Johnson Controls

Code No. LIT-1900137
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M9000 Series Electrically Actuated, Standard-Pressure, Standard-Temperature, Three-Way Butterfly Valves (without Weather Shield)

Description

VF Series M9000 Electrically Actuated, Standard-Pressure, Standard-Temperature, Three-Way Butterfly Valves are specifically designed for a wide range of 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 2 through 6 in. non-spring return, and 2 through 4 in. spring return. M9000 electrically actuated, non-weather shield models feature an integral handle for manual positioning of the valve, independent of a power supply.

Refer to the *VF Series Standard-Pressure, Standard-Temperature Butterfly Valves Product Bulletin (LIT-977205P)* for important product application information.

Features

- low seating/unseating torques
- bubble-tight shutoff
- broad range of pre-assembled actuators
- compatible with all types of American National Standards Institute (ANSI) 125/150 slip-on and weld-neck flanges
- high-integrity components
- M9000 Series electric actuators available with or without a rugged, factory-installed weather shield
- M9000 Series electric actuators available with or without end switches

Repair Information

If the VF Series Butterfly Valve fails to operate within its specifications, refer to the *VF Series Standard-Pressure, Standard-Temperature Butterfly Valves Product Bulletin (LIT-977205P)* for a list of repair parts available.

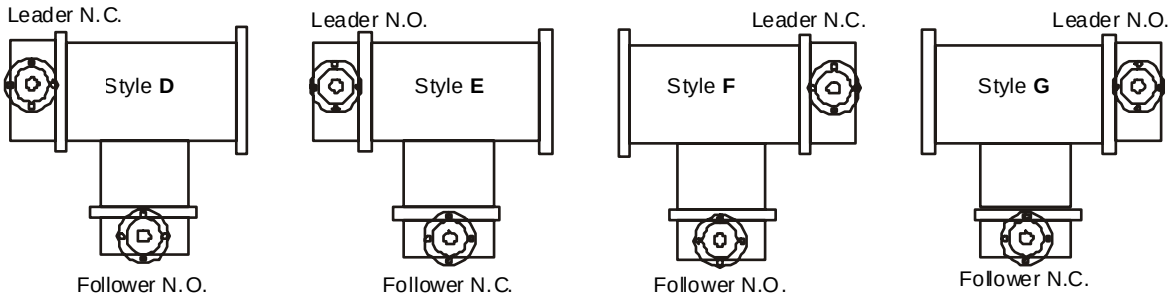
Three-Way Valve with M9000 Series Electric Actuator (without Weather Shield)

