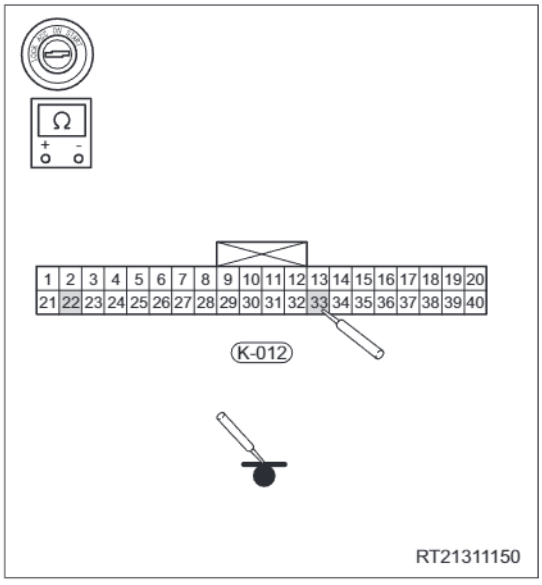
OK

4	Check wire harness and connector (HVAC control panel assembly - body ground)

a. Turn ignition switch to LOCK.
b. Disconnect the negative battery cable.
c. Disconnect the HVAC control panel assembly connector K-012.
d. Using a digital multimeter, check for continuity between connector K-012 and body ground to check if system is short to ground according to the table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
K-012 (22) - Body ground	Always	No continuity
K-012 (33) - Body ground	Always	No continuity



NG → **Repair or replace A/C wire harness and connector**

OK

5	Reconfirm DTCs

a. Reconnect all disconnected connectors securely.
b. Connect the negative battery cable.
c. Turn ignition switch ON.
d. Use X-431 3G diagnostic tester (the latest software) to record and clear DTCs stored in the HVAC control panel assembly.
e. Turn ignition switch to LOCK and wait for a few seconds.
f. Turn ignition switch ON.
g. Use X-431 3G diagnostic tester to read DTCs stored in the HVAC control panel assembly again.

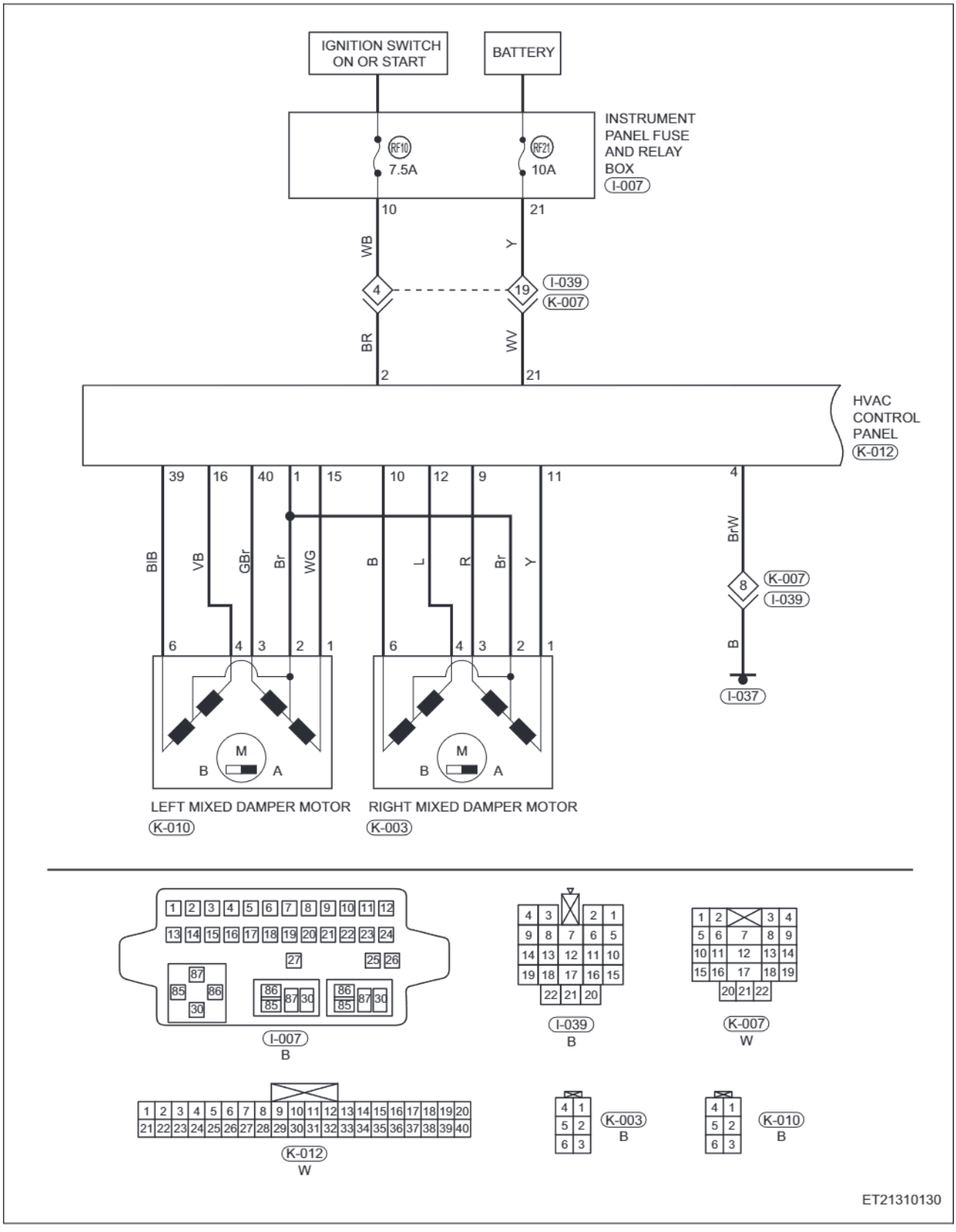
NG → **Replace HVAC control panel assembly**

OK ↓

System operates normally

DTC	B2160	Error of AC Mix Actuator (Left Side)

DTC	B2163	Error of AC Mix Actuator (Right Side)



DTC Code	DTC Definition	DTC Detection Condition	Possible Cause
B2160	Error of AC Mix Actuator (Left Side)	Ignition switch ON	• Mix damper motor • Wire harness and connector • HVAC control panel
B2163	Error of AC Mix Actuator (Right Side)		

CAUTION

- When performing electrical equipment diagnosis and test, always refer to the circuit diagram for related circuit and component information.

Diagnosis Procedure

1	Check wire harness and connector

Use the circuit diagram as a guide to perform the following procedures:

a. Turn ignition switch to LOCK.
b. Disconnect the negative battery cable.
c. Disconnect the HVAC control panel assembly connector K-012.
d. Disconnect the left mix damper motor connector K-010 and right mix damper motor connector K-003.
e. Check if wire harnesses are worn, pierced, pinched or partially broken.
f. Look for broken, bent, protruded or corroded terminals.
g. Check if related connector pins are in good condition.

NG → **Repair or replace A/C wire harness and connector**

OK

2	Check mix damper motor

a. Remove the mix damper motor.
b. Install the new mix damper motor to vehicle.
c. Use X-431 3G diagnostic tester to check if DTCs are still output.

NO → **Replace mix damper motor**

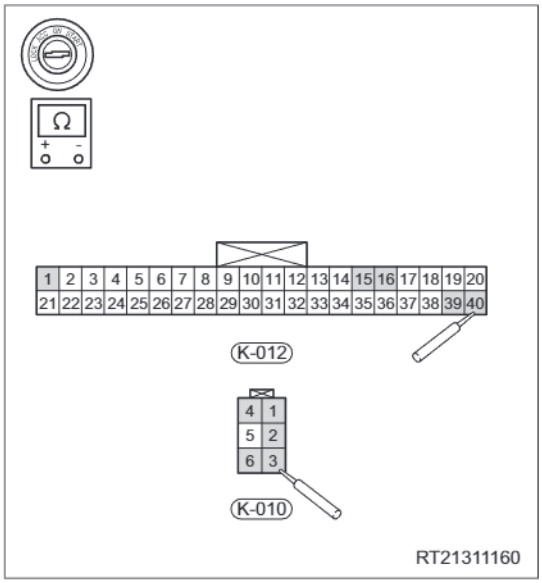
YES

3	Check wire harness and connector (HVAC control panel assembly - mix damper motor)

a. Turn ignition switch to LOCK.
b. Disconnect the negative battery cable.
c. Disconnect the HVAC control panel assembly connector K-012.
d. Disconnect the left mix damper motor connector K-010 and right mix damper motor connector K-003.
e. Using a digital multimeter, check for continuity between terminals of connector K-012 and connector K-010 to check if there is an open in left mix damper motor according to the table below.

Standard Condition

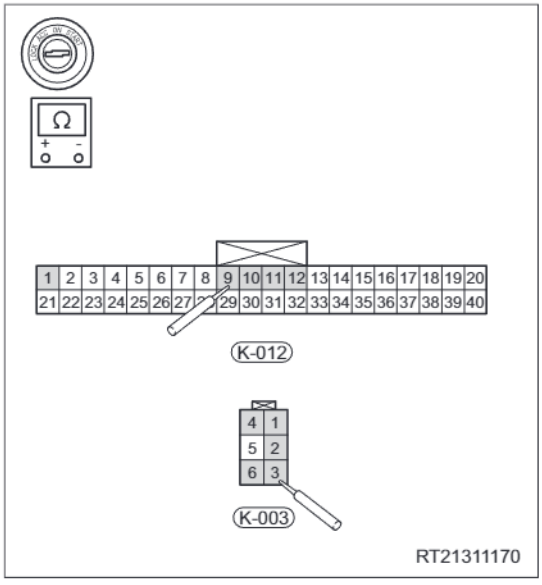
Multimeter Connection	Condition	Specified Condition
K-012 (15) - K-010 (1)	Always	Continuity
K-012 (1) - K-010 (2)	Always	Continuity
K-012 (40) - K-010 (3)	Always	Continuity
K-012 (16) - K-010 (4)	Always	Continuity
K-012 (39) - K-010 (6)	Always	Continuity



f. Using a digital multimeter, check for continuity between terminals of connector K-012 and connector K-003 to check if there is an open in right mix damper motor according to the table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
K-012 (11) - K-003 (1)	Always	Continuity
K-012 (1) - K-003 (2)	Always	Continuity
K-012 (9) - K-003 (3)	Always	Continuity
K-012 (12) - K-003 (4)	Always	Continuity
K-012 (10) - K-003 (6)	Always	Continuity



NG	Repair or replace A/C wire harness and connector

OK

4	Check wire harness and connector (HVAC control panel assembly - body ground)

a. Turn ignition switch to LOCK.

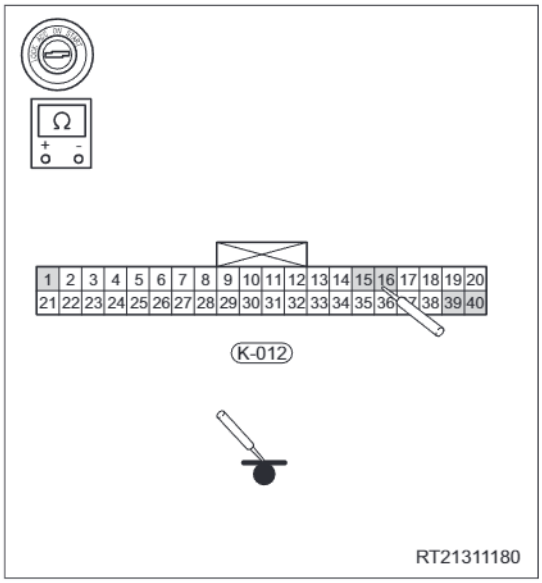
b. Disconnect the negative battery cable.

c. Disconnect the HVAC control panel assembly connector K-012.

d. Using a digital multimeter, check for continuity between connector K-012 and body ground to check if left mix damper motor circuit is short to ground according to the table below.

Standard Condition

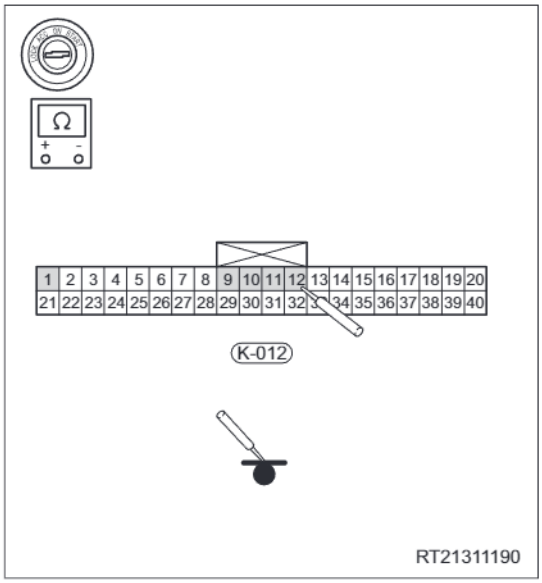
Multimeter Connection	Condition	Specified Condition
K-012 (1) - Body ground	Always	No continuity
K-012 (15) - Body ground	Always	No continuity
K-012 (16) - Body ground	Always	No continuity
K-012 (39) - Body ground	Always	No continuity
K-012 (40) - Body ground	Always	No continuity



e. Using a digital multimeter, check for continuity between connector K-012 and body ground to check if right mix damper motor circuit is short to ground according to the table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
K-012 (1) - Body ground	Always	No continuity
K-012 (9) - Body ground	Always	No continuity
K-012 (10) - Body ground	Always	No continuity
K-012 (11) - Body ground	Always	No continuity
K-012 (12) - Body ground	Always	No continuity



NG → **Repair or replace A/C wire harness and connector**

OK

5	Reconfirm DTCs

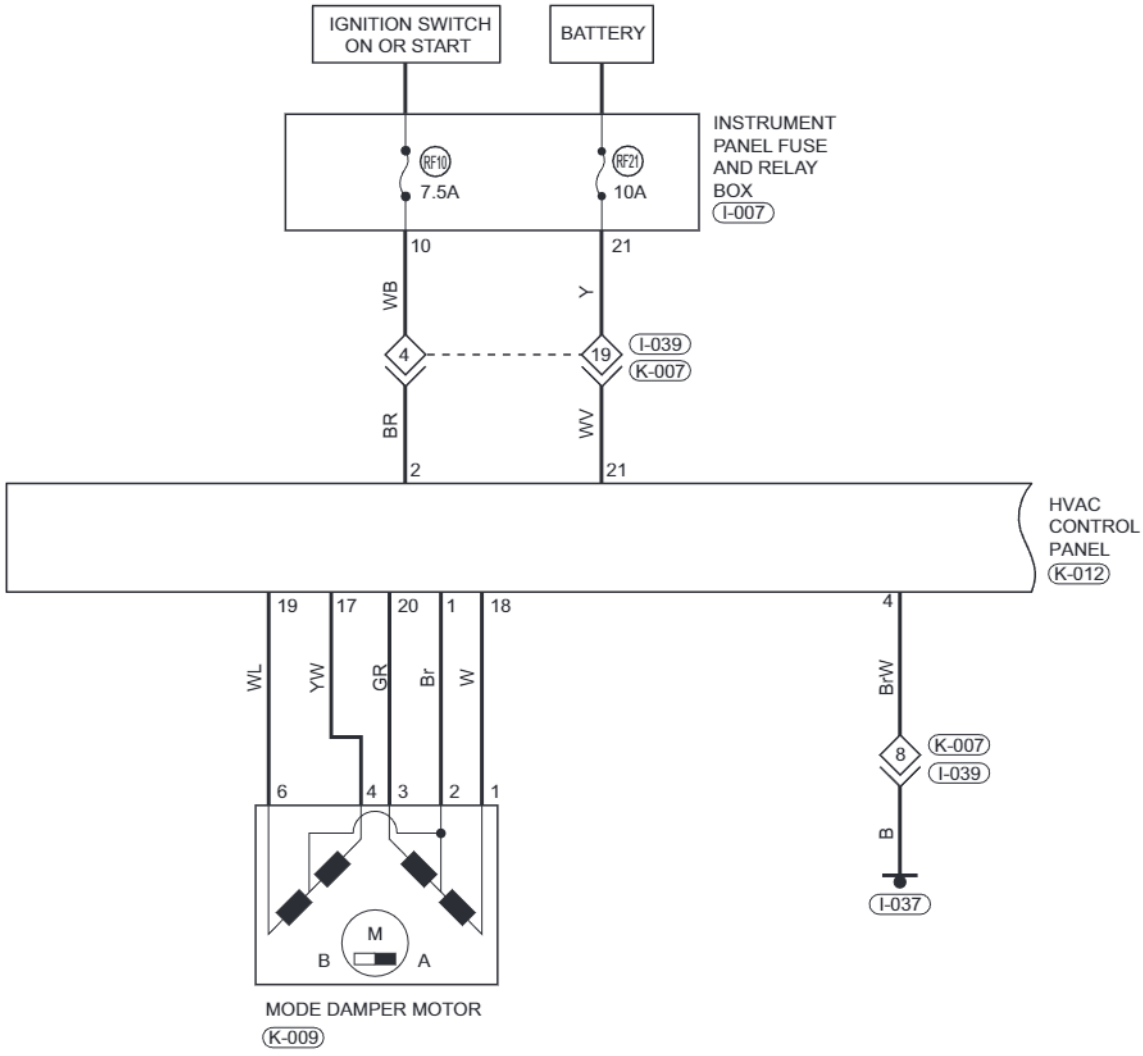
a. Reconnect all disconnected connectors securely.
b. Connect the negative battery cable.
c. Turn ignition switch ON.
d. Use X-431 3G diagnostic tester (the latest software) to record and clear DTCs stored in the HVAC control panel assembly.
e. Turn ignition switch to LOCK and wait for a few seconds.
f. Turn ignition switch ON.
g. Use X-431 3G diagnostic tester to read DTCs stored in the HVAC control panel assembly again.

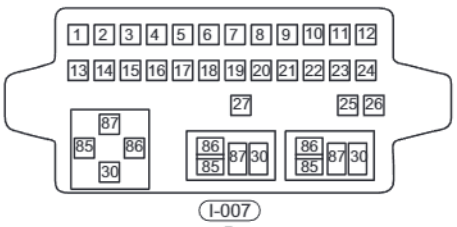
NG → Replace HVAC control panel assembly

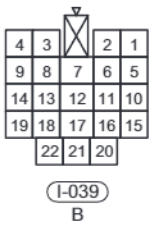
OK

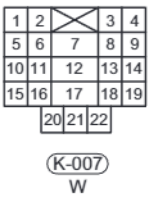
System operates normally

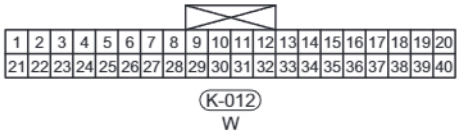
DTC	B2166	Error of AC Mode Actuator

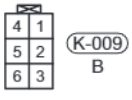












ET21310140

DTC Code	DTC Definition	DTC Detection Condition	Possible Cause
B2166	Error of AC Mode Actuator	Ignition switch ON	• Mode damper motor • Wire harness and connector • HVAC control panel

CAUTION

- When performing electrical equipment diagnosis and test, always refer to the circuit diagram for related circuit and component information.

Diagnosis Procedure

1	Check wire harness and connector

Use the circuit diagram as a guide to perform the following procedures:

a. Turn ignition switch to LOCK.
b. Disconnect the negative battery cable.
c. Disconnect the HVAC control panel assembly connector K-012.
d. Disconnect the mode damper motor connector K-009.
e. Check if wire harnesses are worn, pierced, pinched or partially broken.
f. Look for broken, bent, protruded or corroded terminals.
g. Check if related connector pins are in good condition.

NG → **Repair or replace A/C wire harness and connector**

OK ↓

2	Check mode damper motor

a. Remove the mode damper motor.
b. Install the new mode damper motor to vehicle.
c. Use X-431 3G diagnostic tester to check if DTCs are still output.

