

RH Series Spring Return Direct Coupled Actuators

RH-24, RH-24-S, RH-24-MOD, RH-120, RH-120-S



RH-24, RH-24-S, RH-24-MOD, RH-120 and RH-120-S Spring Return Direct Coupled Actuators (DCA) are used within heating, ventilating, and air-conditioning (HVAC) systems.

Applications include:

Volume control dampers, mounted directly to the drive shaft or remotely (with the use of accessory hardware).

SPECIFICATIONS

Models:

- See Table 1.

Torque Ratings:

- Typical Holding, Driving, Spring Return: 44 lb-in. (5 N·m).
- Stall Maximum (fully open at 75°F): 105 lb-in. (12 N·m).

Electrical Ratings:

- See Table 1.

Timing (at Rated Torque and Voltage):

- 2-Position
 - Drive Open (typical): 45 seconds ±5 seconds.
- Modulating
 - Spring Close: 20 seconds typical ±5 seconds.

Design Life (at Rated Voltage):

- 60,000 full stroke cycles; 60,000 full stroke spring returns.

Device Weight

- 3.5 lbs (1.60 kg)

Ambient Operating Temperature:

- 40° to 150°F (-40° to 65°C)
- 22° to 150°F (-30° to 65°C) (Two position only)

Shipping and Storage Temperature:

- 40° to +150°F (-40° to +65°C) for 24 hours

Humidity Ratings:

- 5% to 95% R.H., Non-Condensing

Electrical Connections:

- Field wiring 18 AWG (0.5 mm) to 14 AWG (1.5 mm) conductors (stranded or solid) and up to 2 - 14 AWG (1.5 mm) conductors (stranded) to screw terminals, located under the removable access cover.

Auxiliary Switch (One SPDT):

- Switch adjustable from 0-95°
- 500 uA Resistive at 5 Vdc (minimum)
- 250 Vac, 8 A resistive, 3 A inductive

SPECIFICATION DATA

FEATURES

- Brushless DC submotor with electronic stall protection on all models
- Self-centering shaft adaptor (shaft coupling) for wide range of shaft sizes
- Models available for use with two-position, SPST, line- (Series 40) or low- (Series 80) voltage controls
- Models available for use with proportional current or voltage (Series 70) controls
- Models available with an internal end switch
- Access cover to facilitate connectivity
- Durable plastic housing with built-in mechanical end limits
- Spring return direction field selectable
- Shaft position indicator and scale
- UL (cUL) listed and CE compliant
- All models are plenum rated per UL873

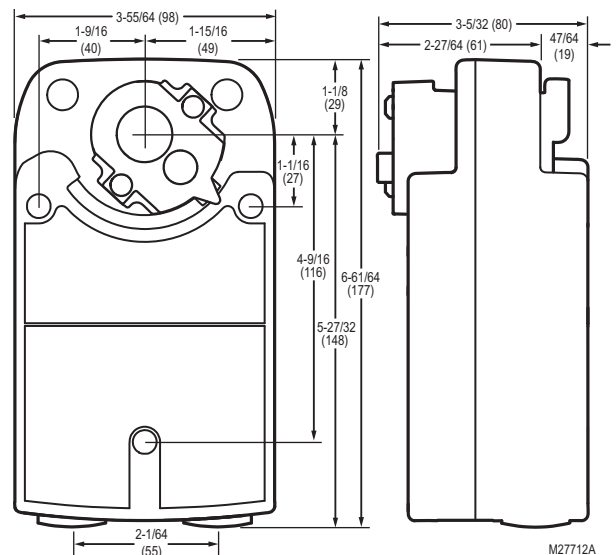


Fig. 1. Dimensional drawing of actuator in in. (mm).



Mounting: Self-centering shaft adapter (shaft coupling):

- Round damper shafts: 3/8 to 5/8 in. (9 to 16 mm)
- Square damper shafts: 1/4 to 1/2 in. (6 to 13 mm)

Minimum Damper Shaft Length:

- 1 in. (25 mm); 3 in. (76 mm) recommended.

Stroke: 95° ±3°, mechanically limited.

