Ball Valve (VSS), 2", 2-way, Cv 108

- **NSF/ANSI 61 – Water Quality – C. Hot**
- **NSF/ANSI 372 - Lead Free**

2-year warranty

Type overview

Type	DN
B249VSS	50

Technical data

Functional data	Valve size [mm]	2" [50]
	Fluid	chilled or hot water, up to 60% glycol, steam
	Fluid Temp Range (water)	-22...298°F [-30...148°C]
	Body Pressure Rating	1500 psig WOG
	Close-off pressure Δps	1000 psi
	Flow characteristic	modified equal percentage
	Leakage rate	ANSI Class VI
	Pipe connection	Internal thread NPT (female)
	Max Differential Pressure (Steam)	50 psi
	Flow Pattern	2-way
	Controllable flow range	90° rotation, A – AB open ccw, B – AB open cw
	Cv	108
	Maximum Inlet Pressure (Steam)	50 psi
	Maximum Velocity	15 FPS
Materials	Valve body	Stainless steel A351-CF8M 316
	Housing seal	PTFE
	Stem	316 stainless steel
	Stem seal	RPTFE
	Seat	RPTFE
	Lock nut	stainless steel
	Ball	316 stainless steel
Suitable actuators	Non Fail-Safe	GMB(X) PRB(X)
	Spring	AF
	Electrical fail-safe	GKB(X) PKRB(X)

Note: NSF/ANSI/CAN 61 Section 8, Annex G, NSF/ANSI 372 - Drinking Water System Components - Lead Content. Suitable for Cold, Domestic Hot, and Commercial Hot applications.

Product features

Application

These threaded valves are designed to provide modulating or two position control of hot or chilled water and saturated steam systems under 50 psi.

Typical applications include reheat coils, VAV terminal control, unit ventilators, and air handlers, especially in areas which have minimum profile requirements.

Up to 50 psi steam

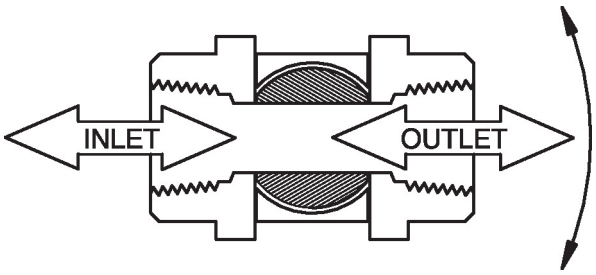
1/2" - 2000 PSIG WOG, Cold Non-Shock

Federal Specification: WW-V-35C, Type II

Composition: SS

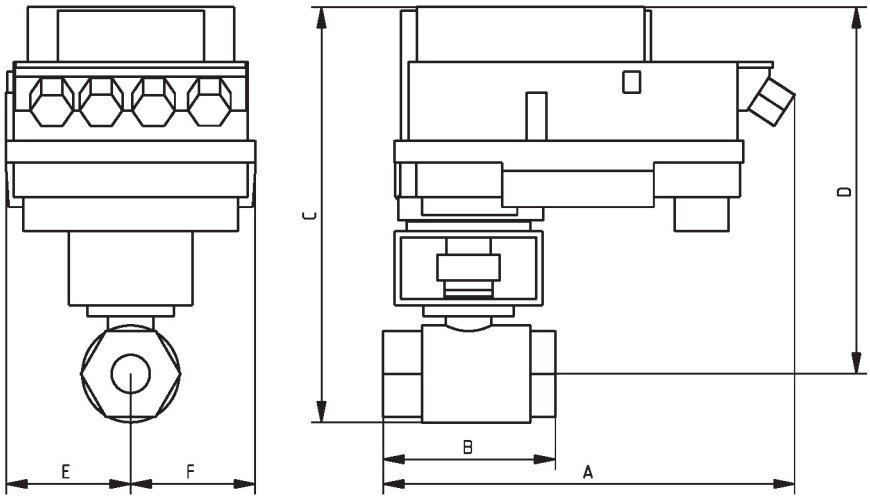
Style: 3

Flow/Mounting details



Dimensions

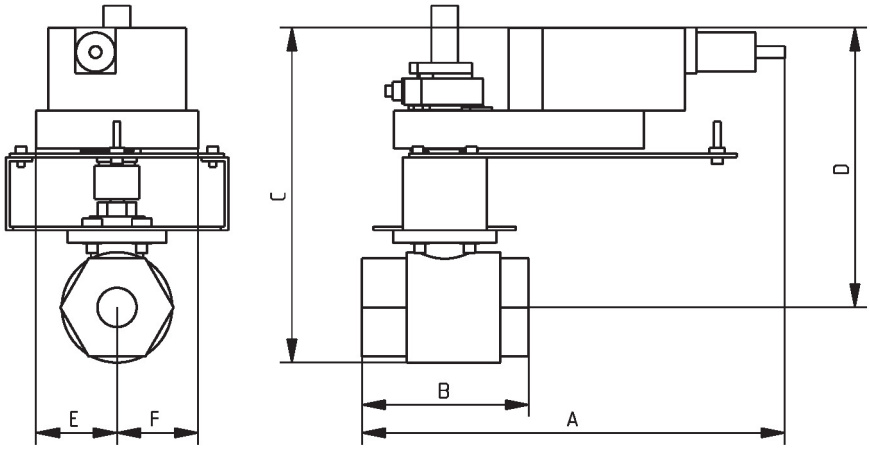
Type	DN	Weight
B249VSS	50	6.2 lb [2.8 kg]



B249VSS+PKR..

