

# One-Piece Ball Valves VB2 & VB2G Series

1/8 to 1/2 in. (3 to 12 mm OD)  
Up to 3000 psig (206 bar)  
Stainless Steel, Brass

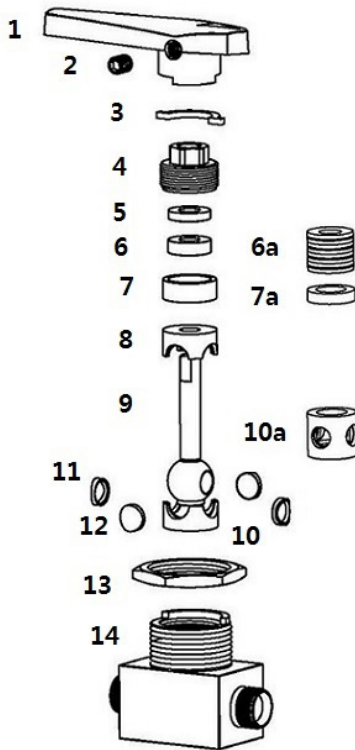
Catalog No. VB2-3  
May, 2019



### Features

- Directional Handle indicates flow direction.
- Panel mounting nut provides ability to mount valve to control panel or actuator.
- Live-loaded disc springs maintain load to packing to seal and compensate thermal cycles.
- One piece body reduces potential leak path.
- One piece ball stem prevents backlash during valve actuation.
- Capsule packing fills voids between body and ball allowing no fluid entrapment.
- Capsule packing design does not require system pressure to seal.
- Discs and rings prevent the packing from deformation.

### Materials of Construction



Components	Valve Body Material	
	Stainless Steel	Brass
	Material Grade / ASTM Standard	
1. Handle	Nylon with Zinc insert	
2. Set screw	SS304 /A276	
3. Handle Stopper	SS316 / A240 Applicable to VB2D & VB23D Series	
4. Packing bolt	SS316/A276	Brass C3604/JIS H3250, C36000/B16
5. Upper gland	SS316/A276	
6. Bushing	PTFE /D1710	
6a. Disc Springs for VB2G Series	S17400/A693, VB2A Series 8 springs; VB2B Series 6 Springs	
7. Lower gland	SS316/A276	Brass C3604/ JIS H3250, C36000/B16
7a. Gland for VB2G Series	SS316/A276	
8. Upper packing	PTFE /D1710	
10. Lower packing		
10a. One-Piece Packing for VB2G Series	PFA/D3307	
9. Ball stem	SS316/A276	
11. Side disc (2)	PTFE coated Powered SS 300 Series / B783	
12. Side ring (2)		
13. Panel nut	SS316/A276	Brass C3604/ JIS H3250, C36000/B16
14. Body		
Wetted Parts listed in <b>BOLD</b> letters		
Lubricant	Wetted parts: Silicon-based	
	Non-wetted parts: Molybdenum disulfide with hydrocarbon binder coating	

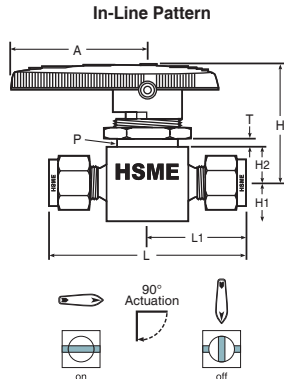
### Pressure-Temperature Ratings

Temp. °F (°C)	VB2GA, VB23GA Series		VB2GB, VB23GB Series			
	SS316	Brass	SS316		Brass	
	2-way In-Line & Angle, 3-Way		2-way In-Line	Angle, 3-Way	2-way In-Line	Angle, 3-Way
-65 to 100 (-53 to 37)	2500 (172)	2500 (172)	3000 (206)	2500 (172)	3000 (206)	2500 (172)
150 (65)	2500 (172)	2500 (172)	3000 (206)	2500 (172)	3000 (206)	2500 (172)
200 (93)	2500 (172)	2350 (162)	2800 (193)	2500 (172)	2630 (181)	2350 (162)
250 (121)	2500 (172)	2300 (158)	2650 (182)	2500 (172)	2570 (177)	2300 (158)
300 (148)	2500 (172)	2250 (155)	2500 (172)	2500 (172)	2520 (173)	2250 (155)

