

SB 12 Series Back Pressure/ Relief Valves

The Chemline SB Series Back Pressure/Relief Valve has two functions. As a *back pressure* valve, installed in-line downstream of a pump, the back pressure below the metering pump is maintained. When installed in the branch of a tee it is a *pressure relief* valve. The valve stays closed until inlet pressure reaches the set pressure which is adjusted by turning the spring tensioning bolt. Inlet pressure acts upward against the piston allowing excess pressure to flow upwards through the orifice.

The SB12 Series has a built-in check valve function, desirable for dosing applications. It is not so sensitive as to open with every pulsation from a metering pump.

Designed for Long Life

Ideal for Chemical Dosing Systems

Built-in Check Feature

Features

True Union Ends

- Easy installation and maintenance
- Eliminate chemical leakage problems common with old fashioned threaded connections

Long Cycling Life

- Dynamic seal is Teflon® bonded EPDM for high chemical resistance
- This moulded diaphragm is designed for superior sealing and flex life

Superior Performance in Dosing Systems

- Valves are hydraulically designed for very low hysteresis ("backlash") and to eliminate chatter
- Built-in check (non-return) function
- Valve opening depends on inlet pressure only and is unaffected by changes in downstream (back) pressure

Technical

Set Pressure Ranges:

- 1/2" to 2" – 5 to 150 psi
- 2-1/2" and 3" – 7.5 to 150 psi*
- 4" – 7.5 to 90 psi*

Maximum Viscosity:

- 120cP is maximum recommended service viscosity

* Optional 4 to 60 psi range springs are available for 2-1/2" to 4" sizes.

¹ For ChemFlare™ end connectors, consult Chemline.

² PP and PVDF spigot ends have DIN dimensions and will butt fuse directly to Chemline PP and PVDF piping systems.



CHEMLINE
Plastics Limited

Your Pipeline To Quality

PVC, PP, PVDF

SIZES: 3/8" – 4"

ENDS: True Union Socket, Threaded or ChemFlare™¹
Spigot² Bodies with Plain, Socket, Threaded or Flanged ends

DIAPHRAGM: Teflon® Bonded EPDM

SEALS: EPDM, FPM (Viton®)

CRN
REGISTERED
CONSULT CHEMLINE



SB 12 Back Pressure/Relief Valves

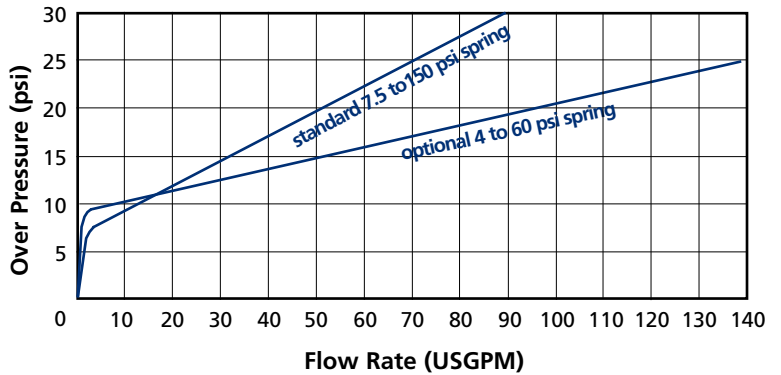


OVER PRESSURE VS. FLOW RATE

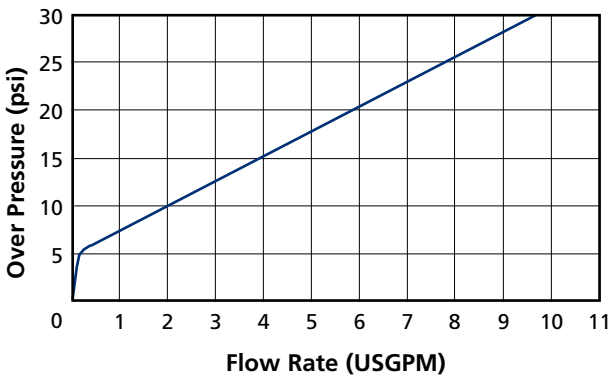
The curves show the relationship between the over pressure (inlet pressure above the set pressure) and the approximate flow rate through the valve for water at 20°C. These values will vary depending on:

- The configuration of the piping and the pressure losses associated with it.
- The fluid if not water at 20°C.
- Whether the pressure is rising or falling. **Hysteresis** is approximately 4 psi.

