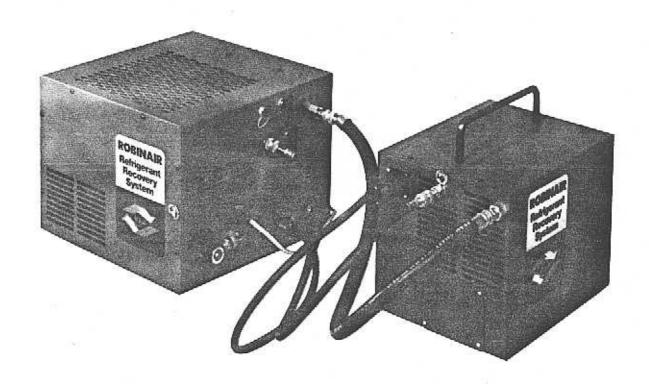
ROBINAIR OPERATING MANUAL



17660 Series Refrigerant Recovery System

For R-12, R-22, R-500 and R-502



ROBINAIR

Refrigerant Recovery Unit Series: 17660 Base Unit (For use only with Series 17660 Compressor Unit)

Refrigerants: R-12, R-22, R-500 and R-502



PRESSURIZED TANK CONTAINS LIQUID REFRIGERANT. OVERFILLING OF THE TANK MAY CAUSE VIOLENT EXPLOSION AND POSSIBLE INJURY OR DEATH. Safety devices require the use of only authorized refillable refrigerant tanks. These include Robinair Part Numbers 17571 (30 lb. tank), 17572 (50 lb. tank) and 17574 (100 lb. tank). Do not recover refrigerants into a non-refillable storage container! Federal regulations require refrigerant to be transported only in containers meeting DOT spec. 4BW or DOT spec. 4BA.

ALL HOSES MAY CONTAIN LIQUID REFRIGERANT UNDER PRESSURE. Contact with refrigerant may cause injury. Wear proper protective equipment, including safety goggles. Disconnect hoses with extreme caution.

HIGH VOLTAGE ELECTRICITY INSIDE PANELS. RISK OF ELECTRICAL SHOCK. Disconnect power before servicing unit. Refer to the instruction manual.

TO REDUCE THE RISK OF FIRE, avoid the use of an extension cord because the extension cord may overheat. However, if you must use an extension cord, the cord shall be No. 14 AWG minimum and keep the cord as short as possible. Do not use this equipment in the vicinity of spilled or open containers of gasoline or other flammable substances.

Use this equipment in locations with mechanical ventilation that provides at least four air changes per hour or locate the equipment at least 18 inches above the floor.

Make certain that all safety devices are functioning properly before operating the unit. Before operating, read and follow the instructions and warnings in the instruction manual.

CAUTION: SHOULD BE OPERATED BY QUALIFIED PERSONNEL. Operator must be familiar with air conditioning and refrigeration systems, refrigerants and the dangers of pressurized components.

Use only with refrigerants R-12, R-22, R-500 OR R-502. This equipment is not designed for any other purpose than recovering refrigerants! Do not mix refrigerant types!

ATTENTION!

Ce réservoir sous pression contient du frigorigène liquide. S'il est surchargé, ce réservoir peut exploser et causer des blessures ou la mort.

ATTENTION. Débrancher avant la maintenance.

ATTENTION. Pour réduire les risques d'incendie, ne pas utiliser de cordon prolongateur de section inférieure à 14 AWG de facon à éviter la surchauffe du cordon.

ATTENTION. Utiliser seulement du frigorigène R-12, R-22, R-500 or R-502.

OPERATING NOTES

At temperatures exceeding 120°F / 49°C, wait 10 minutes between recovery jobs.

