AIR CONDITIONING

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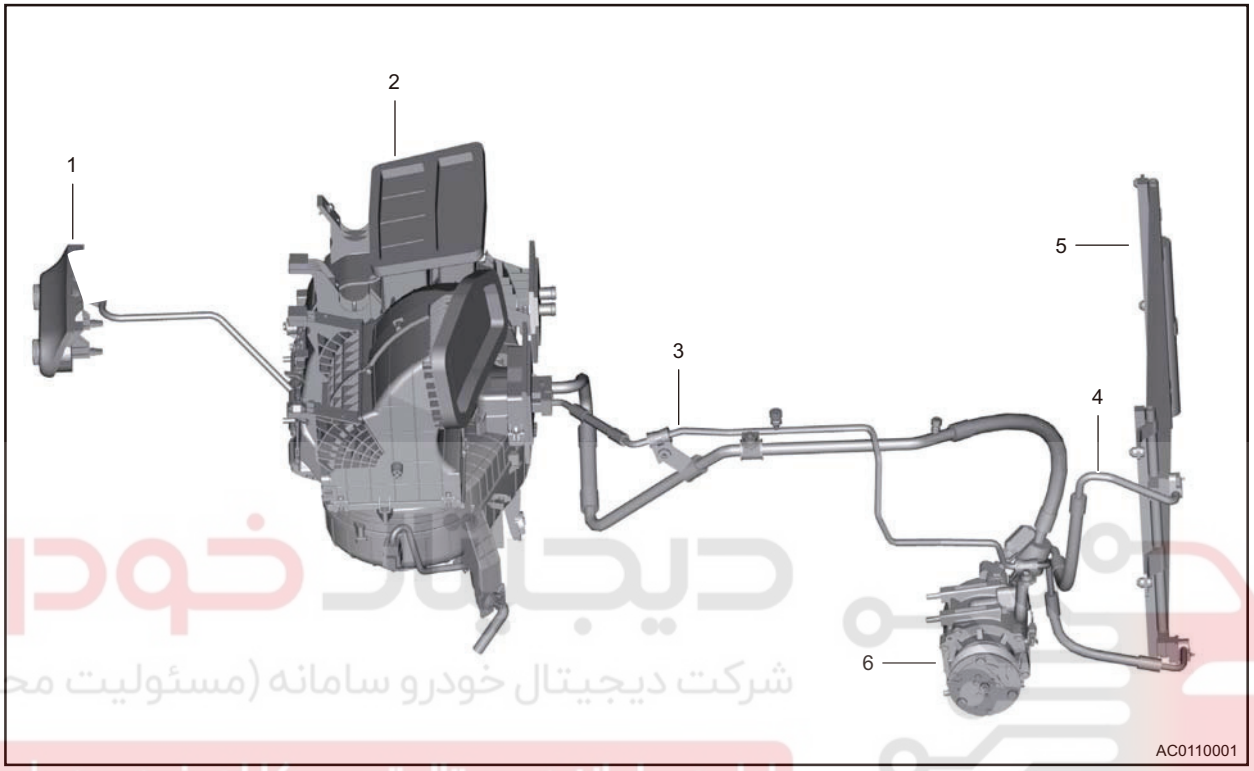
GENERAL INFORMATION

Overview

Description

Electric A/C



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

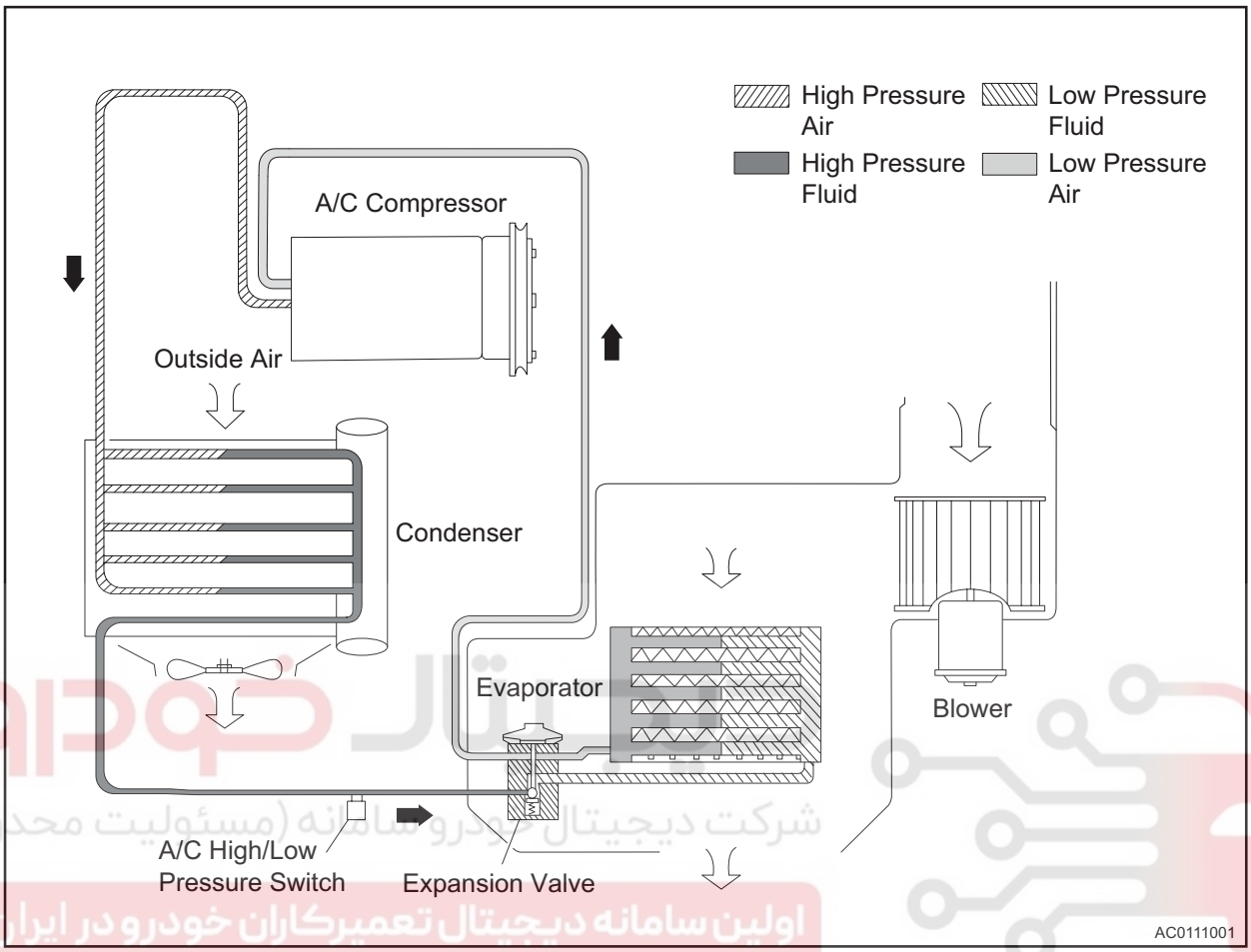
A/C system of Chery 5x-1.5 is integrated cold and warm air conditioning, which adopts constant displacement compressor + expansion valve control method, and uses environment-friendly refrigerant R134a. This system consists of 5 cooling basic components: compressor, condenser, HVAC, lines, power center control integration panel, and other accessories including pressure switch, O-ring, etc.

System composition

Air conditioning and distribution system: air mixing and distributor part of HVAC, inner/outer circulation inlet, outlet and air filter. Control system: A/C control panel assembly, mix damper motor, mode damper motor, inner/outer circulation motor, blower, blower speed regulation module, A/C pressure switch and evaporator temperature sensor. 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), expansion valve, evaporator core assembly and A/C high and low pressure line.

Operation

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. Intake air volume can be adjusted by blower speed regulation module on A/C control panel assembly. Turn on the compressor assembly by pressing A/C switch on DVD A/C interface. 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. Mode knob on DVD A/C interface is used to direct air with temperature adjusted through selected outlets.

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

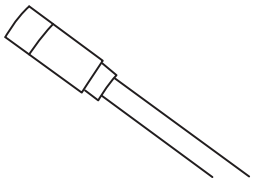
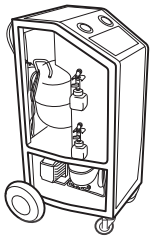
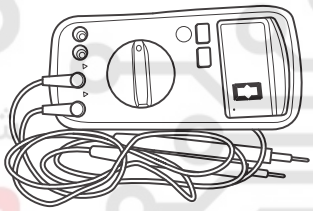
Description	Charging Capacity (g)
R134a Refrigerant	550 ± 15

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

Gas Leak Detector	 092
Refrigerant Recycling Machine	 046
Digital Multimeter	 002

Electric A/C Control Logic

Power ON Definition

1. ON button/knob
   (a) ON button/knob function:
   (1) Control air volume.
   (2) Front defrost function.
   (3) ON/OFF button on DVD A/C interface.
2. Condition after turning on (turn on again after turning off normally by OFF button)
   (a) Air volume will operate by air volume position after operation, and remaining functions will operate according to state before turning off (state will not change if mode, circulation, temperature is operated after turning off).
   (b) It enters front defrost mode, panel sends front defrost information and indicator light comes on, links AC and outer circulation function, air volume is in 4th position (manual operation first).
   (c) It will operate according to the state before turning off (state will not change if mode, circulation, temperature is operated after turning off).
   Hint:
   The above functions can be operated on A/C panel and DVD A/C interface.

Power OFF Definition

1. OFF button
   (a) OFF button, ON/OFF button on DVD A/C interface.
2. State after turning off
   (a) Outer circulation is performed forcibly, temperature is MAX. COLD, circulation and mode are displayed after turning off; temperature, circulation and mode micromotor can be operated normally, corresponding working light is displayed normally.
3. State memory after turning off
   (a) All states before turning off is memorized (if mode or circulation button is operated when turning off, last state will be memorized).
4. State when turning off abnormally
   (a) No change.
5. Power on again when turning off abnormally, A/C will operate directly or set mode again
   (a) Rear defroster will turn off , other functions will operate as state when turning A/C off, blower and compressor will delay.

Hint:
The above functions can be operated on A/C panel and DVD A/C interface.

Backlight Logical Definition

1. Backlight definition
   (a) When clearance light turns off and A/C does not operate: there is no backlight on buttons and display.
   (b) When clearance light turns off and A/C operates: there is no backlight on buttons, display works at maximum brightness.
   (c) When clearance light turns on and A/C does not operate: there is backlight on buttons and no backlight on display, backlight can be adjusted.
   (d) When clearance light turns on and A/C operates: there is backlight on buttons and display, backlight can be adjusted.

2. Turn on backlight when A/C is operating, change of operating lights and display brightness
   (a) Brightness of operating light is reduced when backlight is turned on (the degree of brightness reduction should be defined according to subjective evaluation), when backlight level continues to change, brightness no longer changes; Brightness adjustment of display is consistent with buttons.

Front Defrost Function Definition

1. Front defrost function definition
   (a) It enters front defrost state, outer circulation is performed forcibly and turn on compressor, air volume is in 4th position.
2. Press this button again in front defrost state
   (a) A/C returns to state before performing front defrost when pressing front defrost button again in front defrost state; When power turns on for the first time, after turning on by pressing front defrost button, press this button again, A/C air volume is in 1st position, other states are pre-defrosting; after turning off normally, press this button again, A/C will return to state before OFF.
   Hint:
   The above functions can be operated on A/C panel and DVD A/C interface.

Temperature Adjustment Function

1. Temperature definition
   (a) User can adjust temperature from 1-16 manually by adjusting temperature knob or audio touch screen temperature "+/-" button.
2. When temperature is adjusted to LO
   (a) MAX. COLD, other unrelated.
3. When temperature is adjusted to HI
   (a) MAX. HOT, other unrelated.
4. Limiting position adjustment
   (a) When temperature is in 1st position, rotate temperature knob counterclockwise or press temperature "-" button, temperature damper does not work, temperature gear position does not change; When temperature is in 16th position, rotate temperature knob clockwise or press temperature "+" button, temperature damper does not work, temperature position does not change.
   Hint:
   The above functions can be operated on A/C panel and DVD A/C interface.

Inner/Outer Circulation Definition

1. Circulation function
   (a) There are two states: inner circulation and outer circulation, which can be changed manually in any state (except ACC/OFF).
   Hint:
   The above functions can only be operated on DVD A/C interface.
1. Rear defrost function
   (a) Turning rear defrost on does not associate other functions of A/C, A/C does not work.
2. Rear defrost time
   (a) Rear defrost time is controlled by BCM.
3. Definition of operating indicator light
   (a) Indicator light comes on when receiving feedback signal from BCM.
   Hint:
   The above functions can only be operated on A/C panel.

Airflow Volume Adjustment Function

1. Air volume definition
   (a) There are 7 levels, rotate air volume knob counterclockwise or touch DVD touch screen air volume "-" button, air volume reduces; rotate air volume knob clockwise or touch DVD touch screen air volume "+" button, air volume increases.
2. Blower turns on
   (a) State after turning on
      (1) No matter which level the air volume is in, low voltage start is performed, voltage of blower in unit time can only increase/decrease a certain value, avoiding voltage shock and variation of air volume; After turning off, blower stops operating directly, adjust air volume knob again, A/C turns on and operates in state before turning off.
      (2) The time measured from 0 to 1 should not be greater than 2.5 s.
3. Limiting position adjustment
   (a) When air volume is in 1 level, rotate air volume knob counterclockwise or press air volume "-" button, air volume level does not change; When air volume is in 7 level, rotate air volume knob clockwise or press air volume "+" button, air volume level does not change.
   Hint:
   The above functions can be operated on A/C panel and DVD A/C interface.

