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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



B-2

Selection Guide

Square footage is approximate, based on 4 lb-in/ft²

Application	Electronic														Pneumatic*		
	Spring Return							Non-Spring Return							Spring Return		
	GQD 5 ft ²	GPC 8 ft ²	GNP 12 ft ²	GND 12 ft ²	GMA 16 ft ²	GGD 36 ft ²	GCA 40 ft ²	GSD 5 ft ²	GDE 11 ft ²	GAP 12 ft ²	GLB 22 ft ²	GEB 32 ft ²	GBB 55 ft ²	GIB 77 ft ²	No. 3 12 ft ²	No. 4 16 ft ²	No. 6 24 ft ²
Terminal Units	•	•			•			•	•		•				•		
Face and Bypass									•		•					•	
Multi-zone Mixing Boxes							•		•		•		•	•			
Bypass Damper									•		•						
Makeup Air Damper									•		•						
Outside Air Dampers	•	•			•		•	•				•	•	•			
Small Rooftop Units (RTU)	•	•			•			•				•					
Rooftop Units (RTU)							•						•	•	•		
Zone Isolation Dampers	•	•			•		•	•				•	•	•			
Vortex Dampers							•						•	•			
Inlet Vane Dampers							•						•	•			•
Return Air Dampers	•	•			•		•	•				•	•	•			
Unit Ventilators	•	•			•			•									
Central VAV Fans							•									•••	•••
Fire/Smoke Dampers				•		•										•••	•••
Fume Hoods/Supply and Exhaust Dampers			•							•							

*Estimates for pneumatic actuators are based on the maximum stroke of the actuator and a 90° damper rotation

**LC Model

***See data sheets for specific types

Damper Type	Damper Leakage at 1" H ₂ O (240 Pa) Static Pressure	Damper Torque for Approach Air of 1200 ft./min. (6 m/s) or less
Standard Leakage	More than 10 CFM/ft. ² (50.8 l/s per m ²)	2.5 lb.-in./ft. ² (0.3 Nm/m ²)
Low Leakage	5 to 10 CFM/ft. ² (25.4 to 50.8 l/s per m ²)	5.0 lb.-in./ft. ² (0.6 Nm/m ²)
Very Low Leakage	Less than 5 CFM/ft. ² (Less than 25.4 l/s per m ²)	7.0 lb.-in./ft. ² (0.8 Nm/m ²)

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

Electronic Damper Actuators Spring Return

Easily Replaces:

- Belimo TF Series



20 lb.-in. Torque

- 24 Vac/dc, 2-Position (Open/Closed) Control
- 120 Vac, 2-Position (Open/Closed) Control
- 24 Vac/dc, Floating Control
- 24 Vac/dc, 2 to 10 Vdc/10 to 2 Vdc, (Modulating) Control



GQD Series Spring Return
Direct Coupled Electronic Damper Actuator.

Description

The OpenAir GQD Series direct-coupled, spring return electronic damper actuators are 24 Vac/dc and 120 Vac rated and available in 2-position, floating and 2 to 10 Vdc control.

Features

- Bi-directional, fail-safe spring return
- Modulating actuators contain built-in feedback
- 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

Options

- Available with optional built-in dual auxiliary switches fixed at 5° and 85°

Applications

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

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Damper Actuators

Specifications

Operating Voltage 24 Vac/dc $\pm 20\%$
120 Vac $\pm 15\%$

Frequency 50/60 Hz

Power Consumption

GQD121.1P (24 Vac/24 Vdc)
Running 6.5 VA (4.5 W)
Holding 4 VA (2.5 W)

GQD131.1P (24 Vac/24 Vdc)
Running 4 VA (2.5 W)
Holding 3 VA (1.5 W)

GQD151.1P (24 Vac/24 Vdc)
Running 4.5 VA (3 W)
Holding 3.5 VA (2 W)

GQD221.1U (120 Vac)
Running 10 VA
Holding 7 VA

Function

Torque 20 lb.-in. (2 Nm)
Runtime for 90° 30 sec.
Spring Return 15 sec. nominal
Nominal Angle of Rotation 90°

Dual Auxiliary Switches Fixed at 5° and 85°

AC Rating 24 to 250 Vac
AC 6A resistive
AC 2A General Purpose

DC Rating (Standard/Plenum Cable) 12 to 30 Vdc
DC 2A

Shaft Size 3/8 to 1/2-in. (8 to 13.4 mm) round/square ● ■

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

Conduit Connection (GQD221.1U only) 1/2" NPT

Housing Enclosure NEMA 1

Material Plenum rated rugged plastic

Ambient Temperature

Operating -25° to 130°F (-32° to 55°C)
Storage and Transport -40° to 158°F (-40° to 70°C)

Ambient Humidity 95% RH, non-condensing

Agency Approvals UL873, cUL, CE rated

Pre-Cabled Connection AWG 18

Cable Length 3 ft. (0.9m)

Dimensions <4.72" H x <2.75" W x <2.5" D
(<120 mm H x <70 mm W x <63 mm D)

Shipping Weight <1.5 lbs. (<.68 kg)

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Product Ordering

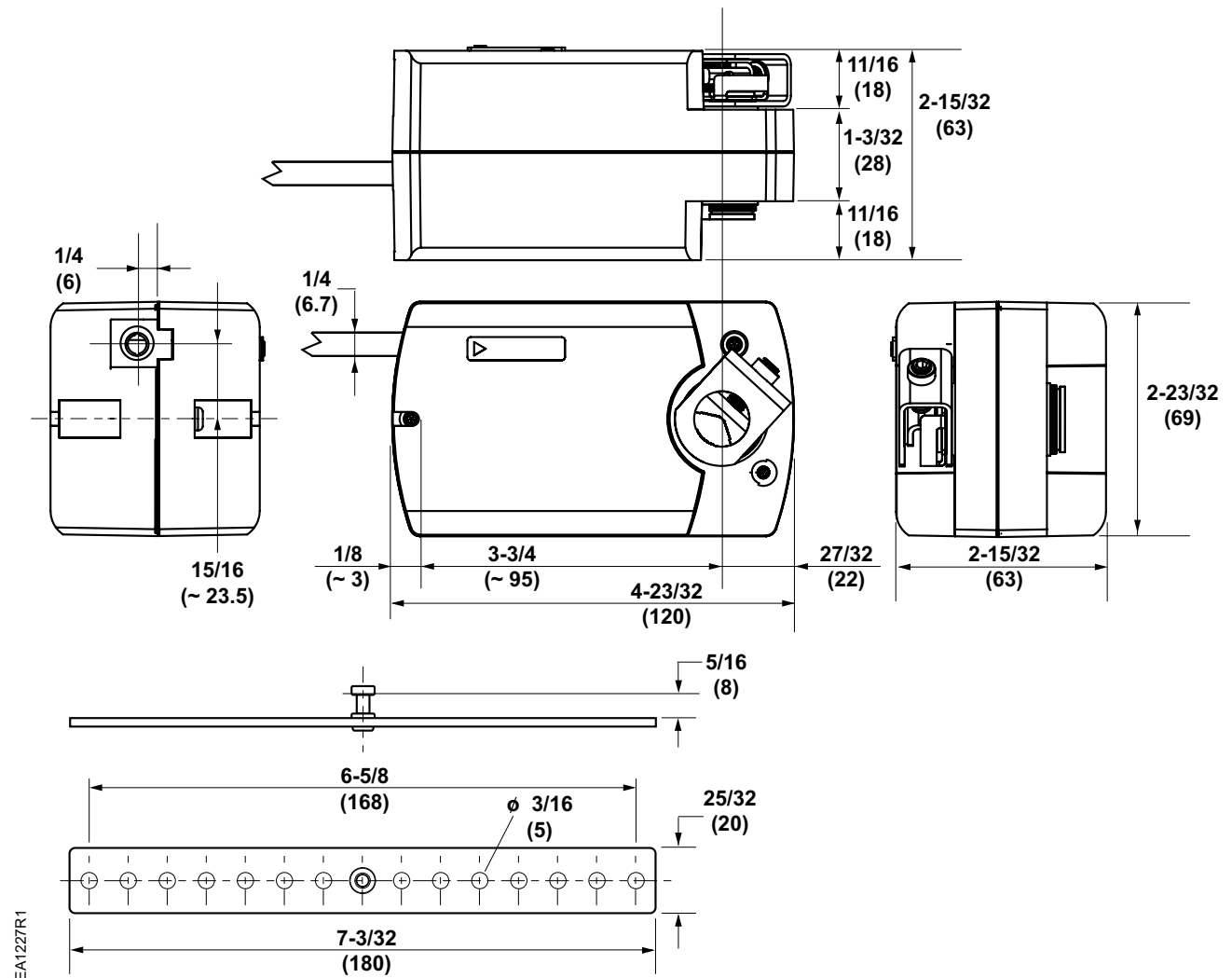
Control Signal	Cabling	Standard	Dual Auxiliary Switches
2-Position (Open/Closed), 24 Vac/dc	Plenum Cable	GQD121.1P	GQD126.1P
	Plenum Cable/Bulk	GQD121.1P/B	—
2-Position (Open/Closed), 120 Vac	Standard Cable	GQD221.1U	GQD226.1U
	Standard Cable/Bulk	GQD221.1U/B	—
Floating, 24 Vac/dc	Plenum Cable	GQD131.1P	GQD136.1P
	Plenum Cable/Bulk	GQD131.1P/B	—
2 to 10 Vdc/10 to 2 Vdc, (Modulating), 24 Vac/dc	Plenum Cable	GQD151.1P	GQD156.1P
	Plenum Cable/Bulk	GQD151.1P/B	—

Ordering Notes:

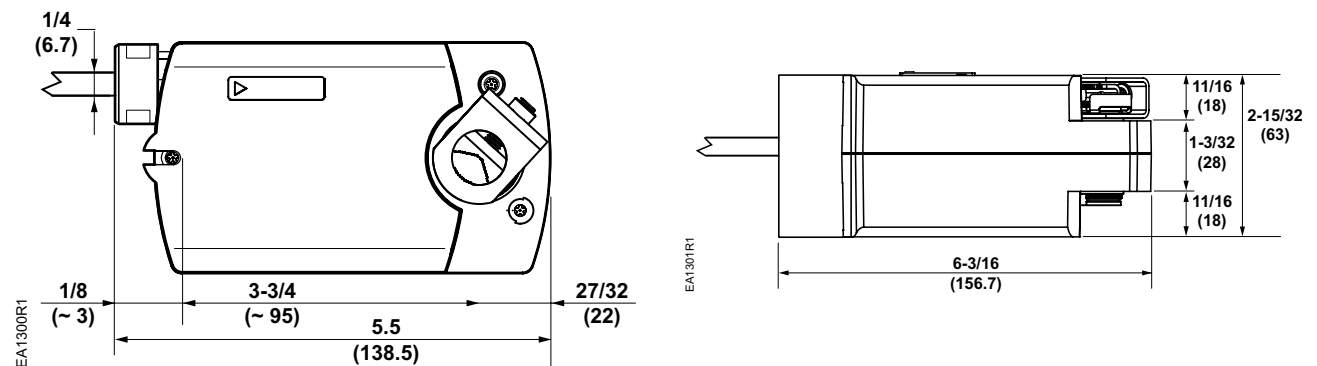
Bulk packages contain 10 actuators unless otherwise noted.

Damper Actuators

GQD Series Open Air Electronic Damper Actuators



Dimensions shown in inches (mm).





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Damper Actuators

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Electronic Damper Actuators Spring Return

NEW!

Easily Replaces:

- Belimo LF Series



35 lb.-in. Torque

- 24 Vac/dc, 2-Position (Open/Closed) Control
- 100 to 240 Vac, 2-Position (Open/Closed) Control
- 24 Vac/dc, Floating Control
- 24 Vac/dc, 0(2) to 10 Vdc/10 to 0(2) Vdc, (Modulating) Control



GPC Series Spring Return
Direct Coupled Electronic Damper Actuator.

Description

The OpenAir GPC Series direct-coupled, spring return electronic damper actuators are 24 Vac/dc and 100 to 240 Vac rated. Available in 2-position, floating and 0(2) to 10 Vdc control.

Features

- Bi-directional, fail-safe spring return
- Selectable modulating control (0 to 10 Vdc or 2 to 10 Vdc)
- Modulating actuators contain built-in feedback (0 to 10 Vdc or 2 to 10 Vdc)
- Pre-cabled
- Integral 1/2 inch conduit connection
- Plenum rated
- Manual override with easy lock function
- 24 Vac/dc compatible
- Flexible 2-position line voltage (100 to 240 Vac)
- Signal inversion capability on modulating type (2 to 10 Vdc/10 to 2 Vdc)
- Small footprint for installation flexibility
- UL, cUL, CE rated
- Very energy efficient

Options

- Available with optional built-in dual auxiliary switches fixed at 5° and 85°

Applications

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

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Damper Actuators



Specifications

Operating Voltage 24 Vac/dc $\pm 20\%$
100-240 Vac (-15/+10%)

Frequency 50/60 Hz

Power Consumption

GPC121.1P (24 Vac/24 Vdc)
Running 4.2 VA (2.7 W)
Holding 2.6 VA (1.6 W)

GPC131.1P (24 Vac/24 Vdc)
Running 4.2 VA (2.7 W)
Holding 2.6 VA (1.6 W)

GPC161.1P (24 Vac/24 Vdc)
Running 3.7 VA (2.2 W)
Holding 2.7 VA (1.5 W)

GPC321.1U (120 Vac)
Running 6.9 VA
Holding 4.8 VA

Function

Torque 35 lb.-in. (4 Nm)
Runtime for 90° 60 sec.
Spring Return 15 sec. nominal
Nominal Angle of Rotation 90°

Dual Auxiliary Switches

Fixed at 5° and 85° AC Rating 24 to 250 Vac
AC 6A resistive
AC 2A General Purpose

DC Rating (Standard/Plenum Cable) 12 to 30 Vdc
DC 2A

Shaft Size 3/8 to 1/2-in. (8 to 13.4 mm) round/square

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

Conduit Connection 1/2" NPT

Housing Enclosure NEMA 1

Material Plenum rated rugged plastic

Ambient Temperature

Operating -25° to 130°F (-32° to 55°C)
Storage and Transport -40° to 158°F (-40° to 70°C)

Ambient Humidity 95% RH, non-condensing

Agency Approvals UL60730, cUL, CE rated

Pre-Cabled Connection AWG 18

Cable Length 3 ft. (0.9m)

Dimensions <5.6" H x <2.83" W x <2.5" D
(<142 mm H x <72 mm W x <63 mm D)

Shipping Weight <1.5 lbs. (<.68 kg)

