



An Ovivo Company

COVER EQUIPMENT

VAREC 2010B / 2020B Series PRESSURE AND VACUUM RELIEF VALVE

The 2010B / 2020B protects tanks from damage or deformation, and minimizes emissions to the environment, as well as loss of product due to evaporation.

Introduction

The Varec 2010B and 2020B Pressure and Vacuum Relief Valves are designed for use on atmospheric and low pressure storage tanks. The 2010B vents to atmosphere. The 2020B allows vapors to be piped away for recovery or destruction.

The primary function of both models is to protect the tank from physical damage or permanent deformation caused by increases in internal pressure or vacuum encountered in normal operations. On smaller tanks, the valve may also provide sufficient flow capacity for emergency venting. The “air-cushion” seating design keeps the valve tightly sealed until the pressure inside the tank approaches the valve setting. Valve selection should be in accordance with American Petroleum Institute Standard 2000 or other applicable standard.

By controlling tank venting, the 2010B and 2020B not only minimize emissions to the environment, but also minimize the loss of product to evaporation. When combined with a well-designed vapor recovery system, the loss can be cut to essentially zero.

An “All-Weather” option (2011B/ 2021B) is offered for freezing climates. The design features a special non-frosting and icing-resistant coating on the pallet perimeter, stem, guide posts and tip-of-seat ring. The coating, along with the flexible PTFE seat insert, provides additional protection against pallets freezing closed.

For high temperature and chemical applications, Varec recommends one of the extended service options, which offers the selection of O-ring, gasket, and screen material.



Features

- Choice of vent to atmosphere or pipe away models
- Modular design provides flexibility of field installation and allows easy reconfiguration, repair or on-site upgrading
- Oversized pressure and vacuum ports provide maximum flow capacity
- Easily removable hood and cover for inspection and maintenance
- Seat rings are both interchangeable and field replaceable
- Protective screens at pressure and vacuum ports prevent entrance of foreign matter
- Outlet adapter on the 2020B Series is one pipe size larger than the valve inlet flange to optimize flow capacity
- Zero product loss when combined with a vapor recovery system
- Replaceable and interchangeable pressure and vacuum seat rings
- “All-weather” non-frosting and ice-resistant coating option available for valve seats and guides
- Extended service options available for high temperature and chemical applications

Available Materials

- Aluminum
- Carbon Steel
- Stainless Steel
- Ductile Iron
- Special Materials on Application

Specifications

The 2010B and 2020B Series Pressure and Vacuum Relief Valves are available in a variety of configurations to meet your specific needs.

Sizes

2010B/ 2011B:	2020B/ 2021B:
2" [50 mm]	2" x 3" [50x80 mm]
3" [80 mm]	3" x 4" [80x100mm]
4" [100 mm]	4" x 6" [100x150 mm]
6" [150 mm]	6" x 8" [150x200 mm]
8" [200 mm]	8" x 10" [200x250 mm]
10" [250 mm]	10"x12" [250x300 mm]
12" [300 mm]	12"x14" [300x350 mm]

Flanged Connections

(STANDARD FLANGE DRILLING)

Aluminum

Drilled to ANSI Class 150 Dimensions (Flat-Faced)

Drilled to DIN 2633 [16 Bar] Dimensions (Flat-Faced)

CS, DI and SS Body

Drilled to ANSI Class 150 Dimensions, (Raised or Flat-Faced)

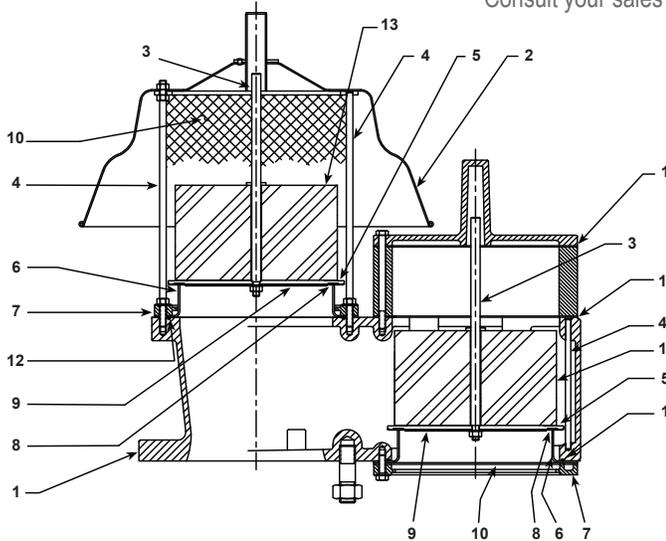
Drilled to Imperial DIN 2633 [16 bar] Dimensions (Raised or Flat-Faced)

