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## RUS-L24-MOD Electric 24 Volt Modulating Control Damper & Louver Actuator DIRECT COUPLED SPRING RETURN

### DESCRIPTION

Ruskin model RUS-L24-MOD electric modulating (proportional) spring return actuator designed for factory mounting on dampers and operable louvers. Actuators can be mounted directly to a damper or louver shaft from 3/4 to 1-1/16 inch (19 to 27 mm) diameter with a universal clamp.

### FEATURES

- Designed specifically to operate damper and operable louver applications up to the square footage face area listed below.
- Reversible mounting design simplifies installation and enables the actuator to be spring return in either direction.
- Electronic stall detection through entire rotation range extends life by deactivating the motor when an overload condition is detected.
- 5 Year factory warranty



**RUS-L24-MOD Electric Spring-Return Actuator**

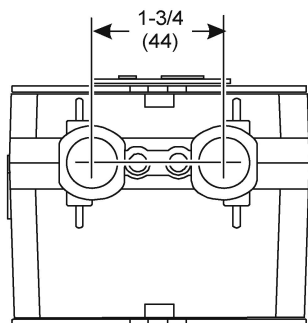
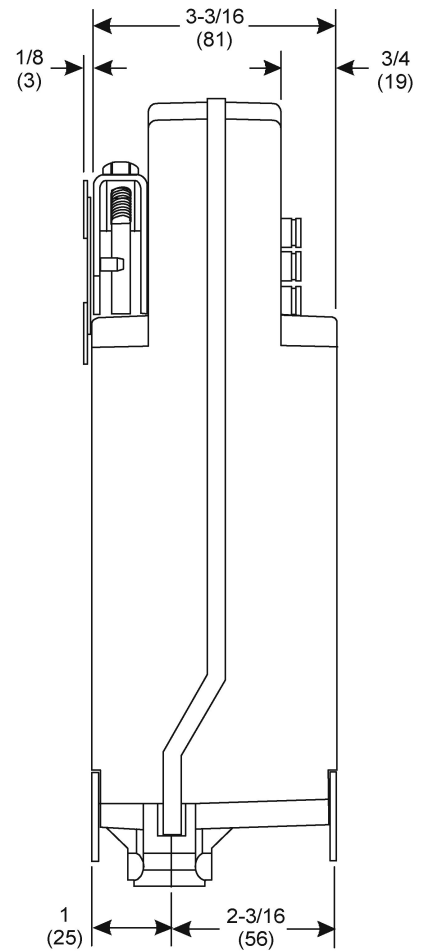
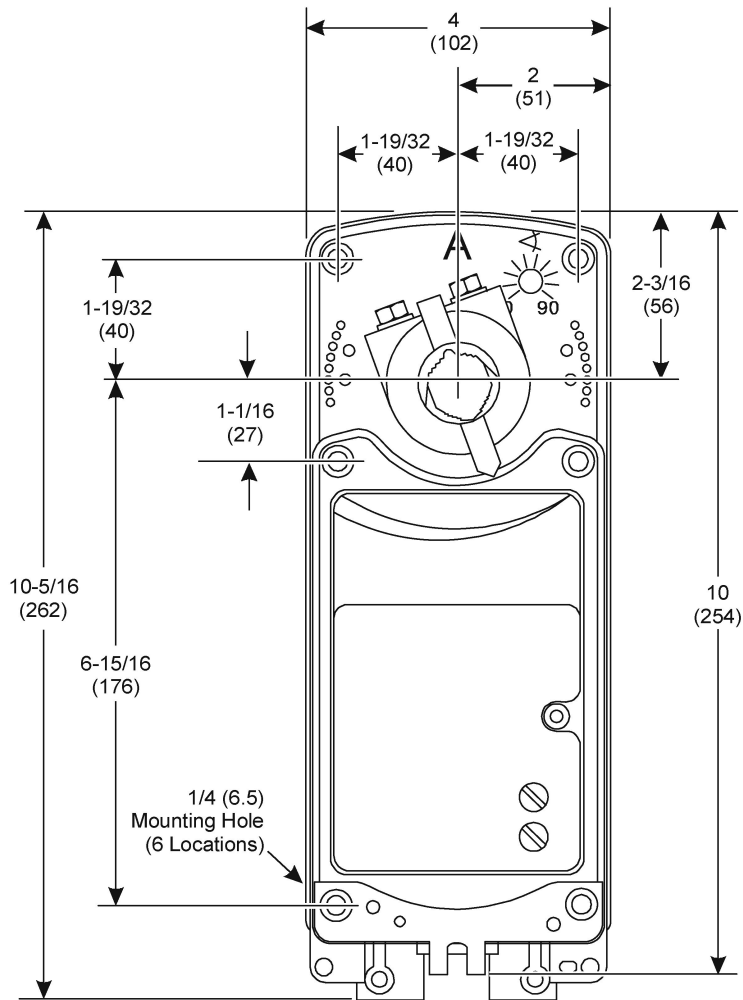
TECHNICAL INFORMATION	
<b>COMMERCIAL DAMPER FACE AREA*</b>	35 sq. ft. with seals 70 sq. ft. without seals
<b>LOUVER FACE AREA</b>	50 sq. ft. with seals, 75 sq. ft. without seal
<b>INDUSTRIAL DAMPERS</b>	Dependent on model and system conditions (Consult Ruskin)
<b>RUNNING TIME</b>	Drive: 150 sec Spring: 20 sec
<b>INPUT SIGNAL</b>	0(2) to 10 VDC 0(4) to 20 mA (w/500 ohm resistor)
<b>POSITION FEEDBACK</b>	0(2) to 10 VDC
<b>POWER SUPPLY</b>	AC 24 V 50/60 Hz DC 24 V
<b>POWER CONSUMPTION</b>	AC: Running 15.5 VA, Holding 7.7 VA DC: Running 6.7 W, Holding 2.9 W
<b>TRANSFORMER SIZE</b>	20 VA
<b>DIRECTION OF ROTATION</b>	Reversible with cw/ccw mounting
<b>POSITION INDICATION</b>	Visual indication 0° to 95°
<b>OPTIONAL AUXILIARY SWITCH (-S Models)</b>	N/A (Consult Ruskin Special Order)
<b>ELECTRICAL PROTECTION</b>	Double insulated
<b>ELECTRICAL CONNECTION</b>	3 ft, 18 ga appliance cable (-S models have 2 cables) 1/2" conduit connector
<b>OVERLOAD PROTECTION</b>	Electronic throughout 0° to 95° rotation
<b>ROTATION PROTECTION</b>	Max 95° adjust. with mechanical stop (optional)
<b>HOUSING</b>	NEMA 2 (IP54) Aluminum
<b>HUMIDITY</b>	5 to 90% non-condensing

