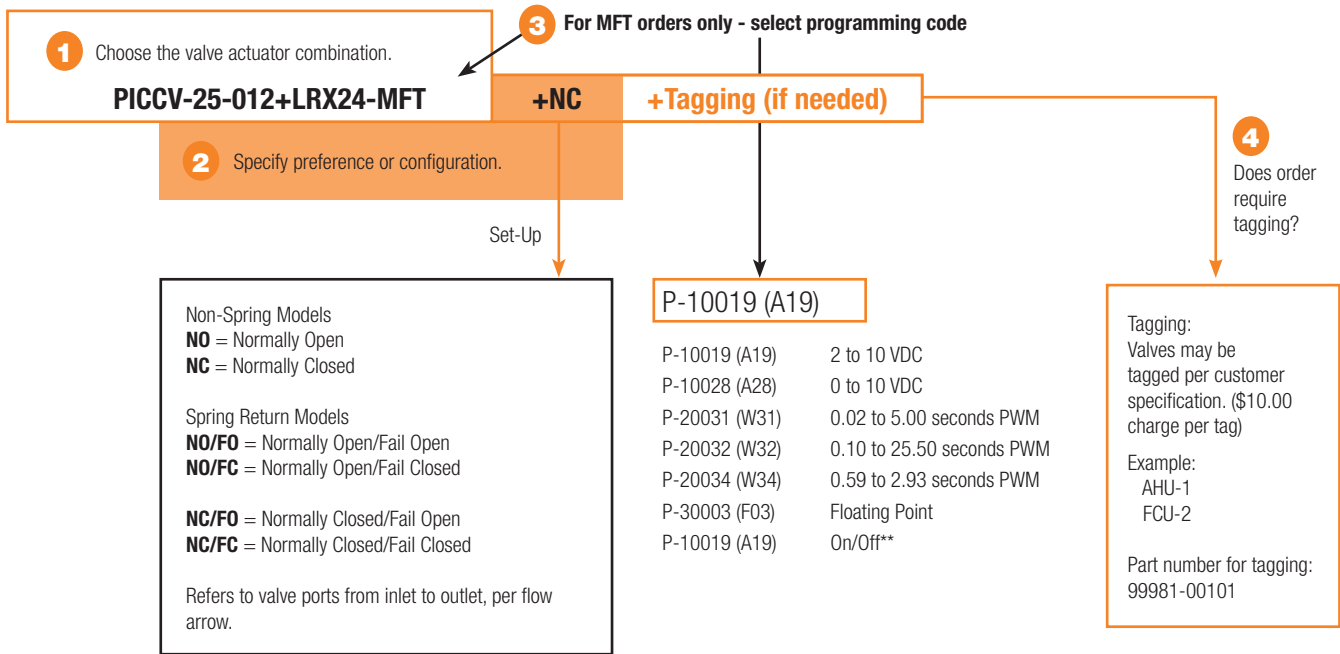




# Pressure Independent Characterized Control Valve™ Nomenclature

PICCV	25	-012	+LRX	24	-MFT	
<b>Pressure Independent Characterized Control Valve</b> 2-way Chrome Plated Brass Ball and Brass Stem	<b>Valve Size</b> 25 = 1" 32 = 1¼" 40 = 1½" 50 = 2"	<b>Flow Rate</b> 3 GPM Refer to table	<b>Actuator Type</b> Non-Spring Return LRB... LRX... ARX... Spring Return TF... LF... AF...	<b>Power Supply</b> 24 = 24 VAC/DC 120 = 120 VAC	<b>Control</b> -3 = Floating Point -MFT = Multi-Function Technology	S = Built-in Auxiliary Switch

