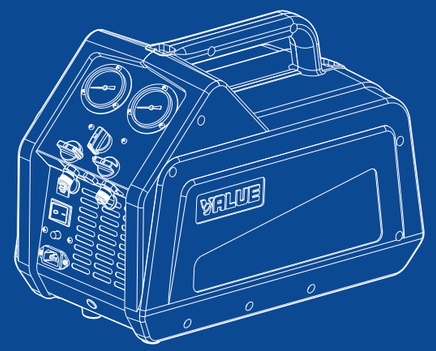
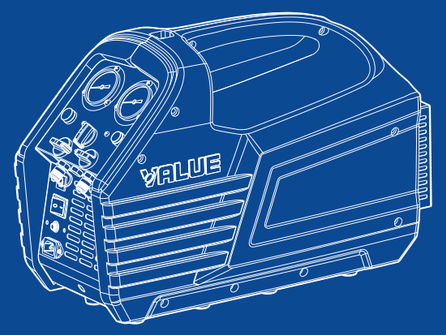
VALUE Creates Value

Recovery Unit Manual

VRR12A/VRR12C
VRR24A/VRR24C





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1. General Safety

Use information

- In order to prolong the usage of the recovery unit,please read the operating manual carefully before using, which can help you to fully understand the safety, specification as operating procedure of the recovery unit.
- Please check the product received is same as you ordered and also the accessories operating manual are attached.Please check the product if there is any damage during transportation Contact with local distributor if the above problem is found.
- Please read the operating manual carefully and use unit according to the product operating.

Safety indication

⚠ Warning

Indicates procedures that must be strictly observed to prevent hazards to persons.

⚠ Notice

Indicates procedures must be strictly observed to prevent damage or destruction of the unit.

Matters needing attention

◆For your safety and correct operation, before using this equipment, please read carefully the instructions and related safety operation specification

⚠Warning

Only a qualified technician can operate this recovery unit.

⚠Warning

Before starting the equipment,make sure that it is well grounded.

⚠Warning

While using electrical wire,the wire must be well connoted and grounded.

⚠Warning

Only a qualified electrician can do the wire connection according to the technical standard and circuit diagram .

⚠Warning

Be sure the power is off before examining or repairing the recovery unit.

⚠Warning

If the original power supply cord is damaged,choose carefully for the replancing one,or you may directly buy form us.

⚠Warning

When the unit breaks down,be sure the power is off before you do any operation.

⚠Warning

Please take power supply and the capacity of your ammeter and electrical wise.

⚠Warning

Only authorized refillable tanks can be used.It requires the use of recovery tanks with a minmum Working pressure of 45 bar(652.6psi).Do not overfill the recovery tank, maximum at 80% capacity to make sure that there is enough space for liquid expansion.Overfilling of the tank may cause a violent explosion.

⚠Warning

Whether the recovery unit with 80% O.F.P. or not, A scale must be used to avoid overfilling the recovery tank!

⚠Warning

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

⚠Warning

Be sure that the place where you are working is thoroughly ventilated.

⚠Warning

Be sure the unit is working under the right power supply.

⚠Warning

While using an extension cord it should be a minimum 14 AWG and no longer than than 7.6 meters, or it may make the voltage drop and damage the compressor.

⚠Warning

The input pressure of the unit should not exceed 26bar(377.1psi).

⚠Warning

The unit need to be laid in horizontally,otherwise it will lead to unexpected vibration,nosise or even abrasion.

⚠Warning

Do not expose the equipment to sun or rain.

⚠Warning

The ventilation opening of the unit must not be blocked.

⚠Warning

if the overload protector pops, reposition it after 5 minutes.

2. Operation Manual

1、Do not overfill the recovery tank. Tank is full at 80% capacity. There should be enough space for liquid expansion. Overfilling of the tank may cause a violent explosion.

2、Do not exceed the working pressure of Recovery Tank Cylinder.

3、Do not mix different refrigerants together in one tank ,or they could not be separated or used.

4、Before recovering the refrigerant ,the tank should achieve the vacuum level: -0.1mpa
Which is for purging non-condensable gases. Each tank was full of nitrogen when it was manufactured in the factory,thus the nitrogen should be evacuated before the first use.

