

Butterfly Valve with Lug types

- Disc 304 stainless steel
- Bubble tight shut-off
- Resilient seat
- Valve face-to-face dimensions comply with API 609 & MSS-SP-67
- Completely assembled and tested, ready for installation



5-year warranty

Type overview

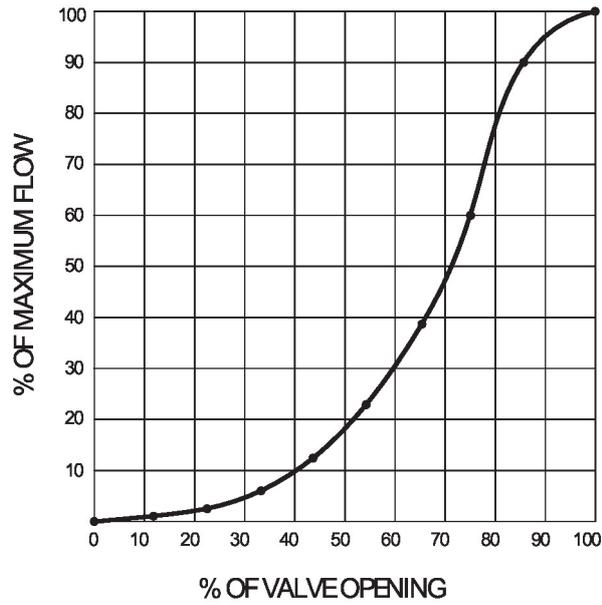
| | |
|-------------|-----------|
| Type | DN |
| F650HD | 50 |

Technical data

| | | |
|---------------------------|--------------------------|---|
| Functional data | Valve size [mm] | 2" [50] |
| | Fluid | chilled or hot water, up to 60% glycol |
| | Fluid Temp Range (water) | -22...250°F [-30...120°C] |
| | Body Pressure Rating | ANSI Class Consistent with 125, 232 psi CWP |
| | Close-off pressure Δps | 200 psi |
| | Flow characteristic | modified equal percentage |
| | Leakage rate | 0% leakage, leakage rate A |
| | Servicing | maintenance-free |
| | Flow Pattern | 2-way |
| | Controllable flow range | 90° rotation |
| | Cv | 115 |
| | Maximum Velocity | 12 FPS |
| | Lug threads | 5/8-11 UNC |
| Materials | Valve body | Ductile cast iron ASTM A536 |
| | Body finish | epoxy powder coating (blue RAL 5002) |
| | Stem | 416 stainless steel |
| | Stem seal | EPDM (lubricated) |
| | Seat | EPDM |
| | Pipe connection | for use with ANSI class 125/150 flanges |
| | Bearing | RPTFE |
| | Disc | 304 stainless steel |
| Gear operator materials | Gears - hardened steel | |
| Suitable actuators | Non-Spring | ARB(X) GRB(X) |
| | Spring | AFRB(X) |

