

# → Series 2480

2480

Safety valves made of  
gunmetal, angle-type with  
threaded connections



## ■ MATERIAL



## ■ SPECIFICATION



1/4" – 2"



– 200°C to + 200°C



0,2 – 70 bar

## ■ SUITABLE FOR

Liquids	neutral and non-neutral	
Air, gases and vapours	neutral and non-neutral	

## ■ EXAMPLES OF USE

Full-lift safety valve for the protection of:

- Containers and pipelines for the storage and transport of cryogenic liquified gases such as LIN, LOX, LAr, CO<sub>2</sub>, LNG.

- Tunnel freezer plants
- Dry ice blasting plants
- Cryogenic plant construction
- Liquid nitrogen dosing
- Cryogenic milling process
- Cryogenic machining
- Ground freezing plants
- Gases used in medical equipment
- Plants for cryogenic gases which come into contact with foodstuffs

**Safety valves are set and sealed at the factory and are oil- and grease-free as standard.**

## ■ APPROVALS

TÜV-Type test approval 2091	D/G, F
EU type examination	S/G, L
ASME	G, L
CRN	G, L
TSG ZF001-2006	D/G (S/G), F (L)
KGS	G
TR ZU 032/2013 - TR ZU 010/2011	D/G (S/G), F (L)
<b>Requirements</b>	
AD 2000 Data sheet A2	TPED 2010/35/EU, ADR/RID 2015
DIN EN ISO 4126-1	FDA 21 CFR 177.1550
DGR 2014/68/EU	FDA 21 CFR 178.3570
DIN EN 13648-1	NSF-H1
ASME-Code Sec. VIII Div. 1	KGS AA 319
<b>Classification society</b>	
Bureau Veritas	BV
American Bureau of Shipping	ABS

## ■ MATERIALS

Component	Material	DIN EN	ASME
Inlet body	Stainless steel	1.4404	316 L
Outlet body	Gunmetal / Brass	CC499K/CW617N	CC499K/CW617N
Internal parts	Stainless steel	1.4404	316 L
Spring	Stainless steel	1.4310	302
Seal	PTFE	PTFE	PTFE

<b>t</b>	gastight version of spring housing	for neutral and non-neutral media. The environment is protected from being affected by the medium.
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## ■ MEDIUM

<b>GF</b>	gaseous and liquid	Cryogenic liquified gases, vapours and liquids, for oxygen max. 40bar/ max. 60°C
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## ■ TYPE OF LIFTING MECHANISM

<b>L</b>	with lifting lever
<b>0</b>	without lifting device

## ■ AVAILABLE NOMINAL DIAMETERS AND CONNECTION SIZES

Nominal diameter DN	8			10			15			25		32		
Inlet	1/4" (8)	3/8" (10)	1/2" (15)	3/8" (10)	1/2" (15)	3/4" (20)	1/2" (15)	3/4" (20)	1" (25)	1" (25)	1 1/4" (32)	1 1/4" (32)	1 1/2" (40)	2" (50)
3/8" (10)	■	■	■											
1/2" (15)	■	■	■	■	■									
1" (25)					■	■	■	■	■					
1 1/2" (40)										■	■			
2" (50)												■	■	■
<b>Outlet</b>														

## ■ TYPE OF CONNECTION INLET / OUTLET THREADED CONNECTIONS

<b>m / f</b>	Standard	Male thread BSP-P / Female thread BSP-P	DIN EN ISO 228-1 / DIN EN ISO 228-1
<b>f / f</b>		Female thread BSP-P / Female thread BSP-P	DIN EN ISO 228-1 / DIN EN ISO 228-1
<b>NPT-m / f</b>		Male thread NPT / Female thread BSP-P	ANSI B1.20.1 / DIN EN ISO 228-1
<b>NPT-m / NPT-f</b>		Male thread NPT / Female thread NPT	ANSI B1.20.1 / ANSI B1.20.1
<b>NPT-f / NPT-f</b>		Female thread NPT / Female thread NPT	ANSI B1.20.1 / ANSI B1.20.1
<b>With insect protection:</b>			
<b>m/z</b>		Male thread BSP-P / Insect protection screen	DIN EN ISO 228-1 / –
<b>f/z</b>		Female thread BSP-P / Insect protection screen	DIN EN ISO 228-1 / –
<b>NPT-m/z</b>		Male thread NPT / Insect protection screen	ANSI B1.20.1 / –

