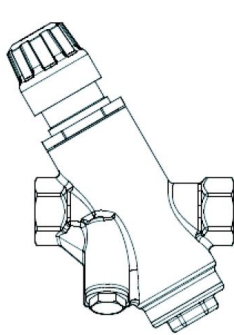
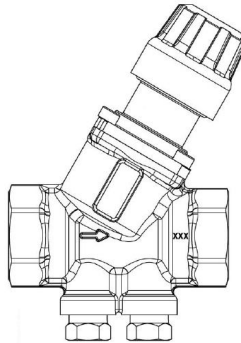




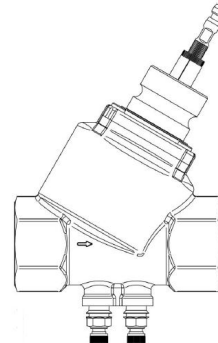
Pressure Independent Control Series
Two-Way, Brass Valve Bodies
1/2 to 2" Brass Body (Ansi Class 250)



1/2 to 1-1/4 Inch NC



1/2- to 1-1/4-Inch NO



1-1/2 to 2-Inch NO

Description

The Pressure Independent Control Valves integrate three functions into a single device: control valve, adjustable flow limiter, and automatic pressure regulator. The 1/2-inch Normally Open valves have a 2.5 mm stroke, and a threaded valve bonnet for use with EN56/ES67 Electronic Valve Actuators. The 3/4- to 1-1/4-inch Normally Open and 1/2 to 1-1/4 inch Normally Closed Valves have a 5 or 5.5 mm stroke, and a threaded valve bonnet for use with EN56/ES67 Electronic Valve Actuators. The 1-1/2 and 2-inch Normally Open Valves have a 15 mm stroke and use the EN45 Electronic Valve Actuators.



Features

- Control valve with integrated pressure regulator and adjustable flow limiter.
- ANSI Class 250 valve body.
- 200 psi close-off with ANSI Class IV leakage (1/2 to 1-1/4-inch Normally Open).
- 100 psi close-off with ANSI Class IV leakage (1-1/2- and 2-inch Normally Open).
- 45 psi close-off with ANSI Class IV leakage (1/2 to 1-1/4 inch Normally Closed).
- Linear Flow Characteristic.
- Stainless Steel Stem.
- 1-1/2- and 2-Inch Normally Open Valves include P/T ports.
- EN45 actuators for 1-1/2- and 2-inch Normally Open Valves can also be set for Normally Closed operation (reverse acting). See note on page 2.

Application

For use in HVAC applications with Pressure Independent Control EN56/ES67, or EN45 Electronic Actuators, to control hot or chilled water or 50% water-glycol solution in closed loop systems.

Warning/Caution
Notations

WARNING:		Personal injury or loss of life may occur if you do not perform a procedure as specified.
CAUTION:		Equipment damage may occur if you do not perform a procedure as specified.



Line Size inch (mm)	Factory Preset Max GPM	Normally Open	Normally Closed
1/2 (15)	0.5	PICV2-050(.9)NO-.5	PICV2-050(2.7)NC-.5
	1	PICV2-050(2.5)NO-1	PICV2-050(2.7)NC-1
	1.5	PICV2-050(2.5)NO-1.5	PICV2-050(2.7)NC-1.5
	2	PICV2-050(2.5)NO-2	PICV2-050(2.7)NC-2
	2.5	PICV2-050(2.5)NO-2.5	PICV2-050(2.7)NC-2.5
	3	–	PICV2-050(7.5)NC-3
	3.5	–	PICV2-050(7.5)NC-3.5
	4	–	PICV2-050(7.5)NC-4
	4.5	–	PICV2-050(7.5)NC-4.5
	5	–	PICV2-050(7.5)NC-5
	5.5	–	PICV2-050(7.5)NC-5.5
	6	–	PICV2-050(7.5)NC-6
	6.5	–	PICV2-050(7.5)NC-6.5
	7	–	PICV2-050(7.5)NC-7
	7.5	–	PICV2-050(7.5)NC-7.5
3/4 (20)	1	PICV2-075(5.8)NO-1	PICV2-075(4.5)NC-1
	1.5	PICV2-075(5.8)NO-1.5	PICV2-075(4.5)NC-1.5
	2	PICV2-075(5.8)NO-2	PICV2-075(4.5)NC-2
	2.5	PICV2-075(5.8)NO-2.5	PICV2-075(4.5)NC-2.5
	3	PICV2-075(5.8)NO-3	PICV2-075(4.5)NC-3
	3.5	PICV2-075(5.8)NO-3.5	PICV2-075(4.5)NC-3.5
	4	PICV2-075(5.8)NO-4	PICV2-075(4.5)NC-4
	4.5	PICV2-075(5.8)NO-4.5	PICV2-075(4.5)NC-4.5
	5	PICV2-075(5.8)NO-5	PICV2-075(8.9)NC-5
	5.5	PICV2-075(5.8)NO-5.5	PICV2-075(8.9)NC-5.5
	6	–	PICV2-075(8.9)NC-6
	6.5	–	PICV2-075(8.9)NC-6.5
	7	–	PICV2-075(8.9)NC-7
	7.5	–	PICV2-075(8.9)NC-7.5
	8	–	PICV2-075(8.9)NC-8
	8.5	–	PICV2-075(8.9)NC-8.5
1 (25)	1	–	PICV2-100(8.9)NC-1
	2	–	PICV2-100(8.9)NC-2
	3	–	PICV2-100(8.9)NC-3
	4	–	PICV2-100(8.9)NC-4
	5	PICV2-100(8.0)NO-5	PICV2-100(8.9)NC-5
	6	PICV2-100(8.0)NO-6	PICV2-100(8.9)NC-6
	7	PICV2-100(8.0)NO-7	PICV2-100(8.9)NC-7
	8	PICV2-100(8.0)NO-8	PICV2-100(8.9)NC-8
	9	–	PICV2-100(8.9)NC-9