Valve Pattern	Valve Series		
	VB2A, VB2C, VB2D	VB2B	-
2-way In-Line	VB2A, VB2C, VB2D	VB2B	-
2-way Angle	VB2A, VB2B	-	VB2C, VB2D
3-way	VB23A, B23B	-	VB23C, B23D
4-way	VB24A	-	VB24B
5-way	VB25A	-	VB25B
<b>Pressure</b>	2500 (172)	3000 (205)	1500 (103)
<b>Temp.</b>	50 to 150 °F (10 to 65 °C)		

## VB2 Series 2-Way On-Off Ball Valves

90° Actuation Valves

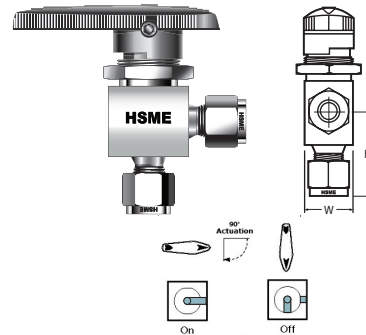


Handle Indicates Flow Direction

**P** panel hole  
 Valve Unit: mm (in.)  
 Series  
 VB2A 15.1 (19/32)  
 VB2B 19.8 (25/32)  
 VB2C 28.6 (1 1/8)  
 VB2D 38.1 (1 1/2)

**T** panel thickness  
 Valve Unit: mm (in.)  
 Series max. min.  
 VB2A 6.4 (1/4) 3.2 (1/8)  
 VB2B 4.8 (3/16) 3.2 (1/8)  
 VB2C 9.5 (3/8) 3.2 (1/8)  
 VB2D 9.5 (3/8) 3.2 (1/8)

### Angle Pattern



Handle Indicates Flow Direction

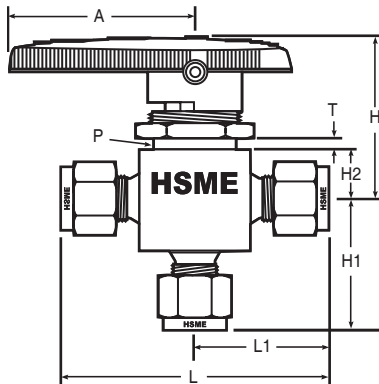
### Ordering Information and Dimensions

Basic Ordering Number	End Connections		Orifice mm (in.)	Cv		Dimensions mm (in.)							
	Inlet	Outlet		In-Line	Angle	L	L1	H	H1	H2	H3	A	W
VB2A- VB2GA-	A2T-	1/8 in. OD M Tube Fitting	2.36 (0.93)	0.2	0.15	51.1 (2.01)	25.7 (1.01)	34.5 (1.36)	7.1 (0.28)	8.6 (0.34)	24.6 (0.97)	28.4 (1.12)	14.7 (0.58)
	A4T-	1/4 in. OD M Tube Fitting	3.18 (0.125)	0.6	0.35	56.1 (2.21)	27.9 (1.10)				27.2 (1.07)		
	A3M-	3mm OD M Tube Fitting	2.36 (0.93)	0.2	0.15	51.1 (2.01)	25.7 (1.01)				24.6 (0.97)		
	A6M-	6mm OD M Tube Fitting	3.18 (0.125)	0.6	0.35	56.1 (2.21)	27.9 (1.10)				27.2 (1.07)		
	F2N-	1/8 in. Female NPT		0.5	0.3	41.4 (1.63)	20.6 (0.81)				20.6 (0.81)		
VB2B- VB2GB-	A4T-	1/4 in. OD M Tube Fitting	4.75 (0.187)	2.4	0.9	60.7 (2.39)	30.5 (1.20)	37.3 (1.56)	9.7 (0.38)	11.2 (0.44)	29.7 (1.17)	38.9 (1.53)	19.8 (0.78)
	A6T-	3/8 in. OD M Tube Fitting		1.5	0.9	65.5 (2.58)	32.8 (1.29)				32.8 (1.29)		
	A6M-	6mm OD M Tube Fitting		2.4	0.9	60.7 (2.39)	30.5 (1.20)				29.7 (1.17)		
	A8M-	8mm OD M Tube Fitting		1.5	0.9	62.5 (2.46)	31.2 (1.23)				30.5 (1.2)		
	F2N-	1/8 in. Female NPT		1.2	0.7	50.8 (2.0)	25.4 (1.0)				25.4 (1.0)		
	F4N-	1/4 in. Female NPT		0.9	0.75	52.3 (2.06)	26.2 (1.03)				26.2 (1.03)		
	F4R-	1/4 in. ISO Female Tapered		0.9	0.75								
	M4N-	1/4 in. Male NPT		1.2	0.75	50.8 (2.0)	25.4 (1.0)						
MA4N4T-	1/4 in. Male NPT to 1/4 in. OD M Tube Fitting	1.6	0.75	55.9 (2.0)	30.5 (1.20)								
VB2C-	A6T-	3/8 in. OD M Tube Fitting	7.14 (0.281)	6	2	77.5 (3.05)	38.6 (1.52)	52.6 (2.07)	14.2 (0.56)	14.2 (0.56)	36.3 (1.43)	50.8 (2.0)	28.4 (1.12)
	A10M	10mm OD M Tube Fitting		6	2	78.0 (3.07)	38.9 (1.53)				36.3 (1.43)		
	F4N-	1/4 in. Female NPT		3	1.7	63.5 (2.5)	31.8 (1.25)				31.8 (1.25)		
	F6N-	3/8 in. Female NPT		2.6	1.5								
	F6R-	3/8 in. ISO Female Tapered		2.6	1.5								
VB2D-	A8T-	1/2 in. OD M Tube Fitting	10.3 (0.406)	12	4.6	99.6 (3.92)	49.8 (1.96)	61.7 (2.43)	17.5 (0.69)	17.5 (0.69)	44.2 (1.74)	76.2 (3.0)	38.1 (1.50)
	A12T-	3/4 in. OD M Tube Fitting		6.4	3.8								
	A12M-	12mm OD M Tube Fitting		12	4.6								
	F8N-	1/2 in. Female NPT		6.3	3.5								
	F8R-	1/2 in. ISO Female Tapered		6.3	3.5						79.2 (3.12)		

