











**WARNING!**

*It is absolutely imperative that the refrigerant discharge-charge hose, at a minimum, have an isolation valve located on its end nearest the OUTLET port of the HANDIVAC unit.*

**• Discharge Hose Clearing & HANDIVAC Self Evacuation**

After liquid or vapor recovery has been completed, follow these procedures for discharge hose liquid clearing and HANDIVAC self evacuation.

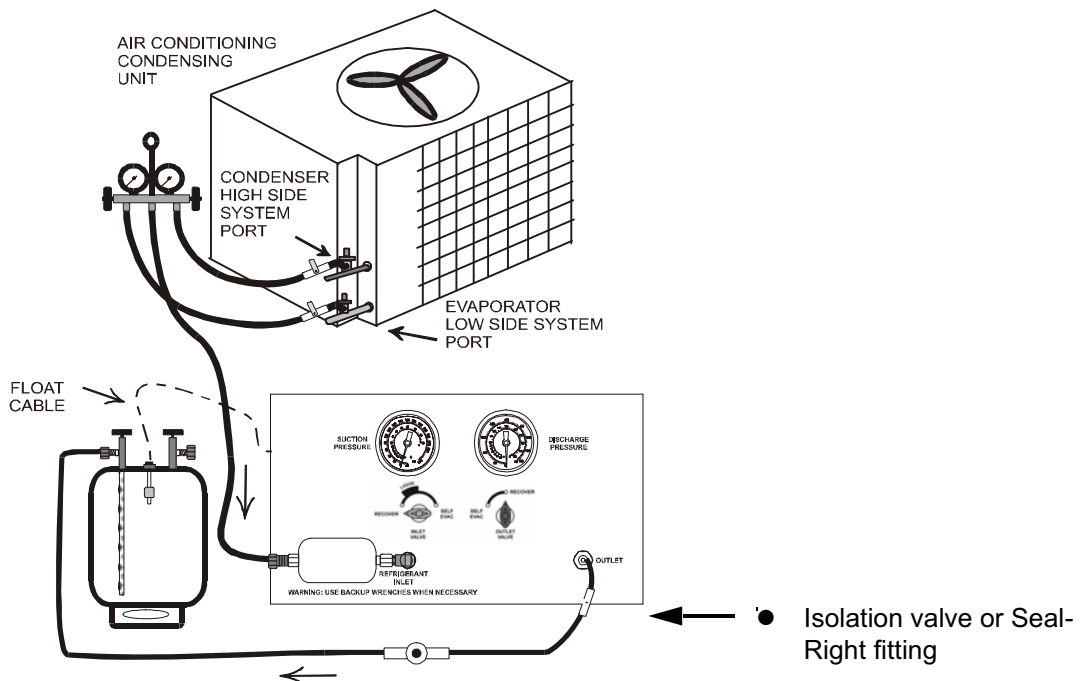
When recovery unit has reached final vacuum level and recovery is complete, turn **Outlet Valve** to **Self Evac** position and **Slowly Inlet Valve** to **Self Evac** position. Note: Very Important That Inlet & Outlet Valve Are Turned In This Sequence !!

Handivac will restart and clear liquid from itself & discharge hose. Unit will pull into a vacuum then shut off. Close both **A/C System valves** and both **Mani-fold Set valves**. Close liquid valve on tank and turn off the power to the recovery unit. Disconnect power and hoses.

To proceed without clearing hoses, turn **HANDIVAC OFF**, close Recovery Tank liquid valve & Hose isolation valves, then disconnect power & hoses. Failure to perform hose clearing & self evacuation leaves residual refrigerant in the discharge hose & **HANDIVAC** unit. Use extreme caution when disconnecting **HANDIVAC** from the recovery tank.

**NOTE: If SYSTEM PRESSURE or TANK PRESSURE gauges still show slight positive pressure after disconnecting the discharge hose, turn OUTLET VALVE to RECOVER. This releases the minute pressure trapped in the internal gauge line.**

