

# FULL LIFT TYPE VALVE AT 10% OVERPRESSURE

## WHAT IS A FULL LIFT TYPE VALVE?

A Full Lift Type Valve is a relief valve which attains full stable lift at only 10% overpressure. Like all Groth Pressure/Vacuum Relief Valves, the Full Lift Type Valve is a modulating valve which offers near zero blowdown, meaning it reseats near set pressure. These performance capabilities are possible due to the harmonization of the nozzle, seating, and pallet areas such that the valve will achieve stable lift at only 10% above the set pressure/vacuum.

## 1800A Series

For applications requiring low emissions and operation near Maximum Allowable Working Pressure (MAWP)



### Advantages of the Groth Full Lift Type Valve Compared to Standard Pressure / Vacuum Relief Valve

#### FULL OPEN CAPACITY AT 10% OVERPRESSURE

The most notable advantage of this valve is it being fully open at 10% overpressure while standard Pressure / Vacuum Relief Valves achieve full open capacity at 100% overpressure. The use of a Full Lift Type Valve allows the user to select the valve set pressure (vacuum) within 10% of the tank Maximum Allowable Working Pressure (Vacuum). This is important because operation near the tank design pressure greatly reduces the breathing losses of the product in the tank.

### Features

- Available in 2" (DN 50) through 12" (DN 300) flange sizes
- Stable Full lift at 10% overpressure
- Modulating action
- Near zero blowdown (reseats near set pressure)
- Able to achieve set pressure/vacuum very close to tank maximum allowable working pressure/vacuum

### Benefits

- Ability to operate process closer to Tank MAWP, increasing operating range of process
- Minimal seat leakage to prevent fugitive emission and conserve tank product
- Narrow valve operating range (from seal to full open) maximizes tank operating range and reduces total vapor emissions
- Stable lift ensures that the venting requirements of the process are reliably met
- Reduced seat leakage, low overpressure, and near zero blowdown characteristics to allow for process maintenance, minimal product loss and better tank corrosion maintenance

### Materials

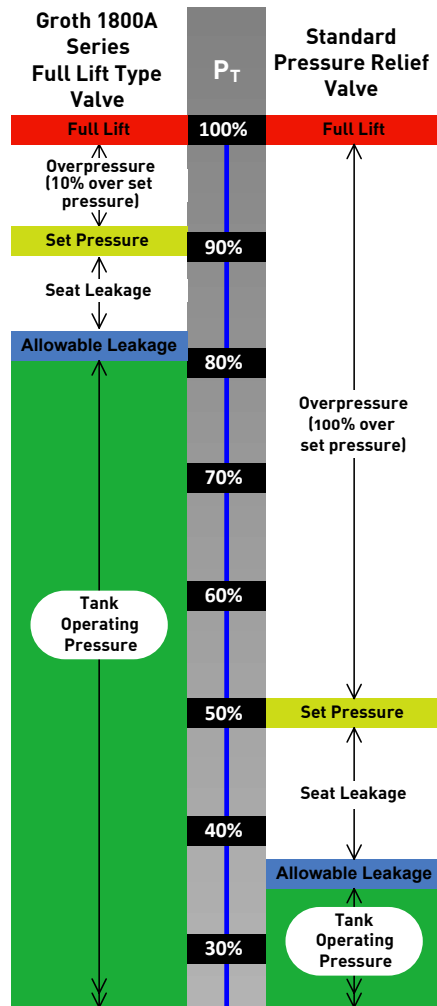
- Available in aluminum, carbon steel and stainless steel

# Reduced Tank Product Breathing Losses

**THE DIAGRAM TO THE RIGHT** compares Groth 1800A Series valves against standard pressure relief valves. The scale in the center represents the tank pressure (PT) as a percent of the tank's Maximum Allowable Working Pressure (MAWP).

## LEAK TIGHT TO 90% OF SET PRESSURE

The Groth Full Lift Type Valve performs better than the API Bulletin 2521 & ISO 28300 seat leakage requirements. The Groth Valve has no measurable leakage below 90% of set pressure. All valve seats are carefully lapped to ensure the valve seat is flat. Groth also requires strict quality guidelines to ensure that all components used in each valve are to the tightest tolerances.



Groth 1800A series Full Lift Type Valves offer full stable lift prior to 10% overpressure, minimal seat leakage and near zero blowdown. These features result in the following benefits:

- Maximum tank operating pressure range. The user can operate the tank at higher pressures thus lowering the product breathing loss by staying above the vapor pressure of the tank media.
- The near zero blowdown allows the user to broaden the operating pressure of the process, reduce product loss, and eliminate issues of valve and blanketing regulator process overlap.
- Reduced vapor emissions due to minimal seat leakage

## Groth 1800A Series Full Lift Type Valve Compared to a Standard Relief Valve

Utilizing a Groth 1800A Series Full Lift Type Valve **more than doubles the allowable tank operating pressure range** when compared to a Standard Relief Valve. The Groth 1800A series Full Lift Type Valve requires 18% of the tank's operating range to operate (leakage at 10% of valve set pressure, 10% overpressure and near 0% blowdown) leaving the USER with **82%** of the tank's operating pressure range to operate within. A Standard Relief Valve (as specified in API Standard 2000) requires 62% of the tank's operating range to operate (leakage at

25% of valve set pressure, 100% overpressure and near 0% blowdown) leaving the USER with **38%** of the tank's operating range to operate within.

