ARMATUREN
GOETZE

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→ Overview

■ COMPANY

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→ Company

INDIVIDUALITY FOR MORE SAFETY

Our customers know: Goetze KG stands for customer commitment, prompt service, flexibility and innovation, even for the smallest order. Small and medium sized companies as well as multinational enterprises appreciate our expert knowledge and the reliability of our products.

Our success is based on the high quality standard of our products, the close communication with our customers and our dedication to meeting the demands of the market.

Our qualified staff and our efficient sales partners in Germany and abroad are always pleased to advise and support you, to make sure that already when planning your individual project the highest safety standards can be assured.

However, the best service would not be effective without our broad knowledge of all the single products and the product range.

Whether safety valves for industrial applications or fittings, pressure-reducing valves or our wide range of accessories – we make sure that the demands of innovative technology and modern design are met – as well as the latest national and international standards and specifications. For this we frequently undergo quality checks and hold all important certificates.

Planning, design and production of our products assure this high quality and guarantee the safety of all your individual applications.

Together with you we wish to work for our common market success, with dedication, creativity, commitment and with our long experience. Now and in the future.

THE BASIS FOR OVER 65 YEARS INTERNATIONAL SUCCESS

- Safety is highest priority
- Product families cover all industrial applications
- Every lot size is available
- Short delivery times
- Individual advice
- Flexible structures
- Individual marking possibilities

DEVELOPMENT Flexible structures mean that the route to a customized product is short. With our technical expertise we realize new and enhanced designs in the shortest time possible.

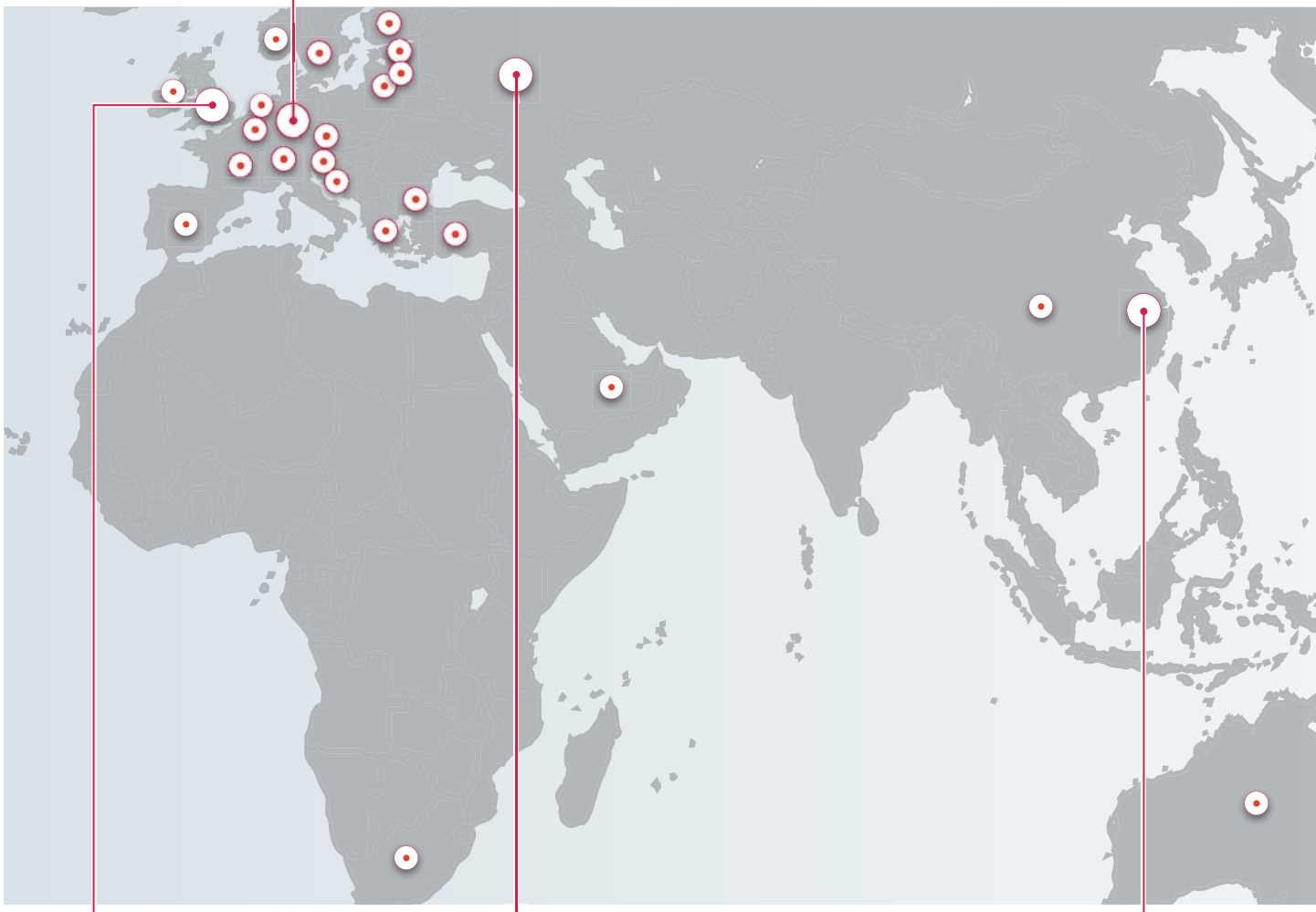
HIGH TECH Intelligent minds and skilled hands are the one thing – however for the manufacturing process at Goetze KG nothing can beat the highest level of precision achieved through the use of high-tech production equipment: Computer controlled CNC machines.

TESTING You can rely on this: Every single valve is tested in our factory. This is not only a random spot check: Each valve is subjected to an ISO-certifed quality control test, before it is allowed to leave the factory.

→ Goetze KG International

Branch Offices and Distributors Worldwide

The company Goetze KG Armaturen is close at hand – worldwide. A competent partner is available wherever you are. Please contact your nearest distributor.



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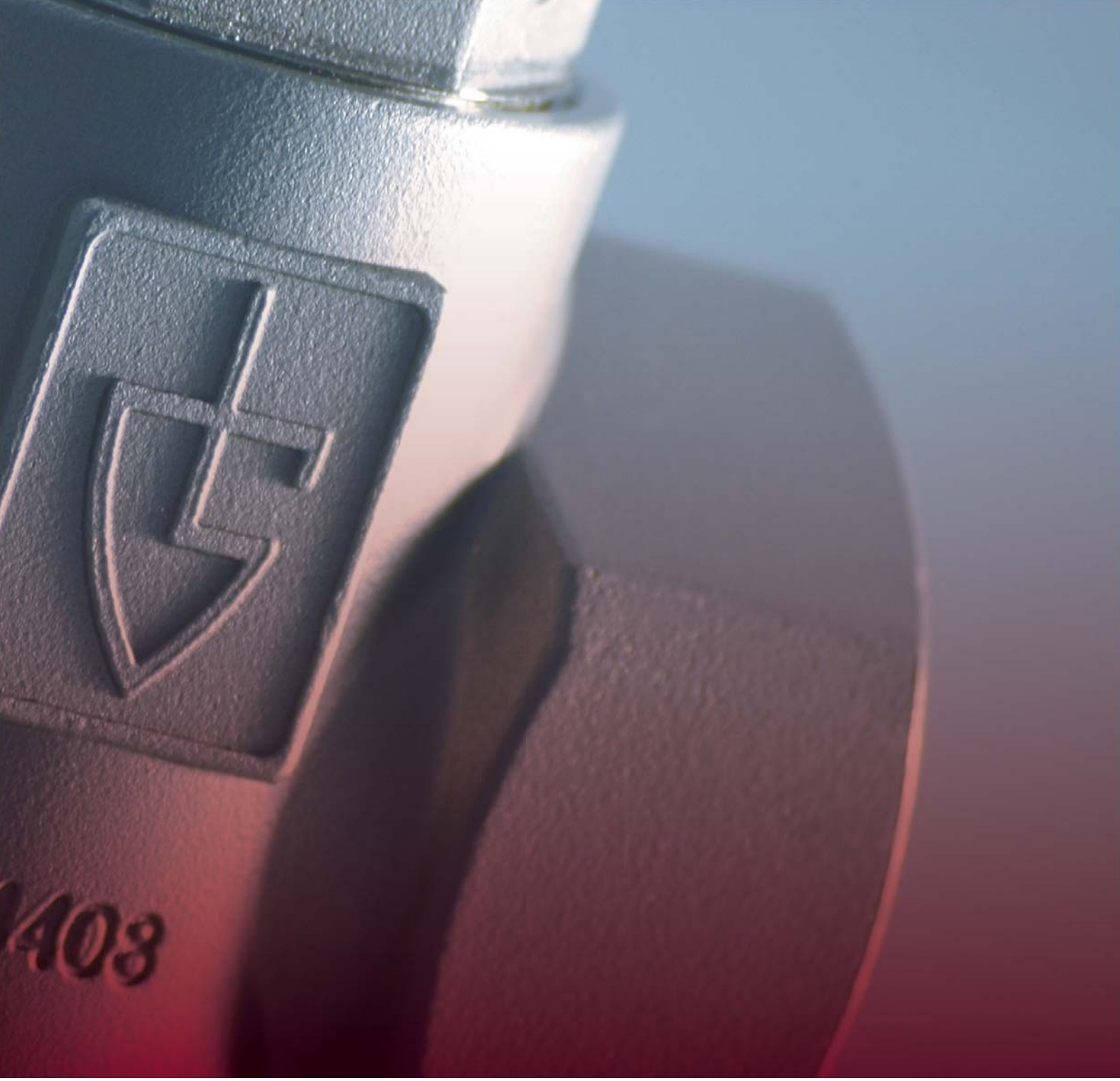

ARMATUREN GOETZE

→ Overview

PRODUCT INFORMATION AND ORDERING

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Product key	This page shows how our valve descriptions are made-up	2.6
Checklist for enquiries	The Checklist for Enquiries helps you to find the suitable valve	2.7
Ordering information	Find all important order information for your valve	2.8
General terms and conditions	General terms and conditions of the Goetze KG	2.9

→ Definitions

SAFETY VALVES

Safety valve
A safety valve is a valve that automatically enables a quantity of medium to discharge without the assistance of any other energy than the medium itself, thus providing protection against a predetermined excessive pressure, and is designed in such a way that it closes again to prevent the further discharge of the medium once normal operating pressure conditions are restored.

Direct-loaded safety valve
Safety valve in which the load resulting from the medium pressure under the valve disk is only counteracted by a direct mechanical load, such as a weight, a lever with weight or a spring, for example.

Standard safety valve
A standard safety valve is a fitting which, af ter the response (beginning of lift), attains the lift required to release the mass flow within a pressure increase of max. 10%. There are no further requirements put to the opening characteristics.

Full-lift safety valve
A full-lift safety valve is a fitting which, after the response (beginning of lift), abruptly opens to the lift stopper within a pressure increase of 5%. The portion of the lift up to the abrupt opening (proportional range) is not to be more than 20% of the entire lift.

Proportional safety valve
A proportional safety valve is a fitting which opens almost continuously as a function of the increase in pressure. In this respect, there is no abrupt opening without an increase in pressure over a range of more than 10% of the lift. After the response (beginning of lift) these safety valves reach the lift required for discharging the mass flow within a maximum pressure increase of 10%.

Diaphragm safety valve
A diaphragm safety valve is a direct-loaded safety valve in which the sliding and rotary parts as well as springs are protected against the impact of the medium by a diaphragm.

Bellows safety valve
A bellows safety valve is a direct-loaded safety valve in which sliding parts (partially or completely) as well as springs are protected against the impact of the medium by bellows. The bellows can be designed in such a way that backpressure influences are compensated to a large extent.

MISCELLANEOUS VALVES

Pressure reducer
A pressure reducer (or pressure reducing valve) is a fitting for installation in a pipe system, which makes sure that a defined outlet pressure is not exceeded at the outlet side in spite of different pressures at the inlet side (inlet pressure).

Overflow/control valve
An overflow/control valve is a valve with proportional control characteristics for pressure maintenance, pressure control and for protecting pumps or plant systems against excessive pressures.

LIFTING DEVICE

Twist-type lifting mechanism
By twisting the knurled nut anti-clockwise the valve spindle and the connected valve disc get lifted from the valve seat. The valve can be tested for correct functioning and operability.

Lifting lever
The valve gets tested by opening the valve. The valve cone gets lifted from the valve seat by pulling the lifting lever.

SEALS

Nitrile Butadiene Rubber (NBR)
Sealing material with good technological properties and a wide range of applications.

Good non-swelling properties in aliphatic hydrocarbons like propane or butan.

Ethylene-Propylene-Diene-Monomere Rubber (EPDM + EPDM Spezial)
Elastomere seals made of EPDM and peroxied cross-linked EPDM have a very good resistance against ozone, aging and wheatering. Good non-swelling properties in hot water and steam, suds and acids and chemical bases.

Fluorcarbon-polymere (FPM)
Elastomere made of FKM are highly resistant at high temperatures, have chemical stability and low permeability to gas.

Good non-swelling properties for mineral oils, greases, fuels and aromatic hydrocarbons.

Perfluorelastomeres (FFPM)
Perfluorelastomeres have the advantage of excellent chemical resitance and a large temperature range. FFKM-seals offer the highest chemical resistance of all elastomeres.

Polytetrafluorethylene (PTFE)
Non-elastic, physiologically harmless Polymere with excellent properties. Thermic application, an extremely high chemical resistanceand a repellent, non-adhesive surface.

Polytetrafluorethylen Compound (PTFE Cpd)
PTFE and TFM-PTFE can be adapted to the various applications by the help of filling materials like glass, carbon and graphite. By adding carbon, the compressive strength can be increased.

PRESSURE

Working pressure/operating pressure
The working pressure / operating pressure is the prevailing overpressure in the protected system under normal operating conditions, e.g. the required overpressure for carrying out a process step.

Response pressure
The response pressure is the set pressure at which a safety valve starts to open under operating conditions.

Set pressure
The set pressure is the overpressure at which a safety valve starts to audibly open under test bench conditions (atmospheric back-pressure).

Opening pressure/blow-off pressure
The opening pressure / blow-off pressure is the overpressure at which the safety valve reaches the lift required for discharging the mass flow; it equals the response pressure plus the opening pressure difference.

Closing pressure
The closing pressure is the static pressure on the inlet side at which the valve disk comes into contact with the seat again or at zero lift.

GENERAL NOTES

Information relating to the placing of an order
When ordering a safety fitting please make sure to include the following details:

- Article number
- Size of connection
- Set pressure
- Flow medium
- Temperature of medium
- Required blow-off capacity

Please observe our attached general terms of sales!

ATEX – EXPLOSIONS PREVENTION

European Directive 2014/34/EU for "Equipment- and Protective Systems intended for use in potentially explosive atmospheres": The directive is to be applied to products which are to be used in a potentially explosive area or in connection with a potentially explosive area.

A potentially explosive area or potentially explosive atmosphere is a combination of

I) a flammable media in the form of gasses, vapours, haze or dusts

II) and air

III) under atmospheric conditions,

IV) in which after ignition has taken place, the combustion process is transferred to the whole of the unburned mixture.

Goetze valves are in principle suitable for use in Exzones and for this purpose have been subjected to a conformity valuation process according to Directive 94/9/EC. Within the scope of these examinations an analysis of the danger as a potential source of ignition according to EN 13463-1 was carried- out with the following results:

- The valves do not have a potential source of ignition and therefore do not fall in the scope of application of ATEX.
- Provided that the individual operating conditions in the Ex-zone are taken into account, the valves may be used in specific applications.

A report and certificate from the TÜV SÜD about the special examination of our valves according to European test specifications exists.

According to the zone the equipment is to be used in, then they must be fitted with corresponding protective mechanisms.

For each category and zone within equipment group II, specially suitable safety valves, overflow valves and pressure reducing valves from our product range are available. Please contact our technical sales (see page 1.3) for applications in potentially explosive areas.

MARKING OF APPROVED SAFETY VALVES

All of our approved safety valves which have been tested by the TÜV Inspection Authority and in accordance with the European Pressure Equipment Directive are marked on the bonnet or on an affixed type plate with the full TÜV approval number and the CE mark including the identification number of the notified body.

TÜV SV xx-xxx xx D xx x

D or D/G or H or D/G/H or W or F or F/K/S or SOL

TÜV symbol

Safety valve

Year of the component test

Component test number

With code letters
D, D/G, D/G/H and F, F/K/S
smallest diameter d_0
in front of the valve seat in mm
with code letter H: no information
with code letterW: connection size in mm

Code letters:

G	suitable for gasses
D	suitable for steam
H	suitable for heating systems according to DIN 4751 and DIN EN 12828
D/G/H	suitable for heating systems according to DIN 4751 and DIN EN 12828
W	suitable for water heating systems according to DIN 4753
F	suitable for liquids
F/K/S	suitable for stationary pressure vessels for granular or powdery materials and for vehicle containers for liquid, granular or powdery materials
SOL	designed for the blowing-off of water and water mixtures from closed, intrinsically safe solar heating systems

coefficient of discharge α_w (K_{dr})
or discharge mass flow rate
or with code letter H and SOL: kW
with code letter W: kW (for valve sizes > DN 25)

Set pressure p in bar

CE Mark with notified body: CE 0036

DIMENSIONING OF PRESSURE REDUCING VALVES WITH K_{VS} VALUE

The application and dimensioning of pressure reducing valves in building technology is governed according to DIN EN 1567, and the correct valve size is selected using the diagrams on the corresponding data sheets for the relevant pressure reducing valve (e.g. 681 or 682).

Due to the various operational requirements in the industry, such as pressure, temperature and operating medium, the method of calculation using the valve-specific K_{vs} value according to DIN EN 60534-2-3 is common and widely used for industrial applications. The K_{vs} value enables the maximum possible flow volume for a valve to be calculated. In non-metric unit systems (SI units), the C_{vs} value is often mentioned, which is equivalent to the K_{vs} value.

In most applications, it is sufficient to perform valve dimensioning with a small amount of effort, as described in DIN EN 60534-2-3. The simplified calculation method shown in this chapter provides adequate results for this.

DEFINITION OF THE K_V VALUE (C_V VALUE)

The K_V value (C_V value) refers to a water flow volume in m3/h (U.S. gallons/min) with a temperature between 5°C and 40°C (40°F to 100°F) and with differential pressure Δp of 1 bar (1psi) between the inlet and outlet of the fitting for a determined valve position. The relationship between the K_V and C_V values is $K_V = 0.865 \bullet C_V$.

For the max. position of the valve (H=100%), the K_V value is referred to as the K_{VS} value (C_{VS} value) of the fitting.

DIMENSIONING OF THE PRESSURE REDUCING VALVE

Pressure reducing valves that are dimensioned to be too large work with a very low valve load and should thus not be overdimensioned.

Decisive factors for economical dimensioning of the pressure-reducing valve include:

- the required flow volume Q in m^3/h
- the total pressure drop between the fitting inlet and the appliance as pressure loss Δp in bar
- the max. flow velocity in the following pipes in m/s

The required flow volume Q (m^3/h) is available in most cases and the quantity needed at the appliance is based on the respective application.

Pressure loss Δp results, depending on the application, from the total length of the pipework, the number of pipe fittings and the nominal diameter of the pipes. When selecting the correct nominal diameter, the max. permitted flow velocity is also to be taken into account, besides the pressure loss, for reasons of noise reduction.

As the nominal diameter increases, the flow velocity in the pipe decreases. The total pressure loss Δp in the pipe thus becomes smaller.

Below is a list of the recommended maximum flow velocities in pipes, which should not be exceeded:

REFERENCE VALUES FOR FLOW VELOCITIES

	Flow velocity [m/s]
Liquids (water and similar substances)	
Suction pipes from pumps	0.5...1.0
Pressure pipes from pumps	1.5...3.0
Water mains	1.0...2.0
Cooling water pressure pipes	1.0...3.0
Cooling water suction pipes	0.5...1.0
Other liquids	
Highly viscose liquids	1
Oil pipelines	1.5…2
Thin hydraulic oil	3.5
Pipelines for gases	
Compressed air lines (depending on length)	15...25
Technical gases over 4 bar	15…40
Vapour lines	
Flash steam in condensate lines	15 ... 25
Saturated steam lines	
up to 1 bar (a)	< 10 m/s
1 to 2 bar (a)	10…15 m/s
2 to 5 bar (a)	15…25 m/s
5 to 10 bar (a)	25…35 m/s
10 to 40 bar (a)	35…40 m/s
40 bar(a)	< 60 m/s

CONTINUATION: ■ DIMENSIONING OF THE PRESSURE REDUCING VALVE

In order to have sufficient reserves in the end area of the pressure reducing valve, the K_V value determined for the pressure reducing valve from the calculation described below is to be multiplied by a dimensioning factor (DF) of 1.3. The next largest K_{VS} value for the desired pressure reducing valve is then chosen from the table on the data sheet. This ensures secure functioning in the range of around 10 - 80% of the control range.

The operating and setting pressures stated in the following examples are stated as overpressure, as is common. However, the calculations are made with absolute pressures. For instance, an absolute pressure of 6 + 1, i.e. 7 bar(a), is calculated with a setting pressure of 6 bar overpressure. What's more, it should be noted that the dimensioning should be performed with the greatest flow rate and the smallest pressure difference.

■ CALCULATION FOR LIQUIDS

Example 1:
A pressure reducing valve is being sought for water with a temperature of 60°C. It should ensure a flow volume of 50 m³/h with upstream pressure of p_1 = 8bar overpressure and downstream pressure in the range of p_2 = 4-6 bar overpressure.

The following is given:

The necessary flow volume:	Q =50m³/h
The pressure in front of the valve:	p_1 = 9 bar (a)
Selected setting pressure:	p_2 = 7 bar (a)
The minimum pressure drop:	p_1-p_2 = Δp = (9 – 7) bar = 2 bar
The density of water at 60°C:	ρ = 983,2 kg/m³

For liquids (incompressible fluids), the following applies: $K_v = Q \sqrt{\frac{\rho}{1000 \times \Delta p}}$

and in the example: $K_v = 50 \sqrt{\frac{983{,}2}{1000 \times 2}} = 35{,}1 \frac{m^3}{h}$

Multiplied by DF=1.3 makes: 35.1 m³/h x 1.3 = 45.6 m³/h

The type 682 pressure reducing valve made from red brass in the nominal diameter DN 80 with a K_{VS} value of 50m³/h is chosen.

To check the suitable pipe nominal diameter after the pressure reducing valve, the following applies:

$$w = 353 \frac{Q}{d^2} = 353 \frac{50}{80^2} = 2{,}75 \frac{m}{s}$$

w = flow velocity in m/s

d = nominal diameter of the pipeline in mm

The nominal diameter after the pressure reducing valve is correctly selected in DN 80.

CALCULATION FOR GASES

When calculating for gases, it is to be verified beforehand whether the flow is in the subcritical or overcritical range. To make a distinction, $p_2 = p_1/2 = \Delta p$ can be used for a rough calculation.

1. For subcritical flows, i.e. if $\Delta p < \frac{p_1}{2}$ the following applies:

$$K_v = \frac{Q_N}{519} \sqrt{\frac{\rho_N \times (t_1 + 273)}{\Delta p \times p_2}}$$

2. For overcritical flows, i.e. if $\Delta p > \frac{p_1}{2}$ the following applies:

$$K_v = \frac{Q_N}{259.5 \times p_1} \sqrt{\rho_N \times (t_1 + 273)}$$

Example 2:
A pressure reducing valve is being sought for a nitrogen line. The consumer requires 500 to 3000 Nm³/h gas at a temperature of 20°C for operations. Upstream pressure is p_1 = 40-45 bar (overpressure) from the gas supply. The minimum application pressure at the appliance is 10 bar (overpressure). However, the max. permitted downstream pressure is usually p_2 = 15 bar.

The following is given:

The necessary max. flow volume:	Q_N	= 3000 Nm³/h (under normal conditions)
Lowest pressure in front of the valve:	p_1	= 41 bar (a)
Selected setting pressure:	p_2	= 16 bar (a)
The minimum pressure drop:	p_1-p_2	= Δp = (41 – 16) bar = 25 bar
Nitrogen temperature in operation:	t_1	= 20°C
Nitrogen standard density:	ρ_n	= 1.25 kg/m³

As Δp = (41 – 16) bar = 25 bar > $p_1/2$ overcritical flow is used for calculations:

$$K_v = \frac{3000}{259.5 \times 41} \sqrt{1.25 \times (20 + 273)} = 5.4 \text{ m}^3/\text{h}$$

Multiplied by DF makes: 5.4 m³/h x 1.3 = 7.02 m³/h

The type 684 pressure reducing valve made from red brass in the nominal diameter DN 40 with a K_{VS} value of 9.4m³/h is chosen.

To check the suitable pipe nominal diameter after the pressure reducing valve, the flow volume has to be converted to operating conditions:

$$Q = Q_N \bullet \frac{1}{p} \bullet \frac{T}{273} \frac{\text{m}^3}{\text{h}}$$

Q = flow volume in an operational condition in m³/h
p = absolute operating pressure in the pipe in bar (a)
T = absolute temperature of the medium in K

The operating flow volume Q is thus:

$$Q = \frac{3000}{16} \bullet \frac{(20 + 273)}{273} = 201.2 \frac{\text{m}^3}{\text{h}}$$

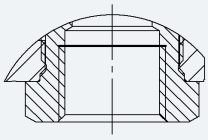
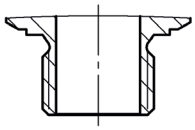
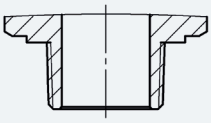
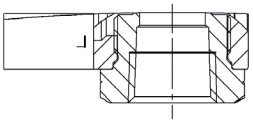
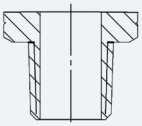
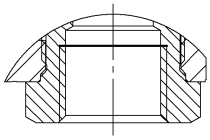
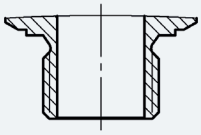
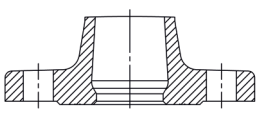
To check the suitable pipe nominal diameter after the pressure reducing valve, the identical relationship as for liquids can be used:

$$w = 353 \frac{Q}{d^2} = 353 \frac{201.2}{40^2} = 44.4 \frac{\text{m}}{\text{s}}$$

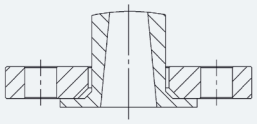
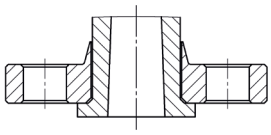
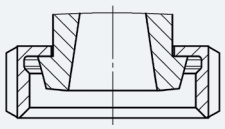
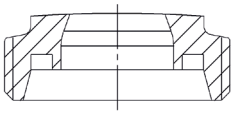
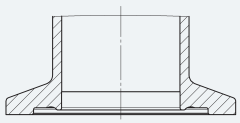
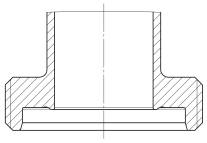
The pipe nominal diameter after the pressure reducing valve is already very close to the limit in DN40. Expanding the nominal diameter to at least DN50 (w =28.4 m/s) is thus recommended.

