

VA-9070 Series Electric Rotary Actuators for Two-Position and Modulating Service

Product Bulletin

Code No. LIT-977319
Issued March 2023

The VA-9070 Series Electric Rotary Actuators for Two-Position and Modulating Service are designed for direct mounting on VF Series Butterfly Valves. The VA-9070 is available in seven different sizes, for two-position and modulating service on VF Series Standard-Pressure, Standard-Temperature Butterfly Valves and VF Series High-Pressure, High-Temperature Butterfly Valves.

For more detailed information on VA-9070 Series Electric Rotary Actuators, refer to the VA-9070 Series Electric Rotary Actuators for Two-Position and Modulating Service Technical Bulletin (LIT-977325).

Figure 1: VA-9070 Series Electric Rotary Actuator mounted on a VF Series Butterfly Valve

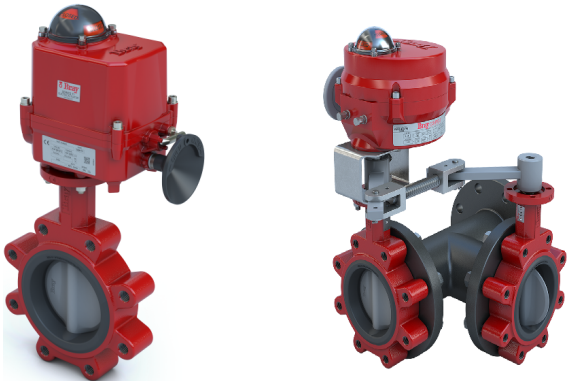


Table 1: Features and benefits

Features	Benefits
Low profile and lightweight design	Reduces space requirements and provides ease of installation
Built-in motor overload protection for 120 VAC motors	Prevents thermal overload of motor
Pre-wired actuator switches to terminal block; field-configurable power and input signals	Provide ease of wiring without interference from other components; enable field modification of input signal
Patented travel limit switch cam design	Allows simple adjustment of travel limit cams without interference
External manual handwheel override	Ensures positive and fast manual operation without the need for extra tools or levers
Rugged, die-cast aluminum NEMA 4, 4X, IP65 type enclosure with captive housing screws	Provide waterproofing and exceptional corrosion, wear, impact, and Ultraviolet (UV) light resistance; prevents time-consuming problems due to lost or misplaced bolts
Valve status display	Provides clear and convenient indication of valve position throughout full range of travel
Heater/thermostat	Prevents condensation build-up and freeze-ups

Selection table

Table 2: Code numbers and cross-reference data

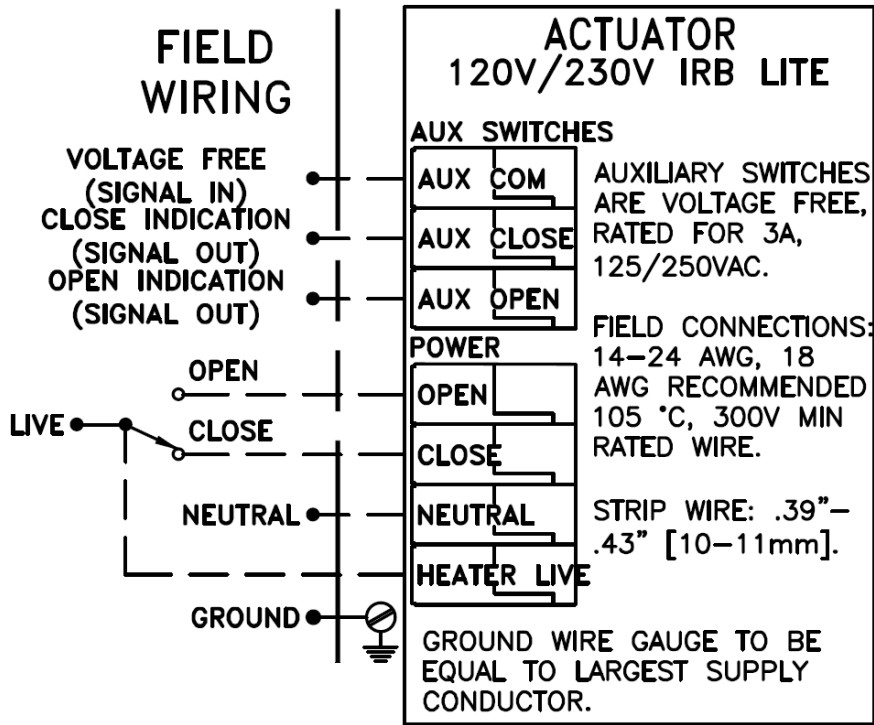
Johnson Controls actuator only code number	Johnson Controls VF Series Butterfly Valve assembly actuator sub-code
Electric two-position models	
VA-9071-04	-721D
VA-9071-12	-721D4
VA-9073-04	-723D
VA-9073-12	-723D4
VA-9074-04	-724D
VA-9075-04	-725D
VA-9075-16	-725D4
VA-9076-04	-726D
VA-9077-04	-727D
VA-9077-16	-727D4
VA-9078-04	-728D
VA-907A-04	-927D
VA-907B-04	-928D
Electric modulating models	
VA-9071-03	-701N
VA-9071-11	-701N4
VA-9073-03	-703N
VA-9073-11	-703N4
VA-9074-03	-704N
VA-9075-03	-705N
VA-9075-15	-705N4
VA-9076-03	-706N
VA-9077-03	-707N
VA-9077-15	-707N4
VA-9078-03	-708N
VA-907A-03	-907N
VA-907B-03	-908N

Applications

Figure 2 through Figure 5 show typical wiring diagrams for their respective applications.