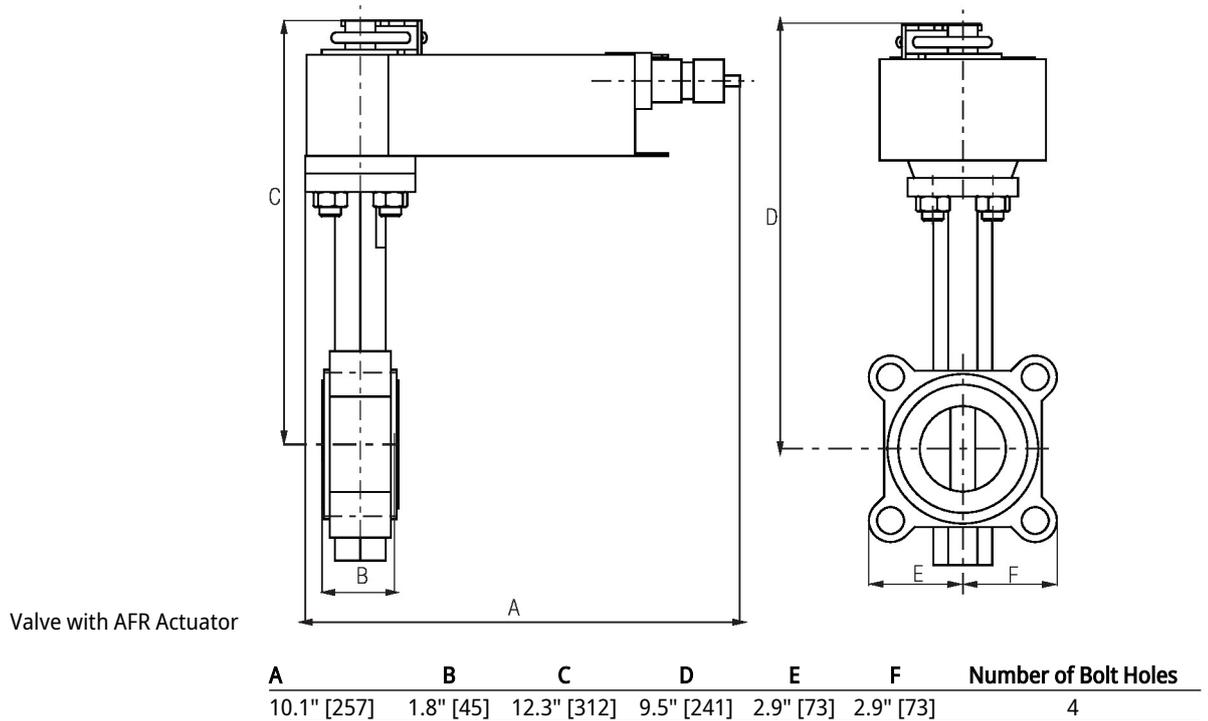
Product features

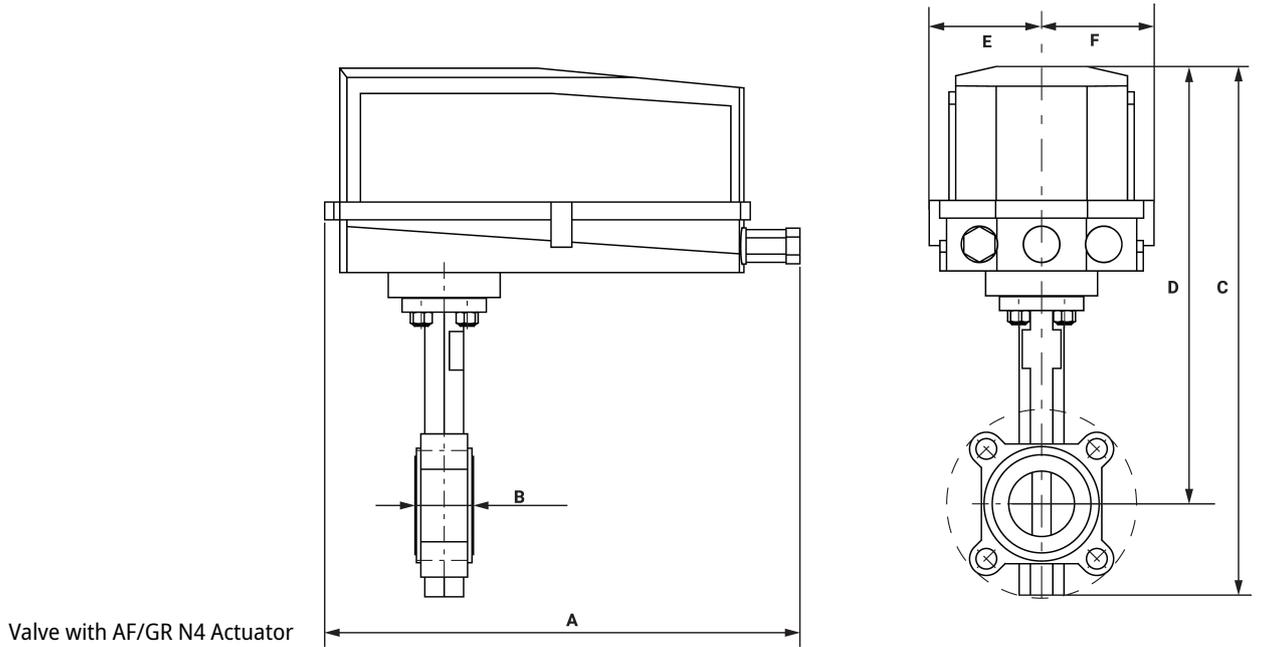
Flow/Mounting details



Dimensions

