

# V-3766, V-3966, and V-4332 Brass Pneumatic Flare Valves, 1/2 in. Two-Way and Three-Way

## Description

The 1/2 in. flared valve line accurately regulates the flow of hot or cold water in small HVAC terminal units. These 1/2 in. valves are available with a factory-installed V-3000-1 exposed type pneumatic actuator; enclosed actuators (V-3000-2) are also available (order separately). This valve style is available for field mounting the VA-805x Series electric actuators or with a factory-coupled VA-805x Series electric actuator.

Refer to the *Flare Valves 1/2 in. Two-Way and Three-Way Product Bulletin (LIT-977175)* for important product application information.

## Features

- 1/2 in. OD SAE 45 flare connections do not require solder installation with copper tubing; provides easy removal for maintenance
- standard Johnson Controls® non-adjustable ring pack packings provide proven reliability and long life
- body rated 400 psig static pressure does not restrict building location
- every valve tested for tight initial and long-term shutoff; ensures occupant comfort and energy conservation
- factory-assembled valves available with pneumatic or electric actuators; install quickly and easily, minimizing job site time



Brass Pneumatic Flare Valves

## Selection Charts

### Pneumatically Actuated V-3766, V-3966, and V-4332 Flare Valves

Valve Body	Style <sup>1</sup>	Max. Cv	Rangeability <sup>2</sup>	Valve Suffix with V-3000 Actuator (Maximum Closeoff Pressure, psi <sup>3</sup> )		
				Spring Ranges, psi		
				3 to 6	4 to 8	9 to 13
V-3766	N.O.	1.0	7:1	-1001 (345)		
	N.O.	1.7	12:1	-1002 (345)		
	N.O.	3.2	23:1	-1003 (345)		
V-3966	N.C.	1.7	12:1			-1001 (240)
	N.C.	3.2	23:1			-1002 (240)
V-4332	MIX	1.2	7:1		-1007 (240/240)	-1004 (240/240)
	MIX	2.0	12:1		-1009 (240/240)	-1006 (240/240)

1. Normally Open (N.O.); Normally Closed (N.C.); Mixing Valve (MIX); maximum closeoff pressure (N.C. port/N.O. port)
2. Rangeability is defined as the ratio of maximum flow to minimum controllable flow.
3. Maximum closeoff pressures listed are for 20 psi supply pressure to diaphragm for normally open and 0 psi supply pressure to diaphragm for normally closed.

### Valid Code Numbers of V-3766, V-3966, and V-4332 Flare Valve and Pneumatic Actuator Combinations

Valid Pneumatic Valve/Actuator Assembly Code Number	Spring Range, psi	Max. Cv	Style
V-3766-1001	3 to 6	1.0	N.O.
V-3766-1002	3 to 6	1.7	
V-3766-1003	3 to 6	3.2	
V-3966-1001	9 to 13	1.7	N.C.
V-3966-1002	9 to 13	3.2	
V-4332-1004	9 to 13	1.2	MIX
V-4332-1006	9 to 13	2.0	
V-4332-1007	4 to 8	1.2	
V-4332-1009	4 to 8	2.0	
VB-3766-1	None	1.0	PDTC <sup>1</sup>
VB-3766-2	None	1.7	
VB-3766-3	None	3.2	
VB-3966-1	None	1.7	PDTO <sup>1</sup>
VB-3966-2	None	3.2	
VB-4332-4	None	1.2	MIX
VB-4332-5	None	2.0	

1. Push-Down-to-Close (PDTC); Push-Down-to-Open (PDTO)

### Electrically Actuated VB-3766, VB-3966, and VB-4332 Flare Valves

Valve Body	Style	Max. Cv	Rangeability	Assembly Order Code Number (Maximum Shutoff Pressure, psi)	
				VA-8050	VA-8051
VB-3766-1	PDTC	1.0	7:1	AV-8050-1007 (150)	AV-8051-1007 (150)
VB-3766-2	PDTC	1.7	12:1	AV-8050-1008 (150)	AV-8051-1008 (150)
VB-3766-3	PDTC	3.2	23:1	AV-8050-1009 (150)	AV-8051-1009 (150)
VB-4332-4	MIX	1.2	7:1	AV-8050-1016 (100)	AV-8051-1016 (100)
VB-4332-5	MIX	2.0	12:1	AV-8050-1017 (100)	AV-8051-1017 (100)

