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ELECTRONIC PRESSURE INDEPENDENT CONTROL VALVES (ePIV)

Compact Performance Solution

- No manual balancing valve required.
- Automatic Dynamic Balancing optimizes system performance at all times.
- Select valves based on coil flow rate. No C_V calculations are needed.

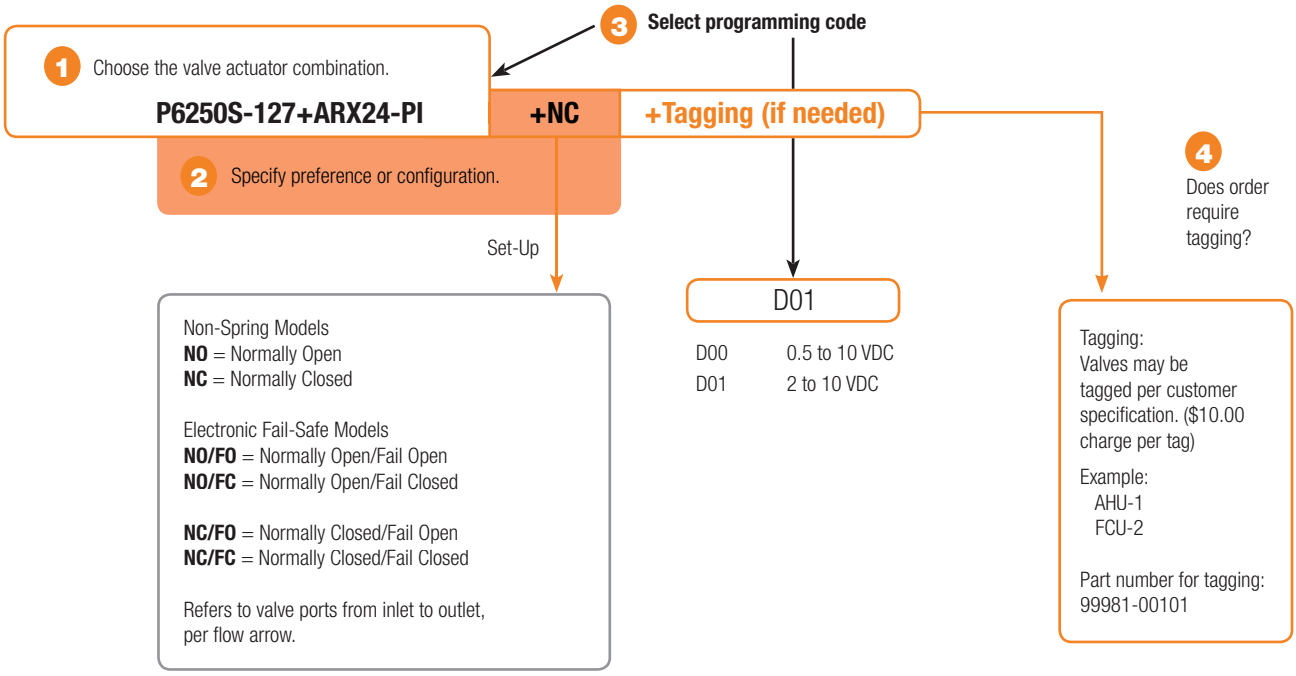
Tricia Bruenn, Business Development Manager

Electronic Pressure Independent Valve (ePIV) Nomenclature

P6	250S	-127		+ARX	24	-PI	
Electronic Pressure Independent Valve P2- NPT 2-way (½" to 2") P6- Flanged 2-way (2½" to 6")	**Valve Size** 050 = ½" 075 = ¾" 100 =1" 125 = 1¼" 150 = 1½" 200 = 2" 250 = 2½" 300 = 3" 400 = 4" 500 = 5" 600 = 6" S = Stainless Steel Ball and Stem	**Flow Rate** 127 GPM Refer to valve pages for full list	**Pressure Rating** Blank = ANSI 125 -250 = ANSI 250	**Actuator Type** Non-Spring Return LRX NRX ARX GRX EVX* Electronic Fail-Safe AKRX GKRX AVKX*	**Power Supply** 24 = 24 VAC/DC	EP = ½" to 2" PI = 2½" to 6" Modulating Control	-L = 2½" to 3"* -B = 4" to 6"*

