

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

## Product Bulletin

Code No. LIT-977319  
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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
<b>Low profile and lightweight design</b>	Reduces space requirements and provides ease of installation.
<b>Built-in motor overload protection for 120 VAC motors</b>	Prevents thermal overload of motor.
<b>Pre-wired actuator switches to terminal block; field-configurable power and input signals</b>	Provide ease of wiring without interference from other components; enable field modification of input signal.
<b>Patented travel limit switch cam design</b>	Allows simple adjustment of travel limit cams without interference.
<b>External manual handwheel override</b>	Ensures positive and fast manual operation without the need for extra tools or levers.
<b>Rugged, die-cast aluminum NEMA 4, 4X, IP65 type enclosure with captive housing screws</b>	Provide waterproofing and exceptional corrosion, wear, impact, and Ultraviolet (UV) light resistance; prevents time-consuming problems due to lost or misplaced bolts.
<b>Valve status display</b>	Provides clear and convenient indication of valve position throughout full range of travel.
<b>Heater/thermostat</b>	Prevents condensation build-up and freeze-ups.

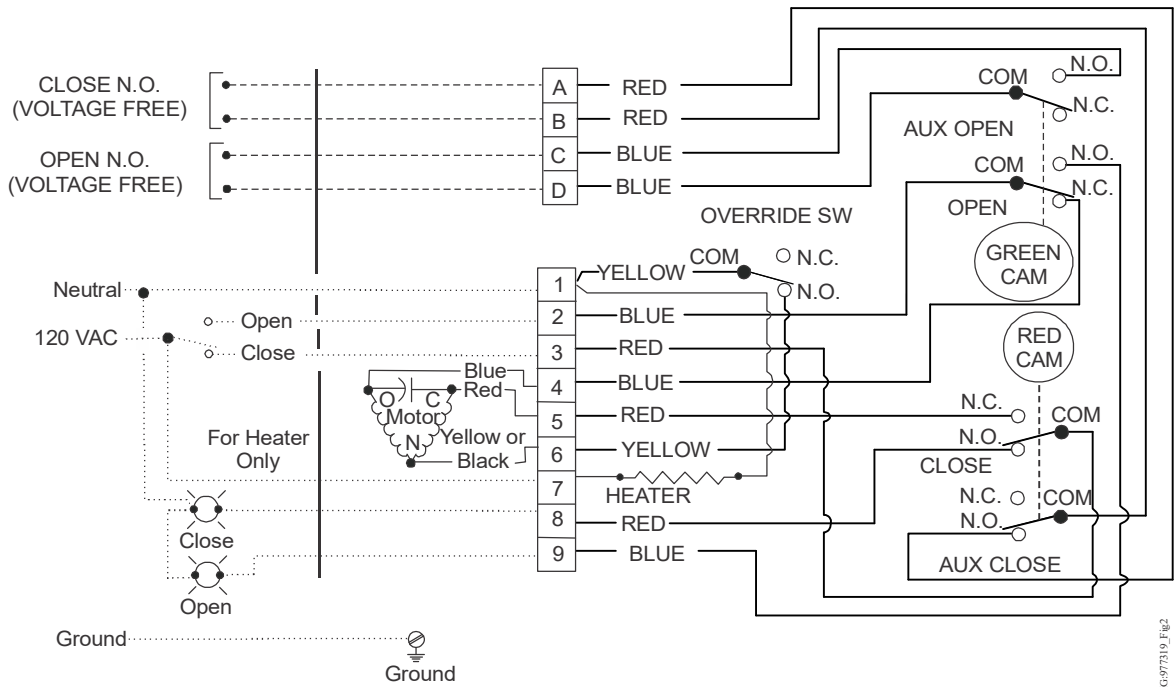
## Selection Table

Table 2: Code numbers and cross-reference data

Johnson Controls® Actuator only code number	Johnson Controls VF Series Butterfly Valve Assembly Actuator sub-code	Bray® Series Number
<b>Electric two-position models</b>		
VA-9072-02	-722	S70-006 On-Off
VA-9075-02	-725	S70-020 On-Off
VA-9076-02	-726	S70-030 On-Off
VA-9077-02	-727	S70-050 On-Off
VA-9078-02	-728	S70-065 On-Off
VA-9072-12	-722D4	S70-006 On-Off, AC 24V
VA-9075-12	-725D4	S70-020 On-Off, AC 24V
VA-9077-12	-727D4	S70-050 On-Off, AC 24V
VA-907A-02	-927	S70-130 On-Off
VA-907B-02	-928	S70-180 On-Off
<b>Electric modulating models</b>		
VA-9072-01	-702	S70-006 Modulating
VA-9075-01	-705	S70-020 Modulating
VA-9076-01	-706	S70-030 Modulating
VA-9077-01	-707	S70-050 Modulating
VA-9078-01	-708	S70-065 Modulating
VA-9072-11	-702N4	S70-006 Modulating, AC 24V
VA-9075-11	-705N4	S70-020 Modulating, AC 24V
VA-9077-11	-707N4	S70-050 Modulating, AC 24V
VA-907A-01	-907	S70-130 Modulating
VA-907B-01	-908	S70-180 Modulating

## Applications

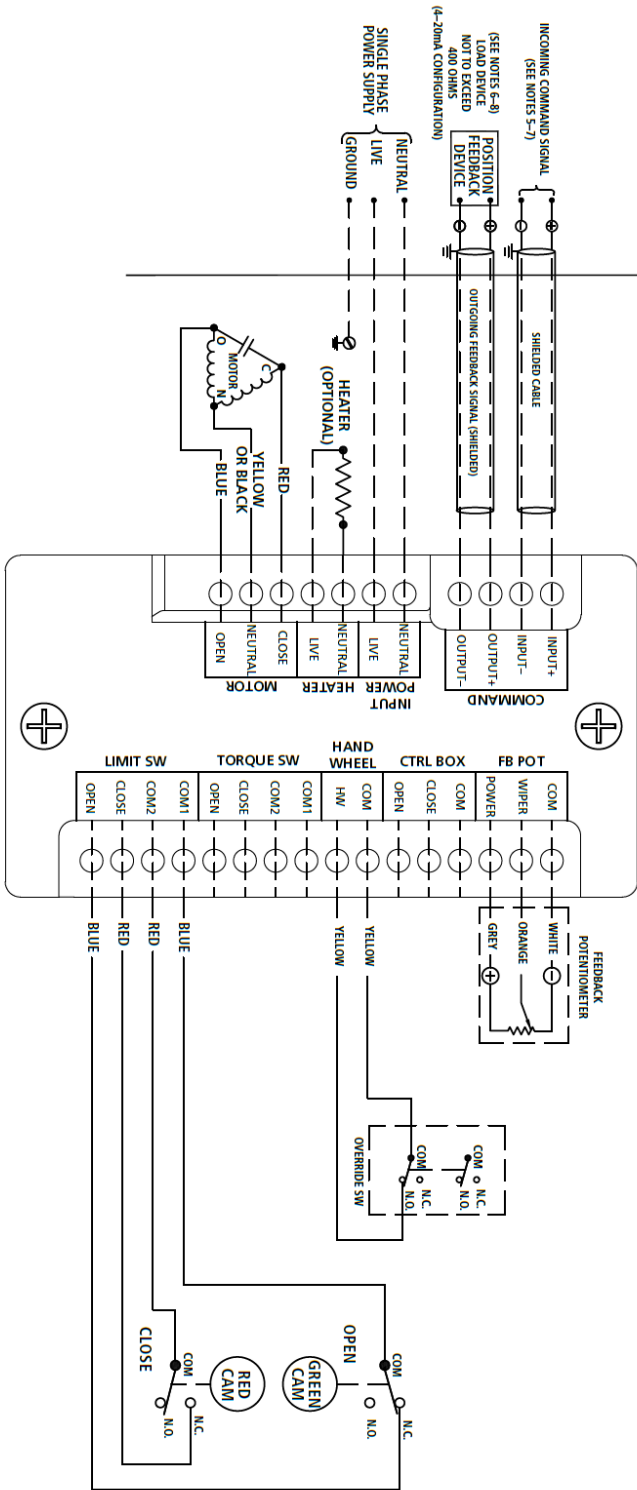
Figure 2 and Figure 3 show typical wiring diagrams for their respective applications.