Figure 2: 120V On / Off actuators

120V On / Off actuators and sub-codes	
Johnson Controls actuator code	Johnson Controls valve assembly sub-code
VA-9071-04	721D



120V On / Off actuators and sub-codes	
Johnson Controls actuator code	Johnson Controls valve assembly sub-code
VA-9073-04	723D
VA-9074-04	724D
VA-9075-04	725D
VA-9076-04	726D
VA-9077-04	727D
VA-9078-04	728D
VA-907A-04	927D
VA-907B-04	928D

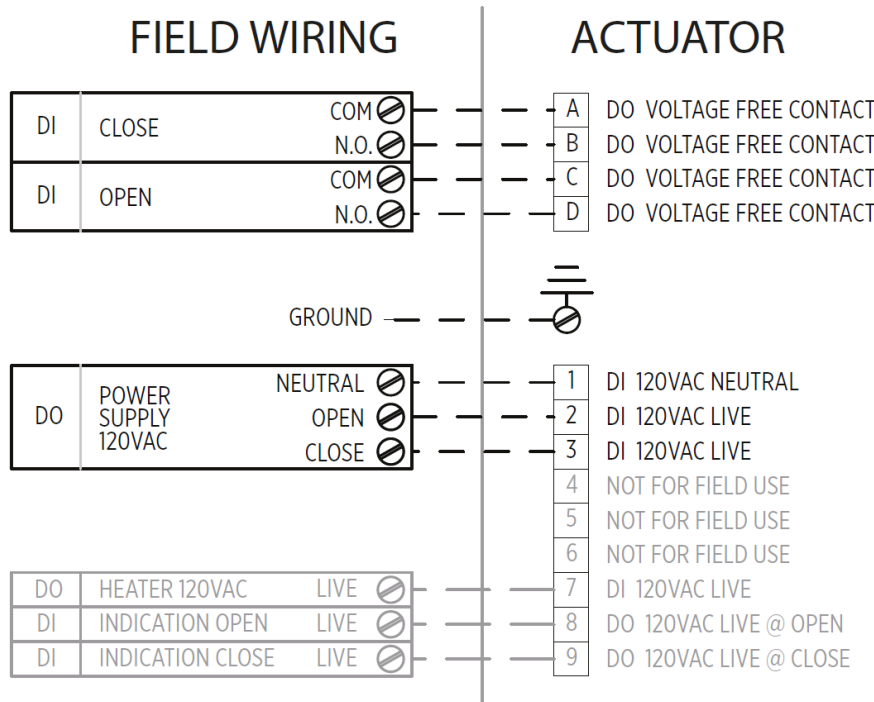
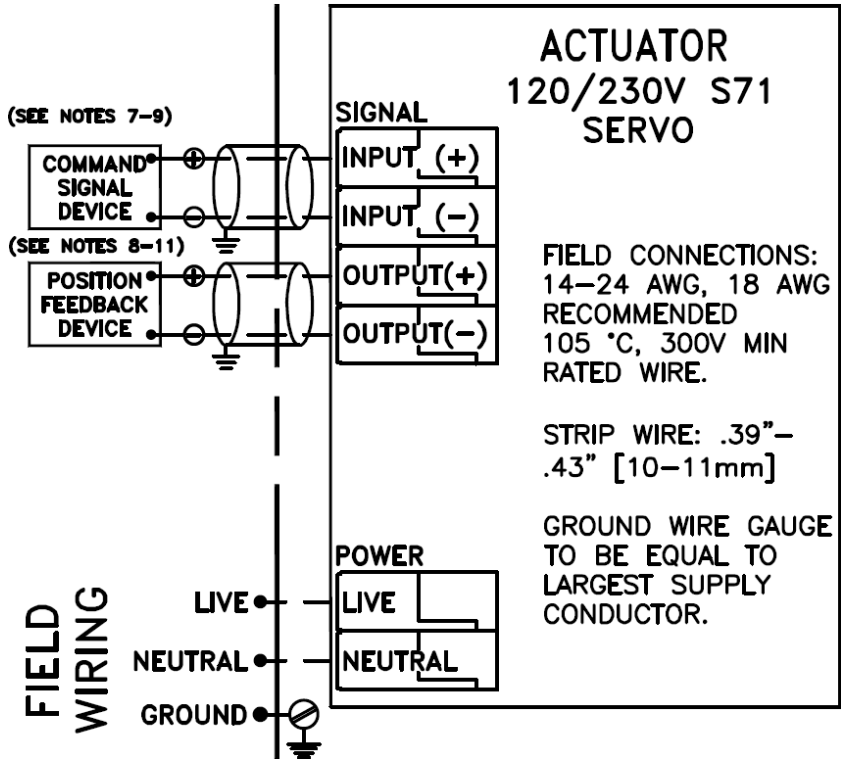


