



**Ref Tec**  
INTERNATIONAL SYSTEMS LLC

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# Oil Recovery™



## Chiller Oil Recovery System

OPERATION MANUAL  
(VERSION 4.0)  
115 & 240 VOLT MODEL

PORTABLE SERVICE CART MODEL

10530 Portal Crossing West  
Clearwater, FL 34211

Technical Support:  
1- 800 -214 -4883

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## SPECIFICATIONS

### Electrical Power Requirements

240 VAC, 50 Hz, 1-Phase, 10-Amp Min, 15 Amp Max.

115Vac, 60 Hz, 1-Phase, 10Amp Min, 15 Amp Max

### Dimensions (approximate)

55" high x 21-1/4" wide x 23" deep

### Weight

178-lbs. (400-lbs. shipping)

Rev 4.0 7- 3 1 - 2 0 0 9

#### Notice

RefTec International, Inc. urges that all HVAC servicers working on RefTec equipment or any manufacturer's products, make every effort to eliminate, if possible, or vigorously reduce the emission of CFC, HCFC, and HFC refrigerants to the atmosphere resulting from installation, operation, routine maintenance, or major service of this equipment. Always act in a responsible manner to conserve refrigerants for continued use even when acceptable alternatives are available. Conservation and emission reduction can be accomplished by following recommended service and safety procedures.

#### WARNING!!

To avoid injury or death due to inhalation of, or skin exposure to refrigerant, closely follow all safety procedures described in the Material Safety Data Sheet for the refrigerant and to all labels on refrigerant containers. Certain procedures common to refrigeration system service may expose personnel to liquid or vaporous refrigerant.

## Product Description

ORR-1000 oil recovery/recharge unit consists of a 250-lb refrigerant tank, 0.75-hp oil-less compressor, and a vacuum pump. Hose connections are made from the unit to a chiller's compressor oil sump and condenser.

First, the oil-less compressor evacuates the tank and hoses to approximately 15-in Hg vacuum. The line to the oil sump is then opened allowing oil to transfer into the tank via pressure differential.

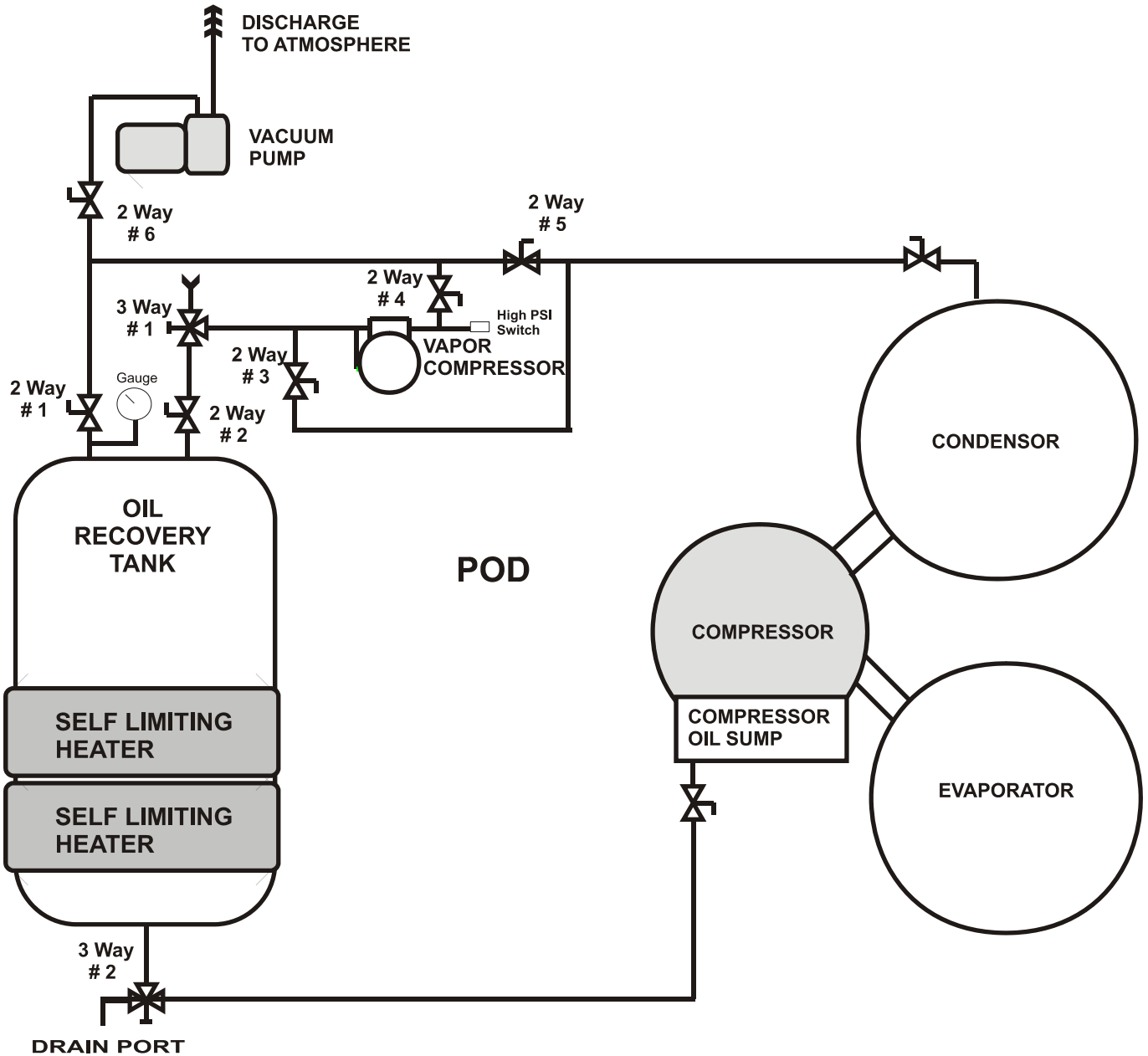
The oil-less compressor pumps refrigerant vapor off the oil and sends it back into the chiller condenser. Once all refrigerant has been removed from the oil, it may be easily and safely disposed of. By using the vapor Compressor to pressurize the 250# Cylinder will push fresh oil into the chiller compressor oil sump.

