



An Ovivo Company

COVER EQUIPMENT

VAREC 3500B/ 3600B/ 3650B Series VACUUM OR PRESSURE RELIEF VALVES

The 3500B, 3600B and 3650B relief valves are designed to provide superior seat tightness while protecting liquid storage vessels, vapor recovery systems, and process systems from excess vacuum.

Introduction

The Varec 3500B & 3600B Relief Valves are designed to protect atmospheric and low pressure tanks from excessive vacuum while the 3650B protects from excess pressure or vacuum. The 3500B, 3600B and 3650B Series are dead-weight loaded vacuum breakers utilizing weights proportional to the seat surface area to achieve the desired setting. Flow curves are provided to help you select the proper size for your vacuum venting requirements.

Features

The Varec 3500B, 3600B and 3650B Series is designed to offer flexibility of installation.

- 3500B valves are tank top mounted
- 3600B valves are side mounted
- 3650B valves with flanged intake and discharge connections for “in-line” applications. May also be used for either pressure (top mounted) or vacuum (side mounted) relief applications
- Oversized port for maximum flow
- Replaceable “Air Cushion” PTFE seating for lowest available leakage for weight-loaded valve
- Pallet drip ring and self-draining housing protect the seating surface from condensate and freezing
- Side-and-center guided pallet
- Wide range of materials for service in most applications
- “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



3500B SERIES



3600B SERIES



3650B SERIES

Technical Data

Materials:	Aluminum, Carbon Steel Stainless Steel
Sizes:	
3500B/ 3600B:	2" to 12" [500 to 300 mm]
3650B:	2" x 3" to 12" x 14" [50 x 75 to 300 x 350 mm]
Connections:	Drilled Flange
Vacuum Settings:	2 PSIG [0.14 barg]

Specifications

Sizes

3500B & 3600B:	3650B:
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)

Mounting Studs

Fractional (Imperial)
Metric

Maximum Working Pressure

2 PSIG [0.138 barg] for Low Set Range
5 PSIG [0.345 barg] for High Set Range

This is a function of pallet thickness. Operating above these pressures could cause valve damage. Higher working pressures available. Please consult factory.

Testing

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

Setting Information

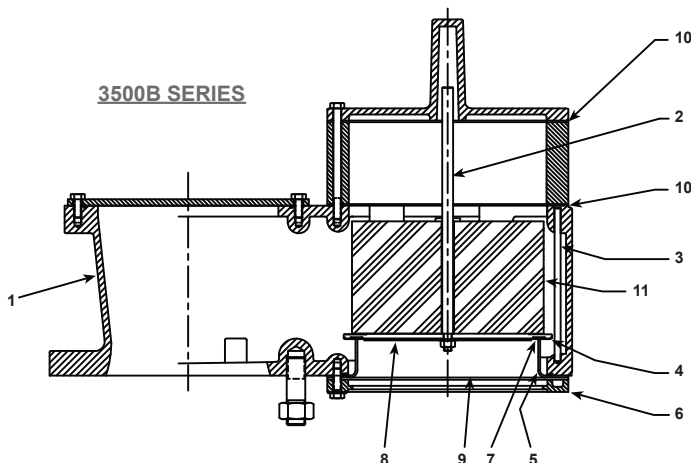
Size	Minimum Pressure/ Vacuum Set		Low Set Range	High Set Range
	Aluminum	316SS		
3500B				
2"	0.26 oz/ in ²	0.62 oz/ in ²	Min to 10 oz/ in ²	10.01 oz/ in ² to 2 psig
3"	0.21 oz/ in ²	0.49 oz/ in ²	Min to 10 oz/ in ²	10.01 oz/ in ² to 2 psig
4"	0.27 oz/ in ²	0.56 oz/ in ²	Min to 16 oz/ in ²	16.01 oz/ in ² to 2 psig
6"	0.26 oz/ in ²	0.61 oz/ in ²	Min to 16 oz/ in ²	16.01 oz/ in ² to 2 psig
8"	0.25 oz/ in ²	0.55 oz/ in ²	Min to 16 oz/ in ²	16.01 oz/ in ² to 2 psig
10"	0.25 oz/ in ²	0.63 oz/ in ²	Min to 16 oz/ in ²	16.01 oz/ in ² to 2 psig
12"	0.23 oz/ in ²	0.59 oz/ in ²	Min to 16 oz/ in ²	16.01 oz/ in ² to 2 psig
3501B				
2"	0.26 oz/ in ²	0.62 oz/ in ²	Min to 10 oz/ in ²	10.01 oz/ in ² to 2 psig
3"	0.21 oz/ in ²	0.49 oz/ in ²	Min to 10 oz/ in ²	10.01 oz/ in ² to 2 psig
4"	0.27 oz/ in ²	0.56 oz/ in ²	Min to 16 oz/ in ²	16.01 oz/ in ² to 2 psig
6"	0.26 oz/ in ²	0.61 oz/ in ²	Min to 16 oz/ in ²	16.01 oz/ in ² to 2 psig
8"	0.25 oz/ in ²	0.55 oz/ in ²	Min to 16 oz/ in ²	16.01 oz/ in ² to 2 psig
10"	0.49 oz/ in ²	1.33 oz/ in ²	Min to 16 oz/ in ²	16.01 oz/ in ² to 2 psig
12"	0.47 oz/ in ²	1.28 oz/ in ²	Min to 16 oz/ in ²	16.01 oz/ in ² to 2 psig
3600B				
2"	0.26 oz/ in ²	0.62 oz/ in ²	Min to 10 oz/ in ²	10.01 oz/ in ² to 2 psig
3"	0.26 oz/ in ²	0.62 oz/ in ²	Min to 10 oz/ in ²	10.01 oz/ in ² to 2 psig
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12"	0.25 oz/ in ²	0.63 oz/ in ²	Min to 16 oz/ in ²	16.01 oz/ in ² to 2 psig
3601B				
2"	0.26 oz/ in ²	0.62 oz/ in ²	Min to 10 oz/ in ²	10.01 oz/ in ² to 2 psig
3"	0.26 oz/ in ²	0.62 oz/ in ²	Min to 10 oz/ in ²	10.01 oz/ in ² to 2 psig
4"	0.21 oz/ in ²	0.49 oz/ in ²	Min to 10 oz/ in ²	10.01 oz/ in ² to 2 psig
6"	0.27 oz/ in ²	0.56 oz/ in ²	Min to 16 oz/ in ²	16.01 oz/ in ² to 2 psig
8"	0.26 oz/ in ²	0.61 oz/ in ²	Min to 16 oz/ in ²	16.01 oz/ in ² to 2 psig
10"	0.25 oz/ in ²	0.55 oz/ in ²	Min to 16 oz/ in ²	16.01 oz/ in ² to 2 psig
12"	0.49 oz/ in ²	1.33 oz/ in ²	Min to 16 oz/ in ²	16.01 oz/ in ² to 2 psig
3650B				
2"	0.26 oz/ in ²	0.62 oz/ in ²	Min to 10 oz/ in ²	10.01 oz/ in ² to 2 psig
3"	0.21 oz/ in ²	0.49 oz/ in ²	Min to 10 oz/ in ²	10.01 oz/ in ² to 2 psig
4"	0.27 oz/ in ²	0.56 oz/ in ²	Min to 16 oz/ in ²	16.01 oz/ in ² to 2 psig
6"	0.26 oz/ in ²	0.61 oz/ in ²	Min to 16 oz/ in ²	16.01 oz/ in ² to 2 psig
8"	0.25 oz/ in ²	0.55 oz/ in ²	Min to 16 oz/ in ²	16.01 oz/ in ² to 2 psig
10"	0.25 oz/ in ²	0.63 oz/ in ²	Min to 16 oz/ in ²	16.01 oz/ in ² to 2 psig
12"	0.23 oz/ in ²	0.59 oz/ in ²	Min to 16 oz/ in ²	16.01 oz/ in ² to 2 psig
3651B				
2"	0.26 oz/ in ²	0.62 oz/ in ²	Min to 10 oz/ in ²	10.01 oz/ in ² to 2 psig
3"	0.21 oz/ in ²	0.49 oz/ in ²	Min to 10 oz/ in ²	10.01 oz/ in ² to 2 psig
4"	0.27 oz/ in ²	0.56 oz/ in ²	Min to 16 oz/ in ²	16.01 oz/ in ² to 2 psig
6"	0.26 oz/ in ²	0.61 oz/ in ²	Min to 16 oz/ in ²	16.01 oz/ in ² to 2 psig
8"	0.25 oz/ in ²	0.55 oz/ in ²	Min to 16 oz/ in ²	16.01 oz/ in ² to 2 psig
10"	0.49 oz/ in ²	1.33 oz/ in ²	Min to 16 oz/ in ²	16.01 oz/ in ² to 2 psig
12"	0.47 oz/ in ²	1.28 oz/ in ²	Min to 16 oz/ in ²	16.01 oz/ in ² to 2 psig

Specifications

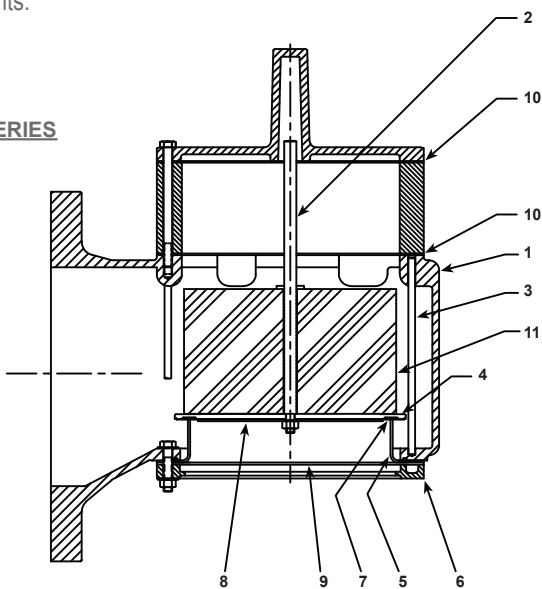
Available Materials

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

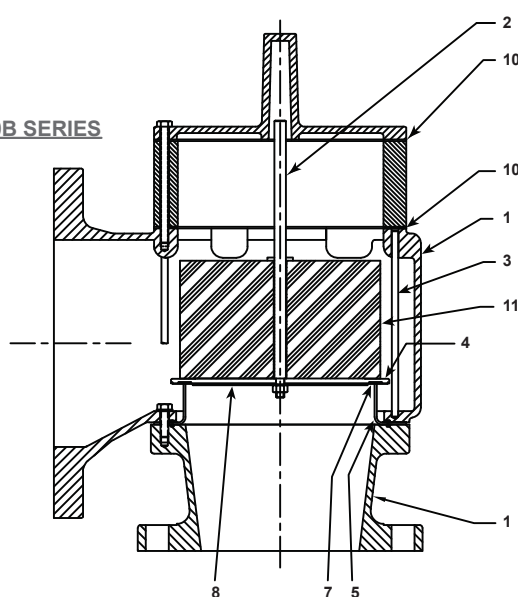
The 3500B, 3600B and 3650B are part of Varec's modular products which use interchangeable components for assembling a variety of functional configurations. The modular design provides flexibility of field installation and allows the valve to be reconfigured, repaired and even upgraded on-site by simply replacing or adding components.