**Figure 2: Typical wiring diagram of VA-9070 Series Two-Position Electric Rotary Actuator**

# FIELD WIRING

# ACTUATOR



Sample field wiring diagram for Series 70 actuator with Servo NXT.

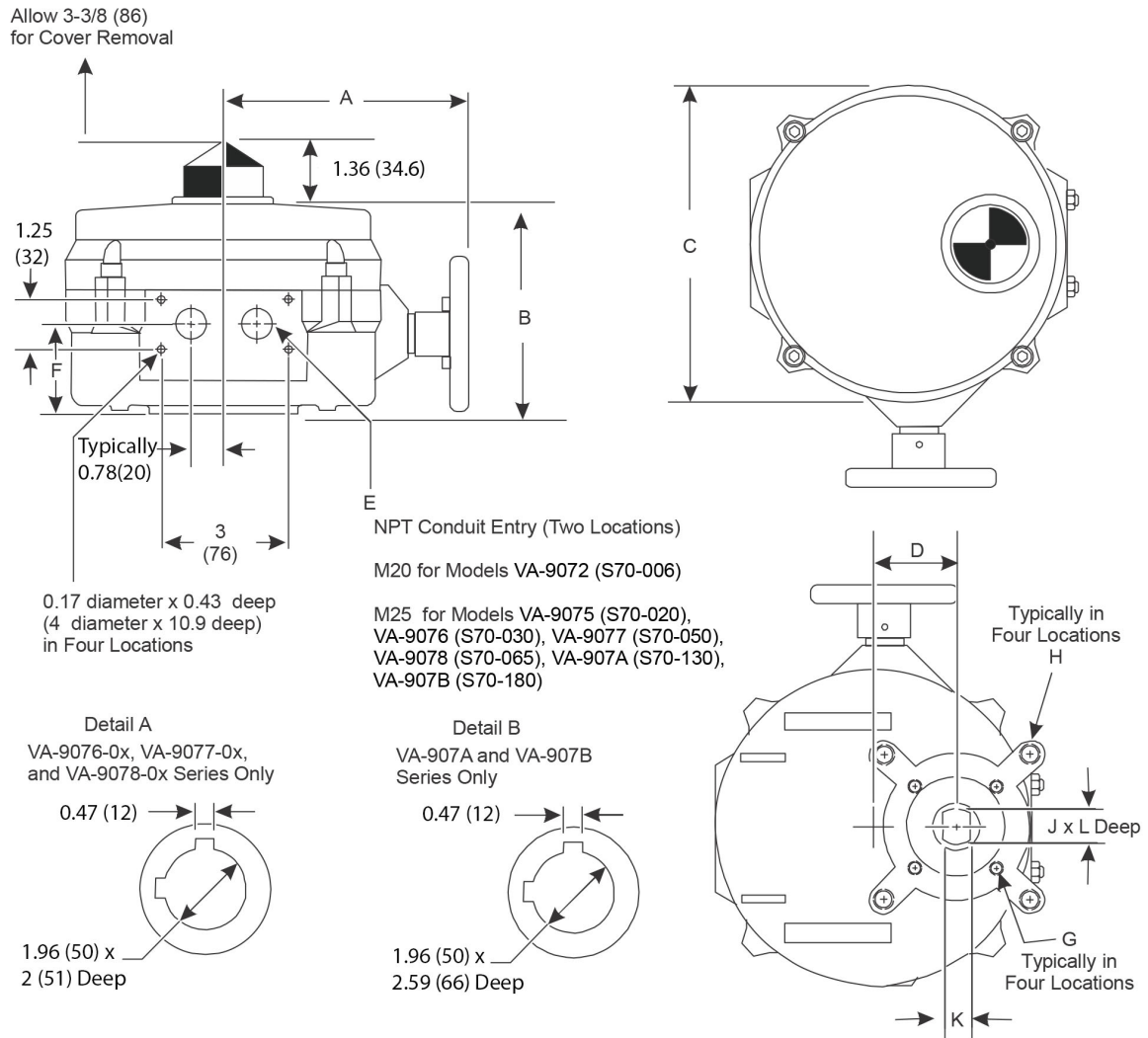
Figure 3: Typical wiring diagram of VA-9070 Series Modulating Electric Rotary Actuator

