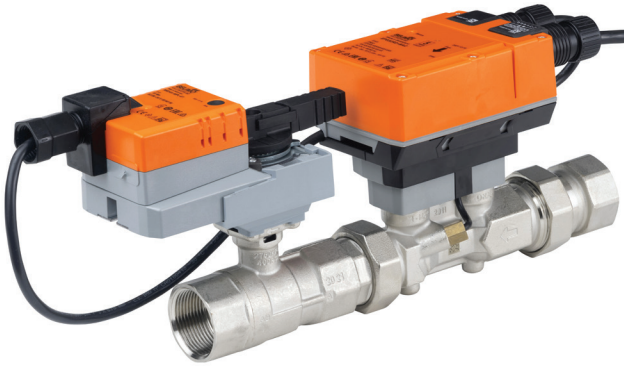
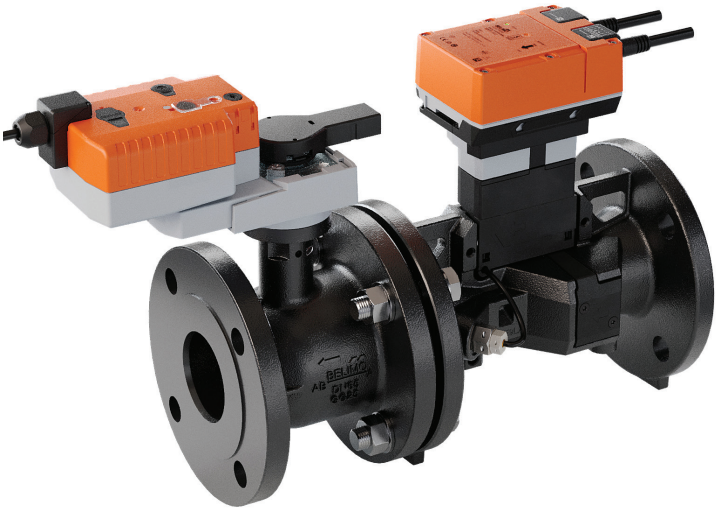
Version 04.26

Electronic Pressure Independent Valves (EPIV4)





Valve Innovations

- Pressure independent valves compensate for pressure variations, performing a continual balancing function to maintain system performance at varying loads.
- Precise flow control eliminates over-pumping and provides favorable energy savings.
- Pressure independent valves prevent energizing additional chillers by maintaining desirable Delta T.
- Pressure independent valves are selected based on flow rate and no Cv calculations are needed.

