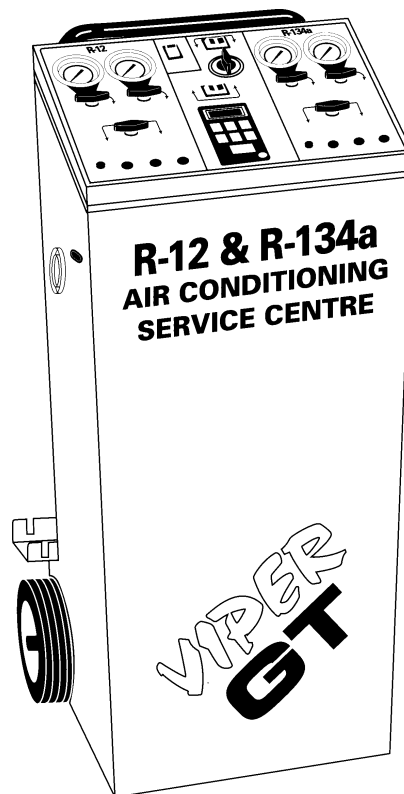


# VR-GT

R-12 & R-134a

RECOVER/RECYCLE/RECHARGE UNIT- 110V

## OPERATING MANUAL



TO BE OPERATED BY  
QUALIFIED PERSONNEL ONLY

Form # 842-219-000

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# INTRODUCTION

Thank you for purchasing the VIPER unit. We are dedicated to solving the issues surrounding the safe containment and proper management of CFC'S. Your new unit incorporates the latest technology and state-of-the art features to aid you in servicing air conditioning and refrigeration systems. We hope you get as much enjoyment using this equipment as we did designing and building it.

To help you get a good start, we suggest that you carefully read through the enclosed operating manual before you operate your unit. This manual contains important information on proper and safe procedures for you to use when operating this equipment.

Please pay close attention to the safety information and "Cautions" provided throughout this manual. First of all you are an important customer to us and your safety is our concern. Secondly, we do not want you to damage the equipment. We would like our product to fulfil the long and useful life for which it is designed.

The attached warranty card must be filled out and mailed, with proof of purchase to VIPER Service within thirty (30) days. This is required to activate our published warranty.

## **CFC BACKGROUND AND EFFECTS**

The ozone layer around the earth's atmosphere is a thin protective covering. It acts as a shield against the sun's destructive ultraviolet rays. Without the ozone layer the very existence of our planet would be in question.

Scientific studies show that the ozone layer is being destroyed at an alarming rate. It has been established that emissions from refrigerants containing chlorofluorocarbons (CFC's) is the leading cause of ozone depletion. One CFC molecule has been shown to destroy up to 100,000 ozone molecules.

In 1987, 60 Nations signed the Montreal Protocol. Among other things the objective was the complete phase out of CFC based products by the year 2000.

## **PARTS AND ACCESSORIES**

Your **VR-GT** includes the following:

- |  |  |
|--|--|
| 1 Quart of <b>ViperVac</b> vacuum pump oil.                | 1 Virgin tank's transfer adapter.            |
| 1 50 pound R-134a storage tank c/w switch and thermometer. | 1 96" red R-12 hose c/w ball valve.          |
| 1 50 pound R-12 storage tank c/w switch and thermometer.   | 1 96" blue R-12 hose c/w ball valve.         |
| 2 24" R-134a blue hose c/w ball valve.                     | 1 96" red R-134a hose c/w high side coupler. |
| 2 24" R-12 yellow hose c/w ball valve.                     | 1 96" blue R-134a hose c/w low side coupler. |
| 1 18" Black hose for vacuum pump port connection .         | 1 Operating manual.                          |
|  | 1 Warranty registration card.                |

# **SAFETY SUMMARY**

Every craftsman respects the tools with which they work. They know that the tools represent years of constantly improved designs and developments. The true craftsman also knows that the tools are dangerous if misused or abused.

## **THIS UNIT MUST BE OPERATED BY QUALIFIED PERSONNEL!**

**READ ALL SAFETY INFORMATION CAREFULLY** before attempting to install, operate, or service this equipment. Failure to comply with these instructions could result in personal injury and/or property damage.

Published standards on safety are available. They are listed in **ADDITIONAL SAFETY INFORMATION** at the end of this **SAFETY SUMMARY**.

The National Electrical Code, (Occupational Safety and Health Act regulations, local industrial codes and local inspection requirements also provide a basis for equipment installation, use, and service.

**RETAIN THE FOLLOWING SAFETY INFORMATION FOR FUTURE REFERENCE.**

## **ELECTRICAL SHOCK HAZARDS**

- **WARNING!** To reduce the risk of electric shock, unplug the A/C service center from the outlet before attempting any maintenance or cleaning. Turning off controls will not reduce this risk.
- Do not operate the A/C service center with damaged cord or plug - replace the cord or plug immediately. To reduce the risk of damage to electric plug and cord, disconnect charger by pulling on the plug rather than the cord.
- An extension cord should not be used unless absolutely necessary. Use of an improper extension cord could result in a risk of fire and electric shock. If extension cord must be used, make sure:
  - a. That pins on plug of extension cord are the same number, size, and shape as those on plug on recycler.
  - b. That extension cord is properly wired and in good electrical condition; and
  - c. That the wire size is large enough for the length of cord as specified below:

Length of cord in feet:	25	50	100	150
AWG size of cord:	16	12	10	8

## **MOTION HAZARDS**

- **WARNING!** Engine parts that are in motion and unexpected movement of a vehicle can injure or kill. When working near moving engine part, wear snug fit clothing and keep hands and fingers away from moving parts. keep hoses and tools clear of moving part. Always stay clear of moving engine parts. Hoses and tools can be thrown through the air if not kept clear of moving engine parts.
- The unexpected movement of a vehicle can injure or kill. When working on a vehicle, always set the parking brake or block the wheels of the vehicle being serviced.

## **FUME HAZARDS**

- **WARNING! FUMES, GASSES, AND VAPORS CAN CAUSE DISCOMFORT, ILLNESS, AND DEATH!** To reduce the risk of discomfort, illness, or death, read, understand, and follow the following safety instructions. In addition, make certain that anyone else that uses this equipment, understands and follows these safety instructions as well.
- Avoid breathing A/C refrigerant and lubricant vapor mist. Exposure may irritate eyes, nose, and throat. To remove HFC-134a from the A/C system, use service equipment certified to meet the requirements of SAE J2210 (HFC-134a recycling equipment). Additional health and safety information may be obtained from additional refrigerant and lubricant manufacturers.
- Always perform vehicle service in a properly ventilated area. Never run an engine without proper ventilation for its exhaust.
- Stop the recycling process if you develop momentary eye, nose, or throat irritation as this indicates inadequate ventilation. Stop work and take necessary steps to improve ventilation in the work area.

## **HEAT/FREEZING HAZARDS**

- **WARNING!** When under pressure, refrigerants become liquid. When accidentally released from the liquid state they evaporate and become gaseous. As they evaporate, they can freeze or frostbite tissue very rapidly. When these gasses are breathed, the lungs can be seriously damaged. If sufficient quantities are taken into the lungs, death can result. If you believe you have exposed your lungs to released refrigerant, seek immediate medical assistance.
- Refrigerants can cause frostbite and severe burns to exposed skin. Refrigerants are under pressure and can be forcibly sprayed in all directions if carelessly handled. Avoid contact with refrigerants and always wear hand coverings and make certain other exposed skin is properly covered.
- Refrigerants can also severely injure or cause permanent blindness to unprotected eyes. Refrigerants are under pressure and can be forcibly sprayed in all directions if carelessly handled. Avoid contact with refrigerants and always wear safety goggles.

## **EXPLOSION/FLAME HAZARDS**

- Never recover anything other than the approved refrigerants for this machine as specified on the unit. Alternate refrigerants may contain flammables such as butane or propane and can explode or cause a fire. Recovering alternate refrigerants will also void the warranty.

## **ADDITIONAL SAFETY INFORMATION**

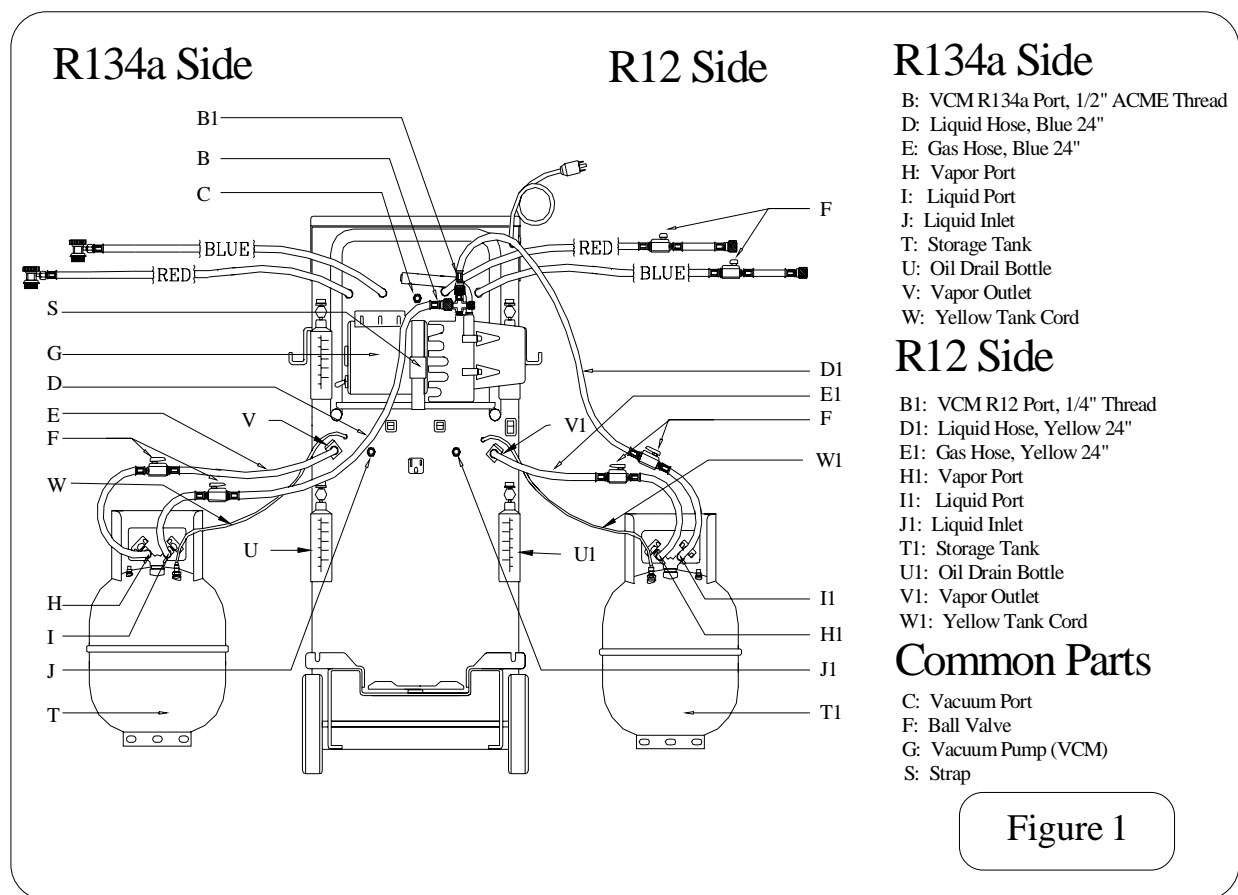
For additional information concerning safety, refer to the following standards.

