



**UNI-K**

- **A/C system**

**UNI-KRM2I/1/1**

## 4.1 A/C system

### Model :UNI-K

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# UNI-K



## 4.1.1 A/C system

### Specifications

#### Basic information

Name	A/C compressor	Compressor lubricating oil model	Compressor lubricating oil filling amount	Refrigerant model	Refrigerant filling amount
Model	7PV18	SP10	100ml	R134a	580g

#### Compressor lubricating oil filling amount

Replacing parts	Condenser assembly	Evaporator	Expansion valve	A/C pipeline
Filling amount(Ml)	30	35	30	20

#### Tightening torque

Fastening position	Specifications	Quantity	Tightening torque(Nm)
Compressor assembly(Fixed to engine)	Hexagon flange bolt M8×1.25×100	4	23±2
HVAC assembly(Securing to CCB cross member)	Hexagon flange nut M8×1.25×8	2	8±1
HVAC assembly(Fastening to CCB rail)	Cross recessed hexagon-head screw M6×1.0×16	2	8±1
HVAC assembly(Fastening to body)	Hexagon flange bolt and plain washer assembly M8×1.25×25	2	8±1
Condenser assembly(Fixed to radiator)	Hexagon head bolt and plain washer assembly M6×1.0×14	2	5.5±1
Compressor suction pipe assembly(Connect to compressor)	Hexagon flange nut M6×1.0×6	1	9±1
Compressor suction pipe assembly(Connect to evaporator connecting pipe)	Hexagon flange nut M6×1.0×6	1	9±1
Compressor discharge pipe assembly(Connect to compressor)	Hexagon flange nut M6×1.0×6	1	9±1
Compressor discharge pipe assembly(Connect to condenser)	Hexagon flange bolt M6×1.0×25	1	9±1
Evaporator connecting pipe assembly(Connection to expansion valve)	Hexagon flange nut M6×1.0×6	1	9±1
Evaporator connecting pipe assembly(Fastening to body)	Hexagon flange bolt M6×1.0×25	2	9±1
Dual-temperature zone automatic A/C control panel and controller assembly(Fixed to steering	Cross recessed hexagon-head screw M6×1.0×25	2	6±1

## Description and operation

### System introduction

#### General

The air conditioning system is designed to provide a comfortable seating environment for the passenger compartment regardless of the external weather conditions of the vehicle. The system controls the air entering the passenger compartment by performing the following functions:

- Cooling • Drying • Heating • Cycle

Fresh air starts from A/C air inlet hood, passes through A/C filter screen, HVAC assembly and air duct, and then reaches each air outlet to enter the interior space. The A/C system consists of the following main components:

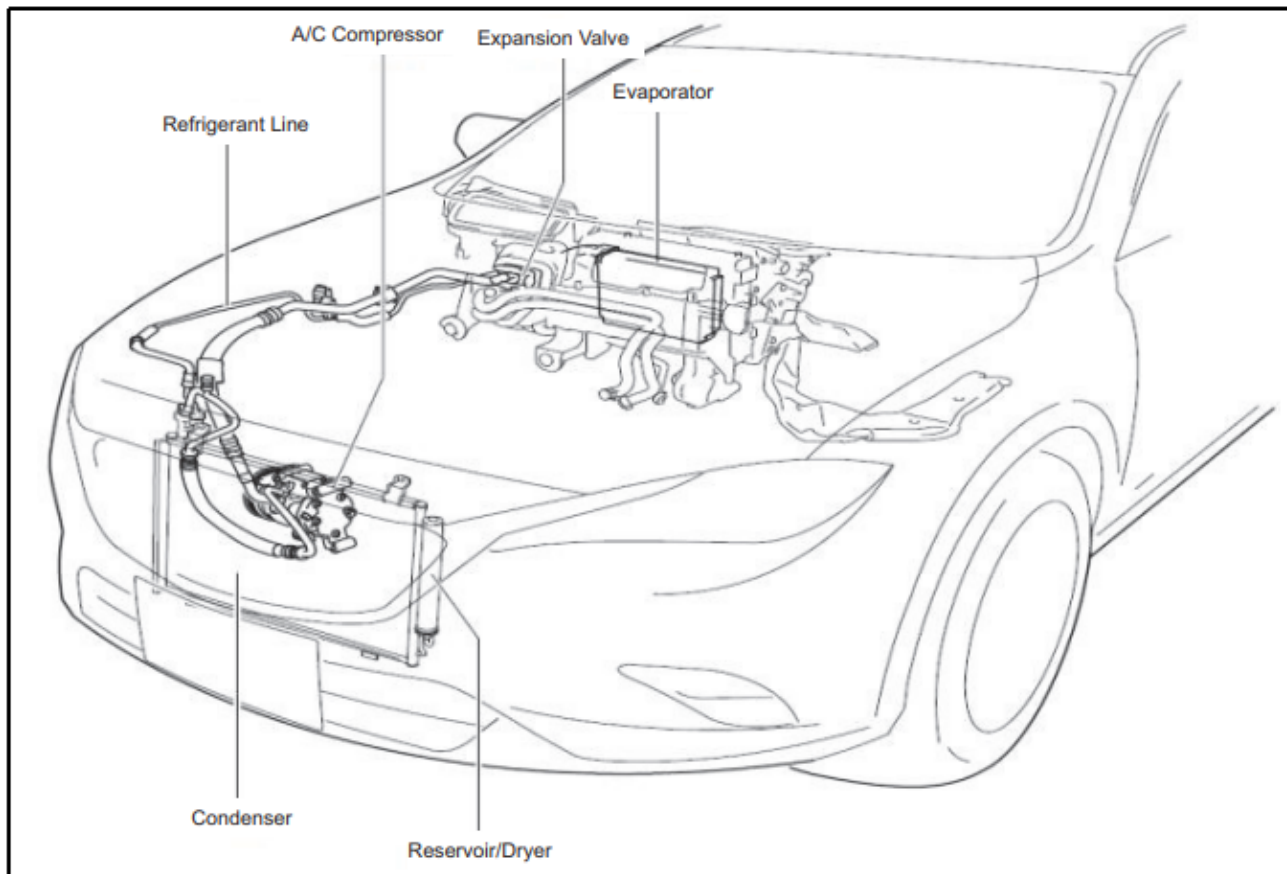
- Cooling system • Heating system • Air ventilation system • A/C control system

The air conditioning system has the following characteristics:

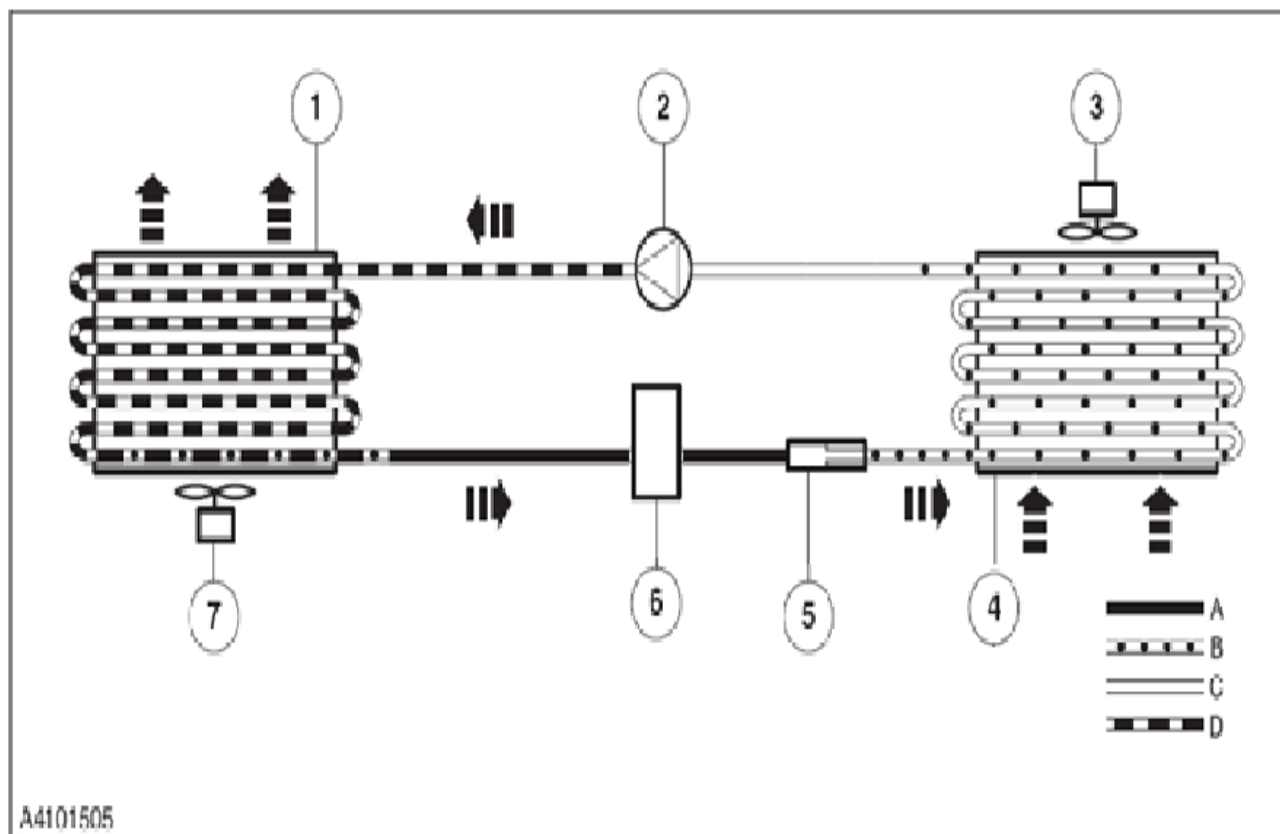
Adjust temperature, humidity, cleanliness, front and rear windshield defrosting

The driver can select any of the following functions from the A/C control panel:

- Interior temperature • HVAC blower speed • Outlet mode • Internal and external circulation



## A/C cooling system



Serial number	Name	Serial number	Name
1	Chiller	7	Condenser fan
2	Compressor	A	High pressure, liquid and high temperature state
3	Blower	B	Low pressure, liquid and low temperature
4	Evaporator	C	Low pressure, gaseous and low temperature
5	Expansion valve	D	High pressure, gaseous and high temperature
6	Drying bottle		

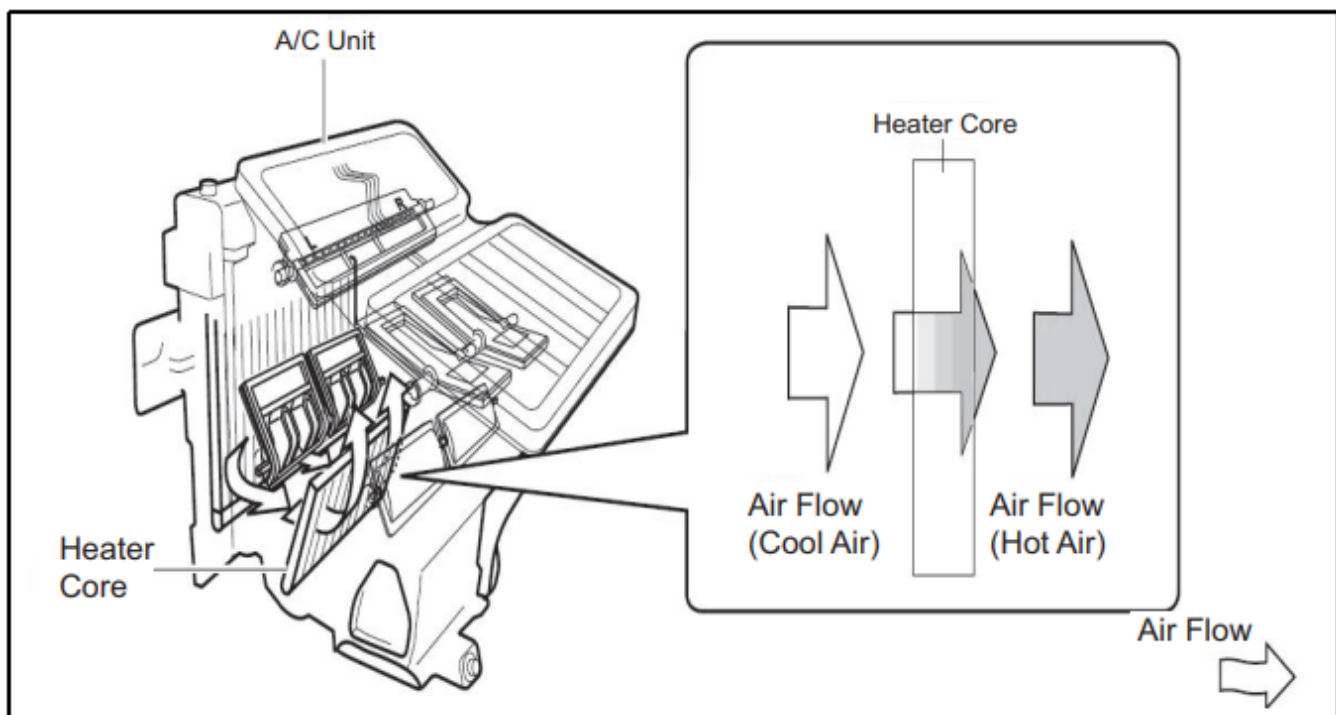
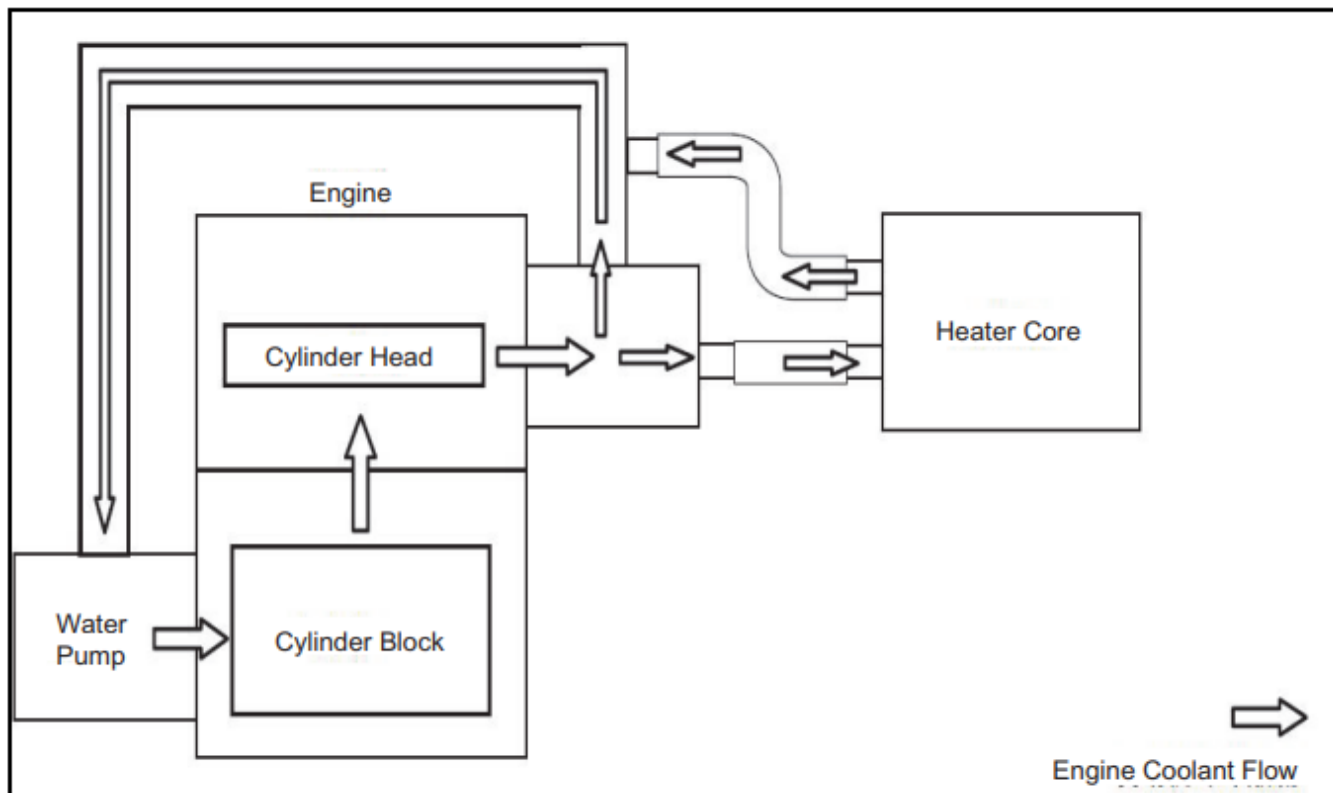
Gaseous refrigerant is sucked from the compressor inlet and compressed. The refrigerant is thus heated to between 70 °C ~ 110 °C. The compressed gas is then pumped into the condenser. The condenser is composed of many radiators for air to flow through, so that the compressed gas can be fully cooled by the outside wind and the air sucked from the condenser fan. The cooled refrigerant is stored in the drying bottle, and then the concentrated liquid refrigerant passes through the expansion valve, the pressure and temperature drop rapidly, and a part of the refrigerant is evaporated. The expansion valve is just in the front part of the evaporator in the refrigeration pipeline, and the refrigerant is completely evaporated in the evaporator. Because the evaporator is cold, the air passing through it will also be cooled.

