

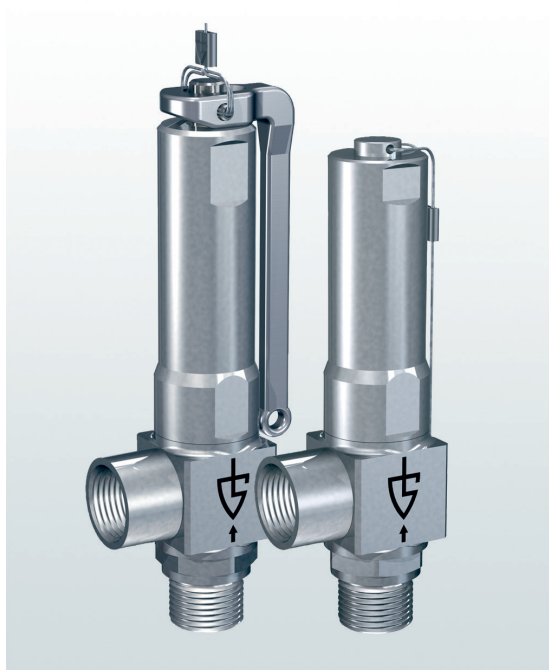
Type test approved safety valves angle-type for industrial applications

3.5

420

**Safety valves made of
stainless steel, angle-type
with threaded connections**

→ Series 420



■ MATERIAL



■ SPECIFICATION



1/4" – 3/8"



– 40°C to + 260°C
depending on version



0,5 – 50 bar
depending on version

■ SUITABLE FOR

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

■ EXAMPLES OF USE

For the protection of:

- pressure tanks and -systems for neutral / non-neutral vapours, gases and liquids
- steam boilers and steam plants

Please observe plant-specific regulations and use of appropriate valve version and sealing material.

- chemical plants, biogas plants
- process technology
- desalination plants
- process equipment construction and medical technology
- shipbuilding industry and marine equipment
- secondary areas in the food-, beverage-, pharmaceutical- and cosmetics-industries
- offshore-applications
- general applications with screwed pipe connections

Safety valves are set and sealed at the factory.

■ APPROVALS

TÜV-Type test approval 2069	D/G, F, F/K/S ¹
EC type examination	S/G, L, F/K/S ¹
KGS	G
TR ZU 032/2013 - TR ZU 010/2011	D/G (S/G), F (L), F/K/S ¹
Requirements	
AD 2000 Data sheet A2	DIN EN ISO 4126-1
TRD 421	PED 2014/68/EU
TRB 801 No. 22 and No. 23 ¹	KGS AA 319

Classification society

DNVGL	DNVGL
Lloyd's Register EMEA	LR EMEA
American Bureau of Shipping	ABS
Bureau Veritas	BV
Russian Maritime Register of Shipping	RS

■ MATERIALS

Component	Material	DIN EN	ASME
Inlet body	Stainless steel	1.4404	316 L
Outlet body	Stainless steel	1.4404	316 L
Internal parts	Stainless steel	1.4404	316 L
Spring	Stainless steel	1.4310	302
Metallic bellows (optional)	Stainless steel	1.4571	316 Ti
PTFE-bellows (optional)	PTFE	PTFE	PTFE

¹only for versions with bellows

t	gastight version of spring housing	for neutral and non-neutral media without counter pressure. The environment is protected from being affected by the medium.
tb	gastight version with bellows	for neutral and non-neutral media. spring and moving parts as the environment are protected from being affected by the medium. Version of bellows depend on set pressure: DN8: 0,5 to 9 bar PTFE bellows; 9,1 to 50 bar stainless steel bellows DN10: 0,5 to 7 bar PTFE bellows; 7,1 to 50 bar stainless steel bellows

■ MEDIUM

GF	gaseous and liquid	Air, vapours, gases, liquids and - depending on seal - also for steam Only for steam boilers <10l and d ₀ minimum 6mm, i.e. only DN10 usable.
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■ TYPE OF LIFTING MECHANISM

L	Lifting lever
0	without lifting device

■ AVAILABLE NOMINAL DIAMETERS AND CONNECTION SIZES

Nominal diameter DN		8			10		
Inlet		1/4" (8)	SV (8mm)	SV (10mm)	3/8" (10)	SV (10mm)	SV (12mm)
Outlet	3/8" (10)	■	■	■	■	■	■
	SV (12mm)	■	■	■	■	■	■

■ 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
SV / f		Cutting ring threaded connection / female thread BSP-P	EN ISO 8434-1 / DIN EN ISO 228-1
SV / SV		Cutting ring threaded connection / Cutting ring threaded connection	EN ISO 8434-1 / EN ISO 8434-1

■ SEALS

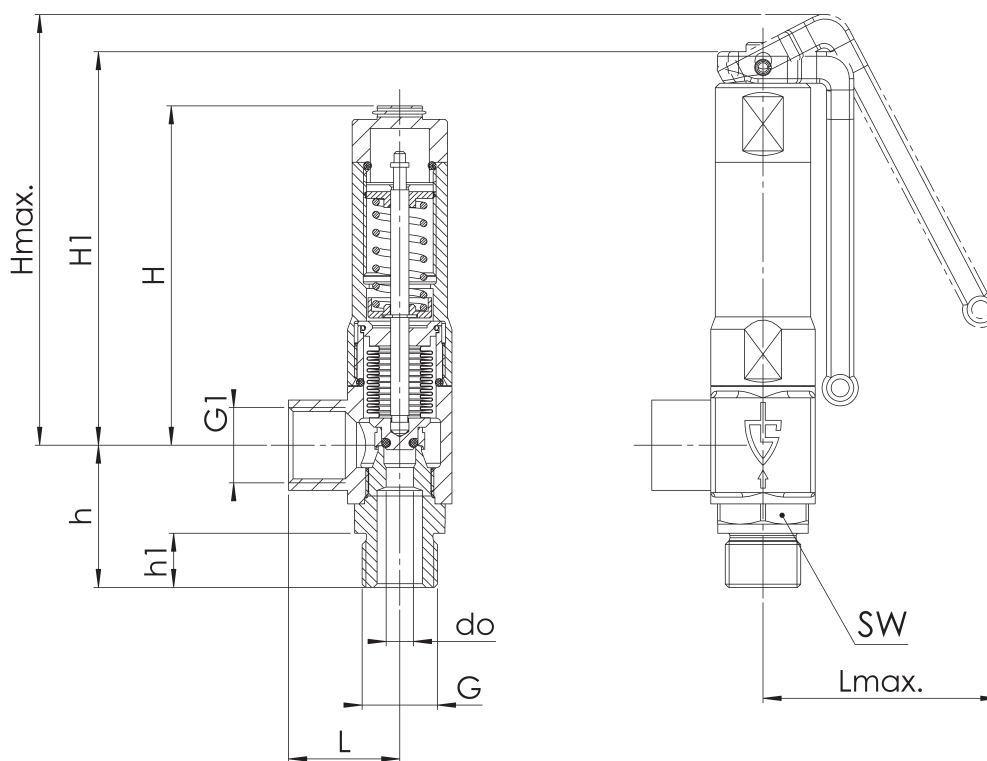
EPDM	Ethylene propylene diene	Elastomere moulded seal with metallic support	-40°C to +170°C
FKM	Fluorcarbon	Elastomere moulded seal with metallic support	-20°C to +200°C
FFKM	Perfluorinated rubber	Elastomere moulded seal with metallic support	-10°C to +260°C

■ NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

Series 420: Connection, installation dimensions, ranges of adjustment			
Nominal diameter	DN	8	10
Connection DIN EN ISO 228	G	1/4" (8)	3/8" (10)
Outlet DIN EN ISO 228	G1	3/8" (10)	3/8" (10)
Installation dimensions in mm	L	25	25
	Lmax	45	45
	H	75	75
	H1	87	87
	Hmax	93	93
	h	32	32
	h1	12	12
	SW	20	20
	do	4,5	6
Weight	kg	0,31 / 0,36*	0,23 / 0,28*
Range of adjustment	bar	0,5-50	0,5-50

* Weight indications for valve with lever

■ MAIN DIMENSIONS, INSTALLATION DIMENSIONS



Series	Valve version	Medium	Lifting device	Nominal diameter DN	Connection type		Connection size		Seal	Options	Set pressure	Quantity
					Inlet	Outlet	Inlet	Outlet				
420	<i>tb</i>	GF	<i>L</i>	<i>8</i>	<i>m</i>	<i>f</i>	<i>8</i>	<i>10</i>	FFKM		5,5	2
420	<i>t</i>	GF	<i>O</i>	<i>10</i>	SV	<i>f</i>	10mm	10	EPDM		22	1
420		GF										
420		GF										

■ PROPERTIES

G0X	Especially for gaseous O2 applications by employment of specific materials including oil- and grease free production process	☐	☐
P01	Oil- and grease-free production	☐	☐
		☐	☐

■ CERTIFICATES / APPROVALS

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

■ ADMISSIONS / ACCREDITATIONS

AA1	EC Type examination acc. to Directive 2014/68/EU	☐	AK1	DNV-GL (DNVGL) type approval	☐
AA2	TÜV component test acc. to VdTÜV specification sheet SV 100	☐	AK2	Lloyd's Register (LR) type approval	☐
AA4	EAC - certificate/declaration with passport for the valve and laser marking of the valve	☐	AK3	American Bureau of Shipping (ABS) type approval	☐
		☐	AK4	Bureau Veritas (BV) type approval	☐
		☐	AK5	Russian Maritime Register of Shipping (RMRS) type approval	☐
		☐	AK6	Registro Italiano Navale (RINA) type approval	☐
		☐	AL	Individual inspection by notified body inspector – (body to be indicated): _____	☐

■ ENQUIRY

Copy and send to: order@goetze-armaturen.de.

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

■ CAPACITY TABLE

Series 420: Blowing-off rates at 10% above set pressure							
Nominal diameter DN		8			10		
Set pressure bar		I	II	III	I	II	III
Air I Nm³/h	0,5	11	-	0,35	16	13	0,65
	1	15	-	0,48	24	19	0,88
	1,5	20	-	0,58	32	25	1,07
	2	24	-	0,67	40	32	1,24
Steam II kg/h	2,5	28	-	0,75	47	37	1,38
	3	33	-	0,82	55	43	1,52
Water III m³/h	3,5	37	-	0,89	62	48	1,64
	4	41	-	0,95	69	53	1,75
	4,5	45	-	1,01	76	58	1,86
	5	49	-	1,06	83	64	1,96
	5,5	53	-	1,12	90	69	2,05
	6	58	-	1,16	96	74	2,14
	6,5	62	-	1,21	103	79	2,23
	7	66	-	1,26	110	85	2,32
	7,5	70	-	1,30	117	90	2,40
	8	74	-	1,35	124	95	2,48
	8,5	78	-	1,39	131	100	2,55
	9	83	-	1,43	138	105	2,63
	9,5	87	-	1,47	145	111	2,70
	10	91	-	1,50	152	116	2,77
	11	99	-	1,58	166	126	2,90
	12	108	-	1,65	180	136	3,03
	13	116	-	1,71	194	147	3,16
	14	124	-	1,78	208	157	3,28
	15	133	-	1,84	222	167	3,39
	16	141	-	1,90	236	178	3,50
	17	149	-	1,96	250	188	3,61
	18	158	-	2,02	264	198	3,71
	19	166	-	2,07	278	208	3,82
	20	174	-	2,13	292	218	3,92
	21	183	-	2,18	306	229	4,01
	22	191	-	2,23	320	239	4,11
	23	199	-	2,28	334	249	4,20
	24	208	-	2,33	348	260	4,29
	25	216	-	2,38	362	270	4,38
	26	224	-	2,43	376	280	4,46
	27	233	-	2,47	390	291	4,55
	28	241	-	2,52	404	301	4,63
	29	249	-	2,56	418	312	4,72
	30	258	-	2,60	432	321	4,80
	32	274	-	2,69	460	342	4,95
	34	291	-	2,77	488	363	5,11
	36	308	-	2,85	515	384	5,25
	38	324	-	2,93	543	404	5,40
	40	341	-	3,01	571	425	5,54
	42	358	-	3,08	599	446	5,67
	44	374	-	3,15	627	467	5,81
	46	391	-	3,23	655	488	5,94
	48	408	-	3,30	683	509	6,07
	50	424	-	3,36	711	530	6,19

→ Series 451



■ MATERIAL



■ SPECIFICATION



1/2" – 2"



– 60°C bis + 400°C
depending on version



0,5 – 70 bar

■ SUITABLE FOR

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

■ EXAMPLES OF USE

For the protection of:

- pressure tanks and -systems for neutral / non-neutral vapours, gases and liquids
- steam boilers and steam plants
- bulk transport vehicles for liquid, granular and dusty goods.¹

Please observe plant-specific regulations and use of appropriate valve version and sealing material.

- chemical plants, biogas plants
- process equipment construction and medical technology (sterilizers, autoclaves)
- secondary areas in the food-, beverage-, pharmaceutical- and cosmetics-industries

Safety valves are set and sealed at the factory.

■ APPROVALS

TÜV-Type test approval 666, 684	D/G, F, F/K/S ¹
EC type examination	S/G, L, F/K/S ¹
ASME CRN	S, G, L G
TSG ZF001-2006	D/G (S/G), F (L), F/K/S ¹
KGS	G
TR ZU 032/2013 - TR ZU 010/2011	D/G (S/G), F (L), F/K/S ¹
Requirements	
AD 2000 Data sheet A2 TRD 421 TRB 801 No. 22 and No. 23 ¹ DIN EN ISO 4126-1	PED 2014/68/EU ASME-Code Sec. VIII Div. 1 KGS AA 319

Classification society

DNVGL	DNVGL
Lloyd's Register EMEA	LR EMEA
American Bureau of Shipping	ABS
Bureau Veritas	BV
Russian Maritime Register of Shipping	RS

■ MATERIALS

Component	Material	DIN EN	ASME
Inlet body	Stainless steel	1.4404	316 L
Outlet body	Stainless steel	1.4408	CF8M
Internal parts	Stainless steel	1.4404	316 L
Spring	Stainless steel	1.4310	302
Bellows (optional)	Stainless steel	1.4571	316 Ti

¹only for versions with bellows

s	Standard, non-gastight version of the spring housing	for neutral media without counter pressure.
b	with bellows	for neutral and non-neutral media and/or counter pressure up to 4 bar. Spring, moving parts and the environment are protected from being affected by the medium.
t	gastight version of spring housing	for neutral and non-neutral media without counter pressure. The environment is protected from being affected by the medium. Only available without lifting device. This version is not available for inlet / outlet 15/15 and 20/20!
tb	gastight version with bellows	for neutral and non-neutral an particularly for flammable, toxic and environmentally hazardous media and/or counter pressure up to 4 bar. Spring, moving parts and the environment are protected from being affected by the medium. Double gastight.