## Dimensions

Figure 4 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 4: 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: Johnson Controls code number (Bray series number)			
	VA-9072 (S70-006)	VA-9075 (S70-020)	VA-9076 (S70-030) VA-9077 (S70-050) VA-9078 (S70-065)	VA-907A (S70-130) VA-907B (S70-180)
<b>A</b>	7.5 (191)	10.1 (256)	12.1 (308)	12.1 (308)
<b>B</b>	5.8 (147)	7.8 (198)	9.5 (242)	9.5 (242)
<b>C</b>	5.6 (141)	6.6 (168)	7.2 (183)	12.5 (317)
<b>D</b>	1.9 (48)	2.4 (62)	2.9 (73)	8.1 (206)
<b>E</b>	1.94 (49.2)	2.69 (68.3)	3.19 (80.9)	9.2 (234)
<b>F</b>	0.19 (4.7)	0.56 (14.3)	0.56 (14.3)	0.56 (14.2)
<b>G</b>	1/2	3/4	3/4	3/4
<b>H</b>	2.2 (55)	2.6 (66)	3.1 (78)	8.3 (211)
<b>J (UNC)</b>	5/16-18 x 0.276 (F07)	5/16-18 x 2.76 (F07)	1/2-13 x 4.92 (F12)	1/2-13 x 4.92 (F12)
<b>K</b>	-	1/2-13 x 4.92 (F12)	3/4 - 10 x 6.5 (F16)	3/4 - 10 x 6.5 (F16)
<b>L</b>	.75 (19)	1.18 (30)	See Detail A1	See Detail A2
<b>M</b>	.51 (13)	.87 (22)		
<b>N</b>	1.75 (44.5)	2.22 (56.3)		
<b>P</b>	3.5 (89)	8.0 (203)	12 (304.8)	12 (305)
<b>Q</b>	-	-	-	6.1 (155)
<b>R</b>	-	-	-	12.7 (323)
<b>S</b>	-	-	-	8 (203)
<b>Weight lbs (kg)</b>	13 (6)	28 (13)	48 (22)	118 (54)

**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 <sup>1</sup>  (Total Gear Ratio)
	VAC	Amperes	
<b>VA-9072 (S70-006)</b>	120	1.0	30 seconds (11,151:1)
	24	1.8 at 60 Seconds	60 seconds
<b>VA-9075 (S70-020)</b>	120	1.0	30 seconds (3,340:1)
	24	2.0	60 seconds
<b>VA-9076 (S70-030)</b>	120	1.2	60 seconds
<b>VA-9077 (S70-050)</b>	120	1.6	
	24	3.0	
<b>VA-9078 (S70-065)</b>	120	2.3	110 seconds (10,000:1)
<b>VA-907A (S70-130)</b>	120	2.3	
<b>VA-907B (S70-180)</b>	120	2.5	

1. The duty cycle for two-position and modulating operation is 100% at a maximum ambient temperature of 104°F (40°C).

**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-9072 (S70-006)	600 (68)	22.8 (10.3)	12.0 (5.4)
VA-9075 (S70-020)	2,000 (226)	33.0 (15.0)	28.0 (12.7)
VA-9076 (S70-030)	3,000 (339)	33.0 (15.0)	48.0 (21.8)
VA-9077 (S70-050)	5,000 (565)	55.0 (25.0)	
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 (53.5)
VA-907B (S70-180)	18,000 (2,030)		