→ Connection possibilities

POSSIBLE CONNECTION VARIANTS

Connection type	Drawing	Description
f		Whitworth threaded cylindrical pipe connection – female – seal not made on thread BSP-P according to DIN ISO 228
m		Whitworth threaded cylindrical pipe connection – male – seal not made on thread BSP-P according to DIN ISO 228
BSP-Tm		Whitworth threaded tapered pipe connection – male – seal made on thread male connection BSP-T according to DIN EN 10226
NPTf		US standard tapered pipe thread NPT threaded pipe connection NPT – female – according to ANSI / ASME B 1.20.1 seal made on thread
NPTm		US standard tapered pipe thread NPT threaded pipe connection NPT – male – according to ANSI / ASME B 1.20.1 seal made on thread
METf		Metric ISO female connection according to DIN 13 seal not made on thread
METm		Metric ISO male connection according to DIN 13 seal not made on thread
FL		Cast flange connection according to DIN EN 1092

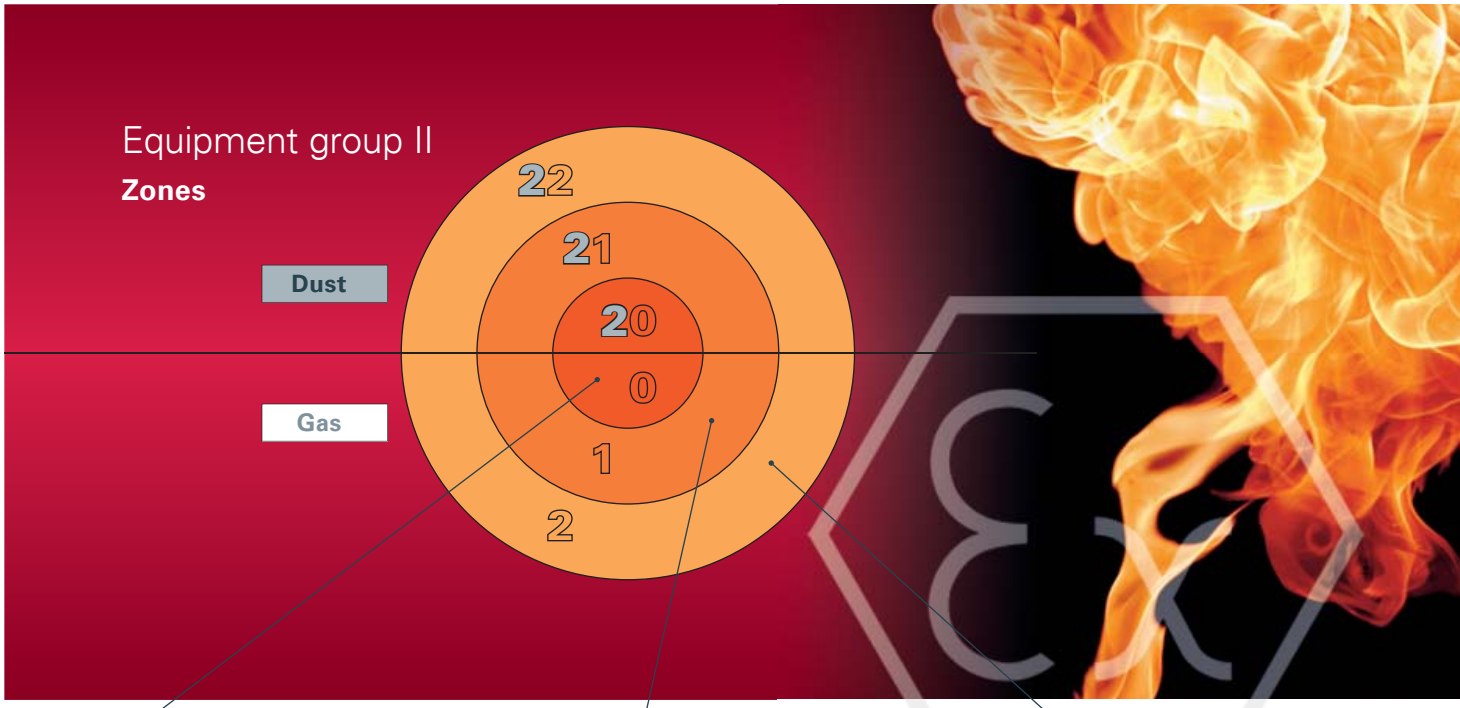
POSSIBLE CONNECTION VARIANTS

Connection type	Drawing	Description
FLDIN		Loose flange connection according to DIN EN 1092 up to max. PN 40
FLANSI		Loose flange connection according to ASME B 16.5 up to max. 600 lbs
KSDIN		Taper nipple (diary coupling screw joint) according to DIN 11887 valves for food, chemical and pharmaceutical industry standard threaded connections
GSDIN		Threaded ferule connection – male – (diary coupling screw joint) according to DIN 11887 valves for food, chemical and pharmaceutical industry standard threaded connections
KLSDIN		Clamp connection according to DIN 32676 valves for food, chemical and pharmaceutical industry
KLSISO		Clamp connection according to ISO 2852 valves for food, chemical and pharmaceutical industry
A-KLSDIN		Aseptic clamp ferrule connection DIN 11864-3 valves made of stainless steel for aseptic, chemical and pharmaceutical industry
A-GSDIN		Aspetic threaded ferule connection – male – form A DIN 11864-1 aseptic threaded pipe connection for the food, chemical and pharmaceutical industry

→ Valves and ATEX!

WITH GOETZE YOU CAN REST ASSURED

Goetze valves are fundamentally suitable for use in potentially explosive areas. Consequently they were subjected to a conformity assessment according to the ATEX Product Directive 2014/34/EU. As an independent, notified body, the TÜV Süd was commissioned with the assessment of our products.



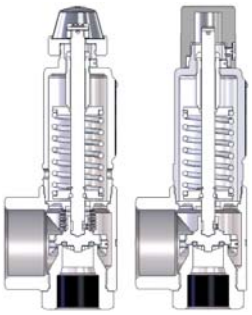
Category 1

Example: Within a fuel tank or gas tank

Valve with bellows **and** gastight cap

Category 2

Example: Sewage treatment plant – condensate collecting tank for biogas



Valve with bellows **or** gastight cap

Category 3

Example: Paint shop after extraction system

All valve types possible

Equipment Groups / Categories / Zones / Products

Selection Chart for Goetze ATEX Products

Equipment group I		Equipment group II		
Equipment for use in ○ The mining industry ○ Open cast mining ○ Deep mining		Equipment for use in other potentially explosive areas		
Category M1	**Category M2**	**Category 1**	**Category 2**	**Category 3**
Requirement: **extremely high level of safety**	Requirement: **high level of safety**	Requirement: **extremely high level of safety**	Requirement: **high level of safety**	Requirement: **normal level of safety**
Operation guaranteed even in the case of rare incidences	Shutdown in case of occurence of a potentially explosive atmosphere possible	Danger: **continuously, frequently, long-term**	Danger: **occasionally**	Danger: **rarely or short-term**
		Zone 0 **G** Gas / **Zone 20** **D** Dust	**Zone 1** **G** Gas / **Zone 21** **D** Dust	**Zone 2** **G** Gas / **Zone 22** **D** Dust
Safety valves				
420tbGFO; tbGFL 451tbGO; tbFO; tbGFO 452tbGO; tbFO; tbGFO 455tbGF(O,L) 851tbGO; tbFO; tbGFO 852tbGO; tbFO; tbGFO	400bGFK 420tGF(O;L) 451bG(O,K,L); bF(O,K,L); bGF(O,K,L) 451tGO; tFO; tGFO 452bG(O,L); bF(O,L); tGF(O,L) 452tG(O,L); tF(O,L); tGF(O,L) 455bGF(O,L) 455tGF(O,L) 460tGF(O,L) 461tGFO; tGO; tFO 492tGO 851bG(O,K,L); bF(O,K,L); bGF(O,K,L) 851tGO; tFO; tGFO 852bG(O,L); bF(O,L); bGF(O,L) 852tG(O,L); tF(O,L); tGF(O,L) 861tGFO; tGO; tFO 2400tGFO 2480tGF(O,L)	420tbGFO ; tbGFL 451tbGO; tbFO; tbGFO 452tbGO; tbFO; tbGFO 455tbGF(O,L) 851tbGO; tbFO; tbGFO 852tbGO; tbFO; tbGFO	400bGFK 420tGF(O,L) 451bG(O,K,L); bF(O,K,L); bGF(O,K,L) 451tGO; tFO; tGFO 452bG(O,L); bF(O,L); tGF(O,L) 452tG(O,L); tF(O,L); tGF(O,L) 455bGF(O,L) 455tGF(O,L) 460tGF(O,L) 461tGFO, 461tGO, 461tFO 492tGO 851bG(O,K,L); bF(O,K,L); bGF(O,K,L) 851tGO; tFO; tGFO 852bG(O,L); bF(O,L); bGF(O,L) 852tG(O,L); tF(O,L); tGF(O,L) 861tGFO; tGO; tFO 2400tGFO 2480tGF(O,L)	451sG(K,L); sF(K,L); sGF(K,L) 452sG(O,L); sF(O,L); sGF(O,L) 455sGF(O,L) 461sGF(K,L), sG(K,L); sF(K,L) 492sGK 652 810 / 410 812 / 412 813 / 413 851sG(K,L); sF(K,L); sGF(K,L) 852sG(O,L); sF(O,L); sGF(O,L) 861sGF(K,L), sG(K,L); sF(K,L) 2400sGF(K, L)

Continuation Page 2.3.2

Equipment Groups / Categories / Zones / Products

Selection Chart for Goetze ATEX Products

Continuation

Equipment group I		Equipment group II		
Equipment for use in ○ The mining industry ○ Open cast mining ○ Deep mining		Equipment for use in other potentially explosive areas		
Category M1	**Category M2**	**Category 1**	**Category 2**	**Category 3**
Requirement: **extremely high level of safety** Operation guaranteed even in the case of rare incidences	Requirement: **high level of safety** Shutdown in case of occurence of a potentially explosive atmosphere possible	Requirement: **extremely high level of safety** Danger: **continuously, frequently, long-term** **Zone 0** **G** Gas / **Zone 20** **D** Dust	Requirement: **high level of safety** Danger: **occasionally** **Zone 1** **G** Gas / **Zone 21** **D** Dust	Requirement: **normal level of safety** Danger: **rarely or short-term** **Zone 2** **G** Gas / **Zone 22** **D** Dust
Overflow and pressure control valves				
452tbGFU; tbGU; tbFU 453tbGFO 852tbGFU; tbGU; tbFU 853tbGFO	400.5bGFK 417tGFO 418tGFO 452tGFU; bGFU 453tGF(O,K) 608tGFO 617tGFO 618tGFO 852tGFU; bGFU; 853tGF(O,K)	452tbGFU; tbGU; tbFU 453tbGFO 852tbGFU; tbGU; tbFU 853tbGFO	400.5bGFK 417tGFO 418tGFO 452tGFU; bGFU 453tGF(O,K) 608tGFO 617tGFO 618tGFO 852tGFU; bGFU; 853tGF(O,K)	630 / 430 631 / 431
Pressure reducing valves				
	681 / 481 682 / 482 484mGO; mGFO; kGO; kGFO 684mGO; mGFO; kGO; kGFO		681 / 481; 682 / 482 484mGO; mGFO; kGO; kGFO 684mGO; mGFO; kGO; kGFO	681 / 481 683 682 / 482 484mGS; kGS; mGFS, kGFS 684mGS; kGS; mGFS, kGFS
Diverter ball valve				
	2700 2780		2700 2780	
Vent valves				
				1940, 1945 1960, 1965

With Goetze you can rest assured.

Certified explosion protection.

The safety of our customers is of paramount importance to Goetze.
That's why Goetze offers more:

- the highest level of safety in all ATEX zones
- reliable advice: which products meet your requirements?
- safe products for each ATEX zone according to TÜV criteria

→ Quickfinder Valve

■ TÜV/CE ANGLE-TYPE SAFETY VALVES FOR INDUSTRIAL APPLICATIONS

Series	Materials	Connection type	Medium: neutral liquid	neutral air/gases	neutral steam	non-neutral liquid	non-neutral air/gases	non-neutral steam	Temperature in °C: -300 -200 -100 -50 0 50 100 150 200 250 300 350 400	Set pressure bar: 0 0,5 1 5 10 15 20 30 50 70	Page
451			■		■	■		■			3.1
851			■		■	■		■			3.2
460			■		■	■		■			3.3
652			■		■						3.4
420			■		■	■		■			3.5
461			■		■	■		■			3.6
861			■		■	■		■			3.7
452			■		■	■		■			3.8
852			■		■	■		■			3.9
352			■		■	■		■			3.10
455			■		■	■		■			3.11

■ TÜV/CE ATMOSPHERIC DISCHARGE SAFETY VALVES FOR INDUSTRIAL APPLICATIONS

Series	Materials	Connection type	Medium: neutral liquid	neutral air/gases	neutral steam	non-neutral liquid	non-neutral air/gases	non-neutral steam	Temperature in °C: –100 –50 0 50 100 150 200 250 300 350 400	Set pressure bar: 0 0,5 1 5 10 15 20 30 50 70	Page
410				■							4.1
810				■							4.2
412				■							4.3
812				■							4.4
413				■							4.5
813				■							4.6

■ TÜV/CE ATMOSPHERIC DISCHARGE SAFETY VALVES FOR INDUSTRIAL APPLICATIONS **WITH HIGH PRESSURE RATINGS**

Series	Materials	Connection type	Medium: neutral liquid	neutral air/gases	neutral steam	non-neutral liquid	non-neutral air/gases	non-neutral steam	Temperature in °C: –100 –50 0 50 100 150 200 250 300 350 400	Set pressure bar: 0 50 100 150 200 300 400 500 600 700	Page
492				■			■				4.7

■ PRESSURE RELIEF VALVES

Series	Materials	Connection type	Medium: neutral liquid	neutral air/gases	neutral steam	non-neutral liquid	non-neutral air/gases	non-neutral steam	Temperature in °C: –100 –50 0 50 100 150 200 250 300 350 400	Set pressure bar: 0 0,5 1 5 10 15 20 30 50 70	Page
418			■		■	■		■			5.1
618			■		■	■		■			5.2
601			■		■						5.3
612			■		■						5.4

OVERFLOW AND PRESSURE CONTROL VALVES

Series	Materials	Connection type	Medium: neutral liquid	neutral air/gases	neutral steam	non-neutral liquid	non-neutral air/gases	non-neutral steam	Temperature in °C (−200 −100 −50 0 50 100 150 200 250 300 350 400)	Set pressure bar (0 0,5 1 5 10 15 20 30 50 70)	Page
417			■		■	■		■			6.1
418			■		■	■		■			6.2
617			■		■	■		■			6.3
618			■		■	■		■			6.4
453			■		■	■		■			6.5
853			■		■	■		■			6.6
608			■		■	■		■			6.7
430			■			■					6.8
431			■			■					6.9
630			■			■					6.10
631			■			■					6.11

SAFETY FITTINGS FOR HYGIENIC APPLICATIONS

Series	Materials	Connection type	Medium: neutral liquid	neutral air/gases	neutral steam	non-neutral liquid	non-neutral air/gases	non-neutral steam	Temperature in °C (−200 −100 −50 0 50 100 150 200 250 300 350 400)	Set pressure bar (0 0,5 1 5 10 15 20 30 50 70)	Page
400			■		■	■		■			7.1
400.5			■		■	■		■			7.2
4000			■		■	■		■			7.3

SAFETY VALVES AND FITTINGS FOR CRYOGENIC APPLICATIONS

Series	Materials	Connection type	Medium: neutral liquid	neutral air/gases	neutral warm water	non-neutral liquid	non-neutral air/gases	non-neutral warm water	Temperature in °C (−200 −100 −50 0 50 100 150 200 250 300 350 400)	Set pressure bar (0 0,5 1 5 10 15 20 30 50 70)	Page
2400			■			■					8.1
2480			■			■					8.2
2700			■			■				PN 63	8.3
2780			■			■				PN 63	8.4

PRESSURE REDUCING VALVES

Series	Materials	Connection type	Medium: neutral liquid	neutral air/gases	neutral warm water	non-neutral liquid	non-neutral air/gases	non-neutral warm water	Temperature in °C (−200 −100 −50 0 50 100 150 200 250 300 350 400)	Set pressure bar (0 0,5 1 5 10 15 20 30 50 70)	Page
481			■		■	■		■		Inlet pressure / Outlet pressure	9.1
681			■		■	■		■		Inlet pressure / Outlet pressure	9.2
482			■		■	■		■		Inlet pressure / Outlet pressure	9.3
682			■		■	■		■		Inlet pressure / Outlet pressure	9.4
683										Inlet pressure / Outlet pressure	9.5
484			■			■				Inlet pressure / Outlet pressure	9.6
684			■			■				Inlet pressure / Outlet pressure	9.7

TÜV/CE SAFETY VALVES FOR HEATING AND COOLING

Series	Materials	Connection type	Medium								Temperature in °C	Set pressure bar	Page
			neutral				non-neutral						
			solar	hot water	steam	liquid	solar	hot water	steam	liquid	–100 –50 0 50 100 150 200 250 300 350 400	0 0,5 1 5 10 15 20 30 50 70	
651mHNK				■				■				II	10.1
651mHIK				■				■				III	10.2
451bH				■				■					10.3
851bH				■				■					10.4
452bHL				■				■					10.5
852bHL				■				■					10.6
352bHL				■				■					10.7
451bHF				■		■		■		■			10.8
851bHF				■		■		■		■			10.9
652mFK						■				■			10.10

TÜV/CE SAFETY VALVES FOR SOLAR PLANTS AND DISTRICT HEATING

Series	Materials	Connection type	Medium									Temperature in °C	Set pressure bar	Page
			neutral				non-neutral							
			solar	hot water	steam	air/ gases	solar	hot water	steam	air/ gases		–100 –50 0 50 100 150 200 250 300 350 400	0 0,5 1 5 10 15 20 30 50 70	
651mSK			■				■							11.1
451bG			■		■	■	■		■	■				11.2
851bG			■		■	■	■		■	■				11.3
452bGL			■		■	■	■		■	■				11.4
852bGL			■		■	■	■		■	■				11.5
451bH				■				■						11.6
851bH				■				■						11.7

SAFETY FITTINGS FOR WATER SUPPLY IN THE BUILDING TECHNOLOGY SECTOR

Series	Materials	Connection type	Medium								Temperature in °C	Set pressure bar	Page
			neutral				non-neutral						
			solar	hot water	steam	warm water	solar	hot water	steam	warm water	–100 –50 0 50 100 150 200 250 300 350 400	0 0,5 1 5 10 15 20 30 50 70	
651mWNK						■				■			12.1
651mWIK						■				■			12.2
669						■				■			12.3

→ Quickfinder based on certificate required

Our certificates – Proof of the safety and reliability we offer nationally and internationally

General Type Test Approvals

↗ EUROPEAN PED

National Type Test (TÜV)

↗ NATIONAL TYPE TEST (TÜV)

EC type test

↗ EC-TYPE TEST

↗ TYPE TEST (USA)

Canadian Registration Number (CRN)

↗ CANADIAN REGISTRATION NUMBER (CRN)

↗ TR ZU 032/2013 (RU)

↗ MANUFACTURE LICENSE (CHINA) TSG ZF001-2006

↗ KOREA GAS SAFETY (KR)

Applications: Potable water and building technology

↗ TYPE APPROVAL (DE)

↗ TYPE APPROVAL (FR)

↗ TYPE APPROVAL (EN)

↗ TYPE APPROVAL (NO)

Applications: Shipbuilding and railway

↗ TYPE APPROVAL

↗ TYPE APPROVAL

↗ TYPE APPROVAL

↗ TYPE APPROVAL

↗ TYPE APPROVAL

Registro Italiano Navale (RINA)

↗ TYPE APPROVAL

↗ DEUTSCHE BAHN

Applications: Foodstuffs and Pharmaceutical Industry

↗ DGUV

↗ EHEDG

■ WHICH VALVE HAS WHICH CERTIFICATE?

Safety valves	2.5.1
Pressure relief valves	2.5.1
Overflow and pressure control valves	2.5.1
Hygienic valves	2.5.2
Safety valves and fittings for cryogenic applications.	2.5.2
Pressure reducing valves	2.5.2

SAFETY VALVES

Series	National Type Test (TÜV)	CE 2014/68/EU	EC type test	ASME	Canadian Registration Number (CRN)	EAC	TS	KC	ACS Potable water approval	DNV·GL	Lloyd's Register	ABS	Bureau Veritas	RINA	Registro Italiano Navale (RINA)	DB Railway	Page
												Shipbuilding					
352	■	■	■			■	■	■		■	■	■	■	■	■		3.10
352bHL	■	■	■			■	■			■	■	■	■	■	■		10.7
410	■	■	■	■	■	■	■	■		■	■	■	■	■	■		4.1
412	■	■	■	■	■	■	■	■		■	■	■	■	■	■		4.3
413	■	■	■			■	■	■		■	■	■	■	■	■		4.5
420	■	■	■			■		■		■	■	■	■	■	■		3.5
451	■	■	■	■	■	■	■	■		■	■	■	■	■	■		3.1
451bH	■	■	■			■	■			■	■	■	■	■	■		10.3/11.6
451bHF	■	■	■			■	■			■	■	■	■	■	■		10.8
452	■	■	■			■		■		■	■	■	■	■	■		3.8
452bHL	■	■	■			■				■	■	■	■	■	■		10.5
455	■	■	■			■		■				■	■		■		3.11
460	■	■	■			■	■	■		■	■	■	■	■	■		3.3
461	■	■	■			■	■	■		■	■	■	■	■	■		3.6
492	■	■	■	■	■	■	■	■		■	■	■	■	■	■		4.7
651mWIK		■				■	■		■	■	■	■	■	■	■		12.2
651mWNK	■	■				■	■		■	■	■	■	■	■	■		12.1
651mHNK	■	■	■			■	■			■	■	■	■	■	■		10.1
651mHIK		■	■			■	■			■	■	■	■	■	■		10.2
651mSK	■	■	■			■	■			■	■	■	■	■	■		11.1
652	■	■	■			■		■		■	■	■	■	■	■		3.4
810	■	■	■	■	■	■	■	■		■	■	■	■	■	■	■	4.2
812	■	■	■	■	■	■	■	■		■	■	■	■	■	■	■	4.4
813	■	■	■			■	■	■		■	■	■	■	■	■		4.6
851	■	■	■	■	■	■	■	■		■	■	■	■	■	■		3.2
851bH	■	■	■			■	■			■	■	■	■	■	■		10.4/11.7
851bHF	■	■	■			■	■			■	■	■	■	■	■		10.9
852	■	■	■			■		■		■	■	■	■	■	■		3.9
852bHL	■	■	■			■				■	■	■	■	■	■		10.6
861	■	■	■			■	■	■		■	■	■	■	■	■		3.7

PRESSURE RELIEF VALVES

Series	CE 2014/68/EU	EAC	DNV·GL	Lloyd's Register	ABS	Bureau Veritas	RINA	Registro Italiano Navale (RINA)	Page
601	■	■							5.3
612	■	■							5.4

OVERFLOW AND PRESSURE CONTROL VALVES

Series	CE 2014/68/EU	EAC	DNV·GL	Lloyd's Register	ABS	Bureau Veritas	RINA	Registro Italiano Navale (RINA)	Page
417	■	■	■	■	■	■	■	■	6.1
418	■	■	■	■	■	■	■	■	6.2
430	■	■	■	■	■	■	■	■	6.8
431	■	■	■	■	■	■	■	■	6.9
453	■	■	■	■	■	■	■	■	6.5
617	■	■	■	■	■	■	■	■	6.3
618	■	■	■	■	■	■	■	■	6.4
630	■	■	■	■	■	■	■	■	6.10
631	■	■	■	■	■	■	■	■	6.11
853	■	■	■	■	■	■	■	■	6.6

HYGIENIC VALVES

Series	National Type Test (TÜV)	CE 2014/68/EU	EC type test	EAC	TS	KC	DNV·GL	Lloyd's Register	ABS	Bureau Veritas	RINA	Registro Italiano Navale (RINA)	3-A	EHEDG	Page
Hygienic 400	■	■	■	■	■	■	■	■	■	■	■	■	■	■	7.1
Hygienic 400.5		■		■			■	■	■	■	■	■	■		7.2
Hygienic 4000	■	■	■	■	■	■		■	■	■		■			7.3

SAFETY VALVES AND FITTINGS FOR CRYOGENIC APPLICATIONS

Series	National Type Test (TÜV)	CE 2014/68/EU	EC type test	ASME	Canadian Registration Number (CRN)	EAC	TS	KC	Lloyd's Register	ABS	Bureau Veritas	Registro Italiano Navale (RINA)	Page
2400	■	■	■	■	■	■	■	■	■	■	■	■	8.1
2480	■	■	■	■	■	■	■	■	■	■	■	■	8.2
2700		■				■							8.3
2780		■											8.4

PRESSURE REDUCING VALVES

Series	CE 2014/68/EU	EAC	DIN DVGW	ACS	WRAS	SINTEF	DNV·GL	Lloyd's Register	ABS	Bureau Veritas	RINA	Registro Italiano Navale (RINA)	Page
481	■	■	■	■	■		■	■	■	■	■	■	9.1
482	■	■	■	■	■		■	■	■	■	■	■	9.3
681	■	■	■	■	■	■	■	■	■	■	■	■	9.2
682	■	■	■	■	■		■	■	■	■	■	■	9.4
683	■	■					■	■	■	■	■	■	9.5
484	■	■						■	■	■	■	■	9.6
684	■	■					■	■	■	■	■	■	9.7

All information relating to certifications is subject to validity.

→ Product key

■ THIS IS HOW YOU WILL FIND THE VALVE DESCRIPTION YOU ARE USED TO

With the help of our well-proven product key the variety of our Goetze series is easy to understand as it includes all relevant specifications. For example you are able to identify immediately the valve version, the inlet and outlet connection sizes, the primary sealing or for what state of aggregation of the medium the valve is suitable.

For further questions or queries please call us on
+49 (0) 71 41.4 88 94 60

Wherever valves made by Goetze KG are in use, the highest degree of safety is of paramount importance.

We have the solution which meets your requirements:
Take us at our word.

How to order the correct valve:

This is what the valve looks like for this example:

851	= TÜV/CE Safety valve made of gunmetal
tb	= gastight version with bellows
GF	= for gaseous and liquid media
O	= without lifting device
25	= DN 25
m/f	= male thread BSP-P, Female thread BSP-P
25/40	= inlet DN 25, outlet DN 40
PTFE	= polytetrafluoroethylene seal

Example

851 tbGFO – 25 – m/f – 25/40 PTFE

- 851 – **Series**
- tb – **Version**
- G – **Medium**
- F – **Type of lifting mechanism**
- O – **Type of lifting mechanism**
- 25 – **Nominal valve size**
- m/f – **Type of inlet/ type of outlet**
- 25/40 – **Size of inlet/ size of outlet**
- PTFE – **Seal**

→ Checklist for enquiries Safety/Pressure relief and Overflow valves

a.) Which **type of plant** should be protected by the safety valves?

_____

_____

b.) Required **function:**

☐ Safety valves *(protection of the plant/the vessel/the system according to Pressure Equipment Directive)*

☐ Pressure-relief-valves *(pressure relief, with a spring range or set and sealed at a fixed pressure)*

☐ Overflow-valves *(bypass valve/pump protection/pressure limitation)*

c.) Which **medium** is involved?

☐ compressible (air, gas, steam) ○ neutral ○ non-neutral (flammable, toxic, ...)

☐ non-compressible (liquids) ○ neutral ○ non-neutral (flammable, toxic, ...)

Description/ type of medium (e.g. water, heating oil, fuels, nitrogen,...): _____

d.) What is the **temperature** of the medium? min. _____ °C to max. _____ °C

e.) Which **materials** are required?

1.) **Body:** ☐ Stainless steel ☐ Brass ☐ Gunmetal ☐ Spheroidal graphite cast iron

2.) **Seal:** ☐ EPDM ☐ FKM ☐ NBR

☐ FFKM ☐ PTFE ☐ metal to metal sealing ☐ others: _____

f.) What range of **adjustment / set pressure** is required?

☐ Set pressure safety valve: _____ bar overpressure

☐ Range of adjustment/set pressure
Overflow-/pressure relief valve: _____ to _____ bar overpressure

Is there superimposed counter pressure affecting the outlet side of the valve? ☐ Yes, ____ bar overpressure

Remark: Type tested safety valves are set and sealed at the factory. If changes are made to the product by the operator, the warranty shall not apply.

g.) What **blow-off capacity or flow volume** is required?

Steam: _____ kg/h Air: _____ Standard m³/h

Heat output: _____ kW Water: _____ m³/h

h.) Which **connection size** is required? (the required blow-off capacity defines the connection size necessary)

Thread: ☐ DN 8 (¼") ☐ DN 10 (⅜") ☐ DN 15 (½") ☐ DN 20 (¾") ☐ DN 25 (1") ☐ DN 32 (1¼") ☐ DN 40 (1½") ☐ DN 50 (2")

Flange: ☐ DN 15 ☐ DN 20 ☐ DN 25 ☐ DN 32 ☐ DN 40 ☐ DN 50 ☐ DN 65 ☐ DN 80 ☐ DN 100

i.) What **connection type** is required?

☐ Female thread BSPP

☐ Flange DIN EN Pressure rating: PN _____

☐ Flange ASME Pressure rating: Class _____

☐ Male thread BSPP

☐ Special connection

☐ Description: _____

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j.) Required **approvals**:

- ☐ None
- ☐ Others
- ☐ TÜV and CE
- ☐ Which? _____
  see catalogue 2.5 "Quickfinder based on certificate required"

k.) Special **approval certificates** according to DIN EN 10204:

For the valve setting:

- ☐ Factory Test Report 2.2
- ☐ Factory Inspection Certificate 3.1
- ☐ TÜV Inspection Certificate 3.2

For the material of the pressure-bearing body parts:

- ☐ Inspection certificate 3.1

For the valve being oil- and grease free according to DIN EN 12300 or factory specification:

- ☐ Inspection certificate 3.1

l.) Other **documentation** required: _____

_____

m.) Additional **Accessories**:

- ☐ Sensor control of the bellows
- ☐ Proximity switch for display of the valve opening

n.) **Other** important information concerning installation situation and plant:

1.) Maximum **required operating pressure** in the plant or in the process: _____

2.) What causes **excessive pressure in the plant**?

- ☐ Expansion of the medium due to heating
- ☐ Defective pressure switch or non switching-off of the compressor or pump
- ☐ Closed valve due to operating error

3.) What **plant-specific characteristics** have to be considered?

- ☐ Plant-specific standards and regulations
- ☐ Hygienic standards (food- and pharmaceutical applications)
- ☐ Explosion protection (Ex, ATEX)
- ☐ Environmental conditions (cold, heat, radiant heat,...)
- ☐ Vibrations
- ☐ Tightness requirements (Helium leak test required)

4.) **Specific features of the installation situation** (supply pipe, discharge pipe):
Description or photo

_____

_____

_____

o.) **Sender**:

Name: _____ Company: _____

E-Mail: _____

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→ Checklist for enquiries
Pressure reducing valves

a.) Which **function** should be achieved with the valve?

- ☐ Reduction of a higher or varying inlet pressure to a lower outlet pressure (= resting pressure at zero-usage)
- ☐ Reduction of higher or varying inlet pressure to a lower flow pressure (= prevailing flow pressure at usage)

b.) **Type of application**:

- ☐ Building technology (potable water supply)
- ☐ Compressed air supply
- ☐ Pump stations and Pressure booster plants
- ☐ Fire fighting- and sprinkler systems
- ☐ Shipbuilding
  - ○ Water supply ○ General air supply ○ Starter- or control air
- ☐ Others: _____

c.) Which **medium** is involved?

- ☐ compressible (air, gas, steam) ○ neutral ○ non-neutral (flammable, toxic, ...)
- ☐ non-compressible (liquids) ○ neutral ○ non-neutral (flammable, toxic, ...)

Description/ type of medium (e.g. seawater, heating oil, fuel, nitrogen...): _____

d.) What is the **temperature** of the medium? min. _____ °C to max. _____ °C

e.) Which **materials** are required?

