

Integral Block & Bleed Valves



Introduction

Superlok's range of Double Block and Bleed products is a direct response to industry demand for improved efficiency and greater system integrity. By combining piping and instrument valves into a single compact model, leak paths are greatly reduced (up to 60%). Incorporating a double block and bleed system provides customers with a compact design and reduces weight and vibration concerns while maintaining system integrity.

Application & Installation

Superlok instrumentation products provide multiple solutions for integral block and bleed valves. Superlok's design consists of a one-piece forged body with a multitude of end configurations. We can produce valves from a wide range of metallurgy and configurations to meet our customers unique requirements.

1. Conventional Installation:

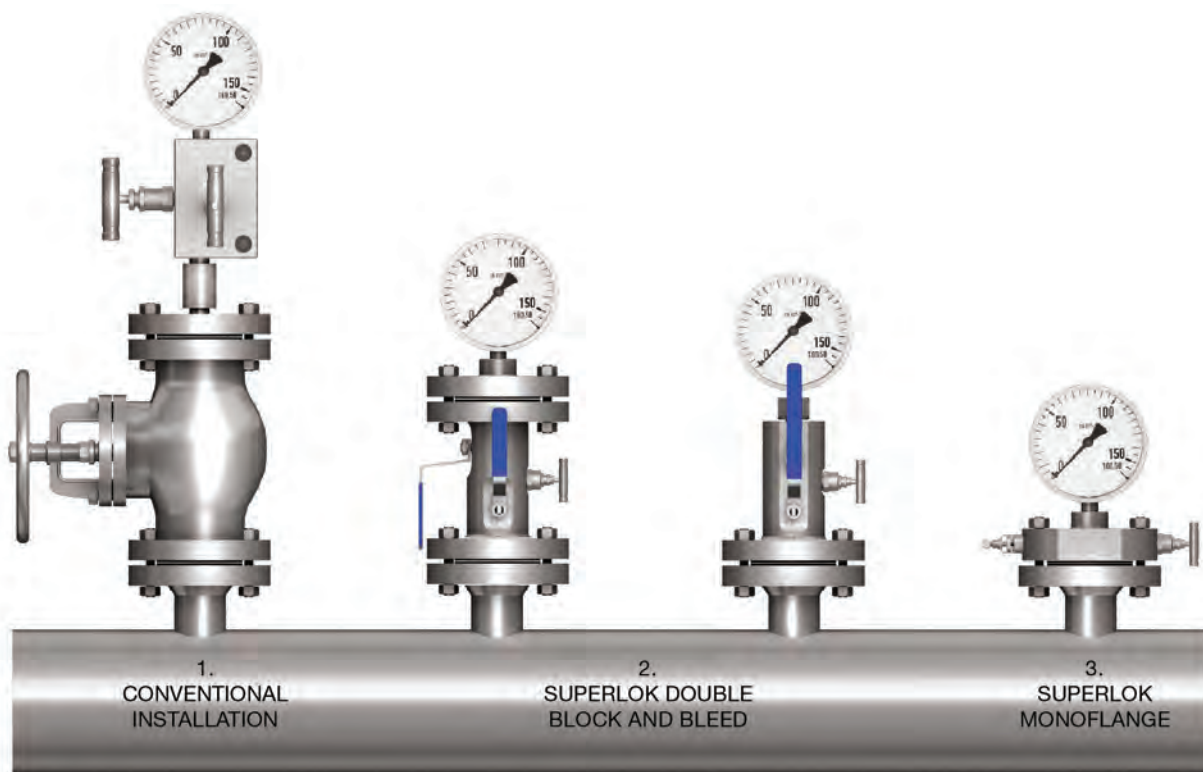
A welded flange, connected to a primary ANSI class isolating valve. The primary valve will be connected to a secondary instrument valve. A pressure gauge or transmitter will then be installed downstream of the instrument valve.

2. Superlok Double Block and Bleed:

- A one-piece integral forging can incorporate up to three ball valves, or a combination of ball and needle valves.
- Improved safety: leak paths reduced by up to 60%.
- Reduced costs: installation and component costs reduced by up to 70%.
- Reduced weight: by up to 80%.
- Reduced susceptibility to problems caused by vibration.

3. Superlok Monoflange:

- Typically used for gas or clean service.
- More compact than Superlok double block and bleed valve adding further space and weight saving possibilities.
- Improved safety: leak paths reduced by up to 60%, less susceptibility to vibration.
- Reduced costs: installation and component costs saving up to 80%.
- Reduced weight: up to 85%.

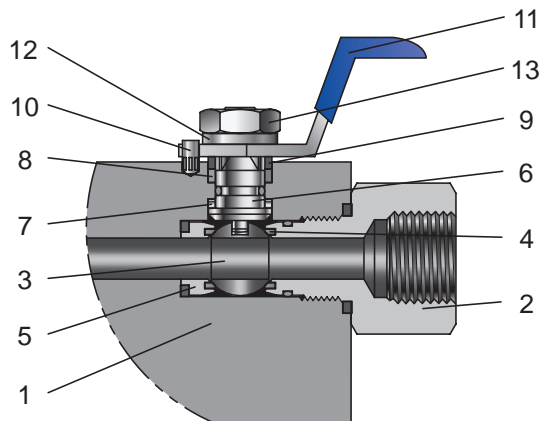


Specifications

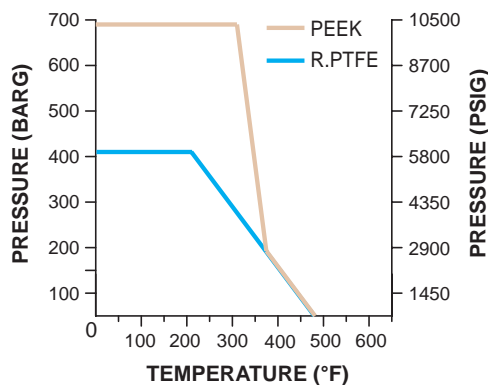
Design Codes

- ANSI / ASME B 16.34 - Designed to meet the pressure and temperature requirements
- ANSI / ASME B 16.5 - Flange dimensions
- ANSI / ASME B 1.20.1 - National pipe threads
- API 607 / BS 6755 - Fire Safe design