3600B SERIES



3650B SERIES



Parts and Materials Table

Item	Material Code					
	1	2	3	4	5	
1 Body	Aluminum	Aluminum	Steel	316 SS	Iron	
2 Guide Stem	Aluminum	316 SS	316 SS	316 SS	316 SS	
3 Guide Posts	316 SS	316 SS	316 SS	316 SS	316 SS	
4 Pallet	Aluminum	316 SS	316 SS	316 SS	316 SS	
5 Seat Ring	Aluminum	316 SS	316 SS	316 SS	316 SS	
6 Seat Ring Retainer ¹	Polypropylene	Polypropylene	Polypropylene	Polypropylene	Polypropylene	
7 Insert ¹	PTFE	PTFE	PTFE	PTFE	PTFE	
8 Insert Retainer	Aluminum	316 SS	316 SS	316 SS	316 SS	
9 Screen ¹	HDPE	HDPE	HDPE	HDPE	HDPE	
10 Gaskets ¹	Fiber	Fiber	Fiber	Fiber	Fiber	
11 Weights	Lead	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 - 5 to achieve lower settings.

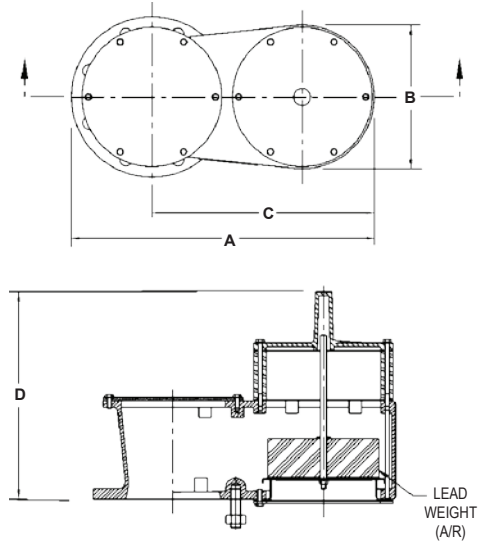
3 - All nuts and cap screws are 316 SS.

Specifications

3500B & 3501B

Dimensions, inches [mm]

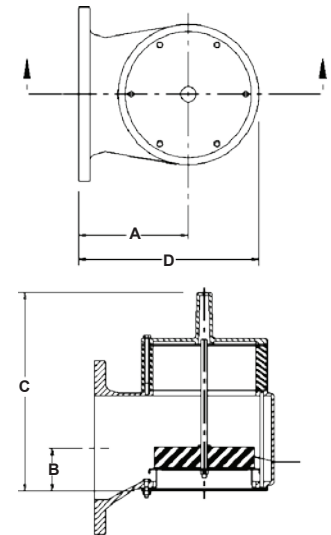
Size Code	2	3	4	6	8	0	1
Nominal Pipe Size	2	3	4	6	8	10	12
A	13 ¹ / ₈ [333]	16 ¹ / ₈ [410]	16 ¹⁵ / ₁₆ [430]	21 ³ / ₁₆ [538]	26 ⁵ / ₁₆ [668]	32 ¹⁵ / ₁₆ [837]	38 ⁷ / ₈ [987]
B	6 ³ / ₁₆ [157]	7 ⁵ / ₈ [194]	8 [203]	10 ¹ / ₁₆ [256]	12 ⁷ / ₈ [327]	16 ¹ / ₈ [410]	19 ¹ / ₄ [489]
C	9 ⁷ / ₈ [251]	12 ³ / ₁₆ [310]	12 ⁷ / ₁₆ [316]	15 ⁹ / ₁₆ [395]	19 ⁹ / ₁₆ [497]	24 ¹⁵ / ₁₆ [633]	29 ³ / ₈ [746]
D	5 ⁹ / ₁₆ [141]	6 ⁹ / ₁₆ [167]	11 ¹⁵ / ₁₆ [287]	11 ³ / ₁₆ [284]	13 ³ / ₁₆ [335]	16 ¹ / ₁₆ [408]	18 ³ / ₄ [476]
Low Set							
D	10 ¹ / ₁₆ [256]	11 ³ / ₁₆ [284]	7 ¹¹ / ₁₆ [195]	14 ⁷ / ₁₆ [367]	15 ⁵ / ₈ [397]	17 ³ / ₄ [451]	18 ³ / ₄ [476]
High Set							



3600B & 3601B

Dimensions, inches [mm]

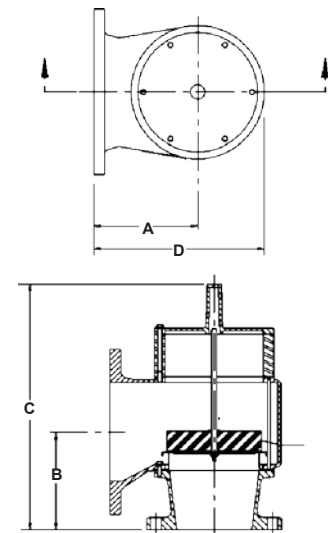
Size Code	2	3	4	6	8	10	1
Nominal Pipe Size	2	3	4	6	8	10	12
A	5 ¹ / ₂ [140]	4 ¹⁵ / ₁₆ [125]	6 ³ / ₈ [162]	8 [203]	8 ³ / ₄ [222]	11 ³ / ₁₆ [284]	13 ⁵ / ₈ [346]
B	1 ¹¹ / ₁₆ [43]	2 ¹ / ₈ [54]	2 ⁵ / ₁₆ [59]	2 ³ / ₈ [60]	3 ³ / ₄ [95]	4 ¹ / ₈ [105]	5 ⁷ / ₁₆ [138]
C	5 ⁷ / ₈ [149]	5 ¹⁵ / ₁₆ [151]	7 ³ / ₁₆ [183]	8 ⁵ / ₁₆ [211]	12 ¹ / ₂ [318]	14 ¹ / ₁₆ [357]	16 ⁷ / ₈ [429]
Low Set							
C	10 ⁷ / ₁₆ [265]	10 ⁷ / ₁₆ [265]	11 ¹⁵ / ₁₆ [303]	12 ³ / ₈ [314]	15 ¹¹ / ₁₆ [398]	16 ¹ / ₂ [419]	18 ⁹ / ₁₆ [471]
High Set							
D	8 ⁵ / ₈ [219]	8 [203]	10 ³ / ₁₆ [259]	12 ¹ / ₄ [311]	14 ³ / ₁₆ [360]	17 ¹⁵ / ₁₆ [456]	22 ³ / ₈ [568]



3650B & 3651B

Dimensions, inches [mm]

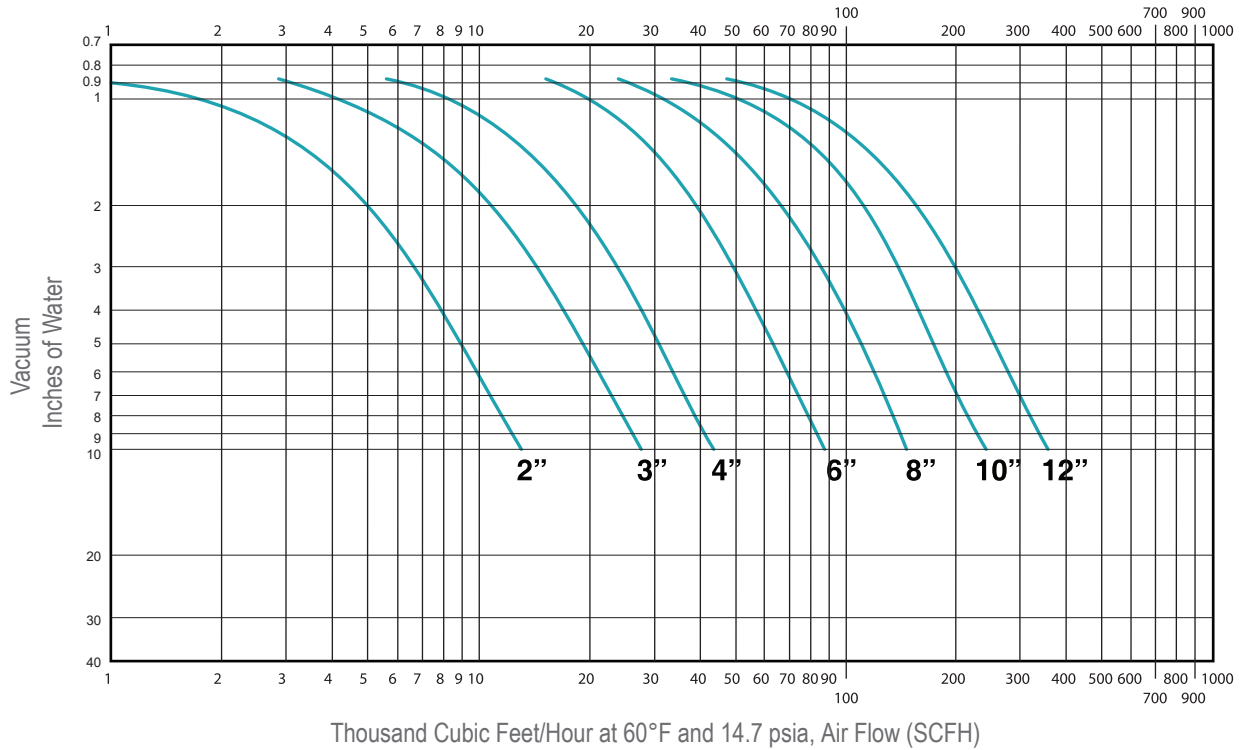
Size Code	2	3	4	6	8	0	1
Nominal Pipe Size	2	3	4	6	8	10	12
A	4 ¹⁵ / ₁₆ [125]	6 ³ / ₈ [162]	8 [203]	8 ⁹ / ₁₆ [203]	11 ³ / ₁₆ [284]	13 ⁵ / ₈ [346]	15 ³ / ₈ [391]
B	5 ¹³ / ₁₆ [148]	6 ¹ / ₄ [159]	6 ⁵ / ₁₆ [160]	16 ³ / ₄ [203]	8 ⁵ / ₈ [219]	12 ⁵ / ₈ [321]	16 ⁹ / ₁₆ [421]
C	9 ⁹ / ₁₆ [243]	11 ¹ / ₈ [283]	12 ¹ / ₄ [311]	16 ³ / ₄ [425]	18 ⁹ / ₁₆ [471]	24 ¹ / ₁₆ [611]	29 ¹³ / ₁₆ [757]
Low Set							
C	14 ¹ / ₁₆ [357]	15 ⁷ / ₈ [403]	16 ⁵ / ₁₆ [414]	20 [508]	21 ¹ / ₁₆ [535]	25 ³ / ₄ [654]	29 ¹³ / ₁₆ [757]
High Set							
D	8 [203]	10 ³ / ₁₆ [259]	12 ¹ / ₄ [311]	14 ³ / ₁₆ [360]	17 ⁵ / ₁₆ [440]	22 ³ / ₈ [568]	25 ³ / ₈ [645]



