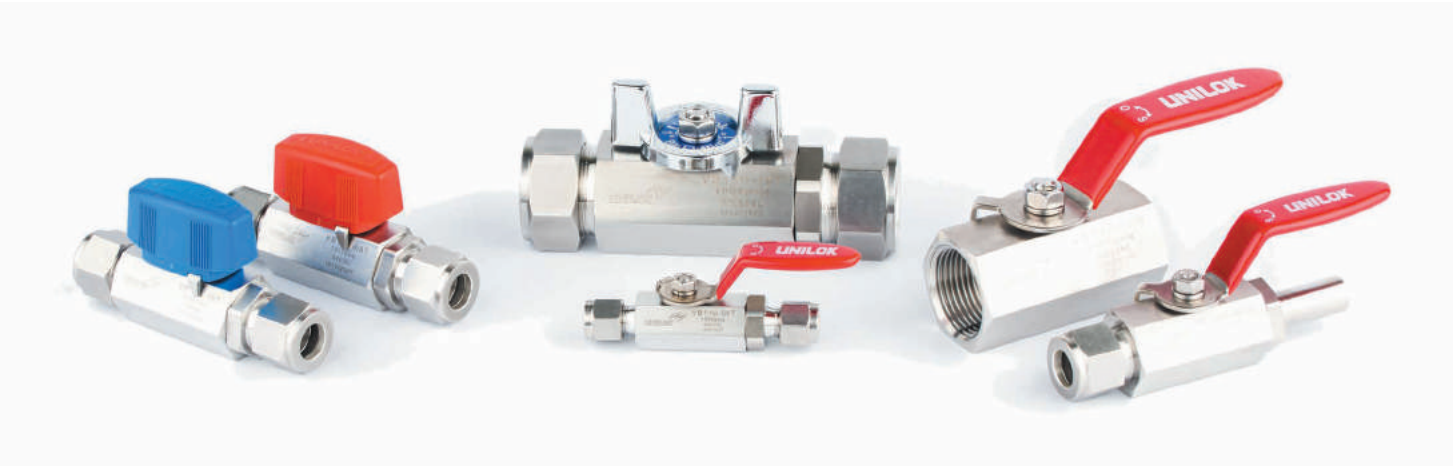


Hex Ball Valves  
VB1

Ball Valves

VB1 Hex Ball Valves	115
VBM1 Master key Hex Ball Valves	123
VB3 Ball Valves	127
VB6F High Pressure Ball Valves	135
VB6B High Pressure Bar Stock Ball Valves	141



# Hex Ball Valves VB1

## CONTENTS

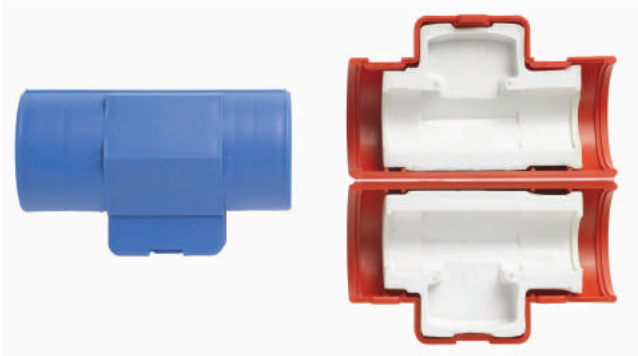
Application .....	116	Materials of Construction .....	117
Protection Cover .....	116	Important Notification .....	117
Features .....	116	How To Order .....	118
Type of Handle .....	116	Ordering Information & Dimension .....	119
Testing .....	117	Protection Cover Size .....	122
Cleaning .....	117	Pressure-Temperature Ratings .....	122

## Application

Steam, water, air lines in onshore and offshore application  
Utility lines in semiconductor and display panel industries.

## Protection Cover

Maintain the temperature of fluids, keep handle position and distinguish in-out lines visually, to keep the temperature of flow and to distinguish the line.  
VB1 series ball valve with both 3/4" UNILOK end connection and plastic bar handle. 1/2" is available only with the different size of inner cover.



## Features

- Pressure rating up to 1000psig (69bar) with PTFE seats and 2000psig(137bar) with TFM only for VB1F series ball valves with lever handle Easy to operate owing to low torque quarter turn actuation
- All valve body's made from 316SS bar stock to secure the high integrity
- Compact designed one piece hexagonal body
- Micro finished 316SS balls not to occur the leakage
- Blow-out proof design with internally loaded stem
- Various selection of handles
- Wide choice of end connections : UNILOK tube fittings, Female NPT or ISO7/1(PT) threads, Weld Systems

## Type of Handle



Bar handles offer visual distinguishment of in-out lines at high purity applications.



## Testing

Every valve is 100% factory tested with air and nitrogen at 1000psig(69bar) for leakage at the seat and packing. Each test is performed to a maximum allowable leak rate of 0.1scc/min.

## Cleaning

UNILOK valves are free from machine oils, loose particles and grease throughout the close cleaning process.  
The special cleaning for high purity application is available upon request.

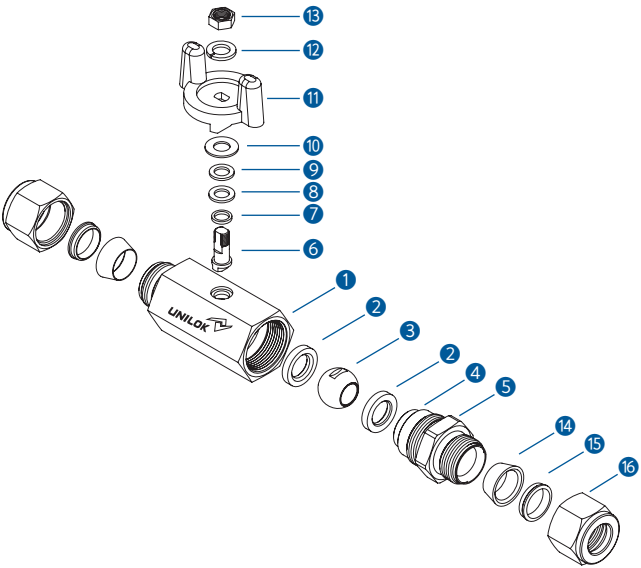
## Important Notification

UNILOK ball valves are designed to be operated in a fully open or fully closed position.  
The packing adjustment may be required during the valve's service life.  
Proper installation, materials compatibility, operation and maintenance of these valves are the responsibility of the user. The total system design must be taken into consideration to ensure optimal performance and safety.

## Materials of Construction

No.	Description	Materials
1	Body	316SS
2	Ball Seat	Reinforced PTFE
3	Ball	316SS
4	O-Ring	Viton
5	Connector	316SS
6	Stem	316SS
7	Inner Packing	PTFE
8	Outer Packing	PTFE
9	Gland	316SS
10	Washer	316SS
11	Handle	Zinc
12	Spring Washer	304SS
13	Nut	304SS
14	Front Ferrule	316SS
15	Back Ferrule	316SS
16	Nut	316SS

Handle Materials :  
Lever - 304SS+PVC Coat  
Bar - Nylon



How To Order

UNILOK VB1 series ball valves are ordered by part number as shown below.

**Example:** The following part number, *VB1U-04T-SS-B* is designated for VB1 series ball valve with both 1/4" UNILOK tube fitting, 316SS, PTFE seat, butterfly handle.

V

B1

U

-

04T

-

SS

-

B

-

UNILOK  
Valve

Valve  
Type

Connection  
type

Connection  
Size

Body  
Materials

Handle  
Type

Seat  
Materials

Connection Type	
U	UNILOK Tube Fitting
F	Female NPT or ISO7/1(PT)
WB-*T	Butt Weld-Tube
WB-*P	Butt Weld-Pipe

Connection Size						
Fractional(Inch) Tube O.D. Designation						
Tube O.D.	inch	1/4	3/8	1/2	3/4	1
	mm	6.35	9.52	12.70	19.05	25.40
Designator		04T	06T	08T	12T	16T

Metric Tube O.D. Designation						
Tube O.D.	mm	6	8	10	12	25
Designator		M06T	M08T	M10T	M12T	M25T

Pipe Size O.D. Designation				
Pipe O.D.	Normal	15A	20A	25A
	mm	21.7	27.2	34.0
Designator		15A	20A	25A

Pipe Size Designation (NPT or ISO7/1-PT)						
Pipe Size	1/8	1/4	3/8	1/2	3/4	1
Designator	02N/R	04N/R	06N/R	08N/R	12N/R	16N/R

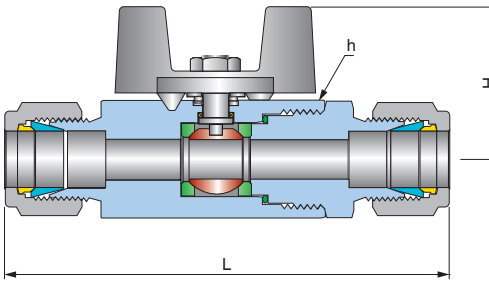
Hadle Type		
None	Lever Handle	
B	Butterfly Handle	
PR	Nylon Bar Handle	Red
PS		Blue
PB		Black

Seat Materials	
None	PTFE
TFM	TFM
PK	PEEK

VB1U series

(Both UNILOK Tube Fittings)

- Max Operating Pressure  
1000psig (69bar) at 38 °C(100 °F) with PTFE seat  
1000psig(69bar) at 170 °C(338 °F) with PEEK seat
- Connection Type  
Both UNILOK tube fittings
- Handle Type  
Lever, Butterfly and Bar



Ordering Information & Dimensions

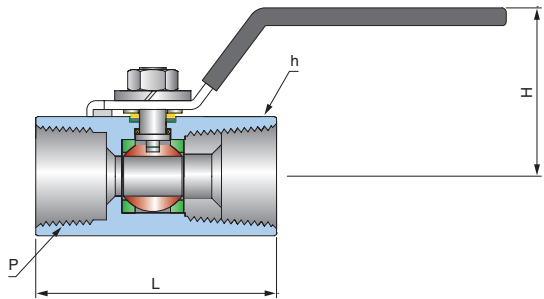
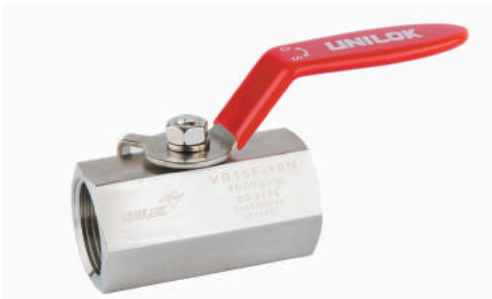
Part No.		End Connections		Orifice	Dimensions (mm)		
		Inlet	Outlet		h(Hex)	L	H
VB11	U-04T-	1/4" UNILOK		5.0	17.46	79.0	26.5
	U-M06T-	6mm UNILOK				82.0	
	U-M08T-	8mm UNILOK					
VB12	U-06T-	3/8" UNILOK		7.5	22.22	89.5	32.5
	U-M10T-	10mm UNILOK					
VB13	U-08T-	1/2" UNILOK		9.0	26.98	101.6	35.0
	U-M12T-	12mm UNILOK					
VB14	U-12T-	3/4" UNILOK		12.5	31.75	107.5	37.5
VB15	U-16T-	1" UNILOK		16.0	38.10	132.6	44.5
	U-M25T-	25mm UNILOK					

Dimensions are for reference only and are subject to change without prior notice.

