SEWON

BREATHER VALVE
(Pressure / Vacuum Relief Valve)

SEWON Q&TECH CO., LTD.

■ HEAD OFFICE / FACTORY
1038-2, CHUNGOK-RI, JUCHON-MYUN, KIMHAE,
KYEONG-NAM, KOREA. 621-840.
Tel: +82 55-323-5894~7
Fax: +82 55-323-5898
http://www.swqt.co.kr
http://www.sewon-ind.co.kr
E-mail: sewon@sewon-ind.co.kr

■ SEOUL OFFICE
3FL, 29-13, KARAK-DONG, SONGPA-KU,
SEOUL, KOREA. 138-160
Tel: +82-2-406-5013~4 / 406-7021
Fax: +82-2-406-7022
E-mail: helpdesk@sewon-ind.co.kr

Weight loaded conventional relief valve
Spring loaded conventional relief valve

END-OF-LINE TYPE

SBF	Pressure & vacuum relief
SBG	Pressure relief
SBV	Vacuum relief
SBFV	Vacuum relief
SBE	Pressure & vacuum relief with steam jacket

IN-LINE TYPE

SBB	Pressure & vacuum relief
SBD	Pressure relief

VALVES FOR SPECIAL APPLICATION

BREATHER VALVES

Sewon Q&Tech Co., Ltd. manufacture an extensive range of products to protect low pressure storage tanks and pressure vessels.

Sewon pressure and/or vacuum relief valves (breather valves) are designed to protect storage tank from excessive pressure and/or vacuum.

When a tank is being filled, the vapor that filled the space above the liquid surface is compressed and if this pressure were allowed to exceed the storage tank design pressure, then it would explode or rupture. In addition, if the temperature of the storage tank or vessel increases, then expansion and vaporization may cause the pressure to rise. Conversely, emptying liquid from tank, or a decrease of temperature, cause a vacuum to be created.

Venting requirements are given for flowing conditions, but other circumstances such as pressure transfer blow-off, effect of internal or external heat transfer device, and utility failure should be considered.

1) Inbreathing resulting from maximum outflow of liquid from tank

2) Inbreathing resulting from contraction or condensation of vapors caused by maximum decreased in vapor space temperature (thermal breathing)

3) Outbreathing resulting from maximum inflow of liquid into the tank and maximum vaporization caused by such inflow

4) Outbreathing resulting from expansion and vaporization that result from maximum increase in vapor space temperature

5) Outbreathing results from fire exposure

Sewon pressure and/or vacuum relief valves may be combined with SEWON flame arrester to prevent explosion of flammable vapors in the storage tank caused by external potential ignition source.

MODEL SBF

NOMINAL SIZE	CONNECTIONS
• 1-1/2", 2", 3", 4", 6", 8", 10", and 12"	• ANSI/ASME B16.5 Class 150 Flange • KS/JIS 10K Flange

AVAILABLE IN A FULL RANGE OF SIZES AND CONFIGURATIONS, AND STANDARD AIR-CUSHIONED PALLET ASSURES MINIMAL INTERNAL VAPOR LEAKAGE

FEP TEFLON® SEAT DIAPHRAGMS ARE STANDARD TO INCREASE RELIABILITY AND EXTENDED SERVICE LIFE, AND MAKE MINIMIZE STICKING CAUSED BY RESINOUS VAPORS AND ATMOSPHERIC MOISTURE

GUIDED PRESSURE AND VACUUM PALLETS ASSURE SMOOTH LIFT AND CLOSURE, AND SUITABLE MATERIALS AVAILABLE FOR CORROSIVE AND EXTREME TEMPERATURE SERVICE

304 STAINLESS STEEL WEATHER HOOD AS STANDARD EQUIPMENT

[SBF, Weight Loaded Type]

[SBF, Spring Loaded Type]

Drilling conforming to ANSI/ASME B16.5 for Class 150 Flanges, or KS/JIS 10K Flanges. Other standards are available on customer's request. Consult our factory for special application or special design.

SPECIFICATIONS >>>>>>>

Service	Pressure and Vacuum Relief, End-of-line
Set pressure & set vacuum, min. / max Weight loaded type Spring loaded type	 22mmH2O (0.5oz/sq. in) / 700 mmH2O (1psi) 700mmH2O (1psi) / 1.05kg/cm² (15psi)
Temperature range (standard)	-45℃ ~ 120℃ (-50℉ ~ +220℉)

::::: MATERIALS :::::

PART NAME	MATERIALS	
	STANDARD	OPTIONAL
BODY & COVER	CARBON STEEL, 304 S.S, 316 S.S, AL	304L S.S, 316L S.S
SEAT	304 S.S, 316 S.S	304L S.S, 316L S.S
PALLET	304 S.S, 316 S.S	304L S.S, 316L S.S, AL
PALLET GUIDE	304 S.S	316 S.S
SEATING DIAPHRAGM	FEP TEFLON® (weight loaded type) VITON® O-ring (spring loaded type)	METAL TO METAL, NBR
WEATHER HOOD	304 S.S	316 S.S

*Other Special materials and special specifications are available upon customer's request.

::::: FLOW CAPACITY :::::

	WEIGHT LOADED	SPRING LOADED
PRESSURE	DATA SHEET NO. BVFL-01	DATA SHEET NO. BVFL-05
VACUUM	DATA SHEET NO. BVFL-02	DATA SHEET NO. BVFL-06

MODEL SBG

NOMINAL SIZE	CONNECTIONS
• 1-1/2", 2", 3", 4", 6", 8", 10", and 12"	• ANSI/ASME B16.5 Class 150 Flange • KS/JIS 10K Flange

DESIGNED PROTECT STORAGE TANK FROM INTERNAL OVER-PRESSURE, AND STANDARD AIR-CUSHIONED PALLET ASSURES MINIMAL INTERNAL VAPOR LEAKAGE

NBR(Buna-N), VITON® AND OTHER SEATING MATERIALS ARE AVAILABLE WHEN REQUIRED

GUIDED PRESSURE AND VACUUM PALLETS ASSURE SMOOTH LIFT AND CLOSURE

SUITABLE MATERIALS AVAILABLE FOR CORROSIVE AND EXTREME TEMPERATURE SERVICE, AND 304 STAINLESS STEEL WEATHER HOOD AS STANDARD EQUIPMENT

[SBG, Weight Loaded Type]

[SBG, Spring Loaded Type]

Drilling conforming to ANSI/ASME B16.5 for Class 150 Flanges, or KS/JIS 10K Flanges. Other standards are available on customer's request. Consult our factory for special application or special design.

SPECIFICATIONS >>>>>>>

Service	Pressure Relief, End-of-line
Set pressure, min. / max Weight loaded type Spring loaded type	 22mmH2O (0.5oz/sq. in) / 700 mmH2O (1psi) 700mmH2O (1psi) / 1.05kg/cm²(15psi)
Temperature range (standard)	-45℃ ~ 120℃ (-50℉ ~ +220℉)

BREATHER VALVE

::::: MATERIALS :::::

PART NAME	MATERIALS	
	STANDARD	OPTIONAL
BODY	CARBON STEEL, 304 S.S, 316 S.S, AL	304L S.S, 316L S.S
SEAT	304 S.S, 316 S.S	304L S.S, 316L S.S
PALLET	304 S.S, 316 S.S	304L S.S, 316L S.S, AL
PALLET GUIDE	304 S.S	316 S.S
SEATING DIAPHRAGM	FEP TEFLON® (weight loaded type) VITON® O-ring (spring loaded type)	METAL TO METAL, NBR
WEATHER HOOD	304 S.S	316 S.S

*Other Special materials and special specifications are available upon customer's request.