## Ordering Example

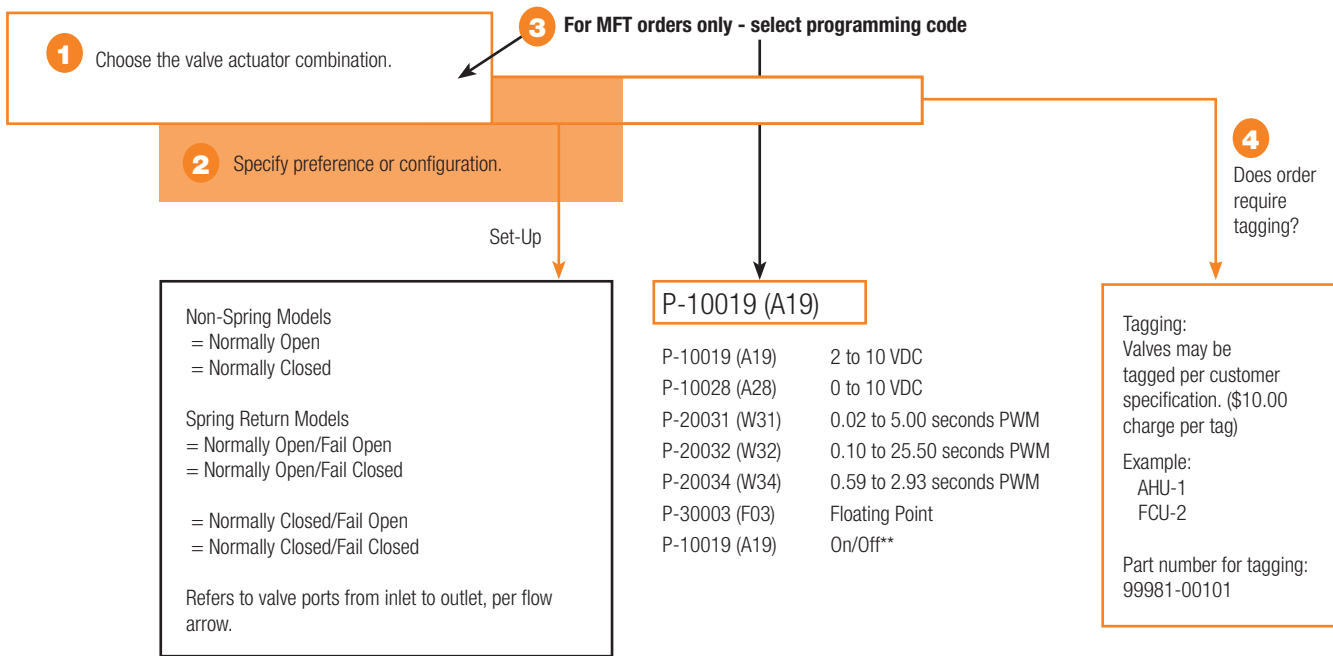


\*\* Wire for On/Off

# Pressure Independent Characterized Control Valve™ (½" and ¾") Nomenclature

P	2	050	B	005	LRX	24	-MFT
<b>Valve Type</b> P= Pressure Independent Characterized Control Valve	<b>Porting</b> 2 = Two Way	<b>Valve Body Size</b> 050 = ½" 075 = ¾"	<b>Body Type</b> B= Chrome Plated	<b>Flow Rate</b> 005 = .50 GPM 010 = 1 GPM 015 = 1.5 GPM 020 = 2 GPM 025 = 2.5 GPM 030 = 3 GPM 035 = 3.5 GPM 040 = 4 GPM 045 = 4.5 GPM 050 = 5 GPM 055 = 5.5 GPM 060 = 6 GPM 065 = 6.5 GPM 070 = 7 GPM 075 = 7.5 GPM 080 = 8 GPM 085 = 8.5 GPM 090 = 9 GPM 095 = 9.5 GPM 100 = 10 GPM	<b>Actuator Type</b> Non-Spring Return LRB... LRX... Spring Return TF... LF...	<b>Power Supply</b> 24 = 24 VAC/DC 120 = 120 VAC	<b>Control</b> -3 = Floating Point -MFT = Multi-Function Technology

## Ordering Example



\*\* Wire for On/Off



# Control Valve Product Range

## Pressure Independent Characterized Control Valve Product Range P2..., 2-way



Equal percentage characteristic



GPM**	Valve Nominal Size		Type	Suitable Actuators		
	Inches	DN [mm]		2-way NPT	Spring Return	Non-Spring Return
0.5	½	15	P2050B005	TF24-MFT US		
1	½	15	P2050B010			
1.5	½	15	P2050B015			
2	½	15	P2050B020			
3	½	15	P2050B030			
4	½	15	P2050B040	LF24-MFT US	LRB24-3	LRX24-MFT
5	½	15	P2050B050			
6	¾	20	P2075B060			
7	¾	20	P2075B070			
8	¾	20	P2075B080			
9	¾	20	P2075B090			
10	¾	20	P2075B100			
12	1	25	PICCV-25-012			
14	1	25	PICCV-25-014			
16	1	25	PICCV-25-016			
18	1	25	PICCV-25-018	AF24-MFT US		LRCB24-3 Heat Pump Only
18	1¼	32	PICCV-32-018			
20	1¼	32	PICCV-32-020			
22	1¼	32	PICCV-32-022			
24	1¼	32	PICCV-32-024			
26	1¼	32	PICCV-32-026			
26	1½	40	PICCV-40-026			
28	1½	40	PICCV-40-028			
30	1½	40	PICCV-40-030			
33	1½	40	PICCV-40-033			
33	2	50	PICCV-50-033			
36	2	50	PICCV-50-036			
40	2	50	PICCV-50-040			
44	2	50	PICCV-50-044			
48	2	50	PICCV-50-048			
52	2	50	PICCV-50-052			
56	2	50	PICCV-50-056			
60	2	50	PICCV-50-060			
65	2	50	PICCV-50-065			
70	2	50	PICCV-50-070			
75	2	50	PICCV-50-075			
80	2	50	PICCV-50-080			
90	2	50	PICCV-50-090			
100	2	50	PICCV-50-100			

### Applications

Water-side control of heating and cooling systems, for AHUs, re-heat coils, fan coil units, unit ventilators and heat pumps.

### Mode of Operation

The Pressure Independent Characterized Control Valve is a two-way valve which combines the functionality of a control valve and a pressure regulating valve, creating one precise product which is unaffected by pressure variations in a system.

### Product Features

Constant flow regardless of pressure variations in the system at every degree of ball opening. Maximizes chiller ΔT, preventing energizing additional chillers due to low ΔT. Simplified valve sizing and selection, no C<sub>v</sub> calculations required.

### Actuator Specifications

Control type	Floating Point, Non-Spring Multi-Function Technology (MFT) Non-Spring and Spring Return
Manual override	(LRB, LRX, LRC, AF, ARX)
Electrical connection	3 ft [1m] cable with ½" conduit fitting (additional cable lengths are available)

### Valve Specifications

Service	chilled or hot water, 60% glycol
Flow characteristic	equal percentage
Controllable flow range	75°
Sizes	½", ¾", 1", 1¼", 1½", 2"
Type of end fitting	NPT female ends
Materials	
Body	forged brass, nickel plated
Ball	chrome plated brass
Stem	chrome plated brass
Seat	fiberglass reinforced Teflon® PTFE
Set O-ring	Viton®
Characterizing disc	
½" & ¾"	brass
1"-2"	TEFZEL®
Packing	2 EPDM O-rings, lubricated
Diaphragm	
½" & ¾"	silicone and Nomex
1"-2"	polyester reinforced silicone
Regulator components	stainless steel/brass/Delrin 500AF
Spring	stainless steel
Pressure rating	
600 psi	½", ¾", 1"
400 psi	1¼", 1½", 2"
Media temp range	0°F to 212°F [-18°C to 100°C]
Close off pressure	200 psi
Maximum differential pressure across valve (range)	5 to 50 psid
Leakage	ANSI Class IV (0.01% of rated valve capacity at 50 psi differential)





\*\*Reference the following pages for all flow rates available.

