



Belimo Americas Headquarters Test Lab, Danbury, CT

2016 Product Range Overview

Effective April 1, 2016



Innovations in Comfort, Energy Efficiency, and Safety for Your Buildings

New



ZoneTight Zone Valves
Efficient in Every Way

New



Belimo Energy Valves™
Solving Low Delta T

New



Butterfly Valves
Advanced Technology for
High Flow Applications*

*Releasing Summer 2016

New



Retrofit Solutions
Get Up and Running
in Record Time

New



Fire & Smoke
Damper Actuators
Technology that Saves Lives



ZIP Economizer™
Now Available with BACnet
Communication*

*Releasing Summer 2016

BACnet® is a registered trademark of ASHRAE.

- Superior functionality in products designed for today's intelligent systems.
- Highly developed product technology that allows for reduced energy consumption.
- Extended product life with added comfort, safety, and energy efficiency.
- ISO 9001 Quality Control.
- ISO 14001 Environmental Management System.

EXPERIENCE
EFFICIENCY

BELIMO

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EF, AF, NF, Spring Return Damper Actuator Product Range



		Power Supply		Power Consumption		Running Time(s)		Control Input		Control Input MFT		Position Feedback	Auxiliary Switches								
		24 VAC ± 20%, 50/60 Hz, VDC ± 10%	24 to 240 VAC +10%/-20%, 50/60 Hz	24 to 125 VDC ± 10%	120 VAC ± 10%	230 VAC ± 10%	VA Rating, Actuator/Heater	Wattage Running/Heater (Holding)	Motor Drive (Default)	Spring Return	On/Off	2-10 VDC (Default) 4-20 mA (w/500 Ω Resistor)	0-10 V Phasecut	Honeywell Series 90, 0-135 Ω	On/Off	Floating Point	Start and Span adj., Start 0.5 to 30 VDC, Span 2.5 to 32 VDC	PWM adj., 0.02 to 50.0 Seconds	2-10 VDC (Default)	VDC Variable, Start 0.5 to 8, Span 2-10 VDC	2 SPDT, 3 A (0.5 A inductive) @ 250V

EFB Series
270 in-lbs [30 Nm]
Approx. 66 sq. ft.



EFB24	●					16	9.5 (4.5)	75	<20♦	●												
EFB24 N4	●					16	9.5 (4.5)	75	<20♦	●												
EFB24-S	●					16	9.5 (4.5)	75	<20♦	●												●
EFB120		●			●	21	9.5 (4.5)	75	<20♦	●												●
EFB120-S			●		●	21	9.5 (4.5)	75	<20♦	●												●
EFB120-S N4				●	●	21	9.5 (4.5)	75	<20♦	●												●
EFB24-SR	●					14	8 (4.5)	95	<20♦		●								●			
EFB24-SR N4	●					14	8 (4.5)	95	<20♦		●								●			
EFB24-SR-S	●					14	8 (4.5)	95	<20♦		●								●			●
EFB24-MFT	●					16	9.5 (4.5)	60...150 (150)	<20♦		●			●	●	●	●	●	●	●	●	
EFB24-MFT-S	●					16	9.5 (4.5)	60...150 (150)	<20♦		●			●	●	●	●	●	●	●	●	●

AFB Series
180 in-lbs [20 Nm]
Approx. 45 sq. ft.



AFB24	●					7.5	5 (2.5)	<75	20♦	●												
AFB24-S	●					7.5	5 (2.5)	<75	20♦	●												●
AFBUP		●				8.5*	7 (3.5)	<75	20♦	●												
AFBUP-S		●				8.5*	7 (3.5)	<75	20♦	●												●
AFB24-SR	●					8.5	5.5 (3)	95	<20♦		●								●			
AFB24-SR-S	●					8.5	5.5 (3)	95	<20♦		●								●			●
AFB24-PC	●					10	7.5 (3)	150	<20♦			●							●			
AFB24-MFT	●					10	7.5 (3)	70...220 (150)	<20♦		●			●	●	●	●	●	●	●	●	
AFB24-MFT-S	●					10	7.5 (3)	70...220 (150)	<20♦		●			●	●	●	●	●	●	●	●	●
AFB24-MFT95	●					10	7.5 (3)	70...220 (150)	<20♦				●						●	●		●
AFB24 N4H	●					7.5/25	5/25(3)	<75	20♦	●												●
AFB24-S N4H	●					7.5/25	5/25(3)	<75	20♦	●												●
AFBUP N4H		●				8.5/25	7/25 (3)	<75	20♦	●												
AFBUP-S N4H		●				8.5/25	7/25 (3)	<75	20♦	●												●
AFB24-SR N4H	●					8.5/25	5.5/25 (3)	95	<20♦		●								●			
AFB24-SR-S N4H	●					8.5/25	5.5/25 (3)	95	<20♦		●								●			●
AFB24-MFT N4H	●					10/25	7.5/25 (3)	70...220 (150)	<20♦		●			●	●	●	●	●	●	●	●	●
AFB24-MFT-S N4H	●					10/25	7.5/25 (3)	70...220 (150)	<20♦		●			●	●	●	●	●	●	●	●	●
AFB24-MFT95 N4H	●					10/25	7.5/25 (3)	70...220 (150)	<20♦				●						●	●		●

NFB Series
90 in-lbs [10 Nm]
Approx. 22 sq. ft.



NFB24	●					8.5	6 (2.5)	<75	<20♦	●												
NFB24-S	●					8.5	6 (2.5)	<75	20♦	●												●
NFBUP		●				6.5**	6 (2.5)	<75	20♦	●												
NFBUP-S		●				6.5**	6 (2.5)	<75	20♦	●												●
NFB24-SR	●					6	3.5 (2.5)	95	<20♦		●								●			
NFB24-SR-S	●					6	3.5 (2.5)	95	<20♦		●								●			●
NFB24-MFT	●					9	6.5 (3)	40...150 (150)	<20♦		●			●	●	●	●	●	●	●	●	
NFB24-MFT-S	●					9	6.5 (3)	40...150 (150)	<20♦		●			●	●	●	●	●	●	●	●	●
NFB24 N4H	●					8.5/25	6/25 (2.5)	<75	<20♦	●												●
NFB24-S N4H	●					8.5/25	6/25 (2.5)	<75	20♦	●												●
NFBUP N4H		●				6.5**/25	6/25 (2.5)	<75	20♦	●												
NFBUP-S N4H		●				6.5**/25	6/25 (2.5)	<75	20♦	●												●
NFB24-SR N4H	●					6/25	3.5/25 (2.5)	95	<20♦		●								●			
NFB24-SR-S N4H	●					6/25	3.5/25 (2.5)	95	<20♦		●								●			●
NFB24-MFT N4H	●					9/25	6.5/25 (3)	40...150 (150)	<20♦		●			●	●	●	●	●	●	●	●	●
NFB24-MFT-S N4H	●					9/25	6.5/25 (3)	40...150 (150)	<20♦		●			●	●	●	●	●	●	●	●	●

♦ <60 seconds @ -22°F [-30°C].
 * 8.5 VA for 120 VAC; 7 VA for 24 VAC, 18 VA for 240 VAC.
 ** 6.5 VA for 120 VAC; 6 VA for 24 VAC; 9.5 VA for 240 VAC.
NEMA 4 Heater: add "H" to the end of select "N4", for example NFB24-MFT N4H. All AF/NF NEMA 4 models are configured for a CCW spring return rotation.
AF/NF NEMA 4 actuators without heater option are listed on page 3.

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LF, TF Spring Return Damper Actuator Product Range



Power Supply	Power Consumption		Running Time(s)		Control Input		Control Input MFT			Position Feedback	Auxiliary Switches							
	24 VAC ± 20%, 50/60 Hz, VDC ± 10%	120 VAC ± 10%	230 VAC ± 10%	VA Rating, Transformer Sizing	Wattage Running (Holding)	Motor Drive (Default)	Spring Return	On/Off	Floating Point	2-10 VDC (Default) 4-20 mA (w/500 Ω Resistor)	3 kΩ NTC Type 10 Thermistor	6 - 9 VDC, 20 VDC Output Voltage	On/Off	Floating Point	Start and Span adj., Start 0.5 to 30 VDC, Span 2.5 to 32 VDC	PWM adj., 0.02 to 50.0 Seconds	2-10 VDC (Default)	VDC Variable, Start 0.5 to 8, Span 2-10 VDC

LF Series
35 in-lbs [4 Nm]
Approx. 8.5 sq. ft.



LF24 US	●			7	5 (2.5)	<40 to 75	<25♦	●												
LF24-S US	●			7	5 (2.5)	<40 to 75	<25♦	●												●
LF120 US		●		7.5	5.5 (3.5)	<40 to 75	<25♦	●												
LF120-S US		●		7.5	5.5 (3.5)	<40 to 75	<25♦	●												●
LF230 US			●	7	5 (3)	<40 to 75	<25♦	●												●
LF230-S US			●	7	5 (3)	<40 to 75	<25♦	●												●
LF24-SR US	●			5	2.5 (1)	150	<25♦		●								●			●
LF24-SR-S US	●			5	2.5 (1)	150	<25♦		●								●			●
LF24-SR-E US	●			5	2.5 (1)	150	<25♦		●								●			●
LF24-3 US	●			5	2.5 (1)	150	<25♦		●											●
LF24-3-S US	●			5	2.5 (1)	150	<25♦		●											●
LF24-ECON-R03 US	●			5	2.5 (1)	95	<25♦			●							●			●
LF24-MFT US	●			5	2.5 (1)	75...300 (150)	<25♦		●		●	●	●	●	●	●	●	●	●	●
LF24-MFT-S US	●			5	2.5 (1)	75...300 (150)	<25♦		●		●	●	●	●	●	●	●	●	●	●
LF24-MFT-20 US	●			6	3.5 (1.5)	150	<25♦			●	●	●	●	●	●	●	●	●	●	●
LF24-MFT-S-20 US	●			6	3.5 (1.5)	150	<25♦			●	●	●	●	●	●	●	●	●	●	●
LFC24-3-R US	●			5	2.5 (1)	90	<25♦		●											●
LFC24-3-S US	●			5	2.5 (1)	90	<25♦		●											●

TFB Series
22 in-lbs [2.5 Nm]
Approx. 5.5 sq. ft.



TFB24	●			5	2 (1.3)	<75	<25♦	●												●
TFB24-S	●			5	2 (1.3)	<75	<25♦	●												●
TFLB24	●			5	2 (1.3)	<75	<75	●												●
TFB120		●	●	5	2.5 (1.3)	<75	<25♦	●												●
TFB120-S		●	●	5	2.5 (1.3)	<75	<25♦	●												●
TFLB120		●	●	5	2.5 (1.3)	<75	<75	●												●
TFCB120-S		●	●	6	3 (1.5)	<30	<25♦	●												●
TFB24-SR	●			4	2 (1)	95	<25♦		●								●			●
TFB24-SR-S	●			4	2 (1)	95	<25♦		●								●			●
TFB120-SR		●	●	5.5	2.5 (2)	95	<25♦		●								●			●
TFB24-3	●			4	2.5 (1)	95	<25♦		●											●
TFB24-3-S	●			4	2.5 (1)	95	<25♦		●											●
TFB24-MFT	●			4	2.5 (1)	75...300 (150)	<25♦		●		●	●	●	●	●	●	●	●	●	●
TFB24-MFT-S	●			4	2.5 (1)	75...300 (150)	<25♦		●		●	●	●	●	●	●	●	●	●	●

♦ <60 seconds @ -22°F [-30°C].

Custom Spring Return Damper Actuator Product Range



	Power Supply		Power Consumption		Running Time(s)		Control Input	Control Input MFT			Position Feedback	Auxiliary Switches	Cable Options					
	24 VAC ± 20%, 50/60 Hz, VDC ± 10%	24 to 240 VAC +10%/- 20%, 50/60 Hz 24 to 125 VDC ± 10%	120 VAC ± 10%	230 VAC ± 10%	VA Rating, Actuator/Heater	Wattage Running/Heater (Holding)	Motor Drive (Default)	Spring Return	On/Off	2-10 VDC (Default) 4-200 mA (w/500 Ω Resistor)	Honeywell Series 90, 0-135 Ω	On/Off	Floating Point	Start and Span adj., Start 0.5 to 30 VDC, Span 2.5 to 32 VDC	PWM adj., 0.02 to 50.0 Seconds	2-10 VDC (Default)	VDC Variable, Start 0.5 to 8, Span 2-10 VDC	2 SPDT, 3 A (0.5 A inductive) @ 250V

EFX Series 270 in-lbs [30 Nm] Approx. 66 sq. ft.																					
EFX24	●				16	9.5 (4.5)	75	<20♦	●												●
EFX24-S	●				16	9.5 (4.5)	75	<20♦	●												●
EFX120		●		●	21	9.5 (4.5)	75	<20♦	●												●
EFX120-S		●		●	21	9.5 (4.5)	75	<20♦	●												●
EFX24-SR	●				14	8 (4.5)	95	<20♦		●						●					●
EFX24-SR-S	●				14	8 (4.5)	95	<20♦		●						●					●
EFX24-MFT	●				16	9.5 (4.5)	60...150 (150)	<20♦		●		●	●	●	●	●					●
EFX24-MFT-S	●				16	9.5 (4.5)	60...150 (150)	<20♦		●		●	●	●	●	●					●
EFX24-S N4	●				16	9.5 (4.5)	75	<20♦	●												●
EFCX24-S N4	●				16	9.5 (4.5)	75	<10♦♦	●												●
EFX24-S N4H	●				16/21	9.5/21 (4.5)	75	<20♦	●												●
EFX120-S N4		●		●	21	9.5 (4.5)	75	<20♦	●												●
EFCX120-S N4		●		●	21	9.5 (4.5)	75	<10♦♦	●												●
EFX120-S N4H		●		●	21/22	9.5/22 (4.5)	75	<20♦	●												●
EFX120-SR N4		●		●	21	9(5.5)	95	<20♦		●						●					●
EFX120-SR-S N4		●		●	21	9(5.5)	95	<20♦		●						●					●
EFX24-SR-S N4	●				14	8 (4.5)	95	<20♦		●						●					●
EFX24-SR-S N4H	●				14/21	8/21 (4.5)	95	<20♦		●						●					●
EFX24-MFT-S N4	●				16	9.5 (4.5)	60...150 (150)	<20♦		●		●	●	●	●	●					●
EFX24-MFT-S N4H	●				16/21	9.5/21 (4.5)	60...150 (150)	<20♦		●		●	●	●	●	●					●

AFX Series 180 in-lbs [20 Nm] Approx. 45 sq. ft.																					
AFX24	●				7.5	5 (2.5)	<75	20♦	●												●
AFX24-S	●				7.5	5 (2.5)	<75	20♦	●												●
AFXUP		●			8.5*	7 (3.5)	<75	20♦	●												●
AFXUP-S		●			8.5*	7 (3.5)	<75	20♦	●												●
AFX24-SR	●				8.5	5.5 (3)	95	<20♦		●						●					●
AFX24-SR-S	●				8.5	5.5 (3)	95	<20♦		●						●					●
AFX24-MFT	●				10	7.5 (3)	70...220 (150)	<20♦		●		●	●	●	●	●					●
AFX24-MFT-S	●				10	7.5 (3)	70...220 (150)	<20♦		●		●	●	●	●	●					●
AFX24-MFT95	●				10	7.5 (3)	70...220 (150)	<20♦		●		●				●					●
AFX24 N4	●				7.5	5 (2.5)	<75	20♦	●												●
AFX24-S N4	●				7.5	5 (2.5)	<75	20♦	●												●
AFXUP N4		●			8.5*	7 (3.5)	<75	20♦	●												●
AFXUP-S N4		●			8.5*	7 (3.5)	<75	20♦	●												●
AFX24-SR N4	●				8.5	5.5 (3)	95	<20♦		●						●					●
AFX24-SR-S N4	●				8.5	5.5 (3)	95	<20♦		●						●					●
AFX24-MFT N4	●				10	7.5 (3)	70...220 (150)	<20♦		●		●	●	●	●	●					●
AFX24-MFT-S N4	●				10	7.5 (3)	70...220 (150)	<20♦		●		●	●	●	●	●					●
AFX24-MFT95 N4	●				10	7.5 (3)	70...220 (150)	<20♦		●		●				●					●

