D -70, 140, 210, 280 Series
Specifications, Overview and Operation

Bray Electric Actuator
78-0051-113AO
S/N 152665

APPLICATION OVERVIEW

Note: This device is not designed or intended to be used in or near environments where explosive vapors or gases could be present, or environments where substances corrosive to the device's internal components could be present.

D-Series actuators are designed to position air dampers and valves in HVAC systems. Applications include:

- positioning return air or exhaust dampers
- controlling face and bypass dampers
- positioning blades for variable volume fans
- positioning valves used with a Bray Valve Linkage

Refer to the manufacturer's information to properly size the damper, valve, and/or actuator. Spring return actuators, such as Bray DS Series Models are recommended for use with outdoor air dampers in cold climates.

OPERATION

Note: All D-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. D-Series actuators operate on 24 VAC at 50/60 Hz or 24 VDC. These compact actuators use a DC motor with stall detection circuitry that operates throughout the entire stroke. The proportional and resistive actuators employ noise filtering techniques on the control signal to eliminate response to spurious noise.

Rotation is limited to 93° by integral end-stops. The position of the actuator is visually indicated from 0 to 90° on the cover. An anti-rotation bracket prevents lateral movement of the actuator. The actuator has a manual override for hand positioning the coupler.

SPECIFICATIONS

Power Requirements	On/Off and Floating:	20 to 30 VAC at 50/60 Hz or 24 VDC ±10%; 6.5 VA supply, minimum; Class 2	
	Proportional and Resistive:	20 to 30 VAC at 50/60 Hz or 24 VDC ±10%; 7.5 VA supply, minimum; Class 2	
Input Signal	On/Off and Floating:	24 VAC at 50/60 Hz or 24 VDC	
	Proportional:	0(2) to 10 VDC, 0(2) to 20 VDC or 0 (4) to 20 mA	
Input Signal Adjustments	Floating Factory Setting:	Terminals 1 and 2, CW rotation; Terminals 1 and 3, CCW rotation	
	Proportional (Voltage Input or Current Input):	Jumper selectable, Fixed:	0 (2) to 10 VDC or 0 (4) to 20 mA
		Adjustable:	Zero, 0 to 6 VDC, 0 to 12 VDC or 0 to 12 mA
			Span, 0 to 10 VDC, 4 to 20 VDC or 4 to 20 mA
Input Impedance	Floating	400 Ω	
	Proportional	Voltage Input, 205,000 Ω for 0 (2) to 10V and 410,000 Ω for 0 (4) to 20V	
		Current Input, 500 Ω	
Feedback Signal	Floating:	1,000 Ω or 135 Ω (models with feedback potentiometer)	
	Proportional	0 to 10 VDC or 2 to 10 VDC for 90° (1 mA at 10 VDC)	
Switch Contact Rating	Two SPDT (Single-Pole, Double-Throw) rated at 24 VAC 1.5A inductive, 3A resistive, 35 VA max. per switch, Class 2		
Mechanical Output	D24-70 D24-140 D24-210 D24-280	70 lb-in (8 Nm) 140 lb-in (16 Nm) 210 lb-in (24 Nm) 280 lb-in (32 Nm)	
Audible Noise Rating	45 dBA at 1 m		
Rotation Range	Adjustable from 0 to 90° in 5° increments, mechanically limited to 93°		
Rotation Timing	D24-70 D24-140 D24-210 D24-280	30 sec. at 50% rated load, 25 to 50 sec. for 0 to 70 lb-in (0 to 8 Nm) 80 sec. at 50% rated load, 70 to 115 sec. for 0 to 140 lb-in (0 to 16 Nm) 130 sec. at 50% rated load, 115 to 175 sec. for 0 to 210 lb-in (0 to 24 Nm) 140 sec. at 50% rated load, 115 to 205 sec. for 0 to 280 lb-in (0 to 32 N·m)	
Cycle Life	60,000 full stroke cycles		
Electrical Connection	Screw terminals for 22 to 14 AWG (insert a maximum of two 18, 20, or 22 AWG per terminal.)		
Mechanical Connection	3/8 to 3/4 in. (10 to 20 mm) diameter round shaft 3/8 to 5/8 in. (10 to 16 mm) square shaft		
Enclosure	NEMA 2, IP42		
Ambient Conditions	Operating	-4 to 122°F (-20 to 50°C); 0 to 95% RH, non-condensing	
	Storage	-40 to 186°F (-40 to 86°C); 0 to 95% RH, non-condensing	
Dimensions (H x W x D)	7.09 x 3.94 x 2.54 in. (180 x 100 x 64.5 mm)		
Shipping Weight	2.9 lb (1.3 kg)		
Agency Compliance	UL Listed, File E27734, CCN XAPX CSA Certified, File LR85083, Class 322102 CE Mark, EMC Directive 89/336/EEC		
Warranty	5 Years		

The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the local Bray office. Bray, Inc. shall not be liable for damages resulting from misapplication or misuse of its products.