

→ Series 2480



■ 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, CO₂, 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.



■ MATERIAL



■ SPECIFICATION



1/4" – 1"



– 200°C to + 200°C



0,2 – 70 bar

■ APPROVALS

TÜV-Type test approval 2091	D/G, F
EC 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)
Requirements	
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
Classification society	
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

t	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

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

L	with lifting lever
0	without lifting device

■ AVAILABLE NOMINAL DIAMETERS AND CONNECTION SIZES

Nominal diameter DN		8			10			15		
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)
Outlet	3/8" (10)	■	■	■						
	1/2" (15)	■	■	■	■	■				
	1" (25)					■	■	■	■	■

■ TYPE OF CONNECTION INLET / OUTLET THREADED CONNECTIONS

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

■ SEALS

PTFE	Polytetrafluoroethylene	O-ring with FDA Approval	–200°C to +200°C
PTFE+Kohle	Polytetrafluoroethylene + carbon	O-ring	–200°C to +200°C

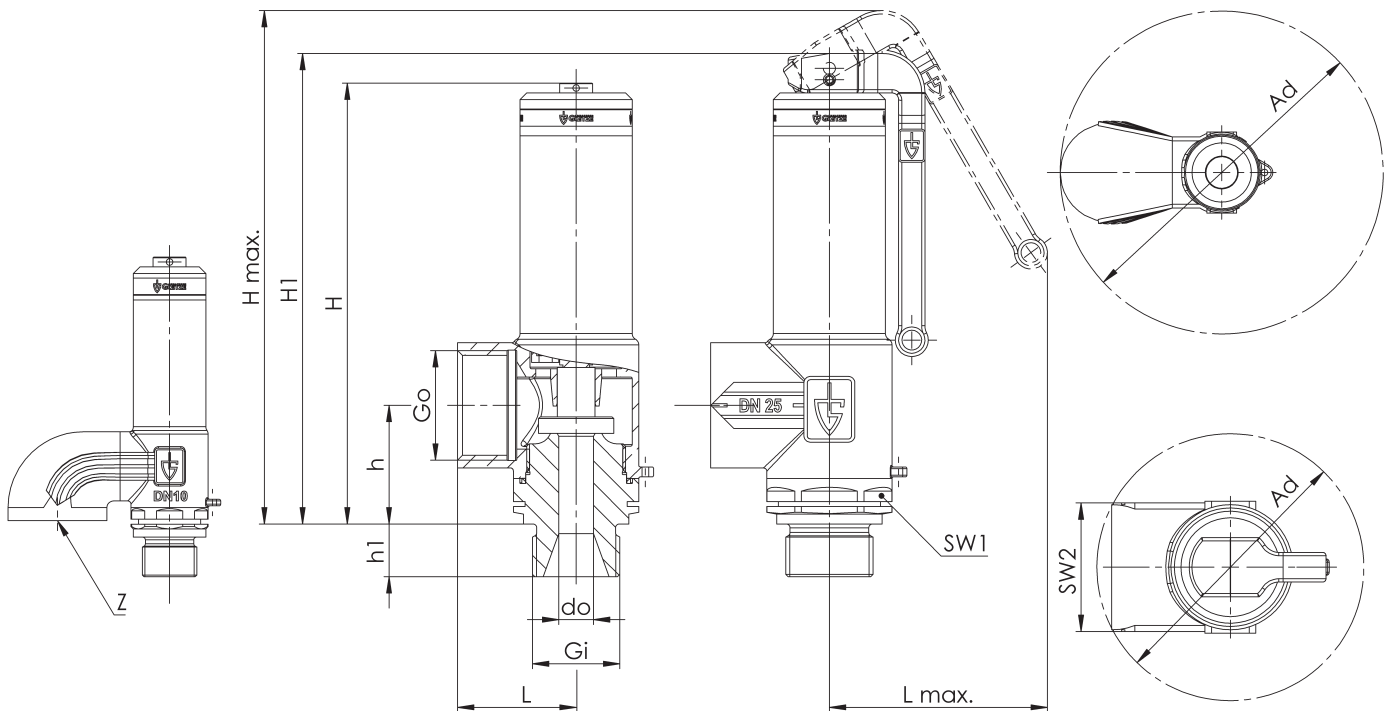
■ NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

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

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

²Diameter 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									

■ TECHNICAL FINISHES, VARIANTS, ACCESSORIES

S77	Screw-in seat made of brass	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>

