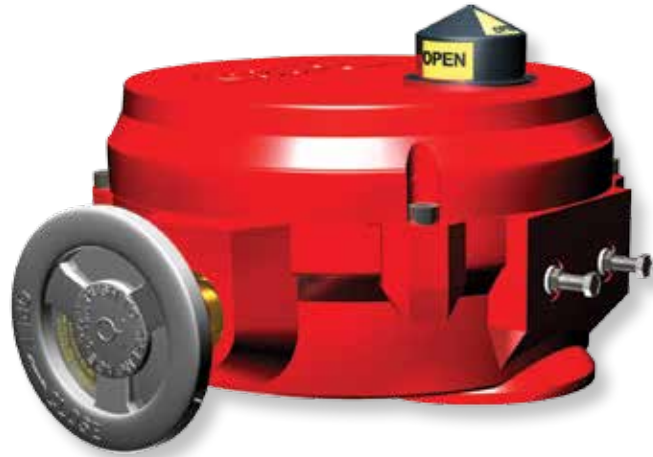


## Series 70 Industrial Electric Actuators

The Bray Series 70 Electric Actuator provides a rugged, compact industrial actuator solution to a wide range of quarter turn applications including butterfly valves, ball valves, and dampers. Available in torque outputs from 600 to 18,000 lb. in. (68 to 2033 Nm), these actuators mount directly to Bray and other industry standard butterfly valves without the need for brackets and linkages. The manual declutchable override handwheel is standard on all Bray Series 70 actuators, providing end user convenience in installation, commissioning and service.



On/Off and modulating models are available in 24, 110 and 220 VAC. The standard enclosure is NEMA 4x and IP65 rated with an industrial polyester finish, making the Series 70 the ideal choice for cooling tower valves and other outdoor applications. The advanced Servo Pro modulating control card assures compatibility with virtually any analog control signal used in today's building automation and temperature control systems.

### FEATURES

Compact design and direct mounting

UL, CSA and CE approved (most models)

High visibility beacon position indicator

Internal isolation relays

Manual declutchable override handwheel

Advanced Servo Pro modulating option

Optional battery backup on 24 VAC models

### BENEFITS

Fits in tight spaces, installs easily

Assures universal application acceptability

Assists in field operation

Allows parallel wiring of multiple actuators from a single control output

Allows manual positioning without disconnecting power

Provides on-board diagnostics and user adjustable options including control signal type, speed controls and other features.

Assures return to a predetermined position upon loss of power supply

**MODEL SELECTION**

Model Number	Torque Output in/lbs.	24 VAC	120 VAC	On/Off	Modulating	Heater	Aux. Switches
70-24-0061	600	•		•			•
70-24-0061H	600	•		•		•	•
70-24-0061SV	600	•			•		•
70-24-0061SVH	600	•			•	•	•
70-0061	600		•	•			•
70-0061H	600		•	•		•	•
70-0061SV	600		•		•		•
70-0061SVH	600		•		•	•	•
70-0121	1200		•	•			•
70-0121H	1200		•	•		•	•
70-0121SV	1200		•		•		•
70-0121SVH	1200		•		•	•	•
70-24-0201	2000	•		•			•
70-24-0201H	2000	•		•		•	•
70-24-0201SV	2000	•			•		•
70-24-0201SVH	2000	•			•	•	•
70-0201	2000		•	•			•
70-0201H	2000		•	•		•	•
70-0201SV	2000		•		•		•
70-0201SVH	2000		•		•	•	•

Model Number	Torque Output in/lbs.	24 VAC	120 VAC	On/Off	Modulating	Heater	Aux. Switches
70-0301	3000		•	•			•
70-0301H	3000		•	•		•	•
70-0301SV	3000		•		•		•
70-0301SVH	3000		•		•	•	•
70-24-0501	5000	•		•			•
70-24-0501H	5000	•		•		•	•
70-24-0501SV	5000	•			•		•
70-24-0501SVH	5000	•			•	•	•
70-0501	5000		•	•			•
70-0501H	5000		•	•		•	•
70-0501SV	5000		•		•		•
70-0501SVH	5000		•		•	•	•
70-0651	6500		•	•			•
70-0651H	6500		•	•		•	•
70-0651SV	6500		•		•		•
70-0651SVH	6500		•		•	•	•
70-1300	13,000		•	•			•
70-1300H	13,000		•	•		•	•
70-1300SV	13,000		•		•		•
70-1300SVH	13,000		•		•	•	•
70-1800	18,000		•	•			•
70-1800H	18,000		•	•		•	•
70-1800SV	18,000		•		•		•
70-1800SVH	18,000		•		•	•	•

**Application Note:**

Use Series 70 actuators only to control equipment under normal operating conditions. Where failure or malfunction of the electric actuator could lead to personal injury or property damage to the controlled equipment or other property, additional precautions must be designed into the control system. Incorporate and maintain other devices, such as supervisory or alarm systems or safety or limit controls, intended to warn of or protect against failure or malfunction of the electric actuator.