Approvals:

- UL873
- IEC 60730-1 and Part 2-14
- UL1097 for Double Insulation
- CE Certification Low Voltage Directive 2006/95/EC
- CE EMC 2004/108/EC
- C-Tick N314

Enclosure Ratings:

- IP54
- NEMA 2
- Flame Resistance UL94-5VA

Input Impedance:

- 95 kOhms minimum.

Feedback Signal:

- 0(2)-10 Vdc, 3 mA minimum.

Noise Rating at 1m (Maximum):

- Driving
 - Floating/Modulating/Econ: < 40 dB(A)
 - 2-Position: < 50 dB(A)
- Spring Return: < 60 dB(A)

Spring Return Timing (at Rated Load):

- < 25 seconds @ -4°F to 130°F (-20°C to 55°C)
- < 60 seconds @ -22°F (-30°C)

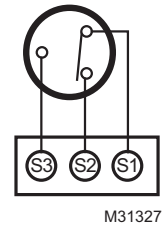
TYPICAL SPECIFICATION

Spring return actuators shall be direct coupled type requiring neither crankarm nor linkage and be capable of direct mounting to a jackshaft of up to 5/8 in. diameter. The actuator shall connect to the shaft using a removable output hub with a self-centering shaft coupling. This coupling shall provide concentric mounting and include an integral adjustable range-stop mechanism.

The actuator shall provide two-position, floating, or proportional control. Proportional control refers to direct acceptance of 0-10 Vdc, 2-10 Vdc, or (with addition of a 500 ohm resistor) a 4-20 mA input signal. Proportional and floating control models shall provide a feedback signal. Actuators shall provide wiring terminals located within an integral access cover with conduit connections. Proportional and floating actuators shall have a rotation direction control switch accessible on the cover.

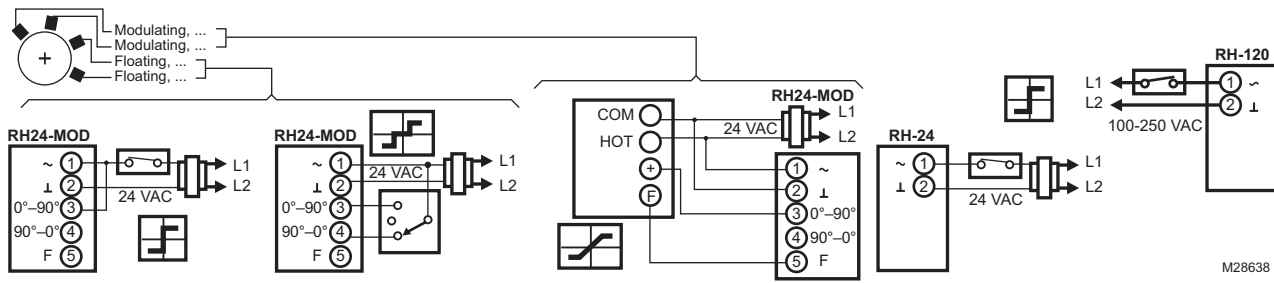
All spring return actuators must be designed for either clockwise or counterclockwise fail-safe operation with a continuously engaged mechanical spring. This spring must return the valve or actuator to a fail-safe position within 25 seconds of power loss.

All actuators shall be designed for a minimum of 60,000 fullstroke cycles at rated torque and temperature, 60,000 springreturn cycles and 1,500,000 repositions. Run time shall be constant and independent of: load, temperature, and supply voltage (within specifications). All actuators shall be UL60730 and cUL (CSA22.2) listed, have a five year warranty, and be manufactured under ISO 9001 International Quality Control Standards.



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Fig. 2. Auxiliary switch wiring diagram



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Fig. 3. Auxiliary switch wiring diagram

Table 1. Models and Electrical Ratings

Model(s)	Torque	Control Signal	Power Supply and Frequency	Switch	Drive Timing	VA Driving
RH-24	44 lb-in (5Nm)	Two Position SPST	24Vac @ 50/60 Hz, +/-20% 24Vdc +/-10%	0	45 sec	8 VA
RH-24-S				1		
RH-120				0		
RH-120-S				1		
RH-24-MOD		(0)2-10 Vdc, Floating	24Vac @ 50/60 Hz, +/-20% 24Vdc +/-10%	0	90 sec	8 VA

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