NO → **Replace mode damper motor**

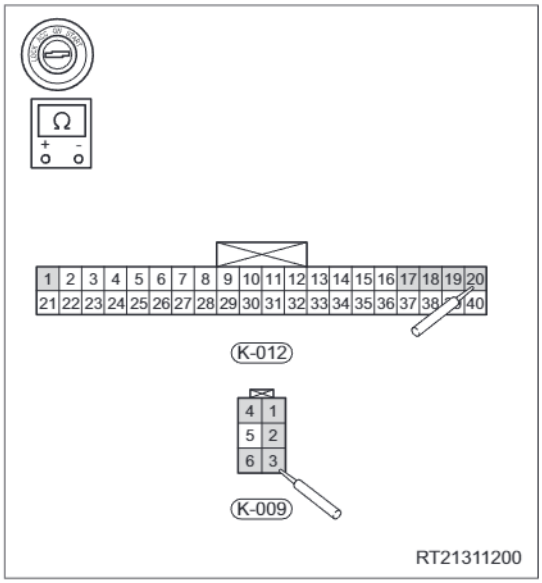
YES ↓

3	Check wire harness and connector (HVAC control panel assembly - mode damper motor)

a. Turn ignition switch to LOCK.
b. Disconnect the negative battery cable.
c. Disconnect the HVAC control panel assembly connector K-012.
d. Disconnect the mode damper motor connector K-009
e. Using a digital multimeter, check for continuity between terminals of connector K-012 and connector K-009 to check if there is an open in mode damper motor according to the table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
K-012 (18) - K-009 (1)	Always	Continuity
K-012 (1) - K-009 (2)	Always	Continuity
K-012 (20) - K-009 (3)	Always	Continuity
K-012 (17) - K-009 (4)	Always	Continuity
K-012 (19) - K-009 (6)	Always	Continuity



NG → **Repair or replace A/C wire harness and connector**

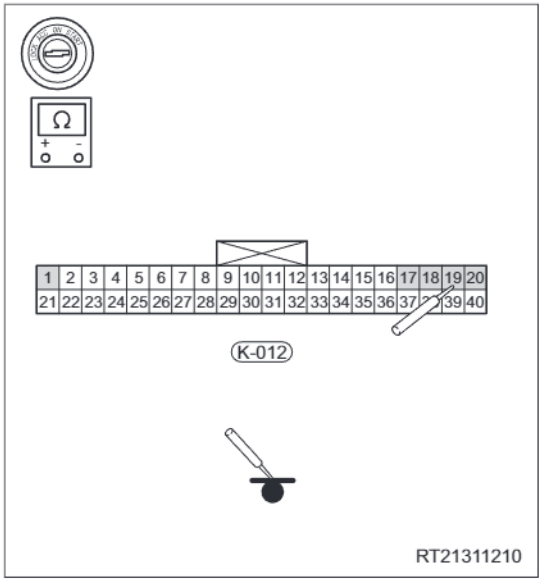
OK

4	Check wire harness and connector (HVAC control panel assembly - body ground)

a. Turn ignition switch to LOCK.
b. Disconnect the negative battery cable.
c. Disconnect the HVAC control panel assembly connector K-012.
d. Using a digital multimeter, check for continuity between connector K-012 and body ground to check if mode damper motor circuit is short to ground according to the table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
K-012 (1) - Body ground	Always	No continuity
K-012 (17) - Body ground	Always	No continuity



Multimeter Connection	Condition	Specified Condition
K-012 (18) - Body ground	Always	No continuity
K-012 (19) - Body ground	Always	No continuity
K-012 (20) - Body ground	Always	No continuity

NG → **Repair or replace A/C wire harness and connector**

OK

5	Reconfirm DTCs

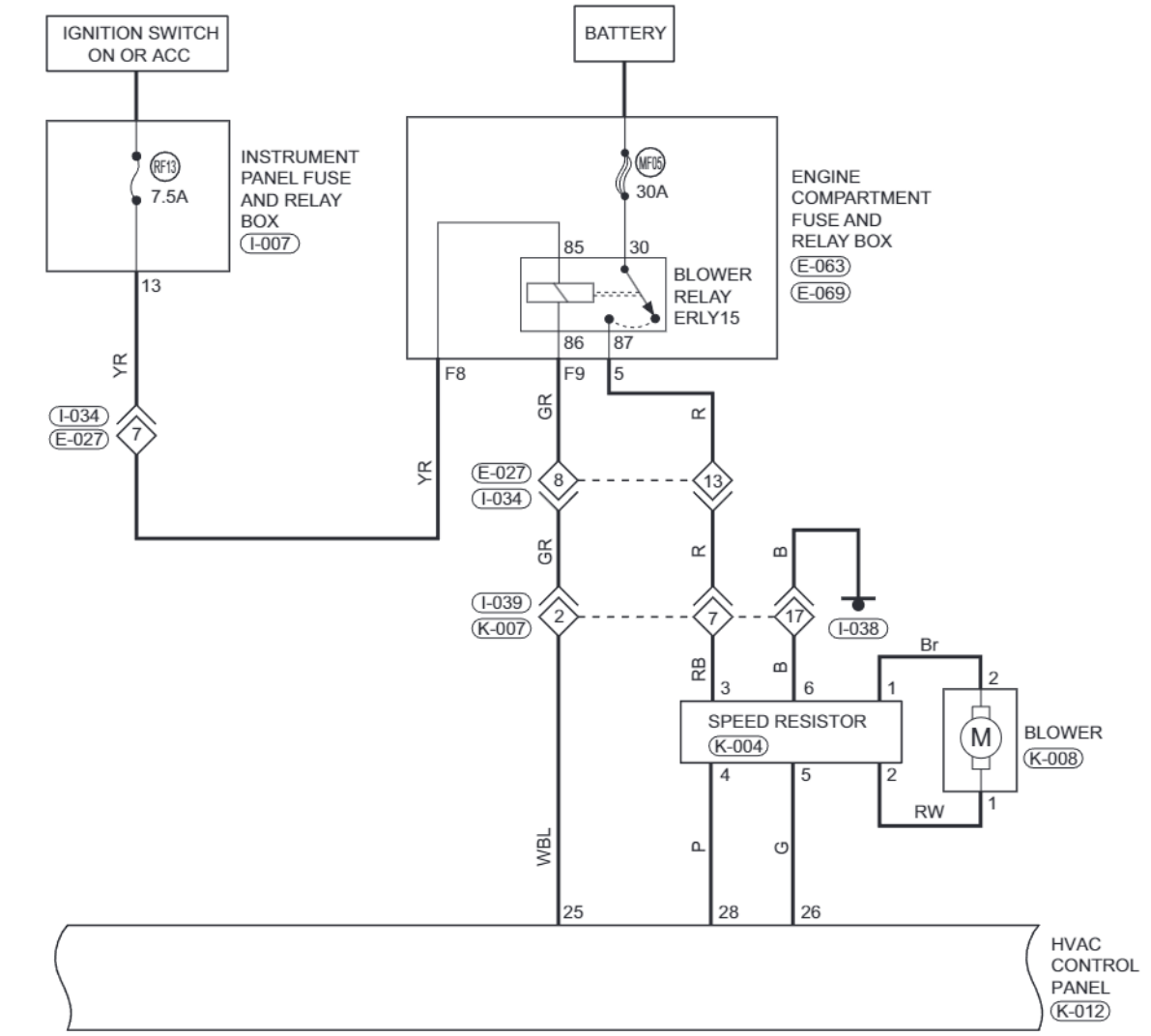
a. Reconnect all disconnected connectors securely.
b. Connect the negative battery cable.
c. Turn ignition switch ON.
d. Use X-431 3G diagnostic tester (the latest software) to record and clear DTCs stored in the HVAC control panel assembly.
e. Turn ignition switch to LOCK and wait for a few seconds.
f. Turn ignition switch ON.
g. Use X-431 3G diagnostic tester to read DTCs stored in the HVAC control panel assembly again.

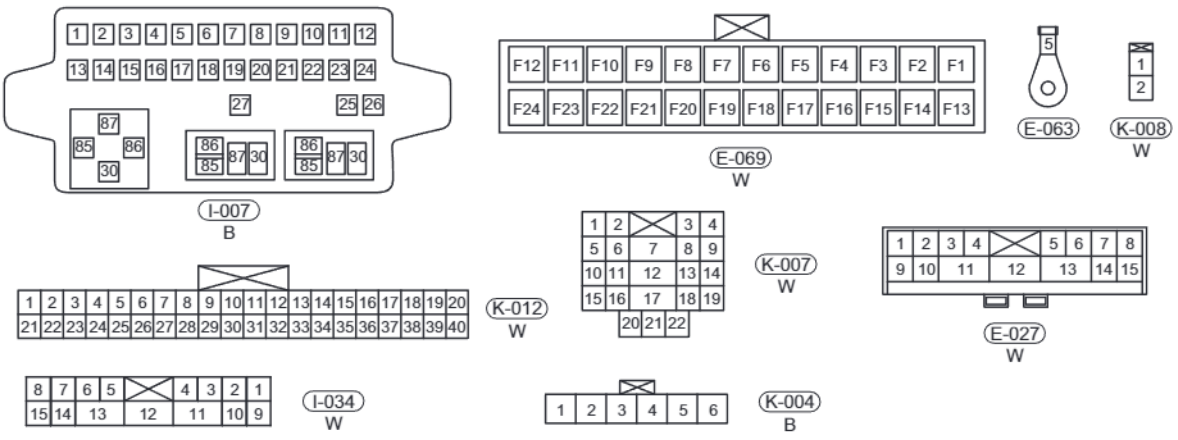
NG → **Replace HVAC control panel assembly**

OK

System operates normally

DTC	B2169	Error of AC Blower Actuator





ET21310150

DTC Code	DTC Definition	DTC Detection Condition	Possible Cause
B2169	Error of AC Blower Actuator	Ignition switch ON	• Fuse • Relay • Blower motor • Blower speed resistor • Wire harness and connector • HVAC control panel

CAUTION

- When performing electrical equipment diagnosis and test, always refer to the circuit diagram for related circuit and component information.

Diagnosis Procedure

1	Check wire harness and connector

Use the circuit diagram as a guide to perform the following procedures:

a. Turn ignition switch to LOCK.
b. Disconnect the negative battery cable.
c. Disconnect the HVAC control panel assembly connector K-012.
d. Disconnect the blower connector K-008 and blower speed resistor connector K-004.
e. Check if wire harnesses are worn, pierced, pinched or partially broken.
f. Look for broken, bent, protruded or corroded terminals.
g. Check if related connector pins are in good condition.

NG → **Repair or replace A/C wire harness and connector**

OK ↓

2	Check blower

a. Remove the blower.
b. Install the new blower to vehicle.
c. Use X-431 3G diagnostic tester to check if DTCs are still output.

NO → **Replace blower**

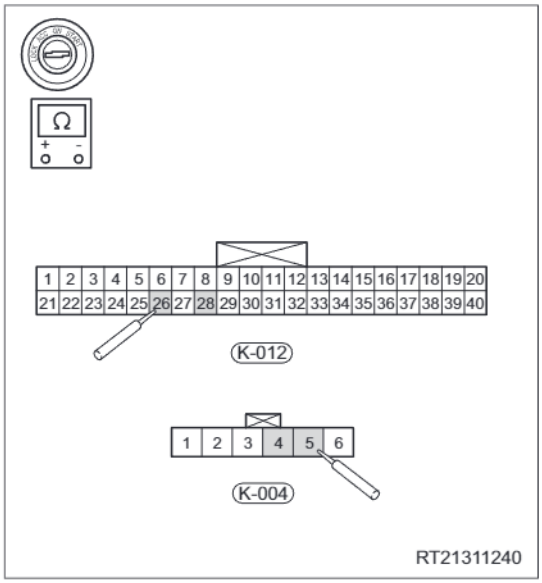
YES ↓

3	Check wire harness and connector (HVAC control panel assembly - blower speed resistor)

a. Turn ignition switch to LOCK.
b. Disconnect the negative battery cable.
c. Disconnect the HVAC control panel assembly connector K-012.
d. Disconnect the blower speed resistor connector K-004.
e. Using a digital multimeter, check for continuity between terminals of connector K-012 and connector K-004 to check if there is an open in system according to the table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
K-012 (28) - K-004 (4)	Always	Continuity
K-012 (26) - K-004 (5)	Always	Continuity



NG → **Repair or replace A/C wire harness and connector**

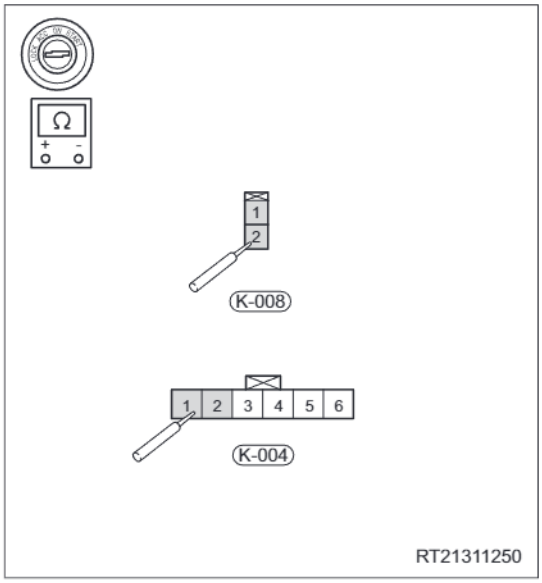
OK

4	Check wire harness and connector (blower - blower speed resistor)

a. Turn ignition switch to LOCK.
b. Disconnect the negative battery cable.
c. Disconnect the blower connector K-008.
d. Disconnect the blower speed resistor connector K-004.
e. Using a digital multimeter, check for continuity between terminals of connector K-008 and connector K-004 to check if there is an open in system according to the table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
K-008 (1) - K-004 (2)	Always	Continuity
K-008 (2) - K-004 (1)	Always	Continuity



NG → **Repair or replace A/C wire harness and connector**

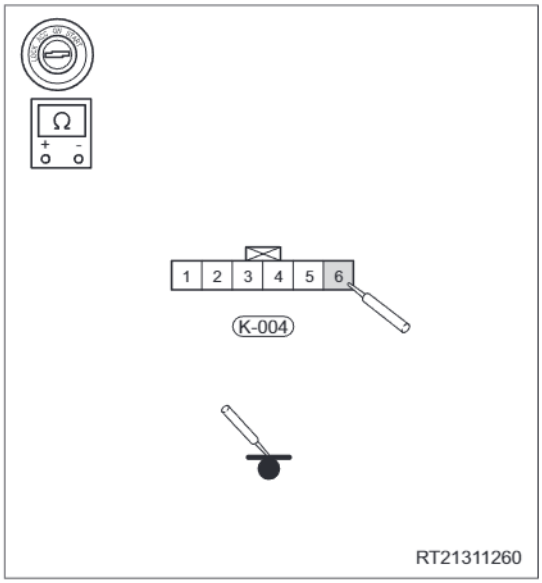
OK

5	Check wire harness and connector (blower speed resistor - body ground)

a. Turn ignition switch to LOCK.
b. Disconnect the negative battery cable.
c. Disconnect the blower speed resistor connector K-004.
d. Using a digital multimeter, check for continuity between terminal 6 of connector K-004 and body ground to check if ground circuit is in good condition according to the table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
K-004 (6) - Body ground	Always	Continuity



NG → **Repair or replace A/C wire harness and connector**

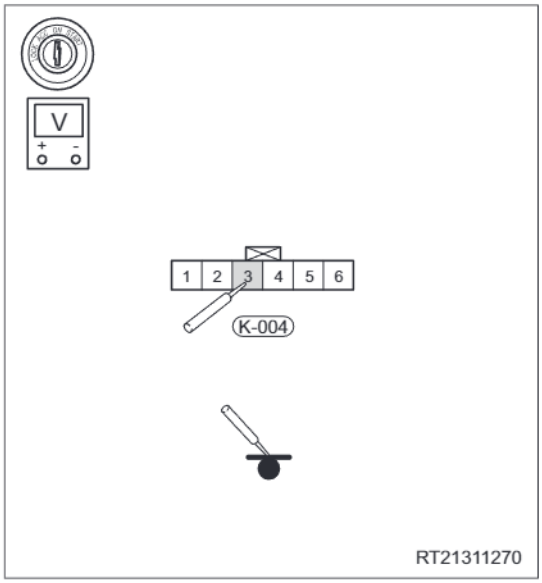
OK

6	Check wire harness and connector (blower speed resistor - battery)

a. Turn ignition switch to LOCK.
b. Disconnect the negative battery cable.
c. Disconnect the blower speed resistor connector K-004.
d. Connect the negative battery cable.
e. Turn ignition switch ON.
f. Using a digital multimeter, check the voltage between terminal 3 of connector K-004 and body ground to check if power supply circuit is in good condition according to the table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
K-004 (3) - Body ground	Ignition switch ON	9 to 16 V



NG → **Check wire harness and connector among blower relay, fuse MF05, engine compartment fuse and relay box and blower speed resistor**

OK

7	Check blower speed resistor

a. Remove the blower speed resistor.
b. Install the new blower speed resistor to vehicle.
c. Use X-431 3G diagnostic tester to check if DTCs are still output.

NO → Replace blower speed resistor

YES ↓

8	Reconfirm DTCs

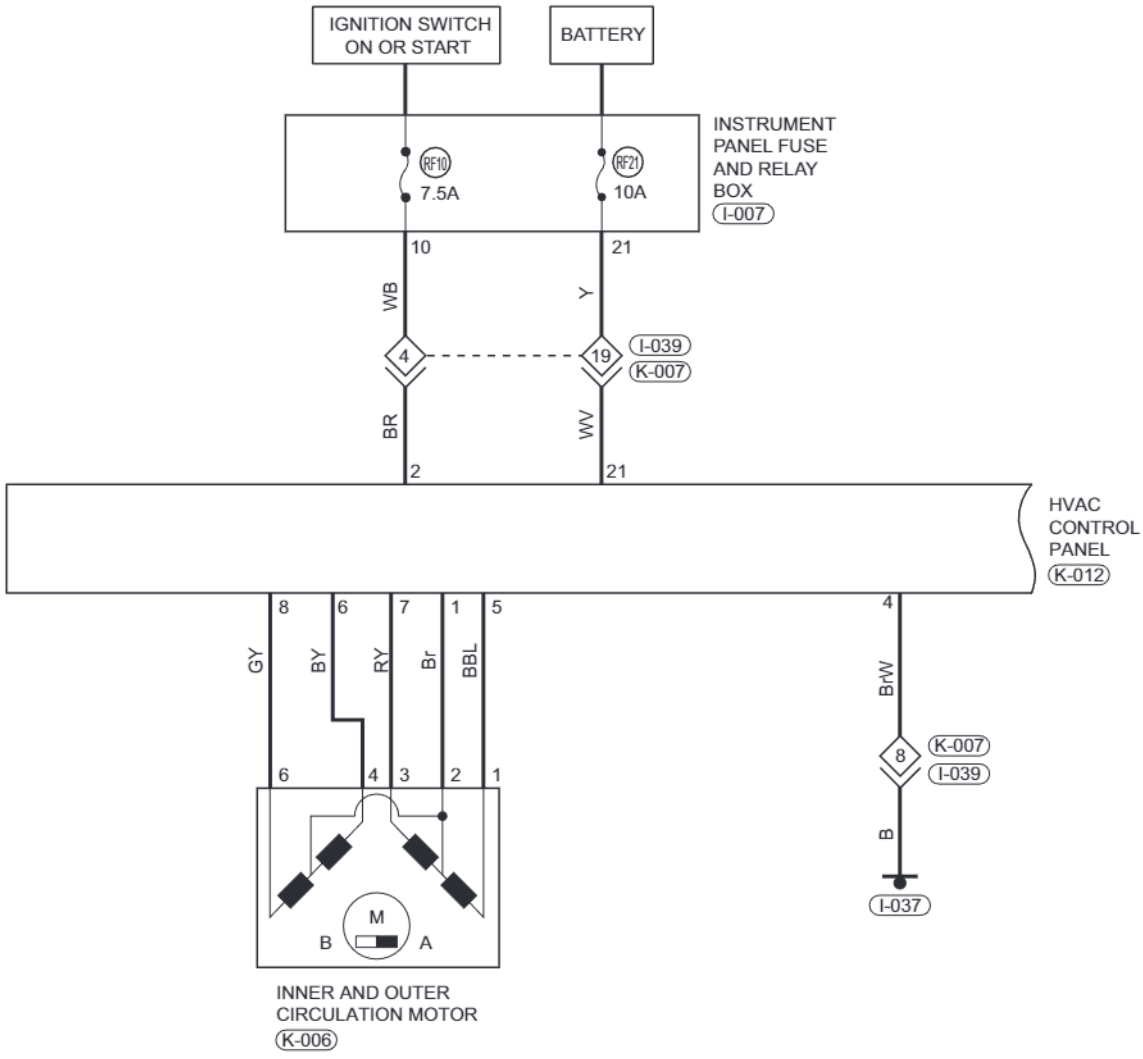
a. Reconnect all disconnected connectors securely.
b. Connect the negative battery cable.
c. Turn ignition switch ON.
d. Use X-431 3G diagnostic tester (the latest software) to record and clear DTCs stored in the HVAC control panel assembly.
e. Turn ignition switch to LOCK and wait for a few seconds.
f. Turn ignition switch ON.
g. Use X-431 3G diagnostic tester to read DTCs stored in the HVAC control panel assembly again.

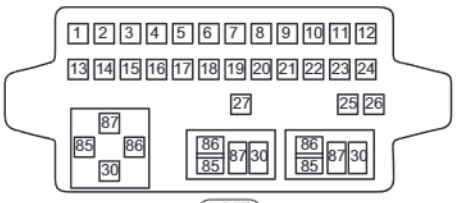
NG → Replace HVAC control panel assembly

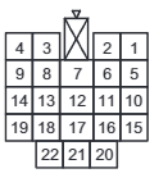
OK ↓

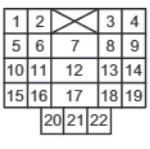
System operates normally

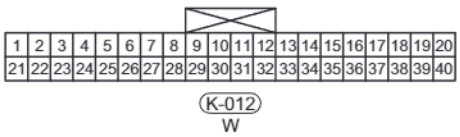
DTC	B2172	AC Recirculation Actuator

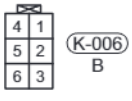












ET21310160

DTC Code	DTC Definition	DTC Detection Condition	Possible Cause
B2172	AC Recirculation Actuator	Ignition switch ON	• Inner/Outer circulation damper motor • Wire harness and connector • HVAC control panel

CAUTION

- When performing electrical equipment diagnosis and test, always refer to the circuit diagram for related circuit and component information.