Specifications

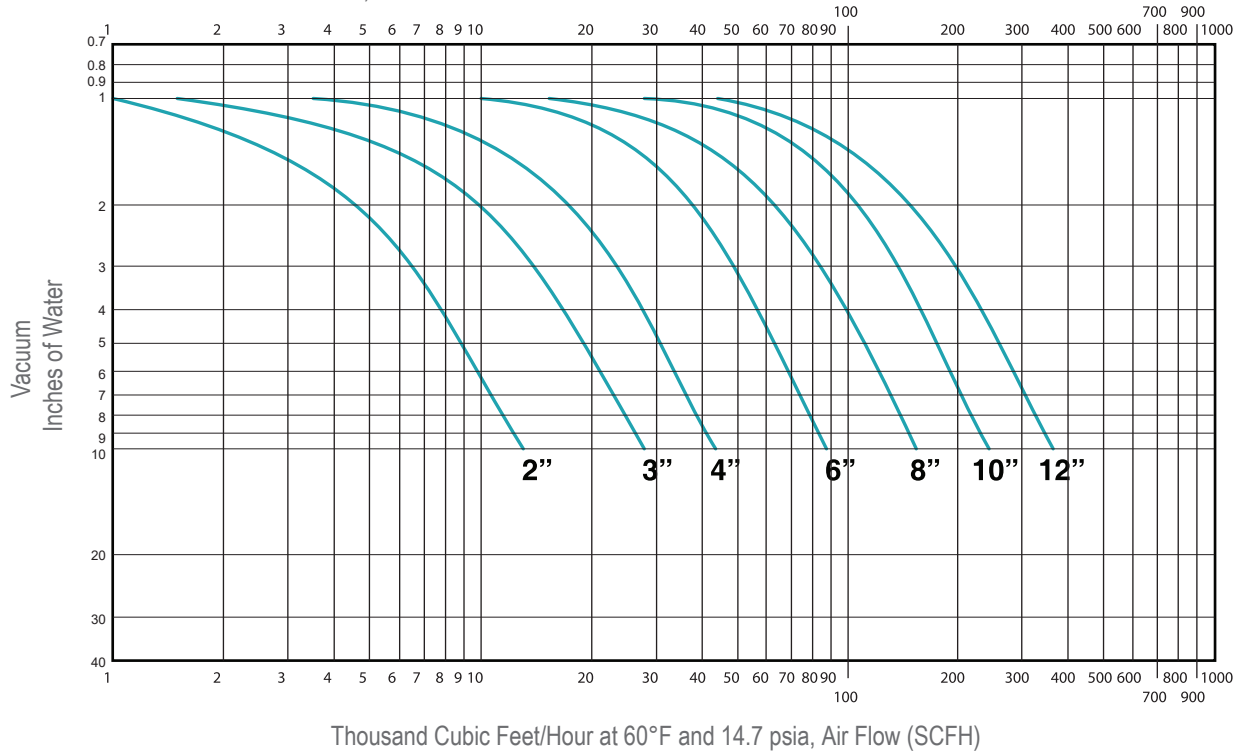
Flow Curves

3500B Series Relief Valve, Set at 0.865 inches of Water



Flow Curves

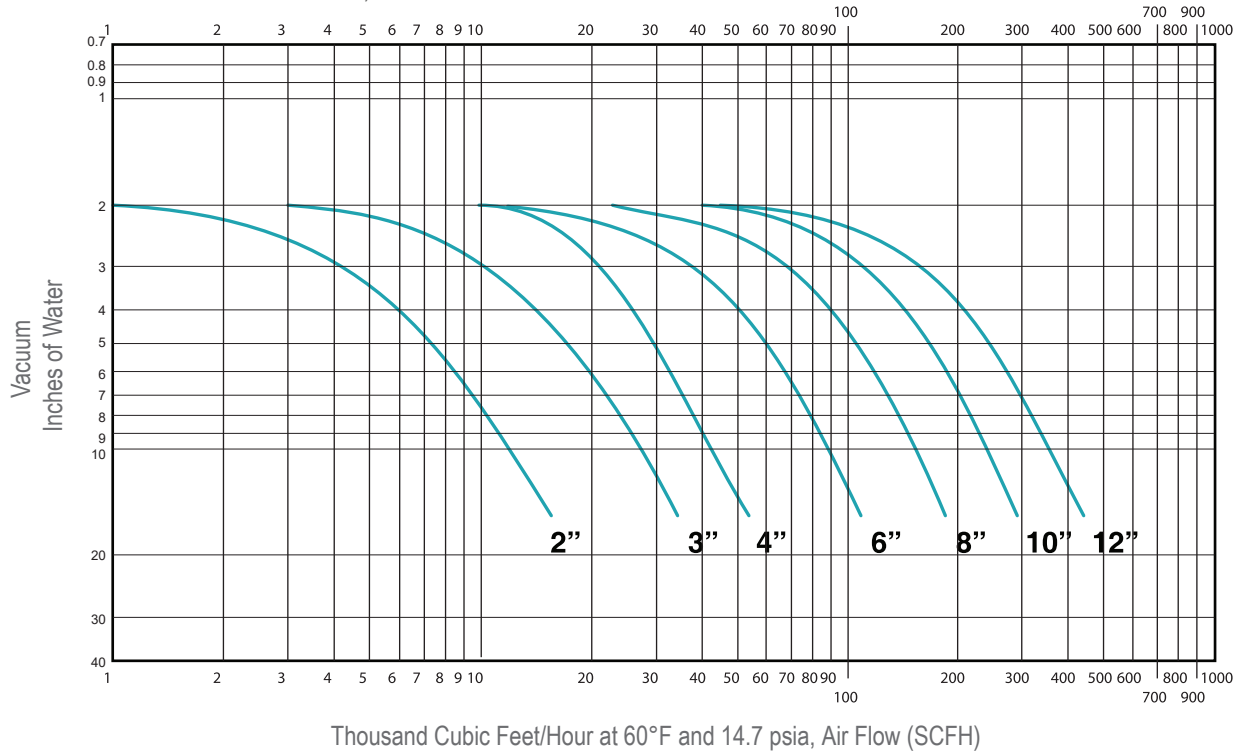
3500B Series Relief Valve, Set at 1 inches of Water



