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**Standard Shipping within 3 to 5 days**  Products ordered through the Rapid Response™ program can ship same day. Expect longer lead times for large quantities and unique parts. See page 1 for details on Rapid Response™ shipping.
Overview

Damper Actuators

Damper Actuators provide control, either electronically or pneumatically, for a variety of HVAC applications, including:

- VAV Systems
- Mixing Boxes
- Central Fan Systems
- Exhaust Dampers
- Fire/Smoke Dampers

Selection Guide

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<th>GND/GGD</th>
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<th>GEB</th>
<th>GBB/GIB</th>
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<td>Face and Bypass</td>
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<td>Multi-zone Mixing Boxes</td>
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<td>Bypass Damper</td>
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<td>Makeup Air Damper</td>
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<tr>
<td>Outside Air Dampers</td>
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<tr>
<td>Zone Isolation Dampers</td>
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<tr>
<td>Vortex Dampers</td>
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<td>Inlet Vane Dampers</td>
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</tbody>
</table>

*LC Model
**See data sheets for specific types

For detailed damper actuator sizing information, please refer to the Engineering Section, I.

www.usa.siemens.com/hvaccomponents
GQD Series
Spring Return Electric Damper Actuator

Easily Replaces:
• Belimo TF Series

Description
The OpenAir GQD Series direct-coupled, spring return electronic damper actuators are 24 Vac/dc rated and available in 2-position, 3-position and 2 to 10 Vdc control.

Features
• Bi-directional, fail-safe spring return
• Pre-cabled
• Plenum rated
• Signal inversion capability on modulating type (2 to 10 Vdc/10 to 2 Vdc)
• Small footprint for installation flexibility
• UL, cUL, CE rated
• Quiet operation

Applications
The small footprint and torque make this actuator ideal for small HVAC dampers or residential zone dampers requiring fail safe operation.

www.usa.siemens.com/hvaccomponents
## Specifications/Product Ordering

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<th>Details</th>
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</tr>
<tr>
<td>Frequency</td>
<td>50/60 Hz</td>
</tr>
<tr>
<td>Power Consumption</td>
<td></td>
</tr>
<tr>
<td>Running</td>
<td>&lt;7 VA</td>
</tr>
<tr>
<td>Holding</td>
<td>&lt;7 VA</td>
</tr>
<tr>
<td>Function</td>
<td></td>
</tr>
<tr>
<td>Torque</td>
<td>20 lb.-in. (2 Nm)</td>
</tr>
<tr>
<td>Runtime 3PT and 2-10Vdc for 90°</td>
<td>30 sec.</td>
</tr>
<tr>
<td>Runtime 2PT for 90°</td>
<td>15 sec.</td>
</tr>
<tr>
<td>Spring Return</td>
<td>15 sec. nominal</td>
</tr>
<tr>
<td>Nominal Angle of Rotation</td>
<td>90°</td>
</tr>
<tr>
<td>Shaft Size</td>
<td>3/8 to 1/2-in. (8 to 13.4 mm) round/square</td>
</tr>
<tr>
<td>Min. Shaft Length</td>
<td>1-in. (25.4 mm)</td>
</tr>
<tr>
<td>Housing Enclosure</td>
<td>NEMA 1</td>
</tr>
<tr>
<td>Material</td>
<td>Plenum rated rugged plastic</td>
</tr>
<tr>
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<td>-25 to 130°F (-32 to 55°C)</td>
</tr>
<tr>
<td>Storage and Transport</td>
<td>-40 to 158°F (-40 to 70°C)</td>
</tr>
<tr>
<td>Ambient Humidity</td>
<td>95% RH, non-condensing</td>
</tr>
<tr>
<td>Agency Approvals</td>
<td>UL873, cUL, CE rated</td>
</tr>
<tr>
<td>Pre-Cabled Connection</td>
<td>AWG 18</td>
</tr>
<tr>
<td>Cable Length</td>
<td>3 ft. (0.9m)</td>
</tr>
<tr>
<td>Dimensions</td>
<td>&lt;4.72&quot; H x &lt;2.75&quot; W x &lt;2.5&quot; D (120 mm H x &lt;70 mm W x &lt;63 mm D)</td>
</tr>
<tr>
<td>Shipping Weight</td>
<td>&lt;1.5 lbs. (&lt;0.68 kg)</td>
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**Ordering Note** Bulk packages contain 10 actuators unless otherwise noted.

## Control Signal

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<td>Plenum Cable</td>
<td>GQD121.1P</td>
</tr>
<tr>
<td>(Open/Closed),</td>
<td>Plenum Cable/Bulk</td>
<td>GQD121.1P/B</td>
</tr>
<tr>
<td>24 Vac/dc</td>
<td></td>
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</tr>
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<td>3-position</td>
<td>Plenum Cable</td>
<td>GQD131.1P</td>
</tr>
<tr>
<td>(Floating),</td>
<td>Plenum Cable/Bulk</td>
<td>GQD131.1P/B</td>
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<td>24 Vac/dc</td>
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<td>2-10 Vdc/10-2 Vdc</td>
<td>Plenum Cable</td>
<td>GQD151.1P</td>
</tr>
<tr>
<td>(Modulating)</td>
<td>Plenum Cable/Bulk</td>
<td>GQD151.1P/B</td>
</tr>
<tr>
<td>24 Vac/dc</td>
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<td></td>
</tr>
</tbody>
</table>

**Wiring Diagrams**

- **SUPPLY**: 1
- **NEUTRAL**: 2
- **CONTROL**: 8
- **POSITION OUTPUT**: 9
- **CW**: 6
- **CCW**: 7
- **1**: 1
- **2**: 2
Dimensions

GQD Series Open Air Spring Return Electric Damper Actuator

Dimensions shown in inches (mm).
TECH TIPS

Visit us on the web at:
www.usa.siemens.com/hvaccomponents

You can:
• search for products by part number
  or description.
• print out product information for submittals.
• link to technical documentation.
• locate a distributor near you.
GMA Series

Spring Return Electric Damper Actuator

Easily Replaces:
• Belimo LN/NF Series

62 lb.-in.:
24 Vac/Vdc, 2-position Control
120 Vac, 2-position Control
24 Vac/dc, 3-position Control
0 to 10 Vdc, Modulating Control
2 to 10 Vdc/10 to 2 Vdc, Modulating Control

Description
The OpenAir GMA Series Direct-coupled, Spring Return Electronic Damper Actuators provide modulating, two-position and three-position control of building HVAC dampers.

Features
• 24 Vac/dc compatible
• Integral 1/2-inch conduit connector
• Small actuator footprint with 62 lb.-in. of torque
• Bi-directional fail-safe spring return
• Unique self-centering shaft coupling
• Floating control models available with feedback potentiometer
• Manual override
• Mechanical range adjustment capability
• Easily visible position indicator
• Brushless DC motor technology
• Precabled
• UL60730, cUL (C22.2 No. 24-93), and CE listed
• All modulating types contain built-in feedback

Options
• Dual independently adjustable auxiliary switch
• Adjustable offset and span
• Signal inversion

Applications
The OpenAir GMA Series Damper Actuators are ideal for Constant or Variable Air Volume installations for the control of return air, mixed air, exhaust, and face and bypass dampers that require up to 62 lb.-in. of torque.

The actuators are designed for application where the damper is required to return to a fail-safe position when there is a power failure.

Models are available with either an appliance cable for wiring in conduit or a plenum-rated cable.
**Specifications/Product Ordering**