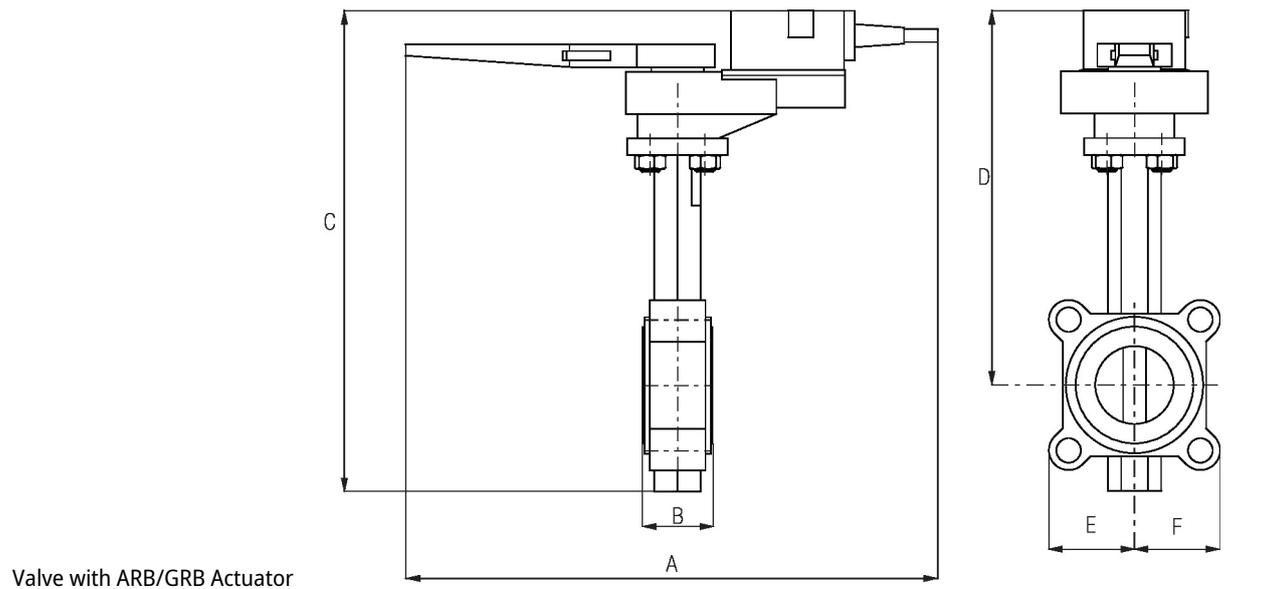
| Type | DN | Weight |
|--------|----|-----------------|
| F650HD | 50 | 5.3 lb [2.4 kg] |