**SPECIFICATIONS**

Industrial electric actuators shall include manual declutchable override handwheel and high visibility position indication. Motors shall be continuous duty. Enclosure shall be NEMA 4X, IP 65 rated. Actuator shall conform to ISO 5211 standards for direct mounting onto quarter turn valves. On/Off actuators shall be equipped with internal isolation relays to allow parallel wiring of multiple units. Modulating actuators shall be equipped with a microprocessor-based servo control with on-board diagnostics. Actuator shall be UL, CSA and CE approved. Actuators shall be Bray Series 70 or approved equal.

Model	Voltage	Torque (lb. in.)	Stroke Time	Current Draw (Amps)	
				Full Load	Locked Rotor
70-24-0061	24 VAC	600	45 sec.	1.8	-
70-24-0201	24 VAC	2000	60 sec.	2.0	-
70-24-0501	24 VAC	5000	60 sec.	3.0	-
70-0061	120 VAC	600	30 sec.	1	1.4
70-0121	120 VAC	1200	30 sec.	0.78	2.1
70-0201	120 VAC	2000	30 sec.	1	2.1
70-0301	120 VAC	3000	30 sec.	1.2	3.0
70-0501	120 VAC	5000	30 sec.	1.6	3.0
70-0651	120 VAC	6500	30 sec.	2.3	3.1
70-1300	120 VAC	13000	110 sec.	2.3	3.1
70-1800	120 VAC	18000	110 sec.	2.5	3.1
Motor Duty Cycle	Continuous Duty				
Aux Switches (Two SPDT)	10A (1/3 HP) @ 120 VAC 10A (1/2 HP) @ 220 VAC				
Heater (Optional)	24V Models 120 V Models	5 Watt, PTC style, self regulating 5 Watt, PTC style, self regulating			
Servo (Modulating Models)	Control Input Input Impedance	0 to 10 VDC, 2 to 10 VDC, 0 to 5 VDC, 4 to 20 mA Voltage: 1000K Ohms; Current: 250 Ohms			
Housing	Die Cast Aluminum, Polyester Finish NEMA 4X, IP 65				
Conduit Entries (2)	70-0061, 1/2" NPT All Other Models, 3/4" NPT				
Terminal Strip	On/off Models, 12 to 22 AWG Modulating Models, 14 to 24 AWG				
Ambient Temperature	-20 to 150F (-29 to 65C)				
Agency Listings (120V)	UL, CE, CSA				

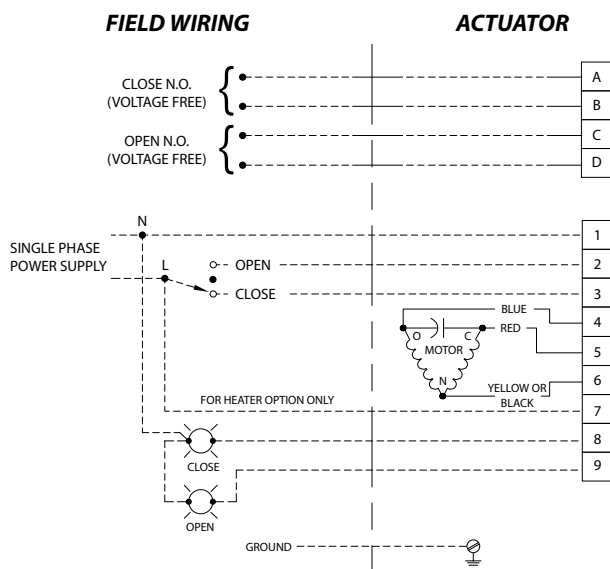
The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the nearest Bray office. Bray controls shall not be liable for damages resulting from misapplication or misuse of its products.

