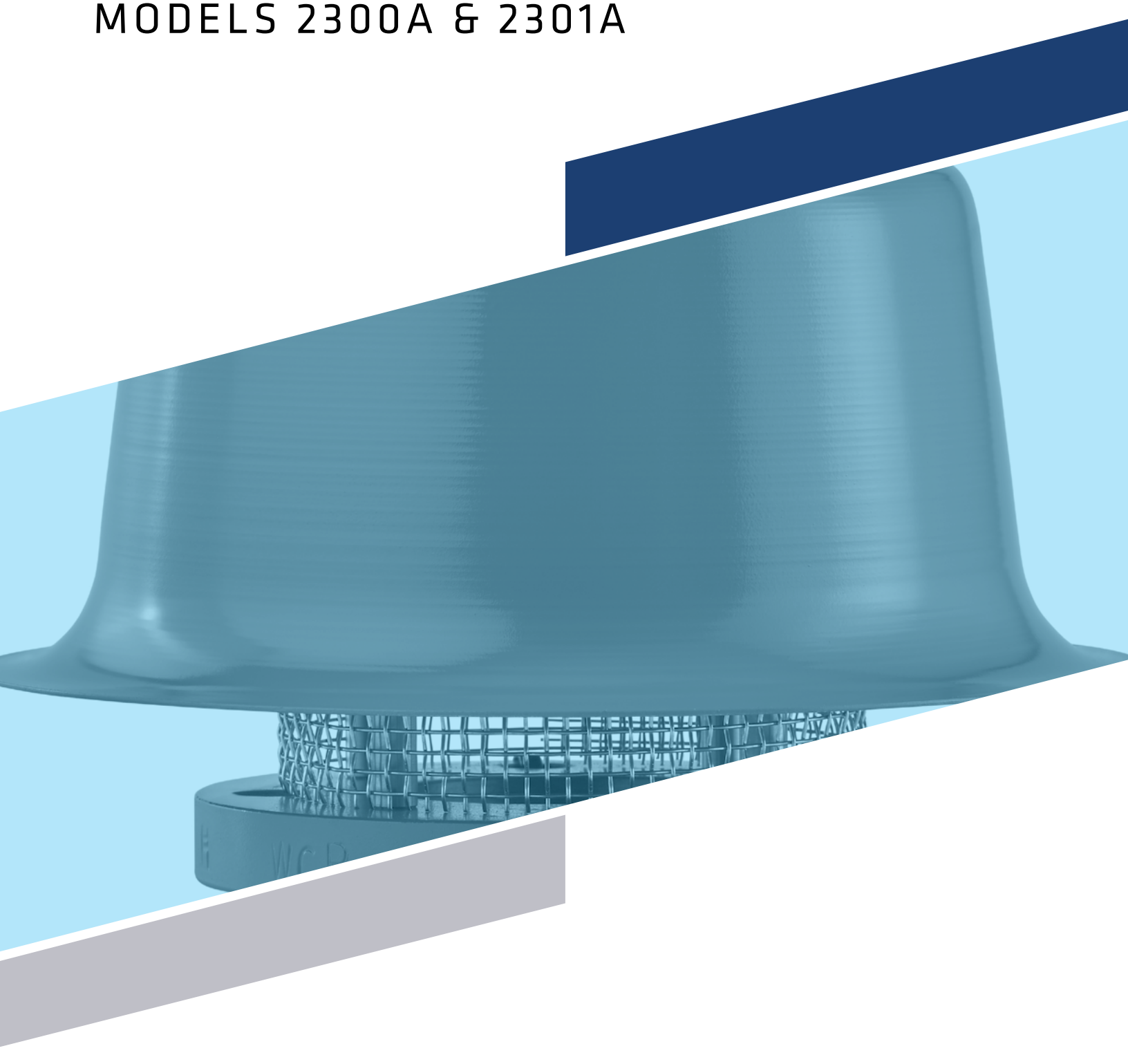
GROTH®
CORPORATION

PRESSURE RELIEF VALVES

MODELS 2300A & 2301A



MODELS 2300A & 2301A

The Groth Models 2300A & 2301A Pressure Relief Valves are designed to protect your tank from damage created by overpressure or excessive vacuum. Costly product evaporation losses due to normal tank "breathing" are greatly reduced. Because the 2300 Series products retain toxic vapors, atmospheric contamination is minimized which helps to provide increased fire protection and safety.

