



®

CORPORATION

PILOT OPERATED RELIEF VALVE

1600 SERIES





1600 SERIES

The Groth 1600 Series valves provide safe, dependable, and accurate low pressure and/or vacuum protection. Seals in accordance with API 2000 requirements for Pilot Operated Relief Valves. This design prevents fugitive emissions and conserves stored product. Rated flow at 10% overpressure provides the ability to operate closer to the tank MAWP, increasing the operating range of the process. This reduces the need for a large overpressure and saves product, which translates into profit. Flexibility in terms of film or o-ring seat and snap or modulating action allows product customization to specific application requirements. The Model 1662A incorporates a vacuum breaker.

Technical Details

- Sizes: 2" through 12" (50-300mm)
- Pressure Settings: 2.0 InWC to 15 psig
- Vacuum Settings: 7.0 InWC to 12 psig
- Standard Body Materials: Carbon Steel (WCB/CS), Stainless Steel (CF8M/316), Aluminum (356)
- Supply Media Temperature Range: -320° F to 300° F
- ISO 9001 Certified manufacturing process
- ATEX and PED Approval

Features

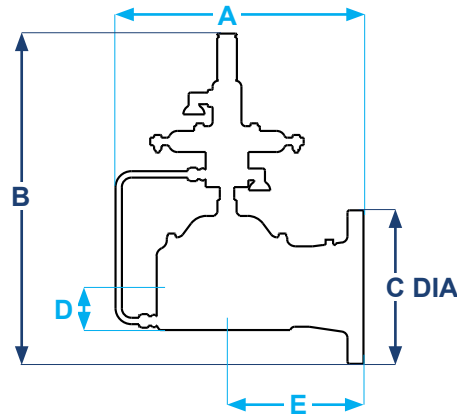
- Ease of precision settings
- Only the pilot needs to be set
- Remote pilot sensing option allows the pilot to sense the true system pressure
- Remote or manual blowdown available
- Main valve remains tight to set pressure.
- Full open at 10% overpressure
- Modulating action conserves product since valve opening is proportional to overpressure
- Noise is reduced since the valve only opens fully when required
- Soft seats seal tight to conserve product and minimize valve wear which improves reliability
- Reduces maintenance costs since the valve can be completely serviced without removal from its mounting
- Wide range of materials to meet most corrosive media and temperature applications at the lowest possible cost
- There is a size to meet your relieving capacity requirements without the need of expensive oversizing
- Groth pilot operated valves have more capacity for your money
- Setting range covers all atmospheric and low pressure storage tanks
- Wide setting range to meet your design requirements

Options

- 150# ANSI, PN10, PN16, JIS drilling classes available
- Pilot exhaust piped to discharge header
- Field test connection
- Manual blow down
- Conical film seat pallet
- Remote sense pickup
- Pilot supply filter

SPECIFICATIONS

Inlet In (mm)	Outlet In (mm)	A In (mm)	B In (mm)	C In (mm)	D In (mm)	E In (mm)	Approx. Ship Wt. for Al Lbs (kg)
2 (50)	3 (80)	11.75 (298)	19.75 (502)	7.50 (191)	2.75 (70)	6.00 (152)	30 (14)
3 (80)	4 (200)	14.75 (375)	21.50 (546)	9.00 (229)	2.53 (64)	8.00 (203)	45 (20)
4 (100)	6 (150)	18.00 (457)	21.75 (552)	11.00 (279)	4.00 (102)	10.00 (254)	56 (25)
6 (150)	8 (200)	21.25 (540)	26.00 (660)	13.50 (343)	4.32 (110)	12.00 (305)	80 (36)
8 (200)	10 (250)	25.50 (648)	28.00 (711)	16.00 (406)	5.31 (135)	14.00 (356)	130 (59)
10 (250)	12 (300)	31.75 (806)	31.50 (800)	19.00 (483)	6.65 (169)	18.00 (457)	170 (77)
12 (300)	16 (400)	36.50 (927)	35.00 (889)	23.50 (597)	8.00 (203)	20.10 (511)	230 (104)