All dimensions shown are for reference only and are subject to change. Dimensions with M Tube Fitting nuts are in finger-tight position.

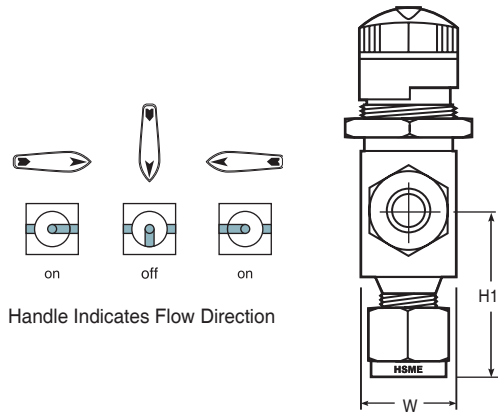
## VB23 Series 3-Way Switching Valves

180° Actuation Valves



**P panel hole**  
 Valve Unit: mm (in.)  
 Series  
 VB23A 15.1 (19/32)  
 VB23B 19.8 (25/32)  
 VB23C 28.6 (1 1/8)  
 VB23D 38.1 (1 1/2)

**T panel thickness**  
 Valve Unit: mm (in.)  
 Series max. min.  
 VB23A 6.4 (1/4) 3.2 (1/8)  
 VB223 4.8 (3/16) 3.2 (1/8)  
 VB23C 9.5 (3/8) 3.2 (1/8)  
 VB23D 9.5 (3/8) 3.2 (1/8)

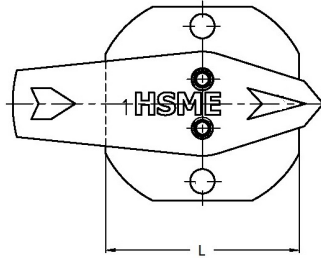
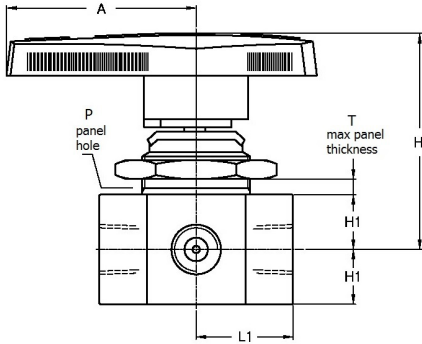