Specifications

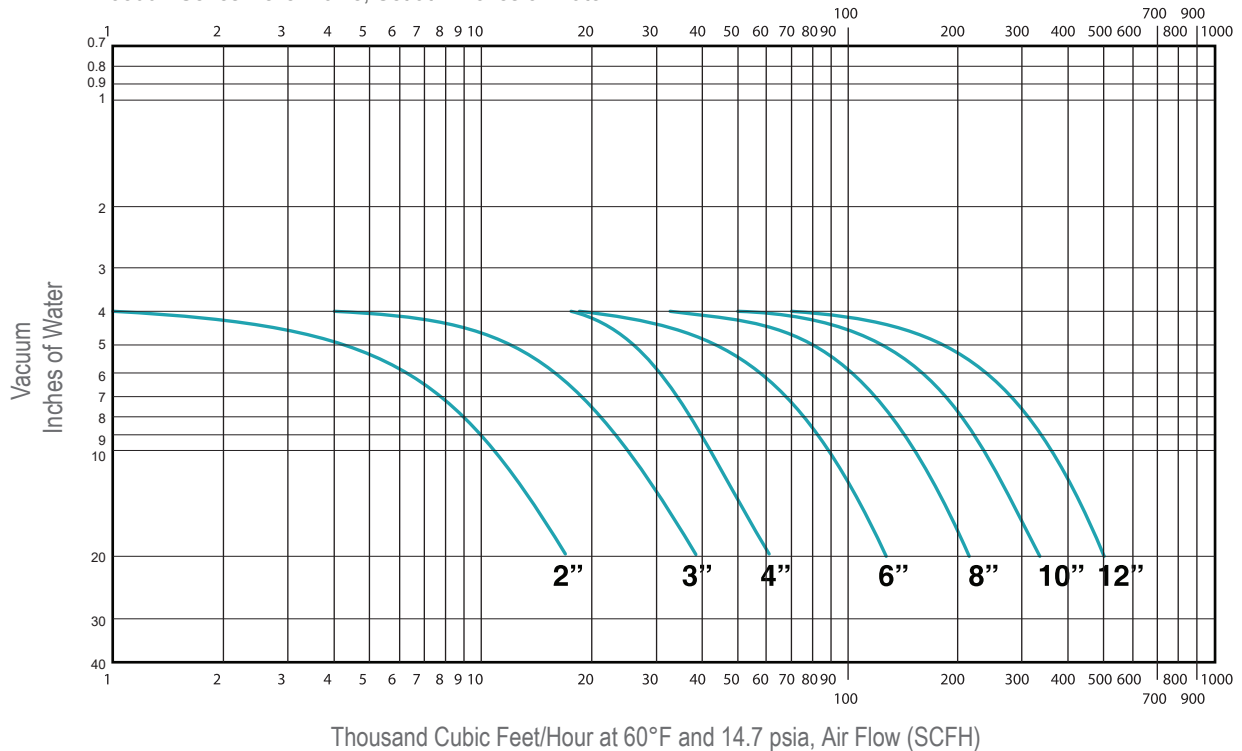
Flow Curves

3500B Series Relief Valve, Set at 2 inches of Water



Flow Curves

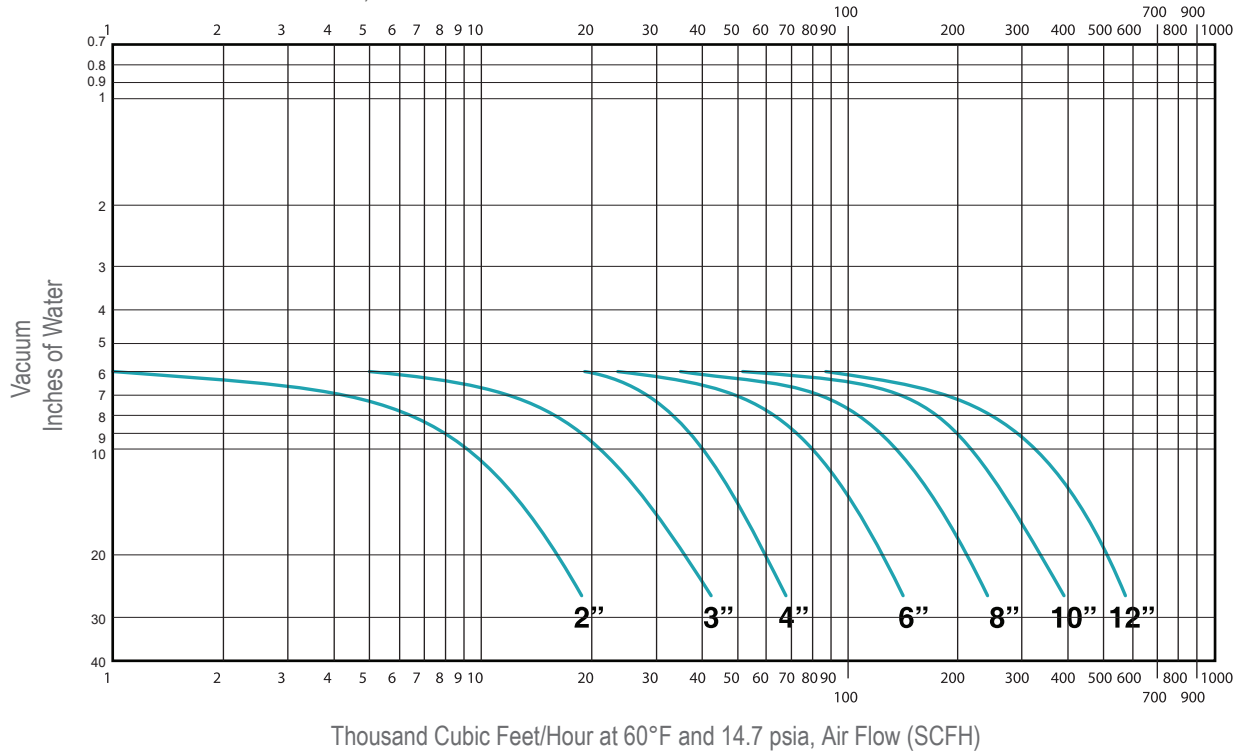
3500B Series Relief Valve, Set at 4 inches of Water



Specifications

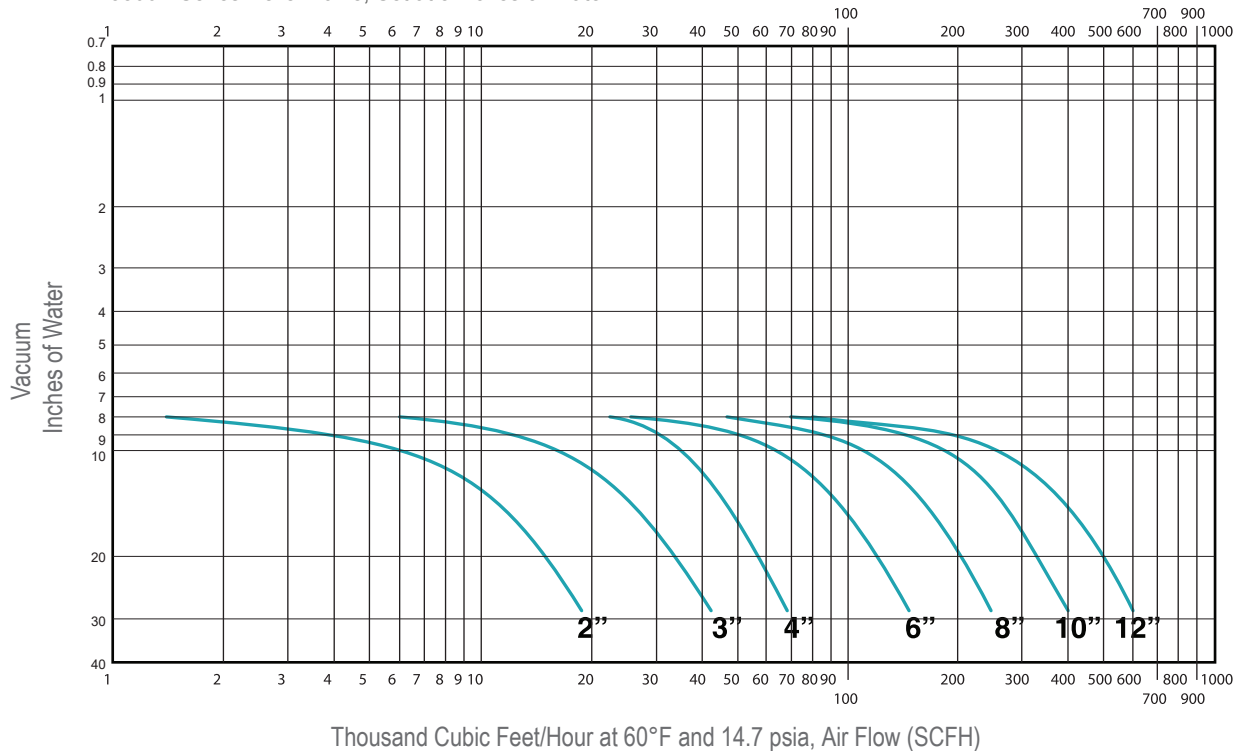
Flow Curves

3500B Series Relief Valve, Set at 6 inches of Water



Flow Curves

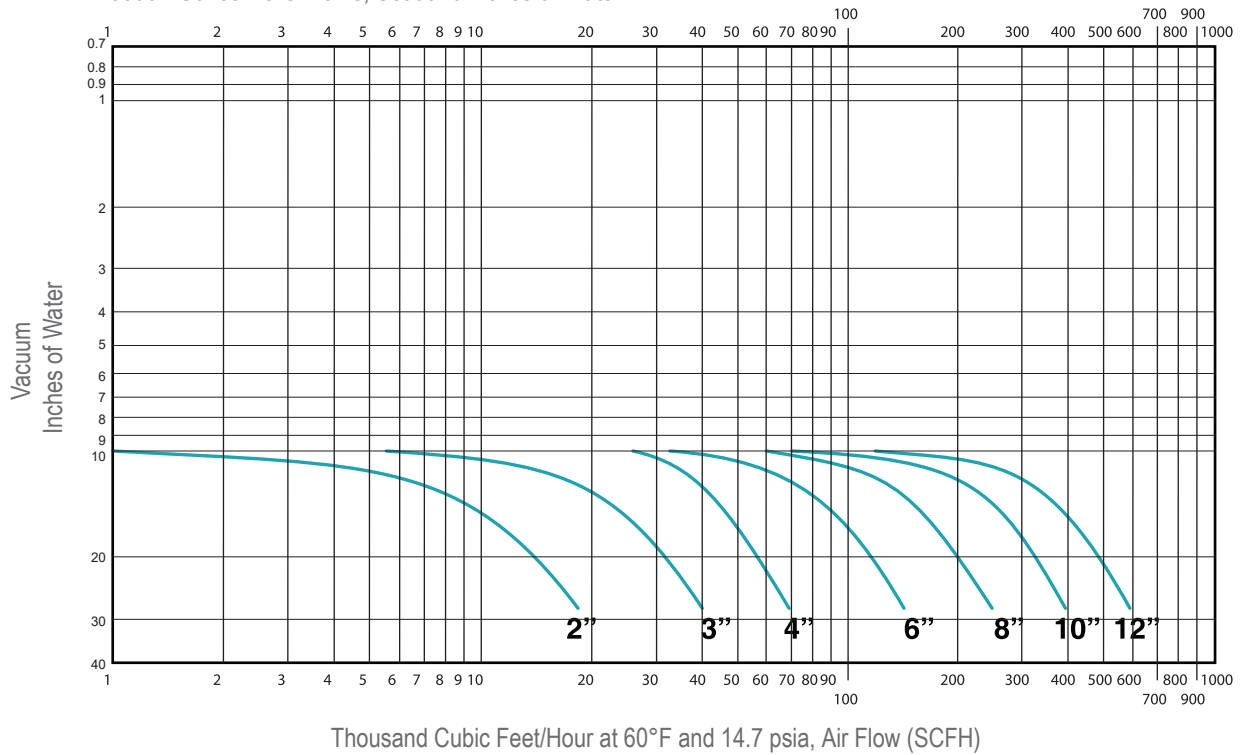
3500B Series Relief Valve, Set at 8 inches of Water



