

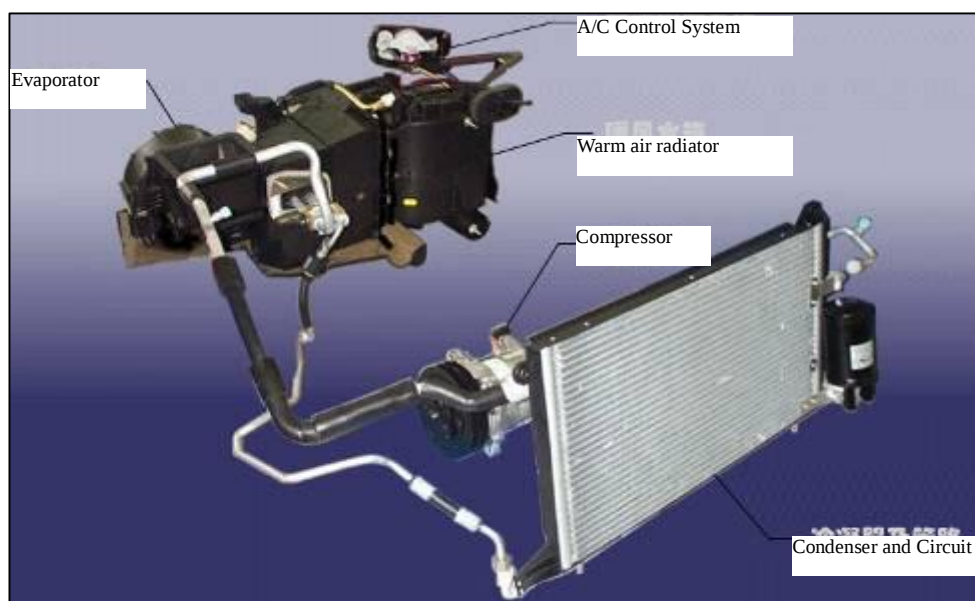
AIR CONDITIONER SYSTEM

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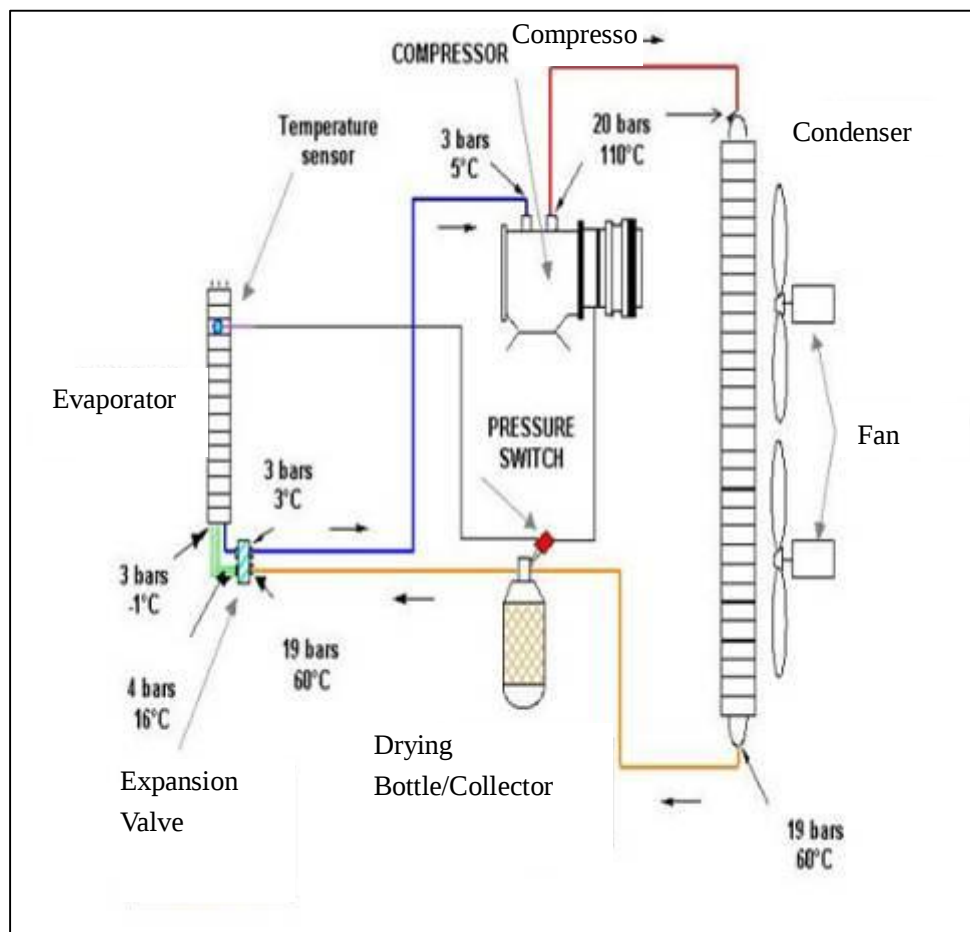
AIR CONDITIONING SYSTEM OVERVIEW

Based on its function, the Chery A15LHD air conditioning unit may be divided into such five basic components as the refrigeration system, heating system, ventilation system, control system and air purification system.

