

Ball Valve Series

Application

Semiconductor, Display, Solar. Oil Gas,
Power Plant, Offshore and Water Desalination

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BL Series

Hex Ball Valve
Working Pressure Max. 1000psig

Maximum operation pressure

1000psi at 100°F(38°C) with PTFE Seat.

Compact Design

One piece hexagon body for high structural strength.

Easy operation

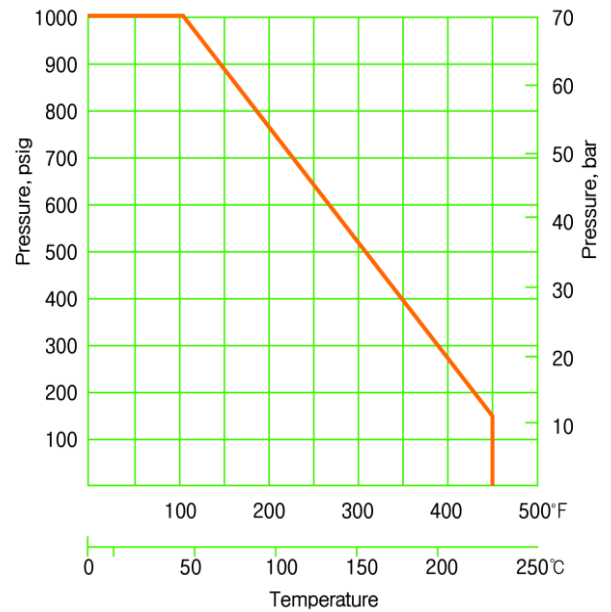
Tight shut-off of low torque and quarter – turn
Quick operation.

Patented Nylon Handle

Available for better installation in a restricted space
Easy to distinguish the flow line. (**BLACK**, **RED**, **BLUE**)

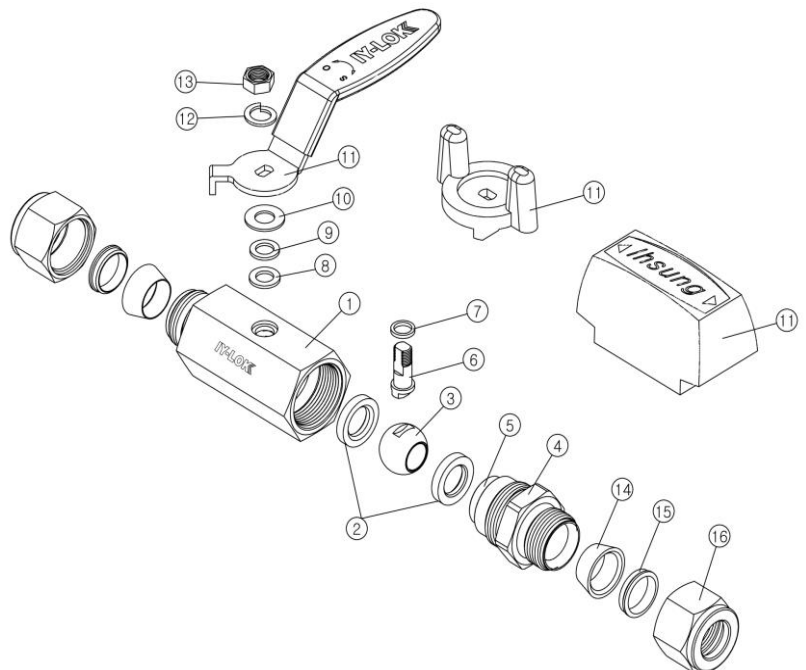
Variety of End Connections.

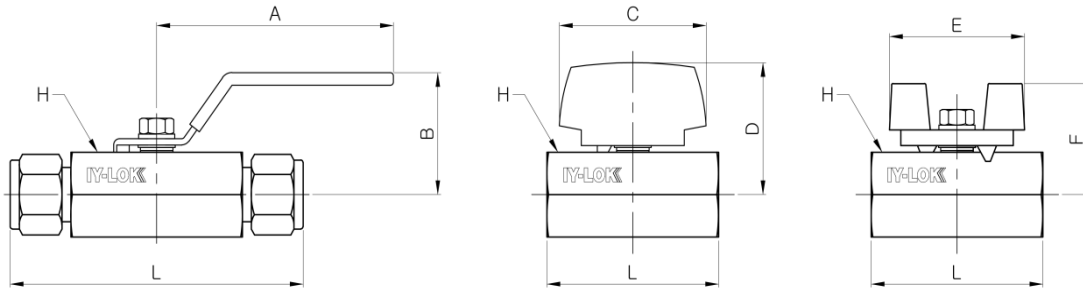
100% Factory tested.



MATERIALS OF CONSTRUCTION

ITEM NO.	DESCRIPTION	MATERIALS
1	Body	316 SS
2	Seat	PTFE
3	Ball	316 SS
4	Insert	316 SS
5	O-ring	FKM
6	Stem	316 SS
7	Inner Packing	PTFE
8	Outer Packing	PTFE
9	Gland	304 SS
10	Gland Washer	304 SS
11	Lever Handle	SUS304
	Butterfly Handle	Zinc
11	Knob Handle	PTB
	Spring Washer	304 SS
12	Spring Washer	304 SS
13	Lock Nut	304 SS
14	Front Ferrule	316 SS
15	Back Ferrule	316 SS
16	Nut	316 SS

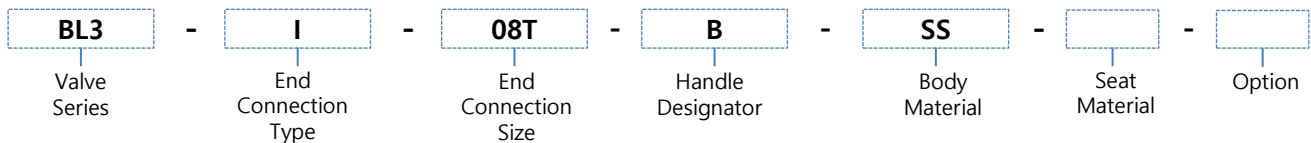




Basic Part No.	End Connection		Orifice	Dimensions (mm)							
	Inlet	Outlet		L	A	B	C	D	E	F	H (Hex.)
BL1-	I - 06M	6mm IY-Lok	5.0	80.0	60.0	32	41	33.47	37.6	26.6	17.46
	I - 04T	1/4" IY-Lok		80.0							
	F - 04N	1/4" Female NPT		40.0							
	IS - 04T	1/4" Stub Tube 1/4" IY-Lok		78							
	S - 04T	1/4" Stub Tube		75.7							
BL2-	I - 10M	10mm 1/4" IY-Lok	7.5	90.0	80.0	40	41	34.70	41.0	30.2	20.63
	I - 06T	3/8" IY-Lok		90.0							
	F - 06N	3/8" Female NPT		45.0							
	IS - 06T	3/8" Stub Tube 3/8" IY-Lok		90.0							
	S - 06T	3/8" Stub Tube		88.1							
BL3-	I - 12M	12mm IY-Lok	9.0	99.0	80.0	42	50	42.31	45.6	35.5	26.98
	I - 08T	1/2" IY-Lok		99.0							
	F - 08N	1/2" Female NPT		54.5							
	IS - 08T	1/2" Stub Tube 1/2" IY-Lok		102							
BL4-	I - 16M	12mm IY-Lok	12.5	109.0	100.0	51	50	43.93	49.0	38.1	31.75
	I - 10T	5/8" IY-Lok		109.0							
	I - 12T	3/4" IY-Lok		110.0							
	F - 12N	3/4" Female NPT		61.0							
	IS - 12T	3/4" Stub Tube 3/4" IY-Lok		110.5							
BL5-	S - 12T	3/4" Stub Tube	113.2	100.0	55	62	53.50	65.0	45.2	38.10	
	I - 16T	1" IY-Lok	134.0								
	F - 16N	1" Female NPT	76.0								
	IS - 16T	1" Stub Tube 1" IY-Lok	138								
	S - 16T	1" Stub Tube	143.2								

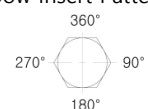
* All dimensions are in millimeter for reference only. Dimensions shown with IY-LOK nuts in finger-tight position, where applicable.