### Shipping Contents:

Furnished with Oil Recovery are:

- Two 10-ft 1/2" high pressure refrigerant hoses.
- One 10-ft 3/8" high pressure refrigerant hose.
- Two 240 VAC heater band.
- One 25' Power Cord
- Warranty: 1 year parts.

Figure 2. P & I D Schematic



## **OPERATING PROCEDURES:**

### **Evacuating Oil Recovery Tank and Hose: Valve Positions.**

1. Install 1/2" from right port on 3-way valve # 2 to oil sump.
2. Install 3/8" hose from 3/8" port to condenser valve.
3. Keep service valves on condenser and oil sump close.
4. Open 2 way valves: # 1,2,3,4,5 &6
5. Turn 3 way valve # 1 towards Atmosphere.
6. Turn 3 way valve # 2 to the left.

### **Remove old oil from system: Valve Positions.**

1. Close 2 way valves #1,3 & 6.
2. Open 2 way valve # 2,4 & 5.
3. Turn 3 way valve # 1 towards Atmosphere.
4. Turn 3 way valve # 2 to the left.
5. Open service valve on oil sump.
6. Open service valve on condenser.

### **Recover Refrigerant from Old Oil: Valve Positions.**

1. Close 2 way valves # 1,3 & 6..
2. Open 2 way valve # 2,4, & 5..
3. Turn 3 way valve # 1 towards Atmosphere.
4. Turn 3 way valve # 2 to the left.
5. Close service valve on oil sump.
6. Open service valve on condenser.

### **Remove Old Oil from Tank: Valve positions.**

1. Close 2 way valves: # 3, 5, & 6.
2. Open 2 way valves: # 1, 2, & 4.
3. Turn 3 way valve # 1 towards cylinder.
4. Turn 3 way valve # 2 to the right..
5. Install 1/2" hose from left port on 3-way valve # 2 to waste oil container.
7. Close service valves on condenser and oil sump.

### **Add New Oil to Tank: Valve Positions.**

1. Install 1/2" hose from left port on 3-way valve # 2 to new oil container.
2. Open 2-way valves: # 1,2,3,4,5 & 6
3. Close service valves on condenser and oil sump.
4. Turn 3 way valve # 1 towards Atmosphere.
5. Turn 3 way valve # 2 to the right.

### **Distilling New Polyolester Oil: Valve Positions.**

1. Open 2-way valves: # 1,2,3,4,5 &6.
2. Turn 3 way valve # 1 towards Atmosphere.
3. Turn 3 way valve # 2 to the left.
4. Install Heater Band.