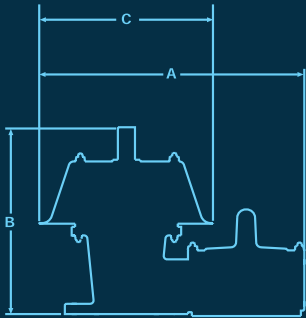
## Groth 1800A Series Full Lift Type Valve compared to our Competition's Full Lift Type Valve

Groth 1800A series Full Lift Type Valves far out perform any other Full Lift Type Valve available when comparing the overall opening and closing of the valve during tank breathing. The Groth 1800A Series Full Lift Type Valve has the **MAJOR** advantage of near zero blowdown (valve reseats near set pressure), while our competition's Full Lift Type Valve requires up to 25% blowdown. The Groth valve provides a great advantage due to its minimal operating range when compared to other valves.

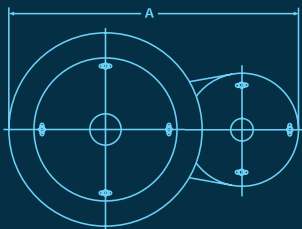


# MODEL 1800

Pressure/Vacuum Relief Valve



Inlet Flg	A Length	B Height	C Width
Metric	Metric	Metric	Metric
2"	13 <sup>5</sup> / <sub>8</sub> "	13"	9 <sup>1</sup> / <sub>2</sub> "
50 mm	346 mm	330 mm	241 mm
3"	18"	13 <sup>5</sup> / <sub>8</sub> "	11 <sup>1</sup> / <sub>2</sub> "
30 mm	457 mm	346 mm	292 mm
4"	19 <sup>3</sup> / <sub>4</sub> "	15 <sup>1</sup> / <sub>8</sub> "	13"
100 mm	503 mm	403 mm	130 mm
6"	27 <sup>3</sup> / <sub>4</sub> "	22 <sup>1</sup> / <sub>4</sub> "	19"
150 mm	704 mm	565 mm	482 mm
8"	33 <sup>7</sup> / <sub>8</sub> "	26 <sup>5</sup> / <sub>8</sub> "	23 <sup>5</sup> / <sub>8</sub> "
200 mm	860 mm	669 mm	600 mm
10"	40 <sup>7</sup> / <sub>8</sub> "	28 <sup>5</sup> / <sub>8</sub> "	30 <sup>3</sup> / <sub>4</sub> "
250 mm	1038 mm	733 mm	781 mm
12"	46"	32 <sup>7</sup> / <sub>8</sub> "	36"
300 mm	1165 mm	835 mm	914 mm



## Pressure Relief Capacity

Model 1800A PRESSURE RELIEF								
Set Pressure		Size						
In WC	OSI	2" (DN50)	3" (DN75)	4" (DN100)	6" (DN150)	8" (DN200)	10" (DN250)	12" (DN300)
Flow Capacity at 10% Over-pressure and 60°F [1000 SCFH]								
0.9	0.5	3.29	7.25	12.5	28.3	49.1	77.3	111
1.0	0.6	3.54	7.79	13.4	30.5	52.7	83.1	119
2.0	1.2	5.00	11.0	19.0	43.1	74.6	118	169
3.0	1.7	6.13	13.5	23.2	52.7	91.3	144	206
4.0	2.3	7.07	15.6	26.8	60.9	105	166	238
6.0	3.5	8.66	19.1	32.9	74.6	129	204	292
8.0	4.6	10.0	22.0	37.9	86.1	149	235	337
10.0	5.8	11.2	24.6	42.4	96.2	167	263	377
12.0	6.9	12.2	27.0	46.4	105	182	288	413
13.9	8.0	13.1	29.0	49.9	113	196	309	443

Model 1800A PRESSURE RELIEF								
Set Pressure		Size						
mm Wc	mbar	2" (DN50)	3" (DN75)	4" (DN100)	6" (DN150)	8" (DN200)	10" (DN250)	12" (DN300)
Flow Capacity at 10% Over-pressure and 0°C [1000 NCMH]								
25	2.45	0.102	0.225	0.388	0.88	1.52	2.40	3.44
50	4.90	0.145	0.318	0.548	1.24	2.15	3.40	4.87
75	7.35	0.177	0.390	0.671	1.52	2.64	4.16	5.96
100	9.80	0.204	0.450	0.775	1.76	3.05	4.80	6.89
125	12.3	0.228	0.503	0.867	1.97	3.41	5.37	7.70
150	14.7	0.250	0.551	0.949	2.15	3.73	5.88	8.43
200	19.6	0.289	0.636	1.10	2.49	4.31	6.79	9.74
250	24.5	0.323	0.711	1.22	2.78	4.81	7.59	10.9
300	29.4	0.354	0.779	1.34	3.04	5.27	8.31	11.9
350	34.3	0.382	0.841	1.45	3.29	5.69	8.97	12.9

Flow capacity is certified by Groth Corporation based on actual tests conducted in compliance with API Standard 2000 and ISO 28300:2008.



