VA-908x Series Electric Rotary Actuators for Two-Position and Modulating Service

Product Bulletin

VA-908x

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The VA-908x Series Electric Rotary Actuators for Two-Position and Modulating Service are designed for direct mounting in an upright position on VF Series Butterfly Valves. The VA-908x is available in two different sizes, for two-position and modulating service.

All models feature two independently adjustable, travel limit switches for the open and closed position, each factory-set for 90° valve rotation. Powered by a rugged, high-torque, single-phase reversible motor, the VA-908x actuators are designed to withstand stall torque for reliable performance in even the most demanding applications. The watertight actuator enclosure meets National Electrical Manufacturers' Association (NEMA) 4, 4X, and 6 ratings, as well as IP67 standards.

For VA-908x Series Actuator sizing recommendations when used on VF Series Butterfly Valves, refer to the *VF Series Standard-Pressure, Standard-Temperature Butterfly Valves Product Bulletin (LIT-977205P)* or *VF Series High-Pressure, High-Temperature Butterfly Valves Product Bulletin (LIT-977208)*.



Figure 1: VA-908x Series Electric Rotary Actuator for Two-Position and Modulating Service

Table 1: Features and Benefits

Features	Benefits
Built-In Motor Overload Protection	Prevents thermal overload of motor.
Output Torques of 8,850 or 13,275 lb·in (1,000 or 1,500 N·m)	Provide optimal output torque for larger valve actuation applications.
Visual Position Indication and Manual Override	Provides clear and convenient indication of valve position; ensures positive and fast manual operation without the need for tools.
Factory-Set Limit Switches	Eliminate the need for field calibration.
CSA certified to USA and Canadian Standards	Meets requirements of industry standards.
Rugged, Die-Cast Aluminum NEMA 4, 4X, 6 and IP67 Enclosure	Provides waterproofing and exceptional corrosion, wear, impact, and Ultraviolet (UV) resistance.

IMPORTANT: The VA-908X Series Electric Valve Actuators are intended to control saturated steam, hot water, and chilled water flow under normal equipment operating conditions. Where failure or malfunction of the VA-908x Series Valve Actuator could lead to personal injury or property damage to the controlled equipment or other property, additional precautions must be designed into the system. Incorporate and maintain other devices, such as supervisory or alarm systems or safety or limit controls, intended to warn of or protect against failure or malfunction of the VA-908X Series Valve Actuator.

VA-908x-02 Series Two-Position Electric Actuators

A controller sends a 120 VAC power source to the actuator at terminals 1 and 3 (open), or 1 and 2 (close), depending on the desired movement of the valve (see Figure 2). This signal activates the motor, causing the cam post and coupled valve shaft to rotate in the proper direction to accurately position the valve.

When the valve reaches its fully open or fully closed position, the cams engage causing the corresponding limit switch to open and shut off power to the motor. Field calibration of the limit switches is not required.

Note: All VA-908x-02 Series Two-Position Electric Actuators can be positioned manually using the integral handwheel.

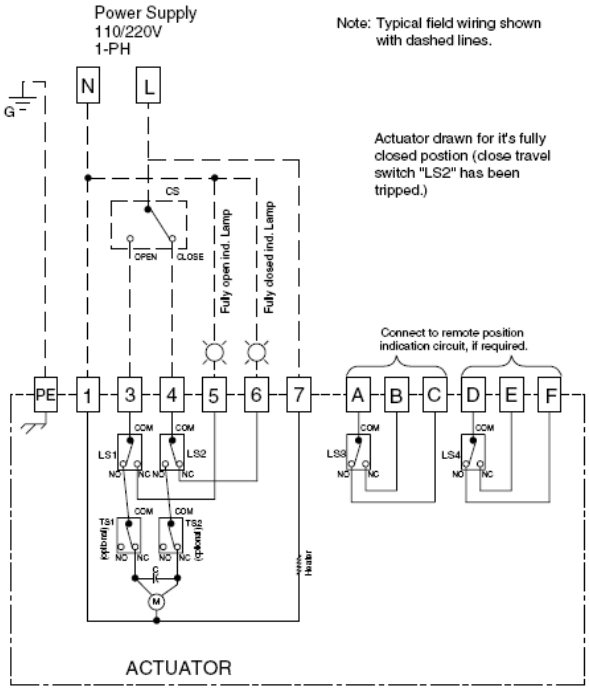


Figure 2: VA-908x-02 Series Two-Position Electric Actuator

VA-908x-01 Series Modulating Electric Actuators

A controller sends a command signal (typically 4 to 20 mA DC) to the actuator terminal board (see Figure 3). This signal is compared to the actual position of the valve via the feedback potentiometer. The resulting signal activates the motor to rotate the cam post and coupled valve shaft in the proper direction to accurately position the valve.

When the valve reaches its fully open or fully closed position, the cams engage causing the corresponding limit switch to open and shut off power to the motor. Field calibration of the limit switches is not required.

Note: All VA-908x-01 Series Modulating Electric Actuators can be positioned manually using the integral handwheel.