Selection Chart

Valve Code Number	Size, in.	Cv at 90°	Cv at 70°	Closeoff Pressure, psig[1]	Three-Way Butterfly Valves			
					Three-Way — Spring Return[2]			
					On/Off Control		**Proportional Control**	
					M9220-BGA-3 without End Switches	**M9220-BGC-3 with Two End Switches**	**M9220-GGA-3 without End Switches**	**M9220-GGC-3 with Two End Switches**
VFD020HB	2	144	84	175	VFD020HB+92NBGA	VFD020HB+92NBGC	VFD020HB+92NGGA	VFD020HB+92NGGC
VFD025HB	2-1/2	282	163	175	VFD025HB+92NBGA	VFD025HB+92NBGC	VFD025HB+92NGGA	VFD025HB+92NGGC
VFD030HB	3	461	267	175	VFD030HB292NBGA[3]	VFD030HB292NBGC[3]	VFD030HB292NGGA[3]	VFD030HB292NGGC[3]
VFD040LB	4	841	496	50	VFD040LB292NBGA[3]	VFD040LB292NBGC[3]	VFD040LB292NGGA[3]	VFD040LB292NGGC[3]
					Floating Control			
					M9220-AGA-3 without End Switches	**M9220-AGC-3 with Two End Switches**		
VFD020HB	2	144	84	175	VFD020HB+92NAGA	VFD020HB+92NAGC		
VFD025HB	2-1/2	282	163	175	VFD025HB+92NAGA	VFD025HB+92NAGC		
VFD030HB	3	461	267	175	VFD030HB292NAGA[3]	VFD030HB292NAGC[3]		
VFD040LB	4	841	496	50	VFD040LB292NAGA[3]	VFD040LB292NAGC[3]		
					Three-Way — Non-Spring Return			
					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**
VFD020HB	2	144	84	175	VFD020HB+916AGA	VFD020HB+916AGC	VFD020HB+916GGA	VFD020HB+916GGC
VFD025HB	2-1/2	282	163	175	VFD025HB+916AGA	VFD025HB+916AGC	VFD025HB+916GGA	VFD025HB+916GGC
VFD030HB	3	461	267	175	VFD030HB+924AGA	VFD030HB+924AGC	VFD030HB+924GGA	VFD030HB+924GGC
VFD040LB	4	841	496	50	VFD040LB+924AGA	VFD040LB+924AGC	VFD040LB+924GGA	VFD040LB+924GGC
VFD040HB	4	841	496	175	VFD040HB2924AGA[3]	VFD040HB2924AGC[3]	VFD040HB2924GGA[3]	VFD040HB2924GGC[3]
VFD050LB	5	1376	775	50	VFD050LB2924AGA[3]	VFD050LB2924AGC[3]	VFD050LB2924GGA[3]	VFD050LB2924GGC[3]
VFD060LB	6	1850	1025	50	VFD060LB2924AGA[3]	VFD060LB2924AGC[3]	VFD060LB2924GGA[3]	VFD060LB2924GGC[3]

1. Valves rated for 175 psig closeoff have a 75 psig maximum dead-end service rating. Valves rated for 50 psig closeoff are not rated for dead-end service.
2. Code numbers listed in this table are three-way valves, style **D**. For styles **E**, **F**, or **G**, change the **D** in the third digit of the code number to the desired style. Example: VF**E**xxxxxx+xxxxxx, VF**F**xxxxxx+xxxxxx, or VF**G**xxxxxx+xxxxxx. See the following figure.
3. Valve assemblies have two actuators mounted in tandem.

M9000 Series Electrically Actuated, Standard-Pressure, Standard-Temperature, Three-Way Butterfly Valves (without Weather Shield) (Continued)



Three-Way Valve Body Styles

Technical Specifications

M9000 Series Electrically Actuated, Standard-Pressure, Standard-Temperature, Three-Way Butterfly Valves (without Weather Shield)[1]		
Service		Hot, Chilled, or Condenser Water, and 50/50Glycol Solutions (Not Designed for Use in Steam Applications)
Body Styles and Sizes		Three-Way, 2 through 6 in., Fully Lugged
Fluid Temperature Limits		-40°F to 250°F (-40°C to 121°C)
Body Pressure Rating		175 psig
Maximum Fluid Velocity		30 ft/second (9 m/second)
Rangeability		Refer to the *VF Series Standard-Pressure, Standard-Temperature Butterfly Valves Product Bulletin (LIT-977205P).*
Leakage		Bubble Tight
Flow Characteristics		Modified Equal Percentage
Materials	Body	Cast Iron, ASTM A126 Class B
	Tee (Three-Way Valves Only)	Cast Iron
	Disc	Ductile Iron, Nylon 11 Coated, ASTM A536 Gr 65-45-12
	Seat	Ethylene Propylene Diene Monomer (EPDM)
	Stem	416 Stainless Steel
Ambient Temperature Limits	Storage	-20 to 150°F (-29 to 66°C), Preferably 40 to 85°F (4 to 29°C)
	Operating	Spring-Return Actuator: -40 to 131°F (-40 to 55°C) Non-Spring-Return Actuator: -4 to 122°F (-20 to 50°C)

1. Refer to the *VF Series Standard-Pressure, Standard-Temperature Butterfly Valves Product Bulletin (LIT-977205P)* for actuator specifications.

