

# 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.

<sup>1</sup> For ChemFlare™ end connectors, consult Chemline.

<sup>2</sup> 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™<sup>1</sup>  
Spigot<sup>2</sup> 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

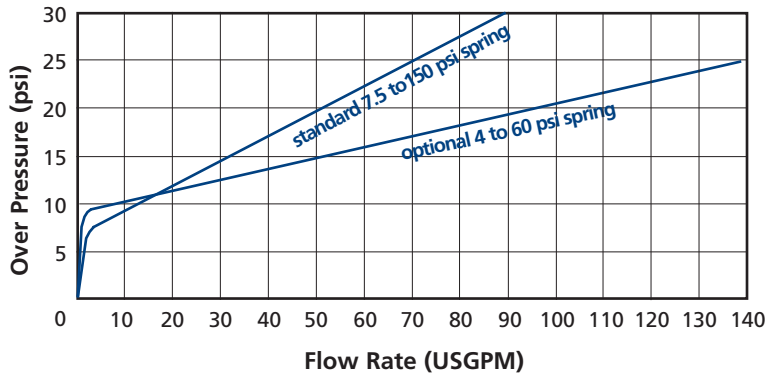


## OVER PRESSURE VS. FLOW RATE

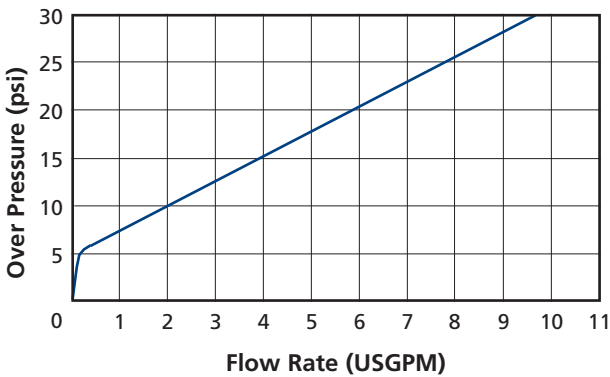
The curves show the relationship between the over pressure (inlet pressure above the set pressure) and the approximate flow rate through the valve for water at 20°C. These values will vary depending on:

- 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.

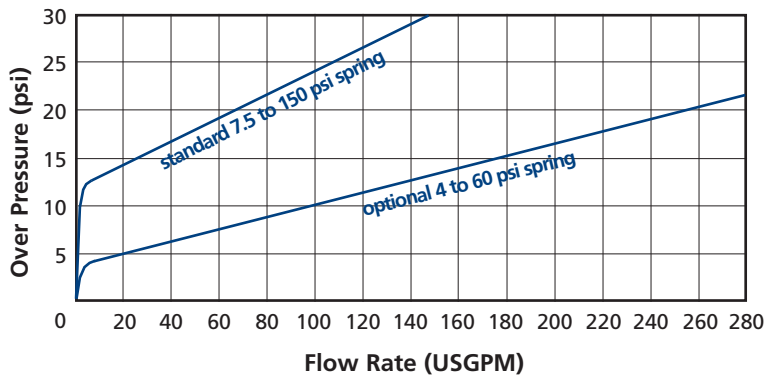
### VALVE SIZE 2-1/2"



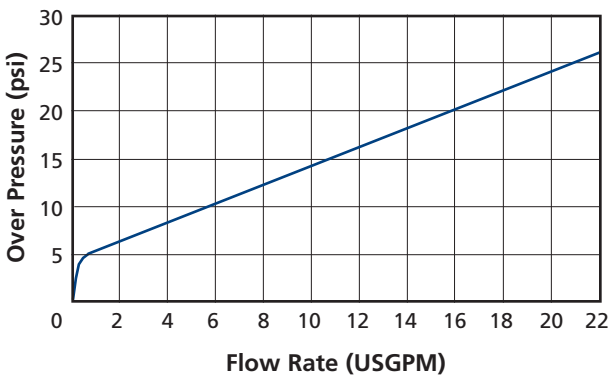
### VALVE SIZES 3/8" and 1/2"



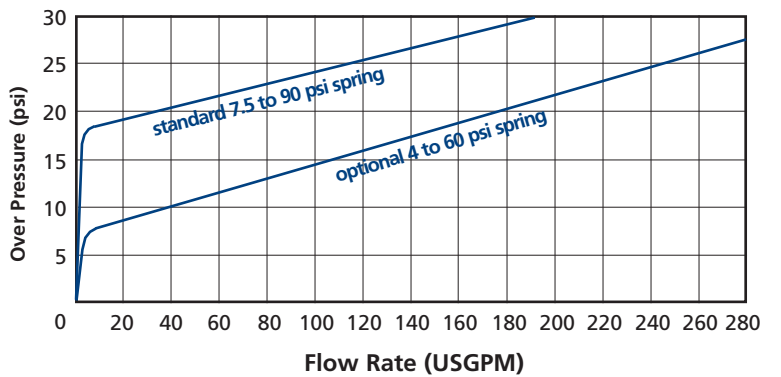
### VALVE SIZE 3"



