

# **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.

# SPECIFICATIONS

#### Models:

See Tables 2 and 3.

#### **Dimensions:**

■ See Fig. 1 and 2.

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.

## 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<sup>®</sup> Motors and MN/MS Series direct-coupled actuators.
- Constant total flow throughout full plug travel (3-way bodies).
- Not suitable for combustible gasses.

#### 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.

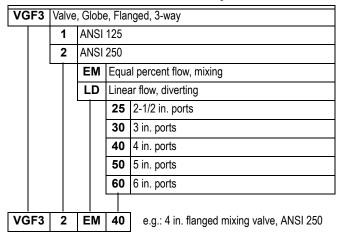
	System Pressure						
Temperature °F (°C)	ANSI Class 125 (VGF21, VGF31)	ANSI Class 250 (VGF22, VGF32)					
35 to 130 (2-66)	175 psig (1206 kPa)	400 psig (2758 kPa)					
Up to 200 (< 93)	165 psig (1138 kPa)	370 psig (2251 kPa)					
Up to 250 (< 121)	150 psig (1034 kPa)	340 psig (2344 kPa)					
Up to 300 (< 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.

VGF	2	Valve, Globe, Flanged, 2-way								
		1	ANSI	ANSI 125						
		2	ANSI	I 250						
	_		EP	<b>EP</b> Equal percent flow, pressure-balanced <sup>a</sup>						
			ES	Equa	qual percent flow, standard					
	<b>LP</b> Linear flow, pressure-balanced <sup>a</sup>									
			LS	Linear flow, standard <sup>a</sup>						
				25	2-1/2 in. ports					
			30	3 in. ports						
			40	4 in. ports						
			50	5 in. ports						
<b>60</b> 6		60	6 in. ports							
					<sup>a</sup> ANSI 125 only					
VGF	2	1	EP	30	e.g.: 3 in. flanged, equal percent, pressure balanced, ANSI 125					

Table 3. VGF3 3-way.



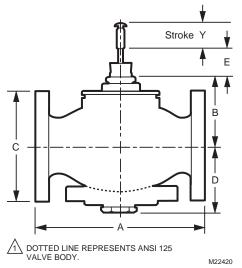


Fig. 1. Dimensions for two-way models in inches (mm) (See Table 4).

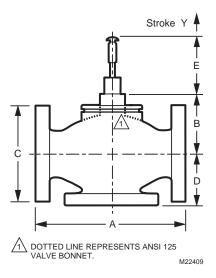


Fig. 2. Dimensions for three-way models in inches (mm) (See Table 4).

