## Technical Data

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Power Supply</strong></td>
<td>24...240 VAC, -20% / +10%, 50/60 Hz, 24...125 VDC, ±10%</td>
</tr>
<tr>
<td><strong>Power consumption in operation</strong></td>
<td>7 W</td>
</tr>
<tr>
<td><strong>Power consumption in rest position</strong></td>
<td>3.5 W</td>
</tr>
<tr>
<td><strong>Transformer sizing</strong></td>
<td>7 VA @ AC 24 V (class 2 power source), 8.5 VA @ AC 120 V, 18 VA @ AC 240 V</td>
</tr>
<tr>
<td><strong>Shaft Diameter</strong></td>
<td>1/2...1.05” round, centers on 1/2” and 3/4” with insert, 1.05” without insert</td>
</tr>
<tr>
<td><strong>Electrical Connection</strong></td>
<td>18 GA appliance cable, 3 ft [1 m], with 1/2” conduit connector</td>
</tr>
<tr>
<td><strong>Overload Protection</strong></td>
<td>electronic throughout 0...95° rotation</td>
</tr>
<tr>
<td><strong>Electrical Protection</strong></td>
<td>actuators are double insulated</td>
</tr>
<tr>
<td><strong>Angle of rotation</strong></td>
<td>95°, adjustable with mechanical end stop, 35...95°</td>
</tr>
<tr>
<td><strong>Torque motor</strong></td>
<td>180 in-lb [20 Nm]</td>
</tr>
<tr>
<td><strong>Direction of motion motor</strong></td>
<td>selectable by ccw/cw mounting</td>
</tr>
<tr>
<td><strong>Direction of motion fail-safe</strong></td>
<td>reversible with cw/ccw mounting</td>
</tr>
<tr>
<td><strong>Position indication</strong></td>
<td>Mechanical</td>
</tr>
<tr>
<td><strong>Manual override</strong></td>
<td>5 mm hex crank (3/16” Allen), supplied</td>
</tr>
<tr>
<td><strong>Running Time (Motor)</strong></td>
<td>75 s</td>
</tr>
<tr>
<td><strong>Running time fail-safe</strong></td>
<td>&lt;20 s @ -4...122°F [-20...50°C], &lt;60 s @ -22°F [-30°C]</td>
</tr>
<tr>
<td><strong>Ambient humidity</strong></td>
<td>max. 95% r.H., non-condensing</td>
</tr>
<tr>
<td><strong>Ambient temperature</strong></td>
<td>-22...122°F [-30...50°C]</td>
</tr>
<tr>
<td><strong>Storage temperature</strong></td>
<td>-40...176°F [-40...80°C]</td>
</tr>
<tr>
<td><strong>Degree of Protection</strong></td>
<td>IP54, NEMA 2, UL Enclosure Type 2</td>
</tr>
<tr>
<td><strong>Housing material</strong></td>
<td>Galvanized steel and plastic housing</td>
</tr>
<tr>
<td><strong>Agency Listing</strong></td>
<td>cULus acc. to UL60730-1A/-2-14, CAN/CSA E60730-1:02, CE acc. to 2014/30/EU and 2014/35/EU; Listed to UL 2043 - suitable for use in air plenums per Section 300.22(c) of the NEC and Section 602.2 of the IMC</td>
</tr>
<tr>
<td><strong>Noise level, motor</strong></td>
<td>50 dB(A)</td>
</tr>
<tr>
<td><strong>Noise level, fail-safe</strong></td>
<td>62 dB(A)</td>
</tr>
<tr>
<td><strong>Servicing</strong></td>
<td>maintenance-free</td>
</tr>
<tr>
<td><strong>Quality Standard</strong></td>
<td>ISO 9001</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>2.4 lb [2.4 kg]</td>
</tr>
</tbody>
</table>

†Rated Impulse Voltage 4kV, Type of Action 1.AA.B, Control Pollution Degree 3.

