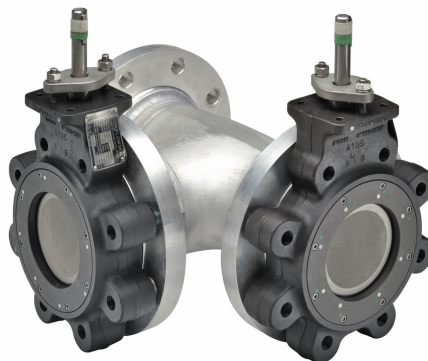


### Butterfly Valve with ANSI Class 300 Lug types

- Disc 316 stainless steel
- Bubble tight shut-off
- Teflon seat
- Valve face-to-face dimensions comply with API 609 & MSS-SP-67
- For use with dead-end service
- Completely assembled and tested, ready for installation
- The SHP series are Flowseal® valves manufactured by the Crane Company.



5-year warranty

Picture may differ from product

### Type overview

| Type        | DN |
|-------------|----|
| F780-300SHP | 80 |

### Technical data

|                    |                          |                                            |
|--------------------|--------------------------|--------------------------------------------|
| Functional data    | Valve size [mm]          | 3" [80]                                    |
|                    | Fluid                    | chilled or hot water, up to 60% glycol     |
|                    | Fluid Temp Range (water) | -22...400°F [-30...204°C]                  |
|                    | Body Pressure Rating     | ANSI Class 300                             |
|                    | Close-off pressure Δps   | 285 psi                                    |
|                    | Flow characteristic      | modified linear, unidirectional            |
|                    | Leakage rate             | 0%                                         |
|                    | Pipe connection          | Flange<br>for use with ASME/ANSI class 300 |
|                    | Servicing                | maintenance-free                           |
|                    | Flow Pattern             | 3-way Mixing/Diverting                     |
|                    | Controllable flow range  | quarter turn, mechanically limited         |
|                    | Cv                       | 228                                        |
|                    | Maximum Velocity         | 32 FPS                                     |
|                    | Lug threads              | 3/4-10 UNC                                 |
| Materials          | Valve body               | Carbon steel full lug (ASME B16.34)        |
|                    | Stem                     | 17-4 PH stainless steel                    |
|                    | Seat                     | RPTFE                                      |
|                    | Bearing                  | glass backed PTFE                          |
|                    | Disc                     | 316 stainless steel                        |
| Suitable actuators | Non Fail-Safe            | 2*GMB(X)<br>PRB(X)                         |
|                    | Electronic fail-safe     | 2*GKB(X)<br>PKRB(X)                        |

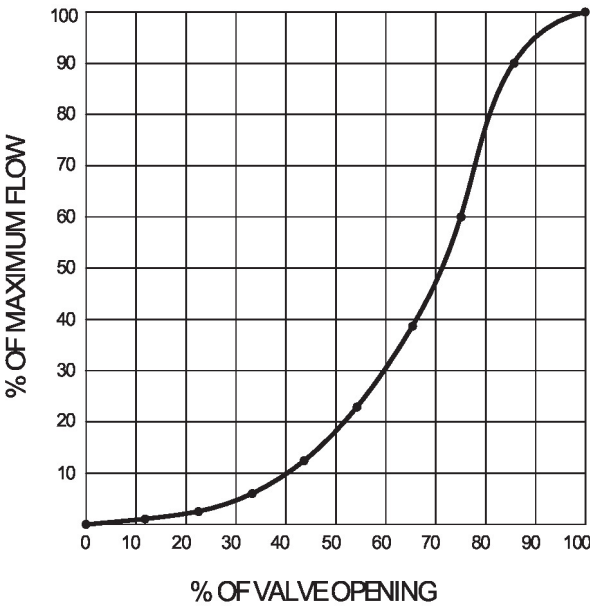
### Safety notes



- 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)