### **Add New Polyolester Oil to System: Valve Positions.**

1. Open service valve on condenser.
2. Close 2 way valves: # 2,5 & 6.
3. Open 2 way valves: # 1,3, & 4.
4. Turn 3 way valve # 1 towards Atmosphere.
5. Turn 3 way valve # 2 to the left.
6. Open service valve on oil sump.

## OPERATING PROCEDURES:

### Evacuating Oil Recovery Tank and Hose:

1. Turn the chiller and circulating water pumps off. Make sure they cannot restart.
2. Connect Power to 1 phase 15 amp to power inlet.
3. Refer to figure # 2 page 3 for the P&ID layout of valve arrangements.
4. Refer to page 4 for valve settings.
5. Leave valves on condenser and oil sump closed.
6. Turn Vacuum Pump to the on position and pull tank into a deep vacuum.
7. Recovery tank and hoses will now be in a vacuum.
8. Turn Vacuum Pump switch back to the off position.
9. Evacuation is now complete.

### Remove Old Oil from System:

1. Refer to figure # 2 page 3 for the P&ID layout of valve arrangements.
2. Refer to page 4 for valve settings.
3. Open valve on the oil sump to allow oil to flow into the recovery tank. Once the tank has equalized some oil may still be left in the sump.
4. Open valve on condenser
5. Turn Vapor Pump to the on position until all of the old oil is removed from the system.
6. Turn Vapor Pump switch back to the off position.

### Recover Refrigerant from Old Oil:

1. Refer to figure # 2 page 3 for the P&ID layout of valve arrangements.
2. Refer to page 4 for valve settings.
3. Close valve on the oil sump.
4. Open valve on condenser
5. Turn Vapor Pump to the on position until a 15" hg vacuum is pulled.
6. Turn Vapor Pump switch back to the off position.
7. Close valve on the condenser
8. Vapor recovery is now complete.

### Remove Old Oil from Tank:

1. Refer to figure # 2 page 3 for the P&ID layout of valve arrangements.
2. Refer to page 4 for valve settings.
3. Turn the vapor pump to the on position until tank reaches a positive pressure. This is to be able to push the old oil from the tank. 5 to 10 Psig should be enough pressure to push the oil out of the tank.
4. After installing a 1/2" hose from left port on 3-way valve # 2 to a waste oil drum, turn 3-way valve # 2 to the right and drain old oil to a waste oil drum.
5. Turn off vapor pump.

### Add New Oil to Tank:

1. Refer to figure # 2 page 3 for the P&ID layout of valve arrangements.
2. Refer to page 4 for valve settings.
3. After installing a 1/2" hose from left port on 3-way valve # 2 to new oil container, turn 3-way valve # 2 to the right.
4. Turn vacuum pump to the on position and add the required amount of new oil need to fill the system.
5. Turn the vacuum pump to the off position.

### Distillation Of New Polyolester Oil:

**Note: Distillation of new polyolester oil and other synthetic ester oils may be required because these oils have a high infinity for moisture. After moisture is removed from the polyolester oil, then clean moisture free oil can be pump into the system.**

1. Refer to figure # 2 page 3 for the P&ID layout of valve arrangements.
2. Refer to page 4 for valve settings.
3. After the new polyolester oil has been add to the tank, install the heater bands around the lower portion to the oil recovery tank and plug into a 240 Volt 15 Amp circuit to heat the oil.

## OPERATING PROCEDURES:

4. Turn vacuum pump to the on position.
5. Run the vacuum pump and the heater band until the oil reaches 2 mm of vacuum.

**Note:**

**Depending on the amount of moisture in the new polyolester oil, the vacuum pump oil may need to be changed. If the oil continues to turn milky more frequent oil changes may be needed.**

6. After the moisture is removed then close 2 way valve 6 and turn off the heater band and vacuum pump.

**Note:**

If a 2 mm vacuum is hard to achieve close 2-way valves 2,3 & 4 to isolate the vapor compressor.