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<td>120 Vac ±10%</td>
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<td>Frequency</td>
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<td>50/60 Hz</td>
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<td>Power Consumption</td>
<td>GMA12x</td>
<td>24 Vac/dc</td>
</tr>
<tr>
<td>Running</td>
<td></td>
<td>5 VA/3.5W</td>
</tr>
<tr>
<td>Holding</td>
<td>GMA13x</td>
<td>4 VA/3W</td>
</tr>
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<td>Equipment Rating</td>
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<td>Class 2, in accordance with UL/CSA</td>
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<td>Control Signal</td>
<td>Equipment Rating</td>
<td>Class 2, in accordance with UL/CSA</td>
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<td>Input Signal (wires 8-2)</td>
<td>GMA16x</td>
<td>GMA16x</td>
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<td>Voltage Input</td>
<td>GMA16x</td>
<td>0 to 10 Vdc (max. 35 Vdc)</td>
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<td>GMA15x</td>
<td></td>
<td>2 to 10 Vdc (max. 35 Vdc)</td>
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<td>GMA16x</td>
<td>&gt;100K Ohms</td>
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<td>Control Signal Adjustment</td>
<td>Offset (Start Point)</td>
<td>...0 to 5 Vdc ...0 V</td>
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<td>30 V</td>
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<td>GMA16x</td>
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<td>GMA16x</td>
<td>24 to 250 Vac</td>
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<td>GMA16x</td>
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<td>GMA16x</td>
<td>0 to 1000 Ohm &lt;10 mA</td>
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<td>GMA16x</td>
<td>Position output signal (wires 9-2)</td>
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<td>0 to 10 Vdc</td>
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<td>2 to 10 Vdc</td>
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<td>GMA16x</td>
<td>62 lb.-in. (7 Nm)</td>
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<td>Spring Return Torque</td>
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<tr>
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<td>GMA16x</td>
<td>186 lb.-in. (21 Nm)</td>
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<tr>
<td>Nominal Angle of Rotation</td>
<td>...90°, 95° max...</td>
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<tr>
<td>Shaft Dimensions</td>
<td>GMA16x</td>
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<tr>
<td>Min. Shaft Length</td>
<td>GMA16x</td>
<td>1/4 to 1/2-in. (6 to 13 mm) Sq.</td>
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<td>-25 to +130°F (-32 to +55°C)</td>
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<td>-25 to +150°F (-32 to +70°C)</td>
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<td>Humidity</td>
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<td>95% RH, non-condensing</td>
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<td>Agency Approvals</td>
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<td>C-UL certified to Canadian Standard C22.2 No. 24-93 CE</td>
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<td>Housing</td>
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<td>NEMA 1</td>
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<tr>
<td>Material</td>
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<td>Die-cast Aluminum Alloy</td>
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<tr>
<td>Gear Lubrication</td>
<td></td>
<td>Silicone free</td>
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<tr>
<td>Pre-cabled Connection</td>
<td>...UL60730 ...18 AWG, 3 ft. (0.9 m)</td>
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<tr>
<td>Life Cycle</td>
<td></td>
<td>Designed for over 60,000 full strokes at rated torque and temperature</td>
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<tr>
<td>Dimensions</td>
<td>...8.38&quot; H x 3.25&quot; W x 2.67&quot; D ...</td>
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<td></td>
<td>(212 mm H x 83 mm W x 68 mm D)</td>
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<tr>
<td>Shipping Weight</td>
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**Table: GMA Series**

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<th>Cabling</th>
<th>Standard</th>
<th>Options</th>
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<td>Modulating, 0 to 10 Vdc, 24 Vac/dc</td>
<td>Plenum Cable</td>
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<td>Modulating, 24 Vac/dc</td>
<td>2 to 10 Vdc/ 10 to 2 Vdc (Signal inversion)</td>
<td>Plenum Cable</td>
<td>GMA151.1P</td>
</tr>
<tr>
<td>2-pos., 24 Vac/Vdc</td>
<td>Plenum Cable</td>
<td>GMA121.1P</td>
<td>—</td>
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<td>2-pos., 120 Vac</td>
<td>Plenum Cable/Bulk</td>
<td>GMA121.1P/B</td>
<td>—</td>
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<td>3-pos., 24 Vac/Vdc</td>
<td>Plenum Cable</td>
<td>GMA131.1P</td>
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</table>

**Notes:**
- Bulk packages contain 10 actuators.
- Ships same day when requested through Rapid Response™ shipping. See page 1 for details.
Dimensions shown in inches (mm).
Rule of Thumb:
When determining the torque required to move a damper, take the area of the damper (ft.²) and multiply by 7 to get the amount of lb.-in. needed to control the damper.

Example: 48" x 60" damper is 20 ft.²
20 x 7 = 140 lb.-in.

We always recommend doing a complete sizing routine, which can be found in the Engineering section.
GCA Series
Spring Return Electric Damper Actuator

Easily Replaces:
• Belimo AF Series

142 lb.-in. torque
24 Vac/dc, 2-position Control
120 Vac, 2-position Control
24 Vac/dc, 3-position Control
0 to 10 Vdc/2 to 10 Vdc, Modulating Control

Description
Designed for control of building HVAC dampers, the OpenAir GCA Series Direct-coupled, Spring Return Electric Actuators are available in 0 to 10 Vdc or 2 to 10 Vdc modulating, three-position (floating) and two-position (on/off) control models.

Features
• 24 Vac/dc compatible
• Visible position indication
• Self-centering shaft coupling
• Bidirectional fail-safe spring return
• Rugged all metal housing
• Accepts shaft diameters up to 1” (25 mm)
• Quiet, low-power operation
• Brushless DC motor technology with stall protection
• Assembled in the U.S.A.
• Manual override
• Precabled
• All modulating types contain built-in feedback.

Options
• Independently adjustable dual auxiliary switches
• Potentiometer for 3-position models
• Adjustable span and offset
• Signal inversion

Applications
The OpenAir GCA Series Damper Actuators are ideal for Constant or Variable Air Volume installations for the control of return air, mixed air, exhaust, and face and bypass dampers that require up to 142 lb.-in. (16 Nm) torque.

The actuators are designed for applications where the damper is required to return to a fail-safe position when there is a power failure.

Models are available with either an appliance cable for wiring in conduit or a plenum-rated cable for applications where conduit is not required.
Specifications/Product Ordering

Operating Voltage (1–2)
GA11x .................................................................24 Vac ±20%, 24 Vdc ±10%
GA22x .................................................................120 Vac ±10%
Frequency ................................................................50 to 60 Hz
Power Consumption
GCA15x.xx & GCA16x.xx
Running .................................................................9 VA (7 W)
Holding .................................................................5 VA (4 W)
GA22x.xx AC 24 Vdc
Running .................................................................8 VA (6 W)
Holding .................................................................3 VA (2 W)
GCA22x.xx AC 120 Vac
Running .................................................................9 VA (7 W)
Holding .................................................................9 VA (7 W)
GCA13x.xx AC 24 Vdc
Running .................................................................8 VA (6 W)
Holding .................................................................5 VA (4 W)
Input Signal (8–2)
GCA16x
Voltage-input .........................................................0 to 10 Vdc (max. 35 Vdc)
Input Resistance ......................................................>100 K Ohms
GCA15x
Voltage-input .........................................................0 to 10 Vdc or 2 to 10 Vdc (max. 35 Vdc)
Input Resistance ......................................................>100 K Ohms
Position Output Signal (9–2)
GCA15x/GCA16x
Voltage-output .........................................................0 to 10 Vdc
Max. Output Current ..............................................±1 mA
Equipment Rating for Operating Voltage,
Input Signal, and Position Output Signal .................Class 2
Control Signal Adjustment
Offset (start point) ...................................................0 to 5 Vdc
Factory setting .......................................................0 V
Span ........................................................................2 to 30 Vdc
Factory setting .......................................................10 V
Dual Auxiliary Switch
Contact Rating
Standard Cable ......................................................6 A resistive, 2 A General Purpose
Plenum Cable .......................................................4 A resistive, 2 A General Purpose
Voltage
Standard Cable .........................................................24 to 250 Vac
Plenum Cable .........................................................24 Vac
Switch Range
Switch A .................................................................0 to 90° with 5° intervals
Recommended Range ...........................................0 to 45°
Switch B .................................................................0 to 90° with 5° intervals
Recommended Range ...........................................45 to 90°
Switching Hysteresis ...............................................2°
Position Feedback
GCA132.1x .............................................................0 to 1000 Ohm <10 mA
Torque
Running Torque ......................................................142 lb.-in. (16 Nm)
Spring Return .........................................................142 lb.-in. (16 Nm)
Max. Torque ..........................................................<150 lb.-in. (40 Nm)
Runtime for 90° operating with motor ......................90 seconds
Closing (on power loss) with Spring Return ..............15 seconds
Nominal Angle of Rotation ...................................90°
Max. Angular Rotation ..........................................95°
Temperature
Operation .............................................................-25 to +130°F (-32 to +55°C)
Storage and Transport ...........................................-40 to +158°F (-40 to +70°C)
Humidity ................................................................95% RH, non-condensing
Shaft Size .............................................................3/8 to 1-in (8 to 25 mm) Dia.
Min. Shaft Length ....................................................1/4 to 3/4-in (6 to 18 mm) Sq.
Housing Enclosure ................................................NEMA 2*
Material .............................................................Die-cast Aluminum alloy
Pre-cabled Connection ............................................AWG 18
Agency Approvals ...................................................cUL C22.2 No. 24-93
        .................................................................UL 873
Cable Length .........................................................3 ft. (0.9 m)
Dimensions ..........................................................12” H x 4.75” W x 2.88” D
Shipping Weight ...................................................4.85 lb. (2.2 kg)

*Refer to Installation Instructions for acceptable mounting positions.

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<td>Standard</td>
<td>GCA221.1U</td>
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<td></td>
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<tr>
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<tr>
<td></td>
<td>Plenum Cable</td>
<td>GCA131.1P</td>
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</table>

Ordering Note Bulk packages contain 8 actuators.

