



Spring Return Rotary Electronic Actuator, Two-Position ES177A(-S)



The ES177A Two-position Actuators are direct mount, spring return electric actuators that operate on 24 VAC or VDC, or 120 VAC power. These bidirectional actuators do not require a damper linkage, and are easily installed on dampers with 1/2 to 3/4 in. or 12 to 19 mm round shafts, or 3/8 and 1/2 in. or 10, 12, and 14 mm square shafts using the standard shaft clamp included with the actuator. An optional Jackshaft Coupler Kit is available for 3/4 to 1-1/16 in. or 19 to 27 mm round shafts, or 5/8 and 3/4 in. or 16, 18, and 19 mm square shafts.

The ES177A Series Electric Spring Return Actuators provide running and spring return torques of 177 in-lb (20 N-m). Integral line voltage auxiliary switches are available on the -S models to indicate end-stop position, or to perform switching functions within the selected rotation range.

The ES177A On/Off Electric Spring Return Actuator provides reliable, integrated damper or valve control. An AC 24 V at 50/60 Hz or DC 24 V input signal (ES177A2 model) between the black and red wires, or an AC 120 V input signal at 60 Hz (ES177A1 model) between the black and white wires, causes the output hub to rotate from -5 to 90° (unless an external mechanical limit is reached).

When power is applied, the actuator rotates and the output hub rotates against the spring from -5 to 90°. The actuator is electronically overload protected should the actuator stall before reaching 90°. It holds position at the end of the stroke until power is removed. When power is removed, the actuator spring returns to its -5° position (unless an external mechanical limit is reached). A stall condition while driving between -5 to 90° causes the output hub to stop motion and hold its position until power is removed. Rotation is mechanically limited to the -5 and 90° positions by integral end-stops. Optional end-stops are available to limit the output hub travel. An anti-rotation bracket prevents rotational movement of the actuator body.

Actuator Part Number Table						
Torque	Input Signal	Cabling	Operating Voltage			
			24 VAC/VDC		120 VAC	
			Standard	Dual Auxiliary Switches	Standard	Dual Auxiliary Switches
177 in-lb (20 N-m)	Two-Position	Standard or Plenum Cable	ES177A2	ES177A2-S	ES177A1	ES177A1-S



Spring Return Rotary Electronic Actuator, Two-Position ES177A(-S)

Technical Data	ES177A2(-S)	ES177A1(-S)
Power supply	24 VAC @ 50/60 Hz or 24 VDC, Class 2	120 VAC @ 60 Hz
Power Requirements	24 VAC: 24.6 VA Running, 7.7 VA Holding Position, 24 VDC: 17.6 W Running, 2.8 W Holding Position	120 VAC: 0.25 VA Running, 0.13 VA Holding Position
Transformer sizing	25 VA min. Class 2 power source req. for UL, CSA	
Electrical connection	48" 18 AWG Halogen-free Cable Wire Leads	
Control signal	2-Position	
Overload protection	Electronic throughout 0 to 95° rotation	
Switch contact rating (-S option)	two SPD, double insulated switches with gold flash contacts; rated @ 24 VAC, 50 VA pilot duty	two SPD, double insulated switches with gold flash contacts; rated @ 120 VAC, 5.8 resistive, 1/4 hp, 275 VA pilot duty
Conduit Connections	Integral Connectors for 3/8 in. (10 mm) Flexible Metal Conduit	
Mechanical connection (shaft size)	1/2" to 3/4" (12 to 19 mm) diameter round shaft, or 3/8" and 1/2" (10, 12 and 14mm) square shafts. Note: Optional jackshaft coupler kits are available for larger shafts.	
Angle of rotation	mechanically limited to 90°, adjustable from 30° to 90°	
Torque	177 in-lbs (20 N-m); or 354 in-lb (40 N-m) for two models mounted in tandem	
Direction of rotation	selectable when ordering valves, selectable in field for dampers	
Position indication	clip-on indicator	
Manual override	3 mm hex crank (shipped with actuator)	
Spring Return	Direction is selectable with Mounting Position of Actuator: Side A, Actuator face away from damper for CCW spring return; Side B, Actuator face away from damper for CW spring return	
Running Time	24 to 57 seconds for 0 to 177 in-lbs (0 to 20 N-m) at all operating conditions; 35 seconds nominal at full rated load. Spring Return: 11 to 15 secs for 0 to 177 in-lb (0 to 20 N-m) at room temperature; 35 secs maximum for 0 to 177 in-lb (0 to 20 N-m) at -22° (-30°C); 130 secs for 0 to 177 in-lb (0 to 20 N-m) at -40° (-40°C);	
Humidity	90% RH maximum, non-condensing	
Ambient temperature	-40°F to 131°F (-40°C to 55°C)	
Ambient Conditions	Operating: -40 to 131°F (-40 to 55°C); 90% RH Maximum, Noncondensing	
	Storage: -85 to 185°F (-65 to 85°C); 95% RH Maximum, Noncondensing	
Cycles	60,000 full stroke cycles; 1,500,000 repositions	
Storage temperature	-85°F to 185°F (-65°C to 85°C)	
Housing type*	NEMA 2 / IP54	
Housing material	Die cast aluminum alloy	
Agency listings U.S.	UL Listed, CCN XAPX, File E191697; to UL 60730-1A: Automatic Electrical Controls for Household and Similar Use; and UL 60730-2-14: Part 2, Particular Requirements for Electric Actuators. (All Models)	
Agency listings Canada	UL Listed, CCN XAPX7, File E191697; to CAN/CSA-E60730-1: Automatic Electrical Controls for Household and Similar Use. (All Models)	
Noise level	<66 dBA @ 1 m	
Servicing	maintenance free	