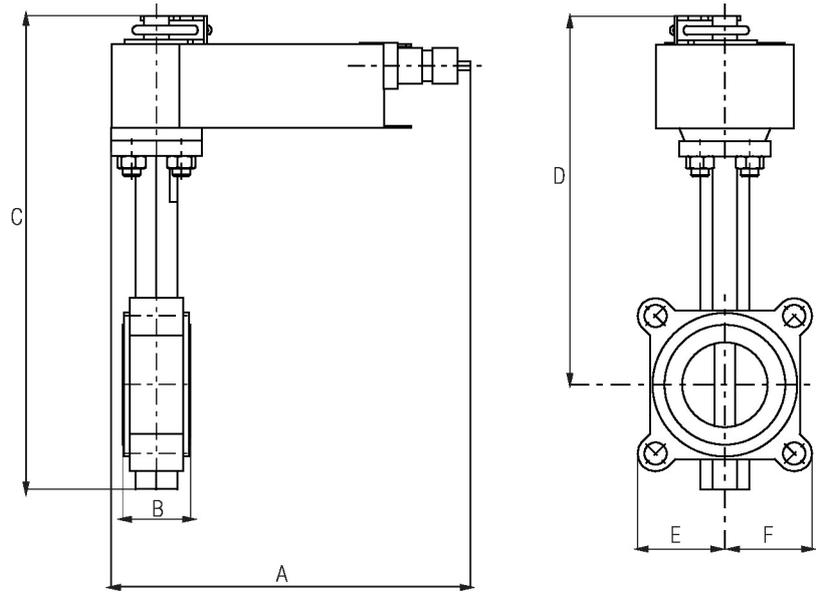
Valve with AF/GR N4 Actuator

| A | B | C | D | E | F | Number of Bolt Holes |
|-------------|-----------|-------------|-------------|-----------|-----------|----------------------|
| 14.5" [368] | 1.8" [45] | 16.1" [409] | 13.3" [338] | 3.4" [86] | 3.4" [86] | 4 |



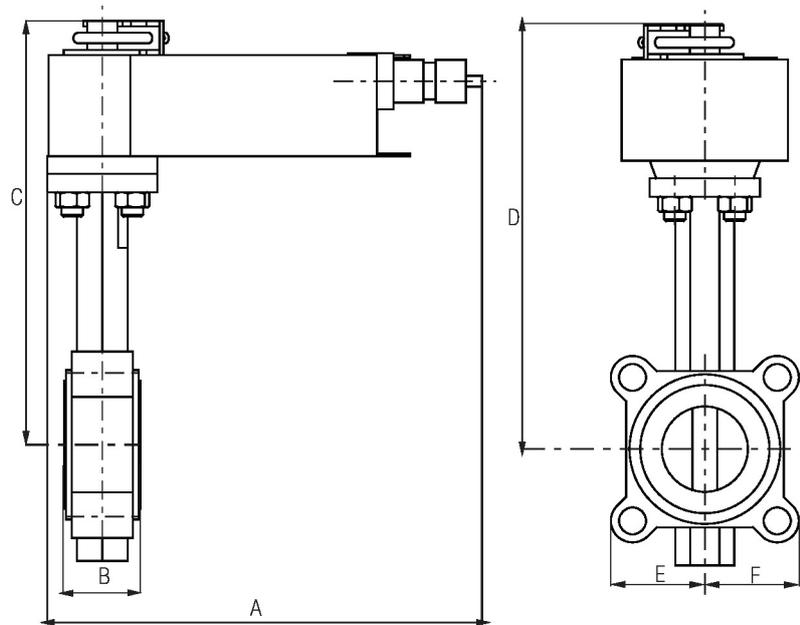
Valve with ARB/GRB Actuator

| A | B | C | D | E | F | Number of Bolt Holes |
|-------------|-----------|-------------|------------|-----------|-----------|----------------------|
| 14.6" [370] | 1.8" [45] | 12.4" [314] | 9.7" [246] | 2.9" [73] | 2.9" [73] | 4 |



