



Crosby Series BP OMNI-TRIM® Pressure Relief Valves for applications involving variable back pressure.

Features

The balanced piston design offsets the effects of variable back pressure on valve set pressure. Series BP valves can also handle applications involving high built-up back pressure.

- Cost Reduction
 - Reduced replacement parts inventories required with unique and versatile design approved for both liquid and vapor applications.
 - Maximum corrosion resistance with stainless steel trim. All 316 stainless steel, Monel®, Hastelloy® and NACE¹ optional construction are available.
 - Inexpensive O-rings are the only recommended spare parts.
 - Reduced piping requirements.
 - Costly bellows are not required.
- Reduced Product Loss
 - Minimized product loss with superior seat tightness.
- Increased Reliability
 - Fewer parts in streamlined design.
 - Reliable blowdown without the need for adjustment.
- Certifications
 - Relieving capacities certified by National Board of Boiler and Pressure Vessel Inspectors. Certification includes liquid, gas and vapor.
 - Valves manufactured in accordance with the requirements of ASME Boiler and Pressure Vessel Code, Section VIII and Section III.

Technical Data

Sizes: 3/4" x 1", 1" x 1"

Set Pressures: 50 to 1500 psig
[3.45 to 103.44 barg]

Temperature Range: -20 to +400°F
[-28 to +204°C]

Note: Contact your sales representative for compliance to NACE MR-0175-2003 or later requirements.



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Introduction

Crosby's Series BP OMNI-TRIM® pressure relief valves have a simplified, single trim design with superior application versatility. They provide overpressure protection for low and medium flow applications in refineries, chemical and petrochemical plants, power plant auxiliary systems, and pulp and paper mills.

Crosby's Series BP OMNI-TRIM® pressure relief valves provide overpressure protection on air, gas, vapor, liquid and thermal relief service. The maximum fixed blowdown is 25% or less. Standardization of components in the BP design provides easy assembly, durability, and less repair, maintenance and inventory costs. Crosby Series BP is a reliable pressure relief valve for industrial applications involving variable back pressure. The design and options provide maximum versatility and premium performance.

The piston O-ring (Figure 1) is used to balance the Series BP. The diameter of the piston O-ring is the same as the seat diameter (Figure 2) and offsets the effects of superimposed variable back pressure and built-up back pressure in excess of ten percent of the set pressure.

Effective orifice areas are 0.074 and 0.110 in² (47.74 and 70.96 mm²). Standard materials of construction are carbon steel cylinder; 316 stainless steel base, disc insert, disc holder and guide; and 17-7PH stainless steel spring.

Optional materials of construction are available for special applications or conditions involving corrosive fluids. In addition, materials are available conforming to NACE MR-0175¹. Special cleanings, coatings and lubricants are also available on application.

For applications at pressures and temperatures not listed in this catalog, consult Crosby or your local authorized representative.

ASME Code Requirements

Series BP pressure relief valves are manufactured in accordance with requirements of ASME Boiler and Pressure Vessel Code, Section VIII and Section III.

Back Pressure

The maximum allowable back pressure in liquid applications is 70% of set pressure. The maximum back pressure in vapor and gas applications is 50% of set pressure. For liquid thermal relief applications, the maximum allowable

back pressure is 90% of set pressure. Note: The maximum back pressure rating is 400 psig. For back pressures greater than 400 psig, consult the factory.

Certified Capacities

Capacity certification includes air, liquids, gas and vapor. Relieving capacities are certified by National Board of Boiler and Pressure Vessel Inspectors.

Seat Design

Series BP pressure relief valves are available with elastomer or TFE O-ring soft seats for optimum seat tightness and minimal maintenance. Details on O-ring materials and pressure and temperature limitations are on page 6. All O-rings are standard commercial sizes.

Blowdown

Blowdown is the difference between the opening and reseating pressure of a pressure relief valve expressed as a percentage of set pressure. Series BP blowdown is fixed and non-adjustable (typically 25% or less) on liquid, gas and vapor applications.

Optional Connections

Series BP valves may be furnished with optional flanged connections up to ANSI Class 1500. Standard flanged connections are lap joint stub end construction.

Note: Contact your sales representative for compliance to NACE MR-0175-2003 or later requirements.

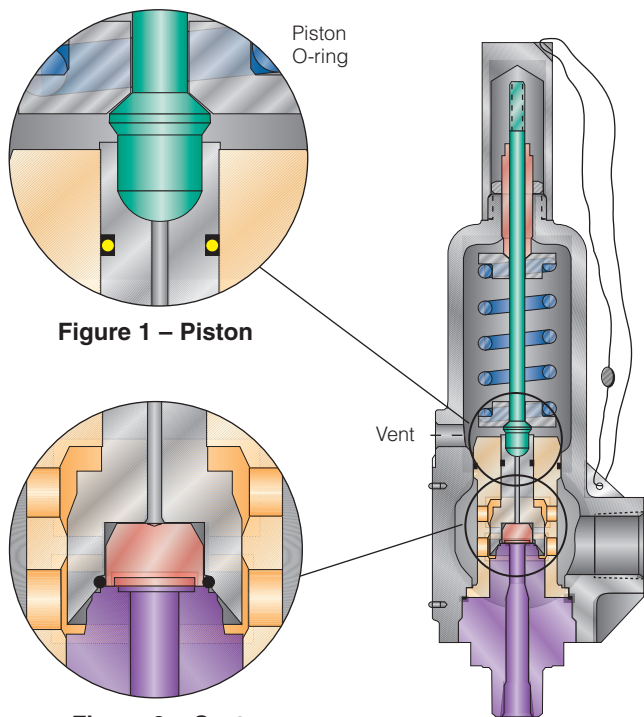


Figure 1 – Piston

Figure 2 – Seat

The cylinder chamber is isolated by the Guide O-ring and is vented to atmosphere.