*ANSI 250 models only

Ordering Example



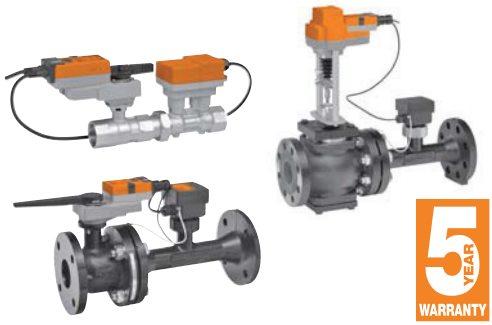
5 Complete Ordering Example: P6250S-127+ARX24-PI+NC+D01

Control Valve Product Range

Electronic Pressure Independent Control Valve (ePIV) Product Range

		Valve Nominal Size		Type	Suitable Actuators	
	GPM Range	Inches	DN [mm]	2-way	Non-Spring Return	Electronic Fail-Safe
NPT	1.65 - 5.5*	½	15	P2050S	LRX24-EP	AKRX24-EP
	6 - 10.3*	¾	20	P2075S		
	11.1 - 18.2*	1	25	P2100S		
	18 - 28.5*	1¼	32	P2125S	NRX24-EP	
	26.1 - 39.6*	1½	40	P2150S		
	32.7 - 76.1*	2	50	P2200S	ARX24-EP	
	80-100**	2	50	P2200S		
Flanged ANSI 125	80 - 127*	2½	65	P6250S	ARX24-PI	AKRX24-PI
	133 - 180*	3	80	P6300S		
	195 - 317*	4	100	P6400S	GRX24-PI	GKRX24-PI
	335 - 495*	5	125	P6500S		
	515 - 713*	6	150	P6600S		
Flanged ANSI 250	38 - 127*	2½	65	P6250S-250	EVX24-PI-L	AVKX24-PI-L
	54 - 180*	3	80	P6300S-250		
	95 - 317*	4	100	P6400S-250	EVX24-PI-B	AVKX24-PI-B
	149 - 495*	5	125	P6500S-250		
	214 - 713*	6	150	P6600S-250		

*V'nom = Maximum flow for each valve body size.
** Applies to 2" ePIV models P2200S-800 through P2200S-1000 only.
Note: For NPT and ANSI 125 versions, flows can be field set to 30% of nominal flow rate.



ePIV

Equal Percentage Characteristic

Mode of Operation

The Electronic Presure Independent Control Valve (ePIV) is a two-way valve which is unaffected by pressure variations in a system.

Product Features

Provides constant flow regardless of pressure variations in the system. Simplified valve sizing and selection, no Cv calculations required.

Actuator Specifications

Control type	modulating
Manual override	LR, NR, AR, GR, AKR, GKR, EV, AVK
Electrical connection	3 ft. [1 m] cable with ½" conduit fitting

Valve Specifications

Service	chilled or hot water, 60% glycol (open loop and steam not allowed)
Flow characteristic*	equal percentage/linear
Sizes	½", ¾", 1", 1¼", 1½", 2", 2½", 3", 4", 5", 6"
End fitting	NPT female ends (½"-2") pattern to mate with ANSI 125 flange (2½"-6") and ANSI 250 (-250) models
Materials	
Body	
Valve	brass, nickel plated (½"-2") cast iron-GG25 (2½"-6")
Sensor housing	forged brass, nickel plated (½"-2") ductile iron- GGG50 (2½"-6")
Ball	stainless steel
Plug	stainless steel (-250)
Stem	stainless steel
Seats	Teflon® PTFE, stainless steel (-250)
Characterizing disc	Tefzel® (½"- 2") stainless steel (2½"-6")
Stem packing	EPDM (lubricated), NLP (-250)
Media temp range	14°F to 250°F [-10°C to +120°C], 39°F to 250°F [4°C to 120°C]**
Body pressure rating	360 psi (½" to 2") ANSI 125, Class B (2½"-6") ANSI 250 (2½"-6") (-250)
Close-off pressure	200 psi (½"- 2") 100 psi (2½"-6") varies by size (-250)
Differential pressure range (ΔP)	see application pages
Leakage	0%, ANSI Class IV (-250)
Flow sensor technology	ultrasonic (½"- 2") magnetic (2½"-6")
Inlet length to meet specified measurement accuracy	5x nominal pipe size (NPS)
Conductivity of media	min. 20uS/cm (Applies to sizes 2½" [DN65] to 6" [DN150] only.)