■ MEDIUM

G	gaseous	Air, vapours, gases and - depending on safety valve version and seal - also for steam
F	liquid	The temperature of the medium under atmospheric pressure must not reach boiling point
GF	gaseous and liquid	Air, vapours, gases, liquids and - depending on safety valve version and seal - also for steam -Not in combination with ASME Approval-

■ TYPE OF LIFTING MECHANISM

K	Standard with twist-type lifting mechanism
L	Lifting lever
O	without lifting device, standard for gastight versions

■ AVAILABLE NOMINAL DIAMETERS AND CONNECTION SIZES

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

■ TYPE OF CONNECTION INLET / OUTLET THREADED CONNECTIONS

f / f	Standard	Female thread BSP-P / Female thread BSP-P	DIN EN ISO 228-1 / DIN EN ISO 228-1
m / f		Male thread BSP-P / Female thread BSP-P	DIN EN ISO 228-1 / DIN EN ISO 228-1
BSP-Tm / f		Male thread BSP-T / Female thread BSP-P	DIN EN 10226, ISO 7-1 / DIN EN ISO 228-1

■ SEALS

NBR	Nitrile rubber	Elastomere moulded seal with metallic support up to 25 bar	-30°C to +130°C
EPDM	Ethylene propylene diene	Elastomere moulded seal with metallic support up to 25 bar	-40°C to +170°C
FKM	Fluorcarbon	Elastomere moulded seal with metallic support up to 25 bar	-20°C to +200°C
PTFE	Polytetrafluoroethylene	Flat seal up to 25 bar	-60°C to +225°C
PTFE+Kohle	Polytetrafluoroethylene + carbon	Flat seal from 25 bar	-60°C to +225°C
FFKM	Perfluorinated rubber	Elastomere moulded seal with metallic support up to 25 bar	-10°C to +260°C
MD	Metal-to-metal sealing	Flat seal	-60°C to +400°C

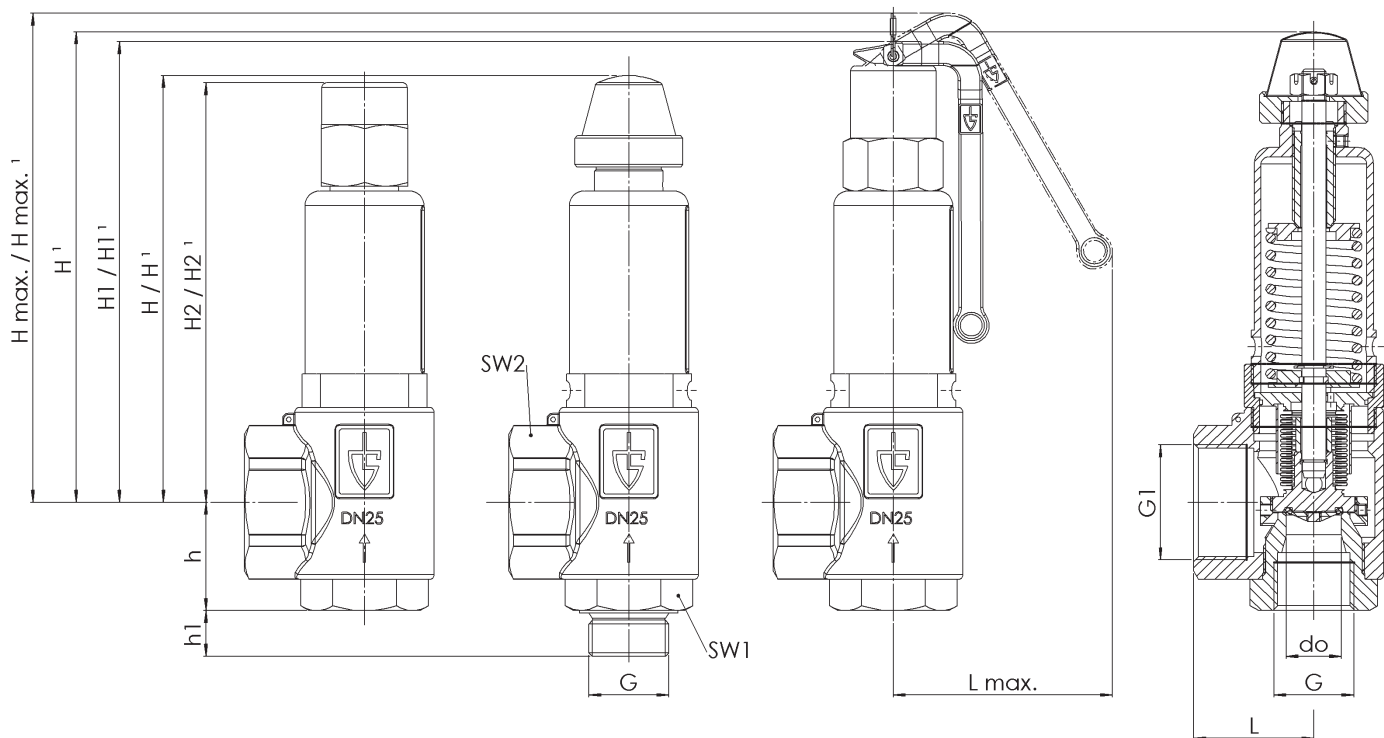
■ NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

Series 451: Connection, installation dimensions, ranges of adjustment										
Nominal diameter	DN	15	20	25	32					
Connection DIN EN ISO 228	G	1/2" (15)	3/4" (20)	1" (25)	1 1/4" (32)	1 1/2" (40)	2" (50)	2" (50)	2" (50)	
Outlet DIN EN ISO 228	G1	1/2" (15)	1" (25)	1" (25)	3/4" (20)	1 1/4" (32)	1 1/2" (40)	2" (50)	2" (50)	2" (50)
Installation dimensions in mm	L	34	40	40	42	43	50	61	61	61
	Lmax	65	65	65	91	91	92	92	92	92
	H / H ¹	79 / 79	77 / 77	131 / 131	137 / 137	138 / 152	178 / 196	241 / 263	241 / 263	241 / 263
	H1 / H1 ¹	93 / 93	91 / 91	149 / 149	154 / 154	158 / 174	192 / 210	264 / 286	264 / 286	264 / 286
	H2 / H2 ¹	79 / 79	77 / 77	131 / 131	138 / 138	139 / 153	175 / 193	241 / 263	241 / 263	241 / 263
	Hmax / Hmax ¹	105 / 105	103 / 103	164 / 164	169 / 169	173 / 184	207 / 225	277 / 299	277 / 299	277 / 299
	h	28	30	30	31	39	45	55	69	74
	h1	15	15	15	16	16	18	20	23	25
	SW1	30	30	30	36	36	46	55	55	70
	SW2	-	40	40	32	50	58	70	70	70
Weight	do	15,8	15,8	15,8	15,8	18	23	30,3	30,3	30,3
	kg	0,4	0,4	0,8	1,0	1,0	1,8	4,0	4,0	4,0
	bar	0,5 ² -25	0,5 ² -25	25,1-70	0,5 ² - 70	0,5-70	0,5-70	0,5-70	0,5-70	0,5-70
Range of adjustment ASME	psi	15-1015	15-1015	15-1015	15-1015	15-1015	15-1015	15-1015	15-1015	15-1015

¹Dimension for the version with bellows

²Version with bellows only available from 1 bar

■ MAIN DIMENSIONS, INSTALLATION DIMENSIONS



Series	Valve version	Medium	Lifting device	Nominal diameter DN	Connection type		Connection size		Seal	Options	Set pressure	Quantity
					Inlet	Outlet	Inlet	Outlet				
451	<i>b</i>	<i>F</i>	<i>L</i>	<i>15</i>	<i>m</i>	<i>f</i>	<i>15</i>	<i>25</i>	<i>EPDM</i>		<i>15,0</i>	<i>2</i>
451												
451												
451												

■ TECHNICAL FINISHES, VARIANTS, ACCESSORIES

S18	Inlet area in hygienic finish by means of a flat seal (despite of an o-ring fixed by a nut)	☐
S60	Pressure sensor connection M5 or G1/4 for monitoring the springhousing (only for valves with bellow)	☐
S62	Inductive proximity sensor, assembled, for indication of valve position	☐

■ PROPERTIES

G0X	Especially for gaseous O2 applications by employment of specific materials including oil- and grease free production process	☐	☐
P01	Oil- and grease-free production	☐	☐
		☐	☐

■ CERTIFICATES / APPROVALS

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

■ ADMISSIONS / ACCREDITATIONS

AA1	EC Type examination acc. to Directive 2014/68/EU	☐	AK1	DNV-GL (DNVGL) type approval	☐
AA2	TÜV component test acc. to VdTÜV specification sheet SV 100	☐	AK2	Lloyd's Register (LR) type approval	☐
AA3	Certification acc. to ASME Boiler and Pressure Vessel Code, Section VIII.Div 1 (ASME) ¹	☐	AK3	American Bureau of Shipping (ABS) type approval	☐
AA4	EAC - certificate/declaration with passport for the valve and laser marking of the valve	☐	AK4	Bureau Veritas (BV) type approval	☐
AA5	Manufacture License of Special Equipment People's Republic of China (ML)	☐	AK5	Russian Maritime Register of Shipping (RMRS) type approval	☐
AA6	Certification acc. to. Korean Gas Safety Corporation (KGS) ^{2,3}	☐	AK6	Registro Italiano Navale (RINA) type approval	☐
AA7	Registration according to Canadian Registration Number (CRN) ⁴	☐	AL	Individual inspection by notified body inspector – (body to be indicated):	☐

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.

■ CAPACITY TABLE

Series 451: Blowing-off rates at 10% above set pressure											
Nominal diameter DN		15				20					
		Bellows				do = 15,8			do = 18		
Set pressure bar		I	II	without III	with III	I	II	III	I	II	III
Air I Nm³/h	0,5	56**	42**	2,3**	1,9**	64**	48**	2,9**	127	96	5,4
	1	87	69	3,1	2,5	120	96	4,0	189	151	7,3
	1,5	113	90	3,8	3,1	166	132	4,9	252	200	9,0
	2	141	111	4,4	3,6	205	161	5,6	316	249	10,4
	2,5	165	129	5,0	4,0	250	196	6,3	383	300	11,6
Steam II kg/h	3	189	148	5,4	4,4	298	233	6,9	447	349	12,7
	3,5	214	166	5,9	4,7	336	262	7,4	504	392	13,7
	4	238	184	6,3	5,0	375	291	8,0	561	435	14,7
Water III m³/h	4,5	262	203	6,7	5,3	413	319	8,4	618	478	15,6
	5	286	221	7,0	5,6	451	348	8,9	675	521	16,4
	5,5	310	239	7,4	5,9	489	377	9,3	732	564	17,2
	6	335	257	7,7	6,2	527	406	9,7	790	608	18,0
	6,5	359	275	8,0	6,4	565	434	10,1	847	650	18,7
	7	383	293	8,3	6,6	604	462	10,5	904	692	19,4
	7,5	407	311	8,6	6,9	642	491	10,9	961	735	20,1
	8	431	329	8,9	7,1	680	519	11,3	1018	777	20,8
	8,5	456	347	9,2	7,3	718	547	11,6	1075	820	21,4
	9	480	365	9,4	7,5	756	576	11,9	1132	862	22,0
	9,5	504	383	9,7	7,7	794	604	12,3	1190	905	22,6
	10	528	401	9,9	7,9	833	632	12,6	1247	947	23,2
	11	577	437	10,4	8,3	909	688	13,2	1361	1031	24,3
	12	625	472	10,9	8,7	985	744	13,8	1475	1115	25,4
	13	674	508	11,3	9,1	1061	801	14,3	1590	1199	26,5
	14	722	544	11,8	9,4	1138	857	14,9	1704	1284	27,5
	15	770	580	12,2	9,7	1214	914	15,4	1818	1368	28,4
	16	819	616	12,6	10,1	1290	970	15,9	1932	1453	29,4
	17	867	650	13,0	10,4	1367	1025	16,4	2047	1535	30,3
	18	916	686	13,3	10,7	1443	1081	16,9	2161	1619	31,1
	19	964	721	13,7	11,0	1519	1137	17,3	2275	1703	32,0
	20	1013	757	14,0	11,2	1596	1193	17,8	2390	1787	32,8
	21	1061	793	14,4	11,5	1672	1250	18,2	2504	1872	33,6
	22	1109	829	14,7	11,8	1748	1306	18,7	2618	1956	34,4
	23	1158	865	15,1	12,1	1825	1363	19,1	2732	2040	35,2
	24	1206	900	15,4	12,3	1901	1419	19,5	2847	2125	35,9
	25	1255	936	15,7	12,6	1977	1475	19,9	2961	2209	36,7
	26	1303	972*	16,0	12,8	2054	1532	20,3	3075	2294*	37,4
	27	1352	1008*	16,3	13,1	2130	1589	20,7	3190	2379*	38,1
	28	1400	1044*	16,6	13,3	2206	1646	21,1	3304	2465*	38,8
	29	1449	1081*	16,9	13,5	2283	1703	21,4	3418	2550*	39,5
	30	1497	1114*	17,2	13,8	2359	1755	21,8	3532	2628*	40,2
	32	1594	1186*	17,8	14,2	2511	1869	22,5	3761	2799*	41,5
	34	1691	1258*	18,3	14,7	2664	1982	23,2	3990	2969*	42,8
	36	1788	1330*	18,8	15,1	2817	2096	23,9	4218	3139*	44,0
	38	1884	1402*	19,4	15,5	2969	2209	24,5	4447	3309*	45,2
	40	1981	1474*	19,9	15,9	3122	2323	25,2	4675	3479*	46,4
	42	2078	1547*	20,4	16,3	3275	2437	25,8	4904	3650*	47,6
	44	2175	1619*	20,8	16,7	3427	2551	26,4	5132	3821*	48,7
	46	2272	1692*	21,3	17,0	3580	2666	27,0	5361	3992*	49,8
	48	2369	1764*	21,8	17,4	3732	2780	27,6	5589	4163*	50,8
	50	2466	1837*	22,2	17,8	3885	2895	28,1	5818	4335*	51,9
	52	2562	1910*	22,7	18,1	4038	3009	28,7	6047	4506*	52,9
	54	2659	1984*	23,1	18,5	4190	3126	29,2	6275	4681*	53,9
	56	2756	2061*	23,5	18,8	4343	3248	29,8	6504	4868*	54,9
	58	2853	2136*	23,9	19,1	4496	3366	30,3	6732	5040*	55,9
	60	2950	2209*	24,3	19,5	4648	3481	30,8	6961	5213*	56,8
	62	3047	2282*	24,7	19,8	4801	3596	31,3	7189	5385*	57,8
	64	3144	2355*	25,1	20,1	4954	3711	31,8	7418	5558*	58,7
	66	3240	2428*	25,5	20,4	5106	3827	32,3	7647	5730*	59,6
	68	3337	2502*	25,9	20,7	5259	3943	32,8	7875	5905*	60,5
	70	3434	2578*	26,3	21,0	5411	4062	33,3	8104	6082*	61,4

*) only possible with metal-to-metal sealing

**) Version with bellows only available from 1 bar

CONTINUATION - Series 451: Blowing-off rates at 10% above set pressure							
Nominal diameter DN		25			32		
Set pressure bar		I	II	III	I	II	III
Air I Nm³/h	0,5	199	150	8,8	353	266	15,4
	1	291	232	12,0	515	411	20,8
	1,5	390	309	14,7	683	542	25,5
	2	489	385	16,9	832	656	29,4
	2,5	583	457	18,9	1012	793	32,9
Steam II kg/h	3	681	532	20,8	1182	924	36,0
	3,5	768	597	22,4	1333	1036	38,9
	4	855	663	24,0	1484	1151	41,6
	4,5	942	729	25,4	1635	1265	44,1
	5	1029	794	26,8	1786	1378	46,5
Water III m³/h	5,5	1116	860	28,1	1937	1492	48,8
	6	1203	926	29,3	2088	1607	50,9
	6,5	1290	990	30,5	2239	1719	53,0
	7	1377	1054	31,7	2390	1830	55,0
	7,5	1464	1119	32,8	2542	1943	56,9
	8	1552	1184	33,9	2693	2056	58,8
	8,5	1639	1249	34,9	2844	2168	60,6
	9	1726	1314	35,9	2995	2281	62,4
	9,5	1813	1379	36,9	3146	2392	64,1
	10	1900	1443	37,9	3297	2504	65,8
	11	2074	1571	39,7	3599	2727	69,0
	12	2248	1699	41,5	3902	2948	72,0
	13	2422	1827	43,2	4204	3172	75,0
	14	2596	1957	44,8	4506	3396	77,8
	15	2771	2085	46,4	4808	3618	80,5
	16	2945	2214	47,9	5111	3842	83,2
	17	3119	2339	49,4	5413	4059	85,7
	18	3293	2467	50,8	5715	4281	88,2
	19	3467	2594	52,2	6017	4503	90,6
	20	3641	2723	53,6	6320	4726	93,0
	21	3816	2852	54,9	6622	4950	95,3
	22	3990	2981	56,2	6924	5173	97,5
	23	4164	3109	57,5	7226	5396	99,7
	24	4338	3238	58,7	7529	5619	101,9
	25	4512	3366	59,9	7831	5842	104,0
	26	4686	3496*	61,1	8133	6067*	106,0
	27	4860	3626*	62,3	8435	6293*	108,0
	28	5035	3756*	63,4	8738	6518*	110,0
	29	5209	3886*	64,5	9040	6744*	112,0
	30	5383	4005*	65,6	9342	6951*	113,9
	32	5731	4265*	67,8	9947	7401*	117,6
	34	6080	4524*	69,9	10551	7851*	121,2
	36	6428	4783*	71,9	11156	8301*	124,8
	38	6776	5042*	73,9	11760	8751*	128,2
	40	7124	5301*	75,8	12365	9200*	131,5
	42	7473	5562*	77,6	12969	9653*	134,8
	44	7821	5823*	79,5	13574	10105*	137,9
	46	8169	6083*	81,3	14178	10558*	141,0
	48	8518	6344*	83,0	14783	11011*	144,1
	50	8866	6606*	84,7	15387	11464*	147,0
	52	9214	6867*	86,4	15992	11917*	149,9
	54	9563	7134*	88,0	16596	12380*	152,8
	56	9911	7412*	89,7	17200	12864*	155,6
	58	10259	7681*	91,2	17805	13330*	158,4
	60	10608	7943*	92,8	18409	13786*	161,1
	62	10956	8206*	94,3	19014	14242*	163,7
	64	11304	8469*	95,8	19618	14699*	166,3
	66	11652	8732*	97,3	20223	15155*	168,9
	68	12001	8998*	98,8	20827	15616*	171,5
	70	12349	9269*	100,2	21432	16086*	174,0

