PDF Published July 2, 2019

SB10/11 Series Back Pressure/Relief HypoValve

CHEMLINE PLASTICS
SUPERIOR FLOW SOLUTIONS

PVC

CRN Registered as Category C Fittings Consult Chemline

SERIES: SB10 & SB11

SIZES: 3/8" – 1"

ENDS: True Union Socket or ChemFlare™[1]

DIAPHRAGM: PTFE Bonded EPDM

SEALS: FKM (Viton®), EPDM (optional)

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 on the PTFE control diaphragm opening the valve, allowing excess pressure to flow downwards through the orifice.

The SB10/11 Series is very sensitive to pressure changes and requires low overpressure to fully open. It is designed for ***clean fluids only***.

features

True Union Ends

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

Long Cycling Life

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

Designed for Superior Performance

- Valves are hydraulically designed for low hysteresis ("backlash") and to eliminate chatter
- Low overpressure to fully open
- Sensitive to pressure changes

technical

Set Pressure Ranges

- SB10 – 3 to 60 psi
- SB11 – 7 to 150 psi

– The only difference between SB10 and SB11 is the strength of spring

Maximum Viscosity

- 120cP is maximum recommended service viscosity

SB11 Back Pressure/ Relief HypoValve

- 1/2" to 1" with FKM (Viton®) seals and ChemFlare™ end connections

[1] For ChemFlare™ end connectors, consult Chemline.

SB10/11 Series Back Pressure/Relief HypoValve

working pressures vs. flow rate

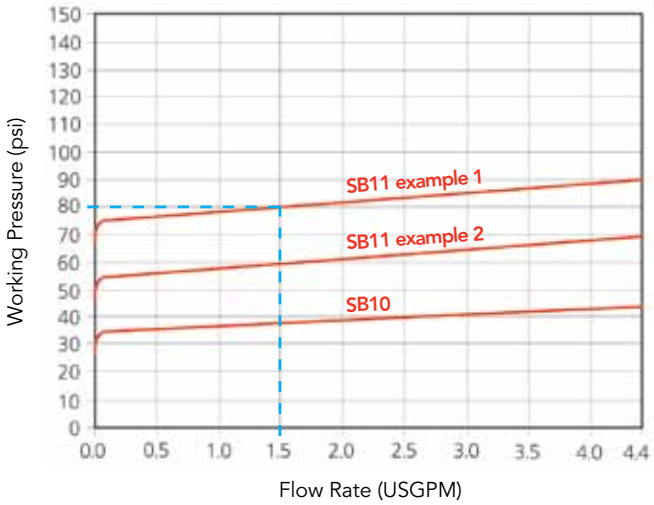
The curves show the relationship between the working pressure and the approximate flow rate through the valve for water at 20°C (68°F). These values vary depending on:

- the configuration of the piping and the pressure losses associated with it
- the fluid if not water at 20°C (68°F)
- whether the pressure is rising or falling. Hysteresis is approximately 4 psi.
- the profile of the flow curves will be the same for any set pressure

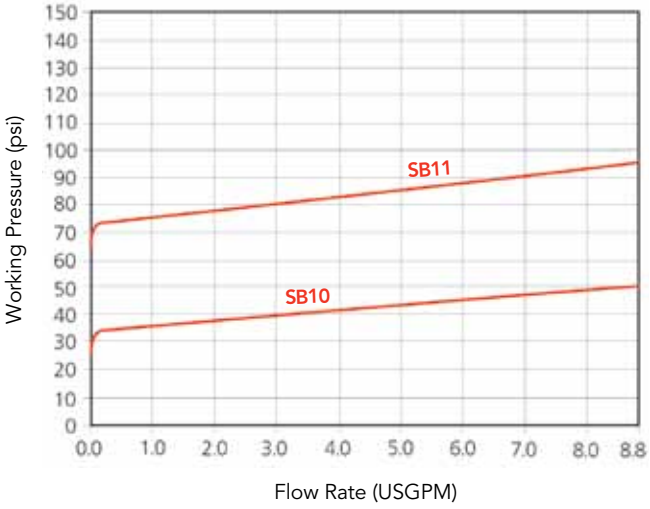
operation examples

1. The SB11 valve is set closed at 70 psi. At a pressure increase of 10 psi, a flow of approximately 1.5 USGPM will be reached.
   - set pressure = 70 psi
   - working pressure = 80 psi
   - opening pressure = approximately 74 psi
2. The SB11 valve is set closed at 50 psi. At a pressure increase of 10 psi, a flow of approximately 1.5 USGPM will be reached.
   - set pressure = 50 psi
   - working pressure = 60 psi
   - opening pressure = approximately 54 psi