**WIRING**

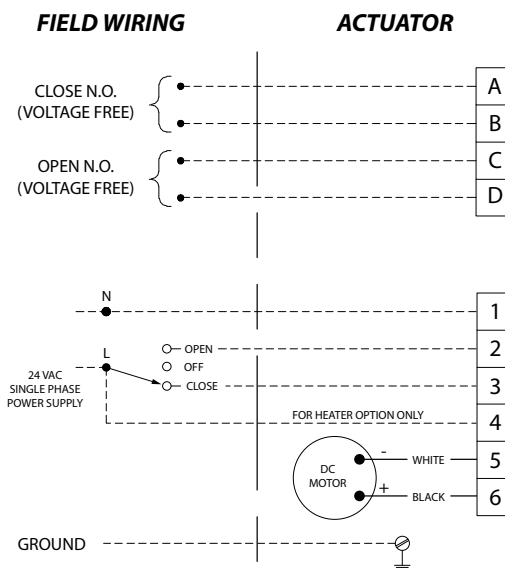
Note: Use this Series 70 Electric Actuator only to control equipment under normal operating conditions. Where failure or malfunction of the electric actuator could lead to personal injury or property damage to the controlled equipment or other property, additional precautions must be designed into the control system. Incorporate and maintain other devices such as supervisory or alarm systems or safety or limit controls intended to warn of, or protect against, failure or malfunction of the electric actuator.

Note: Do not install or use the Series 70 Electric Actuator in or near environments where corrosive substances or vapors could be present. Exposure of the electric actuator to corrosive environments may damage the internal components of the device, and will void the warranty.

**120 VAC ON/OFF WIRING**



**24 VAC ON/OFF WIRING**

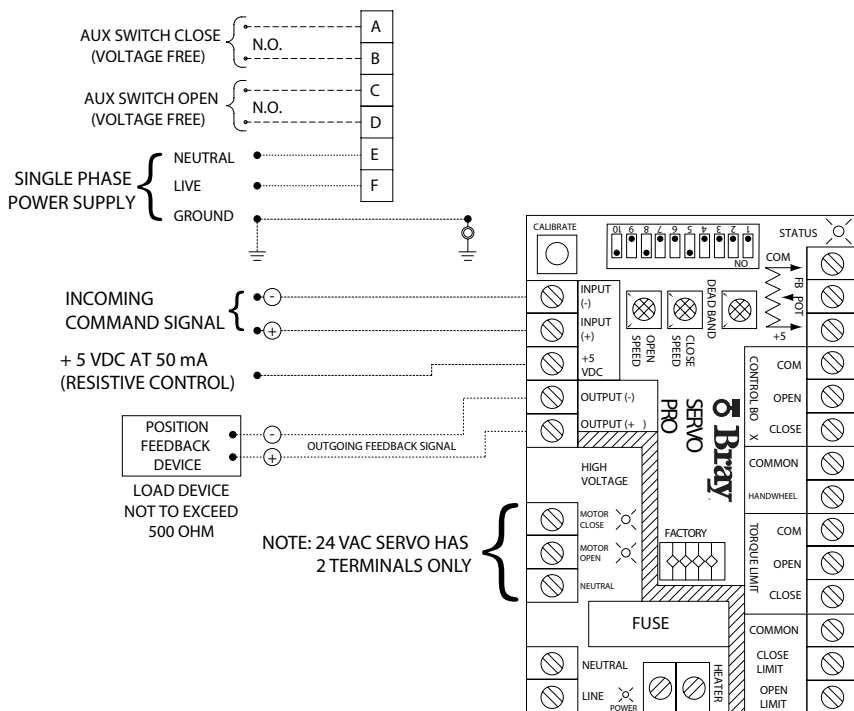


**Notes:**

1. Command signal and feedback wires **MUST** be shielded and grounded for proper servo operation.
2. The command signal input (-) terminal is internally connected to the servo neutral terminal. **DO NOT** connect the live to the neutral terminal on the servo.
3. Command signal and feedback signal must be isolated from each other and any other circuits. When using 0-10VDC, 0-5VDC & 2-10VDC, the common of the command signal should **NOT** be ground/earth referenced.
4. Feedback loop is powered by the servo, do not supply external power.
5. Command signal & feedback signal wires should be shielded properly & shield should be grounded/earthed on one end only, preferably the controller end.

