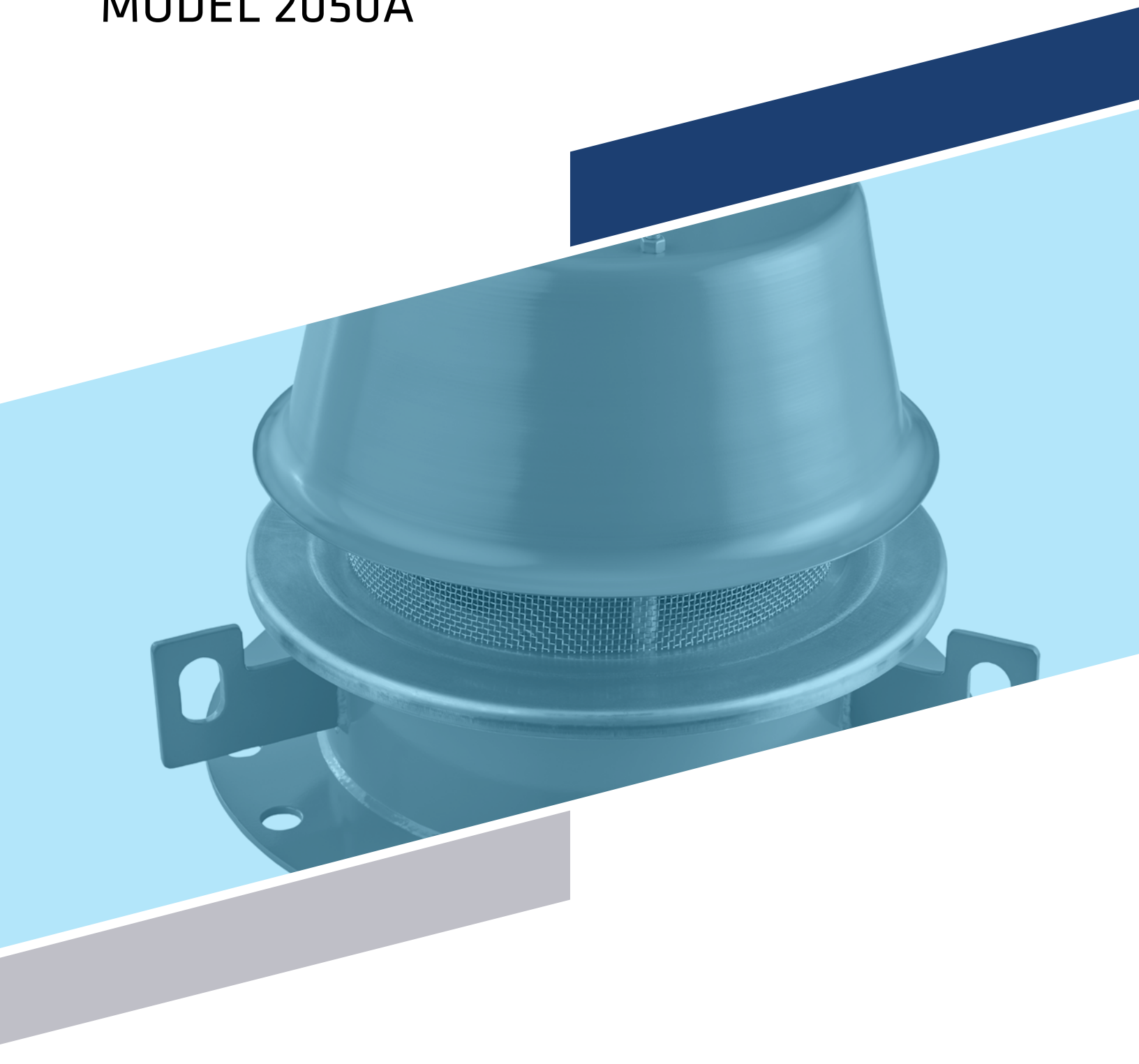
GROTH®
CORPORATION

EMERGENCY PRESSURE VACUUM RELIEF VALVE
MODEL 2050A



MODEL 2050A

The Groth Model 2050A Emergency Pressure Vacuum Relief Valve is designed to provide emergency relief capacity beyond that furnished by the normal operating pressure or vacuum relief valves on the tank. The Model 2050A valve protects the tank against rupture, explosion or implosion that could result from excessive internal pressures or vacuum conditions caused by fire or rapid emptying of the tank. As excessive pressure builds up, Model 2050A relieves, then re-seats when overpressure has been dissipated.

