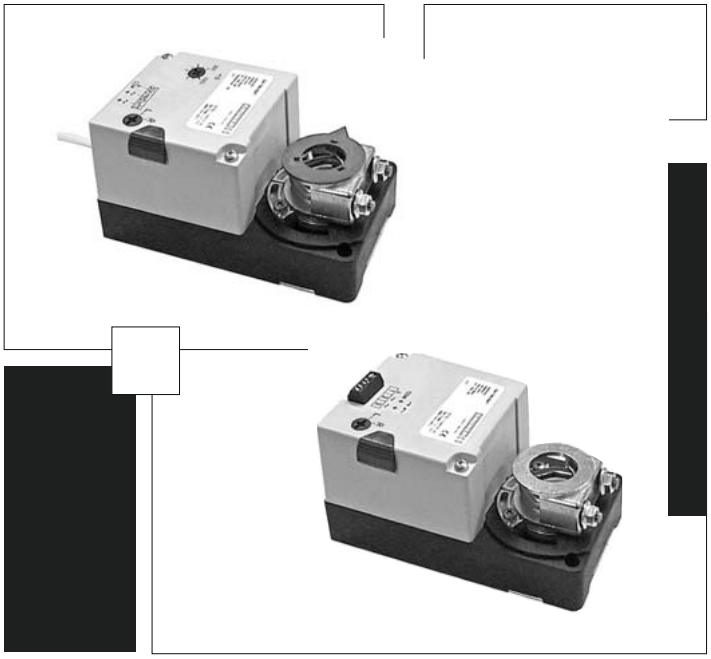
GRUNER



GA-(S)P45-024

Direct coupled, non-spring return actuators, 45 in-lb

User Manual

November, 2003

ISO 9001

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Direct coupled, non-spring return actuators, 45 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: Ø $^{5}/_{16}$" to $^{5}/_{8}$" (Ø 8 - 16 mm)
□ $^{5}/_{16}$" to $^{15}/_{32}$" (□ 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)

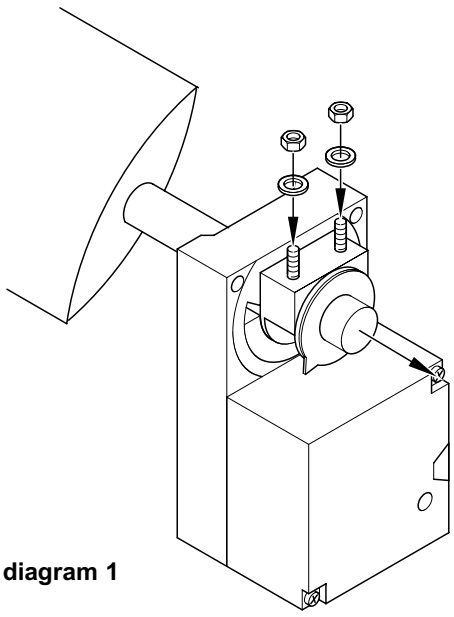


diagram 1

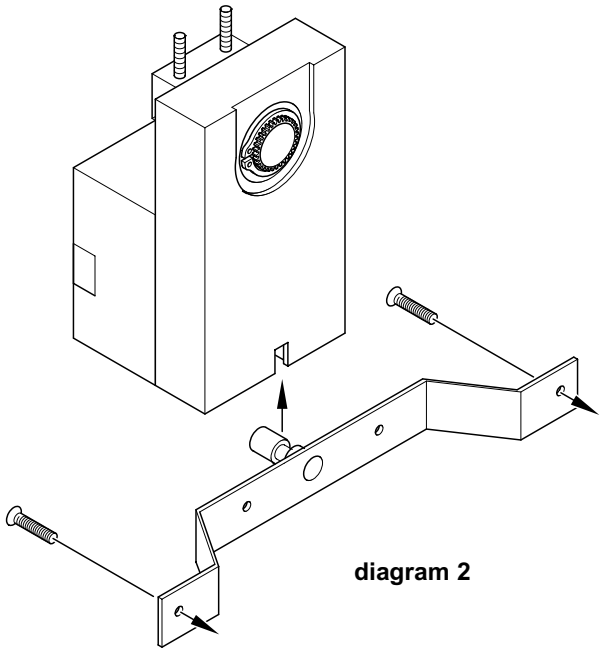
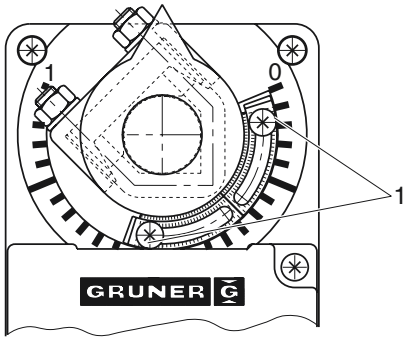


