

# REFRIGERANT RECOVERY UNIT OPERATING MANUAL (including R32, 1234YF)



CE

#### NOTICE FOR USE

- Dear customers, thanks for your trust and support. Thanks for using our refrigerant recovery unit. We will provide you with the best quality and service.
- Please check if the product you see now is the product you purchased and if the attachments and manual are fully equipped, if any damage is done during transportation. If you have come across any of these, please contact the local distributor or our A/S.
- Please read carefully the Operation Manual and follow the instructions while operating this unit.
- For a long lifetime and safe running, please carefully read this manual before operating, testing or maintaining this unit.

## TABLE OF CONTENT

GENERAL SAFETY.....	1
OPERATION MANUAL.....	3
SPECIFICATION.....	6
INTRODUCTION OF OPERATION PANEL.....	7
PARTS DIAGRAM.....	8
WIRING DIAGRAM.....	9
RECOVERY METHOD.....	10
SELF-PURGE METHOD.....	11
LIQUID PUSH/PULL METHOD.....	12
TROUBLE SHOOTING.....	14

## 1 GENERAL SAFETY

### SECURITY LABELS

#### **Warning**

*Warning means that mis-operation can lead to body injury.*

#### **Notice**

*Notice means that mis-operation can do harm to the unit and lower the performance of the unit, or even make the unit unable to work properly.*

For your better understanding of the security labels in this manual, we have listed the content of these security labels for your reference.

#### **Warning**

Only a qualified technician should operate this recovery unit.

#### **Warning**

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

#### **Warning**

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

#### **Warning**

Only a qualified electrician should 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 replacing one, or you may directly buy from 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 wire.

# 1 GENERAL SAFETY

## ⚠ Warning

Use only authorized refillable refrigerant tanks. It requires the use of recovery tanks with a minimum working pressure of 40 bar (580psi). 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.

## ⚠ Warning

An electric scale is needed to prevent overfilling.

## ⚠ Warning

Always wear safety goggles and protective gloves while working with refrigerants to protect your skin and eye from refrigerant gases or liquid. Avoid getting in touch with caustic gas or liquid.

## ⚠ Warning

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

## ⚠ Notice

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

## ⚠ Notice

When using an extension cord, it should be a minimum 1.5mm<sup>2</sup> AWG and no longer than 7.5 meters, or it may cause the voltage drop and damage the compressor.

## ⚠ Notice

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

## ⚠ Notice

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

## ⚠ Notice

Do not expose the equipment to sun or rain.

## ⚠ Notice

The ventilation opening of the unit must not be blocked.

## ⚠ Notice

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

# 2 OPERATION MANUAL

1. Do not mix different refrigerants together in one tank, or they could not be separated or used.
2. Before recovering the refrigerant, the tank should achieve the vacuum level:-75cmHg(-29.6psi), 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.
3. The switch should be at "Position ●" before operation. All the valves must be closed, the input and output fittings should be covered with protective caps when the unit is not in operation. The air moisture is harmful to the recovery result and will shorten the life span of the unit.
4. 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.
5. Special-caution is needed when recovering from burnt system, and two dry filter is needed.
6. The unit has an Internal High Pressure Shut-Off Switch. If the pressure inside the system is above 38.5 bar, compressor will automatically shut off and the high pressure alarm red light turns on. To restart the compressor, please decrease the internal pressure and make the High Pressure alarm light turn off (High pressure shut-off switch reset automatically), then hit the start button, on the right of panel and turn on the power to restart the compressor.