1. Refrigeration system It is available to cool the air inside the vehicle based on the refrigeration principle of vapor compression refrigerator. The temperature of evaporator as the cold source is lower than the dew-point temperature of air, so the refrigeration system also play the role of dehumidification and air purification. The refrigeration system of Chery's electronic fuel injection type engine adopts the coolant R134a. As shown in the figure, the refrigeration system mainly consist of the compressor, condenser, expansion valve, evaporator and etc. In the evaporator, the coolant fluid absorbs the heat from the air inside vehicle and is gasified to the low-pressure, low-temperature coolant vapor, and then is inhaled into the compressor.



The coolant vapor will be compressed by the compressor as the high-temperature, high-pressure gas which enters into the condenser. In the condenser, the coolant is cooled by the ambient air, and condensed into the fluid after emitting its heat outwards, then the moisture content is filtered and removed from the fluid via the fluid reservoir. The high-temperature, high-pressure coolant fluid is throttled down through the expansion valve (installed in the inlet pipe of evaporator) to reduce its pressure and temperature, and then the fluid enters into the evaporator. The low-temperature and low-pressure coolant fluid also absorb the heat from the inside of vehicle, and gasifies again to the low-temperature and low-pressure coolant vapor, and then is inhaled into the compressor. In such a manner, the coolant cycles recurrently to make the indoor temperature of vehicle reduce. **The pipelines for coolant are shown in the figure below:**

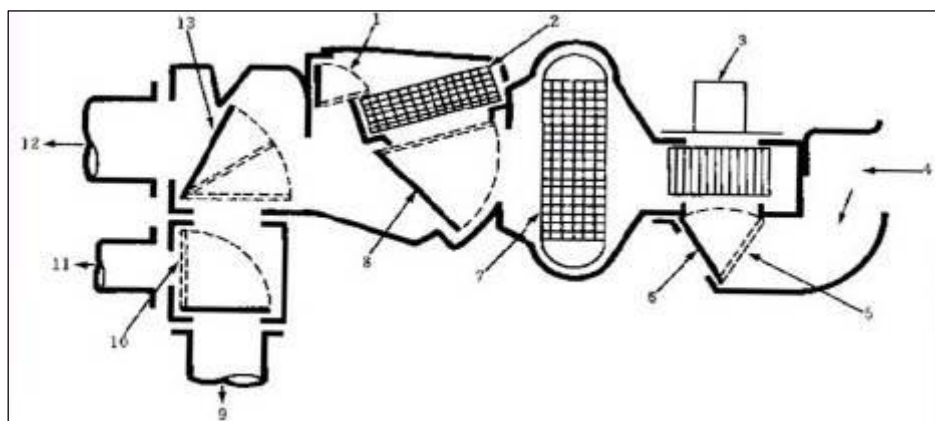


2. Heating system It adopts the engine coolant as the heat source and introduces the coolant into the radiator located at the compartment to heat the indoor air via the blower, and, at the same time, it is also used to defrost and defog the front windscreen. Chery A15LHD's air conditioning unit adopts the reheating mixed type unit, the heating system of which is used not only to individually heat the circulating air from the inside of vehicle or the fresh air from the outside, but also to firstly cool these two kinds of airs and then heat the whole or part to obtain the air temperature required. It is available to dehumidify the air, and also to filter the air so as to get the clean air with desired humidity.

3. Ventilation system Apart from the cool and heat the air inside the vehicle, the centrifugal blower is also used to change and ventilate the air inside the vehicle. The ventilation system consists of the air filter, air inlet, air duct, vent and etc. The system introduces the fresh air from the outside of vehicle into the inside while the ventilation and discharge port extracts the vitiated air from the inside to the outside. Chery A15LHD adopts the natural ventilation and forced ventilation. The open/close fresh air inlet is controlled by the fresh/circulating air vacuum valve.

During the natural ventilation, the fresh air enters into the vehicle from the air inlet fixed under the front windscreen (positive pressure area), and gets into the trunk from the seat belt notch on the trunk cover, then passes across the vents (negative pressure area) on the body rear skirt, trunk lining, rear side beam and finally discharges to the atmosphere. Due to the movement of air in the rear body compartment, it plays a good role to defrost the rear windows. In addition, the whole process is conducted without pressure, so the air changing doesn't create any noise and has nothing with the driving speed.