# MODEL 1800

Pressure/Vacuum Relief Valve

## Vacuum Relief Capacity

Model 1800A VACUUM RELIEF								
Set Vacuum		Size						
In WC	OSI	2" (DN50)	3" (DN75)	4" (DN100)	6" (DN150)	8" (DN200)	10" (DN250)	12" (DN300)
Flow Capacity at 10% Over-vacuum and 60°F [1000 SCFH]								
0.9	0.5	1.57	3.54	6.30	14.2	25.2	39.4	56.7
1.0	0.6	1.69	3.81	6.80	15.2	27.1	42.3	61.0
2.0	1.2	2.39	5.37	9.60	21.5	38.2	60.0	86.0
3.0	1.7	2.92	6.6	11.7	26.3	46.7	73.0	105
4.0	2.3	3.37	7.60	13.5	30.3	53.9	84.0	121
6.0	3.5	4.11	9.30	16.5	37.0	66.0	103	148
8.0	4.6	4.74	10.7	18.9	42.6	76.0	118	170
10.0	5.8	5.28	11.9	21.1	47.5	84.0	132	190
12.0	6.9	5.80	13.0	23.1	51.9	92.0	144	208
13.9	8.0	6.20	13.9	24.7	55.6	99.0	154	222

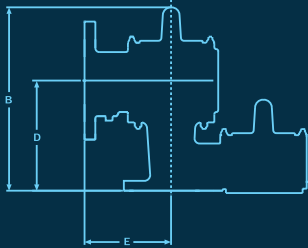
Model 1800A VACUUM RELIEF								
Set Vacuum		Size						
mm Wc	mbar	2" (DN50)	3" (DN75)	4" (DN100)	6" (DN150)	8" (DN200)	10" (DN250)	12" (DN300)
Flow Capacity at 10% Over-vacuum and 0°C [1000 NCMH]								
25	2.45	0.049	0.110	0.196	0.44	0.780	1.22	1.76
50	4.90	0.069	0.155	0.276	0.620	1.10	1.73	2.48
75	7.35	0.084	0.190	0.338	0.760	1.35	2.11	3.04
100	9.80	0.097	0.219	0.389	0.880	1.56	2.43	3.50
125	12.3	0.109	0.245	0.435	0.980	1.74	2.72	3.91
150	14.7	0.119	0.267	0.475	1.07	1.90	2.97	4.28
200	19.6	0.137	0.308	0.547	1.23	2.19	3.42	4.93
250	24.5	0.153	0.343	0.610	1.37	2.44	3.81	5.49
300	29.4	0.167	0.375	0.670	1.50	2.67	4.17	6.00
350	34.3	0.179	0.404	0.720	1.62	2.87	4.49	6.46

Flow capacity is certified by Groth Corporation based on actual tests conducted in compliance with API Standard 2000 and ISO 28300:2008.



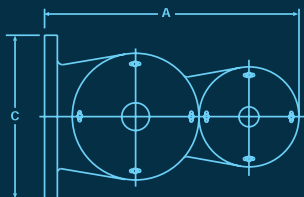
# MODEL 1820

Pressure/Vacuum Relief Valve



Inlet Fig	A Length Metric	B Height Metric	C Width Metric
2"	14 1/4"	12 3/8"	7 1/2"
50 mm	361 mm	320 mm	191 mm
3"	18"	15 1/8"	9"
30 mm	457 mm	384 mm	229 mm
4"	19 1/4"	18 1/4"	11"
100 mm	489 mm	463 mm	279 mm
6"	26 1/4"	23 3/4"	13 1/2"
150 mm	673 mm	603 mm	343 mm
8"	32 1/2"	28 1/2"	16"
200 mm	826 mm	723 mm	406 mm
10"	37 3/4"	34 1/4"	19"
250 mm	959 mm	876 mm	483 mm
12"	42 3/4"	39 1/8"	21"
300 mm	1086 mm	993 mm	533 mm

Inlet Fig	D Metric	E Metric
2"	7"	5 1/2"
50 mm	178 mm	140 mm
3"	8 1/8"	6"
30 mm	206 mm	152 mm
4"	9 1/2"	6 1/2"
100 mm	241 mm	165 mm
6"	12 3/4"	8 1/2"
150 mm	324 mm	216 mm
8"	15 1/4"	10 3/4"
200 mm	387 mm	273 mm
10"	18"	12 1/2"
250 mm	457 mm	318 mm
12"	20 3/8"	15"
300 mm	524 mm	381 mm



