

SB10/11 Series Back Pressure/Relief HypoValve

CHEMLINE PLASTICS
SUPERIOR FLOW SOLUTIONS

PVC

CRN
Registered
Consult Chemline

SERIES: SB10/SB11 **HypoValve** with ChemFlare™
SB10/SB11 **HypoValve** with ECTFE (Halar®)

SIZES: 1/2" to 1"

ENDS: 1/2" to 1": ChemFlare™
1/2" to 1": ECTFE (Halar®)

SEATS: PTFE Bonded EPDM

SEALS¹: FKM (Viton®)

TUBING SIZES: 1/4"² to 1"

PIPE SIZES: 1/2" to 1"



The Chemline **SB Series** Back Pressure/Relief **HypoValve** is a superior choice for sodium hypochlorite service. We offer both ChemFlare™ end connectors and PFA fittings for flexible tube applications and ECTFE butt fusion union end connections for rigid pipe applications. Both are long term leak-free systems for sodium hypochlorite applications. The 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

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

With ChemFlare™ system

Weldless Design

- Eliminates all fusion welds and cemented joints
- Threaded connection between flared end and tube nut is not wetted

Easy Installation

- Flaring the tube ends is easy
- Assembly is by hand¹

Low Down Time

- No welding or curing waiting time, the system may be pressure tested immediately.

Minimum Dead Volume

- The flared tubing connection has minimum dead volume desirable on sodium hypochlorite and ultrapure applications

With ECTFE (Halar®) system

Butt Fusion Design

- O-ring seal at valve face, with direct fusion to Chemline piping
- Guaranteed leak-free design
- No wetted threads or cemented joints

Low Down Time

- Low wait time, the system may be pressure tested in minutes, not hours

¹ ChemFlare™ fitting nuts should be hand tightened only. Use of a wrench can result in excessive tightening and stripped threads



Working Pressures vs. Flow Rate

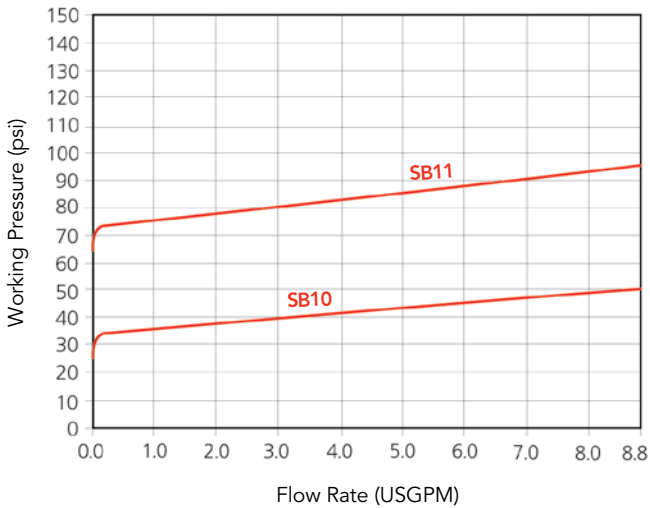
The curves show the relationship between the working pressure and the approximate flow rate through the valve for water at 20°C (68°F). These values vary depending on:

- 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

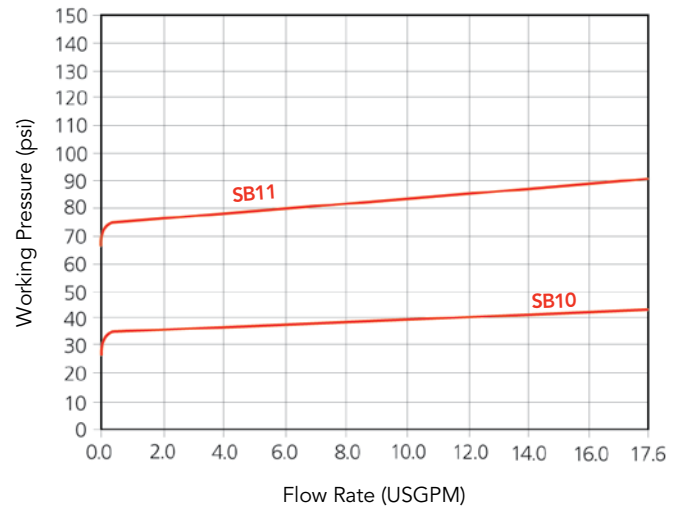
Operation Examples

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

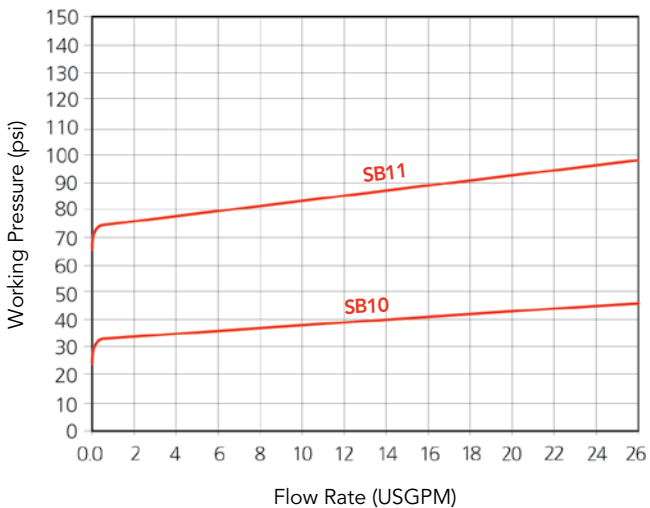
1/2" Valves



3/4" Valves

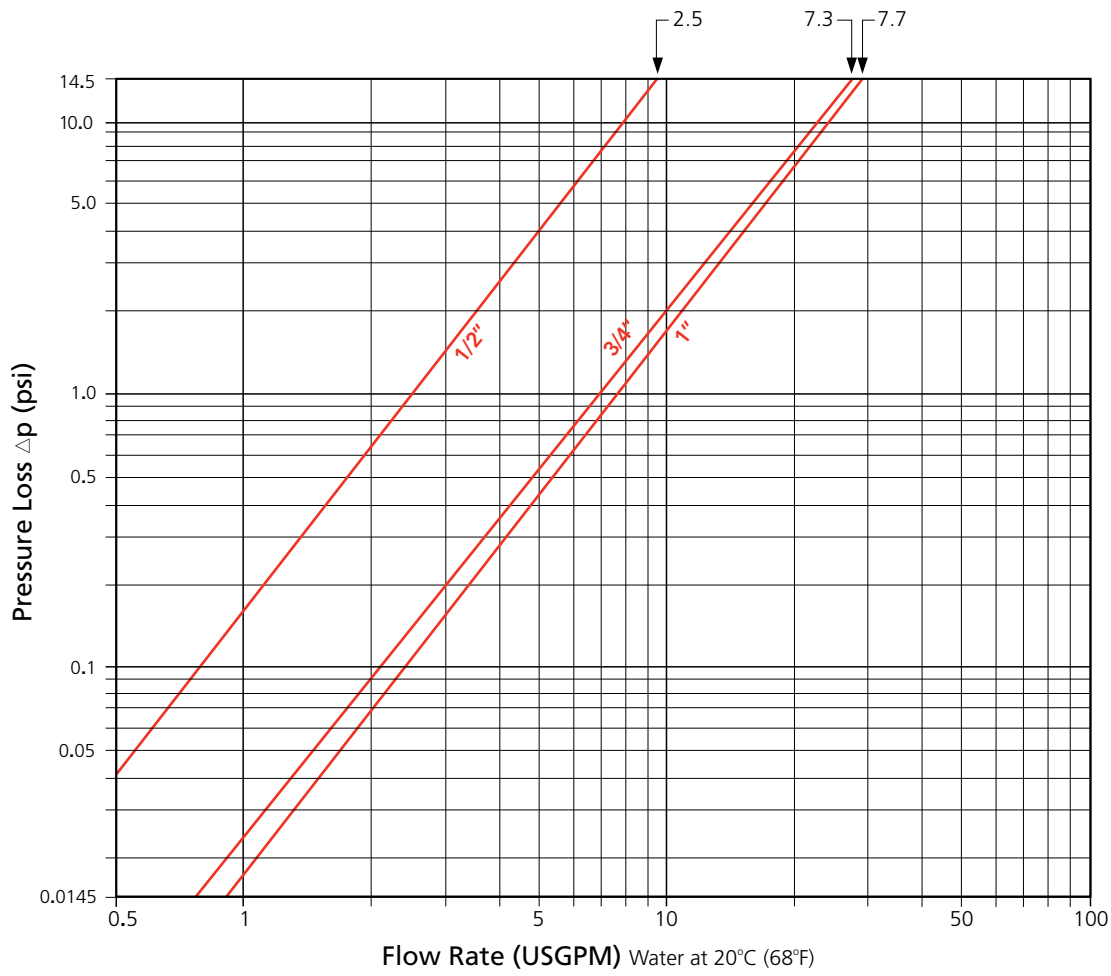


1" Valves

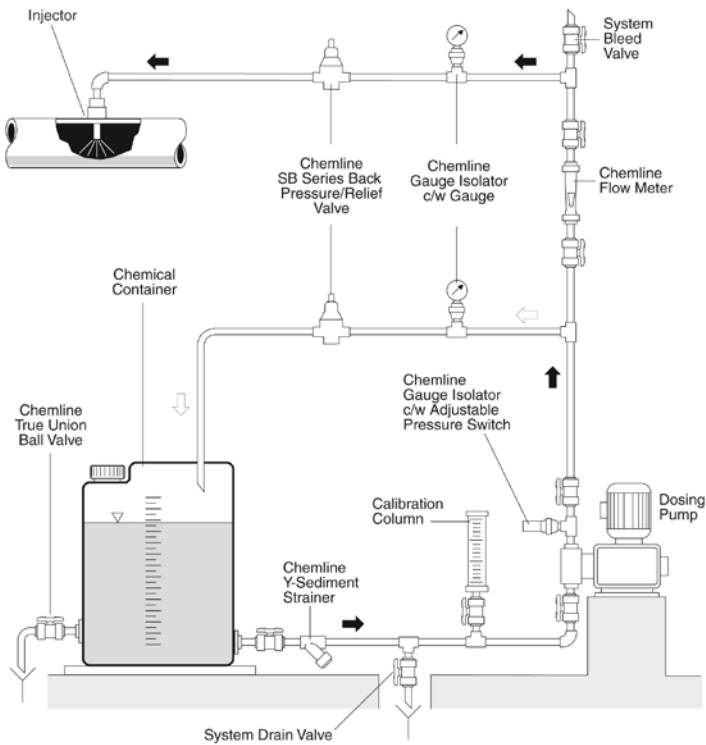




Pressure Loss Nomogram for SB10 & SB11 Valves



Typical Dosing System Schematic



Application of Pressure Relief Valves

