



VAREC 2010B/2020B PRESSURE AND VACUUM RELIEF VALVES

Weight-loaded relief valves that protect tanks from damage or deformation, minimize emissions to the environment and loss of product due to evaporation



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.

GENERAL APPLICATION

The 2010B and 2020B are designed for use on atmospheric and low pressure storage tanks or for emergency venting on smaller tanks. The 2010B vents to atmosphere; the 2020B allows vapors to be piped away for recovery.

TECHNICAL DATA

Materials:	Aluminum, carbon steel, stainless steel Special materials on application
Sizes	
2010B/2011B:	2" to 12" (DN 50 to 300)
2020B/2021B:	2" x 3" to 12" x 14" (DN 50 x 80 to 300 x 350)
Connections:	Drilled flanges
Pressure settings:	up to 2 psig (0.14 barg).
Temperature range:	-65° to 350°F (-54° to 177°C)

VAREC 2010B/2020B PRESSURE AND VACUUM RELIEF VALVES

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: 2" (DN 50)
3" (DN 80)
4" (DN 100)
6" (DN 150)
8" (DN 200)
10" (DN 250)
12" (DN 300)

Sizes

2020B/2021B: 2" x 3" (DN 50 x DN 80)
3" x 4" (DN 80 x DN 100)
4" x 6" (DN 100 x DN 150)
6" x 8" (DN 150 x DN 200)
8" x 10" (DN 200 x DN 250)
10" x 12" (DN 250 x DN 300)
12" x 14" (DN 300 x DN 350)

FLANGED CONNECTIONS - STANDARD FLANGE DRILLING

Aluminum

Drilled to ANSI Class 150 dimensions (flat face)
Drilled to DIN 2633 (16 bar) dimensions (flat face)

CS, DI and SS body

Drilled to ANSI Class 150 dimensions (raised or flat face)
Drilled to imperial DIN 2633 (16 bar) dimensions (raised or flat face)
Drilled to JPI or JIS (raised or flat face) - consult your sales representative

Mounting studs

Fractional (imperial)
Metric

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.

PARTS AND MATERIALS (see page 3)

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

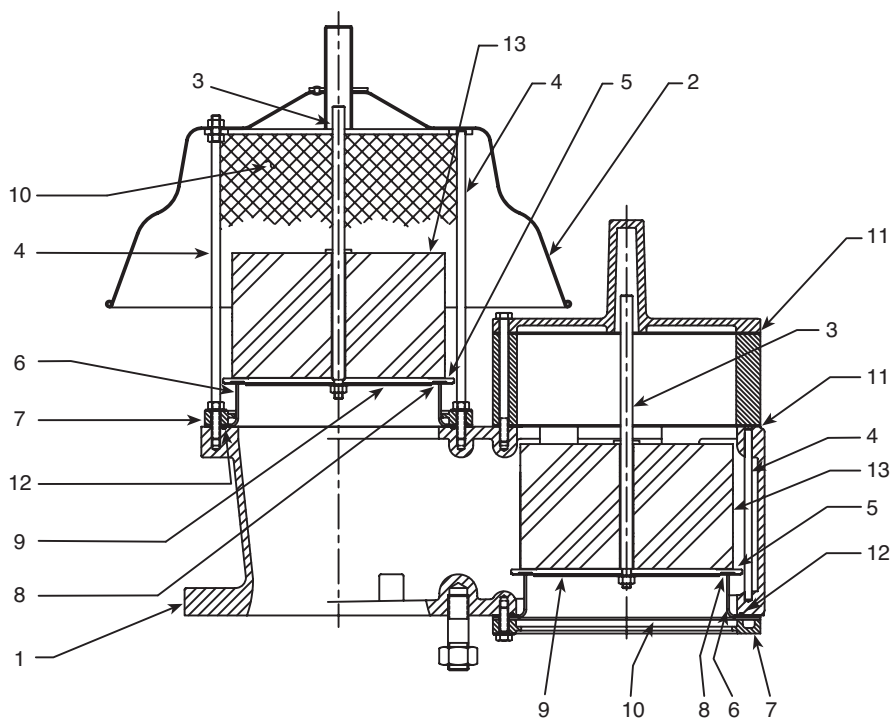
NOTE

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.

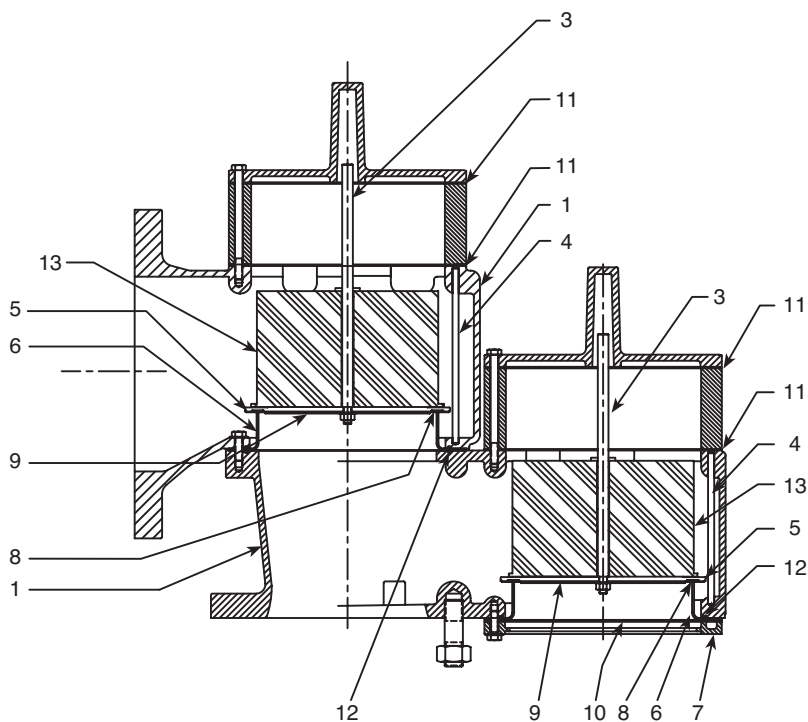
VAREC 2010B/2020B PRESSURE AND VACUUM RELIEF VALVES

PARTS AND MATERIALS

2010B (see page 2)



2020B (see page 2)



VAREC 2010B/2020B PRESSURE AND VACUUM RELIEF VALVES

SPECIFICATIONS

SETTING INFORMATION

Size	Min. pressure set, oz/in ²		Min. 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)
2010B								
2"	0.29	0.70	0.26	0.62	Λ 16	Λ 10	16.01 - 2	10.01 - 2
3"	0.23	0.55	0.21	0.49	Λ 16	Λ 10	16.01 - 2	10.01 - 2
4"	0.29	0.60	0.27	0.56	Λ 16	Λ 16	16.01 - 2	16.01 - 2
6"	0.26	0.61	0.26	0.61	Λ 16	Λ 16	16.01 - 2	16.01 - 2
8"	0.25	0.55	0.25	0.55	Λ 16	Λ 16	16.01 - 2	16.01 - 2
10"	0.25	0.63	0.25	0.63	Λ 16	Λ 16	16.01 - 2	16.01 - 2
12"	0.23	0.59	0.23	0.59	Λ 16	Λ 16	16.01 - 2	16.01 - 2
2011B								
2"	0.29	0.70	0.26	0.62	Λ 16	Λ 10	16.01 - 2	10.01 - 2
3"	0.23	0.55	0.21	0.49	Λ 16	Λ 10	16.01 - 2	10.01 - 2
4"	0.29	0.60	0.27	0.56	Λ 16	Λ 16	16.01 - 2	16.01 - 2
6"	0.26	0.61	0.26	0.61	Λ 16	Λ 16	16.01 - 2	16.01 - 2
8"	0.25	0.55	0.25	0.55	Λ 16	Λ 16	16.01 - 2	16.01 - 2
10"	0.49	1.33	0.49	1.33	Λ 16	Λ 16	16.01 - 2	16.01 - 2
12"	0.47	1.28	0.47	1.28	Λ 16	Λ 16	16.01 - 2	16.01 - 2
2020B								
2"	0.26	0.62	0.26	0.62	Λ 10	Λ 10	10.01 - 2	10.01 - 2
3"	0.21	0.49	0.21	0.49	Λ 10	Λ 10	10.01 - 2	10.01 - 2
4"	0.27	0.56	0.27	0.56	Λ 16	Λ 16	16.01 - 2	16.01 - 2
6"	0.26	0.61	0.26	0.61	Λ 16	Λ 16	16.01 - 2	16.01 - 2
8"	0.25	0.55	0.25	0.55	Λ 16	Λ 16	16.01 - 2	16.01 - 2
10"	0.25	0.63	0.25	0.63	Λ 16	Λ 16	16.01 - 2	16.01 - 2
12"	0.23	0.59	0.23	0.59	Λ 16	Λ 16	16.01 - 2	16.01 - 2
2021B								
2"	0.26	0.62	0.26	0.62	Λ 10	Λ 10	10.01 - 2	10.01 - 2
3"	0.21	0.49	0.21	0.49	Λ 10	Λ 10	10.01 - 2	10.01 - 2
4"	0.27	0.56	0.27	0.56	Λ 16	Λ 16	16.01 - 2	16.01 - 2
6"	0.26	0.61	0.26	0.61	Λ 16	Λ 16	16.01 - 2	16.01 - 2
8"	0.25	0.55	0.25	0.55	Λ 16	Λ 16	16.01 - 2	16.01 - 2
10"	0.49	1.33	0.49	1.33	Λ 16	Λ 16	16.01 - 2	16.01 - 2
12"	0.47	1.28	0.47	1.28	Λ 16	Λ 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

VAREC 2010B/2020B PRESSURE AND VACUUM RELIEF VALVES

DIMENSIONS

2010B AND 2011B

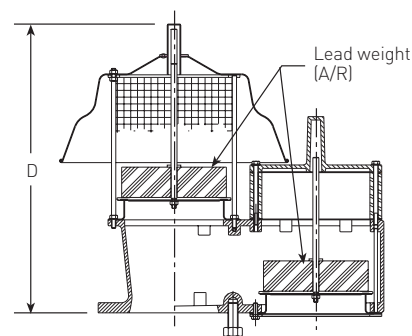
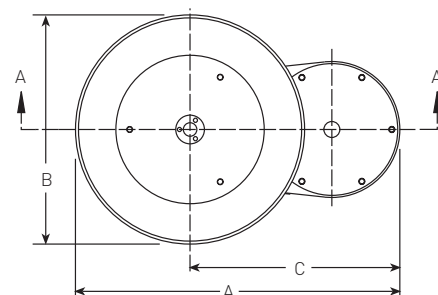
Size code	2	3	4	6	8	0	1
Nominal pipe size	2 (50)	3 (80)	4 (100)	6 (150)	8 (200)	10 (250)	12 (300)
A	14 $\frac{1}{8}$ [359]	17 $\frac{1}{16}$ [446]	19 $\frac{1}{8}$ [486]	24 [610]	29 $\frac{7}{8}$ [759]	38 $\frac{7}{16}$ [976]	46 $\frac{5}{8}$ [1184]
B	8 $\frac{1}{2}$ [216]	10 $\frac{3}{4}$ [273]	13 $\frac{3}{8}$ [340]	17 [432]	20 $\frac{5}{8}$ [524]	27 [686]	34 [864]
C	9 $\frac{7}{8}$ [251]	12 $\frac{1}{4}$ [311]	12 $\frac{7}{16}$ [316]	15 $\frac{1}{2}$ [394]	19 $\frac{1}{16}$ [497]	24 $\frac{15}{16}$ [633]	29 $\frac{3}{8}$ [746]
D*	10 $\frac{7}{16}$ [265]	12 $\frac{5}{16}$ [313]	14 $\frac{1}{2}$ [368]	18 $\frac{3}{16}$ [462]	21 $\frac{1}{8}$ [549]	27 $\frac{1}{16}$ [697]	31 $\frac{7}{8}$ [810]
D**	13 $\frac{3}{16}$ [338]	15 $\frac{1}{4}$ [387]	16 $\frac{5}{8}$ [422]	21 $\frac{1}{2}$ [546]	24 $\frac{3}{4}$ [629]	29 $\frac{7}{16}$ [748]	31 $\frac{7}{8}$ [810]

* Low set

** High set

All other figures are for the high set option.

