

INSTRUMENTATION BALL VALVES

High Pressure Ball Valves

V08-VB6-01, JAN, 2016



VB6 Series

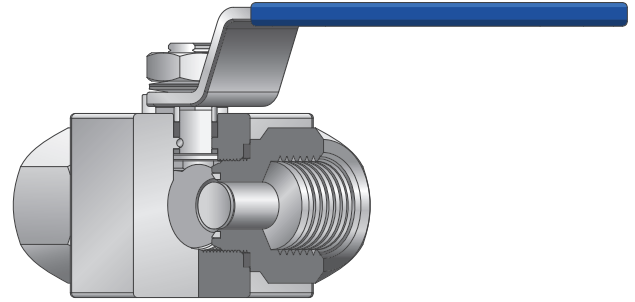
- Pressure rating up to 10,000 psig (690 barg) @ 70°F (21°C)
- Temperature rating from -22°F to 355°F (-30°C to 150°C) with PCTFE seat and from -65°F to 500°F (-54°C to 260°C) with PEEK seat
- 2-way, 3-way, small and compact designs
- Materials available in 316 stainless steel, carbon steel, duplex and alloy 400
- 100% factory tested

INSTRUMENTATION BALL VALVES

■ Features

- Advanced Low Torque Design**
 VB6 series ball valves offer a range of seat materials and low operating torques to provide in-process environmental compatibility.
- Ball**
 Precision machined ball is super finished, thus assuring low operating torques.
- Stem**
 One piece stem is designed as an anti-blowout type and maintains seal integrity at all pressures.
- Body Seals**
 Fully contained PTFE 'O' ring body seals provide a high level of body integrity and protect the body threads from process media.
- Firesafe Seats**
 In a fire system line, this option ensures that the secondary metal to metal contact between ball and seat is maintained. Note that the body and stem seals are graphite.
- Stainless Steel Handle**
 One piece stamped 316 stainless steel handle provides rust-free quarter turn operation.
- A Variety** of end connections, seats and stem packings are available.

VB6A-F Series



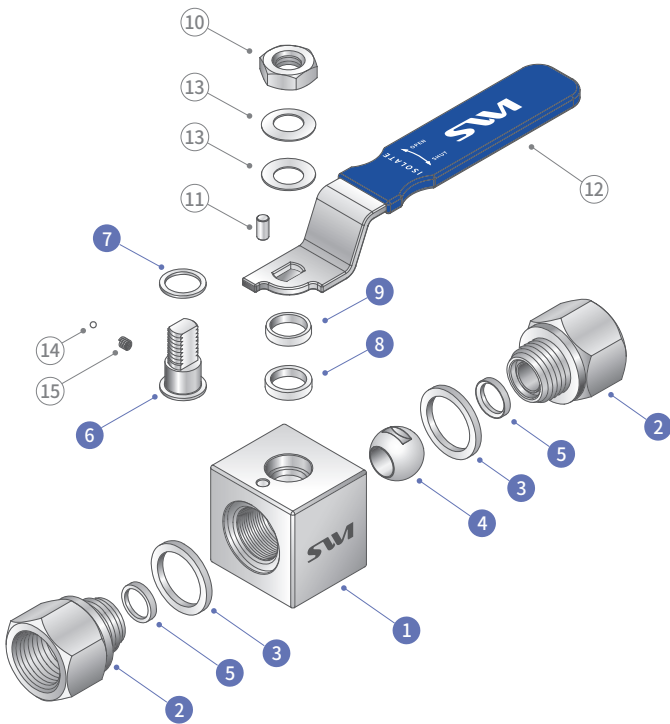
■ Specifications

Pressure Rating	10,000 psig (690 barg) @ 70°F (21°C)
Temperature Rating	-22 to 355°F (-30 to 150°C) with PCTFE seat -65 to 500°F (-54 to 260°C) with PEEK seat
Body Material	316 stainless steel and carbon steel
Port Connections	1/4" to 1"
Orifice	10.0 mm to 19.0 mm