**Table 6: Accessories (Part 1 of 2)**

Description	Code number	
<b>Servo kit</b>	VA-907x-630 VA-907x-634	
<b>Thermostat/Heater kit</b>	VA-907x-609	
<b>Mounting and adaptor kits for Standard-Pressure, Standard-Temperature Two-Way VF Series Butterfly Valves</b>	Mounts VA-9072 Series Two-Position and Modulating Electric Actuators on 2 through 3 in. Valves	VA-9072-300
	Mounts VA-9072 Series Two-Position and Modulating Electric Actuators on 4 in. Valves	VA-9072-400
	Mounts VA-9072 Series Two-Position and Modulating Electric Actuators on 5 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 and 6 in. Valves	VA-9075-600
	Mounts VA-9075 Series Two-Position and Modulating Electric Actuators on 8 in. Valves	VA-9075-800
	Mounts VA-9075 Series Two-Position and Modulating Electric Actuators on 10 and 12 in. Valves	VA-9075-1200
	Mounts VA-9076, VA-9077, and VA-9078 Series Two-Position and Modulating Electric Actuators on 8 in. Valves	VA-9078-800
	Mounts VA-9076, VA-9077, and VA-9078 Series Two-Position and Modulating Electric Actuators on 10 and 12 in. Valves	VA-9078-1200
	Mounts VA-9076, VA-9077, and VA-9078 Series Two-Position and Modulating Electric Actuators on 14 and 16 in. Valves Mounts VA-907A Series Two-Position and Modulating Electric Actuators on 16 in. Valves	VA-9078-1600
	Mounts VA-9076, VA-9077, and VA-9078 Series Two-Position and Modulating Electric Actuators on 18 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

**Table 6: Accessories (Part 2 of 2)**

Description		Code number
<b>Mounting and adaptor kits for Class 150 High-Pressure, High-Temperature Two-Way VF Series Butterfly Valves</b>	Mounts VA-9072 Series Electric Actuators on 2-1/2 through 4 in. Valves	VA-9072-410
	Mounts 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-9078-810
	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
	Mounts VA-907A Series Electric Actuators on 16 in. Valves	VA-9078-2000
<b>Mounting and adaptor kits for Class 300 High-Pressure, High-Temperature Two-Way VF Series Butterfly Valves</b>	Mounts VA-9075 Series Electric Actuators on 2-1/2 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
	Mounts VA-907B Series Electric Actuators on 14 in. Valves	VA-9078-2000
<b>Local control station</b>	For All 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
<b>Auxiliary switch kits</b>	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
<b>Feedback potentiometer kits</b>	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

<b>Code numbers and cross-reference data</b>	Two-Position: VA-907x-02 Series (See Table 2.) Modulating: VA-907x-01 Series (See Table 2.)
<b>Dimensions</b>	See Table 3.
<b>Motor ratings and operating speeds</b>	See Table 4.
<b>Output torque values, rim pull, and mounting data</b>	See Table 5.
<b>Supply voltage</b>	120 VAC, 50/60 Hz or 24 VAC 50/60 Hz
<b>Limit switches</b>	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
<b>Control signal, proportional models</b>	4 to 20 mA, 0 to 5 VDC, 0 to 10 VDC, or 2 to 10 VDC, field-selectable
<b>Ambient temperature limits</b>	-20 to 150°F (-29 to 66°C); Heater/Thermostat Kit required below 32°F (0°C)
<b>Agency listings</b>	<b>Models for 120 VAC Voltage (VA-907x-0x):</b> UL File number E200414; CSA reference LR 78858 All VA-9070 actuators are CSA approved under Class 3211 07 Industrial Control Equipment - Miscellaneous Apparatus. The CSA certificate number is LR78858-4 issued July 1996 to Bray Controls for the Series 70 actuators, NEMA 4, and NEMA 4X.
<b>Accessories and repair parts</b>	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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