MicroMetl

Since 1965

Actuator
Product Data Sheet



Foremost HVAC Accessory Manufacturer

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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



Selection Guide

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

Application	Electronic														Pneumatic*		
	Spring Return							Non-Spring Return							Spring Return		
	GQD 5 ft²	GPC 8 ft²	GNP 12 ft²	GND 12 ft²	GMA 16 ft²	GGD 36 ft²	GCA 40 ft²	GSD 5 ft²	GDE 11 ft²	GAP 12 ft²	GLB 22 ft²	GEB 32 ft²	GBB 55 ft²	GIB 77 ft²	No. 3 12 ft²	No. 4 16 ft²	No. 6 24 ft²
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_2O (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 m²)	2.5 lb.-in./ft.² (0.3 Nm/m²)
Low Leakage	5 to 10 CFM/ft.² (25.4 to 50.8 l/s per m²)	5.0 lb.-in./ft.² (0.6 Nm/m²)
Very Low Leakage	Less than 5 CFM/ft.² (Less than 25.4 l/s per m²)	7.0 lb.-in./ft.² (0.8 Nm/m²)

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

Electronic Damper Actuators
Spring Return



GQD Series Spring Return
Direct Coupled Electronic Damper Actuator.

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

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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Specifications

Operating Voltage ..... 24 Vac/dc ±20%
120 Vac ±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 5º and 85º

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)

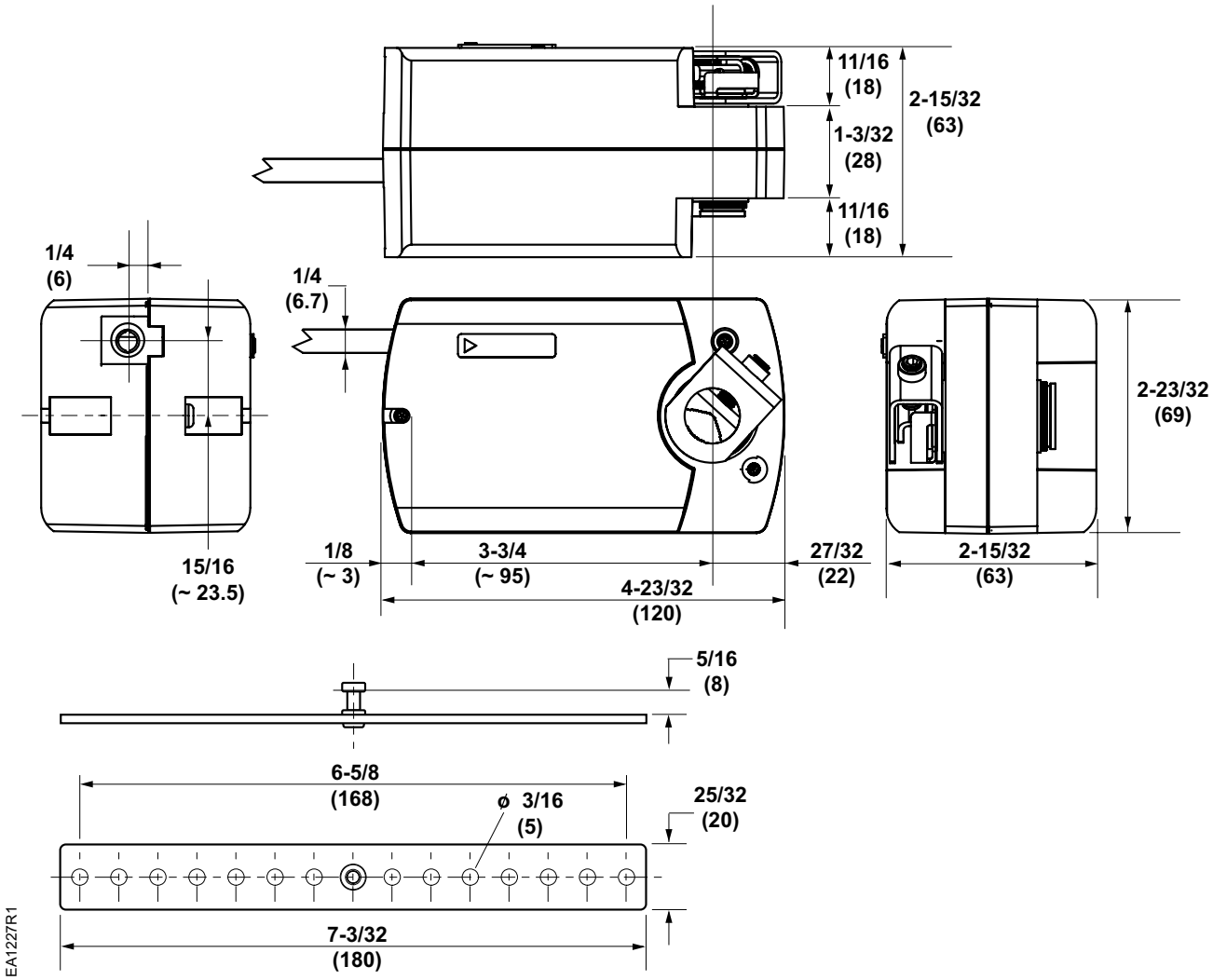
Shipping Weight ..... <1.5 lbs. (<.68 kg)

Product Ordering

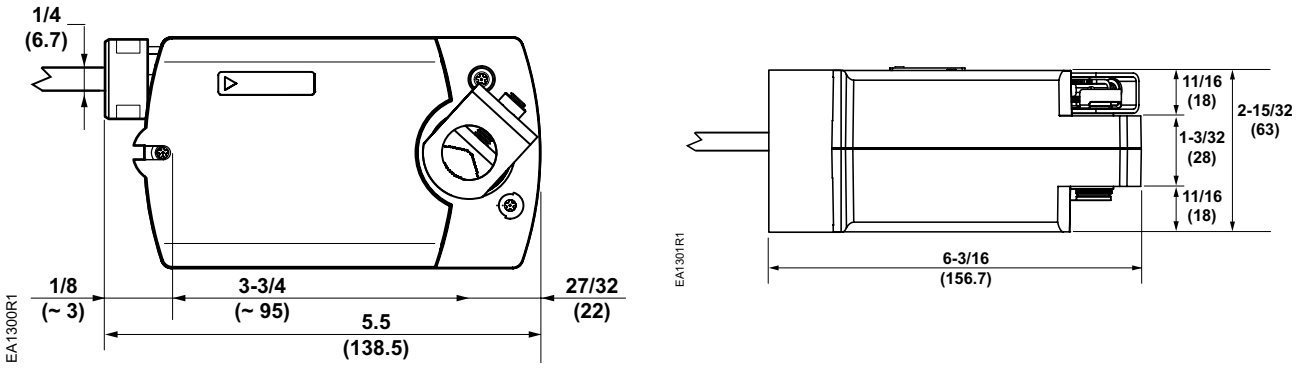
Control Signal	Cabling	Standard	Dual Auxiliary Switches
2-Position (Open/Closed), 24 Vac/dc	Plenum Cable	**GQD121.1P**	**GQD126.1P**
	Plenum Cable/Bulk	**GQD121.1P/B**	**—**
2-Position (Open/Closed), 120 Vac	Standard Cable	**GQD221.1U**	**GQD226.1U**
	Standard Cable/Bulk	**GQD221.1U/B**	**—**
Floating, 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.

GQD Series Open Air Electronic Damper Actuators



Dimensions shown in inches (mm).




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Electronic Damper Actuators Spring Return

NEW!



GPC Series Spring Return
Direct Coupled Electronic Damper Actuator.

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

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.