Line Size inch (mm)	Factory Preset Max GPM	Normally Open	Normally Closed
1-1/4	3	–	PICV2-125(13.2)NC-3
	4	–	PICV2-125(13.2)NC-4
	5	–	PICV2-125(13.2)NC-5
	6	–	PICV2-125(13.2)NC-6
	7	–	PICV2-125(13.2)NC-7
	8	–	PICV2-125(13.2)NC-8
	9	PICV2-125(18)NO-9	PICV2-125(13.2)NC-9
	10	PICV2-125(18)NO-10	PICV2-125(13.2)NC-10
	11	PICV2-125(18)NO-11	PICV2-125(13.2)NC-11
	12	PICV2-125(18)NO-12	PICV2-125(13.2)NC-12
	13	PICV2-125(18)NO-13	PICV2-125(13.2)NC-13
	14	PICV2-125(18)NO-14	–
	15	PICV2-125(18)NO-15	–
	16	PICV2-125(18)NO-16	–
	17	PICV2-125(18)NO-17	–
	18	PICV2-125(18)NO-18	–
1-1/2	15	PICV2-150(40)NO-15	–
	20	PICV2-150(40)NO-20	–
	25	PICV2-150(40)NO-25	–
	30	PICV2-150(40)NO-30	–
	35	PICV2-150(40)NO-35	–
	40	PICV2-150(40)NO-40	–
2	20	PICV2-200(50)NO-20	–
	25	PICV2-200(50)NO-25	–
	30	PICV2-200(50)NO-30	–
	35	PICV2-200(50)NO-35	–
	40	PICV2-200(50)NO-40	–
	45	PICV2-200(50)NO-45	–
	50	PICV2-200(50)NO-50	–

* See EN45 Electronic Valve Actuator, NSR, 24 Vac Proportional Control Technical Instructions, EN45 Electronic Valve Actuator, NSR, 24Vac, 3-Position Control Technical Instructions, and EN45 Electronic Valve Actuator Installation Instruction for reverse-acting (normally closed) operation.



Specifications

Line sizes	1/2- to 2-inch (15 to 50 mm)
Capacity	See Table 2
Body style	2-way
Action	Normally Closed and Normally Open
Valve body rating	ANSI Class 250
Connection	Internal NPT thread
Stem travel (Stroke)	
1/2-inch NO	2.5 mm
3/4-inch NO and 1/2 to 1-1/4 inch NC	5 mm
1- and 1-1/4-inch NO	5.5 mm
1-1/2 to 2-inch NO	15 mm

Table 2. Reference: Valve Body Flow Range.