Figure 3: 120V Proportional actuators

120V Proportional actuators and sub-codes	
Johnson Controls actuator code	Johnson Controls valve assembly sub-code
VA-9071-03	701N



120V Proportional actuators and sub-codes	
Johnson Controls actuator code	Johnson Controls valve assembly sub-code
VA-9073-03	703N
VA-9074-03	704N
VA-9075-03	705N
VA-9076-03	706N
VA-9077-03	707N
VA-9078-03	708N
VA-907A-03	907N
VA-907B-03	908N

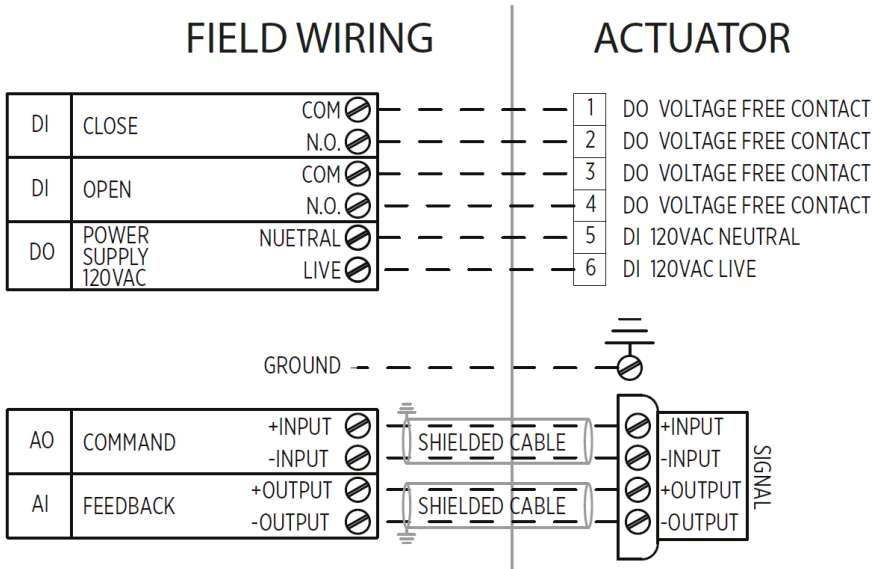
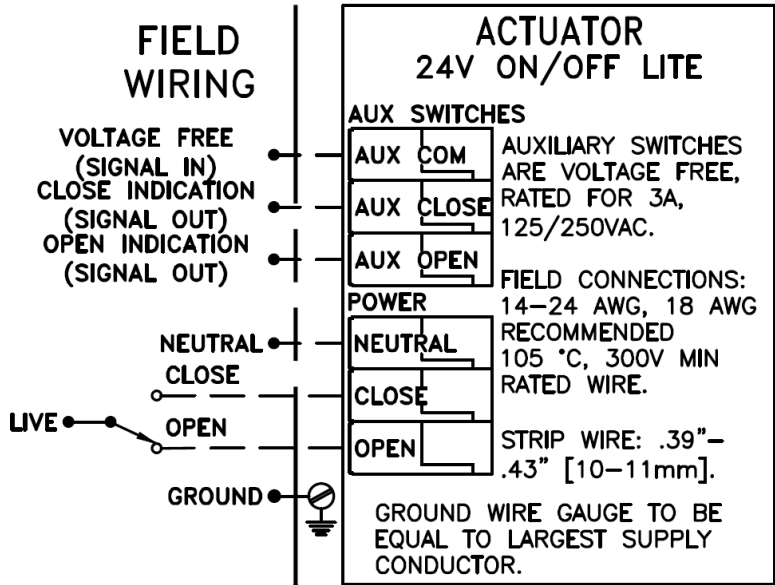
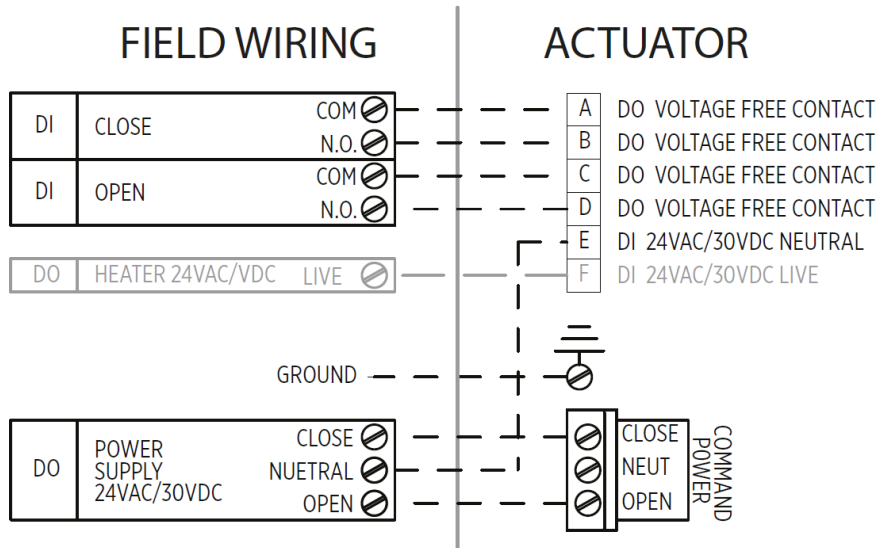


