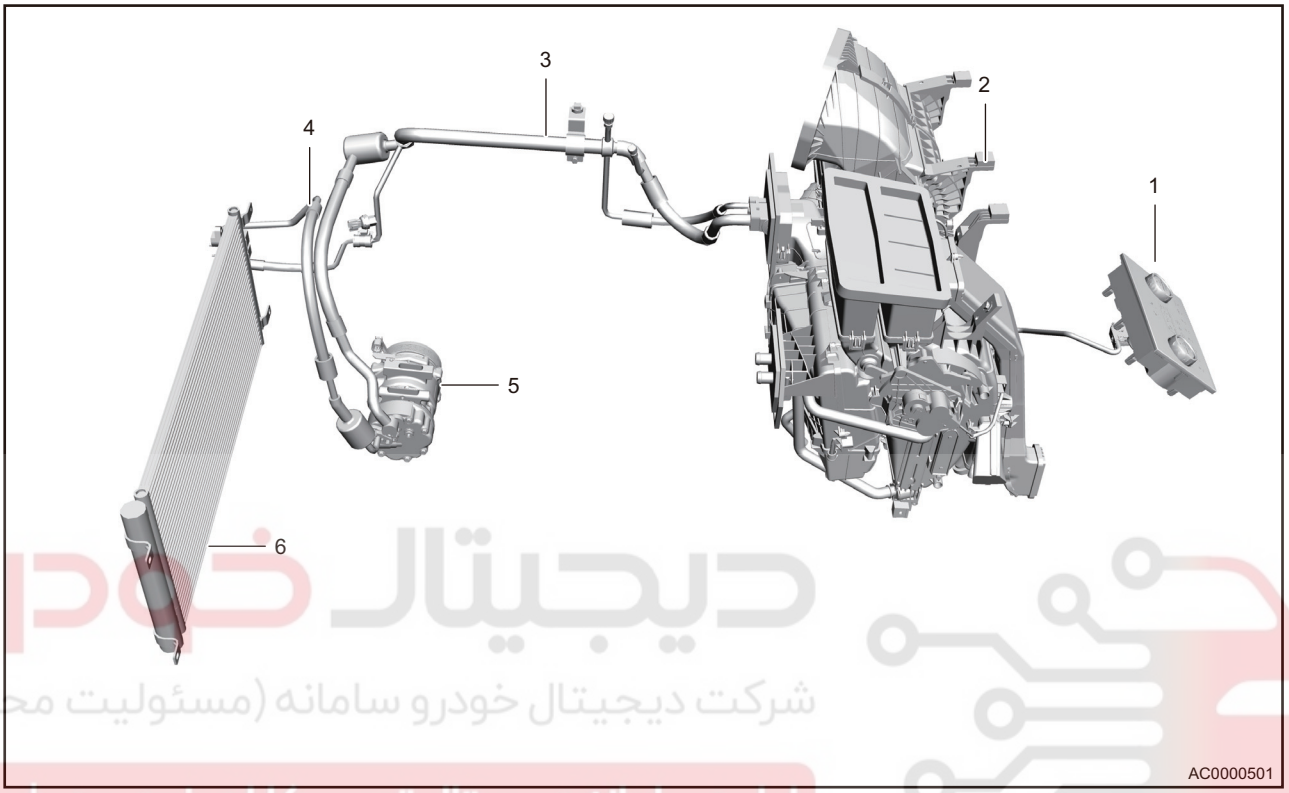
AIR CONDITIONING

GENERAL INFORMATION

Overview

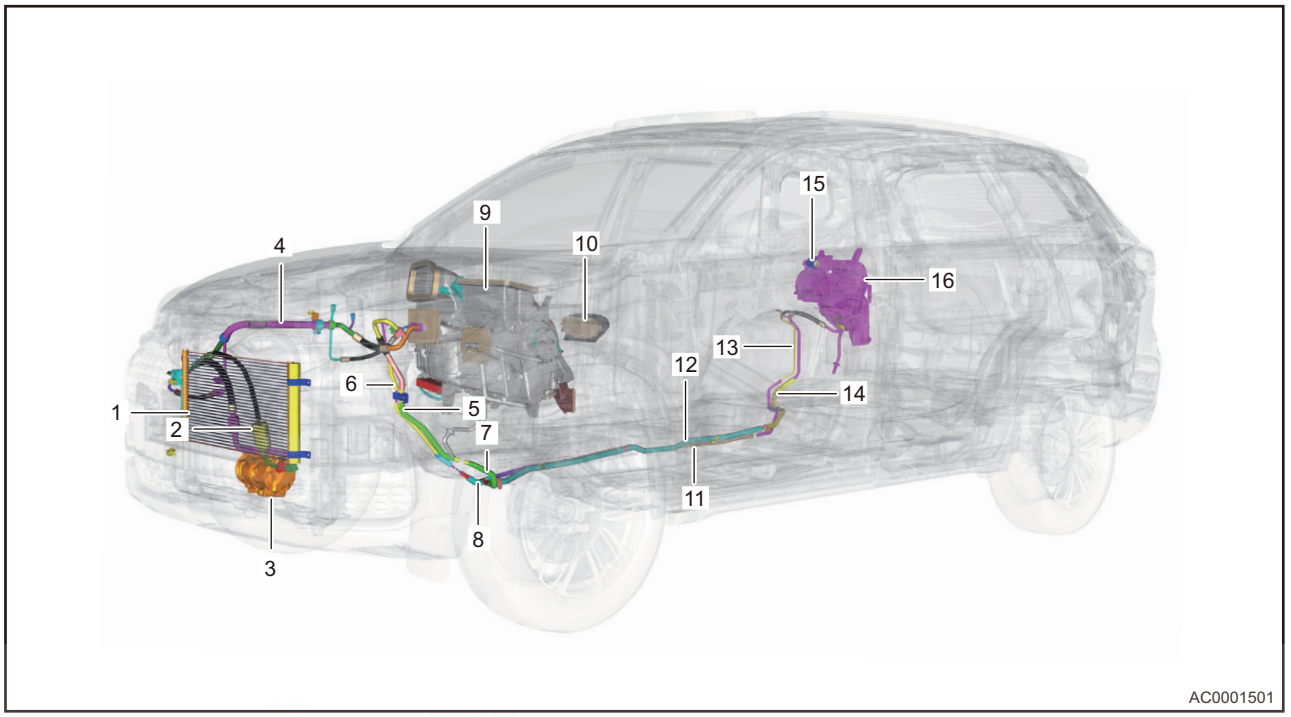
Description

Electric A/C



1 - Electric A/C Control Panel	2 - HVAC Assembly
3 - A/C Coaxial Line Assembly	4 - Compressor - Condenser Line Assembly
5 - Condenser Assembly (w/ Receiver Drier)	6 - V-ribbed Belt A/C Compressor Assembly

Automatic A/C



1 - Condenser Assembly (w/ Receiver Drier)	2 - Compressor - Condenser Line Assembly
3 - V-ribbed Belt A/C Compressor Assembly	4 - A/C Coaxial Line Assembly
5 - Rear Evaporator to Compressor Line Assembly III	6 - Condenser to Rear Evaporator Line Assembly III
7 - Rear Evaporator to Compressor Line Assembly	8 - Condenser to Rear Evaporator Line Assembly
9 - Automatic Dual Area HVAC Assembly	10 - Automatic A/C Control Panel
11 - Condenser to Rear Evaporator Line Assembly II	12 - Rear Evaporator to Compressor Line Assembly II
13 - Condenser to Rear Evaporator Line Assembly I	14 - Rear Evaporator to Compressor Line Assembly I
15 - Rear A/C Control Panel Assembly	16 - Rear HVAC Assembly

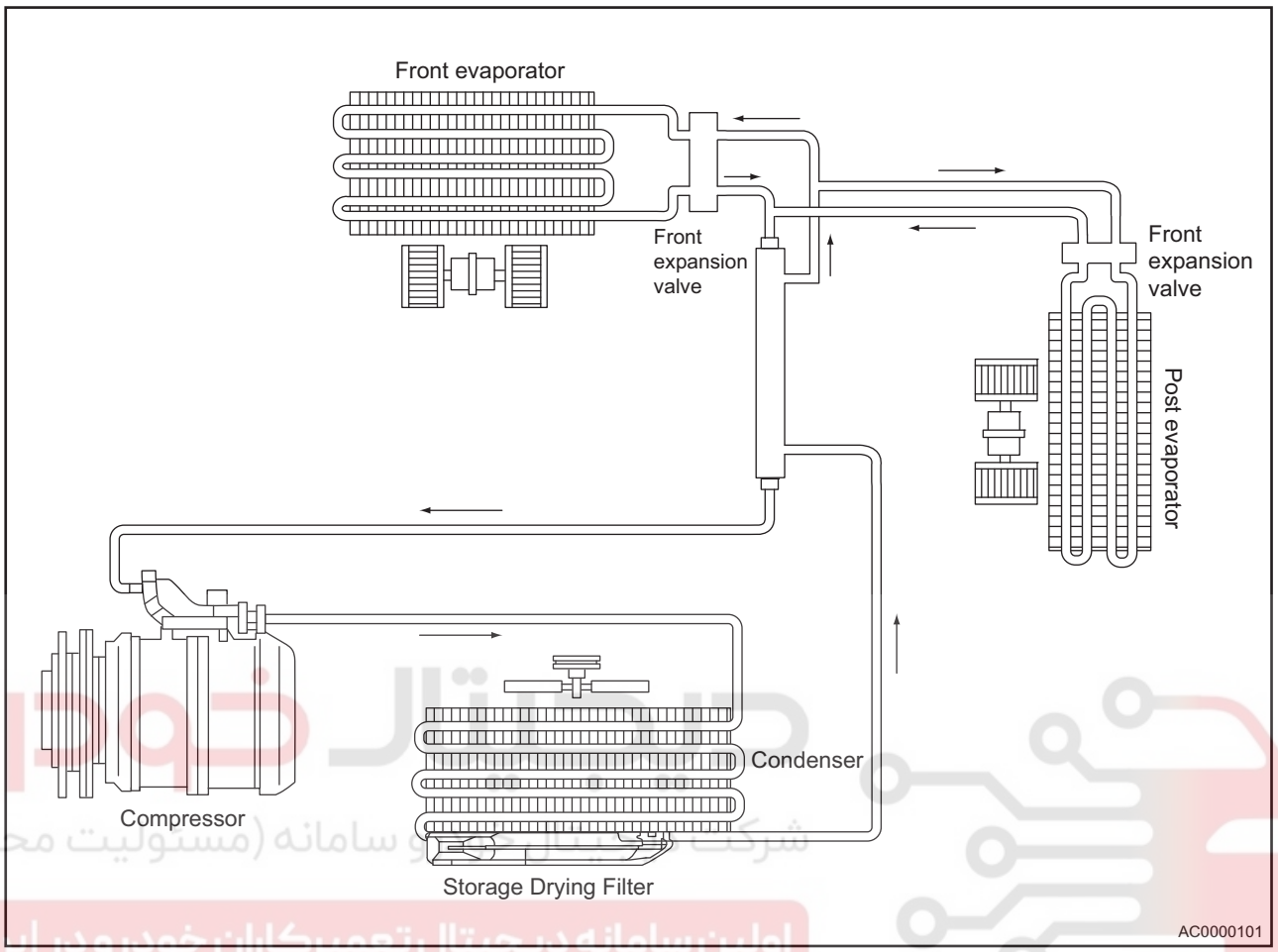
A/C system of Chery T18-2.0T is integrated cold and warm air conditioning, which adopts variable displacement compressor + thermal expansion valve control method, and uses environment-friendly refrigerant R134a. It consists of basic refrigeration components such as compressor, condenser, HVAC, rear evaporator (not equipped for single evaporator electric A/C), line, A/C control panel and other accessories including pressure switch, O-ring, etc.

System composition

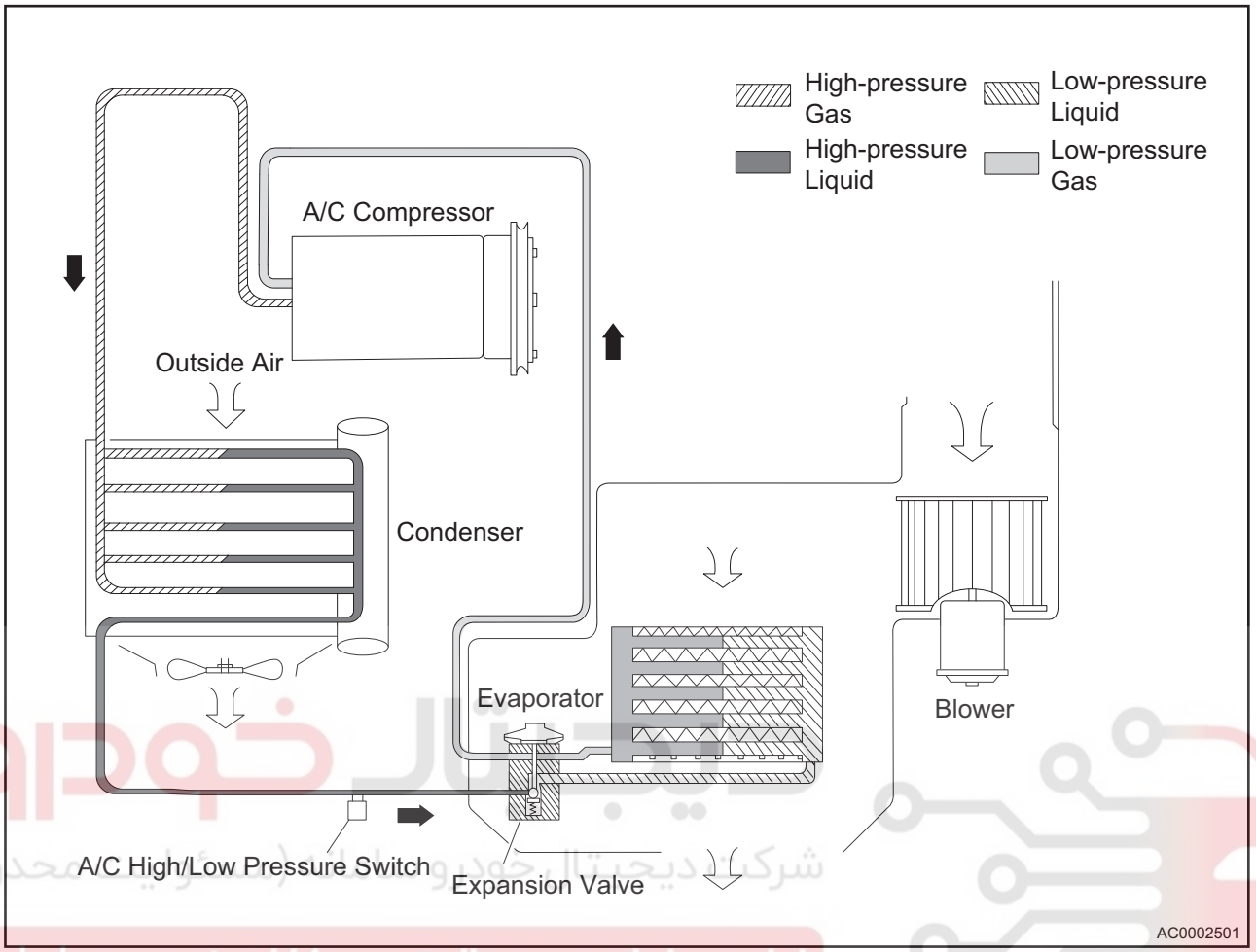
Air conditioning and distribution system: air mixing and distributor part of HVAC, rear evaporator (not equipped for single evaporator electric A/C), inner/outer circulation inlet, outlet and air filter. Control system: electric A/C / automatic A/C control panel assembly, left / right mix damper motor, mode damper motor, inner/outer circulation motor, blower, blower speed regulation module, A/C pressure switch, evaporator temperature sensor. High configuration automatic A/C is also equipped with inner and outer PM2.5 sensors, air quality sensor and PM2.5 monitoring module.
Heating system: heater core assembly, heating inlet hose, heating outlet hose and engine cooling circulation system.
Refrigerating system: compressor assembly, condenser assembly (w/ receiver drier), front and rear expansion valves (for automatic A/C), front and rear evaporator core assemblies (for automatic A/C) and A/C high and low pressure line.

Operation

Automatic A/C



Electric A/C



Outside fresh air enters air inlet filter assembly through cowl top opening at the right side of windshield base. Fresh air flows through evaporator core and heater core, and then enters vehicle through outlets on instrument panel and floor. Temperature can be adjusted by operating airflow volume adjustment knob on A/C control panel. Turn on the compressor assembly by pressing A/C switch on DVD A/C interface (for electric A/C, it can also use A/C button on A/C control panel to turn on compressor assembly; For automatic A/C, it can also turn on compressor assembly by operating driver side temperature adjustment knob on A/C control panel). Refrigerant is compressed by compressor assembly and converted into high temperature/pressure gas, which is then condensed into high pressure liquid in the condenser. Then the liquid is filtered and dried by receiver drier (integrated with condenser) and delivered to expansion valve and becomes low-pressure liquid through throttling and depressurization. Finally the liquid enters evaporator in vehicle and absorbs heat and evaporates, thus refrigeration is achieved. A/C heating is realized by engine coolant circulation system. Heater core is a main component of heating system. With engine running, engine coolant flows from engine water pump to heater core, and the heater core transmits the heat from engine coolant to the air that flows through heater core. At this time, A/C switch is off. The air flowing through heater core becomes hot wind through heat exchanging, thus providing heating. Temperature adjustment control mechanism can be controlled by rotating temperature adjustment knob. Mix damper closes when temperature adjustment knob is rotated counterclockwise to MAX COOL position. If airflow does not flow through heater core, the heat transmission will not occur.

When rotating temperature adjustment knob clockwise from MAX COOL position, the mix damper will open slowly, allowing air to flow through gap of heater core. Most of airflow is heated in this way and discharged air becomes warmer. When temperature adjustment knob is rotated clockwise to MAX HOT position, the mix damper is fully opened and all air flows through heat core, thus air is heated. Operate mode adjustment button on A/C control panel or soft button on display to adjust mode. Rotate automatic A/C rear airflow volume adjustment knob clockwise to increase airflow volume, and rotate it counterclockwise to decrease airflow volume. When engine is started, front A/C is turned on and airflow gear is not 0 position, press the REAR button to enter rear A/C cooling mode. Rotate the temperature adjustment knob counterclockwise to cool down; Adjust temperature to desired temperature directly on rear A/C panel.

Specifications

Torque Specifications

Description	Torque (N·m)
Expansion Valve Fixing Bolt	9 ± 1.5
Hose Clamp Fixing Bolt	9 ± 1.5
Compressor Fixing Bolt	25 ± 3
Compressor Intake and Exhaust Line Fixing Bolt	25 ± 3
Condenser Fixing Nut	9 ± 1
A/C Line Fixing Bolt	9 ± 1
HVAC Fixing Nut	5 ± 1
HVAC Fixing Bolt	7 ± 1
HAVC Self-tapping Screw	2.5 ± 0.5

Refrigerant Charging Specification

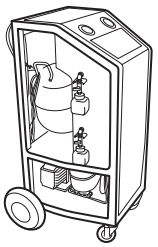
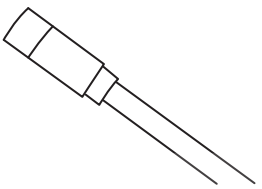
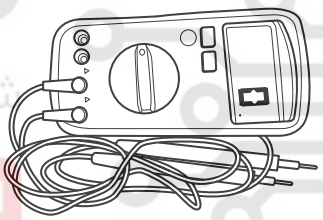
Description	Charging Capacity (g)
R134a Refrigerant (Dual Evaporator Automatic A/C)	925 ± 15
R134a Refrigerant (Single Evaporator Electric A/C)	550 ± 15

R134a Refrigerant

Description	Charging Capacity (ml)
Evaporator Replacement	20
Compressor Assembly Replacement	Supplement according to actual pouring amount
Condenser Replacement	20
A/C Line Replacement	10

Tool Drawing

General Tools

Tool Name	Tool Drawing
Gas Leak Detector	 046
Refrigerant Recycling Machine	 092
Digital Multimeter	 002

Electric A/C Control Logic

Power ON Definition

Airflow volume knob is set as the power ON button; Mode, circulation and temperature can be operated when power OFF (panel with electricity);
Airflow volume will operate by airflow volume level after airflow volume button is turned on, and remaining functions will operate according to state before turning off (state will not change if mode, circulation, temperature is operated after turning off); If vehicle is in front defrost state before turning off, it will not activate the defrost function but button is in front defrost position when turns on airflow volume button.

Power OFF Definition

There is only OFF mode on power OFF button. Outer circulation is performed forcibly after turning off. Only circulation and mode conditions are displayed on A/C. Circulation, temperature and mode micromotor can be operated normally, corresponding working light is displayed normally.
All states before turning off is memorized (if mode, circulation button and temperature knob are operated when turning off, last state will be memorized).
If vehicle is in front defrost state before turning off, it will not activate the defrost function but button is in front defrost position when turns on airflow volume button. When ignition switch is turned from OFF to ON position again after turning off abnormally, A/C must enter in the state before turning off by memory.
Power on again when turning off abnormally, rear defroster will turn off (rear defroster is operating before turning off), other functions will operate as state when powering off.

Front Defrost Function Definition

When A/C is turned on, touch front defroster button to enter front defrost state, outer circulation is performed forcibly and turn on compressor, airflow volume switch is kept in original position and remains unchanged. Touch this button at this time, mode, circulation and compressor return to state before touching front defrost. And airflow volume switch is kept in original position and remains unchanged.
When A/C is turned off, front defrost button is invalid.

Temperature Adjustment Function

Temperature damper is controlled by motor and adjusted manually, user can adjust temperature knob to adjust room temperature. There are 29 levels (Tentative) for temperature adjustment knob, each of which corresponds to a fixed position of mixing damper, and the indicator light position indicates temperature trend. Rotate knob clockwise to increase temperature and rotate it counterclockwise to decrease temperature.

Inner/Outer Circulation Definition

There are only 2 modes of inner circulation and outer circulation in manual control state, it can switch manually at any state. Indicator light comes on to indicate that A/C is in inner circulation mode. When this button is pressed again, indicator light goes off, A/C is in outer circulation mode.

Airflow Volume Adjustment Function

Airflow volume range definition: 8 levels (OFF-1-7). OFF position is the A/C off gear. Rotate knob counterclockwise to decrease airflow volume, rotate it clockwise to increase airflow volume.

AC Function

1. After pressing AC button while A/C is turned on, AC indicator light will come on directly regardless of the external environment. Blower is turned on, AC button is valid, evaporator temperature (2 - 5°C) and external temperature are linked.

Automatic A/C Control Logic

AUTO

When it enters AUTO state, AUTO is displayed and operation light comes on, airflow volume/temperature/mode/inner and outer circulation/compressor will enter into automatic control state. When inner and outer circulation is changed manually, this function will exit automatic control state, but other functions still maintain in automatic control state, AUTO and operation indicator light are still illuminated. When airflow volume, mode, compressor or temperature LOW/HI is changed manually, this function will exit automatic control state, but other functions still maintain in automatic control state, AUTO is not displayed and operation indicator light will go off. Press AUTO button again under AUTO state, it will not exit AUTO mode.

Inner/Outer Circulation Definition Function Definition

There are only 2 modes of inner circulation and outer circulation in manual control state, it can switch manually at any state.
Circulation mode can be kept in any position according to the control algorithm under automatic control state.
When inner circulation is operated for 15 minutes in automatic state, switch the mode to outer circulation for 1 minute and return back to inner circulation, both indicator light and display will remain unchanged. It is necessary to avoid sudden changes of wind speed when inner/outer circulation is changed, make sure that the change of wind speed is not more than 5% (Primary definition, correct it during calibration: If circulation damper position angle is always less than 30% for 15 minutes, adjust damper angle according to outside temperature. If the outside temperature is higher than 35°C, after circulation damper is adjusted to 50% for 1 minute, it will resume to automatic state. If the outside temperature is lower than 35°C, after circulation damper is adjusted to 100% for 1 minute, it will resume to automatic state. State of circulation operation indicator light remains unchanged during this time).
A/C is in off state and IGN OFF state, A/C outer circulation is performed forcibly at this time and airflow mode is foot and fully cold.
Under the A/C AUTO state, city operation idling parking will switch outer circulation to inner circulation automatically.

AC Function Definition

A/C can be turned on with AC button, regardless of the external temperature (blower can be turned on). If the current AC request signal is in invalid state and external temperature is not higher than 0°C, AC request signal is invalid when operating AC button, and this operation cannot be memorized. If AC button is operated again when external temperature is higher than 0°C, AC indicator light will come on and AC request signal is sent. If the current AC request signal is in valid state, when external temperature is between -2°C and 0°C, AC signal is still valid and operation indicator light will come on. Only when external temperature is lower than -2°C, AC signal is invalid and AC operation indicator light will go off. Airflow volume, temperature, mode and inner/outer circulation state in which before turning A/C off will be memorized when A/C is turned on, and AC request signal is sent simultaneously. Note: If mode, circulation and temperature are operated during turning off, the priority is processed manually. Blower is turned on, AC button is valid, evaporator temperature and external temperature are linked.

