

GA-SRP(H)135-024

Direct coupled, spring return actuators, 135 in-lb

User Manual

December, 2003

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Direct coupled, spring return actuators, 135 in-lb

1 Application

Actuators may be easily installed by direct shaft mounting on air dampers, shutters and butterfly valves in ventilation and air conditioning systems. The mechanical spring return function operates only upon a power failure or power interruption caused by an unsafe condition. The actuators can be controlled by any compatible electric or electronic analog controller, DDC/PLC control or automation system.

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.

If using electrical conduit, the attachment to the actuator must be made with flexible metal conduit.

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 and fixing with enclosed anti-rotation mounting bracket.

Shaft: $\varnothing 3/8"$ to $3/4"$ ($\varnothing 9 - 20$ mm)

$\square 3/8"$ to $5/8"$ ($\square 9 - 16$ mm)

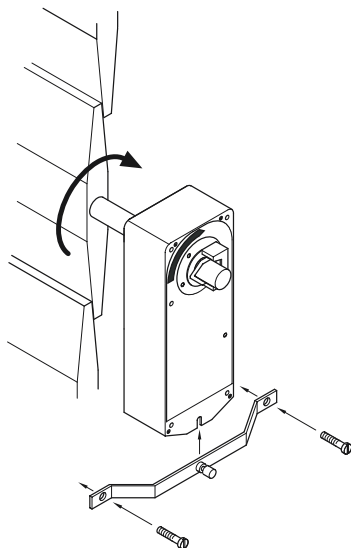
Attention!

Actuator will be delivered for clockwise rotation when control signal is applied - reverse mounting for counterclockwise rotation.

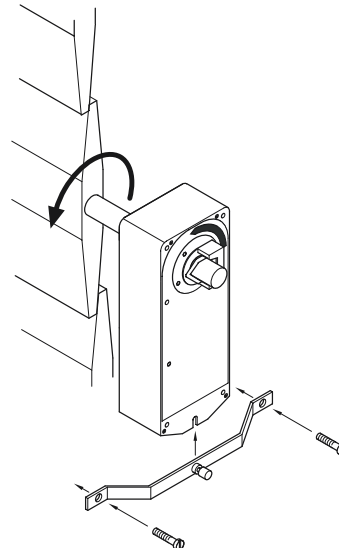
Change of rotation direction by reversed mounting

1. Remove the snap ring.
2. Pull out the V-bolt clamp assembly from the actuator towards outside.
3. Push the V-bolt clamp assembly from the opposite face.
4. Refit the snap ring.

Mounting "clockwise rotation"



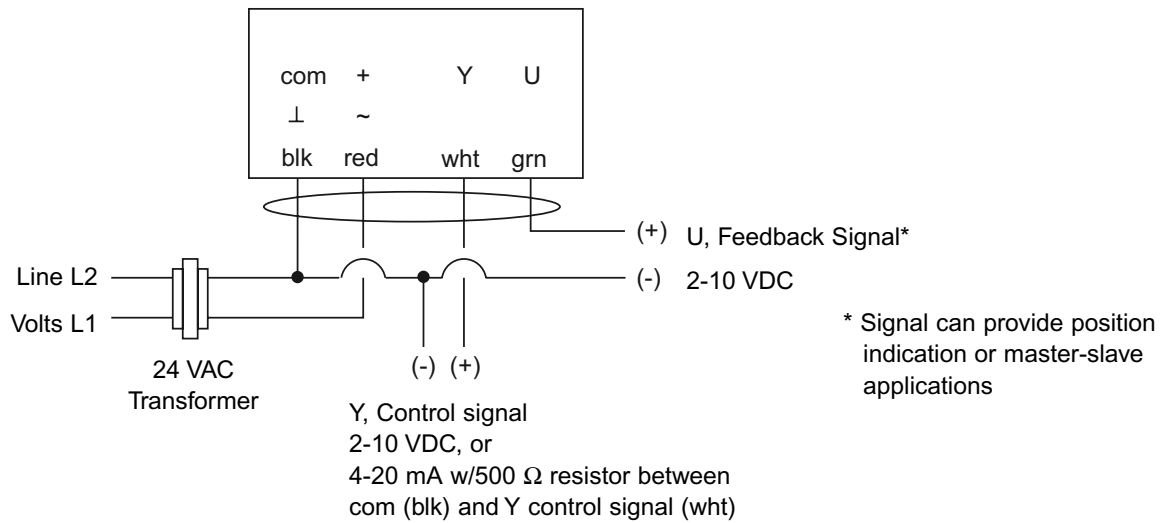
Mounting "counterclockwise rotation"



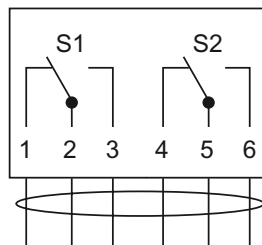
4 Wiring configuration GA-SRP135-024, proportional control

Notes:

- Actuators are provided with color coded wires. Wires for optional switches are number coded.
- 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.
- Use copper twisted conductors only.
- If using electrical conduit, the attachment to the actuator must be made with flexible metal conduit.
- Provide overload protection for line voltage and disconnect as required.
- Power supply and auxiliary switch connections meet UL and CSA requirements without the need of an electrical ground connection.