*) only possible with metal-to-metal sealing

**) Version with bellows only available from 1 bar

Series 451: Blowing-off rates at 10% above set pressure							
Nominal diameter DN		15			20		
		I	II	III	I	II	III
Set pressure psi(g)							
Air I	15	80,8	226,9	12,9	155,9	437,7	31,2
	30	117,9	331,0	17,5	227,4	638,5	42,3
	40	145,1	407,4	20,2	279,9	785,8	48,8
SCFM	50	172,3	483,7	22,6	332,3	933,0	54,6
	60	199,5	560,1	24,7	384,7	1080,3	59,8
	70	226,7	636,4	26,7	437,2	1227,5	64,6
Steam II	80	253,9	712,7	28,6	489,6	1374,8	69,1
	90	281,1	789,1	30,3	542,1	1522,0	73,3
	100	308,3	865,4	31,9	594,5	1669,3	77,2
PPH	110	335,5	941,8	33,5	647,0	1816,5	81,0
	120	362,6	1018,1	35,0	699,4	1963,8	84,6
	130	389,8	1094,4	36,4	751,9	2111,0	88,1
Water III	140	417,0	1170,8	37,8	804,3	2258,3	91,4
	150	444,2	1247,1	39,1	856,7	2405,5	94,6
	160	471,4	1323,5	40,4	909,2	2552,8	97,7
GPM	170	498,6	1399,8	41,7	961,6	2700,0	100,7
	180	525,8	1476,1	42,9	1014,1	2847,3	103,6
	190	553,0	1552,5	44,0	1066,5	2994,5	106,5
	200	580,2	1628,8	45,2	1119,0	3141,8	109,2
	210	607,4	1705,2	46,3	1171,4	3289,0	111,9
	220	634,6	1781,5	47,4	1223,9	3436,3	114,6
	230	661,8	1857,8	48,4	1276,3	3583,5	117,1
	240	688,9	1934,2	49,5	1328,7	3730,8	119,7
	250	716,1	2010,5	50,5	1381,2	3878,0	122,1
	260	743,3	2086,9	51,5	1433,6	4025,3	124,5
	270	770,5	2163,2	52,5	1486,1	4172,5	126,9
	280	797,7	2239,5	53,5	1538,5	4319,8	129,2
	290	824,9	2315,9	54,4	1591,0	4467,0	131,5
	300	852,1	2392,2	55,3	1643,4	4614,3	133,8
	320	906,5	2544,9	57,1	1748,3	4908,8	138,2
	340	960,9	2697,6	58,9	1853,2	5203,2	142,4
	360	1015,3	2850,3	60,6	1958,1	5497,7	146,5
	380	1069,6	3002,9	62,3	2063,0	5792,2	150,6
	400	1124,0	3155,6	63,9	2167,9	6086,7	154,5
	420	1178,4	3308,3	65,5	2272,7	6381,2	158,3
	440	1232,8	3461,0	67,0	2377,6	6675,7	162,0
	460	1287,2	3613,7	68,5	2482,5	6970,2	165,7
	480	1341,6	3766,3	70,0	2587,4	7264,7	169,2
	500	1395,9	3919,0	71,4	2692,3	7559,2	172,7
	550	1531,9	4300,7	74,9	2954,5	8295,5	181,1
	600	1667,9	4682,4	78,3	3216,7	9031,7	189,2
	650	1803,8	5064,1	81,4	3479,0	9768,0	196,9
	700	1939,8	5445,8	84,5	3741,2	10504,2	204,3
	750	2075,7	5827,5	87,5	4003,4	11240,5	211,5
	800	2211,7	6209,2	90,4	4265,6	11976,7	218,5
	850	2347,7	6590,9	93,1	4527,8	12713,0	225,2
	900	2483,6	6972,6	95,8	4790,1	13449,2	231,7
	950	2619,6	7354,3	98,5	5052,3	14185,4	238,1
	1015	2796,3	7850,5	101,8	5393,2	15142,6	246,1

CONTINUATION - Series 451: Blowing-off rates at 10% above set pressure

Nominal diameter DN		25			32		
		I	II	III	I	II	III
Set pressure psi(g)							
Air I	15	254,5	714,7	51,0	441,8	1240,4	88,5
	30	371,3	1042,5	69,1	644,4	1809,3	119,9
	40	456,9	1282,9	79,8	793,0	2226,6	138,4
SCFM	50	542,6	1523,4	89,2	941,6	2643,8	154,8
	60	628,2	1763,8	97,7	1090,2	3061,1	169,5
	70	713,8	2004,2	105,5	1238,8	3478,3	183,1
Steam II	80	799,4	2244,6	112,8	1387,4	3895,6	195,8
	90	885,1	2485,0	119,6	1536,1	4312,8	207,6
	100	970,7	2725,4	126,1	1684,7	4730,1	218,9
PPH	110	1056,3	2965,9	132,3	1833,3	5147,3	229,5
	120	1141,9	3206,3	138,1	1981,9	5564,6	239,7
	130	1227,6	3446,7	143,8	2130,5	5981,8	249,5
Water III	140	1313,2	3687,1	149,2	2279,1	6399,0	259,0
	150	1398,8	3927,5	154,4	2427,7	6816,3	268,0
	160	1484,5	4167,9	159,5	2576,3	7233,5	276,8
GPM	170	1570,1	4408,4	164,4	2724,9	7650,8	285,4
	180	1655,7	4648,8	169,2	2873,5	8068,0	293,6
	190	1741,3	4889,2	173,8	3022,1	8485,3	301,7
	200	1827,0	5129,6	178,3	3170,7	8902,5	309,5
	210	1912,6	5370,0	182,7	3319,3	9319,8	317,2
	220	1998,2	5610,4	187,0	3467,9	9737,0	324,6
	230	2083,8	5850,9	191,2	3616,5	10154,3	331,9
	240	2169,5	6091,3	195,4	3765,1	10571,5	339,1
	250	2255,1	6331,7	199,4	3913,8	10988,8	346,0
	260	2340,7	6572,1	203,3	4062,4	11406,0	352,9
	270	2426,3	6812,5	207,2	4211,0	11823,3	359,6
	280	2512,0	7052,9	211,0	4359,6	12240,5	366,2
	290	2597,6	7293,3	214,8	4508,2	12657,8	372,7
	300	2683,2	7533,8	218,4	4656,8	13075,0	379,1
	320	2854,5	8014,6	225,6	4954,0	13909,5	391,5
	340	3025,7	8495,4	232,5	5251,2	14744,0	403,6
	360	3197,0	8976,3	239,3	5548,4	15578,5	415,3
	380	3368,2	9457,1	245,8	5845,6	16413,0	426,6
	400	3539,5	9937,9	252,2	6142,8	17247,5	437,7
	420	3710,7	10418,8	258,4	6440,1	18082,0	448,5
	440	3882,0	10899,6	264,5	6737,3	18916,5	459,1
	460	4053,2	11380,4	270,5	7034,5	19750,9	469,4
	480	4224,5	11861,3	276,3	7331,7	20585,4	479,5
	500	4395,8	12342,1	282,0	7628,9	21419,9	489,4
	550	4823,9	13544,2	295,7	8371,9	23506,2	513,3
	600	5252,0	14746,2	308,9	9115,0	25592,4	536,1
	650	5680,1	15948,3	321,5	9858,0	27678,6	558,0
	700	6108,3	17150,4	333,6	10601,0	29764,9	579,0
	750	6536,4	18352,5	345,4	11344,1	31851,1	599,4
	800	6964,5	19554,6	356,7	12087,1	33937,3	619,0
	850	7392,7	20756,6	367,7	12830,1	36023,6	638,1
	900	7820,8	21958,7	378,3	13573,2	38109,8	656,6
	950	8248,9	23160,8	388,7	14316,2	40196,0	674,6
	1015	8805,5	24723,5	401,8	15282,1	42908,1	697,3

→ Series 452



■ SUITABLE FOR

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

■ EXAMPLES OF USE

For the protection of:

- pressure tanks and -systems for neutral / non-neutral vapours, gases and liquids
 - steam boilers and steam plants
 - bulk transport vehicles for liquid, granular and dusty goods¹
- Please observe plant-specific regulations and use of appropriate valve version and sealing material.

- chemical plants
- biogas plants
- industrial- and commercial boiler plants
- shipbuilding industry and marine equipment
- secondary areas in the food-, beverage-, pharmaceutical- and cosmetics-industries

Safety valves are set and sealed at the factory.

■ APPROVALS

TÜV-Type test approval 2007	D/G, F, F/K/S ¹
EC type examination	S/G, L, F/K/S ¹
KGS	G
TR ZU 032/2013 - TR ZU 010/2011	D/G (S/G), F (L), F/K/S ¹
Requirements	
AD 2000 Data sheet A2 TRD 421 TRB 801 No. 22 and No. 23 ¹	DIN EN ISO 4126-1 PED 2014/68/EU KGS AA 319

Classification society

Germanischer Lloyd	GL
Lloyd's Register EMEA	LR EMEA
American Bureau of Shipping	ABS
Det Norske Veritas	DNV
Bureau Veritas	BV
Russian Maritime Register of Shipping	RS



■ MATERIAL



■ SPECIFICATION



DN 40 and DN 50 – 60°C to + 400°C
depending on version 0,5 – 25 bar

■ MATERIALS

Component	Material	DIN EN	ASME
Inlet body	Stainless steel	1.4408	CF8M
Outlet body	Stainless steel	1.4408	CF8M
Internal parts	Stainless steel	1.4404	316 L
Spring	Stainless steel	1.4310	302
Bellows (optional)	Stainless steel	1.4571	316 Ti

¹only for versions with bellows

s	non-gastight version of spring housing	for neutral media without counter pressure.
b	with bellows	for neutral and non-neutral media and/or counter pressure up to 4 bar. Spring, moving parts and the environment are protected from being affected by the medium.
t	gastight version of spring housing	for neutral and non-neutral media without counter pressure. The environment is protected from being affected by the medium.
tb	gastight version with bellows	for neutral and non-neutral an particularly for flammable, toxic and environmentally hazardous media and/or counter pressure up to 4 bar. Spring, moving parts and the environment are protected from being affected by the medium. Double gastight.

■ MEDIUM

G	gaseous	Air, vapours, gases and - depending on safety valve version and seal - also for steam
F	liquid	The temperature of the medium under atmospheric pressure must not reach boiling point
GF	gaseous and liquid	Air, vapours, gases, steam and liquids

■ TYPE OF LIFTING MECHANISM

L	Standard with lifting lever
O	without lifting device

■ AVAILABLE NOMINAL DIAMETERS AND CONNECTION SIZES

Nominal diameter DN		40	50
Inlet		40	50
Outlet	65	■	
	80		■

■ CONNECTION TYPE INLET / OUTLET FLANGE CONNECTIONS

FL / FL	Standard	Flange connection / flange connection	DIN EN 1092 / DIN EN 1092
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■ SEALS

NBR	Nitrile rubber	Elastomere moulded seal with metallic support	-30°C to +130°C
EPDM	Ethylene propylene diene	Elastomere moulded seal with metallic support	-40°C to +170°C
FKM	Fluorocarbon	Elastomere moulded seal with metallic support	-20°C to +200°C
PTFE	Polytetrafluoroethylene	Flat seal	-60°C to +225°C
Against surcharge			
FFKM	Perfluorinated rubber	Elastomere moulded seal with metallic support	-10°C to +260°C
MD	Metal-to-metal sealing	Flat seal	-60°C to +400°C

■ OPTIONS

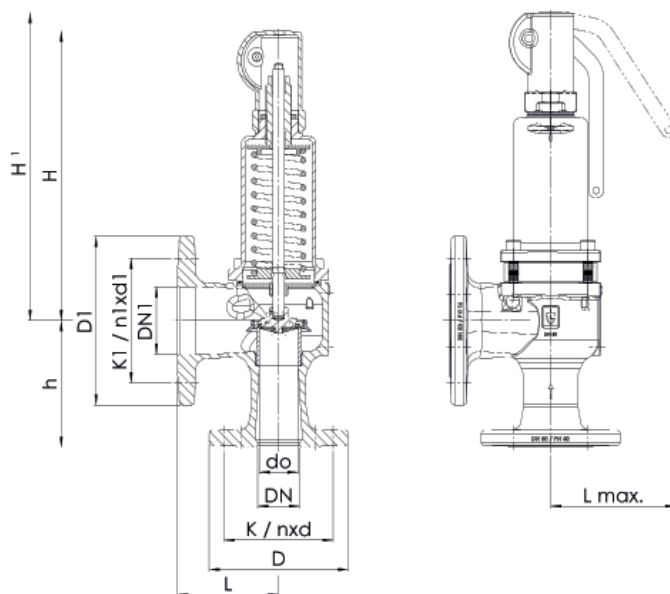
Special versions on request.	
Against surcharge	
Connection for condensate pipe G 1/4" with sealing plug	Order description: AKL

■ NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

Series 452: Connection, installation dimensions, ranges of adjustment				
Nominal diameter	DN	40	50	
Connection DIN EN 1092	DN / PN	40 / 40	50 / 40	
Outlet DIN EN 1092	DN / PN	65 / 16	80 / 16	
Installation dimensions in mm	L	115	120	
	Lmax	150	150	
	H / H¹	345 / 362	345 / 362	
	h	140	150	
	D	150	165	
	D1	185	200	
	K / nxd	110 / 4x18	125 / 4x18	
	K1 / n1xd1	145 / 4x18	160 / 8x18	
	do	37	46	
	Weight	kg / kg¹	19 / 20	
Range of adjustment	bar	0,5-25	0,5-25	

¹Details for the version with bellows

■ MAIN DIMENSIONS, INSTALLATION DIMENSIONS



■ INDIVIDUAL SELECTION / VALVE CONFIGURATION

Series	Valve version	Medium	Lifting device	Nominal diameter DN	Connection type		Connection size		Seal	Options	Set pressure	Quantity
					Inlet	Outlet	Inlet	Outlet				
452	<i>b</i>	<i>G</i>	<i>L</i>	<i>50</i>	FL	FL	<i>50</i>	<i>80</i>	EPDM		<i>5,0</i>	<i>2</i>
452					FL	FL						
452					FL	FL						
452					FL	FL						

In this table you can configure a valve according to your individual requirements (similar to the *example* shown, which should be deleted before you enter your own data). Please complete the table by hand using the abbreviations in this datasheet and then fax it to: +49(0)7141.4889488
Please do not forget to add your personal data so that our sales team can contact you.

Name _____

First Name _____

Company _____

Telephone _____

E-Mail _____

■ CAPACITY TABLE

Series 452: Blowing-off rates at 10% above set pressure							
Nominal diameter DN		40			50		
Set pressure bar		I	II	III	I	II	III
Air I Nm³/h	0,5	667	503	23	995	750	36
	1	983	785	32	1472	1176	49
	1,5	1299	1032	39	1948	1547	60
Steam II kg/h	2	1615	1273	45	2461	1939	69
	2,5	1926	1510	50	2926	2294	77
	3	2208	1726	55	3404	2661	85
Water III m³/h	3,5	2491	1937	59	3839	2985	91
	4	2773	2151	63	4275	3315	98
	4,5	3056	2364	67	4710	3643	104
	5	3338	2575	71	5146	3970	109
	5,5	3621	2789	74	5581	4299	114
	6	3903	3003	77	6016	4629	120
	6,5	4186	3212	81	6452	4951	124
	7	4468	3420	84	6887	5272	129
	7,5	4751	3632	86	7323	5598	134
	8	5033	3843	89	7758	5923	138
	8,5	5316	4053	92	8194	6247	142
	9	5598	4263	95	8629	6570	146
	9,5	5881	4472	97	9064	6893	150
	10	6163	4681	100	9500	7215	154
	11	6728	5097	105	10371	7856	162
	12	7293	5511	109	11241	8494	169
	13	7858	5928	114	12112	9138	176
	14	8423	6348	118	12983	9784	183
	15	8988	6763	122	13854	10425	189
	16	9553	7181	126	14725	11069	195
	17	10118	7586	130	15595	11693	201
	18	10683	8002	134	16466	12334	207
	19	11248	8416	138	17337	12973	213
	20	11813	8835	141	18208	13617	218
	21	12378	9253	145	19079	14261	224
	22	12943	9670	148	19949	14905	229
	23	13508	10087	151	20820	15547	234
	24	14073	10503	155	21691	16190	239
	25	14638	10920	158	22562	16831	244

At temperatures above 220°C the yield strength decrease of the nominal pressure rating must be taken into account.

→ Series 461



■ MATERIAL



■ SPECIFICATION



1/4" – 1/2"



– 60°C to + 225°C
depending on version



0,5 – 70 bar

■ SUITABLE FOR

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

■ EXAMPLES OF USE

For the protection of:

- pressure tanks and -systems for neutral / non-neutral vapours, gases and liquids

- steam boilers and steam plants

Please observe plant-specific regulations and use of appropriate valve version and sealing material.

- chemical plants, biogas plants
- desalination plants
- process equipment construction and medical technology
- shipbuilding industry and marine equipment
- secondary areas in the food-, beverage-, pharmaceutical- and cosmetics- industries
- offshore-applications

Safety valves are set and sealed at the factory.