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.

Mode Adjustment Function

1. Mode definition
   (a) There are 5 main modes: face, face and foot, foot, foot and defrost, defrost.
      (1) User can switch A/C air outlet direction by adjusting mode button on touch screen manually.
      (2) When any of mode button on DVD touch screen is touched, mode motor operates to corresponding position, current mode button backlight comes on, other mode backlight goes off. Touch that mode button again, A/C is still in that mode.
2. Air direction
   (a) Face mode - air flows from instrument panel front outlet.
   (b) Face and foot mode - air flows from instrument panel front outlet and floor side outlet.
   (c) Foot mode - air flows from floor side outlet.
   (d) Foot and defrost mode - air flows from foot and defrost outlet.
   (e) Front defrost mode - air flows from defrost outlet.
   Hint:
   The above functions can only be operated on DVD A/C interface.

AC Function

1. Whether feedback signal is required
   (a) Feedback signal is not required: In ON state, after pressing AC button, AC state will be displayed directly without considering external environment.
2. Sending conditions is requested by AC
   (a) Blower is turned on, AC button is valid, evaporator temperature (2 - 5°C) and external temperature are linked.
   Hint:
   The above functions can only be operated on DVD A/C interface.

System Error Repair Function

3. Fixed value in case of failure
   (a) Evaporator temperature sensor: -1°C.

DIAGNOSIS & TESTING

Diagnosis 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 12 V

Result

Proceed to
OK
NG

28

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 7**

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

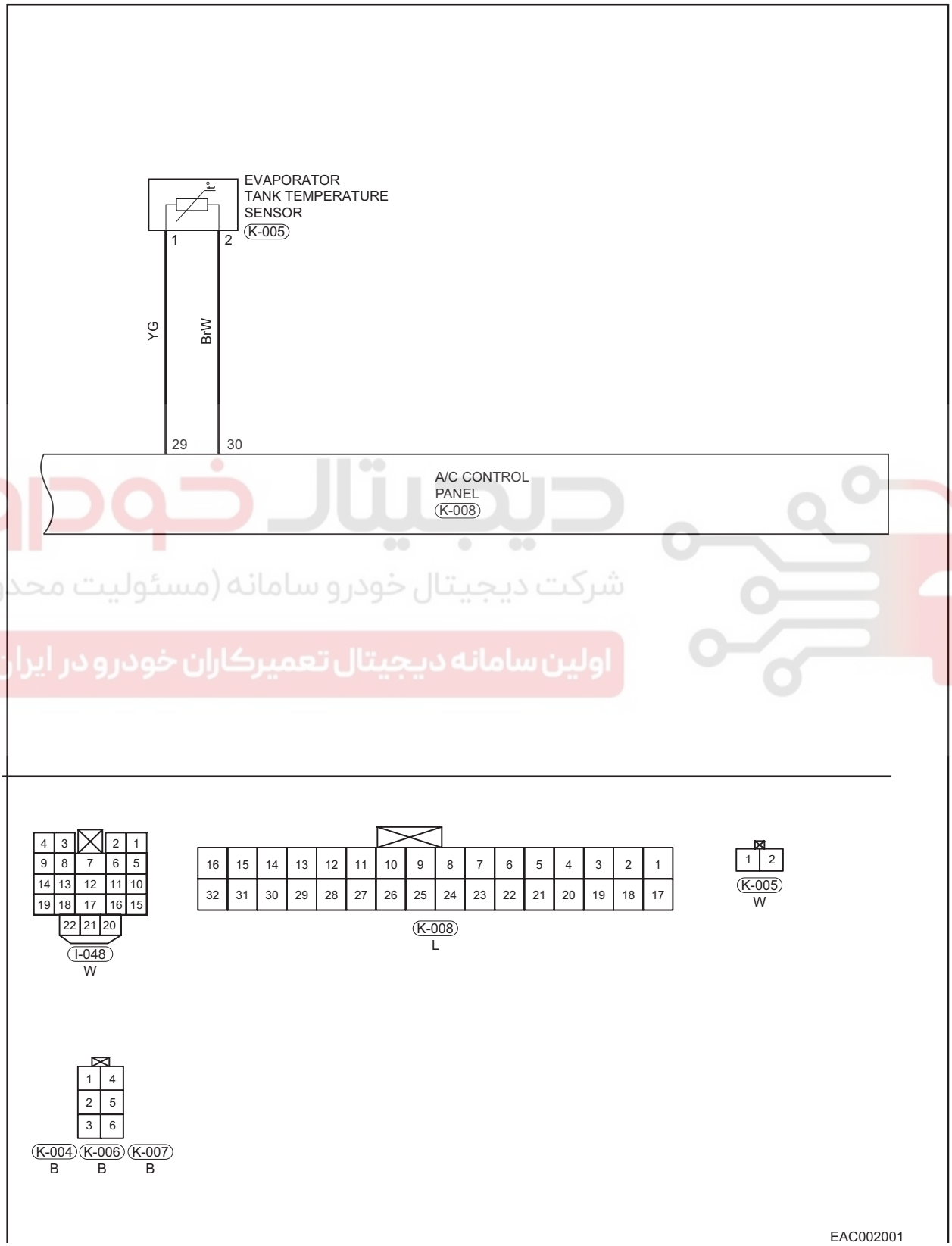
A/C System Function

Electric A/C DTC Definition:

DTC	Trouble Content
B1400_01	Evaporator Temperature Sensor Error
B1401_01	Ambient Temperature Sensor Error
B14AB_11	Mode Motor Error
B14AB_41	Intake Motor Error
B1402_01	Temperature Motor Error
B1413_88	EIPM CAN Communication Bus Off
U0140_87	Lost Communication With Body Control Module
U0100_87	Lost Communication With Engine Control System Module
U0155_87	Lost Communication With Instrument Cluster Module
U0245_87	Lost Communication With Radio Receiver Module
U0129_87	Lost Communication With BSM

DTC	B1400_01	Evaporator Temperature Sensor Error

Circuit Diagram



Description

DTC	DTC Definition	DTC Detection Condition	Possible Cause
B1400_01	Evaporator Temperature Sensor Error	ENGINE START STOP switch is in ON	• Evaporator temperature sensor • Wire harness or connector

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 temperature sensor K-005 and A/C control panel connector K-008.
(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 is DTC B1404-11.

Result

Proceed to
OK
NG

NG → **Replace evaporator tank temperature sensor**

OK ↓

3	Check wire harness (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-005 and A/C control panel connector K-008.

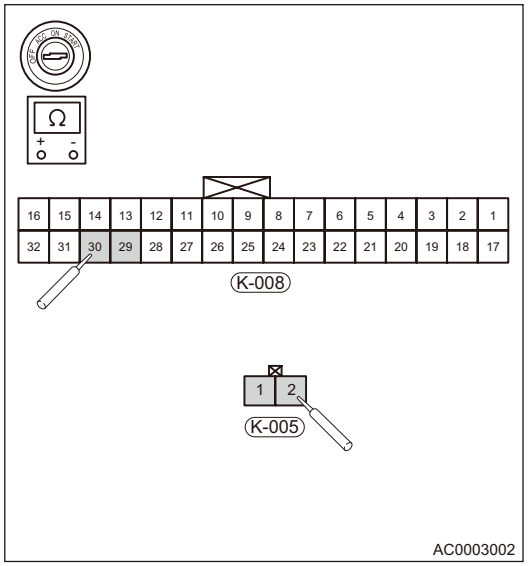
(d) Using a digital multimeter, measure the wire harness between evaporator tank temperature sensor connector K-005 and A/C control panel connector K-008 according to value(s) in table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
K-005 (2) - K-008 (30)	Always	Resistance ⩽ 1Ω
K-005 (1) - K-008 (29)		

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 the same DTCs are still output using A/C self-diagnosis.

Result

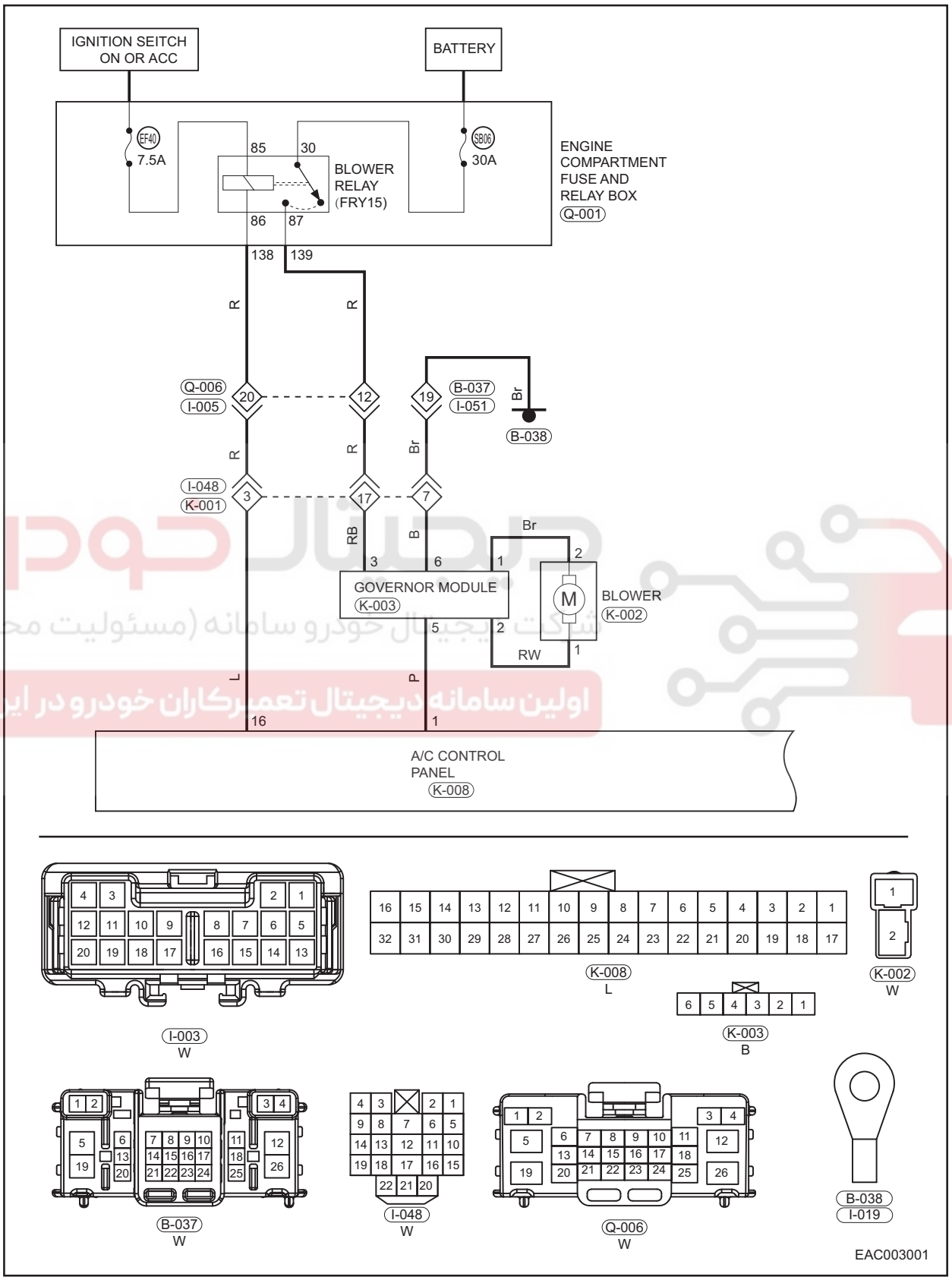
Proceed to
OK
NG

OK → **System operates normally**

NG → **Replace A/C control panel**

Blower Error (Failure of Adjustment)

Circuit Diagram



Description

Symptom	Possible Cause
Blower error (failure of adjustment)	• Blower • Blower speed regulation module • Wire harness or connector

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-002 and blower speed regulation module connector K-003.
(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 if DTC exists.

Result

Proceed to
OK
NG

NG → **Replace A/C control panel**

OK ↓

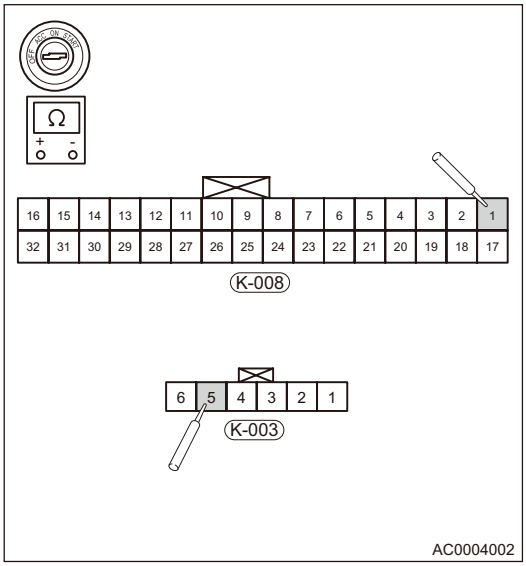
3	Check wire harness connector

(a) Turn ENGINE START STOP switch to OFF.
(b) Disconnect the negative battery cable.
(c) Disconnect the A/C control panel connector K-008 and speed module connector K-003.