Specifications

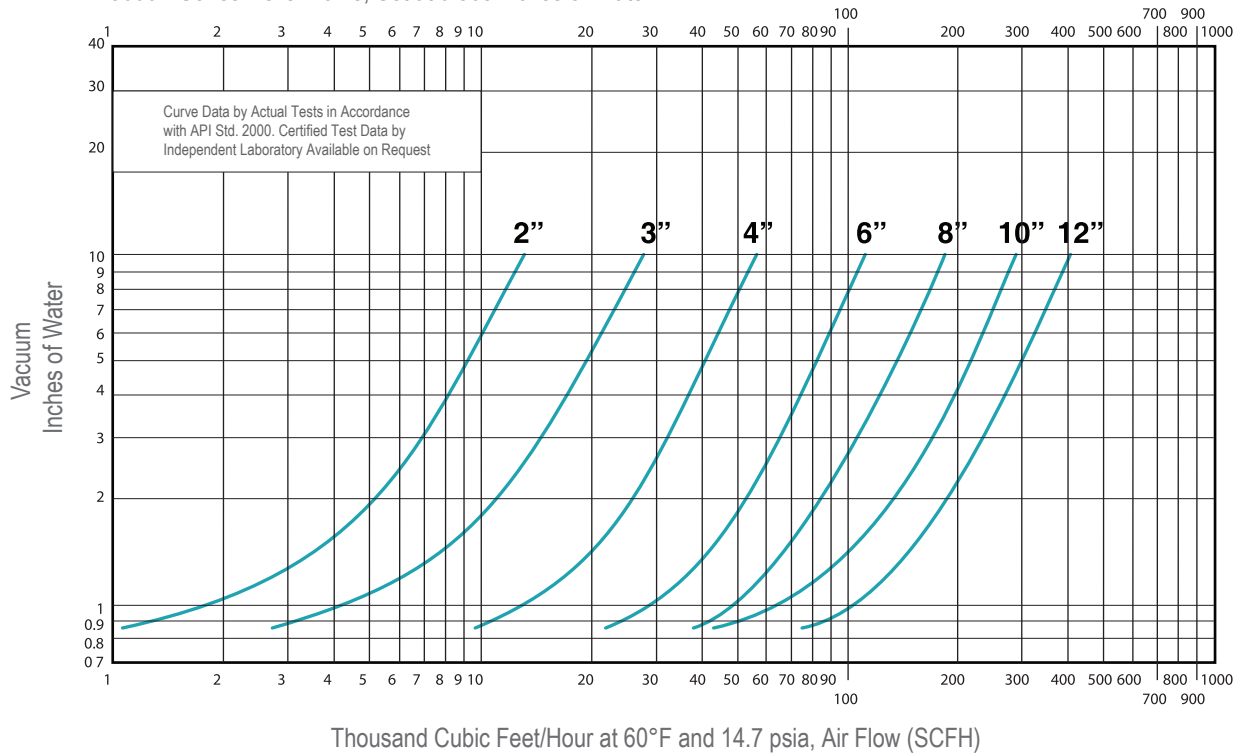
Flow Curves

3500B Series Relief Valve, Set at 10 inches of Water



Flow Curves

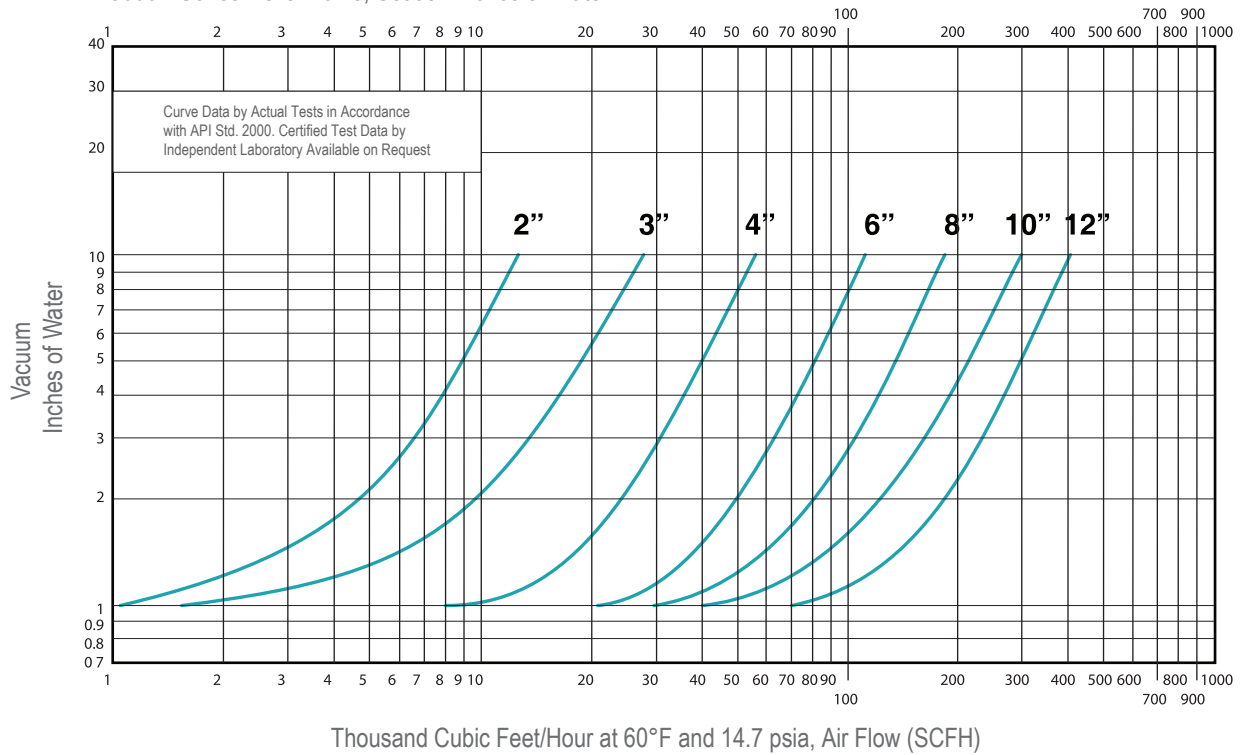
3600B Series Relief Valve, Set at 0.865 inches of Water



Specifications

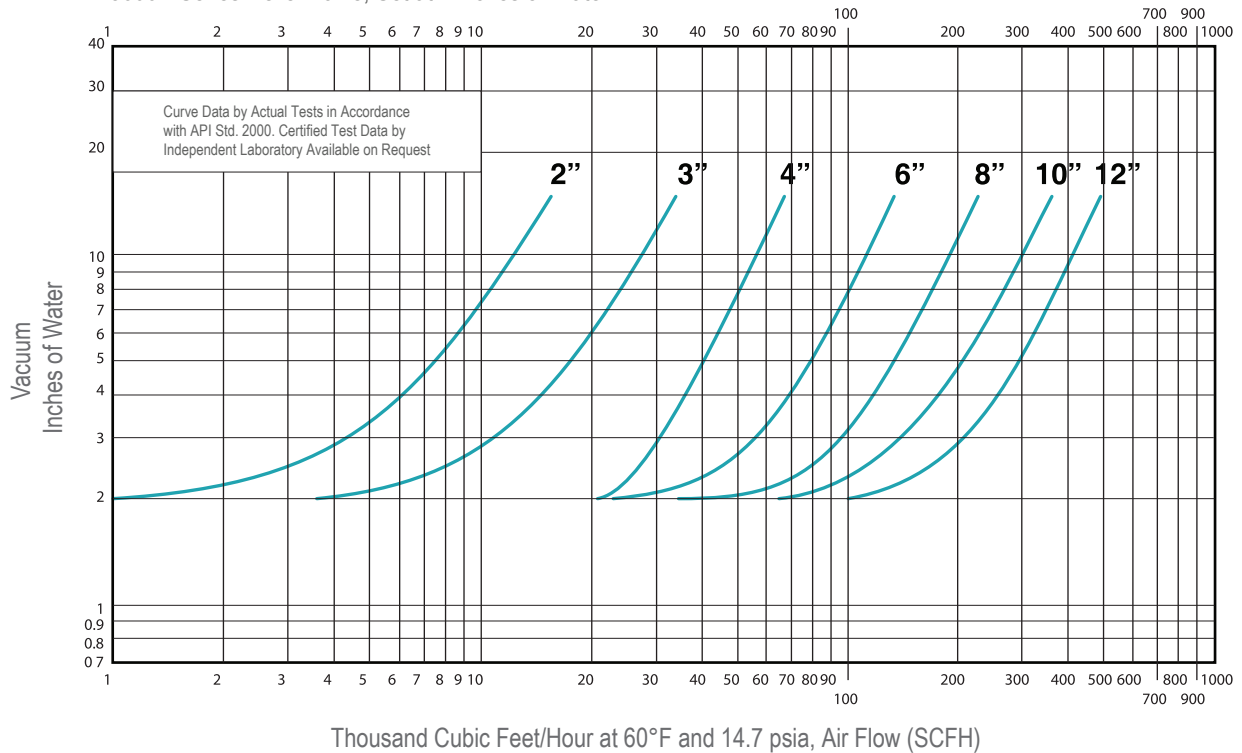
Flow Curves

3600B Series Relief Valve, Set at 1 inches of Water



Flow Curves

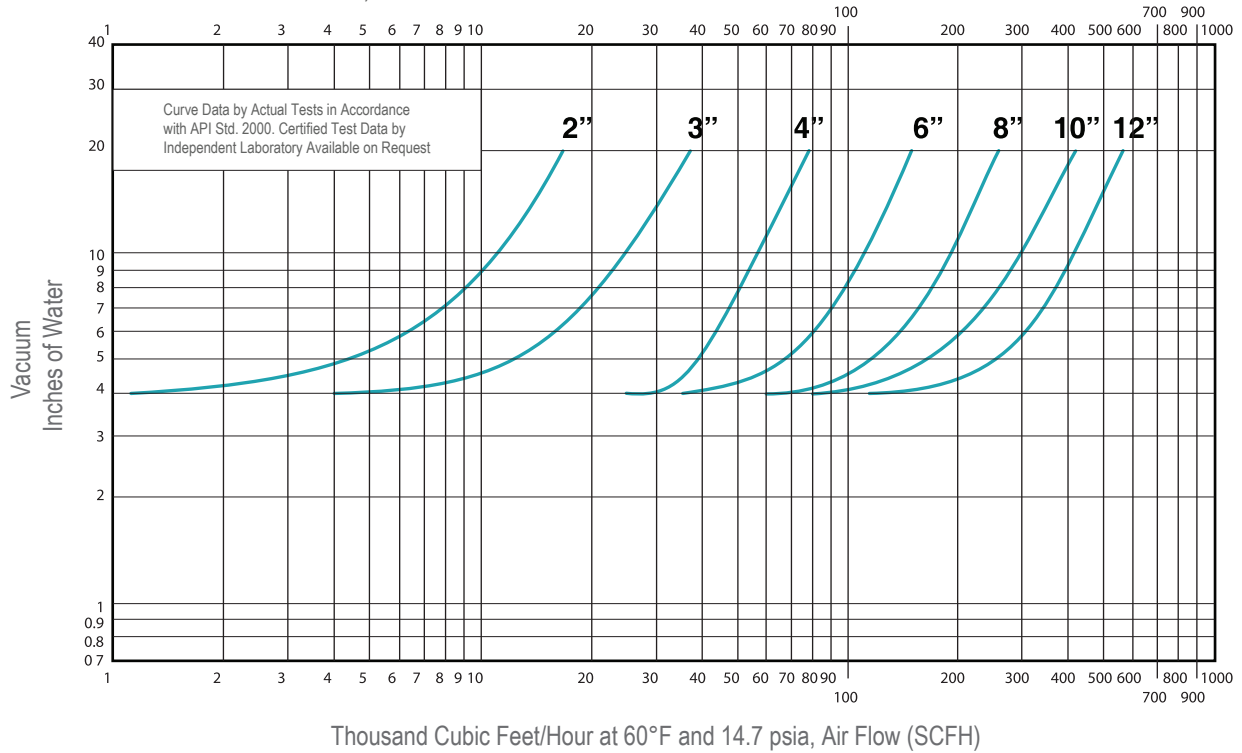
3600B Series Relief Valve, Set at 2 inches of Water