::::: FLOW CAPACITY :::::

	WEIGHT LOADED	SPRING LOADED
PRESSURE	DATA SHEET NO. BVFL-01	DATA SHEET NO. BVFL-05
VACUUM	-	-

MODEL SBV

NOMINAL SIZE	CONNECTIONS
• 1", 1-1/2", 2", 3", 4", 6", 8", 10", and 12"	• ANSI/ASME B16.5 Class 150 Flange • KS/JIS 10K Flange

DESIGNED PROTECT STORAGE TANK FROM EXCESSIVE NEGATIVE OVER-PRESSURE

FEP TEFLON® SEAT DIAPHRAGMS ARE STANDARD TO INCREASE RELIABILITY AND EXTENDED SERVICE LIFE, AND MAKE MINIMIZE STICKING CAUSED BY RESINOUS VAPORS AND ATMOSPHERIC MOISTURE

NBR(Buna-N), VITON® AND OTHER SEATING MATERIALS ARE AVAILABLE WHEN REQUIRED

SUITABLE MATERIALS AVAILABLE FOR CORROSIVE AND EXTREME TEMPERATURE SERVICE

304 STAINLESS STEEL WEATHER HOOD AS STANDARD EQUIPMENT

Drilling conforming to ANSI/ASME B16.5 for Class 150 Flanges, or KS/JIS 10K Flanges. Other standards are available on customer's request. Consult our factory for special application or special design.

SPECIFICATIONS >>>>>>>

Service	Vacuum Relief, End-of-line
Set vacuum, min. / max	22mmH2O (0.5oz/sq. in) / 700 mmH2O (1psi)
Temperature range (standard)	-45℃ ~ 120℃ (-50℉ ~ +220℉)

::::: MATERIALS :::::

PART NAME	MATERIALS	
	STANDARD	OPTIONAL
BODY	CARBON STEEL, 304 S.S, 316 S.S, AL	304L S.S, 316L S.S
SEAT	304 S.S, 316 S.S	304L S.S, 316L S.S
PALLET	304 S.S, 316 S.S	304L S.S, 316L S.S, AL
SPRING	304 S.S	316 S.S
SEATING DIAPHRAGM	FEP TEFLON®	METAL TO METAL, NBR, VITON®
WEATHER HOOD	304 S.S	316 S.S

*Other Special materials and special specifications are available upon customer's request.

::::: FLOW CAPACITY :::::

REFER TO DATA SHEET NO. BVFL-09

MODEL SBFV

NOMINAL SIZE	CONNECTIONS
• 1-1/2", 2", 3", 4", 6", 8", 10", and 12"	• ANSI/ASME B16.5 Class 150 Flange • KS/JIS 10K Flange

AVAILABLE IN A FULL RANGE OF SIZES AND CONFIGURATIONS

DESIGNED PROTECT STORAGE TANK FROM EXCESSIVE NEGATIVE OVER-PRESSURE, AND STANDARD AIR-CUSHIONED PALLET ASSURES MINIMAL INTERNAL VAPOR LEAKAGE

FEP TEFLON® SEAT DIAPHRAGMS ARE STANDARD TO INCREASE RELIABILITY AND EXTENDED SERVICE LIFE, AND MAKE MINIMIZE STICKING CAUSED BY RESINOUS VAPORS AND ATMOSPHERIC MOISTURE

GUIDED VACUUM PALLETS ASSURE SMOOTH LIFT AND CLOSURE, AND ASSURES RELIABLE OPERATION

SUITABLE MATERIALS AVAILABLE FOR CORROSIVE AND EXTREME TEMPERATURE SERVICE

Drilling conforming to ANSI/ASME B16.5 for Class 150 Flanges, or KS/JIS 10K Flanges. Other standards are available on customer's request. Consult our factory for special application or special design.

SPECIFICATIONS >>>>>>>

BREATHER VALVE

Service	Vacuum Relief, End-of-line
Set vacuum, min. / max Weight loaded type (standard) Spring loaded type	 22mmH2O (0.5oz/sq. in) / 700 mmH2O (1psi) 700mmH2O (1psi) / FULL VACUUM
Temperature range (standard)	-45℃ ~ 120℃ (-50℉ ~ +220℉)

::::: MATERIALS :::::

PART NAME	MATERIALS	
	STANDARD	OPTIONAL
BODY & COVER	CARBON STEEL, 304 S.S, 316 S.S, AL	304L S.S, 316L S.S
SEAT	304 S.S, 316 S.S	304L S.S, 316L S.S
PALLET	304 S.S, 316 S.S	304L S.S, 316L S.S, AL
PALLET GUIDE	304 S.S	316 S.S
SEATING DIAPHRAGM	FEP TEFLON® (weight loaded type) VITON® O-ring (spring loaded type)	METAL TO METAL, NBR

*Other Special materials and special specifications are available upon customer's request.

::::: FLOW CAPACITY :::::

	WEIGHT LOADED	SPRING LOADED
PRESSURE	-	-
VACUUM	DATA SHEET NO. BVFL-02	DATA SHEET NO. BVFL-06

MODEL SBE

NOMINAL SIZE	CONNECTIONS
• 1-1/2", 2", 3", 4", 6", 8", 10", and 12"	• ANSI/ASME B16.5 Class 150 Flange • KS/JIS 10K Flange

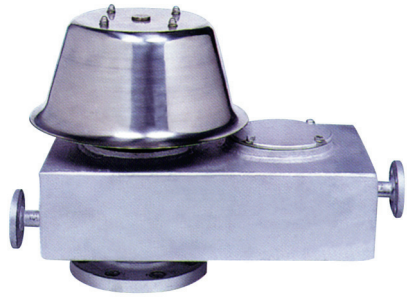
INSTALLED THE STEAM JACKET AS STANDARD EQUIPMENT, AND PROVIDES A MEANS OF TRANSFERRING HEAT FROM STEAM TO THE VENT

USED ON TANKS CONTAINING LIQUIDS WHOSE VAPORS TEND TO CRYSTALLIZE AT AMBIENT TEMPERATURES

304 STAINLESS STEEL, AND WEATHER HOOD 304 SS JACKET ARE STANDARD

STANDARD AIR-CUSHIONED PALLET ASSURES MINIMAL INTERNAL VAPOR LEAKAGE

GUIDED PRESSURE AND VACUUM PALLETS ASSURE SMOOTH LIFT AND CLOSURE, AND SUITABLE MATERIALS AVAILABLE FOR CORROSIVE AND EXTREME TEMPERATURE SERVICE



Jacket connections are ANSI 150lbs flanges. Hydrostatic testing can be done in accordance with the customer's request. Threaded connections are also available.

SPECIFICATIONS >>>>>>>

Service	Pressure and Vacuum Relief, End-of-line
Set pressure & set vacuum, min. / max	22mmH2O (0.5oz/sq. in) / 700 mmH2O (1psi)
Temperature range (standard)	-45℃ ~ 120℃ (-50℉ ~ +220℉)

::::: MATERIALS :::::

PART NAME	MATERIALS	
	STANDARD	OPTIONAL
BODY & COVER	304 S.S, 316 S.S	304L S.S, 316L S.S
SEAT	304 S.S, 316 S.S	304L S.S, 316L S.S
PALLET	304 S.S, 316 S.S	304L S.S, 316L S.S
PALLET GUIDE	304 S.S	316 S.S
SEATING DIAPHRAGM	FEP TEFLON® (weight loaded type) VITON® O-ring (spring loaded type)	METAL TO METAL
WEATHER HOOD	304 S.S	316 S.S

*Other Special materials and special specifications are available upon customer's request.

::::: FLOW CAPACITY :::::

	WEIGHT LOADED	SPRING LOADED
PRESSURE	DATA SHEET NO. BVFL-01	DATA SHEET NO. BVFL-05
VACUUM	DATA SHEET NO. BVFL-02	DATA SHEET NO. BVFL-06

MODEL SBB

NOMINAL SIZE	CONNECTIONS
• 1-1/2", 2", 3", 4", 6", 8", 10", and 12"	• ANSI/ASME B16.5 Class 150 Flange • KS/JIS 10K Flange

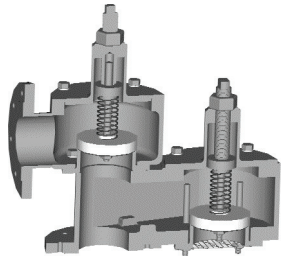
AVAILABLE IN A FULL RANGE OF SIZES AND CONFIGURATIONS

FEP TEFLONa SEAT DIAPHRAGMS ARE STANDARD TO INCREASE RELIABILITY AND EXTENDED SERVICE LIFE, AND MAKE MINIMIZE STICKING CAUSED BY RESINOUS VAPORS AND ATMOSPHERIC MOISTURE

GUIDED PRESSURE AND VACUUM PALLETS ASSURE SMOOTH LIFT AND CLOSURE, AND SUITABLE MATERIALS AVAILABLE FOR CORROSIVE AND EXTREME TEMPERATURE SERVICE

[SBB, Weight Loaded Type]

[SBB, Spring Loaded Type]



[SBB, Dual Spring Loaded Type]

Drilling conforming to ANSI/ASME B16.5 for Class 150 Flanges, or KS/JIS 10K Flanges. Other standards are available on customer's request. Consult our factory for special application or special design.

