5

5-year warranty

Type overview

Type	DN
G220S-J	20

Technical data

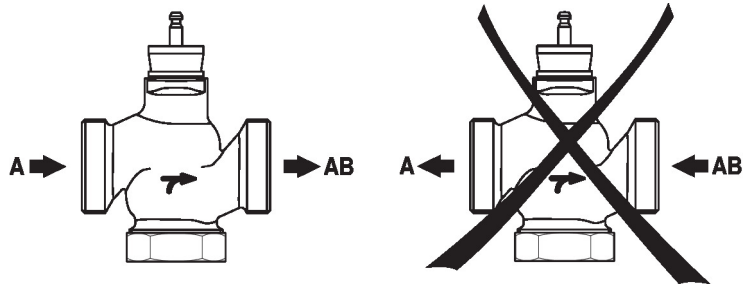|		
Functional data	Valve size [mm]	0.75" [20]
	Fluid	chilled or hot water, up to 60% glycol, steam
	Fluid Temp Range (water)	20...338°F [-7...170°C]
	Fluid Temp Range (steam)	32...338°F [0...170°C]
	Body Pressure Rating	ANSI Class 250, up to 400 psi below 150°F
	Flow characteristic	modified equal percentage
	Servicing	repack kits available
	Rangeability Sv	100:1
	Maximum differential pressure (water)	50 psi [345 kPa]
	Max Differential Pressure (Steam)	50 psi [345 kPa]
	Flow Pattern	2-way
	Leakage rate	ANSI Class VI
	Controllable flow range	stem up - open A – AB
	Cv	5.5
	Maximum Inlet Pressure (Steam)	100 psi [690 kPa]
Materials	Valve body	Bronze
	Valve plug	Stainless steel AISI 316
	Spindle	316 stainless steel
	Spindle seal	EPDM O-ring
	Seat	Stainless steel AISI 316
	Pipe connection	NPT female ends
Suitable actuators	Non-Spring	LVB(X)
	Spring	LF
	Electrical fail-safe	LVKB(X)