■ APPROVALS

TÜV-Type test approval 2061	D/G, F
EC type examination	S/G, L
TSG ZF001-2006	D/G (S/G), F (L)
TR ZU 032/2013 - TR ZU 010/2011	D/G (S/G), F (L)
Requirements	
AD 2000 Data sheet A2 TRD 421 DIN EN ISO 4126-1	PED 2014/68/EU KGS AA 319

Classification society

DNVGL	DNVGL
Lloyd's Register EMEA	LR EMEA
American Bureau of Shipping	ABS
Russian Maritime Register of Shipping	RS
Registro Italiano Navale	RINA

■ MATERIALS

Component	Material	DIN EN	ASME
Inlet body	Stainless steel	1.4404	316 L
Outlet body	Stainless steel	1.4408	CF8M
Internal parts	Stainless steel	1.4404	316 L
Spring	Stainless steel	1.4310	302

Series 861 ■ VALVE VERSION

s	Standard, non-gastight version of the spring housing	for neutral media without counter pressure, not for medium in combination GF
t	gastight version of spring housing	for neutral and non-neutral media, not counter pressure compensated. The environment is protected from being affected by the medium.

■ MEDIUM

G	gaseous	Air, vapours, gases and steam
F	liquid	The temperature of the medium under atmospheric pressure must not reach boiling point
GF	gaseous and liquid	Air, vapours, gases, steam and liquids

■ TYPE OF LIFTING MECHANISM

K	Standard with twist-type lifting mechanism, non-gastight version	
L	Lifting lever, non-gastight version	
O	without lifting device, standard for gastight version	

■ AVAILABLE NOMINAL DIAMETERS AND CONNECTION SIZES

Nominal diameter DN		8	10	15
Inlet		1/4" (8)	3/8" (10)	1/2" (15)
Outlet	1/2" (15)	■	■	■

■ 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
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■ SEALS

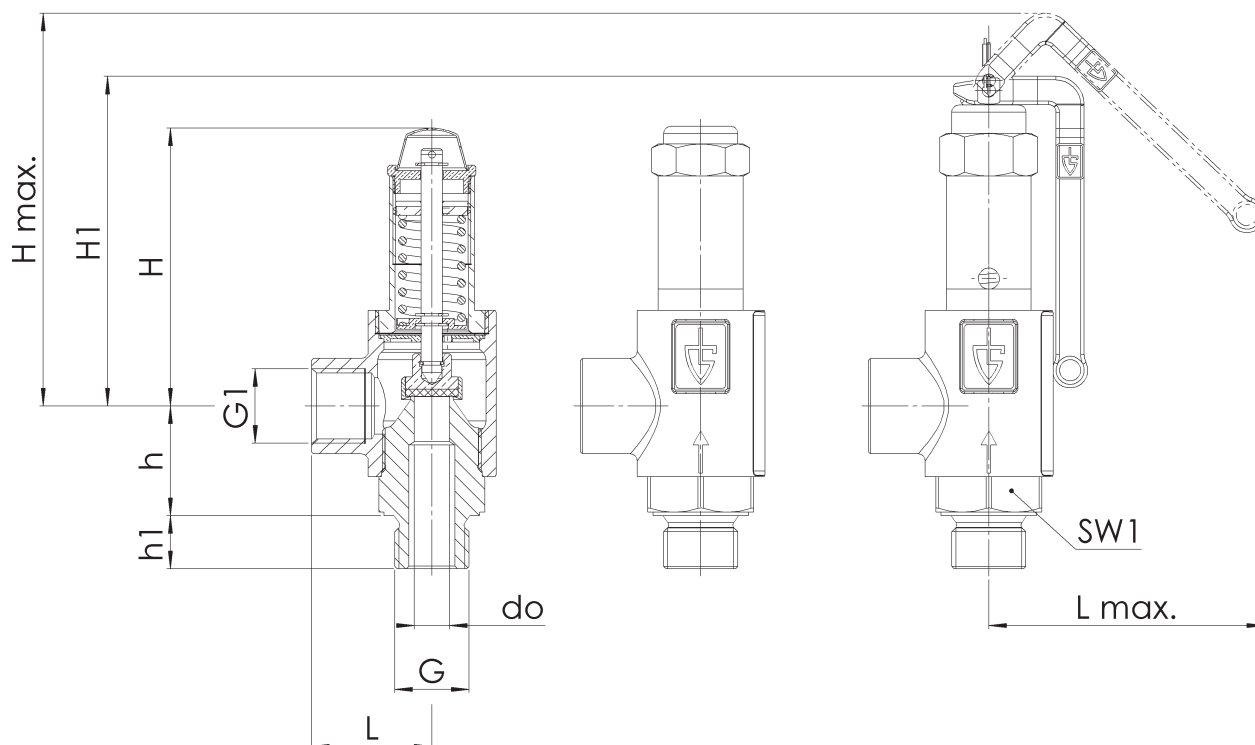
PTFE	Polytetrafluoroethylene	Flat seal up to 25 bar	−60°C to +225°C
PTFE+Kohle	Polytetrafluoroethylene + carbon	Flat seal from 25,1 bar	−60°C to +225°C

■ NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

Series 461: Connection, installation dimensions, ranges of adjustment					
Nominal diameter	DN	8	10	15	
Connection DIN EN ISO 228	G	1/4" (8)	3/8" (10)	1/2" (15)	1/2" (15)
Outlet DIN EN ISO 228	G1	1/2" (15)	1/2" (15)	1/2" (15)	1/2" (15)
Installation dimensions in mm	L	34	34	34	34
	Lmax	78	78	78	78
	H	79	79	79	133
	H1	93	93	93	150
	Hmax	111	111	111	168
	h	31	31	31	31
	h1	12	12	15	15
	SW	30	30	30	30
	do	6	8	10	10
Coefficients of flow ISO 4126-1	$\alpha_w / Kdr (F)$	0,5	0,44	0,47	0,47
Coefficients of flow ISO 4126-1	$\alpha_w / Kdr (D/G)^1)$	0,68	0,64	0,71	0,71
Weight	kg	0,5	0,5	0,6	1
Range of adjustment	bar	0,5-70	0,5-70	0,5-30	30,1-70

¹Coefficients of flow for blow-off pressures >3,0 bar. For lower pressures refer to values in the capacity table.

■ MAIN DIMENSIONS, INSTALLATION DIMENSIONS



Series	Valve version	Medium	Lifting device	Nominal diameter DN	Connection type		Connection size		Seal	Options	Set pressure	Quantity
					Inlet	Outlet	Inlet	Outlet				
461	<i>t</i>	<i>G</i>	<i>O</i>	<i>8</i>	m	f	<i>8</i>	15	<i>PTFE</i>		<i>12,3</i>	<i>2</i>
461					m	f		15				
461					m	f		15				
461					m	f		15				

■ PROPERTIES

G0X	Especially for gaseous O2 applications by employment of specific materials including oil- and grease free production process	☐		☐
P01	Oil- and grease-free production	☐		☐
		☐		☐

■ CERTIFICATES / APPROVALS

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

■ ADMISSIONS / ACCREDITATIONS

AA1	EC Type examination acc. to Directive 2014/68/EU	☐	AK1	DNV-GL (DNVGL) type approval	☐
AA2	TÜV component test acc. to VdTÜV specification sheet SV 100	☐	AK2	Lloyd's Register (LR) type approval	☐
AA4	EAC - certificate/declaration with passport for the valve and laser marking of the valve	☐	AK3	American Bureau of Shipping (ABS) type approval	☐
AA5	Manufacture License of Special Equipment People's Republic of China (ML)	☐	AK4	Bureau Veritas (BV) type approval	☐
		☐	AK5	Russian Maritime Register of Shipping (RMRS) type approval	☐
		☐	AK6	Registro Italiano Navale (RINA) type approval	☐
		☐	AL	Individual inspection by notified body inspector – (body to be indicated):	☐

■ ENQUIRY

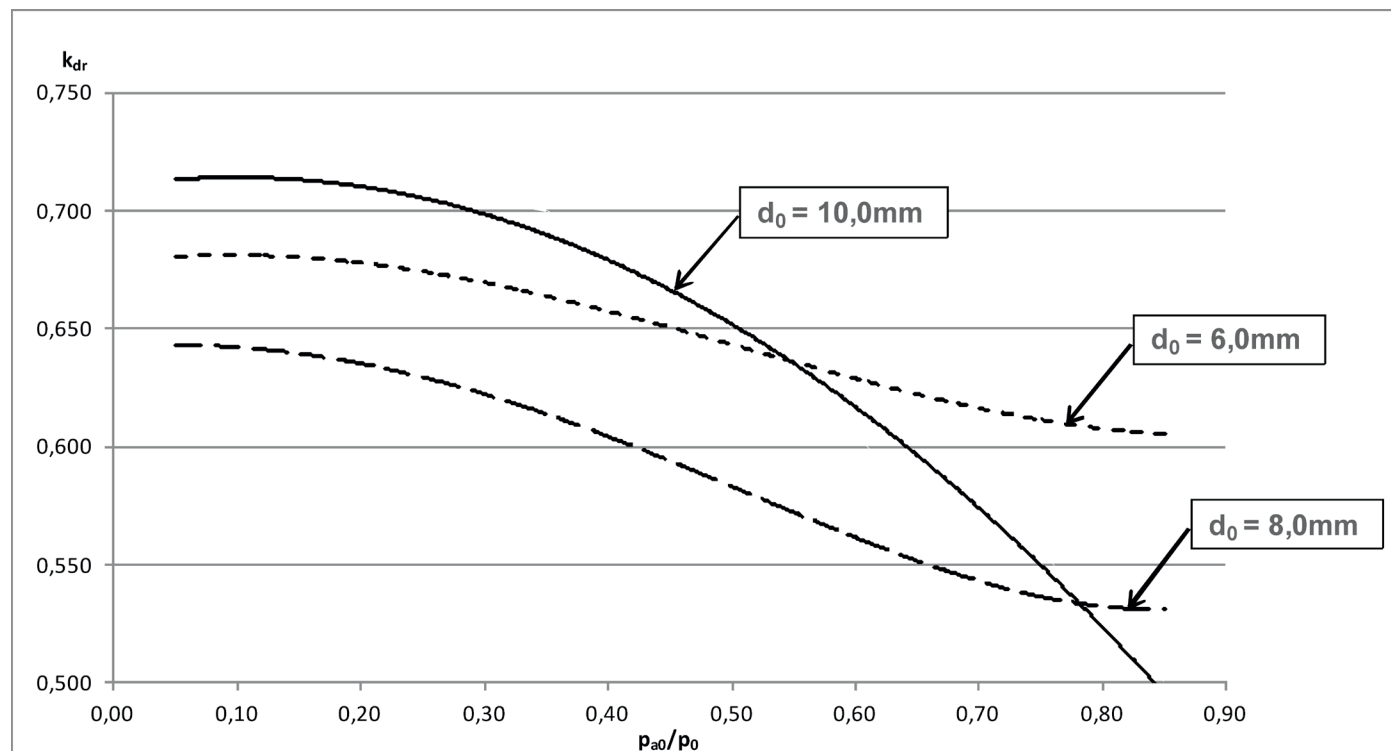
Copy and send to: order@goetze-armaturen.de.

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

■ CAPACITY TABLE

Series 461: Blowing-off rates at 10% above set pressure											
Nominal diameter DN			8			10			15		
			d0 = 6 mm			d0 = 8 mm			d0 = 10 mm		
Set pressure bar			I	II	III	I	II	III	I	II	III
Air I	0,5		18,9	15,5	0,6	29,7	24,3	0,9	49,4	40,4	1,4
	Nm³/h	1,0	26,1	20,8	0,8	41,9	33,4	1,2	73,5	58,5	2,0
		1,5	33,8	26,7	0,9	55,3	43,8	1,4	97,5	77,2	2,4
Steam II	2,0		41,3	32,5	1,1	68,4	53,8	1,7	120,1	94,5	2,8
	kg/h	2,5	48,8	38,2	1,2	81,0	63,4	1,9	141,7	110,9	3,1
		3,0	56,2	43,8	1,3	93,4	72,8	2,0	163,3	127,3	3,4
Water III	3,5		63,4	49,3	1,4	105,8	82,2	2,2	184,2	143,1	3,7
	m³/h	4,0	70,6	54,7	1,5	118,3	91,6	2,4	205,1	158,8	3,9
		4,5	77,8	60,1	1,6	130,4	100,7	2,5	226,0	174,5	4,2
		5,0	85,1	65,5	1,7	142,4	109,7	2,6	246,9	190,2	4,4
		5,5	92,3	70,9	1,8	154,5	118,8	2,8	267,8	205,9	4,6
		6,0	99,5	76,3	1,8	166,6	127,8	2,9	288,7	221,5	4,8
		6,5	106,7	81,7	1,9	178,6	136,8	3,0	309,6	237,1	5,0
		7,0	113,9	87,1	2,0	190,7	145,8	3,1	330,5	252,7	5,2
		7,5	121,1	92,5	2,1	202,7	154,8	3,2	351,4	268,3	5,4
		8,0	128,3	97,8	2,1	214,8	163,7	3,3	372,3	283,8	5,6
		8,5	135,5	103,2	2,2	226,8	172,7	3,4	393,2	299,4	5,7
		9,0	142,8	108,6	2,3	238,9	181,7	3,5	414,1	314,9	5,9
		9,5	150,0	113,9	2,3	250,9	190,7	3,6	435,0	330,5	6,1
		10,0	157,2	119,3	2,4	263,0	199,6	3,7	455,8	346,0	6,2
		11,0	171,6	130,0	2,5	287,1	217,6	3,9	497,6	377,1	6,5
		12,0	186,0	140,7	2,6	311,2	235,5	4,1	539,4	408,1	6,8
		13,0	200,4	151,4	2,7	335,3	253,3	4,3	581,2	439,1	7,1
		14,0	214,8	162,1	2,8	359,4	271,3	4,4	623,0	470,2	7,4
		15,0	229,2	172,9	2,9	383,5	289,2	4,6	664,8	501,4	7,6
		16,0	243,6	183,5	3,0	407,6	307,1	4,7	706,6	532,3	7,9
		17,0	258,0	194,3	3,1	431,7	325,1	4,9	748,3	563,4	8,1
		18,0	272,4	205,0	3,2	455,8	343,0	5,0	790,1	594,6	8,4
		19,0	286,8	215,8	3,3	479,9	361,0	5,2	831,9	625,8	8,6
		20,0	301,2	226,5	3,4	504,0	379,0	5,3	873,7	657,0	8,8
		21,0	315,7	237,3	3,5	528,1	397,0	5,4	915,5	688,2	9,0
	22,0	330,1	248,0	3,5	552,3	415,0	5,5	957,3	719,4	9,3	
	23,0	344,5	258,8	3,6	576,4	433,1	5,7	999,1	750,7	9,5	
	24,0	358,9	269,6	3,7	600,5	451,2	5,8	1040,8	782,0	9,7	
	25,0	373,3	280,4	3,8	624,6	469,2	5,9	1082,6	813,4	9,9	
	26,0	387,7		3,9	648,7		6,0	1124,4		10,1	
	27,0	402,1		3,9	672,8		6,1	1166,2		10,2	
	28,0	416,5		4,0	696,9		6,3	1208,0		10,4	
	29,0	430,9		4,1	721,0		6,4	1249,8		10,6	
	30,0	445,3		4,1	745,1		6,5	1291,6		10,8	
	32,0	474,1		4,3	793,3		6,7	1375,1		11,2	
	34,0	502,9		4,4	841,5		6,9	1458,7		11,5	
	36,0	531,8		4,5	889,7		7,1	1542,3		11,8	
	38,0	560,6		4,7	938,0		7,3	1625,8		12,2	
	40,0	589,4		4,8	986,2		7,5	1709,4		12,5	
	42,0	618,2		4,9	1034,4		7,7	1793,0		12,8	
	44,0	647,0		5,0	1082,6		7,8	1876,6		13,1	
	46,0	675,8		5,1	1130,8		8,0	1960,1		13,4	
	48,0	704,6		5,2	1179,0		8,2	2043,7		13,7	
	50,0	733,5		5,3	1227,2		8,4	2127,3		13,9	
	51,0	747,9		5,4	1251,3		8,4	2169,1		14,1	
	52,0	762,3		5,4	1275,4		8,5	2210,8		14,2	
	53,0	776,7		5,5	1299,5		8,6	2252,6		14,4	
	54,0	791,1		5,6	1323,7		8,7	2294,4		14,5	
	55,0	805,5		5,6	1347,8		8,8	2336,2		14,6	
	56,0	819,9		5,7	1371,9		8,8	2378,0		14,8	
	57,0	834,3		5,7	1396,0		8,9	2419,8		14,9	
	58,0	848,7		5,8	1420,1		9,0	2461,6		15,0	
	59,0	863,1		5,8	1444,2		9,1	2503,4		15,2	
	60,0	877,5		5,9	1468,3		9,2	2545,1		15,3	
	61,0	891,9		5,9	1492,4		9,2	2586,9		15,4	
	62,0	906,3		5,9	1516,5		9,3	2628,7		15,5	
	63,0	920,8		6,0	1540,6		9,4	2670,5		15,7	
	64,0	935,2		6,0	1564,7		9,5	2712,3		15,8	
	65,0	949,6		6,1	1588,8		9,5	2754,1		15,9	
	66,0	964,0		6,1	1612,9		9,6	2795,9		16,0	
	67,0	978,4		6,2	1637,0		9,7	2837,6		16,1	
	68,0	992,8		6,2	1661,1		9,7	2879,4		16,3	
	69,0	1007,2		6,3	1685,2		9,8	2921,2		16,4	
	70,0	1021,6		6,3	1709,4		9,9	2963,0		16,5	