SPECIFICATIONS >>>>>>>

BREATHER VALVE

Service	Pressure and Vacuum Relief, In-line
Set pressure & set vacuum, min. / max Weight loaded type Spring loaded type	 22mmH2O (0.5oz/sq. in) / 700 mmH2O (1psi) 700mmH2O (1psi) / 1.05kg/cm^2 (15psi)
Temperature range (standard)	-45℃ ~ 120℃ (-50℉ ~ +220℉)

::::: MATERIALS :::::

PART NAME	MATERIALS	
	STANDARD	OPTIONAL
BODY & COVER	CARBON STEEL, 304 S.S, 316 S.S, AL	304L S.S, 316L S.S
SEAT	304 S.S, 316 S.S	304L S.S, 316L S.S
PALLET	304 S.S, 316 S.S	304L S.S, 316L S.S, AL
SEATING DIAPHRAGM	FEP TEFLON® (weight loaded type) VITON® O-ring (spring loaded type)	METAL TO METAL, NBR

*Other Special materials and special specifications are available upon customer's request.

::::: FLOW CAPACITY :::::

	WEIGHT LOADED	SPRING LOADED
PRESSURE	DATA SHEET NO. BVFL-03	DATA SHEET NO. BVFL-07
VACUUM	DATA SHEET NO. BVFL-04	DATA SHEET NO. BVFL-08

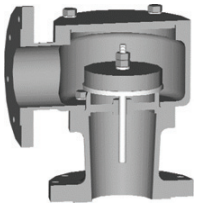
MODEL SBD

NOMINAL SIZE	CONNECTIONS
• 1", 1-1/2", 2", 3", 4", 6", 8", 10", and 12"	• ANSI/ASME B16.5 Class 150 Flange • KS/JIS 10K Flange

AVAILABLE IN A FULL RANGE OF SIZES AND CONFIGURATIONS, AND A MORE COMPACT DESIGN REDUCES INSTALLATION AND MAINTENANCE COST

FEP TEFLONa SEAT DIAPHRAGMS ARE STANDARD TO INCREASE RELIABILITY AND EXTENDED SERVICE LIFE, AND MAKE MINIMIZE STICKING CAUSED BY RESINOUS VAPORS AND ATMOSPHERIC MOISTURE

PIPE-AWAY RELIVES VAPORS THROUGH A FLANGED CONNECTION, AND SUITABLE FOR CORROSIVE AND TOXIC APPLICATIONS



[SBD, Weight Loaded, Type "A"]

[SBD, Weight Loaded, Type "B"]

[SBD, Spring Loaded Type]

Drilling conforming to ANSI/ASME B16.5 for Class 150 Flanges, or KS/JIS 10K Flanges. Other standards are available on customer's request. Consult our factory for special application or special design.

SPECIFICATIONS >>>>>>>

Service	Pressure Relief, In-line
Set pressure & set vacuum, min. / max Weight loaded type Spring loaded type	 22mmH2O (0.5oz/sq. in) / 700 mmH2O (1psi) 700mmH2O (1psi) / 1.05kg/cm^2 (15psi)
Temperature range (standard)	-45℃ ~ 120℃ (-50℉ ~ +220℉)

::::: MATERIALS :::::

PART NAME	MATERIALS	
	STANDARD	OPTIONAL
BODY & COVER	CARBON STEEL, 304 S.S, 316 S.S, AL	304L S.S, 316L S.S
SEAT	304 S.S, 316 S.S	304L S.S, 316L S.S
PALLET	304 S.S, 316 S.S	304L S.S, 316L S.S, AL
SEATING DIAPHRAGM	FEP TEFLON® (weight loaded type) VITON® O-ring (spring loaded type)	METAL TO METAL, NBR

*Other Special materials and special specifications are available upon customer's request.

::::: FLOW CAPACITY :::::

	WEIGHT LOADED	SPRING LOADED
PRESSURE	DATA SHEET NO. BVFL-03	DATA SHEET NO. BVFL-07
VACUUM	-	-

SPECIAL APPLICATION

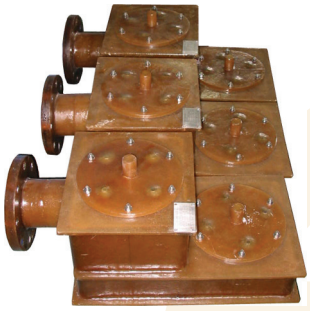
NOMINAL SIZE	CONNECTIONS
• 2", 3", 4", 6", 8", 10", and 12"	• ANSI/ASME B16.5 Class 150 Flange • KS/JIS 10K Flange

MATERIALS ARE SUITABLE FOR CORROSIVE AND TOXIC APPLICATIONS SUCH AS HYDROCHLORIC ACID, SULFURIC ACID (H_2SO_4) AND NITRIC ACID (HNO_3) STORAGE TANKS

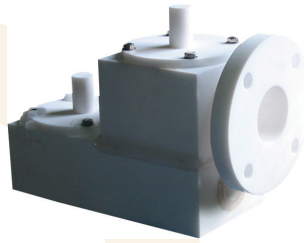
CUSTOMIZED DESIGN SERVICE AVAILABLE

PIPE-AWAY RELIVES VAPORS THROUGH A FLANGED CONNECTION

COMPACT DESIGN REDUCES INSTALLATION AND MAINTENANCE COST



[Pressure and vacuum relief valves with FRP body]



[Pressure and vacuum relief valve with Teflon® body]

Drilling conforming to ANSI/ASME B16.5 for Class 150 Flanges, or KS/JIS 10K Flanges. Other standards are available on customer's request. Consult our factory for special application or special design.

BREATHER VALVE

SPECIFICATIONS >>>>>>>

Service	Pressure and Vacuum Relief, In-line
Set pressure & set vacuum, min. / max Weight loaded type Spring loaded type	 22mmH2O (0.5oz/sq. in) / 700 mmH2O (1psi) 700mmH2O (1psi) / 1.05kg/cm^2 (15psi)

VALVE CAPACITY & SIZING
SBF / SBG, Weight loaded

MODEL SBF / SBG, Weight Loaded Type

‖ END-OF-LINE PRESSURE RELIEF ‖

Set Pressure		Air Flow Rates at 100% overpressure (Double of Set Pressure) in 1,000 Nm3/h						
mmH2O	mbar	2"	3"	4"	6"	8"	10"	12"
22	2.2	0.177	0.393	0.740	1.604	2.863	4.673	5.867
25	2.5	0.187	0.415	0.782	1.698	3.029	4.949	6.212
50	4.9	0.259	0.577	1.090	2.377	4.236	6.942	8.706
75	7.4	0.316	0.709	1.338	2.921	5.202	8.526	10.687
100	9.8	0.365	0.819	1.545	3.373	6.004	9.834	12.323
125	12	0.406	0.914	1.723	3.760	6.693	10.954	13.724
150	15	0.443	0.998	1.880	4.101	7.300	11.942	14.959
175	17	0.476	1.074	2.022	4.409	7.849	12.835	16.075
200	20	0.507	1.143	2.152	4.691	8.353	13.656	17.102
225	22	0.535	1.207	2.273	4.954	8.823	14.422	18.060
250	25	0.562	1.268	2.386	5.200	9.264	15.142	18.962
275	27	0.587	1.324	2.494	5.434	9.682	15.824	19.817
300	29	0.611	1.378	2.595	5.655	10.080	16.473	20.630
325	32	0.634	1.430	2.693	5.867	10.459	17.092	21.407
350	34	0.656	1.479	2.785	6.069	10.821	17.685	22.151
375	37	0.677	1.526	2.874	6.262	11.168	18.252	22.864
400	39	0.698	1.571	2.960	6.448	11.501	18.796	23.548
450	44	0.736	1.655	3.120	6.797	12.127	19.819	24.835
500	49	0.771	1.733	3.267	7.120	12.705	20.762	26.023
550	54	0.804	1.806	3.404	7.417	13.237	21.631	27.121
600	59	0.834	1.873	3.529	7.692	13.729	22.433	28.134
700	69	0.888	1.992	3.753	8.182	14.602	23.855	29.937

Notes

1) Flow rates listed in above Table are based on full open valves at 100% overpressure.
2) If the set pressure is not listed above Table, use liner interpolation.
3) If the overpressure is less than 100%, calculate the flow rates using the Factor "C".

