



2-year warranty

## Type overview

| Type   | DN |
|--------|----|
| B220VS | 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)          | -22...280°F [-30...138°C]                     |
|                    | Body Pressure Rating              | 600 psig WOG psi                              |
|                    | Close-off pressure Δps            | 600 psi                                       |
|                    | Flow characteristic               | modified equal percentage                     |
|                    | Max Differential Pressure (Steam) | 35 psi                                        |
|                    | Flow Pattern                      | 2-way                                         |
|                    | Leakage rate                      | ANSI Class VI                                 |
|                    | Controllable flow range           | 90° rotation                                  |
|                    | Cv                                | 51                                            |
|                    | Maximum Inlet Pressure (Steam)    | 35 psi [241 kPa]                              |
|                    | Maximum Velocity                  | 15 FPS                                        |
| Materials          | Valve body                        | Bronze B584-C84400                            |
|                    | Housing seal                      | PTFE                                          |
|                    | Spindle                           | 316 stainless steel                           |
|                    | Spindle seal                      | RPTFE                                         |
|                    | Seat                              | RPTFE                                         |
|                    | Lock nut                          | stainless steel                               |
|                    | Pipe connection                   | NPT female ends                               |
|                    | Retainer                          | B16 Brass                                     |
| Suitable actuators | Non-Spring                        | NMB(X)                                        |
|                    |                                   | GRCB(X)                                       |
|                    |                                   | GRB(X)                                        |
|                    | Spring                            | NF                                            |

## 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)

**Product features**

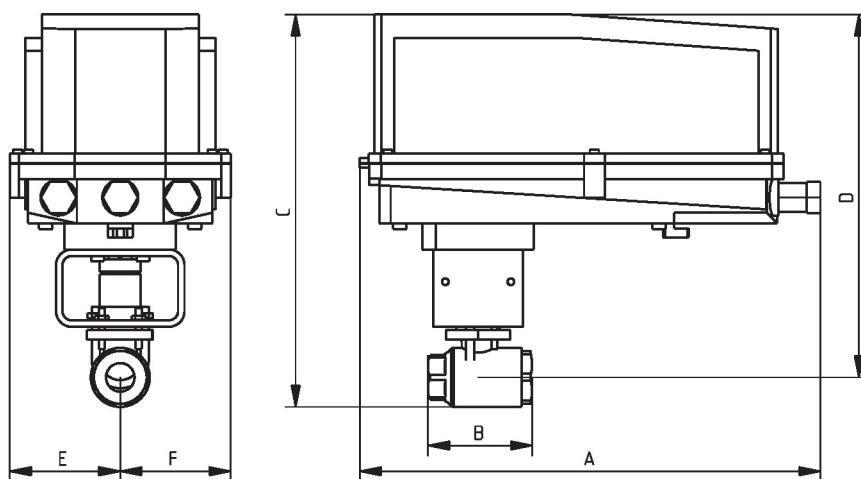
**Application** This valve is typically used in air handling units on heating or cooling coils, and fan coil unit heating or cooling coils. Some other common applications include Unit Ventilators, VAV Box re-heat coils and bypass loops. This valve is suitable for use in a hydronic system with variable flow. This valve is designed with MFT functionally which facilitates the use of various control input.

Up to 35 psi steam  
 1/2" - 2" 600 PSIG WOG, Cold Non-Shock  
 Federal Specification: WW-V-35C, Type II  
 Composition: BZ  
 Style: 3

**Flow/Mounting details**

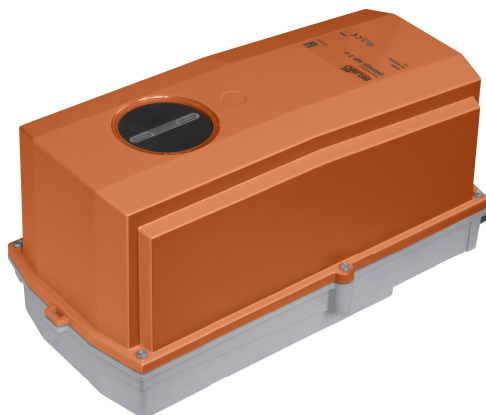
**Dimensions**

| Type   | DN |
|--------|----|
| B220VS | 20 |



B220VS+GRC..N4

| A           | B         | C           | D           | E         | F         |
|-------------|-----------|-------------|-------------|-----------|-----------|
| 14.1" [358] | 3.2" [82] | 12.0" [305] | 11.1" [282] | 3.4" [86] | 3.4" [86] |