*The flow characteristic can be changed by using the Belimo PC-Tool software.

SET-UP - Specify Upon Ordering

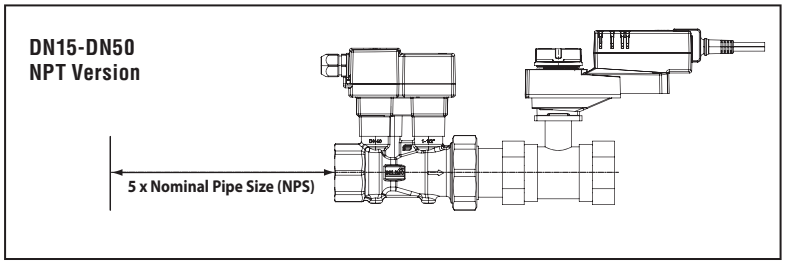
		2-WAY VALVE			
NON-SPRING RETURN STAYS IN LAST POSITION	**LRX…Series** **NRX…Series** **ARX…Series** **GRX…Series** **EVX…Series**	**NC:** Normally Closed-valve will open as voltage increases.	**NO:** Normally Open-valve will close as voltage increases.		
ELECTRONIC FAIL-SAFE STAYS IN FAIL-SAFE POSITION	**AKRX…Series** **GKRX…Series** **AVKX…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 (2V close, 10V open). Feedback signal can be set to true flow or valve position. The default is true flow. Changing this setting requires the use of the PC-Tool software.

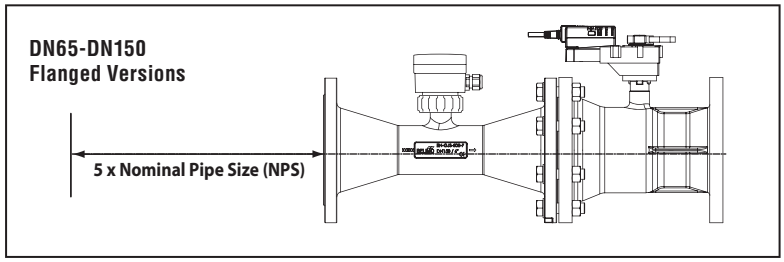
INSTALLATION

Inlet Length
The ePIV requires a section of straight pipe on the valve inlet to guarantee sensor accuracy. This section should be at least 5 pipe diameters long with respect to the size of the valve.

½" [DN15] 5 x nominal pipe size = 2.5" [64 mm]
¾" [DN20] 5 x nominal pipe size = 3.75" [95 mm]
1" [DN25] 5 x nominal pipe size = 5" [127 mm]
1¼" [DN32] 5 x nominal pipe size = 6.25" [159 mm]
1½" [DN40] 5 x nominal pipe size = 7.5" [191 mm]
2" [DN50] 5 x nominal pipe size = 10" [254 mm]



2½" [DN65] 5 x nominal pipe size = 12.5" [317 mm]
3" [DN80] 5 x nominal pipe size = 15" [381 mm]
4" [DN100] 5 x nominal pipe size = 20" [508 mm]
5" [DN125] 5 x nominal pipe size = 25" [635 mm]
6" [DN150] 5 x nominal pipe size = 30" [762 mm]