NFX Series 90 in-lbs [10 Nm] Approx. 22 sq. ft.																					
NFX24	●				8.5	6 (2.5)	<75	20♦	●												●
NFX24-S	●				8.5	6 (2.5)	<75	20♦	●												●
NFXUP		●			6.5**	6 (2.5)	<75	20♦	●												●
NFXUP-S		●			6.5**	6 (2.5)	<75	20♦	●												●
NFX24-SR	●				6	3.5 (2.5)	95	<20♦		●						●					●
NFX24-SR-S	●				6	3.5 (2.5)	95	<20♦		●						●					●
NFX24-MFT	●				9	6.5 (3)	40...150 (150)	<20♦		●		●	●	●	●	●					●
NFX24-MFT-S	●				9	6.5 (3)	40...150 (150)	<20♦		●		●	●	●	●	●					●
NFX24 N4	●				8.5	6 (2.5)	<75	20♦	●												●
NFX24-S N4	●				8.5	6 (2.5)	<75	20♦	●												●
NFXUP N4		●			6.5**	6 (2.5)	<75	20♦	●												●
NFXUP-S N4		●			6.5**	6 (2.5)	<75	20♦	●												●
NFX24-SR N4	●				6	3.5 (2.5)	95	<20♦		●						●					●
NFX24-SR-S N4	●				6	3.5 (2.5)	95	<20♦		●						●					●
NFX24-MFT N4	●				9	6.5 (3)	40...150 (150)	<20♦		●		●	●	●	●	●					●
NFX24-MFT-S N4	●				9	6.5 (3)	40...150 (150)	<20♦		●		●	●	●	●	●					●


♦ <60 seconds @ -22°F [-30°C]. ♦♦ <15 seconds @ -22°F [-30°C]. * 8.5 VA for 120 VAC; 7 VA for 24 VAC, 18 VA for 240 VAC. ** 6.5 VA for 120 VAC; 6 VA for 24 VAC; 9.5 VA for 240 VAC

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Custom Spring Return Damper Actuator Product Range





Power Supply	Power Consumption	Running Time(s)	Control Input	Control Input MFT	Position Feedback	Auxiliary Switches	Cable Options										
								24 VAC ± 20%, 50/60 Hz, VDC ± 10%	120 VAC ± 10%	230 VAC ± 10%	VA Rating, Transformer Sizing	Wattage Running (Holding)	Motor Drive (Default)	Spring Return	On/Off	Floating Point	2-10 VDC (Default) 4-20 mA (w/500 Ω Resistor)

TFX Series 22 in-lbs [2.5 Nm] Approx. 5.5 sq. ft.		TFX24	TFX24-S	TFX120	TFX120-S	TFX24-SR	TFX24-SR-S	TFX24-3	TFX24-3-S	TFX24-MFT	TFX24-MFT-S		
		●	●	●	●	●	●	●	●	●	●	●	●
		●	●	●	●	●	●	●	●	●	●	●	●
		●	●	●	●	●	●	●	●	●	●	●	●
		●	●	●	●	●	●	●	●	●	●	●	●
		●	●	●	●	●	●	●	●	●	●	●	●
		●	●	●	●	●	●	●	●	●	●	●	●
		●	●	●	●	●	●	●	●	●	●	●	●
		●	●	●	●	●	●	●	●	●	●	●	●
		●	●	●	●	●	●	●	●	●	●	●	●

◆ <60 seconds @ -22°F [-30°C]

GKB, NKQB Electronic Fail-Safe Damper Actuator Product Range






	Power Supply	Power Consumption		Running Time		Control Input			Position Feedback		Add-On Accessory	
		VA Rating, Actuator/Heater	Wattage Running/Heater (Holding)	Motor Drive	Fail-Safe	On/Off	Floating Point	2-10 VDC (Default) 4-20 mA (w/500 Ω Resistor)	2-10 VDC (Default)	S1A or S2A (with Z-SPA for NKQ)	Potentiometer (with Z-SPA for NKQ)	
GKB Series 360 in-lbs [40 Nm] Approx. 90 sq. ft. 	GKB24-3*	●	21	11 (3)	150	35	●	●			●	●
	GKB24-SR	●	21	11 (3)	150	35			●	●	●	●
	GKB24-3-T N4H*	●	21/21	11/21 (3)	150	35	●	●			●	●
	GKB24-SR-T N4H	●	21/21	11/21 (3)	150	35			●	●	●	●
	GKB24-MFT-T N4H†	●	21/21	11/21 (3)	150	35			●	●	●	●
NKQB Series 54 in-lbs [6 Nm] Approx. 12 sq. ft. 	NKQB24-1	●	22	11 (3)	4	4	●				●	●
	NKQB24-SR	●	22	11 (3)	4	4			●	●	●	●

*GK...24-3 is VAC only

†Piggy back mounting on a single shaft for -MFT wired Master-Slave, 720 in-lbs maximum load, and 1" minimum diameter shaft.
NEMA 4 actuators without heater option are listed below.

Custom Electronic Fail-Safe Damper Actuator Product Range



	Power Supply	Power Consumption		Running Time(s)		Control Input		Control Input MFT			Position Feedback		Cable Options	Add-On Accessory		
		VA Rating, Transformer Sizing	Wattage Running (Holding)	Motor Drive (Default)	Fail-Safe	On/Off	Floating Point	2-10 VDC (Default) 4-20 mA (w/500 Ω Resistor)	On/Off	Floating Point	Start and Span adj., Start 0.5 to 30 VDC, Span 2.5 to 32 VDC	PWM adj., 0.02 to 50.0 Seconds	2-10 VDC (Default) VDC Variable, Start 0.5 to 8, Span 2 to 10 VDC	10 ft. (3 m) or 16 ft. (5 m) cable	S1A or S2A (with Z-SPA for NKQ)	Potentiometer (with Z-SPA for NKQ)
GKX Series 360 in-lbs [40 Nm] Approx. 90 sq. ft. 	GKX24-3*	●	21	11 (3)	90, 150 (150)	35	●	●						●	●	●
	GKX24-SR	●	21	11 (3)	90, 150 (150)	35			●			●		●	●	●
	GKX24-MFT†	●	21	11 (3)	90, 150 (150)	35			●	●	●	●		●	●	●
	GKX24-3-T N4*	●	21	11 (3)	90, 150 (150)	35	●	●							●	●
	GKX24-SR-T N4	●	21	11 (3)	90, 150 (150)	35			●				●		●	●
	GKX24-MFT-T N4†	●	21	11 (3)	90, 150 (150)	35			●	●	●	●	●		●	●
NKQX Series 54 in-lbs [6 Nm] Approx. 12 sq. ft. 	NKQX24-1	●	22	11 (3)	4, 7, 10 (4)	4	●							●	●	●
	NKQX24-SR	●	22	11 (3)	4, 7, 10 (4)	4			●			●		●	●	●
	NKQX24-MFT	●	22	11 (3)	4, 7, 10 (4)	4			●	●	●	●		●	●	●
AHKX Series 101 lbf [450 N Force] Approx. 4" stroke 	AHKX24-MFT-100	●	22	11 (3)	90, 150 (150)	35			●	●	●	●	●	●		






*GK...24-3 is VAC only

†Piggy back mounting on a single shaft for -MFT wired Master-Slave, 720 in-lbs maximum load, and 1" minimum diameter shaft.

FSAF*A, FSAFB, FSNF, FSLF, FSTF

Fire and Smoke Spring Return Damper Actuator Product Range



	Power Supply			Power Consumption	Running Time(s)		Control Input	Auxiliary Switches	
	24 VAC (FSAF, FSTF - 24 VAC/DC)	120 VAC	230 VAC	VA Rating	Motor Drive	Spring Return	On/Off	2 SPST	2 SPDT
FSAF*A Series 180 in-lbs [20 Nm] Approx. 18 sq. ft. @ 350°F 	FSAF24A	●		32 [‡]	<25	<15	●		
	FSAF24A-S	●		32 [‡]	<25	<15	●	●	
	FSAF120A		●	38 [‡]	<25	<15	●		
	FSAF120A-S		●	38 [‡]	<25	<15	●	●	
	FSAF230A			●	37 [‡]	<25	<15	●	
	FSAF230A-S			●	37 [‡]	<25	<15	●	●
FSAFB Series 180 in-lbs [20 Nm] Approx. 18 sq. ft. @ 250°F 	FSAFB24-SR	●		9	<75	<20	2-10 VDC		
	FSAFB24-SR-S	●		9	<75	<20	2-10 VDC		●
FSNF Series 70 in-lbs [8 Nm] Approx. 12 sq. ft. @ 350°F 	FSNF24 US	●		24 [‡]	<15	<15	●		
	FSNF24-S US	●		24 [‡]	<15	<15	●		●
	FSNF120 US		●	23 [‡]	<15	<15	●		
	FSNF120-S US		●	23 [‡]	<15	<15	●		●
	FSNF230 US			●	23 [‡]	<15	<15	●	
	FSNF230-S US			●	23 [‡]	<15	<15	●	●
FSLF Series 30 in-lbs [3.5 Nm] Approx. 4 sq. ft. @ 350°F 	FSLF24 US	●		15 [‡]	<15	<15	●		
	FSLF24-S US	●		15 [‡]	<15	<15	●	●	
	FSLF120 US		●	18 [‡]	<15	<15	●		
	FSLF120-S US		●	18 [‡]	<15	<15	●	●	
	FSLF230 US			●	17 [‡]	<15	<15	●	
	FSLF230-S US			●	17 [‡]	<15	<15	●	●
FSTF Series* 18 in-lbs [2 Nm] Approx. 1.5 sq. ft. @ 250°F 	FSTF24 US	●		3	<75	<25	●		
	FSTF24-S US	●		3	<75	<25	●	●	
	FSTF120 US		●	3.5	<75	<25	●		
	FSTF120-S US		●	3.5	<75	<25	●	●	
	FSTF230 US			●	5.5	<75	<25	●	
	FSTF230-S US			●	5.5	<75	<25	●	●

‡VA Rating Note:

The FSAF*A, FSNF, and FSLF series actuators draw more current when driving against any stops. Neither UL nor Belimo require any local fusing or breakers. If used, see individual data sheets for End Stop current draws and current limit values.

*The FSTF series should be used to replace only existing FSTF actuators. The FSLF is recommended for dampers less than 4 sq.ft. in area. Contact Belimo Technical Support for applications involving small dampers.

GMB, AMB, NMB, LMB, CMB Non-Spring Return Damper Actuator Product Range



		Power Supply		Power Consumption		Running Time	Control Input		Control Input MFT			Position Feedback		Bulk Pack	NEMA 4/4X Option	Add-On Accessory											
		24 VAC ± 20%, 50/60 Hz VDC ± 10%	100 VAC to 240 VAC	VA Rating	Wattage Running (Holding)	Motor Drive	On/Off	Floating Point	2-10 VDC or 4-20 mA (w/500 Ω Resistor)	On/Off	Floating Point	Start and Span adj., Start 0.5 to 30 VDC, Span 2.5 to 32 VDC	PWM adj., 0.02 to 50.0 Seconds	2-10 VDC (Default) Adjustable with MFT	5 kΩ Resistive Feedback	10 kΩ Resistive Feedback	Quantity of Actuators Included in Bulk Pack	Enclosure (Part No. +N4 or +N4H) ¹	1 SPDT, 3A (0.5A Inductive) @ 250V	STA or S2A	Potentiometer						
GMB Series 360 in-lbs [40 Nm] Approx. 90 sq.ft.		GMB24-3	●	6	4.0 (2.0)	150	●	●									●		●	●							
		GMB24-SR	●	6.5	4.5 (2.0)	150			●				●					●		●	●						
		GMB24-MFT† (A)	●	7	4.0 (1.5)	150				●	●	●	●							●	●						
AMB Series 180 in-lbs [20 Nm] Approx. 45 sq.ft.		AMB24-3	●	5.5	2.5 (0.5)	95	●	●										●		●	●						
		AMB24-3-S	●	5.5	2.5 (0.5)	95	●	●											●		●	●					
		AMB24-SR	●	5	2.5 (0.4)	95			●				●						●		●	●					
		AMB24-MFT (A)	●	6	3.5 (1.3)	150				●	●	●	●								●	●					
NMB Series 90 in-lbs [10 Nm] Approx. 22 sq.ft.		NMB24-3	●	4	2.0 (0.2)	95	●	●										●		●	●						
		NMCB24-3	●	4	2.5 (0.2)	45	●	●													●	●					
		NMB24-SR	●	5	2.5 (0.4)	95			●				●								●	●					
		NMCB24-SR	●	5	2.5 (0.4)	45			●				●									●	●				
		NMB24-MFT (A)	●	6	3.5 (1.3)	150				●	●	●	●									●	●				
		LMB24-3	●	2	1.5 (0.2)	95	●	●														●	●				
		LMCB24-3	●	2.5	1.5 (0.2)	35	●	●															●	●			
		LMB24-3.1	●	2	1.5 (0.2)	95	●	●									24 pc.						●	●			
LMB Series 45 in-lbs [5 Nm] Approx. 11 sq.ft.		LMB24-3-S	●	2	1.5 (0.2)	95	●	●														●	●				
		LMB24-3-T	●	2	1.5 (0.2)	95	●	●																●	●		
		LMCB24-3-T	●	2.5	1.5 (0.2)	35	●	●																	●	●	
		LMB24-3-T.1	●	2	1.5 (0.2)	95	●	●									36 pc.									●	●
		LMB24-3-P5-T	●	2	1.5 (0.2)	95	●	●					●													●	●
		LMB24-3-P5-T.1	●	2	1.5 (0.2)	95	●	●					●				36 pc.									●	●
		LMB24-3-P10-T	●	2	1.5 (0.2)	95	●	●										●								●	●
		LMB24-SR	●	3	1.5 (0.4)	95			●				●													●	●
		LMCB24-SR	●	3	1.5 (0.4)	35			●				●													●	●
		LMB24-SR.1	●	3	1.5 (0.4)	95			●				●					24 pc.								●	●
		LMB24-SR-T	●	3	1.5 (0.4)	95			●				●													●	●
		LMCB24-SR-T	●	3	1.5 (0.4)	35			●				●													●	●
		LMB24-SR-T.1	●	3	1.5 (0.4)	95			●				●					36 pc.								●	●
		LMB24-MFT (A)	●	5	2.5 (1.2)	150				●	●	●	●													●	●
		LMB24-HM (B)	●	2	1.5 (0.2)	95																				●	●
		LMB24-10P-HM (B)	●	2	1.5 (0.2)	95												●								●	●
CMB Series 18 in-lbs [2 Nm] Approx. 4.5 sq.ft.		CMB24-3	●	1.5	1.0 (0.2)	35	●	●																			
		CMB24-3.1*	●	1.5	1.0 (0.2)	35	●	●									20 pc.										
		CMB120-3	●	3.5	1.5 (1.0)	35	●	●																			
		CMB24-3-T	●	1.5	1.0 (0.2)	35	●	●																			
		CMB24-3-T.1*	●	1.5	1.0 (0.2)	35	●	●										20 pc.									
		CMB24-SR-R	●	2.5	1.5 (0.5)	35			●				●														
	CMB24-SR-L	●	2.5	1.5 (0.5)	35			●				●															

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† Dual mounting on a single shaft is possible for 720 in-lb (-MFT wired Master-Slave). Please call Belimo customer service for details.
 (A) Shipped default. 150 seconds running time, 2-10 VDC control input and feedback. Field programmable with MFT tools.
 (B) Drop-in replacement of LM24-M VAV actuator.
¹Heater option for NEMA 4/NEMA 4X has a list price adder.
 * Z-PICM position indicator and Z-ARCM anti-rotation bracket sold separately.