## 2 OPERATION MANUAL

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:

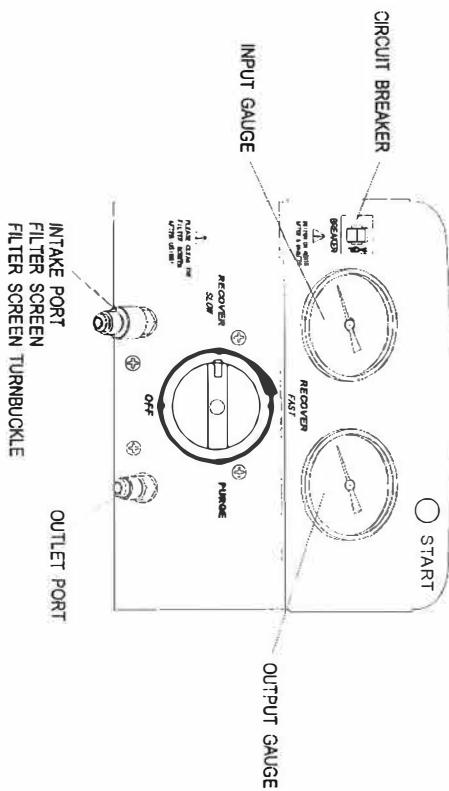
- ① The input valve of the refrigerant tank is closed---open the valve will help solve the problem.
  - ② The connecting hose between the recovery unit and refrigerant tank is stuck—close all the valves and replace the connecting hose.
  - ③ The temperature of the refrigerant tank is too high, pressure is too high—give it some time to cool down and the pressure will come back to normal.
7. The unit has an Internal Low Pressure Shut-off Switch and delay circuit. If the pressure inside the system is below -5 inHg~-14 inHg(-12.7cmHg~-35.5cmHg) for 20 seconds, the unit will automatically shut off and the Green Alarm Light turns on. When the unit finish recovery and purge operation and there is no pressure in the intake port, after turn on the power switch for 20 seconds, the Green Alarm Light turns on. It only can work for 20 seconds if you restart the unit.
- When the input pressure is above 0.8 bar(11 psi),the unit will work continuously.
8. 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.
9. While recovering large amounts of liquid, use the Push/Pull Mode.  
(see Push/Pull mode operation on Page12)
10. After recovering, make sure there is no refrigerant left in the unit. Read

## 2 OPERATION MANUAL

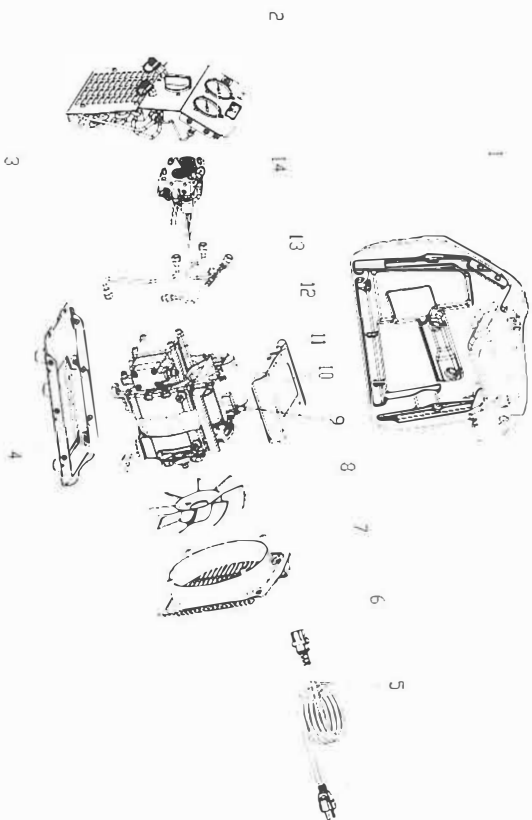
the Purge Operation carefully. Liquid refrigerant remained in the unit may be expanded and destroy the components.

- 11.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.
- 12.Connection hose with check valve is recommended, it can prevent refrigerant lose.
- 13.The intake port is equipped with filter screen, please wash it frequently to keep it clean.
- 14.The One Key Operation switch is not allowed between the positions ( “0” , “1” , “2” , “3” ), it must point directly to the numbers.
- 15.If it is difficult to start the unit, please turn the Switch two rounds to balance the internal pressure and make it easier to start the unit.
- 16.The Low Pressure Gauge shows the pressure of the intake port of the compressor and the High Pressure Gauge shows the pressure of the outlet port of the recovery unit.
- 17.After using, please turn the knob to “0” position.