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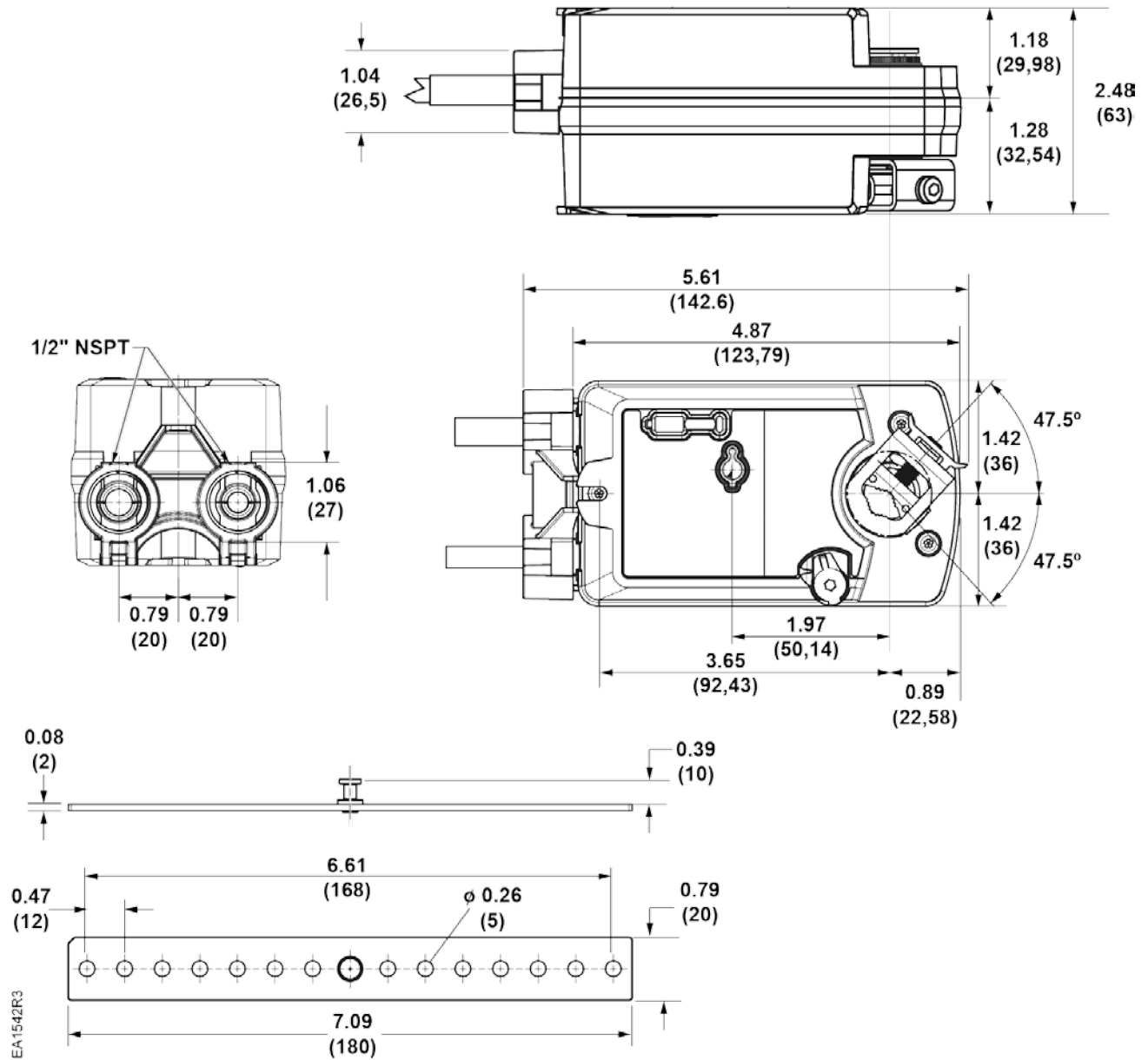
Damper Actuators

Product Ordering

Control Signal	Cabling	Standard	Dual Auxiliary Switches
2-position (Open/Closed), 24 Vac/dc	Plenum Cable	GPC121.1P	GPC126.1P
Floating, 24 Vac/dc	Plenum Cable	GPC131.1P	GPC136.1P
0(2) to 10 Vdc/10 to 0(2) Vdc, (Modulating), 24 Vac/dc	Plenum Cable	GPC161.1P	GPC166.1P
2-position (Open/Closed), 100-240 Vac	Standard Cable	GPC321.1U	GPC326.1U

Dimensions

GPC Series Open Air Electronic Damper Actuators



Dimensions shown in inches (mm).

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Electronic Damper Actuator Spring Return

Easily Replaces:

- Belimo LN/NF Series



62 lb.-in. Torque

24 Vac/Vdc, 2-Position Control
120 Vac, 2-Position Control
24 Vac/dc, Floating Control
0 to 10 Vdc, Modulating Control
2 to 10 Vdc/10 to 2 Vdc, Modulating Control



GMA Series Spring Return
Direct-coupled Electronic Damper Actuator.

Description

The OpenAir GMA Series Direct-coupled, Spring Return Electronic Damper Actuators provide modulating, two-position and floating 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
- Assembled in the U.S.A

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 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.

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Damper Actuators



Specifications

Operating Voltage

GMA12x, GMA13x, GMA16x, GMA15x 24 Vac $\pm 20\%$; 24 Vdc $\pm 15\%$
GMA22x 120 Vac $\pm 10\%$

Frequency 50/60 Hz

Power Consumption 24 Vac/dc

Running 5 VA (3.5 W)

Holding 4 VA (3 W)

Equipment Rating Class 2, in accordance with UL/CSA

Control Signal

Input Signal (wires 8-2) GMA16x

Voltage Input

GMA16x 0 to 10 Vdc (max. 35 Vdc)

GMA15x 2 to 10 Vdc (max. 35 Vdc)

Input Resistance >100K Ohms

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

AC Rating 24 to 250 Vac

AC 6 A resistive

AC 2A General Purpose

DC Rating 12 to 30 Vdc

DC 2 A

Position Feedback 0 to 1000 Ohm <10 mA

Feedback Signal Position output signal (wires 9-2) GMA16x.xx/
GMA15x.xx

Voltage Output

GMA16x 0 to 10 Vdc

GMA15x 2 to 10 Vdc

Max. Output Current (both) +1 mA, -0.5 mA

Running Torque 62 lb.-in. (7 Nm)

Spring Return Torque 62 lb.-in. (7 Nm)

Max. Torque 186 lb.-in. (21 Nm)

Runtime for 90° operating with motor 90 sec.

Closing on power loss 15 sec. typical

(60 sec. Max. at -25°F)

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) min. length

Temperature

Operating -25° to 130°F (-32° to 55°C)

Storage -25° to 158°F (-32° to 70°C)

Humidity 95% RH, non-condensing

Agency Approvals UL listed UL60730 (Replacing UL873)

C-UL certified to Canadian Standard

C22.2 No. 24-93

CE

Housing

Enclosure NEMA 1

Material Die-cast Aluminum Alloy

Gear Lubrication Silicone free

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

Life Cycle Designed for over 60,000 full strokes

at rated torque and temperature

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 2.86 lbs. (1.3 kg)

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Damper Actuators

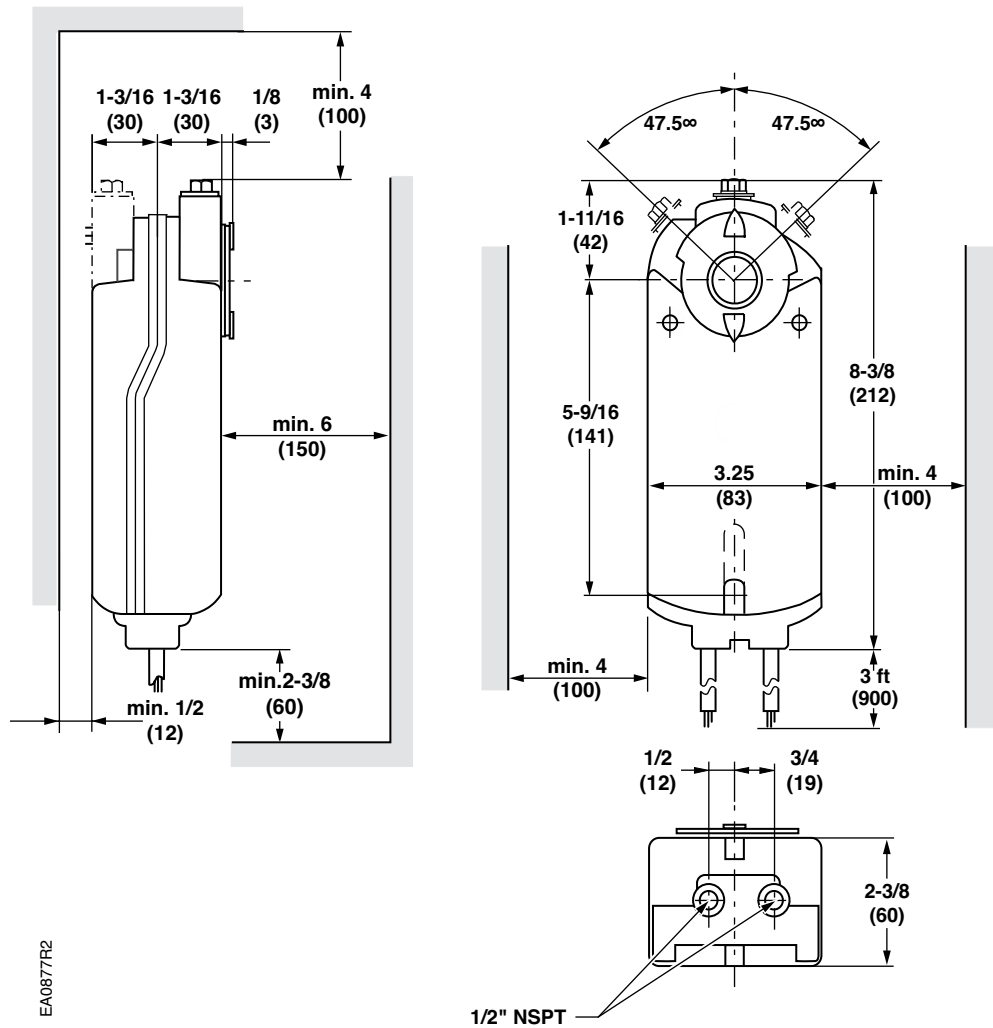
Product Ordering

Input Signal	Cabling	Part No.				
		Standard	Span/Offset Adjustable	Dual Aux. Switches & Span/Offset Adjustable	Dual Aux. Switches Only	Position Feedback Only
Modulating, 0 to 10 Vdc, 24 Vac/dc	Plenum Cable	GMA161.1P	GMA163.1P	—	GMA166.1P	—
	Plenum Cable/Bulk	GMA161.1P/B	—	—	—	—
	Standard	GMA161.1U	GMA163.1U	GMA164.1U	GMA166.1U	—
Modulating, 24 Vac/dc 2 to 10 Vdc/10 to 2 Vdc (Signal inversion)	Plenum Cable	GMA151.1P	—	—	GMA156.1P	—
	Standard	GMA151.1U	—	—	GMA156.1U	—
2-position, 24 Vac/Vdc	Plenum Cable	GMA121.1P	—	—	GMA126.1P	—
	Plenum Cable/Bulk	GMA121.1P/B	—	—	—	—
	Standard	GMA121.1U	—	—	GMA126.1U	—
	Standard/Bulk	GMA121.1U/B	—	—	—	—
2-position, 120 Vac	Standard	GMA221.1U	—	—	GMA226.1U	—
	Standard/Bulk	GMA221.1U/B	—	—	—	—
Floating, 24 Vac/Vdc	Plenum Cable	GMA131.1P	—	—	—	—
	Standard	GMA131.1U	—	—	GMA136.1U	GMA132.1U

Ordering Notes:

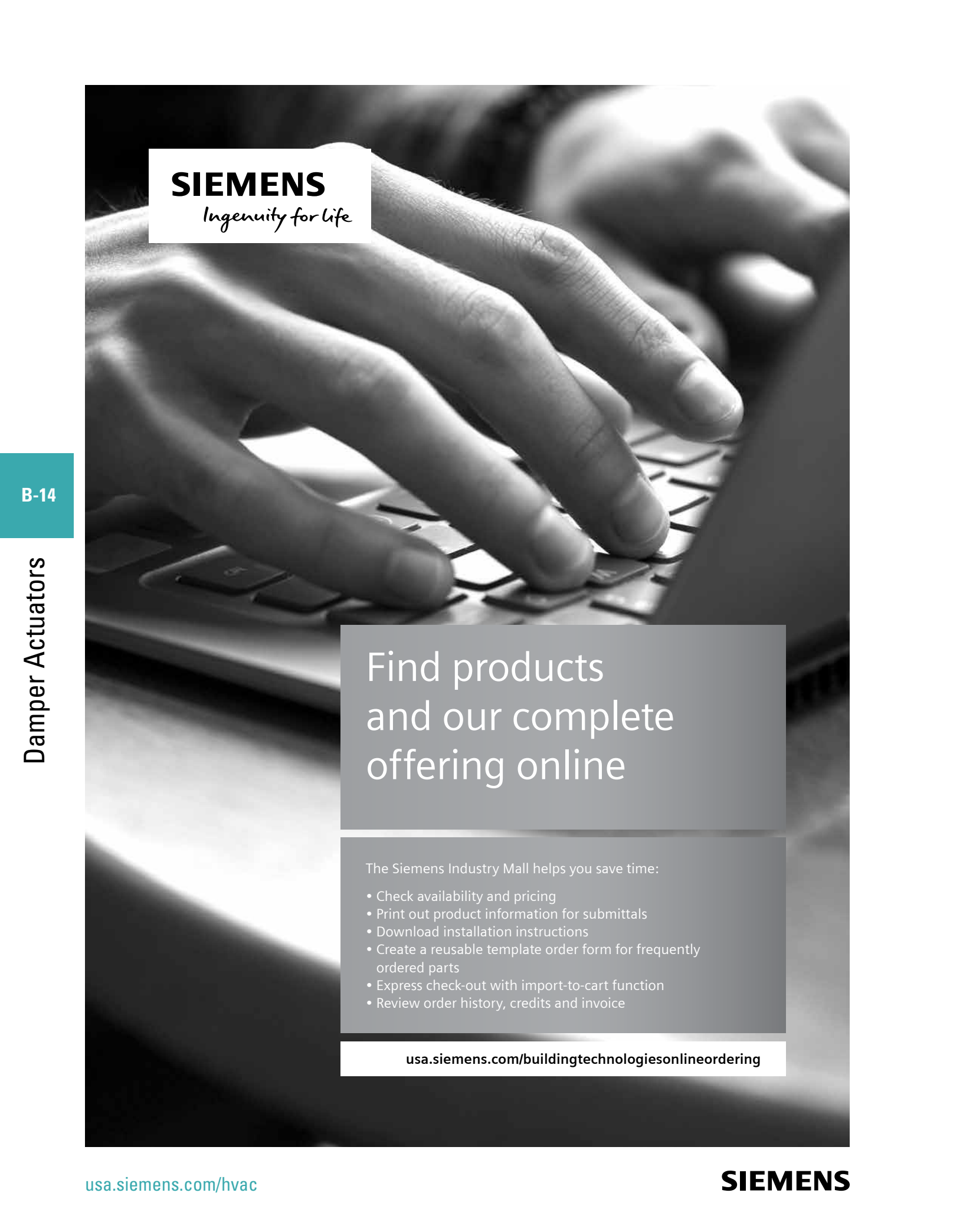
Bulk packages contain 10 actuators.

GMA/GEB Series OpenAir Damper Actuator



EA0877R2

Dimensions shown in inches (mm).



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Damper Actuators

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Electronic Damper Actuator Spring Return

Easily Replaces:

- Belimo AF Series



160 lb.-in. Torque

- 24 Vac/dc, 2-Position Control
- 120 Vac, 2-Position Control
- 24 Vac/dc, Floating Control
- 24 Vac/dc, 0 to 10 Vdc/2 to 10 Vdc, Modulating Control



GCA Series Spring Return
Electronic Damper Actuator.

Description

Designed for control of building HVAC dampers, the OpenAir GCA Series Direct-coupled, Spring Return Electronic Actuators are available in 0 to 10 Vdc or 2 to 10 Vdc modulating, 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 floating 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 160 lb.-in. (18 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.

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Damper Actuators



Specifications

Operating Voltage (1–2)

GCA1xx	24 Vac ±20%, 24 Vdc ±10%
GCA22x	120 Vac ±10%

Frequency 50 to 60 Hz

Power Consumption

GCA15x.xx & GCA16x.xx	
Running	9 VA (7 W)
Holding	5 VA (4 W)
GCA12x.xx AC 24 Vac/dc	
Running	8 VA (6 W)
Holding	3 VA (3 W)
GCA22x.xx AC 120 Vac	
Running	9 VA (7 W)
Holding	9 VA (7 W)
GCA13x.xx AC 24 Vac/dc	
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)

GCA16x/GCA15x	
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	160 lb.-in. (18 Nm)
Spring Return	160 lb.-in. (18 Nm)
Max. Torque	<380 lb.-in. (43 Nm)

Runtime for 90° operating with motor

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. ●
1/4 to 3/4-in. (6 to 18 mm) Sq. ■

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

Housing Enclosure NEMA 2*

Material Die-cast Aluminum alloy

Pre-cabled Connection AWG 18

Cable Length 3 ft. (0.9 m)

Agency Approvals UL60730
cUL C22.2 No. 24-93
CE

Dimensions 12" H x 4.75" W x 2.88" D
(305 mm H x 121 mm W x 73 mm D)

Shipping Weight 4.85 lb. (2.2 kg)

*Refer to Installation Instructions for acceptable mounting positions.

