

Series 70 (On/Off) — Submittal/Technical Data

800-18,000 lb-in. — Non-Spring Return — On/Off — Auxiliary Switches

Construction		
Housing	ASTM B85 Pressure Die Cast Aluminum - Polyester Powder Coated	
Motor	120 VAC 24 VAC/DC	Single Phase, Reversible, Permanent Split Capacitor Induction Motor Permanent Magnet-Brush D.C. Motor
Heater	5 Watt PTC style (Heater operation required for humid environments)	
Terminal Strip	Switch Plate Servo	12 - 22 AWG (2.0 - 0.65mm) 14 - 24 AWG (1.63 - 0.51mm)
Torque Limiting	Optional, Open and Closed preset at factory - Standard on 13,000 & 18,000 lb.-in.	
Auxiliary/Limit Switches: SPDT	120 VAC	10A - 1/3 HP
	220 VAC	10A - 1/2 HP
	250 VDC	1/4A
	12 VDC	2A
Exposed Fasteners	Stainless Steel	
Travel Stops	Externally adjustable at both 0 and 90 degrees	
Conduit Entries	800 lb.-in.	Two 1/2" NPT
	1200 lb.-in. and Higher	Two 3/4" NPT
Weight	See Dimensions	
Enclosure	Designed to meet NEMA Type 4, 4x and IP65 specifications	
Warranty	3 Years	
Certifications	UL/CSA 120V. CE 24 & 120V	

Operating Conditions		
Motor Insulation	120 VAC: 24 VAC/DC:	Class F, 311°F (155°C) thermal trip at 275°F (135°C) Class B, Fast Blow Fuse 5A 250 VAC
Ambient Temperature	-20 to 150°F (-29° to 65°C)	
Continuous Duty	Will operate continuously at a maximum ambient temperature of 104°F (40°C)	
Manual Operation	Pull to Engage, Push to Disengage - 30:1 drive ratio, 13 & 18K lb.-in. models are 90:1	

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.

Torque and Motor Data						
24 V Models	Voltage 50/60 Hz	(lb.in)	(NM)	Stroke Time*	Full Load Amps	Power Consumption VA
70-24-0081H	24 VAC/DC	800	90	60 Sec.	2.90	70
70-24-0201H	24 VAC/DC	2000	226	80 Sec.	3.50	84
70-24-0501H	24 VAC	5000	565	90 Sec	4.00	96

All 24V current ratings include heaters and servos

- 24V heater = 208 mA
- 24V modulating servo current draw = 0.3 A

Torque and Motor Data						
120 VAC Models	Voltage 50/60 Hz	(lb.in)	(NM)	Stroke Time*	Full Load Amps	Locked Rotor Amps
70-0081H	120 VAC	800	90	30 Sec	0.80	1.00
70-0121H	120 VAC	1,200	135	30 Sec	0.75	2.10
70-0201H	120 VAC	2,000	226	30 Sec	0.85	2.10
70-E301H	120 VAC	3,000	339	30 Sec	1.00	2.10
70-0501H	120 VAC	5,000	565	30 Sec	1.60	3.00
70-0651H	120 VAC	6,500	734	30 Sec	2.30	3.10
70-1300H	120 VAC	13,000	1,470	110 Sec	2.30	3.10
70-1800H	120 VAC	18,000	2,034	110 Sec	2.50	3.10

For 120V models, heater and servo current draws are additive

- 120V Heater + 42 mA
- 120V servo + 0.3 A

*Stroke Times shown are with 60 Hz power.

Actuators with 50 Hz power supply will be 20% slower.