### Ordering Information and Dimensions

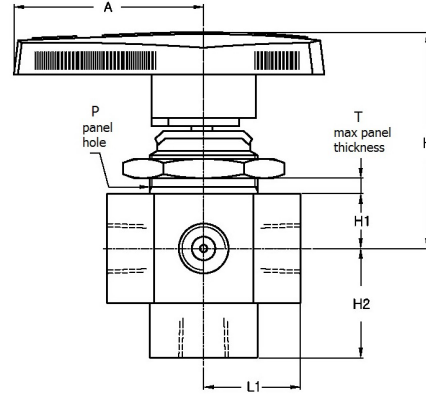
Basic Ordering Number	End Connections	Orifice mm (in.)	Cv	Dimensions mm (in.)									
				L	L1	H	H1	H2	A	W			
VB23A- VB23GA-	A2T-	1/8 in. OD M Tube Fitting	2.36 (0.093)	0.15	51.1(2.01)	25.7(1.01)	34.5 (1.36)	24.6(0.97)	8.6 (0.34)	28.7 (1.13)	14.7 (0.58)		
	A4T-	1/4 in. OD M Tube Fitting	3.10 (0.125)	0.35	56.1(2.21)	27.9(1.10)		27.2(1.07)					
	A3M-	3mm OD M Tube Fitting	2.36 (0.093)	0.15	51.1(2.01)	25.7(1.01)		24.6(0.97)					
	A6M-	6mm OD M Tube Fitting	3.10 (0.125)	0.35	56.1(2.21)	27.9(1.10)		27.2(1.07)					
	F2N-	1/8 in. Female NPT		0.3	41.4(1.63)	20.6(0.81)		20.6(0.81)					
VB23B- VB23GB-	A4T-	1/4 in. OD M Tube Fitting	4.75 (0.187)	0.9	60.7(2.39)	30.5(1.20)	37.3 (1.47)	29.7(1.17)	11.2 (0.44)	38.9 (1.53)	19.8 (0.78)		
	A6M-	6mm OD M Tube Fitting		0.8	62.5(2.46)	31.2(1.23)		30.5(1.20)					
	A8M-	8mm OD M Tube Fitting		0.75	52.3(2.06)	26.2(1.03)		26.2(1.03)					
	F4N-	1/4 in. Female NPT		0.8	60.7(2.39)	30.5(1.20)		26.2(1.03)					
	MA4N4T-	1/4 in. Male NPT to 1/4 in. OD M Tube Fitting		0.75	52.3(2.06)	26.2(1.03)		26.2(1.03)					
	F4R-	1/4 in. ISO Female Tapered			52.3(2.06)	26.2(1.03)		26.2(1.03)					
VB23C-	A6T-	3/8 in. OD M Tube Fitting	7.10 (0.281)	2.0	73.4(2.89)	36.8(1.45)	52.6 (2.07)	36.3(1.43)	14.2 (0.56)	50.8 (2.0)	28.4 (1.12)		
	A10M-	10mm OD M Tube Fitting		1.7	63.5(2.50)	31.8(1.25)		31.8(1.25)					
	F4N-	1/4 in. Female NPT		1.5									
	F6N-	3/8 in. Female NPT											
	F6R-	3/8 in. ISO Female Tapered											
VB23D-	A8T-	1/2 in. OD M Tube Fitting	10.3 (0.406)	4.6			88.4(3.48)		44.2(1.74)	61.7 (2.43)	44.2(1.74)	17.5 (0.69)	76.2 (3.0)
	A12T-	3/4 in. OD M Tube Fitting		3.8									
	A12M-	12mm OD M Tube Fitting		4.6									
	F8N-	1/2 in. Female NPT		3.5	79.5(3.13)	39.6(1.56)		39.6(1.56)					
	F8R-	1/2 in. ISO Female Tapered											

All dimensions shown are for reference only and are subject to change. Dimensions with M Tube Fitting nuts are in finger-tight position.

## VB24 Series 4-Way Ball Valves

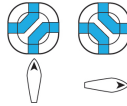


## VB25 Series 5 Way Ball Valves



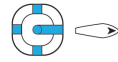
### 4-Way Crossover Ball Valves

- 90° actuation
- Crossover of two stream flows.
- Handle's mechanical stop with stop plate provides positive port positioning.



### 5-Way Switching Ball Valves

- 360° actuation
- Flow switching from a single inlet to multiple outlets or multiple inlets to single outlet.
- Handle contains a spring-loaded pin and detent plate for exact port positioning.