Diagnosis Procedure

1	Check wire harness and connector

Use the circuit diagram as a guide to perform the following procedures:

a. Turn ignition switch to LOCK.
b. Disconnect the negative battery cable.
c. Disconnect the HVAC control panel assembly connector K-012.
d. Disconnect the inner/outer circulation damper motor connector K-006.
e. Check if wire harnesses are worn, pierced, pinched or partially broken.
f. Look for broken, bent, protruded or corroded terminals.
g. Check if related connector pins are in good condition.

NG → **Repair or replace A/C wire harness and connector**

OK ↓

2	Check inner/outer circulation damper motor

a. Remove the inner/outer circulation damper motor.
b. Install the new inner/outer circulation damper motor to vehicle.
c. Use X-431 3G diagnostic tester to check if DTCs are still output.

NO → **Replace inner/outer circulation damper motor**

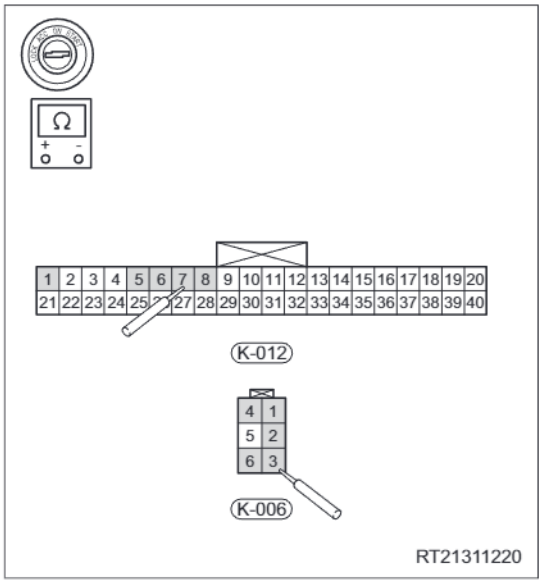
YES ↓

3	Check wire harness and connector (HVAC control panel assembly - inner/outer circulation damper motor)

a. Turn ignition switch to LOCK.
b. Disconnect the negative battery cable.
c. Disconnect the HVAC control panel assembly connector K-012.
d. Disconnect the inner/outer circulation damper motor connector K-006.
e. Using a digital multimeter, check for continuity between terminals of connector K-012 and connector K-006 to check if there is an open in inner/outer circulation damper motor according to the table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
K-012 (5) - K-006 (1)	Always	Continuity
K-012 (1) - K-006 (2)	Always	Continuity
K-012 (7) - K-006 (3)	Always	Continuity
K-012 (6) - K-006 (4)	Always	Continuity
K-012 (8) - K-006 (6)	Always	Continuity

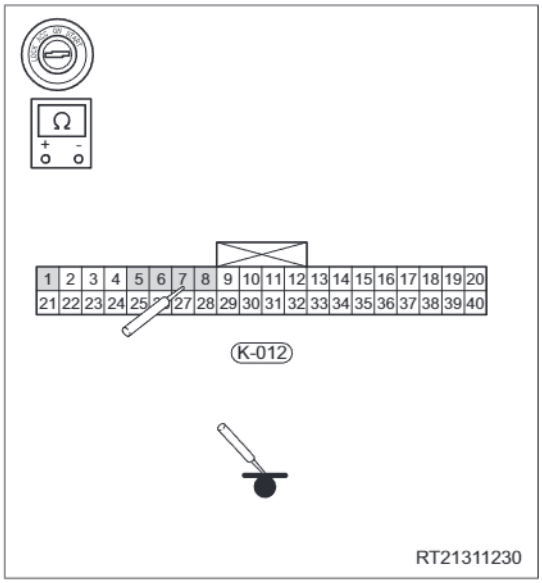


NG → **Repair or replace A/C wire harness and connector**

OK →

4	Check wire harness and connector (HVAC control panel assembly - body ground)

a. Turn ignition switch to LOCK.
b. Disconnect the negative battery cable.
c. Disconnect the HVAC control panel assembly connector K-012.
d. Using a digital multimeter, check for continuity between connector K-012 and body ground to check if inner/outer circulation damper motor circuit is short to ground according to the table below.



Standard Condition

Multimeter Connection	Condition	Specified Condition
K-012 (1) - Body ground	Always	No continuity
K-012 (5) - Body ground	Always	No continuity
K-012 (6) - Body ground	Always	No continuity
K-012 (7) - Body ground	Always	No continuity
K-012 (8) - Body ground	Always	No continuity

NG → **Repair or replace A/C wire harness and connector**

OK

5	Reconfirm DTCs

a. Reconnect all disconnected connectors securely.
b. Connect the negative battery cable.
c. Turn ignition switch ON.
d. Use X-431 3G diagnostic tester (the latest software) to record and clear DTCs stored in the HVAC control panel assembly.
e. Turn ignition switch to LOCK and wait for a few seconds.
f. Turn ignition switch ON.
g. Use X-431 3G diagnostic tester to read DTCs stored in the HVAC control panel assembly again.

NG → **Replace HVAC control panel assembly**

OK

System operates normally

ON-VEHICLE SERVICE

On-vehicle Inspection

HINT:
The A/C refrigerant lines and hoses are used to transfer refrigerant among the A/C system components. Any twist or bent in the refrigerant lines and hoses will reduce the performance of A/C system and refrigerant flow in system.

There remains high pressure in refrigerant when the A/C compressor assembly is operating. It is necessary to ensure that each connecting part in A/C system is sealed well. Check all the system lines at least once a year to ensure that they are in good condition and properly routed. The refrigerant lines and hoses cannot be repaired and must be replaced if leakage or damage exists.

1. General inspection
   a. Check if there exists any oil or dust in each joint of the A/C line. If this occurs, there may exist leak.
   b. Check if the surface of condenser is dirty and the fins are deformed.
   c. Check for harsh noises while the compressor assembly is operating normally.
   d. Temperature difference should be noticeable by feeling the intake line and exhaust line of compressor assembly with hand. Normally, the intake line is cool while the exhaust line is hot. Feel the temperature of intake duct and exhaust duct of condenser with hand. Normally, the temperature of intake duct is higher than that of exhaust duct. Feel the temperature difference between expansion valve inlet and outlet line with hand. Normally, the expansion valve inlet line is hot while the outlet line is cool, and temperature difference is noticeable between both.
2. Using the pressure gauge set, check the refrigerant pressure.
   a. Connect the manifold pressure gauge set. After the following conditions are met, read the pressure on pressure gauge. Measurement conditions are as follows:
      - Inner/outer circulation switch is in outer circulation position.
      - Engine runs at approximately 2000 rpm.
      - Adjust the temperature knob to MAX. COOL.
      - Blower speed control switch is in highest band.
      - Turn on the A/C switch.

   Observe the pressure value on the pressure gauge. In normal condition, the pressure of low pressure side is 0.15 - 0.20 MPa and the pressure of high pressure side is 1.3 -1.7 MPa.

Compressor Assembly Noise Inspection

When checking noise related to A/C system, you must first know the conditions under which the noise occurs. These conditions include: weather, vehicle speed, engine speed, engine temperature and any other special conditions. Louder noises during A/C operation can often mislead someone. For example, what sounds like a failed bearing, may be caused by loose bolts, mounting brackets or a loose compressor assembly.

CAUTION

- A/C compressor assembly must be replaced if any abnormal compressor assembly noise is heard.
- Noise may occur from the drive belt at different engine speeds, and you may mistake it for a noise from A/C compressor assembly. The noise occurs when the compressor assembly operates at the maximum displacement, and it will not occur at the minimum displacement.

1. Select a quiet place for testing.
2. Duplicate the customer's feedback information as much as possible.
3. Turn the A/C system on and off several times to clearly identify the compressor assembly noise.

4. Listen to the operation sound of A/C compressor assembly while it is operating at maximum and minimum displacement positions.
5. Using an engine sound scope or a long screwdriver with handle, hold the A/C compressor assembly near your ear for detecting, in order to locate the noise source easier.
6. To duplicate a high temperature condition (high pressure), air is limited to flow through the A/C condenser. Install a manifold pressure gauge set to ensure that the discharge pressure is lower than 2550 kPa.
7. Check the condition of compressor assembly belt.
8. Check the compressor assembly hub, pulley and bearing assembly. Make sure that the hub and pulley are aligned correctly, and the pulley bearing is securely installed to the A/C compressor assembly.
9. Check if the refrigerant line routes incorrectly, is damaged or has an interference that could result in an abnormal noise. Also, check the refrigerant line for twist or bend, otherwise the refrigerant will be limited to flow, which will cause a noise.
10. Loosen all the compressor assembly tightening bolts and retighten them.
11. If noise occurs when the liquid refrigerant in A/C suction pipe is under a slugging condition, replace the condenser and check the refrigerant oil level and the charging condition for refrigerant.
12. If the slugging condition still exists after replacing the condenser, replace the A/C compressor assembly.

⚠ WARNING

- DO NOT race engine when vacuum pump operates or vacuum exists in the A/C system. Failure to do so may result in a serious damage to the A/C compressor assembly.

Refrigerant Leakage Inspection

⚠ WARNING

- DO NOT perform pressure test or leakage test to R134a service device or vehicle A/C system with compressed air. Air mixture and R134a is inflammable at high pressure. These mixtures have potential danger, and it may cause a fire or explosion, resulting in vehicle damage, personal injury or death.
- Avoid inhaling vapor or moisture from the A/C refrigerant and refrigerant oil.
- Only use technical service device to discharge the R134a system. If system is discharged unexpectedly, ventilate the work place before servicing.

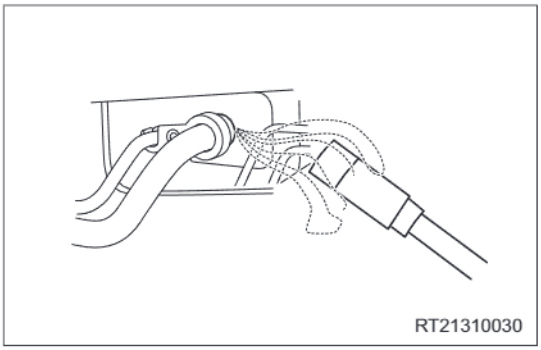
CAUTION

- If the A/C refrigerant filling amount is empty or low, the A/C system may have leak. Check all A/C lines, joints and parts for remaining oil. The remaining oil is the indication mark of A/C system leaking position.

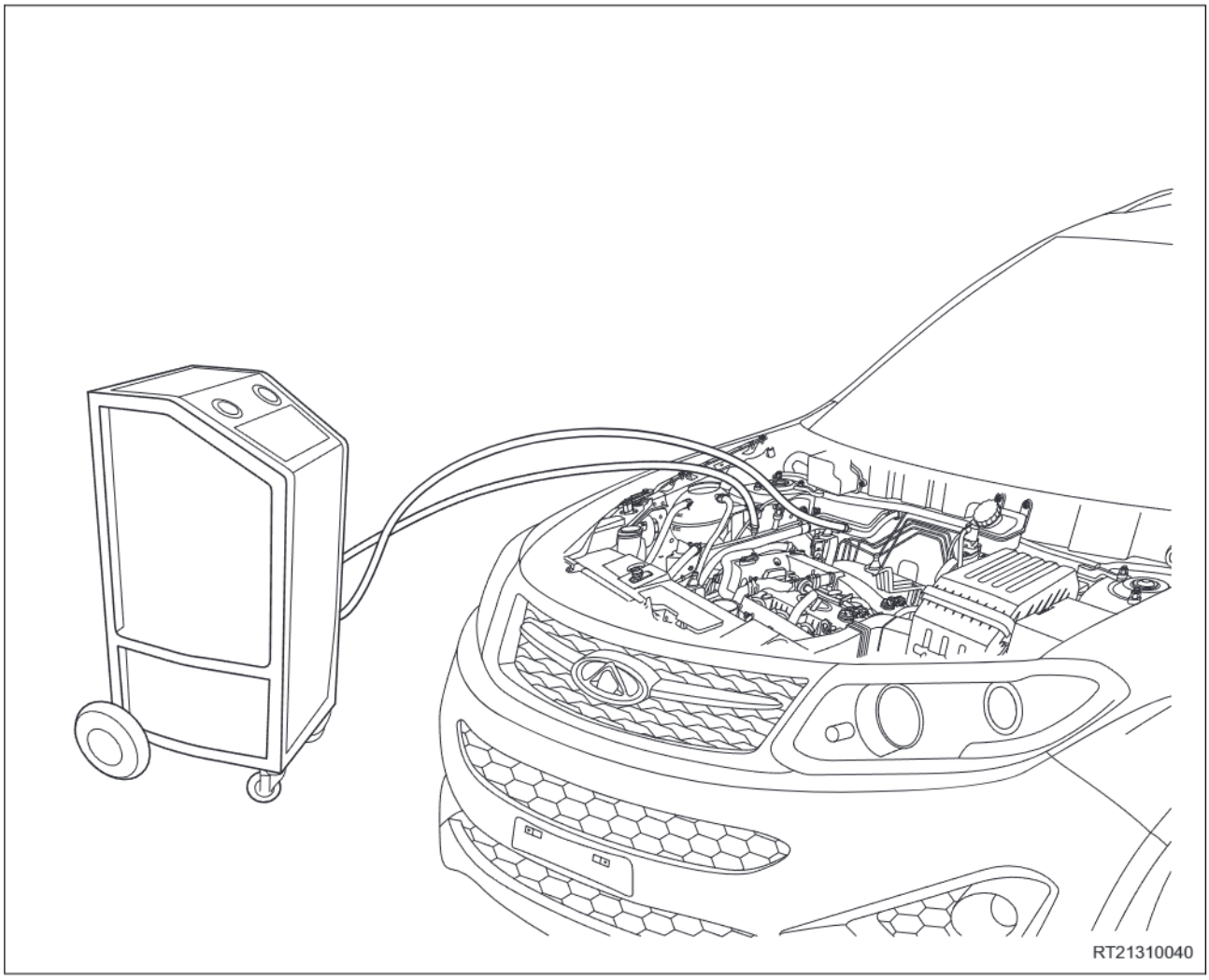
Check refrigerant for leakage

1. After recharging refrigerant, use the gas leak detector to check the refrigerant gas for leakage.
2. Perform operations under the following conditions:
   - Stop the engine.
   - Ensure the ventilation is well (the gas leak detector may react to volatile gases which are not from refrigerant, such as gasoline vapor or exhaust gas).
   - Repeat the test for 2 or 3 times.
   - Make sure that there is some refrigerant remaining in the refrigerant system.

3. Place air leakage tester near the joint of A/C line, and check A/C line for leakage. If the air leakage tester makes a sound, it indicates that a leakage exists. Repair or replace the leaking A/C line as necessary.


RT21310030

4. Disconnect the A/C pressure sensor connector, and use the same procedures to check the A/C pressure sensor for leakage. Replace the A/C pressure sensor as necessary.
5. Insert the air leakage tester into the evaporator tank assembly, and use the same procedures to check the evaporator for leakage. Clean or replace the evaporator core assembly as necessary.
6. Use the same procedures to check the condenser for leakage. Clean or replace the condenser assembly as necessary.


RT21310040

Refrigerant Recovering/Draining

⚠ WARNING

- Take extra care when servicing the A/C system under high pressure.
- Because there is refrigerant under high pressure in the A/C system, it must be serviced by professional technician. Otherwise, a wrong service procedure may cause a serious danger or fatal injury.
- If A/C system is discharged unexpectedly, ventilate the work place before servicing. In a closed work place, a large amount of refrigerant is discharged, which may cause oxygen reduction and result in smothering, causing a serious or fatal injury.

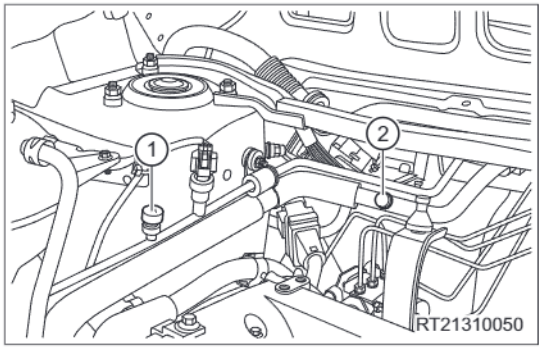
♻ ENVIRONMENTAL PROTECTION

- Never drain the refrigerant in A/C system into the atmosphere directly, and avoid environmental contamination.

CAUTION

- It is necessary to recover refrigerant with R134a refrigerant special recycling machine.
- DO NOT work near the open flame.
- Always dispose of recovered refrigerant as specified.
- Never charge R-12 to the refrigerant system which is designed to use R134a. These refrigerants are incompatible, which could damage the A/C system.
- DO NOT race engine when vacuum pump operates or vacuum exists in the A/C system. Failure to do so may result in serious damage to the A/C compressor assembly.

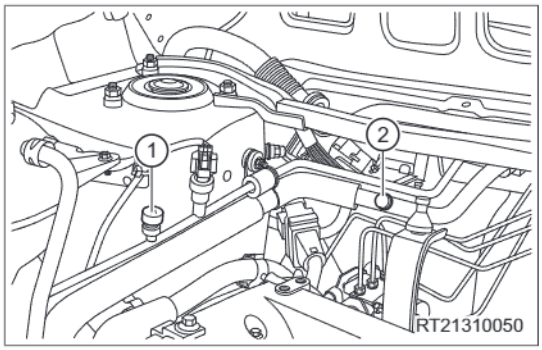
1. Open the hood, and loosen the joint cover of A/C high/low pressure line.
2. Connect the refrigerant recycling machine to A/C high/low pressure line joint.
   a. Connect the red connector to A/C high pressure line joint (1).
   b. Connect the blue connector to A/C low pressure line joint (2).



3. Open the high pressure valve and low pressure valve of refrigerant recycling machine.
4. Choose the "recovering" item on machine and make it start to operate.
5. Check the low pressure value on pressure gauge to ensure that the recycling is completed, and then turn the machine off.
6. Disconnect the connections between refrigerant recycling machine and A/C line joint.
7. Reinstall the cover onto the refrigerant line joint.

Vacuum Pumping

1. Open the hood, and loosen the joint cover of A/C high/low pressure line.
2. Connect the refrigerant recycling machine to A/C high/low pressure line joint.
   a. Connect the red connector to A/C high pressure line joint (1).
   b. Connect the blue connector to A/C low pressure line joint (2).



3. Open the high pressure valve and low pressure valve of refrigerant recycling machine.
4. Choose the "vacuum pumping" item on machine and the time setting is 15 minutes, then choose OK and make it start to operate.
5. Wait for 10 minutes after completing the operation, check if there is any change in the A/C system vacuum. If there is any change, the A/C system leakage may exist, you should check and repair the A/C system. If there is no change, proceed to perform the refrigerant charging procedures.

Refrigerant Recharging

CAUTION

- A small amount of refrigerant oil in the A/C system will be discharged when recovering and draining the refrigerant. Be sure to supplement the lost refrigerant oil during recovering when filling the A/C system.
- DO NOT fill excessive refrigerant. Otherwise, it will cause excessive pressure to the compressor assembly, resulting in compressor assembly noise and A/C system failure.
- Always perform vacuum pumping before recharging refrigerant.

1. Perform vacuum pumping with vacuum pump.
2. Charge refrigerant oil after checking that there is no leakage in A/C system.
3. Perform vacuum pumping for 3 minutes again after charging refrigerant oil, then charge refrigerant.
4. Choose the "charging" item on machine and set the amount of charging to the specified value, then choose OK and make it start to operate.
5. Open the suction valve and close the exhaust valve, and then open the charge valve to allow refrigerant to flow into the system.
6. When the delivery of refrigerant has stopped, close the charge valve.
7. If the charged refrigerant is not delivered to the specified position, start the engine to operate the A/C compressor assembly.
8. Open the charge valve to deliver the remaining refrigerant to A/C system.

WARNING

- At this time, do not open the exhaust (high pressure) valve. Failure to do so may result in serious personal injury or even death.

9. Perform A/C system pressure test after charging is completed.

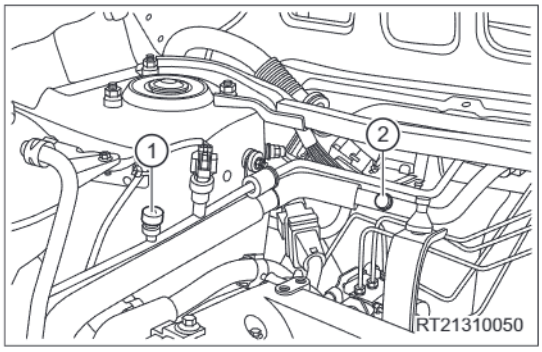
10. Remove the connecting pipe for refrigerant charging after the test is completed.
11. Reinstall the cover onto the A/C line joint.

Refrigerant Oil Recovering

CAUTION

- Special service equipment for R134a refrigerant must be used.
- Always keep the work area in good ventilation, because the A/C system is easy to leak.
- Always dispose of the recovered refrigerant as specified.
- Refrigerant oil must be charged after replacing the A/C system components or recovering the refrigerant.

1. Open the engine hood and loosen the joint cover of A/C high/low pressure line.
2. Connect the refrigerant recycling machine to A/C high/low pressure line joint.
   a. Connect the red connector to A/C high pressure line joint (1).
   b. Connect the blue connector to A/C low pressure line joint (2).



