Recovery Unit Manual

CLI02306

Preface

- Dear Users, welcome to use our products and thank you for your trust. We will wholeheartedly provide first-class quality products and the best and most convenient services for all customers!

- Please check whether the products in the box are correct, whether the accessories and instructions are complete, and whether the products are damaged during transportation. In case of the above situation, please contact the local dealer or our after-sales service in time.

- Please read this manual carefully before use and operate in strict accordance with the instructions in this manual.

- Carefully reading this manual and taking correct operation can ensure the safety of operation and prolong the service life.

- Please keep this manual properly.

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1 General Safety

⚠Tips

In order to ensure the long-term stable operation of the product, it is necessary to operate it before you read this manual carefully, so as to fully understand the problems related to safety and precautions related to use and operation.

Safety signs

The safe and effective operation of the recycling machine can only be guaranteed if the equipment is used correctly according to this manual. In order to make you fully understand this instruction manual and the warning signs on the product, we have listed the contents of various safety signs.

⚠Warning

It means that if the usage is wrong, it will cause casualties and high risk.

⚠Notice

It means that if there is an error in use, it may cause equipment damage, make the equipment unable to operate normally or degrade its performance.

For your safety and correct operation, please read the operation manual and relevant safe operation specifications carefully before using the equipment!

⚠Warning

The equipment must be operated by qualified operators who are familiar with the air conditioning and refrigeration system !

⚠Warning

Before starting the equipment, it must be grounded!

⚠Warning

When using the cable, the cable must have a grounding wire and connected to ground!

⚠Warning

The power connection must be correctly operated by qualified operators according to the technical standards of power equipment and wiring regulations!

⚠Warning

When checking and repairing the equipment, the power supply must be cut off before operation!

⚠Warning

If the power cord provided by our company is damaged, it must be replaced with a power cord with grounding wire or purchased from our company!

1 General Safety

⚠Warning

After abnormal shutdown, please turn off the power switch before any operation!

⚠Warning

Please consider the current capacity of your power supply, watt hour meter, wire and socket before power on!

⚠Warning

Please use the new hose attached with this machine to avoid the old hose from bursting due to aging when used repeatedly!

⚠Warning

Only certified and reusable refrigerant storage tanks with a minimum nominal pressure of 40bar (580psi) can be used! The refrigerant storage tank shall not recover too much refrigerant, up to 80% of its maximum capacity, so as to reserve space to prevent explosion caused by pressure increase!

⚠Warning

When recovering refrigerant, the refrigerant storage tank must be monitored by electronic scale to prevent over filling!

⚠Warning

Please wear protective gloves and goggles during operation to prevent refrigerant from contacting skin or eyes and influencing your health!

⚠Warning

The place of use of this equipment must be well ventilated!

⚠Notice

The power supply used must be consistent with the power supply marked by the product!

⚠Notice

While using an extension cord it should be a minimum 14 AWG and no longer than than 7.5 meters , or it may make the voltage drop and damage the compressor

⚠Notice

The air inlet pressure of the equipment (the value indicated by the low pressure gauge) shall not exceed 26bar (377.1psi)!

⚠Notice

If the equipment is placed obliquely, the vibration and noise of the compressor may increase during operation, and even accelerate the wear of parts!

1 General Safety

⚠Notice

Please place the equipment horizontally when working!

⚠Notice

Do not expose the equipment to the sun or rain!

⚠Notice

The vents of the front base and hood of the equipment shall be free of obstacles that hinder ventilation!

⚠Notice

if the overload protector pops, it will be reset manually after natural cooling for 5 minutes!

Operation Manual

1. Do not mix different kinds of refrigerants in the same recovery tank. Mixed refrigerants will no longer be separated and used.
2. Before recovering refrigerant to the empty refrigerant storage tank, the empty tank must be vacuumized to - 75cmHg (29.6inHg) to remove various non condensable gases. The empty refrigerant storage tank has been filled with dry nitrogen before leaving the factory, and it should also be evacuated before the first use.
3. When the equipment is not in use, the inlet and outlet valves shall be in the closed position, and the inlet and exhaust joints must be screwed with protective caps to avoid the entry of air and moisture in the air, which will affect the recovery effect and service life of the equipment.
4. The drying filter must be correctly connected at the input of the equipment, and it is required to be replaced frequently. In order to ensure the normal operation of the equipment, please use the drying filter specified by the company. High quality drying filter will improve the recovery effect and service life of the machine.
5. Special care should be taken when recovering from the sintered system, and two drying filters must be used.
6. The equipment is equipped with an automatic reset high pressure protection switch. When the internal pressure of the system exceeds the rated breaking pressure of the high pressure switch (see the technical parameters), the

compressor will automatically stop and the high pressure red warning light will be on (red - high pressure warning - see the introduction of the control panel). To restart, press the start button on the right side of the front panel (see the introduction of the control panel) to start the compressor after the internal pressure of the system decreases and the high-pressure warning light goes out (the high-pressure protection switch has been automatically restored).

After high pressure protection, it is necessary to find out the reasons for protection and eliminate the problems before starting the equipment.

Causes of high pressure protection and troubleshooting methods:

① If the input valve of the refrigerant storage tank is closed, open the valve;

② If the hose connecting the equipment and the refrigerant storage tank is blocked, first close the valve of the equipment and the refrigerant storage tank, and then replace the hose;

③ As the temperature of the refrigerant storage tank increases, the pressure increases. After the refrigerant storage tank cools naturally, the pressure and temperature will decrease.