### Ordering Information and Dimensions

Complete Part Number	End Connections	Cv	Dimensions, mm (in.)								
			Orifice	H	H1	H2	L1	L	A	T	P
<b>4-Way</b>											
VB24A-F2N-SS	1/8 in. Female NPT	0.08	1.57 (0.062)	42.9 (1.69)	11.2 (0.44)	-	19.8 (0.78)	39.4 (1.55)	38.9 (1.53)	4.8 (3/16)	23.1 (29/32)
VB24B-F8N-SS	1/2 in. Female NPT	1.6	7.14 (0.281)	61.7 (2.43)	17.5 (0.69)	-	39.6 (3.13)	79.5 (3.13)	76.2 (3.00)	9.7 (3/8)	38.1 (1 1/2)
<b>5-Way</b>											
VB25A-F2N-SS	1/8 in. Female NPT	0.07	1.57 (0.062)	42.9 (1.69)	11.2 (0.44)	39.6 (3.13)	39.4 (1.55)	38.9 (1.53)	4.1 (5/32)	23.1 (29/32)	
VB25B-F8N-SS	1/2 in. Female NPT	3.5	10.3 (0.406)	61.7 (2.43)	17.5 (0.69)		79.5 (3.13)	76.2 (3.00)	9.7 (3/8)	38.1 (1 1/2)	

All dimensions shown are for reference only and are subject to change.

### Flow Data @ 70 °F (21 °C)

Cv	Water Flow			Air Flow			Cv	Water Flow			Air Flow		
	U.S.gal/min. (std L/min.)			std ft3/min (std L/min.)				U.S.gal/min. (std L/min.)			std ft3/min (std L/min.)		
	Pressure Drop to Atmosphere (Δ p), psi (bar)							Pressure Drop to Atmosphere (Δ p), psi (bar)					
	10 (0.68)	50 (3.4)	100 (6.8)	10 (0.68)	50 (3.4)	100 (6.8)		10 (0.68)	50 (3.4)	100 (6.8)	10 (0.68)	50 (3.4)	100 (6.8)
0.07	0.2 (0.7)	0.5 (1.8)	0.7 (2.6)	0.8 (22)	2.1 (59)	3.7 (100)	1.5	4.7 (17)	11 (41)	15 (56)	17 (480)	45 (1200)	80 (2200)
0.08	0.3 (1.1)	0.6 (2.2)	0.8 (3.0)	0.9 (25)	2.4 (67)	4.3 (120)	1.6	5.0 (18)	11 (41)	16 (60)	18 (500)	48 (1300)	85 (2400)
0.15	0.4 (1.5)	1.0 (3.7)	1.5 (5.6)	1.7 (48)	4.5 (120)	8.0 (220)	1.7	5.3 (20)	12 (45)	17 (64)	19 (530)	51 (1400)	90 (2500)
0.20	0.6 (2.2)	1.4 (5.2)	2.0 (7.5)	2.3 (65)	6.0 (160)	11 (310)	2.0	6.3 (23)	14 (52)	20 (75)	22 (620)	60 (1600)	100 (2800)
0.30	0.9 (3.4)	2.1 (7.9)	3.0 (11)	3.4 (96)	9.0 (250)	16 (450)	2.4	7.6 (28)	17 (64)	24 (90)	27 (760)	72 (2000)	120 (3300)
0.35	1.1 (4.1)	2.4 (9.0)	3.5 (13)	4.0 (110)	10 (280)	19 (530)	2.6	8.2 (31)	18 (68)	26 (98)	29 (820)	78 (2200)	140 (3900)
0.50	1.6 (6.0)	3.5 (13)	5.0 (18)	5.6 (150)	15 (420)	27 (760)	3	9.5 (35)	21 (79)	30 (110)	34 (960)	90 (2500)	160 (4500)
0.60	1.9 (7.1)	4.2 (15)	6.0 (22)	6.8 (190)	18 (500)	32 (900)	3.5	11 (41)	25 (94)	35 (130)	39 (1100)	100 (2800)	180 (5000)
0.70	2.2 (8.3)	4.9 (18)	7.0 (26)	7.9 (220)	21 (590)	37 (1000)	3.8	12 (45)	27 (100)	38 (140)	43 (1200)	110 (3100)	200 (5600)
0.75	2.3 (8.7)	5.3 (20)	7.5 (28)	8.5 (240)	22 (620)	40 (1100)	4.6	15 (56)	33 (120)	46 (170)	52 (1400)	140 (3900)	240 (6700)
0.90	2.8 (10)	6.4 (24)	9 (34)	10 (280)	27 (760)	48 (1300)	6.0	19 (71)	42 (150)	60 (220)	68 (1900)	180 (5000)	320 (9000)
1.2	3.8 (14)	8.5 (32)	12 (45)	14 (390)	36 (1000)	64 (1800)	6.3	20 (75)	45 (170)	63 (230)	71 (2000)	190 (5300)	330 (9300)