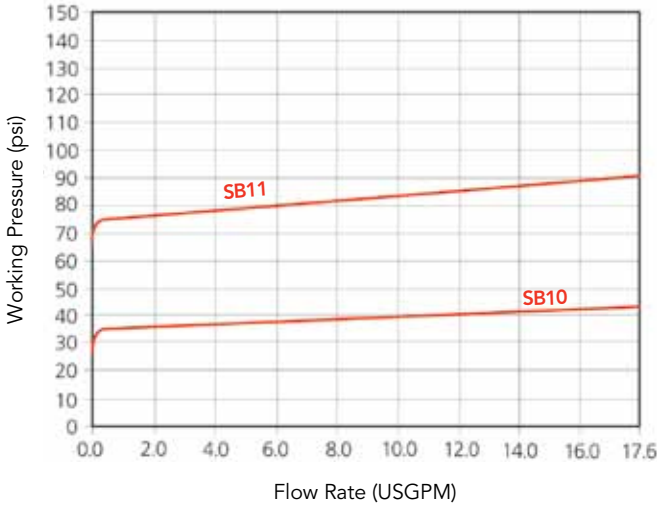
3/8" Valves



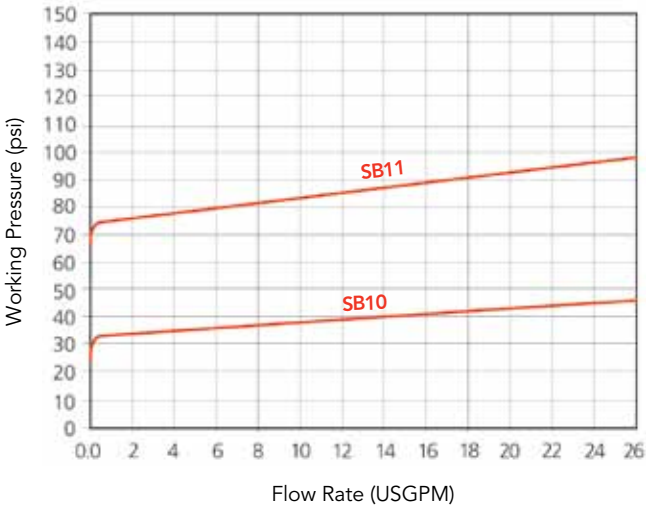
1/2" Valves



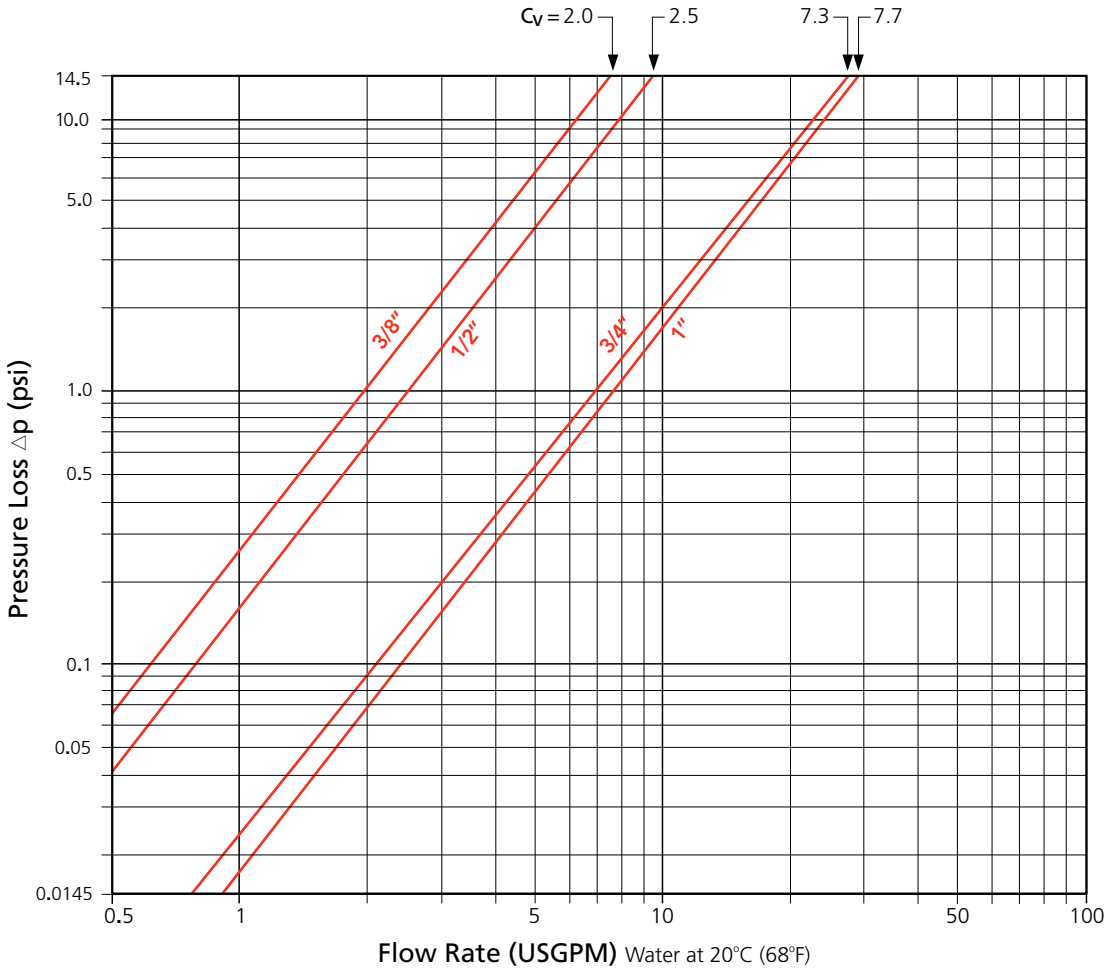
3/4" Valves



1" Valves

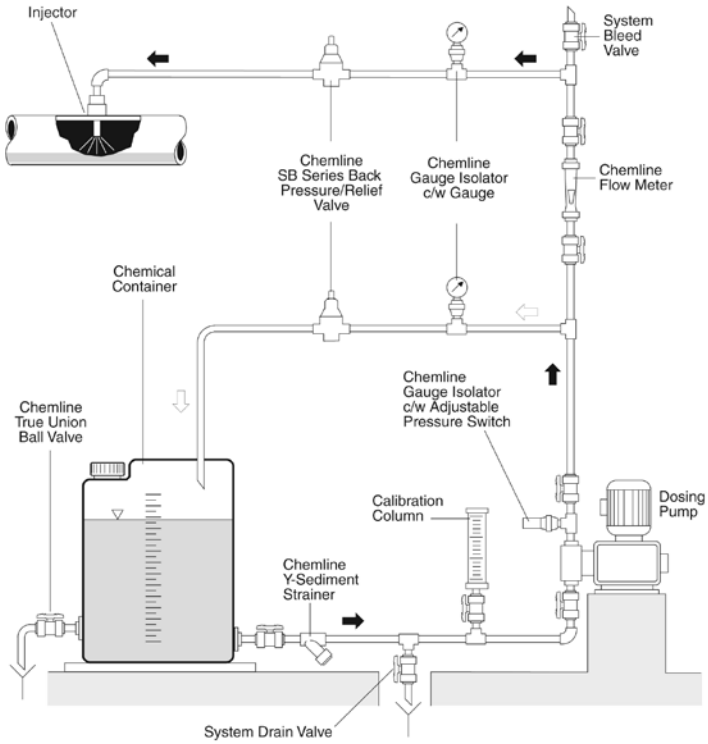


pressure loss nomogram for SB10 & SB11 valves



SB10/11 Series Back Pressure/Relief HypoValve

typical dosing system schematic