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
$p_{set} \text{ bar(g)}$	$p_0 \text{ bar(a)}$
≤ 1	$p_{set} + p_{atm} + 0,1 \text{ bar}$
> 1	$p_{set} \times 1,1 + p_{atm}$

For a safety valve set at = 0,5bar(g) and blowing-off into the enviroment the blow-off pressure is determined as follows:

Set-pressure	0,5	bar(g)
+ Atmospheric pressure	1,01325	bar(a)
+ permissable overpressure	0,1	bar(g)
~ Blow-off pressure	1,61	bar(a)

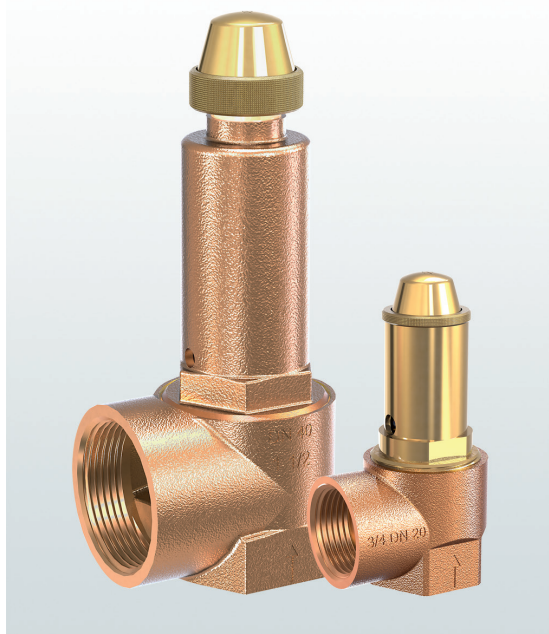
Consequently:

$$\frac{p_{a0}}{p_0} = \frac{1,01325 \text{ bar(a)}}{1,61 \text{ bar(a)}} = 0,72 \quad \text{and extracted from the chart} \quad \alpha_w \text{ i.e. } K_{dr} = 0,56 \text{ at } d_0=8,0\text{mm}$$

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 652



■ MATERIAL



■ SPECIFICATION



1/2" – 2"



– 60°C to + 200°C
depending on version



1,0 – 16 bar

■ SUITABLE FOR

Liquids	neutral	
Air, gases and vapours	neutral	
Steam		

■ EXAMPLES OF USE

For the protection of:

- pressure tanks and systems for water and neutral liquids
- pressure tanks and systems for air, neutral gases and vapours
- steam boiler Cat.I < 10 liter up to 3 bar

Please observe plant-specific regulations and use of appropriate valve version and sealing material.

- pump protection
- pressure booster plants water/air-side
- cooling-/chilling-systems
- mini steam generators

Safety valves are set and sealed at the factory.

■ APPROVALS

TÜV-Type test approval 293, 312	F, D/G
EC type examination	L, S/G
KGS	G
TR ZU 032/2013 - TR ZU 010/2011	F (L), D/G (S/G)
Requirements	
AD 2000 Data sheet A2 TRD 421 DIN EN ISO 4126-1	PED 2014/68/EU KGS AA 319

Classification society

DNVGL	DNVGL
Lloyd's Register EMEA	LR EMEA
American Bureau of Shipping	ABS
Bureau Veritas	BV
Russian Maritime Register of Shipping	RS

■ MATERIALS

Component	Material	DIN EN	ASME
Inlet body	Gunmetal	CC499K	CC499K
Outlet body	Gunmetal	CC499K	CC499K
Internal parts	Brass	CW617N	CW617N
Spring	Spring steel with anti-rust protection	1.1200	ASTM A228

Series 652 ■ VALVE VERSION

s	non-gastight version of spring housing	for neutral, gaseous media without counter pressure.
m	with diaphragm	for neutral liquids and liquids in cooling circuits without counter pressure. Spring, moving parts and the environment are protected from being affected by the medium.

■ MEDIUM

F	liquid	The temperature of the medium under atmospheric pressure must not reach boiling point
G	gaseous	Air, vapours, gases and - depending on safety valve version and seal - also for steam

■ TYPE OF LIFTING MECHANISM

K	Standard with twist-type lifting mechanism	
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■ AVAILABLE NOMINAL DIAMETERS AND CONNECTION SIZES

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

■ TYPE OF CONNECTION INLET / OUTLET THREADED CONNECTIONS

f / f	Standard	Female thread BSP-P / Female thread BSP-P	DIN EN ISO 228-1 / DIN EN ISO 228-1
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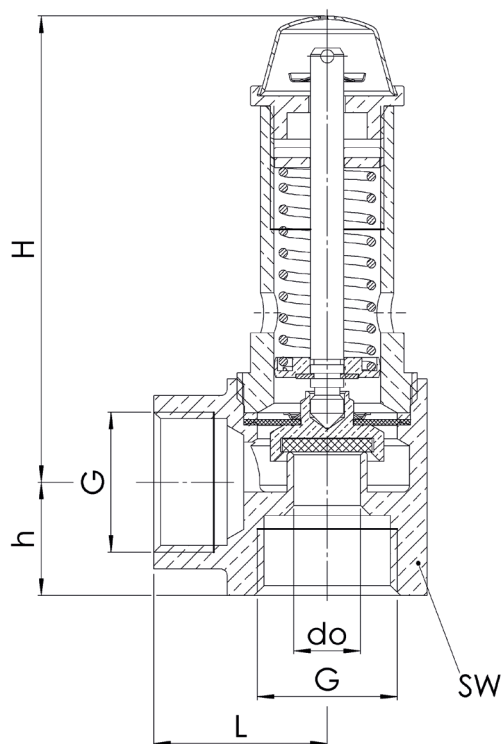
■ SEALS

NBR	Nitrile rubber (Standard)	Elastomere flat seal (up to 30% glycol)	-30°C to +130°C
EPDM	Ethylene propylene diene	Elastomere flat seal (up to 100% Glykol)	-50°C to +150°C
FKM	Fluorcarbon	Elastomere flat seal	-20°C to +200°C
Only for type 652sGK for air, neutral vapours			

■ NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

Series 652: Connection, installation dimensions, ranges of adjustment							
Nominal diameter	DN	15	20	25	32	40	50
Connection DIN EN ISO 228	G	1/2" (15)	3/4" (20)	1" (25)	1 1/4" (32)	1 1/2" (40)	2" (50)
Outlet DIN EN ISO 228	G	1/2" (15)	3/4" (20)	1" (25)	1 1/4" (32)	1 1/2" (40)	2" (50)
Installation dimensions in mm	L	26	31	35	40	46	54
	H	70	70	80	100	140	155
	h	17	18	22	25	28	34
	SW	27	32	40	49	56	68
	do	10	13	16	18	22	25
Weight	kg	0,2	0,3	0,5	0,7	1,2	1,6
Range of adjustment	bar	1-16	1-16	1-16	1-16	1-16	1-16

■ MAIN DIMENSIONS, INSTALLATION DIMENSIONS



Series	Valve version	Medium	Lifting device	Nominal diameter DN	Connection type		Connection size		Seal	Options	Set pressure	Quantity
					Inlet	Outlet	Inlet	Outlet				
652	<i>m</i>	<i>F</i>	K	<i>15</i>	f	f	<i>15</i>	<i>15</i>	<i>NBR</i>		<i>5,5</i>	<i>2</i>
652	<i>s</i>	<i>G</i>	K	<i>25</i>	f	f	<i>25</i>	<i>25</i>	<i>FKM</i>		<i>3,5</i>	<i>4</i>
652			K		f	f						
652			K		f	f						

■ PROPERTIES

G0X	Especially for gaseous O2 applications by employment of specific materials including oil- and grease free production process	☐	P03	Galvanically nickel-plated finish	☐
P01	Oil- and grease-free production	☐	P04	Chrome-plated finish	☐
P02	Chemically nickel-plated finish	☐			☐

■ CERTIFICATES / APPROVALS

C01	Factory certificate acc. DIN EN 10204 2.2 (WKZ 2.2)	☐	C06	ATEX evaluation acc. to 2014/34/EU	☐
C02	Test certificate acc. DIN EN 10204 3.1 (WPZ 3.1)	☐	C07	SIL evaluation relating to IEC 61508-2	☐
C03	Material test certificate acc. DIN EN 10204 3.1 (MPZ 3.1) (pressure retaining part)	☐	C10	Certificate of oil- and grease free production	☐
C04	TÜV/DEKRA individual inspection acc. EN 10204 3.2 (TÜV/DEKRA-APZ)	☐	C11	Certification of the production process especially for gaseous oxygen applications by employment of specific materials	☐

■ ADMISSIONS / ACCREDITATIONS

AA1	EC Type examination acc. to Directive 2014/68/EU	☐	AK1	DNV-GL (DNVGL) type approval	☐
AA2	TÜV component test acc. to VdTÜV specification sheet SV 100	☐	AK2	Lloyd's Register (LR) type approval	☐
AA4	EAC - certificate/declaration with passport for the valve and laser marking of the valve	☐	AK3	American Bureau of Shipping (ABS) type approval	☐
AA5	Manufacture License of Special Equipment People's Republic of China (ML)	☐	AK4	Bureau Veritas (BV) type approval	☐
	☐		AK5	Russian Maritime Register of Shipping (RMRS) type approval	☐
	☐		AK6	Registro Italiano Navale (RINA) type approval	☐
	☐		AL	Individual inspection by notified body inspector – (body to be indicated):	☐

■ ENQUIRY

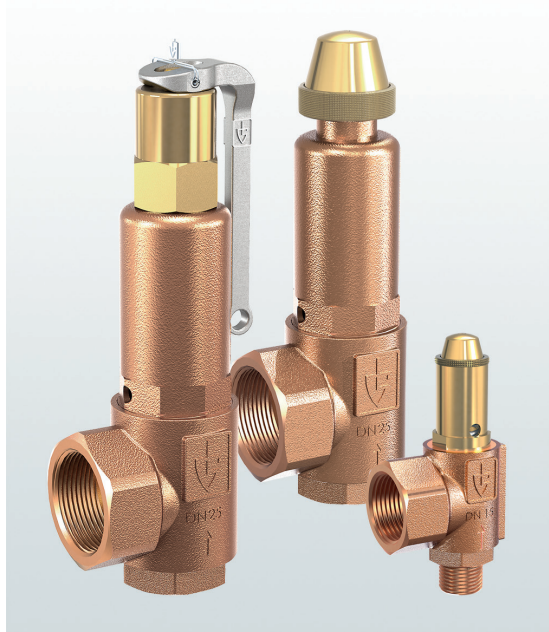
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Order form easily to be found online under the section for each series.

■ CAPACITY TABLE

Series 652: Blowing-off rates at 10% above set pressure																			
Nominal diameter DN		15			20			25			32			40			50		
Set pressure bar		I	II	III	I	II	III	I	II	III	I	II	III	I	II	III	I	II	III
Air I Nm³/h	1	31	25	1,51	53	42	2,55	80	64	3,87	102	81	4,89	152	121	7,31	196	157	9,44
	1,5	40	32	1,85	67	53	3,13	102	81	4,73	128	102	5,99	192	152	8,95	248	197	11,56
	2	48	38	2,14	81	64	3,61	123	97	5,47	155	122	6,92	232	183	10,33	299	236	13,35
	2,5	56	44	2,39	95	74	4,03	144	113	6,11	182	143	7,73	272	213	11,55	351	275	14,92
Steam II kg/h	3	64	50	2,62	109	85	4,42	165	129	6,69	208	163	8,47	311	243	12,66	402	314	16,34
	3,5	73	-	2,82	123	-	4,77	186	-	7,23	235	-	9,15	351	-	13,67	454	-	17,65
Water III m³/h	4	81	-	3,02	137	-	5,10	207	-	7,73	262	-	9,78	391	-	14,62	505	-	18,87
	4,5	89	-	3,20	150	-	5,41	228	-	8,20	288	-	10,38	431	-	15,50	556	-	20,02
	5	97	-	3,38	164	-	5,71	249	-	8,64	315	-	10,94	471	-	16,34	608	-	21,10
	5,5	105	-	3,54	178	-	5,98	270	-	9,06	342	-	11,47	511	-	17,14	659	-	22,13
	6	114	-	3,70	192	-	6,25	291	-	9,47	368	-	11,98	550	-	17,90	711	-	23,11
	6,5	122	-	3,85	206	-	6,51	312	-	9,85	395	-	12,47	590	-	18,63	762	-	24,06
	7	130	-	3,99	220	-	6,75	333	-	10,23	422	-	12,94	630	-	19,33	814	-	24,97
	7,5	138	-	4,13	234	-	6,99	354	-	10,59	448	-	13,40	670	-	20,01	865	-	25,84
	8	147	-	4,27	248	-	7,22	375	-	10,93	475	-	13,84	710	-	20,67	917	-	26,69
	8,5	155	-	4,40	262	-	7,44	396	-	11,27	502	-	14,26	750	-	21,30	968	-	27,51
	9	163	-	4,53	276	-	7,65	418	-	11,60	528	-	14,68	789	-	21,92	1019	-	28,31
	9,5	171	-	4,65	290	-	7,86	439	-	11,91	555	-	15,08	829	-	22,52	1071	-	29,08
	10	180	-	4,77	303	-	8,07	460	-	12,22	582	-	15,47	869	-	23,11	1122	-	29,84
	11	196	-	2,78	331	-	6,82	502	-	12,82	635	-	14,42	949	-	23,56	1225	-	31,30
12	212	-	2,91	359	-	7,12	544	-	13,39	688	-	15,06	1028	-	24,61	1328	-	32,69	
13	229	-	3,02	387	-	7,41	586	-	13,94	742	-	15,68	1108	-	25,62	1431	-	34,02	
14	245	-	3,14	415	-	7,69	628	-	14,46	795	-	16,27	1188	-	26,58	1534	-	35,31	
15	262	-	3,25	443	-	7,96	670	-	14,97	848	-	16,84	1267	-	27,52	1637	-	36,55	
16	278	-	3,36	470	-	8,22	713	-	15,46	902	-	17,39	1347	-	28,42	1740	-	37,75	

→ Series 851



■ MATERIAL



■ SPECIFICATION



1/2" – 2"



– 60°C to + 225°C
depending on version



0,5 – 50 bar

■ SUITABLE FOR

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

■ EXAMPLES OF USE

For the protection of:

- Pressure-vessels/-systems for neutral / non-neutral vapours, gases and liquids
- Steam boilers and steam plants
- Stationary silos and bulk transport vehicles for liquid, granular and powdery goods

taking into account the plant-specific regulations and making use of the suitable valve versions and sealing materials.

- Mechanical engineering
- pump protection
- Apparatus construction and medical technology (sterilizers, autoclaves)
- shipbuilding and -repair
- Pressure booster systems water- / air-side
- Steam- and industrial-boiler systems

Safety valves are set and sealed at the factory.