Action	Valve Body	Line Size Inch (mm)	GPM Flow Range
Normally Closed	PICV2-050(2.7)NC	1/2 (15)	0.3 to 2.7
	PICV2-050(7.5)NC		1.0 to 7.5
	PICV2-075(4.5)NC	3/4 (20)	0.5 to 4.5
	PICV2-075(8.9)NC		1.0 to 8.9
	PICV2-100(8.9)NC	1 (25)	1.0 to 8.9
	PICV2-125(13.2)NC	1-1/4 (32)	2.5 to 13.2
Normally Open	PICV2-050(.9)NO	1/2 (15)	0.2 to 0.9
	PICV2-050(2.5)NO		0.5 to 2.5
	PICV2-075(5.8)NO	3/4 (20)	1 to 5.8
	PICV2-100(8.0)NO	1 (25)	1.2 to 8
	PICV2-125(18)NO	1-1/4 (32)	3 to 18
	PICV2-150(40)NO	1-1/2 (40)	10 to 40
	PICV2-200(50)NO	2 (50)	10 to 50

Material

Body

1/2- to 1-1/4-inch	Brass
1-1/2- and 2-inch	Ductile Iron
Plug	Brass
Stem, spring	Stainless Steel
Seals	EPDM 281 O-ring

Operating

Controlled medium	Hot/chilled water or 50% water-glycol solutions in closed loop systems
Medium temperature range	34°F to 248°F (1°C to 120°C)
Leakage rate	
1/2- to 1-1/4-inch NO	ANSI Class IV (0.01%) @ 200 psi
1-1/2- and 2-inch NO	ANSI Class IV (0.01%) @ 100 psi
1/2- to 1-1/4 inch NC	ANSI Class IV (0.01%) @ 45 psi
Flow characteristics	Linear
Pressure regulation flow accuracy	+/- 5% from 5 to 58psi
	+/-10% from Δp min. to 5 psi
Range of Pressure Independence	See Table 3.



Table 3. Pressure Independence Range.

Action	Valve	Size	Δp_{min} (psi)	Δp_{max} (psi)
Normally Closed	PICV2-050(2.7)NC	1/2	2.3	58
	PICV2-050(7.5)NC		2.6	
	PICV2-075(4.5)NC	3/4	2.3	
	PICV2-075(8.9)NC		3.2	
	PICV2-100(8.9)NC	1	3.2	
	PICV2-125(13.2)NC	1-1/4	2.6	
Normally Open	PICV2-050(.9)NO	1/2	2.3	
	PICV2-050(2.5)NO		2.7	
	PICV2-075(5.8)NO	3/4	3.1	
	PICV2-100(8.0)NO	1	4.0	
	PICV2-125(18)NO	1-1/4	4.1	
	PICV2-150(40)NO	1-1/2	3.6	
	PICV2-200(50)NO	2	5.0	

Miscellaneous

Mounting location NEMA 1 (interior only)
Dimensions and weight See Figure 2 and Figure 3.

Accessory

P/T port set for PICV P/T Port Set
One set of high and low pressure measuring ports to replace blank caps in valves

P/T Ports Installation

The low-pressure P/T port (blue indicator ring) should be located on the downstream side of the valve. The high pressure P/T port (red indicator ring) will be located on the upstream or inlet side of the valve.

For 1/2 and 1-1/4-inch

Normally Open Valves

Note:

1-1/2- and 2-inch normally open valves ship with P/T ports installed.

For 1/2 to 1-1/4-inch Normally Closed valves

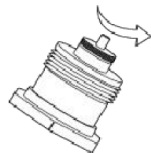
The low-pressure P/T port (blue indicator ring) should be located on the side of the valve with the raised lettering and label. The high-pressure P/T port (red indicator ring) will be located on the opposite side.

Presetting

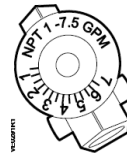
Adjustment

Prior to mounting the actuator, verify the valve is set to ordered flow setting (suffix of part number).

To change the valve flow setting, see Steps 2, 3, and 4 below (Flow setting scales are in gallons per minute (gpm) on all valves):



1. On 1/2- to 1-1/4-inch valves, loosen the brass knurled nut. On 1-1/2 and 2-inch valves, loosen the valve stem.



2. Adjust the desired dial setting with the white knob.
3. Retighten the brass knurled nut or valve stem by hand.

NOTE: When tightening the knurled nut on 1/2- to 1-1/4-inch valves, some force is required to reach the required physical stop; approximately an additional 1/2 to 3/4 extra turn after initial “finger tight” resistance is felt.



**Presetting
Adjustment,
Continued**



CAUTION:

On 1-1/2- and 2-inch valves, do NOT use tools to tighten the valve stem. Hand-tighten only or damage will occur.



CAUTION:

Do NOT rotate the actuator on the valve once the actuator and valve stem are connected. Doing so will inadvertently adjust the flow setting of the valve or damage the stem.

**Mounting and
Installation**

Install the valve so the flow follows the direction of the arrow indicated on the valve body.