(d) Using a digital multimeter, measure the wire harness between speed regulation module connector K-003 and A/C control panel connector K-008 according to value(s) in table below.

Standard Condition

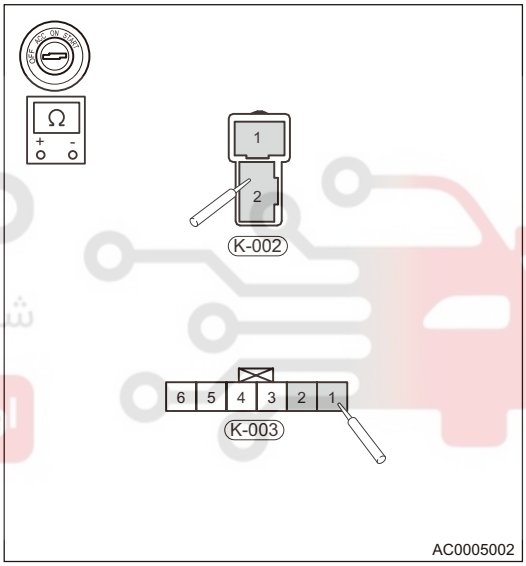
Multimeter Connection	Condition	Specified Condition
K-003 (5) - K-008 (1)	Always	Resistance ⩽ 1Ω



(e) Using a digital multimeter, measure the wire harness between blower connector K-002 and blower speed regulation module connector K-003 according to value(s) in table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
K-002 (1) - K-003 (2)	Always	Resistance ⩽ 1Ω
K-002 (2) - K-003 (1)		



Result

Proceed to
OK
NG

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

OK

4	Check the ground circuit of blower speed regulation module

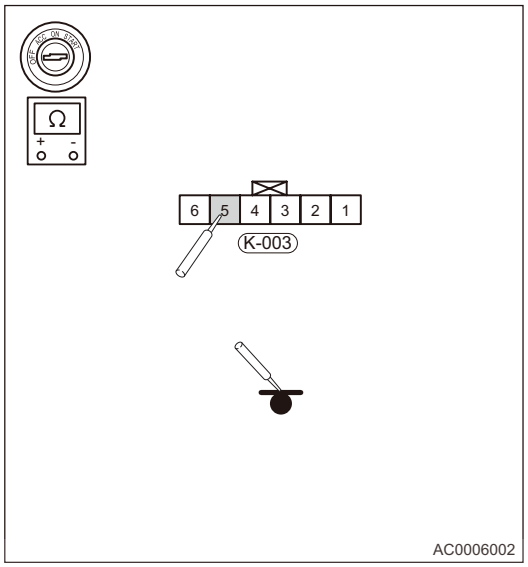
(a) Using a digital multimeter, measure the wire harness between blower speed regulation module connector K-003 and body ground according to value(s) in table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
K-003 (6) - Body ground	Always	Resistance ⩽ 1Ω

Result

Proceed to
OK
NG



NG → Repair or replace related wire harness

OK →

5	Check power circuit of blower speed regulation module

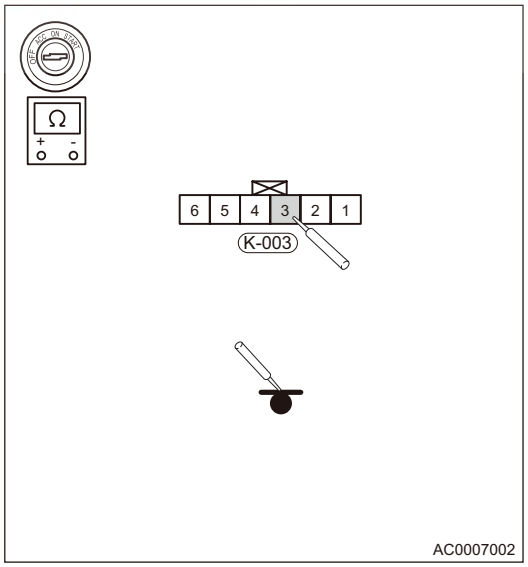
(a) Connect all connectors and disconnect A/C speed regulation module connector.
(b) Connect the negative battery cable.
(c) Turn ENGINE START STOP switch to ON, turn blower on.
(d) Using a digital multimeter, measure the voltage between terminal 3 of blower speed regulation module connector K-003 and body ground according to value(s) in table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
K-003 (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.

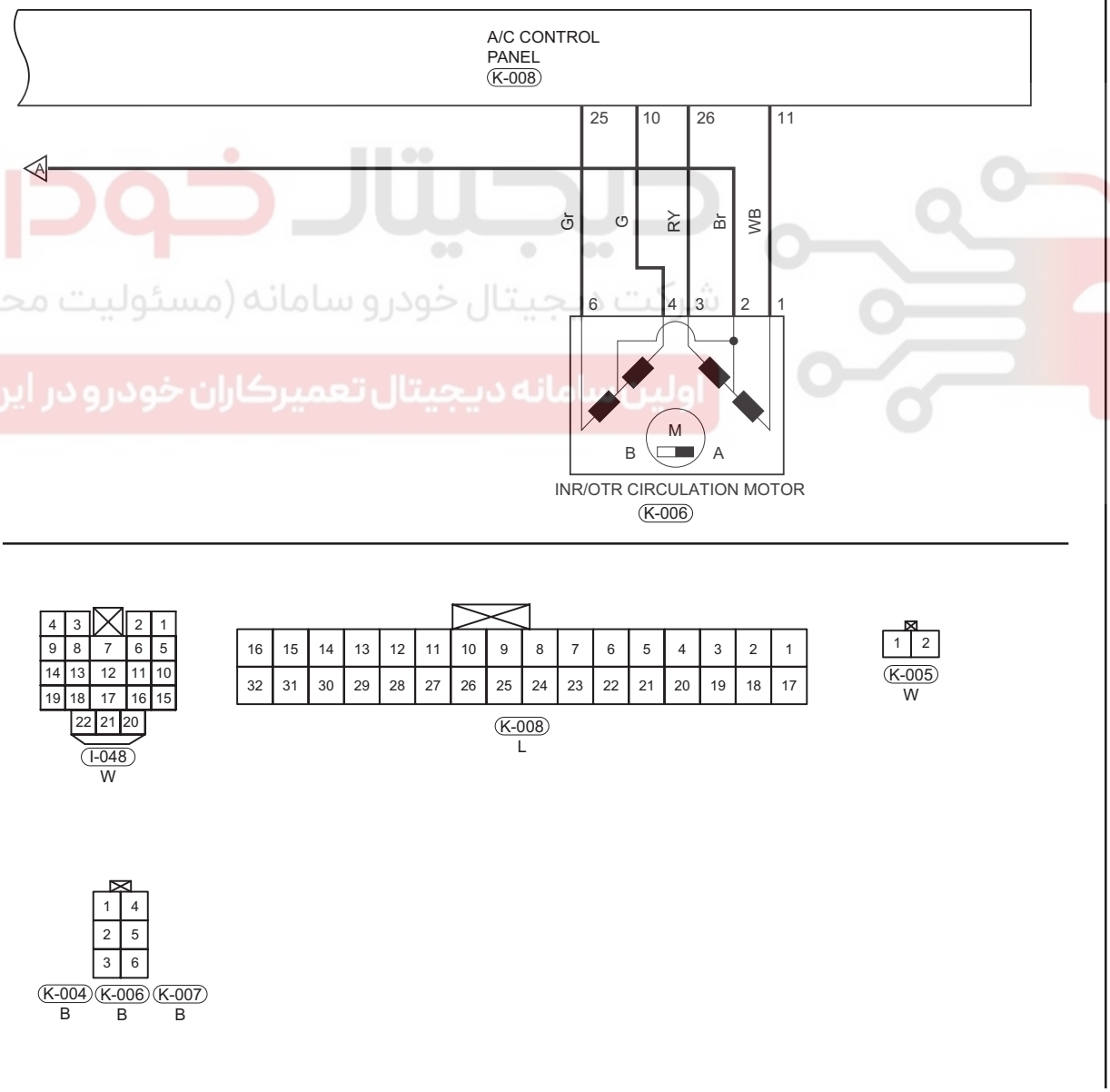
Result

Proceed to
OK
NG

OK	System operates normally
NG	Replace A/C control panel

DTC	B14AB_41	Intake Motor Error

Circuit Diagram



Description

DTC	DTC Definition	DTC Detection Condition	Possible Cause
B14AB_41	Circulation damper motor error (failure of adjustment)	ENGINE START STOP switch is in ON	• Circulation damper motor • A/C control panel • Wire harness or connector

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 circulation motor connector K-006 and A/C control panel connector K-008.
(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 circulation motor

(a) Remove the inner/outer circulation motor from malfunctioning vehicle.
(b) Install a new inner/outer circulation motor to malfunctioning vehicle.
(c) Check whether there is B1410–11.

Result

Proceed to
OK
NG

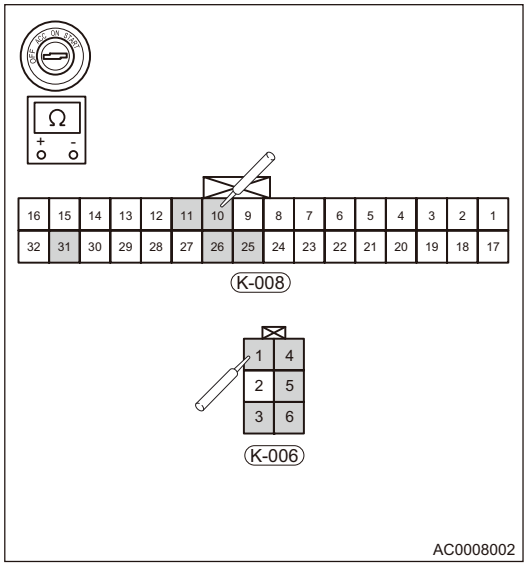
NG → **Replace inner/outer damper motor**

OK ↓

3	Check A/C control panel to inner/outer circulation motor wire harness connector

(a) Turn ENGINE START STOP switch to OFF.
(b) Disconnect the negative battery cable.
(c) Disconnect the A/C control panel connector K-008 and inner/outer circulation motor connector K-006.

(d) Using a digital multimeter, measure the wire harness between inner/outer circulation motor connector K-006 and A/C control panel connector K-008 according to value(s) in table below.



Check for Open

Multimeter Connection	Condition	Specified Condition
K-006 (1) - K-008 (11)	Always	Resistance ⩽ 1 Ω
K-006 (2) - K-008 (31)	Always	Resistance ⩽ 1 Ω
K-006 (3) - K-008 (26)	Always	Resistance ⩽ 1 Ω
K-006 (4) - K-008 (10)	Always	Resistance ⩽ 1 Ω
K-006 (6) - K-008 (25)	Always	Resistance ⩽ 1 Ω

Check for Short

Multimeter Connection	Condition	Specified Condition
K-006 (1) - Body ground	Always	Resistance ∞
K-006 (2) - Body ground	Always	Resistance ∞
K-006 (3) - Body ground	Always	Resistance ∞
K-006 (4) - Body ground	Always	Resistance ∞
K-006 (6) - Body ground	Always	Resistance ∞

Result

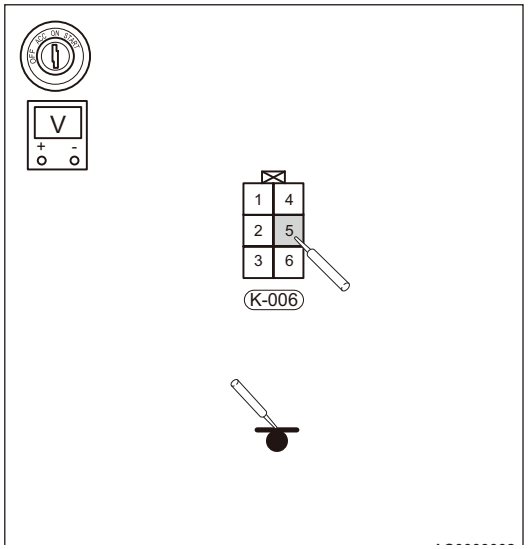
Proceed to
OK
NG

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

OK

4	Check power circuit of inner/outer circulation motor

(a) Disconnect the inner/outer circulation motor connector K-006 and A/C control panel connector K-008.
(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 circulation motor connector K-006 and body ground according to value(s) in table below.