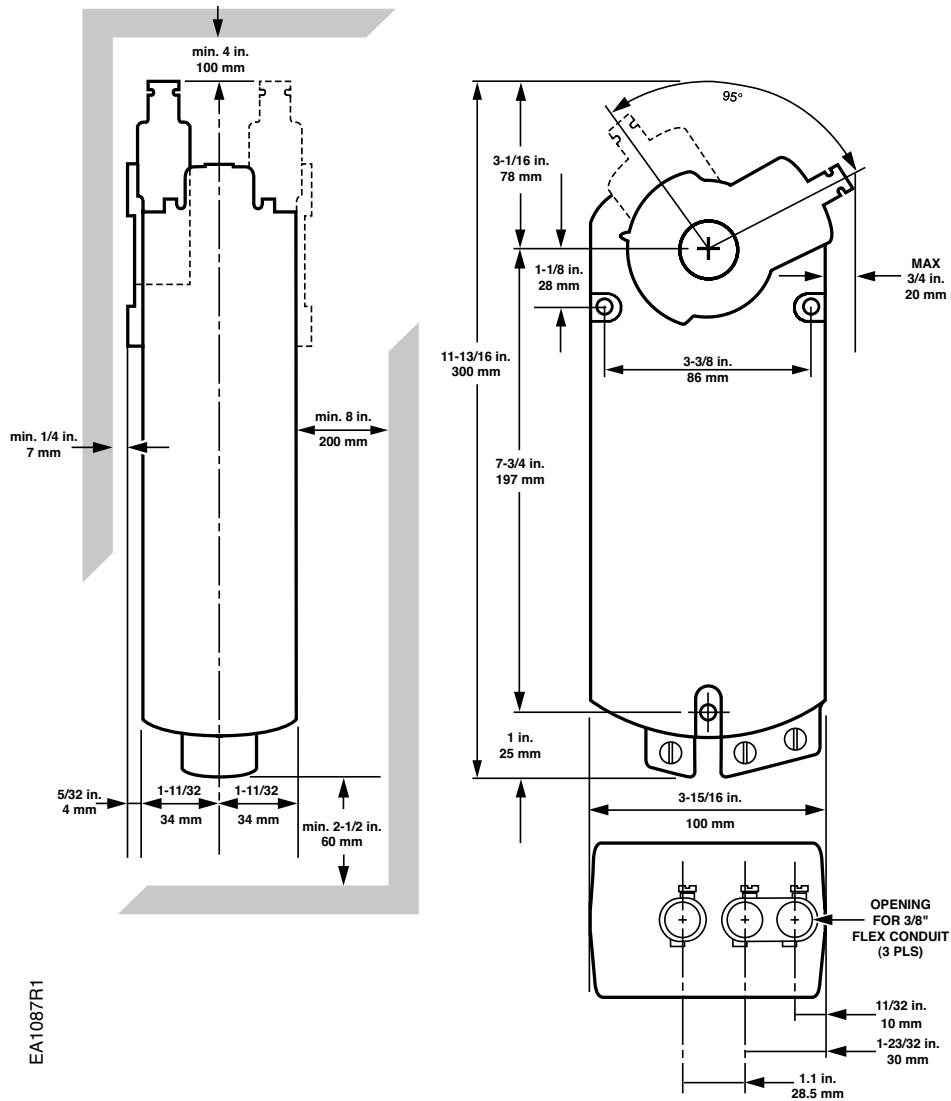
Product Ordering

Input Signal	Cabling	Part No.				
		Standard	Span/Offset Adjustable	Dual Aux. Switches & Span/Offset Adjustable	Dual Aux. Switches Only	Position Feedback Only
0 to 10 Vdc, 24 Vac/dc	Standard	GCA161.1U	GCA163.1U	GCA164.1U	GCA166.1U	—
	Plenum Cable	GCA161.1P	GCA163.1P	GCA164.1P	GCA166.1P	—
	Plenum Cable/Bulk	GCA161.1P/B	—	—	—	—
0 to 10 Vdc or 2 to 10 Vdc Modulating 24 Vac/dc, (Signal Inversion)	Standard	GCA151.1U	—	—	GCA156.1U	—
	Plenum Cable	GCA151.1P	—	—	GCA156.1P	—
2-position, 24 Vac/dc	Standard	GCA121.1U	—	—	GCA126.1U	—
	Standard/Bulk	GCA121.1U/B	—	—	—	—
	Plenum Cable	GCA121.1P	—	—	GCA126.1P	—
2-position, 120 Vac	Standard	GCA221.1U	—	—	GCA226.1U	—
	Standard/Bulk	GCA221.1U/B	—	—	—	—
Floating, 24 Vac/dc	Standard	GCA131.1U	—	—	GCA136.1U	GCA132.1U
	Plenum Cable	GCA131.1P	—	—	GCA136.1P	GCA132.1P

Ordering Notes:

Bulk packages contain 8 actuators.

GCA/GIB/GBB Series OpenAir Damper Actuator



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Damper Actuators

More torque, less energy consumption

Siemens damper actuators ship ready to install, with built-in time and cost-saving features such as a patented self-centering shaft adapter, standardized wiring, and brushless motor technology. With torques ranging from 20 to 310 lb-in., this powerful and flexible line-up delivers out-of-the-box performance and long-lasting reliability for all types of HVAC applications.

usa.siemens.com/hvac

Rotary, Electronic Damper Actuators Fail Safe and Fail-In-Place



53 lb.-in. Torque
2-Position Control
Floating Control
0-10/2-10 Vdc Modulating Voltage Control
(0) 4-20 mA Modulating Current Control



GNP/GAP Series Spring Return and
Non-Spring Return Electronic Damper Actuator.

Description

Designed for control of critical environments, the OpenAir direct-coupled fail safe/fail-in-place electronic actuators are available in modulating, two-position, and floating control for laboratory fume hoods, supply and exhaust units.

Features

- Fast operation, 2 seconds runtime
- One model performs all control signals:
 - 2-position
 - Floating
 - Modulating (0(2) to 10 Vdc and 4 (0) to 20 mA)
- 24 Vac/dc compatible
- Selectable fail-safe position (fail open or closed)
- Feedback standard on all models
- Highly accurate positioning
- Self centering
- Unique self-centering shaft coupling
- Assembled in the U.S.A.
- Plenum rated
- UL and cUL listed, CE certified
- Manual Override
- Precabled

Options

- Available with dual, independently adjustable auxiliary switches

Applications

Used in laboratory fume hoods, constant or variable air volume installations for the control of supply and exhaust air terminals; 53 lb-in (6 Nm) torque.

Models designed for applications that require the damper to return to a fail-safe position when there is a power failure; or models for fail-in-place.

B-19

Damper Actuators



Specifications

Operating Voltage (1-2)	24 Vac/dc $\pm 20\%$
Frequency	50 to 60 Hz
Power Consumption	
GNP19x/GAP19x	
Running	28 VA (19 W)
Holding	8 VA (5 W)
Control Signal Y/Y1 (Wires 8-2)	
Modulating Input Signal	
Voltage Input Signal	0 to 10 Vdc (Max. 35 Vdc) or 2 to 10 Vdc (Max. 35 Vdc)
Current Input Signal	4-20 mA or 0-20 mA
Input Resistance	>100K ohms
Floating Input Signal	0 or 24 Vac/dc Clockwise
Control Signal Y2 (Wires 7-2)	
Floating Input Signal	0 or 24 Vac/dc Clockwise
Position Output Signal (Wires 9-2)	
Voltage-Output	0 to 10 Vdc
Maximum Output Current DC	± 1 mA
Equipment Rating	
Class 2, in Accordance with UL/CSA Class III per EN 60730	
Dual Auxiliary Switches	
Contact Loading	6 A resistive, 2A inductive
Voltage (No Mixed Operation 24 Vac/230 Vac)	24 to 250 Vac
Switch Range	5° to 90°
Step Increments	5°
Feedback Signal (Wires 9-2)	
Position Output Signal	0 to 10 Vdc
Maximum Output Current	DC ± 1 mA
Torque	
Running Torque	53 lb-in (6 Nm)
Maximum Torque	142 lb-in (16 Nm)

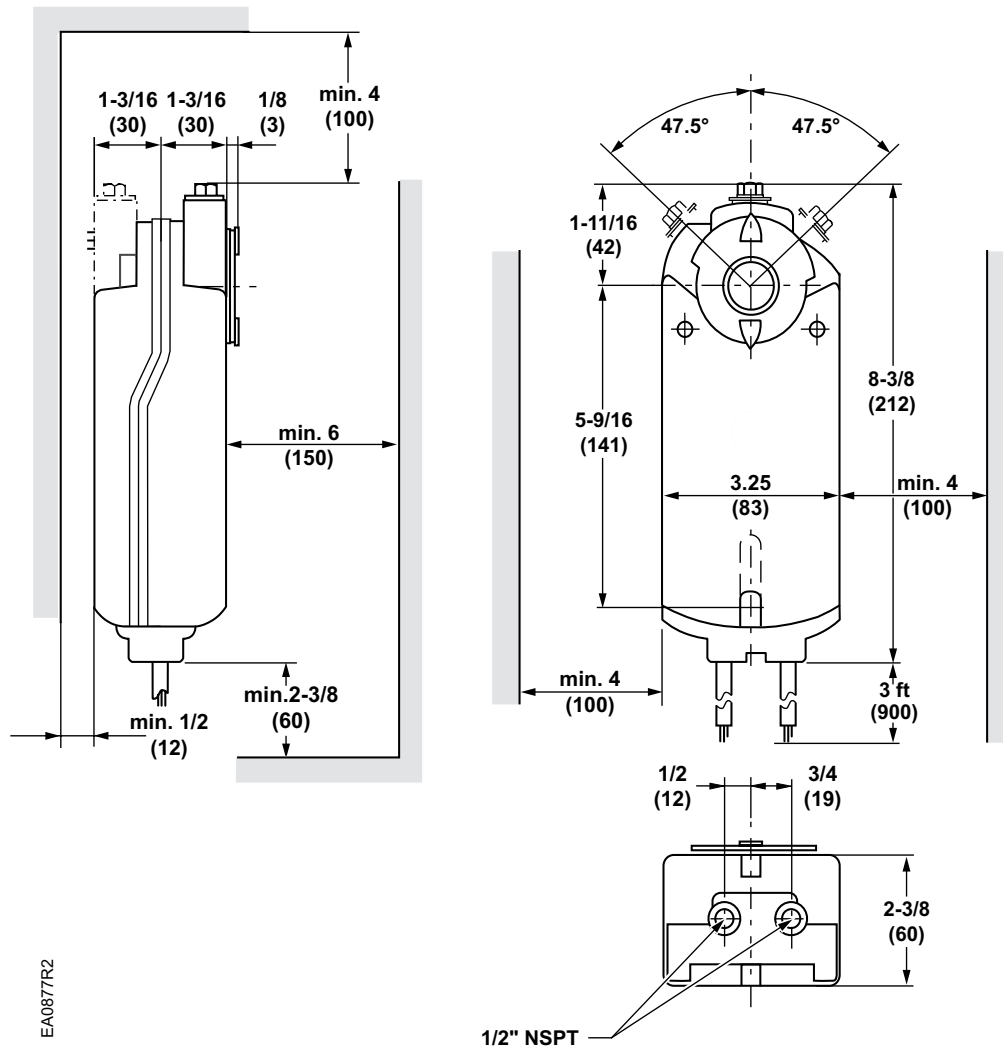
Runtime for 90° Operating with Motor	< 2 seconds
Fail-safe position on power loss (for GNP19x only)	2 seconds
Nominal Angle Of Rotation	90°
Maximum Angular Rotation	95°
Fail-Safe Operation	
GNP Actuator Series	On initial power-up, and after a power-fail event, the GNP actuators require up to 90 seconds for the capacitors to fully charge. During this time the actuator will respond to positioning commands, but will not power-fail until the capacitors are fully charged.
Temperature	
Operation	-0°F to 122°F (-18°C to 50°C)
Storage and Transport	-26°F to 158°F (-32°C to 70°C)
Humidity	95% RH, Non-condensing
Shaft Size	
1/4 to 3/4-inch (6.4 to 20.5 mm) dia. ●	
1/4 to 1/2-inch (6.4 to 13 mm) square ■	
Minimum Shaft Length	3/4-inch (20 mm)
Housing Enclosure	NEMA 1 IP54 according to EN 60 529*
Material	Die-cast Aluminum Alloy
Cable Length	3 Ft. (0.9 m)
Agency Approvals	
UL 873	
cUL C22, 2 No. 24-93	
CE	
Dimensions	
8-3/8" H x 3-1/4" W x 2-3/8" D (212 mm H x 83 mm W x 60 mm D)	
Shipping Weight	3 lbs 6 oz

*Limited positions; refer to OpenAir™ GNP/GAP Series Installation Instructions, 129-541.

Product Ordering

Input Signal	Standard Model w/Plenum Cable	Dual Adjustable Auxiliary Switches
Fail Safe 2P, Floating, 0-10 Vdc, 2-10 Vdc, 4-20 mA	GNP191.1P	GNP196.1P
Fail-in-place 2P, Floating, 0-10 Vdc, 2-10 Vdc, 4-20 mA	GAP191.1P	GAP196.1P

GNP/GAP Series Rotary, Electronic Damper Actuators



Dimensions shown in inches (mm).

A detailed photograph of a Siemens damper actuator assembly. The assembly consists of a grey motor unit at the top, a black bracket in the middle, and a metal valve body at the bottom. The motor unit has the text 'HVAC Products SKD62' and the Siemens logo. The bracket has a large 'R' on it. The valve body has 'DN50 PN16 ANSI' and '5120364' stamped on it. A white box with the Siemens logo and tagline is overlaid on the motor unit.

SIEMENS
Ingenuity for life

B-22

Damper Actuators

Siemens is your
best choice for
easy retrofits!

- Siemens Universal ARK Retrofit Kits conveniently replace Siemens Series 591 and 658 Globe Valve Actuators and JCI, Honeywell, and Siebe Globe Valve Actuators
- Siemens Ball Valve Actuator and Bracket Kits, including low-profile bracket options, replace Griswold and Honeywell Ball Valves and PICV Actuators

To order genuine Siemens building automation HVAC replacement parts, call toll free 800-516-9964

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Electronic Damper Actuators Non-Spring Return

NEW!

Easily Replaces:

- Belimo CM Series



20 lb.-in. Torque

- 24 Vac/dc, 2-Position (Open/Closed) Control
- 24 Vac/dc, Floating Control
- 24 Vac/dc, 2 to 10 Vdc/10 to 2 Vdc, (Modulating) Control



GSD Series Non-Spring Return
Direct Coupled Electronic Damper Actuator.

Description

The OpenAir GSD Series direct-coupled, non-spring return rotary electronic damper actuators are 24 Vac/dc rated and available in 2-position, floating, and modulating [0(2) to 10 Vdc or 10 to 0(2) Vdc] control.