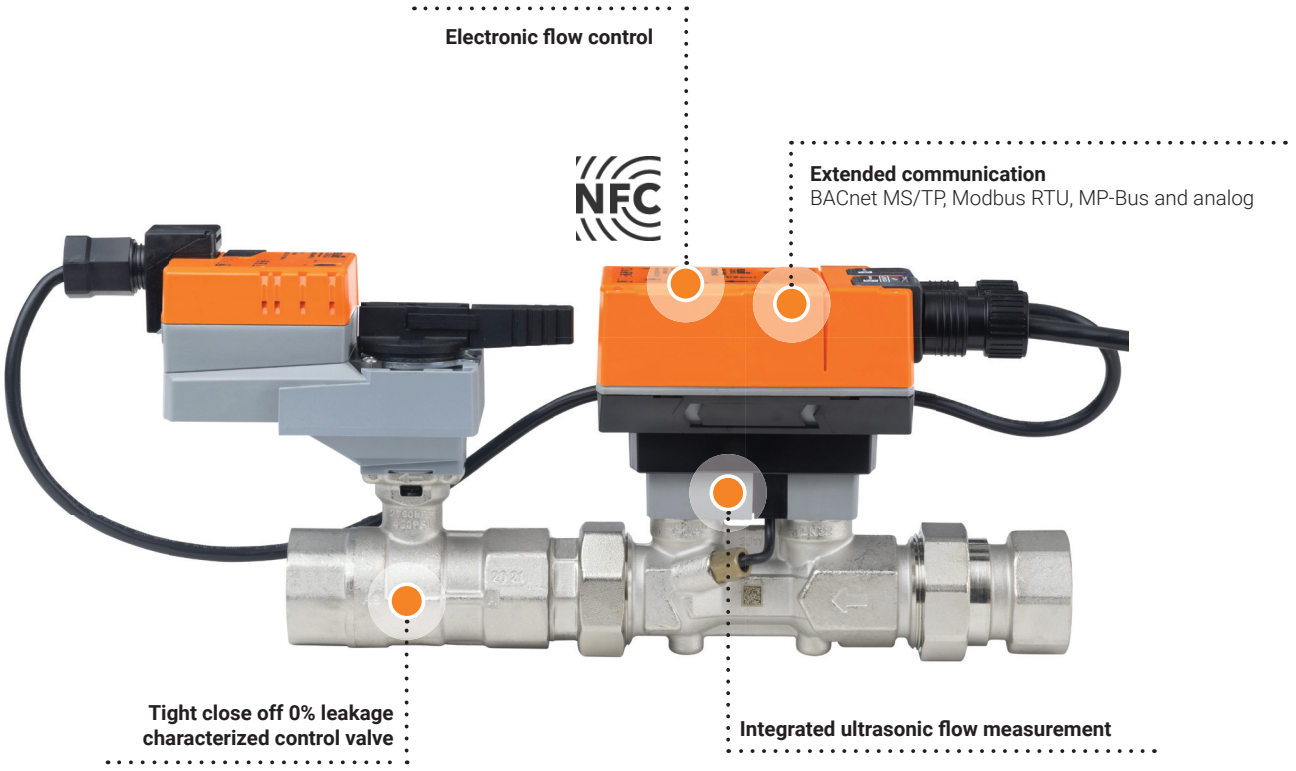
Features and Benefits

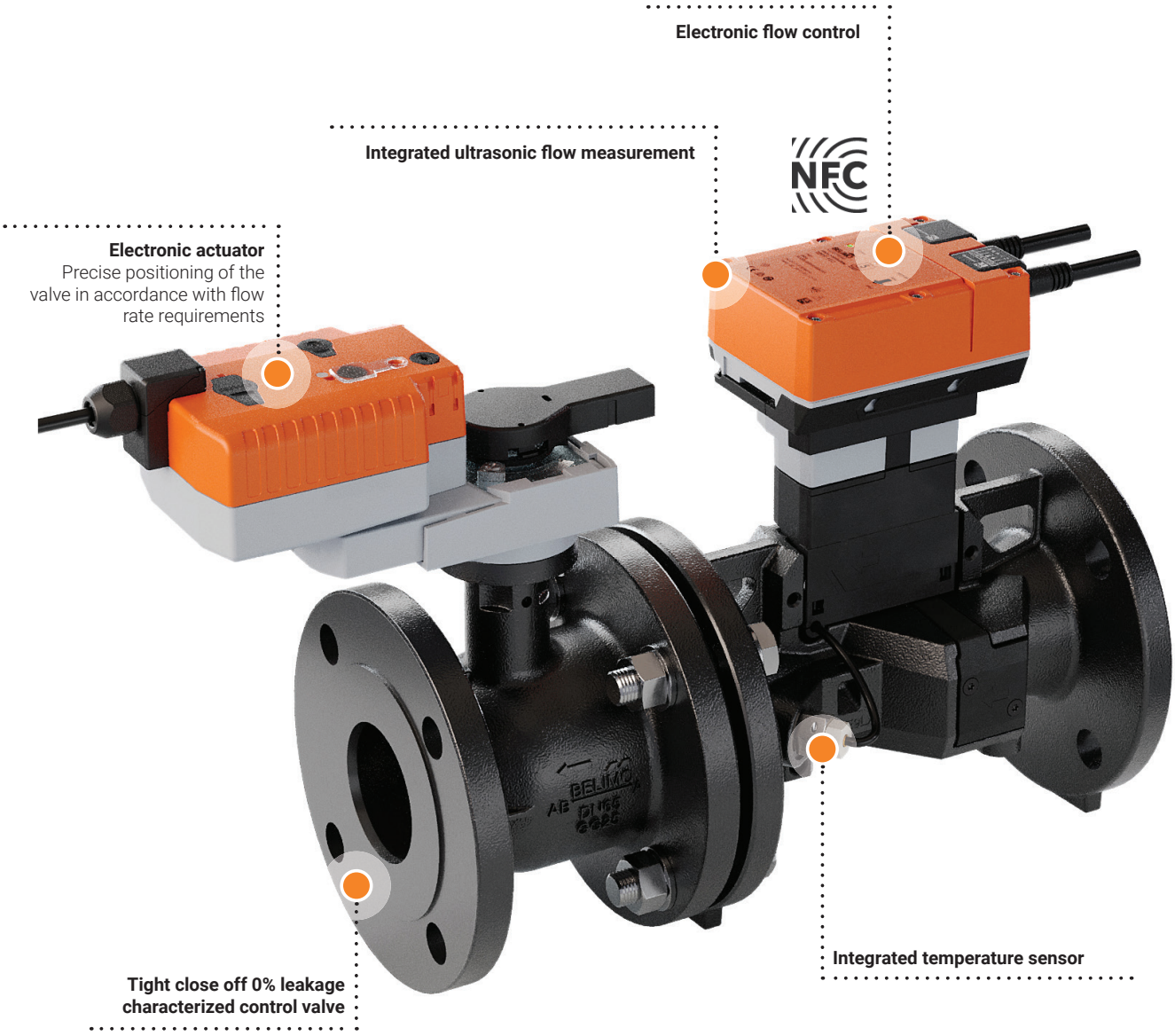
- Ultrasonic Flow Measurement with Glycol Compensation: Delivers true flow readings, accurate total volume, and glycol percentage output.
- Integrated Temperature Sensor: Measures fluid temperature and monitors glycol mixture.
- Extended Communication: BACnet MS/TP, Modbus RTU, MP-Bus, and analog.
- Built-in NFC: Fast, wireless setup via the Belimo Assistant 2 App.
- Optional Sensor Connectivity: Supports an additional active/passive sensor or switching contact.
- Digital Workflows: Belimo Assistant 2 App enables remote calibration and automatic commissioning reports.
- Analog Output Feedback: 0...10 V, 0.5...10 V, 2...10 V signals.
- N4 Option: Available as an alternative, including N4HH (NEMA 4 with humidistat) and N4HT (NEMA 4 with thermostat) models.