SECTION A-A



2020B AND 2021B

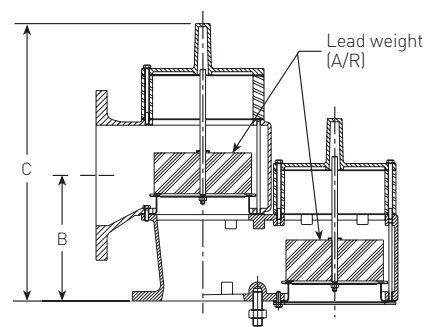
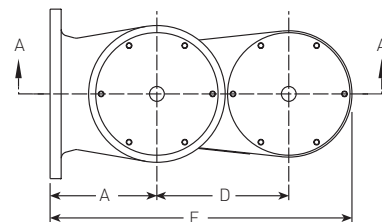
Size code	2	3	4	6	8	0	1
Nominal pipe size	2 x 3 (50 x 80)	3 x 4 (80 x 100)	4 x 6 (100 x 150)	6 x 8 (150 x 200)	8 x 10 (200 x 250)	10 x 12 (250 x 300)	12 x 14 (300 x 350)
A	41 $\frac{1}{16}$ [125]	6 $\frac{3}{8}$ [162]	8 [203]	8 $\frac{7}{16}$ [217]	11 $\frac{3}{16}$ [284]	13 $\frac{3}{8}$ [346]	15 $\frac{3}{8}$ [391]
B	5 $\frac{1}{4}$ [133]	5 $\frac{7}{8}$ [149]	6 $\frac{13}{16}$ [173]	10 [254]	12 $\frac{1}{8}$ [308]	16 $\frac{1}{8}$ [410]	18 $\frac{3}{4}$ [476]
C*	9 $\frac{7}{16}$ [230]	10 $\frac{3}{4}$ [273]	12 $\frac{3}{4}$ [324]	18 $\frac{3}{4}$ [476]	22 $\frac{1}{8}$ [562]	27 $\frac{1}{16}$ [700]	32 [813]
C**	13 $\frac{1}{2}$ [343]	15 $\frac{1}{2}$ [394]	16 $\frac{13}{16}$ [427]	22 [559]	24 $\frac{1}{2}$ [622]	29 $\frac{1}{4}$ [743]	32 [813]
D	6 $\frac{3}{4}$ [171]	8 $\frac{3}{8}$ [213]	8 $\frac{7}{16}$ [214]	10 $\frac{1}{2}$ [267]	13 $\frac{1}{8}$ [333]	16 $\frac{7}{8}$ [429]	19 $\frac{3}{4}$ [502]
E	14 $\frac{3}{4}$ [375]	18 $\frac{7}{16}$ [471]	20 $\frac{7}{16}$ [519]	24 $\frac{1}{4}$ [616]	30 $\frac{3}{4}$ [781]	38 $\frac{3}{8}$ [979]	44 $\frac{11}{16}$ [1135]

* Low set

** High set

All other figures are for the high set option.

SECTION A-A



Dimensions, in. (mm)

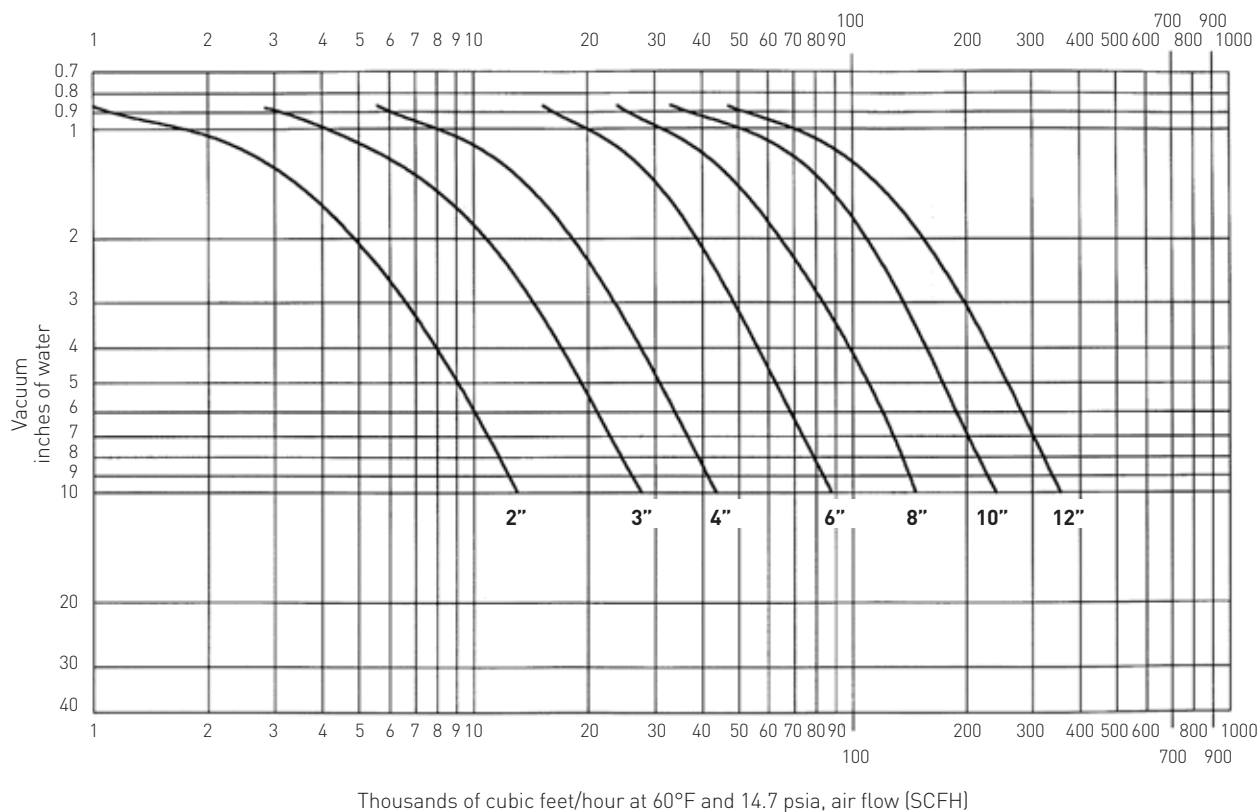
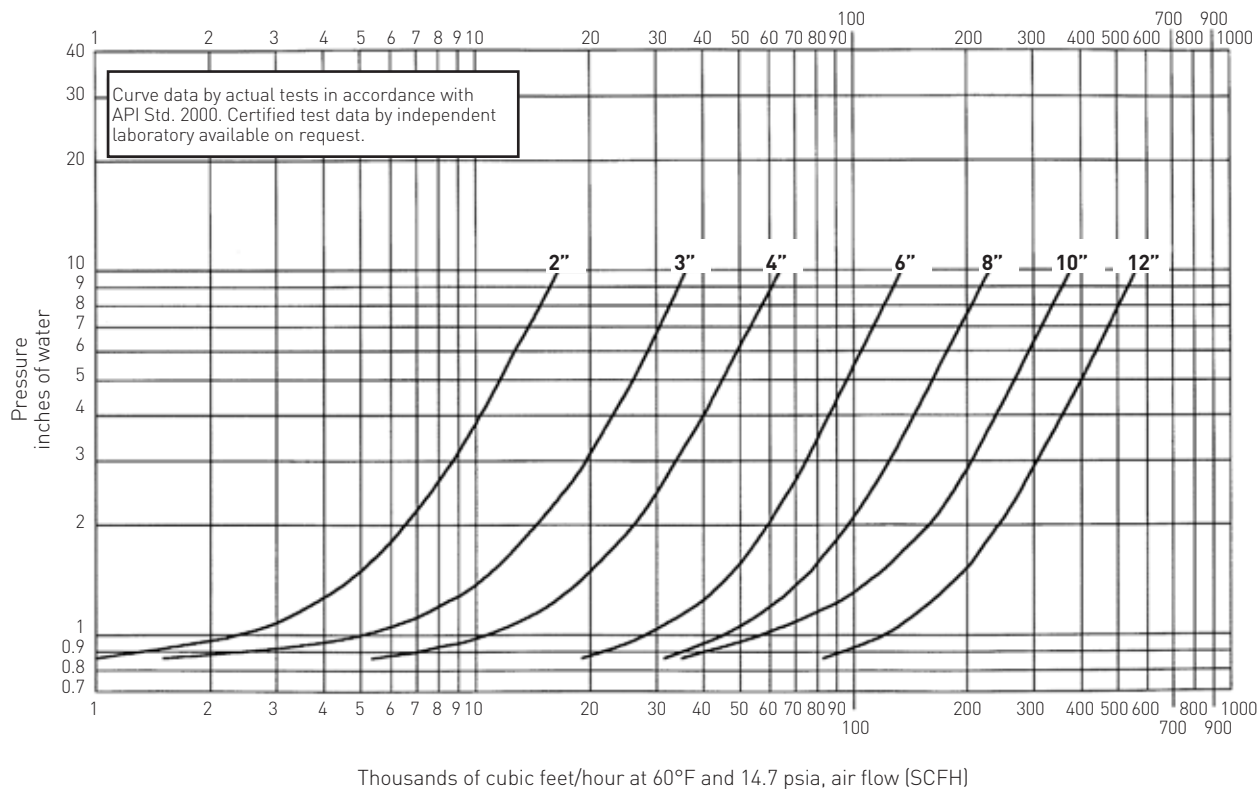
Dimensions are for preliminary general information and should not be used for construction purposes.

Certified dimensional drawings are available upon request.

VAREC 2010B/2020B PRESSURE AND VACUUM RELIEF VALVES

FLOW CAPACITY - FLOW CURVES

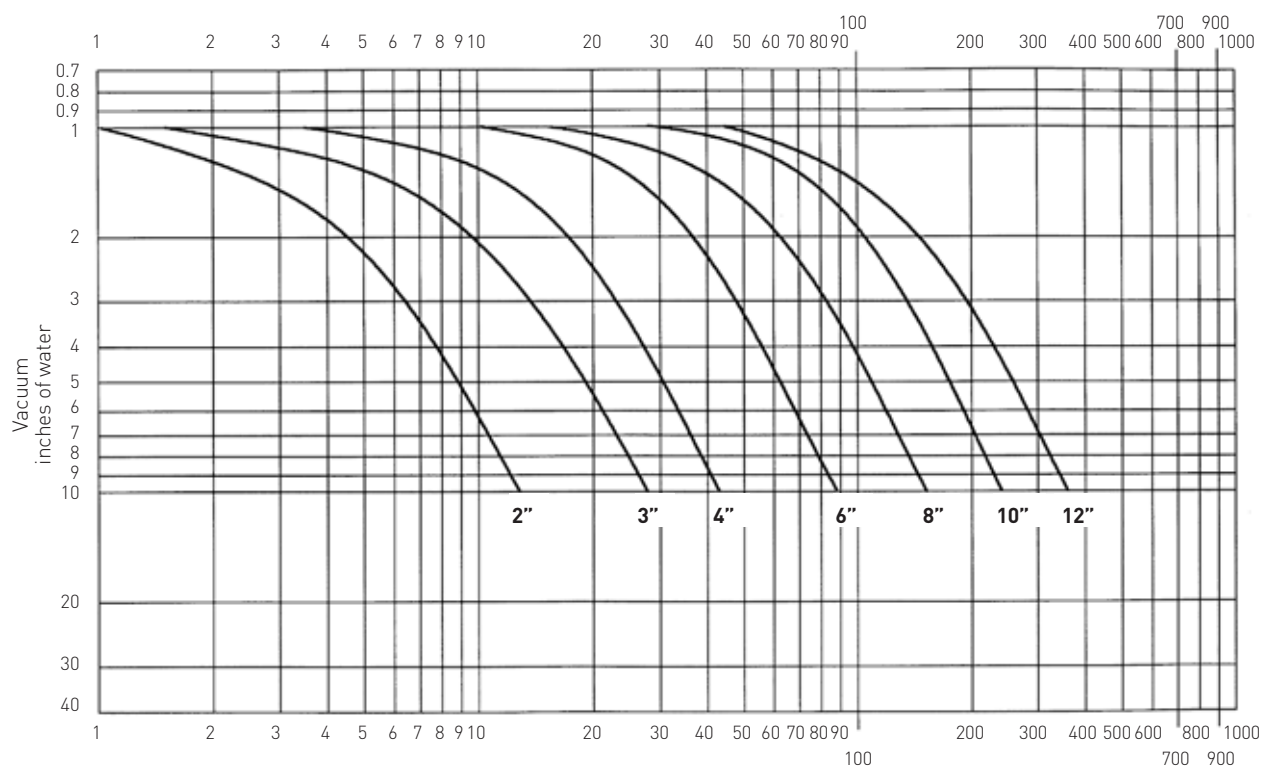
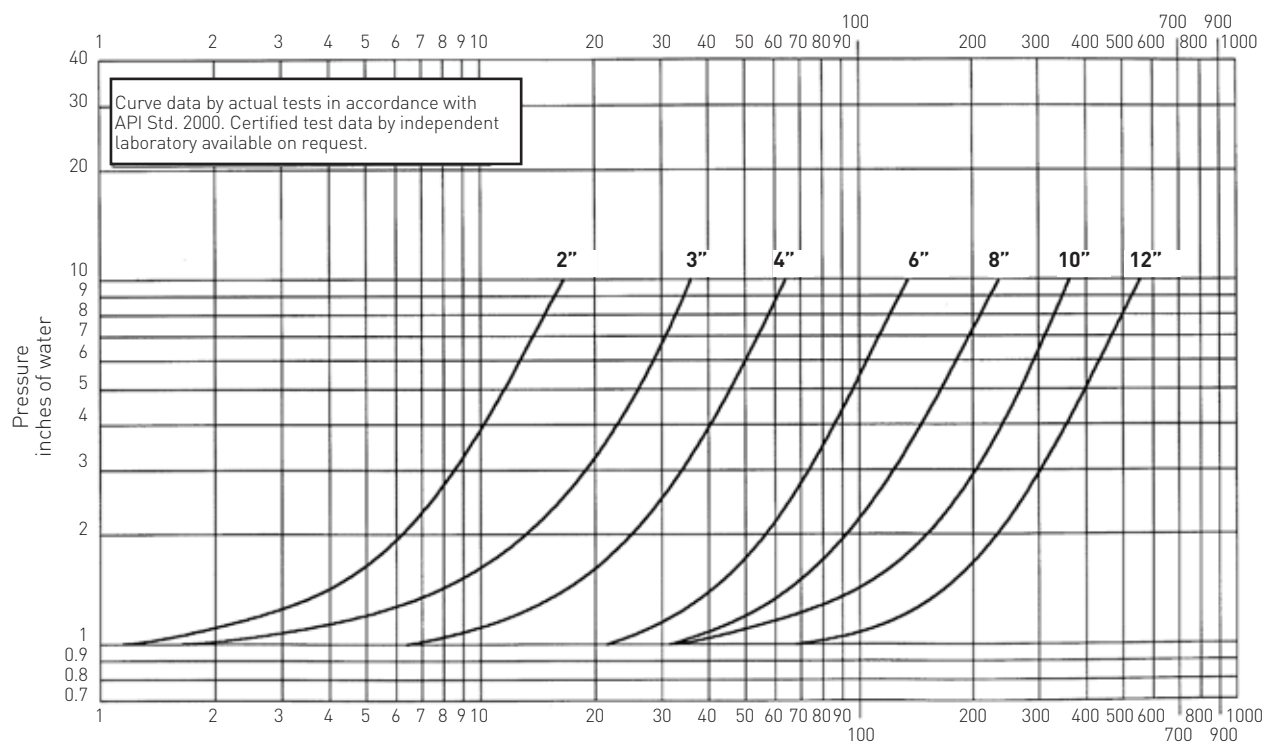
Flow curves for 2010B series, set at 0.865 inch of water