Option S2



(2) Auxiliary switches, SPDT, 250 VAC, 5 (2.5) A, w/ adjustable cam for setting between 0 - 72° and 18 - 90°.

Factory set: S1 @ 4.5°
S2 @ 72.0°

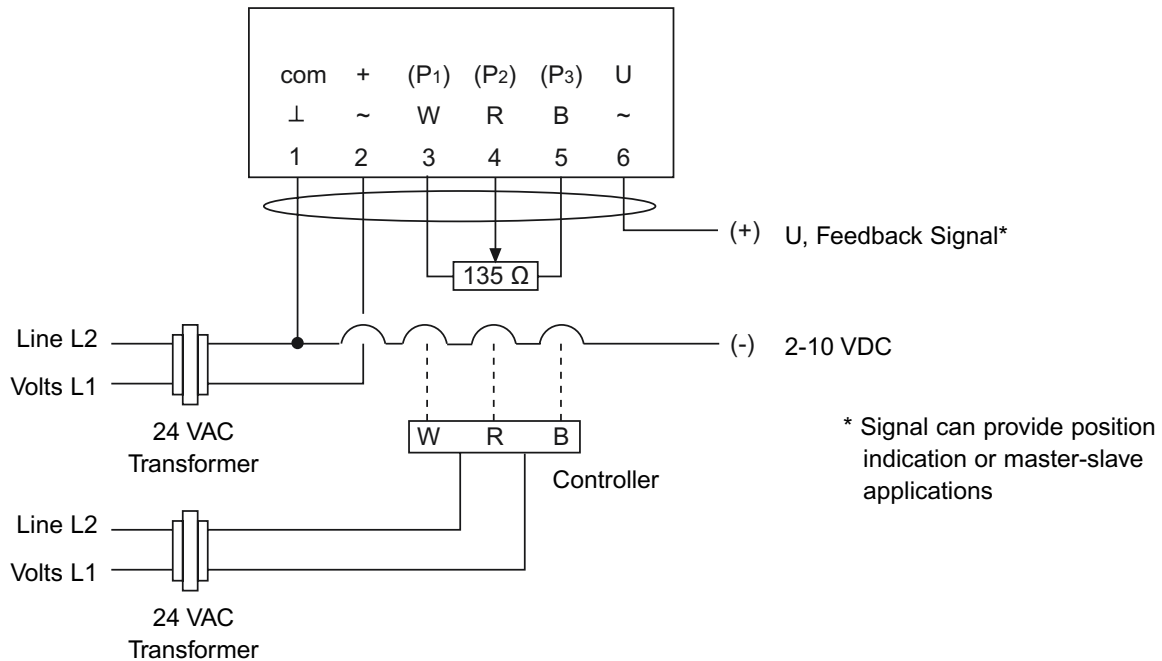
| Selection of direction | | |
|---------------------------------|-------------------|-------------------------------|
| Spring return CCW or CW mounted | | |
| Pos. of select. | Angle of rotation | Proportional control Signal Y |
| CW | 0-90° | 2-10 VDC |
| CCW | 90-0° | 2-10 VDC |

| Multiple actuators (maximum quantities) | GA-SRP135-024 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 |

5 Wiring configuration GA-SRPH135-024, proportional control

Notes:

- Actuators are provided with number 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.
- Greater than a 0.2 V drop must be avoided for any common wire.
- Controller and actuators must have separate transformers.
- Use copper twisted conductors only.
- If using electrical conduit, the attachment to the actuator must be made with flexible metal conduit.
- Provide overload protection for line voltage and disconnect as required.
- Power supply and auxiliary switch connections meet UL and CSA requirements without the need of an electrical ground connection.



