Troubleshooting Guide

The following guide will help the installer determine if a problem that would cause a malfunction exists in the system. **If you are experiencing problems in the physical operation of the unit (blower speeds, door operation, etc.), we encourage you to refer to the wiring diagram located in the instruction manual.** Using a continuity or light tester, you can solve many of the simple problems by tracing all connections and testing them individually. If the unit is functioning correctly, but it is not cooling, you can refer to the following guide that will outline the most common problems encountered by installers.

I. Test conditions used to determine system operation:

- **A.** Place temperature probe (thermometer) into center outlet.
- **B.** Connect gauges or service equipment to the high/low charging ports.
- **C.** Place blower fan switch on medium.
- **D.** Close all doors and windows on vehicle.
- **E.** Place shop fan or heavy duty squirrel-cage blower directly in front of the condenser for sufficient airflow.
- **F.** Run engine idle up to 1,500 RPM.

(These test conditions will simulate the effect of driving the vehicle and will give the technician the three critical readings needed to diagnose any potential problems.)

II. Acceptable operating pressure ranges for Vintage Air systems:

A. R-134a type:

1. High-side pressure: 160 to 250 PSI. **NOTE: A general rule of thumb is two times the ambient (daytime) temperature, plus 15 to 20%.**
2. Low-side pressure: 18 to 22 PSI in a steady state.
3. Center duct temperature: 38 to 46° F.

Charge as follows: R134a = 1.8 lbs.
No additional oil is necessary in new Vintage Air supplied compressors

III. Typical problems encountered when charging a system:

A. Noisy Compressor:

1. A noisy compressor is generally caused by overcharging the system, mounting bracket issues, or introducing outside air into the system.
   - **a.** If a system is overcharged, both gauges will register abnormally high readings. Overcharging causes a feedback pressure on the compressor, which results in the compressor rattling or shaking from the increased cylinder head pressures. To correct, the system must be evacuated and recharged to exact weight specifications.

b. If air is introduced into the system during charging, it will introduce moisture that will cause ice to form in the refrigerant flow, and will cause the compressor to rattle or growl under acceleration. To correct, the system must be evacuated and recharged to exact weight specifications, making sure to bleed any air from the lines when introducing the refrigerant.

B. System not cooling:

1. There are a number of factors that can cause the cooling to be less than optimal.

   a. **Improper charge in system:** Improper charging is the number one cause of system failure. Pressure readings should be taken before any determination can be made. High or low readings in direct proportion to the normal pressures (See Section II) will tell you if the charge is too high or too low. Excessive system pressure can also cause vibrations and whistling noises from the expansion valve and refrigerant lines.

   b. **Heater control valve installation:** Failing to install the heater control valve in the correct hose will allow water to collect in the unit. **NOTE: The heater control valve is a directional valve. Make sure the water flow follows the direction of the arrow.** As the engine heats up, the water transfers heat to the coil, thus overpowering the A/C coil. A leaking or faulty valve will have a more pronounced effect on the unit's cooling ability. Installing the valve improperly (such as having the flow reversed) will allow water to flow through, thus inhibiting cooling. Check for heat transfer by disconnecting the hoses from the system completely. By running down the road with the hoses looped back through the motor, you eliminate the possibility of heat transfer to the unit. Move or replace the valve if necessary.

   c. **Evaporator freezing:** Freezing can occur both externally and internally on an evaporator core.

      i. **External freeze up** occurs when the coil cannot effectively displace the condensation on the outside of the fins, and the water forms ice (the evaporator core resembles a block of solid ice). It restricts the flow of air that can pass through it, which gives the illusion of the A/C not functioning. The common cause of external freezing is the setting of the thermostat and the presence of high humidity in the passenger compartment. All door and window seals should be checked in the event of constant freeze up. A thermostat is provided with all units to control the cycling of the compressor. The gas-filled probe will often come coiled up and must be installed into the coil through the access hole located in the top of each unit. **NOTE: The rotary-type thermostat should be set all the way clockwise and turned back counterclockwise an eighth of a turn. The lever-type thermostat should be backed away from the cold position slightly.**

ii. **Internal freeze up** occurs when there is too much moisture inside the system. The symptoms of internal freeze up often surface after extended highway driving. The volume of air stays constant, but the temperature of the air gradually rises. When this freezing occurs, the low side pressure will drop, eventually going into a vacuum. At this point, the system should be checked by a professional who will evacuate the system and change the drier.

d. **Inadequate airflow to condenser:** The condenser works best in front of the radiator with a large supply of fresh air. Abnormally high pressure will result from improper airflow. Check the airflow requirements by placing a large-capacity fan in front of the condenser and running cool water over the surface. If the pressure drops significantly, this indicates the need for better airflow.

e. **Incorrect or inadequate condenser capacity:** Incorrect condenser capacity will cause abnormally high head pressure. Vintage Air recommends at least 300 cubic inches of fin area on a double-pass (two rows of tubes) condenser. This can be measured by multiplying (Height x Width x Thickness). This rule applies only to tube-and-fin style condensers. The efficiency of the SuperFlow™ design allows the use of a smaller area. A quick test that can be performed is to run cool water over the condenser while the system is operating. If the pressure decreases significantly, it is likely an airflow or capacity problem.

f. **Expansion valve failure:** An expansion valve failure is generally caused by dirt or debris entering the system during assembly. If an expansion valve fails, it will be indicated by abnormal gauge readings.

   i. A valve that is blocked will be indicated by the high side being unusually high, while the low side is unusually low, with the low side even going into a vacuum in some cases.

   ii. A valve that is stuck open will be indicated by both the high- and low-side pressures rising to unusually high readings, seeming to move toward equal readings on the gauges.

g. **Restrictions in the system:** A restriction in the cooling system will cause abnormal readings on the gauges. A high-side restriction (between the compressor and the drier inlet) will be indicated by the discharge gauges reading excessively high.

These simple tests can be performed by a local shop, and can help determine the extent of the systems problem. **If further assistance is needed, our tech line can be reached at (210) 654-7171.** If you have performed the initial tests, please document the results and readings before calling our technical line, as it will help us solve the problem more quickly.