Part No. in black box Ships same day when requested through Rapid Response™ shipping. See page 1 for details.
Dimensions

GCA/GIB/GBB Series OpenAir Damper Actuator

**E-13**

Damper Actuators

**Accessories & Service Kits**

**E-45**

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GDE Series
Non-spring Return Electric Damper Actuator

Easily Replaces:
• Belimo LM Series

44 lb.-in. torque
24 Vac, 3-position Control
0 to 10 Vdc, Modulating Control

Description
The OpenAir GDE Series Direct-coupled 24 Vac Non-spring Return Rotary Electric Actuator is designed for 0 to 10 Vdc or three-position (floating) control of building HVAC dampers.

Features
• Compact design
• Easy-to-see position indicator
• 0 to 10 V or 3-position models
• Self-adapting capability for maximum flexibility in damper positioning
• UL, cUL, CE listed
• Quiet, low-power operation
• Rated NEMA 2
• Assembled in the U.S.A.
• Manual override

Options
• Independently adjustable dual auxiliary switches
• Adjustable start/span
• Standard or plenum cable
• Available in bulk packs for additional savings

Applications
The OpenAir GDE Series Damper Actuators are used in Constant or Variable Air Volume installations for the control requiring up to 44 lb.-in. (5 Nm) torque.

Models are available with either a universal cable for wiring in conduit or a plenum-rated cable for applications where conduit is not required.

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### Specifications/Product Ordering

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<td></td>
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<td></td>
<td>- Factory Setting: 0 V</td>
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<tr>
<td></td>
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<tr>
<td>Dual Auxiliary Switch</td>
<td>- Contact Rating: 4 A resistive, 2 A General Purpose Voltage: 24 Vac</td>
</tr>
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<td></td>
<td>- Switch Range:</td>
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<td>- Switch A: 0 to 90° with 5° intervals</td>
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<td>- Recommended Range Usage: 45 to 90°</td>
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<td></td>
<td>- Factory Setting: 85°</td>
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<tr>
<td></td>
<td>- Switching Hysteresis: 3°</td>
</tr>
<tr>
<td>Position Feedback</td>
<td>GDE132.1P</td>
</tr>
<tr>
<td></td>
<td>- 0 to 1000 Ohm &lt;10 mA</td>
</tr>
</tbody>
</table>

### Function

- Torque: 44 lb.-in.(5 Nm) at 50 Hz, 108 sec. at 60 Hz, 90 sec.
- Nominal Angle of Rotation: 90°
- Max. Angular Rotation: 95°
- Shaft Size: 3/8 to 5/8-in. (8 to 16 mm) Dia.
- Min. Shaft Length: 3/4-in. (20 mm)
- Housing Enclosure: NEMA Type 2
- Material: Plenum Rated Rugged Plastic
- Temperature:
  - Operation: -25 to +130°F (-32 to +55°C)
  - Storage and Transport: -25 to +140°F (-30 to +60°C)
- Humidity: 95% RH, non-condensing
- Agency Approvals: UL873, cUL C22.2 No. 24-93, CE
- Pre-cabled Connection: AWG 18
- Cable Length: 3 ft. (0.9 m)
- Dimensions: 5.4” H x 2.6” W x 2.3” D (137 mm H x 68 mm W x 60 mm D)
- Shipping Weight: 1.06 lb. (0.45 kg)

### Damper Actuators

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<th>Cabling</th>
<th>Standard Options</th>
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<td>Plenum Cable/Bulk</td>
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<td></td>
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<td>GDE164.1P</td>
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<td></td>
<td></td>
<td>Plenum Cable/Bulk</td>
<td>GDE131.1P/B</td>
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<tr>
<td></td>
<td>3-position</td>
<td>Standard</td>
<td>GDE131.1U</td>
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<td>GDE131.1Q/B</td>
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<td>0 to 10 Vdc</td>
<td>Terminal Strip</td>
<td>GDE161.1T</td>
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<td></td>
<td></td>
<td>Terminal Strip/Bulk</td>
<td>GDE161.1T/B</td>
</tr>
<tr>
<td></td>
<td>3-position</td>
<td>Terminal Strip</td>
<td>GDE131.1T</td>
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<tr>
<td></td>
<td></td>
<td>Terminal Strip/Bulk</td>
<td>GDE131.1T/B</td>
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</tbody>
</table>

### Ordering Note

Bulk packages contain 24 actuators unless otherwise noted.

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Dimensions

GDE/GLB Series OpenAir Electric Damper Actuator

Dimensions shown in inches (mm).

Accessories & Service Kits E-45

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GLB Series Non-spring Return Electric Damper Actuator

Easily Replaces:
- Belimo NM Series

88 lb.-in. torque
24 Vac, 3-position Control
0 to 10 Vdc, Modulating Control

Description
The OpenAir GLB Series Direct-coupled 24 Vac Non-spring Electric Actuator is designed for 0 to 10 Vdc or three-position (floating) control of building HVAC dampers.

Features
- Compact design
- Easy-to-see position indicator
- 0 to 10 V or 3-position models
- Self-adapting capability for maximum flexibility in damper positioning
- UL, cUL, CE listed
- Quiet, low-power operation
- Rugged all metal housing, rated NEMA 2
- Assembled in the U.S.A.
- Manual override
- Plenum-rated cable

Options
- Independently adjustable dual auxiliary switches
- Adjustable start/span

Applications
The OpenAir GLB Series Damper Actuators are used in Constant or Variable Air Volume installations for the control requiring up to 88 lb.-in. (10 Nm) torque.

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### Specifications/Product Ordering

**Operating Voltage** ................................................. 24 Vac
**Frequency** .......................................................... 50 to 60 Hz
**Power Consumption** ............................................ 3.3 VA (modulating)
................................................................. 2.3 VA (3-position)

**Input Signal (8–2)**
Voltage-Input .......................................................... 0 to 10 Vdc
Input Resistance .................................................... 100K Ohms

**Position Output Signal (9–2)**
Voltage-Output .......................................................... 0 to 10 Vdc
Max. Output Current ................................................ 1 mA

**Equipment Rating for Operating Voltage,**
**Input Signal,** and **Position Output Signal** ........... Class 2

**Control Signal Adjustment**
Offset (Start Point) ................................................ Between 0 to 5 Vdc
Factory Setting ...................................................... 0 V
Span ................................................................. Between 2 to 10 Vdc

**Dual Auxiliary Switch**
Contact Rating ..................................................... 4 A resistive, 2 A General Purpose
Voltage ................................................................. 24 Vac
Switch Range
Switch A .......................................................... 0 to 90° with 5° intervals
Recommended Range Usage ................................. 0 to 45°
Factory Setting .................................................... 0°
Switch B .......................................................... 0 to 90° with 5° intervals
Recommended Range Usage ................................. 45 to 90°
Factory Setting .................................................... 85°
Switching Hysteresis .............................................. 3°

**Position Feedback**
GLB132.1P .......................................................... 0 to 1000 Ohm <10 mA

**Function**
Torque ................................................................ 88 lb.-in. (10 Nm)
at 50 Hz ............................................................. 150 sec.
at 60 Hz ............................................................. 125 sec.
Nominal Angle of Rotation ..................................... 90°
Max. Angular Rotation ........................................ 95°

**Shaft Dimensions** .............................................. 3/8 to 5/8-in. (9 to 16 mm) Dia.
1/4 to 1/2-in. (6 to 13 mm) Sq.

**Min. Shaft Length** ............................................... 3/4-in. (20 mm)

**Housing Enclosure** ............................................. NEMA 2

**Material** ......................................................... Plenum Rated Rugged Plastic

**Temperature**
Operation ......................................................... -25 to +130°F (-32 to +55°C)
Storage and Transport ........................................... -40 to +158°F (-40 to +70°C)

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

**Agency Approvals** ........................................... UL873
................................................................. cUL C22.2 No. 24-93
................................................................. CE

**Pre-cabled Connection** ....................................... AWG 18

**Cable Length** ..................................................... 3 ft. (0.9 m)

**Dimensions** ....................................................... 5.4" H x 2.6" W x 2.3" D
(137 mm H x 68 mm W x 60 mm D)

**Shipping Weight** ................................................ 1.06 lb. (0.45 kg)

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Refer to page E-17 for Dimensions.

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### GLB Series

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<th>Input Signal</th>
<th>Cabling</th>
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<th>GLB161.1P</th>
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<td>GLB132.1P</td>
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<tr>
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<td>6’ Plenum Cable</td>
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</tr>
<tr>
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<td>3’ Plenum Cable</td>
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<td>GLB166.1P</td>
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</tbody>
</table>
**GEB Series**

**Non-Spring Return Electric Damper Actuator**

**Easily Replaces:**
- Belimo NM Series

132 lb.-in.
- 24 Vac, 3-position Control
- 0 to 10 Vdc or 2 to 10 Vdc, Modulating Control

**Description**

The OpenAir GEB Series Direct-coupled, Non-spring Return Electronic Damper Actuators provide modulating and three position control of building HVAC dampers.