Temperature Adjustment Function

Temperature range definition: Low-18-32-HI, step size is 0.5. Rotate the stepless knob clockwise to heat, rotate it counterclockwise to cool. Except for the extreme positions of LOW and HI, the remaining positions are always in automatic control state. Set temperature of 22°C is defined as the only set temperature for the comfort of the four seasons of automatic air conditioning. When it is set to LOW, inner circulation is linked under AUTO mode, compressor is forced to turn on, airflow volume is in MAX, mix damper is in FULL COLD position, airflow mode is face, but AUTO is not displayed. There is no link under manual mode. When it is set to HI, it is linked under AUTO mode, airflow volume is in MAX, mix damper is in FULL HEAT position, compressor is forced to turn off, but AUTO is not displayed. There is no link under manual mode. Under AUTO/DUAL mode, when the set temperature is set to LOW or HI from 18-32, AUTO is not displayed. If AUTO button is operated again at this time, AUTO is necessary to display, it is maintained in LOW or HI link condition, only AUTO indicator comes on. In AUTO mode, when the set temperature is set to LOW or HI from 18-32, AUTO is not displayed. If the set temperature returns 18-32, AUTO is necessary to display. Temperature adjustment in the off state each time the temperature knob/ button is operated, the temperature gear position changes by one grid, the position of the temperature damper is no longer automatically calculated, and it is directly executed according to the manual operation state of the user, and is divided into 31 gear positions.

Airflow Volume Adjustment Function Definition

Airflow volume range definition: 1-7, the lowest gear is 1st gear. Regardless of the position of the air volume, the low-voltage start is performed. The maximum voltage of the blower can be increased/ decreased by a certain value per unit time to avoid voltage shock and sudden change of air volume. In manual state, the speed is increased/decreased by 2.5V/S. In the state, the air volume is increased/ decreased at a speed of 1V/S; when it is turned off, the air volume directly becomes 0. In order to improve comfort, increase the summer warm air blow surface adjustment, winter cooling water adjustment, winter anti-fog adjustment preventive measures, the specific implementation plan is controlled separately according to each item, but this content must exist; under automatic control state, air volume It is not allowed to have sudden changes.

HMI Display Function

Some functions of the air conditioner can be operated on the air conditioner panel or the DVD air conditioner interface. If the function is operated on the air conditioner panel, the DVD interface needs to display the corresponding state. If it is operated on the DVD air conditioner interface, if the function is indicated on the air conditioner panel. If the light is on, the indicator light should be turned on or off. On the air conditioning interface on the DVD, the current active status will be illuminated with blue characters or background. When the air conditioner interface is displayed, if the hard keys of other functions of the DVD are operated, the air conditioning interface will exit., preferentially display other information of the DVD.

Dual Temperature Area Independent Control

DUAL button indicator lights up and enters the dual area independent control. In the dual area independent control mode, the left and right area temperature control needs to display the obvious temperature area according to different set temperatures; in the dual area independent control mode, the left and right area set the temperature value. They are not related to each other; in the AUTO state (single area or dual area), the air conditioning state (except temperature) changes only according to the change of the main drive set temperature. In the single area AUTO state, the temperature of the main driving side is adjusted at this time, and the set temperatures of the left and right areas are simultaneously changed. In the single area AUTO state, if the secondary drive temperature is adjusted, it will automatically switch to the dual area mode; when it is turned on, it will remember the single-dual area mode when it was last turned off. Adjusting the front passenger temperature knob in the OFF state does not activate the dual area mode, at which time the main drive temperature will change along with the front passenger temperature.

Air Purification Function

Inner/outer PM2.5 values are displayed on the DVD; during the operation of the air purification system, ensure that the front windshield does not fog; the air conditioning control strategy during the operation of the air purification system must ensure both NVH and air The rapidity of purification; after the air purifying function is turned on, the air purifying switch button on the air conditioning panel is operated again, the air purifying function is turned off, and the switch button on the operating sound does not turn off. After the air purification system is turned on, the vehicle power supply is turned OFF, the air purification system is turned off; after the air purification function is turned on, the air blower is turned off, and the air purification function is turned off; if the air purification function is turned on, if the internal/external circulation mode is changed, the air purification is performed. The function is turned off; if the air purifying function is turned on, if the defrost and defogging is turned on, the air purifying function is turned off; after the air purifying function is turned on, the MAX AC function is turned on, and the air purifying function is turned off. After the air purifying function is turned on, when the air conditioner is in the maximum cooling/heating demand, the air purifying function is turned off; after the function is exited, the next time it needs to be turned back on, it does not automatically recover. (For example, after changing the vehicle circulation mode, the function is exited, and the operation button is changed back to the original circulation mode, and the air purification function needs to be turned back on)

Front Defrost Function

Enter into the front defrost state, forced external circulation and open the compressor. If the highest air volume is 7 gears, the associated air volume is 4 gears; the user is allowed to manually turn off the compressor and switch the internal and external circulation modes in the defrost mode; the wiper is turned on. In the case of the AUTO mode, the AC is associated; in the non-AUTO mode, the AC is not associated.

DVD Voice Control A/C

Main Function	Function Description	Voice Command	Function Execution Condition
Turn on A/C	User turns on A/C via voice	Turn on A/C	1. Turn ENGINE START STOP switch to ON. 2. Automatic A/C or electronic A/C is powered on
Turn off A/C	User turns off A/C via voice	Turn off A/C	1. Turn ENGINE START STOP switch to ON. 2. Automatic A/C or electronic A/C is powered on
Turn on automatic mode	User turns on automatic mode via voice	Turn on automatic mode	1. Turn ENGINE START STOP switch to ON. 2. Automatic A/C
Turn off automatic mode	User turns off automatic mode via voice	Turn off automatic mode	1. Turn ENGINE START STOP switch to ON. 2. Automatic A/C
Turn on air purification	User turns on air purification function via voice	Turn on air purification	1. Turn ENGINE START STOP switch to ON. 2. Automatic A/C
Adjust airflow speed to ** position	User adjusts airflow speed to ** position via voice	Increase fan speed, decrease fan speed, adjust airflow speed to MAX, adjust airflow speed to MIN, adjust airflow speed to ** position	1. Turn ENGINE START STOP switch to ON. 2. Automatic A/C or electronic A/C is powered on
Adjust A/C temperature to ** (18-32)	User adjusts temperature to ** via voice	Increase temperature (1° is increased per instruction), decrease temperature (1° is decreased per instruction), adjust to MAX temperature, adjust to MIN temperature, my temperature (adjust to customer's preset temperature)	1. Turn ENGINE START STOP switch to ON. 2. Automatic A/C

Main Function	Function Description	Voice Command	Function Execution Condition
Change A/C airflow mode	User adjusts A/C airflow mode via voice	Face mode, foot mode, face&foot mode, foot&defrost mode, change A/C airflow mode.	1. Turn ENGINE START STOP switch to ON. 2. Automatic A/C or electronic A/C is powered on
Turn on front defroster	User turns on front defroster via voice	Turn on front defroster	1. Turn ENGINE START STOP switch to ON. 2. Automatic A/C or electronic A/C is powered on
Turn off front defroster	User turns off front defroster via voice	Turn off front defroster	1. Turn ENGINE START STOP switch to ON. 2. Automatic A/C or electronic A/C is powered on
Change circulation mode	User changes circulation mode via voice	Turn on inner circulation, turn on outer circulation, change circulation mode	1. Turn ENGINE START STOP switch to ON. 2. Automatic A/C or electronic A/C is powered on
Turn on cooler (compressor)	User turns on cooler via voice	Turn on cooler	1. Turn ENGINE START STOP switch to ON. 2. Engine is started 3. Automatic A/C or electronic A/C is powered on
Turn off cooler (compressor)	User turns off cooler via voice	Turn off cooler	1. Turn ENGINE START STOP switch to ON. 2. Engine is started 3. Automatic A/C or electronic A/C is powered on
Turn on MAX cooling	User turns on MAX cooling via voice	Turn on MAX cooling/turn on MAX AC	1. Turn ENGINE START STOP switch to ON. 2. Engine is started 3. Automatic A/C or electronic A/C is powered on

DIAGNOSIS & TESTING

Diagnostic Content

Problem Symptoms Table

Hint:

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

Symptom	Suspected Area
A/C no heating	Blower fuse (damaged)
	Blower relay (damaged)
	Blower speed regulation module (damaged)
	Blower motor (damaged)
	Mix damper control mechanism (stuck or damaged)
	Heating pipe (blocked or damaged)
	Heater core assembly (blocked or damaged)
	Wire harness or connector (open or short)
A/C no cooling	Leak in system
	Refrigerant (overcharged)
	A/C Pressure Switch (damaged)
	Evaporator temperature sensor (damaged)
	A/C switch (damaged)
	Compressor assembly fuse (damaged)
	Compressor assembly relay (damaged)
	Compressor assembly belt (loose)
	Compressor assembly (damaged)
	Condenser assembly (blocked or damaged)
	Expansion valve (blocked or frosted)
	Evaporator core assembly (blocked or damaged)
	Wire harness or connector (open or short)
A/C intermittent cooling	Moisture in system
A/C insufficient cooling	Leak in system
	Refrigerant (insufficient)
	Air in refrigerant
	Moisture in refrigerant
	Condenser (dirty or blocked)
	Expansion valve (dirty or blocked)
	A/C high/low pressure line (dirty or blocked)
Too much noise in system	Compressor assembly belt (slip)
	Compressor assembly clutch bearing (worn and excessive clearance)
	Compressor assembly belt (over tightened)
	Compressor assembly mounting bolt (loose)
	Cooling fan blade (distorted)
	Refrigerant oil (insufficient)
Pressure is too low for low pressure side and high pressure side, cooling performance is insufficient	A/C system (leaked)
	Refrigerant (insufficient)
Pressure is too low for low pressure side and high pressure side, frost exists on line from condenser to A/C unit	Condenser (dirty or blocked)

Symptom	Suspected Area
Vacuum occurs at low pressure side, and pressure at 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)
Frost exists on lines on both sides	A/C line (leaked)
	Condenser (dirty or blocked)
Pressure at low pressure side and pressure at high pressure side is too high	Expansion valve (faulty)
	Refrigerant oil (excessive)
Pressure at low pressure side is normal or slightly low, and pressure at high pressure side is too high	Condenser surface (dirty)
	Cooling fan (not operating)
	Air in refrigerant
Pressure at low pressure side is too low, and pressure at high pressure side is too high	A/C high pressure line (blocked)
	Expansion valve (faulty)

Diagnosis Tools

Digital Multimeter

When using digital multimeter:

- Troubleshoot electrical malfunctions and wire harness system.
- Look for basic malfunction.
- Measure voltage, current and resistance.

Ground Inspection

Groundings are very important to entire circuit system, which are normal or not can seriously affect the entire circuit system. Ground points are often exposed to moisture, dirt and other corrosive environments. Corrosion (rust) and oxidation may increase load resistance. This case will seriously affect normal operation of circuit. Check the ground points as follows:

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

Diagnosis Procedure

Hint:

Use following procedures to troubleshoot the brake control system.

1	**Vehicle brought to workshop**

Result

Proceed to
Next

Next

2	Check battery voltage

Check if battery voltage is normal.

OK

Standard Voltage: Not less than 12V

Result

Proceed to
OK
NG

NG → **Check and repair battery**

OK

3	Customer problem analysis

Result

Proceed to
Next

Next

4	Read DTCs

Result

Proceed to
No DTC
Current DTC
History DTC

History DTC

5	Problem Repair (No DTC)

Result

Proceed to
Next

Next → **Go to step 6**

6	Troubleshoot according to Diagnostic Trouble Code (DTC) chart

Result

Proceed to
Next

Next → Go to step 6

7	Troubleshoot according to Problem Symptoms Table

Result

Proceed to
Next

Next

8	Conduct test and confirm malfunction has been repaired

Result

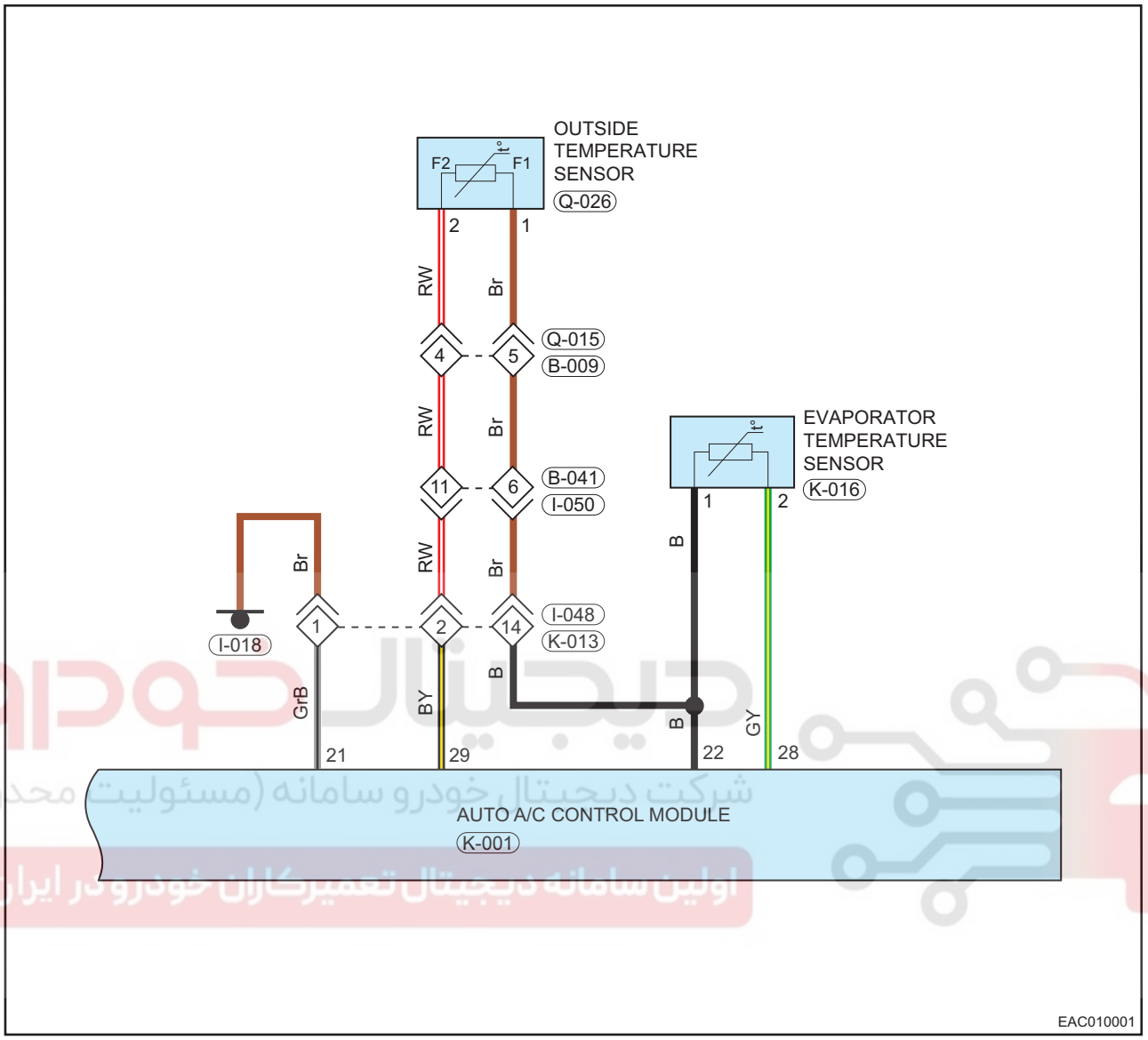
Proceed to
Next

Next → End

DTC	B1401-11	Filtered Incar Temperature (Left Side)
DTC	B1401-13	Filtered Incar Temperature (Left Side)
DTC	B1403-11	Filtered Ambient Temperature
DTC	B1403-13	Filtered Ambient Temperature
DTC	B1404-11	Evaporator Temperature Sensor Short to Ground
DTC	B1404-13	Filtered Evaporator Temperature
DTC	B1406-11	Solar Radiation (Left Side)
DTC	B1406-13	Solar Radiation (Left Side)
DTC	B1407-11	Solar Radiation (Right Side)
DTC	B1407-13	Solar Radiation (Right Side)
DTC	B1408-29	Blower Voltage
DTC	B1408-31	Blower Voltage
DTC	B1409-11	Mode Motor Step
DTC	B1409-13	Mode Motor Step
DTC	B1410-11	Rec Motor Step
DTC	B1410-13	Rec Motor Step
DTC	B1412-11	Mix Flap Motor Step (Left Side)
DTC	B1412-13	Mix Flap Motor Step (Left Side)
DTC	B1414-11	Mix Flap Motor Step (Right Side)
DTC	B1414-11	Mix Flap Motor Step (Right Side)
DTC	U0140-87	Lost Communication With Body Control Module

DTC	U0155-87	Lost Communication With Instrument Cluster Module
DTC	U0151-87	Lost Communication With Air Bag Module
DTC	U0245-87	Lost Communication With Radio Receiver Module
DTC	U0100-87	Lost Communication With Engine Control System Engine Control System Module
DTC	U0129-87	Lost Communication With BSM
DTC	U1160-87	Lost Communication With AIPM
DTC	U0214-87	Lost Communication With PEPS
DTC	U1164-87	Lost Communication With CLM
DTC	B1403-11	Filtered Ambient Temperature
DTC	B1403-13	Filtered Ambient Temperature

Circuit Diagram



Description

DTC	DTC Definition	DTC Detection Condition	Possible Cause
B1403-11	Filtered Ambient Temperature	ENGINE START STOP switch is in ON	• Outside temperature sensor • Wire harness or connector
B1403-13	Filtered Ambient Temperature		

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

Diagnosis Procedure

1	**Check wire harness and connector**

(a) Turn ENGINE START STOP switch to OFF.
(b) Disconnect the negative battery cable.
(c) Disconnect the ambient temperature sensor Q-026 and A/C control panel connector K-001.
(d) Check wire harness, connector and terminal for deformation, bend or damage.

Result

Proceed to
OK
NG

NG → **Repair or replace wire harness**

OK →

2 Check outside temperature sensor

(a) Remove ambient temperature sensor from malfunctioning vehicle.
(b) Install new ambient temperature sensor to malfunctioning vehicle.
(c) Check whether there are DTC B1403-11 and B1403-13.

Result

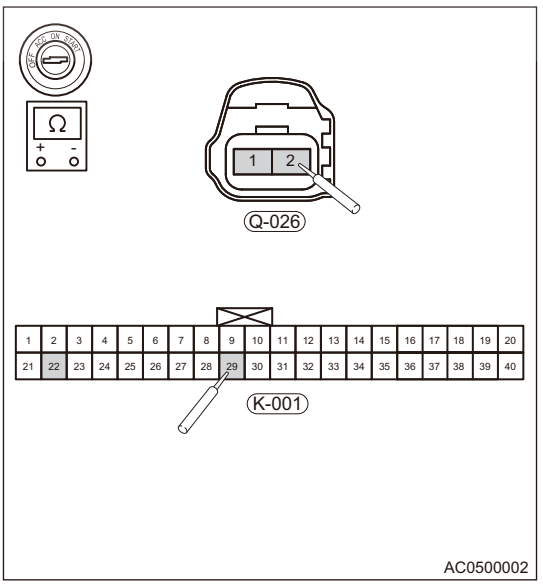
Proceed to
OK
NG

NG → **Replace outside temperature sensor**

OK →

3 Check wire harness (automatic A/C control panel - outside temperature sensor)

(a) Turn ENGINE START STOP switch to OFF.
(b) Disconnect the negative battery cable.
(c) Disconnect the ambient temperature sensor connector Q-026 and A/C control panel connector K-001.
(d) Using a digital multimeter, measure the wire harness between ambient temperature sensor connector Q-026 and A/C control panel connector K-001 according to value(s) in table below.



Standard Condition

Multimeter Connection	Condition	Specified Condition
Q-026 (2) - K-001 (29)	Always	Resistance ≤ 1 Ω
Q-026 (1) - K-001 (22)	Always	Resistance ≤ 1 Ω

Result

Proceed to
OK
NG

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

OK →

4	Reconfirm DTCs

(a) Connect all connectors.
(b) Connect the negative battery cable.
(c) Turn ENGINE START STOP switch to ON.
(d) Check if same DTCs are output.

Result

Proceed to
OK
NG

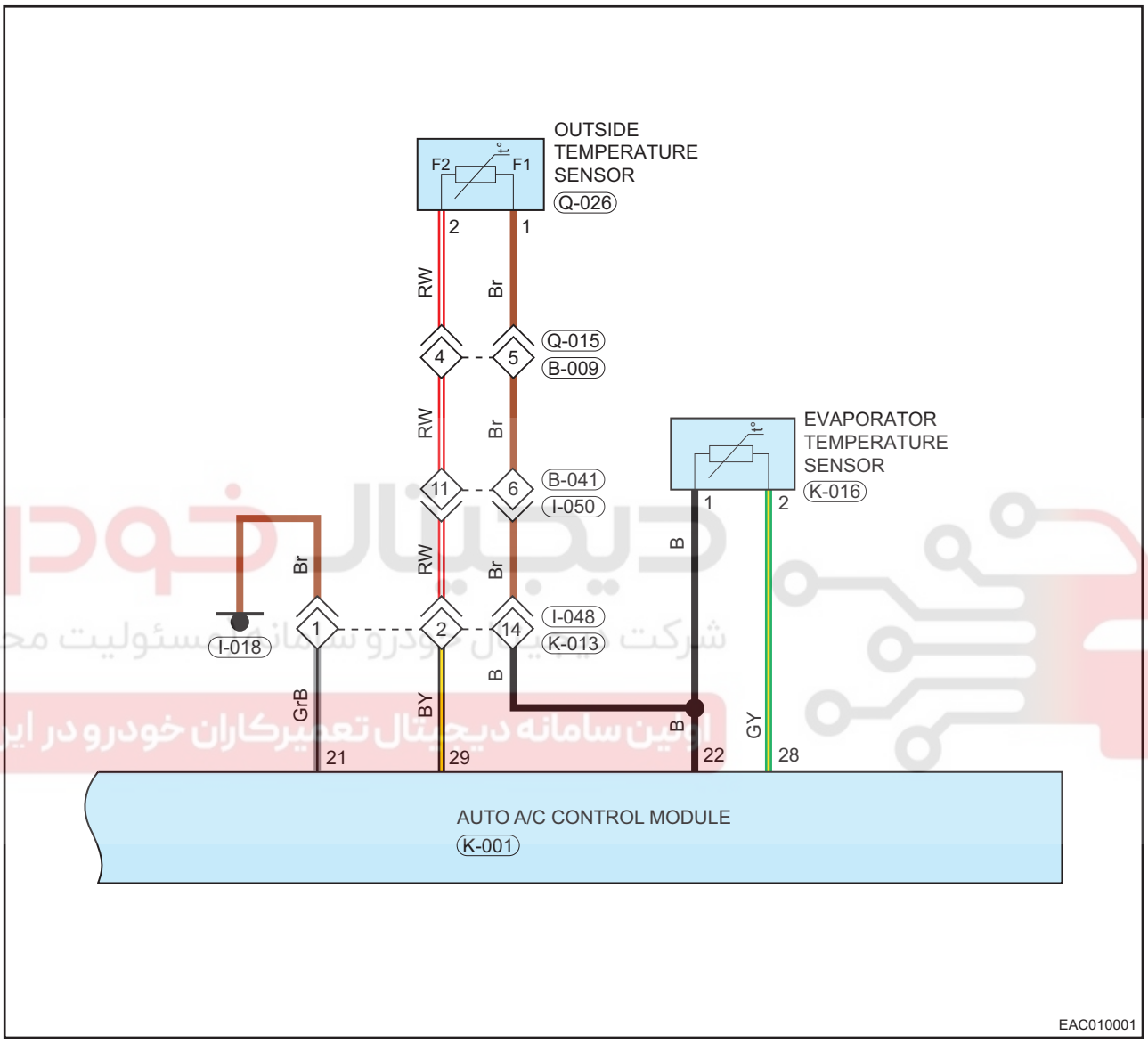
OK → **System operates normally**

NG → **Replace automatic A/C control module**

DTC	B1404-11	Filtered Evaporator Temperature

DTC	B1404-13	Filtered Evaporator Temperature

Circuit Diagram



Description

DTC	DTC Definition	DTC Detection Condition	Possible Cause
B1404-11	Filtered Evaporator Temperature	ENGINE START STOP switch is in ON	• Evaporator temperature sensor • Wire harness or connector
B1404-13	Filtered Evaporator Temperature		

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

Diagnosis Procedure

1	Check wire harness and connector

(a) Turn ENGINE START STOP switch to OFF.
(b) Disconnect the negative battery cable.
(c) Disconnect the evaporator tank temperature sensor K-016 and A/C control panel connector K-001.
(d) Check wire harness, connector and terminal for deformation, bend or damage.

Result

Proceed to
OK
NG

NG → **Repair or replace wire harness**

OK →

2	Check evaporator tank temperature sensor

(a) Remove evaporator tank temperature sensor from malfunctioning vehicle.
(b) Install new evaporator tank temperature sensor to malfunctioning vehicle.
(c) Check whether there are DTC B1404-11 and B1404-13.