ANSI Standard Z87.1    **SAFE PRACTICE FOR OCCUPATION AND EDUCATIONAL EYE AND FACE PROTECTION** - obtainable from the American National Standards Institute, 1430 Broadway, New York, NY 10018

# UNIT PREPARATION

Your VR-GT is shipped completely assembled and 100% pretested. This will ensure your satisfaction and only the following need doing prior to operation.

1. Remove the vacuum pump from its box and place it on the tray on the back of the unit. Connect the power cord of the vacuum pump to the top receptacle on the back of the unit.
2. The vacuum pump is shipped with two 24" hoses connected to it. Connect the other ends of the hoses to the liquid ports on the storage tanks, blue (D, Figure 1) for R-134a, and yellow (D1) for R-12.



3. Attach the vacuum pump's strap (S) around the vacuum pump (G) to hold it in place with the tray.
4. Remove the oil drain bottles (U, U1) from the vacuum pump's box and attach them to the oil drain ports on the back of the unit.
5. Remove vacuum pump oil fill cap (G, Figure 1, located on top of the vacuum pump) and fill pump with oil supplied, until the sight glass is 1/2 full.

**NOTE: Only fill with your vacuum pump off. Overfilling will cause damage to your vacuum pump.**

6. Connect the 24" blue hose (E) attached to the R-134a vapor outlet (V, on back of the unit) to the vapor port (H) of the R-134a storage tank (Refer to Figure 1).

**NOTE: On the storage tanks, always define the liquid and vapor valves by what is written on the valves, and NOT by their color.**

7. Connect the other 24" yellow hose (E1) attached to the R-12 vapor outlet (V1, on back of the unit), to vapor port (H1) of the R-12 storage tank.
8. Connect the yellow tank shut-off cords (W,W1) to the tank full switches on the storage tanks. (Refer to Figure 1)
9. Make sure all hose connections are finger tight.

## **EVACUATING THE UNIT BEFORE THE FIRST USE**

1. Ensure that vacuum pump oil has been added to the vacuum pump, and sight glass level is 1/2 full, before attempting to start vacuum pump.
2. Confirm hose connections for R-134a side; the first 24" blue hose (D), from vacuum pump to the liquid port on R-134a storage tank. The second 24" blue hose (E), from vapor port (V) on back of the machine to the vapor port (H) on the R-134a storage tank. (Refer to Figure 1).
3. Confirm hose connections for R-12 side; the first 24" yellow hose (D1), from vacuum pump to the liquid port (l1) on R-12 storage tank. The second 24" yellow hose, from vapor port (V1) on rear of the machine to the vapor port (H1) on the R-12 storage tank. (Refer to Figure 1).

**NOTE: For steps 2 & 3, the ball valves on the 24" hoses should be closer to the tanks.**

4. Open both vapor (l, l1) and liquid valves (H, H1) on both R-12 (T1) and R-134a (t) storage tanks. (4 valves).
5. Open all 4 ball valves (F) on the 24" blue and yellow hoses.

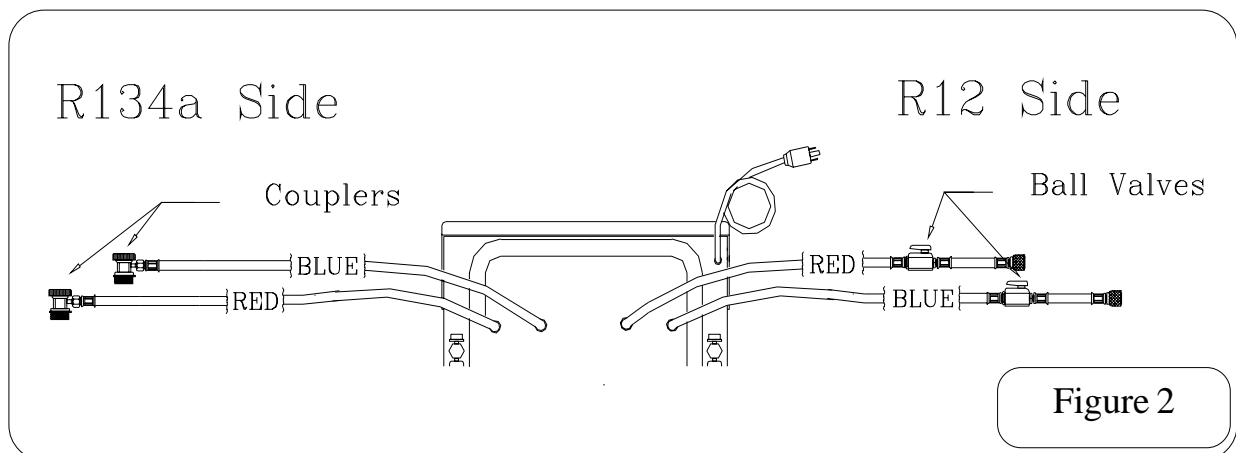


Figure 2

6. Make sure the 96" hoses are connected to the back of the machine. (Refer to Figure 2).
7. Make sure the ball valves at the end of the 96" blue and red hoses (for R-12) are closed. (Refer to Figure 3).
8. Make sure all connections are finger tight.
9. Open both high and low side manifold valves on the control panel (both R-134a and R-12 side). (Refer to Figure 4).
10. Turn both R-12 and R-134a selector valves to Recover/Recycle. (Refer to Figure 4).

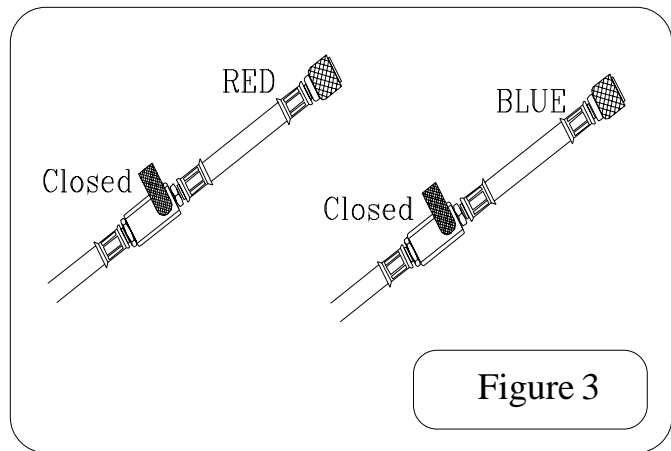


Figure 3

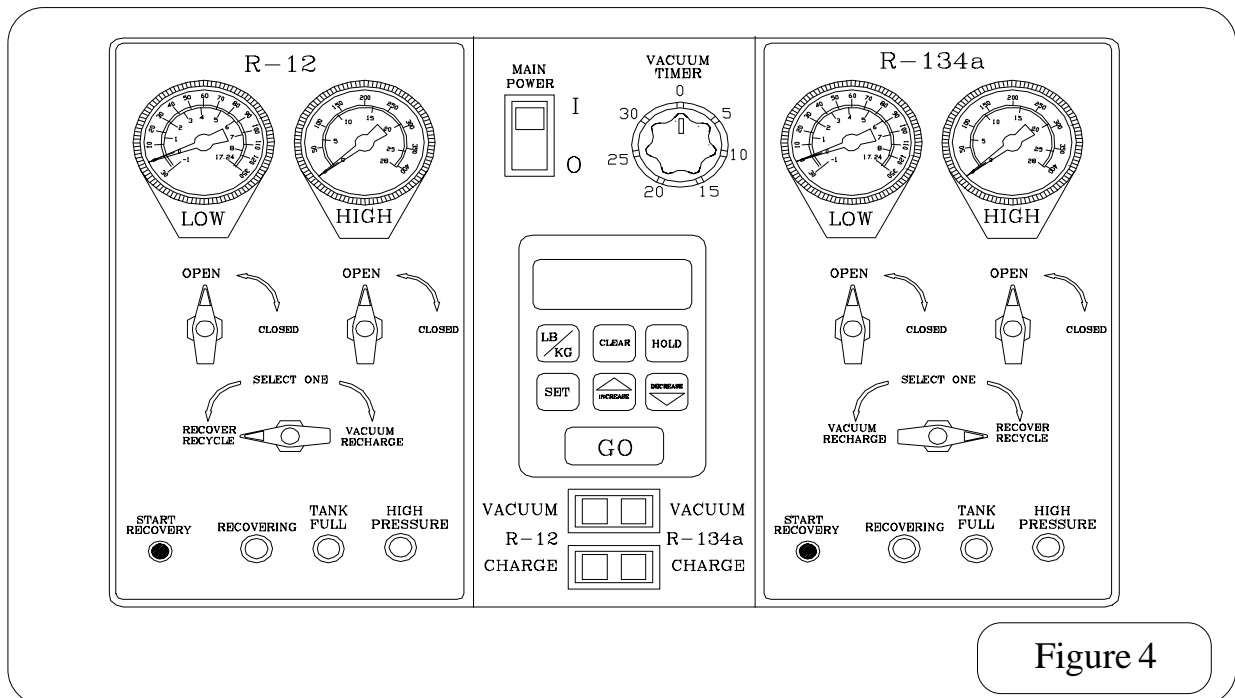
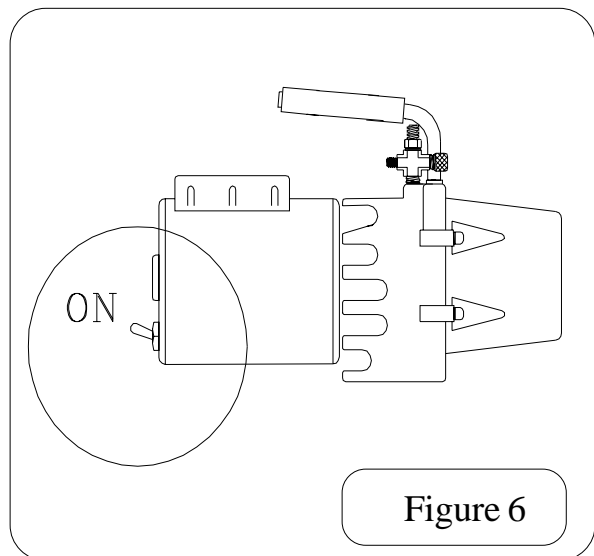
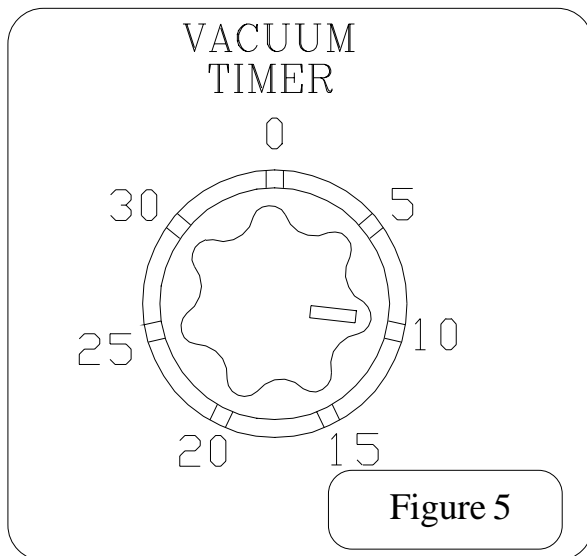


