

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

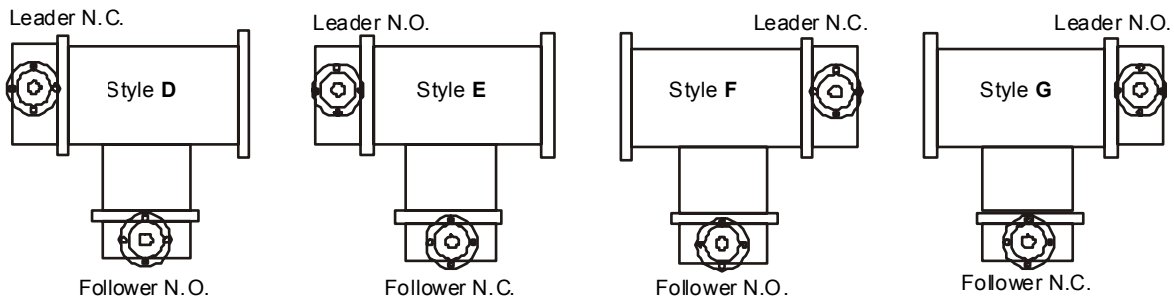
Valve Code Number	Size, in.	Cv at 90°	Cv at 70°	Closeoff Pressure, psig ¹	Three-Way Butterfly Valves			
					Three-Way — Spring Return²			
					On/Off Control		Proportional Control	
					M9220-BGA-3 without End Switches	M9220-BGC-3 with Two End Switches	M9220-GGA-3 without End Switches	M9220-GGC-3 with 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

The performance specifications are nominal and conform to acceptable industry standards. For applications at conditions beyond these specifications, consult the local Johnson Controls office. Johnson Controls shall not be liable for damages resulting from misapplication or misuse of its products. © 2018 Johnson Controls. www.johnsoncontrols.com

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

Valve Code Number	Size, in.	Cv at 90°	Cv at 70°	Closeoff Pressure, psig ¹	Three-Way Butterfly Valves	
					Three-Way — Non-Spring Return	
					Automatic Signal Detection Floating, On/Off, Proportional	
					M93xx-HGC-2 Without End Switches	M93xx-HGC-2 With Two End Switches
VFD020HB	2	144	84	175	VFD020HB+920HGA	VFD020HB+920HGC
VFD025HB	2-1/2	282	163	175	VFD025HB+920HGA	VFD025HB+920HGC
VFD030HB	3	461	267	175	VFD030HB+935HGA	VFD030HB+935HGC
VFD040HB	4	841	496	175	VFD040HB2935HGA ³	VFD040HB2935HGC ³
VFD040LB	4	841	496	50	VFD040LB+935HGA	VFD040LB+935HGC
VFD050HB	5	1376	775	175	VFD050HB2935HGA ³	VFD050HB2935HGC ³
VFD050LB	5	1376	775	50	VFD050LB2935HGA ³	VFD050LB2935HGC ³
VFD060HB	6	1850	1025	175	VFD060HB2935HGA ³	VFD060HB2935HGC ³
VFD060NB	6	1850	1025	50	VFD060NB2935HGA ³	VFD060NB2935HGC ³

- 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.
- 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: VFExxxxxx+xxxxxx, VFFxxxxxx+xxxxxx, or VFGxxxxxx+xxxxxx. See the following figure.
- Valve assemblies have two actuators mounted in tandem.



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	-20°F to 250°F (-29°C to 121°C)	
Body Pressure Rating	175 psig	
Maximum Fluid Velocity	30 ft/second (9 m/second)	
Rangeability	Refer to the <i>VF Series Standard-Pressure, Standard-Temperature Butterfly Valves Product Bulletin (LIT-977205P)</i> .	
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°F to 150°F (-29°C to 66°C), Preferably 40°F to 85°F (4°C to 29°C)
	Operating	Spring-Return Actuator: -20°F to 131°F (-29°C to 55°C) Non-Spring-Return Actuator: -4°F to 122°F (-20°C to 50°C)

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