‖ Example of Flow Rate Calculation ‖

Model SBF 10"

Set pressure (P_{set}) = 150mmH2O (15mbar)
Valve inlet pressure (P_{in})= 185 mmH2O

1. Calculate overpressure

$$\text{Overpressure} = \frac{P_{in} - P_{set}}{P_{set}} \times 100 = 23\ (\%)$$

2. Determine Factor C from right Table.
   C = 0.54

3. Read flow rate at 100% overpressure corresponding specified set pressure. The flow rate is 11,942Nm3/h from above Table.

4. Calculate flow rate at specified inlet pressure
   Flow rate at 185mmH_2O = 0.54 x 11942 = 6,449 Nm3/h

Factor C for less than 100% over-pressure										
%	0	1	2	3	4	5	6	7	8	9
10	0.40	0.42	0.43	0.45	0.46	0.47	0.48	0.49	0.50	0.51
20	0.52	0.53	0.53	0.54	0.55	0.56	0.56	0.57	0.58	0.58
30	0.59	0.60	0.60	0.61	0.62	0.62	0.63	0.64	0.64	0.65
40	0.66	0.66	0.67	0.67	0.68	0.69	0.69	0.70	0.70	0.71
50	0.72	0.72	0.73	0.73	0.74	0.75	0.75	0.76	0.76	0.77
60	0.78	0.78	0.79	0.79	0.80	0.80	0.81	0.82	0.82	0.83
70	0.83	0.84	0.84	0.85	0.86	0.86	0.87	0.87	0.88	0.88
80	0.89	0.89	0.90	0.90	0.91	0.91	0.92	0.93	0.93	0.94
90	0.94	0.95	0.95	0.96	0.96	0.97	0.97	0.98	0.98	0.99

VALVE CAPACITY & SIZING
SBF / SBFV, Weight loaded

MODEL SBF / SBFV, Weight Loaded Type

END-OF-LINE VACUUM RELIEF

Set Vacuum		Air Flow Rates at 100% negative overpressure (Double of Set Vacuum) in 1,000 Nm3/h						
mmH2O	mbar	2"	3"	4"	6"	8"	10"	12"
-22	-2.2	0.129	0.283	0.439	0.956	1.670	2.513	3.560
-25	-2.5	0.136	0.299	0.465	1.013	1.768	2.662	3.767
-50	-4.9	0.188	0.422	0.654	1.425	2.479	3.739	5.278
-75	-7.4	0.233	0.519	0.806	1.752	3.049	4.596	6.489
-100	-9.8	0.270	0.600	0.932	2.024	3.523	5.307	7.497
-125	-12	0.304	0.669	1.041	2.257	3.930	5.918	8.365
-150	-15	0.333	0.730	1.136	2.462	4.290	6.460	9.133
-175	-17	0.359	0.785	1.222	2.649	4.616	6.952	9.829
-200	-20	0.383	0.836	1.301	2.821	4.916	7.405	10.470
-225	-22	0.405	0.883	1.375	2.981	5.196	7.830	11.069
-250	-25	0.426	0.928	1.444	3.132	5.460	8.230	11.633
-275	-27	0.445	0.970	1.510	3.276	5.710	8.610	12.167
-300	-29	0.463	1.011	1.572	3.413	5.948	8.972	12.676
-325	-32	0.480	1.049	1.632	3.543	6.176	9.319	13.162
-350	-34	0.497	1.086	1.690	3.669	6.394	9.650	13.627
-375	-37	0.512	1.122	1.745	3.789	6.603	9.967	14.072
-400	-39	0.528	1.156	1.798	3.904	6.804	10.272	14.500
-450	-44	0.556	1.220	1.898	4.122	7.182	10.846	15.305
-500	-49	0.583	1.280	1.990	4.323	7.533	11.375	16.047
-550	-54	0.608	1.336	2.077	4.509	7.857	11.863	16.733
-600	-59	0.632	1.387	2.157	4.681	8.157	12.313	17.366
-700	-69	0.676	1.479	2.301	4.987	8.692	13.114	18.492

Notes

1) Flow rates listed in above Table are based on full open valves at 100% negative overpressure.
2) If the set vacuum is not listed above Table, use liner interpolation.
3) If the negative overpressure is less than 100%, calculate the flow rates using the Factor "C".

Example of Flow Rate Calculation

Model SBF, 8"

Set vacuum (P_{set}) = -200mmH2O (-20mbar)
Valve inlet pressure (P_{in})= -270 mmH2O

1. Calculate overpressure

   $$\text{Overpressure} = \frac{P_{in} - P_{set}}{P_{set}} \times 100 = -35\ (\%)$$

2. Determine Factor C from right Table.
   C = 0.62

3. Read flow rate at 100% negative overpressure corresponding specified set vacuum. The flow rate is 4,916Nm3/h from above Table.

4. Calculate flow rate at specified inlet pressure
   Flow rate at -270mmH_2O = 0.62 x 4,916 = 3,048 Nm3/h

Factor C for less than 100% negative over-pressure										
%	0	1	2	3	4	5	6	7	8	9
10	0.40	0.42	0.43	0.45	0.46	0.47	0.48	0.49	0.50	0.51
20	0.52	0.53	0.53	0.54	0.55	0.56	0.56	0.57	0.58	0.58
30	0.59	0.60	0.60	0.61	0.62	0.62	0.63	0.64	0.64	0.65
40	0.66	0.66	0.67	0.67	0.68	0.69	0.69	0.70	0.70	0.71
50	0.72	0.72	0.73	0.73	0.74	0.75	0.75	0.76	0.76	0.77
60	0.78	0.78	0.79	0.79	0.80	0.80	0.81	0.82	0.82	0.83
70	0.83	0.84	0.84	0.85	0.86	0.86	0.87	0.87	0.88	0.88
80	0.89	0.89	0.90	0.90	0.91	0.91	0.92	0.93	0.93	0.94
90	0.94	0.95	0.95	0.96	0.96	0.97	0.97	0.98	0.98	0.99

VALVE CAPACITY & SIZING
SBB / SBD, Weight loaded

MODEL SBB / SBD, Weight Loaded Type

‖ IN-LINE PRESSURE RELIEF ‖

Set Pressure		Air Flow Rates at 100% overpressure (Double of Set Pressure) in 1,000 Nm3/h						
mmH2O	mbar	2"	3"	4"	6"	8"	10"	12"
22	2.2	0.154	0.318	0.642	1.364	2.186	3.621	4.742
25	2.5	0.164	0.337	0.680	1.444	2.313	3.833	5.018
50	4.9	0.231	0.474	0.953	2.025	3.240	5.373	7.032
75	7.4	0.286	0.587	1.174	2.492	3.988	6.612	8.653
100	9.8	0.331	0.682	1.359	2.880	4.613	7.645	10.005
125	12	0.370	0.764	1.518	3.215	5.151	8.536	11.169
150	15	0.405	0.837	1.659	3.511	5.629	9.327	12.201
175	17	0.436	0.903	1.787	3.778	6.062	10.044	13.137
200	20	0.465	0.964	1.906	4.025	6.463	10.707	14.000
225	22	0.492	1.021	2.017	4.255	6.837	11.328	14.808
250	25	0.517	1.075	2.122	4.472	7.190	11.915	15.571
275	27	0.541	1.126	2.222	4.678	7.527	12.473	16.298
300	29	0.564	1.176	2.318	4.874	7.848	13.007	16.992
325	32	0.586	1.223	2.410	5.062	8.157	13.518	17.659
350	34	0.608	1.269	2.499	5.243	8.454	14.010	18.300
375	37	0.629	1.314	2.585	5.416	8.739	14.483	18.918
400	39	0.649	1.357	2.668	5.583	9.015	14.939	19.515
450	44	0.687	1.440	2.825	5.900	9.538	15.802	20.646
500	49	0.723	1.519	2.972	6.194	10.026	16.606	21.703
550	54	0.757	1.594	3.110	6.467	10.482	17.356	22.692
600	59	0.789	1.665	3.240	6.722	10.908	18.054	23.615
700	69	0.847	1.797	3.475	7.181	11.679	19.313	25.288

Notes

1) Flow rates listed in above Table are based on full open valves at 100% overpressure.
2) If the set pressure is not listed above Table, use liner interpolation.
3) If the overpressure is less than 100%, calculate the flow rates using the Factor "C".

