RSA Series

Electric Spring-Return Rotary-Motion Actuators

Features and Benefits

Noise Rating
- 45 dBA for motor and 65 dBA for spring return when running
- Meets audible requirements for open ceiling

At least 60,000 Cycles of Operation
- Extends actuator life due to improved technology

Direct Shaft Mount
- Simplifies installation in any convenient orientation

Fail-safe Operation
- On power shutdown, built-in spring returns controlled device to normal position
- Provides torque protection for the controlled device without limit switches

Switch-Selectable Direction of Rotation (Proportional Models Only)
- Simplifies installation

0-10 VDC Feedback (Proportional Models Only)
- Provides simple, closed-loop control with accurate position sensing

Angle of Rotation with Mechanical End Stops from 30º to 90º at 10º Increments
- Allows application versatility requiring less than 90º rotation

Optional Auxiliary Switches (On-Off Models Only)
- 2xSPDT switches available

Automatic Stop at End of Rotation in Each Direction (Proportional Models Only)
- Avoid excessive wear or drive time on the motor

General

The RSA Series electric spring-return rotary-motion actuators are designed for use with 2-wire on-off, 3-wire floating or 2-wire proportional controllers. These spring-return actuators are used to position dampers, ball valves and butterfly valves in typical HVAC control applications. They are also used to position the blades in a VAV box.

A controller provides a control signal, causes the

actuator motor to rotate in the proper direction and moves the damper blade or valve open or closed. To avoid unnecessary excessive wear or drive time on the motor, a controller that provides a time-out function to remove the signal at the end of rotation is recommended.

These bi-directional actuators do not require a damper linkage and are easily installed on a damper with:

Round Shaft (Φ)	Square Shaft
2, 4 and 6 Nm Actuators	
8 to 20 mm (5/16” to 25/32”)	8 to 14 mm (5/16” to 9/16”)
8 and 15Nm Actuators	
15 to 25 mm (9/16” to 1”)	10 to 17 mm (3/8” to 11/16”)

and with an anti-rotation bracket. They may also be mounted to a ball valve or butterfly valve which comes with a direct-couple mounting bracket and an extended valve shaft.

Rotation is mechanically limited to 95º by integral end -stops. The position of the actuator is marked from 0 to 90º on the gear box face plate. An anti-rotation bracket prevents lateral movement of the actuator. The actuator rotation is factory set from 30º to 90º at 10º increments and must be specified on ordering. Standard factory setting is 90º.

Direction of Rotation Switch position Selection (Proportional Models Only)
CW is set for clockwise rotation with 0 VDC input at fully-closed position and CCW for counter clockwise rotation with 0 VDC input at fully-open position.The factory setting is for CW. Can be changed in the field to CCW by moving the switch from CW to CCW position on the actuator enclosure.

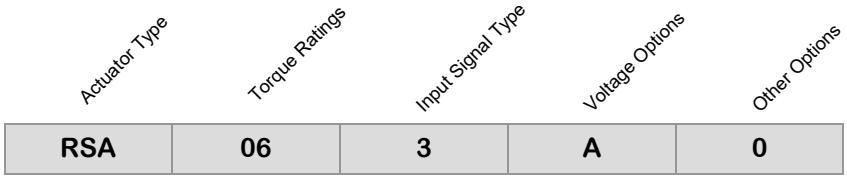
Feedback Signal (Proportional Models Only)
The RSA Series actuators are provided with 0-10 VDC position feedback signal on all proportional models.

Optional Auxiliary Switches (On-Off Models Only)
The RSA Series actuators are available with two built-in auxiliary switches as an option on all on-off models that allow position indication at end-of-

Ordering
To order, specify complete model number. For proportional models, factory setting is for 0-10 VDC input. If 4-20 mA input is required, specify when ordering.

Replacement and Repair
Field repairs must not be made and no field replacement parts are available.

