MODEL 2000A

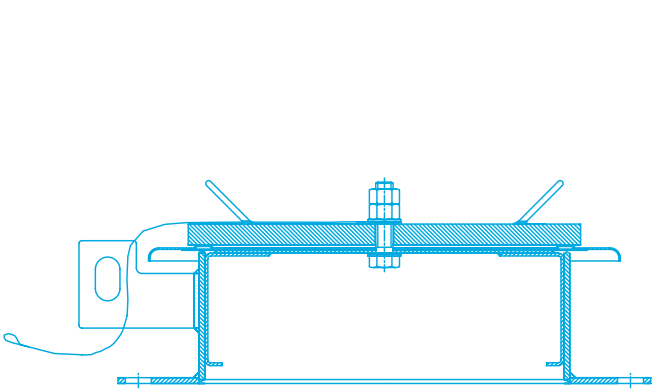
- Sizes // 16", 20" and 24"
- Pressure settings // 1.5 - 16 oz/in²
- Vacuum settings // 0.5 - 4 oz/in²
- Available in carbon steel, stainless steel, fiberglass and other materials
- Easy access manway combined with emergency relief

EMERGENCY PRESSURE RELIEF VALVE

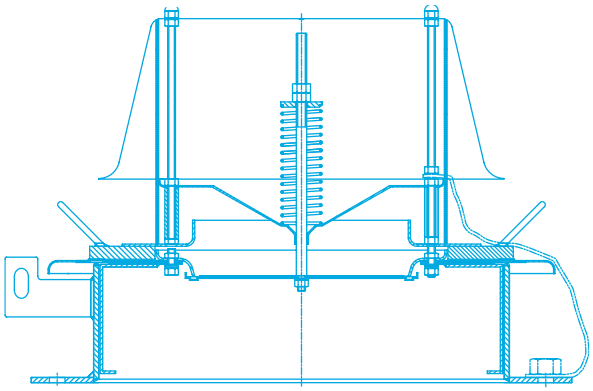
Model 2000A is designed to provide emergency relief capacity beyond that furnished by the normal operating pressure relief valve on the tank. The valve protects the tank against rupture or explosion that could result from excessive internal pressures caused by fire, etc. As excessive pressure builds up, the Groth Model 2000A relieves excess pressure, then reseats when pressure has been dissipated. Removable stops can be provided which restrict the lift of the cover.

SPECIAL FEATURES

Model 2000A is built of corrosion resistant materials throughout. A grounding cable connects the head and flange. Groth's special fluoropolymer "cushioned air" pallet and peripheral guiding insures proper alignment and integrity of seating. Model 2050A incorporates a vacuum breaker for added vacuum relief capability.

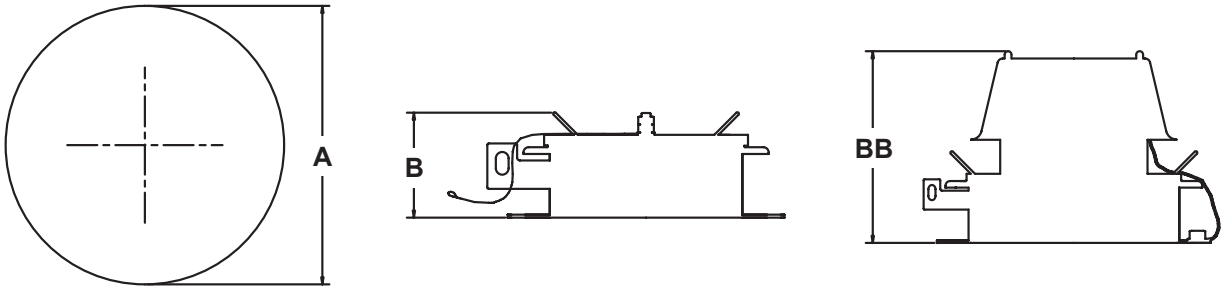


MODEL 2000A



MODEL 2050A

SPECIFICATIONS



Specifications subject to change without notice. Certified dimensions available upon request.

MODEL 2000A

Size* (Metric)	Minimum Pressure Setting Weight Loaded	Maximum Pressure Setting Weight Loaded	A Width (Metric)	B Height† (Metric)	Approx. Ship Wt. Lbs. at min. setting
16" (406 mm)	1.50 oz/in² (6.5 mbar)	16 oz/in² (69 mbar)	23.50" (597 mm)	11" (279 mm)	62 (28 kg)
20" (508 mm)	1.50 oz/in² (6.5 mbar)	16 oz/in² (69 mbar)	27.50" (699 mm)	11" (279 mm)	88 (40 kg)
24" (610 mm)	1.50 oz/in² (6.5 mbar)	16 oz/in² (69 mbar)	32" (813 mm)	11" (279 mm)	114 (52 kg)

