

SIEMENS

OpenAir™ Electronic Damper Actuators Selection Guide

Experience the difference.



More Experience

**150 years of industry experience
is the cornerstone of our success**



A leader in the Heating, Ventilation and Air Conditioning (HVAC) industry, Siemens Building Technology delivers the products and services that you depend on for outstanding quality, reliability and performance.

Delivered ready to mount and go.

With standardized footprints, wiring configurations and checkout procedures, OpenAir electronic damper actuators are designed for fast installation resulting in lower installed cost.

Quality as a requirement. OpenAir damper actuators are 100% factory-assembled and tested at our state-of-the-art, ISO9002 certified manufacturing facility located in Buffalo Grove, Illinois.

Need it fast? Same day shipping is no problem for rush orders. Helpful customer service representatives can input your order and ship within three business days for standard shipping.

Support 24/7/365. Technical support is just a phone call away.

Instant Information Access.

Go on-line for technical documentation and installation instructions at our web site and locate information faster than ever before.

Now, that's smart.

www.valves-actuators.com
Information at your fingertips

More Solutions

Expanded product line delivers power and flexibility



GDE/GLB Series ***Small Non-Spring Return***

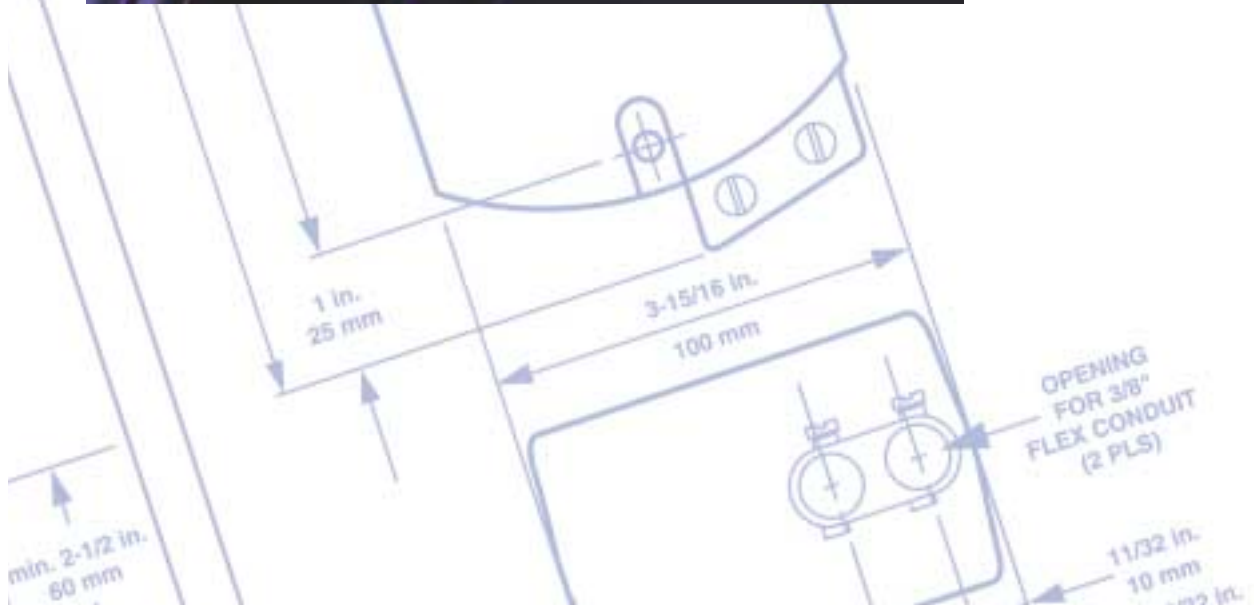
Terminal Units
Face and By-Pass Dampers
Multi-zone Mixing Boxes
By-pass Dampers (VAV)
Make-up Air Dampers
Unit Ventilators

GMA/GEB Series ***Medium Spring Return/ Non-Spring Return***

Outside Air Dampers
Mixing Boxes
Return Air Dampers
Zone Isolation Dampers
Make-up Air Dampers
Unit Ventilators

GCA/GBB/GIB Series ***Large Spring Return/ Non-Spring Return***

Outside Air Dampers
Rooftop Units
Mixing Boxes
Vortex Dampers
Inlet Vane Dampers
Return Air Dampers
Zone Isolation Dampers



GMA Series

62 lb.-in. for approx.
16 ft.²* damper area



On/Off	2-position	24 VAC/VDC	GMA121.1U GMA121.1P ⁵					GMA126.1U
On/Off	2-position	120 VAC	GMA221.1U ⁵					GMA226.1U
Floating	3-position	24 VAC/VDC	GMA131.1U	GMA132.1U				GMA136.1U
Modulating	0-10 VDC	24 VAC/VDC	GMA161.1U GMA161.1P ⁵		GMA163.1U	GMA164.1U		GMA166.1U GMA191.1U ⁴ GMA194.1U ⁴ GMA191.1U GMA194.1U

GCA Series

142 lb.-in. for approx.
36 ft.²* damper area



On/Off	2-position	24 VAC	GCA121.1U GCA121.1P ⁵					GCA126.1U GCA126.1P
On/Off	2-position	120 VAC	GCA221.1U ⁵					GCA226.1U
Floating	3-position	24 VAC	GCA131.1U GCA131.1P				GCA135.1U GCA135.1P	
Modulating	0-10 VDC	24 VAC	GCA161.1U GCA161.1P ⁵		GCA163.1U GCA163.1P	GCA164.1U GCA164.1P		GCA166.1U GCA166.1P GCA161.1P/MAS GCA164.1P/MAS GCA161.1P/SLA
Modulating	4-20 mA	24 VAC	GCA151.1U GCA151.1P					GCA156.1U GCA156.1P

GGD Series

142 lb.-in. for approx.
36 ft.²* damper area



On/Off	2-position	24 VAC	GGD121.1U ⁵					
On/Off	2-position	115 VAC	GGD221.1U ⁵					
On/Off	2-position	230 VAC	GGD321.1U					
Intended for control of UL listed smoke dampers or combination fire/smoke rated dampers								

GDE Series

44 lb.-in. for approx.
11 ft.²* damper area



Floating	3-position	24 VAC	GDE131.1U ¹ GDE131.1P ¹	GDE132.1P				GDE136.1P
Modulating	0-10 VDC	24 VAC	GDE161.1P		GDE163.1P	GDE164.1P		GDE166.1P

GLB Series

88 lb.-in. for approx.
22 ft.²* damper area



Floating	3-position	24 VAC	GLB131.1P	GLB132.1P				GLB136.1P
Modulating	0-10 VDC	24 VAC	GLB161.1P		GLB163.1P	GLB164.1P		GLB166.1P

GEB Series

132 lb.-in. for approx.
32 ft.²* damper area



Floating	3-position	24 VAC	GEB131.1U	GEB132.1U				GEB136.1U
Modulating	0-10 VDC	24 VAC	GEB161.1U			GEB164.1U		GEB161.1U ⁴ GEB164.1U ⁴

GBB Series

177 lb.-in. for approx.
44 ft.²* damper area



On/Off/Floating	2/3-position	24 VAC	GBB171.1U GBB171.1P					GBB175.1U GBB175.1P
Modulating	0-10 VDC	24 VAC	GBB161.1U GBB161.1P		GBB163.1U GBB163.1P	GBB164.1U GBB164.1P		GBB166.1U GBB166.1P
	4-20 mA	24 VAC	GBB151.1U GBB151.1P					GBB156.1U GBB156.1P

GIB Series

310 lb.-in. for approx.
77 ft.²* damper area



On/Off/Floating	2/3-position	24 VAC	GIB171.1U GIB171.1P					GIB175.1U GIB175.1P
Modulating	0-10 VDC	24 VAC	GIB161.1U GIB161.1P		GIB163.1U GIB163.1P	GIB164.1U GIB164.1P		GIB166.1U GIB166.1P GIB161.1P/MAS GIB164.1P/MAS GIB161.1P/SLA
	4-20 mA	24 VAC	GIB151.1U GIB151.1P					GIB156.1U GIB156.1P

Rotary to linear kit	Rotary to linear kit w/mounting bracket	Floor mount kit	Frame mount kit	Oversized shaft adapter (to 1.05")	½" NPT conduit adapter	Tandem bracket- 2 pt./3 pt. & Elec. tandem	Tandem bracket modulating control	Weather shield
ASK71.13	ASK71.14	ASK71.11	ASK71.11		985036P25	ASK73.3		ASK75.3U

ASK71.3	ASK71.4	ASK71.1U	ASK71.2U	ASK74.1U	985036P25 985037P20 ²	ASK73.1	ASK73.2U	ASK75.1U
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ASK71.3	ASK71.4	ASK71.1U	ASK71.2U	ASK74.1U	985035P25 985036P25 985037P20 ²			
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ASK71.5	ASK71.6	ASK71.6	ASK71.6		ASK76.1U ASK76.1UP20 ³			
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ASK71.5	ASK71.6	ASK71.6	ASK71.6		ASK76.1U ASK76.1UP20 ³			
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ASK71.13	ASK71.14	ASK71.11	ASK71.11		985036P25			ASK75.3U
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ASK71.3	ASK71.4	ASK71.1U	ASK71.2U	ASK74.1U	985036P25 985037P20 ²			ASK75.1U
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ASK71.3	ASK71.4	ASK71.1U	ASK71.2U	ASK74.1U	985036P25 985037P20 ²	ASK73.1	ASK73.2U	ASK75.1U
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More Benefits

Spring Return

Self-centering shaft coupling with patented design relieves strain on the actuator for longer motor life and increased reliability.

Position indicators are universally located for at-a-glance verification.

Rugged housing on all models for added durability and longevity.

Manual override allows actuator to be mounted and commissioned before power is available for quick installation.

Optional built-in adjustable start/span available factory-installed for faster installation.

Direct-coupled connection for on-the-go installation.

Position measured continuously with no need to power up at start up, saving time.



New Features!

Single-bolt fastening for easy installation and reduced installed cost.

AC/DC operation for added flexibility.

Compact footprint for ease of installation.

Enhanced functionality with scaling control signal from 0 to 10 V or 10 to 0 V for added flexibility.

Integral conduit adapter designed for easy installation.

Full-stroke overload protection kicks in automatically to protect motor and components.

Pre-cabled, plenum options are factory installed for faster, easier installs in the field.

Consistent wiring detail across product family for faster installs and lower installed cost.

GMA model shown.

More Performance

Non-Spring Return

Rugged housing on all models for added durability and longevity.

Position indicators are universally located for at-a-glance verification.

Optional built-in adjustable start/span available factory-installed for faster installation.

Self-centering shaft coupling with patented design relieves strain on the actuator for longer motor life and increased reliability.