ORDERING SYSTEM



Valve Series		End Connection Size						Handle Designator		Seat Material						
BL1	BALL VALVE 1Series	Tube O.D. Designation						Nil	Lever Handle	Nil	PTFE					
BL2	BALL VALVE 2Series	Inch Tube	Tube O.D (inch)	1/4	3/8	1/2	3/4	1	B	Butterfly Handle	PK	PEEK				
			Designator	04T	06T	08T	12T	16T								
BL3	BALL VALVE 3Series	Metric Tube	Tube O.D (mm)	6	8	10	12	16	K1	Knob Handle	Red	Option(Pattern)				
BL4	BALL VALVE 4Series		Designator	06M	08M	10M	12M	16M					K2	Blue	Nil	Hex Insert
BL5	BALL VALVE 5Series		Designator	06M	08M	10M	12M	16M								
End Connection Type		Pipe Thread Designation (NPT or ISO7/1 (PT))						Body Material		180E	180° Pattern					
I	IY-LOK Tube Fitting	Thread Size	1/4	3/8	1/2	3/4	1	SS	316 / 316L SS	270E	270° Pattern					
M	Male Pipe Thread	Designator	04N/R	06N/R	08N/R	12N/R	16N/R			360E	360° Pattern					
F	Female Pipe Thread															
S	Stub Tube															

* Elbow Insert Pattern





BLT Series

Working Pressure Max. 2000psig

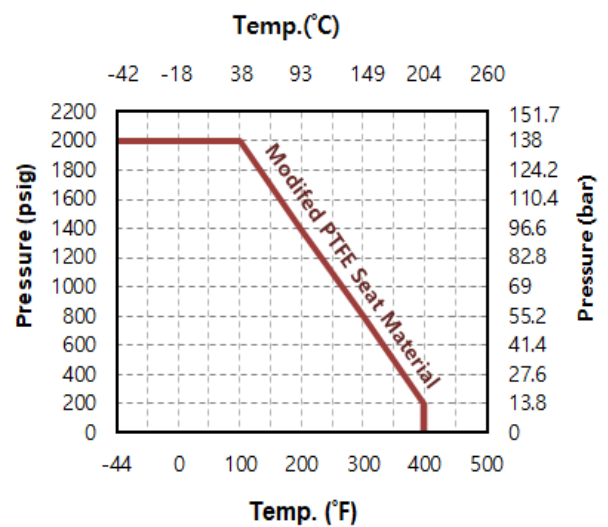
Maximum operation pressure
2000psi at 100°F(38°C) with Modified PTFE Seat.

Compact Design
One piece hexagon body for high structural strength

Easy operation
Tight shut-off of low torque and quarter – turn
Quick operation.

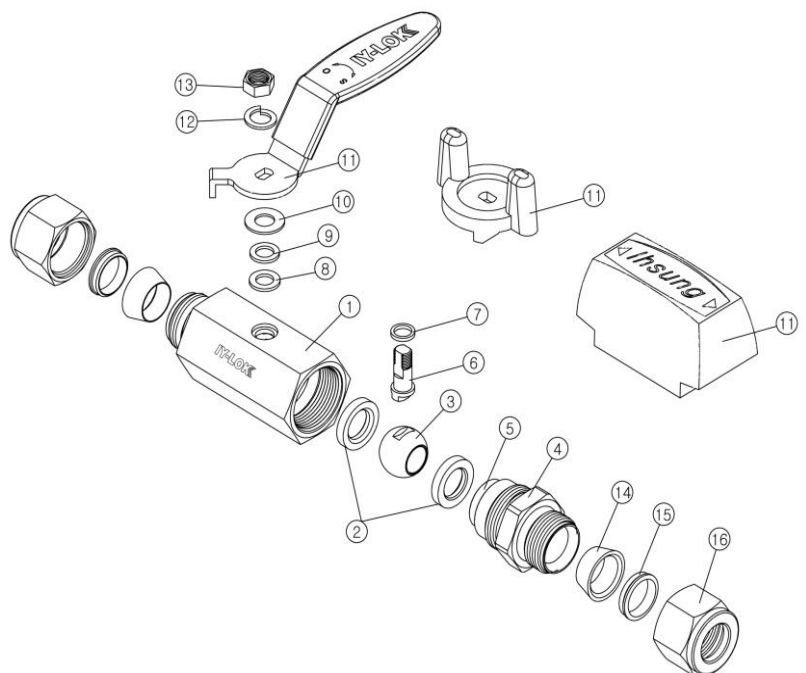
Patented Nylon Handle
Available for better installation in a restricted space
Easy to distinguish the flow line. (BLACK, RED, BLUE)

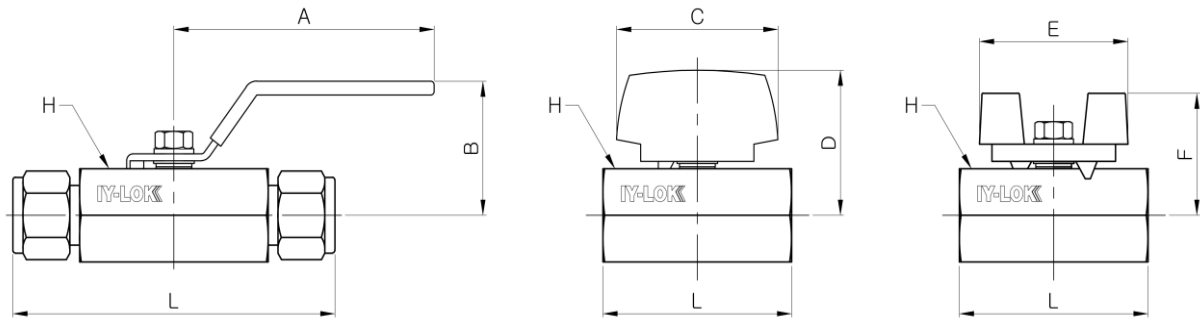
Variety of End Connections.
100% Factory tested.



MATERIALS OF CONSTRUCTION

ITEM NO.	DESCRIPTION	MATERIALS
1	Body	316 SS
2	Seat	TFM
3	Ball	316 SS
4	Insert	316 SS
5	O-ring	FKM
6	Stem	316 SS
7	Inner Packing	TEFLON
8	Outer Packing	TEFLON
9	Gland	304 SS
10	Gland Washer	304 SS
	Lever Handle	304 SS
11	Butterfly Handle	Zinc
	Knob Handle	PTB
12	Spring Washer	304 SS
13	Lock Nut	304 SS
14	Front Ferrule	316 SS
15	Back Ferrule	316 SS
16	Nut	316 SS

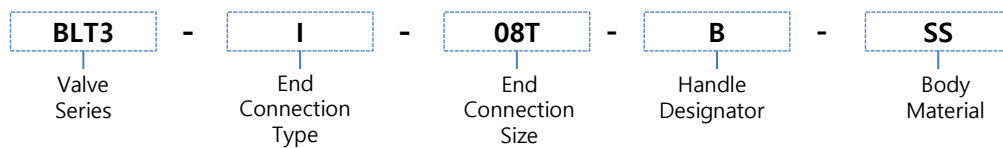




Basic Part No.	End Connection		Orifice	Dimensions (mm)							
	Inlet	Outlet		L	A	B	C	D	E	F	H (Hex.)
BLT1-	I - 06M	6mm IY-Lok	5.0	80.0	60.0	32	41	33.47	37.6	26.6	17.46
	I - 04T	1/4" IY-Lok		80.0							
	F - 04N	1/4" Female NPT		40.0							
BLT2-	I - 10M	10mm IY-Lok	7.5	90.0	80.0	40	41	34.70	41.0	30.2	20.63
	I - 06T	3/8" IY-Lok		90.0							
	F - 06N	3/8" Female NPT		45.0							
BLT3-	I - 12M	12mm IY-Lok	9.0	99.0	80.0	42	50	42.31	45.6	35.5	26.98
	I - 08T	1/2" IY-Lok		99.0							
	F - 08N	1/2" Female NPT		54.5							
BLT4-	I - 16M	12mm IY-Lok	12.5	109.0	100.0	51	50	43.93	49.0	38.1	31.75
	I - 10T	5/8" IY-Lok		109.0							
	I - 12T	3/4" IY-Lok		110.0							
	F - 12N	3/4" Female NPT		61.0							
BLT5-	I - 16T	1" IY-Lok	16.0	134.0	100.0	55	62	53.50	65.0	45.2	38.10
	F - 16N	1" Female NPT		76.0							

* All dimensions are in millimeter for reference only. Dimensions shown with IY-LOK nuts in finger-tight position, where applicable.