# VB1F series

(Both Female Threads)

- Max Operating Pressure  
1000psig (69bar) at 38 °C(100 °F) with PTFE seat  
2000psig(138bar) at 38 °C(100 °F) with TFM seat
- PEEK seats not applicable
- Connection Type  
Both NPT or ISO7/1(PT) female threads
- Handle Type  
Lever, Butterfly and Bar



## Ordering Information & Dimensions

Part No.		End Connections		Orifice	Dimensions (mm)		
		Inlet	Outlet		h(Hex)	L	H
VB11	F-04N-	1/4" Female NPT		5.0	17.46	40.0	29.0
VB12	F-06N-	3/8" Female NPT		7.5	22.22	45.0	35.7
VB13	F-08N-	1/2" Female NPT		9.0	26.98	54.5	38.1
VB14	F-12N-	3/4" Female NPT		12.5	31.75	61.0	44.5
VB15	F-16N-	1" Female NPT		16.0	38.10	75.0	48.0

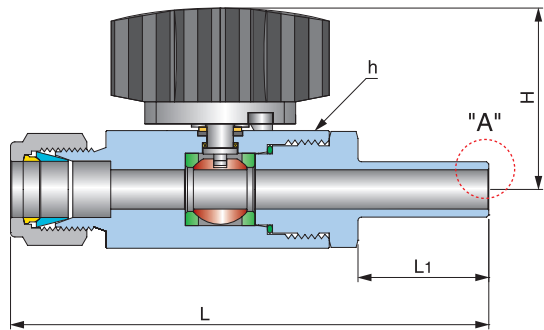
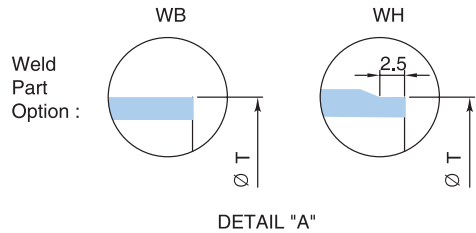
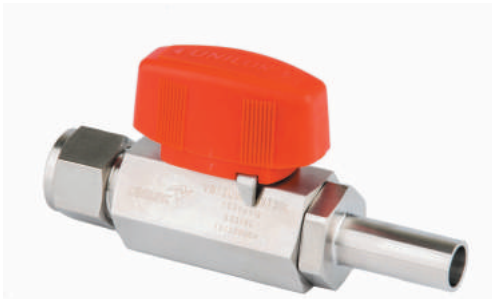
Female ISO7/1 Tapered Threads (PT) are available for all fractional sizes of VB1F series valves.  
Add "R" as a suffix instead of "N".

Dimensions are for reference only and are subject to change without prior notice.

# VB1W series

(Pipe or Tube Butt Weld and UNILOK Tube Fitting)

- Max Operating Pressure  
1000psig (69bar) at 38 °C(100 °F) with PTFE seat
- Connection Type  
Pipe Butt or Tube Butt Weld and  
UNILOK Tube Fitting
- Handle Type  
Lever, Butterfly and Bar



## Ordering Information & Dimensions

Part No.		End Connections		Orifice	Dimensions (mm)			
		Inlet	Outlet		h(Hex)	L	L <sub>1</sub>	H
VB13	UWB-08T08T	1/2" Tube	1/2" UNILOK	9.0	26.98	109.7	30.0	41.6
	UWB-15AP08T	15A Pipe	1/2" UNILOK			114.7	35.0	
VB14	UWB-12T12T	3/4" Tube	3/4" UNILOK	12.5	31.75	129.2	43.0	44.2
	UWB-20AP12T	20A Pipe	3/4" UNILOK			121.2	35.0	
VB15	UWB-16T16T	1" Tube	1" UNILOK	16.0	38.10	137.3	31.0	53.8
	UWB-25AP16T	25A Pipe	1" UNILOK			146.3	40.0	

Length of L1 can be adjusted upon the customer's request

Dimensions are for reference only and are subject to change without prior notice.

# VB1 Protection Cover

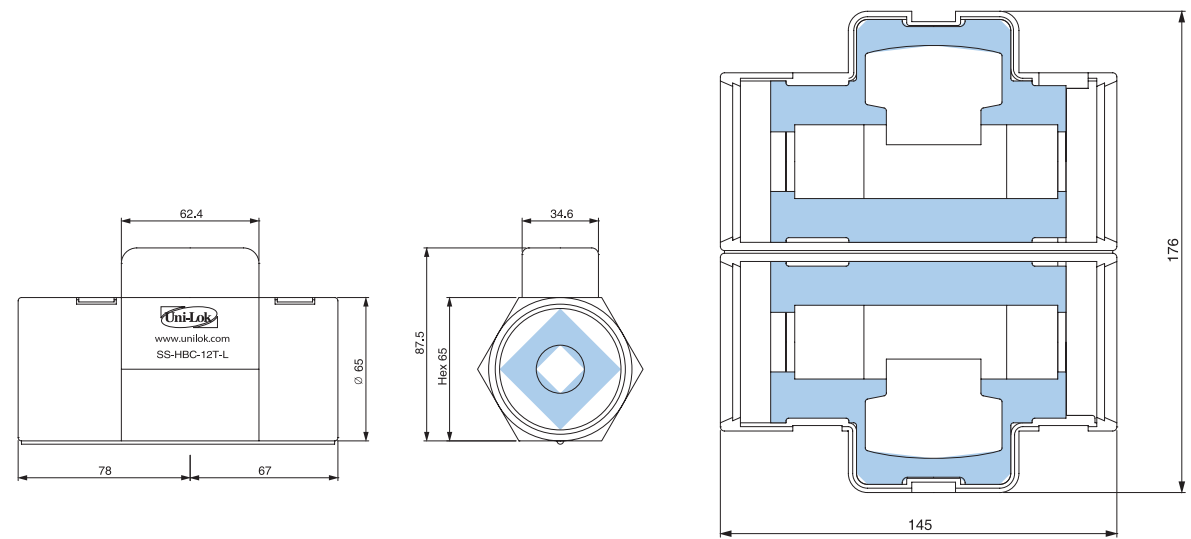
Maintain the temperature of fluids, keep handle position and distinguish in-out visually.

VB1 series ball valve with both 3/4" UNILOK end connection and plastic bar handle. 1/2" is available only with the different size of inner cover.

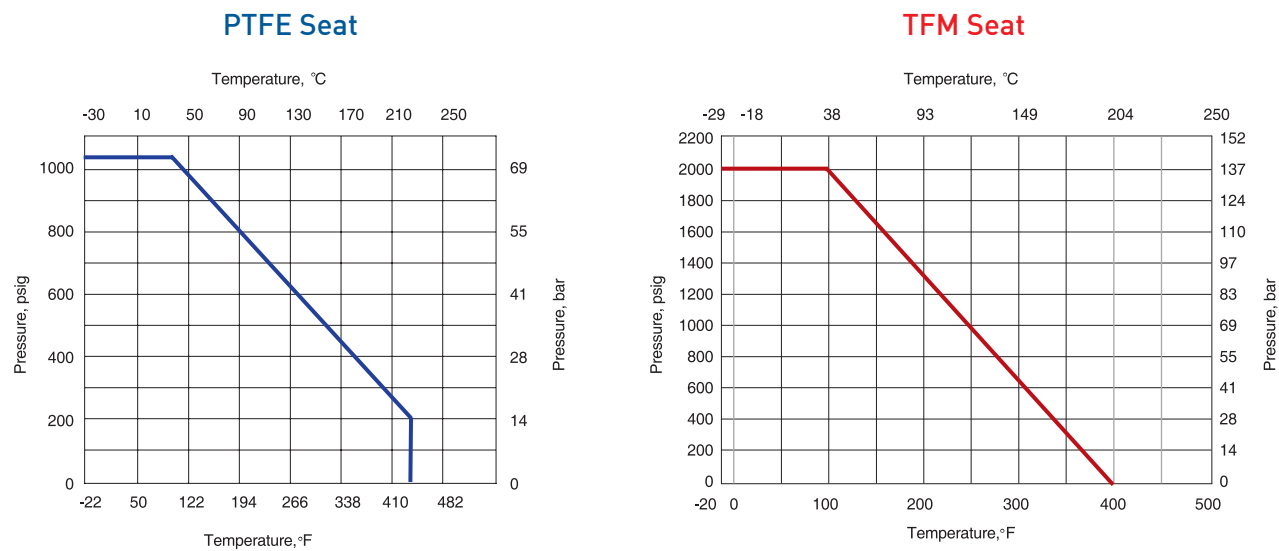
Ordering Number

VB1-PC-R : Red

VB1-PC-S : Blue



## Pressure - Temperature Ratings



Dimensions are for reference only and are subject to change without prior notice.

# INSTRUMENT

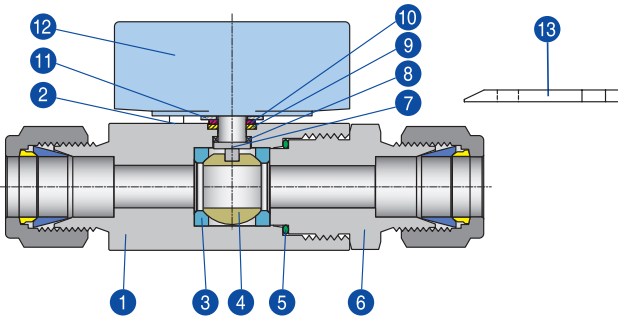
## Master key Hex Ball Valves VBM1



Features

- Locking handle on open or Close Positions
- Body Materials : Standard 316 stainless steel
- Compact handle design
- Handle Low operating torques

Material of Construction



How To Order

UNILOK VBM1 series ball valves are ordered by part number as shown belows.