Applications

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

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°

Siemens Product Guard **PLUS 3** Warranty

Specifications

Operating Voltage ..... 24 Vac/dc ±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)

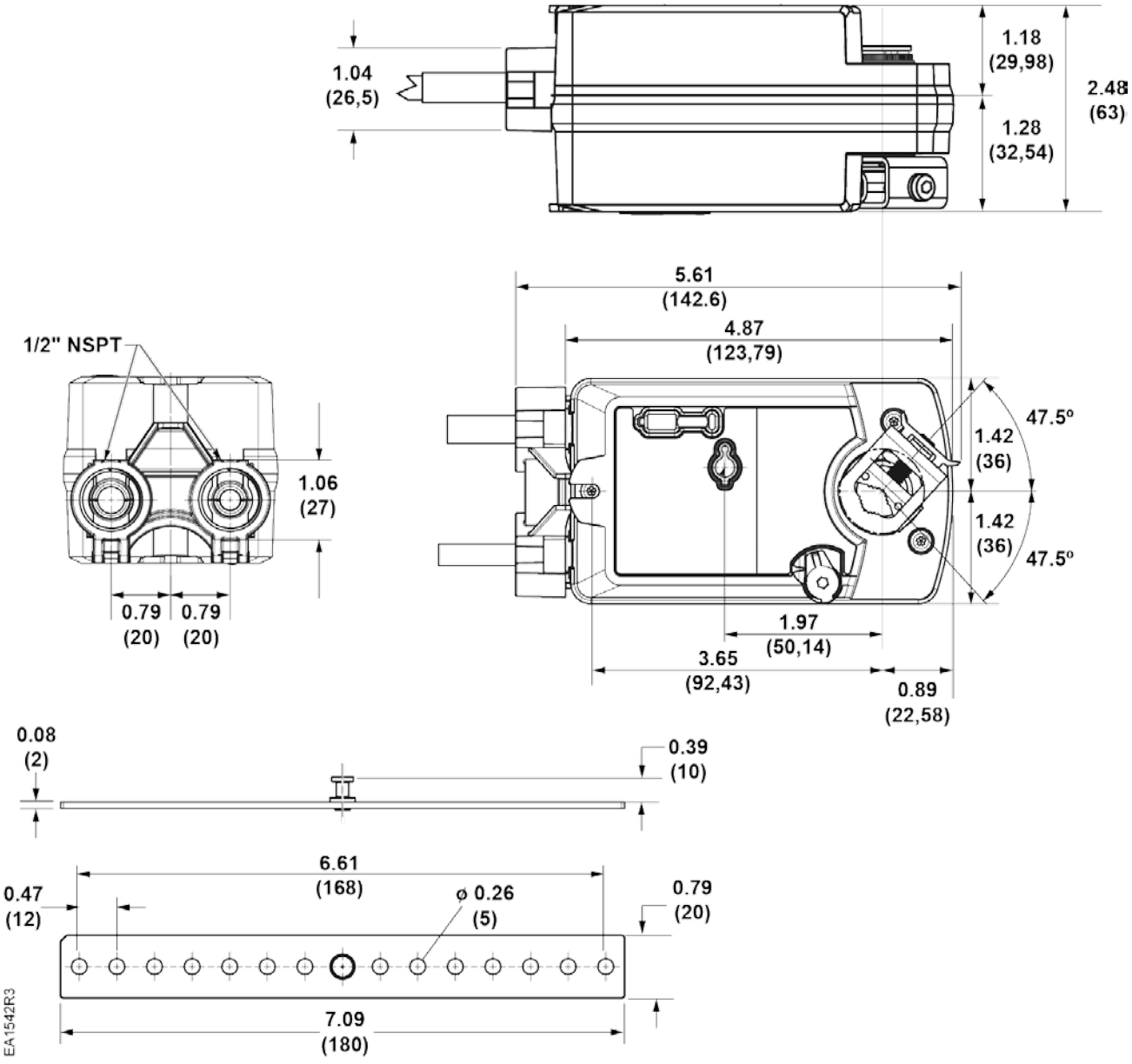
Dimensions ..... <5.6" H x <2.83" W x <2.5" D
(<142 mm H x <72 mm W x <63 mm D)

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

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**

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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PLUS 3 Warranty

Specifications

Operating Voltage
GMA12x, GMA13x, GMA16x, GMA15x ..... 24 Vac ±20%; 24 Vdc ±15%
GMA22x ..... 120 Vac ±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)

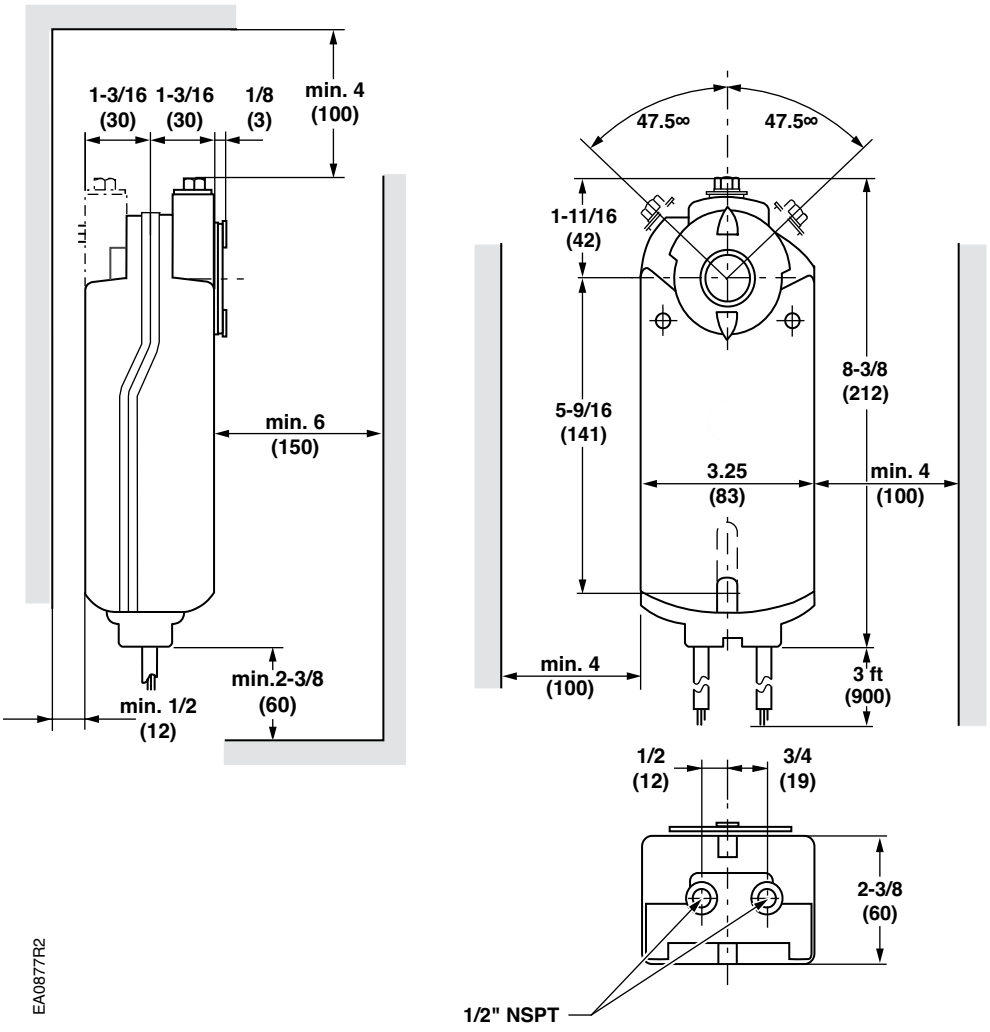
Shipping Weight ..... 2.86 lbs. (1.3 kg)

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



Dimensions shown in inches (mm).