Specifications

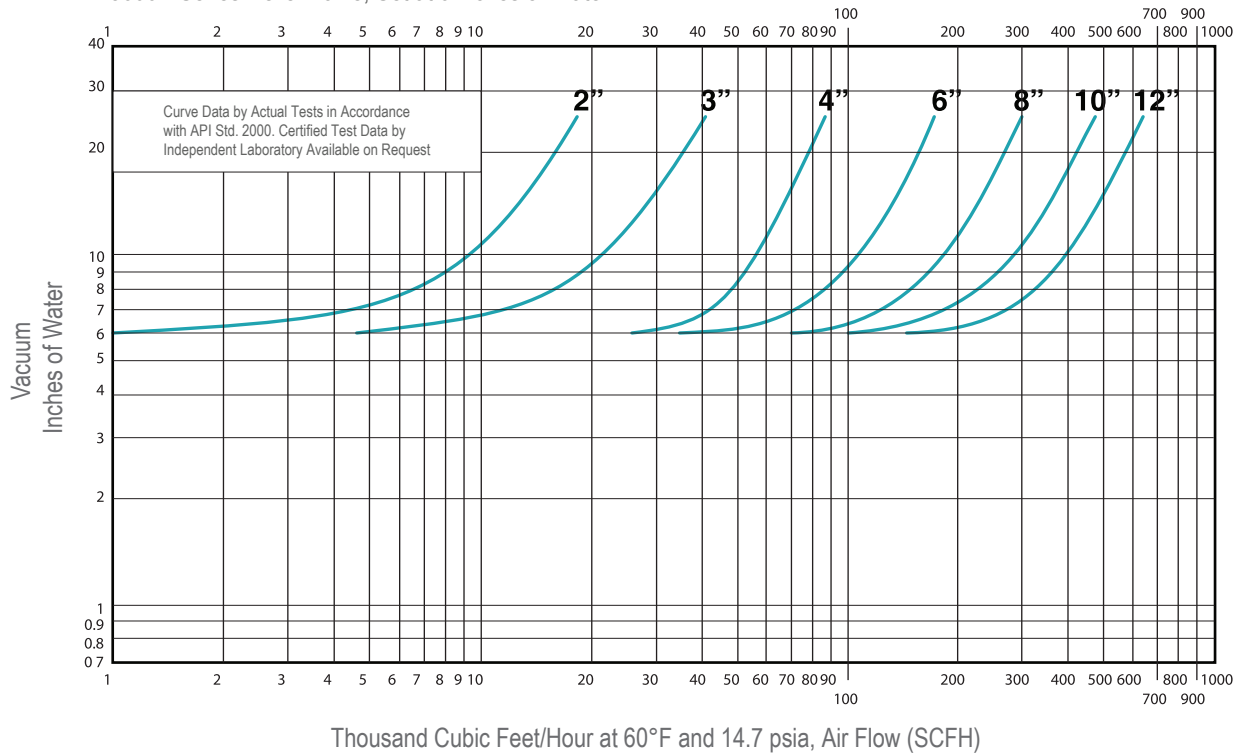
Flow Curves

3600B Series Relief Valve, Set at 4 inches of Water



Flow Curves

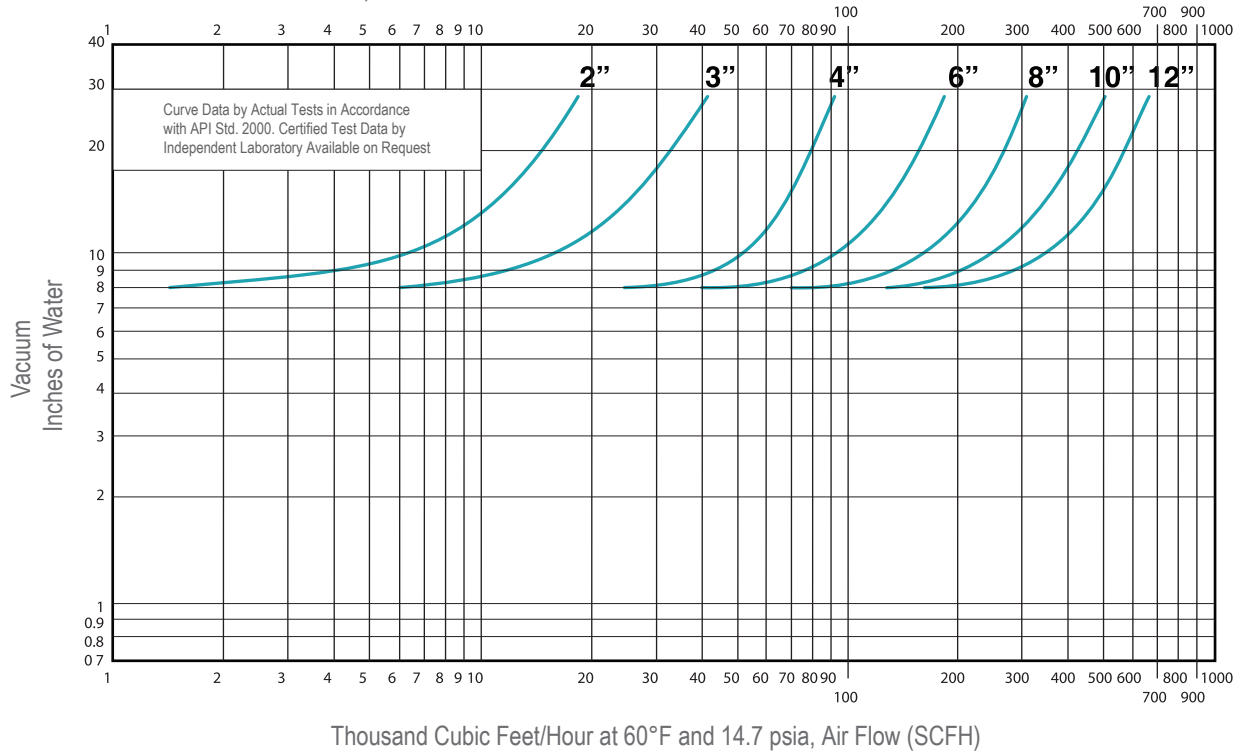
3600B Series Relief Valve, Set at 6 inches of Water



Specifications

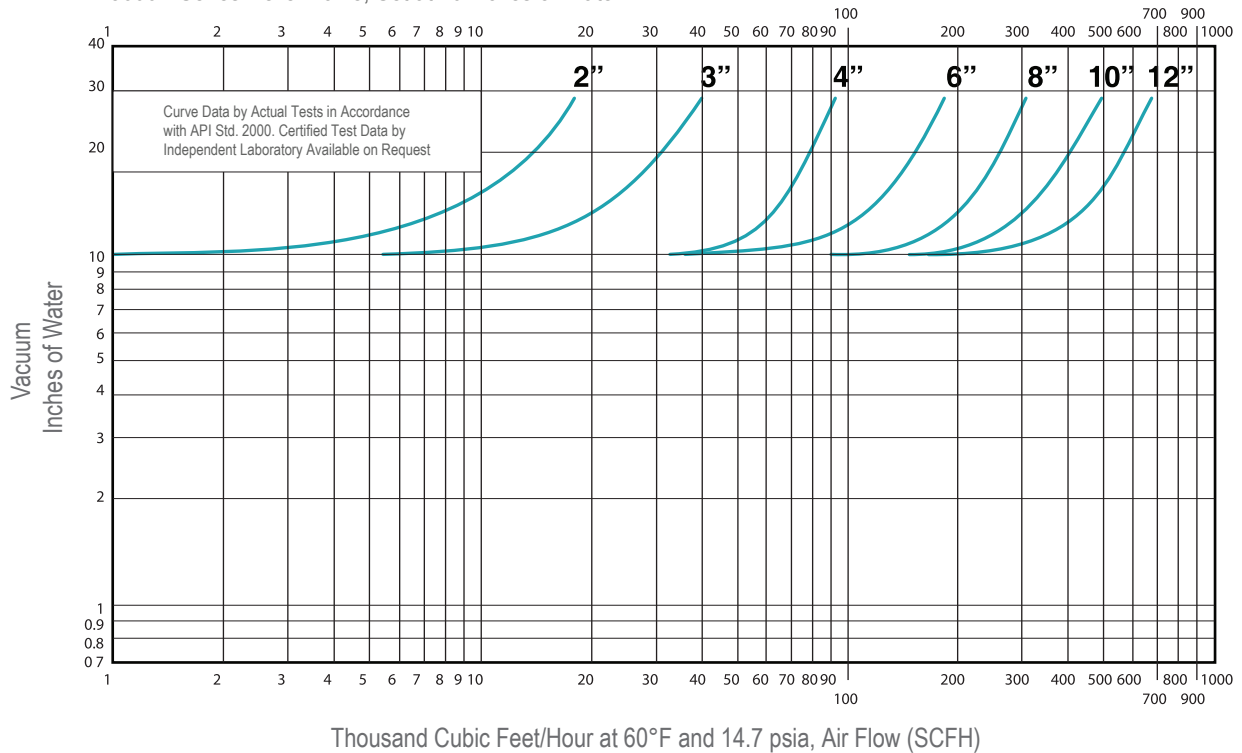
Flow Curves

3600B Series Relief Valve, Set at 8 inches of Water



Flow Curves

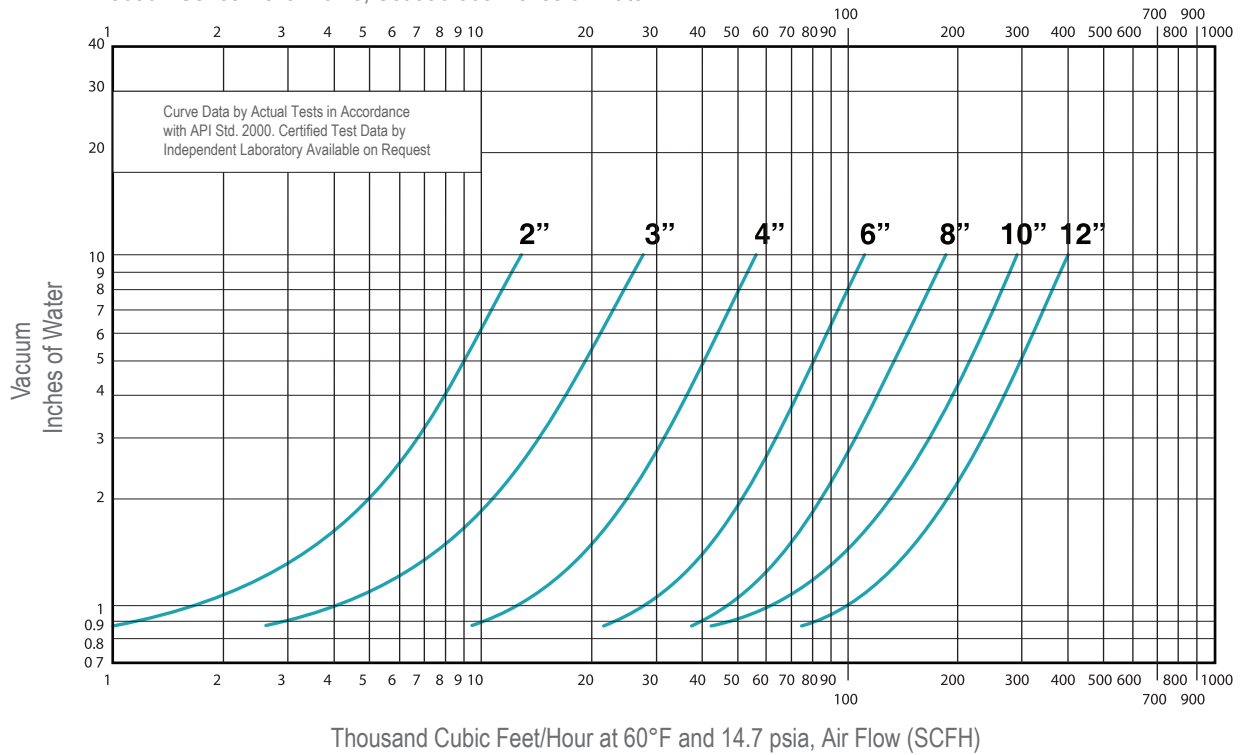
3600B Series Relief Valve, Set at 10 inches of Water