VAREC 2010B/2020B PRESSURE AND VACUUM RELIEF VALVES

FLOW CAPACITY - FLOW CURVES

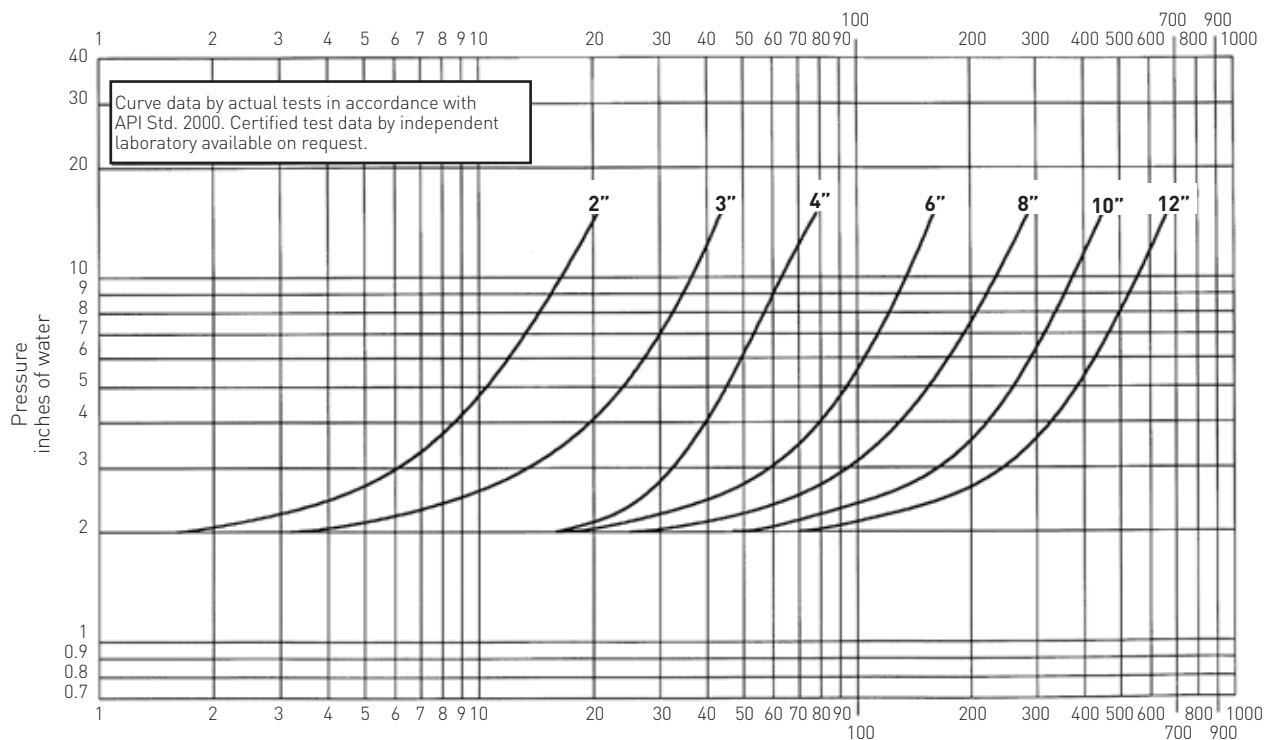
Flow curves for 2010B series, set at 1 inch of water



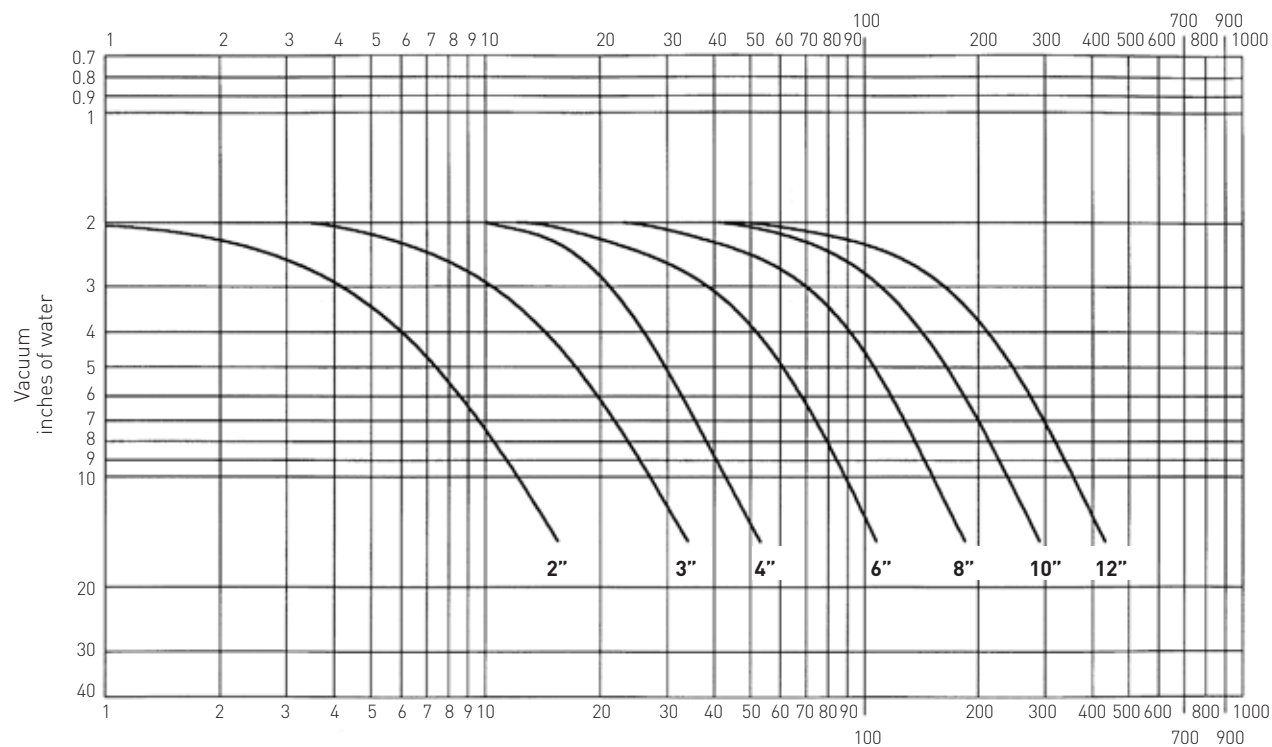
VAREC 2010B/2020B PRESSURE AND VACUUM RELIEF VALVES

FLOW CAPACITY - FLOW CURVES

Flow curves for 2010B series, set at 2 inches of water



Thousands of cubic feet/hour at 60°F and 14.7 psia, air flow (SCFH)

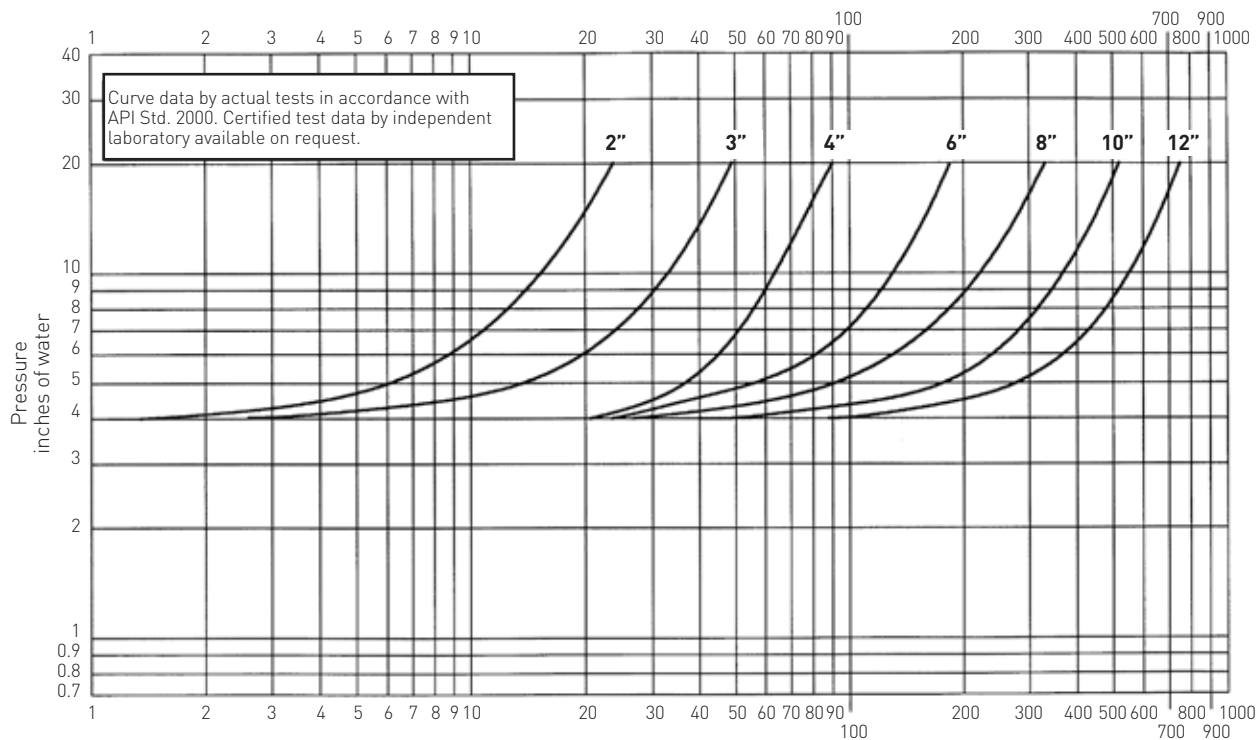


Thousands of cubic feet/hour at 60°F and 14.7 psia, air flow (SCFH)

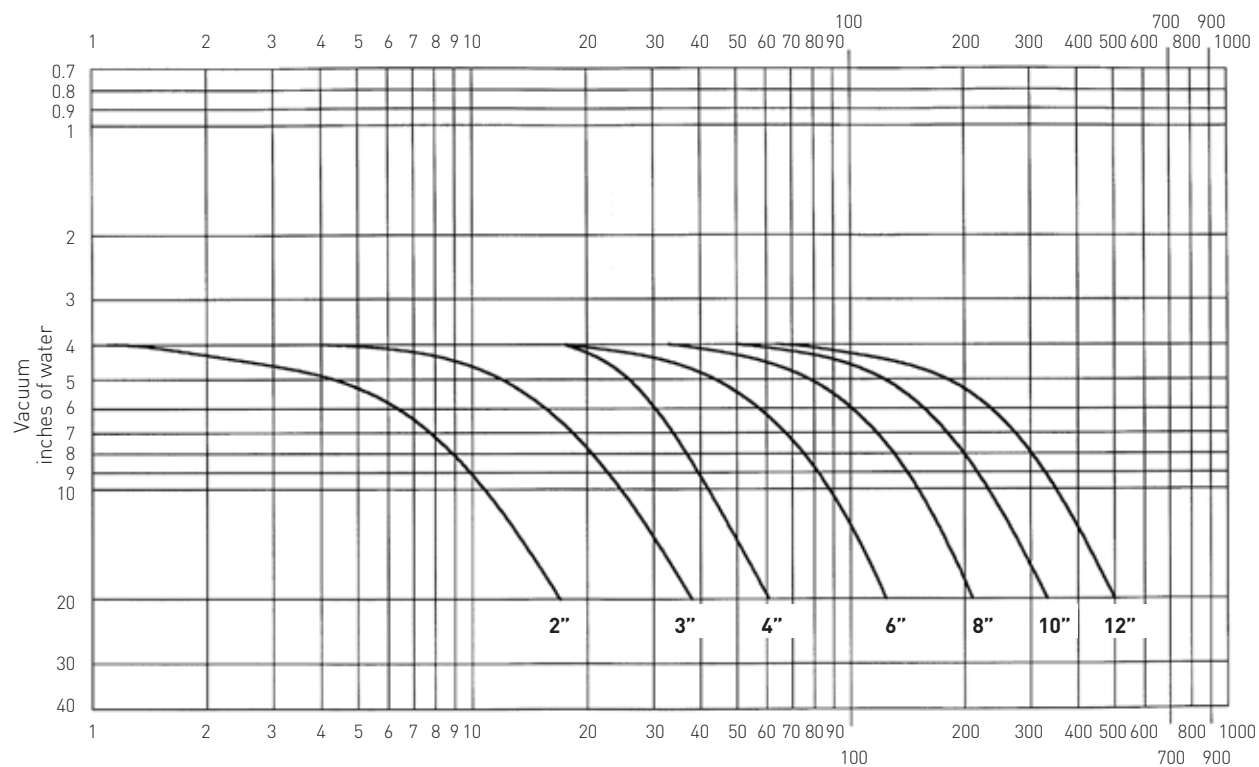
VAREC 2010B/2020B PRESSURE AND VACUUM RELIEF VALVES

FLOW CAPACITY - FLOW CURVES

Flow curves for 2010B series, set at 4 inches of water



Thousands of cubic feet/hour at 60°F and 14.7 psia, air flow (SCFH)