Figure 4: 24V On / Off actuators

24V On / Off actuators	
Johnson Controls actuator code	Johnson Controls valve assembly sub-code
VA-9071-12	721D4



24V On / Off actuators	
Johnson Controls actuator code	Johnson Controls valve assembly sub-code
VA-9073-12	723D4
VA-9074-16	725D4



24V On / Off actuators	
Johnson Controls actuator code	Johnson Controls valve assembly sub-code
VA-9077-16	727D4

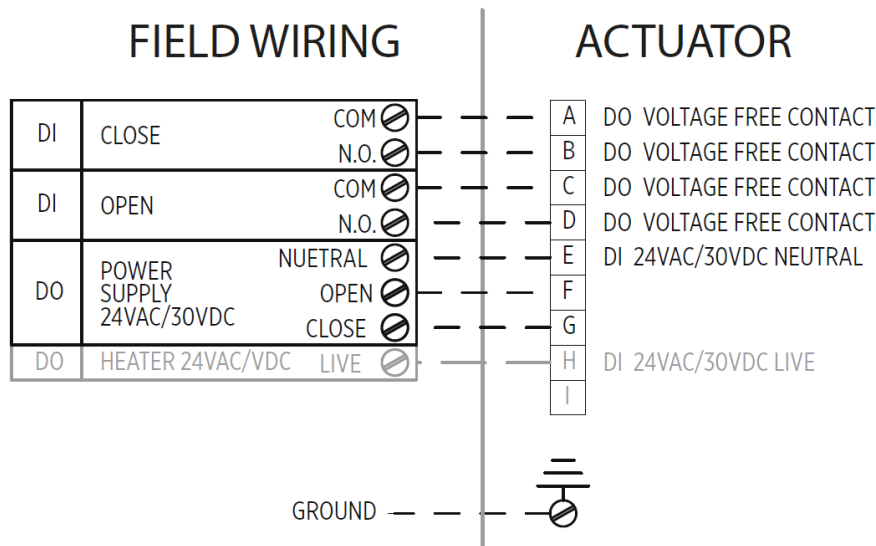
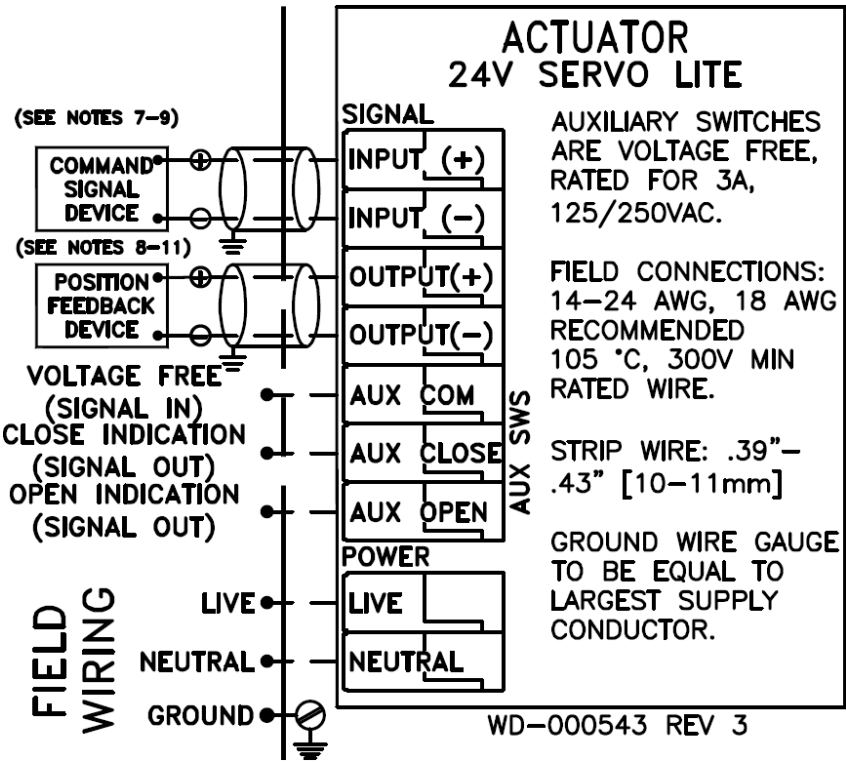
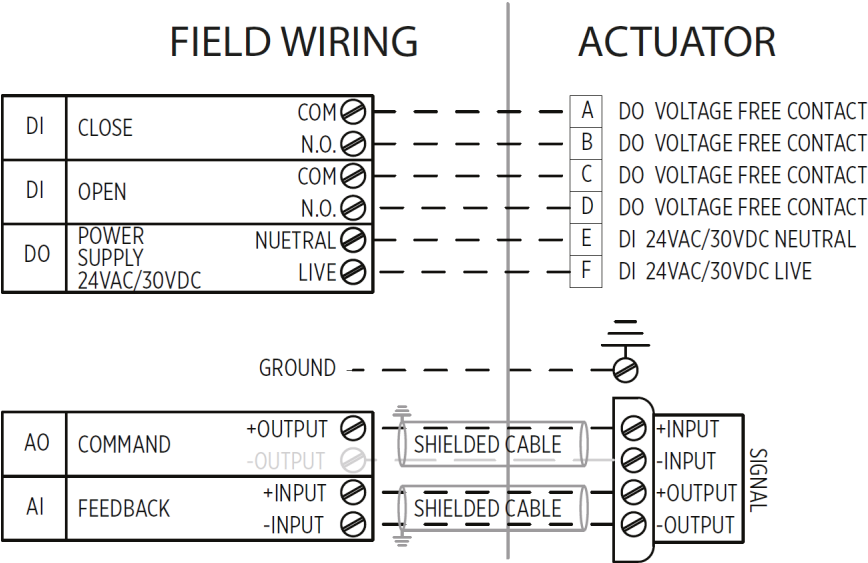