Standard Condition

Multimeter Connection	Condition	Specified Condition
K-006 (2) - Body ground	ENGINE START STOP switch ON	Not less than 12 V

Result

Proceed to
OK
NG

NG → **Check wire harness connector fuse RF07 (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

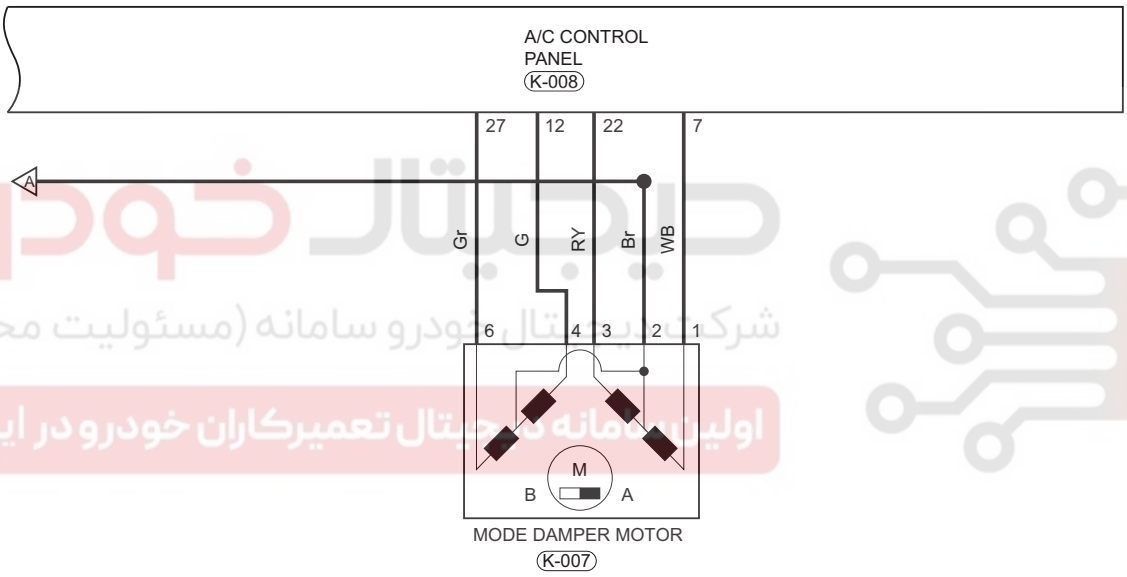
Proceed to
OK
NG

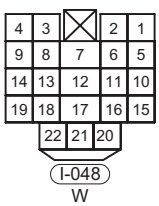
OK → **System operates normally**

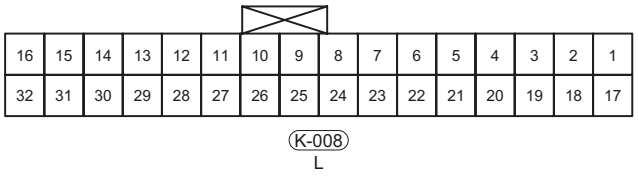
NG → **Replace A/C control panel**

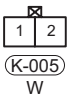
DTC	B14AB_11	Mode Motor Error

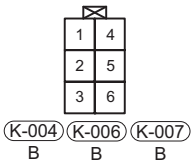
Circuit Diagram











Description

DTC	DTC Definition	DTC Detection Condition	Possible Cause
B14AB_11	Mode damper motor error (failure of adjustment)	ENGINE START STOP switch is in ON	• Mode damper motor • A/C control panel • Wire harness or connector

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 mode damper motor connector K-007 and A/C control panel connector K-008.
(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 is B14AB_11.

Result

Proceed to
OK
NG

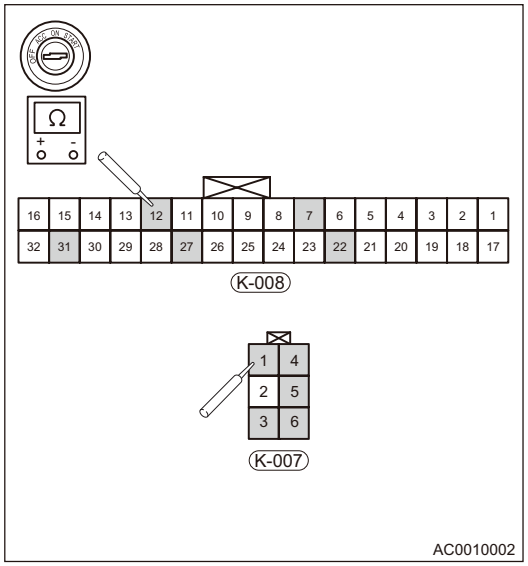
NG → **Replace mode damper motor**

OK

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

(a) Turn ENGINE START STOP switch to OFF.
(b) Disconnect the negative battery cable.
(c) Disconnect the A/C control panel connector K-008 and mode damper motor connector K-007.

(d) Using a digital multimeter, measure the wire harness between mode damper motor connector K-007 and A/C control panel connector K-008 according to value(s) in table below.



Check for Open

Multimeter Connection	Condition	Specified Condition
K-007 (1) - K-008 (7)	Always	Resistance ⩽ 1 Ω
K-007 (3) - K-008 (22)	Always	Resistance ⩽ 1 Ω
K-007 (4) - K-008 (12)	Always	Resistance ⩽ 1 Ω
K-007 (2) - K-008 (31)	Always	Resistance ⩽ 1 Ω
K-007 (6) - K-008 (27)	Always	Resistance ⩽ 1 Ω

Check for Short

Multimeter Connection	Condition	Specified Condition
K-007 (1) - Body ground	Always	Resistance ∞
K-007 (3) - Body ground	Always	Resistance ∞
K-007 (4) - Body ground	Always	Resistance ∞
K-007 (2) - Body ground	Always	Resistance ∞
K-007 (6) - Body ground	Always	Resistance ∞

Result

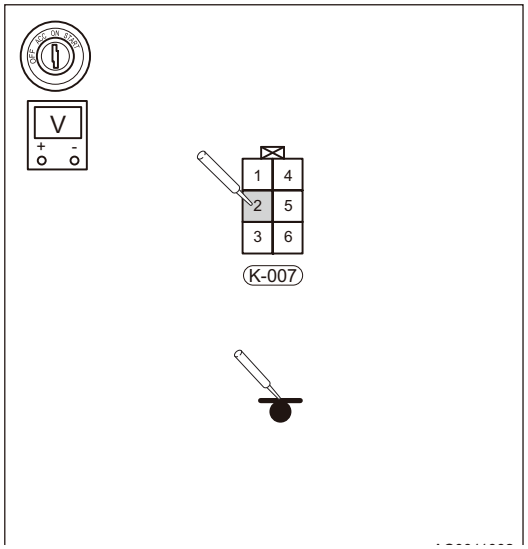
Proceed to
OK
NG

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

OK

4	Check power circuit of mode damper motor

(a) Disconnect the mode damper motor connector K-007 and A/C control panel connector K-008.
(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-007 and body ground according to value(s) in table below.



Voltage Inspection

Multimeter Connection	Condition	Specified Condition
K-007 (5) - Body ground	ENGINE START STOP switch ON	Not less than 12 V

Result

Proceed to
OK
NG

NG → **Check wire harness connector fuse RF07 (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

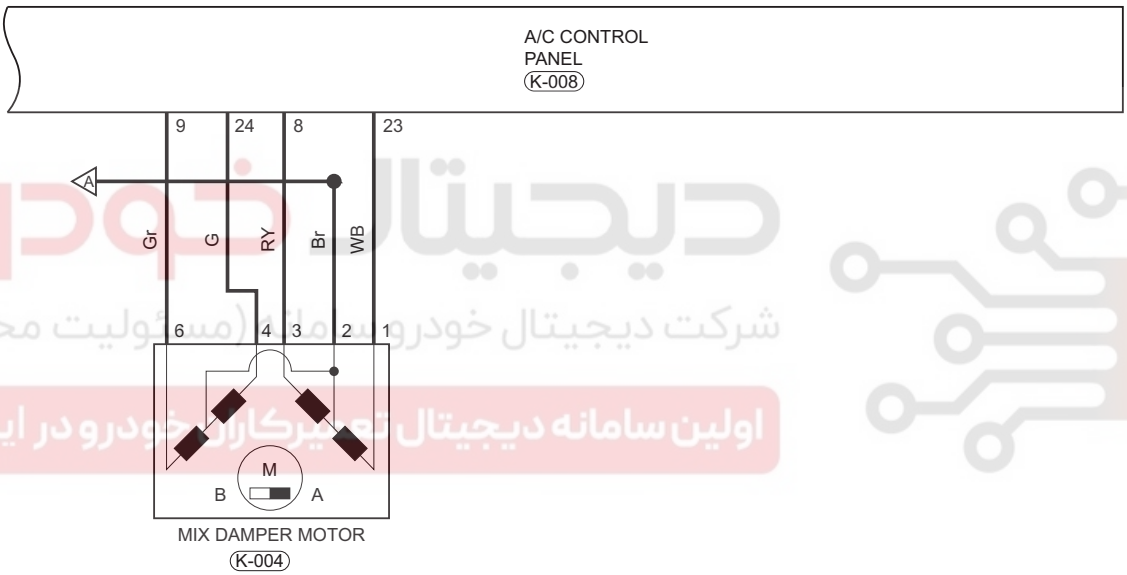
Proceed to
OK
NG

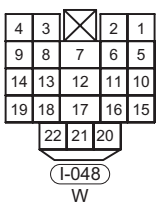
OK → **System operates normally**

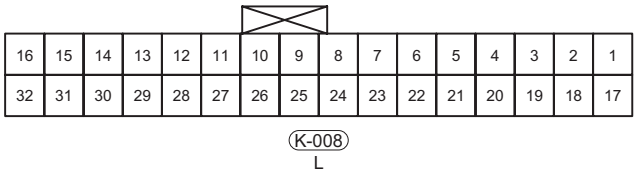
NG → **Replace A/C control panel**

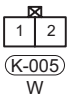
DTC	B1402_01	Temperature Motor Error

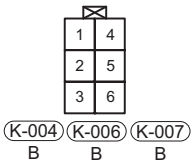
Circuit Diagram











Description

DTC	DTC Definition	DTC Detection Condition	Possible Cause
B1402_01	Temperature mix damper motor error (failure of adjustment)	ENGINE START STOP switch is in ON	• Temperature mix damper motor • A/C control panel • Wire harness or connector

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 temperature mix damper motor connector K-004 and A/C control panel connector K-008.
(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 temperature mix damper motor

(a) Remove the temperature mix damper motor from malfunctioning vehicle.
(b) Install a new temperature mix damper motor to malfunctioning vehicle.
(c) Check whether there is B1402_01.

Result

Proceed to
OK
NG

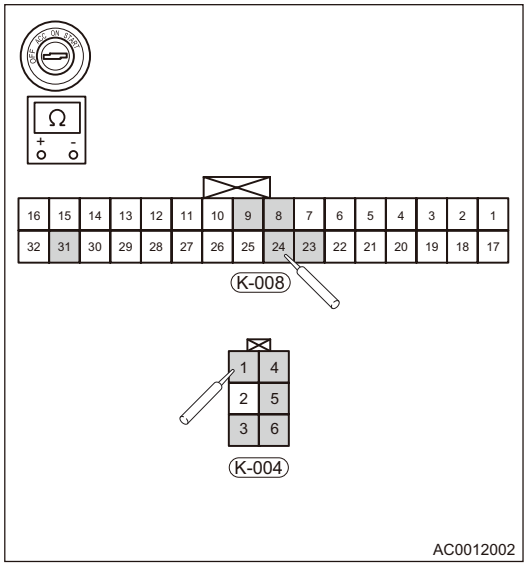
NG → **Replace the temperature mix damper motor**

OK →

3	Check A/C control panel to temperature mix damper motor wire harness connector

(a) Turn ENGINE START STOP switch to OFF.
(b) Disconnect the negative battery cable.
(c) Disconnect the A/C control panel connector K-008 and temperature mix damper motor connector K-004.

(d) Using a digital multimeter, measure the wire harness between temperature mix damper motor connector K-004 and A/C control panel connector K-008 according to value(s) in table below.



Check for Open

Multimeter Connection	Condition	Specified Condition
K-004 (1) - K-008 (23)	Always	Resistance ⩽ 1 Ω
K-004 (3) - K-008 (8)	Always	Resistance ⩽ 1 Ω
K-004 (4) - K-008 (24)	Always	Resistance ⩽ 1 Ω
K-004 (2) - K-008 (31)	Always	Resistance ⩽ 1 Ω
K-004 (6) - K-008 (9)	Always	Resistance ⩽ 1 Ω

Check for Short

Multimeter Connection	Condition	Specified Condition
K-004 (1) - Body ground	Always	Resistance ∞
K-004 (3) - Body ground	Always	Resistance ∞
K-004 (4) - Body ground	Always	Resistance ∞
K-004 (2) - Body ground	Always	Resistance ∞
K-004 (6) - Body ground	Always	Resistance ∞

Result

Proceed to
OK
NG

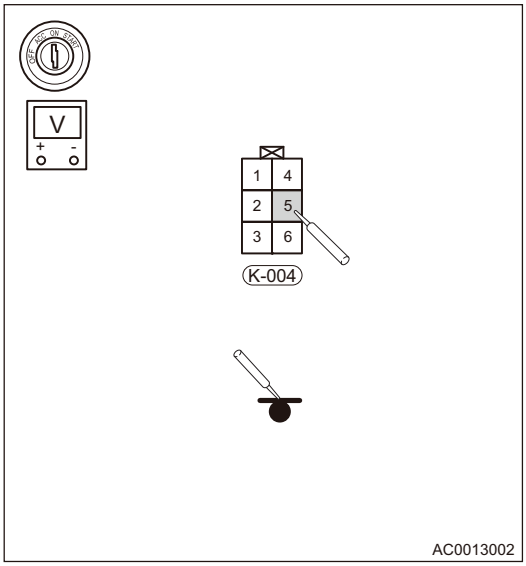
NG → **Repair or replace related wire harness**

OK →

4	**Check power circuit of mix damper motor**

(a) Disconnect the temperature mix damper motor connector K-004 and A/C control panel connector K-008.
(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 temperature mix damper motor connector K-004 and body ground according to value(s) in table below.