Style Designations

1 st and 2 nd Digits	3 rd Digit	4 th Digit	5 th Digit	6 th Digit	7 th Digit	8 th Digit	9 th Digit
Series	Effective Orifice Area	Maximum Pressure ¹	Seat Material ²	Materials of Construction ³	Connection Size - NPS ⁴	Connection Type ^{5,6}	Caps and Lifting Levers
BP: Back Pressure Balanced Threaded Valve	(5) 0.074 in ² [47.74 mm ²] (6) 0.110 in ² [70.96 mm ²]	(1) 1500 psig [103.44 barg]	(2) BUNA-N (3) Viton® (4) Ethylene Propylene Rubber (EPR) (5) Kalrez® (6) TFE ⁷ (7) Other (Specify)	(0) Standard materials, carbon steel cylinder, 316 stainless steel base, disc insert, disc holder and guide, 17-7PH stainless steel spring (1) All 316 stainless steel materials (3) Carbon steel cylinder, Monel® base, disc insert, disc holder, and guide, Inconel® X750 spring (4) All Monel® materials, Inconel® X750 spring (5) Carbon steel cylinder, Hastelloy® C base, disc insert, disc holder and guide, Inconel® X750 spring (6) All Hastelloy® C materials (7) NACE MR-0175 ⁸ , carbon steel cylinder, 316 stainless steel base, disc insert, disc holder and guide, Inconel® X750 spring with 316 stainless steel washers (8) Other (specify)	(1) 3/4 x 1 (2) 1 x 1	(M) MNPT x FNPT (F) FNPT x FNPT (1) 150# RF x 150# RF (2) 300# RF x 150# RF (3) 600# RF x 150# RF (4) 1500# RF x 300# RF (7) Other (Specify)	(A) Standard Threaded Cap (B) Threaded Cap with Test Rod (D) Packed Lifting Lever (E) Packed Lifting Lever with Test Rod

Available Options

- Special Materials not catalogued such as Alloy 20, Titanium, etc.
- O-ring seat materials not catalogued.
- Position indicators, proximity switches, etc.

How to Order

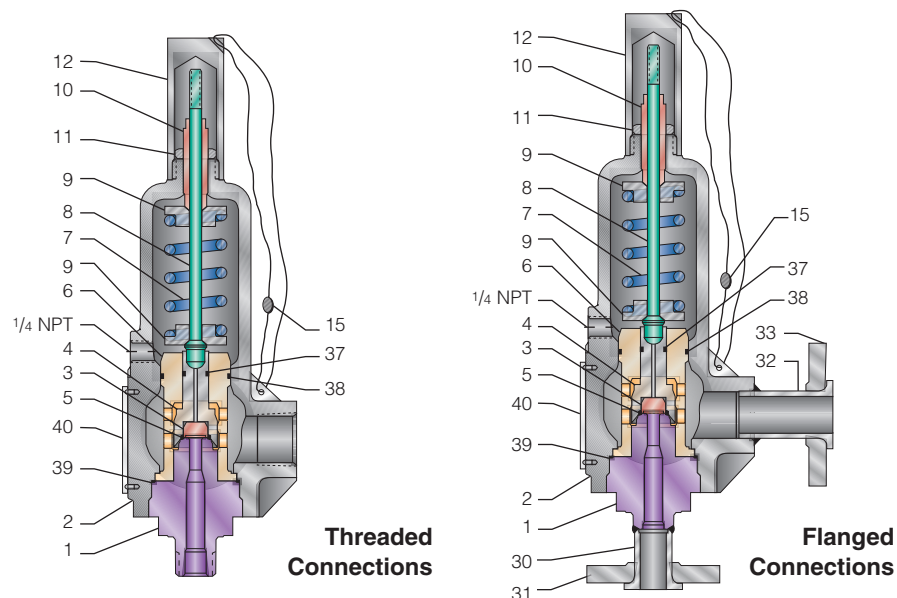
Example:

To specify a 3/4 x 1, MNPT x FNPT Series BP valve, with a 0.074 in² [47.74 mm²] effective area, BUNA-N seats, all 316 stainless steel materials, standard threaded cap, process fluid operating temperature at 150°F [66°C], and set at 175 psig [12.07 barg], use the following style designation: BP51211MA

Notes

1. See page 7 for appropriate maximum set pressures.
2. Seat and seal materials are identical except for valves with TFE seats. Seal material for valves with TFE seats is Viton® unless otherwise specified.
3. See page 4 for complete listing of materials of construction.
4. See page 7 for appropriate inlet and outlet sizes for each effective orifice area.
5. Optional flange facings (such as ring type joint, 125-200RA), if required, must always be specified.
6. Optional flange materials (such as Monel® and Hastelloy®), if required, must always be specified.
7. TFE = Tetrafluorethylene.
8. Contact your sales representative for compliance to NACE MR-0175-2003 or later requirements.