Figure 4

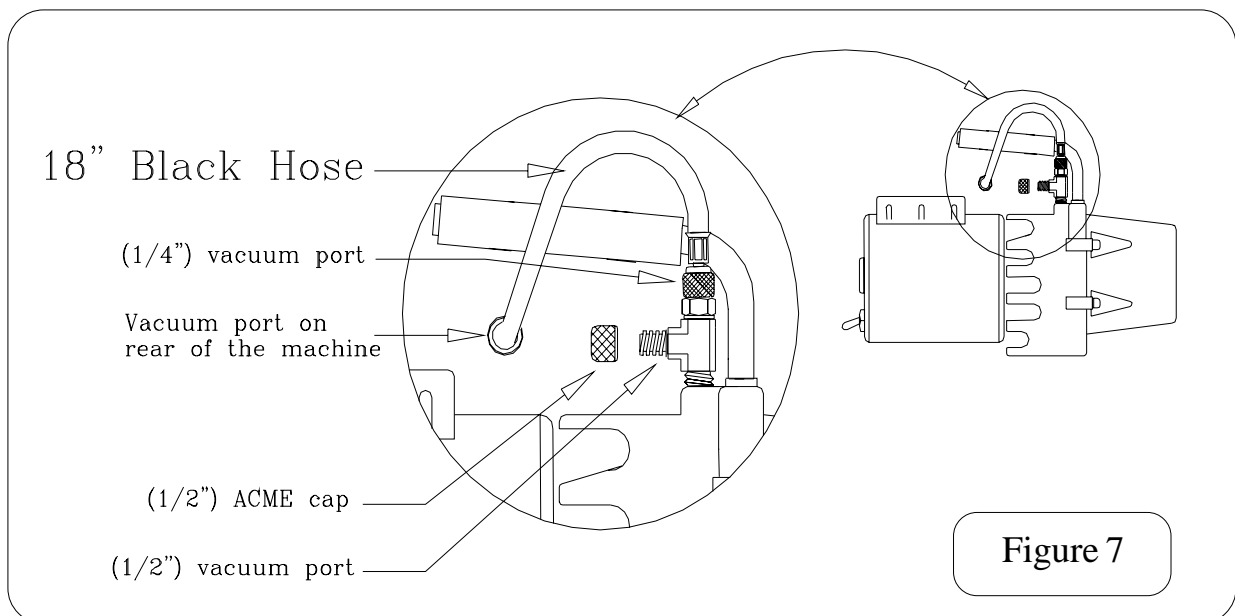
11. Connect the power cord to a three prong grounded receptacle, and turn on main power switch.
12. Turn vacuum pump timer on the control panel clockwise to (15) minutes, to begin evacuating the system. (Refer to Figure 5). If vacuum pump does not start check to make sure the switch on the end of the vacuum pump is set to ON. (Refer to Figure 6).
13. Evacuate system to 29" of vacuum as indicated on the low side gauge of either the R-12 or R-134a side, close ball valves on hoses attached to vacuum pump.

**NOTE:** If the gauges are not pulling down into a vacuum, the inlet check valve may be sticking. To correct the failing check valve, remove the top end of the valve and put a pin through the top of the check valve which will loosen the ball. Reconnect with the arrow pointing down on the check valve and continue with step 14.





14. Leave system in a vacuum state for 5 minutes and observe low side gauges for any vacuum loss.
15. If the low side gauges do not indicate vacuum loss, the system is now ready to either transfer refrigerant from a virgin tank to the storage tank, or commence the Recover/Re-cycle procedure. If the system losses vacuum after repeated attempts remove front cover of unit and inspect for loosened flare nuts which may have come loose during transit.
16. CLOSE ALL VALVES on hoses, tanks and unit.
17. Disconnect both 24" blue (D) and yellow (D1) hoses, from the vacuum pump (G) and connect them to the liquid inlet ports on the back of the unit. (blue (D) for R-134a to inlet port (J) and yellow (D1) for R-12 to inlet port (J1)).
18. Connect the 18" black hose from the vacuum port on the back of the unit to the (1/4") vacuum port on the vacuum pump. (Refer to Figure 7).
19. Close the 1/2" ACME port on the vacuum pump with a cap, (supplied with the vacuum pump).



# TRANSFERRING REFRIGERANT

## R-12 TRANSFER

To transfer R-12 refrigerant from the virgin tank to the storage tank, proceed with the following steps:

1. The R12 storage tank must be placed on the center of the scale's platform.
2. Attach low side blue hose from R-12 LOW INLET to the virgin's tank port. (Refer to Figure 8).

**NOTE: The virgin tank should remain upright to prevent liquid from damaging the unit.**

3. Open the ball valve on the 96" blue hose.
4. Open the valve on the R-12 virgin tank.
5. Open ball valve on 24" yellow hose connecting the vapor outlet on the back of the unit to the storage tank's vapor port for the R-12 side. (Refer to Figure 9).
6. Open vapor valve on R-12 storage tank.
7. Open the low side manifold valve on the control panel (R-12 side).
8. Turn selector valve on the R-12 side to Recover/Recycle. (Refer to Figure 10).
9. All other valves should be closed.

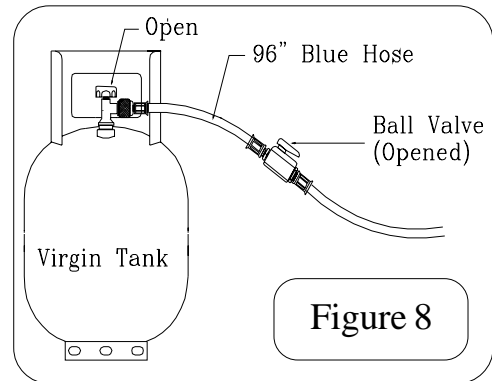


Figure 8

10. Turn on main power switch. The red light in the switch will illuminate and the display will read "VIPER" for approximately 20 seconds. Then the display will read "GROSS WEIGHT" indicating the weight of the refrigerant in the storage tank.

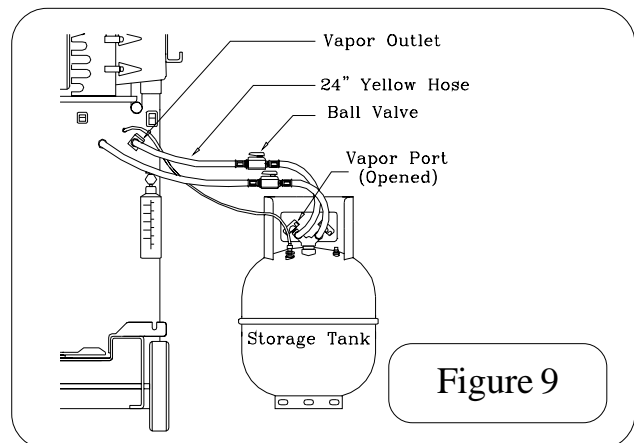


Figure 9

11. Depress the CLEAR button on the keypad. The scale will read "TARE WEIGHT" "000 lb. 00.00 oz."
12. Select the units of measure (lb. or kg.) by depressing the LB/KG key.

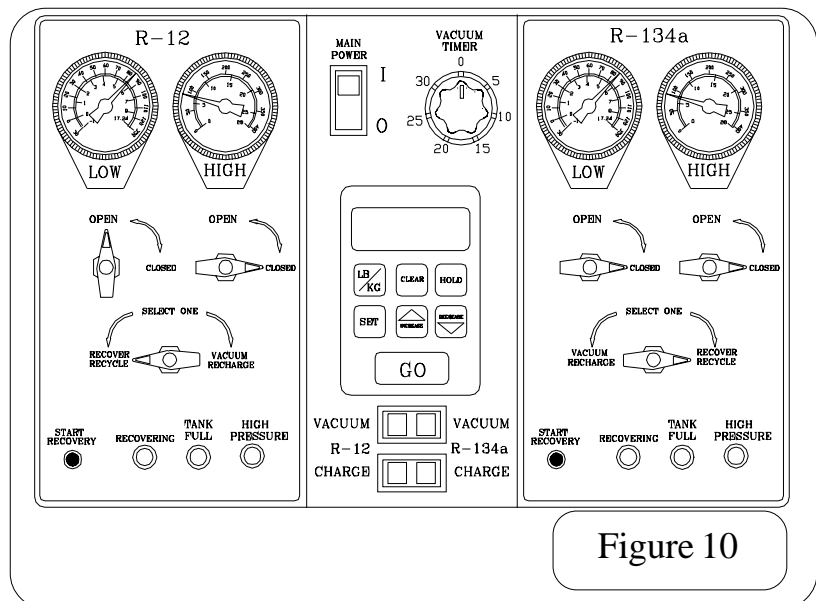


Figure 10

13. Depress START RECOVERY button.

The green RECOVERING light illuminates and the unit will transfer refrigerant from the virgin tank to the storage tank and shut-off automatically when it reaches 10" of vacuum. It may be necessary to use a heater band on the virgin tank or put the virgin tank in hot water to prevent the tank from freezing.

14. The display will indicate the amount of refrigerant recovered from the virgin tank

**NOTE: It is normal for the storage tank to get hot to the touch, and the storage tank pressure gauge (on the side of unit) to rise to 180 - 250 psi.**

15. Close ball valve on the 96" blue hose (R-12 side), and disconnect the 96" blue hose from the virgin tank.

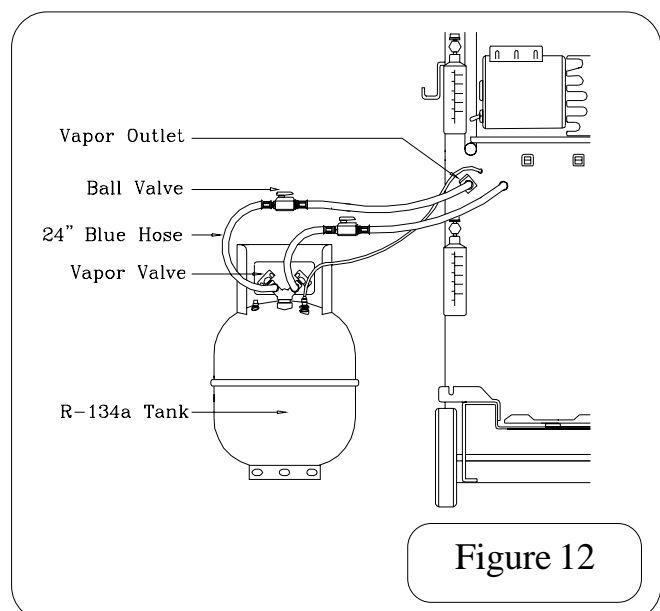
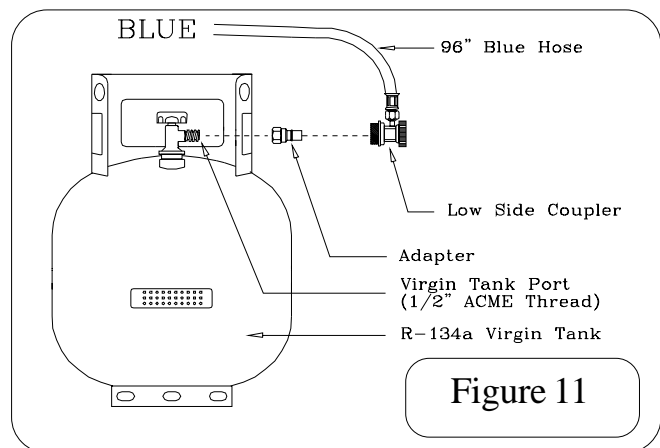
## R-134a TRANSFER

To transfer R-134a refrigerant from the virgin tank to the storage tank, proceed with the following steps:

1. The R134a storage tank must be placed on the center of the scale's platform.
2. Connect the virgin tank adapter (shipped attached to the blue storage tank's purge port for convenient storage) to the virgin tank. (Refer to Figure 11).
3. Connect the low side blue coupler on the 96" blue hose to the adapter on the virgin tank. Turn the coupler's valve clockwise to open the valve and allow the flow of the refrigerant.