Drilled to JPI or JIS (Raised or Flat-Faced)
Consult your sales representative

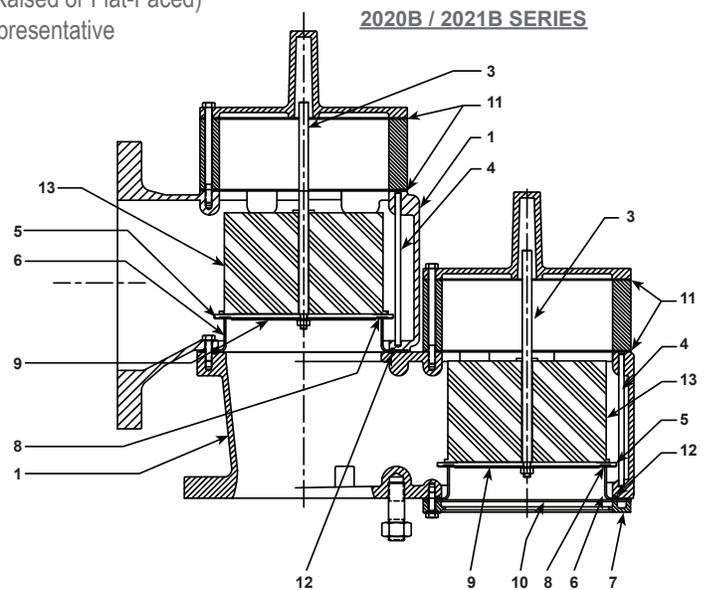
Testing

Each valve is tested for proper setting and for a leakage rate of less than 1 SCFH (0.03 Nm³/ hr) of air at 90 percent of the set point. Each valve is tested for leak tightness at 75 percent of set point as required in API Standard 2000.

2010B / 2011B SERIES



2020B / 2021B SERIES



Parts and Materials Table

Item	Material Code			
	1	2	3	4
1 Body	Aluminum	Aluminum	Carbon Steel	316 SS
2 Weatherhood	Aluminum	Aluminum	Carbon Steel	316 SS
3 Guide Stem	Aluminum	316 SS	316 SS	316 SS
4 Guide Posts	316 SS	316 SS	316 SS	316 SS
5 Pallet	Aluminum	316 SS	316 SS	316 SS
6 Seat Ring	Aluminum	316 SS	316 SS	316 SS
7 Seat Ring Retainer ¹	Polypropylene	Polypropylene	Polypropylene	Polypropylene
8 Insert ¹	PTFE	PTFE	PTFE	PTFE
9 Insert Retainer	Aluminum	316 SS	316 SS	316 SS
10 Screen ¹	HDPE	HDPE	HDPE	HDPE
11 Gaskets ¹	Fiber	Fiber	Fiber	Fiber
12 O-Ring ¹	NBR	NBR	NBR	NBR
13 Weights	Lead	Lead	Lead	Lead

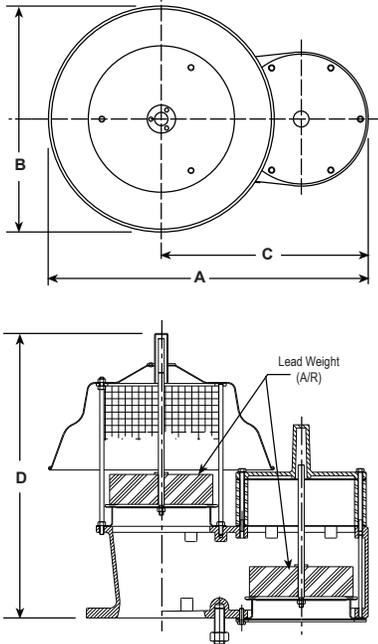
Note: 1 - Materials are as standard. See model option code for other materials and their associated temperature ranges.