Features

- Pre-cabled
- Plenum rated models available
- Optional built-in auxiliary switches with fixed switch points at 5° and 85° rotation
- 30-second run time
- Signal inversion capability on modulating type [0(2) to 10 Vdc or 10 to 0(2) Vdc]
- Small footprint for installation flexibility
- UL and cUL listed; CE certified
- Approved for installation in plenum areas by Underwriters Laboratories, Inc. per UL 2043.
- Low voltage models are 24 Vac/dc compatible
- 100 to 240 Vac models available
- Fixed Dual End Switches
24 Vac to 250 Vac/12 to 30 Vdc
6A resistive/2A inductive @ AC
4A resistive/2A inductive @ 30 Vdc
0.8A resistive, 0.5A inductive @ 60 Vdc
- 1/2" NPT conduit

Applications

The small footprint and torque make this actuator ideal for VAV boxes, small HVAC dampers, economizers, or residential zone dampers.

B-23

Damper Actuators

Specifications

Operating Voltage	
GSD1x	24 Vac/dc ±20%
GSD3x	100 to 240 Vac ±10%
Frequency	50/60 Hz
Power Consumption	
GSD14x (24 Vac/dc 60 Hz)	
Running	2.2 VA (1.2 W)
Holding	1.0 VA (0.5 W)
GSD14x (24 Vac/dc 60 Hz)	
Running	2.4 VA (1.4 W)
Holding	1.2 VA (0.7 W)
GSD14x (24 Vac/dc 60 Hz)	
Running	4.5 VA (1.8 W)
Holding	2.4 VA (0.9 W)
Function	
Torque	20 lb.-in. (2 Nm)
Runtime for 90°	30 sec.
Nominal Angle of Rotation	90°
Auxiliary Switches	Fixed at 5° and 85°
AC Rating	24 to 250 Vac
	AC 6A resistive
	AC 2A General Purpose
DC Rating (Standard/Plenum Cable)	12 to 30 Vdc
	DC 2A

Shaft Size	3/8 to 1/2-in. (8 to 13 mm) round ● 1/4 to 7/16-in. (6 to 11 mm) square ■
Min. Shaft Length	3/4-in (20 mm)
Housing Enclosure	NEMA 1
Material	Plenum rated rugged plastic
Ambient Temperature	
Operating.....	-25° to 130°F (-32° to 55°C)
Storage and Transport.....	-25° to 158°F (-32° to 70°C)
Ambient Humidity	95% RH, non-condensing
Agency Approvals	UL listed per UL 60730, cUL listed to CSA C22.2 N. 24-93; CE certified
120 through 240 Vac	EMC and Low Voltage Directives
Pre-Cabled Connection	AWG 18
Cable Length	3 ft. (0.9m)
Dimensions	5.46" H x 2.83" W x 2.45" D (138.8 mm H x 72 mm W x 62.5 mm D)
Shipping Weight	1.54 lbs. (0.55 kg)

B-24

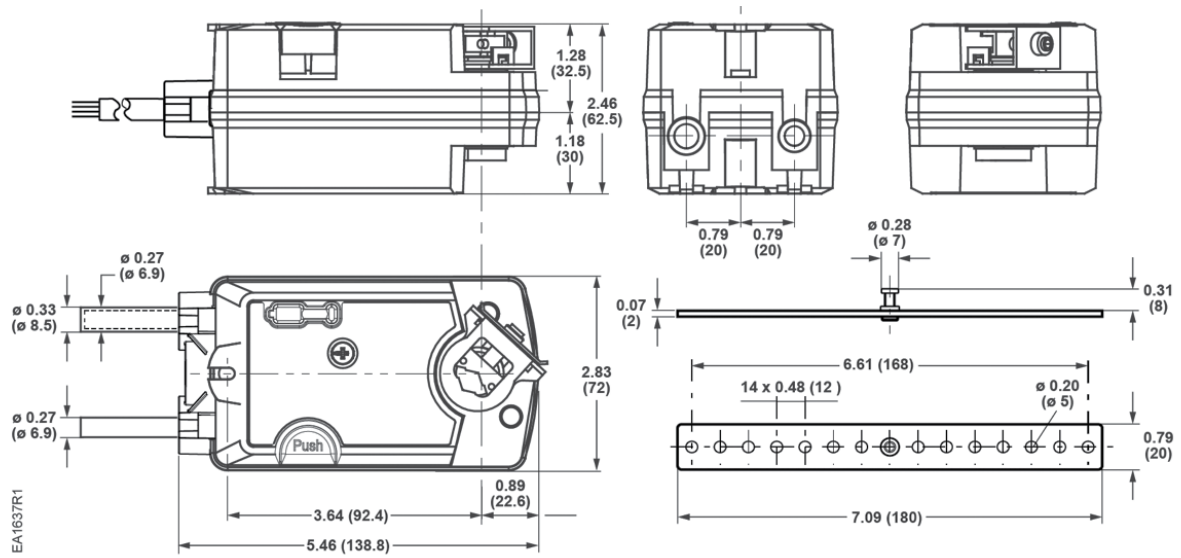
Damper Actuators

Product Ordering

Control Signal	Cabling	Part No.	
		Standard	Aux. Switch
2-position/Floating, 24 Vac/dc	Plenum	GSD141.1P	GSD146.1P
2-position/Floating, 100 to 240 Vac	Appliance	GSD341.1U	GSD346.1U
0 to 10 Vdc or 2 to 10 Vdc	Plenum	GSD161.1P	GSD166.1P
Modulating 24 Vac/dc			

Dimensions

GSD Series Actuators with Mounting Bracket



Dimensions shown in inches (mm).

B-25

Damper Actuators

SIEMENS
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B-26

Damper Actuators



Size and select products with SimpleSelect™

SimpleSelect quickly narrows your search from our entire portfolio of PICV, Zone, Globe, Ball, Magnetic, and Butterfly Valves, and Electronic and Pneumatic Damper Actuators.

Menus help you quickly size products:

- Select category of device
- Choose the medium being controlled
- Determine the correct Cv or required flow (gpm)
- Calculate pressure drop and quantity of steam
- Size and select Damper Actuators by Torque and Control Signal

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Electronic Damper Actuator Non-Spring Return

NEW!

Easily Replaces:

- Belimo LM Series



44 lb.-in. Torque

24 Vac/dc, 2-Position/Floating Control
120 Vac, 2-Position/Floating Control
0(2) to 10 Vdc/10 to 0(2) Vdc, Modulating Control



GDE Series Non-Spring Return
Electronic Damper Actuator.

Description

The OpenAir GDE Series Direct-coupled Non-Spring Return Rotary Electronic Actuator is designed for 0 to 10 Vdc or 2-position/floating control of building HVAC dampers.

Features

Enhanced Features

- New 141 models perform both 2-position and floating control
- Selectable modulating control (0 to 10 Vdc or 2 to 10 Vdc)
- 24 Vac/dc compatible
- New line voltage 341 models for 100 to 240 Vac 2-position/floating control
- Integral 1/2 inch conduit connection (No conduit on auxiliary switch types – use ASK76.1U bracket)

Standard Features

- Compact design
- Easy-to-see position indicator
- Self-adapting capability for maximum flexibility in damper positioning
- Energy efficient
- UL, cUL, CE listed
- Quiet operation
- Rated NEMA 2
- Assembled in the U.S.A.
- Manual override
- Modulating actuators contain built-in feedback
- N Versions designed for under floor installation (pluggable cable connections)

Options

- Independently adjustable dual auxiliary switches
- Adjustable start/span
- Standard or plenum cable
- Available in bulk packs for additional savings
- Potentiometer on 2-position/floating control

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.

B-27

Damper Actuators



Siemens
Product Guard
PLUS 3 Warranty

Specifications

Operating Voltage	24 Vac/dc 100 to 240 Vac (GDE34x)
Frequency	50/60 Hz
Power Consumption	
GDE14x	
Running	2 VA (1 W)
GDE34x	
Running	5 VA (1.6 W)
GDE16x	
Running	2.1 VA (1.2 W)
Input signal (8–2)	
Voltage-Input	0(2) to 10 Vdc
Input Resistance	100K Ohms
Position Output Signal (9–2)	
Voltage-Output	0(2) 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	5°
Switch B	0° to 90° with 5° intervals
Recommended Range Usage	45° to 90°
Factory Setting	85°
Switching Hysteresis	3°

Position Feedback	
GDE142.1P	0 to 5000 Ohm <10 mA
Function	
Torque	44 lb.-in. (5 Nm)
at 50/60 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. ● 1/4 to 1/2-in. (6 to 13 mm) Sq. ■
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	6.6" H x 2.7" W x 2.3" D (167 mm H x 68 mm W x 59.2 mm D)
Weight	1.35 lb. (0.61 kg)

B-28

Damper Actuators

Product Ordering

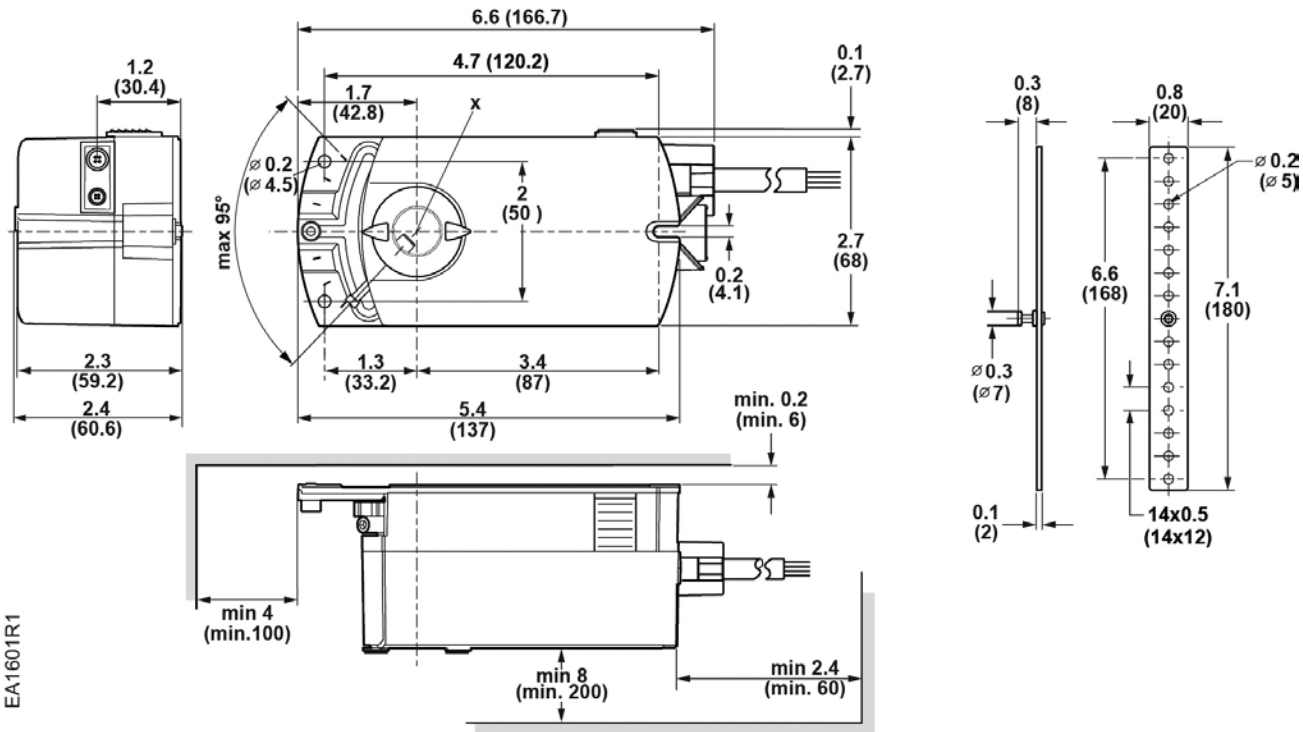
Input Signal	Part No.					Pre-Cabled	No Cables
	Standard	With Potentiometer	Slope/Offset Adjustable	Dual Aux. Switches & Slope/Offset Adjustable	Dual Aux. Switches Only		
Enhanced Models							
2-position/Floating 24 Vac/dc	GDE141.1U	—	—	—	—	Standard	—
	GDE141.1U/B	GDE142.1P	—	—	GDE146.1P	Plenum	—
	GDE141.1P						
	GDE141.1P/B (24 ea)						
GDE141.1Q	—	—	6 ft Plenum	—			
2-position/Floating 100 to 240 Vac	GDE341.1U	—	—	—	GDE346.1U	Standard	—
Modulating 0(2) to 10 Vdc 24 Vac/dc	GDE161.1P	—	GDE163.1P	GDE164.1P	GDE166.1P	Plenum	—
	GDE161.1P/B (24 pk)	—	—	—	—	6 ft Plenum	—
	GDE161.1Q	—	—	—	—	6 ft Plenum	—
Standard Models							
Floating 24 Vac	GDE131.1U	—	—	—	—	Standard	—
	GDE131.1U/B (24 pk)	—	—	—	—	Plenum	—
	GDE131.1P						
	GDE131.1P/B (24 pk)	—	—	—	—	—	Post Header AMP
	GDE131.1N	—	—	—	—	—	Terminal Strip
	GDE131.1T	—	—	—	—	—	Terminal Strip
GDE131.1T/B (24 pk)	—	—	—	—	—	Terminal Strip	
0 to 10 Vdc 24 Vac/dc	GDE161.1N	—	—	—	—	—	Post Header AMP
	GDE161.1T	—	—	—	—	—	Terminal Strip
	GDE161.1T/B (24 pk)	—	—	—	—	—	Terminal Strip

Cables compatible with the GDE131.1N and GDE161.1N sold separately on page B-67.

B-29

Damper Actuators

GDE/GLB Series OpenAir Electronic Damper Actuator and Mounting Bracket



Dimensions shown in inches (mm).

B-30

Damper Actuators

Electronic Damper Actuator Non-Spring Return

NEW!

Easily Replaces:

- Belimo NM Series



88 lb.-in. Torque

24 Vac/dc, 2-Position/Floating Control
100 to 240 Vac, 2-Position/Floating Control
0 to 10 Vdc, Modulating Control



GLB Series Non-Spring Return
Electronic Damper Actuator.

Description

The OpenAir GLB Series Direct-coupled Non-Spring Electronic Actuator is designed for 0 to 10 Vdc or floating control of building HVAC dampers.

Features

Enhanced Features

- New 141 models perform both 2-position and floating control
- Selectable modulating control (0 to 10 Vdc or 2 to 10 Vdc)
- 24 Vac/dc compatible
- New line voltage 341 models for 100 to 240 Vac 2-position/floating control
- Integral 1/2 inch conduit connection (No conduit on auxiliary switch types – use ASK76.1U bracket)

Standard Features

- Compact design
- Easy-to-see position indicator
- Self-adapting capability for maximum flexibility in damper positioning
- UL, cUL, CE listed
- Quiet operation
- Rugged all metal housing, rated NEMA 2
- Assembled in the U.S.A.
- Manual override
- Plenum-rated cable
- Modulating actuators contain built-in feedback
- Energy efficient

Options

- Independently adjustable dual auxiliary switches
- Adjustable start/span
- Potentiometer on 2-position/floating control

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.

B-31

Damper Actuators



Specifications

Operating Voltage	24 Vac/dc 100 to 240 Vac (GLB34x)
Frequency	50 to 60 Hz
Power Consumption	
GLB14x	
Running	2.2 VA (1.3 W)
GLB34x	
Running	5.8 VA (1.9 W)
GLB16x	
Running	2.5 VA (1.5 W)
Input Signal (8–2)	
Voltage-Input	0(2) to 10 Vdc
Input Resistance	100K Ohms
Position Output Signal (9–2)	
Voltage-Output	0(2) to 10 Vdc
Max. Output Current	1 mA
Equipment Rating for Operating Voltage, Input Signal, and Position Output Signal	Class 2
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	5°
Switch B	0° to 90° with 5° intervals
Recommended Range Usage	45° to 90°
Factory Setting	85°
Switching Hysteresis	3°

Function	
Torque	88 lb.-in. (10 Nm)
at 50/60 Hz	125 sec.
Nominal Angle of Rotation	90°
Max. Angular Rotation	95°
Shaft Dimensions	3/8 to 5/8-in. (8 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	6.6" H x 2.7" W x 2.3" D (167 mm H x 68 mm W x 59.2 mm D)
Weight	1.35 lb. (0.61 kg)

B-32

Damper Actuators

Refer to page B-30 for Dimensions.

