

GA-P70-024

Direct coupled, non-spring return actuators, 70 in-lb

User Manual

November, 2003

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Direct coupled, non-spring return actuators, 70 in-lb

1 Application

Actuators to be easily installed by direct shaft mounting on air dampers, shutters and butterfly valves in ventilation and air conditioning systems. Can be controlled by any compatible electric or electronic analog controller DDC/PLC control or automation system. The actuators should be mounted indoors in a dry environment, relatively free from corrosive fumes.

2 Safety remarks

The actuators are not suitable for use in explosive atmospheric applications!

All service to the actuators (mounting, electrical connection, retrofitting and repair) must be carried out with the power supply disconnected. The electrical connection must be done by a trained and competent person considering the wiring diagrams, local and national regulations. Use copper twisted conductors only. Provide disconnect and overload protection if necessary.

This actuator may only be operated by 24 VAC/VDC!

The transformer **must** be sized according to technical data of the actuator (see section 10). Electronics and controllers must be powered from a separate transformer when controller power is full-wave rectified. Otherwise the controller or the actuator may be damaged.

Always read the controller installation instructions before making any connection!

3 Installation

Direct mounting with V-bolt clamp to the damper shaft (diagr. 1) and fixing with enclosed anti-rotation mounting bracket (diagr. 2).

Shaft: $\varnothing 5/16"$ to $5/8"$ ($\varnothing 8 - 16$ mm)
 $\square 5/16"$ to $15/32"$ ($\square 8 - 12$ mm)

- Turn the damper until the blades are closed
- Disengage the gears by pressing the red button and rotate the clamp until the switching position indication shows 90°
- Tighten the nuts on the clamp (4 - 6 ft-lb)

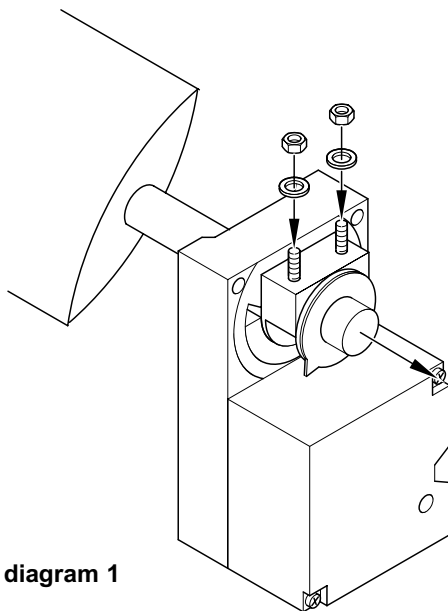


diagram 1

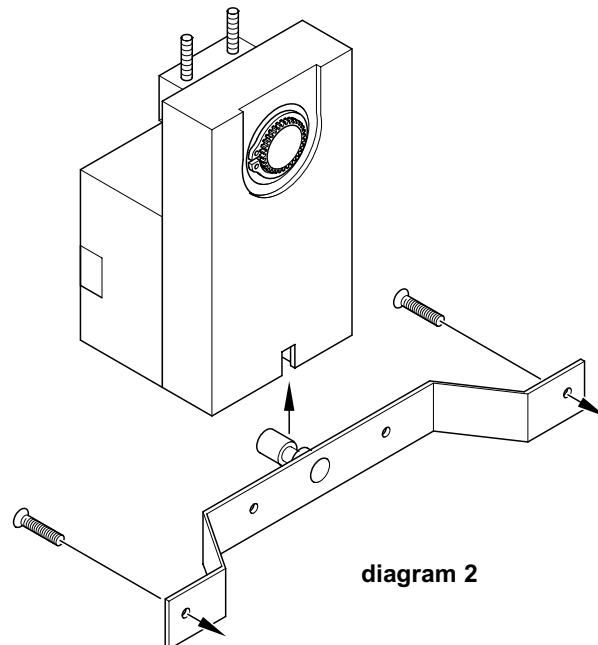
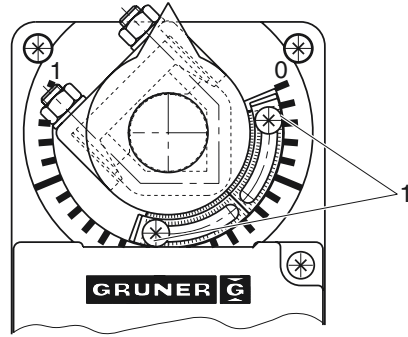


diagram 2

4 Adjustment of the angle of rotation

Both end stops are adjusted to 0° and 90°. For smaller rotation angles, loosen the screws (1) at the metal end stop, adjust the end stops as required, and fasten the screws again.

