

Van Steenburgh Refrigerant Reclaim System

JV Series
Self Clearing



Operations Manual

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**VAN STEENBURGH REFRIGERANT RECLAIM SYSTEM
OPERATION/MAINTENANCE MANUAL
JV SELF CLEARING SERIES**

INTRODUCTION

PURPOSE

The Van Steenburgh Refrigerant Reclaim System can be used to reclaim R-12, R-22, R-502, R134a and R-500 and all new refrigerants in the same range from a refrigeration system. It can also be used to remove or transfer refrigerant from cylinders and to store refrigerant within it's storage/chill chamber. This Refrigerant Reclaim System has a self clearing feature to assist in the changing of refrigerants. The reclaiming process removes oil, acid, hard particle contaminants, moisture and non-condensables from the refrigerants.

GENERAL

The Van Steenburgh Refrigerant Reclaim System is a fully integrated piece of equipment. All necessary elements are self-contained including the storage/chill chambers which are especially engineered pressure vessels welded in place.

The system is designed and constructed of top quality steel cabinetry and finished with a durable baked finish. All component parts are of the highest quality including all gauges, solenoids, valves, controls and switches. All parts are available from the Manufacturer (see Parts List).

The equipment is designed with the technician and work place in mind. The gauges are laboratory quality to assure long life and excellent calibration. Switches are clearly marked and easily accessible on the front control panel.

Your Van Steenburgh system has been ruggedly constructed with your day-to-day activities in mind. All refrigerant carrying tubing that maintains a temperature below dewpoint is insulated to aid in efficient operation and the cabinet and frame are reinforced for sturdiness.

OPERATION RECAP

1. Refrigerant can be taken into the system as EITHER vapor or liquid automatically.
2. The entering refrigerant is taken to high temperature and velocity using the heat of compression, friction and electrical resistance of the motor by use of a tube in tube heat exchanger.
3. It then enters a large unique Separation Chamber where the velocity is radically reduced. This allows the vapor, at high temperature, to rise. During this phase, copper chips, carbon, oil, acid, water and all other contaminants drop to the bottom of the Separator where they can be removed during the "oil out" operation. (This process also allows you to accurately determine the amount of oil removed from a reclaimed system since all of it remains in the bottom of the Chamber).
4. The distilled vapor, at high temperature, rises and passes from the Separation Chamber to the compressor, the tube in tube Heat Exchanger, then to the air cooled condenser where it is converted to liquid.
5. The liquid passes into the on-board storage chambers (chill chamber). Within these chambers an evaporator assembly including thermal expansion valves that correspond to the type of refrigerant sub-cools the liquid to 20 to 40 degrees F/ -6.7 to 4 degrees C (depending on several variables) during the CHILL operation.
6. A pair of replaceable Filter/Driers in this circuit removes any remaining moisture, while finalizing the cleaning process.
7. Chilling the refrigerant also facilitates the transfer to any external cylinders or systems at ambient temperature.

Note: It is best NOT to over chill the refrigerant in the system. Over chilling can cause frost, or even ice, to form on the valves and chambers, especially in higher humidity areas. As it melts, it leaves water within the unit which can gather on the floor of the cabinet causing problems.

GETTING STARTED

SET UP PROCEDURES

Each system is thoroughly tested before it leaves the factory. At the completion of the test procedure each unit is pressurized with nitrogen to protect it during shipping. Your unit will have a tag on the front indicating the same.

1. Remove unit from shipping crate and attach casters to bottom of unit. Make a thorough visual inspection of the unit making sure there is no shipping damage. If any damage is noted contact shipping company.
2. Verify voltage and amperage on serial tag on rear of unit.
3. Open INLET and OUTLET hand valves (with unit plugged into proper power source), this will release the protective nitrogen charge and allow system to come to atmospheric pressure. Hook vacuum pump to both REFRIGERANT INLET and REFRIGERANT OUTLET fittings. Pull a vacuum until system reaches 1000 microns.
4. Check Suction Gauge to ascertain vacuum level. Close In and Out hand valves.