Manual override allows actuator to be mounted and commissioned before power is available for quick installation.

Direct-coupled connection snap on for on-the-go, fast installation.

Full-stroke protection kicks in automatically to protect motor and components.

Pre-cabled, plenum options are factory installed for faster, easier installs in the field.

Small footprint provides powerful performance.

Consistent wiring detail across product family for faster installs and lower installed cost.

Brushless motor technology for quiet, low noise operation.

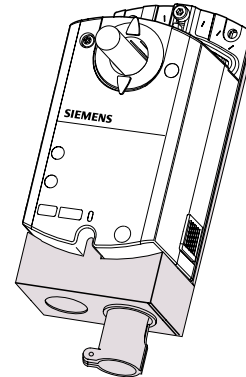
GLB model shown.

More Mounting Alternatives

Conduit Adapter Bracket

The Conduit Adapter Bracket is a convenient choice when 1/2" electrical conduit or flex cabling is required by job specifications or local code (GDE/GLB models only).

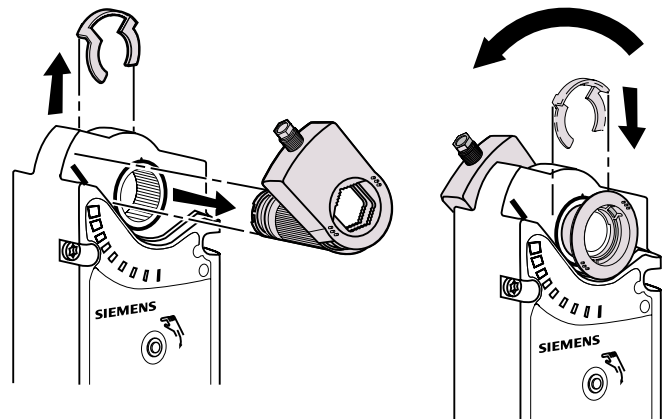
Conduit adapters are standard on other models.



Short Shaft Mounting Option

For easy mounting on short shafts without special accessories, the self-centering shaft adapter can be mounted on the backside of the actuator.

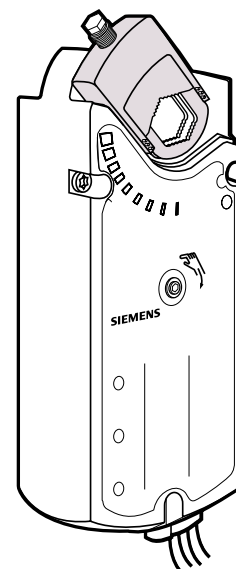
Each actuator includes an adapter so that the position indicator is still easily viewed.



Large Shaft Adapter

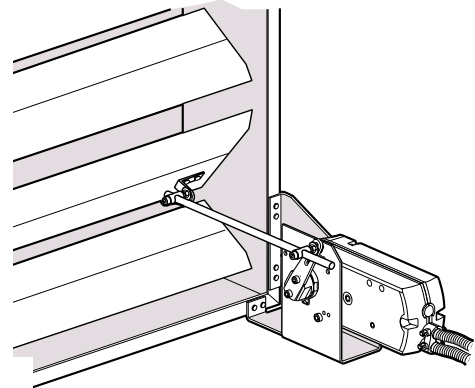
Shaft sizes larger than 1" can be easily accommodated with the large shaft adapter.

The optional shaft adapter will accommodate jack shafts and damper shafts up to 1-1/20-inch.



Frame Mounting

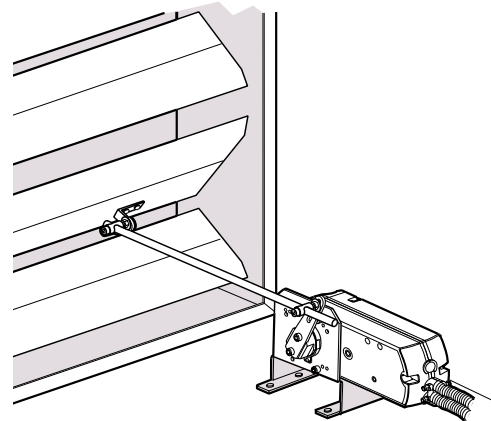
The Frame Mounting Kit is used when actuator cannot be directly mounted on damper shaft due to space limitations.



Foot Mounting

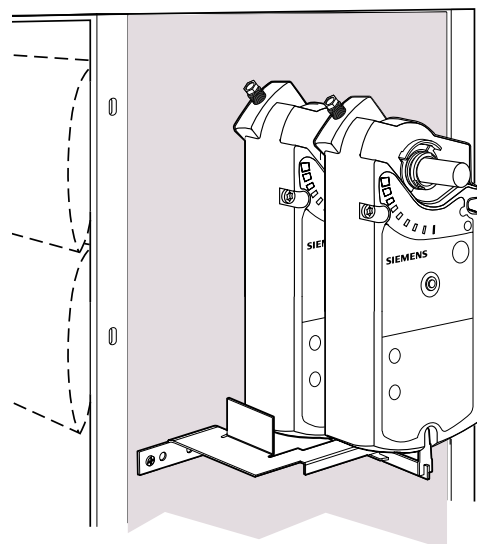
Easily replace existing Honeywell, Johnson, and Barber-Colman modulating motors using the Foot Mounting Kit.

The Foot Mounting Kit can also be used for placing the actuator in the air stream and linking to the damper blades.



Actuators Mounted in Tandem

OpenAir actuators can be mounted in tandem to effectively double the torque of a single actuator. This unique feature allows OpenAir actuators to operate in a wider range of applications.

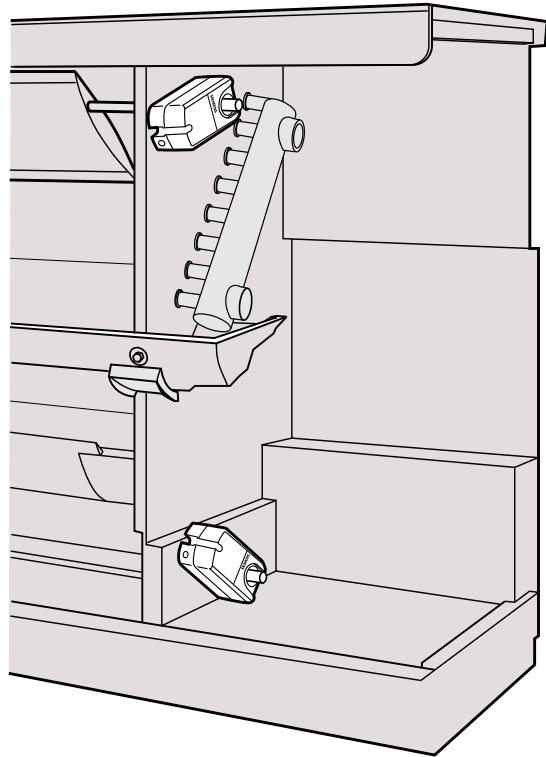


More Applications Expertise

Unit Ventilator Applications

Excellent when space is limited, the GMA and GEB have a small footprint for easy mounting.

High torque, full features, and a small footprint make the GMA and GEB actuators a perfect choice for Unit Ventilator Applications.

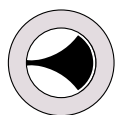


Valve Applications

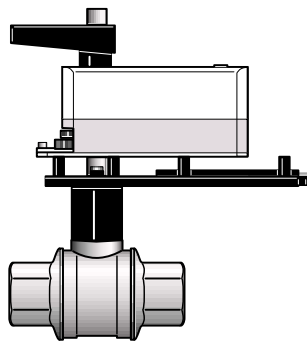
GDE, GLB, and GMA actuators can be used with Powermite Ball Valves.

GCA and GBB models can be mounted on a 599 Flowrite basket trim globe valve using Siemens linkage, Part No. 599-03609.

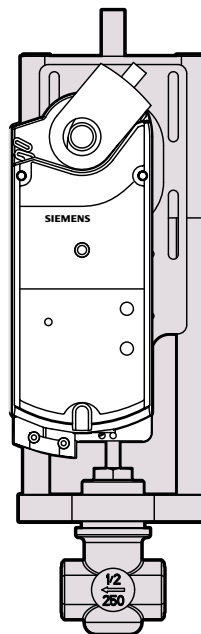
Factory assembly is recommended and available at no charge.



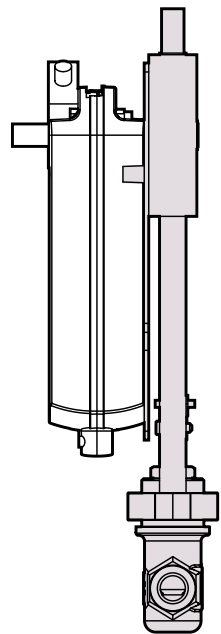
Cutaway of
Characterized
Ball Valve



1/2 to 2-inch Ball
Valve with
Actuator



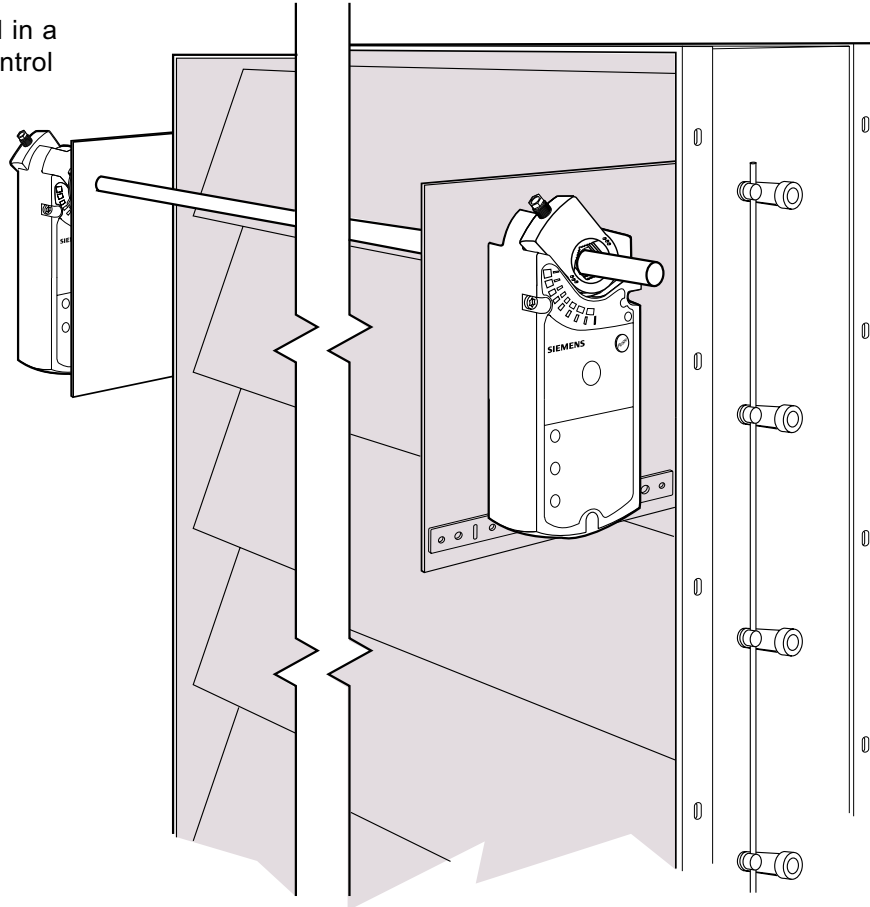
1/2 to 2-inch Globe Valve with Rack
and Pinion and Actuator



Electronic Tandem Control

When critical control is needed in a modulating application, one control signal can control two actuators in a master-slave configuration. The secondary unit can be mounted up to 15 feet away from the primary actuator.