**Features**

- Integral 1/2-inch conduit connector
- Unique self-centering shaft coupling
- Floating control models available with feedback potentiometer
- All metal housing
- Manual override
- DIP switches GEB16x.1x
  - Direction of rotation
  - Adaptation of rotational angle range.
  - Selection of 2 to 10 Vdc control signal
- Mechanical range adjustment capability
- Easily visible position indicator
- Precabled
- UL60730, cUL (C22.2 No. 24-93) and CE listed
- Brushless motor technology
- All modulating types contain built-in feedback

**Options**

- Dual independently adjustable auxiliary switches
- Adjustable offset/span

**Applications**

The OpenAir GEB Series Damper Actuators are ideal for Constant or Variable Air Volume installations for the control of return air, mixed air, exhaust, and face and bypass dampers that require up to 132 lb.-in. of torque.
Specifications/Product Ordering

**Power Supply**
- 24 Vac

**Operating Voltage**
- 24 Vac ±20%

**Frequency**
- 50/60 Hz

**Runtime for 90°**
- 125 seconds (60 Hz)
- 150 seconds (50 Hz)

**Power Consumption**
- **GEB16x.1x**
  - Running: 5 VA/4W
  - Holding: 1 VA
- **GEB13 x.1x**
  - Running: 3 VA/3W
  - Holding: 1 VA

**Equipment Rating (24 Vac)**
- Class 2 per UL/CSA

**Control Signal**
- Input Signal (wires 8-2): GEB16x.xx
- Voltage Input: 0 to 10 Vdc or 2 to 10 Vdc (max. 35 Vdc)
- Input Resistance: >100K Ohms

**Feedback Signal**
- Position output signal (wires 9-2): GEB16x.xx
- Voltage Output: 0 to 10 Vdc
- Max. Output Current: ±1 mA

**Control Signal Adjustment**
- Offset (Start Point): 0 to 5 Vdc
- Factory Setting: 0 V
- Span: 2 to 30 Vdc
- Factory Setting: 30 V

**Dual Auxiliary Switch**
- Contact Rating: 24 to 250 Vac
- AC Rating: 120 VAC
- DC Rating: 120 VDC
- Controller Rating: AC 6A Resistive, AC 2A General Purpose

**Plenum Cable**
- 4A resistive, 2A, General Purpose
- Voltage: 24 to 250 Vac

**Switch Range**
- **Switch A**
  - 0 to 90° with 5° intervals
- **Switch B**
  - 0 to 90°
  - Recommended Range: 45 to 90°
- Switching Hysteresis: 2°

**Position Feedback**
- **GEB132.1U**
  - 0 to 1000 Ohms <10 mA

**Torque**
- Running Torque: 132 lb.-in. (16 Nm)
- Spring Return Torque: 132 lb.-in. (16 Nm)
- Max. Torque: >265 lb.-in. (30 Nm)

**Nominal Angle of Rotation**
- 90°, 95° max.

**Shaft Dimensions**
- 1/4 to 3/4-in. (6 to 20.5 mm) Dia.
- 1/4 to 1/2-in. (6 to 13 mm) Sq.

**Min. Shaft Length**
- 3/4-in. (20 mm)

**Temperature**
- Operating: -25 to +130°F (-32 to +55°C)
- Storage: -40 to +158°F (-40 to +70°C)

**Humidity**
- 95% RH, non-condensing

**Pre-cabled Connection**
- 18 AWG, 3 ft. (0.9 m) long

**Housing**
- Enclosure: NEMA 1
- Material: Die-cast Aluminum alloy
- Gear Lubrication: Silicone free

**Agency Certifications**
- UL60730, (Replaces UL873)
- cUL C22.2 No. 24-93
- CE

**Dimensions**
- 8.38” H x 3.25” W x 2.67” D (212 mm H x 83 mm W x 68 mm D)

**Shipping Weight**
- 2.2 lbs. (1.0 kg)

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Refer to page E-9 for Dimensions.

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GBB Series

Non-spring Return Rotary Electric Damper Actuator

**Description**

Designed for control of building HVAC dampers, the OpenAir GBB Series Direct-coupled 24 Vac Non-spring Return Electric Damper Actuators are available in 0 to 10 Vdc and three-position control.

**Features**

- Brushless motor technology with stall protection
- Self-centering shaft coupling
- Rugged all metal housing
- Quiet, low-power operation
- Accepts shaft diameters up to 1" (25 mm)
- Manual override
- Assembled in the U.S.A.
- UL, cUL and CE listed

**Options**

- Independently adjustable dual auxiliary switches
- Adjustable offset and span
- Potentiometer for 3-position models

**Applications**

The OpenAir GBB Series Damper Actuators are used in Constant or Variable Air Volume installations for the control of return air, mixed air, exhaust, and face and bypass dampers that require up to 221 lb.-in. (25 Nm) torque.

Models are available with either an appliance cable for wiring in conduit or a plenum-rated cable for applications where conduit is not required.

**Easily Replaces:**

- Belimo SM/AM Series

---

221 lb.-in. torque
0 to 10 Vdc, Modulating Control
3-position Control

GBB Series Non-spring Return Electric Damper Actuator.

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### Specifications/Product Ordering

**Operating Voltage** .......................................................... 24 Vac ± 20%
**Frequency** ................................................................. 50 to 60 Hz
**Power Consumption**
- 0-10 Vdc ................................................................. 8 VA
- 3-position ................................................................. 7 VA
**Input Signal (8–2)**
- Voltage-input .................................................. 0 to 10 Vdc (max. 35 Vdc)
- Input Resistance ...................................................... 100 K Ohms
**Position Output Signal (9–2)**
- Voltage-output ............................................... 0 to 10 Vdc
- Max. Output Current ................................................ ±1 mA
**Equipment Rating for Operating Voltage** ......................... Class 2
**Runtime for 90° Opening or Closing** .............................
- 60 Hz ................................................................. 125 sec.
- 50 Hz ................................................................. 150 sec.
**Nominal Angle of Rotation** ............................................... 90°
**Max. Angular Rotation** ..................................................... 95°
**Dual Auxiliary Switch**
**Contact Rating**
- Standard Cable .................................................. 6 A resistive, 2 A General Purpose
- Plenum Cable ..................................................... 4 A resistive, 2 A General Purpose
**Voltage**
- Standard Cable .................................................. 24 to 250 Vac
- Plenum Cable ...................................................... 24 Vac
**Switch Range**
- Switch A .......................................................... 0 to 90° with 5° intervals
- Switch B .......................................................... 0 to 45°
**Recommended Range** .............................................
- 0 to 90° with 5° intervals
- 45 to 90°
**Switching Hysteresis** .................................................. 2°

**Position Feedback** ...................................................... 0 to 1000 Ohm <10 mA
**Torque** ................................................................. 221 lb.-in. (25 Nm)
**Temperature**
- Operating ......................................................... -25 to +130°F (-32 to +55°C)
- Storage and Transport ...................................... -40 to +158°F (-40 to +70°C)
**Humidity** .......................................................... 95% RH, non-condensing
**Agency Approvals** ..................................................
- UL 873
- cUL C22.2 No. 24-93
- CE
**Shaft Size** .......................................................... 3/8 to 1-in. (8 to 25 mm) Dia.
- 1/4 to 5/8-in. (6 to 16 mm) Sq.
**Min. Shaft Length** .................................................. 3/4-in. (20 mm)
**Housing Enclosure** .................................................. NEMA 2*
**Material** .......................................................... Die-cast aluminum alloy
**Cable Length** .......................................................... 3 ft. (0.9 m)
**Dimensions** .......................................................... 12" H x 4.75" W x 2.88" D
- (305 mm H x 121 mm W x 73 mm D)
**Shipping Weight** .................................................. 4.4 lb. (2.0 kg)

*Refer to Installation Instructions for acceptable mounting positions.

---

### Accessories & Service Kits

**GBB Series**

<table>
<thead>
<tr>
<th>Input Signal</th>
<th>Cabling</th>
<th>Standard</th>
<th>Options</th>
<th>Dual Aux. Switches Only</th>
<th>Dual Aux. &amp; Service Kits</th>
<th>Dual Aux. &amp; Service Kits</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 10 Vdc</td>
<td>Standard</td>
<td>GBB161.1U</td>
<td>GBB163.1U</td>
<td>GBB164.1U</td>
<td>GBB166.1U</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>Plenum Cable</td>
<td>GBB161.1P</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
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<tr>
<td>3-position</td>
<td>Standard</td>
<td>GBB131.1U</td>
<td>—</td>
<td>—</td>
<td>GBB136.1U</td>
<td>GBB132.1U</td>
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<tr>
<td></td>
<td>Plenum Cable</td>
<td>GBB131.1P</td>
<td>—</td>
<td>—</td>
<td>GBB136.1P</td>
<td>GBB132.1P</td>
</tr>
</tbody>
</table>

Refer to page E-13 for Dimensions.
GIB Series

Non-spring Return Electric Damper Actuator

Easily Replaces:

- Belimo GM Series

310 lb.-in.
0 to 10 Vdc, Modulating Control
3-position Control

Description

The OpenAir GIB Series Direct-coupled 24 Vac Non-spring Return Electric Actuators are designed for modulating and three-position control of building HVAC dampers.