## Pressure Relief Capacity

Model 1820A PRESSURE RELIEF								
Set Pressure		Size						
In WC	OSI	2" (DN50)	3" (DN75)	4" (DN100)	6" (DN150)	8" (DN200)	10" (DN250)	12" (DN300)
Flow Capacity at 10% Over-pressure and 60°F [1000 SCFH]								
0.9	0.5	2.52	5.55	9.50	21.7	37.5	59.1	85.0
1.0	0.6	2.71	5.96	10.3	23.3	40.3	63.6	91.0
2.0	1.2	3.83	8.40	14.5	32.9	57.0	90.0	129
3.0	1.7	4.68	10.3	17.8	40.3	69.8	110	158
4.0	2.3	5.41	11.9	20.5	46.6	81.0	127	182
6.0	3.5	6.62	14.6	25.1	57.0	99.0	156	223
8.0	4.6	7.60	16.8	29.0	65.8	114	180	258
10.0	5.8	8.50	18.8	32.4	73.6	127	201	288
12.0	6.9	9.40	20.6	35.5	81.0	140	220	316
13.9	8.0	10.1	22.2	38.1	87.0	150	236	339

Model 1820A PRESSURE RELIEF								
Set Pressure		Size						
mm Wc	mbar	2" (DN50)	3" (DN75)	4" (DN100)	6" (DN150)	8" (DN200)	10" (DN250)	12" (DN300)
Flow Capacity at 10% Over-pressure and 0°C [1000 NCMH]								
25	2.45	0.078	0.172	0.297	0.673	1.17	1.84	2.63
50	4.90	0.111	0.244	0.419	0.952	1.65	2.60	3.73
75	7.35	0.135	0.298	0.513	1.17	2.02	3.18	4.56
100	9.80	0.156	0.344	0.593	1.35	2.33	3.67	5.27
125	12.3	0.175	0.385	0.663	1.50	2.60	4.11	5.89
150	14.7	0.191	0.422	0.726	1.65	2.85	4.50	6.45
200	19.6	0.221	0.487	0.838	1.90	3.29	5.19	7.45
250	24.5	0.247	0.544	0.937	2.13	3.68	5.80	8.32
300	29.4	0.270	0.596	1.03	2.33	4.03	6.36	9.12
350	34.3	0.292	0.643	1.11	2.51	4.35	6.86	9.84

Flow capacity is certified by Groth Corporation based on actual tests conducted in compliance with API Standard 2000 and ISO 28300:2008.





# MODEL 1820

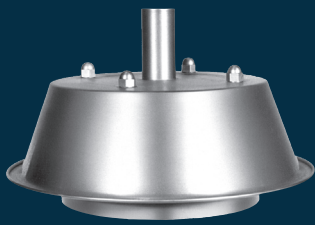
Pressure/Vacuum Relief Valve

## Vacuum Relief Capacity

Model 1820A VACUUM RELIEF								
Set Vacuum		Size						
In WC	OSI	2" (DN50)	3" (DN75)	4" (DN100)	6" (DN150)	8" (DN200)	10" (DN250)	12" (DN300)
Flow Capacity at 10% Over-vacuum and 60°F [1000 SCFH]								
0.9	0.5	1.57	3.54	6.30	14.2	25.2	39.4	56.7
1.0	0.6	1.69	3.81	6.80	15.2	27.1	42.3	61.0
2.0	1.2	2.39	5.37	9.60	21.5	38.2	60.0	86.0
3.0	1.7	2.92	6.60	11.7	26.3	46.7	73.0	105
4.0	2.3	3.37	7.60	13.5	30.3	53.9	84.0	121
6.0	3.5	4.11	9.30	16.5	37.0	66.0	103	148
8.0	4.6	4.74	10.7	18.9	42.6	76.0	118	170
10.0	5.8	5.28	11.9	21.1	47.5	84.0	132	190
12.0	6.9	5.80	13.0	23.1	51.9	92.0	144	208
13.9	8.0	6.20	13.9	24.7	55.6	99.0	154	222

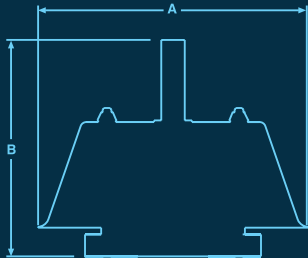
Model 1820A VACUUM RELIEF								
Set Vacuum		Size						
mm Wc	mbar	2" (DN50)	3" (DN75)	4" (DN100)	6" (DN150)	8" (DN200)	10" (DN250)	12" (DN300)
Flow Capacity at 10% Over-vacuum and 0°C [1000 NCMH]								
25	2.45	0.049	0.110	0.196	0.440	0.78	1.22	1.76
50	4.90	0.069	0.155	0.276	0.620	1.10	1.73	2.48
75	7.35	0.084	0.190	0.338	0.760	1.35	2.11	3.04
100	9.80	0.097	0.219	0.389	0.880	1.56	2.43	3.50
125	12.3	0.109	0.245	0.435	0.980	1.74	2.72	3.91
150	14.7	0.119	0.267	0.475	1.07	1.90	2.97	4.28
200	19.6	0.137	0.308	0.547	1.23	2.19	3.42	4.93
250	24.5	0.153	0.343	0.610	1.37	2.44	3.81	5.49
300	29.4	0.167	0.375	0.670	1.50	2.67	4.17	6.00
350	34.3	0.179	0.404	0.720	1.62	2.87	4.49	6.46

Flow capacity is certified by Groth Corporation based on actual tests conducted in compliance with API Standard 2000 and ISO 28300:2008.



