

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
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	Bray® Series Number
Electric Two-Position Models		
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
Electric Modulating Models		
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.

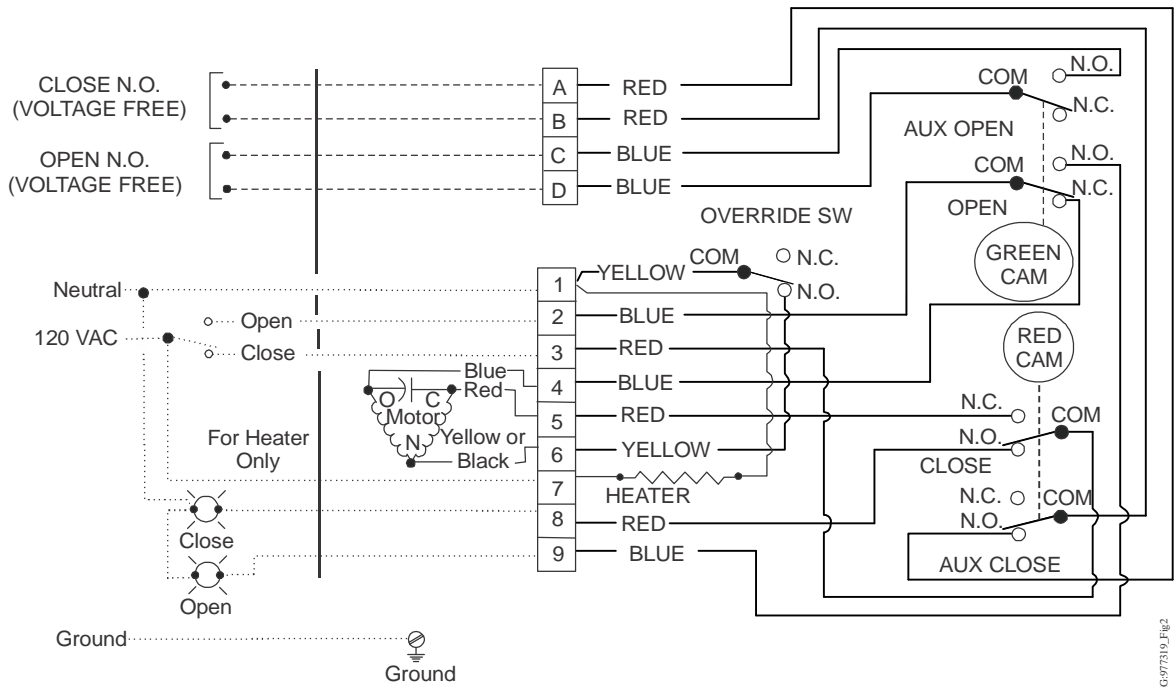


Figure 2: Typical Wiring Diagram of VA-9070 Series Two-Position Electric Rotary Actuator