AMQB, NMQB, LMQB

Quick Running Non-Spring Return Damper Actuator Product Range



AMQB Series 140 in-lbs [16 Nm] Approx. 16 sq.ft.	AMQB24-1	●	23	15 (1.5)	7	●								●	●
	AMQB24-MFT [Ⓐ]	●	23	15 (1.5)	7			●	●	●				●	●
NMQB Series 70 in-lbs [8 Nm] Approx. 12 sq.ft.	NMQB24-1	●	20	13 (1.5)	4	●								●	●
	NMQB24-MFT [Ⓐ]	●	20	13 (1.5)	4			●	●	●				●	●
LMQB Series 35 in-lbs [4 Nm] Approx. 8.5 sq.ft.	LMQB24-1	●	20	13 (1.5)	2.5	●								●	●
	LMQB24-MFT [Ⓐ]	●	20	13 (1.5)	2.5			●	●	●				●	●

		Power Supply		Power Consumption		Running Time	Control Input		Control Input MFT			Position Feedback		Add-On Accessory		
		24 VAC ± 20%, 50/60 Hz, VDC ±10%	100 VAC to 240 VAC	VA Rating	Wattage Running (Holding)		Motor Drive	On/Off	Floating Point	2-10 VDC or 4-20 mA (w/500 Ω Resistor)	On/Off	Floating Point	Start and Span adj., Start 0.5 to 30 VDC, Span 2.5 to 32 VDC	PWM adj., 0.02 to 50.0 Seconds	2-10 VDC (Default) Adjustable with MFT	5 kΩ Resistive Feedback

[Ⓐ] Shipped default. 2-10 VDC control input and feedback. Field programmable with MFT tools.

AHB, AHQB, LHB, LHQB, LUB

Non-Spring Return Damper Actuator Product Range



AHB Series 101 lbf [450 N Force] 4" or 8" stroke	AHB24-3-100	●	4.5	2.0 (0.5)	150*	●	●								
	AHB24-3-200	●	4.5	2.0 (0.5)	150*	●	●								
	AHB24-SR-100	●	4.5	2.5 (0.5)	150*			●					●		
AHQB Series 44 lbf [200 N Force] 4" stroke	AHQB24-1-100	●	23	13 (1.5)	7*	●									
	AHQB24-MFT-100 [Ⓐ]	●	23	13 (1.5)	7*			●	●	●				●	
LHB Series 34 lbf [150 N Force] 4" or 8" stroke	LHB24-3-100	●	3	1.5 (0.5)	150*	●	●								
	LHB24-3-200	●	3	1.5 (0.5)	150*	●	●								
	LHB24-SR-100	●	3	1.5 (0.5)	150*			●					●		
LHQB Series 22 lbf [100 N Force] 4" stroke	LHQB24-1-100	●	23	13 (1.5)	3.5*	●									
	LHQB24-MFT-100	●	23	13 (1.5)	3.5*			●	●	●				●	
LUB Series 27 in-lbs [3 Nm] Approx. 6 sq.ft.	LUB24-3	●	2.5	1.0 (0.5)	150**	●	●								
	LUB24-SR	●	3	3.0 (0.5)	150**			●					●		

		Power Supply		Power Consumption		Running Time	Control Input		Control Input MFT			Position Feedback		
		24 VAC ± 20%, 50/60 Hz, VDC ±10%	100 VAC to 240 VAC	VA Rating	Wattage Running (Holding)		Motor Drive	On/Off	Floating Point	2-10 VDC or 4-20 mA (w/500 Ω Resistor)	On/Off	Floating Point	Start and Span adj., Start 0.5 to 30 VDC, Span 2.5 to 32 VDC	PWM adj., 0.02 to 50.0 Seconds













*Running time is per 4 inches [100 mm] of travel.
 **Running time is 150 seconds per 90°.

[Ⓐ] Shipped default. 2-10 VDC control input and feedback. Field programmable with MFT tools.

Custom Non-Spring Return Damper Actuator Product Range



	Power Supply		Power Consumption		Running Time	Control Input		Control Input MFT			Position Feedback	Custom Options	NEMA 4/4X Option	Add-on Accessory						
	24 VAC ± 20%, VDC ± 10%	100 to 240 VAC	VA Rating	Wattage Running (Holding)	Motor Drive Range (Default)	On/Off	Floating Point	2-10 VDC (Default) 4-20 mA (w/500 Ω Resistor)	0-20V Phasecut	Honeywell Series 90, 0-135 Ω	On/Off	Floating Point	Start and Span adj., Start 0.5 to 30 VDC, Span 2.5 to 32 VDC	PWM adj., 0.02 to 50.0 Seconds	2-10 VDC (Default)	VDC Variable, Start 0 to 8, Span 2-10 VDC	10 ft. (3 m) Cable / 16 ft. (5 m) Cable	Terminal Strip NEMA 1/IP20 / 2/IP54	Enclosure (Part No. +N4 or +N4H) ¹	S1A or S2A

GMX Series 360 in-lbs [40 Nm] Approx. 90 sq.ft. 	GMX24-3	●	6	4.0 (2.0)	150	●	●							●				●	●	●	
	GMX24-SR	●	6.5	4.5 (2.0)	150			●						●					●	●	●
	GMX24-PC	●	7	4.0 (1.5)	150				●						●					●	●
	GMX120-3	●	7	4.0 (2.0)	150		●	●							●					●	●
	GMX24-MFT†	●	7	4.0 (1.5)	75-300 (150)			●			●	●	●	●	●	●	●	●		●	●
AMX Series 180 in-lbs [20 Nm] Approx. 45 sq.ft. 	AMX24-3	●	5.5	2.5 (0.5)	95	●	●							●					●	●	●
	AMX24-3-T	●	5.5	2.5 (0.5)	95	●	●							●						●	●
	AMX24-SR	●	5	2.5 (0.4)	95			●						●						●	●
	AMX24-SR-T	●	5	2.5 (0.4)	95			●						●						●	●
	AMX24-PC	●	5.5	3.5 (1.3)	90				●					●						●	●
	AMX120-3	●	7	3.0 (0.6)	95		●	●						●						●	●
	AMX120-SR	●	7.5	4.0 (1.0)	95			●						●						●	●
	AMX24-MFT	●	6	3.5 (1.3)	90-300 (150)			●			●	●	●	●	●	●	●	●		●	●
	AMCX24-MFT	●	6	3.5 (1.3)	35-120 (35)			●			●	●	●	●	●	●	●	●		●	●
	AMX24-MFT95	●	6	3.5 (1.3)	75-150 (150)				●		●	●	●	●	●	●	●	●		●	●
AMQ Series 140 in-lbs [16 Nm] 	AMQX24-MFT	●	26	15 (1.5)	7-15 (7)					●	●			●						●	●
NMX Series 90 in-lbs [10 Nm] Approx. 22 sq.ft. 	NMX24-3	●	4	2.0 (0.2)	95	●	●							●					●	●	●
	NMX24-3-T	●	4	2.0 (0.2)	95	●	●							●						●	●
	NMX24-SR	●	5	2.5 (0.4)	95			●						●						●	●
	NMX24-SR-T	●	5	2.5 (0.4)	95			●						●						●	●
	NMX120-3	●	5.5	2.5 (0.6)	150		●	●						●						●	●
	NMX120-SR	●	6.5	3.5 (1.0)	150			●						●						●	●
	NMX24-MFT	●	6	3.5 (1.3)	45-150 (150)			●			●	●	●	●	●	●	●	●		●	●
	NMX24-MFT95	●	6	3.5 (1.3)	45-150 (150)				●		●	●	●	●	●	●	●	●		●	●
NMCX24-MFT	●	5	3.0 (0.6)	20-75 (20)			●			●	●	●	●	●	●	●	●		●	●	
NMQ Series 70 in-lbs [8 Nm] 	NMQX24-MFT	●	23	13 (1.5)	4-20 (4)					●	●			●						●	●
LMX Series 45 in-lbs [5 Nm] Approx. 11 sq.ft. 	LMX24-3	●	2	1.5 (0.2)	95	●	●							●						●	●
	LMX24-3-T	●	2	1.5 (0.2)	95	●	●							●						●	●
	LMX24-SR	●	3	1.5 (0.4)	95			●						●						●	●
	LMX24-SR-T	●	3	1.5 (0.4)	95			●						●						●	●
	LMX120-3	●	4	2.0 (0.5)	150		●	●						●						●	●
	LMX120-SR	●	4.5	2.5 (1.0)	150			●						●						●	●
	LMX24-MFT	●	5	2.5 (1.2)	35-200 (150)			●			●	●	●	●	●	●	●	●		●	●
LMX24-MFT95	●	5	2.5 (1.2)	35-150 (150)				●		●	●	●	●	●	●	●	●		●	●	
LMQ Series 35 in-lbs [4 Nm] 	LMQX24-MFT	●	23	13 (1.5)	2.5-10 (2.5)					●	●			●						●	●
AHX Series 101 lbf [450 N Force] 4", 8", or 12" stroke 	AHX24-3*	●	4.5	2.0 (0.5)	150*	●	●							●						●	●
	AHX24-SR*	●	4.5	2.5 (0.5)	150*			●						●						●	●
	AHX24-MFT*	●	6	3.5 (1.3)	150*			●			●	●	●	●	●	●	●	●		●	●
AHQ Series 44 lbf [200 N Force] 	AHQX24-MFT-100	●	23	13 (1.5)	7-20 (7)*			●						●						●	●
LHX Series 34 lbf [150 N Force] 4", 8", or 12" stroke 	LHX24-3*	●	3	1.5 (0.5)	150*	●	●							●						●	●
	LHX24-SR*	●	3	1.5 (0.5)	150*			●						●						●	●
	LHX24-MFT*	●	5	2.5 (1.2)	75-150 (150)*			●			●	●	●	●	●	●	●	●		●	●
LHQ Series 22 lbf [100 N Force] 	LHQX24-MFT-100	●	23	13 (1.5)	3.5-15 (3.5)*			●						●						●	●
LUX Series 27 in-lbs [3 Nm] 	LUX24-3	●	2.5	1.0 (0.5)	150	●	●							●						●	●
	LUX24-SR	●	3	1.5 (0.5)	150			●						●						●	●
	LUX24-MFT	●	5	2.5 (1.2)	75-150 (150)			●			●	●	●	●	●	●	●	●		●	●

* The LH and AH linear series actuators come in three different stroke lengths [4, 8, or 12 in]. The part number is followed by -100, -200, -300 respectively. The default running time is 150 seconds per 4 inches [100 mm]. Running time is adjustable depending on model: LH Series: 70-270, 140-540, 200-810, on the -100, -200, -300 models respectively. AH Series: 150-600, 300-1200, 450-1800, on the -100, -200, -300 models respectively. LHQ and AHQ available in 4 inch version only.

† Dual mounting on a single shaft is possible for higher 720 in-lbs (-MFT wired Master-Slave). Please call Belimo customer service for details.

¹Heater option for NEMA 4/NEMA 4X has a list price adder.

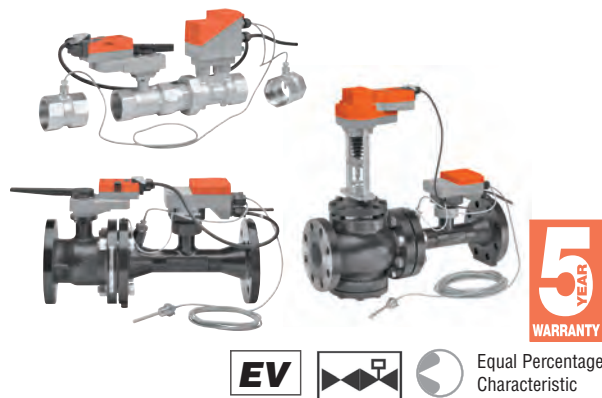
Control Valve Product Range

Energy Valve Product Range

	GPM Range	Valve Nominal Size		Type	Suitable Actuators		
		Inches	DN [mm]		2-way	Non-Spring Return	Electronic Fail-Safe
NPT	1.65 - 5.5*	½	15	EV050S-055	LRB(X)24-EV	AKRB(X)24-EV	
	3.1 - 10.3*	¾	20	EV075S-103			
	5.5 - 18.2*	1	25	EV100S-182			
	8.6 - 28.5*	1¼	32	EV125S-285	NRB(X)24-EV		
	11.9 - 39.6*	1½	40	EV150S-396			
	22.8 - 76.1*	2	50	EV200S-761			
Flanged ANSI 125	30-100**	2	50	EV200S-1000	ARB(X)24-EV	AKRB(X)24-EV	
	38 - 127*	2½	65	EV250S-127			
	54 - 180*	3	80	EV300S-180			
	95 - 317*	4	100	EV400S-317	GRB(X)24-EV		GKRB(X)24-EV
	149 - 495*	5	125	EV500S-495			
214 - 713*	6	150	EV600S-713				
Flanged ANSI 250	38 - 127*	2½	65	EV250S-127-250	EVX24-EV-L	AVX24-EV-L	
	54 - 180*	3	80	EV300S-180-250			
	95 - 317*	4	100	EV400S-317-250	EVX24-EV-B	AVX24-EV-B	
	149 - 495*	5	125	EV500S-495-250			
	214 - 713*	6	150	EV600S-713-250			

*V_{nom} = Maximum flow for each valve body size.

** Applies to 2" Energy Valve model EV200S-1000 only.



Mode of Operation

The Energy Valve is an energy metering pressure independent control valve that optimizes, documents, and proves water coil performance.

Product Features

Measures Energy: using its built-in electronic flow sensor and supply and return temperature sensors.

Controls Power: with its Power Control logic, providing linear heat transfer regardless of temperature and pressure variations.

Manages Delta T: by solving Low Delta T Syndrome. In addition, it reduces pumping costs while increasing chiller/boiler efficiency by optimizing coil efficiency.

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
Controllable flow range	75°
Action	stem up - open A to AB
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 or 250 flange (2½"- 6")

Materials

Body	
Valve	forged 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
Stem	stainless steel
Plug	stainless steel (-250)
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"- 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 Product Guide and Price List

Leakage 0%, ANSI Class IV (-250)

Inlet length to meet

specified measurement accuracy 5x nominal pipe size (NPS)

Communication BACnet IP, BACnet MS/TP, listed by BTL, web server, Belimo MP-Bus

Conductivity of media min. 20uS/cm (Applies to sizes 2½" [DN65] to 6" [DN150] only.)