**NOTE: The virgin tank should remain upright to prevent liquid from damaging the unit.**

4. Open the valve on the R-134a virgin tank.
5. Open ball valve on 24" blue hose connecting the vapor outlet on the back of the unit to the storage tank's vapor port for the R-134a side. (Refer to Figure 12).
6. Open vapor valve on R-134a storage tank. (Refer to Figure 12).
7. Open the low side manifold valve on the control panel (R-134a side). (Refer to Figure 13.)



8. Turn selector valve on the R-134a side to Recover/ Recycle. (Refer to Figure 13).
9. All other valves should be closed.
10. Turn on main power switch. The red light in the switch will illuminate and the display will read "VIPER" for approximately 20 seconds. Then the display will read "GROSS WEIGHT" indicating the weight of the refrigerant in the storage tank.
11. Depress the CLEAR button on the keypad. The scale will read "TARE WEIGHT" "000 lb 00.00 oz."

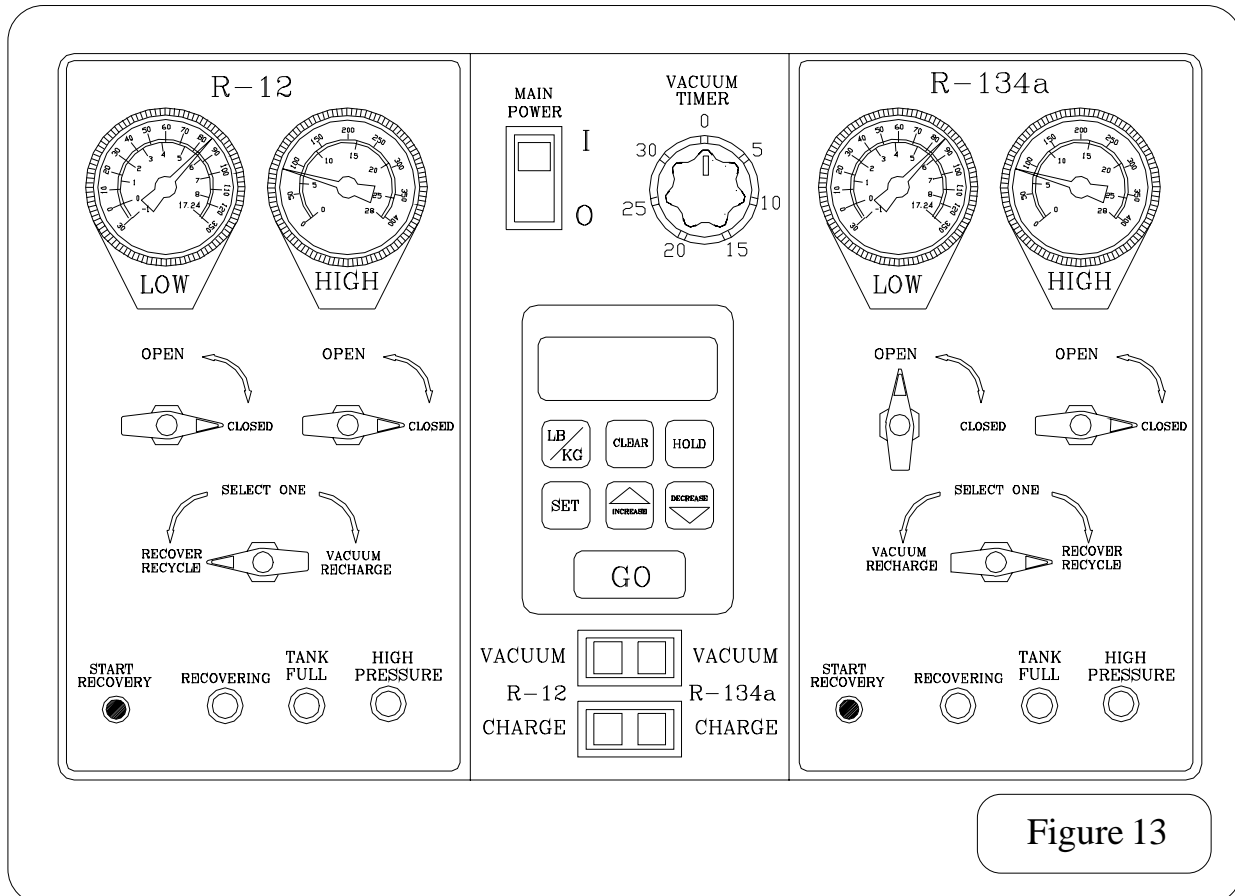


Figure 13

12. Select the units of measure (lb. or kg.) by depressing the LB/KG key.
13. Depress START RECOVERY button.

The green RECOVERING light illuminates and the unit will transfer the refrigerant from the virgin tank to the storage tank and shut-off automatically when it reaches 10" of vacuum. It may be necessary to use a heater band on the virgin tank or put the virgin tank in hot water to prevent the tank from freezing.

14. The display will indicate the amount of refrigerant recovered.

**NOTE: It is normal for the storage tank on the unit to get hot to the touch, and the storage tank pressure gauge (side of unit) to rise to 180 - 250 psi.**

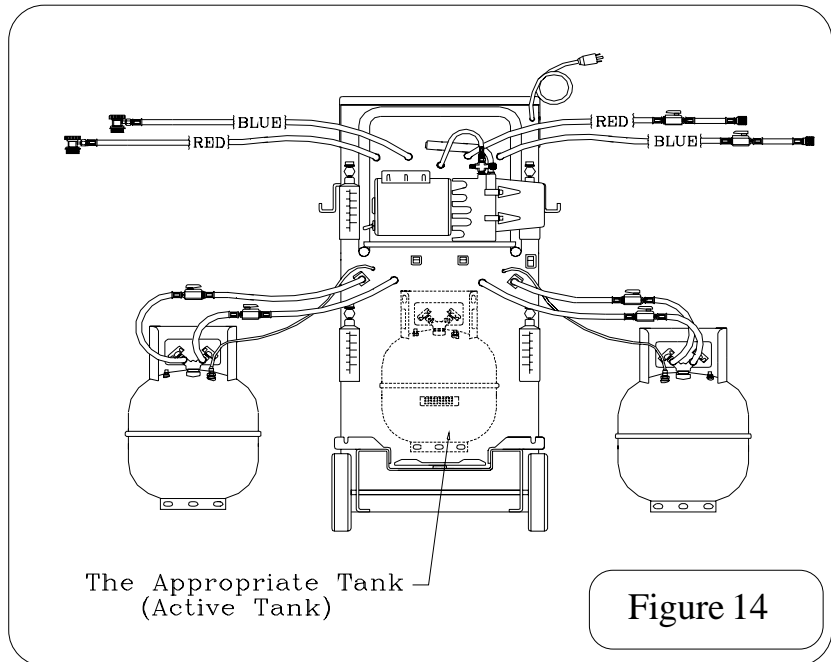
15. Close the coupler's valve and disconnect the coupler from the virgin tank. Unscrew the adapter from the virgin tank and attach it to the storage tank for convenient storage.

# RECOVER / RECYCLE OPERATION

## Measuring the Amount of Recovered Refrigerant

The operator has the option of weighing the amount of refrigerant recovered from the vehicle a/c system. To measure the amount of refrigerant recovered:

1. The appropriate storage tank (that matches the refrigerant type) must be placed on the center of the scale's platform (Refer to Figure 14).
2. Turn on main power switch. The display will read "VIPER" for approximately 20 seconds. Then the display will read "GROSS WEIGHT" indicating the weight of the refrigerant in the storage tank.



3. Perform step 1 to 5 in the Recover/Recycle Operation below.
4. Depress the CLEAR button on the keypad. The scale will read "TARE WEIGHT" "000 lb 00.00 oz. "
5. Go to step 7 in the Recover/Recycle Operation on the next page.
6. Select the units of measure (lb. or kg.) by depressing the LB/KG key.
7. The display will indicate the amount of refrigerant recovered from the vehicle a/c system during Recovering/Recycling mode.

The VR-GT unit features a single pass patented distillation process. As the refrigerant is being recovered, it is also being recycled beyond industry accepted standards set by SAE ( J-1991 for R-12 and J-2210 for R-134a).

8. Connect the 96" blue hose to the low side port of the vehicle a/c system to be serviced, and the 96" red hose to the high side port of the vehicle a/c system.
9. Open both ball valves at the end of the 96" blue and red hoses (if you are recovering R-12), or turn both low and high side coupler's valves clockwise (if you are recovering R-134a).
10. Make sure the vehicle a/c system has a minimum of 10 PSI of pressure (indicated on low side or high side gauge of corresponding system) or do not recover into the unit, as there

may be excessive air and there is no refrigerant to be recovered.

11. Turn selector valve on the control panel to Recover/Recycle.
12. Open the following valves:
  - Storage tank's vapor valve.
  - Ball valve on 24" vapor hose.
  - Low side manifold valve.
  - High side manifold valve.
13. Turn on main power switch. The red light in the switch illuminates indicating the unit has power.
14. Depress the START RECOVERY button. The green RECOVERING light will illuminate indicating the unit is recovering and recycling the refrigerant from the vehicle. Both R-12 and R-134a systems can be connected and operated at the same time if desired.
15. The recovery operation automatically stops when the vehicle a/c system reaches 10" of vacuum.
16. Close both high and low manifold valves, wait five minutes and observe the manifold gauges. If the pressure remains at or below "0" psi on both manifold gauges, all the refrigerant has been recovered from the a/c system. If the pressure reading is above "0" psi (indicating small pockets of refrigerant still in the system), repeat steps 7,8, and 9.