MODEL	RR250(R32,1234YF)	RR500(R32,1234YF)					
Refrigerants	Category III : R12, R134a, R401C, R406A, R500, 1234YF Category IV : R22, R401A, R401B, R402B, R407C, R407D, R408A, R409A, R411A, R411B, R412A, R502, R509 Category V : R402A, R404A, R407A, R407B, R410A, R507, R32						
Power	220-240 VAC 50 - 60Hz	110-120 VAC 60Hz					
Motor	3/4HP, single cylinder system	1 HP, twin cylinder system					
Motor Speed	1450rpm@50Hz	1750rpm@60Hz					
Maximal Current Draw	110V:8A; 220V:4A	110V:10A; 220V:5A					
Compressor	Oil-less, Air-cooled, Piston						
High Pressure Shut-off	38.5 bar/3850kPa(558psi)						
	Category III	Category IV	Category V	Category III	Category IV	Category V	
Recovery Rate (kg/min)	Vapor	0.20	0.25	0.25	0.40	0.50	0.50
	Liquid	1.60	1.80	2.20	3.00	3.50	3.50
	Push/Pull	4.60	5.60	6.30	7.50	8.50	9.50
Operating Temperature	0 C ~40 C /32~104°F						
Dimensions	400mmx250mmx360mm						
Net Weight	13.5kg			14.0kg			



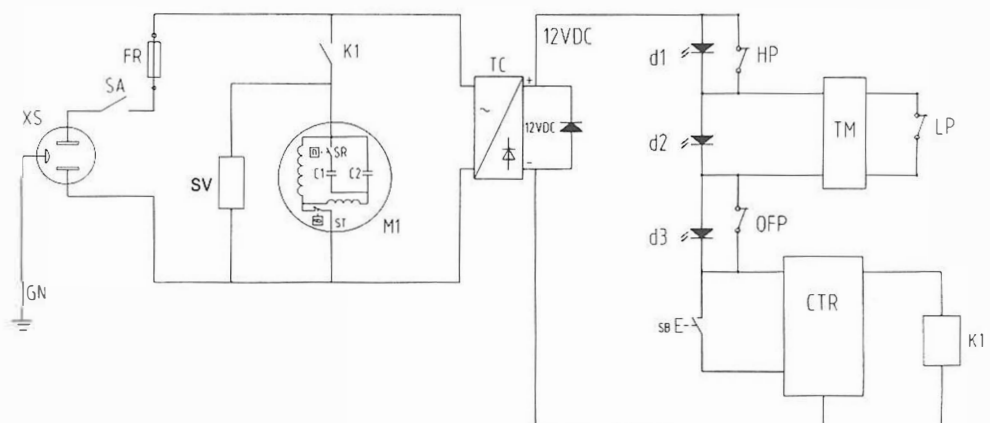
## 5 PARTS DIAGRAM



NO.	Component	NO.	Component
1	Cover	9	Starting Capacitor Plugboard
2	Front Panel	10	Junction Box Cover
3	Air-Cool Condenser	11	Running Capacitor
4	Base	12	Compressor
5	Power Supply Cord	13	Copper pipes
6	Fan Cover	14	Control Valve
7	Fan		

8

## 6 WIRING DIAGRAM



ITEM	GRAPHICS CODE	DESCRIPTION	REMARKS
1	XS	Power outlet	
2	SA	Power Switches	
3	FR	Overload protection device	
4	M1	Compressor Motor	
5	SR	Centrifugal switch	
6	C1	Start capacitor	
7	C2	Running capacitor	
8	ST	Motor thermal protectors	
9	TC	Electronic Transformer	
10	HP	High Pressure Switch	

