

# ACCESSORY KIT INSTALLATION MANUAL

**THERMAL EXPANSION VALVE KITS R-22 – (S1-1TVM2\*\*, 1TVM7\*\*) & R-407C – (S1-1TVM2\*\*) R-410A – (S1-1TVM4\*\*, S1-1TVM9\*\*, S1-1TVMBA2, S1-1TVMBB2, S1-1TVMBC2, S1-1TVMBD2, S1-1TVMBE2, S1-1TVMBF2, S1-1TVMBG2, S1-1TVMBH2) FOR USE WITH MODELS: COILS - FC, MC, PC, UC, HD, HC, G4FA, G4FD & AIR HANDLERS - AH, AV, F\*FP, RFCX\*E1, & RTCX\*P1**

## GENERAL INFORMATION

This thermal expansion valve (TXV) with internal check valve is to be used with flex coils for models listed above. This kit is required to provide overall rated system performance improvement. The kit can be applied to the listed indoor (ID) coils and air handlers, both for heat pump and cooling applications.

The kit consists of a bolt-on TXV, 2.5 feet of thermal insulation, bulb straps or bulb clamp and this instruction.

When a TXV kit is installed, a hard start kit may be required. Consult your outdoor (OD) Tabular Data Sheet

Refer to Tabular Data Sheet for the specific Model/TXV match-up.

- 1TVM2, 1TVM7 series TXV kits are for R-22 AC and HP.
- 1TVM2 series TXV kits are for R-407C AC and HP.
- 1TVM4, 1TVM9, 1TVMB series TXV kits are for R-410A AC and HP.

## INSTALLATION

To install the TXV, use the following steps. The coil may have to be pulled out of the casing for installation access.

### ⚠ WARNING

#### COIL UNDER PRESSURE.

*The ID coil is under an inert gas holding charge. Relieve pressure by depressing Schrader stem.*

1. Relieve the holding charge by removing the Schrader valve from the suction line stub out on the coil.
2. Loosen and remove distributor cap seal.

### ⚠ CAUTION

*Do not overtorque. Do not use slip joint pliers. This will distort the aluminum distributor and the brass fitting (potentially causing leaks).*

3. Install the TXV on the distributor assembly with supplied fittings. Orient the TXV as shown in Figure 1. Hand tighten, and tighten an additional 1/4 turn to seal. Do not over-tighten fittings.
4. Install the liquid line to the thermal expansion valve with fitting supplied with the liquid line. Hand modify the liquid line to align with casing opening. Hand tighten the liquid line, and tighten an additional 1/4 turn to seal.
5. Align the suction and liquid line sets to the suction and liquid coil tubing.

6. Braze the line set to the coil.
7. Install the TXV equalizer line into the vapor line. Hand tighten the 1/4" SAE nut to the schrader fitting, and tighten an additional 1/3 turn to seal.

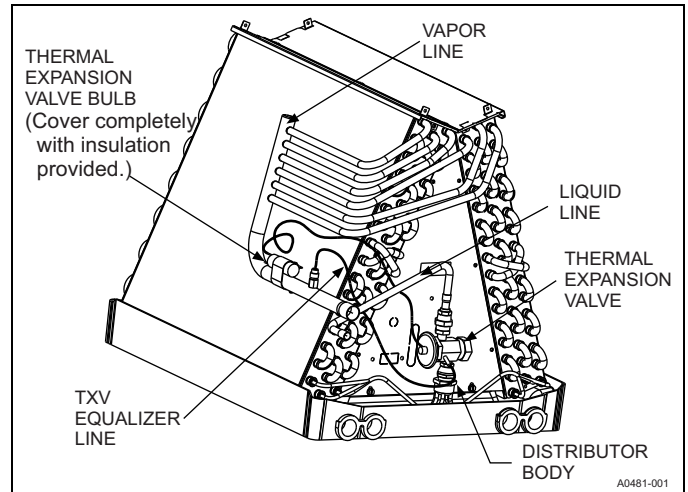


FIGURE 1: Kit Installation in System

8. Install the TXV bulb to the vapor line near the equalizer line, using the bulb clamp(s) furnished with the TXV assembly kit. Ensure the bulb is making maximum contact. See Figures 2, 3, and 4 for clamp assembly of the 1TVM valve temperature bulb.
  - a. Install the bulb on the suction line near the equalizer line with the bulb horizontal to the suction line. On a suction line under 7/8" Outside Diameter (O.D.), install the bulb on top of the line as shown in Figure 2. On a suction line 7/8" O.D. or larger, install the bulb at about the 2 or 10 o'clock position as shown in Figures 3 or 4.
  - b. If bulb installation is made on a vertical run, ensure that the bulb is a minimum of 8 inches (23.3 cm) away from elbow coming out of the coil. Position the bulb with the tail of the bulb at the top, so that the bulb acts as a reservoir as shown in Figure 2.
  - c. Bulb should be insulated using thermal insulation provided to protect it from the effect of the surrounding ambient temperature. Cover bulb completely to insulate from air-stream.

