

**BDE/BLB Series  
Electric Actuators  
Non-Spring Return**



These Bray direct coupled 24 VAC non-spring return rotary electric actuators are designed for tri-state or modulating control of valves and dampers.

**FEATURES**

- Compact, lightweight design
- Self-adapting capability for maximum flexibility in damper positioning
- Manual override
- Offset and slope adjustment models available
- Independently adjustable dual auxiliary switches available
- UL, CSA approved; CE rated

**APPLICATION OVERVIEW**

These actuators are used in constant or variable air volume installations for control of HVAC dampers requiring up to 44 lb-in (5 Nm) or 88 lb-in (10 Nm).

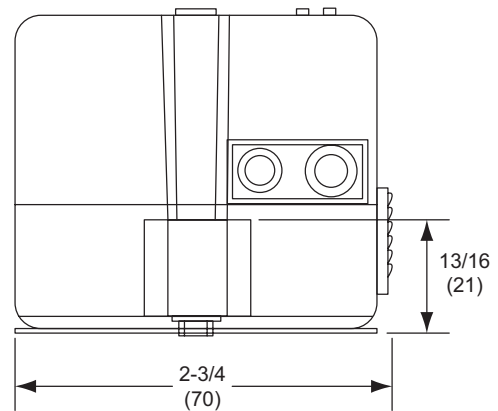
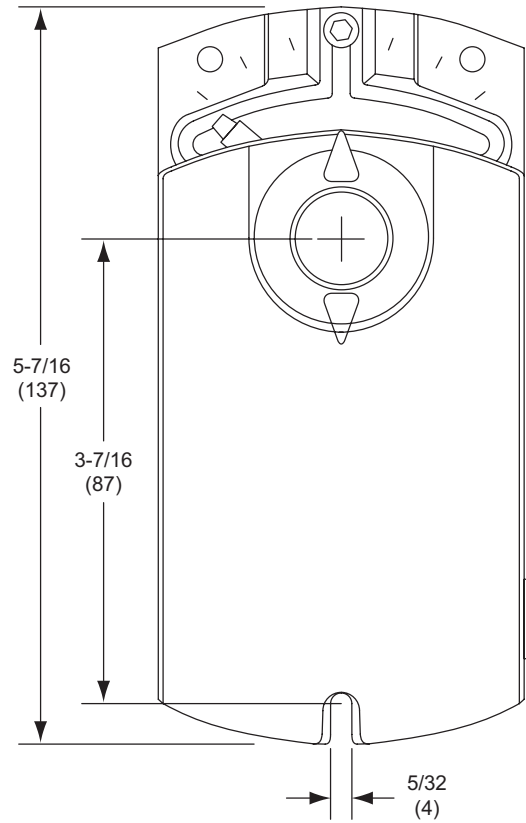
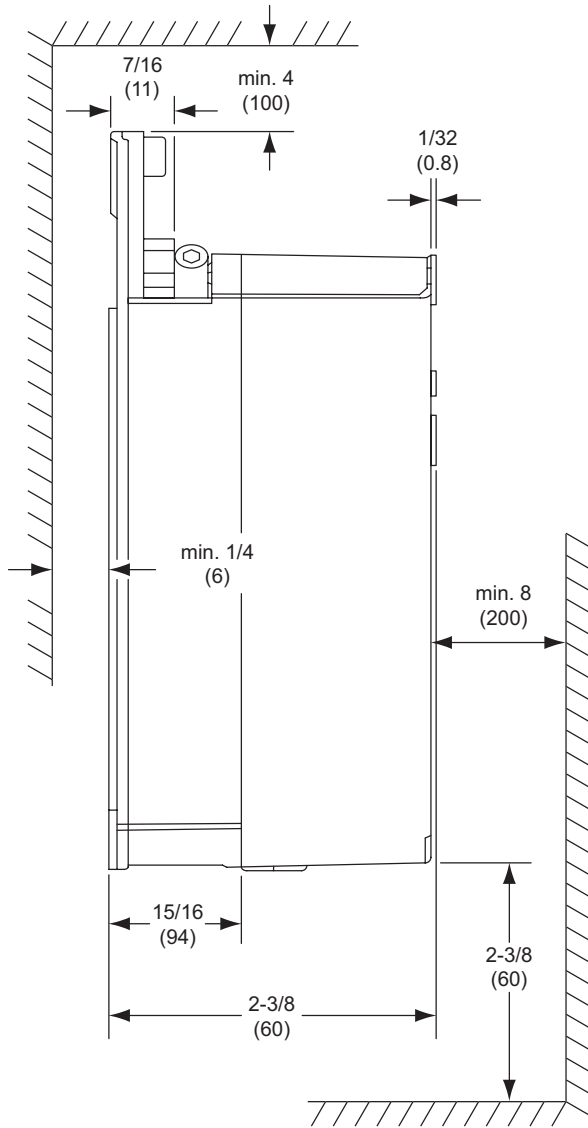
**ORDERING INFORMATION**

		Tri-State		
Torque	Cabling	Standard	With Potentiometer	Dual Auxiliary Switches Only
44 lb-in (5 Nm)	Plenum Cable	BDE131.1P	BDE132.1P	BDE136.1P
	Standard Cable	BDE131.1U	—	—
88 lb-in (10 Nm)	Plenum Cable	BLB131.1P	BLB132.1P	BLB136.1P

		Modulating			
Torque	Cabling	Standard	Slope/Offset Adjustable	Dual Auxiliary Switches and Slope/Offset Adjustable	Dual Auxiliary Switches Only
44 lb-in (5 Nm)	Plenum Cable	BDE161.1P	BDE163.1P	BDE164.1P	BDE166.1P
88 lb-in (10 Nm)	Plenum Cable	BLB161.1P	BLB163.1P	BLB164.1P	BLB166.1P