*The 24 V Servo Pros (Revision J) can be wired 3 or 4 wire configured*

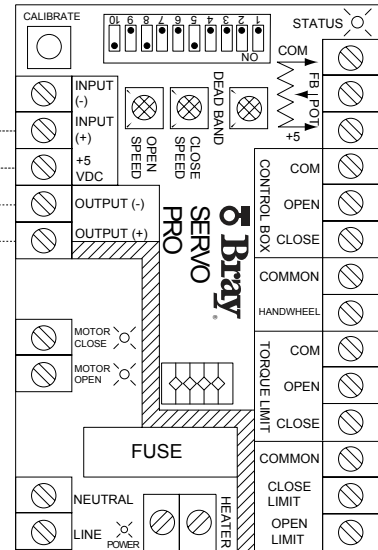
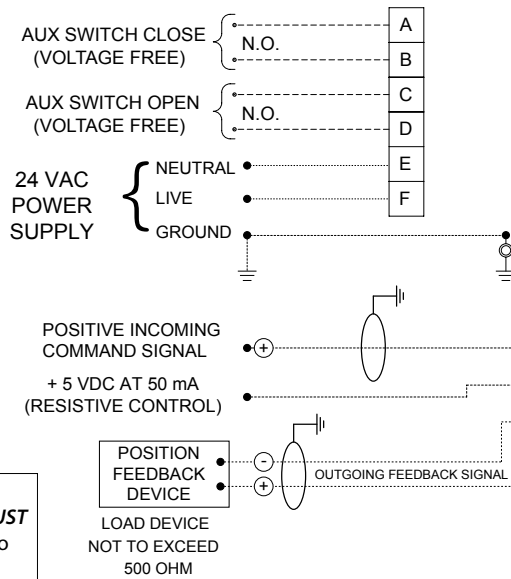
**120 VAC MODULATING WIRING**



Industrial Actuators

**WIRING**

**24 VAC 3-WIRE MODULATING**

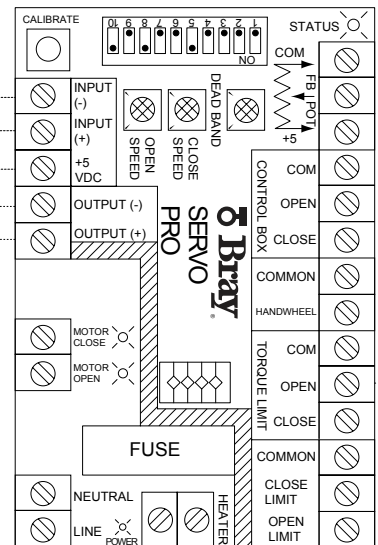
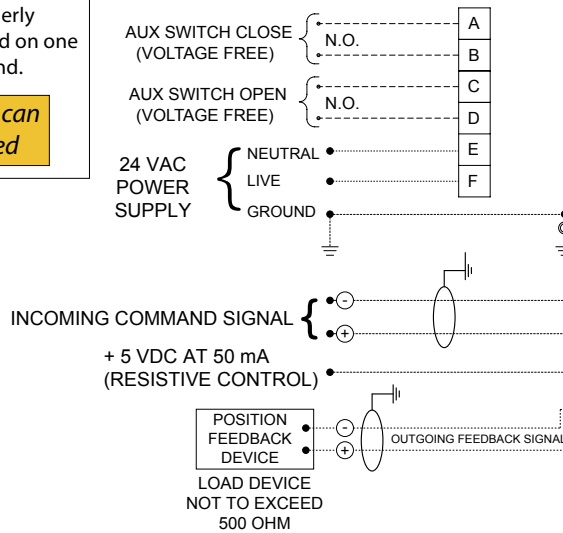


**Notes:**

1. Command signal and feedback wires **MUST** be shielded and grounded for proper servo operation.
2. The command signal input (-) terminal is internally connected to the servo neutral terminal. **DO NOT** connect the live to the neutral terminal on the servo.
3. Command signal and feedback signal must be isolated from each other and any other circuits. When using 0-10VDC, 0-5VDC & 2-10VDC, the common of the command signal should NOT be ground/earth referenced.
4. Feedback loop is powered by the servo, do not supply external power.
5. Command signal & feedback signal wires should be shielded properly & shield should be grounded/earthed on one end only, preferably the controller end.