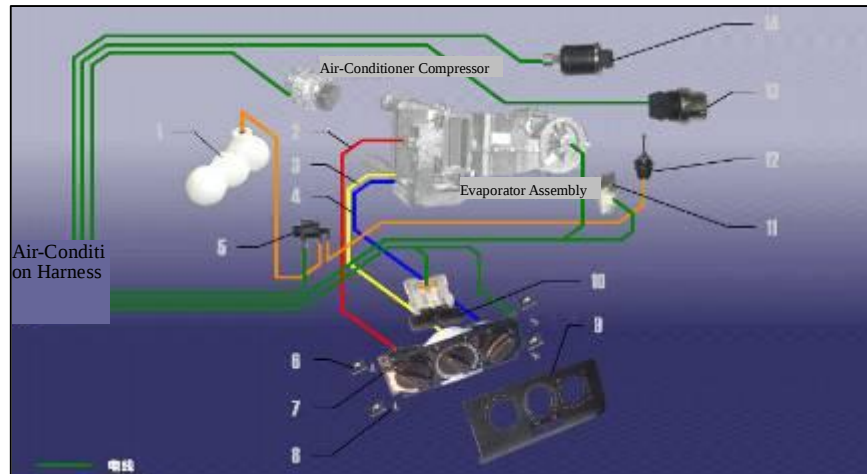
And during the forced ventilation, in case that the fresh air doesn't pass through the heating radiator (the mixed gate closed) after the air is pressurized by the blower, the air will enter



into the vehicle via all air ducts, and then discharge along the same route as that of natural ventilation to the atmosphere.

An individual type casing system with blower

- | | | |
|----------------------|--------------------------------|------------------------|
| 1. Restrictor damper | 5. Fresh/recirculated air door | 9. To panel |
| 2. Heater core | 6. Recirculated air | 10. A/C defrost damper |
| 3. Blower motor | 7. Evaporator core | 11. To defroster |
| 4. Fresh air | 8. Air mix damper | 12. To bottom outlet |



4. Control system The control system mainly consist of the electrical component, vacuum hose and control mechanism. On one side, it is available to control the temperature and pressure of refrigeration and heating system, and, on the other side, it is also used to control the temperature of air inside the vehicle, the blowing rate and direction.

5. Air purification system The air purification system mainly indicates the dust filter, which is used to filter the outside air inhaled, and continuously discharge the vitiated air generated inside the vehicle to make the air inside the vehicle clean and hygienic.

REFILLING OF REFRIGERANT AND REFRIGERANT OIL

Caution:

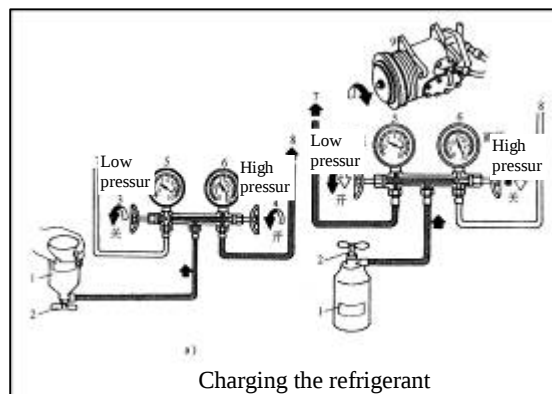
- If there are some moist materials or other foreign materials circulating in the refrigeration system, the cooling performance of the refrigeration system will considerably decrease and generate the abnormal noise. So, after any refrigeration and circulation part is removed, the openings shall be immediately plugged to avoid the entrance of moist materials or other foreign materials.

- If the service reservoir is used to refill the refrigerant, it is very dangerous to open the valve located at engine high pressure side. During the operation, the pressure inside the service reservoir will rise, which may cause the explosion of the reservoir, what's more, the metal fragment from explosion and the refrigerant sputtered will be serious harmful to the operators. Thus, it is recommended to pay more attention to the close of the high-pressure-side valve during the course of engine operation.

Caution:

- Take care not to exceed the standard value(s) specified in the technical specification during refilling the refrigerant into the refrigeration system. If exceeding the standard values, it will considerably reduce the efficiency of the A/C system, and even damage the refrigerant recirculation parts.

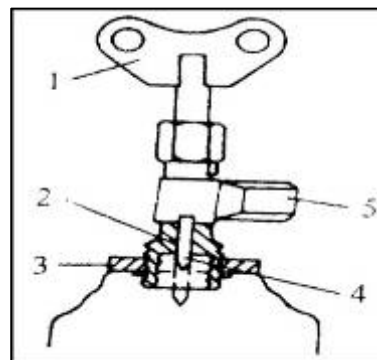
- In accordance with the regulation, the refrigerant shall be refilled from the high-pressure side at all time. If it is refilled from the low-pressure side, the valve leaf of A/C compressor will loosen and give off the abnormal noise.



- 1-Refrigerant tank
- 2-Unlock valve
- 3-Low-pressure manual valve
- 4-High-pressure manual valve
- 5-Low-pressure gauge
- 6-High-pressure gauge
- 7-Connect to low-pressure service valve hose
- 8-Connect to high-pressure service valve hose
- 9-A/C compressor

1. Precautions for Refrigerant Concerned

- (1) To avoid the refrigerant contacting with your skin, wear rubber gloves and safety goggles while handling the refrigerant.
- (2) Handle the refrigerant concerned at a well ventilated location. Since the refrigerant is a colorless gas at room temperature and its density is greater than that of air, the refrigerant will deposit in the maintenance location, which may easily cause the maintenance personnel choked.
- (3) Do not allow the refrigerant to contact with fire. Otherwise it may generate the toxic gas.
- (4) The O-ring can be applied once only.
- (5) Chery model-A15LHD adopts the refrigerant R134a which cannot be interchanged with R12. Also compressor oils cannot be mixed. During the course of handling, any tool that has touched certain kind of refrigerant must not touch any other kind of refrigerant.



