

# F650HD, 2", 2-Way Butterfly Valve

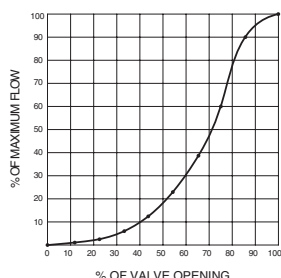
## Resilient Seat, 304 Stainless Steel Disc



### Technical Data

|                          |   |
|--------------------------|---|
| Media                    | chilled, hot water, up to 60% glycol    |
| Flow characteristic      | modified equal percentage               |
| Controllable flow range  | 90° rotation                            |
| Valve Size [mm]          | 2" [50]                                 |
| Pipe connection          | for use with ANSI class 125/150 flanges |
| Housing                  | Ductile cast iron ASTM A536             |
| Body finish              | epoxy powder coating (blue RAL 5002)    |
| Stem                     | 416 stainless steel                     |
| Stem seal                | EPDM (lubricated)                       |
| Seat                     | EPDM                                    |
| Bearing                  | RPTFE                                   |
| Disc                     | 304 stainless steel                     |
| Body Pressure Rating     | 232 psi CWP                             |
| ANSI Class               | Consistent with 125                     |
| Number of Bolt Holes     | 4                                       |
| Lug threads              | 5/8-11 UNC                              |
| Close-Off Pressure       | 200 psi                                 |
| Rangeability Sv          | 10:1 (for 30° to 70° range)             |
| Maximum Velocity         | 12 FPS                                  |
| Cv                       | 115                                     |
| Weight                   | 5.3 lb [2.4 kg]                         |
| Media Temp Range (water) | -22...250°F [-30...120°C]               |
| Leakage rate             | 0%                                      |
| Maintenance              | maintenance-free                        |

### Flow Pattern



### Application

Valve is designed for use in ANSI flanged piping systems to meet the needs of bi-directional high flow HVAC hydronic applications with 0% leakage. Typical applications include cooling tower bypass, primary flow change-over systems, and large air handler coil control. Valve face-to-face dimensions comply with API 609 & MSS-SP-67, Completely assembled and tested, Ready for installation.

### Jobsite Note

Valve assembly should be stored in a weather protected area prior to installation. Reference the butterfly valve installation instruction for additional information.

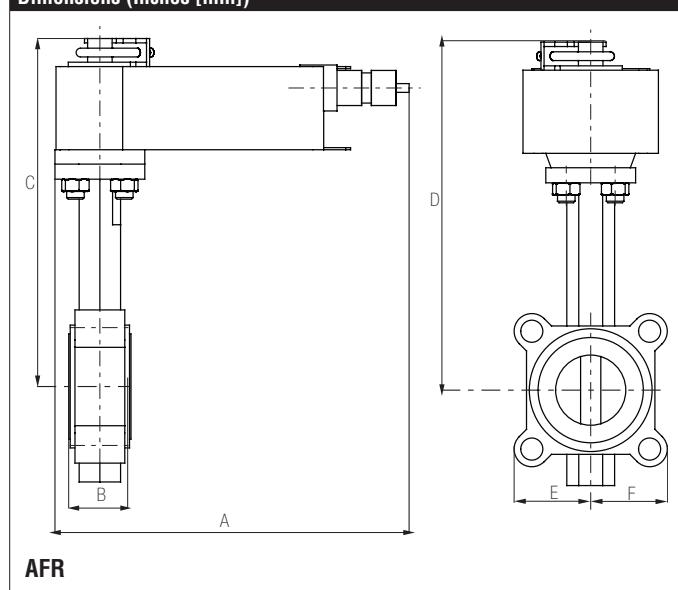
### Flow/Cv

| Cv 10° | Cv 20° | Cv 30° | Cv 40° | Cv 50° | Cv 60° | Cv 70° | Cv 80° | Cv 90° |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0.06   | 3      | 7      | 15     | 27     | 44     | 70     | 105    | 115    |

### Suitable Actuators

|        | Non-Spring     | Spring  |
|--------|----------------|---------|
| F650HD | ARB(X), GRB(X) | AFRB(X) |

### Dimensions (Inches [mm])

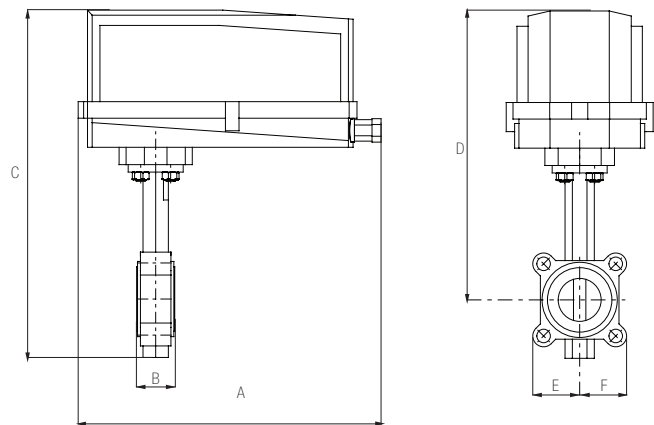


| A           | B         | C           | D          | E         | F |
|-------------|-----------|-------------|------------|-----------|---|
| 10.6" [269] | 1.7" [44] | 12.6" [320] | 9.9" [251] | 2.8" [71] |   |