Safety notes

⚠️

- WARNING: This product can expose you to lead which is known to the State of California to cause cancer and reproductive harm. For more information go to www.p65warnings.ca.gov
- The valve has been designed for use in stationary heating, ventilation and air-conditioning systems and must not be used outside the specified field of application, especially in aircraft or in any other airborne means of transport.
- Only authorized specialists may carry out installation. All applicable legal or institutional installation regulations must be complied during installation.
- The valve does not contain any parts that can be replaced or repaired by the user.
- When determining the flow rate characteristic of controlled devices, the recognised directives must be observed.
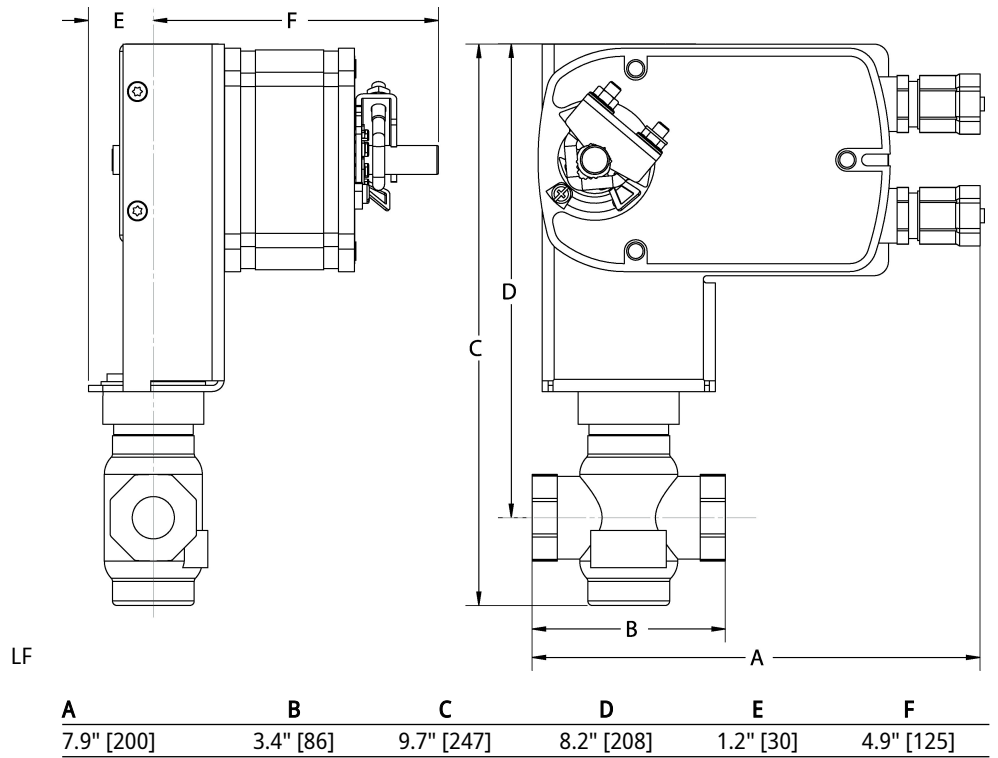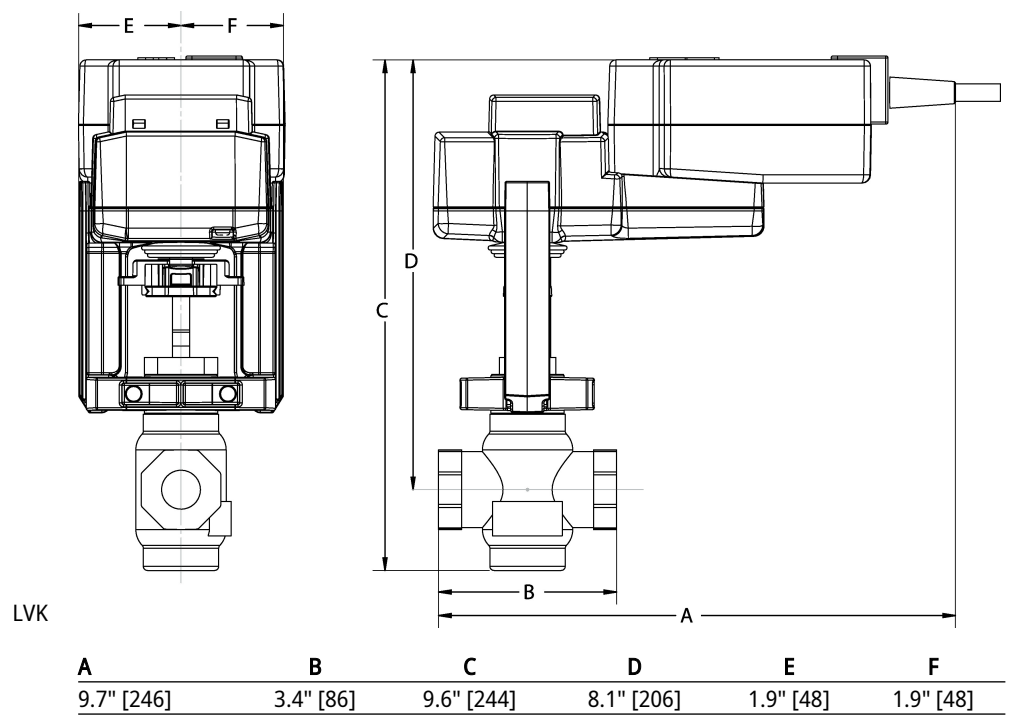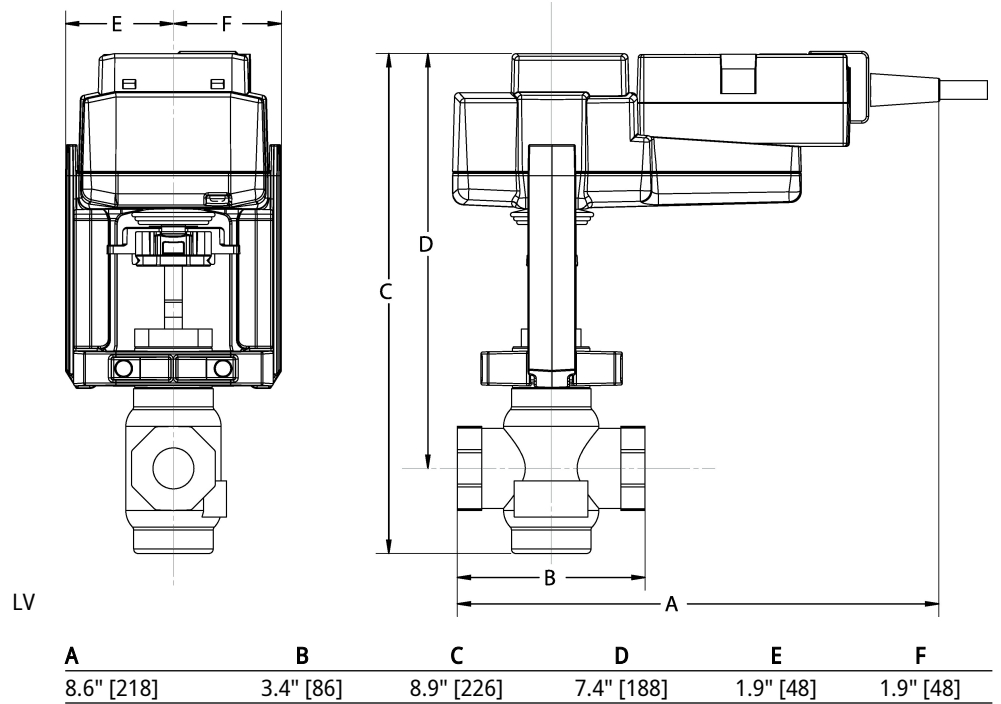
Installation notes