You are now ready to accept refrigerant. **MAKE CERTAIN THE REFRIGERANT SELECTOR KNOB INDICATES THE APPROPRIATE REFRIGERANT.** Refer to **Refrigerant In** procedure for instructions.

OPERATING CHARACTERISTICS

The individual sections in this Operator's Manual deal with the step by step actions for the operating procedures. The following operating characteristics apply in general and should be taken into consideration. **THE RECLAIM/CLEAR SWITCH MUST BE IN THE RECLAIM POSITION FOR ALL OPERATIONS EXCEPT CLEARING.**

1. All Van Steenburgh Reclaim Systems are industrial grade equipment. They are based on established sound heat transfer principles and depend, to an extent, on the refrigerant in the reclaim system to achieve maximum performance. Consequently, you will achieve the best results if you follow some basic procedures.
 - A. Before starting your reclaim operations, hook the unit to a cylinder of the same refrigerant you will be processing and pull in a small amount to establish the holding charge as follows:

JV 90 Series 7 to 9 lbs/ 3.2 to 4.1 kg

Leave that amount in the reclaimer for the subsequent use.

- B. Before starting reclaiming operations, turn compressor switch ON (if not already on) and chiller switch ON prior to starting. Let machine run for approximately 5 or 10 minutes. This will warm up the compressor and assure maximum efficiency in the Separation Chamber.

This simple warm up activity will help considerably towards assuring smooth operation and clean refrigerant because the heat exchanger will be up to temperature and this will assure good “separation” as the refrigerant enters the separation chamber.

- 2. **The OIL OUT operation is especially important for trouble free operation.** By conducting frequent OIL OUT procedures you will keep the separated oil below the level of the entry port and assure that the oil/moisture mix will not start foaming and re-entrain with the vapors.

NOTE: Avoid using Extension Cord. It may overheat. If necessary to use cord, use shortest possible length of No. 12 AWG minimum.

HINTS

Long Hose "Pulls"

On occasion longer lengths of hose are required when it is not possible to get the Reclaimer to the source. In these cases it is important to remember the following:

- A. Always use the largest diameter refrigerant hose possible - at least a 3/8"/.952 cm.
- B. The line loss will begin to have a more noticeable effect after 25 feet/7.62 meters.
- C. At 50 feet/15.2 meters (75 deg F/23.9 deg C) the liquid capacity will be reduced by 20 percent. The vapor capacity, however, will be diminished by 67 percent!
- D. Pumping capacity will diminish drastically as hose lengths exceed 50 feet/15.2 meters.

Low Ambient Operations

The Reclaimer is no different from any other piece of equipment that depends on a compressor. The lower the ambient, the more important it is to assure the compressor is warm enough.

Here are some hints:

- A. Reclaimer must be run prior to beginning reclaim operations to warm up the compressor and bring the system up to temperature.
- B. Low ambient temperatures will mean longer "pull" times. Hooking into liquid side is even more important during these conditions.

Transferring Refrigerant

Transferring sub-cooled refrigerant from the Reclaimer following the chilling process is aided by a combination of things:

- A. The sub-cooled refrigerant entering a cylinder or system at a higher ambient condenses the vapor and lowers the pressure.
- B. The Reclaimer compressor, operating at much higher temperature and pressure, is driving the sub-cooled refrigerant from behind.

Care of Reclaimer

If refrigerant is stored in reclaimer during periods of non use it is **imperative** that unit remains connected to power source with compressor switch in the on position. Should any refrigerant migrate to the compressor, the unit will start and pump down with the low pressure control shutting the system down at approximately "0" psig/bar. This will also provide power to the crankcase heater, which maintains the compressor oil at a constant temperature, thus boiling any refrigerant out of the compressor oil. This will assure a smooth start up when beginning reclaiming operations.

Caution: Failure to follow these instructions may cause serious compressor damage and void the warranty.

OPERATION

REFRIGERANT IN

1. Attach hose to the 3/8"/.952 cm flare fitting labeled REFRIGERANT IN.
2. Attach the other end of the hose to the refrigerant source. Purge hose. Use a gauge at reclaiming source. This will show when the source is empty.