Materials of Construction

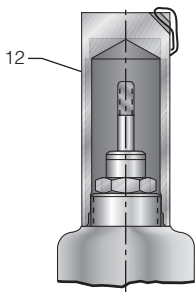


Material Designation	Standard Materials		Variations From Standard Materials (1-7)				
	(0)	(1)	(3)	(4)	(5)	(6)	(7)
No. Part Name	20 to +400°F [-28 to +204°C]	-20 to +400°F [-28 to +204°C]	-20 to +400°F [-28 to +204°C]	-20 to +400°F [-28 to +204°C]	-20 to +400°F [-28 to +204°C]	-20 to +400°F [-28 to +204°C]	NACE⁵ MR-0175 Level II -20 to +400°F [-28 to +204°C]
1 Base	316 SS	316 SS	Monel®	Monel®	Hastelloy® C	Hastelloy® C	316 SS
2 Cylinder	CS	316 SS	CS	Monel®	CS	Hastelloy® C	CS
	SA-216 Gr. WCB	SA-351 Gr. CF8M	SA-216 Gr. WCB	Gr. M35-1	SA-216 Gr. WCB	Gr. CW-12MW	SA-216 Gr. WCB
3 Disc Insert ¹	316 SS	316 SS	Monel®	Monel®	Hastelloy® C	Hastelloy® C	316 SS
4 Disc Holder	316 SS	316 SS	Monel®	Monel®	Hastelloy® C	Hastelloy® C	316 SS
5 Seat O-ring ^{2, 1}	Specify	Specify	Specify	Specify	Specify	Specify	Specify
6 Guide	316 SS	316 SS	Monel®	Monel®	Hastelloy® C	Hastelloy® C	316 SS
7 Spindle	416 SS	316 SS	416 SS	Monel®	416 SS	Hastelloy® C	316 SS
8 Spring	17-7PH SS	316 SS	Inconel® X750	Inconel® X750	Inconel® X750	Hastelloy® C	Inconel® X750
9 Spring Washers	416 SS	316 SS	316 SS	Monel®	316 SS	Hastelloy® C	316 SS
10 Adjusting Bolt	416 SS	316 SS	416 SS	Monel®	416 SS	Hastelloy® C	316 SS
11 Adjusting Bolt Nut	CS	316 SS	CS	Monel®	CS	Hastelloy® C	316 SS
12 Type A Cap ³	CS	316 SS	CS	Monel®	CS	Hastelloy® C	CS
13 Nameplate ⁴	300 Series SS	300 Series SS	300 Series SS	300 Series SS	300 Series SS	300 Series SS	300 Series SS
14 Drive Screws ⁴	SS	SS	SS	SS	SS	SS	SS
15 Seal and Wire	Lead and SS	Lead and SS	Lead and SS	Lead and SS	Lead and SS	Lead and SS	Lead and SS
30 Lap Joint Stub End (Inlet)	316 SS	316 SS	Monel®	Monel®	Hastelloy® C	Hastelloy® C	316 SS
31 Inlet Flange	CS	316 SS	CS	CS	CS	CS	CS
32 Lap Joint Stub End (Outlet)	CS	316 SS	CS	Monel®	CS	Hastelloy® C	CS
33 Outlet Flange	CS	316 SS	CS	CS	CS	CS	CS
37 O-ring Piston ¹	Specify	Specify	Specify	Specify	Specify	Specify	Specify
38 O-ring Guide ¹	Specify	Specify	Specify	Specify	Specify	Specify	Specify
39 O-ring Cylinder ¹	Specify	Specify	Specify	Specify	Specify	Specify	Specify
40 Caution Plate	300 Series SS	300 Series SS	300 Series SS	300 Series SS	300 Series SS	300 Series SS	300 Series SS

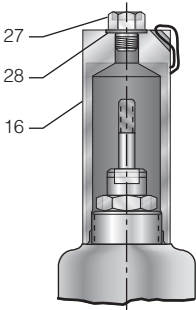
Notes

1. Recommended spare part.
2. Refer to page 6 for pressure/temperature limits and available O-ring materials.
3. Refer to page 5 for other available cap styles and materials.
4. Not shown.
5. Contact your sales representative for compliance to NACE MR-0175-2003 or later requirements.

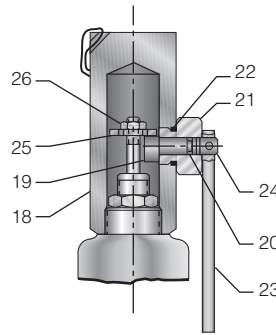
Caps and Lifting Levers



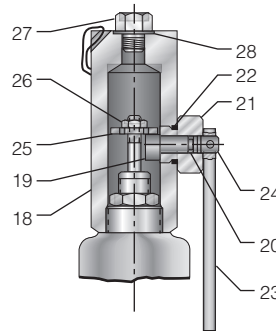
**Type A
Threaded Cap**



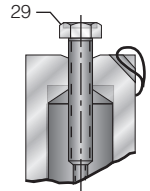
**Type B
Threaded Cap
with Test Rod**



**Type D
Packed Lifting
Lever**



**Type E
Packed Lifting Lever
with Test Rod**



**View Showing
Valve Gagged
Types B and E
with Test Rod**

Crosby Series BP pressure relief valves are furnished with a threaded cap over the adjusting bolt as standard. Optional cap types and lifting levers are described below.

1) Standard Threaded Cap (Type A)

Where no lifting lever is required.

2) Threaded Cap with Test Rod (Type B)

Normally used to hold the pressure relief valve closed when the system is being hydrostatically tested.

3) Packed Lifting Lever (Type D)

For applications where periodic testing is desirable. This is a sealed design for pressure integrity.

NOTE: ASME Boiler and Pressure Vessel Code rules require that pressure relief valves used on air and water over 140°F [60°C] shall have a lifting device. (Ref. Para. UG-136)

4) Packed Lifting Lever with Test Rod (Type E)

Same as Type D except furnished with a test rod.