ORDERING SYSTEM



Valve Series	
BLT1	BALL VALVE 1Series (2000 psi)
BLT2	BALL VALVE 2Series (2000 psi)
BLT3	BALL VALVE 3Series (2000 psi)
BLT4	BALL VALVE 4Series (2000 psi)
BLT5	BALL VALVE 5Series (2000 psi)

End Connection Type	
I	IY-LOK Tube Fitting
F	Female Pipe Thread

End Connection Size						
Tube O.D. Designation						
Inch Tube	Tube O.D (inch)	1/4	3/8	1/2	3/4	1
	Designator	04T	06T	08T	12T	16T
Metric Tube	Tube O.D (mm)	6	8	10	12	16
	Designator	06M	08M	10M	12M	16M

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

Handle Designator		
Nil	Lever Handle	
B	Butterfly Handle	
K1		Black
K2	Knob Handle	Red
K3		Blue

Body Material	
SS	316 / 316L SS



KBL Series

Key Lock Ball Valve
Working Pressure Max. 1000psig

Max. operation pressure
1000psi(69bar) at 38°F(100°C) With PTFE Seat.

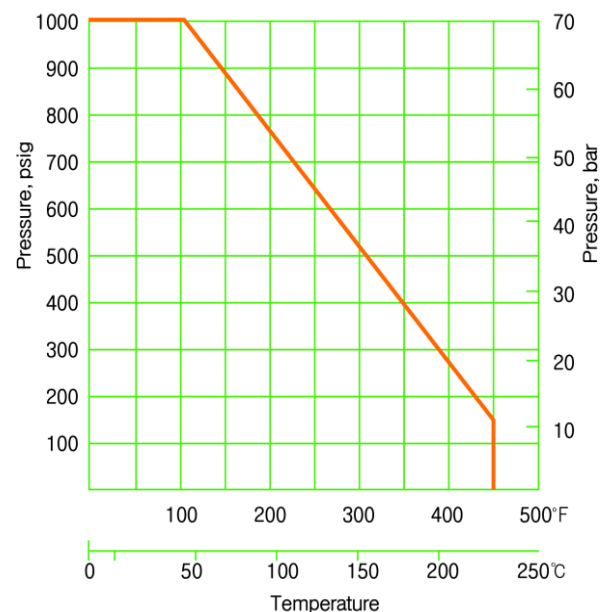
Compact Handle Design

Master Key release type

Body Material
316 Stainless steel

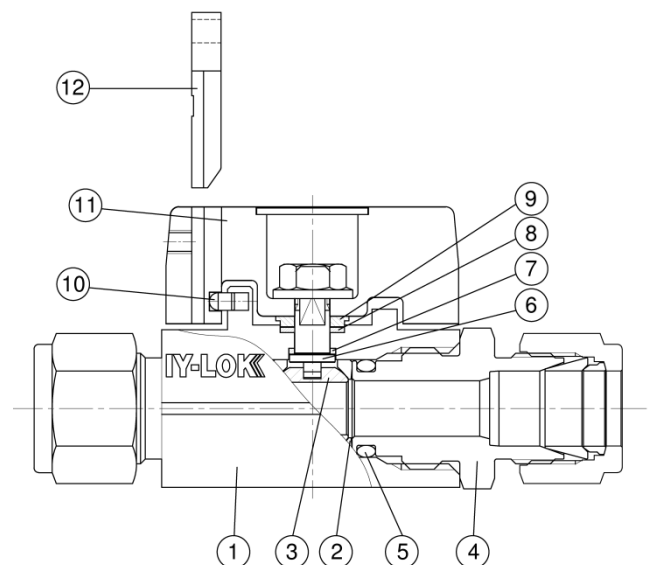
Variety of end connections.
IY-LOK Tube Fitting, NPT or ISO7/1 Female Thread.

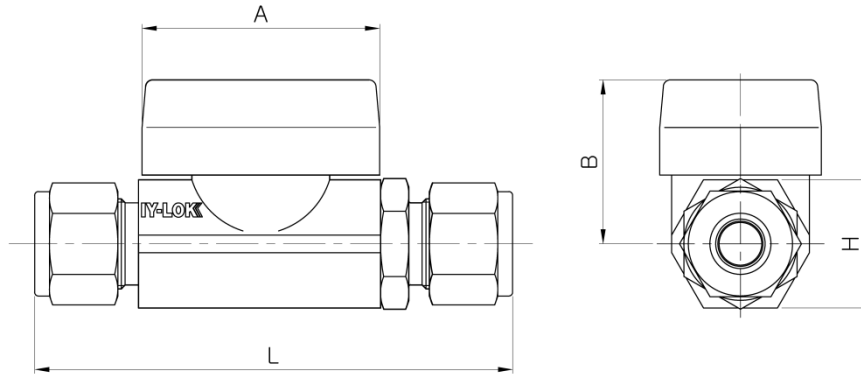
100% Factory tested.



MATERIALS OF CONSTRUCTION

No.	Description	Materials
1	Body	316 SS
2	Seat	PTFE
3	Stem	316 SS
4	Insert	316 SS
5	O-ring	FKM
6	Stem	316 SS
7	Inner Packing	PTFE
8	Outer Packing	PTFE
9	Gland	316 SS
10	Stop Pin	316 SS
11	Handle	Zinc
12	Key	Zinc

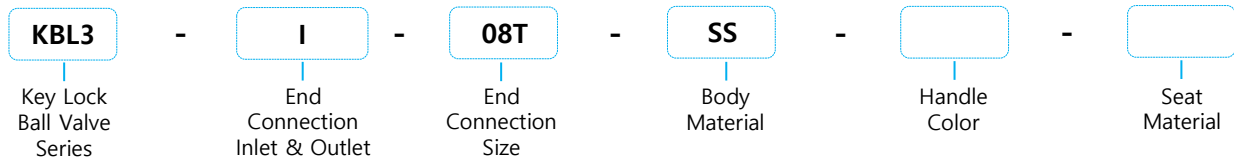




Part No.	End connections		Orifice (mm)	Flow Coefficient (Cv)	Dimensions (mm)			
	port1	port2			L	A	B	H
KBL3	I-8T	1/2" IY-Lok	9.0	9.5	100.5	50.0	37.6	26.98
	I-12M	12mm IY-Lok						
	F-8N	1/2" Female NPT			54.5			

* All dimensions are in millimeter for reference only. Dimensions shown with IY-LOK nuts in finger-tight position, where applicable.

ORDERING SYSTEM



Valve Series	
KBL3	Key Lock Ball Valve 3Series

End Connection Type	
I	IY-LOK Tube Fitting
F	Female Pipe Thread

End Connection Size		
Tube O.D. Designation		
Inch Tube	Tube O.D (inch)	1/2
	Designator	08T
Pipe Thread Designation (NPT or ISO7/1 (PT))		
Thread Size		1/2
Designator		08N/R

Handle Color	
Nil	Blue
OR	Orange

Body Material	
SS	316 / 316L SS

Seat Material	
Nil	PTFE
PK	PEEK



CBL Series

Clean Ball Valve

Working Pressure Max. 1000psig

Maximum operation pressure
1000psi at 100°F(38°C) with PTFE Seat.

Compact Design
One piece hexagon body for high structural strength.

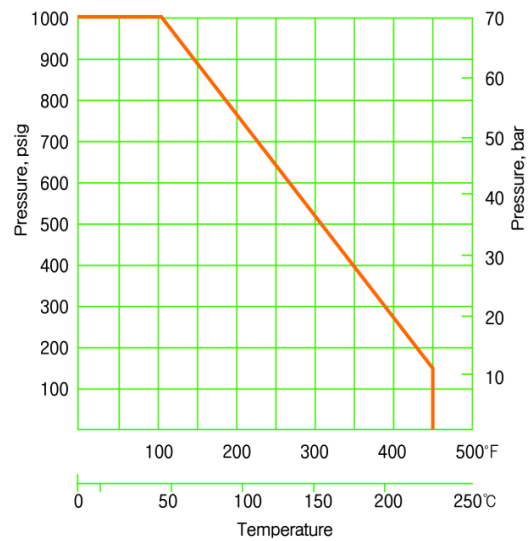
Easy operation
Tight shut-off of low torque and quarter – turn
Quick operation.