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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.

Siemens Product Guard **PLUS 3** Warranty

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 ..... 90 seconds
Closing (on power loss) with Spring Return ..... 15 seconds

Nominal Angle of Rotation ..... 90°

Max. Angular Rotation ..... 95°

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

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

Shaft Size ..... 3/8 to 1-in. (8 to 25 mm) Dia. ●
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)

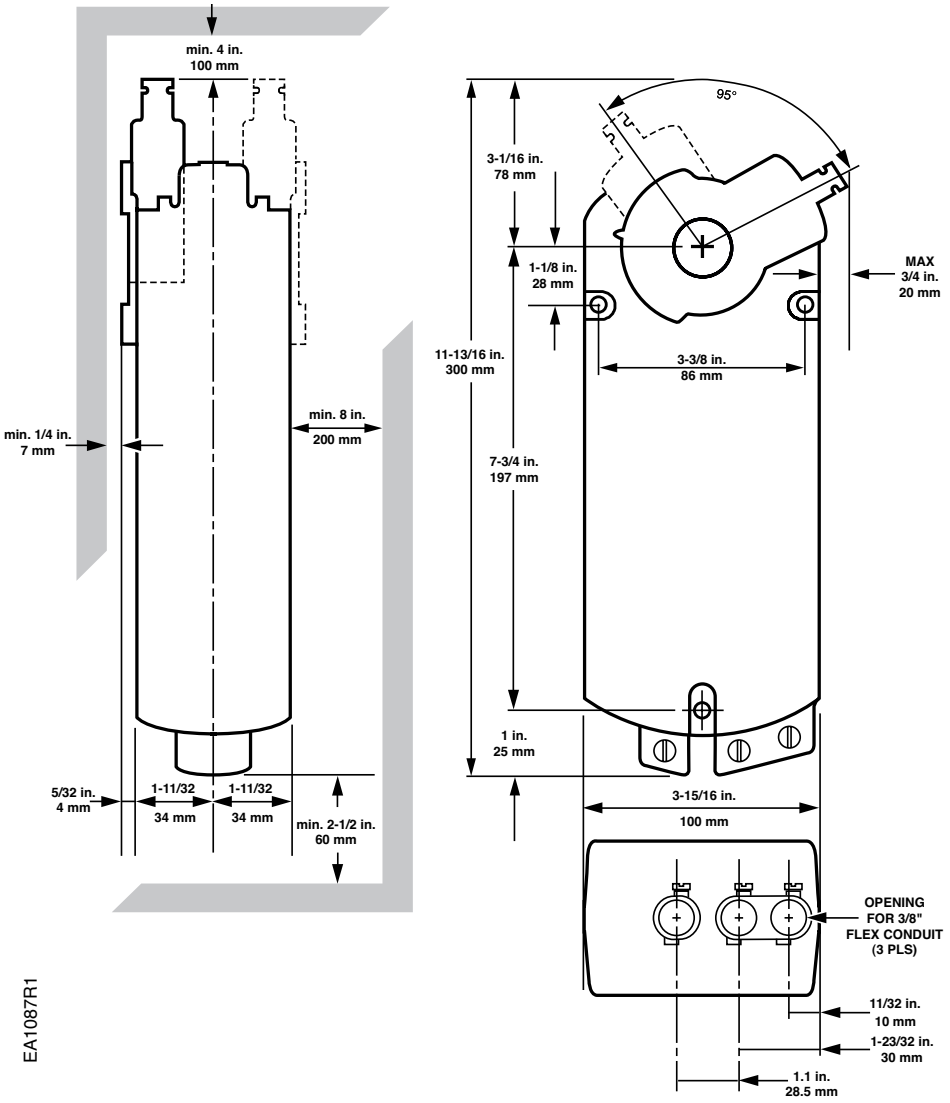
*Refer to Installation Instructions for acceptable mounting positions.

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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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.

Siemens
Product Guard
PLUS 3 Warranty

Specifications

Operating Voltage (1–2) ..... 24 Vac/dc ±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)

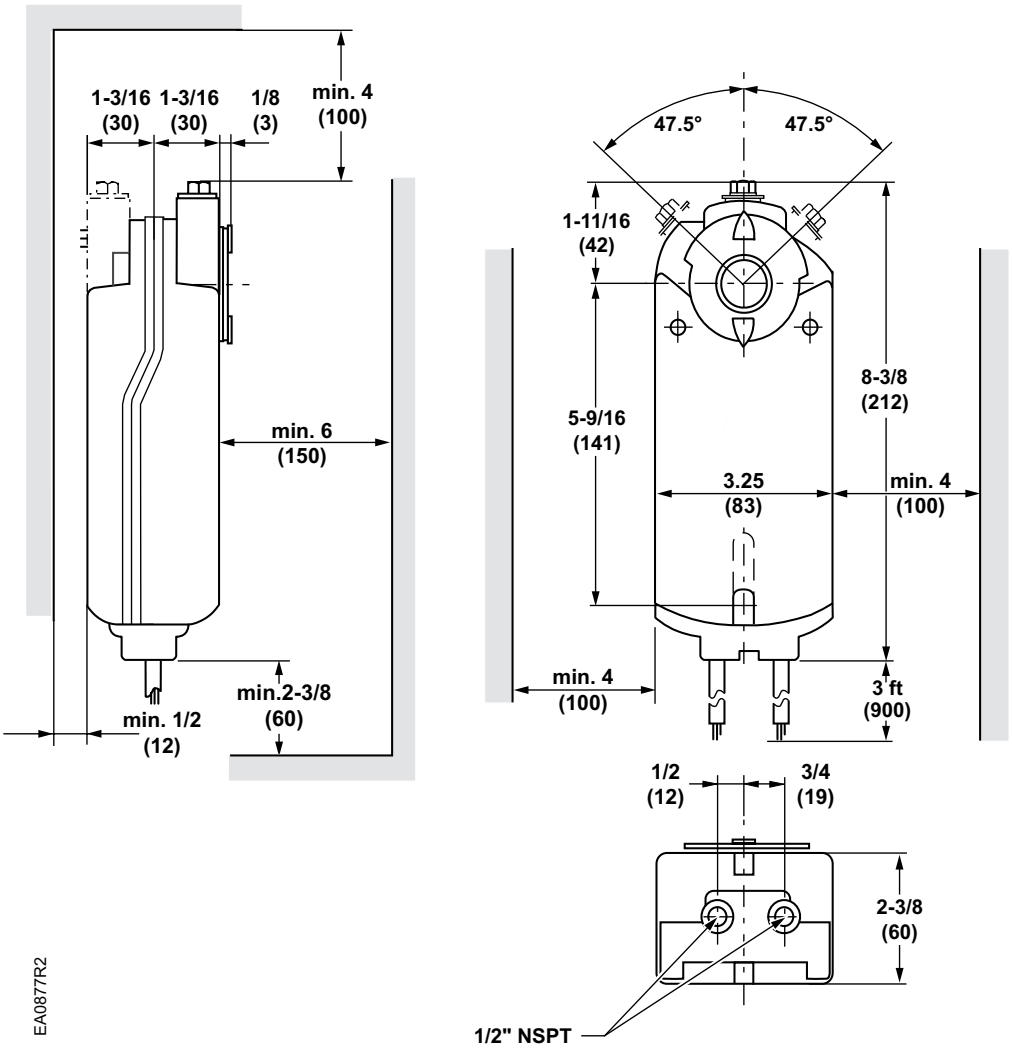
Runtime for 90° Operating with Motor ..... < 2 seconds
Fail-safe position on power loss (for GNP19x only) ..... 2 seconds
Nominal Angle Of Rotation ..... 90°
Maximum Angular Rotation ..... 95°
Fail-Safe Operation
GNP Actuator Series ..... On initial power-up, and after a power-fail event, the GNP actuators 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).