Features

- Visible position indication
- Unique self-centering shaft coupling
- Rugged all metal housing
- Shaft diameters up to 1-inch (25 mm)
- All modulating types include built-in feedback
- Brushless motor technology
- Assembled in the U.S.A.
- Manual Override
- Tandem mount capability with standard GIB actuators

Options

- Independently adjustable dual auxiliary switches
- Adjustable offset and span
- Potentiometer for 3-position models

Applications

The OpenAir GIB Series Damper Actuators are used in Constant or Variable Air Volume installations for the control of return air, mixed air, exhaust, and face and bypass dampers requiring up to 310 lb.-in. (35 Nm) torque.

Models are available with either an appliance cable for wiring in conduit or a plenum-rated cable for applications where conduit is not required.
Specifications/Product Ordering

Operating Voltage (1–2) .................................................. 24 Vac ±20%
Frequency ................................................................. 50/60 Hz
Power Consumption 0-10 Vdc ........................................ 8 VA
3-position ................................................................. 7 VA
Input signal (8–2) Voltage-Input ........................................ 0 to 10 Vdc
Input Resistance ....................................................... 100K Ohms
Position Output Signal (9–2) Voltage-Output ....................... 0 to 10 Vdc
Max. Output Current .................................................. 1 mA
Equipment Rating for Operating Voltage, Input Signal, and Position Output Signal ......................... Class 2
Control Signal Adjustment Offset (Start Point) ................... Between 0 to 5 Vdc
Factory Setting ......................................................... 0 V
Span .......................................................................... Between 2 to 30 Vdc
Dual Auxiliary Switch Contact Rating
Standard Cable ......................................................... 6 A resistive, 2 A General Purpose
Plenum Cable ......................................................... 4 A resistive, 2 A General Purpose
Voltage Standard Cable .............................................. 24 to 250 Vac
Plenum Cable .......................................................... 24 Vac
Switch Range Switch A .................................................. 0 to 90° with 5° intervals
Factory Setting ......................................................... 0 to 45°
Switch B ................................................................. 0 to 90° with 5° intervals
Recommended Range Usage ................................. 45 to 90°
Factory Setting ......................................................... 85°
Switching Hysteresis .................................................. 2°
Position Feedback ..................................................... 0 to 1000 Ohm <10 mA

Function
Torque ......................................................................... 310 lb.-in. (35 Nm)
Runtime for 90° Opening or Closing
60 Hz ................................................................. 125 sec
50 Hz ................................................................. 150 sec
Nominal Angle of Rotation ........................................ 90°
Max. Angular Rotation .............................................. 95°
Noise Level .............................................................. <45 dBA
Shaft Dimensions ..................................................... 3/8 to 1-in. (8 to 26 mm) Dia.
1/4 to 1/2-in. (6 to 16 mm) Sq.
Min. Shaft Length ...................................................... 3/4-in. (20 mm)
Housing
Enclosure ................................................................. NEMA 2*
Material ................................................................. Die-cast Aluminum alloy
Temperature
Operation ............................................................... -25 to +130°F (-32 to +55°C)
Storage and Transport ........................................... -40 to +158°F (-40 to +70°C)
Humidity ............................................................... 95% RH, non-condensing
Agency Approvals .................................................... UL873
cUL C22.2 No. 24-93
CE
Pre-cabled Connection ............................................... AWG 18
Cable Length .......................................................... 3 ft. (0.9 m)
Dimensions ................................................................ monthly
Shipping Weight ...................................................... 4.4 lb. (2.0 kg)

*Refer to the Installation Instructions for acceptable mounting positions.

Refer to page E-13 for Dimensions.

<table>
<thead>
<tr>
<th>GIB Series</th>
<th>Input Signal</th>
<th>Cabling</th>
<th>Standard</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Span/Offset Adjustable</td>
<td>Dual Aux. Switches &amp; Span/Offset Adjustable</td>
</tr>
<tr>
<td>0 to 10 Vdc</td>
<td>Standard</td>
<td>GIB161.1U</td>
<td>GIB163.1U</td>
<td>GIB164.1U</td>
</tr>
<tr>
<td></td>
<td>Plenum Cable</td>
<td>GIB161.1P</td>
<td>GIB163.1P</td>
<td>GIB164.1P</td>
</tr>
<tr>
<td>3-position</td>
<td>Standard</td>
<td>GIB131.1U</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>Plenum Cable</td>
<td>GIB131.1P</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

www.usa.siemens.com/hvaccomponents
GND Series

Electric Damper Actuator

Designed for UL Listed Fire/Smoke and Smoke Control Dampers

53 lb.-in.
2-position, 15-second Run Time
15-second Spring Return Time

Description

Intended for use on UL listed smoke control dampers and combination fire/smoke rated dampers, the OpenAir GND Series Direct Coupled, Fast-Acting, Two-position, Spring Electronic Actuators are available in 24 Vac/dc, 120 Vac, and 230 Vac models.

Features

• Optional built-in auxiliary switches: Fixed switch points at 5° and 85° rotation
• Optional built-in Electronic Fusible Link (EFL) capability with four temperature ratings: 165°F (74°C), 212°F (100°C), 250°F (121°C), 350°F (177°C)
• Reversible fail-safe spring return
• All metal housing
• Pre-cabled Teflon® insulated lead wires
• Fifteen-second operation at rated torque, temperature and voltage.

Applications

The GND Series Spring Return Electronic Actuator is used for the control of dampers requiring up to 53 lb-in (6Nm) driving torque. It is intended for control of UL listed smoke control dampers and combination fire/smoke HVAC dampers. This actuator is designed to meet the 2002 revisions to the UL 555/555S and the AMCA Standard 520 specifications.
### Specifications/Product Ordering

**Operating Voltage**
- 24 Vac ±20%
- 24 Vdc ±20%, -10%
- 120 Vac ±10%
- 230 Vac ±10%

**Frequency**
50/60 Hz

**Power Consumption**
- Running: 20 VA/12W
- Holding: 8 VA/6W

**Power Consumption**
- 120 Vac/230 Vac
  - Running and Holding: 20 VA/9VA

**Torque**
- Running Torque: 53 lb.-in. (6 Nm) (minimum)
- Stall Torque (minimum): 160 lb.-in. (18 Nm)
- Runtime for 90°: 15 sec. nominal
- Closing (on power loss) with Spring Return: 15 sec. Max.
- Nominal Angle of Rotation: 95°

**Life Expectancy**
Minimum 35,000 full stroke cycles

**Mounting**
- Damper Shaft Size: 0.5” (12.7 mm) round
- Damper Shaft Length, Minimum: 1.4” (36 mm)

**Housing**
- Enclosure: NEMA 1
- Material: Die-cast Aluminum alloy

**Temperature**
- Operation: 0 to 140°F (-18 to +60°C)
- One time: 350°F (177°C)
- Storage and Transport: -40 to +158°F (-40 to +70°C)
- Humidity: Max. 95% RH, non-condensing
- Teflon Cable: 400°F (200°C)

**Agency Certification**
- UL 873
- cUL C22.2 No. 24-93
- AS/NZS 2064 1/2:1997
- Conforms to CE requirements for the EMC and low voltage directives
- Australian Electromagnetic Compatibility (EMC) per AS/NZS 4251.1/2:1999 (C-tick)
- UL 508

**Pre-cabled Connection**
- 18 AWG, 3 ft. (0.9 m)
- 3/8” (0.5mm) flexible conduit connector

**Dimensions**
- 9” H X 3.25” W X 3” D
- (229 mm H X 83 mm W X 76 mm D)

**Shipping Weight**
0.4 lb. (1.8 kg)

*Refer to the Installation Instructions for acceptable mounting positions.

---

### Electronic Fusible Links

<table>
<thead>
<tr>
<th>Temperature Range</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>165°F (74°C)</td>
<td>ASK79.165</td>
</tr>
<tr>
<td>212°F (100°C)</td>
<td>ASK79.212</td>
</tr>
<tr>
<td>250°F (121°C)</td>
<td>ASK79.250</td>
</tr>
<tr>
<td>350°F (177°C)</td>
<td>ASK79.350</td>
</tr>
</tbody>
</table>

**Ordering Note**
- EFL Electronic Fusible Links must be ordered separately (see table below).
- All products are available in bulk packages of 10. Add /B to part number to order a bulk pack.
Dimensions

GND Series OpenAir Damper Actuator

Dimensions shown in inches (mm).
TECH TIPS

To carry the UL555 and UL555S ratings, the fire/smoke damper manufacturer must test, manufacture and sell the damper and actuator as an assembly. Field replacement of fire/smoke damper actuators falls under the local authority having jurisdiction. The Authority Having Jurisdiction (AHJ) is the person or organization that approves the application of the product. The degree to which the AHJ controls the approval process varies according to local codes.
GGD Series

Electric Damper Actuator

Designed for UL Listed Fire/Smoke and Smoke Control Dampers

142 lb.-in. torque
2-position, 15-second Runtime
15-second Spring Return Time

Description

Intended for use on UL listed smoke control dampers or combination fire/smoke rated dampers, the OpenAir GGD Series Direct-coupled, Fast Acting, Two-position, Spring Return Electronic Actuators are available in 24 Vac, 115 Vac, and 230 Vac models.