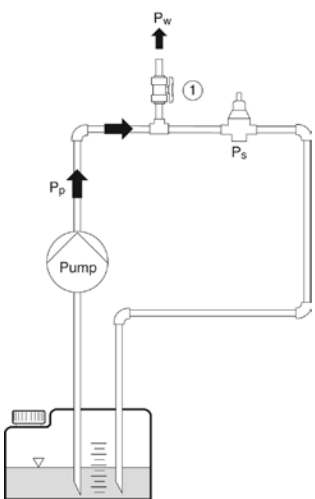
Constant System Pressure

Consumer 1 and/or 2 Open, Valve Closes

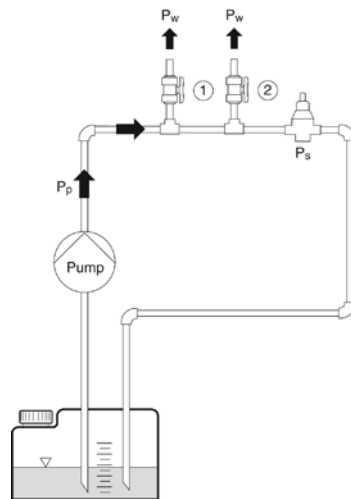
Non-Return Valve Container 1 is located above the pump

Overflow Valve

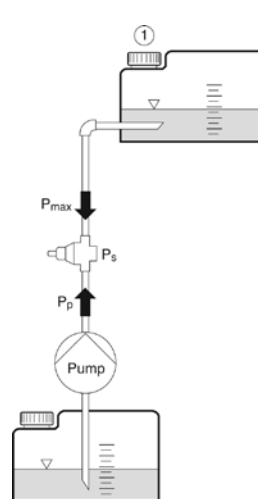
Pressure of container or application system should not exceed the maximum pressure value



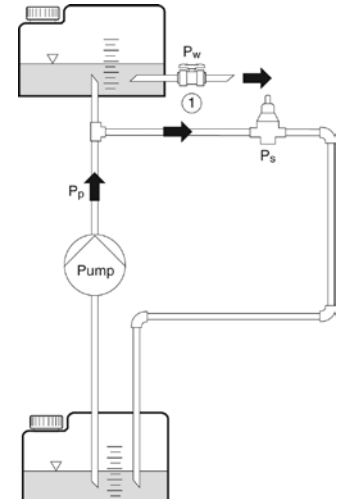
$P_p \geq P_w$
 $P_p \geq P_s \rightarrow$ valve opens
 $P_p \leq P_s \rightarrow$ valve closed