3. Open the high pressure valve and low pressure valve of refrigerant recycling machine.
4. Recover the refrigerant oil according to the instructions on machine.
5. Record the amount of recovered refrigerant oil.
6. Disconnect the connections between refrigerant recycling machine and A/C line joint.
7. Reinstall the joint cover onto the refrigerant line joint.

Refrigerant Oil Charging

Refrigerant Oil Charging Amount Specifications

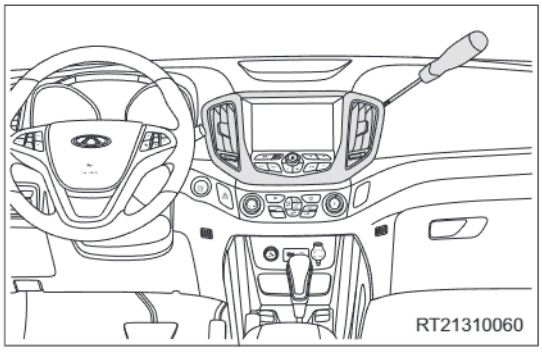
Item	A/C Compressor Assembly Replacement	Condenser Replacement	Evaporator Replacement	Line Replacement
Charging Capacity (ml)	It is necessary to pour out 50 ml of refrigerant oil from the new compressor assembly	50 ml	50 ml	10 ml

1. Perform vacuum pumping with vacuum pump. Wait for approximately 10 minutes after completing the operation, check if there is any change in A/C system pressure. If there is any change, A/C system leakage may exist, you should check and repair the A/C system. If there is no change, proceed to perform the refrigerant oil charging procedures.
2. Open the suction valve and close the exhaust valve, and then open the charge valve to allow the refrigerant oil to flow into the system.
3. Close the charging valve after the refrigerant oil charging is completed.
4. Perform the vacuum pumping again for 3 minutes.
5. Continue to perform refrigerant charging procedures after the operation is completed.

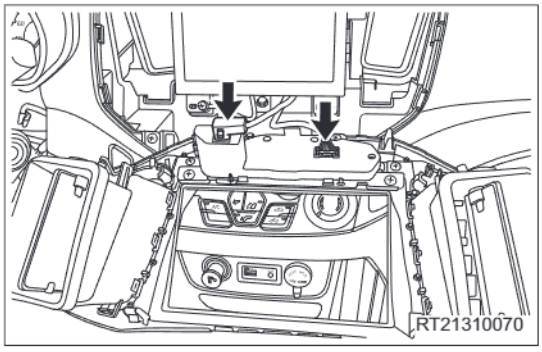
A/C Control Panel Assembly

Removal

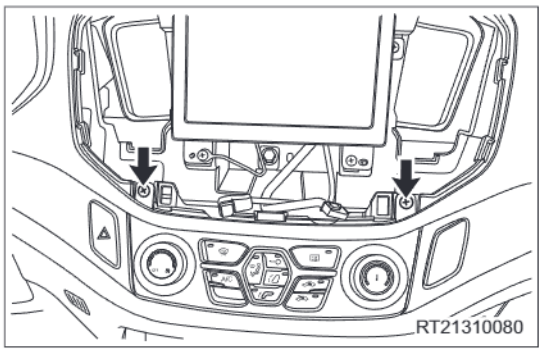
1. Turn off all the electrical equipment and ignition switch.
2. Disconnect the negative battery cable.
3. Remove the A/C control panel assembly.
   a. Using a flat tip screwdriver wrapped with protective tape, pry out the console panel assembly carefully.



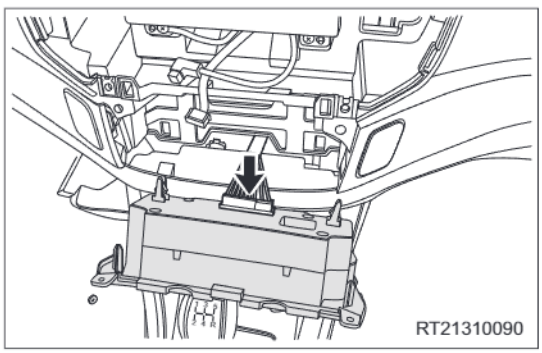
   b. Disconnect the audio system connectors (arrow).



   c. Remove 2 fixing screws (arrow) from the A/C control panel assembly, and detach the fixing clip on the lower part.
   (Tightening torque: 2.5 ± 0.5 N·m)



   d. Disconnect the A/C control panel assembly connector (arrow).

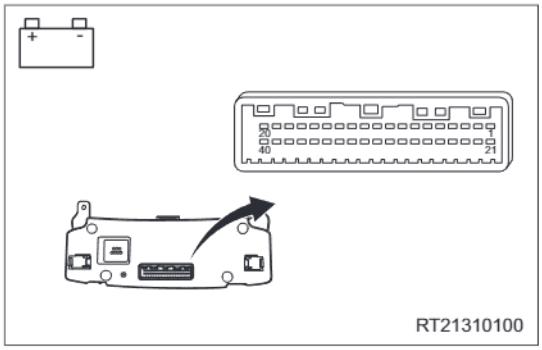


   e. Remove the A/C control panel assembly.

Inspection

1. Check the A/C control panel assembly.
   a. Remove the A/C control panel assembly.
   b. Connect the positive (+) battery lead to terminal 3 and negative (-) battery lead to terminal 4, then check if the A/C control panel assembly switch backlight comes on.

      OK: Light comes on.



If result is not as specified, replace the A/C control panel assembly.

Installation

Installation is in the reverse order of removal.

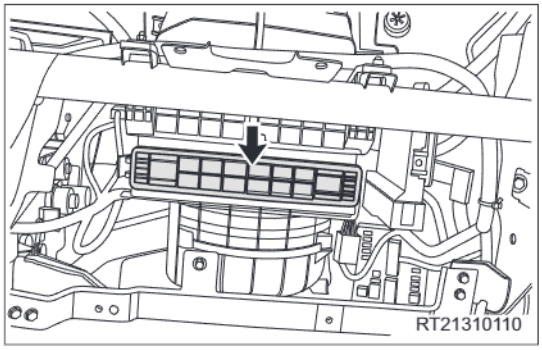
CAUTION

- Be sure to install clip on the lower part of A/C control panel assembly in place during installation.
- Be sure to align the positioning hole on upper part of A/C control panel assembly with the dowel pin of instrument panel during installation.

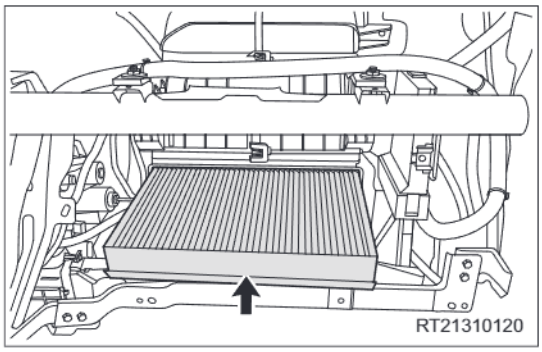
A/C Element

Removal

1. Remove the glove box assembly (See page 45-17).
2. Remove the A/C element.
   a. Detach the claws on both sides of A/C element cover, and remove the A/C element cover (arrow) from the air inlet assembly.



   b. Pull out the A/C element (arrow) slowly from the air inlet assembly.



Installation

Installation is in the reverse order of removal.

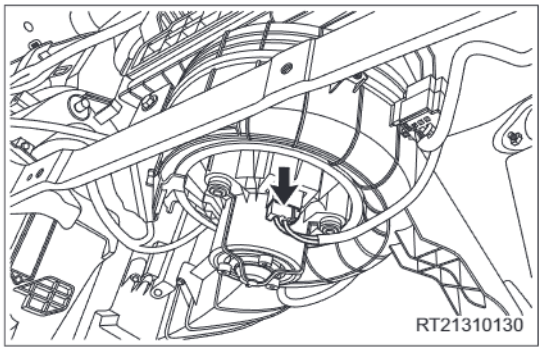
CAUTION

- Be sure to check the A/C element for dirt during installation. Clean as necessary.
- If A/C element is too dirty or damaged, replace with a new one.

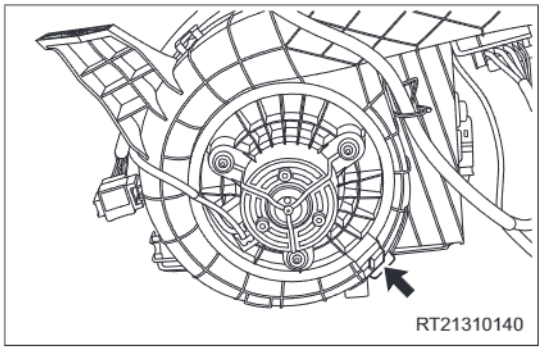
Blower Assembly

Removal

1. Turn off all the electrical equipment and ignition switch.
2. Disconnect the negative battery cable.
3. Remove the blower assembly.
   a. Disconnect the blower assembly connector (arrow).



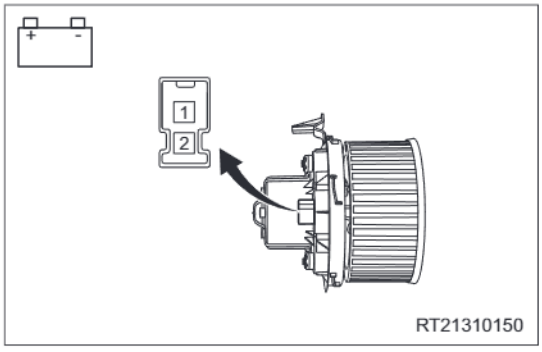
   b. Detach the fixing claw (arrow) from the blower assembly.



   c. Rotate the blower assembly lightly to remove it.

Inspection

1. Check the blower motor.
   a. Remove the blower assembly.
   b. Connect the positive (+) battery lead to terminal 1 and negative (-) battery lead to terminal 2. Check that the blower motor operates smoothly.



   If operation is not as specified, replace the blower assembly.

Installation

Installation is in the reverse order of removal.

Blower Speed Resistor

Removal

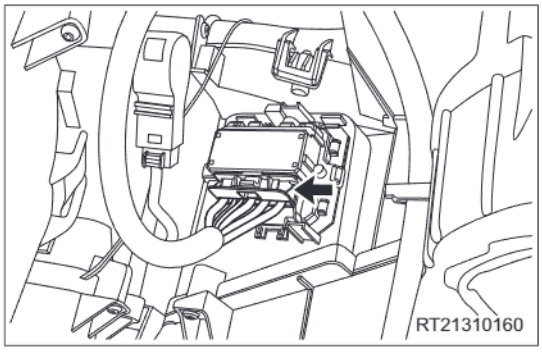
⚠ WARNING

- During normal operation, the blower speed resistor may be very hot. Turn off the blower and wait for a few minutes to cool the blower speed resistor before diagnosing or servicing, in order to avoid burns.

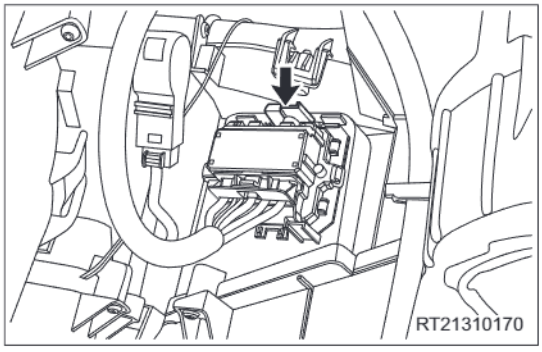
CAUTION

- DO NOT operate the blower assembly when removing blower speed resistor from vehicle. Failure to do so may result in damage to the blower assembly.

1. Turn off all the electrical equipment and ignition switch.
2. Disconnect the negative battery cable.
3. Remove the blower speed resistor.
   a. Disconnect the blower speed resistor connector (arrow).



   b. Detach the fixing claw (arrow) from the blower speed resistor.



   c. Remove the blower speed resistor.

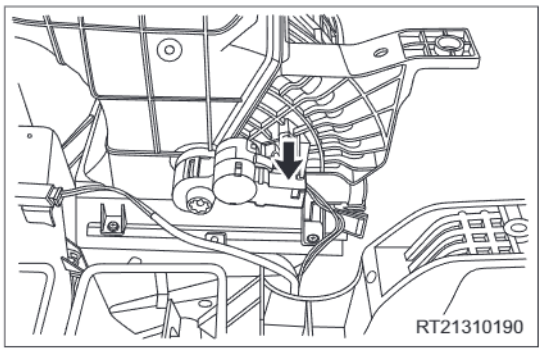
Installation

Installation is in the reverse order of removal.

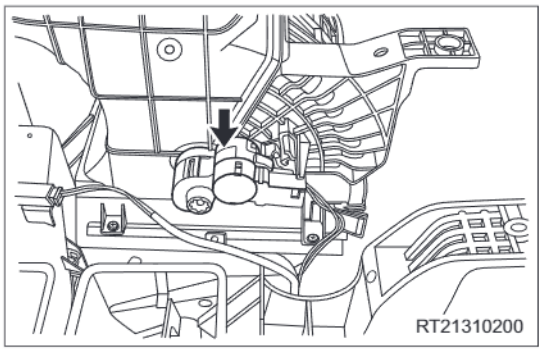
Inner/Outer Circulation Damper Motor

Removal

1. Turn off all the electrical equipment and ignition switch.
2. Disconnect the negative battery cable.
3. Remove the glove box assembly (See page 45-17).
4. Remove the inner/outer circulation damper motor.
   a. Disconnect the inner/outer circulation damper motor connector (arrow).



   b. Detach the fixing claw, and remove the inner/outer circulation damper motor (arrow) from the air inlet assembly carefully.



Installation

Installation is in the reverse order of removal.

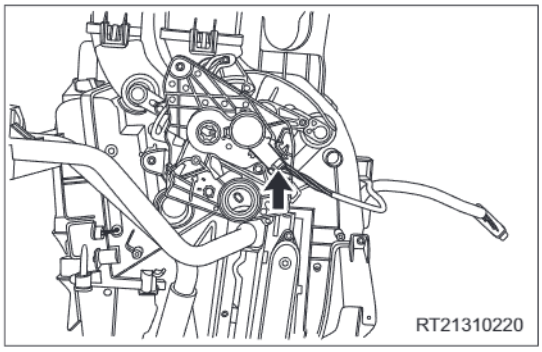
CAUTION

- When installing, apply a small amount of grease to the contact surface between inner/outer circulation damper motor lever and inner/outer circulation damper set to ensure the motor operates smoothly.

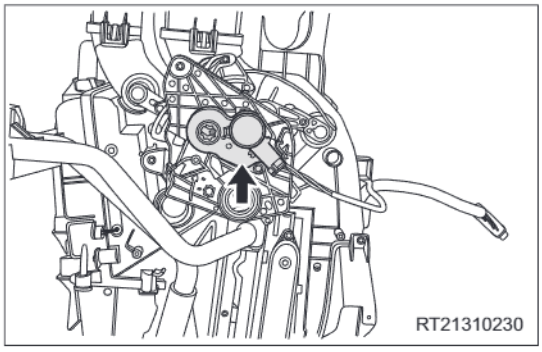
Mode Damper Servo Motor

Removal

1. Turn off all the electrical equipment and ignition switch.
2. Disconnect the negative battery cable.
3. Remove the mode damper servo motor.
   a. Disconnect the mode damper servo motor connector (arrow).



   b. Detach the fixing claw, and remove the mode damper servo motor (arrow) from the evaporator tank assembly carefully.



Installation

Installation is in the reverse order of removal.

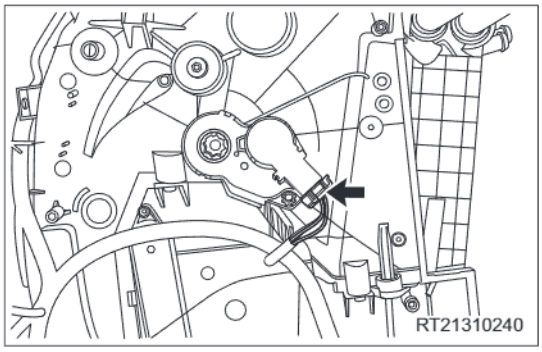
CAUTION

- When installing, apply a small amount of grease to the contact surface between mode damper servo motor lever and mode damper adjustment mechanism set to ensure the motor operates smoothly.

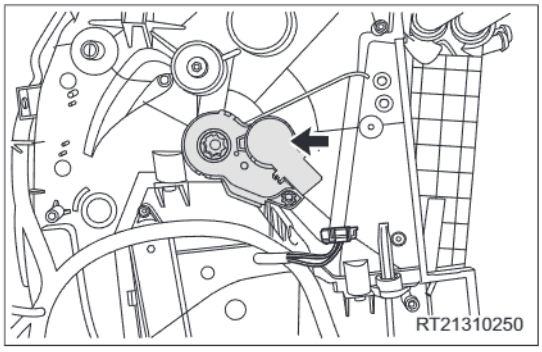
Mix Damper Servo Motor

Removal

1. Turn off all the electrical equipment and ignition switch.
2. Disconnect the negative battery cable.
3. Remove the mix damper servo motor.
   a. Disconnect the mix damper servo motor connector (arrow).



   b. Detach the fixing claw, and remove the mix damper servo motor (arrow) from the evaporator tank assembly carefully.



Installation

Installation is in the reverse order of removal.

CAUTION

- When installing, apply a small amount of grease to the contact surface between mix damper servo motor lever and mix damper adjustment mechanism set to ensure the motor operates smoothly.

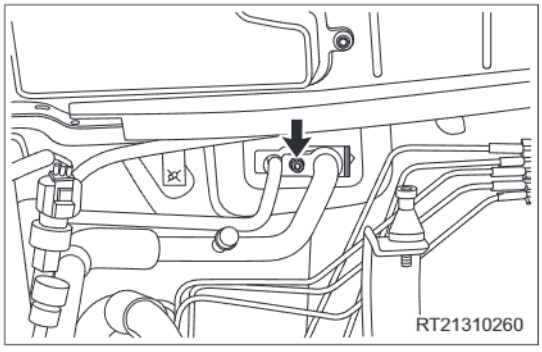
HVAC Assembly

Removal

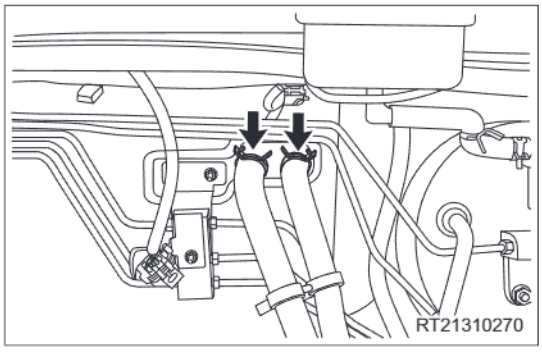
CAUTION

- Special service equipment for R134a refrigerant must be used to recover/charge refrigerant.
- Be careful not to damage hoses during removal and installation.
- Always keep the work area in good ventilation.
- The disconnected A/C line and connecting part should be sealed to prevent foreign matter from entering.

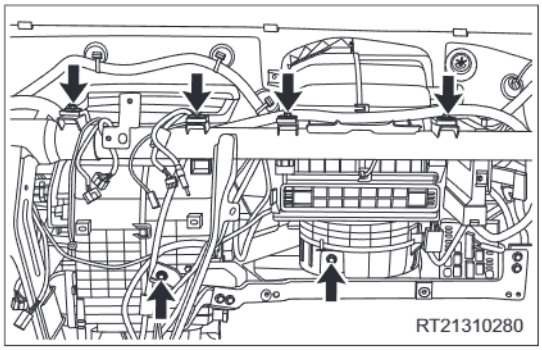
1. Recover the refrigerant from the A/C system (See page 31-66).
2. Turn off all the electrical equipment and ignition switch.
3. Disconnect the negative battery cable.
4. Remove the steering wheel assembly (See page 28-10).
5. Remove the steering column (See page 28-16).
6. Remove the instrument panel body assembly (See page 45-17).
7. Remove the instrument panel crossmember assembly (See page 45-24).
8. Remove the HVAC assembly.
   a. Remove the fixing bolt (arrow) between A/C high/low pressure line and expansion valve, and detach the A/C high/low pressure line.
   (Tightening torque: 7 ± 1 N·m)



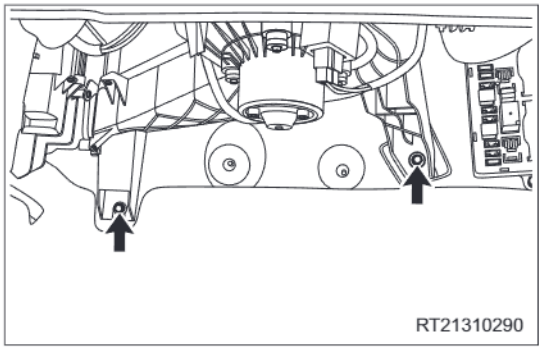
   b. Using snap spring calipers, disengage the fixing clamps (arrow) from the heating inlet hose and heating outlet hose, and disengage the heating inlet and outlet hoses.