Basic conditions for normal operation of A/C cooling system:

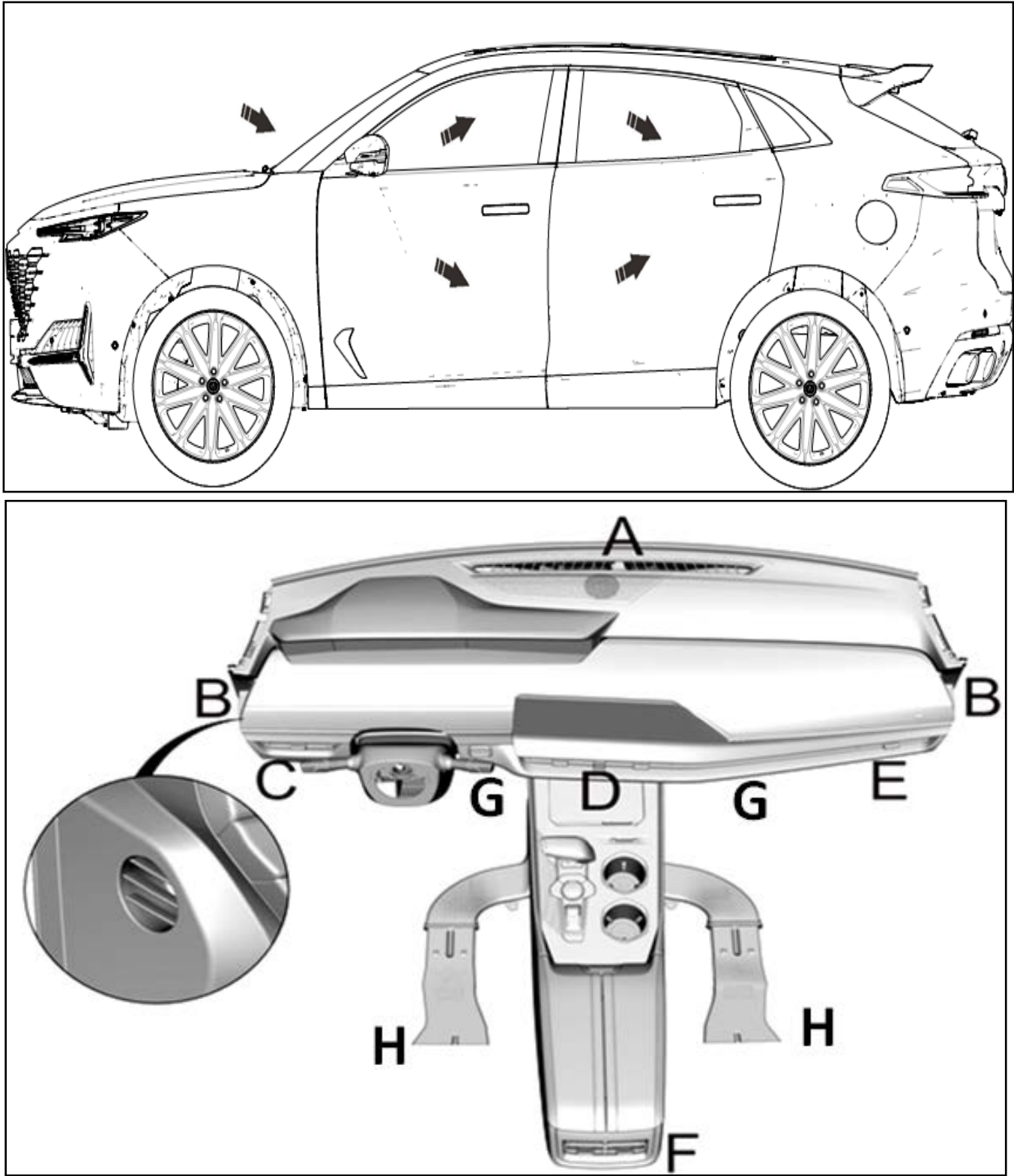
A. Outdoor temperature is greater than 0 degrees; B. The evaporator temperature is greater than the frosting protection value; C. A/C system pressure is normal; D. A/C blower starts normally; E. The engine control unit works normally; F. The control circuit is normal.

**A/C heating system**

- 1、Run by water pump, engine coolant flows into heating core.
- 2、When the heated engine coolant circulates in the heater core, the heater core will become hot.
- 3、Air flow through the heating core is heated



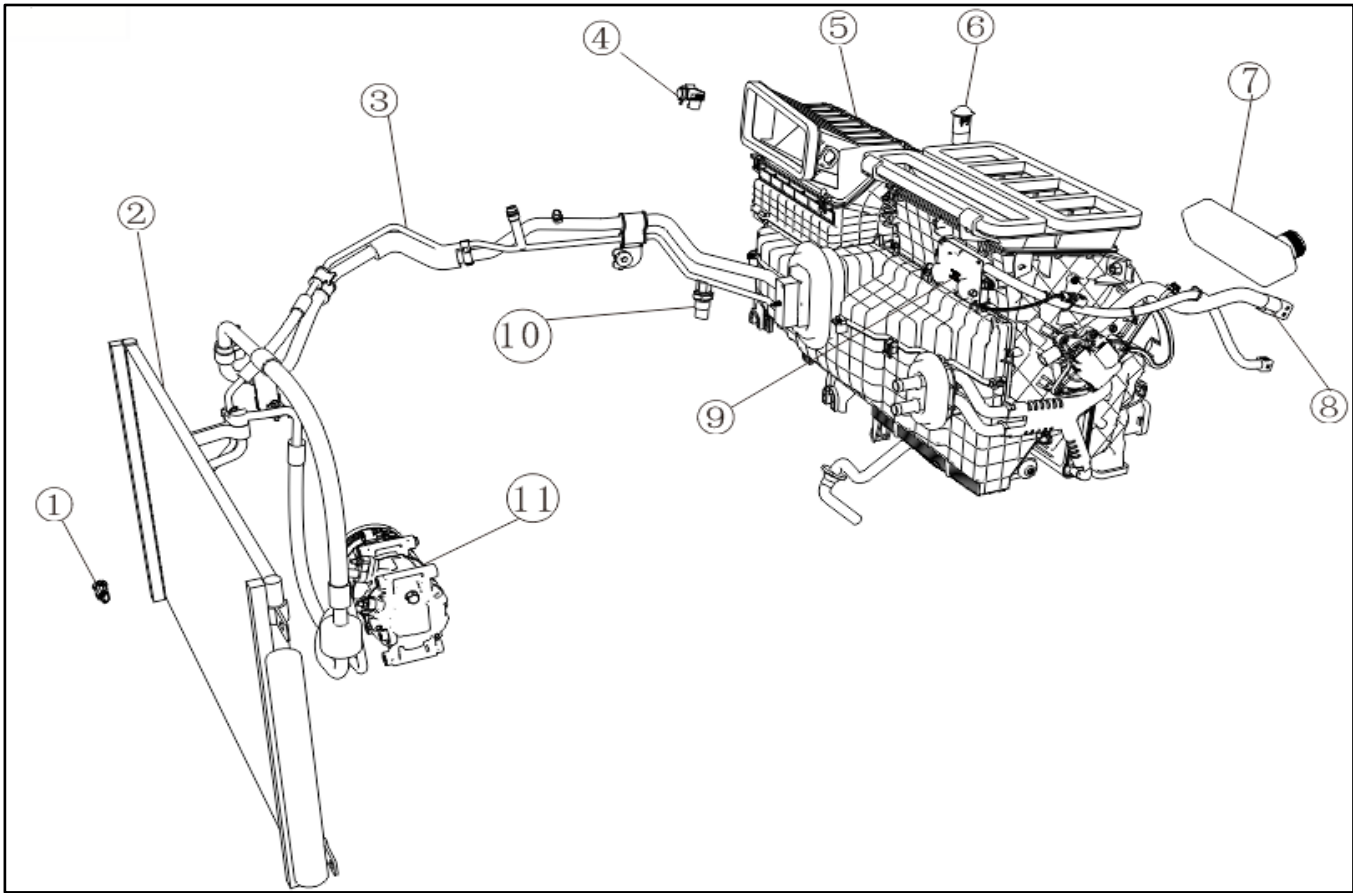
A/C ventilation system



Project	Description	Project	Description	Project	Description
A	Windshield defroster outlet	B	Side defroster air outlet	C	Left blow face air outlet
D	Central face outlet	E	Right side air outlet	F	Rear exhaust vent
G	Front step air outlet	H	Rear step air outlet		

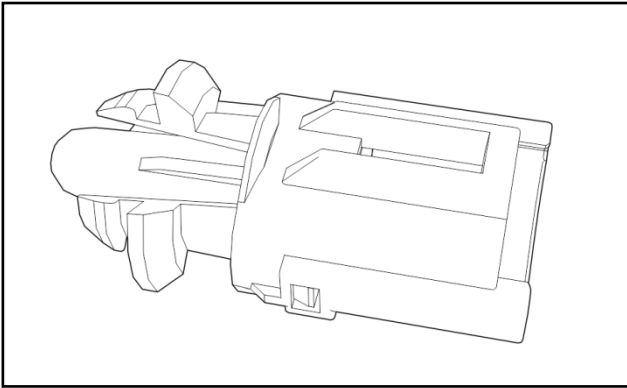


A/C system component description



Serial number	Name	Serial number	Name
1	Outside temperature sensor	7	A/C controller assembly
2	Condenser assembly	8	Interior temperature sensor
3	A/C system pipeline assembly	9	PM2.5 sensor
4	Air quality sensor	10	A/C pressure switch
5	HVAC assembly	11	Compressor
6	Rainfall light sensor assy.(Sunlight intensity sensor)		

### Outside temperature sensor

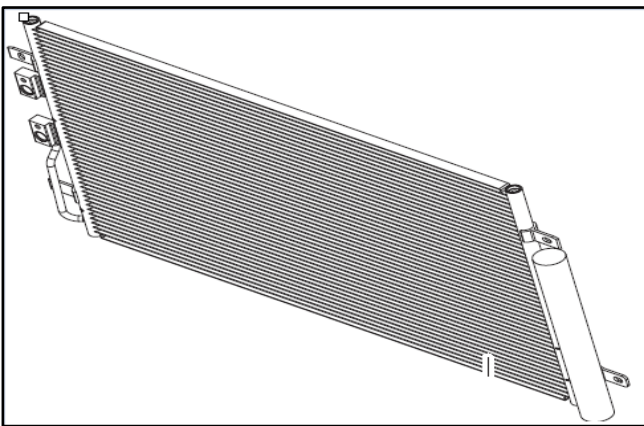


It is used to detect the outside ambient temperature. The resistance between the two terminals decreases as the ambient temperature increases, and increases as the ambient temperature decreases.

Normal temperature state (ambient temperature 10~25°C) Resistance range:

10 KΩ ~ 5 KΩ

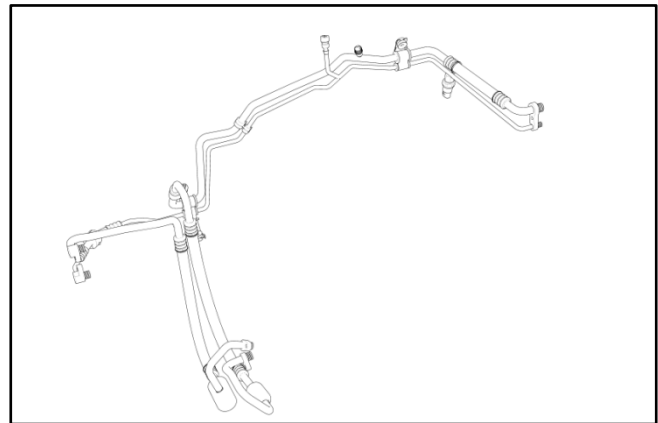
### Condenser assembly



The high-pressure and high-temperature refrigerant vapor from the A/C compressor flows into the condenser, which is made of aluminum pipe and cooling fins that allow rapid heat transfer of the high-pressure and high-temperature refrigerant vapor. The cooling fins condense the high-pressure and high-temperature refrigerant vapor into high-pressure and medium-temperature liquid through heat dissipation. The liquid storage drying bottle is located on the left side of the condenser. The internal structure design of the liquid storage drying bottle can ensure that the

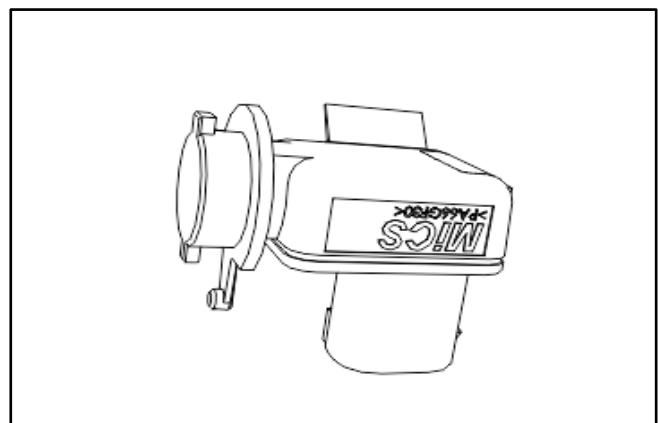
high-pressure, high-temperature gas-liquid mixture and refrigerant enter, while the liquid from the liquid storage drying bottle can only be the high-pressure, medium-temperature liquid refrigerant. There is desiccant adsorbing moisture of refrigeration system inside the liquid storage drying bottle, and the desiccant cannot be reused.