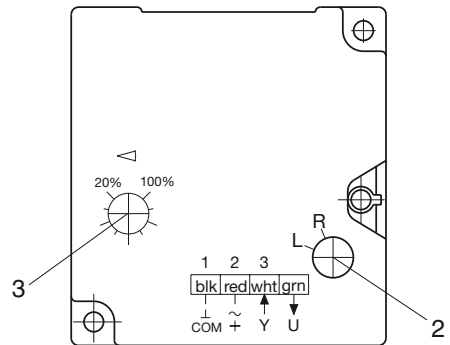


5 Adjustment of the rotation direction and rotation range for proportional control

The actuator is adjusted to clockwise direction by the factory --> "R". To change the direction of rotation, turn the adjustment knob (2) to "L".

The actuator is factory set for a 0° to 90° range with a 2 to 10 VDC input signal. A smaller rotation range may be selected (3), where 2 to 10 VDC is proportional to the range.

The actuator must be switched off during set up.



Note: Terminal version has no feedback signal and no angle selector (3).

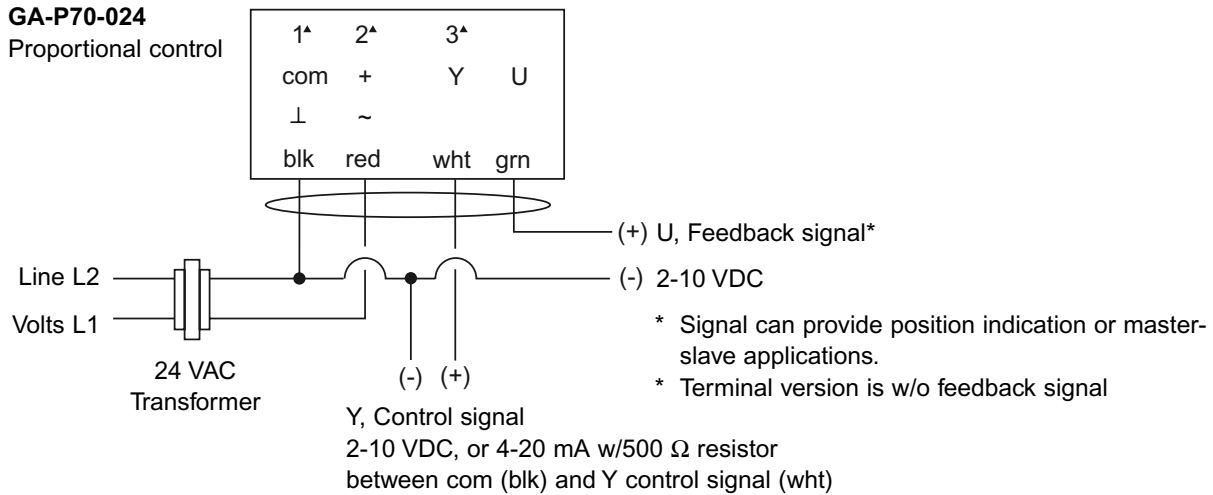
6 Wiring configuration

Notes:

- Actuators are provided with color coded wires.
- Observe polarity on secondary of transformers. All common and signal (-) must be connected in line. Incorrect polarity can cause controller damage or operation error.
- Long wire runs requires a 4-wire configuration (connect common for power and control signal at the actuator or close by). Greater than a 0.2 V drop must be avoided for any common wire.
- Always use a separate transformer when controller power is full-wave rectified.
- Controller and actuators must have separate transformers for paralleled multi-actuator application.
- Provide overload protection for line voltage and disconnect as required.