The smarter way to control the flow rate

The EPIV is a pressure independent characterized control valve with an integrated electronic flow meter and a powerful control algorithm.

It compensates for pressure variations and performs dynamic balancing to maintain system performance at varying loads. The EPIV integrated control signal maintains a flow set point regardless of system pressure variations with its robust algorithm modulating the valve based on the actual measured flow. Valves are selected based on coil flow rate; no valve authority and Cv calculations are needed. Available in sizes ½ ...6“.

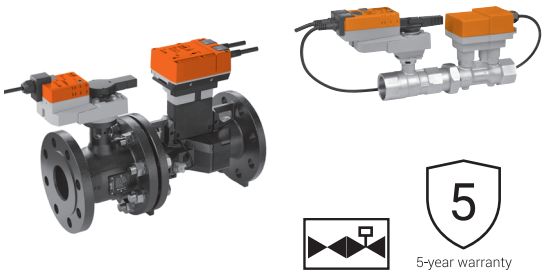




Product Range Overview

		Valve Nominal Size		Type	Suitable Actuators	
	V'nom [GPM]*	Inches	DN [mm]	2-way	Non Fail-Safe	Electronic Fail-Safe
NPT	1.65…6.6*	½	15	EP050	LRX-E, ARX-E (N4)	AKRX-E (N4)
NPT	2.7…11*	¾	20	EP075	LRX-E, ARX-E (N4)	AKRX-E (N4)
NPT	4.5…18.2*	1	25	EP100	LRX-E, ARX-E (N4)	AKRX-E (N4)
NPT	7.1…28.5*	1¼	32	EP125	NRX-E, ARX-E (N4)	AKRX-E (N4)
NPT	11…44*	1½	40	EP150	NRX-E, ARX-E (N4)	AKRX-E (N4)
NPT	16.5…66*	2	50	EP200	ARX-E (N4)	AKRX-E (N4)
NPT	25…100*	2	50	EP200H	ARX-E (N4)	AKRX-E (N4)
Flanged ANSI 125	33…132*	2½	65	EP250	ARX-E (N4)	AKRX-E (N4)
Flanged ANSI 125	46…185*	3	80	EP300	ARX-E (N4)	AKRX-E (N4)
Flanged ANSI 125	83…330*	4	100	EP400	GRX-E (N4)	GKRX-E (N4)
Flanged ANSI 125	132…528*	5	125	EP500	GRX-E (N4)	GKRX-E (N4)
Flanged ANSI 125	198…793*	6	150	EP600	GRX-E (N4)	GKRX-E (N4)
Flanged ANSI 250	33…132*	2½	65	EP250-250	ARX-E (N4)	AKRX-E (N4)
Flanged ANSI 250	46…185*	3	80	EP300-250	ARX-E (N4)	AKRX-E (N4)
Flanged ANSI 250	83…330*	4	100	EP400-250	GRX-E (N4)	GKRX-E (N4)
Flanged ANSI 250	132…528*	5	125	EP500-250	GRX-E (N4)	GKRX-E (N4)
Flanged ANSI 250	198…793*	6	150	EP600-250	GRX-E (N4)	GKRX-E (N4)

*V'nom = Maximum flow for each valve body size.
Note: Flows can be field set to 25% of nominal flow rate.



MODE OF OPERATION

The 2-way EPIV is a pressure independent characterized control valve with an integrated electronic flow meter and a powerful control algorithm. The EPIV maintains the flow setpoint regardless of system pressure variations and modulates the valve based on its measured true flow.

PRODUCT FEATURES

Provides True Flow measurements, simplifying the flow verification. Easy integration via BACnet MS/TP or Modbus RTU** for monitoring and controlling.

ACTUATOR SPECIFICATIONS

Control Type	modulating
Power Supply	AC/DC 24 V
Manual Override	LR, NR, AR, GR, AKR, GKR
Electrical Connection	3 ft. [1 m] cable with ½" conduit fitting

VALVE SPECIFICATIONS

Fluid	chilled or hot water, up to 60% glycol max
Sizes	½", ¾", 1", 1¼", 1½", 2", 2½", 3", 4", 5", 6"
End Fitting	NPT female (½...2") ANSI 125 or 250 flange (2½...6")
Materials	
Body	
Valve	forged brass, nickel plated (½...2") cast iron - GG25 (2½...6") ANSI 125 ductile cast iron - GGG40.3 (2½...6") ANSI 250
Flow Sensor	forged brass, nickel plated (½...2") cast iron - GG25 (2½...6") ANSI 125 ductile cast iron - GGG40.3 (2½...6") ANSI 250
Ball	stainless steel
Stem	stainless steel
Characterizing Disc	Tefzel® (½...2") stainless steel (2½...6")
Fluid Temp Range	14...250°F [-10...+120°C]
Body Pressure Rating	360 psi (½...2") ANSI 125, Class B (2½...6") ANSI 250 (2½...6") (-250)
Close-Off Pressure	200 psid (½...2") 175 psid (2½...6") 310 psid (2½...6") (-250)
Differential Pressure Range (ΔP)	see page 23-5
Communication	analog and Belimo MP-Bus, BACnet MS/TP, Modbus RTU
Leakage	0%
Rangeability	100:1
Flow Control Tolerance	5%
Flow Measurement Tolerance	±2%

