**BD Series (Bidirectional flow design meets the bidirectional usage requirements for heat pump systems)**

The BD Series is a thermostatic expansion valve that is designed to meet the bidirectional requirements for heat pump systems. This TXV is used to adjust the refrigerant supply volume in the evaporator by sensing the superheat degree of the evaporator outlet through a thermal sensing bulb and external (internal) balance.

## Features

- Adjustable superheat degree design
- Power head uses continuous laser welding, providing high welding strength and a long diaphragm life
- Available MOP function
- Rare hysteresis and good adjustment performance
- Balanced port design for bidirectional throttling
- Standard capillary tube length: 60 in. (1.5 m)

## Operating Conditions

- Applicable refrigerants: R410A, R22, R134A, R404A, R507, R290 and R407C, etc.
- Max working pressure: 667 psi (4.6 MPa)
- Medium temperature range: -40°F to 158°F (-40°C to 70°C)
- Ambient temperature range: -22°F to 131°F (-30°C to 55°C)
- Maximum thermal bulb temperature: 212°F (100°C)
- Maximum valve body temperature: 230°F (110°C)
- Static state superheat degree adjustment change: 0 K to 8 K
- Static state superheat degree setting: 4 K
- Relative humidity: 95%

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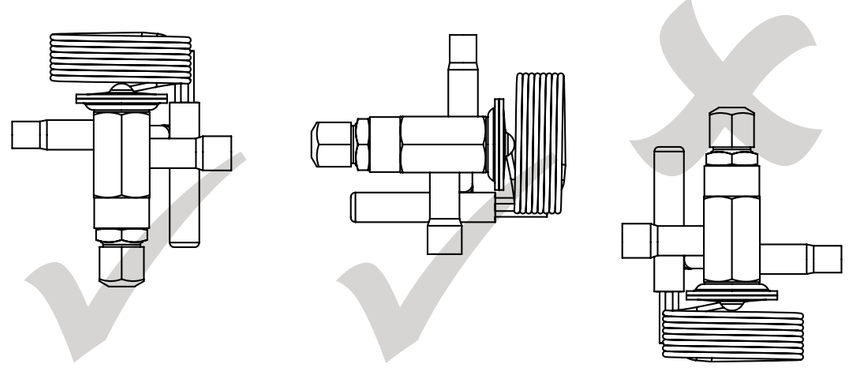
# Installation Guide

M, CV and BD Series
Thermostatic Expansion Valves

## 1. TXV Placement

When placing the TXV into the system, ensure it is upright or on the side. Do **NOT** place the valve upside-down. See the diagram below.



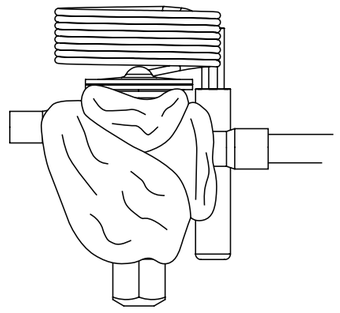
## 2. Brazing Installation

a. Before brazing, wrap a wet rag around the valve to keep the internals cool.

b. During the brazing process, uncoil the sensing bulb and move it away from the valve.

c. To ensure a clean environment, flow nitrogen through the valve. This will help to prevent oxidation.

d. We recommend using a 15% silver brazing alloy. During the brazing process, be conscious of where the torch is pointed. Do not point the torch towards the valve body.



### 3. Threaded Connections

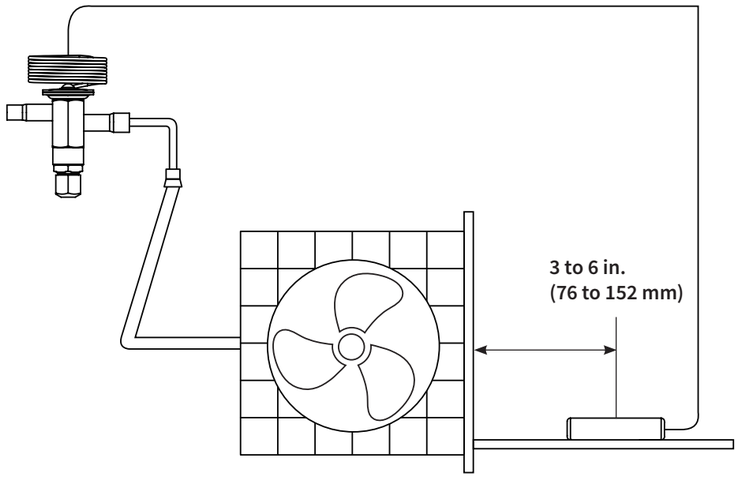
When working with TXVs that have threaded connections, use a torque wrench to ensure they are tightened properly. Overtightening the connections can lead to leaks.