# MODEL 1830

Pressure Relief Valve



Inlet Flg	A Diameter	B Height
Metric	Metric	Metric
2"	9½"	6⅝"
50 mm	241 mm	168 mm
3"	11½"	8⅝"
30 mm	292 mm	219 mm
4"	13"	10⅞"
100 mm	330 mm	268 mm
6"	19"	15"
150 mm	482 mm	381 mm
8"	23⅝"	16⅝"
200 mm	600 mm	422 mm
10"	30¾"	17"
250 mm	781 mm	431 mm
12"	36"	18"
300 mm	914 mm	457 mm

## Pressure Relief Capacity

Model 1830A PRESSURE RELIEF								
Set Pressure		Size						
In WC	OSI	2" (DN50)	3" (DN75)	4" (DN100)	6" (DN150)	8" (DN200)	10" (DN250)	12" (DN300)
Flow Capacity at 10% Over-pressure and 60°F [1000 SCFH]								
0.9	0.5	3.29	7.25	12.5	28.3	49.1	77.3	111
1.0	0.6	3.54	7.79	13.4	30.5	52.7	83.1	119
2.0	1.2	5.00	11.0	19.0	43.1	74.6	118	169
3.0	1.7	6.13	13.5	23.2	52.7	91.3	144	206
4.0	2.3	7.07	15.6	26.8	60.9	105	166	238
6.0	3.5	8.66	19.1	32.9	74.6	129	204	292
8.0	4.6	10.0	22.0	37.9	86.1	149	235	337
10.0	5.8	11.2	24.6	42.4	96.2	167	263	377
12.0	6.9	12.2	27.0	46.4	105	182	288	413
13.9	8.0	13.1	29.0	49.9	113	196	309	443

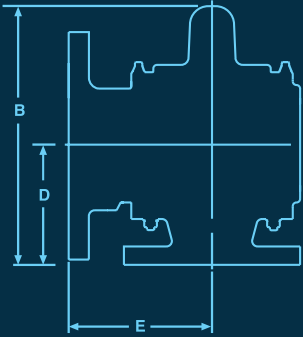
Model 1830A PRESSURE RELIEF								
Set Pressure		Size						
mm Wc	mbar	2" (DN50)	3" (DN75)	4" (DN100)	6" (DN150)	8" (DN200)	10" (DN250)	12" (DN300)
Flow Capacity at 10% Over-pressure and 0°C [1000 NCMH]								
25	2.45	0.102	0.225	0.388	0.880	1.52	2.40	3.44
50	4.90	0.145	0.318	0.548	1.24	2.15	3.40	4.87
75	7.35	0.177	0.390	0.671	1.52	2.64	4.16	5.96
100	9.80	0.204	0.450	0.775	1.76	3.05	4.80	6.89
125	12.3	0.228	0.503	0.867	1.97	3.41	5.37	7.70
150	14.7	0.250	0.551	0.949	2.15	3.73	5.88	8.43
200	19.6	0.289	0.636	1.10	2.49	4.31	6.79	9.74
250	24.5	0.323	0.711	1.22	2.78	4.81	7.59	10.9
300	29.4	0.354	0.779	1.34	3.04	5.27	8.31	11.9
350	34.3	0.382	0.841	1.45	3.29	5.69	8.97	12.9

Flow capacity is certified by Groth Corporation based on actual tests conducted in compliance with API Standard 2000 and ISO 28300:2008.



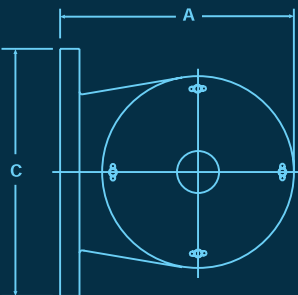
# MODEL 1860

Pressure Relief Valve



Inlet Flg	A Length	B Height	C Width
Metric	Metric	Metric	Metric
2"	8 <sup>5</sup> / <sub>8</sub> "	9 <sup>5</sup> / <sub>8</sub> "	7 <sup>1</sup> / <sub>2</sub> "
50 mm	219 mm	238 mm	191 mm
3"	10"	11 <sup>1</sup> / <sub>8</sub> "	9"
30 mm	254 mm	282 mm	229 mm
4"	11"	13 <sup>7</sup> / <sub>8</sub> "	11"
100 mm	279 mm	352 mm	279 mm
6"	14 <sup>1</sup> / <sub>2</sub> "	17 <sup>3</sup> / <sub>8</sub> "	13 <sup>1</sup> / <sub>2</sub> "
150 mm	368 mm	441 mm	343 mm
8"	18"	21 <sup>1</sup> / <sub>4</sub> "	16"
200 mm	457 mm	539 mm	406 mm
10"	20 <sup>3</sup> / <sub>4</sub> "	23 <sup>3</sup> / <sub>8</sub> "	19"
250 mm	527 mm	600 mm	483 mm
12"	24 <sup>3</sup> / <sub>4</sub> "	26 <sup>5</sup> / <sub>8</sub> "	21"
300 mm	629 mm	676 mm	533 mm