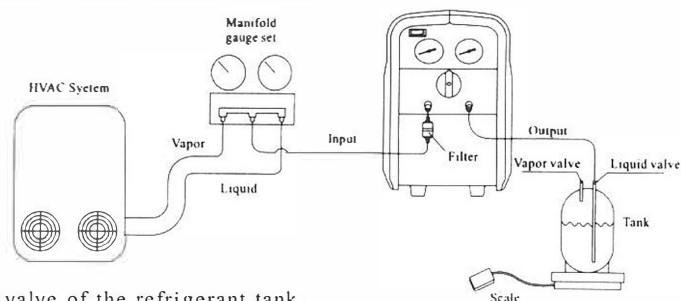
ITEM	GRAPHICS CODE	DESCRIPTION	REMARKS
11	LP	Low-Pressure switch	
12	OFP	80% O.F.P.switch	
13	d1,d3	Red indicator	
14	d2	Green indicator	
15	TM	Delayer	
16	SB	Start button	
17	CTR	Control module	
18	SV	Solenoid Valve	
19	K1	Relay	

9



## 7 RECOVERY METHOD

1. Turn the Switch to position "1".
2. Correctly and firmly connect the pipes. (See Connection Drawing)
3. Connect the unit to the right power supply (as shown on the Name Plate), please press "START" button to start the unit.
4. Hit the START button to start the unit.



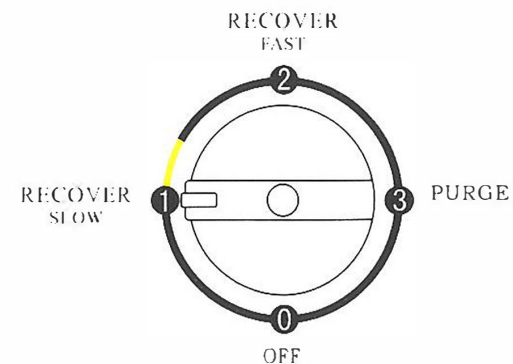
5. Open the valve of the refrigerant tank.
6. Open the liquid valve of the manifold gauge.
7. Slowly turn the Switch to position "2" for faster recovery.

### ▲ Notice

- ① If compressor impact occurs, turn the Switch to position "1"; If the impact still occurs, please slowly turn the switch within the limits of the yellow area, and the indicating value of Low Pressure gauge begin to drop, until the impact stops. But the pressure should be above 0, otherwise the intake port cannot take air. (About the yellow, please see the knob diagram in page 10)
  - ② If the power goes off when the unit is working, and the unit cannot restart, you can turn the Switch 2 rounds and stop at position "1", turn the power on and hit the Start button to start the unit.
8. When liquid recovery is finished, turn the Switch to position "2" for faster recovery.
  9. The unit will automatically stop when recovery is finished, please do the Purge operation now.

## 8 SELF-PURGE METHOD

1. ① Do not turn off the power when the "complete" light turn green and unit stops work, please hit the reset button first, then turn the switch to position "3" to start purge.
  - ② If the ultimate vacuum meet your request but the unit is still working, please turn the switch to position "3" to start purge directly.
2. When reaches the required vacuum, purging ends.
  - ① Close the valve of the refrigerant tank.
  - ② Close the check valve of the connecting hoses.
  - ③ Close the liquid valve and gas valve of the manifold gauge.
  - ④ Close the connecting valve between the refrigeration system and the manifold valve.
  - ⑤ Press "START" button, and disconnect all the external hoses.
  - ⑥ Cap the intake port and the outlet port.



### ▲ Warning

After each use the unit must be purged, make sure there is no refrigerant left in the unit. Liquid refrigerant remained may expand and damage the components.



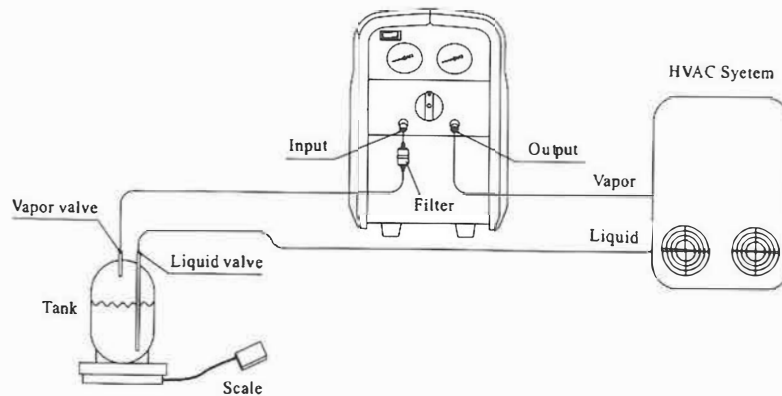
## 9 LIQUID PUSH/PULL METHOD

When recovering liquid refrigerant more than 10kgs, Push/Pull is recommended.