Standard Condition

Multimeter Connection	Condition	Specified Condition
K-004 (2) - Body ground	ENGINE START STOP switch ON	Not less than 12 V

Result

Proceed to
OK
NG

NG → **Check wire harness connector fuse RF07 (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 A/C control panel**

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.

1. General inspection
   (a) Check if there exists any oil or dust in each joint of A/C line. If this occurs, there may exist leak.
   (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.
2. Using pressure gauge set, check the refrigerant pressure.
   (a) Connect the A/C 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:

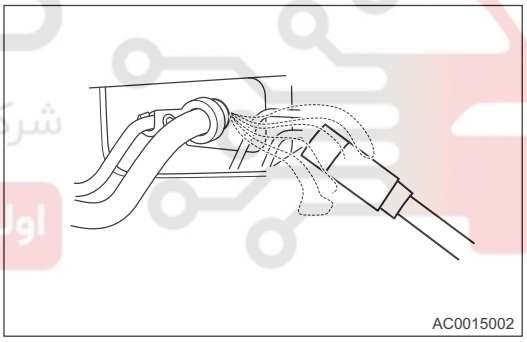
Warning:

- 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

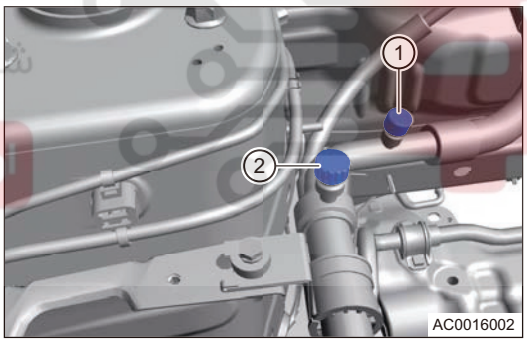
Warning / Caution / Hint:

- 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.

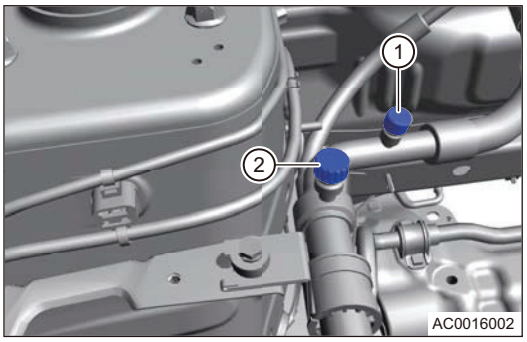
1. Open the engine hood and loosen the joint cover of A/C high/low pressure line.
2. Connect the refrigerant recycling machine to A/C high/low pressure line joint.
   (a) Connect the red connector to A/C high pressure line joint (1).
   (b) Connect the blue connector to A/C low pressure line joint (2).



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

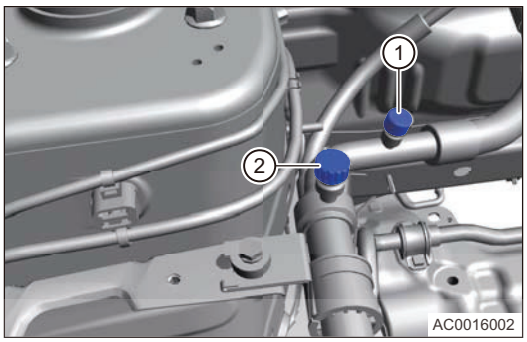
Refrigerant Oil Recovering

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.

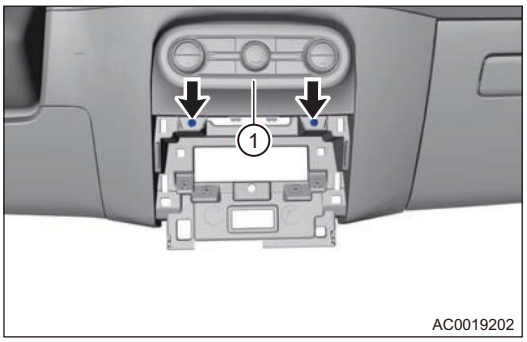
Refrigerant Oil Charging Amount Specifications

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

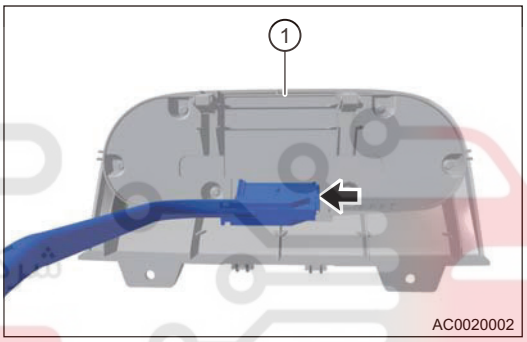
A/C Control Panel Assembly

Removal

1. Turn off all electrical equipment and the ENGINE START STOP switch.
2. Disconnect the negative battery cable.
3. Remove auxiliary fascia console storage box USB panel
4. Remove the A/C control panel.
   (a) Remove 2 fixing screws (arrow) under USB panel.
   Tightening torque
   1.5 ± 0.5 N·m



   (b) Remove A/C control panel (1) with interior crow plate.
   (c) Unplug the rear connector (arrow) of panel and remove the A/C control panel (1).



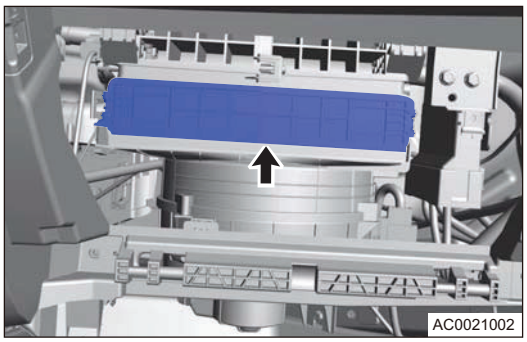
Installation

1. Installation is in the reverse order of removal.
   Caution:
   - Make sure that fixing clips on upper part of A/C control panel assembly are installed in place when installing.
   - Make sure that dowel pin on upper part of A/C control panel assembly is aligned with positioning hole of instrument panel when installing.

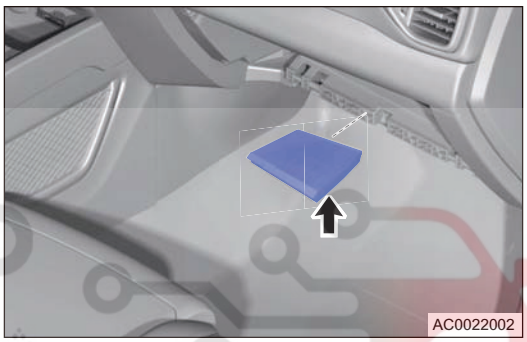
A/C Element

Removal

1. Remove the glove box assembly (See page 45-11).
2. Remove the A/C element.
   (a) Detach two clips from A/C element protector cover, and remove A/C element protector cover.



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



Installation

1. Installation is in the reverse order of removal.

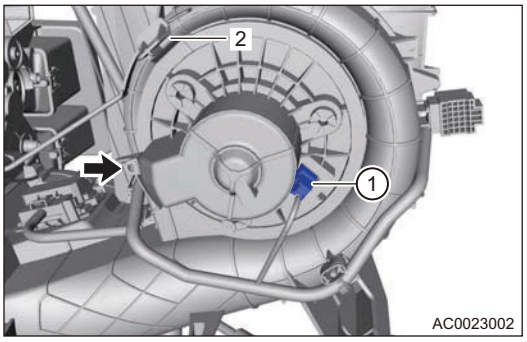
Caution:

- Be sure to check A/C element for dirt when installing. Clean it as necessary.
- If A/C element is too dirty or damaged, replace it with a new one.
- Double effect filter is equipped on automatic A/C.

Front Blower Assembly

Removal

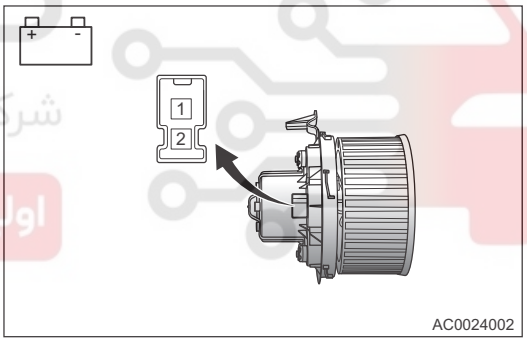
1. Turn off all electrical equipment and the ENGINE START STOP switch.
2. Disconnect the negative battery cable.
3. Remove the blower assembly.
   (a) Disconnect the blower assembly connector (1), remove 1 fixing bolt (arrow) from blower and detach clip (2).
   Tightening torque
   5 ± 1 N·m



   (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.

Blower Speed Regulation Module

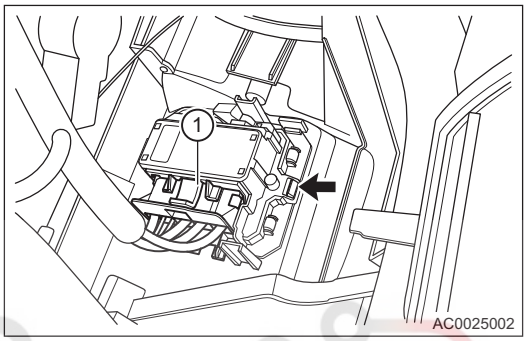
Removal

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 45-11).
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.

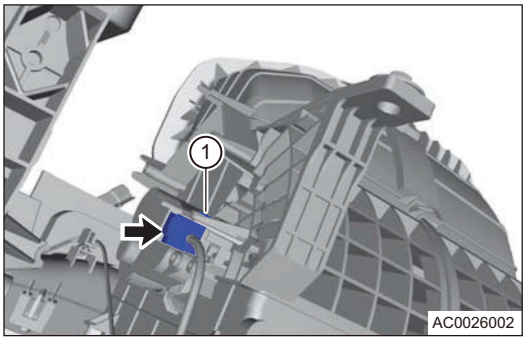
Installation

1. Installation is in the reverse order of removal.

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 45-11).
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 inner/outer circulation motor.
   (c) Rotate counterclockwise to remove the inner/outer circulation motor.



Installation

1. Installation is in the reverse order of removal.

Caution:

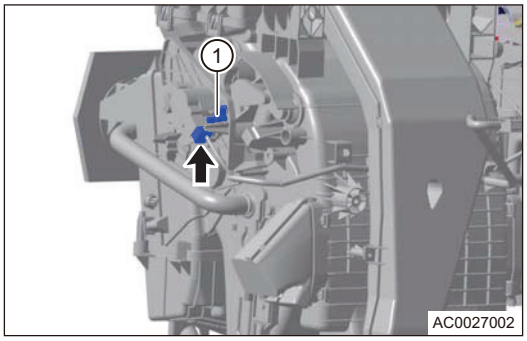
- When installing, apply a small amount of grease to contact surface of the inner/outer circulation damper motor lever and the inner/outer circulation damper set to ensure the motor operates smoothly.

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 45-11).
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.

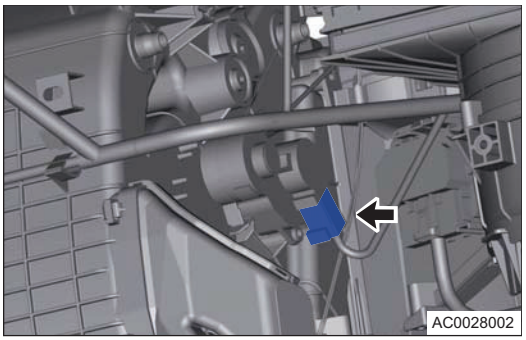
Caution:

- 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.

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 mix damper motor.
   (a) Disconnect the mix damper motor connector (arrow).
   (b) Loosen the clip, rotate counterclockwise to remove 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 mix damper motor lever and the mix damper set to ensure the motor operates smoothly.

HVAC Assembly

Removal

WARNING

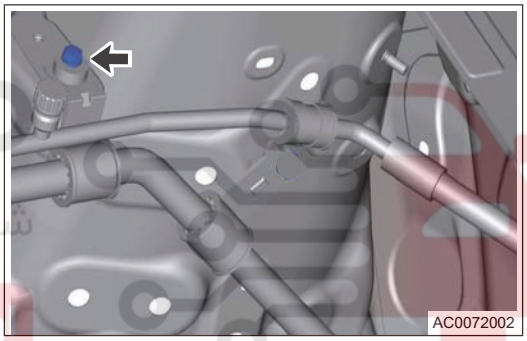
Caution:

- 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.
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 29-69).
5. Remove the steering wheel assembly (See page 26-8).
6. Remove the auxiliary fascia console assembly (See page 45-7).
7. Remove the instrument panel assembly (See page 45-11).
8. Remove the instrument panel crossmember assembly (See page 45-17).
9. Remove the HVAC assembly.