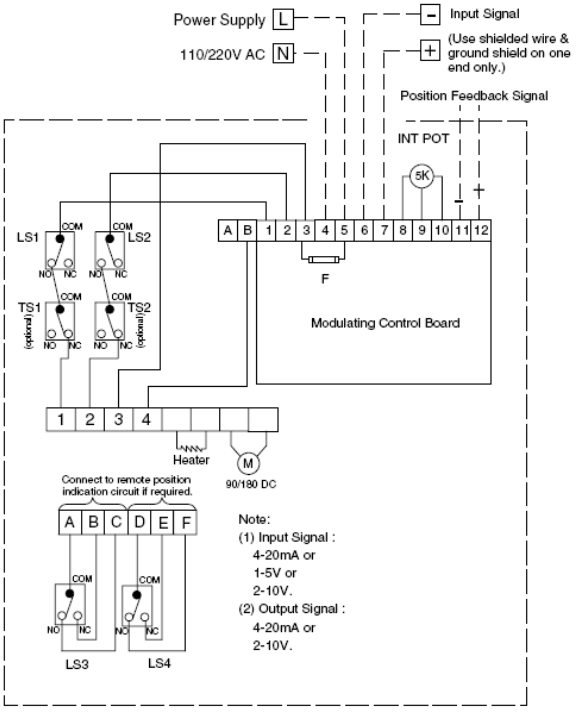


Figure 3: VA-908x-01 Series Modulating Electric Actuator

Installation

The VA-9000 Series Electric Rotary Actuators are pre-sized and factory-coupled to Johnson Controls® VF Series Butterfly Valves. For installation instructions, refer to the *VF Series Standard-Pressure, Standard-Temperature Butterfly Valves Product Bulletin (LIT-977205P)* or *VF Series High-Pressure, High-Temperature Butterfly Valves Product Bulletin (LIT-977208)*, and the *VF Series Butterfly Valves 2 Through 20 in., Two-Way and Three-Way Installation Instructions (LIT-977205X)*.

Wiring

All wiring must be in accordance with applicable electrical code requirements. An accessible, clearly marked terminal block allows for pigtail connections.

Field Adjustments

Field calibration is not required. Travel limit, span, and bandwidth adjustments are preset at the factory. To change these factory settings, refer to *VA-908x Series Electric Rotary Actuators for Two-Position and Modulating Service Installation Instructions (LIT-12011566)*.

Ordering Information

To order a VA-908x Series Electric Rotary Actuator and VF Series Butterfly Valve Assembly, refer to the *VF Series Standard-Pressure, Standard-Temperature Butterfly Valves Product Bulletin (LIT-977205P)* or *VF Series High-Pressure, High-Temperature Butterfly Valves Product Bulletin (LIT-977208)*.

Repair Information

See Table 4 for a complete list of accessories and repair parts available. For a replacement VA-908x Series Electric Rotary Actuator and VF Series Butterfly Valve Assembly, contact your local Johnson Controls representative.

Table 2: VA-908X Series Electric Rotary Actuators Model Numbers and Miscellaneous Specifications

Johnson Controls Actuator Code Number	Johnson Controls Actuator Sub-Code	Bray® Series Number	Service	Output Torque Value[1] lb·in (N·m)	Stroke Time in Seconds at 60 Hz	120 VAC Current Rating in Amperes		Shipping Weight lb (kg)
						Run	Lock Rotor	
VA-9087-02	-927	S74-0890 On-Off	Two-Position	8850 (1000)	46	3.2	10.0	80 (36.3)
VA-9088-02	-928	S74-1330 On-Off	Two-Position	13275 (1500)	46	4.0	10.0	80 (36.3)
VA-9087-01	-907	S74-0890 Modulating	Modulating	8850 (1000)	46	3.2	10.0	124 (56.3)
VA-9088-01	-908	S74-1330 Modulating	Modulating	13275 (1500)	46	4.0	10.0	124 (56.3)