**HOSE CLEARING & SELF EVACUATION DIAGRAM**



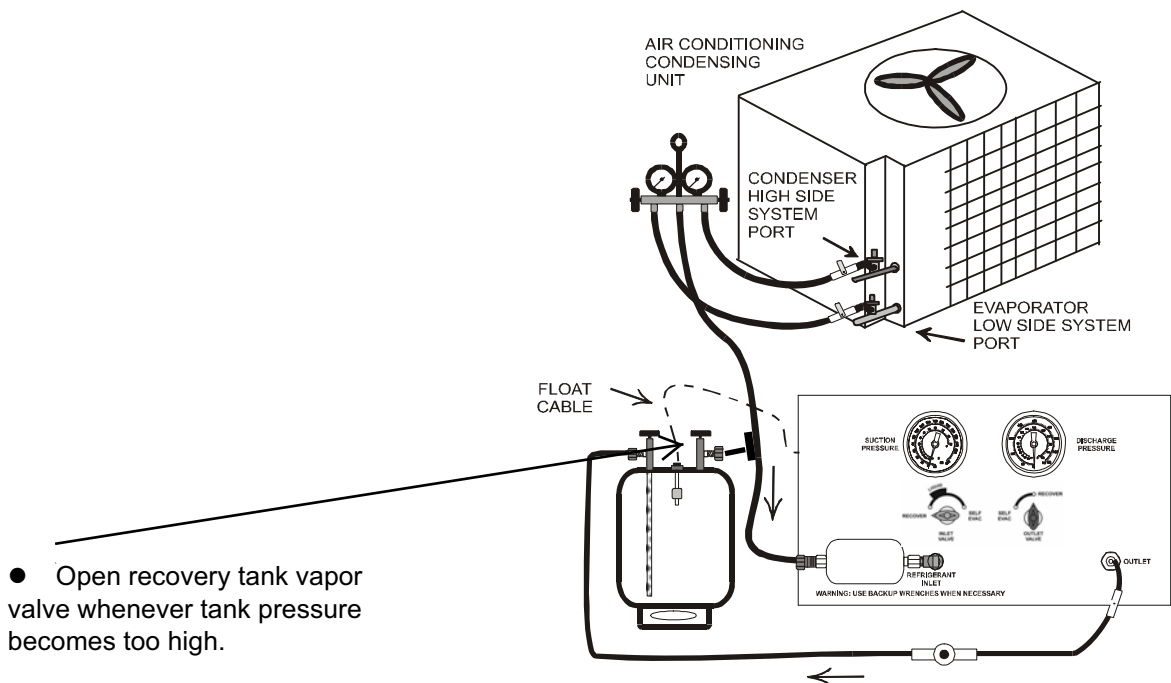
## Lowering Recovery Tank Internal Pressure due to Presence of Noncondensibles or High Ambient Temperatures

Connect manifold set and 1/4" or 3/8" refrigerant hoses as shown in diagram below. Install a 1/4" or 3/8" male flare tee in-line with the recovery tank vapor port and the HAND-IVAC inlet line.

Operator regulates vapor from the tank to the inlet of the HANDIVAC by simply opening the tank vapor valve whenever tank pressure becomes too high. Closing the manifold set from the A/C system completely isolates the recovery tank for even faster tank subcooling.

Refrigerant in the tank subcools when high pressure vapor exits the tank and is reprocessed by HANDIVAC then reinjecting into the recovery tank as a liquid. By metering refrigerant through the Recovery Tank liquid port and regulating the Recovery Tank vapor port, a flash cooling effect occurs that eventually lowers the tank's internal temperature and pressure.

- A) If TANK PRESSURE gauge surpasses 375-psig, open the Recovery Tank vapor valve.
- B) When pressure returns to an acceptable level, close the Recovery Tank vapor valve.



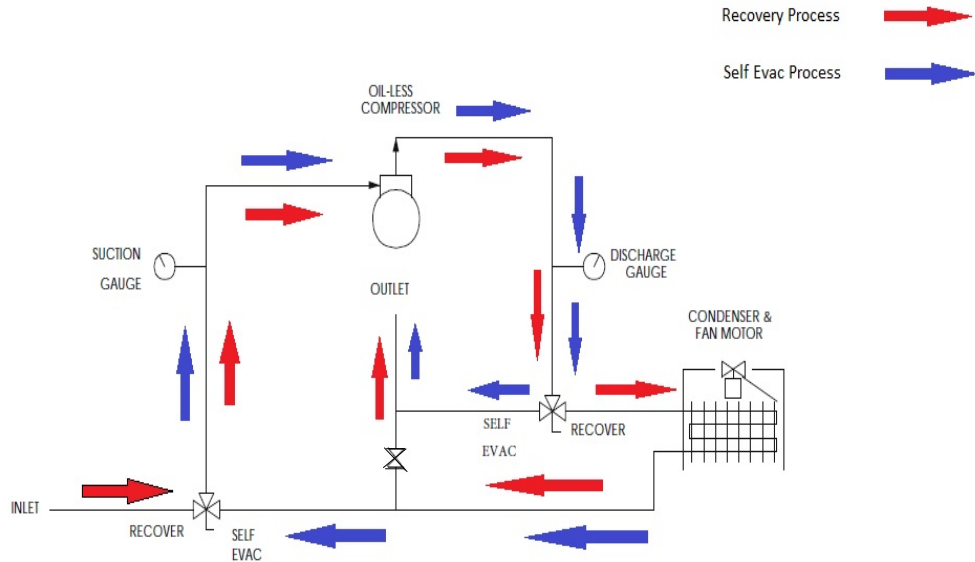
## CHANGING REPLACEABLE FILTER DRIERS:

Be sure to replace the disposable in-line with either 052 or larger filter drier after each recovery job.

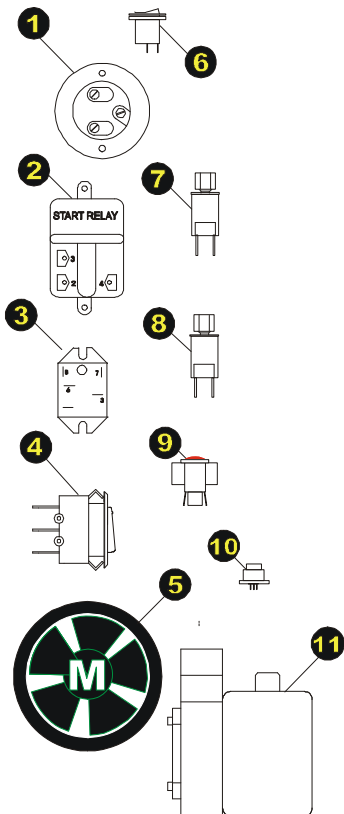
- 1) Use back-up wrench on 3/8" male flare inlet fitting to prevent it from loosening.
- 2) Unscrew used drier & replace it with a similar type of drier.
- 3) Remove black dust cap from old drier and install it on newly installed drier.

*Failure to use a new drier on each and every recovery job may damage the oil-less compressor and void warranty.*