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Electronic Damper Actuators Non-Spring Return

NEW!



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

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

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.

Applications

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

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

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 5º and 85º
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)

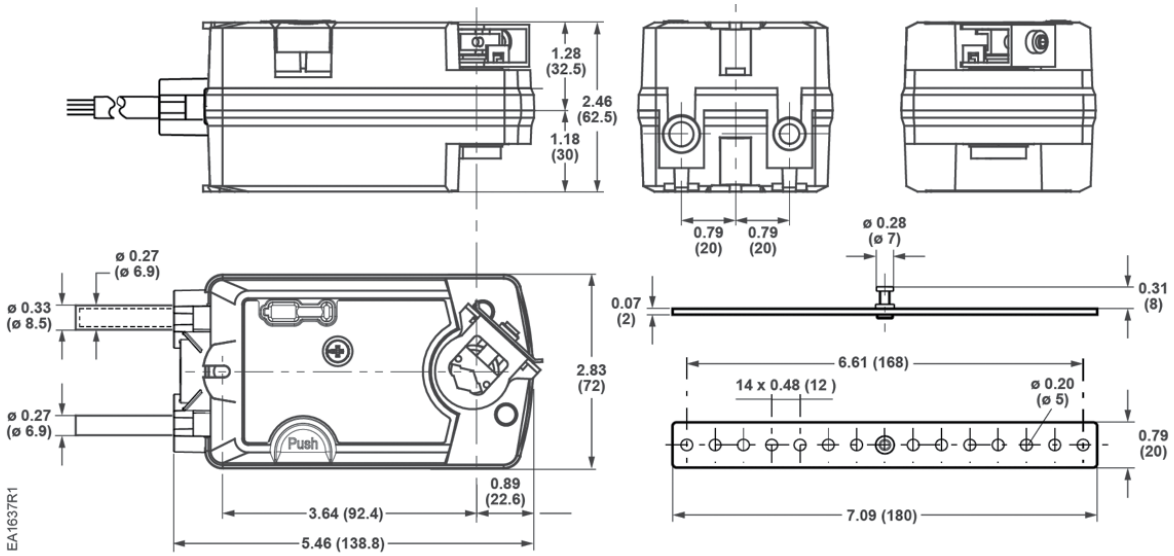
Dimensions.....5.46" H x 2.83" W x 2.45" D
(138.8 mm H x 72 mm W x 62.5 mm D)

Shipping Weight.....1.54 lbs. (0.55 kg)

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 Modulating 24 Vac/dc	Plenum	**GSD161.1P**	**GSD166.1P**

GSD Series Actuators with Mounting Bracket



Dimensions shown in inches (mm).

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Electronic Damper Actuator Non-Spring Return

NEW!



GDE Series Non-Spring Return Electronic Damper Actuator.

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

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.

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)

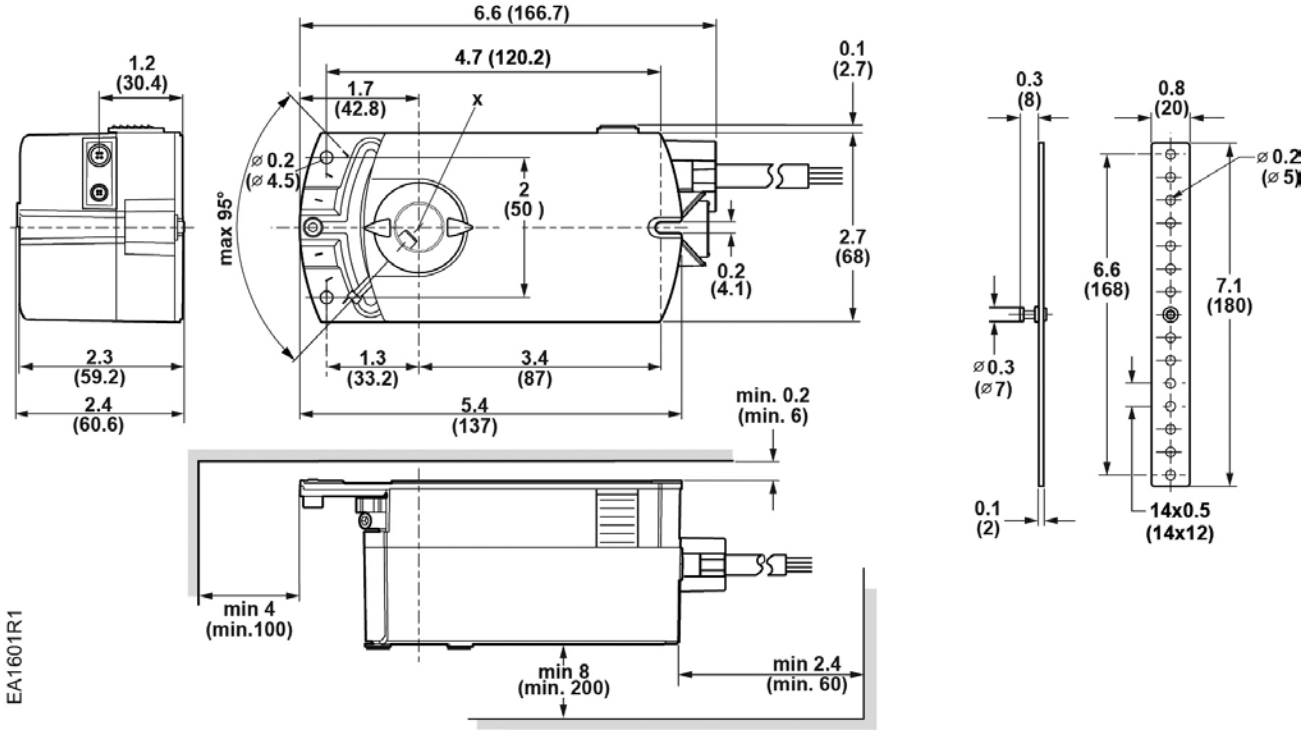
Weight ..... 1.35 lb. (0.61 kg)

Product Ordering

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

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

GDE/GLB Series OpenAir Electronic Damper Actuator and Mounting Bracket



Dimensions shown in inches (mm).

Electronic Damper Actuator Non-Spring Return

NEW!



GLB Series Non-Spring Return Electronic Damper Actuator.

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

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.

Siemens Product Guard **PLUS 3** Warranty

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)

Refer to page B-30 for Dimensions.

Product Ordering

Input Signal	Cabling	Part No. Standard	Part No. 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.

Siemens
Product Guard
PLUS 3 Warranty

Specifications

Power Supply ..... 24 Vac
Operating Voltage ..... 24 Vac ±20%
Frequency ..... 50/60 Hz
Runtime for 90° ..... 125 seconds (60 Hz)
150 seconds (50 Hz)

Power Consumption GEB16x.1x
Running ..... 5 VA (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
AC Rating ..... 24 to 250 Vac
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



GBB Series Non-Spring Return Electronic Damper Actuator.

Easily Replaces:

- Belimo SM/AM Series

221 lb.-in. Torque
0 to 10 Vdc, Modulating Control
Floating Control

c UL us LISTED

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.

Siemens Product Guard **PLUS 3** Warranty

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.

Siemens
Product Guard
PLUS 3 Warranty

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.

Siemens
Product Guard
PLUS 3 Warranty

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.

