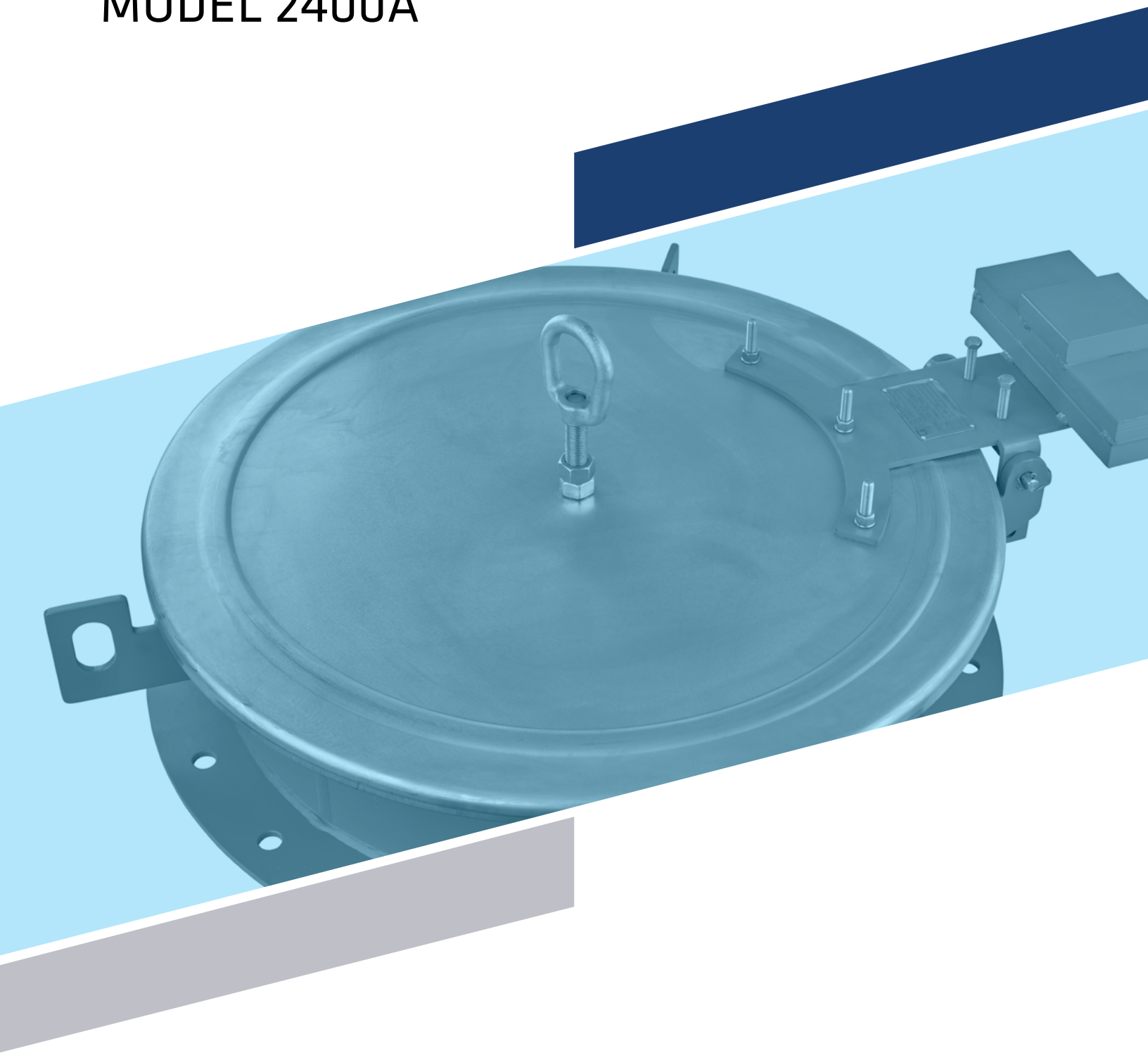
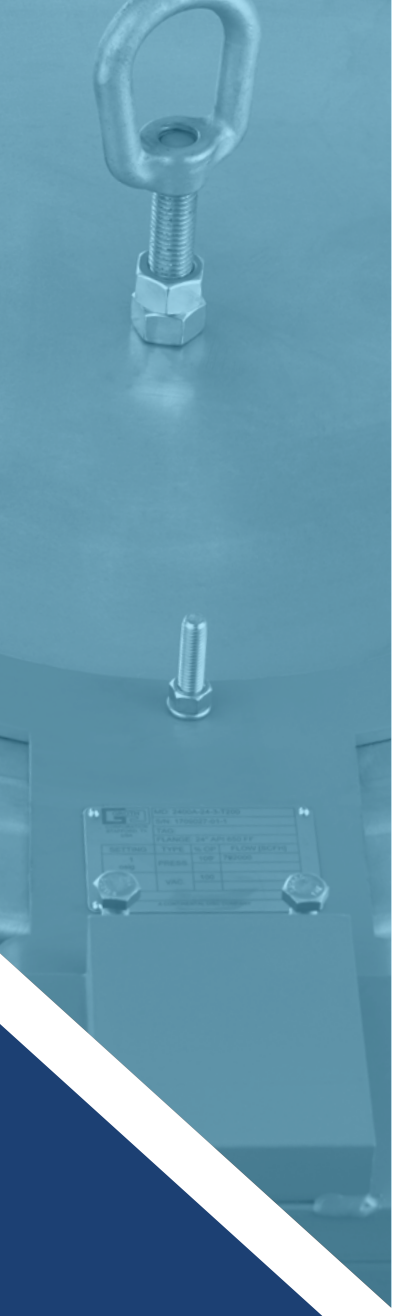
GROTH®
CORPORATION