### **Add New Polyolester Oil to System:**

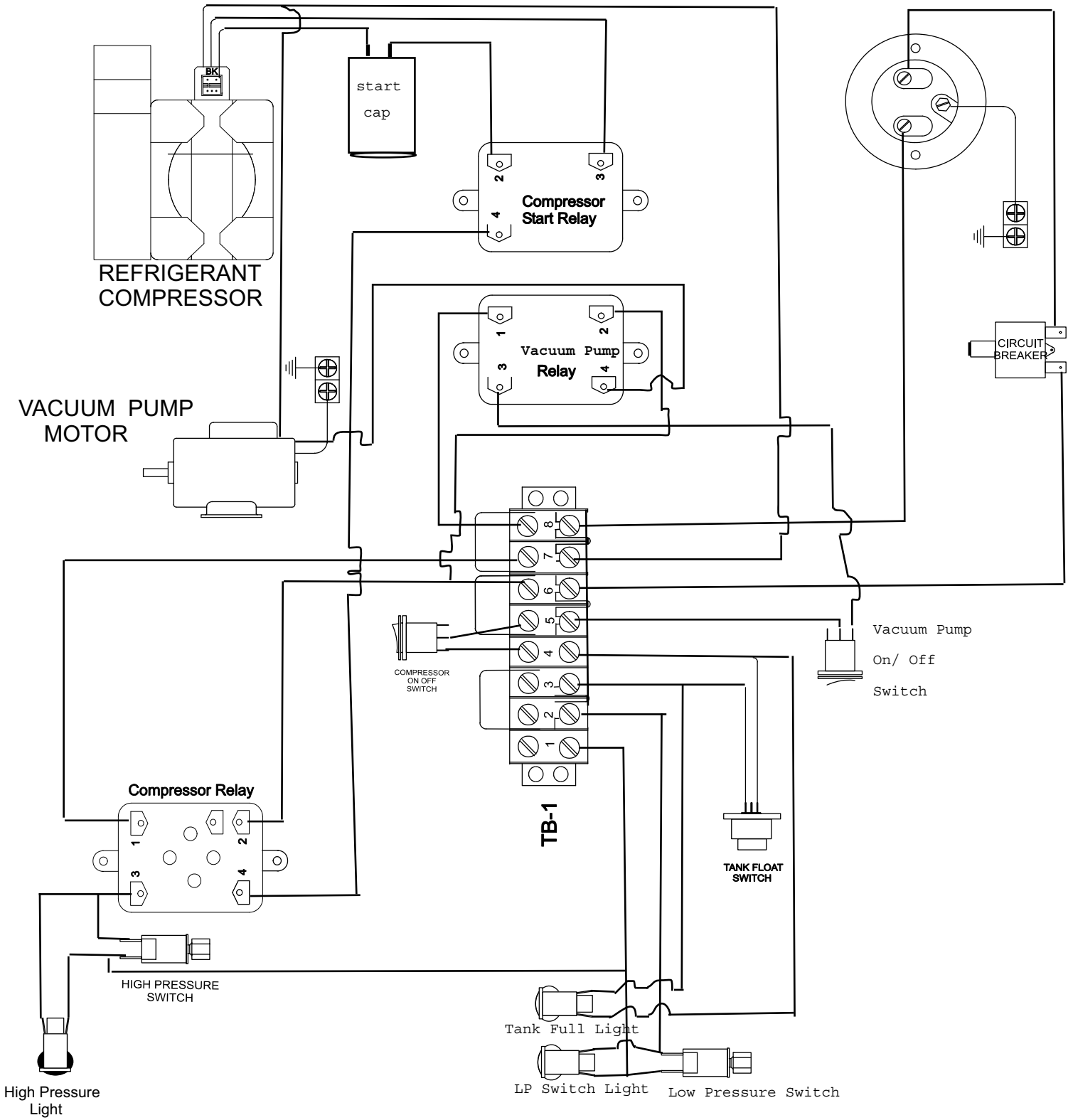
1. Refer to figure # 2 page 3 for the P&ID layout of valve arrangements.
2. Refer to page 4 for valve settings.
3. Install 3/8" hose from 3/8" port to service valve on condenser.
4. Install 1/2" hose from right port on 3-way valve # 2 to service valve on oil sump oil sump.

**Note: At this point the hose should have been install will be in a vacuum.**

6. Open service valve on condenser allow refrigerant to pressurize the oil recovery tank.
7. Close 2 way valves # 2,5 & 6.
8. Open 2 way valves # 1,3 & 4.
9. Turn vapor compressor to the on position and raise the pressure in the tank to @ 50 psig above condenser pressure.
10. Open service valve on chiller oil sump and push the new moisture free clean polyolester oil into the chiller oil sump.
11. Turn vapor compressor to the off position.