SET-UP - Specify Upon Ordering

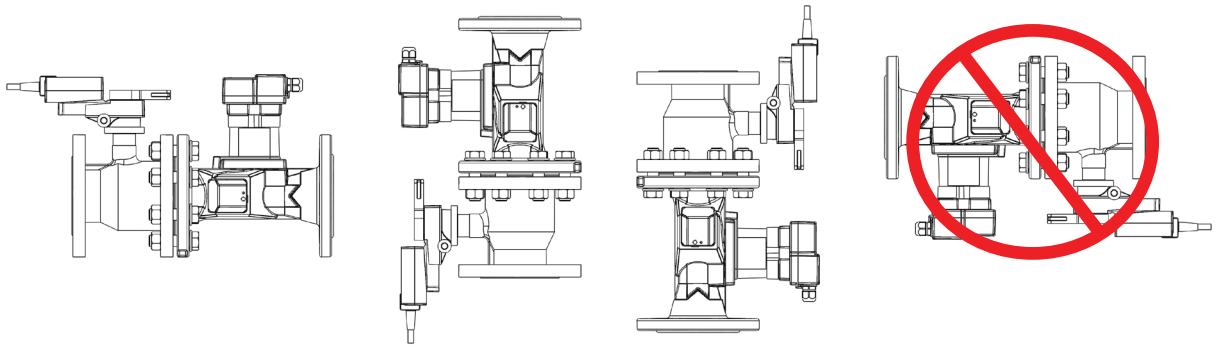
		2-WAY VALVE			
NON FAIL-SAFE STAYS IN LAST POSITION	**LRX...Series** **NRX...Series** **ARX...Series** **GRX...Series**	**NC:** Normally Closed- valve will open as voltage increases.	**NO:** Normally Open- valve will close as voltage increases.		
ELECTRONIC FAIL-SAFE STAYS IN FAIL-SAFE POSITION	**AKRX...Series** **GKRX...Series**	**NO/FO Valve:** Normally Open- valve will close as voltage increases. Fail Action: Will fail open upon power loss.	**NO/FC Valve:** Normally Open- valve will close as voltage increases. Fail Action: Will fail closed upon power loss.	**NC/FO Valve:** Normally Closed- valve will open as voltage increases. Fail Action: Will fail open upon power loss.	**NC/FC Valve:** Normally Closed- valve will open as voltage increases. Fail Action: Will fail closed upon power loss.

NOTE: Feedback signal is always direct acting (2 V close, 10 V open). Feedback signal can be set to true flow or valve position. The default is true flow. Actuator default setting is NC or NC/FC. Changing this setting requires the use of the Belimo Assistant 2 App, or Assistant Link (part number: Link 10).

ORIENTATION

EPIVs shall be installed with flow in the direction of the arrow on the valve body.

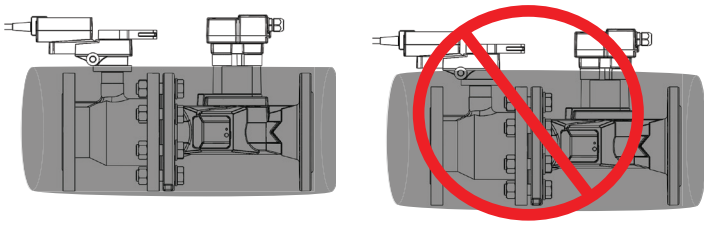
The valve assembly can be installed in a vertical or horizontal arrangement, as long as the actuator is positioned to avoid condensation from dripping onto the actuator.



(Not for use with weather shields)

INSULATION

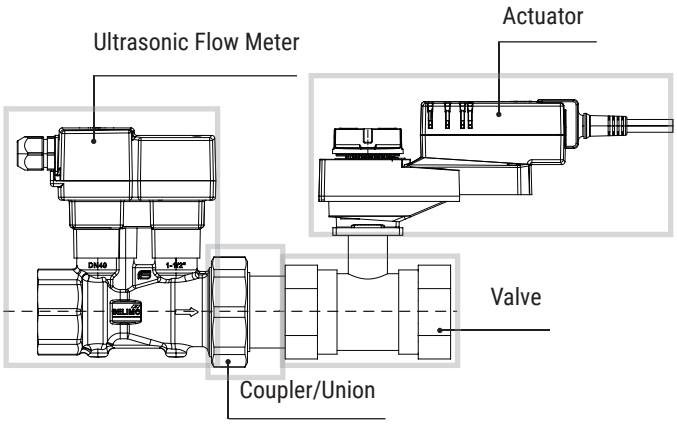
The insulation should be below the actuator

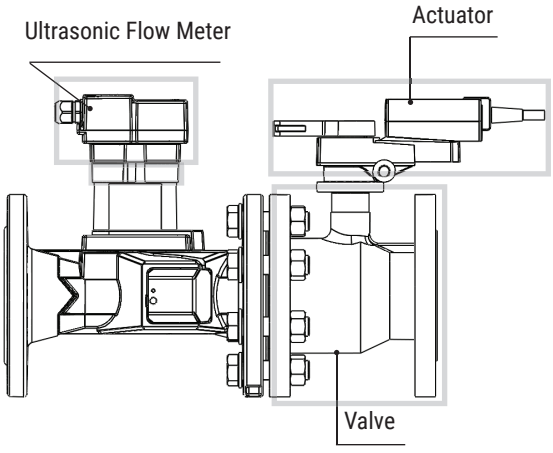


ACTUATOR AND FLOW SENSOR REMOVAL

To replace flow sensor, isolation valves need to be closed or system needs to be drained.