For best performance, install the valve assembly with the actuator above the valve body. The valve and actuator can be installed in any position between vertical and horizontal. See Figure 1.

Do not install the valve assembly with the actuator below horizontal or upside down.

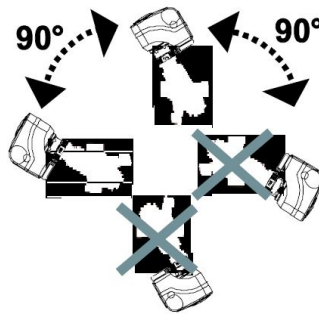


Figure 1. Recommended Installation Orientations.

NOTE: Allow sufficient space for servicing the valve and actuator. Instructions for field mounting an actuator, wiring diagrams, and start-up are covered in the *EN56/ES67 Series Electronic Valve Actuator Installation Instructions* and *EN45 Electronic Valve Actuators Installation Instructions*.

**Commissioning
Notes**



CAUTION:

The Pressure Independent Control Valves must be open when flushing or pressure testing the system. Strong pressure impacts can damage closed Pressure Independent Control Valves.

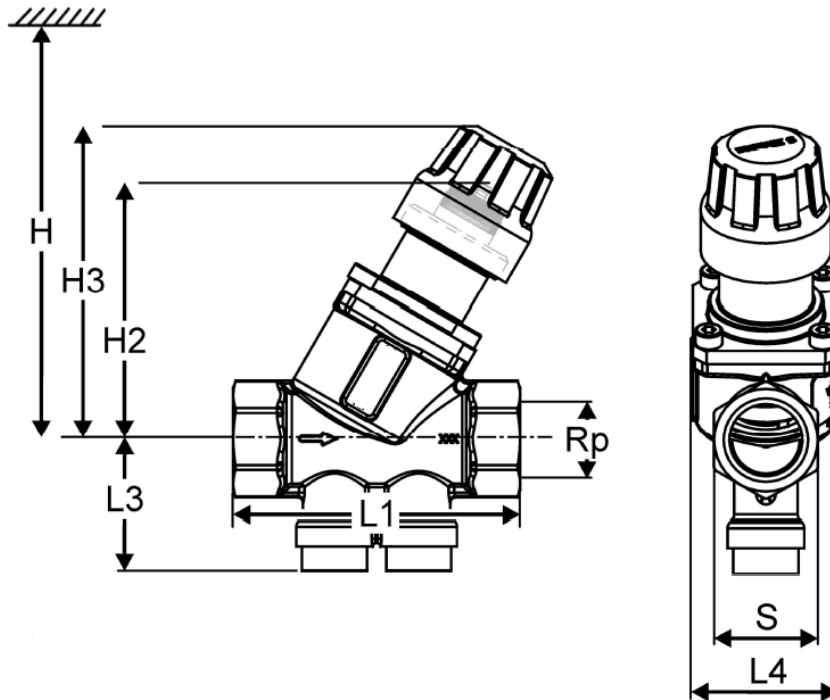


CAUTION:

Differential pressure across the valve greater than 58 psi will result in damage to the pressure regulator.