MODEL 1660A PRESSURE RELIEF CAPACITY

Air Flow Capacity at 10% Overpressure
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)
2.00	1.16	5.46	12.0	20.9	46.8	81.9	129	185
4.00	2.31	7.73	17.1	29.5	66.3	116	182	262
6.00	3.47	9.48	20.9	36.2	81.3	142	223	322
8.00	4.62	11.0	24.2	41.9	94.0	165	258	372
10.0	5.78	12.3	27.1	46.9	105	184	289	417
15.0	8.66	15.1	33.3	57.7	129	227	356	512
20.0	11.6	17.5	38.6	66.8	150	262	412	594
25.0	14.4	19.6	43.3	75.0	168	294	462	666

Air Flow Capacity at 10% Overpressure
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	20.7	45.7	79.0	177	311	488	702
2	29.8	65.8	114	255	447	702	1011
3	37.1	81.9	142	318	557	875	1260
4	43.6	96.1	166	373	654	1027	1478
5	49.4	109	189	424	742	1165	1677
6	54.9	121	210	471	824	1294	1863
8	65.1	144	248	557	976	1533	2207
10	74.4	164	284	638	1117	1754	2525
12	83.2	184	318	713	1249	1961	2825
14	91.6	202	350	785	1375	2159	3109
15	95.7	211	366	820	1436	2255	3247

MODEL 1660A PRESSURE RELIEF CAPACITY

Air Flow Capacity at 10% Overpressure
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)
50	4.90	0.16	0.35	0.60	1.34	2.35	3.69	5.31
100	9.80	0.22	0.49	0.85	1.90	3.33	5.22	7.52
150	14.7	0.27	0.60	1.04	2.33	4.08	6.41	9.23
200	19.6	0.31	0.69	1.20	2.69	4.72	7.41	10.7
300	29.4	0.42	0.93	1.61	3.62	6.34	9.95	14.3
400	39.2	0.46	1.02	1.76	3.95	6.93	10.9	15.7
500	49.0	0.50	1.11	1.92	4.30	7.52	11.8	17.0
600	58.8	0.54	1.19	2.06	4.63	8.10	12.7	18.3

Air Flow Capacity at 10% Overpressure
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	0.61	1.35	2.34	5.24	9.18	14.4	20.8
0.10	0.63	1.39	2.40	5.39	9.44	14.8	21.4
0.20	1.05	2.31	3.99	8.96	15.7	24.6	35.5
0.30	1.38	3.04	5.27	11.8	20.7	32.5	46.8
0.40	1.67	3.68	6.38	14.3	25.1	39.4	56.7
0.50	1.93	4.26	7.38	16.6	29.0	45.5	65.6
0.60	2.06	4.55	7.87	17.7	30.9	48.6	69.9
0.70	2.20	4.85	8.40	18.8	33.0	51.8	74.6
0.80	2.34	5.17	8.95	20.1	35.2	55.2	79.5
0.90	2.49	5.49	9.50	21.3	37.3	58.6	84.4
1.00	2.69	5.94	10.3	23.1	40.4	63.5	91.4

MODEL 1662A VACUUM RELIEF CAPACITY

Air Flow Capacity at 10% Over-Vacuum
1000 Standard Cubic Feet per Hour at 60° F

Set Vacuum (P _s)		Size In (mm)						
InWC	oz/in ²	2 (50)	3 (80)	4 (100)	6 (150)	8 (200)	10 (250)	12 (300)
3.00	1.73	6.66	14.7	25.5	57.1	100	157	226
3.50	2.00	6.82	15.1	26.1	58.5	102	161	232
4.00	2.31	7.69	17.0	29.4	65.9	115	181	261
6.00	3.47	9.41	20.8	35.9	80.6	141	222	319
8.00	4.62	10.8	23.9	41.4	93.0	163	256	368
10.0	5.78	12.1	26.7	46.3	104	182	285	411
12.0	6.93	13.3	29.2	50.6	114	199	312	450
16.0	9.27	15.3	33.7	58.3	131	229	360	518
20.0	11.6	17.0	37.6	65.0	146	255	401	578
25.0	14.4	19.0	41.9	72.5	163	285	447	644