Return to Recover refrigerant from old oil to remove excessive refrigerant from tank and put back into the chiller.

# Block Wiring Diagram





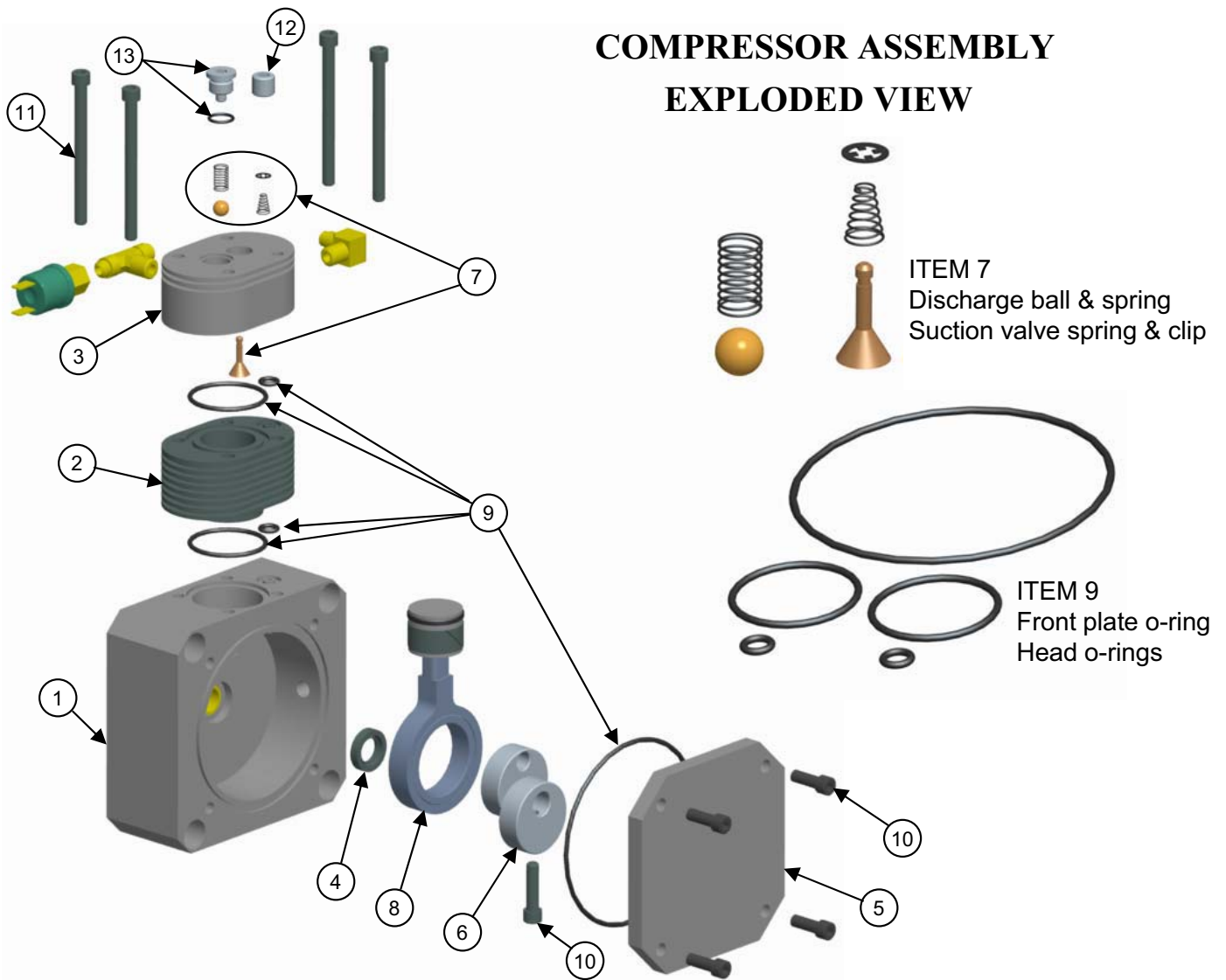
## Electrical Parts List

No.	Part No.	Part No.	Item Description
	<b>POD-115</b>	<b>POD-240</b>	
1	ERY120	ERY121	Compressor Start Relay
2	ERY004	ERY005	Compressor Run Relay
3	ECP189	ECP189	START CAP 233-280MFD
4	EBR115	EBR115	15 AMP BREAKER
5	EMI461	EMI461	POWER CABLE MALE INLET
6	ERY004	ERY005	Vacuum Pump Relay
7	XSW235	XSW235	235 PSI High Pressure Switch
8	XSW010	XSW010	12-15HG Low Pressure Switch
9	ELT001	ELT003	Tank Full Light
10	ELT001	ELT003	High Pressure Switch Light
11	ELT002	ELT003	Low Pressure Switch Light
12	ESW002	ESW002	Compressor/Vacuum Pump on/off switch
13	ECA200	ECA200	14/3 SJOW CABLE
14	EMI454	EMI454	Locking Connector
15	XTS008	XTS008	8 Position Terminal Strip
16	ETC005	ETC005	Tank Float Cable Bulkhead
17	EGL006	EGL006	#6 Ground Lug

## PARTS LIST

No.	Part No. POD-115	Part No. POD-240	
1	TFS250	TFS250	250 FLOAT SWITCH
2	RVP115	RVP240	1/3 HP 3.1CFM Vacuum Pump
3	EMO750	EMO751	Refrigeration Compressor Motor
4	FVC-006	FVC-006	6FT Float Cable
5	RGA501	RGA501	2-1/2" Refrigerant Gauge
6	RVH004	RVH004	# 2 Valve 2-way 1/2"
7	RVM002	RVM002	# 3 Valve 2-way 1/4"
8	RVM002	RVM002	# 6 Valve 2-way 1/4"
9	EHT115	EHT240	340 Watt Band Heater
10	RHH234	RHH234	3/8" X 10FT HP Hose
11	RHH230	RHH230	1/2" X 10FT HP Hose
12	RHH009	RHH009	6" Inch Hose
13	RV-3031	RV-3031	# 1 Valve 3-way 3/8"
14	RV-203	RV-203	# 1 Valve 2-way 3/8"
15	RVA050	RVA050	1/2" 3WAY Drain Valve
16	RVM004	RVM004	# 5 Valve 2-way 1/4"
17	RVM012	RVM012	# 4 Valve 2-way 1/8"
18	Ref Compressor	Ref Compressor	See Next Page
19			
20			

## COMPRESSOR ASSEMBLY EXPLODED VIEW



1	1	RSCP051	DIABLO STYLE BLOCK
2	1	RSCP02	COMPRESSOR CYLINDER