Refrigerant Tank Unlock Valve

- 1-Butterfly Handle
- 2-Refrigerant Tank Refilling Valve
- 3-Plate-shaped Nut
- 4- Needle Valve
- 5-Refilling Valve Joint

2. Method to Refill Refrigerant

If the 400g tanked refrigerant is required, a refrigerant tank unlock valve shall be applied (shown in the figure). The operation procedures are as follows:

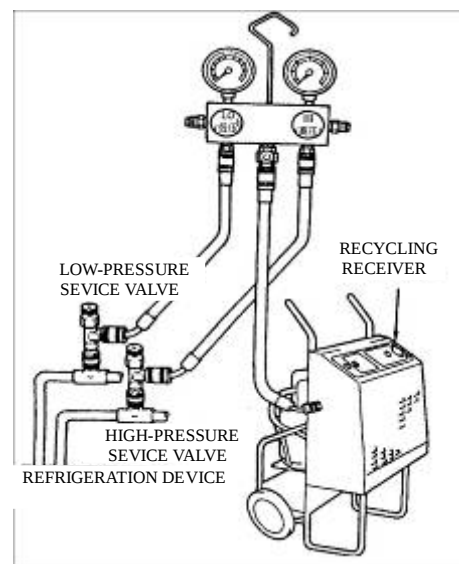
- (1) Before the unlock valve is installed on the refrigerant tank, turn the butterfly handle 1 in the counterclockwise direction till the needle valve returns back completely.
- (2) Turn the plate-shaped nut 3 in the counterclockwise direction to lift it up to the highest position, and then tighten the valve and the dummy club at the center of refrigerant tank.
- (3) Install the intermediate filling hose of manifold pressure gauge on the joint 5, and then turn the plate-shaped nut in the

clockwise direction and tighten it by hand as possible.

- (4) Turn the butterfly handle 1 in the clockwise direction to make the valve needle 4 in its front end punch a small hole in the dummy club of refrigerant tank.
- (5) Turn the butterfly handle 1 in the counterclockwise direction, which the refrigerant will flow into the manifold pressure gauge along the charging hose.
- (6) Then turn the butterfly handle 1 in the clockwise direction to the lowest position, and it can close down the refrigerant tank again. However, do not detach the unlock valve, otherwise the refrigerant inside the tank will leak out.

3. Refrigerant Refilling Procedures

- (1) Connect the manifold pressure gauge to the refrigerant tank, shown in the picture below.
- (2) Unscrew the handle of unlock valve 2 in the counterclockwise direction to enable the refrigerant to enter the intermediate charging hose. In this case, do not open the handle valves in the both sides.
- (3) Unscrew the nuts of intermediate hose of manifold pressure gauge, and then tighten the nuts of intermediate hose after the air inside the intermediate hose are drained when you see the white refrigerant gas overflow and heard the “fizzle” sound.
- (4) Turn on the high-pressure manual valve 4, shown in the figure below, stand the refrigerant tank 1 upside down so as to let the refrigerant in liquid-state charge into the refrigeration system. In this case, do not switch on the A/C unit to prevent the refrigerant from returning back to the tank.



200 g or more refrigerants shall be charged every time, and turn the compressor several times by hand after the completion of charging.

- (5) Turn off the high-pressure manual valve 4, shown in the figure below, and turn on the low-pressure manual valve 3 to let the refrigerant in gas-state charge into the refrigeration system. The refrigerant charged from the low-pressure manual valve must be gas-state. If it is liquid state, the liquid hammer phenomenon may appear to damage the compressor. Turn off the low-pressure manual valve when the reading of low-pressure gauge reaches 2.8×10^5 Pa.

Refrigerant Refilling

Regulated amount: R134a, 850 ± 25 g

4. Leak Check of Refrigeration System

Three effective methods can be used to check the air tightness of refrigeration system: check with electronic leak detector, soap solution and halogen leak detector.

1) Check with Electronic Leak Detector

As shown in the figure, connect the power supply connector 2 of electronic leak detector 1 to the power supply, and move probe 3 slowly (30 mm/s), which should be placed 3 mm away from the check point. And if any alarming sound is emitted, it means there is a leak phenomenon occurred at that place.

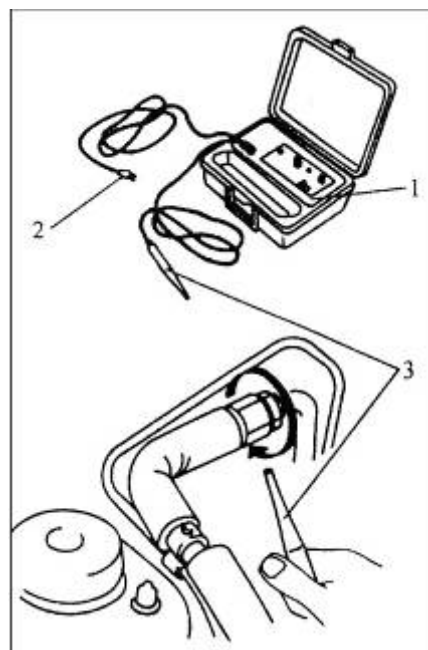
2) Check with Soap Solution

Apply the soap solution to the possible leak position. Observe whether air bubbles appear. If there are air bubbles, it indicates a leaking accident occurs.