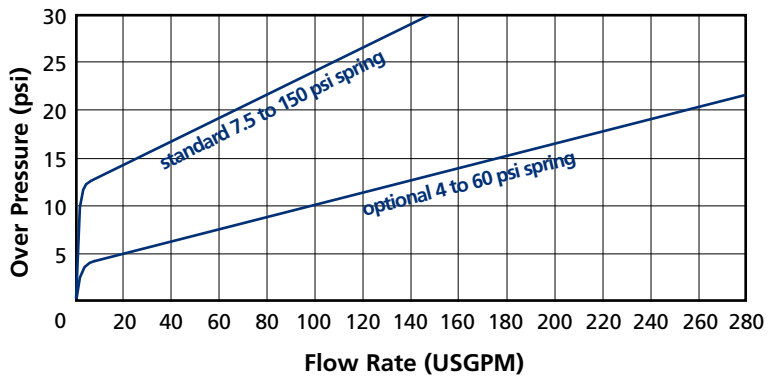
VALVE SIZE 2-1/2"



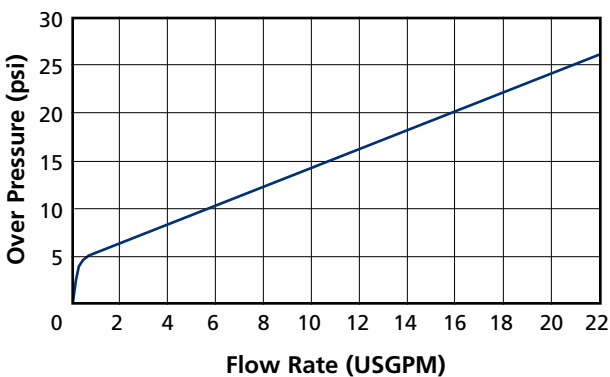
VALVE SIZES 3/8" and 1/2"



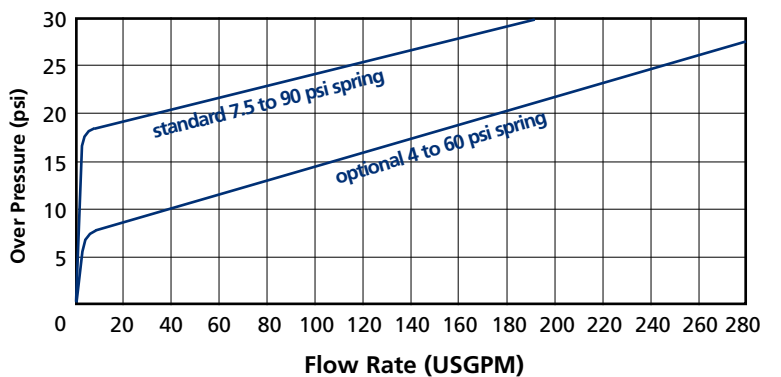
VALVE SIZE 3"



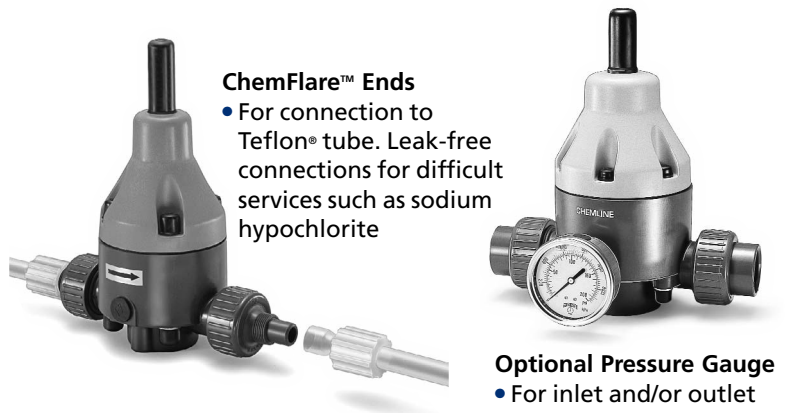
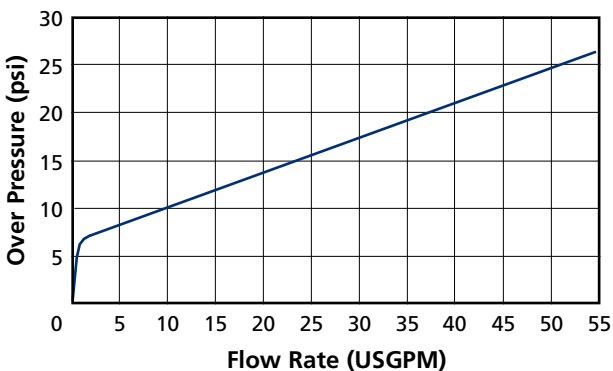
VALVE SIZES 3/4" and 1"