Caution: Test Rods should never be tightened more than fingertight. Overtightening may damage internal parts. Moreover, a test rod should never be kept on the valve during operation of the equipment. During normal operation the test rod is replaced with cap plug and O-ring to maintain tightness on the discharge side.

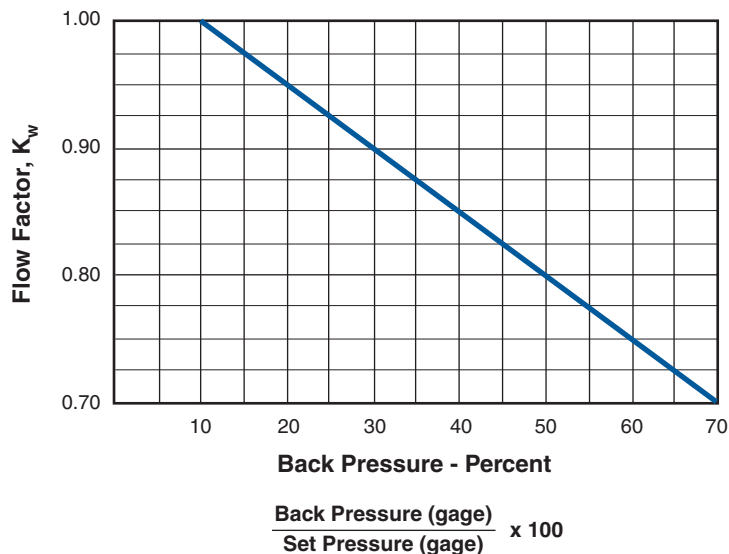
Materials of Construction

		Material Designation: 0, 3, 5, 7				1, 2		4		6	
Cap Part	Type No. Name	Materials									
A	12 Cap	Steel	316 SS	Monel®	Hastelloy® C						
B	16 Cap	Steel	316 SS	Monel®	Hastelloy® C						
	27 Cap Plug	Steel	316 SS	Monel®	Hastelloy® C						
	28 Cap Plug O-ring	Viton®	Viton®	Viton®	Viton®						
	29 Test Rod	Steel (Plated)	Steel (Plated)	Steel (Plated)	Steel (Plated)						
D	18 Cap	Steel	316 SS	Monel®	Hastelloy® C						
	19 Cam	416 SS	316 SS	Monel®	Hastelloy® C						
	20 Cam O-ring	Viton®	Viton®	Viton®	Viton®						
	21 Cam Sleeve	416 SS	316 SS	Monel®	Hastelloy® C						
	22 Cam Sleeve O-ring	Viton®	Viton®	Viton®	Viton®						
	23 Lever	Steel	Steel	Steel	Steel						
	24 Lever Pin	302 SS	302 SS	302 SS	302 SS						
	25 Spindle Nut	Steel	316 SS	Monel®	Hastelloy® C						
26 Locknut	Steel (Plated)	300 Series SS	Monel®	Hastelloy® C							
E	18 Cap	Steel	316 SS	Monel®	Hastelloy® C						
	19 Cam	416 SS	316 SS	Monel®	Hastelloy® C						
	20 Cam O-ring	Viton®	Viton®	Viton®	Viton®						
	21 Cam Sleeve	416 SS	316 SS	Monel®	Hastelloy® C						
	22 Cam Sleeve O-ring	Viton®	Viton®	Viton®	Viton®						
	23 Lever	Steel	Steel	Steel	Steel						
	24 Lever Pin	302 SS	302 SS	302 SS	302 SS						
	25 Spindle Nut	Steel	316 SS	Monel®	Hastelloy® C						
	26 Locknut	Steel (Plated)	300 Series SS	Monel®	Hastelloy® C						
	27 Cap Plug	Steel	316 SS	Monel®	Hastelloy® C						
28 Cap Plug O-ring	Viton®	Viton®	Viton®	Viton®							
29 Test Rod	Steel (Plated)	Steel (Plated)	Steel (Plated)	Steel (Plated)							

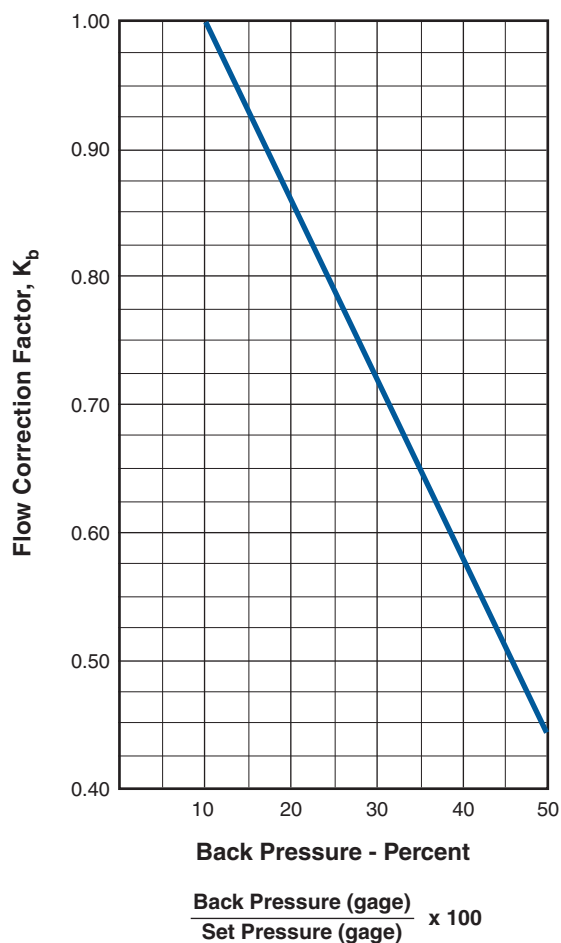
Note: Shaded materials are variation from standard.