2 - PTFE coated aluminum may be supplied with material codes 2 - 4 to achieve lower settings.

3 - All nuts and cap screws are 316 SS.

Specifications

2010B / 2011B SERIES



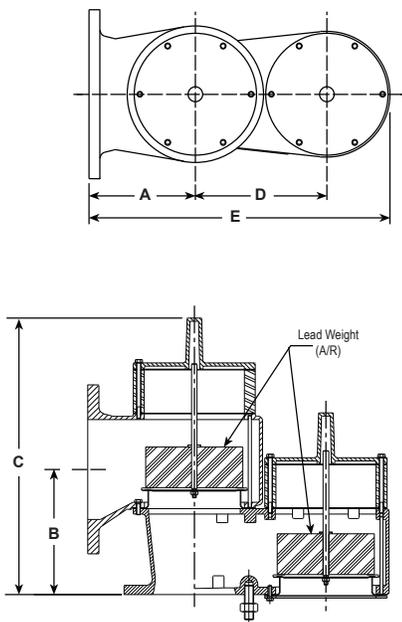
Dimensions, inches [mm]

Size Code	2	3	4	6	8	0	1
Nominal Pipe Size	2 [50]	3 [80]	4 [100]	6 [150]	8 [200]	10 [250]	12 [300]
A	14 1/8 [359] ⁸	17 9/16 [446] ¹⁶	19 1/8 [486] ⁸	24 [610]	29 7/8 [759] ⁸	38 7/16 [976] ¹⁶	46 5/8 [1184] ⁸
B	8 1/2 [216]	10 3/4 [273] ⁴	13 3/8 [340] ⁸	17 [432]	20 5/8 [524] ⁸	27 [686]	34 [864]
C	9 7/8 [251] ⁸	12 1/4 [311] ⁴	12 1/4 [311] ⁴	15 1/2 [394] ²	19 9/16 [497] ¹⁶	24 15/16 [633] ¹⁶	29 3/8 [746] ⁸
D	10 7/16 [265] ¹⁶	12 5/16 [313] ¹⁶	12 7/16 [368] ¹⁶	18 3/16 [462] ¹⁶	21 5/8 [549] ⁸	27 7/16 [697] ¹⁶	31 7/8 [810] ⁸
Low Set	[265]	[313]	[368]	[462]	[549]	[697]	[810]
D	13 5/16 [338] ¹⁶	15 1/4 [387] ⁴	16 5/8 [422] ⁸	21 1/2 [546] ²	24 3/4 [629] ⁴	29 7/16 [748] ¹⁶	31 7/8 [810] ⁸
High Set	[338]	[387]	[422]	[546]	[629]	[748]	[810]

Note: Figure shown is for high set option.

Dimensions are for preliminary general information and should not be used for construction purposes. Certified dimensional drawings are available upon request.

2020B / 2021B SERIES



Dimensions, inches [mm]