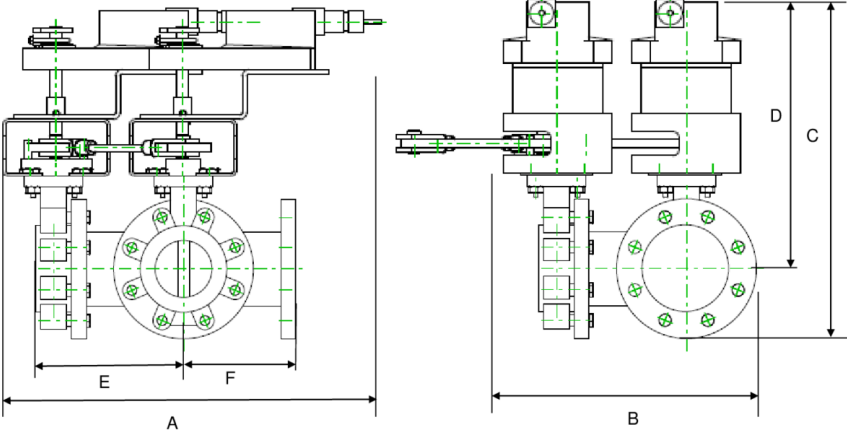
Product features

Flow/Mounting details

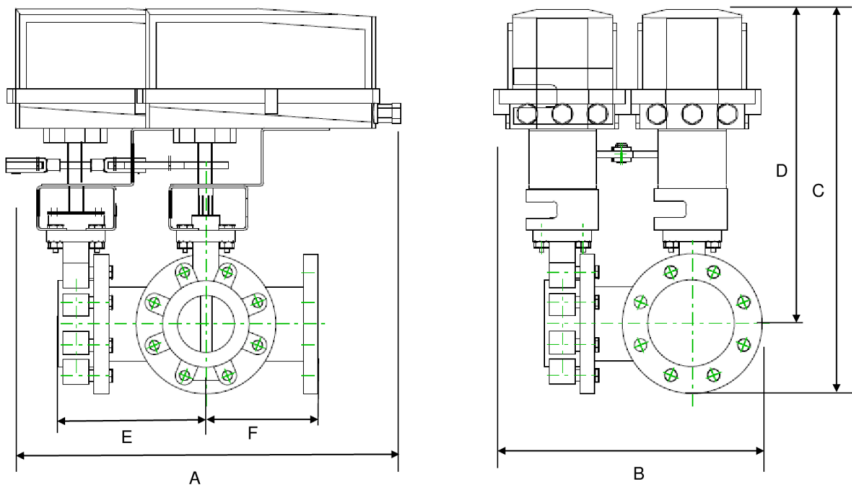


Dimensions

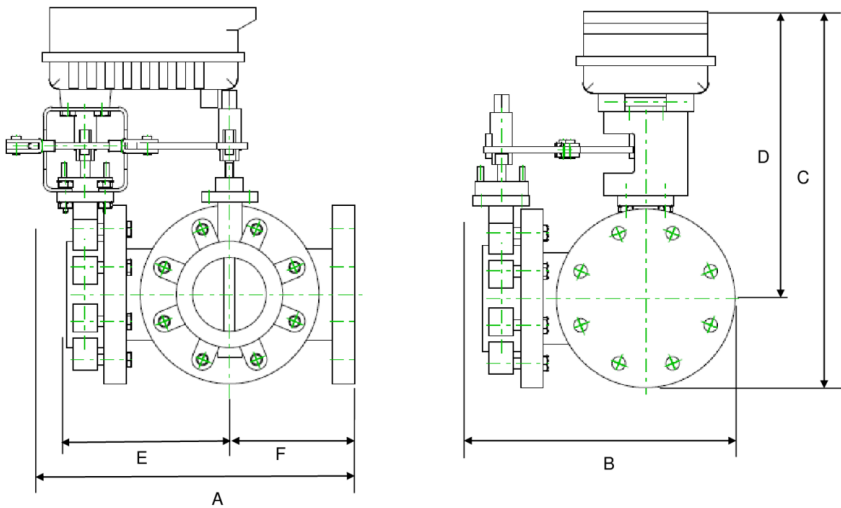
| Type        | DN | Weight        |
|-------------|----|---------------|
| F780-300SHP | 80 | 62 lb [28 kg] |



| A           | B           | C           | D           | E          | F          | Number of Bolt Holes |
|-------------|-------------|-------------|-------------|------------|------------|----------------------|
| 16.0" [406] | 11.7" [298] | 16.3" [415] | 12.5" [318] | 7.9" [201] | 6.0" [152] | 8                    |

