

## M9000 Electrically Actuated Standard-Pressure, Standard-Temperature Two-Way Butterfly Valves (Less Weather Shield)

### Description

VF Series M9000 Electrically Actuated Standard-Pressure, Standard-Temperature Two-Way Butterfly Valves are designed specifically for a wide range of Heating, Ventilating, and Air-Conditioning (HVAC) applications including two-position and modulating control of hot, chilled, or condenser water, and 50/50 glycol solutions. These valves are also bidirectional, allowing positive shutoff with the flow in either direction.

Two-way configurations are available in sizes from 2 through 6 in. M9000 electrically actuated non-spring return, non-weather shield models feature an integral handle for manual positioning of the valve, independent of a power supply.

Refer to the *VF Series M9000 Electrically and D-3000 Pneumatically Actuated Standard-Pressure, Standard-Temperature Butterfly Valves Product Bulletin (LIT-977202)* for important product application information.

### Features

- Low Seating/Unseating Torques
- Bubble-Tight Shutoff
- Pre-Assembled Actuators
- Compatible with All Types of ANSI 125/150 Slip-On and Weld-Neck Flanges
- M9000 Electric Actuators Available with or without a Rugged, Factory-Installed Weather Shield
- M9000 Electric Actuators Available with or without End Switches



**Two-Way Valve with M9000 Series Spring Return Electric Actuator (Less Weather Shield)**



**Two-Way Valve with M9000 Series Non-Spring Return Electric Actuator (Less Weather Shield)**

### Repair Information

If the M9000 Electrically Actuated Standard-Pressure, Standard-Temperature Two-Way Butterfly Valve fails to operate within its specifications, refer to the *VF Series M9000 Electrically and D-3000 Pneumatically Actuated Standard-Pressure, Standard-Temperature Butterfly Valves Product Bulletin (LIT-977202)* for a list of repair parts available.

### Selection Charts

#### Two-Way Valves with M9000 Series Non-Spring Return Electric Actuators (Less Weather Shield)

Size, in.	Cv at 90°	Cv at 70°	Closeoff Pressure (psig) <sup>1</sup>	On/Off (Floating) Control		0 to 10 VDC Proportional Control	
				M91xx-AGA-2 without End Switches	M91xx-AGC-2 with Two End Switches	M91xx-GGA-2 without End Switches	M91xx-GGC-2 with Two End Switches
2	159	105	200	VF4231AA+916AGA	VF4231AA+916AGC	VF4231AA+916GGA	VF4231AA+916GGC
2-1/2	266	156	200	VF4231BA+916AGA	VF4231BA+916AGC	VF4231BA+916GGA	VF4231BA+916GGC
3	457	240	200	VF4231CA+916AGA	VF4231CA+916AGC	VF4231CA+916GGA	VF4231CA+916GGC
4	860	423	200	VF4231DA+924AGA	VF4231DA+924AGC	VF4231DA+924GGA	VF4231DA+924GGC
5	1320	656	50	VF4231EA+924AGA	VF4231EA+924AGC	VF4231EA+924GGA	VF4231EA+924GGC
5	1320	656	200	VF4231EA2924AGA <sup>2</sup>	VF4231EA2924AGC <sup>2</sup>	VF4231EA2924GGA <sup>2</sup>	VF4231EA2924GGC <sup>2</sup>
6	2020	941	100	VF4231FA2924AGA <sup>2</sup>	VF4231FA2924AGC <sup>2</sup>	VF4231FA2924GGA <sup>2</sup>	VF4231FA2924GGC <sup>2</sup>

1. All valves are rated for dead-end service. Valves rated at 200 psig closeoff have 150 psig maximum dead-end service rating.
2. Valve assemblies have two actuators mounted in tandem.

#### Floating Control Two-Way Valves with M9000 Series Spring Return Electric Actuator (Less Weather Shield)

Size, in.	Cv at 90°	Cv at 70°	Closeoff Pressure (psig) <sup>1</sup>	M9220-AGA-3 without End Switches		M9220-AGC-3 with Two End Switches	
				Spring Open	Spring Closed	Spring Open	Spring Closed
2	159	105	200	VF4231AA+92NAGA	VF4431AA+94NAGA	VF4231AA+92NAGC	VF4431AA+94NAGC
2-1/2	266	156	200	VF4231BA+92NAGA	VF4431BA+94NAGA	VF4231BA+92NAGC	VF4431BA+94NAGC
3	457	240	200	VF4231CA+92NAGA	VF4431CA+94NAGA	VF4231CA+92NAGC	VF4431CA+94NAGC
4	860	423	50	VF4231DA+92NAGA	VF4431DA+94NAGA	VF4231DA+92NAGC	VF4431DA+94NAGC
4	860	423	200	VF4231DA292NAGA <sup>2</sup>	VF4431DA294NAGA <sup>2</sup>	VF4231DA292NAGC <sup>2</sup>	VF4431DA294NAGC <sup>2</sup>
5	1320	650	100	VF4231EA292NAGA <sup>2</sup>	VF4431EA294NAGA <sup>2</sup>	VF4231EA292NAGC <sup>2</sup>	VF4431EA294NAGC <sup>2</sup>

1. All valves are rated for dead-end service. Valves rated at 200 psig closeoff have 150 psig maximum dead-end service rating.
2. Valve assemblies have two actuators mounted in tandem.