Size Code	2	3	4	6	8	0	1
Nominal Pipe Size	2 x 3 [50 x 80]	3 x 4 [80 x 100]	4 x 6 [100 x 150]	6 x 8 [150 x 200]	8 x 10 [200 x 250]	10 x 12 [250 x 300]	12 x 14 [300 x 350]
A	4 15/16 [125] ¹⁶	6 3/8 [162] ⁸	8 [203]	8 9/16 [217] ¹⁶	11 3/16 [284] ¹⁶	13 5/8 [346] ⁸	15 3/8 [391] ⁸
B	5 1/4 [133] ⁴	5 7/8 [149] ⁸	6 13/16 [173] ¹⁶	10 [254]	12 1/8 [308] ⁸	16 1/8 [410] ⁸	18 3/4 [476] ⁴
C	9 1/16 [230] ¹⁶	10 3/4 [273] ⁴	12 3/4 [324] ⁴	18 3/4 [476] ⁴	22 1/8 [562] ⁸	27 9/16 [700] ¹⁶	32 [813]
Low Set	[230]	[273]	[324]	[476]	[562]	[700]	[813]
C	13 1/2 [343] ²	15 1/2 [394] ²	16 13/16 [427] ¹⁶	22 [559]	24 1/2 [622] ²	29 1/4 [743] ⁴	32 [813]
High Set	[343]	[394]	[427]	[559]	[622]	[743]	[813]
D	6 3/4 [171] ⁴	8 3/8 [213] ⁸	8 7/16 [214] ¹⁶	10 1/2 [267] ²	13 1/8 [333] ⁸	16 7/8 [429] ⁸	19 3/4 [502] ⁴
E	14 3/4 [375] ⁴	18 9/16 [471] ¹⁶	20 7/16 [519] ¹⁶	24 1/4 [616] ⁴	30 3/4 [781] ⁴	38 9/16 [979] ¹⁶	44 11/16 [1135] ¹⁶

Note: Figure shown is for high set option.

Dimensions are for preliminary general information and should not be used for construction purposes. Certified dimensional drawings are available upon request.

Specifications

Setting Information

Size	Minimum Pressure Set, oz/ in ²		Minimum Vacuum Set, oz/ in ²		Low Set Range		High Set Range	
	Aluminum	316 SS	Aluminum	316 SS	Pressure (min. to oz/in ²)	Vacuum (min. to oz/in ²)	Pressure (oz/in ² to psig)	Vacuum (oz/in ² to psig)
2"	0.29	0.70	0.26	0.62	^16	^10	16.01 - 2	10.01 - 2
3"	0.23	0.55	0.21	0.49	^16	^10	16.01 - 2	10.01 - 2
4"	0.29	0.60	0.27	0.56	^16	^16	16.01 - 2	16.01 - 2
6"	0.26	0.61	0.26	0.61	^16	^16	16.01 - 2	16.01 - 2
8"	0.25	0.55	0.25	0.55	^16	^16	16.01 - 2	16.01 - 2
10"	0.25	0.63	0.25	0.63	^16	^16	16.01 - 2	16.01 - 2
12"	0.23	0.59	0.23	0.59	^16	^16	16.01 - 2	16.01 - 2

2011B

2"	0.29	0.70	0.26	0.62	^16	^10	16.01 - 2	10.01 - 2
3"	0.23	0.55	0.21	0.49	^16	^10	16.01 - 2	10.01 - 2
4"	0.29	0.60	0.27	0.56	^16	^16	16.01 - 2	16.01 - 2
6"	0.26	0.61	0.26	0.61	^16	^16	16.01 - 2	16.01 - 2
8"	0.25	0.55	0.25	0.55	^16	^16	16.01 - 2	16.01 - 2
10"	0.49	1.33	0.49	1.33	^16	^16	16.01 - 2	16.01 - 2
12"	0.47	1.28	0.47	1.28	^16	^16	16.01 - 2	16.01 - 2

2020B

2"	0.26	0.62	0.26	0.62	^10	^10	10.01 - 2	10.01 - 2
3"	0.21	0.49	0.21	0.49	^10	^10	10.01 - 2	10.01 - 2
4"	0.27	0.56	0.27	0.56	^16	^16	16.01 - 2	16.01 - 2
6"	0.26	0.61	0.26	0.61	^16	^16	16.01 - 2	16.01 - 2
8"	0.25	0.55	0.25	0.55	^16	^16	16.01 - 2	16.01 - 2
10"	0.25	0.63	0.25	0.63	^16	^16	16.01 - 2	16.01 - 2
12"	0.23	0.59	0.23	0.59	^16	^16	16.01 - 2	16.01 - 2

2021B

2"	0.26	0.62	0.26	0.62	^10	^10	10.01 - 2	10.01 - 2
3"	0.21	0.49	0.21	0.49	^10	^10	10.01 - 2	10.01 - 2
4"	0.27	0.56	0.27	0.56	^16	^16	16.01 - 2	16.01 - 2
6"	0.26	0.61	0.26	0.61	^16	^16	16.01 - 2	16.01 - 2
8"	0.25	0.55	0.25	0.55	^16	^16	16.01 - 2	16.01 - 2
10"	0.49	1.33	0.49	1.33	^16	^16	16.01 - 2	16.01 - 2
12"	0.47	1.28	0.47	1.28	^16	^16	16.01 - 2	16.01 - 2

Lower settings may be available. Please consult your sales representative.