EMERGENCY PRESSURE RELIEF VALVE
MODEL 2400A





MODEL 2400A

The Groth Model 2400A Emergency Pressure Relief Valve is designed to provide emergency relief capacity beyond that furnished by the normal operating pressure relief valve on the tank. The valve helps protects the tank against rupture or internal pressures caused by fire exposure and other emergency events and can be offered in corrosion resistant materials throughout. Model 2400A is designed to be self-closing, while Groth's special fluoropolymer "cushioned air" pallet and peripheral guiding insures proper alignment and integrity of seating.

Technical Details

- Sizes: 16" (DN 400) , 20" (DN 500) and 24" (DN 600)
- Pressure Setting: 1.5 - 8 oz/in2 (6.46 mbarg to 34.5 mbarg)
- Vacuum Settings: 0.5 - 4 oz/in2 (2.15 mbarg to 17.2 mbarg)
- Materials: Carbon Steel, Stainless Steel, special materials upon request
- Certified to the ATEX 2014/34/EU Directive

Features

- A wide stainless steel seat and air-cushion seal keeps leakage low long after the valve is put in service
- A hinged design including a lift stop ensuring positive re-seating for reliable performance
- Easy access manway combined with emergency relief

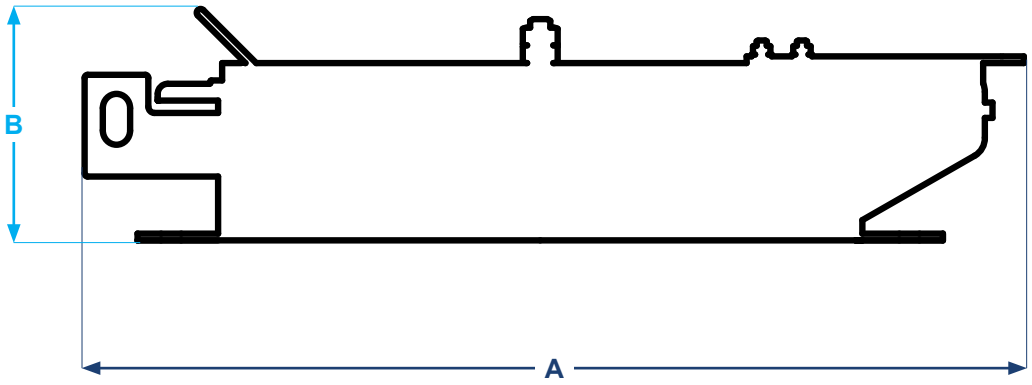
Options

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

SPECIFICATIONS

Size* In (mm)	Standard Setting Pressure Weight Loaded oz/in² (mbar)	Maximum Setting Pressure Weight Loaded oz/in² (mbar)	A Width In (mm)	B Height (At max. setting) In (mm)		Approx. Ship Weight Lbs (kg) at min. setting
				Closed	Open	
16 (406)	1.5 (6.5)	8 (34.5)	23.50 (587)	11 (279)	20.50 (521)	72 (22)
20 (508	1.5 (6.5)	8 (34.5)	28.75 (730)	11 (279)	22.50 (572)	98 (45)
24 (610)	1.5 (6.5)	8 (34.5)	33.25 (845(	11 (279)	24.50 (622)	124 (56)

* 150# ANSI. or API 650 drilling compatibility. † Minimum pressure setting 1.0 oz/in² on special application.
ˢ Maximum pressure setting on 16" size = 4 oz/in2. Fiberglass dimensions on request.
"Caution" — See IOM when mounting to API 650 flange. ◊ Max. vacuum setting is 4 oz./in². **Minimum pressure setting 1.5 oz/in2 on special application.