5、All the valves should be closed and the input and output fittings should be covered with protective caps when the unit is not in operation.Without protective caps, because the air or the moisture of air may harm the recovery result and shorten the service life of compressor.

6、A filter drier should always be used and should be replaced frequently.And each type of refrigerant must have its own filter .For the sake of ensuring the normal operation of the unit,please use the filter specified by our company. High quality filter drier will bring high quality services.

7、Specified-caution is needed when recovering from burnt system,and two dry filter is need.

8、a. (only suitable for VRR12A)
The unit has an Internal High Pressure Shut-Off switch.If the pressure inside the system is above rated shut-off pressure(see specification),compressor will automatically shut off and the power will be off. Torestart the compressor, please lower the internal pressure(Output gauge indicates lower than 30bar/435 psi)and hit the Reset button,then turn on the power to restant the compressor.

b. (suitable for VRR12C,VRR24A,VRR24C)
The unit has an internal High pressure Shut-Off switch.If the pressure inside the system is above rated shut-off pressure(see specification),compressor will automatically shut off and the high pressure alarm light will turn on.to restart the compressor,please lower the internal pressure (output gauge indicates lower than 30bar/435.1psi),after the high pressure alarm light turn off, hit the “START” button , then turn on the power to restart the compressor.

c. When high pressure protection is initiated, please find out the cause and deal with it before restarting the unit.cause of High Pressure Protection and Trouble Shooting:

① The output valve of the unit is closed——open the valve will help solve the problem;

② The input valve of the refrigerant tank is closed——open the valve will help solve the problem;

③ The connecting hose between the recovery unit and refrigerant tank is stuck——close all the valves and replace the connecting hose.

④ The temperature of the refrigerant tank is too high,pressure is too high——gave it some time to cool down and the pressure will come back to normal.

9、IF the units is configuration with the low pressure protect, If the inside pressure of the system lower then −5 inHg ～ −14 inHg(-12.6cmHg～-35.5cmHg)，It will be auto off after 20s. Meanwhile, the green indicator light,（Greenlight-The recycle finished- see picture 7），by now，press the “START” button again ，the units will start again, while it will be auto off again after 20s.

10、Recycling machine for filling work, please use electronic scale to monitoring the recovery process, to prevent excessive filling

11、（This clause is suitable for VRR12C and VRR24C）This units is configuration with the oil seperator，In the process of recycling, turn the input valve down, keep the low pressure at around 4 bar (56.9 psi), in order to achieve the best effect of the oil separate.
Recycle refrigerant accumulated reaches 8 kg, please purge first , then shut down the unit, then open the oil cut-off valve (picture 20) , put out the oil.

12、In order to gain maximum recover speed, a hose with inner diameter bigger than 4mm is recommended and the hose should better be shorter than 1.5m.

13、While recovering large amounts of liquid,use the Push/Pull Mode.

14、 After recovering,make sure there is no refrigerant left in the unit.Read the Purge Operation carefully.liquid refrigerant remaind in the unit may be expanded and destroy the components.

15、 If the unit is to be stored or not used for any length of time, we recommend that it be completely evacuated of any residual refrigerant and purged with dry nitrogen.

16、Connection hose with check valve is recommended,it can prevent refrigerant lose.

17、If the recovery unit has 80% O.F.P function, this unit can be used together with a float level sensor. Please connect the recovery unit and the tank with the 80% O.F.P. Cable. If the liquid refrigerant reaches 80% capacity of the tank the recovery unit will automatically shut off and the Red Alarm Light turns on. Before restart please change a new tank.
If the refrigerant tank has no float level sensor, please take the 80% O.F.P. Cable off. Otherwise the recovery unit can not started. In this case, an electric scale is required to monitor the recovered refrigerant amount.