NOTE: Hook up to liquid side whenever possible. Removing liquid first is much faster. It also serves to cool the motor compressor in the reclaimer. Other reasons to hook to liquid side:

- A. Drawing from vapor side means you will be boiling the liquid without a heat source, which will drastically reduce the efficiency of the operation.
 - B. If there is refrigerant in the oil of the compressor motor it will boil and cause the oil to foam and leave the compressor and enter the reclaimer.
3. Turn the COMPRESSOR switch on and open REFRIGERANT IN hand valve. **Reclaim/Clear switch must be in the reclaim position.** Reclaimer will start to pump. Warm unit up maintaining a minimum of 65°F/18.3°C on separator gauge for 3 to 4 minutes before opening inlet valve fully. Maintain maximum suction pressure of 50 psig/3.4 bar and a minimum 65°F/18.3°C on separator temperature gauge during reclaiming operation for best results.

NOTE: With the vapor switch also on, the liquid injection solenoid will activate when the suction pressure gets down to approximately 3 to 4 PSIG/.204 to .272 bar. By diverting liquid refrigerant from the on board storage to the compressor by means of a liquid injection valve the compressor is kept cool as you continue to pump the remaining vapor from the source. (SEE PUMPING TO REQUIRED VACUUMS)

4. An electric Float Switch shuts off an inlet solenoid when machine is full to prevent overfilling the on-board cylinder. The Float Switch is so placed to leave room for expansion of refrigerants at high ambients.

PASS THROUGH OPERATION

1. Attach a hose to the source to be reclaimed. Attach other end to the reclaimer fitting labeled INLET, (See Refrigerant In for Hints). Purge hose.
2. Attach hose to fitting labeled OUTLET. Attach other end of this hose to the VAPOR side of the storage cylinder to which you wish to transfer. Purge hose.
3. Turn COMPRESSOR ON and open REFRIGERANT IN and OUT hand valves. Refrigerant will pass through the reclaimer and go directly to the receiving container hooked to the OUTLET fitting.

PASS THROUGH WITH CHILL

This procedure will afford the opportunity to achieve additional chilling while also circulating the refrigerant through the drier/filter as it goes through the reclaimer. This procedure will be slightly slower but will give you the benefit of chilling.

1. Attach a hose to the LIQUID side of the source to be reclaimed.
2. Open the inlet hand valve with compressor switch ON. Pull in the refrigerant until the reclaimer full light goes on and the reclaimer is full.
3. Close the INLET hand valve and turn CHILL switch ON. Let the reclaimer run in the chill mode for 15 to 20 minutes.
4. Hook hose from OUTLET of reclaimer to the VAPOR side of the storage cylinder or system. Purge hose.
5. Open OUTLET hand valve of reclaimer. Let refrigerant pass to cylinder.
6. Open INLET after full light goes off and a small amount of refrigerant has passed to storage cylinder.
7. Adjust INLET and OUTLET to an even flow.
8. Continue pass through operation until suction pressure drops indicating vapor is being pumped from source.
9. Close OUTLET and complete operation per PUMPING TO REQUIRED VACUUM to bring source into compliance with vacuum level.

10. Chill remaining refrigerant and transfer to cylinder using standard REFRIGERANT OUT procedure.

PUMPING TO REQUIRED VACUUMS

As the reclaimer continues to pump, and you reach the vapor stage of the source charge, the suction pressure will drop. With the VAPOR switch ON the liquid injection valve will open at approximately 3 psig/.204 bar. This cools the compressor during low mass flow operations as it continues to draw the source down. To pump the remaining refrigerant and take the source to the required EPA vacuum levels proceed as follows:

1. When both gauges (source and reclaimer suction) are equal (at about 3 psig/.204 bar) turn the VAPOR SWITCH OFF.
2. The low pressure control will control the compressor and the reclaimer will pump down and shut off.
3. Wait until the two gauges (source and reclaimer suction) equalize.