## VF Series M9000 Electrically Actuated Standard-Pressure, Standard-Temperature Two-Way Butterfly Valves (Less Weather Shield) (Continued)

### On/Off Control Two-Way Valves with M9000 Series Spring Return Electric Actuator (Less Weather Shield)

Size, in.	Cv at 90°	Cv at 70°	Closeoff Pressure (psig) <sup>1</sup>	M9220-BGA-3 without End Switches		M9220-BGC-3 with Two End Switches	
				Spring Open	Spring Closed	Spring Open	Spring Closed
2	159	105	200	VF4231AA+92NBGA	VF4431AA+94NBGA	VF4231AA+92NBGC	VF4431AA+94NBGC
2-1/2	266	156	200	VF4231BA+92NBGA	VF4431BA+94NBGA	VF4231BA+92NBGC	VF4431BA+94NBGC
3	457	240	200	VF4231CA+92NBGA	VF4431CA+94NBGA	VF4231CA+92NBGC	VF4431CA+94NBGC
4	860	423	50	VF4231DA+92NBGA	VF4431DA+94NBGA	VF4231DA+92NBGC	VF4431DA+94NBGC
4	860	423	200	VF4231DA292NBGA <sup>2</sup>	VF4431DA294NBGA <sup>2</sup>	VF4231DA292NBGC <sup>2</sup>	VF4431DA294NBGC <sup>2</sup>
5	1320	656	100	VF4231EA292NBGA <sup>2</sup>	VF4431EA294NBGA <sup>2</sup>	VF4231EA292NBGC <sup>2</sup>	VF4431EA294NBGC <sup>2</sup>

- All valves are rated for dead-end service. Valves rated at 200 psig closeoff have 150 psig maximum dead-end service rating.
- Valve assemblies have two actuators mounted in tandem.

### 0 to 10 VDC Proportional Control Two-Way Valves with M9000 Series Spring Return Electric Actuator (Less Weather Shield)

Size, in.	Cv at 90°	Cv at 70°	Closeoff Pressure (psig) <sup>1</sup>	M9220-GGA-3 without End Switches		M9220-GGC-3 with Two End Switches	
				Spring Open	Spring Closed	Spring Open	Spring Closed
2	159	105	200	VF4231AA+92NGGA	VF4431AA+94NGGA	VF4231AA+92NGGC	VF4431AA+94NGGC
2-1/2	266	156	200	VF4231BA+92NGGA	VF4431BA+94NGGA	VF4231BA+92NGGC	VF4431BA+94NGGC
3	457	240	200	VF4231CA+92NGGA	VF4431CA+94NGGA	VF4231CA+92NGGC	VF4431CA+94NGGC
4	860	423	50	VF4231DA+92NGGA	VF4431DA+94NGGA	VF4231DA+92NGGC	VF4431DA+94NGGC
4	860	423	200	VF4231DA292NGGA <sup>2</sup>	VF4431DA294NGGA <sup>2</sup>	VF4231DA292NGGC <sup>2</sup>	VF4431DA294NGGC <sup>2</sup>
5	1320	656	100	VF4231EA292NGGA <sup>2</sup>	VF4431EA294NGGA <sup>2</sup>	VF4231EA292NGGC <sup>2</sup>	VF4431EA294NGGC <sup>2</sup>

- All valves are rated for dead-end service. Valves rated at 200 psig closeoff have 150 psig maximum dead-end service rating.
- Valve assemblies have two actuators mounted in tandem.

## Technical Specifications

VF Series M9000 Electrically Actuated Standard-Pressure, Standard-Temperature Two-Way Butterfly Valves <sup>1</sup>		
<b>Service</b>	Hot, Chilled, or Condenser Water, and 50/50 Glycol Solutions (Not Designed for Use in Steam Applications)	
<b>Body Styles and Sizes</b>	Two-Way, 2 through 10 in., Fully Lugged	
<b>Fluid Temperature Limits</b>	-30 to 250°F (-34 to 121°C)	
<b>Maximum Fluid Velocity</b>	30 ft/Second (9 m/Second)	
<b>Rangeability</b>	80:1 Minimum	
<b>Leakage</b>	Bubble Tight, Bidirectional Shutoff Rated for Dead-End Service (Uni-Directional); Inlet Must Face Pressure	
<b>Flow Characteristics</b>	Modified Equal Percentage	
<b>Materials</b>	<b>Body</b>	Cast Iron, ASTM A126 CL B
	<b>Tee (Three-Way Valves Only)</b>	Cast Iron
	<b>Disk</b>	Aluminum Bronze, ASTM B148
	<b>Seal and Liner</b>	Ethylene Propylene Diene Monomer (EPDM)
	<b>Stem</b>	416 Stainless Steel
	<b>Bearings</b>	Reinforced Polytetrafluoroethylene (RPTFE)
<b>Ambient Temperature Limits</b>	<b>Storage</b>	-20 to 150°F (-29 to 66°C); Preferably 40 to 85°F (4 to 29°C)
	<b>Operating</b>	Spring Return Actuator (M9220 Series): -40 to 131°F (-40 to 55°C) Non-Spring Return Actuator (M91xx Series): -4 to 122°F (-20 to 50°C)
<b>Weather Shield Rating</b>	NEMA 4	

- Refer to the appropriate actuator product bulletin for actuator specifications.