



5-year warranty

## Type overview

|         |    |
|---------|----|
| Type    | DN |
| G220B-K | 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...280°F [-7...138°C]                       |
|                    | Fluid Temp Range (steam)          | 32...280°F [0...138°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                                         |
|                    | Max Differential Pressure (Steam) | 20 psi [103 kPa]                              |
|                    | Flow Pattern                      | 2-way                                         |
|                    | Leakage rate                      | ANSI Class VI                                 |
|                    | Controllable flow range           | stem up - open A – AB                         |
|                    | Cv                                | 7.5                                           |
|                    | Maximum Inlet Pressure (Steam)    | 35 psi [241 kPa]                              |
| Materials          | Valve body                        | Bronze                                        |
|                    | Valve plug                        | brass                                         |
|                    | Spindle                           | stainless steel                               |
|                    | Spindle seal                      | EPDM O-ring                                   |
|                    | Seat                              | Bronze                                        |
|                    | Pipe connection                   | NPT female ends                               |
| Suitable actuators | Non-Spring                        | LVB(X)                                        |
|                    | Spring                            | LF                                            |
|                    | Electrical fail-safe              | LVKB(X)                                       |

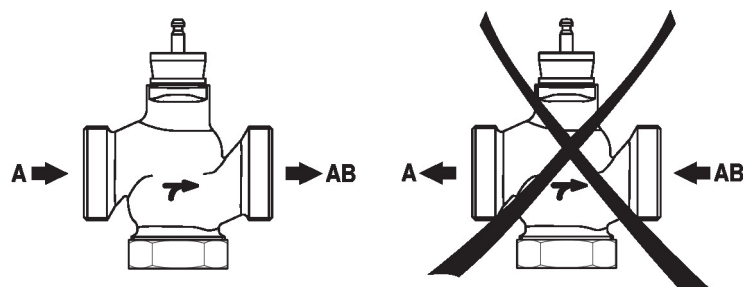
## Safety notes



- 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](http://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

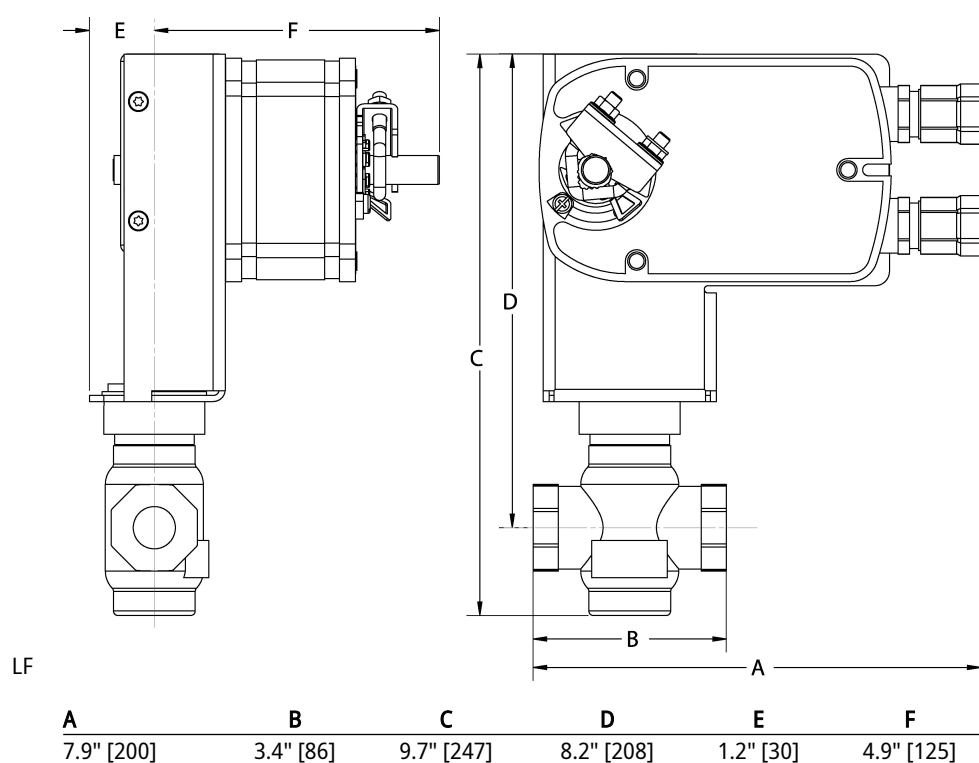
**Flow direction** The direction of flow, specified by an arrow on the housing, is to be complied with, since otherwise the valve could become damaged.