Figure 1: Actuator Model Number Selection Guide



Actuator Type

RSA = RSA Series spring-return rotary-motion actuators

Torque Ratings

Small Size Actuators
02 = 2 Nm
04 = 4 Nm
06 = 6 Nm
Medium Size Actuators
08 = 8 Nm
15 = 15 Nm

Input Signal Type

2 = 2-wire on-off

3 = 3-wire floating

4 = 2-wire proportional

Voltage Options

For 2-wire on-off actuators only:
A = 24 V DC or AC
U = 220 V 50/60 Hz
For 3-wire floating or 2-wire proportional actuators:
A = 24 V DC or AC only

Other Options

0 = No options
3 = With 2 x SPDT end-of-travel position indication switches
4 = with 2 x SPDT end-of-travel limit switches
Note: Options 3 and 4 are applicable to 2-wire on-off models only.

Example: 486515SR4A0, proportional type, 15 Nm, spring-return, 0-10 VDC input, 24 V DC or AC power , no options

Specifications

Product model numbers	See Figure 1: Actuator Model Number Selection Guide
Power supply	2-wire on-off: 24 V DC or AC or 220 VAC, ±10% 3-wire floating and 2-wire proportional: 24 V DC or AC, ±10%
Power consumption	2-wire on-off (W) / 3-wire floating (W) / 2-wire proportional 2 Nm: 6 / 6.5 / 6 4 Nm: 6 / 6.5 / 6 6 Nm: 6 / 6.5 / 6 8 Nm: 6 / 6.5 / 6 15 Nm: 6 / 6.5 / 6.5
Input signal	2-wire on-off: 24 V DC or AC or 220 VAC 3-wire floating: 24 V DC or AC 2-wire proportional: 0(2)-10 VDC. If4-20mA is required, must be specified when ordering.
Input signal impedance	2-wire proportional: 200,000 Ω for voltage input; 500 Ω for current input
Feedback signal	Proportional models only: 0-10 VDC for 90º span
Auxiliary switch contact ratings	2-wire on-off models only: 2xSPDT rated at 24 VAC 1.5 A inductive, 3 A resistive per switch
Electrical connection	500 mm long cable with color-coded wires
Mechanical connection	Small size actuators: 8 to 20 mm (5/16” to 25/32”) round shaft or 8 to 14 mm (5/16” to 9/16”) square shaft Medium size actuators: 15 to 25 mm (9/16” to 1”) round shaft or 10 to 17 mm (3/8” to 11/16”) square shaft
Protection class	IP54
Cycles of operation	At least 60,000
Torque ratings	2, 4, 6, 8 or 15 Nm
Rotation range	30-90º in 5º increments, mechanically limited to 95º; factory set at 95º
Actuator motor type	Bi-directional brushless DC motor
90º rotation time	2 to 6 Nm actuators: 68 s with motor and 20 s with spring return 8 Nm actuators: 115 s with motor and 20 s with spring return 15 Nm actuators: 150 s with motor and 20 s with spring return
Audible Noise Rating	45 dBA for motor and 65 dBA for spring return when running
Ambient Conditions	Operating: -5 to 50ºC (23 to 122ºF); 0-95% RH, non-condensing Storage: -30 to 70ºC (-22 to 158ºF); 0-95% RH, non-condensing
Agency Approval	CSA certified
Dimensions	See Figure 2: Dimensions and Shipping Weights
Shipping Weights	1.5 kg for actuators of 2, 4, 6 or 8 Nm; 2.3 Kg for actuators of 15 Nm

The performance specifications above are nominal and subject to tolerances and application variables of generally acceptable industry standards. The Manufacturer shall not be liable for damages resulting from misapplication or misuse of its products.