### Safety Notes

⚠ **WARNING:** For Belimo Products sold in California, these Products do or may contain chemicals which are known to the State of California to cause cancer and or birth defects or other reproductive harms. For more information see [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov).

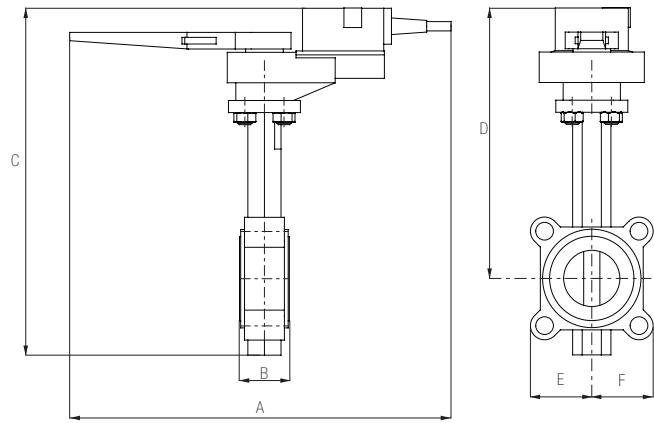
Dimensions (Inches [mm])



GR/AFR N4(H)

| A           | B         | C           | D           | E         | F |
|-------------|-----------|-------------|-------------|-----------|---|
| 14.1" [358] | 1.7" [44] | 16.1" [409] | 13.6" [345] | 2.8" [71] |   |

Dimensions (Inches [mm])



ARB/GRB

| A           | B         | C           | D          | E         | F |
|-------------|-----------|-------------|------------|-----------|---|
| 12.7" [323] | 1.4" [35] | 12.4" [314] | 9.6" [243] | 2.8" [71] |   |

# AFRXUP-S

On/Off, Spring Return, 24 to 240 VAC



## Technical Data

|                                    |   |
|------------------------------------|---|
| Power Supply                       | 24...240 VAC, -20% / +10%, 50/60 Hz,<br>24...125 VDC, ±10%                                    |
| Power consumption in operation     | 7 W   |
| Power consumption in rest position | 3.5 W   |
| Transformer sizing                 | 7 VA @ 24 VAC (class 2 power source), 8.5 VA @ 120 VAC, 18 VA @ 240 VAC                       |
| Electrical Connection              | (2) 18 GA appliance cables with 1/2" conduit connectors, 3 ft [1 m].                          |
| Overload Protection                | electronic throughout 0° to 95° rotation  |
| Angle of rotation                  | 90°   |
| Direction of rotation motor        | reversible with CW/CCW mounting   |
| Direction of motion fail-safe      | reversible with CW/CCW mounting   |
| Position indication                | Mechanical  |
| Manual override                    | 5 mm hex crank (3/16" Allen), supplied  |
| Running Time (Motor)               | <75 s   |
| Running time fail-safe             | <20 s   |
| Ambient humidity                   | max. 95% r.H., non-condensing   |
| Ambient temperature                | -22...122°F [-30...50°C]  |
| Storage temperature                | -40...176°F [-40...80°C]  |
| Degree of Protection               | IP54, NEMA 2, UL Enclosure Type 2   |
| Agency Listing                     | cULus acc. to UL60730-1A/-2-14, CAN/CSA E60730-1:02, CE acc. to 2004/108/EC and 2006/95/EC    |
| Noise level, motor                 | 45 dB(A)  |
| Noise level, fail-safe             | 62 dB(A)  |
| Maintenance                        | maintenance-free  |
| Quality Standard                   | ISO 9001  |
| Weight                             | 4.1 lb [1.9 kg]   |
| Auxiliary switch                   | 2 x SPDT, 3 A resistive (0.5 A inductive) @ AC 250 V, one set at 10°, one adjustable 10...90° |







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

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## Wiring Diagrams

## **INSTALLATION NOTES**

-  Actuators with appliance cables are numbered.
-  Universal Power Supply (UP) models can be supplied with 24 VAC up to 240 VAC, or 24 VDC up to 125 VDC.
-  Provide overload protection and disconnect as required.
-  Actuators may be powered in parallel. Power consumption must be observed.
-  Parallel wiring required for piggy-back applications.
-  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.