NOTE: Be certain all refrigerant is accounted for in source (from remote condensers, multiple evaporators, etc.). This may take some extra time. Overriding compressor prematurely may cause overheating.

4. While watching the source gauge, push the COMPRESSOR OVERRIDE SWITCH (on the right side of the control panel) down and hold.
5. Watch source gauge until it reaches the required vacuum level per EPA regulations.

Type	Inches Hg	Bar
HCFC-22, less than 200 lb/90.9 kg. of refrigerant	0	0
HCFC-22, more than 200 lb/90.9 kg. of refrigerant	10	.33
Other high pressure units normally containing less than 200 lb/90.9 kg.	10	.33
Other high pressure units normally containing more that 200 lb/90.9 kg.	15	.49

CHILLER

After REFRIGERANT IN operation has been completed, make sure inlet valve is closed and remove hose and cap INLET fitting with supplied caps. Turn CHILLER switch and COMPRESSOR switch ON and allow reclaim system to operate for a minimum 22 minutes for JV Series. This operation circulates the on-board refrigerant through an evaporative cooler and a pair of Filter/Driers at approximately 300-400 lbs/136.36-181.80 kg per hour rate. This will provide a final cleaning of any microscopic particles and remove any remaining moisture.

NOTE: Chill time is based on a full unit.

If you choose to store the refrigerant in the reclaimer, unit must be left connected to power source and compressor switch in the ON position. All other switches in the OFF position. This will allow the system to pump down if any refrigerant inadvertently migrates to the compressor. **See Care of Reclaimer, Page 7.**

NOTE: Before removing refrigerant it is recommended that you re-chill before beginning REFRIGERANT OUT process. (See REFRIGERANT OUT for explanation)

DRIER/FILTER

NOTE: A moisture indicator sight glass is provided in series BETWEEN the two Filter/Drier “towers” as an additional monitor. This can be used in conjunction with the hour meter to monitor the reclaimed product.

For best results the Drier/Filter should be changed as follows:

JV90 Series-after each 3.2 hours of chilling operation .

NON CONDENSABLE PURGE PROCEDURE

After refrigerant recovery from source AND BEFORE CHILLING allow the reclaimer to pump down and the Compressor to shut off.

1. Wait a minimum of 5 minutes for the system temperature to stabilize.
2. Observe and note temperature reading on temperature gauge located on front panel.
3. Refer to temperature/pressure chart (calculated to your elevation above sea level) and determine saturation level.
4. Compare Head Pressure gauge reading with pressure reading from chart.

5. If Head Pressure is more than 10 psi/.68 bar above reading on chart, purging is necessary.
6. Using AIR OUT switch on front panel, purge for 15 seconds.
7. Wait 3 minutes and make comparison (4 above) again.

Repeat steps 5, 6, and 7 until temperature and pressure on chart agree within 10 psi/.68 bar of pressure shown on Head Pressure gauge.

REFRIGERANT OUT

After the CHILL operation has been completed and the refrigerant is thoroughly chilled, proceed as follows:

1. Attach hose to the fitting labeled REFRIGERANT OUT. Attach the other end of the hose to the vapor side of a storage cylinder or system you wish to transfer to. Purge the hose.
2. Turn COMPRESSOR switch ON and open REFRIGERANT OUT hand valve. The refrigerant will begin transferring. Leave CHILL switch on until suction pressure begins to drop, then turn CHILL switch off.

NOTE: It is important that the refrigerant is chilled prior to beginning this procedure. This facilitates the transfer because the sub-cooled refrigerant will immediately condense the vapor in the cylinder or system, lower the pressure and cause the refrigerant to transfer. (See TROUBLE SHOOTING section for additional hints in transferring).

NOTE: ONLY AN EXPERIENCED OPERATOR SHOULD DISPENSE REFRIGERANT. IT IS EXTREMELY IMPORTANT TO UNDERSTAND THOROUGHLY THE EXPANSION/CONTRACTION PROPERTIES OF REFRIGERANT.

DO NOT OVERFILL. Fill only 75% to 80% of capacity. LEAVE ROOM FOR EXPANSION.