\*Consult Ruskin for proper actuator sizing on TED50 series dampers

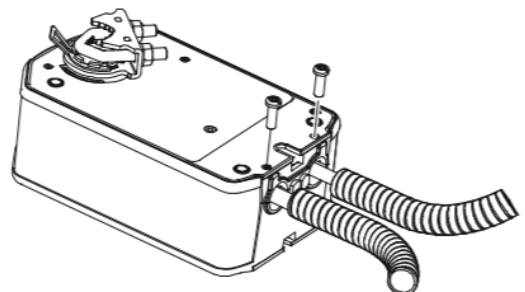
TECHNICAL INFORMATION	
<b>AMBIENT TEMPERATURE</b>	-40° to 131°F (-40° to 55°C)
<b>STORAGE TEMPERATURE</b>	-85° to 185°F (-65° to 85°C)
<b>AGENCY LISTINGS</b>	UL 60730-1A: 2003-08 UL 60730-2-14: 2002-02 UL 2043 C22.2 No. 24-93
<b>NOISE LEVEL AT APPROX. 40" DISTANCE</b>	Drive: <45 dba      Holding: <20 dba Spring: <55 dba
<b>WEIGHT</b>	RUS-L24-MOD: 6.4 lb (2.9 kg)
<b>SERVICING</b>	Maintenance free
<b>QUALITY STANDARD</b>	ISO 9001

ACCESSORY	
<b>ADJUSTABLE END STOP KIT</b>	Part #M9220-603 From 35° to 95° in 5° increments
<b>SMALLER SHAFT COUPLER</b>	Part #M9220-601 1/2 to 3/4 in. or 12 to 19 mm Round Shafts, or 3/8 and 1/2 in. or 10, 12, and 19 mm Square Shafts
<b>WEATHER SHIELDS</b>	Part #M9000-320 NEMA3R, IP32, OR Part #M9000-340 NEMA 5, IP54 impact-grade plastic enclosure with UV inhibitors to extend life