Technical Details

- Sizes: 2" (DN 50) through 12" (DN 300)
- Pressure Settings: 0.5 oz/in2 to 15 psig (2.15 mbarg to 1.03 barg)
- Vacuum Settings: 0.5 oz/in2 to 12 psig (2.15 mbarg to 506 mbarg)
- Material: Aluminum, Carbon Steel, Stainless Steel, Fiberglass, special materials available upon request

Features

- Modular Construction
- Cushioned air seating
- Superior performing fluoropolymer diaphragms
- Self draining housing body and drip rings
- Peripheral Guiding and center stabilizing system for alignment
- ATEX Certified

Options

- Buna-N, FKM
- Steam Jacket Valve

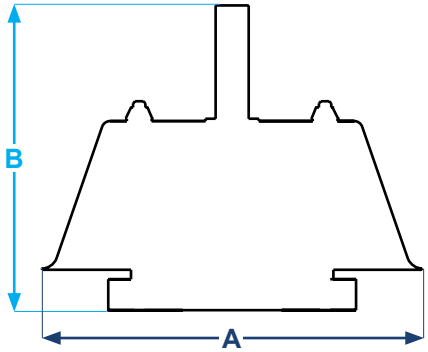
2300A

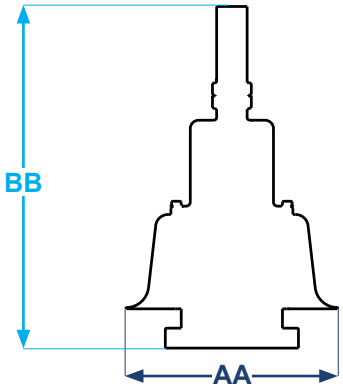
2301A

SPECIFICATIONS

Flange Size In (mm)	Max. Set Pressure	Min. Set Pressure	A Diameter In (mm)	AA Diameter In (mm	B Height In (mm)	BB Height In (mm))	Approx. Ship Wt. for Al Lbs (kg)
2 (50)	16 oz/in2 Weight Loaded (70.3 gm/cm2) 15 psig Spring Loaded (1.05 kg/cm2)	**0.5 oz/in2 (2.2 gm/cm2) Weight Loaded	9.50 (241)	9.50 (241)	9.75 (248)	16.50 (419)	12 (5)
3 (80)			11.50 (292)	13 (330)	8.62 (219)	22.00 (550)	15 (7)
4 (100)			13 (330)	13 (330)	10.56 (268)	22.50 (572)	20 (9)
6 (150)			19 (480)	19.50 (495)	15 (381)	30.50 (784)	30 (14)
8 (200)			23.62 (600)	23.50 (597)	16 .62(422)	35.37 (899)	45 (20)
10 (250)			30.75 (781)	25.50 (648)	17 (431)	41.37 (1051)	65 (20)
12 (300)			36 (914)	25.50 (648)	18 (457)	42.37 (1076)	100 (45)

‡ On spring loaded valves, change to model 2301A. † Larger sizes available - consult factory. * 150# ANSI. drilling compatibility, F.F. on aluminum and R.F. on carbon steel and stainless steel alloys. Fiberglass dimensions on request. **Some sizes require non-ferrous components to achieve 0.5 oz/in2 setting.





MODEL 2300APRESSURE RELIEF CAPACITY

Air Flow Capacity at 100% Overpressure (Double Set Pressure) 1000 Standard Cubic Feet per Hour at 60° F								
Set Pressure (P_s)		Size In (mm)						
InWC	oz/in^2	2 (50)	3 (80)	4 (100)	6 (150)	8 (200)	10 (250)	12 (300)
0.87	0.50	6.98	15.4	26.1	58.5	88.4	143	211
1.00	0.58	7.50	16.5	28.0	62.8	95.0	154	227
1.73	1.00	9.85	21.7	36.8	82.5	125	203	298
2.00	1.16	10.6	23.3	39.6	88.6	134	218	320
2.60	1.50	12.1	26.6	45.1	101	153	248	365
3.00	1.73	12.9	28.6	48.4	108	164	266	392
3.46	2.00	13.9	30.7	52.0	116	176	285	420
4.00	2.31	14.9	33.0	55.8	125	189	307	451
6.00	3.47	18.2	40.4	68.2	152	230	374	550
8.00	4.62	21.0	46.6	78.5	175	265	430	633
10.0	5.78	23.4	52.1	87.6	194	295	479	705
12.0	6.93	25.6	57.1	95.7	212	322	523	769
15.0	8.66	28.5	63.8	107	235	358	581	855
20.0	11.6	32.7	73.6	122	268	409	665	979
25.0	14.4	36.3	82.2	136	296	454	736	1084
30.0	17.3	39.5	89.9	148	321	492	799	1177