## ■ SEALS

<b>PTFE</b>	Polytetrafluoroethylene	O-ring with FDA Approval	-200°C to +200°C
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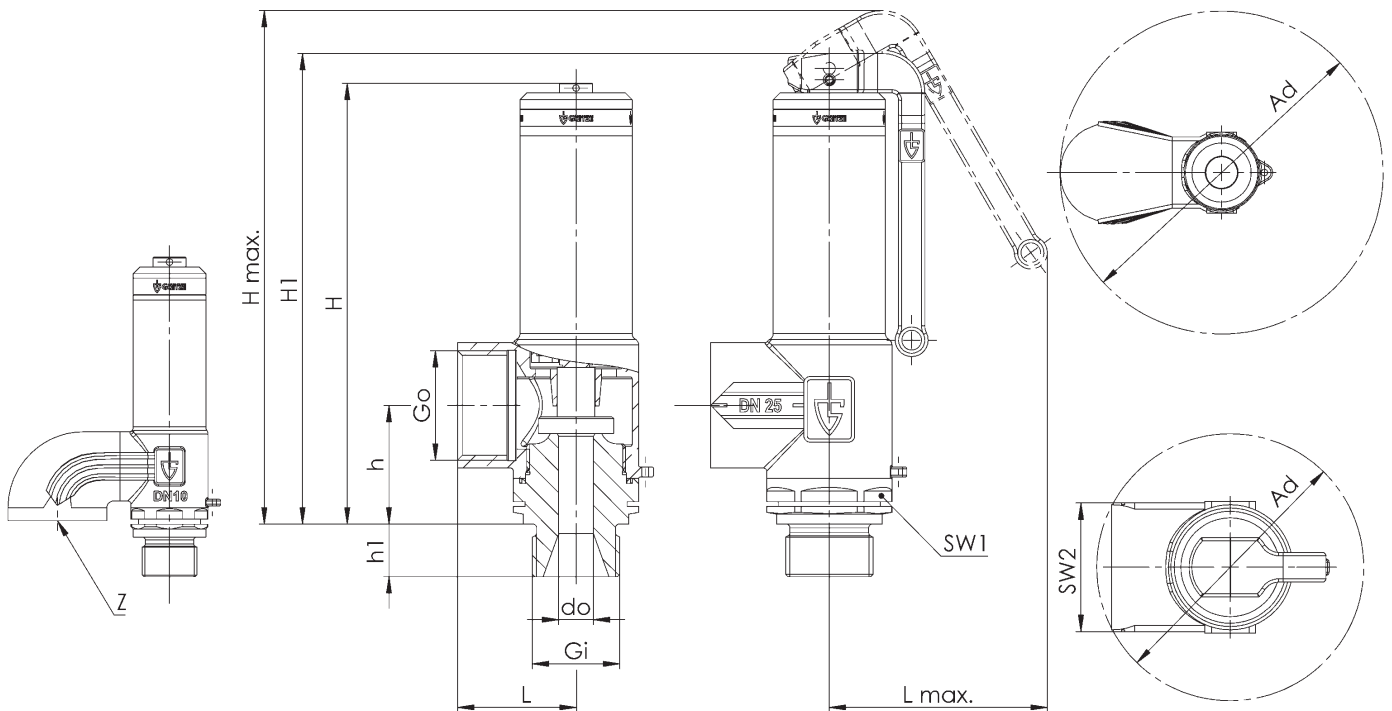
■ NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

