2006
Product Range Overview
Actuator Product Range

Spring Return

<table>
<thead>
<tr>
<th>Series</th>
<th>Torque [in-lb / Nm]</th>
<th>Area [sq. ft.]</th>
</tr>
</thead>
<tbody>
<tr>
<td>TF Series</td>
<td>18 [2 Nm]</td>
<td>Approx. 4.5</td>
</tr>
<tr>
<td>LF Series</td>
<td>35 [4 Nm]</td>
<td>Approx. 8</td>
</tr>
<tr>
<td>NF Series</td>
<td>60 [7 Nm]</td>
<td>Approx. 15</td>
</tr>
<tr>
<td>AF Series</td>
<td>133 [15 Nm]</td>
<td>Approx. 33</td>
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</tbody>
</table>

Fire & Smoke Actuators

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<th>Torque [in-lb]</th>
<th>Area [sq. ft.]</th>
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<tr>
<td>30, 70, 133</td>
<td>4 to 20</td>
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Control:
- On/Off
- Floating Point
- 2-10 VDC
- 4-20 mA with 500Ω resistor
- Multi-Function (MFT)♦

Power Supply:
- 24 VAC/DC
- 100 to 240 VAC

Options:
- Built-In Auxiliary Switch

♦ Multi-Function Technology (MFT) Options:
- Control Selectable
  - Start and Span Adj., Start 0.5 to 30 VDC, Span 2.5 to 32 VDC
  - PWM Adj: 0.02 to 50.0 sec
  - Floating Point
  - On/Off
  - Feedback Selectable
  - Running Time Selectable

See programming codes on pg. 41

For detailed information and submittal data, see our Technical Documentation section at www.belimo.com or ask your sales manager for a 2006 Technical Documentation CD.
Actuator Product Range
Non-Spring Return

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<th>AM Series</th>
<th>GM Series</th>
<th>Linear &amp; Rotary Series</th>
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<td>Approx. 11 sq. ft.</td>
<td>Approx. 22 sq. ft.</td>
<td>Approx. 45 sq. ft.</td>
<td>Approx. 90 sq. ft.</td>
<td>27 in-lb [3 Nm]</td>
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Control:
- On/Off, Floating Point
- 2-10 VDC
- 4-20 mA w/500Ω resistor
- 0 to 20 V Phasecut
- 0 to 135Ω
- Multi-Function (MFT)*

Power Supply:
- 24 VAC/DC
- 100 to 240 VAC

Basic Options:
- Built-In Auxiliary Switch
- Terminal Strip
- Bulk Packs

Flexible Options*:
- 3ft, 10ft, 16ft Cables
- Terminal Strip
- Running Time
- MFT Programming

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- 0 to 20 V Phasecut
- 0 to 135Ω
- Multi-Function (MFT)*

Power Supply:
- 24 VAC/DC
- 100 to 240 VAC

Basic Options:
- Built-In Auxiliary Switch

Flexible Options*:
- 3ft, 10ft, 16ft Cables
- Terminal Strip
- Running Time
- MFT Programming

Do you need a longer cable or different programming?

- Flexible Options:
  Belimo's new flexible line of actuators are configurable to your specific needs. See page 36.

- Selectable Options:
  - Clamp diameter and type.
  - Wiring options from cable lengths to terminal strips.
  - Running Time
  - MFT Programming

Multi-Function Technology (MFT) Options:
- Control Selectable
  - Start and Span Adj., Start 0.5 to 30 VDC, Span 2.5 to 32 VDC
  - PWM Adj: 0.02 to 50.0 sec
  - Floating Point
  - On/Off Feedback Selectable
  - Running Time Selectable

See programming codes on pg. 41

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Control Valve Product Range

Electronic Pressure Independent Characterized Control Valves™
U.S. Patent

PICCV
Two-way
1/2” to 2”

Service: Chilled/hot water, 60% glycol
Flow Rate: 0.5-80 GPM
Material: Brass Body
Control: Floating
Multi-Function Technology®
Spring Return or Non-Spring Return

Typical Application
Air Handling Units: Heating Coils, Cooling Coils
Unit Ventilators
VAV Box Re-heat Coils

Electronic Characterized Control Valves™
U.S. Patent

Electronic Zone Valves

B2... Series Two-way
B3... Series Three-way Mixing/diverting
B6... Series Two-way Flanged
1/2” to 3”

Service: Chilled/hot water, 60% glycol
Material: Stainless trim or Brass trim
Control: On/Off, floating, 2-10 VDC
Multi-Function Technology®
Spring Return or Non-Spring Return