Maximum Flow Capacity.

Cleaning Process in a Certified Clean Room

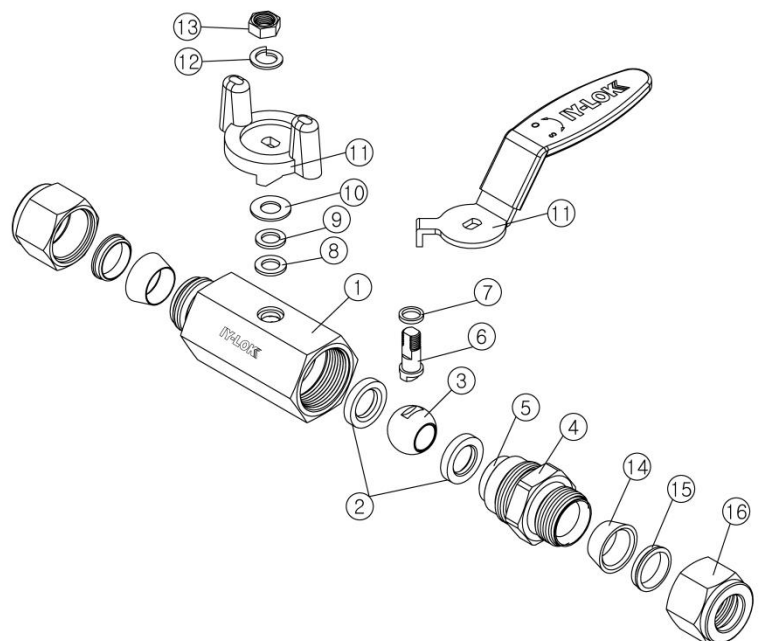
Variety of End Connections.

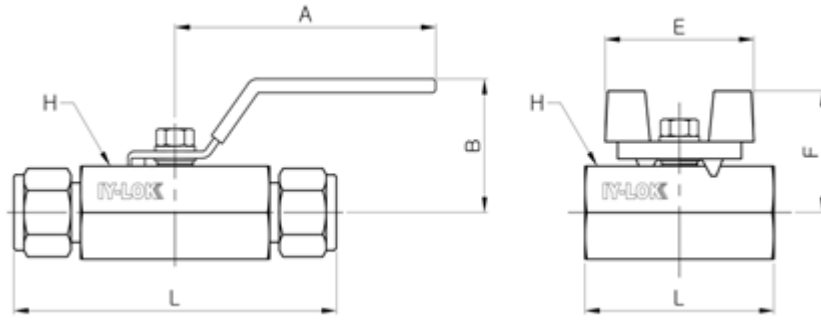
100% Factory tested.



MATERIALS OF CONSTRUCTION

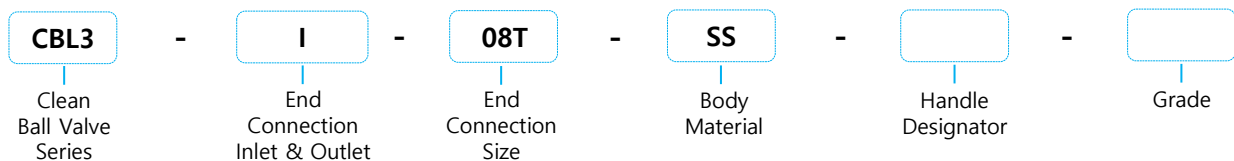
ITEM NO.	DESCRIPTION	MATERIALS
1	Body	316 SS
2	Seat	PTFE
3	Ball	316 SS
4	Insert	316 SS
5	O-ring	FKM
6	Stem	316 SS
7	Inner Packing	PTFE
8	Outer Packing	PTFE
9	Gland	304 SS
10	Gland Washer	304 SS
11	Lever Handle	SUS304
	Butterfly Handle	Zinc
12	Spring Washer	304 SS
13	Lock Nut	304 SS
14	Front Ferrule	316 SS
15	Back Ferrule	316 SS
16	Nut	316 SS





Basic Part No.	End Connection		Orifice	Dimensions (mm)					
	Inlet	Outlet		L	A	B	E	F	H (Hex.)
CBL1-	I - 06M	6mm IY-Lok	5.0	80.0	60.0	32	37.6	26.6	17.46
	I - 04T	1/4" IY-Lok		80.0					
	F - 04N	1/4" Female NPT		40.0					
	IS - 04T	1/4" Stub Tube		78					
	S - 04T	1/4" Stub Tube		75.7					
CBL2-	I - 10M	10mm1/4" IY-Lok	7.5	90.0	80.0	40	41.0	30.2	20.63
	I - 06T	3/8" IY-Lok		90.0					
	F - 06N	3/8" Female NPT		45.0					
	IS - 06T	3/8" Stub Tube		90.0					
	S - 06T	3/8" Stub Tube		88.1					
CBL3-	I - 12M	12mm IY-Lok	9.0	99.0	80.0	42	45.6	35.5	26.98
	I - 08T	1/2" IY-Lok		99.0					
	F - 08N	1/2" Female NPT		54.5					
	IS - 08T	1/2" Stub Tube		102					
	S - 08T	1/2" Stub Tube		103.2					
CBL4-	I - 16M	12mm IY-Lok	12.5	109.0	100.0	51	49.0	38.1	31.75
	I - 10T	5/8" IY-Lok		109.0					
	I - 12T	3/4" IY-Lok		110.0					
	F - 12N	3/4" Female NPT		61.0					
	IS - 12T	3/4" Stub Tube		110.5					
CBL5-	S - 12T	3/4" Stub Tube	113.2						
	I - 16T	1" IY-Lok	134.0	100.0	55	65.0	45.2	38.10	
	F - 16N	1" Female NPT	76.0						
	IS - 16T	1"Stub Tube	138						
	S - 16T	1"Stub Tube	143.2						

ORDERING SYSTEM



Valve Series	
CBL1	Clean Ball Valve 1Series
CBL2	Clean Ball Valve 2Series
CBL3	Clean Ball Valve 3Series
CBL4	Clean Ball Valve 4Series
CBL5	Clean Ball Valve 5Series

End Connection Type	
I	IY-LOK Tube Fitting
M	Male Pipe Thread
F	Female Pipe Thread
S	Stub Tube

End Connection Size							
Tube O.D. Designation							
Inch Tube	Tube O.D (inch)	1/4	3/8	1/2	3/4	1	
	Designator	04T	06T	08T	12T	16T	
Metric Tube	Tube O.D (mm)	6	8	10	12	16	
	Designator	06M	08M	10M	12M	16M	

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

Handle Designator	
Nil	Butterfly Handle
L	Lever Handle

Body Material	
SS	316 / 316L SS

Grade	
Nil	Bright Annealing
AP	Annealing Pickling
EP	Electro Polished



BM Series

Working Pressure Max. 3000psig

Maximum operation pressure

Up to 3000psi(206bar) at 70°F(21°C)

Temperature rating

50°F(10°C) to 150°F(65°C) with reinforced PTFE seat and Packing.

Compact Design

One piece Compact bar stock design for high structural strength.

Easy operation

Tight shut-off of low torque and easy quick operation

Flow direction

Arrow on the handle indicates the flow direction.

Variety of flow patterns

Straight, Angle and 3-way patterns.