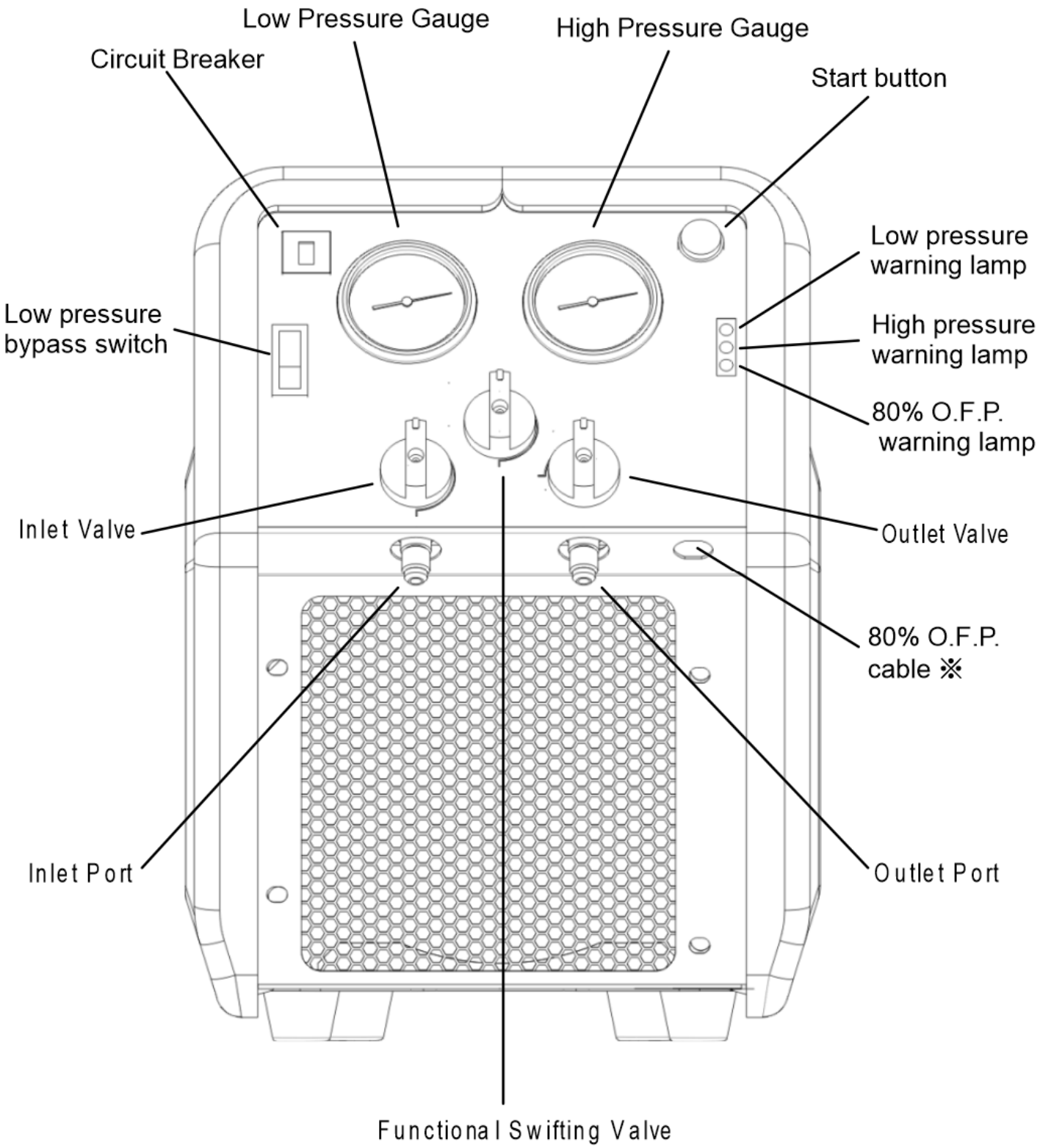
7. The equipment is equipped with low pressure protection switch and its bypass switch. If the bypass switch is set to "Auto", the low pressure switch will play a role. When the internal pressure of the system is lower than - 5inHg ~ - 14 inHg (- 12.7cmHg ~ - 35.5cmHg) (according to the model), the equipment will automatically close after 20 seconds and the green indicator light will be on (green - low pressure warning - see the introduction of the control panel). If it is necessary to restart the equipment, press the "Start button" again (see the introduction of the control panel), the equipment will restart, but it will automatically shut down again after 20 seconds of operation. Or turn the low pressure bypass switch to "Manual" to make the low pressure switch inoperative, and then press the "Start button" (see the introduction of the control panel), This device will not shut down automatically.

8. This equipment can be used with refrigerant storage tank equipped with liquid level sensor. Before starting, the refrigerant storage tank must be connected to the equipment with 80% O.F.P. connecting wires (see the exploded drawing serial number 3). During the recovery process, if the recovered liquid refrigerant reaches 80% of the capacity of the refrigerant storage tank, the equipment will automatically stop and the red warning light will be on (80% protection warning - see the introduction of the control panel). Please replace the empty refrigerant storage tank before starting the equipment.