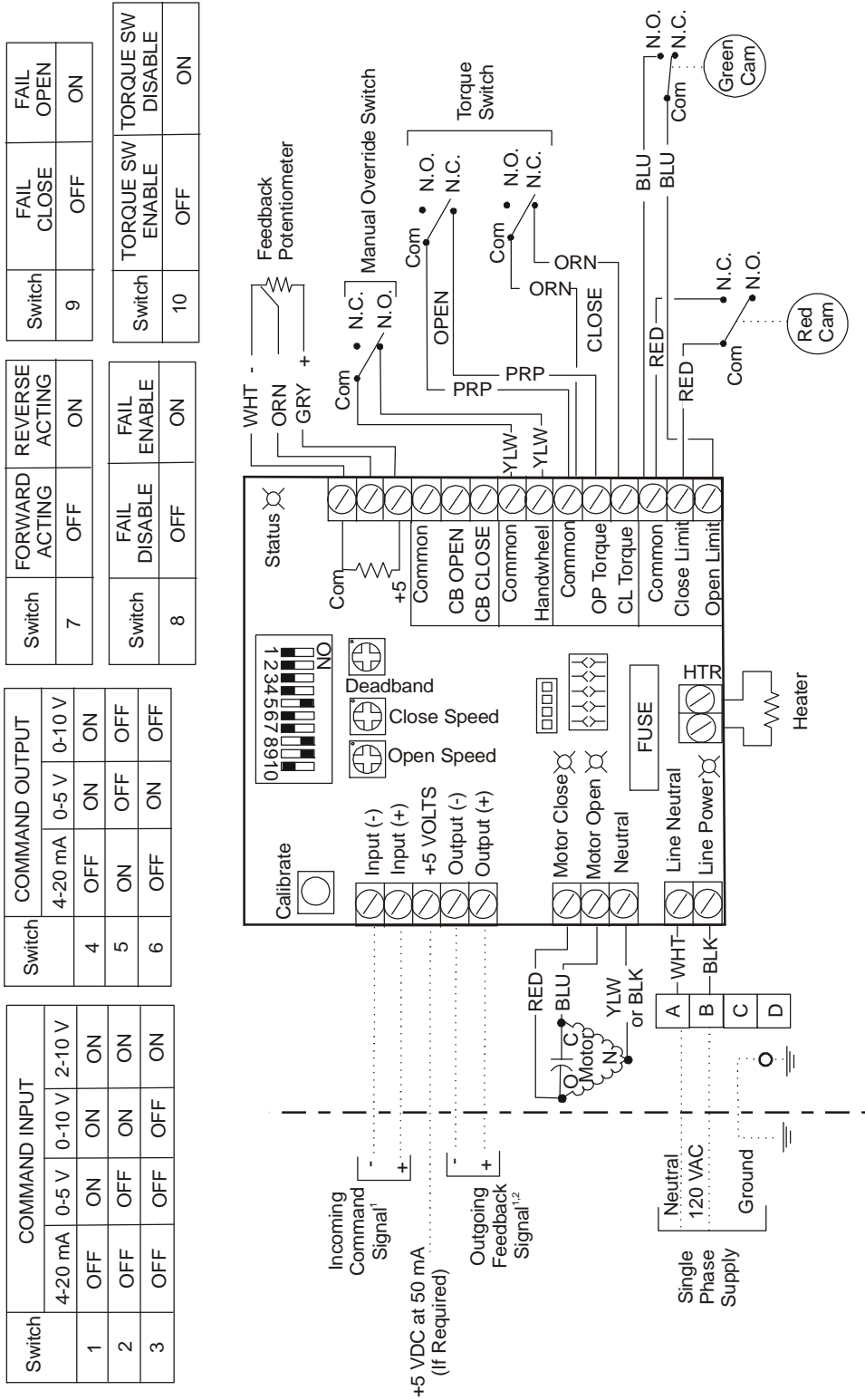


Figure 3: Typical Wiring Diagram of VA-9070 Series Modulating Electric Rotary Actuator

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.