Ball Valve



DESCRIPTION	BODY MATERIAL		
	STAINLESS STEEL	CARBON STEEL	DUPLEX STAINLESS STEEL
1 VALVE BODY	A182 F316	A350 LF2	A182 F51
2 OULET CONNECTOR	A276 TP316	A350 LF2	A182 F51
3 BALL	A479 TP316		S31803
4 BALL SEAT	PTFE / R.PTFE / PEEK / ETC		
5 SEAT CAPSULE	A276 TP316	S31803	
6 STEM	A276 TP316		
7 LOWER STEM SEAL	PTFE		
8 UPPER STEM SEAL	GRAPHITE		
9 PACKING GLAND	A276 TP316	S31803	
10 STOP PIN	A276 TP316	S31803	
11 HANDLE	STAINLESS STEEL		
12 STEM WASHER	STAINLESS STEEL		
13 STEM NUT	A194 8M		

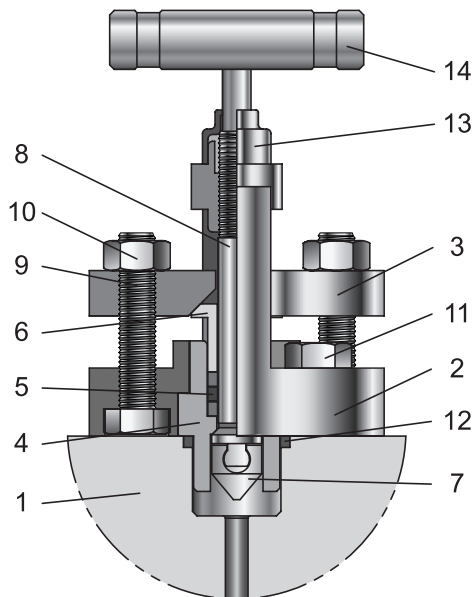


- 316 Stainless steel as standard.
- Pressure rating up to 10,000 psig (690bar).
- Temperature rating -71°F to 482°F (-57°C to 250°C).

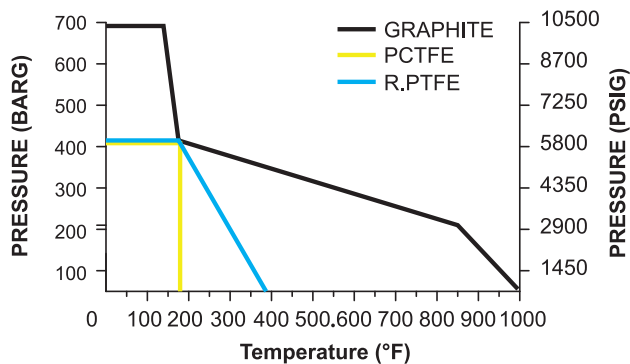
Features

- One or two-piece body design - minimizes leak paths.
- Choice of seat materials : PTFE (virgin or filled), PCTFE, PEEK.
- End connector threads are fully isolated from process.
- Fully encapsulated ball seat.
- Superior finished ball for low operating torque.
- Floating ball design providing seat wear compensation.
- Anti-static design as standard.
- Blowout proof stem design.
- Colour-coded handle with marked function.
- Bore size : Full bore, Reduced bore, 10mm, 14mm, 20mm.
- Optional : handle locking available, NACE compliant.

Outside Screw and Yoke (OS&Y) Needle Valve



DESCRIPTION	BODY MATERIAL		
	STAINLESS STEEL	CARBON STEEL	DUPLEX STAINLESS STEEL
1 VALVE BODY	A182 F316	A350 LF2	A182 F51
2 OS & Y BONNET	A351 CF8M	A352 LCC	A182 F51
3 GLAND FLANGE	A351 CF8M	A352 LCC	A182 F51
4 INSERT	A276 TP316		S31803
5 PACKING	GRAPHITE		
6 BUSHING	A276 TP316		S31803
7 VEE TIP	A564 TP630		
8 STEM	A276 TP316		S31803
9 FLANGE BOLT	A193 B8M	A320 L7M	A453 Gr.660
10 FLANGE NUT	A194 8M	A194 Gr.7	
11 BONNET BOLT	A193 B8M	A320 L7M	
12 BONNET SEAL	GRAPHITE		
13 DUST CAP	NYLON		
14 BAR HANDLE	A276 TP316		S31803

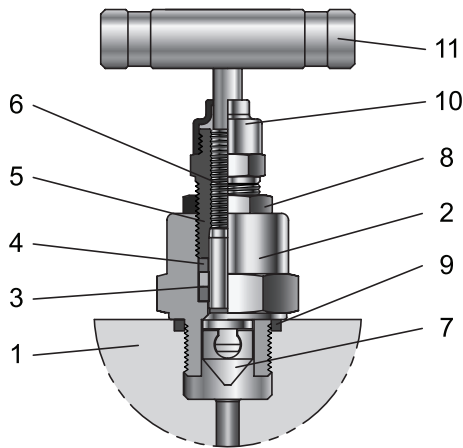


- 316 Stainless steel as standard.
- Pressure rating up to 10,000 psig (690bar).
- Temperature rating -65°F to 1000°F (-54°C to 538°C).