# Electronic Pressure Independent Characterized Control Valves

## P2 Series Pressure Independent Characterized Control Valves



### SET-UP

		2-WAY VALVE			
		SPECIFY UPON ORDERING			
<b>NON-SPRING RETURN</b> Stays in Last Position	<b>LRB24-3</b> Floating type actuators	Power to pin 2 will drive valve CW. Power to pin 3 will drive valve CCW. The above will function when the directional switch is in the "1" position-to reverse select the "0" position.			
	<b>LRX24-MFT</b> <b>ARX24-MFT</b> MFT type actuators†	<b>NC:</b> Valve Closed-will open as voltage increases. Actuator switch on Y2.	<b>NO:</b> Valve Open-will close as voltage increases. Actuator switch on Y1.		
<b>SPRING RETURN</b> Note Fail Position	<b>LF24-MFT US</b> <b>AF24-MFT US</b> MFT type actuators†	<b>NC/FO Valve:</b> Valve Closed-will open as voltage increases. Actuator switch on CW. Spring Action: Will spring open upon power loss.	<b>NC/FC Valve:</b> Valve Closed-will open as voltage increases. Actuator switch on CW. Spring Action: Will spring closed upon power loss.	<b>NO/FC Valve:</b> Valve Open-will close as voltage increases. Actuator switch on CCW. Spring Action: Will spring closed upon power loss.	<b>NO/FO Valve:</b> Valve Open-will close as voltage increases. Actuator switch on CCW. Spring Action: Will spring open upon power loss.
	<b>TF24-MFT US</b>	<b>NC/FO Valve:</b> Valve Closed-will open as voltage increases. Switch on  (arrow setting) Spring Action: Will spring open upon power loss.	<b>NC/FC Valve:</b> Valve Closed-will open as voltage increases. Switch on  (arrow setting) Spring Action: Will spring closed upon power loss.	<b>NO/FC Valve:</b> Valve Open-will close as voltage increases. Switch on  (arrow setting) Spring Action: Will spring closed upon power loss.	<b>NO/FO Valve:</b> Valve Open-will close as voltage increases. Switch on  (arrow setting) Spring Action: Will spring open upon power loss.

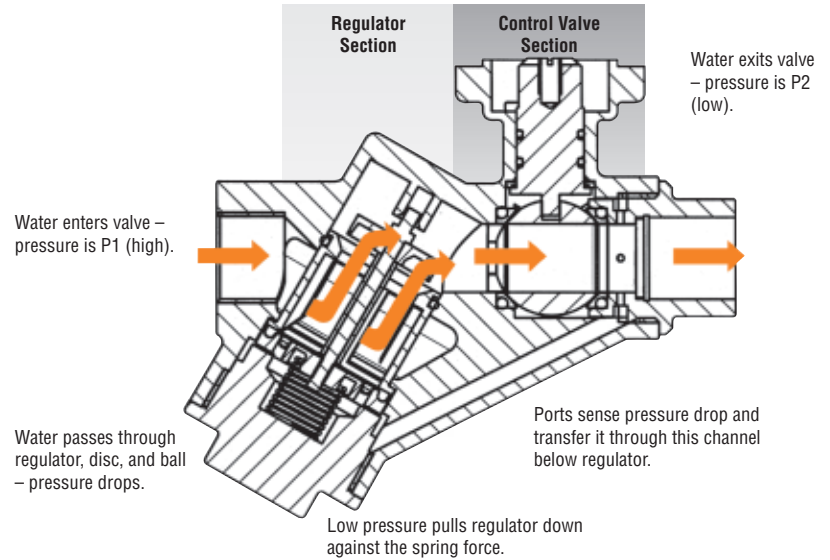
† The design flow rate of PICCVs with MFT actuators are dependent on their Minimum and Maximum Percentages of rotation. Actuators must be re-programmed for different Minimum and Maximum Settings if actuator set-ups must be changed. Please refer to PICCV online technical documentation, MFT Adjustment Tables, for re-programming the settings.

### FLOW PATTERN

PICCV consists of a differential pressure regulator in series with a control valve.

The amount of flow that passes through the valve is controlled by the use of a pressure regulator that moves according to the change in pressure above and below it.

All pressure changes are absorbed by the pressure regulator allowing the differential pressure to be held constant over the control valve section thereby giving the same flow.



### INSTALLATION

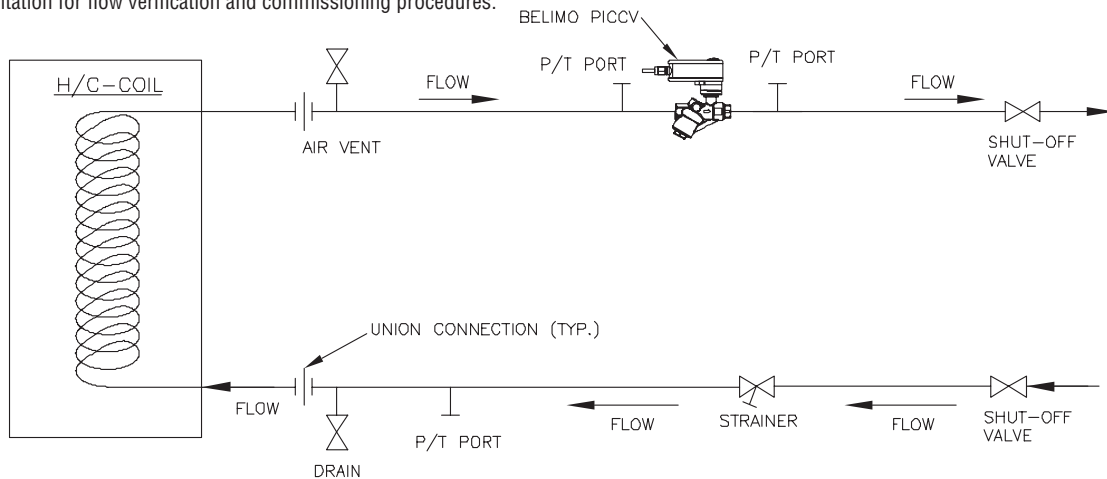
PICCVs shall be installed, with flow in the direction of the arrow on the valve body. If installed backwards, there could be damage to either the diaphragm or the regulator top.

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



### PIPING

The PICCVs are 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. P/T ports are recommended on either side of the valve and the supply side of the heat transfer device to allow for pressure/flow measurement/calculation. Refer to Belimo documentation for flow verification and commissioning procedures.