**Inlet / Outlet:** 18 to 26 ft-lbs (25 to 35 N-m)

**Equalizer:** 9 to 12 ft-lbs (12 to 17 N-m)

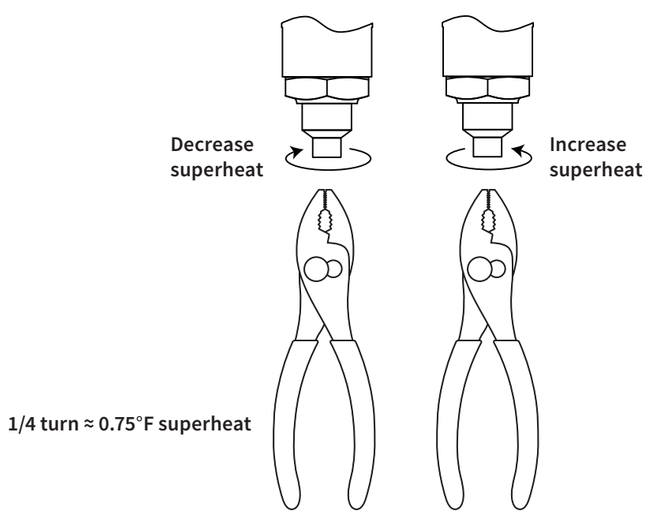
### 4. Sensing Bulb Installation

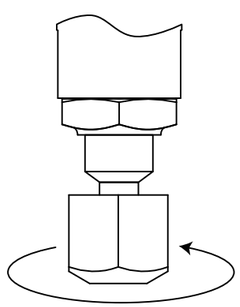
Before attaching the sensing bulb to the suction line, clean the desired section thoroughly. The bulb should be placed horizontally and no further than 6 inches away from the evaporator. Make sure to never place a flame near the bulb. This can cause damage to the valve by over-pressurizing the refrigerant.




### 5. Adjustable TXV's

To adjust the superheat setting on adjustable TXVs, simply turn the adjustment knob. Clockwise will decrease and counterclockwise will increase the superheat. To avoid over-adjustments, wait 10 minutes, then reevaluate if the desired superheat setting has been achieved.




### M Series (Compact product design meets the requirements of small refrigeration equipment)

The M Series is a thermostatic expansion valve that is designed to meet the requirements of small refrigeration equipment. This TXV is used to adjust the refrigerant supply volume in the evaporator by sensing the superheat degree of the evaporator outlet through a thermal sensing bulb and external (internal) balance.

#### Features

- Two optional designs: adjustable superheat degree (straight-way style) and non-adjustable (right-angle style)
- Compact structure of valve body
- Power head uses continuous laser welding, providing high welding strength and a long diaphragm life
- Available BP capability, 15% or 30%
- Available MOP function
- Optional imported filter
- Connection: Weld
- Standard capillary tube length: 30 in. (0.75 m)

#### Operating Conditions

- Applicable refrigerants: R134A, R404A, R407C, R22, R290, R448A and R449A, etc.
- Max working pressure: 493 psi (3.4 MPa)
- Medium temperature range: -40°F to 158°F (-40°C to 70°C)
- Ambient temperature range: -22°F to 131°F (-30°C to 55°C)
- Maximum thermal bulb temperature: 212°F (100°C)
- Maximum valve body temperature: 230°F (110°C)
- Static state superheat degree adjustment change: 0 K to 8 K
- Static state superheat degree setting: 4 K
- Relative humidity: 95%

### CV Series (Built-in check valve design eliminates the need for a parallel check valve in the system)

The CV Series is a thermostatic expansion valve with built-in check valve. This eliminates the need for a separate check valve in the system. This TXV is used to adjust the refrigerant supply volume in the evaporator by sensing the superheat degree of the evaporator outlet through a thermal sensing bulb and external (internal) balance.

#### Features

- Two optional designs: adjustable and non-adjustable structure
- Power head uses continuous laser welding, providing high welding strength and a long diaphragm life
- Available BP capability
- Available MOP functionality
- Built-in check valve
- Standard capillary tube length: 60 in. (1.5 m)

#### Operating Conditions

- Applicable refrigerants: R410A and R22, etc.
- Max working pressure: 667 psi (4.6 MPa)
- Medium temperature: -40°F to 158°F (-40°C to 70°C)
- Maximum thermal bulb temperature: 212°F (100°C)
- Maximum valve body temperature: 230°F (110°C)
- Static state superheat degree adjustment change: 0 K to 8 K
- Static state superheat degree setting: 4 K
- Ambient temperature: -22°F to 131°F (-30°C to 55°C)
- Relative humidity: 95%