1.) **Body:** ☐ Gunmetal / Brass ☐ Stainless steel

2.) **Seal:** ☐ EPDM ☐ FKM

f.) **Pressures**:

- ☐ Inlet pressure: _____ bar (gauge)
- ☐ Outlet pressure: Pressure range _____ bar to _____ bar (gauge)

g.) The **outlet pressure** required as:

- ☐ Resting pressure (no flow; draw-off point closed)
- ☐ Flow pressure (flow; draw-off point open)

h.) **Fixed setting** and **sealing** of the outlet pressure is required: _____ bar (gauge) at zero-usage

i.) Required **flow volume**:

- ☐ Water _____ m³/h
- ☐ Air _____ Standard m³/h

j.) **Max. permissible pressure drop of the outlet pressure** at the required flow volume (pressure difference between resting pressure and flow pressure):

Delta-p _____ bar (gauge) at zero-usage

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k.) Required **kv value**: _____

l.) Which **connection size** is required?(the required blow-off capacity defines the connection size necessary)

Thread: ☐ DN 8 (¼") ☐ DN 10 (⅜") ☐ DN 15 (½") ☐ DN 20 (¾") ☐ DN 25 (1") ☐ DN 32 (1¼") ☐ DN 40 (1½") ☐ DN 50 (2")

Flange: ☐ DN 15 ☐ DN 20 ☐ DN 25 ☐ DN 32 ☐ DN 40 ☐ DN 50 ☐ DN 65 ☐ DN 80 ☐ DN 100

m.) What **connection type** is required?

☐ Female thread BSPP
☐ Flange DIN
☐ Union joints with male BSPT threaded connection
☐ Special connection
Description: _____

n.) Required **approvals**:

☐ None
☐ Others
☐ DVGW
☐ Which? _____
see catalogue 2.5 "Quickfinder based on certificate required"

o.) Special **approval certificates** according to DIN EN 10204:

For the valve setting:
☐ Factory Test Report 2.2 ☐ Factory Inspection Certificate 3.1

For the material of the pressure-bearing body parts:
☐ Inspection certificate 3.1

For the valve being oil- and grease free according to DIN EN 12300 or factory specification:
☐ Inspection certificate 3.1

p.) Other **documentation** required: _____

_____

_____

q.) Important information concerning installation situation and plant:

1.) Specific features of the installation situation: Description or photo

2.) What **plant-specific characteristics** have to be considered?

☐ Plant-specific standards and regulations
☐ Hygienic standards (food- and pharmaceutical applications)
☐ Explosion protection (Ex, ATEX)
☐ Environmental conditions (cold, heat, radiant heat,...)
☐ Vibrations, pressure surges, etc.
☐ Heating up of the medium within a confined space on the outlet side

r.) **Sender**:

Name: _____ Company: _____

E-Mail: _____

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→ Ordering information

CERTIFICATES

Valves with TÜV test certificate have been approved according to the European Pressure Equipment Directive and carry the CE mark and number of the notified body.

CE 0036

PLEASE NOTE

All descriptions and technical details given in this catalogue have been checked thoroughly and correspond to the technical features of the products at the time of print. However, they are not binding for us.

Subject to product changes resulting from technical development.

Offers and deliveries according to our general terms of business only.

CERTIFICATION

Since January 2002 our company has been ISO 9001 approved and certified according to the European Pressure Equipment Directive. Successful Environmental Management certification according to ISO 14001 since 2011.

↗ ENVIRONMENTAL MANAGEMENT DIN EN ISO 14001

↗ PRESSURE EQUIPMENT DIRECTIVE 2014/68/EU

↗ QUALITY MANAGEMENT DIN EN ISO 9001

REPORTS AND CERTIFICATES

Factory certificate acc. EN 10204 2.2 (WKZ 2.2). Price per certificate	18,00 € / in retrospect: 40,00 €
Test certificate acc. EN 10204 3.1 (WPZ 3.1). Price per certificate	40,00 € / not available in retrospect
Material certificate (MPZ 3.1). Price per certificate	40,00 € / in retrospect: 100,00 €
TÜV individual inspection acc. EN 10204 3.2 (TÜV-APZ) 1 to 10 valves. Price per valve	58,00 €
TÜV individual inspection acc. EN 10204 3.2 (TÜV-APZ) 11 to 20 valves. Price per valve	56,00 €
Sealing material - Manufacturer certification (FDA, USP 3, 3-A,...). Price per certificate	20,00 €
EAC - certificate/declaration with passport for the valve and laser marking of the valve (price for the first valve of a line item)	100,00 €
Price for each subsequent EAC - certificate/declaration of the line item	10,00 €
Duplicate of original EAC-certificate/declaration in retrospect	40,00 €
Price for each subsequent passport of the line item	10,00 €
ASME laser marking (if applicable/available). Price per valve	40,00 €
ATEX certificate. Price per valve	40,00 €

SHIPBUILDING – TYPE APPROVALS

DNV, BV, LR, ABS, GL, RS (if applicable / available). Price per valve Including laser marking of each valve	40,00 €
Individual inspection	on demand

MISCELLANEOUS

24h-express production	20,00 € for the first valve, subsequent 10,00 € each
Low value surcharge for orders less than 100,00 € (value of goods)	10,00 € per order
Special thread/ connections for stainless steel (except clamp- and loose flange connections)	10% of listprice but at least 10,00 € per valve
Special thread/ connections for gunmetal/brass (except clamp- and loose flange connections)	20% of listprice but at least 10,00 € per valve
Individual marking	5,00 € per valve
Setting and/or sealing of pressure reducing valves	10,00 € per valve
For set-pressures other than indicated in our catalogue for valves with diaphragm	10,00 € per valve
Oil- and grease-free	20% of listprice but at least 20,00 € per valve
Chemically nickel plated	30% of listprice but at least 20,00 € per valve
Galvanically nickel plated	25% of listprice but at least 20,00 € per valve
Chrome-plated	40% of listprice but at least 40,00 € per valve
Return/ Cancellation costs of customer specific produced valves	50% of listprice but at least 60,00 € per valve
Return costs of stock valves	30% of listprice but at least 30,00 € per valve
Standard packaging material costs	5 kg: 5,00 € < 30 kg: 10,00 € > 30 kg: 15,00 €
Surcharge for third-party-deliveries	5,00 € per consignment

→ General terms and conditions (Last updated: 02/2018)

I. General

1. All offers, supplies and services are subject exclusively to the following terms and conditions. These terms and conditions shall also apply to all future offers, supplies and services. The customer shall also submit to these terms and conditions should we perform orders at short notice which would not normally be confirmed separately by us.
2. General terms of business or purchase of the customer or third parties which deviate from these terms and conditions are hereby contradicted. Said customer's terms and conditions shall be deemed to have been contradicted even if we do not explicitly reject any such terms of business and purchase should they be received by us. Even if we refer to correspondence containing the business terms of the customer or a third party, or refer to such, this shall not be an agreement to the validity of the business terms.

II. Initiation and conclusion of contract

1. Our offers shall not be binding. Our declarations shall only be valid if made in text form or in electronic form as defined by §§ 126a, 127 BGB (German Civil Code). Declarations of any kind issued in any form (verbal, by telephone, by fax, etc.) by our employees or representatives, including all subsidiary agreements, shall only be valid if confirmed by us in text form or fully automatically.
2. Offers and purchase orders issued by the customer shall only be deemed to have been accepted by us if explicitly confirmed in text form or if fully automatic confirmation of the same is issued. If no response is made to an offer or purchase order issued by the customer, this shall not be interpreted as tacit acceptance of the same.
3. Our written or fully automatic acknowledgement of order shall be authoritative with regard to contracts concluded with the customer. Any objections brought by the customer against the acknowledgement of order or the confirmation of subsidiary agreements shall be notified to us immediately, at the latest within 2 working days of receipt of our acknowledgement. Should the customer fail to raise objections in good time, the fittings specified in our acknowledgement or order in particular – with the exception of those subject to our warranty obligations – shall not be subject to exchange and shall not be taken back by us.

III. Product properties, manufacturer specifications, dimensions, weights, quality, drawings

1. Drawings, illustrations, dimensions, weights or other performance data, including samples, drawings, data sheets and similar, as well as information in advertising material shall not substantiate an agreement on quality or condition as defined by §§ 434 Para. 1 Sentence 1 and 2, § 633 Para. 2 BGB (German Civil Code). Such specifications shall only be deemed to be binding if they have been agreed in writing. Samples shall only be deemed to be non-binding demonstration models.
2. Deviations from bindingly agreed dimensions, weights and standards of quality shall be permissible within the limits defined in applicable DIN standards or customary practice. Changes to bindingly agreed dimensions, weights and standards of quality made at the request of the customer shall only be possible if they are notified by the customer in good time such that the relevant change can be taken into account during the production process.
3. Consulting services shall be provided by our employees and representatives to the best of their knowledge. Facts and figures relating to the properties, dimensions, weights and levels of quality of our products, as well as about the suitability and application of our products for specific processes and purposes are not binding and shall not substantiate an agreement on quality or condition as defined by §§ 434 Para. 1 Sentence 1 and Sentence 2, § 633 Para. 2 BGB (German Civil Code). Any such information provided in the context of consultations shall not release the customer from the obligation to perform its own inspections and tests.We shall only be liable for any mistakes in such facts and figures in the event of intention or gross negligence.
4. The functions and properties of our products and systems as shown in test certificates, approvals or similar documents can only be expected if use is made of our original products and systems and if processing is undertaken by properly qualified specialist firms which are familiar with the recognized state of the art, particularly in the fields of metal and mechanical engineering, and which are demonstrably informed about the relevant DIN standards, industry guidelines and recommendations. The information about our produces and services provided by us in our technical documentation as well as information issued by us for the purpose of processing our products – i.e. information about design, arrangement, assembly, processing, installation, etc. – shall be intended as suggestions and ideas for properly qualified specialist firms which are familiar with the recognized state of the art and which are demonstrably informed about the relevant DIN standards, industry guidelines and recommendations. This information shall not form part or the basis of the contract concluded with the customer and we consequently make no separate charge for said information. We shall only be liable for any mistakes in such facts and figures in the event of intention or gross negligence.
5. We reserve the proprietorship rights or copyrights to all quotations and costing estimations provided by us as well as drawings, plans, data sheets, illustrations, calculations, prospectuses, catalogues, models, tools and other documents and aids provided to the customer. The customer may not make these objects as such, nor the contents, accessible to third parties without our explicit previous written permission, and may not publish them, use them personally or through third parties or reproduce them. The customer must return these objects to us in full at our request and destroy any copies made if they are no longer required by the customer in a proper business transaction or if negotiations do not lead to the conclusion of a contract.

IV. Delivery

1. Delivery periods and deadlines shall only be binding if they are explicitly agreed as such in writing. Agreed delivery periods shall commence on the date of our acknowledgement of order, however not before full clarification of all necessary details and technical issues of the order. The latter shall also apply to delivery dates.
2. If the customer does not fulfil contractual obligations, including cooperation or secondary obligations (e.g. opening a letter of credit, providing national or international certificates, approvals, releases or documents, payment of an agreed deposit or similar) punctually, we shall be entitled to appropriately extend or postpone our delivery periods and dates, irrespective of our rights resulting from the customer's delay, according to the requirements of our production process.
3. Our obligations are subject to receipt by us of correct and timely supplies. This shall only apply in the case of purchase orders placed by consumers if a specific covering transaction has been concluded and not been fulfilled by our own supplier. We shall not be held responsible for delivery delays – even where delivery periods have been bindingly agreed – resulting from force majeure and owing to events which render delivery significantly more difficult or impossible for longer than a temporary period, such as strikes, lockouts, directives issued by public authorities are not our responsibility, including if this happens to our own suppliers, even if the delivery periods had been agreed to as obligatory. Such circumstances shall release us from the obligation towards punctual fulfilment of the contract for the period they last and entitle us to postpone the delivery by the duration of the impeding circumstances plus a reasonable start-up period. Our customer shall be notified immediately should deliveries be abortive or delayed.
4. We shall be entitled to make partial deliveries as long as and to the extent that this is not unreasonable for the customer.
5. An agreed delivery period shall be deemed to have been met if the delivery item has left our business premises prior to expiry of said period or readiness for shipment has been notified to the customer and shipment has not been made at the request of the customer.
6. Should we be unable to deliver ordered goods because a supplier does not fulfil their contractual delivery obligations, we shall be entitled to withdraw from the contract with the customer. In non-commercial transactions however, this only applies if we have concluded a specific hedging transaction with the respective supplier, if we are not responsible for absence of the delivery and if the hedging transaction is a congruent hedging transaction. We shall be obliged to immediately inform the customer about non-availability of the service and shall promptly refund any return services provided by the customer.
7. Discernible defects in our deliveries and services, including delivery of incorrect quantities or the delivery of goods other than those ordered, shall be notified by the customer immediately. Defects in our deliveries which cannot be detected in the course of standard receiving inspections shall be notified by the customer immediately upon detection of such defects. In the case of transport damages, the customer shall immediately arrange for an investigation and report to be made detailing the transport damages by the responsible authorities.

V. Passage of risk, acceptance, packaging

1. The risk of ruin, loss or damage to the goods shall transfer to the customer upon handover to the customer, the shipper or freight forwarder or another third party nominated to ship the goods, but at the latest when leaving the factory or warehouse. When handing over the delivery item to the above-mentioned persons, the start of the loading process shall be decisive. This shall also apply if partial deliveries are made or we have taken on other services. If an agreement is made for the customer to collect the goods, the risk shall transfer to the latter upon provision of the goods.
2. If the delivery of our supplies and services is delayed for reasons for which the customer is responsible, we shall be entitled but not obliged to store the goods at the cost and risk of the customer at our own discretion, to take all the measures which we deem to be necessary for the purpose of preserving the goods and to issue an invoice for the same. In such cases the risk shall pass to the customer at the time that readiness for delivery has been notified to the customer. The date on which readiness for delivery is notified to the customer shall be regarded as the date of delivery to the customer. The same shall apply if goods notified as ready for delivery are not called forward within 3 working days. The statutory provisions regarding delayed acceptance shall continue to apply. We are also entitled to charge the customer for the costs incurred as a result of the delay. Should the goods be stored on our premises, the customer shall be charged at least 0.5% of the invoice amount per month. The customer is entitled to prove that damage is not caused by the delay or is significantly lower than the lump sum. Following the unsuccessful expiration of an acceptance deadline given to the customer and following prior notification, we can also dispose of the deliverable in another manner. Our statutory claims from the customer's default remain unaffected.
3. If acceptance of our supplies and services is agreed or if the customer has accepted the obligation to accept at our behest, such acceptance shall take place in our works or warehouse. The acceptance inspection and procedure shall be conducted immediately following notification of readiness for acceptance. The costs of the acceptance inspection and procedure shall be borne by the customer. If special quality regulations or a specific standard of quality of our supplies and services have been agreed, or if the customer requests that our standard articles or standard systems are processed to meet special requirements, we shall be entitled but not obliged to demand acceptance of our supplies and services from the customer. The customer shall be required to accept on request. If the customer defaults on acceptance of our supplies and services, we shall be entitled to assert the rights specified in Clause V (2).
4. If the delivery items are shipped or transported to the customer by us, we shall select the means of transport, transport route, method of shipment and shipment route at our discretion. In such cases we shall also select the carrier and/or shipping agent. Unless otherwise agreed, the delivery items shall be shipped and/or transported to the customer at the customer's cost. If the customer requests that insurance be taken out to cover transport risks, the customer shall make such request in good time and shall bear the costs of such transport insurance. Additional costs incurred as a result of special shipment requests made by the customer shall be borne by the customer. Additional costs for the reforwarding of goods requested by the customer and additional warehousing costs shall also be borne by the customer.
5. Unless otherwise agreed in writing, the delivery item shall be delivered in cartons. Unless otherwise agreed in writing, packaging costs shall be borne by the customer. Packaging will only be taken back by the supplier if specifically agreed unless the taking back of such packaging is mandated by law or by official regulations based on mandatory statutory provisions. Where packaging is taken back, reimbursement/refunding of the packaging costs borne by the buyer shall also be subject to explicit agreement.

VI. Prices, proof of exportation, settlement, collateral

1. Our prices are quoted as net prices to which currently applicable rates of statutory value-added tax in Germany or abroad shall be added. Our prices apply ex warehouse / ex works. Customs duties, consular costs, freight, insurance premiums, packaging costs and other costs relating to the implementation of the contract shall be charged separately to the customer. If, deviating from this term, an agreement is reached whereby such costs are included in the price, any increases in costs which occur after the contract is concluded shall be charged to the customer.
2. If the agreed prices are based on our list prices and the delivery is agreed to be made more than 4 months after conclusion of the contract, our valid list prices upon delivery shall apply. Deliveries made to meet call off orders placed by the customer in the framework of continuous obligations shall be subject to the list prices applying at the time the customer call off is made.
3. If the customer defaults on payment of an invoice or if we become aware of circumstances which suggest that the creditworthiness of the customer may be seriously impaired, we shall be entitled to demand immediate settlement of all current outstanding claims against the customer regardless of any payment targets which may have been granted and regardless of the term of any discounted bills. We shall also be entitled to withdraw in whole or part from current contracts. We reserve the right to make purchase orders which have not yet been performed contingent on advance payment or the furnishing of security. The costs of such collateral shall be borne by the customer in such cases.
4. We shall be entitled to demand security from the customer at any time in compliance with § 648 a BGB (German Civil Code). The usual costs for the furnishing of security shall be reimbursed in this case up to a maximum of 2 % p. a.
5. Our invoices are due for settlement within 30 days of the invoice date at no discount. Other terms of payment and prompt payment discounts shall be subject to explicit agreement.
6. If supplies and services are made within the EU the customer shall provide us with the VAT Reg. No. under which it settles acquisition tax in the EU prior to performance of a purchase order. Invoicing of cross-border supplies and services between the EU members states is subject to the valid VAT regulations of the 6th EU Directive unless otherwise regulated under national law. If value-added tax must be charged by us, the customer shall owe the applicable VAT in addition to the agreed (net) price. If a customer based outside the Federal Republic of Germany or its agent collects the goods and transports or ships them to countries outside the EU, the customer shall provide us with proof of exportation which complies with the legal VAT regulations in the Federal Republic of Germany. If such proof is not provided within 30 days of transfer of the goods, the customer shall pay the value-added tax at the tax rate applicable on the invoice amount for the relevant deliveries within the Federal Republic of Germany.
7. The customer shall only be entitled to retain payments or to offset payments with counterclaims to the extent that such counterclaims are undisputed by us or have been legally determined. The offsetting ban does not apply to a counterclaim due to a defect that is based on the same contractual relationship as our entitlement. The customer shall only be entitled to assign claims against us with our prior written consent.

VII. Retention of title

1. Our goods shall remain our property pending fulfillment of all, including future, claims, including but not limited to balance claims due to us in the context of the business relationship with the customer. The assertion of our retention of title shall not constitute withdrawal from the contract. If we assert our right to demand surrender of the goods, the customer hereby grants us the irrevocable right to repossess the goods which are our property and to enter the premises on which such goods are kept for this purpose.
2. Any treatment or processing of goods which are still our property shall be undertaken on our behalf as manufacturer as defined by § 950 BGB (German Civil Code) without this imposing any obligations on us. Should our delivery items be processed with other items which are not our property, we shall acquire co-title to the new object based on the ratio of the invoice value of the goods supplied by us to the processing value of the new item. The treated or processed delivery item or our share of the jointly owned new item shall be regarded as retained goods in accordance with Clause (1). If our delivery items are mixed or connected with other goods which are not our property, we shall acquire co-title to the new object based on the ratio of the value of the mixed or connected items to the integral item of which they form part. If processed or mixed items other than our property are regarded as the principal good and should these items be the property of the customer, the customer herewith assigns co-title to us equal in value to the value of the mixed or connected items. Items to which we hold co-title shall be regarded as retained goods as defined in Clause (1) above.
3. The customer shall be entitled to sell the retained goods in the course of its ordinary business activities. Claims obtained by the customer from the resale shall be herewith assigned to us to the value of the invoice value of the retained goods. If the retained goods are sold by the customer with other goods which are not our property, the customer shall assign the claims arising from the resale to us based on the ratio of the invoice value of our retained goods to the invoice value of the other goods. If goods which are jointly owned by us as defined by the above Clause (2) are resold, the share of the resale claim which corresponds to our share of the ownership in the goods shall herewith be assigned.
4. The assignments referred to in Clause (3) above shall be made to secure all our existing and future claims arising from the business relationship with the customer. We undertake to release the collateral security due to us at the request of the customer to the extent that the realizable value of our collateral exceeds the value of the secured receivables by more than 20 %.
5. The customer shall not be entitled to assign claims from the resale of retained goods to third parties. Claims arising from the resale of retained goods shall only be assigned to factoring companies with our explicit, prior written approval. The customer shall not be entitled to pledge the retained goods or use the same as security as long as our retention of title continues to apply. If payments are suspended, the customer shall no longer be entitled to resell retained goods, even if such goods have been processed. The customer shall draw attention to our ownership or any claims arising from the resale of the retained goods which are assigned to us and shall notify us in writing immediately if retained goods are attached or seized in any other way by third parties.
6. At our request, the customer shall notify its contracting parties that assignment has been made to us, shall provide us with the required information and surrender the required documentation. We shall be entitled to notify the customer's contracting parties of such assignment.
7. If the customer accepts payment or other forms of consideration from the resale of retained goods before the customer's liabilities to us have been settled in full, such payments or consideration shall be accepted on our behalf at the amount of claims surrendered to us. The customer shall receive such payments or consideration as our trustee.
8. The customer shall also surrender the claims to secure our receivables against him that accrue against a third party by connection of the delivery item with a property.

VIII. Warranty claims

1. Our supplies and services shall be deemed to have been provided in accordance with contract if they comply – or do not substantially deviate from – the agreed specifications at the time of passage of risk. The contractual compliance and freedom from defects of our supplies and services shall be determined exclusively according to our agreements on quality and quantity of the ordered goods. Liability for specific purpose or suitability shall only be accepted if such liability is explicitly agreed in writing.
2. If changes are made to the product supplied by us, if materials are exchanged or used which do not comply with original specifications or if materials delivered by us are not processed according to our processing guidelines, our warranty obligations shall not apply unless the customer demonstrates that none of these circumstances were responsible for such defects and that, on the contrary, the defects existed prior to passage of risk and regardless of the above circumstances. No warranty shall be assumed either in the event of unsuitable or improper use, faulty or negligent handling and/or storage and defective processing of goods supplied by us. The same shall apply to defects in and damages to goods delivered by us resulting from a failure to comply with the operating and maintenance instructions provided with all supplied products. We shall also be released from liability for the ensuing defects in the event of improper subsequent improvements undertaken by the customer or a third party.
3. In the event of complaints, the customer shall immediately provide us with the opportunity of examining the delivery items subject to complaint. The goods subject to complaint and a sample of the same shall be made available to us at no cost at our request. If unjustified complaints are made, we shall be entitled to charge the customer the shipping, handling and inspection costs at customary prices.
4. In the event of the assertion of claims for material defects to the delivered objects, we undertake and are entitled in the first instance to choose within an appropriate period of grace between the rectification of the defect and the delivery of a replacement. The Customer undertakes to allow us the time and opportunity we require for the rectification or replacement delivery which we deem to be necessary. In any other case, we will be exempted from liability for any consequences which may arise as a result.
5. Rights of recourse of the Customer against us pursuant to § 478 of the German Civil Code (BGB) are limited to the statutory scope of the justified claims for defects asserted against the Customer by third parties and assume that the Customer has complied with the duty to give notice of defects incumbent upon him in relation to us pursuant to § 377 of the German Commercial Code (HGB).

IX. General limitation of liability

1. Unless otherwise agreed in these terms and conditions, we shall only be liable for damages in case of breach of contractual or non-contractual duties, including breach of collateral duties or breach of duties prior to contract formation, in the event of intent or the gross negligence of our legal representative or agents in performance or in the case of culpable breach of major contractual duties.
2. In the event of the culpable breach of major contractual duties we shall only be liable – except in the event of intent or gross negligence of our legal representatives or agents in performance – for foreseeable damages which are intrinsic to the contract. Damage amounting to a maximum of €25,000 is deemed to be contractually typical, foreseeable damage.
3. The above limited liability provisions shall not apply to injury to life, limb or health or to damages to privately used property in accordance with the German Product Liability Act (Produkthaftungsgesetz). The statutory liability provisions shall also apply in cases of fraudulently concealed defects and infringement of expressly warranted characteristics.
4. The statutory period of limitation for all of the customer's claims due to a defect is one year, commencing with the beginning of the statutory limitation period. This does not apply if we fraudulently conceal the defect or, as an exception, have assumed a guarantee. The knowledge-dependent statutory period of limitation for compensation claims not based on a defect is one year; the non-knowledge-dependent maximum period for compensation claims is five years. In all cases, the statutory limitation of claims due to intent or gross negligence by us or our agents and upon personal injury, bodily harm or damage to health and based on the German Product Liability Act [Produkthaftungsgesetz] remains unaffected. The limitation periods for all defect claims shall be 5 years from the beginning of the statutory limitation period if the terms of § 438 Para. 1 no. 2 or § 634 a Para. 1 no. 2 BGB (German Civil Code) exist.

X. Applicable law, place of performance and legal venue, miscellaneous

1. Our legal relationships with our customers are subject to the law of the Federal Republic of Germany to the exclusion of the uniform UN Convention on Contracts for the International Sale of Goods, CIFG.
2. The place of performance and legal venue for purchase orders placed by merchants, legal persons under public law or public funds shall be Ludwigsburg. We shall, however, be entitled to bring an action at the customer's own place of general jurisdiction.
3. Should a clause in these terms of business be or become ineffective, the effectiveness of the remaining clauses shall not be affected. In place of the ineffective clause, an effective clause shall count as agreed that comes as close as possible to the original intention of the parties. The same shall apply to a loophole.
4. Data generated in connection with the business relationship shall be processed by computer and stored in file form.

ARMATUREN GOETZE

→ Overview

TÜV/CE ANGLE-TYPE SAFETY VALVES FOR INDUSTRIAL APPLICATIONS

Series	Materials	Temperatures	Pressures	Media	Threaded connection	Flange connection	Page
451		–60 °C – +400 °C	0.5 bar – 70 bar		1/2" – 2"		3.1
851		–60 °C – +225 °C	0.5 bar – 50 bar		1/2" – 2"		3.2
460		–60 °C – +225 °C	0.2 bar – 25 bar		3/8" – 1"		3.3
652		–60 °C – +200 °C	1 bar – 16 bar		1/2" – 2"		3.4
420		–40 °C – +260 °C	0.5 bar – 50 bar		1/4" – 3/8"		3.5
461		–60 °C – +225 °C	0.5 bar – 70 bar		1/4" – 1/2"		3.6
861		–60 °C – +225 °C	0.5 bar – 50 bar		1/4" – 1/2"		3.7
452		–60 °C – +400 °C	0.5 bar – 25 bar			DN 40 and DN 50	3.8
852		–60 °C – +225 °C	0.5 bar – 25 bar			DN 40 and DN 50	3.9
352		–10 °C – +350 °C	0.5 bar – 16 bar			DN 40 and DN 50	3.10
455		–270 °C – +400 °C	0,2 bar – 40 bar			DN 20 to DN 100	3.11

→ Series 451

451

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

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.

UV

MATERIAL

SPECIFICATION

1/2“ – 2“	– 60°C to + 400°C depending on version	0,5 – 70 bar

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**
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	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

[1]only for versions with bellows

Series 451 ■ VALVE VERSION

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)	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

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
Against surcharge			
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

■ OPTIONS

Special versions on request.

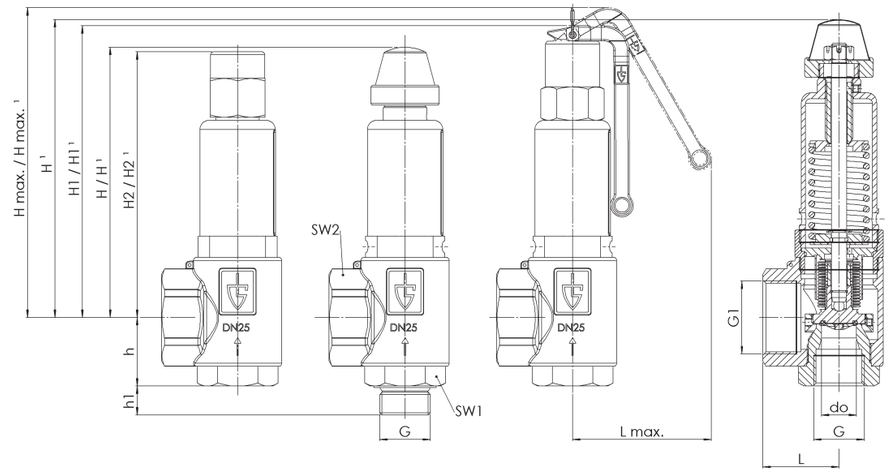
■ NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

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)
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
	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	4,0
Range of adjustment	**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

[1]Dimension for the version with bellows
[2]Version with bellows only available from 1 bar

■ 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*	*F*	*L*	*15*	*m*	*f*	*15*	*25*	*EPDM*		*15,0*	*2*
451												
451												
451												

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 / 488 94 88
Please do not forget to add your personal data so that our sales team can contact you.