5-year warranty



## Technical data

|                        |                                    |                                                                                           |
|------------------------|------------------------------------|-------------------------------------------------------------------------------------------|
| <b>Electrical data</b> | Nominal voltage                    | AC/DC 24 V                                                                                |
|                        | Nominal voltage frequency          | 50/60 Hz                                                                                  |
|                        | Power consumption in operation     | 8 W                                                                                       |
|                        | Power consumption in rest position | 2.5 W                                                                                     |
|                        | Transformer sizing                 | 11 VA (class 2 power source)                                                              |
|                        | Electrical Connection              | Terminal blocks                                                                           |
|                        | Overload Protection                | electronic throughout 0...90° rotation                                                    |
| <b>Functional data</b> | Direction of motion motor          | selectable with switch 0/1                                                                |
|                        | Manual override                    | under cover                                                                               |
|                        | Angle of rotation                  | 90°                                                                                       |
|                        | Angle of rotation note             | adjustable with mechanical stop                                                           |
|                        | Running Time (Motor)               | 35 s / 90°                                                                                |
|                        | Running time motor note            | constant, independent of load                                                             |
|                        | Noise level, motor                 | 45 dB(A)                                                                                  |
| <b>Safety data</b>     | Position indication                | Mechanically, 5...20 mm stroke                                                            |
|                        | Degree of protection IEC/EN        | IP66/67                                                                                   |
|                        | Degree of protection NEMA/UL       | NEMA 4X                                                                                   |
|                        | Enclosure                          | UL Enclosure Type 4X                                                                      |
|                        | 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                                                                                  |
|                        | Ambient temperature                | -22...122°F [-30...50°C]                                                                  |
|                        | Ambient temperature note           | -40...50°C for actuator with integrated heating                                           |
|                        | Storage temperature                | -40...176°F [-40...80°C]                                                                  |
|                        | Ambient humidity                   | Max. 100% RH                                                                              |
|                        | Servicing                          | maintenance-free                                                                          |
| <b>Materials</b>       | Housing material                   | Die cast aluminium and plastic casing                                                     |

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

## Accessories

| Electrical accessories     | Description                                         | Type                         |
|----------------------------|-----------------------------------------------------|------------------------------|
|                            | Battery backup system, for non-spring return models | NSV24 US                     |
|                            | Battery, 12 V, 1.2 Ah (two required)                | NSV-BAT                      |
|                            | Auxiliary switch 1 x SPDT add-on                    | S1A                          |
|                            | Auxiliary switch 2 x SPDT add-on                    | S2A                          |
|                            | Feedback potentiometer 140 $\Omega$ add-on, grey    | P140A GR                     |
|                            | Feedback potentiometer 1 k $\Omega$ add-on, grey    | P1000A GR                    |
|                            | Feedback potentiometer 10 k $\Omega$ add-on, grey   | P10000A GR                   |
|                            | Feedback potentiometer 2.8 k $\Omega$ add-on, grey  | P2800A GR                    |
|                            | Feedback potentiometer 500 $\Omega$ add-on, grey    | P500A GR                     |
|                            | Feedback potentiometer 5 k $\Omega$ add-on, grey    | P5000A GR                    |
| Factory add-on option only | Description                                         | Type                         |
|                            | Heater, with adjustable thermostat                  | N4 Heater Add-on<br>24V (-H) |

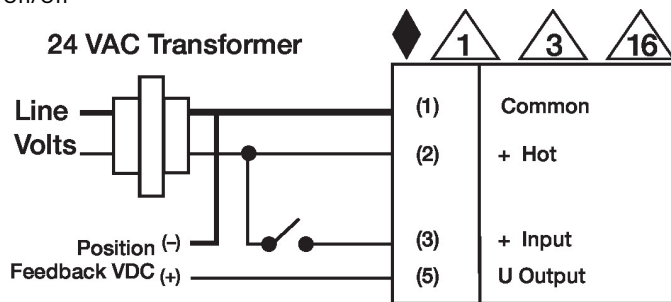
## Electrical installation

### ⚡ INSTALLATION NOTES

- 1 Provide overload protection and disconnect as required.
- 3 Actuators may also be powered by DC 24 V.
- 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).
- 16 Actuators are provided with a numbered screw terminal strip instead of a cable.
- Meets cULus requirements without the need of an electrical ground connection.
- 1 **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