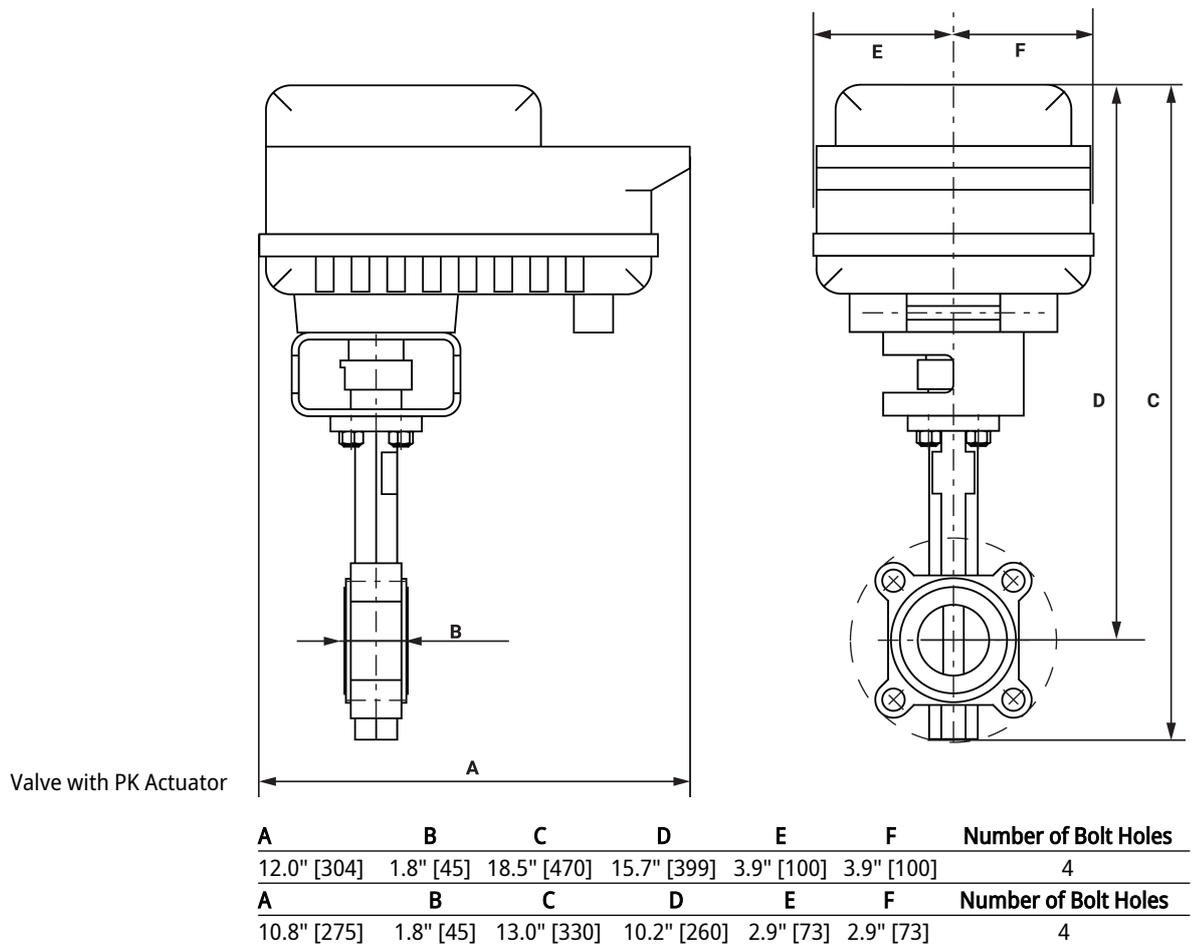
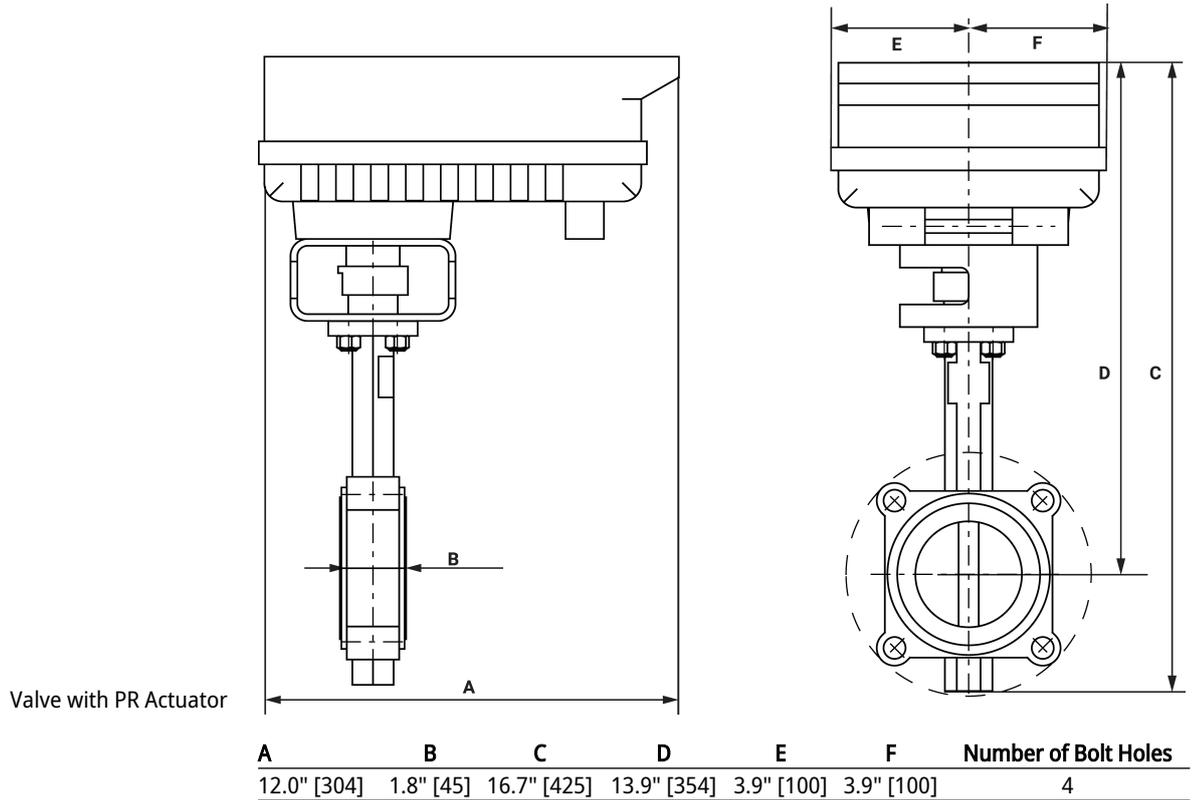
Valve with AFB/AFX Actuator