3	1	RSCP01	COMPRESSOR HEAD
4	1	RSC019	LIP SEAL
5	1	RSC106	COVER PLATE
6	1	RSC108	COMPRESSOR COUNTER WEIGHT
7	1	CPK078	COMPRESSOR HEAD KIT
8	1	CPK077	COMPRESSOR PISTON KIT
9	1	CPK076	COMPRESSOR O-RING KIT
10	5	RSC024	SCREW SOCKET HEAD CAP 1/4-20 X 1.00 LONG STEEL BLACK
11	4	RSC025	SCREW SOCKET HEAD CAP 1/4-20 X 3.00 LONG STEEL BLACK
12	1	RSC250	SUCTION VALVE PLUG
13	1	RSP08	DISCHARGE PLUG / WITH O-RING

# MANUFACTURERS LIMITED WARRANTY

Limited Warranty. RefTec warrants that the equipment will, under normal and anticipated use, be free from defects in refrigerant related parts for a period of one (1) year from and after the date of shipment, and be free from defects in electrical related parts for a period of ninety (90) days from and after the date of shipment, but in all cases excluding consumables and other matters as hereinafter provided. Labor is NOT covered and shall be the sole cost and responsibility of the Purchaser. The obligation of RefTec under this limited warranty is limited to the supplying of parts (excluding consumables) as hereinabove specifically provided. Parts shall be new or nearly new.

RefTec shall be liable to replace the applicable parts only if (i) RefTec is properly notified by Purchaser upon discovery of the alleged defects, (ii) defective parts are returned to RefTec upon authorization with all transportation charges prepaid by Purchaser, (iii) RefTec's examination of the parts discloses to its satisfaction that the defects were not caused by the Purchaser or its agents and (iv) the parts are otherwise covered by RefTec's limited warranty.

Purchaser shall be responsible to select the means of transportation and bear the cost of inbound and outbound freight expense associated with any replacement parts, and all risk of loss attendant thereto.