DO NOT USE DISPOSABLE REFRIGERANT CYLINDERS. THIS IS EXTREMELY DANGEROUS AND COULD RESULT IN SERIOUS BODILY HARM OR EVEN DEATH. USE ONLY REFILLABLE CONTAINERS.

KNOW YOUR EMPTY WEIGHTS AND FULL WEIGHTS FROM THE CYLINDER MANUFACTURER BEFORE BEGINNING THIS OPERATION.

OIL OUT

For the best results drain oil from Separation Chamber after every 15 minutes of operation as indicated by the hour meter. This will keep the oil level down in the Separation Chamber and prevent it from re-entraining into the reclaimed refrigerant.

To remove the separated oil and other contaminants from the Separation Chamber, proceed as follows:

1. With Refrigerant IN and Refrigerant OUT both closed and with Compressor ON. Allow unit to pump down and shut off. Turn Compressor OFF.
2. Using Compressor override switch located on the right side of the panel. Pull suction pressure into a 2 to 4 inch/.06 to -.13 bar vacuum. Let unit sit 3 minutes. This operation pulls the separation chamber into a vacuum thus removing any refrigerant that might be trapped in the oil.
3. Using Chiller switch, flip switch up a few times to put 3 to 4 lbs/.204 to .272 bar. pressure on Suction Pressure Gauge.
4. Connect the OIL OUT access valve which is supplied with the unit to the OIL OUT fitting at the bottom of the front panel.
5. Assure that the knob on the access valve is turned OUT or counterclockwise.
6. Place a container in front of the OIL OUT fitting to catch the oil. A Pyrex glass container with graduations works especially well because you can determine accurately the amount of oil removed.
7. Open OIL OUT valve slowly (at bottom of front panel).
8. Turn the access valve SLOWLY clockwise while the oil begins to flow. When it stops flowing, vapor will appear.
9. Turn valve OFF COUNTER-CLOCKWISE.
10. Close OIL OUT valve.

NOTE: If the refrigerant source has been a system with a "dead" compressor or a compressor which has not been running prior to reclaiming, you can, with this process, determine how much oil to replace in the evacuated system.

CLEARING REFRIGERANTS

Self Clearing version only

NOTE: This operation is for clearing refrigerant from the reclaim system. A refillable cylinder with **dual** ports that has 25% greater capacity than the amount of refrigerant on board must be used (90#/41 kg on board, minimum 125#/57 kg cylinder). For best results use a cylinder that has been evacuated.

To clear refrigerant from the reclaim system proceed as follows:

1. Reclaim/Clear switch must be in the **reclaim** position.
2. Turn Compressor and Chiller switches on and allow reclaimer to operate for approximately 15 minutes.
3. While reclaimer is in chill mode attach one hose to the fitting labeled **outlet** and attach other end of hose to **vapor** port of storage cylinder, purge hose. Attach other hose to fitting labeled **clear** and other end to **liquid** port of storage cylinder.
4. Open outlet hand valve and vapor side of cylinder. Allow refrigerant to transfer until suction pressure begins to drop. Turn chiller switch off and turn vapor switch on. Allow refrigerant to transfer until unit shuts down. Close outlet hand valve and vapor valve on cylinder.
5. Open liquid valve on cylinder and clear hand valve on reclaimer. **After** valves are open turn Reclaim/clear switch to **clear**. Reclaimer will start and transfer remaining refrigerant into storage cylinder. The low pressure control will shut unit down at "0" psig/bar. Using the compressor momentary switch on right side of panel pull reclaimer into required vacuum. Close clear hand valve and liquid valve on cylinder. Place all switches in the off position. Turn Reclaim/Clear switch to **reclaim** position.

Caution: During the clear procedure the hose will heat up due to the discharge gas transferring to the storage cylinder.

Note: By transferring the hot discharge gas into the liquid side of the cylinder it is being moved to the bottom of the cylinder which is full of sub cooled liquid. This condenses the hot vapor and keeps the cylinder temperature/pressure down in the cylinder.