Remote temperature

sensor length

½"- 2" 2 ft. 7.5 in. [0.8 m] short, 9.8 ft. [3 m] long

2½"- 6" 32.8 ft. [10 m]

Control Valve Product Range

Electronic Pressure Independent Valve (ePIV) Product Range



ePIV



Equal Percentage Characteristic

	GPM Range	Valve Nominal Size		Type	Suitable Actuators	
		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		
	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.

Mode of Operation

The Electronic Pressure 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 Product Guide and Price List
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.)

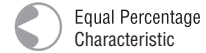
*The flow characteristic can be changed by using the Belimo PC-Tool software.

** Applies to 2" ePIV models P2200S-800 through P2200S-1000 only.

Control Valve Product Range

Factory Set Pressure Independent Characterized Control Valve Product Range

	GPM	Valve Nominal Size		Type	Suitable Actuators				
		Inches	DN [mm]		Non-Spring Return		Spring Return		
Models with (-P) have integral PT ports Forged Body	0.5	½	15	P2050B005 (-P)	LRB24-3	LRX24-MFT	LRX120-3	TFRX24-MFT	LF24-MFT US
	1	½	15	P2050B010 (-P)					
	1.5	½	15	P2050B015 (-P)					
	2	½	15	P2050B020 (-P)					
	2.5	½	15	P2050B025 (-P)					
	3	½	15	P2050B030 (-P)					
	3.5	½	15	P2050B035 (-P)					
	4	½	15	P2050B040 (-P)					
	4.5	½	15	P2050B045 (-P)					
	5	½	15	P2050B050 (-P)					
	5.5	½	15	P2050B055 (-P)					
	6	¾	20	P2075B060 (-P)					
	6.5	¾	20	P2075B065 (-P)					
	7	¾	20	P2075B070 (-P)					
	7.5	¾	20	P2075B075 (-P)					
	8	¾	20	P2075B080 (-P)					
	8.5	¾	20	P2075B085 (-P)					
	9	¾	20	P2075B090 (-P)					
	9.5	¾	20	P2075B095 (-P)					
10	¾	20	P2075B100 (-P)						
11	1	25	PICCV-25-011 (-P)						
12	1	25	PICCV-25-012 (-P)						
13	1	25	PICCV-25-013 (-P)						
14	1	25	PICCV-25-014 (-P)						
15	1	25	PICCV-25-015 (-P)						
16	1	25	PICCV-25-016 (-P)						
17	1	25	PICCV-25-017 (-P)						
18	1	25	PICCV-25-018 (-P)						
19	1	25	PICCV-25-019 (-P)						
Models with (-P) have external PT ports Cast Body	18	1¼	32	PICCV-32-018 (-P)	ARX24-MFT				AFRX24-MFT
	19	1¼	32	PICCV-32-019 (-P)					
	20	1¼	32	PICCV-32-020 (-P)					
	21	1¼	32	PICCV-32-021 (-P)					
	22	1¼	32	PICCV-32-022 (-P)					
	23	1¼	32	PICCV-32-023 (-P)					
	24	1¼	32	PICCV-32-024 (-P)					
	25	1¼	32	PICCV-32-025 (-P)					
	26	1¼	32	PICCV-32-026 (-P)					
	26	1½	40	PICCV-40-026 (-P)					
	27	1½	40	PICCV-40-027 (-P)					
	28	1½	40	PICCV-40-028 (-P)					
	29	1½	40	PICCV-40-029 (-P)					
	30	1½	40	PICCV-40-030 (-P)					
	31	1½	40	PICCV-40-031 (-P)					
	32	1½	40	PICCV-40-032 (-P)					
	33	1½	40	PICCV-40-033 (-P)					
	33	2	50	PICCV-50-033 (-P)					
	34	2	50	PICCV-50-034 (-P)					
	35	2	50	PICCV-50-035 (-P)					
	36	2	50	PICCV-50-036 (-P)					
	37	2	50	PICCV-50-037 (-P)					
	38	2	50	PICCV-50-038 (-P)					
	39	2	50	PICCV-50-039 (-P)					
	40	2	50	PICCV-50-040 (-P)					
	44	2	50	PICCV-50-044 (-P)					
	48	2	50	PICCV-50-048 (-P)					
	52	2	50	PICCV-50-052 (-P)					
	56	2	50	PICCV-50-056 (-P)					
	60	2	50	PICCV-50-060 (-P)					
	65	2	50	PICCV-50-065 (-P)					
70	2	50	PICCV-50-070 (-P)						
75	2	50	PICCV-50-075 (-P)						
80	2	50	PICCV-50-080 (-P)						
90	2	50	PICCV-50-090 (-P)						
100	2	50	PICCV-50-100 (-P)						



Mode of Operation

The Pressure Independent Characterized Control Valve (PICCV) 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 set degrees of ball opening. Maximizes chiller, preventing energizing additional chillers due to low ΔT. Simplified valve sizing and selection, no C_v calculations required.

(-P) ΔP verification across valve using PT ports.

Actuator Specifications

Control type	-3 on/off, floating point modulating, 2-10 VDC (configurable)
Manual override	LRB, LRX, AFRX, ARX
Electrical connection	3 ft. [1 m] cable with ½" conduit fitting (additional cable lengths are available)

Valve Specifications

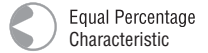
Service	chilled or hot water, 60% glycol max
Flow characteristic	equal percentage
Controllable flow range	75°
Sizes	½", ¾", 1", 1¼", 1½", 2"
End fitting	NPT female ends
Materials	
Body	brass, nickel plated
Ball	chrome plated brass
Stem	nickel plated brass
Seats	Teflon® PTFE
Seat o-rings	Viton®
Characterizing disc	
½" and ¾"	brass
1" to 2"	Tefzel®
Stem o-rings	EPDM (lubricated)
Diaphragm	
½" and ¾"	Nomex reinforced silicone
1" to 2"	polyester reinforced silicone
Regulator components	stainless steel/brass/Nitrile
Spring	stainless steel
Media temp. range	0°F to 212°F [-18°C to +100°C]
PT ports, optional	½" to ¾" integral 1" to 2" external
Body pressure rating	
600 psi	½", ¾", 1"
400 psi	1¼", 1½", 2"
Close-off pressure	200 psi
Differential pressure (ΔP) range	5 to 50 psi
Leakage	ANSI Class IV (0.01% of rated valve capacity at 50 psi differential)

Tefzel® and Teflon® are registered trademarks of DuPont™

Control Valve Product Range

Field Set Pressure Independent Characterized Control Valve Product Range

Valve is supplied at maximum flow in the full open position only.
Field adjustment is necessary to achieve lower flow.



GPM Range	Valve Nominal Size		Type	Suitable Actuators	
	Inches	DN [mm]	2-way NPT	Non-Spring Return	
0...(0.5-1.5)	½	15	P2050B010	KRB24-3	LRB24-SA
0...(1.6-3.0)	½	15	P2050B025		
0...(3.0-5.6)	½	15	P2050B055		
0...(5.7-10)	¾	20	P2075B100		
0...(11-16)	1	25	PICCV-25-016		
0...(17-21)	1	25	PICCV-25-021		

ΔP verification across valve using PT ports (-P)

GPM Range	Valve Nominal Size		Type	Suitable Actuators	
	Inches	DN [mm]	2-way NPT	Non-Spring Return	
0...(0.5-1.5)	½	15	P2050B010-P	KRB24-3	LRB24-SA
0...(1.6-3.0)	½	15	P2050B025-P		
0...(3.0-5.6)	½	15	P2050B055-P		
0...(5.7-10)	¾	20	P2075B100-P		
0...(11-16)	1	25	PICCV-25-016-P		
0...(17-21)	1	25	PICCV-25-021-P		

Flow verification using ΔP across orifice (-F)

GPM Range	Valve Nominal Size		Type	Suitable Actuators	
	Inches	DN [mm]	2-way NPT	Non-Spring Return	
0...(0.5-1.5)	½	15	P2050B010-F	KRB24-3	LRB24-SA
0...(1.6-3.0)	½	15	P2050B025-F		
0...(3.0-5.6)	½	15	P2050B055-F		
0...(5.7-10)	¾	20	P2075B100-F		
0...(11-16)	1	25	PICCV-25-016-F		
0...(17-21)	1	25	PICCV-25-021-F		

Mode of Operation

The Pressure Independent Characterized Control Valve (PICCV) 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

Once field set the valve will provide constant flow regardless of pressure variations in the system at set degrees of ball opening. Maximizes chiller, preventing energizing additional chillers due to low ΔT. Simplified valve sizing and selection, no C_v calculations required.

(-P) ΔP verification across valve using PT ports.

(-F) Flow verification using ΔP across flow orifice.

**Valve is supplied at maximum flow in the full open position only.
Field adjustment is necessary to achieve lower flow.**

Actuator Specifications

Control type	on/off, floating point (KRB), modulating (LRB...-SA)
Manual override	KRB, LRB...-SA
Electrical connection	3 ft. [1 m] cable (no conduit on KR) ½" conduit fitting on LR only

Valve Specifications

Service	chilled or hot water, 60% glycol max
Flow characteristic	equal percentage
Controllable flow range	75°
Sizes	½", ¾", 1"
End fitting	NPT female ends
Materials	
Body	brass, nickel plated
Ball	chrome plated brass
Stem	nickel plated brass
Seats	
½" and ¾"	Teflon® PTFE
1"	PTFE / ETFE
Seat o-rings	Viton®
Characterizing disc	
½" and ¾"	brass
1"	Tefzel®
Stem o-rings	EPDM (lubricated)
Diaphragm	
½" and ¾"	Nomex reinforced silicone
1"	polyester reinforced silicone
Regulator components	stainless steel/brass/Nitrile
Spring	stainless steel
Media temp. range	0°F to 212°F [-18°C to +100°C]
KR valve assembly	0°F to 176°F [-18°C to +80°C]
Body pressure rating	600 psi
Close-off pressure	200 psi
Differential pressure	5 to 50 psi
(ΔP) range	
Leakage	ANSI Class IV (0.01% of rated valve capacity at 50 psi differential)

Tefzel® and Teflon® are registered trademarks of DuPont™

Control Valve Product Range

ZoneTight Zone Valve (QCV) Product Range

C _v	Valve Nominal Size		Type		Suitable Actuators	
	Inches	DN [mm]	2-way NPT	3-way NPT	Non-Spring Return	Fail-Safe
5.9*	½	15	Z2050Q-J		CQ Series	COK Series
9.8*	¾	20	Z2075Q-K			
1	½	15		Z3050Q-E		
2.9	½	15		Z3050Q-H		
4.6	¾	20		Z3075Q-J		

*Maximum flow. Max value can be field adjusted, see actuator instructions.



	Clip Position for Flow Adjustment (GPM)								
	Size	1	2	3	4	5	6	N	No Clip
Z2050Q-J	½"	0.5	0.7	1.2	1.7	2.4	3.4	4.8	5.9
Z2075Q-K	¾"	0.5	1.0	1.5	2.3	3.3	4.6	6.6	9.8
Actuator Runtime		30 sec.	37 sec.	43 sec.	49 sec.	55 sec.	62 sec.	68 sec.	75 sec.

Mode of Operation

The ZoneTight Zone Valve (QCV) is operated by a rotary actuator. The actuators are controlled by a standard voltage for on/off control, a modulating signal, or 3-point control system which move the ball of the valve to the position dictated by the control system.

Product Features

The equal percentage characteristic of the flow is ensured by the design of the ball. This characteristic provides linear heating or cooling output from the coil improving energy efficiency and comfort.

Actuator Specifications

Control type	-3 on/off, floating point -SR modulating, 2-10 VDC (configurable)
Manual override	use actuator to turn valve stem
Electrical connection	3 ft. [1 m] cable with ½" conduit fitting screw terminals
Power consumption	CQ.. 0.3 W running, 1.5 W holding CQK.. 3 W running, 1 W holding CQ..UP 1.5 W running, 1.1 W holding
Power supply	24V (110-230 VAC, UP series)
Transformer sizing	CQ.. 0.6 VA CQK.. 8 VA CQ..UP 2 VA

Valve Specifications

Service	chilled or hot water, 60% glycol
Flow characteristic	equal percentage (2-way) linear (3-way)
Controllable flow range	75° (2-way), 90° (3-way)
Sizes	½", ¾"
End fitting	NPT female ends
Materials	Body forged brass Ball chrome plated brass Stem brass Seats Teflon® PTFE O-rings EPDM (lubricated)
Media temp. range	36°F to 212°F [2°C to 100°C]
Media temp. limit	250°F [120°C]
Maximum allowable operating temperature	212°F [100°C]
Body pressure rating	360 psi
Close-off pressure	75 psi
Maximum differential pressure (ΔP)	40 psi
Leakage	0%

Teflon® is a registered trademark of DuPont™

If temperature exceeds 212°F [100°C] operating range due to a boiler control failure the valve will safely contain the hot water but manufacturer's product warranty becomes invalid.

Control Valve Product Range

ZoneTight Pressure Independent Zone Valve (PIQCV) Product Range

GPM	Valve Nominal Size		Type	Suitable Actuators	
	Inches	DN [mm]	2-way NPT with PT ports	Non-Spring Return	Fail-Safe
0.9*	½	15	Z2050QPT-B	CQ Series	CQK Series
1.9*	½	15	Z2050QPT-D		
4.3*	½	15	Z2050QPT-F		

*Maximum flow. Max value can be field adjusted, see actuator instructions.

	Clip Position for Flow Adjustment (GPM)							
	1	2	3	4	5	6	N	No Clip
Z2050QPT-B	N/A	N/A	0.1	0.2	0.4	0.6	0.8	0.9
Z2050QPT-D	0.2	0.3	0.4	0.5	0.7	1	1.4	1.9
Z2050QPT-F	N/A	0.7	1.0	1.4	2.1	2.9	3.7	4.3
Actuator Runtime	30 sec.	37 sec.	43 sec.	49 sec.	55 sec.	62 sec.	68 sec.	75 sec.



Mode of Operation

The ZoneTight Pressure Independent Zone Valve (PIQCV) 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 set degrees of ball opening. Maximizes chiller ΔT , preventing energizing additional chillers due to low ΔT . Simplified valve sizing and selection, no C_v calculations required.

Actuator Specifications

Control type	-3 -SR	on/off, floating point modulating, 2-10 VDC (configurable)
Manual override		use actuator to turn valve stem
Electrical connection		3 ft. [1 m] cable with ½" conduit fitting screw terminals
Power consumption	CQ.. CQK.. CQ..UP	0.3 W running, 1.5 W holding 3 W running, 1 W holding 1.5 W running, 1.1 W holding
Power supply		24V (110-230 VAC, UP series)
Transformer sizing	CQ.. CQK.. CQ..UP	0.6 VA 8 VA 2 VA

Valve Specifications

Service	chilled or hot water, 60% glycol
Flow characteristic	equal percentage
Controllable flow range	75°
Sizes	½"
End fitting	NPT female ends
Materials	
Body	forged brass
Ball	stainless steel
Stem	stainless steel
Seats	Teflon® PTFE
O-rings	PTFE
Spring	stainless steel
Media temp. range	36°F to 212°F [2°C to 100°C]
Media temp. limit	250°F [120°C]
Maximum allowable operating temperature	212°F [100°C]
PT ports	optional
Body pressure rating	360 psi
Close-off pressure	100 psi
Differential pressure	
(ΔP) range	5 to 50 psi
Leakage	0%

If temperature exceeds 212°F [100°C] operating range due to a boiler control failure the valve will safely contain the hot water but manufacturers product warranty becomes invalid.