■ Materials of Construction

Component	Material	
	Carbon Steel	Stainless Steel
1 Body	Carbon Steel	A276 / 479 Type 316/L
2 End Connector	Carbon Steel	A276 / 479 Type 316/L
3 End Packing	Standard : PTFE / Optional : O-ring, Graphite	
4 Ball	A276 / 479 Type 316/L	
5 Seat	PCTFE, PVDF, PEEK, etc. (PTFE, RPTFE also available)	
6 Stem	A276 / 479 Type 316/L	
7 Stem Washer	PTFE	
8 Stem Packing	Standard : PTFE / Optional : Graphite	
9 Packing Gland	A276 / 479 Type 316	
10 Handle Nut	316 stainless steel	
11 Locking Pin		
12 Handle		
13 Disc Spring		
14 Anti Static Ball		
15 Anti Static Spring		

- Wetted parts are listed in navy
- Carbon steel is galvanized to prevent corrosion
- Lubricant : Fluorinated base



■ Factory Testing

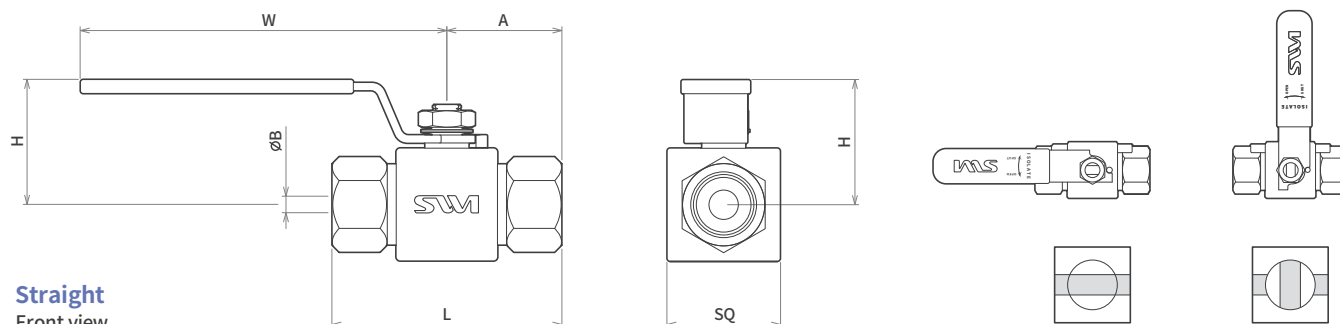
- All valves are production tested with GN₂ at 1,000 psig. Also, the stem packing is tested with GN₂ at 1,000 psig for no detectable leakage.
- Shell testing is performed to a requirement of no detectable leakage.

■ Cleaning

- Every valve is cleaned and packaged in accordance with SWI Valve Cleaning Standard.

■ Dimensions

• VB6A-F Series (2-Way)