6. Attach vacuum pump to Inlet and Outlet fitting and open In and Out hand valves. Evacuate reclaimer for approximately 5 minutes.

7. Set selector knob on front panel to desired refrigerant.
8. Hook up to new refrigerant source.
9. Begin **Refrigerant In** operation.





MAINTENANCE

Complete the following preventive maintenance on a regularly scheduled basis.

1. Wipe front panels including gauge faces with a clean cloth to keep switch labels and gauge faces clear and readable.
2. Clean and check vent areas on side of machine and the condenser face to assure maximum air flow over condenser.
3. Check Oil Sight Gauge on compressor. This visual check must be made with 2-3 PSIG/.136-.204 BAR indicating on the SUCTION gauge. If oil is needed, replace with appropriate oil only. Oil level should be visible at bottom of sight glass. **DO NOT OVERFILL**



Adding Oil to Compressor

- A. Locate the Access Valve fitting next to compressor oil sight glass
- B. Verify that there is 0 psi on suction gauge. If positive pressure in on gauge hold momentary compressor switch (right hand side) down until a small vacuum is indicated on SUCTION GAUGE (VAPOR switch must be OFF).
- D. Install oil access valve on compressor fitting. Slowly open oil access valve by rotating knob clockwise.
- E. Suck oil into compressor suction line using Access tool.
- E. Allow system to return to 2 psig/.136 bar (all switches off, bump chiller switch) and wait a few minutes.
- F. Watch sight glass for level. Proper level is indicated when oil is visible in the LOWER LEVEL of sight glass. Verify that there is 0 psi on suction gauge. Remove oil access valve and replace cap on access fitting.
DO NOT OVERFILL

Change Drier/Filter

NOTE: Drier/Filter assembly is located on the back panel of the unit. It consists of two 24”/61 cm “towers” hooked in series.

1. With refrigerant on board turn the compressor and chill switch ON.
2. CLOSE the ball valve at the bottom of the filter. Allow the unit to pump down and shut off. TURN COMPRESSOR AND CHILL SWITCHES OFF.
3. Loosen the 3/8”/.95 cm flare nuts on top of the filters and remove Sight Glass assembly.
4. Using a 1 3/8”/ 3.49 cm wrench, loosen and remove filters from lower fittings. DO NOT LOOSEN ELBOWS OR VALVE FITTINGS.
5. Loosen retainer clamps on filters. Remove expended filters.
6. Replace filters. NOTE PROPER FLOW DIRECTION
7. Reattach and secure top fitting.
8. Reattach and secure filters to bottom fittings.
9. Open ball valve at bottom and check for leaks.
10. Turn compressor and chill switches ON. Run in chill mode for approximately 5 minutes. Unit is now ready for reclaiming operation.



TROUBLESHOOTING

PROBLEM

SOLUTION

Unit won't accept refrigerant

1. Check to assure REFRIGERANT IN hand valve is open.
2. Check operation of FLOAT VALVE SAFETY SWITCH.
3. Unit is plugged in.
4. Unit is full.

System "pulls slowly".

1. Check to assure you are hooked in to liquid side of source.
2. Low ambient temperature. Apply heat to source.
3. Check hoses for detents, orifices, etc.
4. Connecting hose too long.
5. Filters need to be changed

Refrigerant won't transfer.

1. Run in CHILL mode for minimum of 10 minutes (See CHILLER) before starting operation.
2. Reclaim system doesn't have enough refrigerant in it.

HINT: Hook hose from REFRIGERANT IN to vapor side of cylinder. Run Reclaimer for a period of time pulling on vapor side of cylinder. This will cool the cylinder and lower the head pressure. Rehook REFRIGERANT OUT to vapor side of cylinder and continue transfer.

Not sure which refrigerant is in machine.

Place thermometer on top of machine overnight to record ambient temperature. Check pressure on Head Pressure Gauge and consult your TEMPERATURE PRESSURE CHART.

Oil in lines.