This feature is available on the GMA, GCA and GIB models.



OpenAir Accessories

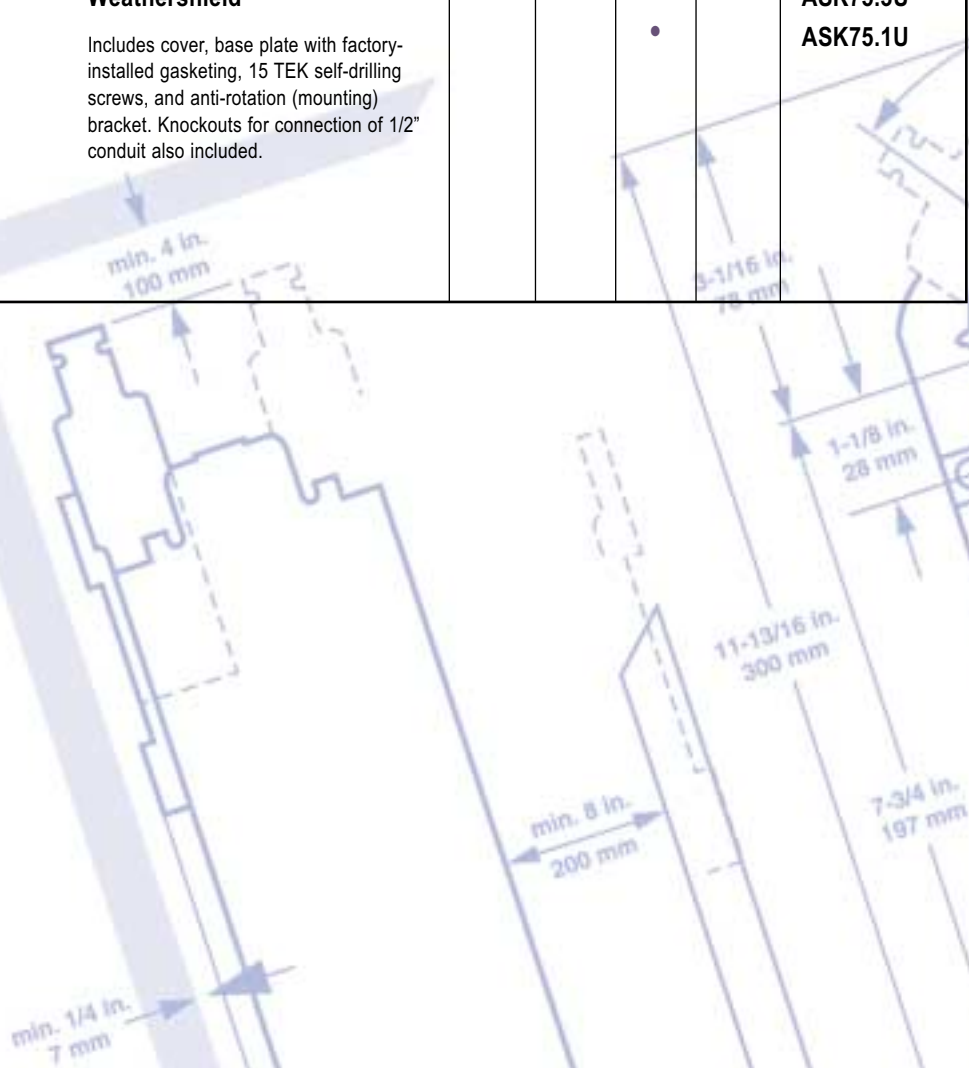
Description		GDE/ GLB	GEB/ GMA	GCA/GIB/ GBB	GGD	Part No.
	Actuator Commissioning Tool A portable instrument for exercising, calibrating, and testing resistive, proportional (voltage/current), incremental(floating), and On/Off actuators.	•	•	•	•	985-047
	Hex Key 24 Pk. Adjustment Key 1 ea.	•	•	•		985-054P24 985-098
	Rotary to Linear Kit Allows a direct-coupled actuator to provide a linear drive; can be used to simultaneously drive a set of opposing or adjacent dampers with a single actuator.	•				ASK71.5
	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.		•	•	•	ASK71.13 ASK71.3
	Rotary to Linear Kit with Universal Mounting Bracket For use in applications where the actuator can be rigidly surface-mounted and a linear stroke output is required.	•				ASK71.6
	Crank Arm Kit with Bracket For use in applications where the actuator can be rigidly surface-mounted and a linear stroke output is required.		•	•	•	ASK71.14 ASK71.4

Description		GDE/ GLB	GEB/ GMA	GCA/GIB/ GBB	GGD	Part No.
	Universal Crank Arm For use with all OpenAir rotary to linear kits for linear applications requiring connection to damper louver shaft when joint connection is not possible. For 3/8 to 1" (8 to 25.6 mm) Dia. or 3/8 to 5/8" (8 to 16 mm) Sq.	•	•	•		ASK71.9
	Tandem Mounting Bracket Tandem Mounting Bracket for 2-position and floating GCA/GIB models Tandem Mounting Bracket for modulating GCA/GIB models.		•	•		ASK73.3 ASK73.1 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.	•		•	•	ASK71.6 ASK71.1U
	Combined Foot/Frame Mount Kit		•			ASK71.11
	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.			•	•	ASK71.2U
	Combined Foot/Frame Mount Kit		•			ASK71.11
	5/16" (8 mm) Dia. Damper Push Rods 12" (30 cm) Length 15" (38 cm) Length 18" (46 cm) Length 24" (61 cm) Length 36" (91 cm) Length 48" (122 cm) Length	•	•	•		338-041 338-042 338-043 338-044 338-045 338-046

OpenAir Accessories (continued)

Description	GDE/ GLB	GEB/ GMA	GCA/GIB/ GBB	GGD	Part No.
 Anti-Rotation Bracket • Mounting Screws Anti-Rotation Bracket Anti-Rotation Bracket	• •	•	•	•	985-055P24 985-053P48 985-092 985-006
 Replacement Standard Shaft Adapter • up to 3/4" shaft • up to 1" shaft			• •	•	985-093 985-004
 Large Shaft Adapter • up to 1.05" shaft Accepts up to 1-1/20" (27 mm) diameter shaft and can be used for coupling to 1.05" (27 mm) 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)			•	•	ASK74.1U
 3/8" Actuator Shaft Insert for small shaft diameters • up to 3/8"	•				ASK78.3U
 5/8 to 3/4" Actuator Shaft Insert for high force, small shaft diameters For ASK74.1U with GIB models			•		985-052P20
 Replacement Standard Visual Position Indicators/10 Pk.	•	•	•		985-051P10 985-094P10 985-003

Description	GDE/ GLB	GEB/ GMA	GCA/GIB/ GBB	GGD	Part No.
    ASK76.1 985-036P25 985-037P20 985-035P25 1/2" Conduit Adapter/1 ea. 1/2" Conduit Adapters/20 Pk. 1/2" Conduit Adapters/25 Pk. 1/2" Dual Conduit Adapters/20 Pk. for auxillary switch 1/2" Male Conduit Adapter/25 Pk.	• •	•	• •	• • •	ASK76.1 ASK76.1/UP20 985-036P25 985-037P20 985-035P25
 Weathershield Includes cover, base plate with factory-installed gasketing, 15 TEK self-drilling screws, and anti-rotation (mounting) bracket. Knockouts for connection of 1/2" conduit also included.		•	•		ASK75.3U ASK75.1U

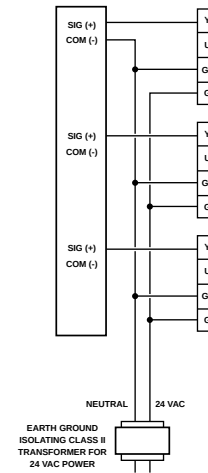


More Wiring Options

0 to 10 V Actuators Powered by One Transformer

Multiple OpenAir 0 to 10 V actuators can be powered off of one transformer.

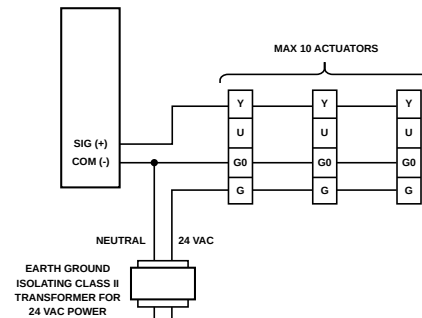
Power up to ten actuators off of one transformer (except GGD Series).



0 to 10 V Actuators Wired in Parallel with One Transformer

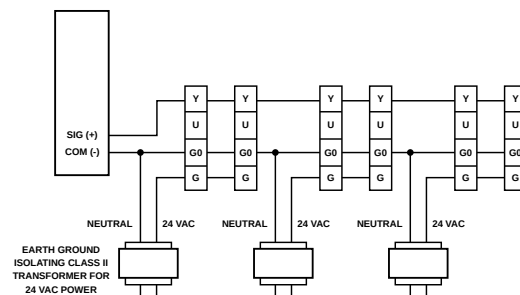
OpenAir 0 to 10 V actuators can be wired in parallel with one signal driving up to ten actuators.

Feedback should not be wired together and can be read off of one of the actuators.



0 to 10 V Actuators Wired in Parallel with Multiple Transformers

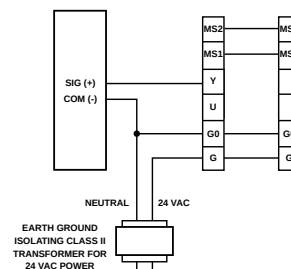
OpenAir 0 to 10 V actuators can be wired in parallel with one signal driving a bank of up to ten actuators. Multiple transformers can power multiple actuators. Feedback should not be wired together and can be read off of one of the actuators.