Product Ordering

Input Signal	Cabling	Part No.	
		Standard	Dual Aux. Switches Only
Enhanced Models			
2-position/Floating, 24 Vac/dc	3' Plenum Cable	GLB141.1P	GLB146.1P
	6' Plenum Cable	GLB141.1Q	—
2-position/Floating, 100 to 240 Vac	Standard	GLB341.1U	GLB346.1U
0(2) to 10 Vdc	3' Plenum Cable	GLB161.1P	GLB166.1P
	6' Plenum Cable	GLB161.1Q	—

Electronic Damper Actuator Non-Spring Return

Easily Replaces:

- Belimo NM Series



132 lb.-in. Torque

24 Vac, Floating Control

0 to 10 Vdc or 2 to 10 Vdc, Modulating Control



GEB Series Non-Spring Return
Direct-coupled Electronic Damper Actuator.

Description

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

Features

- Integral 1/2-inch conduit connector
- Unique self-centering shaft coupling
- All metal housing
- Manual override
- DIP switches GEB16x.1x
 - Direction of rotation
 - Adaptation of rotational angle range
 - Selection of 0 to 10 or 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
- Assembled in the U.S.A.

Options

- Dual independently adjustable auxiliary switches
- Adjustable offset/span
- Floating control models available with feedback potentiometer

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.

B-33

Damper Actuators



Specifications

Power Supply	24 Vac
Operating Voltage	24 Vac $\pm 20\%$
Frequency	50/60 Hz
Runtime for 90°	125 seconds (60 Hz) 150 seconds (50 Hz)
Power Consumption GEB16x.1x	
Running	5 VA (4 W)
Holding	1 VA
Power Consumption GEB13x.1x	
Running	3 VA (3 W)
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	AC 6A Resistive AC 2A General Purpose
DC Rating	12 to 30 Vdc DC 2A
Plenum Cable	4A resistive, 2A, 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°
Recommended Range	45 to 90°
Switching Hysteresis	2°

Position Feedback	
GEB132.1U	0 to 1000 Ohm <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)
------------------------------	-------------------

Refer to page B-13 for Dimensions.

Product Ordering

Input Signal	Cabling	Part No.			
		Standard	Dual Aux. Switches & Offset/Span Only	Position Feedback Only	Dual Aux. Switches Only
Modulating, 0 to 10 Vdc	Plenum Cable	GEB161.1P	—	—	—
	Standard	GEB161.1U	GEB164.1U	—	—
Floating, 24 Vac	Plenum Cable	GEB131.1P	—	—	—
	Standard	GEB131.1U	—	GEB132.1U	GEB136.1U

Rotary Electronic Damper Actuator Non-Spring Return

Easily Replaces:

- Belimo SM/AM Series



221 lb.-in. Torque

0 to 10 Vdc, Modulating Control
Floating Control



GBB Series Non-Spring Return
Electronic Damper Actuator.

Description

Designed for control of building HVAC dampers, the OpenAir GBB Series Direct-coupled 24 Vac Non-Spring Return Electronic Damper Actuators are available in 0 to 10 Vdc and floating 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
- Modulating actuators contain built-in feedback

Options

- Independently adjustable dual auxiliary switches
- Adjustable offset and span
- Potentiometer built in for floating controls

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.

B-35

Damper Actuators



Specifications

Operating Voltage	24 Vac ± 20%
Frequency	50 to 60 Hz
Power Consumption	
0 to 10 Vdc	8 VA
Floating	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
Recommended Range	0° to 45°
Switch B	0° to 90° with 5° intervals
Recommended Range	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	UL873
	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.

Refer to page B-17 for Dimensions.

Product Ordering

Input Signal	Cabling	Part No.				
		Standard	Span/Offset Adjustable	Dual Aux. Switches & Span/Offset Adjustable	Dual Aux. Switches Only	Position Feedback
0 to 10 Vdc	Standard	GBB161.1U	GBB163.1U	GBB164.1U	GBB166.1U	—
	Plenum Cable	GBB161.1P	GBB163.1P	GBB164.1P	GBB166.1P	—
Floating	Standard	GBB131.1U	—	—	GBB136.1U	GBB132.1U
	Plenum Cable	GBB131.1P	—	—	GBB136.1P	GBB132.1P

Electronic Damper Actuator Non-Spring Return

Easily Replaces:

- Belimo GM Series



310 lb.-in. Torque

0 to 10 Vdc, Modulating Control
Floating Control



GIB Series Non-Spring Return Electronic Damper Actuator.

Description

The OpenAir GIB Series Direct-coupled 24 Vac Non-Spring Return Electronic Actuators are designed for modulating and floating 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
- Modulating actuators contain built-in feedback

Options

- Independently adjustable dual auxiliary switches
- Adjustable offset and span
- Potentiometer built in for floating control

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.

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Damper Actuators



Specifications

Operating Voltage (1–2)	24 Vac ±20%
Frequency	50/60 Hz
Power Consumption	
0 to 10 Vdc	8 VA
Floating	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
Recommended Range Usage	0 to 45°
Factory Setting	5°
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 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
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	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 the Installation Instructions for acceptable mounting positions.

Refer to page B-17 for Dimensions.

Product Ordering

Input Signal	Cabling	Part No.				
		Standard	Span/Offset Adjustable	Dual Aux. Switches & Span/Offset Adjustable	Dual Aux. Switches Only	Position Feedback
0 to 10 Vdc	Standard	GIB161.1U	GIB163.1U	GIB164.1U	GIB166.1U	—
	Plenum Cable	GIB161.1P	GIB163.1P	GIB164.1P	GIB166.1P	—
Floating	Standard	GIB131.1U	—	—	GIB136.1U	GIB132.1U
	Plenum Cable	GIB131.1P	—	—	GIB136.1P	GIB132.1P

Electronic Damper Actuator

Designed for UL Listed Fire/Smoke and Smoke Control Dampers



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



GND Series Electronic Damper Actuator.

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

- Manual override
- 24 Vac/dc, 120 Vac and 230 Vac models available
- Reversible fail-safe spring return
- All metal housing
- Pre-cabled Teflon® insulated lead wires
- Fifteen-second operation at rated torque, temperature and voltage
- Assembled in the U.S.A.

Options

- 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)

Applications

The GND Series Spring Return Electronic Actuator is used for the control of dampers requiring up to 53 lb-in (6 Nm) 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.

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Damper Actuators



Specifications

Operating Voltage	24 Vac ±20%
	24 Vdc +20%, -10%
	120 Vac ±10%
	230 Vac ±10%
Frequency	50/60 Hz
Power Consumption	24 Vac/dc
Running	20 VA (12 W)
Holding	8 VA (6 W)
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	UL873
	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)
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	4 lb. (1.8 kg)

*Refer to the Installation Instructions for acceptable mounting positions.

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Damper Actuators

Product Ordering

Description	Cabling	Part No.		
		24 Vac/dc	120 Vac	230 Vac
2-position	Standard	GND121.1U	GND221.1U	GND321.1U
	EFL	GND121.1U/F	GND221.1U/F	GND321.1U/F
2-position with aux. switches	Standard	GND126.1U	GND226.1U	GND326.1U
	EFL	GND126.1U/F	GND226.1U/F	GND326.1U/F

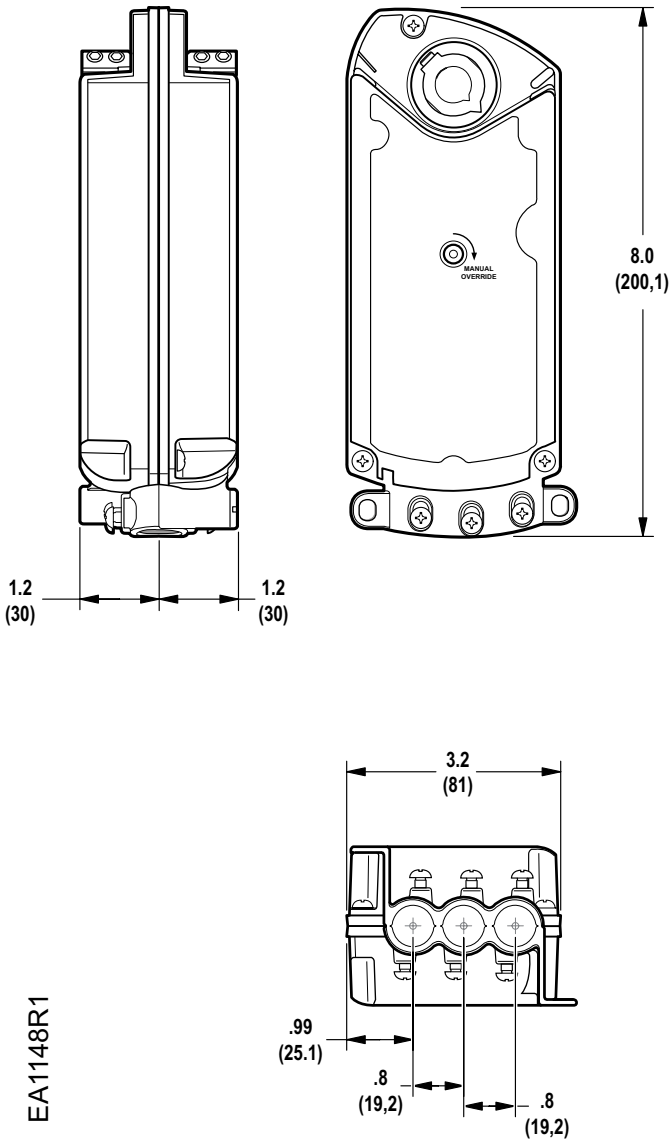
Ordering Notes:

- 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.

Electronic Fusible Links

Temperature Range	Part No.
165°F (74°C)	ASK79.165
212°F (100°C)	ASK79.212
250°F (121°C)	ASK79.250
350°F (177°C)	ASK79.350

GND Series OpenAir Damper Actuator



Dimensions shown in inches (mm).

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Damper Actuators

BT300 Variable Frequency Drives

Available in frame sizes up to 250 hp, the BT300 is well-suited for demanding HVAC environments and helps save 20-50% of energy compared to equipment with little or no control. Built-in features – like a real-time clock, energy savings optimization programming, and a sleep function – help measure energy savings. Built-in wizards get HVAC equipment up and running quickly and accurately.

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Electronic 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



GGD Series Electronic Damper Actuator.

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
- Manual override
- 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
- Assembled in the U.S.A

Options

- Optional built-in Auxiliary Switches: fixed switch points at 5° and 85° rotation

Applications

The GGD Series Spring Return Actuator is used for the control of dampers requiring up to 142 lb.-in. (16 Nm) 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.

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Damper Actuators



Specifications

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 certified 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)

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Damper Actuators

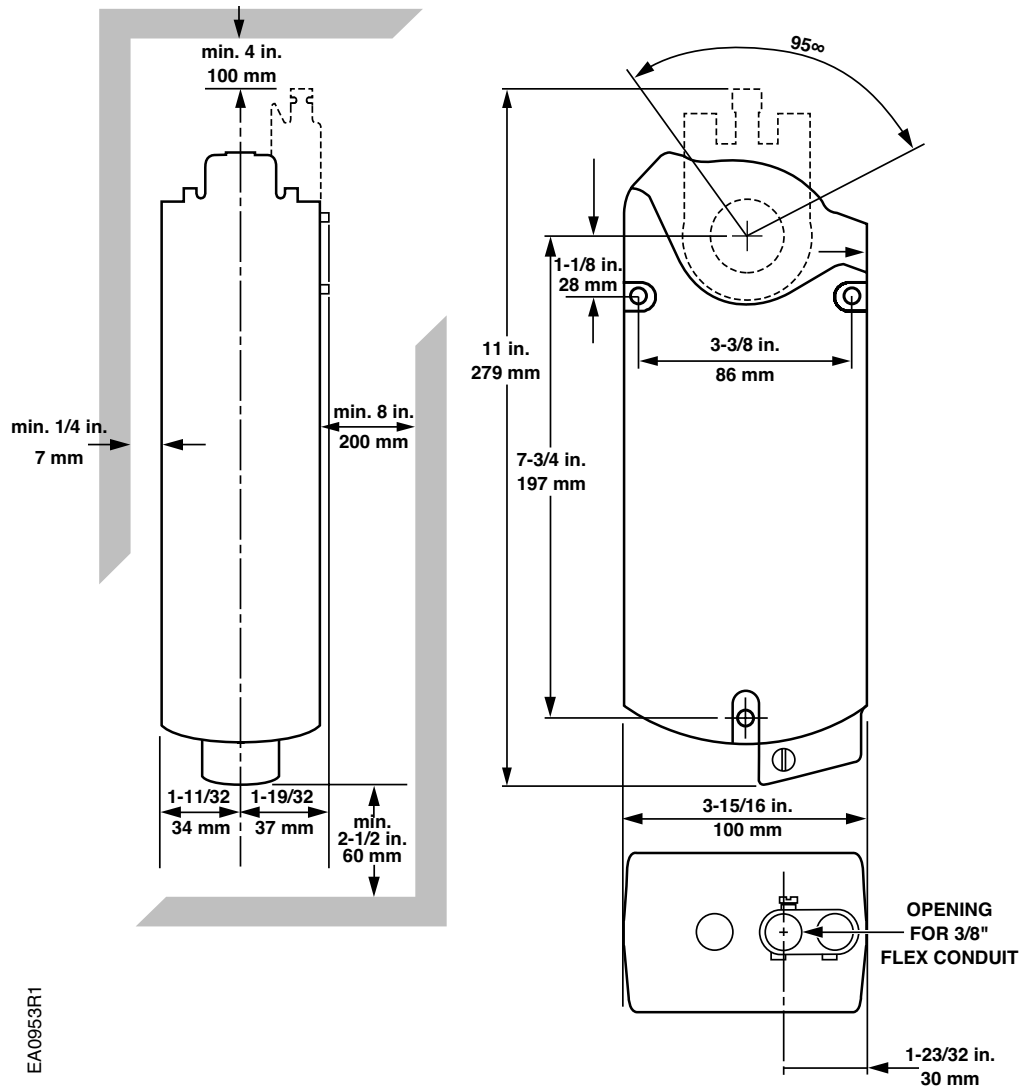
Product Ordering

Description	Shaft Adapter	Part No.		
		24 Vac	115 Vac	230 Vac
Standard	Self-centering	GGD121.1U	GGD221.1U	GGD321.1U
Standard/Bulk	Self-centering	GGD121.1U/B	GGD221.1U/B	GGD321.1U/B
Auxiliary Switches 5° and 85°	Self-centering	GGD126.1U	GGD226.1U	GGD326.1U
Standard	Oversized	—	GGD221.3U	GGD321.3U

Ordering Notes:

Bulk packages contain 8 actuators.

GGD Series OpenAir Damper Actuator



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Damper Actuators

Global Actuator Program		G	B	B	1	6	1	.	1	U
Type	Laboratory Fail In Place 53 Lb-in	A								
	Non-Spring Return 221 Lb-in	B								
	Spring Return 160 Lb-in	C								
	Non-Spring Return 44 Lb-in	D								
	Non-Spring Return 132 Lb-in	E								
	Fire And Smoke 142 Lb-in	G								
	Non-Spring Return 310 Lb-in	I								
	Non-Spring Return 88 Lb-in	L								
	Spring Return 62 Lb-in	M								
	Fire And Smoke Or Laboratory Fail Safe 53 Lb-in	N								
	Spring Return 35 Lb-in	P								
	Spring Return 20 Lb-in	Q								
	Non-Spring Return 20 Lb-in	S								
Running Time	90 Sec. At 50/60 Hz	A								
	150(125) Sec At 50/60 Hz	B								
	60 Sec At 50/60 Hz	C								
	15 Sec/30 Sec. At 50/60 Hz	D								
	108(90) Sec. At 50/60 Hz	E								
	2 Sec. At 50/60 Hz	P								
Voltage	24 Vac/Dc SR/ 24Vac NSR	1								
	120 Vac	2								
	100 to 240 Vac	3								
Functionality	2Pt	2								
	Floating	3								
	2Pt, Floating, 24 Vac/dc	4								
	Modulating 0-10Vdc/2-10Vdc/Signal Inversion	5								
	Modulating 0-10Vdc	6								
	2Pt, Floating ,0-10Vdc, 2-10Vdc,4-20Ma, and 0-20Ma	9								
Optional Features	Standard Version	1								
	Potentiometer 1K Ω	2								
	Signal Adjustable	3								
	Switches+Signal Adjustable	4								
	Switches	6								
Action	Rotary self-cent. Shaft adapter	1								
	Linear	2								
Cabling	Universal Appliance Cable	U								
	Plenum Cable	P								
	Bulk Packaging	/B								
	6' Plenum Cable	Q								

No. 3 Pneumatic Actuator



331-4311 Actuator, clevis and rocker arm. Mounting for extended shaft.



