

**SERIES 70**

# **ELECTRIC ACTUATORS**

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 **Bray**<sup>®</sup>

[BRAY.COM](http://BRAY.COM)

THE HIGH PERFORMANCE COMPANY

**1 Enclosure**

The low profile weatherproof enclosure is UL listed Type 4, 4x and IP65. Polyester powder coated die-cast aluminum cover and base, for exceptional corrosion, wear, impact and ultraviolet resistance.

**2 High Visibility Position Indicator**

Prominently labeled and color coded yellow for open, red for close – the display indicates valve position through the full range of travel. The O-ring sealed dome is made of high impact, heat, chemical and ultraviolet resistant clear polycarbonate and designed to withstand caustic wash down ensuring excellent corrosion protection.

**3 Captive Cover Bolts**

The cover is attached to the base by captive stainless steel bolts placed outside the sealing area.

**4 O-Ring Seal For Watertight Enclosure**

The O-ring seal between the cover and base provides a weatherproof seal preventing internal corrosion.

**5 Manual Override**

Standard on all models. The declutchable manual override prevents handwheel movement during motor operation. When manual operation is desired, pull the handwheel out to expose the yellow stripe around the handwheel shaft, which indicates the handwheel is engaged and manual operation is available.

**6 Manual Override Switch**

Interrupts power to the motor when handwheel operation is engaged.

**7 Conduit Entries**

Two connections in either NPT or metric threads. One entry is for power, the other for control wiring.

**8 Motor Gear**

High torque start motor assembly, designed for fast inspection and maintenance.

**9 Output Drive**

Self-locking worm shaft and worm gear assembly holds the valve in desired position.

**10 Mechanical Travel Stop Bolts**

Designed to prevent over-travel in the open or close direction during manual operation. Travel stop bolts include a locknut to prevent loosening, seals to prevent water ingress, and spacers to prevent adjustment between 0° and 90° limit switch settings. Travel stop bolts permit 5° of over travel.

**11 Terminal Strip**

Actuator limit switches are pre-wired to an easily accessible and clearly marked terminal block for customer wiring. The terminal strip has been placed near the two conduit entries with ample room for running wire leads. An easily accessible green plated ground screw is provided. A wiring diagram is included inside the cover for easy reference.

**12 Limit Switch Bracket**

Simple and secure design to firmly hold limit switch assemblies for accurate and repeatable valve position feedback.

**13 Limit Switch CAMs**

Bray's patented CAM design includes standard green (open) and red (close) CAMs which are adjustable with finger touch or screwdriver. No additional tools necessary. Standard factory setting allows 90° travel between open and close positions.

**14 Roller Bearing**

Provides low friction while securely aligning actuator indicator shaft and CAMs for reliable valve position feedback.

**15 Oldham Coupler**

Corrects any misalignment between the valve and actuator without introducing side load to the position indicator shaft assembly.