### A/C pipeline assembly



A/C pipeline mainly connects various parts of A/C system to form a complete set of automobile A/C refrigeration system, including compressor suction pipe, compressor discharge pipe and evaporator connection pipe assembly. Generally, it is composed of aluminum pipe, rubber pipe, pipe joint, sealing ring, fixed pipe clamp, filling valve, etc. It is required that A/C pipe has good damping effect and can bear high pressure, so as to ensure the sealing reliability of A/C system and ensure that refrigerant does not leak.

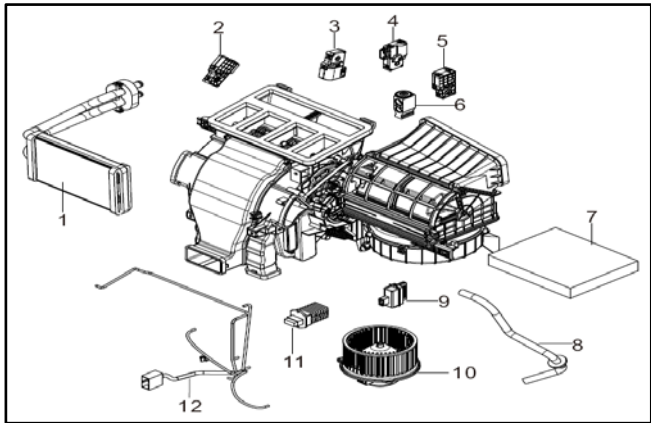
### Air quality sensor



The air quality sensor is installed near the

air inlet of the A/C to detect the air quality entering the vehicle. When the automatic inner and outer circulation function is turned on, if the air quality entering the vehicle becomes worse, the A/C will be changed from the outer circulation to the inner circulation, so as to avoid air pollution in the vehicle.

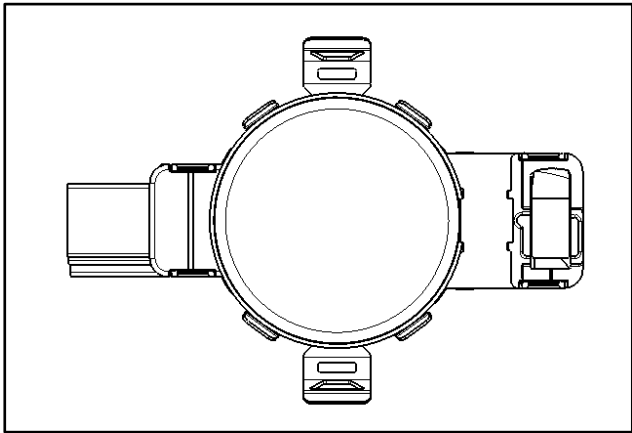
HVAC assembly



Serial number	Name	Serial number	Name
1	Heater core assembly	7	A/C strainer assembly
2	Left cooling/heating door actuator assembly(Partial configuration)	8	A/C drain pipe assembly
3	Cold and warm air door actuator assembly	9	
4	Mode damper actuator assembly	10	Blower assembly
5	Inner and outer circulation actuator assembly	11	Speed regulating module assembly
6	Expansion valve assembly	12	HVAC harness assembly

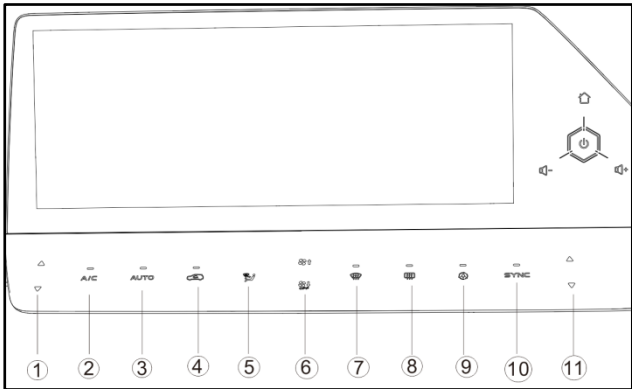
HVAC assembly is located in the instrument panel and consists of HVAC blower, HVAC blower motor speed regulation module, dust filter, heating core, evaporator, expansion valve, mixed air valve control motor, various air deflection damper and ventilation duct.

Rainfall light sensor assy.(Sunlight intensity sensor)



The integrated sunlight intensity sensor is directly connected to the automatic A/C controller, and its output voltage varies according to the sunlight intensity. When the sunlight intensity increases, the output voltage decreases; When the sunlight intensity decreases, the output voltage rises.

Automatic A/C control panel



Project	Description	Project	Description
1	Driver temperature adjustment switch	7	Front defrosting switch
2	A/C refrigeration switch	8	Rear defrosting switch
3	Automatic	9	Air

	A/C switch		purification switch or MAX AC switch
4	Inner and outer air circulation switch	10	Two-zone temperature setting switch
5	Mode adjustment switch	11	Passenger's temperature adjustment switch
6	Air volume +- switch		

### Automatic A/C control function

Press the AUTO switch, the switch indicator lights up, and the A/C system enters the automatic mode. According to the user-set demand temperature, interior temperature, exterior temperature, sunlight intensity and engine water temperature, the A/C supply air temperature, wind speed and blowing direction are automatically controlled, and the interior temperature is kept relatively constant.

### Temperature regulation function

The temperature control button is used to set the temperature in the vehicle and control the temperature of the air flowing out of the vent. Operate the temperature control button, adjust and set the air outlet temperature of the A/C, press the downward triangle to lower the temperature (blue direction), press the upward triangle to increase the temperature (red direction), and display the current set temperature on the display screen.

When the down button is held down or the up button is held down, the set temperature can be adjusted down and up step by step.

### Air volume adjustment function

**Press the down button to adjust the output air volume (up to the air volume OFF), trigger the up button to adjust the output air volume (maximum 8 gears), and display the current air volume on the display screen.**

**When the down button is pressed for more than 1 second, the outlet air volume is**

**closed; Keep the button up to adjust the output air volume step by step.**

### Mode adjustment function

The mode adjustment switch and front defrosting switch can be set with four different blowing directions. The mode adjustment switch can be adjusted continuously to switch the following four air outlet directions in sequence:

Blowing face? Blowing face and blowing foot? Blowing foot? Blowing foot and defrosting? Blowing face

### On/Off A/C cooling function

The refrigeration switch can turn on the refrigeration function of the A/C. Click the switch to send a control request signal to the engine control module for controlling the A/C compressor to start the A/C refrigeration function.

The A/C off switch is used to turn off the A/C supply air and turn off the cooling function.

### Inner and outer air circulation control function

Internal and external circulation switch, which can select internal air circulation or external air circulation mode. When the working indicator on the interior circulation button is on, it indicates that the air conditioning system is in the interior air circulation state; When the working indicator lamp on the exterior circulation switch is on or the indicator lamp of the interior and exterior circulation switch is off, it indicates that the vehicle is in the exterior air intake state.

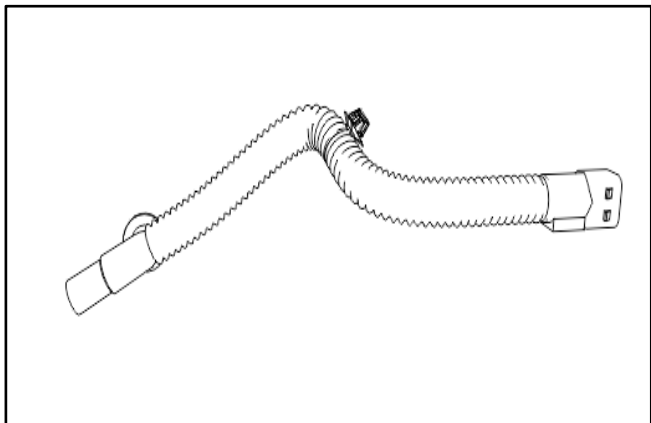
### Front windshield defrosting/defogging control function

The front defrost switch is used to activate the front windshield defrost/demist function. Press the button, the refrigeration switch indicator lamp will be lit, the front windshield can be defrosted/defogged, and the outside air intake state will be switched; When the previous air volume gear is less than 5th gear, it will be increased to 5th gear. The user can also increase the defrosting/defogging rate by manually raising the temperature and increasing the air volume gear.

Rear windshield defrosting/defogging control function

The rear defrost switch is used to activate the rear windshield defrost/demist function. Press the switch, the working indicator lamp is on, and the electric heating defrosting of rear windshield is started; Press this button again, the working indicator lamp goes out, and the defrosting ends.

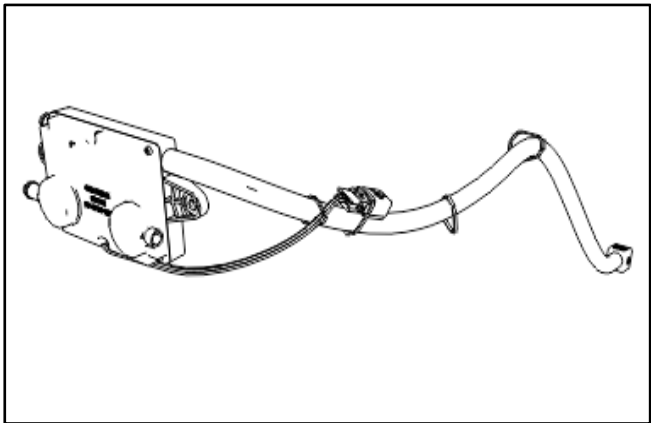
Interior temperature sensor



It is used to detect the interior temperature of the vehicle. One end is connected to the HVAC assembly, and the other end is connected to the instrument panel trim panel. When the A/C blower operates, use the HVAC to draw air through the instrument panel trim panel grille to detect the air flow temperature in the vehicle. The resistance between the two terminals decreases as the temperature increases and increases as the ambient temperature decreases.

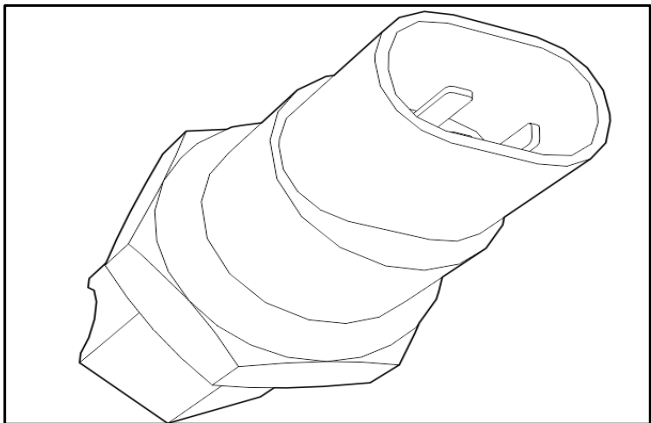
Resistance range under normal temperature (ambient temperature 10~25℃):  
4.2 KΩ ~ 2.1 KΩ

PM2.5 sensor



PM2.5 sensor is mainly used to detect the concentration of particulate pollutants in the air, and input the detection results into the A/C controller, which is used to guide the opening of the air purification function.

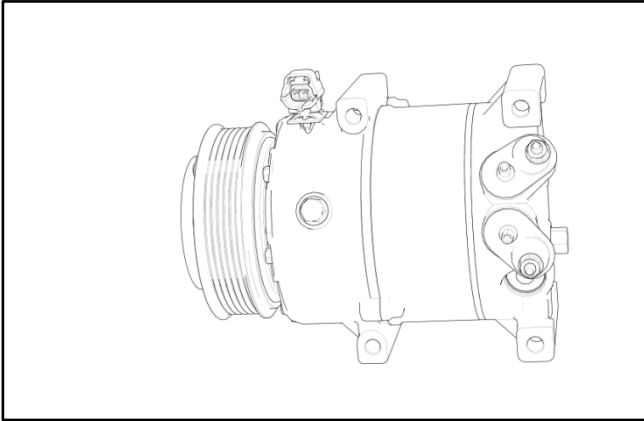
A/C pressure switch



A/C pressure switch belongs to three-state pressure switch, which transmits A/C pressure signal.

Pressure switch value:

Name	Pressure value(MPa)	Signal value
High voltage switch	3.2 ± 0.2	Cut off
	2.6 ± 0.2	Recovery
Low voltage switch	0.2 ± 0.02	Cut off
	0.23 ± 0.02	Recovery
Medium voltage switch	1.52 ± 0.1	Recovery
	1.25 ± 0.1	Cut off

**Compressor**

The A/C compressor is driven by the compressor clutch pulley driven by the engine crankshaft through the belt. When the electromagnetic clutch coil is not energized, the compressor pulley rotates freely and does not drive the compressor shaft. When the clutch coil is energized with voltage, the clutch plate and hub are pushed toward the pulley. The magnetic force integrates the clutch plate and the pulley to drive the compressor shaft.

The compressor is shut down when:

1. Throttle valve fully open
2. Low idle speed
3. Low ambient temperature
4. Coolant temperature too high
5. Refrigerant pressure above  $3.2 \pm 0.2$  MPa or below  $0.2 \pm 0.02$  MPa

**A/C system auxiliary materials****R134a refrigerant instructions**

Refrigerant has the following functions in A/C system:

- Heat absorption
- Carry heat
- Release heat

The vehicle uses R-134a refrigerant, which is non-toxic, flame-retardant, transparent and colorless liquefied gas.

Be sure to follow the instructions for the following repairs:

- Refrigerant recovery and regeneration
- Add refrigerant oil
- Emptying cooling system
- Refill refrigerant

Refrigerant precautions:

- The refrigerant will not burn or explode, but it will decompose the gas harmful to human body when in contact with the open flame, so avoid the open flame.
- Refrigerant will evaporate rapidly under atmospheric environment. When its liquid adheres to the skin, it will absorb heat from the skin and evaporate, resulting in local frostbite and avoiding contact with the skin as far as possible.

