

P6... Series Electronic Pressure Independent Valves (ePIV) Stainless Steel Ball, ANSI 125 Flange Ends



Valve Specifications

Service	chilled or hot water, 50% glycol max (closed loop/steam not allowed)
Flow characteristic	equal percentage / linear
Controllable flow range	90° rotation
Size	2½", 3", 4", 5", 6"
Type of end fitting	pattern to mate with ANSI 125 flange
Materials	
Body	cast iron - GG25 and ductile iron - GGG50
Ball	stainless steel
Seat	PTFE
Characterizing disc	stainless steel
Packing	2 EPDM O-rings, lubricated
Body pressure rating	according to ANSI 125, standard class B
Media temp. range	36°F to 250°F [2°C to 120°C]
Conductivity	Min. 20uS/cm (no fully desalinated systems)
Leakage	0%
Differential pressure range(ΔP)	5 to 50 psid
Inlet length required in front of valve	5x DN
Power supply for the flow sensor	sensor is powered by the actuator

Application

Water-side control of heating and cooling systems for AHUs and heat pumps.
Equal Percentage: Heating / cooling applications.
Linear Characteristic: Bypass control.

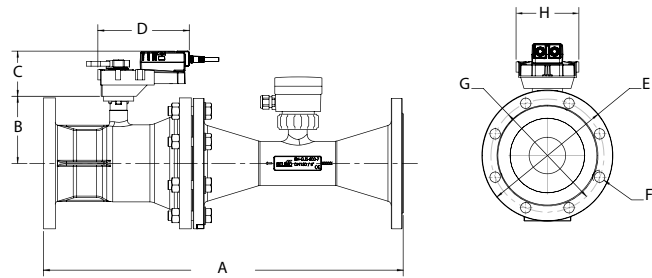
Mode of Operation

The Electronic Pressure Independent Control Valve is a two-way valve which is unaffected by pressure variations in a system.

Product Features

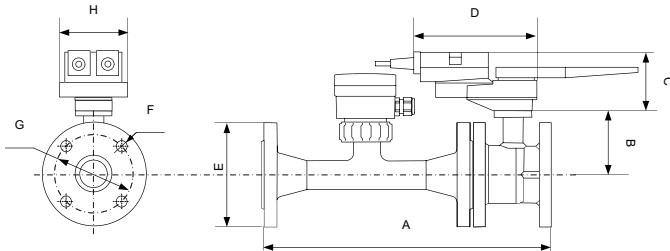
Constant flow regardless of pressure variations in the system. Maximizes chiller ΔP, preventing energizing additional chillers due to low ΔT. Simplified valve sizing and selection, no Cv calculations required.

Dimensions



Valve Nominal Size		Dimensions (Inches [mm])							
In.	DN [mm]	A	B	C	D	E	F	G	H
4"	100	22.85 [580.5]	4.88 [124]	3.29 [83.7]	6.83 [173.4]	7.50 [190.5]	0.75 [19]	7.50 [190.5]	3.74 [95]
5"	125	25.18 [639.5]	5.63 [143]	3.79 [96.2]	7.68 [194.9]	10.0 [254]	0.88 [22.4]	8.50 [215.9]	5.28 [134]
6"	150	30.2 [767]	5.63 [143]	3.79 [96.2]	7.68 [194.9]	11.0 [279.4]	0.88 [22.4]	9.50 [241.3]	5.28 [134]

Dimensions



Valve Nominal Size		Dimensions (Inches [mm])							
In.	DN [mm]	A	B	C	D	E	F	G	H
2½"	65	17.9 [454]	4.50 [113]	2.68 [68]	6.81 [173]	7.28 [185]	0.75 [19.05]	5.50 [140]	3.70 [95]
3"	80	19.7 [499]	4.50 [113]	2.68 [68]	6.81 [173]	7.87 [200]	0.75 [19.05]	6.07 [154]	3.70 [95]

Weights

Valve Nominal Size		Weights
Inches	DN [mm]	Pounds [kg]
2½"	65	52.0 [23.3]
3"	80	63.0 [28.3]
4"	100	89.0 [40.1]
5"	125	120.0 [54.3]
6"	150	154.0 [69.6]