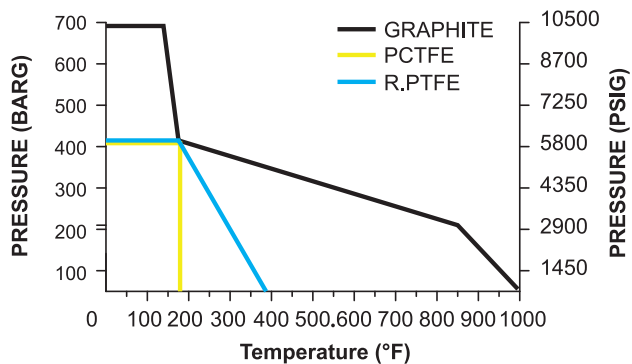
Features

- Externally adjustable gland.
- PTFE or Graphite packing for bubble tight sealing.
- Self-centering crimped needle tip for bubble tight shut-off and repeatability.
- Back seat design provides secondary stem sealing and prevents stem blowout.
- Colour-coded close contact dust cap and function label for easy identification.
- Bonnet seal ensures bubble tight seal between body and bonnet.
- Stem threads are completely isolated from the process.
- Yoke of investment casting is precision casted for strength and perfect stem alignment.
- Bolted bonnet for strength.

Globe Style Needle Valve



DESCRIPTION	BODY MATERIAL		
	STAINLESS STEEL	CARBON STEEL	DUPLEX STAINLESS STEEL
1 BODY	A276 TP316	A350 LF2	A182 F51
2 BONNET	A276 TP316	A350 LF2	A182 F51
3 PACKING	GRAPHITE		
4 PACKING GLAND	A276 TP316		S31803
5 PACKING BOLT	A276 TP316	A350 LF2	S31803
6 STEM	A276 TP316		S31803
7 VEE TIP	A564 TP630		
8 LOCK NUT	A276 TP316	A350 LF2	S31803
9 BONNET SEAL	GRAPHITE		
10 DUST CAP	NYLON		
11 BAR HANDLE	A276 TP316		S31803



- 316 Stainless steel as standard.
- Pressure rating up to 10,000 psig (690bar).
- Temperature rating -65°F to 1000°F (-54°C to 538°C).

Features

- Rolled stem operating threads for low torque operation.
- Gland packing in PTFE or Graphite for bubble tight sealing.
- Colour-coded close contact dust cap and function label for easy identification.
- Self-centering crimped needle tip for bubble tight seat sealing.
- Close contact dust cap for operating thread protection.
- Back seat design provides secondary stem sealing and prevents stem blowout.
- Stem threads are completely isolated from the process.
- Packing bolt with easy access.
- Lock nut for vibration protection.

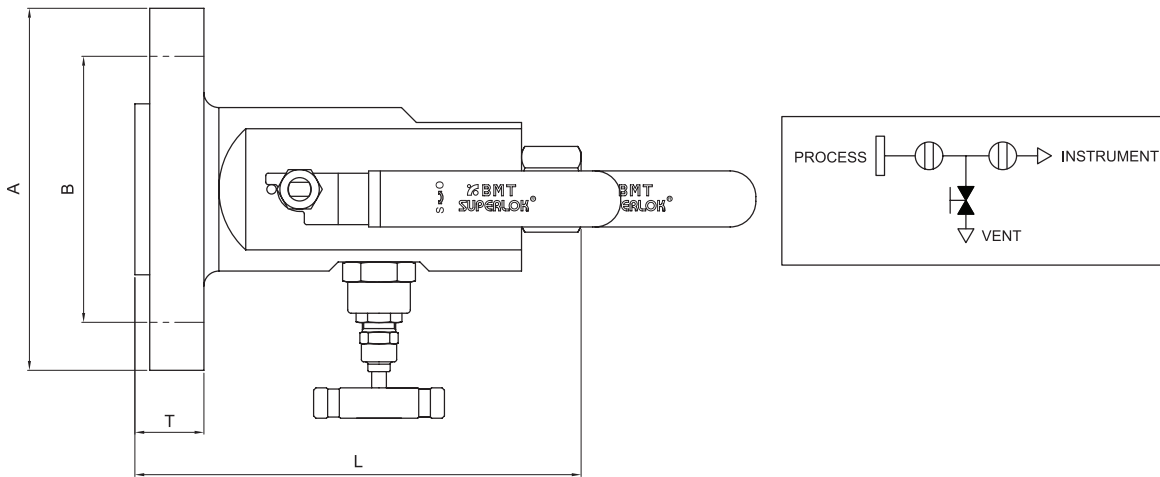
Block & Bleed Valves

Features

- ANSI B16.5 flanged inlet connections 1/2" to 3" sizes Class 150 rated to Class 2500 rated.
- 1/2" -1" F.NPT Thread outlet to ANSI/ASME B1.20.1 (depending on bore size).
- 1/2" F.NPT Thread vent connection to ANSI/ASME B1.20.1
- Standard materials of Stainless steel:
ASTM A182 F316/F316L, Carbon steel ASTM A350 LF2/A105, Duplex ASTM A182 F51.
- Optional materials include Super Duplex, Monel, Hastelloy, and Inconel.
- Raised-face and ring type joint flange styles.
- One-piece forged construction flange as standard.
- Fire Safe design passes BS 6755 Part 2/API 607 test.
- DBB & SBB Products meet the relevant code requirement of ASME VIII, ASMEB 16.34, B16.5, B31.3 and API 6D.
- Bubble tight shut-off.
- Locking and anti-tamper devices for all valve types an available option.
- Positive lever stop.
- User-preferred handles.
- Permanent affixed reference label.