Typical Application
Air Handling Units: Heating Coils, Cooling Coils
Fan Coil Units: Heating Coils, Cooling Coils
Unit Ventilators
VAV Box Re-heat Coils
Bypass loops

Electronic Pressure Independent Characterized Control Valves™
U.S. Patent

PICCV
Two-way
1/2” to 2”

Service: Chilled/hot water, 60% glycol
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Control: Floating
Multi-Function Technology®
Spring Return or Non-Spring Return

Typical Application
Air Handling Units: Heating Coils, Cooling Coils
Unit Ventilators
VAV Box Re-heat Coils

Electronic Zone Valves

ZONE2...N Series Two-way NPT
ZONE2...S Series Two-way Sweat
ZONE3...N Series Three-way Diverting NPT
ZONE3...S Series Three-way Diverting Sweat
1/2” to 1”

Service: Chilled/hot water, 50% glycol
Material: Brass Body
Control: On/Off, floating, 2-10 VDC
Multi-Function Technology®
Spring Return

Typical Application
Fan Coil Units: Heating Coils, Cooling Coils
Baseboard Radiation

For detailed information and submittal data, see our Technical Documentation section at www.belimo.com or ask your sales manager for a 2006 Technical Documentation CD.
**Electronic Globe Valves**

- **G2... (S) Series**: Two-way Screwed Bronze or Stainless Trim
- **G6...C (S) Series**: Two-way Flanged Bronze or Stainless Trim
- **G6... (S)-250 Series**: Two-way Flanged ANSI 250 Bronze or Stainless Trim
- **G3... (D) Series**: Three-way Screwed Bronze Trim
- **G7... (S)-250 Series**: Three-way Flanged ANSI 250 Bronze or Stainless Trim

Three-way Valves available in Mixing or Diverting

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**Electronic Butterfly Valves**

- **F6... Series (HS,HSU)**: Two-way
- **F7... Series (HS,HSU)**: Three-way Mixing/diverting
- **F6... SHP Series**: Two-way ANSI 150/300
- **F7... SHP Series**: Three-way ANSI 150/300 Mixing/diverting

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**Electronic Ball Valves – VS Series**

- **B2... VS Series**: Two-way Screwed Stainless Steel Trim
- **B3... VS Series**: Three-way Mixing/Diverting Screwed Stainless Steel Body and Trim
- **B2... VSS Series**: Two-way Screwed Stainless Steel Body and Trim
- **B6... VS Series**: Two-way Flanged Stainless Steel Trim

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**Typical Application**

- **Air Handling Units**: Heating Coils, Cooling Coils
- **Fan Coil Units**: Heating Coils, Cooling Coils
- **Unit Ventilators**: VAV Box Re-heats Coils, Bypass loops

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**Service**

- Chilled/hot water, 60% glycol, steam
  - **Cv Range**: 0.4-344 (Two-way)
  - **Material**: Stainless steel stem, Bronze plug or Stainless plug
  - **Control**: On/Off, floating, 2-10 VDC

  - **Multi-Function Technology®**: Spring Return or Non-Spring Return

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**Technical Information**

For detailed information and submittal data, see our Technical Documentation section at www.belimo.com or ask your sales manager for a 2006 Technical Documentation CD.
The Belimo Difference

- 5-Year peace of mind warranty.
- Competent application assistance thanks to 100% dedication to HVAC Damper Actuators and Control Valves.
- Free technical support.
- Belimo University for HVAC application training.
- 100% product testing before shipment.
- Same-day shipments.
- Three customer Service Centers in the US (NE, SE and W).
- 30+ years design, manufacturing and application experience.

**Damper Actuators**
- Extensive product range.
- Specific retrofit offerings.
- Small dimensions in relation to torque.
- Microprocessor-controlled Brushless DC motor increases actuator life span and reliability & provides constant running time (most actuators).
- Cut labor costs with simple direct coupling.
- Check damper position easily with clear position indication.
- Overload-proof throughout rotation.
- Temporary restrictions in damper movement will not change actuator operation. Actuator returns to normal operation when restriction is remove.
- Built-in or add-on mechanical stops to adjust angle of rotation.
- Built-in auxiliary switch is easy to use, offers feedback or signal for additional device (-S models).
- Need to change control direction? Do it easily with a simple switch on actuator housing.
- Rugged housings withstand rough handling in the mechanical room.
- Double insulated – no need for separate ground. A Belimo exclusive (on 120/230V models, and all models with built-in auxiliary switches.)
- Need to change control direction? Do it easily with a simple switch on actuator housing.
- Rugged housings withstand rough handling in the mechanical room.
- Double insulated – no need for separate ground. A Belimo exclusive (on 120/230V models, and all models with built-in auxiliary switches.)
- Automatically compensates for damper seal wear, ensuring tight close off.