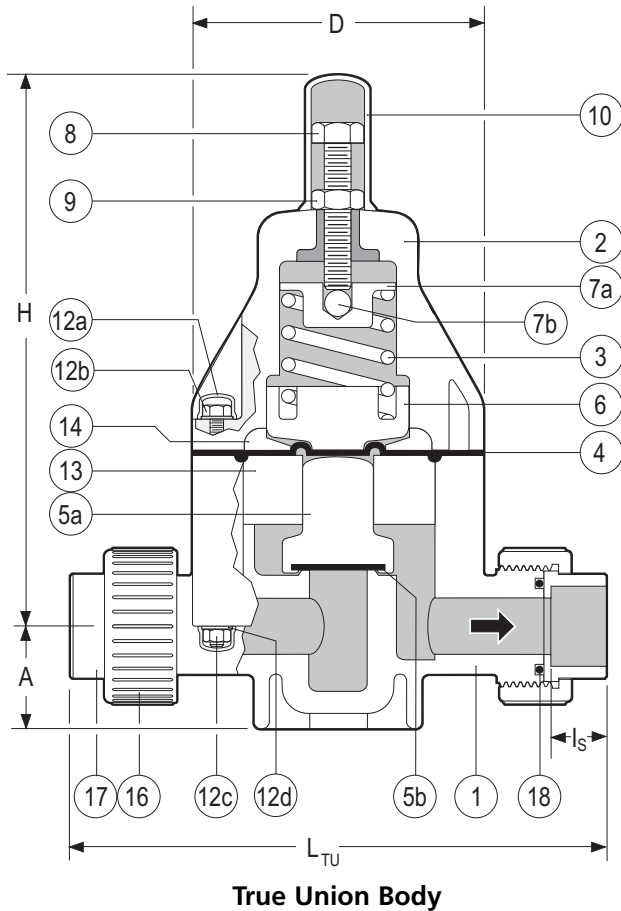
VALVE SIZE 4"



VALVE SIZES 1-1/4", 1-1/2" and 2"



SB 12 Relief Valves 1/2" – 2"



True Union Body

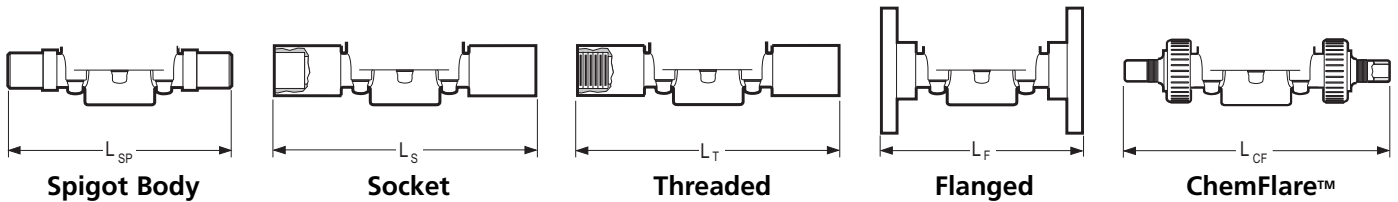
PARTS

▲ Recommended Spare Parts

No.	Part	Pcs.	Materials
1	Body	1	PVC, PP, PVDF
2	Bonnet	1	PPG
3	Spring	1	Galvanized Steel
4▲	Control Diaphragm	1	Teflon® PTFE bonded EPDM
5a▲	Piston	1	PVC, PP, PVDF
5b▲	Seat	1	EPDM, FPM(Viton®)
6	Lower Spring Retainer	1	PPG
7a	Upper Spring Retainer	1	Cad. Plated Steel
7b	Ball	1	304 SS
8	Spring Tensioning Bolt	1	304 SS
9	Lock Nut	1	304 SS
10	Spring Bolt Cap	1	PE
12a	Bolt/Nut Cap	8/12 ¹	PE
12b	Hex Bolt	4/6 ¹	304 SS
12c	Hex Nut	4/6 ¹	304 SS
12d	Washer	8/12 ¹	304 SS
13	Spacer Disc	1	PVC, PP, PVDF
14	Pressure Plate	1	PP
16	Union Nut	2	PVC, PP, PVDF
17	End Connector	2	PVC, PP, PVDF
18▲	Face O-Ring	2	EPDM, FPM(Viton®)