*The 24 V Servo Pros (Revision J) can be wired 3 or 4 wire configured*

**24 VAC 4-WIRE MODULATING**



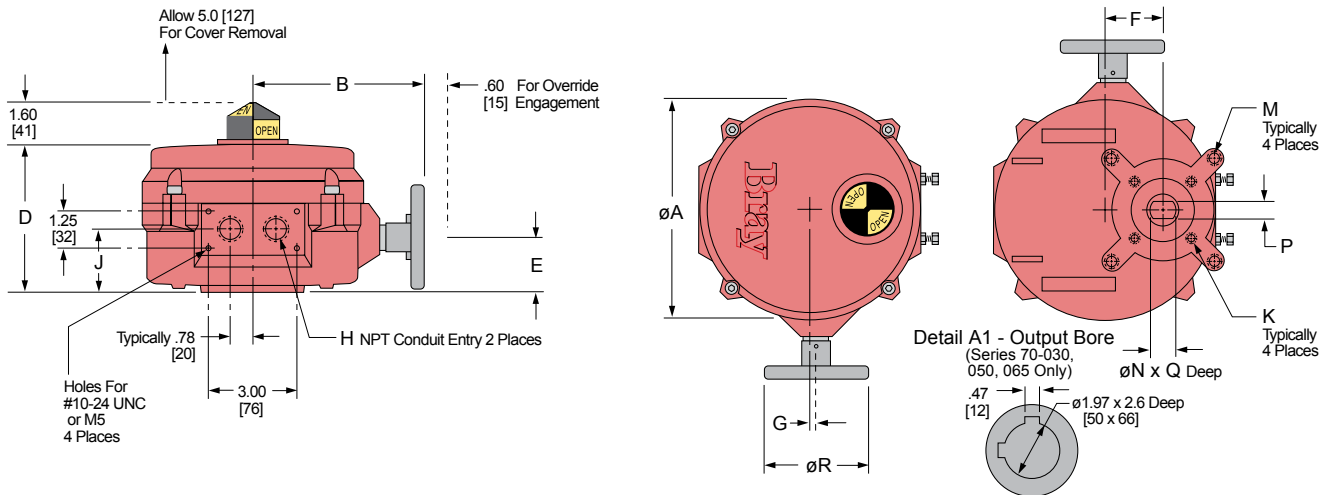
**DIMENSIONS**

**SERIES 70 ACTUATOR DIMENSIONS**

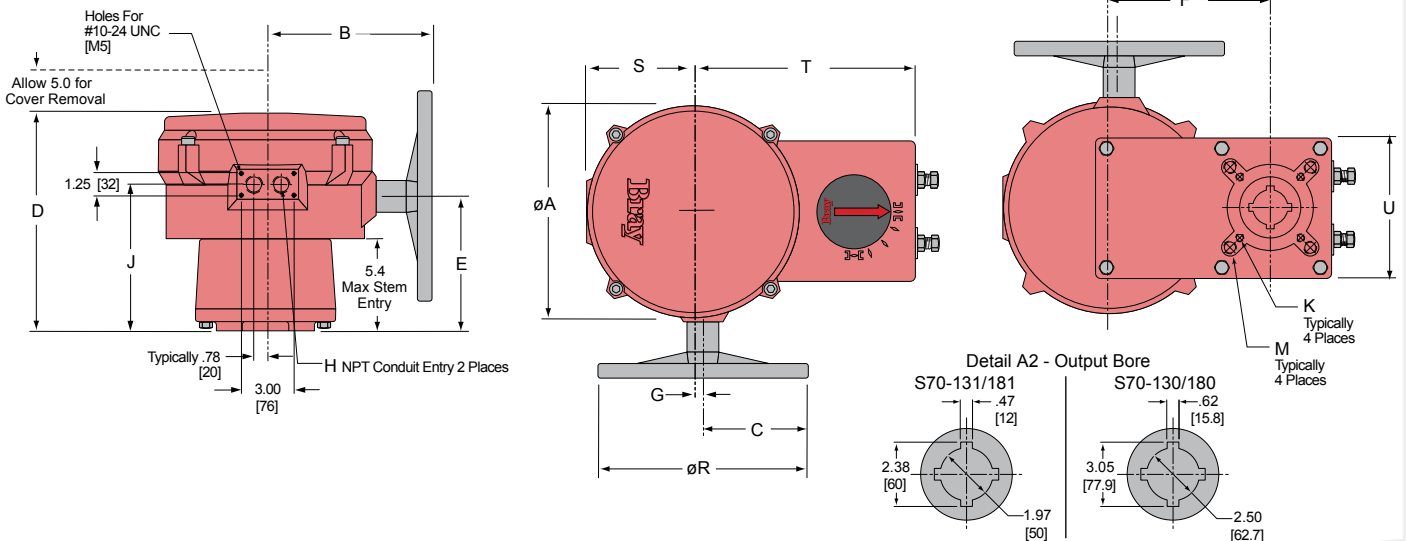
ACTUATOR MODEL NUMBER	Please reference illustration below																		Wt. lbs [kgs]
	A	B	C	D	E	F	G	H	J	K (UNC) x B.C.	M (UNC) x B.C.	N	P	Q	øR	S	T	U	
S70-0061	7.5 [191]	5.6 [142]	3.0 [76]	5.1 [130]	1.9 [48]	1.94 [49.3]	.19 [4.8]	1/2 ±	2.0 [51]	5/16-18 x ø2.76 F07	—	.75 [19]	.51 [13]	1.75 [44]	3.5 [89]	—	—	—	12 [6]
S70-0121 S70-0201	10.1 [257]	7.8 [198]	3.7 [94]	6.5 [165]	2.5 [64]	2.69 [68.3]	.56 [14.2]	3/4 ±	2.6 [66]	5/16-18 x ø2.76 F07	1/2-13 x ø4.92 F12	1.18 [30]	.87 [22]	2.20 [56]	8 [203]	—	—	—	28 [13]
S70-0301 S70-0501 S70-0651	12.1 [307]	9.5 [241]	5.6 [142]	7.2 [183]	2.9 [74]	3.19 [81]	.56 [14.2]	3/4 ±	3.1 [79]	1/2-13 x ø4.92 F12	3/4-10 x ø6.50 F16	See Detail A1			12 [305]	—	—	—	48 [22]
S70-1300 S70-1800	12.1 [307]	9.5 [241]	6.0 [152]	12.5 [317]	8.1 [206]	9.2 [234]	.56 [14.2]	3/4 ±	8.3 [211]	1/2-13 x ø4.92 F12	3/4-10 x ø6.50 F16	See Detail A2			12 [305]	6.1 [155]	12.7 [323]	8 [203]	118 [54]