U.S. PATS: 4,261,176; 4,768,347; 4,805,416; 4,938,031; 5,005,375; 5,036,578; 5,095,713
OTHER U.S. AND FOREIGN PATENTS PENDING. Mid. by Robineir Division, SPX Corporation, Montpelier, OH 43543

Introduction

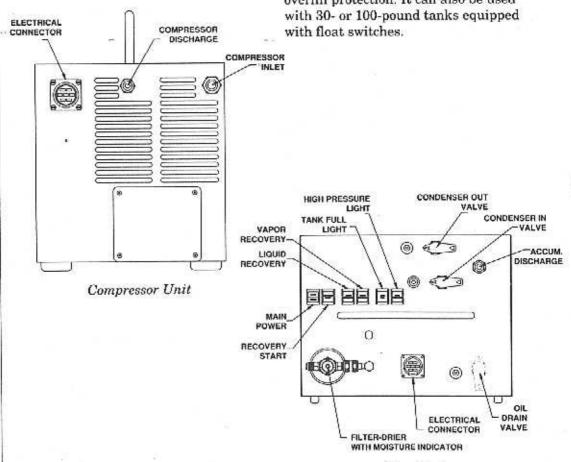
Robinair's modular refrigerant recovery system is designed to give you portability without sacrificing power.

You get two easy-to-handle units that give you flexibility for a wide range of applications, from residential through large commercial air conditioning and refrigeration systems. The compressor is housed in one unit, with the condenser and other components in a second unit so that they can be carried up a ladder or through a maintenance hatch. At the job site, it takes just three quick hook-ups to connect them.

Together, the two units provide fast, efficient refrigerant recovery. Also, refrigerant is recovered through an inline filter-drier so that you can recharge with refrigerant that is substantially cleaner than it was in the A/C-R system.

In addition to the standard refrigerant recovery process, you can perform an optional recycling sequence. Because the in-line filter-drier has extremely high moisture absorption properties, hooking up the unit to recirculate through the filter-drier will provide additional cleaning of the refrigerant.

Your unit comes with a 50-pound refrigerant tank with float switch control for overfill protection. It can also be used with 30- or 100-pound tanks equipped with float switches.



Base Unit

Diagram of Unit's Components

Performance Tips

To speed the recovery process, use 3/8" hoses with your manifold. Although the unit is designed for 3/8" hoses, a 1/4" flare adapter is provided so the unit can be used with standard 1/4" charging hoses.

Always replace the flare cap on fittings when not in use, especially on the filter-drier. This prolongs the life of the filter-drier by preventing moisture from being absorbed from the atmosphere.

During operation, you *must* place the base unit so that air blows upward. The controls, valves, and fittings are on the side of the unit in this position — see the cover illustration for correct positioning.

You *must* maintain voltage to the unit at ±10% of the voltage specified on the unit's nameplate. Any extension cord used must be a minimum of 14 AWG, and keep the cord as short as possible.

The optimum operating temperature range is 50°F to 105°F (11°C to 41°C). The unit operates at temperatures outside this range, but may not perform to advertised specifications.

The system oil separator can hold approximately 25 ounces of oil before it needs to be drained. If, after starting the unit, you suspect that the oil level in the separator is reaching this level, stop the unit and drain the separator. Repeat as often as necessary.

After completing the recovery process, you must drain the system oil separator before transporting the base unit.

At start-up, the unit defaults to the liquid recovery mode. You can recover both liquid and vapor in this mode, but the vapor recovery performance will improve in the vapor recovery mode. See details in "How to Recover Refrigerant."

Operating Guidelines

Preparing a Refrigerant Tank

A WARNING A

USE ONLY AUTHORIZED REFILLABLE REFRIGERANT TANKS. Read and follow all warnings at the beginning of this manual before operating the unit.

IMPORTANT! DO NOT MIX REFRIGER-ANT TYPES! Be sure to indicate on the outside of the tank the refrigerant type contained in the tank (R-12, R-22, R-500, or R-502).

INSTALLING A NEW TANK

How you prepare a refrigerant tank for use with this unit depends on the type of tank you are working with:

- New or Empty Tank Open the tank's VAPOR valve to release any pressure (new tanks have a 5-10 psi dry nitrogen charge), then pull a vacuum on the tank for five to ten minutes. Close the tank's valves before turning the vacuum pump off to prevent air from entering the tank.
- Partially-Filled Tank You can add additional refrigerant to a partiallyfilled tank without pulling a vacuum. If you suspect the presence of air in the tank, be sure the tank is at ambient temperature, then use a pressure gauge to check for and purge any non-condensibles.