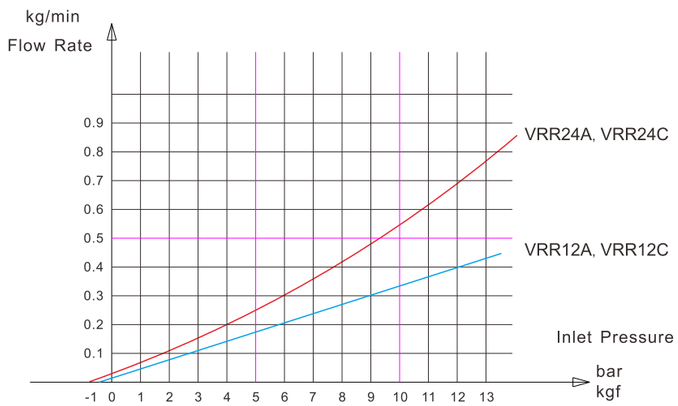
3. Specification

VRR12A，VRR12C

Refrigerants		III ：R-12，R-134a，R-401C，R-406A，R-500		
		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		
Power		110V～120V/60HZ；220V～240V/50～60HZ		
Motor		3/4HP		
Motor Speed		1450RPM (50Hz)	1750RPM (60Hz)	
Maximal Curret Draw		220V，4A	110V，8A	
Compressor		Oil-less,Air-cooled,Piston		
High Pressure Shou-off		38.5 bar (558 psi)		
Low pressure protect		5~14inHg		
Operating Temperature		0℃-40℃		
Dimensions	VRR12A	500mm×222mm×340mm		
	VRR12C	530mm×220mm×340mm		
Net Weight	VRR12A	16kg		
	VRR12C	17kg		
Refrigerants		R134a	R22	R410a
Liquid		1.57 kg/min	1.81 kg/min	1.85 kg/min
Push/Pull		4.64 kg/min	5.57 kg/min	6.22 kg/min

VRR24A，VRR24C

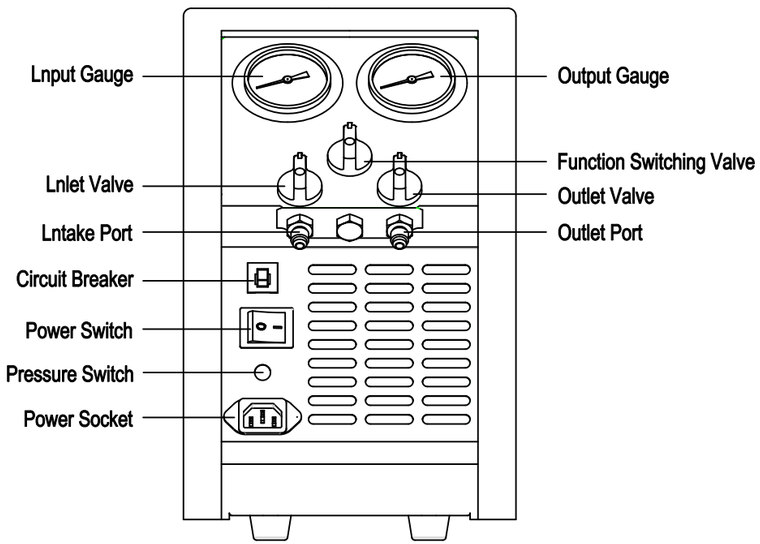
Refrigerants		III ：R-12，R-134a，R-401C，R-406A，R-500		
		IV ：R-22，R-401A，R-401B，R-402B，R-407C，R-407D，R-408A，R-409A，R-411A，R-411B，R-412A，R-502，R-509		
		V： R-402A，R-404A，R-407A，R-407B，R-410A，R-507		
Power		110V～120V/60HZ；220V～240V/50～60HZ		
Motor		1HP		
Motor Speed		1450RPM (50Hz)	1750RPM (60Hz)	
Maximal Curret Draw		220V，5A	110V，10A	
Compressor		Oil-less,Air-cooled,Piston		
High Pressure Shou-off		38.5 bar (558 psi)		
Automatic Shut-off At Vacuum		5~14inHg		
Operating Temperature		0℃-40℃		
Dimensions	VRR24A	515mm×245mm×360mm		
	VRR24C	545mm×245mm×360mm		
Net Weight	VRR24A	17 kg		
	VRR24C	18 kg		
Refrigerants		R134a	R22	R410a
Liquid		3.14 kg/min	3.62 kg/min	3.70 kg/min
Push/Pull		7.47 kg/min	8.37 kg/min	9.95 kg/min