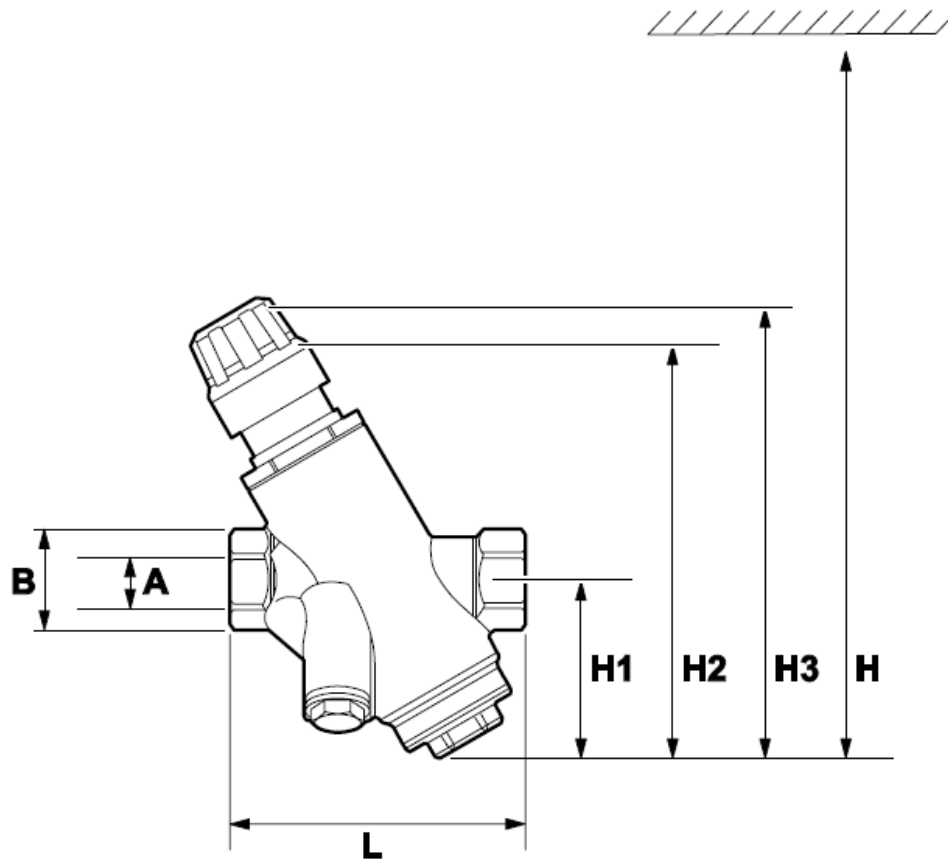


Dimensions in Inches (mm)



Valve P/N	Valve Size Inch (mm)	S	L1	L3	L4	H2	H3	H	Weight (lb (kg))
PICV2-050(.9)NO	1/2 (15)	1.1 (27)	3.0 (75)	1.6 (41)	1.5 (38)	2.6 (67.3)	3.2 (82.4)	14.6 (371)	1.1 (0.50)
PICV2-050(2.5)NO		1.1 (27)	3.0 (75)	1.6 (41)	1.5 (38)	2.6 (67.3)	3.2 (82.4)	14.6 (371)	1.1 (0.50)
PICV2-075(5.8)NO	3/4 (20)	1.25 (32)	3.1 (79)	1.6 (41)	1.5 (38)	2.7 (67.5)	3.3 (82.5)	14.7 (374)	1.2 (0.53)
PICV2-100(8.0)NO	1 (25)	1.5 (40)	4.0 (100)	1.7 (44)	1.5 (38)	2.8 (71)	3.3 (82.5)	14.7 (374)	2.5 (1.14)
PICV2-125(18)NO	1-1/4 (32)	1.8 (46)	4.1 (104)	2.1 (53)	2.5 (65)	3.4 (86)	4.0 (100)	15.4 (391)	2.8 (1.27)
PICV2-150(40)NO	1-1/2 (40)	2.3 (58)	5.4 (138)	2.7 (68)	3.7 (94)	5.9 (149)	—	20 (508)	7.2 (3.28)
PICV2-200(50)NO	2 (50)	2.8 (72)	5.4 (138)	2.9 (74)	3.7 (94)	5.9 (149)	—	20 (508)	8.2 (3.71)

Figure 2. Two-Way Normally Open Valves Dimensions.



Valve P/N	Valve Size Inch (mm)	A	B	L	H1	H2	H3	H	Weight (lb (kg))
PICV2-050(2.7)NC	1/2 (15)	.50 (15)	1.1 (27)	3.5 (88)	2.1 (53)	4.8 (123)	5.3 (135)	16.3 (414)	2.0 (0.9)
PICV2-050(7.5)NC		.50 (15)	1.1 (27)	3.5 (88)	2.1 (53)	4.8 (123)	5.3 (135)	16.3 (414)	2.0 (0.9)
PICV2-075(4.5)NC	3/4 (20)	.75 (20)	1.3 (32)	3.5 (88)	2.1 (53)	4.8 (123)	5.3 (135)	16.3 (414)	2.0 (0.9)
PICV2-075(8.9)NC		.75 (20)	1.3 (32)	3.5 (88)	2.1 (53)	4.8 (123)	5.3 (135)	16.3 (414)	2.0 (0.9)
PICV2-100(8.9)NC	1 (25)	1.0 (25)	1.5 (39)	3.6 (92)	2.1 (53)	4.8 (123)	5.3 (135)	16.3 (414)	2.0 (0.9)
PICV2-125(13.2)NC	1-1/4 (32)	1.25 (32)	1.8 (46)	5.0 (128)	2.7 (69)	5.7 (145)	6.2 (158)	19.9 (505)	3.3 (1.5)

Figure 3. Two-Way Normally Closed Valves Dimensions.

Information in this publication is based on current specifications. The company reserves the right to make changes in specifications and models as design improvements are introduced.