■ APPROVALS

TÜV-Type test approval 666, 684	D/G, F, F/K/S ¹
EC type examination	S/G, L, F/K/S ¹
ASME	S, G, L
CRN	G
TSG ZF001-2006	D/G (S/G), F (L), F/K/S ¹
KGS	G
TR ZU 032/2013 - TR ZU 010/2011	D/G (S/G), F (L), F/K/S ¹
Requirements	
AD 2000 Data sheet A2	PED 2014/68/EU
TRD 421	ASME-Code Sec. VIII Div. 1
TRB 801 No. 22 and No. 23 ¹	KGS AA 319
DIN EN ISO 4126-1	

Classification society

DNVGL	DNVGL
Lloyd's Register EMEA	LR EMEA
American Bureau of Shipping	ABS
Bureau Veritas	BV
Russian Maritime Register of Shipping	RS

■ MATERIALS

Component	Material	DIN EN	ASME
Inlet body	Gunmetal	CC499K	CC499K
Outlet body	Gunmetal	CC499K	CC499K
Internal parts	Brass	CW617N	CW617N
Spring	Stainless steel	1.4310	302
Bellows (optional)	Bronze	CW452K	C51900

¹only for versions with bellows

Series 851 ■ VALVE VERSION

s	non-gastight version of spring housing	for neutral media without counter pressure.
b	with bellows	for neutral and non-neutral media and/or counter pressure up to 4 bar. Spring, moving parts and the environment are protected from being affected by the medium.
t	gastight version of spring housing	for neutral and non-neutral media without counter pressure. The environment is protected from being affected by the medium. Only available without lifting device. This version is not available for inlet / outlet 15/15 and 20/20!
tb	gastight version with bellows	for neutral and non-neutral, flammable, toxic and environmentally hazardous media and/or counter pressure up to 4 bar. Spring, moving parts and the environment are protected from being affected by the medium. Without lifting device. Double gastight

■ MEDIUM

G	gaseous	Air, vapours, gases and - depending on safety valve version and seal - also for steam
F	liquid	The temperature of the medium under atmospheric pressure must not reach boiling point
GF	gaseous and liquid	Air, vapours, gases, steam and liquids -Not in combination with ASME Approval-

■ TYPE OF LIFTING MECHANISM

K	Standard with twist-type lifting mechanism
L	Lifting lever
O	without lifting device, standard for gastight versions

■ AVAILABLE NOMINAL DIAMETERS AND CONNECTION SIZES

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

■ TYPE OF CONNECTION INLET / OUTLET THREADED CONNECTIONS

f / f	Standard	Female thread BSP-P / Female thread BSP-P	DIN EN ISO 228-1 / DIN EN ISO 228-1
m / f	on request	Male thread BSP-P / Female thread BSP-P	DIN EN ISO 228-1 / DIN EN ISO 228-1
BSP-Tm / f		Male thread BSP-T / Female thread BSP-P	DIN EN 10226, ISO 7-1 / DIN EN ISO 228-1

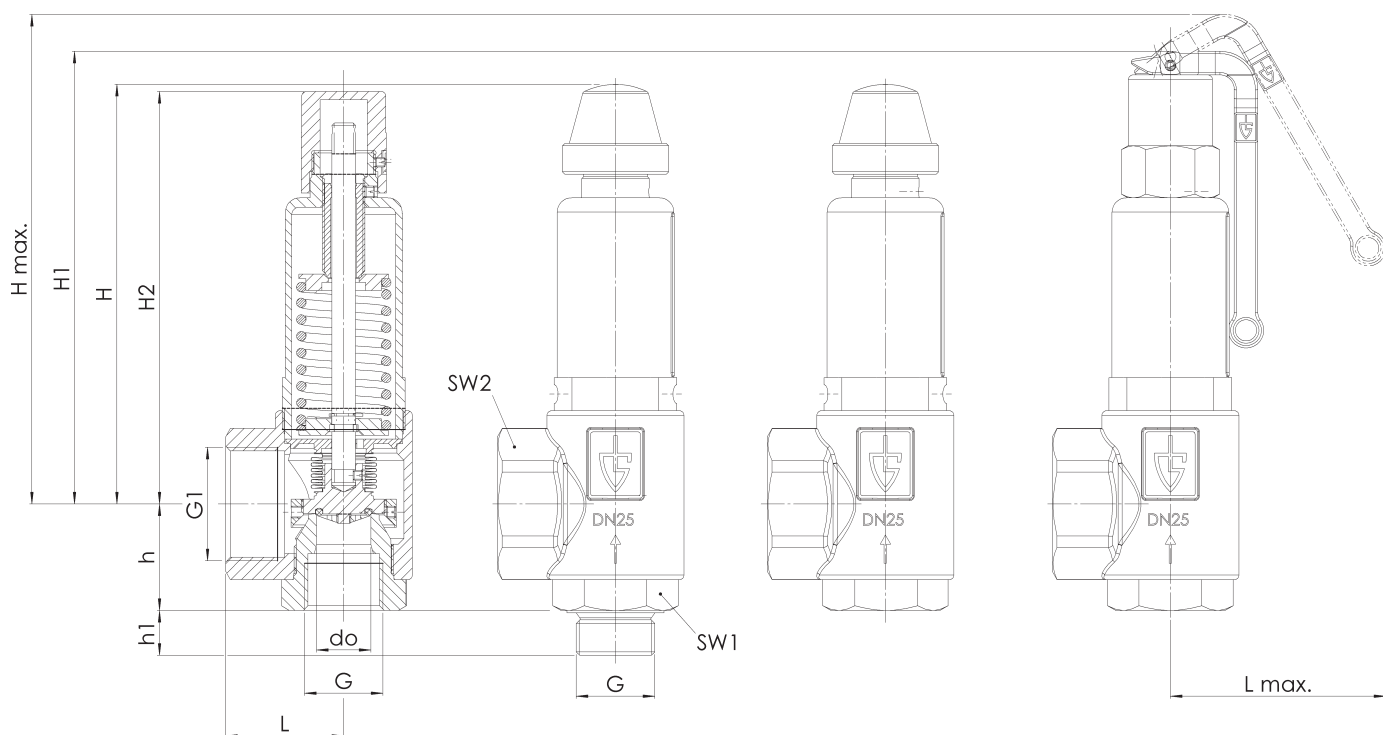
■ SEALS

NBR	Nitrile rubber	Elastomere moulded seal with metallic support up to 25 bar	-30°C to +130°C
EPDM	Ethylene propylene diene	Elastomere moulded seal with metallic support up to 25 bar	-40°C to +170°C
FKM	Fluorcarbon	Elastomere moulded seal with metallic support up to 25 bar	-20°C to +200°C
PTFE	Polytetrafluoroethylene	Flat seal up to 25 bar	-60°C to +225°C
PTFE+Kohle	Polytetrafluoroethylene + carbon	Flat seal from 25 bar	-60°C to +225°C
FFKM	Perfluorinated rubber	Elastomere moulded seal with metallic support up to 25 bar	-10°C to +225°C
MD	Metal-to-metal sealing	Flat seal	-60°C to +225°C

■ NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

Series 851: Connection, installation dimensions, ranges of adjustment										
Nominal diameter	DN	15			20		25	32		
Connection DIN EN ISO 228	G	1/2" (15)			3/4" (20)		1" (25)	1 1/4" (32)	1 1/2" (40)	2" (50)
Outlet DIN EN ISO 228	G1	1/2" (15)	1" (25)	1" (25)	3/4" (20)	1 1/4" (32)	1 1/2" (40)	2" (50)	2" (50)	2" (50)
Installation dimensions in mm	L	34	40	40	42	43	50	61	61	61
	Lmax	65	65	65	91	91	92	92	92	92
	H	79	77	131	137	138	178	241	241	241
	H1	93	91	149	154	158	192	264	264	264
	H2	79	77	131	138	139	175	241	241	241
	Hmax	105	103	164	169	173	207	277	277	277
	h	28	30	30	31	39	45	55	69	74
	h1	15	15	15	16	16	18	20	23	25
	SW1	30	30	30	36	36	46	55	55	70
	SW2	-	40	40	32	50	58	70	70	70
	do	15,8	15,8	15,8	15,8	18	23	30,3	30,3	30,3
	Weight	kg	0,4	0,4	0,8	1,0	1,0	1,8	4,0	4,0
	Range of adjustment	bar	0,5-25	0,5-25	25,1-50	0,5 - 50	0,5-50	0,5-50	0,5-50	0,5-50
	Range of adjustment ASME	psi	15-1015	15-1015	15-1015	15-1015	15-1015	15-1015	15-1015	15-1015

■ MAIN DIMENSIONS, INSTALLATION DIMENSIONS



Series	Valve version	Medium	Lifting device	Nominal diameter DN	Connection type		Connection size		Seal	Options	Set pressure	Quantity
					Inlet	Outlet	Inlet	Outlet				
851	tb	GF	0	25	m	f	25	40	FKM		16,0	5
851												
851												
851												

■ TECHNICAL FINISHES, VARIANTS, ACCESSORIES

S18	Inlet area in hygienic finish by means of a flat seal (despite of an o-ring fixed by a nut)	☐
S60	Pressure sensor connection M5 or G1/4 for monitoring the springhousing (only for valves with bellow)	☐
S62	Inductive proximity sensor, assembled, for indication of valve position	☐

■ PROPERTIES

G0X	Especially for gaseous O2 applications by employment of specific materials including oil- and grease free production process	☐	P03	Galvanically nickel-plated finish	☐
P01	Oil- and grease-free production	☐	P04	Chrome-plated finish	☐
P02	Chemically nickel-plated finish	☐			☐

■ CERTIFICATES / APPROVALS

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

■ ADMISSIONS / ACCREDITATIONS

AA1	EC Type examination acc. to Directive 2014/68/EU	☐	AK1	DNV-GL (DNVGL) type approval	☐
AA2	TÜV component test acc. to VdTÜV specification sheet SV 100	☐	AK2	Lloyd's Register (LR) type approval	☐
AA3	Certification acc. to ASME Boiler and Pressure Vessel Code, Section VIII.Div 1 (ASME) ¹	☐	AK3	American Bureau of Shipping (ABS) type approval	☐
AA4	EAC - certificate/declaration with passport for the valve and laser marking of the valve	☐	AK4	Bureau Veritas (BV) type approval	☐
AA5	Manufacture License of Special Equipment People's Republic of China (ML)	☐	AK5	Russian Maritime Register of Shipping (RMRS) type approval	☐
AA6	Certification acc. to Korean Gas Safety Corporation (KGS) ^{2,3}	☐	AK6	Registro Italiano Navale (RINA) type approval	☐
AA7	Registration according to Canadian Registration Number (CRN) ⁴	☐	AL	Individual inspection by notified body inspector – (body to be indicated):	☐

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.

■ CAPACITY TABLE

Series 851: Blowing-off rates at 10% above set pressure										
Nominal diameter DN		15				20				
		Bellows				do = 15,8			do = 18	
Set pressure bar		I	II	III without	III with	I	II	III	I	II III
Air I Nm³/h	0,5	56	42	2,3	1,9	64	48	2,9	127	96 5,4
	1	87	69	3,1	2,5	120	96	4,0	189	151 7,3
	1,5	113	90	3,8	3,1	166	132	4,9	252	200 9,0
	2	141	111	4,4	3,6	205	161	5,6	316	249 10,4
Steam II kg/h	2,5	165	129	5,0	4,0	250	196	6,3	383	300 11,6
	3	189	148	5,4	4,4	298	233	6,9	447	349 12,7
Water III m³/h	3,5	214	166	5,9	4,7	336	262	7,4	504	392 13,7
	4	238	184	6,3	5,0	375	291	8,0	561	435 14,7
	4,5	262	203	6,7	5,3	413	319	8,4	618	478 15,6
	5	286	221	7,0	5,6	451	348	8,9	675	521 16,4
	5,5	310	239	7,4	5,9	489	377	9,3	732	564 17,2
	6	335	257	7,7	6,2	527	406	9,7	790	608 18,0
	6,5	359	275	8,0	6,4	565	434	10,1	847	650 18,7
	7	383	293	8,3	6,6	604	462	10,5	904	692 19,4
	7,5	407	311	8,6	6,9	642	491	10,9	961	735 20,1
	8	431	329	8,9	7,1	680	519	11,3	1018	777 20,8
	8,5	456	347	9,2	7,3	718	547	11,6	1075	820 21,4
	9	480	365	9,4	7,5	756	576	11,9	1132	862 22,0
	9,5	504	383	9,7	7,7	794	604	12,3	1190	905 22,6
	10	528	401	9,9	7,9	833	632	12,6	1247	947 23,2
	11	577	437	10,4	8,3	909	688	13,2	1361	1031 24,3
	12	625	472	10,9	8,7	985	744	13,8	1475	1115 25,4
	13	674	508	11,3	9,1	1061	801	14,3	1590	1199 26,5
	14	722	544	11,8	9,4	1138	857	14,9	1704	1284 27,5
	15	770	580	12,2	9,7	1214	914	15,4	1818	1368 28,4
	16	819	616	12,6	10,1	1290	970	15,9	1932	1453 29,4
	17	867	650	13,0	10,4	1367	1025	16,4	2047	1535 30,3
	18	916	686	13,3	10,7	1443	1081	16,9	2161	1619 31,1
	19	964	721	13,7	11,0	1519	1137	17,3	2275	1703 32,0
	20	1013	757	14,0	11,2	1596	1193	17,8	2390	1787 32,8
	21	1061	793	14,4	11,5	1672	1250	18,2	2504	1872 33,6
	22	1109	829	14,7	11,8	1748	1306	18,7	2618	1956 34,4
	23	1158	865	15,1	12,1	1825	1363	19,1	2732	2040 35,2
	24	1206	900	15,4	12,3	1901	1419	19,5	2847	2125 35,9
	25	1255	936	15,7	12,6	1977	1475	19,9	2961	2209 36,7
	26	1303	-	16,0	12,8	2054	-	20,3	3075	- 37,4
	27	1352	-	16,3	13,1	2130	-	20,7	3190	- 38,1
	28	1400	-	16,6	13,3	2206	-	21,1	3304	- 38,8
	29	1449	-	16,9	13,5	2283	-	21,4	3418	- 39,5
	30	1497	-	17,2	13,8	2359	-	21,8	3532	- 40,2
	32	1594	-	17,8	14,2	2511	-	22,5	3761	- 41,5
	34	1691	-	18,3	14,7	2664	-	23,2	3990	- 42,8
	36	1788	-	18,8	15,1	2817	-	23,9	4218	- 44,0
	38	1884	-	19,4	15,5	2969	-	24,5	4447	- 45,2
	40	1981	-	19,9	15,9	3122	-	25,2	4675	- 46,4
	42	2078	-	20,4	16,3	3275	-	25,8	4904	- 47,6
	44	2175	-	20,8	16,7	3427	-	26,4	5132	- 48,7
	46	2272	-	21,3	17,0	3580	-	27,0	5361	- 49,8
	48	2369	-	21,8	17,4	3732	-	27,6	5589	- 50,8
	50	2466	-	22,2	17,8	3885	-	28,1	5818	- 51,9

*) only possible with metal-to-metal sealing

**) Version with bellows only available from 1 bar

CONTINUATION - Series 851: Blowing-off rates at 10% above set pressure

Nominal diameter DN		25			32		
		I	II	III	I	II	III
Set pressure bar							
Air I	0,5	199	150	8,8	353	266	15,4
	1	291	232	12,0	515	411	20,8
	1,5	390	309	14,7	683	542	25,5
	2	489	385	16,9	832	656	29,4
	2,5	583	457	18,9	1012	793	32,9
Steam II	3	681	532	20,8	1182	924	36,0
	3,5	768	597	22,4	1333	1036	38,9
	4	855	663	24,0	1484	1151	41,6
	4,5	942	729	25,4	1635	1265	44,1
	5	1029	794	26,8	1786	1378	46,5
Water III	5,5	1116	860	28,1	1937	1492	48,8
	6	1203	926	29,3	2088	1607	50,9
	6,5	1290	990	30,5	2239	1719	53,0
	7	1377	1054	31,7	2390	1830	55,0
	7,5	1464	1119	32,8	2542	1943	56,9
	8	1552	1184	33,9	2693	2056	58,8
	8,5	1639	1249	34,9	2844	2168	60,6
	9	1726	1314	35,9	2995	2281	62,4
	9,5	1813	1379	36,9	3146	2392	64,1
	10	1900	1443	37,9	3297	2504	65,8
	11	2074	1571	39,7	3599	2727	69,0
	12	2248	1699	41,5	3902	2948	72,0
	13	2422	1827	43,2	4204	3172	75,0
	14	2596	1957	44,8	4506	3396	77,8
	15	2771	2085	46,4	4808	3618	80,5
	16	2945	2214	47,9	5111	3842	83,2
	17	3119	2339	49,4	5413	4059	85,7
	18	3293	2467	50,8	5715	4281	88,2
	19	3467	2594	52,2	6017	4503	90,6
	20	3641	2723	53,6	6320	4726	93,0
	21	3816	2852	54,9	6622	4950	95,3
	22	3990	2981	56,2	6924	5173	97,5
	23	4164	3109	57,5	7226	5396	99,7
	24	4338	3238	58,7	7529	5619	101,9
	25	4512	3366	59,9	7831	5842	104,0
	26	4686	-	61,1	8133	-	106,0
	27	4860	-	62,3	8435	-	108,0
	28	5035	-	63,4	8738	-	110,0
	29	5209	-	64,5	9040	-	112,0
	30	5383	-	65,6	9342	-	113,9
	32	5731	-	67,8	9947	-	117,6
	34	6080	-	69,9	10551	-	121,2
	36	6428	-	71,9	11156	-	124,8
	38	6776	-	73,9	11760	-	128,2
	40	7124	-	75,8	12365	-	131,5
	42	7473	-	77,6	12969	-	134,8
	44	7821	-	79,5	13574	-	137,9
	46	8169	-	81,3	14178	-	141,0
	48	8518	-	83,0	14783	-	144,1
	50	8866	-	84,7	15387	-	147,0