Features

- High temperature rated drive system
- Reversible fail-safe spring return
- All metal housing
- Teflon® insulated lead wires
- Mechanical range adjustment
- Multiple shaft couplings available; will accommodate up to 1.05-inch shafts
- 15 second nominal open time
- 15 second nominal spring return time
- 24, 115 and 230 Vac models

Applications

The GGD Series Spring Return Actuator is used for the control of dampers requiring up to 142 lb.-in. (16Nm) driving torque. It is intended for control of UL listed smoke control dampers or combination fire/smoke HVAC dampers. This actuator is designed to meet the 2002 revisions to the UL 555S rating up to 350°F (177°C) and AMCA 500-D specifications.
### Specifications/Product Ordering

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
</table>
| Operating Voltage             | 24 Vac ±20%  
115 Vac ±15%  
230 Vac ±10%                |
| Frequency                     | 50/60 Hz                                                             |
| Power Consumption             | Running: 150 VA  
Holding: 10 VA                                                    |
| Torque                        | Running: 142 lb.-in. (16 Nm)  
Spring Return: 108 lb.-in. (12 Nm)  
Minimum Stall: 350 lb.-in. (39 Nm) |
| Runtime for 90°               | Operating with motor at 60 Hz: 15 seconds nominal  
Closing (on power loss) with spring return: 15 seconds maximum |
| Nominal Angle of Rotation     | 95°                                                                    |
| Life Expectancy               | Minimum 35,000 full stroke cycles                                    |
| Damper Shaft Size             | Standard: 3/8 to 1-in. (8 to 25.6 mm)  
Oversized: 1.05-in. max. (26.6 mm)   |
| Min. Shaft Length             | 3/4-in. (20 mm)                                                        |
| Housing                       | Enclosure: NEMA 1  
Material: Die-cast Aluminum alloy                                  |
| Temperature                   | Operation: 0 to 130°F (-18 to +55°C)  
One time 350°F (177°C) for 1/2 hour (per UL555S)  
Storage and Transport: -25 to +158°F (-32 to +70°C) |
| Humidity                      | Maximum 95% RH, non-condensing                                       |
| Agency Certifications         | UL listed to UL873  
C-UL cert. to Canadian standard C22.2 No. 24-93  
Australian EMC Framework (C-tick) with the limits per AS/NZS 2064 1/2:1997 |
| Pre-cabled Connection         | AWG 18                                                                |
| Dimensions                    | 12" H x 4.76" W x 2.88" D  
(305 mm H x 120 mm W x 72 mm D)                                    |
| Shipping Weight               | Single Pack: 7.0 lbs. (3.2 kg)  
Bulk Pack: 56 lbs. (25.4 kg)                                        |

### Description and Adapter Options

<table>
<thead>
<tr>
<th>Description</th>
<th>Rotation</th>
<th>Shaft Adapter</th>
<th>24 Vac</th>
<th>115 Vac</th>
<th>230 Vac</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard</td>
<td>95°</td>
<td>Self-centering</td>
<td>GGD121.1U</td>
<td>GGD221.1U</td>
<td>GGD321.1U</td>
</tr>
<tr>
<td>Standard/Bulk</td>
<td>95°</td>
<td>Self-centering</td>
<td>GGD121.1U/B</td>
<td>GGD221.1U/B</td>
<td>GGD321.1U/B</td>
</tr>
<tr>
<td>Standard</td>
<td>95°</td>
<td>Oversized</td>
<td>GGD121.3U</td>
<td>GGD221.3U</td>
<td>—</td>
</tr>
<tr>
<td>Standard/Bulk</td>
<td>105°</td>
<td>Self-centering</td>
<td>GGD121.1U/BR/B</td>
<td>GGD221.1U/BR/B</td>
<td>—</td>
</tr>
</tbody>
</table>

**Ordering Note**: Bulk packages contain 8 actuators.
Dimensions

GGD Series OpenAir Damper Actuator

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### OpenAir Part No. Nomenclature

<table>
<thead>
<tr>
<th>Type</th>
<th>Nomenclature</th>
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</thead>
<tbody>
<tr>
<td>Non-Spring Return 221 lb-in.</td>
<td>B</td>
</tr>
<tr>
<td>Spring Return 142 lb-in.</td>
<td>C</td>
</tr>
<tr>
<td>Non-Spring Return 44 lb-in.</td>
<td>D</td>
</tr>
<tr>
<td>Non-Spring Return 132 lb-in.</td>
<td>E</td>
</tr>
<tr>
<td>Fire and Smoke 142 lb-in.</td>
<td>G</td>
</tr>
<tr>
<td>Non-Spring Return 310 lb-in.</td>
<td>I</td>
</tr>
<tr>
<td>Non-Spring Return 88 lb-in.</td>
<td>L</td>
</tr>
<tr>
<td>Spring Return 62 lb-in.</td>
<td>M</td>
</tr>
<tr>
<td>Fire and Smoke 53 lb-in.</td>
<td>N</td>
</tr>
<tr>
<td>Spring Return 20 lb-in.</td>
<td>Q</td>
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</table>

<table>
<thead>
<tr>
<th>Running Time</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>90 sec.</td>
<td>A</td>
</tr>
<tr>
<td>150(125) s AT 50(60) Hz</td>
<td>B</td>
</tr>
<tr>
<td>60 s</td>
<td>C</td>
</tr>
<tr>
<td>15 s</td>
<td>D</td>
</tr>
<tr>
<td>108(90) s AT 50(60) Hz</td>
<td>E</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Voltage</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>24 Vac</td>
<td>1</td>
</tr>
<tr>
<td>120 Vac</td>
<td>2</td>
</tr>
<tr>
<td>230 Vac</td>
<td>3</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Functionality</th>
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<td>2PT</td>
<td>2</td>
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<tr>
<td>3PT</td>
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<tr>
<td>Modulating with Signal Inversion (0...10V or 2...10V)</td>
<td>5</td>
</tr>
<tr>
<td>Modulating (0...10V)</td>
<td>6</td>
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</table>

<table>
<thead>
<tr>
<th>Optional Features</th>
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<tbody>
<tr>
<td>Standard Version</td>
<td>1</td>
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<tr>
<td>Potentiometer 1 K Ohm</td>
<td>2</td>
</tr>
<tr>
<td>Signal adjustable</td>
<td>3</td>
</tr>
<tr>
<td>Switches+Signal adjustable</td>
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</tr>
<tr>
<td>Switches</td>
<td>6</td>
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</table>

<table>
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<tr>
<th>Action</th>
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<tr>
<td>Rotary Self-Centering Shaft Adapter</td>
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</table>

<table>
<thead>
<tr>
<th>Cabling</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard USA 3 ft. Cable</td>
<td>U</td>
</tr>
<tr>
<td>Plenum USA 3 ft. Cable</td>
<td>P</td>
</tr>
</tbody>
</table>
No. 3 Pneumatic Actuator

Description
Designed with a 2-3/8-inch (60 mm) stroke, the No. 3 Pneumatic Actuator is a rugged, metal-fabricated device that provides gradual or positive actuation of HVAC dampers. The actuator is available in a variety of spring ranges for energy optimizing and sequencing with other devices.

Features
- Ozone-resistant rolling rubber diaphragm
- Variety of installation options, including:
  - Fixed bracket mounting
  - Direct front mounting
  - Pivot mounting for extended shaft
- Available with positioning relay

Applications
Recommended for control of mixing box dampers or air valves and damper control for unit ventilators, unit conditioners and small HVAC systems, the No. 3 Pneumatic Actuator is also available with 2-3/4-inch (70 mm) stroke in the three spring ranges.

For more information, contact your local Siemens Building Technologies representative.