9. If there is no level sensor in the refrigerant storage tank, turn 80% to O.F.P connecting wire short circuit can work normally, otherwise the equipment cannot be started, but the recovery process must be monitored by electronic scale. (※ note: 80% O.F.P protection in Article 8 and 9 is optional)
10. The equipment is equipped with an oil separation device. During the recovery process, the input valve is adjusted down to keep the pressure indication of the low pressure gauge at about 4bar (58psi) to achieve the best oil separation effect. When the accumulated recovered refrigerant reaches 8kg, please self clean first, close the equipment, and then open the oil separation stop valve (exploded drawing serial number 8) to drain the separated oil.(※ note: the oil separation device in this article is optional)
11. In order to achieve the maximum recovery rate, it is recommended that you use a hose with an inner diameter greater than 4mm, and the length should not exceed 1.5m. The hose with too thin or too long diameter will greatly reduce the recovery rate.
12. When recovering a large amount of liquid refrigerant, use "push-pull mode". (see "system push-pull mode" operation steps on page 16 for details)
13. To ensure that there is no refrigerant in the equipment after recovery, please carefully read the "self purge" operation process in this operation manual. Residual liquid refrigerant may expand in the condenser and cause component damage.
14. When the equipment is not used for a long time, it is recommended to completely evacuate and purify it with dry nitrogen.
15. It is recommended to use hose with stop valve to avoid refrigerant loss in the pipe. When connecting, the end with stop valve shall be close to the equipment.
16. The air inlet of the equipment is equipped with a filter screen. Please clean it frequently and keep it clean.
17. The knob of the equipment is not allowed to stop in the middle of two positions, but must be in place.
18. If it is difficult to start, turn the input valve knob to the self-purge position to balance the internal pressure and start easily.
19. The low pressure gauge of the equipment indicates the pressure at the air inlet of the compressor in the recycling machine; The high pressure gauge indicates the pressure at the exhaust port.

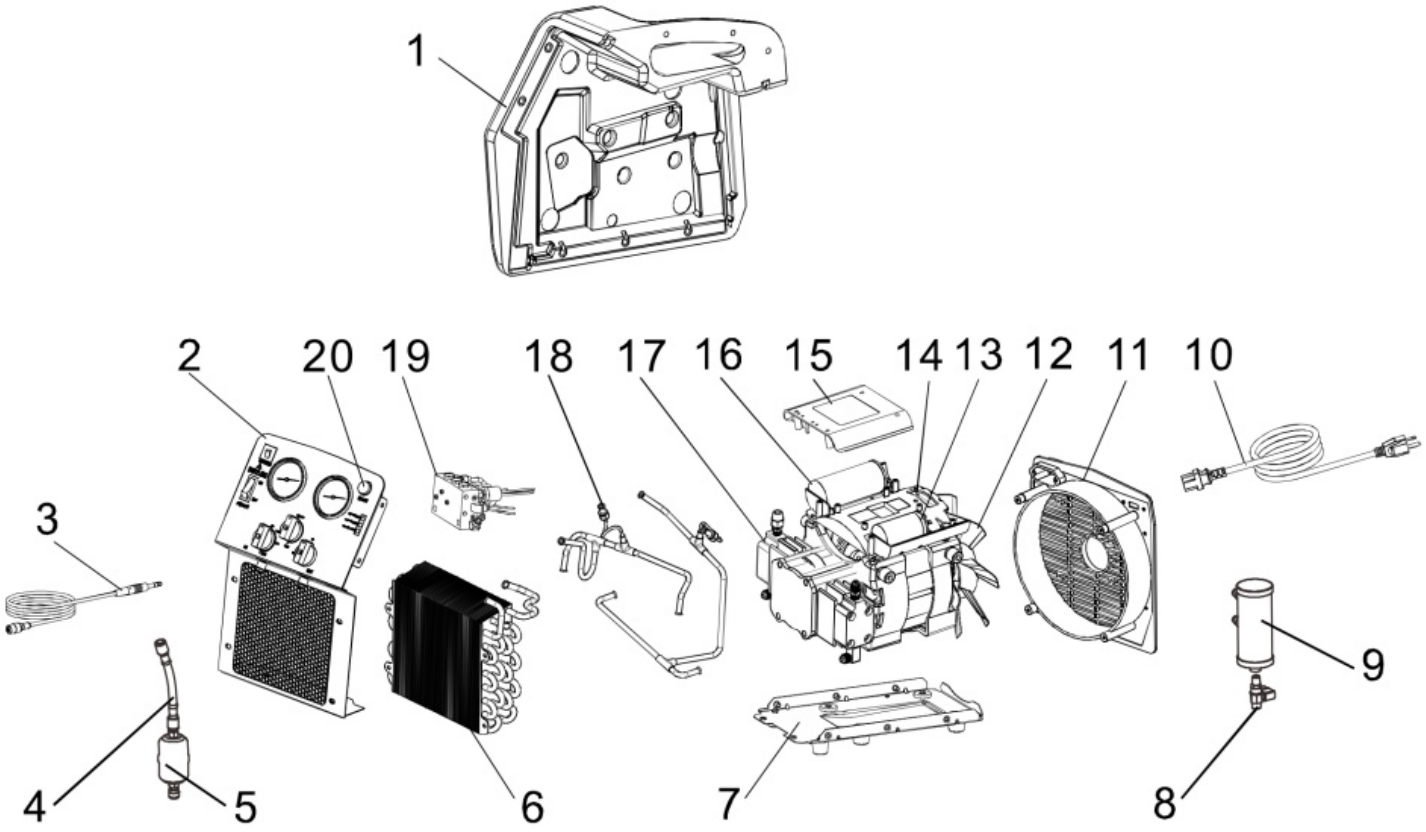
Model		RR12L(R32)			RR24L(R32)		
Refrigerants		Ⅲ：R-12, R-134a, R-401C, R-406A, R-500,1234YF					
		IV：R-22, R-401A, R-401B, R-402B, R-407C, R-407D, R-408A, R-409A, R-411A, R-411B, R-412A, R-502, R-509					
		V：R-402A, R-404A, R-407A, R-407B, R-410A, R-507,R-32					
Power		220-240VAC 50-60Hz 110-120VAC 60Hz					
Motor		3/4HP			1HP		
Motor Speed		1450RPM/1750RPM			1750RPM		
Maximal Curret Draw		5A			10A		
Compressor		Oil-less, Air-cooled, Piston					
High Pressure Shou-off		38.5bar/3850kPa （558psi）					
Recovery rate		Ⅲ	IV	V	Ⅲ	IV	V
	Vapor	0.23kg/min	0.25kg/min	0.26kg/min	0.46kg/min	0.50kg/min	0.52kg/min
	Liquid	1.57kg/min	1.81kg/min	1.85kg/min	3.14kg/min	3.62kg/min	3.70kg/min
	Push/Pull	4.64kg/min	5.57kg/min	6.22kg/min	7.47kg/min	8.37kg/min	9.95kg/min
Operating Temperature		0 ℃-40℃					
Dimensions		418mmX 250mmX 345mm					
Net Weight		14kg			15kg		