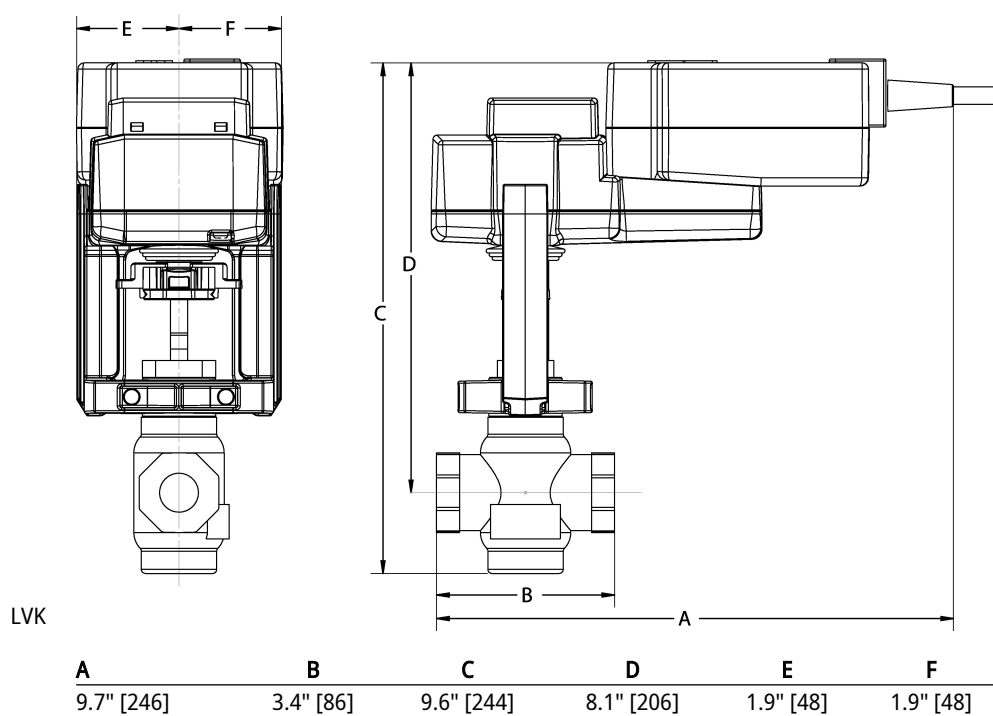
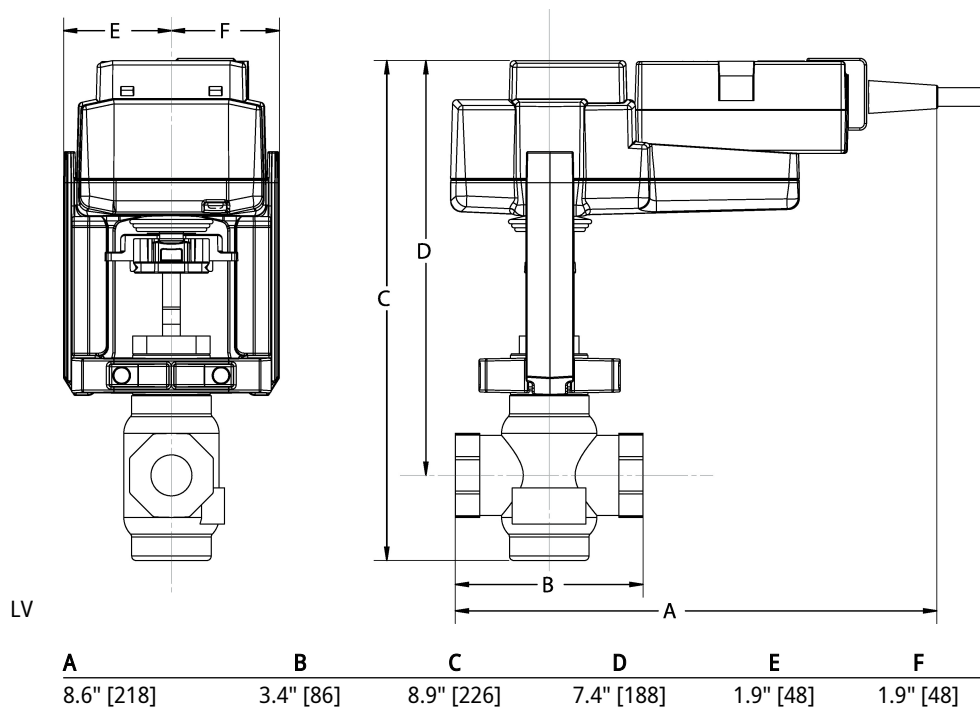