Dimensions are in Inches [Millimeters in brackets]

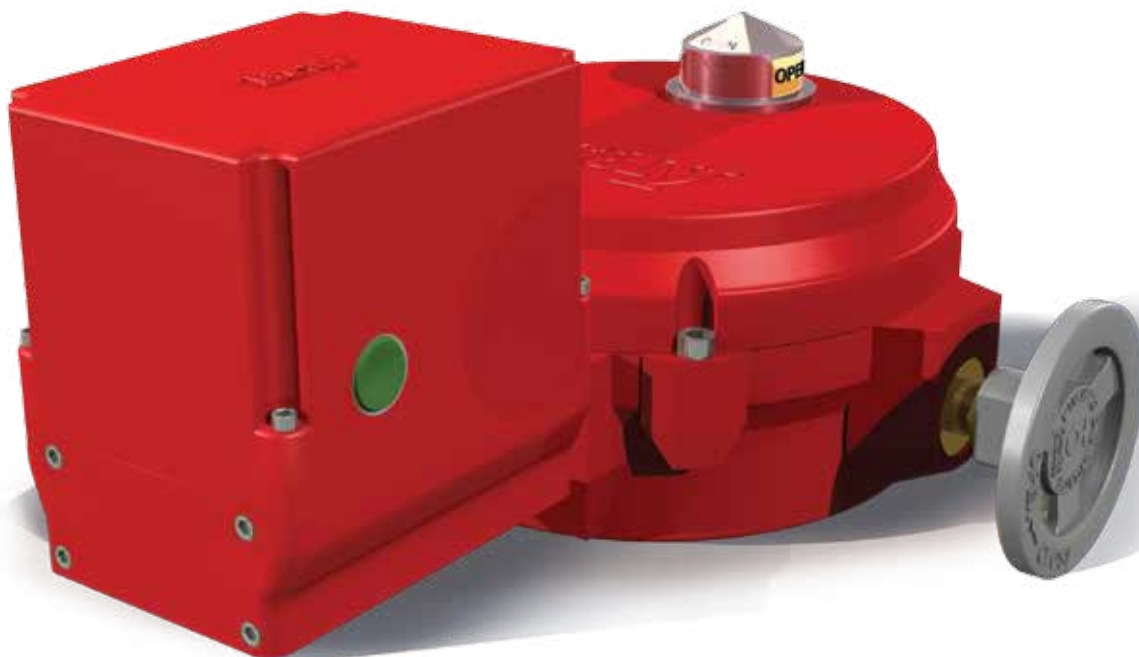
**70-0061 to 70-0651**



**70-1300 to 70-1800**



**BATTERY BACKUP FOR SERIES 70 ACTUATORS**



**Features**

- Factory installed and wired
- Battery Strength Indication
- Field selectable Normally Open Or Normally Closed
- Nema 4x (IP 65) enclosure