Flow direction   The direction of flow, specified by an arrow on the housing, is to be complied with, since otherwise the valve could become damaged.

Dimensions

Type	DN
G220S-J	20

LF

A	B	C	D	E	F
7.9" [200]	3.4" [86]	9.7" [247]	8.2" [208]	1.2" [30]	4.9" [125]

LV

A	B	C	D	E	F
8.6" [218]	3.4" [86]	8.9" [226]	7.4" [188]	1.9" [48]	1.9" [48]

LVK

A	B	C	D	E	F
9.7" [246]	3.4" [86]	9.6" [244]	8.1" [206]	1.9" [48]	1.9" [48]

BELIMO®

Modulating, Spring Return, Multi-Function Technology®

5

5-year warranty

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	2.5 W
	Power consumption in rest position	1 W
	Transformer sizing	5 VA
	Electrical Connection	18 GA appliance cable, 1 m, with 1/2" conduit connector
	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
	Direction of motion motor	selectable with switch 0/1
	Direction of motion fail-safe	reversible with cw/ccw mounting
	Angle of rotation	90°
	Running Time (Motor)	150 s / 90°
	Running time motor variable	75...300 s
	Running time fail-safe	<25 s @ -4...122°F [-20...50°C], <60 s @ -22°F [-30°C]
	Noise level, motor	50 dB(A)
	Noise level, fail-safe	62 dB(A)
	Position indication	Mechanical
Safety data	Power source UL	Class 2 Supply
	Degree of protection IEC/EN	IP54
	Degree of protection NEMA/UL	NEMA 2
	Enclosure	UL Enclosure Type 2
	Agency Listing	cULus acc. To UL 873 and CAN/CSA C22.2 No. 24-93
	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]

Safety data	Servicing	maintenance-free
Weight	Weight	3.3 lb [1.5 kg]
Materials	Housing material	galvanized steel

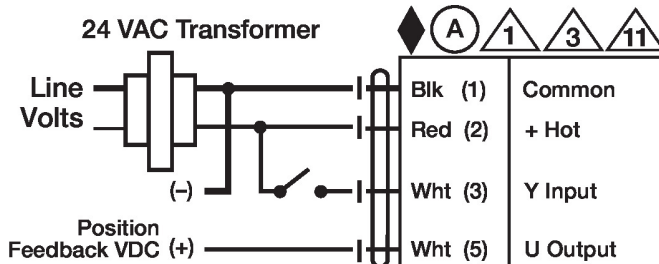| **Footnotes** | *Variable when configured with MFT options. |

Accessories

Electrical accessories	Description	Type
	Service Tool, with ZIP-USB function, for programmable and communicative Belimo actuators, VAV controller and HVAC performance devices	ZTH US

Electrical installation
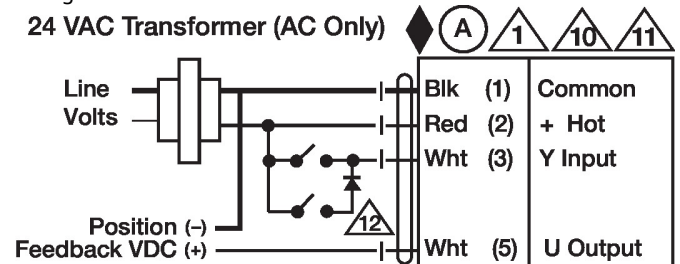
⚒ **INSTALLATION NOTES**

Ⓐ Actuators with appliance cables are numbered.