**Compressor lubricating oil instructions**

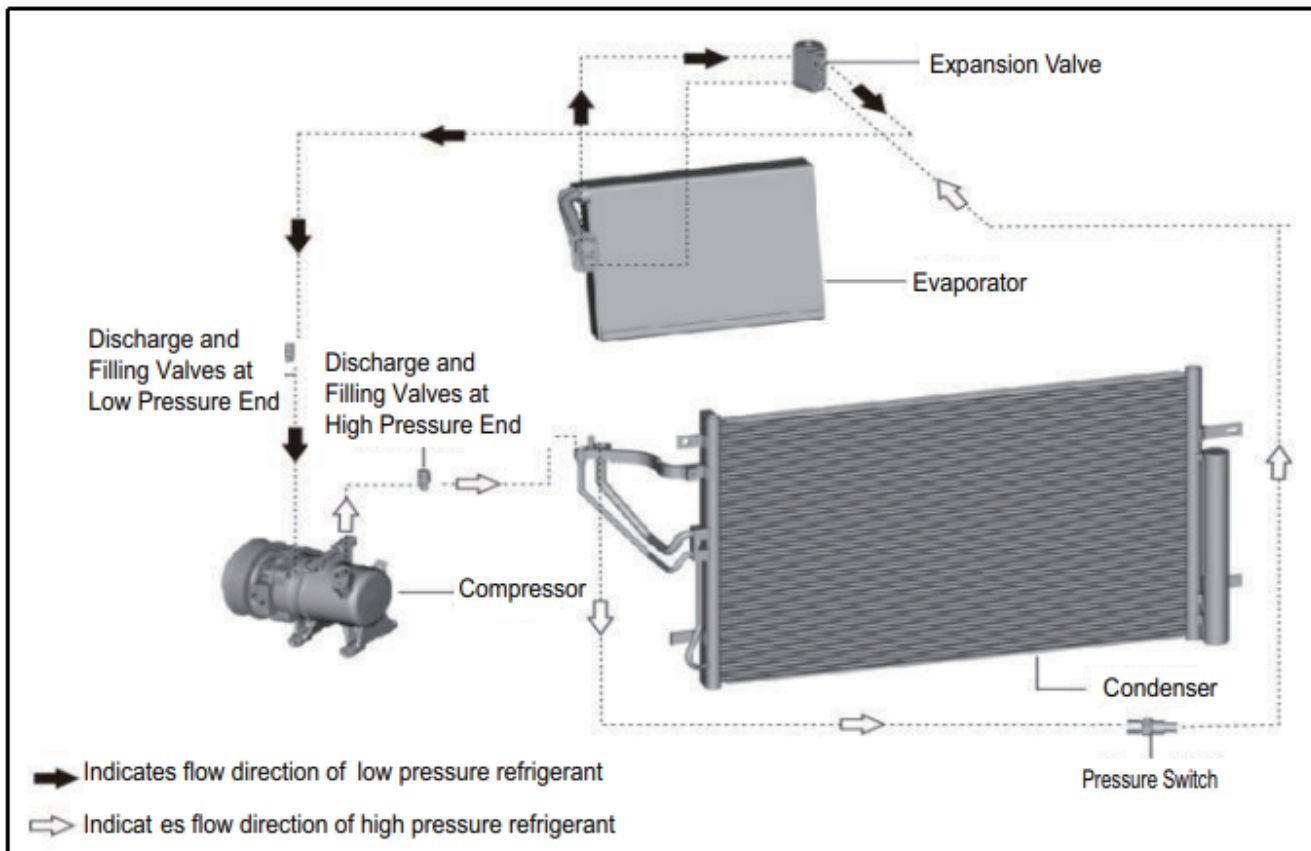
Compressor lubricating oil is the special lubricating oil of A/C compressor, which can ensure normal operation of compressor and must follow the steps in the instructions for maintenance;

Precautions for compressor lubricating oil:

- The grade of compressor lubricating oil specified in the original A/C compressor must be strictly used, and different types and brands of compressor grade lubricating oil are prohibited.
- The compressor lubricating oil has strong water absorption capacity. When filling or replacing, the operation must be rapid. After filling, the oil tank cover should be sealed and stored immediately.
- It is only allowed to add to the specified amount, and it is not allowed to overfill to avoid reducing the cooling effect.
- Slowly discharge the refrigerant to avoid discharging the compressor lubricating oil and refrigerant together.

## Recovering/filling refrigerant

### Refrigeration system cycle circuit diagram



### Recovering and filling A/C refrigerant

Common tools and maintenance equipment:  
Refrigerant recovery filling machine, which can complete the air conditioning system discharging, emptying and refilling procedures in one connection. The refrigerant shall be filtered during recovery and evacuation to ensure that the refrigerant filled into the A/C system is clean and dry.

carried out in a well-ventilated environment and refrigerant vapor should not be sucked. Air conditioning refrigerant 134a and lubricating oil vapor or mist should be avoided. Contact will irritate the eyes, nose and pharynx. Work in well-ventilated areas. When removing a R-134a from the air conditioning system, use a R-134a regeneration device that is certified to meet the J 2210 requirements of the SAE. If the system is accidentally drained, the working area must be vented before proceeding with the repair. Other health and safety information is available from refrigerant and lubricant manufacturers.

#### Recovering refrigerant

1. Turn off all appliances and start switch.
2. Disconnect the negative battery harness.

[Reference: 3.1.11 charging system](#)

3. Connect the power supply equipment.



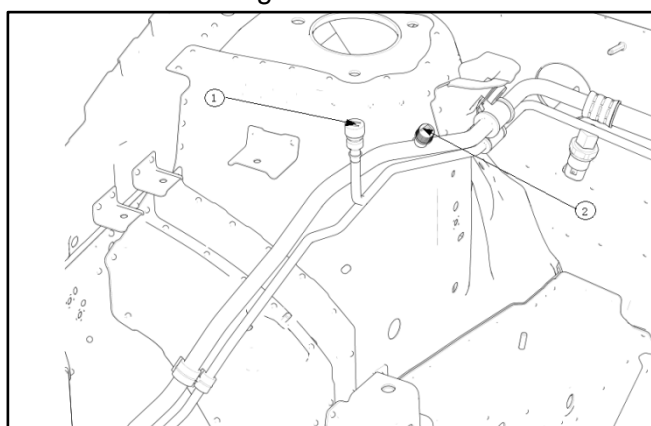
**Warning:** Refrigerant-related work should be



4. Connect high and low pressure pipes of refrigeration circuit.
5. Open the low pressure valve switch (1) and high pressure valve switch (2) of the equipment.
6. Select the equipment "Refrigerant Recovery" option to start the equipment and start the recovery work.
7. Check the low pressure gauge pressure of the equipment. When the pressure gauge reaches -34kPa vacuum degree, close the equipment and stop recycling.

#### A/C system vacuum

1. Connect high and low pressure pipes of refrigeration circuit.
2. Open the high-pressure valve (2) of the equipment, select the "Vacuum" option, and set the time as 15 minutes. Start the device to vacuumize. When the time reaches the set value, the device automatically stops working.
3. Close the high-pressure valve and check the low-pressure gauge pressure.
4. If the pressure reaches the set value and does not rise again, confirm that the refrigeration circuit does not leak, and add the compressor lubricating oil and refrigerant.
5. If the pressure rises, check the refrigeration circuit for leakage.



#### Filling refrigerant

- Fill refrigerant according to the following standards.

Refrigerant model	Refrigerant filling amount
R134a	580±20g

**⚠ Note:** Fill refrigerant after replenishing lubricating oil of A/C compressor.

1. Connect high and low pressure pipes of refrigeration circuit
2. Select the equipment "Refrigerant replenishment" option to adjust the filling amount.
3. Open the low-pressure valve switch and start the device for filling.
4. Observe the device display, and when the filling amount reaches the set value, the screen displays that the filling is completed.
5. Close the valve.
6. If the device shows the filling speed is too slow, refer to the following filling methods:
  - Disconnect the refrigeration circuit high pressure connector and connect only the low pressure end.
  - Close the high and low pressure valves of the equipment.
  - Set the vehicle to parking position, start the vehicle, turn on the air conditioner, and set it to low temperature mode.
  - Open the equipment mortgage valve and refrigerant will be injected into the refrigeration pipeline from the low pressure end.
  - When the pressure gauge shows the low pressure standard value, disconnect the low pressure end connector.
  - Refrigerant filling is completed.

#### Recovering/filling compressor lubricating oil

##### Recover compressor lubricating oil

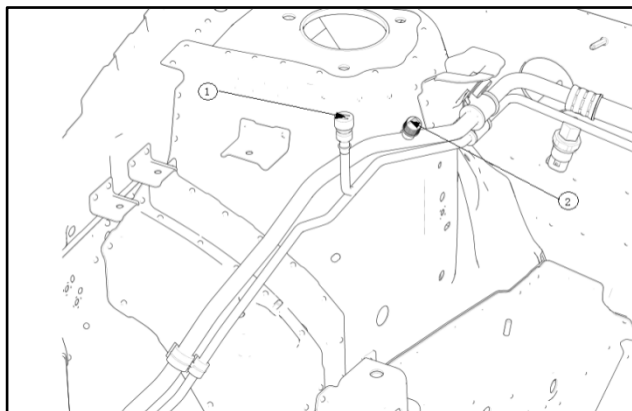
**⚠ Note:**

- After the refrigerant is recovered, discharge the lubricating oil of A/C compressor.
  - Recycle waste lubricating oil and refrigerant according to relevant regulations.
  - Empty the filler drain collection bottle.
1. Connect high and low pressure pipes of refrigeration circuit.
  2. Open the low-pressure valve switch (1) and high-pressure valve switch (2) of the equipment.
  3. Open the oil drain valve on the A/C refrigerant filling machine control panel, start the equipment, and check whether the A/C compressor lubricating oil drains into the



collection bottle.

4. After the lubricating oil of A/C compressor is drained, stop the oil draining and close the oil draining valve.
5. Check the collection bottle and record the oil



quantity.

Replenish compressor lubricating oil

1. Add new lubricating oil according to the amount of lubricating oil in the collection bottle.
2. If the following components are replaced separately, supplement the A/C compressor lubricating oil according to the standard.

Component	Filling amount: MI
Condenser	30
Evaporator	35
Expansion valve	30
A/C pipe	20

#### Filling compressor lubricating oil

**⚠ Note:** The compressor lubricating oil can be added only after vacuum is pumped.

2. Install filling bottle and add compressor lubricating oil according to standard.
3. Connect refrigeration circuit high and low pressure pipelines, open equipment high pressure valve and compressor lubricating oil filling switch.
4. Start the A/C refrigerant filling machine and observe the right side height in the filling bottle until the required oil quantity.
5. Close the high pressure valve.

## Fault phenomenon and diagnosis

General equipment

Digital multimeter
Hand-held diagnostic scanner KT 400/KT 700, etc.

### Inspection and confirmation

1. Confirm the customer's A/C problem.
2. Visually inspect for visible signs of mechanical or electrical damage.

Visual Check List

Mechanical part	Electrical part
<ul style="list-style-type: none"> <li>• Fan hood</li> <li>• Compressor</li> <li>• A/C high/low pressure pipe</li> <li>• Pipeline connection position</li> <li>• Condenser</li> <li>• Expansion valve</li> <li>• Air supply port</li> </ul>	<ul style="list-style-type: none"> <li>• Circuit</li> <li>• Refrigerant pressure switch</li> <li>• Electronic fan</li> <li>• Blower and speed regulation module</li> <li>• Cooling and heating door motor</li> <li>• Mode damper motor</li> <li>• Inner and outer circulation damper motor</li> <li>• A/C control module</li> <li>• Temperature sensor</li> </ul>

3. Check the air-conditioning system lines that are easy to see or can be seen to find out if there is a leak in the air-conditioning system.
4. If the apparent cause of the observed or raised problem has been found, the cause must be corrected before proceeding to the next step.
5. If the visual inspection is passed, confirm the fault and refer to the fault symptom table.

Reference: Air conditioning system complete vehicle operation test standard.

Environment Temperature	Central vent temperature	Vehicle Working condition	Test Condition	Test Time
10	6	Idle speed	Door closed, window fully open, ACON, 1/2 with internal circulation, full cooling, maximum air flow	1min
13	7			1min
16	8			1min
19	9			1min
21	10			1min
25	11.5			1min
28	13			1min
31	14.5			1min
34	16.5			1min
37	18.5			1min

## Fault symptom table

If the fault occurs but no DTCs are stored in the control module and the cause of the fault cannot be confirmed in the basic inspection, the fault diagnosis and rule out shall be performed according to the sequence listed in the following table.

Symptoms	Possible causes	Measures
A/C cooling insufficient/uncooled	<ul style="list-style-type: none"> <li>Insufficient refrigerant filling amount</li> <li>Accessory drive belt slip</li> <li>Compressor clutch slip</li> <li>Pipeline leakage</li> <li>Blower fault</li> <li>Mixed damper fault</li> <li>Air duct blocked or leaking</li> <li>Compressor wear</li> </ul>	Reference: Diagnosis process of insufficient cooling capacity of A/C
A/C heating is insufficient	<ul style="list-style-type: none"> <li>Insufficient antifreeze</li> <li>Heater water pipe fault</li> <li>Heater tank fault</li> <li>Blower fault</li> <li>Mixed damper fault</li> <li>Air duct blocked or leaking</li> <li>Engine fault</li> </ul>	Reference: Air conditioning heating insufficient diagnosis process
Blower does not work	<ul style="list-style-type: none"> <li>Circuit</li> <li>Fuse</li> <li>Blower speed regulation module</li> <li>Blower relay</li> <li>Blower fault</li> </ul>	Reference: Blower inoperation diagnostic process
A/C compressor clutch does not work	<ul style="list-style-type: none"> <li>Fuse</li> <li>Compressor relay</li> <li>Circuit</li> <li>Pipeline</li> <li>Compressor clutch fault</li> <li>Refrigerant pressure switch fault</li> <li>Engine control module fault</li> </ul>	Reference: A/C Compressor Clutch Inoperative Diagnostic Procedure
Abnormal refrigerant pressure switch signal	<ul style="list-style-type: none"> <li>Pressure switch short circuit</li> <li>Open circuit of pressure switch</li> <li>Harness fault</li> </ul>	<ul style="list-style-type: none"> <li>Repairing wire harness for refrigerant pressure switch</li> <li>Replace refrigerant pressure switch</li> </ul>
Abnormal refrigerant pressure	<ul style="list-style-type: none"> <li>A/C high pressure exceeds 3.2 MPa</li> </ul>	<ul style="list-style-type: none"> <li>Recover excess refrigerant and refill</li> <li>Repair vehicle poor heat dissipation</li> <li>Repair engine malfunction</li> <li>Overhaul A/C system pipeline internal blockage fault</li> </ul>
	<ul style="list-style-type: none"> <li>A/C low pressure lower than 0.2 Mpa</li> </ul>	<ul style="list-style-type: none"> <li>Vacuum again and fill refrigerant</li> <li>Overhaul A/C system leakage fault</li> </ul>

		<ul style="list-style-type: none"> <li>Overhaul A/C system pipeline internal blockage fault</li> </ul>
Symptoms	Possible causes	Measures
A/C water leakage	<ul style="list-style-type: none"> <li>Torsion of drain pipe and body</li> <li>Drain pipe is blocked</li> <li>Poor assembly of drain pipe and HVAC</li> </ul>	<ul style="list-style-type: none"> <li>Overhaul drain pipe</li> <li>Replace drain pipe</li> </ul>
Turn on A/C fan with great jitter and noise	<ul style="list-style-type: none"> <li>A/C pressure high</li> </ul>	<ul style="list-style-type: none"> <li>Detect A/C pressure. If the high pressure exceeds 1.52MPa, the cooling fan is running at high speed. Compared with cooling fan running at low speed, excessive jitter and noise is normal.</li> </ul>
	<ul style="list-style-type: none"> <li>The cooling fan is attached with mud.</li> </ul>	<ul style="list-style-type: none"> <li>If mud is attached to the fan blade, clean the scattered blade.</li> </ul>
	<ul style="list-style-type: none"> <li>Balance weight on cooling fan blade falls off</li> </ul>	<ul style="list-style-type: none"> <li>If the balance weight is found to fall off, replace the cooling fan.</li> </ul>
Under high temperature, the blower is not ventilated, and the temperature decreases and restarts and recovers.	<ul style="list-style-type: none"> <li>Speed control module thermal protection</li> </ul>	<ul style="list-style-type: none"> <li>Replace blower speed regulation module</li> </ul>

