Technical Data Sheet

Butterfly Motorized Valve (AFB Actuator)

Valves are supplied by Belimo to AERCO’s specification.
- 50 psi bubble tight shut-off
- Long stem design allows for 2” insulation
- Valve face-to-face dimensions comply with API 609 & MSS-SP-67
- Completely assembled and tested, ready for installation

Application

These valves are designed to meet the needs of HVAC and commercial applications requiring bubble tight shut-off for liquids. Typical applications include chiller isolation, cooling tower isolation, change-over systems, large air handler coil control, bypass and process control applications. The large Cv values provide for an economical control valve solution for larger flow applications.

Jobsite Note

Valves should be stored in a weather protected area prior to construction. Complete installation recommendations can be found in Belimo’s Installation and Maintenance Instructions for F6/F7 HD/HDU Butterfly Valves.

Valve Technical Data

<table>
<thead>
<tr>
<th>Service</th>
<th>chilled, hot water, 60% glycol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flow Characteristic</td>
<td>modified equal percentage</td>
</tr>
<tr>
<td>Action</td>
<td>90° rotation</td>
</tr>
<tr>
<td>Type of End Fitting</td>
<td>for use with ANSI Class 125/150 flanges</td>
</tr>
<tr>
<td>Materials</td>
<td></td>
</tr>
<tr>
<td>Body</td>
<td>ductile iron ASTM A536</td>
</tr>
<tr>
<td>Body finish</td>
<td>epoxy powder coated</td>
</tr>
<tr>
<td>Disc</td>
<td>304 stainless steel</td>
</tr>
<tr>
<td>Seat</td>
<td>EPDM</td>
</tr>
<tr>
<td>Shaft</td>
<td>416 stainless steel</td>
</tr>
<tr>
<td>O-ring</td>
<td>EPDM</td>
</tr>
<tr>
<td>Upper bushing</td>
<td>RPTFE</td>
</tr>
<tr>
<td>Middle bushings</td>
<td>RPTFE</td>
</tr>
<tr>
<td>Lower bushing</td>
<td>RPTFE</td>
</tr>
<tr>
<td>Media Temperature Range</td>
<td>-22°F to 250°F [-30°C to 120°C]</td>
</tr>
<tr>
<td>Operation Ambient Temperature Range</td>
<td>-22°F to 122°F [-30°C to 50°C]</td>
</tr>
<tr>
<td>Body Pressure Rating</td>
<td>ASME/ANSI Class 125/150 (200 psi at -30°F to 275°F)</td>
</tr>
<tr>
<td>Range ability</td>
<td>10:1 (for 30° to 70° range)</td>
</tr>
<tr>
<td>Maximum Velocity</td>
<td>12 FPS</td>
</tr>
</tbody>
</table>

Flow Pattern

% OF MAXIMUM FLOW

% OF VALVE OPENING

Application Notes
1. Valves are rated at 50 psi differential pressure in the closed position.
2. Valves are furnished with lugs tapped for use with ANSI Class 125/150 flanges. Installation flanges and hardware are not included.
3. 2-way assemblies are furnished assembled and tested, ready for installation.
**Actuator Technical Data**

- **Power Supply**
  - AFBUP-S: 24...240 VAC -20% / +10%, 50/60 Hz
  - 24...125 VDC +20%

- **Power consumption**
  - AFBUP-S running: 7 W
  - AFBUP-S holding: 3.5 W

- **Transformer sizing**
  - AFBUP-S: 7 VA @ 24 VAC (class 2 power source)
  - 8.5 VA @ 120 VAC
  - 18 VA @ 240 VAC

- **Electrical connection**
  - 3 ft, 18 GA appliance cable
  - 1/2” conduit connector

- **Overload protection**
  - Electronic throughout 0° to 95° rotation

- **Mechanical angle of rotation**
  - 95° (adjustable with mechanical end stop, 35° to 95°)

- **Torque**
  - 180 in-lb [20 Nm] minimum

- **Direction of rotation spring**
  - Reversible with CW/CCW mounting

- **Position indication**
  - Visual indicator, 0° to 95°
    - 0° is full spring return position