Figure 5: 24V Proportional actuators

24V Proportional actuators and sub-codes	
Johnson Controls actuator code	Johnson Controls valve assembly sub-code
VA-9071-11	701N4



24V Proportional actuators and sub-codes	
Johnson Controls actuator code	Johnson Controls valve assembly sub-code
VA-9073-11	703N4
VA-9075-15	705N4
VA-9077-15	707N4



Note: The command signal is factory wired for 3 wire (power live, power neutral, command signal positive). The jumper wire from command signal negative to power neutral can be removed from the NXT control module for 4 wire use.

Dimensions

Figure 6, Figure 7, and Table 3 provide dimensions for VA-9070 Series actuators. Table 4 and Table 5 provide further technical data.

Repair information

Table 6 provides information about how to order accessories. For non-standard accessories and repair parts, contact your local Johnson Controls representative.

Figure 6: VA-9070 Series Electric Rotary Actuator Dimensions, in. (mm) (see Table 3)

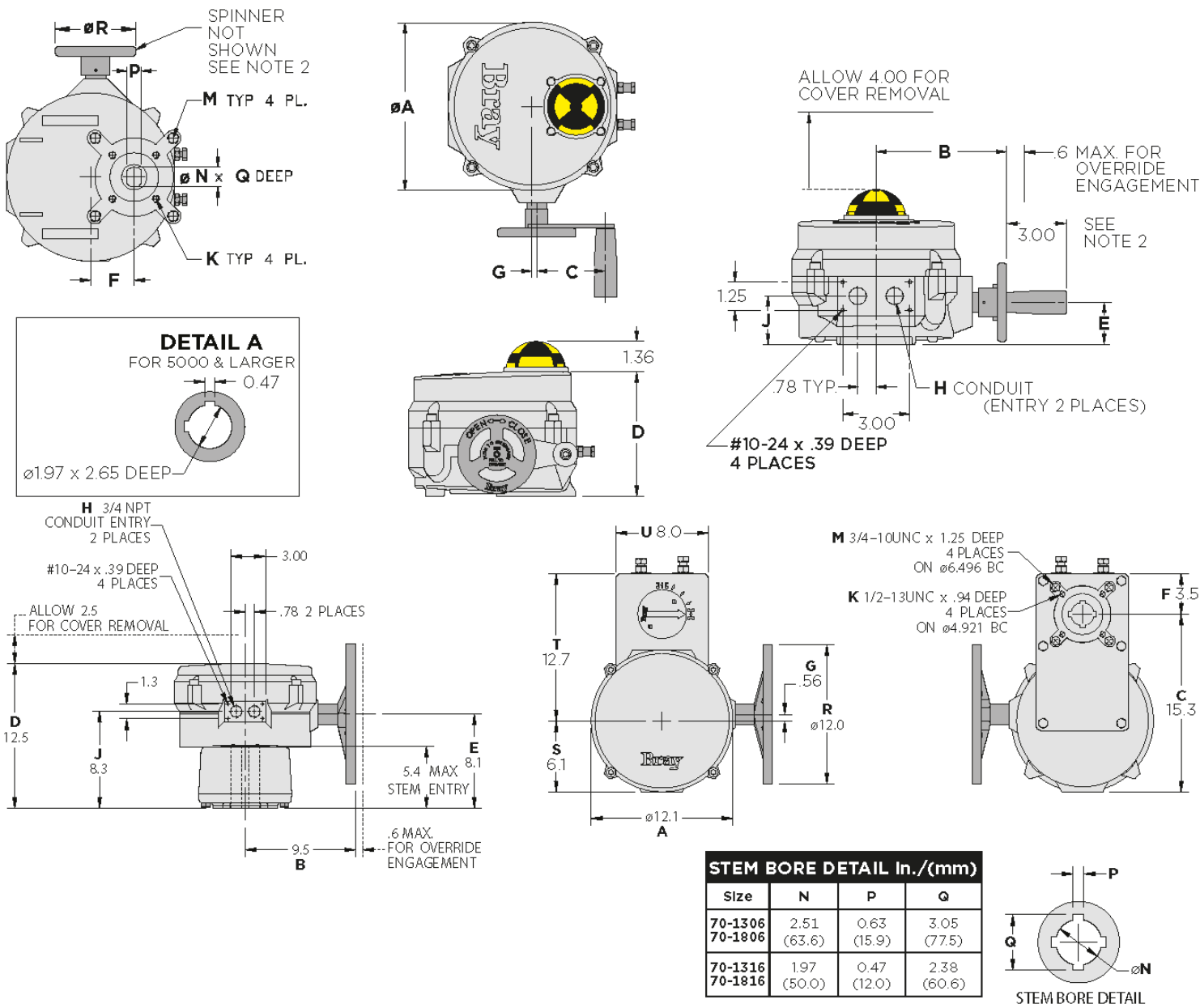