Back Pressure Flow Correction Factor Curves

Correction Factor For Liquids, K_w for Series BP Valves At 10% Overpressure



Correction Factor For Vapors and Gases, K_b for Series BP Valves At 10% Overpressure



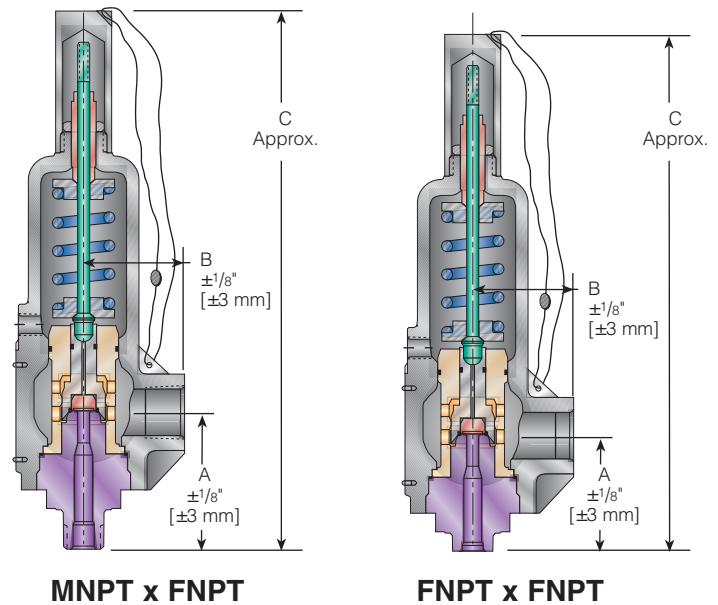
O-ring Soft Seat Pressure Temperature Limits

Material	Set Pressure, psig [barg]		Inlet Temperature, °F [°C]	
	Minimum	Maximum	Minimum	Maximum
BUNA-N	50 [3.45]	1500 [103.44]	-20 [-28]	+250 [+121.1]
Viton®	50 [3.45]	1500 [103.44]	0 [-17.8]	+400 [+204.4]
EPR	50 [3.45]	1500 [103.44]	-20 [-28]	+250 [+121.1]
TFE	100 [6.89]	1500 [103.44]	-20 [-28]	+400 [+204.4]
Silicone	50 [3.45]	1500 [103.44]	-20 [-28]	+400 [+204.4]
Kalrez®	100 [6.89]	1500 [103.44]	0 [-17.8]	+400 [+204.4]

EPR = Ethylene Propylene Rubber

TFE = Tetrafluorethylene

Specifications – Threaded Connections (NPT), USCS Units (U.S. Customary System) [Metric Units]



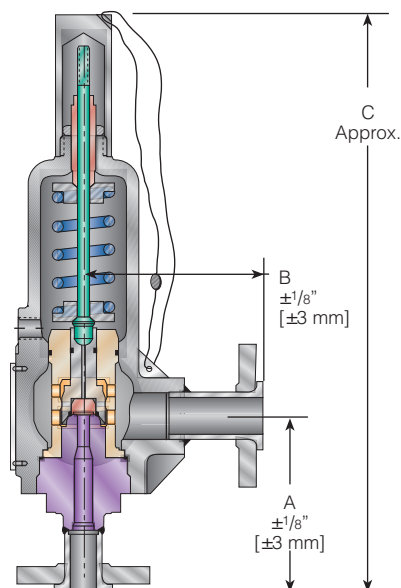
Dimensions and Weights, Pressure/Temperature Ratings

Valve Style Number	Connection Size (NPS)		Min Set Pressure psig [barg]	Max Set Pressure psig [barg]	Max Outlet Pressure psig [barg]	Temperature ¹ Range °F, [°C]	Dimensions, in. [mm]			Approx. Weight ³ lbs (kg)
	Inlet	Outlet					A	B	C ²	
Style BP5 – Series BP with No. 5 Orifice (0.074 in² [47.7 mm²]) and 1500 psig [103.44 barg] Max Set Pressure										
BP51(())1M	3/4	1	50 [3.45]	1500 [103.44]	400 [27.58]	-20/+400 [-28/+204]	3 ³ / ₈ [86]	2 ¹ / ₂ [64]	13 ³ / ₈ [340]	14 (6)
BP51(())2M	1	1	50 [3.45]	1500 [103.44]	400 [27.58]	-20/+400 [-28/+204]	3 ⁵ / ₈ [92]	2 ¹ / ₂ [64]	13 ⁵ / ₈ [346]	14 (6)
BP51(())1F	3/4	1	50 [3.45]	1500 [103.44]	400 [27.58]	-20/+400 [-28/+204]	2 ³ / ₄ [70]	2 ¹ / ₂ [64]	12 ³ / ₄ [324]	14 (6)
BP51(())2F	1	1	50 [3.45]	1500 [103.44]	400 [27.58]	-20/+400 [-28/+204]	3 [76]	2 ¹ / ₂ [64]	13 [330]	14 (6)
Style BP6 – Series BP with No. 6 Orifice (0.110 in² [70.96 mm²]) and 1500 psig [103.44 barg] Max Set Pressure										
BP61(())1M	3/4	1	50 [3.45]	1500 [103.44]	400 [27.58]	-20/+400 [-28/+204]	3 ³ / ₈ [86]	2 ¹ / ₂ [64]	13 ³ / ₈ [340]	14 (6)
BP61(())2M	1	1	50 [3.45]	1500 [103.44]	400 [27.58]	-20/+400 [-28/+204]	3 ⁵ / ₈ [92]	2 ¹ / ₂ [64]	13 ⁵ / ₈ [346]	14 (6)
BP61(())1F	3/4	1	50 [3.45]	1500 [103.44]	400 [27.58]	-20/+400 [-28/+204]	2 ³ / ₄ [70]	2 ¹ / ₂ [64]	12 ³ / ₄ [324]	14 (6)
BP61(())2F	1	1	50 [3.45]	1500 [103.44]	400 [27.58]	-20/+400 [-28/+204]	3 [76]	2 ¹ / ₂ [64]	13 [330]	14 (6)

