Application

This valve is typically used in Air Handling Units on heating or cooling coils and Fan Coil Unit heating or cooling coils. Some other common applications include Unit Ventilators, VAV Box reheat coils and bypass loops. This valve is suitable for use in a hydronic system with constant or variable flow.

3-way valves are available with mixing or diverting flow patterns.

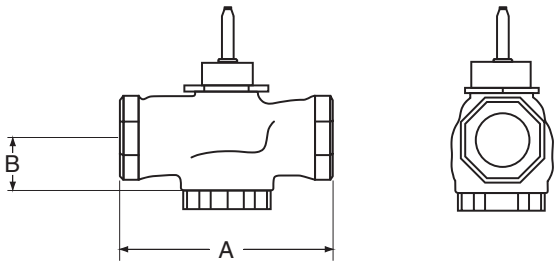
C_v	Valve Nominal Size Inches	DN [mm]	Type 3-way NPT	Suitable Actuators Non-Spring	Spring	Electronic Fail- Safe
2.2	½	15	G314	LV Series	LF Series	LVK Series
4.4	½	15	G315(D)			
7.5	¾	20	G320(D)			
14	1	25	G325(D)	SV Series	NF	SVK Series
20	1¼	32	G332(D)			
28	1½	40	G340(D)		AF(X) Series	
41	2	50	G350			
40	2	50	G350(D)			

Technical Data

	G3	G3...D
Service	chilled or hot water, 60% glycol	
Flow characteristic	linear	
Action	stem up - open B to AB	stem up - open B to AB
Sizes	½" to 2"	
End fitting	NPT female ends	
Materials		
Body	bronze	
Seat	bronze	
Stem	stainless steel	
Plug	brass	
Packing	spring loaded TFE	
Disc	none	
ANSI class	ANSI 250 (up to 400 psi below 150°F)	
Leakage	ANSI III	
Media temperature water	20°F to 250°F (-7°C to 120°C)	
Maximum ΔP* water	35 psi (241 kPa)	
Rangeability	500:1	
Valve weights	G314, G315(D)	2 lbs
	G320	3 lbs
	G320D	2.5 lbs
	G325, G332(D)	2.5 lbs
	G325D	5 lbs
	G340(D), G350(D)	14 lbs

*(50% or more open)

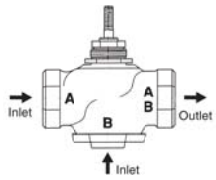
Dimensions



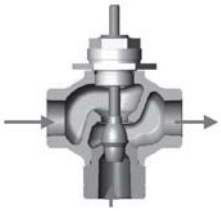
Valve Body	Valve Nominal Size Inches	DN [mm]	Dimensions (Inches [mm]) A	B
G314	½"	15	3.06" [78]	1.37" [35]
G315(D)	½"	15	3.06" [78]	1.37" [35]
G320(D)	¾"	20	3.62" [92]	1.68" [43]
G325(D)	1"	25	4.62" [117]	1.56" [40]
G332(D)	1¼"	32	4.62" [117]	1.62" [41]
G340(D)	1½	40	5.37" [137]	1.62" [41]
G350(D)	2	50	6.12" [156]	1.87" [48]

G3...(D) 3-way Flow Patterns

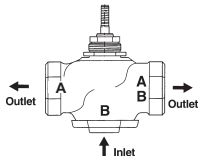
G3 3-way Mixing Valve



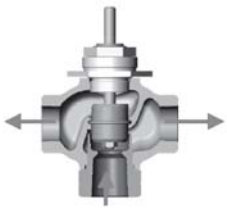
Stem Up- Open B to AB



G3…D 3-way Diverting Valve



Stem Up- Open B to AB



Note: Flow B to A travels through center of plug (as shown).

Piping

The valves should be mounted in a weather-protected area in a location that is within the ambient limits of the actuator. Allow sufficient room for valve with actuator and for service. Please allow 12" for complete actuator/linkage removal. The G2(S) and G3(D) preferred mounting position of the valve is with the valve stem vertical above the valve body, for maximum life. However, the assemblies can be mounted with the valve stem vertical or horizontal in relation to the pipe. The actuators should never be mounted underneath the valve, as condensation can build up and result in a failure of the actuators. Do not reverse flow direction.