331-4312 Actuator with pivot mounting bracket.



331-4314 Actuator with fixed mounting bracket and clevis.



331-4331 Actuator with fixed mounting bracket and ball joint connector.

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.

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Damper Actuators

Nominal Spring Rating	Max. Thrust lb. (N)				Gradual Operation	Torque Rating lb.-in (Nm)		
	Full Stroke Forward			Spring Return (No Stroke) 0 psi (0 kPa)		2-position Operation or with Positioner		
	15 psi (103 kPa)	18 psi (124 kPa)	25 psi (172 kPa)			15 psi (103 kPa)	18 psi (124 kPa)	25 psi (172 kPa)
3 to 7 psi 21 to 48 kPa)	64 (285)	88 (391)	144 (641)	24 (107)	10 (1.1)	20.2 (2.3)	20.2 (2.3)	20.2 (2.3)
5 to 10 psi (35 to 69 kPa)	40 (178)	64 (285)	120 (534)	40 (178)	10 (1.1)	33.6 (3.8)	33.6 (3.8)	33.6 (3.8)
8 to 13 psi (55 to 90 kPa)	16 (71)	40 (178)	96 (427)	64 (285)	10 (1.1)	53.8 (6.1)	53.8 (6.1)	53.8 (6.1)

With maximum hysteresis of 2.5 psi (17.2 kPa) @ 90° rotation.

Specifications

Effective Diaphragm Area	8 in. ² (51.5 cm ²)
Stroke	2-3/8-in. (60 mm)
Max. Air Pressure	30 psi (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	-20° to 160°F (-29° to 71°C)
Storage	-20° to 160°F (-29° to 71°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)

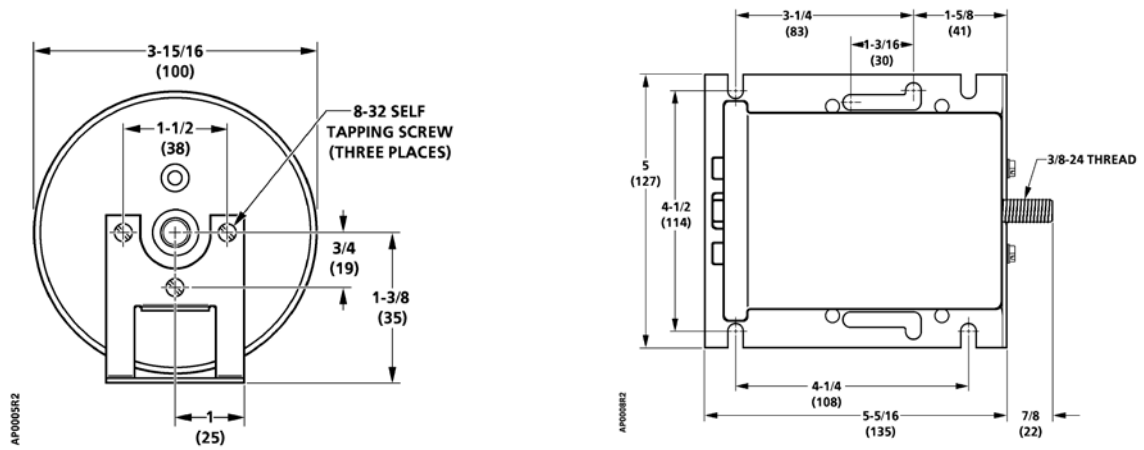
Product Ordering

No. 3 Actuator Description	Mounting Style	No. 3 Part Number		
		Nominal Spring Range		
		3-7 psi (21-48 kPa)	5-10 psi (35-69 kPa)	8-13 psi (55-90 kPa)
Actuator, Basic	Front	331-4310 ¹	331-4510 ¹	331-4810 ¹
Actuator, Basic, for "332" models with Positioning Relay, (difference is elbow air fitting)	Front	—	—	331-4809 ¹
Actuator, Bracket	Fixed	331-4313	331-4513	331-4813
Actuator, Bracket, Clevis	Fixed	331-4314	331-4514	331-4814
Actuator, Bracket, Ball Joint Connector	Fixed	331-4331	331-4531	331-4831
Actuator, Bracket, Ball Joint Connector with Positioning Relay	Fixed with Positioning Relay	—	—	332-4831
Actuator, Integral Pivot	Pivot	331-4312	331-4512	331-4812
Actuator, Integral Pivot with Pivot Post. Mounted on plate for Extended Shaft ² with Clevis and Crank Arm for 3/8" (10 mm), 7/16" (11 mm), or 1/2" (13 mm) diameter shaft.	Extended Shaft ²	331-4311	331-4511	331-4811
Actuator, Integral Pivot with Pivot Post. Mounted on plate for Extended Shaft ² with Clevis and Crank Arm for 3/8" (10 mm), 7/16" (11 mm), 1/2" (13 mm) diameter shaft.	Extended Shaft ² with Positioning Relay	—	—	332-4811
If the actuator is inoperative, replace the entire actuator.				
 The No. 3 damper actuator part numbers noted above all utilize pneumatic damper actuators that are UL Recognized Components for fire/smoke applications under UL's Damper Actuator category EMKU2, referencing standards UL555 and UL555S. This category covers pneumatic damper actuators used in fire dampers and leakage rated dampers for smoke control.				

Ordering Notes:

- ¹ These No. 3 pneumatic basic damper actuator devices are UL component recognized. These same basic damper actuator devices are used in all of the actuator assemblies following the base model in each column.
- ² 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.

Dimensions



Dimensions shown in inches (mm).



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Damper Actuators

24/7 Technical support by phone and in the field

Our Technical Support Center is open from 7:00 a.m. to 7:00 p.m. CST, every day, including holidays and remains on-call for after-hour emergencies. Plus, we offer field support and on-site assistance.

We cover the entire life cycle of our Control Products & Systems, including:

- APOGEE®, TALON® and Staefa
- SiPass Security Access System

When you need answers, call 800-877-7545, option 2.

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No. 4 Pneumatic Actuator



331-2929 No. 4
Pneumatic Actuator
for frame mounting.



331-2904 No. 4
Pneumatic Actuator with
pivot mounting bracket.



331-2973 No. 4
Pneumatic Actuator with clevis, and crank.
Universal Mounting Plate for extended shaft
or frame mounting.



331-2974 No. 4
Pneumatic Actuator with
non-pivot bracket for unit ventilator.

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.

Nominal Spring Rating	Max. 121 Thrust lb. (N)				Torque Rating lb.-in (Nm)			
	Full Stroke Forward			Spring Return (No Stroke) 0 psi (0 kPa)	Gradual Operation	2-position Operation or with Positioner		
	15 psi (103 kPa)	18 psi (124 kPa)	25 psi (172 kPa)			15 psi (103 kPa)	18 psi (124 kPa)	25 psi (172 kPa)
3 to 7 psi (21 to 48 kPa)	88 (391)	121 (538)	198 (881)	33 (147)	30 (3.4)	46 (5.2)	46 (5.2)	46 (5.2)
3 to 13 psi (21 to 90 kPa)	22 (98)	55 (245)	132 (587)	33 (147)	30 (3.4)	46 (5.2)	46 (5.2)	46 (5.2)
5 to 10 psi (35 to 90 kPa)	55 (245)	88 (391)	165 (734)	55 (245)	30 (3.4)	77 (8.7)	77 (8.7)	77 (8.7)
8 to 13 psi (55 to 90 kPa)	22 (98)	55 (245)	132 (587)	88 (391)	30 (3.4)	123 (14)	123 (14)	123 (14)
2 to 3, 8 to 13 psi (14 to 20, 55 to 90 kPa) Hesitation	22 (98)	55 (245)	132 (587)	22 (98)	23 (2.6)	—	—	—

Table Notes:

With maximum hysteresis of 2.5 psi (17.2 kPa) @ 90° rotation.

Specifications

Effective Diaphragm Area	11 in. ² (71 cm ²)
Stroke	4-in. (102 mm)
Stroke (hesitation models)	3-in. (76 mm)
Max. Air Pressure	30 psi (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.....	-20° to 200°F (-29° to 93°C)
Storage.....	-20° to 200°F (-29° to 93°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)

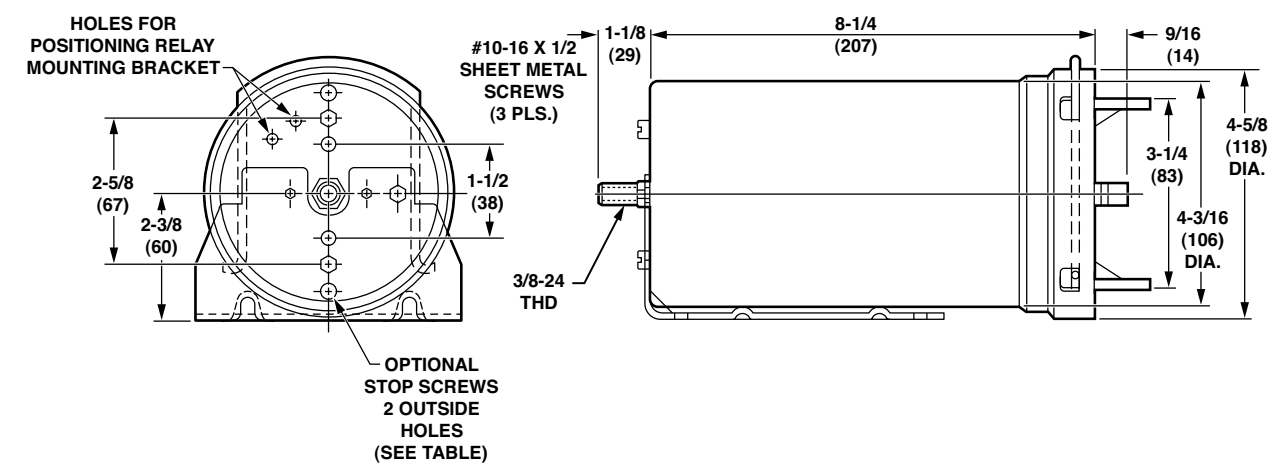
Product Ordering

		No. 4 Actuator Part Number				
		Nominal Spring Range				
		3-7 psi (21-48 kPa)	3-13 psi (21-90 kPa)	5-10 psi (35-69 kPa)	8-13 psi (55-90 kPa)	Hesitation Model 2-3, 8-13 psi (14-21, 55-90 kPa)
No. 4 Actuator Description ³	Mounting Style					
Actuator, Basic with Integral Pivot	Pivot	331-2904¹	331-2905¹	331-2906¹	331-2961¹	331-2909¹
Actuator, Basic with Integral Pivot and Positioning Relay	Pivot	—	—	—	332-2961	—
Actuator with Integral Pivot, Clevis and Clevis Pin for use with frame mounting accessory	Pivot	331-2929	331-2930	331-2931	331-2968	—
Actuator with Integral Pivot, Clevis and Clevis Pin for use with frame mounting accessory. Includes Positioning Relay.	Pivot	—	—	—	332-2968	—
Actuator, Mounting Screws (Non-Pivot)	Front	331-2910	—	331-2917	331-2963	—
Actuator, Bracket (Non-Pivot) with 3" (76 mm) stroke for unit ventilator	Fixed	331-2911	—	331-2934	331-2966	331-2927
Actuator, Bracket (Non-Pivot) with 2-3/8" (60 mm) stroke for unit ventilator	Fixed	—	—	—	—	331-2974
Actuator, Mounting Plate, Ball Joint Connector	Fixed	—	331-3018	—	331-3017	—
Actuator, Mounting Plate, Ball Joint Connector with Positioning Relay	Fixed with Positioning Relay	—	—	—	332-3017	—
Actuator, Integral Pivot with Pivot Post. Mounted on plate for Extended Shaft ² with Clevis and Crank Arm for 3/8" (9.5 mm), 7/16" (11 mm) or 1/2" (13 mm) diameter shaft. Parts for frame mounting (blade drive) included with kit.	Universal Kit ²	331-3000	331-3001	331-3002	331-2973	331-3004
Actuator, Integral Pivot with pivot post and Positioning Relay. Mounted on plate for extended shaft with Clevis and Crank for 3/8" (10 mm), 7/16" (11 mm), 1/2" (13 mm) diameter shaft. Parts for frame mounting (blade drive) included with kit.	Universal Kit ² with Positioning Relay	—	—	—	332-2973	—
If the actuator is inoperative, replace the entire actuator.						
 The No. 4 damper actuator part numbers noted above all utilize pneumatic damper actuators that are UL Recognized Components for fire/smoke applications under UL's Damper Actuator category EMKU2, referencing standards UL555 and UL555S. This category covers pneumatic damper actuators used in fire dampers and leakage rated dampers for smoke control.						

Ordering Notes:

- ¹ These No. 4 pneumatic basic damper actuator devices are UL component recognized. These same basic damper actuator devices are used in all of the actuator assemblies following the base model in each column.
- ² When the actuator is ordered with Universal Kit 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.
- ³ The No. 4 pneumatic damper actuator contains a replaceable diaphragm with EPDM rubber. See Siemens document #129-089 to replace.

Dimensions



Dimensions shown in inches (mm).



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Damper Actuators

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No. 6 Pneumatic Actuator



331-2792 and 331-3060 No. 6
Pneumatic Actuator,
pivot mounting type.



331-2856 No. 6
Pneumatic Actuator and
clevis for frame mounting.



331-3011 No. 6 Pneumatic Actuator,
clevis, crank and rocker arm. Universal mounting for
extended shaft or frame mounting.

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.

Nominal Spring Rating	Max. Thrust lb. (N)				Torque Rating lb.-in (Nm)			
	Full Stroke Forward			Spring Return (No Stroke) 0 psi (0 kPa)	Gradual Operation	2-position Operation or with Positioner		
	15 psi (103 kPa)	18 psi (124 kPa)	25 psi (172 kPa)			15 psi (103 kPa)	18 psi (124 kPa)	25 psi (172 kPa)
3 to 8 psi (21 to 55 kPa)	125 (556)	179 (796)	304 (1352)	54 (240)	50 (5.6)	75 (8.5)	75 (8.5)	75 (8.5)
3 to 13 psi (21 to 90 kPa)	36 (160)	89 (396)	214 (952)	54 (240)	50 (5.6)	75 (8.5)	75 (8.5)	75 (8.5)
8 to 13 psi (55 to 90 kPa)	36 (160)	89 (396)	214 (952)	144 (640)	50 (5.6)	202 (22.8)	202 (22.8)	202 (22.8)

Table Notes:
With maximum hysteresis of 2.5 psi (17.2 kPa) @ 90° rotation.