Name

First Name

Company

Telephone

E-Mail

GOETZE ARMATUREN
Version 2017 / 10
www.goetze-armaturen.de | info@goetze-armaturen.de | Phone: +49 (0) 7141 / 488 94 60

CAPACITY TABLE

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

Nominal diameter DN		15				20					
				Bellows		do = 15,8			do = 18		
				without	with						
Set pressure bar		I	II	III	III	I	II	III	I	II	III
	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
Air l	1,5	113	90	3,8	3,1	166	132	4,9	252	200	9,0
Nm³/h	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	3	189	148	5,4	4,4	298	233	6,9	447	349	12,7
kg/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
Water III	4,5	262	203	6,7	5,3	413	319	8,4	618	478	15,6
m³/h	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

CAPACITY TABLE

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
	0,5	199	150	8,8	353	266	15,4
	1	291	232	12,0	515	411	20,8
Air l	1,5	390	309	14,7	683	542	25,5
Nm³/h	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
kg/h	3,5	768	597	22,4	1333	1036	38,9
	4	855	663	24,0	1484	1151	41,6
Water III	4,5	942	729	25,4	1635	1265	44,1
m³/h	5	1029	794	26,8	1786	1378	46,5
	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

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Version 2017 / 10
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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)							
	15	80,8	226,9	12,9	155,9	437,7	31,2
Air l	30	117,9	331,0	17,5	227,4	638,5	42,3
SCFM	40	145,1	407,4	20,2	279,9	785,8	48,8
	50	172,3	483,7	22,6	332,3	933,0	54,6
Steam II	60	199,5	560,1	24,7	384,7	1080,3	59,8
PPH	70	226,7	636,4	26,7	437,2	1227,5	64,6
	80	253,9	712,7	28,6	489,6	1374,8	69,1
Water III	90	281,1	789,1	30,3	542,1	1522,0	73,3
GPM	100	308,3	865,4	31,9	594,5	1669,3	77,2
	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
	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
	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

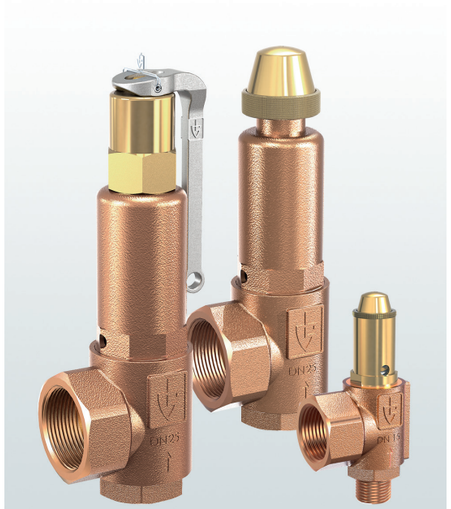
CONTINUATION - Series 451: Blowing-off rates at 10% above set pressure

Nominal diameter DN		25			32		
		I	II	III	I	II	III
Set pressure psi(g)							
	15	254,5	714,7	51,0	441,8	1240,4	88,5
Air l	30	371,3	1042,5	69,1	644,4	1809,3	119,9
SCFM	40	456,9	1282,9	79,8	793,0	2226,6	138,4
	50	542,6	1523,4	89,2	941,6	2643,8	154,8
Steam II	60	628,2	1763,8	97,7	1090,2	3061,1	169,5
PPH	70	713,8	2004,2	105,5	1238,8	3478,3	183,1
	80	799,4	2244,6	112,8	1387,4	3895,6	195,8
Water III	90	885,1	2485,0	119,6	1536,1	4312,8	207,6
GPM	100	970,7	2725,4	126,1	1684,7	4730,1	218,9
	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
	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
	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 851

851

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



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.

MATERIAL

SPECIFICATION

1/2“ – 2“

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

0,5 – 50 bar

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**
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

[1]only 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 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
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

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
Against surcharge			
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

■ OPTIONS

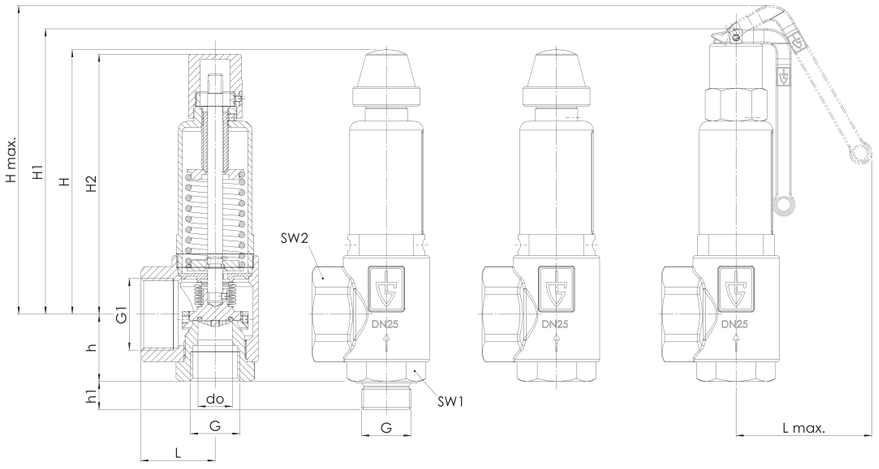
Special versions on request.

■ 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	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	0,5-50
Range of adjustment ASME	**psi**	15-1015	15-1015	15-1015	15-1015	15-1015	15-1015	15-1015	15-1015	15-1015

■ 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				
851	*tb*	*GF*	*0*	*25*	*m*	*f*	*25*	*40*	*FKM*		*16,0*	*5*
851												
851												
851												

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 / 488 94 88
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 851: Blowing-off rates at 10% above set pressure

Nominal diameter DN		15				20					
				Bellows without	Bellows with	do=15,8			do=18		
Set pressure bar		I	II	III	III	I	II	III	I	II	III
	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
Air l	1,5	113	90	3,8	3,1	166	132	4,9	252	200	9,0
Nm³/h	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	3	189	148	5,4	4,4	298	233	6,9	447	349	12,7
kg/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
Water III	4,5	262	203	6,7	5,3	413	319	8,4	618	478	15,6
m³/h	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

CAPACITY TABLE

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

Nominal diameter DN		25			32		
Set pressure bar		I	II	III	I	II	III
	0,5	199	150	8,8	353	266	15,4
	1	291	232	12,0	515	411	20,8
Air l	1,5	390	309	14,7	683	542	25,5
Nm³/h	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
kg/h	3,5	768	597	22,4	1333	1036	38,9
	4	855	663	24,0	1484	1151	41,6
Water III	4,5	942	729	25,4	1635	1265	44,1
m³/h	5	1029	794	26,8	1786	1378	46,5
	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

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CAPACITY TABLE ASME

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)							
	15	80,8	226,9	12,9	155,9	437,7	31,2
Air l	30	117,9	331,0	17,5	227,4	638,5	42,3
SCFM	40	145,1	407,4	20,2	279,9	785,8	48,8
	50	172,3	483,7	22,6	332,3	933,0	54,6
Steam II	60	199,5	560,1	24,7	384,7	1080,3	59,8
PPH	70	226,7	636,4	26,7	437,2	1227,5	64,6
	80	253,9	712,7	28,6	489,6	1374,8	69,1
Water III	90	281,1	789,1	30,3	542,1	1522,0	73,3
GPM	100	308,3	865,4	31,9	594,5	1669,3	77,2
	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
	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
	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

CAPACITY TABLE ASME

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)							
	15	254,5	714,7	51,0	441,8	1240,4	88,5
Air l	30	371,3	1042,5	69,1	644,4	1809,3	119,9
SCFM	40	456,9	1282,9	79,8	793,0	2226,6	138,4
	50	542,6	1523,4	89,2	941,6	2643,8	154,8
Steam II	60	628,2	1763,8	97,7	1090,2	3061,1	169,5
PPH	70	713,8	2004,2	105,5	1238,8	3478,3	183,1
	80	799,4	2244,6	112,8	1387,4	3895,6	195,8
Water III	90	885,1	2485,0	119,6	1536,1	4312,8	207,6
GPM	100	970,7	2725,4	126,1	1684,7	4730,1	218,9
	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
	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
	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

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→ Series 460

460

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

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.

MATERIAL

SPECIFICATION

3/8“ – 1“	– 60°C to + 225°C depending on version	0,2 – 25 bar depending on version

APPROVALS

TÜV-Type test approval 2067	**D/G, F**
EC type examination	**S/G, L**
TSG ZF001-2006	**D/G (S/G), F (L)**
KGS	**G**
TR ZU 032/2013 -TR ZU 010/2011	**D/G (S/G), F (L)**

Requirements

AD 2000 Data sheet A2	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

MATERIALS

Component	Material	DIN EN	ASME
Inlet body	Stainless steel	1.4408	CF8M
Outlet body	Stainless steel	1.4408	CF8M
Internal parts	Stainless steel	1.4401	316
Spring	Stainless steel	1.4310	304

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Series 460 ■ VALVE VERSION

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

GF	gaseous and liquid	Air, vapours, gases, liquids and - depending on seal - also for steam

■ TYPE OF LIFTING MECHANISM

L	Lifting lever
0	without lifting device

■ AVAILABLE NOMINAL DIAMETERS AND CONNECTION SIZES

Nominal diameter DN		**10**	**15**	**20**	**25**
Inlet		3/8“ (10)	1/2“ (15)	3/4“ (20)	1“ (25)
Outlet	3/8“ (10)	■			
	1/2“ (15)		■		
	3/4“ (20)			■	
	1“ (25)				■

■ TYPE OF CONNECTION INLET / OUTLET THREADED CONNECTIONS

m / f	Standard	Male thread BSP-P / Female thread BSP-P	DIN EN ISO 228-1 / DIN EN ISO 228-1
Against surcharge			
BSP-Tm / f		Male thread BSP-T / Female thread BSP-P	DIN EN 10226, ISO 7-1 / DIN EN ISO 228-1
NPT-m / f		Male thread NPT / Female thread BSP-P	ASME B1.20.1 / DIN EN ISO 228-1

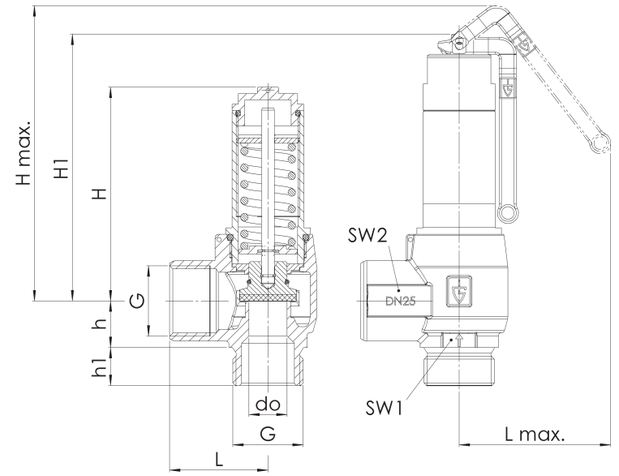
■ SEALS

NBR	Nitrile rubber	Elastomere flat seal	–30°C to +130°C
EPDM	Ethylene propylene diene	Elastomere flat seal	–50°C to +150°C
FKM	Fluorcarbon	Elastomere flat seal	–20°C to +200°C
PTFE	Polytetrafluoroethylene	Flat seal from 0,5 bar	–60°C to +225°C

■ NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

Series 460: Connection, installation dimensions, ranges of adjustment					
Nominal diameter	**DN**	**10**	**15**	**20**	**25**
Connection DIN EN ISO 228	**G**	3/8" (10)	1/2" (15)	3/4" (20)	1 " (25)
Outlet DIN EN ISO 228	**G**	3/8" (10)	1/2" (15)	3/4" (20)	1 " (25)
Installation dimensions in mm	**L**	30	36	43	47
	Lmax	72	72	72	72
	H	77,5	82	90,5	101
	H1	98	107	117	127
	h	17	19	20	22
	h1	12	15	16	18
	SW1	24	27	34	38
	SW2	22	26	32	38
	do	9	13	15	18
Weight	**kg**	0,3	0,4	0,6	0,8
Range of adjustment	**bar**	0,2-25	0,2-25	0,2-25	0,2-25

■ 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				
460	**t**	**GF**	*L*	*15*	*BSP-T m*	**f**	*15*	*15*	*EPDM*		*5,5*	*2*
460	**t**	**GF**				**f**						
460	**t**	**GF**				**f**						
460	**t**	**GF**				**f**						

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 / 488 94 88
Please do not forget to add your personal data so that our sales team can contact you.

Name

First Name

Company

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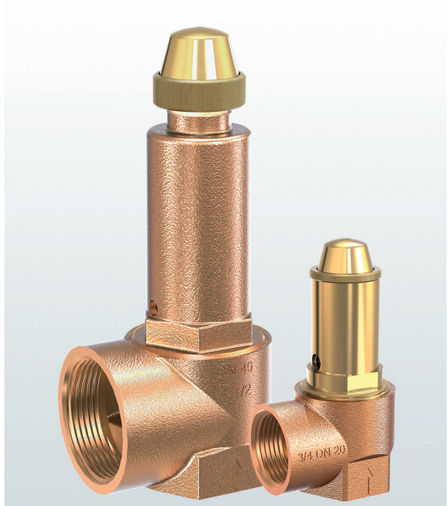
CAPACITY TABLE

Series 460: Blowing-off rates at 10% above set pressure

Nominal diameter DN		10			15			20			25		
Set pressure bar		I	II	III	I	II	III	I	II	III	I	II	III
	0,2	18	14	0,6	41	33	1,3	58	46	1,8	77	61	2,6
Air l	0,5	25	20	0,8	62	50	1,9	81	65	2,5	111	89	3,7
Nm³/h	0,8	34	27	1,0	82	65	2,3	107	85	3,1	145	115	4,7
	1	39	31	1,1	95	75	2,6	124	97	3,4	167	132	5,2
Steam II	1,5	53	41	1,4	127	99	3,3	169	132	4,2	243	191	6,3
kg/h	2	65	51	1,6	159	124	3,8	212	165	4,8	310	243	7,3
	2,5	80	62	1,8	190	147	4,3	257	200	5,4	370	288	7,7
Water III	3	91	71	2,0	217	169	4,7	295	229	5,9	439	341	8,5
m³/h	3,5	105	81	2,2	250	193	5,1	338	262	6,4	512	396	9,2
	4	119	92	2,3	278	214	5,5	383	296	7,0	570	440	9,8
	4,5	134	103	2,5	306	236	5,8	429	331	7,4	628	485	10,4
	5	146	113	2,7	340	263	6,1	469	362	7,8	687	530	10,9
	5,5	159	122	2,8	369	285	6,4	509	392	8,2	745	574	11,5
	6	174	135	2,9	398	307	6,7	557	430	8,6	804	620	12,0
	6,5	187	144	3,0	442	341	7,0	598	461	8,9	864	666	12,5
	7	200	154	3,1	471	364	7,2	638	492	9,7	934	721	12,9
	7,5	216	167	3,3	510	393	7,5	678	523	10,1	993	766	13,4
	8	246	190	3,4	549	423	7,7	719	555	10,4	1052	812	13,8
	8,5	260	200	3,6	580	447	8,0	759	586	10,7	1111	857	14,3
	9	274	211	3,7	610	471	8,2	799	617	11,0	1170	903	14,7
	9,5	287	222	3,8	641	495	8,4	840	648	11,3	1229	948	15,1
	10	301	232	3,9	672	518	8,6	880	679	11,6	1288	994	15,5
	11	329	254	4,1	734	566	9,1	961	741	12,2	1406	1085	16,2
	12	357	275	4,2	795	613	9,5	1042	803	12,7	1524	1176	16,9
	13	384	296	4,4	857	661	9,8	1122	866	13,3	1643	1267	17,6
	14	412	318	4,6	918	708	10,2	1203	928	13,8	1761	1358	18,3
	15	439	339	4,7	980	756	10,6	1284	990	14,3	1879	1449	18,9
	16	467	360	4,9	1042	803	10,9	1364	1052	14,7	1997	1540	19,6
	17	495	382	5,0	1103	851	11,3	1445	1115	15,2	2115	1632	20,2
	18	522	403	5,2	1165	899	11,6	1526	1177	15,6	2233	1723	20,8
	19	550	424	5,3	1226	946	11,9	1606	1239	16,0	2351	1814	21,3
	20	577	446	5,5	1288	994	12,2	1687	1301	16,5	2469	1905	21,9
	21	605	467	5,6	1350	1041	12,5	1768	1364	16,9	2587	1996	22,4
	22	633	488	5,7	1411	1089	12,8	1848	1426	17,3	2705	2087	22,9
	23	660	509	5,9	1473	1136	13,1	1929	1488	17,6	2823	2178	23,5
	24	688	531	6,0	1534	1184	13,4	2010	1550	18,0	2942	2269	24,0
	25	716	552	6,1	1596	1231	13,6	2090	1613	18,4	3060	2360	24,5

→ Series 652



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.

MATERIAL

SPECIFICATION

1/2“ – 2“	– 60°C to + 200°C depending on version	1,0 – 16 bar

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	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

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

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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

■ 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

■ 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
For type 652mFK against surcharge			
FKM	Fluorcarbon	Elastomere flat seal	–20°C to +200°C
Only for type 652sGK for air, neutral vapours			

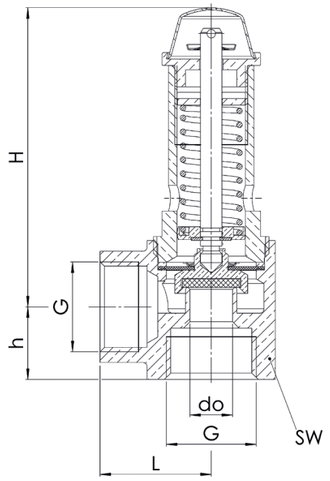
■ OPTIONS

Special versions on request.

■ 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



■ 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				
652	*m*	*F*	**K**	*15*	**f**	**f**	*15*	*15*	*NBR*		*5,5*	*2*
652	*s*	*G*	**K**	*25*	**f**	**f**	*25*	*25*	*FKM*		*3,5*	*4*
652			**K**		**f**	**f**						
652			**K**		**f**	**f**						

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 / 488 94 88
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 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
	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
Air l	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
Nm³/h	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	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
kg/h	3,5	73	-	2,82	123	-	4,77	186	-	7,23	235	-	9,15	351	-	13,67	454	-	17,65
	4	81	-	3,02	137	-	5,10	207	-	7,73	262	-	9,78	391	-	14,62	505	-	18,87
Water III	4,5	89	-	3,20	150	-	5,41	228	-	8,20	288	-	10,38	431	-	15,50	556	-	20,02
m³/h	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

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→ Series 420

420

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

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.

MATERIAL

SPECIFICATION

1/4“ – 3/8“	– 40°C to + 260°C depending on version	0,5 – 50 bar depending on version

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

[1]only for versions with bellows

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Series 420 ■ VALVE VERSION

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 dependign 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.

■ 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
Against surcharge			
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

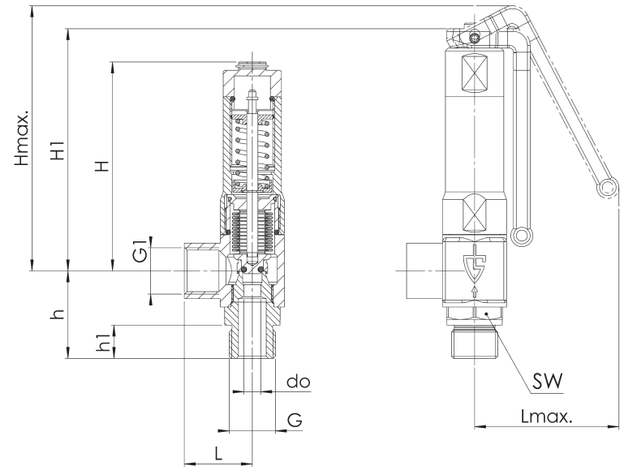
EPDM	Ethylene propylene diene	Elastomere moulded seal with metallic support	–40°C to +170°C
FKM	Fluorcarbon	Elastomere moulded seal with metallic support	–20°C to +200°C
Against surcharge			
FFKM	Perfluorinated rubber	Elastomere moulded seal with metallic support	–10°C to +260°C

■ 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



■ 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				
420	*tb*	**GF**	*L*	*8*	*m*	*f*	*8*	*10*	*FFKM*		*5,5*	*2*
420	*t*	**GF**	*0*	*10*	*SV*	*f*	*10mm*	*10*	*EPDM*		*22*	*1*
420		**GF**										
420		**GF**										

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 / 488 94 88
Please do not forget to add your personal data so that our sales team can contact you.

Name

First Name

Company

Telephone

E-Mail

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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
	0,5	11	-	0,35	16	13	0,65
Air l	1	15	-	0,48	24	19	0,88
Nm³/h	1,5	20	-	0,58	32	25	1,07
	2	24	-	0,67	40	32	1,24
Steam II	2,5	28	-	0,75	47	37	1,38
kg/h	3	33	-	0,82	55	43	1,52
	3,5	37	-	0,89	62	48	1,64
Water III	4	41	-	0,95	69	53	1,75
m³/h	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 461

461

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

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.

MATERIAL

SPECIFICATION

1/4“ – 1/2“

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

0,5 – 70 bar

APPROVALS

TÜV-Type test approval 2061	**D/G, F**
EC type examination	**S/G, L**
TSG ZF001-2006	**D/G (S/G), F (L)**
KGS	**G**
TR ZU 032/2013 - TR ZU 010/2011	**D/G (S/G), F (L)**

Requirements

AD 2000 Data sheet A2	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
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

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Series 461 ■ VALVE VERSION

s	Standard, non-gastight version of the spring housing	for neutral media without counter pressure.
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
L	Lifting lever
O	without lifting device, standard for gastight versions

■ 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

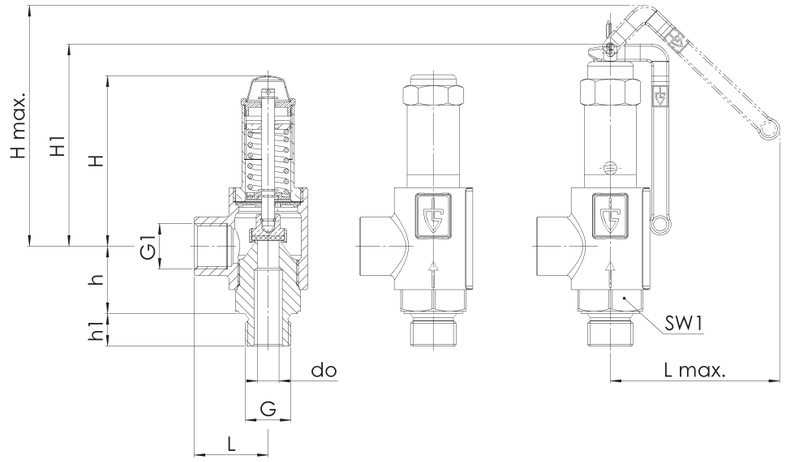
■ SEALS

PTFE	Polytetrafluoroethylene	Flat seal up to 22 bar	–60°C to +225°C
PTFE+Kohle	Polytetrafluoroethylene + carbon	Flat seal from 22,1 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
Weight	**kg**	0,5	0,5	0,6	1
Range of adjustment	**bar**	0,5-70	0,5-70	0,5-50	50,1-70

■ 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				
461	*t*	*G*	*O*	*8*	**m**	**f**	*8*	**15**	*PTFE*		*12,3*	*2*
461					**m**	**f**		**15**				
461					**m**	**f**		**15**				
461					**m**	**f**		**15**				

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 / 488 94 88
Please do not forget to add your personal data so that our sales team can contact you.

Name

First Name

Company

Telephone

E-Mail

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CAPACITY TABLE

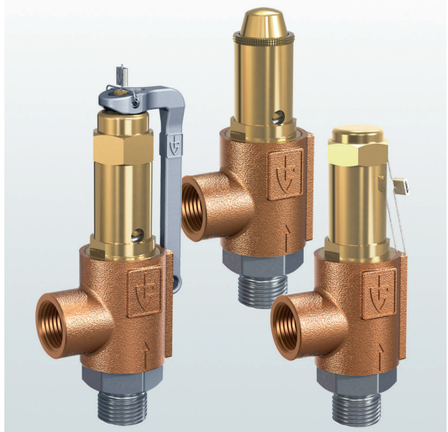
Series 461: Blowing-off rates at 10% above set pressure

Nominal diameter DN		8			10			15		
Set pressure bar		I	II	III	I	II	III	I	II	III
	0,5	6	4	0,54	24	18	0,86	44	34	1,62
Air I	1	10	8	0,70	35	28	1,13	67	54	2,24
Nm³/h	1,5	14	11	0,89	46	37	1,38	91	72	2,70
	2	18	15	1,00	57	45	1,62	113	89	3,13
Steam II	2,5	22	17	1,11	68	53	1,78	132	104	3,49
kg/h	3	26	20	1,24	78	61	1,94	154	120	3,83
	3,5	29	22	1,30	88	68	2,11	174	135	4,10
Water III	4	32	25	1,40	98	76	2,24	196	152	4,40
m³/h	4,5	35	27	1,46	110	85	2,38	216	167	4,67
	5	39	30	1,51	120	93	2,48	236	182	4,91
	5,5	42	32	1,59	130	100	2,57	256	197	5,16
	6	45	35	1,67	140	108	2,67	276	213	5,40
	6,5	49	37	1,73	151	116	2,81	296	227	5,62
	7	52	40	1,78	161	123	2,89	316	242	5,86
	7,5	55	42	1,84	171	131	3,00	336	257	6,10
	8	58	45	1,92	181	138	3,08	356	272	6,32
	8,5	62	47	1,97	191	146	3,19	376	287	6,48
	9	65	49	2,00	201	153	3,29	396	302	6,70
	9,5	68	52	2,05	211	161	3,38	416	316	6,88
	10	72	54	2,11	222	168	3,46	436	331	7,07
	11	78	59	2,16	242	183	3,62	476	361	7,43
	12	85	64	2,27	262	198	3,78	516	390	7,72
	13	94	71	2,35	283	213	3,94	556	419	8,10
	14	101	76	2,43	303	228	4,08	596	449	8,37
	15	108	81	2,54	323	243	4,21	636	479	8,75
	16	114	86	2,62	344	258	4,37	676	508	9,05
	17	121	91	2,70	364	273	4,51	716	537	9,32
	18	128	96	2,78	384	288	4,62	756	566	9,56
	19	135	101	2,86	420	314	4,81	796	596	9,87
	20	142	106	2,90	441	330	4,93	836	625	10,13
	21	153	114	2,97	470	351	5,05	876	655	10,38
	22	160	120	3,04	491	367	5,17	916	684	10,62
	23	167	125	3,11	513	383	5,29	956	714	10,86
	24	174	130	3,18	534	399	5,40	996	743	11,09
	25	181	135	3,25	556	415	5,51	1036	773	11,32
	26	188	-	3,31	577	-	5,62	1076	-	11,55
	27	195	-	3,37	599	-	5,73	1116	-	11,77
	28	202	-	3,43	620	-	5,83	1156	-	11,98
	29	209	-	3,50	641	-	5,94	1196	-	12,20
	30	216	-	3,56	663	-	6,04	1236	-	12,40
	32	230	-	3,67	706	-	6,24	1316	-	12,81
	34	244	-	3,79	749	-	6,43	1396	-	13,21
	36	258	-	3,89	792	-	6,62	1475	-	13,59
	38	272	-	4,00	835	-	6,80	1555	-	13,96
	40	286	-	4,11	877	-	6,97	1635	-	14,32
	42	300	-	4,21	920	-	7,15	1715	-	14,68
	44	314	-	4,31	963	-	7,31	1795	-	15,02
	46	328	-	4,40	1006	-	7,48	1875	-	15,36
	48	342	-	4,50	1049	-	7,64	1955	-	15,69
	50	355	-	4,59	1092	-	7,80	2035	-	16,01
	52	369	-	4,68	1135	-	7,95	2115	-	16,33
	54	383	-	4,77	1178	-	8,10	2195	-	16,64
	56	397	-	4,86	1221	-	8,25	2275	-	16,95
	58	411	-	4,94	1263	-	8,40	2355	-	17,25
	60	425	-	5,03	1306	-	8,54	2435	-	17,54
	62	439	-	5,11	1349	-	8,68	2515	-	17,83
	64	453	-	5,19	1392	-	8,82	2595	-	18,12
	66	467	-	5,27	1435	-	8,96	2675	-	18,40
	68	481	-	5,35	1478	-	9,09	2755	-	18,68
	70	495	-	5,43	1521	-	9,22	2835	-	18,95

→ Series 861

861

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



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.