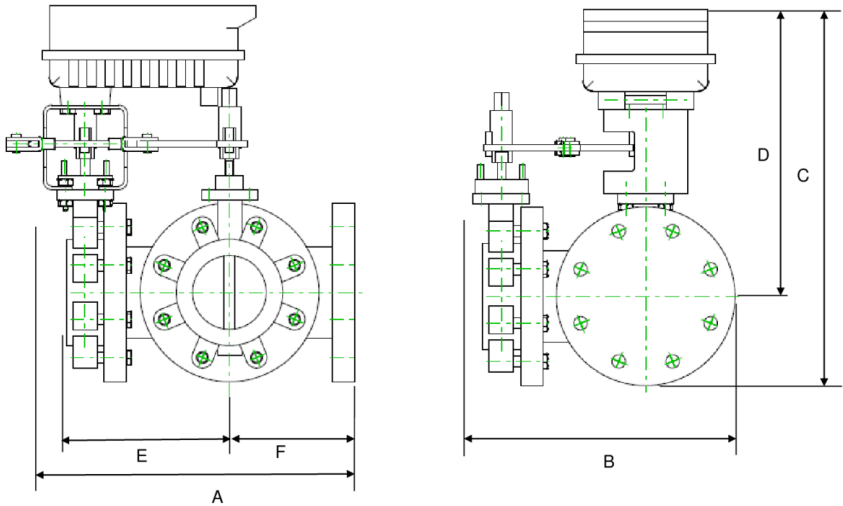


| A           | B           | C           | D           | E          | F          | Number of Bolt Holes |
|-------------|-------------|-------------|-------------|------------|------------|----------------------|
| 21.5" [547] | 11.7" [298] | 18.3" [464] | 14.5" [368] | 7.9" [201] | 6.0" [152] | 8                    |



| A           | B           | C           | D           | E          | F          | Number of Bolt Holes |
|-------------|-------------|-------------|-------------|------------|------------|----------------------|
| 16.8" [426] | 11.7" [298] | 16.3" [415] | 12.5" [318] | 7.9" [201] | 6.0" [152] | 8                    |

Dimensions

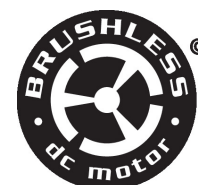


| A           | B           | C           | D           | E          | F          | Number of Bolt Holes |
|-------------|-------------|-------------|-------------|------------|------------|----------------------|
| 16.8" [426] | 11.7" [298] | 21.3" [540] | 17.5" [445] | 7.9" [201] | 6.0" [152] | 8                    |

MFT/programmable, Electronic fail-safe, 24 V



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     | 12 W                                                                                                     |
|                 | Power consumption in rest position | 3 W                                                                                                      |
|                 | Transformer sizing                 | 40 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<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                                                                                             |
|                 | 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)                                                                                                 |

## Technical data

|                        |                              |                                                                                             |
|------------------------|------------------------------|---------------------------------------------------------------------------------------------|
| <b>Functional data</b> | Noise level, fail-safe       | 61 dB(A)                                                                                    |
|                        | Position indication          | Mechanical, 30...65 mm stroke                                                               |
| <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 UL60730-1A/-2-14, CAN/CSA E60730-1:02<br>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                                                                            |
| <b>Weight</b>          | Weight                       | □                                                                                           |
| <b>Materials</b>       | 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

|                               |                                            |             |
|-------------------------------|--------------------------------------------|-------------|
| <b>Gateways</b>               | <b>Description</b>                         | <b>Type</b> |
|                               | Gateway MP to BACnet MS/TP                 | UK24BAC     |
| <b>Electrical accessories</b> | Gateway MP to Modbus RTU                   | UK24MOD     |
|                               | Gateway MP to LonWorks                     | UK24LON     |
|                               | <b>Description</b>                         | <b>Type</b> |
|                               | 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         |

## Accessories

|       | Description                                                                                                                           | Type    |
|-------|---------------------------------------------------------------------------------------------------------------------------------------|---------|
|       | Service tool, with ZIP-USB function, for programmable and communicative Belimo actuators, VAV controller and HVAC performance devices | ZTH US  |
| Tools | Description                                                                                                                           | Type    |
|       | Connecting cable 10 ft [3 m], A: RJ11 6/4 ZTH EU, B: 3-pin Weidmüller and supply connection                                           | ZK4-GEN |
|       | Service tool, with ZIP-USB function, for programmable and communicative Belimo actuators, VAV controller and HVAC performance devices | ZTH US  |