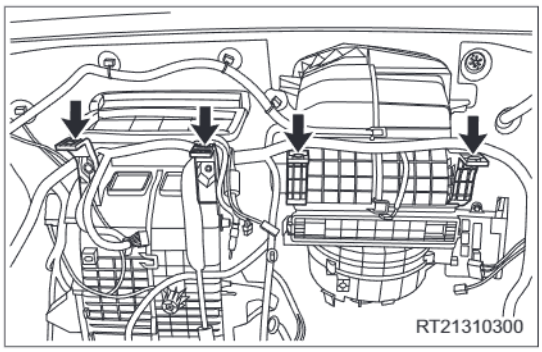
c. Remove 4 fixing nuts and 2 fixing bolts (arrow) between HVAC assembly and instrument panel crossmember assembly.
(Tightening torque for nut: 7 ± 1 N·m)
(Tightening torque for bolt: 4 ± 1 N·m)



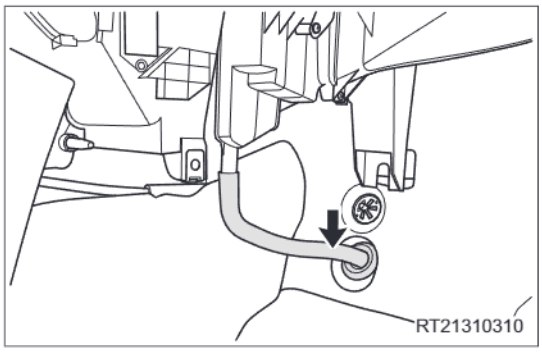
d. Remove 2 fixing bolts (arrow) between HVAC assembly and body.
(Tightening torque: 7 ± 1 N·m)



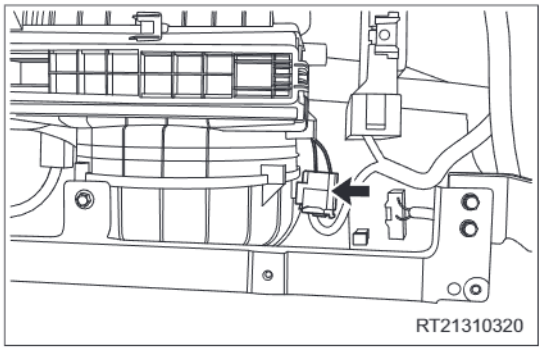
e. Remove the instrument panel wire harness assembly fixing clips (arrow) from the HVAC assembly.



f. Disengage the A/C drain pipe (arrow) from the body positioning hole.



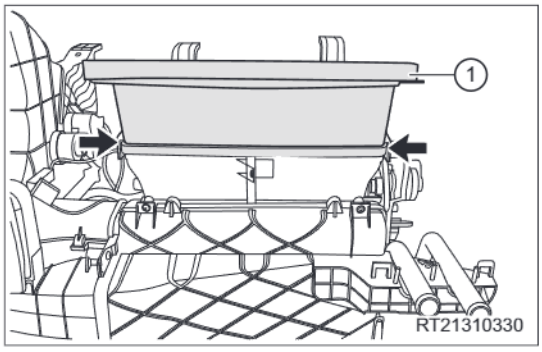
g. Disconnect the connector (arrow) connecting A/C wire harness assembly and instrument panel wire harness assembly.



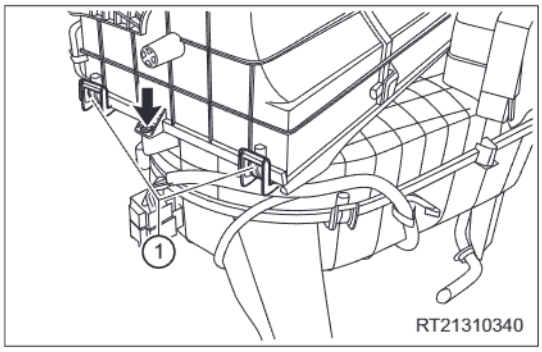
h. Carefully take off the HVAC assembly from the cabin.

Disassembly

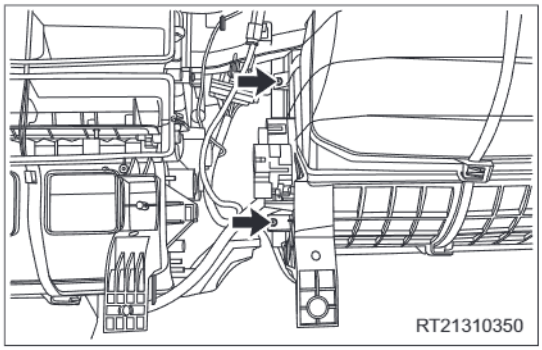
1. Remove the A/C element (See page 31-72).
2. Remove the blower assembly (See page 31-73).
3. Remove the blower speed resistor (See page 31-74).
4. Remove the inner/outer circulation damper motor (See page 31-75).
5. Remove the mode damper servo motor (See page 31-76).
6. Remove the mix damper servo motor (See page 31-77).
7. Remove the HVAC assembly transition duct.
   a. Detach the claws (arrow) on both sides and remove the transition duct (1) from the HVAC assembly.



8. Remove the air inlet assembly.
   a. Remove the air inlet assembly right fixing screw (arrow) and detach the fixing claws (1).
   (Tightening torque: 2.5 ± 0.5 N·m)



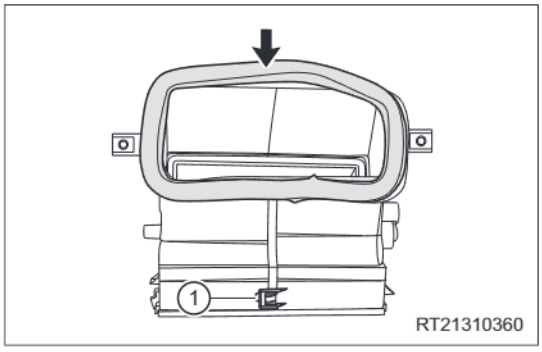
b. Remove 2 fixing screws (arrow) from the left side of air inlet assembly.
(Tightening torque: 2.5 ± 0.5 N·m)



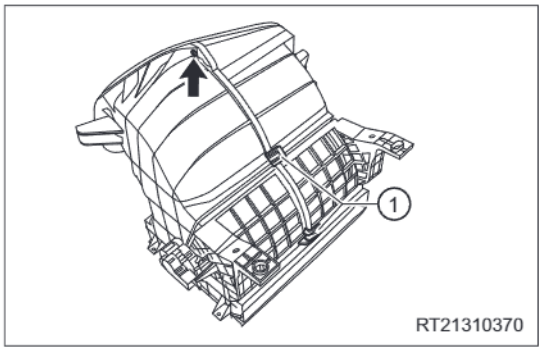
c. Remove the air inlet assembly.

9. Remove the inner/outer circulation damper set.

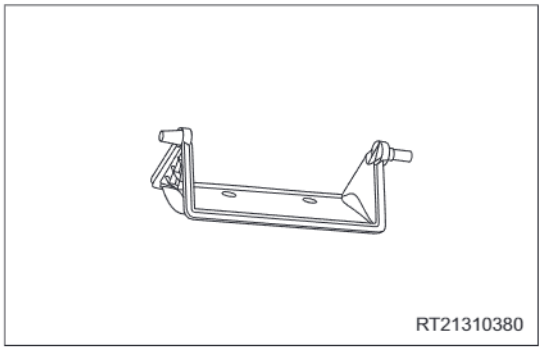
a. Remove the air inlet assembly grommet (arrow) and detach the fixing claw (1) on front part.



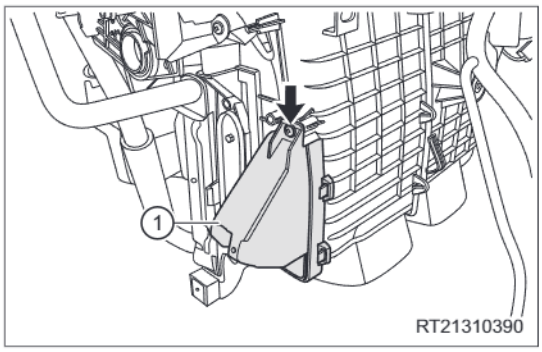
b. Remove the air inlet assembly rear fixing screw (arrow) and detach the fixing claws (1).
(Tightening torque: 2.5 ± 0.5 N·m)



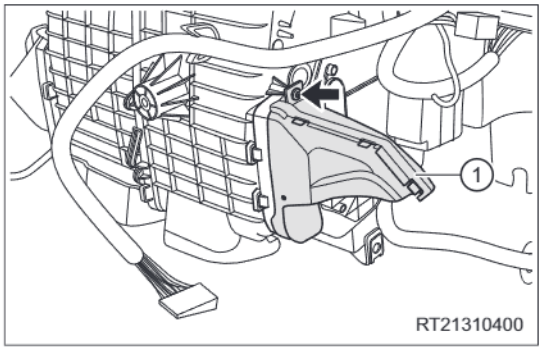
c. Detach the air inlet housing assembly and remove the inner/outer circulation damper set.



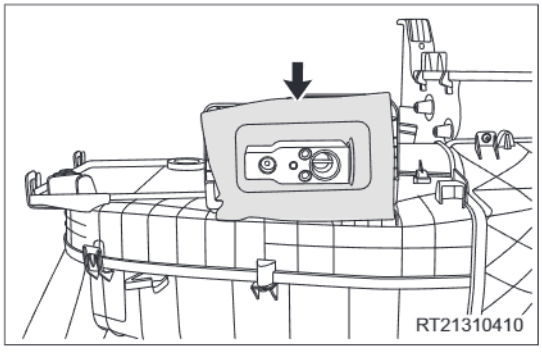
10. Remove the left foot fan shield.
    a. Remove the fixing screw (arrow), detach the fixing claw and detach the left foot fan shield (1) from the HVAC assembly.
    (Tightening torque: 2.5 ± 0.5 N·m)



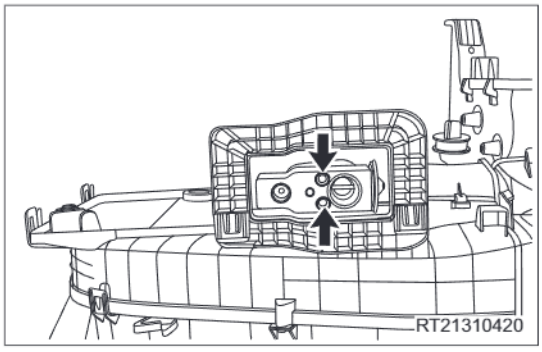
11. Remove the right foot fan shield.
    a. Remove the fixing screw (arrow), detach the fixing claw and detach the right foot fan shield (1) from the HVAC assembly.
    (Tightening torque: 2.5 ± 0.5 N·m)



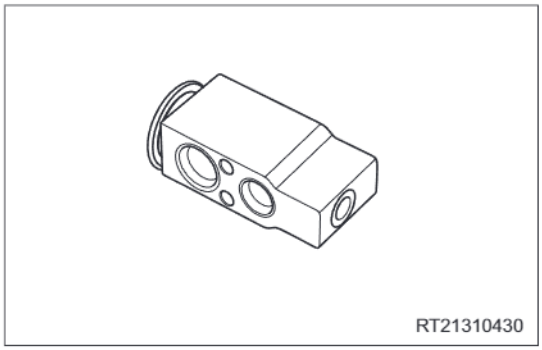
12. Remove the expansion valve.
    a. Remove the evaporator core line grommet (arrow).



    b. Remove 2 fixing bolts (arrow) between expansion valve and expansion valve mounting pressure plate.
    (Tightening torque: 7 ± 1 N·m)

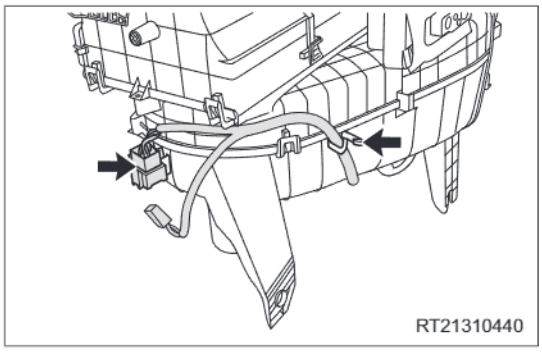


c. Detach the A/C high/low pressure line and remove the expansion valve carefully.

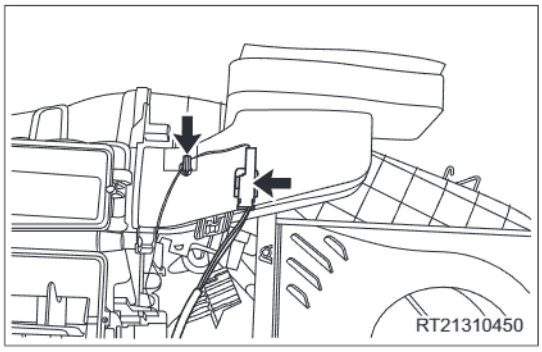


13. Remove the blower case assembly.

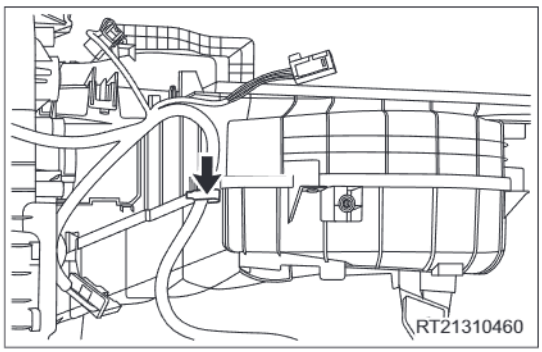
a. Detach the A/C wire harness and connector (arrow) from the blower case assembly.



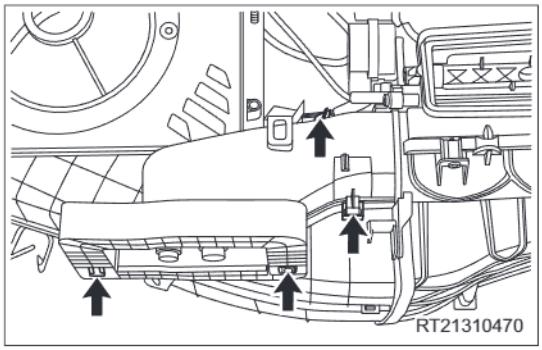
b. Detach the evaporator temperature sensor wire harness and connector (arrow) from the blower case assembly.



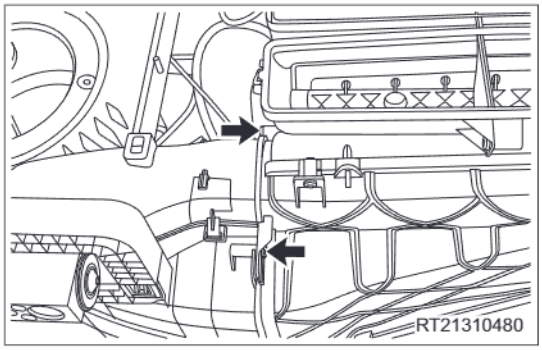
c. Detach the A/C wire harness (arrow) from the blower case assembly.



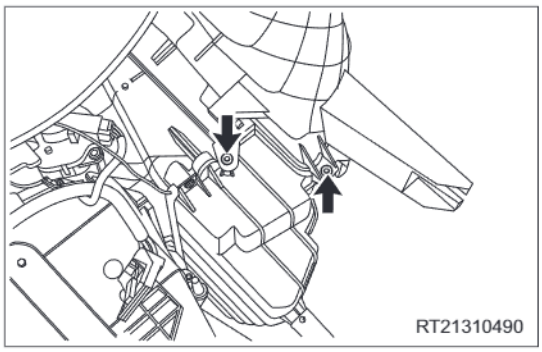
d. Detach the fixing claws (arrow) from the expansion valve cover plate and remove the expansion valve cover plate.



e. Remove 2 fixing screws (arrow) between blower case assembly and the upper part of evaporator tank assembly.
(Tightening torque: 2.5 ± 0.5 N·m)



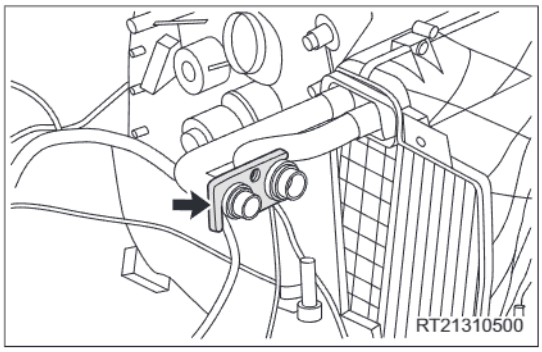
f. Remove 2 fixing screws (arrow) between blower case assembly and the lower part of evaporator tank assembly.
(Tightening torque: 2.5 ± 0.5 N·m)



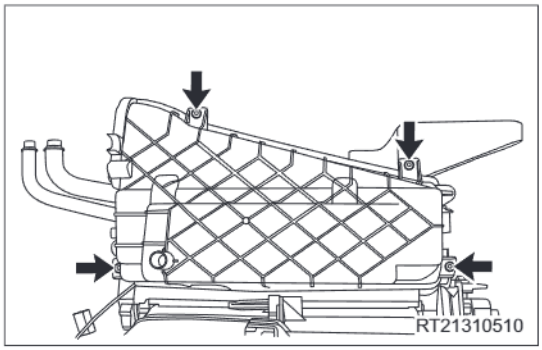
g. Detach the blower case assembly from the evaporator tank assembly.

14. Remove the evaporator core assembly.

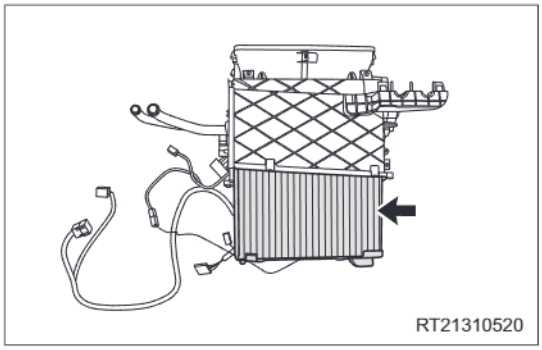
a. Remove the expansion valve mounting pressure plate (arrow) from the evaporator core line.



b. Remove 4 fixing screws (arrow) from the bottom of evaporator tank assembly.
(Tightening torque: 2.5 ± 0.5 N·m)

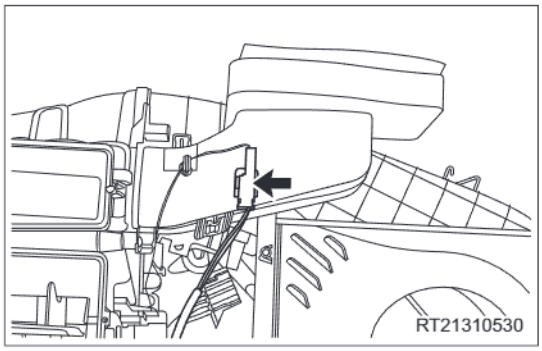


c. Take out the evaporator core (arrow) from the evaporator tank assembly carefully.

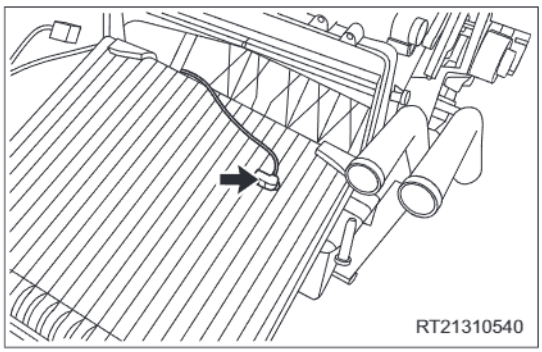


15. Remove the evaporator temperature sensor.

a. Disconnect the evaporator temperature sensor connector (arrow).

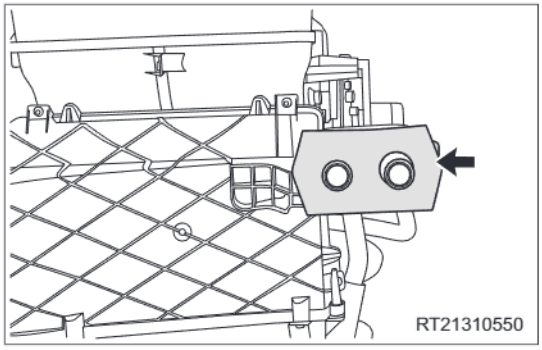


b. Remove the evaporator temperature sensor (arrow) from the evaporator core.

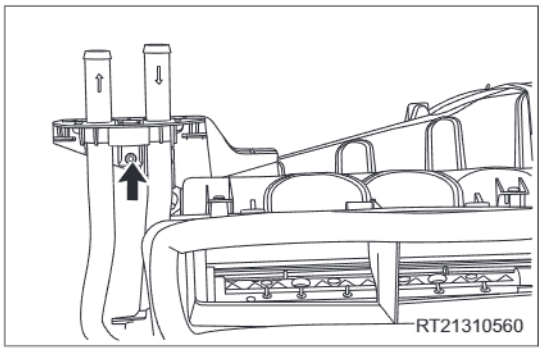


16. Remove the heater core assembly.

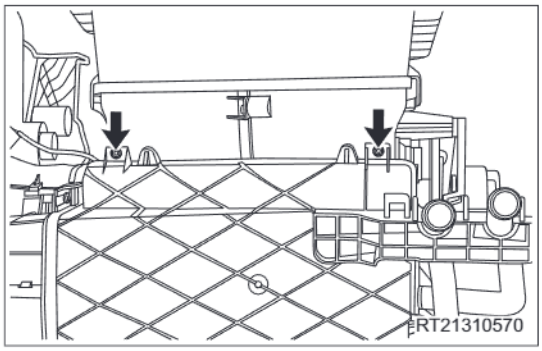
a. Remove the heater core line grommet (arrow).