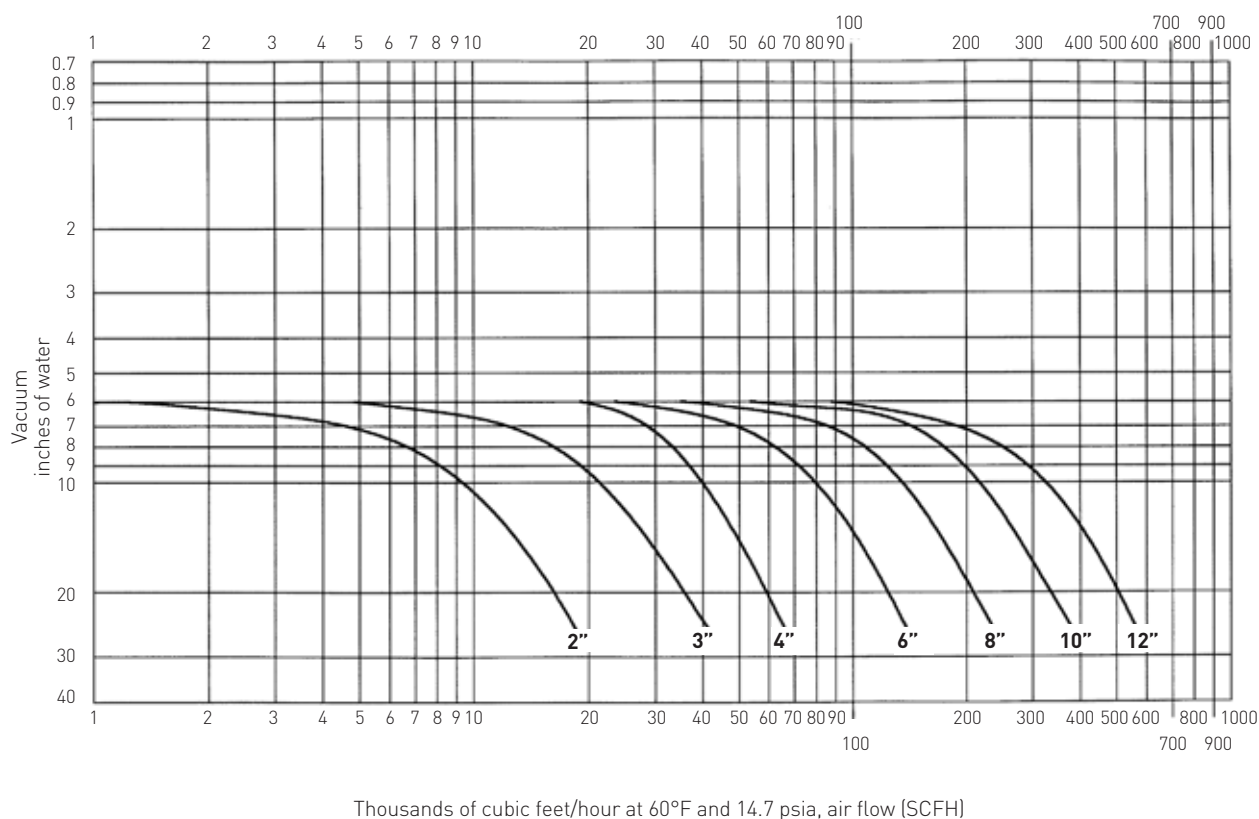
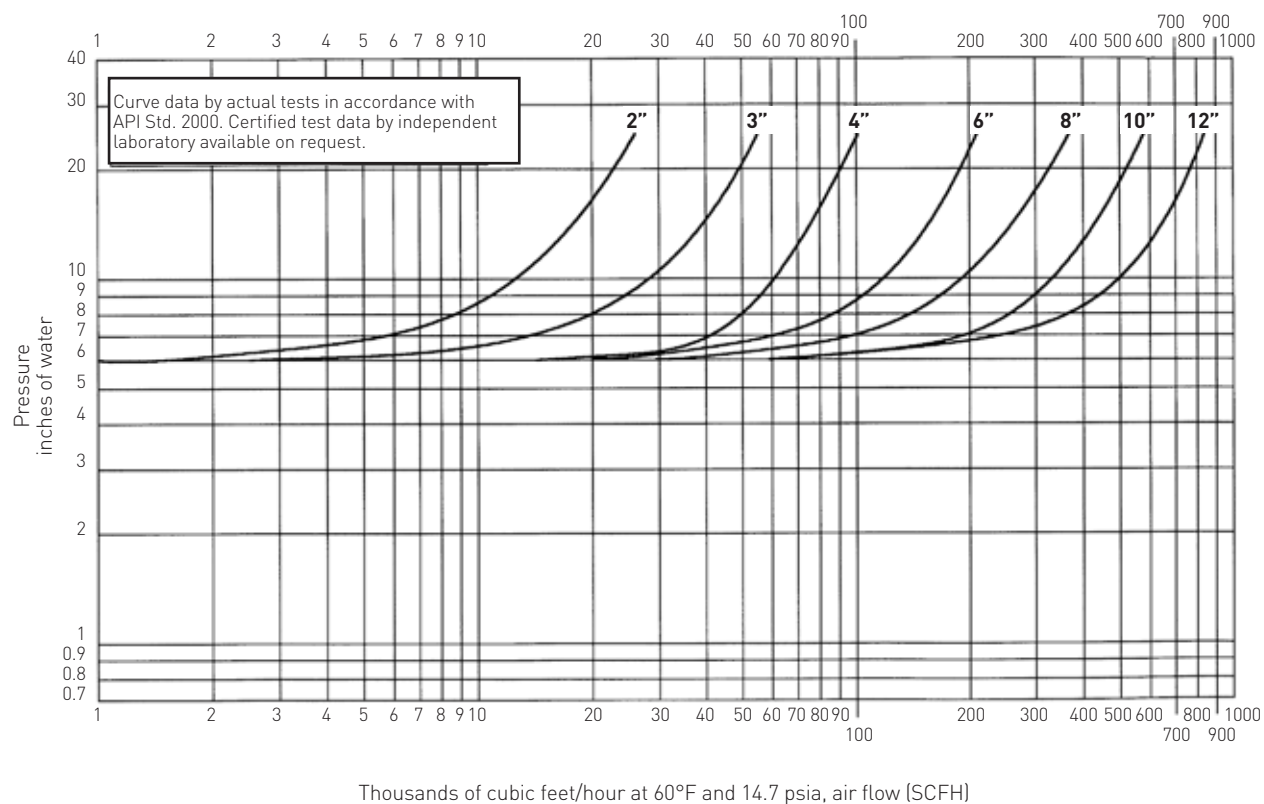


Thousands of cubic feet/hour at 60°F and 14.7 psia, air flow (SCFH)

VAREC 2010B/2020B PRESSURE AND VACUUM RELIEF VALVES

FLOW CAPACITY - FLOW CURVES

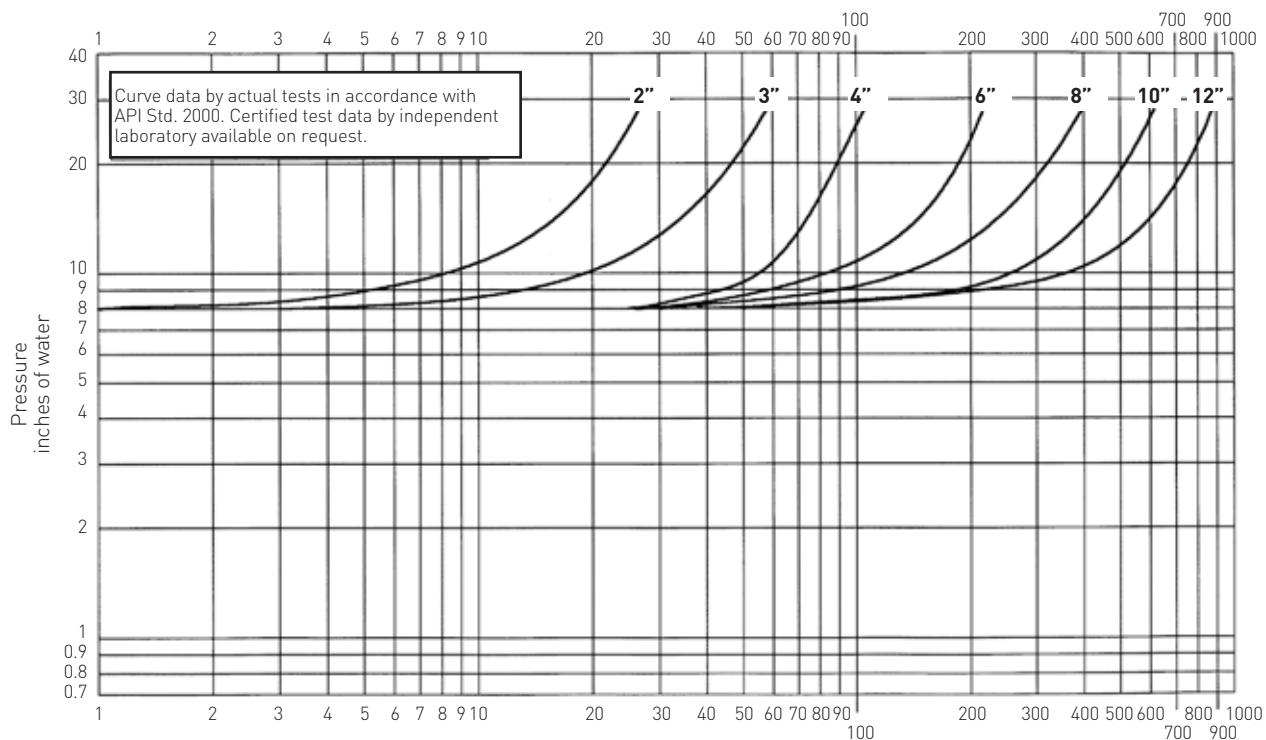
Flow curves for 2010B series, set at 6 inches of water



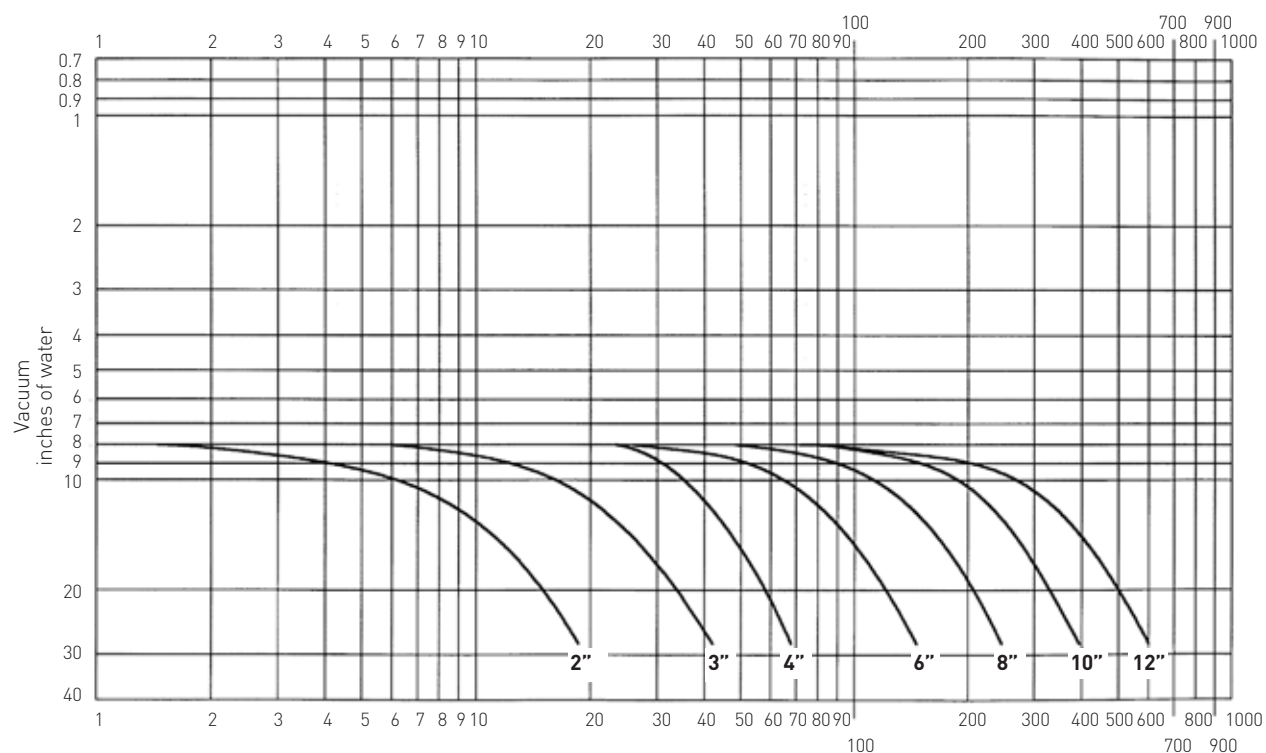
VAREC 2010B/2020B PRESSURE AND VACUUM RELIEF VALVES

FLOW CAPACITY - FLOW CURVES

Flow curves for 2010B series, set at 8 inches of water



Thousands of cubic feet/hour at 60°F and 14.7 psia, air flow (SCFH)