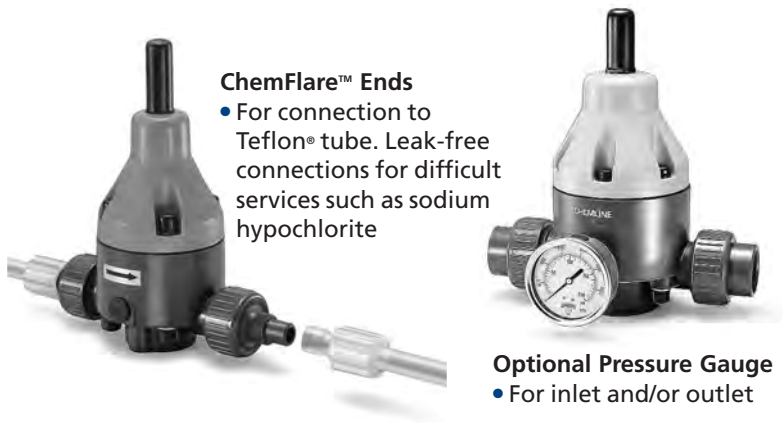
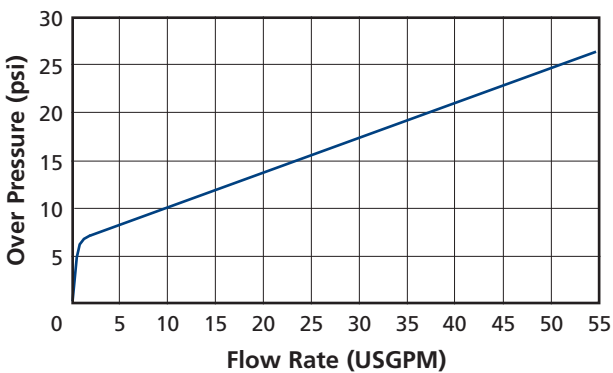
### VALVE SIZES 3/4" and 1"



### VALVE SIZE 4"



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

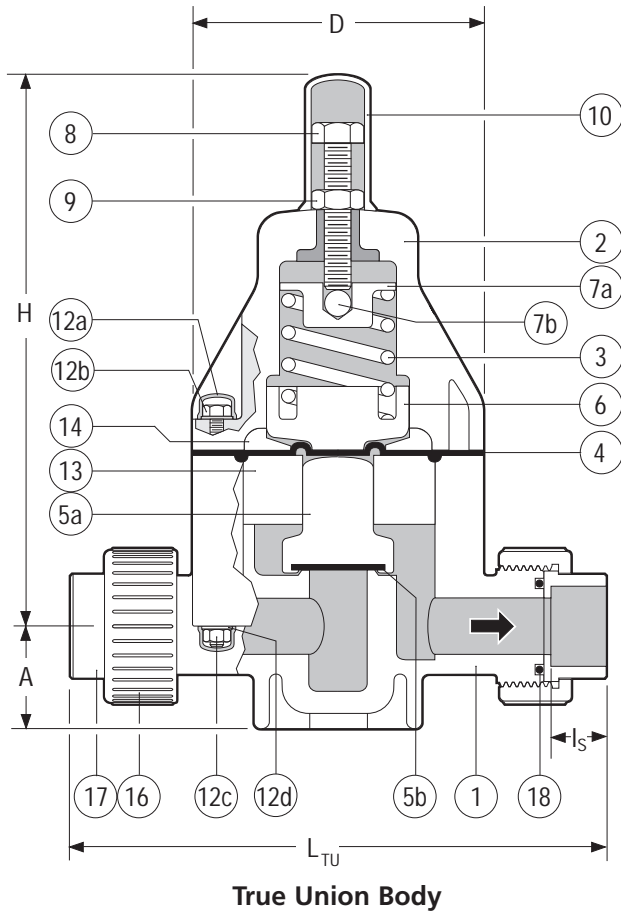


#### ChemFlare™ Ends

- For connection to Teflon® tube. Leak-free connections for difficult services such as sodium hypochlorite

- Optional Pressure Gauge
- For inlet and/or outlet

# SB 12 Relief Valves 1/2" – 2"



True Union Body

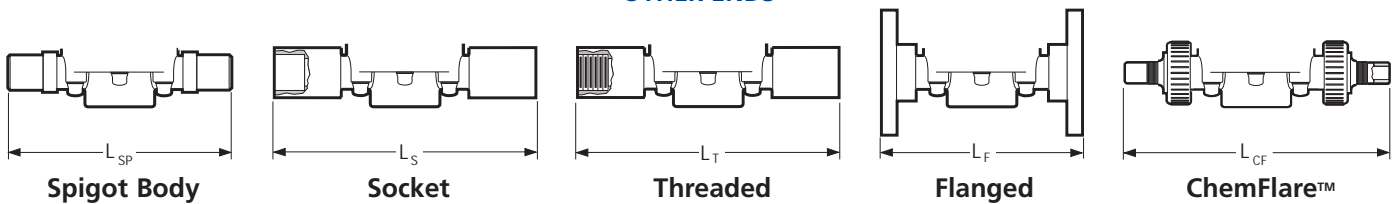
## PARTS

▲ 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 <sup>1</sup>	PE
12b	Hex Bolt	4/6 <sup>1</sup>	304 SS
12c	Hex Nut	4/6 <sup>1</sup>	304 SS
12d	Washer	8/12 <sup>1</sup>	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®)