REPLACING A FULL TANK

To replace a full refrigerant tank in the middle of the recovery sequence, follow these steps:

- 1. Close the tank's VAPOR valve.
- Close the CONDENSER OUT valve on the base unit.
- Disconnect the ¼" red charging hose from the refrigerant tank, and disconnect the tank float switch from the tank.
- Reconnect the '4" red charging hose to the VAPOR valve of the new tank (which was prepared as described above). Reconnect the yellow float switch cable to the new tank.
- To proceed with recovery, open the VAPOR valve on the tank and the CONDENSER OUT valve on the base unit. Press the RECOVERY START button.

The unit will run until recovery is complete or the new tank is full.

Setting Up the Unit

Follow these steps to properly set up the unit for operation.

A WARNING A

ALWAYS WEAR SAFETY GOGGLES WHEN WORKING WITH REFRIGERANT.

Read and follow all warnings at the beginning of this manual before operating the unit.

- Using the ¹/₂" hose provided, connect the ¹/₂" flare on the base unit to the ¹/₂" flare on the compressor unit.
- Using the ³/₈" hose provided, connect the ³/₈" flare on the base unit to the ³/₈" flare on the compressor unit.

Note: Be sure to attach the Quick SealTM (large) end to the base unit.

- Attach the electrical connector cable between the base unit and the compressor unit.
- Attach the ¼" red hose from the CONDENSER OUT fitting to a vacuum pump.
- Open the CONDENSER IN and OUT valves on the base unit. The OIL DRAIN VALVE must be closed.

 Pull a five- to ten-minute vacuum on the unit. Close the CONDENSER OUT valve before turning off the vacuum pump to prevent air from entering the unit.

A WARNING A

DISCONNECT HOSES WITH EXTREME CAUTION! ALL HOSES MAY CONTAIN LIQUID REFRIGERANT UNDER PRESSURE. Read and follow all warnings at the beginning of this manual before operating the unit.

 Disconnect the ¼" red hose from the vacuum pump, and attach it to the VAPOR valve of a refillable refrigerant tank that is ready for use.

CAUTION! DO NOT MIX REFRIGERANT TYPES! Be sure to use a tank designated for the type of refrigerant you will be recovering.

- Connect the yellow float switch cable to the tank, and connect the power cord from the rear of the base unit to an appropriate power source.
- Open the VAPOR valve on the tank, and open the CONDENSER OUT valve. The CONDENSER IN valve should already be open.

How to Recover Refrigerant

After you have set up the unit, follow these steps to recover refrigerant.

A WARNING A

ALWAYS WEAR SAFETY GOGGLES WHEN WORKING WITH REFRIGERANT. CONNECTING HOSES TO THE WRONG PORTS MAY CAUSE PERSONAL INJURY OR MAY DAMAGE THE EQUIPMENT. Read and follow all warnings at the beginning of this manual before operating the unit.

 Attach your manifold gauge set to the A/C-R system, then attach the center hose of the manifold to the inlet filter on the unit.

Note: The filter-drier has a $\frac{3}{6}$ male flare connection. If you are not using a $\frac{3}{6}$ hose with your manifold, attach the $\frac{1}{4}$ adapter provided to the inlet. Then connect the $\frac{1}{4}$ red hose from the base unit to the tank's VAPOR valve.

- Open both valves on the manifold gauge set, then slightly loosen the knurled nut of the center hose at the manifold to purge air from the lines. Retighten the nut.
- Turn on the MAIN POWER switch. It will illuminate, and the fans will start.
- Press the RECOVERY START button. It will illuminate, and the recovery process will begin.

Note: The unit automatically goes into the liquid recovery mode when it is turned on. You can recover entirely in the liquid mode, but for improved performance or in high ambient conditions, you can complete the job more quickly if you switch to vapor recovery (see Step 5).

CAUTION! DO NOT RECOVER LIQUID IN THE VAPOR MODE! You can revert to liquid recovery by pressing the LIQUID RECOVERY button, but it is best to be sure you've recovered all the liquid before switching to vapor recovery.