4 Introduction of Operation Panel



Note: devices with "※" can be selected according to the model

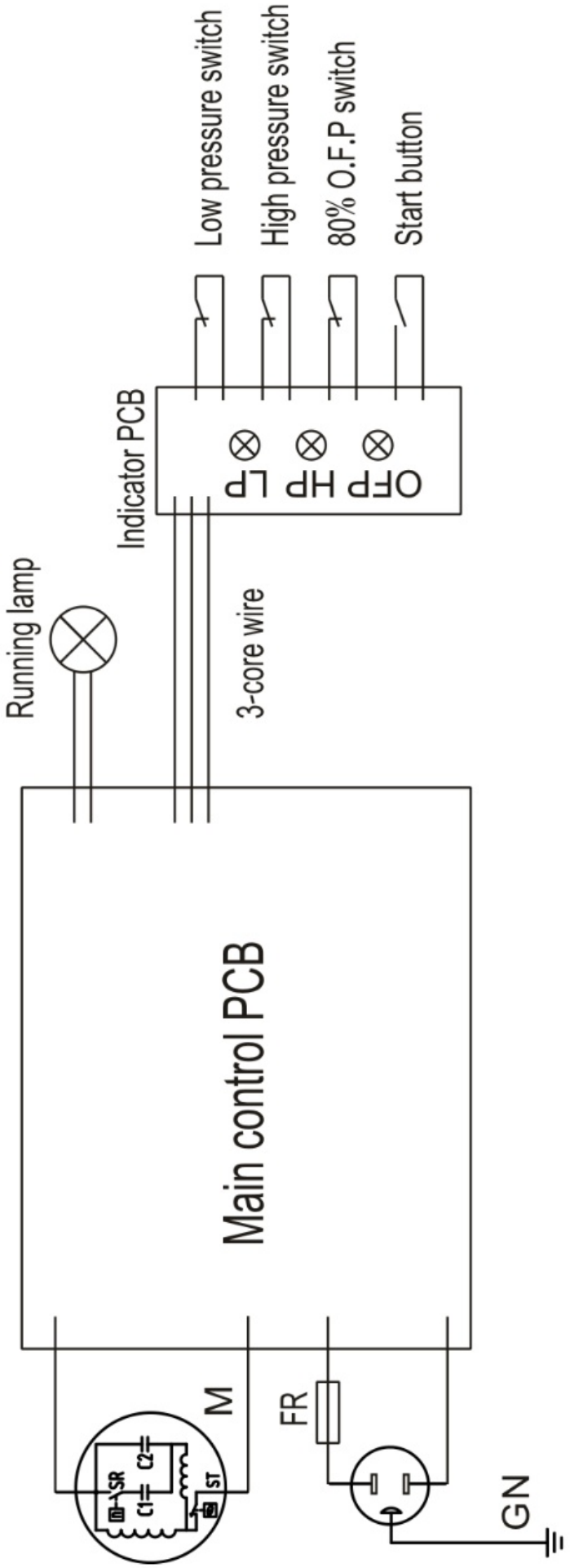
5 Parts Diagram



NO.	Component		NO.	Component
1	Plastic shell		11	Fan Cover
2	Front Panel		12	Fan
3	80% O.F.P. Cable（※）		13	Start Capacitor
4	1/4” Hose		14	PCB
5	Filter		15	Junction box cover
6	Air-cooled condenser		16	Running capacitor
7	Base		17	Compressor
8	Oil Drain Valve（※）		18	Copper tube group
9	Oil separation（※）		19	Control valve
10	Power Supply Cable		20	Start button