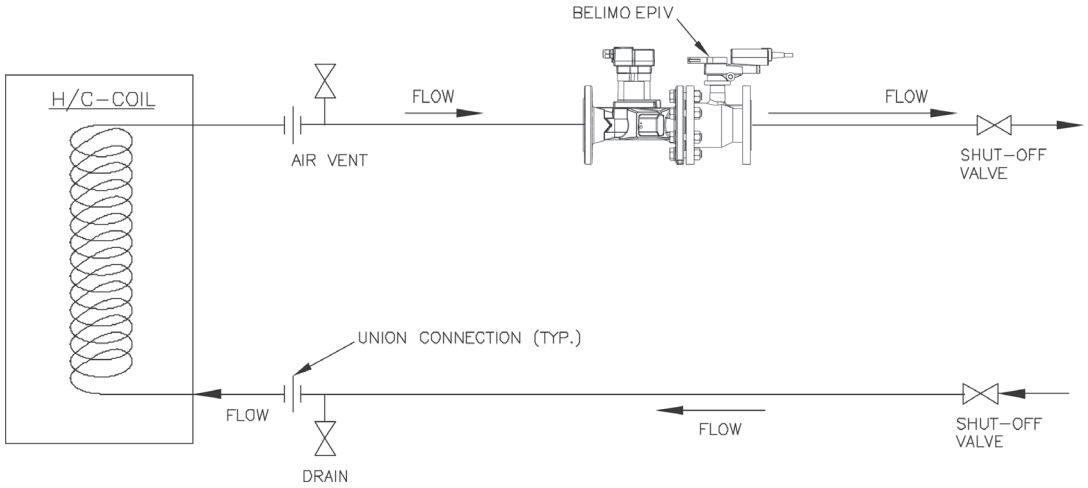
½" to 6" EPIV
The flow sensor cannot be separated from the flow housing. However, it can be separated from the valve using the coupler/union connecting both.





PIPING

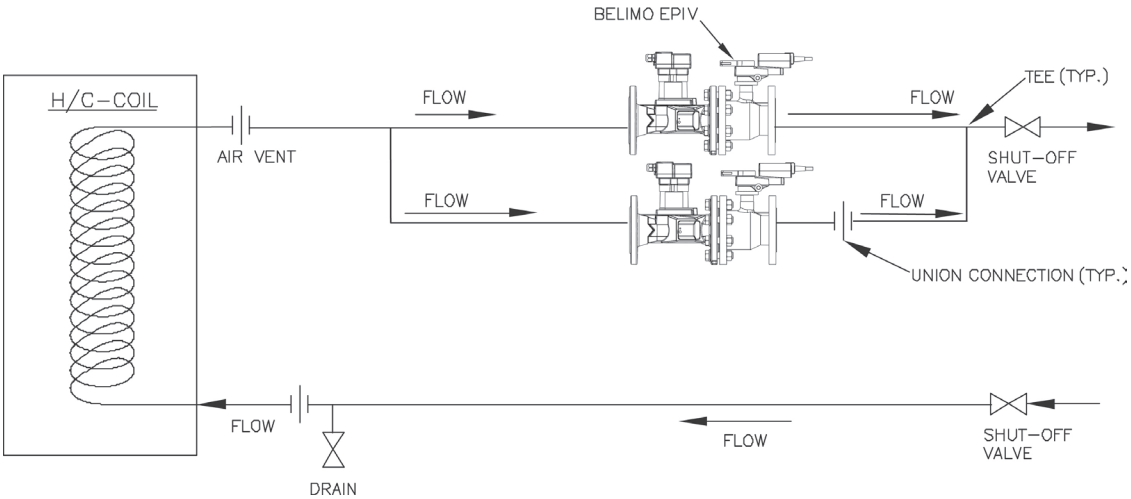
The EPIV can be installed on the supply or return side of the coil - the recommendation is to be installed on the return side. This diagram is for typical applications only. Consult engineering specification and drawings for particular circumstances. Refer to EPIV technical documentation for flow verification and commissioning procedures.