0 to 10 V Master-Slave Actuators

Master and slave actuators can be tandem mounted for 0 to 10 V applications.

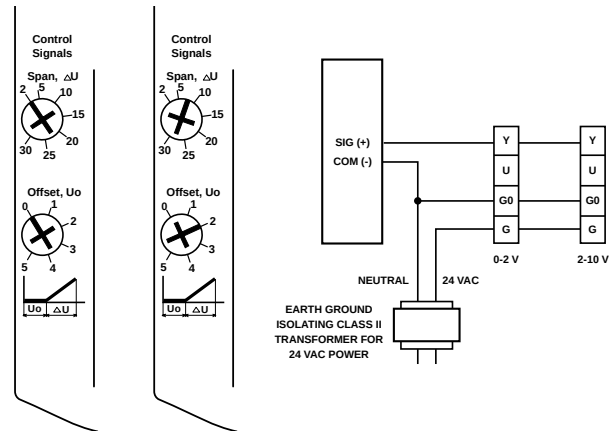
This effectively doubles the torque produced by one actuator. This unique feature allows OpenAir actuators to operate in a wider range of applications



Sequencing of 0 to 10 V Actuators

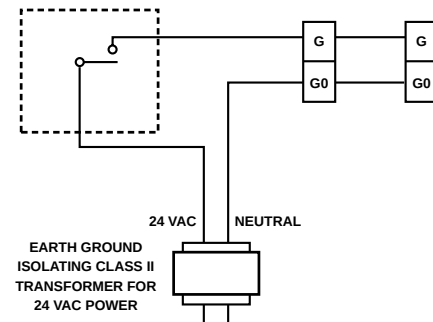
With the settings shown, two 0 to 10 V actuators can be sequenced such that the first one will operate such that the first one will operate at 0 to 2 V and the second at 2 to 10 V.

This feature is perfect for specialized applications, such as staging or minimum required airflow.



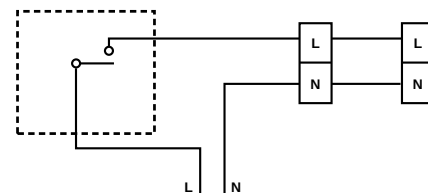
2-position 24 V Actuators Wired in Parallel

Two actuators can be wired in parallel to effectively double the torque or may be mounted separately and operated in parallel.



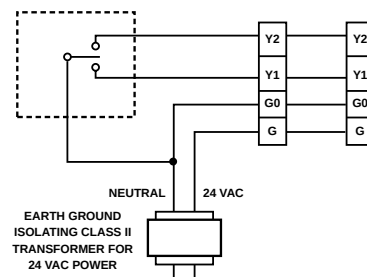
2-position 120 V Actuators Wired in Parallel

Two actuators can be wired in parallel to effectively double the torque or may be mounted separately and operated in parallel.

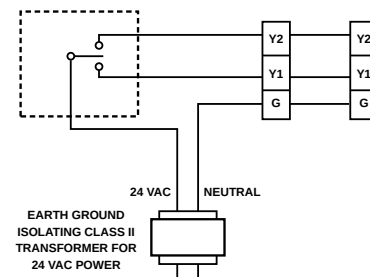


3-position Actuators Wired in Parallel

Two actuators can be wired in parallel to effectively double the torque or may be mounted separately and operated in parallel.



GMA/GCA Series



GDE/GLB/GEB Series

Submittal Summary

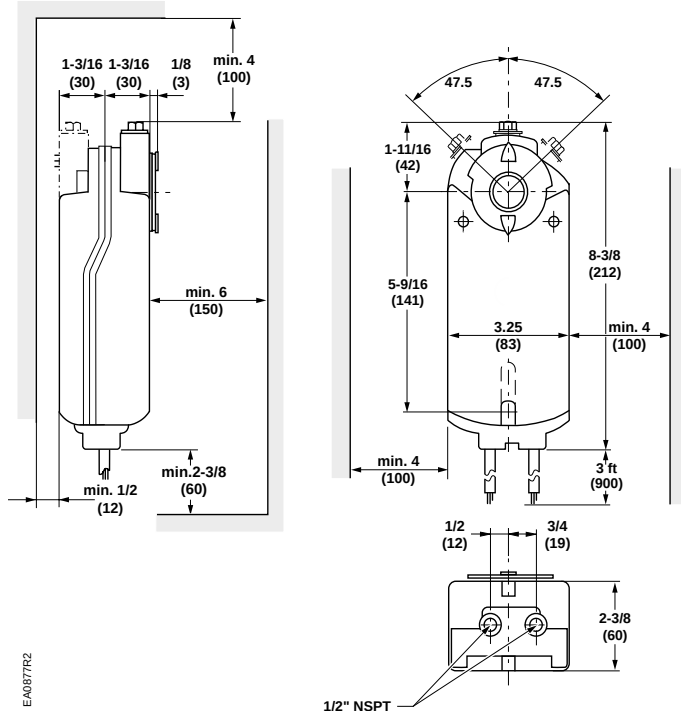
OpenAir GMA Series Spring Return, Direct-Coupled Electronic Damper Actuators

62 lb.-in.

24 Vac/dc and 120 Vac
Modulating
2-position/3-position



Dimensions

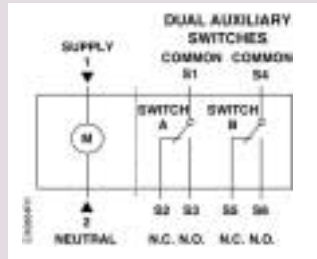


Dimensions shown in inches (mm).

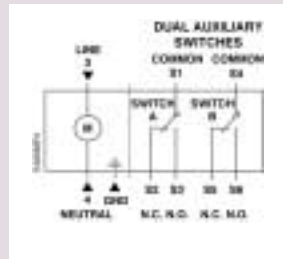
Specifications

Torque62 lb.-in. (7 Nm) running and spring return min.
Runtime for 90°90 sec. operating,
15 sec. typical (<60 sec. max at -25°F)
Frequency.....50/60 Hz
Power consumption24 Vac/dc
Running5 VA/3.5W dc
Holding.....4 VA/3W dc
Power consumption120 Vac
Running and Holding≤ 7 VA/5 W
Equipment rating (24 Vac)Class 2 per UL/CSA
Angle of rotation90° nominal, 95° max.
Shaft dimensions1/4 to 3/4-in. (6.4 to 20.5 mm) Dia. ●
1/4 to 1/2-in. (6.4 to 13 mm) Sq. ■
1-in. (25.4 mm) min. length
Operating temperature-25 to +130°F (-32 to +55°C)
Storage temperature-25 to +158°F (-32 to +70°C)
Ambient humidity95% RH, non-condensing
Enclosure.....NEMA 1
Pre-cabled connection18 AWG, 3 ft. (0.9 m) long
Agency listingsUL60730 (replacing UL873)
C-UL C22.2 No. 24-93
MaterialDie cast aluminum alloy
Gear LubricationSilicone free
Dimensions8-3/8" H x 3-1/4" W x 2-2/3" D
(212 mm H x 83 mm W x 68 mm D)
Weight2.9 lbs. (1.3 kg)

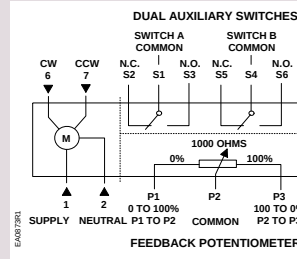
Wiring Diagrams



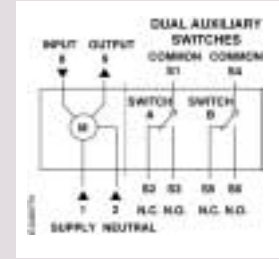
Two-position, 24 Vac/dc



Two-position, 120 Vac/dc



Three-position, 24 Vac/dc



Modulating (0 to 10 Vdc),
24 Vac/dc

Product Number	Operating Voltage		Control			Cables		Built-in Control Options					
	24 Vac $\pm$ 20% 24 Vdc $\pm$ 15%	120 Vac $\pm$ 10%	Modulating 0 to 10 Vdc	3-position	2-position	Standard	Plenum	Position Feedback	Dual Auxiliary Switches	Offset and Span	Input Signal Inversion	Input Signal Selectable	Elec. Tandem Control
GMA121.1U	•				•	•							
GMA121.1P	•				•		•						
GMA126.1U	•				•	•			•				
GMA221.1U		•			•	•							
GMA226.1U		•			•	•			•				
GMA131.1U	•			•		•							
GMA132.1U	•			•		•		•					
GMA136.1U	•			•		•			•				
GMA161.1U	•		•			•		•					
GMA161.1P	•		•				•	•					
GMA163.1U	•		•			•		•		•			
GMA164.1U	•		•			•		•	•	•			
GMA166.1U	•		•			•		•	•				
GMA191.1U	•		•			•		•			•	•	•
GMA194.1U	•		•			•		•	•	•	•		•

Submittal Summary

OpenAir GCA Series Spring Return, Direct-coupled Electronic Damper Actuators

142 lb.-in.

24 Vac and 120 Vac
Modulating
2-position/3-position



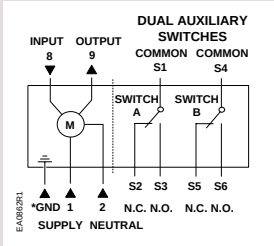
Specifications

Torque	142 lb.-in. (16 Nm) running and spring return
Runtime for 90°	90 sec. operating, 15 sec. typical (30 sec. max.) closing
Frequency.....	50/60 Hz
Power consumption	
Running	9 VA (0 to 10 V, modulating) 8 VA (24 Vac), 9 VA (120 Vac) 8 VA (3-position)
Holding.....	3 VA (24 Vac, 2-position), 5 VA (0 to 10 V, modulating) 5 VA (24 Vac, 3-position), 9 VA (120 Vac)
Equipment rating (24 Vac)	Class 2 per UL/CSA
Noise level	<45 dBA (running)
Angle of rotation	90° nominal, 95° max.
Shaft dimensions	3/8 to 1-in. (8 to 25.6 mm) Dia. ● 1/4 to 3/4-in. (6 to 18 mm) Sq. ■ 3/4-in. (20 mm) min. length

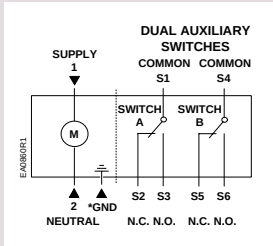
Operating temperature	-25 to +130°F (-32 to +55°C)
Storage temperature	-40 to +158°F (-40 to +70°C)
Ambient humidity	95% RH, non-condensing
Pre-cabled connection	18 AWG, 3 ft. (0.9 m) long
Enclosure	NEMA 2, IP40 per EN60529
Material	Die cast aluminum alloy
Agency listings	UL873, C-UL C22.2 No. 24-93
Gear Lubrication	Silicone free
Dimensions*	12" H x 4-3/4" W x 2-7/8" D (305 mm H x 120 mm W x 72 mm D)
Weight	4.85 lbs. (2.2 kg)

*For dimensional drawing, refer to page 30.