Series 2480: Connection, installation dimensions, ranges of adjustment																			
Nominal diameter	DN	8				10				15			25		32				
Connection DIN EN ISO 228	Gi	1/4" (8)	3/8" (10)	1/2" (15)	1/4" (8)	3/8" (10)	1/2" (15)	3/8" (10)	1/2" (15)	1/2" (15)	3/4" (20)	1/2" (15)	3/4" (20)	1" (25)	1" (25)	1-1/4" (32)	11/4" (32)	11/2" (40)	2" (50)
Outlet DIN EN ISO 228	Go	3/8" (10)		1/2" (15)		1/2" (15)		1" (25)		1" (25)			1-1/2" (40)		2" (50)				
Installation dimensions in mm	h1	12	14	12	14	12	14	14	16	14	16	18	18	22	20	20	20		
	h	22		26		26		36		36			56		66				
	L	21		26		26		36		36			53		66				
	Lmax	43		47		47		66		66			85		122				
	H	85		99		99		134		134			215		276				
	H1	91		107		107		144		144			203		264				
	Hmax	99		116		116		156		156			230		300				
	SW1	22		27		27		34		34			50		55				
	SW2	22		26		26		39		39			56		70				
	Ad	47 / 98 <sup>2</sup>		58		58		81		81			119		146				
	$\alpha_w / K_{dr} (F)$	0,52		0,52		0,52		0,49		0,52			0,52		0,52				
	$\alpha_w / K_{dr} (D/G)^1$	0,73		0,73		0,73		0,73		0,73			0,73		0,73				
	d <sub>o</sub>	6,0		6,0		7,5		7,5		10,5			18,0		23,0				
	Weight	kg	0,2		0,3		0,3		0,7		0,7			3,0		6,7			
Range of adjustment	bar	0,2 - 70		0,2 - 70		0,2 - 70		0,2 - 50		0,2 - 50			0,2 - 50		0,2 - 50				
Range of adjustment ASME	psi	40 - 1015		40 - 1015		40 - 1015		40 - 725		40 - 725			40 - 725		40 - 725				
Outlet with insect protection screen	Z	- / Yes		-		-		-		-			-		-				

<sup>1</sup>Flow coefficients for blow-off pressures < 3,0 bar: Please refer to the Flow Coefficients Chart.

<sup>2</sup>Diameter for body with insect protection screen

■ MAIN DIMENSIONS, INSTALLATION DIMENSIONS



Series 2480 ■ INDIVIDUAL SELECTION / VALVE CONFIGURATION

Series	Valve version	Medium	Lifting device	Nominal diameter DN	Connection type		Connection size		Seal	Set pressure	Quantity
					Inlet	Outlet	Inlet	Outlet			
2480	t	GF	0	15	m	f	20	25	PTFE	6,0	2
2480	t	GF									
2480	t	GF									
2480	t	GF									

■ CERTIFICATES / APPROVALS

<b>C01</b>	Factory certificate acc. DIN EN 10204 2.2 (WKZ 2.2)	<input type="checkbox"/>	<b>C06</b>	ATEX evaluation acc. to 2014/34/EU	<input type="checkbox"/>
<b>C02</b>	Test certificate acc. DIN EN 10204 3.1 (WPZ 3.1)	<input type="checkbox"/>	<b>C07</b>	SIL evaluation relating to IEC 61508-2	<input type="checkbox"/>
<b>C03</b>	Material test certificate acc. DIN EN 10204 3.1 (MPZ 3.1) (pressure retaining part)	<input type="checkbox"/>	<b>C09</b>	Seat tightness test with helium, leak detection method under vacuum incl. Factory Inspection Certificate 3.1 acc. to DIN EN 10204	<input type="checkbox"/>
<b>C04</b>	TÜV/DEKRA individual inspection acc. EN 10204 3.2 (TÜV/DEKRA-APZ)	<input type="checkbox"/>	<b>C10</b>	Certificate of oil- and grease free production	<input type="checkbox"/>
<b>C05</b>	Sealing material Manufacturer certification (FDA, USP 3, 3-A,...), Please indicate description of certificate: .....	<input type="checkbox"/>	<b>C11</b>	Certification of the production process especially for gaseous oxygen applications by employment of specific materials	<input type="checkbox"/>

■ ADMISSIONS / ACCREDITATIONS

<b>AA1</b>	EC Type examination acc. to Directive 2014/68/EU	<input type="checkbox"/>	<b>AK3</b>	American Bureau of Shipping (ABS) type approval	<input type="checkbox"/>
<b>AA2</b>	TÜV component test acc. to VdTÜV specification sheet SV 100	<input type="checkbox"/>	<b>AK4</b>	Bureau Veritas (BV) type approval	<input type="checkbox"/>
<b>AA3</b>	Certification acc. to ASME Boiler and Pressure Vessel Code, Section VIII.Div 1 (ASME) <sup>1</sup>	<input type="checkbox"/>	<b>AK6</b>	Registro Italiano Navale (RINA) type approval	<input type="checkbox"/>
<b>AA4</b>	EAC - certificate/declaration with passport for the valve and laser marking of the valve	<input type="checkbox"/>	<b>AL</b>	Individual inspection by notified body inspector – (body to be indicated): .....	<input type="checkbox"/>
<b>AA5</b>	Manufacture License of Special Equipment People's Republic of China (ML)	<input type="checkbox"/>			<input type="checkbox"/>
<b>AA6</b>	Certification acc. to Korean Gas Safety Corporation (KGS) <sup>3</sup>	<input type="checkbox"/>			<input type="checkbox"/>
<b>AA7</b>	Registration according to Canadian Registration Number (CRN) <sup>4</sup>	<input type="checkbox"/>			<input type="checkbox"/>