Variety of End Connections

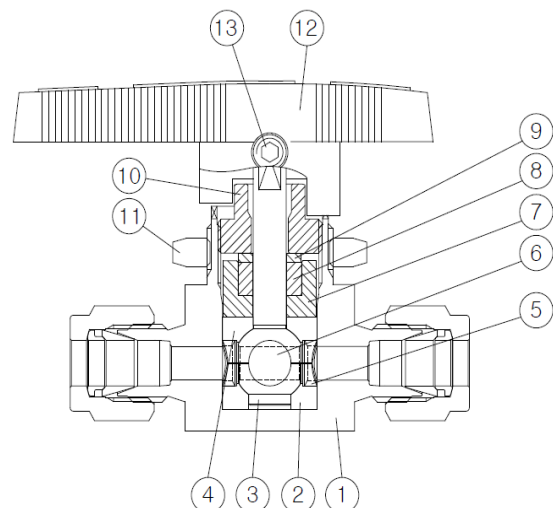
100% Factory tested

Pressure Rating @ 50°F to 150°F (10°C to 65°C)

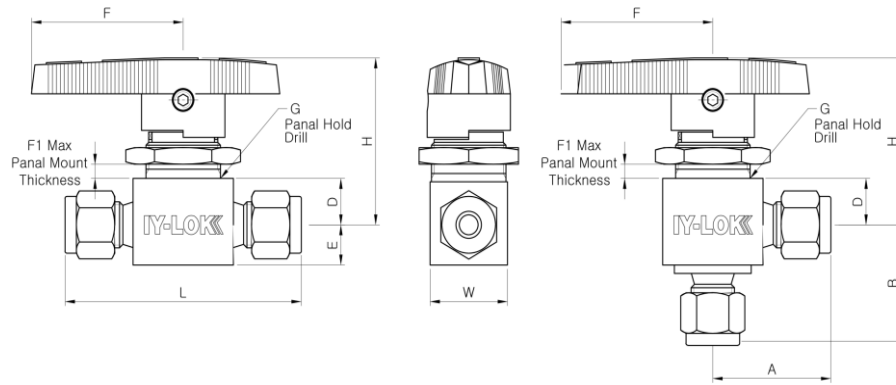
Valve Designator	Straight 2 - way	Angle 2 - way	Switching 3 - way
BM1	2500 psig (172bar)	2500 psig (172bar)	2500 psig (172bar)
BM2	3000 psig (206bar)	2500 psig (172bar)	2500 psig (172bar)
BM3	2500 psig (172bar)	1500 psig (103bar)	1500 psig (103bar)
BM4	2500 psig (172bar)	1500 psig (103bar)	1500 psig (103bar)

Materials of Construction

No.	Description	Materials
1	Body	316 SS
2	Lower Ball Seat	316 SS
3	Ball Stem	316 SS
4	Upper Ball Seat	316 SS
5	Side Ring	316 SS
6	Side Disc	316 SS
7	Gland	316 SS
8	Packing	PTFE
9	Packing Ring	316 SS
10	Packing Bolt	316 SS
11	Panel Nut	316 SS
12	Handle	Nylon
13	Set screw	304 SS



2-Way Shut-off Valve



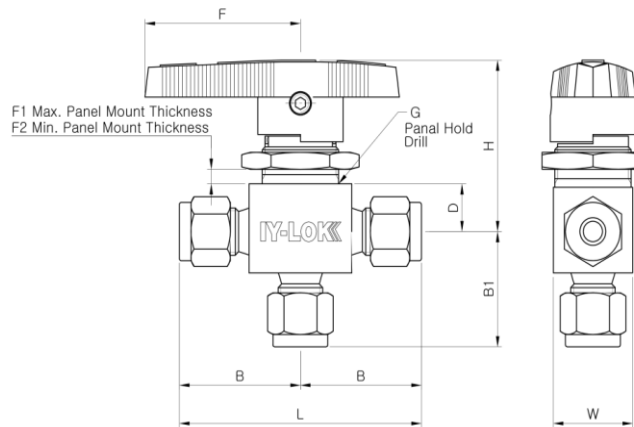
Basic Part No.	Orifice mm	CV	End Connection		Dimensions(mm)												
			Inlet	Outlet	L	A	B	H	E	D	F	F1	F2	G	W		
BM1-I-1T	1.3	0.1	1/16" IY-Lok		42.6	21.3	21.3	34.0	8.8	8.8	28.0	5.5	2.0	15.0	17.5		
BM1-I-3M	2.4	0.2	3mm IY-Lok		50.8	25.4	25.4	34.0	8.8	8.8	28.0	5.5	2.0	15.0	17.5		
BM1-I-2T		1/8" IY-Lok															
BM1-F-2N	3.2	0.5	1/8" Female NPT		41.2	20.6	20.6	34.0	8.8	8.8	28.0	5.5	2.0	15.0	17.5		
BM1-I-6M		6mm IY-Lok		55.4	27.7	27.7											
BM1-I-4T		1/4" IY-Lok															
BM2-F-2N	4.8	1.2	1/8" Female NPT		50.8	25.4	25.4	41.2	10.0	10.0	39.0	6.0	2.5	20.0	20.0		
BM2-F-4N		1/4" Female NPT		52.4	26.2	26.2											
BM2-F-2R		1/4" ISO Female Tapered															
BM2-M-4N		1/4" Male NPT		50.8	25.4	25.4											
BM2-MI-4N4T		1.6	1/4" Male NPT	1/4" IY-Lok	55.6	25.4	30.2										
BM2-I-6M		2.4	6mm IY-Lok		60.4	30.2	30.2										
BM2-I-4T		2.4	1/4" IY-Lok		62	31	31										
BM2-I-8M		1.5	8mm IY-Lok		65	32.5	32.5										
BM2-I-6T		1.5	3/8" IY-Lok														
BM3-F-4N		7.1	3.0	1/4" Female NPT		63.6	31.8									31.8	52.8
BM3-F-6N	3/8" Female NPT																
BM3-F-4R	3/8" ISO Female Tapered																
BM3-I-6T	3/8" IY-Lok		77.8	38.9	38.9												
BM3-I-10M	10mm IY-Lok																
BM4-F-8N	10.3	6.3	1/2" Female NPT		79.2	39.6	39.6	67.0	17.5	17.5	77.0	10.0	3.0	39.0	38.1		
BM4-F-8R		1/2" ISO Female															
BM4-I-12M		12mm IY-Lok		100												50	50
BM4-I-8T		1/2" IY-Lok															
BM4-I-12T		3/4" IY-Lok															

* All dimensions are in millimeter for reference only. Dimensions shown with IY-LOK nuts in finger-tight position, where applicable.

Flow Rate

Pressure Drop to Atmosphere (Δp) in psi	Cv															
	0.1	0.2	0.5	0.6	0.9	1.2	1.5	1.6	2.4	2.6	3.0	6.0	6.3	6.4	12.0	
Air SCFM @70°F(21°C)	10	1.1	2.7	6.9	8.3	12	17	21	22	33	36	41.5	83	87.2	88.6	166
	50	3	7.6	19.1	23	34	46	57	61	92	99.5	115	230	241	245	459
	100	5.3	14	33.9	40.7	61	81	100	110	160	176	203	407	427	434	814
Water US GPM @70°F(21°C)	10	0.3	0.6	1.6	1.9	2.8	3.7	4.7	5	7.5	8.2	9.5	19	19.9	20.2	87.9
	50	0.7	1.4	3.5	4.2	6.3	8.4	11	11	17	18.4	21.2	42.3	44.5	45.3	84.9
	100	1	2	5	6	9	12	15	16	24	26	30	60	63	64	120