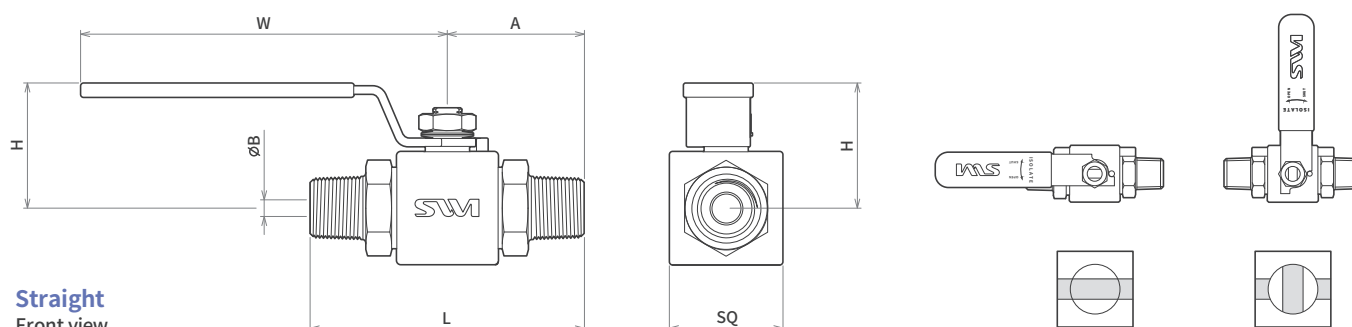


Straight
Front view

Valve Series	End Connection	Orifice in. (mm)	Cv	Dimension in. (mm)					
				L	A	B	H	W	SQ
VB6A-F4N	1/4 F NPT	0.39 (10.0)	7.5	2.52 (64.0)	1.26 (32.0)	0.76 (19.5)	1.57 (40.0)	4.96 (126.0)	1.53 (39.0)
VB6A-F6N	3/8 F NPT			2.79 (73.0)	1.39 (35.5)				
VB6A-F8N	1/2 F NPT			3.11 (79.0)	1.55 (39.5)				
VB6B-F8N	1/2 F NPT	0.5 (12.7)	10.0	3.54 (90.0)	1.77 (45.0)	0.94 (24.0)	2.00 (51.0)	6.37 (162.0)	1.88 (48.0)
VB6B-F12N	3/4 F NPT			3.54 (90.0)	1.77 (45.0)				
VB6C-F12N	3/4 F NPT	0.74 (19.0)	30.0	3.54 (90.0)	1.77 (45.0)	1.14 (29.0)	2.20 (56.0)	6.37 (162.0)	2.28 (58.0)
VB6C-F16N	1 F NPT			3.86 (98.2)	1.93 (49.1)				

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

• VB6A-MF Series (2-Way)



Straight
Front view

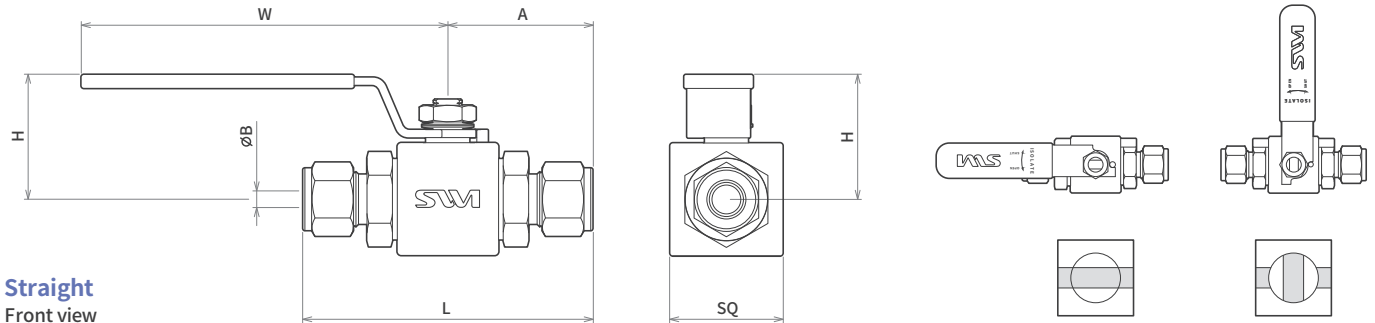
Valve Series	End Connection	Orifice in. (mm)	Cv	Dimension in. (mm)					
				L	A	B	H	W	SQ
VB6A-M4N	1/4 M NPT	0.39 (10.0)	3.7	3.36 (85.4)	1.68 (42.7)	0.27 (7.11)	1.57 (40.0)	4.96 (126.0)	1.53 (39.0)
VB6A-M6N	3/8 M NPT		7.2	3.36 (85.4)	1.68 (42.7)	0.37 (9.65)			
VB6A-M8N	1/2 M NPT		7.5	3.74 (95.2)	1.87 (47.6)	0.39 (10.0)			
VB6B-M8N	1/2 M NPT	0.5 (12.7)	10.0	4.08 (103.6)	2.03 (51.8)	0.5 (12.7)	2.00 (51.0)	6.37 (162.0)	1.88 (48.0)
VB6B-M12N	3/4 M NPT			4.14 (105.2)	2.07 (52.6)				
VB6C-M12N	3/4 M NPT	0.74 (19.0)	19.0	4.53 (115.2)	2.26 (57.6)	0.62 (15.74)	2.20 (56.0)	6.37 (162.0)	2.28 (58.0)
VB6C-M16N	1 M NPT		30.0	4.91 (124.8)	2.45 (62.4)	0.78 (20.0)			

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■ Dimensions

• VB6A-T Series (2-Way)