5. To recover in the vapor mode, watch the sight glass on the filterdrier. If you are recovering liquid, the sightglass will appear about half full. Recover in the liquid mode until no refrigerant or bubbles are visible in the sightglass. Then press the VAPOR RECOVERY button.

The unit automatically shuts off at a vacuum level of 4 in. Hg or when the tank is full (see "Replacing a Full Tank" for instructions on how to replace a tank).

6. When the unit shuts off, watch the manifold gauges. Pressure should rise as refrigerant continues to boil out of the oil in the A/C-R system. To recover this remaining refrigerant, press the RECOVERY START button when the pressure rises to 5 psi (if the pressure does not reach this level, the recovery process is complete). Repeat until the manifold gauge readings stabilize and indicate a satisfactory level of refrigerant recovery.

A WARNING A

DISCONNECT HOSES WITH EXTREME CAUTION! ALL HOSES MAY CONTAIN LIQUID REFRIGERANT UNDER PRESSURE. Read and follow all warnings at the beginning of this manual before operating the unit.

- When recovery is complete, close the manifold valves and disconnect the center manifold hose from the unit.
- Drain the oil separator by opening the OIL DRAIN VALVE and collecting the oil in the calibrated plastic bottle supplied with the unit. When all the oil has been drained, close the valve.

IMPORTANT! The oil lost from the A/C-R system during the recovery process must be replaced with new oil as part of A/C-R system recharging. After each refrigerant recovery procedure, measure the amount of oil in the oil catch bottle. Add the same amount of new compressor oil to the system, following the manufacturer's recommendations. Be sure to dispose of recovered oil in an appropriate manner.

You must now perform the self-clearing process (explained next) to clear any remaining refrigerant. To remove additional moisture from the refrigerant first, see "Optional Recycling Sequence."

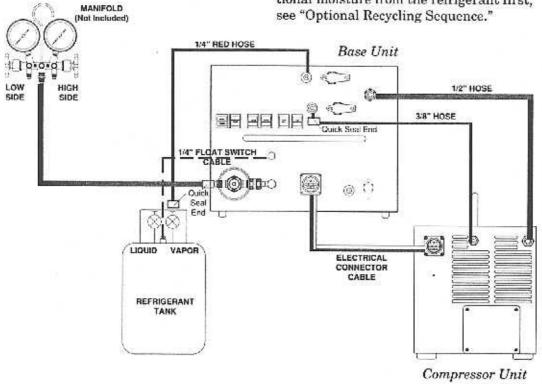


Diagram of Standard Recovery Hook-Up

Performing the Self-Clearing Sequence

During recovery, the unit's high side fills with liquid refrigerant and, depending on the circumstances, can hold two to three pounds of refrigerant. Performing the self-clearing sequence actually recovers nearly all remaining refrigerant by pumping it straight from the compressor into the tank without any cooling.

Because condensing is bypassed, it is not uncommon for the unit to cut out on high pressure during self-clearing. If this happens, the majority of refrigerant left in the unit will have been recovered. Or you can let the tank cool and continue to restart the unit until it shuts off on vacuum.

A WARNING A

ALWAYS WEAR SAFETY GOGGLES WHEN WORKING WITH REFRIGERANT.

Read and follow all warnings at the beginning of this manual before operating the unit.

- Close the CONDENSER IN and OUT valves and the tank's VAPOR valve.
- Disconnect the red Quick Seal[™] hose from the tank's VAPOR valve, and connect it to the unit's inlet.
- Connect the ³/₆" to ¹/₄" flare adapter (provided) to the tank's VAPOR valve.

A WARNING A

DISCONNECT HOSES WITH EXTREME CAUTION! ALL HOSES MAY CONTAIN LIQUID REFRIGERANT UNDER PRESSURE. Read and follow all warnings at the beginning of this manual before operating the unit.