3-Way Switching Valve



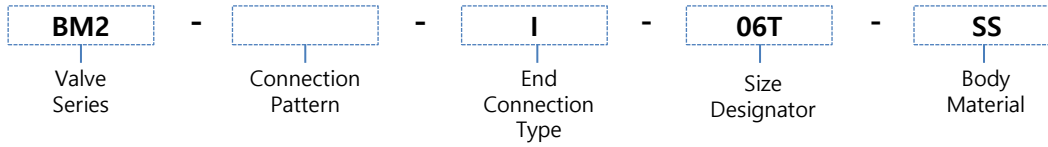
Basic Part No.	Orifice mm	CV	End Connection		Dimensions(mm)									
			Inlet	Outlet	L	B	B1	D	H	F	F1	F2	G	W
BM1-3-I-1T	1.3	0.08	1/16" IY-Lok		42.6	21.3	20.6	8.8	34.0	28.0	5.5	2.0	15.0	17.5
BM1-3-I-3M	2.4	0.15	3mm IY-Lok		50.8	25.4	24.6	8.8	34.0	28.0	5.5	2.0	15.0	17.5
BM1-3-I-2T		1/8" IY-Lok												
BM1-3-F-2N	3.2	0.30	1/8" Female NPT		41.2	20.6	20.6	8.8	34.0	28.0	5.5	2.0	15.0	17.5
BM1-3-I-6M		6mm IY-Lok		55.4	27.7	26.9								
BM1-3-I-4T		1/4" IY-Lok												
BM2-3-F-4N	4.8	0.75	1/4" Female NPT		52.4	26.2	26.2	10.0	41.2	39.0	6.0	2.5	20.0	20.0
BM2-3-F-4R		1/4" ISO Female Tapered												
BM2-3-I-6M		6mm IY-Lok		60.4	30.2	29.5								
BM2-3-I-4T		1/4" IY-Lok												
BM2-3-IM-4N4T		0.80	1/4" IY-Lok	1/4" Male NPT	26.2									
BM2-3-I-8M	0.80	8mm IY-Lok		62	31	30.2								
BM3-3-F-4N	7.1	1.70	1/4" Female NPT		63.6	31.8	31.8	14.5	52.8	51.0	9.0	3.0	28.0	28.6
BM3-3-F-6N		3/8" Female NPT												
BM3-3-F-6R		3/8" ISO Female Tapered												
BM3-3-I-6T		3/8" IY-Lok		73.2	36.6	35.8								
BM3-3-I-10M	2.00	10mm IY-Lok		79.2	39.6	39.6	17.5	67.0	77.0	10.0	3.0	39.0	38.1	
BM4-3-F-8N	1/2" Female NPT													
BM4-3-F-8R	1/2" ISO Female Tapered													
BM4-3-I-12M	12mm IY-Lok													
BM4-3-I-8T	4.60	1/2" IY-Lok		89	44.5	44.5	17.5	67.0	77.0	10.0	3.0	39.0	38.1	
BM4-3-I-12T	3/4" IY-Lok													

* All dimensions are in millimeter for reference only. Dimensions shown with IY-LOK nuts in finger-tight position, where applicable.

Flow Rate

Pressure Drop to Atmosphere (p) in psi		Cv												
		0.08	0.15	0.30	0.35	0.75	0.80	0.90	1.50	1.70	2.00	3.50	3.80	4.60
Air SCFM @70°F(21°C)	10	0.9	2.0	4.2	4.8	10.0	11.0	12.0	20.8	23.5	27.7	48.4	52.6	63.7
	50	2.4	5.7	11.5	13.4	29.0	31.0	34.0	57.4	65.0	76.5	134.0	145.0	176.0
	100	4.3	10.1	20.3	23.7	51.0	54.0	61.0	102.0	115.0	136.0	237.0	258.0	312.0
Water US GPM @70°F(21°C)	10	0.3	0.4	0.9	1.1	2.3	2.5	2.8	4.7	5.4	6.3	11.1	12.0	14.5
	50	0.6	1.0	2.1	2.5	5.3	5.6	6.3	10.6	12.0	14.1	24.7	26.9	32.5
	100	0.8	1.5	3.0	3.5	7.5	8.0	9.0	15.0	17.0	20.0	35.0	38.0	46.0

ORDERING SYSTEM



Valve Series	
BM1	BM1 Series
BM2	BM2 Series
BM3	BM3 Series
BM4	BM4 Series

Valve Series	
Null	2Way
3	3Way
A	Angle

End Connection Type	
I	IY-LOK Tube Fitting
F	Female Pipe Thread

End Connection Size					
Tube O.D. Designation					
Inch Tube	Tube O.D (inch)	1/4	3/8	1/2	3/4
	Designator	04T	06T	08T	12T
Metric Tube	Tube O.D (mm)	6	8	10	12
	Designator	06M	08M	10M	12M
Pipe Thread Designation (NPT or ISO7/1 (PT))					
Thread Size		1/8	1/4	3/8	1/2
Designator		02N/R	04N/R	06N/R	08N/R

Body Material	
SS	316 / 316L SS

BH Series

Working Pressure Max. 6000psig

Maximum operation pressure

Up to 6000psi(414bar) at 70°F(21°C)

Temperature rating

-22°F(-30°C) to 265°F(130°C) with PCTFE seat.
-65°F(-54°C) to 500°F(260°C) with PEEK seat

Variety of flow patterns

Straight and 3-way patterns.

Function

On/off service with 2-way pattern
Diverter service with 3-way pattern

Variety of end connections.

Anti blow-out stem design.

Minimize the pressure drop with Max orifice

100% Factory tested.

* Each valve is tested with nitrogen @1000psig (69bar) to maximum allowable leak rate of 0.1SCCM.

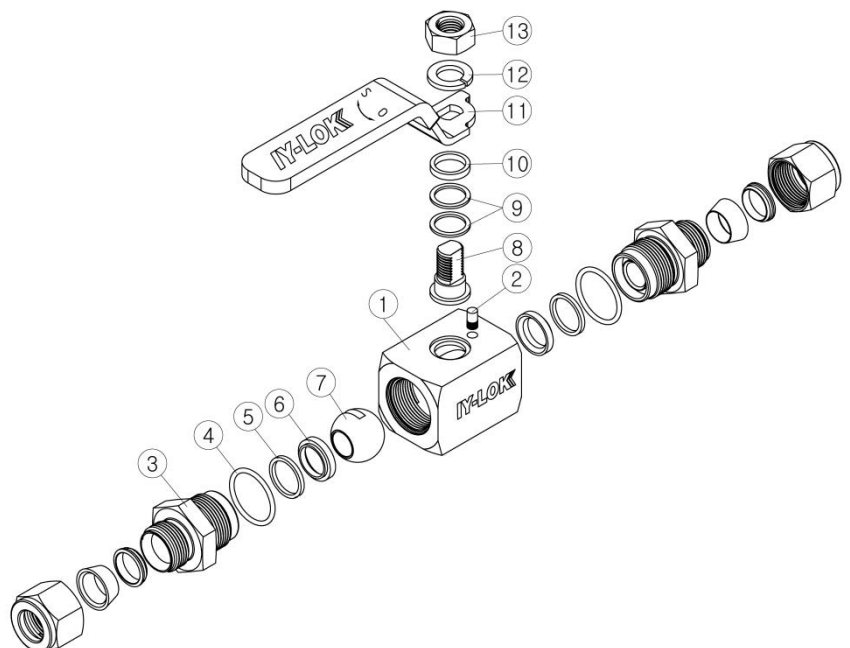
* Hydrostatic shell test is performed at 1.5times the working pressure.

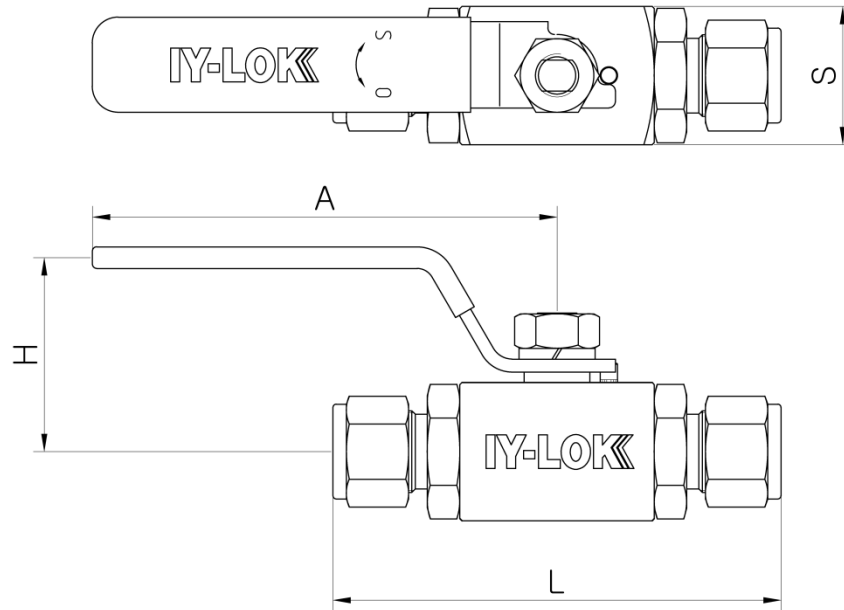
* Optional tests are available upon request.