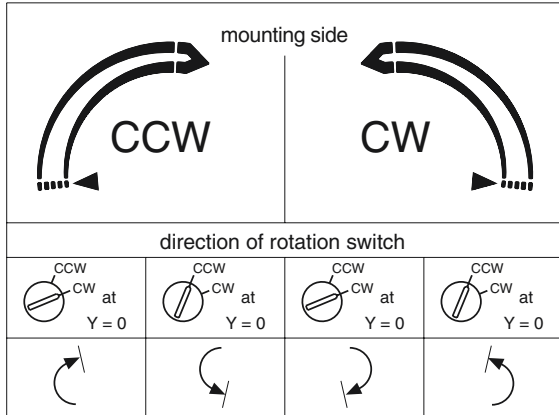
Selection of direction for spring return and motor

- Spring return reversible with CCW or CW mounting
- Motor reversible with CCW/CW selector, built-in actuator cover

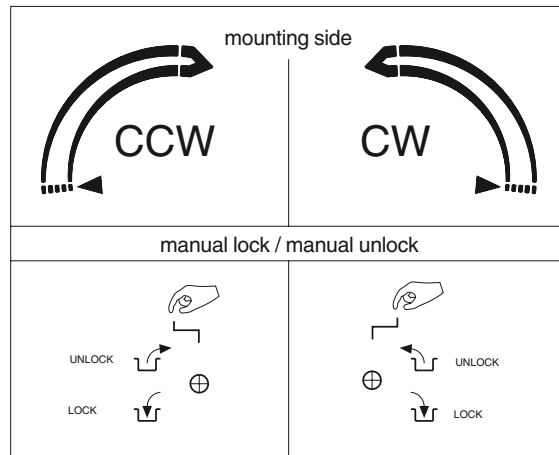
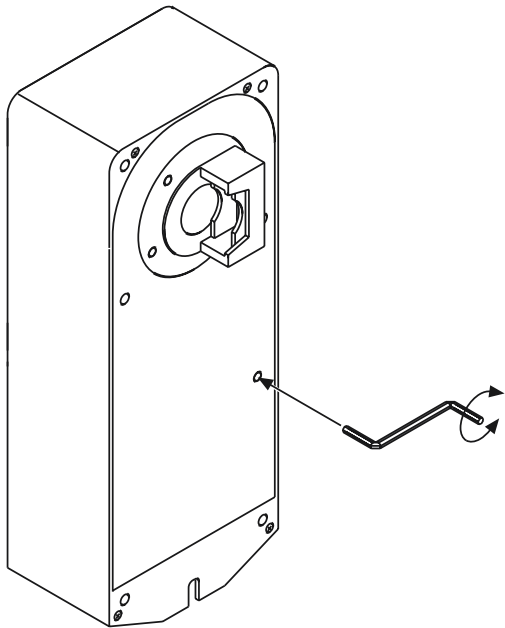
| Selection of direction | | |
|---------------------------------|-------------------|-------------------------------|
| Spring return CCW or CW mounted | | |
| Pos. of select. | Angle of rotation | Proportional control Signal Y |
| CW | 0-90° | 0-135 Ω |
| CCW | 90-0° | 0-135 Ω |

| Multiple actuators (maximum quantities) | GA-SRPH135-024 Proportional |
|--|-----------------------------|
| Stacking (torque is additive) | 4 |
| Parallel connection, 0-135 Ω, proportional | 20 |
| Master-slave, via U, feedback signal | 10 |

