

Electric Rotary Actuators

Description

The VA-9070 Series Electric Rotary Actuators are designed for direct mounting on the VF Series Standard-Pressure, Standard-Temperature Butterfly Valves and the VF Series High-Pressure, High-Temperature Butterfly Valves. The VA-9070 Series actuators are available in eight different sizes for two-position and modulating service.

For more detailed information on VA-9070 Series Electric Rotary Actuators, refer to the *Bray® Series 70 Electric Actuator Color Brochure (Bulletin No. B-1016)*.

Features

- low profile and lightweight design reduces space requirements and provides ease of installation
- built-in motor overload protection prevents thermal overload of motor
- pre-wired actuator switches to terminal block and field-configurable power and input signals provide ease of wiring without interference from other components; enables field modification of input signal
- patented travel limit switch cam design allows for simple finger or screwdriver 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 and captive housing screws provide waterproofing and exceptional corrosion, wear, impact, and Ultraviolet (UV) 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
- optional heater/thermostat prevents condensation build-up and freeze-ups

Repair Information

If the VA-9070 Series Electric Rotary Actuator fails to operate within its specifications, replace the unit. For a replacement VA-9070 actuator, contact the nearest Johnson Controls® representative.



VA-9070 Series Electric Rotary Actuator Mounted on a VF Series Butterfly Valve

Selection Charts

Actuator Selection for Two-Way High Performance VF Series Butterfly Valves

Valve Size (in.)	Torque Required ¹ lb·in (N·m)	Actuator Code Number for	
		Two-Position Service	Modulating Service
550 psig Closeoff Pressure			
2-1/2	510 (57.6)	VA-9073-02	VA-9073-01
3	530 (59.9)		
4	730 (82.5)		
5	1,850 (209)	VA-9075-02	VA-9075-01
6	2,300 (260)	VA-9076-02	VA-9076-01
8	4,300 (486)	VA-9077-02	VA-9077-01
240 psig Closeoff Pressure			
2-1/2	300 (33.9)	VA-9072-02	VA-9072-01
3	320 (36.2)		
4	460 (52.0)		
5	1,040 (118)	VA-9074-02	VA-9074-01
6	1,200 (136)	VA-9075-02	VA-9075-01
8	2,100 (237)	VA-9076-02	VA-9076-01
10	4,100 (463)	VA-9077-02	VA-9077-01
12	6,500 (734)	VA-9078-02	VA-9078-01

1. Torque values include a safety factor.

Actuator Selection for Two-Way Standard Performance VF Series Butterfly Valves

Valve Size (in.)	Torque Required lb·in (N·m)	Actuator Code Number for	
		Two-Position Service	Modulating Service
150 or 175 psig (High) Closeoff Pressure¹			
2	158 (17.9) ²	VA-9071-02	VA-9071-01
2-1/2	188 (21.2) ²		
3	225 (25.4) ²		
4	465 (52.5) ²	VA-9072-02	VA-9072-01
5	585 (66.1) ²	VA-9073-02	VA-9073-01
6	705 (79.7) ²	VA-9075-02	VA-9075-01
8	1,530 (172.9) ²		
10	3,296 (372.4) ²		
12	5,165 (583.6) ²	VA-9077-02	VA-9077-01
14	6,450 (728.8) ²	VA-9078-02	VA-9078-01
50 psig (Low) Closeoff Pressure³			
4	225 (25.4) ²	VA-9071-02	VA-9071-01
5	390 (44.1) ²	VA-9072-02	VA-9072-01
6	570 (64.4) ²	VA-9073-02	VA-9073-01
8	705 (79.7) ²		
10	1,410 (159.3) ²		
12	2,595 (293.2) ²	VA-9076-02	VA-9076-01
14	3,300 (372.9) ²	VA-9077-02	VA-9077-01
16	4,268 (482.2) ²	VA-9078-02	VA-9078-01
18	5,267 (595.1) ²		
20	16,867 (775) ²		

1. 150 psig (1,034 kPa) for 14 in. valves; 175 psig (1,207 kPa) for 2 through 12 in. valves.

2. Torque values have already been adjusted for 25% safety factor on 2 through 12 in. valves; 10% safety factor on 14 in. valves.

3. 50 psig (345 kPa) for 4 through 20 in. valves.

VA-9070 Series Electric Rotary Actuators (Continued)

Actuator Selection for Three-Way Standard Performance VF Series Butterfly Valves

Valve Size (in.)	Torque Required lb·in (N·m)	Actuator Code Number for	
		Two-Position Service	Modulating Service
175 psig (High) Closeoff Pressure¹			
2	190 (21.5) ²	VA-9071-02	VA-9071-01
2-1/2	225 (25.4) ²		
3	270 (30.5) ²		
4	558 (63.0) ²	VA-9073-02	VA-9073-01
5	702 (79.3) ²		
6	846 (95.6) ²	VA-9074-02	VA-9074-01
8	1,836 (207.4) ²	VA-9075-02	VA-9075-01
10	3,955 (446.9) ²	VA-9077-02	VA-9077-01
12	6,198 (700.3) ²	VA-9078-02	VA-9078-01
50 psig (Low) Closeoff Pressure³			
4	270 (30.5) ²	VA-9071-02	VA-9071-01
5	468 (52.9) ²	VA-9072-02	VA-9072-01
6	684 (77.3) ²	VA-9073-02	VA-9073-01
8	846 (95.6) ²	VA-9074-02	VA-9074-01
10	1,692 (191.2) ²	VA-9075-02	VA-9075-01
12	3,114 (351.8) ²	VA-9077-02	VA-9077-01

- 175 psig (1,207 kPa) for 2 through 12 in. valves.
- Torque values have already been adjusted for 25% safety factor for all sizes.
- 50 psig (345 kPa) for 4 through 12 in. valves.

