

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

### Description

VF Series M9000 Electrically Actuated Standard-Pressure, Standard-Temperature Three-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.

Three-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

### 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)*.



Three-Way Valve with M9000 Series Electric Actuator (Less Weather Shield)

### Selection Charts

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

Size, in.	Cv at 90°	Cv at 70°	Closeoff Pressure (psig) <sup>1</sup>	M91xx-AGA-2 without End Switches	M91xx-AGC-2 with Two End Switches
2	159	105	200	VF4831AD+916AGA	VF4831AD+916AGC
2-1/2	266	156	200	VF4831BD+916AGA	VF4831BD+916AGC
3	457	240	200	VF4831CD+916AGA	VF4831CD+916AGC
4	860	423	50	VF4831DD+924AGA	VF4831DD+924AGC
5	1320	656	100	VF4831ED2924AGA <sup>2</sup>	VF4831ED2924AGC <sup>2</sup>
6	2020	941	100	VF4831FD2924AGA <sup>2</sup>	VF4831FD2924AGC <sup>2</sup>

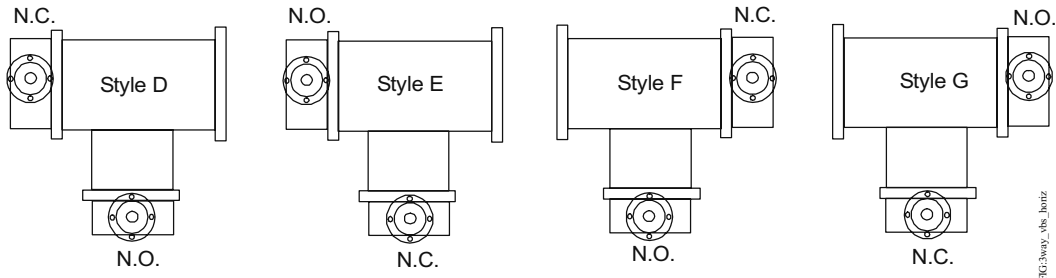
1. All valves are rated for dead-end service. Valves rated for 150 to 200 psig closeoff have 150 psig maximum dead-end service rating.
2. Valve assemblies have two actuators mounted in tandem.

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

Size, in.	Cv at 90°	Cv at 70°	Closeoff Pressure (psig) <sup>1</sup>	M91xx-GGA-2 without End Switches	M91xx-GGC-2 with Two End Switches
2	159	105	200	VF4831AD+916GGA	VF4831AD+916GGC
2-1/2	266	156	200	VF4831BD+916GGA	VF4831BD+916GGC
3	457	240	200	VF4831CD+916GGA	VF4831CD+916GGC
4	860	423	50	VF4831DD+924GGA	VF4831DD+924GGC
5	1320	656	100	VF4831ED2924GGA <sup>2</sup>	VF4831ED2924GGC <sup>2</sup>
6	2020	941	100	VF4831FD2924GGA <sup>2</sup>	VF4831FD2924GGC <sup>2</sup>

1. All valves are rated for dead-end service. Valves rated for 150 to 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 Three-Way Butterfly Valves (Less Weather Shield) (Continued)



Three-Way Valve Body Styles

### Floating Control Three-Way Valves<sup>1</sup> with M9000 Series Spring Return Electric Actuators (Less Weather Shield)

Size, in.	Cv at 90°	Cv at 70°	Closeoff Pressure (psig) <sup>2</sup>	M9220-AGA-3 without End Switches	M9220-AGC-3 with Two End Switches
2	159	105	200	VF4831AD+92NAGA	VF4831AD+92NAGC
2-1/2	266	156	200	VF4831BD+92NAGA	VF4831BD+92NAGC
3	457	240	150	VF4831CD+92NAGA	VF4831CD+92NAGC
4	860	423	175	VF4831DD292NAGA <sup>3</sup>	VF4831DD292NAGC <sup>3</sup>

- Code numbers listed are three-way valves in Style D. See *Three-Way Valve Body Styles* diagram. For Styles E, F, or G, change the D in the eighth digit of the code number to the desired style. Example VFxxxxxE+xxxxx, VFxxxxxF+xxxxx, VFxxxxxG+xxxxx.
- All valves are rated for dead-end service. Valves rated for 150 to 200 psig closeoff have 150 psig maximum dead-end service rating.
- Valve assemblies have two actuators mounted in tandem.

### On/Off Control Three-Way Valves<sup>1</sup> with M9000 Series Spring Return Electric Actuators (Less Weather Shield)

Size, in.	Cv at 90°	Cv at 70°	Closeoff Pressure (psig) <sup>2</sup>	M9220-BGA-3 without End Switches	M9220-BGC-3 with Two End Switches
2	159	105	200	VF4831AD+92NBGA	VF4831AD+92NBGC
2-1/2	266	156	200	VF4831BD+92NBGA	VF4831BD+92NBGC
3	457	240	150	VF4831CD+92NBGA	VF4831CD+92NBGC
4	860	423	175	VF4831DD292NBGA <sup>3</sup>	VF4831DD292NBGC <sup>3</sup>

- Code numbers listed are three-way valves in Style D. See *Three-Way Valve Body Styles* diagram. For Styles E, F, or G, change the D in the eighth digit of the code number to the desired style. Example VFxxxxxE+xxxxx, VFxxxxxF+xxxxx, VFxxxxxG+xxxxx.
- All valves are rated for dead-end service. Valves rated for 150 to 200 psig closeoff have 150 psig maximum dead-end service rating.
- Valve assemblies have two actuators mounted in tandem.

### Proportional Control Three-Way Valves<sup>1</sup> with M9000 Series Spring Return Electric Actuators (Less Weather Shield)

Size, in.	Cv at 90°	Cv at 70°	Closeoff Pressure (psig) <sup>2</sup>	M9220-GGA-3 without End Switches	M9220-GGC-3 with Two End Switches
2	159	105	200	VF4831AD+92NGGA	VF4831AD+92NGGC
2-1/2	266	156	200	VF4831BD+92NGGA	VF4831BD+92NGGC
3	457	240	150	VF4831CD+92NGGA	VF4831CD+92NGGC
4	860	423	175	VF4831DD292NGGA <sup>3</sup>	VF4831DD292NGGC <sup>3</sup>

- Code numbers listed are three-way valves in Style D. See *Three-Way Valve Body Styles* diagram. For Styles E, F, or G, change the D in the eighth digit of the code number to the desired style. Example VFxxxxxE+xxxxx, VFxxxxxF+xxxxx, VFxxxxxG+xxxxx.
- All valves are rated for dead-end service. Valves rated for 150 to 200 psig closeoff have 150 psig maximum dead-end service rating.
- Valve assemblies have two actuators mounted in tandem.

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

### Technical Specifications

VF Series M9000 Electrically Actuated Standard-Pressure, Standard-Temperature Three-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 and Three-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	

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