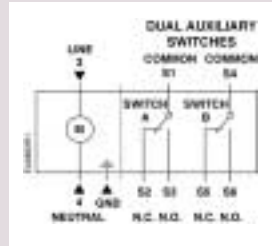
Wiring Diagrams



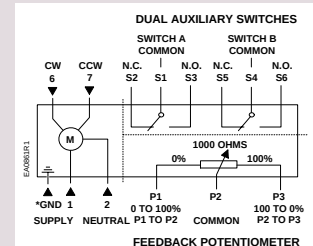
Mod. (0 to 10 Vdc), 24 Vac



Two-position, 24 Vac



Two-position, 120 Vac



Three-position, 24 Vac

Product Number	Operating Voltage		Control				Cables		Built-in Control Options			Elec. Tandem Control	
	24 Vac-20%	120 Vac-10%	0 to 10 Vdc	4 to 20 mA	3-position	2-position	Standard	Plenum	Position Feedback	Dual Auxiliary Switches	Span and Offset	Master	Slave
GCA121.1U	•					•	•						
GCA121.1P	•					•		•					
GCA126.1U	•					•	•			•			
GCA126.1P	•					•		•		•			
GCA221.1U		•				•	•						
GCA226.1U		•				•	•			•			
GCA131.1U	•				•		•						
GCA131.1P	•				•			•					
GCA135.1U	•				•		•		•	•			
GCA135.1P	•				•			•	•	•			
GCA151.1U	•			•			•						
GCA151.1P	•			•				•					
GCA156.1U	•			•			•			•			
GCA156.1P	•			•				•		•			
GCA161.1U	•		•				•		•				
GCA161.1P	•		•					•	•				
GCA163.1U	•		•				•		•		•		
GCA163.1P	•		•					•	•		•		
GCA164.1U	•		•				•		•	•	•		
GCA164.1P	•		•					•	•	•	•		
GCA166.1U	•		•				•		•	•			
GCA166.1P	•		•					•	•	•			
GCA161.1P/MAS	•		•					•	•			•	
GCA164.1P/MAS	•		•					•	•	•	•	•	
GCA161.1P/SLA	•		•					•	•				•

Submittal Summary

GGD Series Spring Return Electronic Damper Actuator

Designed for UL Listed Fire/Smoke and Smoke Control Dampers

142 lb.-in. torque

142 lb.-in. torque

2-position, 15-second Runtime

15-second Spring Return Time Max.



N474

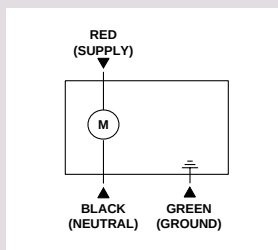


Specifications

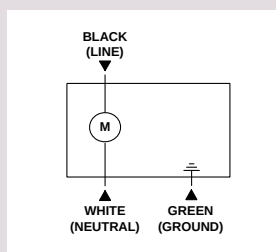
Operating Voltage	24 Vac $\pm$ 20%
	115 Vac $\pm$ 15%
	230 Vac $\pm$ 10%
Frequency.....	50/60 Hz
Power Consumption	
Running	150 VA
Holding.....	10 VA
Torque	
Running	142 lb.-in. (16 Nm)
Spring Return	108 lb.-in. (12 Nm)
Minimum Stall.....	350 lb.-in. (39 Nm)
Torque reduction at elevated temperature.....	< 10%
Runtime for 90°	
Operating with motor at 60 Hz	15 seconds nominal
Closing (on power loss) with spring return.....	15 seconds max.
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)
Oversize	1.05 in. max. (26.6 mm)

Minimum Shaft Length.....	3/4-inch (20 mm)
Housing	
Enclosure	NEMA 1
Material	Die cast Aluminum alloy
Ambient 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)
Ambient Humidity.....	Max. 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 4-3/4" W x 2-7/8" D
	(305 mm H x 120 mm W x 72 mm D)
Weight	
Single Pack.....	7.0 lbs. (3.2 kg)
Eight pack.....	56 lbs. (25.4 kg)

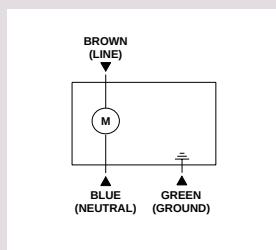
Wiring Diagrams



24 Vac



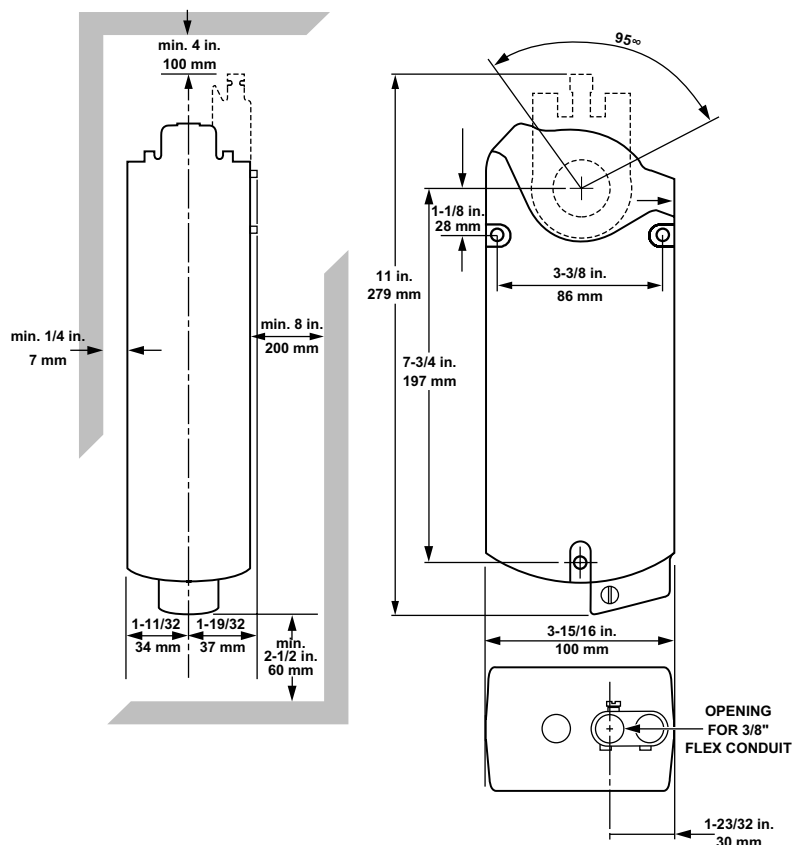
115 Vac



230 Vac

Note: Wire the 230 Vac line with respect to neutral and connect the ground lead for proper protection of the actuator.

Dimensions



Dimensions shown in inches (mm).

Product Number	Operating Voltage			Shaft Adapter		Packaging	
	24 Vac -20%, 50/60 Hz	115 Vac -20%, 50/60 Hz	230 Vac -20%, 50/60 Hz	Self-centering to 1-inch	Oversized to 1.05-inches	Standard Single Pack	Eight Pack of Standard
GGD121.1U	•			•		•	
GGD121.1U/B	•			•			•
GGD121.3U		•			•	•	
GGD221.1U		•		•		•	
GGD221.1U/B		•		•			•
GGD221.3U		•			•	•	
GGD321.1U			•	•		•	
GGD321.3U			•		•	•	

Submittal Summary

OpenAir GDE Series Non-spring Return, Direct-coupled Electronic Damper Actuators

44 lb.-in.

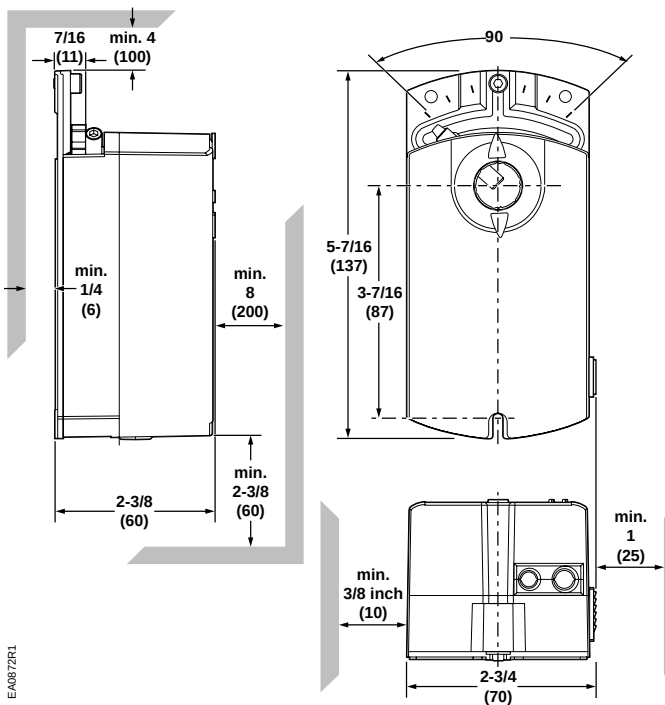
24V

Modulating

3-position Control



Dimensions

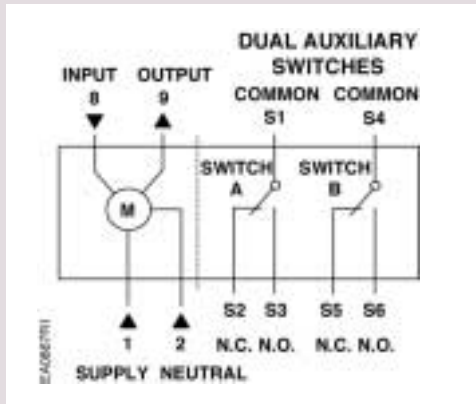


Dimensions shown in inches (mm).