■ CERTIFICATES / APPROVALS

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

■ ADMISSIONS / ACCREDITATIONS

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

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

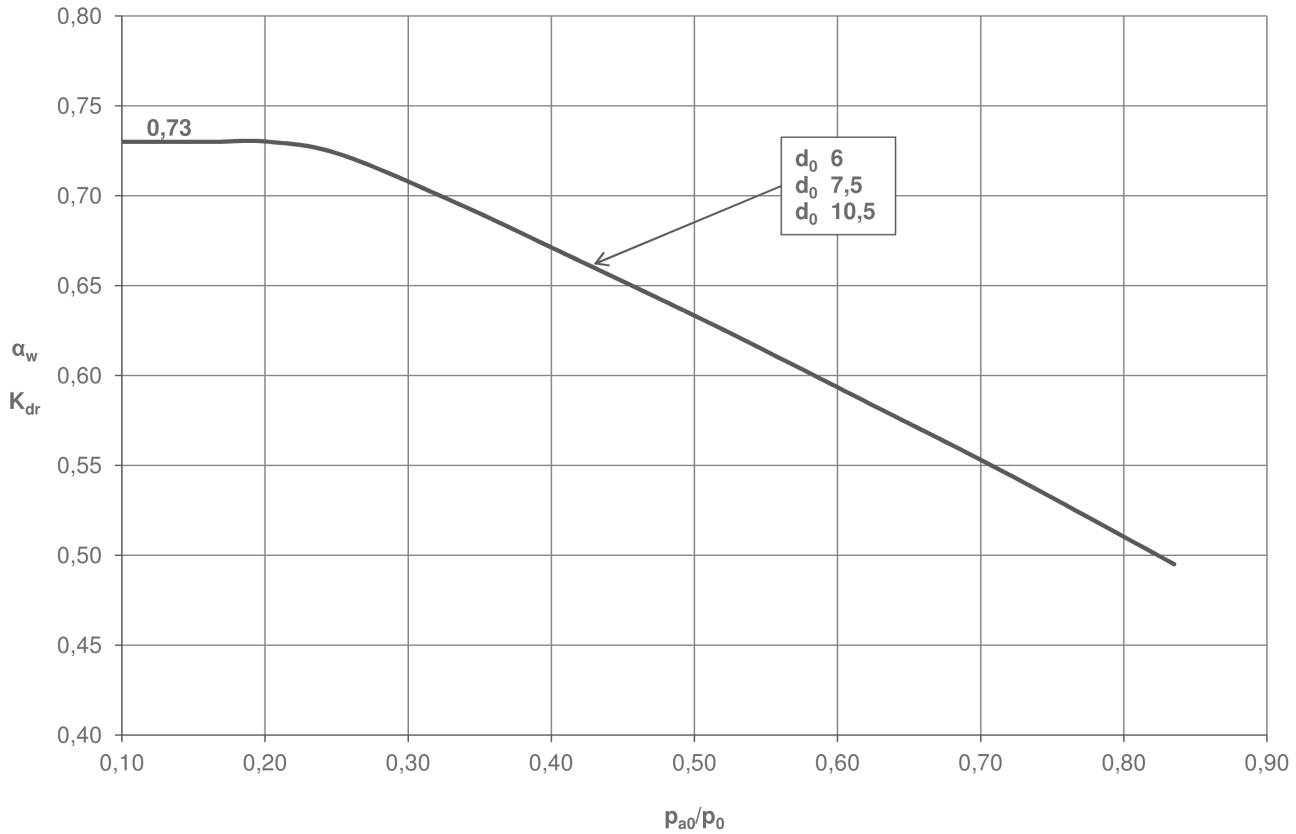
■ ENQUIRY

Copy and send to: 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			

Coefficient of discharge α_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 α_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)
≤ 1	$p_{set} + p_{atm} + 0,1 \text{ bar}$
> 1	$p_{set} \times 1,1 + p_{atm}$

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

Set-pressure	0,3	bar(g)
+ Atmospheric pressure	1,01325	bar(a)
+ permissible 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) \triangleq absolute pressure - pressure in relation to absolute vacuum (zero), e.g. $p_{atm} = 1,01325 \text{ bar(a)}$

bar(g) \triangleq 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		137	22
SCFM	60	52		81		159	24
	70	59		92		180	26
Water II	87	71		111		217	28
	90	73		114		223	29
GPM	100	80		125		245	31
	110	87		136		267	32
	120	94		147		288	33
	130	101		158		310	35
	140	108	169	331	36		
	150	115	180	353	37		
	160	122	191	375	39		
	170	129	202	396	40		
	180	136	213	418	41		
	190	143	224	439	42		
	200	151	235	461	43		
	210	158	246	483	44		
	220	165	257	504	45		
	230	172	268	526	46		
	240	179	279	548	47		
	250	186	290	569	48		
	260	193	301	591	49		
	270	200	312	612	50		
	280	207	323	634	51		
	290	214	334	656	52		
	300	221	345	677	53		
	320	235	368	720	55		
	340	249	390	764	56		
	360	263	412	807	58		
	380	278	434	850	59		
	400	292	456	893	61		
	420	306	478	936	63		
	440	320	500	980	64		
	460	334	522	1023	65		
	480	348	544	1066	67		
	500	362	566	1109	68		
	550	398	621	1217	72		
	600	433	676	1325	75		
	650	468	731	1434	78		
	700	503	787	1542	81		
	725	521	814	1596	82		
	750	539	842	1650	84		
	800	574	897	1758	86		
	850	609	952	1866	89		
	900	644	1007	1974	92		
	950	680	1062	2082	94		
	1015	726	1134	2222	97		