# P2 Series Pressure Independent Characterized Control Valve with Floating Point and MFT, Non-Spring Return Actuator



2-way Valve with Chrome Plated Brass Ball and Brass Stem, NPT Female Ends

## Valve Specifications

Service	chilled or hot water, 60% glycol
Flow characteristic	equal percentage
Controllable flow range	75°
Sizes	½", ¾", 1"
Type of end fitting	NPT female ends
Materials:	
Body	forged brass, nickel plated
Ball	chrome plated brass
Stem	chrome plated brass
Seat	fiberglass reinforced Teflon® PTFE
Seat O-rings	Viton®
Characterizing disc	brass (½" and ¾"), TEFZEL® (1")
Packing	2 EPDM O-rings, lubricated
Diaphragm	silicone and Nomex (½" and ¾"), polyester reinforced silicone (1")
Regular components	stainless steel, brass, Delrin 500AF
Spring	stainless steel
Body pressure rating	600 psi (½", ¾", 1")
Media temp. range	0°F to 212°F [-18°C to +100°C]
Differential pressure range (ΔP)	5 to 50 psid
Leakage	ANSI Class IV (0.01% of rated valve capacity at 50 psi differential)



## Non-Spring Return Actuators



ACTUATOR PART #	LRB24-3	LRX24-MFT
Control type	Floating Point	Proportional/MFT
Manual override	•	•
Running time	95 seconds (varies in the flow setting)	100 seconds
Noise level	<35 dB(A)	<35 dB(A)
<b>ELECTRICAL CONNECTION:</b>		
3 ft cable, ½" conduit fitting	•	•

PICCV Model #	Flow Rate GPM	Flow Rate Liter/Sec	Valve Nominal Size			Close-off psi		
			Inches	DN mm				
P2050B005*	0.5	0.03	½	15	200		\$458.00	\$606.00
P2050B010*	1	0.06	½	15	200		\$458.00	\$606.00
P2050B015*	1.5	0.09	½	15	200		\$462.00	\$634.00
P2050B020*	2	0.13	½	15	200		\$462.00	\$634.00
P2050B025*	2.5	0.16	½	15	200		\$462.00	\$634.00
P2050B030*	3	0.19	½	15	200		\$462.00	\$634.00
P2050B035*	3.5	0.22	½	15	200		\$462.00	\$634.00
P2050B040*	4	0.25	½	15	200		\$462.00	\$634.00
P2050B045*	4.5	0.28	½	15	200		\$462.00	\$634.00
P2050B050*	5	0.32	½	15	200		\$462.00	\$634.00
P2050B055*	5.5	0.35	½	15	200		\$462.00	\$634.00
P2075B060	6	0.38	¾	20	200		\$482.00	\$656.00
P2075B065	6.5	0.41	¾	20	200		\$482.00	\$656.00
P2075B070	7	0.44	¾	20	200		\$482.00	\$656.00
P2075B075	7.5	0.47	¾	20	200		\$482.00	\$656.00
P2075B080	8	0.5	¾	20	200		\$482.00	\$656.00
P2075B085	8.5	0.54	¾	20	200		\$482.00	\$656.00
P2075B090	9	0.57	¾	20	200		\$482.00	\$656.00
P2075B095	9.5	0.6	¾	20	200		\$482.00	\$656.00
P2075B100	10	0.63	¾	20	200		\$482.00	\$656.00
PICCV-25-011**	11	0.69	1	25	200		\$540.00	\$744.00
PICCV-25-012**	12	0.76	1	25	200		\$540.00	\$744.00
PICCV-25-013**	13	0.82	1	25	200		\$540.00	\$744.00
PICCV-25-014**	14	0.88	1	25	200		\$540.00	\$744.00
PICCV-25-015**	15	0.95	1	25	200		\$540.00	\$744.00
PICCV-25-016**	16	1.01	1	25	200		\$540.00	\$744.00
PICCV-25-017**	17	1.07	1	25	200		\$540.00	\$744.00
PICCV-25-018**	18	1.14	1	25	200		\$540.00	\$744.00
PICCV-25-019**	19	1.2	1	25	200		\$540.00	\$744.00

OPTIONS (ADD TO LIST PRICE)	LRB24-3-S	LRX24-3-S	LRX120-3
Built-in auxiliary switch (-S)	\$66.00	\$66.00	
120 VAC			\$30.00

\* ½" body has two different flow capacities (.50 GPM to 2.5 GPM) (3 GPM to 5.5 GPM)  
 \*\* 1" body has two different flow capacities (11 GPM to 16 GPM) (17 GPM to 19 GPM)

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### Valve Specifications

Service	chilled or hot water, 60% glycol
Flow characteristic	equal percentage
Controllable flow range	75°
Sizes	1¼", 1½", 2"
Type of end fitting	NPT female ends
Materials:	
Body	forged brass, nickel plated
Ball	chrome plated brass
Stem	chrome plated brass
Seat	fiberglass reinforced Teflon® PTFE
Seat O-rings	Viton®
Characterizing disc	TEFZEL®
Packing	2 EPDM O-rings, lubricated
Diaphragm	polyester reinforced silicone (1¼" - 2")
Regular components	stainless steel, brass, Delrin 500AF
Spring	stainless steel
Body pressure rating	400 psi (1¼", 1½", 2")
Media temp. range	0°F to 212°F [-18°C to +100°C]
Differential pressure range (ΔP)	5 to 50 psid
Leakage	ANSI Class IV (0.01% of rated valve capacity at 50 psi differential)



### Non-Spring Return Actuators



ACTUATOR PART #	ARX24-MFT
Control type	Proportional/MFT
Manual override	•
Running time	100 seconds
Noise level	<45 dB(A)
<b>ELECTRICAL CONNECTION:</b>	
3 ft cable, ½" conduit fitting	•