**Spring Return**
- True mechanical spring return – the most reliable fail-safe.
- Reverse mount for clockwise or counterclockwise fail-safe.
- Manual override crank speeds installation (AF Series).
- 3 ft. appliance cable and conduit connector eases installation.

**Non-Spring Return**
- Increased torque output by up to 28%
- More mounting flexibility – LM accepts 3/4” dia. shafts, NM, AM & GM mounts to 1.05” dia. jackshafts.
- New linear stroking actuators with extensive control responses and lengths (4”, 8” and 12”)
- New 360 degree actuators with extensive control responses and 0 to 330 degree operating angle with accessory or default endless rotation.
- New optional external auxiliary switch(es) or position feedback potentiometer modules – same modules for all non-spring return actuators!
- Manual override push button.
- Compatible to discontinued models.
- The power of choice – Belimo’s flexible actuator range offers longer cable lengths, NEMA 2/IP54 terminal strip covers, mechanical clamping options, programming options

**Fire and Smoke**
- FSLF & FSNF meet the Uniform Building Code (UBC) 15-second operation time requirements between 32°F and 350°F at rated voltage and torque.
- FSAF meets UL555 operating requirements and offers 133 in-lb min torque output with only10VA power requirement.
- Overload protection is electronic throughout 0° to 95° rotation.
- 3 ft, 18 GA 3 color-coded leads, 1/2” conduit connector.

**Multi-function Technology (MFT)**
- Selectable:
  - Control (VDC, PWM, Floating Pt, On/Off).
  - Feedback.
  - Motion (Run Time).
  - Diagnostics (alarm messages).
Pressure Independent Characterized Control Valves™

- Easy selection, no \( C_v \) calculation required.
- Hydronic balancing is simplified, as the circuits are not interactive.
- Flexible commissioning.
- One piece installation saves 50% of labor costs, installation space, and investment for balancing valve.
- Reduces pumping costs.
- Maintains \( \Delta T \) for higher efficiency of chillers and condensing boilers.
- Visualizes flow in a BMS system and provides accurate flow for each degree of opening.
- Prevents overflow or underflow for fast start-up.

Characterized Control Valves™

- \( C_v \) range 0.3 to 240.
- An equal-percentage valve characteristic.
- Unlike a globe valve, no sudden change in inlet flow upon opening.
- Excellent stability of control.
- \( C_v \) values comparable with those of globe valves of the same size or larger.
- Higher close-off ratings than standard globe valves.
- 100% tight shut-off on two-way valves means NO leak-by unlike globe valves that have ANSI IV shutoff (leakage rate of 0.01% of the \( C_v \) rating).
- Three-way valve can be piped in mixing or diverting application.
- Position indication visible from 10 ft. distance.

Electronic Zone Valves

- Push button for quick removal of actuator.
- Easy manual open lever with automatic return.
- Up to 75 psi close-off.
- Only 2-3/8” wide to fit most baseboards.
- Spring return normally open or normally closed.
- One actuator for two- and three-way applications.
- Available with or without auxiliary switch.

Electronic Globe Valves

- Self-adjusting stroke utilizes full control signal for maximum resolution.
- Visual sliding stroke indicators speed installation and system check.
- Assembly can be mounted with valve stem horizontal to the pipe.
- Self locking valve coupling to ensure proper valve-actuator connection.
- Pressure Compensated Flanged Globe Valves utilize a balanced plug design. Perfect for high close-off requirements.

Electronic Butterfly Valves

- Cast Iron Full Lug Bodies.
- EPDM liner.
- Stainless Steel Disc as Standard.
- Unique seat and disc design ensures positive valve sealing while maintaining low seating torque.
- Belimo or Industrial NEMA 4 Actuators.
- Easily Accessible Field Wiring Terminal on NEMA 4 type.
- Simple, Single Handed Override Wheel on NEMA 4 type.
- High Performance line for ANSI 150/300 Ratings.

Electronic Ball Valves

- Bronze, Cast Iron and Stainless Bodies.
- Stainless Ball and Stem.
- NPT or Flanged Bodies.
- Live Loaded or Gland Type Packing.
- Belimo or Industrial NEMA 4 Actuators.