

OPERATING INSTRUCTIONS



Model VR5 REFRIGERANT RECOVERY UNIT

**NATIONAL REFRIGERATION PRODUCTS
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MODEL VR5

For use with all Group III, IV, and V Refrigerants
R12, R134a, R406A, R500, R401A, R409A, R417C, R401B, R419B, R411A, R407D, R22,
R411B, R422E, R502, R427A, R408A, R407C, R402B, R407A, R404A, R402A, R507, R407B,
R410B, R410A

230V, 1.5HP, 60Hz, 20AMPS

The VR5 is designed for commercial installations and recovers both vapor refrigerant and liquid refrigerant using the push-pull method.

For safety reasons it is very important to fill all cylinders by weight in accordance with the cylinder supplier's instructions and ARI Guidelines.

- DO NOT OPERATE THE VR5 UNIT BEFORE READING THE OPERATING INSTRUCTIONS COMPLETELY.
- DO NOT OVERFILL CYLINDERS; CYLINDERS MUST BE FILLED TO A MAXIMUM OF 80% CAPACITY. Use a scale to weigh cylinders.
- DO NOT MIX DIFFERENT REFRIGERANTS IN A CYLINDER. MIXTURES CAN NOT BE SEPARATED.
- ALWAYS WEAR RUBBER GLOVES AND SAFETY GOGGLES WHEN TRANSFERRING REFRIGERANT.
- BEFORE FILLING AN EMPTY CYLINDER, ALWAYS EVACUATE THE CYLINDER TO AT LEAST 1000 MICRONS TO REMOVE NON-CONDENSABLES. NON-CONDENSABLES WILL INCREASE DISCHARGE PRESSURE DRASTICALLY.
- EVACUATE THE VR5 BEFORE YOUR FIRST RECOVERY JOB BY OPERATING THE "PUMP OUT" MODE WITH THE INLET VALVE CLOSED AND THE OUTLET VALVE OPEN TO THE ATMOSPHERE. THEN COMPLETE THE EVACUATION WITH A VACUUM PUMP TO REMOVE ALL THE NON-CONDENSABLE.
- ALWAYS USE A 164 FILTER-DRIER AT THE INLET OF THE VR5 TO PROTECT THE COMPRESSOR, PRESSURE REGULATOR, AND SOLENOID VALVES.
- EVACUATE THE VR5 UNIT AND HOSES BEFORE EACH RECOVERY JOB TO AVOID INTRODUCING NON CONDENSABLES INTO THE RECOVERY CYLINDERS.

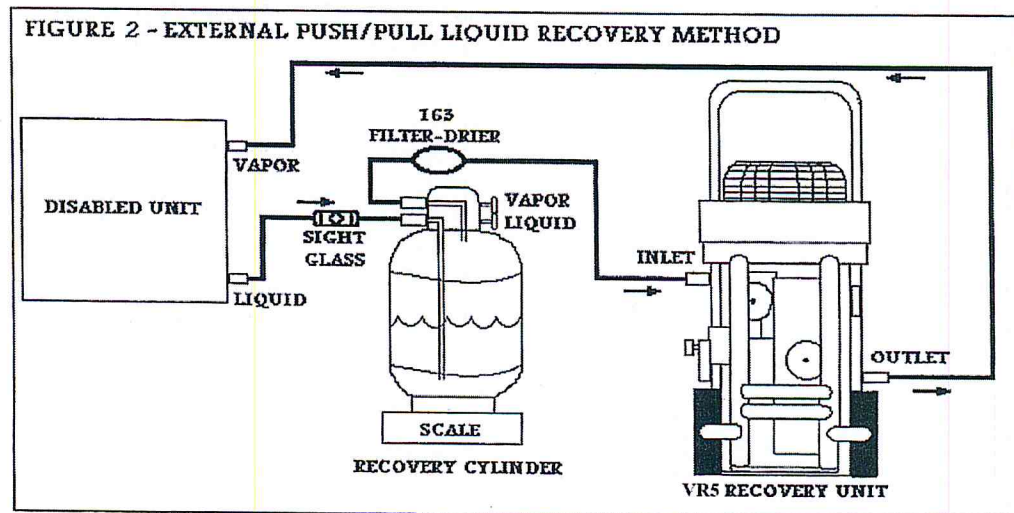
WARNING

1. DO NOT OPERATE THE VR5 UNIT IN "PUMP OUT" MODE WITH THE INLET VALVE OPEN
2. THE COMPRESSOR OF THE VR5 IS FACTORY CHARGED WITH 34oz of 32 VISCOSITY POE OIL.