<sup>1</sup>ASME not for gases in combination with liquids | <sup>2</sup>KGS only for gases | <sup>3</sup>KGS only in combination with ASME | <sup>4</sup>CRN only in combination with ASME

■ ENQUIRY

Copy and send to: [order@goetze-armaturen.de](mailto:order@goetze-armaturen.de).

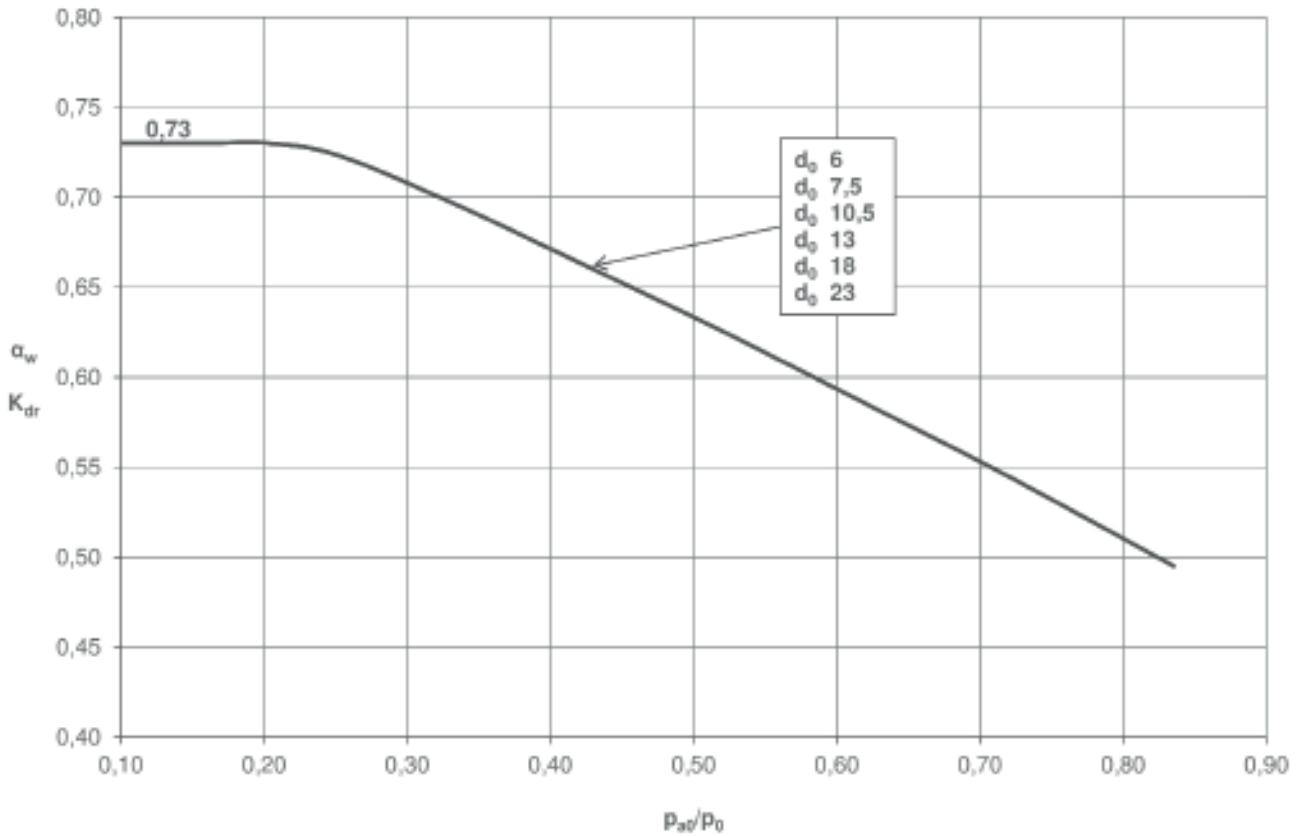
Order form easily to be found online under the section for each series.

