Honeywell

VGF Flanged Globe Valves

VGF Flanged Globe Valves are used for 2-position or modulating control of steam, hot water, or chilled water-glycol solutions up to 50% concentration in heating, ventilation and air conditioning (HVAC) systems. They can be operated by ML6984/7984, ML6420/6425, ML6421/7421 Electric Linear Actuators, MP953 Pneumatic Actuators, Modutrol® Motors with Q5001 valve linkage, or MN/MS Series Direct Coupled Actuators with Q5020 valve linkage. Three-way bodies are available in mixing or diverting style with equal percentage and linear flow characteristics. Pressure-balanced models feature very high, low leakage close-off ratings.

SPECIFICATION DATA

FEATURES

- **ANSI Class 125 and Class 250 cast iron bodies with flanged end connections.**
- **Face-to-face flange dimensions per ANSI/ISA S75.03 standard.**
- **Sizes from 2-1/2 to 6 inches.**
- **Metal-to-metal seating for long life span.**
- **Stainless steel trim standard.**
- **Differential pressure up to 175 psi, ANSI Class IV on pressure-balanced models.**
- **Steam inlet pressure up to 100 psig.**
- **Self-adjusting packing.**
- **Accurate positioning with equal percentage and linear flow characteristics to ensure state-of-the-art temperature control.**
- **Universal bonnet for direct-coupled electric and pneumatic actuators for easy mounting, or linkage-coupled Modutrol® Motors and MN/MS Series direct-coupled actuators.**
- **Constant total flow throughout full plug travel (3-way bodies).**
- **Not suitable for combustible gasses.**

SPECIFICATIONS

Models:
❑ See Tables 2 and 3.

Dimensions:
❑ See Fig. 1 and 2.

Action:
❑ Mixing valves: Stem up to close port A-AB.
❑ All others: Stem down to close port A-AB.

Controlled Media:
❑ Water up to 50% glycol solution.
❑ Saturated steam (2-way models) up to 100 psig.

Valve Body Temperature-Pressure Ratings:
❑ Water: ANSI Class 125 and 250. See Table 1.
❑ Steam: 100 psig (6.9 bar) maximum.

Flow Capacity:
❑ See Table 4.

Stroke and Mounting:
❑ 2-1/2 and 3 inch: 3/4 in. (20mm), 1-3/8 in. bonnet.
❑ 4 to 6 inch: 1-1/2 in. (38mm), 1-7/8 in. bonnet.

Maximum Temperature Differential (alternating hot/cold water):
❑ 108°F (60°C).

Flow Characteristic:
❑ VGF__**E**_: Equal percentage, port A-AB.
❑ VGF__**L**_: Linear, port A-AB.
❑ VGF3__(all 3-way bodies): Linear port B-AB.

Rangeability:
❑ 50:1.

Close-Off Pressure (maximum):
❑ VGF21_P pressure-balanced: 175 psi (12 bar).
❑ All others: Proportional to actuator force. See Table 4.

Leakage Rate (maximum):
❑ VGF21_P pressure-balanced: 0.01% of Cv (ANSI Class IV).
❑ VGF2__S: 0.05% of Cv (ANSI Class III).
❑ Three-way: See Table 4.

Valve Body:
❑ End connections:
  ❑ Face-to-face flange dimensions per ANSI/ISA 75.03.
  ❑ Bolt holes conform to ANSI B16.1.
❑ Material: Cast iron, ASTM A126 Class B (GG25).

Trim:
❑ Seat:
  ❑ Mixing valve: body integrated.
  ❑ All: Stainless steel.
❑ Plug: Stainless steel, skirt guided.
❑ Stem: Stainless steel.
❑ Packing: Spring loaded PTFE cone rings.

Table 1. Medium Temperature and Maximum Pressure.