Result

Proceed to
OK
NG

NG → **Replace evaporator tank temperature sensor**

OK →

3	Check wire harness (automatic A/C control panel - evaporator tank temperature sensor)

(a) Turn ENGINE START STOP switch to OFF.
(b) Disconnect the negative battery cable.
(c) Disconnect the evaporator tank temperature sensor connector K-016 and A/C control panel connector K-001.

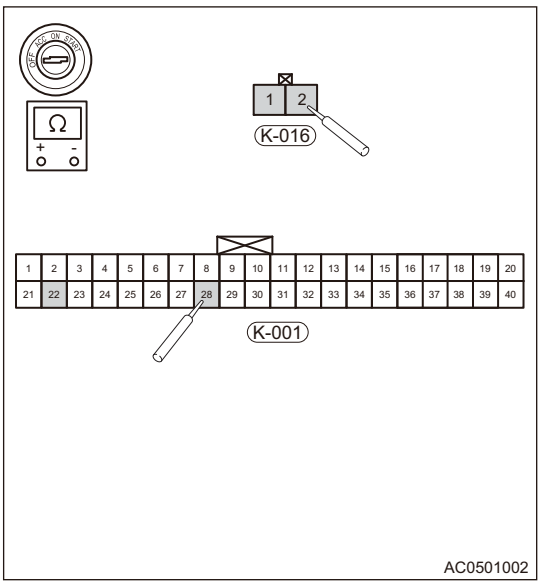
(d) Using a digital multimeter, measure the wire harness between evaporator tank temperature sensor connector K-016 and A/C control panel connector K-001 according to value(s) in table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
K-016 (2) - K-001 (28)	Always	Resistance ≤ 1 Ω
K-016 (1) - K-001 (22)	Always	Resistance ≤ 1 Ω

Result

Proceed to
OK
NG



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

OK

4 Reconfirm DTCs

(a) Connect all connectors.
(b) Connect the negative battery cable.
(c) Turn ENGINE START STOP switch to ON.
(d) Check if same DTCs are output.

Result

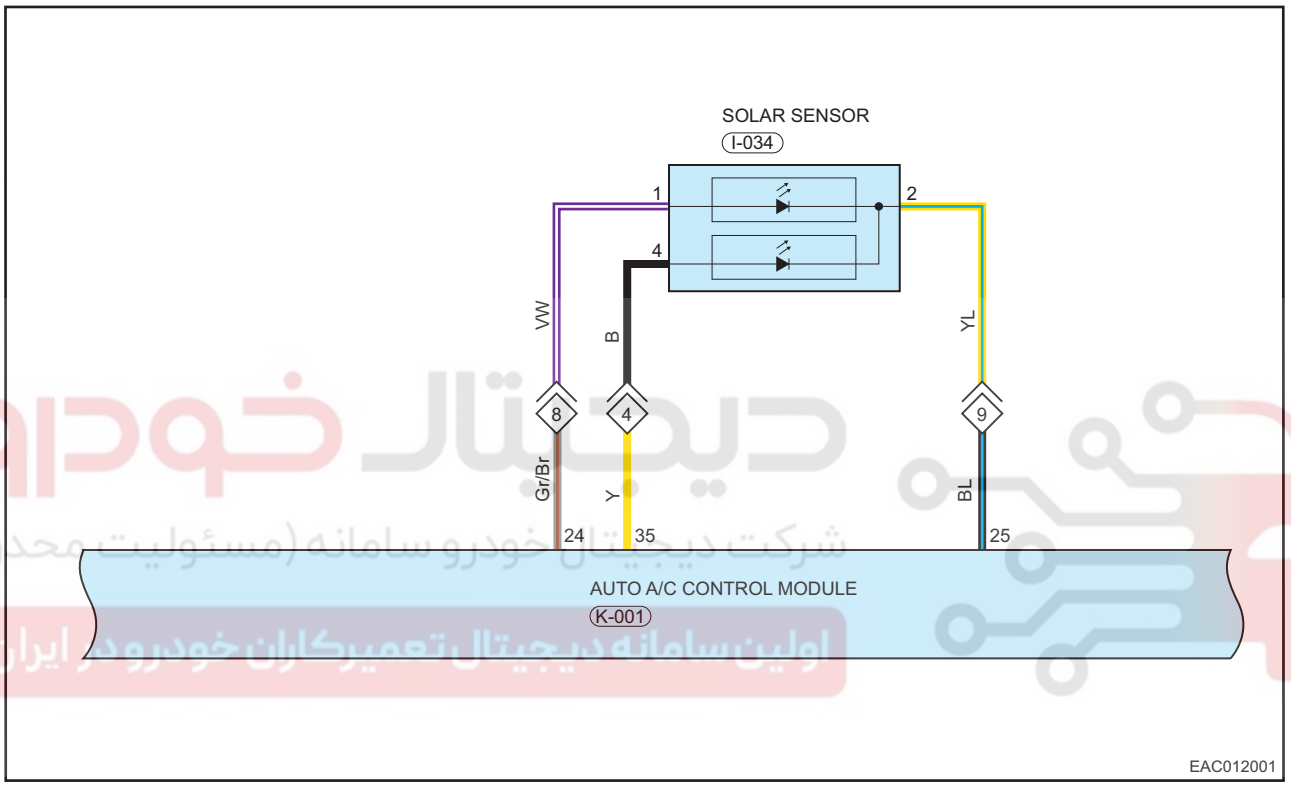
Proceed to
OK
NG

OK → **System operates normally**

NG → **Replace automatic A/C control module**

DTC	B1406-11	Solar Radiation (Left Side)
DTC	B1406-13	Solar Radiation (Left Side)
DTC	B1407-11	Solar Radiation (Right Side)
DTC	B1407-13	Solar Radiation (Right Side)

Circuit Diagram



Description

DTC	DTC Definition	DTC Detection Condition	Possible Cause
B1406-11	Solar Radiation (Left Side)	ENGINE START STOP switch is in ON	• Solar sensor • Wire harness or connector
B1406-13	Solar Radiation (Left Side)		
B1407-11	Solar Radiation (Right Side)		
B1407-13	Solar Radiation (Right Side)		

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

Diagnosis Procedure

1	Check wire harness and connector

(a) Turn ENGINE START STOP switch to OFF.
(b) Disconnect the negative battery cable.
(c) Disconnect the solar sensor I-034 and A/C control panel connector K-001.
(d) Check wire harness, connector and terminal for deformation, bend or damage.

Result

Proceed to
OK
NG

NG → **Repair or replace wire harness**

OK →

2	Check solar sensor

(a) Remove solar sensor from malfunctioning vehicle.
(b) Install new solar sensor to malfunctioning vehicle.
(c) Check whether there are DTC B1406-11, B1406-13, B1407-11 and B1407-13.

Result

Proceed to
OK
NG

NG → **Replace solar sensor**

OK →

3	Check wire harness (automatic A/C control panel - solar sensor)

(a) Turn ENGINE START STOP switch to OFF.
(b) Disconnect the negative battery cable.
(c) Disconnect the solar sensor connector I-060 and A/C control panel connector K-001.

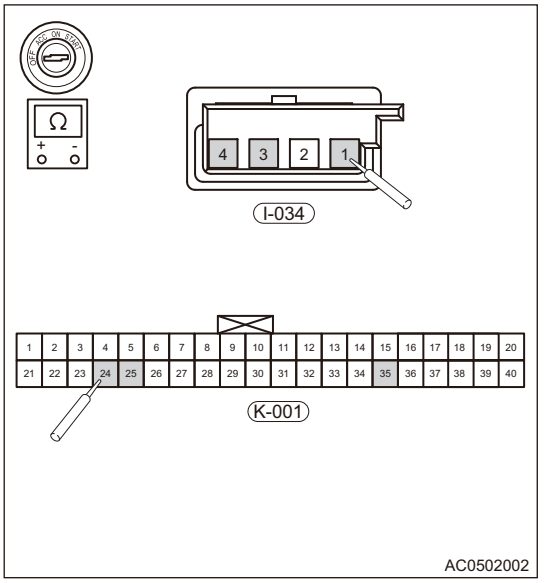
(d) Using a digital multimeter, measure the wire harness between solar sensor connector I-034 and A/C control panel connector K-001 according to value(s) in table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
I-034 (1) - K-001 (24)	Always	Resistance ≤ 1 Ω
I-034 (3) - K-001 (25)	Always	Resistance ≤ 1 Ω
I-034 (4) - K-001 (35)	Always	Resistance ≤ 1 Ω

Result

Proceed to
OK
NG



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

OK

4	Reconfirm DTCs

(a) Connect all connectors.
(b) Connect the negative battery cable.
(c) Turn ENGINE START STOP switch to ON.
(d) Check if same DTCs are output.

Result

Proceed to
OK
NG

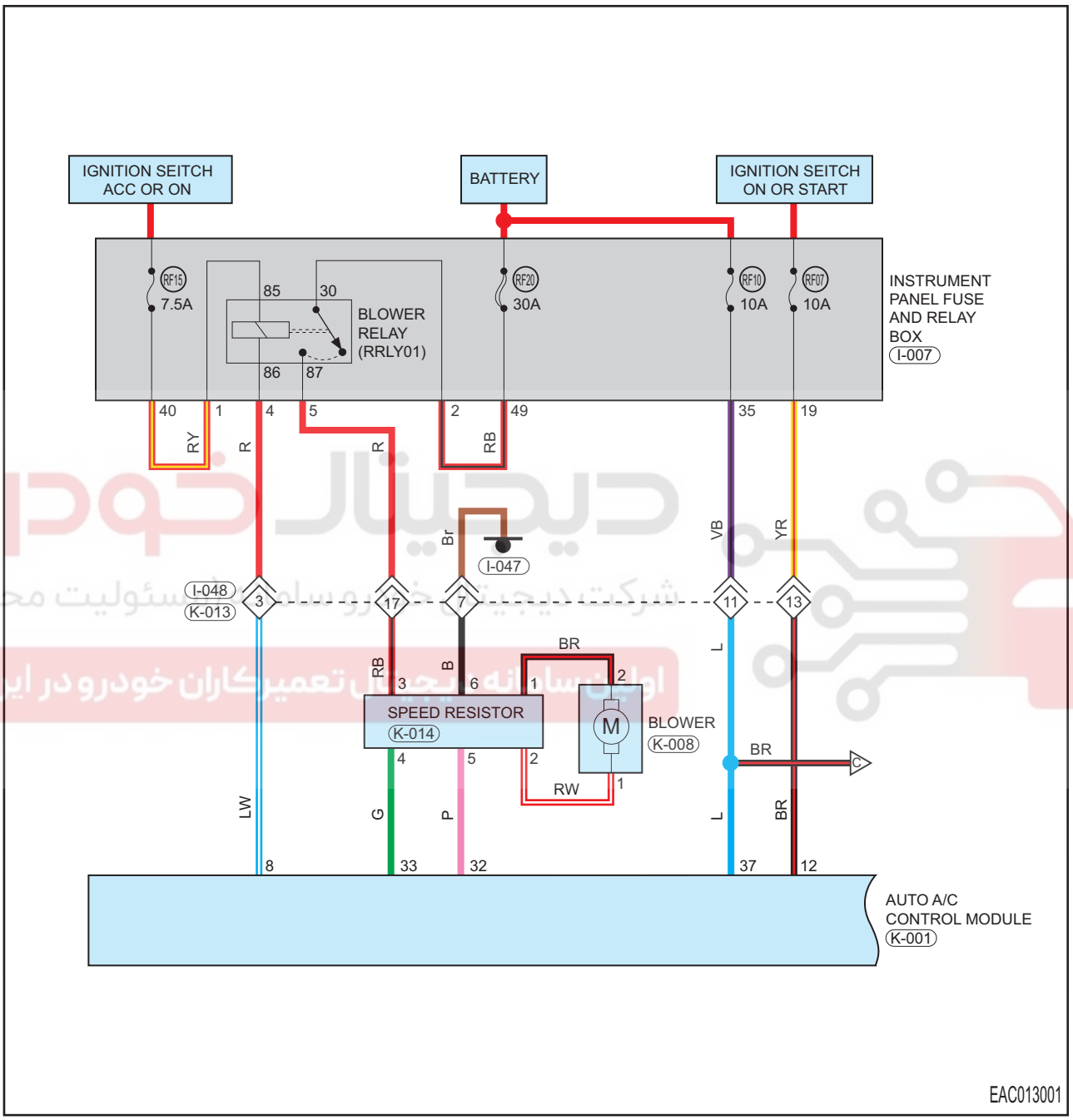
OK → **System operates normally**

NG → **Replace automatic A/C control module**

DTC	B1408-11	Blower Voltage

DTC	B1408-31	Blower Voltage

Circuit Diagram



Description

DTC	DTC Definition	DTC Detection Condition	Possible Cause
B1408-11	Blower Voltage	ENGINE START STOP switch is in ON	• Blower • Blower speed regulation module • Wire harness or connector
B1408-31	Blower Voltage		

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

Diagnosis Procedure

1	Check wire harness and connector

(a) Turn ENGINE START STOP switch to OFF.
(b) Disconnect the negative battery cable.
(c) Disconnect the blower connector K-008 and blower speed regulation module connector K-014.
(d) Check wire harness, connector and terminal for deformation, bend or damage.

Result

Proceed to
OK
NG

NG → **Repair or replace wire harness**

OK

2	Check blower

(a) Remove the blower from malfunctioning vehicle.
(b) Install a new blower to malfunctioning vehicle.
(c) Check whether there are DTC B1408-11 and B1408-31.

Result

Proceed to
OK
NG

NG → **Replace automatic A/C control module**

OK

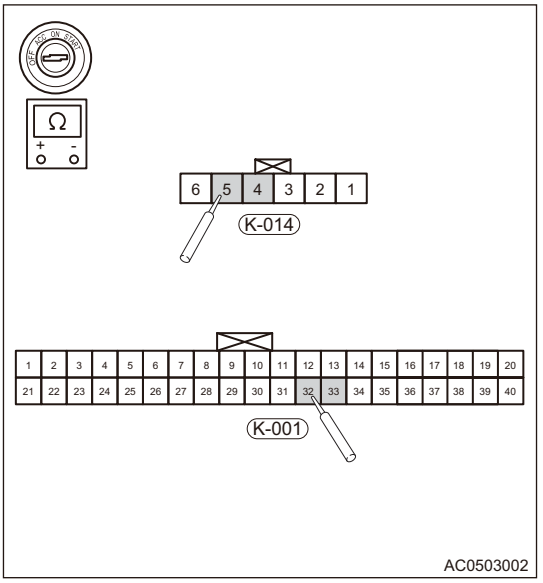
3	Check wire harness connector

(a) Turn ENGINE START STOP switch to OFF.
(b) Disconnect the negative battery cable.
(c) Disconnect the automatic A/C control module connector K-001 and speed regulation module connector K-014.

(d) Using a digital multimeter, measure the wire harness between speed regulation module connector K-014 and automatic A/C control module connector K-001 according to value(s) in table below.

Standard Condition

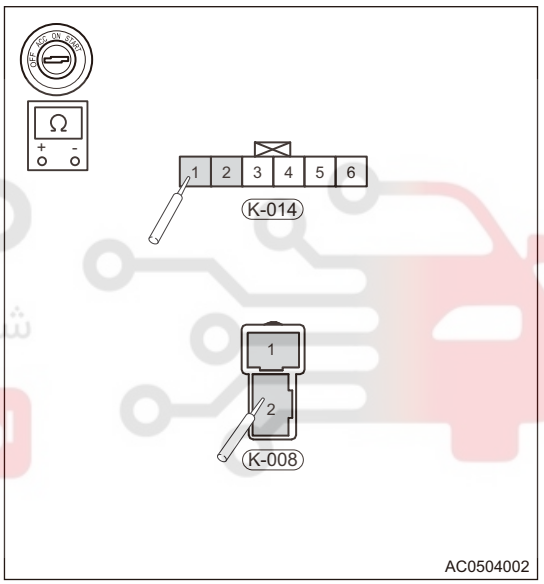
Multimeter Connection	Condition	Specified Condition
K-014 (5) - K-001 (32)	Always	Resistance ≤ 1 Ω
K-014 (4) - K-001 (33)	Always	Resistance ≤ 1 Ω



(e) Using a digital multimeter, measure the wire harness between blower connector K-008 and blower speed regulation module connector K-014 according to value(s) in table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
K-014 (1) - K-008 (2)	Always	Resistance ≤ 1 Ω
K-014 (2) - K-008 (1)		



Result

Proceed to
OK
NG

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

OK

4	Check the ground circuit of blower speed regulation module

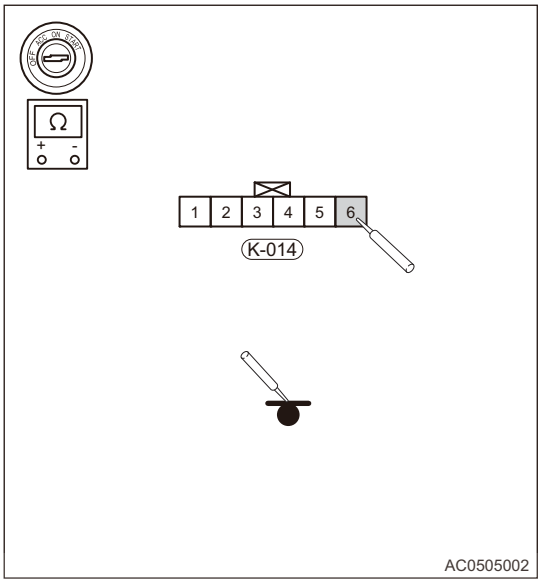
(a) Using a digital multimeter, measure the wire harness between blower speed regulation module connector K-014 and body ground according to value(s) in table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
K-014 (6) - Body ground	Always	Resistance ≤ 1 Ω

Result

Proceed to
OK
NG



NG → Repair or replace related wire harness

OK

5	Check power circuit of blower speed regulation module

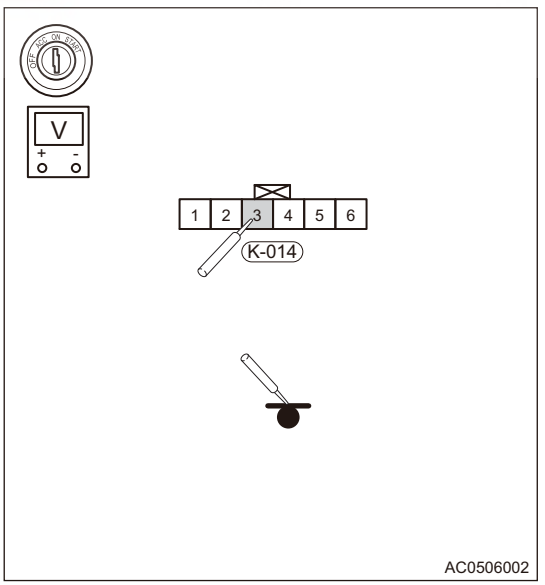
(a) Connect all connectors and disconnect A/C speed regulation module connector.
(b) Connect the negative battery cable.
(c) Turn ENGINE START STOP switch to ON, turn blower on.
(d) Using a digital multimeter, measure the voltage between terminal 3 of blower speed regulation module connector K-014 and body ground according to value(s) in table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
K-014 (3) - Body ground	ENGINE START STOP switch ON	Not less than 12 V

Result

Proceed to
OK
NG



NG → Repair or replace related wire harness

OK

6	Reconfirm DTCs

(a) Connect all connectors.
(b) Connect the negative battery cable.
(c) Turn ENGINE START STOP switch to ON.
(d) Check if the same DTCs are still output using A/C self-diagnosis.

Result

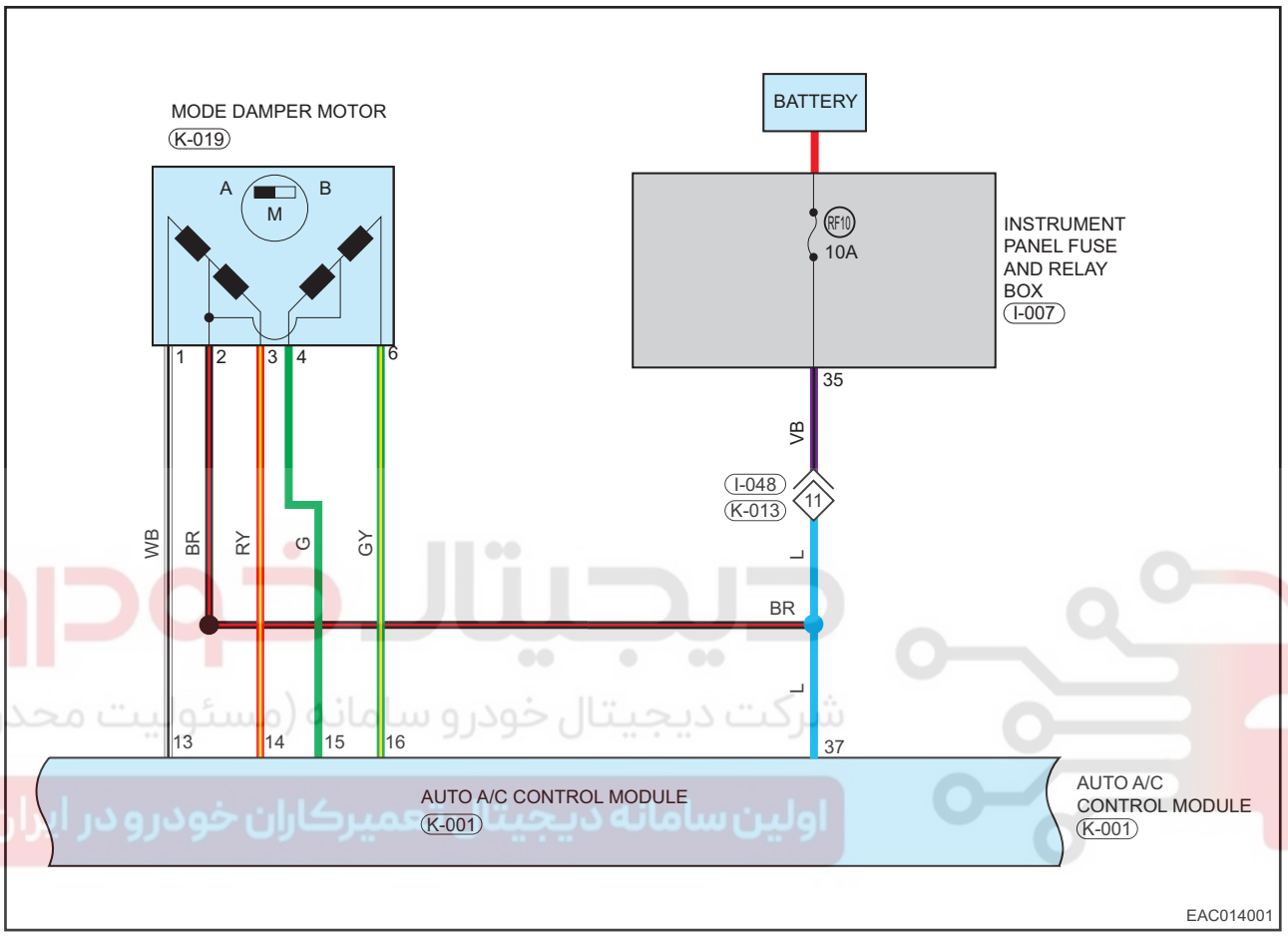
Proceed to
OK
NG

OK	System operates normally
NG	Replace automatic A/C control module

DTC	B1409-11	Mode Motor Step

DTC	B1409-13	Mode Motor Step

Circuit Diagram



Description

DTC	DTC Definition	DTC Detection Condition	Possible Cause
B1409-11	Mode Motor Step	ENGINE START STOP switch is in ON	• Mode damper motor • Automatic A/C control module • Wire harness or connector
B1409-13	Mode Motor Step		

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

Diagnosis Procedure

1	Check wire harness and connector

25

(a) Turn ENGINE START STOP switch to OFF.
(b) Disconnect the negative battery cable.
(c) Disconnect the mode damper motor connector K-019 and automatic A/C control module connector K-001.
(d) Check wire harness, connector and terminal for deformation, bend or damage.

Result

Proceed to
OK
NG

NG → **Repair or replace wire harness**

OK →

2 Check mode damper motor

(a) Remove the mode damper motor from malfunctioning vehicle.
(b) Install a new mode damper motor to malfunctioning vehicle.
(c) Check whether there are DTC B1409-11 and B1409-13.

Result

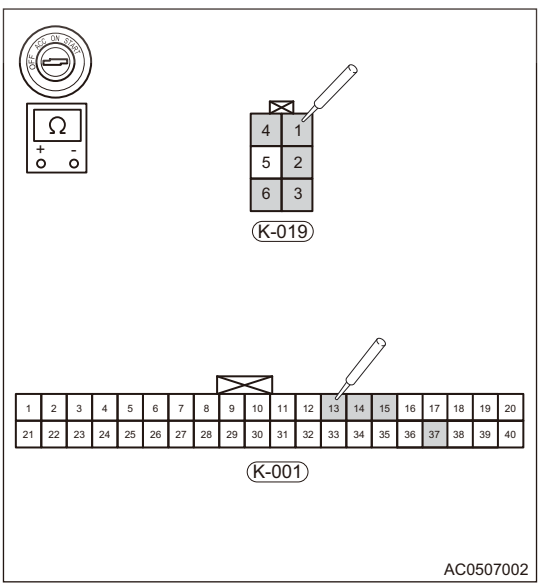
Proceed to
OK
NG

NG → **Replace inner/outer circulation motor**

OK →

3 Check automatic A/C control module to mode damper motor wire harness connector

(a) Turn ENGINE START STOP switch to OFF.
(b) Disconnect the negative battery cable.
(c) Disconnect the automatic A/C control module connector K-001 and mode damper motor connector K-019.
(d) Using a digital multimeter, measure the wire harness between mode damper motor connector K-019 and automatic A/C control module connector K-001 according to value(s) in table below.