Series 851: Blowing-off rates at 10% above set pressure							
Nominal diameter DN		15			20		
		I	II	III	I	II	III
Set pressure psi(g)							
Air I	15	80,8	226,9	12,9	155,9	437,7	31,2
	30	117,9	331,0	17,5	227,4	638,5	42,3
	40	145,1	407,4	20,2	279,9	785,8	48,8
SCFM	50	172,3	483,7	22,6	332,3	933,0	54,6
	60	199,5	560,1	24,7	384,7	1080,3	59,8
	70	226,7	636,4	26,7	437,2	1227,5	64,6
Steam II	80	253,9	712,7	28,6	489,6	1374,8	69,1
	90	281,1	789,1	30,3	542,1	1522,0	73,3
	100	308,3	865,4	31,9	594,5	1669,3	77,2
PPH	110	335,5	941,8	33,5	647,0	1816,5	81,0
	120	362,6	1018,1	35,0	699,4	1963,8	84,6
	130	389,8	1094,4	36,4	751,9	2111,0	88,1
Water III	140	417,0	1170,8	37,8	804,3	2258,3	91,4
	150	444,2	1247,1	39,1	856,7	2405,5	94,6
	160	471,4	1323,5	40,4	909,2	2552,8	97,7
GPM	170	498,6	1399,8	41,7	961,6	2700,0	100,7
	180	525,8	1476,1	42,9	1014,1	2847,3	103,6
	190	553,0	1552,5	44,0	1066,5	2994,5	106,5
	200	580,2	1628,8	45,2	1119,0	3141,8	109,2
	210	607,4	1705,2	46,3	1171,4	3289,0	111,9
	220	634,6	1781,5	47,4	1223,9	3436,3	114,6
	230	661,8	1857,8	48,4	1276,3	3583,5	117,1
	240	688,9	1934,2	49,5	1328,7	3730,8	119,7
	250	716,1	2010,5	50,5	1381,2	3878,0	122,1
	260	743,3	2086,9	51,5	1433,6	4025,3	124,5
	270	770,5	2163,2	52,5	1486,1	4172,5	126,9
	280	797,7	2239,5	53,5	1538,5	4319,8	129,2
	290	824,9	2315,9	54,4	1591,0	4467,0	131,5
	300	852,1	2392,2	55,3	1643,4	4614,3	133,8
	320	906,5	2544,9	57,1	1748,3	4908,8	138,2
	340	960,9	2697,6	58,9	1853,2	5203,2	142,4
	360	1015,3	2850,3	60,6	1958,1	5497,7	146,5
	380	1069,6	3002,9	62,3	2063,0	5792,2	150,6
	400	1124,0	3155,6	63,9	2167,9	6086,7	154,5
	420	1178,4	3308,3	65,5	2272,7	6381,2	158,3
	440	1232,8	3461,0	67,0	2377,6	6675,7	162,0
	460	1287,2	3613,7	68,5	2482,5	6970,2	165,7
	480	1341,6	3766,3	70,0	2587,4	7264,7	169,2
	500	1395,9	3919,0	71,4	2692,3	7559,2	172,7
	550	1531,9	4300,7	74,9	2954,5	8295,5	181,1
	600	1667,9	4682,4	78,3	3216,7	9031,7	189,2
	650	1803,8	5064,1	81,4	3479,0	9768,0	196,9
	700	1939,8	5445,8	84,5	3741,2	10504,2	204,3
	750	2075,7	5827,5	87,5	4003,4	11240,5	211,5
	800	2211,7	6209,2	90,4	4265,6	11976,7	218,5
	850	2347,7	6590,9	93,1	4527,8	12713,0	225,2
	900	2483,6	6972,6	95,8	4790,1	13449,2	231,7
	950	2619,6	7354,3	98,5	5052,3	14185,4	238,1
	1015	2796,3	7850,5	101,8	5393,2	15142,6	246,1

CONTINUATION - Series 851: Blowing-off rates at 10% above set pressure

Nominal diameter DN		25			32		
		I	II	III	I	II	III
Set pressure psi(g)							
Air I	15	254,5	714,7	51,0	441,8	1240,4	88,5
	30	371,3	1042,5	69,1	644,4	1809,3	119,9
	40	456,9	1282,9	79,8	793,0	2226,6	138,4
SCFM	50	542,6	1523,4	89,2	941,6	2643,8	154,8
	60	628,2	1763,8	97,7	1090,2	3061,1	169,5
	70	713,8	2004,2	105,5	1238,8	3478,3	183,1
Steam II	80	799,4	2244,6	112,8	1387,4	3895,6	195,8
	90	885,1	2485,0	119,6	1536,1	4312,8	207,6
	100	970,7	2725,4	126,1	1684,7	4730,1	218,9
PPH	110	1056,3	2965,9	132,3	1833,3	5147,3	229,5
	120	1141,9	3206,3	138,1	1981,9	5564,6	239,7
	130	1227,6	3446,7	143,8	2130,5	5981,8	249,5
Water III	140	1313,2	3687,1	149,2	2279,1	6399,0	259,0
	150	1398,8	3927,5	154,4	2427,7	6816,3	268,0
	160	1484,5	4167,9	159,5	2576,3	7233,5	276,8
GPM	170	1570,1	4408,4	164,4	2724,9	7650,8	285,4
	180	1655,7	4648,8	169,2	2873,5	8068,0	293,6
	190	1741,3	4889,2	173,8	3022,1	8485,3	301,7
	200	1827,0	5129,6	178,3	3170,7	8902,5	309,5
	210	1912,6	5370,0	182,7	3319,3	9319,8	317,2
	220	1998,2	5610,4	187,0	3467,9	9737,0	324,6
	230	2083,8	5850,9	191,2	3616,5	10154,3	331,9
	240	2169,5	6091,3	195,4	3765,1	10571,5	339,1
	250	2255,1	6331,7	199,4	3913,8	10988,8	346,0
	260	2340,7	6572,1	203,3	4062,4	11406,0	352,9
	270	2426,3	6812,5	207,2	4211,0	11823,3	359,6
	280	2512,0	7052,9	211,0	4359,6	12240,5	366,2
	290	2597,6	7293,3	214,8	4508,2	12657,8	372,7
	300	2683,2	7533,8	218,4	4656,8	13075,0	379,1
	320	2854,5	8014,6	225,6	4954,0	13909,5	391,5
	340	3025,7	8495,4	232,5	5251,2	14744,0	403,6
	360	3197,0	8976,3	239,3	5548,4	15578,5	415,3
	380	3368,2	9457,1	245,8	5845,6	16413,0	426,6
	400	3539,5	9937,9	252,2	6142,8	17247,5	437,7
	420	3710,7	10418,8	258,4	6440,1	18082,0	448,5
	440	3882,0	10899,6	264,5	6737,3	18916,5	459,1
	460	4053,2	11380,4	270,5	7034,5	19750,9	469,4
	480	4224,5	11861,3	276,3	7331,7	20585,4	479,5
	500	4395,8	12342,1	282,0	7628,9	21419,9	489,4
	550	4823,9	13544,2	295,7	8371,9	23506,2	513,3
	600	5252,0	14746,2	308,9	9115,0	25592,4	536,1
	650	5680,1	15948,3	321,5	9858,0	27678,6	558,0
	700	6108,3	17150,4	333,6	10601,0	29764,9	579,0
	750	6536,4	18352,5	345,4	11344,1	31851,1	599,4
	800	6964,5	19554,6	356,7	12087,1	33937,3	619,0
	850	7392,7	20756,6	367,7	12830,1	36023,6	638,1
	900	7820,8	21958,7	378,3	13573,2	38109,8	656,6
	950	8248,9	23160,8	388,7	14316,2	40196,0	674,6
	1015	8805,5	24723,5	401,8	15282,1	42908,1	697,3

→ Series 852



■ SUITABLE FOR

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

■ EXAMPLES OF USE

For the protection of:

- pressure tanks and -systems for neutral / non-neutral vapours, gases and liquids
- steam boilers and steam plants
- bulk transport vehicles for liquid, granular and dusty goods¹

Please observe plant-specific regulations and use of appropriate valve version and sealing material.

- pressure booster plants (water/air-side)
- fire-fighting equipment
- industrial- and commercial boiler plants
- shipbuilding industry and marine equipment
- pump protection

Safety valves are set and sealed at the factory.



■ MATERIAL



■ SPECIFICATION



DN 40 and DN 50 – 60°C to + 225°C
depending on version

0,5 – 25 bar

■ APPROVALS

TÜV-Type test approval 2007	D/G, F, F/K/S ¹
EC type examination	S/G, L, F/K/S ¹
KGS	G
TR ZU 032/2013 - TR ZU 010/2011	D/G (S/G), F (L), F/K/S ¹
Requirements	
AD 2000 Data sheet A2 TRD 421 TRB 801 No. 22 and No. 23 ¹	DIN EN ISO 4126-1 PED 2014/68/EU KGS AA 319

Classification society

Germanischer Lloyd	GL
Lloyd's Register EMEA	LR EMEA
American Bureau of Shipping	ABS
Det Norske Veritas	DNV
Bureau Veritas	BV
Russian Maritime Register of Shipping	RS

■ MATERIALS

Component	Material	DIN EN	ASME
Inlet body	Gunmetal	CC499K	CC499K
Outlet body	Gunmetal	CC499K	CC499K
Internal parts	Stainless steel	1.4404	316 L
Spring	Stainless steel	1.4310	302
Bellows (optional)	Stainless steel	1.4571	316 Ti

¹only for versions with bellows

Series 852 ■ VALVE VERSION

s	non-gastight version of spring housing	for neutral media without counter pressure.
b	with bellows	for neutral and non-neutral media and/or counter pressure up to 4 bar. Spring, moving parts and the environment are protected from being affected by the medium.
t	gastight version of spring housing	for neutral and non-neutral media without counter pressure. The environment is protected from being affected by the medium.
tb	gastight version with bellows	for neutral and non-neutral an particularly for flammable, toxic and environmentally hazardous media and/or counter pressure up to 4 bar. Spring, moving parts and the environment are protected from being affected by the medium. Double gastight.

■ MEDIUM

G	gaseous	Air, vapours, gases and - depending on safety valve version and seal - also for steam
F	liquid	The temperature of the medium under atmospheric pressure must not reach boiling point
GF	gaseous and liquid	Air, vapours, gases, steam and liquids

■ TYPE OF LIFTING MECHANISM

L	Standard with lifting lever
O	without lifting device

■ AVAILABLE NOMINAL DIAMETERS AND CONNECTION SIZES

Nominal diameter DN		40	50
Inlet		40	50
Outlet	65	■	
	80		■

■ CONNECTION TYPE INLET / OUTLET FLANGE CONNECTIONS

FL / FL	Standard	Flange connection / flange connection	DIN EN 1092 / DIN EN 1092
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■ SEALS

NBR	Nitrile rubber	Elastomere moulded seal with metallic support	-30°C to +130°C
EPDM	Ethylene propylene diene	Elastomere moulded seal with metallic support	-40°C to +170°C
FKM	Fluorocarbon	Elastomere moulded seal with metallic support	-20°C to +200°C
PTFE	Polytetrafluoroethylene	Flat seal	-60°C to +225°C
Against surcharge			
FFKM	Perfluorinated rubber	Elastomere moulded seal with metallic support	-10°C to +225°C
MD	Metal-to-metal sealing	Flat seal	-60°C to +225°C

■ OPTIONS

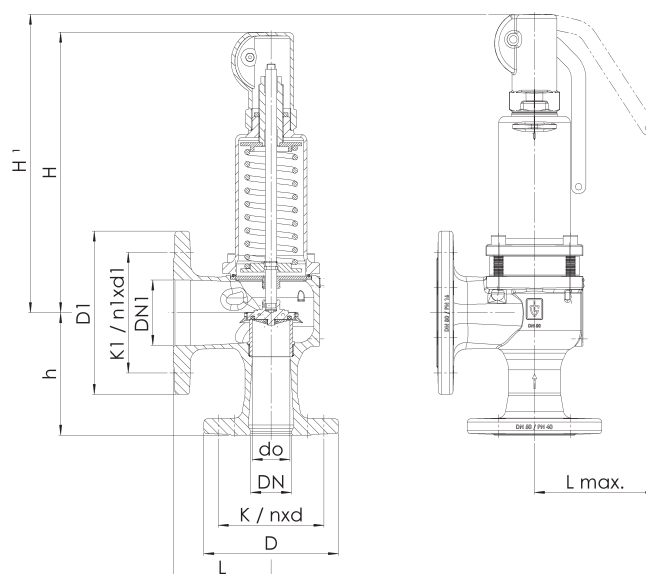
Special versions on request.	
Against surcharge	
Connection for condensate pipe G 1/4" with sealing plug	Order description: AKL

■ NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

Series 852: Connection, installation dimensions, ranges of adjustment			
Nominal diameter	DN	40	50
Connection DIN EN 1092	DN / PN	40 / 40	50 / 40
Outlet DIN EN 1092	DN / PN	65 / 16	80 / 16
Installation dimensions in mm	L	115	120
	Lmax	150	150
	H / H ¹	345 / 362	345 / 362
	h	140	150
	D	150	165
	D1	185	200
	K / nxd	110 / 4x18	125 / 4x18
Weight	K1 / n1xd1	145 / 4x18	160 / 8x18
	do	37	46
	kg / kg ¹	17 / 18	19 / 20
Range of adjustment	bar	0,5-25	0,5-25

¹Details for the version with bellows

■ MAIN DIMENSIONS, INSTALLATION DIMENSIONS



■ INDIVIDUAL SELECTION / VALVE CONFIGURATION

Series	Valve version	Medium	Lifting device	Nominal diameter DN	Connection type		Connection size		Seal	Options	Set pressure	Quantity
					Inlet	Outlet	Inlet	Outlet				
852	s	G	L	50	FL	FL	50	80	PTFE	AKL	7,5	2
852	b	F	L	40	FL	FL	40	65	EPDM		5,0	4
852					FL	FL						
852					FL	FL						

In this table you can configure a valve according to your individual requirements (similar to the [example](#) shown, which should be deleted before you enter your own data). Please complete the table by hand using the abbreviations in this datasheet and then fax it to: +49(0)7141.4889488
Please do not forget to add your personal data so that our sales team can contact you.

Name _____

First Name _____

Company _____

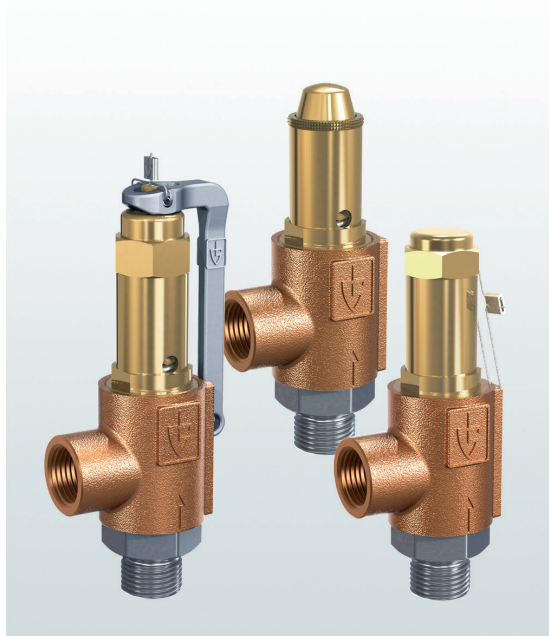
Telephone _____

E-Mail _____

■ CAPACITY TABLE

Series 852: Blowing-off rates at 10% above set pressure							
Nominal diameter DN		40			50		
Set pressure bar		I	II	III	I	II	III
Air I Nm³/h	0,5	667	503	23	995	750	36
	1	983	785	32	1472	1176	49
	1,5	1299	1032	39	1948	1547	60
Steam II kg/h	2	1615	1273	45	2461	1939	69
	2,5	1926	1510	50	2926	2294	77
	3	2208	1726	55	3404	2661	85
Water III m³/h	3,5	2491	1937	59	3839	2985	91
	4	2773	2151	63	4275	3315	98
	4,5	3056	2364	67	4710	3643	104
	5	3338	2575	71	5146	3970	109
	5,5	3621	2789	74	5581	4299	114
	6	3903	3003	77	6016	4629	120
	6,5	4186	3212	81	6452	4951	124
	7	4468	3420	84	6887	5272	129
	7,5	4751	3632	86	7323	5598	134
	8	5033	3843	89	7758	5923	138
	8,5	5316	4053	92	8194	6247	142
	9	5598	4263	95	8629	6570	146
	9,5	5881	4472	97	9064	6893	150
	10	6163	4681	100	9500	7215	154
	11	6728	5097	105	10371	7856	162
	12	7293	5511	109	11241	8494	169
	13	7858	5928	114	12112	9138	176
	14	8423	6348	118	12983	9784	183
	15	8988	6763	122	13854	10425	189
	16	9553	7181	126	14725	11069	195
	17	10118	7586	130	15595	11693	201
	18	10683	8002	134	16466	12334	207
	19	11248	8416	138	17337	12973	213
	20	11813	8835	141	18208	13617	218
	21	12378	9253	145	19079	14261	224
	22	12943	9670	148	19949	14905	229
	23	13508	10087	151	20820	15547	234
	24	14073	10503	155	21691	16190	239
	25	14638	10920	158	22562	16831	244

→ Series 861



■ MATERIAL



■ SPECIFICATION



1/4" – 1/2"



– 60°C to + 225°C
depending on version



0,5 – 50 bar

■ SUITABLE FOR

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

■ EXAMPLES OF USE

For the protection of:

- pressure tanks and -systems for neutral / non-neutral vapours, gases and liquids

- steam boilers and steam plants

Please observe plant-specific regulations and use of appropriate valve version and sealing material.

- mechanical engineering
- pump protection
- process equipment construction and medical technology (sterilizers, autoclaves)
- shipbuilding industry and marine equipment
- pressure booster plants water-/ air-side
- steam- and industrial boiler plants

Safety valves are set and sealed at the factory.