PICCV Model #	Flow Rate		Valve Nominal Size			Close-off psi	
	GPM	Liter/Sec	Inches	DN mm			
PICCV-32-018	18	1.14	1¼	32	200		\$1,362.00
PICCV-32-019	19	1.2	1¼	32	200		\$1,362.00
PICCV-32-020	20	1.26	1¼	32	200		\$1,362.00
PICCV-32-021	21	1.32	1¼	32	200		\$1,362.00
PICCV-32-022	22	1.39	1¼	32	200		\$1,362.00
PICCV-32-023	23	1.45	1¼	32	200		\$1,362.00
PICCV-32-024	24	1.51	1¼	32	200		\$1,362.00
PICCV-32-025	25	1.58	1¼	32	200		\$1,362.00
PICCV-32-026	26	1.64	1¼	32	200		\$1,362.00
PICCV-40-026	26	1.64	1½	40	200		\$1,462.00
PICCV-40-027	27	1.7	1½	40	200		\$1,462.00
PICCV-40-028	28	1.77	1½	40	200		\$1,462.00
PICCV-40-029	29	1.83	1½	40	200		\$1,462.00
PICCV-40-030	30	1.89	1½	40	200		\$1,462.00
PICCV-40-031	31	1.96	1½	40	200		\$1,462.00
PICCV-40-032	32	2.01	1½	40	200		\$1,462.00
PICCV-40-033	33	2.08	1½	40	200		\$1,462.00
PICCV-50-033	33	2.08	2	50	200		\$1,648.00
PICCV-50-034	34	2.15	2	50	200		\$1,648.00
PICCV-50-035	35	2.21	2	50	200		\$1,648.00
PICCV-50-036	36	2.27	2	50	200		\$1,648.00
PICCV-50-037	37	2.33	2	50	200		\$1,648.00
PICCV-50-038	38	2.4	2	50	200		\$1,648.00
PICCV-50-039	39	2.46	2	50	200		\$1,648.00
PICCV-50-040	40	2.52	2	50	200		\$1,648.00
PICCV-50-044***	44	2.78	2	50	200		\$4,350.00
PICCV-50-048***	48	3.03	2	50	200		\$4,350.00
PICCV-50-052***	52	3.28	2	50	200		\$4,350.00
PICCV-50-056***	56	3.53	2	50	200		\$4,350.00
PICCV-50-060***	60	3.79	2	50	200		\$4,350.00
PICCV-50-065***	65	4.1	2	50	200		\$4,350.00
PICCV-50-070***	70	4.42	2	50	200		\$4,350.00
PICCV-50-075***	75	4.73	2	50	200		\$4,350.00
PICCV-50-080***	80	5.05	2	50	200		\$4,350.00
PICCV-50-090***	90	5.68	2	50	200		\$4,350.00
PICCV-50-100***	100	6.31	2	50	200		\$4,350.00

\*\*\* Larger 2" body has two different flow capacities (44 GPM to 80 GPM) (90 GPM to 100 GPM).

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# P2 Series Pressure Independent Characterized Control Valve with Floating Point and MFT, Non-Spring Return Actuator



2-way Valve with Chrome Plated Brass Ball and Brass Stem, NPT Female Ends

MULTI-FUNCTION TECHNOLOGY					
Description	P-CODE	Control Input	Running Time	Built-in Feedback	List Price
P-10019	A19	2-10 VDC	100 seconds	2-10 VDC	No Charge
P-10028	A28	0-10 VDC	100 seconds	0-10 VDC	No Charge
P-10118	AAJ	2-6 VDC	100 seconds	2-10 VDC	No Charge
P-10119	AAK	6-10 VDC	100 seconds	2-10 VDC	No Charge
P-10137	AD5	2-5 VDC	100 seconds	2-10 VDC	No Charge
P-20031	W31	0.02-5.00 seconds PWM	100 seconds	2-10 VDC	No Charge
P-20032	W32	0.10-25.5 seconds PWM	100 seconds	2-10 VDC	No Charge
P-20034	W34	0.59-2.93 seconds PWM	100 seconds	2-10 VDC	No Charge
P-30003	F03	Floating Point	100 seconds	2-10 VDC	No Charge
P-10019†	A19	On/Off	100 seconds	2-10 VDC	No Charge

Example: LRX24-MFT is the basic model. Add the P... pre-set MFT configuration number and list price to the actuator when ordering, as needed.

Note: Most popular configurations available at no additional cost. All other configurations carry a \$34.00 list price.

† Wire for On/Off. Refer to PICCV technical documentation for wiring diagram.

### Valve Specifications

Service	chilled or hot water, 60% glycol
Flow characteristic	equal percentage
Controllable flow range	75°
Sizes	½", ¾", 1", 1¼"
Type of end fitting	NPT female ends
Materials:	
Body	forged brass, nickel plated
Ball	chrome plated brass
Seats	fiberglass reinforced Teflon® PTFE
Seat O-rings	Viton®
Characterizing disc	brass (½" and ¾"), TEFLON® (1" and 1¼")
Packing	2 EPDM O-rings, lubricated
Diaphragm	silicone and Nomex (½" and ¾"), polyester reinforced silicone (1" and 1¼")
Regular components	stainless steel, brass, Delrin 500AF
Spring	stainless steel
Body pressure rating	600 psi (½", ¾", 1") 400 psi (1¼")
Media temp. range	0°F to 212°F [-18°C to +100°C]
Differential pressure range (ΔP)	5 to 50 psid
Leakage	ANSI Class IV (0.01% of rated valve capacity at 50 psi differential)



### Spring Return Actuators



ACTUATOR PART #	TF24-MFT US	LF24-MFT US	AF24-MFT US
Control type	Proportional/MFT	Proportional/MFT	Proportional/MFT
Manual override			•
Running time	100 seconds	100 seconds	100 seconds
Noise level	<35 dB(A)	<35 dB(A)	<45 dB(A)
<b>ELECTRICAL CONNECTION:</b> 3 ft cable, ½" conduit fitting	•	•	•