OIL OUT operation has not been completed on a regular basis. Separation Chamber is full and oil has migrated through system. Complete OIL OUT operation and run several loads through machine to clean system.

Short cycle in
Chiller Mode

Not enough refrigerant in
machine.

PARTS LIST

PARTS LIST JV SERIES RECLAIMER

Part #	Part Description
16-002	Air Condenser.
09-038	Air Out/Compressor Momentary Switch.
24-001	Casters - with brakes
24-002	Casters - without brakes
09-036	Chiller Toggle Switch.
15-108	Compressor - 208/230V, 60Hz, 1Ph
15-100	Compressor - 220/240V, 50Hz, 1Ph
22-002	Compressor Oil Sight Glass
09-036	Compressor On/Off Toggle Switch.
09-034	Contactora (Compressor)
09-035	Crankcase Heater
12-042	Drier Ball Valve 3/8
26-001	Drier/Filter Tower
09-053	Fan Motor - 230V
17-001	Fan Pressure Control
22-004	Float Switch only (UL)
09-113	Full Light
10-002	Head Pressure Gauge.
17-003	High Pressure Control
12-008	High Pressure Relief Valve
09-155	Hour Meter
09-002	Liquid Injection Relay
12-034	Liquid Injection Valve (ADRI)
17-002	Low Pressure Control
12-005	Oil Access Valve
16-008	Oil Separator
12-015	R-12 Expansion Valve
12-017	R-22 Expansion Valve
12-014	R-500 Expansion Valve
12-016	R-502 Expansion Valve
09-036	Refrigerant In/Out Toggle Switch
09-058	Refrigerant Selector Knob
09-031	Refrigerant Selector Switch

22-001	Refrigerant Sight Glass
09-175	Relay for Tecumseh
09-176	Run Capacitor for Tecumseh
12-009	Solenoid
12-010	Solenoid Coil - 120V
12-032	Solenoid, Air Out
09-178	Start Capacitor for Tecumseh
10-001	Suction Pressure Gauge
09-065	Transformer
09-037	Vapor Oil/Out Toggle Switch

FLOW CHART

Attached.

WIRING DIAGRAM

Attached.

SPECIFICATIONS

Series JV

Dimensions

W-28"/71 cm

D-24"/61 cm

H-60"/152 cm (with casters)

WEIGHT

475 lbs/216 kg (approx)

COMPRESSOR

2 HP

ELECTRICAL

208/230 VAC, 60Hz, 1 PH and 220 VAC, 50 Hz, 1 PH

REFRIGERANTS

R12, R22, R502, R50, R134a

RECLAIM CAPACITY

5 lbs/2.27 kg per minute liquid

Vapor slightly less

STORAGE CAPACITY @ 75 deg F/24 deg. C

90 lbs/41 kg (approx)

PRESSURE GAUGES

Laboratory Quality

IN/OUT, OIL VALVES

3/8"/.95 cm SAE Male Flare

CASTERS

5"/12.7 cm Heavy Duty Ball Bearing

JV 90 Series Design certified by Underwriters Laboratories, Inc. in accordance with ARI-740 1993 for the tabulated characteristics.

ARI-740 1993 Characteristics	12	22	134a	500	502
Vapor Refrigerant Recovery Rate	1.49	1.8	1.7	1.5	2.4
Liquid Refrigerant Recovery Rate	5	4.8	4.7	4.8	5
Final recovery Vacuum- Hg	15	15	15	15	15
Recycle Rate	2.08	2.08	2.77	2.08	2.08

ARI-740 1993 Contaminant Levels

Chloride Ions	Pass	Pass	Pass	Pass	Pass
Acidity-ppm	<0.1	<0.1	<0.1	<0.1	<0.1
Moisture Content-ppm	8.3	6.5	1.8	3.1	3.6
High Boiling Residue-% by Volume	0.005	0.007	<0.01	0.007	0.005
Particulates/Solid	Pass	Pass	Pass	Pass	
Non Condensables-% by Volume	0.81	1.02	0.26	0.24	1.40

UL 1963 Purge Loss/Non Condensables-Less than 5% by weight