3) Check with Halogen Leak Detector

The inspection procedure is described below:

- (1) Check the liquid propane capacity in the



1. Electronic leak detector.

2. Power supply connector.

3. Probe

If the leakage occurs at the joints of refrigeration pipes, the relevant O-rings shall be replaced.

reservoir.

- (2) Tighten the propane reservoir 16 to the leak detector.
- (3) Insert a lighting match into lighting device 9, and then slowly turn the adjusting handle 14 in the counterclockwise direction till the torch is lit.
- (4) Adjust the flame to smallest. The smaller the flame, the more sensitive to the leak of refrigerant.
- (5) Move suck pipe 3 to the possible leak position.
- (6) Observe the change of flame color. The flame has no color if there is no leakage. The flame is tint green if there is very small leakage or be blue if there is relatively big leakage, and it will become purple if there is too much leakage.

5. Methods of Refrigerant Oil Charging

There are two methods for refrigerant oil charging: direct charging method and vacuum inhaling method.

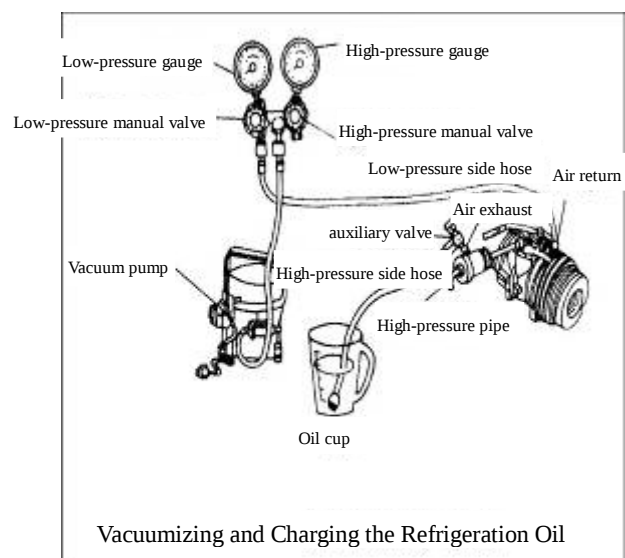
1) Direct charging

Remove the oil charging plug 1, and charge the specified model of refrigerant oil.

2) Vacuum inhaling

Vacuumize the refrigeration system to 30psi, and then start to charge the refrigerant oil, the procedures of which are as follows:

- (1) Turn off the high-pressure manual valve, and turn off the auxiliary valve.
- (2) Remove the high-pressure side hose from the manifold pressure gauge, and insert the hose into the oil cup.
- (3) Turn off the auxiliary valve to inhale the refrigerant oil into the refrigeration system from the oil cup.
- (4) When the refrigeration oils in the cup are nearly evacuated, immediately turn off the



auxiliary valve so as to prevent the air from being inhaled into the system.

- (5) Connect the high-pressure side hose joint to the manifold pressure gauge, turn on the high-pressure manual valve, and start up the vacuum pump to vacuumize the high-pressure side hose. And turn on the auxiliary valve to vacuumize for the system to 30psi, and then vacuumize 15 min again so as to remove the air entering into the system together with the oils. In this case, the refrigeration oils are in the high-pressure side, and the oils will return back to the compressor after the operation of the system.

3) Type & amount of refrigerant oil charged

Regulated amount: SP10 type, 150ml.

It is unnecessary to charge the refrigerant oil into the newly-mounted A/C system, and it is required to complement some refrigerant oil only when a certain part is needed to repair or when the vehicle is driven to a specified mileage.

The amount of implementing oil required when replacing parts is as follows: Evaporator and condenser: 30ml. Drier: 20ml. and pipe: 10ml.

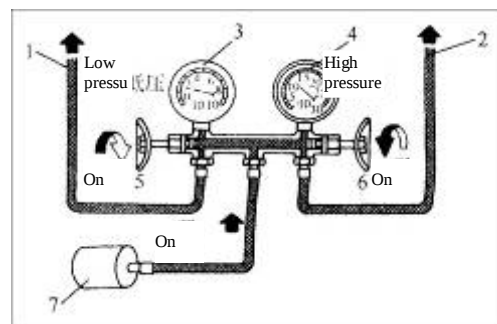
6. Methods of Refrigerant Vacuumizing

It is difficult to pump out the water from the refrigeration system when vacuumizing. But the vacuumizing can reduce the fluidization point of water after the vacuum is generated in the refrigeration system, which enables the water to boil at the lower temperature, and pump out it in the form of steam from the system.

Conduct the leak check firstly before vacuumizing. If vacuumizing without the leak check, it is difficult to find out the leaking position after vacuumizing when there is a certain leakage phenomenon.

