

# Air Conditioner and Heat Pump

## Installation Instructions

**Thermo Expansion Valve Kit 918477 (1.5 - 3.0 ton AC or HP)**  
**918478 (3.5 - 5.0 ton AC or HP)**

### INTRODUCTION

These instructions are primarily intended to assist qualified individuals experienced in the proper installation of heating and/or air conditioning appliances. Before beginning the installations read these instructions thoroughly and follow all warnings and cautions in the instructions and on the unit. Improper installation, service, adjustment, or maintenance can cause explosion, fire, electrical shock, or other conditions which may result in personal injury or property damage.

The Thermo Expansion Valve Kit is designed for use in air conditioner and heat pump systems. The kit consists of a thermo expansion valve with an external equalizer, a copper fitting assembly for the external equalizer, and two mounting hose clamps. The kit is intended to replace the fixed orifice in the refrigeration system. The thermo expansion valve will then adjust the refrigerant flow by monitoring the superheat of the system.

### INSTALLATION SEQUENCE

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#### **WARNING:**

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**To avoid risk of electric shock, personal injury, or death, disconnect electrical power to the unit before performing any maintenance or service. The unit may have more than one electric power supply. See the manufacturer's instructions for more installation information.**

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The installation sequence is as follows:

- 1) Read these installation instructions** completely before proceeding.
- 2) Disconnect all power** to the unit.
- 3) Recover refrigerant:** Before the components can be added to the system, all refrigerant in the system must be recovered.
- 4) Remove cover panel from indoor unit:** This will expose the 'A' coil and the copper refrigerant tubing.
- 5) Remove fixed orifice:** After the refrigerant has been recovered the fixed orifice needs to be removed from the header of the distributor. Unscrew the swivel cap and remove the orifice.

**Note:** It is a good practice to put a drop of refrigerant oil on each threaded connection.

- 6) Install thermo expansion valve:** Add the thermo expansion valve to the 3/8" liquid line between the distributor and the swivel cap. Attach the swivel cap onto the inlet of the valve and attach the distributor header to the outlet of the valve. Be sure the gasket in the swivel cap is in place then tighten the joints so they do not leak.
- 7) Modify close off plate:** Bend back a section of the top right corner of the tube close off plate found on the coil box. This will allow the external equalizer and the sensing bulb to be attached to the refrigerant lines outside of the coil box.
- 8) Install external equalizer:**
  - Before cutting the copper tubing be sure to position the copper fitting assembly the correct distance from the close off plate. The copper fitting must be close enough to the indoor coil so that the external equalizer tube from the valve can reach the fitting but still allow enough room for the sensing bulb to fit flush against the suction line without hitting the braze joint of the external equalizer.

- Position the copper fitting assembly so that the external equalizer (the ¼" access fitting) will not siphon oil from the suction line.

Cut the suction line so a 2" gap exists where the copper fitting assembly, which is provided with the kit, can be installed. Braze the copper fitting assembly between the cut pieces of the suction line, (depending on the suction line diameter two reducers may need to be added before brazing each side of the copper assembly into place). Bring the external equalizer fitting from the thermo expansion valve through the bent corner on the close off plate to the ¼" fitting on the copper assembly and screw into place.

### 9) Install sensing bulb:

- For proper operation the sensing bulb must be located upstream from the external equalizer.
- See the valve manufacturer's instructions for more information on proper sensing bulb locations.
- Be sure that the sensing bulb is flush against the suction line for optimum heat transfer.

Try to avoid attaching the sensing bulb to the lowest part of the suction line where condensate may accumulate. For a horizontal line the bulb location should **not** be at 12 or 6 o' clock on the suction line. The best location is at 4 or 8 o' clock. The sensing bulb should not be located on a vertical section of line set.

The sensing bulb will attach outside of the coil cabinet on the suction line just upstream from

the cut for the external equalizer assembly. The sensing bulb capillary tube will need to pass through the bent corner on the close off plate to get outside the coil cabinet. Using the two hose clamps provided with the kit attach the sensing bulb to the suction line. Once the sensing bulb is installed be sure to wrap it with a material such as tar tape or another insulating material.

**Note:** If the system has been opened for an extended period of time it is good practice to install an appropriately sized liquid line filter drier. (Be sure to remove the old filter drier if installed).

- 10) Leak check:** Leak check the system to ensure that the lineset and the brazed joints are free from leaks.
- 11) Evacuation:** Evacuate the system of moisture and non-condensables to prevent low-efficiency operation and/or damage to the unit. The suggested range of evacuation is 250 – 500 microns.
- 12) Charge refrigerant:** The best method for charging a unit with this thermo expansion valve is by measuring the temperature and pressure of the refrigerant after it goes through the compressor. The liquid line temperature/pressure numbers should be at least 8 to 10 degrees F below the saturation point of the refrigerant; this is charging by subcooling.
- 13) Install the cover panel** and apply power to the unit. The system is now ready for operation.