Technical Details

- Sizes: 16" (DN 400) , 20" (DN 500) and 24" (DN 600)
- Pressure Setting: 1.5 oz/in2 to 16 psig (6.46 mbarg to 68.9 mbarg)
- Vacuum Settings: 0.5 oz/in2 to 4 psig (2.15 mbarg to 17.2 mbarg)
- Materials: Carbon Steel, Stainless Steel, Fiberglass, special materials upon request
- Certifcation: ATEX Approval

Features

- Available in corrosion resistant materials
- Grounding Cable connects the head and flange
- Cushioned Air pallet
- Peripheral Guiding
- Vacuum breaker

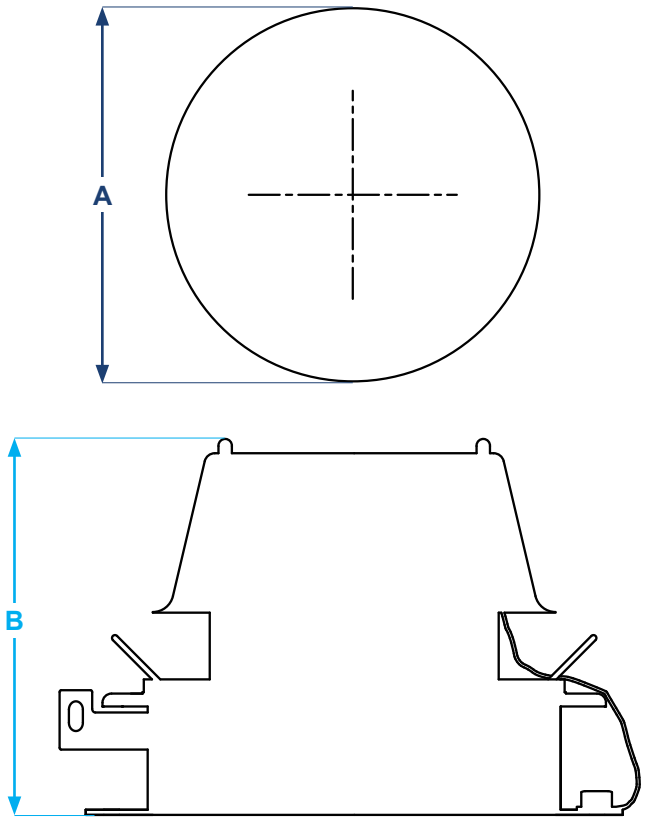
Options

- Steam Jacket
- Buna-N, Fluoropolymer, FKM
- ANSI 150# and API 650 drilling classes

SPECIFICATIONS

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

* 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.



PRESSURE/VACUUM RELIEF CAPACITY

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*
0.87	0.50*				65
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.

Pf = Flowing pressure
Ps = Set pressure
% OP = [(Pf - Ps)/Ps] x 100

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

"C" Factor Table										
%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 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

Example Flow Capacity Calculation

20" Model 2050A	1.Read flow capacity at set pressure from table	Flow = 829,000 SCFH
4 InWC set pressure [P_s]	2.Calculate overpressure	% OP = [(7 - 4)/4] x 100 = 75%
7 InWC flowing pressure [P_f]	3.Read "C" factor from table	"C" = 0.95
	4.Calculate flow capacity	Flow = 0.95 x 829,000 = 787,550 SCFH

PRESSURE/VACUUM RELIEF CAPACITY

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*
22	2.16*				1.83
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.