A	B	C	D	E	F
12.8" [325]	5.5" [140]	13.3" [337]	11.7" [298]	4.0" [102]	4.0" [102]

Dimensions



B249VSS+GK..X1

A	B	C	D	E	F
11.5" [293]	5.5" [140]	10.0" [254]	8.4" [214]	3.1" [80]	3.1" [80]

MFT/programmable, Electrical fail-safe, 24 V

5-year warranty

MFT

Technical data

Electrical data	Nominal voltage	AC/DC 24 V
	Nominal voltage frequency	50/60 Hz
	Nominal voltage range	AC 19.2...28.8 V / DC 21.6...28.8 V
	Power consumption in operation	12 W
	Power consumption in rest position	3 W
	Transformer sizing	21 VA
	Electrical Connection	18 GA plenum cable, 1 m, 3 m, or 5 m with 1/2" NPT conduit connector, degree of protection NEMA 2 / IP54
	Overload Protection	electronic throughout 0...95° rotation
Functional data	Operating range Y	2...10 V
	Operating range Y note	4...20 mA w/ ZG-R01 (500 Ω, 1/4 W resistor)
	Input impedance	100 kΩ for 2...10 V (0.1 mA), 500 Ω for 4...20 mA, 1500 Ω for PWM, On/Off and Floating point
	Operating range Y variable	Start point 0.5...30 V End point 2.5...32 V
	Operating modes optional	variable (VDC, on/off, floating point)
	Position feedback U	2...10 V
	Position feedback U note	Max. 0.5 mA
	Position feedback U variable	VDC variable
	Bridging time (PF)	2 s
	Bridging time (PF) variable	0...10 s
	Pre-charging time	5...20 s
	Direction of motion motor	selectable with switch 0/1
	Direction of motion fail-safe	reversible with switch
	Manual override	external push button
	Angle of rotation	Max. 95°
	Angle of rotation note	adjustable with mechanical stop
	Running Time (Motor)	150 s / 90°
	Running time motor variable	95...150 s
	Running time fail-safe	<35 s
	Noise level, motor	52 dB(A)
	Noise level, fail-safe	61 dB(A)
	Position indication	Mechanical, 30...65 mm stroke
Safety data	Power source UL	Class 2 Supply

Technical data

Safety data	Degree of protection IEC/EN	IP54
	Degree of protection NEMA/UL	NEMA 2
	Enclosure	UL Enclosure Type 2
	Agency Listing	cULus acc. to UL60730-1A/-2-14, CAN/CSA E60730-1:02 CE acc. to 2014/30/EU and 2014/35/EU
	Quality Standard	ISO 9001
	UL 2043 Compliant	Suitable for use in air plenums per Section 300.22(C) of the NEC and Section 602 of the IMC
	Ambient humidity	Max. 95% RH, non-condensing
	Ambient temperature	-22...122°F [-30...50°C]
	Storage temperature	-40...176°F [-40...80°C]
	Servicing	maintenance-free
Weight	Weight	4.0 lb [1.8 kg]
Materials	Housing material	Galvanized steel and plastic housing

Footnotes †Rated Impulse Voltage 800V, Type of action 1.AA, Control Pollution Degree 3

Product features

Bridging time

Power failures can be bridged up to a maximum of 10 s.

In the event of a power failure, the actuator will remain stationary in accordance with the set bridging time. If the power failure is greater than the set bridging time, the actuator will move into the selected fail-safe position.

The bridging time set at the factory is 2 s. It can be modified on site in operation by means of the Belimo service tool MFT-P.

Settings: The rotary knob must not be set to the "PROG FAIL-SAFE" position!

For retroactive adjustments of the bridging time with the Belimo service tool MFT-P or with the ZTH EU adjustment and diagnostic device only the values need to be entered.

Accessories

Electrical accessories

Description	Type
Feedback potentiometer 140 Ω add-on, grey	P140A GR
Feedback potentiometer 500 Ω add-on, grey	P500A GR
Feedback potentiometer 1 kΩ add-on, grey	P1000A GR
Feedback potentiometer 2.8 kΩ add-on, grey	P2800A GR
Feedback potentiometer 5 kΩ add-on, grey	P5000A GR
Feedback potentiometer 10 kΩ add-on, grey	P10000A GR
Auxiliary switch 1x SPDT add-on	S1A
Auxiliary switch 2x SPDT add-on	S2A
Service tool, with ZIP-USB function, for programmable and communicative Belimo actuators, VAV controller and HVAC performance devices	ZTH US

Electrical installation

INSTALLATION NOTES

A Actuators with appliance cables are numbered.