Series 2480: Blowing-off rates at 10% above set pressure							
Nominal diameter DN		8		10		15	
flow diameter		d0 = 6 mm		d0 = 7,5 mm		d0 = 10,5 mm	
Set pressure bar		I	II	I	II	I	II
Air I Nm³/h	0,2	11,1	0,4	17,3	0,6	33,9	1,2
	0,5	17,4	0,6	27,2	0,9	53,3	1,8
	1	25,8	0,8	40,3	1,2	79,0	2,4
	1,5	34,5	1,0	54,0	1,5	105,8	2,9
	2	43,2	1,1	67,5	1,7	132,2	3,4
	2,5	51,7	1,2	80,8	1,9	158,4	3,8
	3	60,1	1,4	93,9	2,1	184,1	4,2
	3,5	68,1	1,5	106,5	2,3	208,7	4,5
	4	76,0	1,6	118,8	2,5	232,8	4,8
	4,5	83,8	1,7	130,9	2,6	256,5	5,1
5	91,5	1,8	143,0	2,7	280,2	5,4	
5,5	99,2	1,8	155,1	2,9	303,9	5,6	
6	107,0	1,9	167,1	3,0	327,6	5,9	
6,5	114,7	2,0	179,2	3,1	351,3	6,1	
7	122,5	2,1	191,3	3,2	375,0	6,4	
7,5	130,2	2,2	203,4	3,4	398,7	6,6	
8	137,9	2,2	215,5	3,5	422,4	6,8	
8,5	145,7	2,3	227,6	3,6	446,2	7,0	
9	153,4	2,4	239,7	3,7	469,9	7,2	
9,5	161,2	2,4	251,8	3,8	493,6	7,4	
10	168,9	2,5	263,9	3,9	517,3	7,6	
11	184,4	2,6	288,1	4,1	564,7	8,0	
12	199,9	2,7	312,3	4,3	612,1	8,3	
13	215,4	2,8	336,5	4,4	659,5	8,7	
14	230,8	2,9	360,7	4,6	707,0	9,0	
15	246,3	3,0	384,9	4,8	754,4	9,3	
16	261,8	3,1	409,1	4,9	801,8	9,6	
17	277,3	3,2	433,3	5,1	849,2	9,9	
18	292,8	3,3	457,5	5,2	896,6	10,2	
19	308,3	3,4	481,7	5,4	944,0	10,5	
20	323,7	3,5	505,8	5,5	991,5	10,8	
21	339,2	3,6	530,0	5,6	1038,9	11,0	
22	354,7	3,7	554,2	5,8	1086,3	11,3	
23	370,2	3,8	578,4	5,9	1133,7	11,5	
24	385,7	3,8	602,6	6,0	1181,1	11,8	
25	401,2	3,9	626,8	6,1	1228,5	12,0	
26	416,6	4,0	651,0	6,3	1276,0	12,3	
27	432,1	4,1	675,2	6,4	1323,4	12,5	
28	447,6	4,2	699,4	6,5	1370,8	12,7	
29	463,1	4,2	723,6	6,6	1418,2	13,0	
30	478,6	4,3	747,8	6,7	1465,6	13,2	
32	509,5	4,4	796,2	6,9	1560,5	13,6	
34	540,5	4,6	844,5	7,2	1655,3	14,0	
36	571,5	4,7	892,9	7,4	1750,1	14,4	
38	602,4	4,8	941,3	7,6	1845,0	14,8	
40	633,4	5,0	989,7	7,8	1939,8	15,2	
42	664,4	5,1	1038,1	8,0	2034,6	15,6	
44	695,3	5,2	1086,5	8,1	2129,5	16,0	
46	726,3	5,3	1134,9	8,3	2224,3	16,3	
48	757,3	5,4	1183,2	8,5	2319,1	16,7	
50	788,2	5,6	1231,6	8,7	2414,0	17,0	
52	819,2	5,7	1280,0	8,9			
54	850,2	5,8	1328,4	9,0			
56	881,1	5,9	1376,8	9,2			
58	912,1	6,0	1425,2	9,3			
60	943,1	6,1	1473,6	9,5			
62	974,0	6,2	1521,9	9,7			
64	1005,0	6,3	1570,3	9,8			
66	1036,0	6,4	1618,7	10,0			
68	1066,9	6,5	1667,1	10,1			
70	1097,9	6,6	1715,5	10,3			