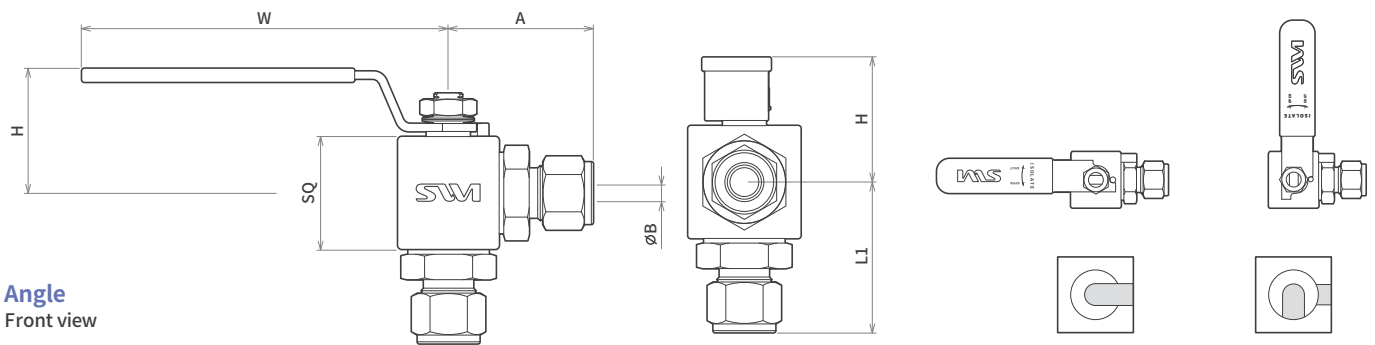


Straight
Front view

Valve Series	End Connection	Orifice in. (mm)	Cv	Dimension in. (mm)					
				L	A	B	H	W	SQ
VB6A-T4	1/4 Tube Fitting	0.39 (10.0)	1.2	3.60 (91.6)	1.80 (45.8)	0.18 (4.8)	1.57 (40.0)	4.96 (126.0)	1.53 (39.0)
VB6A-T6	3/8 Tube Fitting		3.7	3.72 (94.6)	1.86 (47.3)	0.27 (7.11)			
VB6A-T8	1/2 Tube Fitting		7.5	3.92 (99.6)	1.96 (49.8)	0.39 (10.0)			
VB6B-T10	1/2 Tube Fitting	0.5 (12.7)	10.0	4.35 (110.6)	2.17 (55.3)	0.5 (12.7)	2.00 (51.0)	6.37 (162.0)	1.88 (48.0)
VB6B-T12	3/4 Tube Fitting			4.35 (110.6)	2.17 (55.3)				
VB6C-T12	3/4 Tube Fitting	0.74 (19.0)	19.0	4.59 (116.6)	2.29 (58.3)	0.62 (15.74)	2.20 (56.0)	6.37 (162.0)	2.28 (58.0)
VB6C-T16	1 Tube Fitting		30.0	5.11 (129.8)	2.55 (64.9)	0.78 (20.0)			

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• VB6AA-T Series (2-Way)



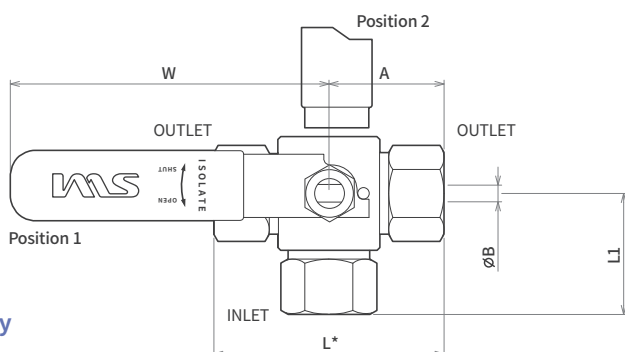
Angle
Front view

Valve Series	End Connection	Orifice in. (mm)	Cv	Dimension in. (mm)					
				L1	A	B	H	W	SQ
VB6AA-T4	1/4 Tube Fitting	0.39 (10.0)	1.2	2.09 (53.3)	1.80 (45.8)	0.18 (4.8)	1.57 (40.0)	4.96 (126.0)	1.53 (39.0)
VB6AA-T6	3/8 Tube Fitting		3.7	2.15 (54.8)	1.86 (47.3)	0.27 (7.11)			
VB6AA-T8	1/2 Tube Fitting		7.5	2.12 (54.0)	1.96 (49.8)	0.39 (10.0)			
VB6BA-T10	1/2 Tube Fitting	0.5 (12.7)	10.0	2.57 (65.3)	2.17 (55.3)	0.5 (12.7)	2.00 (51.0)	6.37 (162.0)	1.88 (48.0)
VB6BA-T12	3/4 Tube Fitting			2.57 (65.3)	2.17 (55.3)				
VB6CA-T12	3/4 Tube Fitting	0.74 (19.0)	19.0	2.74 (69.8)	2.29 (58.3)	0.62 (15.74)	2.20 (56.0)	6.37 (162.0)	2.28 (58.0)
VB6CA-T16	1 Tube Fitting		30.0	2.74 (69.8)	2.55 (64.9)	0.78 (20.0)			