V

UNILOK Valve

BM1

Valve Type

U

Connection Type

-

08T

Connection Size

-

SS

Body Materials

-

Handle Color

-

Seat Materials

Valve Type	
BM1*	Master Key Hex Ball VALVE

Connection Type	
U	UNILOK Tube Fitting
F	Female NPT or ISO7/1(PT)
WB-	Butt Weld-Tube
WB-	Butt Weld-Pipe

Connection Size				
Fractional(Inch) Tube O.D. Designation				
Tube O.D.	inch	1/2	3/4	1
	mm	12.70	19.05	25.40
Designator		08T	12T	16T

Metric Tube O.D. Designation				
Tube O.D.	mm	12	20	25
Designator		M12T	M20T	M25T

Pipe Size Designation (NPT or ISO7/1-PT)			
Pipe Size	1/2	3/4	1
Designator	08N/R	12N/R	16N/R

Weld Size Designation			
Pipe Size	15A	20A	25A
Designator	15A	20A	25A

Handle Color	
S	BLUE
R	RED

Seat Materials	
None	PTFE
PK	PEEK

Testing

Every valve is 100% factory tested with air and nitrogen at 1000psig(69bar) for leakage at the seat and packing. Each test is performed to a maximum allowable leak rate of 0.1scc/min.

Materials

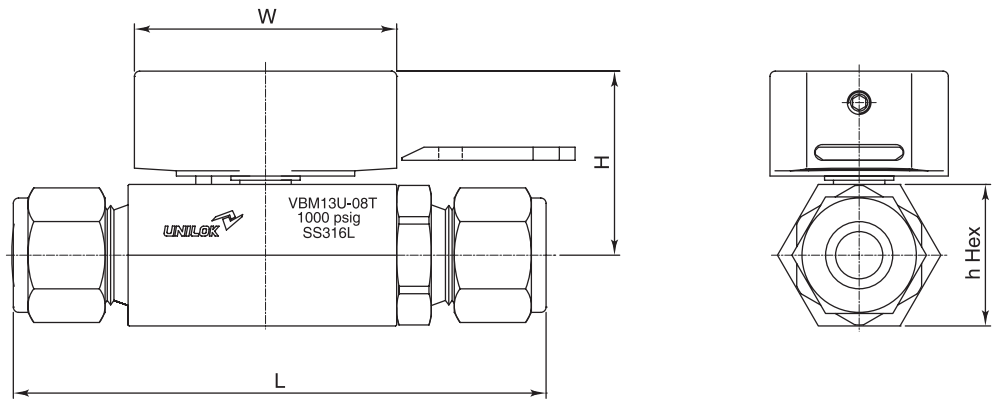
No.	Description	Materials
1	Body	316SS
2	Guide Pin	316 SS
3	Ball Seat	PTFE
4	Ball	316 SS
5	O-Ring	FKM
6	Connector	316SS
7	Stem	316SS
8	Inner Packing	PTFE
9	Outer Packing	PTFE
10	Gland	316SS
11	Washer	316SS
12	Handle	Zinc
13	Key	Zinc

Specifications

- Max Operating Pressure  
1000 Psig (69 bar) at 38 °C(100 °F) with PTFE Seat
- Connection Type  
UNILOK Tube Fittings
- Orifice  
9.0mm to 16.0mm



Ordering Information & Dimensions



Part No.		End Connections		Orifice	Dimensions (mm)			
		Inlet	Outlet		h(Hex)	L	H	W
VBM13	U-08T	1/2" UNILOK		9.0	26.98	101.6	35.0	50.0
	U-M12T	12mm UNILOK						
VBM14	U-12T	3/4" UNILOK		12.5	31.75	107.5	41.6	60.0
VBM15	U-16T	1" UNILOK		16.0	38.1	132.6	44.7	60.0
	U-M25T	25mm UNILOK						

Dimensions are for reference only and are subject to change without prior notice.



Specifications

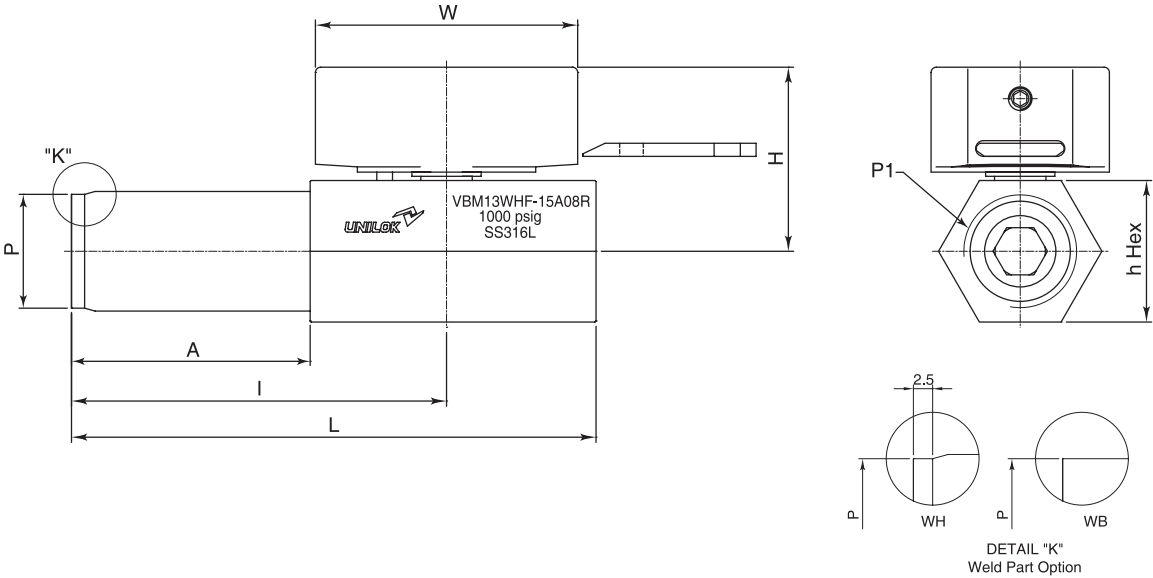
- Max Operating Pressure  
1000 Psig (69 bar) at 38 °C(100 °F) with PTFE Seat
- Connection Type  
Pipe Butt or Tube Butt Weld  
Both NPT or ISO 7/1(PT) Female Threads
- Orifice  
9.0mm to 16.0mm



INSTRUMENT

Ball Valves  
VB3

Ordering Information & Dimensions



Part No.		End Connections		Orifice	Dimensions (mm)					
		Inlet(P)	Outlet(P1)		h (Hex)	A	I	L	H	A
VBM13	WHF-15A08R	15A Butt Weld	1/2 Female PT	9.0	26.98	45.5	71.5	100.0	35.0	50.0
VBM14	WHF-20A12R	20A Butt Weld	3/4 Female PT	12.5	31.75	44.0	73.5	105.0	41.6	60.0
VBM15	WHF-25A16R	25A Butt Weld	1 Female PT	16.0	38.1	45.0	81.0	120.0	44.7	60.0



Dimensions are for reference only and are subject to change without prior notice.

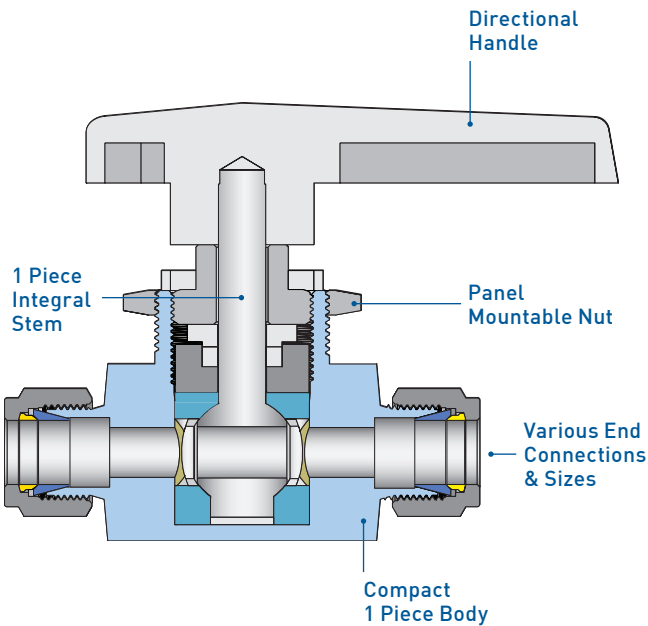
# Ball Valves VB3

## CONTENTS

Features	128	How To Order	129
Application	128	VB3 series	130
Testing	128	VB3X series	131
Cleaning	128	VB3C series	132
Important Notification	128	VB3CA series Color Coding Handle	133
Materials of Construction	129		

## Features

- Pressure rating with standard PTFE seats 3000psig (206bar) only for the valves with orifice 4.8
- 2500psig (172bar) for the other valves
- Temperature rating from 10 °C(50 °F) to 65 °C(150 °F) with standard PTFE packing
- Compact designed one piece body to reduce space and possible leak point
- One piece integral ball stem to eliminate backlash and to encapsulate ball seats perfectly
- Panel mounting for easy installation
- Wide choice of end connections : UNILOK tube fittings, Female NPT or ISO7/1(PT) thread
- 2 way shut off valves and 3 way switching valves are available



## Application

VB3, VB3X series ball valves with lowest dead volume is required in analytical purpose to prevent fluid entrapment which can cause contamination.

## Sour Environment Services

UNILOK valves are comply with NACE MR-0175/ISO 15156 for sour oilfield application or NACE MR-0103 for petroleum refining operations.  
To order, add-N to the end of part number.