Note: devices with "※" can be selected according to the model

6 Wiring Diagram

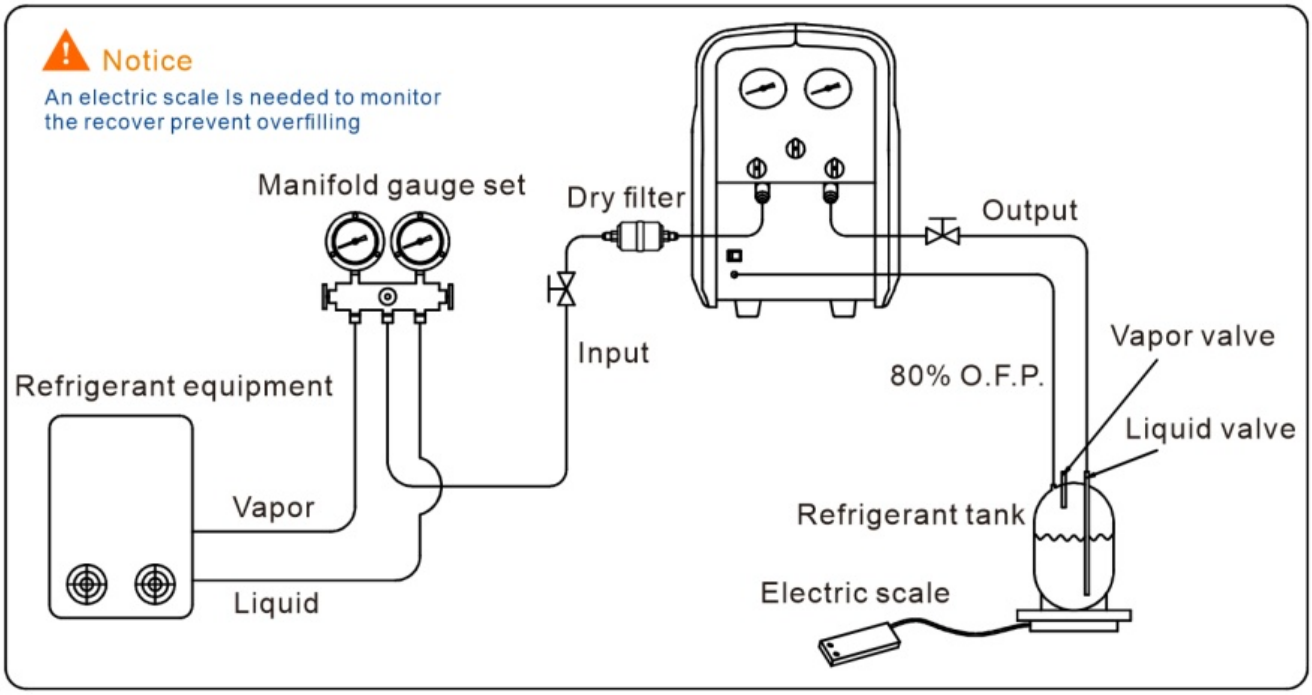


7 Standard Liquid/Vapor Recovery Method

If the refrigeration device has gas and liquid interfaces, please follow the following steps;

1、Turn the input valve to “OFF", make sure the "Recovery and PURGE valve" is set on "Recovery", turn the output valve on "OFF".

2、Make sure all connections are correct and tight (see Picture 2)



Picture 2 Vapor , liquid recovery circuit connection diagram

3、Turn the output valve of the equipment to the "ON" position.

4. Open the liquid port valve of the refrigerant storage tank and the stop valve on the output pipe of the equipment.

5. Open the liquid port valve on the manifold gauge set and the stop valve on the input pipe of the equipment.

6、Connect the units on the correct power supply (same as the nameplate) .

7、Turn the input valve to Liquid position , (see Picture 3) , and the pressure indication of the low-pressure gauge will rise slowly.

8、Ensure the indicating value on the low pressure gauge lower than 16.5bar (239 . 3psithen press the " START button (see Parts Diagram serial number 20) as soon as possible to start the units and work for the liquid recycle.

9、In order to speed up the flow rate , it will not connect with the manifold gauge , but connect the pipe directly from the vapors port or liquid port of the recycled equipment , through the dry filter to connect the inlet port of recovery unit.

7 Standard Liquid/Vapor Recovery Method

Caution:

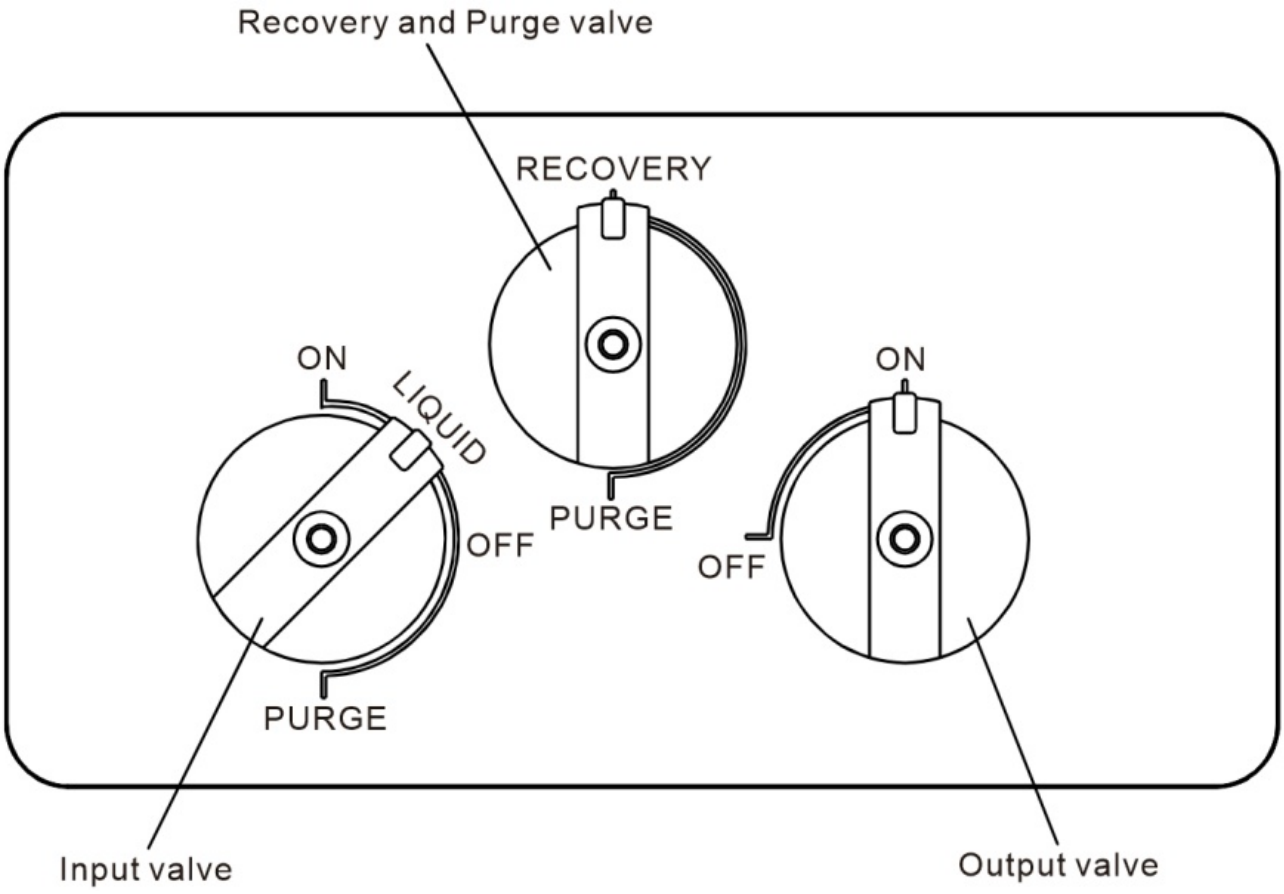
① If the compressor starts to hit, slowly turn down the "input valve" (clockwise) until the impact stops.