## A/C cooling insufficient diagnosis process

Test conditions	Details/Results/Measures
1. Check temperature of A/C central air outlet	
	<p>A. Start the engine, turn on the A/C, set the lowest temperature, adjust to the internal circulation, and measure the temperature of the A/C central air outlet: Is the air outlet temperature still high?</p> <p>? Yes Perform the following repair and adjustment and confirm whether it is normal:</p> <ul style="list-style-type: none"> <li>• Diagnose whether the A/C controller reports fault codes. If yes, refer to troubleshooting suggestions in 4.1.1 Fault Code Table;</li> <li>• Overhaul whether the hybrid damper control motor acts;</li> <li>• Check the surface of condenser for dirt blockage and dust accumulation;</li> <li>• Inspect whether there is oil stain or leakage mark at the pipeline connection parts;</li> </ul> <p>? No to step 2.</p>
2. Check air volume of A/C central air outlet	
	<p>A. Check the air volume status of A/C central air outlet: Judge whether the air output is too small?</p> <p>? Yes Perform the following repair and adjustment and confirm whether it is normal:</p> <ul style="list-style-type: none"> <li>• Check whether the outlet air direction can be adjusted normally;</li> <li>• Inspect the air outlet and air duct for blockage and poor assembly;</li> <li>• Check whether the A/C filter screen is dirty and blocked;</li> </ul> <p>? No to step 3.</p>
3. Check refrigerant pressure	
	<p>A. Connect the A/C pressure detection gauge set, start the engine, turn on the A/C, set the lowest temperature, adjust to the internal circulation, and measure the high and low pressure of the A/C system:</p> <p><b>Reference value (ambient temperature below 30℃):</b></p> <p><b>High pressure 1.0 ~ 1.6 MPa</b></p> <p><b>Low pressure 0.2 ~ 0.35 MPa</b></p> <p>Does the refrigerant pressure meet the reference value?</p> <p>? Yes to step 4.</p> <p>? No Perform the following repairs and adjustments and confirm that they are normal:</p> <ul style="list-style-type: none"> <li>• Check whether the refrigerant is excessive or missing;</li> <li>• Re-vacuumize and maintain pressure to further confirm the air conditioning system tightness;</li> <li>• Fill refrigerant according to standard;</li> <li>• Check whether the expansion valve is blocked;</li> <li>• Check whether the radiator fan rotates</li> </ul>

	abnormally or is damaged;
4. Check A/C compressor working status	
	<p>A. Check the following:</p> <ul style="list-style-type: none"> <li>• Compressor belt working state;</li> <li>• Compressor clutch working state;</li> <li>• Compressor working state;</li> </ul> <p>Is it working properly?</p> <p>? Yes Find the cause of the fault from other symptoms.</p> <p>? No Perform the following repairs and adjustments and confirm the system is normal:</p> <ul style="list-style-type: none"> <li>• Check whether the engine control module reports fault codes;</li> <li>• Adjust the compressor belt and replace it if necessary;</li> <li>• Check the amount of refrigerant and lubricating oil, and supplement if necessary;</li> <li>• Overhaul compressor clutch circuit;</li> <li>• Overhaul the compressor clutch and replace it if necessary;</li> <li>• Overhaul the compressor and replace it if necessary;</li> </ul>

### A/C heating insufficient diagnosis process

Test conditions	Details/Results/Measures
1. Check engine coolant temperature	

	<p>A. Check engine water temperature. Does the engine water temperature reach 82 °C? ? Yes to step 2. ? No Perform the following repairs and adjustments and confirm that they are normal:</p> <ul style="list-style-type: none"> <li>• Diagnose whether the A/C controller reports fault codes. If yes, refer to troubleshooting suggestions in 4.1.1 Fault Code Table;</li> <li>• Check Whether the engine control module reports fault codes, overhauls and adjusts engine working conditions;</li> <li>• Extend the engine running time;</li> <li>• Empty the engine cooling system;</li> </ul>
2. Check the working status of mixing damper	
	<p>A. Check the working status of mixing damper. Is the mixed damper working normally? ? Yes Find the cause of the fault from other symptoms. ? No Perform the following repairs and adjustments and confirm that they are normal:</p> <ul style="list-style-type: none"> <li>• Check whether the mixing damper mechanism can rotate normally;</li> <li>• Check the air duct for air leakage;</li> </ul>

**Blower does not work diagnostic process**

Test conditions	Details/Results/Measures
1. General inspection	
	<p>A. Inspect the HVAC blower assembly harness and HVAC blower harness plug for damage, poor contact, aging and loosening. Is it normal? ? Yes to step 2. ? No Repair fault point.</p>
2. Check fuse	
	<p>A. Inspect the blower and blower relay fuse. Rated capacity of fuse: 30a, 10 A Is the fuse normal? ? Yes to step 3. ? No Overhaul the circuit and replace the rated capacity fuse.</p>
3. Check blower relay	
	<p>A. Replace a new relay, power on to ON position, and turn on the air volume switch. Does the blower work normally? ? Yes Replace the blower relay. ? No to Step 4</p>
4. Inspect the blower and blower relay coil power supply circuit.	
	<p>A. Power off the vehicle to off gear; B. Remove the blower relay; C. Power on the vehicle to ON gear; D. Use a multimeter to measure the voltage between the blower relay coil on the engine compartment relay fuse box and the supply terminal, the switch and the reliable grounding point. Standard voltage: 11 ~ 14 V Is the voltage normal? ? Yes to step 5. ? No Overhaul the open circuit problem of blower relay switch terminal and blower relay coil terminal power</p>
5. Check blower relay coil control circuit	
	<p>A. Power off the vehicle to off gear; B. Remove the blower relay; C. Power on the vehicle to ON position and turn on the air volume switch; D. Measure the voltage between the blower relay coil control terminal on the engine compartment relay fuse box and reliable grounding point with a multimeter. Standard voltage: 0 ~ 1 V Is the voltage normal? ? Yes to step 6. ? No Overhaul the open circuit problem from the blower relay coil control end to the A/C controller and fix it.</p>



6. Check blower status	
	<p>A. Power off the vehicle to off gear;</p> <p>B. Remove the blower connector;</p> <p>Measure whether the resistance between the two terminals of the blower is less than 100 ohms.</p> <p>? Yes to step 7.</p> <p>? No Replace blower.</p> <p><a href="#">Reference: Blower motor replacement</a></p>
7. Check grounding circuit of blower	
	<p>A. Power off the vehicle to off gear;</p> <p>B. Disconnect the blower harness plug;</p> <p>C. Measure whether the circuit between the blower harness plug and reliable grounding point is connected with a multimeter.</p> <p>? Yes to step 8.</p> <p>? No Overhaul the open circuit fault between HVAC assembly harness plug and grounding.</p>
8. Check circuit between A/C controller of blower speed regulation module	
	<p>A. Power off the vehicle to off gear;</p> <p>B. Disconnect the blower speed regulation module harness plug and A/C controller harness plug;</p> <p>C. Measure whether blower assembly harness blower control voltage pin and speed control module control pin are connected?</p> <p>? Yes to step 9.</p> <p>? No Overhaul open circuit problem between A/C controller and blower speed regulating module.</p>
9. Check blower speed regulation module	
	<p>A. Replace HVAC blower speed regulation module.</p> <p>Yes Replace the HVAC blower speed regulation module and confirm the system is normal.</p> <p>? No Find the cause of the fault from other symptoms.</p>

## A/C Compressor Clutch Inoperative Diagnostic Procedure

Test conditions	Details/Results/Measures
1. General inspection	<p>A. Check front end gear train and belt;  <a href="#">Reference: 3.1.3 Mechanical system</a></p> <p>B. Inspect the refrigerant pressure switch and compressor clutch harness plug for signs of damage, aging, poor contact and loosening;            Is it normal?            ? Yes to step 2.            ? No Repair fault point.</p>
2. Check fuse	<p>A. Inspect the compressor clutch fuse.            Rated capacity of fuse: 15a            Is the fuse normal?            ? Yes to step 3.            ? No Overhaul the circuit and replace the rated capacity fuse.</p>
3. Check refrigerant pressure of A/C system	<p>A. Connect A/C pressure detection gauge set to A/C high/low pressure pipeline, and detect the refrigerant pressure of A/C system under normal temperature and normal state.            Reference pressure value: 0.5 ~ 0.8MPa            Is the pressure normal?            ? Yes to step 4.            ? No Check refrigerant pressure line of air-conditioning system and fill refrigerant according to standard.  <a href="#">Reference: Refrigeration system pressure check</a></p>
4. Check whether the A/C controller reports abnormal fault of pressure switch detection.	<p>A. Power on the vehicle to ON gear;            B. Connect the handheld diagnostic scanner, enter the A/C controller panel and read the current DTC.            Does the A/C controller report a fault about abnormal pressure switch detection?            ? Check the connection between the pressure switch and the harness plug, and replace the pressure switch if necessary.            ? No to step 5.</p>
5. Check whether compressor start request of A/C controller is issued.	

	<p>A. Power on the vehicle to ON gear;</p> <p>B. Enter the A/C control data flow reading function through the diagnostic scanner, and turn on the A/C refrigeration switch to light the indicator.</p> <p>Read whether A/C controller sends open request normally?</p> <p>? Yes to step 6.</p> <p>? No Check the CAN network status and replace the</p>
6. Inspect the compressor clutch relay supply circuit.	
	<p>A. Power off the vehicle to off gear;</p> <p>B. Remove the compressor clutch relay;</p> <p>C. Power on the vehicle to ON gear;</p> <p>D. Measure the voltage between the supply terminal of the compressor clutch relay in the engine compartment fuse box and reliable grounding point.</p> <p>Standard voltage: 11 ~ 14 V</p> <p>Is the voltage normal?</p> <p>? Yes to step 7.</p> <p>? No Overhaul the open circuit of the compressor clutch relay supply circuit and repair it.</p>
7. Check compressor clutch relay coil control circuit	
	<p>A. Power off the vehicle to off gear;</p> <p>B. Remove the compressor clutch relay;</p> <p>C. Power on the vehicle to ON gear;</p> <p>D. Measure whether the coil end of the compressor clutch relay in the engine compartment fuse box is connected to the corresponding pin of the engine control module.</p> <p>? Yes Troubleshooting engine control module control problems.</p> <p>? No Overhaul the open circuit problem of the compressor clutch relay control circuit and repair it.</p>

## DTC and corresponding diagnosis method

### Fault code table

#### Automatic A/C

Fault code	Meaning	Possible fault causes	Maintenance advice
B1400	Evaporator temperature sensor detection failure	Evaporator temperature sensor open circuit or short circuit to power supply	1. On the diagnostic scanner data flow page, read whether the evaporator temperature value is abnormal; 2. Check whether the connector is loose or short to power supply; 3. Check whether sensor to controller circuit is open; 4. Check whether evaporator temperature sensor is disconnected;
		Evaporator temperature sensor short circuit or short circuit to ground	1. On the diagnostic scanner data flow page, read whether the evaporator temperature value is abnormal; 2. Check whether the connector is shorted; 3. Check whether the sensor is short circuit to the controller circuit; 4. Check the evaporator temperature sensor for short circuit;
B1401	Interior temperature sensor fault	Interior temperature sensor open circuit or short circuit to power supply	1. On the diagnostic scanner data flow page, read whether the temperature value in the vehicle is abnormal; 2. Check whether the connector is loose or short to power supply; 3. Check whether sensor to controller circuit is open; 4. Check whether the interior temperature sensor is disconnected;
		Interior temperature sensor short circuit or short circuit to ground	1. On the diagnostic scanner data flow page, read whether the temperature value in the vehicle is abnormal; 2. Check whether the connector is shorted; 3. Check whether the sensor is short circuit to the controller circuit; 4. Check whether the interior temperature sensor is short circuit;
B1402	Sunlight sensor fault	Sunlight sensor open circuit or short circuit to power supply	1. On the diagnostic scanner data flow page, read whether the value of sunlight sensor is abnormal; 2. Check whether the connector is loose or short to power supply; 3. Check whether sensor to controller circuit is open; 4. Check whether the sunlight sensor is disconnected;
		Sunlight sensor short circuit or short circuit to ground	1. On the diagnostic scanner data flow page, read whether the value of sunlight

			<p>sensor is abnormal;</p> <p>2. Check whether the connector is shorted;</p> <p>3. Check whether the sensor is short circuit to the controller circuit;</p> <p>4. Check whether the sunlight sensor is short circuit;</p>
B1403	Outside temperature sensor fault	Outside temperature sensor open circuit or short circuit to power supply	<p>1. On the diagnostic scanner data flow page, read whether the outside temperature value is abnormal;</p> <p>2. Check whether the connector is loose or short to power supply;</p> <p>3. Check whether sensor to controller circuit is open;</p> <p>4. Check whether the outside temperature sensor is disconnected;</p>
		Outside temperature sensor short circuit or short circuit to ground	<p>1. On the diagnostic scanner data flow page, read whether the outside temperature value is abnormal;</p> <p>2. Check whether the connector is shorted;</p> <p>3. Check whether the sensor is short circuit to the controller circuit;</p> <p>4. Check whether the outside temperature sensor is short circuit;</p>
B1404	Mode damper actuator motor drive circuit fault	Poor contact of actuator connector or damage to actuator cannot be driven	Check wiring from actuating motor drive end to controller or replace actuating motor
B1405	Left temperature motor actuator motor drive circuit fault	Poor contact of actuator connector or damage to actuator cannot be driven	Check wiring from actuating motor drive end to controller or replace actuating motor
B1406	Inner and outer motor actuator motor drive circuit fault	Poor contact of actuator connector or damage to actuator cannot be driven	Check wiring from actuating motor drive end to controller or replace actuating motor
B1408	Mode damper actuator motor feedback fault	Mode damper actuator motor feedback short circuit to ground fault	1. Check whether the damper motor feedback end is short to ground;
		Mode damper actuator motor feedback open circuit or short circuit to power	<p>1. Check whether the connector is loose;</p> <p>2. Check whether the damper motor feedback to the controller circuit is open;</p> <p>3. Check whether the feedback is short to power supply;</p>
B1409	Left temperature damper actuator motor feedback fault	Left temperature damper actuator motor feedback short circuit to ground fault	1. Check whether the damper motor feedback end is short to ground;
		Left temperature damper actuator motor feedback open circuit or short circuit to battery fault	<p>1. Check whether the connector is loose;</p> <p>2. Check whether the damper motor feedback to the controller circuit is open;</p> <p>3. Check whether the feedback is short to power supply;</p>