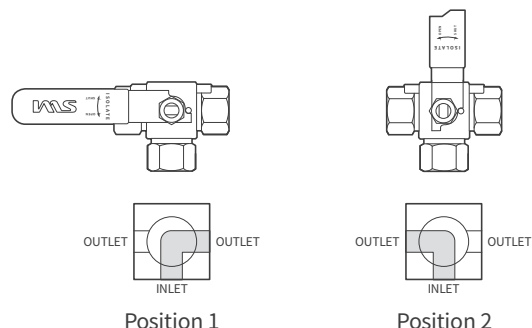
• All dimensions are for reference only and are subject to change.

■ Dimensions

• VB6A3S-F Series (3-Way)



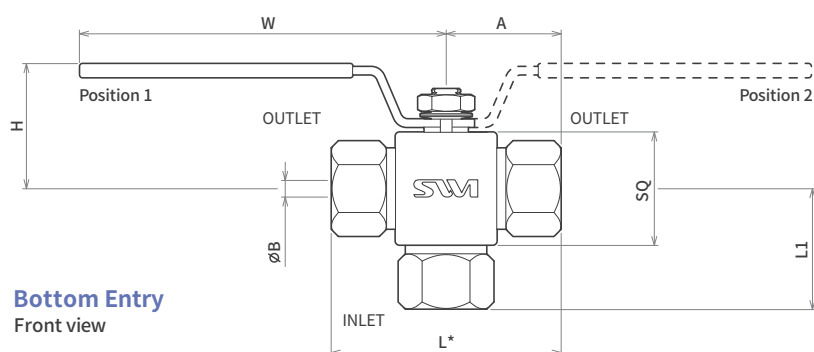
Side Entry
Top view



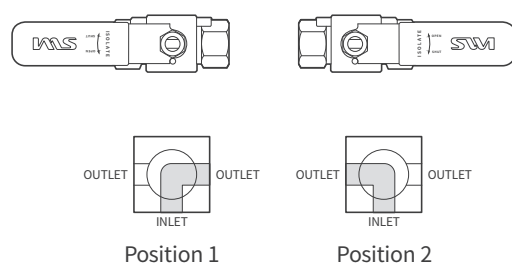
Valve Series	End Connection	Orifice in. (mm)	Cv	Dimension in. (mm)					
				L1	A	B	H	W	SQ
VB6A3S-F4N	1/4 F NPT	0.39 (10.0)	7.5	1.43 (36.5)	1.25 (32.0)	0.76 (19.5)	1.57 (40.0)	4.96 (126.0)	1.53 (39.0)
VB6A3S-F6N	3/8 F NPT			1.57 (40.0)	1.39 (35.5)				
VB6A3S-F8N	1/2 F NPT			1.73 (44.0)	1.55 (39.5)				
VB6B3S-F8N	1/2 F NPT	0.5 (12.7)	10.0	1.94 (49.5)	1.77 (45.0)	0.94 (24.0)	2.00 (51.0)	6.37 (162.0)	1.88 (48.0)
VB6B3S-F12N	3/4 F NPT			2.16 (55.0)	1.77 (45.0)				
VB6C3S-F12N	3/4 F NPT	0.74 (19.0)	30.0	2.22 (56.5)	1.77 (45.0)	1.14 (29.0)	2.20 (56.0)	6.37 (162.0)	2.28 (58.0)
VB6C3S-F16N	1 F NPT			2.38 (60.6)	1.93 (49.1)				

• " * " marked dimensions are the same as those of 2-way (straight) valve. See VB6A-F Series on page 3.
• All dimensions are for reference only and are subject to change.