6 Change of control direction



7 Manual lock and manual unlock



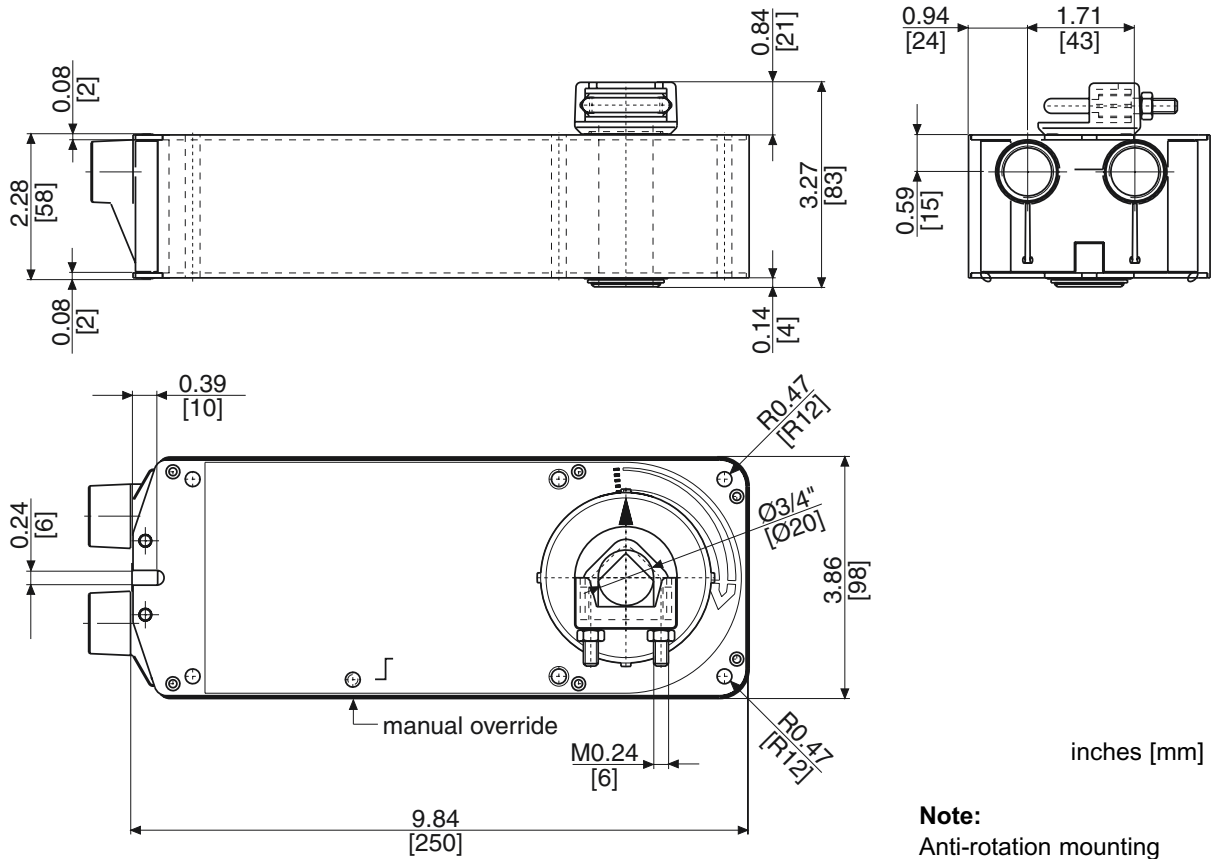
Manual lock

Turn the manual winding tool quickly opposite to direction of rotation!

Manual unlock

Turn the manual winding tool in direction of rotation!

8 Dimensions



inches [mm]

Note:
Anti-rotation mounting bracket and 3 mm hex crank for manual override supplied w/actuator

9 Ordering information

GA-SRP135-024 Standard
GA-SRP135-024-S2 w/(2) auxiliary switches

GA-SRPH135-024 Standard

10 Specifications

Control

| | |
|------------------|--|
| Input signal | |
| · GA-SRP135-024 | Proportional 2-10 VDC, or 4-20 mA *w/500 Ω resistor |
| · GA-SRPH135-024 | Proportional 0-135 Ω Honeywell series 90 or a 0-135 Ω input |

| | |
|-----------------|------------------|
| Input impedance | |
| · GA-SRP135-024 | 100 kΩ |
| Feedback signal | 2-10 VDC, 0.5 mA |

Electrical

| | |
|-------------------|-------------------------------|
| Power supply | 24 VAC/VDC ± 20%, 50/60 Hz |
| Over voltage | Up to 40 V, max. 5 sec. |
| Power consumption | 7.0 W (9.0 VA) |
| - holding | 4.0 W |

Performance

| | |
|---------------------|--|
| Torque | 135 in-lb (15 Nm) |
| Damper size | Up to 34 sq. ft. (3.0 m ²) |
| Angle of rotation | 100° (-5 to 95°) |
| · direction | Spring return can be selected by CCW/CW mounting |
| Rotation time | |
| · actuator rotation | < 150 sec/0-90° |
| · spring return | < 20 sec/90-0° |
| Power failure | Spring return to -5° position |
| Position indicator | Visual scale |
| Synchronization | ± 1% |
| Overload protection | Electronic throughout rotation |
| Manual override | 3 mm hex crank, shipped w/actuator |

| | |
|-----------------|---------------|
| Noise level | |
| · motor | Max. 50 dB(A) |
| · spring return | Max. 62 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 plates | Zinc coated steel |
| · base | PA 6.6 |
| · color | Silver and black |
| · protection | NEMA 2 |
| Mounting position | Any position |
| Anti-rotation bracket | Included w/actuator |
| Stacking/paralleling | Refer to table "Multiple Actuators" |
| Clamp connection to | |
| · round shaft | Ø 3/8" to 3/4" (9 to 20 mm) |
| · square shaft | □ 3/8" to 5/8" (9 to 16 mm) |
| Wire connection | 3 ft. (0.9 m) appliance cable. GA-SRP color coded GA-SRPH number coded |
| · option on request | Plenum rated cable |
| Wire size | 18 AWG (0.75 mm ²) |
| Conduit connector | 1/2", built-in |
| Dimensions | 9.84 x 3.86 x 2.28 in. (250 x 98 x 58 mm) |
| Weight | 4.4 lbs. (2.0 kg) |
| Manufacturing | ISO 9001 certified |
| Listings/Approvals | CE UL and CSA |
| Warranty | Five-year material and workmanship (Two-year standard, three-year conditional) |

Options

| | |
|----------------------------------|---|
| GA-SRP135-024 | |
| · S2 (2) Aux. switch built-in | SPDT 250 VAC, 5 (2.5) A, position adj. between 0-72° and 18-90°, incl. 3 ft. (0.9 m) appliance cable, number coded, and 1/2" conduit connector |