MATERIAL

SPECIFICATION

1/4“ – 1/2“

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

0,5 – 50 bar

APPROVALS

TÜV-Type test approval 2061	**D/G, F**
EC type examination	**S/G, L**
TSG ZF001-2006	**D/G (S/G), F (L)**
KGS	**G**
TR ZU 032/2013 - TR ZU 010/2011	**D/G (S/G), F (L)**

Requirements	
AD 2000 Data sheet A2	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

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

s	Standard, non-gastight version of the spring housing	for neutral media without counter pressure.
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
L	Lifting lever
O	without lifting device, standard for gastight versions

■ 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

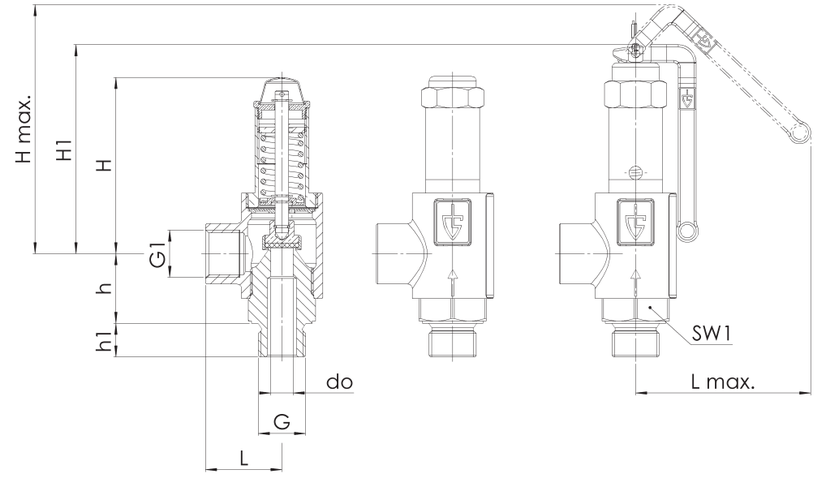
■ SEALS

PTFE	Polytetrafluoroethylene	Flat seal up to 22 bar	–60°C to +225°C
PTFE+Kohle	Polytetrafluoroethylene + carbon	Flat seal from 22,1 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)
Outlet DIN EN ISO 228	**G1**	1/2" (15)	1/2" (15)	1/2" (15)
Installation dimensions in mm	**L**	34	34	34
	Lmax	78	78	78
	H	79	79	79
	H1	93	93	93
	Hmax	111	111	111
	h	31	31	31
	h1	12	12	15
	SW	30	30	30
	do	6	8	10
Weight	**kg**	0,5	0,5	0,6
Range of adjustment	**bar**	0,5-50	0,5-50	0,5-50

■ 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				
861	*t*	*G*	*O*	*8*	**m**	**f**	*8*	**15**	*PTFE*		*12,3*	*2*
861					**m**	**f**		**15**				
861					**m**	**f**		**15**				
861					**m**	**f**		**15**				

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 / 488 94 88
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 861: Blowing-off rates at 10% above set pressure

Nominal diameter DN		8			10			15		
Set pressure bar		I	II	III	I	II	III	I	II	III
	0,5	6	4	0,54	24	18	0,86	44	34	1,62
Air I	1	10	8	0,70	35	28	1,13	67	54	2,24
Nm³/h	1,5	14	11	0,89	46	37	1,38	91	72	2,70
	2	18	15	1,00	57	45	1,62	113	89	3,13
Steam II	2,5	22	17	1,11	68	53	1,78	132	104	3,49
kg/h	3	26	20	1,24	78	61	1,94	154	120	3,83
	3,5	29	22	1,30	88	68	2,11	174	135	4,10
Water III	4	32	25	1,40	98	76	2,24	196	152	4,40
m³/h	4,5	35	27	1,46	110	85	2,38	216	167	4,67
	5	39	30	1,51	120	93	2,48	236	182	4,91
	5,5	42	32	1,59	130	100	2,57	256	197	5,16
	6	45	35	1,67	140	108	2,67	276	213	5,40
	6,5	49	37	1,73	151	116	2,81	296	227	5,62
	7	52	40	1,78	161	123	2,89	316	242	5,86
	7,5	55	42	1,84	171	131	3,00	336	257	6,10
	8	58	45	1,92	181	138	3,08	356	272	6,32
	8,5	62	47	1,97	191	146	3,19	376	287	6,48
	9	65	49	2,00	201	153	3,29	396	302	6,70
	9,5	68	52	2,05	211	161	3,38	416	316	6,88
	10	72	54	2,11	222	168	3,46	436	331	7,07
	11	78	59	2,16	242	183	3,62	476	361	7,43
	12	85	64	2,27	262	198	3,78	516	390	7,72
	13	94	71	2,35	283	213	3,94	556	419	8,10
	14	101	76	2,43	303	228	4,08	596	449	8,37
	15	108	81	2,54	323	243	4,21	636	479	8,75
	16	114	86	2,62	344	258	4,37	676	508	9,05
	17	121	91	2,70	364	273	4,51	716	537	9,32
	18	128	96	2,78	384	288	4,62	756	566	9,56
	19	135	101	2,86	420	314	4,81	796	596	9,87
	20	142	106	2,90	441	330	4,93	836	625	10,13
	21	153	114	2,97	470	351	5,05	876	655	10,38
	22	160	120	3,04	491	367	5,17	916	684	10,62
	23	167	125	3,11	513	383	5,29	956	714	10,86
	24	174	130	3,18	534	399	5,40	996	743	11,09
	25	181	135	3,25	556	415	5,51	1036	773	11,32
	26	188	-	3,31	577	-	5,62	1076	-	11,55
	27	195	-	3,37	599	-	5,73	1116	-	11,77
	28	202	-	3,43	620	-	5,83	1156	-	11,98
	29	209	-	3,50	641	-	5,94	1196	-	12,20
	30	216	-	3,56	663	-	6,04	1236	-	12,40
	32	230	-	3,67	706	-	6,24	1316	-	12,81
	34	244	-	3,79	749	-	6,43	1396	-	13,21
	36	258	-	3,89	792	-	6,62	1475	-	13,59
	38	272	-	4,00	835	-	6,80	1555	-	13,96
	40	286	-	4,11	877	-	6,97	1635	-	14,32
	42	300	-	4,21	920	-	7,15	1715	-	14,68
	44	314	-	4,31	963	-	7,31	1795	-	15,02
	46	328	-	4,40	1006	-	7,48	1875	-	15,36
	48	342	-	4,50	1049	-	7,64	1955	-	15,69
	50	355	-	4,59	1092	-	7,80	2035	-	16,01

→ 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 goods[1]

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.

MATERIAL

SPECIFICATION

DN 40 and DN 50

– 60°C to + 400°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	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	1.4408	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

[1]only for versions with bellows

Series 452 ■ 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

■ 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

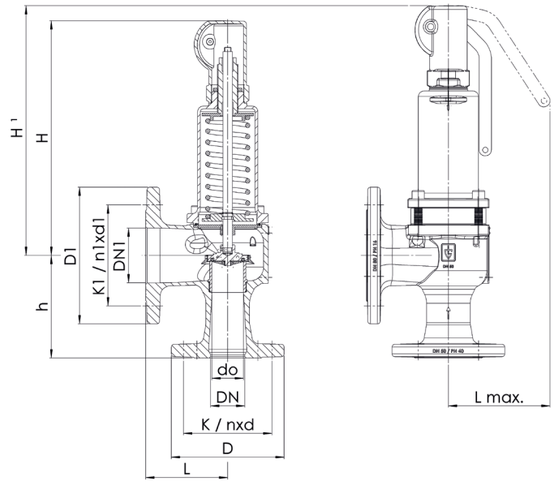
Connection for condensate pipe G 1/4“ with sealing plug	Order description: **AKL**

■ 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**	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				
452	*b*	*G*	*L*	*50*	**FL**	**FL**	*50*	*80*	*EPDM*		*5,0*	*2*
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 / 488 94 88
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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
	0,5	667	503	23	995	750	36
Air l	1	983	785	32	1472	1176	49
Nm³/h	1,5	1299	1032	39	1948	1547	60
	2	1615	1273	45	2461	1939	69
Steam II	2,5	1926	1510	50	2926	2294	77
kg/h	3	2208	1726	55	3404	2661	85
	3,5	2491	1937	59	3839	2985	91
Water III	4	2773	2151	63	4275	3315	98
m³/h	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 852

852

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

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.

- pressure booster plants (water-/air-side)
- fire-fighting equipment
- industrial- and commerical 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	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	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

[1]only for versions with bellows

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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

■ 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

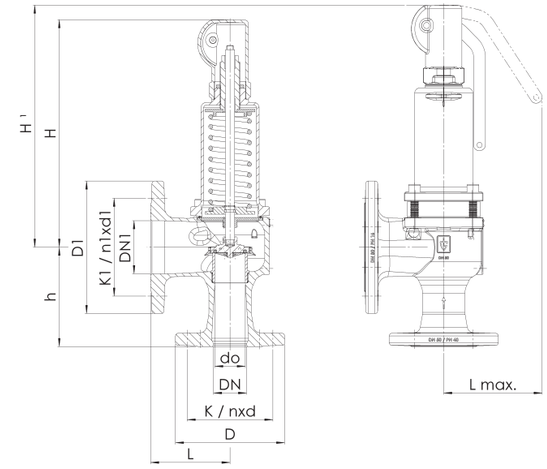
Connection for condensate pipe G 1/4“ with sealing plug	Order description: **AKL**

■ 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 / 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**	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**						

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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
	0,5	667	503	23	995	750	36
Air l	1	983	785	32	1472	1176	49
Nm³/h	1,5	1299	1032	39	1948	1547	60
	2	1615	1273	45	2461	1939	69
Steam II	2,5	1926	1510	50	2926	2294	77
kg/h	3	2208	1726	55	3404	2661	85
	3,5	2491	1937	59	3839	2985	91
Water III	4	2773	2151	63	4275	3315	98
m³/h	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 352

352

Safety valves made of spheroidal graphite cast iron, angle-type with flange connections

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.

- pressure booster plants (water-/air-side)
- fire-fighting equipment
- industrial- and commercial boiler plants
- power plant technology
- pump protection

Safety valves are set and sealed at the factory.

MATERIAL

SPECIFICATION

DN 40 and DN 50	– 10°C to + 350°C depending on version	0,5 – 16 bar

APPROVALS

TÜV-Type test approval 2007	**D/G, F, F/K/S[1]**
EC type examination	**S/G, L, F/K/S[1]**
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	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	Spheroidal graphite cast iron	0.7043	Gr. 60-40-18
Outlet body	Spheroidal graphite cast iron	0.7043	Gr. 60-40-18
Internal parts	Stainless steel	1.4404	316 L
Spring	Stainless steel	1.4310	302
Bellows (optional)	Stainless steel	1.4571	316 Ti

[1]only for versions with bellows

Series 352 ■ 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
65	■	
80		■

■ CONNECTION TYPE INLET / OUTLET FLANGE CONNECTIONS

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

■ SEALS

NBR	Nitrile rubber	Elastomere moulded seal with metallic support	–10°C to +130°C
EPDM	Ethylene propylene diene	Elastomere moulded seal with metallic support	–10°C to +170°C
FKM	Fluorocarbon	Elastomere moulded seal with metallic support	–10°C to +200°C
PTFE	Polytetrafluoroethylene	Flat seal	–10°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	–10°C to +350°C

■ OPTIONS

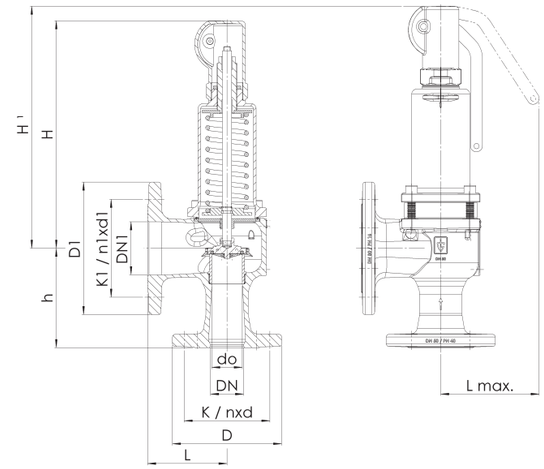
Special versions on request.	
Against surcharge	
Connection for condensate pipe G 1/4“ with sealing plug	Order description: **AKL**

■ NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

Series 352: 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**	17 / 18	19 / 20
Range of adjustment	**bar**	0,5-16	0,5-16

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				
352	*b*	*F*	*L*	*40*	**FL**	**FL**	*40*	*65*	*EPDM*		*6,5*	*3*
352	*s*	*G*	*L*	*50*	**FL**	**FL**	*50*	*80*	*PTFE*	*AKL*	*15,0*	*1*
352					**FL**	**FL**						
352					**FL**	**FL**						

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CAPACITY TABLE

Series 352: Blowing-off rates at 10% above set pressure

Nominal diameter DN		40			50		
Set pressure bar		I	II	III	I	II	III
	0,5	667	503	23	995	750	36
Air l	1	983	785	32	1472	1176	49
Nm³/h	1,5	1299	1032	39	1948	1547	60
	2	1615	1273	45	2461	1939	69
Steam II	2,5	1926	1510	50	2926	2294	77
kg/h	3	2208	1726	55	3404	2661	85
	3,5	2491	1937	59	3839	2985	91
Water III	4	2773	2151	63	4275	3315	98
m³/h	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

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→ Series 455

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 plants

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

- Chemical and petrochemical plants
- biogas plants
- industrial- and commercial boiler plants
- Production and processing of industrial gases
- shipbuilding industry and marine equipment
- secondary areas in the food-, beverage-, pharmaceutical- and cosmetics-industries

Safety valves are set and sealed at the factory.

MATERIAL

SPECIFICATION

DN 20 to DN 100

– 270°C to + 400°C
depending on version

0,2 – 40 bar

APPROVALS

TÜV-Type test approval 2094	**D/G, F**
EC type examination	**S/G, L,**
KGS	**G**
TR ZU 032/2013 -TR ZU 010/2011	**D/G (S/G), F (L)**

Requirements

PED 2014/68/EU	TRD 421 and DIN EN 12952-7
DIN EN ISO 4126-1	DIN EN 12953-8
AD 2000 Data sheet A2	KGS AA 319
VdTÜV Guideline SV 100	

Classification society

Bureau Veritas	BV
American Bureau of Shipping	ABS

MATERIALS

Component	Material	DIN EN	ASME
Body and spring housing	Stainless steel	1.4408	CF8M
Valve seat	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

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Series 455 ■ VALVE VERSION

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.
b	with bellows	for neutral and non-neutral media and /or counter-pressure. Spring, moving parts and the environment are protected from being affected by the medium.
tb	gastight version with bellows	for neutral and non-neutral and particularly for flammable, toxic and environmentally hazardous media and/or counter pressure. 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	Liquid media
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		**20**	**25**	**40**	**50**	**80**	**100**
Inlet		20	25	40	50	80	100
Outlet	32	■					
	40		■				
	65			■			
	80				■		
	125					■	
	150						■

■ CONNECTION TYPE INLET / OUTLET FLANGE CONNECTIONS

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

■ SEALS

MD	Metal-to-metal sealing	Flat seal	–270°C to +400°C
Soft seals at a supplement			
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
FFKM	Perfluorinated rubber	Elastomere moulded seal with metallic support	–10°C to +260°C
PTFE	Polytetrafluoroethylene	Flat seal	–200°C to +225°C

■ OPTIONS

Special versions on request.

Against surcharge

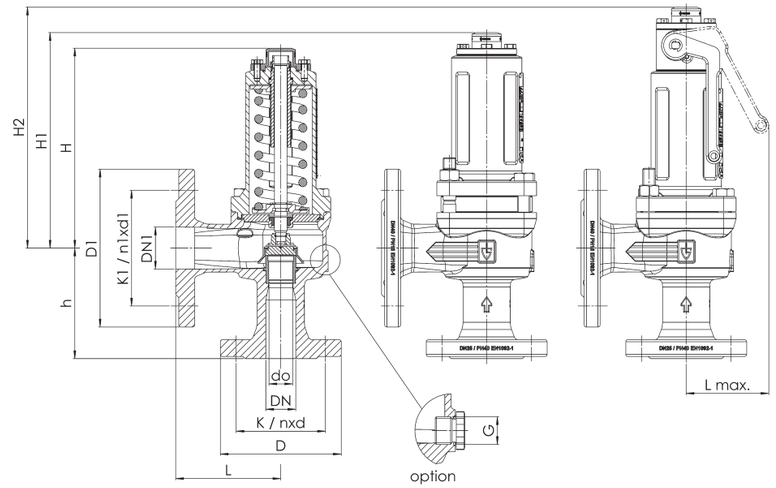
Connection for condensate pipe G 1/4“ or G 1/2“ with sealing plug	Order description: **AKL**
Proximity switch for indication of valve position	Order description: **S62**
Connection for monitoring the gastight spring housing in the case of valves fitted with bellows	Order description: **S60**

■ NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

Series 455: Connection, installation dimensions, ranges of adjustment							
Nominal diameter	**DN**	**20**	**25**	**40**	**50**	**80**	**100**
Connection DIN EN 1092	**DN / PN**	20 / 40	25 / 40	40 / 40	50 / 40	80 / 40	100 / 40
Outlet DIN EN 1092	**DN1 / PN**	32 / 16	40 / 16	65 / 16	80 / 16	125 / 16	150 / 16
Installation dimensions in mm	**L**	95	100	115	120	160	180
	h	85	105	140	150	195	220
	D	105	115	150	165	200	235
	K / nxd	75 / 4x14	85 / 4x14	110 / 4x18	125 / 4x18	160 / 8x18	168 / 8x22
	D1	140	150	185	200	250	285
	K1 / n1xd1	100 / 4x18	110 / 4x18	145 / 8x18	160 / 8x18	210 / 8x18	218 / 8x22
	H / H1[1]	165 / 183	170 / 205	333 / -	352 / -	512 / -	577 / -
	H2	204	229	363	413	556	647
	Lmax	55	70	110	130	180	190
	G	1/4"	1/4"	1/2"	1/2"	1/2"	1/2"
	α_w / K_{dr} (F)	0,54	0,54	0,54	0,54	0,54	0,54
	α_w / K_{dr} (D/G)[2] do	0,74 18,0	0,74 22,5	0,74 36,0	0,74 45,0	0,74 72,0	0,74 90,0
Weight	**kg[3]**	6,5	8,0	19,0	24,5	60,0	93,0
Range of adjustment	**bar**	0,2 - 40	0,2 - 40	0,2 - 40	0,2 - 40	0,2 - 40	0,2 - 40

[1] Details for the version with bellows
[2] Coefficients of flow for blow-off pressures >3,0 bar. For lower pressures refer to values in the capacity table
[3] Values for version with lifting lever

■ 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				
455	*t*	*GF*	*L*	*50*	**FL**	**FL**	*50*	*80*	*MD*	*S62*	*10,0*	*1*
455					**FL**	**FL**						
455					**FL**	**FL**						
455					**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 / 488 94 88
Please do not forget to add your personal data so that our sales team can contact you.

Name

First Name

Company

Telephone

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GOETZE ARMATUREN
Version 2017 / 10
www.goetze-armaturen.de | info@goetze-armaturen.de | Phone: +49 (0) 7141 / 488 94 60

Series 455: Blowing-off rates at 10% above set pressure

Nominal diameter DN		20			25			40		
		d0 = 18 mm			d0 = 22,5 mm			d0 = 36 mm		
Set pressure bar		I	II	III	I	II	III	I	II	III
	0,2	39,6	81,7	3,7	61,9	127,7	5,9	158,6	326,9	15,0
Air l	0,5	66,4	132,4	5,4	103,7	206,9	8,4	265,4	529,7	21,5
Nm³/h	1	240,6	191,5	7,3	375,9	299,3	11,4	962,3	766,1	29,2
	1,5	324,1	256,1	9,0	506,4	400,2	14,0	1296,4	1024,5	35,8
Steam II	2	401,9	315,8	10,4	628,0	493,4	16,2	1607,6	1263,0	41,4
kg/h	2,5	478,1	373,8	11,6	747,1	584,1	18,1	1912,5	1495,3	46,3
	3	552,2	430,0	12,7	862,8	671,8	19,8	2208,8	1719,9	50,8
Water III	3,5	622,8	483,2	13,7	973,2	755,1	21,4	2491,3	1933,0	54,9
m³/h	4	693,5	536,4	14,7	1083,5	838,1	22,9	2773,8	2145,6	58,7
	4,5	764,1	589,4	15,6	1193,9	921,0	24,3	3056,3	2357,7	62,2
	5	834,7	642,3	16,4	1304,2	1003,7	25,6	3338,8	2569,4	65,6
	5,5	905,3	695,2	17,2	1414,6	1086,2	26,9	3621,4	2780,6	68,8
	6	976,0	747,9	18,0	1524,9	1168,5	28,1	3903,9	2991,4	71,9
	6,5	1046,6	800,6	18,7	1635,3	1251,0	29,2	4186,4	3202,5	74,8
	7	1117,2	853,3	19,4	1745,7	1333,3	30,3	4468,9	3413,3	77,7
	7,5	1187,9	906,0	20,1	1856,0	1415,6	31,4	4751,4	3623,8	80,4
	8	1258,5	958,5	20,8	1966,4	1497,6	32,4	5033,9	3833,9	83,0
	8,5	1329,1	1011,0	21,4	2076,7	1579,7	33,4	5316,5	4044,0	85,6
	9	1399,7	1063,5	22,0	2187,1	1661,6	34,4	5599,0	4253,8	88,1
	9,5	1470,4	1116,0	22,6	2297,5	1743,7	35,3	5881,5	4463,9	90,5
	10	1541,0	1168,4	23,2	2407,8	1825,7	36,3	6164,0	4673,7	92,8
	11	1682,3	1273,4	24,3	2628,5	1989,7	38,0	6729,0	5093,8	97,4
	12	1823,5	1378,2	25,4	2849,2	2153,5	39,7	7294,1	5512,9	101,7
	13	1964,8	1482,9	26,5	3070,0	2317,0	41,4	7859,1	5931,5	105,9
	14	2106,0	1588,0	27,5	3290,7	2481,2	42,9	8424,1	6351,8	109,9
	15	2247,3	1693,0	28,4	3511,4	2645,3	44,4	8989,2	6772,1	113,7
	16	2388,6	1797,6	29,4	3732,1	2808,8	45,9	9554,2	7190,6	117,5
	17	2529,8	1902,7	30,3	3952,8	2973,0	47,3	10119,2	7610,8	121,1
	18	2671,1	2008,0	31,1	4173,5	3137,4	48,7	10684,3	8031,9	124,6
	19	2812,3	2113,2	32,0	4394,3	3301,9	50,0	11249,3	8452,7	128,0
	20	2953,6	2218,5	32,8	4615,0	3466,3	51,3	11814,3	8873,8	131,3
	21	3094,8	2323,9	33,6	4835,7	3631,0	52,6	12379,4	9295,5	134,6
	22	3236,1	2429,3	34,4	5056,4	3795,8	53,8	12944,4	9717,4	137,7
	23	3377,4	2535,0	35,2	5277,1	3961,0	55,0	13509,4	10140,2	140,8
	24	3518,6	2640,9	36,0	5497,8	4126,4	56,2	14074,5	10563,5	143,9
	25	3659,9	2746,7	36,7	5718,6	4291,8	57,4	14639,5	10986,9	146,8
	26	3801,1	2852,8	37,4	5939,3	4457,4	58,5	15204,5	11411,0	149,8
	27	3942,4	2959,0	38,2	6160,0	4623,4	59,6	15769,6	11835,9	152,6
	28	4083,7	3065,4	38,9	6380,7	4789,6	60,7	16334,6	12261,4	155,4
	29	4224,9	3171,9	39,5	6601,4	4956,1	61,8	16899,6	12687,6	158,2
	30	4366,2	3278,5	40,2	6822,1	5122,7	62,8	17464,7	13114,2	160,9
	32	4648,7	3492,6	41,5	7263,6	5457,2	64,9	18594,7	13970,5	166,1
	34	4931,2	3707,1	42,8	7705,0	5792,4	66,9	19724,8	14828,6	171,3
	36	5213,7	3922,6	44,1	8146,4	6129,0	68,8	20854,9	15690,2	176,2
	38	5496,2	4138,7	45,3	8587,9	6466,7	70,7	21984,9	16554,8	181,1
	40	5778,8	4355,7	46,4	9029,3	6805,7	72,6	23115,0	17422,6	185,8

CONTINUATION - Series 455: Blowing-off rates at 10% above set pressure

Nominal diameter DN		50			80			100		
		d0 = 45 mm			d0 = 72 mm			d0 =90 mm		
Set pressure bar		I	II	III	I	II	III	I	II	III
	0,2	247,8	510,7	23,4	634,2	1307,4	60,0	991,0	2042,8	93,7
Air l	0,5	414,7	827,7	33,5	1061,6	2118,9	85,8	1658,8	3310,7	134,1
Nm³/h	1	1503,6	1197,1	45,6	3849,2	3064,5	116,8	6014,4	4788,2	182,5
	1,5	2025,6	1600,8	56,0	5185,5	4098,2	143,3	8102,3	6403,4	224,0
Steam II	2	2511,9	1973,5	64,7	6430,4	5052,2	165,7	10047,5	7894,0	258,9
kg/h	2,5	2988,4	2336,5	72,4	7650,2	5981,4	185,3	11953,4	9345,9	289,6
	3	3451,2	2687,4	79,3	8835,1	6879,7	203,1	13804,8	10749,5	317,4
Water III	3,5	3892,6	3020,3	85,7	9965,1	7731,9	219,5	15570,5	12081,1	342,9
m³/h	4	4334,1	3352,5	91,7	11095,2	8582,4	234,7	17336,3	13410,1	366,6
	4,5	4775,5	3683,8	97,2	12225,3	9430,6	248,9	19102,0	14735,3	389,0
	5	5216,9	4014,6	102,5	13355,3	10277,4	262,4	20867,7	16058,5	410,0
	5,5	5658,4	4344,8	107,5	14485,4	11122,6	275,3	22633,4	17379,0	430,1
	6	6099,8	4674,1	112,3	15615,5	11965,7	287,5	24399,2	18696,5	449,3
	6,5	6541,2	5003,9	116,9	16745,5	12809,9	299,3	26164,9	20015,4	467,7
	7	6982,7	5333,3	121,3	17875,6	13653,3	310,6	27930,6	21333,2	485,3
	7,5	7424,1	5662,2	125,6	19005,7	14495,2	321,5	29696,4	22648,8	502,4
	8	7865,5	5990,5	129,7	20135,7	15335,7	332,1	31462,1	23962,1	518,9
	8,5	8307,0	6318,7	133,7	21265,8	16175,9	342,3	33227,8	25274,8	534,9
	9	8748,4	6646,6	137,6	22395,9	17015,3	352,3	34993,5	26586,3	550,4
	9,5	9189,8	6974,8	141,4	23525,9	17855,6	361,9	36759,3	27899,3	565,5
	10	9631,3	7302,7	145,1	24656,0	18694,9	371,4	38525,0	29210,7	580,2
	11	10514,1	7959,0	152,1	26916,1	20375,0	389,5	42056,5	31836,0	608,6
	12	11397,0	8614,0	158,9	29176,3	22051,8	406,8	45587,9	34455,9	635,7
	13	12279,8	9267,9	165,4	31436,4	23725,9	423,5	49119,4	37071,7	661,7
	14	13162,7	9924,7	171,7	33696,5	25407,3	439,5	52650,8	39699,0	686,7
	15	14045,6	10581,3	177,7	35956,7	27088,2	454,9	56182,3	42325,4	710,8
	16	14928,4	11235,3	183,5	38216,8	28762,4	469,8	59713,8	44941,2	734,1
	17	15811,3	11892,0	189,2	40476,9	30443,4	484,3	63245,2	47567,8	756,7
	18	16694,2	12549,8	194,7	42737,1	32127,4	498,4	66776,7	50199,1	778,7
	19	17577,0	13207,4	200,0	44997,2	33811,0	512,0	70308,1	52829,7	800,0
	20	18459,9	13865,3	205,2	47257,3	35495,3	525,3	73839,6	55461,4	820,8
	21	19342,8	14524,2	210,3	49517,5	37181,9	538,3	77371,0	58096,6	841,1
	22	20225,6	15183,4	215,2	51777,6	38869,4	551,0	80902,5	60733,5	860,9
	23	21108,5	15844,0	220,1	54037,7	40560,6	563,4	84434,0	63376,0	880,3
	24	21991,4	16505,5	224,8	56297,9	42254,1	575,5	87965,4	66022,1	899,2
	25	22874,2	17167,1	229,4	58558,0	43947,7	587,4	91496,9	68668,3	917,8
	26	23757,1	17829,7	234,0	60818,1	45644,1	599,0	95028,3	71318,9	936,0
	27	24640,0	18493,5	238,5	63078,3	47343,4	610,4	98559,8	73974,1	953,8
	28	25522,8	19158,5	242,8	65338,4	49045,8	621,6	102091,3	76634,0	971,3
	29	26405,7	19824,3	247,1	67598,5	50750,3	632,6	105622,7	79297,4	988,5
	30	27288,5	20490,9	251,4	69858,7	52456,7	643,5	109154,2	81963,6	1005,4
	32	29054,3	21829,0	259,6	74378,9	55882,1	664,6	116217,1	87315,8	1038,4
	34	30820,0	23169,7	267,6	78899,2	59314,4	685,0	123280,0	92678,7	1070,4
	36	32585,7	24516,0	275,4	83419,5	62760,9	704,9	130342,9	98063,9	1101,4
	38	34351,5	25866,9	282,9	87939,7	66219,2	724,2	137405,8	103467,5	1131,6
	40	36117,2	27222,9	290,3	92460,0	69690,6	743,0	144468,8	108891,6	1161,0

ARMATUREN GOETZE

→ Overview

TÜV/CE ANGLE-TYPE SAFETY VALVES FOR INDUSTRIAL APPLICATIONS

Series	Materials	Temperatures	Pressures	Media	Threaded connection	Flange connection	Page
451		–60 °C – +400 °C	0.5 bar – 70 bar		1/2" – 2"		3.1
851		–60 °C – +225 °C	0.5 bar – 50 bar		1/2" – 2"		3.2
460		–60 °C – +225 °C	0.2 bar – 25 bar		3/8" – 1"		3.3
652		–60 °C – +200 °C	1 bar – 16 bar		1/2" – 2"		3.4
420		–40 °C – +260 °C	0.5 bar – 50 bar		1/4" – 3/8"		3.5
461		–60 °C – +225 °C	0.5 bar – 70 bar		1/4" – 1/2"		3.6
861		–60 °C – +225 °C	0.5 bar – 50 bar		1/4" – 1/2"		3.7
452		–60 °C – +400 °C	0.5 bar – 25 bar			DN 40 and DN 50	3.8
852		–60 °C – +225 °C	0.5 bar – 25 bar			DN 40 and DN 50	3.9
352		–10 °C – +350 °C	0.5 bar – 16 bar			DN 40 and DN 50	3.10
455		–270 °C – +400 °C	0,2 bar – 40 bar			DN 20 to DN 100	3.11

TÜV/CE atmospheric discharge safety valves for industrial applications

→ Series 410

410

Safety valves made of stainless steel, atmospheric discharge, with threaded connections

SUITABLE FOR

Air, gases and vapours	neutral	

EXAMPLES OF USE

For the protection of:
- pressure tanks and
- pressure systems

for air and other neutral, non-poisonous and non-flammable gases which can be freely discharged into the environment.
Please observe plant-specific regulations and use of appropriate valve version and sealing material.

- pneumatic control units
- pressure booster plants air-side
- waste water treatment plants
- transport- and railway applications
- pneumatic braking systems
- secondary areas in the food-, pharmaceutical- and cosmetics- industries

Safety valves are set and sealed at the factory.