‖ Example of Flow Rate Calculation ‖

Model SBB 10"

Set pressure (P_{set}) = 150mmH2O (15mbar)
Valve inlet pressure (P_{in})= 185 mmH2O

1. Calculate overpressure

$$\text{Overpressure} = \frac{P_{in} - P_{set}}{P_{set}} \times 100 = 23\ (\%)$$

2. Determine Factor C from right Table.
   C = 0.54

3. Read flow rate at 100% overpressure corresponding specified set pressure. The flow rate is 9,327Nm3/h from above Table.

4. Calculate flow rate at specified inlet pressure
   Flow rate at 185mmH_2O = 0.54 x 9,327 = 5,037Nm3/h

Factor C for less than 100% negative over-pressure										
%	0	1	2	3	4	5	6	7	8	9
10	0.40	0.42	0.43	0.45	0.46	0.47	0.48	0.49	0.50	0.51
20	0.52	0.53	0.53	0.54	0.55	0.56	0.56	0.57	0.58	0.58
30	0.59	0.60	0.60	0.61	0.62	0.62	0.63	0.64	0.64	0.65
40	0.66	0.66	0.67	0.67	0.68	0.69	0.69	0.70	0.70	0.71
50	0.72	0.72	0.73	0.73	0.74	0.75	0.75	0.76	0.76	0.77
60	0.78	0.78	0.79	0.79	0.80	0.80	0.81	0.82	0.82	0.83
70	0.83	0.84	0.84	0.85	0.86	0.86	0.87	0.87	0.88	0.88
80	0.89	0.89	0.90	0.90	0.91	0.91	0.92	0.93	0.93	0.94
90	0.94	0.95	0.95	0.96	0.96	0.97	0.97	0.98	0.98	0.99

VALVE CAPACITY & SIZING
SBB, Weight loaded

MODEL SBB, Weight Loaded Type

‖ IN-LINE VACUUM RELIEF ‖

Set Vacuum		Air Flow Rates at 100% negative overpressure (Double of Set Vacuum) in 1,000 Nm3/h						
mmH2O	mbar	2"	3"	4"	6"	8"	10"	12"
-22	-2.2	0.129	0.283	0.439	0.956	1.670	2.513	3.560
-25	-2.5	0.136	0.299	0.465	1.013	1.768	2.662	3.767
-50	-4.9	0.188	0.422	0.654	1.425	2.479	3.739	5.278
-75	-7.4	0.233	0.519	0.806	1.752	3.049	4.596	6.489
-100	-9.8	0.270	0.600	0.932	2.024	3.523	5.307	7.497
-125	-12	0.304	0.669	1.041	2.257	3.930	5.918	8.365
-150	-15	0.333	0.730	1.136	2.462	4.290	6.460	9.133
-175	-17	0.359	0.785	1.222	2.649	4.616	6.952	9.829
-200	-20	0.383	0.836	1.301	2.821	4.916	7.405	10.470
-225	-22	0.405	0.883	1.375	2.981	5.196	7.830	11.069
-250	-25	0.426	0.928	1.444	3.132	5.460	8.230	11.633
-275	-27	0.445	0.970	1.510	3.276	5.710	8.610	12.167
-300	-29	0.463	1.011	1.572	3.413	5.948	8.972	12.676
-325	-32	0.480	1.049	1.632	3.543	6.176	9.319	13.162
-350	-34	0.497	1.086	1.690	3.669	6.394	9.650	13.627
-375	-37	0.512	1.122	1.745	3.789	6.603	9.967	14.072
-400	-39	0.528	1.156	1.798	3.904	6.804	10.272	14.500
-450	-44	0.556	1.220	1.898	4.122	7.182	10.846	15.305
-500	-49	0.583	1.280	1.990	4.323	7.533	11.375	16.047
-550	-54	0.608	1.336	2.077	4.509	7.857	11.863	16.733
-600	-59	0.632	1.387	2.157	4.681	8.157	12.313	17.366
-700	-69	0.676	1.479	2.301	4.987	8.692	13.114	18.492

Notes

1) Flow rates listed in above Table are based on full open valves at 100% negative overpressure.
2) If the set vacuum is not listed above Table, use liner interpolation.
3) If the negative overpressure is less than 100%, calculate the flow rates using the Factor "C".

‖ Example of Flow Rate Calculation ‖

Model SBB, 8"

Set vacuum (P_{set}) = -200mmH2O (-20mbar)
Valve inlet pressure (P_{in})= -270 mmH2O

1. Calculate overpressure

$$\text{Overpressure} = \frac{P_{in} - P_{set}}{P_{set}} \times 100 = -35\ (\%)$$

2. Determine Factor C from right Table.
   C = 0.62

3. Read flow rate at 100% negative overpressure corresponding specified set vacuum. The flow rate is 4,916Nm3/h from above Table.

4. Calculate flow rate at specified inlet pressure
   Flow rate at -270mmH_2O = 0.62 x 4916 = 3,048 Nm3/h

Factor C for less than 100% negative over-pressure										
%	0	1	2	3	4	5	6	7	8	9
10	0.40	0.42	0.43	0.45	0.46	0.47	0.48	0.49	0.50	0.51
20	0.52	0.53	0.53	0.54	0.55	0.56	0.56	0.57	0.58	0.58
30	0.59	0.60	0.60	0.61	0.62	0.62	0.63	0.64	0.64	0.65
40	0.66	0.66	0.67	0.67	0.68	0.69	0.69	0.70	0.70	0.71
50	0.72	0.72	0.73	0.73	0.74	0.75	0.75	0.76	0.76	0.77
60	0.78	0.78	0.79	0.79	0.80	0.80	0.81	0.82	0.82	0.83
70	0.83	0.84	0.84	0.85	0.86	0.86	0.87	0.87	0.88	0.88
80	0.89	0.89	0.90	0.90	0.91	0.91	0.92	0.93	0.93	0.94
90	0.94	0.95	0.95	0.96	0.96	0.97	0.97	0.98	0.98	0.99

VALVE CAPACITY & SIZING
SBF / SBG, Spring loaded

MODEL SBF / SBG, Spring Loaded Type

END-OF-LINE PRESSURE RELIEF

Set Pressure		Air Flow Rates at 100% overpressure (Double of Set Pressure) in 1,000 Nm3/h						
mmH2O	mbar	2"	3"	4"	6"	8"	10"	12"
700	69	0.822	1.609	2.878	6.585	10.650	15.929	22.252
750	74	0.851	1.650	2.952	6.755	10.930	16.341	22.827
800	78	0.879	1.691	3.026	6.924	11.208	16.752	23.399
850	83	0.907	1.732	3.099	7.093	11.485	17.160	23.969
900	88	0.934	1.773	3.172	7.260	11.761	17.567	24.535
1,000	98	0.987	1.855	3.317	7.593	12.309	18.374	25.661
1,200	118	1.088	2.015	3.603	8.249	13.388	19.968	27.882
1,500	147	1.227	2.250	4.022	9.212	14.967	22.303	31.137
1,750	172	1.333	2.441	4.363	9.994	16.249	24.202	33.783
2,000	196	1.434	2.628	4.697	10.759	17.500	26.058	36.368
2,250	221	1.529	2.810	5.022	11.507	18.722	27.872	38.896
2,500	245	1.619	2.989	5.341	12.238	19.916	29.646	41.368
3,000	294	1.789	3.334	5.958	13.653	22.221	33.078	46.148
3,500	343	1.949	3.664	6.548	15.006	24.422	36.361	50.721
4,000	392	2.100	3.981	7.114	16.302	26.527	39.502	55.097
4,500	441	2.244	4.284	7.656	17.554	28.540	42.510	59.287
5,000	490	2.383	4.574	8.175	18.733	30.467	45.391	63.301
5,500	539	2.517	4.852	8.673	19.873	32.313	48.151	67.148
6,000	588	2.647	5.118	9.151	20.967	34.084	50.796	70.836
7,000	686	2.894	5.619	10.051	23.025	37.414	55.767	77.769
10,000	980	3.553	6.899	12.362	28.303	45.983	68.469	95.528
10,500	1,029	3.652	7.085	12.699	29.071	47.236	70.310	98.108

Notes

1) Flow rates listed in above Table are based on full open valves at 100% overpressure.
2) If the set pressure is not listed above Table, use liner interpolation.
3) If the overpressure is less than 100%, calculate the flow rates using the Factor "C".