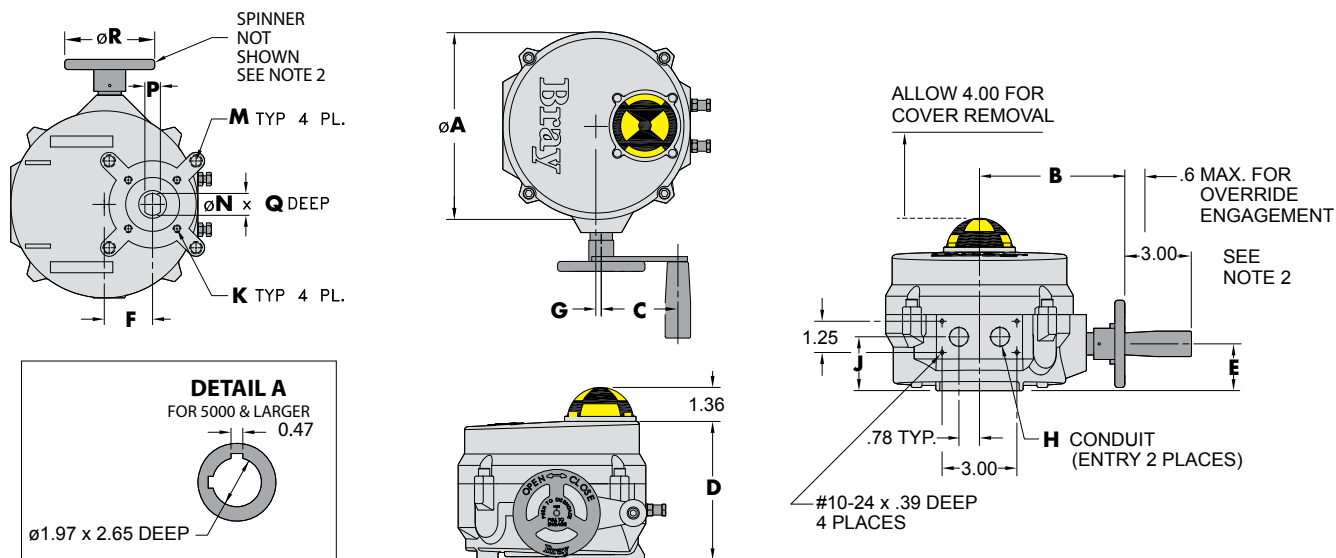
Series 70 - Dimensions

70-0081 TO 70-0651

Series 70 Actuator - DIMENSIONS In./(mm)

Actuator Model Number	øA	B	C	D	E	F	G	H	J	K (UNC) x B.C. (K x B.C.)	M (UNC) x B.C. (M x B.C.)	N	P	Q	øR	Weight lbs. (kg)
S70-0081	7.5 (191)	5.8 (147)	3.0 (76)	5.6 (141)	1.9 (48)	1.94 (49.2)	.19 (4.7)	1/2 NPT (M20 x 1.5)	2.2 (55)	5/16-18 x ø2.76 (M8 x 1.25 x ø70)	—	.75 (19.0)	.51 (13.0)	1.75 (44.5)	3.5 (89)	13 (6)
S70-0121 S70-0201 S70-E301	10.1 (256)	7.8 (198)	3.7 (93)	6.6 (168)	2.4 (62)	2.69 (68.3)	.56 (14.3)	3/4 NPT (M25 x 1.5)	2.6 (66)	5/16-18 x ø2.76 (M8 x 1.25 x ø70)	1/2-13 x ø4.92 (M12 x 1.75 x ø125)	1.18 (30.0)	.87 (22.0)	2.22 (56.3)	8.0 (203)	28 (13)
S70-0501 S70-0651	12.1 (308)	9.5 (241)	5.5 (139)	7.2 (183)	2.9 (73)	3.19 (80.9)	.56 (14.3)	3/4 NPT (M25 x 1.5)	3.1 (78)	1/2-13 x ø4.92 (M12 x 1.75 x ø125)	3/4-10 x ø6.50 (M20 x 2.5 x ø165)	See Detail A			12.0 (305)	48 (22)

Note: Products are sold in **imperial units**; metric dimensions are listed for **reference only**. Items with metric dimensions are different products with different PNs—please contact **BCD Sales** for details.