## Special Flow Paths

### 2-way In-Line Pattern

Standard Straight Path	Optional L Path	Optional T Path																																		
<p>on</p> <p>off</p>	<p>Traps sample from port 1</p> <p>Transfers sample to port 2</p> <table border="1"> <thead> <tr> <th>Applicable Valve Series</th> <th>Porting Designator</th> <th>Orifice mm (in.)</th> <th>Pressure Ratings, psig (bar)</th> </tr> </thead> <tbody> <tr> <td>VB2A</td> <td rowspan="4">L</td> <td>1.2 (0.047)</td> <td>2500</td> </tr> <tr> <td>VB2B</td> <td>1.6 (0.062)</td> <td>(172)</td> </tr> <tr> <td>VB2C</td> <td>3.2 (0.125)</td> <td>1500</td> </tr> <tr> <td>VB2D</td> <td>7.1 (0.281)</td> <td>(103)</td> </tr> </tbody> </table>	Applicable Valve Series	Porting Designator	Orifice mm (in.)	Pressure Ratings, psig (bar)	VB2A	L	1.2 (0.047)	2500	VB2B	1.6 (0.062)	(172)	VB2C	3.2 (0.125)	1500	VB2D	7.1 (0.281)	(103)	<p>on</p> <p>off</p> <p>T porting is used when fluid must not be trapped in the valve path.</p> <table border="1"> <thead> <tr> <th>Applicable Valve Series</th> <th>Porting Designator</th> <th>Orifice mm (in.)</th> <th>Pressure Ratings, psig (bar)</th> </tr> </thead> <tbody> <tr> <td>VB2A</td> <td rowspan="4">T</td> <td>3.1 (0.125)</td> <td>2500</td> </tr> <tr> <td>VB2B</td> <td>4.75 (0.187)</td> <td>(172)</td> </tr> <tr> <td>VB2C</td> <td>7.1 (0.281)</td> <td>1500</td> </tr> <tr> <td>VB2D</td> <td>10.3 (0.406)</td> <td>(103)</td> </tr> </tbody> </table>	Applicable Valve Series	Porting Designator	Orifice mm (in.)	Pressure Ratings, psig (bar)	VB2A	T	3.1 (0.125)	2500	VB2B	4.75 (0.187)	(172)	VB2C	7.1 (0.281)	1500	VB2D	10.3 (0.406)	(103)
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### 3-Way Valves

Standard Path	Optional I Path																																		
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### Special Flow Path Ordering Information

To order, suffix the applicable designator of special flow path to the valve ordering number. Example: VB23A-A4T-SS-C

## Options

### Vented Valves

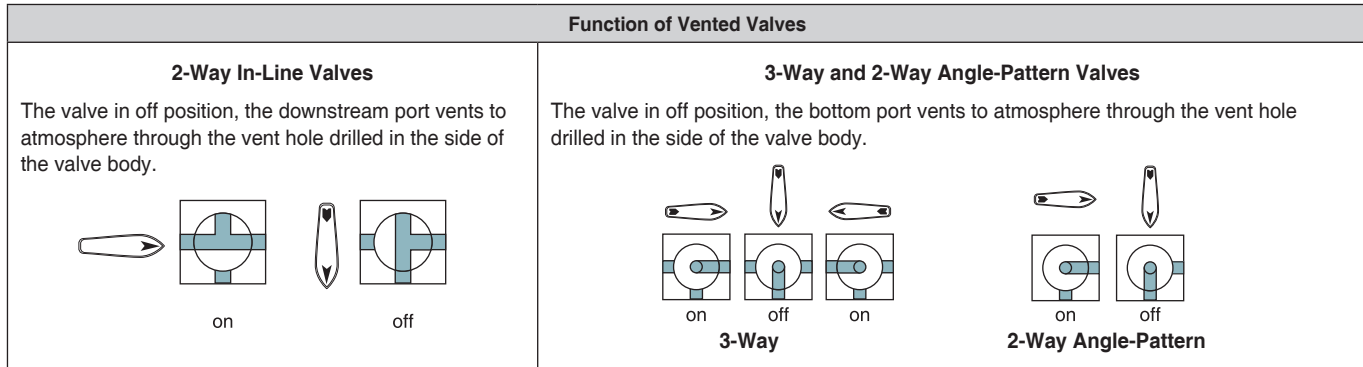
Vented Valve Series			Body Vent Hole Size, mm (in.)
2-Way Pattern		3-Way	
In-Line	Angle		
VB2VA		VB23VA	1.02 (0.040)
VB2VB		VB23VB	
VB2VC		VB23VC	1.24 (0.049)
VB2VD		VB23VD	2.36 (0.093)