Check for Open

Multimeter Connection	Condition	Specified Condition
K-019 (1) - K-001 (13)	Always	Resistance ≤ 1 Ω
K-019 (2) - K-001 (37)	Always	Resistance ≤ 1 Ω
K-019 (3) - K-001 (14)	Always	Resistance ≤ 1 Ω
K-019 (4) - K-001 (15)	Always	Resistance ≤ 1 Ω
K-019 (6) - K-001 (16)	Always	Resistance ≤ 1 Ω

Result

Proceed to
OK
NG

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

OK

4	Check power circuit of mode damper motor

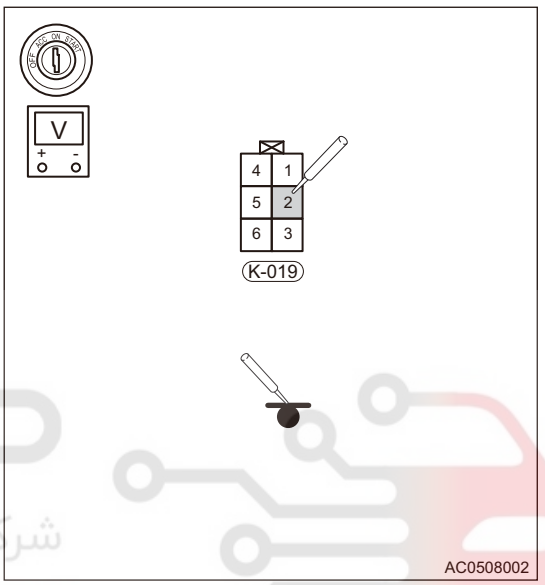
(a) Disconnect the mode damper motor connector K-019 and automatic A/C control module connector K-001.
(b) Connect the negative battery cable.
(c) Turn ENGINE START STOP switch to ON, turn blower on.
(d) Using a digital multimeter, measure the voltage between terminal 2 of mode damper motor connector K-019 and body ground according to value(s) in table below.

Voltage Inspection

Multimeter Connection	Condition	Specified Condition
K-019 (2) - Body ground	ENGINE START STOP switch ON	Not less than 12 V

Result

Proceed to
OK
NG



NG → **Check wire harness connector fuse RF10 (10A), meter relay box.**

OK

5	Reconfirm DTCs

(a) Connect all connectors.
(b) Connect the negative battery cable.
(c) Turn ENGINE START STOP switch to ON.
(d) Check if the same DTCs are still output using A/C self-diagnosis.

Result

Proceed to
OK
NG

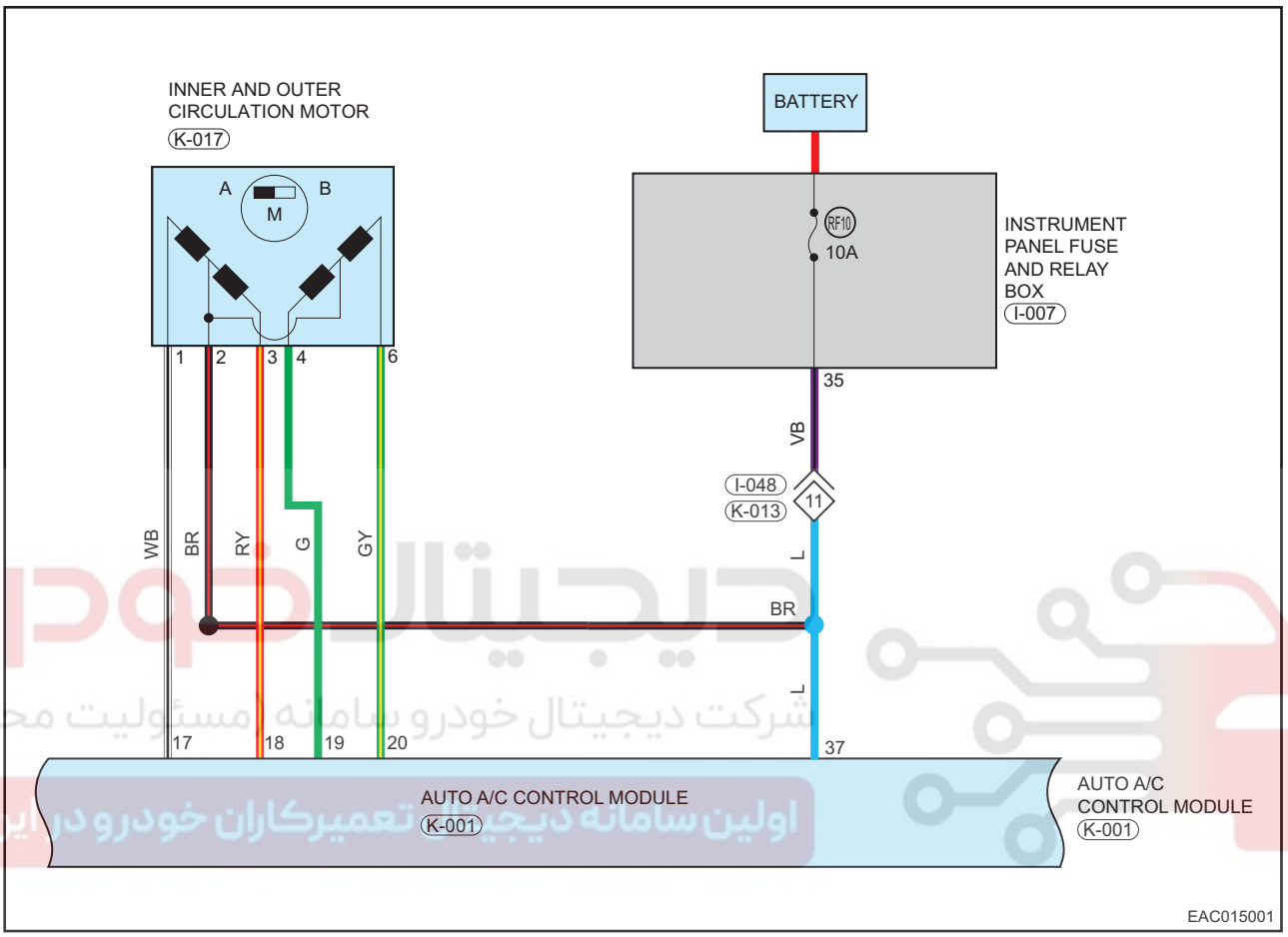
OK → **System operates normally**

NG → **Replace automatic A/C control module**

DTC	B1410-11	Rec Motor Step

DTC	B1410-13	Rec Motor Step

Circuit Diagram



Description

DTC	DTC Definition	DTC Detection Condition	Possible Cause
B1410-11	Rec Motor Step	ENGINE START STOP switch is in ON	• Mode Damper Motor • Automatic A/C control module • Wire harness or connector
B1410-13	Rec Motor Step		

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

Diagnosis Procedure

1	Check wire harness and connector

(a) Turn ENGINE START STOP switch to OFF.
(b) Disconnect the negative battery cable.
(c) Disconnect the inner/outer damper motor connector K-017 and automatic A/C control module connector K-001.
(d) Check wire harness, connector and terminal for deformation, bend or damage.

Result

Proceed to
OK
NG

NG → **Repair or replace wire harness**

OK

2 Check inner/outer damper motor

(a) Remove the inner/outer damper motor from malfunctioning vehicle.
(b) Install new inner/outer damper motor to malfunctioning vehicle.
(c) Check whether there are DTC B1410-11 and B1410-13.

Result

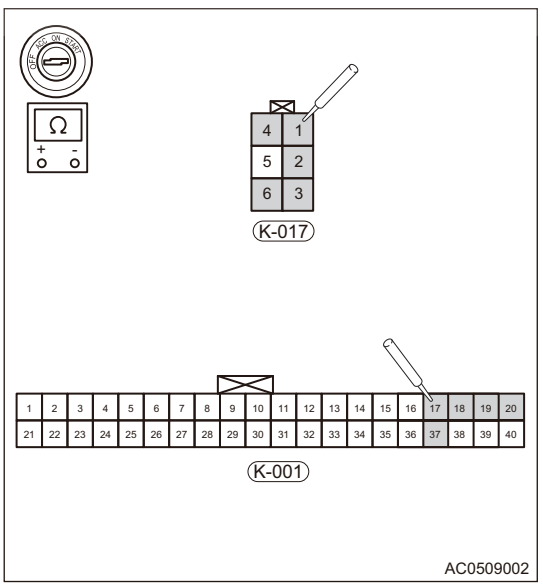
Proceed to
OK
NG

NG → **Replace inner/outer damper motor**

OK

3 Check automatic A/C control module to inner/outer damper motor wire harness connector

(a) Turn ENGINE START STOP switch to OFF.
(b) Disconnect the negative battery cable.
(c) Disconnect the automatic A/C control module connector K-001 and inner/outer damper motor connector K-017.
(d) Using a digital multimeter, measure the wire harness between inner/outer damper motor connector K-017 and automatic A/C control module connector K-001 according to value(s) in table below.



Check for Open

Multimeter Connection	Condition	Specified Condition
K-017 (1) - K-001 (17)	Always	Resistance ≤ 1 Ω
K-017 (2) - K-001 (37)	Always	Resistance ≤ 1 Ω
K-017 (3) - K-001 (18)	Always	Resistance ≤ 1 Ω
K-017 (4) - K-001 (19)	Always	Resistance ≤ 1 Ω
K-017 (6) - K-001 (20)	Always	Resistance ≤ 1 Ω

Result

Proceed to
OK

Proceed to
NG

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

OK

4 Check power circuit of inner/outer damper motor

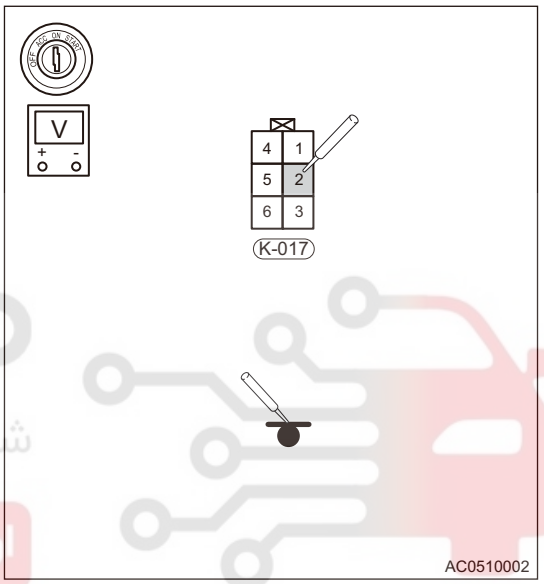
(a) Disconnect the inner/outer damper motor connector K-017 and automatic A/C control module connector K-001.
(b) Connect the negative battery cable.
(c) Turn ENGINE START STOP switch to ON, turn blower on.
(d) Using a digital multimeter, measure the voltage between terminal 2 of inner/outer damper motor connector K-017 and body ground according to value(s) in table below.

Voltage Inspection

Multimeter Connection	Condition	Specified Condition
K-017 (2) - Body ground	ENGINE START STOP switch ON	Not less than 12 V

Result

Proceed to
OK
NG



NG → **Check wire harness connector fuse RF10 (10A), meter relay box.**

OK

5 Reconfirm DTCs

(a) Connect all connectors.
(b) Connect the negative battery cable.
(c) Turn ENGINE START STOP switch to ON.
(d) Check if the same DTCs are still output using A/C self-diagnosis.

Result

Proceed to
OK
NG

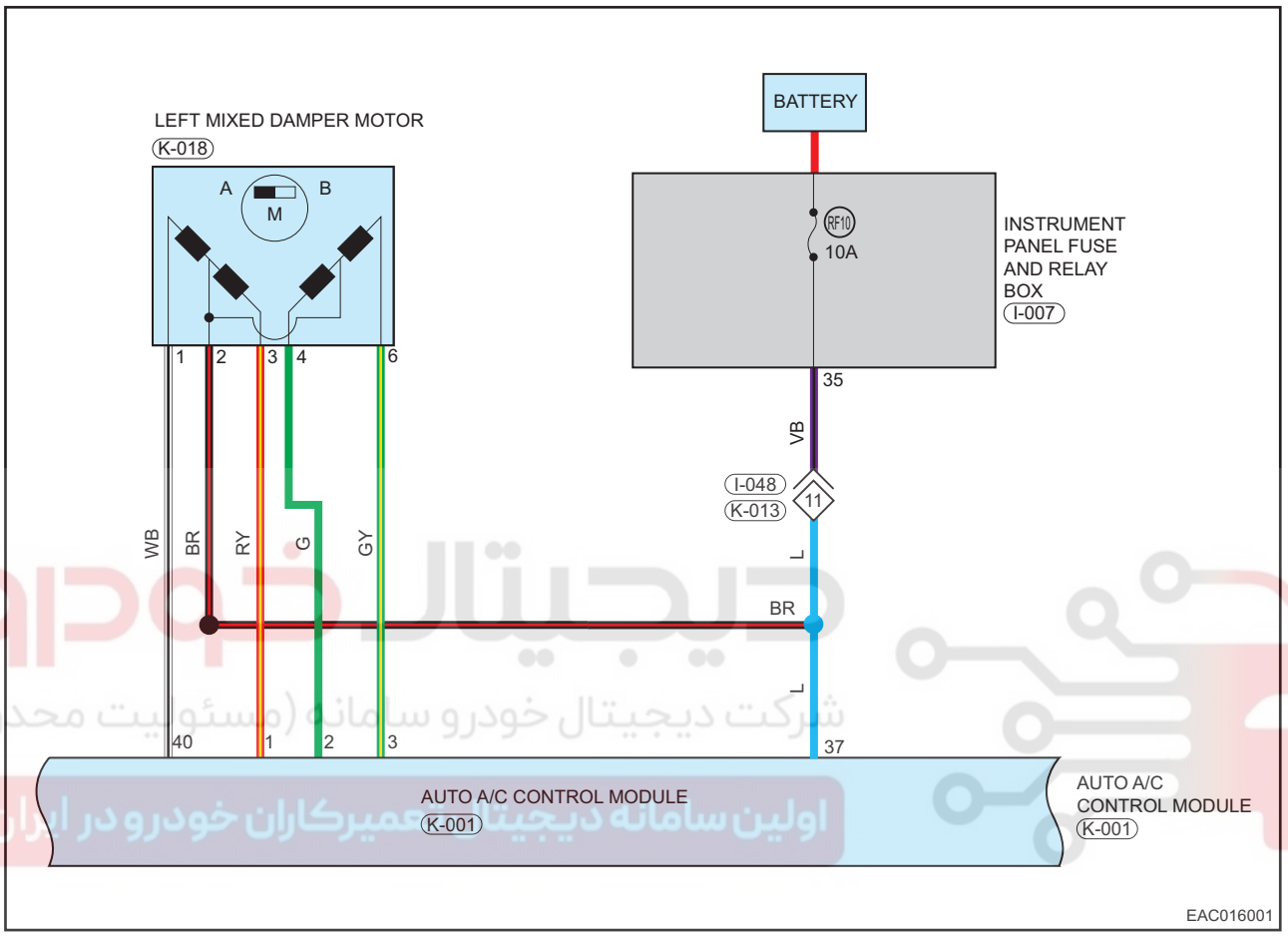
OK → **System operates normally**

NG → **Replace automatic A/C control module**

DTC	B1412-11	Mix Flap Motor Step (Left Side)

DTC	B1412-13	Mix Flap Motor Step (Left Side)

Circuit Diagram



Description

DTC	DTC Definition	DTC Detection Condition	Possible Cause
B1412-11	Mix Flap Motor Step (Left Side)	ENGINE START STOP switch is in ON	• Mode damper left motor • Automatic A/C control module • Wire harness or connector
B1412-13	Mix Flap Motor Step (Left Side)		

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

Diagnosis Procedure

1	Check wire harness and connector

(a) Turn ENGINE START STOP switch to OFF.
(b) Disconnect the negative battery cable.
(c) Disconnect the left mix damper motor connector K-018 and automatic A/C control module connector K-001.

(d) Check wire harness, connector and terminal for deformation, bend or damage.

Result

Proceed to
OK
NG

NG → **Repair or replace wire harness**

OK

2 Check the left mix damper motor

(a) Remove the left mix damper motor from malfunctioning vehicle.
(b) Install new left mix damper motor to malfunctioning vehicle.
(c) Check whether there are DTC B1412-11 and B1412-13.

Result

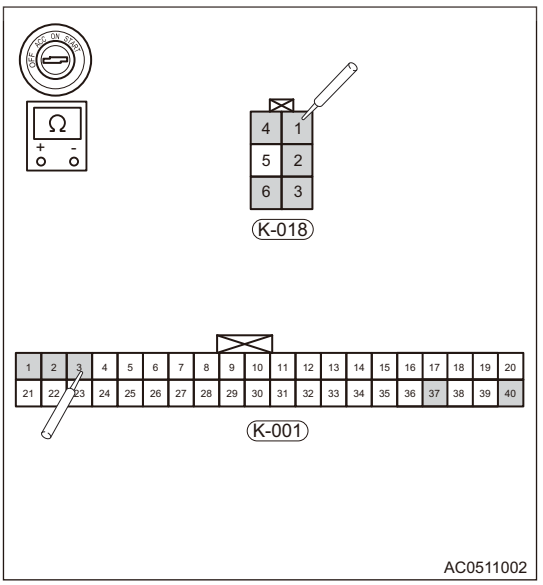
Proceed to
OK
NG

NG → **Replace the left mix damper motor**

OK

3 Check automatic A/C control module to left mix damper motor wire harness connector

(a) Turn ENGINE START STOP switch to OFF.
(b) Disconnect the negative battery cable.
(c) Disconnect the automatic A/C control module connector K-001 and left mix damper motor connector K-018.
(d) Using a digital multimeter, measure the wire harness between left mix damper motor connector K-018 and automatic A/C control module connector K-001 according to value(s) in table below.



Check for Open

Multimeter Connection	Condition	Specified Condition
K-018 (1) - K-001 (40)	Always	Resistance ≤ 1 Ω
K-017 (2) - K-001 (37)	Always	Resistance ≤ 1 Ω
K-017 (3) - K-001 (1)	Always	Resistance ≤ 1 Ω
K-017 (4) - K-001 (2)	Always	Resistance ≤ 1 Ω
K-017 (6) - K-001 (3)	Always	Resistance ≤ 1 Ω

Result

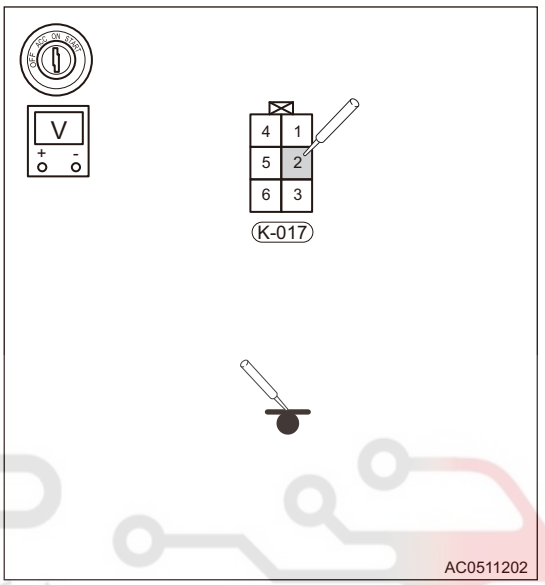
Proceed to
OK
NG

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

OK

4	Check power circuit of left mix damper motor

(a) Disconnect the left mix damper motor connector K-018 and automatic A/C control module connector K-001.
(b) Connect the negative battery cable.
(c) Turn ENGINE START STOP switch to ON, turn blower on.
(d) Using a digital multimeter, measure the voltage between terminal 2 of inner/outer damper motor connector K-018 and body ground according to value(s) in table below.



Voltage Inspection

Multimeter Connection	Condition	Specified Condition
K-017 (2) - Body ground	ENGINE START STOP switch ON	Not less than 12 V

Result

Proceed to
OK
NG

NG → **Check wire harness connector fuse RF10 (10A), meter relay box.**

OK

5	Reconfirm DTCs

(a) Connect all connectors.
(b) Connect the negative battery cable.
(c) Turn ENGINE START STOP switch to ON.
(d) Check if the same DTCs are still output using A/C self-diagnosis.

Result

Proceed to
OK
NG

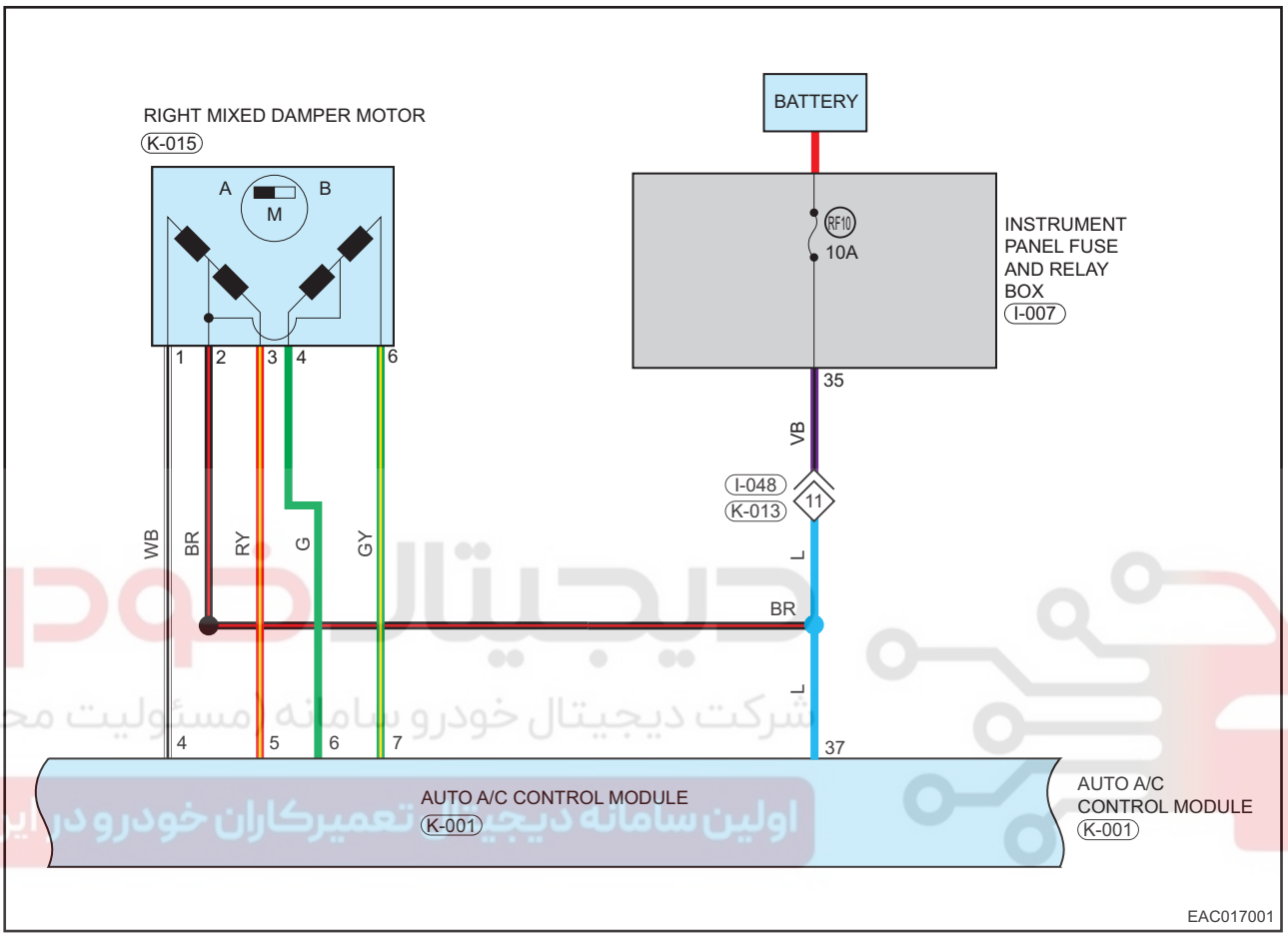
OK → **System operates normally**

NG → **Replace automatic A/C control module**

DTC	B1414-11	Mix Flap Motor Step (Right Side)

DTC	B1414-13	Mix Flap Motor Step (Right Side)

Circuit Diagram



Description

DTC	DTC Definition	DTC Detection Condition	Possible Cause
B1414-11	Mix Flap Motor Step (Right Side)	ENGINE START STOP switch is in ON	• Mode damper right motor • Automatic A/C control module • Wire harness or connector
B1414-13	Mix Flap Motor Step (Right Side)		

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

Diagnosis Procedure

1	Check wire harness and connector

(a) Turn ENGINE START STOP switch to OFF.
(b) Disconnect the negative battery cable.
(c) Disconnect the right mix damper motor connector K-015 and automatic A/C control module connector K-001.