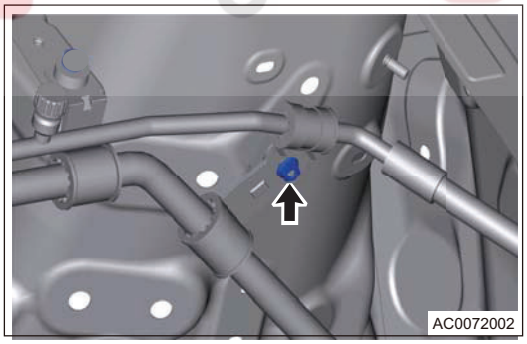
(a) Remove the A/C low pressure line fixing bolt (arrow).

Tightening torque
9 ± 1.5 N·m



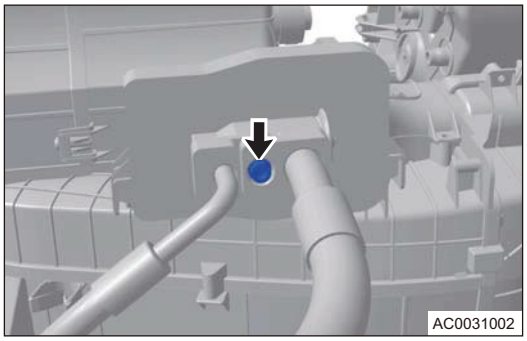
(b) Remove 1 fixing nut (arrow) from A/C high/low pressure line.

Tightening torque
9 ± 1.5 N·m



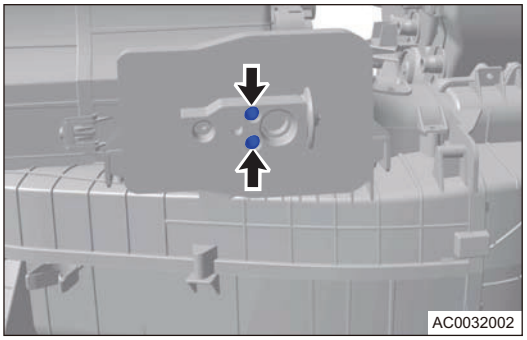
(c) Remove the fixing bolt (arrow) between A/C high/low pressure line and expansion valve, and remove the high/low pressure line.

Tightening torque
9 ± 1.5 N·m

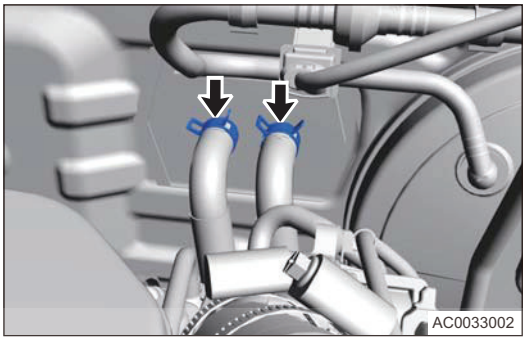


(d) Remove 2 fixing bolts (arrow) from expansion valve and remove expansion valve assembly.

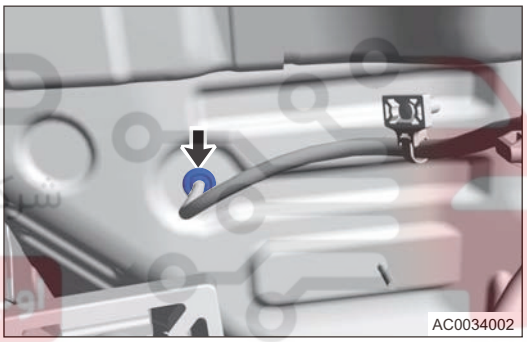
Tightening torque
9 ± 1.5 N·m



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

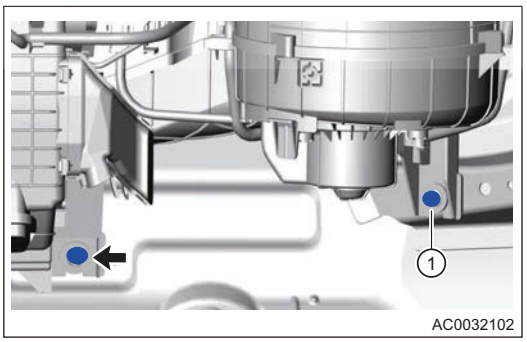


(f) Disengage the outlet hose of HVAC and fixing bush rubber (arrow) of body.



(g) Remove 1 fixing nut (arrow) and 1 fixing bolt (1) from lower part of HVAC assembly

Tightening torque
7 ± 1 N·m

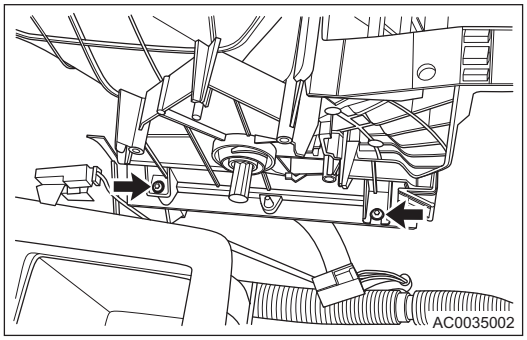


(h) Carefully take off the HVAC assembly from cabin.

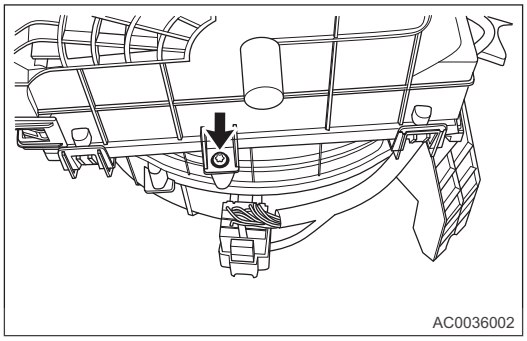
Disassembly

1. Remove the blower assembly.
2. Remove the blower speed regulation module.
3. Remove the inner/outer circulation damper motor.
4. Remove the mix damper servo motor.
5. Remove the mode damper motor.
6. Remove the A/C element assembly.
7. Remove the inner/outer damper set.

(a) Remove 2 fixing screws (arrow) from inlet air duct assembly.
Tightening torque
1.2 ± 0.2 N·m

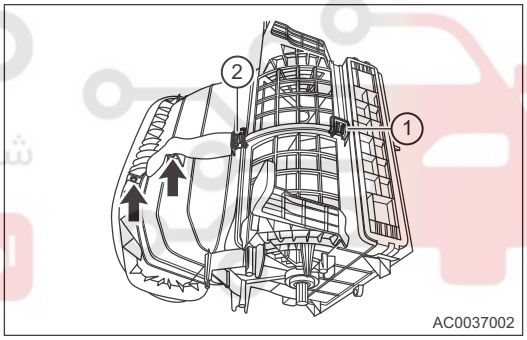


(b) Remove 1 fixing bolt (arrow) from inlet air duct assembly.
Tightening torque
21.2 ± 0.2 N·m



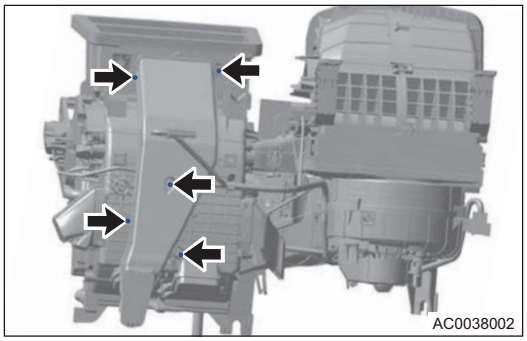
(c) Remove the inlet air duct assembly.

(d) Remove 2 fixing screws (arrow) from inner/outer damper set, disengage 2 fixing clips.
Tightening torque
21.2 ± 0.2 N·m

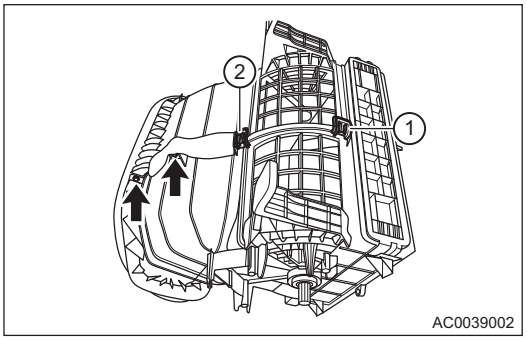


8. Remove HAVC A/C wire harness assembly

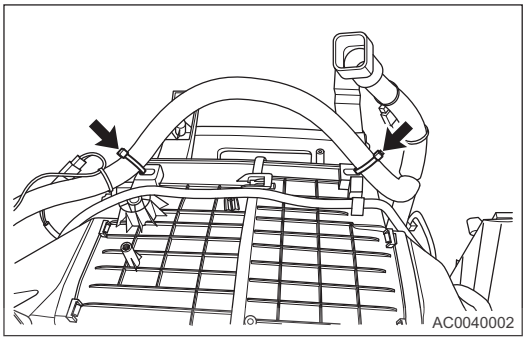
(a) Remove 5 fixing screws (arrow) from rear duct.
Tightening torque
21.2 ± 0.2 N·m



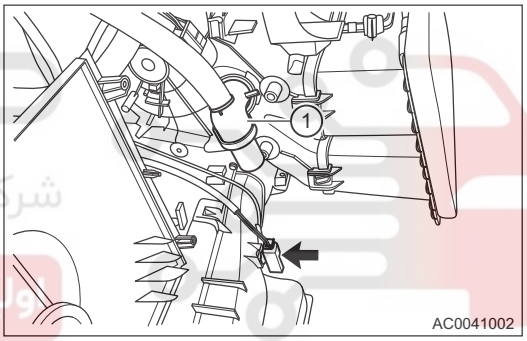
(b) Disengage 3 wire harness fixing clips (arrow).



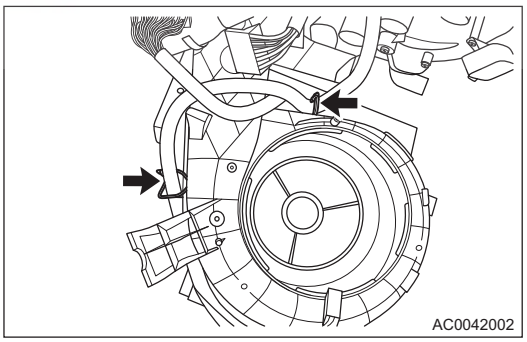
(c) Disengage 1 wire harness fixing clip (arrow).



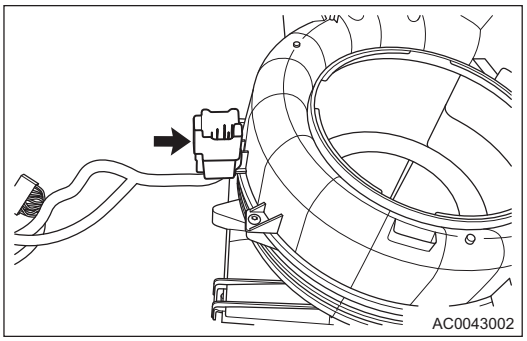
(d) Disconnect the evaporator tank temperature sensor (arrow).



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

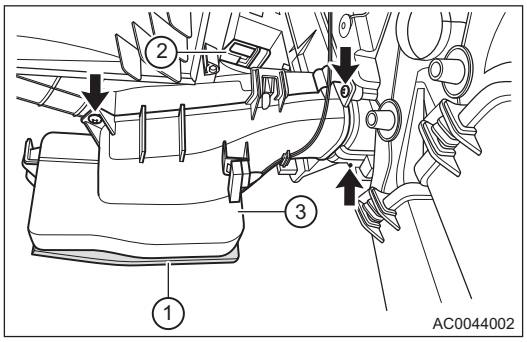


(f) Disengage the A/C wire harness connector (arrow) from HVAC.