| A | B | C | D | E | F | Number of Bolt Holes |
|-------------|-----------|-------------|-------------|-----------|-----------|----------------------|
| 10.1" [257] | 1.8" [45] | 15.1" [384] | 12.4" [315] | 2.9" [73] | 2.9" [73] | 4 |



Valve with AMB/AMX Actuator

| A | B | C | D | E | F | Number of Bolt Holes |
|------------|-----------|-------------|-------------|-----------|-----------|----------------------|
| 8.3" [211] | 1.8" [45] | 15.1" [384] | 12.4" [315] | 2.9" [73] | 2.9" [73] | 4 |





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 | 7.5 W |
| | Power consumption in rest position | 3 W |
| | Transformer sizing | 10 VA |
| | Electrical Connection | 18 GA appliance or plenum cables, 1 m, 3 m or 5 m, with or without 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, PWM, 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 |
| | Direction of motion fail-safe | reversible with cw/ccw mounting |
| | Manual override | 5 mm hex crank (3/16" Allen), supplied |
| | Angle of rotation | 90° |
| | Running Time (Motor) | 150 s / 90° |
| | Running time motor variable | 70...220 s |
| | Running time fail-safe | <20 s @ 20°C |
| | Adaptation Setting Range | off (default) |
| | Noise level, motor | 45 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 UL60730-1A/-2-14, CAN/CSA E60730-1:02 CE acc. to 2014/30/EU and 2014/35/EU |
| | Quality Standard | ISO 9001 |

| | | |
|--------------------|--|---|
| Safety data | 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 | 4.1 lb [1.9 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

| | |
|------------------------------|---|
| Default/Configuration | Default parameters for 2 to 10 VDC applications of the AF..-MFT actuator are assigned during manufacturing. If required, custom versions of the actuator can be ordered. The parameters are variable and can be changed by three means: Factory pre-set or custom configuration, set by the customer using PC-Tool software or the handheld ZTH US. |
| Factory settings | Default parameters for 2 to 10 VDC applications of the AF..-MFT actuator are assigned during manufacturing. If required, custom versions of the actuator can be ordered. The parameters are variable and can be changed by three means: Factory pre-set or custom configuration, set by the customer using PC-Tool software or the handheld ZTH US. |

Accessories

| Gateways | Description | Type |
|------------------------|---|---------|
| | Gateway MP to BACnet MS/TP | UK24BAC |
| | Gateway MP to Modbus RTU | UK24MOD |
| | Gateway MP to LonWorks | UK24LON |
| Electrical 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 |
| | Connection 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.