## Application

**Torque min. 180 in-lb, for control of air dampers.**

**Operation**

For On/Off, fail-safe control of dampers in HVAC systems. Actuator sizing should be done in accordance with the damper manufacturer’s specifications. Control is On/Off from an auxiliary contact or a manual switch. The actuator is mounted directly to a damper shaft up to 1.05” in diameter by means of its universal clamp. A crank arm and several mounting brackets are available for applications where the actuator cannot be direct coupled to the damper shaft. Maximum of two AF’s can be piggybacked for torque loads of up to 266 in-lbs. Minimum 3/4” diameter shaft and parallel wiring.

**Diagram**

- Torque motor: 180 in-lb [20 Nm]
- Dimensions (Inches [mm]):
  - 9.69” [246.1]
  - 6.77” [172]

**Noise level, motor**: 50 dB(A)
**Noise level, fail-safe**: 62 dB(A)
**Servicing**: maintenance-free
**Quality Standard**: ISO 9001
**Weight**: 2.4 lb [2.4 kg]
Accessories

AF-P Anti-rotation bracket AF/NF.
AV8-25 Shaft extension
IND-AFB End stop indicator
K7-2 Shaft clamp reversible
KG10A Ball joint
KG8 Ball joint
KH10 Damper crank arm
KH8 Damper crank arm
KH-AFB Actuator arm
SH10 Push rod for KG10A ball joint (36” L, 3/8” diameter).
SH8 Push rod for KG6 & KG8 ball joints (36” L, 5/16” diameter).
TOOL-06 8 mm and 10 mm wrench.
ZG-100 Univ. right angle bracket 17”x11-1/8”x6” (HxWxbase).
ZG-101 Univ. right angle bracket 13x11x7-7/16” (HxWxbase).
ZG-102 Dual actuator mounting bracket.
ZG-109 Right angle bracket for ZS-260.
ZG-110 Stand-off bracket for ZS-260.
ZG-118 AFB(X)/NFB(X) U bracket 5-7/8x5-1/2x2-19/32” (HxWxD).
ZG-120 Jackshaft mounting bracket.
ZG-AFB Mounting kit for linkage operation
ZG-AFB118 AFB(X)/NFB(X) crankarm adaptor kit.
ZG-DC1 Damper clip for damper blade, 3.5” width.
ZG-DC2 Damper clip for damper blade, 6” width.
ZG-JSA-1 1” diameter jackshaft adaptor (11” L).
ZG-JSA-2 1-5/16” diameter jackshaft adaptor (12” L).
ZG-JSA-3 1.05” diameter jackshaft adaptor (12” L).
ZS-100 Weather shield - galvanal 13x8x6” (LxWxD).
ZS-101 Base plate for ZS-100.
ZS-150 Weather shield - PC w/ foam seal 16x8-3/8x4” (LxWxD).
ZS-260 Explosion proof housing.
ZS-300 NEMA 4X, 304 stainless steel enclosure.
ZS-300-5 NEMA 4X, 316L stainless steel enclosure.
ZS-300-C1 1/2” shaft adaptor, standard with ZS-300(-5).
ZS-300-C2 3/4” shaft adaptor for ZS-300(-5).
ZS-300-C3 1” shaft adaptor for ZS-300(-5).
Z-SF Base plate extension
P475 Shaft mount, non-Mercury aux. switch for 1/2” dia. shafts.
P475-1 Shaft mount, non-Mercury aux. switch for 1” dia. shafts.
PS-100 Low voltage and control signal simulator.
TF-CC US Cable conduit connector, 1/2”.

Typical Specification

On/Off spring return damper actuators shall be direct coupled type which
require no crank arm and linkage and be capable of direct mounting to a
jackshaft up to a 1.05” diameter. The actuators must be designed so that they
may be used for either clockwise or counter clockwise fail-safe operation.
Actuators shall be protected from overload at all angles of rotation. If required,
two SPDT auxiliary switch shall be provided having the capability of one being
adjustable. Actuators with auxiliary switches must be constructed to meet
the requirements for Double Insulation so an electrical ground is not required
to meet agency listings. Actuators shall be cULus listed and have a 5 year
warranty, and be manufactured under ISO 9001 International Quality Control
Standards. Actuators shall be as manufactured by Belimo.
**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.

- **Meets cULus requirements without the need of an electrical ground connection.**
- **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.**