Table 3: VA-9070 Series Electric Rotary Actuator dimensions, in. (mm)

Dimension	Actuator series			
	VA-9073	VA-9074 VA-9075 VA-9076	VA-9077 VA-9078	VA-907A VA-907B
A	7.5 (191)	10.1 (256)	12.1 (308)	12.1 (308)
B	5.8 (147)	7.8 (198)	9.5 (242)	9.5 (242)
C	5.6 (141)	6.6 (168)	7.2 (183)	12.5 (317)
D	1.9 (48)	2.4 (62)	2.9 (73)	8.1 (206)
E	1.94 (49.2)	2.69 (68.3)	3.19 (80.9)	9.2 (234)
F	0.19 (4.7)	0.56 (14.3)	0.56 (14.3)	0.56 (14.2)
G	0.5 (12.7)	0.75 (19)	0.75 (19)	0.75 (19)
H	2.2 (55)	2.6 (66)	3.1 (78)	8.3 (211)
J (UNC)	0.31 - 18 x 02.76 (F07)	0.31-18 x 2.76 (F07)	0.5 - 13 x 4.92 (F12)	0.5 - 13 x 4.92 (F12)
K	—	0.5 - 13 x 4.92 (F12)	0.75 - 10 x 6.5 (F16)	0.75 - 10 x 6.5 (F16)
L	0.75 (19)	1.18 (30)	See Detail A1	See Detail A2
M	0.51 (13)	0.87 (22)		
N	1.75 (44.5)	2.22 (56.3)		
P	3.5 (89)	8.0 (203)	12 (304.8)	12 (305)
Q	—	—	—	6.1 (155)
R	—	—	—	12.7 (323)
S	—	—	—	8 (203)
Weight, lbs (kg)	13 (6)	28 (12)	48 (22)	118 (54)

Figure 7: Bray S71 Series Electric Rotary Actuator Dimensions, in. (mm)