## Testing

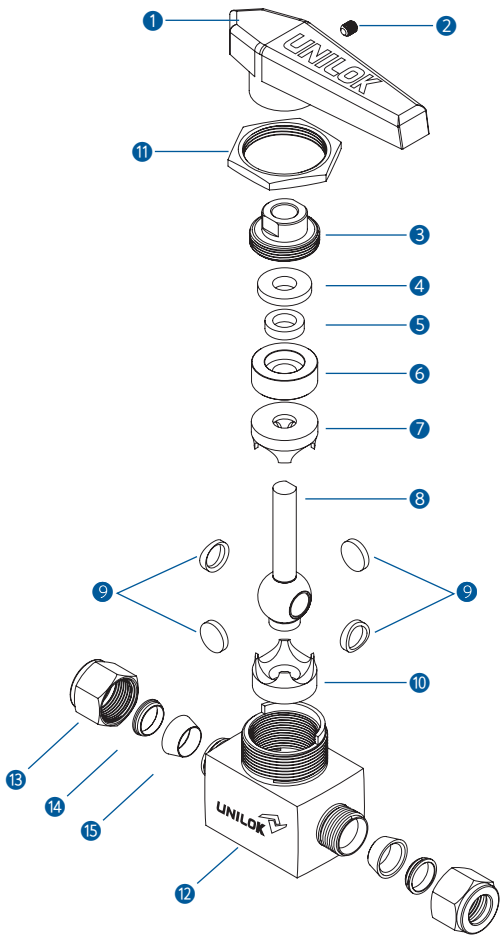
Every valve is 100% factory tested with air and nitrogen at 1000psig(69bar) for leakage at the seat and packing. Each test is performed to a maximum allowable leak rate of 0.1scc/min.

## Cleaning

UNILOK valves are free from machine oils, loose particles and grease throughout the close cleaning process.  
The special cleaning for high purity application is available upon request.

## Important Notification

UNILOK ball valves are designed to be operated in a fully open or fully closed position.  
The packing adjustment may be required during the valve’s service life.  
Proper installation, materials compatibility, operation and maintenance of these valves are the responsibility of the user. The total system design must be taken into consideration to ensure optimal performance and safety.



## Materials of Construction

No.	Description	Materials	
Body Material		316SS	Brass
1	Handle	Nylon	
2	Set Screw	304SS	
3	Packing Bolt	316SS	Brass
4	Upper Gland	316 SS	
5	Lower Bushing	PTFE	
6	Lower Gland	316SS	
7	Upper Packing	PTFE	
8	Ball Stem	316 SS	
9	Side Disk	316 SS	
10	Lower Packing	PTFE	
11	Panel Nut	304SS	Brass
12	Body	316SS	Brass
13	Nut	316SS	Brass
14	Back Ferrule	316SS	Brass
15	Front Ferrule	316SS	Brass

## How To Order

UNILOK VB3 series ball valves are ordered by part number as shown below.

**Example:** The following part number, **VB33U-08T-SS** is designated for VB3 series ball valve with both 1/2" UNILOK tube fitting, 316SS, PTFE seat.

V

B33

U

-

08T

-

SS

-

UNILOK Valve

Valve Type

Connection Type

Connection Size

Body Materials

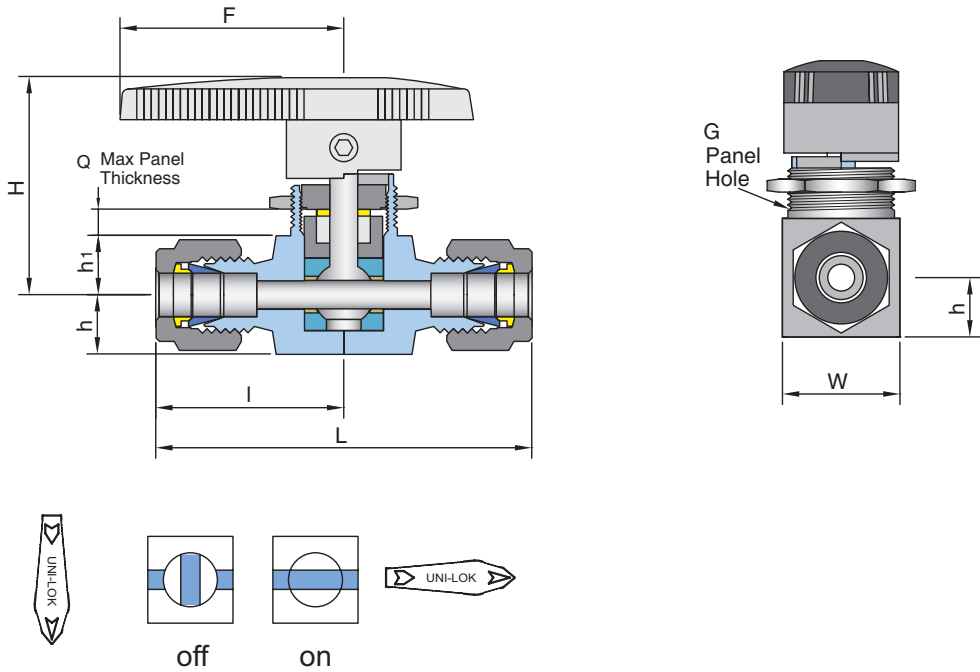
Handle Color

Valve Type		Connection Size						Body Materials	
B3	2 Way Type	Fractional(Inch) Tube O.D. Designation						SS	316SS
B3X	3 Way Type	Tube O.D.	inch	1/4	3/8	1/2	3/4	BS	Brass
B3C	Compact Type, 2 & 3 Way		mm	6.35	9.52	12.70	19.05	Colored directional handles are available only for VB3C series, compact type ball valves.	
B3CA	Compact Type, Angle Pattern	Designator		04T	06T	08T	12T		
Connection Type		Metric Tube O.D. Designation							
U	UNILOK Tube Fitting	Tube O.D.	mm	6	8	10	12		
F	Female NPT or ISO7/1(PT)	Designator		M06T	M08T	M10T	M12T		
		Pipe Size Designation (NPT or ISO7/1-PT)							
		Pipe Size		1/8	1/4	3/8	1/2		
		Designator		02N/R	04N/R	06N/R	08N/R		



VB3 series

(2 Way, Shut-Off Both UNILOK Tube Fittings or Both Female Threads)



Ordering Information & Dimensions

Part No.		End Connections		Orifice	CV	Dimensions (mm)								
		Inlet	Outlet			L	I	h	h1	H	G	Q	W	F
VB31	U-04T-	1/4" UNILOK		4.8	1.4	62.6	31.3	10.0	10.6	39.6	19.8	4.8	19.8	40.0
	U-06T-	3/8" UNILOK			1.5	66.6	33.3							
	U-M06T-	6mm UNILOK			1.4	62.6	31.3							
	U-M08T-	8mm UNILOK			1.5	63.2	31.6							
	F-02N-	1/8" Female NPT			1.2	50.8	25.4							
	F-04N-	1/4" Female NPT			0.9	52.4	26.2							
VB32	U-06T-	3/8" UNILOK		7.1	6.0	77.8	38.9	14.3	14.5	52.8	28.0	9.0	28.6	51.0
	U-M10T-	10mm UNILOK			6.0	77.8	38.9							
	F-04N-	1/4" Female NPT			3.0	63.6	31.8							
	F-06N-	3/8" Female NPT			2.6	63.6	31.8							
VB33	U-08T-	1/2" UNILOK		10.3	12.0	98.6	49.3	18.0	17.5	61.9	38.1	9.4	38.1	76.2
	U-12T-	3/4" UNILOK			6.4	99.2	49.6							
	U-M12T-	12mm UNILOK			12.0	98.8	49.4							
	U-M20T-	20mm UNILOK			6.4	100.0	50.0							
	F-08N-	1/2" Female NPT			6.3	80.0	40.0							

Female ISO7/1 Tapered Threads (PT) are available for all fractional sizes of VB3F series valves.  
Add "R" as a suffix instead of "N".

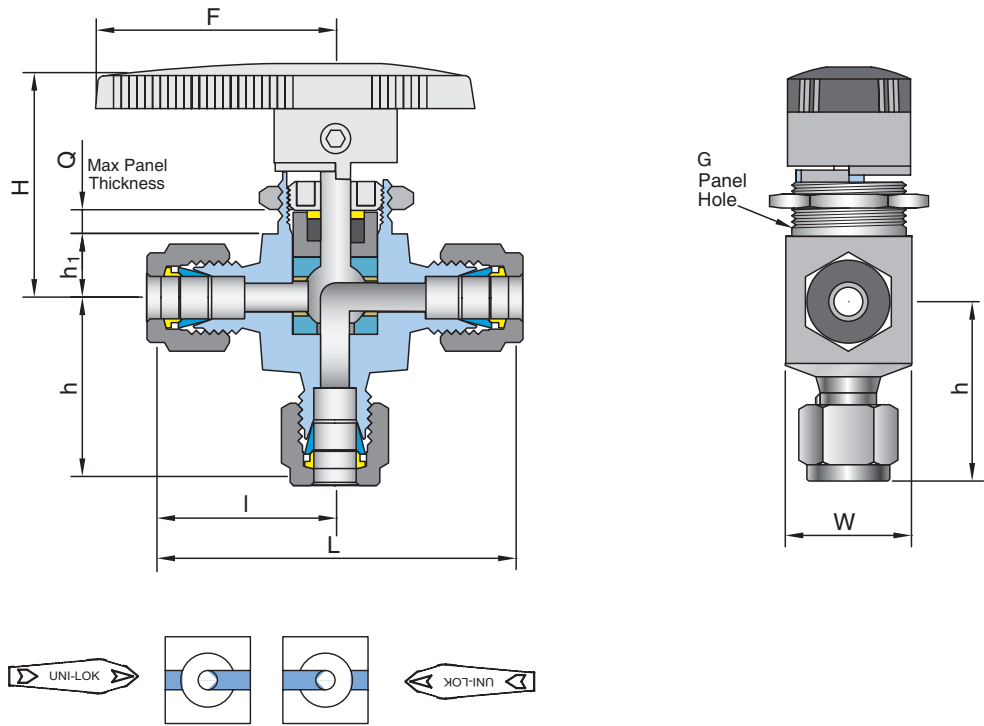
Dimensions are for reference only and are subject to change without prior notice.

Dimensions are for reference only and are subject to change without prior notice.

Dimensions are for reference only and are subject to change without prior notice.