B140A B140B	Fan terminal voltage control is inaccurate A/C system pressure too high or too low	Poor connection of fan interface, fan fault or speed control module fault	1. Check battery voltage, harness, fan and speed regulation module.
		Tristate pressure switch is disconnected due to too high or too low pressure, or harness contact problem	Check whether the A/C system has refrigerant and whether the A/C refrigeration cycle works normally.
B140C B140D	AQS sensor fault The passenger cooling/heating door actuator is blocked or the drive circuit is blocked.	Poor connection of sensor interface or sensor failure	Check reference sensor reference voltage circuit or connector harness
		Poor connection of sensor interface or sensor failure	Check reference sensor reference voltage circuit or connector harness
B140E	Front passenger cooling/heating door actuator feedback open circuit or short circuit to battery fault Front passenger cooling/heating door actuator feedback fault	Front passenger cooling/heating door actuator feedback open circuit or short circuit to battery fault	Check reference sensor reference voltage circuit or connector harness
		Front passenger cooling/heating door actuator feedback short circuit to ground	Check reference sensor reference voltage circuit or connector harness
B140F	Front passenger sun sensor fault	Abnormal communication or BCM signal link	Check harness or replace sensor
B1411	Sensor reference voltage fault	Sensor reference voltage short to battery	Check reference 5V reference voltage circuit or connector harness
		Sensor reference voltage short circuit to ground	Check reference 5V reference voltage circuit or connector harness
B1412	Ionizer fault	Ionizer internal fault or circuit fault	Check ion generator and replace
U127088	Bus off	Communication fault/poor contact	1. Check whether CAN bus is short to ground or power supply; 2. Check whether twisted pair wires are shorted to each other;
U127117	High pressure	AC detects high supply voltage	1. Check harness or alternator and battery
U127118	Low pressure	AC detects that the supply voltage is too low.	1. Check harness or alternator and battery
U120087	Controller reception timeout	EMS node missing	1. Check harness or replace sender ECU
U120495	Controller reception timeout	IP node lost	1. Check harness or replace sender ECU
U120187	Controller reception timeout	BCM node lost	1. Check harness or replace sender ECU
U120387	Controller reception timeout	Hu node lost	1. Check harness or replace sender ECU
U120F	Lin message receiving	Abnormal LIN message reception	1. Check harness or replace sender ECU

	timeout		
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## Removal and installation

### A/C cooling system parts

#### A/C compressor

##### Removal

1. Disconnect the negative battery harness.

Reference: 3.1.11 charging system

2. Disconnect the compressor harness connector.

3. Recover refrigerant.

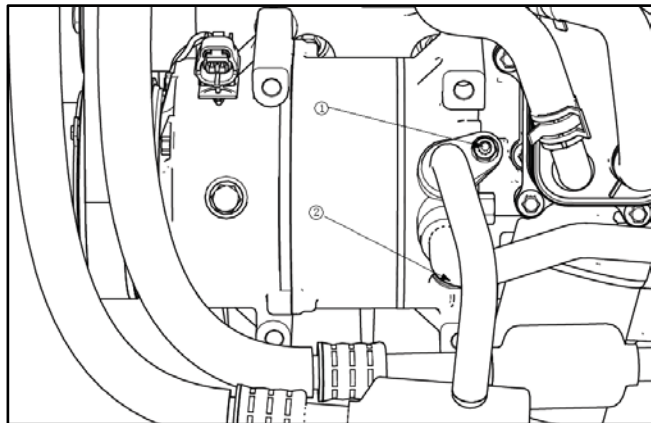
Reference: Air conditioning refrigerant recovery and filling

4. Remove the compressor drive belt.

Reference: 3.1.3 Mechanical system.

5. Remove compressor high and low pressure connecting pipe.
  1. Remove the compressor high-pressure pipe connecting bolt.
  2. Remove the compressor low-pressure pipe connecting bolt.

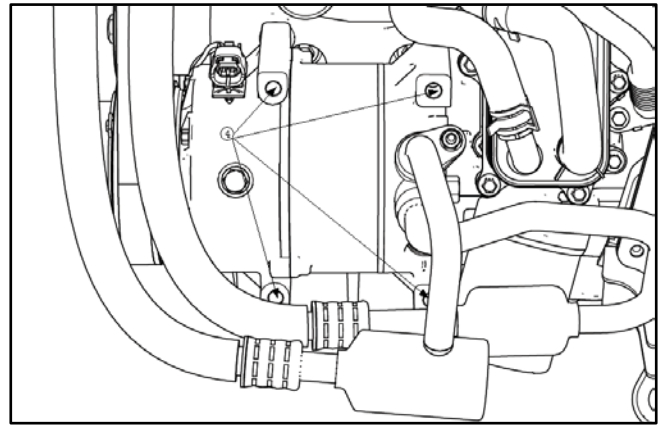
Torque: 10±1Nm



**⚠ Note:** All O-rings involved in the installation process must be replaced with new parts.

6. Remove the compressor retaining bolt 3, and take out the compressor from the vehicle bottom.

Torque: 23±2Nm



##### Installation

1. The installation sequence is reverse to the removal sequence, and pay attention to the following items:

- The new A/C compressor already has a standard capacity compressor lubricant.
- When installing the old A/C compressor, first draw the compressor lubricating oil, and then add about 150 ml lubricating oil.
- The A/C compressor itself contains lubricating oil. If there is no refrigerant leakage in the A/C system, just replace it with a new compressor and proceed as follows:
- Drain removed compressor lubricant and measure the amount of oil drained.
- Before installing a new compressor, a part of the lubricating oil must be drained by the difference between the removed compressor drained oil and 150 ml.

2. After installation, vacuum the A/C system

Reference: Air conditioning refrigerant recovery and filling

3. Fill refrigerant.

Reference: Air conditioning refrigerant recovery and filling


4. After filling the A/C refrigerant, start the A/C compressor in the following way:
  1. Turn on the A/C switch and set the A/C temperature to low temperature mode;
  2. Turn on the A/C cooling mode, and make the A/C compressor run at idle speed for at least 5 minutes.

**⚠ Note:** The compressor can work at full load only when the compressor lubricating oil is evenly distributed into the refrigeration



system.

### Condenser assembly

 **Note:** The condenser and the drying reservoir are integral and cannot be replaced separately.

#### Removal

1. Disconnect the negative battery harness.

Reference: 3.1.11 charging system

2. Recover refrigerant.

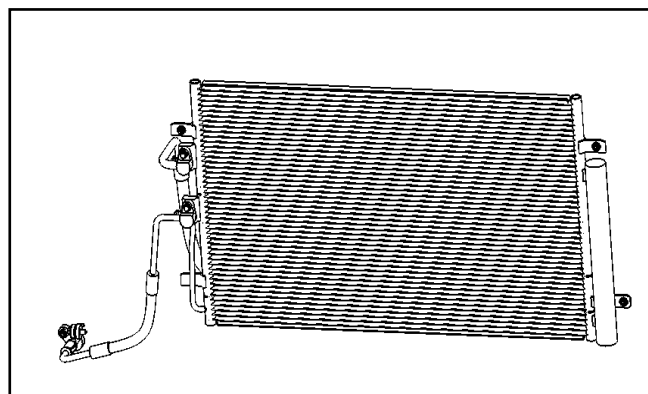
Reference: Air conditioning refrigerant recovery and filling

3. Remove front bumper.

Reference: 5.2.10 bumper.

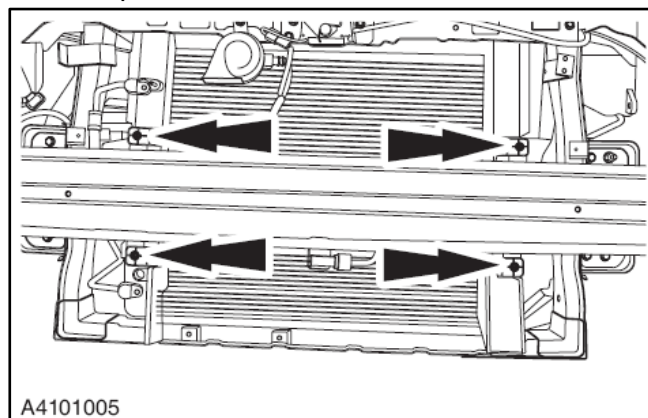
4. Remove the condenser A/C connecting line retaining nuts.

Torque:  $10 \pm 1 \text{ Nm}$

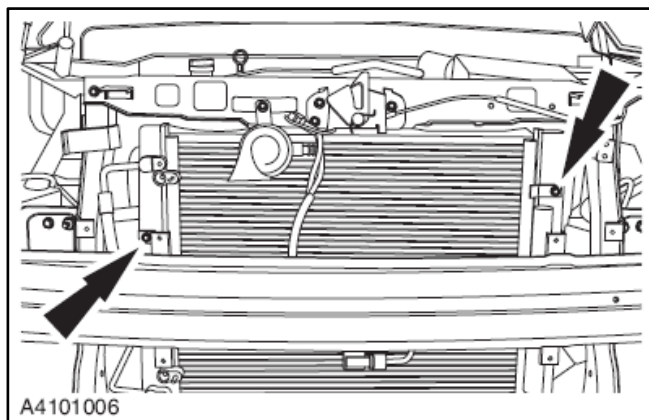


5. Remove the 4 retaining bolts of the condenser on the radiator.

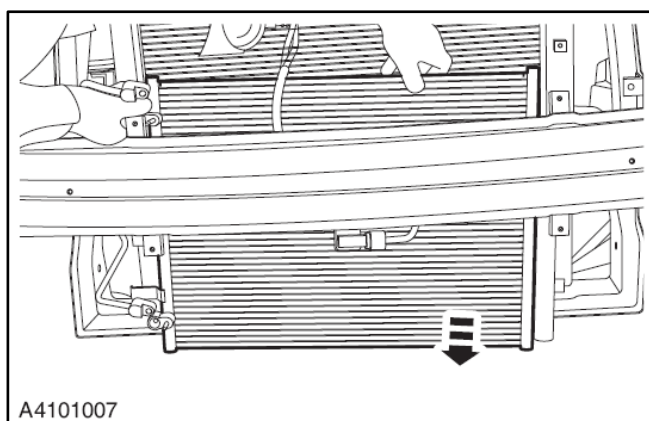
Torque:  $6 \pm 1 \text{ Nm}$



6. Remove the 2 retaining bolts of the condenser.



7. Remove condenser downwards.



#### Installation

- The installation sequence is the reverse of the removal sequence, noting the following:
  - Replace the O-ring with a new one and grease the O-ring with air-conditioning compressor lubricant.
- After installation, vacuumize the air conditioning system.

Reference: Air conditioning refrigerant recovery and filling

- Fill refrigerant.

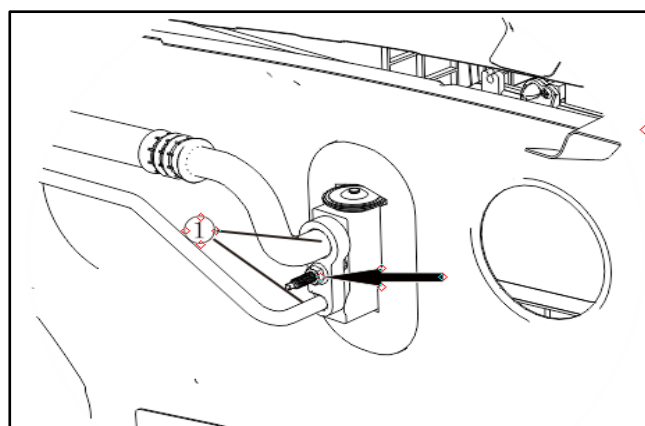
Reference: Air conditioning refrigerant recovery and filling

#### Expansion valve

##### Removal

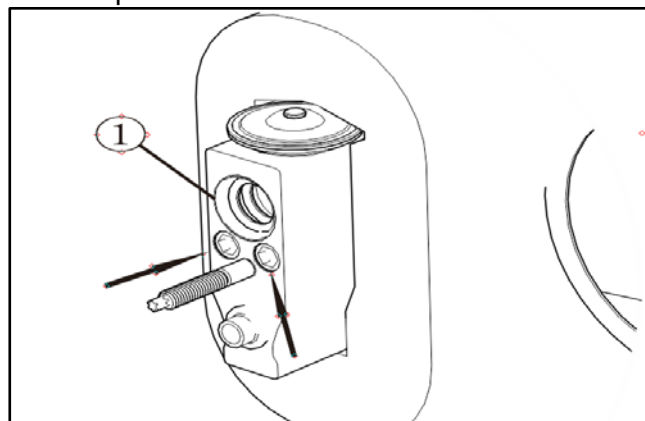
- Disconnect the negative battery harness.  
Reference: 3.1.11 charging system
- Recover refrigerant.  
Reference: Air conditioning refrigerant recovery and filling
- Remove the retaining bolt-arrow, disconnect the evaporator connecting pipe assembly (1) from the expansion valve, and seal the pipe joint.

Torque:  $10 \pm 1 \text{ Nm}$



- Dismantle fixing bolt-arrow of expansion valve and evaporator connecting pipe, take out expansion valve and seal evaporator interface.

Torque:  $8 \pm 1 \text{ Nm}$



##### Installation

- The installation sequence is the reverse of the removal sequence, noting the following:
  - Replace the O-ring with a new one and grease the O-ring with air-conditioning compressor lubricant.
- After installation, vacuumize the air conditioning system.

Reference: Air conditioning refrigerant recovery and filling.

3. Fill refrigerant.

Reference: Air conditioning refrigerant recovery and filling

### A/C pressure sensor

#### Removal

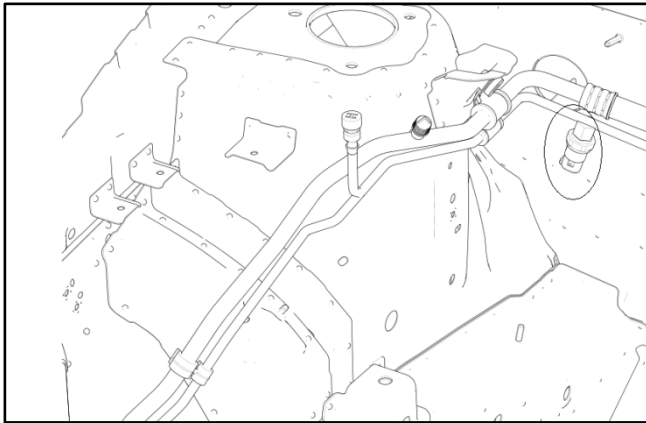
1. Disconnect the negative battery harness.

Reference: 3.1.11 charging system

2. Recover refrigerant.

Reference: Air conditioning refrigerant recovery and filling

3. Disconnect the A/C pressure switch harness plug, and take out the A/C pressure sensor with a suitable tool.



#### Installation

1. The installation sequence is the reverse of the removal sequence, noting the following:
  - Replace the O-ring with a new one and grease the O-ring with air-conditioning compressor lubricant.
2. After installation, vacuumize the air conditioning system.