- Disconnect the ³/₈" Quick SealTM hose from the CONDENSER IN fitting on the base unit, and connect it to the adapter on the tank's VAPOR valve.
- Open the tank's VAPOR valve, and open the CONDENSER OUT valve.
- Press the RECOVERY START button, and let the unit run until it shuts off automatically.
- Close the tank's VAPOR valve, and close the CONDENSER OUT valve.
- Disconnect the ³/₈" Quick Seal[™] hose and adapter from the tank, and disconnect the red hose from the unit's inlet.
- Loosen the knurled nut on the 3/s"
 hose at the fitting on the compressor
 box to bleed off pressure in the hose.
 Tighten the nut.

The unit is now ready for the next job and has been cleared so that you can recover R-12, R-22, R-500 or R-502. To begin the next job, follow the steps explained in "Setting Up the Unit."

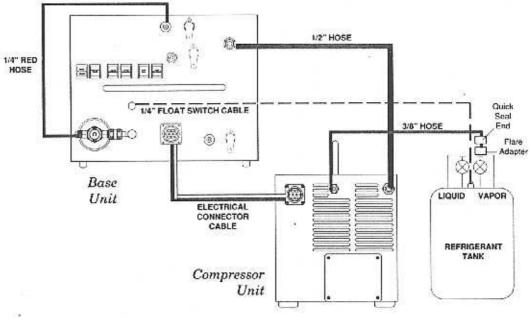


Diagram of Self-Clearing Hook-Up

If you feel it is necessary to remove additional moisture from the refrigerant, follow these steps to recirculate the refrigerant through the filter-drier and oil separator. The moisture indicator on the sight glass will indicate when the refrigerant is dry and ready for reuse.

A WARNING A

ALWAYS WEAR SAFETY GOGGLES WHEN WORKING WITH REFRIGERANT.

Read and follow all warnings at the beginning of this manual before operating the unit.

- The base and compressor units should be connected with the ¹/₂" hose, the ³/₈" hose, and the electrical connector cable. The ¹/₄" red hose should be connected from the base unit to the tank's VAPOR valve, and the CONDENSER IN and OUT valves should be open.
- Connect the Quick Seal™ (large) end
 of the blue ¼" hose provided to the
 LIQUID valve of the tank containing
 refrigerant to be recycled. Connect
 the other end of the blue ¼" hose to
 the inlet of the unit.

- Loosen the knurled nut at the outlet of the moisture indicator to purge any air in the filter. Retighten the nut.
- Press the RECOVERY START button, and leave the unit in the liquid recovery mode.
- Let the unit run until the moisture indicator changes from pink to blue.

Note: If the moisture indicator does not change color after two hours of recycling, change the filter-drier following the steps in "Changing the Filter-Drier."

 When recycling is complete, close the tank's LIQUID valve and let the unit shut off automatically. You must then perform the self-clearing sequence explained earlier.

Note: If you've recovered refrigerant from a compressor burnout or for more thorough cleaning, you should recycle the refrigerant using Robinair's 17150A Refrigerant Recycling Unit.

Compressor Unit

Base Unit 1/2" HOSE RED 3/8" HOSE 1/4" FLOAT SWITCH C Quick Secol BLUE HOSE LIQUID VAPOR ELECTRICAL CONNECTOR CABLE REFRIGERANT TANK

Diagram of Optional Recycling Hook-Up

Optional Recycling Sequence

Maintenance Instructions

This unit requires two routine maintenance procedures for proper operation: changing the filter-drier and changing the compressor oil.

CAUTION! Be sure to close all valves on the unit during service and maintenance procedures unless otherwise noted.

CHANGING THE FILTER-DRIER

The filter-drier needs to be replaced when:

- a maximum of 600 pounds of refrigerant has been recovered,
- a maximum of 600 pounds of refrigerant has been continuously recycled,
- the moisture indicator does not change color after two hours of continuous recycling, or
- refrigerant recovered and/or recycled is from a compressor burn-out.

You may change the filter-drier cartridge only *or* you may change the filter-drier and the moisture indicator. The "Trouble-shooting Tips" section will help you determine when the moisture indicator should be changed. Follow this procedure only after the unit is shut down and a self-clearing performed.

To change the filter-drier, follow these steps.