### Valid Code Numbers of VB-3766, VB-3966, and VB-4332 Flare Valve and Electric Actuator Combinations

Valid Actuator/Valve Factory Assembly Code Number	Actuator	Valve Body	Max. Cv	Flared Valve Body Style
AV-8050-1007	VA-8050-1 Floating/Incremental	VB-3766-1	1.0	Two-Way PDTC
AV-8050-1008		VB-3766-2	1.7	
AV-8050-1009		VB-3766-3	3.2	Three-Way MIX
AV-8050-1016		VB-4332-4	1.2	
AV-8050-1017		VB-4332-5	2.0	
AV-8051-1007	VA-8051-1 Floating/Incremental Feedback	VB-3766-1	1.0	Two-Way PDTC
AV-8051-1008		VB-3766-2	1.7	
AV-8051-1009		VB-3766-3	3.2	Three-Way MIX
AV-8051-1016		VB-4332-4	1.2	
AV-8051-1017	VA-8050-1	VB-4332-5	2.0	

## Accessories

Code Number	Description
V-3000-8003	Enclosed V-3000 Actuator for Field Mounting
V-3000-10	Valve Position Indicator for V-3000-1 Exposed Style Pneumatically Actuated Valves
V-9502-15	Valve Positioner for Field Mounting to a V-3000-1 Exposed Style Pneumatically Actuated Valve
V-9502-20	Valve Positioner Spring for V-3000-1 Exposed Style Pneumatically Actuated Valves Using a V-9502-15 Positioner; 3.0 psi (21 kPa) Span
V-9502-101	Valve Positioner Spring for V-3000-1 Exposed Style Pneumatically Actuated Valves Using a V-9502-15 Positioner; 4.3 psi (30 kPa) Span
V-9502-19	Valve Positioner Spring for V-3000-1 Exposed Style Pneumatically Actuated Valves Using a V-9502-15 Positioner 8.0 psi (56 kPa) Span

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## V-3766, V-3966, and V-4332 Brass Pneumatic Flare Valves, 1/2 in. Two-Way and Three-Way (Continued)

### Repair Parts

Valve Code Number	Repair Kit Code Number	Description
V-3766 VB-3766	V-3754-6010 <sup>1</sup>	Spring Kit, 3-6 psig, 1/2 in. Stroke for V-3011, V-3020, V-3752, V-3755, V-4510, V-5250 (1-1/2 and 2), V-3754 (1/2 and 3/4), and V-3766 (1/2) Valve with V-3000-1 or V-3000-2 Actuator
V-3966 VB-3966	V-3754-6009 <sup>1</sup>	Spring Kit, 9-13 psig, 1/2 in. Stroke for V-3011, V-3020, V-3212, V-3752, V-3755, V-3970, V-4322 (1-1/2 and 2), V-3974, V-3966, V-6139 (1/2), V-3754, V-3974, V-4324 (1/2 and 3/4) Valve with V-3000-1 or V-3000-2 Actuator
V-4332 VB-4322	V-4332-6001 <sup>1</sup>	Spring Kit, 4-8 psig, 5/16 in. Stroke for V-3212, V-3970, V-4322 (1/2 and 3/4), V-4332, V-4333 (1/2), V-4334 (5/8), and VT Valve with V-3000-1 or V-3000-2 Actuator
	V-3752-6022 <sup>1</sup>	Spring Kit, 9-13 psig, 5/16 in. Stroke for V-3011, V-3020, V-3212, V-3752, V-3755, V-3970, V-4322 (1/2 and 3/4), V-4334 (5/8), V-4332, V-4333, V-5416, V-7416 (1/2), V-6143 (3/8 and 3/4) and VT Valve with V-3000-1 or V-3000-2 Actuator
All Assemblies	V-9999-608 <sup>2</sup>	Ring Pack Packing Kits: Single Pack
	V-9999-610 <sup>2</sup>	10 Pack (Contains Enough Materials to Repack 10 Valves)
	V-9999-630 <sup>3</sup>	50 Pack (Contains U-Cups and O-Rings Only to Repack 50 Valves)