Inlet Flg	D	E
Metric	Metric	Metric
2"	4 <sup>1</sup> / <sub>8</sub> "	5 <sup>1</sup> / <sub>2</sub> "
50 mm	105 mm	140 mm
3"	5"	6"
30 mm	127 mm	152 mm
4"	6 <sup>1</sup> / <sub>2</sub> "	6 <sup>1</sup> / <sub>2</sub> "
100 mm	165 mm	165 mm
6"	8 <sup>1</sup> / <sub>2</sub> "	8 <sup>1</sup> / <sub>2</sub> "
150 mm	216 mm	216 mm
8"	9 <sup>3</sup> / <sub>4</sub> "	10 <sup>3</sup> / <sub>4</sub> "
200 mm	248 mm	273 mm
10"	10 <sup>1</sup> / <sub>4</sub> "	12 <sup>1</sup> / <sub>2</sub> "
250 mm	260 mm	318 mm
12"	11"	15"
300 mm	279 mm	381 mm



## Pressure Relief Capacity

Model 1860A PRESSURE RELIEF								
Set Pressure		Size						
In WC	OSI	2" (DN50)	3" (DN75)	4" (DN100)	6" (DN150)	8" (DN200)	10" (DN250)	12" (DN300)
Flow Capacity at 10% Over-pressure and 60°F [1000 SCFH]								
0.9	0.5	2.52	5.55	9.5	21.7	37.5	59.1	85.0
1.0	0.6	2.71	5.96	10.3	23.3	40.3	63.6	91.0
2.0	1.2	3.83	8.40	14.5	32.9	57.0	90.0	129
3.0	1.7	4.68	10.3	17.8	40.3	69.8	110	158
4.0	2.3	5.41	11.9	20.5	46.6	81.0	127	182
6.0	3.5	6.62	14.6	25.1	57.0	99.0	156	223
8.0	4.6	7.60	16.8	29.0	65.8	114	180	258
10.0	5.8	8.50	18.8	32.4	73.6	127	201	288
12.0	6.9	9.40	20.6	35.5	81.0	140	220	316
13.9	8.0	10.1	22.2	38.1	87.0	150	236	339

Model 1860A PRESSURE RELIEF								
Set Pressure		Size						
mm Wc	mbar	2" (DN50)	3" (DN75)	4" (DN100)	6" (DN150)	8" (DN200)	10" (DN250)	12" (DN300)
Flow Capacity at 10% Over-pressure and 0°C [1000 NCMH]								
25	2.45	0.078	0.172	0.297	0.673	1.17	1.84	2.63
50	4.90	0.111	0.244	0.419	0.952	1.65	2.60	3.73
75	7.35	0.135	0.298	0.513	1.17	2.02	3.18	4.56
100	9.80	0.156	0.344	0.593	1.35	2.33	3.67	5.27
125	12.3	0.175	0.385	0.663	1.50	2.60	4.11	5.89
150	14.7	0.191	0.422	0.726	1.65	2.85	4.50	6.45
200	19.6	0.221	0.487	0.838	1.90	3.29	5.19	7.45
250	24.5	0.247	0.544	0.937	2.13	3.68	5.80	8.32
300	29.4	0.270	0.596	1.03	2.33	4.03	6.36	9.12
350	34.3	0.292	0.643	1.11	2.51	4.35	6.86	9.84

Flow capacity is certified by Groth Corporation based on actual tests conducted in compliance with API Standard 2000 and ISO 28300:2008.



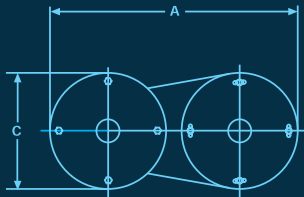


# MODEL 1810

Vacuum Relief Valve



Inlet Flg	A Length	B Height	C Width
Metric	Metric	Metric	Metric
2"	11 <sup>5</sup> / <sub>8</sub> "	6 <sup>7</sup> / <sub>8</sub> "	6"
50 mm	295 mm	174 mm	152 mm
3"	15 <sup>3</sup> / <sub>4</sub> "	7 <sup>3</sup> / <sub>4</sub> "	7 <sup>3</sup> / <sub>4</sub> "
30 mm	400 mm	196 mm	197 mm
4"	17 <sup>1</sup> / <sub>4</sub> "	9 <sup>5</sup> / <sub>8</sub> "	9"
100 mm	438 mm	244 mm	229 mm
6"	23 <sup>1</sup> / <sub>2</sub> "	11 <sup>7</sup> / <sub>8</sub> "	12"
150 mm	597 mm	301 mm	305 mm
8"	28 <sup>1</sup> / <sub>2</sub> "	15 <sup>1</sup> / <sub>2</sub> "	14 <sup>1</sup> / <sub>2</sub> "
200 mm	724 mm	393 mm	368 mm
10"	33 <sup>1</sup> / <sub>4</sub> "	18 <sup>5</sup> / <sub>8</sub> "	16 <sup>1</sup> / <sub>2</sub> "
250 mm	845 mm	473 mm	419 mm
12"	37 <sup>1</sup> / <sub>4</sub> "	21 <sup>5</sup> / <sub>8</sub> "	19"
300 mm	946 mm	549 mm	483 mm