Materials of Construction

No.	Description	Materials
1	Body	316 SS
2	Stop Pin	304 SS
3	Connector	316 SS
4	O-Ring	FKM
5	Ring Seat	PTFE
6	Ball Seat	PCTFE
7	Ball	316 SS
8	Stem	316 SS
9	Packing	PTFE
10	Gland	316 SS
11	Handle	304 SS
12	Spring Washer	304 SS
13	Nut	304 SS

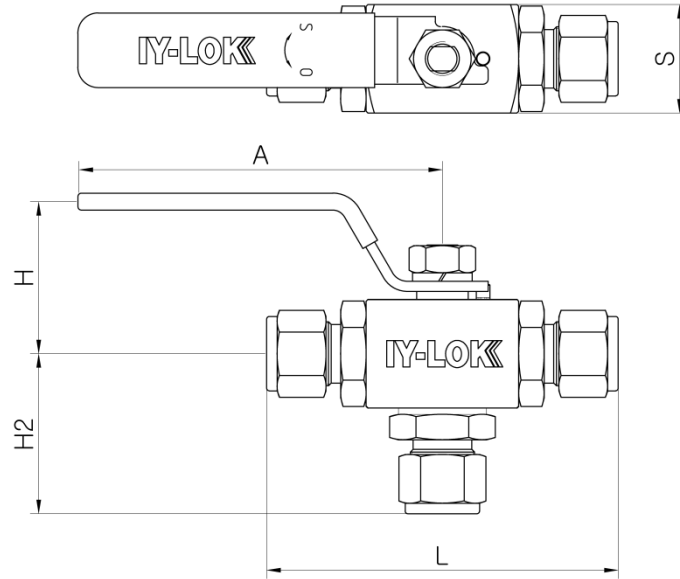




2-Way

Part No.	Orifice	Cv	End Connections	d Min.	Dimensions					
			Inlet & Outlet		L	H	A	S		
BH1	10	1.2	1/4" IY-Lok	4.8	91.6	45	107.5	32		
		3.7	3/8" IY-lok	7.11	94.6					
		7.5	1/2" IY-lok	10	103.6					
			1/4" Female NPT		70					
			3/8" Female NPT		71					
		7.5	1/2" Female NPT	79						
		3.7	1/4" Male NPT	7.11	85.4					
		7.2	3/8" Male NPT	9.65	85.4					
		7.5	1/2" Male NPT	10	98					
BH2	12.7	10	1/2" Female NPT	12.7	90	55.5	148.5	40		
			3/4" Female NPT		98					
			3/4" Male NPT		105.2					
			5/8" IY-Lok		110.6					
			3/4" IY-lok		110.6					
BH3	19	30	3/4" Female NPT	20	90	55.5	148.5	50		
			1" Female NPT		98.2					
		19	3/4" IY-lok	15.74	116.6					
		30	1" IY-lok	20	129.8					
		19	3/4" Male NPT	15.75	115.2					
		30	1" Male NPT	20	124.8					

* All dimensions are in millimeter for reference only. Dimensions shown with IY-LOK nuts in finger-tight position, where applicable.



3-Way

Part No.	Orifice	Cv	End Connections	d Min.	Dimensions					
			Inlet & Outlet		L	H	H2	A	S	
BH1-3	-I-4T	10	1.2	1/4" IY-Lok	4.8	91.6	45	53.3	107.5	32
	-I-6T		3.7	3/8" IY-lok	7.11	94.6		55		
	-I-8T		7.5	1/2" IY-lok	10	103.6		57.5		
	-F-4N	1/4" Female NPT		70	36.7					
	-F-6N	3/8" Female NPT		71	40.2					
	-F-8N	1/2" Female NPT	79	44.2						
BH2-3	-F-8N-	12.7	10	1/2" Female NPT	90	55.5	9	148.5	40	
	-F-12N			3/4" Female NPT	12.7		98			102
	-I-12T			3/4" IY-lok	110.6		115			
BH3-3	-F-12N	19	30	3/4" Female NPT	20	55.5	119	148.5	50	
	-F-16N			1" Female NPT	98.2		129			
	-I-12T	19	3/4" IY-lok	15.74	116.6		125			
	-I-16T	30	1" IY-lok	20	129.8		134			

* All dimensions are in millimeter for reference only. Dimensions shown with IY-LOK nuts in finger-tight position, where applicable.

Pressure Temperature Rating

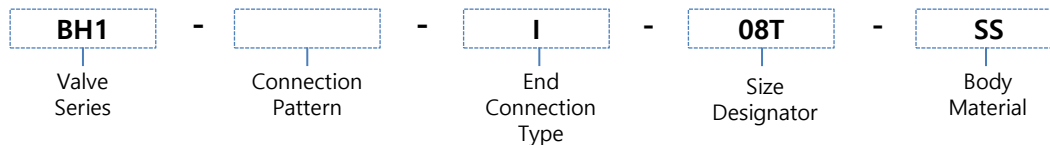
2-WAY Straight Types

VALVE Series	Materials			Pressure Rating @ -65°F~70°F (-54°C~21°C)	Temperature Rating
	Seat	Stem Packing	End Seal		
BH1	PVDF	PTFE		6000psig (413bar)	-22°F~265°F (-30°C~130°C)
	PCTFE				-22°F~265°F (-30°C~130°C)
	PEEK				-65°F~500°F (-54°C~260°C)
BH2 BH3	PVDF	PTFE		5000psig (344bar)	-10°F~375°F (-23°C~191°C)
	PCTFE				-10°F~375°F (-23°C~191°C)
	PEEK				6000psig (413bar)

3-WAY Straight Types

VALVE Series	Materials			Pressure Rating @ -65°F~70°F (-54°C~21°C)	Temperature Rating
	Seat	Stem Packing	End Seal		
BH1-3	PVDF	PTFE	VITON	4000psig (275bar)	-22°F~265°F (-30°C~130°C)
	PCTFE				-22°F~355°F (-30°C~180°C)
	PEEK				6000psig (413bar)
BH2-3 BH3-3	PVDF	PTFE	VITON	3000psig (206bar)	-10°F~375°F (-23°C~191°C)
	PCTFE				-10°F~375°F (-23°C~191°C)
	PEEK				4000psig (275bar)

ORDERING SYSTEM



Valve Series	
BH1	BH1 Series
BH2	BH2 Series
BH3	BH3 Series

Connection Pattern	
Nill	2Way
3	3Way

End Connection Type	
I	IY-LOK Tube Fitting
M	Male Pipe Thread
F	Female Pipe Thread

End Connection Size						
Tube O.D. Designation						
Inch Tube	Tube O.D (inch)	1/4	3/8	1/2	3/4	1
	Designator	04T	06T	08T	12T	16T
Metric Tube	Tube O.D (mm)	6	8	10	12	16
	Designator	06M	08M	10M	12M	16M
Pipe Thread Designation (NPT or ISO7/1 (PT))						
Thread Size		1/4	3/8	1/2	3/4	1
Designator		04N/R	06N/R	08N/R	12N/R	16N/R

Body Material	
SS	316 / 316L SS

BF Series

Forged High Working Pressure Max. 6000psig

High Flow capacity in a compact design

Maximum operation pressure

Up to 6000psi(414bar) at 70°F(21°C) with standard PCTFE seat.

Temperature rating

-65°F(-54°C) to 350°F(177°C) with standard PCTFE seat.

Variety of flow patterns

Straight and 3-way patterns

Function

On/off service with 2-way pattern

Diverter service with 3-way pattern

Variety of end connection

1/4" to 3/4"

Body Material

316 stainless steel

100% Factory tested.

* Each valve is tested with nitrogen @1000psig (69bar) to maximum allowable leak rate of 0.1SCCM.

* Optional tests are available upon request.