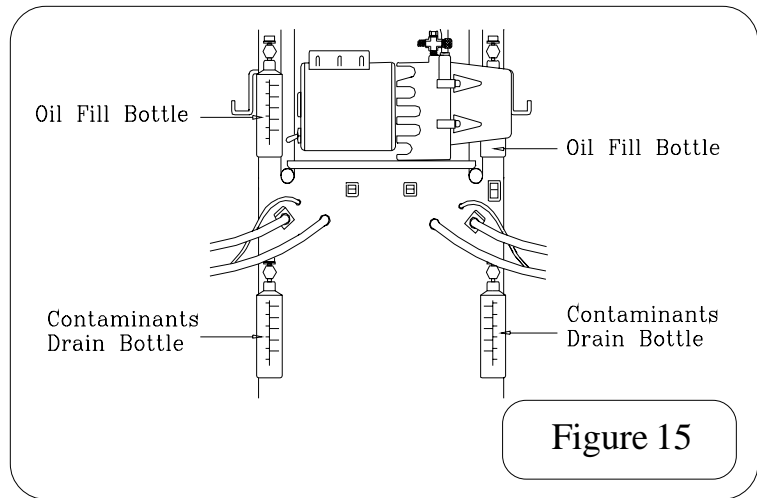


Figure 15

**IMPORTANT:** After each recovery and recycle the contaminants in the distillation chamber must be drained. Slowly open the contaminants drain valve just long enough to allow the contaminants to drain from the system. (Refer to Figure 14). Be sure to add the same amount of virgin oil back into the a/c system. Refer to Oil Injection on page 17.

**NOTE:** Do not mix R-12 and R-134a oils upon charging and be certain to use manufacturers' type and grade of oil for specified system. (Refer to Figure 14).

# EVACUATION

After the vehicle a/c system has been repaired, you must first evacuate the vehicle a/c system to remove all the unwanted air and moisture before charging it with refrigerant. To do so proceed with the following steps;

1. Connect the 96" blue and red hoses of vehicle a/c system.
2. For the R-134a a/c systems, turn the coupler's valves, (blue and red) clockwise. For the R-12 a/c systems, open the ball valves at the end of the 96" blue and red hoses. (Refer to Figure 16).
3. Open the low and high side manifold valves on the control panel (on the active side R-134a or R-12).
4. Turn selector valve to VACUUM/RE-CHARGE (on the active side).
5. Turn on main power switch. The red light in the switch will illuminate, indicating the unit has power.
6. On the control panel, position the vacuum selector switch to the refrigerant type desired R-12 or R-134a. (Refer to Figure 17).

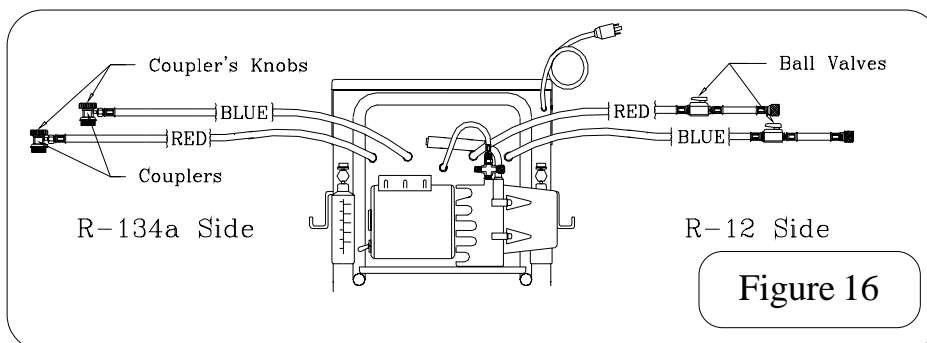


Figure 16

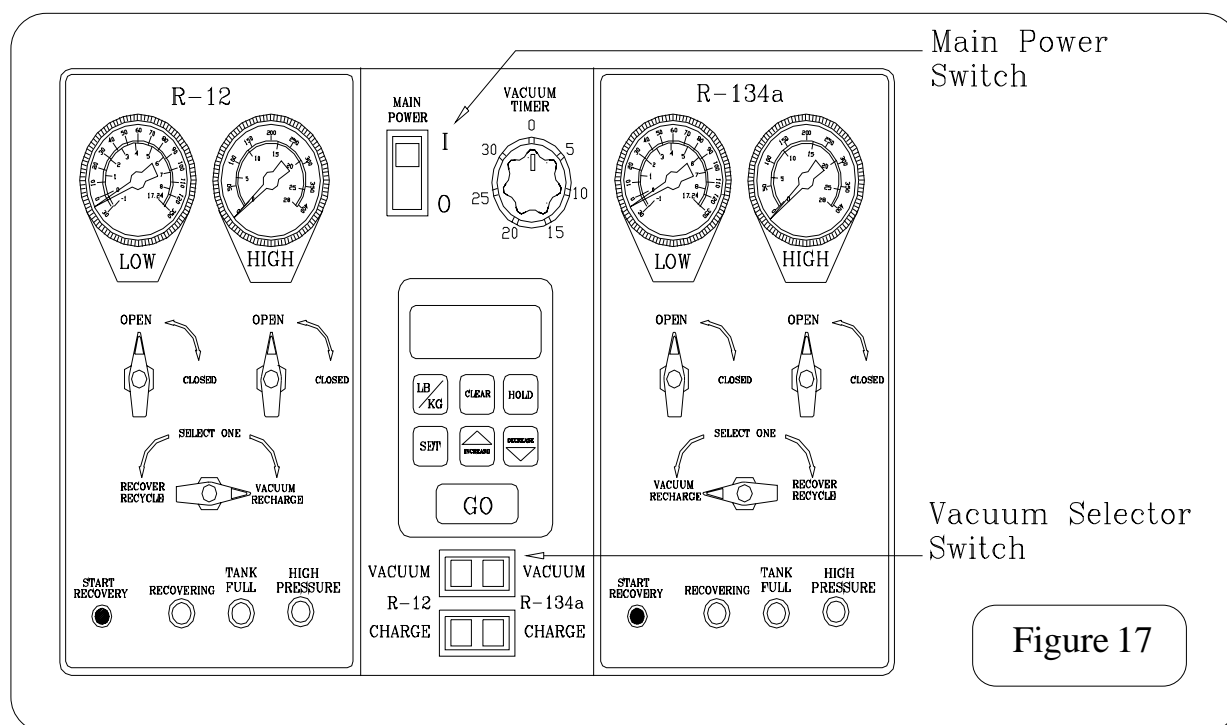


Figure 17

7. Make sure the switch on the rear of the vacuum pump is on. (Refer to Figure 18).
8. Turn vacuum timer clockwise to desired time (counter clockwise for hold). Evacuate the a/c system to 29" of vacuum.
9. Timer will automatically shut-off vacuum pump after the desired time is elapsed (unless the timer was turned counter clockwise to the HOLD position).
10. Close both manifold gauge valves low and high, and watch for vacuum loss indicating a leak in the vehicle a/c system.

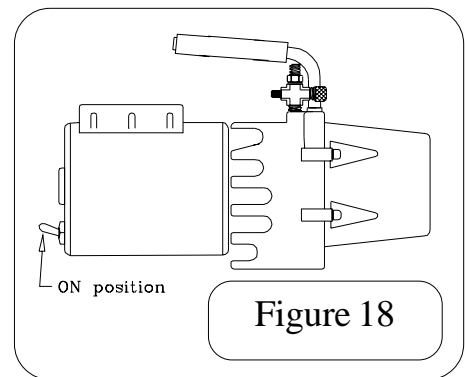


Figure 18

## OIL INJECTION

You can inject virgin lubricating oil to the vehicle a/c system at this time. Make certain that the oil reservoir has sufficient quantity of oil. Open the oil fill valve (use caution, as the system will draw very fast!). When the desired amount has been removed from the container, close the oil fill valve. The oil will be drawn into the vehicle a/c system by the deep vacuum that was obtained while evacuating. Subsequent charging of refrigerant will ensure all of the oil will be charged from the lines and hoses. (Refer to Figure 19).