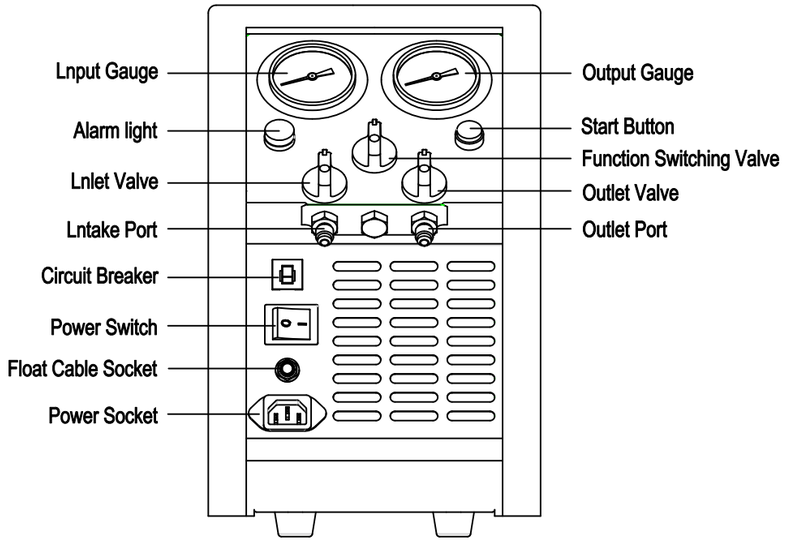
Notice

The flow rate of vapor is direct proportion to inlet pressure.

4. Introduction of Operation Panel



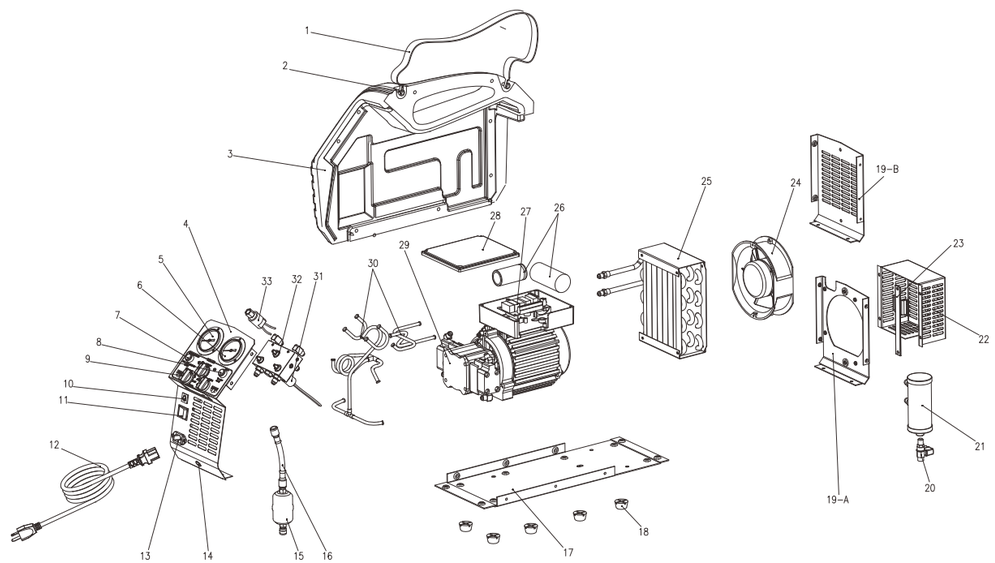
VRR12A



VRR12C, **VRR24A**, **VRR24C**

Some functions of this equipment are for choice. The above picture is for reference only, please check the real product for details.

5. Parts Diagram



NO.	Component	NO.	Component	NO.	Component
1	Belt	13	Power Socket	24	Axial Fan
2	Pin	14	Rubber Stopper	25	Air-cooled condenser
3	Plastic Case	15	Filter	26	Capacitor
4	Front Panel	16	1/4″Hose	27	Circuit Plate
5	Input Gauge	17	Base	28	Circuit Cover
6	Out Gauge	18	Rubber Foot	29	Compressor
7	Alarm Light	19-A	Back Panel ▲	30	Copper Hose
8	Start button	19-B	Back Panel ■	31	High Pressure Switch
9	Knob	20	Oil Drain Valve ▲	32	Control Valve
10	Circuit Breaker	21	Oil Separator ▲	33	Low Pressure Switch
11	Power Switch	22	Back Cover ▲		
12	Power Supply Cord	23	Oil seperatorblock ▲		