Specifications

Effective Diaphragm Area	17.9 in. ² (115 cm ²)
Stroke	4-in. (102 mm)
Max. Air Pressure	30 psi (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 200°F (-29° to 93°C)
Storage.....	-20° to 200°F (-29° to 93°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)

Product Ordering

No. 6 Actuator Description ³	Mounting Style	No. 6 Actuator Part Number		
		Nominal Spring Range		
		3-8 psi (21-55 kPa)	3-13 psi (21-90 kPa)	8-13 psi (55-90 kPa)
Actuator, Basic, Integral Pivot	Pivot	331-2793¹	331-2794¹	331-3060¹
Actuator, Integral Pivot and Forward Travel Stops	Pivot	—	—	331-2988
Actuator with Clevis	Pivot	331-2857	331-2858	331-2856
Actuator with Clevis and Positioning Relay	Pivot	—	—	332-2856
Actuator, Integral Pivot with pivot post. Mounted on plate for Extended Shaft ² mounting with Clevis and Crank for 3/8" (10 mm), 7/16" (11 mm) or 1/2" (13 mm) diameter shaft.	Extended Shaft ²	331-3012	331-3013	331-3011
Actuator, Integral Pivot with pivot post. Mounted on plate for Extended Shaft ² mounting with Clevis and Crank for 3/8" (10 mm), 7/16" (11 mm) or 1/2" (13 mm) diameter shaft.	Extended Shaft Kit ² with Positioning Relay	—	—	332-3011
If the actuator is inoperative, replace the entire actuator.				
 The No. 6 damper actuator part numbers noted above all utilize pneumatic damper actuators that are UL Recognized Components for fire/smoke applications under UL's Damper Actuator category EMKU2, referencing standards UL555 and UL555S. This category covers pneumatic damper actuators used in fire dampers and leakage rated dampers for smoke control.				

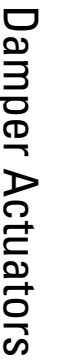
Ordering Notes:

- ¹ These No. 6 pneumatic basic damper actuator devices are UL component recognized. These same basic damper actuator devices are used in all of the actuator assemblies following the base model in each column.
- ² When the actuator is ordered with universal 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.
- ³ Siemens No. 6 Pneumatic Damper Actuator contains a replaceable diaphragm with silicone rubber. See Siemens document #129-089 for replacement instruction for this diaphragm.

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Damper Actuators

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Damper Actuators



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- Choose the medium being controlled
- Determine the correct Cv or required flow (gpm)
- Calculate pressure drop and quantity of steam
- Size and select Damper Actuators by Torque and Control Signal

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No. 6 Pneumatic Actuator – Tandem Mounting



331 No. 6 Pneumatic Damper 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

Arm Length Versus Rotation

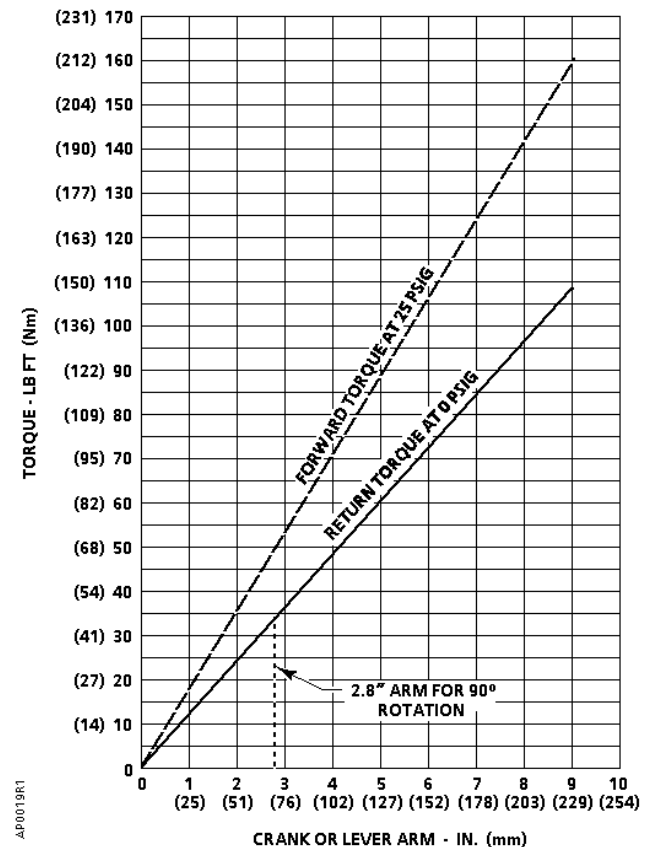
If the damper rotation is other than 90°, use the Arm Length vs. Rotation Chart and the Thrust and Torque Ratings to determine the actuator assembly torque rating. Then divide the actuator assembly torque rating by the damper torque rating per unit of area for job conditions to determine the damper area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

Lever or Crank Arm Length In. (mm)	Damper Rotation in Degrees
2.3" (58 mm)	120°
2.8" (71 mm)	90°
3" (76 mm)	84°
4" (102 mm)	60°
5" (127 mm)	47°
6" (152 mm)	39°
7" (178 mm)	33°
8" (203 mm)	29°
9" (229 mm)	25°

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.

Torque Rating



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Damper Actuators

Specifications

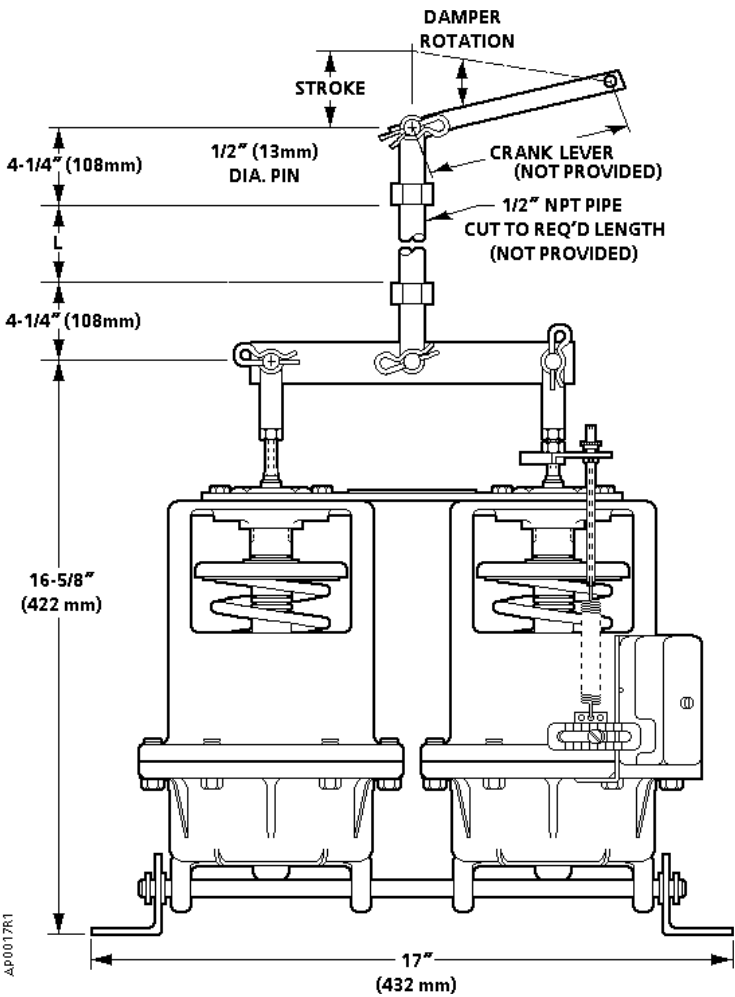
Effective Diaphragm Area	35.8 in. ² (230 cm ²)
Stroke	4-in. (102 mm)
Max. Air Pressure	30 psi (207 kPa)
Spring Start Point (Adjustable)	3 to 10 psi (21 to 69 kPa)
Spring Span (Adjustable)	3 to 12 psi (21 to 83 kPa)
Spring Range	
Factory Setting	8 to 13 psi (55 to 90 kPa)
Temperature Range	
Operating	-20° to 200°F (-29° to 93°C)
Storage	-20° to 200°F (-29° to 93°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)

Product Ordering

Description	Part No.
Damper Actuator with Tandem Mounting	331-3070

Dimensions



Dimensions shown in inches (mm).

Accessories & Service Kits

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Large Capacity Pneumatic Actuator



331 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

- Maximum 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.

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Damper Actuators

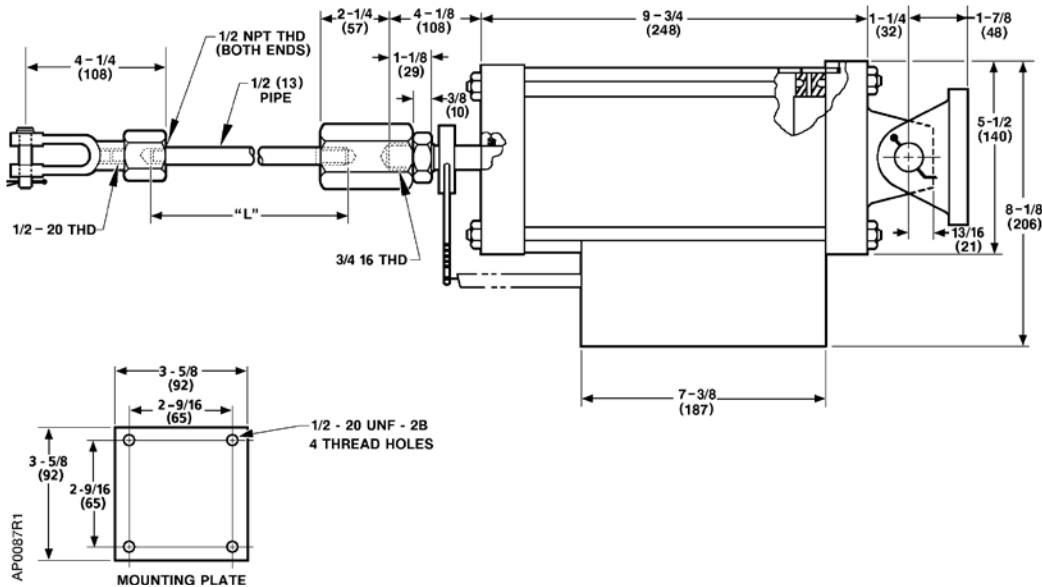
Specifications

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

Product Ordering

Description	Part No.
Large Capacity Pneumatic Actuator	331-2882

Dimensions



Dimensions shown in inches (mm).

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Position Indicators	B-66
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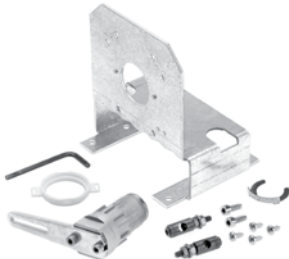


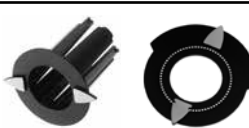
Refer to Valve Accessories & Service Kits, A-289, for Rack & Pinion Linkage.

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Damper Actuators

	Description	Series			Quantity	Part No.
		GDE GLB	GEB GMA	GCA GIB GBB		
OpenAir						
	Actuator Commissioning Tool. A portable instrument for exercising, calibrating, and testing resistive, proportional (voltage/current), incremental (floating), and On/Off actuators.	•	•	•	1	985-047
	Adjustment Tool.		•		1	985-098P10
	Hex Key.	•			Pkg. of 24	985-054P24
	Crank Arm Kit. Allows a direct-coupled actuator to provide an auxiliary linear drive; can be used to simultaneously drive a set of opposing or adjacent dampers with a single actuator.		•		1	ASK71.13
				•	1	ASK71.3
	Crank Arm Kit with Bracket. For use in applications where the actuator can be rigidly surface-mounted and a linear stroke output is required.		•		1	ASK71.14
				•	1	ASK71.4
	Rotary to Linear Kit.	•			1	ASK71.5
	Rotary to Linear Kit with Universal Mounting Bracket.	•			1	ASK71.6
	Universal Crank Arm. For linear applications requiring connection to damper shaft when ball joint connection is not possible. • Shaft sizes 3/8 to 1"	•	•	•	1	ASK71.9

	Description	Series			Quantity	Part No.
		GDE GLB	GEB GMA	GCA GIB GBB		
OpenAir						
	Tandem Mount Bracket. Provides an extended anti-rotation pin which allows dual mounting of 2-position, floating and GCA15 actuators, and all GIB actuators.			•	1	ASK73.1
	Tandem Mount Bracket. For dual mounting of modulating (0 to 10 V) GCA16X actuators.			•	1	ASK73.2U
	Floor Mount Kit. For airstream applications and where a foot-mounted actuator can be used. Ideal replacement of a Honeywell MOD motor. Includes crank arm, Teflon support-bearing ring, and mounting fasteners.			•	1	ASK71.1U
	Frame Mount Kit. For direct mounting to damper frame. Includes a crank arm to generate a linear stroke, a Teflon support-bearing ring to minimize side-loading on the actuator's output bearing, and other mounting fasteners.			•	1	ASK71.2U
	Combined Foot/Frame Mount Kit.		•		1	ASK71.11
	Damper Push Rods. 5/16" (8 mm) dia.	•	•	•		
	• 12" (30 cm) Length				1	338-041
	• 15" (38 cm) Length				1	338-042
	• 18" (46 cm) Length				1	338-043
	• 24" (61 cm) Length				1	338-044
	• 36" (91 cm) Length				1	338-045
	• 48" (122 cm) Length				1	338-046

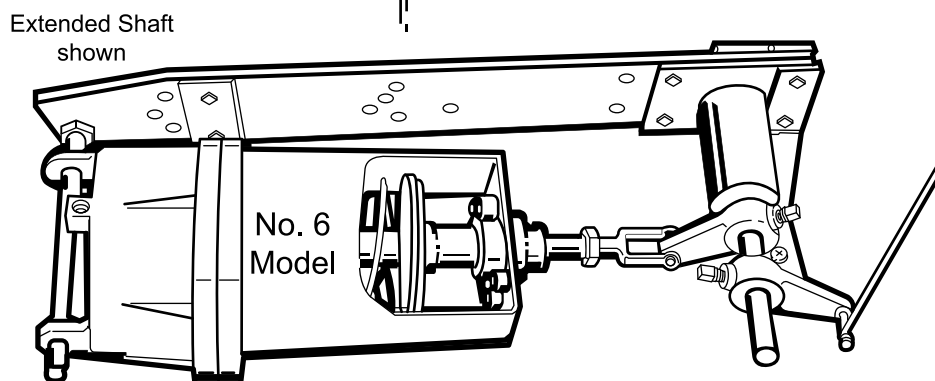
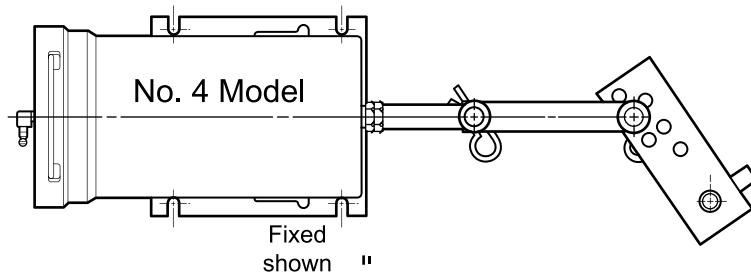
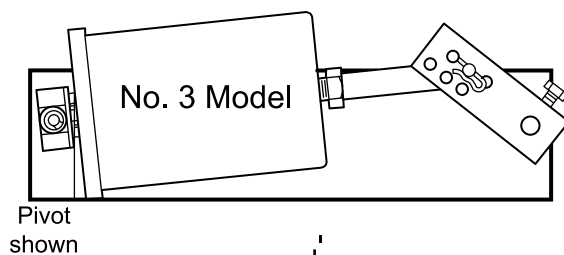
	Description	Series			Quantity	Part No.
		GDE GLB	GEB GMA	GCA GIB GBB		
OpenAir						
	Anti-rotation Bracket.	•			Pkg. of 24	985-055P24
	• Mounting Screws	•			Pkg. of 48	985-053P48
	Anti-rotation Bracket.			•	1	985-006
	Anti-rotation Bracket.		•			985-092
	Standard Shaft Adapter. Replacement for a standard self-centering shaft adapter. • up to a 1" (25 mm) D			•	1	985-004
	• up to 3/4" (20 mm) D		•		1	985-093
	Over-sized Shaft Adapter. Accepts up to 1.05" (27 mm) diameter shaft and can be used for jackshafts that are slightly oversized. <i>Note: When used with a GIB, accepts shaft diameters from 3/4 to 1-1/20" (19 to 27 mm).</i>			•	1	ASK74.1U
	Replacement Shaft Adapter Clip.		•		Pkg. of 20	985-242P20
				•	Pkg. of 20	985-241P20
	5/8 to 3/4" (10 mm to 19 mm) Actuator Shaft Insert. For use with GIB and Over-sized Shaft Adapter, ASK74.1U.			•	Pkg. of 20	985-052P20
	3/8" (8 to 10 mm) Actuator Shaft Insert.	•			Pkg. of 10	ASK78.3U
	1/2" (13 mm) Shaft Guide. Note: This part is factory-installed with all GDE/GLB damper actuators.	•			Pkg. of 25	985-101P25
	Standard Position Indicators.	•			Pkg. of 10	985-051P10
			•		Pkg. of 10	985-094P10
				•	Pkg. of 10	985-003
	1/2" (13 mm) Conduit Adapters.	•			1	ASK76.1U
		•			Pkg. of 20	ASK76.1UP20
	1/2" (13 mm) Conduit Adapters.			•	Pkg. of 20	985-008P20
	1/2" (13 mm) Conduit Adapter – Male.			•	Pkg. of 25	985-035P25