All valves are factory tested for leakage and correct setting prior to shipment. Certification of valve setting is available upon request.

The mixed pressure/vacuum set ranges , 0204 and 0402 (Low Pressure/ High Vacuum and High Pressure/ Low Vacuum) use heavier pallets, and therefore have higher low set range minimums. For these cases, add the applicable value from the table (right) to the low set range minimum. (This increase does not apply for 10" and 12" 2011B/2021B.)

Size	Aluminum	316 SST
2"	0.30	0.72
3"	0.27	0.70
4"	0.21	0.62
6"	0.20	0.55
8"	0.21	0.44
10"	0.25	0.61
12"	0.26	0.67

Ordering Information

Model	Description									
20	Air Cushion Pressure/ Vacuum Relief Valve									
	Code	Model								
	1	Vent-to-Atmosphere								
	2	Pipe-Away								
	Code	Configuration								
	0B	Standard Air Cushion Type								
	1B	All Weather Type (-25°F to 200°F)								
	Code	Size								
	2	2" (2" x 3")								
	3	3" (3" x 4")								
	4	4" (4" x 6")								
	6	6" (6" x 8")								
	8	8" (8" x 10")								
	0	10" (10" x 12")								
	1	12" (12" x 14")								
	Code	Body/ Trim Material								
	1	Aluminum/ Aluminum (-65°F to 250°F)								
	2	Aluminum/ 316 Stainless Steel (-65°F to 250°F)								
	3	Carbon Steel/ 316 Stainless Steel (-20°F to 350°F)								
	4	316 Stainless Steel/ 316 Stainless Steel (-65°F to 350°F)								
	5	Ductile Iron/ 316 Stainless Steel (2 to 8 inch Only) (-20° to 325°F)								
	Code	Insert Material								
	T	PTFE (-65°F to 400°F)								
	B	NBR (-40°F to 250°F)								
	V	FKM (-15°F to 400°F)								
	Code	Flange Connection								
	FF	Flat Face flange drilled to ANSI 150 with Fractional Studs								
	MF	Flat Face flange drilled to ANSI 150 with Metric Studs								
	FR	Raised Face flange drilled to ANSI 150 with Fractional Studs (Not Available in Aluminum)								
	MR	Raised Face flange drilled to ANSI 150 with Metric Studs (Not Available in Aluminum)								
	DF	DIN Flat Face Flange Drilling								
	DR	DIN Raised Face Flange Drilling (Not Available in Aluminum)								
	Code	Gasket/ O-Ring/ and Retainer/ Screen Material								
	OP	Standard Fiber/ NBR and Plastic (-40°F to 250°F)								
	OS	Standard Fiber/ NBR and Stainless Steel (-40°F to 250°F)								
	TP	PTFE and Plastic (-65°F to 250°F)								
	TS	PTFE and Stainless Steel (-65°F to 350°F)								
	BP	NBR and Plastic (-40°F to 250°F)								
	BS	NBR and Stainless Steel (-40°F to 250°F)								
	VP	FKM and Plastic (-15°F to 250°F)								
	VS	FKM and Stainless Steel (-15°F to 350°F)								
	Code	Pressure Setting Range (See Table)								
	02	Low Setting								
	04	High Setting								
	Code	Vacuum Setting Range (See Table)								
	02	Low Setting								
	04	High Setting								

20 1 0B 1 2 T FF OP 02 02 (Example)

Example: 12" Size Aluminum Body/ 316SS Trim, PTFE Insert, 150 FF Flanges, Standard Fiber/ NBR Gaskets, Low Set Pressure and Vacuum, Temperature Range: -20°F to 250°F.