## ⚠ CAUTION

Dry nitrogen should always be supplied through the tubing while it is being brazed, because the temperature is high enough to cause oxidation of the copper unless an inert atmosphere is provided. The flow of dry nitrogen should continue until the joint has cooled. Always use a pressure regulator and safety valve to insure that only low pressure dry nitrogen is introduced into the tubing. Only a small flow is necessary to displace air and prevent oxidation.

## IMPORTANT

All connections to be brazed are copper-to-copper and should be brazed with a phosphorous-copper alloy material such as Silfos-5 or equivalent. DO NOT use soft solder.

Nitrogen can be introduced through the Schraeder access (located at the OD unit connection of the refrigerant line). The Schraeder core can be removed before connecting the source of nitrogen, but must be reinstalled prior to the evacuation and charging of the refrigerant lines and ID coil.

9. Leak check refrigerant lines and ID coil connections. If leak free, remove leak check charge, reinstall any Schraeder cores that were removed from the OD unit and evacuate refrigerant lines and ID coil. Evacuate through the Schraeder access valves of the liquid and vapor service valves on OD unit.

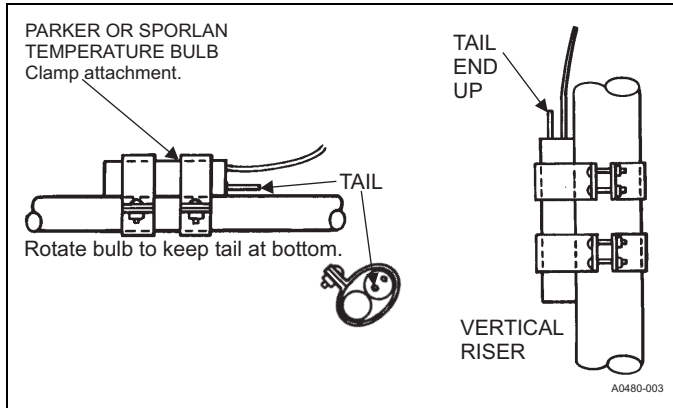


FIGURE 2: Temperature Bulb on Line Smaller than 7/8"

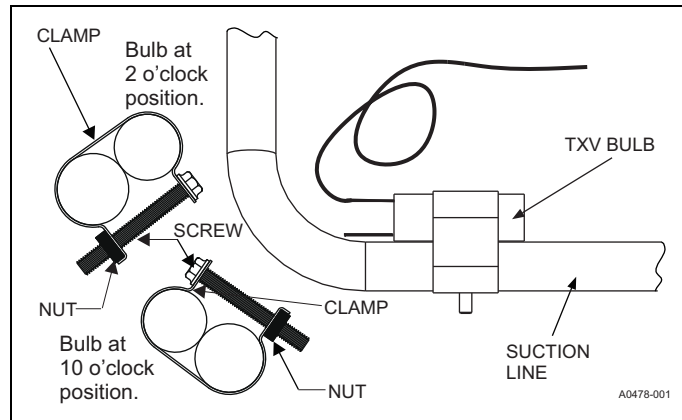


FIGURE 3: Temperature Bulb on 7/8" Line

10. After the interconnecting refrigerant lines, the TXV assembly and the ID coil have been evacuated, open the liquid and vapor line valves at the OD unit to release the refrigerant charge into the complete system. Refer to the proper procedure for opening these valves in the OD unit installation instructions.

## NOTICE

The OD unit factory refrigerant charge includes the charge for 15 feet of interconnecting vapor and liquid lines. If interconnecting lines are longer than 15 feet, additional charge must be added for the length.

11. Refer to "Refrigerant Piping Guide" for line sets over 7.5 ft. Refer to the OD unit installation instructions for the list of required charges per foot in the liquid and vapor lines.

## NOTICE

Some ID coil matches may require additional charge. The additional charge should be introduced into the system by weighing the charge in.

12. Refer to the OD unit installation instruction for the matching ID coil charge.

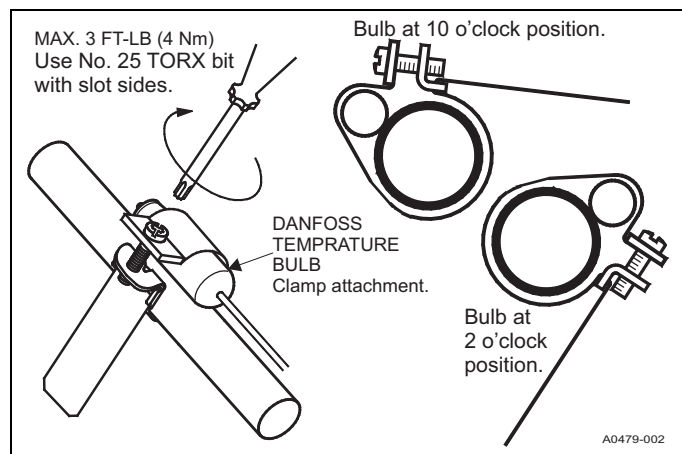


FIGURE 4: Temperature Bulb on Line Larger than 7/8"