Notes

1. Refer to page 6 for soft seat temperature limits.
2. Dimension “C” shown is for Type A cap.
For Type B cap, add 1/4” [6 mm] to “C” dimension (an additional 2” [51 mm] is required for test rod head clearance).
For Type D cap, add 5/8” [16 mm] to “C” dimension.
For Type E cap, add 7/8” [22 mm] to “C” dimension (an additional 2” [51 mm] is required for test rod head clearance).
3. Add 1.6 lbs. [0.7 kg] for Type D and E caps.

Specifications – Flanged Connections, USCS Units (U.S. Customary System) [Metric Units]



Flange x Flange

Dimensions and Weights, Pressure/Temperature Ratings

Valve Style Number	Connection Size (NPS)		Std. ANSI ² Lap Joint Stub End Flanges		Maximum ¹ Set Pressure at 100°F [37.8°C] psig [barg]	Maximum Outlet Pressure psig [barg]	Dimensions, in. [mm]			Approx. Weight ⁴ lbs. (kg)
	Inlet	Outlet	Inlet	Outlet			A	B	C ³	
Style BP5 – Series BP with No. 5 Orifice (0.074 in² [47.7 mm²])										
BP51()11	3/4	1	150	150	285 [19.65]	285 [19.65]	4 ⁵ / ₈ [117]	4 ³ / ₄ [121]	14 ⁵ / ₈ [371]	18 (8)
BP51()12	3/4	1	300	150	740 [51.02]	285 [19.65]	4 ⁵ / ₈ [117]	4 ³ / ₄ [121]	14 ⁵ / ₈ [371]	20 (9)
BP51()13	3/4	1	600	150	1480 [102.04]	285 [19.65]	4 ⁵ / ₈ [117]	4 ³ / ₄ [121]	14 ⁵ / ₈ [371]	20 (9)
BP51()14	3/4	1	1500	300	1500 [103.44]	400 ⁵ [27.58] ⁵	5 ⁵ / ₈ [143]	5 [127]	15 ⁵ / ₈ [397]	24 (11)
BP51()21	1	1	150	150	285 [19.65]	285 [19.65]	4 ⁷ / ₈ [124]	4 ³ / ₄ [121]	14 ⁷ / ₈ [378]	19 (9)
BP51()22	1	1	300	150	740 [51.02]	285 [19.65]	4 ⁷ / ₈ [124]	4 ³ / ₄ [121]	14 ⁷ / ₈ [378]	20 (9)
BP51()23	1	1	600	150	1480 [102.04]	285 [19.65]	4 ⁷ / ₈ [124]	4 ³ / ₄ [121]	14 ⁷ / ₈ [378]	20 (9)
BP51()24	1	1	1500	300	1500 [103.44]	400 ⁵ [27.58] ⁵	5 ⁵ / ₈ [143]	5 [127]	15 ⁷ / ₈ [403]	26 (12)
Style BP6 – Series BP with No. 6 Orifice (0.110 in² [70.96 mm²])										
BP61()11	3/4	1	150	150	285 [19.65]	285 [19.65]	4 ⁵ / ₈ [117]	4 ³ / ₄ [121]	14 ⁵ / ₈ [371]	18 (8)
BP61()12	3/4	1	300	150	740 [51.02]	285 [19.65]	4 ⁵ / ₈ [117]	4 ³ / ₄ [121]	14 ⁵ / ₈ [371]	20 (9)
BP61()13	3/4	1	600	150	1480 [102.04]	285 [19.65]	4 ⁵ / ₈ [117]	4 ³ / ₄ [121]	14 ⁵ / ₈ [371]	20 (9)
BP61()14	3/4	1	1500	300	1500 [103.44]	400 ⁵ [27.58] ⁵	5 ⁵ / ₈ [143]	5 [127]	15 ⁵ / ₈ [397]	24 (11)
BP61()21	1	1	150	150	285 [19.65]	285 [19.65]	4 ⁷ / ₈ [124]	4 ³ / ₄ [121]	14 ⁷ / ₈ [378]	19 (9)
BP61()22	1	1	300	150	740 [51.02]	285 [19.65]	4 ⁷ / ₈ [124]	4 ³ / ₄ [121]	14 ⁷ / ₈ [378]	20 (9)
BP61()23	1	1	600	150	1480 [102.04]	285 [19.65]	4 ⁷ / ₈ [124]	4 ³ / ₄ [121]	14 ⁷ / ₈ [378]	20 (9)
BP61()24	1	1	1500	300	1500 [103.44]	400 ⁵ [27.58] ⁵	5 ⁵ / ₈ [143]	5 [127]	15 ⁷ / ₈ [403]	26 (12)