IMPORTANT NOTES

1. ALL VALVES ON THE VR5 MUST BE IN THE CLOSED POSITION EXCEPT WHEN THE MACHINE IS IN USE. THE VR5 IS JUST LIKE A REFRIGERATION UNIT AND MUST NOT BE OPENED TO THE AIR SINCE MOISTURE WILL DAMAGE THE COMPRESSOR.
2. CONNECT THE VR5 TO A PROPERLY GROUNDED 230 VOLT, SINGLE PHASE, 60 Hz OUTLET. DO NOT USE AN EXTENSION CORD LONGER THAN 25 FEET. THE VOLTAGE DROP WILL DAMAGE THE MOTOR.
3. USE ½" DIAMETER NRP REFRIGERANT HOSES.
4. THE 163 FILTER-DRIER MUST BE CHANGED AFTER RECOVERY FROM A BURNED-OUT SYSTEM. THE FILTER-DRIER MUST BE CHANGED BEFORE TRANSFERING A DIFFERENT REFRIGERANT TO AVOID MIXING. THE FILTER-DRIER MUST BE REPLACED AFTER RECOVERING 200 POUNDS OF REFRIGERANT OR AFTER EACH RECOVERY.
5. THE VR5 UNIT IS SUITABLE FOR RECOVERY OF R12, R22, R500, R502, R134a, R404A, R407C, R410A, AND ALL CLASS III, IV AND V REFRIGERANTS.
6. IT IS VERY IMPORTANT THAT THE OIL LEVEL IN THE COMPRESSOR BE CHECKED BEFORE EACH USE AND BE CLOSELY MONITORED DURING EXTENDED PERIODS OF OPERATION. USE 32 VISCOSITY POE OIL. THE OIL LEVEL SHOULD STAY IN THE SIGHT GLASS.
7. DO NOT ATTEMPT TO SERVICE THE MECHANICAL OR ELECTRICAL COMPONENTS OF THIS UNIT UNLESS YOU ARE THOROUGHLY FAMILIAR WITH PROPER SERVICE PROCEDURES ASSOCIATED WITH REFRIGERATION UNITS AND THEIR ELECTRICAL COMPONENTS. HIGH VOLTAGE IS PRESENT IN THE CONTROL COMPARTMENT AND UNDER NO CIRCUMSTANCES SHOULD SERVICE BE ATTEMPTED WITHOUT FIRST DISCONNECTING THE ELECTRIC PLUG. FAILURE TO DO SO COULD RESULT IN SEVERE INJURY OR DEATH.
8. THE VR5 IS CAPABLE OF SELF-PUMP OUT OF REFRIGERANT. THE SELF-PUMPOUT FEATURE ALLOWS THE REFRIGERANT TRAPPED IN THE CONDENSER COIL AND PIPES OF THE UNIT TO BE SENT TO THE RECOVERY CYLINDER, COMPLETING THE RECOVERY OPERATION.

External Push/Pull Liquid Recovery Method



Since it is faster to recover refrigerant as a liquid than as a vapor the serviceman should remove the liquid first using the push/pull method.

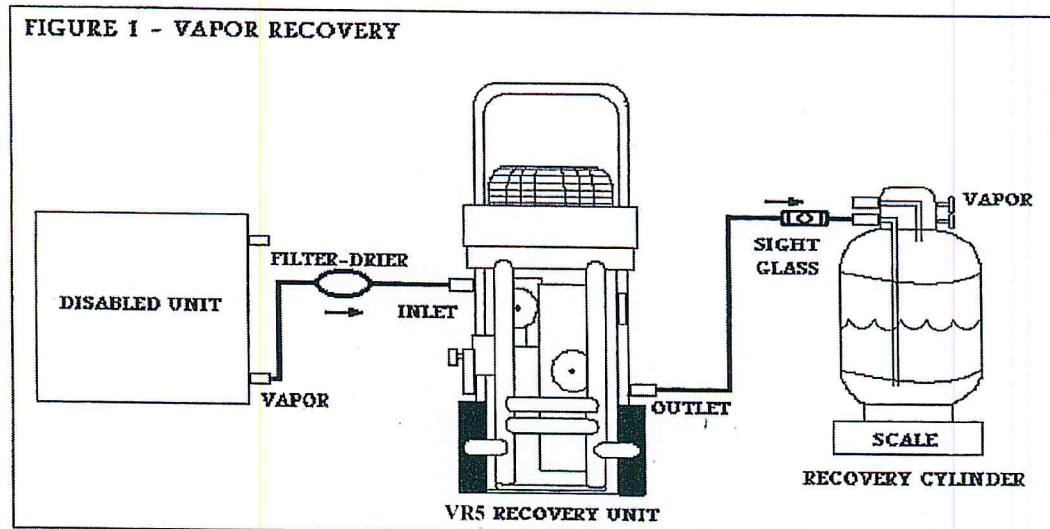
Liquid refrigerant is transferred directly from the disabled unit to the recovery cylinder at a rate of approximately 60 pounds per minute for R22.