(d) Check wire harness, connector and terminal for deformation, bend or damage.

Result

Proceed to
OK
NG

NG → **Repair or replace wire harness**

OK

2 Check the right mix damper motor

(a) Remove the right mix damper motor from malfunctioning vehicle.
(b) Install new right mix damper motor to malfunctioning vehicle.
(c) Check whether there are DTC B1414-11 and B1414-13.

Result

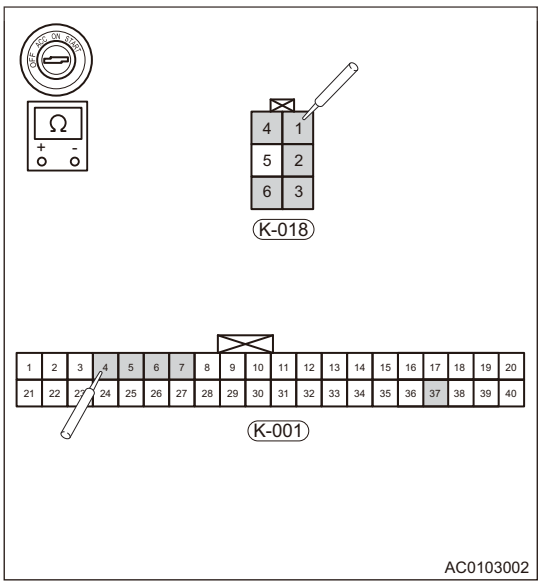
Proceed to
OK
NG

NG → **Replace the right mix damper motor**

OK

3 Check automatic A/C control module to right mix damper motor wire harness connector

(a) Turn ENGINE START STOP switch to OFF.
(b) Disconnect the negative battery cable.
(c) Disconnect the automatic A/C control module connector K-001 and right mix damper motor connector K-015.
(d) Using a digital multimeter, measure the wire harness between right mix damper motor connector K-015 and automatic A/C control module connector K-001 according to value(s) in table below.



Check for Open

Multimeter Connection	Condition	Specified Condition
K-015 (1) - K-001 (4)	Always	Resistance ≤ 1 Ω
K-015 (2) - K-001 (37)	Always	Resistance ≤ 1 Ω
K-015 (3) - K-001 (5)	Always	Resistance ≤ 1 Ω
K-015 (4) - K-001 (6)	Always	Resistance ≤ 1 Ω
K-015 (6) - K-001 (7)	Always	Resistance ≤ 1 Ω

Result

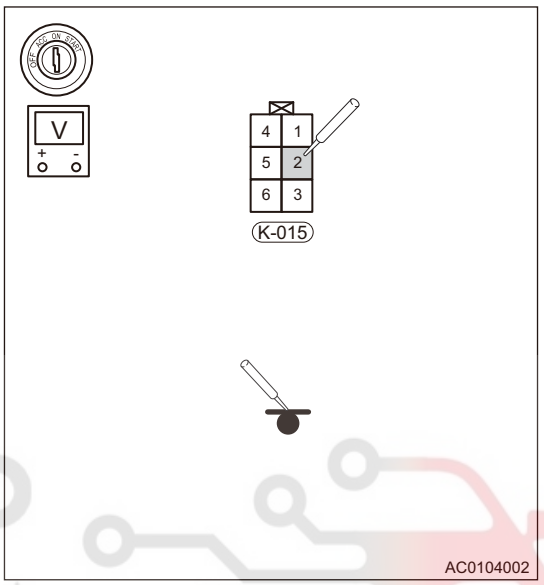
Proceed to
OK
NG

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

OK

4	Check power circuit of right mix damper motor

(a) Disconnect the right mix damper motor connector K-015 and automatic A/C control module connector K-001.
(b) Connect the negative battery cable.
(c) Turn ENGINE START STOP switch to ON, turn blower on.
(d) Using a digital multimeter, measure the voltage between terminal 2 of inner/outer damper motor connector K-015 and body ground according to value(s) in table below.



Voltage Inspection

Multimeter Connection	Condition	Specified Condition
K-015 (2) - Body ground	ENGINE START STOP switch ON	Not less than 12 V

Result

Proceed to
OK
NG

NG → **Check wire harness connector fuse RF10 (10A), meter relay box.**

OK

5	Reconfirm DTCs

(a) Connect all connectors.
(b) Connect the negative battery cable.
(c) Turn ENGINE START STOP switch to ON.
(d) Check if the same DTCs are still output using A/C self-diagnosis.

Result

Proceed to
OK
NG

OK → **System operates normally**

NG → **Replace automatic A/C control module**

Instrument CAN Network DTCs

DTC	DTC Definition
U0140-87	Lost Communication With Body Control Module
U0155-87	Lost Communication With Instrument Cluster Module
U0151-87	Lost Communication With Air Bag Module
U0245-87	Lost Communication With Radio Receiver Module
U0100-87	Lost Communication With Engine Control System Engine Control System Module
U0129-87	Lost Communication With BSM
U1160-87	Lost Communication With AIPM
U0214-87	Lost Communication With PEPS
U1164-87	Lost Communication With CLM

Refer to Chapter 47 CAN Communication System for CAN network DTCs.

On-vehicle Inspection

General inspection

Warning / Caution / Hint:

- A/C refrigerant lines and hoses are used to transfer refrigerant among A/C system components. Any twist or bend in refrigerant lines and hoses will reduce performance of A/C system and refrigerant flow in system.
- There remains high pressure in refrigerant when A/C compressor assembly is operating. It is necessary to ensure that each connecting part in A/C system is sealed well. Check all system lines at least once a year to ensure that they are in good condition and properly routed. Refrigerant lines and hoses cannot be repaired and must be replaced if leakage or damage exists.
  (a) Check if there exists any oil or dust in each joint of A/C line. If this occurs, there may be leakage.
  (b) Check if condenser surface is dirty and if fins are deformed.
  (c) Check if there are harsh noises while compressor assembly is operating normally.
  (d) Temperature difference should be noticeable by touching intake line and exhaust line of compressor assembly with hand. Normally, temperature of low pressure line is relatively low and that of high pressure line is relatively hot. Feel the temperature difference between condenser inlet pipe and outlet pipe, under normal conditions, temperature of inlet pipe is higher than that of outlet pipe. If you feel the temperature difference between expansion valve inlet and outlet line with hand, under normal conditions, temperature of expansion valve inlet line is relatively hot and that of outlet line is relatively cool, and the temperature difference between them is noticeable.

1. Using pressure gauge set, check the refrigerant pressure.
   (a) Connect manifold pressure gauge set. After following conditions are met, read pressure values on pressure gauge. Measurement Condition:
   - Inner/outer circulation switch is in outer circulation position.
   - Engine runs at approximately 2000 rpm.
   - Adjust temperature knob to Max. Cool.
   - Set blower speed control switch to highest band.
   - Turn on A/C switch.

   Hint:
   - Observe the pressure value on pressure gauge, under normal condition, low pressure is 0.15-0.20 Mpa, high pressure is 1.3-1.7 Mpa.

Compressor Assembly Noise Inspection

Warning / Caution / Hint:

Hint:

- 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. Loud noises during A/C operation can often mislead someone. For example, some 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 noise is heard from compressor assembly.
- Noise may occur from drive belt at different engine speeds, and you may mistake it for a noise from A/C compressor assembly.

1. Select a quiet place for testing.
2. Duplicate customer's feedback information as much as possible.
3. Turn on and off A/C for several times to identify compressor assembly noise clearly.
4. Check the condition of compressor assembly belt.
5. Check the hub, pulley, bearing assembly of compressor assembly. Make sure that hub and pulley are aligned correctly, and pulley bearing is securely installed to A/C compressor assembly.
6. Check if refrigerant line routes incorrectly, and if it 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.
7. Loosen all compressor assembly tightening bolts and retighten them.
8. If noise occurs when liquid refrigerant in A/C suction line is under a slugging condition, replace the condenser and check refrigerant oil level and charging condition for refrigerant.
9. If the slugging condition still exists after replacing condenser, replace the A/C compressor assembly.

   Caution:

   - DO NOT race engine when vacuum pump operates or vacuum exists in A/C system. Otherwise, A/C compressor assembly will be damaged seriously.

Refrigerant Leakage Inspection

Warning / Caution / Hint:

Warning:

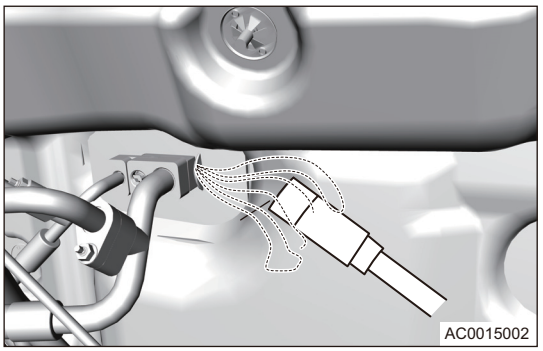
- DO NOT perform a pressure test or a leakage test to R134a service device or vehicle A/C system with compressed air. Mixture of air and R134a is inflammable at high pressure. This mixture has potential danger, and it may cause a fire or explosion, resulting in vehicle damage, personal injury or death.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

Caution:

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

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

3. Place gas leak detector near the joint of A/C line, and check the A/C line for leakage. If gas leak detector makes a sound, it indicates that a leakage exists. Repair or replace the leakage A/C line as necessary.
4. Disconnect A/C pressure sensor connector, and use same procedures to check A/C pressure sensor for leakage. Replace the A/C pressure sensor as necessary.



5. Insert gas leak detector into evaporator tank assembly, and use same procedures to check evaporator for leakage. Clean or replace the evaporator core assembly as necessary.
6. Use same procedures to check condenser for leakage. Clean or replace the condenser assembly as necessary.

ON-VEHICLE SERVICE

Refrigerant Recovering, Vacuum Pumping and Recharging

Refrigerant Recovering/Draining

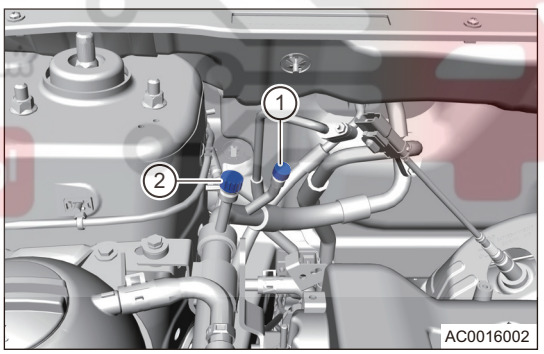
Warning / Caution / Hint:

- Take extra care when servicing A/C system under high pressure.
- Because there is refrigerant under high pressure in 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 pressure is released unexpectedly, ventilate work area before servicing. In a closed work place, if a large amount of refrigerant is discharged, it may cause oxygen reduction and result in smothering, causing a serious or fatal injury.
- Never drain 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 open flames.
- Always dispose of recovered refrigerant as specified.
- Never charge R-12 to refrigerant system which is designed to use R134a. This refrigerant is incompatible, which could damage the A/C system.
- DO NOT race engine when vacuum pump operates or vacuum exists in A/C system. Otherwise, A/C compressor assembly will be damaged seriously.

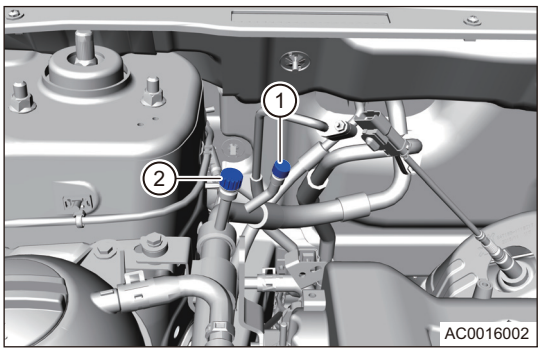
1. Open the engine hood and loosen the joint cover of A/C high/low pressure line.
2. Connect the refrigerant recycling machine to A/C high/low pressure line joint.
   (a) Connect the red connector to A/C high pressure line joint (1).
   (b) Connect the blue connector to A/C low pressure line joint (2).



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

Vacuum Pumping

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. Choose "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 operation, check if there is any change in 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 refrigerant charging procedures.

Refrigerant Recharging

Warning / Caution / Hint:

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

1. Perform vacuum pumping with a vacuum pump.
2. Add refrigerant oil after checking that there is no leakage in A/C system.
3. Perform vacuum pumping for 3 minutes again after adding refrigerant oil, then charge refrigerant.
4. Choose "charging" item on machine and set the amount of charging to specified value, then choose "OK" and make it start to operate.
5. Open the suction valve and close the discharging valve, and then open the charging valve to allow refrigerant to flow into the system.
6. When the delivery of refrigerant has stopped, close the charging valve.
7. If charged refrigerant is not delivered to specified position, start the engine to operate the A/C compressor assembly.
8. Open the charging valve to deliver the remaining refrigerant to A/C system.
   Warning:
   - At this time, do not open exhaust (high pressure) valve. Failure to do so may result in personal injury or even death.
9. Perform A/C system pressure test after charging.
10. Remove the connecting pipe for refrigerant charging after the test is completed.
11. Reinstall the cover onto A/C line joint.

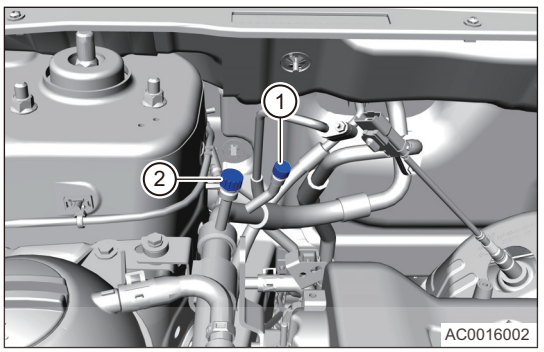
Refrigerant Oil Recovering and Charging

Refrigerant Oil Recovering

Warning / Caution / Hint:

- Special service equipment for R134a refrigerant must be used.
- Always keep work area in good ventilation, because A/C system is easy to leak.
- Always dispose of recovered refrigerant as specified.
- Refrigerant oil must be charged after replacing A/C system components or recovering 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 refrigerant oil according to instructions on the machine.
5. Record amount of recovered refrigerant oil.
6. Disconnect the connection between refrigerant recycling machine and A/C line joint.
7. Reinstall the joint cover onto refrigerant line joint.

Refrigerant Oil Charging

1. Perform vacuum pumping with a vacuum pump. Wait for 10 minutes after completing operation, check if there is any change in A/C system pressure. 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 refrigerant oil charging procedures.
2. Open the suction valve and close the exhaust valve, and then open the charging valve to allow refrigerant oil to flow into the system.
3. Close the charging valve after refrigerant oil charging is completed.
4. Perform vacuum pumping again for 3 minutes.
5. Continue to perform refrigerant charging procedures after operation is completed.

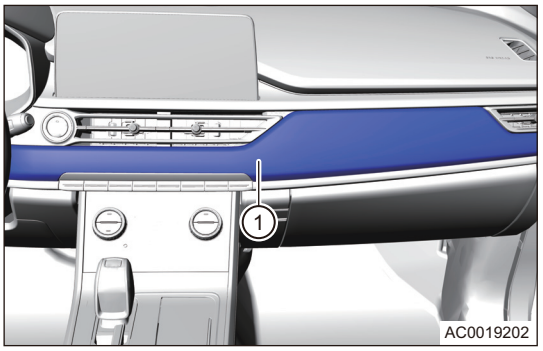
Refrigerant Oil Charging Amount Specifications

Item	A/C Compressor Assembly Replacement	Condenser Replacement	Evaporator Tank Replacement	Line Replacement
Refrigerant Oil Charging Amount	Supplement according to actual pouring amount	20 ml	20 ml	10 ml

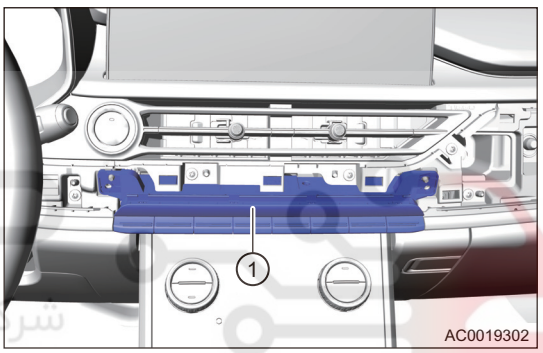
A/C Control Panel Assembly

Removal

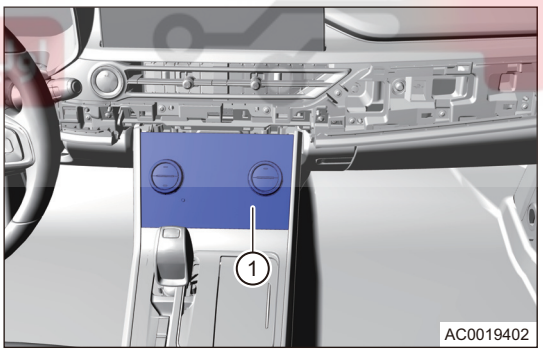
1. Turn off all electrical equipment and the ignition switch.
2. Disconnect the negative battery cable.
3. Remove the A/C control panel.
   (a) Using an interior crow plate, remove center control panel assembly (1).



   (b) Remove 2 fixing screws from center console switch and then remove center console switch assembly (1).
   Tightening torque
   1.5 ± 0.5 N·m



   (c) Using an interior crow plate, pry off and unplug rear connector of panel and remove the panel (1).



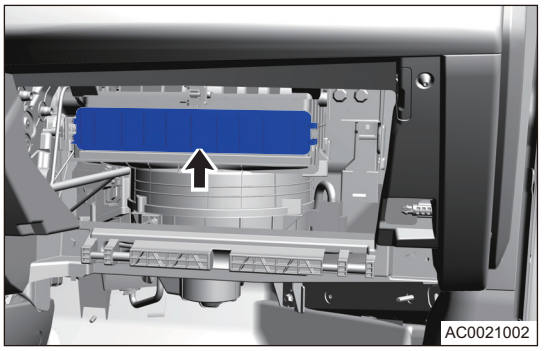
Installation

1. Installation is in the reverse order of removal.
   Caution:
   - Be sure to install upper fixing clips of A/C control panel assembly into place during installation.
   - Be sure to align upper dowel pin of A/C control panel assembly with positioning hole on instrument panel during installation.

A/C Element

Removal

1. Remove the glove box assembly.
2. Remove the A/C element.
   (a) Pull 2 clips of A/C element protector cover and remove A/C element protector cover.



   (b) Remove A/C element assembly from upper inlet position of blower.

Installation

1. Installation is in the reverse order of removal.

Caution:

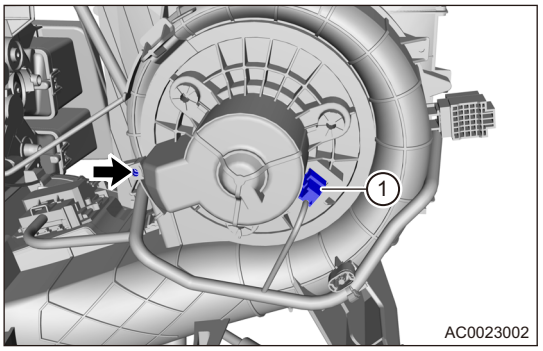
- Be sure to check if A/C element is dirty during installation. Clean it as necessary.
- After removal of element, confirm if there are fallen leaves or other debris into blower and if there is any abnormal noise from blower.
- If A/C element is too dirty or has been damaged, replace it with a new one.
- Auto A/C is equipped with double effect filter.

Front Blower Assembly

Removal

1. Turn off all electrical equipment and the ENGINE START STOP switch.
2. Disconnect the negative battery cable.
3. Remove the blower assembly.
   (a) Disconnect the blower assembly connector (1), remove 1 fixing bolt from blower and detach clip (arrow).

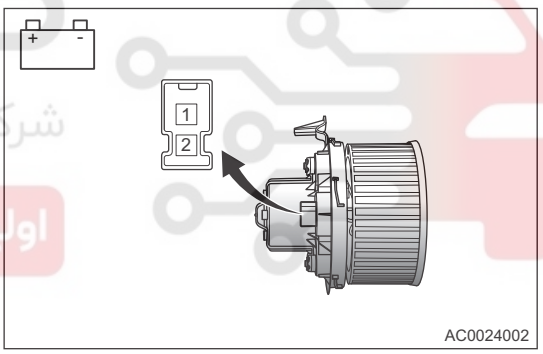
   Tightening torque
   5 ± 1 N·m



   (b) Remove the blower assembly.

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.



Installation

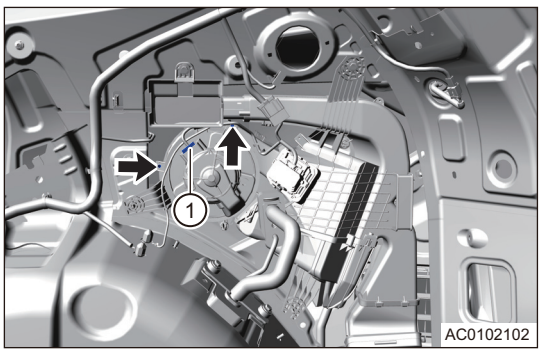
1. Installation is in the reverse order of removal.
   Caution:
   - Tighten fixing bolts to specified torques.

Rear Blower Assembly

Removal

1. Turn off all electrical equipment and the ENGINE START STOP switch.
2. Disconnect the negative battery cable.
3. Remove the C-pillar lower protector (See page 46-17).
4. Remove the C-pillar upper protector (See page 46-19).
5. Remove the rear blower assembly.
   (a) Disconnect the blower assembly connector (1), remove 2 fixing screws from blower and detach clip (arrow).

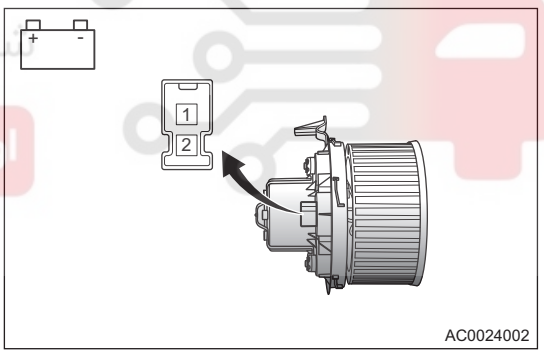
   Tightening torque
   5 ± 1 N·m



   (b) Remove the blower assembly.

Inspection

1. Check the rear 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.



Installation

1. Installation is in the reverse order of removal.
   Caution:
   - Tighten fixing bolts to specified torques.

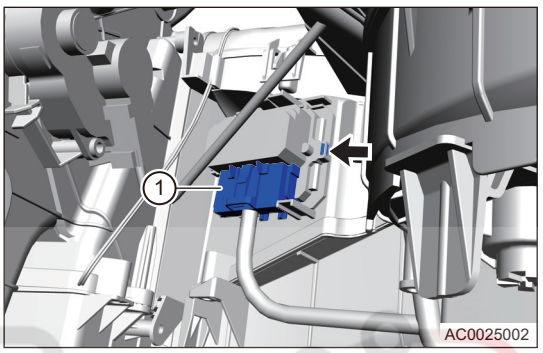
Front Blower Speed Regulation Module

Removal

Warning / Caution / Hint:

- During normal operation, blower speed regulation module may be very hot. Turn off blower and wait for a few minutes to cool it before diagnosing or servicing, in order to avoid burns.
- DO NOT operate blower assembly when removing the blower speed regulation module from vehicle. Failure to do so may result in damage to the blower assembly.

1. Turn off all electrical equipment and the ENGINE START STOP switch.
2. Disconnect the negative battery cable.
3. Remove the glove box assembly (See page 42-15).
4. Remove the blower speed regulation module.
   (a) Disconnect the blower speed regulation module connector (1).
   (b) Detach the attachment structure (arrow) of blower speed regulation module.
   (c) Remove the blower speed regulation module assembly.



Installation

1. Installation is in the reverse order of removal.

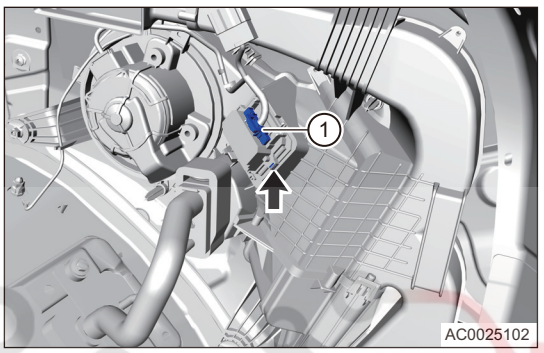
Rear Blower Speed Regulation Module

Removal

Warning / Caution / Hint:

- During normal operation, blower speed regulation module may be very hot. Turn off blower and wait for a few minutes to cool it before diagnosing or servicing, in order to avoid burns.
- DO NOT operate blower assembly when removing the blower speed regulation module from vehicle. Failure to do so may result in damage to the blower assembly.

1. Turn off all electrical equipment and the ENGINE START STOP switch.
2. Disconnect the negative battery cable.
3. Remove the C-pillar lower protector (See page 46-17).
4. Remove the C-pillar upper protector (See page 46-19).
5. Remove the rear blower speed regulation module.
   (a) Disconnect the blower speed regulation module connector (1).
   (b) Detach the attachment structure (arrow) of blower speed regulation module.
   (c) Remove the blower speed regulation module assembly.