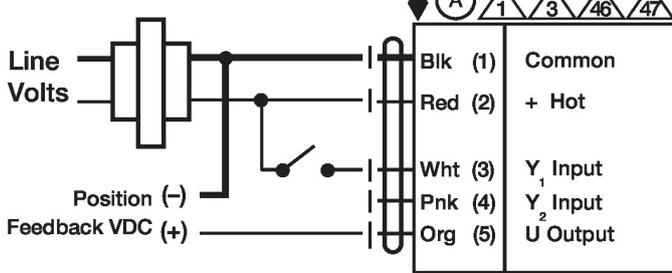
⚠ Warning! Live electrical components!

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

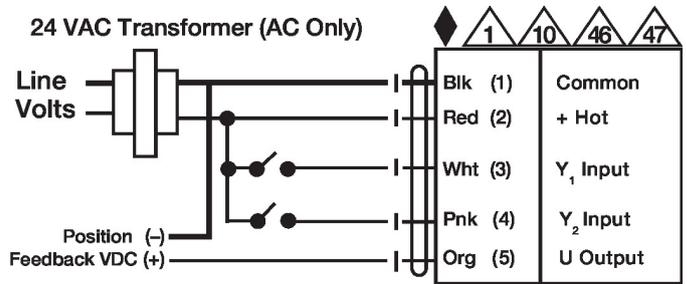
On/Off

24 VAC Transformer



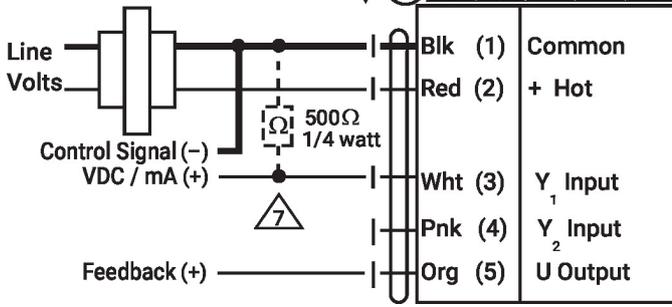
Floating Point

24 VAC Transformer (AC Only)



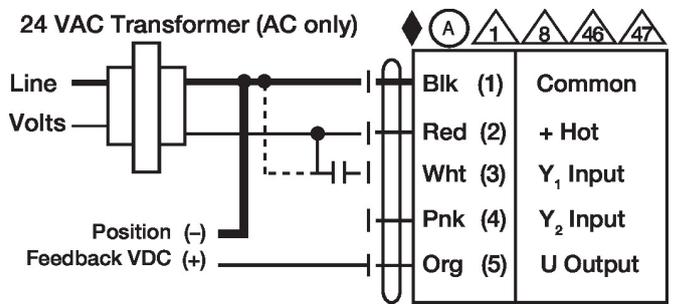
VDC/mA Control

24 VAC Transformer



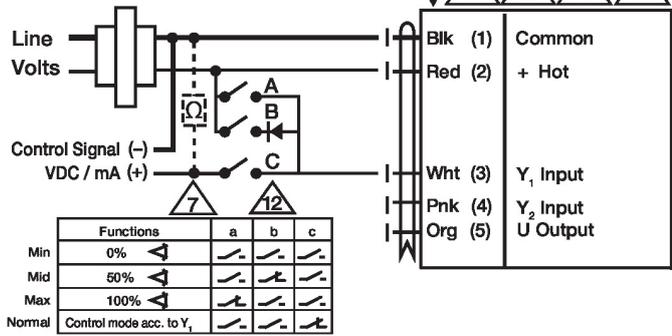
PWM Control

24 VAC Transformer (AC only)



Override Control

24 VAC Transformer (AC Only)



Primary - Secondary