Example of Flow Rate Calculation

Model SBF 4", Spring loaded

Set pressure (P_{set}) = 2000mmH2O (196mbar)
Valve inlet pressure (P_{in})= 3200 mmH2O

1. Calculate overpressure

$$\text{Overpressure} = \frac{P_{in} - P_{set}}{P_{set}} \times 100 = 60\ (\%)$$

2. Determine Factor C from right Table.
   C = 0.71

3. Read flow rate at 100% overpressure corresponding specified set pressure. The flow rate is 4,697Nm3/h from above Table.

4. Calculate flow rate at specified inlet pressure
   Flow rate at 3200mmH_2O = 0.71 x 4,697 = 3.335Nm3/h

Factor C for less than 100% over-pressure										
%	0	1	2	3	4	5	6	7	8	9
10	-	-	-	-	-	0.20	0.21	0.23	0.24	0.25
20	0.27	0.28	0.29	0.31	0.32	0.33	0.35	0.36	0.37	0.39
30	0.40	0.41	0.42	0.43	0.45	0.46	0.47	0.48	0.49	0.50
40	0.51	0.52	0.53	0.54	0.56	0.57	0.58	0.59	0.60	0.61
50	0.62	0.62	0.63	0.64	0.65	0.66	0.67	0.68	0.69	0.70
60	0.71	0.72	0.72	0.73	0.74	0.75	0.76	0.77	0.77	0.78
70	0.79	0.80	0.81	0.81	0.82	0.83	0.84	0.84	0.85	0.86
80	0.87	0.87	0.88	0.89	0.89	0.90	0.91	0.91	0.92	0.93
90	0.93	0.94	0.95	0.95	0.96	0.97	0.97	0.98	0.99	0.99

MODEL SBF / SBFV, Spring Loaded Type

VALVE CAPACITY & SIZING
SBF / SBFV, Spring loaded

END-OF-LINE VACUUM RELIEF

Set Vacuum		Air Flow Rates at 100% negative overpressure (Double of Set Pressure) in 1,000 Nm3/h						
mmH2O	mbar	2"	3"	4"	6"	8"	10"	12"
-700	-69	0.395	0.864	1.491	3.387	5.554	8.544	11.902
-750	-74	0.407	0.892	1.539	3.495	5.732	8.816	12.290
-800	-78	0.420	0.919	1.585	3.600	5.906	9.081	12.666
-850	-83	0.432	0.945	1.631	3.703	6.074	9.339	13.031
-900	-88	0.443	0.971	1.675	3.803	6.238	9.590	13.384
-950	-93	0.455	0.995	1.718	3.900	6.398	9.834	13.728
-1,000	-98	0.466	1.019	1.759	3.994	6.554	10.072	14.061
-1,100	-108	0.487	1.066	1.840	4.176	6.852	10.528	14.699
-1,200	-118	0.507	1.109	1.916	4.348	7.135	10.959	15.300
-1,300	-127	0.525	1.151	1.988	4.511	7.403	11.368	15.869
-1,400	-137	0.543	1.190	2.056	4.665	7.657	11.755	16.406
-1,500	-147	0.560	1.227	2.120	4.811	7.897	12.122	16.915
-1,600	-157	0.576	1.262	2.182	4.950	8.125	12.469	17.397
-1,700	-167	0.591	1.296	2.240	5.081	8.341	12.798	17.855
-1,800	-176	0.605	1.327	2.295	5.206	8.545	13.109	18.289
-1,900	-186	0.619	1.357	2.347	5.324	8.738	13.404	18.702
-2,000	-196	0.631	1.385	2.396	5.436	8.922	13.683	19.096
-2,100	-206	0.643	1.412	2.443	5.541	9.095	13.947	19.470
-2,200	-216	0.655	1.437	2.487	5.642	9.260	14.197	19.827
-2,300	-225	0.665	1.461	2.529	5.737	9.415	14.434	20.168
-2,400	-235	0.675	1.484	2.569	5.827	9.563	14.658	20.494
-2,500	-245	0.685	1.505	2.607	5.912	9.703	14.871	20.806

Notes

1) Flow rates listed in above Table are based on full open valves at 100% negative overpressure.
2) If the set vacuum is not listed above Table, use liner interpolation.
3) If the negative overpressure is less than 100%, calculate the flow rates using the Factor "C".

Example of Flow Rate Calculation

Model SBF 8", Spring loaded

Set vacuum (P_{set}) = -850mmH2O (-83mbar)
Valve inlet pressure (P_{in})= -1000 mmH2O

1. Calculate overpressure

$$\text{Overpressure} = \frac{P_{in} - P_{set}}{P_{set}} \times 100 = -18\ (\%)$$

2. Determine Factor C from right Table.
   C = 0.24

3. Read flow rate at 100% negative overpressure corresponding specified set vacuum. The flow rate is 6,074Nm3/h from above Table.

4. Calculate flow rate at specified inlet pressure
   Flow rate at -1000mmH_2O = 0.24 x 6,074 = 1,458Nm3/h

Factor C for less than 100% negative over-pressure										
%	0	1	2	3	4	5	6	7	8	9
10	-	-	-	-	-	0.20	0.21	0.23	0.24	0.25
20	0.27	0.28	0.29	0.31	0.32	0.33	0.35	0.36	0.37	0.39
30	0.40	0.41	0.42	0.43	0.45	0.46	0.47	0.48	0.49	0.50
40	0.51	0.52	0.53	0.54	0.56	0.57	0.58	0.59	0.60	0.61
50	0.62	0.62	0.63	0.64	0.65	0.66	0.67	0.68	0.69	0.70
60	0.71	0.72	0.72	0.73	0.74	0.75	0.76	0.77	0.77	0.78
70	0.79	0.80	0.81	0.81	0.82	0.83	0.84	0.84	0.85	0.86
80	0.87	0.87	0.88	0.89	0.89	0.90	0.91	0.91	0.92	0.93
90	0.93	0.94	0.95	0.95	0.96	0.97	0.97	0.98	0.99	0.99

MODEL SBB / SBD, Spring Loaded Type

VALVE CAPACITY & SIZING SBB / SBD, Spring loaded

IN-LINE PRESSURE RELIEF

Set Pressure		Air Flow Rates at 100% overpressure (Double of Set Pressure) in 1,000 Nm3/h						
mmH2O	mbar	2"	3"	4"	6"	8"	10"	12"
700	69	0.822	1.609	2.878	6.585	10.650	15.929	22.252
750	74	0.851	1.650	2.952	6.755	10.930	16.341	22.827
800	78	0.879	1.691	3.026	6.924	11.208	16.752	23.399
850	83	0.907	1.732	3.099	7.093	11.485	17.160	23.969
900	88	0.934	1.773	3.172	7.260	11.761	17.567	24.535
1,000	98	0.987	1.855	3.317	7.593	12.309	18.374	25.661
1,200	118	1.088	2.015	3.603	8.249	13.388	19.968	27.882
1,500	147	1.227	2.250	4.022	9.212	14.967	22.303	31.137
1,750	172	1.333	2.441	4.363	9.994	16.249	24.202	33.783
2,000	196	1.434	2.628	4.697	10.759	17.500	26.058	36.368
2,250	221	1.529	2.810	5.022	11.507	18.722	27.872	38.896
2,500	245	1.619	2.989	5.341	12.238	19.916	29.646	41.368
3,000	294	1.789	3.334	5.958	13.653	22.221	33.078	46.148
3,500	343	1.949	3.664	6.548	15.006	24.422	36.361	50.721
4,000	392	2.100	3.981	7.114	16.302	26.527	39.502	55.097
4,500	441	2.244	4.284	7.656	17.554	28.540	42.510	59.287
5,000	490	2.383	4.574	8.175	18.733	30.467	45.391	63.301
5,500	539	2.517	4.852	8.673	19.873	32.313	48.151	67.148
6,000	588	2.647	5.118	9.151	20.967	34.084	50.796	70.836
7,000	686	2.894	5.619	10.051	23.025	37.414	55.767	77.769
10,000	980	3.553	6.899	12.362	28.303	45.983	68.469	95.528
10,500	1,029	3.652	7.085	12.699	29.071	47.236	70.310	98.108

Notes

1) Flow rates listed in above Table are based on full open valves at 100% overpressure.
2) If the set pressure is not listed above Table, use liner interpolation.
3) If the overpressure is less than 100%, calculate the flow rates using the Factor "C".