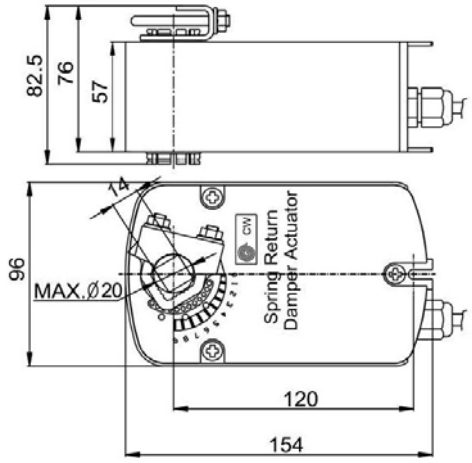
CAUTION: Equipment Damage Hazard. Do not install the actuator in atmospheres where explosive or corrosive vapors or escaping gases are present. This could result in damage to the unit.

WARNING: All RSA Series actuators are designed for use only in conjunction with operating controls. Where an operating control failure would result in personal injury and/or loss of property, it is the responsibility of the installer to add safety devices or alarm systems that protect against, and/or warn of, control failure.

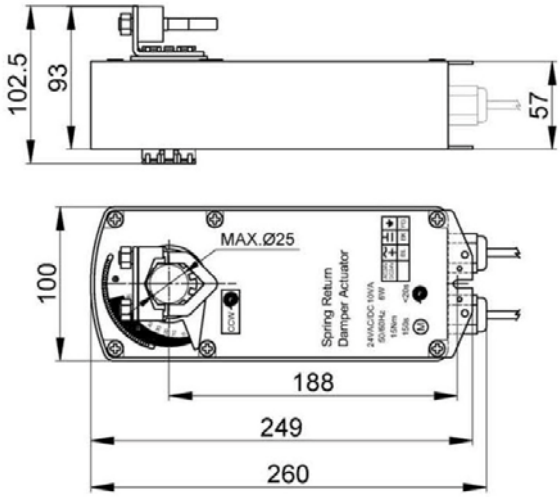
Switch Location of Direction of Rotation (Proportional Models Only)

Figure 2: Dimensions

For Actuators of 2, 4 and 6 Nm



For Actuators of 8 and 15 Nm



Mounting hardware

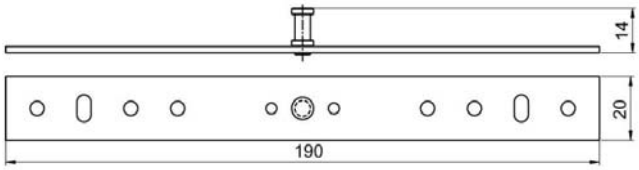
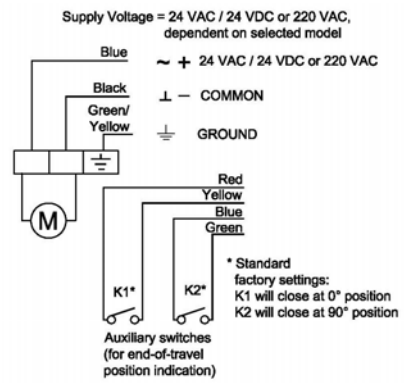
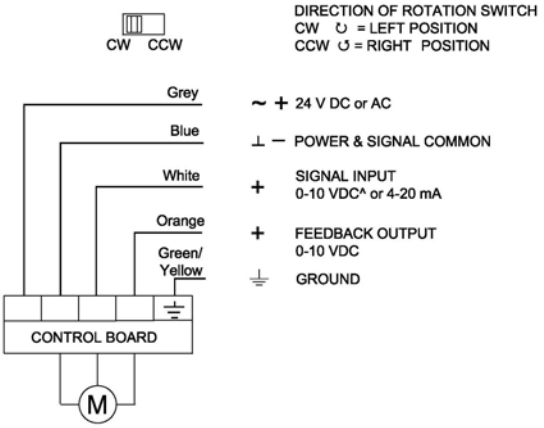


Figure 3: Wiring Diagrams

For 2-Wire On-Off Actuators



For 2-wire Proportional Actuators



For 3-Wire Floating Actuators