<sup>1</sup> 1/2" size / 3/4" to 2" sizes

## OTHER ENDS



## DIMENSIONS INCHES

## WEIGHTS LB. C<sub>v</sub> VALUES

Size	D	H	PVC							PP and PVDF			PVC	PP	PVDF	USGPM Flow at 1 psi ΔP	
			A	L <sub>S</sub>	L <sub>TU</sub> <sup>†</sup>	L <sub>SP</sub> <sup>*</sup>	L <sub>S</sub>	L <sub>T</sub>	L <sub>F</sub>	L <sub>CF</sub>	A	L <sub>SP</sub> <sup>*</sup>					L <sub>TU</sub> <sup>†</sup>
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 <sup>‡</sup>	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

<sup>†</sup> True Union bodies come standard with socket ends. Threaded union ends are available. \*\* Consult Chemline.

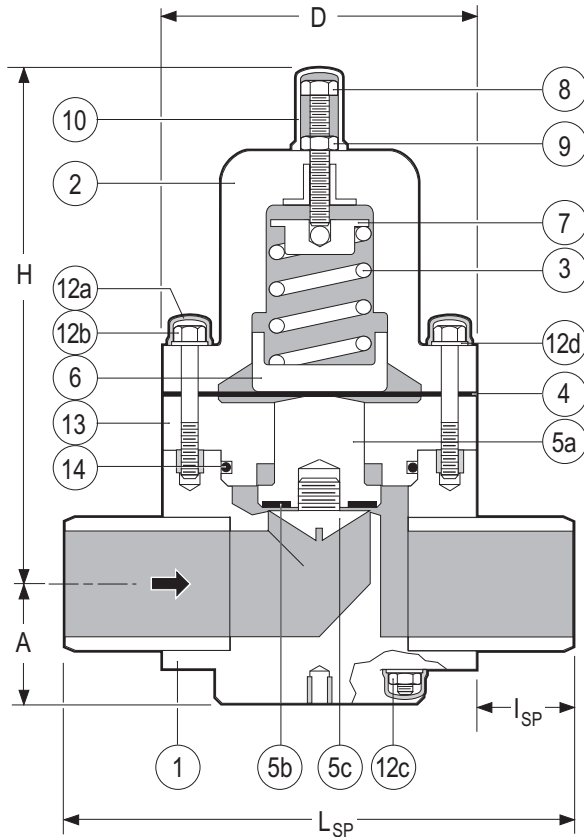
<sup>\*</sup> Spigot bodies are used for non union socket, threaded or flanged ends. All spigot ends have metric dimensions and the PP and PVDF spigots butt fuse directly to Chemline PP and PVDF piping. <sup>‡</sup> Tube size can be reduced to 1/4" tube, L<sub>CF</sub> = 7.74" for 1/4", 8.26" for 3/8".

## MAXIMUM PRESSURES PSI

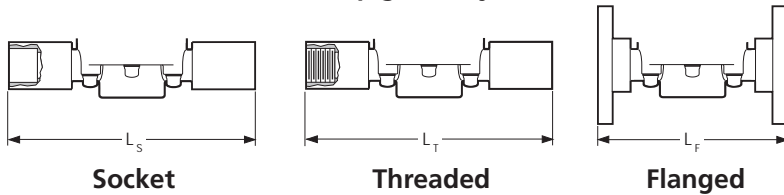
Size	PVC				PP					PVDF					
	20°C 68°F	30°C 86°F	40°C 104°F	50°C 122°F	30°C 86°F	40°C 104°F	50°C 122°F	60°C 140°F	70°C 158°F	30°C 86°F	50°C 122°F	70°C 158°F	80°C 176°F	90°C 194°F	100°C 212°F
1/2" - 2"	150	105	60	15	150	90	60	37.5	15	150	100	60	45	30	15

Temperature Ranges: PVC 0 to 50°C (32 to 122°F), PP 10 to 70°C (50 to 158°F), PVDF –30 to 100°C (–22 to 212°F).

# SB 12 Relief Valves 2-1/2" – 4"



**Spigot 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	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	PVC, PP and PVDF					PVC	WEIGHTS LB.			Cv VALUES
	A	D	H	L <sub>sp</sub> *	I <sub>sp</sub>	L <sub>f</sub>	PVC	PP	PVDF	USGPM Flow at 1 psi ΔP
2-1/2"	2.7	6.9	11.1	11.2	2.1	11.7	20.9	15.4	24.6	41
3"	3.0	7.9	12.2	14.5	3.1	14.6	26.4	23.8	30.8	63
4"	3.7	9.8	14.2	16.5	3.3	17.0	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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