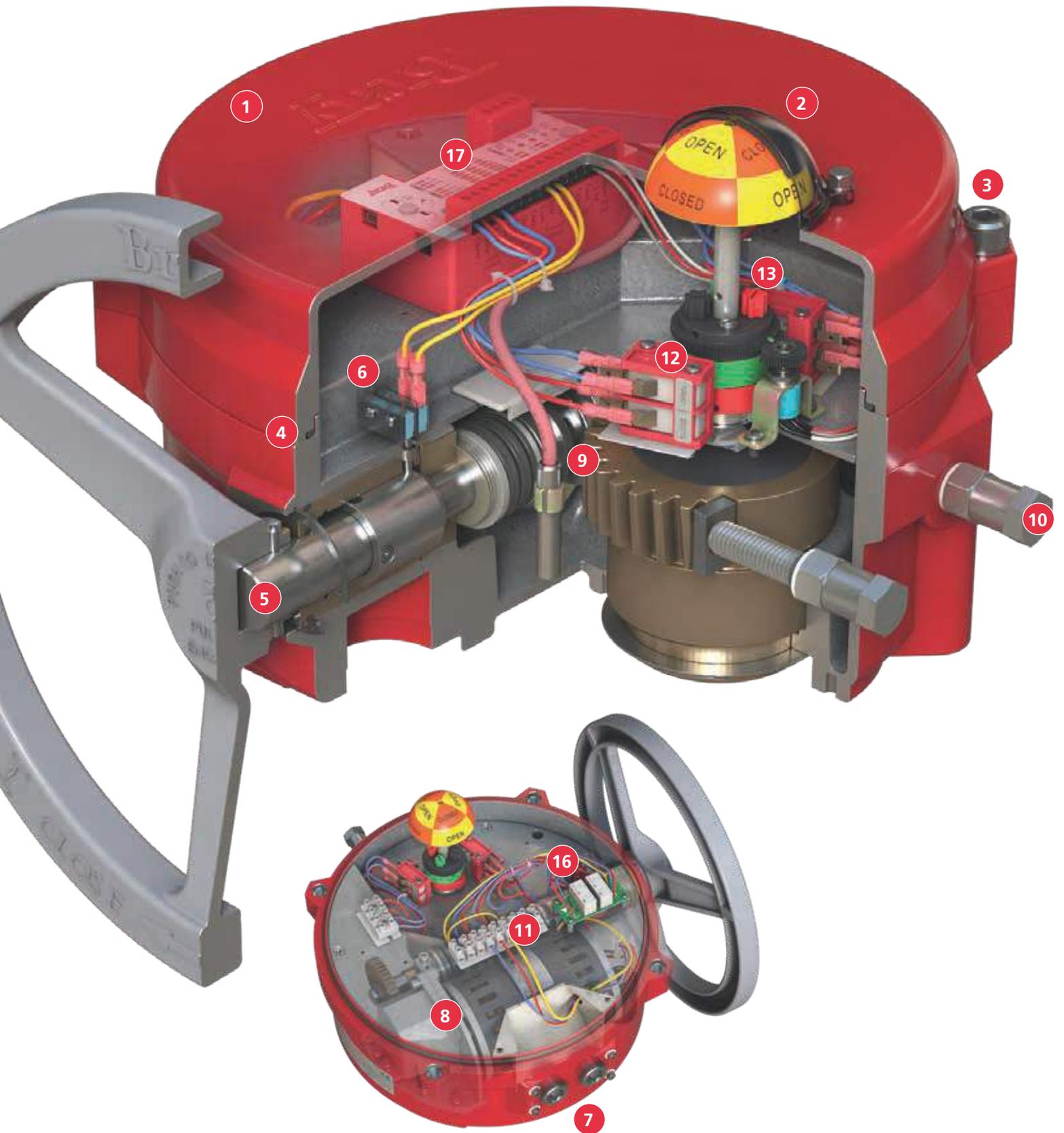
**16 Standard Actuator Control Interposing Relay Board (I.R.B.)**

120/220 VAC 50/60Hz On/Off control

**17 Optional Actuator Controls Servo NXT Modulating Controller**

120, 220, 24 VAC 50/60 Hz, 1 phase 24 VDC

**24V On/Off Controller**  
(not shown)



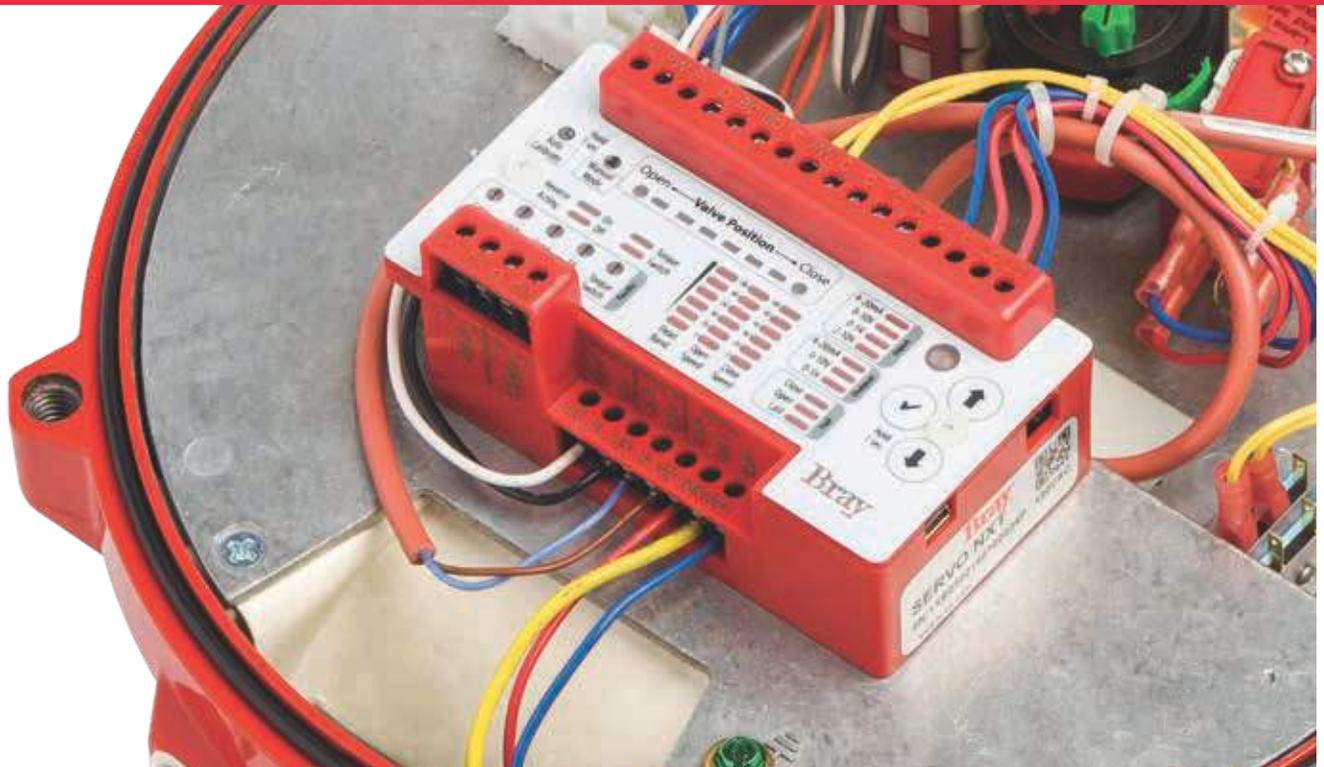
**Bray's Series 70 electric actuator has many advantages over other actuators including:**