• VB6A3B-F Series (3-Way)



Bottom Entry
Front view



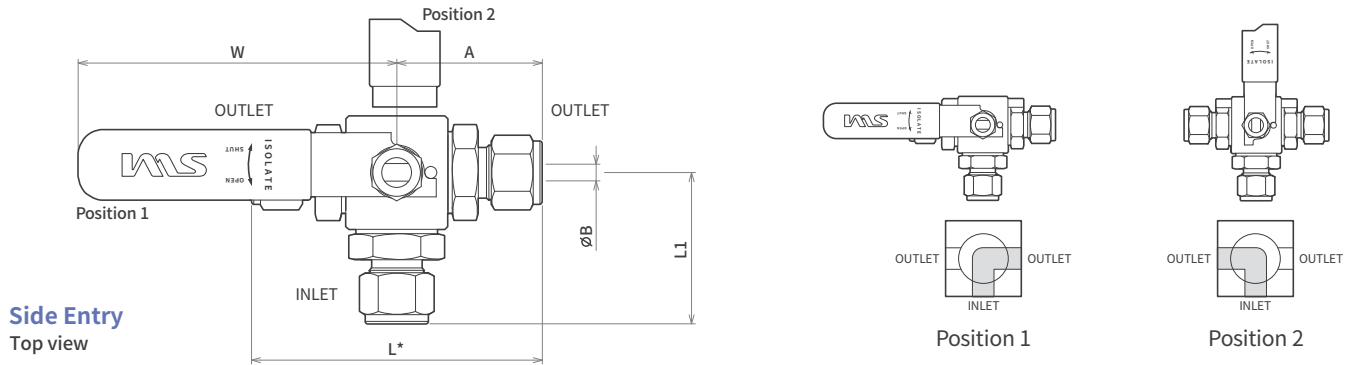
Valve Series	End Connection	Orifice in. (mm)	Cv	Dimension in. (mm)					
				L1	A	B	H	W	SQ
VB6A3B-F4N	1/4 F NPT	0.39 (10.0)	7.5	1.43 (36.5)	1.25 (32.0)	0.76 (19.5)	1.57 (40.0)	4.96 (126.0)	1.53 (39.0)
VB6A3B-F6N	3/8 F NPT			1.57 (40.0)	1.39 (35.5)				
VB6A3B-F8N	1/2 F NPT			1.73 (44.0)	1.55 (39.5)				
VB6B3B-F8N	1/2 F NPT	0.5 (12.7)	10.0	1.94 (49.5)	1.77 (45.0)	0.94 (24.0)	2.00 (51.0)	6.37 (162.0)	1.88 (48.0)
VB6B3B-F12N	3/4 F NPT			2.16 (55.0)	1.77 (45.0)				
VB6C3B-F12N	3/4 F NPT	0.74 (19.0)	30.0	2.22 (56.5)	1.77 (45.0)	1.14 (29.0)	2.20 (56.0)	6.37 (162.0)	2.28 (58.0)
VB6C3B-F16N	1 F NPT			2.38 (60.6)	1.93 (49.1)				

• " * " marked dimensions are the same as those of 2-way (straight) valve. See VB6A-F Series on page 3.
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■ Dimensions

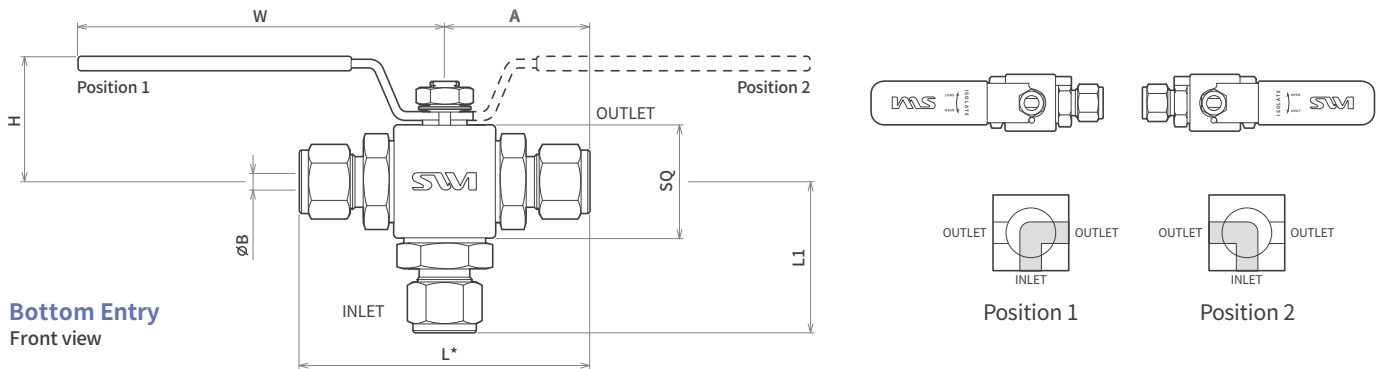
• VB6A3S-T Series (3-Way)