MATERIAL

SPECIFICATION

1/4“ – 1“	– 60°C to + 225°C depending on version	0,2 – 50 bar

APPROVALS

TÜV Type test approval 2055	**D/G**
ASME	**G**
EC type examination	**S/G**
TSG ZF001-2006	**D/G (S/G)**
KGS	**G**
TR ZU 032/2013 -TR ZU 010/2011	**D/G (S/G)**

Requirements

AD 2000 Data sheet A2	ASME-Code Sec. VIII Div. 1
DIN EN ISO 4126-1	KGS AA 319
PED 2014/68/EU	

Classification society

DNVGL	DNVGL
Lloyd’s Register EMEA	LR EMEA
Bureau Veritas	BV
American Bureau of Shipping	ABS
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	1.4568	631

Series 410 ■ VALVE VERSION

s	Standard	cylindrical form, atmospheric discharge, for air and similar neutral, non-toxic and non-flammable gases that can be freely discharged into the atmosphere.

■ MEDIUM

G	gaseous	Air and similar neutral gases

■ TYPE OF LIFTING MECHANISM

K	Standard with twist-type lifting mechanism

■ AVAILABLE NOMINAL DIAMETERS AND CONNECTION SIZES

Nominal diameter DN	**8**	**10**	**15**	**20**	**25**
Inlet	1/4“ (8)	3/8“ (10)	1/2“ (15)	3/4“ (20)	1“ (25)
Atmospheric discharge via outlet apertures	■	■	■	■	■

■ TYPE OF CONNECTION INLET / OUTLET THREADED CONNECTIONS

m / –	Standard	Male thread BSP-P / –	DIN EN ISO 228-1 / –

■ SEALS

FKM	Fluorocarbon	Elastomere flat seal 0,2 – 25 bar	–20°C to +200°C
PTFE	Polytetrafluoroethylene	Flat seal 25,1 – 50 bar	–60°C to +225°C
On request			
NBR	Nitrile rubber	Elastomere flat seal 0,2 – 25 bar	–30°C to +130°C
Against surcharge			
PTFE	Polytetrafluoroethylene	Flat seal 0,2 – 25 bar	–60°C to +225°C

■ OPTIONS

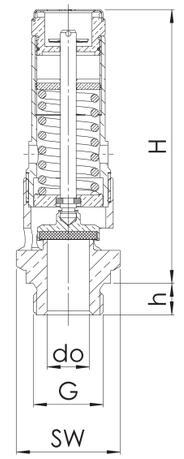
Special versions on request.

■ NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

Series 410: Connection, installation dimensions, ranges of adjustment

Nominal diameter	**DN**	**8**	**10**		**15**		**20**		**25**
Connection DIN EN ISO 228	**G**	1/4" (8)	3/8" (10)		1/2" (15)		3/4" (20)		1" (25)
Installation dimensions in mm	**H**	60	65	78	66	79	94	104	111
	h	10	10	10	12	12	12	12	14
	SW	19	24	24	27	27	36	36	41
	do	7,5	10	10	11	11	16	16	20
Weight	**kg**	0,1	0,14	0,16	0,17	0,19	0,35	0,4	0,6
Range of adjustment	**bar**	0,2-50	0,2-9	9,1-50	0,2-7	7,1-50	0,2-9	9,1-50	0,2-50
Range of adjustment ASME	**psi**	15-725	15-130	131-725	15-102	103-725	15-130	131-725	15-725

■ 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				
410	**s**	**G**	**K**	*8*	**m**	–	*8*	–	*FKM*		*10,0*	*5*
410	**s**	**G**	**K**		**m**	–		–				
410	**s**	**G**	**K**		**m**	–		–				
410	**s**	**G**	**K**		**m**	–		–				

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 / 488 94 88
Please do not forget to add your personal data so that our sales team can contact you.

Name

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CAPACITY TABLE

Series 410: Blowing-off rates at 10% above set pressure

Nominal diameter DN		8	10	15	20	25
Set pressure bar						
	0,2	20	35	46	100	133
Air	0,3	25	45	54	119	144
Nm³/h	0,4	29	52	67	137	167
	0,5	32	58	74	158	185
	0,6	35	64	82	172	211
	0,7	37	70	87	187	235
	0,8	41	74	95	200	260
	0,9	43	80	101	213	282
	1	46	85	107	227	305
	1,5	60	108	137	286	408
	2	73	132	166	346	506
	3	100	182	222	465	699
	4	125	228	279	584	889
	5	151	274	336	703	1070
	6	176	321	393	821	1251
	7	201	367	450	940	1432
	8	227	414	507	1059	1613
	9	252	460	564	1178	1794
	10	278	507	621	1297	1975
	11	303	553	678	1416	2156
	12	329	599	735	1535	2337
	13	354	646	791	1654	2518
	14	380	692	848	1773	2700
	15	405	739	905	1891	2881
	16	431	785	962	2010	3062
	17	456	832	1019	2129	3243
	18	482	878	1076	2248	3424
	19	507	925	1133	2367	3605
	20	533	971	1190	2486	3786
	21	558	1017	1247	2605	3967
	22	584	1064	1304	2724	4148
	23	609	1110	1361	2843	4329
	24	635	1157	1417	2961	4510
	25	660	1203	1474	3080	4691
	26	685	1250	1531	3199	4872
	27	711	1296	1588	3318	5053
	28	736	1342	1645	3437	5234
	29	762	1389	1702	3556	5415
	30	787	1435	1759	3675	5597
	31	813	1482	1816	3794	5778
	32	838	1528	1873	3913	5959
	33	864	1575	1930	4031	6140
	34	889	1621	1986	4150	6321
	35	915	1667	2043	4269	6502
	36	940	1714	2100	4388	6683
	37	966	1760	2157	4507	6864
	38	991	1807	2214	4626	7045
	39	1017	1853	2271	4745	7226
	40	1042	1900	2328	4864	7407
	41	1068	1946	2385	4983	7588
	42	1093	1993	2442	5101	7769
	43	1119	2039	2499	5220	7950
	44	1144	2085	2556	5339	8131
	45	1170	2132	2612	5458	8313
	46	1195	2178	2669	5577	8494
	47	1220	2225	2726	5696	8675
	48	1246	2271	2783	5815	8856
	49	1271	2318	2840	5934	9037
	50	1297	2364	2897	6053	9218

CAPACITY TABLE ASME

Series 410: Blowing-off rates at 10% above set pressure

Nominal diameter DN		8	10	15	20	25
Set pressure bar psi(g)						
	15	31	55	67	142	221
Air	30	45	81	98	207	323
SCFM	40	56	99	120	254	397
	50	66	118	143	302	472
	60	77	137	165	350	546
	70	87	155	188	397	621
	87	105	187	226	478	747
	90	108	192	233	493	770
	100	119	211	255	540	844
	110	129	230	278	588	919
	120	140	248	300	636	993
	130	150	267	323	683	1068
	140	161	286	345	731	1142
	150	171	304	368	779	1217
	160	182	323	391	826	1291
	170	192	341	413	874	1366
	180	203	360	436	922	1440
	190	213	379	458	969	1515
	200	223	397	481	1017	1589
	210	234	416	503	1065	1663
	220	244	434	526	1112	1738
	230	255	453	548	1160	1812
	240	265	472	571	1208	1887
	250	276	490	593	1255	1961
	260	286	509	616	1303	2036
	270	297	528	638	1351	2110
	280	307	546	661	1398	2185
	290	318	565	683	1446	2259
	300	328	583	706	1494	2334
	320	349	621	751	1589	2483
	340	370	658	796	1684	2632
	360	391	695	841	1780	2781
	380	412	732	886	1875	2929
	400	433	770	931	1970	3078
	420	454	807	976	2066	3227
	440	475	844	1021	2161	3376
	460	496	881	1066	2256	3525
	480	517	919	1111	2351	3674
	500	538	956	1157	2447	3823
	520	559	993	1202	2542	3972
	540	580	1030	1247	2637	4121
	560	600	1067	1292	2733	4270
	580	621	1105	1337	2828	4419
	600	642	1142	1382	2923	4568
	620	663	1179	1427	3019	4717
	640	684	1216	1472	3114	4866
	660	705	1254	1517	3209	5015
	680	726	1291	1562	3305	5164
	700	747	1328	1607	3400	5313
	725	773	1375	1663	3519	5499

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→ Series 810

810

Safety valves made of brass, atmospheric discharge, with threaded connections

SUITABLE FOR

Air, gases and vapours	neutral	

EXAMPLES OF USE

For the protection of:
- pressure tanks and
- pressure systems

for air and other neutral, non-poisonous and non-flammable gases which can be freely discharged into the environment.
Please observe plant-specific regulations and use of appropriate valve version and sealing material.

- compressors
- pressure booster plants air-side
- paint spray shops
- pneumatic control units
- transport- and railway applications

Safety valves are set and sealed at the factory.

APPROVALS

TÜV Type test approval 2055	**D/G**
ASME	**G**
EC type examination	**S/G**
TSG ZF001-2006	**D/G (S/G)**
KGS	**G**
TR ZU 032/2013 - TR ZU 010/2011	**D/G (S/G)**
Type approval Deutsche Bahn	

Requirements

AD 2000 Data sheet A2	ASME-Code Sec. VIII Div. 1
DIN EN ISO 4126-1	KGS AA 319
PED 2014/68/EU	

Classification society

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

MATERIAL

SPECIFICATION

1/4" – 1"

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

0,2 – 50 bar

MATERIALS

Component	Material	DIN EN	ASME
Inlet body	Brass	CW617N	CW617N
Outlet body	Brass	CW617N	CW617N
Internal parts	Brass	CW617N	CW617N
Spring	Stainless steel	1.4568	631

Series 810 ■ VALVE VERSION

s	Standard	cylindrical form, atmospheric discharge, for air and similar neutral, non-toxic and non-flammable gases that can be freely discharged into the atmosphere.

■ MEDIUM

G	gaseous	Air and similar neutral gases

■ TYPE OF LIFTING MECHANISM

K	Standard with twist-type lifting mechanism

■ AVAILABLE NOMINAL DIAMETERS AND CONNECTION SIZES

Nominal diameter DN	**8**	**10**	**15**	**20**	**25**
Inlet	1/4“ (8)	3/8“ (10)	1/2“ (15)	3/4“ (20)	1“ (25)
Atmospheric discharge via outlet apertures	■	■	■	■	■

■ TYPE OF CONNECTION INLET / OUTLET THREADED CONNECTIONS

m / –	Standard	Male thread BSP-P / –	DIN EN ISO 228-1 / –
Against surcharge			
BSP-Tm / –	On request	Male thread BSP-T / –	DIN EN 10226, ISO 7-1 / –
NPT-m / –	On request	Male thread NPT-m / –	ANSI B1.20.1 / –

■ SEALS

FKM	Fluorocarbon	Elastomere flat seal 0,2 – 25 bar	–20°C to +200°C
PTFE	Polytetrafluoroethylene	Flat seal 25,1 – 50 bar	–60°C to +225°C
Against surcharge			
PTFE	Polytetrafluoroethylene	Flat seal 0,2 – 25 bar	–60°C to +225°C

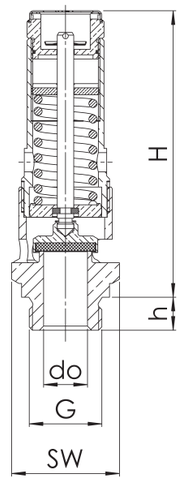
■ OPTIONS

Special versions on request.

■ NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

Series 810: Connection, installation dimensions, ranges of adjustment									
Nominal diameter	**DN**	**8**	**10**		**15**		**20**		**25**
Connection DIN EN ISO 228	**G**	1/4" (8)	3/8" (10)		1/2" (15)		3/4" (20)		1" (25)
Installation dimensions in mm	**H**	60	65	78	66	79	94	104	111
	h	10	10	10	12	12	12	12	14
	SW	19	24	24	27	27	34	34	41
	do	7,5	10	10	11	11	16	16	20
Weight	**kg**	0,1	0,14	0,16	0,17	0,19	0,35	0,4	0,6
Range of adjustment	**bar**	0,2-50	0,2-9	9,1-50	0,2-7	7,1-50	0,2-9	9,1-50	0,2-50
Range of adjustment ASME	**psi**	15-725	15-130	131-725	15-102	103-725	15-130	131-725	15-725

■ 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				
810	**s**	**G**	**K**	*10*	*m*	–	*10*	–	*FKM*		*11,5*	*50*
810	**s**	**G**	**K**			–		–				
810	**s**	**G**	**K**			–		–				
810	**s**	**G**	**K**			–		–				

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 / 488 94 88
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CAPACITY TABLE

Series 810: Blowing-off rates at 10% above set pressure

Nominal diameter DN		8	10	15	20	25
Set pressure bar						
	0,2	20	35	46	100	133
Air	0,3	25	45	54	119	144
Nm³/h	0,4	29	52	67	137	167
	0,5	32	58	74	158	185
	0,6	35	64	82	172	211
	0,7	37	70	87	187	235
	0,8	41	74	95	200	260
	0,9	43	80	101	213	282
	1	46	85	107	227	305
	1,5	60	108	137	286	408
	2	73	132	166	346	506
	3	100	182	222	465	699
	4	125	228	279	584	889
	5	151	274	336	703	1070
	6	176	321	393	821	1251
	7	201	367	450	940	1432
	8	227	414	507	1059	1613
	9	252	460	564	1178	1794
	10	278	507	621	1297	1975
	11	303	553	678	1416	2156
	12	329	599	735	1535	2337
	13	354	646	791	1654	2518
	14	380	692	848	1773	2700
	15	405	739	905	1891	2881
	16	431	785	962	2010	3062
	17	456	832	1019	2129	3243
	18	482	878	1076	2248	3424
	19	507	925	1133	2367	3605
	20	533	971	1190	2486	3786
	21	558	1017	1247	2605	3967
	22	584	1064	1304	2724	4148
	23	609	1110	1361	2843	4329
	24	635	1157	1417	2961	4510
	25	660	1203	1474	3080	4691
	26	685	1250	1531	3199	4872
	27	711	1296	1588	3318	5053
	28	736	1342	1645	3437	5234
	29	762	1389	1702	3556	5415
	30	787	1435	1759	3675	5597
	31	813	1482	1816	3794	5778
	32	838	1528	1873	3913	5959
	33	864	1575	1930	4031	6140
	34	889	1621	1986	4150	6321
	35	915	1667	2043	4269	6502
	36	940	1714	2100	4388	6683
	37	966	1760	2157	4507	6864
	38	991	1807	2214	4626	7045
	39	1017	1853	2271	4745	7226
	40	1042	1900	2328	4864	7407
	41	1068	1946	2385	4983	7588
	42	1093	1993	2442	5101	7769
	43	1119	2039	2499	5220	7950
	44	1144	2085	2556	5339	8131
	45	1170	2132	2612	5458	8313
	46	1195	2178	2669	5577	8494
	47	1220	2225	2726	5696	8675
	48	1246	2271	2783	5815	8856
	49	1271	2318	2840	5934	9037
	50	1297	2364	2897	6053	9218

CAPACITY TABLE ASME

Series 810: Blowing-off rates at 10% above set pressure

Nominal diameter DN		8	10	15	20	25
Set pressure bar psi(g)						
	15	31	55	67	142	221
Air	30	45	81	98	207	323
SCFM	40	56	99	120	254	397
	50	66	118	143	302	472
	60	77	137	165	350	546
	70	87	155	188	397	621
	87	105	187	226	478	747
	90	108	192	233	493	770
	100	119	211	255	540	844
	110	129	230	278	588	919
	120	140	248	300	636	993
	130	150	267	323	683	1068
	140	161	286	345	731	1142
	150	171	304	368	779	1217
	160	182	323	391	826	1291
	170	192	341	413	874	1366
	180	203	360	436	922	1440
	190	213	379	458	969	1515
	200	223	397	481	1017	1589
	210	234	416	503	1065	1663
	220	244	434	526	1112	1738
	230	255	453	548	1160	1812
	240	265	472	571	1208	1887
	250	276	490	593	1255	1961
	260	286	509	616	1303	2036
	270	297	528	638	1351	2110
	280	307	546	661	1398	2185
	290	318	565	683	1446	2259
	300	328	583	706	1494	2334
	320	349	621	751	1589	2483
	340	370	658	796	1684	2632
	360	391	695	841	1780	2781
	380	412	732	886	1875	2929
	400	433	770	931	1970	3078
	420	454	807	976	2066	3227
	440	475	844	1021	2161	3376
	460	496	881	1066	2256	3525
	480	517	919	1111	2351	3674
	500	538	956	1157	2447	3823
	520	559	993	1202	2542	3972
	540	580	1030	1247	2637	4121
	560	600	1067	1292	2733	4270
	580	621	1105	1337	2828	4419
	600	642	1142	1382	2923	4568
	620	663	1179	1427	3019	4717
	640	684	1216	1472	3114	4866
	660	705	1254	1517	3209	5015
	680	726	1291	1562	3305	5164
	700	747	1328	1607	3400	5313
	725	773	1375	1663	3519	5499

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TÜV/CE atmospheric discharge safety valves for industrial applications

→ Series 412

412

Safety valves made of stainless steel, atmospheric discharge, with threaded connections

SUITABLE FOR

Air, gases and vapours | neutral

EXAMPLES OF USE

For the protection of:
- pressure tanks and
- pressure systems

for air and other neutral, non-poisonous and non-flammable gases which can be freely discharged into the environment.
Please observe plant-specific regulations and use of appropriate valve version and sealing material.

- pneumatic control units
- pressure booster plants air-side
- waste water treatment plants
- traffic- and railway technology
- pneumatic braking systems
- secondary areas in the food-, pharmaceutical- and cosmetics- industries

Safety valves are set and sealed at the factory.

APPROVALS

TÜV Type test approval 2003	**D/G**
ASME	**G**
EC type examination	**S/G**
TSG ZF001-2006	**D/G (S/G)**
KGS	**G**
TR ZU 032/2013 - TR ZU 010/2011	**D/G (S/G)**

Requirements

AD 2000 Data sheet A2	ASME-Code Sec. VIII Div. 1
DIN EN ISO 4126-1	KGS AA 319
PED 2014/68/EU	

Classification society

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

MATERIAL

SPECIFICATION

1/2" – 2"

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

0,2 – 50 bar
depending on version

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 / 1.4568	302 / 631
Sealing cap	Stainless steel	1.4301	304

Series 412 ■ VALVE VERSION

s	Standard	cylindrical form, atmospheric discharge, for air and similar neutral, non-toxic and non-flammable gases that can be freely discharged into the atmosphere.

■ MEDIUM

G	gaseous	Air and similar neutral gases

■ TYPE OF LIFTING MECHANISM

K	Standard with twist-type lifting mechanism

■ 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)
Atmospheric discharge via outlet apertures	■	■	■	■	■	■

■ TYPE OF CONNECTION INLET / OUTLET THREADED CONNECTIONS

m / –	Standard	Male thread BSP-P / –	DIN EN ISO 228-1 / –
Against surcharge			
BSP-Tm / –		Male thread BSP-T / –	DIN EN 10226, ISO 7-1 / –
NPT-m / –		Male thread NPT / –	ANSI B1.20.1 / –
Further connection types available on request			

■ SEALS

NBR	Nitrile rubber	Elastomere flat seal	–30°C to +130°C
On request			
FKM	Fluorocarbon	Elastomere flat seal	–20°C to +200°C
PTFE	Polytetrafluoroethylene	Flat seal from 1 bar	–60°C to +225°C
EPDM	Ethylene propylene diene	Elastomere flat seal	–40°C to +170°C

■ OPTIONS

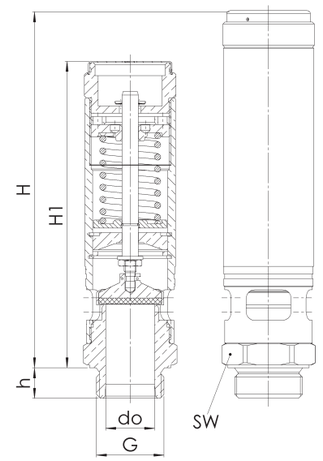
SHORT	short version for DN 32 and DN 40
Against surcharge	
Deflector made of stainless steel	Order code: **812 ABS-DN..**
Special versions on request.	

■ NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

Series 412: 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)
Installation dimensions in mm	**H (H1)**	144	177	177	215 (177[1])	215 (177[1])	282
	h	12	15	15	22,5	22,5	26
	SW	32	41	41	55	55	80
	do	14	20	24	31	31	48
Weight	**kg**	0,6	1,3	1,3	2,6	2,6	5,4
Range of adjustment	**bar**	0,2-50	0,2-50	0,2-50	0,2-50	0,2-50	0,2-30
Range of adjustment ASME	**psi**	15-725	15-725	15-725	15-725	15-725	15-435

[1]type 412 with the option SHORT for the pressure range 0,2 to 6 bar also available as short version

■ 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				
412	**s**	**G**	**K**	*20*	*NPT-m*	–	*20*	–	*FKM*		*4,5*	*2*
412	**s**	**G**	**K**	*40*	*NPT-m*	–	*40*	–	*PTFE*	*SHORT*	*5,0*	*5*
412	**s**	**G**	**K**			–		–				
412	**s**	**G**	**K**			–		–				

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 / 488 94 88
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 412: Blowing-off rates at 10% above set pressure							
	Nominal diameter DN	15	20	25	32	40	50
	Set pressure bar						
	0,2	61	167	240	401	401	768
Air	0,3	76	189	272	453	453	827
Nm³/h	0,4	88	205	296	493	493	887
	0,5	99	222	320	534	534	946
	0,6	110	240	345	576	576	1005
	0,7	121	262	377	629	629	1064
	0,8	129	280	404	673	673	1123
	0,9	138	299	431	719	719	1182
	1	147	319	459	766	766	1370
	1,5	194	419	604	1007	1007	1827
	2	245	520	749	1249	1249	2325
	3	338	717	1032	1723	1723	3177
	4	436	923	1330	2219	2219	4056
	5	524	1112	1601	2671	2671	4962
	6	613	1300	1872	3123	3123	5802
	7	702	1488	2143	3575	3575	6642
	8	790	1676	2413	4027	4027	6034
	9	879	1864	2684	4478	4478	6711
	10	968	2052	2955	4930	4930	7388
	11	1057	2240	3226	5382	5382	8065
	12	1145	2428	3497	5834	5834	8742
	13	1234	2617	3768	6286	6286	9420
	14	1323	2805	4039	6738	6738	10097
	15	1412	2993	4310	7190	7190	10774
	16	1500	3181	4581	7642	7642	11451
	17	1589	3369	4851	8094	8094	12129
	18	1678	3557	5122	8546	8546	12806
	19	1766	3745	5393	8998	8998	13483
	20	1855	3933	5664	9450	9450	14160
	21	1944	4122	5935	9902	9902	14838
	22	2033	4310	6206	10354	10354	15515
	23	2121	4498	6477	10806	10806	16192
	24	2210	4686	6748	11258	11258	16869
	25	2299	4874	7019	11710	11710	17546
	26	2387	5062	7289	12162	12162	18224
	27	2476	5250	7560	12614	12614	18901
	28	2565	5438	7831	13066	13066	19578
	29	2654	5626	8102	13518	13518	20255
	30	2742	5815	8373	13970	13970	20933
	31	2831	6003	8644	14422	14422	-
	32	2920	6191	8915	14874	14874	-
	33	3009	6379	9186	15325	15325	-
	34	3097	6567	9457	15777	15777	-
	35	3186	6755	9727	16229	16229	-
	36	3275	6943	9998	16681	16681	-
	37	3363	7131	10269	17133	17133	-
	38	3452	7320	10540	17585	17585	-
	39	3541	7508	10811	18037	18037	-
	40	3630	7696	11082	18489	18489	-
	41	3718	7884	11353	18941	18941	-
	42	3807	8072	11624	19393	19393	-
	43	3896	8260	11895	19845	19845	-
	44	3984	8448	12166	20297	20297	-
	45	4073	8636	12436	20749	20749	-
	46	4162	8825	12707	21201	21201	-
	47	4251	9013	12978	21653	21653	-
	48	4339	9201	13249	22105	22105	-
	49	4428	9389	13520	22557	22557	-
	50	4517	9577	13791	23009	23009	-

CAPACITY TABLE ASME

Series 412: Blowing-off rates at 10% above set pressure							
	Nominal diameter DN	15	20	25	32	40	50
	Set pressure psi(g)						
	15	111	226	326	543	543	985
Air	30	162	330	475	792	792	1437
SCFM	40	199	406	584	975	975	1768
	50	236	482	694	1158	1158	2099
	60	273	558	803	1340	1340	2430
	70	311	634	913	1523	1523	2762
	87	374	763	1099	1834	1834	3325
	90	385	786	1132	1888	1888	3424
	100	422	862	1241	2071	2071	3755
	110	460	938	1351	2254	2254	4087
	120	497	1014	1460	2437	2437	4418
	130	534	1090	1570	2619	2619	4749
	140	571	1166	1679	2802	2802	5081
	150	609	1242	1789	2985	2985	5412
	160	646	1318	1898	3167	3167	5743
	170	683	1394	2008	3350	3350	6074
	180	721	1470	2117	3533	3533	6406
	190	758	1546	2227	3715	3715	6737
	200	795	1623	2336	3898	3898	7068
	210	832	1699	2446	4081	4081	7400
	220	870	1775	2555	4263	4263	7731
	230	907	1851	2665	4446	4446	8062
	240	944	1927	2774	4629	4629	8393
	250	981	2003	2884	4812	4812	8725
	260	1019	2079	2993	4994	4994	9056
	270	1056	2155	3103	5177	5177	9387
	280	1093	2231	3212	5360	5360	9718
	290	1130	2307	3322	5542	5542	10050
	300	1168	2383	3431	5725	5725	10381
	320	1242	2535	3650	6090	6090	11044
	340	1317	2687	3869	6456	6456	11706
	360	1391	2839	4088	6821	6821	12369
	380	1466	2991	4307	7187	7187	13031
	400	1540	3143	4527	7552	7552	13694
	420	1615	3295	4746	7917	7917	14356
	435	1671	3410	4910	8191	8191	14853
	460	1764	3600	5184	8648	8648	-
	480	1838	3752	5403	9014	9014	-
	500	1913	3904	5622	9379	9379	-
	550	2099	4284	6169	10292	10292	-
	600	2286	4664	6717	11206	11206	-
	650	2472	5045	7264	12119	12119	-
	700	2658	5425	7812	13033	13033	-
	725	2751	5615	8085	13490	13490	-

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TÜV/CE atmospheric discharge safety valves for industrial applications

→ Series 812

812

Safety valves made of brass, atmospheric discharge, with threaded connections

SUITABLE FOR

Air, gases and vapours	neutral	

EXAMPLES OF USE

For the protection of:
- pressure tanks and
- pressure systems

for air and other neutral, non-poisonous and non-flammable gases which can be freely discharged into the environment.
Please observe plant-specific regulations and use of appropriate valve version and sealing material.

- pneumatic control units
- pressure booster plants air-side
- paint spray shops
- transport- and railway applications
- pneumatic braking systems

Safety valves are set and sealed at the factory.

APPROVALS

TÜV Type test approval 2003	**D/G**
ASME	**G**
EC type examination	**S/G**
TSG ZF001-2006	**D/G (S/G)**
KGS	**G**
TR ZU 032/2013 - TR ZU 010/2011	**D/G (S/G)**
Type approval Deutsche Bahn	

Requirements

AD 2000 Data sheet A2	ASME-Code Sec. VIII Div. 1
DIN EN ISO 4126-1	KGS AA 319
PED 2014/68/EU	

Classification society

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

UV

MATERIAL

SPECIFICATION

1/2" – 2"

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

0,2 – 50 bar
depending on version

MATERIALS

Component	Material	DIN EN	ASME
Inlet body	Brass	CW617N	CW617N
Outlet body	Brass	CW617N	CW617N
Internal parts	Brass / Stainless steel	CW617N / 1.4404	CW617N / 316 L
Spring	Stainless steel	1.4310 / 1.4568	302 / 631
Sealing cap	Stainless steel	1.4301	304

Series 812 ■ VALVE VERSION

s	Standard	cylindrical form, atmospheric discharge, for air and similar neutral, non-toxic and non-flammable gases that can be freely discharged into the atmosphere.

■ MEDIUM

G	gaseous	Air and similar neutral gases

■ TYPE OF LIFTING MECHANISM

K	Standard with twist-type lifting mechanism

■ 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)
Atmospheric discharge via outlet apertures	■	■	■	■	■	■

■ TYPE OF CONNECTION INLET / OUTLET THREADED CONNECTIONS

m / –	Standard	Male thread BSP-P / –	DIN EN ISO 228-1 / –
Against surcharge			
BSP-Tm / –		Male thread BSP-T	DIN EN 10226, ISO 7-1 / –
NPT-m / –		Male thread NPT / –	ANSI B1.20.1 / –
Further connection types available on request			

■ SEALS

NBR	Nitrile rubber	Elastomere flat seal	–30°C to +130°C
Against surcharge			
FKM	Fluorocarbon	Elastomere flat seal	–20°C to +200°C
PTFE	Polytetrafluoroethylene	Flat seal from 1 bar	–60°C to +225°C
EPDM	Ethylene propylene diene	Elastomere flat seal	–40°C to +170°C

■ OPTIONS

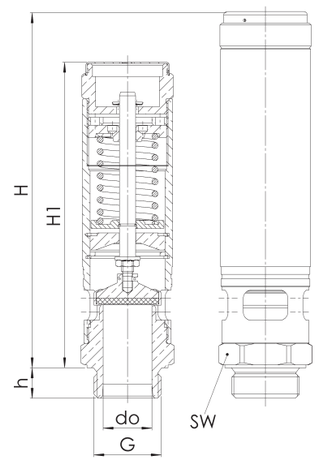
SHORT	short version for DN 32 and DN 40
Against surcharge	
Deflector made of stainless steel	Order code: **812 ABS-DN..**
Special versions on request.	

■ NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

Series 812: 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)
Installation dimensions in mm	**H (H1)**	144	177	177	215 (177[1])	215 (177[1])	282
	h	12	15	15	22,5	22,5	26
	SW	32	41	41	55	55	80
	do	14	20	24	31	31	48
Weight	**kg**	0,6	1,3	1,3	2,6	2,6	5,4
Range of adjustment	**bar**	0,2-50	0,2-50	0,2-50	0,2-50	0,2-50	0,2-30
Range of adjustment ASME	**psi**	15-725	15-725	15-725	15-725	15-725	15-435

[1]type 812 with the option SHORT for the pressure range 0,2 to 6 bar also available as short version

■ 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				
812	**s**	**G**	**K**	*40*	*m*	–	*40*	–	*FKM*		*5,0*	*3*
812	**s**	**G**	**K**	*32*	*m*	–	*32*	–	*NBR*	*SHORT*	*3,5*	*2*
812	**s**	**G**	**K**			–		–				
812	**s**	**G**	**K**			–		–				

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 / 488 94 88
Please do not forget to add your personal data so that our sales team can contact you.

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First Name

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■ CAPACITY TABLE

Series 812: Blowing-off rates at 10% above set pressure							
Nominal diameter DN		15	20	25	32	40	50
Set pressure bar							
	0,2	61	167	240	401	401	768
Air	0,3	76	189	272	453	453	827
Nm³/h	0,4	88	205	296	493	493	887
	0,5	99	222	320	534	534	946
	0,6	110	240	345	576	576	1005
	0,7	121	262	377	629	629	1064
	0,8	129	280	404	673	673	1123
	0,9	138	299	431	719	719	1182
	1	147	319	459	766	766	1370
	1,5	194	419	604	1007	1007	1827
	2	245	520	749	1249	1249	2325
	3	338	717	1032	1723	1723	3177
	4	436	923	1330	2219	2219	4056
	5	524	1112	1601	2671	2671	4962
	6	613	1300	1872	3123	3123	5802
	7	702	1488	2143	3575	3575	6642
	8	790	1676	2413	4027	4027	6034
	9	879	1864	2684	4478	4478	6711
	10	968	2052	2955	4930	4930	7388
	11	1057	2240	3226	5382	5382	8065
	12	1145	2428	3497	5834	5834	8742
	13	1234	2617	3768	6286	6286	9420
	14	1323	2805	4039	6738	6738	10097
	15	1412	2993	4310	7190	7190	10774
	16	1500	3181	4581	7642	7642	11451
	17	1589	3369	4851	8094	8094	12129
	18	1678	3557	5122	8546	8546	12806
	19	1766	3745	5393	8998	8998	13483
	20	1855	3933	5664	9450	9450	14160
	21	1944	4122	5935	9902	9902	14838
	22	2033	4310	6206	10354	10354	15515
	23	2121	4498	6477	10806	10806	16192
	24	2210	4686	6748	11258	11258	16869
	25	2299	4874	7019	11710	11710	17546
	26	2387	5062	7289	12162	12162	18224
	27	2476	5250	7560	12614	12614	18901
	28	2565	5438	7831	13066	13066	19578
	29	2654	5626	8102	13518	13518	20255
	30	2742	5815	8373	13970	13970	20933
	31	2831	6003	8644	14422	14422	-
	32	2920	6191	8915	14874	14874	-
	33	3009	6379	9186	15325	15325	-
	34	3097	6567	9457	15777	15777	-
	35	3186	6755	9727	16229	16229	-
	36	3275	6943	9998	16681	16681	-
	37	3363	7131	10269	17133	17133	-
	38	3452	7320	10540	17585	17585	-
	39	3541	7508	10811	18037	18037	-
	40	3630	7696	11082	18489	18489	-
	41	3718	7884	11353	18941	18941	-
	42	3807	8072	11624	19393	19393	-
	43	3896	8260	11895	19845	19845	-
	44	3984	8448	12166	20297	20297	-
	45	4073	8636	12436	20749	20749	-
	46	4162	8825	12707	21201	21201	-
	47	4251	9013	12978	21653	21653	-
	48	4339	9201	13249	22105	22105	-
	49	4428	9389	13520	22557	22557	-
	50	4517	9577	13791	23009	23009	-

■ CAPACITY TABLE ASME

Series 812: Blowing-off rates at 10% above set pressure							
Nominal diameter DN		15	20	25	32	40	50
Set pressure psi(g)							
	15	111	226	326	543	543	985
Air	30	162	330	475	792	792	1437
SCFM	40	199	406	584	975	975	1768
	50	236	482	694	1158	1158	2099
	60	273	558	803	1340	1340	2430
	70	311	634	913	1523	1523	2762
	87	374	763	1099	1834	1834	3325
	90	385	786	1132	1888	1888	3424
	100	422	862	1241	2071	2071	3755
	110	460	938	1351	2254	2254	4087
	120	497	1014	1460	2437	2437	4418
	130	534	1090	1570	2619	2619	4749
	140	571	1166	1679	2802	2802	5081
	150	609	1242	1789	2985	2985	5412
	160	646	1318	1898	3167	3167	5743
	170	683	1394	2008	3350	3350	6074
	180	721	1470	2117	3533	3533	6406
	190	758	1546	2227	3715	3715	6737
	200	795	1623	2336	3898	3898	7068
	210	832	1699	2446	4081	4081	7400
	220	870	1775	2555	4263	4263	7731
	230	907	1851	2665	4446	4446	8062
	240	944	1927	2774	4629	4629	8393
	250	981	2003	2884	4812	4812	8725
	260	1019	2079	2993	4994	4994	9056
	270	1056	2155	3103	5177	5177	9387
	280	1093	2231	3212	5360	5360	9718
	290	1130	2307	3322	5542	5542	10050
	300	1168	2383	3431	5725	5725	10381
	320	1242	2535	3650	6090	6090	11044
	340	1317	2687	3869	6456	6456	11706
	360	1391	2839	4088	6821	6821	12369
	380	1466	2991	4307	7187	7187	13031
	400	1540	3143	4527	7552	7552	13694
	420	1615	3295	4746	7917	7917	14356
	435	1671	3410	4910	8191	8191	14853
	460	1764	3600	5184	8648	8648	-
	480	1838	3752	5403	9014	9014	-
	500	1913	3904	5622	9379	9379	-
	550	2099	4284	6169	10292	10292	-
	600	2286	4664	6717	11206	11206	-
	650	2472	5045	7264	12119	12119	-
	700	2658	5425	7812	13033	13033	-
	725	2751	5615	8085	13490	13490	-

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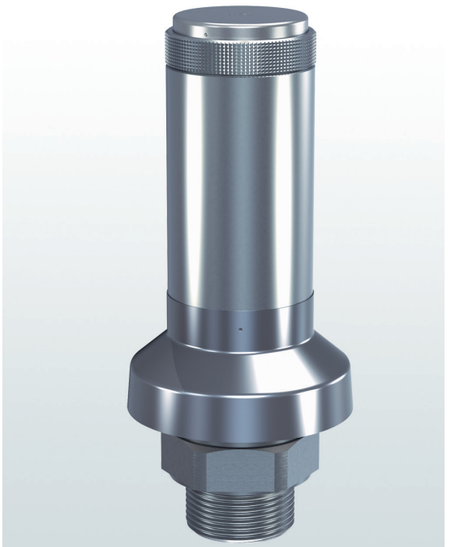
TÜV/CE atmospheric discharge safety valves for industrial applications

→ Series 413

413

Safety valves made of stainless steel, atmospheric discharge, with threaded connections



SUITABLE FOR

Air, gases and vapours	neutral	

EXAMPLES OF USE

For the protection of:
- stationary pressure tanks and
- bulk transport vehicles

for liquid, granular and dusty media. Please observe plant-specific regulations and use of appropriate valve version and sealing material.

- stationary silos
- bulk transport vehicle manufacturers and service companies
- paint spray shops
- secondary areas in the food-, pharmaceutical- and cosmetics-industries

Safety valves are set and sealed at the factory.

APPROVALS

TÜV Type test approval 2003	**D/G, F/K/S**
EC type examination	**S/G, F/K/S**
TSG ZF001-2006	**D/G (S/G), F/K/S**
KGS	**G**
TR ZU 032/2013 - TR ZU 010/2011	**D/G (S/G), F/K/S**

Requirements

AD 2000 Data sheet A2	PED 2014/68/EU
TRB 801 Nr. 22 and Nr. 23	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

MATERIAL

SPECIFICATION

1/2" – 2"	– 60°C to + 225°C depending on version	0,2 – 6 bar

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
Deflector	Stainless steel	1.4301	304
Sealing cap	Stainless steel	1.4301	304

Series 413 ■ VALVE VERSION

m	with diaphragm	cylindrical form, atmospheric discharge, for air and similar neutral gases. Spring and moving parts protected from being affected by the medium. Standard version with deflector made of stainless steel.

■ MEDIUM

G	gaseous	Air and similar neutral gases

■ TYPE OF LIFTING MECHANISM

K	Standard with twist-type lifting mechanism

■ 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)
Atmospheric discharge via outlet apertures	■	■	■	■	■	■

■ TYPE OF CONNECTION INLET / OUTLET THREADED CONNECTIONS

m / –	Standard	Male thread BSP-P / –	DIN EN ISO 228-1 / –
Against surcharge			
BSP-Tm / –		Male thread BSP-T / –	DIN EN 10226, ISO 7-1 / –
NPT-m / –		Male thread NPT / –	ANSI B1.20.1 / –
Further connection types available on request			

■ SEALS

FKM	Fluorocarbon	Elastomere flat seal	–20°C to +200°C
On request			
PTFE	Polytetrafluoroethylene	Flat seal from 1 bar	–60°C to +225°C

■ OPTIONS

Special versions on request.

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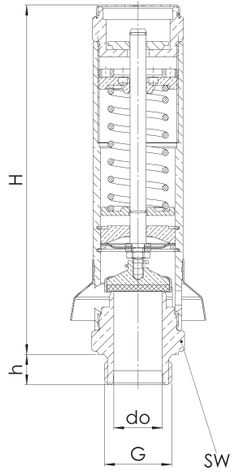
■ NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

Series 413: 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)
Installation dimensions in mm	**H**	144	177	177	177	177	282
	h	12	15	15	22,5	22,5	26
	SW	32	41	41	55	55	80
	do	14	20	24	31	31	48
Weight	**kg**	0,6	1,3	1,3	2,6	2,6	5,4
Range of adjustment	**bar**	0,2-6	0,2-6	0,2-6	0,2-6	0,2-6	0,2-6

■ 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				
413	**m**	**G**	**K**	*32*	*m*	–	*32*	–	*FKM*		*2,0*	*5*
413	**m**	**G**	**K**			–		–				
413	**m**	**G**	**K**			–		–				
413	**m**	**G**	**K**			–		–				

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 / 488 94 88
Please do not forget to add your personal data so that our sales team can contact you.

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Company

Telephone

E-Mail

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CAPACITY TABLE

Series 413: Blowing-off rates at 10% above set pressure

Nominal diameter DN		15	20	25	32	40	50
Set pressure bar							
	0,2	61	167	240	401	401	768
Air	0,3	76	189	272	453	453	827
Nm^3/h	0,4	88	205	296	493	493	887
	0,5	99	222	320	534	534	946
	0,6	110	243	351	585	585	1005
	0,7	121	262	377	629	629	1064
	0,8	129	280	404	673	673	1123
	0,9	138	299	431	719	719	1182
	1	147	319	459	766	766	1370
	1,2	168	357	514	858	858	1514
	1,4	186	396	571	952	952	1658
	1,6	208	437	629	1049	1049	1903
	1,8	225	478	688	1148	1148	2055
	2	245	520	749	1249	1249	2325
	2,5	291	617	889	1483	1483	2724
	3	338	717	1032	1723	1723	3177
	3,5	386	809	1165	1943	1943	3583
	4	436	923	1330	2219	2219	4056
	4,5	480	1018	1465	2445	2445	4469
	5	524	1112	1601	2671	2671	4962
	5,5	569	1206	1736	2897	2897	5382
	6	613	1300	1872	3123	3123	5802

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TÜV/CE atmospheric discharge safety valves for industrial applications

→ Series 813

813

Safety valves made of brass, atmospheric discharge, with threaded connections

SUITABLE FOR

Air, gases and vapours	neutral

EXAMPLES OF USE

For the protection of:
- stationary pressure tanks and
- bulk transport vehicles

for liquid, granular and dusty media.
Please observe plant-specific regulations and use of appropriate valve version and sealing material.

- stationary silos
- bulk transport vehicle manufacturers and service companies
- paint spray shops
- compressed air applications in dirty environmental conditions

Safety valves are set and sealed at the factory.

APPROVALS

TÜV Type test approval 2003	**D/G, F/K/S**
EC type examination	**S/G, F/K/S**
TSG ZF001-2006	**D/G (S/G), F/K/S**
KGS	**G**
TR ZU 032/2013 - TR ZU 010/2011	**D/G (S/G), F/K/S**

Requirements

AD 2000 Data sheet A2	PED 2014/68/EU
TRB 801 Nr. 22 and Nr. 23	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

MATERIAL

SPECIFICATION

1/2" – 2"	– 60°C to + 225°C depending on version	0,2 – 6 bar

MATERIALS

Component	Material	DIN EN	ASME
Inlet body	Brass	CW617N	CW617N
Outlet body	Brass	CW617N	CW617N
Internal parts	Brass / Stainless steel	CW617N / 1.4404	CW617N / 316 L
Spring	Stainless steel	1.4310	302
Deflector	Stainless steel	1.4301	304
Sealing cap	Stainless steel	1.4301	304

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Series 813 ■ VALVE VERSION

m	with diaphragm	cylindrical form, atmospheric discharge, for air and similar neutral gases. Spring and moving parts protected from being affected by the medium. Standard version with deflector made of stainless steel.

■ MEDIUM

G	gaseous	Air and similar neutral gases

■ TYPE OF LIFTING MECHANISM

K	Standard with twist-type lifting mechanism

■ 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)
Atmospheric discharge via outlet apertures	■	■	■	■	■	■

■ TYPE OF CONNECTION INLET / OUTLET THREADED CONNECTIONS

m / –	Standard	Male thread BSP-P / –	DIN EN ISO 228-1 / –
Against surcharge			
BSP-Tm / –		Male thread BSP-T / –	DIN EN 10226, ISO 7-1 / –
NPT-m / –		Male thread NPT / –	ANSI B1.20.1 / –
Further connection types available on request			

■ SEALS

FKM	Fluorocarbon	Elastomere flat seal	–20°C to +200°C
On request			
PTFE	Polytetrafluoroethylene	Flat seal from 1 bar	–60°C to +225°C

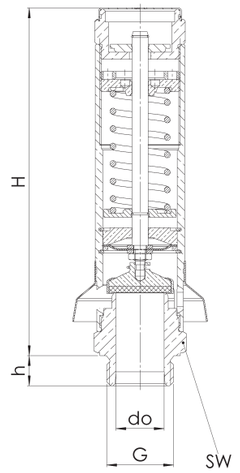
■ OPTIONS

Special versions on request.

■ NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

Series 813: 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)
Installation dimensions in mm	**H**	144	177	177	177	177	282
	h	12	15	15	22,5	22,5	26
	SW	32	41	41	55	55	80
	do	14	20	24	31	31	48
Weight	**kg**	0,6	1,3	1,3	2,6	2,6	5,4
Range of adjustment	**bar**	0,2-6	0,2-6	0,2-6	0,2-6	0,2-6	0,2-6

■ 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				
813	**m**	**G**	**K**	*40*	*m*	–	*40*	–	*FKM*		*2,0*	*3*
813	**m**	**G**	**K**			–		–				
813	**m**	**G**	**K**			–		–				
813	**m**	**G**	**K**			–		–				

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 / 488 94 88
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CAPACITY TABLE

Series 813: Blowing-off rates at 10% above set pressure

Nominal diameter DN		15	20	25	32	40	50
Set pressure bar							
	0,2	61	167	240	401	401	768
Air	0,3	76	189	272	453	453	827
Nm^3/h	0,4	88	205	296	493	493	887
	0,5	99	222	320	534	534	946
	0,6	110	243	351	585	585	1005
	0,7	121	262	377	629	629	1064
	0,8	129	280	404	673	673	1123
	0,9	138	299	431	719	719	1182
	1	147	319	459	766	766	1370
	1,2	168	357	514	858	858	1514
	1,4	186	396	571	952	952	1658
	1,6	208	437	629	1049	1049	1903
	1,8	225	478	688	1148	1148	2055
	2	245	520	749	1249	1249	2325
	2,5	291	617	889	1483	1483	2724
	3	338	717	1032	1723	1723	3177
	3,5	386	809	1165	1943	1943	3583
	4	436	923	1330	2219	2219	4056
	4,5	480	1018	1465	2445	2445	4469
	5	524	1112	1601	2671	2671	4962
	5,5	569	1206	1736	2897	2897	5382
	6	613	1300	1872	3123	3123	5802

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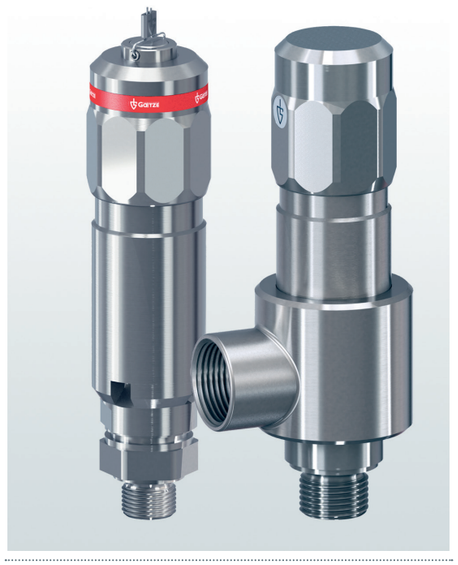
TÜV/CE atmospheric discharge safety valves for industrial applications

→ Series 492

492

Safety valves made of stainless steel, atmospheric discharge, with threaded connections



SUITABLE FOR

Air, gases and vapours	neutral and non-neutral	

EXAMPLES OF USE

For the protection of:
- pressure tanks and
- pressure systems

for air and other neutral and non-neutral gases.
Please observe plant-specific regulations and use of appropriate valve version and sealing material.

- high-pressure compressors
- pressure tanks
- pressure cylinder pack
- CNG-applications

Safety valves are set and sealed at the factory.

MATERIAL

SPECIFICATION

1/4“ – 3/4“	– 60°C to + 180°C	50 – 630 bar depending on version

APPROVALS

TÜV Type test approval 2076	**D/G**
EC type examination	**S/G**
ASME	**G**
TSG ZF001-2006	**D/G (S/G)**
KGS	**G**
TR ZU 032/2013 - TR ZU 010/2011	**D/G (S/G)**

Requirements	
AD 2000 Data sheet A2	ASME-Code Sec. VIII Div. 1
DIN EN ISO 4126-1	KGS AA 319
PED 2014/68/EU	

Classification society	
DNVGL	DNVGL
Lloyd’s Register EMEA	LR EMEA
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	Spring steel	VDSiCr	

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Series 492 ■ VALVE VERSION

s	Standard	cylindrical form, atmospheric discharge, for air and similar neutral, non-toxic and non-flammable gases that can be freely discharged into the atmosphere.
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. Only available for version with angled body and without lifting device.

■ MEDIUM

G	gaseous	Air and similar neutral and non-netral gases

■ TYPE OF LIFTING MECHANISM

K	Standard with twist-type lifting mechanism
0	without lifting device

■ AVAILABLE NOMINAL DIAMETERS AND CONNECTION SIZES

Nominal diameter DN		**10**				**15**		
Inlet		1/4" (8)	3/8" (10)	1/2" (15)	3/4" (20)	3/8" (10)	1/2" (15)	3/4" (20)
Outlet	Atmospheric discharge via outlet apertures	■	■	■	■	■	■	■
	1/2" (15)	■	■	■	■	■	■	■
	3/4" (20)	■	■	■	■	■	■	■
	1" (25)	■	■	■	■	■	■	■

■ TYPE OF CONNECTION INLET / OUTLET THREADED CONNECTIONS

m / –	Standard	Male thread BSP-P / –	DIN EN ISO 228-1 / –
m / f	with positionable angled body	Male thread BSP-P / Female thread BSP-P	DIN EN ISO 228-1 / DIN EN ISO 228-1

■ SEALS

MD / PAI	Metal-to-metal sealing / Polyamidimide	Flat seal 50 – 630 bar	–60°C to +180°C

■ OPTIONS

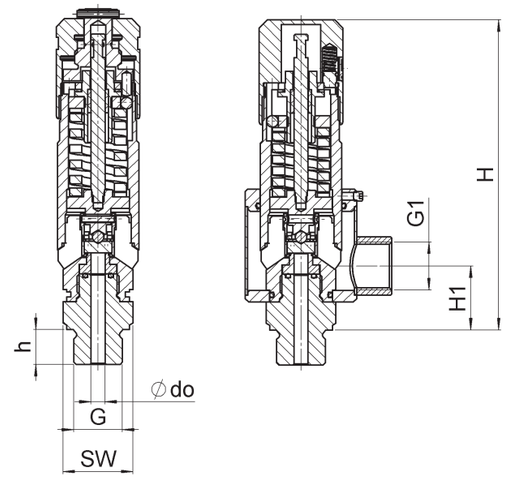
Special versions on request.

■ NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

Series 492: Connection, installation dimensions, ranges of adjustment								
Nominal diameter	**DN**	**10**				**15**		
Connection DIN EN ISO 228	**G**	1/4" (8)	3/8" (10)	1/2"(15)	3/4"(20)	3/8" (10)	1/2" (15)	3/4" (20)
	G1[1]	1/2" (15) 3/4" (20) 1" (25)	1/2" (15) 3/4" (20) 1" (25)	1/2" (15) 3/4" (20) 1" (25)	1/2" (15) 3/4" (20) 1" (25)	1/2" (15) 3/4" (20) 1" (25)	1/2" (15) 3/4" (20) 1" (25)	1/2" (15) 3/4" (20) 1" (25)
Installation dimensions in mm	**H**	133	133	133	133	134	134	134
	H1[1]	ca. 28	ca. 28	ca. 28	ca.28	ca. 30	ca. 30	ca. 30
	h	12	12	15	16	12	15	16
	SW	27	27	27	27	30	30	30
	do	6	6	6	6	9	9	9
Weight	**kg**	0,74	0,74	0,74	0,74	0,86	0,87	0,92
Range of adjustment	**bar**	50-500	50-630	50-630	50-630	50-250	50-250	50-250
Range of adjustment ASME	**psi**	725-7250	725-9135	725-9135	725-9135	725-3625	725-3625	725-3625

[1]only for the version with positionable angled body and according to choice of outlet connection size

■ 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				
492	*s*	**G**	*K*	*10*	**m**	*–*	*8*	*–*	**MD / PAI**		*70,0*	*5*
492	*t*	**G**	*0*	*15*	**m**	*f*	*15*	*20*	**MD / PAI**		*300*	*2*
492		**G**			**m**				**MD / PAI**			
492		**G**			**m**				**MD / PAI**			

In this table you can confi gure 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 / 488 94 88
Please do not forget to add your personal data so that our sales team can contact you.

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Company

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CAPACITY TABLE

Series 492: Blowing-off rates at 10% above set pressure

	Nominal diameter DN	10	15
	Set pressure bar		
	50	787	1867
Air	60	941	2233
Nm³/h	70	1095	2600
	80	1250	2967
	90	1404	3333
	100	1559	3700
	110	1713	4067
	120	1868	4433
	130	2022	4800
	140	2177	5167
	150	2331	5533
	160	2486	5900
	170	2640	6266
	180	2795	6633
	190	2949	7000
	200	3104	7366
	210	3258	7733
	220	3413	8100
	230	3567	8466
	240	3722	8833
	250	3876	9200
	260	4031	
	270	4185	
	280	4340	
	290	4494	
	300	4649	
	310	4803	
	320	4958	
	330	5112	
	340	5267	
	350	5421	
	360	5576	
	370	5730	
	380	5885	
	390	6039	
	400	6194	
	410	6348	
	420	6503	
	430	6657	
	440	6812	
	450	6966	
	460	7121	
	470	7275	
	480	7430	
	490	7584	
	500	7739	
	510	7893	
	520	8048	
	530	8202	
	540	8357	
	550	8511	
	560	8666	
	570	8820	
	580	8975	
	590	9129	
	600	9284	
	610	9438	
	620	9593	
	630	9747	

CAPACITY TABLE ASME

Series 492: Blowing-off rates at 10% above set pressure

	Nominal diameter DN	10	15
	Set pressure bar		
	725	497	1092
Air	750	562	1234
SCFM	775	580	1275
	800	599	1315
	850	635	1396
	900	672	1477
	950	709	1558
	1000	746	1639
	1100	819	1800
	1200	893	1962
	1300	967	2124
	1400	1040	2285
	1500	1114	2447
	1600	1187	2609
	1700	1261	2771
	1800	1334	2932
	1900	1408	3094
	2000	1482	3256
	2100	1555	3417
	2200	1629	3579
	2300	1702	3741
	2400	1776	3902
	2500	1850	4064
	2600	1923	4226
	2700	1997	4388
	2800	2070	4549
	2900	2144	4711
	3000	2218	4873
	3100	2291	5034
	3200	2365	5196
	3300	2438	5358
	3400	2512	5519
	3500	2585	5681
	3600	2659	5843
	3625	2677	5883
	3700	2733	
	3900	2880	
	4000	2953	
	4200	3101	
	4400	3248	
	4600	3395	
	4800	3542	
	5000	3689	
	5200	3837	
	5400	3984	
	5600	4131	
	5800	4278	
	6000	4425	
	6200	4572	
	6400	4720	
	6600	4867	
	6800	5014	
	7000	5161	
	7200	5308	
	7400	5455	
	7600	5603	
	7800	5750	
	8000	5897	
	8200	6044	
	8400	6191	
	8600	6339	
	8800	6486	
	9000	6633	
	9135	6732	

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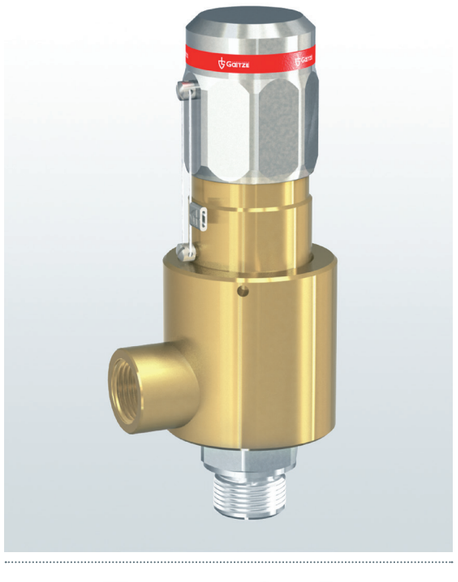
TÜV/CE atmospheric discharge safety valves
for industrial applications

→ Series 492 GOX



SUITABLE FOR

Air, gases and vapours	neutral and non-neutral	

EXAMPLES OF USE

For the protection of:
- pressure tanks and
- pressure systems

for gaseous oxygen and oxygen mixed gases. Please observe plant-specific regulations and use of appropriate valve version and sealing material.

- high-pressure compressors
- pressure tanks
- pressure cylinder pack
- common O2 applications
- technical gas industry
- medical healthcare gas industry

Safety valves are set and sealed at the factory.

APPROVALS

TÜV-Type test approval 2100	**D/G**
EC type examination	**S/G**
ASME	**G**
TSG ZF001-2006	**D/G (S/G)**
KGS	**G**
BAM	
Air Liquide / CTE	
TR ZU 032/2013 - TR ZU 010/2011	**D/G (S/G)**

Requirements

AD 2000 Data sheet A2	ASME-Code Sec. VIII Div. 1
DIN EN ISO 4126-1	KGS AA 319
DGR 2014/68/EU	BG RCI M034

Classification society

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

MATERIAL

SPECIFICATION

1/4" – 3/4"

– 40°C to + 60°C

50 – 420 bar

MATERIALS

Component	Material	DIN EN	ASME
Inlet body	Monel / Stellite	2.4360 / Stellite	UNS N04400 / Stellite
Outlet body	Brass	CW617N	CW617N
Internal parts	Monel / Stainless steel	2.4360 / 1.4404	
Spring	Spring steel	VDSiCr	UNS N04400 / 316L

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→ Overview

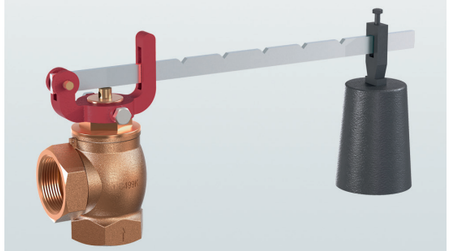
■ PRESSURE RELIEF VALVES

Series	Materials	Temperatures	Pressures	Media	Threaded connection	Page
428		–60 °C – +225 °C	0.2 bar – 30 bar		3/8" – 1 1/4"	5.1
628		–60 °C – +225 °C	0.2 bar – 20 bar		3/8" – 2"	5.2
601		–60 °C – +225 °C	1.5 bar – 16 bar		1/2" – 2"	5.3
612		–60 °C – +225 °C	0.1 bar – 4 bar		1/2" – 2"	5.4

→ Series 601

601

Pressure relief valves made of gunmetal, with lever and weight, angle-type with threaded connections



SUITABLE FOR

Liquids	neutral	
Air, gases and vapours	neutral	
Steam		

EXAMPLES OF USE

For the protection of:
- pressure tanks/-systems for neutral vapours, gases and liquids
- steam boilers and steam plants

if proportional opening characteristics and only small blow-off volumes are required (i.e. protection in the case of expansion due to heating-up). Please observe plant-specific regulations and use of appropriate valve version and sealing material.