# PROCESS & IDENTIFICATION DRAWING



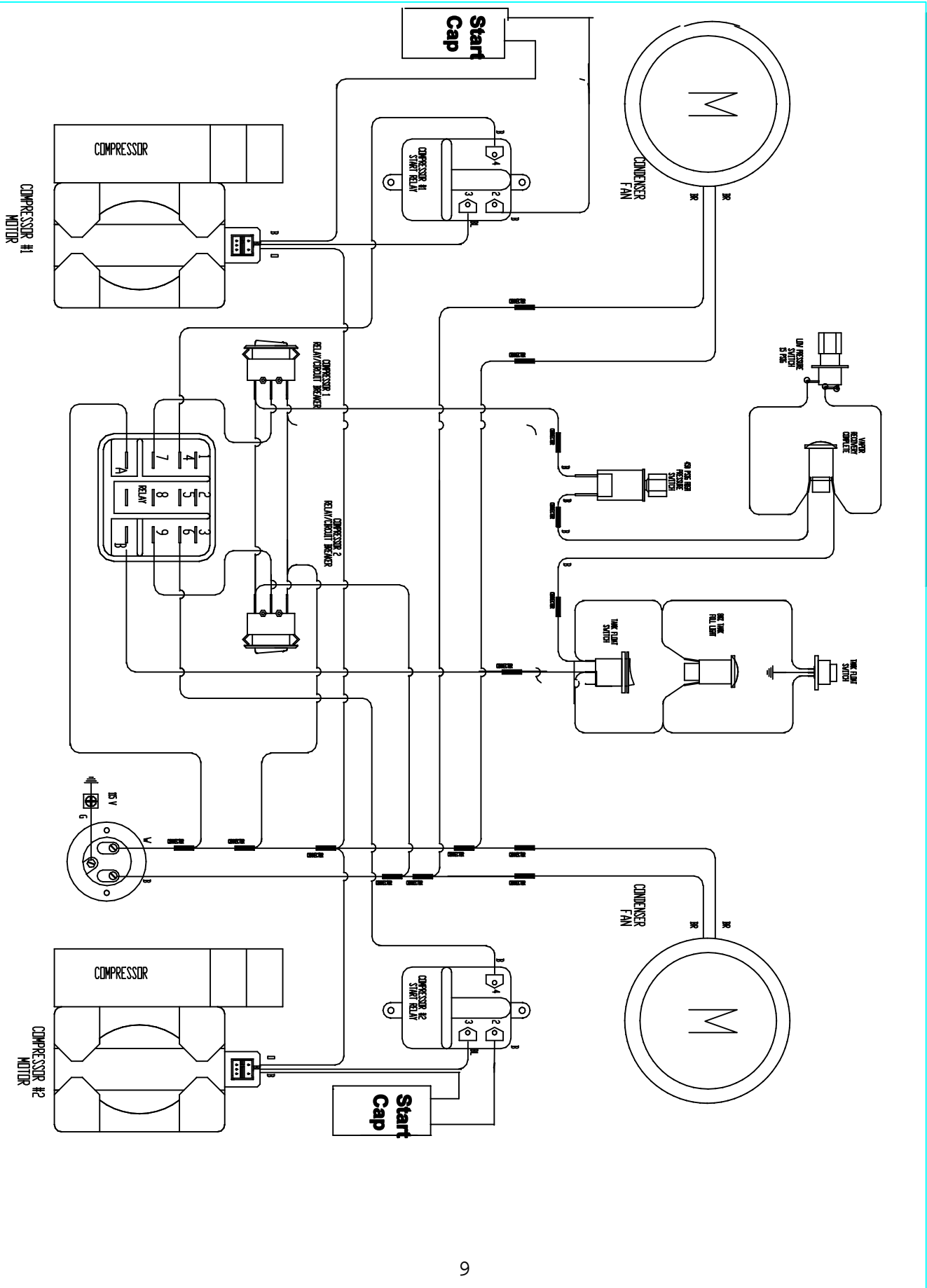
## HANDIVAC ELECTRICAL PARTS BREAKDOWN



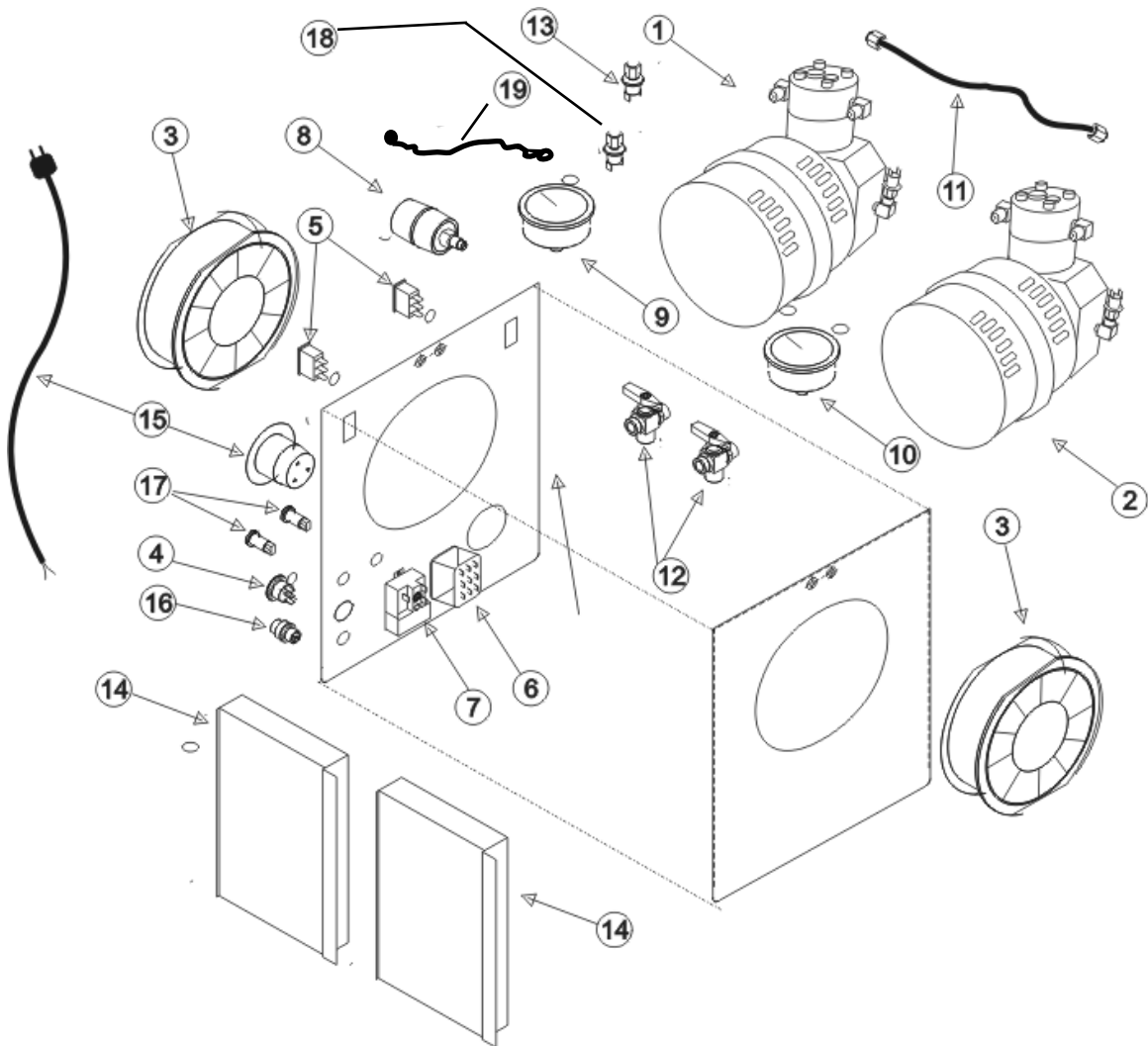
	Part Description	RTO-115 Part #	Part Description	RTO-240 Part #
1	115VAC Inlet Connector	EMI115	240VAC Inlet Connector	ECA250
2	Start Relay 120 VAC.	ERY120	Start Relay 240VAC.	ERY121
3	120 Vac, 50/60 Hz, 2PDT Relay 10 FLA, 60 LRA. 120 Vac Coil	ERY352	240 Vac, 50/60 Hz, 3PDT Relay 10 FLA, 60 LRA. 240 Vac Coil	ERY351
4	15 Amp Circuit Breaker Switch	EBR015	15 Amp Circuit Breaker Switch	EBR015
5	Condenser Fan Motor 35W, 115V, 50/60 Hz	EMO036	Condenser Fan Motor 35W, 220-240V, 50/60 Hz	EMO035
6	Float Bypass Switch 250 VAC.	ESW002	Float Bypass Switch 250 VAC.	ESW002
7	High Pressure Switch 550 Psig 24-240 Vac.	XSW550	High Pressure Switch 550 Psig 24-240 Vac.	XSW550
8	Low Pressure Switch 15Hg 24-240 Vac.	XSW010	Low Pressure Switch 15Hg 24-240 Vac.	XSW010
9	Tank full Indicator Lamp 120 Vac.	ELT002	Tank full Indicator Lamp 240 Vac.	ELT003
10	Tank Safety Float connector	ETC005	Tank Safety Float connector	ETC005
11	Compressor Motor 0.75 HP, 100-115 VAC, 50/60 Hz, 1Ph 1425/1725 Rpm 9.5 FLA.	EMO750	Compressor Motor 0.75 HP, 220-240VAC, 50/60 Hz, 1Ph 1425/1725 Rpm 4.0/3.5 FLA.	EMO751