Notwithstanding anything contained in this warranty to the contrary, (i) this limited warranty shall become null and void upon the use of any improper chemicals or in the event any modifications or improper service or installation is performed on the equipment, (ii) this limited warranty does not apply to consumable materials such as, but not limited to, indicator lamps, fuses, all fluids, filters, coatings, etc., and (iii) this limited warranty is applicable only to Purchaser, and no subsequent purchasers of the equipment from Purchaser shall be entitled to any warranty whatsoever from RefTec, express or implied.

THIS WARRANTY CONSTITUTES THE SOLE AND EXCLUSIVE WARRANTY OF REFTEC WITH RESPECT TO THE EQUIPMENT, THERE ARE NO OTHER WARRANTIES, EXPRESS OR IMPLIED, AND REFTEC SPECIFICALLY DISCLAIMS ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING (WITHOUT LIMITATION), ANY AND ALL WARRANTIES AS TO THE SUITABILITY OR MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE OF THE EQUIPMENT FURNISHED HEREUNDER.

THE EXCLUSIVE REMEDY OF PURCHASER AGAINST REFTEC FOR ANY BREACH OF THE FOREGOING LIMITED WARRANTY SHALL BE TO SEEK REPLACEMENT OF THE AFFECTED PARTS. IN NO EVENT WILL REFTEC'S LIABILITY IN CONNECTION WITH THE EQUIPMENT WHICH IS FOUND TO BE DEFECTIVE EXCEED THE AMOUNTS PAID BY PURCHASER TO REFTEC HEREUNDER FOR SUCH EQUIPMENT WHICH IS SPECIFICALLY FOUND TO BE DEFECTIVE. THESE LIMITATIONS APPLY TO ALL CAUSES OF ACTION IN THE AGGREGATE, BOTH AT LAW AND IN EQUITY, AND INCLUDING WITHOUT LIMITATION, BREACH OF CONTRACT, BREACH OF WARRANTY, REFTEC'S NEGLIGENCE, INFRINGEMENT, STRICT LIABILITY, MISREPRESENTATION AND OTHER TORTS AND CONTRACTUAL CLAIMS. EXCEPT FOR THE EXCLUSIVE REMEDY PROVIDED ABOVE FOR REFTEC'S BREACH OF THIS LIMITED WARRANTY, PURCHASER, FOR ITSELF AND ITS SUCCESSORS AND ASSIGNS, HEREBY WAIVES AND RELEASES REFTEC FROM ANY AND ALL OTHER CLAIMS OR CAUSES OF ACTION THEY HAVE AGAINST REFTEC ON ACCOUNT OF OR ASSOCIATED WITH THE EQUIPMENT PURCHASED HEREUNDER OR FOR REFTEC'S BREACH OF THIS LIMITED WARRANTY. IN NO EVENT SHALL REFTEC BE LIABLE FOR ANY INDIRECT, SPECIAL, INCIDENTAL, CONSEQUENTIAL OR PUNITIVE DAMAGES, SUCH AS, BUT NOT LIMITED TO, LOSS OF ANTICIPATED PROFITS, LOST SAVINGS, LOST REVENUES, FINES, OR OTHER ECONOMIC LOSS IN CONNECTION WITH OR ARISING OUT OF THE AGREEMENT, FURNISHING, FUNCTIONING OR USE OF ANY ITEM OF EQUIPMENT PROVIDED UNDER THIS AGREEMENT, EVEN IF REFTEC HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES AND/OR SUCH DAMAGES ARE REASONABLE AND/OR FORESEEABLE. FURTHER, PURCHASER FOR ITSELF AND ITS SUCCESSORS AND ASSIGNS, WAIVES AND RELEASES ANY RIGHTS THEY MAY HAVE TO BRING AN ACTION ARISING OR RESULTING FROM THIS AGREEMENT, REGARDLESS OF ITS FORM, MORE THAN FIFTEEN (15) MONTHS AFTER SHIPMENT OF THE AFFECTED EQUIPMENT BY REFTEC TO PURCHASER.

The provisions of this warranty shall supersede any contrary provisions contained in this agreement, any document supplied by RefTec to Purchaser or by Purchaser to RefTec, or any other agreement, written or oral, between Purchaser and RefTec, notwithstanding the fact that the provisions contained in this warranty directly conflict with other terms or provisions of this agreement or such other documents, or that such other documents or agreements were provided, delivered, made or executed subsequent to this agreement unless such agreements are in writing, specifically refer to this agreement, specifically provide that they are amending this and are signed by the President of RefTec.