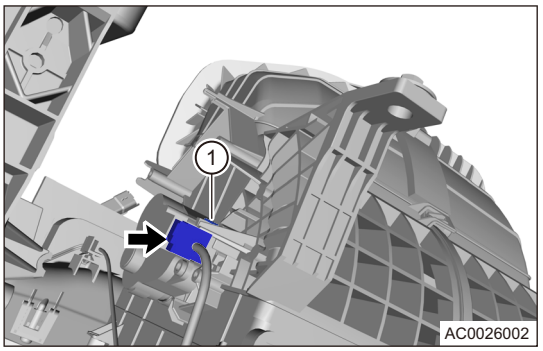
Installation

1. Installation is in the reverse order of removal.

Inner/Outer Circulation Damper Motor

Removal

1. Turn off all electrical equipment and the ENGINE START STOP switch.
2. Disconnect the negative battery cable.
3. Remove the glove box assembly (See page 42-15).
4. Remove the inner/outer circulation damper motor.
   (a) Disconnect the inner/outer circulation damper motor connector (arrow).
   (b) Detach the fixing clip (1) from mode damper motor.
   (c) Rotate counterclockwise to remove the mode damper motor.



Installation

1. Installation is in the reverse order of removal.

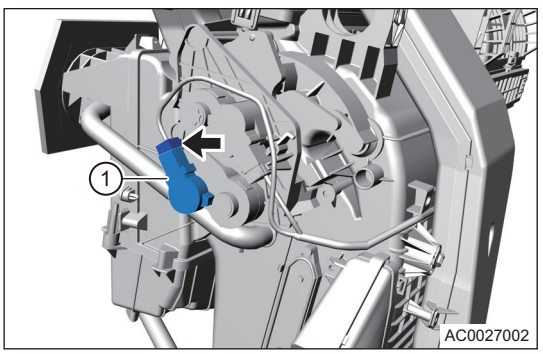
Caution:

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

Mode Damper Motor

Removal

1. Turn off all electrical equipment and the ENGINE START STOP switch.
2. Disconnect the negative battery cable.
3. Remove the instrument panel left lower protector assembly (See page 42-15).
4. Remove the mode damper motor.
   (a) Disconnect the mode damper motor connector (arrow).
   (b) Detach the fixing clip (1) from mode damper motor.
   (c) Rotate counterclockwise to remove the mode damper motor.



Installation

1. Installation is in the reverse order of removal.

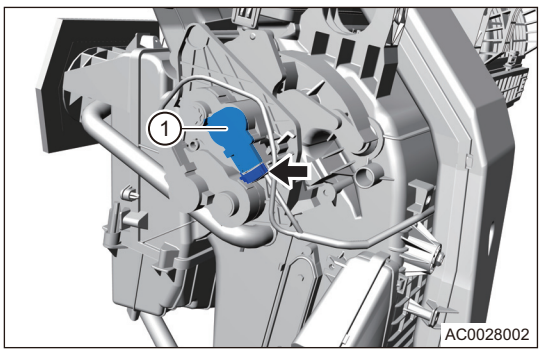
Caution:

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

Left Mix Damper Motor (Automatic A/C)

Removal

1. Turn off all electrical equipment and the ENGINE START STOP switch.
2. Disconnect the negative battery cable.
3. Remove the glove box assembly (See page 42-15).
4. Remove the left mix damper motor.
   (a) Disconnect the left mix damper motor connector (arrow).
   (b) Loosen the clip, rotate counterclockwise to remove left mix damper motor (1).



Installation

1. Installation is in the reverse order of removal.

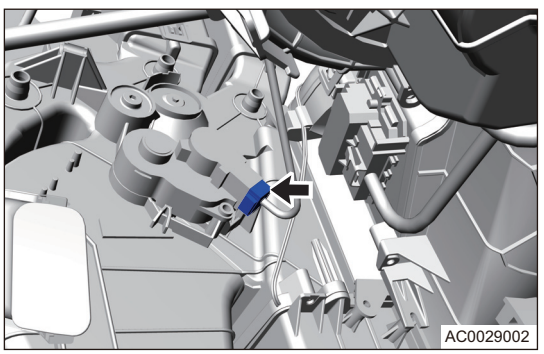
Caution:

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

Right Mix Damper Motor

Removal

1. Turn off all electrical equipment and the ENGINE START STOP switch.
2. Disconnect the negative battery cable.
3. Remove the glove box assembly (See page 42-15).
4. Remove the right mix damper motor.
   (a) Disconnect the right mix damper motor connector (arrow).



   (b) Loosen the clip, rotate counterclockwise to remove right mix damper motor.

Installation

1. Installation is in the reverse order of removal.

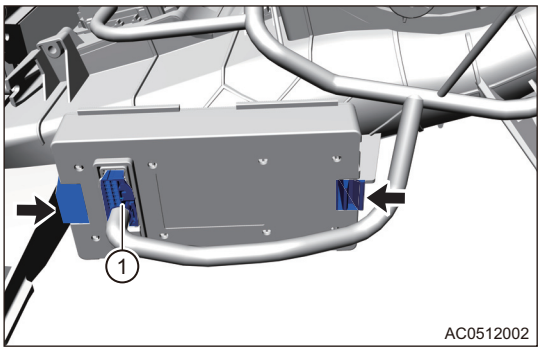
Caution:

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

Automatic A/C Control Module

Removal

1. Turn off all electrical equipment and the ENGINE START STOP switch.
2. Disconnect the negative battery cable.
3. Remove the automatic A/C control module.
4. Remove the right mix damper motor.



(a) Disconnect the automatic A/C control module connector (1).
(b) Loosen 2 fixing clips (arrow) to remove automatic A/C control module.

Installation

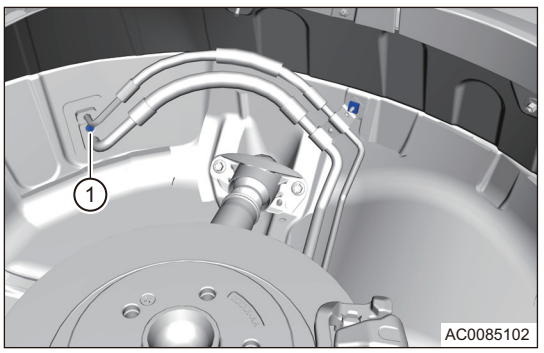
1. Installation is in the reverse order of removal.

Transition Line Assembly

Removal

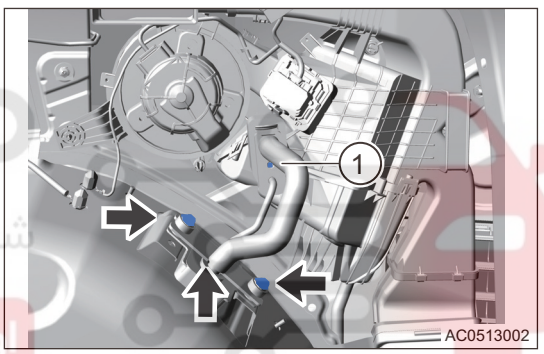
1. Turn off all electrical equipment and the ENGINE START STOP switch.
2. Disconnect the negative battery cable.
3. Remove the C-pillar lower protector (See page 46-17).
4. Remove the C-pillar upper protector (See page 46-19).
5. Remove the transition line assembly.
   (a) Remove the fixing bolt (1) between rear evaporator to compressor line assembly I & condenser to rear evaporator line assembly I and rear expansion valve.

   Tightening torque
   9 ± 1.5 N·m



   (b) Remove 3 fixing bolts (arrow) from high/low pressure pipe clamp. Remove the fixing bolt (1) between transition line and rear expansion valve.

   Tightening torque
   9 ± 1.5 N·m



Installation

1. Installation is in the reverse order of removal.

HVAC Assembly

Removal

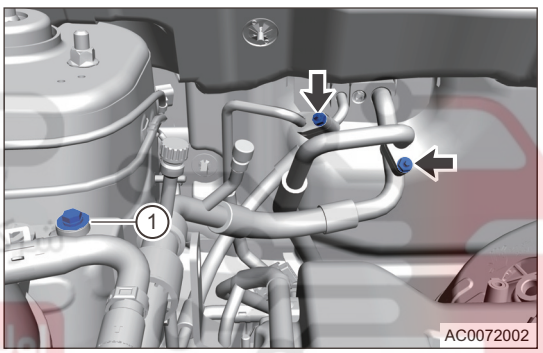
WARNING

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 work area in good ventilation.
- Disconnected A/C line and connecting part should be sealed to prevent foreign matter from entering.

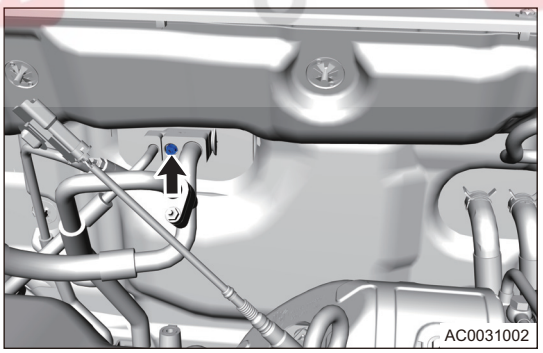
1. Recover the refrigerant from A/C system (See page 25-51).
2. Turn off all electrical equipment and the ENGINE START STOP switch.
3. Disconnect the negative battery cable.
4. Remove the driver airbag (See page 26-53).
5. Remove the steering wheel assembly (See page 24-20).
6. Remove the auxiliary fascia console assembly (See page 42-6).
7. Remove the instrument panel assembly (See page 42-15).
8. Remove the instrument panel crossmember assembly (See page 42-24).
9. Remove the HVAC assembly.
   (a) Remove the A/C high/low pressure line fixing bolt (1).
   (b) Remove 2 fixing nuts from rear evaporator high/low pressure pipe, and detach the rear evaporator high/low pressure pipe.

   Tightening torque
   9 ± 1.5 N·m



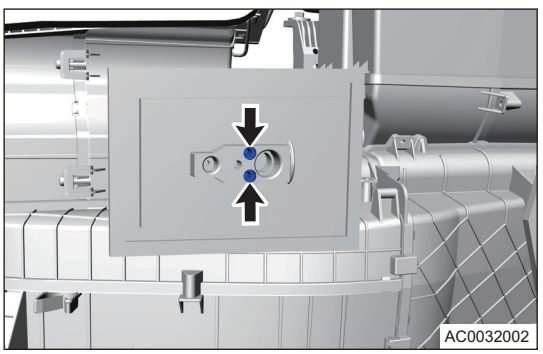
   (c) Remove the A/C high/low pressure line fixing bolt (arrow).

   Tightening torque
   9 ± 1.5 N·m

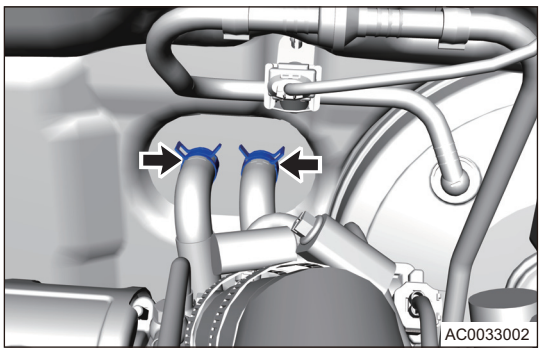


   (d) Remove 2 fixing bolts (arrow) from expansion valve and remove expansion valve assembly.

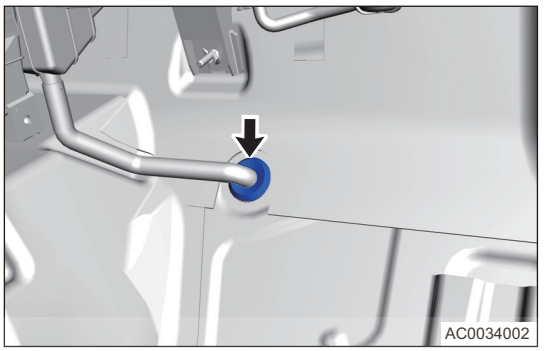
   Tightening torque
   9 ± 1.5 N·m



(e) Using snap spring calipers, disengage the fixing clamps (arrow) from heating inlet and outlet hoses to detach the inlet and outlet hoses.



(f) Disengage the outlet hose of HVAC and fixing bush rubber (arrow) of body.



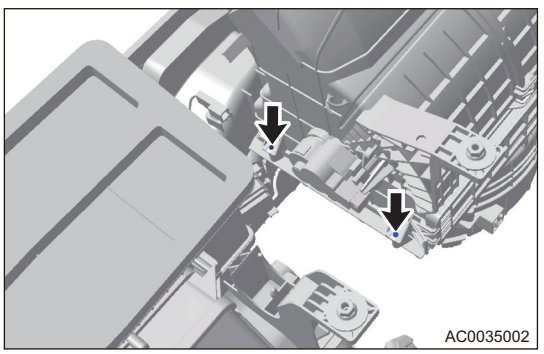
(g) Carefully take off the HVAC assembly from cabin.

Disassembly

1. Remove the blower assembly (See page 25-56).
2. Remove the blower speed regulation module (See page 25-58).
3. Remove the inner/outer circulation damper motor (See page 25-60).
4. Remove the left mix damper servo motor (automatic A/C) (See page 25-61).
5. Remove the mode damper motor (See page 25-60).
6. Remove the right mix damper motor (See page 25-61).
7. Remove the A/C element assembly (See page 25-55).
8. Remove the inner/outer damper set.

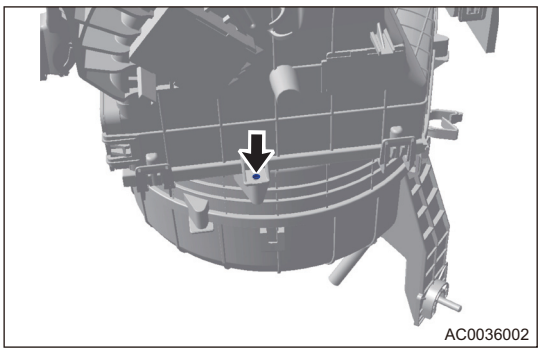
(a) Remove 2 fixing screws (arrow) from inlet air duct assembly.

Tightening torque
2.5 ± 0.5 N·m



(b) Remove 1 fixing bolt (arrow) from inlet air duct assembly.

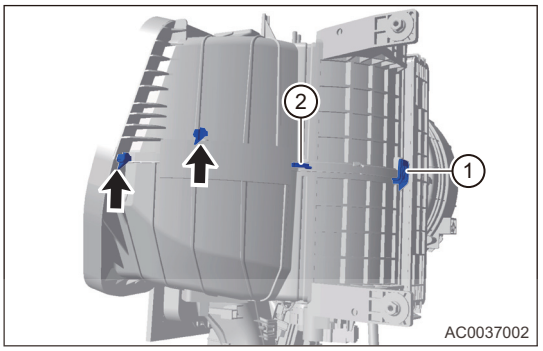
Tightening torque
2.5 ± 0.5 N·m


AC0036002

(c) Remove the inlet air duct assembly.

(d) Remove 2 fixing bolts (arrow) from inner/outer damper set, disengage 2 fixing clips.

Tightening torque
2.5 ± 0.5 N·m

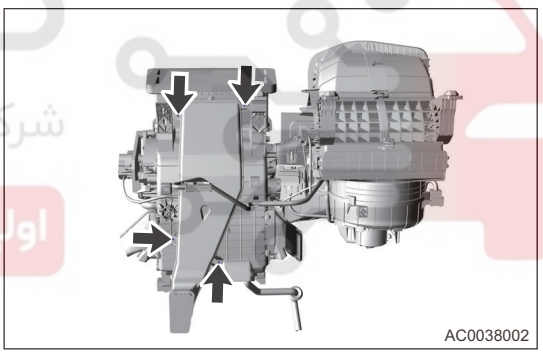


AC0037002

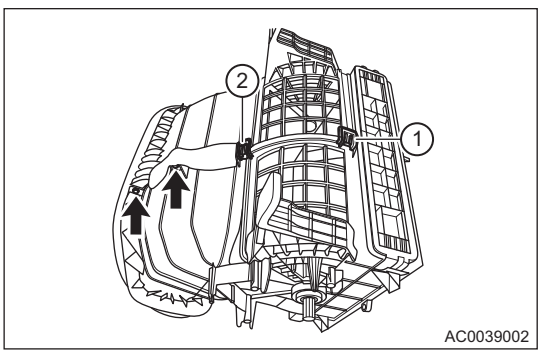
9. Remove A/C wire harness assembly

(a) Remove 5 fixing screws (arrow) from rear duct.

Tightening torque
2.5 ± 0.5 N·m

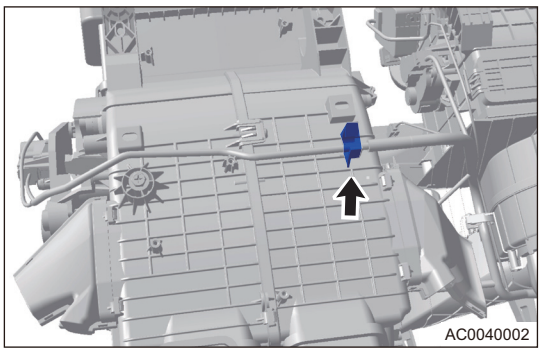

AC0038002

(b) Disengage 3 wire harness fixing clips (arrow).

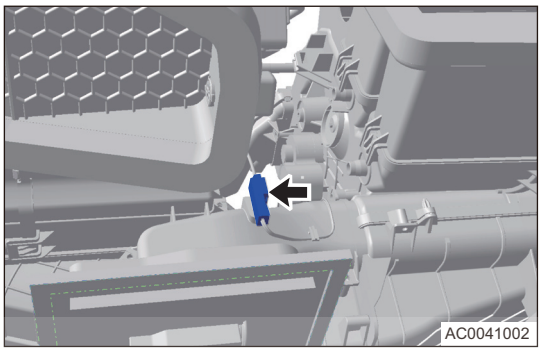


AC0039002

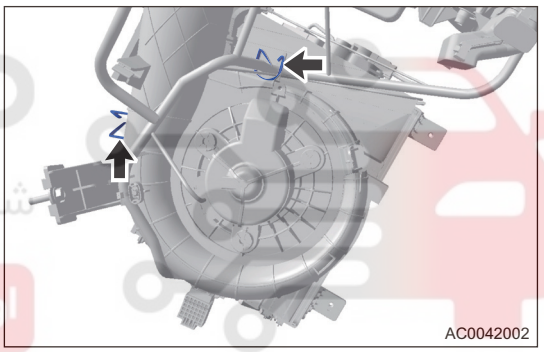
(c) Disengage 1 wire harness fixing clip (arrow).



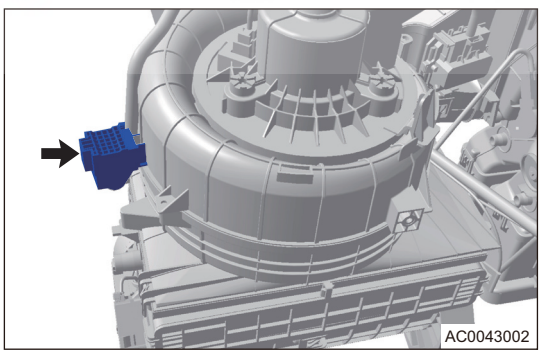
(d) Disconnect the evaporator tank temperature sensor (arrow).



(e) Disengage 2 fixing clips (arrow) of A/C wire harness from HVAC.



(f) Disengage the A/C wire harness connector (arrow) from HVAC.

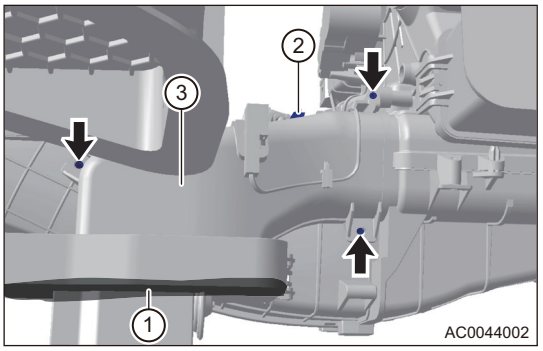


(g) Remove the power A/C wire harness.

10. Remove the blower volute assembly.

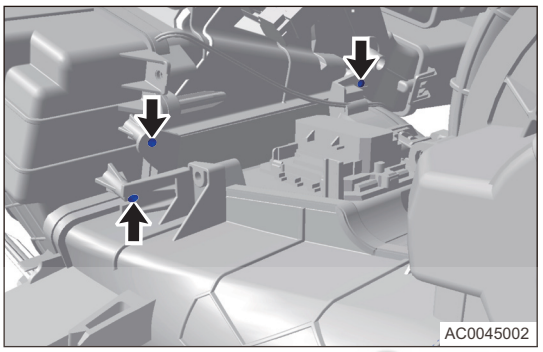
(a) Disengage the fixing clip from evaporator tank temperature sensor. Remove the sponge (1). Remove 3 fixing screws (arrow), disengage fixing clip (2) and open case (3).

Tightening torque
2.5 ± 0.5 N·m



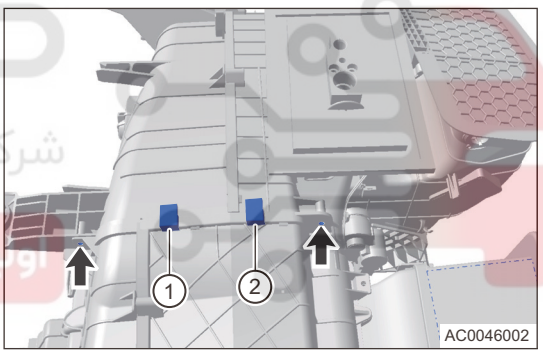
(b) Remove 3 fixing screws (arrow).

Tightening torque
2.5 ± 0.5 N·m



(c) Remove 2 fixing screws (arrow), disengage 2 fixing clips (1) and (2).

Tightening torque
2.5 ± 0.5 N·m

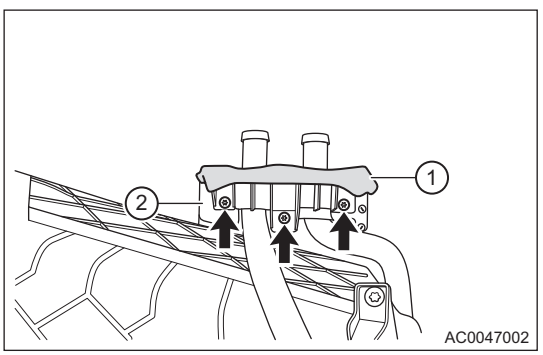


(d) Remove the blower volute assembly.

11. Remove the heater core assembly

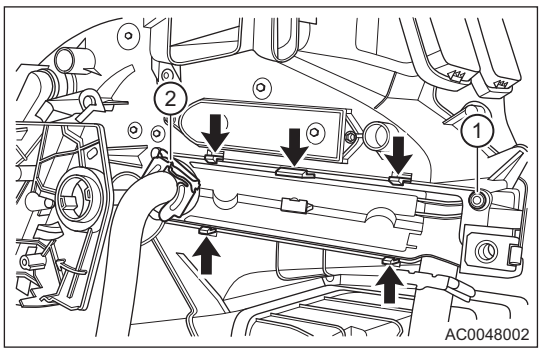
(a) Remove 3 fixing screws (arrow), disengage sponge (1) and open pressing plate (2).

Tightening torque
2.5 ± 0.5 N·m



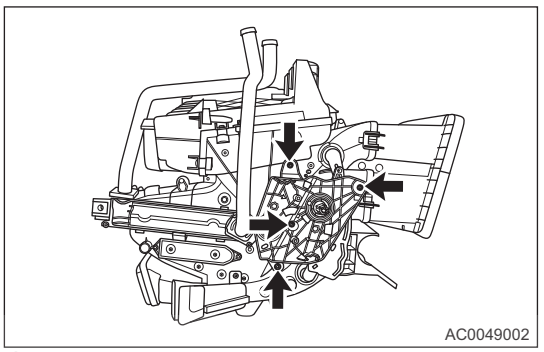
(b) Remove 2 screws (1) and (2) from heater core fixing panel, disengage 5 clips (arrow) from heater core fixing panel.

Tightening torque
2.5 ± 0.5 N·m



(c) Remove 4 fixing screws (arrow) and damper set pressing plate.

Tightening torque
2.5 ± 0.5 N·m

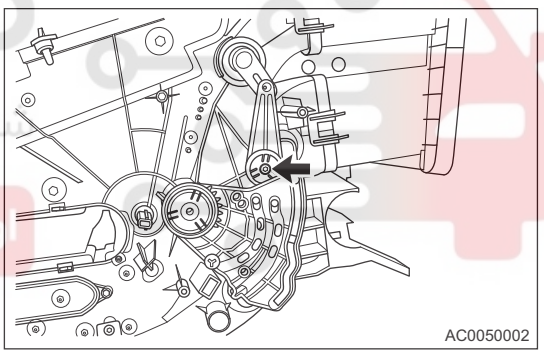


(d) Remove the heater core assembly from evaporator tank.