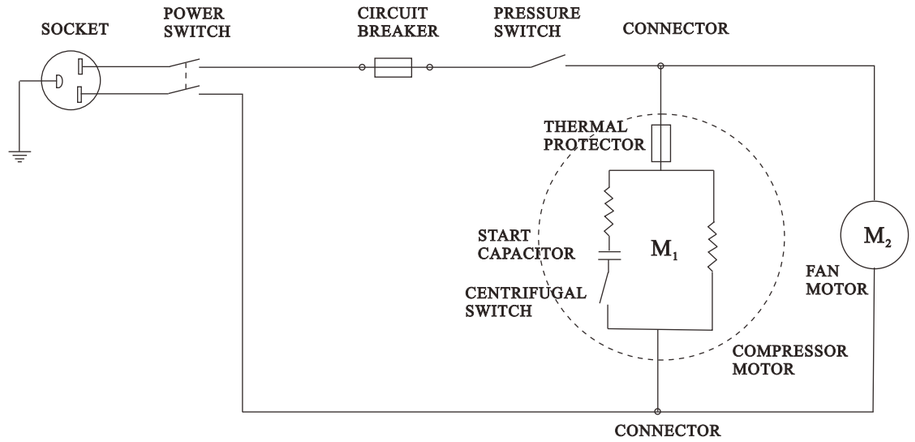
▲: The configuration for VRR12C and VRR24C

■: The configuration for VRR12A and VRR24A

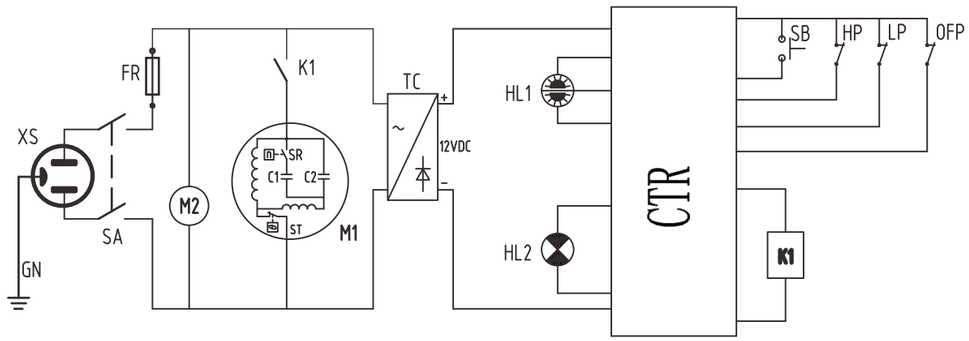
Some functions of this equipment are for choice. The above picture is for reference only, please check the real product for details.

6. Wiring Diagram

VRR12A



VRR12C, VRR24A, VRR24C



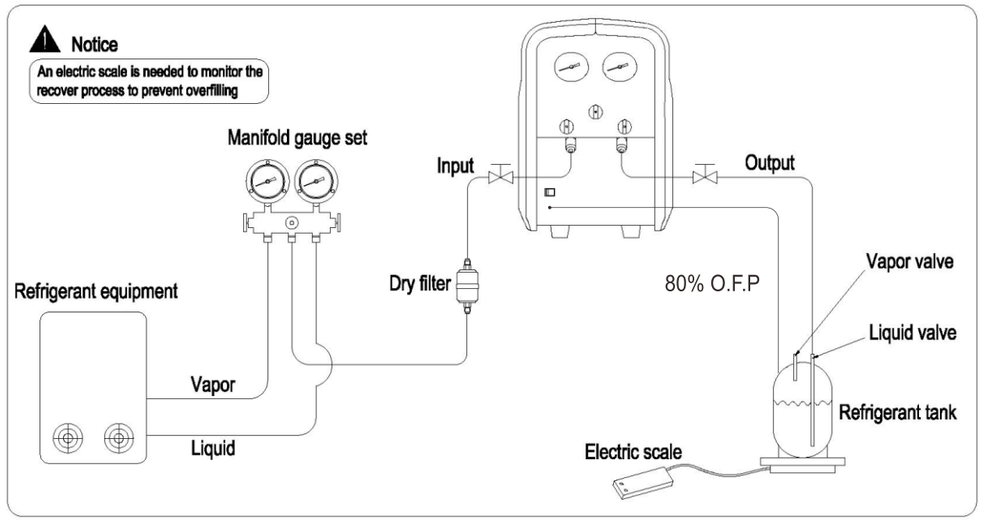
NO.	Code Name	Description	NO.	Code Name	Description
1	XS	Power inlet	9	TC	Electronic transformer
2	SA	Power switch	10	HP	High pressure switch
3	FR	Overfoad protection device	11	LP	Low pressure switch
4	M1	Compressor	12	SB	Start button
5	M2	Axial flow fan	13	OFP	80%OFP switch
6	C1	Start capacitor	14	HL2	80%OFP indicator light
7	C2	Running capacitor	15	HL1	Alarm light
8	ST	Motor thermal pretectors	16	K1	Relay