PICCV Model #	Flow Rate		Valve Nominal Size			Price	Price	Price
	GPM	Liter/Sec	Inches	DN mm	Close-off psi			
P2050B005*	0.5	0.03	½	15	200	\$730.00	\$774.00	
P2050B010*	1	0.06	½	15	200	\$730.00	\$774.00	
P2050B015*	1.5	0.09	½	15	200	\$736.00	\$780.00	
P2050B020*	2	0.13	½	15	200	\$736.00	\$780.00	
P2050B025*	2.5	0.16	½	15	200	\$736.00	\$780.00	
P2050B030*	3	0.19	½	15	200	\$736.00	\$780.00	
P2050B035*	3.5	0.22	½	15	200	\$736.00	\$780.00	
P2050B040*	4	0.25	½	15	200	\$736.00	\$780.00	
P2050B045*	4.5	0.28	½	15	200	\$736.00	\$780.00	
P2050B050*	5	0.32	½	15	200	\$736.00	\$780.00	
P2050B055*	5.5	0.35	½	15	200	\$736.00	\$780.00	
P2075B060	6	0.38	¾	20	200		\$796.00	
P2075B065	6.5	0.41	¾	20	200		\$796.00	
P2075B070	7	0.44	¾	20	200		\$796.00	
P2075B075	7.5	0.47	¾	20	200		\$796.00	
P2075B080	8	0.5	¾	20	200		\$796.00	
P2075B085	8.5	0.54	¾	20	200		\$796.00	
P2075B090	9	0.57	¾	20	200		\$796.00	
P2075B095	9.5	0.6	¾	20	200		\$796.00	
P2075B100	10	0.63	¾	20	200		\$796.00	
PICCV-25-011**	11	0.69	1	25	200		\$868.00	
PICCV-25-012**	12	0.76	1	25	200		\$868.00	
PICCV-25-013**	13	0.82	1	25	200		\$868.00	
PICCV-25-014**	14	0.88	1	25	200		\$868.00	
PICCV-25-015**	15	0.95	1	25	200		\$868.00	
PICCV-25-016**	16	1.01	1	25	200		\$868.00	
PICCV-25-017**	17	1.07	1	25	200		\$868.00	
PICCV-25-018**	18	1.14	1	25	200		\$868.00	
PICCV-25-019**	19	1.2	1	25	200		\$868.00	
PICCV-32-018	18	1.14	1¼	32	200			\$1,508.00
PICCV-32-019	19	1.2	1¼	32	200			\$1,508.00
PICCV-32-020	20	1.26	1¼	32	200			\$1,508.00
PICCV-32-021	21	1.32	1¼	32	200			\$1,508.00
PICCV-32-022	22	1.39	1¼	32	200			\$1,508.00
PICCV-32-023	23	1.45	1¼	32	200			\$1,508.00
PICCV-32-024	24	1.51	1¼	32	200			\$1,508.00
PICCV-32-025	25	1.58	1¼	32	200			\$1,508.00
PICCV-32-026	26	1.64	1¼	32	200			\$1,508.00

OPTIONS (ADD TO LIST PRICE)	LF24-MFT-S US	AF24-MFT-S US
Built-in auxiliary switch (-S)	\$54.00	\$86.00

\* ½" body has two different flow capacities (.50 GPM to 2.5 GPM) (3 GPM to 5.5 GPM)

\*\* 1" body has two different flow capacities (11 GPM to 16 GPM) (17 GPM to 19 GPM)

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# P2 Series Pressure Independent Characterized Control Valve with MFT, Spring Return Actuator



2-way Valve with Chrome Plated Brass Ball and Brass Stem, NPT Female Ends

## Valve Specifications

Service	chilled or hot water, 60% glycol
Flow characteristic	equal percentage
Controllable flow range	75°
Sizes	1½", 2"
Type of end fitting	NPT female ends
Materials:	
Body	forged brass, nickel plated
Ball	chrome plated brass
Seat	fiberglass reinforced Teflon® PTFE
Seat O-rings	Viton®
Characterizing disc	TEFZEL®
Packing	2 EPDM O-rings, lubricated
Diaphragm	polyester reinforced silicone
Regular components	stainless steel, brass, Delrin 500AF
Spring	stainless steel
Body pressure rating	400 psi (1¼", 1½", 2")
Media temp. range	0°F to 212°F [-18°C to +100°C]
Differential pressure range (ΔP)	5 to 50 psid
Leakage	ANSI Class IV (0.01% of rated valve capacity at 50 psi differential)



## Spring Return Actuators



<b>ACTUATOR PART #</b>	<b>AF24-MFT US</b>
Control type	Proportional/MFT
Manual override	•
Running time	100 seconds
Noise level	<45 dB(A)
<b>ELECTRICAL CONNECTION:</b>	
3 ft cable, ½" conduit fitting	•

PICCV Model #	Flow Rate		Valve Nominal Size			Close-off psi	
	GPM	Liter/Sec	Inches	DN mm			
PICCV-40-026	26	1.64	1½	40	200		\$1,660.00
PICCV-40-027	27	1.7	1½	40	200		\$1,660.00
PICCV-40-028	28	1.77	1½	40	200		\$1,660.00
PICCV-40-029	29	1.83	1½	40	200		\$1,660.00
PICCV-40-030	30	1.89	1½	40	200		\$1,660.00
PICCV-40-031	31	1.96	1½	40	200		\$1,660.00
PICCV-40-032	32	2.01	1½	40	200		\$1,660.00
PICCV-40-033	33	2.08	1½	40	200		\$1,660.00
PICCV-50-033	33	2.08	2	50	200		\$1,808.00
PICCV-50-034	34	2.15	2	50	200		\$1,808.00
PICCV-50-035	35	2.21	2	50	200		\$1,808.00
PICCV-50-036	36	2.27	2	50	200		\$1,808.00
PICCV-50-037	37	2.33	2	50	200		\$1,808.00
PICCV-50-038	38	2.4	2	50	200		\$1,808.00
PICCV-50-039	39	2.46	2	50	200		\$1,808.00
PICCV-50-040	40	2.52	2	50	200		\$1,808.00
PICCV-50-044	44	2.78	2	50	200		\$4,442.00
PICCV-50-048	48	3.03	2	50	200		\$4,442.00
PICCV-50-052	52	3.28	2	50	200		\$4,442.00
PICCV-50-056	56	3.53	2	50	200		\$4,442.00
PICCV-50-060	60	3.79	2	50	200		\$4,442.00
PICCV-50-065	65	4.1	2	50	200		\$4,442.00
PICCV-50-070	70	4.42	2	50	200		\$4,442.00
PICCV-50-075	75	4.73	2	50	200		\$4,442.00
PICCV-50-080	80	5.05	2	50	200		\$4,442.00
PICCV-50-090	90	5.68	2	50	200		\$4,442.00
PICCV-50-100	100	6.31	2	50	200		\$4,442.00

<b>OPTIONS (ADD TO LIST PRICE)</b>	<b>AF24-MFT-S US</b>
Built-in auxiliary switch (-S)	\$86.00

Larger 2" body has two different flow capacities (44 GPM to 80 GPM) (90 GPM to 100 GPM).

