HEAT-TIMER® CORPORATION

# 2-WAY AND 3-WAY MOTORIZED VALVES FOR STEAM, VACUUM AND HOT WATER APPLICATIONS


## VALVE AND ACTUATOR FEATURES

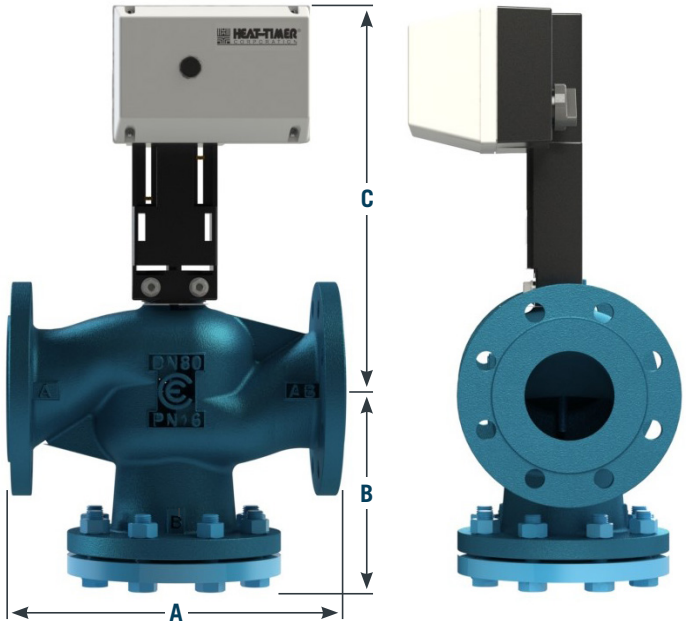
- Valve Sizes range from 2½ inch to 8 inches
- 2-Way and 3-Way Single Seated and 2-Way Double Seated Configurations
- ON/OFF or Modulating—Floating Signal Actuators
- Complete Valve Assembly includes Valve Body, Actuator and 24V 40VA Transformer
- Can be mounted on horizontal or vertical piping
- Leakage is less than 0.03% of full flow per EN1349 Standard
- Designed for Steam, Vacuum and Hot Water Applications
- Floating 24V Actuators with and without Valve position feedback
- Maintenance Free Multi Stack Stem Packing provides Service Longevity

20 New Dutch Lane, Fairfield, NJ 07004 | Phone: 973-575-4004 | Fax: 973-575-4052 | www.heat-timer.com

## 2-WAY STEAM APPLICATION VALVES—BALANCE PLUG/DOUBLE SEATED

**High Pressure Steam Heating.** 2-way double seated or balanced valves can turn on or off the flow of steam from the boiler or other sources in a steam distribution system greater than 15 PSI where the maximum operating pressure is high and the allowable leakage is low.

**Advantage.** The unique balance plug valve design and the double seated valve is more suitable in applications where the system pressure and the differential pressure are both high. Typical application include high pressure steam in district heating, boiler supply water and steam heating.