Specifications

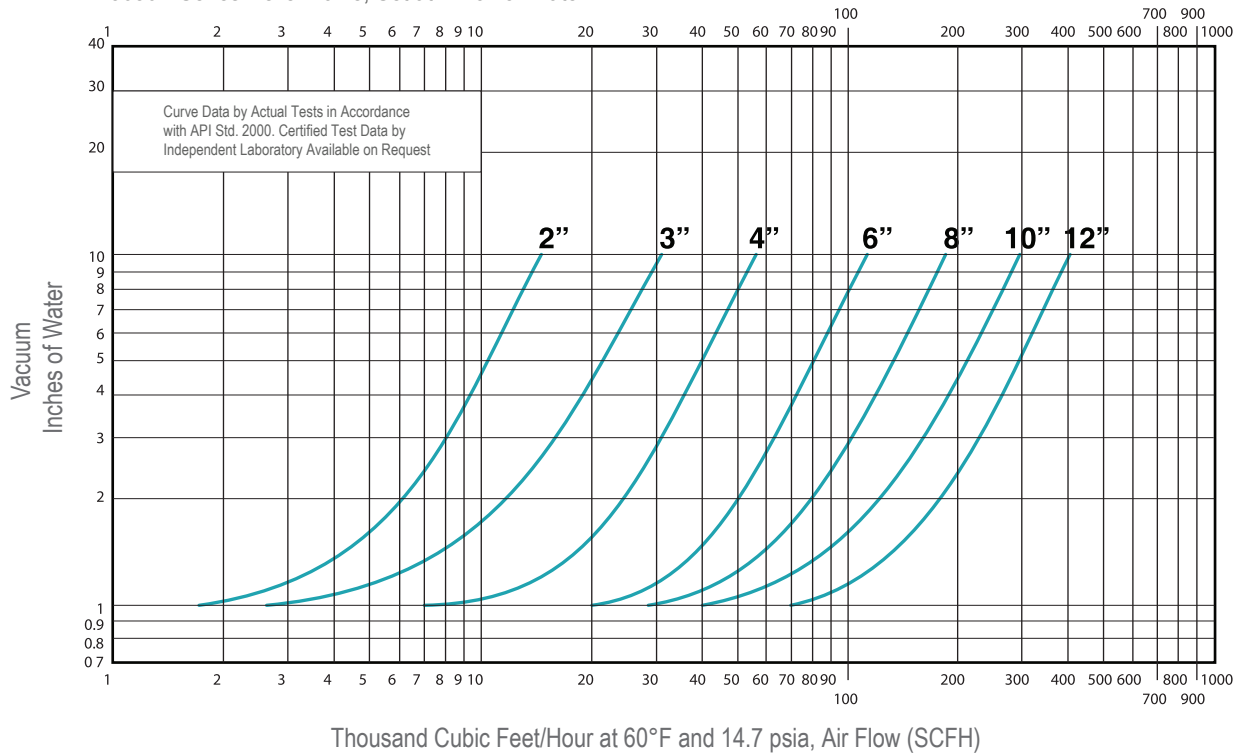
Flow Curves

3650B Series Relief Valve, Set at 0.865 inches of Water



Flow Curves

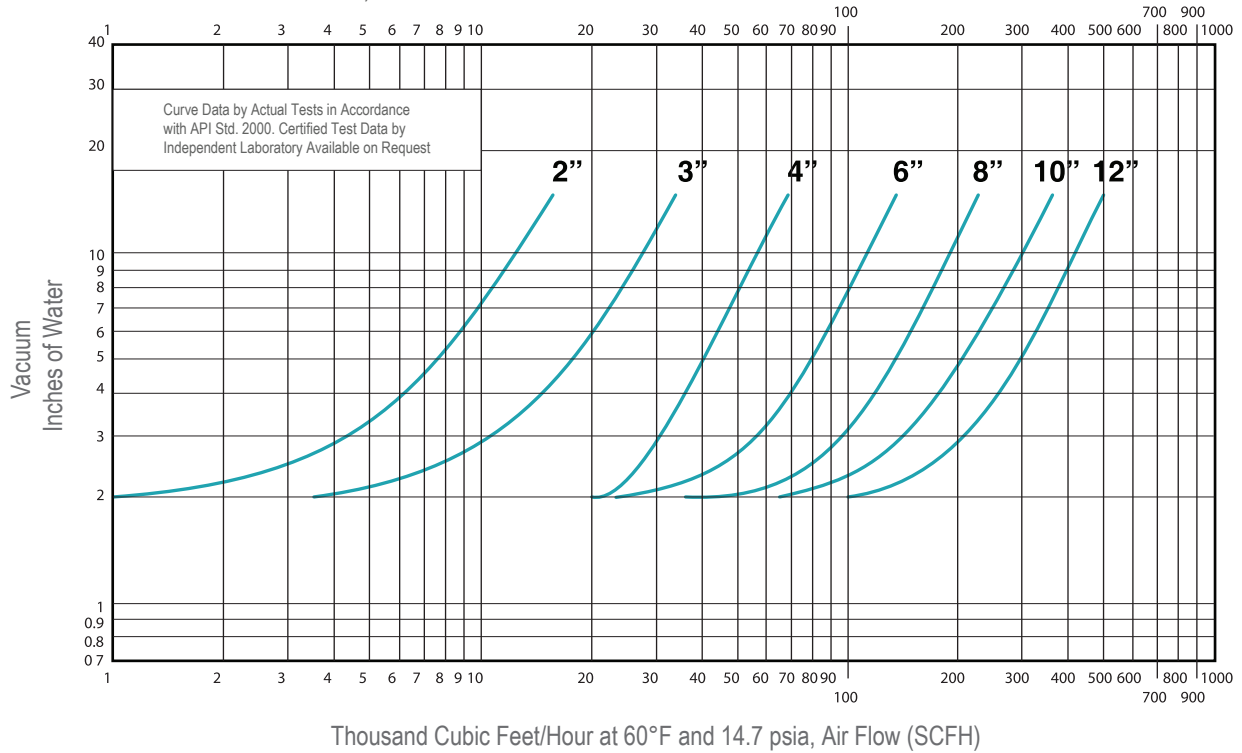
3650B Series Relief Valve, Set at 1 inch of Water



