

## OVERVIEW

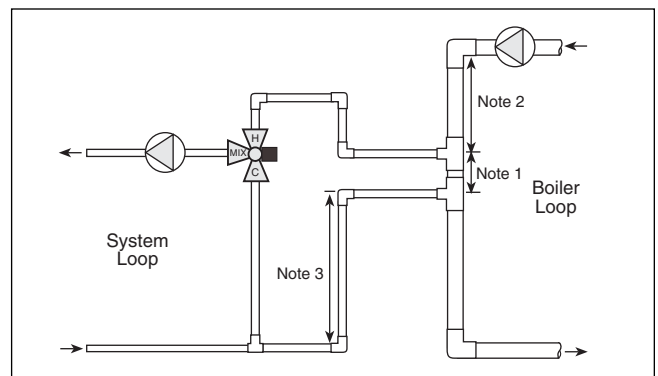
### 5000 Series Mixing Valve

The 5000 Series Mixing Valve is a dual purpose mixing or diverting valve. It is ASSE 1017 approved, providing shut-off reliability on either a hot or cold water supply failure. The high flow and low headloss characteristics make the 5000 Series ideal for domestic water, radiant applications, installations with large variations in flow rate and supply conditions, and installations requiring tightly controlled water temperature. The valve's unique design and advanced thermostatic element ensures a stable mixed water temperature throughout the extended 85°F - 150°F range. The 5000 Series provides fail-safe security and the ultimate performance in a mixing valve.

## DESIGN

When using a 5000 Series Mixing Valve for radiant injection mixing, the following piping requirements must be considered for proper operation.

1. In order to hydraulically isolate the boiler loop from the injection or system loop primary/secondary piping must be used. There must be no more than 4 pipe diameters between the tees in the boiler loop (Note 1).
2. There must be at least 6 pipe diameters of straight pipe on either side of the tees (Note 2) in order to prevent the momentum of water in the boiler loop from pushing flow through the injection loop.
3. There should be a minimum of 1 foot drop on the return pipe of the injection loop, in order to create a thermal trap (Note 3) and prevent unwanted heat transfer.



## VALVE SIZING AND SELECTION

### Performance

In order to properly size the 5000 Series Mixing Valve for radiant injection mixing, follow the design procedure below:

1. Determine the design radiant heating load.
2. Determine the design boiler supply temperature.
3. Determine the radiant system return temperature which is based on the design temperature drop across the radiant system.
4. Determine the design injection flow rate using the following equation:

$$\text{Design Injection Flow Rate (US GPM)} = \frac{\text{Design Radiant Heating Load (BTU/hr)}}{500 \times (\text{Boiler Supply} - \text{Radiant System Return})}$$

5. From the 2-Way Cv chart below, select the valve size with the closest Cv value to the injection flow rate calculated in step 4. Do not size the 5000 Series Mixing Valve based solely on pipe size.

5000 Series: Cv	
Size	Cv
1/2"	3.3
3/4"	3.5
1"	3.8

### Features:

- Fail-safe on hot or cold supply failure
- Delivers stable mixed water temperature
- ASSE 1017 certified
- High flow
- Low headloss
- Dual purpose mixing or diverting valve
- Extended mix temperature range of 85°F - 150°F
- Ideal for domestic water and radiant applications
- Lockable handle
- Available 1/2", 3/4", 1"

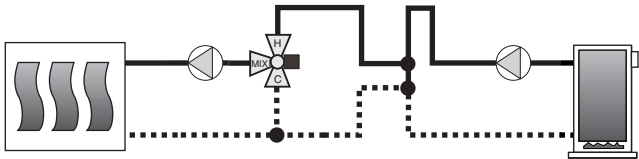
### 5000 Mixing Valve Selection

Select the 5000 Mixing Valve based on the pressure drop chart below.

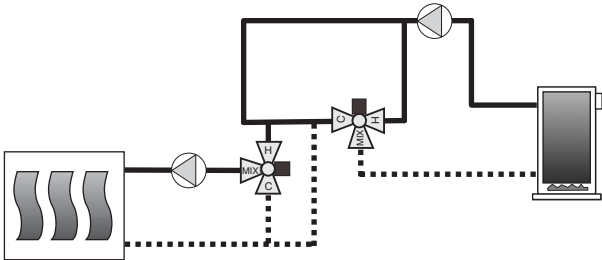
Flow	5000 Series Mixing Valve Pressure Drop					
	1/2" 5002-C1 (Cv = 3.3)		3/4" 5003-C1 (Cv = 3.5)		1" 5004-C1 (Cv = 3.8)	
	PSI	Ft Head	PSI	Ft Head	PSI	Ft Head
GPM						
1/2	0.02	0.05	0.02	0.05	0.02	0.04
1	0.09	0.21	0.08	0.19	0.07	0.16
1 1/2	0.21	0.48	0.18	0.42	0.16	0.36
2	0.37	0.85	0.33	0.75	0.28	0.64
4	1.47	3.39	1.30	3.01	1.11	2.56
6	3.31	7.64	2.94	6.79	2.50	5.76
8	5.88	13.58	5.22	12.07	4.43	10.24

### INSTALLATION

#### Primary / Secondary Installation

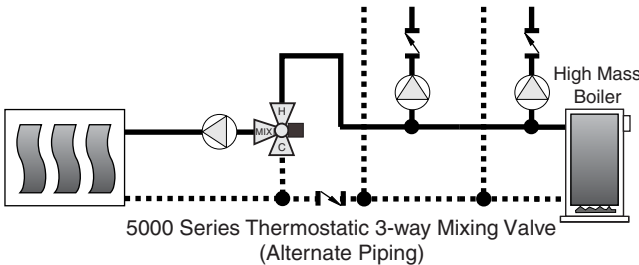


5000 Series Thermostatic 3-way Mixing Valve



5000 Series Thermostatic 3-way Mixing Valve

#### Low Temperature or Radiant Installation



5000 Series Thermostatic 3-way Mixing Valve  
(Alternate Piping)

## Radiant Made Easy™

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