Pf = Flowing pressure
Ps = Set pressure
% OP = [(Pf - Ps)/Ps] x 100

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

"C" Factor Table										
%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
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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 to find "C" factor from table:

Read "C" factor for 75% overpressure at intersection of row 70 and column 5

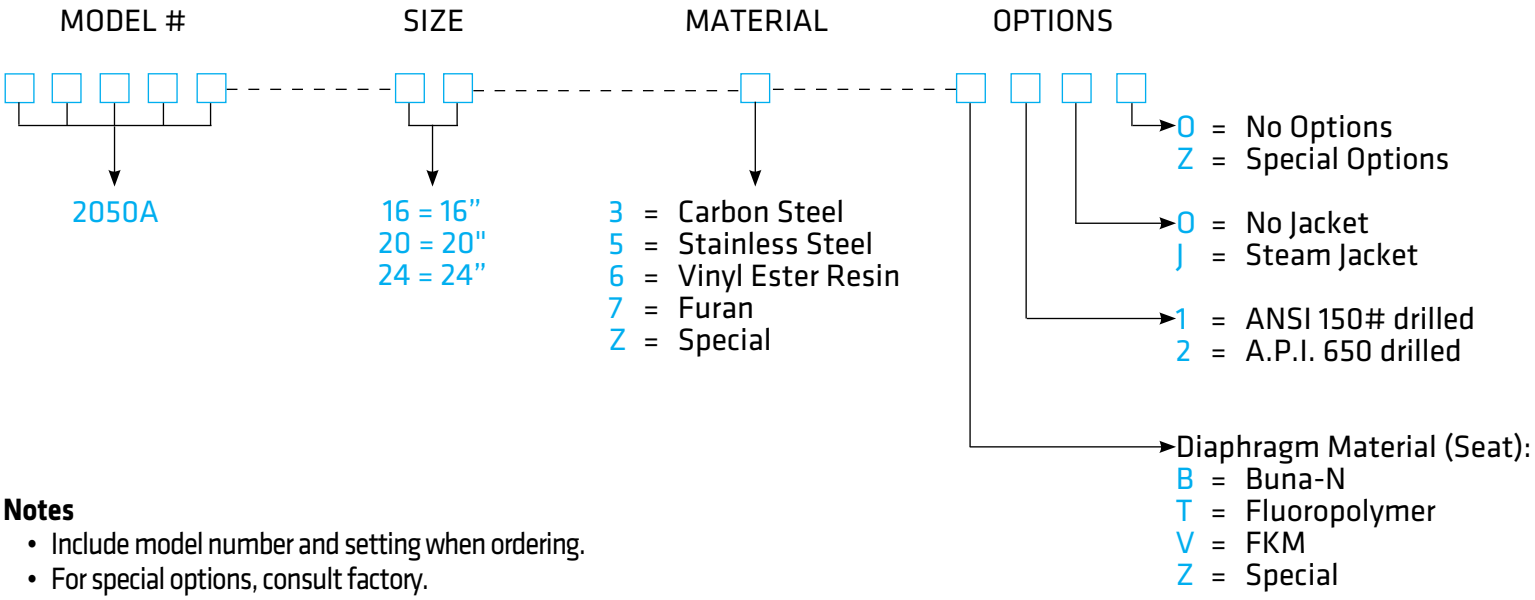
"C" factor at 75% OP = 0.95

Example Flow Capacity Calculation

20" Model 2050A	1.Read flow capacity at set pressure from table	Flow = 23,300 NCMH
100 mmWC Set Pressure [P_s]	2.Calculate overpressure	% OP = [(175 - 100)/100] x 100 = 75
175 mmWC Flowing Pressure [P_f]	3.Read "C" factor from table	"C" = 0.95
	4.Calculate flow capacity	Flow = 0.95 x 23,300 = 22,135 NCMH

HOW TO ORDER

For easy ordering, select proper model numbers



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	5	0	A	–	2	0	–	5	–	T	1	J	0

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