Air Flow Capacity at 10% Over-Vacuum
1000 Standard Cubic Feet per Hour at 60° F

Set Vacuum (P _s)	Size In (mm)						
psig	2 (50)	3 (80)	4 (100)	6 (150)	8 (200)	10 (250)	12 (300)
1	19.9	44.0	76.1	171	299	470	676
2	27.7	61.0	106	237	415	652	938
3	33.2	73.2	127	284	498	781	1125
4	37.4	82.5	143	320	561	881	1268
5	40.7	89.8	155	349	610	959	1380
6	43.2	95.3	165	370	648	1018	1466
7	45.0	99.3	172	386	675	1060	1527

MODEL 1662A VACUUM RELIEF CAPACITY

Air Flow Capacity at 10% Over-Vacuum
1000 Normal Cubic Meters per Hour at 0° C

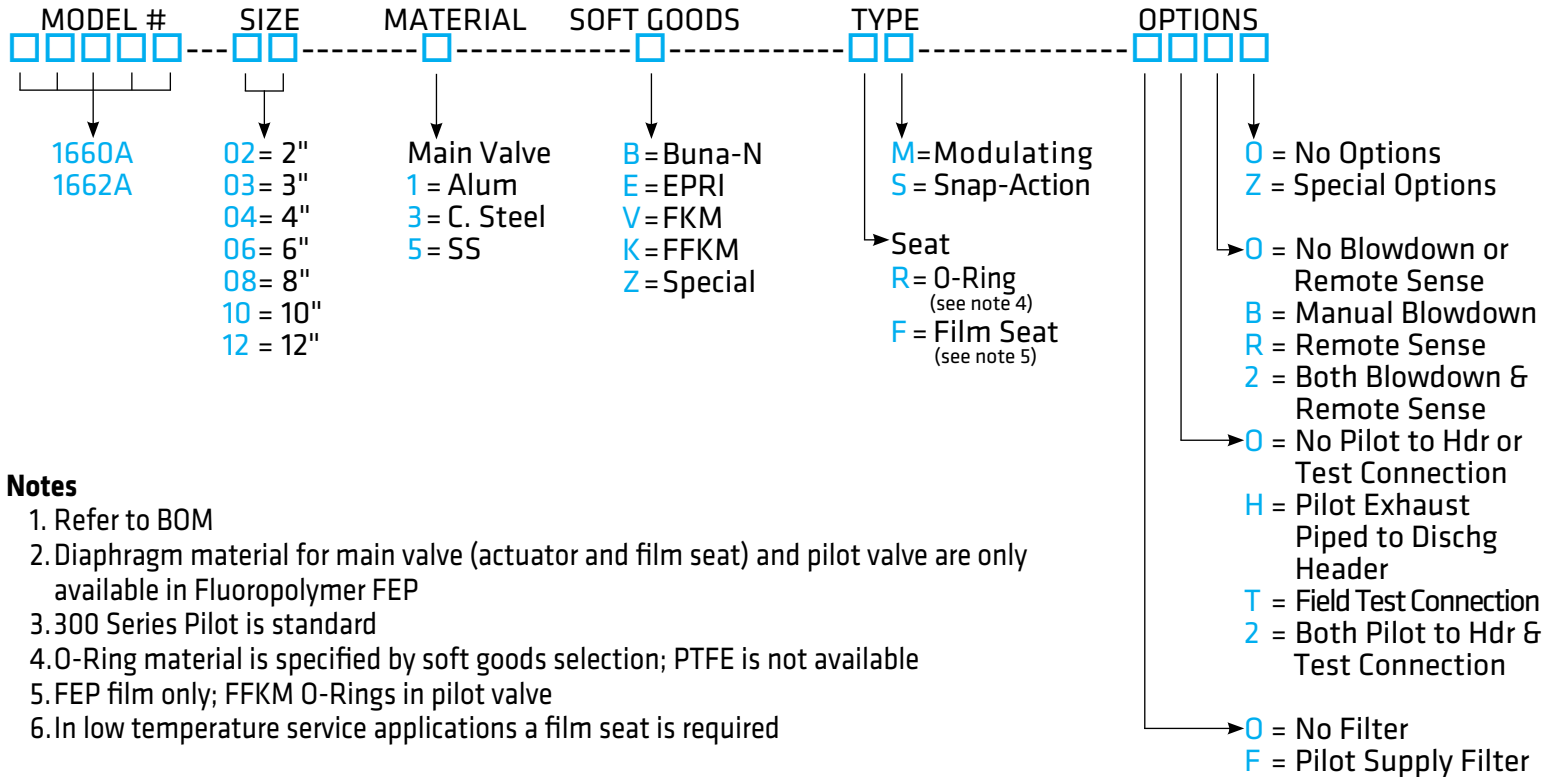
Set Vacuum (P _s)		Size In (mm)						
mmWC	mb	2 (50)	3 (80)	4 (100)	6 (150)	8 (200)	10 (250)	12 (300)
75	7.35	0.19	0.42	0.74	1.65	2.89	4.54	6.53
100	9.8	0.22	0.49	0.85	1.90	3.33	5.24	7.54
150	14.7	0.27	0.60	1.04	2.33	4.08	6.40	9.22
200	19.6	0.31	0.69	1.20	2.69	4.70	7.39	10.6
250	24.5	0.35	0.77	1.34	3.00	5.25	8.25	11.9
300	29.4	0.38	0.84	1.46	3.28	5.75	9.02	13.0
400	39.2	0.44	0.97	1.68	3.78	6.62	10.4	15.0
500	49.0	0.49	1.09	1.88	4.21	7.38	11.6	16.7
600	58.8	0.54	1.19	2.05	4.61	8.07	12.7	18.2