Product Ordering

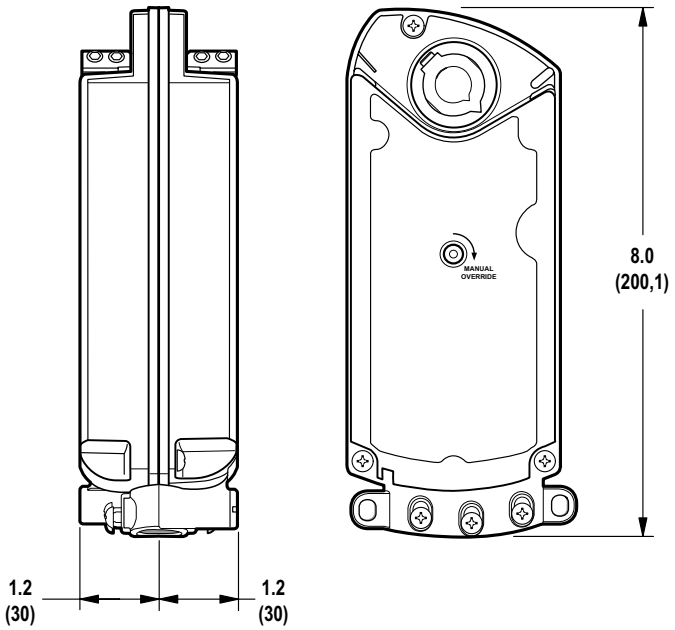
Description	Cabling	Part No. 24 Vac/dc	Part No. 120 Vac	Part No. 230 Vac
2-position	Standard	**GND121.1U**	**GND221.1U**	**GND321.1U**
	EFL	**GND121.1U/F**	**GND221.1U/F**	**GND321.1U/F**
2-position with aux. switches	Standard	**GND126.1U**	**GND226.1U**	**GND326.1U**
	EFL	**GND126.1U/F**	**GND226.1U/F**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

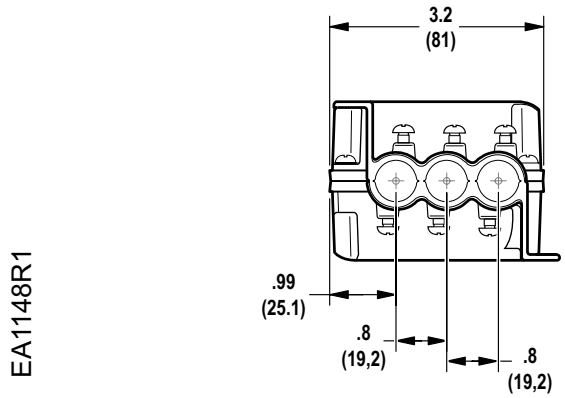
Ordering Notes:
- EFL Electronic Fusible Links must be ordered separately (see table below).
- All products are available in bulk packages of 10. Add **/B** to part number to order a bulk pack.

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





EA1148R1

Dimensions shown in inches (mm).

SIEMENS

Ingenuity for life



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.

usa.siemens.com/hvac

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 5º and 85º 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.

Siemens
Product Guard
PLUS 3 Warranty

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)

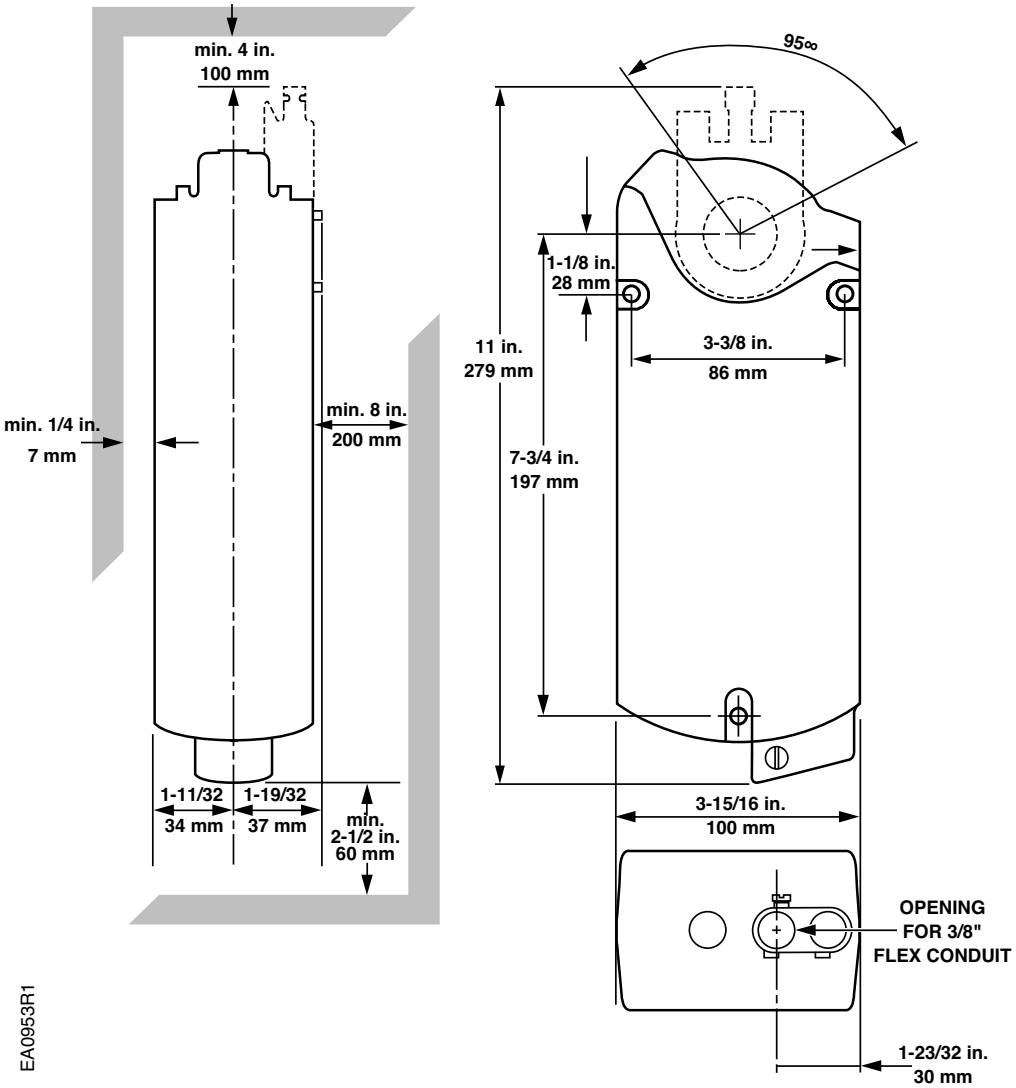
Shipping Weight
Single Pack ..... 7.0 lbs. (3.2 kg)
Bulk Pack ..... 56 lbs. (25.4 kg)

Product Ordering

Description	Shaft Adapter	Part No. 24 Vac	Part No. 115 Vac	Part No. 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 5º and 85º	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



OpenAir Part No. Nomenclature

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.

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 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 cm²)
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.