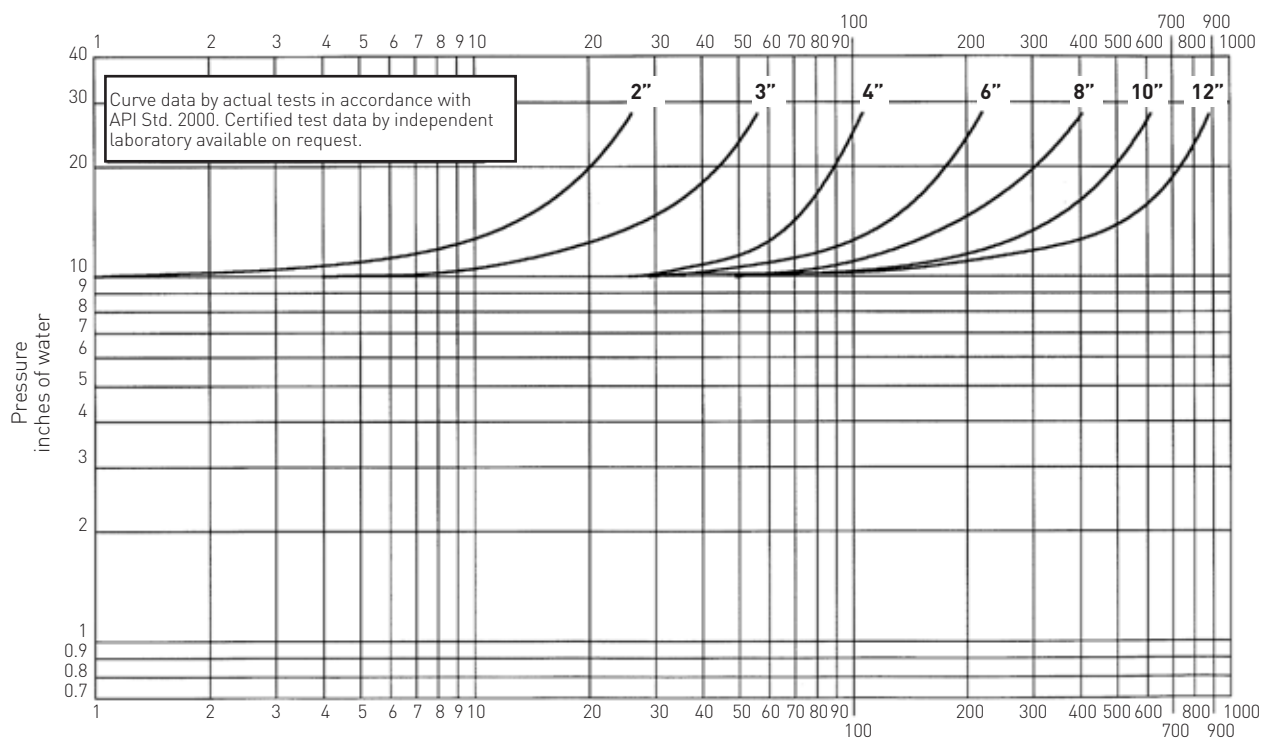


Thousands of cubic feet/hour at 60°F and 14.7 psia, air flow (SCFH)

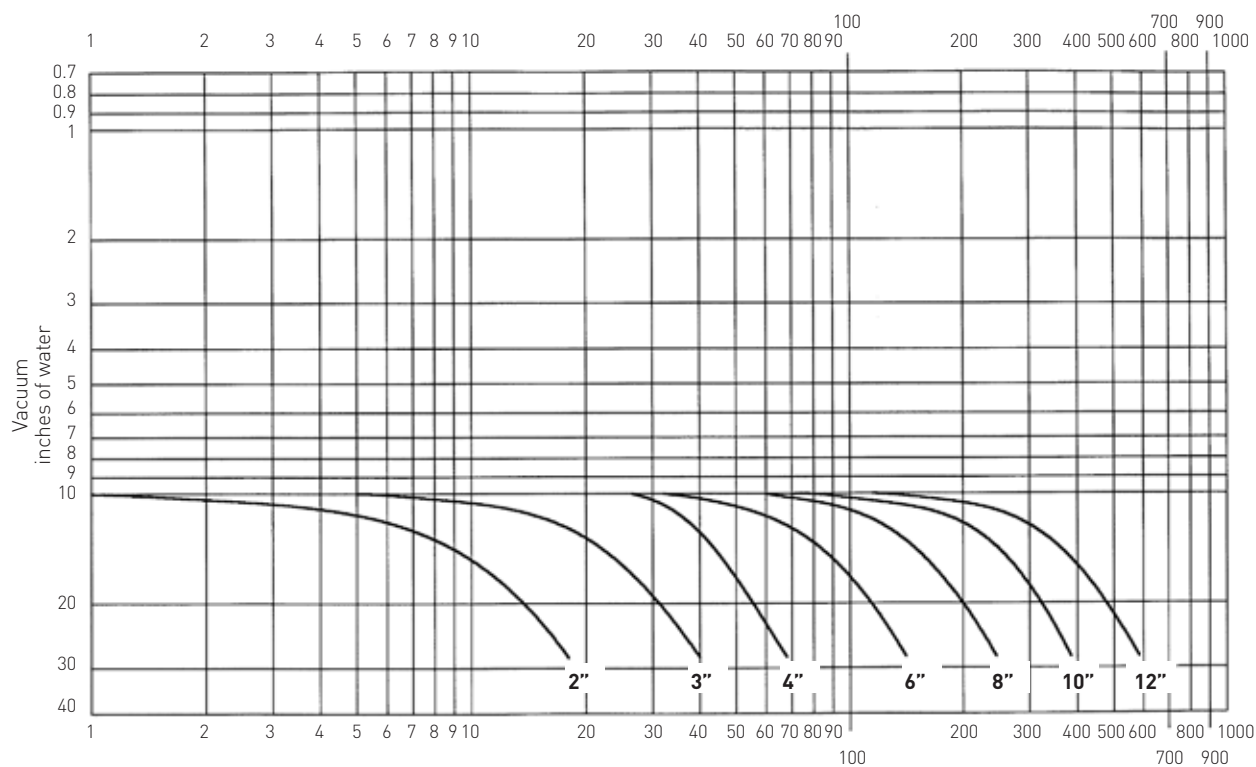
VAREC 2010B/2020B PRESSURE AND VACUUM RELIEF VALVES

FLOW CAPACITY - FLOW CURVES

Flow curves for 2010B series, set at 10 inches of water



Thousands of cubic feet/hour at 60°F and 14.7 psia, air flow (SCFH)

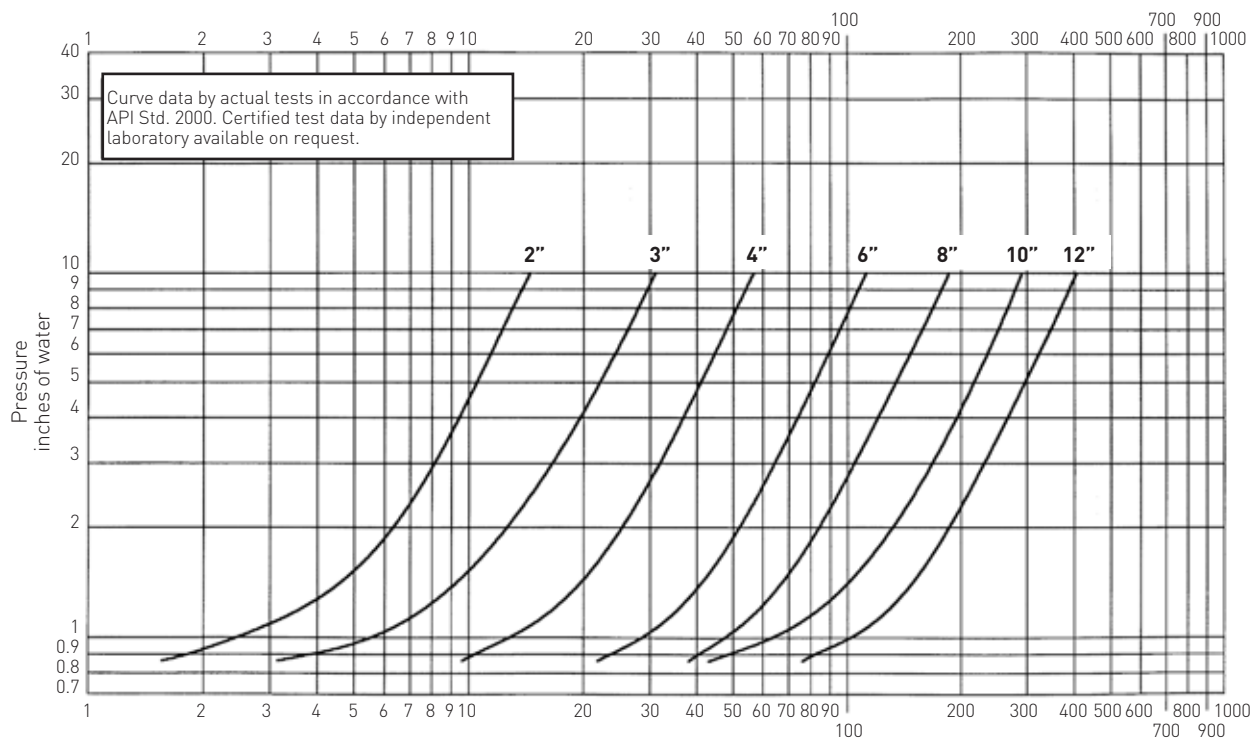


Thousands of cubic feet/hour at 60°F and 14.7 psia, air flow (SCFH)

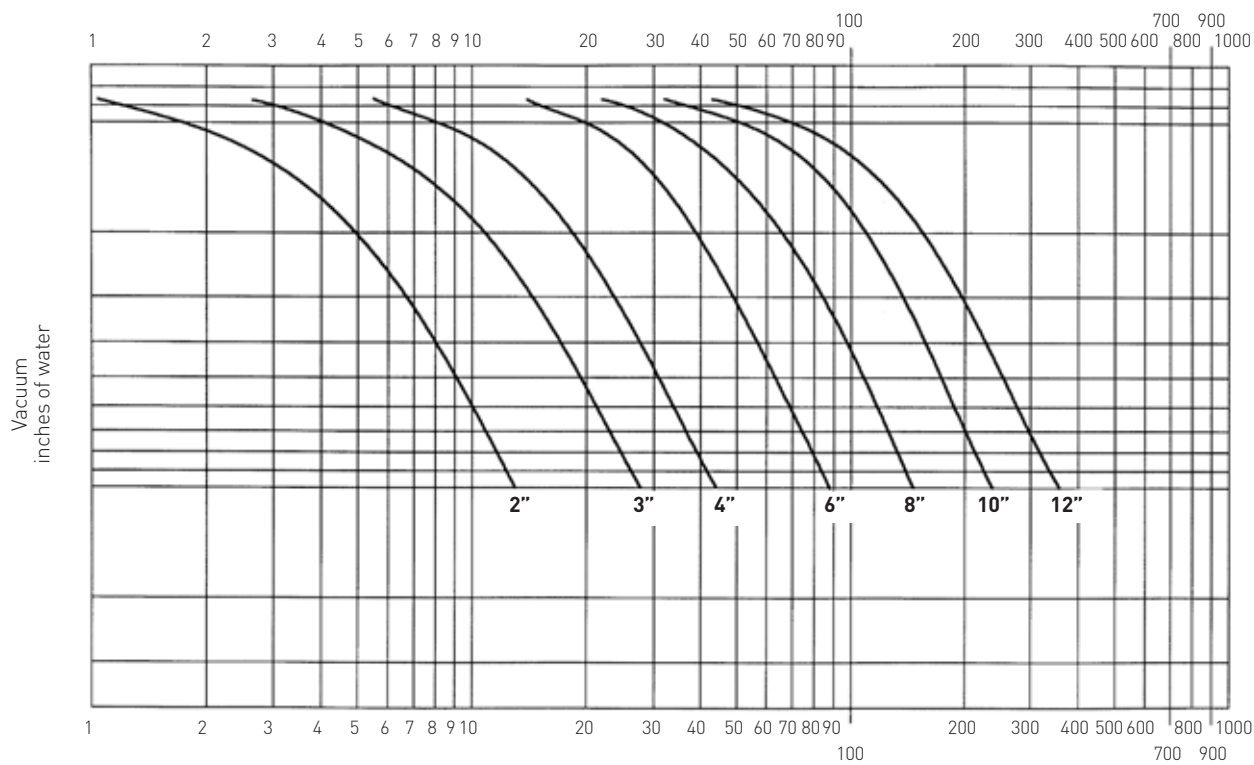
VAREC 2010B/2020B PRESSURE AND VACUUM RELIEF VALVES

FLOW CAPACITY - FLOW CURVES

Flow curves for 2020B series, set at 0.865 inch of water



Thousands of cubic feet/hour at 60°F and 14.7 psia, air flow (SCFH)