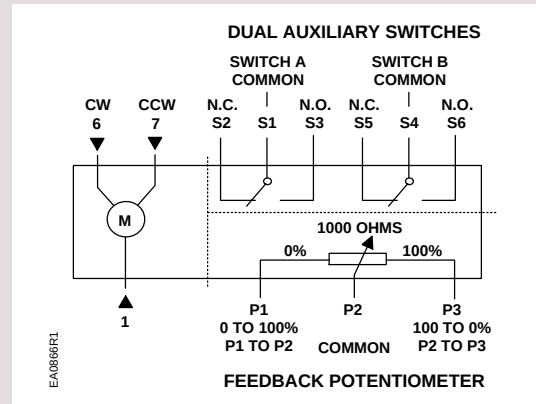
Specifications

Torque	44 lb.-in. (5 Nm)
Runtime for 90°	90 seconds at 60 Hz opening and closing 108 seconds at 50 Hz opening and closing
Frequency	50/60 Hz
Power consumption	3.3 VA (modulating) 2.3 VA (three-position)
Equipment rating (24 Vac)	Class 2 per UL/CSA
Noise level	<35 dBA (running)
Angle of rotation	90° nominal, 95° max.
Shaft dimensions	3/8 to 5/8-in. (8 to 16 mm) Dia. ● 1/4 to 1/2-in. (6 to 12.7 mm) Sq. ■ 3/4-in. (20 mm) min. length
Operating temperature	-22 to +130°F (-30 to +55°C)
Storage temperature	-22 to +140°F (-30 to +60°C)
Ambient humidity	95% RH, non-condensing
Pre-cabled connection	18 AWG, 3 ft. (0.9 m) long
Enclosure	NEMA 2, IP54 per EN60529
Material	Durable plastic
Agency listings	UL873, C-UL C22.2 No. 24-93
CE Conformity	Plenum models only
Electromagnetic Compatibility (EMC)	89/336/EEC
Emissions standards	EN 50081-1
Immunity standards	EN 50082-2
Gear Lubrication	Silicone free
Dimensions	5-7/16" H x 2-3/4" W x 2-3/8" D (137 mm H x 70 mm W x 60 mm D)
Weight	1.06 lbs. (0.48 kg)

Wiring Diagrams



Modulating (0 to 10 Vdc), 24 Vac



3-position, 24 Vac

Product Number	Operating Voltage	Control		Cables		Built-in Control Options			Bulk Pack
	24 Vac +20%, -15%	0 to 10 Vdc	3-position	Standard	Plenum	Position Feedback	Dual Auxiliary Switches	Slope and Offset	24 pieces
GDE131.1U	•		•	•					
GDE131.1U/B	•		•	•					•
GDE131.1P	•		•		•				
GDE131.1P/B	•		•		•				•
GDE132.1P	•		•		•	•			
GDE136.1P	•		•		•		•		
GDE161.1P	•	•			•	•			
GDE163.1P	•	•			•	•		•	
GDE164.1P	•	•			•	•	•	•	
GDE166.1P	•	•			•	•	•		

Submittal Summary

OpenAir GLB Series Non-spring Return, Direct-coupled Electronic Damper Actuators

88 lb.-in.

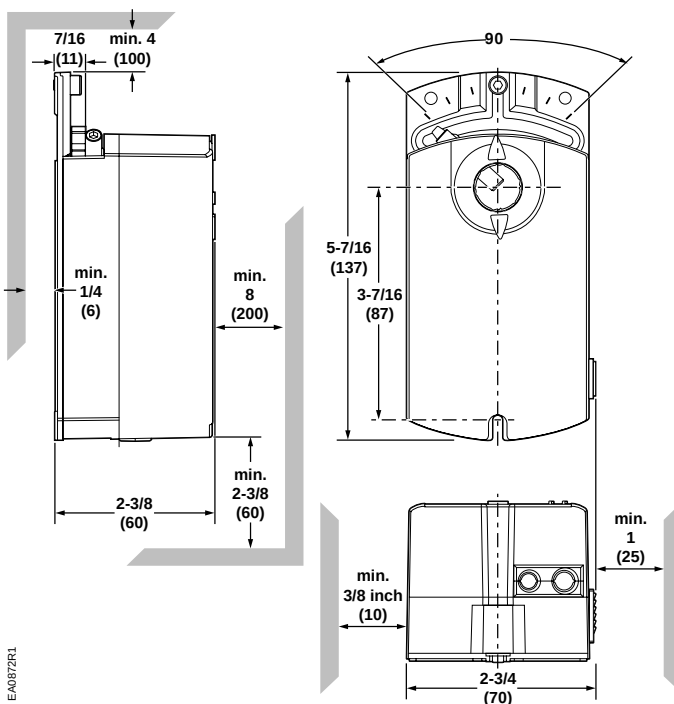
24 V

Modulating

3-position Control



Dimensions

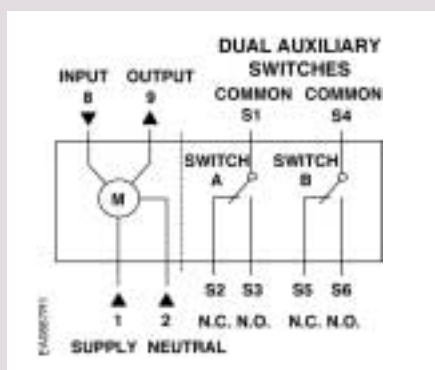


Dimensions shown in inches (mm).

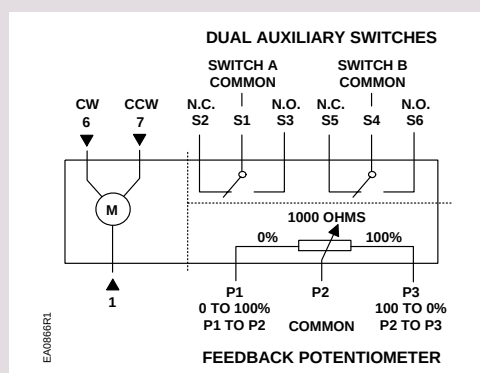
Specifications

Torque.....	88 lb.-in. (10 Nm)
Runtime for 90°	125 seconds at 60 Hz opening and closing 150 seconds at 50 Hz opening and closing
Frequency	50/60 Hz
Power consumption	3.3 VA (modulating) 2.3 VA (three-position)
Equipment rating (24 Vac):	Class 2 per UL/CSA
Noise level.....	<35 dBA (running)
Angle of rotation	90° nominal, 95° max.
Shaft dimensions	3/8 to 5/8-in. (8 to 16 mm) Dia. ● 1/4 to 1/2-in. (6 to 12.7 mm) Sq. ■ 3/4-in. (20 mm) min. length
Operating temperature	-22 to +130°F (-30 to +55°C)
Storage temperature.....	-22 to +140°F (-30 to +60°C)
Ambient humidity.....	95% RH, non-condensing
Pre-cabled connection.....	18 AWG, 3 ft. (0.9 m) long
Enclosure	NEMA 2, IP54 per EN60529
Material.....	Durable plastic
Agency listings.....	UL873, C-UL C22.2 No. 24-93
CE Conformity.....	Plenum models only
Electromagnetic Compatibility (EMC).....	89/336/EEC
Emissions standards.....	EN 50081-1
Immunity standards	EN 50082-2
Gear Lubrication	Silicone free
Dimensions.....	5-7/16" H x 2-3/4" W x 2-3/8" D (137 mm H x 70 mm W x 60 mm D)
Weight	1.06 lbs. (0.48 kg)

Wiring Diagrams



Modulating (0 to 10 Vdc), 24 Vac



3-position, 24 Vac

Product Number	Operating Voltage	Control		Cables		Built-in Control Options		
	24 Vac +20%, -15%	0 to 10 Vdc	3-position	Standard	Plenum	Position Feedback	Dual Auxiliary Switches	Span and Offset
GLB131.1P	•		•		•			
GLB132.1P	•		•		•	•		
GLB136.1P	•		•		•		•	
GLB161.1P	•	•			•	•		
GLB163.1P	•	•			•	•		•
GLB164.1P	•	•			•	•	•	•
GLB166.1P	•	•			•	•	•	

Submittal Summary

OpenAir GEB Series, Non-spring Return, Direct-coupled Electronic Damper Actuators

132 lb.-in.

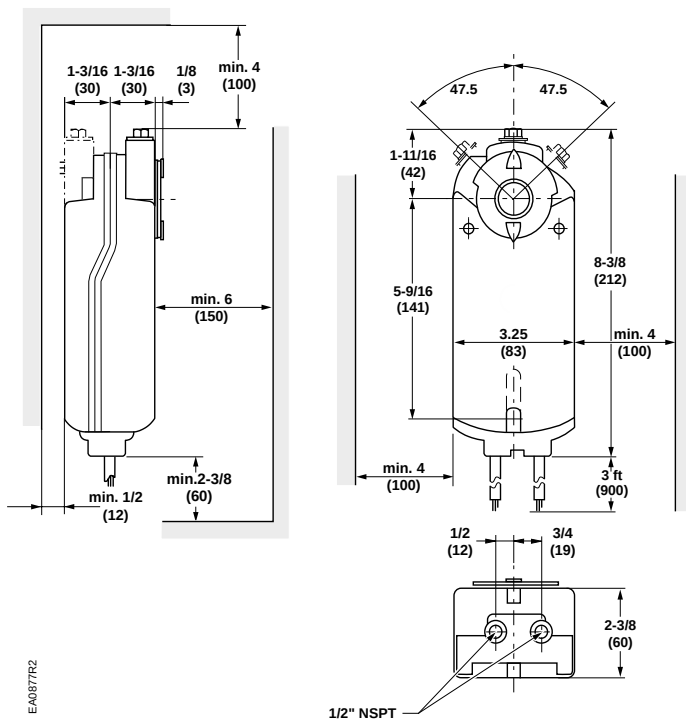
24 V

Modulating

2-position/3-position



Dimensions



Dimensions shown in inches (mm).

Specifications

Torque	132 lb.-in. (15 Nm)
Frequency.....	50/60 Hz
Runtime for 90°	125 seconds (60 Hz)
	150 seconds (50 Hz)

Power consumption GEB161x.1x

Running	4 VA/4W
Holding.....	1 VA

Power consumption GEB131x.1x

Running	3 VA/3W
Holding.....	1 VA

Equipment rating (24 Vac)Class 2 per UL/CSA

Angle of rotation90° nominal, 95° max.