SVKX24-MFT

Proportional, Electronic Fail-Safe, Linear, 24 V, Multi-Function Technology®

Technical Data	
Power supply	24 VAC ± 20% 50/60 Hz, 24 VDC ± 10%
Power consumption running	8.5 W
Power consumption holding	2.5 W
Transformer sizing	21 VA (class 2 power source)
Electrical connection	3 ft, 18 GA plenum rated cable with 1/2" conduit connector protected NEMA 2 (IP54)
Overload protection	electronic throughout full stroke
Electrical protection	actuators are double insulated
Control	Proportional/MFT
Operating Range Y	2 to 10 VDC, 4 to 20 mA (default), variable (VDC, PWM, floating point, on/off)
Input impedance	100 k Ω for 2 to 10 VDC (0.1 mA), 500 Ω for 4 to 20 mA, 1500 Ω for PWM, floating point and On/Off
Feeback Output U	2 to 10 VDC, 0.5 mA max, VDC variable
Stroke	0.75" [20 mm]
Linear Force	337 lbf [1500 N]
Direction of rotation	reversible with switch
Position indication	stroke indicator on bracket
Manual override	4 mm hex crank (shipped with actuator)
Running time motor	90 seconds (default), variable (90 to 150 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	NEMA 2, IP54, UL enclosure type 2
Housing material	Aluminum die cast and plastic casing
Bridge Time	2 second delay before fail-safe activates
Initial Charge	5 to 20 seconds
Agency listings†	cULus acc. to UL 60730-1A/-2-14, CAN/CSA E60730-1:02, CE acc. to 2004/108/EC and 2006/95/EC
Noise level	<45dB(A)
Servicing	maintenance free
Quality standard	ISO 9001
Weight	3.6 lbs

† Use flexible metal conduit. Push the Listed conduit fitting device over the actuator's cable to butt against the enclosure. Screw in conduit connector. Jacket the actuators input wiring with Listed flexible conduit. Properly terminate the conduit in a suitable junction box. Rated impulse Voltage 800V. Type of action 1. Control Pollution Degree 3.

Application

Fail-safe for multiple control types of globe valves in HVAC steam and hydronic systems.

Actuator sizing will be dictated by the valve size selection. All valve selections should be done in accordance with the flow parameters and system specifications. The actuator is mounted directly to the globe valve bonnet by means of its universal clamp and collar.

The actuator operates in response to many controls types as desired by the customer and/or design control input from an electronic controller or positioner. A 2 to 10 VDC feedback signal is provided for position indication.

Operation

The actuator is not provided with and does not require any limit switches, but is electronically protected against overload. The SVK series provides 20 mm of downward travel and a visual indicator indicates position of the actuator. When reaching the valve end position, the actuator automatically stops. The gears can be manually disengaged with a button on the actuator cover.

The SVK… series actuators use a sensorless brushless DC motor. The ASIC inside monitors and controls the actuator's rotation and provides a digital rotation sensing (DRS) function to prevent damage to the actuator in a stall condition. Power consumption is reduced in holding mode.

Add-on auxiliary switches are easily fastened directly onto the actuator body for signaling and switching functions. -SR and –MFT models will have an illuminated green Adaption/Power button to reset and relearn the valve stroke as well as indicate the actuator is powered. This feature allows the actuator to rescale itself based on the actual travel. Along with the Adaption button on –MFT models will have a yellow Status light to confirm communication.