VB3X series

(3 Way, Switching UNILOK Tube Fittings or Female Threads)



Ordering Information & Dimensions

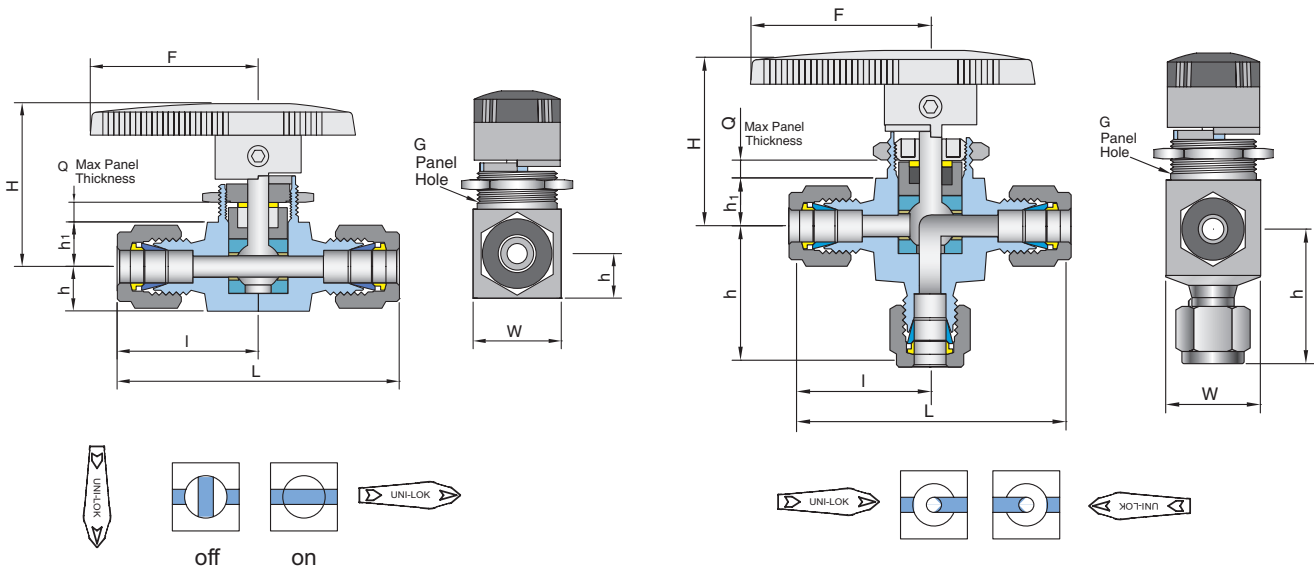
Part No.		End Connections		Orifice	CV	Dimensions (mm)								
		Inlet	Outlet			L	I	h	h <sub>1</sub>	H	G	Q	W	F
VB3X1	U-04T-	1/4" UNILOK		4.8	0.90	59.8	29.9	29.9	10.6	39.6	19.8	4.8	19.8	40.0
	U-M06T-	6mm UNILOK			0.90	59.8	29.9	29.9						
	U-M08T-	8mm UNILOK			0.80	62.6	31.3	31.2						
	F-04N-	1/4" Female NPT			0.75	50.8	25.4	26.2						
VB3X2	U-06T-	3/8" UNILOK		7.1	2.00	73.2	36.6	35.8	14.5	52.8	28.0	9.0	28.6	51.0
	U-M10T-	10mm UNILOK			2.00	73.2	36.6	35.8						
	F-04N-	1/4" Female NPT			1.70	63.6	31.8	31.8						
	F-06N-	3/8" Female NPT			1.50	63.6	31.8	31.8						
VB3X3	U-08T-	1/2" UNILOK		10.3	4.60	88.0	44.0	44.0	17.5	61.9	38.1	9.4	38.1	76.2
	U-M12T-	12mm UNILOK			4.80	88.0	44.0	44.0						
	F-08N-	1/2" Female NPT			3.50	79.2	39.6	39.6						

Female ISO7/1 Tapered Threads (PT) are available for all fractional sizes of VB3XF series valves.  
Add "R" as a suffix instead of "N".

Dimensions are for reference only and are subject to change without prior notice.

VB3C series

[Compact Type Ball Valve 2 Way, Shut Off & 3 Way, Switching]



Ordering Information & Dimensions

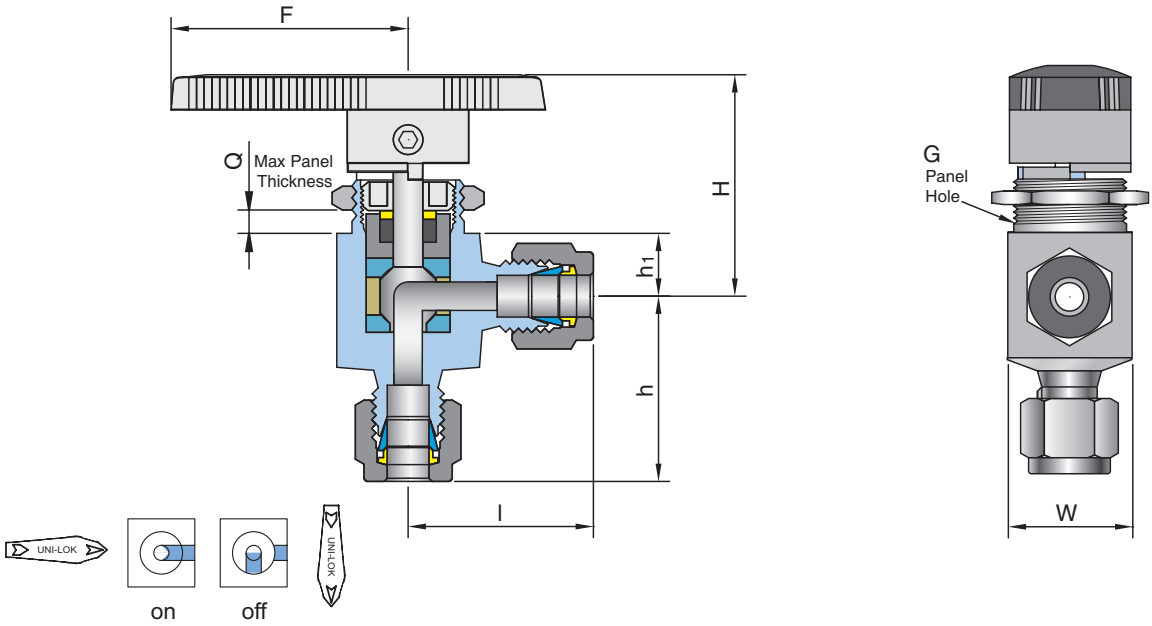
Part No.	End Connection		Orifice	CV	Dimensions (mm)								
	Inlet	Outlet			L	I	h	h <sub>1</sub>	H	G	Q	W	F
2 Way													
VB3CU-02T-	1/8" UNILOK		2.3	0.2	51.0	25.5	8.8	8.8	34.0	15.0	4.8	17.0	28.0
VB3CU-M03T-	3mm UNILOK			0.2	50.8	25.4							
VB3CU-04T-	1/4" UNILOK		3.2	0.6	55.4	27.7							
VB3CU-M06T-	6mm UNILOK			0.6	55.4	27.7							
VB3CF-02N-	1/8" Female NPT			0.5	41.2	20.6							
3 Way													
VB3CXU-02T-	1/8" Female NPT		2.3	0.15	51.0	25.5	24.8	8.8	34.0	15.0	4.8	17.0	28.0
VB3CXU-M03T-	3mm Female NPT				50.8	25.4	25.4						
VB3CXU-04T-	1/4" UNILOK		3.2	0.35	55.4	27.7	26.7						
VB3CXU-M06T-	6mm UNILOK				55.4	27.7	26.7						
VB3CXF-02N-	1/8" Female NPT				41.2	20.6	20.6						

Female ISO7/1 Tapered Threads (PT) are available for all fractional sizes of VB3CF and VB3CXF series valves.  
Add "R" as a suffix instead of "N".

Dimensions are for reference only and are subject to change without prior notice.

VB3CA series

[Compact Type Ball Valve Angle Pattern]



Ordering Information & Dimensions

Part No.		End Connections		Orifice	CV	Dimensions (mm)							
		Inlet	Outlet			I	h	h1	H	G	Q	W	F
VB3CA	U-02T-	1/8" UNILOK		2.3	0.15	25.5	24.8	8.8	34.0	15.0	4.8	17.0	28.0
	U-M03T-	3mm UNILOK				25.4	25.4						
	U-04T-	1/4" UNILOK		3.2	0.35	26.7	26.7						
	U-M06T-	6mm UNILOK				26.7	26.7						
	F-02N-	1/8" Female NPT				20.6	20.6						

Female ISO7/1 Tapered Threads (PT) are available for all fractional sizes of VB3CAF series valves.  
Add "R" as a suffix instead of "N".

Application

VB3C series valve with compact size, directional indication of flow and high flow capacity are required at sampling system, process instrument, equipment.

Color Coding Handle

Colored handle are available for VB3C series, compact type ball valves. To order, add the designator to the end of part number.

Color	Designator
Black	B
Blue	S
Red	R
Green	G
Yellow	Y

Dimensions are for reference only and are subject to change without prior notice.

# INSTRUMENT

## High Pressure Ball Valves VB6F



# High Pressure Ball Valves VB6F

## CONTENTS

Features ..... 136

Materials of Construction ..... 136

Application ..... 137

Testing ..... 137

Cleaning ..... 137

Important Notification ..... 137

How To Order ..... 137

VB6F series ..... 138

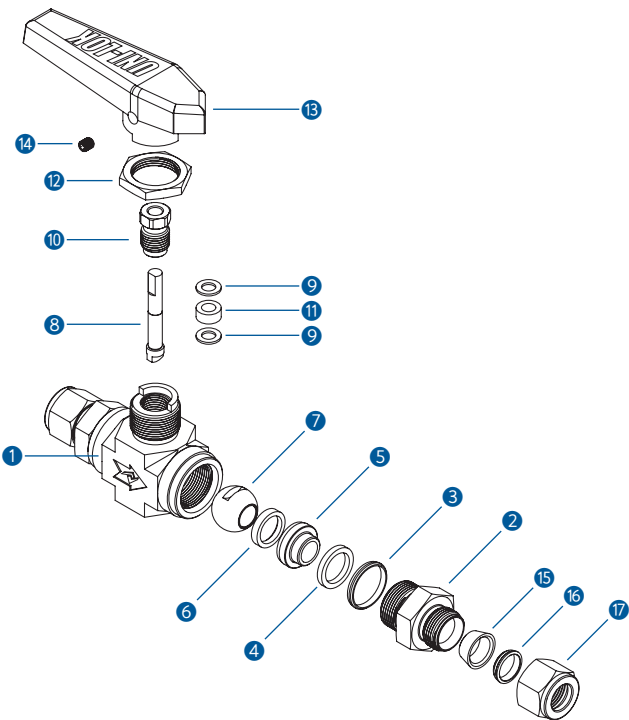
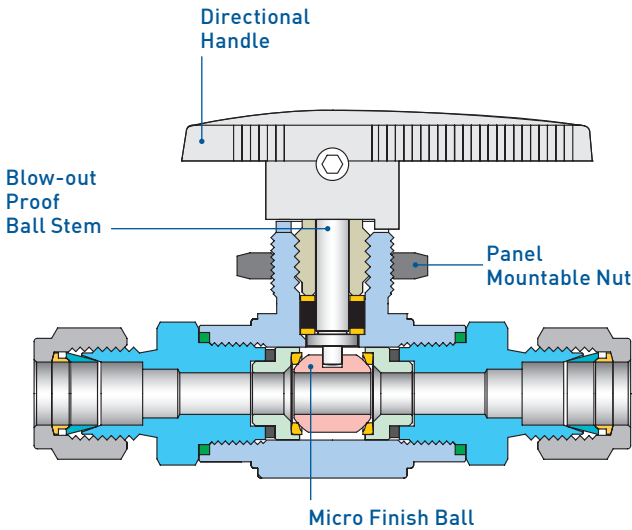
VB6FX series ..... 139