# HANDIVAC INTERNAL BLOCK WIRING DIAGRAM 115V & 240V

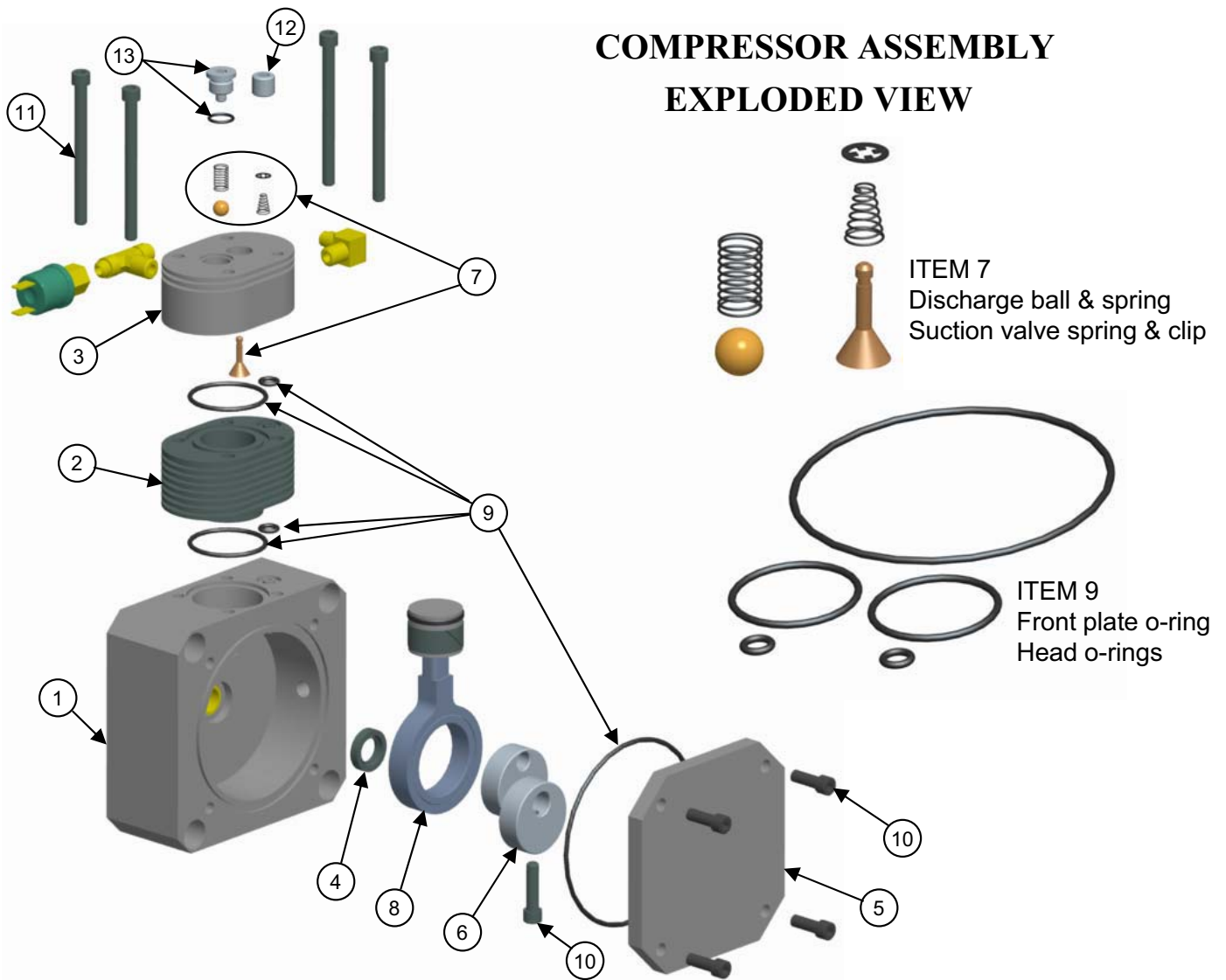


# HANDIVAC PARTS EXPLODED VIEW DRAWING:



Ref.	Item Description	115V	240V
1	COMPRESSOR ASSY (NO MOTOR	CPK500	CPK500
2	COMPRESSOR MOTOR	EMO750	EMO751
3	COOLING FAN	EMO136	EMO035
4	FLOAT BYPASS SWITCH	ESW002	ESW002
5	CIRCUIT BREAKER SWITCH	EBR015	EBR015
6	3PDT RELAY	ERY352	ERY351
7	START CAPACITOR	ECP189	ECP189
8	EXTERNAL FILTER DRIER	RFD154	RFD154
9	LOW PRESSURE GAUGE	RGA502	RGA503
10	HIGH PRESSURE GAUGE	RGA802	RGA803
11	12"REFRIGERANT HOSE	RHH011	RHH011
12	MANIFOLD	MVH007	MVH007
13	HIGH PRESSURE CUT-OUT SWITCH	XSW550	XSW550
14	CONDENSER COIL	RCC019	RCC019
15	MALE INLET (115V) / POWER CORD (240v)	EMI115	ECA240
16	FLOAT CONNECTOR	ETC005	ETC005
17	INDICATOR LIGHT	ELT002	ELT003
18	LowPressureSwitch	XSW010	XSW010
19	7" Refrigerant Hose	RHH009	RHH009

## 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

## **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.

## **Troubleshooting Procedures**

If functional difficulties are experienced and the preceding normal operations do not resolve the problem, refer to the following troubleshooting chart for assistance.