7. Standard Liquid/Vapor Recovery Method

If the system is with vapor or liquid, please follow the following steps

1、Turn the input valve to "Close", make sure the function switching valve is set on Recovery, turn the output valve on "Close".

2、Make sure all connections are correct and tight(refer to following illustration).



Picture 1 Vapor, liquid recovery circuit connection diagram

3、Turn the input valve on Open.

4、Open the vapor valve on the refrigerant tank and the the check valve connect with the output of the units.

5、Open the liquid valve on the gauges and the check valve connect with the input of the units.

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

7、Turn the input valve to Liquid position, (see picture 2),on this monment the indicating valve on the pressure gauge will increasing.

8、Ensure the indicating value on the low pressure gauge lower than 16.5bar (239.3psi), then press the "START" button as soon as possible to start the units and work for the vapor 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 vapour port or liquid port of the recycled equipment, through the dry filter to connect the inlet port of recovery unit.

Caution: ① If the compressor starts to knock, slowly throttle back the input valve unit the knocking stops.

② In case there is some other unexpected situation happened that cause the units stoped working during the process of the liquid recycle, and the input valve is opened that cause the units cannot be restarted, following the next step as below :

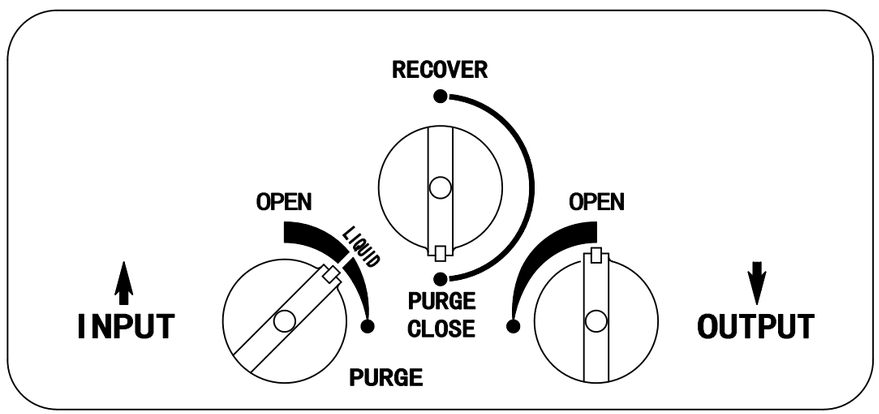
Close the power switch, then clsoe the input valve (turn to the close position) ,also close the check valve which connect with the input valve and the hose of the gauges. Disconnect the input with the hose,open the input valve of the unit slowly to release the pressure, when the pressure showed on the low pressure gauge is lower then 16.5bar（ 239.3psi ）, close the input valve. Reconnect the input valve with the hose, open the check valve on the hose, open the power switch, press the "START" button, repeat the above recycle operation.

⚠ Warning

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

⚠ Warning

When you open the input valve to release the pressure don't towards on others or your self.