# DIMENSIONS

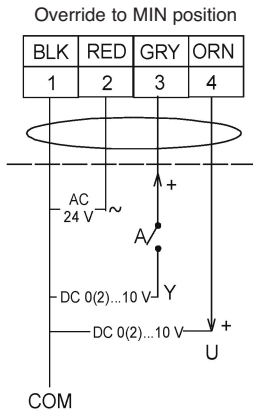


## CONDUIT CONNECTION

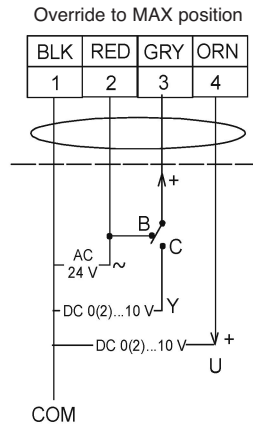


Integral connectors for 3/8 in. (10mm) flexible metal conduit.

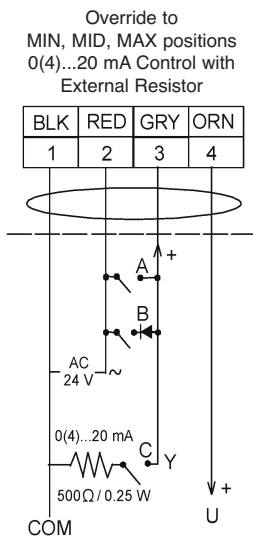
# WIRING RUS-L24-MOD PROPORTIONAL ACTUATORS



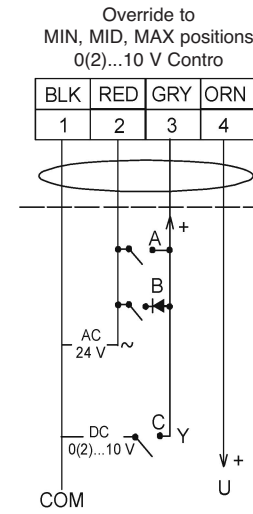
A Open = MIN Position  
A Closed = Normal Operation



B Closed = MAX Position  
C Closed = Normal Operation



FUNCTION	A	B	C
0% ( MIN )			
50% ( MID )			
100% ( MAX )			
NORMAL			



FUNCTION	A	B	C
0% ( MIN )			
50% ( MID )			
100% ( MAX )			
NORMAL			

# WIRING RUS-L24-MOD PROPORTIONAL ACTUATORS

## Mode Selector Switch and CAL Function

The RUS-L24-MOD Proportional Electric Spring Return Actuators are factory set at Direct Acting (DA), DC 0 to 10 V control input (Figure 13). To change to RA operation, move the mode selection switch from DA to RA. The DC input signal is selectable from DC 0 to 10 V or from DC 2 to 10 V, which corresponds to 0 to 90° rotation. If the rotation range is reduced, the end-stop is reached with a reduced input signal. For example, if a DC 0 to 10 V input signal is selected and the rotation range is limited to 75°, the end-stop is reached at DC 8.3 V. If an external 500 ohm resistor is placed across the input, the switch positions then select between 0-20 mA or 4-20 mA).



**Figure 13: Mode Selection**

The CAL function enables the actuator to redefine the selected control input range proportionally across a reduced rotation range. The actuator stores the reduced rotation range in nonvolatile memory (retains data when power is lost or removed).

To calibrate the control input range, proceed as follows:

1. With power off, move the mode selection switch to the CAL position (Figure 13). Then, energize the actuator. The actuator automatically rotates until the end-stops are found, and proportionally reconfigures the control input range to the reduced rotation range.
2. Return the mode selection switch to the desired selection (example: DA, 0 to 10 VDC control input).

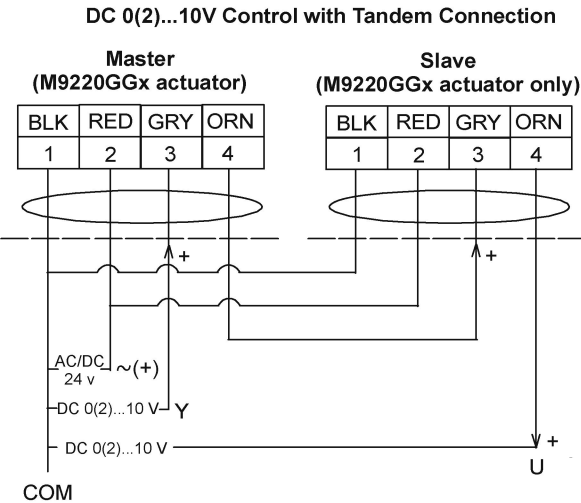
**Note:** During normal operation, if the actuator stroke increases due to seal or seat wear, the input is redefined to the increased rotation range in approximately 0.5° increments.