12. Remove the damper drive set

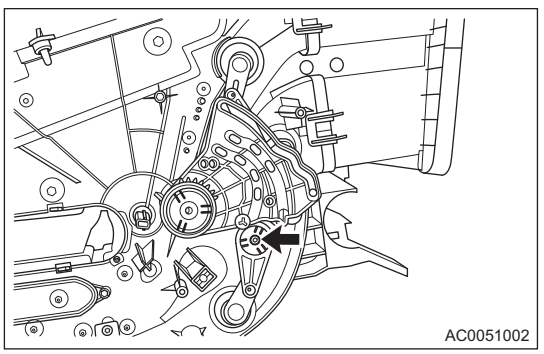
(a) Remove the fixing screw (arrow) from damper drive set.

Tightening torque
1.2 ± 0.2 N·m



(b) Remove the fixing bolt (arrow) from damper drive set.

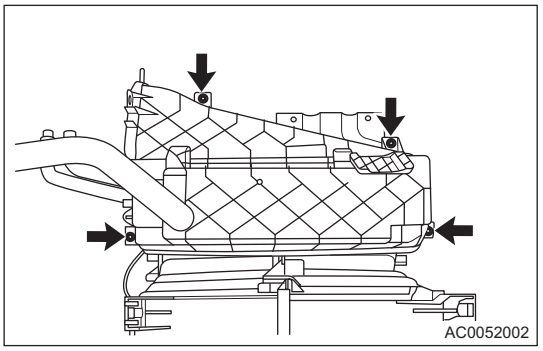
Tightening torque
1.2 ± 0.2 N·m



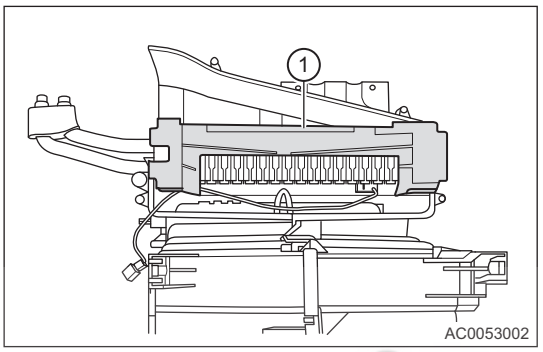
13. Remove evaporator assembly

(a) Remove 4 fixing screws (arrow) between evaporator housing and evaporator case.

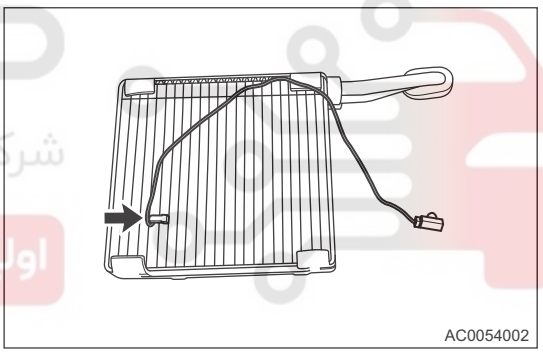
Tightening torque
1.2 ± 0.2 N·m



(b) Remove the evaporator assembly (1) from evaporator tank.

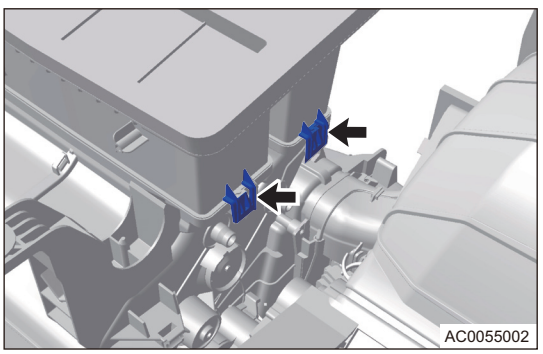


(c) Remove the evaporator tank temperature sensor (arrow) from evaporator assembly.

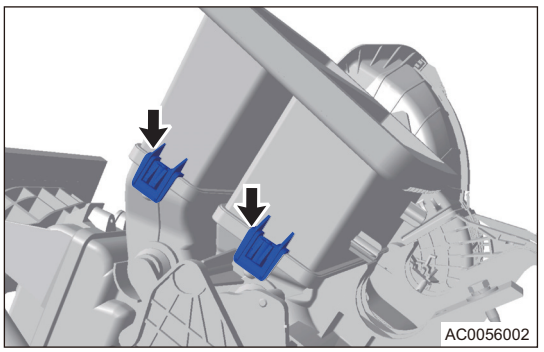


14. Remove the damper set

(a) Disengage 2 fixing clips (arrow) from outlet shield.

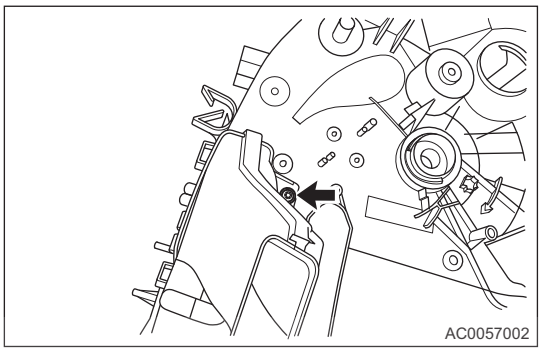


(b) Disengage 2 fixing clips (arrow) from outlet shield.



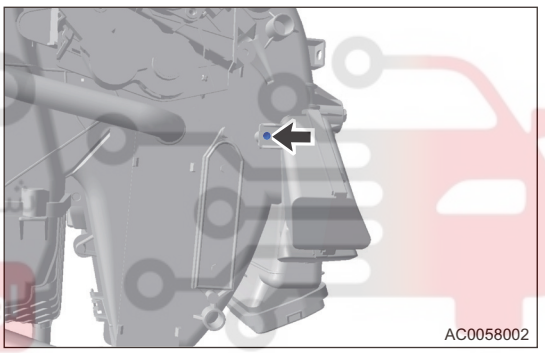
(c) Remove 1 fixing screw (arrow) and right rear outlet.

Tightening torque
1.2 ± 0.2 N·m



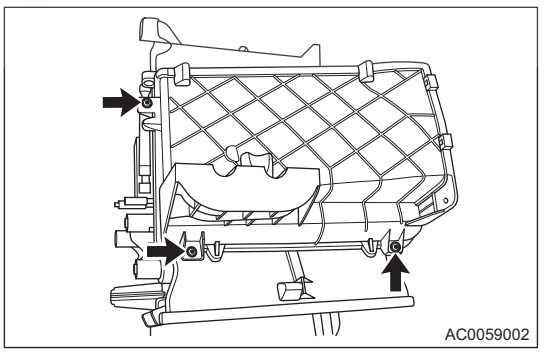
(d) Remove 1 fixing screw (arrow) and left rear outlet.

Tightening torque
1.2 ± 0.2 N·m



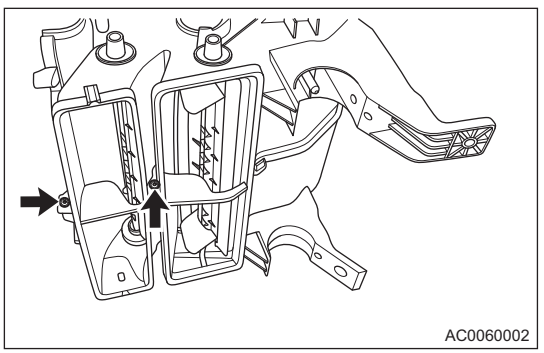
(e) Remove 3 fixing screws (arrow) from evaporator case.

Tightening torque
1.2 ± 0.2 N·m



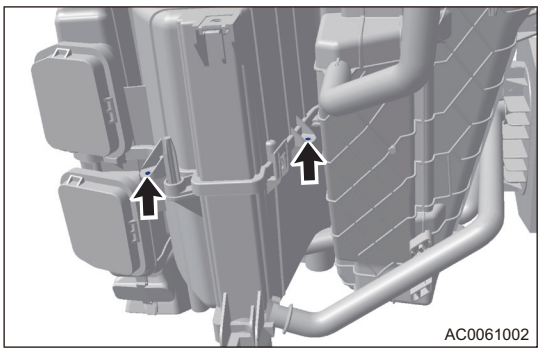
(f) Remove 2 fixing screws (arrow) from damper set housing.

Tightening torque
1.2 ± 0.2 N·m

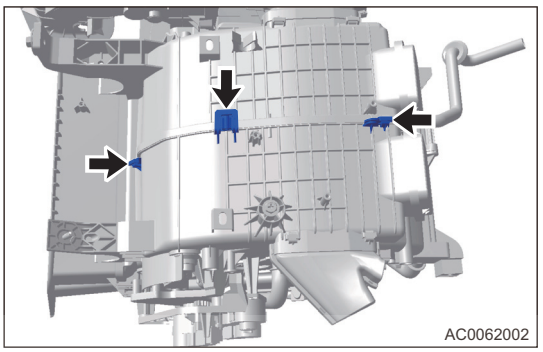


(g) Remove 2 fixing screws (arrow) from damper set housing.

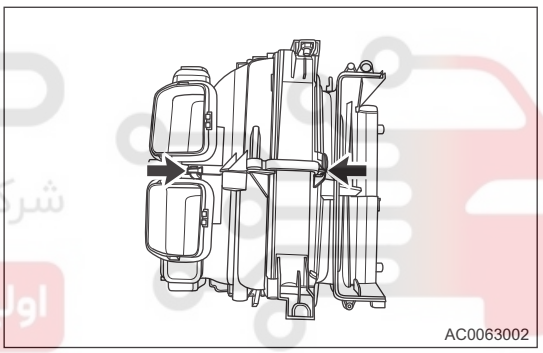
Tightening torque
1.2 ± 0.2 N·m


AC0061002

(h) Remove 3 fixing clips (arrow) from damper set housing.

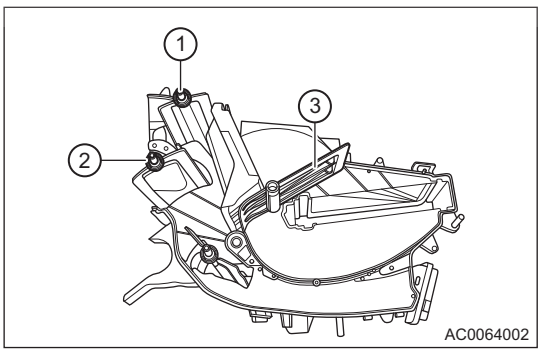

AC0062002

(i) Remove 2 fixing clips (arrow) from damper set housing.


AC0063002

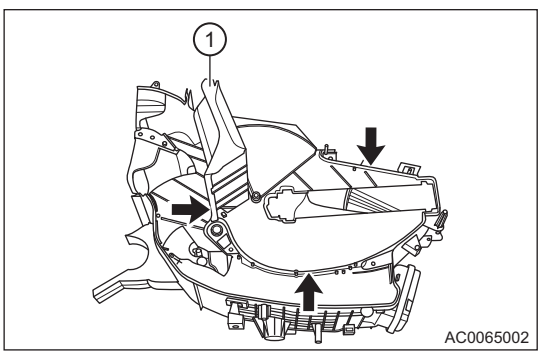
(j) Disengage the damper set housing.

(k) Remove the defrost damper set (1), face damper set (2) and right interior damper set (3).



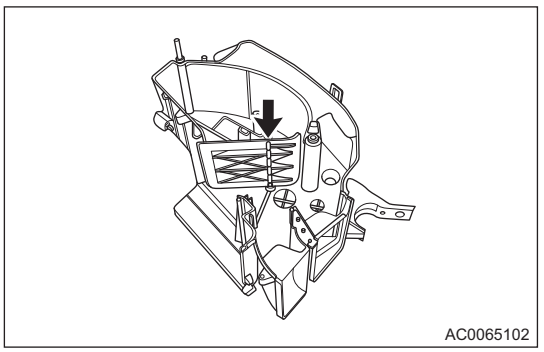
AC0064002

(l) Remove 3 locating plates (arrow) and air deflector (1) from damper housing.



AC0065002

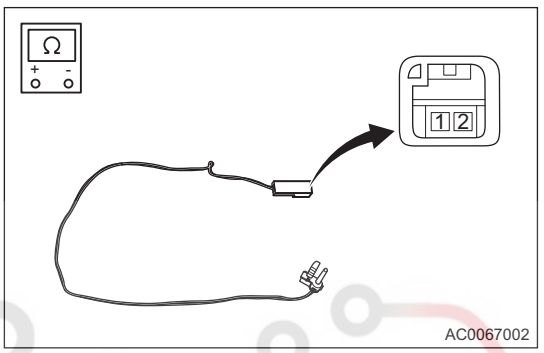
(m) Remove the right interior damper set (arrow).



Inspection

1. Check the evaporator temperature sensor.

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



Multimeter Connection	Temperature (°C)	Standard Resistance (Ω)
Terminal 1 - Terminal 2	-5	7716
Terminal 1 - Terminal 2	0	6194
Terminal 1 - Terminal 2	5	4963
Terminal 1 - Terminal 2	10	4007
Terminal 1 - Terminal 2	15	3259
Terminal 1 - Terminal 2	20	2669

Hint:

- Resistance decreases as temperature increases.
- If result is not as specified, replace the evaporator temperature sensor.

Caution:

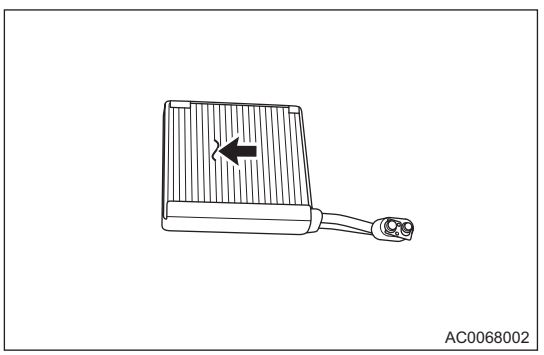
- Resistance value may change even if sensor is touched slightly. Make sure that connector of sensor is held firmly.
- During measurement, sensor temperature must be almost the same as the ambient temperature.

2. Check the evaporator core assembly

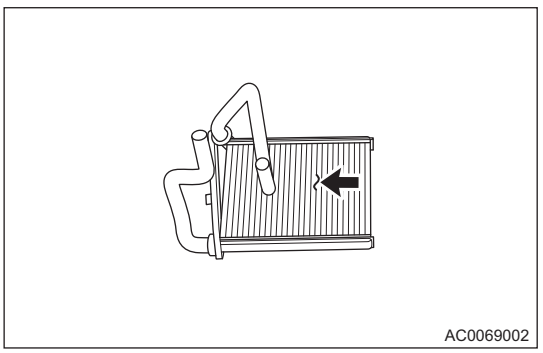
(a) Check if evaporator core assembly is cracked, damaged and leaked. If any problem is found, replace the evaporator core assembly.

(b) Check the fin for bends.

(1) If any fin is bent, carefully straighten it with a screwdriver or pliers.



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


AC0069002

4. Check the damper control mechanism assembly
   (a) Check if inner/outer circulation damper adjustment mechanism is stuck, deformed, damaged or if it has fallen out. Replace as necessary.
   (b) Check if mode damper adjustment mechanism is stuck, deformed, damaged or if it has fallen out. Replace as necessary.
   (c) Check if face/defrost damper set is stuck, deformed, damaged or if it has fallen out. Replace as necessary.

Assembly

1. Assembly is in the reverse order of disassembly.

Caution:

- If evaporator core is reused, do not insert evaporator temperature sensor into its original position. 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 contact surface of the inner/outer circulation damper adjustment mechanism to ensure that it can operate smoothly.
- During installation, apply a small amount of grease to contact surface of the mix damper adjustment mechanism set to ensure that it can operate smoothly.
- During installation, apply a small amount of grease to contact surface of the face damper adjustment mechanism to ensure that it can operate smoothly.
- During installation, apply a small amount of grease to contact surface of the defrost damper adjustment mechanism to ensure that it can operate smoothly.
- Always check that inner/outer circulation damper mechanism assembly operates normally after installation.
- Always check that mix damper mechanism assembly operates normally after installation.
- Always check that face damper mechanism assembly operates normally after installation.
- Always check that defrost damper mechanism assembly operates normally after installation.
- Tighten fixing bolts and nuts to specified torques.
- It is necessary to replace refrigerant line O-ring seal, when installing refrigerant line. Failure to do so may result in refrigerant leaks.
- It is necessary to replace refrigerant line O-ring seal, when installing refrigerant line. Failure to do so may result in refrigerant leaks.
- Only use specified O-ring, as it is made of special materials for R134a system.
- Only use recommended refrigerant oil which is applicable to A/C compressor assembly on vehicle.
- Be sure to recharge refrigerant and check for refrigerant leakage after installation.
- Be sure to recharge engine cooling system and check for coolant leakage after installation.

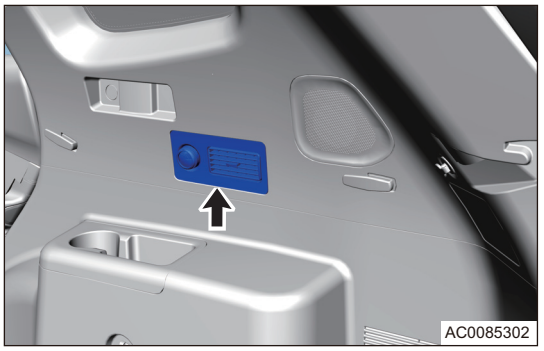
Installation

1. Installation is in the reverse order of removal.

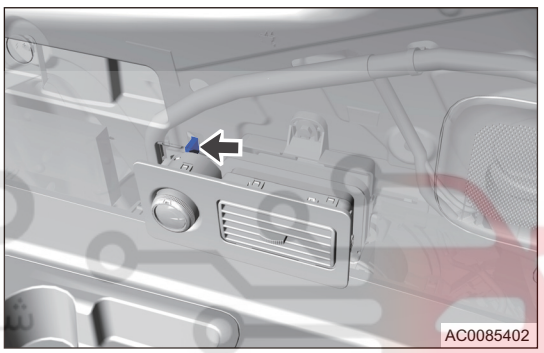
Rear A/C Control Panel Assembly (If Equipped)

Removal

1. Turn off all electrical equipment and the ENGINE START STOP switch.
2. Disconnect the negative battery cable.
3. Remove the rear A/C control panel assembly.
   (a) Using an interior crow plate, pry off the rear A/C control panel assembly (arrow).



   (b) Disconnect the rear A/C control panel assembly (arrow).



   (c) Remove the rear A/C control panel assembly from interior.

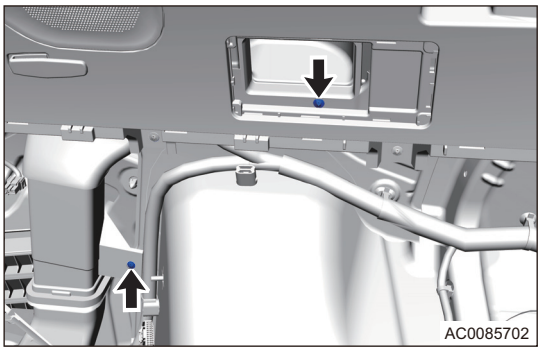
Installation

1. Installation is in the reverse order of removal.

Third Row Left A/C Outlet Duct

Removal

1. Turn off all electrical equipment and the ENGINE START STOP switch.
2. Remove the C-pillar lower protector assembly (See page 46-17).
3. Remove the third row left A/C outlet duct.
   (a) Remove 2 fixing screws (arrow) from the third row left A/C outlet duct.
   Tightening torque
   2.5 ± 0.5 N·m
   (b) Remove the third row left A/C outlet duct.



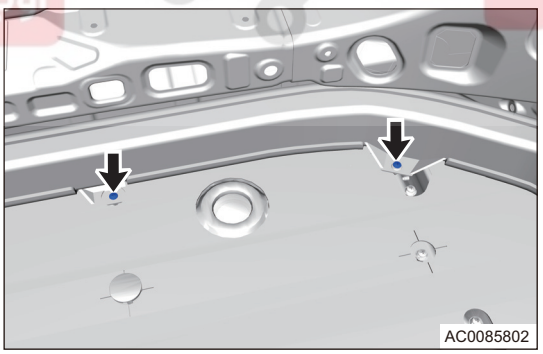
Installation

1. Installation is in the reverse order of removal.

Third Row Middle A/C Outlet Duct

Removal

1. Recover the refrigerant from A/C system (See page 25-51).
2. Turn off all electrical equipment and the ENGINE START STOP switch.
3. Remove the C-pillar lower protector assembly (See page 46-17).
4. Remove the luggage compartment storage box (See page 46-30).
5. Remove the third row middle A/C outlet duct.
   (a) Remove 2 fixing screws (arrow) from the third row middle A/C outlet duct.
   Tightening torque
   2.5 ± 0.5 N·m
   (b) Remove the third row middle A/C outlet duct.



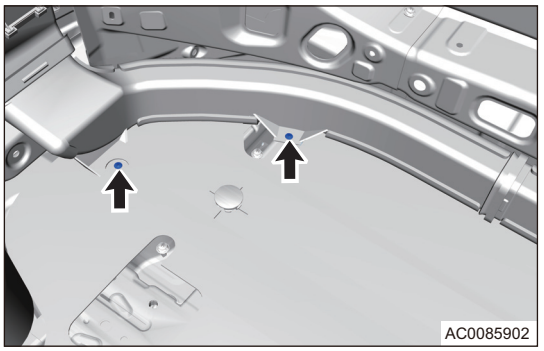
Installation

1. Installation is in the reverse order of removal.

Third Row Right A/C Outlet Duct

Removal

1. Recover the refrigerant from A/C system (See page 25-51).
2. Turn off all electrical equipment and the ENGINE START STOP switch.
3. Remove the C-pillar lower protector assembly (See page 46-17).
4. Remove the luggage compartment storage box (See page 46-30).
5. Remove the third row right A/C outlet duct.
   (a) Remove 2 fixing screws (arrow) from the third row right A/C outlet duct.
   Tightening torque
   2.5 ± 0.5 N·m
   (b) Remove the third row right A/C outlet duct.



Installation

1. Installation is in the reverse order of removal.

Rear HVAC Assembly

Removal

WARNING

Caution:

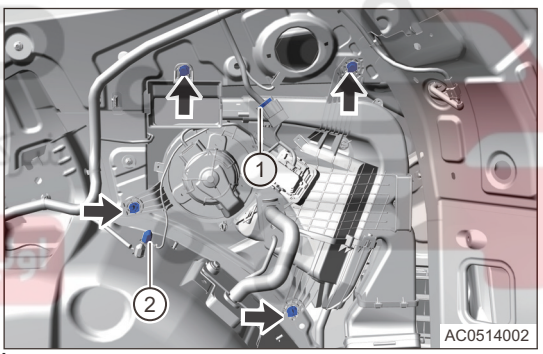
- Special service equipment for R134a refrigerant must be used to recover/charge refrigerant.
- Be careful not to damage hoses during removal and installation.
- Always keep work area in good ventilation.
- Disconnected A/C line and connecting part should be sealed to prevent foreign matter from entering.

1. Recover the refrigerant from A/C system (See page 25-51).
2. Turn off all electrical equipment and the ENGINE START STOP switch.
3. Disconnect the negative battery cable.
4. Remove the driver airbag (See page 26-53).
5. Remove the C-pillar lower protector (See page 46-17).
6. Remove the C-pillar upper protector (See page 46-19).
7. Remove the transition line (See page 25-63).
8. Remove the rear expansion valve.
9. Remove the rear blower assembly (See page 25-57).
10. Remove the rear speed regulation module (See page 25-59).
11. Remove the rear HVAC assembly.

(a) Disconnect the rear A/C wire harness connector (1), remove the ground fixing nut (2).

Tightening torque

9 ± 1.5 N·m



(b) Remove 4 fixing nuts (arrow) from rear evaporator tank.

Tightening torque

9 ± 1.5 N·m

(c) Disengage the drain pipe. Carefully take off the rear HVAC assembly from interior.

Installation

1. Installation is in the reverse order of removal.

Rear Evaporator Tank Assembly

Removal

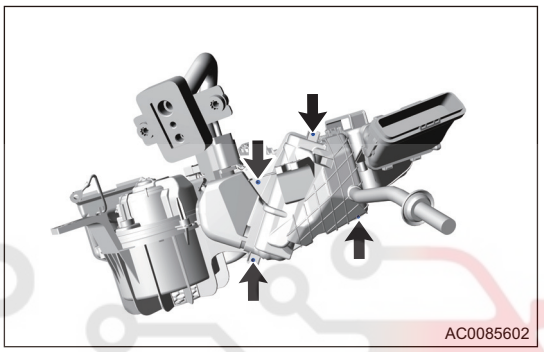
WARNING

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 work area in good ventilation.
- Disconnected A/C line and connecting part should be sealed to prevent foreign matter from entering.

1. Recover the refrigerant from A/C system (See page 25-51).
2. Turn off all electrical equipment and the ENGINE START STOP switch.
3. Disconnect the negative battery cable.
4. Remove the rear HVAC assembly (See page 46-17).
5. Remove the rear evaporator tank assembly.
   (a) Remove 4 fixing screws (arrow) from rear evaporator tank case.