Electronic Pressure Independent Valves can be piped in a parallel orientation to achieve increased flow rates.

TYPICAL PARALLEL PIPING IN RELATION TO THE INPUT AND OUTPUT

To achieve flows larger than nominal flow, it is recommended to connect two valves in parallel leading to a common manifold. To correctly operate these valves it is recommended to use the same signal in parallel (2...10 V); the two actuators are wired from the same control signal DDC and the two valves control the flow in an identical pattern. The resulting flow will be double an individual valve. This arrangement is preferable to a split signal since it offers a more stable and accurate flow and feedback signal is easier to interpret.



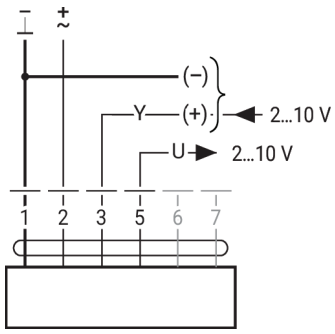
FLOW REDUCTION CHART

SIZE							
Inches	**DN/Millimeters**	**8 psi**	**5 psi ***	**4 psi**	**3 psi**	**2 psi**	**1 psi**
½"	15	6.6 GPM	6.6 GPM	6.6 GPM	6.4 GPM	5.1 GPM	3.6 GPM
¾"	20	11 GPM	11 GPM	11 GPM	10.6 GPM	8.7 GPM	6.1 GPM
1"	25	18.2 GPM	18.2 GPM	18.2 GPM	17.5 GPM	14.3 GPM	10.1 GPM
1¼"	32	28.5 GPM	28.5 GPM	28.5 GPM	28.2 GPM	23 GPM	16.3 GPM
1½"	40	44 GPM	44 GPM	44 GPM	38.4 GPM	31.3 GPM	22.1 GPM
2"	50	100 GPM**	66 GPM	66 GPM	60.1 GPM	49.7 GPM	35.2 GPM
2½"	65	132 GPM	132 GPM	121 GPM	105 GPM	85 GPM	60 GPM
3"	80	185 GPM	185 GPM	167 GPM	145 GPM	118 GPM	84 GPM
4"	100	330 GPM	330 GPM	330 GPM	286 GPM	233 GPM	165 GPM
5"	125	528 GPM	528 GPM	539 GPM	466 GPM	381 GPM	269 GPM
6"	150	793 GPM	793 GPM	734 GPM	636 GPM	519 GPM	367 GPM

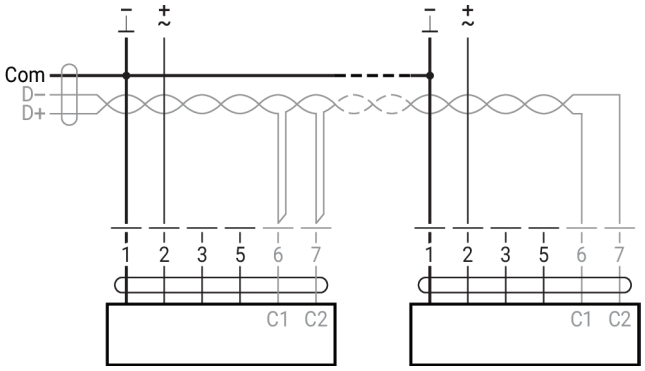
*Select valve based on a minimum of 5 PSI differential.