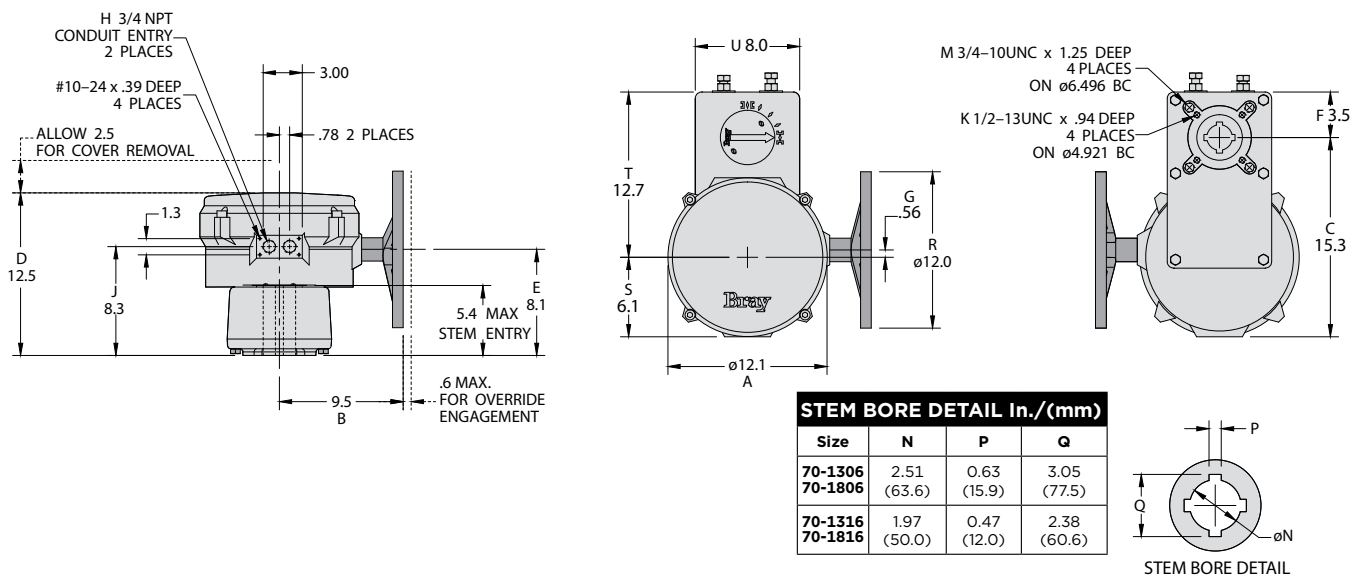


70-1300 TO 70-1800

Series 70 Actuator - DIMENSIONS In./(mm)

Actuator Model Number	øA	B	C	D	E	F	G	H	J	K (UNC) x B.C. (MM) x B.C.)	M (UNC) x B.C. (MM) x B.C.)	N	P	Q	øR	S	T	U	Weight lbs. (kg)	
S70-1300 S70-1800	12.1 (308)	9.5 (241)	15.3 (389)	12.5 (316)	8.1 (206)	3.5 (89)	.56 (14.3)	3/4 NPT (M25 x 1.5)	8.3 (211)	1/2-13 x ø4.921 F12 (12 x 125 BC x 23.9)	3/4-10 x ø6.496 F16 (20 x 165 BC x 31.8)	See Stem Bore Detail				12.0 (305)	6.1 (155)	12.7 (322)	8.0 (203)	118 (54)

Note: Products are sold in **imperial units**; metric dimensions are listed for **reference only**. Items with metric dimensions are different products with different PNs—please contact **BCD Sales** for details.



Series 70 - Wiring - On/Off

70-24-0081H / 70-24-0201H

24VAC/30VDC ON/OFF NXT

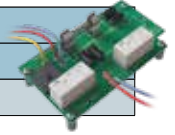
REFERENCE WIRING DIAGRAM: WD-000528



70-24-0501H

24VAC ON/OFF PCB

REFERENCE WIRING DIAGRAM: WD-000111



FIELD WIRING

DI	CLOSE	COM	N.O.
DI	OPEN	COM	N.O.