   Tightening torque
   2.5 ± 0.5 N·m



Installation

1. Installation is in the reverse order of removal.

A/C High/Low Pressure Coaxial Line

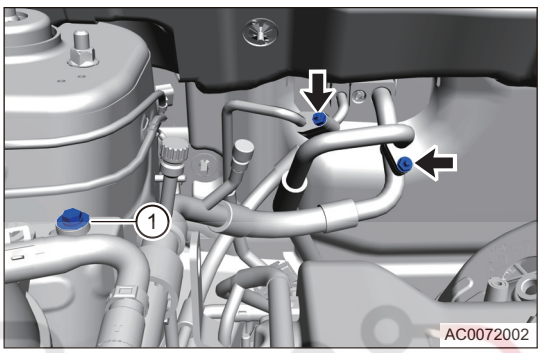
Removal

Warning / Caution / Hint:

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

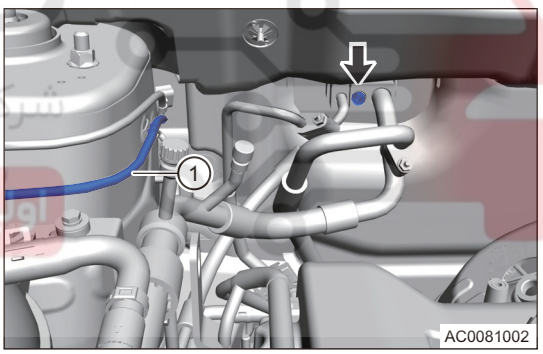
1. Recover the refrigerant from A/C system (See page 25-51).
2. Turn off all electrical equipment and the ENGINE START STOP switch.
3. Disconnect the negative battery cable.
4. Remove the front bumper assembly (See page 45-11).
5. Remove the A/C high/low pressure coaxial line.
   (a) Remove the A/C high/low pressure line fixing bolt (1).
   (b) Remove 2 fixing nuts from rear evaporator high/low pressure pipe, and detach the rear evaporator high/low pressure pipe.

   Tightening torque
   9 ± 1.5 N·m



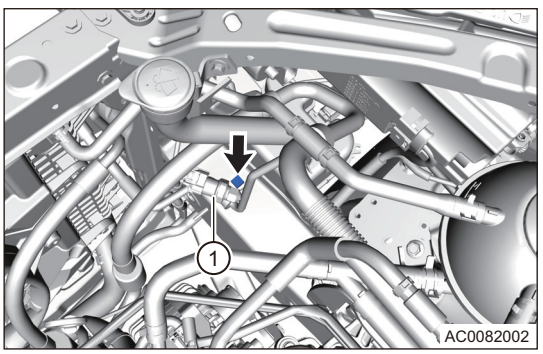
   (c) Remove the fixing bolt (arrow) between A/C high/low pressure line and expansion valve, and disengage the A/C high/low pressure line.

   Tightening torque
   9 ± 1.5 N·m



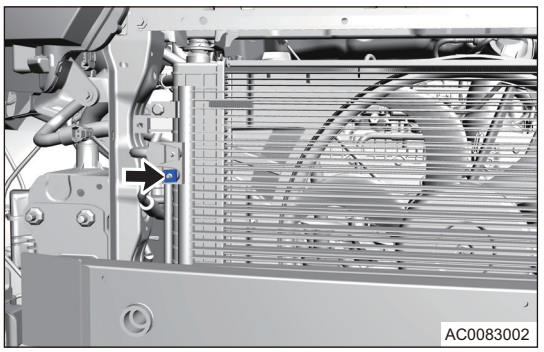
   (d) Disconnect the A/C pressure switch connector (1), and remove the coupling bolt (arrow) between A/C high pressure line fixing bracket and body.

   Tightening torque
   9 ± 1.5 N·m



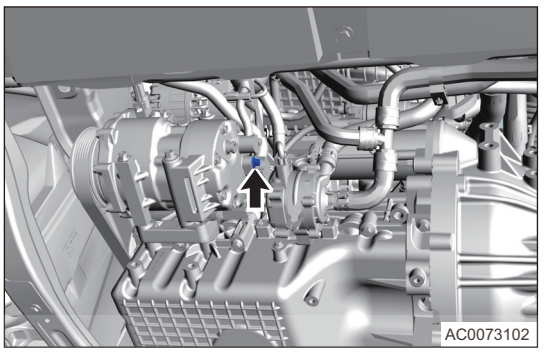
(e) Remove 1 fixing nut (arrow) between A/C coaxial line assembly and condenser assembly.

Tightening torque
9 ± 1.5 N·m


AC0083002

(f) Remove 1 fixing nut (arrow) between A/C coaxial line assembly and A/C compressor assembly.

Tightening torque
25 ± 3 N·m


AC0073102

(g) Remove the A/C high/low pressure coaxial line.

Installation

1. Installation is in the reverse order of removal.

Caution:

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

Compressor to Condenser Line Assembly

Removal

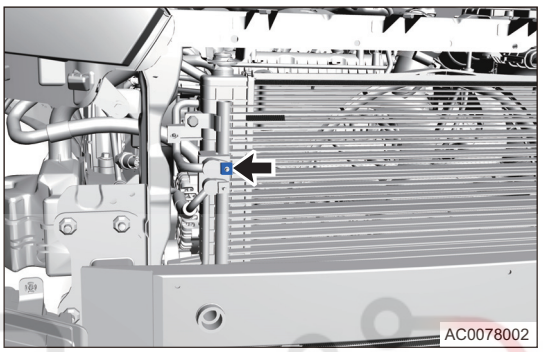
Warning / Caution / Hint:

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

1. Recover the refrigerant from A/C system (See page 25-51).
2. Turn off all electrical equipment and the ENGINE START STOP switch.
3. Disconnect the negative battery cable.
4. Remove the front bumper assembly (See page 45-11).
5. Remove the compressor to condenser line assembly.

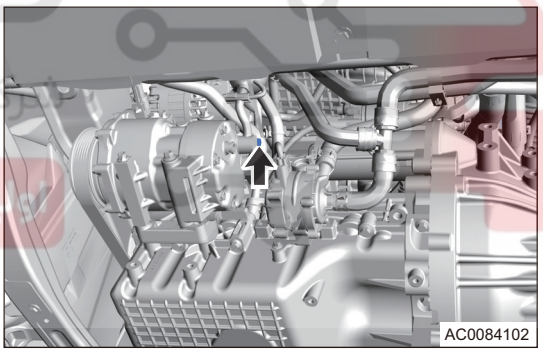
(a) Remove the fixing nut (arrow) from compressor to condenser line assembly.

Tightening torque
9 ± 1.5 N·m



(b) Remove the fixing bolt (arrow) between compressor to condenser line assembly and compressor assembly, and disengage the compressor to condenser line assembly from compressor assembly.

Tightening torque
25 ± 3 N·m



(c) Remove the compressor to condenser line assembly.

Installation

1. Installation is in the reverse order of removal.

Caution:

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

Rear Evaporator to Compressor Line Assembly I & Condenser to Rear Evaporator Line Assembly I

Removal

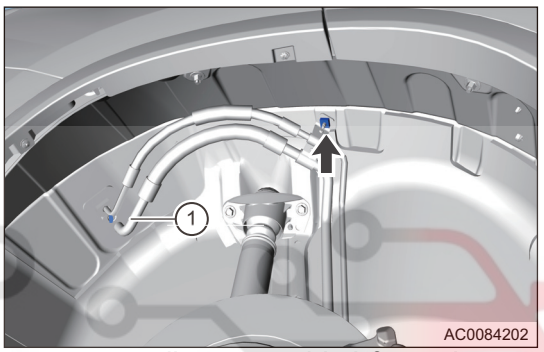
Warning / Caution / Hint:

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

1. Recover the refrigerant from A/C system (See page 25-51).
2. Turn off all electrical equipment and the ENGINE START STOP switch.
3. Disconnect the negative battery cable.
4. Remove the right rear wheel fender apron assembly.
5. Remove the rear evaporator to compressor line assembly I & condenser to rear evaporator line assembly I.

(a) Remove the fixing nut (arrow) between rear evaporator to compressor line assembly I and condenser to rear evaporator line assembly I.

Tightening torque
9 ± 1.5 N·m



(b) Remove the fixing bolt (1) between rear evaporator to compressor line assembly I & condenser to rear evaporator line assembly I and rear expansion valve.

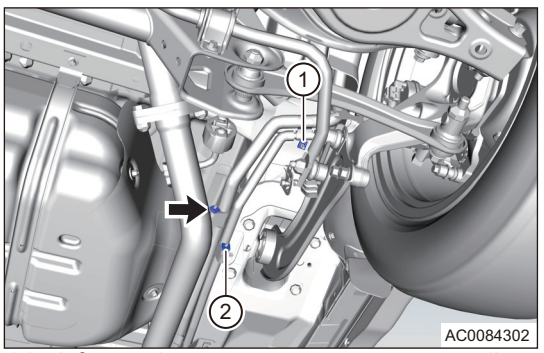
Tightening torque
9 ± 1.5 N·m

(c) Remove the coupling nut (arrow) between rear evaporator to compressor line assembly I and rear evaporator to compressor line assembly II.

(d) Remove the coupling nut (2) between condenser to rear evaporator line assembly I and condenser to rear evaporator line assembly II.

(e) Remove the fixing nut (1) from rear evaporator to compressor line assembly I.

Tightening torque
9 ± 1.5 N·m



(f) Remove the rear evaporator to compressor line assembly I & condenser to rear evaporator line assembly I.

Installation

1. Installation is in the reverse order of removal.

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

Rear Evaporator to Compressor Line Assembly II & Condenser to Rear Evaporator Line Assembly II

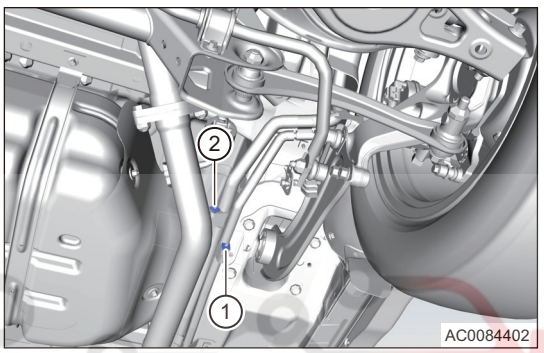
Removal

Warning / Caution / Hint:

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

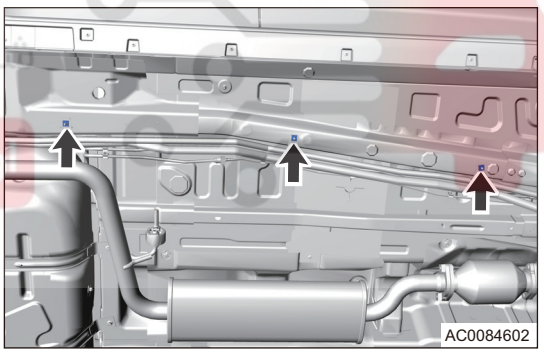
1. Recover the refrigerant from A/C system (See page 25-51).
2. Turn off all electrical equipment and the ENGINE START STOP switch.
3. Disconnect the negative battery cable.
4. Remove the rear evaporator to compressor line assembly II & condenser to rear evaporator line assembly II.
   (a) Remove the coupling nut (1) between condenser to rear evaporator line assembly I and condenser to rear evaporator line assembly II.
   (b) Remove the coupling nut (2) between rear evaporator to compressor line assembly I and rear evaporator to compressor line assembly II.

   Tightening torque
   9 ± 1.5 N·m



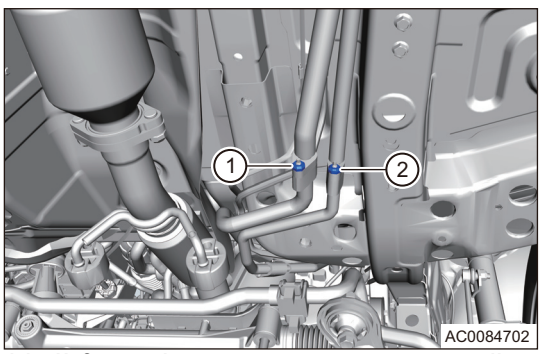
   (c) Remove the 3 fixing nuts (arrow) between rear evaporator to compressor line assembly II and condenser to rear evaporator line assembly II.

   Tightening torque
   9 ± 1.5 N·m



   (d) Remove the 1 coupling nut (1) between rear evaporator to compressor line assembly II and condenser to rear evaporator line assembly. Remove the 1 coupling nut (2) between condenser to rear evaporator line assembly II and condenser to rear evaporator line assembly.

   Tightening torque
   9 ± 1.5 N·m



   (e) Remove the rear evaporator to compressor line assembly II & condenser to rear evaporator line assembly II.

Installation

1. Installation is in the reverse order of removal.

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

Condenser to Rear Evaporator Line Assembly & Compressor to Condenser Line Assembly

Removal

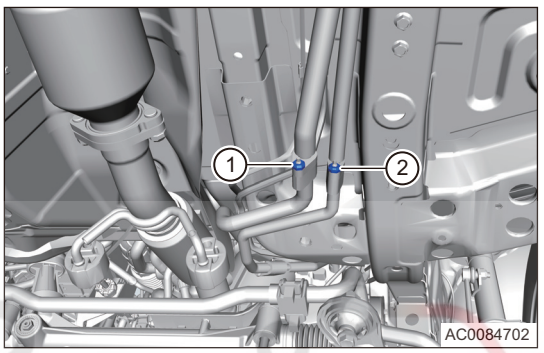
Warning / Caution / Hint:

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

1. Recover the refrigerant from A/C system (See page 25-51).
2. Turn off all electrical equipment and the ENGINE START STOP switch.
3. Disconnect the negative battery cable.
4. Remove the condenser to rear evaporator line assembly & compressor to condenser line assembly.

(a) Remove the 1 coupling nut (1) between rear evaporator to compressor line assembly II and condenser to rear evaporator line assembly.
Remove the 1 coupling nut (2) between condenser to rear evaporator line assembly II and condenser to rear evaporator line assembly.

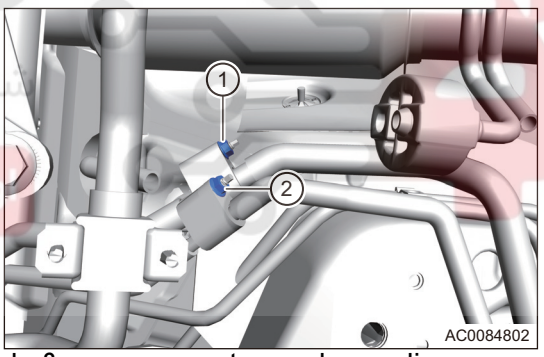
Tightening torque
9 ± 1.5 N·m



(b) Remove the coupling nut (1) between compressor to condenser line assembly and rear evaporator to compressor line assembly III.

(c) Remove the coupling nut (2) between condenser to rear evaporator line assembly and condenser to rear evaporator line assembly III.

Tightening torque
9 ± 1.5 N·m



(d) Remove the condenser to rear evaporator line assembly & compressor to condenser line assembly.

Installation

1. Installation is in the reverse order of removal.

Caution:

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

Condenser to Rear Evaporator Line Assembly III & Rear Evaporator to Compressor Line Assembly III

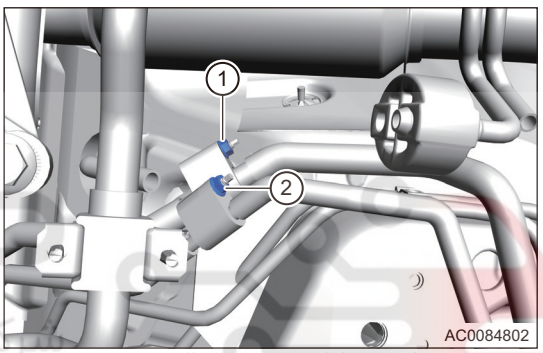
Removal

Warning / Caution / Hint:

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

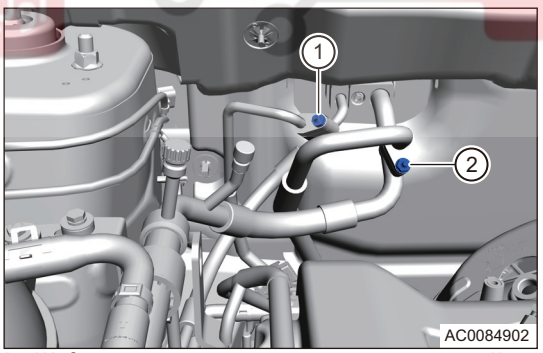
1. Recover the refrigerant from A/C system (See page 25-51).
2. Turn off all electrical equipment and the ENGINE START STOP switch.
3. Disconnect the negative battery cable.
4. Remove the condenser to rear evaporator line assembly III & rear evaporator to compressor line assembly III.
   (a) Remove the coupling nut (1) between compressor to condenser line assembly and rear evaporator to compressor line assembly III.
   (b) Remove the coupling nut (2) between condenser to rear evaporator line assembly and condenser to rear evaporator line assembly III.

   Tightening torque
   9 ± 1.5 N·m



   (c) Remove the coupling nut (1) between condenser to rear evaporator line assembly and condenser to rear evaporator line assembly III.
   (d) Remove the coupling nut (2) between compressor to condenser line assembly and rear evaporator to compressor line assembly III.

   Tightening torque
   9 ± 1.5 N·m



   (e) Remove the condenser to rear evaporator line assembly III & rear evaporator to compressor line assembly III.

Installation

1. Installation is in the reverse order of removal.

   Caution:

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

Compressor Assembly

Removal

Warning / Caution / Hint:

Caution:

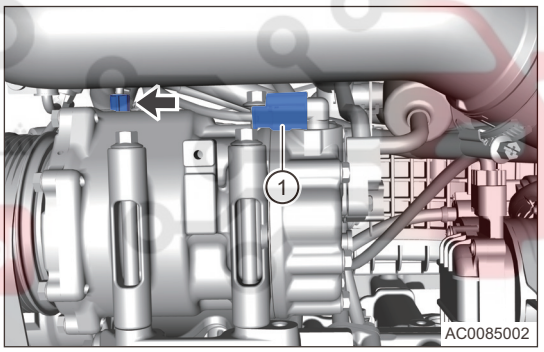
- Be sure to follow safety precautions before performing this procedure. Failure to do so may result in serious personal injury or even death.

Warning:

- Special service equipment for R134a refrigerant must be used to recover/charge refrigerant.
- Always keep work area in good ventilation.
- Disconnected A/C line and connecting part should be sealed to prevent foreign matter from entering.
- If 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 serious damage to A/C compressor assembly after replacing.
- When replacing compressor assembly, it is necessary to measure the refrigerant oil amount removed from new A/C compressor assembly.

1. Recover the refrigerant from A/C system (See page 25-51).
2. Turn off all electrical equipment and the ENGINE START STOP switch.
3. Disconnect the negative battery cable.
4. Remove the accessory drive belt (See page 05-16).
5. Remove the engine lower protector assembly (See page 45-23).
6. Remove the compressor assembly.

(a) Disconnect the compressor assembly clutch switch connector (arrow). Disconnect the compressor solenoid valve (1).



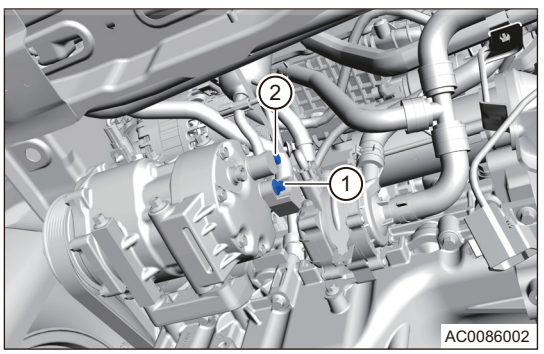
(b) Remove the high/low pressure pipe on compressor.

(1) Remove the 1 fixing bolt (1) between A/C low pressure line and compressor assembly, and disengage A/C low pressure line from compressor assembly.

Tightening torque
25 ± 3 N·m

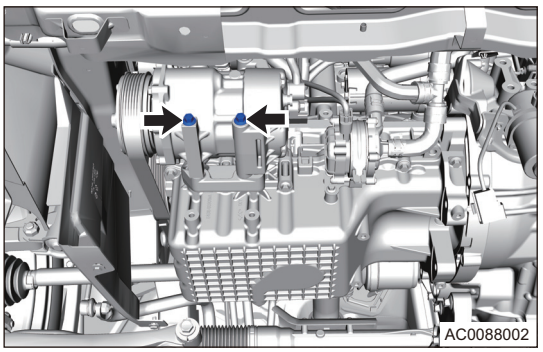
(2) Remove the 1 fixing bolt (2) between A/C high pressure line and compressor assembly, and disengage A/C high pressure line from compressor assembly.

Tightening torque
25 ± 3 N·m



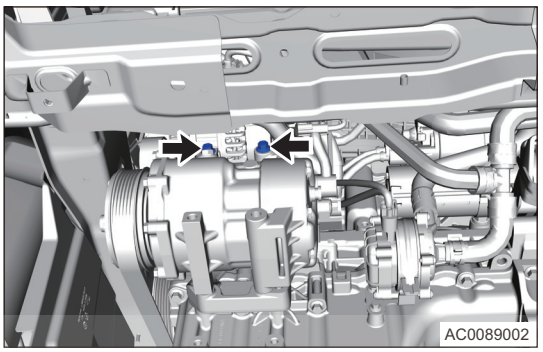
(c) Remove 2 fixing bolts (arrow) between compressor assembly and mounting bracket.

Tightening torque
25 ± 3 N·m



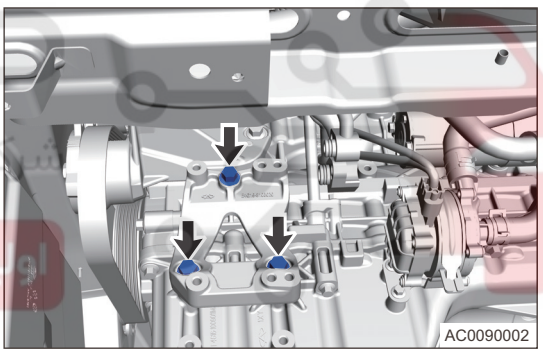
(d) Remove 2 fixing bolts (arrow) between compressor assembly and mounting bracket.

Tightening torque
25 ± 3 N·m



7. Remove the compressor assembly mounting bracket.

(a) Remove 3 fixing bolts (arrow) between compressor mounting bracket and engine.



(b) Remove the compressor assembly mounting bracket.

Installation

1. Installation is in the reverse order of removal.

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

Condenser Assembly

Removal

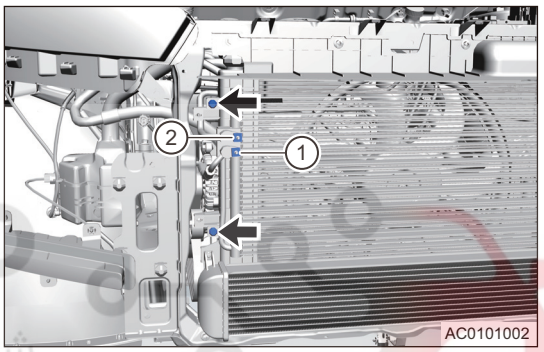
Warning / Caution / Hint:

Warning:

- Be sure to follow safety precautions before performing this procedure. Failure to do so may result in serious personal injury or even death.
- Always keep work area in good ventilation.
- Disconnected A/C line and connecting part should be sealed to prevent foreign matter from entering.

1. Recover the refrigerant from A/C system (See page 25-51).
2. Turn off all electrical equipment and the ENGINE START STOP switch.
3. Disconnect the negative battery cable.
4. Remove the front bumper assembly (See page 45-11).
5. Remove the left/right air deflector assembly (See page 45-13).
6. Remove the condenser assembly.

(a) Remove the fixing bolt between high/low pressure line and condenser (right), and disengage the high/low pressure line.



(1) Remove the fixing nuts (arrow) between A/C high pressure line I and condenser assembly, and disengage A/C high pressure line I from condenser assembly.

Tightening torque
9 ± 1.5 N·m

(2) Remove the fixing nuts (arrow) between A/C high pressure line II and condenser assembly, and disengage A/C high pressure line II from condenser assembly.

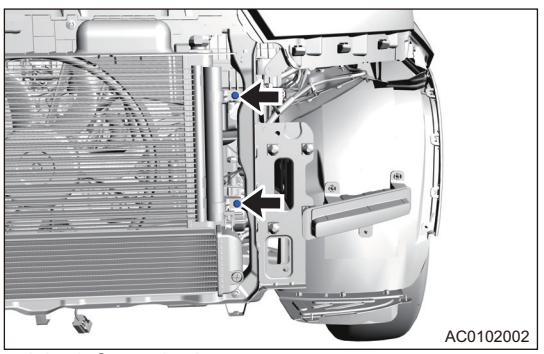
Tightening torque
9 ± 1.5 N·m

(3) Remove 2 fixing bolts (arrow) between radiator assembly and condenser assembly.

Tightening torque
5 ± 1 N·m

(b) Remove 2 fixing bolts (arrow) between radiator assembly and condenser assembly (left).

Tightening torque
5 ± 1 N·m



(c) Carefully remove the condenser assembly (w/ receiver drier) from below.

Inspection

1. Check the condenser fins.
   (a) If condenser fins are dirty, wash with water. And then dry fins with compressed air.
   Caution:
   - DO NOT damage condenser fins.

Installation

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