Valve Series	End Connection	Orifice in. (mm)	Cv	Dimension in. (mm)					
				L1	A	B	H	W	SQ
VB6A3S-T4	1/4 Tube Fitting	0.39 (10.0)	1.2	2.09 (53.3)	1.80 (45.8)	0.18 (4.8)	1.57 (40.0)	4.96 (126.0)	1.53 (39.0)
VB6A3S-T6	3/8 Tube Fitting		3.7	2.15 (54.8)	1.86 (47.3)	0.27 (7.11)			
VB6A3S-T8	1/2 Tube Fitting		7.5	2.12 (54.0)	1.96 (49.8)	0.39 (10.0)			
VB6B3S-T10	1/2 Tube Fitting	0.5 (12.7)	10.0	2.57 (65.3)	2.17 (55.3)	0.5 (12.7)	2.00 (51.0)	6.37 (162.0)	1.88 (48.0)
VB6B3S-T12	3/4 Tube Fitting			2.57 (65.3)	2.17 (55.3)				
VB6C3S-T12	3/4 Tube Fitting	0.74 (19.0)	19.0	2.74 (69.8)	2.29 (58.3)	0.62 (15.74)	2.20 (56.0)	6.37 (162.0)	2.28 (58.0)
VB6C3S-T16	1 Tube Fitting		30.0	2.74 (69.8)	2.55 (64.9)				

• " * " marked dimensions are the same as those of 2-way (straight) valve. See VB6A-T Series on page 4.
 • All dimensions are for reference only and are subject to change.

• VB6A3B-T Series (3-Way)



Valve Series	End Connection	Orifice in. (mm)	Cv	Dimension in. (mm)					
				L1	A	B	H	W	SQ
VB6A3B-T4	1/4 Tube Fitting	0.39 (10.0)	1.2	2.09 (53.3)	1.80 (45.8)	0.18 (4.8)	1.57 (40.0)	4.96 (126.0)	1.53 (39.0)
VB6A3B-T6	3/8 Tube Fitting		3.7	2.15 (54.8)	1.86 (47.3)	0.27 (7.11)			
VB6A3B-T8	1/2 Tube Fitting		7.5	2.12 (54.0)	1.96 (49.8)	0.39 (10.0)			
VB6B3B-T10	1/2 Tube Fitting	0.5 (12.7)	10.0	2.57 (65.3)	2.17 (55.3)	0.5 (12.7)	2.00 (51.0)	6.37 (162.0)	1.88 (48.0)
VB6B3B-T12	3/4 Tube Fitting			2.57 (65.3)	2.17 (55.3)				
VB6C3B-T12	3/4 Tube Fitting	0.74 (19.0)	19.0	2.74 (69.8)	2.29 (58.3)	0.62 (15.74)	2.20 (56.0)	6.37 (162.0)	2.28 (58.0)
VB6C3B-T16	1 Tube Fitting		30.0	2.74 (69.8)	2.55 (64.9)				

• " * " marked dimensions are the same as those of 2-way (straight) valve. See VB6A-T Series on page 4.
 • All dimensions are for reference only and are subject to change.