<table>
<thead>
<tr>
<th>Thrust/Torque Ratings</th>
<th>Max. Thrust lb. (N)</th>
<th>Torque Rating lb.-in (Nm)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Full Stroke Forward</td>
<td>Spring Return (No Stroke)</td>
</tr>
<tr>
<td></td>
<td>15 psi (103 kPa)</td>
<td>18 psi (124 kPa)</td>
</tr>
<tr>
<td>3 to 7 psi (21 to 48 kPa)</td>
<td>64 (285)</td>
<td>88 (391)</td>
</tr>
<tr>
<td>5 to 10 psi (35 to 69 kPa)</td>
<td>40 (178)</td>
<td>64 (285)</td>
</tr>
<tr>
<td>8 to 13 psi (55 to 90 kPa)</td>
<td>16 (71)</td>
<td>40 (178)</td>
</tr>
</tbody>
</table>

With maximum hysteresis of 2.5 psi (17.2 kPa) @ 90° rotation.
Specifications/Product Ordering

Effective Diaphragm Area ................................................. 8 in.\(^2\) (51.5 cm\(^2\))
Stroke ........................................................................... 2-3/8-in. (60 mm)
Max. Air Pressure ......................................................... 30 psig (210 kPa)
Nominal Spring Ranges ................................................. 3 to 7 psi (21 to 50 kPa) 5 to 10 psi (35 to 69 kPa) 8 to 13 psi (55 to 90 kPa)

Ambient Temperature Range
Operating ........................................................ 35 to +140°F (2 to 60°C)
Storage ......................................................-20 to +140°F (-29 to +60°C)

Materials
Housing (totally enclosed) ................................................... Aluminum
Stem ................................................................................... Plated Steel
Diaphragm ............................................................. Ozone-resistant EPT rubber
Spring .................................................................................... Steel
Bearing ......................................................................................... Delrin

Air Connection .............................................................. 1/8" NPT Female with a straight dual barb fitting for 1/4" (6 mm) OD tubing

Type of Mounting ...................................................... Front, bracket, pivot, extended shaft
Shipping Weight (Actuator only) .................................. 1.3 lb. (0.58 kg)

Ordering Note
• When the actuator is ordered with Extended Shaft Mounting, the mounting plate, pivot post and hardware, clevis, damper crank, rocker arm and all screws/nuts are included. Order other frame mounting accessories as required if not supplied by damper manufacturer.

Accessories & Service Kits

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Nos.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actuator</td>
<td>331-4310</td>
</tr>
<tr>
<td>Actuator, Bracket</td>
<td>331-4313</td>
</tr>
<tr>
<td>Actuator, Bracket, Clevis</td>
<td>331-4314</td>
</tr>
<tr>
<td>Actuator, Integral Pivot</td>
<td>331-4312</td>
</tr>
<tr>
<td>Actuator, Integral Pivot with pivot post. Mounted on plate for extended shaft with Clevis and Crank for 3/8&quot; (10 mm), 7/16&quot; (11 mm), 1/2&quot; (13 mm) diameter shaft.</td>
<td>331-4311</td>
</tr>
<tr>
<td>Actuator, Integral Pivot with pivot post. Mounted on plate for extended shaft with Clevis and Crank for 3/8&quot; (10 mm), 7/16&quot; (11 mm), 1/2&quot; (13 mm) diameter shaft.</td>
<td>331-4511</td>
</tr>
<tr>
<td>Actuator, Bracket, ball joint connector Fixed</td>
<td>331-4331</td>
</tr>
<tr>
<td>Actuator, Bracket, ball joint connector with Positioning Relay</td>
<td>331-4331</td>
</tr>
</tbody>
</table>

Dimensions shown in inches (mm).

No. 4 Pneumatic Actuator

**Description**

Designed with a 4-inch (102 mm) stroke, the No. 4 Pneumatic Actuator is a rugged, metal-fabricated device that provides gradual or positive actuation of HVAC and fire/smoke dampers.

**Features**

- Replaceable diaphragm
- Positioning relay (optional)
- Forward travel stops (optional)
- Hesitation model (provides minimum ventilation without separate damper/actuator)
- Variety of spring ranges for sequencing with other control devices
- Stainless steel actuator shaft

**Applications**

Recommended for control of outdoor, return air, exhaust, face and bypass, fan discharge, and static pressure control dampers, the No. 4 Pneumatic Actuator also is excellent for controlling specialized dampers and air valves in terminal units, such as unit ventilators and mixing boxes.

The No. 4 actuator hesitation model is frequently used to operate the outdoor air damper on unit ventilators and mixing boxes.

An actuator marked with an asterisk (*) is a component recognized under UL's Damper Actuator category (EMKU2) for use on fire dampers and leakage-related dampers.

**Max. 121 Thrust lb. (N)**

<table>
<thead>
<tr>
<th>Thrust/Torque Ratings</th>
<th>Spring Return (0 psig)</th>
<th>Spring Return (No Stroke)</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 psi (103 kPa)</td>
<td>18 psi (124 kPa)</td>
<td>25 psi (172 kPa)</td>
</tr>
<tr>
<td>3 to 7 psi</td>
<td>88 (391)</td>
<td>121 (538)</td>
</tr>
<tr>
<td>3 to 10 psi (21 to 48 kPa)</td>
<td>22 (198)</td>
<td>55 (245)</td>
</tr>
<tr>
<td>5 to 10 psi</td>
<td>55 (245)</td>
<td>88 (391)</td>
</tr>
<tr>
<td>8 to 13 psi</td>
<td>55 (245)</td>
<td>88 (391)</td>
</tr>
<tr>
<td>2 to 3, 8 to 13 psi</td>
<td>55 (245)</td>
<td>132 (587)</td>
</tr>
</tbody>
</table>

**Torque Rating lb.-in. (Nm)**

<table>
<thead>
<tr>
<th>Gradual Operation</th>
<th>15 psi (103 kPa)</th>
<th>18 psi (124 kPa)</th>
<th>25 psi (172 kPa)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 to 7 psi</td>
<td>46 (5.2)</td>
<td>46 (5.2)</td>
<td>46 (5.2)</td>
</tr>
<tr>
<td>3 to 10 psi</td>
<td>46 (5.2)</td>
<td>46 (5.2)</td>
<td>46 (5.2)</td>
</tr>
<tr>
<td>5 to 10 psi</td>
<td>77 (8.7)</td>
<td>77 (8.7)</td>
<td>77 (8.7)</td>
</tr>
<tr>
<td>8 to 13 psi</td>
<td>123 (14)</td>
<td>123 (14)</td>
<td>123 (14)</td>
</tr>
<tr>
<td>2 to 3, 8 to 13 psi</td>
<td>23 (2.6)</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

With maximum hysteresis of 2.5 psi (17.2 kPa) @ 90° rotation.
Specifications/Product Ordering

Effective Diaphragm Area: 11 in.² (71 cm²)
Stroke: 4-in. (102 mm)
Stroke (hesitation models): 3-in. (76 mm)
Max. Air Pressure: 30 psig (207 kPa)
Nominal Spring Ranges:
- 3 to 7 psi (21 to 48 kPa)
- 3 to 13 psi (21 to 90 kPa)
- 5 to 10 psi (35 to 69 kPa)
- 8 to 13 psi (55 to 90 kPa)
Nominal Spring Range (hesitation model): 2 to 3, 8 to 13 psi (14 to 21, 55 to 90 kPa)

Temperature Range
- Operating: 35 to 140°F (2 to 60°C)
- Storage: -20 to +140°F (-29 to +60°C)

Materials
- Housing (totally enclosed): Steel, electro-coated epoxy
- Shaft: Stainless Steel
- Diaphragm: EDPM Rubber
- Spring: Steel
- Bearing: Delrin
- Air Connection: 1/8" NPT Female with a dual barb elbow fitting for 1/4" (6 mm) OD tubing

Type of Mounting: Front, bracket, pivot; universal (extended shaft or frame mount)

Shipping Weight (Actuator only): 3.66 lb. (1.66 kg)

Ordering Notes
1. When the actuator is ordered with universal mounting, mounting plate, pivot post and hardware, clevis, damper crank, rocker arm, and all screws/nuts are included. Order other frame mounting accessories as required if not supplied by manufacturer.
3. Siemens No. 4 Pneumatic Damper Actuator contains a diaphragm with EDPM rubber.

Dimensions

Accessories & Service Kits
E-50

Part No. in black box Ships same day when requested through Rapid Response™ shipping. See page 1 for details.
No. 6 Pneumatic Actuator

Description
Designed with a 4-inch (102 mm) stroke, the No. 6 Pneumatic Actuator is a rugged, metal-fabricated device that provides gradual or positive actuation of HVAC and fire/smoke dampers.

Features
- Replaceable diaphragm
- Variety of spring ranges for sequencing with other control devices
- High torque

Options
- Positioning relay
- Forward travel stops

Applications
Recommended for multiple applications, the No. 6 Pneumatic Actuator is excellent for control of outdoor air, return air, mixed air, exhaust, face and bypass, fan discharge, multisection, static pressure control, fan inlet vanes and other special applications.

An actuator marked with an asterisk is recognized under UL's Damper Actuator category (EMKU2) for use on fire dampers and leakage-rated dampers.