PRESSURE 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
0.87	0.50*			
1.73	1.00*			
2.60	1.50	422	668	970
3.00	1.73	454	718	1043
3.46	2.00*	487	771	1120
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
6.93	4.00*	689	1090	1583
10.4	6.00	843	1334	1937
13.9	8.00	973	1539	2236

* 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 2400A	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 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
22	2.16*			
44	4.31*			
88	8.63*	13.8	21.9	31.7
100	9.80	14.7	23.3	33.8
132	12.9*	16.9	26.8	38.9
176	17.3*	19.5	30.9	44.9
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

* 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

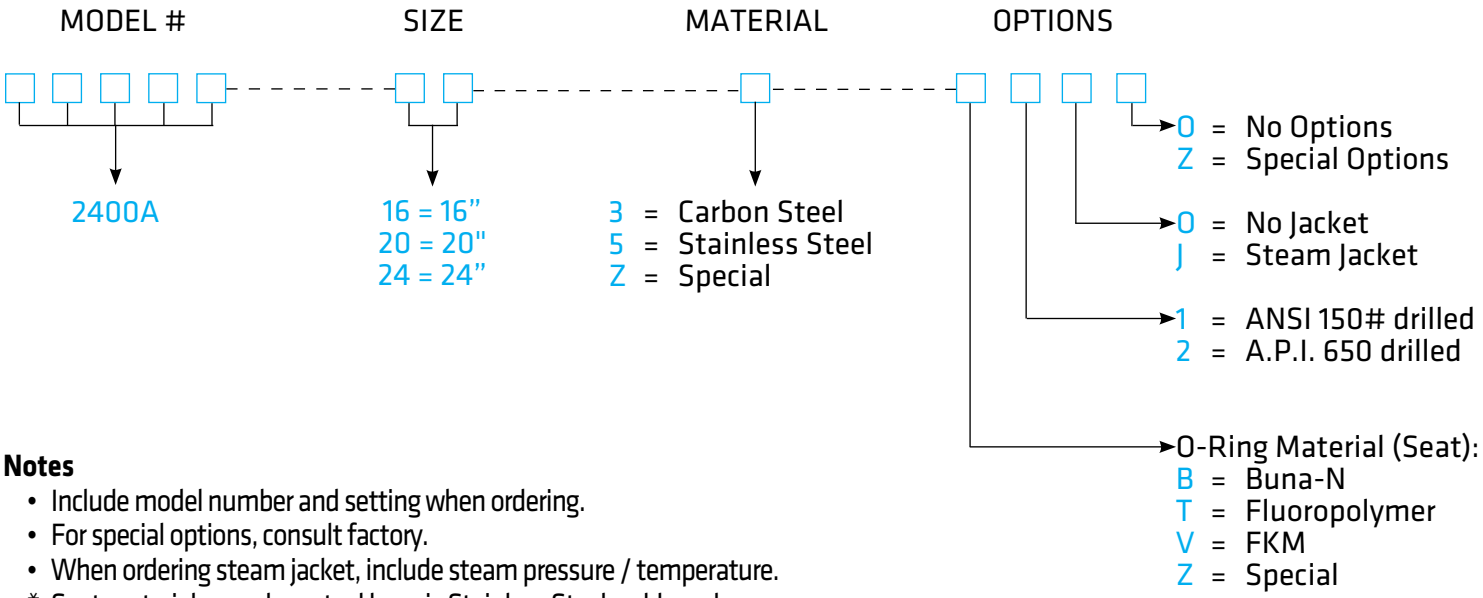
"C" factor at 75% OP = 0.95

Example Flow Capacity Calculation

20" Model 2400A	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.

* Seat material on carbon steel base is Stainless Steel weld overlay.

Example

2	4	0	0	A	–	2	0	–	5	–	T	1	J	0

Indicates a 20” Model 2400A with Stainless Steel Body, Fluoropolymer Seat Diaphragm, ANSI 150# drilled, Steam Jacket and no other options.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