Control Valve Product Range

6-Way Characterized Control Valve Product Range

Sequence 1 C _v	Sequence 2 C _v	Valve Nominal Size		Type	Suitable Actuators	
		Inches	DN [mm]	6-way NPT	Non-Spring Return	
0.29	0.29	½	15	B315-029-029	LRB24-SR	LFX24-MFT
0.29	0.46	½	15	B315-029-046		
0.29	0.73	½	15	B315-029-073		
0.29	1.16	½	15	B315-029-116		
0.29	1.50	½	15	B315-029-150		
0.46	0.29	½	15	B315-046-029		
0.46	0.46	½	15	B315-046-046		
0.46	0.73	½	15	B315-046-073		
0.46	1.16	½	15	B315-046-116		
0.46	1.50	½	15	B315-046-150		
0.73	0.29	½	15	B315-073-029		
0.73	0.46	½	15	B315-073-046		
0.73	0.73	½	15	B315-073-073		
0.73	1.16	½	15	B315-073-116		
0.73	1.50	½	15	B315-073-150		
1.16	0.29	½	15	B315-116-029		
1.16	0.46	½	15	B315-116-046		
1.16	0.73	½	15	B315-116-073		
1.16	1.16	½	15	B315-116-116		
1.16	1.50	½	15	B315-116-150		
1.50	0.29	½	15	B315-150-029		
1.50	0.46	½	15	B315-150-046		
1.50	0.73	½	15	B315-150-073		
1.50	1.16	½	15	B315-150-116		
1.50	1.50	½	15	B315-150-150		
0.73	0.73	¾	20	B320-073-073		
0.73	1.16	¾	20	B320-073-116		
0.73	1.86	¾	20	B320-073-186		
0.73	2.9	¾	20	B320-073-290		
1.16	0.73	¾	20	B320-116-073		
1.16	1.16	¾	20	B320-116-116		
1.16	1.86	¾	20	B320-116-186		
1.16	2.9	¾	20	B320-116-290		
1.86	0.73	¾	20	B320-186-073		
1.86	1.16	¾	20	B320-186-116		
1.86	1.86	¾	20	B320-186-186		
1.86	2.9	¾	20	B320-186-290		
2.9	0.73	¾	20	B320-290-073		
2.9	1.16	¾	20	B320-290-116		
2.9	1.86	¾	20	B320-290-186		
2.9	2.9	¾	20	B320-290-290		
2.9	4.0	¾	20	B320-290-400		
2.9	4.7	¾	20	B320-290-470		
4.0	2.9	¾	20	B320-400-290		
4.0	4.0	¾	20	B320-400-400		
4.0	4.7	¾	20	B320-400-470		
4.9	2.9	¾	20	B320-490-290		
4.9	4.0	¾	20	B320-490-400		
4.9	4.7	¾	20	B320-490-470		



Linear Characteristic

Mode of Operation

The control valve is operated by an electronic actuator that responds to a modulating VDC/4...20 mA control signal. The actuator will then move the ball of the valve to the position dictated by the control signal thus changing the flow.

Product Features

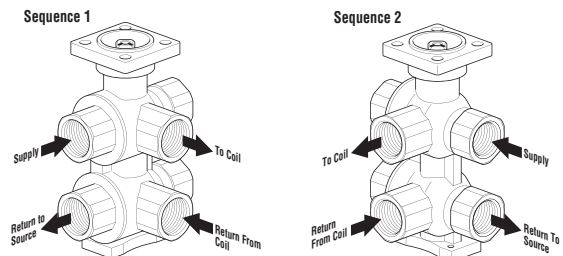
Linear characteristic, complete close-off.

Actuator Specifications

Control type	2-10 VDC multi-function technology (MFT)
Manual override	LR...
Electrical connection	3 ft. [1 m] cable with ½" conduit fitting

Valve Specifications

Service	chilled or hot water, 60% glycol
Flow characteristic	linear
Controllable flow range	
Sequence 1	(0 to 30° angle) ¹
	Dead zone 30° to 60°
Sequence 2	(60° to 90° angle) ²
Sizes	½", ¾"
End fitting	NPT
Materials	
Body	nickel plated brass
Ball	chrome plated brass
Stem	nickel plated brass
Seats	Teflon® PTFE
Seat o-rings	EPDM
Characterizing disc	chrome plated steel
O-rings	EPDM
Media temperature range	43°F to 180°F [6°C to 82°C]
Body pressure rating	232 psi [1600kPa]
Close-off pressure	50 psi
Maximum differential pressure (ΔP)	15 psi
Leakage	0%



Control Valve Product Range

6-Way Electronic Pressure Independent Characterized Control Valve Product Range

Flow V'nom/GPM	Valve Nominal Size		Type	Suitable Actuators
	Inches	DN [mm]	ePI 6-way	Non-Spring Return
5.5	½	15	EP315	LRX24-EP6
10.4	¾	20	EP320	



Mode of Operation

The control valve is operated by an electronic actuator that responds to a modulating VDC/4...20 mA control signal. The actuator will then move the ball of the valve to the position dictated by the control signal and change the flow.

Product Features

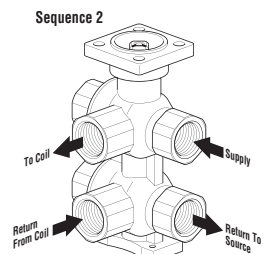
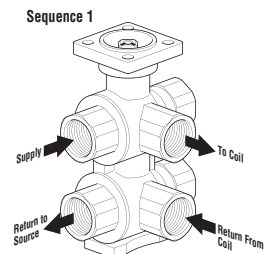
Linear characteristic, complete close-off.

Actuator Specifications

Control type	modulating
Manual override	LRX24-EP6
Electrical connection	3 ft. [1 m] cable with ½" conduit fitting

Valve Specifications

Service	chilled or hot water, 60% glycol
Flow characteristic	linear
Controllable flow range	
Sequence 1	(0 to 30° angle) ¹ Dead zone 30° to 60°
Sequence 2	(60° to 90° angle) ²
Sizes	½", ¾"
End fitting	NPT
Materials	
Body	nickel plated brass
Ball	chrome plated brass
Stem	nickel plated brass
Seats	Teflon® PTFE
Seat o-rings	EPDM
Characterizing disc	chrome plated steel
O-rings	EPDM
Media temperature range	43°F to 180°F [6°C to 82°C]
Body pressure rating	232 psi [1600kPa]
Close-off pressure	50 psi
Maximum differential pressure (ΔP)	15 psi
Leakage	0%



Control Valve Product Range

Characterized Control Valve (CCV) Product Range

C _v	Valve Nominal Size		Type		Suitable Actuators			
	Inches	DN [mm]	2-way NPT	3-way NPT	Non-Spring Return	NEMA 4X	Spring Return	NEMA 4
0.3	½	15	B207(B)	B307(B)	TR Series	LR Series	NR Series	LF Series
0.46	½	15	B208(B)	B308(B)				
0.8	½	15	B209(B)	B309(B)				
1.2	½	15	B210(B)	B310(B)				
1.9	½	15	B211(B)	B311(B)				
3	½	15	B212(B)	B312(B)				
4.7	½	15	B213(B)	B313(B)				
7.4	½	15	B214(B)					
10	½	15	B215(B)	B315(B)				
16	½	15	B216(B)*	B316(B)*				
4.7	¾	20	B217(B)	B317(B)				
7.4	¾	20	B218(B)	B318(B)				
10	¾	20	B219(B)					
14	¾	20	B220(B)*					
14	¾	20		B320(B)				
24	¾	20	B221(B)*	B321(B)*				
7.4	1	25	B222	B322				
10	1	25	B223	B323				
19	1	25	B224					
30	1	25	B225*	B325*				
10	1¼	32	B229					
19	1¼	32	B230*					
10	1¼	32		B329				
19	1¼	32		B330				
25	1¼	32	B231	B331				
37	1¼	32	B232*					
19	1½	40	B238	B338				
29	1½	40	B239	B339				
37	1½	40	B240*	B340				
46	1½	40		B341				
29	2	50	B248	B347				
37	2	50		B348				
46	2	50	B249	B349				
57	2	50	B250*	B350				
65	2	50	B251					
68	2	50		B351				
83	2	50		B352				
85	2	50	B252					
120	2	50	B253					
240	2	50	B254*					

* Models without characterizing discs. (B) Models with chrome plated brass ball and nickel plated brass stem



Equal Percentage Characteristic

Mode of Operation

The Characterized Control Valve is operated by a rotary actuator. The actuators are controlled by a standard voltage for on/off control, a modulating signal, or floating point control system which move the ball of the valve to the position dictated by the control system.

Product Features

The equal-percentage characteristic of the flow is ensured by the integral characterizing disc. This characteristic provides linear heating or cooling output from the coil improving energy efficiency and comfort.

Actuator Specifications

Control type	on/off, floating point, 2-10 VDC, multi-function technology (MFT)
Manual override	TR, LR, AR, NR, AFR series
Electrical connection	3 ft. [1 m] cable with ½" conduit fitting or covered screw terminal strip

Valve Specifications

Service	chilled or hot water, up to 60% glycol
Flow characteristic	A-port equal percentage B-port modified for constant common port flow
Controllable flow range	75°
Sizes	½", ¾", 1", 1¼", 1½", 2"
End fitting	NPT female ends

Materials

Body	forged brass, nickel plated
Ball	stainless steel or chrome plated brass
Stem	stainless steel or nickel plated brass
Seats	Teflon® PTFE
Seat o-rings	EPDM
Characterizing disc	
½"- 1 ½" (2-way)	Tefzel®
½"- 1" (3-way)	Tefzel®
2" (2-way) B248-B249	Tefzel®
2" (2-way) B251-B253	stainless steel
1¼"- 2" (3-way)	stainless steel
Stem o-rings	EPDM (lubricated)

Media temp. range 0°F to 250°F [-18°C to +120°C]

Body pressure rating

2-way	
All ½", ¾", and 1"	600 psi
1¼" up to B230	600 psi
1¼" from B231	400 psi
1½" - 2"	400 psi
3-way	
All ½", ¾", and 1"	600 psi
1¼"- 2"	400 psi

Close-off pressure 200 psi

Maximum differential pressure (ΔP) 50 psi

Leakage 0% for A to AB
< 2.0% for B to AB

Cv rating B port: 70% of A to AB Cv

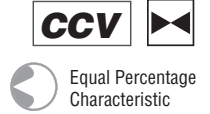
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Control Valve Product Range

Characterized Control Valve (CCV) Product Range

C _v	Valve Nominal Size		Type	Suitable Actuators		
	Inches	DN [mm]		2-way NPT	Non-Spring Return	Spring Return
60	2½	65	B261	AR Series	AFR Series	AR/AFR Series
75	2½	65	B262			
110	2½	65	B263			
150	2½	65	B264			
210	2½	65	B265*			
70	3	80	B277			
130	3	80	B278			
170	3	80	B280*			

* Models without characterizing disc



Mode of Operation

The Characterized Control Valve is operated by a rotary actuator. The actuators are controlled by a standard voltage for on/off control, a modulating signal, or floating point control system which move the ball of the valve to the position dictated by the control system.

Product Features

The equal-percentage characteristic of the flow is ensured by the integral characterizing disc. This characteristic provides linear heating or cooling output from the coil improving energy efficiency and comfort.

Actuator Specifications

Control type	on/off, floating point, 2-10 VDC, multi-function technology (MFT)
Manual override	AR and AFR series
Electrical connection	3 ft. [1 m] cable with ½" conduit fitting or covered screw terminal strip

Valve Specifications

Service	chilled or hot water, up to 60% glycol
Flow characteristic	A-port equal percentage
Controllable flow range	75°
Sizes	2½", 3"
End fitting	NPT female ends
Materials	
Body	forged brass, nickel plated
Ball	stainless steel
Stem	stainless steel
Seats	Teflon® PTFE
Seat o-rings	EPDM
Characterizing disc	Tefzel®
Stem o-rings	EPDM (lubricated)
Media temp. range	0°F to 212°F [-18°C to +100°C]
Body pressure rating	400 psi
Close-off pressure	100 psi
Maximum differential pressure (ΔP)	30 psi
Leakage	0% for A to AB

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Control Valve Product Range

Characterized Control Valve (CCV) Product Range

C _v	Valve Nominal Size		Type	Suitable Actuators					
	Inches	DN [mm]		2-way Flanged	Non-Spring Return	Spring Return	Electronic Fail-Safe	NEMA 4	NEMA 4X
70	2½	65	B6250S-070						
110	2½	65	B6250S-110	AR		AFR		AFR	AR
110	3	80	B6300S-110						
186	4	100	B6400S-186						
290	5	125	B6500S-290		GR		GKR	GR	GKR
400	6	150	B6600S-400						



Equal Percentage Characteristic

Mode of Operation

The Characterized Control Valve is operated by a rotary actuator. The actuators are controlled by a standard voltage for on/off control, a modulating signal, or floating point control system which move the ball of the valve to the position dictated by the control system.

Product Features

The equal-percentage characteristic of the flow is ensured by the integral characterizing disc. This characteristic provides linear heating or cooling output from the coil improving energy efficiency and comfort.

Actuator Specifications

Control type	on/off, floating point, 2-10 VDC, multi-function technology (MFT)
Manual override	AR, GR, AFR and GKR series
Electrical connection	3 ft. [1 m] cable with ½" conduit fitting or covered screw terminal strip

Valve Specifications

Service	chilled or hot water, up to 60% glycol max.	
Flow characteristic	A-port equal percentage	
Controllable flow range	75°	
Sizes	2½", 3", 4", 5", 6"	
End fitting	ANSI Class 125 flange	
Materials		
Body	cast iron GG25	
Ball	stainless steel	
Stem	stainless steel	
Seats	Teflon® PTFE	
Seat o-rings	EPDM rubber	
Characterizing disc	stainless steel	
O-rings	EPDM (lubricated)	
Media temp. range	0°F to 250°F [-18°C to +120°C]	
Body pressure rating	ANSI 125, Class B	
	°F	Psi
	-20° to +150°	200
	200°	180
	225°	180
	250°	175
Close-off pressure	100 psi	
Maximum differential pressure (ΔP)	50 psi	
Leakage	0% for A to AB	

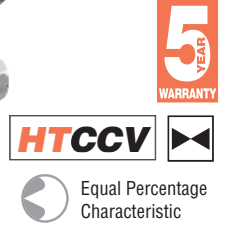
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Control Valve Product Range

High Temperature Characterized Control Valve (HTCCV) Product Range

C _v	Valve Nominal Size		Type	Suitable Actuators	
	Inches	DN [mm]		Non-Spring Return	Spring Return
0.29	½	15	B215HT029	TR Series	TFR Series
0.46	½	15	B215HT046		
0.73	½	15	B215HT073		
1.16	½	15	B215HT116		
1.86	½	15	B215HT186		
2.90	½	15	B215HT290		
4.55	½	15	B215HT455*	LR Series	LF Series
1.86	¾	20	B220HT186		
2.90	¾	20	B220HT290		
4.64	¾	20	B220HT464		
7.31	¾	20	B220HT731		
9.28	¾	20	B220HT928		
13.20	¾	20	B220HT1320		
4.64	1	25	B225HT464		
7.31	1	25	B225HT731		
11.60	1	25	B225HT1160		
18.56	1	25	B225HT1856		
28.00	1	25	B225HT2800		

* Modified equal percentage.