Picture 2 knob positon under the liquid recycling state

9、 When you finished the liquid recycling, open the input valve totally, see picture 3, open the vapor valve on the hose, that operation can improve the gas recovery rate

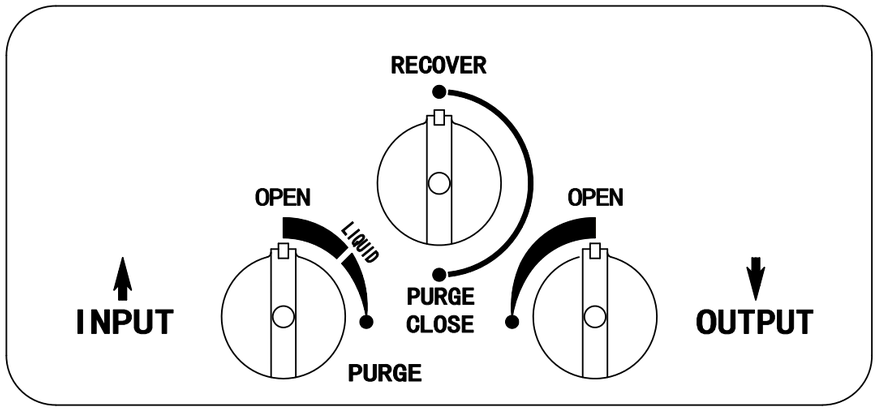
10、Run until desired vacuum is achieved or the unit is under low pressure protection and shuts off automatically,when you finished recycling, turn to the purge mode, details operation see the Purge mode operation.

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

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

⚠ Notice

Alaway purge the unit after each use.Failureto purge the remained refrigerant from the unit couldresult in the acidic degradation of internal components and ultimately cause premature failure of the the unit.



Picture 3 knob position under the vapor recycling state

8. Self-purge Method

Procedure for purging remained refrigerant from this unit

1、If the unit not stop, go directly on the purge mode, if stoped, press the "START" button, to start the units

2、Turn the input valve to the "PURGE" position(output valve and recovery tank valve are open.

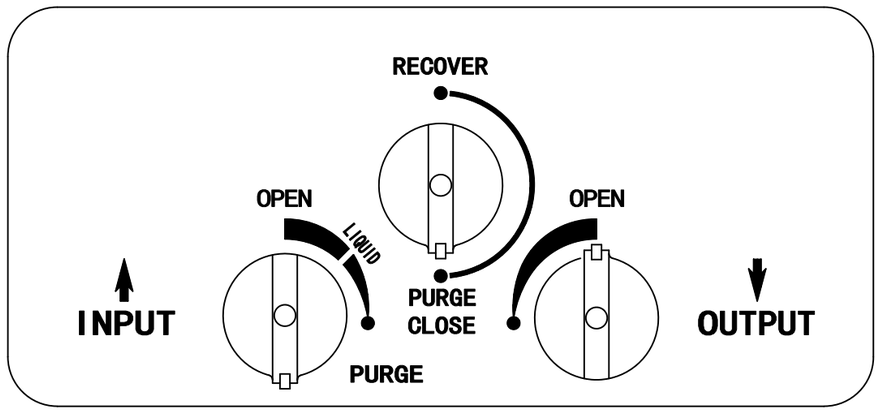
3、Turn the function switching valve to the"PURGE" position.

4、Close the valve on the refrigerant tank.

5、Press the "START" button, waitting till the unit stoped working, then turn the power off, release the hose and the filter and so on.

6、Return the function switching valve to the "RECOVER" position and the input and output valve to the "CLOSE" position.

7、Screw the protective caps on the input and output fittings.



Picture 4 Knob position under the purge mode

9. Liquid Push/Pull Method

Push/Pull method 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 output valve of the unit, open the input valve.

2、Put function switching valve on Recover.（see picture 5）

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

4、Open the power switch, press button, seep（See diagram serial number 8, start the unit.

5. Open the vapor valve and the liquid valve of the refrigerant tank

6、Open the output valve of the unit, start the liquid recycling.

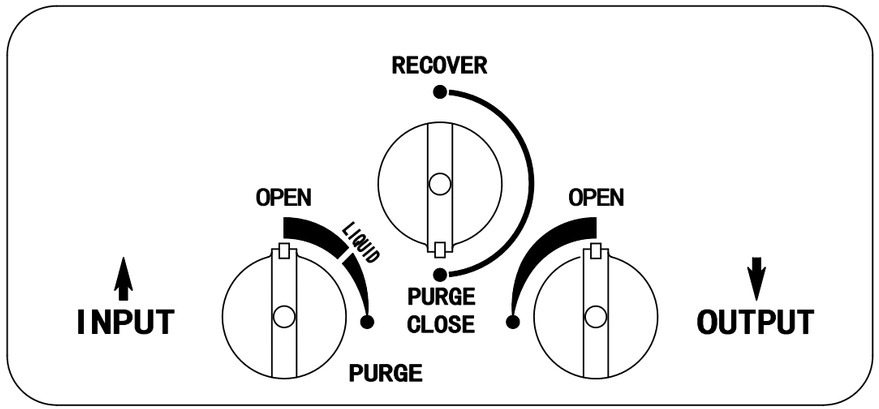
7、If the indicating value on the charging scale remain same or with slow change, that is showing The liquid is recycled within the system , now only need the vapor recycling.（then reconnect the pipe, according to the recycling operation steps to recycle vapor）.