The purpose of vacuumizing is to further check the air tightness of the refrigeration system under the vacuum condition, and prepare for the system's refrigerant charging. Its procedures are as follows:

- (1) Connect the high-pressure gauge hose to the high-pressure service valve joint of refrigerant tank, shown in the figure below, connect the low-pressure gauge hose to the low-pressure service valve joints on the pipe from the evaporator to the A/C compressor, and connect the intermediate hose to the interface of vacuum pump.
- (2) Turn on the high- and low-pressure valves of manifold pressure gauge, and start up the vacuum gauge.
- (3) The vacuum pump works for at least 15 min to make the vacuum reading of low-pressure gauge below 30psi . If the vacuum reading can't be obtained, turn off the manual valves at the high- and low-pressure sides, stop vacuumizing, and check the leaking position.
- (4) Turn off the valves, and the gauge needle doesn't return back within 10 min, which it is called the vacuum leakage check method. If the vacuum down, it shows that there is a leaking position which can be found out by using a leakage detector.
- (5) If the gauge needle doesn't considerably



Vacuumizing

- 1- Connect to low-pressure service valve hose
- 2- Connect to high-pressure service valve hose
- 3-Low-pressure gauge
- 4-High-pressure gauge
- 5-Low-pressure manual valve
- 6-High-pressure manual valve
- 7-Vacuum pump

return back within 10 min, it indicates that the system is normal and the refrigerant can be charged into the system.

- (6) Restart the vacuum pump, and turn on the low-pressure valve of the manifold pressure gauge to continuously vacuumize 15 min. Then, turn off the low-pressure valve to stop vacuumizing, and prepare for charging the refrigerant.

7. Refrigerant Recycling Equipment Operation Guide

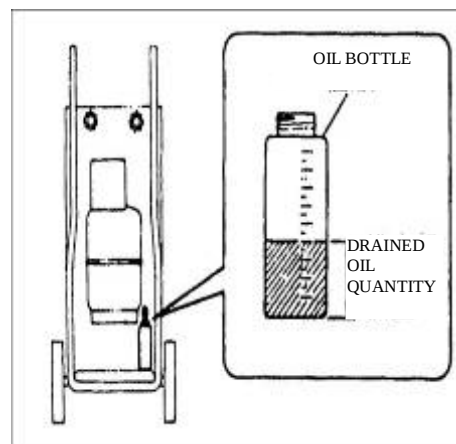
Recycle the refrigerant from the refrigeration device

When the refrigerant is removed from the refrigeration device under the following conditions, a recycling receiver shall be applied to recycle the refrigerant.

Before the components on the refrigerant pipe are replaced.

When moisture or air enters into the refrigerant pipe.

When excessive refrigerants are charged into the system.



WARNING:

- (1) When the recycling receiver is required, take care to operate it according to the requirements of device manufacturer's instructions.
- (2) After the completion of recycling work, measure the level of compressor oil recycled so that the same quantity of oils are added to the refrigeration device in the future.

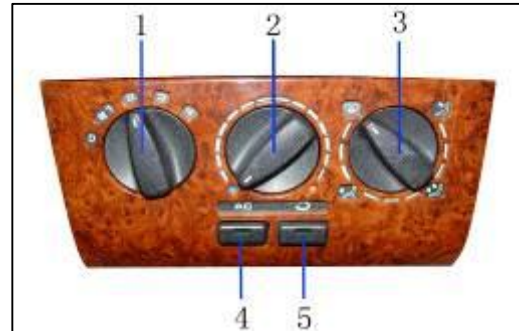
Operation guide for refrigerant recycling receiver

1. Install the manifold pressure gauge kit on the service valve.
2. Recycle the refrigerant from the refrigeration device.
 - (a) Connect the intermediate hose to the recycling receiver.
 - (b) Operate the recycling receiver.
 - (c) Open the manual high- and low-pressure valves on the refrigeration pressure gauge kit.
1. After the completion of recycling work, turn off the recycling receiver.
2. Remove the manifold pressure gauge kit from the service valve.

A/C SYSTEM COMPONENTS

1. Function description of A/C control panel

- (1) Blower switch
- (2) Temperature control switch
- (3) Air-flow distribution switch
- (4) A/C ON/OFF
- (5) Internal circulation switch



2. Removal/Installation of A/C compressor

- (1) Drain off the coolant (see the coolant recycling procedure)
- (2) Loosen the drive belt, and remove it
- (3) Remove the air filter and generator
- (4) Remove the refrigerator pipes, and pull out the electromagnetic clutch connector
- (5) Remove the two bolts (M10*110) (with tightening torque of $45\pm 5\text{N}\cdot\text{m}$) used to secure the compressor and its support.
- (6) Install it in the reverse order of removal



Compressor Position and Related Performance Parameters:

Chery A15LHD with the electronic fuel injection type engine adopts the SD7V16 type compressor, the performance parameters of which are shown in the table below.