	Description	Series				Quantity	Part No.
		GDE GLB	GEB GMA	GCA GIB GBB	GPC GQD		
OpenAir							
	NEMA 4X Rated Weathershield. Includes the NEMA Type 4X Weathershield Enclosure Assembly and NEMA 4X Cover, plus 3 anti-rotation brackets that accommodate all control adaptor types, and all the screws and standoffs needed to mount kit to equipment.	•	•	•	•	1	ASK75.7U
	NEMA 3R Rated Weathershield. Includes cover, base plate with factory-installed gasketing, 15TEK self-drilling screws, and anti-rotation (mounting) bracket. Knockouts for connection of 1/2" conduit also included; NEMA 3R rated.		•			1	ASK75.3U
				•		1	ASK75.1U
	NEMA 3R Rated Heater and Weathershield. Includes weathershield listed above and heater assembly for operation in temps as low as -58°F; NEMA 3R rated.		•			1	985-107
				•		1	985-106
	Heater Assembly. Includes replacement heater assembly.		•			1	985-108
				•		1	985-105
	External Auxiliary Switch Kit. Includes dual switch package rated to 250 Vac, mounting screws and adapter rings. Mounts to the actuator, not damper shaft.		•	•		1	ASC77.2U
	500 Ohm Restrictor Kit. Converts 4-20 mA signal to 2 to 10 Vdc.	•	•	•		1	985-124
	Floating Input Cable, 3 ft. For use with GDE131.1N only.	•				Pkg. of 12	985-131
	0 to 10 Vdc Input Cable, 3 ft. For use with GDE161.1N only.	•				Pkg. of 12	985-133
	Daisy Chain Cable, 12 ft. For use with GDE131.1N and GDE161.1N only.	•				Pkg. of 12	985-134
	Daisy Chain Cable, 25 ft. For use with GDE131.1N and GDE161.1N only.	•				Pkg. of 12	985-135
	Universal Indirect Mounting Kit. Floor or frame mounting with the GQD actuator series.				•	1	ASK80.1
	Rotation Limiter Kit. Limits the rotation angle of the GQD actuator from the standard 90°.				•	Pkg. of 10	ASK74.11

Damper Actuator Accessories Location Diagram

Mounting
Style

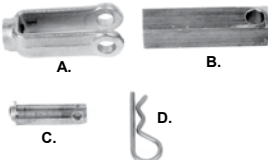
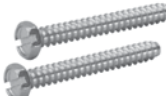
Connections
Damper Fittings



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Damper Actuators

	Description	Used with Pneumatic Actuator Models					Quantity	Part No.
		No. 3	No. 4	No. 6	No. 6 Tandem	Large Capacity LC		
Connection Hardware and Damper Fittings								
	Damper Shaft Crank. Adjustable radius, 3/4" (19 mm) to 4-5/8" (117 mm), for 3/8" (10 mm) diameter dampershaft.	•	•				1	331-805
	Damper Shaft Crank. Selectable radius, 45°, 60°, and 90° angular rotation, for 3/8" (10 mm) to 1/2" (13 mm) diameter damper shaft.	•	•				1	331-941
	• 1/2"						1	333-182
	• 5/8"						1	333-183
	• 3/4"						1	333-181
	Cast Iron Crank and Set Screws. For 1/2" (6 mm) OD shaft.			•	•	•	1	333-078
	Linkage Kit. 4" (102 mm) link and crank. For 3/8 inch (10 mm) to 1/2 inch (13 mm) diameter damper shafts.	•	•	•	•		1	331-958
	Linkage Kit. 4" (102 mm) rod, ball joint and crank. For 3/8 inch (10 mm) to 1/2 inch (13 mm) diameter damper shafts.	•	•	•	•		1	331-947
	Ball Joint Connector.	•	•				1	331-656
	Pivot Post Kit. For use with No. 3 actuator. 1/4-28 x 7/16 inch bolt and nut 5/16 inch rod receiver.	•					1	331-657

	Description	Used with Pneumatic Actuator Models					Quantity	Part No.
		No. 3	No. 4	No. 6	No. 6 Tandem	Large Capacity LC		
Connection Hardware and Damper Fittings								
	Ball Joint Connector Linkage Kit. For Trane and Nesbitt units • 3/8-24 ball joint connector • 1/4-20 ball joint connector • 8 inch (202 mm) long, 5/16 inch push rod • Bracket, lockwashers, nuts	•	•				1	331-671
	Clevis and Components for Frame Mounting. • Forged Steel Clevis, 2 in. long (A)	•	•	•	•		1	331-653
	• 5/8" Square Steel Clevis, 2.6 in. long (B)						1	333-207
	• Clevis Pin (C)						1	331-293
	• Hitch Clip Pin (D)						1	331-807
	Steel Pivot Post. For service replacement only (short length).		•	•			1	331-547
	Steel Pivot Post. For additional clearance (long length) for actuator. Includes steel pivot post lockwasher, nuts (2), and E-rings (2).		•	•			1	333-045
	Actuator Forward Stroke Stop Kit. Adjustable 3" (76 mm) to 4" (102 mm) Field-assembled.		•				1	331-938
	Actuator Forward Stroke Stop Kit. Adjustable 2-3/8" (60 mm) to 4" (102 mm) Field-assembled.		•				1	331-939
	Travel Stop Kit. For field assembly. Reduce travel from 4" (102 mm) down to 2-29/32"(73 mm). For Model 3 only.	•	•				1	333-197

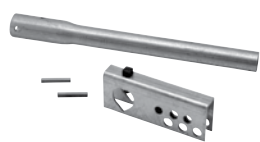
Accessories & Service Kits

	Description	Used with Pneumatic Actuator Models					Quantity	Part No.
		No. 3	No. 4	No. 6	No. 6 Tandem	Large Capacity LC		
Actuator Shaft Extensions and Damper Push Rods								
	Actuator Shaft Extension Kit. Includes push rod, 1/4"-28 ball joint connector, coupling and screws.	•	•				1	331-674
	Actuator Shaft Extension Kit. Includes shaft/clevis adapter (2 required), clevis adapter rod and nuts. Field-assembled actuator shaft extension kit with field fabricated 1/2" NPT threaded pipe (not provided). Threaded female adapters are 1/2"-14 NPT and 3/8"-24 UNS threads.		•	•			1	333-030
	Long Actuator Shaft Extension Rod. 10-1/8" (257 mm)	•	•	•			1	331-434A
	Damper Shaft Extension. 1/2" (13 mm) diameter damper shaft extension rod. Rod is 2-1/4" (57 mm) long.	•	•	•			1	331-631
	Damper Shaft Extension. 1/2" (13 mm) diameter damper shaft extension rod. Rod is 9" (229 mm) long.	•	•	•			1	333-043-03
	Adapter. For 3/8" (10 mm) diameter damper shafts. Use with 333-042, Shaft Extension.	•	•	•			1	331-632

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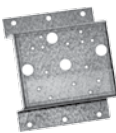
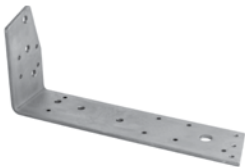
Damper Actuators

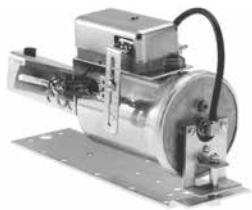
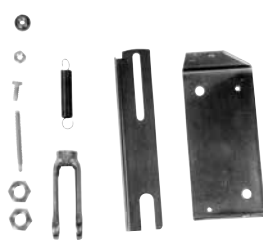
Accessories & Service Kits

	Description	Used with Pneumatic Actuator Models					Quantity	Part No.
		No. 3	No. 4	No. 6	No. 6 Tandem	Large Capacity LC		
Actuator Shaft Extensions and Damper Push Rods								
	Long Shaft Extension. For a 1/2" (13 mm) hollow damper shaft.		•				1	333-184
	Shaft Rod for LC Actuator. • 4.5 inches (114 mm) long					•	1	331-357
	Shaft Extension. 1" (25 mm) diameter shaft extension 11-5/8" (295 mm) long for Ruskin dampers. Includes 1" (25 mm) diameter crank and 2 roll pins for assembly.		•	•			1	333-194
	Flange Bearing. 1/2" (13 mm) damper shaft bearing for universal mounting plate, 331-623.		•	•			1	331-862
	Damper Push Rods. 5/16" (8 mm) dia.	•	•	•				
	• 12" (30 cm) Length						1	338-041
	• 15" (38 cm) Length						1	338-042
	• 18" (46 cm) Length						1	338-043
	• 24" (61 cm) Length						1	338-044
	• 36" (91 cm) Length						1	338-045
	• 48" (122 cm) Length						1	338-046
	Adjustable Yoke End Adapter. • 1/2–20 thread to 1/2 inch NPT				•	•	1	331-351
	No. 3 Pivot Post Kit. For extended shaft mounting plate.	•					1	331-006
	• E-ring						2	
	• Lockwasher						2	
	• Nut						2	
	Frame Mounting Lug Kit.	•	•	•			1	331-004
	• Screw						2	
	• Nut						2	

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Damper Actuators

	Description	Used with Pneumatic Actuator Models					Quantity	Part No.
		No. 3	No. 4	No. 6	No. 6 Tandem	Large Capacity LC		
Actuator Shaft Extensions and Damper Push Rods								
	Extended Shaft Mounting Plate. May also require pivot post, clevis, crank and miscellaneous mounting hardware. 3" (76 mm) W x 10-1/2" (267 mm) L.	•					1	331-033
	Offset Mounting Bracket. For mounting the universal mounting lug, pivot post, clevis, crank, and miscellaneous mounting hardware.		•	•			1	333-176
	Universal Mounting Plate. May also require frame mounting lug, pivot post, clevis, crank and miscellaneous mounting hardware.		•	•				
	• 3/4" (20 mm)						1	331-623
	• 1" (25 mm)						1	331-623A
	Actuator Side Mounting Bracket. For side mounting of No. 3 or No. 4 actuators.	•	•				1	331-916
	Pivot Mounting Kit. Pivot mounting bracket and screws included (3).	•					1	333-148
	Remote Mounting Kit. For use with actuator/clevis assembly. Allows connection to damper shaft when damper shaft and actuator pivot post are mounted on different planes. Field fabricated 3/8" (10 mm) diameter push rod not included. Cut to length as needed.		•	•			1	331-618
	Right Angle Mounting Plate. For mounting actuator to floor. <i>Order separately.</i>		•	•			1	333-208
	Copper to Polyethylene Tubing Adapters. 24" length. Adapts 1/4 inch (6 mm) OD poly tubing to 1/4 inch (6 mm) OD copper tubing. Eliminates the need for compression fitting.	•	•	•	•	•	Pkg. of 50	141-426

	Description	Used with Pneumatic Actuator Models					Quantity	Part No.
		No. 3	No. 4	No. 6	No. 6 Tandem	Large Capacity LC		
Positioning Relay and Relay Mounting Kits								
	Positioning Relay. A compact, pneumatic device designed to provide positive positioning of a pneumatic actuator. The positioned provides supply air pressure against the actuator diaphragm to initiate stem or shaft movement. The actuator spring reverses the stem or shaft movement.	•	•	•	•		1	147-2000
	Positioning Relay Actuator Mounting Kit for No. 3 Damper Actuator. Can also be factory-assembled to extended shaft mounted actuators. If using cast iron crank, it must be replaced with a 331-941 crank. (mfg. after 1/93)	•					1	147-104
	Positioning Relay Mounting Kit for No. 4 Damper Actuator.		•				1	147-314
	Positioning Relay Mounting Kit for No. 6 Damper Actuator.			•			1	147-276

	Description	Used with Pneumatic Actuator Models					Quantity	Part No.
		No. 3	No. 4	No. 6	No. 6 Tandem	Large Capacity LC		
Replacement 147 Feedback Springs for Positioning Relay								
	Small Zinc Plate. Travel Range: 1/4" (6.4 mm) to 3/8" (9.5 mm) • VP 591 8 in. Valve Act. (147-333) • Flowrite 8-inch models 1 and 2 (147-277) • VP 591/3 Flowrite Valve Act. (147-311) • Super Flowrite Valves, 1/2" – 4"						1	147-289
	Small Red. Travel Range: 3/4" (19 mm) to 1" (25 mm) • VP 591 8 in. Valve Act. (147-333) • Flowrite Series 599 8-inch (599-00426) • Flowrite Series 599 12-inch (599-00423) • Flowrite 8-inch models 1 and 2 (147-277) • VP 591/3 Flowrite Valve Act. (147-311) • Super Flowrite Valves, 1/2" – 4"						1	147-290
	Long Green. Travel Range: 1" (25 mm) to 1-1/4" (32 mm) • VP 591 8 in. Valve Act. (147-333) • Flowrite 8-inch models 1 and 2 (147-277) • VP 591/3 Flowrite Valve Act. (147-311) • Super Flowrite Valves, 1/2" – 4"						1	147-291
	2" Red. Travel Range: 2-3/8" (60 mm) to N/A • No. 3 Damper Actuator (147-104)	•					1	147-105
	Long Zinc Plate. Travel Range: 3" (76 mm) to 3-1/4" (83 mm) • No. 6 Damper Actuator (147-276)			•			1	147-292
	3" Red. Travel Range: 3-3/4" (95 mm) to 4" (102 mm) • Relay Mounting Kit (147-300)						1	147-301
	Blue. Travel Range: 4" (102 mm) to 4-1/4" (108 mm) • No. 6 Damper Actuator (147-276)			•			1	147-293
	Zinc Pl. or Yell. Chr. Travel Range: 4" (102 mm) to 6" (152 mm) • No. 4 Damper Actuator (147-314)		•				1	147-313
	Zinc Plate. Travel Range: 7" (178 mm) to 12-1/4" (311 mm) • Large Capacity Pneu. Act. with Positioner (331-2882)					•	1	147-330

Accessories & Service Kits

	Description	Used with Pneumatic Actuator Models					Quantity	Part No.
		No. 3	No. 4	No. 6	No. 6 Tandem	Large Capacity LC		
Actuator Service and Repair Accessories								
	No. 4 Cast Aluminum Housing, Standard. Legacy actuators with part numbers lower than or equal to 331-2885.		•				Pkg. of 5	333-072
	No. 4 Diaphragm for High Ambient Temperature. For newer models with part numbers 331-2888 and higher (Up to 400°F diaphragm).		•				Pkg. of 5	333-071
	No. 6 Standard Replacement Diaphragm.			•	•		Pkg. of 5	333-572

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Damper Actuators