### ⚠ Warning

An electric scale needs to be used together with the recovery unit to monitor the recover process. The siphon can continue even if the machine was turned off. You must manually close the valves on the tank and the unit to prevent overfilling.

1. Turn the Switch to position "1".
2. Correctly and firmly connect the hoses. (See Connection Drawing)
3. Press "START" button.



4. Open the gas valve and liquid valve of the refrigerant tank.
5. Turn the Switch to position "2" to start Push/Pull Mode operation recovery.

## 9 LIQUID PUSH/PULL METHOD

6. When the showing of electric scale is not changing or changing very slowly, it means that the liquid recovery is finished, and it's time for gas recovery. (The hoses need to be re-connected and please follow the Purge Operation to purge the gas refrigerant.)
7. Close the gas valve of the refrigerant tank and then turn press "START" button again.
8. Close all the valves and disconnect all the external hoses. Connect the hoses according to the Recovery Operation to do the gas refrigerant recovery.
9. Purge.

### ⚠ Warning

When the showing of the electric scale show that the refrigerant in the tank reaches 80 % capacity, please press "START" button again and close the valves of the tank.

## 10 TROUBLE SHOOTING

FAULT	CAUSE	SOLUTION
Fan not revolving	Mechanical damage	<ol style="list-style-type: none"> <li>1. Replace the fan</li> <li>2. Factory service is needed</li> </ol>
Compressor don't work	<ol style="list-style-type: none"> <li>1. Shut off by High Pressure Protection, red light ON</li> </ol>	<ol style="list-style-type: none"> <li>1. Lower the pressure of the unit</li> <li>2. Check the connection</li> <li>3. Turn the switch two rounds and stop at position "1"</li> </ol>
Compressor can't start (Jammed)	<ol style="list-style-type: none"> <li>1. External pressure is too high</li> <li>2. Motor failure or other component damage</li> </ol>	<ol style="list-style-type: none"> <li>1. Turn the Switch 2 rounds and point to position "1", and then restart</li> <li>2. Factory service is needed</li> </ol>
Compressor starts but stops within a few minutes	<ol style="list-style-type: none"> <li>1. High Pressure Protection caused by mis-operation shuts the unit off like: Outlet valve closed, refrigerant tank valve closed</li> <li>2. Motor Overload Protection shut the motor off</li> <li>3. Recovery finished, green light ON</li> <li>4. Overload during liquid recovery process, light flashes and off</li> <li>5. Circuit breaker shut off</li> </ol>	<ol style="list-style-type: none"> <li>1. Read carefully the Operation Manual and follow the instructions while operating</li> <li>2. Give the motor some time to restart</li> <li>3. Follow the purge Operation to do the Purging</li> <li>4. Turn the switch 2 rounds and stop position "1" while recovering liquid refrigerant</li> <li>5. Cool the circuit breaker down and restart after 5 minutes</li> </ol>
Low recovery speed	<ol style="list-style-type: none"> <li>1. The pressure of the refrigerant tank is too high</li> <li>2. Piston ring of the compressor is damaged</li> </ol>	<ol style="list-style-type: none"> <li>1. Cool the tank down can help bringing down the pressure</li> <li>2. Factory service is needed</li> </ol>
Not vacuum enough	<ol style="list-style-type: none"> <li>1. Hose connection loosened</li> <li>2. Leakage of the unit</li> </ol>	<ol style="list-style-type: none"> <li>1. Tighten the connecting hoses</li> <li>2. Factory service is needed</li> </ol>