Reference: Air conditioning refrigerant recovery and filling.

3. Fill refrigerant.

Reference: Air conditioning refrigerant recovery and filling

### A/C pipeline

#### Removal

1. Disconnect the negative battery harness.

Reference: 3.1.11 charging system

2. Recover refrigerant.

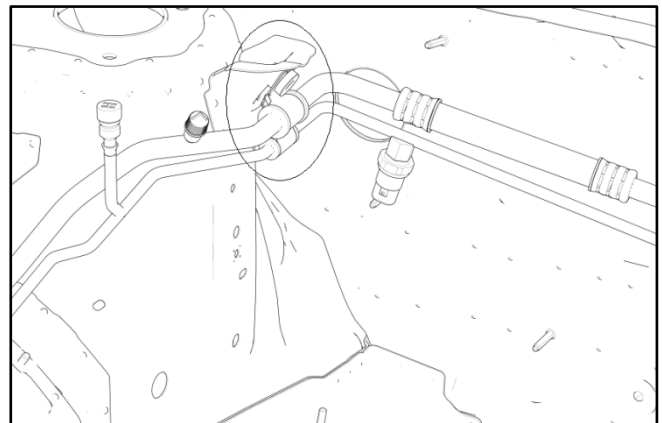
Reference: Air conditioning refrigerant recovery and filling

3. Remove A/C pressure sensor.

Reference: Removing and installing A/C pressure sensor

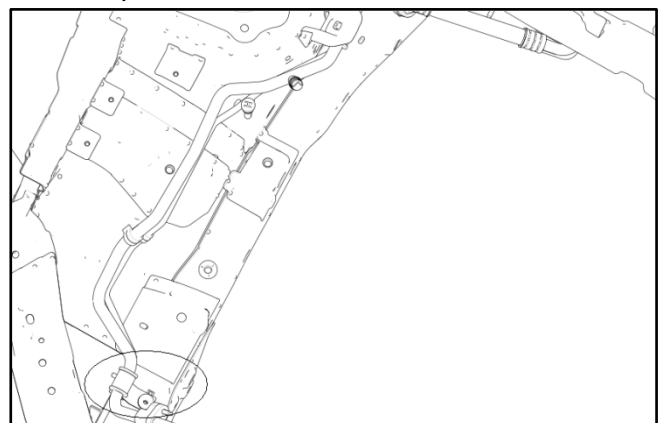
4. Remove retaining bolts of high and low pressure pipes at front right pillar.

Torque:  $10 \pm 1 \text{ Nm}$



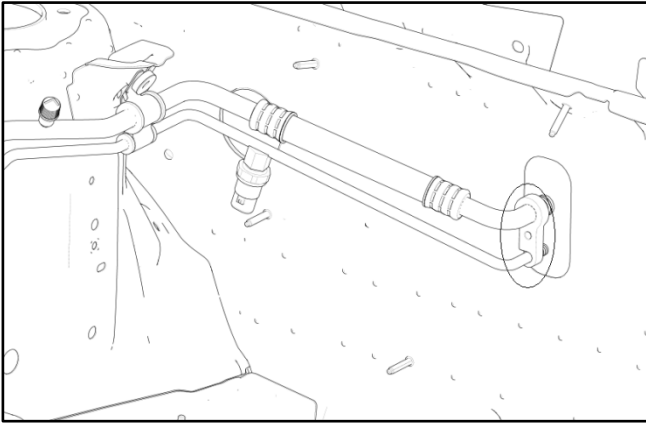
5. Remove the retaining bolts of high and low pressure pipes at the right suspension of the engine.

Torque:  $10 \pm 1 \text{ Nm}$



6. Remove the connecting nuts between the high/low pressure pipe and the expansion valve, separate the high/low pressure pipe, and seal the joint.

Torque:  $10 \pm 1 \text{ Nm}$



7. Remove front bumper.

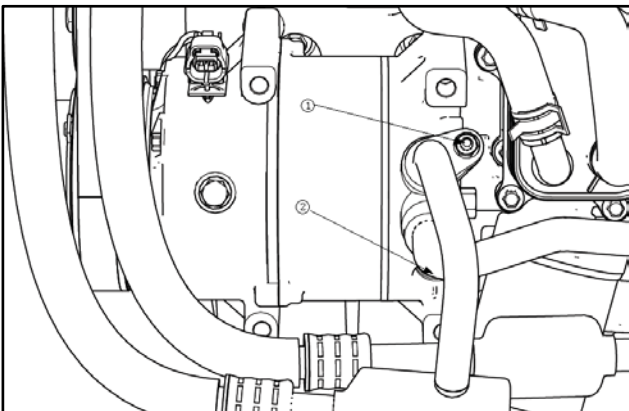
Reference: 5.2.10 bumper

8. Remove the condenser high and low pressure pipe retaining nut, disconnect the pipe connection, and seal the joint.

Torque: 10±1Nm

9. Remove the compressor high and low pressure pipe retaining bolts, disconnect the pipe connection, and seal the joint.

Torque: 10±1Nm



### Installation

- The installation sequence is the reverse of the removal sequence, noting the following:
  - Replace the O-ring with a new one and grease the O-ring with air-conditioning compressor lubricant.
- After installation, vacuumize the air conditioning system.

Reference: Air conditioning refrigerant recovery and filling

3. Fill refrigerant.

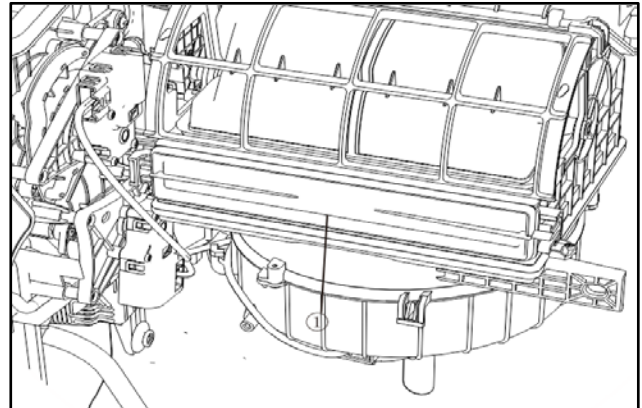
Reference: Air conditioning refrigerant recovery and filling

## A/C heating system parts

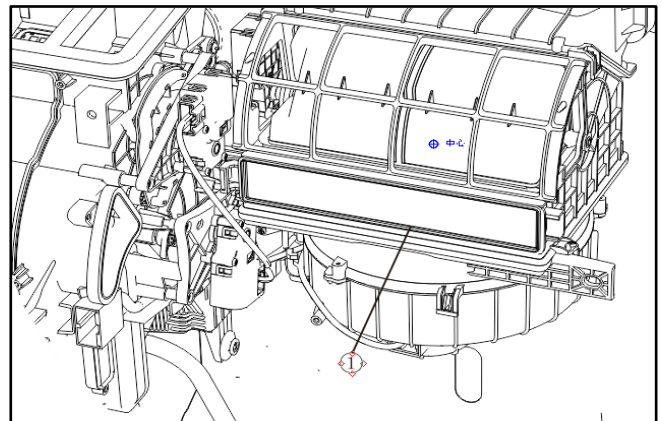
### A/C strainer assembly

#### Removal

- Remove glove box assembly.  
Reference: 5.3.3 Front interior
- Press the filter element cover plate opening in the direction of arrow, and take out the filter element cover plate.



3. Take out A/C filter assembly (1).



#### Installation

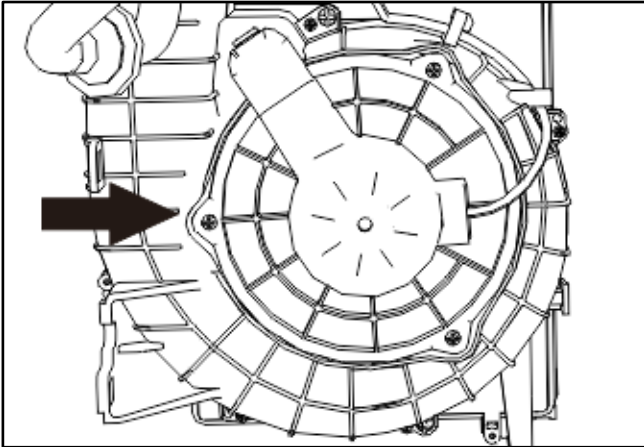
- The installation sequence is the reverse of the removal sequence, noting the following:
  - When installing, install the A/C filter assembly with the marking arrow upward.

### Blower

#### Removal

- Disconnect the negative battery harness.  
Reference: 3.1.11 charging system
- Disconnect wire harness plug connection for blower motor.

3. Remove the three retaining screws of the blower motor, and take out the blower motor.



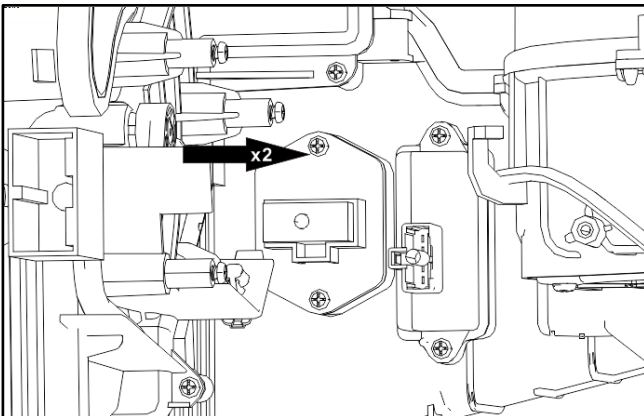
#### Installation

1. The installation sequence is the reverse of the removal sequence.

#### Blower speed regulating resistance

##### Removal

1. Disconnect battery negative wire  
[Reference: 3.1.11 charging system](#)
2. Disconnect harness connector of speed regulating module.
3. Remove the 2 retaining screws of the speed control module.



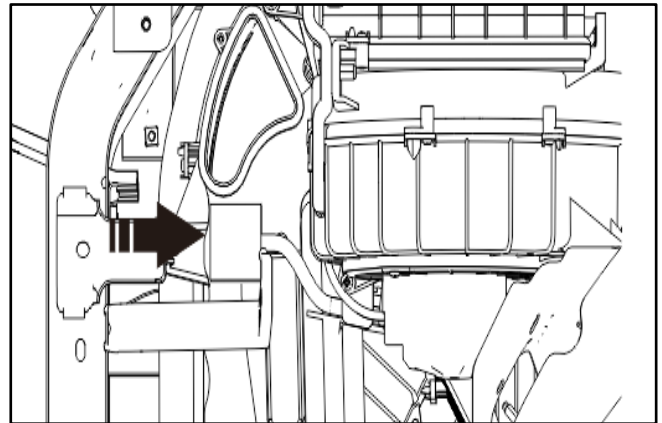
#### Installation

1. The installation sequence is the reverse of the removal sequence.

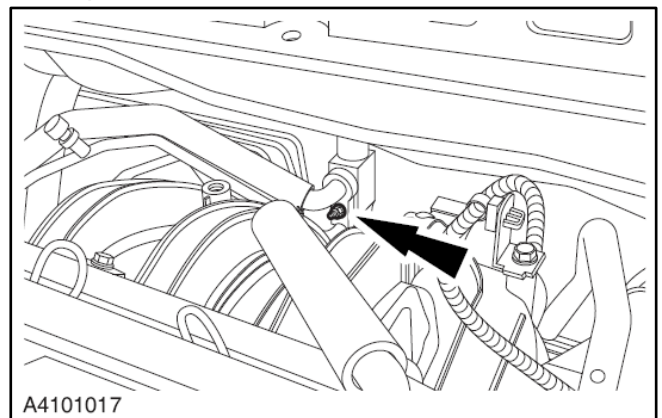
#### HVAC assembly

##### Removal

1. Recover refrigerant.  
[Reference: Air conditioning refrigerant recovery and filling](#)
2. Drain the engine coolant.  
[Reference: 3.1.5 Cooling system](#)
3. Disconnect the negative battery harness.  
[Reference: 3.1.11 charging system](#)
4. Remove dashboard.  
[Reference: 5.3.3 Front interior](#)
5. Disconnect the heater A/C (HVAC) assembly harness plug.

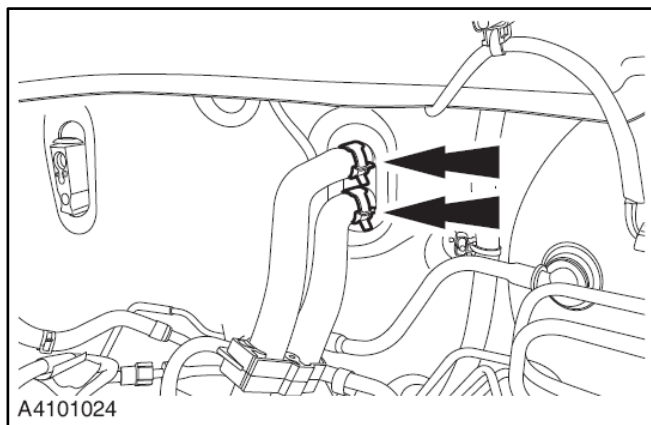


6. Dismantle connecting nut between high/low pressure pipe and expansion valve, and separate high/low pressure pipe from expansion valve.

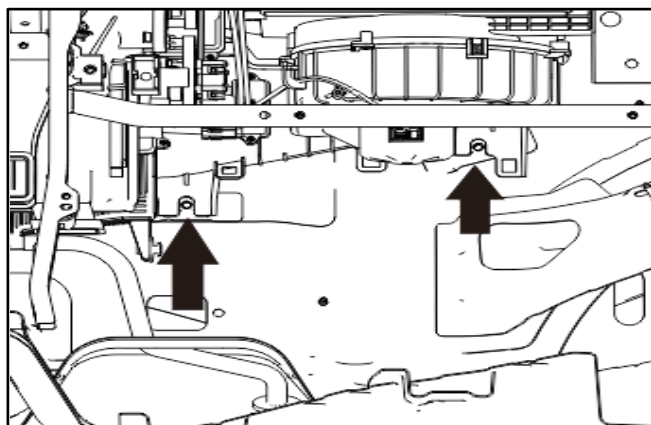


7. Remove front heater water pipe of front wall panel assembly.

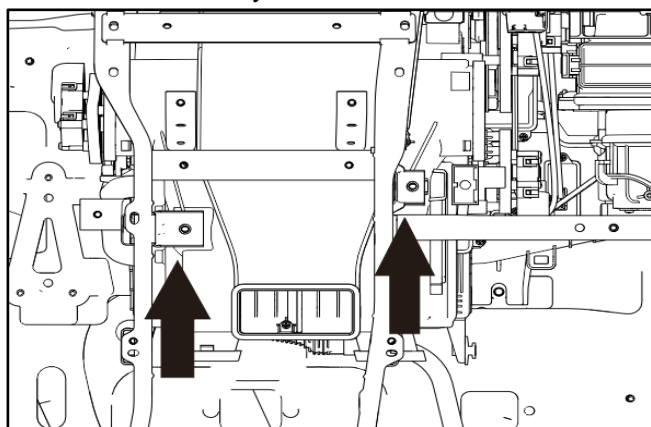




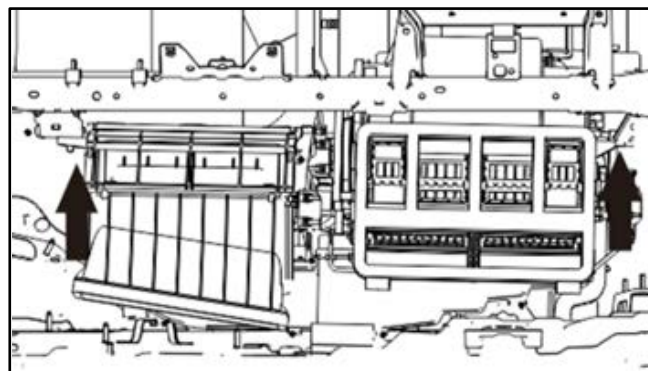
8. Remove 2 retaining bolts at the lower part of HVAC blower.