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Proportional control



▲ Terminal version wiring connection:

1 = com 2 = + (24 V) 3 = control signal

Multiple actuators (maximum quantities)	GA-P70-024 Proportional
Stacking (torque is additive)	4
Parallel connection 2-10 VDC	20
Parallel connection 4-20 mA, w/500 Ω resistor	10
Master-slave via U, feedback signal	10

L/R selector (built-in actuator cover)	
Select	Angle of rotation
R	CW/0-90°
L	CW/0-90°

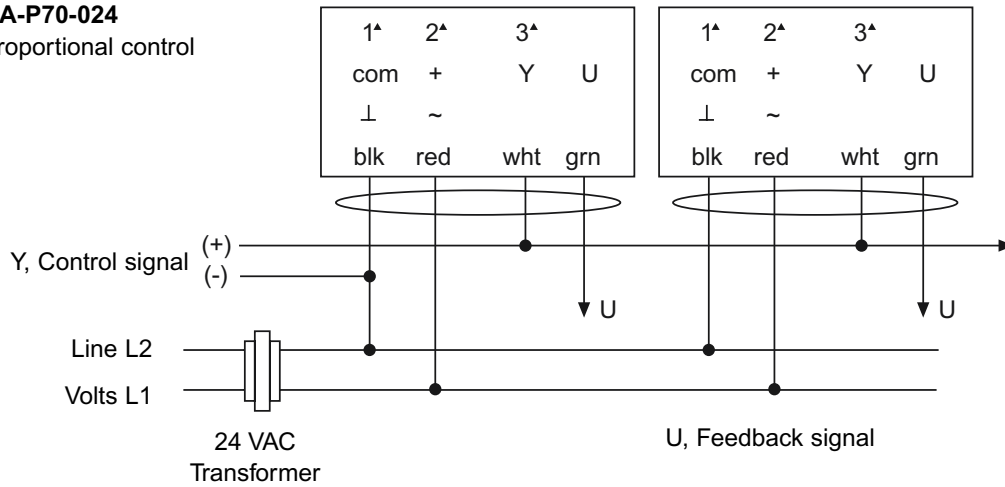
7 Parallel control of two or more actuators

Notes:

- Provide overload protection and disconnect as required.
- Always use a separate transformer when controller power is full-wave.
- Set reversing switch L/R as required.

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Proportional control



Attention:

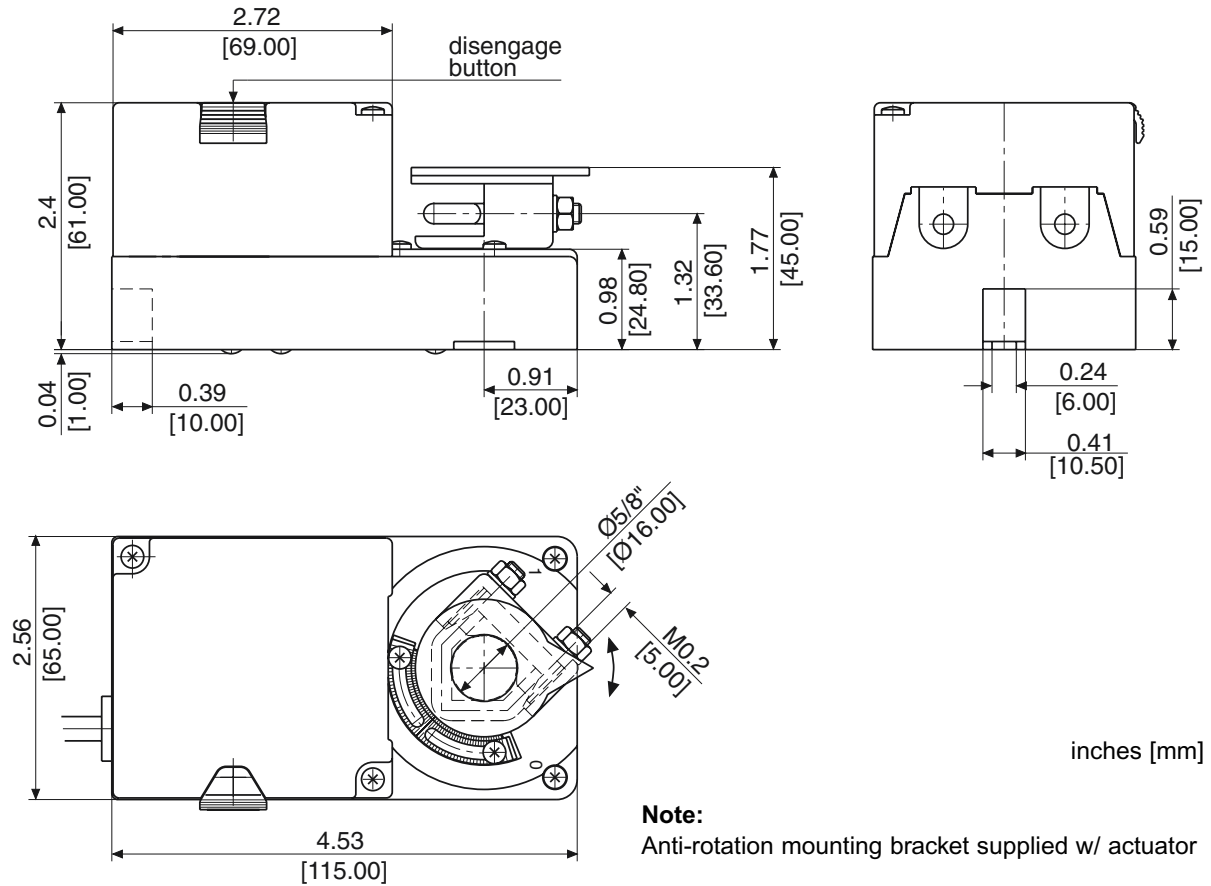
- Observe polarity on secondary of transformers.
- Connect all actuator black wires (1) to line of transformer and all red wires (2) to the other leg of the transformer and all white wires (3) together to “Y” of control signal.