The VR5 pulls vapor from the top of the recovery cylinder. It compresses the vapor and pumps it into the disabled unit. This maintains a lower pressure in the cylinder than in the disabled unit, which pulls the liquid refrigerant into the cylinder.

1. Connect the disabled unit, cylinder, and recovery unit as shown in above Figure1. Use a recovery cylinder with two valves. (one for liquid and one for vapor). Before use the Recovery Cylinder must be evacuated with a Vacuum Pump and be under deep vacuum
2. Purge all hoses.
3. Open both valves on the cylinder and both valves on the recovery unit. Recovery Cylinders must always be placed on a scale.
4. Push the switch into "RECOVERY" mode. Then turn power on.
5. Refrigerant liquid can be seen through a sight glass connected to the liquid side of the recovery cylinder.
6. When liquid transfer is complete or the cylinder is 80% full, turn off the recovery unit and close the valves on the cylinder and the recovery unit.

NOTE: In some cases it may not be possible to recover the refrigerant in liquid form. There may not be much liquid refrigerant or it has migrated to another part of the system. In this case the refrigerant will have to be recovered in vapor form.

VAPOR RECOVERY



1. Check the compressor oil level of the VR5 before each use. It should cover half of the sight glass.
2. Make sure the inlet and outlet valves on the VR5 are closed.
3. Connect one side of a hose or manifold to the unit being serviced. Connect the other side to the valve labeled "REFRIGERANT IN" on the VR5.
4. Connect a hose from the valve labeled "REFRIGERANT OUT" on the VR5 to the liquid valve of your recovery cylinder.
5. Purge all the hoses.
6. Open the valve labeled "REFRIGERANT OUT" on the VR5. Open the liquid valve of the recovery cylinder.
7. Plug in the unit to a 230-1-60 Hz outlet and switch to recovery mode and then power on.
8. Slowly open the valve labeled "REFRIGERANT IN".
9. Operate the VR5 until all of the refrigerant is recovered.
10. Turn off the VR5 and close all valves.

PUMP OUT OF REFRIGERANT

When the transferring of refrigerant from the serviced unit is completed, the VR5 can pump out any refrigerant left in its condenser. Since this procedure involves transferring refrigerant directly to a recovery cylinder without the benefit of a condenser, it is necessary to discharge refrigerant into a cool or evacuated recovery cylinder. Attempting to discharge high pressure refrigerant into a warm or nearly full tank may result in very high pressures which can damage the compressor.

VERY IMPORTANT

- NEVER OPERATE THE VR5 UNIT IN PUMP OUT MODE WITH THE INLET VALVE OPEN.
- AFTER "PUMP OUT" A SMALL AMOUNT OF HIGH PRESSURE REFRIGERANT WILL REMAIN IN THE DISCHARGE LINE.

TO "PUMP OUT" the VR5 unit:

1. Close both the valve labeled "REFRIGERANT IN" AND THE VALVE LABELED "REFRIGERANT OUT"
2. Connect a hose from the valve labeled "REFRIGERANT OUT" to the vapor valve of your cylinder.
3. Open the valve labeled "REFRIGERANT OUT"
4. Push the switch into the "PUMP OUT" position.
5. "PUMP OUT" is finished when the vacuum is achieved as shown on inlet gauge. Pump-Out should take approximately 1 minute.
6. Push the power switch into the "OFF" position. Close the valves on the recovery cylinder. Close the valves on the VR5. Remove Hoses. A small amount of high pressure refrigerant will remain in the discharge line of the VR5. Push switch into Recovery position.
7. The VR5 is prepared for the next transfer job. A total evacuation of the unit can only be obtained by using a vacuum pump.