1 Provide overload protection and disconnect as required.

3 Actuators may also be powered by DC 24 V.

Electrical installation

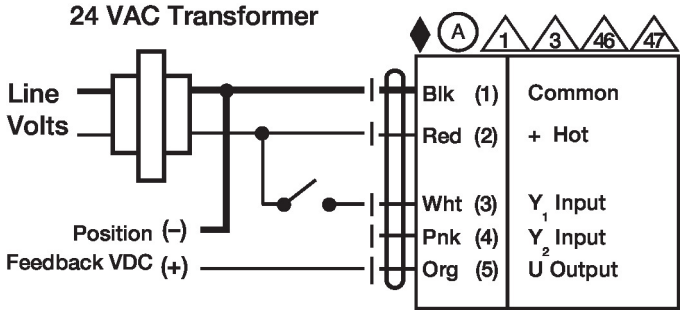
5 Only connect common to negative (-) leg of control circuits.
7 A 500 Ω resistor (ZG-R01) converts the 4...20 mA control signal to 2...10 V.
8 Control signal may be pulsed from either the Hot (Source) or Common (Sink) 24 V line.
10 For triac sink the Common connection from the actuator must be connected 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).
46 Actuators may be controlled in parallel. Current draw and input impedance must be observed.
47 Master-Slave wiring required for piggy-back applications. Feedback from Master to control input(s) of Slave(s).

Meets cULus requirements without the need of an electrical ground connection.

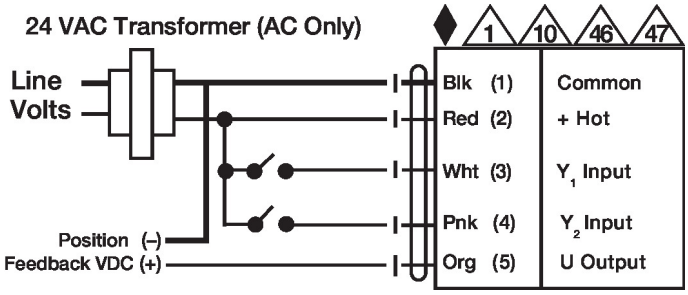
Warning! Live electrical components!
During installation, testing, servicing and troubleshooting of this product, it may be necessary to work with live electrical components. Have a qualified licensed electrician or other individual who has been properly trained in handling live electrical components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

Wiring diagrams

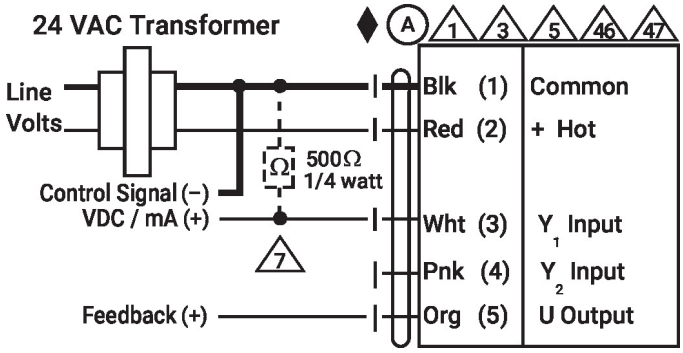
On/Off



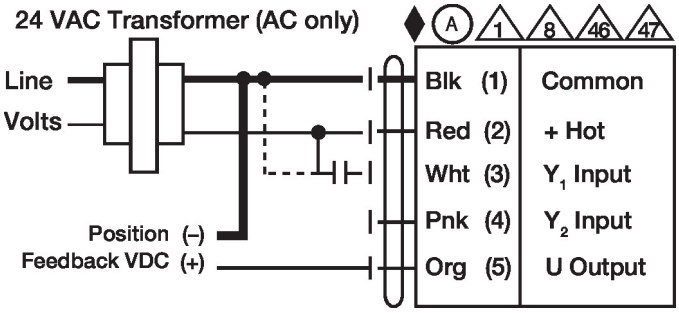
Floating Point



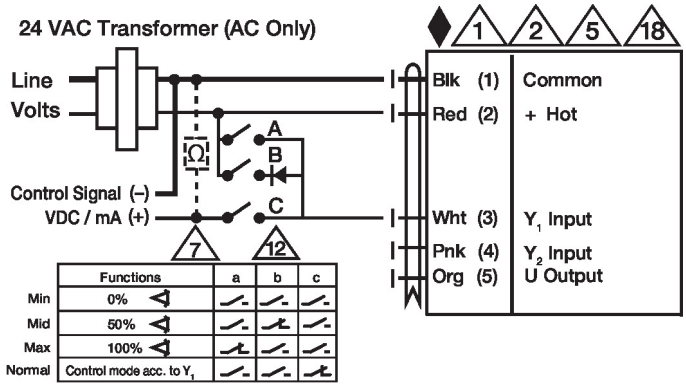
VDC/mA Control



PWM Control



Override Control



Primary - Secondary