② If the equipment is shut down in the process of recovering liquid refrigerant for some reason, and the "input valve" is not closed in time, it may not be able to restart. At this time, the following operations should be carried out:

Please turn off the power of the equipment first, then turn off the "input valve" of the equipment (turn it to the "off" position) and the stop valve on the input pipe, unscrew the connection between the filter and the input pipe of the equipment, slowly open the "input valve" of the equipment for pressure relief, and close the "input valve" of the equipment when the pressure indication of the low pressure gauge is lower than 16.5bar (239.3psi). Reconnect the filter with the input pipe, then open the stop valve on the input pipe, press the "start button" and repeat the above recycling operation.

⚠Warning

Always wear protective gloves and goggles while working with refrigerants to protect your skin and eye form hurting by refrigerant gases or liquid.



Picture 3 knob position under the liquid recycling state

7 Standard Liquid/Vapor Recovery Method

⚠Warning

Do not aim at yourself or others when opening the input valve of the equipment to relieve pressure!

10、When the liquid recovery is completed, fully open the input valve (see Picture 4) and open the gas port valve on the manifold gauge group, so as to improve the gas recovery rate.

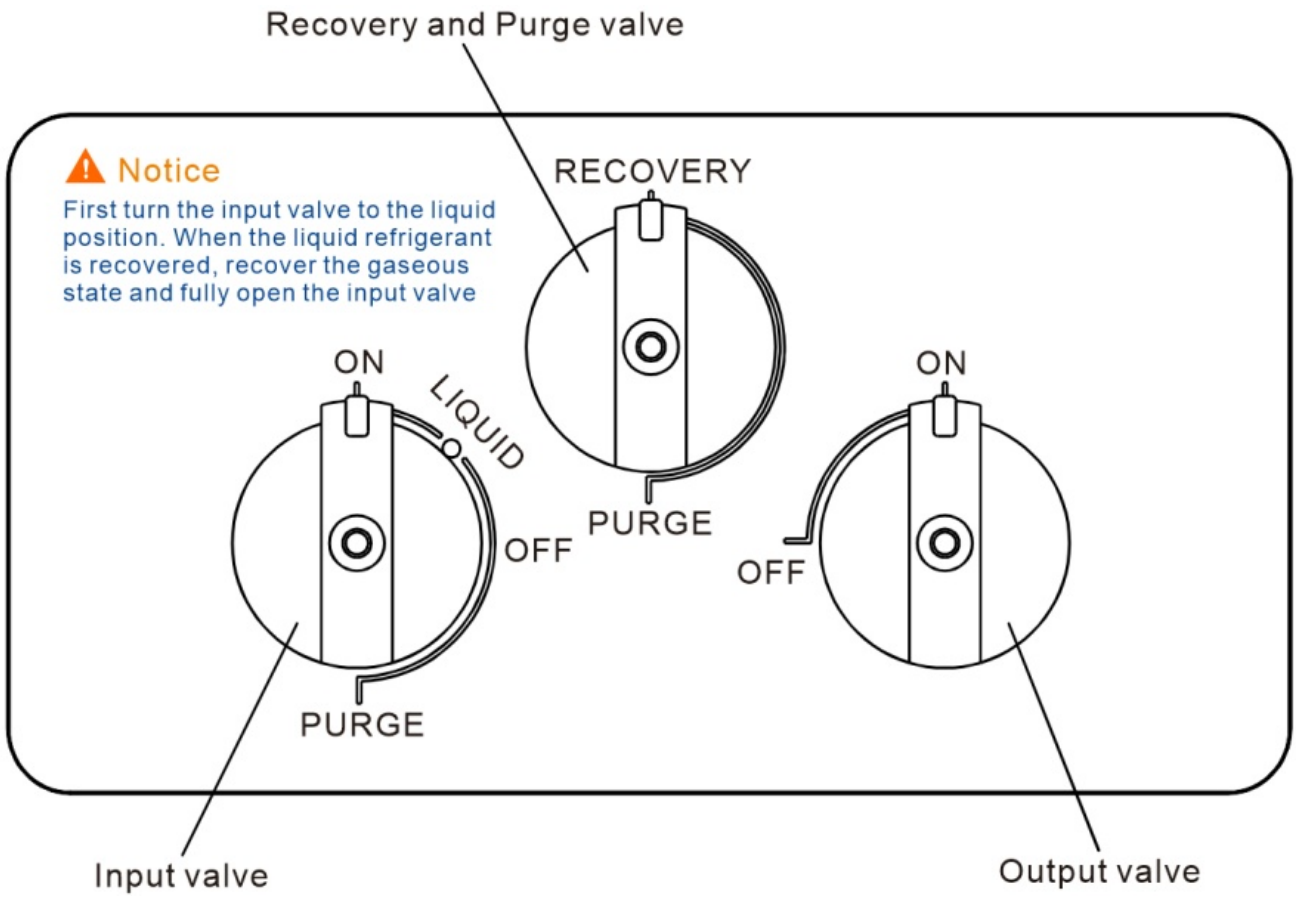
11、Let the equipment run to the required vacuum degree or to the automatic shutdown state of low pressure protection. After the recovery is completed, turn to the Purge operation. For details, refer to the <Purge mode operation>.