DB1 Series (Flange x FNPT)



Dimensions

(10mm BORE)

Size (inch)	Rating (lb)	Dimension			
		L (RF)	A	B	T(RF)
1/2 (DN15)	150	170	90	60.3	11.6
	300		95		14.7
	600	177	95	66.7	21.3
	900/1500	191	120	82.5	29.3
	2500	195	135	88.9	37.2
3/4 DN(20)	150	170	100	69.8	13.2
	300	170	115	82.5	16.3
	600	175	115		22.9
	900/1500	190	130	88.9	32.4
	2500	195	140	95.2	38.8
1 (DN25)	150	170	110	79.4	14.7
	300		125	88.9	17.9
	600	175	125		24.5
	900/1500	190	150	101.6	35.6
	2500	195	160	108.0	42.0
1-1/2 (DN40)	150	170	125	98.4	17.9
	300	175	155	114.3	21.1
	600	180	155		29.3
	900/1500	190	180	124.0	38.8
	2500	210	205	146.1	51.5
2 (DN50)	150	172	150	120.6	19.5
	300	177	165	127.0	22.7
	600	190			32.4
	900/1500	200	215	165.1	45.1
	2500	220	235	171.5	57.9

• All dimensions in millimeters unless specified as "inch". Dimension are for reference only, subject to change.

Dimensions

(14mm BORE)

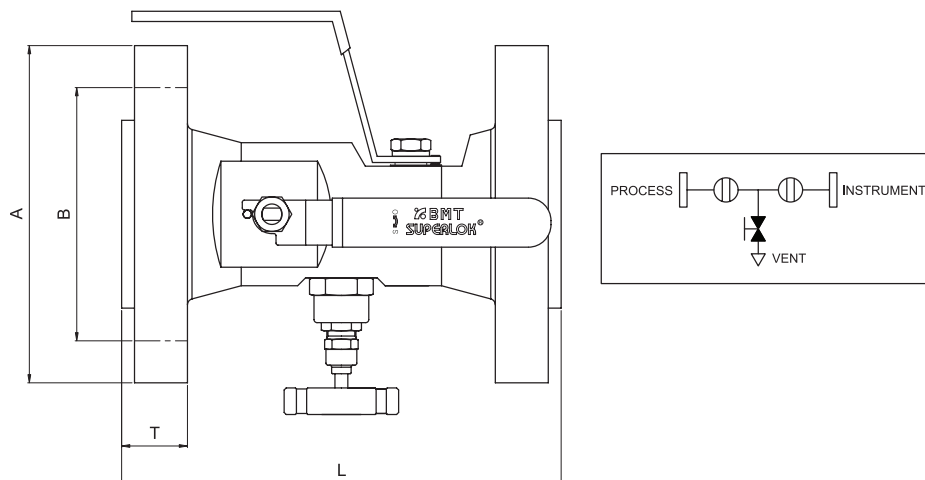
Size (inch)	Rating (lb)	Dimension			
		L (RF)	A	B	T(RF)
3/4 DN(20)	150	208	100	69.8	13.2
	300		115		82.5
	600		115	22.9	
	900/1500	218	130	88.9	32.4
	2500	224	140	95.2	38.8
1 (DN25)	150	208	110	79.4	14.7
	300		125		88.9
	600	218	125	24.5	
	900/1500	224	150	101.6	35.6
	2500	227	160	108.0	42.0
1-1/2 (DN40)	150	208	125	98.4	17.9
	300		218		155
	600	155		29.3	
	900/1500	224	180	124.0	38.8
	2500	238	205	146.1	51.5
2 (DN50)	150	218	150	120.6	19.5
	300		165		127.0
	600	224		32.4	
	900/1500	238	215	165.1	45.1
	2500	246	235	171.5	57.9

(20mm BORE)

Size (inch)	Rating (lb)	Dimension			
		L (RF)	A	B	T(RF)
1 (DN25)	150	235	110	79.4	14.7
	300		125		88.9
	600		244	125	
	900/1500	251	150	101.6	35.6
	2500		160	108.0	42.0
1-1/2 (DN40)	150	235	125	98.4	17.9
	300	244	155	114.3	21.1
	600		155		29.3
	900/1500	251	180	124.0	38.8
	2500	265	205	146.1	51.5
2 (DN50)	150	244	150	120.6	19.5
	300		165		127.0
	600	251		32.4	
	900/1500	265	215	165.1	45.1
	2500	273	235	171.5	57.9

• All dimensions in millimeters unless specified as "inch". Dimension are for reference only, subject to change.

DB2 Series (Flange x Flange)



Dimensions

(10mm BORE)

Size (inch)	Rating (lb)	Dimension			
		L (RF)	A	B	T(RF)
1/2 (DN15)	150	190	90	60.3	11.6
	300	190	95	66.7	14.7
	600	205	95		21.3
	900/1500	230	120	82.5	29.3
	2500	240	135	88.9	37.2
3/4 DN(20)	150	190	100	69.8	13.2
	300	190	115	82.5	16.3
	600	200	115		22.9
	900/1500	230	130	88.9	32.4
	2500	240	140	95.2	38.8
1 (DN25)	150	190	110	79.4	14.7
	300	190	125	88.9	17.9
	600	200	125		24.5
	900/1500	240	150	101.6	35.6
	2500	260	160	108.0	42.0
1-1/2 (DN40)	150	190	125	98.4	17.9
	300	200	155	114.3	21.1
	600	210	155		29.3
	900/1500	245	180	124.0	38.8
	2500	290	205	146.1	51.5
2 (DN50)	150	200	150	120.6	19.5
	300	210	165	127.0	22.7
	600	240			32.4
	900/1500	290	215	165.1	45.1
	2500	315	235	171.5	57.9

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Dimensions

(14mm BORE)