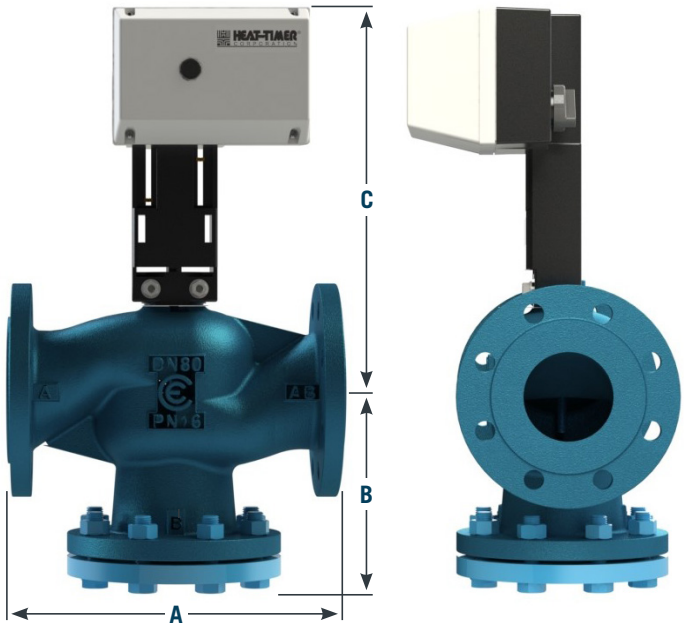

| VALVE SIZE | PART NUMBER | PORT | FLOW CV RATING | DIMENSIONS—INCHES | | | SHIPPING WEIGHT LBS | MOTOR SPEED APPROXIMATE MINUTES |
|---|---|---|---|---|---|---|---|---|
| | | | | A | B | C | | |
| 2 ½” | 928072-50 | Balanced | 73 | 11.4” | 6.9” | 13.5” | 66 | 2 |
| 3” | 928073-00 | Balanced | 115 | 12.2” | 7.3” | 13.9” | 83 | 2 |
| 4” | 928074-00 | Balanced | 150 | 13.8” | 8.1” | 14.4” | 128 | 2 |
| 5” | 928075-00 | Balanced | 231 | 15.7” | 10.0” | 15.3” | 162 | 2 |
| 6” | 928076-00 | Balanced | 347 | 18.9” | 10.8” | 16” | 205 | 2 |
| 8” | 928078-00 | Double seated | 578 | 23.6” | 10.8” | 23.4” | 400 | 2 |

## SPECIFICATIONS

| | |
|---|---|
| Valve Body Material | ANSI B16.1 Iron |
| Valve Connection | 125 lb ANSI Flange |
| Temperature Rating | 14°F to 302°F (-10°C to 150°C) |
| Stem/Plug Material | Stainless/Brass |
| Seat Closure | Double or Balance Port ANSI \| Class IV Shutoff |
| Packing Material | Long Life EDPM Rubber |
| Packing Temp Rating | 302°F (150°C) |
| Maximum Operating Pressure at 302°F | 55 PSI |

# 2-WAY VACUUM STEAM APPLICATION VALVES—BALANCE PLUG/DOUBLE SEATED

**Vacuum Steam Heating.** 2-way valves can modulate the flow of sub-atmospheric steam from the boiler or other source into a steam distribution system. Actuators are equipped with a position feedback signal. A typical example of this type of application would be using vacuum steam to heat radiators in a building. When the control, such as the SRC Platinum, calls to put heat into the system, the 2-way valve partially modulates open and steam flows into the radiators based on the outdoor air temperature. Then when the control determines that sufficient heat has entered the radiators, the control marginally closes the 2-way valve reducing the flow of steam.




| VALVE SIZE | PART NUMBER | PORT | FLOW CV RATING | DIMENSIONS—INCHES | | | SHIPPING WEIGHT LBS | MOTOR SPEED APPROXIMATE MINUTES |
|---|---|---|---|---|---|---|---|---|
| | | | | A | B | C | | |
| 2 ½” | 928072-50 | Balanced | 73 | 11.4” | 6.9” | 13.5” | 66 | 2 |
| 3” | 928073-00 | Balanced | 115 | 12.2” | 7.3” | 13.9” | 83 | 2 |
| 4” | 928074-00 | Balanced | 150 | 13.8” | 8.1” | 14.4” | 128 | 2 |
| 5” | 928075-00 | Balanced | 231 | 15.7” | 10.0” | 15.3” | 162 | 2 |
| 6” | 928076-00 | Balanced | 347 | 18.9” | 10.8” | 16” | 205 | 2 |
| 8” | 928078-00 | Double seated | 578 | 23.6” | 10.8” | 23.4” | 400 | 2 |

## SPECIFICATIONS

Valve Body Material — ANSI B16.1 Iron

Valve Connection — 125 lb ANSI Flange

Temperature Rating — 14°F to 302°F (-10°C to 150°C)