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MULTI-FUNCTION TECHNOLOGY					
Description	P-CODE	Control Input	Running Time	Built-in Feedback	List Price
P-10019	A19	2-10 VDC	100 seconds	2-10 VDC	No Charge
P-10028	A28	0-10 VDC	100 seconds	0-10 VDC	No Charge
P-10118	AAJ	2-6 VDC	100 seconds	2-10 VDC	No Charge
P-10119	AAK	6-10 VDC	100 seconds	2-10 VDC	No Charge
P-10137	AD5	2-5 VDC	100 seconds	2-10 VDC	No Charge
P-20031	W31	0.02-5.00 seconds PWM	100 seconds	2-10 VDC	No Charge
P-20032	W32	0.10-25.5 seconds PWM	100 seconds	2-10 VDC	No Charge
P-20034	W34	0.59-2.93 seconds PWM	100 seconds	2-10 VDC	No Charge
P-30003	F03	Floating Pt.	100 seconds	2-10 VDC	No Charge
P-10019†	A19	On/Off	100 seconds	2-10 VDC	No Charge

Example: LF24-MFT US is the basic model. Add the P... pre-set MFT configuration number and list price to the actuator when ordering, as needed.

Note: Most popular configurations available at no additional cost. All other configurations carry a \$34.00 list price.

† Wire for On/Off. Refer to PICCV technical documentation for wiring diagram.

# Optimize Your Heat Pump Application

by Using a Pressure Independent Characterized Control Valve

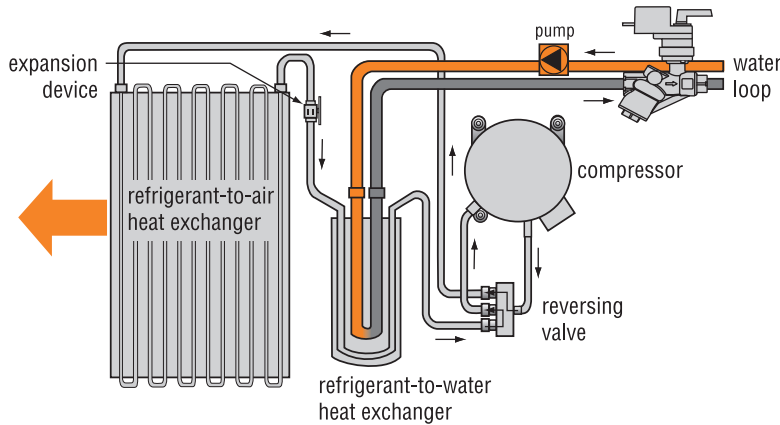
## What are the benefits?

A balanced system is achieved without the need for a balancer to manually balance each circuit. Because the system is dynamic and the PICCV performs dynamic balancing, Differential Pressures are no longer an issue to be concerned with. The PICCV will maintain a constant flow at part load and during morning warm-up when all loops become critical. With the PICCV, each terminal gets the required flow, no over-flow or under-flow at this critical time. The PICCV allows a mechanic to easily commission additional circuits after the initial system is up and running, again thanks to dynamic balancing capability. The PICCV is available in flow rates from .5 to 100 GPM. Choosing the right PICCV is as easy as determining the appropriate flow for your heat pump and then choosing the valve that satisfies the flow requirement.

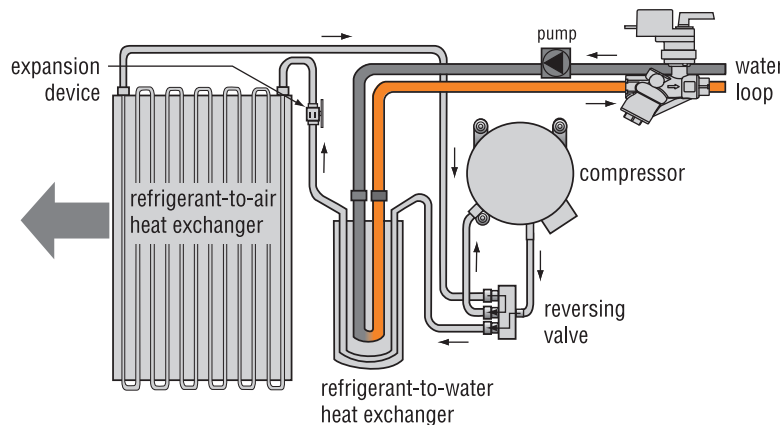
## How does it work?

Keep with the same idea of a conventional heat pump system, then add the Belimo PICCV (2-way Pressure Independent Characterized Control Valve). Think savings, and not necessarily first cost of equipment. Add a VFD (with its known and accepted benefits) and a Belimo PICCV as your flow control valve, and you have now optimized your system flow for very little additional cost.

### HEAT PUMP IN HEATING MODE



### HEAT PUMP IN COOLING MODE



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### Valve Specifications

Service	chilled or hot water, 60% glycol
Flow characteristic	equal percentage
Controllable flow range	75°
Sizes	½", ¾", 1"
Type of end fitting	NPT female ends
Materials:	
Body	forged brass, nickel plated
Ball	chrome plated brass
Stem	chrome plated brass
Seats	fiberglass reinforced Teflon® PTFE
Seat O-rings	Viton®
Characterizing disc	brass (½" and ¾"), TEFZEL® (1")
Packing	2 EPDM O-rings, lubricated
Diaphragm	silicone and Nomex
Regular components	stainless steel, brass, Delrin 500AF
Spring	stainless steel
Body pressure rating	600 psi (½", ¾", 1")
Media temp. range	0°F to 212°F [-18°C to +100°C]
Differential pressure range (ΔP)	5 to 50 psid
Leakage	ANSI Class IV (0.01% of rated valve capacity at 50 psi differential)



### Non-Spring Return Actuator



<b>ACTUATOR PART #</b>	<b>LRCB24-3</b>
Control type	On/Off
Manual override	•
Running time	40 seconds
Noise level	<35 dB(A)
<b>ELECTRICAL CONNECTION:</b>	
3 ft cable, ½" conduit fitting	•