Vented valves are supplied with a small hole drilled in the side of valve body.

#### How to order

1. Select an applicable valve basic ordering number. Example: VB2A-A4T-
2. Insert "V" in the valve ordering number. Example: VB2VA-A4T-
3. Suffix the valve body material designator. Example: VB2VA-A4T-SS

**Pressure Rating:** Vented valve changes the pressure rating to 500 psig (34.4 bar).

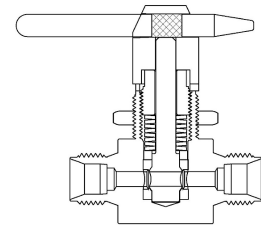


### Metal Handle

Applicable to 2-Way In-Line, Angle Pattern, and 3-Way valves.



Metal handle is useful for actuating valve in an elevated temperature. Stainless Steel and Aluminum materials are available.



#### Metal Handle Designator

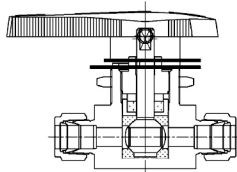
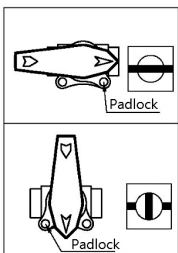
Handle Material	Designator
Stainless Steel	-SH
Aluminum	-AH

To order factory-assembled metal handle on the valve, add **-SH** or **-AH** to the valve ordering number. Example: VB2A-A4T-**SH**-SS

Aluminum handle is supplied with black anodized.

### Valve Lockout Device

Applicable to 2-Way In-Line Pattern valves



The Device allows lockout of 2-Way in-Line pattern valves either in on or off position using the standard padlock.

To order factory-assembled lockout device on the valve, add "**LD**" to the valve ordering number. Example: VB2A-A4T-**LD**-SS

Padlock is not supplied.



### Sour-Gas Service

Stainless Steel valves for service in sour gas application are available. Materials are selected in accordance with NACE MR0175/ISO 15156-3 or NACE MR0103 depending on the application. To order, add "**SG**" to the valve ordering number. Example: VB2GA-A4T-**SG**-SS



## Factory-Assembled Valve with Pneumatic Actuator

Pneumatic Actuators are in compliance to ISO 5211.

2-Way in-line, Angle pattern, and 3-Way valves with “I” and “C” flow paths require need 90° actuation; all other 3-Way valves require 180° actuation.

To order, select actuator designator. Example: **QSOHT**

Add the designator of the actuator to the valve ordering number. Example: VB2GA-A4T-**QSOHT**-SS

Step 1	Step 2	Step 3	Step 4
<b>Q:</b> 90° Actuation <b>H:</b> 180° Actuation	<b>S:</b> Spring Return <b>D:</b> Double Acting	<b>O:</b> Normally Open <b>C:</b> Normally Close This option applicable to Spring Return actuator	<b>Nil:</b> Standard Temperature <b>HT:</b> High Temperature <b>LT:</b> Low Temperature

Actuator Operating Temperature, °F (°C)

Actuator	Standard Temperature	High Temperature	Low Temperature
Operating Temperature	-4 to 176 (-20 to 80)	-5 to 302 (-15 to 150)	-40 to 176 (-40 to 80)
Actuator O-Ring	NBR	FKM	Silicon

## Factory Test and Cleaning

- Every valve is factory tested with nitrogen @ 1000 psig (69 bar) for leakage at packing to a maximum allowable leak rate of 0.1 std cm<sup>3</sup>/min.
- Every valve is cleaned and packaged in accordance with HSME cleaning standard CS-01. Special cleaning standard CS-11 in compliance with ASTM G93 Level C is for option.