1. Spring kit contains: spring, upper and lower spring plate, stem extension, lock screw, and instructions.
2. Packing kit contains: O-rings, crocus cloth, assembly tool, gland nut liner, guide, extractor/installer, ring pack assembly, follower, grease, and instructions.
3. Silicone grease is not included in this kit; order V-9999-606 separately.

### Technical Specifications

V-3766, V-3966, and V-4332 Brass Pneumatic Flare Valves, 1/2 in. Two-Way and Three-Way		
Models	Pneumatic	V-3766 - PDTC (Normally Open), V-3966 - PDT0 (Normally Closed), V-4332 - Three-Way Mixing
	Electric	VB-3766 - PDTC, VB-3966 - PDT0, VB-4332 - Three-Way Mixing
Service	Hot and Cold Water	
Control Air Connection (Pneumatic Operation)	1/8 in. NPT Barbed Fitting for 5/32 or 1/4 in. OD Polytubing for Pneumatic Actuators	
Flow Characteristics	Equal Percentage	
Actuator Sizing/Maximum Closeoff Pressure	See Selection Charts.	
Valve Stem Diameter	1/4 in.	
Flow Coefficients (Cv)	Two-Way: 1.0, 1.7, 3.2; Three-Way (Mixing): 1.2, 2.0. See Selection Charts.	
Maximum Seat Leakage	PDTC (N.O.) and PDT0 (N.C.): 0.05% of Maximum Rated Valve Capacity Three-Way Mixing: 0.5% of Maximum Rated Valve Capacity	
Maximum Recommended Differential Pressure for Valve Sizing	35 psi (245 kPa)	
Rangeability	Refer to the <i>Flare Valves 1/2 in. Two-Way and Three-Way Product Bulletin (LIT-977175)</i> .	
Valve Stroke	5/16 in.	
Maximum Allowable Pressure/Temperature	(Two-Way) V-3766, VB-3766, V-3966, VB-3966 400 psi (2,800 kPa) up to 150°F (66°C) Decreasing to 345 psi (2,415 kPa) at 281°F (140°C) (Three-Way Mixing) V-4332 and VB-4332 250 psi (1,750 kPa) Maximum at 281°F (140°C)	
Ambient Temperature Limit	-10 to 150°F (-23 to 66°C) for Pneumatic Actuators; -10 to 140°F (-23 to 60°C) with VA-805x Actuator	
Fluid Operating Temperature Limits	281°F (140°C) Maximum for Pneumatic Actuators; 195°F (90°C) Maximum with VA-805x Actuator	
Materials	Stem	Stainless Steel
	Plug	PDTC (N.O.) and PDT0 (N.C.): Brass with Molded and Bonded Composition Disc Three-Way Mixing: Brass (Metal-to-Metal Seating)
	Body	Cast Brass with Natural Finish
	Actuator	Die Cast Aluminum for Pneumatic Actuators. For Electric Actuators, Refer to the Relevant Electric Actuator Product Bulletin.
	Diaphragm	Molded Reinforced Synthetic Rubber for Pneumatic Actuators
Spring Ranges (Nominal)	3 to 6 psi (21 to 42 kPa) N.O. only; 4 to 8 psi (28 to 56 kPa) MIX Only; 9 to 13 psi (63 to 91 kPa) N.C. and MIX for Pneumatic Actuators	
Body Style and Sizes	Offset Globe for 1/2 in. SAE Flared Connections	
Maximum Control Pressure	30 psi (210 kPa) for Pneumatic Actuators	