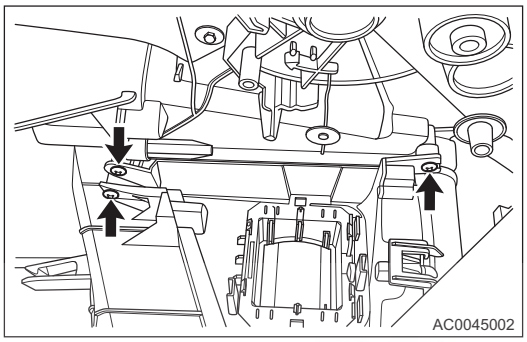


(g) Remove the HVAC A/C wire harness

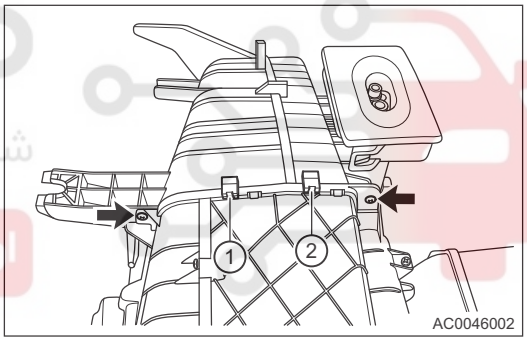
9. Remove the blower volute assembly.
   (a) Disengage the fixing clip from evaporator tank temperature sensor. Remove the sponge (1). Remove 3 fixing screws (arrow), disengage fixing clip (2) and open case (3).
   Tightening torque
   21.2 ± 0.2 N·m



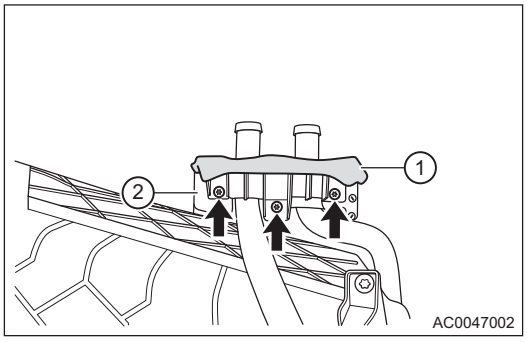
   (b) Remove 3 fixing screws (arrow).
   Tightening torque
   1.2 ± 0.2 N·m



   (c) Remove 2 fixing screws (arrow), disengage 2 fixing clips (1) and (2).
   Tightening torque
   1.2 ± 0.2 N·m

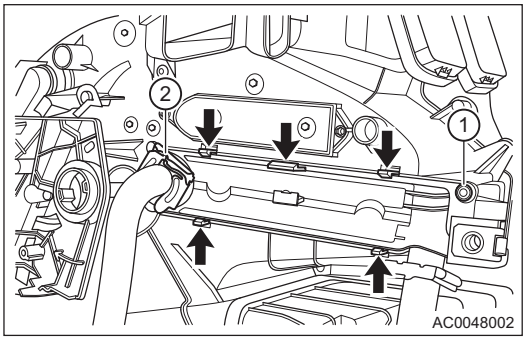


   (d) Remove the blower volute assembly.
10. Remove the heater core assembly
   (a) Remove 3 fixing screws (arrow), disengage sponge (1) and open pressing plate (2).
   Tightening torque
   1.2 ± 0.2 N·m



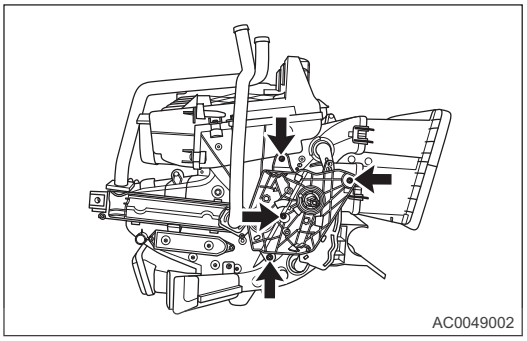
(b) Remove 2 screws (1) and (2) from heater core fixing panel, disengage 5 clips (arrow) from heater core fixing panel.

Tightening torque
1.2 ± 0.2 N·m



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

Tightening torque
1.2 ± 0.2 N·m

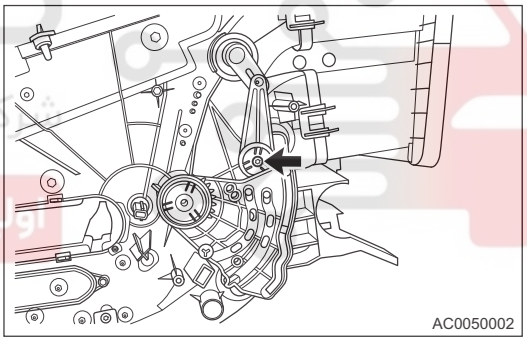


(d) Remove the heater core assembly from evaporator tank case.

11. Remove the damper drive set

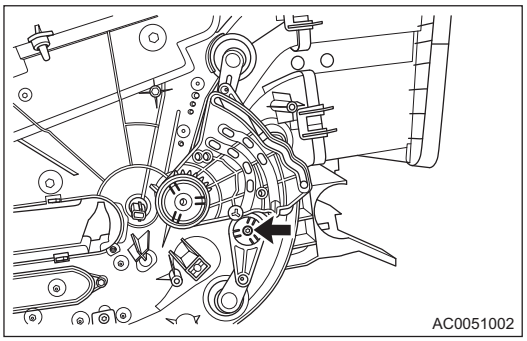
(a) Remove the fixing screw (arrow) from damper drive set.

Tightening torque
1.2 ± 0.2 N·m



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

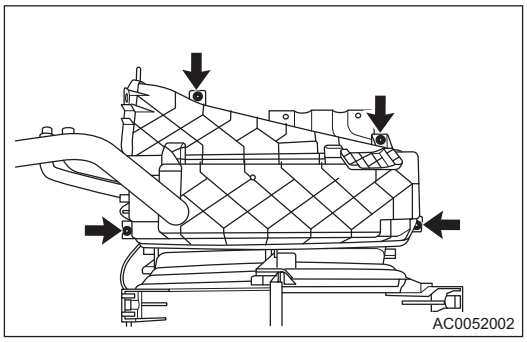
Tightening torque
1.2 ± 0.2 N·m



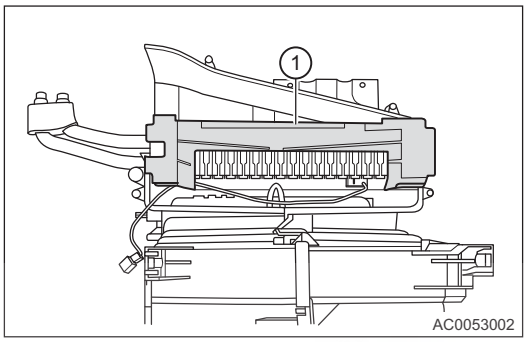
12. Remove evaporator assembly

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

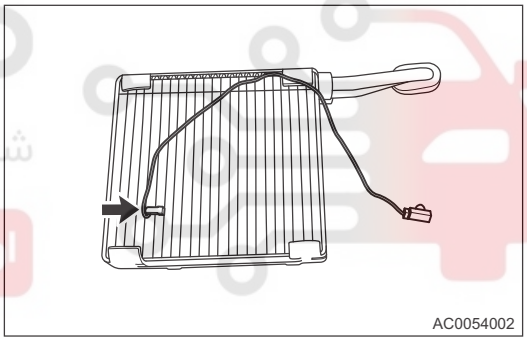
Tightening torque
1.2 ± 0.2 N·m



(b) Open the evaporator housing and remove the evaporator assembly (1).

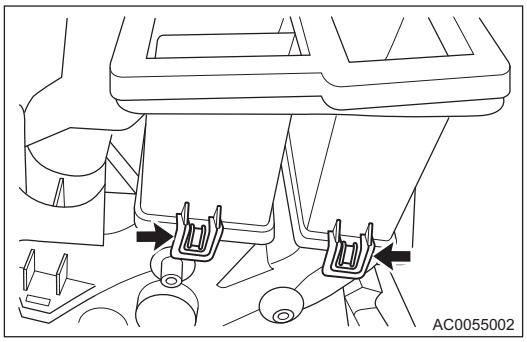


(c) Remove the evaporator tank temperature sensor (arrow) from evaporator assembly.

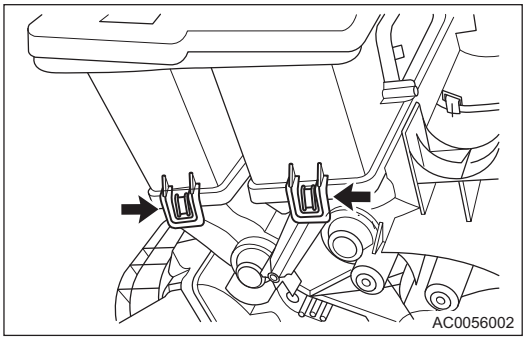


13. Remove the damper set

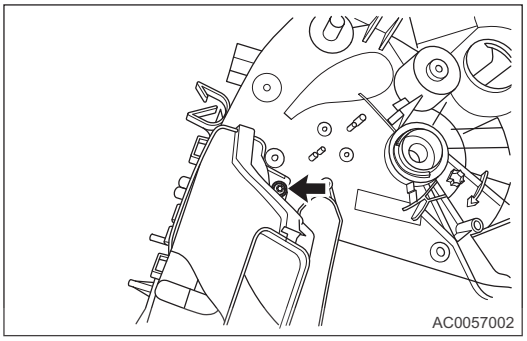
(a) Disengage 2 fixing clips (arrow) from outlet shield.



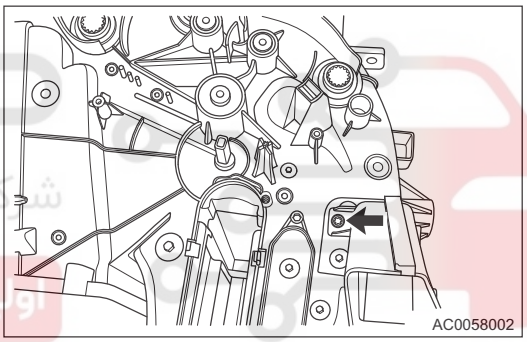
(b) Disengage the other 2 fixing clips (arrow) from outlet shield.



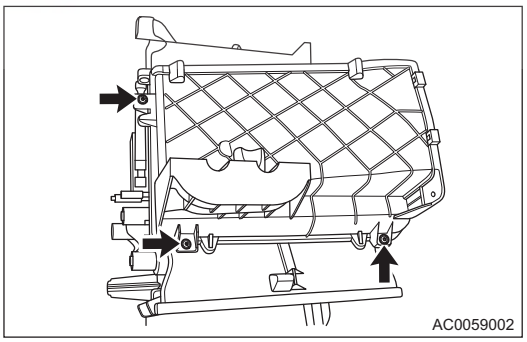
(c) Remove 1 fixing screw (arrow) and right rear outlet.
Tightening torque
1.2 ± 0.2 N·m



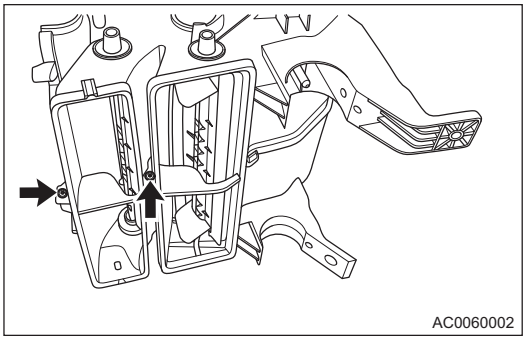
(d) Remove 1 fixing screw (arrow) and left rear outlet.
Tightening torque
1.2 ± 0.2 N·m



(e) Remove 3 fixing screws (arrow) from evaporator case.
Tightening torque
1.2 ± 0.2 N·m

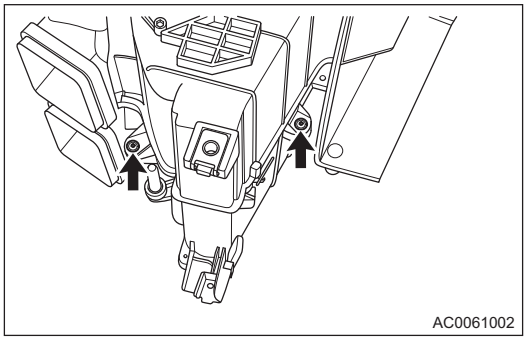


(f) Remove 2 fixing screws (arrow) from damper set housing.
Tightening torque
1.2 ± 0.2 N·m

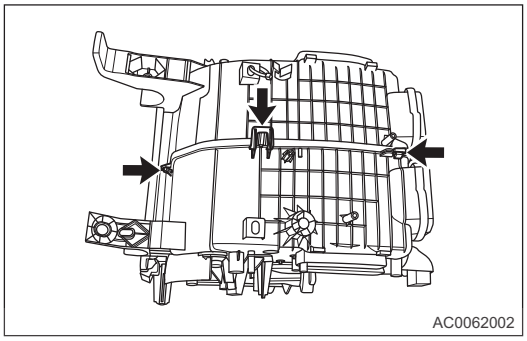


(g) Remove 2 fixing screws (arrow) from damper set housing.

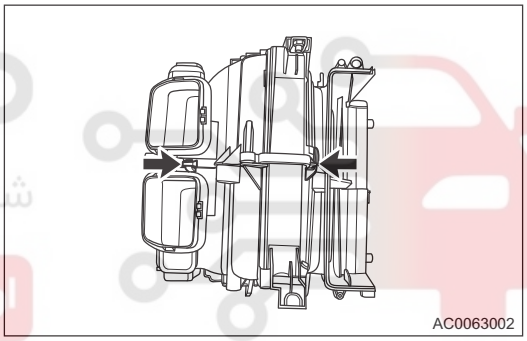
Tightening torque
1.2 ± 0.2 N·m


AC0061002

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

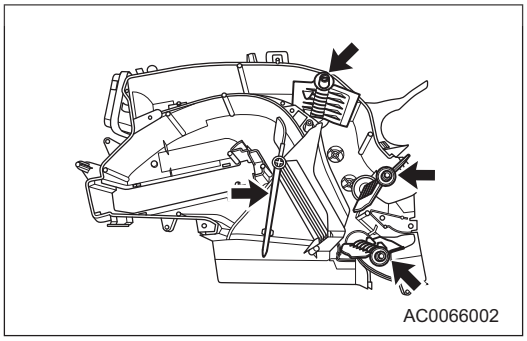

AC0062002

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


AC0063002

(j) Disengage the damper set housing.