<table>
<thead>
<tr>
<th>Thrust/Torque Ratings</th>
<th>Full Stroke Forward</th>
<th>Spring Return (No Stroke)</th>
<th>Gradual Operation</th>
<th>2-position Operation or with Positioner</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>15 psi (103 kPa)</td>
<td>18 psi (124 kPa)</td>
<td>25 psi (172 kPa)</td>
<td></td>
</tr>
<tr>
<td>3 to 8 psi (21 to 55 kPa)</td>
<td>125 (556)</td>
<td>179 (796)</td>
<td>304 (1352)</td>
<td>54 (240)</td>
</tr>
<tr>
<td>3 to 13 psi (21 to 90 kPa)</td>
<td>36 (160)</td>
<td>89 (396)</td>
<td>214 (952)</td>
<td>54 (240)</td>
</tr>
<tr>
<td>8 to 13 psi (55 to 90 kPa)</td>
<td>36 (160)</td>
<td>89 (396)</td>
<td>214 (952)</td>
<td>144 (640)</td>
</tr>
</tbody>
</table>

With maximum hysteresis of 2.5 psi (17.2 kPa) @ 90° rotation.
Specifications/Product Ordering

Effective Diaphragm Area .............................................. 17.9 in.² (115 cm²)
Stroke .............................................................................. 4-in. (102 mm)
Max. Air Pressure .......................................................... 30 psig (207 kPa)
Nominal Spring Ranges ................................................. 3 to 8 psi (21 to 55 kPa)
3 to 13 psi (21 to 90 kPa)
8 to 13 psi (55 to 90 kPa)

Temperature Range
Operating ..................................................-20 to +160°F (-29 to +71°C)
Storage ......................................................-20 to +160°F (-29 to +71°C)

Materials
Housing ................................................................................. Aluminum
Stem ............................................................... Type 416 Stainless Steel
Diaphragm ..................................................................... Silicone Rubber
Spring ............................................................................................. Steel
Bearing ...............................................................................Bronze Oilite

Air Connection ................................................................. 1/8" NPT Female
Type of Mounting ........... Pivot; Universal (extended shaft or frame mount)
Shipping Weight (Actuator only) .................................. 9.0 lb. (4.08 kg)

<table>
<thead>
<tr>
<th>Description</th>
<th>Mounting Style</th>
<th>Nominal Spring Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actuator, Integral Pivot</td>
<td>Pivot</td>
<td>331-2793 331-2794 331-3060</td>
</tr>
<tr>
<td>Actuator, Integral Pivot and Forward Travel Stops</td>
<td>Pivot</td>
<td>— — 331-2988</td>
</tr>
<tr>
<td>Actuator with Clevis</td>
<td>Pivot¹</td>
<td>331-2857 331-2858 331-2856</td>
</tr>
<tr>
<td>Actuator with Clevis and Positioning Relay</td>
<td>Pivot¹</td>
<td>— — 332-2856</td>
</tr>
<tr>
<td>Actuator, Integral Pivot with pivot post. Mounted on plate for extended shaft mounting with Clevis and Crank for 3/8&quot; (10 mm), 7/16&quot; (11 mm) or 1/2&quot; (13 mm) diameter shaft.</td>
<td>Extended Shaft</td>
<td>331-3012 331-3013 331-3011</td>
</tr>
<tr>
<td>Actuator, Integral Pivot with pivot post. Mounted on plate for extended shaft mounting with Clevis and Crank for 3/8&quot; (10 mm), 7/16&quot; (11 mm) or 1/2&quot; (13 mm) diameter shaft.</td>
<td>Extended Shaft Kit with Positioning Relay</td>
<td>— — 332-3011</td>
</tr>
<tr>
<td>Actuator, Extended Temperature Range Model</td>
<td>Pivot</td>
<td>— — 331-3060</td>
</tr>
</tbody>
</table>

Ordering Notes
1. Also order frame mounting kit accessories.
2. When the actuator is ordered with universal mounting, mounting plate, pivot post and hardware, clevis, damper crank, rocker arm and all screws/nuts are included. Order other frame mounting accessories as required if not supplied by damper manufacturer.
4. Siemens No. 6 Pneumatic Damper Actuator contains a diaphragm with silicone rubber. For HVAC applications where products containing silicone are unacceptable, contact your Siemens representative for damper actuators with a silicone-free diaphragm.

Dimensions

Dimensions shown in inches (mm).

www.usa.siemens.com/hvaccomponents
**No. 6 Pneumatic Actuator—Tandem Mounting**

**Description**
A rugged, metal-fabricated device for tandem mounting, the No. 6 Pneumatic Damper Actuator, is piloted by a positioning relay, mounted on a sturdy angle iron frame.

**Features**
- Adjustable spring span and start point
- Spring return actuators
- Replaceable diaphragms

**Applications**
The No. 6 Pneumatic Damper Actuator with tandem mounting is recommended to position inlet vanes on fans or large dampers that use a jack shaft.

**Arm Length vs. Rotation**

<table>
<thead>
<tr>
<th>Arm Length (In.)</th>
<th>Damper Rotation in Degrees</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.3&quot; (58 mm)</td>
<td>120°</td>
</tr>
<tr>
<td>2.8&quot; (71 mm)</td>
<td>90°</td>
</tr>
<tr>
<td>3&quot; (76 mm)</td>
<td>84°</td>
</tr>
<tr>
<td>4&quot; (102 mm)</td>
<td>60°</td>
</tr>
<tr>
<td>5&quot; (127 mm)</td>
<td>47°</td>
</tr>
<tr>
<td>6&quot; (152 mm)</td>
<td>39°</td>
</tr>
<tr>
<td>7&quot; (178 mm)</td>
<td>33°</td>
</tr>
<tr>
<td>8&quot; (203 mm)</td>
<td>29°</td>
</tr>
<tr>
<td>9&quot; (229 mm)</td>
<td>25°</td>
</tr>
</tbody>
</table>

Arm Length Versus Rotation
If the damper rotation is other than 90°, use the Arm Length vs. Rotation Chart and the Thrust and Torque Ratings to determine the actuator assembly torque rating. Then divide the actuator assembly torque rating by the damper torque rating per unit of area for job conditions to determine the damper area that can be controlled. Make sure the torque units used are the same.
Specifications/Product Ordering

Effective Diaphragm Area ............................................... 35.8 in.$^2$ (230 cm$^2$)
Stroke .............................................................................. 4-in. (102 mm)
Max. Air Pressure .......................................................... 30 psig (207 kPa)
Spring Start Point (Adjustable) ................................. 3 to 10 psig (21 to 69 kPa)
Spring Span (Adjustable) ........................................ 3 to 12 psig (21 to 83 kPa)
Spring Range
Factory Setting .......................................................... 8 to 13 psig (55 to 90 kPa)
Temperature Range
Operating ................................................................. -20 to +160°F (-29 to +71°C)
Storage ................................................................. -20 to +160°F (-29 to +71°C)

Materials
Housing ........................................................................ Aluminum
Stem ........................................................................ Type 416SS
Diaphragm ............................................................... Silicone rubber
Spring ................................................................. Steel
Bearing ................................................................. Bronze Oilite
Air Connection .................................................. 1/8” NPT Female
Type of Mounting ........................................ Pivot; Universal (extended shaft for female)
Shipping Weight .............................................................. 30.0 lb. (13.5 kg)

<table>
<thead>
<tr>
<th>Description</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Damper Actuator with Tandem Mounting</td>
<td>331-3070</td>
</tr>
</tbody>
</table>

Dimensions

Dimensions shown in inches (mm).

www.usa.siemens.com/hvaccomponents

SIEMENS
Large Capacity Pneumatic Actuator

Description
Designed to develop very high thrust, the 331 Large Capacity Pneumatic Actuator has the capacity to handle heavy loads.

Features
- Max. 30 psi (207 kPa) inlet pressure
- All mounting hardware included
- Adjustable start point
- Adjustable span

Applications
The 331 Large Capacity Pneumatic Actuator controls large dampers and equipment that requires high operating thrust.

Caution
Actuator cannot be used when spring return to fail safe position is required.
**Specifications/Product Ordering**

- **Air Supply Pressure**: 25 psi (172 kPa)
- **Max. Pressure**: 30 psi (207 kPa)
- **Temperature Range**
  - Operating: 50 to 140°F (10 to 60°C)
  - Storage: -20 to +160°F (-29 to +71°C)
- **Effective Piston Area**: 19.6 in.² (126 cm²)
- **Stroke**: 7-in. (18 cm)
- **Span (adjustable)**: 3 to 12 psi (21 to 83 kPa)
- **Response**: 0.5 psi (3.4 kPa)
- **Torque Rating (90° rotation)**
  - with 25 psig (172 kPa) air supply: 130 lb.-ft. (176 Nm)
- **Spring Start Point (adjustable)**: 3 to 10 psig (21 to 69 kPa)
- **Mounting**: Pivot
- **Air Connection**: 1/8” NPT
- **Shipping Weight**: 35.0 lb. (16.0 kg)

<table>
<thead>
<tr>
<th>Description</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large Capacity Pneumatic Actuator</td>
<td>331-2882</td>
</tr>
</tbody>
</table>

**Dimensions**

Dimensions shown in inches (mm).