Specifications

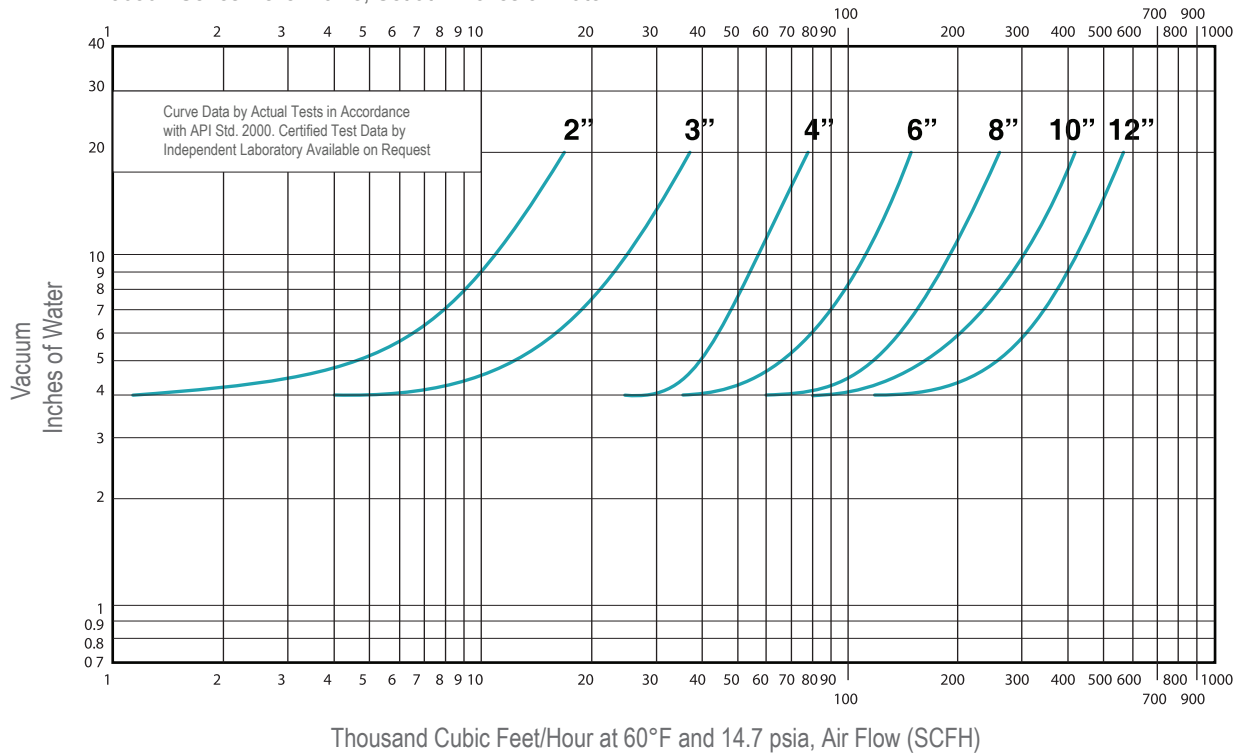
Flow Curves

3650B Series Relief Valve, Set at 2 inches of Water



Flow Curves

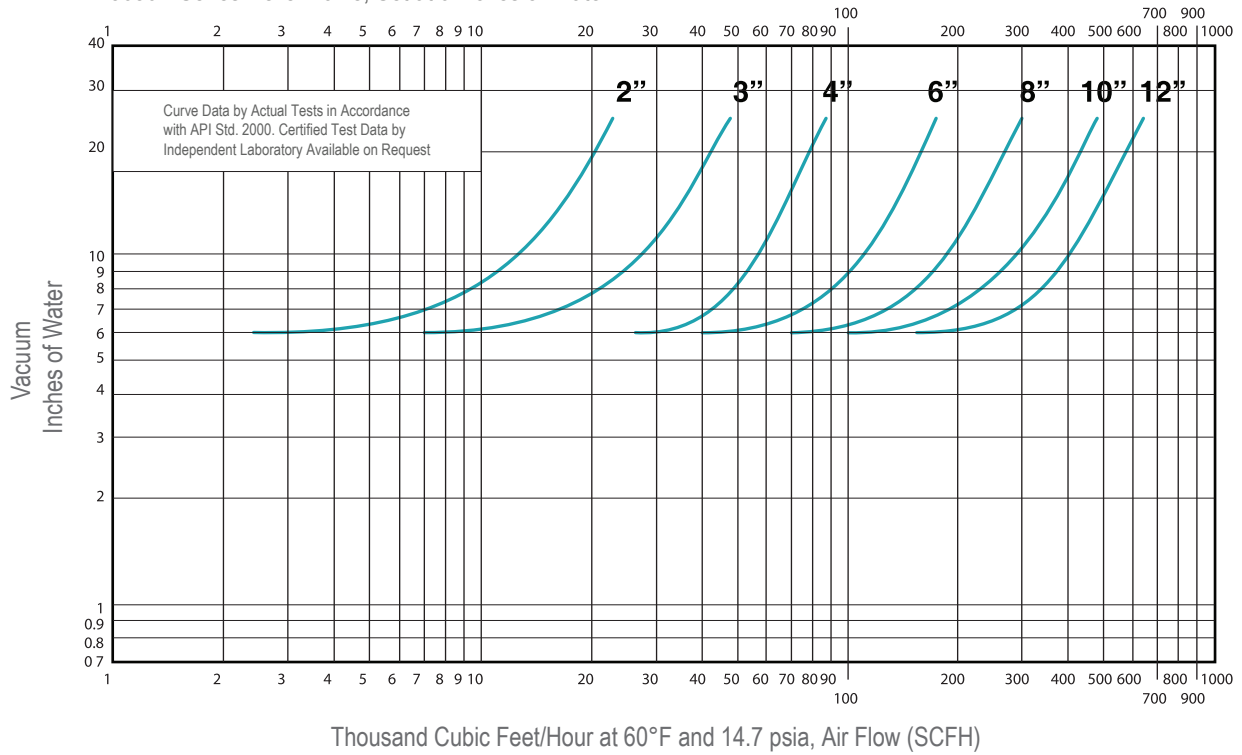
3650B Series Relief Valve, Set at 4 inches of Water



Specifications

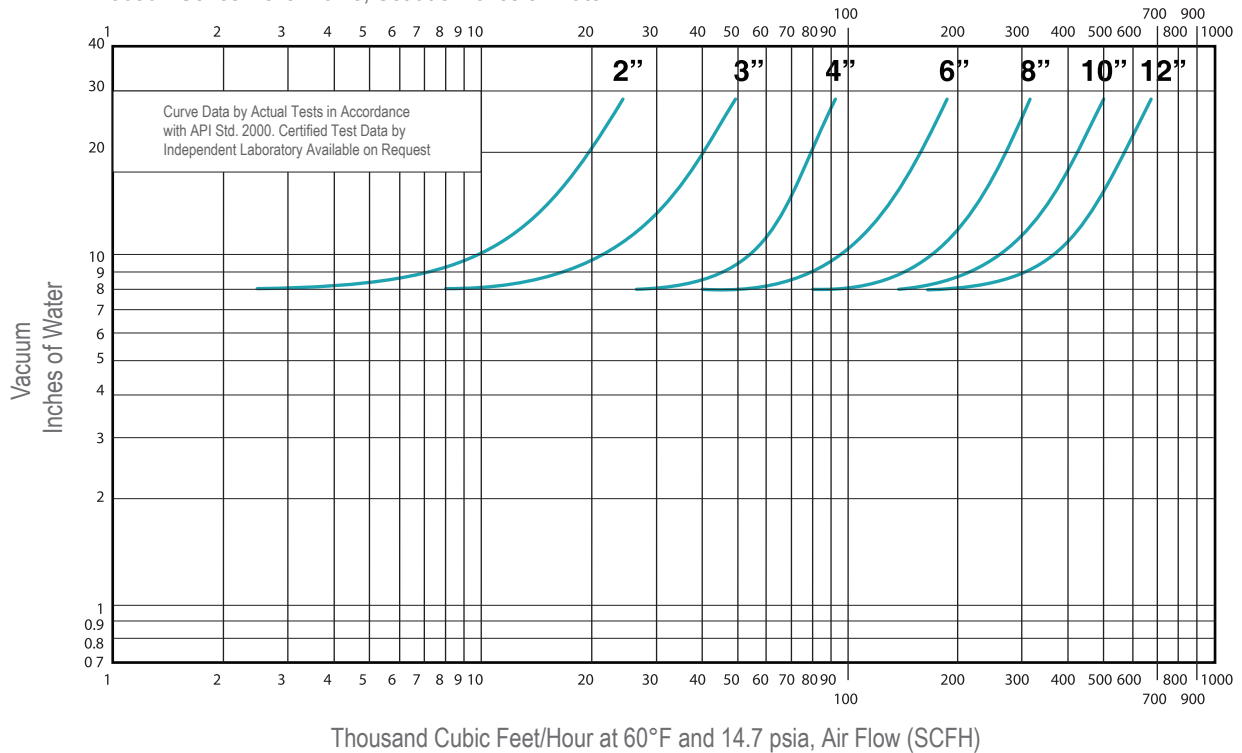
Flow Curves

3650B Series Relief Valve, Set at 6 inches of Water



Flow Curves

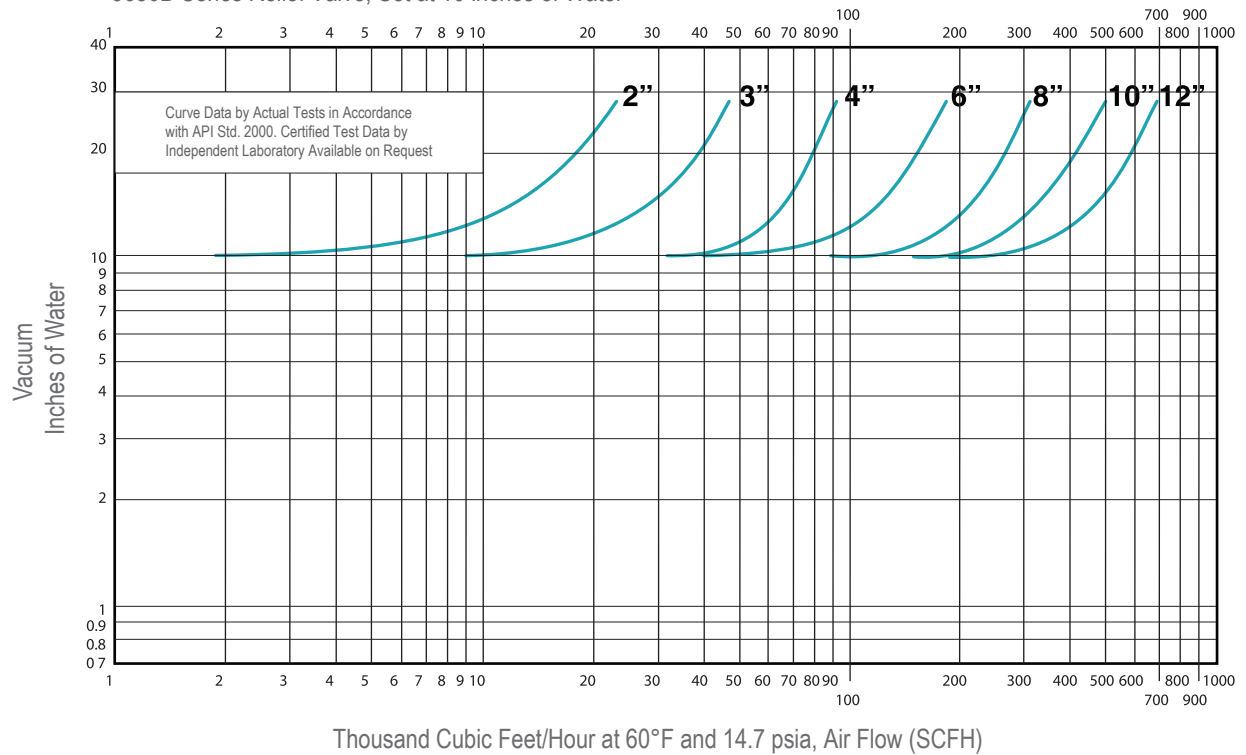
3650B Series Relief Valve, Set at 8 inches of Water



Specifications

Flow Curves

3650B Series Relief Valve, Set at 10 inches of Water



Ordering Information

Code	Description							
3	Air Cushion Vacuum Relief Valve							
Code	Model							
50	Top Mounted Vacuum Relief Valve							
60	Side Mounted Vacuum Relief Valve							
65	"In-Line" Pressure or Vacuum Relief Valve							
Code	Configuration							
0B	Standard							
1B	"All Weather Type" (-25°F to 200°F)							
Code	Size	3650B/ 3651B Vacuum Connection Size						
2	2"	3"						
3	3"	4"						
4	4"	6"						
6	6"	8"						
8	8"	10"						
0	10"	12"						
1	12"	14"						
Code	Body / Trim Material							
1	Aluminum / Aluminum (-20° F - 250° F)							
2	Aluminum / 316 Stainless Steel (-20° F - 250° F)							
3	Carbon Steel / 316 Stainless Steel (-20° F - 350° F)							
4	Stainless Steel / 316 Stainless Steel (-65° F - 350° F)							
5	Ductile Iron / 316 Stainless Steel (2" - 8" ONLY) (-20° F - 325° F)							
Code	Insert Material							
T	PTFE (-65° F - 400° F)							
B	NBR (-40° F - 250° F)							
V	FKM (-15° F - 400° F)							
Code	Flange Finish							
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 on Aluminum)							
Code	Gasket/O-Ring & Retainer/Screen Material							
OP	Standard (Fiber / NBR) and Plastic (-40° F - 250° F)							
OS	Standard (Fiber / NBR) and Stainless Steel (-40° F - 250° F)							
TP	PTFE and Plastic (-65° F - 250° F)							
TS	PTFE and Stainless Steel (-65° F - 350° F)							
BP	NBR and Plastic (-40° F - 250° F)							
BS	NBR and Stainless Steel (-40° F - 250° F)							
VP	FKM and Plastic (-15° F - 250° F)							
VS	FKM and Stainless Steel (-15° F - 350° F)							
Code	Setting Range (See Setting Information Table)							
02	Low Setting							
04	High Setting							

3 50 0B 2 1 T FF OP 02 (Example)

Example: 2" Top Mounted Vacuum Relief Valve, Aluminum Body with Aluminum Trim, PTFE Insert, Flat Faced Flange, Standard Fiber/NBR Gaskets, Low Vacuum Set Range, Temperature Range: -20°F to 250°F)