Equal Percentage Characteristic

Mode of Operation

The control valve is operated by an electronic actuator that responds to a standard voltage for on/off control, by a modulating VDC/4...20 mA, or 3-point control system. The actuator will then move the ball of the valve to the position dictated by the control signal or voltage and change the flow.

Product Features

Equal-percentage characteristic of the flow. B215HT455 model has a modified equal percentage characteristic.

Actuator Specifications

Control type	on/off, floating point, 2-10 VDC multi-function technology (MFT)
Manual override	only TR, LR series
Electrical connection	3 ft. [1 m] cable with ½" conduit fitting (except TR)

Valve Specifications

Service	hot water, up to 60% glycol, steam
Flow characteristic	A-port equal percentage
Controllable flow range	75°
Sizes	½", ¾", 1"
End fitting	NPT female ends
Materials	
Body	brass (DZR) P-CuZn35Pb2
Ball	stainless steel
Stem	stainless steel
Seat	ETFE
Stem packing	Viton®
Characterizing disc	ETFE
O-rings	EPDM (lubricated)
Body pressure rating	600 psi
Media temperature range	
Steam	250°F [120°C]
Water	60°F to 266°F [16°C to 130°C]
Close-off pressure	200 psi
Maximum differential pressure (ΔP)	
Steam	15 psi
Water	60 psi partially open ball 116 psi full open only (Model #B215HT455)
Maximum inlet pressure	
Steam	15 psi
Leakage	0%

Control Valve Product Range

Ball Valve Product Range

C _v	Valve Nominal Size		Type		Suitable Actuators	
	Inches	DN [mm]	2-way NPT	3-way NPT	Non-Spring Return	Spring Return
1	½	15	B2050VS-01*		LM Series	LF Series
2	½	15	B2050VS-02*			
4	½	15	B2050VS-04*			
15	½	15	B2050VS-15*			
30	¾	20	B219VS		NM Series	NF Series
51	¾	20	B220VS			
43	1	25	B224VS		AM Series	AF Series
68	1	25	B225VS			
48	1¼	32	B232VS			
84	1½	40	B239VS		GM Series	AF Series
177	1½	40	B240VS			
108	2	50	B249VS		NM Series	LF
15	½	15	B2050VSS-15*			
30	¾	20	B219VSS			
43	1	25	B224VSS			
108	2	50	B249VSS		AM	AF Series
					GM	AF Series
6.4	½	15		B315L**	LR Series	LFR Series
12.8	¾	20		B320L**		
11	1	25		B325L**		
34	1¼	32		B332L**	NR	AFR Series
57	1½	40		B340L**	AR Series	
87	2	50		B350L**		

* For hot only or cold only applications. Not for temperature changeover applications.

** Not for steam applications

NOTE: Industrial ball valves (B2..VS, B2..VSS) have serviceable components. Proper maintenance of these parts will ensure a longer in-service life for the valves. The seats of these valves will require replacement at an interval consistent with number of full cycles the valve has been operated, or as field condition dictates.



Mode of Operation

The control valve is operated by an electronic actuator that responds to a standard voltage for on/off control, by a modulating VDC/4...20 mA, or 3-point control system. The actuator will then move the ball of the valve to the position dictated by the control signal thus changing the flow.

Product Features

Modified equal percentage of flow for B2. Modified linear flow for B3.

B3...L valves are for diverting applications and are not rated for steam.

Actuator Specifications

Control type	on/off, floating point, modulating, 2-10 VDC multi-function technology (MFT)
Manual override	LM, NM, GM, AM, SY, AF, NF, GK
Electrical connection	3 ft. [1 m] cable with ½" conduit fitting (excluding SY)

Valve Specifications

Service	chilled or hot water, (60% glycol), steam
Flow characteristic	modified equal percentage (B2), modified linear (B3..L)
Sizes	½", ¾", 1", 1¼", 1½", 2"
End fitting	FNPT
Materials	
Body	bronze (B2..VS) stainless steel (B2..VSS) nickel plated brass (B3..L)
Ball	stainless steel, bronze (B2050VSS-15) chrome plated brass (B3..L)
Stem	stainless steel nickel plated brass (B3..L)
Seats	
2-way	RPTFE
3-way	Teflon PTFE
Stem packing	
2-way NPT	RPTFE
O-rings	NPT EPDM (B3..L)
Media temp range	
B2..VS	-22°F to +280°F [-30°C to +138°C]
B2..VSS	-22°F to +298°F [-30°C to +148°C]
B3..L	0°F to 250°F [-18°C to +120°C]
Body pressure rating	
3-way	600 psi DN 15-25 (B3..L ½"-1") 400 psi DN 32-50 (B3..L 1¼" - 2")
Maximum inlet pressure	
Steam	35 psi B2..VS 50 psi B2..VSS
Leakage	ANSI Class IV (B2..VS, VSS) 0% (B3..L)

Control Valve Product Range

V Ball Valve Product Range

C _v	Valve Nominal Size		Type		Suitable Actuators			
	Inches	DN [mm]	2-way NPT	2-way Flanged	Non-Spring Return	Spring Return	Electronic Fail-Safe	
024	1	25	B2100VB-024		SY Series	NF Series		
055	1½	40	B2150VB-055				AM Series	
077	2	50	B2200VB-077					
207	3	80		B6300VB-207			AF	
350	4	100		B6400VB-350		GM		GK Series
507	6	150		B6600VB-507				

NOTE: Industrial ball valves have serviceable components. Proper maintenance of these parts will ensure a longer in-service life for the valves. The seats of these valves will require replacement at an interval consistent with number of full cycles the valve has been operated, or as field condition dictates.



Equal Percentage Characteristic

Mode of Operation

The control valve is operated by an electronic actuator that responds to a standard voltage for on/off control, by a modulating VDC/4...20 mA, or 3-point control system. The actuator will then move the ball of the valve to the position dictated by the control signal thus changing the flow.

Product Features

Equal percentage of flow
300:1 rangeability
ANSI Leakage Class IV

Actuator Specifications

Control type	on/off, floating point, modulating, 2-10 VDC multi-function technology (MFT)
Manual override	all models
Electrical connection	3 ft. [1 m] cable with ½" conduit fitting, terminal block

Valve Specifications

Service	chilled or hot water, (60% glycol), steam
Flow characteristic	equal percentage
Sizes	1", 1½", 2", 3", 4", 6"
End fitting	SAE NPT female (1" to 2") ANSI flanged (3" to 6")
Materials	
Body	carbon steel
Characterizing ball	hardened chrome plated stainless steel
Stem	stainless steel
Seats	Teflon®
O-rings	ALFAS
Stem packing	spring loaded Teflon® V-ring
Bushings	PEEK
Media temp. range	380°F max.
Body pressure rating	NPT ANSI 300 (1" to 2") Flanged ANSI 150 (3" to 6")
Maximum ΔP steam	100 psi
Maximum ΔP water	100 psi
Close-off pressure	
Water	150 psi
Steam	200 psi
Maximum inlet pressure	
Steam	200 psi
Leakage	ANSI Class IV

Control Valve Product Range

Pipe Package Product Range

Valve Series	Valve Nominal Size		Hoses	Union	Isolation Valve	Manual Balancing Valve	Strainer
	Inches	DN [mm]	Lengths	Body End/ Tailpiece End	Body End/ Tailpiece End	Body End/ Tailpiece End	Body End/ Tailpiece End
2-Way PICCV	½	15	12", 18", 24"	F-NPT, Sweat, Press Fit/M-NPT	F-NPT, Sweat, Press Fit/M-NPT		M-NPT, Sweat, FNPT, Press Fit/M-NPT
	¾	20	12", 18", 24"				
	1	25	12", 18", 24"				
	1¼	32	18", 24", 36"				
	1½	40	18", 24", 36"				
	2	50	24", 36"				
2-Way CCV	½	15	12", 18", 24"				
	¾	20	12", 18", 24"				
	1	25	12", 18", 24"				
	1¼	32	18", 24", 36"				
	1½	40	18", 24", 36"				
	2	50	24", 36"				
3-Way CCV	½	15	12", 18", 24"				
	¾	20	12", 18", 24"				
	1	25	12", 18", 24"				
	1¼	32	18", 24", 36"				
	1½	40	18", 24", 36"				
	2	50	24", 36"				
2-Way Zone Valve	½	15	12", 18", 24"				
	¾	20	12", 18", 24"				
	1	25	12", 18", 24"				

Manual Balance Valve Technical Specifications

Service	chilled or hot water, 60% glycol
Sizes	½", ¾", 1", 1¼", 1½", 2"
Materials	
Body	forged brass
Ball	chrome plated/forged brass
Stem	extruded brass
Union	forged brass
Tailpiece	forged brass
Gland nut	extruded brass
Seats & packing	virgin PTFE
O-rings	Viton
Venturi	extruded brass
Readout port body & cap	extruded brass
Readout port seal	Nordel
Memory stop	forged brass
Pressure/temperature ratings	
½" to 2"	400 psi
Component temperature	300°F maximum
Media temperature range	0°F to 250°F [-18°C to +121°C]
Leakage	0%

Strainer Technical Specifications

Service	chilled or hot water, 60% glycol
Sizes	½", ¾", 1", 1¼", 1½", 2"
Materials	
Body	forged brass
Union nut	forged brass
Ball	chrome plated/forged brass
Stem & gland nut	forged brass
Tailpiece	forged brass
Seals & packing	PTFE
Stem o-rings	Viton
Strainer screen	304 stainless steel / 20 mesh standard
Readout port body & cap	extruded brass
Readout port seal	Nordel
Pressure/temperature ratings	
½" to 2"	600 psi
Component temperature	325°F maximum
Media temperature range	0°F to 250°F [-18°C to +121°C]
Leakage	0%

Hose Technical Specifications

Materials	
External braiding	stainless steel AISI 304
Crimping ferrules	stainless steel AISI 304
Connectors	machined brass
Fiber gasket	BA-U fiber washer
Core	formulated EPDM
Operating & burst pressure rating	
½"	375 psi operating 1500 psi burst pressure
¾"	300 psi operating 1200 psi burst pressure
1"	225 psi operating 900 psi burst pressure
1¼"	200 psi operating 800 psi burst pressure
1½"	175 psi operating 600 psi burst pressure
2"	150 psi operating 500 burst pressure
Component temperature	5°F to 230°F [-15°C to +110°C] less than 41°F with use of glycol additive.
Note: Media temperature may be limited by the hose rating	

Union Technical Specifications

Service	chilled or hot water, 60% glycol
Sizes	½", ¾", 1", 1¼", 1½", 2"
Materials	
Body	forged brass
Union nut	forged brass
Tailpiece	forged brass
Gasket	EPDM
Insulator	glass reinforced nylon (dielectric)
Readout port body & cap	extruded brass
Readout port seal	Nordel
Pressure/temperature ratings	
½" to 2"	400 psi
Component temperature	250°F maximum
Media temperature range	0°F to 250°F [-18°C to +121°C]

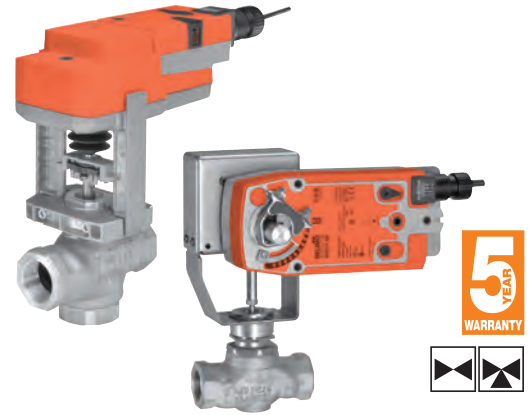
Isolation Valve Technical Specifications

Service	chilled or hot water, 60% glycol
Sizes	½", ¾", 1", 1¼", 1½", 2"
Materials	
Body	forged brass
Gland nut	extruded brass
Ball	chrome plated/hot forged brass
Stem	extruded brass
Union nut	forged brass
Tailpiece	forged brass
Seats	virgin PTFE
Packing	virgin PTFE
Stem o-rings	Viton
Readout port body & cap	extruded brass
Readout port seal	Nordel
Pressure/temperature ratings	
½" to ¾"	600 psi
1" to 2"	500 psi
Component temperature	300°F maximum
Media temperature range	0°F to 212°F [-18°C to +100°C]
Leakage	0%

Control Valve Product Range

Globe Valve Product Range

C _v	Valve Nominal Size		Type		Suitable Actuators		
	Inches	DN [mm]	2-way NPT	3-way NPT	Non-Spring Return	Spring Return	Electronic Fail-Safe
0.4	½	15	G212	–	LV Series	LF Series	LVK Series
1.3	½	15	G213	–			
2.2	½	15	G214	–			
4.4	½	15	G215	–			
0.4	½	15	G212S	–			
1.3	½	15	G213S	–			
2.2	½	15	G214S	G314			
4.4	½	15	G215S	G315			
4.4	½	15	–	G315D			
5.5	¾	20	G219	–			
7.5	¾	20	G220	–			
5.5	¾	20	G219S	–			
7.5	¾	20	G220S	G320			
7.5	¾	20	–	G320D			
10	1	25	G224	–			
14	1	25	G225	–			
10	1	25	G224S	–			
14	1	25	G225S	G325			
14	1	25	–	G325D			
20	1¼	32	G232	–			
20	1¼	32	G232S	G332			
20	1¼	32	–	G332D			
28	1½	40	G240	–			
28	1½	40	G240S	G340			
28	1½	40	–	G340D			
40	2	50	G250	–			
40	2	50	G250S	–			
41	2	50	–	G350			
40	2	50	–	G350D			



Mode of Operation

The control valve is operated by an electronic actuator that responds to a standard voltage for on/off control, by a modulating VDC/4...20 mA, 3-point control system. The actuator will then move the plug of the valve to the position dictated by the control signal thus changing the flow.

Product Features

Equal percentage (G2) and linear (G3) flow curve options available for a wide variety of HVAC applications. Capable of being used for heating, cooling, and steam service. Repack and rebuild kits are available to extend the life of the valve without full replacement.

Actuator Specifications

Control type	on/off, floating point, 2-10 VDC, multi-function technology (MFT)
Manual override	all models except LF
Electrical connection	3 ft [1 m] cable with ½" conduit fitting

Valve Specifications

Service	chilled or hot water, 60% glycol, steam	
Flow characteristic	G2 - equal percentage G2S, G3, G3D - linear	
Sizes	½", ¾", 1", 1¼", 1½", 2"	
End fitting	NPT female ends	
Materials	Body Stem Plug Seat Stem packing Disc / Seal	bronze stainless steel brass stainless steel: G2..S bronze stainless steel: G2..S spring loaded TFE composition EPDM G2 Teflon® G2...S
Media temp. range	refer to valve specification pages in the Product Guide and Price List	
Body pressure rating	250 psi G2, G3..., ½"- 2"	
Maximum inlet pressure	Steam 35 psi G2 100 psi G2...S	
Maximum differential pressure (ΔP)	Water Steam	35 psi (241 kPa) 20 psi (138 kPa) G2 35 psi (241 kPa) G2...S
Rangeability	5:1 (G212..) 15:1 (G213..) 25:1 (G214..) 40:1 (G215..) 50:1 (G219..) 60:1 (G220.., G224..) 75:1 (all others) 500:1 (G3..)	