①Close the vapor and liquid ports of the manifold gauge sets.

②Close the HVAC ports connected with the manifold gauge sets.

⚠Notice

The equipment must be Purge after each use, the residual liquid refrigerant in the condenser may expand and lead to component damage!

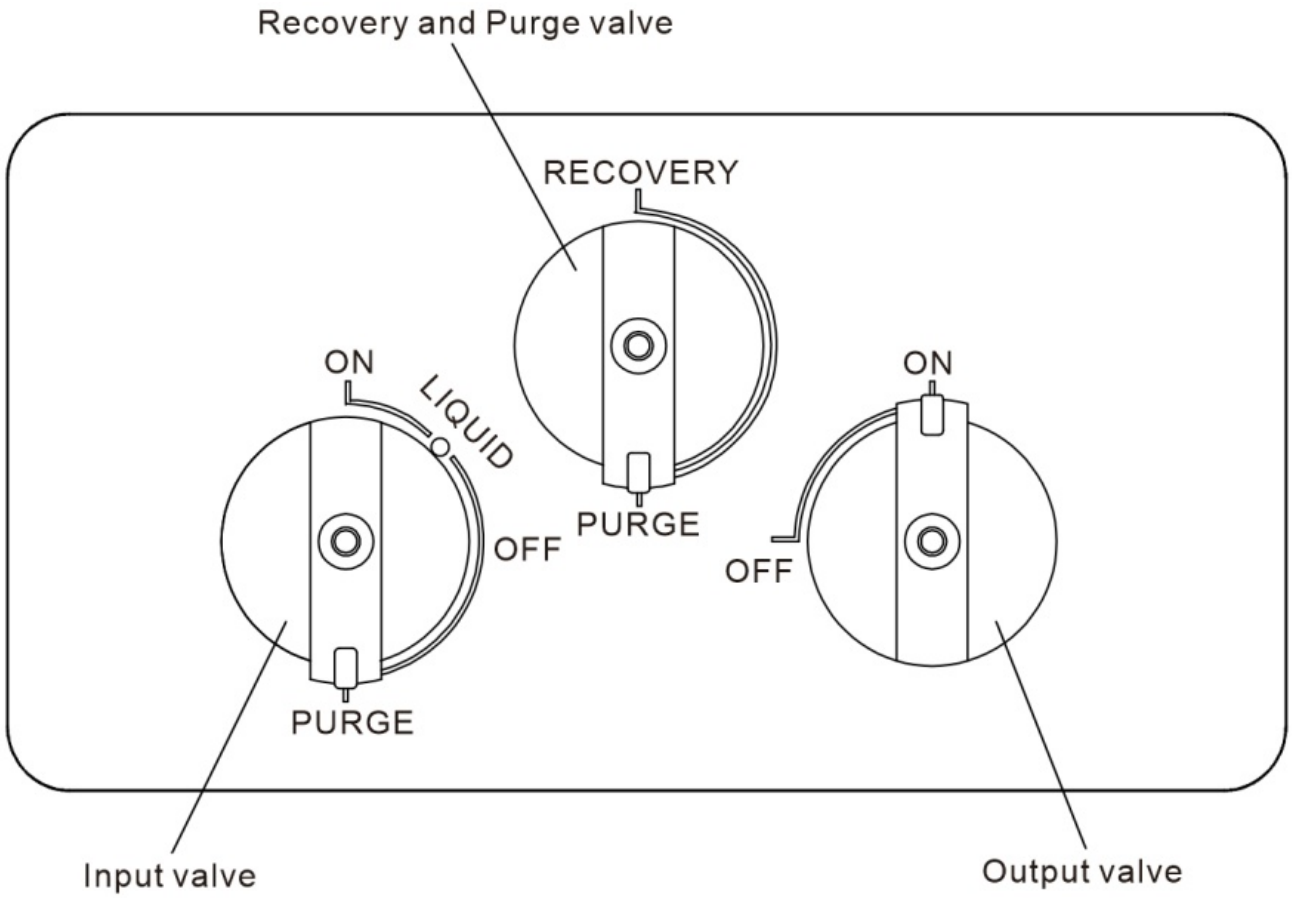


Picture 4 knob position under the vapor recycling state

8 Self-purge Method

Procedure for purging remained refrigerant from this unit

1. Turn the "Recovery and PURGE valve" to the "PURGE" position.
2. Slowly turn the input valve to the "PURGE " position (see Picture 5), and operate it to the required vacuum degree or to the automatic closing state of low-pressure protection.
3. Close the refrigerant storage tank valve.
4. Press the “Start button” (see Parts Diagram serial number 20) to shut down the equipment, and remove all external pipelines, drying filters, etc.
5. Turn the "Recovery and PURGE valve" to the "Recovery" position, and the input and output valves to the "OFF" position.
6. Finally, screw the protective cap on the input and output connectors of the equipment.



Picture 5 Knob position under the purge mode

9 Liquid Push / Pull Mode

Push / Pull mode only works with large systems where the liquid refrigerants no less than 10 kg.