- Voltages: 120, 220, 24VAC 50/60 Hz, 1-phase, 24VDC
- Output torque 300 lb-in (34 Nm) to 18,000 lb-in (2,034 Nm)
- UL, CSA and CE certification on most units
- Low profile, light weight
- High visibility position indicator
- Simple manual override handwheel system
- On-off or modulating control
- Terminal strip for cable terminations
- Hand or screw driver adjustment of travel limit cams
- ISO 5211 for direct mounting
- Optional hazardous location model available
- Optional Seacorr coating for harsh environments


*Hazardous Location*

*Sizes 130-180*

*Sizes 003-065*

## SERVO NXT FEATURES / SPECIFICATIONS

Servo is available for modulating service, continuous duty actuators only.

The Servo NXT offers precise modulating service for accurate position control.

- One touch automatic calibration
- User-friendly interface
- Advanced control of proportional band and dead band
- Automatic pulsing mode for precise positioning
- Self diagnostics
- Action on loss of command signal
- Go to position commands

<b>Actuator Voltage</b>	120, 220, 24 VAC 50/60 Hz, 1 phase 24 VDC
<b>Input Signal</b>	Configurable 4-20 mA, 0-10, 2-10, 0-5 VDC
<b>Retransmission signal</b>	Configurable 4-20 mA, 0-10, 0-5 VDC
<b>Independent Isolation</b>	Control signal input and output Control signals and power
<b>Display</b>	Menu driven auto dimming LED
<b>Menu Navigation</b>	Up/Down arrows with select (✓) buttons
<b>Configuration</b>	Menu selectable to non-volatile memory
<b>Calibration</b>	Auto calibration sequence for travel limits
<b>Deadband</b>	Configurable 1% - 6%
<b>Reverse Acting</b>	Configurable for inverted input signal
<b>Speed Control</b>	Independent for open and close direction
<b>Fail Position (loss of input signal)</b>	Configurable close, open, last
<b>Manual Mode</b>	Local operation via Servo NXT user interface
<b>Fault Indications</b>	Loss of command signal Limit switch Handwheel engaged Feedback pot Torque switch Jammed valve / motor stalled
<b>Health Monitor</b>	Heartbeat - Backlit blinking Bray logo

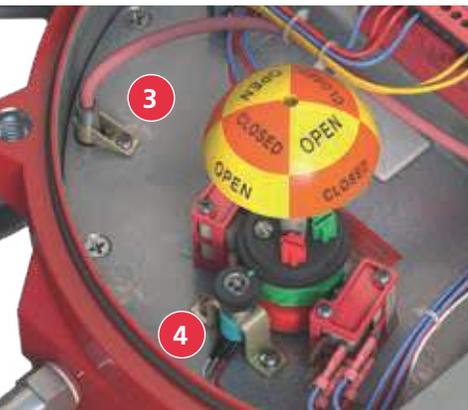
*"Configurable" means the customer, or the factory, can modify the Servo NXT.*


**1 Control Station**

The optional control station features a local-off-remote control switch, an open-stop-close switch, and two lights which locally indicate open and close valve position. This weatherproof aluminum enclosure is easily bolted to the four mounting holes located on the S70 conduit entry panel. The Control Station cover includes captive bolts and may be rotated in 90° increments allowing the customer to easily operate and view the control station. Two ¾" NPT cable entries are available in the control station base. Two different multi-pin, weatherproof electrical cable connections are also available.


**2 Battery Backup Unit (BBU)**

Designed for use with 24V actuators, the optional BBU provides power to permit the actuator to reach its fail-open or fail-close position in the event of a main power failure. Upon reaching the fail position, the BBU turns off until external power is restored. After main power has been restored, the actuator returns to normal operation.