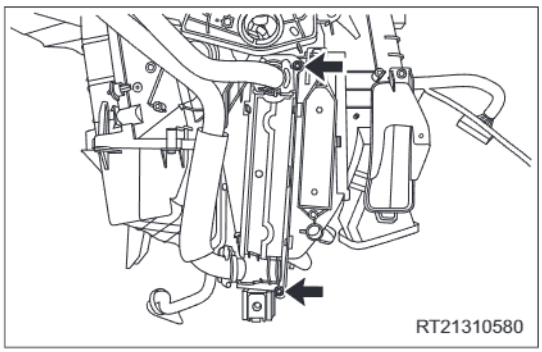
b. Remove the heater core line pressure plate fixing screw (arrow).
(Tightening torque: 2.5 ± 0.5 N·m)



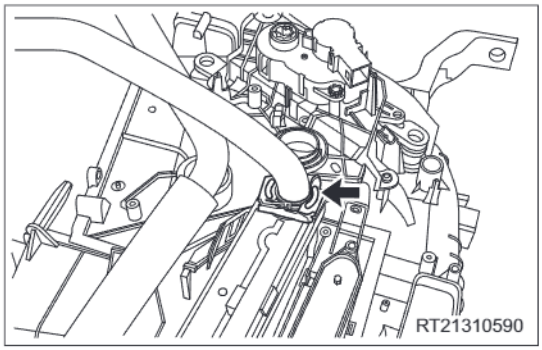
c. Remove 2 fixing screws (arrow) from the evaporator case.
(Tightening torque: 2.5 ± 0.5 N·m)



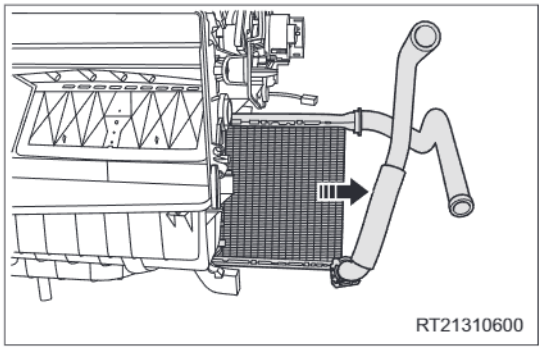
d. Remove 2 fixing screws (arrow) from the heater core line cover plate.
(Tightening torque: 2.5 ± 0.5 N·m)



e. Remove the heater core outlet pipe fixing clamp (arrow).

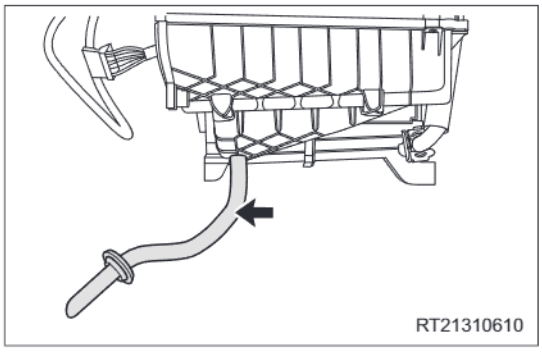


f. Take out the heater core assembly carefully.



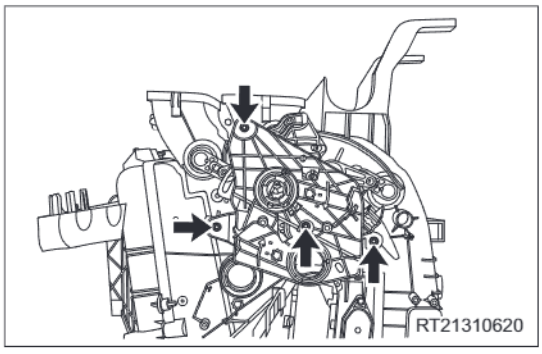
17. Remove the A/C drain pipe.

a. Remove the A/C drain pipe (arrow) from the bottom of evaporator tank assembly.

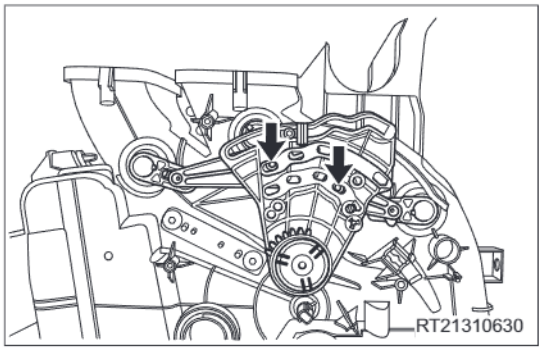


18. Remove the mode damper adjustment mechanism set.

a. Remove 4 fixing screws (arrow) from the mode damper adjustment mechanism set.
(Tightening torque: 2.5 ± 0.5 N·m)



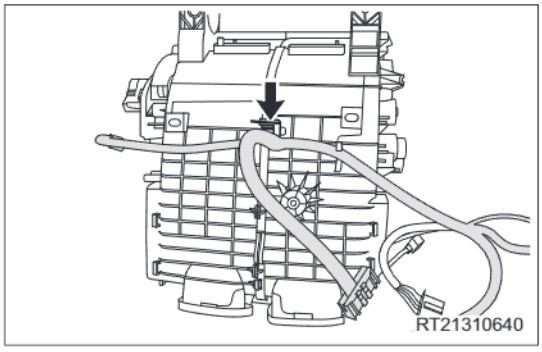
b. Remove 2 fixing screws (arrow) from the mode damper adjustment mechanism set.
(Tightening torque: 2.5 ± 0.5 N·m)



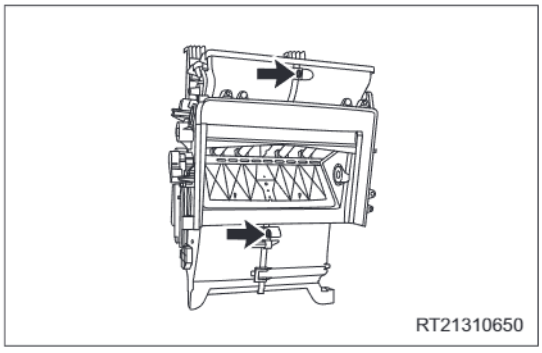
c. Detach the mode damper adjustment mechanism set from the evaporator tank assembly carefully.

19. Remove the temperature/face/defroster/foot damper set.

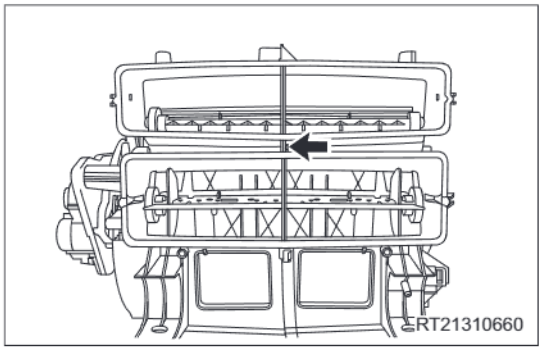
a. Detach the A/C wire harness assembly (arrow) from the evaporator tank assembly.



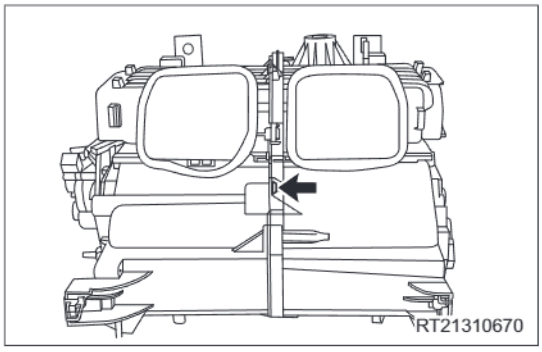
b. Remove 2 fixing screws (arrow) from the front part of evaporator tank assembly.
(Tightening torque: 2.5 ± 0.5 N·m)



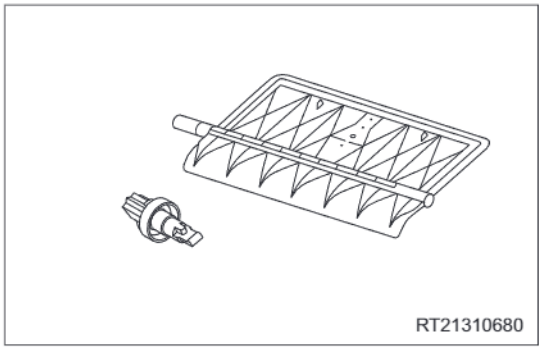
c. Remove the fixing screw (arrow) from the upper part of evaporator tank assembly.
(Tightening torque: 2.5 ± 0.5 N·m)



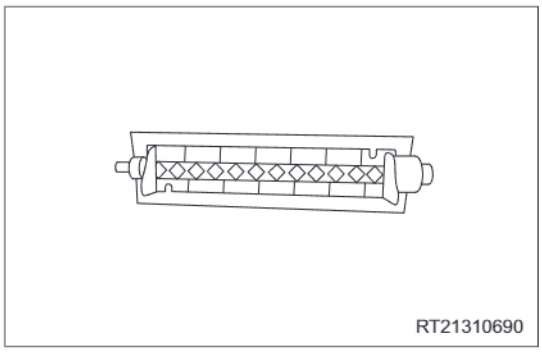
d. Remove the fixing screw (arrow) from the lower part of evaporator tank assembly.
(Tightening torque: 2.5 ± 0.5 N·m)


RT21310670

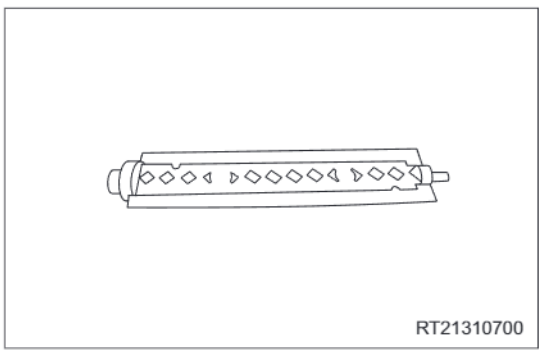
e. Detach the fixing clips, separate the evaporator case, and remove the temperature damper set.


RT21310680

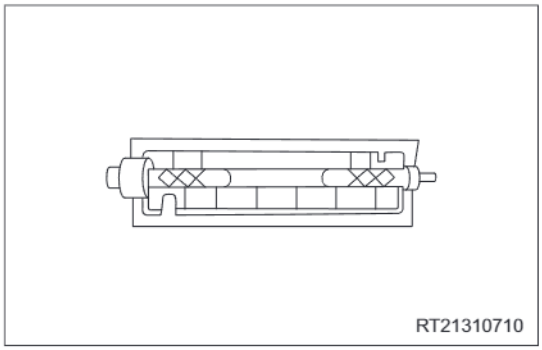
f. Remove the face damper set.


RT21310690

g. Remove the defroster damper set.

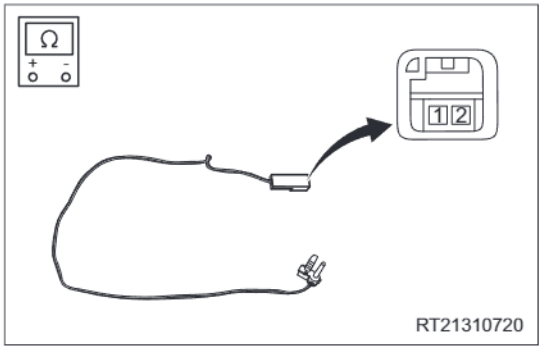

RT21310700

h. Remove the foot damper set.



31 Inspection

1. Check the evaporator temperature sensor.
   a. Using the ohm band of digital multimeter, measure the resistance of evaporator temperature sensor according to the table below.



Standard Resistance

Multimeter Connection	Temperature (°C)	Specified Condition (Ω)	Temperature (°C)	Specified Condition (Ω)	Temperature (°C)	Specified Condition (Ω)
Terminal 1 - Terminal 2	-40	45636	-8	8916	24	2294
Terminal 1 - Terminal 2	-39	43408	-7	8516	25	2200
Terminal 1 - Terminal 2	-38	41180	-6	8116	26	2125
Terminal 1 - Terminal 2	-37	38953	-5	7716	27	2050
Terminal 1 - Terminal 2	-36	36725	-4	7412	28	1975
Terminal 1 - Terminal 2	-35	34498	-3	7107	29	1900
Terminal 1 - Terminal 2	-34	32864	-2	6803	30	1825
Terminal 1 - Terminal 2	-33	31230	-1	6498	31	1764
Terminal 1 - Terminal 2	-32	29596	0	6194	32	1704
Terminal 1 - Terminal 2	-31	27962	1	5922	33	1643

Multimeter Connection	Temperature (°C)	Specified Condition (Ω)	Temperature (°C)	Specified Condition (Ω)	Temperature (°C)	Specified Condition (Ω)
Terminal 1 - Terminal 2	-30	26328	2	5663	34	1583
Terminal 1 - Terminal 2	-29	25117	3	5418	35	1522
Terminal 1 - Terminal 2	-28	23906	4	5185	36	1473
Terminal 1 - Terminal 2	-27	22695	5	4963	37	1424
Terminal 1 - Terminal 2	-26	21484	6	4752	38	1375
Terminal 1 - Terminal 2	-25	20273	7	4552	39	1326
Terminal 1 - Terminal 2	-24	19367	8	4361	40	1277
Terminal 1 - Terminal 2	-23	18461	9	4180	41	1237
Terminal 1 - Terminal 2	-22	17554	10	4007	42	1197
Terminal 1 - Terminal 2	-21	16648	11	3857	43	1156
Terminal 1 - Terminal 2	-20	15742	12	3708	44	1116
Terminal 1 - Terminal 2	-19	15058	13	3558	45	1076
Terminal 1 - Terminal 2	-18	14374	14	3408	46	1043
Terminal 1 - Terminal 2	-17	13689	15	3259	47	1010
Terminal 1 - Terminal 2	-16	13005	16	3141	48	978
Terminal 1 - Terminal 2	-15	12321	17	3023	49	945
Terminal 1 - Terminal 2	-14	11800	18	2905	50	912
Terminal 1 - Terminal 2	-13	11279	19	2787	51	885
Terminal 1 - Terminal 2	-12	10758	20	2669	52	858
Terminal 1 - Terminal 2	-11	10237	21	2575	53	830
Terminal 1 - Terminal 2	-10	9716	22	2481	54	803

Multimeter Connection	Temperature (°C)	Specified Condition (Ω)	Temperature (°C)	Specified Condition (Ω)	Temperature (°C)	Specified Condition (Ω)
Terminal 1 - Terminal 2	-9	9316	23	2388	55	776

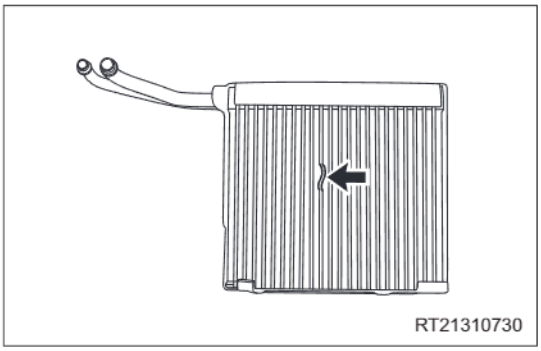
HINT:
Resistance decreases as the temperature increases.

CAUTION

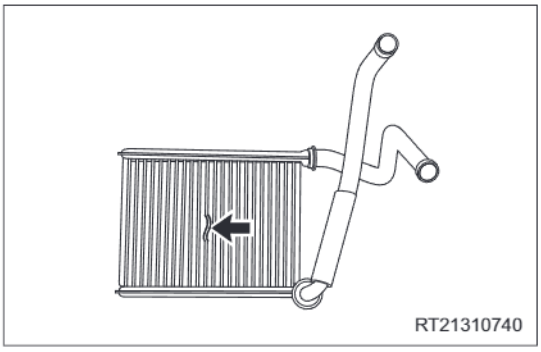
- Resistance value may change even if the sensor is touched slightly. Make sure that the connector of sensor is held firmly.
- During measurement, the sensor temperature must be almost the same as the ambient temperature.

If result is not as specified, replace the evaporator temperature sensor.

2. Check the evaporator core assembly.
   a. Check if the evaporator core assembly is cracked, damaged and leaked.
      If any problem is found, replace the evaporator core assembly.
   b. Check the fin for bends.
      If any fin is bent, carefully straighten it with a screwdriver or pliers.


RT21310730

3. Check the heater core assembly.
   a. Check if the heater core assembly is cracked, damaged or leaked.
      If any problem is found, replace the heater core assembly.
   b. Check the fin for bends.
      If any fin is bent, carefully straighten it with a screwdriver or pliers.


RT21310740

4. Check the damper control mechanism assembly.
   a. Check if the mode damper adjustment mechanism set is stuck, fell out, deformed or damaged. Replace as necessary.
   b. Check if the inner/outer circulation/temperature/face/defrost/foot damper set is stuck, fell out, deformed or damaged. Replace as necessary.

Assembly

Assembly is in the reverse order of disassembly.

CAUTION

- If evaporator core is to be reused, do not insert the evaporator temperature sensor into a location where the sensor was previously inserted. Insert it to a location that is 1 fin to the right or left of its previous location.
- During installation, apply a small amount of grease to the contact surface of mode damper adjustment mechanism set to ensure that it can operate smoothly.
- Always check that inner/outer circulation damper mechanism assembly operates normally after installation is completed.
- Always check that mode damper mechanism assembly operates normally after installation is completed.
- Always check that temperature damper mechanism assembly operates normally after installation is completed.

Installation

Installation is in the reverse order of removal.

CAUTION

- Tighten fixing bolts and fixing nuts to specified torque.
- It is necessary to replace the refrigerant line O-ring when installing the refrigerant line. Failure to do so may result in refrigerant leaks.
- Lubricate the new rubber O-ring with clean refrigerant oil and install it to the refrigerant line joint.
- Only use the specified O-ring, as it is made of special materials for R134a system.
- Only use recommended refrigerant oil which is applicable to the A/C compressor assembly on vehicle.
- Be sure to recharge the refrigerant and check refrigerant fo leakage after installation.

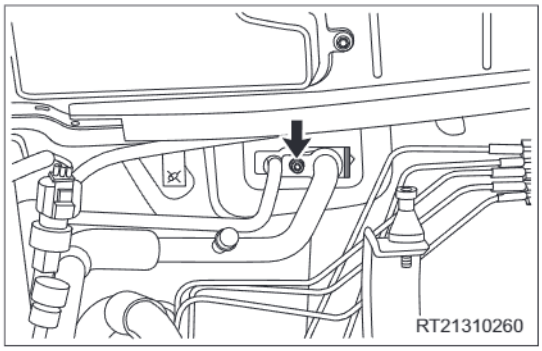
A/C Low Pressure Line

Removal

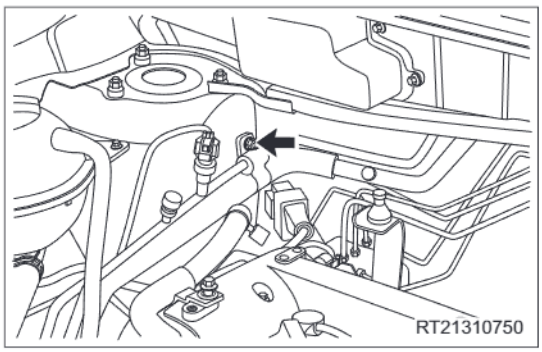
CAUTION

- Special service equipment for R134a refrigerant must be used to recover/charge refrigerant.
- Always keep the work area in good ventilation.
- The disconnected A/C line and connecting part should be sealed to prevent foreign matter from entering.