Temperature °F (°C)	System Pressure	
	ANSI Class 125 (VGF21, VGF31)	ANSI Class 250 (VGF22, VGF32)
35 to 130 (2-66)	175 psig (1206 kPa)	400 psig (2758 kPa)
Up to 200 (< 93)	165 psig (1138 kPa)	370 psig (2251 kPa)
Up to 250 (< 121)	150 psig (1034 kPa)	340 psig (2344 kPa)
Up to 300 (< 149)	140 psig (965 kPa)	310 psig (2137 kPa)
Up to 356 (< 180)	125 psig (862 kPa)	280 psig (1931 kPa)

Table 2. VGF2 2-way.

VGF2	Valve, Globe, Flanged, 2-way			
	1	ANSI 125		
	2	ANSI 250		
		EP	Equal percent flow, pressure-balanced[a]	
		ES	Equal percent flow, standard	
		LP	Linear flow, pressure-balanced[a]	
		LS	Linear flow, standard[a]	
			25	2-1/2 in. ports
			30	3 in. ports
			40	4 in. ports
			50	5 in. ports
			60	6 in. ports

[a] ANSI 125 only

VGF2	**1**	**EP**	**30**	e.g.: 3 in. flanged, equal percent, pressure balanced, ANSI 125

Table 3. VGF3 3-way.

VGF3	Valve, Globe, Flanged, 3-way			
	1	ANSI 125		
	2	ANSI 250		
		EM	Equal percent flow, mixing	
		LD	Linear flow, diverting	
			25	2-1/2 in. ports
			30	3 in. ports
			40	4 in. ports
			50	5 in. ports
			60	6 in. ports

VGF3	**2**	**EM**	**40**	e.g.: 4 in. flanged mixing valve, ANSI 250

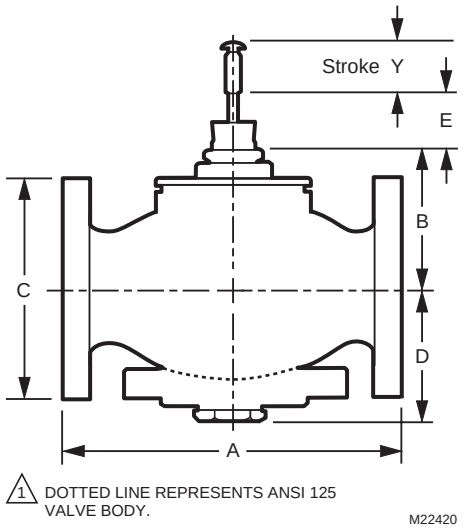

Fig. 1. Dimensions for two-way models in inches (mm) (See Table 4).

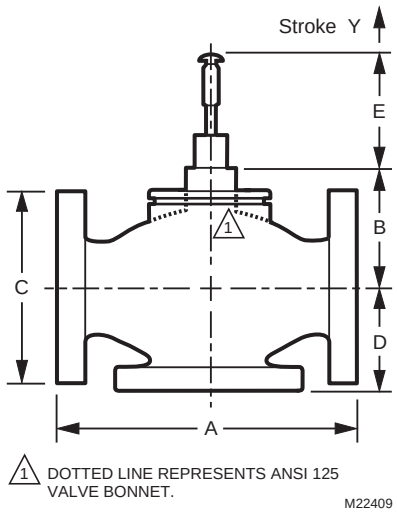

Fig. 2. Dimensions for three-way models in inches (mm) (See Table 4).

IMPORTANT

Valve sizing is important for correct system operation. Undersized valves do not have sufficient capacity at maximum load. Oversized valves do not have sufficient authority over the load in modulating applications.

Oversized valves can initiate cycling and the seat and throttling plug can be damaged because of the restricted opening. Some variables that must be determined are:

- *Medium (steam, water, glycol solution 50 percent maximum) to be controlled.*
- *Maximum temperature and pressure of the medium at the valve.*
- *Pressure differential that exists across the valve under maximum load conditions.*
- *Maximum capacity the valve must deliver.*
- *Maximum line pressure differential against which the valve actuator must close.*

The presence of iron oxide (red rust) in the system voids the valve warranty.

Table 4. Valve Sizes, Flow Capacities, Close-off Pressure Ratings, and Dimensions.