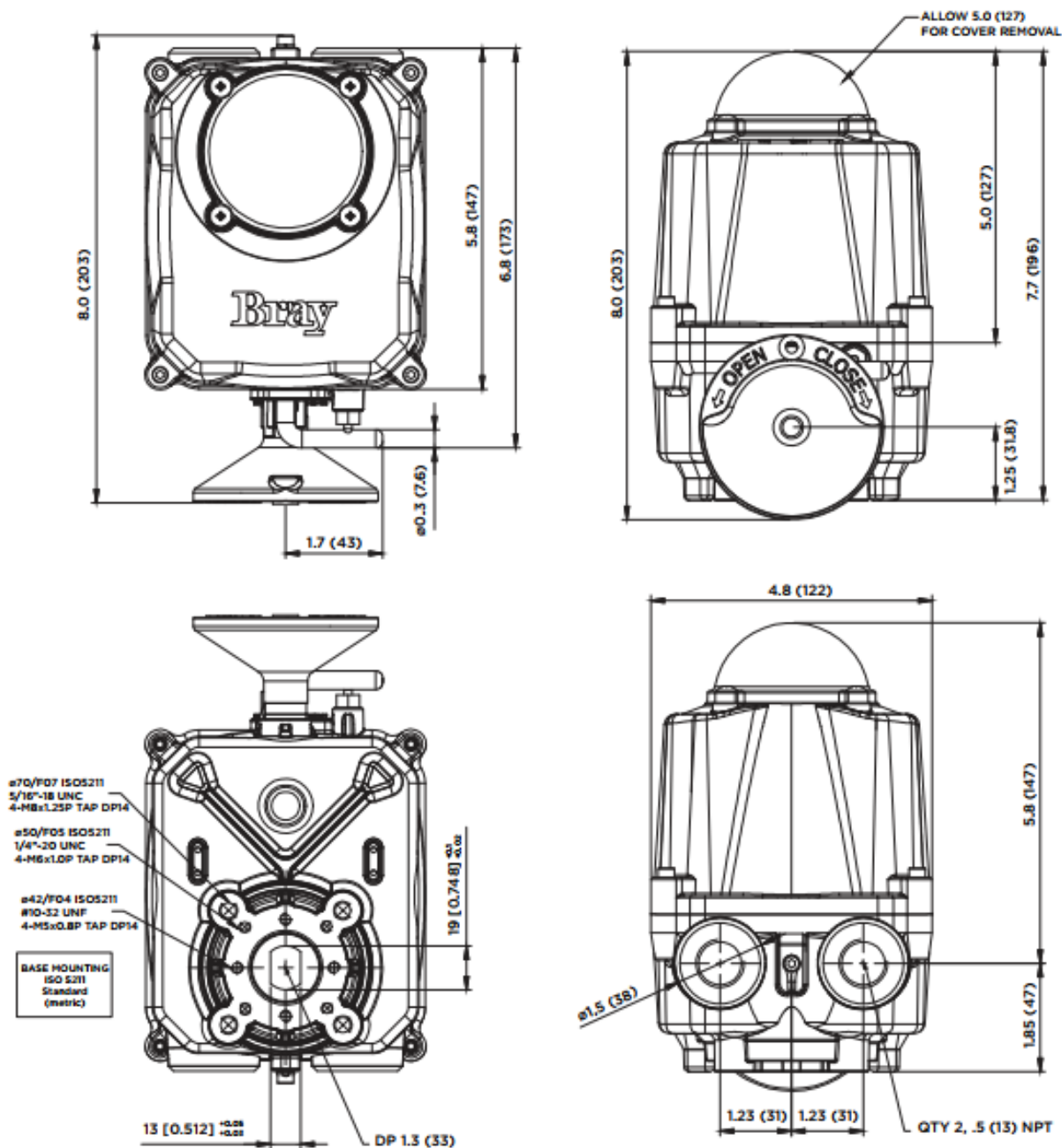


Table 4: VA-9070 Series Electric Rotary Actuators motor ratings and operating speeds

Actuator series: Johnson Controls code number (Bray series number)	50/60 Hz single phase motors: current rating in amperes at all speeds		Two-position and modulating speeds for 90° operation in seconds (Total gear ratio)
	VAC	Amperes	
VA-9071 (071-0530)	120	0.4	31 seconds (38:5:1)
	24	1.7	31 seconds
VA-9073 (S70-008)	120	0.8	30 seconds (30:1)
	24	2.9	60 seconds
VA-9074	120	0.75	30 seconds
VA-9075 (S70-020)	120	0.85	30 seconds
	24	3.5	80 seconds
VA-9076 (S70-030)	120	1	30 seconds (30:1)
VA-9077 (S70-050)	120	1.6	30 seconds (30:1)
	24	4	90 seconds
VA-9078 (S70-065)	120	2.3	30 seconds (30:1)
VA-907A (S70-130)	120	2.3	110 seconds (90:1)
VA-907B (S70-180)	120	2.5	110 seconds (90:1)

Table 5: VA-9070 Series Electric Rotary Actuators output torque values, rim pull, and mounting data

Actuator series: Johnson Controls code number (Bray series number)	Output torque lb·in (N·m)	Rim pull lb (kg)	Net weight lb (kg)
VA-9071 (S71-0530)	530 (60)	—	8.9 (4.0)
VA-9073 (S70-008)	800 (90)	22.8 (10.3)	13.0 (6.0)
VA-9074 (S70-012)	1,200 (135)	—	28.0 (13.0)
VA-9075 (S70-020)	2,000 (226)	33.0 (15.0)	28.0 (13.0)
VA-9076 (S70-030)	3,000 (339)	33.0 (15.0)	28.0 (13.0)
VA-9077 (S70-050)	5,000 (565)	55.0 (25.0)	48.0 (22.0)
VA-9078 (S70-065)	6,500 (734)	72.0 (32.7)	
VA-907A (S70-130)	13,000 (1,470)	80.0 (36.2)	118.0 (54.0)
VA-907B (S70-180)	18,000 (2,030)		