**3 Heater**

Mounted on the actuator switch plate, a self-regulating heater can be added to prevent potential electrical component damage due to condensation build-up inside the actuator.

**4 Potentiometer**

Optional gear driven 10k ohm potentiometer provides continuous position feedback for a customer control system. Potentiometer is standard with the Servo NXT controller.

**5 Auxiliary Switches**

Up to four additional dry-contact (voltage free) SPDT mechanical switches can be added to indicate travel position for remote customer control systems.

**6 Torque Switch**

Optional torque switches provide protection for the automated valve assembly in the event of an over-torque event.

**7 Electrical Cable Connections**

Pre-wired multi-pin weatherproof cable receptacles allow quick-connect field installation and prevent internal cabling errors which could occur during commissioning. Cord sets can be supplied with connection/flying leads or connection/connection on cord set ends to plug directly into the actuator receptacle.



		S70-003	S70-006	S70-008* S70-708*	S70-012* S70-712*	S70-020* S70-720*	S70-030	S70-050	S70-065	S70-130	S70-180
Torque	lb-in	300	600	800	1200	2000	3000	5000	6500	13000	18000
	Nm	34	68	90	136	226	339	565	734	1469	2034
ISO Mounting Base		F07	F07	F07/F12	F07/F12	F07/F12	F12/F16	F12/F16	F12/F16	F12/F16	F12/F16
Weight (Approximate)	lbs	11	11	25	25	25	45	45	45	118	118
	kg	5	5	11	11	11	20	20	20	54	54

<b>MANUAL OVERRIDE</b>											
Handwheel Dia.	in	3.5	3.5	8	8	8	12	12	12	12	12
	mm	89	89	203	203	203	300	300	300	300	300
Gear Ratio		30:1	30:1	30:1	30:1	30:1	30:1	30:1	30:1	90:1	90:1
Rim Pull	lbs	16	32	18	28	46	37	62	80	80	80
	kg	7.2	14.5	8.2	12.7	20.8	16.8	28.1	36.3	36.3	36.3

\*Hazardous Location Units

### 120VAC

Travel Time 90° (Sec)		S70-003		S70-006		S70-008* S70-708*		S70-012* S70-712*		S70-020* S70-720*		S70-030		S70-050		S70-065		S70-130		S70-180			
		Current Draw in Amps																					
60 Hz	50 Hz	FLA	LRA	FLA	LRA	FLA	LRA	FLA	LRA	FLA	LRA	FLA	LRA	FLA	LRA	FLA	LRA	FLA	LRA	FLA	LRA		
10	12					1.20	2.10	1.40	2.30														
15	18					0.78	2.10	1.20	2.10	1.70	2.30												
18	22											1.80	3.00	2.30	3.10								
30	36	0.60	1.00	0.80	1.00	0.60	2.10	0.78	2.10	1.00	2.10	1.20	3.00	1.60	3.00	2.30	3.10						
110	132																	2.30	3.10	2.50	3.10		

\*Hazardous Location Units

### 220VAC

Travel Time 90° (Sec)		S70-003		S70-006		S70-008 S70-708		S70-012 S70-712		S70-020 S70-720		S70-030		S70-050		S70-065		S70-130		S70-180			
		Current Draw in Amps																					
60 Hz	50 Hz	FLA	LRA	FLA	LRA	FLA	LRA	FLA	LRA	FLA	LRA	FLA	LRA	FLA	LRA	FLA	LRA	FLA	LRA	FLA	LRA		
10	12					0.50	0.76	0.60	0.81														
15	18					0.38	0.90	0.50	0.76	0.55	0.90												
18	22											0.78	1.40	1.10	1.40								
30	36	0.60	0.75	0.65	0.75	0.38	0.90	0.45	0.90	0.50	0.81	0.75	1.2	0.90	1.40	1.10	1.40						
110	132																	1.30	2.70	1.50	2.70		

FLA - Full Load Amperage

LRA - Locked Rotor Amperage

### 24VAC

Travel Time 90° (Sec)		S70-006	S70-020	S70-050
		Current Draw in Amps		
60 Hz	50 Hz	FLA	FLA	FLA
60	72	1.80	2.00	4.00

### 24VDC

Travel Time 90° (Sec)		S70-006	S70-020	S70-050
		Current Draw in Amps		
		FLA	FLA	FLA
40		1.80		
60			2.00	4.00

### Travel Time - Motors

30, 40, 60, 110 second motors are continuous duty
10, 15, 18 second motors are intermittent duty

For all other information such as dimensional drawings, wiring diagrams, and EDS files please visit [bray.com](http://bray.com) or contact your local Bray representative.



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