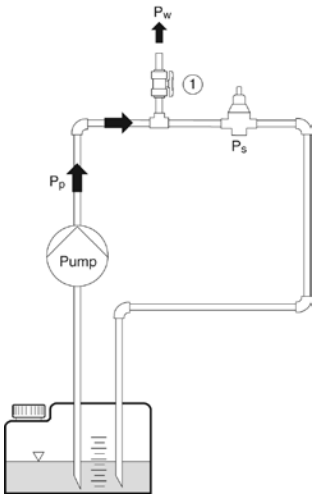


Optional Pressure Gauge

- For inlet and/or outlet

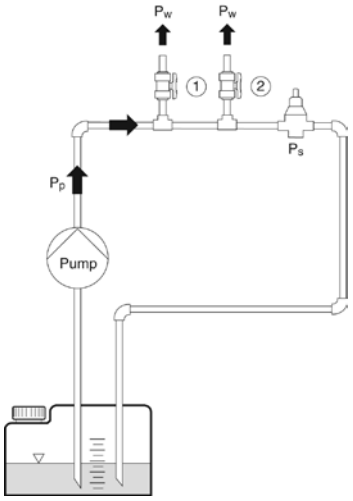
application of pressure relief valves

Constant System Pressure



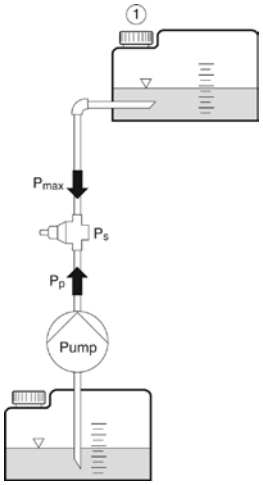
$P_p \geq P_w$
$P_p \geq P_s$ → valve opens
$P_p \leq P_s$ → valve closed

Consumer 1 and/or 2 Open, Valve Closes