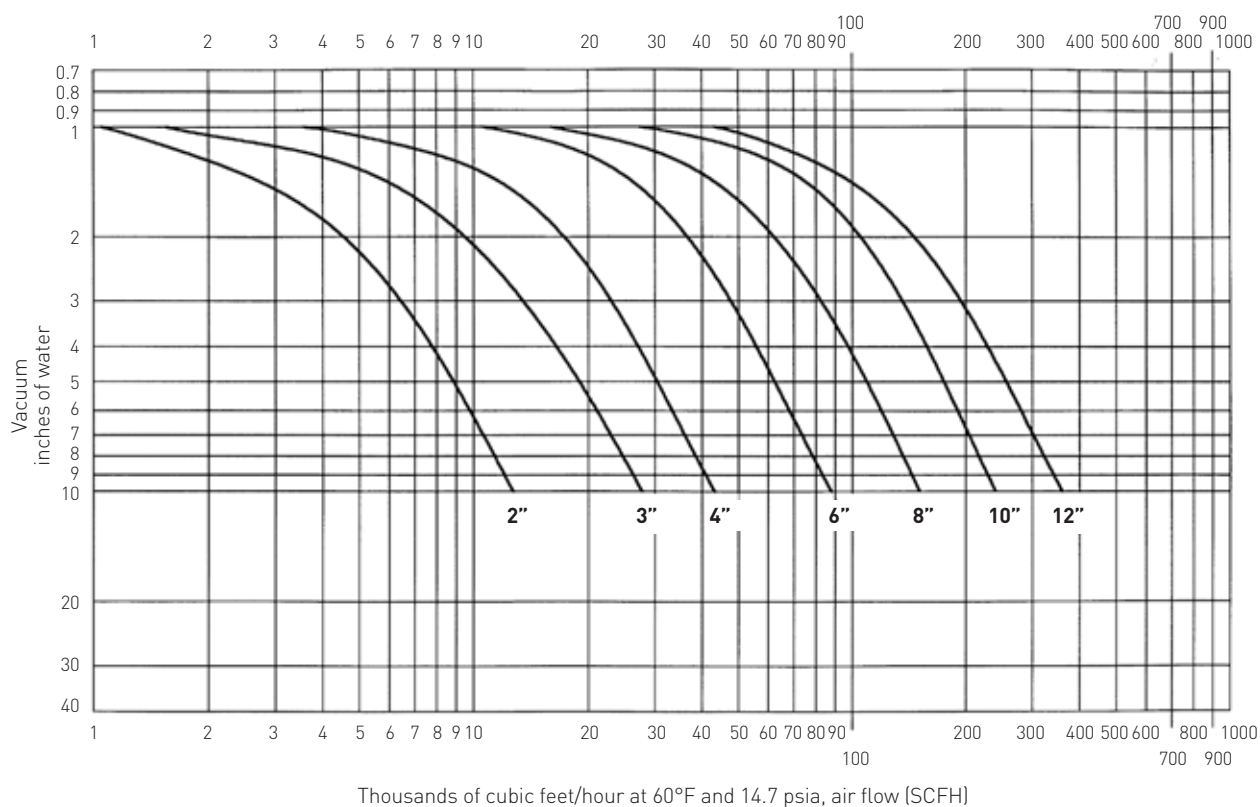
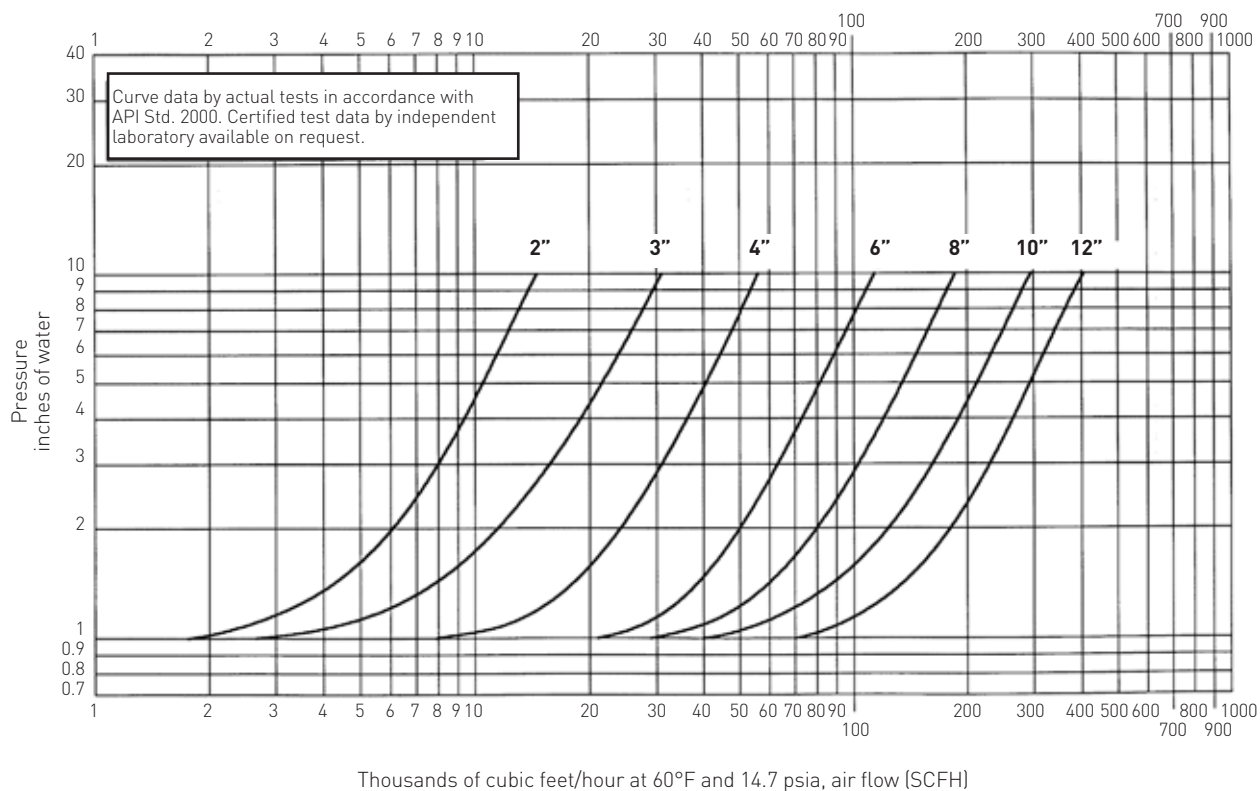


Thousands of cubic feet/hour at 60°F and 14.7 psia, air flow (SCFH)

VAREC 2010B/2020B PRESSURE AND VACUUM RELIEF VALVES

FLOW CAPACITY - FLOW CURVES

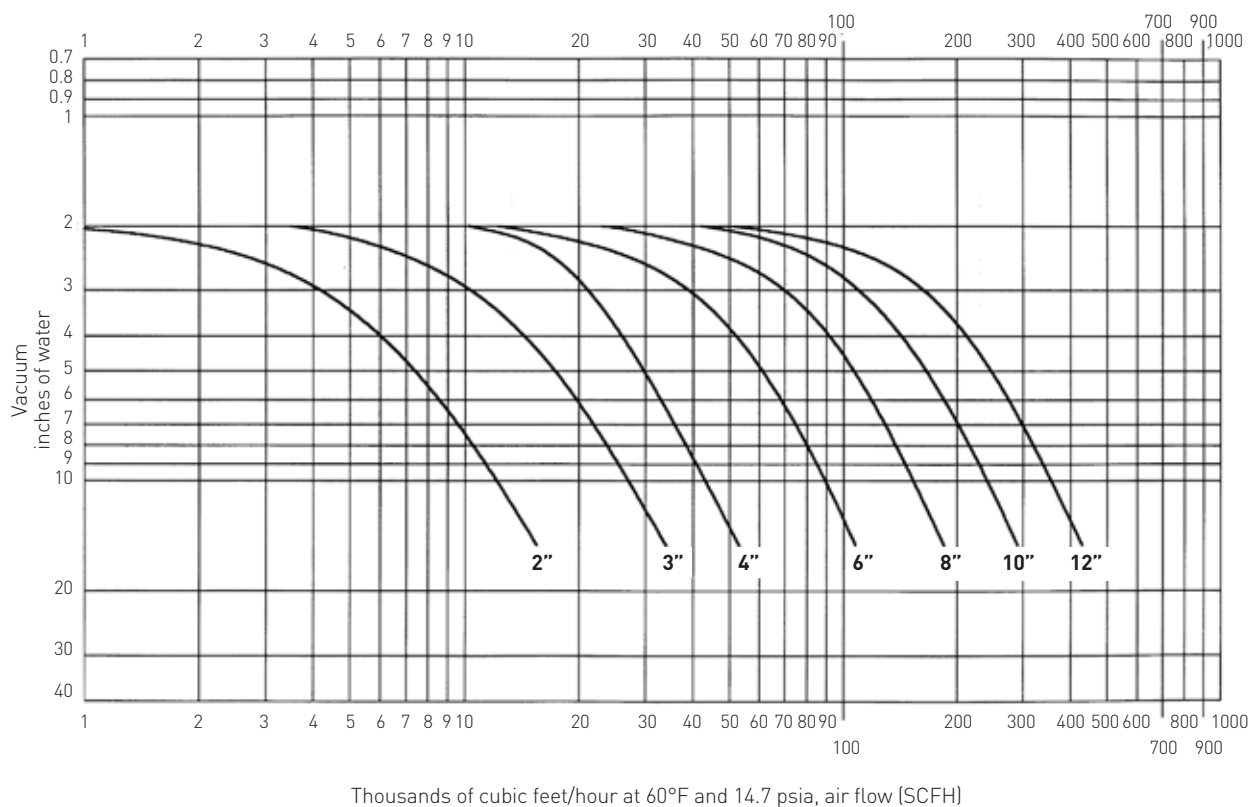
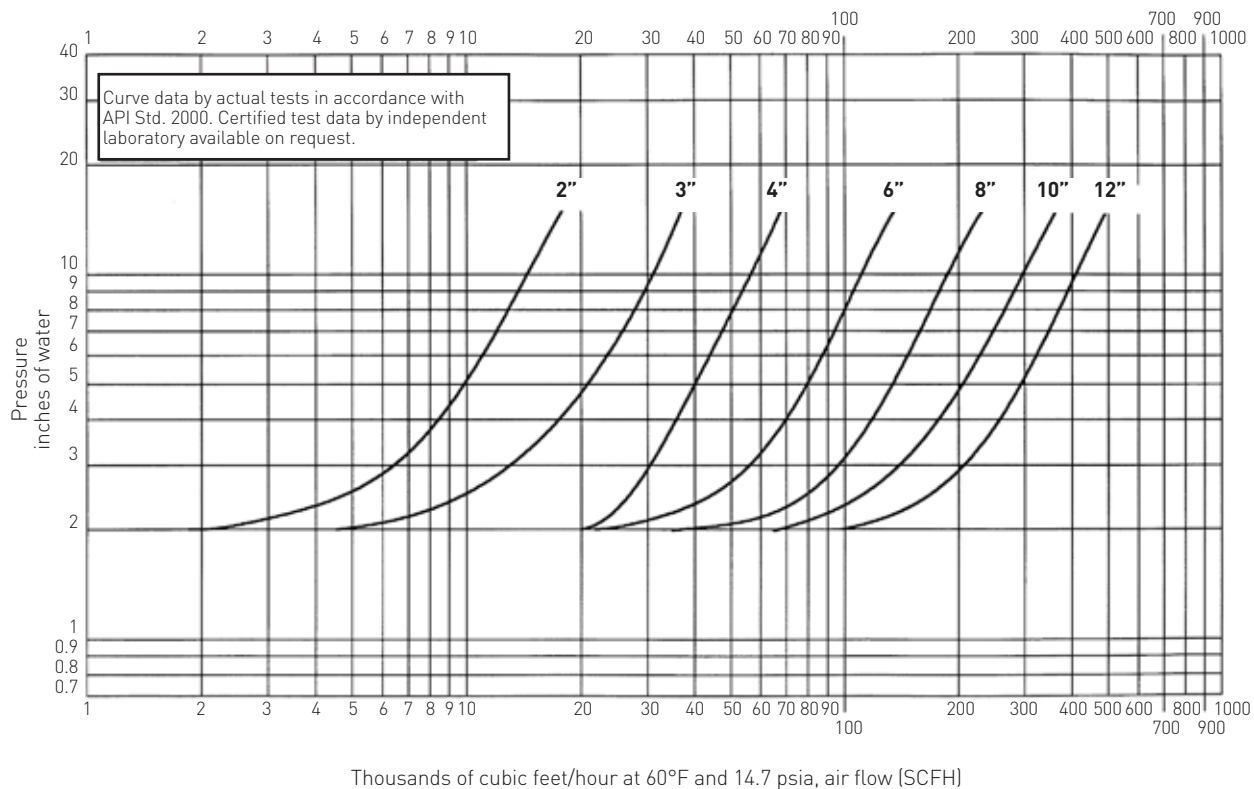
Flow curves for 2020B series, set at 1 inch of water