Pressure-Temperature Ratings ..... 140

Flow Rates ..... 140

## Features

- Pressure rating up to 6000psig (413bar) @21°C (70°F) with standard PCTFE seats
- Temperature rating from -54°C(-65°F) to 177°C (350°F) with standard PCTFE seats
- Compact forged body design
- Micro finished 316SS ball to provide a positive seal
- Blow-out proof design with internally loaded ball stem
- Low operating torques and positive handle stops
- Panel mounting for easy installation
- 2 way shut off valves and 3 way switching valves are available



## Materials of Construction

No.	Description	Materials
1	Body	316SS
2	Connector	316SS
3	Connector O-ring	PTFE
4	Retainer Seal	PTFE
5	Seat Retainer	316SS
6	Ball Seat	PCTFE
7	Ball	316SS
8	Stem	316SS
9	Washer	304SS
10	Packing Bolt	304SS
11	Packing	PTFE
12	Panel Nut	316SS
13	Handle	Nylon
14	Bolt	304SS
15	Front Ferrule	316SS
16	Back Ferrule	316SS
17	Nut	316SS

## Application

VB6F series valves are requiring in a wide range onshore and offshore applications to offer a safe and reliable performance.

## Sour Environment Services

UNILOK valves are comply with NACE MR-0175/ISO 15156 for sour oilfield application or NACE MR-0103 for petroleum refining operations.  
To order, add-N to the end of part number

## Testing

Every valve is 100% factory tested with air and nitrogen at 1000psig(69bar) for leakage at the seat and packing. Each test is performed to a maximum allowable leak rate of 0.1scc/min.  
Hydrostatic shell test to be performed at 1.5 time of the working pressure with optional.

## How To Order

UNILOK VB6F series ball valves are ordered by part number as shown below.

## Cleaning

UNILOK valves are free from machine oils, loose particles and grease throughout the close cleaning process.

## Important Notification

UNILOK ball valves are designed to be operated in a fully open or fully closed position.  
The packing adjustment may be required during the valve's service life.  
Proper installation, materials compatibility, operation and maintenance of these valves are the responsibility of the user. The total system design must be taken into consideration to ensure optimal performance and safety.

**Example:** The following part number, *VB6F2U-04T-SS-PK* is designated for VB6F series ball valve with both 1/4" UNILOK tube fitting, 316SS, PEEK seat.

V

UNILOK Valve

B6F2

Valve Type

U

Connection Type

-

04T

Connection Size

-

SS

Body Materials

-

PK

Seat Materials

Other alloys are available upon request

Valve Type	
B6F	2 Way Type
B6FX	3 Way Type

Connection Type	
U	UNILOK Tube Fitting
F	Female NPT or ISO7/1(PT)
M	Male NPT or ISO7/1(PT)

Connection Size						
Fractional(Inch) Tube O.D. Designation						
Tube O.D.	inch	1/8	1/4	3/8	1/2	3/4
	mm	3.17	6.35	9.53	12.70	19.05
Designator		02T	04T	06T	08T	12T

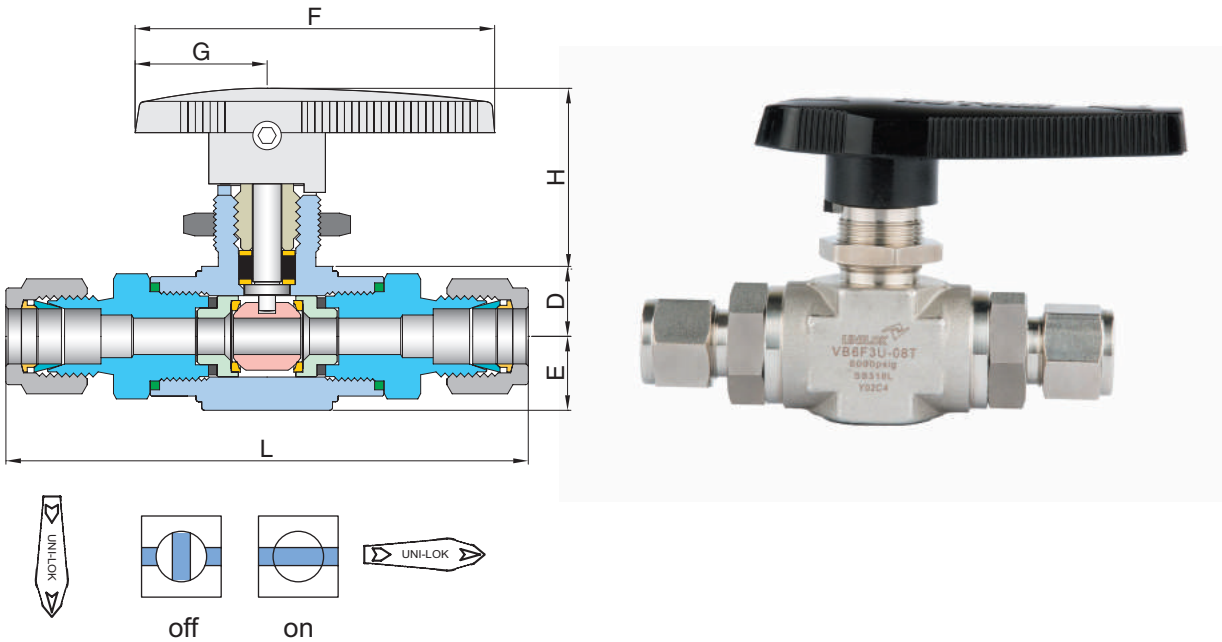
Metric Tube O.D. Designation						
Tube O.D.	mm	3	6	8	10	12
Designator		M03T	M06T	M8T	M10T	M12T

Pipe Size Designation (NPT or ISO7/1-PT)				
Pipe Size	1/8	1/4	3/8	1/2
Designator	02N/R	04N/R	06N/R	08N/R

Seat Materials	
None	PCTFE
PK	PEEK

VB6F series

(2 Way, Shut-Off Both UNILOK Tube Fittings or Both Female or Male Threads)



Ordering Information & Dimensions

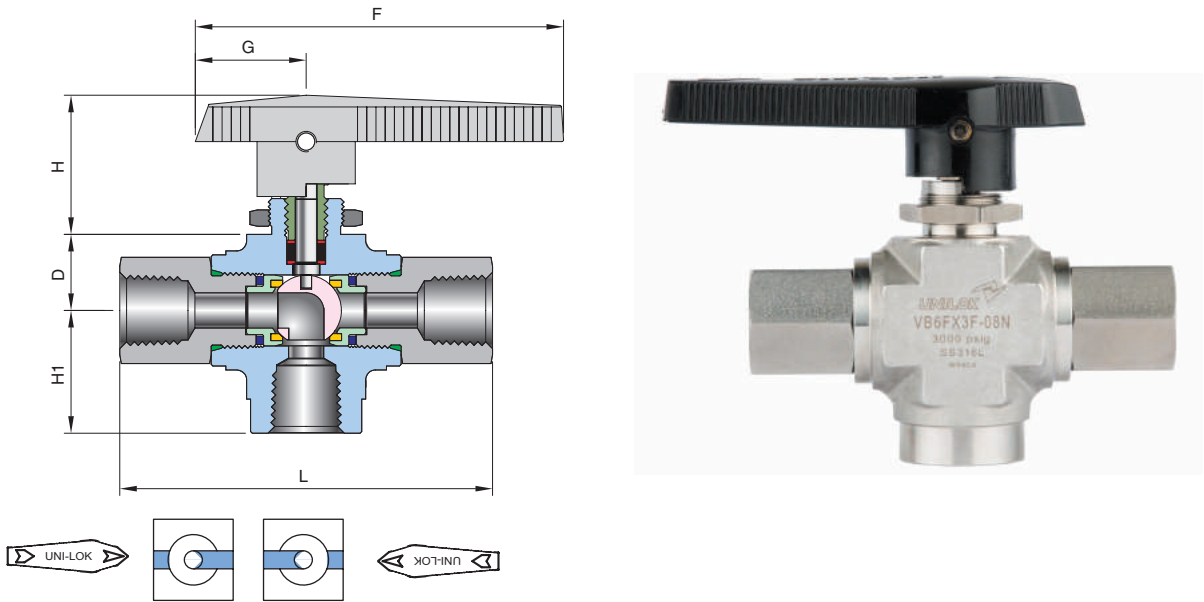
Part Number		End Connections		Orifice	CV	Dimensions (mm)						Panel Hole Drill Size
		Inlet	Outlet			L	E	D	H	F	G	
VB6F1	U-04T-	1/4" UNILOK		4.2	0.93	75.2	9.5	8.4	23.2	46.0	17.4	14.7
	F-02N-	1/8" Female NPT				54.4						
	M-04N-	1/4" Male NPT				68.6						
VB6F2	U-04T-	1/4" UNILOK		6.4	2.34	88.7	13.0	12.3	31.8	63.2	23.2	19.6
	U-06T-	3/8" UNILOK				91.4						
	U-M06T-	6mm UNILOK				88.7						
	U-M08T-	8mm UNILOK				91.0						
	U-M10T-	10mm UNILOK				93.0						
	F-04N-	1/4" Female NPT				77.0						
	M-04N-	1/4" Male NPT				82.2						
	M-06N-	3/8" Male NPT				82.2						
VB6F3	U-08T-	1/2" UNILOK		10.3	6.42	118.8	18.5	17.0	46.1	108.0	32.5	22.9
	U-12T-	3/4" UNILOK				118.4						
	U-M12T-	12mm UNILOK		9.5	5.57	118.8						
	F-06N-	3/8" Female NPT		10.3	6.42	98.9						
	F-08N-	3/8" Female NPT				109.2						
	M-08N-	1/2" Male NPT				112.8						

ISO7/1 Tapered Threads (PT) are available for all fractional sizes of VB6F series valves.  
Add "R" as a suffix instead of "N".