Fail-Safe Indication

LED status indicator lights sequence:

Yellow off / Green on: operation ok, no faults

Yellow off / Green blinking: fail-safe mechanism is active

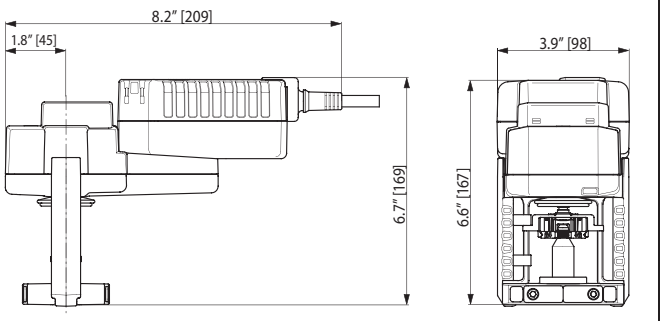
Yellow on / Green off: fault is detected

Yellow off / Green off: not in operation / capacitors charging

Yellow on / Green on: adaption running

Yellow blinking / Green on: communication with programming tool

Dimensions (Inches [mm])



Typical Specification

Proportional control globe valve actuators shall be electronic and direct coupled to the globe valve bonnet via an integrated linkage, which requires no secondary linkage and be capable of mounting to valves ½" to 2" in size. Actuators must provide control in response to a control input from an electronic controller or positioner. Actuators shall have brushless DC motor technology and be protected from overload at all angles of rotation. Actuators shall have reversing switch and manual override on the cover. Run time shall be constant and independent of torque. Actuators shall be cULus listed, have a 5-year warranty, and be manufactured under ISO 9001 International Quality Control Standards. Actuators shall be as manufactured by Belimo.

Wiring Diagrams

INSTALLATION NOTES

2 ***CAUTION** Equipment Damage!*
Actuators may be connected in parallel if not mechanically mounted to the same shaft. Power consumption and input impedance must be observed.

3 Actuators may also be powered by 24 VDC.

7 a 500 Ω resistor converts the 4-20 mA control signal to 2-10 VDC

8 Control signal may be pulsed from either the Hot (Source) or Common (Sink) 24 VAC line.

9 For triac sink the common connection from the actuator must be connected to the hot connection of the controller. Contact closures A & B also can be triacs. A & B should both be closed for the triac source and open for triac sink.

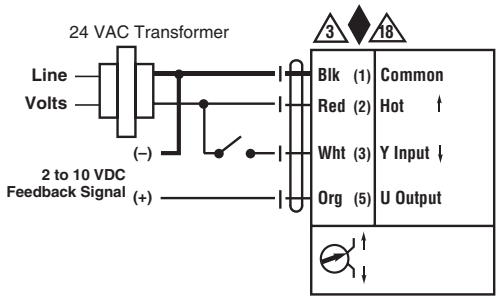
10 For triac sink the common connection from the actuator must be connected to the hot connection of the controller. Position feedback cannot be used with a triac sink controller. The actuator internal common reference is not compatible.

12 IN4004 or IN4007 diode. (IN4007 supplied, Belimo part number 40155)

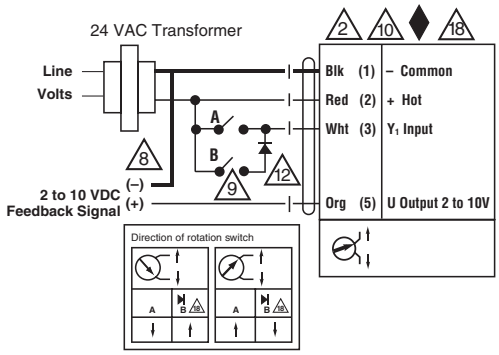
18 Actuators with plenum cable do not have numbers; use color codes instead.

Meets cULus or UL and CSA Standard requirements without the need of an electrical ground connection.

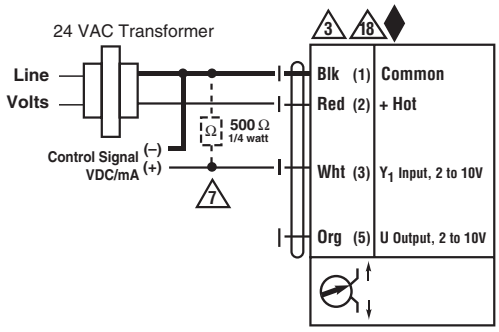
***WARNING** Live Electrical Components!*
During installation, testing, servicing and troubleshooting of this product, it may be necessary to work with live electrical components. Have a qualified licensed electrician or other individual who has been properly trained in handling live electrical components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