Stem/Plug Material — Stainless/Brass

Seat Closure — Single Seated ANSI | Class IV Shutoff

Packing Material — Multi Packed Long Life EDPM Rubber

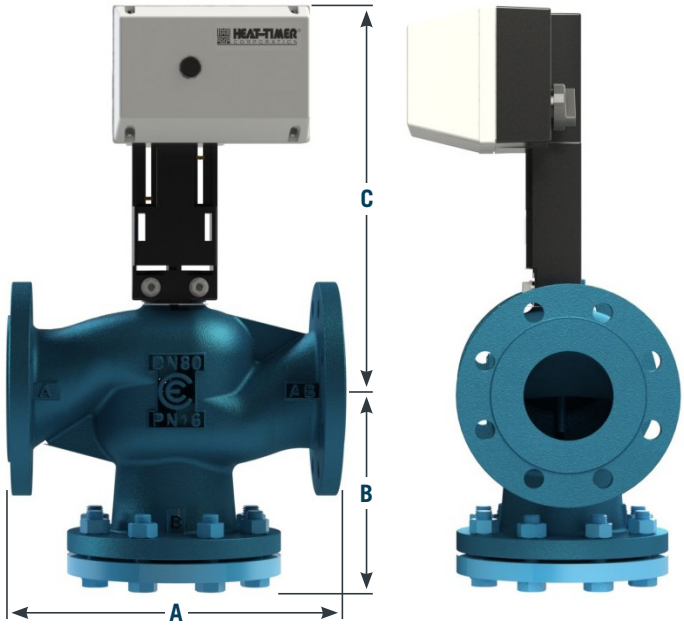
Packing Temp Rating — 302°F (150°C)

Maximum Operating Pressure at 302°F — 55 PSI

## 2-WAY STEAM APPLICATION VALVES—SINGLE SEATED

**Low Pressure Steam Heating.** 2-way valves can turn on or off the flow of steam from the boiler or other sources into a steam distribution system under 15 PSI. A typical example of this type of application would be using steam to heat radiators in a one or two pipe steam heated building using the MPC Platinum control.

**Steam To Hot Water Heat Exchanger.** 2-way valves can be used to control the amount of steam entering a system. A typical example of this type of application would be to regulate the amount of steam entering a heat exchanger to maintain the hot water output temperature using the HWR Platinum control. When the load changes, the valve is signaled to change the amount of steam entering the heat exchanger.



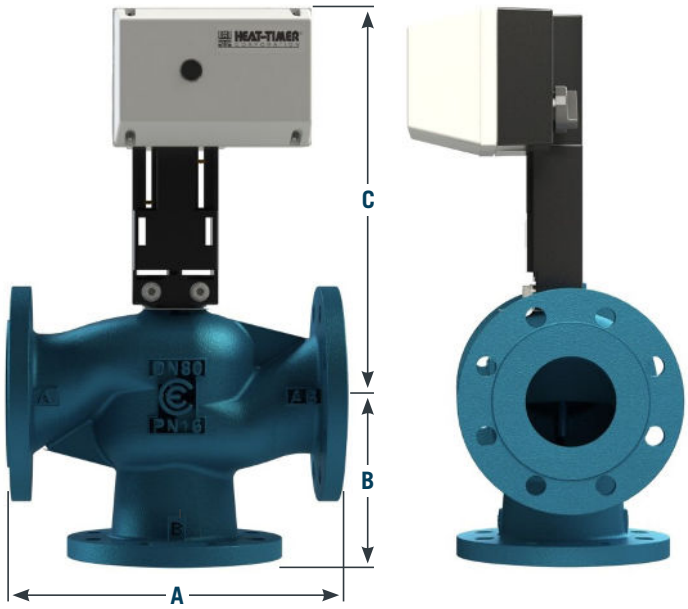

| VALVE SIZE | PART NUMBER | FLOW CV RATING | CLOSE OFF PRESSURE RATING | DIMENSIONS—INCHES | | | SHIPPING WEIGHT LBS | MOTOR SPEED APPROXIMATE MINUTES |
|---|---|---|---|---|---|---|---|---|
| | | | | A | B | C | | |
| 2 ½” | 928272-50 | 73 | 62 | 11.4” | 6.9” | 13.5” | 67 | 2 |
| 3” | 928273-00 | 116 | 41 | 12.2” | 7.4” | 13.9” | 84 | 2 |
| 4” | 928274-00 | 151 | 25 | 13.8” | 8.1” | 14.4” | 129 | 2 |
| 5” | 928275-00 | 232 | 15 | 15.7” | 9.2” | 15.3” | 163 | 2 |
| 6” | 92827 6-00 | 348 | 10 | 18.9” | 10.9” | 16” | 206 | 2 |

## SPECIFICATIONS

| | |
|---|---|
| Valve Body Material | ANSI B16.1 Iron |
| Valve Connection | 125 lb ANSI Flange |
| Temperature Rating | 14°F to 302°F (-10°C to 150°C) |
| Stem/Plug Material | Stainless/Brass |
| Seat Closure | Single Seated ANSI \| Class IV Shutoff |
| Packing Material | Long Life EPDM Rubber |
| Packing Temp Rating | 302°F (150°C) |
| Maximum Operating Pressure at 302°F | 55 PSI |