1. Torque values **do not** include a safety factor.

Dimensions

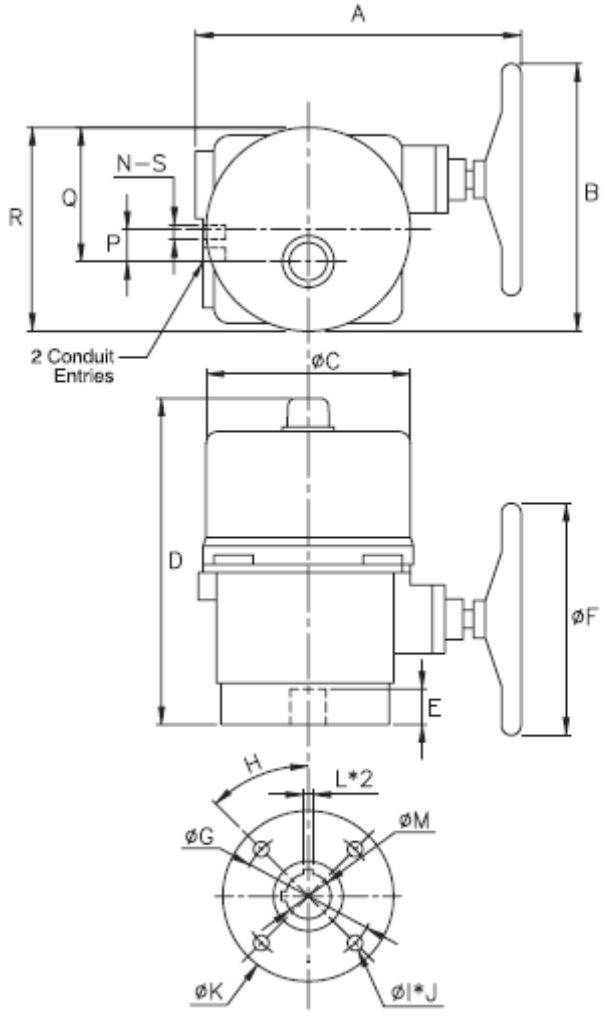


Figure 4: VA-908x Series Electric Rotary Actuators Dimensions, in. (mm)

Table 3: VA-908x Series Electric Rotary Actuators Dimensions, in. (mm)

A	B	C	D	E	F	G	H	I	J	K	L	M	N	P	Q	R	S
17.13 (435)	13.23 (336)	8.54 (217)	15.98 (406)	2.36 (60)	11.69 (297)	4.92 (125)	45°	M12	4	7.09 (180)	0.39 (10)	1.38 (35)	2	0.63 (16)	5.16 (131)	9.06 (230)	1/2 NPT

Accessories

Table 4: VA-908x Series Electric Rotary Actuators Accessories and Repair Parts[1]

Description		Code Number
Servo Control Kits, for all VA-908x Series Electric Actuators		VA-908x-601
Mounting and Adaptor Kits for VF Series Standard-Pressure and Standard-Temperature Two-Way Valves		
	Used when Mounting VA-9087 Series Electric Rotary Actuators on 16 in. VF Series Butterfly Valves	VA-9087-1600
	Used when Mounting VA-9087 Series Electric Rotary Actuators on 18 and 20 in. VF Series Butterfly Valves	VA-9087-2000
	Used when Mounting VA-9088 Series Electric Rotary Actuators on 16 in. VF Series Butterfly Valves	VA-9088-1600
	Used when Mounting VA-9088 Series Electric Rotary Actuators on 18 and 20 in. VF Series Butterfly Valves	VA-9088-2000
Mounting and Adaptor Kits for VF Series High-Pressure, High-Temperature Class 150 Two-Way Valves		
	Used when Mounting VA-9087 Series Electric Rotary Actuators on 14 in. Class 150 High Performance Butterfly Valves	VA-9087-1410
	Used when Mounting VA-9088 Series Electric Rotary Actuators on 16 in. Class 150 High Performance Butterfly Valves	VA-9088-1610
Mounting and Adaptor Kits for VF Series High-Pressure, High-Temperature Class 300 Two-Way Valves		
	Used when Mounting VA-9087 Series Electric Rotary Actuators on 10 in. Class 300 High Performance Butterfly Valves	VA-9087-1230
	Used when Mounting VA-9088 Series Electric Rotary Actuators on 12 in. Class 300 High Performance Butterfly Valves	VA-9088-1230
	Used when Mounting VA-9088 Series Electric Rotary Actuators on 14 in. Class 300 High Performance Butterfly Valves	VA-9088-1430
Limit Switch Kit		
	For All Models of VA-9087 and VA-9088 Series Electric Rotary Actuators	VA-908x-604
Thermostat/Heater Kit		
	For All Models of VA-9087 and VA-9088 Series Electric Rotary Actuators	VA-908x-602
Feedback Potentiometer Kit		
	0 to 1,000 Ohms for All Models of VA-9087 and VA-9088 Series Electric Rotary Actuators	VA-908x-603

1. For non-standard accessories and repair parts, contact your local Johnson Controls representative.

Technical Specifications

Table 5: VA-908x Series Electric Rotary Actuators Technical Specifications

Service	Non-Spring Return	VA-9087-01 Proportional
		VA-9087-02 On/Off (Floating)
		VA-9088-01 Proportional
		VA-9088-02 On/Off (Floating)
Power Requirements	VA-9087	120 VAC, 50/60 Hz, 180 W 3.2 A running current 12.0 A starting current 10.0 A locked rotor/stall current
	VA-9088	120 VAC, 50/60 Hz, 220 W 4.0 A running current 14.0 A starting current 10.0 A locked rotor/stall current
Duty Cycle	VA-908x-02	30%
	VA-908x-01	75%
Input Signal	VA-908x-02	120 VAC, 50/60 Hz
	VA-908x-01	Switch Selectable: 2 to 10 VDC, 4 to 20 mA, 1 to 5 VDC
		Switch Selectable direct or reverse action with increasing signal
		Switch Selectable position on loss of control signal
Feedback Signal	VA-908x-01	Switch Selectable 2 to 10 VDC, 4 to 20 mA
Ambient Operating Temperature Range		-21 to 148°F (-30 to 65°C)
Agency Listings		CSA CE Mark

The performance specifications are nominal and conform to acceptable industry standards. 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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