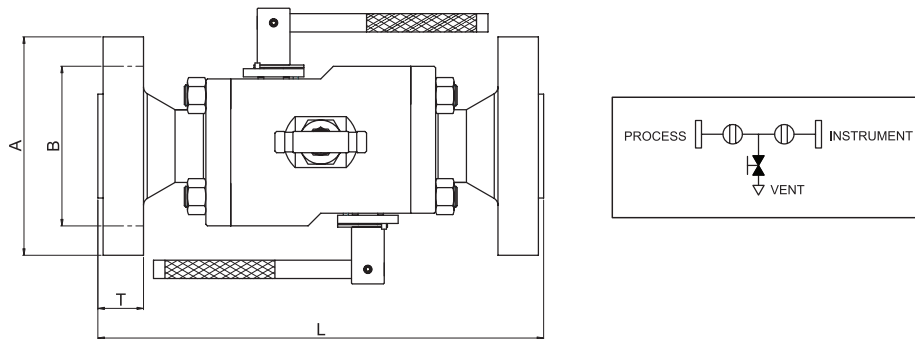
Size (inch)	Rating (lb)	Dimension			
		L (RF)	A	B	T(RF)
3/4 DN(20)	150	235	100	69.8	13.2
	300		115	82.5	16.3
	600		115		22.9
	900/1500	254	130	88.9	32.4
	2500	267	140	95.2	38.8
1 (DN25)	150	235	110	79.4	14.7
	300		125	88.9	17.9
	600	254	125		24.5
	900/1500	267	150		101.6
	2500	273	160	108.0	42.0
1-1/2 (DN40)	150	235	125	98.4	17.9
	300	254	155	114.3	21.1
	600		155		29.3
	900/1500	267	180	124.0	38.8
	2500	334	205	146.1	51.5
2 (DN50)	150	254	150	120.6	19.5
	300		165	127.0	22.7
	600	267			32.4
	900/1500	334			215
	2500		235	171.5	57.9

(20mm BORE)

Size (inch)	Rating (lb)	Dimension			
		L (RF)	A	B	T(RF)
1 (DN25)	150	235	110	79.4	14.7
	300		125	88.9	17.9
	600	254	125		24.5
	900/1500	267	150		101.6
	2500	273	160	108.0	42.0
1-1/2 (DN40)	150	235	125	98.4	17.9
	300	254	155	114.3	21.1
	600		155		29.3
	900/1500	268	180	124.0	38.8
	2500	334	205	146.1	51.5
2 (DN50)	150	254	150	120.6	19.5
	300		165	127.0	22.7
	600	173			32.4
	900/1500	334			215
	2500		235	171.5	57.9

• All dimensions in millimeters unless specified as "inch". Dimension are for reference only, subject to change.

Dimensions



(REDUCED BORE)

Size (inch)	Bore	Rating (lb)	Dimension					
			RF Flange		RTJ Flange		A	B
			L	T	L	T		
1-1/2 (DN40)	25.4	150	270	17.9	280	22.7	125	98.4
		300	290	21.1	300	25.9	155	114.3
		600	330	29.3	330	30.3	155	
		900/1500	350	38.8	350	39.8	180	124.0
		2500	400	51.5	400	52.5	205	146.1
2 (DN50)	38.1	150	380	19.5	390	24.3	150	120.6
		300	390	22.7	400	27.5	165	127.0
		600	410	32.4	410	33.4		
		900/1500	450	45.1	450	46.1	215	165.1
		2500	490	57.9	490	58.9	235	171.5
3 (DN80)	50.8	150	530	24.3	540	29.1	190	152.4
		300	540	29.0	550	33.8	210	168.1
		600	560	38.8	560	39.9		

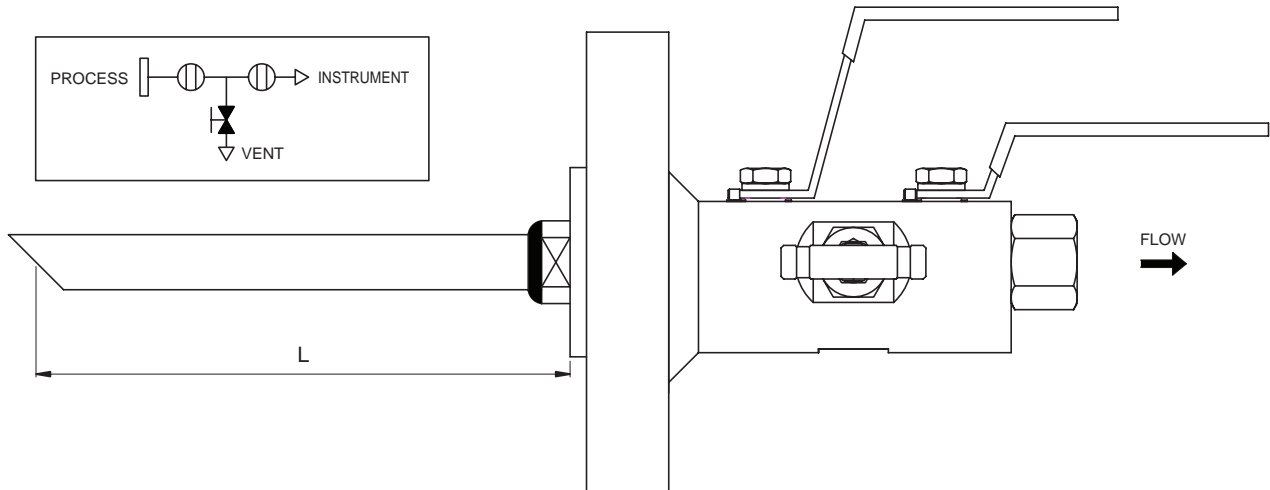
(FULL BORE)

Size (inch)	Bore	Rating (lb)	Dimension					
			RF Flange		RTJ Flange		A	B
			L	T	L	T		
1 (DN25)	25.4	150	270	14.7	280	19.5	110	79.4
		300	280	17.9	290	22.7	125	88.9
		600	300	24.5	300	25.5	125	
		900/1500	350	35.6	350	36.6	150	101.6
		2500	370	42.0	370	43.0	160	108.0
1-1/2 (DN40)	38.1	150	370	17.9	380	22.7	125	98.4
		300	400	21.1	410	25.9	155	114.3
		600	410	29.3	410	30.3	155	
		900/1500	430	38.8	430	39.8	180	124.0
		2500	470	51.5	470	52.5	205	146.1
2 (DN50)	50.8	150	460	19.5	470	24.3	150	120.6
		300	470	22.7	480	27.5	165	127.0
		600	490	32.4	490	33.4		
		900/1500	510	45.1	510	46.1	215	165.1

• All dimensions in millimeters unless specified as "inch". Dimension are for reference only, subject to change.