**Benefits**

- Reduces field installation cost
- Provides visual and electronic indication of low battery state
- Application Flexibility
- Suitable for outdoor use, subject to ambient temperature limits

The Battery Backup (BBU) option for the Bray Series 70 24VAC actuators provides a convenient and cost effective solution to provide return of the valve or damper to a user-selectable position upon loss of supply power. The BBU is available for both On/Off and modulating actuators.

The advanced circuitry of the BBU continuously monitors battery strength and provides a visual indication (LED) and remote indication (via dry contact). The BBU is housed in sturdy die cast aluminum NEMA 4x (IP 65) enclosure and is factory mounted and factory wired to the Bray Series 70 24 VAC actuator.

**MODEL SELECTION**

Model Number	Torque	On/Off	Modulating	Heater	Auxiliary Switches
70-24-0061SV-BBU	600	•	•		•
70-24-0061SVH-BBU	600	•	•	•	•
70-24-0201SV-BBU	2000	•	•		•
70-24-0201SVH-BBU	2000	•	•	•	•
70-24-0501SV-BBU	5000	•	•		•
70-24-0501SVH-BBU	5000	•	•	•	•

**SPECIFICATIONS**

Power Requirements	24 to 27 VAC	
VA Requirements (Actuator w/ BBU)	70-24-0061BBU, 70-24-0061SVBBU	100 VA Each BBU must be wired separately to a dedicated transformer
	70-24-0201BBU, 70-24-0201SVBBU	
	70-24-0501BBU, 70-24-0501SVBBU	
Contact Ratings	Battery Strength Alarm	2 A
	All Other Contacts	See Bray Series 70 document
Temperature Limits	Operating	-4 to 122°F (-20 to 50°C)
	Battery Charging	-4 to 122°F (-20 to 50°C)
	Storage	-40 to 140°F (-40 to 60°C)
Batteries (2)	Type	SLA (Sealed Lead Acid) Power Sonic PS1212 or Equal
	Life	4 years, depended on ambient Temperature
	Charging	Continuous
	Discharging	4.2A (Only upon loss of input power)
Housing	Die Cast aluminium, Polyester finish, Nema 4X (IP 65)	
Wiring	Conduit Entries (2)	3/4" NPT
	Terminal Block	Max 14 AWG

**OPERATION**

In the normal mode of operation with power supplied to the actuator, the batteries maintain a charge and are in an offline mode. The power applied to the motor is from the power supply, not the batteries.

Upon loss of supply power, after a 10 second startup sequence, the BBU circuitry applies the stored power in the batteries to move the valve or damper to the full open or full closed position designated by the user. The actuator remains in this position until external power is restored to the unit.

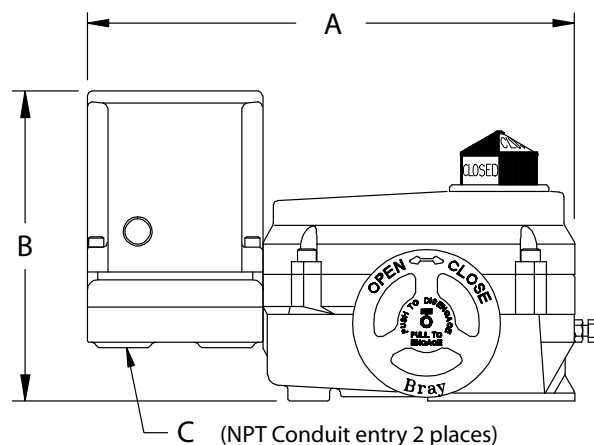
For two position (on/off units), and modulating units, the BBU board automatically detects when the actuator has reached the desired position and then disconnects the battery power from the motor.

**Application Note:** Use Battery Backup (BBU) only to control equipment under normal operating conditions. Where failure or malfunction of the electric actuator could lead to personal injury or property damage to the controlled equipment or other property, additional precautions must be designed into the control system. Incorporate and maintain other devices such as supervisory or alarm systems or safety or limit controls, intended to warn of or protect against failure or malfunction of the electric actuator.