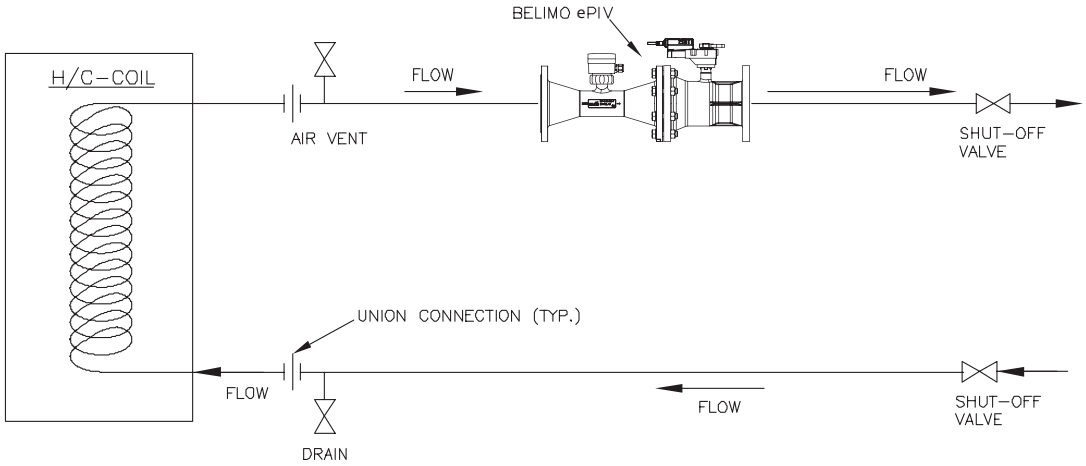


Outlet Length
No requirements for outlet length.
Elbows can be installed directly after the valve.

PIPING

The ePIV is recommended to be installed on the return side of the coil. 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.

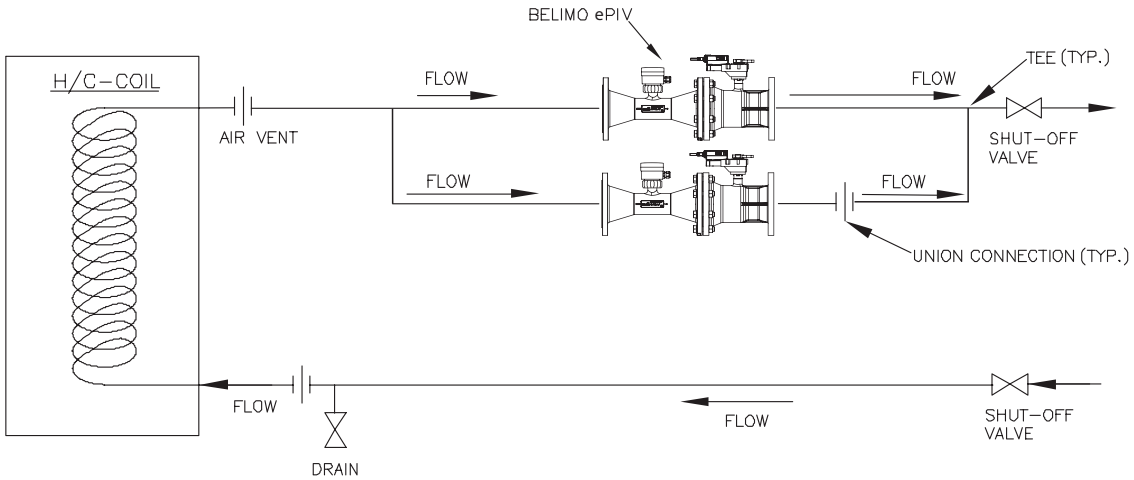
Belimo recommends installing one strainer per system. If the system has multiple branches, it is recommended to install one strainer per branch.