Sampling Valve

This manifold range is designed to replace conventional multiple-valve installations where sampling of the process stream is required. This design has been developed to remove a sample directly from the process stream at full system pressure.

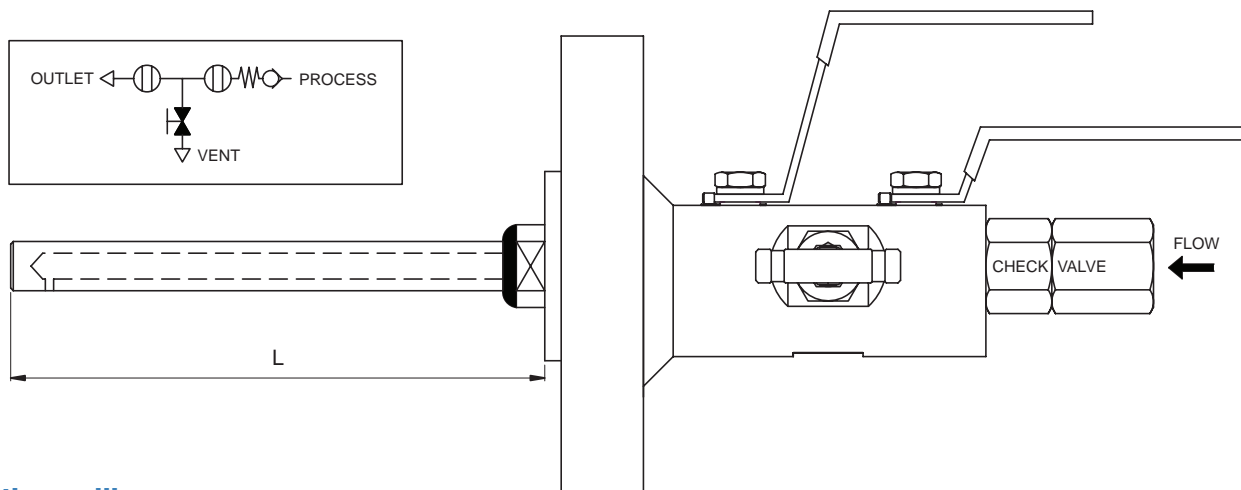


Sampling probe

The probe length must be specified from the raised face to the end of the probe in mm, to the nearest mm. Probes are supplied to suit the insertion length required by the pipeline and thus must be specified by the customer.

Chemical Injection Valve

This manifold range is designed to replace conventional multiple-valve installations where injection into the process stream is required. This design has been developed to inject directly into the process stream at full system pressure.



Injection quill

The probe length must be specified from the raised face to the end of the probe in mm. Probes length shall be decided in consideration of injection insert length in the pipeline and customer's request.

Non return check valve

This poppet type spring return valve has a Viton soft seal (SUPERLOK standard).

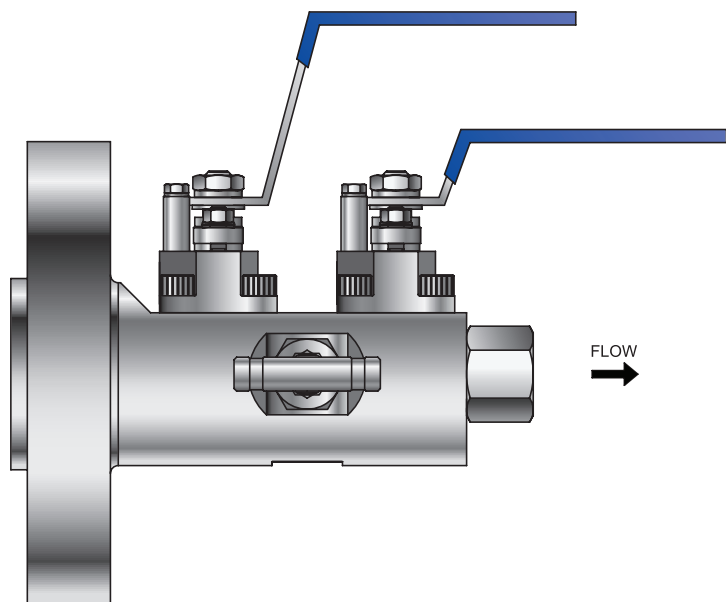
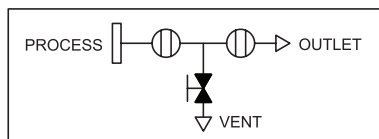
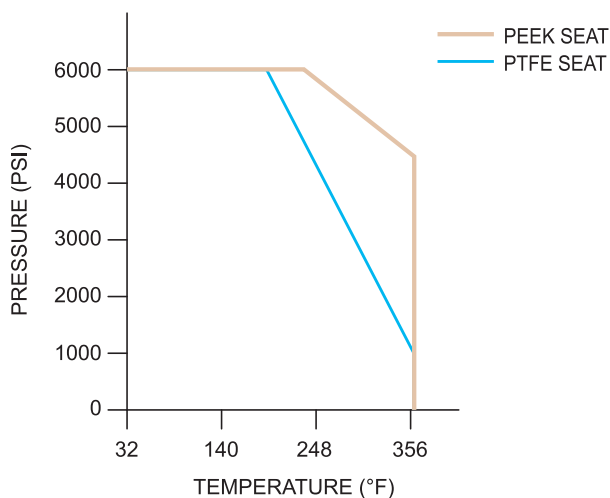
Fugitive Emissions

ISO 15848 parts 1 & 2 (defining a classification system and qualification procedures, and production acceptance test of industrial valves, respectively) specify new ultra low standards for emissions. This standard has become the requirement of oil & gas and petrochemical organizations worldwide. The standard was originally created for process valves and control valves, but is now being applied to instrument valves including primary isolation valves for environmentally-sensitive projects.