Shaft dimensions1/4 to 3/4-in. (6 to 20.5 mm) Dia. ●
1/4 to 1/2-in. (6.4 to 13 mm) Sq. ■
3/4-in. (20 mm) min. length

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

Storage temperature-25 to +158°F (-32 to +70°C)

Ambient humidity95% RH, non-condensing

Pre-cabled connection18 AWG, 3 ft. (0.9 m) long

EnclosureNEMA 1

MaterialDie cast aluminum alloy

Agency listingsUL60730 (replacing UL873)

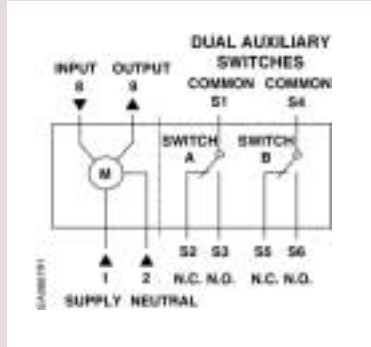
C-UL C22.2 No. 24-93

Gear LubricationSilicone free

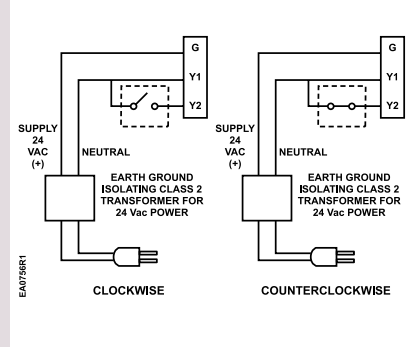
Dimensions*8-3/8" H x 3-1/4" W x 2-2/3" D
(215 mm H x 83 mm W x 68 mm D)

Weight2.2 lbs. (1.0 kg)

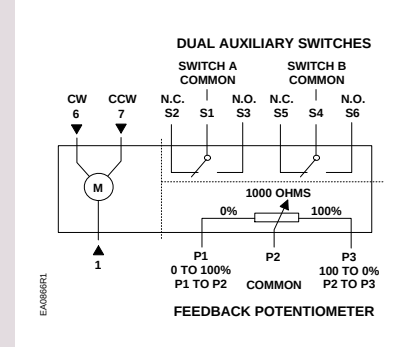
Wiring Diagrams



Modulating (0 to 10 Vdc), 24 Vac



Two-position, 24 Vac



Three-position, 24 Vac

Product Number	Operating Voltage	Control		Cables		Built-in Control Options			
	24 Vac $\pm 20\%$	0 to 10 Vdc	3-position	Jacketed	Plenum	Position Feedback	Dual Auxiliary Switches	Offset and Span	Input Signal Selectable
GEB131.1U	•		•	•					
GEB132.1U	•		•	•		•			
GEB136.1U	•		•	•			•		
GEB161.1U	•			•		•			•
GEB163.1P	•	•			•	•		•	
GEB164.1U	•	•		•		•	•	•	
GEB166.1U	•	•		•		•	•		

Submittal Summary

OpenAir GBB Series Non-spring Return, Direct-coupled Electronic Damper Actuators

177 lb.-in.

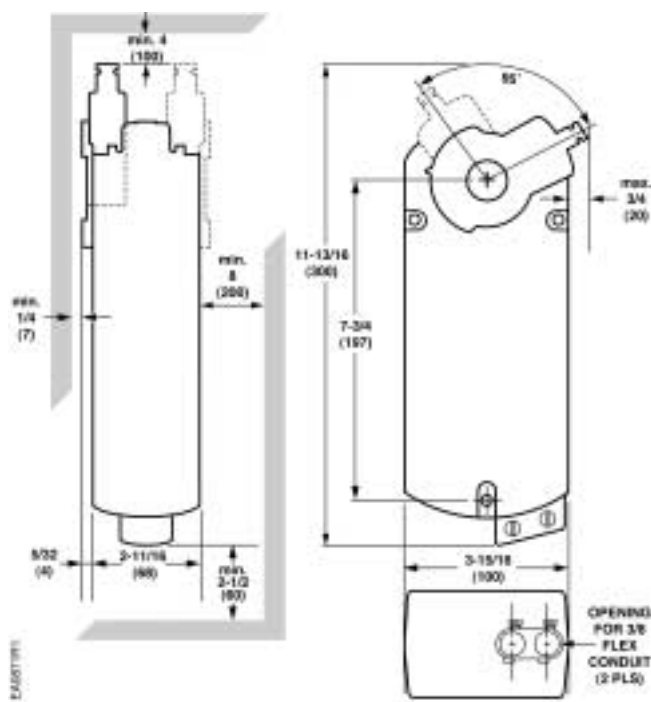
24 V

Modulating

2-position/3-position



Dimensions

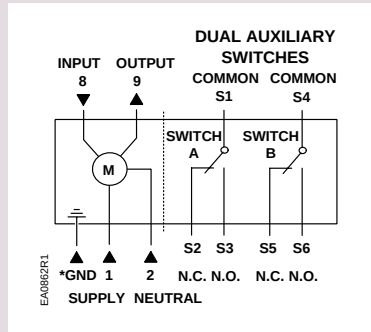


Dimensions shown in inches (mm).

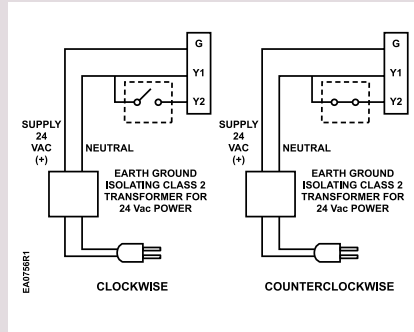
Specifications

Torque	177 lb.-in. (20 Nm)
Runtime for 90°	150 sec. opening and closing
Frequency	50/60 Hz
Power consumption	4 VA
Equipment rating (24 Vac)	Class 2 per UL/CSA
Noise level	<45 dBA (running)
Angle of rotation	90° nominal, 95° max.
Shaft dimensions	3/8 to 1-in. (8 to 25.6 mm) Dia. ● or 1/4 to 5/8-in. (6 to 16 mm) Sq. ■ 3/4-in. (20 mm) min. length
Operating temperature	-25 to +130°F (-32 to 55°C)
Storage temperature	-40 to +158°F (-40 to 70°C)
Ambient humidity	95% RH, non-condensing
Pre-cabled connection	18 AWG, 3 ft. (0.9 m) long
Enclosure	NEMA 2, IP40 per EN60529
Material	Die-cast aluminum alloy
Agency listings	UL873, C-UL C22.2 No. 24-93
Gear Lubrication	Silicone free
Dimensions	12" H x 4-3/4" W x 2-7/8" D (305 mm H x 120 mm W x 72 mm D)
Weight	4.4 lbs. (2.0 kg)

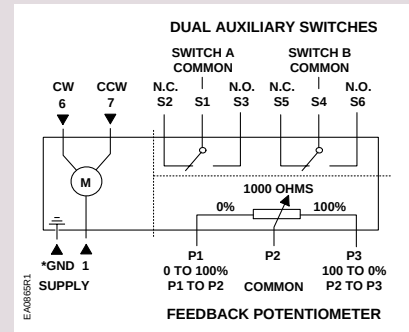
Wiring Diagrams



Modulating (0 to 10 Vdc), 24 Vac



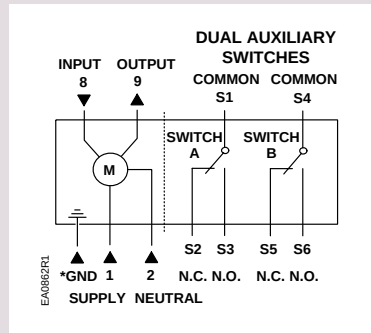
Two-position, 24 Vac



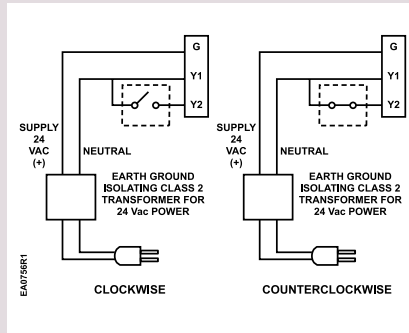
Three-position, 24 Vac

Product Number	Operating Voltage	Control			Cables		Built-in Control Options		
	24 Vdc± 20%	0 to 10 Vdc	4 to 20 mA	3-position	Standard	Plenum	Position Feedback	Dual Auxiliary Switches	Span and Offset
GBB171.1U	•			•	•				
GBB171.1P	•			•		•			
GBB175.1U	•			•	•		•	•	
GBB175.1P	•			•		•	•	•	
GBB151.1U	•		•		•				
GBB151.1P	•		•			•			
GBB156.1U	•		•		•			•	
GBB156.1P	•		•			•		•	
GBB161.1U	•	•			•		•		
GBB161.1P	•	•				•	•		
GBB163.1U	•	•			•		•		•
GBB163.1P	•	•				•	•		•
GBB164.1U	•	•			•		•	•	•
GBB164.1P	•	•				•	•	•	•
GBB166.1U	•	•			•		•	•	
GBB166.1P	•	•				•	•	•	

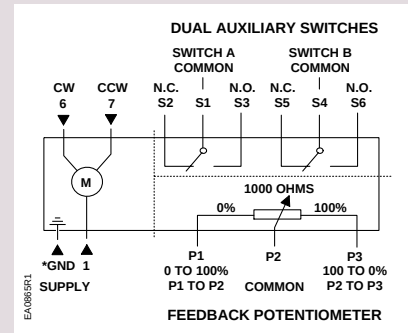
Wiring Diagrams



Modulating (0 to 10 Vdc), 24 Vac



Two-position, 24 Vac



Three-position, 24 Vac

Product Number	Operating Voltage	Control			Cables		Built-in Control Options			Elec. Tandem Control	
	24 Vdc $\pm$ 20%	Modulating 0 to 10 Vdc	4 to 20 mA	3-position	Standard	Plenum	Position Feedback	Dual Auxiliary Switches	Span and Offset	Master	Slave
GIB171.1U	•			•	•						
GIB171.1P	•			•		•					
GIB175.1U	•			•	•		•		•		
GIB175.1P	•			•		•	•		•		
GIB151.1U	•		•		•						
GIB151.1P	•		•			•					
GIB156.1U	•		•		•			•			
GIB156.1P	•		•			•		•			
GIB161.1U	•	•			•		•				
GIB161.1P	•	•				•	•				
GIB163.1U	•	•			•		•		•		
GIB163.1P	•	•				•	•		•		
GIB164.1U	•	•			•		•	•	•		
GIB164.1P	•	•				•	•	•	•		
GIB166.1U	•	•			•		•	•			
GIB166.1P	•	•				•	•	•			
GIB161.1P/MAS	•	•				•	•			•	
GIB164.1P/MAS	•	•				•	•	•	•	•	
GIB161.1P/SLA	•	•				•	•				•

More Replacement Options

To select a Siemens OpenAir product, locate the competitor's actuator in the left-hand column. Next, follow the row across to locate the appropriate OpenAir part number.