Model Number (see Table 1)	Size		Cv (kvs)	Close-off Pressure, psi (kPa), with 400 lbf (1800N) actuator[a]	Leakage Rate	Dimensions, in. (mm) See Fig. 1 (Two-way Valves) or Fig. 2 (Three-way Valves)					
	in.	DN				A	B	C	D	E	Y[b]
2-way valves, ANSI Class 125 Stem down to close. Equal percentage or Linear flow characteristic.											
VGF21_S25	2-1/2	65	63 (54)	69 (475)	<0.05% of Cv (ANSI Class III)	10-7/8 (276)	4-3/8 (112)	7 (178)	—	3-1/2 (89)	13/16 (20)
VGF21_S30	3	80	100 (86)	34 (234)		11-3/4 (298)	6-3/8 (161)	7-1/2 (191)	—		
VGF21_S40	4	100	160 (137)	34 (234)		13-7/8 (352)	5-7/8 (150)	9 (229)	—	5-1/4 (133)	1-1/2 (38)
VGF21_S50	5	125	250 (214)	13 (90)		15-3/4 (400)	6-3/16 (157)	10 (254)	—		
VGF21_S60	6	150	400 (343)	13 (90)		17-3/4 (451)	6-3/16 (157)	11 (279)	—		
2-way valves, ANSI Class 250. Stem down to close. Equal percentage flow characteristic.											
VGF22ES25	2-1/2	65	63 (54)	69 (475)	<0.05% of Cv (ANSI Class III)	11-1/2 (292)	4-3/8 (112)	7-1/2 (191)	—	3-1/2 (89)	13/16 (20)
VGF22ES30	3	80	100 (86)	34 (234)		12-1/2 (318)	6-3/8 (161)	8-1/4 (210)	—		
VGF22ES40	4	100	160 (137)	34 (234)		14-1/2 (368)	5-7/8 (150)	10 (254)	—	5-1/4 (133)	1-1/2 (38)
VGF22ES50	5	125	250 (214)	13 (90)		16-5/8 (422)	6-3/16 (157)	11 (279)	—		
VGF22ES60	6	150	400 (343)	13 (90)		18-5/8 (473)	6-3/16 (157)	12-1/2 (318)	—		
2-way valves, Pressure-balanced, ANSI Class 125. Stem down to close. Equal percentage or Linear flow characteristic.											
VGF21_P25	2-1/2	65	75 (64)	175 (1206)	<0.01% of Cv (ANSI Class IV)	10-7/8 (276)	4-3/16 (107)	7 (178)	—	3-1/2 (89)	13/16 (20)
VGF21_P30	3	80	116 (99)			11-3/4 (298)	5-7/8 (150)	7-1/2 (191)	—		
VGF21_P40	4	100	178 (153)			13-7/8 (352)	5-7/8 (150)	9 (229)	—	5-1/4 (133)	1-1/2 (38)
VGF21_P50	5	125	318 (273)			15-3/4 (400)	6-1/8 (156)	10 (254)	—		
VGF21_P60	6	150	390 (334)			17-3/4 (451)	6-1/8 (156)	11 (279)	—		
3-way Mixing valves, ANSI Class 125. Stem up to close A-AB.											
VGF31EM25	2-1/2	65	63 (54)	87 (599)	<0.5% of Cv, A-AB;<1% of Cv, B-AB.	10-7/8 (276)	3 (76)	7 (178)	3-3/4 (95)	4-3/16 (107)	13/16 (20)
VGF31EM30	3	80	100 (86)	58 (400)		11-3/4 (298)	4-3/16 (107)	7-1/2 (191)	4-3/8 (111)		
VGF31EM40	4	100	160 (137)	34 (234)		13-7/8 (352)	5-8/16 (140)	9 (229)	5-1/8 (130)	6-11/16 (170)	1-1/2 (38)
VGF31EM50	5	125	250 (214)	13 (90)		15-3/4 (400)	5-3/8 (137)	10 (254)	5-3/4 (146)		
VGF31EM60	6	150	400 (343)	13 (90)		17-3/4 (451)	5-11/16 (145)	11 (279)	6-5/8 (168)		
3-way Mixing valves, ANSI Class 250. Stem up to close A-AB.											
VGF32EM25	2-1/2	65	63 (54)	87 (599)	<0.5% of Cv, A-AB;<1% of Cv, B-AB.	11-1/2 (292)	4-3/8 (112)	7-1/2 (191)	3-3/4 (95)	4-3/16 (107)	13/16 (20)