Meeting these low levels is a challenge, which Superlok Canada has solved with new ball and needle valve designs. These designs meet the highest class 'A' level over the temperature range -29°C to +180°C, alongside the standard instrumentation manifold pressure ranges. Production testing and certification is available upon request. Please specify sample quantity required for production testing with your order.

Valve Specifications

- Tightness class A $>1 \times 10^{-6}$ mg.s⁻¹.m⁻¹.
- Maximum cold working pressure rating 6,000 psig.
- Temperature rating -50°C to 180°C (-58°F to 356°F)
- ISO15848-1 prototype tested using global helium vacuum method.



The ISO 15848 standard effectively sets a requirement for zero emissions for processes involving volatile air pollutants and hazardous fluids. This design has been developed to minimise fugitive emissions.

Ordering Information

Example 1 : **DB211 - R8C - B111 - LF2**

1
2 3 4
5 6
7
8

Example 2 : **SB111 - R8A8 - D111 - AB**

1
2 3 4
5 6 5
7
8

1. Valves

SB - SINGLE BLOCK & BLEED VALVE

DB - DOUBLE BLOCK & BLEED VALVE

2. Valve Type

- | | |
|---------------------|-------------------|
| 1 - FLANGE X FNPT | 7 - BW X FNPT |
| 2 - FLANGE X FLANGE | 8 - MSW X FLANGE |
| 3 - MNPT X FNPT | 9 - MNPT X FLANGE |
| 4 - FNPT X FNPT | 0 - SW X SW |
| 5 - MSW X FNPT | B - BW X BW |
| 6 - SW X FNPT | |

4. Bore Size (mm)

(BLANK) - 10mm(STANDARD)

- | | |
|----------|----------|
| 1 - 14mm | 4 - 32mm |
| 2 - 20mm | 5 - 38mm |
| 3 - 25mm | 6 - 50mm |

5. Connection Size

- | | |
|-------------------------|-------------|
| R - RAISED FACE (BLANK) | 4 - 1/4 " |
| J - RING TYPE JOINT | 6 - 3/8 " |
| F - FLAT FACE FLANGE | 8 - 1/2" |
| AF - API-6B TYPE | 12 - 3/4" |
| SA - SAE J518 FLANGE | 16 - 1" |
| IS - ISO 6164 FLANGE | 24 - 1-1/2" |
| JF - JIS FLANGE | 32 - 2" |
| | 48 - 3" |

3. Valve Series

IDENTIFY		1st ISOLATE	2nd ISOLATE	VENT
SINGLE BLOCK TYPE	1	BALL	-	NEEDLE
	2			OS & Y
	3			BALL
	4	NEEDLE		NEEDLE
	5	OS & Y		OS & Y
	6			OS & Y
DOUBLE BLOCK TYPE	1	BALL	BALL	NEEDLE
	2			OS & Y
	3			BALL
	4	NEEDLE	NEEDLE	NEEDLE
	5	OS & Y	OS & Y	NEEDLE
	6			OS & Y
	7	TR BALL	TR BALL	NEEDLE
	8			OS & Y
*A		FUGITIVE EMISSION CL-A		
*B		FUGITIVE EMISSION CL-B		

*To select the Fugitive Emission type, please add suffix of "A" or "B" to the part number of Valve Series.

6. Pressure Class

- | | |
|----------|--------------|
| A - 150 | G - 2000psi |
| B - 300 | H - 3000psi |
| C - 600 | I - 5000psi |
| D - 900 | J - 10000psi |
| E - 1500 | |
| F - 2500 | |
| S - 800 | |

8. Body Material

- (BLANK) - SS316
- 15 - A105
- LF2 - A350 LF2
- F51 - A182 F51
- M40 - MONEL 400
- AB - AL BRONZE
- 625 - INCONEL 625

7. Option + Trim + Seat + O-Ring

Option		Trim		Seat		O-Ring	
Type	Identify	Type	Identify	Type	Identify	Type	Identify
STANDARD(FIRE SAFETY)	BLANK(A)	Body = Trim	BLANK(0)	PTFE	BLANK(0)	NBR	BLANK(0)
SAMPLING PROBE	B	SS316	1	R.PTFE+GLASS	1	VITON	1
CHEMICAL INJECTION	C	CF8M	2	R.PTFE+CARBON	2	EPDM	2
LOCKING DEVICE	D	SS316L	3	PEEK	3	KALREZ	3
ANTI TAMPER KEY	E	SS304	4	PCTFE	4	CR	4
METAL SEAT	H	A105 + ENP	5	POM	5	SILICON	5
CRYOGENIC SERVICE	CY	A105 + CR	6	DEVLON-V	6	NBR (AED)	6
GEAR	G	MONEL 400	7	DELIN	7	VITON (AED)	7
ACTUATOR	-	316 + HF	8	METAL	8	HNBR	8
WELD OVERLAY	M	DUPLEX	9	NYLON 6	9	Kalrez (AED)	9
		INCONEL625	I				