Notes

- Maximum set pressures shown are based on carbon steel flanges. Pressure limits for 316 SS flanges may be lower. Consult your sales representative.
- Flanges are supplied with a serrated face per ANSI B16.5. Other facings/standards (i.e., DIN) are also available.
- Dimension "C" shown is for Type A cap. For Type B cap, add 1/4" [6 mm] to "C" dimension (an additional 2" [51 mm] is required for test rod head clearance). For Type D cap, add 5/8" [16 mm] to "C" dimension. For Type E cap, add 7/8" [22 mm] to "C" dimension (an additional 2" [51 mm] is required for test rod head clearance).
- Add 1.6 lbs. [0.7 kgs] for Type D and E caps.
- ANSI CL 300 supplied; however the maximum back pressure is 400 psig [27.58 barg].

Air Capacities, USCS Units (U.S. Customary System) [Metric Units]

Note: For air capacities, USCS Units are exact equivalents of Imperial Units.

The capacities listed in the following tables are based on discharging to atmospheric pressure. For applications involving back pressure these capacities must be multiplied by the back pressure correction factor determined from the applicable curve shown on page 6.

Capacity in standard cubic feet per minute of air at 60°F and 10% overpressure. Valve discharging to atmospheric pressure. [Capacity in standard cubic meters of air per minute at 16°C and 10% overpressure. Valve discharging to atmospheric pressure.]

Capacities certified by the National Board of Boiler and Pressure Vessel Inspectors and in accordance with the ASME Boiler and Pressure Vessel Code, Section VIII.

USCS – Set Pressures 50 - 1500 psig

Set Pressure psig	Effective Area, in ²		Set Pressure psig	Effective Area, in ²		Set Pressure psig	Effective Area, in ²		Set Pressure psig	Effective Area, in ²	
	0.074	0.110		0.074	0.110		0.074	0.110		0.074	0.110
1 psi incr.	1.4	2.1	1 psi incr.	1.4	2.1	1 psi incr.	1.4	2.1	1 psi incr.	1.4	2.1
5 psi incr.	7.2	10.8	5 psi incr.	7.2	10.8	5 psi incr.	7.2	10.8	5 psi incr.	7.2	10.8
50	92	137	280	427	634	560	834	1241	840	1242	1847
60	106	158	300	456	678	580	863	1284	860	1271	1890
70	121	180	320	485	721	600	893	1327	880	1300	1933
80	135	202	340	514	764	620	922	1370	900	1329	1976
90	150	223	360	543	808	640	951	1414	920	1359	2020
100	165	245	380	572	851	660	980	1457	940	1388	2063
120	194	288	400	601	894	680	1009	1500	960	1417	2106
140	223	331	420	631	937	700	1038	1544	980	1446	2150
160	252	375	440	660	981	720	1067	1587	1000	1475	2193
180	281	418	460	689	1024	740	1096	1630	1100	1621	2409
200	310	461	480	718	1067	760	1126	1673	1200	1766	2626
220	339	505	500	747	1111	780	1155	1717	1300	1912	2842
240	368	548	520	776	1154	800	1184	1760	1400	2057	3059
260	398	591	540	805	1197	820	1213	1803	1500	2203	3275

Metric – Set Pressures 3.45 - 103 barg

Set Pressure [barg]	Effective Area, mm ²		Set Pressure [kPag]	Set Pressure [barg]	Effective Area, mm ²		Set Pressure [kPag]	Set Pressure [barg]	Effective Area, mm ²		Set Pressure [kPag]
	47.74	70.96			47.74	70.96			47.74	70.96	
1 bar incr.	0.5	0.8	100 kPa incr.	1 bar incr.	0.5	0.8	100 kPa incr.	1 bar incr.	0.5	0.8	100 kPa incr.
5 bar incr.	2.9	4.4	500 kPa incr.	5 bar incr.	2.9	4.4	500 kPa incr.	5 bar incr.	2.9	4.4	500 kPa incr.
3.45	2.6	3.8	345	30	18.4	27.4	3000	58	35.2	52.3	5800
4	2.9	4.3	400	32	19.6	29.2	3200	60	36.4	54.1	6000
6	4.1	6.1	600	34	20.8	31.0	3400	62	37.6	55.8	6200
8	5.3	7.9	800	36	22.0	32.7	3600	64	38.7	57.6	6400
10	6.5	9.7	1000	38	23.2	34.5	3800	66	39.9	59.4	6600
12	7.7	11.4	1200	40	24.4	36.3	4000	68	41.1	61.2	6800
14	8.9	13.2	1400	42	25.6	38.1	4200	70	42.3	63.0	7000
16	10.1	15.0	1600	44	26.8	39.9	4400	76	45.9	68.3	7600
18	11.3	16.8	1800	46	28.0	41.6	4600	82	49.5	73.6	8200
20	12.5	18.5	2000	48	29.2	43.4	4800	88	53.1	78.9	8800
22	13.6	20.3	2200	50	30.4	45.2	5000	94	56.7	84.3	9400
24	14.8	22.1	2400	52	31.6	47.0	5200	100	60.3	89.6	10000
26	16.0	23.9	2600	54	32.8	48.7	5400	103	62.0	92.3	10300
28	17.2	25.6	2800	56	34.0	50.5	5600				

Note

- To determine capacities on gases other than air, or for fluid temperatures other than 60°F [16°C], use the gas and vapor sizing formula in the Crosby Engineering Handbook.