diagram 2

4 Adjustment of the angle of rotation

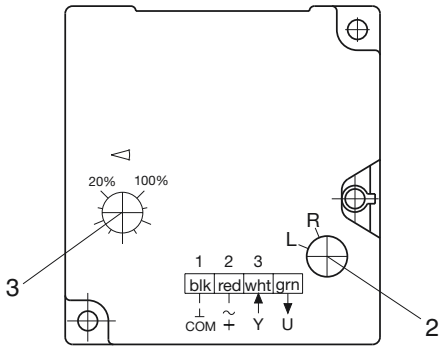
Both end stops are adjusted to 0° and 90°. For smaller rotation angles, loosen the screws (1) at the metal end stop, adjust the end stops as required, and fasten the screws again.



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).

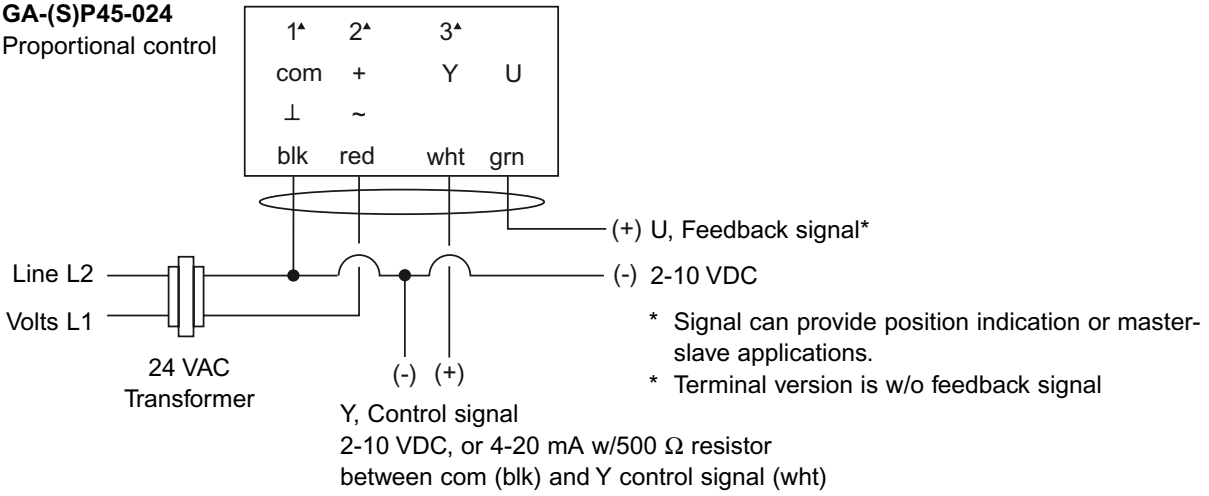


6 Wiring configuration

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.

GA-(S)P45-024
Proportional control



* Signal can provide position indication or master-slave applications.
* Terminal version is w/o feedback signal

▲ Terminal version wiring connection:
1 = com 2 = + (24 V) 3 = control signal

Multiple actuators (maximum quantities)	**GA-(S)P45-024** 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

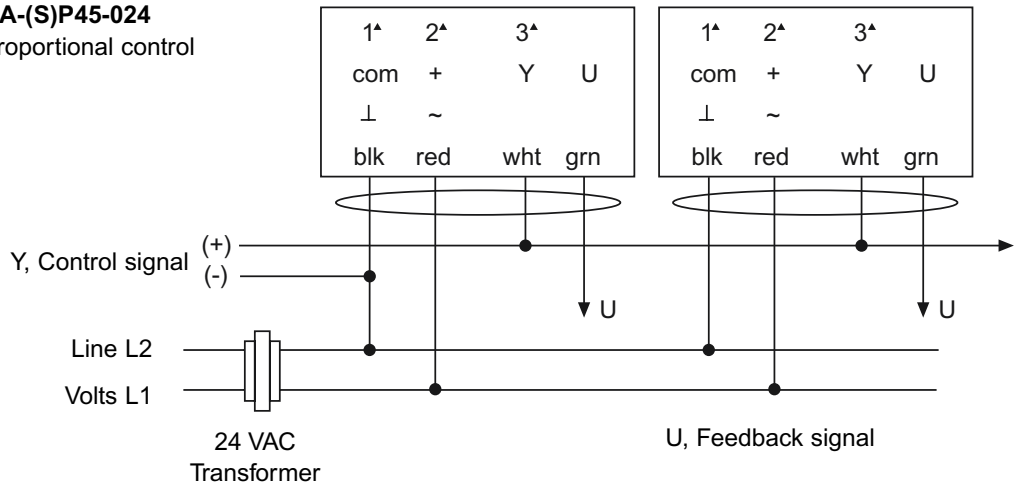
L/R selector (built-in actuator cover)	
Select	Angle of rotation
R	CW/0-90°
L	CW/0-90°

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.