Control Valve Product Range

Globe Valve Product Range

C _v	Valve Nominal Size		Type	Suitable Actuators		
	Inches	DN [mm]		2-way Flanged	Non-Spring Return	Spring Return
65	2½	65	G665C	EV Series	AFX Series	AVK Series
65	2½	65	G665CS			
65	2½	65	G665C-250			
65	2½	65	G665CS-250			
65	2½	65	G665LCS			
85	3	80	G680C			
85	3	80	G680CS			
85	3	80	G680C-250			
85	3	80	G680CS-250			
85	3	80	G680LCS			
170	4	100	G6100C			
170	4	100	G6100CS			
170	4	100	G6100C-250			
170	4	100	G6100CS-250			
170	4	100	G6100LCS			
263	5	125	G6125C			
263	5	125	G6125CS			
263	5	125	G6125C-250			
263	5	125	G6125CS-250			
263	5	125	G6125LCS			
344	6	150	G6150C			
344	6	150	G6150CS			
344	6	150	G6150C-250			
344	6	150	G6150CS-250			
344	6	150	G6150LCS			

The G...(C)(CS)(LCS) Series valve is a pressure compensated valve that allows high close-off ratings while utilizing standard actuation.



Mode of Operation

The control valve is operated by an electronic actuator that responds to a standard voltage for on/off control, a modulating VDC/4...20 mA, or 3-point control system. The actuator will then move the plug of the valve to the position dictated by the control signal thus changing the flow.

Product Features

Equal percentage (G6) and linear (G7) flow curve options available for a wide variety of HVAC applications. Capable of being used for heating, cooling, and steam service. Repack and rebuild kits are available to extend the life of the valve without full replacement.

Actuator Specifications

Control type	on/off, floating point, 2-10 VDC multi-function technology (MFT)
Manual override	all models
Electrical connection	3 ft [1 m] cable with ½" conduit fitting

Valve Specifications

Service	chilled or hot water, 60% glycol, steam
Flow characteristic	G6 A-port equal percentage G6LCS linear
Sizes	2½", 3", 4", 5", 6"
End fitting	ANSI flanged
Materials	Body cast iron Stem stainless steel Plug brass Seat G6 stainless steel G6...S stainless steel
Stem packing	G6 bronze trimmed: NLP (EPDM) G6S stainless trimmed: NLP (EPDM)
Media temp. range	refer to valve specification pages in the Product Guide and Price List
Body pressure rating	G6, 125# ANSI flange 125 psi G6, 250# ANSI flange 250 psi
Maximum inlet pressure	Water 150 psi (1034 kPa) G6C, G6CS 250 psi (1724 kPa) G6C...250, G6CS...250 Steam 35 psi (241 kPa) G6C, G6C...250 100 psi (690 kPa) G6CS, G6CS...250
Maximum differential pressure (ΔP)	Water 25 psi (172 kPa) G6C, G6C...250 50 psi (345 kPa) G6CS, G6CS...250 Steam 15 psi (103 kPa) G6C, G6C...250
Rangeability	85:1 (G665..), 91:1 (G680..) 98:1 (G6100..), 100:1 (G6125..) 98:1 (G6150..)

Control Valve Product Range

Globe Valve Product Range

C _v	Valve Nominal Size		3-Way Flanged	Suitable Actuators		
	Inches	DN [mm]		Non-Spring Return	Spring Return	Electronic Fail-Safe
68	2½	65	G765	EV / RV Series	AFX Series	AVK Series
68	2½	65	G765S			
68	2½	65	G765-250			
68	2½	65	G765S-250			
85	3	80	G780			
85	3	80	G780S			
85	3	80	G780-250			
85	3	80	G780S-250			
190	4	100	G7100			
190	4	100	G7100S			
190	4	100	G7100-250			
190	4	100	G7100S-250			
280	5	125	G7125	RV Series	GK Series	
280	5	125	G7125S			
280	5	125	G7125-250			
280	5	125	G7125S-250			
340	6	150	G7150			
340	6	150	G7150S			
340	6	150	G7150-250			
340	6	150	G7150S-250			
68	2½	65	G765D	EV Series	AFX Series	AVK Series
68	2½	65	G765DS			
68	2½	65	G765DS-250			
85	3	80	G780D			
85	3	80	G780DS			
85	3	80	G780DS-250			
154	4	100	G7100D			
154	4	100	G7100DS			
154	4	100	G7100DS-250			
195	5	125	G7125D			
195	5	125	G7125DS			
195	5	125	G7125DS-250			
248	6	150	G7150D			
248	6	150	G7150DS			
248	6	150	G7150DS-250			



Mode of Operation

The control valve is operated by an electronic actuator that responds to a standard voltage for on/off control, a modulating VDC/4...20 mA, or 3-point control system. The actuator will then move the plug of the valve to the position dictated by the control signal thus changing the flow.

Product Features

Equal percentage (G6) and linear (G7) flow curve options available for a wide variety of HVAC applications. Capable of being used for heating, cooling, and steam service. Repack and rebuild kits are available to extend the life of the valve without full replacement.

Actuator Specifications

Control type	on/off, floating point, 2-10 VDC multi-function technology (MFT)
Manual override	all models
Electrical connection	3 ft [1 m] cable with ½" conduit fitting

Valve Specifications

Service	chilled or hot water, 60% glycol
Flow characteristic	linear
Sizes	2½", 3", 4", 5", 6"
End fitting	flanged
Materials	
Body	cast iron
Stem	stainless steel
Plug	brass
Seat	
G7	stainless steel
G7...S	stainless steel
Stem packing	
G7	bronze trimmed: NLP (EPDM)
G7...S	stainless trimmed: NLP (EPDM)
Media temp. range	refer to valve specification pages in the Product Guide and Price List
Body pressure rating	
G7, 125# ANSI flange	125 psi
G7, 250# ANSI flange	250 psi
Maximum inlet pressure	
Water	150 psi (1034 kPa) G7, G7S 250 psi (1724 kPa) G7...250, G7S...250
Maximum differential pressure (ΔP)	
Water	25 psi (172 kPa) G7, G7...250 50 psi (345 kPa) G7S, G7S...250
Rangeability	50:1

Control Valve Product Range

Resilient Seat Butterfly Valve Product Range

C _v 90°	C _v 60°	2-way		Suitable Actuators													
		Valve Nominal Size		Type	Non-Spring Return						Spring Return		Electronic Fail-Safe				
		IN	DN [mm]	2-way	HDU	HD	HDU	HD	HDU	HD	HDU	HD	HDU	HD	HD		
115	44	2	50	F650													
196	75	2½	65	F665	AR	AR											
302	116	3	80	F680			GR Series	GR Series									
600	230	4	100	F6100													
1022	392	5	125	F6125		DR											
1579	605	6	150	F6150	DR												
3136	1202	8	200	F6200													
5340	2047	10	250	F6250													
8250	3162	12	300	F6300													
11917	4568	14	350	F6350													
16388	6282	16	400	F6400													
21705	8320	18	450	F6450													
27908	10698	20	500	F6500													
43116	16528	24	600	F6600													

C _v 90°	C _v 60°	3-way		Suitable Actuators													
		Valve Nominal Size		Type	Non-Spring Return						Spring Return		Electronic Fail-Safe				
		IN	DN [mm]	3-way	HDU	HD	HDU	HD	HDU	HD	HDU	HD	HDU	HD	HDU	HD	
115	44	2	50	F750	AM	AM											
196	75	2½	65	F765													
302	116	3	80	F780													
600	230	4	100	F7100													
1022	392	5	125	F7125													
1579	605	6	150	F7150													
3136	1202	8	200	F7200													
5340	2047	10	250	F7250													
8250	3162	12	300	F7300													
11917	4568	14	350	F7350													
16388	6282	16	400	F7400													
21705	8320	18	450	F7450													



Mode of Operation

Butterfly valves are capable of handling higher flow rates with relatively low pressure loss. These valves may be used for isolation (shut-off) service or throttling service within a range of 0-60 degrees. Pressure losses for valve opening greater than 70 degrees are too low to produce any significant effect on flow rate. Butterfly valves are controlled with a maintenance-free electronic actuator or with a manually ergonomic handle or gear operator.

Product Features

The unique disc and seat design ensures positive valve seating while maintaining low seating torque.

Actuator Specifications

Control type	on/off, floating point, modulating, 2-10 VDC, multi-function technology (MFT)
Manual override	all models
Electrical connection	3 ft. [1 m] cable terminal block

Valve Specifications

Service	chilled, hot water, 60% glycol
Flow characteristic	F6 modified equal percentage F7 modified linear
Sizes	2" to 24"
End fitting	for ASME/ANSI Class 125/150 flanges
Materials	
Body	ductile iron ASTM A536
Body finish	epoxy powder coat
Disc	304 stainless steel
Shaft	416 stainless steel
Seat	EPDM
O-rings	EPDM
Bushings	RPTFE
Media temp. range	-22°F to +250°F [-30°C to +120°C]
Body pressure rating	consistent with ASME/ANSI Class 125
Close-off pressure	HDU: 50 psi HD: 200 psi, 2" to 12" 150 psi, 14" to 24"
Rangeability	10:1
Maximum velocity	12 FPS
Leakage	0%

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Control Valve Product Range

Grooved Butterfly Valve Product Range

		2-way			Suitable Actuators			
		Valve Nominal Size		Type	Non-Spring Return		Spring Return	Electronic Fail-Safe
C_v 90°	C_v 60°	IN	DN [mm]	2-way				
115	36	2	50	F650VIC	AM Series	GM Series	AF Series	
260	80	2½	65	F665VIC				
440	140	3	80	F680VIC		DR Series		GK
820	250	4	100	F6100VIC				
1200	370	5	125	F6125VIC		SY Series		
1800	560	6	150	F6150VIC				
3400	1050	8	200	F6200VIC				
5800	1800	10	250	F6250VIC				
9000	2790	12	300	F6300VIC				



2
YEAR
WARRANTY



Mode of Operation

Grooved butterfly valves are designed for body pressures ranging from full vacuum to 300 psi and for bi-directional, dead end services to full body pressure. The valve patented seat design ensures full 360° sealing. The pressure-enhanced seat compresses to form a larger seating area as the pressure increases. Valve construction and performance meet and exceed MSS-SP-67 requirements.

Product Features

The unique single offset disc and seat design ensures positive valve seating while maintaining low seating torque.

Actuator Specifications

Control type	on/off, floating point, modulating, 2-10 VDC, multi-function technology (MFT)
Manual override	all models
Electrical connection	3 ft. [1 m] cable terminal block

Valve Specifications

Service	chilled, hot water, 60% glycol
Flow characteristic	F6 modified equal percentage F7 modified linear
Sizes	2" to 12"
End fitting	grooved ANSI/AWWA (C606)
Materials*	
Body	ductile iron ASTM A536, grade 65-45-12
Body finish	black alkyd enamel
Disc	electrolysis nickel coated ductile iron
Shaft	416 stainless steel
Seat	EPDM
Bearings	fiberglass with TFE lining
Media temp. range	-20°F to +250°F [-30°C to +120°C]
Body pressure rating	300 psi
Close-off pressure	200 psi (for most combinations)
Rangeability	100:1
Maximum velocity	20 FPS
Leakage	0%

*VIC® 300 Masterseal™ is manufactured by Victaulic Company

		3-way			Suitable Actuators		
		Valve Nominal Size		Type	Non-Spring Return		Spring Return
C_v 90°	C_v 60°	IN	DN [mm]	3-way			
115	36	2	50	F750VIC	AM	GM Series	AF
260	80	2½	65	F765VIC			
440	140	3	80	F780VIC		SY Series	
820	250	4	100	F7100VIC			
1200	370	5	125	F7125VIC			
1800	560	6	150	F7150VIC			
3400	1050	8	200	F7200VIC			
5800	1800	10	250	F7250VIC			
9000	2790	12	300	F7300VIC			

Control Valve Product Range

High Performance Butterfly Valve Product Range

C _V 90°	C _V 60°	2-way Valves			Suitable Actuators							
		Valve Nominal Size	Type		Non-Spring Return				Spring Return		Electronic Fail-Safe	
			Inches	ANSI 150 2-way	ANSI 300 2-way	150	300	150	300	150	300	150
102	56	2	F650-150SHP	F650-300SHP	GM Series	GM Series	SY Series	SY Series	AF Series	AF Series	GK Series	GK Series
146	80	2½	F665-150SHP	F665-300SHP								
228	125	3	F680-150SHP	F680-300SHP								
451	248	4	F6100-150SHP	F6100-300SHP								
714	392	5	F6125-150SHP	F6125-300SHP								
1103	607	6	F6150-150SHP	F6150-300SHP								
2064	1135	8	F6200-150SHP	F6200-300SHP								
3517	1934	10	F6250-150SHP	F6250-300SHP								
4837	2660	12	F6300-150SHP	F6300-300SHP								
6857	3592	14	F6350-150SHP	F6350-300SHP								
9287	4865	16	F6400-150SHP	F6400-300SHP								
11400	6270	18	F6450-150SHP	F6450-300SHP								
14420	7590	20	F6500-150SHP	F6500-300SHP								
22050	11550	24	F6600-150SHP	F6600-300SHP								

Note: C_V values listed for ANSI Class 150 Butterfly Valves. Please consult the technical documentation for ANSI Class 300 C_V values and configurations.

C _V 90°	C _V 60°	3-way Valves			Suitable Actuators					
		Valve Nominal Size	Type		Non-Spring Return				Electronic Fail-Safe	
			Inches	ANSI 150 3-way	ANSI 300 3-way	150	300	150	300	150
100	52	2	F750-150SHP	F750-300SHP	GM Series	GM Series	SY Series	SY Series	GK Series	GK Series
143	75	2½	F765-150SHP	F765-300SHP						
223	117	3	F780-150SHP	F780-300SHP						
435	228	4	F7100-150SHP	F7100-300SHP						
688	361	5	F7125-150SHP	F7125-300SHP						
1041	546	6	F7150-150SHP	F7150-300SHP						
1911	1001	8	F7200-150SHP	F7200-300SHP						
3194	1673	10	F7250-150SHP	F7250-300SHP						
4428	2319	12	F7300-150SHP	F7300-300SHP						
5702	2986	14	F7350-150SHP	F7350-300SHP						
8243	3988	16	F7400-150SHP	F7400-300SHP						
9712	5088	18	F7450-150SHP	F7450-300SHP						
10658	7590	20	F7500-150SHP	F7500-300SHP						
16205	11550	24	F7600-150SHP	F7600-300SHP						

Note: C_V values listed for ANSI Class 150 Butterfly Valves. Please consult the technical documentation for ANSI Class 300 C_V values and configurations.



Mode of Operation

High performance butterfly valves are designed for modulating and isolation service and feature a machined seat design and blow out proof solid shaft, providing better torque consistency, which offers longer actuator life and reduced risk of leakage. Available for a variety of high temperature and pressure ratings i.e., ASME/ANSI Class 300 or 150. Valve sizes range from 2 to 24 inches, with rangeabilities of 100:1, 0% leakage ratings, and a maximum valve velocity of 32 FPS.

Product Features

Unique body seat and double offset disc design ensures positive valve sealing to help assure leak free performance in water applications while maintaining low seating torque.