## Dimensions

Type  
G220B-K

DN  
20







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## Technical data

|                        |                                    |                                                                                              |
|------------------------|------------------------------------|----------------------------------------------------------------------------------------------|
| <b>Electrical data</b> | 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                                                       |
| <b>Functional data</b> | 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<br>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                                                                                   |
| <b>Safety data</b>     | 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]                                                                     |

|                    |                                             |                  |
|--------------------|---------------------------------------------|------------------|
| <b>Safety data</b> | Servicing                                   | maintenance-free |
| <b>Weight</b>      | Weight                                      | 3.3 lb [1.5 kg]  |
| <b>Materials</b>   | Housing material                            | galvanized steel |
| <b>Footnotes</b>   | *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 |

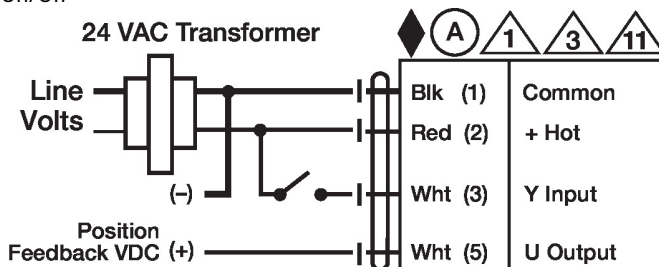
## Electrical installation

### ⚡ INSTALLATION NOTES

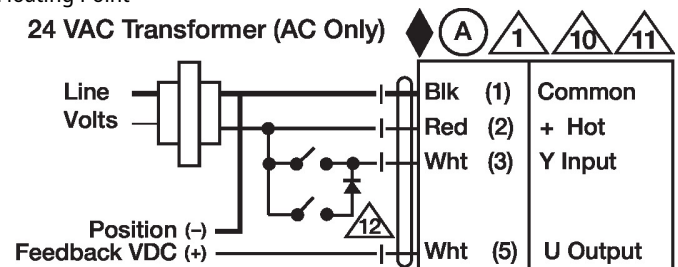
- Ⓐ Actuators with appliance cables are numbered.
- 1 Provide overload protection and disconnect as required.
- 2 Actuators may be connected in parallel. Power consumption and input impedance must be observed.
- ⚠ Apply only AC line voltage or only UL-Class 2 voltage to the terminals of auxiliary switches. 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  $\Omega$  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.

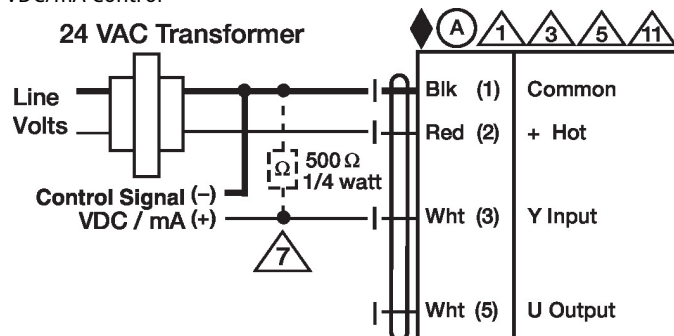
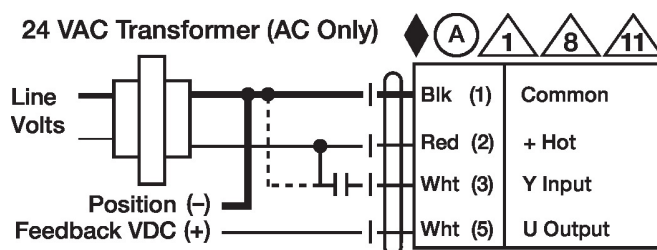
### Wiring diagrams

#### On/Off



#### Floating Point



**VDC/mA Control**

**PWM Control**

**Override Control**