GROUND

DO	POWER SUPPLY 24VAC/30VDC	CLOSE	NUETRAL	OPEN
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ACTUATOR

A	DO	VOLTAGE FREE CONTACT
B	DO	VOLTAGE FREE CONTACT
C	DO	VOLTAGE FREE CONTACT
D	DO	VOLTAGE FREE CONTACT
E		
F		

CLOSE	POWER
NEUT	
OPEN	

FIELD WIRING

DI	CLOSE	COM	N.O.
DI	OPEN	COM	N.O.
DO	POWER SUPPLY 24VAC	NUETRAL	
		OPEN	
		CLOSE	
DO	HEATER 24VAC/VDC	LIVE	

GROUND

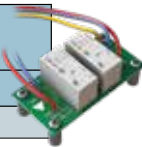
ACTUATOR

A	DO	VOLTAGE FREE CONTACT
B	DO	VOLTAGE FREE CONTACT
C	DO	VOLTAGE FREE CONTACT
D	DO	VOLTAGE FREE CONTACT
E	DI	24VAC NEUTRAL
F	DI	24VAC LIVE
G	DI	24VAC LIVE
H	DI	24VAC/30VDC LIVE
I		

70-0081H / 70-0121H / 70-0201H / 70-E301H /
70-0501H / 70-0651H / 70-1300H / 70-1800H

120VAC ON/OFF IRB

REFERENCE WIRING DIAGRAM: WD-000045



FIELD WIRING

DI	CLOSE	COM	N.O.
DI	OPEN	COM	N.O.

GROUND

DO	POWER SUPPLY 120VAC	NEUTRAL	OPEN	CLOSE
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DO	HEATER 120VAC	LIVE
DI	INDICATION OPEN	LIVE
DI	INDICATION CLOSE	LIVE

ACTUATOR

A	DO	VOLTAGE FREE CONTACT
B	DO	VOLTAGE FREE CONTACT
C	DO	VOLTAGE FREE CONTACT
D	DO	VOLTAGE FREE CONTACT

1	DI	120VAC NEUTRAL
2	DI	120VAC LIVE
3	DI	120VAC LIVE
4		NOT FOR FIELD USE
5		NOT FOR FIELD USE
6		NOT FOR FIELD USE
7	DI	120VAC LIVE
8	DO	120VAC LIVE ● OPEN
9	DO	120VAC LIVE ● CLOSE

CALIBRATION SEQUENCE:

PLEASE VISIT THE S70 INDUSTRIAL ELECTRIC ACTUATOR SECTION OF OUR WEBSITE AND REFER TO THE QUICK START GUIDE AND VIDEO TUTORIAL LINK IN THE DOCUMENTS SECTION.

TERMINAL STRIP:

14-24 AWG FOR CONTROLLER & BBU, MAX TIGHTENING TORQUE 3.5 IN-LBS
14-22 AWG FOR OTHER, MAX TIGHTENING TORQUE 8 IN-LBS
105°C, 300V MIN RATED WIRE

NOTES:

1. HEATER (REQUIRED FOR HUMID ENVIRONMENTS).
2. SWITCHES ARE SPDT (FORM C).
3. 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.

LEGEND:

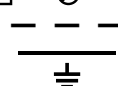
TERMINAL SYMBOLS



FIELD WIRING

FACTORY WIRING

GROUND



FUSE:

FAST BLOW 250V 5A 5x20MM

LIMIT SWITCH:

125/250 VAC, 10A, 1/2 HP
125/250 VDC, 0.25A INDUCTIVE
125/250 VDC, 0.5A RESISTIVE

Wiring Distance (only applicable to 24V actuators)

Conduit Entries (2) - 3/4" NPT Terminal Block - 14 to 24 AWG.
Size wires per NEC guidelines with respect to distance and current draw.

	Max Distance Between Actuator and Supply - ft		
Torque (in-lbs)	800	2000	5000
I _{load} (Amps)	2.90	3.50	4.00
8 GA	3025	741	370
10 GA	1899	465	233
12 GA	1195	293	146
14 GA	752	184	92
16 GA	463	113	57
18 GA	290	71	36