Air Flow Capacity at 10% Over-Vacuum
1000 Normal Cubic Meters per Hour at 0° C

Set Vacuum (P _s)	Size In (mm)						
barg	2 (50)	3 (80)	4 (100)	6 (150)	8 (200)	10 (250)	12 (300)
0.07	0.58	1.29	2.23	5.01	8.77	13.8	19.8
0.10	0.69	1.53	2.65	5.94	10.4	16.3	23.5
0.15	0.84	1.85	3.20	7.17	12.6	19.7	28.4
0.20	0.95	2.10	3.63	8.15	14.3	22.4	32.3
0.30	1.12	2.48	4.30	9.64	16.9	26.5	38.2
0.40	1.24	2.75	4.75	10.7	18.7	29.3	42.2
0.50	1.32	2.91	5.04	11.3	19.8	31.1	44.8

HOW TO ORDER

For easy ordering, select proper model numbers



Notes

1. Refer to BOM
2. Diaphragm material for main valve (actuator and film seat) and pilot valve are only available in Fluoropolymer FEP
3. 300 Series Pilot is standard
4. O-Ring material is specified by soft goods selection; PTFE is not available
5. FEP film only; FFKM O-Rings in pilot valve
6. In low temperature service applications a film seat is required

Example

1 6 6 0 A - 0 6 - 3 - V - R S - 0 0 R 0

Indicates a 6" Model 1660A with carbon steel body and "O-Ring" seat using FKM soft goods with snap-action pilot with remote pilot sense connection and no specials.



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