3. If the actuator mounting position is changed or if the linkage is adjusted, repeat Steps 1 and 2 to reinitiate the CAL function.

**Note:** To repeat calibration with power applied, move the mode selection switch out of the CAL position for at least 2 seconds before returning it to the CAL position. Auto calibration begins 5 seconds after you return it to the CAL position.

## Tandem Operation: Master with Slaves

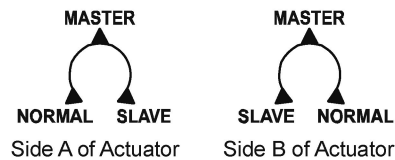
The tandem configuration (Figure 14 and Figure 16) provides twice (with two actuators) or triple (with three actuators) the running and spring return torque of a single actuator, or 354 lb-in (40 N·m), 531 lb-in (60 N·m).



**Figure 14: Tandem Connection**

Follow these guidelines for tandem operation:

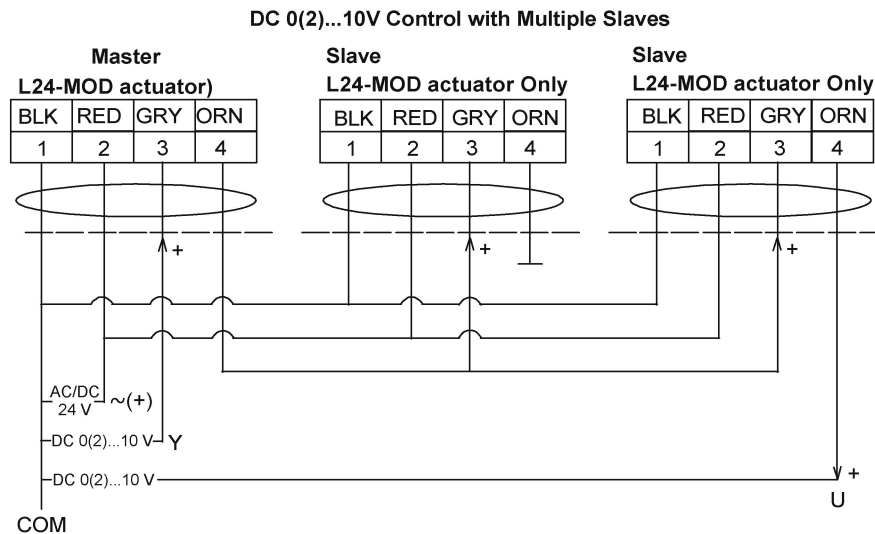
- Two or three RUS-L24-MOD actuators may be operated in tandem on the same shaft. If mounting two actuators, see Figure 14; for three actuators, see Figure 16.
- Each actuator requires separate 24 volt power. When two or more actuators connected in tandem share a common power source, the total maximum power draw is actually 1.5 times the normal running current for each actuator. (Total Power = Number of Actuators x Running Power x 1.5).
- Only one of the actuators can be configured as the master. Set the selector switch to the master position (Figure 15).



**Figure 15: Tandem Selector Switch**

## WIRING RUS-L24-MOD PROPORTIONAL ACTUATORS

- The other RUS-L24-MOD actuator(s) must be configured as slave(s), by setting the tandem selector switch to the slave position.
- The master can accept DC 0-10 V or DC 2-10 V, or 4-20 mA command signals based on the master's switch settings and/or external resistor.
- The master and slave(s) must have matching RA/DA settings.



- The master and slave(s) must spring return in the same direction.
- Once tandem-operating actuators are mounted to a damper shaft, manual override is no longer an available function.

The feedback wire of the master (orange) is connected to the command wire(s) of the slave(s) (gray). As the master moves response to position commands, the master sets its feedback wire to 0 volts if moving counterclockwise, 5 volts if holding, or 10 volts if moving clockwise.

Each slave actuator must have its tandem selector switch (Figure 15) set on the slave setting. Its gray command wire must be connected to the master's orange feedback wire.

Position information, 0-10 (or 2-10) volts, is available on the slave actuator's feedback wire (orange).

**Note:** Electrical override still functions after the actuators are configured for tandem operation and are mounted to a damper shaft. The actuator has a 150-second drive time when operating in this mode.