- Disconnect the nut that attaches the filter-drier to the unit, and slide the filter-drier straight out of the unit.
- Unscrew the moisture indicator from the filter-drier.
- If the moisture indicator is good, screw it on to the new filter-drier.
- If the moisture indicator needs to be replaced, discard it and screw a new moisture indicator on to the filter-drier cartridge. If you are using the ³/₆" or ¹/₄" adapter on the old moisture indicator, be sure to remove it and connect it to the new moisture indicator.
- Slide the new filter-drier into the unit, and connect it to the unit by tightening the fitting nut. Keep the inlet capped until you are ready to connect a hose to it.

To change the filter-drier during the optional recycling sequence, follow these steps.

- Close the LIQUID valve on the refrigerant tank, and let the unit run until it shuts off automatically on vacuum.
- Disconnect the blue hose from the filter-drier inlet.
- Follow Steps 1 through 3 above to replace the filter-drier (and moisture indicator, if necessary).
- Connect the blue ¼" hose to the inlet of the new filter-drier. Open the tank's LIQUID valve. To continue recycling, press the RECOVERY START button.

CHANGING THE COMPRESSOR OIL

The compressor oil needs to be changed when:

- a maximum of 1,000 pounds of refrigerant has been recovered or recycled, or
- recovering and/or recycling a system with a burned-out compressor.
- Close the CONDENSER IN valve and press the RECOVERY START button. Let the unit run until it stops automatically because of high pressure.
- Remove the sight glass panel on the compressor unit.
- Connect the valve core depressor end of a standard hose to the compressor's OIL DRAIN VALVE, and collect the oil in a suitable container.
- Place a flare cap on the inlet of the unit, and disconnect the %" hose from the compressor unit.
- 5. Dip the free end of the hose connected to the compressor's OIL DRAIN VALVE into a container filled with 14 ounces of new 150 viscosity refrigeration oil.
- Turn on the MAIN POWER switch; press the RECOVERY START button.
- When all the oil has been pulled into the compressor, disconnect the hose from the OIL DRAIN VALVE.
- Turn off the MAIN POWER switch, and replace the sight glass panel.

The following is a list of replacement parts you may need to service or maintain your recovery and recycling unit.

Description	Part No.
Filter-Drier	17663
Refillable 30-lb. Tank	
with float switch	17571
Refilable 50-lb. Tank	
with float switch	17572
Refillable 100-lb. Tank	
with float switch	17574
60" red Enviro-Guard™ hose	68360
60" blue Enviro-Guard™ hose	68260
36" ¾" Enviro-Guard™ hose	35136
36" 1/2" Enviro-Guard™ hose	35236
Moisture Indicator	RA19101
Electrical Connector Cable	RA19102
Check Valve	RA17112
Vacuum Switch	RA19103
High Pressure Switch	RA19104
Liquid Flow Control Valve	RA19105

Because of ongoing product improvements, we reserve the right to change design, specifications, and materials without notice.

	D440400
Main Power Switch	RA19106
Recovery Start Switch	RA19107
Liquid Recovery Switch	RA19108
Vapor Recovery Switch	RA19109
High Pressure Light	RA19110
Tank Full Light	RA19111
10" Fan	FIA19011
61/4" Fan	FIA17416
Inlet and Vapor Solenoid	FIA18756
Oil Return Solenoid	FIA17522
Compressor	RA19112
Oil Return Timer	RA19113
220V 50Hz Version	
Replacement Parts	Part No.
Main Power Switch	RA19118
Recovery Start Switch	RA19119
Liquid Recovery Switch	RA19120
Vapor Recovery Switch	RA19121
High Pressure Light	RA19122
Tank Full Light	RA19123
10" Fan	RA19012
63/4" Fan	RA17516
Inlet and Vapor Solenoid	RA19124
Oil Return Solenoid	RA19022
Compressor	RA19125

Replacement Parts List

This product is warranted to be free from defects in workmanship, materials, and components for a period of one year from date of purchase.

The following restrictions apply:

- The limited warranty applies to the original purchaser only.
- The warranty applies to the product in normal usage situations only, as described in the Operating Manual. The product must also be serviced and maintained as specified.
- If the product fails, it will be repaired or replaced at the option of the manufacturer.