If, by mistake, "PUMP OUT" mode was started instead of recovery and the inlet valve was opened:

1. Turn off the VR5 and close the inlet valve as soon as possible.
2. Close the outlet valve.
3. Obtain an empty, evacuated cylinder and connect it to the outlet valve.
4. Open the outlet valve and discharge refrigerant into the cylinder.
5. Start normal recovery procedure.

CHANGING OR ADDING OIL

Always change the oil in the compressor after recovery from a burn-out system

1. Evacuate the unit by operating it in the "PUMP-OUT" mode.
2. Turn off the unit and close all the valves.
3. Disconnect the unit from the recovery cylinder.
4. Open the discharge valve and turn the switch to "PUMP-OUT" for two seconds (DO NOT STAND IN FRONT OF THE DISCHARGE VALVE).
5. Disconnect the 1/4" flare (cap & core) from the fitting on the left side of the compressor (over the sight glass).
6. Place a container under the compressor oil drain fitting located under the compressor.
7. Remove the 1/4" flare cap and valve core. Drain the oil, and replace the core and the cap.
8. Connect a hose to the fitting on the left side of the compressor (over the sight glass) and place the other end into a container with fresh refrigeration oil (34oz of 32 VISCOSITY POE OIL). Run the compressor until there is a slight vacuum showing on the suction gauge. Allow the oil to flow into the compressor until one quarter of the sight glass is full. Remove the hose from the oil and allow its content to be drawn into the compressor. Repeat if necessary. DO NOT OVERFILL
9. Install the 1/4" flare cap & core in the fitting at the left side of the compressor (over the sight glass).
10. Evacuate the unit by operating it in the "PUMP-OUT" mode with the outlet valve open to the atmosphere.
11. Close the refrigerant outlet valve.

PROCEDURE AFTER TRANSFERRING REFRIGERANT FROM A "BURN-OUT"

1. Drain the VR5 compressor oil and replace with appropriate amount of fresh refrigeration oil Remember to fill the VR5 with oil to the proper level on the sight glass, (half of sight glass).
2. Replace the filter-drier in the suction line.
3. Evacuate the VR5 recovery unit and hoses.

PROCEDURE TO FOLLOW BEFORE TRANSFERRING A DIFFERENT REFRIGERANT

1. To avoid mixing different refrigerants in recovery cylinders always pump out the recovery unit at the end of each transfer operation. This "PUMP-OUT" operation will remove the refrigerant from the condenser and internal piping of the recovery unit.
2. Replace the filter-drier in the suction line before recovering a different refrigerant.
3. To evacuate the recovery unit turn the switch to "PUMP-OUT". Open the discharge valve (DO NOT STAND IN FRONT OF THE DISCHARGE VALVE). Turn the power switch to ON. This will release a small amount of high pressure refrigerant through the discharge valve to the atmosphere. Connect a vacuum pump to the discharge valve and evacuate the Recovery Unit for 10 minutes
4. Mark the refrigerant number on each recovery cylinder at the time of recovery.
5. Remember that mixed refrigerants cannot be separated and that it is expensive to dispose of mixtures.

INSTRUCTIONS FOR HIGH AMBIENT APPLICATIONS

104°F AMBIENT

NRP Recovery Unit Model VR5 has been tested and adjusted to operate in ambient conditions up to 104°F.

The Push-Pull liquid recovery rate will not be affected at temperatures of 104°F ambient. The vapor pumping rate at 104°F will be approximately ¾ pound per minute and will vary with the type of refrigerant being pumped and the suction pressure.

WARRANTY

National Refrigeration Products (NRP) Recovery Equipment is warranted to be free from manufacturing defects. NRP will repair or give credit for repair, at NRP's choice, if any NRP Recovery units or accessories have manufacturing defects. In no event shall NRP be liable for the cost of the labor charges, lost profits, injury to good will, or any other special or consequential damages for defective goods, late delivery, or non-delivery. There are no warranties which extend beyond the description on the face herof, and NRP makes no warranty of merchantability or fitness for specific purpose. Warranty does not cover damage by improper operation or abuse.