Notes:

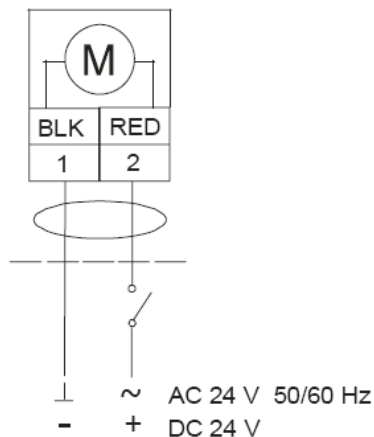
* Most commercial assemblies are available with an optional NEMA 4/4X type housing. See applicable data sheet for details.



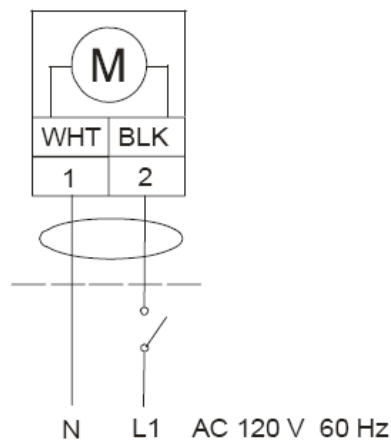
Spring Return Rotary Electronic Actuator 24 VAC or 120 VAC Two-Position ES177A(-S)

Wiring Diagrams

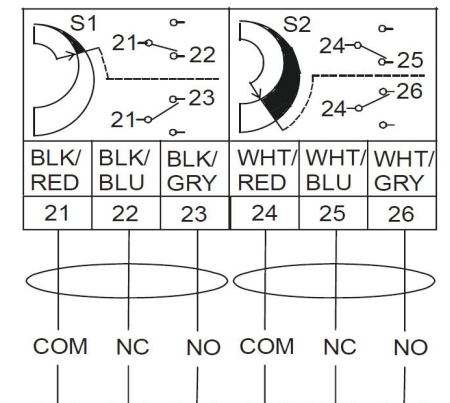
Two-Position Control (24 VAC)



Two-Position Control (120 VAC)



Auxiliary Switches



Notes:

- !- **SWITCH WARNING:** Apply only main voltage or only safety extra-low voltage (SELV) to switching outputs of auxiliary switches A and B. Mixed operation is not permissible.
- !- **CE WARNING:** All wiring of these actuators must be safety extra-low voltage (SELV/PELV) in accordance with EN60730.