#### **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.

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

Model Number (see Table 1) in.	Siz	e		Close-off Pressure, psi (kPa), with 400 lbf (1800N) actuator <sup>a</sup>	Leakage Rate	Dimensions, in. (mm) See Fig. 1 (Two-way Valves) or Fig. 2 (Three-way Valves)						
	in.	DN	Cv (kvs)			Α	В	С	D	E	Yb	
2-way va	lves,	ANS	l Class 12	5 Stem down to close. Equa	al percenta	ige or Linea	ar flow chara	cteristic.				
VGF21_S25	2-1/2	65	63 (54)	69 (475)		10-7/8 (276)	4-3/8 (112)	7 (178)	_	3-1/2	13/16	
VGF21_S30	3	80	100 (86)	34 (234)	<0.05% of	11-3/4 (298)	6-3/8 (161)	7-1/2 (191)	_	(89)	(20)	
VGF21_S40	4	100	160 (137)	34 (234)	Cv (ANSI	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)	Class III)	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 va	lves,	ANS	l Class 25	0. Stem down to close. Equ	al percent	age flow ch	aracteristic.					
VGF22ES25	2-1/2	65	63 (54)	69 (475)		4-3/8 (112)	7-1/2 (191)	_	3-1/2	13/16		
VGF22ES30	3	80	100 (86)	34 (234)	<0.05% of	12-1/2 (318)	6-3/8 (161)	8-1/4 (210)	_	(89)	(20)	
VGF22ES40	4	100	160 (137)	34 (234)	Cv (ANSI	14-1/2 (368)	5-7/8 (150)	10 (254)	_	5-1/4 (133)		
VGF22ES50	5	125	250 (214)	13 (90)	Class III)	16-5/8 (422)	6-3/16 (157)	11 (279)	_		1-1/2 (38)	
VGF22ES60	6	150	400 (343)	13 (90)		18-5/8 (473)	6-3/16 (157)	12-1/2 (318)	_	(100)		
2-way va	lves,	Pres	sure-balar	nced, ANSI Class 125. Stem	down to	close. Equa	l percentage	or Linear f	low charac	teristic	).	
VGF21_P25	2-1/2	65	75 (64)			10-7/8 (276)	4-3/16 (107)	7 (178)	_	3-1/2 (89) 5-1/4 (133)	13/16	
VGF21_P30	3	80	116 (99)		<0.01% of	11-3/4 (298)	5-7/8 (150)	7-1/2 (191)	_		(20)	
VGF21_P40	4	100	178 (153)	175 (1206)	Cv (ANSI	13-7/8 (352)	5-7/8 (150)	9 (229)	_			
VGF21_P50	5	125	318 (273)		Class IV)	15-3/4 (400)	6-1/8 (156)	10 (254)	_		1-1/2 (38)	
VGF21_P60	6	150	390 (334)			17-3/4 (451)	6-1/8 (156)	11 (279)	_			
3-way Mi	xing v	alve	s, ANSI C	lass 125. Stem up to close	A-AB.				l	L		
VGF31EM25	2-1/2	65	63 (54)	87 (599)		10-7/8 (276)	3 (76)	7 (178)	3-3/4 (95)	4-3/16 (107) 6-11/ 16 (170)	13/16 (20)	
VGF31EM30	3	80	100 (86)	58 (400)	<0.5% of	11-3/4 (298)	4-3/16 (107)	7-1/2 (191)	4-3/8 (111)			
VGF31EM40	4	100	160 (137)	34 (234)	Cv, A- AB;<1% of	13-7/8 (352)	5-8/16 (140)	9 (229)	5-1/8 (130)		1-1/2 (38)	
VGF31EM50	5	125	250 (214)	13 (90)	Cv, B-AB.	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 Mi	xing v	alve	s, ANSI C	lass 250. Stem up to close	A-AB.				•			
VGF32EM25	2-1/2	65	63 (54)	87 (599)		11-1/2 (292)	4-3/8 (112)	7-1/2 (191)	3-3/4 (95)		13/16 (20)	
VGF32EM30	3	80	100 (86)	58 (400)	<0.5% of	12-1/2 (318)	6-3/8 (161)	8-1/4 (210)	4-3/8 (111)			
VGF32EM40	4	100	160 (137)	34 (234)	Cv, A- AB;<1% of	14-1/2 (368)	5-7/8 (150)	10 (254)	5-1/8 (130)		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			13 (90)				12-1/2 (318)				
3-way Di	vertin	g val	ves, ANSI	Class 125. Stem down to d	lose AB-A		I.	I	l .	ı		
VGF31LD25	2-1/2	65	63 (54)	69 (475)		10-7/8 (276)	3 (76)	7 (178)	3-3/4 (95)	4-3/16	13/16 (20)	
VGF31LD30	3	80	100 (86)	34 (234)	<0.05% of Cv, AB-	11-3/4 (298)	4-3/16 (107)	7-1/2 (191)	4-3/8 (111)	(107)		
VGF31LD40	4	100	160 (137)	34 (234)	A;<0.1%	13-7/8 (352)	5-8/16 (140)	9 (229)	5-1/8 (130)	6-11/	1-1/2 (38)	
VGF31LD50	5	125	250 (214)	13 (90)	of Cv, AB- B.	15-3/4 (400)	5-3/8 (137)	10 (254)	5-3/4 (146)	16		
VGF31LD60	6	150	360 (309)	13 (90)	Б.	17-3/4 (451)	5-11/16 (145)	11 (279)	6-5/8 (168)	(170)		
3-way Di	vertin	g val	ves, ANSI	Class 250. Stem down to c	lose AB-A			1		1		
VGF32LD25	2-1/2	65	63 (54)	69 (475)		11-1/2 (292)	4-3/8 (112)	7-1/2 (191)	3-3/4 (95)	4-3/16	13/16 (20) 1-1/2 (38)	
VGF32LD30	3		100 (86)	34 (234)	<0.05% of Cv, AB-	12-1/2 (318)		8-1/4 (210)	4-3/8 (111)	(107)		
VGF32LD40	4		160 (137)	34 (234)	A;<0.1%	14-1/2 (368)	` ′	10 (254)	5-1/8 (130)	6-11/		
VGF32LD50	5		250 (214)	13 (90)	of Cv, AB- B.	, ,	6-3/16 (157)	11 (279)	, ,	16		
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<sup>&</sup>lt;sup>a</sup> See form 63-2618 for close-off ratings with other Honeywell actuators. <sup>b</sup> 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, stainlesssteel 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.

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