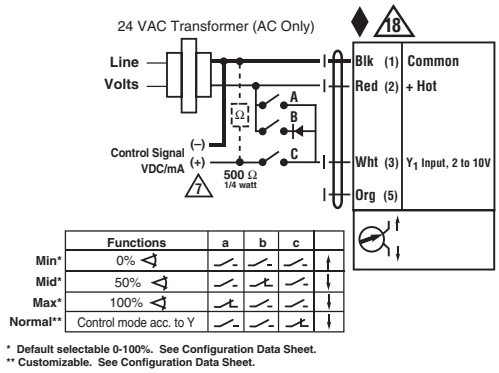
On/Off



Floating Point



VDC/4-20 mA



	Functions	a	b	c	
Min*	0%				
Mid*	50%				
Max*	100%				
Normal**	Control mode acc. to Y				

* Default selectable 0-100%. See Configuration Data Sheet.
** Customizable. See Configuration Data Sheet.

Override

G2/G3 Non-Spring Return, Spring Return, and Electronic Fail-Safe

	Non-Spring Return		Spring Return			Electronic Fail-Safe	
	LV	SV	LF	NF	AFB	LVK	SVK
2-way							
G212(S)	250		250			250	
G213(S)	250		250			250	
G214(S)	250		250			250	
G215(S)	250		250			250	
G219(S)	211		140			211	
G220(S)	211		140			211	
G224(S)		250		220			207
G225(S)		250		220			207
G232(S)		236		140			236
G240(S)		159			210		159
G250(S)		85			120		85
3-way Mixing							
G314	250		210			250	
G315	250		210			250	
G320	211		140			250	
G325		250		220			250
G332		236		140			236
G340		159			210		159
G350		85			120		85
3-way Diverting							
G315D	250		250			250	
G320D	250		250			250	
G325D		250		250			250
G332D		250		250			250
G340D		250			250		250
G350D		250			250		250

G6/G7 Non-Spring Return, Spring Return, and Electronic Fail-Safe

	Non-Spring Return		Spring Return		Electronic Fail-Safe	
	EV	**RV**	**AF**	**2*AF**	**AVK**	**2*GK**
2-way Pressure Comp ANSI 125						
G665C	140		140		140	
G680C	140		140		140	
G6100C	140			140	140	
G6125C	140			140	140	
G6150C	140			110	140	
2-way Pressure Comp ANSI 125						
G665CS, G665LCS	125		125		125	
G680CS, G680LCS	125		125	125	125	
G6100CS, G6100LCS	125			125	125	
G6125CS, G6125LCS	125			125	125	
G6150C, G6150LCS	125			110	125	
2-way Pressure Comp ANSI 250						
G665C-250	310		310		310	
G680C-250	310		280		310	
G6100C-250	310			280	310	
G6125C-250	310			185	232	
G6150C-250	244			110	150	
2-way Pressure Comp ANSI 250						
G665CS-250, G665LCS-250	250		250		250	
G680CS-250, G680LCS-250	250		250		250	
G6100CS-250, G6100LCS-250	250			250	250	
G6125CS-250, G6125LCS-250	250			185	232	
G6150CS-250, G6150LCS-250	244			110	150	250
3-way ANSI 125 Mixing						
G765, G765S	94	125	40	100	71	125
G780, G780S	63	125	26	68	47	125
G7100, G7100S	33	68		12		37
G7125, G7125S		42				
G7150, G7150S		28				
3-way ANSI 250 Mixing						
G765-250, G765S-250	94	185	40	100	71	222
G780-250, G780S-250	63	125	26	68	47	152
G7100-250, G7100S-250	33	68		12		37
G7125-250, G7125S-250		42				22
G7150-250, G7150S-250		28				14
3-way ANSI 125/250 Diverting						
G765D, G765DS, G765DS-250	140		140		140	
G780D, G780DS, G780DS-250	140		140		140	
G7100D, G7100DS, G100DS-250	140		140		140	
G7125D, G7125DS, G7125DS-250	140			140		
G7150D, G7150DS, G7150DS-250	175			175		