MODEL 2050A

Size* (Metric)	Minimum Setting		Maximum Settings	A Width (Metric)	BB Height Closed (Metric)	Approx. Ship Wt. Lbs. at min. setting
	Pressure Weight Loaded	Vacuum Spring Loaded	Pressure[s] ◊ Weight Loaded			
16" (406 mm)	2.6 oz/in² (11.2 mbar)	0.5 oz/in² (2.2 mbar)	8 oz/in² (34.5 mbar)	23.50" (597 mm)	17.75" (451 mm)	69 (31 kg)
20" (508 mm)	2.1 oz/in² (9.1 mbar)	0.5 oz/in² (2.2 mbar)	8 oz/in² (34.5 mbar)	27.50" (699 mm)	17.75" (451 mm)	95 (43 kg)
24" (610 mm)	1.9 oz/in² (8.2 mbar)	0.5 oz/in² (2.2 mbar)	8 oz/in² (34.5 mbar)	32" (813 mm)	17.75" (451 mm)	120 (55 kg)

* 150# ANSI. or API 650 drilling compatibility. "Caution" — See IOM when mounting to API 650 flange. [s] Maximum pressure setting on 16" size = 4 oz/in²
◊ Max. vacuum setting is 4 oz./in² Fiberglass dimensions on request.

HOW TO ORDER

For easy ordering, select proper model numbers

MODEL # **SIZE** **MATERIAL** **OPTIONS**

- 2000A Pressure Only
- 2050A Pressure/Vacuum

- 16"
- 20"
- 24"

Body Material*
- 3 = Carbon Steel
- 5 = Stainless Steel
- 6 = Vinyl Ester Resin
- 7 = Furan
- Z = Special

- O = No Options
- Z = Special Options

- O = No Jacket
- J = Steam Jacket

- 1 = ANSI 150# drilled
- 2 = A.P.I. 650 drilled

Diaphragm Material (Seat):
- B = Buna-N
- T = Fluoropolymer
- V = FKM
- Z = Special

NOTES
- Include model number and setting when ordering.
- For special options, consult factory.
- When ordering steam jacket, include steam pressure / temperature.
- * Stainless steel guides, stems are standard with carbon steel bodies.

EXAMPLE 2 0 0 0 A — 2 0 — 5 — T 1 J O

Indicates a 20" Model 2000A with Stainless Steel Body, Fluoropolymer Seat Diaphragm, ANSI 150# drilled, Steam Jacket and no other options.

Air Flow Capacity at 100% Overpressure (Double Set Pressure/Vacuum) 1000 Standard Cubic Feet per Hour at 60° F						
Set Pressure / Vacuum (P_s)		Size				
InWC	oz/in^2	16" Pressure	20" Pressure	24" Pressure	All Vacuum*	2050 Only
0.87	0.50*				65	For Vacuum Flow, Use the "C1" Factor Table Located with Model 2100
1.73	1.00*				91	
2.60	1.50	422	668	970		
3.00	1.73	454	718	1043		
3.46	2.00*	487	771	1120	129	
4.00	2.31	524	829	1204		
4.33	2.50	545	862	1252		
5.00	2.89	585	926	1345		
5.19	3.00*	597	944	1371	157	
6.93	4.00*	689	1090	1583	180	
10.4	6.00	843	1334	1937		
13.9	8.00	973	1539	2236		
17.3	10.00	1087	1720	2498		
20.8	12.00	1190	1883	2735		
24.2	14.00	1284	2033	2952		
27.7	16.00	1372	2172	3154		

* Standard vacuum settings, consult factory for other settings.

FLOW CAPACITY CALCULATION

Flow capacity values listed above are based on full open valves at 100% overpressure.

Read the flow capacity at 100% overpressure directly from the table above. Use linear interpolation if the set pressure is not listed.

If the allowable overpressure is less than 100%, modify the flow capacity using the appropriate "C" factor from the table. If allowable overpressure is more than 100%, consult your Groth Representative.

Calculate the percentage overpressure by the following formula. Note that all pressures are gauge pressure expressed in the same units of measure.

P_f = Flowing pressure
P_s = Set pressure
% OP = $[(P_f - P_s)/P_s] \times 100$

Calculate flow capacity at less than 100% overpressure according to the following example.