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 sted. 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	0.42	0.43	0.44	0.45	0.46	0.46	0.47	0.48	0.49	0.50
20	0.51	0.52	0.52	0.53	0.54	0.55	0.56	0.56	0.57	0.58
30	0.59	0.59	0.60	0.61	0.61	0.62	0.63	0.64	0.64	0.65
40	0.66	0.66	0.67	0.68	0.68	0.69	0.70	0.70	0.71	0.72
50	0.72	0.73	0.73	0.74	0.75	0.75	0.76	0.77	0.77	0.78
60	0.78	0.79	0.80	0.80	0.81	0.81	0.82	0.82	0.83	0.84
70	0.84	0.85	0.85	0.86	0.86	0.87	0.88	0.88	0.89	0.89
80	0.90	0.90	0.91	0.91	0.92	0.92	0.93	0.93	0.94	0.94
90	0.95	0.95	0.96	0.96	0.97	0.97	0.98	0.99	0.99	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 = 0.87

Example Flow Capacity Calculation

6" Model 2300A	1.Read flow capacity at set pressure from table	Flow = 125,000 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" = 0.87
	4.Calculate flow capacity	Flow = 0.87 x 125,000 = 108,750 SCFH

MODEL 2300A PRESSURE RELIEF CAPACITY

Air Flow Capacity at 100% Overpressure (Double Set Pressure) 1000 Normal Cubic Meters per Hour at 0° C								
Set Pressure (P_s)		Size In (mm)						
mmWC	mb	2 (50)	3 (80)	4 (100)	6 (150)	8 (200)	10 (250)	12 (300)
22	2.16	0.20	0.43	0.73	1.65	2.49	4.04	5.95
50	4.90	0.30	0.65	1.11	2.48	3.75	6.08	8.95
75	7.35	0.36	0.80	1.35	3.03	4.58	7.43	10.9
100	9.80	0.42	0.92	1.56	3.49	5.28	8.57	12.6
125	12.3	0.47	1.03	1.74	3.89	5.89	9.56	14.1
150	14.7	0.51	1.13	1.91	4.25	6.44	10.5	15.4
175	17.2	0.55	1.22	2.06	4.58	6.94	11.3	16.6
200	19.6	0.59	1.30	2.19	4.88	7.40	12.0	17.7
225	22.1	0.62	1.38	2.32	5.16	7.84	12..7	18.7
250	24.5	0.65	1.46	2.45	5.43	8.25	13.4	19.7
275	27.0	0.69	1.53	2.56	5.68	8.63	14.0	20.6
300	29.4	0.72	1.59	2.67	5.92	9.00	14.6	21.5
375	36.8	0.80	1.78	2.98	6.57	10.0	16.2	23.9
500	49.0	0.91	2.06	3.42	7.49	11.4	18.6	27.4
625	61.3	1.02	2.30	3.80	8.28	12.7	20.6	30.3
750	73.5	1.11	2.51	4.13	8.97	13.8	22.4	32.9

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	0.42	0.43	0.44	0.45	0.46	0.46	0.47	0.48	0.49	0.50
20	0.51	0.52	0.52	0.53	0.54	0.55	0.56	0.56	0.57	0.58
30	0.59	0.59	0.60	0.61	0.61	0.62	0.63	0.64	0.64	0.65
40	0.66	0.66	0.67	0.68	0.68	0.69	0.70	0.70	0.71	0.72
50	0.72	0.73	0.73	0.74	0.75	0.75	0.76	0.77	0.77	0.78
60	0.78	0.79	0.80	0.80	0.81	0.81	0.82	0.82	0.83	0.84
70	0.84	0.85	0.85	0.86	0.86	0.87	0.88	0.88	0.89	0.89
80	0.90	0.90	0.91	0.91	0.92	0.92	0.93	0.93	0.94	0.94
90	0.95	0.95	0.96	0.96	0.97	0.97	0.98	0.99	0.99	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 = 0.87

Example Flow Capacity Calculation

6" Model 2300A	1.Read flow capacity at set pressure from table	Flow = 3,490 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" = 0.87
	4.Calculate flow capacity	Flow = 0.87 x 3,490 = 3,036 NCMH