## Application

- Analytical industry requires a valve with the lowest dead volume to prevent fluid entrapment minimizing contamination.
- Control sampling system and process instrumentation require a valve with compact size, high flow capacity and directional indication of flow.

## Operation

- VB2 series valves are designed to control fluid in full open and full close position; using the valves to throttle the flow may reduce the valve service life.
- Valves that have not been actuated for a period of time may have a higher initial actuation torque.
- The working pressure of every valve is adjusted for factory test at 1000 psig (69 bar) @ 70°F (21°C). For use in higher pressure, the valve packing may be required for re-adjustment.

## Packing Adjustment Procedure

- Packing adjustment may be periodically required to prevent leakage and to increase service life.
- Packing bolt permits external packing adjustment maintaining the valve in-line.

1. Depressurize the system.
2. Cycle and purge the valve.
3. Using the Allen Hex Key as indicated in the table below, turn counter-clockwise the set screw on the handle and remove the handle from the valve.
4. To adjust the packing, turn the packing bolt clockwise in 1/16 turn increment until the valve achieves the leak-tight performance.

Valve Series			Set Screw Hollow Hex
2-Way Pattern		3-Way	
In-Line	Angle		
VB2A		VB23A	M4 x 0.7P
VB2B		VB23B	M5 x 0.8P
VB2C		VB23C	M6 x 1.0P
VB2D		VB23D	M8 x 1.25P

Valve Series			Packing Bolt Hex Flat, in.
2-Way Pattern		3-Way	
In-Line	Angle		
VB2A		VB23A	5/16
VB2B		VB23B	3/8
VB2C		VB23C	1/2
VB2D		VB23D	5/8

5. Re-assemble the handle back in the valve.

## How to Order

**Step 1** Select the desired valve basic or complete ordering number : VB2A-A4T-

To complete the valve ordering number, follow the steps below.

Step 2 Vented Valve	Step 3 Angle Pattern	Step 4 Special Ball Porting		Step 5 Special Cleaning
• V	• A-	2-Way In-Line • L- • T-	3-Way Valve • I- • C- • F-	• 11-
Step 6 No Lubrication	Step 7 Metal Handle	Step 8 Lockout Device	Step 9 Sour Gas Service	Step 10 Body Material
• NL-	SH: Stainless Steel AH: Aluminum	• LD-	• SG-	SS: Stainless Steel B: Brass

	VB2A-A4T-		
Step 2	VB2VA-A4T-	-	-
Step 3	-	VB2A-A4T-A-	-
Step 4	-	-	VB2A-A4T-L-
Step 5	-	-	VB2A-A4T-L-11-
Step 6	VB2VA-A4T-NL-	-	-
Step 7	-	-	VB2A-A4T-L-11-SH-
Step 8	-	VB2A-A4T-A-LD-	-
Step 9	-	VB2A-A4T-A-LD-SG-	-
Step 10	VB2VA-A4T-NL-B	VB2A-A4T-A-LD-SG-SS	VB2A-A4T-L-11-SH-SS

## Oxygen Cleaning

Valves are cleaned, packed, and labeled in accordance with the requirements of ASTM G93 Level C. The wetted parts of the valves are lubricated with non-hydrocarbon lubricant. To order, add "11" to the valve ordering number.

Oxygen cleaned VB2G Series Valves change the low temperature rating. Refer to the table.

Valve Series			Change of Low Temperature Ratings	
2-Way		3-Way	From	To
In-Line	Angle			
VB2GA		VB23GA	-65°F (-53°C)	-30°F (-34°C)
VB2GB		VB23GB		

## Valve with No Lubrication

No lubrication valves are cleaned and packed in accordance with HSME cleaning standard CS-11 in compliance with ASTM G93 Level C. To order, add "NL" to the valve ordering number.

No lubrication valves changes the pressure rating. Refer to the table.

### Note:

No lubrication valves have a significantly higher actuation torque than standard valves with lubrication.

Valve Series			Pressure Ratings, psig (bar)
2-Way		3-Way	
In-Line	Angle		
VB2A		VB23A	500 (34.3)
VB2B		VB23B	
VB2C		VB23C	200 (13.7)
VB2D		VB23D	

## Safe Valve Selection

The selection of a valve for any application or system must be considered to ensure safe performance. Valve rating, valve function, material compatibility, proper installation, operation and maintenance remain the sole responsibility of the system designer and the user. HSME Corporation accepts no liability for any improper selection, compatibility, installation, operation or maintenance.