 Transportation charges for warranty service are the responsibility of the purchaser (pre-paid to the factory).

Oil Return Timer

- Warranty service claims are subject to factory inspection for product defect(s).
- All warranty service claims must be made within the specified warranty period. Proof-of-purchase date must be supplied to the manufacturer.

This Limited Warranty does not apply if:

- The product, or product part, is broken by accident.
- The product is misused, tampered with, or modified.
- The product is used for recovering or recycling any substance other than the specified refrigerant types.

Limited Warranty

RA19126

Trouble-Shooting Tips

RECOVERY OPERATION			
Symptom	Cause	Cure	
Compressor does not start or stops prematurely	Unit unplugged	Plug power cord into uni- or into power source	
	Electrical connector cable disconnected between units	Connect cable to units	
	 Float switch cable dis- connected from tank 	Connect float switch cable to tank	
	• Refrigerant tank full	• Replace refrigerant tank	
	High pressure	Be sure condenser's IN and OUT valves are open, or	
		Be sure tank's VAPOR valve is open, or	
	=	Replace tank or allow it to cool	
	• Insufficient pressure at inlet	Be sure there is pressure in the system	
	• Defective components	• Call the factory	
Unit runs but will not shut off at end of recovery	• Leak in A/C-R system	Repair leak	
	OIL DRAIN VALVE open	Close OIL DRAIN VALVE	
	Defective components	• Call the factory	

For assistance in servicing or using the Refrigerant Recovery System, call the toll-free Service Line, 800-822-5561, inside the continental U.S. In Canada, call 419-485-5561, Ext. 300. In all other locations, contact your local distributor.

To help us serve you better, please be prepared to provide the model number, serial number, and date of purchase.

To validate your warranty, you must complete the warranty card attached to your unit and return it within ten days from date of purchase.

RECYCLING OPERATION				
Symptom	Cause	Cure		
Compressor does not start or stops prematurely	Unit unplugged	Plug power cord into unit or into power source		
	Electrical connector cable disconnected between units	Connect cable to units		
	 Float switch cable dis- connected from tank 	Connect float switch cable to tank		
	• Refrigerant tank full	 After recycling connections are made, open the LIQUID valve on the tank and loosen the knurled nut on the outlet of the moisture indicator to purge any air from the filter, or 		
		 Transfer some refrig- erant out of the tank to be recycled into an empty tank 		
	High pressure	Be sure tank's VAPOR valve is open, or		
		Replace tank or allow it to cool		
	 LIQUID valve closed or blue hose improperly connected 	 Open the LIQUID valve or loosen the blue hose by half a turn 		
Moisture indicator will not change color	Insufficient recycling time	 If excessive moisture is present, recycling up to two hours may be re- quired; if there is still no change, replace the filter- drier 		
	• Filter-drier saturated	• Replace the filter-drier		
	 Moisture indicator contaminated or defective 	 Replace a discolored or non-functioning moisture indicator 		

Trouble-Shooting Tips



For assistance in servicing or using the Refrigerant Recovery System, call the toll-free Service Line, 800-822-5561, inside the continental U.S. In Canada, call 419-485-5561, Ext. 300. In all other locations, contact your local distributor.

To help us serve you better, please be prepared to provide the model number, serial number, and date of purchase.

To validate your warranty, you must complete the warranty card attached to your unit and return it within ten days from date of purchase. In addition, returning the warranty card automatically registers you for **Service-Link**, our three-phase program designed to help with any operating difficulties encountered while using the recovery system:

- Toll-Free Service Line By calling our toll-free Service Line, you can talk directly to service technicians who can walk you through set-up and operating procedures as you use the equipment.
- 'Rapid Fire' Parts Supply If our service technicians determine that a replacement part is needed, we'll get it to you quickly.
- Info Source We'll help you keep up to date with information on CFC/HCFC issues as they evolve.

SPX

Robinair Division SPX Corporation



Robinair Way Monspelier, OH 43543-0193 Phone 419-485-5561 FAX 419-485-8300