- **Manual override**
  - 5mm hex crank (3/16” Allen), supplied

- **Auxiliary switches (AFBUP-S)**
  - 2 x SPDT 3A (0.5A) @ 250 VAC, UL approved
  - One set at +10°, one adjustable 10° to 90°

- **Running Time**
  - Motor spring: <75 sec
  - 20 sec @ -4°F to 122°F [-20°C to 50°C];
  - <60 sec @ -22°F [-30°C]

- **Humidity**
  - Max. 95% RH non-condensing

- **Ambient temperature**
  - -22°F to 122°F [-30°C to 50°C]

- **Storage temperature**
  - -40°F to +176°F [-40°C to 80°C]

- **Housing**
  - NEMA 2, IP54, Enclosure Type2

- **Housing material**
  - Zinc coated metal and plastic casing

- **Agency listings**
  - cULus acc. to UL60730-1A/-2-14,
  - CAN/CSA E60730-1:02, CE acc. to
  - 2004/108/EC & 2006/95/EC

- **Noise level**
  - <50dB(A) motor @ 75 seconds
  - <62dB(A) spring return

- **Servicing**
  - Maintenance free

- **Quality standard**
  - ISO 9001

**Specifications**

<table>
<thead>
<tr>
<th>AERCO P/N</th>
<th>Size</th>
<th>Valve Model</th>
<th>Actuator Model</th>
<th>Cv</th>
<th>Max GPM</th>
<th>COP</th>
<th>Weight (lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>92084-1</td>
<td>3&quot;</td>
<td>F680HDU</td>
<td>AFBUP-S (Qty: 1)</td>
<td>302</td>
<td>264</td>
<td>50</td>
<td>17</td>
</tr>
<tr>
<td>*92084-2</td>
<td>4&quot;</td>
<td>F600HDU</td>
<td>AFBUP-S (Qty: 2)</td>
<td>600</td>
<td>470</td>
<td>50</td>
<td>32</td>
</tr>
</tbody>
</table>

**Dimensions (inches)**

<table>
<thead>
<tr>
<th>AERCO P/N</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D (Max)</th>
<th>BHC</th>
<th>No. of Holes</th>
<th>Lug Bolt</th>
</tr>
</thead>
<tbody>
<tr>
<td>92084-1</td>
<td>1.78</td>
<td>3.5</td>
<td>8.5</td>
<td>20.5</td>
<td>5</td>
<td>4</td>
<td>5/8-11UNC</td>
</tr>
<tr>
<td>92084-2</td>
<td>2.05</td>
<td>6</td>
<td>9</td>
<td>21</td>
<td>7.5</td>
<td>8</td>
<td>5/8-11UNC</td>
</tr>
</tbody>
</table>

**Proposal/Submittal Information**

- **System Data**

<table>
<thead>
<tr>
<th>Size</th>
<th>AERCO P/N</th>
<th>GPM</th>
<th>Pressure [psig]</th>
<th>Temp [°F]</th>
</tr>
</thead>
</table>

**Actuator Operation**

The AFB series actuators provide true spring return operation for reliable fail-safe application and positive close off on air tight dampers. The spring return system provides constant torque to the damper with, and without, power applied to the actuator.

The AFB series provides 95° of rotation and is provided with a graduated position indicator showing 0° to 95°.

The actuator may be stalled anywhere in its normal rotation without the need of mechanical end switches.

The AFBUP-S version is provided with two built-in auxiliary switches. These SPDT switches provide safety interfacing or signaling, for example, for fan start-up. The switching function at the fail-safe position is fixed at +10°, the other switch function is adjustable between +10° to +90°. The AFBUP-S, actuator is shipped at +5° (5° from full fail-safe) to provide automatic compression against damper gaskets for tight shut-off.

Dimension “A” is compressed, add .125” for relaxed state.

Dimension “D” allows for actuator removal without the need to remove the valve from the pipe.

*Dual actuated valves have actuators mounted on a common valve shaft.*