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Non-Spring Return Actuators

AR Series
GR Series

Actuator Specifications	
Power supply	24 VAC \pm 20% 24 VDC \pm 10%
Electric Frequency	60 Hz Only
Power consumption	
AR Series	6.5W
GR Series	9W
Transformer sizing	20 VA (class 2 power source)
Electrical connection	18 GA, Plenum rated cable ½" conduit connector protected NEMA 2 (IP54) 3ft [1m] cable
Overload protection	electronic throughout 0° to 90° rotation
Operaton range Y	2 to 10 VDC (default) VDC variable
Control	Proportional
Input impedance	100 k Ω (0.1 mA), 500 Ω
Feedback	2 to 10VDC (default), VDC variable
Torque	
AR Series	180 in-lb [20Nm]
GR Series	360 in-lb [40Nm]
Direction of rotation	electronically variable
Fail-safe position	none
Manual override	external push button
Running time normal operation	90 seconds
Running time fail-safe	none
Humidity	5 to 95% RH, non-condensing
Ambient temperature	-22°F to 122°F [-30°C to 50°C]
Storage temperature	-40°F to 176°F [-40°C to 80°C]
Housing type	NEMA 2, IP54, UL enclosure type 2
Agency listings	cULus acc. to UL60730-1A/-2-14, CAN/CSA, CE acc. to 2004/108/EC and 2006/95/EC
Noise level	<45dB(A) at 90 seconds
Servicing	maintenance free
Quality standard	ISO 9001
Weight	
AR Series	2.65 lb [1.2 kg]
GR Series	4.85 lb [2.2 kg]

The ZTH-GEN and the PC-Tool are tools created to easily adapt the flow settings for the ePIV in the field. It directly connects to the Belimo actuator.

Operation

The actuator is electronically protected against overload. The anti-rotation strap supplied with the actuator will prevent lateral movement.

The GKR and AKR series actuators use a brushless DC motor, which is controlled by an Application Specific Integrated Circuit (ASIC). The ASIC monitors and controls the actuators rotation and provides a digital rotation sensing (DRS) function to prevent damage to the actuator in a stall condition. Power consumption is reduced in a holding mode.

Add-on auxiliary switches or feedback potentiometers are easily fastened directly onto the actuator body for signaling and switching functions.

Electronic Fail-Safe Actuators

AKR Series
GKR Series

Actuator Specifications	
Power supply	24VAC \pm 20% 24VDC \pm 10%
Electric Frequency	60 Hz Only
Power consumption	
AKR Series	12W
GKR Series	14W
Transformer sizing	24 VA (class 2 power source)
Electrical connection	18 GA plenum rated cable ½" conduit connector protected NEMA 2 (IP54) 3 ft [1m] 10 ft [3m] 16 ft [5m]
Overload protection	electronic throughout 0° to 90° rotation
Operation range Y	2 to 10VDC (default), VDC variable
Input impedance	100 k Ω (0.1 mA), 500 Ω
Feedback output U	2 to 10VDC, 0.5mA max, VDC variable
Torque	
AKR Series	180 in-lb [20Nm]
GKR Series	360 in-lb [40 Nm]
Direction of rotation	electronically variable
Fail-safe position	adjustable with dial or tool 0 to 100% in 10% increments
Manual override	external push button
Running time normal operation	90 seconds
Running time fail-safe	35 seconds
Humidity	5 to 95% RH non-condensing
Ambient temperature	-22°F to +122°F [-30°C to +50°C]
Storage temperature	-40°F to +176°F [-40°C to +80°C]
Housing	NEMA2, IP54, UL enclosure type 2
Agency list	cULus acc. to UL 60730-1A/-2-14 CAN/CSA E60730-1:02 CE acc. to 2004/108/EEC and 2006/95/EC
Noise level	< 45dB(A)
Servicing	maintenance free
Quality standard	ISO 9001
Weight	
AKR Series	3.30 lb [1.5 kg]
GKR Series	5.51 lb [2.5 kg]

Wiring Diagrams

✂️ INSTALLATION NOTES

- 1 Provide overload protection and disconnect as required.
- 2 **CAUTION Equipment damage!**
Actuators may be connected in parallel.
Power consumption and input impedance must be observed.
- 3 Actuators may also be powered by 24 VDC.
- 4 Actuators are provided with color coded wires.
Wire numbers are provided for reference.

📄 APPLICATION NOTES

- ◆ Non-Spring Return Actuators:
Up to 2 actuators may be connected in parallel.
Meets cULus or UL and CSA requirements.
- ◆ Meets UL requirements without the need of an electrical ground connection.
- ◆ The ZG-R01 500 Ω resistor may be used.

⚠️ WARNING Live Electrical Components!

During installation, testing, servicing and troubleshooting of this product, it may be necessary to work with live electrical components. Have a qualified licensed electrician or other individual who has been properly trained in handling live electrical components perform these tasks. Failure to follow all electrical safety precautions when exposed to live electrical components could result in death or serious injury.

System Ground

In cases where the valve body is electrically isolated from the water pipe, an earth ground should be installed in order for the sensor to work properly. Earth ground can be connected directly on the sensor body. A connection point is provided on the flange of the sensor body.