VGF32EM30	3	80	100 (86)	58 (400)		12-1/2 (318)	6-3/8 (161)	8-1/4 (210)	4-3/8 (111)		
VGF32EM40	4	100	160 (137)	34 (234)		14-1/2 (368)	5-7/8 (150)	10 (254)	5-1/8 (130)	6-11/16 (170)	1-1/2 (38)
VGF32EM50	5	125	250 (214)	13 (90)		16-5/8 (422)	6-3/16 (157)	11 (279)	5-3/4 (146)		
VGF32EM60	6	150	400 (343)	13 (90)		18-5/8 (473)	6-3/16 (157)	12-1/2 (318)	6-5/8 (168)		
3-way Diverting valves, ANSI Class 125. Stem down to close AB-A.											
VGF31LD25	2-1/2	65	63 (54)	69 (475)	<0.05% of Cv, AB-A;<0.1% of Cv, AB-B.	10-7/8 (276)	3 (76)	7 (178)	3-3/4 (95)	4-3/16 (107)	13/16 (20)
VGF31LD30	3	80	100 (86)	34 (234)		11-3/4 (298)	4-3/16 (107)	7-1/2 (191)	4-3/8 (111)		
VGF31LD40	4	100	160 (137)	34 (234)		13-7/8 (352)	5-8/16 (140)	9 (229)	5-1/8 (130)	6-11/16 (170)	1-1/2 (38)
VGF31LD50	5	125	250 (214)	13 (90)		15-3/4 (400)	5-3/8 (137)	10 (254)	5-3/4 (146)		
VGF31LD60	6	150	360 (309)	13 (90)		17-3/4 (451)	5-11/16 (145)	11 (279)	6-5/8 (168)		
3-way Diverting valves, ANSI Class 250. Stem down to close AB-A.											
VGF32LD25	2-1/2	65	63 (54)	69 (475)	<0.05% of Cv, AB-A;<0.1% of Cv, AB-B.	11-1/2 (292)	4-3/8 (112)	7-1/2 (191)	3-3/4 (95)	4-3/16 (107)	13/16 (20)
VGF32LD30	3	80	100 (86)	34 (234)		12-1/2 (318)	6-3/8 (161)	8-1/4 (210)	4-3/8 (111)		
VGF32LD40	4	100	160 (137)	34 (234)		14-1/2 (368)	5-7/8 (150)	10 (254)	5-1/8 (130)	6-11/16 (170)	1-1/2 (38)
VGF32LD50	5	125	250 (214)	13 (90)		16-5/8 (422)	6-3/16 (157)	11 (279)	5-3/4 (146)		
VGF32LD60	6	150	360 (309)	13 (90)		18-5/8 (473)	6-3/16 (157)	12-1/2 (318)	6-5/8 (168)		

[a] See form 63-2618 for close-off ratings with other Honeywell actuators.

[b] Adjustment dimension. Valve in closed position.

TYPICAL SPECIFICATION

Automatic control valves shall have flanged fittings, 2-1/2 in. through 6 in. sizes, and shall be ANSI-rated to withstand the pressures and temperatures encountered.

Valves shall have metal-to-metal seats, stainless-steel stems, and replaceable spring-loaded reinforced carbon-filled teflon packing.

Valves shall have a maximum leakage rate of 0.05% Cv at the control port.

Valves shall have a 50:1 rangeability or better.

All two-way water valves shall be provided with equal-percentage contoured throttling plugs. All chilled water or steam valves shall be provided with linear contoured throttling plugs.

Three-way valves shall be available in either mixing or diverting configurations.

Water should be properly filtered, treated and conditioned according to local conditions. The installation of a strainer is strongly recommended.