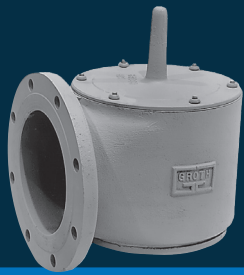


## Vacuum Relief Capacity

Model 1810A VACUUM RELIEF								
Set Vacuum		Size						
In WC	OSI	2" (DN50)	3" (DN75)	4" (DN100)	6" (DN150)	8" (DN200)	10" (DN250)	12" (DN300)
Flow Capacity at 10% Over-vacuum and 60°F [1000 SCFH]								
0.9	0.5	1.57	3.54	6.30	14.2	25.2	39.4	56.7
1.0	0.6	1.69	3.81	6.80	15.2	27.1	42.3	61.0
2.0	1.2	2.39	5.37	9.60	21.5	38.2	60.0	86.0
3.0	1.7	2.92	6.60	11.7	26.3	46.7	73.0	105
4.0	2.3	3.37	7.60	13.5	30.3	53.9	84.0	121
6.0	3.5	4.11	9.30	16.5	37.0	66.0	103	148
8.0	4.6	4.74	10.7	18.9	42.6	76.0	118	170
10.0	5.8	5.28	11.9	21.1	47.5	84.0	132	190
12.0	6.9	5.80	13.0	23.1	51.9	92.0	144	208
13.9	8.0	6.20	13.9	24.7	55.6	99.0	154	222

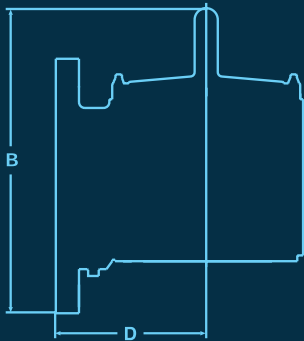
Model 1810A VACUUM RELIEF								
Set Vacuum		Size						
mm Wc	mbar	2" (DN50)	3" (DN75)	4" (DN100)	6" (DN150)	8" (DN200)	10" (DN250)	12" (DN300)
Flow Capacity at 10% Over-vacuum and 0°C [1000 NCMH]								
25	2.45	0.049	0.110	0.196	0.440	0.78	1.22	1.76
50	4.90	0.069	0.155	0.276	0.620	1.10	1.73	2.48
75	7.35	0.084	0.190	0.338	0.760	1.35	2.11	3.04
100	9.80	0.097	0.219	0.389	0.880	1.56	2.43	3.50
125	12.3	0.109	0.245	0.435	0.980	1.74	2.72	3.91
150	14.7	0.119	0.267	0.475	1.07	1.90	2.97	4.28
200	19.6	0.137	0.308	0.547	1.23	2.19	3.42	4.93
250	24.5	0.153	0.343	0.610	1.37	2.44	3.81	5.49
300	29.4	0.167	0.375	0.670	1.50	2.67	4.17	6.00
350	34.3	0.179	0.404	0.720	1.62	2.87	4.49	6.46

Flow capacity is certified by Groth Corporation based on actual tests conducted in compliance with API Standard 2000 and ISO 28300:2008.



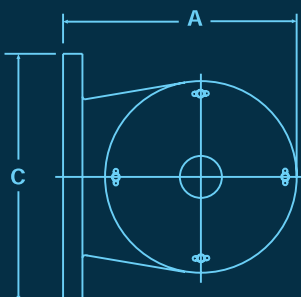
# MODEL 1870

Vacuum Relief Valve



Size Flange	A Length Metric	B Height Metric
3"	8 <sup>5</sup> / <sub>8</sub> "	9 <sup>1</sup> / <sub>4</sub> "
80 mm	219 mm	235 mm
4"	10"	11 <sup>1</sup> / <sub>2</sub> "
100 mm	254 mm	292 mm
6"	11"	14 <sup>1</sup> / <sub>4</sub> "
150 mm	279 mm	362 mm
8"	14 <sup>1</sup> / <sub>2</sub> "	17 <sup>3</sup> / <sub>4</sub> "
200 mm	368 mm	451 mm
10"	18"	21 <sup>1</sup> / <sub>4</sub> "
250 mm	457 mm	539 mm
12"	20 <sup>3</sup> / <sub>4</sub> "	25 <sup>3</sup> / <sub>4</sub> "
300 mm	527 mm	654 mm
14"	24 <sup>3</sup> / <sub>4</sub> "	29 <sup>1</sup> / <sub>4</sub> "
350 mm	629 mm	742 mm