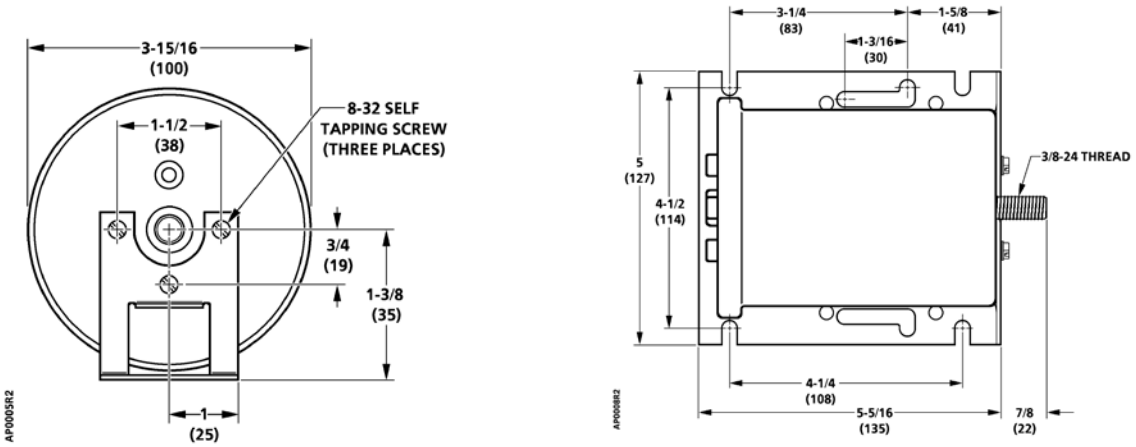
The No. 3 damper actuator part numbers noted above all utilize pneumatic damper actuators that are UL Recognized Components for fire/smoke applications under UL's Damper Actuator category EMKU2, referencing standards UL555 and UL555S. This category covers pneumatic damper actuators used in fire dampers 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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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.

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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 (198)	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 cm²)
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 Description[3]	Mounting Style	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)
Actuator, Basic with Integral Pivot	Pivot	**331-2904**[1]	**331-2905**[1]	**331-2906**[1]	**331-2961**[1]	**331-2909**[1]
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.

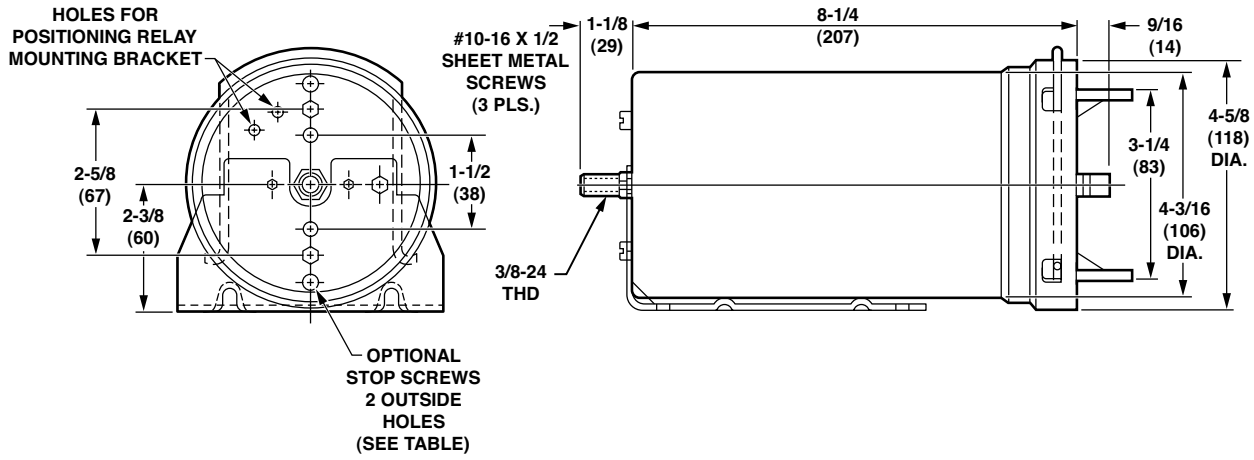
Ordering Notes:

[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.

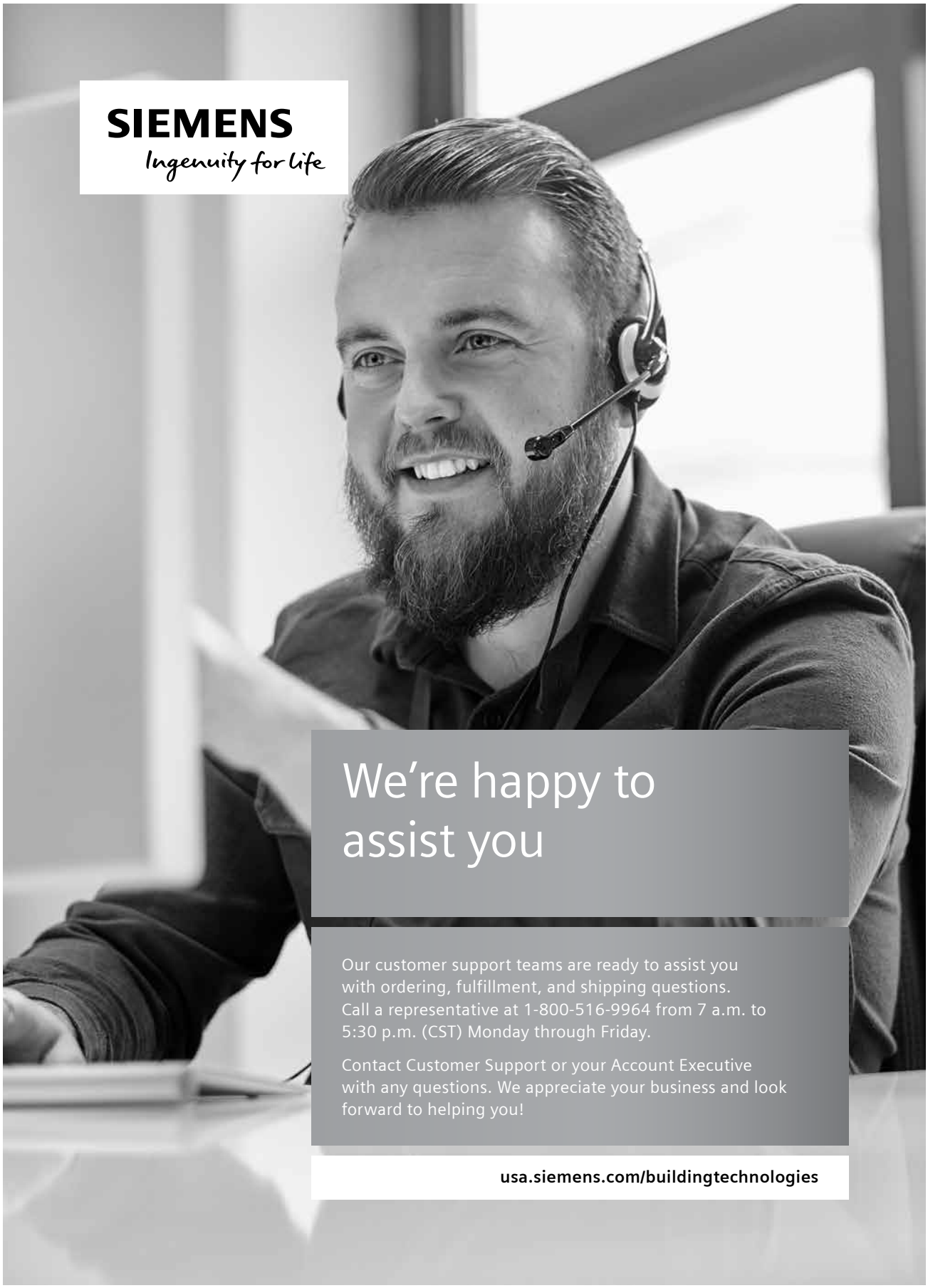
[2] When the actuator is ordered with Universal Kit Mounting, the mounting plate, pivot post and hardware, clevis, damper crank, rocker arm, and all screws/nuts are included. Order other frame mounting accessories as required if not supplied by damper manufacturer.

[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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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 cm²)
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	**331-2793**[1]	**331-2794**[1]	**331-3060**[1]
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.