Example—To find "C" factor from table:
Read "C" factor for 75% overpressure at intersection of row **70** and column **5**
"C" factor at 75% OP = **0.95**

"C4" Factor Table - Pressure Only										
%OP	0	1	2	3	4	5	6	7	8	9
10	0.70	0.71	0.71	0.72	0.72	0.73	0.73	0.74	0.74	0.75
20	0.75	0.76	0.76	0.77	0.77	0.78	0.78	0.79	0.79	0.80
30	0.80	0.81	0.81	0.82	0.82	0.83	0.83	0.84	0.84	0.85
40	0.85	0.86	0.86	0.87	0.87	0.88	0.88	0.89	0.89	0.90
50	0.90	0.90	0.90	0.91	0.91	0.91	0.91	0.91	0.92	0.92
60	0.92	0.92	0.92	0.93	0.93	0.93	0.93	0.93	0.94	0.94
70	0.94	0.94	0.94	0.95	0.95	0.95	0.95	0.95	0.96	0.96
80	0.96	0.96	0.96	0.97	0.97	0.97	0.97	0.97	0.98	0.98
90	0.98	0.98	0.98	0.99	0.99	0.99	0.99	0.99	1.00	1.00

Example—Flow Capacity Calculation
20" Model 2000A
4 InWC set pressure [P_s]
7 InWC flowing pressure [P_f]

1. Read flow capacity at set pressure from table — Flow = 829,000 SCFH
2. Calculate overpressure — % OP = [(7 - 4)/4] x 100 = 75%
3. Read "C" factor from table — "C" = 0.95
4. Calculate flow capacity — ***Flow = 0.95 x 829,000 = 787,550 SCFH***

Air Flow Capacity at 100% Overpressure (Double Set Pressure/Vacuum) 1000 Normal Cubic Meters per Hour at 0° C						
Set Pressure / Vacuum (P_s)		Size				
mmWC	mb	16" Pressure	20" Pressure	24" Pressure	All Vacuum*	2050 Only
22	2.16*				1.83	For Vacuum Flow, Use the "C1" Factor Table Located with Model 2100
44	4.31*				2.58	
88	8.63*	13.8	21.9	31.7	3.63	
100	9.80	14.7	23.3	33.8		
132	12.9*	16.9	26.8	38.9	4.42	
176	17.3*	19.5	30.9	44.9	5.08	
200	19.6	20.8	32.9	47.8		
250	24.5	23.2	36.8	53.4		
300	29.4	25.5	40.3	58.5		
350	34.3	27.5	43.5	63.2		
400	39.2	29.4	46.5	67.5		
500	49.0	32.8	51.9	75.4		
600	58.8	35.9	56.9	82.6		
700	68.6	38.8	61.4	89.1		

* Standard vacuum settings, consult factory for other settings.

FLOW CAPACITY CALCULATION

Flow capacity values listed above are based on full open valves at 100% overpressure.

Read the flow capacity at 100% overpressure directly from the table above. Use linear interpolation if the set pressure is not listed.

If the allowable overpressure is less than 100%, modify the flow capacity using the appropriate "C" factor from the table. If allowable overpressure is more than 100%, consult your Groth Representative.

Calculate the percentage overpressure by the following formula. Note that all pressures are gauge pressure expressed in the same units of measure.

P_f = Flowing pressure
P_s = Set pressure
% OP = $[(P_f - P_s)/P_s] \times 100$

Calculate flow capacity at less than 100% overpressure according to the following example.

Example—To find "C" factor from table:
Read "C" factor for 75% overpressure at intersection of row **70** and column **5**
"C" factor at 75% OP = **0.95**

"C4" Factor Table - Pressure Only										
%OP	0	1	2	3	4	5	6	7	8	9
10	0.70	0.71	0.71	0.72	0.72	0.73	0.73	0.74	0.74	0.75
20	0.75	0.76	0.76	0.77	0.77	0.78	0.78	0.79	0.79	0.80
30	0.80	0.81	0.81	0.82	0.82	0.83	0.83	0.84	0.84	0.85
40	0.85	0.86	0.86	0.87	0.87	0.88	0.88	0.89	0.89	0.90
50	0.90	0.90	0.90	0.91	0.91	0.91	0.91	0.91	0.92	0.92
60	0.92	0.92	0.92	0.93	0.93	0.93	0.93	0.93	0.94	0.94
70	0.94	0.94	0.94	0.95	0.95	0.95	0.95	0.95	0.96	0.96
80	0.96	0.96	0.96	0.97	0.97	0.97	0.97	0.97	0.98	0.98
90	0.98	0.98	0.98	0.99	0.99	0.99	0.99	0.99	1.00	1.00

Example—Flow Capacity Calculation
20" Model 2000A
100 mmWC Set Pressure [P_s]
175 mmWC Flowing Pressure [P_f]

1. Read flow capacity at set pressure from table — Flow = 23,300 NCMH
2. Calculate overpressure — % OP = [(175 - 100)/100] x 100 = 75%
3. Read "C" factor from table — "C" = 0.95
4. Calculate flow capacity — ***Flow = 0.95 x 23,300 = 22,135 NCMH***