

→ Series 451bH

451bH

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

■ SUITABLE FOR

Hot water



■ EXAMPLES OF USE

For the protection of:

- thermostatically protected closed-circuit water heating systems with flow temperatures of up to 120°C for all static heights or rated output above 350 kW according to TRD 721, DIN 4751 and DIN EN 12828.

Should the thermostatic limiting and control unit fail, the safety valve has to blow-off the total heating output of the boiler as hot water and steam.

- Closed-circuit solar heating plants according to DIN 4757-1 und 2 with flow temperatures up to 120°C for all static heights.
- district heating sub-stations, district heating building substations and domestic systems suitable for connection to a hot water district heating network according to DIN 4747-1 und AGFW 505.

- heating plants for building technology and industrial applications
- co-generation plants (CHP)
- biogas plants
- district heating transfer stations, building sub-stations
- solar plants

Safety valves are set and sealed at the factory.

■ APPROVALS

TÜV Type test approval 665 D/G/H

EU type examination D/G/H

TSG ZF001-2006 D/G/H

TR ZU 032/2013 - TR ZU 010/2011 D/G/H

Requirements

TRD 721	DIN EN 12828
AGFW 505	DIN EN ISO 4126-1
DIN 4751 Part 2	PED 2014/68/EU
DIN 4747 Part 1	SWKI HE301-01
DIN 4757 Part 1 and Part 2	

Classification society

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



CE 0035 EAC

■ MATERIAL



■ SPECIFICATION



1/2" – 2"



– 10°C to + 120°C



0,5 – 25 bar

■ 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	Stainless steel	1.4571	316 Ti

Series 451bH ■ VALVE VERSION

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.
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■ MEDIUM

H	Hot water	Flow temperature ≤ 120°C in water heating systems
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■ TYPE OF LIFTING MECHANISM

K	Standard with twist-type lifting mechanism
L	Lifting lever

■ 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
Against surcharge			
BSP-Tm / f		Male thread BSP-T / Female thread BSP-P	DIN EN 10226, ISO 7-1 / DIN EN ISO 228-1
Further connection types available on request.			

■ SEALS

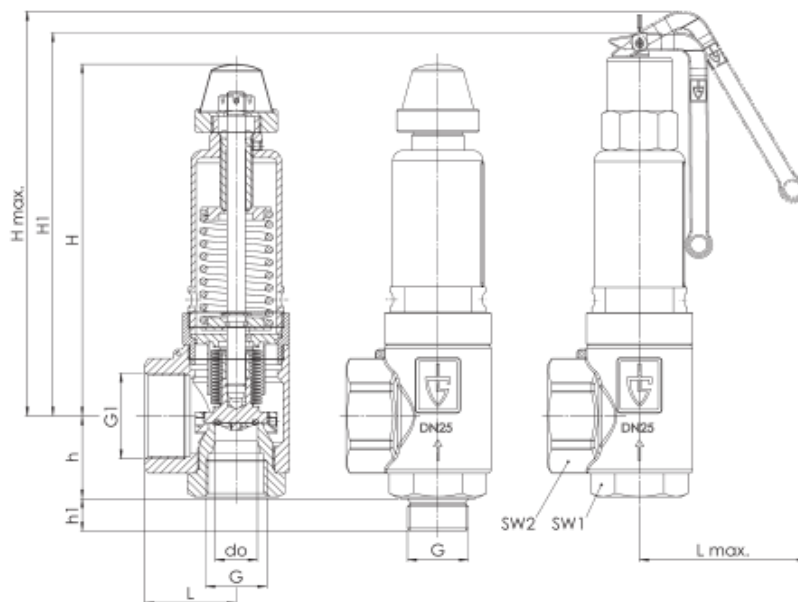
EPDM	Ethylene propylene diene	Elastomere moulded seal with metallic support up to 25 bar	-10°C to +120°C
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NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

Series 451bH: 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" (25)	1 1/4" (32)	1 1/2" (40)	2" (50)	2" (50)	2" (50)
Installation dimensions in mm	L	40	43	50	61	61	61
	Lmax	65	91	92	92	92	92
	H	77	152	196	263	263	263
	H1	91	174	210	286	286	286
	Hmax	103	184	225	299	299	299
	h	30	39	45	55	69	74
	h1	15	16	18	20	23	25
	SW1	30	36	46	55	55	70
	SW2	40	50	58	70	70	70
	do	15,8	18	23	30,3	30,3	30,3
Weight	kg	0,4	1,0	1,8	4,0	4,0	4,0
Range of adjustment	bar	1-25	0,5-25	0,5-25	0,5-25	0,5-25	0,5-25

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				
451	b	H	K	25	f	f	25	40	EPDM		5,5	5
451	b	H	L	32	f	f	40	50	EPDM		4,0	3
451	b	H							EPDM			
451	b	H							EPDM			

■ CAPACITY TABLE ACC. TO ISO 4126-1 / AD2000 A2

Series 451bH: Blowing-off rates at 10% above set pressure									
Nominal diameter DN		15		20		25		32	
Set pressure bar		I	II	I	II	I	II	I	II
Heating I kW	0,5	-	-	62	96	96	150	171	266
	1	44	70	95	151	146	232	258	411
	1,5	56	90	124	200	192	309	336	542
Steam II kg/h	2	68	111	152	249	236	385	401	656
	2,5	79	129	182	300	277	457	481	793
	3	89	148	210	349	320	532	555	924
	3,5	99	166	234	392	357	597	619	1036
	4	109	184	258	435	393	663	682	1151
	4,5	119	203	282	478	430	729	746	1265
	5	129	221	305	521	465	794	808	1378
	5,5	139	239	329	564	501	860	870	1492
	6	149	257	352	608	537	926	931	1607
	6,5	159	275	375	650	571	990	992	1719
	7	168	293	397	692	605	1054	1051	1830
	7,5	178	311	420	735	640	1119	1111	1943
	8	187	329	442	777	674	1184	1170	2056
	8,5	197	347	465	820	708	1249	1229	2168
	9	206	365	487	862	742	1314	1287	2281
	9,5	215	383	508	905	775	1379	1345	2392
	10	225	401	530	947	808	1443	1402	2504
	11	243	437	573	1031	873	1571	1516	2727
	12	261	472	615	1115	938	1699	1628	2948
	13	279	508	658	1199	1002	1827	1739	3172
	14	296	544	699	1284	1066	1957	1849	3396
	15	314	580	740	1368	1127	2085	1957	3618
	16	331	616	781	1453	1190	2214	2065	3842
	17	348	650	820	1535	1250	2339	2169	4059
	18	364	686	860	1619	1311	2467	2274	4281
	19	381	721	899	1703	1370	2594	2378	4503
	20	398	757	938	1787	1430	2723	2482	4726
	21	414	793	978	1872	1490	2852	2586	4950
	22	431	829	1017	1956	1549	2981	2689	5173
	23	447	865	1055	2040	1608	3109	2791	5396
	24	463	900	1093	2125	1666	3238	2891	5619
	25	479	936	1131	2209	1723	3366	2990	5842

In order to achieve the highest possible heating output, up to three valves per system can be installed.

To protect indirectly heated heat generators in accordance with DIN 4751 Part 2 the safety valves have to be rated for the flow rate of the expansion water.
For the valid blow-off capacities in m³/h water see capacity chart 451bHF on datasheet 9.8