**CONTINUATION - Series 2480: Blowing-off rates at 10% above set pressure**

Nominal diameter DN flow diameter	25 d0 = 18 mm		32 d0 = 23 mm	
	I	II	I	II
Set pressure bar				
0,2	99,5	3,6	162,5	5,9
0,5	156,7	5,2	255,8	8,4
1	232,2	7,0	379,2	11,5
<b>Air I</b>	310,8	8,6	507,5	14,1
<b>Nm³/h</b>	388,6	10,0	634,4	16,3
2,5	465,4	11,2	759,8	18,2
<b>Water II</b>	540,9	12,2	883,2	20,0
<b>m³/h</b>	613,3	13,2	1001,4	21,6
4	684,1	14,1	1116,9	23,1
4,5	753,8	15,0	1230,7	24,5
5	823,4	15,8	1344,4	25,8
5,5	893,1	16,6	1458,2	27,0
6	962,8	17,3	1571,9	28,3
6,5	1032,5	18,0	1685,7	29,4
7	1102,1	18,7	1799,5	30,5
7,5	1171,8	19,4	1913,2	31,6
8	1241,5	20,0	2027,0	32,6
8,5	1311,2	20,6	2140,7	33,6
9	1380,8	21,2	2254,5	34,6
9,5	1450,5	21,8	2368,3	35,6
10	1520,2	22,4	2482,0	36,5
11	1659,5	23,4	2709,5	38,3
12	1798,9	24,5	2937,1	40,0
13	1938,2	25,5	3164,6	41,6
14	2077,6	26,4	3392,1	43,2
15	2216,9	27,4	3619,6	44,7
16	2356,3	28,3	3847,1	46,2
17	2495,6	29,1	4074,6	47,6
18	2635,0	30,0	4302,2	49,0
19	2774,3	30,8	4529,7	50,3
20	2913,7	31,6	4757,2	51,6
21	3053,0	32,4	4984,7	52,9
22	3192,4	33,2	5212,2	54,1
23	3331,7	33,9	5439,8	55,4
24	3471,1	34,6	5667,3	56,6
25	3610,4	35,4	5894,8	57,7
26	3749,8	36,1	6122,3	58,9
27	3889,1	36,7	6349,8	60,0
28	4028,5	37,4	6577,3	61,1
29	4167,8	38,1	6804,9	62,2
30	4307,2	38,7	7032,4	63,2
32	4585,9	40,0	7487,4	65,3
34	4864,6	41,2	7942,4	67,3
36	5143,3	42,4	8397,5	69,3
38	5422,0	43,6	8852,5	71,2
40	5700,7	44,7	9307,6	73,0
42	5979,4	45,8	9762,6	74,8
44	6258,1	46,9	10217,6	76,6
46	6536,8	48,0	10672,7	78,3
48	6815,5	49,0	11127,7	80,0
50	7094,2	50,0	11582,7	81,6
52				
54				
56				
58				
60				
62				
64				
66				
68				
70				

Coefficient of discharge  $\alpha_w$  i.e.  $K_{dr}$  as a function of the relation between the pressures  $p_{a0}/p_0$  of vapours and gases



$$\frac{p_{a0}}{p_0} = \frac{\text{counter pressure bar(a)}}{\text{blow-off pressure bar(a)}} \quad p_{atm} = \text{ambient i.e. atmospheric pressure} = 1,01325 \text{ bar(a)}$$

Example to determine the coefficient of discharge  $\alpha_w$  i.e.  $K_{dr}$  in relation to the set-pressure  $p_{set}$

Set-pressure	Blow-off pressure
$p_{set}$ bar(g)	$p_0$ bar(a)
$\leq 1$	$p_{set} + p_{atm} + 0,1$ bar
$> 1$	$p_{set} \times 1,1 + p_{atm}$

For a safety valve set at = 0,3bar(g) and blowing-off into the enviroment the blow-off pressure is determined as follows:

Set-pressure	0,3	bar(g)
+ Atmospheric pressure	1,01325	bar(a)
+ permissable overpressure	0,1	bar(g)
~ Blow-off pressure	1,41	bar(a)

Consequently:

$$\frac{p_{a0}}{p_0} = \frac{1,01325 \text{ bar(a)}}{1,41 \text{ bar(a)}} = 0,72 \quad \text{and extracted from the chart } \alpha_w \text{ i.e. } K_{dr} = 0,55$$

Units:

bar(a)  $\hat{=}$  absolute pressure - pressure in relation to absolute vacuum (zero), e.g.  $p_{atm} = 1,01325 \text{ bar(a)}$   
 bar(g)  $\hat{=}$  overpressure - pressure above i.e. in relation to  $p_{atm} = 1,01325 \text{ bar(a)}$

Series 2480: Blowing-off rates at 10% above set pressure							
Nominal diameter DN		8		10		15	
flow diameter		d0 = 0,2362 inch (6,0 mm)		d0 = 0,2953 inch (7,5 mm)		d0 = 0,4134 inch (10,5 mm)	
Set pressure bar psi(g)		I	II	I	II	I	II
Air I	40	38	Due to small nominal diameter, certification according to ASME Code Sec. VIII Div. 1 not possible	59	Due to small nominal diameter, certification according to ASME Code Sec. VIII Div. 1 not possible	115	19
	50	45		70		22	
SCFM	60	52		81		24	
	70	59		92		26	
Water II	87	71		111		27	
	GPM	90		73		114	29
	100	80	125	31			
	110	87	136	32			
	120	94	147	33			
	130	101	158	35			
	140	108	169	36			
	150	115	180	37			
	160	122	191	39			
	170	129	202	40			
	180	136	213	41			
	190	143	224	42			
	200	151	235	43			
	210	158	246	44			
	220	165	257	45			
	230	172	268	46			
	240	179	279	47			
	250	186	290	48			
	260	193	301	49			
	270	200	312	50			
	280	207	323	51			
	290	214	334	52			
	300	221	345	53			
	320	235	368	55			
	340	249	390	56			
	360	263	412	58			
	380	278	434	59			
	400	292	456	61			
	420	306	478	63			
	440	320	500	64			
	460	334	522	65			
	480	348	544	67			
	500	362	566	68			
	550	398	621	72			
	600	433	676	75			
	650	468	731	78			
	700	503	787	81			
	725	521	814	82			
	750	539	842				
	800	574	897				
	850	609	952				
	900	644	1007				
	950	680	1062				
	1015	726	1134				



CONTINUATION - Series 2480: Blowing-off rates at 10% above set pressure					
Nominal diameter DN		25		32	
flow diameter		d0 = 0,7087 inch (18 mm)		d0 = 0,9055 inch (23 mm)	
Set pressure bar psi(g)		I	II	I	II
Air I	40	333	56	544	92
	50	402	63	657	103
SCFM	60	466	69	761	113
	70	529	75	864	122
Water II	87	593	80	968	131
	90	656	85	1072	139
GPM	100	720	90	1175	146
	110	783	94	1279	153
	120	847	98	1383	160
	130	910	102	1486	167
	140	974	106	1590	173
	150	1037	110	1694	179
	160	1101	113	1798	185
	170	1164	117	1901	191
	180	1228	120	2005	196
	190	1291	124	2109	202
	200	1355	127	2212	207
	210	1418	130	2316	212
	220	1482	133	2420	217
	230	1546	136	2523	222
	240	1609	139	2627	227
	250	1673	142	2731	231
	260	1736	145	2834	236
	270	1800	147	2938	240
	280	1863	150	3042	245
	290	1927	153	3145	249
	300	1990	155	3249	253
	320	2117	160	3457	262
	340	2244	165	3664	270
	360	2371	170	3871	278
	380	2498	175	4079	285
	400	2625	179	4286	293
	420	2752	184	4493	300
	440	2879	188	4701	307
	460	3006	192	4908	314
	480	3133	196	5116	321
	500	3260	200	5323	327
	550	3578	210	5841	343
	600	3895	220	6360	358
	650	4213	229	6878	373
	700	4530	237	7397	387
	725	4689	241	7656	394
	750				
	800				
	850				
	900				
	950				
	1015				