MODEL 2301A PRESSURE RELIEF CAPACITY

Air Flow Capacity at 100% Overpressure (Double Set Pressure) 1000 Standard Cubic Feet per Hour at 60° F							
Set Pressure (P_s)	Size In (mm)						
psig	2 (50)	3 (80)	4 (100)	6 (150)	8 (200)	10 (250)	12 (300)
1.00	27.1	59.9	104	198	345	529	739
2.00	39.7	87.7	152	296	500	767	1070
3.00	50.1	111	192	379	625	960	1340
4.00	59.5	131	228	456	736	1130	1577
5.00	68.3	151	261	530	838	1286	1794
6.00	76.5	169	293	601	932	1431	1997
7.00	84.3	186	323	670	1022	1568	2188
8.00	91.9	203	352	737	1107	1699	2371
9.00	99.3	219	380	804	1189	1825	2546
10.0	107	235	407	869	1267	1945	2714
11.0	113	250	434	934	1343	2062	2877
12.0	120	265	460	998	1417	2175	3036
13.0	127	280	485	1061	1489	2286	3189
14.0	134	295	510	1124	1559	2393	3339
15.0	140	309	535	1186	1627	2498	3486

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	••• Consult Factory•••									
20	0.27	0.29	0.30	0.32	0.33	0.35	0.36	0.38	0.39	0.40
30	0.42	0.43	0.44	0.45	0.47	0.48	0.49	0.50	0.51	0.52
40	0.53	0.54	0.55	0.56	0.57	0.58	0.59	0.60	0.61	0.62
50	0.63	0.64	0.65	0.66	0.67	0.67	0.68	0.69	0.70	0.71
60	0.72	0.72	0.73	0.74	0.75	0.76	0.76	0.77	0.78	0.79
70	0.80	0.80	0.81	0.82	0.82	0.83	0.84	0.85	0.85	0.86
80	0.87	0.87	0.88	0.89	0.90	0.90	0.91	0.92	0.92	0.93
90	0.94	0.94	0.95	0.96	0.96	0.97	0.97	0.98	0.99	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 = 0.83

Example Flow Capacity Calculation

6" Model 2301A	1.Read flow capacity at set pressure from table	Flow = 456,000 SCFH
4 psig Set Pressure [P_s]	2.Calculate overpressure	% OP = [(7 - 4)/4] x 100 = 75%
7 psig Flowing Pressure [P_f]	3.Read "C" factor from table	"C" = 0.83
	4.Calculate flow capacity	Flow = 0.83 x 456,000 = 378,480 SCFH

MODEL 2301A PRESSURE RELIEF CAPACITY

Air Flow Capacity at 100% Overpressure (Double Set Pressure) 1000 Normal Cubic Meters per Hour at 0° C							
Set Pressure (P_s)	Size In (mm)						
barg	2 (50)	3 (80)	4 (100)	6 (150)	8 (200)	10 (250)	12 (300)
0.07	0.80	1.76	3.05	5.83	10.1	15.5	21.7
0.10	0.97	2.13	3.70	7.13	12.2	18.8	26.2
0.15	1.21	2.67	4.64	9.05	15.2	23.4	32.7
0.20	1.43	3.16	5.48	10.8	17.9	27.4	38.3
0.25	1.63	3.60	6.25	12.5	20.3	31.1	43.4
0.30	1.82	4.02	6.98	14.0	22.5	34.5	48.2
0.35	2.00	4.42	7.68	15.6	24.6	37.8	52.7
0.40	2.18	4.81	8.34	17.1	26.6	40.8	57.0
0.45	2.35	5.18	8.99	18.6	28.5	43.8	61.1
0.50	2.51	5.54	9.62	20.0	30.4	46.6	65.1
0.55	2.67	5.89	10.2	21.4	32.2	49.4	68.9
0.60	2.83	6.24	10.8	22.8	33.9	52.0	72.7
0.70	3.13	6.90	12.0	25.6	37.3	57.1	79.8
0.80	3.42	7.55	13.1	28.3	40.4	62.0	86.6
0.90	3.70	8.17	14.2	31.0	43.5	66.7	93.2
1.00	3.98	8.78	15.2	33.6	46.4	71.2	99.4

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	••• Consult Factory•••									
20	0.27	0.29	0.30	0.32	0.33	0.35	0.36	0.38	0.39	0.40
30	0.42	0.43	0.44	0.45	0.47	0.48	0.49	0.50	0.51	0.52
40	0.53	0.54	0.55	0.56	0.57	0.58	0.59	0.60	0.61	0.62
50	0.63	0.64	0.65	0.66	0.67	0.67	0.68	0.69	0.70	0.71
60	0.72	0.72	0.73	0.74	0.75	0.76	0.76	0.77	0.78	0.79
70	0.80	0.80	0.81	0.82	0.82	0.83	0.84	0.85	0.85	0.86
80	0.87	0.87	0.88	0.89	0.90	0.90	0.91	0.92	0.92	0.93
90	0.94	0.94	0.95	0.96	0.96	0.97	0.97	0.98	0.99	1.00