Table 6: Accessories

	Description	Code number
Servo kit	For 120V models of VA-9070 Series Modulating Electric Actuators For 24V models of VA-9070 Series Modulating Electric Actuators	VA-907x-630 VA-907x-634
Thermostat / heater kit	For All 120V models of VA-9070 Series Two-Position and Modulating Electric Actuators	VA-907x-609
Mounting and adaptor kits for Standard-Pressure, Standard-Temperature Two-Way VF Series Butterfly valves	Mounts VA-9071 Series Two-Position and Modulating Electric Actuators on 2 in. through 3 in. valves	VA-9072-300
	Mounts VA-9071 Series Two-Position and Modulating Electric Actuators on 4 in. valves	VA-9072-400
	Mounts VA-9071/VA-9073 Series Two-Position and Modulating Electric Actuators on 5 in. and 6 in. valves	VA-9072-600
	Mounts VA-9075 Series Two-Position and Modulating Electric Actuators on 4 in. valves	VA-9075-400
	Mounts VA-9075 Series Two-Position and Modulating Electric Actuators on 5 in. and 6 in. valves	VA-9075-600
	Mounts VA-9074/VA-9075/VA-9076 Series Two-Position and Modulating Electric Actuators on 8 in. valves	VA-9075-800
	Mounts VA-9075/VA-9076 Series Two-Position and Modulating Electric Actuators on 10 in. and 12 in. valves	VA-9075-1200
	Mounts VA-9077/VA-9078 Series Two-Position and Modulating Electric Actuators on 8 in. valves	VA-9078-800
	Mounts VA-9077, and VA-9078 Series Two-Position and Modulating Electric Actuators on 10 in. and 12 in. valves	VA-9078-1200
	Mounts VA-9077/VA-9078 Series Two-Position and Modulating Electric Actuators on 14 in. and 16 in. valves Mounts VA-907A Series Two-Position and Modulating Electric Actuators on 16 in. valves	VA-9078-1600
Mounting and adaptor kits for Class 150 High-Pressure, High-Temperature Two-Way VF Series Butterfly valves	Mounts VA-9077/VA-9078 Series Two-Position and Modulating Electric Actuators on 18 in. and 20 in. valves Mounts VA-907A Series Two-Position and Modulating Electric Actuators on 18 in. valves Mounts VA-907B Series Two-Position and Modulating Electric Actuators on 20 in. valves	VA-9078-2000
	Mounts VA-9071 Series Electric Actuators on 2 1/2 in. through 4 in. valves	VA-9072-410
	Mounts VA-9074/VA-9075 Series Electric Actuators on 5 in. and on 6 in. valves	VA-9075-610
	Mounts VA-9076 Series Electric Actuators on 8 in. valves	VA-9075-800
	Mounts VA-9077 Series Electric Actuators on 10 in. and VA-9078 Series Electric Actuators on 12 in. valves	VA-9078-1210
	Mounts VA-907A Series Electric Actuators on 14 in. valves	VA-9078-1600
Mounting and adaptor kits for Class 300 High-Pressure, High-Temperature Two-Way VF Series Butterfly valves	Mounts VA-907A Series Electric Actuators on 16 in. valves	VA-9078-2000
	Mounts VA-9075 Series Electric Actuators on 2 1/2 in. through 4 in. valves	VA-9075-430
	Mounts VA-9075 Series Electric Actuators on 5 in. valves	VA-9075-530
	Mounts VA-9076 Series Electric Actuators on 6 in. valves	VA-9075-630
	Mounts VA-9077 Series Electric Actuators on 8 in. valves	VA-9075-830
	Mounts VA-907A Series Electric Actuators on 12 in. valves	VA-9078-1600
Local control station	Mounts VA-907B Series Electric Actuators on 14 in. valves	VA-9078-2000
	For all 120V models of VA-9070 Series Modulating Electric Actuators; kit includes local and remote control switch, open-stop-close switch, and two LEDs for position indication (green for open and red for closed)	VA-907X-620
Auxiliary switch kits	Single auxiliary switch for VA-9075 Series Modulating Electric Actuators	VA-907X-601
	Single auxiliary switch for VA-9076, VA-9077, and VA-9078 Series Modulating Electric Actuators	VA-907X-602
	Single auxiliary switch for VA-9075 Series Two-Position Electric Actuators	VA-907X-603
	Single auxiliary switch for VA-9076, VA-9077, and VA-9078 Series Two-Position Electric Actuators	VA-907X-604
	Two auxiliary switches for VA-9075 Series Two-Position Electric Actuators	VA-907X-605
	Two auxiliary switches for VA-9076, VA-9077, and VA-9078 Series Two-Position Electric Actuators	VA-907X-606
Feedback potentiometer kits	Feedback potentiometer kit, 5,000 Ohm, gear driven for VA-907x Series Proportional Non-Spring Return Electric Actuators	VA-907X-615

Technical specifications

VA-9070 Series Electric Rotary Actuators

Code numbers and cross-reference data	Two-Position: VA-907x-02 Series (see Table 2) Modulating: VA-907x-01 Series (see Table 2)
Dimensions	See Table 3
Motor ratings and operating speeds	See Table 4
Output torque values, rim pull, and mounting data	See Table 5
Supply voltage	120 VAC, 50/60 Hz or 24 VAC 50/60 Hz
Limit switches	Two SPDT (Single-Pole, Double-Throw) switches rated for 10 amperes (75% to 80% power factor), 1/3 hp 120 VAC and 1/2 hp 220 VAC
Control signal, proportional models	4 mA to 20 mA, 0 VDC to 5 VDC, 0 VDC to 10 VDC, or 2 VDC to 10 VDC, field-selectable
Ambient temperature limits	-20°F to 150°F (-29°C to 66°C); heater / thermostat kit required below 32°F (0°C) VA-9071 limits: -22°F to 250°F (-30°C to 120°C); with heater
Agency listings	S70 UL/CSA 120V, CE 24V & 120V S71 UL/cUL 120V, CE 24V & 120V
Accessories and repair parts	See Table 6

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

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