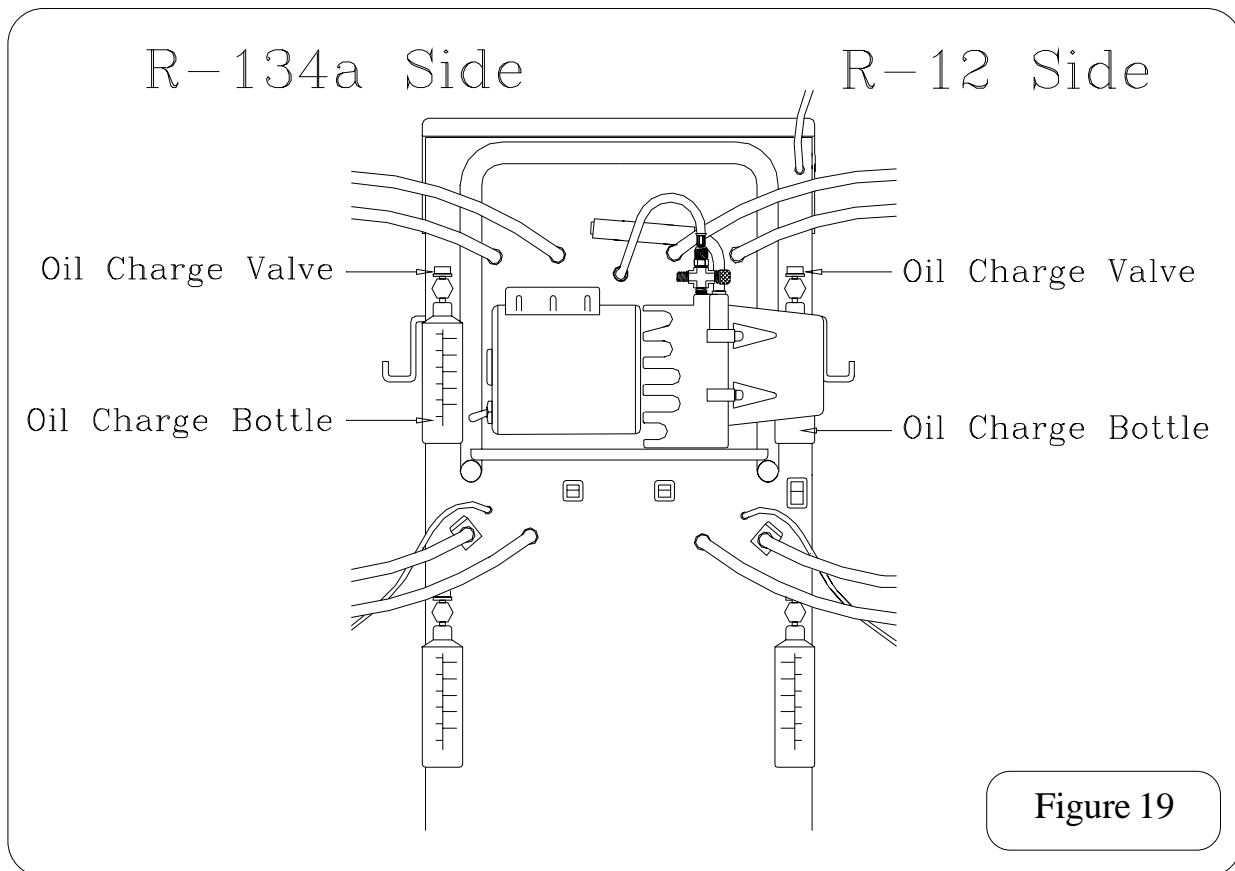


Figure 19



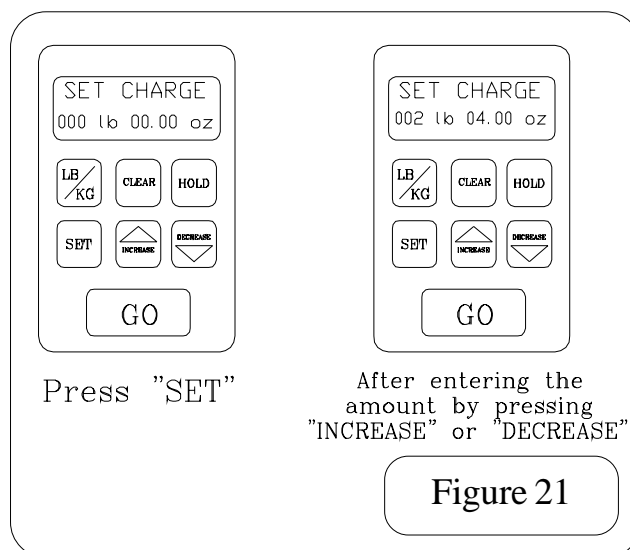
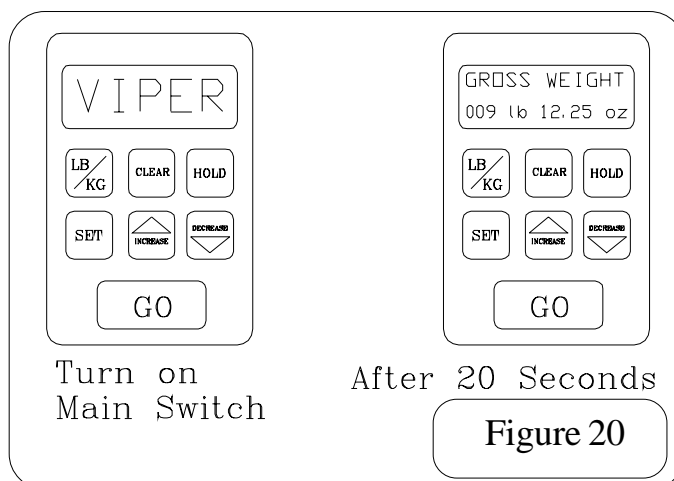
## ELECTRONIC CHARGING

Your VR-GT incorporates a highly accurate weigh scale for fully automatic charging. Other functions can also be performed with this electronic scale as you will notice below. Both standard and metric units of measure are incorporated. To charge the vehicle a/c system with refrigerant, proceed with the following steps:

1. Turn on main power switch, the LCD on the keypad will read "VIPER" for 20 seconds, while the electronics perform a self-test and calibration. After 20 seconds the display will read "GROSS WEIGHT" indicating the weight of the refrigerant in the tank which is on the scale. (Refer to Figure 20).
2. Make certain the desired storage tank is placed on the center of the platform, and has sufficient liquid refrigerant available.

**NOTE: The storage tank should have a minimum of 8 lb. of refrigerant before attempting to charge the vehicle a/c system.**

3. Open the storage tank's liquid valve.
4. Open ball valve on the 24" liquid hose.
5. Determine the amount of refrigerant to be charged using manufacturer's specifications.
6. Select the units of measure (lb. or kg.) by depressing the LB/KG key
7. Depress the **SET** key. The display will read **SET CHARGE**. Press the **INCREASE** or **DECREASE** keys to program the desired charge. The keys will change the charge in 1/4 oz. or 10 gram increments, the longer the key is held, the faster the LCD changes. Example: A 2 1/2 lb. charge should read "002 lb 08.00 oz.". (Refer to Figure 21).
8. Open both high and low side manifold valves on the control panel (R-12 or R-134a side).
9. Turn selector valve on the control panel to VACUUM/RECHARGE (on the corresponding side). (Refer to Figure 22)
10. When charging R-12, open both ball valves on the 96" blue and red hoses. When charging R-134a, Turn both coupler's valves clockwise to open them.



11. Depress the charge selector switch on the control panel to either R-12 or R-134a, (Refer to Figure 22).

12. Make sure the low side manifold gauge still show vacuum

13. On the LCD , make sure the desired weight is displayed (if not adjust the reading by pressing the **INCREASE** and **DECREASE** buttons).

14. Press the **GO** button.

15. The LCD will display "CHARGING" and the charge selector switch will illuminate (the charge counts from zero and up). After the desired amount of refrigerant is charged, the alarm will sound for five seconds, and the LCD will display "CHARGE COMPLETE".

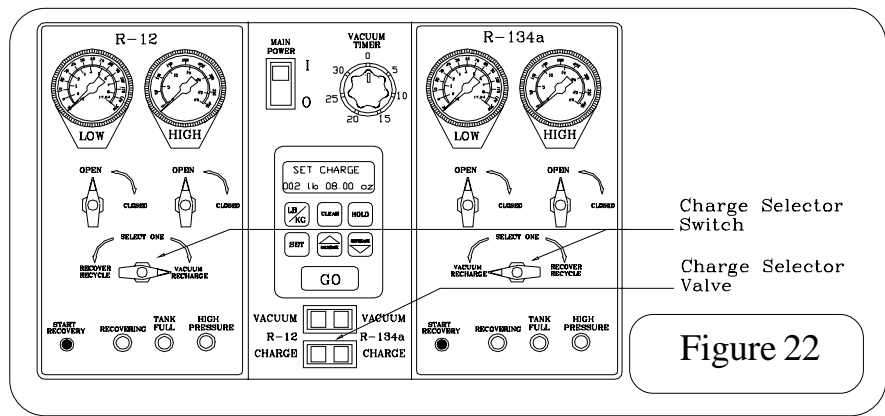


Figure 22

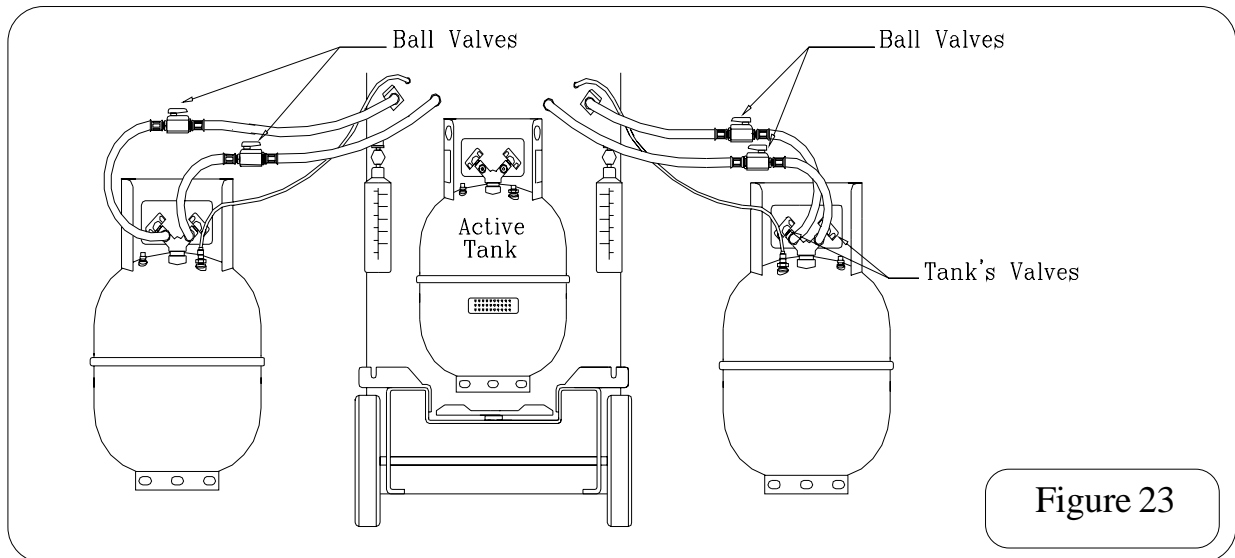


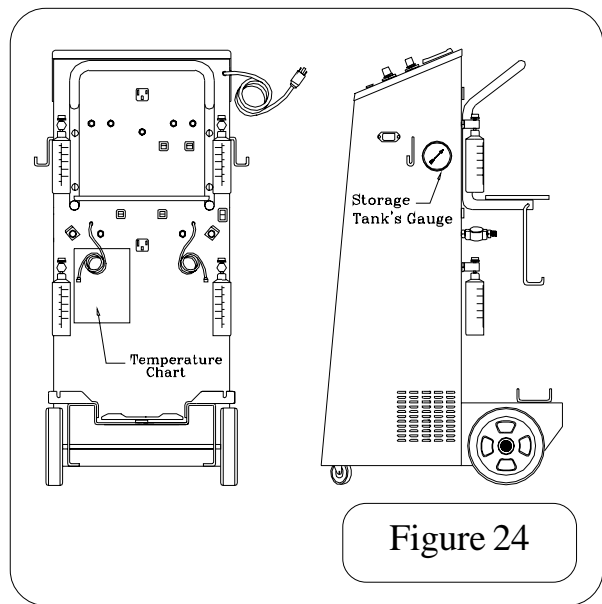
Figure 23

16. When charge is complete, it is recommended to close the ball valve (or the coupler's valve) on the 96" red hose while the hose is still connected to the vehicle a/c system. Start the vehicle's engine , and turn on the a/c system to its maximum, and watch the manifold gauges. When the readings go below 50 psi, the entire charge has been emptied from the hoses into the system. Close the low and high side manifold valves , open ball valve (or the coupler's valve) on the 96" red hose and perform a test on the vehicle a/c system according to the manufacturer's specifications.

**NOTE:** While charging , if three minutes elapse without charging more than one ounce of refrigerant, the circuit board will sound an alarm and display "HOLD". Press the HOLD button on the keypad to shut off the alarm and see the quick reference diagnostic chart on page 22.

## **NON-CONDENSABLES**

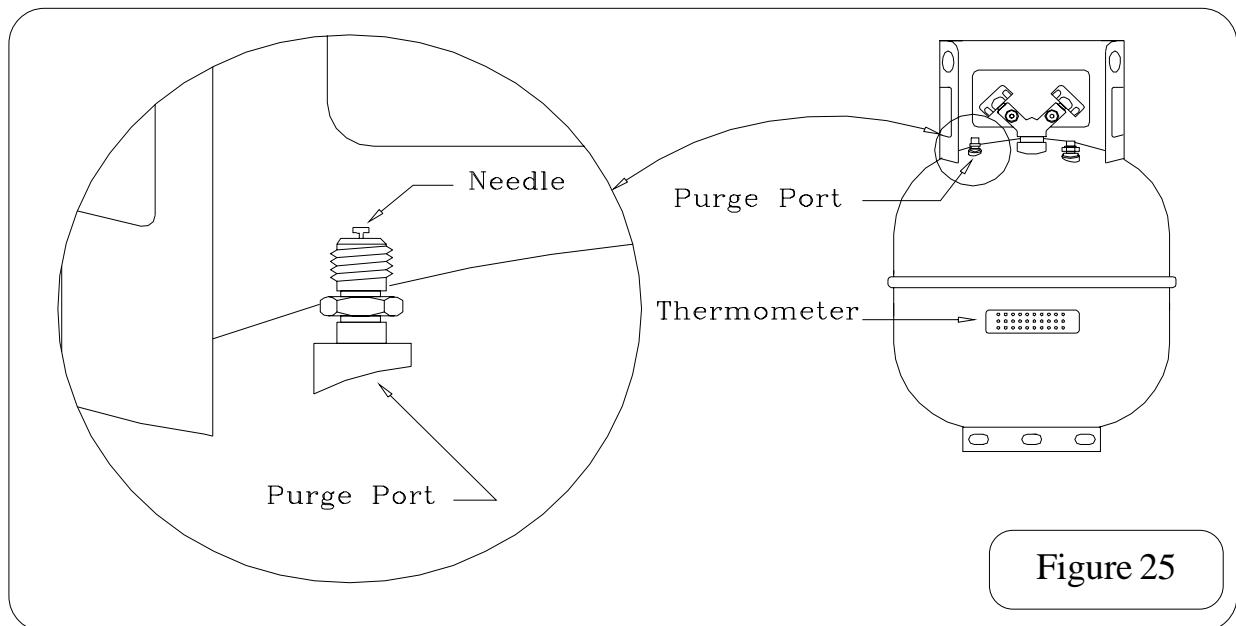
Non-condensable gases (usually consist of air), is accumulated in the storage tank due to poor service operations or leak in the disabled vehicle a/c system. These are unwanted gases and they are neither harmful nor dangerous to the operator or the environment. However, they reduce the efficiency of the machine in the recovery process. It is recommended to manually purge the non-condensable gases periodically to ensure the machine is working at its maximum performance. To define if the storage tank contains non-condensables, get the storage tank's pressure from the side gauge, (refer to Figure 24). According to the pressure/temperature chart on rear of the unit, get the pressure due to the tank's temperature. If the pressure reading of the storage tank is 8 psi (or more) higher than the pressure reading from the chart, then the storage tank contains non-condensables.