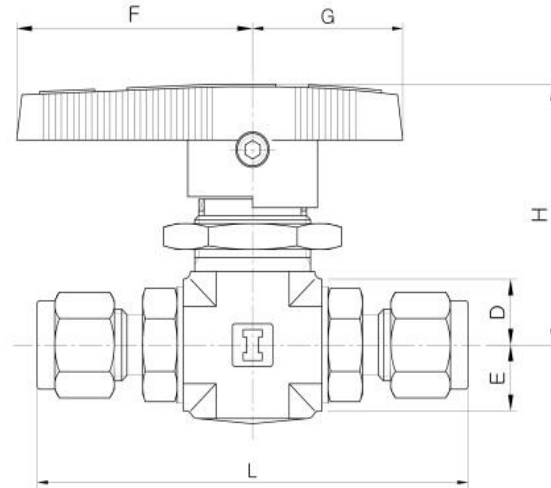


Material of Construction

Description	Grade / ASTM Specification	
	Valve Body Material	
	SS316	
1 Body	316 SS / A182	
2 End Connector	Stainless Steel	
3 Ball	316 SS / A479	
4 Seat retainer	PCTFE, PEEK, PTFE	
5 Seat	PTFE	
6 Retainer Seal	316 SS / A479	
7 Stem*	316 SS	
8 Packing bolt*	316 SS	
9 Panel Nut*	PTFE	
10 Stem Washer*	PTFE	
11 Stem Packing*	PTFE	
12 End Packing*	PTFE	

Temperature and Pressure Rating

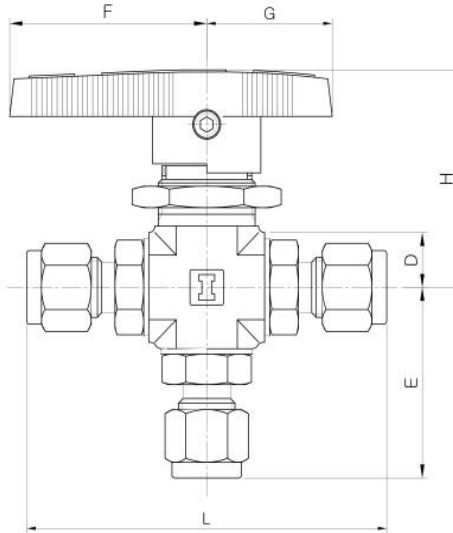
Materials	Temperature Rating	Pressure Rating @100°F (38°C)	Pressure Rating @Max Temperature
Seat			
PCTFE	-65°F~300°F (-54°C~148°C)	6000psig (413bar)	1000psig@300°F (68.9bar@148°C)
PEEK	-65°F~450°F (-54°C~232°C)		700psig@340°F (48bar@200°C)
PTFE	-65°F~300°F (-54°C~148°C)	1500psig (103bar)	250psig@300°F (17.2bar@148°C)



2-Way Shut-off Valve

Part No.	Orifice mm	Flow Coefficient (Cv)	End connections port1 & port2	Dimensions (mm)								
				L	D	E	H	G	F	P	T	
BF1	I-1T	1.3	0.06	1/16" IY-Lok	66.0	8.5	10	23.2	18	47	16.3	3.3
	I-2T	2.4	0.21	1/8" IY-Lok	69.0							
	F-2N	4.2	0.93	1/8" Female NPT	54.4							
	M-2N			1/8" Male NPT	59.8							
	I-4T			1/4" IY-Lok	75.2							
	M-4N			1/4" Male NPT	68.6							
	I-3M	2.2	0.18	3mm IY-Lok	69.6							
BF2	I-2T	2.4	0.26	1/8" IY-Lok	83.8	12.3	14	37.4	32	80	19.6	6.4
	I-4T	4.8	1.04	1/4" IY-Lok	88.4							
	F-4N	6.4	2.34	1/4" Female NPT	76.8							
	M-4N			1/4" Male NPT	82.2							
	I-6T			3/8" IY-Lok	91.4							
	M-6N			3/8" Male NPT	82.2							
	I-6M	4.8	1.04	6mm IY-Lok	89.0							
	I-8M	6.4	2.34	8mm IY-Lok	90.4							
	I-10M			10mm IY-Lok	92.0							
BF3	F-6N	10.3	6.42	3/8" Female NPT	99.0	17.8	19.5	44.2	38.1	101.6	26	9.7
	F-8N			1/2" Female NPT	109.2							
	I-8T			1/2" IY-Lok	118.8							
	M-8N	1/2" Male NPT	112.8									
	I-12T	3/4" IY-Lok	118.4									
	I-12M	9.5	5.57	12mm IY-Lok	118.4							
	I-16M	10.3	6.42	16mm IY-Lok	118.4							

* All dimensions are in millimeter for reference only. Dimensions shown with IY-LOK nuts in finger-tight position, where applicable.



3-Way Switching Valves

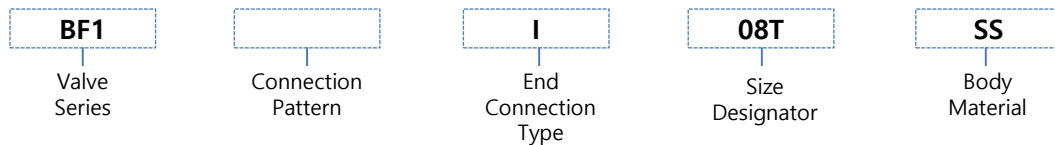
Part No.	Orifice mm	Flow Coefficient (Cv)	End connections	Dimensions (mm)								
			port1 & port2	L	E	D	H	G	F	P	T	
BF1-3	-I-1T	1.3	0.06	1/16" IY-Lok	66.0	33.7	8.5	23.2	18	47	16.3	3.3
	-I-2T	2.4	0.21	1/8" IY-Lok	69.0	36.4						
	-F-2N	4.2	0.93	1/8" Female NPT	54.4	29.9						
	-M-2N			1/8" Male NPT	59.8	29.9						
	-I-4T			1/4" IY-Lok	75.2	37.2						
	-M-4N			1/4" Male NPT	68.6	29.9						
-I-3M	2.2	0.18	3mm IY-Lok	69.6	36.4	12.3	37.4	32	80	19.6	6.4	
BF2-3	-I-2T	2.4	0.26	1/8" IY-Lok	83.8							39.6
	-I-4T	4.8	1.04	1/4" IY-Lok	88.4							40.3
	-F-4N	6.4	2.34	1/4" Female NPT	76.8							33
	-M-4N			1/4" Male NPT	82.2							33
	-I-6T			3/8" IY-Lok	91.4							40.3
	-M-6N	4.8	1.04	3/8" Male NPT	82.2							33
	-I-6M			6mm IY-Lok	89.0							40.4
	-I-8M			8mm IY-Lok	90.4							40.4
	-I-10M	6.4	2.34	10mm IY-Lok	92.0	40.6	17.8	44.2	38.1	101.6	26	9.7
BF3-3	-F-6N	10.3	6.42	3/8" Female NPT	99.0	47						
	-F-8N			1/2" Female NPT	109.2	47						
	-I-8T			1/2" IY-Lok	118.8	57.1						
	-M-8N			1/2" Male NPT	112.8	47						
	-I-12T	9.5	5.57	3/4" IY-Lok	118.4	57.1						
	-I-12M			12mm IY-Lok	118.4	57.1						
	-I-16M			10.3	6.42	16mm IY-Lok	118.4	57.1				

* All dimensions are in millimeter for reference only. Dimensions shown with IY-LOK nuts in finger-tight position, where applicable.

FLOW RATE

Pressure Drop(Δp) to Atmosphere in psi	Cv														
	0.6	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	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	761.5	796.7	1225.9	1413
	100	18.7	56	65.4	80.9	196.1	217.9	270.8	289.5	323.7	728.3	1077	1126.8	1733.7	1998.3
Water@60°F (16°C)US GPM	10	0.2	0.6	0.7	0.8	2	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	8.7	9.3	10.4	23.4	34.6	36.2	55.7	64.2

ORDERING SYSTEM



Valve Series	
BF1	BF1 Series
BF2	BF2 Series
BF3	BF3 Series

Connection Pattern	
Nill	2Way
3	3Way

End Connection Type	
I	IY-LOK Tube Fitting
M	Male Pipe Thread
F	Female Pipe Thread

End Connection Size					
Tube O.D. Designation					
Inch Tube	Tube O.D (inch)	1/4	3/8	1/2	3/4
	Designator	04T	06T	08T	12T
Metric Tube	Tube O.D (mm)	6	8	10	12
	Designator	06M	08M	10M	12M

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

Body Material	
SS	316 / 316L SS