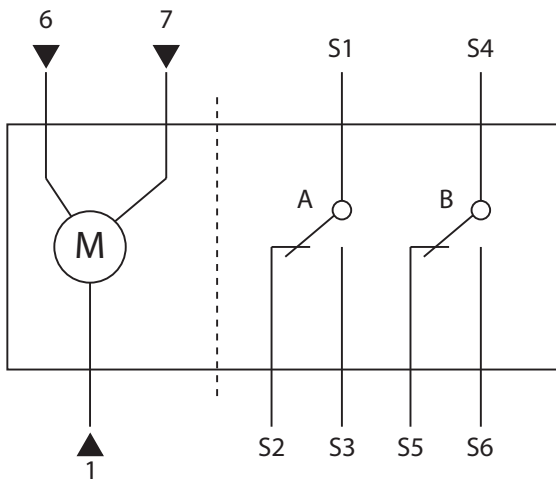
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**DIMENSIONS**

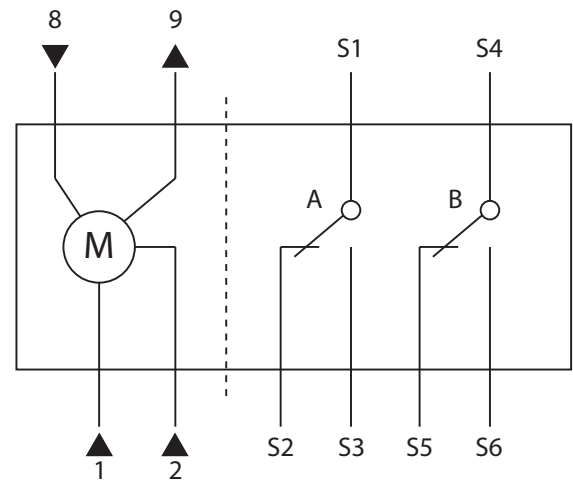


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**WIRING DIAGRAM**



**Floating Control**



**Modulating Control**

Standard Symbol	Function	Terminal Designation	Color
1	Supply (SP)	G	Red
2	Neutral (SN)	G0	Black
6	Control Signal Clockwise	Y1	Violet
7	Control Signal Counterclockwise	Y2	Orange
8	0 to 10 V input signal	Y	Grey
9	Output for 0 to 10 VDC position indication	U	Pink
Factory-Installed Options			
S1	Switch A Common	Q11	Black
S2	Switch A - N.C.	Q12	Black
S3	Switch A - N.O.	Q14	Black
S4	Switch B Common	Q21	Black
S5	Switch B - N.C.	Q22	Black
S6	Switch B - N.O.	Q24	Black

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## SPECIFICATIONS

Power Supply	Operating Voltage	24 VAC +20%, -15%
	Frequency	50/60 Hz
	Power Consumption	Tri-State: 2.3 VA Modulating: 3.3 VA
Control Signal	Voltage Input	0 to 10 VDC
	Input Resistance	100,000 $\Omega$
Feedback Signal	Voltage-Output	0 to 10 VDC
	Max. Output Current	DC 1 mA
Equipment	Rating	Class 2 According to UL, CSA
		Class III per EN60730
Auxiliary Features	Control Signal Adjustment	
	Offset (start point)	Between 0 to 5 VDC
	Slope	Between 2 and 30 VDC
	Dual auxiliary switch Contact Rating	4A Resistive, 2A Inductive
	Voltage	24 VAC / 24 VDC
	Switch Range	
	Switch A	0 to 90° with 5° Intervals
	Recommended Range Usage	0 to 45°
	Factory Setting	5°
	Switch B	0 to 90° with 5° Intervals
	Recommended Range Usage	45 to 90°
	Factory Setting	85°
	Switching Hysteresis	2°
Function	Torque	BDE 44 lb-in (5 Nm) BLB 88 lb-in (10 Nm)
	Runtime for 90° Opening or Closing	BDE 90 sec. at 60 Hz( 108 sec.at 50Hz) BLB 125 sec. at 60 Hz( 150 sec.at 50Hz)
	Nominal Angle of Rotation	90°
	Maximum Angular Rotation	95°
	WARNING: Mixed switch operation is not permitted. To the switching outputs of both auxiliary switches (A and B), only apply: UL/CSA: Class 2 voltage CE: Separated Extra-Low Voltage (SELV) or Protective Extra Low Voltage (PELV), according to HD384-4-41.	
Mounting	Shaft size	3/8 to 5/8 inch (8 to 16 mm) diameter
	Minimum Shaft Length	3/4 inch (20 mm)
Housing	Enclosure	NEMA 2/IP54 according to EN60529
	Material	Durable Plastic
Ambient Conditions	Operation	-22 to 130°F (-30 to 55°C)
	Storage and Transport	-22 to 140°F (-30 to 60°C)
	Ambient Humidity (non-condensing)	95% R.H.
Agency Approvals	UL873, CSA C22.2 No. 24-93, CE	
CE conformity	In accordance with the directive set forth by the European Union for Electromagnetic Compatibility (EMC)	
	Emissions Standards	89/336/EEC
	Immunity Standards	EN 50081-1 EN 50082-2
Miscellaneous	Pre-cabled Connection	AWG 18
	Cable Length	3 ft. (0.9 m)
	Weight	1.06 lb. (0.48 kg)

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

All statements, technical information, and recommendations in this bulletin are for general use only. Consult Bray representatives or factory for the specific requirements and material selection for your intended application. The right to change or modify product design or product without prior notice is reserved.

# **Bray** CONTROLS Commercial Division

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