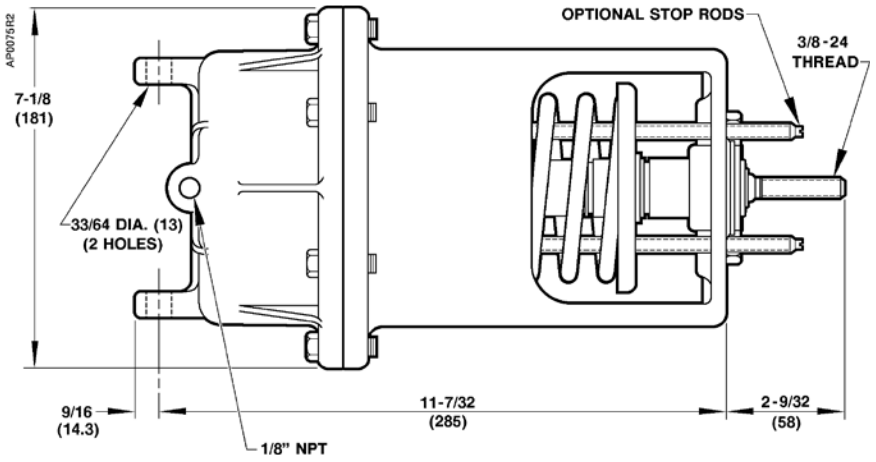
Ordering Notes:

[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.

Dimensions



Dimensions shown in inches (mm).

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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

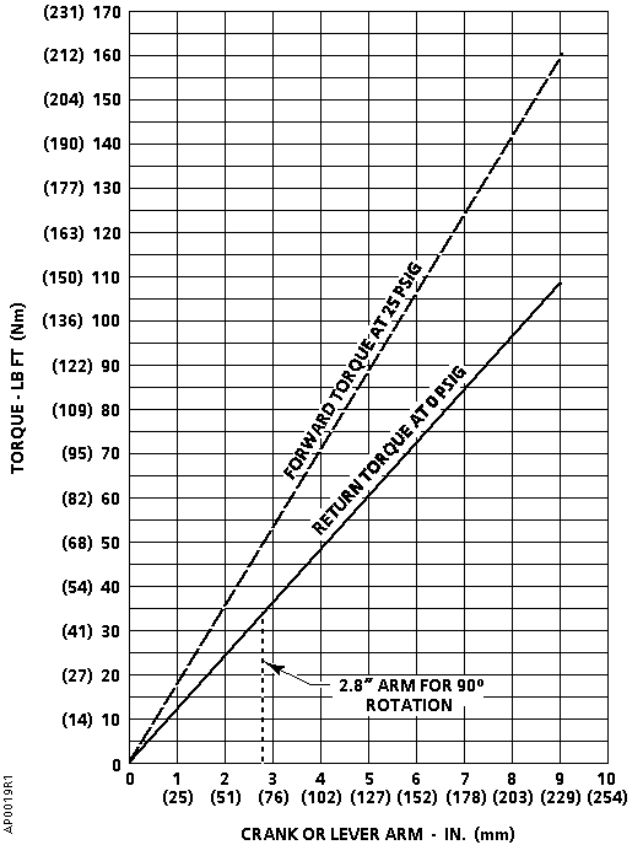
If the damper rotation is other than 90°, use the Arm Length vs. Rotation Chart and the Thrust and Torque Ratings to determine the actuator assembly torque rating. Then divide the actuator assembly torque rating by the damper torque rating per unit of area for job conditions to determine the damper area 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



Specifications

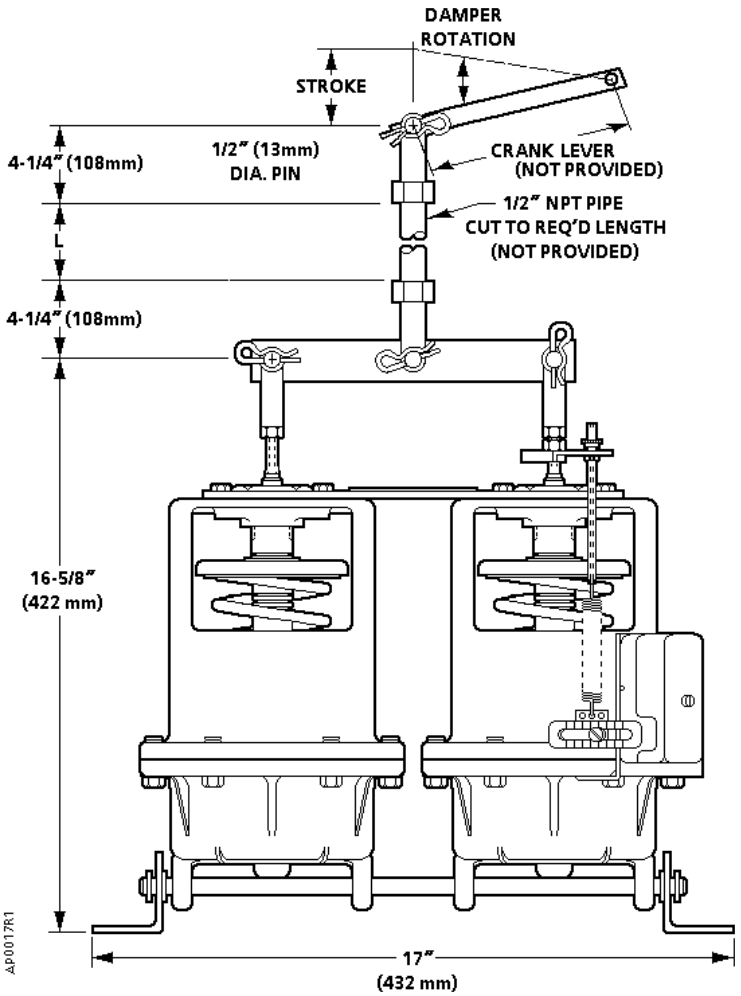
Effective Diaphragm Area ..... 35.8 in.² (230 cm²)
Stroke ..... 4-in. (102 mm)
Max. Air Pressure ..... 30 psi (207 kPa)
Spring Start Point (Adjustable) ..... 3 to 10 psi (21 to 69 kPa)
Spring Span (Adjustable) ..... 3 to 12 psi (21 to 83 kPa)
Spring Range
Factory Setting ..... 8 to 13 psi (55 to 90 kPa)
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).

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.

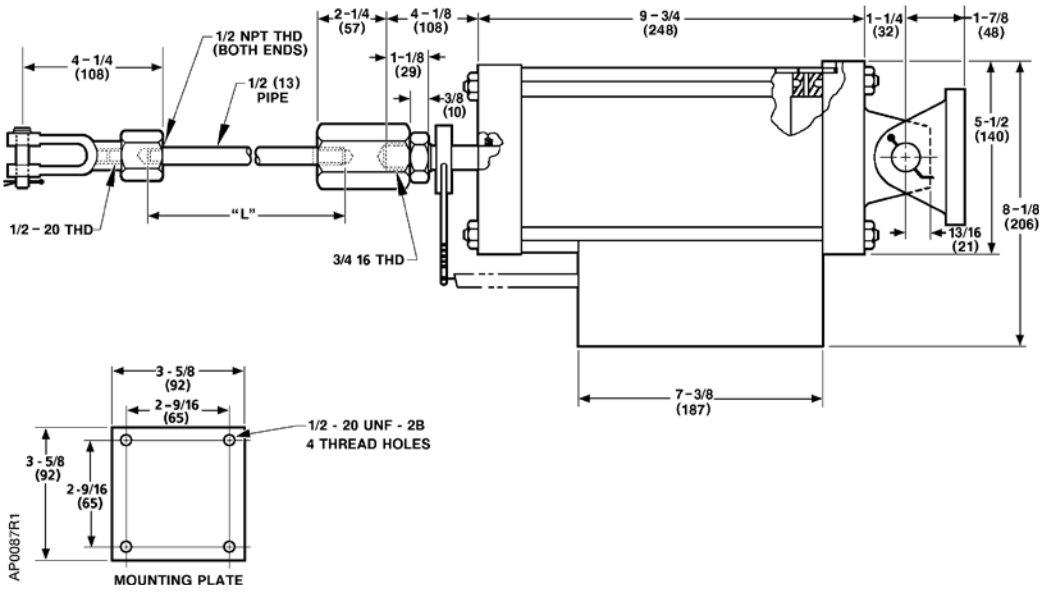
Specifications

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

Product Ordering

Description	Part No.
Large Capacity Pneumatic Actuator	**331-2882**

Dimensions



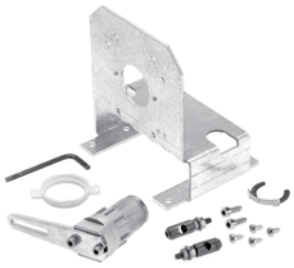
Dimensions shown in inches (mm).