## **BLEEDING OFF THE NON-CONDENSABLES**

Allow storage tank to sit for 30 minutes without any movement and above 65 degrees Fahrenheit (18.3 C). The tank temperature should be stabilized to the ambient air. To accomplish this allow the tank to sit for four (4) hours. Slowly press the purge valve needle to allow the excess air to escape.

**EXAMPLE:** According to the Temperature-Pressure chart, at (70 F), the pressure of the R-12 should be 70 psi. The allowed pressure on the R-12 storage tank is 78 psi.



## ROUTINE SERVICE REQUIREMENTS

Your new VR-GT is a modern piece of equipment, designed to operate for hundreds of hours with very little maintenance.

The only maintenance items are the replaceable filter driers located in the unit (refer to Figure 29). These filters are only to remove fine moisture that makes it past our patented distillation process. For this reason the filters may last up to 1000 pounds of refrigerant before they are changed.

We recommend to replace these filters if one of the following occurs:

1. After 3 hours of recovery use, as indicated on the hour meter.
2. If the moisture indicator turns its color from DRY to WET, (based on the color chart on the indicator). Be certain to use only a quality filter that is provided by VIPER Service, part #980808

**For Added Safety**, all valves on hoses and tanks should be closed at the end of each day.

### **CHANGING THE FILTER DRIER**

Before you change the filter drier, you should evacuate the unit first in order not to vent out the refrigerant. You can evacuate both sides at one time. The following steps must be performed:

1. Close manifold valves, high and low.
2. Close ball valve on the 24" liquid hose.
3. Turn selector valve to Recover/Recycle.
4. Turn on main power switch.
5. Depress START RECOVERY button. The unit will evacuate the remaining refrigerant and it will automatically shut off when the pressure reaches 10" of vacuum.
6. Close ball valve on the 24" vapor hose.
7. Close vapor valve on the storage tank.
8. Slowly disconnect the vapor hose from the machine.
9. Turn off main power switch.
10. Unplug the unit from the power source.
11. Unscrew the front panel's four bolts, and remove the front panel.
12. With gloved hands, loosen the flare nuts from the top and bottom of the filter drier.
13. Replace the filter drier with a new one.

**NOTE: The arrows on the filters should point downwards.**

14. Put the flare nuts back, and tighten them. Check the connections for leaks.
15. Put the front panel back, and screw in the four bolts.
16. Plug in the unit to a three prong receptacle, and the unit is ready for operation.

## QUICK DIAGNOSTIC CHART

The unit starts when you press the start recovery button, but it stops as soon as you let the button go, and the pressure reading from the manifold gauges is above zero. Check if any of the following lights are on:

1. Tank Full Amber light.
  - a. Check the connection of the yellow cord (Tank Shut-off Cord) that is connected to the Tank-Full Switch on the storage tank.
  - b. Check the 0.5 Amp. circuit breaker on rear of the machine.
  - c. Tank is full, replace the storage tank.
2. High Pressure Red Light.
  - a. The ball valve on the 24" vapor hose is closed.
  - b. The vapor valve on the storage tank is closed.
  - c. The pressure in the storage tank is high. Check for non-condensables

**The unit does not pull to 10" of vacuum:**

1. Check for a leak in the system.
2. Compressor oil is low.
3. High pressure in the storage tank. (Check for non-condensables.)

**During charging, the alarm sounds and the LCD displays "HOLD". Press the HOLD button and check the following steps:**

1. Pressure has equalized between the unit and the vehicle a/c system.
  - a. Start the vehicle's engine
  - b. Close the valve on the 96" red hose, (if you are charging R-12), or the valve on the red coupler at the end of the 96" red hose, (if you are charging R-134a).
  - c. Turn the vehicle a/c system on, to its maximum power.
  - d. Press the "GO" button.
2. Refrigerant in the tank is cold.
  - a. Apply heater blanket (# 600177) around the tank.
  - b. Plug the heater blanket into the receptacle on rear of the machine.
  - c. Turn on the switch. (Refer to Figure 26).
  - d. Wait few minutes to warm up the tank.
  - e. Press the GO button.
3. Not enough refrigerant in the storage tank.
  - a. Close liquid valve on the storage tank.
  - b. Close ball valve on the 24" liquid hose.
  - c. Disconnect the Liquid hose from the storage tank and connect it to the virgin tank. Open the virgin tank's valve and the ball valve on the 24" liquid hose.
  - d. Place a virgin tank on the scale, (upside down).
  - e. On the keypad, enter the remaining quantity of the refrigerant.
  - f. Press the GO button.

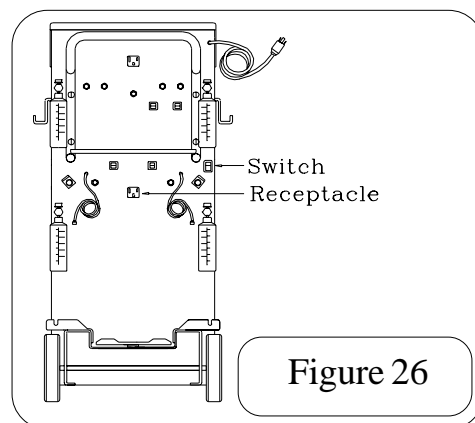


Figure 26

**NOTE:** To define how much refrigerant is in the tank, remove the tank from the scale and push "CLEAR". The LCD will display "TARE WEIGHT" , "000 lb 00.00 oz.". Put the tank back on the scale and read the weight. The reading should be a minimum of 35 lb plus the amount of refrigerant to be charged.

## **2 YEAR LIMITED WARRANTY**

The manufacturer warrants that for two years (1 year for labor, circuit board and load cell) from the date of original retail purchase, it will repair at no charge for parts and labor, this product proven defective in material or workmanship. If, after reasonable efforts by the manufacturer, the product is deemed not repairable, The manufacturer will, at its option, refund the original purchase price or supply a replacement unit.

THE TERMS OF THE MANUFACTURER'S LIMITED WARRANTY CONSTITUTE THE BUYER'S SOLE AND EXCLUSIVE REMEDY. THE IMPLIED WARRANTIES OR MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE LIMITED IN DURATION TO THIS EXPRESS WARRANTY. AFTER ONE YEAR FROM DATE OF PURCHASE, ALL RISK OF LOSS FROM WHATEVER REASON SHALL BE PUT UPON THE PURCHASER. THE MANUFACTURER SHALL NOT BE LIABLE FOR INCIDENTAL AND CONSEQUENTIAL DAMAGES UNDER ANY CIRCUMSTANCES: MANUFACTURER'S LIABILITY, IF ANY, SHALL NEVER EXCEED THE PURCHASE PRICE OF THIS MACHINE, REGARDLESS OF WHETHER LIABILITY IS PREDICTED UPON BREACH OF WARRANTY (EXPRESS OR IMPLIED), NEGLIGENCE, STRICT TORT OR ANY OTHER THEORY. THIS WARRANTY DOES NOT COVER LOSS OF REFRIGERANT UNDER ANY CIRCUMSTANCE.

This warranty extends to each person who acquires lawful ownership within two years of the original retail purchase, but is void if the product has been abused, altered, misused or improperly packaged and damaged when returned for repair.

This warranty applies to the product only and does not apply to any accessory items included with the product which are subject to wear from usage; the replacement or repair of these items shall be at the expense of the owner.

Some states/provinces do not permit the limitation of warranties or limitation of consequential or incidental damages, so the above disclaimer and limitation may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state/province to state/province.

TO OBTAIN SERVICES UNDER THIS WARRANTY Owner pays transportation charges to and from the closest service center.

For answers to questions concerning use, out of warranty service, or warranty/service information, contact:

Refrigerant Recycler Service (1-800-328-2921)  
9231 Penn Avenue South  
Minneapolis, MN 55431