■ Pressure-Temperature Ratings

Valve Series	Material			Pressure Rating - psig (barg) -65°F ~ 70°F (-54°C ~ 21°C)	Temperature Rating
	Seat	Stem Packing	End Seal		
VB6A	PVDF (standard)	PTFE		6,000 (414)	-22°F ~ 25°F (-30°C ~ 130°C)
	PCTFE				-22°F ~ 355°F (-30°C ~ 180°C)
	PEEK				-65°F ~ 500°F (-54°C ~ 260°C)
VB6B VB6C	PVDF (standard)	PTFE	FKM	5,000 (345)	-22°F ~ 265°F (-30°C ~ 130°C)
	PCTFE				-22°F ~ 355°F (-30°C ~ 180°C)
	PEEK				-65°F ~ 500°F (-54°C ~ 260°C)

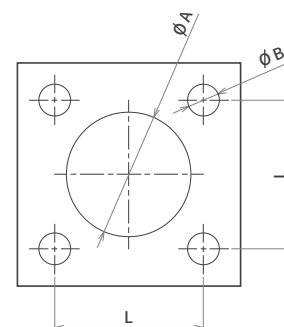
- Above pressure ratings are for 2-way straight pattern valves. The pressure ratings of 2-way angle pattern valves and 3-way valves are equal to 80% of the ratings specified above, respectively.
- The rated pressure shown above is the maximum allowable pressure to the seat. If the system requires higher pressure for testing, the valve must be in open position before and during test so as not to damage the seats.

■ Operation

- Valves are designed to control fluids in fully open or fully closed position.
- Valves that have not been actuated for a prolonged period of time may have a higher initial actuation torque.
- Valves must be in open position during system test to avoid any possible damage to the valve seats.

■ Panel Mounting Options

Valve Series	Orifice in. (mm)	A in. (mm)	B in. (mm)	L in. (mm)
VB6A	0.39 (10.0)	1.18 (30.0)	0.19 (5.0)	1.02 (26.0)
VB6B	0.5 (12.7)	1.49 (38.0)	0.19 (5.0)	1.33 (34.0)
VB6C	0.74 (19.0)	1.49 (38.0)	0.19 (5.0)	1.73 (44.0)



■ Torque for Turning Handle - N·m

Valve Series	Orifice in. (mm)	Working Pressure - psig (barg)					
		0	2,000 (138)	4,000 (276)	6,000 (414)	8,000 (552)	10,000 (690)
VB6A	0.39 (10.0)	1.6	1.8	2.3	2.8	3.3	4.0
VB6B	0.5 (12.7)	3.3	3.8	5.0	5.7	-	-
VB6C	0.74 (19.0)	3.5	4.2	8.0	9.8	-	-

INSTRUMENTATION BALL VALVES

Ordering Information

Code Table: **VB6** | **1** | **2** | **3** | **4** | **5** | **6** | **7**

Sample Valve Code: **A** | **3S** | **F** | **8N** | **PT** | **S** | **PM**

Example : INSTRUMENTATION BALL VALVE, ORIFICE-10.0 mm, 3-WAY SIDE ENTRY, FEMALE NPT 1/2 " x FEMALE NPT 1/2 ", PTFE SEAT, 316/L STAINLESS STEEL BODY, TRIM, PANEL MOUNTING

1.

Orifice	
A	10.0mm
B	12.7mm
C	19.0mm

2.

Valve Pattern	
Nil	2 - way Straight
A	2 - way Angle
3S	3 - way Side Entry
3B	3 - way Bottom Entry

3.

End Connection	
T	LOK Tube Fitting
F	Female
M	Male

Optional

BW	Butt Weld
SW	Socket Weld

4.

Inlet and Outlet Connection Size & Type							
NPT (ISO / BSP)	Thread (NPS)	1/8	1/4	3/8	1/2	3/4	1
	Designator	2N(R)	4N(R)	6N(R)	8N(R)	12N(R)	16N(R)
Fractional Tube	O.D. (in.)	1/8	1/4	3/8	1/2	3/4	1
	Designator	2	4	6	8	12	16
Metric Tube	O.D. (mm)	3	6	10	12	20	25
	Designator	3M	6M	10M	12M	20M	25M

5.

Seat Material	
Nil	PVDF
PT	PTFE
PC	PCTFE
PK	PEEK

6.

Material	
S	Stainless Steel 316 / 316L
C	Carbon Steel
M	Monel UNS N04400
D51	Duplex S.Steel UNS S31803

7.

Option	
N	NACE MR0175
Q	BS EN 10204 Type 3.2
FS	Fire safety design
PM	Panel Mounting

Selecting Valve

When selecting a product, the system design in its entirety must be considered to ensure safe performance. Proper installation, operation and maintenance, as well as material compatibility, adequate ratings and function are the responsibilities of the system designer and user.