Incorrect polarity can damage controller or cause an error in operation!

Before starting the operation, all electrical and mechanical functions have to be checked!

The actuator and the controller must be powered by separate transformer!

8 Dimensions



9 Ordering information

- GA-P70-024** w/ Plenum rated cable
- GA-P70-024T** w/ Terminal block

Note:
Terminal version actuator comes without a feedback signal, adj. visual position indicator and angle selector.

10 Specifications

Control

Input signal Proportional
2-10 VDC, or 4-20 mA
w/500 Ω resistor

Input impedance 50 kΩ

Feedback signal 2-10 VDC (Terminal version
is w/o feedback signal)

Electrical

Power supply 24 VAC/VDC ± 20%,
50/60 Hz

Over voltage Up to 40 V, max. 5 sec.

Power consumption 2.5 W (4.5 VA)

Performance

Torque 70 in-lb (8 Nm)

Damper size Up to 18 sq. ft. (1.6 m²)

Angle of rotation 0-95°/95-0°, selectable, adj.
angle with integral stops

- CCW(L) and CW(R) L/R selector, built-in
actuator cover
- angle Angle selector built in
actuator cover,
electronically adj.
20-100% (Terminal version
is w/o angle selector)

Rotation time 60 to 120 sec/0-90°

Power failure Stays in last position of
operation

Position indicator 0-10 divisions and adj.
visual indicator (Terminal
version is w/o visual
indicator)

Synchronization ± 1%

Overload protection Electronic throughout
rotation

Manual override Built-in disengage button

Motor type DC motor

Noise level Max. 35 dB(A)

Environmental

Permissible ambient

- working temperature -22°F to 122°F
(-30°C to 50°C)
- storage temperature -40°F to 176°F
(-40°C to 80°C)
- humidity 5-95% RH, non-condensing

Physical

Enclosure

- cover ABS, UL 94-5V
- base PA 6.6
- color Grey and black
- protection NEMA 2, NEMA 1 for
Terminal version

Mounting position Any position

Anti-rotation bracket Included w/actuator

Stacking/paralleling Refer to table
"Multiple Actuators"

Clamp connection to

- round shaft Ø 5/16" to 5/8"
(8 to 16 mm)
- square shaft □ 5/16" to 15/32"
(8 to 12 mm)

Wire connection 3 ft. (0.9 m) cable, color
coded, plenum rated
18 AWG (0.75 mm²)

Wire size

Terminal version

- wire connection Terminal block, outside of
cover, screw type for lead
wire,
min. 26 AWG (0.14 mm²)
max. 14 AWG (2.5 mm²)

Dimensions 4.53 x 2.56 x 2.40 in.
(115 x 65 x 61 mm)

Weight 1.2 lbs. (0.53 kg)

Manufacturing ISO 9001 certified

Listings/Approvals CE
UL and CSA

Warranty Five-year material and
workmanship
(Two-year standard,
three-year conditional)