	Swash Plate
Number of cylinders	7
Cylinder diameter (mm)	29. 3
Travel (mm)	
max	34. 2
min	2. 2
Displacement (cm ³ /r)	
max	161. 3
min	10. 4
Allowable maximum instantaneous speed (r/min)	8000
allowable maximum continuous speed (r/min)	7000
Coolant	R134a
Refrigerant oil (cm ³)	115±15
Electromagnetic clutch mass (kg)	2. 2
Rated voltage (V)	12
Rated power (W)	48

The compressor is driven by engine crankshaft pulley via the M belt. When the shift lever on the A/C control mechanism is shifted to the refrigeration position, the electromagnetic clutch of A/C compressor engages, and the compressor pulley make the main shaft and swash plate rotate and then pull the rocking plate to swing. The swinging of the rocking plate pushes the piston to move, which creates the air pumping effect to compress the low-temperature and low-pressure air-state coolant into the high-temperature and high-pressure air-state coolant.

The motion parts of compressor are lubricated using the sputtered refrigerant oil and the oil in coolant. During the operation of compressor, due to the rotation and swing of the swash plate, the refrigerant oil will be sputtered to anywhere. In addition, due to the intersolubility of coolant and oil, when the coolant flows into the compressor, it also carries a part of refrigerant oil which is available to lubricate the motion parts inside the compressor.

ADJUSTMENT OF ELECTROMAGNETIC CLUTCH

1. Use a thickness gauge to measure the clearance between the platen and A/C compressor pulley.
2. Check whether the clearance is in the range specified by the technical specification.
 - If it is found that the result doesn't conform to the requirement of technical specification, remove the platen, and use one or several shims to adjust the clearance.

Clearance:

0.6mm±0.2mm

3. Removal/Inspection of condenser

- (1). Drain off the coolant from the system (see the coolant recycling procedure)
- (2). Remove the front bumper and headlamp crossbeam assy.
- (3). Remove the fluid reservoir and the refrigeration pipes connecting to the condenser.



Check the condenser:

- (1) Check the crack, damage or oily fluid leakage.
 - Replace the condenser if any failure above occurs.
- (2) Check whether the fender position is blocked by dust or not.
 - Clean it if blocked.
- (3) Check the bent condition of fender position.
 - Use a flat headed screwdriver to straighten the fender

position if the bent is found.

Installation of Condenser

- (1) Use some self-tapping screws to secure the condenser and radiator, and assemble the related screw bush and spacer, with the tightening torque of $6\pm0.6\text{N}\cdot\text{m}$;
- (2) Use the bolts (M6) and spacer to secure the condenser support on the front crossbeam, with the tightening torque of $1.5\pm0.15\text{N}\cdot\text{m}$;
- (3) Assemble the integrated condenser-radiator into the related fixing holes;
- (4) Use spacer, shim block and two nuts to fasten the condenser and front crossbeam, where the tightening torque of nut is $1.5\pm0.15\text{N}\cdot\text{m}$.

The condenser is designated to cool the coolant vapor discharged from the compressor and condense the vapor to make it give off its heat and become to the coolant fluid.

Chery A15LHD adopts the serpentine condenser, as shown in the figure. The condenser is secured with engine radiator in a row, and there is an axial fan, which is driven by a DC motor, behind them to forcedly cool the condenser and radiator.

Introduction to the fluid reservoir:

Removal/Installation (see the Removal of Condenser)

Chery A15LHD's fluid reservoir is located under the condenser (i.e., the outlet of condenser), the structure of which is shown in the figure.

In fact, the fluid reservoir is a pressure container used to store the coolant, and it is available to delivery the fluid-state coolant to the expansion valve at a specified flow rate. The filter screen of fluid reservoir is applied to filter the all kinds of foreign materials from the coolant. The drying agent silicon oxide with powerful water absorptivity is filled in the drying unit, which is used to absorb the water content in the coolant. In addition, a fusible plug is also installed on the reservoir. If the poor heat emission of condenser or other causes result the rapid rise of temperature and pressure of the



refrigeration system, the fusible plug will melt so as to drain off the high-temperature and high-pressure coolant when the temperature and pressure inside the reservoir reach the specified value, which protects the refrigeration system.

4. Introduction to the expansion valve and pressure switch

1) Expansion valve

Chery A15LHD adopts the traditional thermo-expansion valve, as shown in the figure, fixed on the inlet/outlet pipes of evaporator.

The temperature sensor inside the expansion valve adjusts the opening of ball valve in accordance with the temperature of coolant located at the evaporator outlet, the purpose of which is to control the flow rate of coolant.



2) Pressure switch

Chery A15LHD's A/C pressure switch adopts the dual-pressure (high and low pressures) and four-wire pressure switch which is installed on the high pressure pipe located at the front end of expansion valve, with 50 PSI or more of low-pressure CLOSE operation and 220 PSI or more of high-pressure CLOSE operation



5. Removal/Installation and inspection of evaporator

- (1) Drain off the coolant from the system (see the coolant recycling procedure)
- (2) Remove the expansion valve
- (3) Remove the instrument panel (see the Disassembly/Assembly of Instrument Panel)
- (4) Remove the control panel trim plate, and 4 self-tapping screws used to secure the control panel and console. (tightening torque of $1.5 \pm 0.2 \text{ N} \cdot \text{m}$)
- (5) Remove 1 bolt (M8*25) and 4 nuts secured with the steering crossbeam and front side respectively (tightening torque of $3.5 \pm 0.2 \text{ N} \cdot \text{m}$) from the fixed evaporator.
- (6) Remove the four bolts from the evaporator.