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



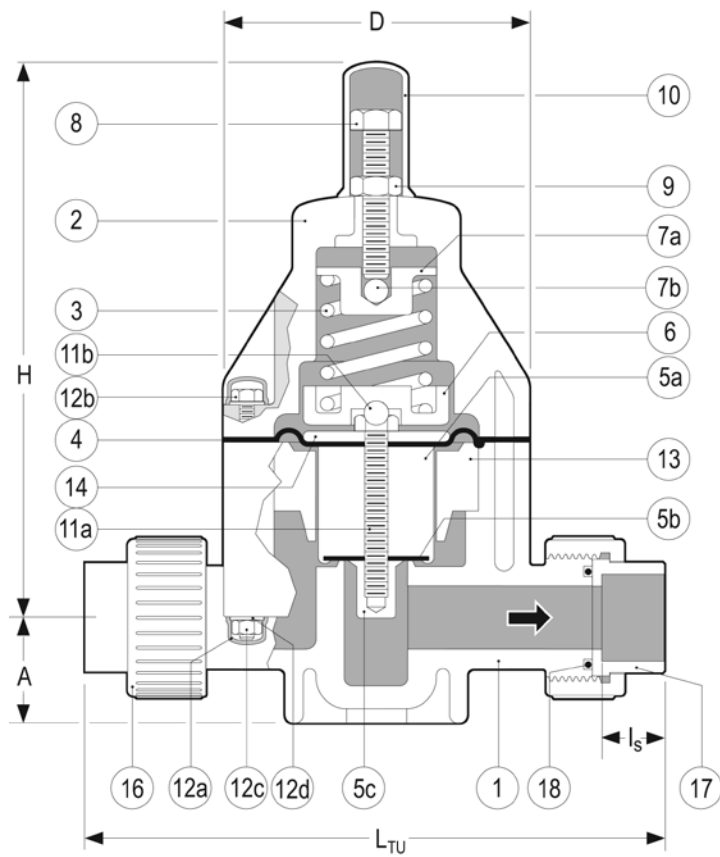
$P_s \geq P_{max}$
 $P_p \geq P_s \rightarrow$ valve opens
 $P_p \leq P_s \rightarrow$ valve closed



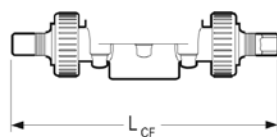
$P_s \leq P_w$
 $P_p \geq P_s \rightarrow$ valve opens
 $P_p \leq P_s \rightarrow$ valve closed

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

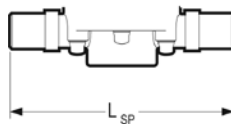
SB10/11 Series Back Pressure/Relief HypoValve



True Union Body



ChemFlare™



ECTFE Butt Fusion

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	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	FPM(Viton®)

¹1/2" size / 3/4" to 1" sizes

DIMENSIONS INCHES

WEIGHTS LB.

C_v VALUES

Size	D	H	A	I _s	L _{TU} ²	L _{CF}	L _{SP}	LB.	USGPM Flow at 1 psi ΔP
1/2"	3.2	6.9	1.0	0.6	6.8	8.3 ³	6.63	1.9	2.5
3/4"	4.2	8.0	1.5	0.7	8.3	9.7	8.89	4.1	7.3
1"	4.2	8.0	1.5	0.9	8.5	10.2	8.81	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"

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
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)

OPTION

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



SAMPLE SPECIFICATION - SB10/11 SERIES

1. All Back Pressure/Relief Valves in PVC shall be Chemline SB10 or SB11 Series or equal in sizes 1/2" 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 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.
- 8a. End connections shall be ChemFlare™ design for connection to flared PFA tubing.
- 8b. End connections shall be ECTFE (Halar®) design for fusing to ECTFE (Halar®) piping.

ORDERING EXAMPLE

Chemline Back Pressure/Relief HypoValve for Sodium Hypochlorite – ChemFlare™	SB11	A	005	V	-A	8N	-HYPO
Pressure Range	SB10 – 3 to 60 psi SB11 – 7 to 150 psi						
Body Material	A – PVC						
Size	005 – 1/2" 007 – 3/4" 010 – 1"						
Elastomers	V – FPM (Viton®)						
ChemFlare™ Fitting Material	A – PVC						
Tube Size ¹	4N – 1/4" 6N – 3/8" 8N – 1/2" ² 12N – 3/4" 16N – 1"						
Application	HYPO – for sodium hypochlorite service						

Example: Chemline SB11 **HypoValve**, PVC, 1/2" diameter, FPM (Viton®) seals, PVC ChemFlare™ end connectors, PVC ChemFlare™ fitting material, 1/2" tube size, including nuts, HYPO for sodium hypochlorite service.

¹ Tube size must be equal or smaller than the valve size.

² PVC nuts are supplied standard for 1/2" tube connectors (-8N), all other sizes have PVDF nuts.

ORDERING EXAMPLE

Chemline Back Pressure/Relief HypoValve for Sodium Hypochlorite – ECTFE	SB11	A	005	V	HB	-HYPO
Pressure Range	SB10 – 3 to 60 psi SB11 – 7 to 150 psi					
Body Material	A – PVC					
Size	005 – 1/2" 007 – 3/4" 010 – 1"					
Elastomers	V – FPM (Viton®)					
End Connector	HB – ECTFE butt fusion end					
Application	HYPO – for sodium hypochlorite service					

Example: Chemline SB11 **HypoValve**, PVC, 1/2" diameter, FPM (Viton®) seals, 63mm OD ECTFE butt fusion end connectors, HYPO for sodium hypochlorite service.

SB10/11 Series HypoValve.DS.11.03.23