## Electrical installation

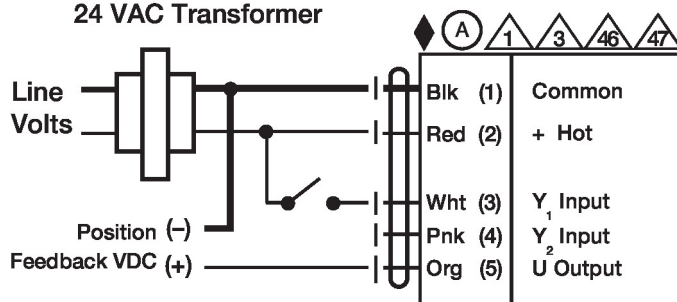
### ✂ INSTALLATION NOTES

- Ⓐ Actuators with appliance cables are numbered.
- ⚠ Provide overload protection and disconnect as required.
- ⚠ Actuators may also be powered by DC 24 V.
- ⚠ Only connect common to negative (-) leg of control circuits.
- ⚠ A 500 Ω resistor (ZG-R01) converts the 4...20 mA control signal to 2...10 V.
- ⚠ Control signal may be pulsed from either the Hot (Source) or Common (Sink) 24 V line.
- ⚠ 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.
- ⚠ IN4004 or IN4007 diode. (IN4007 supplied, Belimo part number 40155).
- ⚠ Actuators may be controlled in parallel. Current draw and input impedance must be observed.
- ⚠ 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

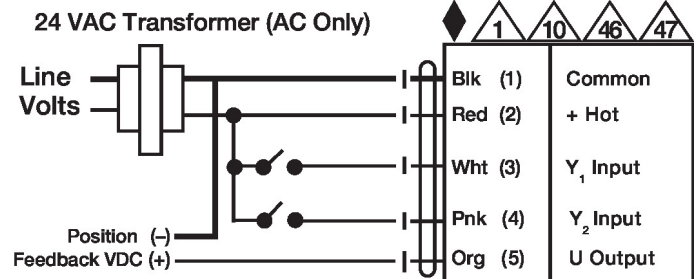
On/Off

#### 24 VAC Transformer



Floating Point

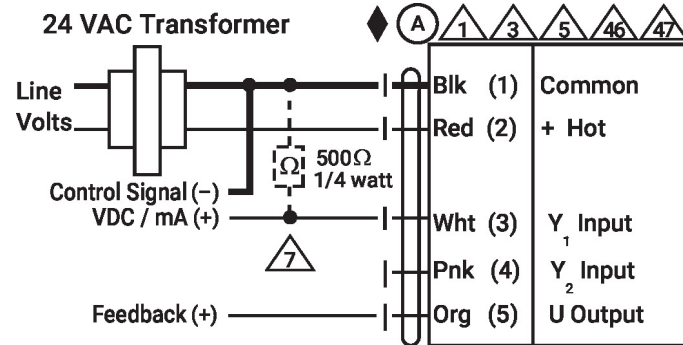
#### 24 VAC Transformer (AC Only)



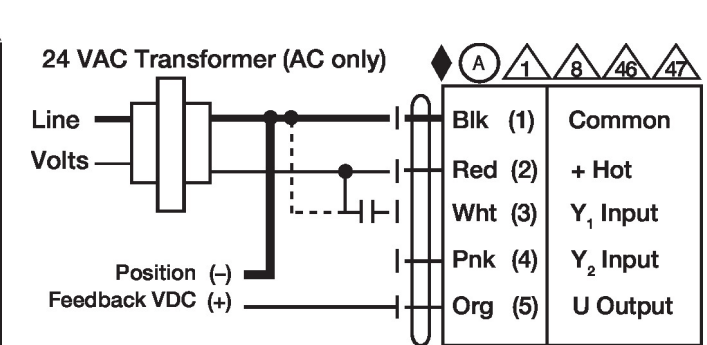
### Electrical installation

#### Wiring diagrams

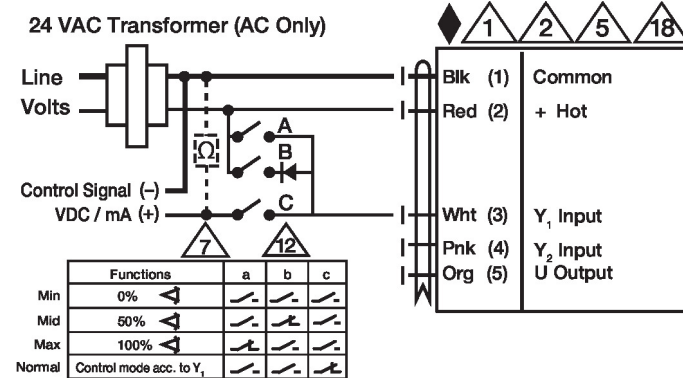
##### VDC/mA Control



##### PWM Control



##### Override Control



##### Primary - Secondary