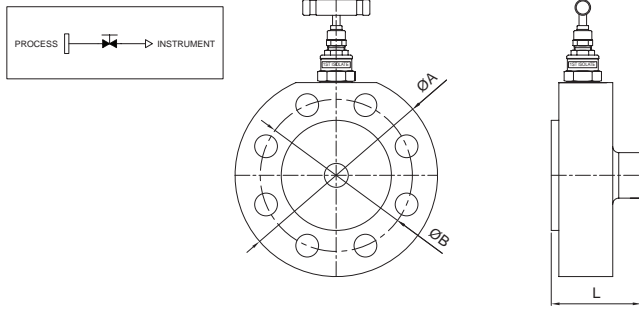
Monoflange Valves

Features

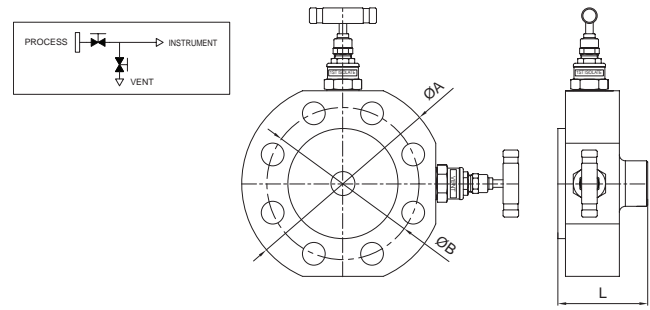
- ANSI B16.5 flanged inlet connections 1/2" to 2" sizes Class 150 rated to Class 2500 rated.
- 1/2"-14 NPT(female) standard outlet.
- 1/4"-18 NPT(female) standard vent.
- Standard materials of Stainless steel:
ASTM A182 F316/F316L, Carbon steel ASTM A350 LF2/A105, Duplex ASTM A182 F51.
- Optional materials include Super Duplex, Monel, Hastelloy, Inconel.
- Combined needle and OS&Y valves available.
- Raised-face and ring type joint flange styles.
- One-piece forged construction flange as standard.
- Fire Safe design passes BS 6755 Part 2 / API 607 test (optional).
- Pressure boundary designs calculated to ASME VIII Div 1 and verified by testing.
- Heat code traceable material to EN 10204.3.1.
- Bubble tight shut-off valve seats 17-4 PH tips standard.
- Colour-coded, functional valves.
- Locking and anti-tamper devices for all valve types available (optional).
- Permanently marked body with full order and specification details.



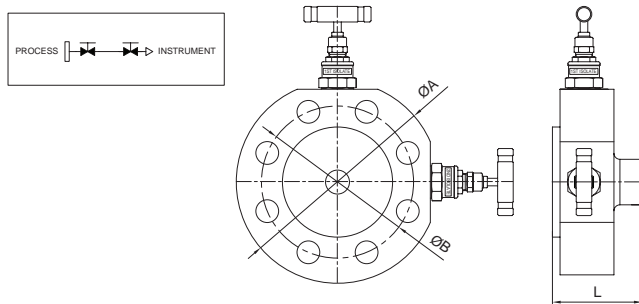
MF1V1 Series



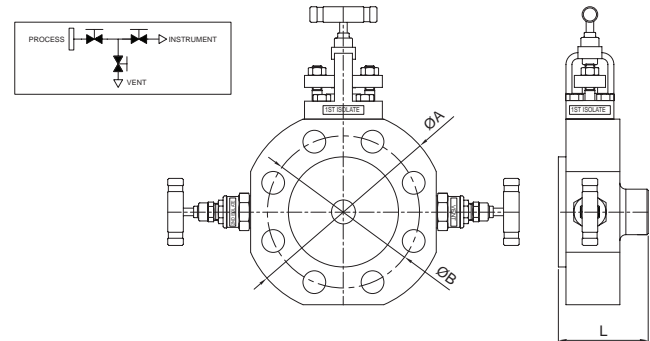
MF1V2 Series



MF1V3 Series



MF1V4 Series



Dimensions

Size (inch)	Rating (lb)	Dimension				
		L(RF)	L(RTJ)	A	B	
1/2 (DN15)	150	64	-	90	60.3	
	300			95		
	600	68	64	95	82.5	
	900/1500			120		
	2500			135		88.9
3/4 DN(20)	150	64	-	100	69.8	
	300	68	68	115	82.5	
	600			115		
	900/1500			130	88.9	
	2500	73	73	140	95.2	
1 (DN25)	150	64	68	110	79.4	
	300	68		125		
	600	68		125	88.9	
	900/1500	73	73	150		101.6
	2500			160		108.0
1-1/2 (DN40)	150	64	68	125	98.4	
	300	69	69	155		114.3
	600	73	73	155		
	900/1500			180	123.8	
	2500	82	84	205	146.1	
2 (DN50)	150	69	73	150	120.6	
	300			75		165
	600	73	127.0			
	900/1500	82	84	215	165.1	

• All dimensions in millimeters unless specified as "inch". Dimension are for reference only, subject to change.

Ordering Information

Example 1 :

MF1V41 - J8C8 - E - AB
 1 2 3 4 3 5 6

Example 2 :

MF1V11 - R8C8 - LF2
 1 2 3 4 3 6

1. Valves

MF - MONO FLANGE

2. Valve Type

IDENTIFY		1st ISOLATE	2st ISOLATE	VENT	
1 - FLANGE X FNPT 2 - FLANGE X FLANGE	V1	1	NEEDLE	-	
		2	OS & Y		
	V2	1	NEEDLE	-	NEEDLE
		2	OS & Y		OS & Y
		3			
	V3	1	NEEDLE	NEEDLE	-
		2	OS & Y		
		3	OS & Y		
	V4	1	NEEDLE	NEEDLE	NEEDLE
		2	OS & Y	NEEDLE	
		3		OS & Y	
		4		OS & Y	

3. Connection Size

R - RAISED FACE (BLANK)	8 - 1/2"
J - RING TYPE JOINT FLANGE	12 - 3/4"
F - FLAT FACE	16 - 1"
AF - API-6B TYPE	24 - 1-1/2"
SA - SAE J518 FLANGE	32 - 2"
IS - ISO 6164 FLANGE	48 - 3"
JF - JIS FLANGE	

4. Pressure Class

A - 150
B - 300
C - 600
D - 900
E - 1500
F - 2500

5. Option

A - STANDARD (FIRE SAFETY)
D - LOCKING DEVICE
E - ANTI TAMPER KEY
F - BOLTED BONNET

6. Body Material

(BLANK) - SS316
15 - A105
LF2 - A350 LF2
F51 - A182 F51
M40 - MONEL 400
AB - AL BRONZE
625 - INCONEL 625