**DIMENSIONS**

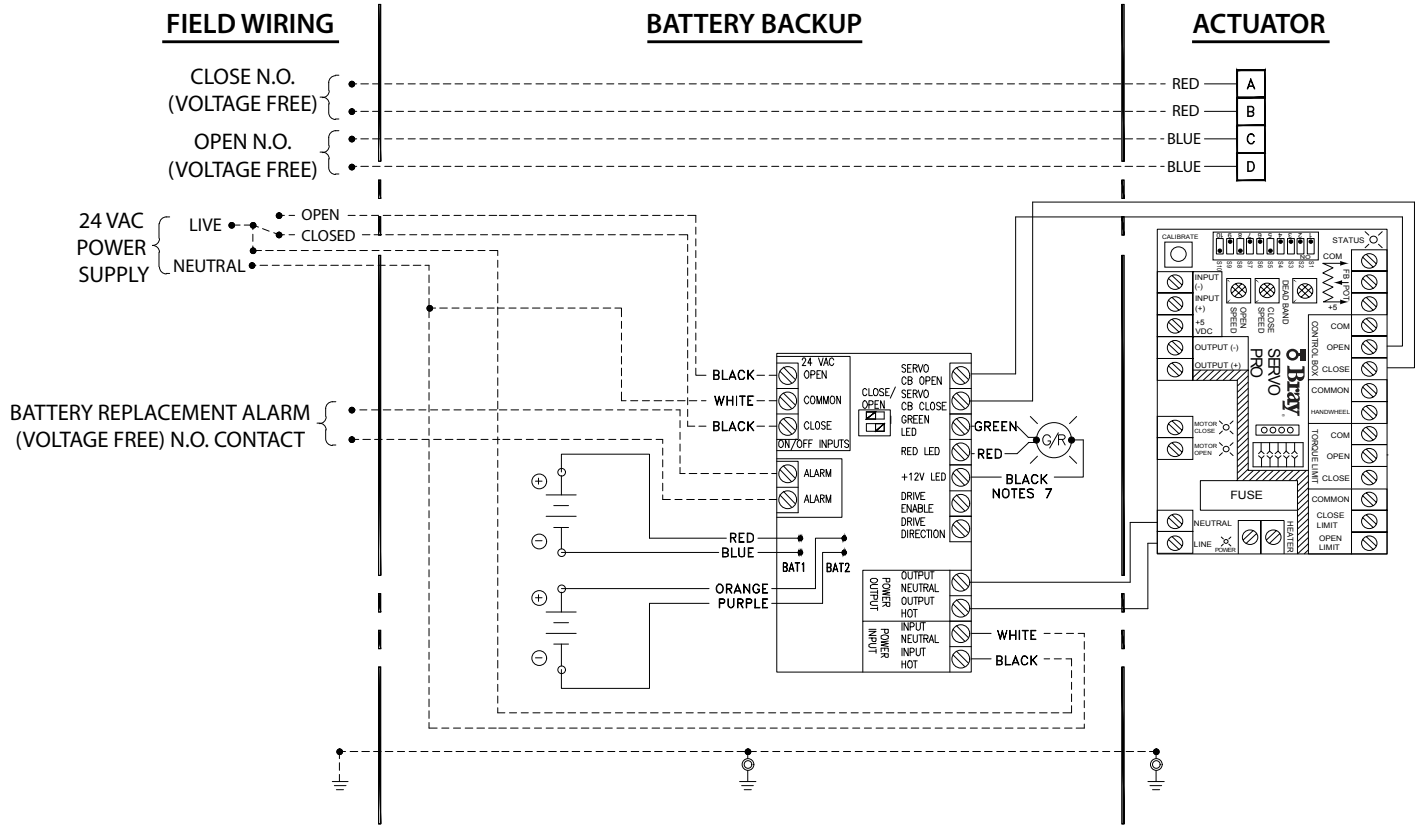
<b>BBU with Actuator DIMENSIONS</b>			
ACTUATOR	A	B	C
70-24-0061	12	7.4	3/4
70-24-0201	14.5	7.9	3/4
70-24-0501	16.6	8.4	3/4

All dimensions in inches.  
Allow 5.0" for cover removal.





**ON/OFF WIRING**



**MODULATING WIRING**