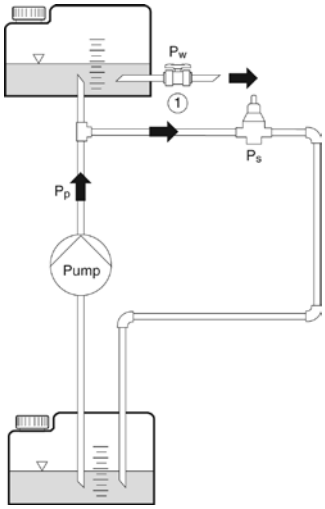
$P_p \geq P_s$ → valve opens
$P_p \leq P_s$ → valve closed

Non-Return Valve
Container 1 is located above the pump



$P_s \geq P_{max}$
$P_p \geq P_s$ → valve opens
$P_p \leq P_s$ → valve closed

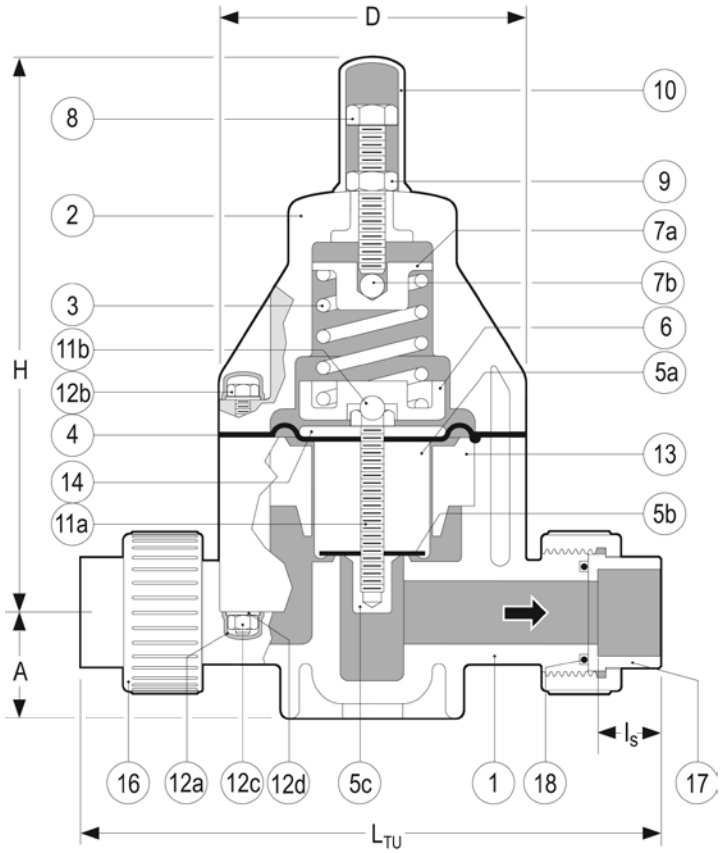
Overflow Valve
Pressure of container or application system should not exceed the maximum pressure value