Accessories

Thermostat/Heater Kit

Code Number	Description
VA-907x-609	Thermostat/Heater kit for all models of VA-9070 Series Two-Position and Modulating Electric Actuators

Mounting and Adaptor Kits for Class 150 High-Pressure, High-Temperature Two-Way VF Series Butterfly Valves

Code Number	Description
VA-9072-410	Mounts VA-9072 Series Electric Actuators on 2-1/2 through 4 in. Valves
VA-9075-610	Mounts VA-9074 Series Electric Actuators on 5 in. and VA-9075 Series Electric Actuators on 6 in. Valves
VA-9078-810	Mounts VA-9076 Series Electric Actuators on 8 in. Valves
VA-9078-1210	Mounts VA-9077 Series Electric Actuators on 10 in. and VA-9078 Series Electric Actuators on 12 in. Valves

Mounting and Adaptor Kits for Class 300 High-Pressure, High-Temperature Two-Way VF Series Butterfly Valves

Code Number	Description
VA-9075-430	Mounts VA-9073 Series Electric Actuators on 2-1/2 through 4 in. Valves
VA-9075-530	Mounts VA-9075 Series Electric Actuators on 5 in. Valves
VA-9075-630	Mounts VA-9076 Series Electric Actuators on 6 in. Valves
VA-9075-830	Mounts VA-9077 Series Electric Actuators on 8 in. Valves

Mounting and Adaptor Kits for Standard-Pressure, Standard-Temperature Two-Way VF Series

Code Number	Description
VA-9072-300	Mounts VA-9071 and VA-9072 Series Two-Position and Modulating Electric Actuators on 2 through 3 in. Valves
VA-9072-400	Mounts VA-9071 and VA-9072 Series Two-Position and Modulating Electric Actuators on 4 in. Valves
VA-9072-600	Mounts VA-9071 and VA-9072 Series Two-Position and Modulating Electric Actuators on 5 through 6 in. Valves
VA-9075-400	Mounts VA-9073, VA-9074, and VA-9075 Series Two-Position and Modulating Electric Actuators on 4 in. Valves
VA-9075-600	Mounts VA-9073, VA-9074, and VA-9075 Series Two-Position and Modulating Electric Actuators on 5 and 6 in. Valves
VA-9075-800	Mounts VA-9073, VA-9074, and VA-9075 Series Two-Position and Modulating Electric Actuators on 8 in. Valves
VA-9075-1200	Mounts VA-9073, VA-9074, and VA-9075 Series Two-Position and Modulating Electric Actuators on 10 and 12 in. Valves
VA-9078-800	Mounts VA-9076, VA-9077, and VA-9078 Series Two-Position and Modulating Electric Actuators on 8 in. Valves
VA-9078-1200	Mounts VA-9076, VA-9077, and VA-9078 Series Two-Position and Modulating Electric Actuators on 10 and 12 in. Valves
VA-9078-1600	Mounts VA-9076, VA-9077, and VA-9078 Series Two-Position and Modulating Electric Actuators on 14 and 16 in. Valves
VA-9078-2000	Mounts VA-9076, VA-9077, and VA-9078 Series Two-Position and Modulating Electric Actuators on 18 in. Valves
VA-9078-2000	Mounts VA-9076, VA-9077, and VA-9078 Series Two-Position and Modulating Electric Actuators on 20 in. Valves

VA-9070 Series Electric Rotary Actuators (Continued)

Technical Specifications

VA-9070 Series Electric Rotary Actuators	
Supply Voltage	120 VAC, 50/60 Hz
Limit Switches	Two Single-Pole, Double-Throw (SPDT) switches rated for 10 amperes (75 to 80% power factor), 1/2 hp 125 VAC and 3/4 hp 250 VAC
Control Signal	4 to 20 mA or 0 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	UL File number E200414; CSA reference LR 78858; CE compliant. 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.

Electrical and Torque Specifications

Johnson Controls Code Number (Bray Series Number)	120 VAC, 50/60 Hz Single Phase Motors: Current Rating at All Speeds	Two-Position and Modulating Speeds for 90 Degree Operation (Total Gear Ratio) ¹	Output Torque lb·in (N·m)	Rim Pull lb (kg)	Valve Sizes for Direct Mount	Net Weight lb (kg)
VA-9071 (S70-003)	2.0 Amperes	30 seconds (5,070:1)	300 (34)	11.4 (5.2)	2 through 6 in.	12.0 (5.4)
VA-9072 (S70-005)			500 (57)	19.0 (8.6)		
VA-9073 (S70-008)	2.3 Amperes	30 seconds (3,340:1)	800 (90)	13.0 (5.9)	2 through 12 in.	28.0 (12.7)
VA-9074 (S70-012)			1,200 (136)	20.0 (9.1)		
VA-9075 (S70-020)			2,000 (226)	33.0 (15.0)		
VA-9076 (S70-030)	3.1 Amperes		3,000 (339)	33.0 (15.0)	8 through 20 in.	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)		

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