8、Close the vapor valve, press the "START" button, stoped the unit.

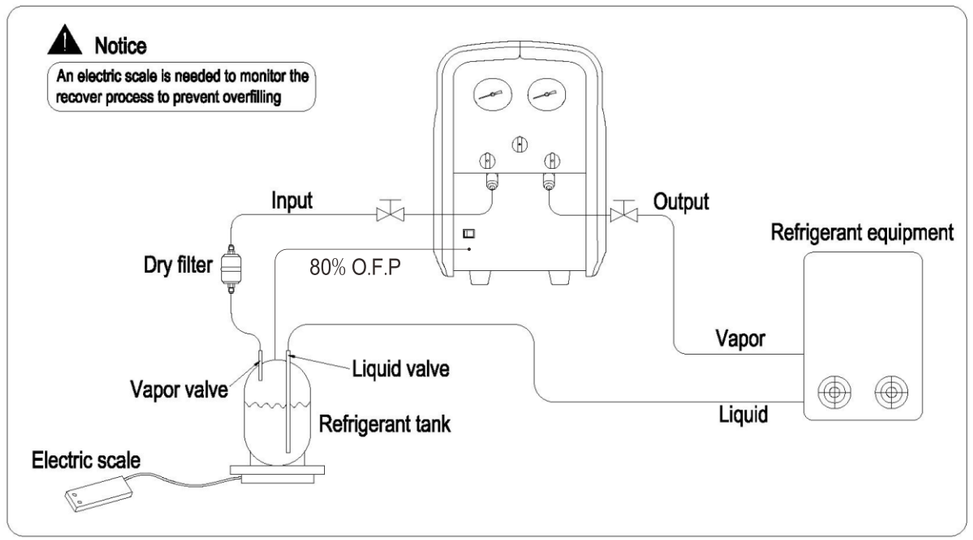
9、Close all the valves, releae the pipes, reconnect the pipe according to the recycling operation step to recycle vapor and purge operation.

⚠Warning

When the showing of electric scale show that the refrigerant in the tank reaches 80% capacity,please turn the power off and close the the valves of the tank



Picture 5 knob position under push-pill mode



Picture 6 push-pull mode recovery circuit connection diagram

10. Trouble Shooting

Question	Reason	Sloution
Connect with power supply, the fan no acts	1.Power supply cord is not connected Voltage is not correct 2.Circuit breaker shuts off	1.Connect the power supply cord Check the power supply at job site 2.Cooling the Circuit breaker down and press"circuit breaker" to restart after 5 minutes
press "START" button, the indicator light, while the compressor no acts and the fan cycling	1. Shut off by high pressure protection,red alarm light turns on 2.Low pressure protection,green alarm light turns on (recovery not finished) 3.Internal wiring fault	1.Lower the pressure of the unit 2.Check if the hose are well connected 3.change the PCB
Alarm light light up compressor cannot work (under blocked staste)	1.External pressure is too high 2.Motor failure or other components damaged	1.according (Vpror/Liquid push-pull mode)to do the decompression operation then restart 2.Factory service is required.
Compressor starts but cuts off within a few minutes	1.High pressure shut off due to wrong operation,such as outlet valve not open or recovery tank are not open 2.Thermal protector disconnected,but axial fan still running 3.Recovery is over and the unit is under low pressure protection	1.Read carefully the Operation Manual and follow the instructions while operating 2.The compressor will restart automatically after the motor is completely cooled 3.Refer to step of self-purge method
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
Unit doesn´t pull out a vacuum	1.Connecting hoses are loose 2.Leakage in the unit。	1.Tighten the hose connections 2.Factory service is required