**Applies to 2" EP200H EPIV model only.

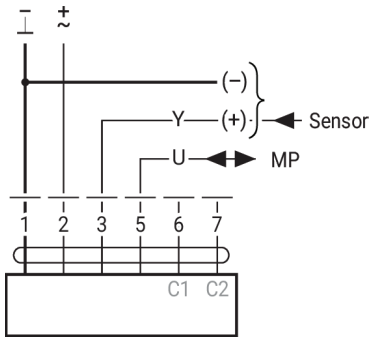
EPIV4 Wiring

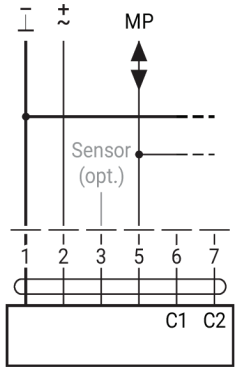


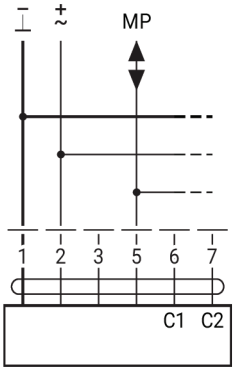
BACnet MSTP / Modbus RTU



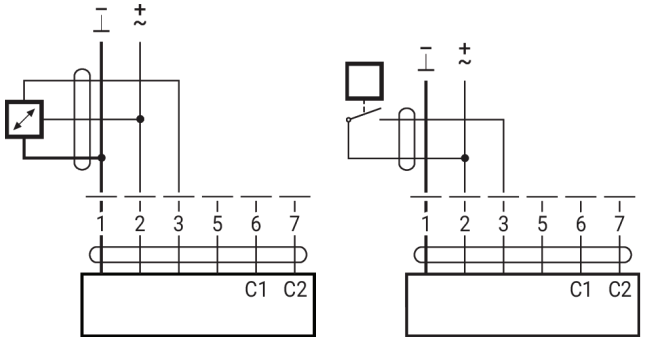
MP-Bus







Sensor (optional)



General Warnings

Valve should not be used for combustible gas applications. Gas leaks and explosions may result. Do not install in systems, which exceed the ratings of the valve.

- Avoid installations where valve may be exposed to excessive moisture, corrosive fumes, vibration, high ambient temperatures, elements, or high traffic areas with potential for mechanical damage.
- Valve assembly location must be within ambient ratings of actuator.
- If temperature is below -14°F a heater is required.
- The valve assembly will require heat shielding, thermal isolation, or cooling if combined effect of medium and ambient temperatures – conduction, convection, and radiation– is above 122°F for prolonged time periods at the actuator.
- Visual access must be provided. Assembly must be accessible for routine schedule service. Contractor should provide unions for removal from line and isolation valves.
- Avoid excessive stresses. Mechanical support must be provided where reducers have been used and the piping system may have less structural integrity than full pipe sizes.
- Sufficient upstream piping runs must be provided to ensure proper valve capacity and flow response. See installation section for details.

Installation

1. Inspect shipping package, valve, linkage, and actuator for physical damage. If shipping damage has occurred notify appropriate carrier. Do not install.
2. If a replacement, remove existing valve, linkage, and actuator from the piping system.
3. If actuator and linkage are removed, they must be reinstalled correctly. The actuator must be rotated so that the valve seats properly for close off.
4. Install valve with the proper ports as inlets and outlets. Check that inlet and outlet of 2-way valves are correct. Flow direction arrows must be correct.
5. Blow out all piping and thoroughly clean before valve installation.
6. Clean flanges with wire brush and rag. Clean pipes, flanges, and valve flanges before installation; check for any foreign material that can become lodged in trim components. Strainers should be cleaned after initial startup.
7. Valve must be installed with the stem towards the vertical, not below horizontal.
8. -125 models are designed to be installed between ANSI Class 125/150 flanges only. -250 models are designed to be installed between ANSI Class 250/300 flanges only.
9. Carefully follow installation using ANSI piping practices.

All inclusive.

At Belimo, we continually invest in new technologies that increase customer value by improving occupant comfort, energy efficiency, simplified installation, and maintenance-free operation. Our sales team is available to consult and provide insight and advice on how to achieve the best solution to help increase your system performance.

Belimo will continue to focus on providing you with exceptional product availability, fast delivery times, and world-class customer service and technical support. We remain dedicated to continuously improve our standards and are committed to providing you with the highest value possible.

Whatever your HVAC application, our global network of support experts are on hand and ready to assist.

- 5-year warranty
- On site around the globe
- Complete product range
- Tested quality
- Short delivery times
- Comprehensive support

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