Water Capacities, USCS Units (U.S. Customary System) [Metric Units]

Note: USCS Units for water and liquids are U.S. gallons per minute (1 U.S. gallon equals 0.833 Imperial gallon).

The capacities listed in the following tables are based on discharging to atmospheric pressure. For applications involving back pressure these capacities must be multiplied by the back pressure correction factor determined from the applicable curve shown on page 6.

Capacity in U.S. gallons per minute of water at 70°F and 10% overpressure. Capacities certified by the National Board of Boiler and Pressure Vessel Inspectors and in accordance with the ASME Boiler and Pressure Vessel Code, Section VIII. [Capacity in liters per minute of water at 21°C and 10% overpressure.]

Capacities certified by the National Board of Boiler and Pressure Vessel Inspectors and in accordance with the ASME Boiler and Pressure Vessel Code, Section VIII.

USCS – Differential Pressures ΔP^1 20 - 1600 psi

Diff. Pressure ΔP (psi)	Effective Area, in ²		Diff. Pressure ΔP (psi)	Effective Area, in ²	
	0.074	0.110		0.074	0.110
20	9.3	13.8	580	50.1	74.5
40	13.1	19.5	600	51.0	75.8
60	16.1	23.9	620	51.8	77.0
80	18.6	27.6	640	52.6	78.3
100	20.8	30.9	660	53.4	79.5
120	22.8	33.9	680	54.3	80.7
140	24.6	36.6	700	55.0	81.8
160	26.3	39.1	720	55.8	83.0
180	27.9	41.5	740	56.6	84.2
200	29.4	43.7	760	57.4	85.3
220	30.8	45.9	780	58.1	86.4
240	32.2	47.9	800	58.8	87.5
260	33.5	49.9	820	59.6	88.6
280	34.8	51.7	840	60.3	89.7
300	36.0	53.6	860	61.0	90.7
320	37.2	55.3	880	61.7	91.8
340	38.3	57.0	900	62.4	92.8
360	39.5	58.7	920	63.1	93.8
380	40.5	60.3	940	63.8	94.9
400	41.6	61.9	960	64.5	95.9
420	42.6	63.4	980	65.1	96.9
440	43.6	64.9	1000	65.8	97.8
460	44.6	66.3	1100	69.0	102
480	45.6	67.8	1200	72.1	107
500	46.5	69.2	1300	75.0	111
520	47.4	70.5	1400	77.9	115
540	48.3	71.9	1500	80.6	119
560	49.2	73.2	1600	83.2	123

Notes

- Differential Pressure (ΔP) equals inlet pressure (set pressure plus overpressure) at flowing conditions minus back pressure.**
- See page 7 for Minimum and Maximum Set Pressure Limits.
- To determine capacities on liquids other than water, use the liquid sizing formula in the Crosby Engineering Handbook.

Metric table on page 11.

Water Capacities, USCS Units (U.S. Customary System) [Metric Units]

Note: USCS Units for water and liquids are U.S. gallons per minute (1 U.S. gallon equals 0.833 Imperial gallon).

The capacities listed in the following tables are based on discharging to atmospheric pressure. For applications involving back pressure these capacities must be multiplied by the back pressure correction factor determined from the applicable curve shown on page 6.

Capacity in U.S. gallons per minute of water at 70°F and 10% overpressure. Capacities certified by the National Board of Boiler and Pressure Vessel Inspectors and in accordance with the ASME Boiler and Pressure Vessel Code, Section VIII. [Capacity in liters per minute of water at 21°C and 10% overpressure.]

Capacities certified by the National Board of Boiler and Pressure Vessel Inspectors and in accordance with the ASME Boiler and Pressure Vessel Code, Section VIII.

Metric – Differential Pressures ΔP 1.4 - 112 bar

Diff. Pressure ΔP [barg]	Effective Area, mm ²		Diff. Pressure ΔP [kPa]	Diff. Pressure ΔP [barg]	Effective Area, mm ²		Diff. Pressure ΔP [kPa]
	47.74	70.96			47.74	70.96	
1.4	35.5	52.1	140	44	199	295	4400
2	42.4	63.1	200	46	203	302	4600
4	60.0	89.2	400	48	207	309	4800
6	73.5	109	600	50	212	315	5000
8	84.9	126	800	52	216	321	5200
10	94.9	141	1000	54	220	327	5400
12	103.9	154	1200	56	224	333	5600
14	112.3	166	1400	58	228	339	5800
16	120.0	178	1600	60	232	345	6000
18	127.3	189	1800	62	236	351	6200
20	134.2	199	2000	64	240	356	6400
22	140	209	2200	66	243	362	6600
24	147	218	2400	68	247	367	6800
26	153	227	2600	70	251	373	7000
28	158	236	2800	76	261	389	7600
30	164	244	3000	82	271	404	8200
32	169	252	3200	88	281	418	8800
34	175	260	3400	94	291	432	9400
36	180	267	3600	100	300	446	10000
38	185	275	3800	106	309	459	10600
40	189	282	4000	112	317	472	11200
42	194	289	4200				

Notes

- Differential Pressure (ΔP) equals inlet pressure (set pressure plus overpressure) at flowing conditions minus back pressure.**
- See page 7 for Minimum and Maximum Set Pressure Limits.
- To determine capacities on liquids other than water, use the liquid sizing formula in the Crosby Engineering Handbook.

Crosby Series BP OMNI-TRIM®

Balanced Threaded Pressure Relief Valve

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