Inspection of evaporator:

(1) Check the crack, damage or oily fluid leakage.

- Replace the evaporation unit if any failure above occurs.

(2) Check the bent of fender.

- Use a flat headed screwdriver to straighten it if a bent is found.

The Chery A15LHD adopts the tube-fin type evaporator which is installed in the air conditioning unit assy. under the instrument panel.

The function of evaporator is opposite to that of condenser. After expanded in the expansion valve, the coolant fluid absorbs the heat inside the vehicle from the evaporator, and evaporates to the coolant gas, then enters into the compressor to circulate.

Introduction to the evaporator temperature sensor (thermostat):

The evaporator temperature sensor used by the Chery A15LHD is the heat-sensitive tube mechanical type temperature regulator, which is closed when the working temperature is adjusted to 4°C or more while disconnected when adjusted to 4°C or below. Its installation position is just under the evaporator, as shown in the figure.



The tightening parameters of A/C pipe fasteners

Inner hexagonal head bolt (M10) secured in the compressor: 30N•m;

Inner hexagonal head bolt (M6) secured in the expansion valve: 7N•m;

To connect with condenser inlet pipe and tighten the nuts: 32 N•m;

To connect with condenser outlet pipe and tighten the nuts: 11.9 to 13 N•m;

FAILURES AND SHOOTING ANALYSIS SHEET

1. Precautions on A/C system installation

- (1) For the pipes fixed using the fixing nuts, two wrenches must be applied to ensure that the pipes don't deform or break;
- (2) Do not use the compressed air to clean the pipes, and the nitrogen or coolant gas is available;
- (3) Correctly assemble it, and check the tightening torque of all connections as required;
- (4) Check all parts to ensure that they aren't damaged and all adjacent parts don't interfere each other;
- (5) Conduct the leakage test to ensure there is no leakage in the A/C system.

PRECAUTIONS ON THE SECURITY OF A/C SYSTEM

Coolant treatment

1. The operator shall pay more attention to prevent the coolant fluid from spraying into your eye or on your skin because the fluid-state coolant is very dangerous. Only one drop of coolant will cause your skin to be damaged partially if it drops up the skin of the skin. You must put on your grooves and protective goggles. When the coolant sprays into your eye or on your skin

(a) Use the cold water to clean those parts

(b) Do not wipe your eye or skin

(c) Immediately get to a hospital to have a professional personnel treat it.

It is recommended to use such equipment as the recovered, recycling, or reused equipment. If there is any emergency system failure, it is recommended that the equipment is placed on a ventilation treatment site before the implementation of the equipment maintenance service.

2. Do not dispose the coolant located at a closed place or near fire. If the coolant gas contacts with sparks or the similar heat source (such as: cigarette or heater), it will generate the toxic gas.

Storage of coolant

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1. The coolant shall be stored in the high-pressure resistance equipment, and take care to slightly place the fluid reservoir to prevent the reservoir from being impacted by some sharp materials. Heating the coolant fluid reservoir or taking it near the fire will make it explode, and the metal fragment generated and the sputtered fluid-state coolant will cause the serious injury to people. It is recommended to store the coolant under the environment of 40⁰C (104⁰F) below.

Safety Notices

1. Do not sit inside the vehicle which operates at the idle speed for a long time, and also do not leave a child in the vehicle.
2. Switchover the air conditioner to the external circulation mode and inhale the fresh air into the vehicle from the outside, and change the blower switch to the High-Speed position when the engine has operated in an unclosed environment for a long time.
3. Avoid the open of luggage boot cover during driving because the gas emitted from the engine may enter into the vehicle. If the boot cover must be opened, please close all windows, and change the air conditioner to the external circulation mode to inhale the fresh air into the vehicle from the outside.
4. Do not open the high-pressure valve of manifold pressure gauge during the operation of compressor. If the high-pressure valve is opened, the coolant will flow in the reverse direction and cause the fluid reservoir to be broken.

Coolant shortage treatment

- If it is found that there is the coolant shortage during checking the failure, it is recommended to add the coolant. The reason is: there is the difference between the pressure values indicated by the different pressure gauges, so it is difficult to add the coolant with accurate quantity in accordance with the pressure reading. If the coolant added is excessive or insufficient, it may cause a series of negative effects, such as: to damage the coolant recycling parts, or, to reduce the refrigeration effect. Thus, if it is found that the coolant is insufficient, it is recommended to completely drain off the coolant from the coolant circulating pipes, and then add the specified quantity of coolant.

Compressor oil treatment

- For this model of vehicle, it is recommended to use the SP10 model compressor oil; otherwise it may be available to regulate the compressor.
- Take care not to spray the compressor oil on the surface of the vehicle during the maintenance operation. Thus, if this case occurs, immediately wipe and clean it, otherwise the compressor oil will damage the paintwork on the surface of the vehicle.
- Engine oil shall absorb the moisture.