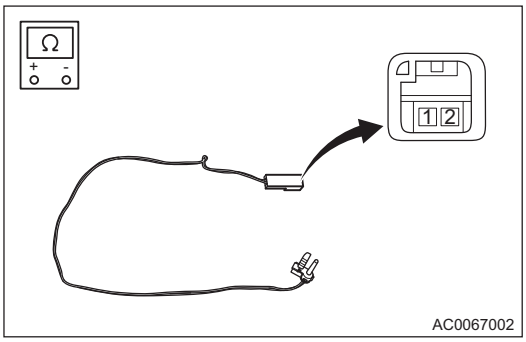
(k) Remove each damper set (arrow).


AC0066002

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:

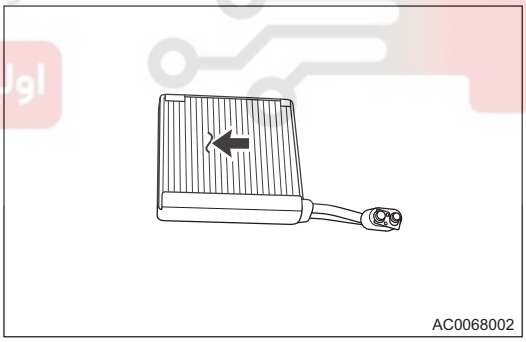
- Resistance value may change even if sensor is touched slightly. Make sure that connector of sensor is held firmly.
- During measurement, sensor temperature must be almost the same as the ambient temperature.

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.

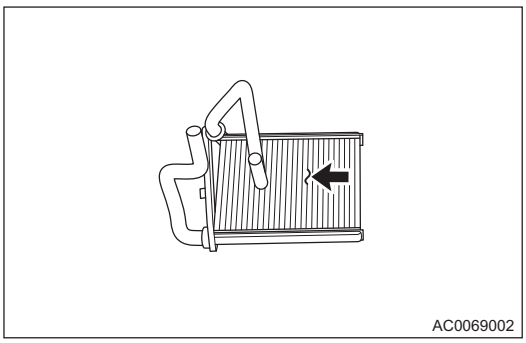


3. Check the heater core assembly

   (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.



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.

A/C High/Low Pressure Line

Removal

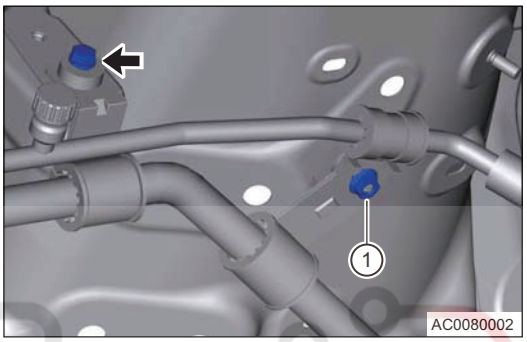
Warning / Caution / Hint:

- 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.
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 48-6).
5. Remove the A/C high/low pressure line.

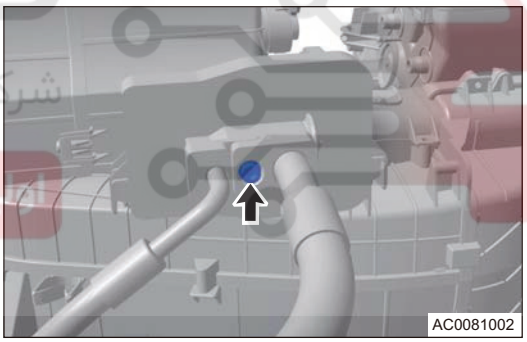
(a) Remove 1 fixing bolt (arrow) and 1 fixing nut (arrow) from A/C high/low pressure line.

Tightening torque
9 ± 1.5 N·m



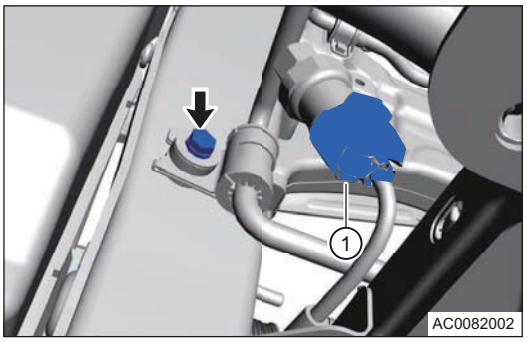
(b) Remove the fixing bolt (arrow) between A/C high/low pressure line and expansion valve, and disengage the A/C high/low pressure line.

Tightening torque
9 ± 1.5 N·m



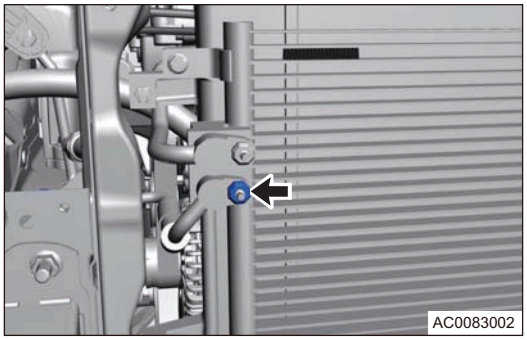
(c) Disconnect the A/C pressure switch connector (1), and remove the coupling bolt (arrow) between A/C high pressure line fixing bracket and body.

Tightening torque
9 ± 1.5 N·m



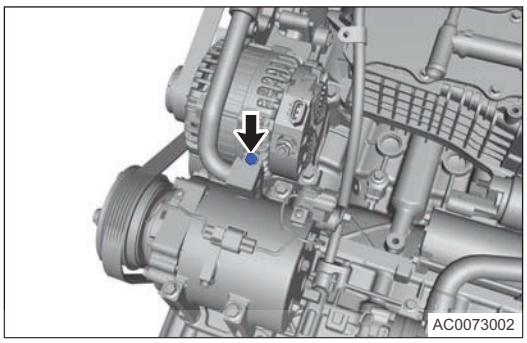
(d) Remove 1 fixing nut (arrow) between A/C high pressure line I and condenser assembly, and remove A/C high pressure line I.

Tightening torque
9 ± 1.5 N·m



(e) Remove 1 fixing bolt (arrow) between A/C low pressure line and A/C compressor assembly.

Tightening torque
25 ± 3 N·m



(f) Remove the A/C low pressure 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.

A/C High Pressure Line II

Removal

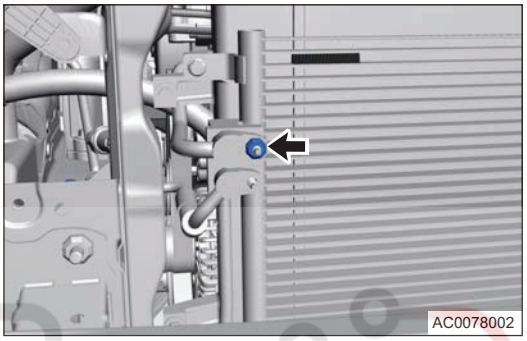
Warning / Caution / Hint:

- 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.
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 48-6).
5. Remove the compressor to condenser high pressure line II assembly.

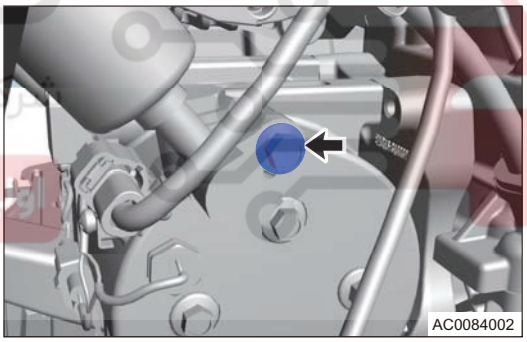
(a) Remove the fixing nut (arrow) from compressor to condenser line assembly.

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 high pressure line II 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.

Compressor Assembly

Removal

Warning / Caution / Hint:

Caution:

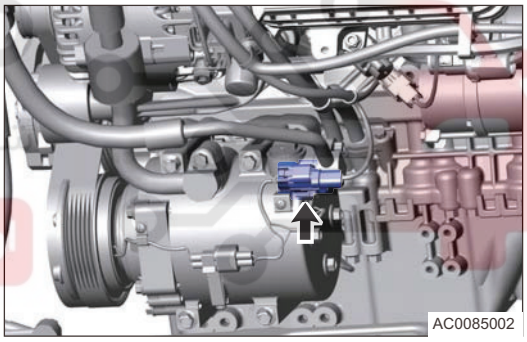
- Be sure to follow safety precautions before performing this procedure. Failure to do so may result in serious personal injury or even death.

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.
2. Turn off all electrical equipment and the ENGINE START STOP switch.
3. Disconnect the negative battery cable.
4. Remove the drive V-ribbed belt.
5. Remove the engine lower protector assembly .
6. Remove the compressor assembly.

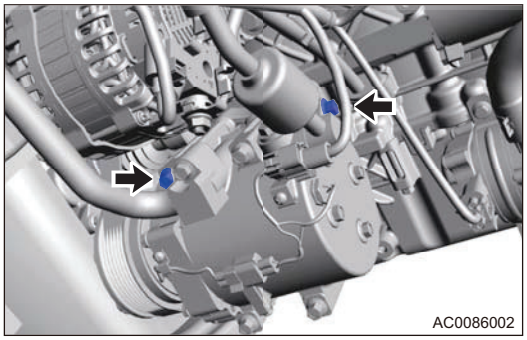
(a) Disconnect the compressor assembly wire harness connector (arrow).



(b) Remove the high/low pressure line connecting bolts (arrow) from A/C compressor respectively, and disengage high/low pressure line.

Tightening torque

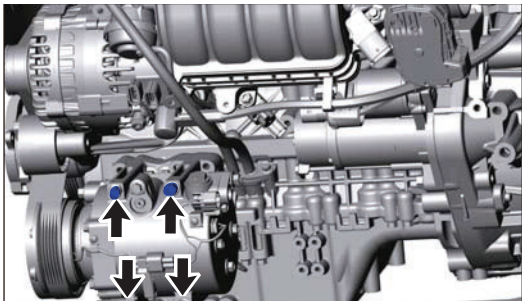
25 ± 3 N·m



(c) Remove 4 fixing bolts (arrow) between compressor assembly and mounting bracket, remove A/C compressor assembly.

Tightening torque

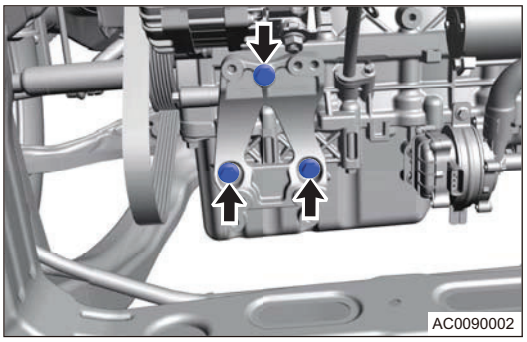
25 ± 3 N·m



7. Remove A/C compressor mounting bracket assembly

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

   Tightening torque
   25 ± 3 N·m



   (b) Remove the A/C compressor mounting bracket 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.
   - 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:

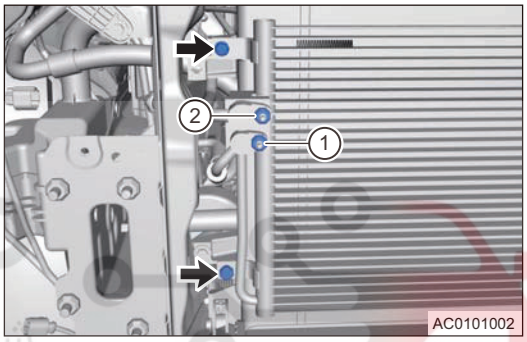
- Be sure to follow safety precautions before performing this procedure. Failure to do so may result in serious personal injury or even death.
- Always keep work area in good ventilation.
- Disconnected A/C line and connecting part should be sealed to prevent foreign matter from entering.

1. Recover the refrigerant from A/C system.
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 48-6).
5. Remove the left/right air deflector assembly (See page 48-13).
6. Remove the condenser assembly.

(a) Remove the fixing bolts (1) and (2) between high/low pressure line and condenser (right), and disengage the high/low pressure line, and remove 2 fixing bolts (arrow) from condenser.

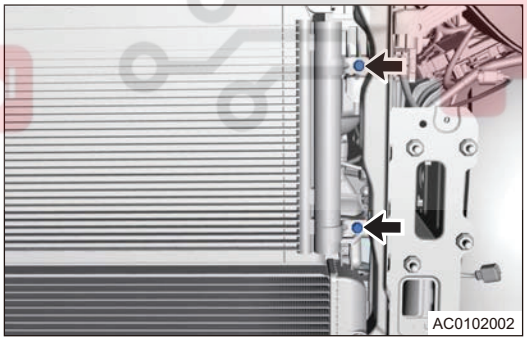
Tightening torque
9 ± 1 N·m

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.