Dimensions are for reference only and are subject to change without prior notice.

VB6FX series

(3 Way, Switching UNILOK Tube Fittings or Female or Male Threads)



Ordering Information & Dimensions

Part Number		End Connections		Orifice	CV	Dimensions (mm)						Panel Hole Drill Size
		Inlet	Outlet			L	H1	D	H	F	G	
VB6FX1	U-04T-	1/4" UNILOK		4.2	0.93	75.2	37.2	8.4	23.2	46.0	17.4	14.7
	F-02N-	1/8" Female NPT				54.4	29.9					
	M-04N-	1/4" Male NPT				68.6	29.9					
VB6FX2	U-04T-	1/4" UNILOK		4.8	1.04	88.7	40.3	12.3	31.8	63.2	23.2	19.6
	U-06T-	3/8" UNILOK		6.4	2.34	91.4	40.3					
	U-M06T-	6mm UNILOK				88.7	40.4					
	U-M08T-	8mm UNILOK				91.0	40.5					
	U-M10T-	10mm UNILOK				93.0	40.6					
	F-04N-	1/4" Female NPT				77.0	33.0					
	M-04N-	1/4" Male NPT				82.2	33.0					
	M-06N-	3/8" Male NPT				82.2	33.0					
	VB6FX3	U-08T-	1/2" UNILOK			10.3	6.42					
U-12T-		3/4" UNILOK		118.4	57.1							
U-M12T-		12mm UNILOK		10.3	6.42	118.8	57.1					
F-06N-		3/8" Female NPT				98.9	47.0					
F-08N-		1/2" Female NPT				109.2	47.0					
M-08N-		1/2" Male NPT				112.8	47.0					

ISO7/1 Tapered Threads (PT) are available for all fractional sizes of VB6FX series valves.  
Add "R" as a suffix instead of "N".

Dimensions are for reference only and are subject to change without prior notice.

Pressure - Temperature Ratings

Valve Group	Sealing Materials			Pressure Rating	Temperature Rating
	Seat	Stem Packing	End Seal		
2 Way					
VB6F1	PCTFE	PTFE	PTFE	6000psig(413bar)	-22°F~-355°F (-30°C~180°C)
VB6F2	PEEK			6000psig(413bar)	-65°F~446°F (-54°C~230°C)
VB6F3					
3 Way					
VB6FX1	PCTFE	PTFE	PTFE	4000psig(275bar)	-22°F~-355°F (-30°C~180°C)
	PEEK			6000psig(413bar)	-65°F~446°F (-54°C~230°C)
VB6FX2	PCTFE	PTFE	PTFE	3000psig(206bar)	-9°F~320°F (-23°C~160°C)
VB6FX3	PEEK			4000psig(275bar)	-54°F~410°F (-35°C~210°C)

Flow Rates

Pressure Drop(Δp) to Atmosphere in psig		Cv													
		0.06	0.18	0.21	0.26	0.63	0.7	0.87	0.93	1.04	2.34	3.46	3.62	5.57	6.42
Air @70°F(21°C) SCFM	10	5.9	17.7	20.7	25.6	62.0	68.9	85.6	91.5	102.4	230.3	340.6	356.3	548.2	631.9
	50	13.2	39.6	46.2	57.2	138.7	154.1	191.5	204.7	228.9	515.0	761.5	796.7	1225.9	1413.0
	100	18.7	56.0	65.4	80.9	196.1	217.9	270.8	289.5	323.7	728.3	1077.0	1126.8	1733.7	1998.3
Water @60°F(16°C) US GPM	10	0.2	0.6	0.7	0.8	2.0	2.2	2.8	2.9	3.3	7.4	10.9	11.5	17.6	20.3
	50	0.4	1.3	1.5	1.8	4.5	4.9	6.2	6.6	7.4	16.5	24.5	25.6	39.4	45.4
	100	0.6	1.8	2.1	2.6	6.3	7.0	8.7	9.3	10.4	23.4	34.6	36.2	55.7	64.2

Flow rate calculated with 1000psig(69bar) inlet pressure.  
To determine m3/hr, multiply SCFM by 1.69 and US GPM by 0.227.  
SCFM : Standard Cubic Feet per Minute. US GPM : Gallons Per Minute

INSTRUMENT

High Pressure  
Bar Stock Ball Valves  
VB6B





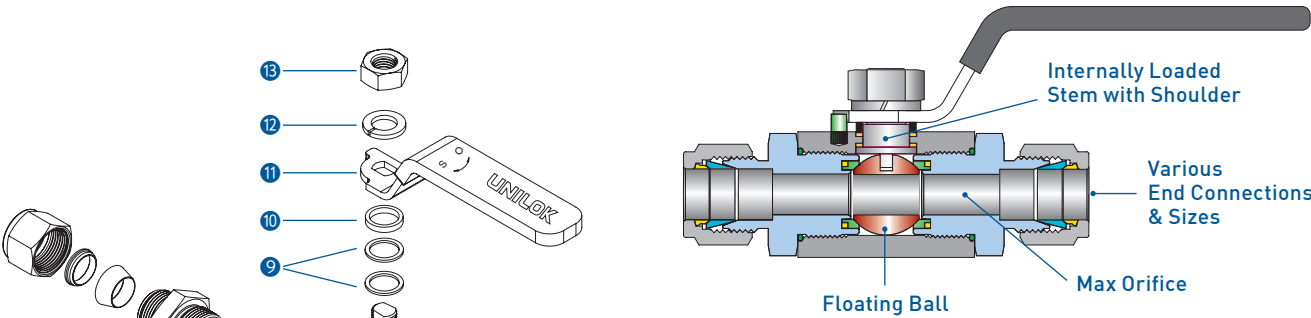
# High Pressure Bar Stock Ball Valves VB6B

## CONTENTS

Features .....	142	How To Order .....	143
Materials of Construction .....	142	VB6B series .....	144
CNG Application .....	142	VB6BX series .....	145
Application .....	143	Pressure-Temperature Ratings .....	146
Testing .....	143	Valve Actuation Torque .....	146
Cleaning .....	143	Panel Mounting .....	146
Important Notification .....	143		

## Features

- Pressure rating up to 6000psig [413bar] @21°C(70) with standard PCTFE seats
- 10000psig [689bar] @21°C(70°F) with optional PEEK seats for CNG application
- Temperature rating from -30°C(-22°F) to 180°C [355°F] with standard PCTFE seats
- Robust body for high pressure application
- Floating ball design ensures leak proof shut-off at high pressure
- Blow-out proof design with internally loaded ball stem with shoulder
- Lever handle with PVC coat allows easy and quick operation with low torque and 1/4 turn to open and close
- Max orifice minimizes the pressure drop Panel mounting is available as optional
- 2 way shut off valves and 3 way switching valves are available



## VB6BC Series Valves for CNG Application

VB6BC series valves with live loaded compensation ring seats and CNG compatible materials provide a proper sealing at low and high pressure CNG application. The CNG compatible materials listed in red are standard materials for VB6BC series valves.

⑥ PEEK : Ball Seats ⑤ PCTFE : Ring Seats ④ H-NBR : O-rings

To order, add **C** next to valve series number.  
Example : VB6B**C**2U-12T-SS.

## Materials of Construction

No.	Description	Materials
1	Body	316SS
2	Pin	304SS
3	Connector	316SS
4	O-Ring	FKM
5	Ring Seat	PTFE
6	Ball Seat	PCTFE
7	Ball	316SS
8	Stem	316SS
9	Packing	PTFE
10	Bushing	316SS
11	Handle	304SS+PVC
12	Spring Washer	304SS
13	Nut	304SS
14	Front Ferrule	316SS
15	Back Ferrule	316SS
16	Nut	316SS

## Application

Internally live loaded ball stem to ensure sealing at low and high pressure CNG application .  
PEEK and PCTFE seats are compatible with CNG  
VB6B series valves are requiring in a wide range onshore and offshore applications to offer a safe and reliable perform.

## Sour Environment Services

UNILOK valves are comply with NACE MR-0175/ISO 15156 for sour oilfield application or NACE MR-0103 for petroleum refining operations.  
To order, add-N to the end of part number.

## Testing

Every valve is 100% factory tested with air and nitrogen at 1000psig[69bar] for leakage at the seat and packing. Each test is performed to a maximum allowable leak rate of 0.1scc/min.  
Hydrostatic shell test to be performed at 1.5 time of the working pressure is available as optional.

## How To Order

UNILOK VB6B series ball valves are ordered by part number as shown below.

## Cleaning

UNILOK valves are free from machine oils, loose particles and grease throughout the close cleaning process.

## Important Notification

UNILOK ball valves are designed to be operated in a fully open or fully closed position.  
The packing adjustment may be required during the valve's service life.  
Proper installation, materials compatibility, operation and maintenance of these valves are the responsibility of the user. The total system design must be taken into consideration to ensure optimal performance and safety.

**Example:** The following part number, **VB6B3U-16T-SS** is designated for VB6B series ball valve with both 1" UNILOK tube fitting, 316SS, PCTFE seat.