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

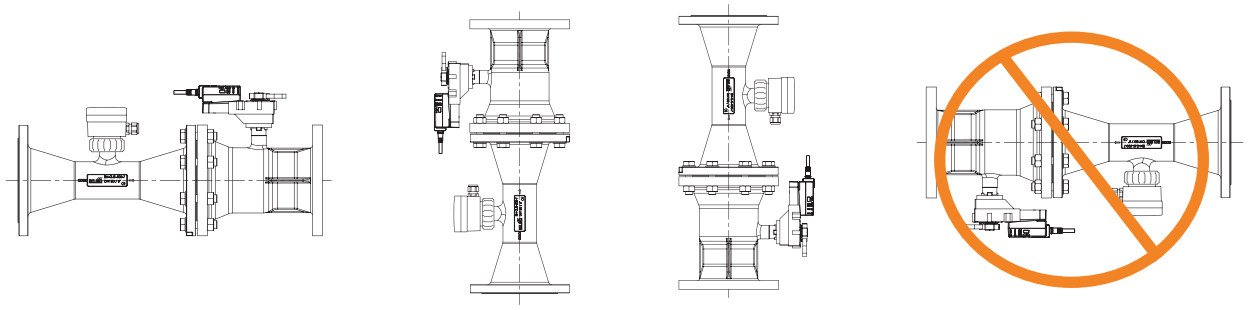
To achieve flows larger than nominal flow, it is recommended to connect two valves in parallel leading to a common manifold. To correctly operate these valves, Multi-Function Technology (MFT) will be employed to utilize one common control signal. It is recommended to use the same signal in parallel (2-10 VDC); the two actuators are wired from the same control signal 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.



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 or flow sensor.



FLOW REDUCTION CHART

MAXIMUM FLOW BASED ON MINIMUM DIFFERENTIAL PRESSURE FOR NPT AND ANSI 125 FLANGED MODELS

Size		8 psi	5 psi*	4 psi	3 psi	2 psi	1 psi
Inches	DN [mm]						
½	15	5.5 GPM	5.5 GPM	5.5 GPM	5.5 GPM	4.8 GPM	3.4 GPM
¾	20	10.3 GPM	10.3 GPM	10.3 GPM	9.9 GPM	8.1 GPM	5.7 GPM
1	25	18.2 GPM	18.2 GPM	18.2 GPM	17.2 GPM	14.1 GPM	9.9 GPM
1¼	32	28.5 GPM	28.5 GPM	28.5 GPM	28.5 GPM	23.3 GPM	16.5 GPM
1½	40	39.6 GPM	39.6 GPM	39.6 GPM	39.6 GPM	34.9 GPM	24.7 GPM
2	50	100 GPM**	76.1 GPM	74 GPM	64.1 GPM	52.3 GPM	37 GPM
2½	65	127 GPM	127 GPM	93 GPM	81 GPM	66 GPM	47 GPM
3	80	180 GPM	180 GPM	138 GPM	120 GPM	97 GPM	69 GPM
4	100	317 GPM	317 GPM	235 GPM	203 GPM	166 GPM	117 GPM
5	125	495 GPM	495 GPM	367 GPM	318 GPM	260 GPM	183 GPM
6	150	713 GPM	713 GPM	550 GPM	476 GPM	389 GPM	275 GPM

*Select valve based on a minimum of 5 PSI differential.
**Applies to 2" ePIV models P2200S-800 through P2200S-1000 only.

MAXIMUM FLOW BASED ON MINIMUM DIFFERENTIAL PRESSURE FOR ANSI 250 FLANGED MODELS

Size		7.5 psi***	5 psi	4 psi	3 psi	2 psi	1 psi
Inches	DN [mm]						
2½	65	127 GPM	109 GPM	98 GPM	85 GPM	69 GPM	49 GPM
3	80	180 GPM	153 GPM	137 GPM	118 GPM	97 GPM	68 GPM
4	100	317 GPM	280 GPM	251 GPM	217 GPM	177 GPM	125 GPM
5	125	495 GPM	436 GPM	390 GPM	337 GPM	275 GPM	195 GPM
6	150	713 GPM	593 GPM	531 GPM	460 GPM	375 GPM	265 GPM

***Select valve based on a minimum of 7.5 PSI differential.