VAREC 2010B/2020B PRESSURE AND VACUUM RELIEF VALVES

FLOW CAPACITY - FLOW CURVES

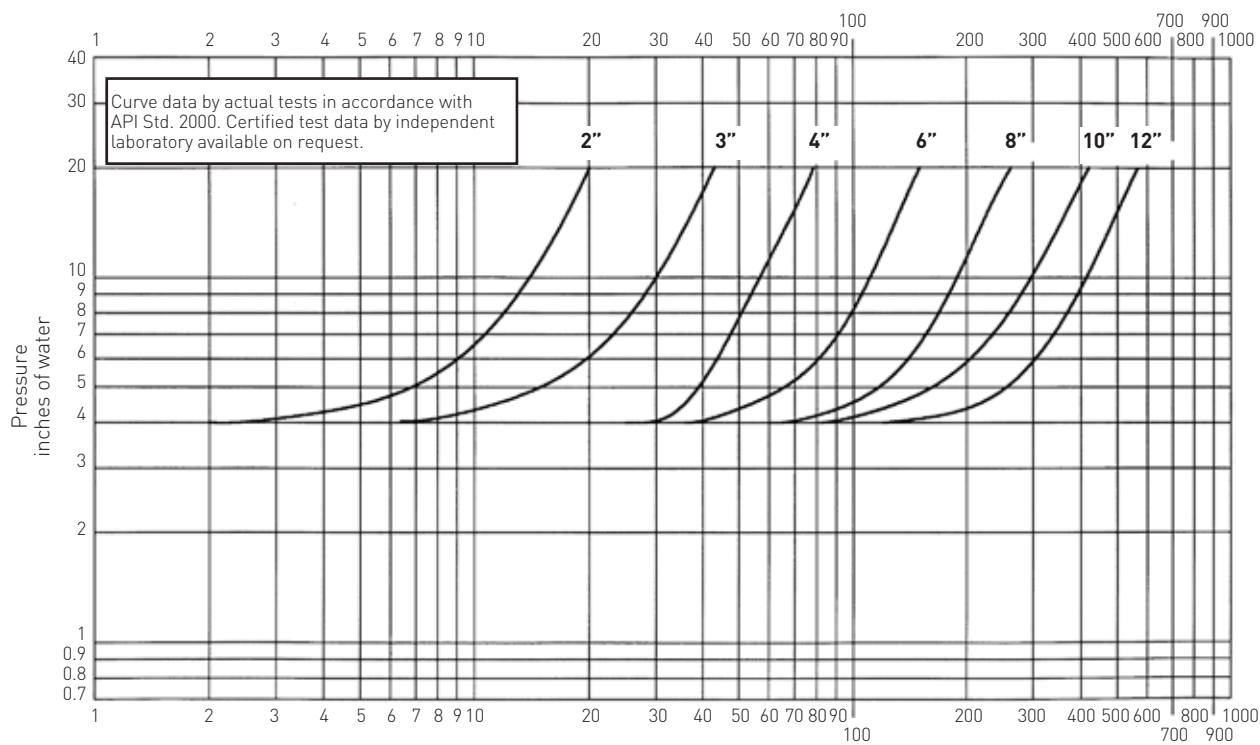
Flow curves for 2020B series, set at 2 inches of water



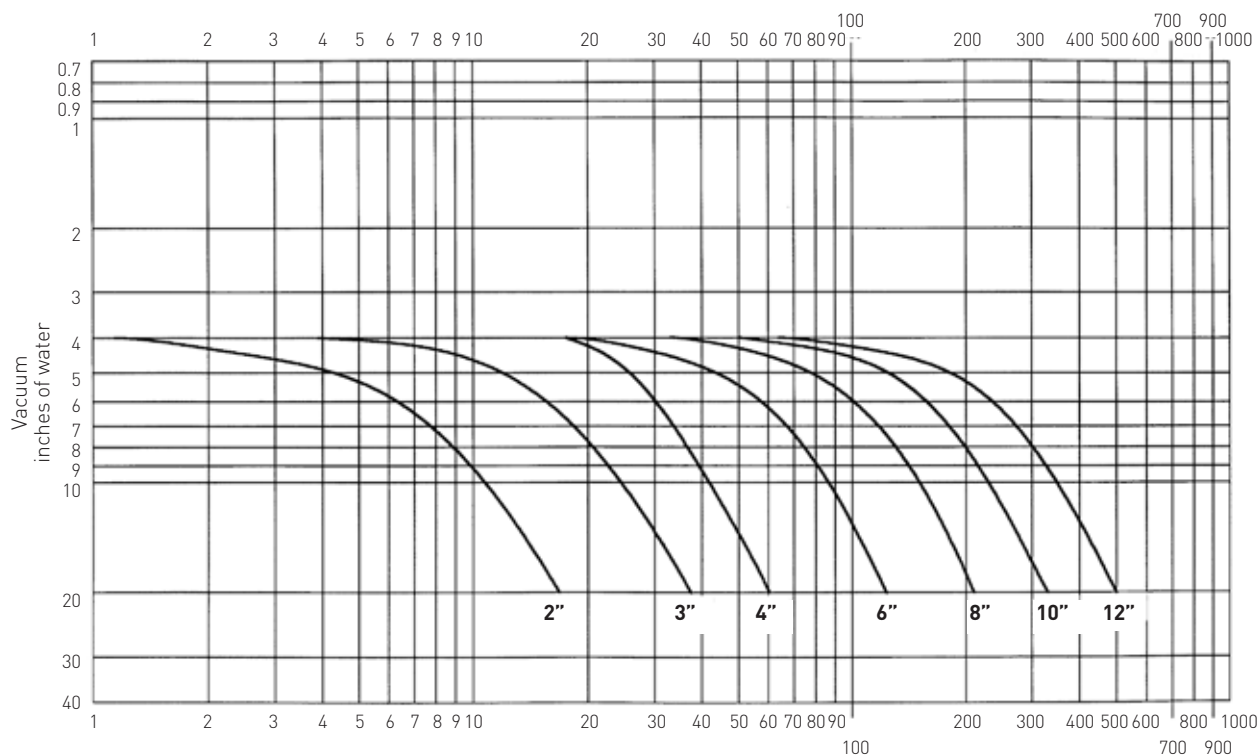
VAREC 2010B/2020B PRESSURE AND VACUUM RELIEF VALVES

FLOW CAPACITY - FLOW CURVES

Flow curves for 2020B series, set at 4 inches of water



Thousands of cubic feet/hour at 60°F and 14.7 psia, air flow (SCFH)

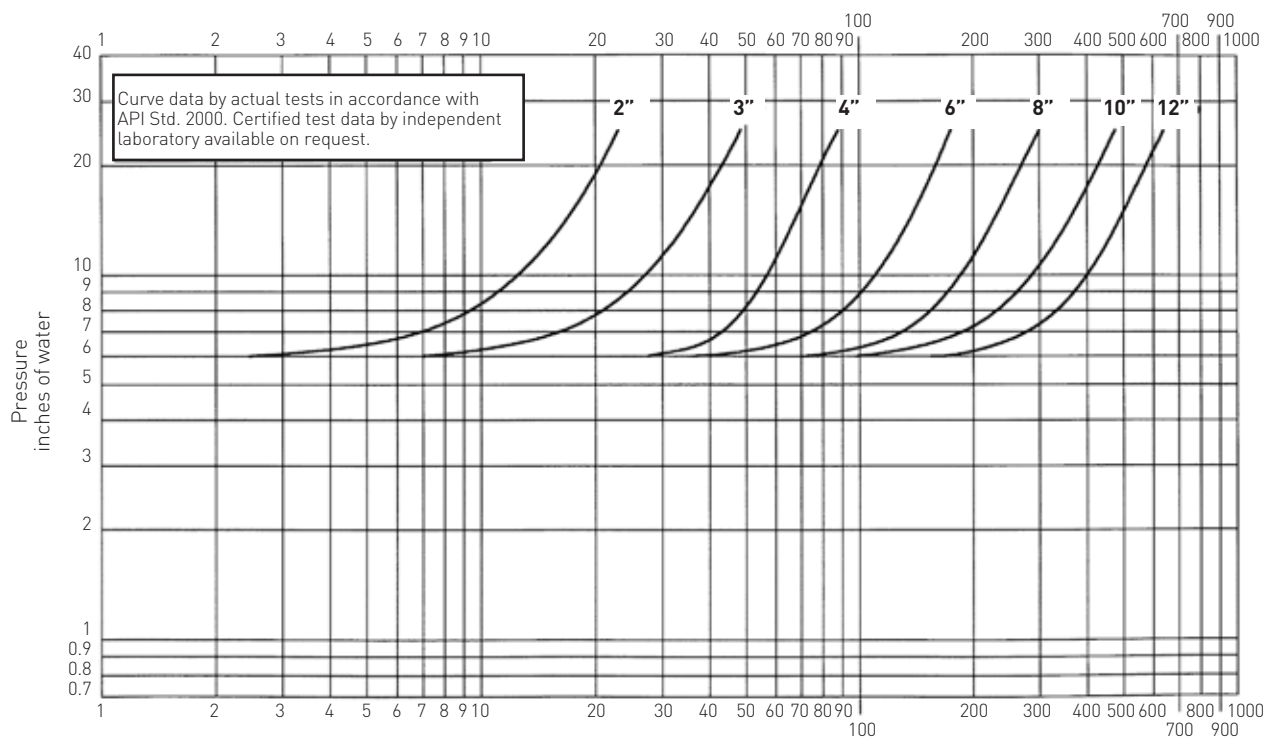


Thousands of cubic feet/hour at 60°F and 14.7 psia, air flow (SCFH)

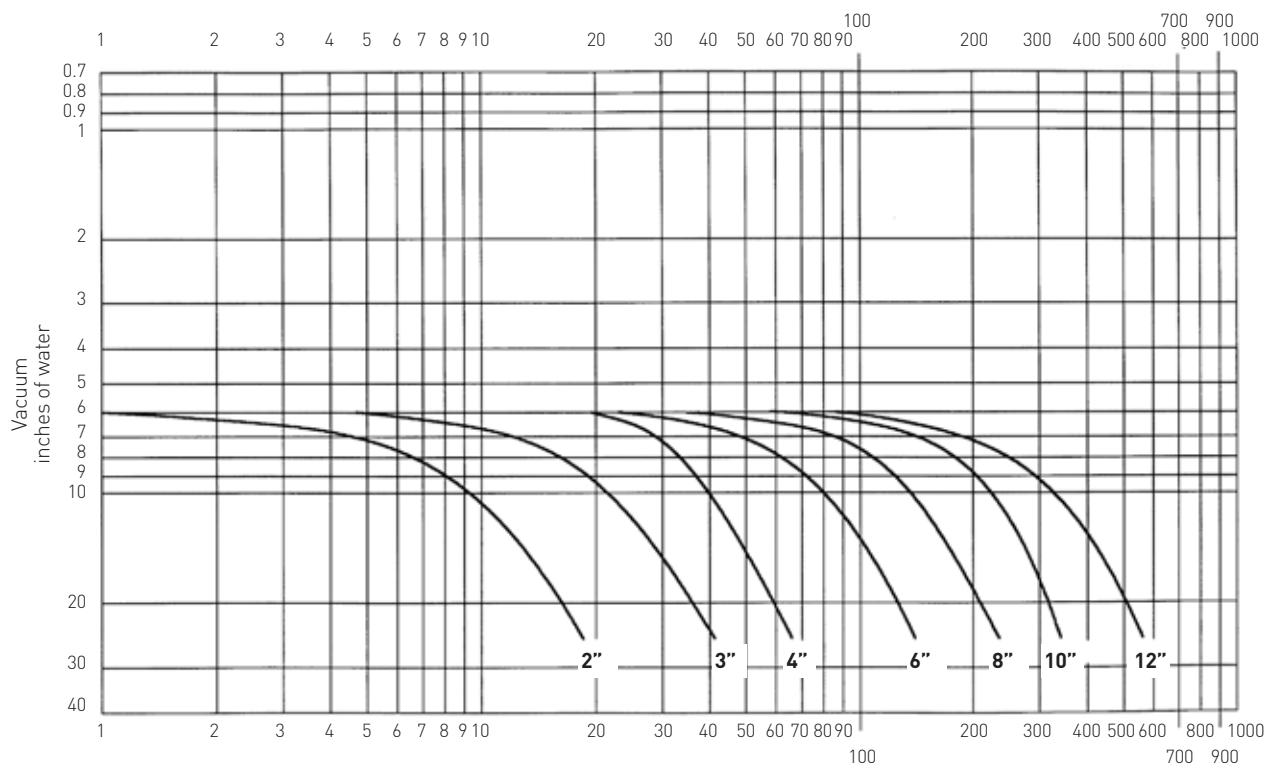
VAREC 2010B/2020B PRESSURE AND VACUUM RELIEF VALVES

FLOW CAPACITY - FLOW CURVES

Flow curves for 2020B series, set at 6 inches of water



Thousands of cubic feet/hour at 60°F and 14.7 psia, air flow (SCFH)