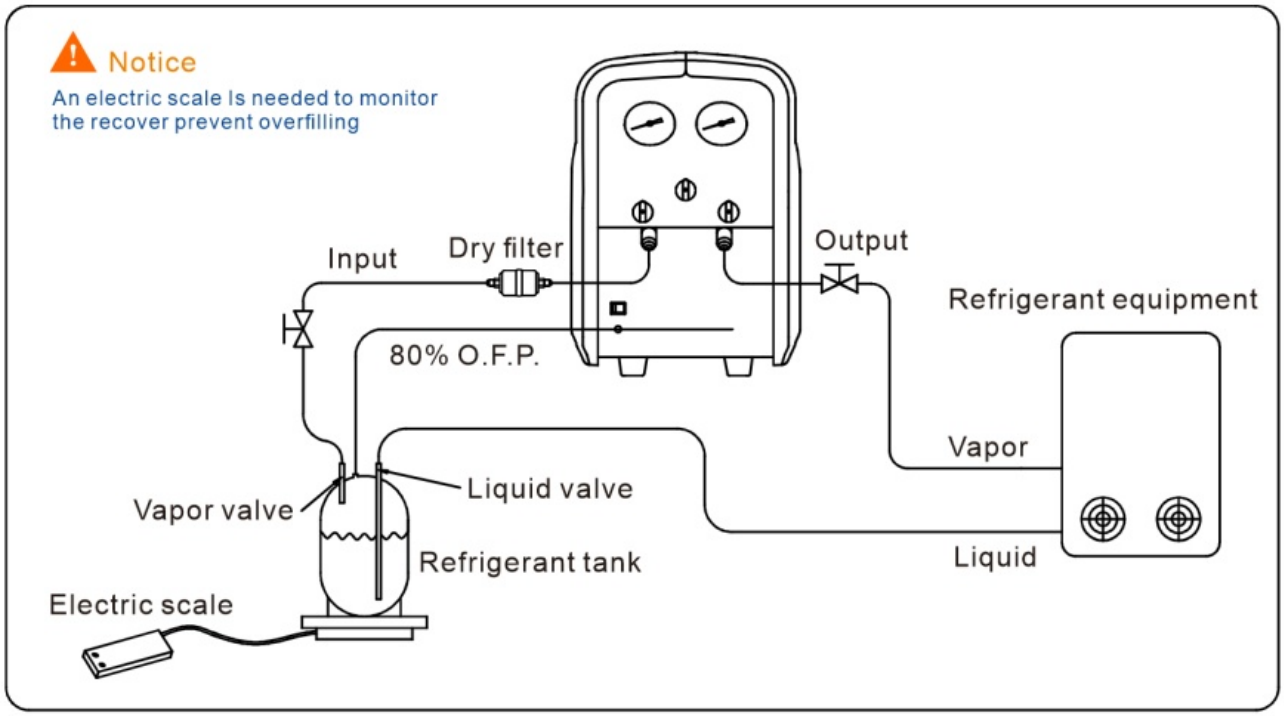
⚠Caution:

While using the "push/pull ", a scale must be used to avoid over filling the recovery tank. Once the siphon is started. it can overfill the recovery tank even if the tank is equipped with a float level sensor. The siphon can continue even if the the machine was turned off. You must manually close the valve on the tank and unit to prevent overfilling of the recovery tank.

1、Close the input valve of this equipment, open the output valve.

2 、Put "Recovery and PURGE valve" on "Recovery".

3、Make sure all connections are correct and tight (refer to following illustration) (See picture 6)



Picture 6 push-pull mode connection diagram

9 Liquid Push / Pull Mode

4、 Press the " START button " (see Parts Diagram serial number 20), start the unit.

5、Open the vapor and liquid valves of the refrigerant tank.

6、Open the input valve of this equipment, start the liquid recycling.

7、If the indicating value on the charging scale remain same or with slow change , that is showing the liquid is recycled within the system , now only need the vapor recycling (then reconnect the pipe , according to the recycling operation steps to recycle vapor).

8、First close the vapor valve of the recovery tank, and then press the "start button" (see Parts Diagram serial number 20) to close the equipment.

9、Close all the valves , remove the pipes , reconnect the pipe according to the recycling operation step to recycle vapor and purge operation.

⚠Warning

When the value displayed by the electronic scale reaches 80% of the capacity of the recovery tank, immediately cut off the power supply of the equipment and close all "input" and "output" valves!

10 Trouble shooting

Question	Reason	Solutions
No response of blade	Mechanical damage	1. Replace components 2. Return to factory for repair
The compressor does not respond when the start button is pressed	1. Bad contact of power line 2. Overload protector disconnected 3. The equipment is under low pressure protection, green warning light on(refrigerants has not recovery over) 4. The high pressure switch is disconnected and the red warning lamp is on 5. 80% O.F.P Cable is not connected with refrigerant Tank connection or connection to refrigerant tank is Poor, red warning light on	1. Connect the power cord 2. Wait for more than 5 minutes and reset the overload protector after the overload protector is completely cooled down 3. If the input pipeline is blocked, press the start button after troubleshooting 4. Release system pressure 5. If it is connected to the refrigerant storage tank, check whether it is connected in place; If there is no connection (there is no O.F.P connection for refrigerant storage tank), short circuit 80% O.F.P Cable
Compressor cannot start (blocked)	1. External pressure too high 2. Motor or other spare parts damaged	1. Conduct pressure release operation according to the description in "refrigerant (gas liquid) collection mode operation", and then start it 2. Return to factory for repairmen
The compressor stops after running for a period of time	1. The high-pressure switch is disconnected due to improper operation, such as not opening the output valve, refrigerant storage tank valve 2. The motor thermal protector is disconnected 3. When the recovery of refrigerant storage tank reaches 80%, the red warning light is on 4. After recycling, it is in the low-pressure protection state and the green warning light is on	1. Please read the instructions carefully and operate in strict accordance with the instructions 2. After allowing the motor to cool sufficiently, the motor will restart automatically 3. Replace the refrigerant storage tank, and then press the "Start button" to 4. Run the self-purge mode operation
Low recovery speed	1. The pressure of the refrigerant tank is too high 2. Piston ring of the compressor is damaged	1. Cool the tank down can help bringing down the pressure 2. Replace the piston ring or send back to factory for repairmen
The device cannot be vacuumized	1. Connecting hoses are loose 2. Leakage in the unit	1. Tighten the hose connections 2. Factory service is required