Example of Flow Rate Calculation

Model SBB 4", Spring loaded

Set pressure (P_{set}) = 1200mmH2O (118mbar)
Valve inlet pressure (P_{in})= 1700 mmH2O

1. Calculate overpressure

$$\text{Overpressure} = \frac{P_{in} - P_{set}}{P_{set}} \times 100 = 42\ (\%)$$

2. Determine Factor C from right Table.
   C = 0.53

3. Read flow rate at 100% overpressure corresponding specified set pressure. The flow rate is 3,603Nm3/h from above Table.

4. Calculate flow rate at specified inlet pressure
   Flow rate at 1700mmH_2O = 0.53 x 3,603 = 1,910Nm3/h

Factor C for less than 100% over-pressure										
%	0	1	2	3	4	5	6	7	8	9
10	-	-	-	-	-	0.20	0.21	0.23	0.24	0.25
20	0.27	0.28	0.29	0.31	0.32	0.33	0.35	0.36	0.37	0.39
30	0.40	0.41	0.42	0.43	0.45	0.46	0.47	0.48	0.49	0.50
40	0.51	0.52	0.53	0.54	0.56	0.57	0.58	0.59	0.60	0.61
50	0.62	0.62	0.63	0.64	0.65	0.66	0.67	0.68	0.69	0.70
60	0.71	0.72	0.72	0.73	0.74	0.75	0.76	0.77	0.77	0.78
70	0.79	0.80	0.81	0.81	0.82	0.83	0.84	0.84	0.85	0.86
80	0.87	0.87	0.88	0.89	0.89	0.90	0.91	0.91	0.92	0.93
90	0.93	0.94	0.95	0.95	0.96	0.97	0.97	0.98	0.99	0.99

VALVE CAPACITY & SIZING
SBB, Spring loaded

MODEL SBB, Spring Loaded Type

IN-LINE VACUUM RELIEF

Set Vacuum		Air Flow Rates at 100% negative overpressure (Double of Set Pressure) in 1,000 Nm3/h						
mmH2O	mbar	2"	3"	4"	6"	8"	10"	12"
-700	-69	0.395	0.864	1.491	3.387	5.554	8.544	11.902
-750	-74	0.407	0.892	1.539	3.495	5.732	8.816	12.290
-800	-78	0.420	0.919	1.585	3.600	5.906	9.081	12.666
-850	-83	0.432	0.945	1.631	3.703	6.074	9.339	13.031
-900	-88	0.443	0.971	1.675	3.803	6.238	9.590	13.384
-950	-93	0.455	0.995	1.718	3.900	6.398	9.834	13.728
-1,000	-98	0.466	1.019	1.759	3.994	6.554	10.072	14.061
-1,100	-108	0.487	1.066	1.840	4.176	6.852	10.528	14.699
-1,200	-118	0.507	1.109	1.916	4.348	7.135	10.959	15.300
-1,300	-127	0.525	1.151	1.988	4.511	7.403	11.368	15.869
-1,400	-137	0.543	1.190	2.056	4.665	7.657	11.755	16.406
-1,500	-147	0.560	1.227	2.120	4.811	7.897	12.122	16.915
-1,600	-157	0.576	1.262	2.182	4.950	8.125	12.469	17.397
-1,700	-167	0.591	1.296	2.240	5.081	8.341	12.798	17.855
-1,800	-176	0.605	1.327	2.295	5.206	8.545	13.109	18.289
-1,900	-186	0.619	1.357	2.347	5.324	8.738	13.404	18.702
-2,000	-196	0.631	1.385	2.396	5.436	8.922	13.683	19.096
-2,100	-206	0.643	1.412	2.443	5.541	9.095	13.947	19.470
-2,200	-216	0.655	1.437	2.487	5.642	9.260	14.197	19.827
-2,300	-225	0.665	1.461	2.529	5.737	9.415	14.434	20.168
-2,400	-235	0.675	1.484	2.569	5.827	9.563	14.658	20.494
-2,500	-245	0.685	1.505	2.607	5.912	9.703	14.871	20.806

Notes

1) Flow rates listed in above Table are based on full open valves at 100% negative overpressure.
2) If the set vacuum is not listed above Table, use liner interpolation.
3) If the negative overpressure is less than 100%, calculate the flow rates using the Factor "C".

Example of Flow Rate Calculation

Model SBB 6", Spring loaded

Set vacuum (P_{set}) = -900mmH2O (-88mbar)
Valve inlet pressure (P_{in})= -1250 mmH2O

1. Calculate overpressure

$$\text{Overpressure} = \frac{P_{in} - P_{set}}{P_{set}} \times 100 = -39\ (\%)$$

2. Determine Factor C from right Table.
   C = 0.50

3. Read flow rate at 100% negative overpressure corresponding specified set vacuum. The flow rate is 3,803Nm3/h from above Table.

4. Calculate flow rate at specified inlet pressure
   Flow rate at -1250mmH_2O = 0.50 x 3,803 = 1,902Nm3/h

Factor C for less than 100% negative over-pressure										
%	0	1	2	3	4	5	6	7	8	9
10	-	-	-	-	-	0.20	0.21	0.23	0.24	0.25
20	0.27	0.28	0.29	0.31	0.32	0.33	0.35	0.36	0.37	0.39
30	0.40	0.41	0.42	0.43	0.45	0.46	0.47	0.48	0.49	0.50
40	0.51	0.52	0.53	0.54	0.56	0.57	0.58	0.59	0.60	0.61
50	0.62	0.62	0.63	0.64	0.65	0.66	0.67	0.68	0.69	0.70
60	0.71	0.72	0.72	0.73	0.74	0.75	0.76	0.77	0.77	0.78
70	0.79	0.80	0.81	0.81	0.82	0.83	0.84	0.84	0.85	0.86
80	0.87	0.87	0.88	0.89	0.89	0.90	0.91	0.91	0.92	0.93
90	0.93	0.94	0.95	0.95	0.96	0.97	0.97	0.98	0.99	0.99

VALVE CAPACITY & SIZING
SBV, Vacuum Relief

MODEL SBV

END-OF-LINE VACUUM RELIEF

Set Vacuum		Air Flow Rates at 100% negative overpressure (Double of Set Pressure) in 1,000 Nm3/h						
mmH2O	mbar	2"	3"	4"	6"	8"	10"	12"
-22	-2.2	0.125	0.274	0.426	0.927	1.620	2.438	3.453
-25	-2.5	0.132	0.290	0.451	0.983	1.715	2.582	3.654
-50	-4.9	0.183	0.409	0.635	1.382	2.405	3.627	5.119
-75	-7.4	0.226	0.503	0.782	1.700	2.958	4.459	6.294
-100	-9.8	0.262	0.582	0.904	1.963	3.417	5.148	7.272
-125	-12	0.294	0.649	1.009	2.189	3.812	5.741	8.114
-150	-15	0.323	0.708	1.102	2.389	4.162	6.266	8.859
-175	-17	0.348	0.761	1.185	2.569	4.478	6.743	9.534
-200	-20	0.372	0.811	1.262	2.736	4.769	7.183	10.156
-225	-22	0.393	0.857	1.334	2.892	5.040	7.595	10.737
-250	-25	0.413	0.900	1.401	3.038	5.296	7.983	11.284
-275	-27	0.432	0.941	1.465	3.177	5.539	8.352	11.802
-300	-29	0.449	0.980	1.525	3.310	5.770	8.703	12.296
-325	-32	0.466	1.018	1.583	3.437	5.991	9.039	12.767
-350	-34	0.482	1.054	1.639	3.559	6.202	9.360	13.218
-375	-37	0.497	1.088	1.692	3.675	6.405	9.668	13.650
-400	-39	0.512	1.121	1.744	3.787	6.600	9.964	14.065
-450	-44	0.540	1.184	1.841	3.998	6.967	10.520	14.846
-500	-49	0.566	1.242	1.931	4.193	7.307	11.033	15.566
-550	-54	0.590	1.296	2.014	4.373	7.621	11.507	16.231
-600	-59	0.613	1.346	2.092	4.540	7.912	11.944	16.845
-700	-69	0.655	1.435	2.232	4.838	8.431	12.720	17.938

Notes

1) Flow rates listed in above Table are based on full open valves at 100% negative overpressure.
2) If the set vacuum is not listed above Table, use liner interpolation.
3) If the negative overpressure is less than 100%, calculate the flow rates using the Factor "C".