## 3-WAY HOT WATER HEATING APPLICATION—CONVERTED VALVES

**Hot Water/Hydronic Heating.** The standard 2-way single seated valves can be converted and used as a 3-way valve simply by removing the lower ANSI plate. In a 3-way valve configuration valves are used to mix heating water to a desired temperature. The hot water from the boiler is blended with the correct proportion of cooler water returning from the system to maintain the target temperature as the HWR Platinum control resets the hot water temperature based on outside temperature. The optional reversal operation of the actuator allows the HOT supply and the COLD supply to be interchangeable, allowing additional flexibility in the installation of the valve.




| VALVE SIZE | PART NUMBER | FLOW CV RATING | CLOSE OFF PRESSURE RATING | DIMENSIONS—INCHES | | | SHIPPING WEIGHT LBS | MOTOR SPEED APPROXIMATE MINUTES |
|---|---|---|---|---|---|---|---|---|
| | | | | A | B | C | | |
| 2 ½" | 928272-50 | 73 | 62 | 11.4" | 5.7" | 13.5" | 67 | 2 |
| 3" | 928273-00 | 116 | 41 | 12.2" | 6.1" | 13.9" | 84 | 2 |
| 4" | 928274-00 | 151 | 25 | 13.8" | 6.9" | 14.4" | 129 | 2 |
| 5" | 928275-00 | 232 | 15 | 15.7" | 7.9" | 15.3" | 163 | 2 |
| 6" | 928276-00 | 348 | 10 | 18.9" | 9.5" | 16" | 206 | 2 |

## SPECIFICATIONS

Valve Body Material — ANSI B16.1 Iron

Valve Connection — 125 lb ANSI Flange

Temperature Rating — 14°F to 302°F (-10°C to 150°C)

Stem/Plug Material — Stainless/Brass

Seat Closure — Single Seated ANSI | Class IV Shutoff

Packing Material — Long Life EDPM Rubber

Packing Temp Rating — 302°F (150°C)

Maximum Operating Pressure — 200 PSI @ 200°F | 165 PSI @ 302°F

## VALVE SIZING AND SELECTION

**Hot Water Valve Sizing.** The selection of a hot water valve should be based on a Cv rating approximately 10% greater than the calculated requirement to maintain control at the maximum flow rate. The following formula is used to calculate the required Cv rating:

$$C_V = \frac{GPM}{\sqrt{\Delta P}}$$

The objective is to minimize the pressure drop across the valve. Take this example in which the objective is to calculate the Cv which will pass 200 GPM of water while limiting the pressure drop to 3 PSIG. These calculations must use absolute pressures.

$$C_V = \frac{200\ GPM}{\sqrt{3 + 14.7}} = 48 \qquad C_V = 48 \times 1.1 = 53$$

Select the valve size where the Cv matches or exceeds the 53. In this case, a 2½" three-way valve.

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**Steam Valve Sizing.** The selection of a steam valve in a zoning situation should be based on minimizing the drop across a 2-way valve. In the case of heat exchangers the objective is to allow maximum capacity flow as specified by the heat exchanger and/or pump capacity. This formula is used:

$$C_V = \frac{Lb/hr.}{2.1\sqrt{(P_1 - P_2) \times (P_1 + P_2)}}$$

Take this example in which the object is to calculate the Cv which will pass 5,000 lb/hr. of saturated steam when the inlet pressure is 7 PSIG and a 2 PSIG pressure drop is desired. Remember to use absolute pressures.

$P_1 = 14.7\ PSI + 7.0\ PSIG = 21.7\ PSI$
$P_2 = 14.7\ PSI + (7.0\ PSIG - 2.0\ PSIG) = 19.7\ PSI$

$$C_V = \frac{5{,}000}{2.1\sqrt{(21.7 - 19.7) \times (21.7 - 19.7)}} = 262$$

Select the valve size where the Cv matches or exceeds the 262. In this case, a 6" 2-way/single or double seated valve.

## ACTUATOR SPECIFICATIONS

| | |
|---|---|
| Input Signal | 24Vac Floating |
| Power Consumption | 12VA |
| Operating Temperature | Ambient 5°F to 122°F (-15°C to 50°C) |
| Locations | NEMA type 2 / IP54 Indoor Only |
| User Interface | Manual Override Handle Status |