⚠1 Provide overload protection and disconnect as required.

△2 Actuators may be connected in parallel. Power consumption and input impedance must be observed.

⚡ Apply only AC line voltage or only UL-Class 2 voltage to the terminals of auxiliary switches. Mixed or combined operation of line voltage/safety extra low voltage is not allowed.

△3 Actuators may also be powered by DC 24 V.

△4 Two built-in auxiliary switches (2x SPDT), for end position indication, interlock control, fan startup, etc.

△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.

△11 Actuators may be connected in parallel if not mechanically linked. Power consumption and input impedance must be observed.

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

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

△4 Actuators are provided with color coded wires. Wire numbers are provided for reference.

⚠ **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.
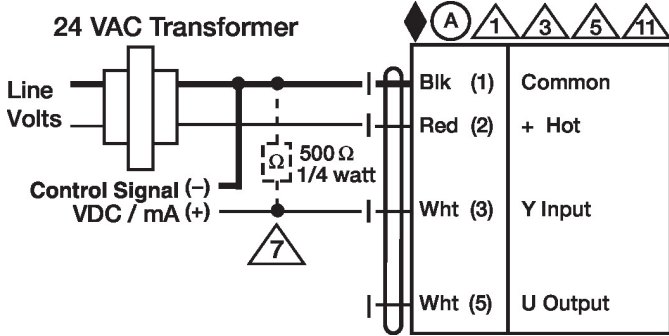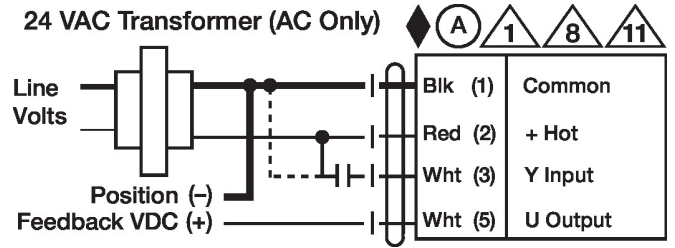
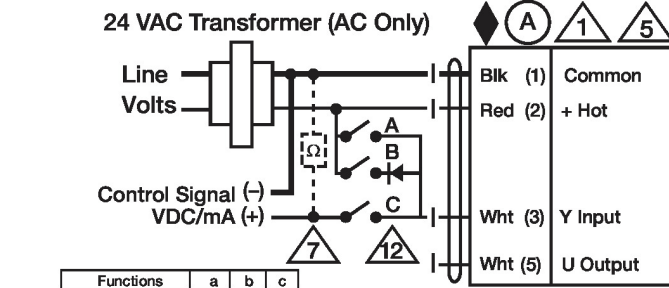**Wiring diagrams**

On/Off

Floating Point

VDC/mA Control

24 VAC Transformer

◆ Ⓐ ⚠1 ⚠3 ⚠5 ⚠11

Line Volts

Control Signal (−)
VDC / mA (+)

⚠7

500 Ω
1/4 watt

Blk	(1)	Common
Red	(2)	+ Hot
Wht	(3)	Y Input
Wht	(5)	U Output

PWM Control

24 VAC Transformer (AC Only)

◆ Ⓐ ⚠1 ⚠8 ⚠11

Line Volts

Position (−)
Feedback VDC (+)

Blk	(1)	Common
Red	(2)	+ Hot
Wht	(3)	Y Input
Wht	(5)	U Output

Override Control

24 VAC Transformer (AC Only)

◆ Ⓐ ⚠1 ⚠5

Line Volts

Control Signal (−)
VDC/mA (+)

⚠7 ⚠12

A
B
C

Blk	(1)	Common
Red	(2)	+ Hot
Wht	(3)	Y Input
Wht	(5)	U Output

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