Competitive Actuator	Torque (lb. -in.)	Power Supply	Auxiliary Switches	Control Signal	Feedback Signal	Offset/Span Adjust	OpenAir Part No.
AF120 US	142	120 VAC	On/Off				GCA221.1U
AF120-S US	142	120 VAC	On/Off	•			GCA226.1U
AF24 US	142	24 VAC/DC	On/Off				GCA121.1U/P
AF24-3	142	24 VAC/DC	Floating				GCA131.1U/P
AF24-S US	142	24 VAC/DC	On/Off	•			GCA126.1U/P
AF24-SR US	142	24 VAC	0-10 Vdc		•		GCA161.1U/P
AF24-SR-S US	42	24 VAC	0-10 Vdc	•	•		GCA166.1U/P
AM24	132	24 VAC	Floating				GEB131.1P
AM24-S US	132	24 VAC	0-10 Vdc	•	•		GEB166.1U
AM24-SR	132	24 VAC	0-10 Vdc		•		GEB161.1P
GM24 US	310	24 VAC/DC	Floating				GIB171.1U/P
GM24-SR US	10	24 VAC	0-10 Vdc		•		GIB161.1U/P
LF120 US	62	120 VAC	On/Off				GMA221.1U
LF120-S US	62	120 VAC	On/Off	•			GMA226.1U
LF24	62	24 VAC/DC	On/Off				GMA121.1P
LF24-3	62	24 VAC/DC	Floating				GMA131.1P
LF24-S US	62	24 VAC/DC	On/Off	•			GMA126.1U
LF24-SR US	62	24 VAC/DC	0-10 Vdc		•		GMA161.1P
LF24-SR-S US	62	24 VAC/DC	0-10 Vdc	•	•		GMA166.1U
LM24	44	24 VAC	Floating				GDE131.1U/P
LM24-S US	44	24 VAC	0-10 Vdc	•	•		GDE166.1P
LM24-SR	44	24 VAC	0-10 Vdc		•		GDE161.1P
M9104-AGA-2	44	24 VAC	Floating				GDE131.1U/P
M9104-GGA-2	44	24 VAC	0-10 Vdc		•		GDE161.1P
M9104-GGC-2	44	24 VAC	0-10 Vdc	•	•		GDE166.1P
M9108-AGA-2	88	24 VAC	Floating				GLB131.1P
M9108-GGA-2	88	24 VAC	0-10 Vdc		•		GLB161.1P
M9108-GGC-2	88	24 VAC	0-10 Vdc	•	•		GLB166.1P
M9108-HGA-2	88	24 VAC	0-10 Vdc		•	•	GLB163.1P
M9108-HGC-2	88	24 VAC	0-10 Vdc	•	•	•	GLB164.1P
M9116-AGA-2	132	24 VAC	Floating				GEB131.1P
M9116-AGE-2	132	24 VAC	Floating		•		GEB135.1U
M9116-GGA-2	132	24 VAC	0-10 Vdc		•		GEB161.1P
M9116-GGC-2	132	24 VAC	0-10 Vdc	•	•		GEB166.1U
M9116-HGA-2	132	24 VAC	0-10 Vdc		•	•	GEB163.1P

Competitive Actuator	Torque (lb.-in.)	Power Supply	Auxiliary Switches	Control Signal	Feedback Signal	Offset/Span Adjust	OpenAir Part No.
M9116-HGC-2	132	24 VAC	0-10 Vdc	•	•	•	GEB164.1U
M9124-AGA-2	310	24 VAC/DC	Floating				GIB171.1U/P
M9124-AGE-2	310	24 VAC/DC	Floating	•	•		GIB175.1U/P
M9124-GGA-2	310	24 VAC	0-10 Vdc		•		GIB161.1U/P
M9124-GGC-2	310	24 VAC	0-10 Vdc	•	•		GIB166.1U/P
M9124-HGA-2	310	24 VAC	0-10 Vdc		•	•	GIB163.1U/P
M9124-HGC-2	310	24 VAC	0-10 Vdc	•	•	•	GIB164.1U/P
M9206-AGA-2	62	24 VAC/DC	On/Off				GMA121.1P
M9206-AGC-2	62	24 VAC/DC	On/Off	•			GMA126.1U
M9206-GGA-2	62	24 VAC/DC	0-10 Vdc		•		GMA161.1P
M9206-GGC-2	62	24 VAC/DC	0-10 Vdc	•	•		GMA166.1P
M9216-AGA-2	142	24 VAC/DC	Floating				GCA131.1U/P
M9216-AGE-2	142	24 VAC/DC	Floating	•	•		GCA135.1U/P
M9216-BGA-2	142	24 VAC/DC	On/Off				GCA121.1U/P
M9216-BGC-2	142	24 VAC/DC	On/Off	•			GCA126.1U/P
M9216-HGA-2	142	24 VAC	0-10 Vdc		•		GCA161.1U/P
M9216-HGC-2	142	24 VAC	0-10 Vdc	•	•	•	GCA164.1U/P
ML6161B 2024	44	24 VAC	Floating				GDE131.1U/P
ML6174B 2019	88	24 VAC	Floating				GLB131.1P
ML6184A 1003	132	24 VAC	Floating				GEB131.1P
ML6185A 1000	62	24 VAC/DC	Floating				GMA131.1P
ML6194A 1002	310	24 VAC/DC	Floating				GIB171.1U/P
ML7161A 2008	44	24 VAC	0-10 Vdc		•		GDE161.1P
ML7174A 2001	88	24 VAC	0-10 Vdc		•		GLB161.1P
ML7284A 1018	132	24 VAC	0-10 Vdc		•		GEB161.1P
ML7284F 1013	132	24 VAC	0-10 Vdc	•	•		GEB166.1U
ML7285A 1007	62	24 VAC/DC	0-10 Vdc		•		GMA161.1P
ML7285C 1005	62	24 VAC/DC	0-10 Vdc	•	•		GMA166.1P
ML7294A 1009	310	24 VAC	0-10 Vdc		•		GIB161.1U/P
ML7294C 1007	310	24 VAC	0-10 Vdc	•	•		GIB166.1U/P
ML8185A 1008	62	24 VAC/DC	On/Off				GMA121.1P
ML8185C 1006	62	24 VAC/DC	On/Off	•			GMA126.1U
ML9264A 1000	310	24 VAC/DC	Floating	•	•		GIB175.1U/P
NF120 US	62	120 VAC	On/Off				GMA221.1U
NF24 US	62	24 VAC/DC	On/Off				GMA121.1P
NF24-SR US	62	24 VAC/DC	0-10 Vdc		•		GMA161.1P
NM24	88	24 VAC	Floating				GLB131.1P
NM24-SR	88	24 VAC	0-10 Vdc		•		GLB161.1P

Wiring Cross Reference

Control Type	Belimo		Siemens		
	Function	Terminal Designation	Standard Symbol	Wire Designation	Color
2-Position 120 Vac GCA/GMA	Neutral	1	3	L	Black
	Hot	2	4	N	White
	Ground		GND		Green/Yellow
2-Position 24 Vac GCA/GMA	Supply (SP)	1	1	G	Black
	Neutral (SN)	2	2	G0	White
	Ground		GND		Green/Yellow
3-Position 24 Vac GMA/GCA	Supply (SP)	2	1	G	Red
	Neutral (SN)	1	2	G0	Black
	Control signal clockwise	4	6	Y1	Violet
	Control signal counterclockwise	3	7	Y2	Orange
	Ground		GND		Green/Yellow
3-Position 24 Vac GDE/GLB/GEB GIB	Supply (SP)	NA	1	G	Red
	Control signal clockwise*	NA	6	Y1	Violet
	Control signal counterclockwise*	NA	7	Y2	Orange
	*Requires switching of neutral leg				
Modulating 0-10 V All	Supply (SP)		1	G	Red
	Neutral (SN)		2	G0	Black
	0 to 10 Vdc/4 to 20 mA input signal		8	Y	Gray
	Output for 0 to 10 Vdc position indication		9	U	Pink
	Ground		GND		Green/Yellow

Switches and Feedback

Belimo		Siemens		
Function	Terminal Designation	Standard Symbol	Terminal Designation	Color
Switch A Common	S1	S1	Q11	Gray/Red
Switch A NC	S2	S2	Q12	Gray/Blue
Switch A NO	S3	S3	Q14	Gray/Pink
Switch B Common	S4	S4	Q21	Black/Red
Switch B NC	S5	S5	Q22	Black/Blue
Switch B NO	S6	S6	Q24	Black/Pink
Position Feedback 0 to 100%	P1	P1	a	White/Red
Position Feedback Common	P2	P2	b	White/Blue
Position Feedback 100 to 0%	P3	P3	c	White/Pink

Damper Sizing

Damper Sizing

When determining the size and quantity of damper actuators needed, there are several factors to consider:

- Type of damper seals
- Quality of damper installation
- Number of damper sections
- Approach air velocity
- Static pressure

Determining Damper Torque

1. Obtain the Damper Torque Rating (DTR) at the most severe operating conditions from the damper manufacturer.

If the damper torque rating is not available, use Table 1 for estimating purposes. However, the exact damper torque rating is required to ensure accurate torque calculations.

2. Calculate the damper area (DA) from the damper dimensions.
3. Calculate the Total Damper Torque (TDT) in lb.-in. using this formula: **TDT=DTR X DA**

If the damper torque rating is not available, use a torque wrench on the damper shaft while air is moving through the duct to measure the TDT.

Determining Actuator Size

1. From the actuator literature, select the actuator type and size with the actuator torque rating (ATR) that is most appropriate for the application.

The ATR is normally based on 90° rotation of the damper. For torque ratings other than 90° rotation, use this formula:

$$\text{ATR @ } X^{\circ} = \text{ATR @ } 90^{\circ} \text{ rotation} \times (\text{Crank Radius @ } X^{\circ} / \text{Crank Radius @ } 90^{\circ})$$

2. If the actuator is rated in pounds of thrust, convert to torque using this formula:

$$\text{Torque} = (*\text{Crank arm length} \times 0.707) \times \text{Thrust}$$

* The crank arm length is for 90° shaft rotation at nominal actuator stroke.

Determining the Number of Actuators

1. Calculate the number of actuators needed using this formula:

$$\text{Number of actuators} = \text{Total Damper Torque} / \text{SF} \times \text{Actuator Torque Rating}$$

$$\text{SF} = 0.80$$

Safety Factor, SF, accounts for variables such as slight misalignment.

2. If the number of actuators is too many, select a more powerful actuator or consider using a positioning relay (if pneumatic).

Table 1

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

Selection Guide

OpenAir Electronic Damper Actuators

More Experience	2
More Solutions: Expanded product line delivers power and flexibility	3
Product and Accessories Selection Chart	4–5
More Benefits: Spring Return Features/Benefits	6
More Performance: Non-Spring Return Features/Benefits	7
More Mounting Alternatives	8–9
More Applications Expertise	10–11
OpenAir Accessories	12–15
More Wiring Options	16–17
Submittal Summaries GMA Series Spring Return GCA Series Spring Return GGD Series Spring Return GDE Series Non-spring Return GLB Series Non-spring Return GEB Series Non-spring Return GBB Series Non-spring Return GIB Series Non-spring Return	18–33
More Replacement Options	34–35
Wiring Cross Reference	36
Damper Sizing	37

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