Size Flange	C Width Metric	D Metric
3"	7 <sup>1</sup> / <sub>2</sub> "	5 <sup>1</sup> / <sub>2</sub> "
80 mm	191 mm	140 mm
4"	9"	6"
100 mm	229 mm	152 mm
6"	11"	6 <sup>1</sup> / <sub>2</sub> "
150 mm	279 mm	165 mm
8"	13 <sup>1</sup> / <sub>2</sub> "	8 <sup>1</sup> / <sub>2</sub> "
200 mm	343 mm	216 mm
10"	16"	10 <sup>3</sup> / <sub>4</sub> "
250 mm	406 mm	273 mm
12"	19"	12 <sup>1</sup> / <sub>2</sub> "
300 mm	483 mm	318 mm
14"	21"	15"
350 mm	533 mm	381 mm



## Vacuum Relief Capacity

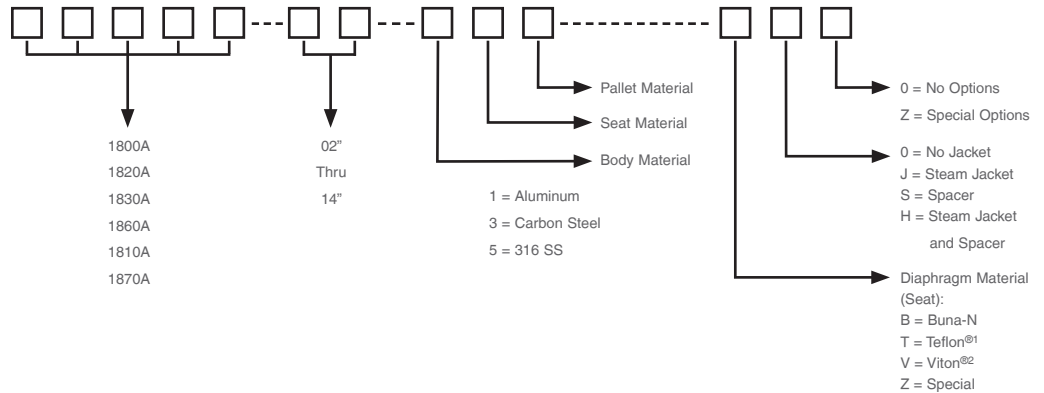
Model 1870A VACUUM RELIEF								
Set Vacuum		Size						
In WC	OSI	3" (DN75)	4" (DN100)	6" (DN150)	8" (DN200)	10" (DN250)	12" (DN300)	14" (DN350)
Flow Capacity at 10% Over-vacuum and 60°F [1000 SCFH]								
0.9	0.5	2.75	6.18	11.0	24.7	44.0	68.7	98.9
1.0	0.6	2.95	6.65	11.8	26.6	47.3	73.8	106
2.0	1.2	4.17	9.38	16.7	37.5	66.7	104	150
3.0	1.7	5.10	11.5	20.4	45.9	81.6	128	184
4.0	2.3	5.88	13.2	23.5	52.9	94.1	147	212
6.0	3.5	7.18	16.2	28.7	64.6	115	180	259
8.0	4.6	8.27	18.6	33.1	74.4	132	207	298
10.0	5.8	9.22	20.7	36.9	83.0	147	230	332
12.0	6.9	10.1	22.6	40.3	90.6	161	252	362
13.9	8.0	10.8	24.3	43.1	97.1	173	270	388

Model 1870A VACUUM RELIEF								
Set Vacuum		Size						
mm Wc	mbar	3" (DN75)	4" (DN100)	6" (DN150)	8" (DN200)	10" (DN250)	12" (DN300)	14" (DN350)
Flow Capacity at 10% Over-vacuum and 0°C [1000 NCMH]								
25	2.45	0.085	0.192	0.341	0.770	1.37	2.13	3.07
50	4.90	0.121	0.271	0.482	1.08	1.93	3.01	4.34
75	7.35	0.147	0.332	0.590	1.33	2.36	3.68	5.31
100	9.80	0.170	0.382	0.680	1.53	2.72	4.25	6.12
125	12.3	0.190	0.427	0.759	1.71	3.04	4.74	6.83
150	14.7	0.208	0.467	0.830	1.87	3.32	5.19	7.47
200	19.6	0.239	0.538	0.956	2.15	3.82	5.97	8.60
250	24.5	0.266	0.599	1.07	2.40	4.26	6.66	9.59
300	29.4	0.291	0.655	1.16	2.62	4.66	7.27	10.5
350	34.3	0.313	0.705	1.25	2.82	5.01	7.83	11.3

Flow capacity is certified by Groth Corporation based on actual tests conducted in compliance with API Standard 2000 and ISO 28300:2008.

# HOW TO ORDER

For easy ordering, select proper model numbers



**EXAMPLE** 1 8 0 0 A — 0 2 — 1 1 5 — T 0 0

Indicates a 2" Model 1800A with Aluminum Body and Seat, 316 SS Pallet, Teflon<sup>®1</sup> Seat Diagram, and no other options.

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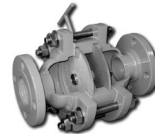
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