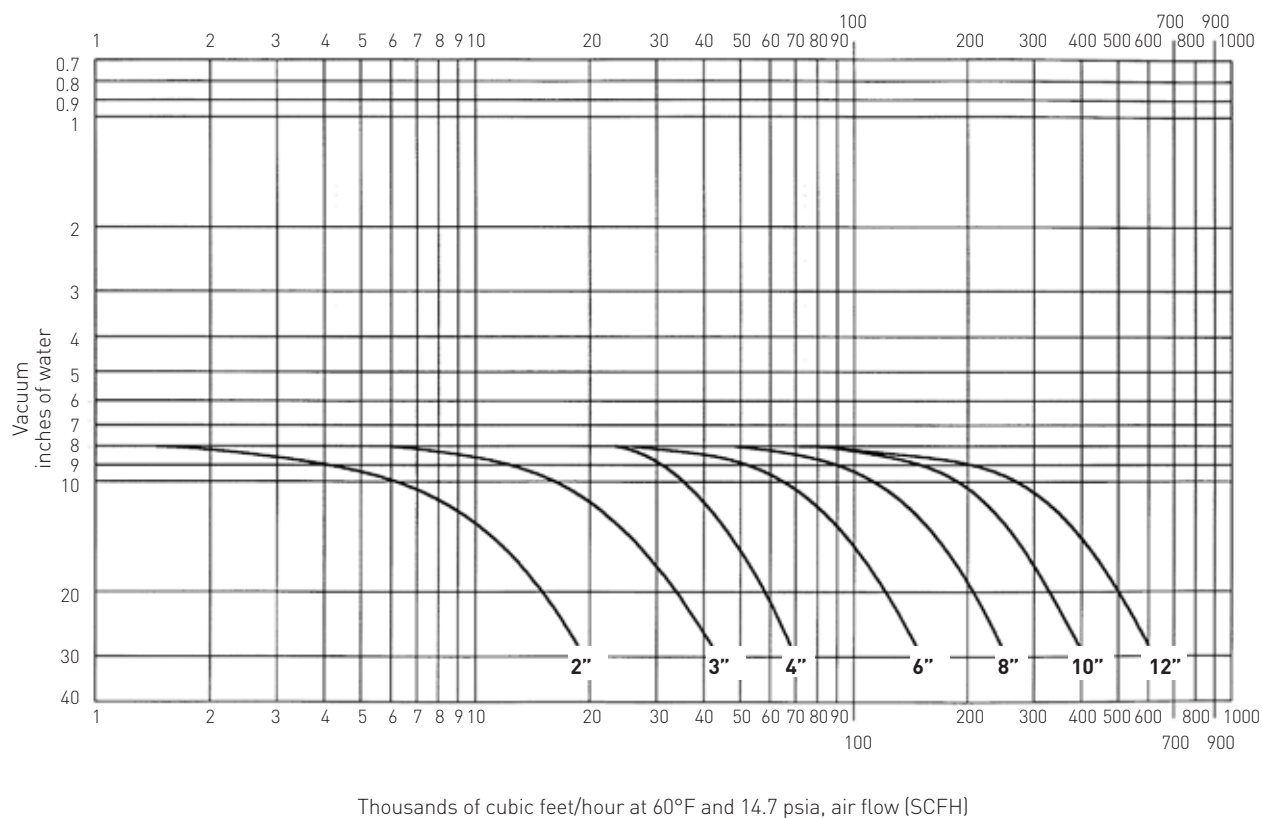
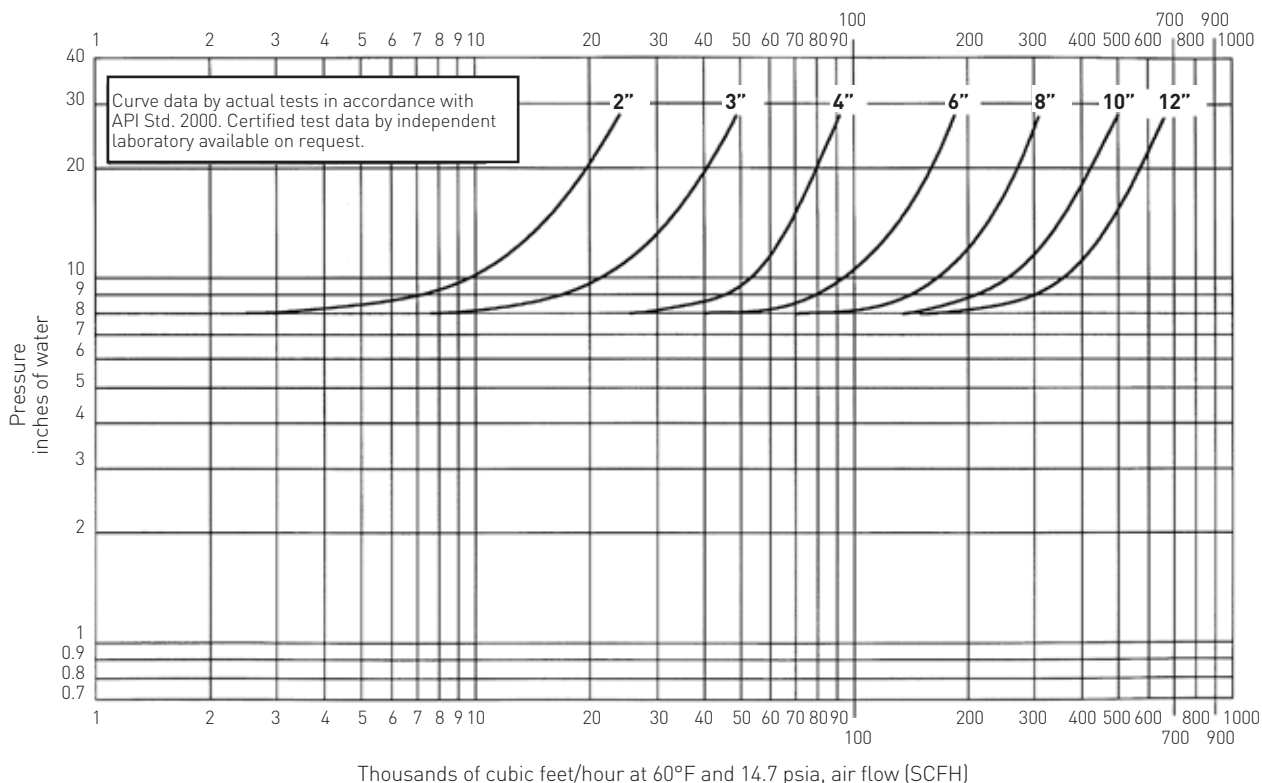


Thousands of cubic feet/hour at 60°F and 14.7 psia, air flow (SCFH)

VAREC 2010B/2020B PRESSURE AND VACUUM RELIEF VALVES

FLOW CAPACITY - FLOW CURVES

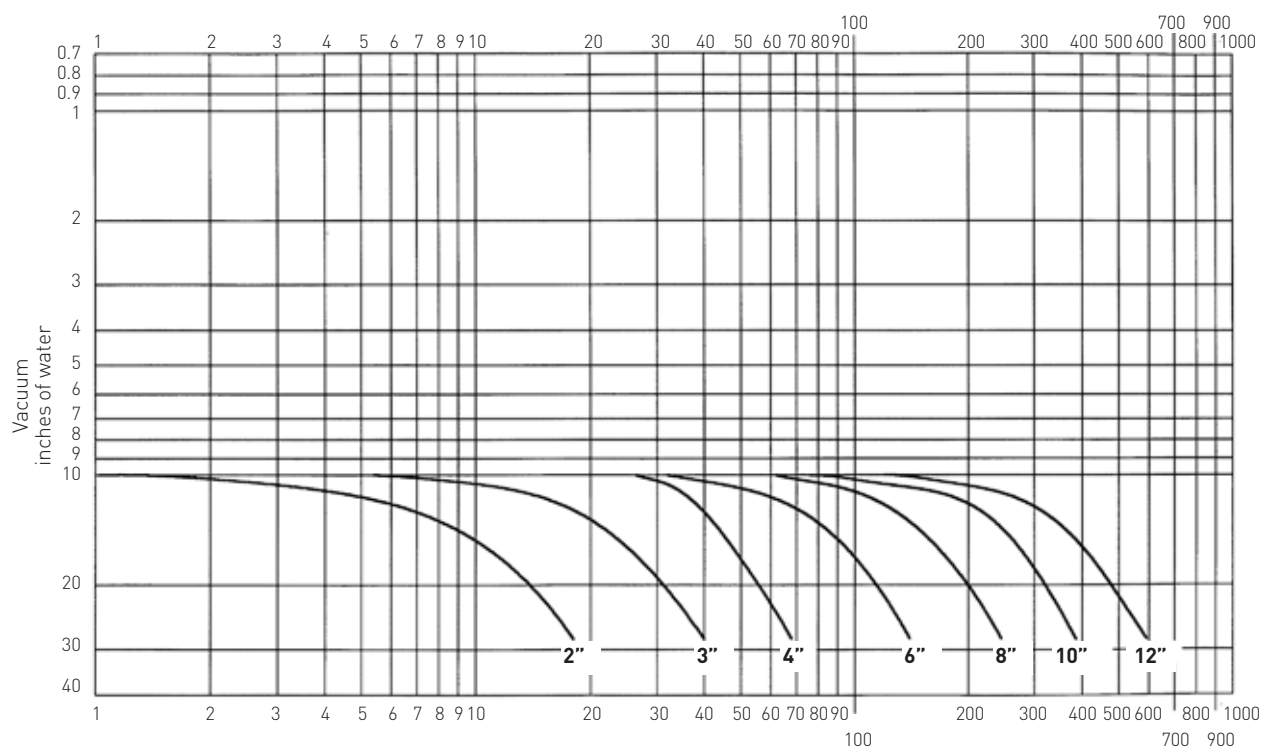
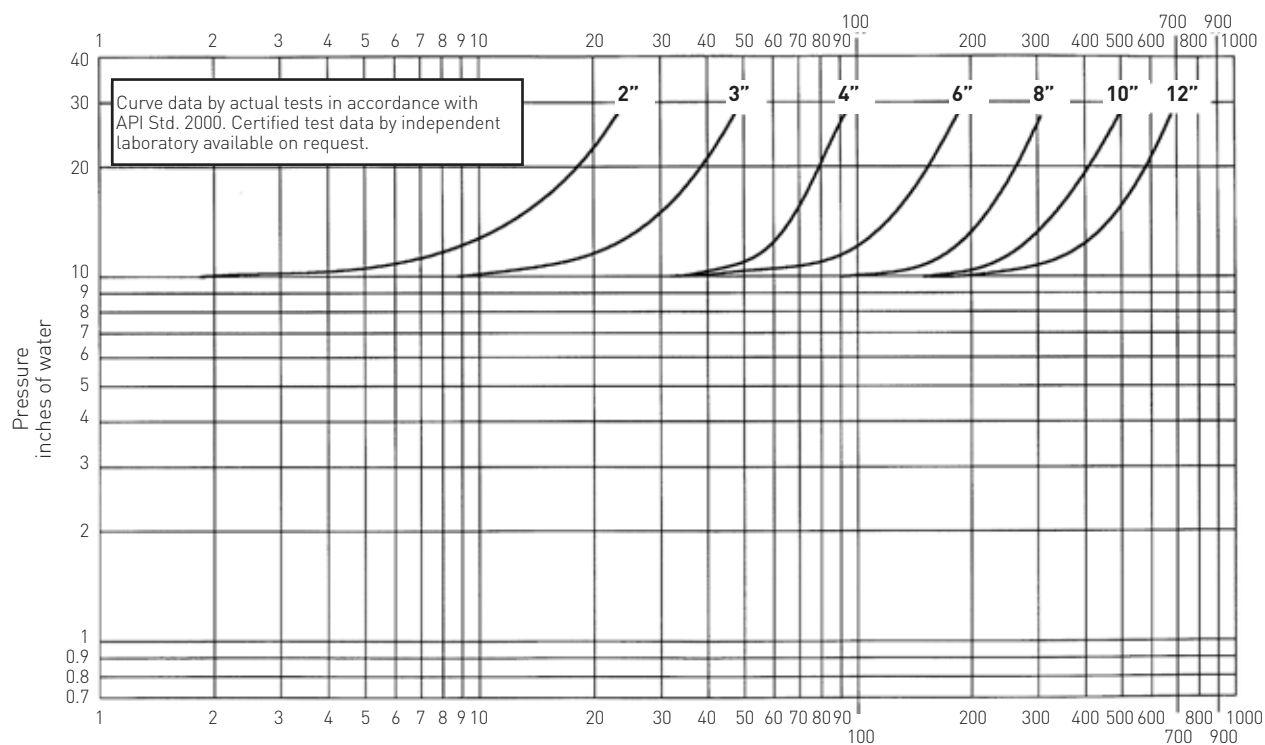
Flow curves for 2020B series, set at 8 inches of water



VAREC 2010B/2020B PRESSURE AND VACUUM RELIEF VALVES

FLOW CAPACITY - FLOW CURVES

Flow curves for 2020B series, set at 10 inches of water



VAREC 2010B/2020B PRESSURE AND VACUUM RELIEF VALVES

ORDERING INFORMATION

SELECTION GUIDE

Example:	20	1	0B	1	2	T	FF	OP	02	02
Model										
20 Air cushion pressure/vacuum relief valve										
Model										
1 Vent-to-atmosphere										
2 Pipe-away										
Configuration										
0B Standard										
1B All weather type (-25°F to 200°F)										
Size										
2 2" (2" x 3") 8 8" (8" x 10")										
3 3" (3" x 4") 0 10" (10" x 12")										
4 4" (4" x 6") 1 12" (12" x 14")										
6 6" (6" x 8")										
Body/trim material										
1 Aluminum/aluminum (-20°F to 250°F)										
2 Aluminum/316 stainless steel (-20°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)										
Insert material										
T PTFE (-65°F to 400°F)										
B NBR (-40°F to 250°F)										
V FKM (-15°F to 400°F)										
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 on aluminum)										
MR Raised face flange drilled to ANSI 150 with metric studs (not available on aluminum)										
DF DIN flat face flange drilling										
DR DIN raised face flange drilling (not available on aluminum)										
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)										
Pressure setting range (see table, page 4)										
02 Low setting										
04 High setting										
Vacuum setting range (see table, page 4)										
02 Low setting										
04 High setting										

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.