■ APPROVALS

TÜV-Type test approval 2061	D/G, F
EC type examination	S/G, L
TSG ZF001-2006	D/G (S/G), F (L)
TR ZU 032/2013 - TR ZU 010/2011	D/G (S/G), F (L)
Requirements	
AD 2000 Data sheet A2	PED 2014/68/EU
TRD 421	KGS AA 319
DIN EN ISO 4126-1	

Classification society

DNVGL	DNVGL
Lloyd's Register EMEA	LR EMEA
American Bureau of Shipping	ABS
Bureau Veritas	BV
Russian Maritime Register of Shipping	RS
Registro Italiano Navale	RINA

■ MATERIALS

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

Series 861 ■ VALVE VERSION

s	Standard, non-gastight version of the spring housing	for neutral media without counter pressure, not for medium in combination GF
t	gastight version of spring housing	for neutral and non-neutral media, not counter pressure compensated. The environment is protected from being affected by the medium.

■ MEDIUM

G	gaseous	Air, vapours, gases and steam
F	liquid	The temperature of the medium under atmospheric pressure must not reach boiling point
GF	gaseous and liquid	Air, vapours, gases, steam and liquids

■ TYPE OF LIFTING MECHANISM

K	Standard with twist-type lifting mechanism, non-gastight version	
L	Lifting lever, non-gastight version	
O	without lifting device, standard for gastight version	

■ AVAILABLE NOMINAL DIAMETERS AND CONNECTION SIZES

Nominal diameter DN		8	10	15
Inlet		1/4" (8)	3/8" (10)	1/2" (15)
Outlet	1/2" (15)	■	■	■

■ 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
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■ SEALS

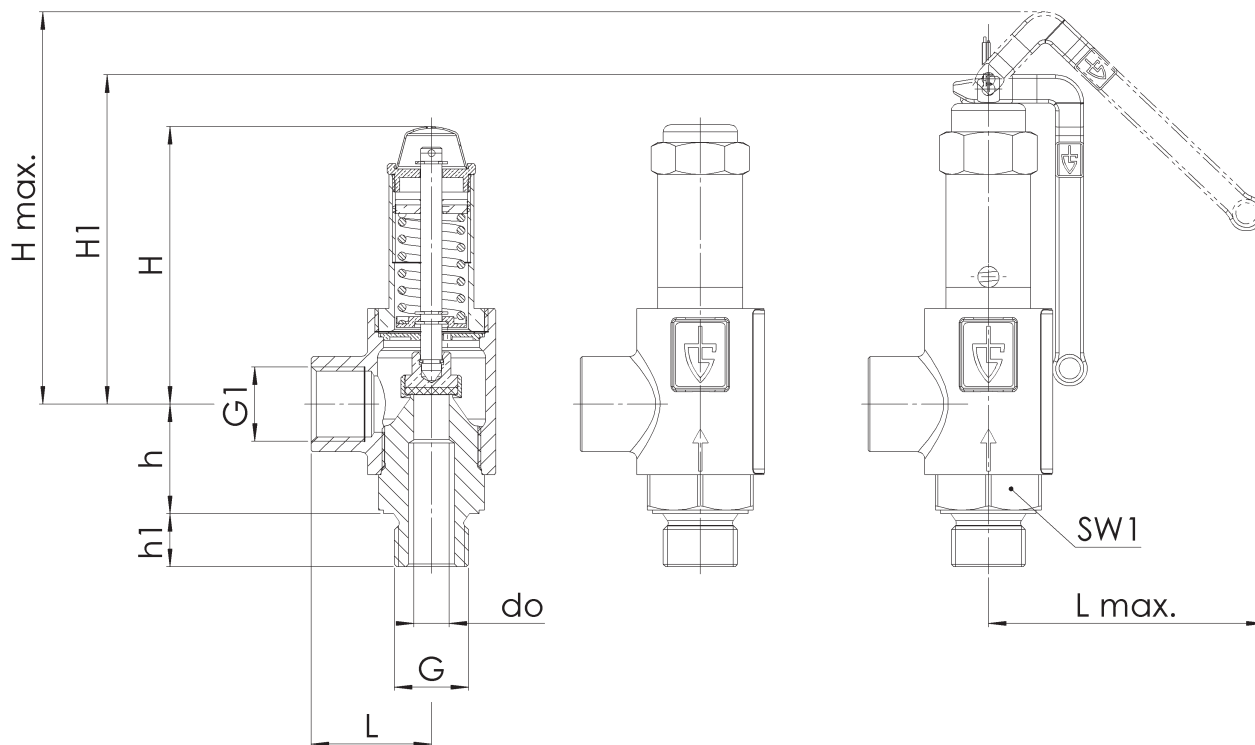
PTFE	Polytetrafluoroethylene	Flat seal up to 25 bar	−60°C to +225°C
PTFE+Kohle	Polytetrafluoroethylene + carbon	Flat seal from 25,1 bar	−60°C to +225°C

■ NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

Series 861: Connection, installation dimensions, ranges of adjustment					
Nominal diameter	DN	8	10	15	
Connection DIN EN ISO 228	G	1/4" (8)	3/8" (10)	1/2" (15)	1/2" (15)
Outlet DIN EN ISO 228	G1	1/2" (15)	1/2" (15)	1/2" (15)	1/2" (15)
Installation dimensions in mm	L	34	34	34	34
	Lmax	78	78	78	78
	H	79	79	79	133
	H1	93	93	93	150
	Hmax	111	111	111	168
	h	31	31	31	31
	h1	12	12	15	15
	SW	30	30	30	30
	do	6	8	10	10
Coefficients of flow ISO 4126-1	$\alpha_w / Kdr (F)$	0,5	0,44	0,47	0,47
Coefficients of flow ISO 4126-1	$\alpha_w / Kdr (D/G)^1)$	0,68	0,64	0,71	0,71
Weight	kg	0,5	0,5	0,6	1
Range of adjustment	bar	0,5-50	0,5-50	0,5-30	0,5-50

¹Coefficients of flow for blow-off pressures >3,0 bar. For lower pressures refer to values in the capacity table.

■ MAIN DIMENSIONS, INSTALLATION DIMENSIONS



Series	Valve version	Medium	Lifting device	Nominal diameter DN	Connection type		Connection size		Seal	Options	Set pressure	Quantity
					Inlet	Outlet	Inlet	Outlet				
861	<i>t</i>	<i>G</i>	<i>O</i>	<i>8</i>	m	f	<i>8</i>	15	<i>PTFE</i>		<i>12,3</i>	<i>2</i>
861					m	f		15				
861					m	f		15				
861					m	f		15				

■ PROPERTIES

GOX	Especially for gaseous O2 applications by employment of specific materials including oil- and grease free production process	☐	P03	Galvanically nickel-plated finish	☐
P01	Oil- and grease-free production	☐	P04	Chrome-plated finish	☐
P02	Chemically nickel-plated finish	☐			☐

■ CERTIFICATES / APPROVALS

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

■ ADMISSIONS / ACCREDITATIONS

AA1	EC Type examination acc. to Directive 2014/68/EU	☐	AK1	DNV-GL (DNVGL) type approval	☐
AA2	TÜV component test acc. to VdTÜV specification sheet SV 100	☐	AK2	Lloyd's Register (LR) type approval	☐
AA4	EAC - certificate/declaration with passport for the valve and laser marking of the valve	☐	AK3	American Bureau of Shipping (ABS) type approval	☐
AA5	Manufacture License of Special Equipment People's Republic of China (ML)	☐	AK4	Bureau Veritas (BV) type approval	☐
	☐		AK5	Russian Maritime Register of Shipping (RMRS) type approval	☐
	☐		AK6	Registro Italiano Navale (RINA) type approval	☐
	☐		AL	Individual inspection by notified body inspector – (body to be indicated):	☐

■ ENQUIRY

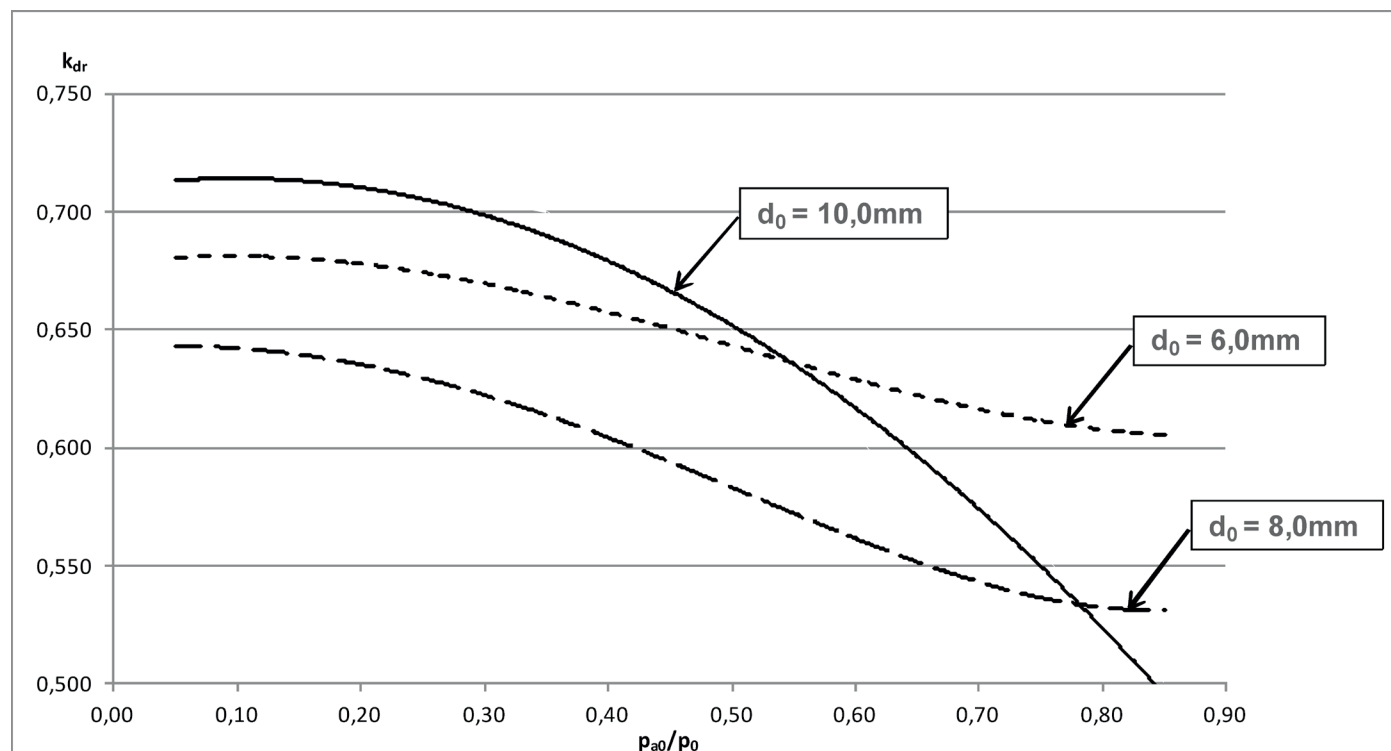
Copy and send to: order@goetze-armaturen.de.

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

■ CAPACITY TABLE

Series 861: Blowing-off rates at 10% above set pressure										
Nominal diameter DN		8 d ₀ = 6 mm			10 d ₀ = 8 mm			15 d ₀ = 10 mm		
Set pressure bar		I	II	III	I	II	III	I	II	III
Air I Nm ³ /h	0,5	18,9	15,5	0,6	29,7	24,3	0,9	49,4	40,4	1,4
	1,0	26,1	20,8	0,8	41,9	33,4	1,2	73,5	58,5	2,0
	1,5	33,8	26,7	0,9	55,3	43,8	1,4	97,5	77,2	2,4
Steam II kg/h	2,0	41,3	32,5	1,1	68,4	53,8	1,7	120,1	94,5	2,8
	2,5	48,8	38,2	1,2	81,0	63,4	1,9	141,7	110,9	3,1
	3,0	56,2	43,8	1,3	93,4	72,8	2,0	163,3	127,3	3,4
Water III m ³ /h	3,5	63,4	49,3	1,4	105,8	82,2	2,2	184,2	143,1	3,7
	4,0	70,6	54,7	1,5	118,3	91,6	2,4	205,1	158,8	3,9
	4,5	77,8	60,1	1,6	130,4	100,7	2,5	226,0	174,5	4,2
	5,0	85,1	65,5	1,7	142,4	109,7	2,6	246,9	190,2	4,4
	5,5	92,3	70,9	1,8	154,5	118,8	2,8	267,8	205,9	4,6
	6,0	99,5	76,3	1,8	166,6	127,8	2,9	288,7	221,5	4,8
	6,5	106,7	81,7	1,9	178,6	136,8	3,0	309,6	237,1	5,0
	7,0	113,9	87,1	2,0	190,7	145,8	3,1	330,5	252,7	5,2
	7,5	121,1	92,5	2,1	202,7	154,8	3,2	351,4	268,3	5,4
	8,0	128,3	97,8	2,1	214,8	163,7	3,3	372,3	283,8	5,6
	8,5	135,5	103,2	2,2	226,8	172,7	3,4	393,2	299,4	5,7
	9,0	142,8	108,6	2,3	238,9	181,7	3,5	414,1	314,9	5,9
	9,5	150,0	113,9	2,3	250,9	190,7	3,6	435,0	330,5	6,1
	10,0	157,2	119,3	2,4	263,0	199,6	3,7	455,8	346,0	6,2
	11,0	171,6	130,0	2,5	287,1	217,6	3,9	497,6	377,1	6,5
	12,0	186,0	140,7	2,6	311,2	235,5	4,1	539,4	408,1	6,8
	13,0	200,4	151,4	2,7	335,3	253,3	4,3	581,2	439,1	7,1
	14,0	214,8	162,1	2,8	359,4	271,3	4,4	623,0	470,2	7,4
	15,0	229,2	172,9	2,9	383,5	289,2	4,6	664,8	501,4	7,6
	16,0	243,6	183,5	3,0	407,6	307,1	4,7	706,6	532,3	7,9
	17,0	258,0	194,3	3,1	431,7	325,1	4,9	748,3	563,4	8,1
	18,0	272,4	205,0	3,2	455,8	343,0	5,0	790,1	594,6	8,4
	19,0	286,8	215,8	3,3	479,9	361,0	5,2	831,9	625,8	8,6
	20,0	301,2	226,5	3,4	504,0	379,0	5,3	873,7	657,0	8,8
	21,0	315,7	237,3	3,5	528,1	397,0	5,4	915,5	688,2	9,0
	22,0	330,1	248,0	3,5	552,3	415,0	5,5	957,3	719,4	9,3
	23,0	344,5	258,8	3,6	576,4	433,1	5,7	999,1	750,7	9,5
	24,0	358,9	269,6	3,7	600,5	451,2	5,8	1040,8	782,0	9,7
	25,0	373,3	280,4	3,8	624,6	469,2	5,9	1082,6	813,4	9,9
	26,0	387,7		3,9	648,7		6,0	1124,4		10,1
	27,0	402,1		3,9	672,8		6,1	1166,2		10,2
	28,0	416,5		4,0	696,9		6,3	1208,0		10,4
	29,0	430,9		4,1	721,0		6,4	1249,8		10,6
	30,0	445,3		4,1	745,1		6,5	1291,6		10,8
	32,0	474,1		4,3	793,3		6,7	1375,1		11,2
	34,0	502,9		4,4	841,5		6,9	1458,7		11,5
	36,0	531,8		4,5	889,7		7,1	1542,3		11,8
	38,0	560,6		4,7	938,0		7,3	1625,8		12,2
	40,0	589,4		4,8	986,2		7,5	1709,4		12,5
	42,0	618,2		4,9	1034,4		7,7	1793,0		12,8
	44,0	647,0		5,0	1082,6		7,8	1876,6		13,1
	46,0	675,8		5,1	1130,8		8,0	1960,1		13,4
	48,0	704,6		5,2	1179,0		8,2	2043,7		13,7
	50,0	733,5		5,3	1227,2		8,4	2127,3		13,9

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
$p_{set} \text{ bar(g)}$	$p_0 \text{ bar(a)}$
≤ 1	$p_{set} + p_{atm} + 0,1 \text{ bar}$
> 1	$p_{set} \times 1,1 + p_{atm}$

For a safety valve set at = 0,5bar(g) and blowing-off into the enviroment the blow-off pressure is determined as follows:

Set-pressure	0,5	bar(g)
+ Atmospheric pressure	1,01325	bar(a)
+ permissable overpressure	0,1	bar(g)
~ Blow-off pressure	1,61	bar(a)

Consequently:

$$\frac{p_{a0}}{p_0} = \frac{1,01325 \text{ bar(a)}}{1,61 \text{ bar(a)}} = 0,72 \quad \text{and extracted from the chart} \quad \alpha_w \text{ i.e. } K_{dr} = 0,56 \text{ at } d_0=8,0\text{mm}$$

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 $p_{atm} = 1,01325 \text{ bar(a)}$