### **Troubleshooting Guide**

The following guide is provided to assist in analyzing problems that could occur.

- **Symptom:** Describes what is happening;
- **Cause:** Suggests possible sources;
- **Solution:** Describes what must be done.

<b>Symptom</b>	<b>Cause</b>	<b>Solution</b>
Pressure differential between system and recovery tank becomes too high - greater than 50 psig.	Restrictions in recovery line. Restriction in liquid recovery lines or tank.	Tank needs to have a 3/8" ID or 1/2" ID valves.
Slow liquid transfer.	Restriction in flow.	Replace restrictive fittings and hoses with appropriate size to expedite transfer.
HANDIVAC running high head pressure back to recovery tank.	Restriction in hoses going to tank.	Replace with appropriately sized hoses and fittings. Run water over tank or add secondary water cooled condenser on liquid return line going to recovery tank. RefTec has available secondary water cooled and air cooled condensers.
	Check for proper air flow and that internal fan is running	
	Capacity of recovery tank is too small or tank is overfilled.	Replace with appropriately sized tanks.
	High concentration of noncondensibles.	Remove noncondensibles.
HANDIVAC Compressor will not restart.	Compressor thermal overload open.	Let unit cool down.
	High head pressure.	Switch Outlet valve to Liquid Purge and back to Vapor after restart.
HANDIVAC shutting down on vacuum cut out during straight liquid recovery mode. Only when optional vacuum switch is installed.	Restricted line to HANDIVAC liquid inlet port.	Verify Schrader fitting is not restricting flow and that the hose from system is not restricted.
HANDIVAC shuts down on 80% full tank and light illuminates.	Recovery tank full or float switch cable not connected.	Verify that tank is not 80% full and that cable between HANDIVAC and tank is connected. Use 80% bypass switch if using a scale.

## Manufacturers Limited Warranty

---

Manufacturer 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 Manufacturer under this limited warranty is limited to the supplying of parts (excluding consumables and all plastic parts) as hereinabove specifically provided. Parts shall be new or nearly new.

Manufacturer shall be liable to replace the applicable parts only if (i) Manufacturer is properly notified by Purchaser upon discovery of the alleged defects, (ii) defective parts are returned to Manufacturer upon authorization with all transportation charges prepaid by Purchaser, (iii) Manufacturer'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 Manufacturer'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 Manufacturer, express or implied.

THIS WARRANTY CONSTITUTES THE SOLE AND EXCLUSIVE WARRANTY OF MANUFACTURER WITH RESPECT TO THE EQUIPMENT, THERE ARE NO OTHER WARRANTIES, EXPRESS OR IMPLIED, AND MANUFACTURER 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 MANUFACTURER FOR ANY BREACH OF THE FOREGOING LIMITED WARRANTY SHALL BE TO SEEK REPLACEMENT OF THE AFFECTED PARTS. IN

NO EVENT WILL MANUFACTURER'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, MANUFACTURER NEGLIGENCE, INFRINGEMENT, STRICT LIABILITY, MISREPRESENTATION AND OTHER TORTS AND CONTRACTUAL CLAIMS. EXCEPT FOR THE EXCLUSIVE REMEDY PROVIDED ABOVE FOR MANUFACTURER'S BREACH OF THIS LIMITED WARRANTY, PURCHASER, FOR ITSELF AND ITS SUCCESSORS AND ASSIGNS, HEREBY WAIVES AND RELEASES MANUFACTURER FROM ANY AND ALL OTHER CLAIMS OR CAUSES OF ACTION THEY HAVE AGAINST MANUFACTURER ON ACCOUNT OF OR ASSOCIATED WITH THE EQUIPMENT PURCHASED HEREUNDER OR FOR REFTEC BREACH OF THIS LIMITED WARRANTY. IN NO EVENT SHALL MANUFACTURER 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 EXISTENCE, FURNISHING, FUNCTIONING OR USE OF ANY ITEM OF EQUIPMENT PROVIDED UNDER THIS AGREEMENT, EVEN IF MANUFACTURER 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 MANUFACTURER TO PURCHASER.

The provisions of this warranty shall supersede any contrary provisions contained in this agreement, any document supplied by Manufacturer to Purchaser or by Purchaser to Manufacturer, or any other agreement, written or oral, between Purchaser and Manufacturer, 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 Manufacturer.

# **HANDIVAC Oil-less Recovery Unit**

“So light & compact, you’ll forget  
you’re wearing it!”