PICCV Model #	Flow Rate		Valve Nominal Size			Close-off psi	
	GPM	Liter/Sec	Inches	DN mm			
P2050B005*	0.5	0.03	½	15	200		\$412.00
P2050B010*	1	0.06	½	15	200		\$412.00
P2050B015*	1.5	0.09	½	15	200		\$416.00
P2050B020*	2	0.13	½	15	200		\$416.00
P2050B025*	2.5	0.16	½	15	200		\$416.00
P2050B030*	3	0.19	½	15	200		\$416.00
P2050B035*	3.5	0.22	½	15	200		\$416.00
P2050B040*	4	0.25	½	15	200		\$416.00
P2050B045*	4.5	0.28	½	15	200		\$416.00
P2050B050*	5	0.32	½	15	200		\$416.00
P2050B055*	5.5	0.35	½	15	200		\$416.00
P2075B060	6	0.38	¾	20	200		\$436.00
P2075B065	6.5	0.41	¾	20	200		\$436.00
P2075B070	7	0.44	¾	20	200		\$436.00
P2075B075	7.5	0.47	¾	20	200		\$436.00
P2075B080	8	0.5	¾	20	200		\$436.00
P2075B085	8.5	0.54	¾	20	200		\$436.00
P2075B090	9	0.57	¾	20	200		\$436.00
P2075B095	9.5	0.6	¾	20	200		\$436.00
P2075B100	10	0.63	¾	20	200		\$436.00
PICCV-25-011**	11	0.69	1	25	200		\$562.00
PICCV-25-012**	12	0.76	1	25	200		\$562.00
PICCV-25-013**	13	0.82	1	25	200		\$562.00
PICCV-25-014**	14	0.88	1	25	200		\$562.00
PICCV-25-015**	15	0.95	1	25	200		\$562.00
PICCV-25-016**	16	1.01	1	25	200		\$562.00
PICCV-25-017**	17	1.07	1	25	200		\$562.00
PICCV-25-018**	18	1.14	1	25	200		\$562.00
PICCV-25-019**	19	1.2	1	25	200		\$562.00

<b>OPTIONS (ADD TO LIST PRICE)</b>	<b>LRCB24-3-S</b>
Built-in auxiliary switch (-S)	\$66.00

\* ½" body has two different flow capacities (.50 GPM to 2.5 GPM) (3 GPM to 5.5 GPM)  
 \*\* 1" body has two different flow capacities (11 GPM to 16 GPM) (17 GPM to 19 GPM)

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# LR Series Valve Actuator

Direct Coupled Non-Spring Valve Actuator, 45 in-lb Minimum Torque



## Actuator Specifications

Torque	45 in-lb [5 Nm]
Angle of Rotation	max. 95, adjustable with mechanical stop electronically variable
Fits Shaft Diameter	N/A
Position Indication	reflective visual Indicator (snap-on)
Manual Override	external push-button
Direction of Rotation	reversible with switch
Dimensions	6.18" x 2.6" x 2.34" [157 x 66 x 59.4 mm]
Electrical Connection	18 GA plenum rated cable, 1/2" conduit fitting
Overload Protection	electronic throughout rotation
Housing	NEMA 2/IP54
Agency Listings	cULus acc. to UL 60730-1A/-2-14, CAN/CSA E60730-1:02, CSA C22.2 No. 24-93, CE acc. to 2006/95/EC and 89/336/EEC

◆ Variable with MFT



LRX24-3

## MFT

MFT= 2-10 VDC Default, or Set, Modify, Read:

- Control (PWM, VDC range, Floating Point)
- Feedback (0-10 VDC, 0-5 VDC, 2-10 VDC, Variable)
- Motion (run time)



All LR Actuators have BDCM



## Non-Spring Return Actuator

Model	Control Input	Feedback	Power Supply	Running Time(s)	VA Rating	Cable Length	Re-order Number	List Price ‡	Valve Assembly Adder	
<b>CUSTOMIZE PRODUCTS</b>										
LRX24-3 (PICCV)	On/Off, Floating Point	Add on	24 VAC/DC	95	2	10 ft.	LR000 RC3 000	\$218.00	\$28.00	
LRX24-3 (PICCV)	On/Off, Floating Point	Add on	24 VAC/DC	95	2	16 ft.	LR000 RC5 000	\$238.00	\$48.00	
LRX24-3-S (PICCV)	On/Off, Floating Point	Built-in	24 VAC/DC	95	2	10 ft.	LR020 RA3 000	\$284.00	\$28.00	
LRX24-3-S (PICCV)	On/Off, Floating Point	Built-in	24 VAC/DC	95	2	16 ft.	LR020 RA5 000	\$304.00	\$48.00	
LRX24-3-T (PICCV)	On/Off, Floating Point	Add on	24 VAC/DC	95	2	N/A	LRT00 RT2 000	\$170.00		
LRX120-3 (PICCV)	On/Off, Floating Point	Add on	100-230 VAC	95	4	10 ft.	LR060 RA3 000	\$308.00	\$28.00	
LRX120-3 (PICCV)	On/Off, Floating Point	Add on	100-230 VAC	95	4	16 ft.	LR060 RA5 000	\$328.00	\$48.00	

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WEATHERSHIELDS - NEMA 4		Non-Spring Return Actuator		Spring Return Actuator		List Price
		LR	AR	LF	AF	
	ZS-CCV-90*			•	•	\$190.00
	ZS-CCV-100*	•	•			\$190.00
EXTENSION BRACKET						
	<b>CCV-EXT-KIT</b>					
	CCV/PICCV valve neck extension kit	•	•	•	•	\$170.00
AUXILIARY SWITCHES & POTENTIOMETERS						
	<b>S1A</b> Auxiliary switch - 1x SPDT, 3A (0.5A Inductive) @ 250 VAC	•	•			\$74.00
	<b>S2A</b> Auxiliary switch - 1x SPDT, 3A (0.5A Inductive) @ 250 VAC	•	•			\$110.00
	<b>P140A</b> Feedback potentiometer 140 Ω	•	•			\$116.00
	<b>P500A</b> Feedback potentiometer 500 Ω	•	•			\$116.00
	<b>P1000A</b> Feedback potentiometer 1000 Ω	•	•			\$116.00
	<b>P2800A</b> Feedback potentiometer 2800 Ω	•	•			\$116.00
	<b>P5000A</b> Feedback potentiometer 5000 Ω	•	•			\$116.00
	<b>P10000A</b> Feedback potentiometer 10000 Ω	•	•			\$116.00

NOTE: CCV-EXT-KIT is an option for all CCVs except for B6 flanged CCVs where it is factory mounted as a standard.

NOTE: For TF/TR actuators, no weathershield available at this time. Please call 800-543-9038 for assistance.

\* Designed to NEMA 4 specifications.