V

UNILOK Valve

B6B3

Valve Type

U

Connection Type

-

16T

Connection Size

-

SS

Body Materials

-

Seat Materials

Other alloys are available upon request

Valve Type	
B6B	2 Way Type
B6BC	2 Way Type, CNG Applicaon
B6BX	3 Way Type

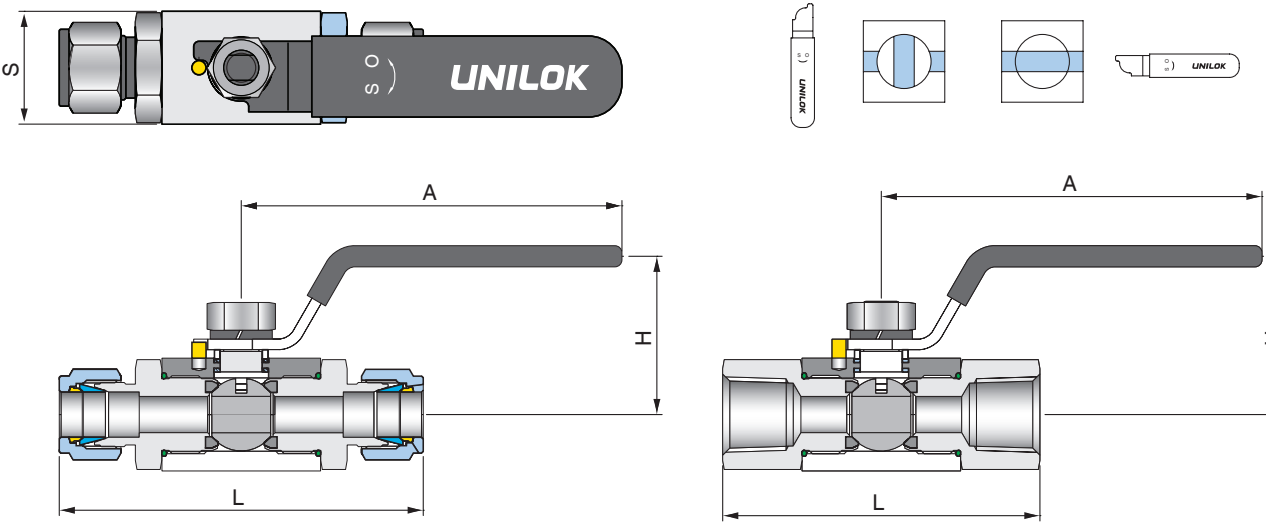
Connection Size						
Fractional(Inch) Tube O.D. Designation						
Tube O.D.	inch	1/4	3/8	1/2	3/4	1
	mm	6.35	9.52	12.70	19.05	25.40
Designator		04T	06T	08T	12T	16T

Seat Materials	
None	PCTFE
PK	PEEK

Pipe Size Designation (NPT or ISO7/1-PT)					
Pipe Size	1/4	3/8	1/2	3/4	1
Designator	04N/R	06N/R	08N/R	12N/R	16N/R

## VB6B series

(2 Way, Shut-Off Both UNILOK Tube Fittings or Both Female or Male Threads)



### Ordering Information & Dimensions

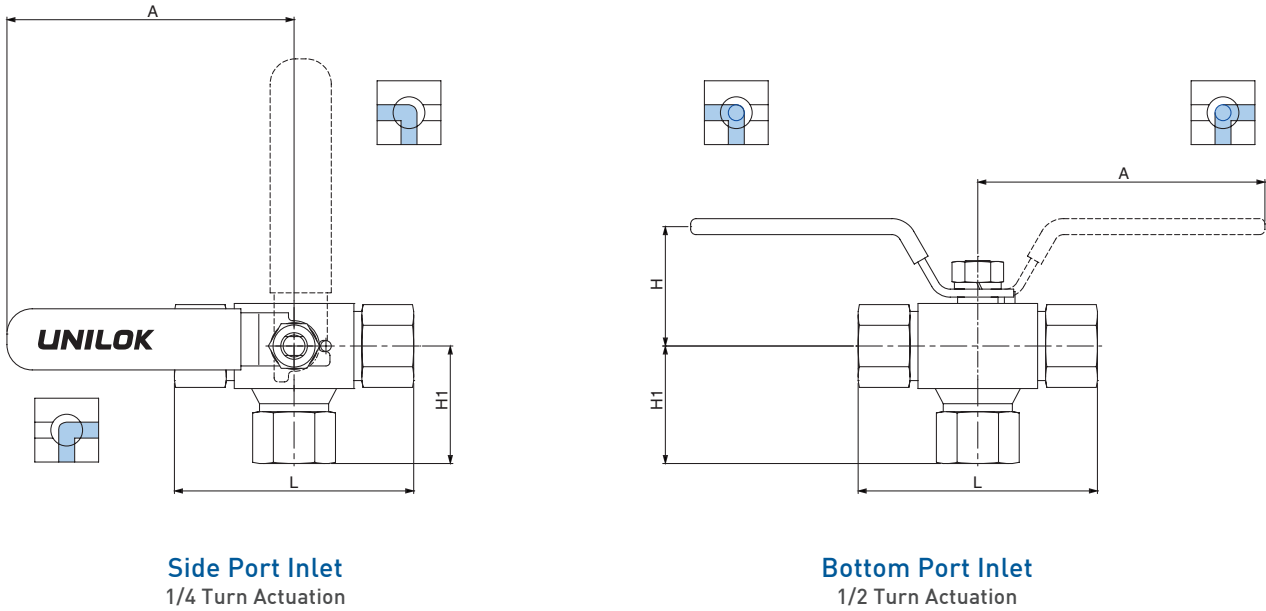
Part No.		End Connections		Orifice	CV	Dimensions (mm)			
		Inlet	Outlet			L	S	H	A
VB6B1	U-04T-	1/4" UNILOK		4.8	1.2	92.0	32.0	45.0	108.0
	U-06T-	3/8" UNILOK		7.1	3.7	95.0			
	U-08T-	1/2" UNILOK		10.0	7.5	103.0			
	F-04N-	1/4" Female NPT				70.0			
	F-06N-	3/8" Female NPT				75.0			
	F-08N-	1/2" Female NPT				90.0			
	M-04N-	1/4" Male NPT		7.1	3.7	85.0			
	M-06N-	3/8" Male NPT		9.7	7.2	85.0			
	M-08N-	1/2" Male NPT		10.0	7.5	85.0			
VB6B2	U-12T-	3/4" UNILOK		12.7	10.0	110.6	40.0	55.0	148.0
	F-08N-	1/2" Female NPT				90.0			
	F-12N-	3/4" Female NPT				98.0			
	M-12N-	3/4" Male NPT				105.0			
VB6B3	U-12T-	3/4" UNILOK		19.0	30.0	118.6	50.0	60.0	148.0
	U-16T-	1" UNILOK				127.5			
	F-12N-	3/4" Female NPT		15.8	19.0	95.0			
	F-16N-	1" Female NPT		19.0	30.0	106.0			
	M-12N-	3/4" Male NPT		15.8	19.0	115.0			
	M-16N-	1" Male NPT		19.0	30.0	125.0			

ISO7/1 Tapered Threads (PT) are available for all fractional sizes of VB6B series valves.  
Add "R" as a suffix instead of "N".

Dimensions are for reference only and are subject to change without prior notice.

## VB6BX series

(3 Way, Switching UNILOK Tube Fittings or Female or Male Threads)



### Ordering Information & Dimensions

Part No.		End Connections		Orifice	Dimensions (mm)				
		Inlet	Outlet		L	S	H	H <sub>1</sub>	A
VB6BXB1	U-04T-	1/4" UNILOK		4.8	92.0	32.0	44.9	53.5	108.0
	U-06T-	3/8" UNILOK		7.1	95.0			55.0	
	U-08T-	1/2" UNILOK		10.0	106.0			57.5	
	F-04N-	1/4" Female NPT			72.0			36.7	
	F-06N-	3/8" Female NPT			75.0			40.2	
	F-08N-	1/2" Female NPT			89.0			44.2	
VB6BXB2	U-12T-	3/4" UNILOK		12.7	115.0	40.0	55.0	65.5	148.0
	F-08N-	1/2" Female NPT			93.0			49.7	
	F-12N-	3/4" Female NPT			102.0			55.2	
VB6BXB3	U-12T-	3/4" UNILOK		15.8	125.0	50.0	60.0	70.0	148.0
	U-16T-	1" UNILOK		20.0	134.0			76.6	
	F-12N-	3/4" Female NPT			119.0			56.7	
	F-16N-	1" Female NPT			129.0			60.8	

Female ISO7/1 Tapered Threads (PT) are available for all fractional sizes of VB6BX series valves.  
Add "R" as a suffix instead of "N".

### Bottom and Side Port Entry Valve Ordering Information

To order side port entry valve, replace **B** with **S**

Examples : **VB6BXB1U-04T-SS**, **VB6BXS1U-04T-SS**

Dimensions are for reference only and are subject to change without prior notice.

Pressure-Temperature Ratings

Valve Group	Sealing Materials			Pressure Rating	Temperature Rating
	Seat	Stem Packing	End Seal		
2 Way					
VB6B1	PCTFE	PTFE	FKM	6000psig(413bar)	-22°F~320°F (-30°C~160°C)
	PEEK			10000psig(689bar)	-40°F~446°F (-40°C~230°C)
VB6B2	PCTFE	PTFE	FKM	5000psig(344bar)	-10°F~320°F (-23°C~160°C)
VB6B3	PEEK			6000psig(413bar)	-10°F~376°F (-23°C~191°C)
3 Way					
VB6BX1	PCTFE	PTFE	FKM	4000psig(275bar)	-22°F~320°F (-30°C~160°C)
	PEEK			6000psig(413bar)	-40°F~446°F (-40°C~230°C)
VB6BX2	PCTFE	PTFE	FKM	3000psig(206bar)	-10°F~320°F (-23°C~160°C)
VB6BX3	PEEK			4000psig(275bar)	-10°F~376°F (-23°C~191°C)

Valve Actuation Torque

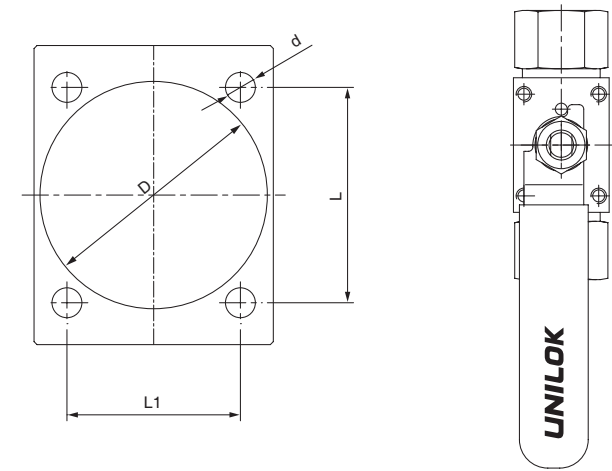
Valve Group	Pressure (psig)		
	0	5000	6000
Way	Torque (Nm)		
VB6B1	3.92	-	6.37
VB6B2	7.35	10.30	-
VB6B3	12.26	19.61	-
	0	3000	4000
3 Way	Torque (Nm)		
VB6BX1	3.92	-	4.90
VB6BX2	7.35	7.85	-

Panel Mounting

Screw hole panel mounting is available with four screw holes on the top of VB6B series valves, M4 x 6mm depth.

To order, add -M to end of part number.

Disassemble the handle before panel mounting.



Valve Group	Dimensions(mm)			
	L	L <sub>1</sub>	d	D
VB6B1	34	25	5	30
VB6B2	36	29	5	38
VB6B3	40	35	5	38

Best Engineering For You