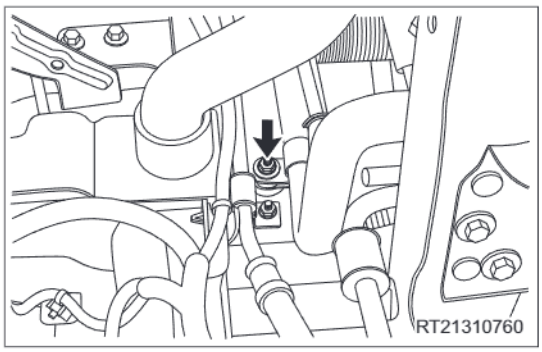
1. Recover the refrigerant from the A/C system (See page 31-66).
2. Turn off all the electrical equipment and ignition switch.
3. Disconnect the negative battery cable.
4. Remove the A/C low pressure line (compressor to evaporator).
   a. Remove the fixing bolt (arrow) between A/C high/low pressure line and expansion valve, and detach the A/C low pressure line.
   (Tightening torque: 7 ± 1 N·m)



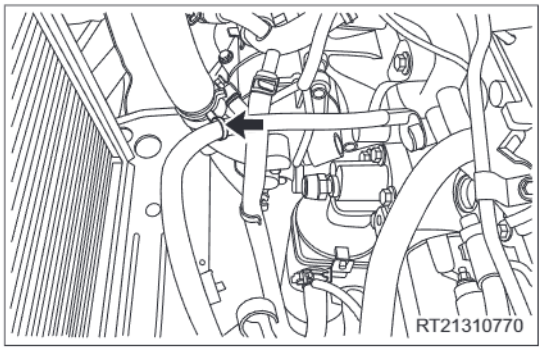
   b. Remove the coupling nut (arrow) between A/C high/low pressure line fixing bracket and body, and disengage the A/C low pressure line.
   (Tightening torque: 7 ± 1 N·m)



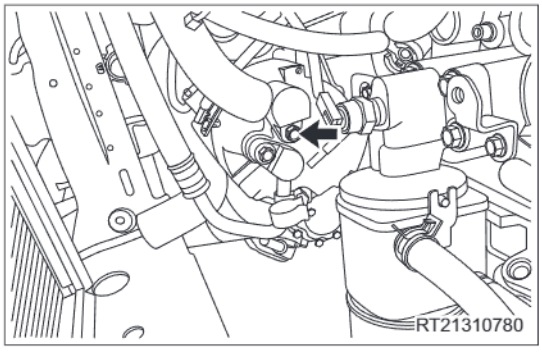
   c. Remove the coupling nut (arrow) between A/C high/low pressure line fixing bracket and body, and disengage the A/C low pressure line.
   (Tightening torque: 7 ± 1 N·m)



d. Disengage the fixing clamp (arrow) between A/C low pressure line and coolant circulation line.



e. Remove the fixing bolt (arrow) between A/C low pressure line and compressor assembly, and disengage the A/C low pressure line from the compressor assembly.
(Tightening torque: 25 ± 2.5 N·m)



f. Remove the A/C low pressure line (compressor to evaporator).

Installation

Installation is in the reverse order of removal.

CAUTION

- Tighten fixing bolts and fixing nuts to specified torque.
- It is necessary to replace the refrigerant line O-ring when installing the refrigerant line. Failure to do so may result in refrigerant leaks.
- Lubricate the new rubber O-ring with clean refrigerant oil and install it to the refrigerant line joint.
- Only use the specified O-ring, as it is made of special materials for R134a system.
- Only use recommended refrigerant oil which is applicable to the A/C compressor assembly on vehicle.
- Perform recharging for the A/C system and check refrigerant for leakage.

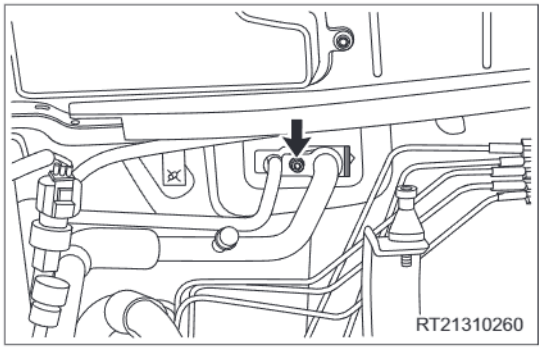
A/C High Pressure Line

Removal

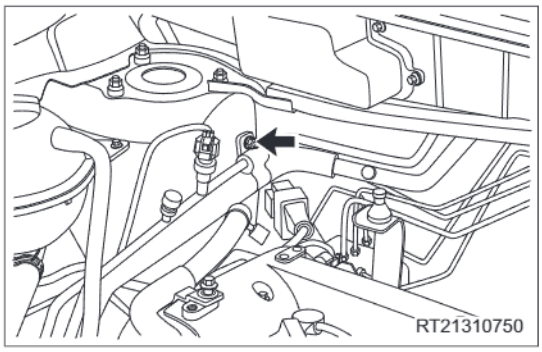
CAUTION

- Special service equipment for R134a refrigerant must be used to recover/charge refrigerant.
- Always keep the work area in good ventilation.
- The disconnected A/C line and connecting part should be sealed to prevent foreign matter from entering.

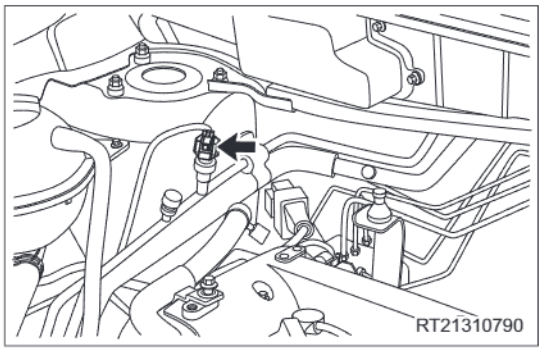
1. Recover the refrigerant from the A/C system (See page 31-66).
2. Turn off all the electrical equipment and ignition switch.
3. Disconnect the negative battery cable.
4. Remove the front bumper assembly (See page 48-11).
5. Remove the A/C high pressure line I (compressor to evaporator).
   a. Remove the fixing bolt (arrow) between A/C high/low pressure line and expansion valve, and disengage the A/C high pressure line I.
   (Tightening torque: 7 ± 1 N·m)



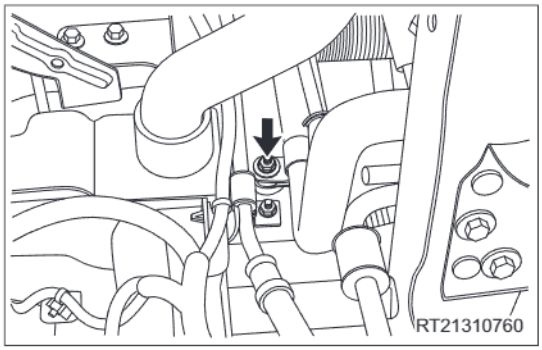
   b. Remove the coupling nut (arrow) between A/C high/low pressure line fixing bracket and body, and disengage the A/C high pressure line I.
   (Tightening torque: 7 ± 1 N·m)



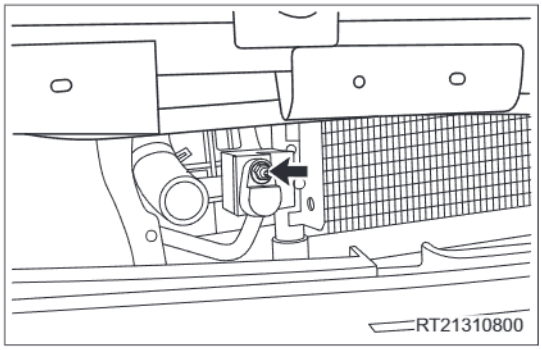
   c. Disconnect the A/C pressure sensor wire harness connector (arrow).



d. Remove the coupling nut (arrow) between A/C high/low pressure line fixing bracket and body, and disengage the A/C high pressure line I.
(Tightening torque: 7 ± 1 N·m)



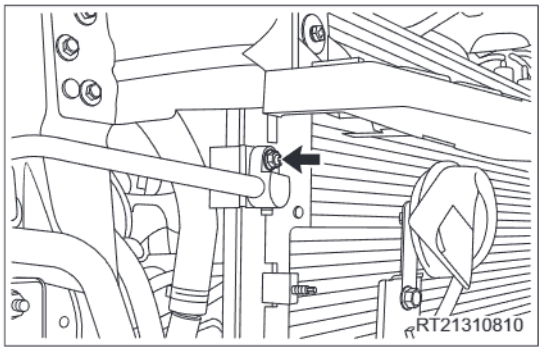
e. Remove the fixing nut (arrow) between A/C high pressure line I and condenser assembly, and disengage the A/C high pressure line I from the condenser assembly.
(Tightening torque: 7 ± 1 N·m)



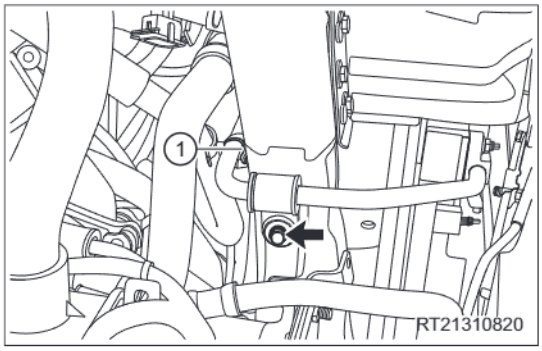
f. Remove the A/C high pressure line I (condenser to evaporator).

6. Remove the A/C high pressure line II (compressor to condenser).

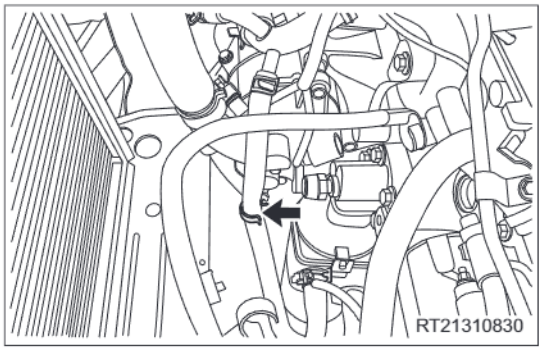
a. Remove the fixing nut (arrow) between A/C high pressure line II and condenser assembly, and disengage the A/C high pressure line II from the condenser assembly.
(Tightening torque: 7 ± 1 N·m)



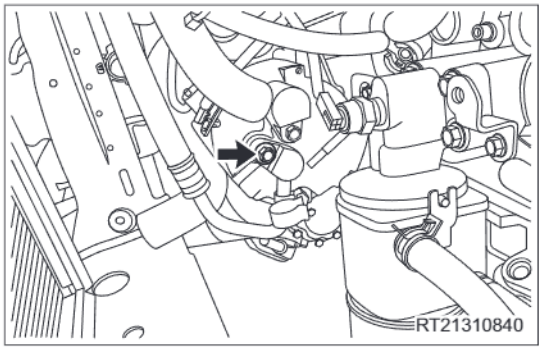
b. Remove the fixing bolt (arrow) between A/C high pressure line II and body and disengage the fixing clamp (1) from the coolant circulation line.
(Tightening torque: 7 ± 1 N·m)



c. Disengage the fixing clamp (arrow) between A/C high pressure line II and coolant circulation line.



d. Remove the fixing bolt (arrow) between A/C high pressure line II and compressor assembly, and disengage the A/C high pressure line II from the compressor assembly.
(Tightening torque: 25 ± 2.5 N·m)



e. Remove the A/C high pressure line II (compressor to condenser).

Installation

Installation is in the reverse order of removal.

CAUTION

- Tighten fixing bolts and fixing nuts to specified torque.
- It is necessary to replace the refrigerant line O-ring when installing the refrigerant line. Failure to do so may result in refrigerant leaks.
- Lubricate the new rubber O-ring with clean refrigerant oil and install it to the refrigerant line joint.
- Only use the specified O-ring, as it is made of special materials for R134a system.
- Only use recommended refrigerant oil which is applicable to the A/C compressor assembly on vehicle.
- Perform recharging for the A/C system and check refrigerant for leakage.

Compressor Assembly

⚠ WARNING

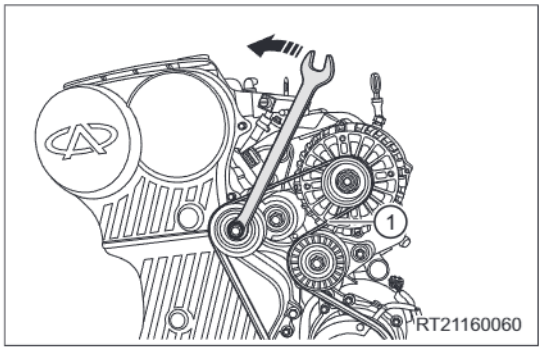
- Be sure to follow the safety precautions before performing the procedure. Failure to do so may result in serious personal injury or even death.

CAUTION

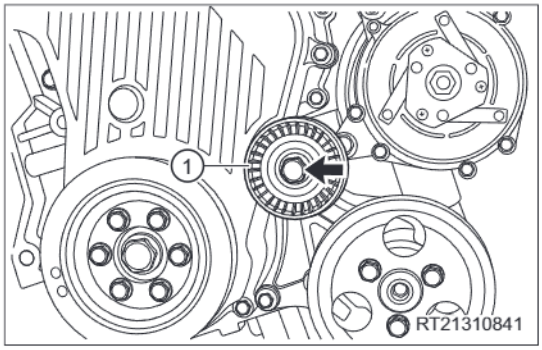
- Special service equipment for R134a refrigerant must be used to recover/charge refrigerant.
- Always keep the work area in good ventilation.
- The disconnected A/C line and connecting part should be sealed to prevent foreign matter from entering.
- If the A/C compressor assembly has an internal malfunction, it is necessary to replace the A/C fluid line. Failure to do so may result in a serious damage to A/C compressor assembly after replacing.
- When replacing compressor assembly, it is necessary to measure the refrigerant oil amount removed from the new A/C compressor assembly.

Removal

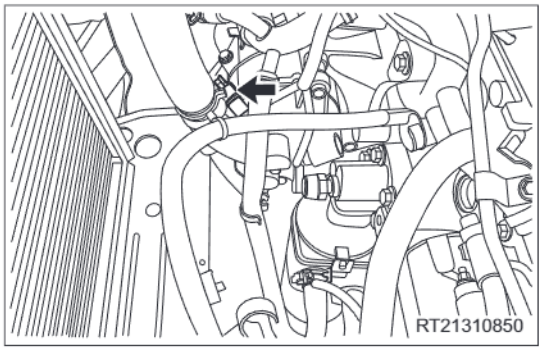
1. Recover the refrigerant from the A/C system (See page 31-66).
2. Turn off all the electrical equipment and ignition switch.
3. Disconnect the negative battery cable.
4. Remove the engine lower right protector assembly.
5. Remove the power steering pump assembly (See page 29-17).
6. Remove the compressor assembly.
   a. Turn the tensioner with a wrench in the direction of arrow as shown in the illustration, and then remove the accessory drive belt (1).



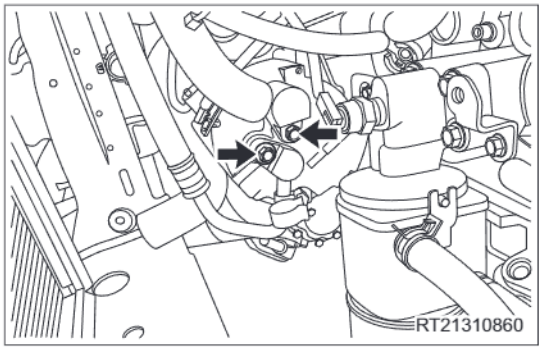
   b. Remove the idler pulley fixing bolt (arrow) and then remove the idler pulley (1).



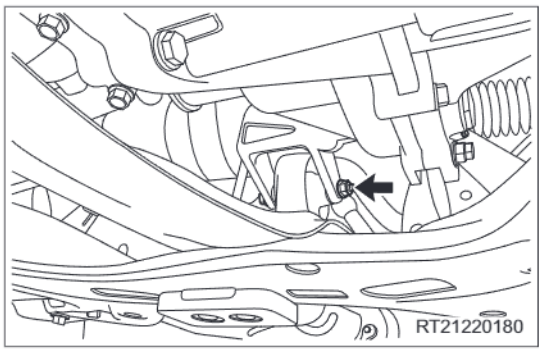
c. Disconnect the compressor assembly wire harness connector (arrow).



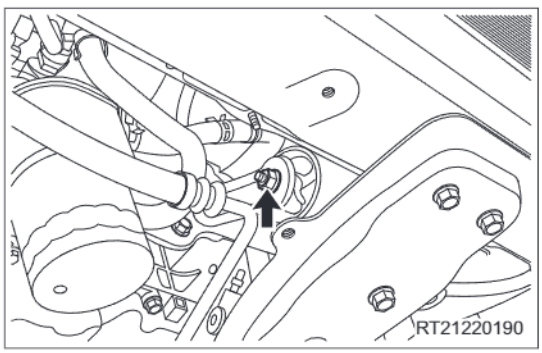
d. Remove 2 fixing bolts (arrow) between A/C high/low pressure line and compressor assembly, and disengage the A/C high/low pressure line from the compressor assembly.
(Tightening torque: 25 ± 2.5 N·m)



e. Remove the coupling bolt and nut (arrow) between rear mounting cushion assembly and rear mounting bracket.
(Tightening torque: 70 ± 5 N·m)

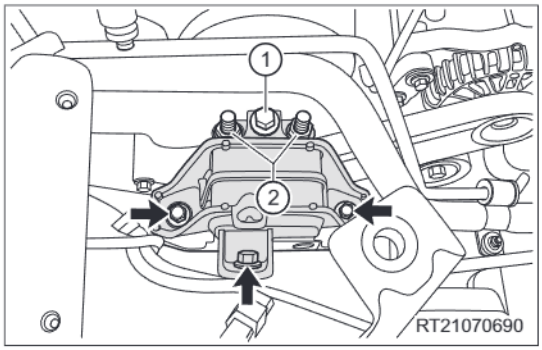


f. Remove the coupling bolt and nut (arrow) between front mounting cushion assembly and front mounting bracket.
(Tightening torque: 70 ± 5 N·m)

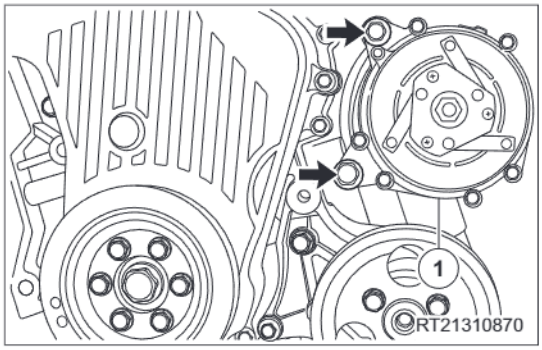


g. Remove the coupling bolt (1) and coupling nuts (2) between right mounting cushion assembly and right mounting bracket.
(Tightening torque: 80 ± 6 N·m)

h. Remove 3 coupling bolts (arrow) between right mounting cushion assembly and body.
(Tightening torque: 70 ± 5 N·m)



i. Lower the engine assembly and remove 2 fixing bolts (arrow) between compressor assembly and mounting bracket.
(Tightening torque: 40 ± 5 N·m)



j. Carefully remove the compressor assembly from below.

Installation

Installation is in the reverse order of removal.

CAUTION

- Tighten the fixing bolts to specified torque.
- It is necessary to replace the refrigerant line O-ring when installing the refrigerant line. Failure to do so may result in refrigerant leaks.
- Lubricate the new rubber O-ring with clean refrigerant oil and install it to the refrigerant line joint.
- Only use the specified O-ring, as it is made of special materials for R134a system.
- Only use recommended refrigerant oil which is applicable to the A/C compressor assembly on vehicle.
- When installing a new compressor assembly, always remove a certain amount of refrigerant oil from the new A/C compressor assembly as specified.
- Perform recharging for the A/C system and check refrigerant for leakage.

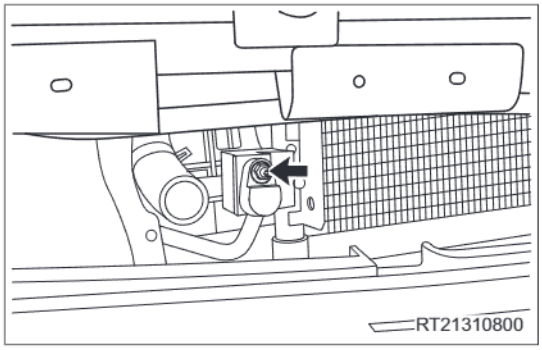
Condenser Assembly (w/Receiver Drier)

Removal

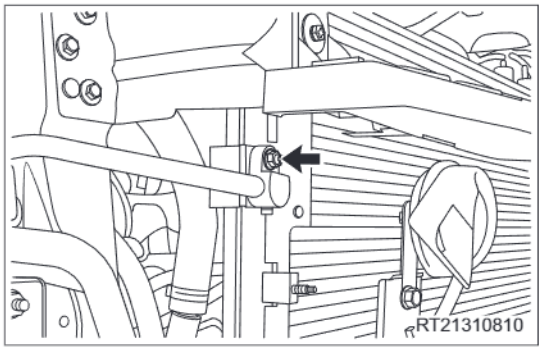
CAUTION

- Special service equipment for R134a refrigerant must be used to recover/charge refrigerant.
- Always keep the work area in good ventilation.
- The disconnected A/C line and connecting part should be sealed to prevent foreign matter from entering.