¹ 1/2" size / 3/4" to 2" sizes

OTHER ENDS



DIMENSIONS INCHES

WEIGHTS LB. C_v VALUES

Size	D	H	PVC							PP and PVDF			USGPM Flow at 1 psi ΔP				
			A	L _S	L _{TU} [†]	L _{SP} [*]	L _S	L _T	L _F	L _{CF}	A	L _{SP} [*]	L _{TU} [†]	PVC	PP	PVDF	
3/8"	3.2	6.9	1.0	0.6	6.5	5.7	7.4	7.2	4.5	–	0.9	5.7	**	1.8	1.5	2.2	2.1
1/2"	3.2	6.9	1.0	0.6	6.8	5.7	8.0	7.8	6.3	8.3 [‡]	0.9	5.7	7.1	1.9	1.6	2.4	3.0
3/4"	4.2	8.0	1.5	0.7	8.3	6.9	9.3	8.9	7.4	9.7	1.4	6.9	8.4	4.1	3.5	4.6	6.6
1"	4.2	8.0	1.5	0.9	8.5	6.9	9.6	9.3	7.4	10.2	1.4	6.9	8.7	4.2	3.5	4.7	8.7
1-1/4"	5.8	10.3	2.2	1.0	10.9	8.8	11.6	11.2	9.2	–	2.1	8.8	10.9	11.0	9.0	12.0	18.0
1-1/2"	5.8	10.3	2.2	1.2	11.1	8.8	12.2	11.5	9.5	–	2.1	8.8	11.2	11.2	9.2	12.2	20.0
2"	5.8	10.3	2.2	1.5	11.3	9.6	12.9	12.0	10.0	–	2.1	8.8	13.2	11.4	9.4	12.4	21.4

[†] True Union bodies come standard with socket ends. Threaded union ends are available. ** Consult Chemline.

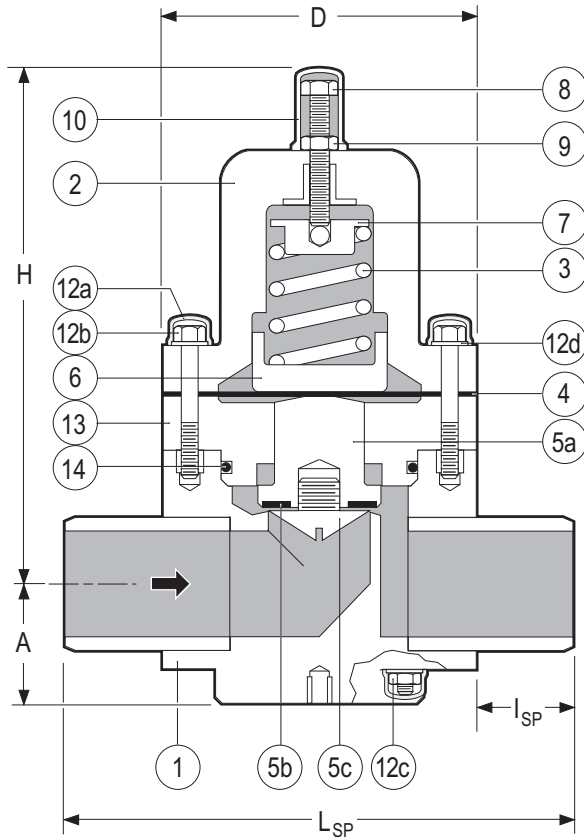
^{*} Spigot bodies are used for non union socket, threaded or flanged ends. All spigot ends have metric dimensions and the PP and PVDF spigots butt fuse directly to Chemline PP and PVDF piping. [‡] Tube size can be reduced to 1/4" tube, L_{CF} = 7.74" for 1/4", 8.26" for 3/8".