Example to find "C" factor from table:

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

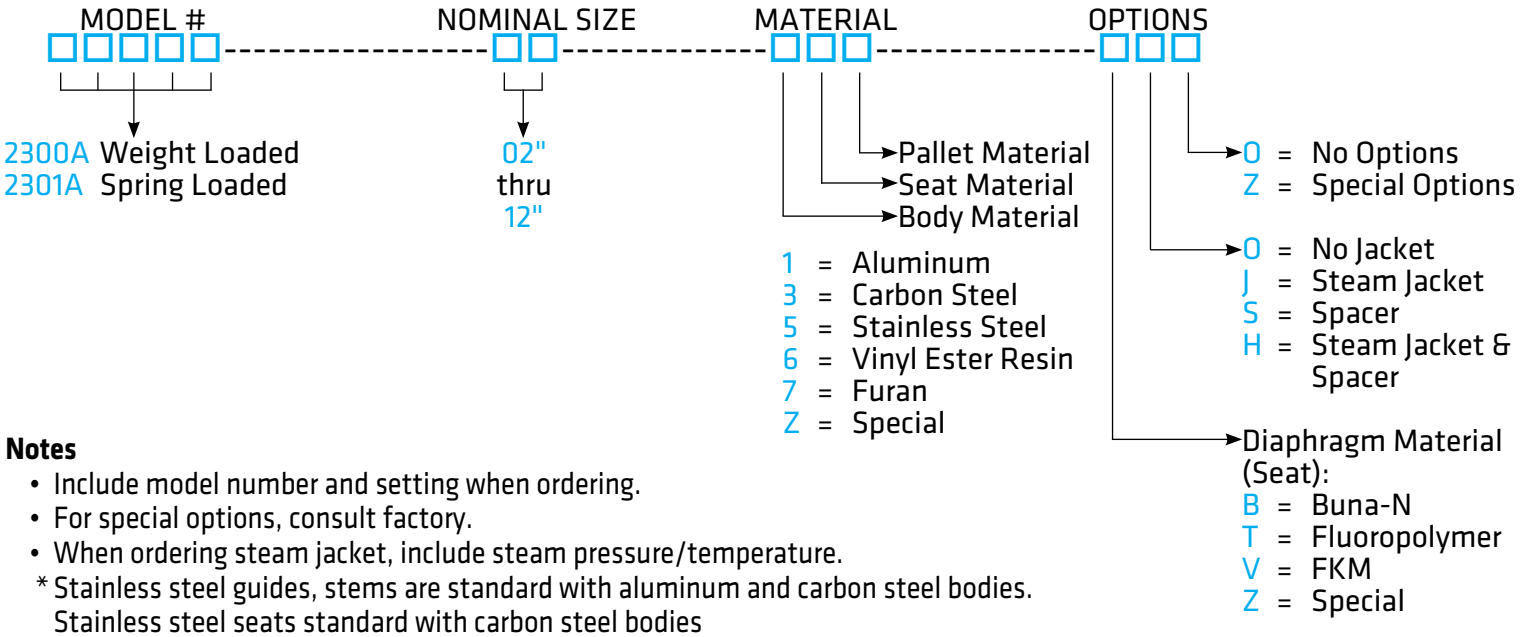
"C" factor at 75% OP = 0.83

Example Flow Capacity Calculation

6" Model 2301A	1.Read flow capacity at set pressure from table	Flow = 17,100 NCMH
0.4 barg Set Pressure [P_s]	2.Calculate overpressure	% OP = [(0.7 - 0.4)/0.4] x 100 = 75%
0.7 barg Flowing Pressure [P_f]	3.Read "C" factor from table	"C" = 0.83
	4.Calculate flow capacity	Flow = 0.83 x 17,100 = 14,193 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 aluminum and carbon steel bodies. Stainless steel seats standard with carbon steel bodies

#Aluminum body not available on 2301A

Example

2	3	0	0	A	–	0	2	–	1	1	5	–	T	0	0

Indicates a 2" Model 2300A with Aluminum Body and Seat, Stainless Steel Pallet, Fluoropolymer Seat Diaphragm, and no other options.

GROTH® CORPORATION

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