9. Remove 2 retaining nuts in the middle of HVAC assembly.



10. Remove the upper left and right retaining nuts of HVAC assembly and disconnect the A/C drain pipe.



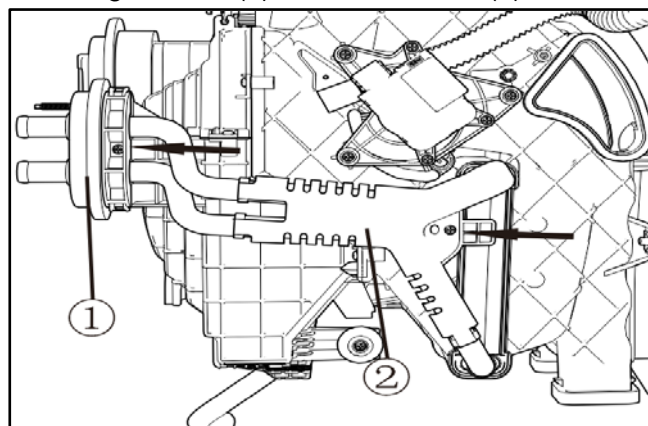
### Installation

- The installation sequence is the reverse of the removal sequence, noting the following:
  - Pay attention to the installation position. The installation position of heater inlet and outlet pipes cannot be interchanged.
  - After installation, vacuumize the air conditioning system.
  - Fill refrigerant.
  - Start the vehicle, check whether the coolant level is normal and add coolant if necessary.

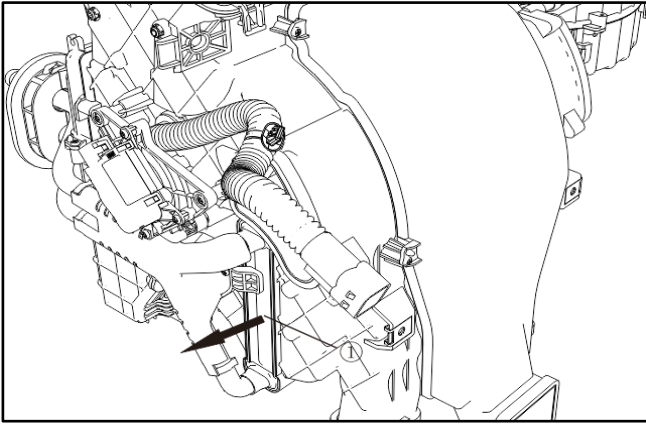
### Heater core

#### Removal

- Remove HVAC assembly  
[Reference: Removing and installing HVAC assembly](#)
- Take out the fixing screws, and loosen the fixing bracket (1) and heat shield (2).



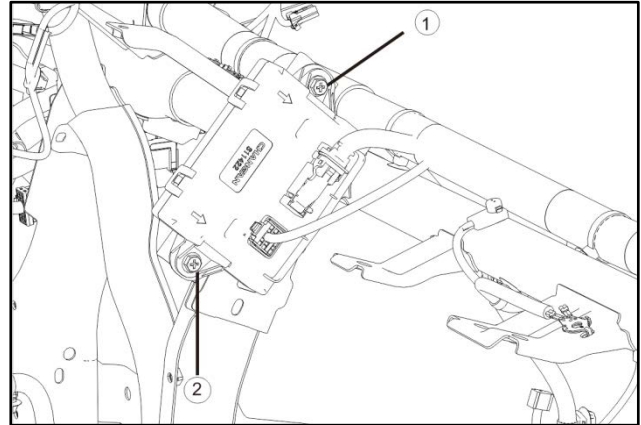
- Take out the heater core (1) in the direction of arrow.

**Installation**

1. The installation sequence is the reverse of the removal sequence.

**A/C control system parts****A/C control panel****Removal**

1. Disconnect the negative battery harness.  
[Reference: 3.1.11 charging system](#)
2. Remove the two screws (1) and (2) of the A/C controller with a suitable tool.



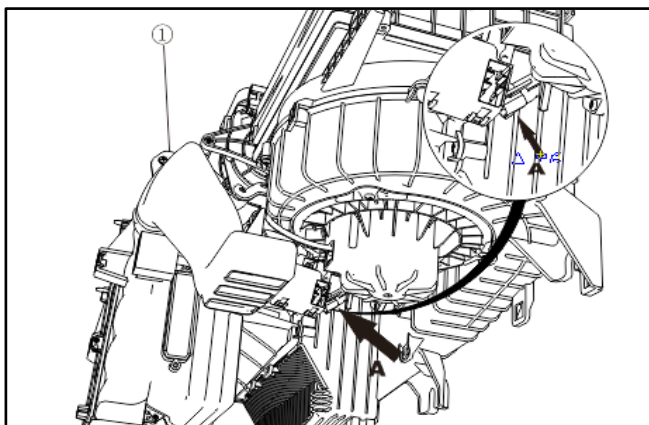
3. Disconnect the A/C control module harness plug, and take out the A/C control panel assembly.

**Installation**

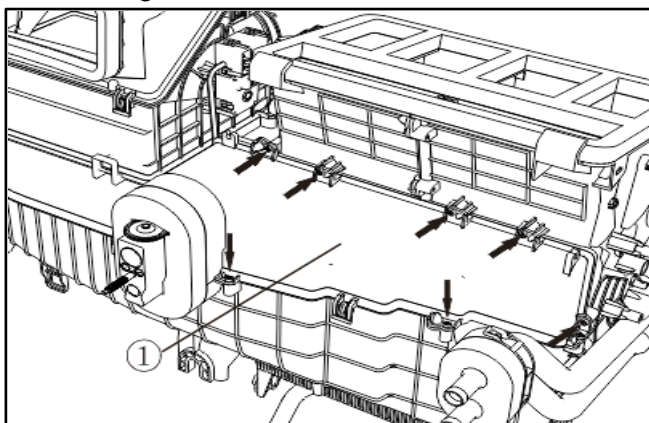
1. The installation sequence is the reverse of the removal sequence.

**Evaporator temperature sensor****Removal**

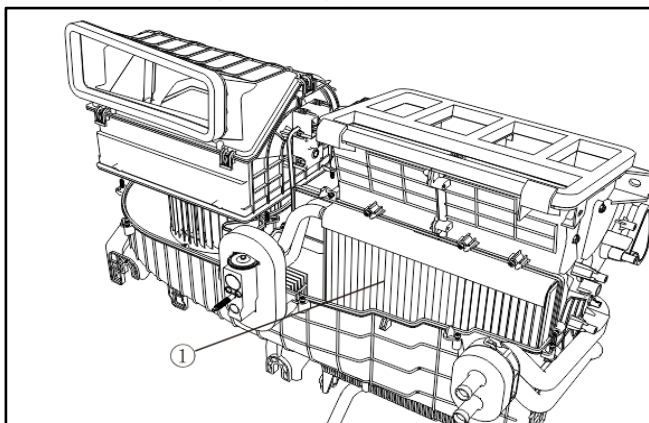
1. Disconnect the negative battery harness.  
[Reference: 3.1.11 charging system](#)
2. Remove HVAC assembly  
[Reference: Removing and installing HVAC assembly](#)
3. Disconnect connector A of evaporator temperature sensor, loosen retaining screw of front right blowing foot air pipe, and take out front right blowing foot air pipe assembly.



4. Loosen the retaining screws of HVAC assembly housing, disengage the housing buckle, and remove the evaporator upper housing.



5. Take out evaporator (1).



6. Take out the evaporator temperature sensor from the evaporator.

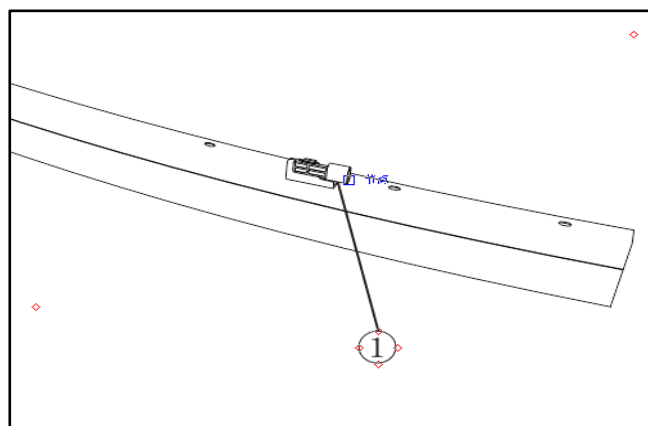
#### Installation

- The installation sequence is the reverse of the removal sequence, noting the following:
  - Do not damage the evaporator sealing strip and heat sink.
  - When installing the housing, the sealing strip must be close to the housing.

### Outside temperature sensor

#### Removal

- Disconnect the negative battery harness.  
[Reference: 3.1.11 charging system](#)
- Removing and installing front bumper assembly.  
[Reference: 5.2.10 bumper](#)
- Disconnect the outside temperature sensor connector and take out the outside temperature sensor.



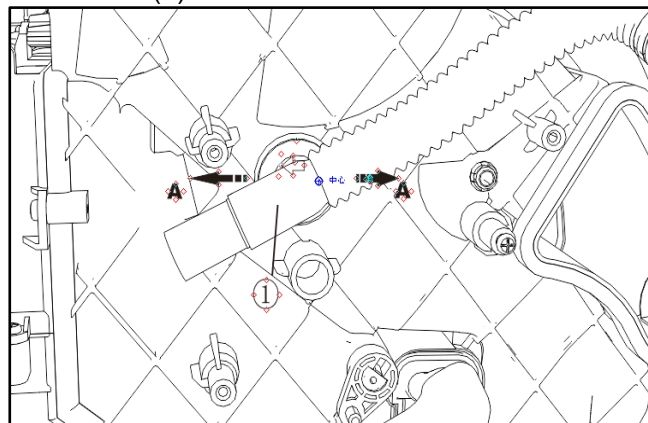
#### Installation

- The installation sequence is the reverse of the removal sequence.

### Interior temperature sensor

#### Removal

- Disconnect the negative battery harness.  
[Reference: 3.1.11 charging system](#)
- Remove the driver side lower guard assembly.  
[Reference: 5.3.3 Front interior](#)
- Rotate bracket fixing clip in direction of arrow A, and take out interior temperature sensor (1) in direction of arrow B.





**Installation**

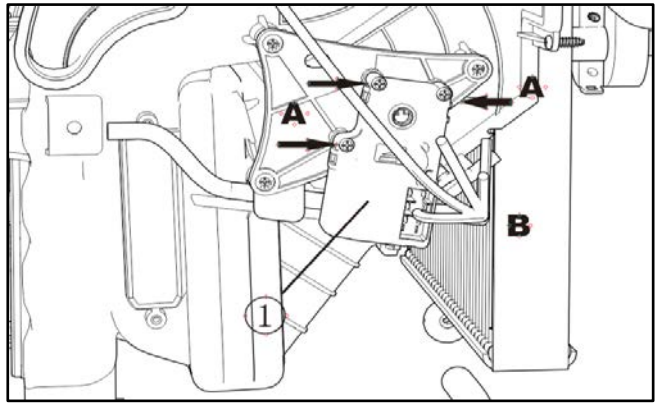
1. Installation sequence is reverse to removal sequence

**Inner and outer circulation damper actuator****Removal**

1. Remove HVAC assembly

[Reference: Removing and installing HVAC assembly](#)

2. Disconnect connector B and loosen inner and outer circulation damper actuator attaching screws A.
3. Remove the inner and outer circulation damper actuator (1).

**Installation**

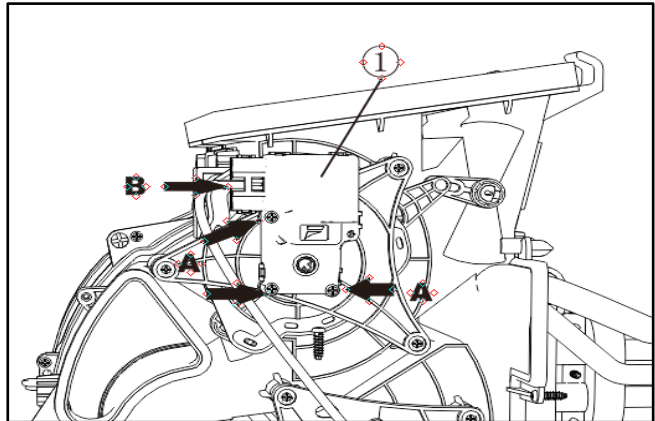
1. The installation sequence is the reverse of the removal sequence, noting the following:
  - The function of the cold and warm door actuator must be checked after installation.

**Mode damper actuator****Removal**

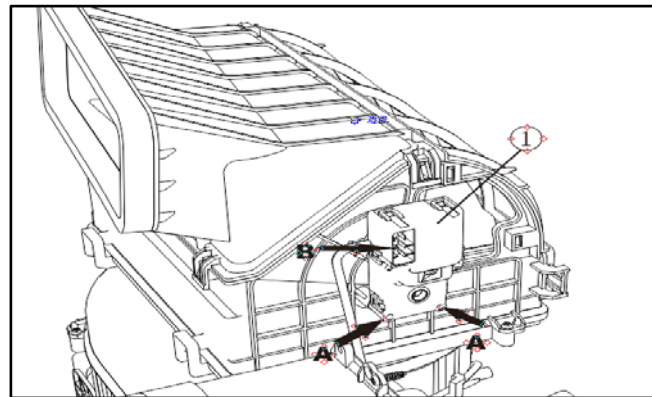
1. Remove HVAC assembly

[Reference: Removing and installing HVAC assembly](#)

2. Disconnect connector B and loosen mode damper actuator attaching screw A.
3. Remove the mode damper actuator (1).

**Installation**

1. The installation sequence is the reverse of the removal sequence, noting the following:
  - The function of the mode damper actuator must be checked after installation.

**Installation**

1. The installation sequence is the reverse of the removal sequence, noting the following:
  - The function of the inner and outer circulation damper actuator must be checked after installation.

**Cold and warm air door actuator****Removal**

1. Remove HVAC assembly

[Reference: Removing and installing HVAC assembly](#)

2. Disconnect connector B and loosen the cooling and heating door actuator attaching screws A.
3. Take out the cold and warm air door actuator (1).



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