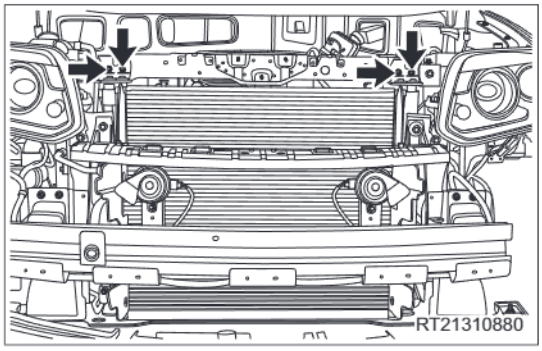
1. Recover the refrigerant from the A/C system (See page 31-66).
2. Turn off all the electrical equipment and ignition switch.
3. Disconnect the negative battery cable.
4. Remove the front bumper assembly (See page 48-11).
5. Remove the condenser assembly (w/ receiver drier).
   a. Remove the fixing nut (arrow) between A/C high pressure line I and condenser assembly, and disengage the A/C high pressure line I from the condenser assembly.
   (Tightening torque: 7 ± 1 N·m)



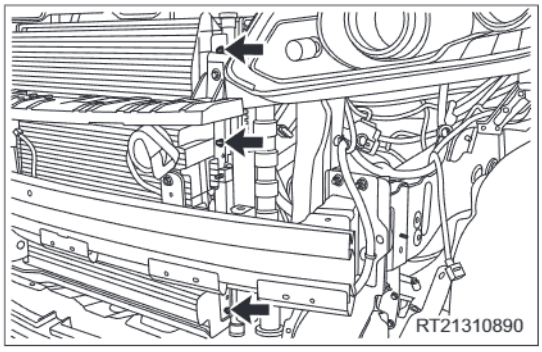
   b. Remove the fixing nut (arrow) between A/C high pressure line II and condenser assembly, and disengage the A/C high pressure line II from the condenser assembly.
   (Tightening torque: 7 ± 1 N·m)



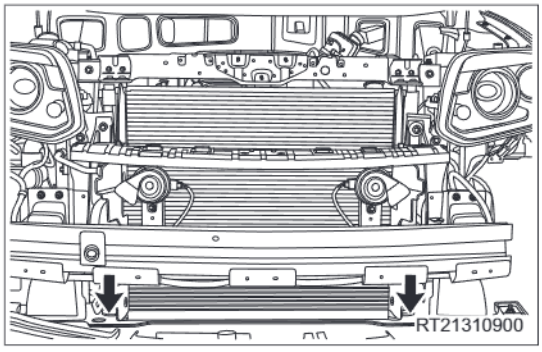
   c. Remove 4 fixing bolts (arrow) from the tank upper crossmember fixing bracket and disengage the upper part of condenser assembly.
   (Tightening torque: 7 ± 1 N·m)



d. Remove the condenser deflector fixing clips (arrow) and remove the deflectors on both sides.



e. Disengage the lower part of condenser assembly from the positioning holes (arrow) of tank lower crossmember assembly.



f. Carefully remove the condenser assembly (w/receiver drier) from above.

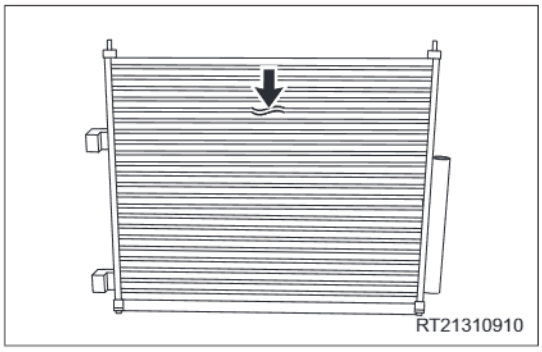
Inspection

1. Check the condenser fins.
   a. If the condenser fins are dirty, wash them with water. And then dry the fins with compressed air.

CAUTION

- DO NOT damage the condenser fins.

b. If the condenser fins are bent, straighten them with a screwdriver or pliers.



Installation

Installation is in the reverse order of removal.

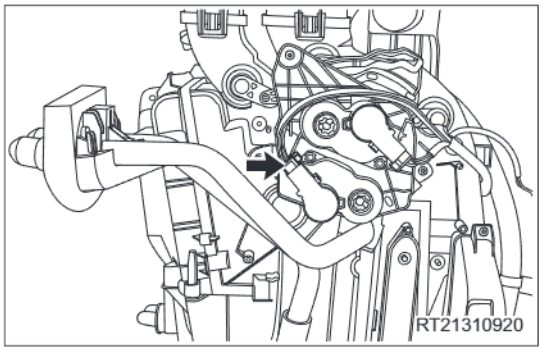
CAUTION

- When installing condenser assembly (w/receiver drier), be sure to align the upper part of it with the positioning hole of tank upper crossmember fixing bracket.
- When installing the condenser assembly (w/receiver drier), be sure to align the lower part of it with the positioning hole of tank lower crossmember.
- It is necessary to replace the refrigerant line O-ring when installing the refrigerant line. Failure to do so may result in refrigerant leaks.
- Lubricate the new rubber O-ring with clean refrigerant oil and install it to the refrigerant line joint.
- Only use the specified O-ring, as it is made of special materials for R134a system.
- Only use recommended refrigerant oil which is applicable to the A/C compressor assembly on vehicle.
- Perform recharging for the A/C system and check refrigerant for leakage.

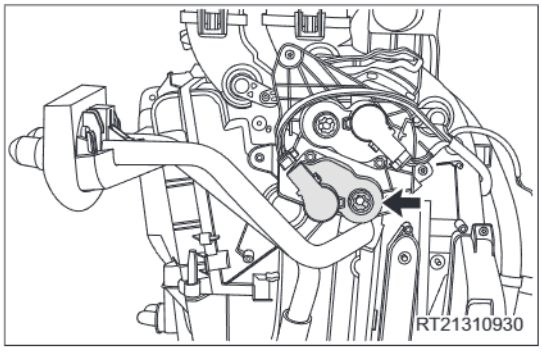
Mix Damper Servo Motor (Left - Automatic A/C)

Removal

1. Turn off all the electrical equipment and ignition switch.
2. Disconnect the negative battery cable.
3. Remove the mix damper servo motor (left - automatic A/C).
   a. Disconnect the mix damper servo motor connector (arrow).



   b. Detach the fixing claw, and remove the mix damper servo motor (arrow) from the evaporator tank assembly carefully.



Installation

Installation is in the reverse order of removal.

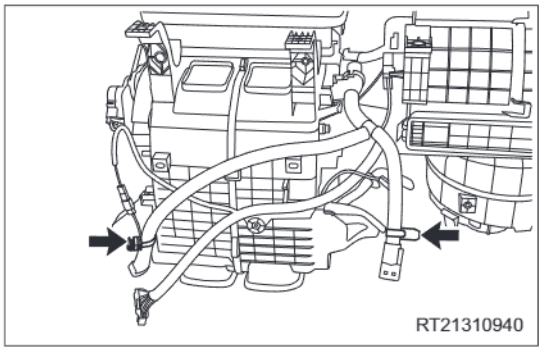
CAUTION

- When installing, apply a small amount of grease to the contact surface between mix damper servo motor lever and mix damper adjustment mechanism set to ensure the motor operates smoothly.

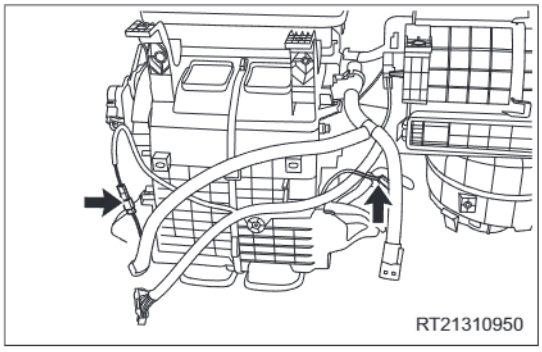
Room Temperature Sensor (for Automatic A/C)

Removal

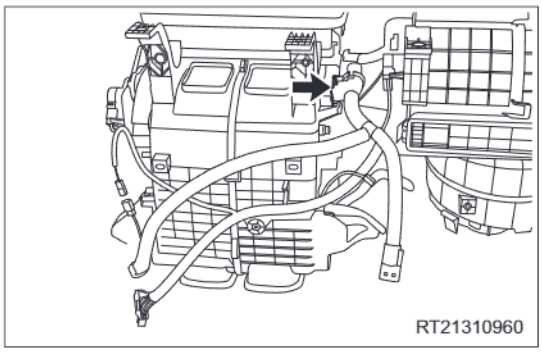
1. Turn off all the electrical equipment and ignition switch.
2. Disconnect the negative battery cable.
3. Remove the room temperature sensor (for automatic A/C).
   a. Disconnect the room temperature sensor wire harness bands (arrow).



   b. Disconnect the room temperature sensor wire harness connectors (arrow).



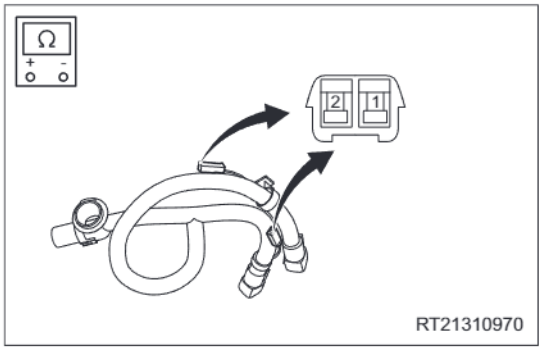
   c. Rotate and detach the connecting part (arrow) between room temperature sensor and HVAC assembly.



   d. Remove the room temperature sensor.

Inspection

1. Check the room temperature sensor.
   a. Using the ohm band of digital multimeter, measure the resistance of room temperature sensor according to the table below.



Standard Resistance

Multimeter Connection	Temperature (°C)	Specified Condition (KΩ)	Upper Limit (KΩ)	Lower Limit (KΩ)
Terminal 1 - Terminal 2	-40	332.1	317.4	347.8
Terminal 1 - Terminal 2	-35	239.9	230	250.1
Terminal 1 - Terminal 2	-30	175.2	168.5	182
Terminal 1 - Terminal 2	-25	130	126.4	134.7
Terminal 1 - Terminal 2	-20	99.03	95.82	102.3
Terminal 1 - Terminal 2	-15	74.18	71.99	76.43
Terminal 1 - Terminal 2	-10	56.1	54.6	57.65
Terminal 1 - Terminal 2	-5	42.82	41.78	43.88
Terminal 1 - Terminal 2	0	32.97	32.24	33.7
Terminal 1 - Terminal 2	5	25.59	25.1	26.08
Terminal 1 - Terminal 2	10	20.02	19.68	20.35
Terminal 1 - Terminal 2	15	15.77	15.55	16
Terminal 1 - Terminal 2	20	12.52	12.37	12.67
Terminal 1 - Terminal 2	25	10	9.9	10.1
Terminal 1 - Terminal 2	30	8.047	7.949	8.144
Terminal 1 - Terminal 2	35	6.517	6.424	6.61
Terminal 1 - Terminal 2	40	5.31	5.225	5.397
Terminal 1 - Terminal 2	45	4.353	4.274	4.433
Terminal 1 - Terminal 2	50	3.588	3.516	3.661
Terminal 1 - Terminal 2	55	2.974	2.909	3.04
Terminal 1 - Terminal 2	60	2.477	2.419	2.537
Terminal 1 - Terminal 2	65	2.074	2.021	2.127
Terminal 1 - Terminal 2	70	1.744	1.697	1.792
Terminal 1 - Terminal 2	75	1.474	1.432	1.517
Terminal 1 - Terminal 2	80	1.25	1.213	1.289
Terminal 1 - Terminal 2	85	1.065	1.032	1.1

HINT:
Resistance decreases as the temperature increases.

CAUTION

- During measurement, the sensor temperature must be almost the same as the ambient temperature.

If result is not as specified, replace the room temperature sensor.

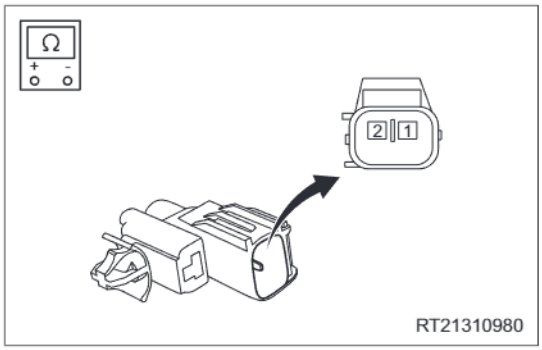
Installation

Installation is in the reverse order of removal.

Outside Temperature Sensor (for Automatic A/C)

Inspection

1. Check the outside temperature sensor.
   a. Using the ohm band of digital multimeter, measure the resistance of outside temperature sensor according to the table below.



Standard Resistance

Multimeter Connection	Temperature (°C)	Specified Condition (Ω)	Temperature (°C)	Specified Condition (Ω)	Temperature (°C)	Specified Condition (Ω)
Terminal 1 - Terminal 2	-40	332.1	2	29.76	44	4.527
Terminal 1 - Terminal 2	-39	310.9	3	28.29	45	4.353
Terminal 1 - Terminal 2	-38	291.2	4	26.9	46	4.186
Terminal 1 - Terminal 2	-37	272.8	5	25.59	47	4.027
Terminal 1 - Terminal 2	-36	255.7	6	24.35	48	3.874
Terminal 1 - Terminal 2	-35	239.9	7	23.17	49	3.728
Terminal 1 - Terminal 2	-34	225	8	22.06	50	3.588
Terminal 1 - Terminal 2	-33	211.2	9	21.01	51	3.454
Terminal 1 - Terminal 2	-32	198.4	10	20.02	52	3.326
Terminal 1 - Terminal 2	-31	186.4	11	19.07	53	3.204
Terminal 1 - Terminal 2	-30	175.2	12	18.18	54	3.086
Terminal 1 - Terminal 2	-29	164.7	13	17.33	55	2.974
Terminal 1 - Terminal 2	-28	154.9	14	16.53	56	2.866
Terminal 1 - Terminal 2	-27	145.8	15	15.77	57	2.762

Multimeter Connection	Temperature (°C)	Specified Condition (Ω)	Temperature (°C)	Specified Condition (Ω)	Temperature (°C)	Specified Condition (Ω)
Terminal 1 - Terminal 2	-26	137.2	16	15.05	58	2.663
Terminal 1 - Terminal 2	-25	130	17	14.37	59	2.568
Terminal 1 - Terminal 2	-24	122.5	18	13.72	60	2.477
Terminal 1 - Terminal 2	-23	115.6	19	13.1	61	2.39
Terminal 1 - Terminal 2	-22	109.1	20	12.52	62	2.306
Terminal 1 - Terminal 2	-21	102.9	21	11.96	63	2.225
Terminal 1 - Terminal 2	-20	99.03	22	11.31	64	2.148
Terminal 1 - Terminal 2	-19	93.39	23	10.93	65	2.074
Terminal 1 - Terminal 2	-18	88.11	24	10.45	66	2.002
Terminal 1 - Terminal 2	-17	83.17	25	10	67	1.934
Terminal 1 - Terminal 2	-16	78.53	26	9.57	68	1.868
Terminal 1 - Terminal 2	-15	74.18	27	9.16	69	1.805
Terminal 1 - Terminal 2	-14	70.1	28	8.77	70	1.744
Terminal 1 - Terminal 2	-13	66.26	29	8.4	71	1.686
Terminal 1 - Terminal 2	-12	62.67	30	8.047	72	1.63
Terminal 1 - Terminal 2	-11	59.28	31	7.71	73	1.576
Terminal 1 - Terminal 2	-10	56.1	32	7.39	74	1.524
Terminal 1 - Terminal 2	-9	53.12	33	7.085	75	1.474
Terminal 1 - Terminal 2	-8	50.3	34	6.794	76	1.426
Terminal 1 - Terminal 2	-7	47.66	35	6.517	77	1.379
Terminal 1 - Terminal 2	-6	45.17	36	6.252	78	1.335

Multimeter Connection	Temperature (°C)	Specified Condition (Ω)	Temperature (°C)	Specified Condition (Ω)	Temperature (°C)	Specified Condition (Ω)
Terminal 1 - Terminal 2	-5	42.82	37	6	79	1.292
Terminal 1 - Terminal 2	-4	40.61	38	5.759	80	1.25
Terminal 1 - Terminal 2	-3	38.53	39	5.53	81	1.211
Terminal 1 - Terminal 2	-2	36.56	40	5.31	82	1.172
Terminal 1 - Terminal 2	-1	34.71	41	5.101	83	1.135
Terminal 1 - Terminal 2	0	32.97	42	4.901	84	1.1
Terminal 1 - Terminal 2	1	31.32	43	4.71	85	1.065

HINT:
Resistance decreases as the temperature increases.

CAUTION

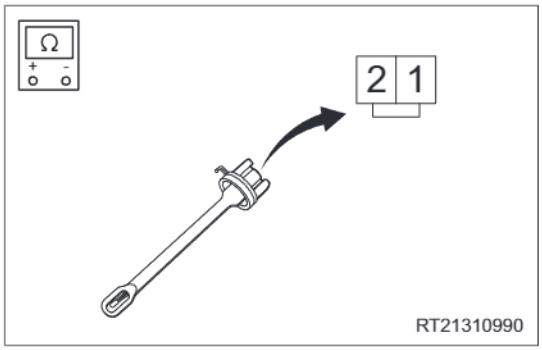
- During measurement, the sensor temperature must be almost the same as the ambient temperature.

If result is not as specified, replace the outside temperature sensor.

Heater Core Sensor (for Automatic A/C)

Inspection

1. Check the heater core sensor.
   a. Using the ohm band of digital multimeter, measure the resistance of heater core sensor according to the table below.



Standard Resistance

Multimeter Connection	Temperature (°C)	Lower Limit (KΩ)	Standard Value (mm)	Upper Limit (KΩ)	Temperature (°C)	Lower Limit (KΩ)	Standard Value (mm)	Upper Limit (KΩ)
Terminal 1 - Terminal 2	36°C	1.388	1.453	1.520	69°C	0.451	0.483	0.516
Terminal 1 - Terminal 2	37°C	1.337	1.400	1.467	70°C	0.437	0.468	0.501
Terminal 1 - Terminal 2	38°C	1.289	1.351	1.415	71°C	0.424	0.454	0.486
Terminal 1 - Terminal 2	39°C	1.242	1.303	1.366	72°C	0.411	0.441	0.472
Terminal 1 - Terminal 2	40°C	1.198	1.258	1.319	73°C	0.398	0.428	0.458
Terminal 1 - Terminal 2	41°C	1.156	1.213	1.274	74°C	0.386	0.415	0.445
Terminal 1 - Terminal 2	42°C	1.114	1.172	1.230	75°C	0.378	0.398	0.418
Terminal 1 - Terminal 2	43°C	1.075	1.131	1.189	76°C	0.364	0.390	0.420
Terminal 1 - Terminal 2	44°C	1.037	1.091	1.148	77°C	0.353	0.379	0.408
Terminal 1 - Terminal 2	45°C	1.001	1.056	1.110	78°C	0.343	0.368	0.397
Terminal 1 - Terminal 2	46°C	0.966	1.018	1.073	79°C	0.333	0.358	0.385
Terminal 1 - Terminal 2	47°C	0.933	0.984	1.038	80°C	0.323	0.348	0.375
Terminal 1 - Terminal 2	48°C	0.900	0.950	1.004	81°C	0.314	0.337	0.364
Terminal 1 - Terminal 2	49°C	0.870	0.919	0.970	82°C	0.305	0.328	0.354

Multimeter Connection	Temperature (°C)	Lower Limit (KΩ)	Standard Value (mm)	Upper Limit (KΩ)	Temperature (°C)	Lower Limit (KΩ)	Standard Value (mm)	Upper Limit (KΩ)
Terminal 1 - Terminal 2	50°C	0.840	0.890	0.937	83°C	0.296	0.319	0.344
Terminal 1 - Terminal 2	51°C	0.812	0.858	0.908	84°C	0.287	0.310	0.335
Terminal 1 - Terminal 2	52°C	0.784	0.830	0.879	85°C	0.279	0.300	0.326
Terminal 1 - Terminal 2	53°C	0.758	0.803	0.850	86°C	0.271	0.293	0.317
Terminal 1 - Terminal 2	54°C	0.733	0.777	0.823	87°C	0.264	0.285	0.308
Terminal 1 - Terminal 2	55°C	0.708	0.751	0.797	88°C	0.256	0.276	0.300
Terminal 1 - Terminal 2	56°C	0.685	0.727	0.772	89°C	0.249	0.269	0.292
Terminal 1 - Terminal 2	57°C	0.663	0.704	0.748	90°C	0.242	0.262	0.284
Terminal 1 - Terminal 2	58°C	0.641	0.681	0.724	91°C	0.236	0.254	0.277
Terminal 1 - Terminal 2	59°C	0.621	0.660	0.702	92°C	0.229	0.247	0.269
Terminal 1 - Terminal 2	60°C	0.601	0.643	0.680	93°C	0.223	0.241	0.262
Terminal 1 - Terminal 2	61°C	0.581	0.621	0.659	94°C	0.217	0.234	0.255
Terminal 1 - Terminal 2	62°C	0.562	0.600	0.639	95°C	0.211	0.228	0.249
Terminal 1 - Terminal 2	63°C	0.545	0.582	0.620	96°C	0.205	0.222	0.242
Terminal 1 - Terminal 2	64°C	0.496	0.564	0.601	97°C	0.200	0.216	0.236
Terminal 1 - Terminal 2	65°C	0.511	0.546	0.582	98°C	0.194	0.210	0.230
Terminal 1 - Terminal 2	66°C	0.495	0.530	0.565	99°C	0.189	0.205	0.224
Terminal 1 - Terminal 2	67°C	0.480	0.513	0.548	100°C	0.184	0.200	0.219
Terminal 1 - Terminal 2	68°C	0.465	0.498	0.532				

HINT:
Resistance decreases as the temperature increases.

If result is not as specified, replace the automatic A/C wire harness assembly.