Example of Flow Rate Calculation

Model SBV, 4"

Set vacuum (P_{set}) = -50mmH2O (-4.9mbar)
Valve inlet pressure (P_{in})= -80 mmH2O

1. Calculate overpressure

$$\text{Overpressure} = \frac{P_{in} - P_{set}}{P_{set}} \times 100 = -60\ (\%)$$

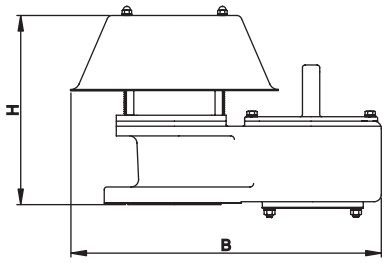
2. Determine Factor C from right Table.
   C = 0.71

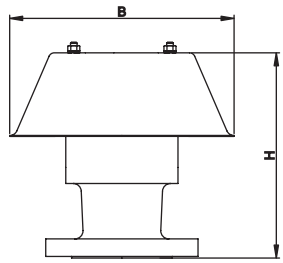
3. Read flow rate at 100% negative overpressure corresponding specified set vacuum. The flow rate is 635Nm3/h from above Table.

4. Calculate flow rate at specified inlet pressure
   Flow rate at -80mmH_2O = 0.71 x 635 = 451Nm3/h

Factor C for less than 100% negative over-pressure										
%	0	1	2	3	4	5	6	7	8	9
10	-	-	-	-	-	0.20	0.21	0.23	0.24	0.25
20	0.27	0.28	0.29	0.31	0.32	0.33	0.35	0.36	0.37	0.39
30	0.40	0.41	0.42	0.43	0.45	0.46	0.47	0.48	0.49	0.50
40	0.51	0.52	0.53	0.54	0.56	0.57	0.58	0.59	0.60	0.61
50	0.62	0.62	0.63	0.64	0.65	0.66	0.67	0.68	0.69	0.70
60	0.71	0.72	0.72	0.73	0.74	0.75	0.76	0.77	0.77	0.78
70	0.79	0.80	0.81	0.81	0.82	0.83	0.84	0.84	0.85	0.86
80	0.87	0.87	0.88	0.89	0.89	0.90	0.91	0.91	0.92	0.93
90	0.93	0.94	0.95	0.95	0.96	0.97	0.97	0.98	0.99	0.99

DIMENSIONS



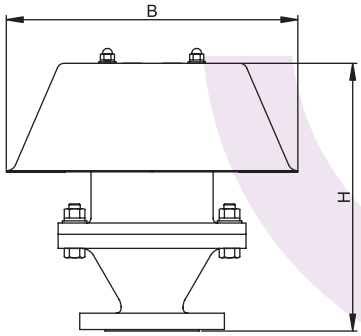


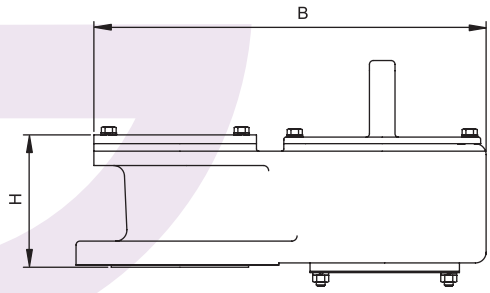
MODEL SBF

Size (inch)	H (mm)	B (mm)
2"	205	320
3"	235	400
4"	270	450
6"	305	590
8"	350	690
10"	365	800
12"	435	930

MODEL SBG

Size (inch)	H (mm)	B (mm)
2"	205	200
3"	235	270
4"	270	280
6"	305	345
8"	350	400
10"	365	400
12"	435	500





MODEL SBV

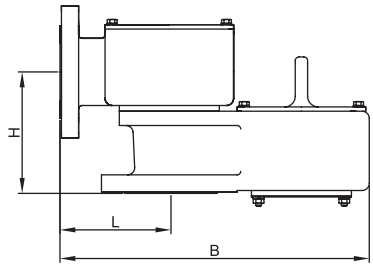
Size (inch)	H (mm)	B (mm)
2"	290	200
3"	305	270
4"	350	280
6"	385	345
8"	395	400
10"	405	400
12"	455	500

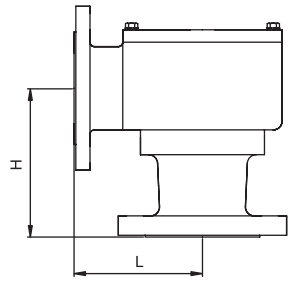
MODEL SBFV

Size (inch)	H (mm)	B (mm)
2"	110	280
3"	125	350
4"	130	410
6"	165	500
8"	210	605
10"	225	715
12"	260	855

Actual dimensions may vary from these listed dimensions due to variations or revisions of specifications. The dimensions may change without notice. For more information, consult our factory.

DIMENSIONS





MODEL STA

Size (inch)	H (mm)	L (mm)	B (mm)
1"x1"	-	-	-
2"x2"	145	115	340
3"x3"	175	145	415
4"x4"	190	180	495
6"x6"	235	215	605
8"x8"	285	300	775
10"x10"	325	300	860
12"x12"	400	360	1030

MODEL SBD

Size (inch)	H (mm)	L (mm)
1"x1"	130	135
2"x2"	145	115
3"x3"	175	145
4"x4"	190	180
6"x6"	235	215
8"x8"	285	300
10"x10"	325	300
12"x12"	400	360

MODEL SBBU

Size (inch)	H (mm)	L (mm)	B (mm)
2"x3"	145	115	340
3"x4"	175	145	415
4"x6"	190	180	495
6"x8"	235	215	605
8"x10"	285	300	775
10"x12"	325	300	860
12"x14"	400	360	1030

MODEL SBDU

Size (inch)	H (mm)	L (mm)
2"x3"	145	115
3"x4"	175	145
4"x6"	190	180
6"x8"	235	215
8"x10"	285	300
10"x12"	325	300
12"x14"	400	360

HOW TO ORDER

MODEL	TYPE	INLET SIZE	MATERIALS	FLANGE DRILLING	OPTION
SBF SBG SBB SBD SBV SBFV SBE SBBU SBDU	W: Weight loaded for P/V sides S: Spring loaded for pressure side V: Spring loaded for vacuum side D: Spring loaded for P/V sides (Dual spring)	01: 1" 1A: 1-1/2" 02: 2" 2A: 2-1/2" 03: 3" 04: 4" 06: 6" 08: 8" 10: 10" 12: 12" SS: Special	Body Seat Pallet C: Carbon Steel 4: 304 S.S 5: 304L S.S 6: 316 S.S 7: 316L S.S A: Aluminum S: Special Material	AR: ANSI Class 150 RF AF: ANSI Class 150 FF KR: KS/JIS 10K RF KF: KS/JIS 10K FF NO: No Drilling SS: Special	0: No Option J: Steam Jacket S: Special

EXAMPLE **SBF-W-02-C44-AR-0**

means a 2" model SBF weight loaded relief valve for pressure & vacuum sides, with carbon steel body, 304 SS seat, 304 SS pallet, ANSI Class 150 RF flange drilling and no other option.

NOTE

SEWON Q&TECH CO., LTD.

■ HEAD OFFICE / FACTORY
1038-2, CHUNGOK-RI, JUCHON-MYUN, KIMHAE,
KYEONG-NAM, KOREA. 621-840.
Tel: +82 55-323-5894~7
Fax: +82 55-323-5898
http://www.swqt.co.kr
http://www.sewon-ind.co.kr
E-mail: sewon@sewon-ind.co.kr

■ SEOUL OFFICE
3FL, 29-13, KARAK-DONG, SONGPA-KU,
SEOUL, KOREA. 138-160
Tel: +82-2-406-5013~4 / 406-7021
Fax: +82-2-406-7022
E-mail: helpdesk@sewon-ind.co.kr