MAXIMUM PRESSURES PSI

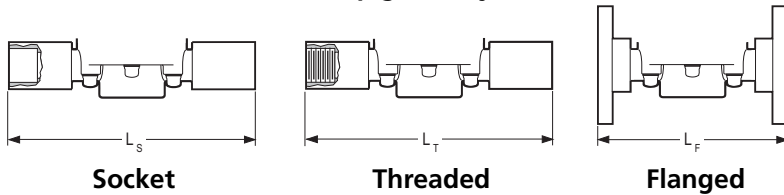
Size	PVC				PP					PVDF					
	20°C 68°F	30°C 86°F	40°C 104°F	50°C 122°F	30°C 86°F	40°C 104°F	50°C 122°F	60°C 140°F	70°C 158°F	30°C 86°F	50°C 122°F	70°C 158°F	80°C 176°F	90°C 194°F	100°C 212°F
1/2" - 2"	150	105	60	15	150	90	60	37.5	15	150	100	60	45	30	15

Temperature Ranges: PVC 0 to 50°C (32 to 122°F), PP -20 to 70°C (-4 to 158°F), PVDF -40 to 100°C (-40 to 212°F).

SB 12 Relief Valves 2-1/2" – 4"



Spigot Body



Socket

Threaded

Flanged

PARTS

▲ Recommended Spare Parts

No.	Part	Pcs.	Materials
1	Body	1	PVC, PP, PVDF
2	Bonnet	1	PPG
3	Spring	1	Galvanized Steel
4▲	Control Diaphragm	1	Teflon® PTFE bonded EPDM
5a▲	Piston	2	PVC, PP, PVDF
5b▲	Seat	1	EPDM, FPM(Viton®)
5c▲	Seat Retainer	1	PVC, PP, PVDF
6	Lower Spring Retainer	1	PPG
7	Upper Spring Retainer	1	304 SS
8	Spring Tensioning Bolt	1	304 SS
9	Lock Nut	1	304 SS
10	Spring Bolt Cap	1	PE
12a	Hex Bolt/Nut Cap	20	PE
12b	Hex Bolt/Stud	12*	304 SS
12c	Hex Nut	20	304 SS
12d	Washer	20	304 SS
13	Spacer Disc	1	PVC, PP, PVDF
14	Spacer O ring	1	EPDM, FPM(Viton®)

* 2 large upper bolts, 2 shorter lower bolts, 8 studs.

DIMENSIONS INCHES

Size	A	D	H	PVC			PP and PVDF		WEIGHTS LB.			C _v VALUES USGPM Flow at 1 psi ΔP
				L _s	L _t	L _f	I _{sp}	L _{sp} *	PVC	PP	PVDF	
2-1/2"	2.7	6.9	11.1	14.5	14.0	10.9	2.1	11.2	20.9	15.4	24.6	41
3"	3.0	7.9	12.2	16.0	15.5	12.2	3.1	14.2	26.4	23.8	30.8	63
4"	3.7	9.8	14.2	-	-	13.8	3.3	16.5	33.0	26.4	37.4	98

* All spigot ends have DIN dimensions and the PP and PVDF spigots may be butt fused directly to Chemline PP and PVDF piping systems.

ORDERING EXAMPLE

Chemline Back Pressure/Relief Valves	SB12	A	005	V	U
Body Material	A – PVC B – PP K – PVDF				
Size	003 – 3/8" 005 – 1/2" 007 – 3/4" 010 – 1" 012 – 1-1/4" 015 – 1-1/2" 020 – 2" 025 – 2-1/2" 030 – 3" 040 – 4"				
Elastomers	E – EPDM V – FPM (Viton®)				
Ends	S – Socket T – Threaded F – Flanged U – Union Socket CFx – ChemFlare™ Blank – Spigot (Butt)				

Example: Chemline SB 12 Series, PVC, 1/2" diameter, FPM (Viton®) seals, Union socket ends. x = 4 for 1/4", 6 for 3/8", 8 for 1/2", 12 for 1" ID tube connections.

OPTIONS

- 4–60 psi Pressure Range springs for 2-1/2" to 4" valves
- **Integral Pressure Gauge** – for inlet and/or outlet
- Bodies in 316 Stainless Steel and Teflon® PTFE



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