# REPLACEMENT PARTS

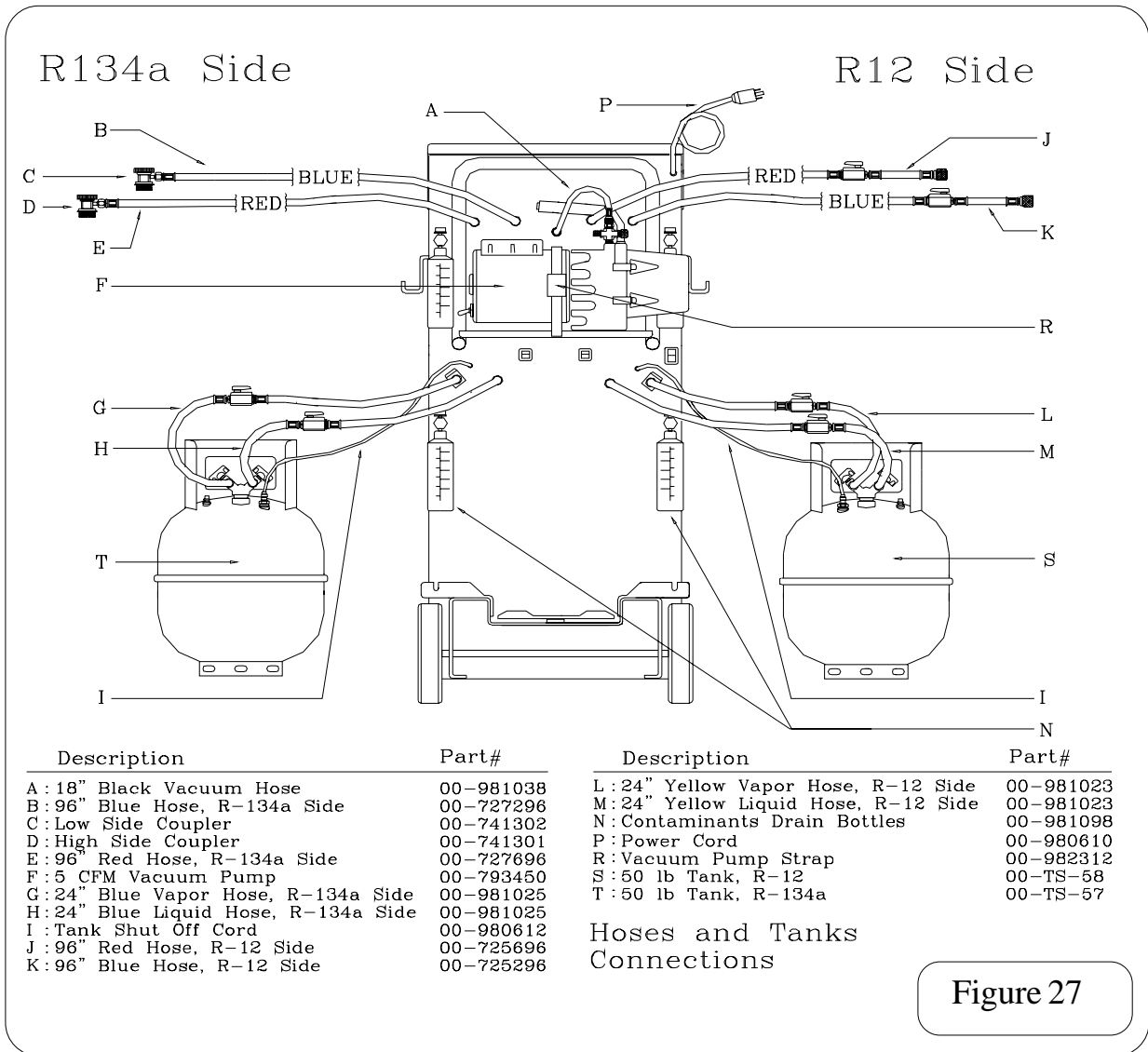


Figure 27

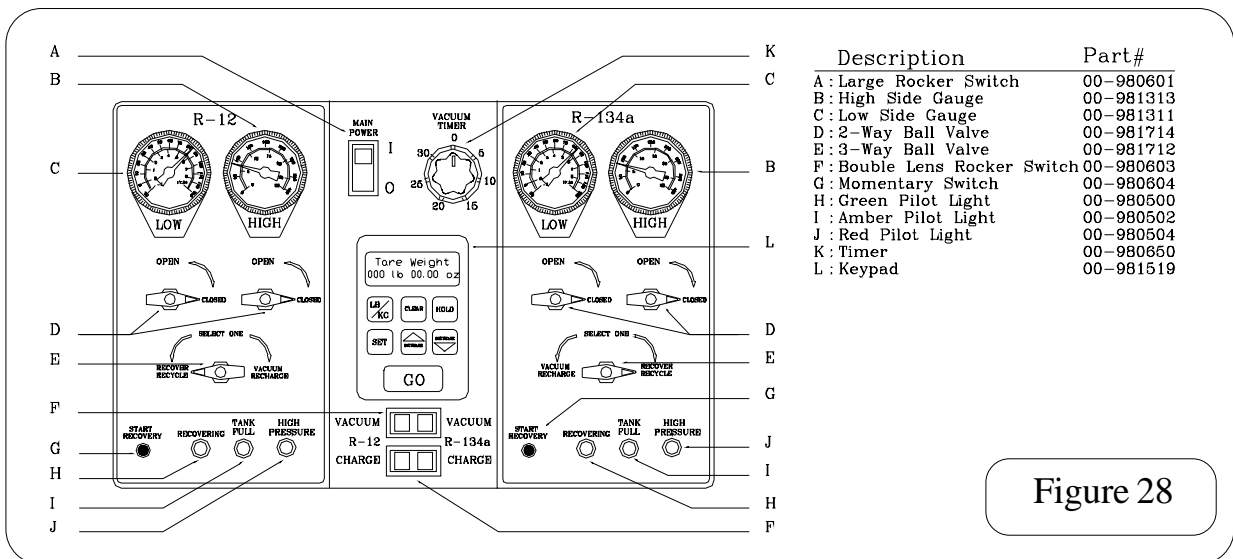
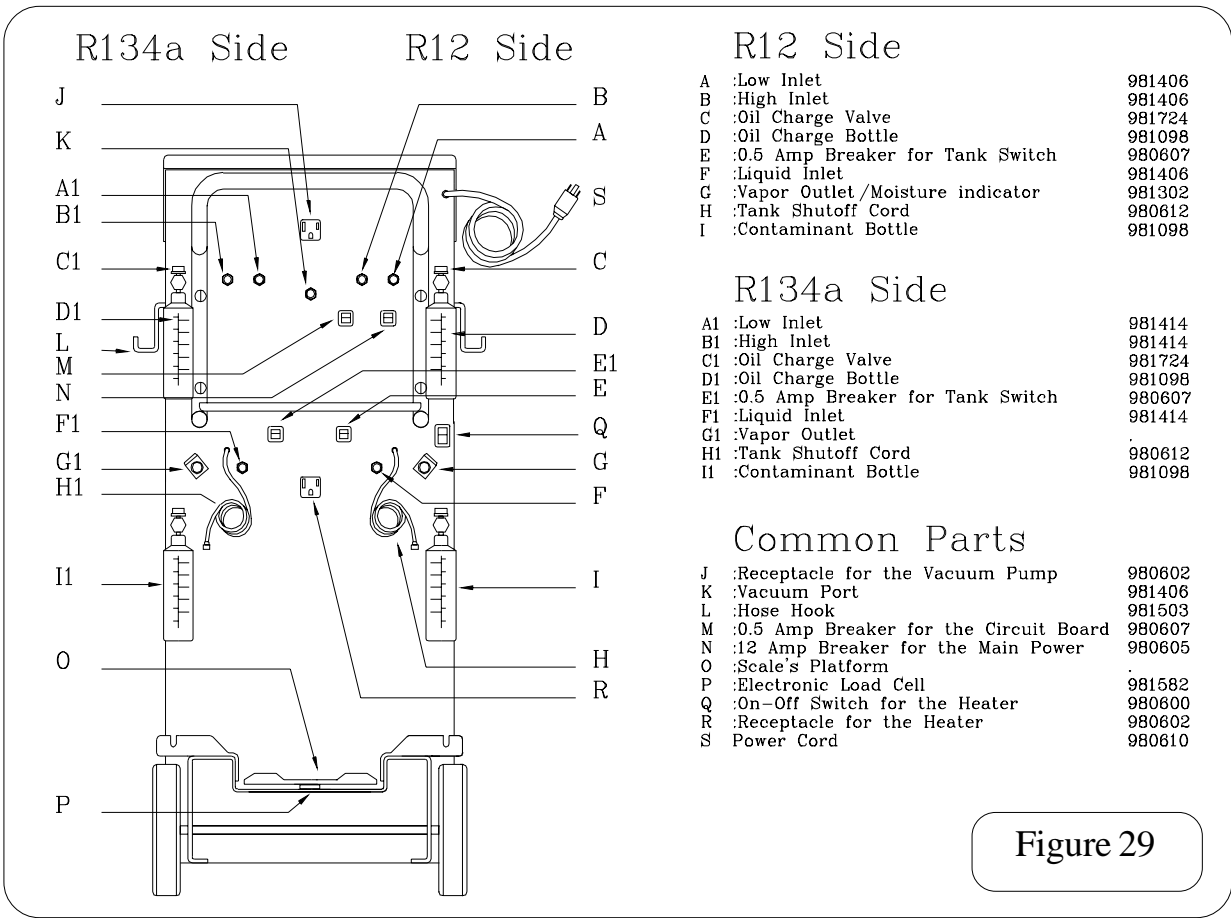
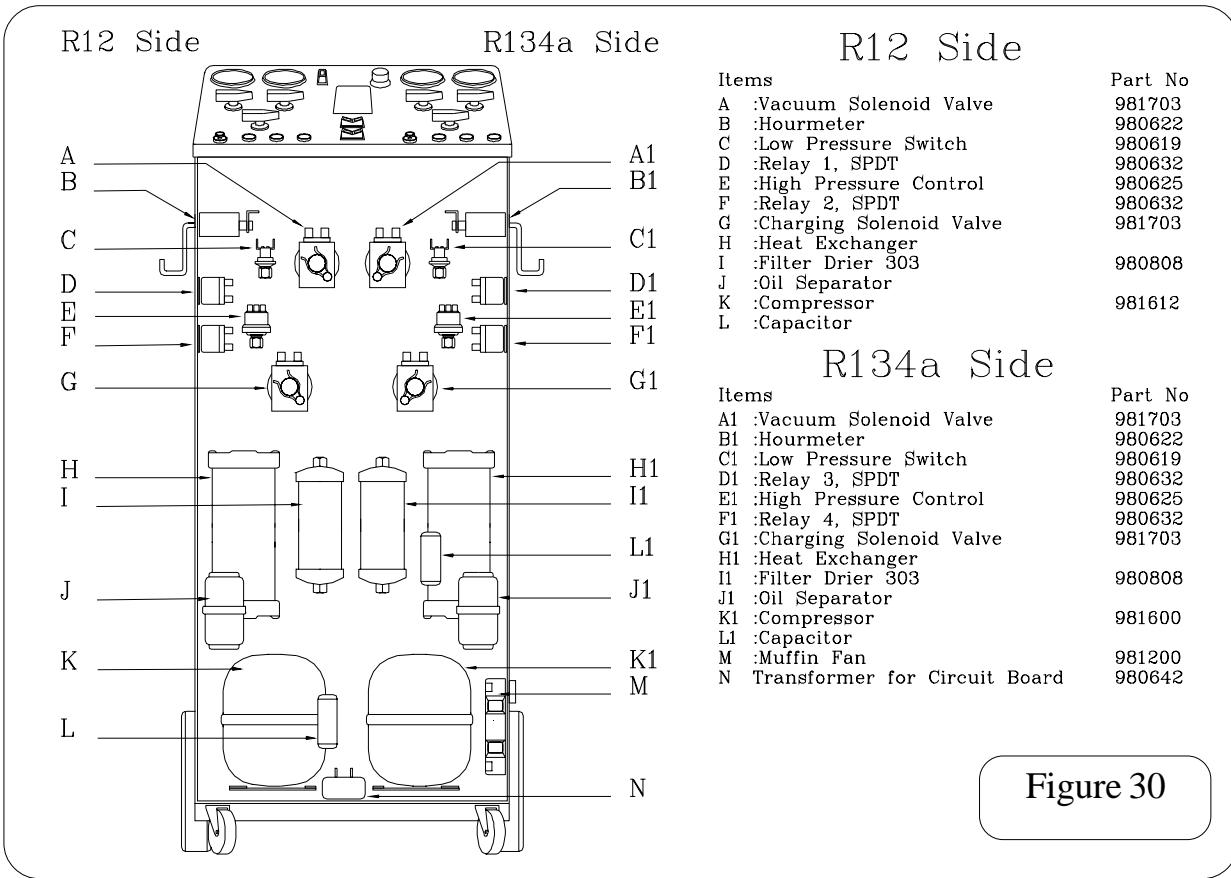


Figure 28



**Figure 29**



**Figure 30**