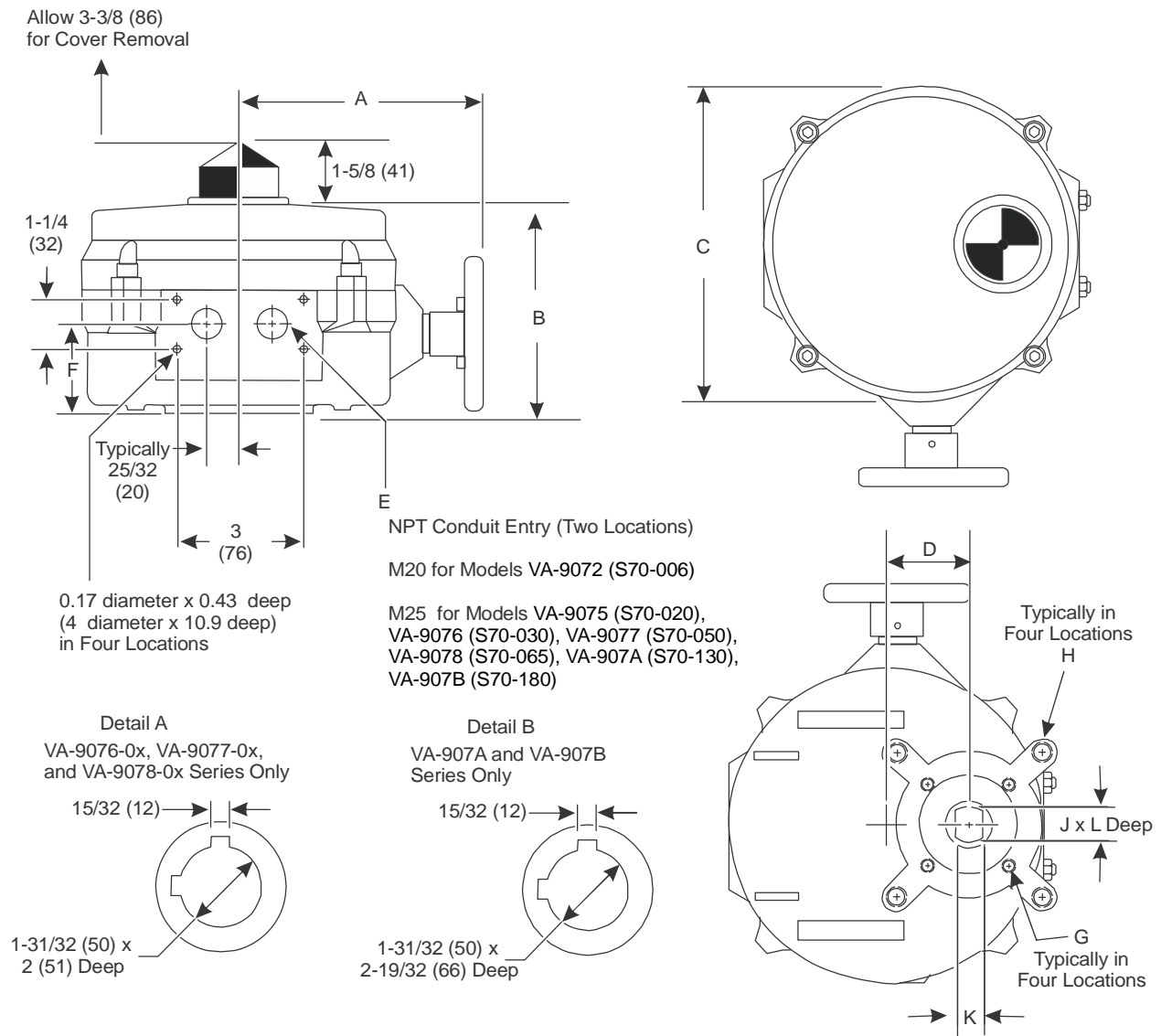


Figure 4: VA-9070 Series Electric Rotary Actuator Dimensions, in. (mm) (See Table 3.)

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)
A	5-19/32 (142)	7-13/16 (198)	9-1/2 (241)	9-1/2 (241)
B	5-3/32 (129)	6-1/2 (165)	7-3/16 (183)	12-1/2 (317)
C	7-1/2 (191)	10-3/32 (256)	12-3/32 (307)	12-3/32 (307)
D	1-15/16 (49)	2-11/16 (68)	3-3/16 (81)	9-3/32 (234)
E	1/2 NPTF	3/4 NPTF	3/4 NPTF	3/4 NPTF
F	2 (51)	2-19/32 (66)	3-3/32 (79)	8-1/3 (211)
G (UNC)	5/16-18 x 2-3/4, F07	5/16-18 x 2-3/4, F07	1/2-13 x 4-15/16, F12	1/2-13 (F12)
H (UNC)	---	1/2-13 x 4-29/32, F12	3/4-10 x 6-1/2, F16	3/4-10 (F16)
J	3/4 (19)	1-3/16 (30)	See Detail A in Figure 4.	See Detail B in Figure 4.
K	1/2 (13)	7/8 (22)		
L	1-3/4 (44)	2-3/16 (56)		

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 ¹ (Total Gear Ratio)
	VAC	Amperes	
VA-9072 (S70-006)	120	1.0	30 seconds (11,151:1)
	24	1.8 at 60 Seconds	
VA-9075 (S70-020)	120	1.0	30 seconds (3,340:1)
	24	2.0	
VA-9076 (S70-030)	120	1.2	
VA-9077 (S70-050)	120	1.6	
	24	3.0	
VA-9078 (S70-065)	120	2.3	
VA-907A (S70-130)	120	2.3	110 seconds (10,000:1)
VA-907B (S70-180)	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 (Part 1 of 2)

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)

Table 5: VA-9070 Series Electric Rotary Actuators Output Torque Values, Rim Pull, and Mounting Data (Part 2 of 2)

Actuator Series: Johnson Controls Code Number (Bray Series Number)	Output Torque lb-in (N·m)	Rim Pull lb (kg)	Net Weight lb (kg)
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
Servo Kit	For All Models of VA-9070 Series Modulating Electric Actuators	VA-907x-630
Thermostat/Heater Kit	For All 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-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
Mounting and Adaptor Kits for Class 150 High-Pressure, High-Temperature Two-Way VF Series Butterfly Valves	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
Mounting and Adaptor Kits for Class 300 High-Pressure, High-Temperature Two-Way VF Series Butterfly Valves	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
Local Control Station	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
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), 1/2 hp 125 VAC and 3/4 hp 250 VAC
Control Signal, Proportional Models	4 to 20 mA, 0 to 5 VDC, 0 to 10 VDC, or 2 to 10 VDC, field-selectable
Ambient Temperature Limits	-40 to 150°F (-40 to 66°C); Heater/Thermostat Kit Required below 32°F (0°C)
Agency Listings	Models for 120 VAC Voltage (VA-907x-0x): 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.
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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