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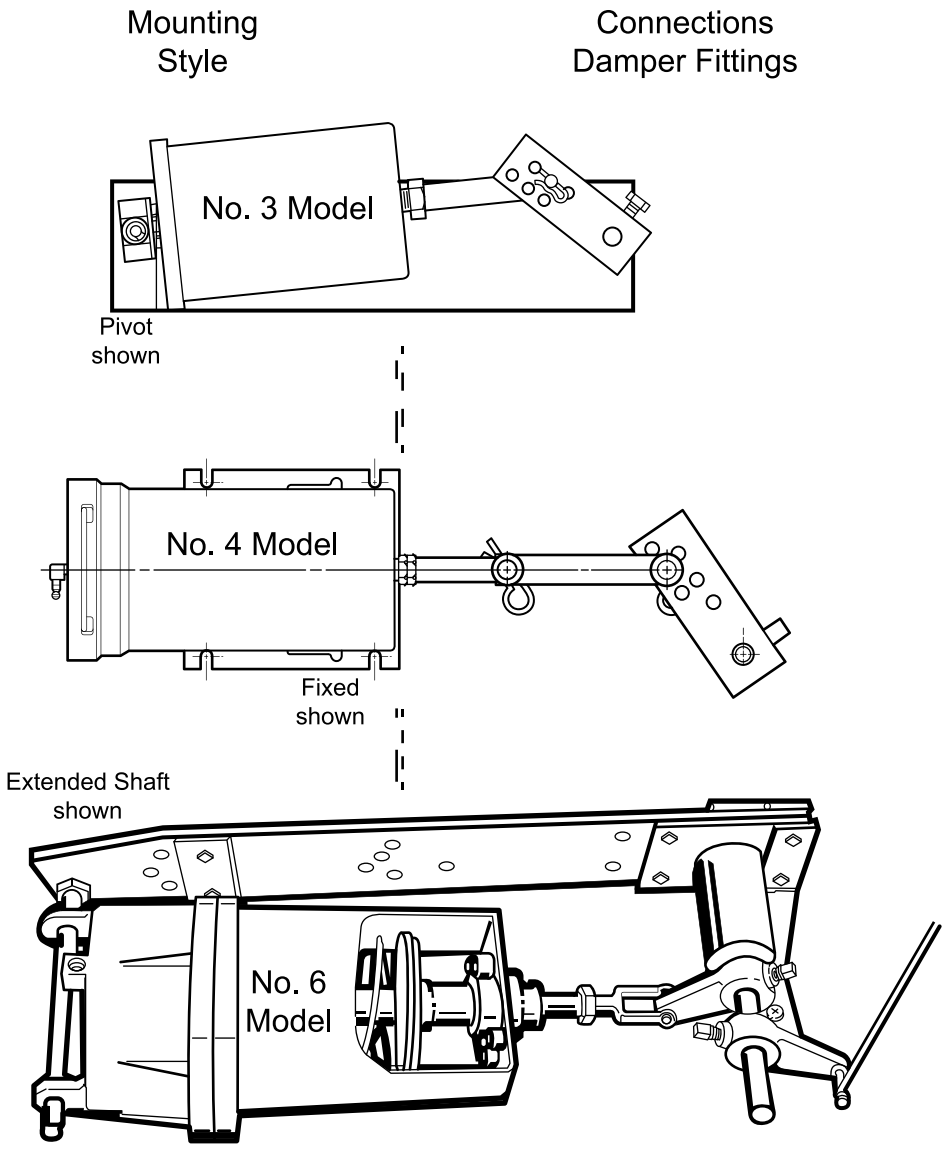
	Description	Series			Quantity	Part No.
		GDE GLB	GEB GMA	GCA GIB GBB		
OpenAir						
	**Actuator Commissioning Tool.** A portable instrument for exercising, calibrating, and testing resistive, proportional (voltage/current), incremental (floating), and On/Off actuators.	•	•	•	1	**985-047**
	**Adjustment 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 GDE GLB	Series GEB GMA	Series GCA GIB GBB	Quantity	Part No.
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 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**

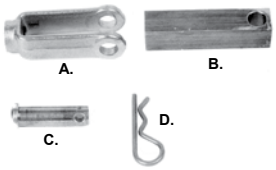
	Description	Series GDE GLB	Series GEB GMA	Series GCA GIB GBB	Quantity	Part No.
OpenAir						
	**Anti-rotation Bracket.**	•			Pkg. of 24	**985-055P24**
	• Mounting Screws	•			Pkg. of 48	**985-053P48**
	Anti-rotation Bracket.			•	1	**985-006**
	Anti-rotation Bracket.		•			**985-092**
	**Standard Shaft 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. *Note: When used with a GIB, accepts shaft diameters from 3/4 to 1-1/20" (19 to 27 mm).*			•	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**

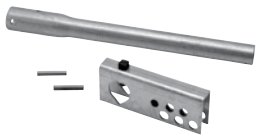
Damper Actuator Accessories Location Diagram

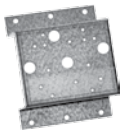


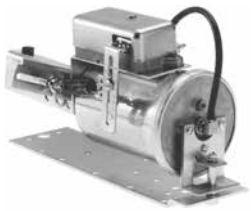
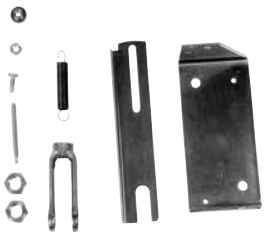
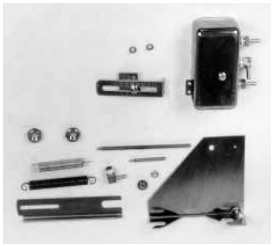
	Description	Used with Pneumatic Actuator Models					Quantity	Part No.
		No. 3	No. 4	No. 6	No. 6 Tandem	Large Capacity LC		
Connection Hardware and Damper Fittings								
	**Damper Shaft Crank.** Adjustable radius, 3/4" (19 mm) to 4-5/8" (117 mm), for 3/8" (10 mm) diameter dampershaft.	•	•				1	**331-805**
	**Damper Shaft Crank.** Selectable radius, 45°, 60°, and 90° angular rotation, for 3/8" (10 mm) to 1/2" (13 mm) diameter damper shaft.	•	•					
	• 1/2"						1	**331-941**
	• 5/8"						1	**333-182**
	• 3/4"						1	**333-183**
	• 1"						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**

	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**

	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	

	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. *Order separately.*		•	•			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**

	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 400ºF diaphragm).		•				Pkg. of 5	**333-071**
	No. 6 Standard Replacement Diaphragm.			•	•		Pkg. of 5	**333-572**

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