Actuator Specifications

Control type	on/off, floating point, modulating, 2-10 VDC, multi-function technology (MFT)
Manual override	all models
Electrical connection	3 ft. [1 m] cable terminal block

Valve Specifications

Service	chilled or hot water, 60% glycol, steam to 50 psi
Flow characteristic	F6 modified equal percentage, unidirectional F7 modified linear, unidirectional
Sizes	2" to 24"
End fitting	ASME/ANSI Class 150 or 300
Materials	Body: carbon steel full lug Disc: 316 stainless steel Shaft: 17-4 PH stainless Seat: RTFE Gland seal: TFE Bearings: glass backed PTFE
Media temp. range	-20°F to +400°F [-30°C to +204°C]
Body pressure rating	150 SHP: ASME/ANSI Class 150 300 SHP: ASME/ANSI Class 300
Close-off pressure	150: 285 psi, 300: 600 psi
Rangeability	100:1
Maximum velocity	32 FPS
Leakage	0%

Double Dead End Service: Utilizes larger retainer ring set screws to allow the valve to be placed at the end of the line without a down stream flange in either flow direction while still holding full pressure.

Meters Product Range

Flow Meter Product Range

	GPM Range	Valve Nominal Size		Type
		Inches	DN [mm]	2-way
NPT	0.07 - 6.6	½	15	FM050
	0.13 - 12.4	¾	20	FM075
	0.23 - 21.8	1	25	FM100
	0.36 - 34.2	1¼	32	FM125
	0.49 - 47.5	1½	40	FM150
	1.09 - 91.2	2	50	FM200



Mode of Operation

The ultrasonic flow meter is an accurate and repeatable liquid flow measurement meter utilizing ultrasonic transit time technology. The transducers perform as both emitter and receiver to provide accurate signal reflection.

Product Features

The Belimo ultrasonic flow meters are designed for HVAC chilled water, hot water, and water/glycol solutions from -4°F to +250°F [-20°C to +120°C] up to 60% glycol. The flow meter incorporates an embedded temperature sensor which enables Belimo's patented temperature and glycol compensation logic to accurately read flow over a wide range of water variables.

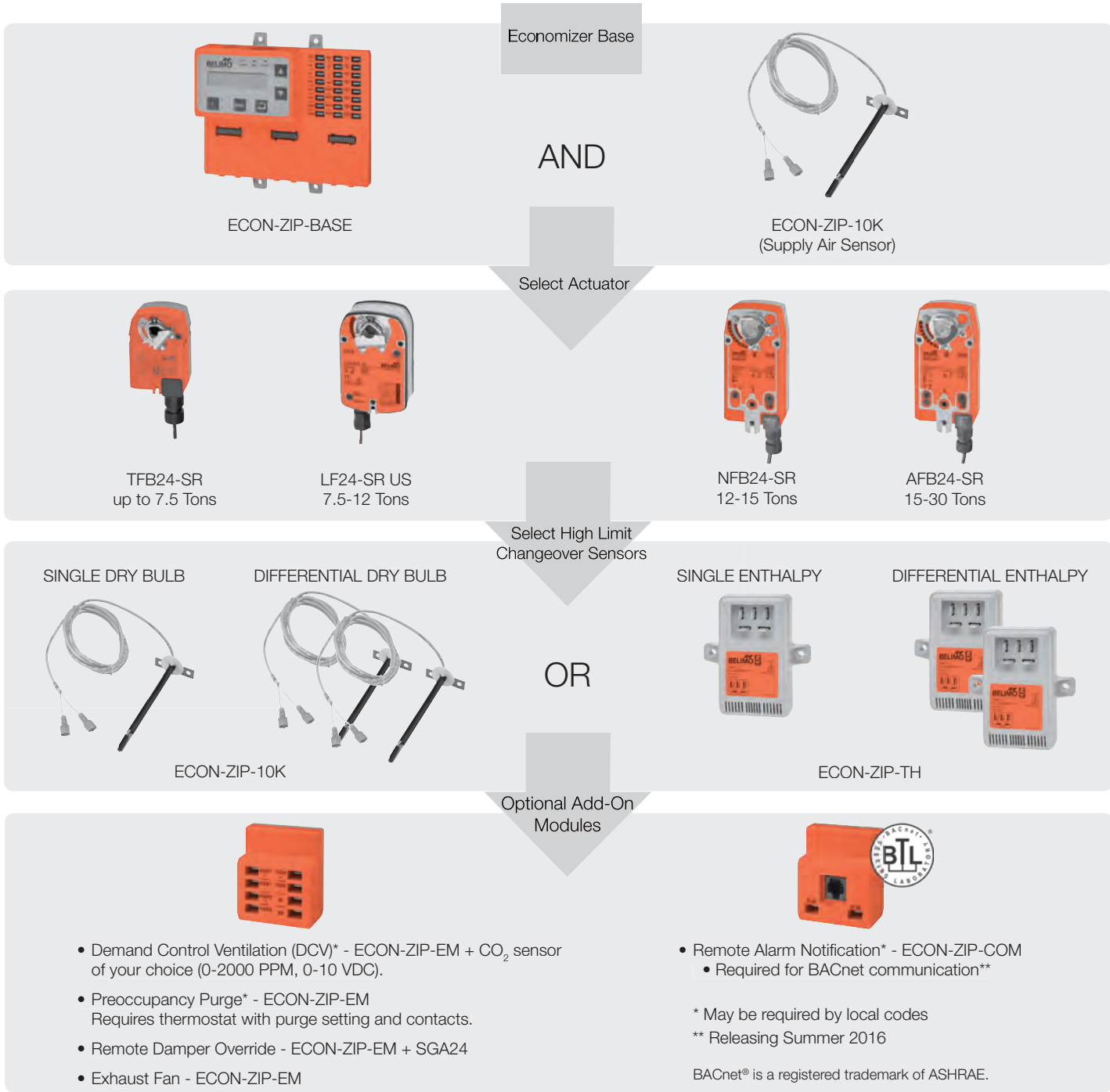
Flow Meter Specifications

Service	chilled or hot water, up to 60% glycol max, condenser water (open loop and steam not allowed)
Sizes	½", ¾", 1", 1¼", 1½", 2"
End fitting	NPT female inlet, NPT male outlet
Materials	
Sensor housing	forged brass, nickel plated
Media temp range	-4°F to +250°F [-20°C to +120°C]
Sensor housing pressure rating	360 psi
Flow sensor technology	ultrasonic with glycol and temperature compensation
Length to meet specified measurement accuracy	
Inlet	5x nominal pipe size (NPS)
Outlet	no requirement
Output signal	analog (0-10 VDC)
0V	sensor has no supply voltage
0.3V	sensor has supply voltage but is in error state
0.5V	0% of V'nom
10V	100% of V'nom
Flow measurement tolerance	± 2%
Flow measurement repeatability	± 0.5%
Electrical connection	3 ft., 18 GA plenum cable

All flow accuracies are at 77°F (25°C).

Selection Guide

ZIP Economizer



ZIP Packs - Packaged Solutions for Quick Drop-in Economizer Replacement

ECON-ZIP	-SE	TF
ZIP Economizer Solution with Energy Module	High Limit Changeover Strategy (Temperature)	Actuator
	SD = Single Dry Bulb	TF** = 22 in-lbs, 7.5 Tons***
	DD = Differential Dry Bulb	LF** = 35 in-lbs, 12 Tons***
	SE = Single Enthalpy	**With corresponding retrofit kit
	DE = Differential Enthalpy	***Recommended max RTU tonnage

Pack Components may include:

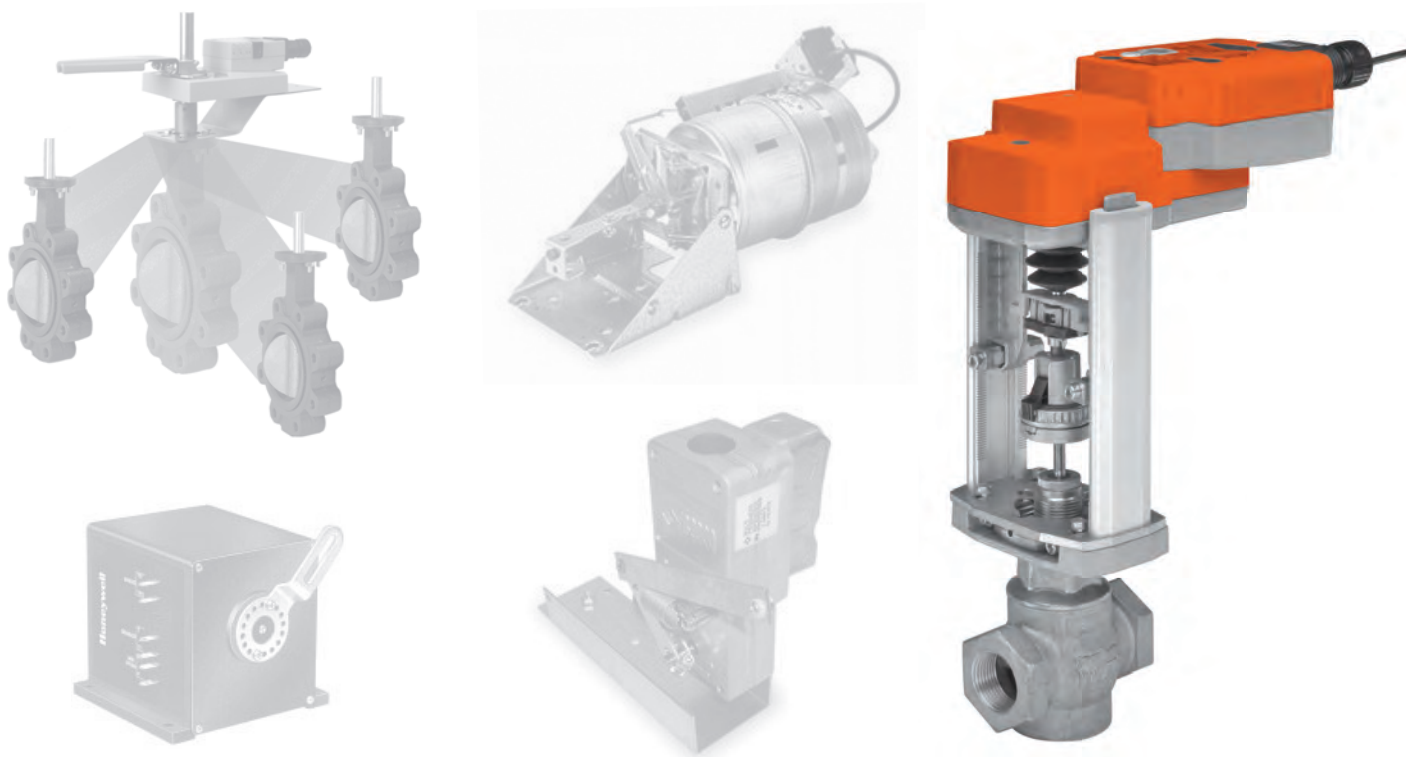
ECON-ZIP-10K: 10K Sensor for Outside Temperature or Return Air

ECON-ZIP-LF1 or ECON-ZIP-TF1: Retrofit Kit for Actuator Replacement

ECON-ZIP-TH: Temperature and Humidity Sensor, Outside Air or Return Air

See product flyer for more details.

Retrofit Solutions for valve and damper actuators increase the quality and reliability of your entire system.



The Source for HVAC and Valve Retrofit Solutions

Belimo has a dedicated retrofit team of professionals to provide you the guidance and resources for getting the most from your HVAC system. If you are experiencing broken or outdated actuators, valves that are not performing or are causing unnecessary energy consumption; Belimo's dedicated retrofit team can help.

Belimo has a state-of-the-art in house CNC machine shop with the ability to fabricate custom linkages for valve automation. Product mediums include stainless steel, cold rolled steel, or brass. With our machining capabilities and our retrofit team we can design and create custom retrofit linkage solutions for your existing valves, regardless of the manufacturer.

Belimo actuators and valves lead the industry in cutting-edge technology and value. Whether electronic or pneumatic, there is a simple way to retrofit.

RETROFIT

Replacement solutions are available for Siemens®, Johnson Controls®, Honeywell®, Invensys®, Robertshaw®, Siebe, Barber Colman®, Landis®, Powers®, Warren®, Apollo®, Bray®, Centerline®, Challenger®, Chemtrol®, Dezurik®, Flowseal®, FNW®, Gruvlok®, Hammond®, Keystone®, K-LOK®, Metraflex®, Milwaukee®, Mueller®, Nibco®, PDC®, Quartermaster®, Victaulic®, Watts® and many more.

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445 Bryant Street, Unit #1
Denver, CO 80204-4800
Phone: 800-777-0910
With branches in CO, MO, KS

Cochrane Supply and Engineering, Inc.
30303 Stephenson Highway
Madison Heights, MI 48071-1633
Phone: 800-482-4894
With branches in MI and Maumee, OH

Columbus Temperature Control
1053 E. 5th Avenue
Columbus, OH 43201
Phone: 800-837-1837

Controlco
985 3rd Street
Oakland, CA 94607
Phone: 510-636-7900
With branches in CA, NV, TN

Control Products
9101 Jameel, Suite 130
Houston, TX 77447
Phone: 713-849-7200
With a branch in San Antonio, TX

Engineered Control Systems
5627 NW 74th Avenue
Miami, FL 33166
Phone: 305-885-8804
With branches in FL

G & O Thermal Supply
5435 N. Northwest Highway
Chicago, IL 60630
Phone: 773-763-1300
With branches in IL

**Industrial Controls Distributors, LLC
(was Climatic Control)**
5061 W. State Street
Milwaukee, WI 53208
Phone: 800-242-1656
With branches in WI

Industrial Controls Distributors, LLC
17 Christopher Way
Eatontown, NJ 07724
Phone: 800-543-8200
With branches in GA, KY, IN, MA, ME,
NC, NY, OH, PA, TN

Interstate HVAC Controls
30 Vineland Street
Brighton, MA 02135
Phone: 617-782-9000

Jackson Controls
1708 E. 10th Street
Indianapolis, IN 46201
Phone: 317-231-2200

M & M Controls
9E West Aylesbury Road
Timonium, MD 21093
Phone: 410-252-1221
With branches in VA

MICONTROLS, Inc.
6516 5th Place South
Seattle, WA 98124
Phone: 800-877-8026
With branches in WA, OR

Meier Supply
123 Brown Street
Johnson City, NY 13790
Phone: 607-797-7700
With branches in NY, PA

Minvalco, Inc.
3340 Gorham Avenue
Minneapolis, MN 55426-4267
Phone: 952-920-0131
With branches in MN

Relevant Solutions
12610 West Airport Blvd, Suite 100
Sugarland, TX 77478
Phone: 281-295-8850

RSD / Refrigeration Supplies Distributor
26021 Atlantic Ocean Drive
Lake Forest, CA 92630
Phone: 949-380-7878
With branches in CA, NV, OR, AK, AZ,
ID, UT, WA, MT

Saint Louis Boiler Supply, Co.
617 Hanley Industrial Court
St. Louis, MO 63144
Phone: 314-962-9242

South Side Control Supply, Co.
488 N. Milwaukee Avenue
Chicago, IL 60610-3923
Phone: 312-226-4900
With branches in IL, IN

Stromquist and Company
4620 Atlanta Road
Smyrna, GA 30080
Phone: 404-794-3440
With a branch in Orlando, FL

Temperature Control Systems
10315 Brockwood Road
Dallas, TX 75238
Phone: 214-343-1444
With branches in OK, TX

T.F. Campbell Company
1203 Edgebrook Avenue
Pittsburgh, PA 15226
Phone: 412-881-8006

Tower Equipment Co., Inc.
1320 West Broad Street
Stratford, CT 06615
Phone: 800-346-4647

Twincos Supply Corporation
55 Craven Street
Huntington Station, NY 11746-2143
Phone: 800-794-3188
With branches in NY

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