GA-(S)P45-024
Proportional control

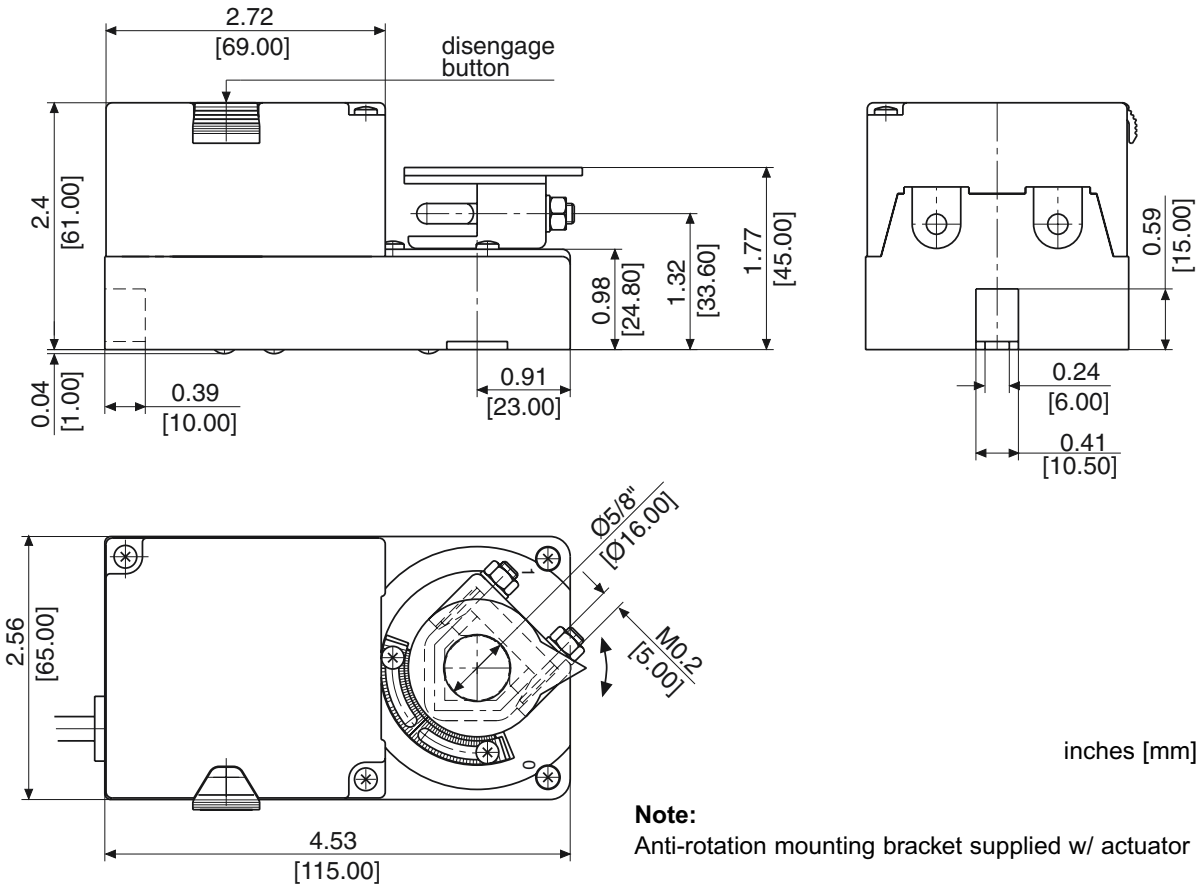


Attention:

- 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



inches [mm]

Note:
Anti-rotation mounting bracket supplied w/ actuator

9 Ordering information

GA-P45-024	w/ Plenum rated cable
GA-P45-024-T	w/ Terminal block
GA-SP45-024	Speedy, 20-35 sec./0-90° w/ Plenum rated cable
GA-SP45-024-T	Speedy, 20-35 sec./0-90° 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)
· ST speedy version	3.5 W (5.5 VA)
Performance	
Torque	45 in-lb (5 Nm)
Damper size	Up to 11 sq. ft. (1 m^2)
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°
· SP speedy version	20 to 35 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
Wire size	18 AWG (0.75 mm^2)
Terminal version	
· wire connection	Terminal block, outside of cover, screw type for lead wire, min. 26 AWG (0.14 mm^2) max. 14 AWG (2.5 mm^2)
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)