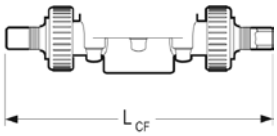
$P_s \leq P_w$
$P_p \geq P_s$ → valve opens
$P_p \leq P_s$ → valve closed

P_w = Working Pressure
P_p = Pump Pressure
P_s = Set Pressure

SB10/11 Series Back Pressure/Relief HypoValve



True Union Body



ChemFlare™

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	PTFE bonded EPDM
5a▲	Piston	1	PVC, PP, PVDF
5b▲	Seat	1	EPDM, FPM(Viton®)
5c▲	Seat Retainer	1	PVC, PP, PVDF
6	Lower Spring Retainer	1	Cad. Plated Steel
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
11a▲	Piston Bolt	1	304 SS
11b	Ball	1	304 SS
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	Cad. Plated Steel
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 1" sizes

DIMENSIONS INCHES — WEIGHTS LB. — Cv VALUES

Size	D	H	A	l_s	L_{TU}[2]	L_{CF}	LB.	USGPM Flow at 1 psi △P
3/8"	3.2	6.9	1.0	0.6	6.5	8.2	1.8	2.0
1/2"	3.2	6.9	1.0	0.6	6.8	8.3[3]	1.9	2.5
3/4"	4.2	8.0	1.5	0.7	8.3	9.7	4.1	7.3
1"	4.2	8.0	1.5	0.9	8.5	10.2	4.2	7.7

[2] True Union Bodies come standard with socket ends. Threaded union ends are available. ** Consult Chemline.
[3] Tube size can be reduced to 1/4" tube, LCF = 7.74" for 1/4", 8.26" for 3/8".

SB10/11 Series Back Pressure/Relief HypoValve

MAXIMUM PRESSURES PSI

Size	20°C 68°F	30°C 86°F	40°C 104°F	50°C 122°F
3/8"	150	105	60	15
1/2"	150	105	60	15
3/4"	150	105	60	15
1"	150	105	60	15

Temperature Ranges: PVC 0 to 50°C (32 to 122°F)

SAMPLE SPECIFICATION

1. All Back Pressure/Relief Valves in PVC shall be Chemline SB10 or SB11 Series or equal in sizes 3/8" to 1". SB10 shall have inlet set pressure range of 3 to 60 psi and SB11 shall have an inlet set pressure range of 7 to 150 psi. All valves shall have a maximum inlet pressure rating of 150 psi. Valves shall be suitable for aggressive clean non scaling chemicals.
2. All exposed external metal parts including spring tensioning bolt and body bolts shall be 304 stainless steel covered with polyethylene caps.
3. All valves shall have a large PTFE coated control diaphragm to fully open at no more than 10-15% over pressure.
4. Static seals shall be EPDM or FPM (Viton®).
5. Socket ends 1/2" to 1" shall be Schedule 80 and conform to ASTM D-2467.
6. PVC compound shall have an ASTM cell classification 11564 as per ASTM D-1784 and a chemical resistance of 1 as per ASTM D-5260.
7. All valves shall have chemical resistant labels permanently marked with manufacturing number to provide production level traceability.

ORDERING EXAMPLE

Chemline Back Pressure/ Relief HypoValve	SB11	A	005	V	CF8
Pressure Range	**SB10** – 3 to 60 psi **SB11** – 7 to 150 psi				
Body Material	**A** – PVC				
Size	**003** – 3/8" **005** – 1/2" **007** – 3/4" **010** – 1"				
Seals	**V** – FPM (Viton®) **E** – EPDM				
Ends	**U** – Union Socket **CFx** – ChemFlare™				

Example: Chemline SB 11 Series, PVC, 1/2" diameter, FPM (Viton®) seals, ChemFlare™ ends.
x = 4 for 1/4", **6** for 3/8", **8** for 1/2", **12** for 1" ID tube connections.

OPTION

- **Integral Pressure Gauge** – for inlet and/or outlet

55 Guardsman Road, Thornhill, ON, L3T 6L2, Canada | ISO 9001:2015 Certified
1.800.930.2436 (CHEM) | fax.905.889.8553 | request@chemline.com | chemline.com