- Industrial and commercial boilers

MATERIAL

SPECIFICATION

1/2“ – 2“	– 60°C to + 225°C depending on version	1,5 – 16 bar depending on version

APPROVALS

European Pressure Equipment Directive

TR ZU 032/2013 - TR ZU 010/2011

Requirements
PED 2014/68/EU

MATERIALS

Component	Material	DIN EN	ASME
Inlet body	Gunmetal	CC499K	CC499K
Outlet body	Gunmetal	CC499K	CC499K
Internal parts	Brass / Gunmetal	CW617N / CC499K	CW617N / CC499K
Lever	Stainless steel	1.4301	304

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Series 601 ■ VALVE VERSION

s	Standard, non-gastight version	for neutral media without counter pressure. With lever and weight(s)

■ MEDIUM

GF	gaseous and liquid	Air, vapours, gases, liquids and - depending on seal - also for steam

■ TYPE OF LIFTING MECHANISM

L	Lifting by lever. Disc can be lifted and turned.

■ 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

■ SEALS

NBR	Nitrile rubber	Elastomere flat seal	–30°C to +130°C
PTFE	Polytetrafluoroethylene	Flat seal	–60°C to +225°C

■ OPTIONS

Against surcharge

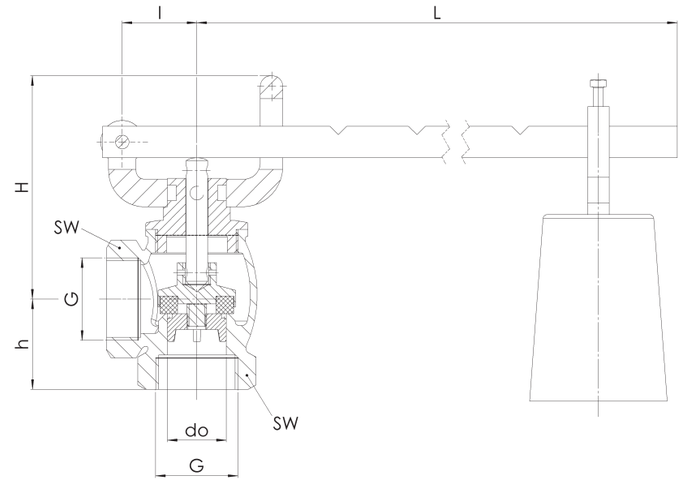
Other pressure ranges according to table of counterweights

■ NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

Series 601: 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**	250	300	380	500	490	600
	l	30	30	40	50	50	65
	H	74	85	100	115	120	150
	h	30	35	41	45	51	60
	SW	28	34	41	52	58	70
	do	13	19	25	30	38	50
Weight der Armatur	**kg**	0,47	0,69	1,2	1,86	2,3	3,75
Counterweight standard	**kg**	0,67	1,36	2,2	2,2	3,55	6,5
Range of adjustment[1]	**bar**	2 - 6	2 - 6	2 - 6	1,5 - 4	1,5 - 4	1,5 - 4

[1]Depending on nominal diameter the valves are also available up to 12 bar or 16 bar against surcharge. See table counterweights.

■ MAIN DIMENSIONS, INSTALLATION DIMENSIONS



■ INDIVIDUAL SELECTION / VALVE CONFIGURATION

Series	**Valve version**	**Medium**	**Lifting device**	**Nominal diameter DN**	**Connection type**		**Connection size**		**Seal**	**Options**	**Pressure range / set pressure**	**Quantity**
					Inlet	Outlet	Inlet	Outlet				
601	**s**	**GF**	**L**	*50*	**f**	**f**	*50*	*50*	*PTFE*		*1,5 - 4,0*	*5*
601	**s**	**GF**	**L**		**f**	**f**						
601	**s**	**GF**	**L**		**f**	**f**						
601	**s**	**GF**	**L**		**f**	**f**						

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 / 488 94 88
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CAPACITY TABLE

Series 601: Blowing-off rates at approx. 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
	0,5	6	5	0,2	13	21	0,5	24	19	0,8	33	27	1,1	54	44	1,9	98	77	3,3
Air l	1	8	6	0,3	18	28	0,6	32	26	1,2	44	36	1,6	72	58	2,6	130	102	4,7
Nm³/h	1,5	10	8	0,4	22	34	0,8	40	32	1,4	55	45	2,0	90	72	3,2	163	127	5,8
	2	24	19	0,8	52	41	1,8	96	75	3,3	132	100	4,6	217	170	7,4	390	300	13,3
Steam II	2,5	28	22	0,9	61	48	2,0	112	87	3,7	154	116	5,1	253	197	8,3	455	348	14,9
kg/h	3	32	25	1,0	70	54	2,2	128	99	4,0	176	132	5,6	289	225	9,1	520	397	16,3
	3,5	36	28	1,1	79	61	2,4	144	111	4,4	198	148	6,0	325	252	9,8	585	444	17,6
Water III	4	40	31	1,2	87	67	2,6	160	123	4,7	220	164	6,4	362	279	10,5	650	492	18,8
m³/h	4,5	44	34	1,2	96	74	2,7	176	135	5,0	242	180	6,8	398	306	11,1	715	540	19,9
	5	48	37	1,3	105	80	2,9	192	147	5,2	264	196	7,2	434	333	11,7	780	588	21,0
	5,5	52	40	1,4	114	87	3,0	208	159	5,5	286	212	7,5	470	360	12,3	845	635	22,0
	6	56	43	1,4	122	93	3,2	224	171	5,7	308	228	7,9	506	387	12,9	910	684	23,0
	6,5	60	46	1,5	131	100	3,3	240	183	6,0	330	243	8,2	542	414	13,4	975	731	24,0
	7	64	49	1,6	140	106	3,4	256	194	6,2	352	259	8,5	578	440	13,9	1040	777	24,9
	7,5	68	52	1,6	149	113	3,5	272	206	6,4	374	275	8,8	615	467	14,4	1105	825	25,7
	8	72	55	1,7	157	119	3,7	288	218	6,6	396	291	9,1	651	494	14,9	1170	872	26,6
	8,5	76	58	1,7	166	126	3,8	304	230	6,8	418	306	9,4	687	521	15,3	1235	919	27,4
	9	80	61	1,8	175	132	3,9	320	242	7,0	440	322	9,7	723	548	15,8	1300	966	28,2
	9,5	84	64	1,8	184	138	4,0	336	253	7,2	462	338	9,9	759	574	16,2	1365	1014	29,0
	10	88	70	1,9	193	150	4,1	355	275	7,4	487	380	10,2	787	620	16,6	1411	1060	29,7
	11	96	76	1,9	211	163	4,3	388	299	7,7	531	414	10,7	858	675	17,4	1539	1154	31,2
	12	104	82	2,0	228	176	4,5	420	323	8,1	575	447	11,2	930	729	18,1	1667	1247	32,6
	13	112	89	2,1	246	189	4,7	452	348	8,4	619	481	11,7	1001	784	18,8	1796	1341	33,9
	14	120	95	2,2	263	203	4,9	485	372	8,7	663	514	12,1	1073	839	19,6	1924	1435	35,2
	15	128	101	2,3	281	216	5,0	517	396	9,1	708	548	12,5	1144	894	20,2	2052	1528	36,4
	16	136	107	2,3	298	229	5,2	549	420	9,4	752	582	12,9	1216	949	20,9	2180	1622	37,6

COUNTERWEIGHT

Series 601: Counterweight

Nominal diameter	DN	15	20	25	32	40	50
Pressure range	Weight, kg						
1,5 - 4 bar		-	-	-	2,2	3,55	6,5
2 - 6 bar		0,67	1,36	2,2	3,55	4,75	9
3 - 8 bar		0,67	1,36	3,55	4,75	9	-
4 - 10 bar		0,67	2,2	3,55	4,75	9	-
4 - 12 bar		1,36	2,2	4,75	4,75	9	-
5 - 15 bar		1,36	2,2	4,75	9	-	-
6 - 16 bar		1,36	2,2	4,75	9	-	-

→ Series 612

612

Pressure relief valves made of gunmetal, with double lever and weights, angle-type with threaded connections

SUITABLE FOR

Liquids	neutral	
Air, gases and vapours	neutral	
Steam		

EXAMPLES OF USE

For the protection of:
- pressure tanks/-systems for neutral vapours, gases and liquids
- steam boilers and steam plants

if proportional opening characteristics and only small blow-off volumes are required (i.e. protection in the case of expansion due to heating-up). Please observe plant-specific regulations and use of appropriate valve version and sealing material.

- low pressure steam systems
- low pressure industrial- and commercial boiler plants

MATERIAL

SPECIFICATION

1/2“ – 2“

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

0,1 – 4 bar

APPROVALS

European Pressure Equipment Directive

TR ZU 032/2013 - TR ZU 010/2011

Requirements
PED 2014/68/EU

MATERIALS

Component	Material	DIN EN	ASME
Inlet body	Gunmetal	CC499K	CC499K
Outlet body	Gunmetal	CC499K	CC499K
Internal parts	Brass / Gunmetal	CW617N / CC499K	CW617N / CC499K
Lever	Stainless steel	1.4301	304

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Series 612 ■ VALVE VERSION

s	Standard, non-gastight version	for neutral media without counter pressure. With double lever and 2 weights for exact adjustment and functioning within a small pressure range.

■ MEDIUM

GF	gaseous and liquid	Air, vapours, gases, liquids and - depending on seal - also for steam

■ TYPE OF LIFTING MECHANISM

L	Lifting by lever. Disc can be lifted and turned.

■ 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

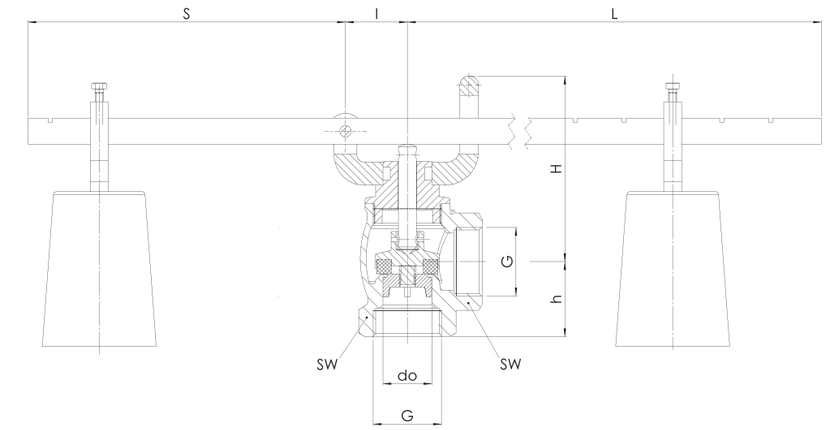
■ SEALS

NBR	Nitrile rubber	Elastomere flat seal	–30°C to +130°C
PTFE	Polytetrafluoroethylene	Flat seal	–60°C to +225°C

■ NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

Series 612: 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**	330	325	430	625	640	765
	l	20	23	30	38	38	50
	H	74	85	100	115	120	150
	h	30	35	41	45	51	60
	S	120	130	165	195	180	245
	SW	28	34	41	52	58	70
	do	13	19	25	30	38	50
Weight of the valve	**kg**	0,6	0,73	1,3	2,1	2,6	4,2
Counterweight	**kg**	2x0,67	2x1,36	2x2,2	2x2,2	2x3,55	2x6,5
Range of adjustment	**bar**	0,1 - 4	0,1 - 4	0,1 - 4	0,1 - 4	0,1 - 4	0,1 - 4

■ MAIN DIMENSIONS, INSTALLATION DIMENSIONS



■ INDIVIDUAL SELECTION / VALVE CONFIGURATION

Series	**Valve version**	**Medium**	**Lifting device**	**Nominal diameter DN**	**Connection type**		**Connection size**		**Seal**	**Options**	**Pressure range / set pressure**	**Quantity**
					Inlet	Outlet	Inlet	Outlet				
612	**s**	**GF**	**L**	*25*	**f**	**f**	*25*	*25*	*NBR*		*0,1 - 4,0*	*3*
612	**s**	**GF**	**L**		**f**	**f**						
612	**s**	**GF**	**L**		**f**	**f**						
612	**s**	**GF**	**L**		**f**	**f**						

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CAPACITY TABLE

Series 612: Blowing-off rates at approx. 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
	0,1	4	4	0,1	10	15	0,2	18	14	0,4	24	20	0,5	40	32	0,8	72	57	1,5
Air I	0,5	6	5	0,2	13	21	0,5	24	19	0,8	33	27	1,1	54	44	1,9	98	77	3,3
Nm^3/h	1	8	6	0,3	18	28	0,6	32	26	1,2	44	36	1,6	72	58	2,6	130	102	4,7
	1,5	10	8	0,4	22	34	0,8	40	32	1,4	55	45	2,0	90	72	3,2	163	127	5,8
Steam II	2	24	19	0,8	52	41	1,8	96	75	3,3	132	100	4,6	217	170	7,4	390	300	13,3
kg/h	2,5	28	22	0,9	61	48	2,0	112	87	3,7	154	116	5,1	253	197	8,3	455	348	14,9
	3	32	25	1,0	70	54	2,2	128	99	4,0	176	132	5,6	289	225	9,1	520	397	16,3
Water III	3,5	36	28	1,1	79	61	2,4	144	111	4,4	198	148	6,0	325	252	9,8	585	444	17,6
m^3/h	4	40	31	1,2	87	67	2,6	160	123	4,7	220	164	6,4	362	279	10,5	650	492	18,8

ARMATUREN GOETZE

→ Overview

OVERFLOW AND PRESSURE CONTROL VALVES

Series	Materials	Temperatures	Pressures	Media	Threaded connection	Flange connection	Page
417		–60 °C – +225 °C	0.2 bar – 20 bar		3/8" – 2"		6.1
418		–60 °C – +225 °C	0.2 bar – 30 bar		3/8" – 1 1/4"		6.2
617		–60 °C – +225 °C	0.2 bar – 20 bar		3/8" – 2"		6.3
618		–60 °C – +225 °C	0.2 bar – 20 bar		3/8" – 2"		6.4
453		–60 °C – +225 °C	0.5 bar – 25 bar		1/2" – 2"		6.5
853		–60 °C – +225 °C	0.5 bar – 25 bar		1/2" – 2"		6.6
608		–60 °C – +225 °C	0.2 bar – 20 bar		3/8"		6.7
430		–10 °C – +95 °C	0.5 bar – 10 bar		1/2" – 2"		6.8
431		–10 °C – +95 °C	0.5 bar – 10 bar			DN 15 – DN 80	6.9
630		–10 °C – +95 °C	0.5 bar – 10 bar		1/2“ – 2“		6.10
631		–10 °C – +95 °C	0.5 bar – 10 bar			DN 15 – DN 100	6.11

→ Series 417

Overflow and pressure control valves made of stainless steel, angle-type with threaded connections –externally adjustable–

SUITABLE FOR

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

EXAMPLES OF USE

For the protection of:
- pumps against overloading in closed circuits for neutral / non-neutral, non-sticking liquids

For the control of:
- systems under pressure for neutral/ non-neutral gases and vapours and – depending on the sealing material – also for steam

- chemical plants, biogas plants
- desalination plants
- mechanical engineering and process equipment construction
- shipbuilding industry and marine equipment
- industrial applications
- secondary areas in the food-, beverage-, pharmaceutical- and cosmetics-industries

MATERIAL

SPECIFICATION

3/8“ – 2“ DN 10 – DN 50	– 60°C to + 225°C depending on version	0,2 – 20 bar

APPROVALS

European Pressure Equipment Directive

TR ZU 032/2013 - TR ZU 010/2011

Requirements

PED 2014/68/EU

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 / 1.4408	316 L / CF8M
Internal parts	Stainless steel	1.4404	316 L
Spring	Stainless steel	1.4310	302

Series 417 ■ VALVE VERSION

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. Adjustable under operating conditions without medium escaping into the atmosphere.

Valves can be delivered unset within a pressure range or set and sealed at the factory.

■ MEDIUM

GF	gaseous and liquid	Air, vapours, gases, liquids and - depending on safety valve version and seal - also for steam

■ TYPE OF LIFTING MECHANISM

0	without lifting device

■ AVAILABLE NOMINAL DIAMETERS AND CONNECTION SIZES

Nominal diameter DN		**10**	**15**	**20**	**25**	**32**	**40**	**50**
Inlet		3/8“ (10)	1/2“ (15)	3/4“ (20)	1“ (25)	1 1/4“ (32)	1 1/2“ (40)	2“ (50)
Outlet	3/8“ (10)	■						
	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			
KLSDIN / KLSDIN	On request	Clamp connection DIN / clamp connection DIN	DIN 32676 / DIN 32676

■ SEALS

NBR	Nitrile rubber (standard)	Elastomere flat seal 0,2 – 12 bar	–30°C to +130°C
FKM	Fluorocarbon	Elastomere flat seal 0,2 – 12 bar	–20°C to +200°C
EPDM	Ethylene propylene diene	Elastomere flat seal 0,2 – 12 bar	–50°C to +150°C
PTFE	Polytetrafluoroethylene	Flat seal 0,5 – 12 bar	–60°C to +225°C

If the seat seal is made of PTFE the O-rings of the body and setting spindle seal are made of FPM.

Against surcharge			
PTFE	Polytetrafluoroethylene	Flat seal 12 – 20 bar	–60°C to +225°C

■ OPTIONS

Fitted with **tamper-proof sealing cap** to avoid manipulation of set pressure Order code: **S48**

Special versions on request.

■ NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

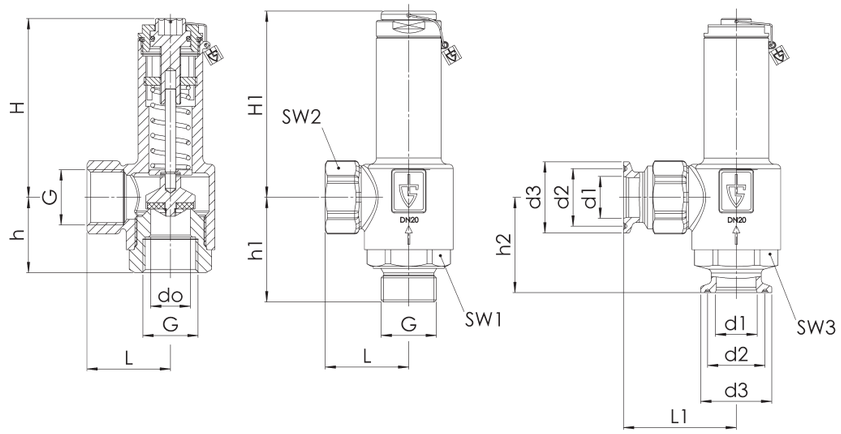
Series 417: Connection, installation dimensions, ranges of adjustment

Nominal diameter	**DN**	10	15	20	25	32	40	50
Connection DIN EN ISO 228	**G**	3/8" (10)	1/2" (15)	3/4" (20)	1" (25)	1 1/4" (32)	1 1/2" (40)	2" (50)
Outlet DIN EN ISO 228	**G**	3/8" (10)	1/2" (15)	3/4" (20)	1" (25)	1 1/4" (32)	1 1/2" (40)	2" (50)
Installation dimensions in mm	**L**	30	34	40	46	50	61	67
	L1	41	44	54	57	61	75	82
	H / H1	60 / 62,5	69 / 71	86 / 88,5	101 / 104	118 / 121	139 / 141,5	149 / 153,5
	h	29	33	36	48	52	60	66
	h1	42	49	50	67	71	85	91
	h2	41	46	46	61	63	76	80
	d1	10	16	20	26	32	38	50
	d2	27,5	27,5	27,5	43,5	43,5	43,5	56,5
	d3	34	34	34	50,5	50,5	50,5	64
	SW1	26	30	36	46	55	58	70
	SW2	24	27	32	41	50	65	70
	SW3	30	30	36	46	55	65	70
	do	10	13	19	25	30	38	50
Weight	**kg**	0,3	0,4	0,7	1,2	1,9	2,5	3,8
Set pressure	**bar**	0,2 - 20	0,2 - 20	0,2 - 20	0,2 - 20	0,2 - 20	0,2 - 20	0,2 - 20
Range of adjustment	**bar**	0,2 - 0,8[2]	0,2 - 0,8[2]	0,2 - 0,8[2]	0,2 - 0,8[2]	0,2 - 0,8[2]	0,2 - 0,8[2]	0,2 - 0,8[2]
		0,5-2,5	0,5-2,5	0,5-2,5	0,5-2,5	0,5-2,5	0,5-2,5	0,5-2,5
		2-8	2-8	2-8	2-8	2-8	2-8	2-8
		2-12	2-12	2-12	2-12	2-12	2-12	2-12
		12-20[1]	12-20[1]	12-20[1]	12-20[1]	12-20[1]	12-20[1]	12-20[1]

[1]Against surcharge, with PTFE seal [2] with PTFE flat seal only available from 0,5 bar

■ MAIN DIMENSIONS, INSTALLATION DIMENSIONS

S48



■ INDIVIDUAL SELECTION / VALVE CONFIGURATION

Series	**Valve version**	**Medium**	**Lifting device**	**Nominal diameter DN**	**Connection type**		**Connection size**		**Seal**	**Options**	**Pressure range / set pressure**	**Quantity**
					Inlet	Outlet	Inlet	Outlet				
417	**t**	**GF**	**0**	*20*	*f*	*f*	*20*	*20*	*NBR*	*S48*	*2 - 8*	*5*
417	**t**	**GF**	**0**	*40*	*KLSDIN*	*f*	*40*	*40*	*PTFE*		*18,0*	*3*
417	**t**	**GF**	**0**									
417	**t**	**GF**	**0**									

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■ CAPACITY TABLE

Series 417: Kv values at 1 bar overpressure

Nominal diameter DN	10					15					20					25					32					40					50				
	Air [Nm³/h]					Air [Nm³/h]					Air [Nm³/h]					Air [Nm³/h]					Air [Nm³/h]					Air [Nm³/h]					Air [Nm³/h]				
Pressure range bar	0,2 - 0,8	0,5 - 2,5	2-8	2-12	12-20	0,2 - 0,8	0,5 - 2,5	2-8	2-12	12-20	0,2 - 0,8	0,5 - 2,5	2-8	2-12	12-20	0,2 - 0,8	0,5 - 2,5	2-8	2-12	12-20	0,2 - 0,8	0,5 - 2,5	2-8	2-12	12-20	0,2 - 0,8	0,5 - 2,5	2-8	2-12	12-20	0,2 - 0,8	0,5 - 2,5	2-8	2-12	12-20
Set pressure bar																																		
0,2	24					**53**					177					**200**					600					**930**					1500				
0,5	28	**83**				**61**	147				200	**209**				**220**	375				680	**717**				**970**	847				1620	**1376**			
0,8	32	**90**				**67**	153				220	**220**				**245**	384				700	**771**				**1050**	878				1740	**1478**			
1		**95**					158					**228**					390					**808**					899					**1546**			
1,5		**101**					173					**257**					433					**901**					1033					**1734**			
2		**111**	62	**48**			180	**126**	86			**287**	180	**159**			462	**335**	302				**977**	353	**233**			1104	**552**	426			**1904**	1001	**788**	
2,5		**119**	68	**50**			202	**132**	89			**306**	197	**168**			495	**351**	311				**1031**	361	**257**			1205	**564**	447			**1953**	1082	**802**	
3			75	**51**				**143**	95				226	**188**				**376**	322					369	**272**				**577**	481				1170	**821**	
4			83	**62**				**166**	101				239	**213**				**423**	341					417	**311**				**601**	527				1339	**878**	
5			95	**80**				**169**	105				233	**242**				**466**	361					459	**352**				**726**	566				1508	**942**	
6			101	**90**				**173**	111				269	**250**				**402**	380					502	**397**				**893**	597				1846	**994**	
7			106	**96**				**150**	118				303	**257**				**398**	391					549	**437**				**994**	764				2224	**1050**	
8			112	**114**				**139**	117				324	**314**				**391**	347					606	**492**				**1113**	910				2666	**1123**	
9				**115**					123					**324**					301						**546**					949					**1187**	
10				**122**					133					**331**					288						**600**					1023					**1280**	
11				**121**					138					**339**					274						**569**					1070					**1358**	
12				**126**	96				138	**112**				**354**	221				261	**305**				**538**	594				1095	**682**				**1480**	1237
13					109					**103**					206					**291**					625					**758**					1277
14					116					**94**					166					**282**					656					**834**					1388
15					120					**85**					140					**269**					687					**911**					1499
16					122					**76**					132					**257**					716					**987**					1609
17					124					**57**					115					**245**					737					**954**					1821
18					129					**56**					84					**233**					758					**922**					2033
19					134					**44**					50					**220**					779					**889**					2245
20					140					**36**					45					**208**					801					**851**					2357

Kv values at 1 bar overpressure

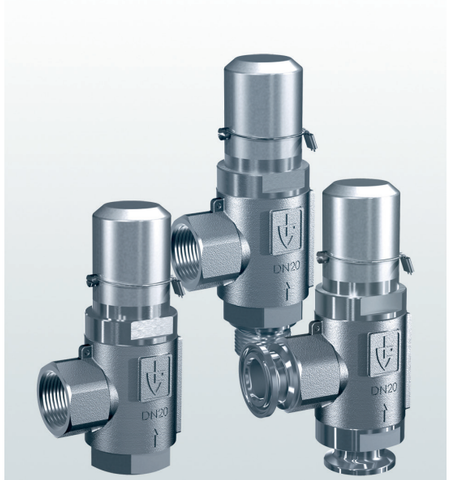
Nominal diameter DN	10					15					20					25					32					40					50				
	Water [m³/h]					Water [m³/h]					Water [m³/h]					Water [m³/h]					Water [m³/h]					Water [m³/h]					Water [m³/h]				
Pressure range bar	0,2 - 0,8	0,5 - 2,5	2-8	2-12	12-20	0,2 - 0,8	0,5 - 2,5	2-8	2-12	12-20	0,2 - 0,8	0,5 - 2,5	2-8	2-12	12-20	0,2 - 0,8	0,5 - 2,5	2-8	2-12	12-20	0,2 - 0,8	0,5 - 2,5	2-8	2-12	12-20	0,2 - 0,8	0,5 - 2,5	2-8	2-12	12-20	0,2 - 0,8	0,5 - 2,5	2-8	2-12	12-20
Set pressure bar																																		
0,2	2,7					**4,4**					5,6					**6,0**					18,3					29,0					**41,0**				
0,5	2,9	**2,7**				**4,6**	4,3				5,6	**6,1**				**6,4**	10,8				19,5	**16,0**				29,0	**21,7**				**44,4**	31,6			
0,8	2,9	**2,8**				**4,9**	4,5				5,6	**6,3**				**7,1**	11,5				20,0	**16,4**				29,0	**22,6**				**47,0**	34,0			
1		**3,0**					4,6					**6,5**					11,9					**16,7**					**23,3**					35,6			
1,5		**3,2**					4,8					**6,7**					12,6					**17,5**					**24,0**					37,7			
2		**3,4**	1,9	**1,6**			5,0	**2,2**	1,8			**6,9**	4,5	**3,7**			13,0	**8,5**	4,2			**18,1**	**7,6**	6,2			**25,2**	10,9	**8,8**			40,6	**24,3**	17,9	
2,5		**3,7**	2,2	**1,7**			5,2	**2,1**	1,8			**7,3**	4,8	**3,8**			13,7	**8,9**	4,3			**18,9**	**7,5**	6,2			**26,1**	11,3	**9,1**			43,0	**26,2**	19,4	
3			2,3	**1,9**				**1,9**	1,8				5,2	**4,1**				**9,3**	4,3				**7,4**	6,1				11,8	**9,3**				**28,2**	21,1	
4			2,7	**2,2**				**1,6**	1,7				5,7	**4,6**				**10,0**	4,5				**7,3**	6,1				12,2	**9,7**				**31,3**	24,7	
5			2,9	**2,5**				**1,4**	1,6				6,5	**5,1**				**10,4**	4,6				**7,2**	6,0				12,5	**10,3**				**34,7**	28,9	
6			3,4	**2,8**				**1,3**	1,5				7,1	**6,1**				**11,0**	4,7				**7,0**	5,9				12,8	**10,6**				**36,3**	30,1	
7			3,6	**2,9**				**1,1**	1,5				7,9	**6,5**				**11,2**	5,0				**6,7**	5,8				13,7	**11,9**				**41,1**	31,7	
8			3,9	**3,1**				**1,0**	1,4				8,5	**7,1**				**11,3**	5,1				**6,5**	5,6				15,1	**13,1**				**47,4**	34,2	
9				**3,2**					1,4					**7,3**					5,3					5,5					**14,3**					37,4	
10				**3,4**					1,4					**8,3**					5,5					5,3					**15,7**					39,3	
11				**3,5**					1,4					**9,1**					5,8					5,2					**17,2**					42,4	
12				**3,7**	1,7				1,3	**0,4**				**9,3**	2,8				5,9	**2,2**				5,0	**6,8**				**17,6**	10,1				43,9	**18,9**
13					1,4					**0,4**					2,4					**2,2**					**6,5**					10,3					**21,2**
14					1,3					**0,5**					2,2					**1,9**					**6,3**					10,5					**24,1**
15					1,1					**0,5**					1,7					**1,6**					**6,1**					10,6					**25,7**
16					0,8					**0,5**					1,4					**1,3**					**6,0**					10,9					**27,6**
17					0,6					**0,5**					1,1					**1,1**					**5,8**					11,0					**29,3**
18					0,4					**0,6**					0,9					**1,0**					**5,6**					11,3					**31,8**
19					0,2					**0,6**					0,7					**0,8**					**5,1**					11,4					**34,6**
20					0,2					**0,6**					0,7					**0,7**					**5,0**					11,5					**36,6**

Series 417: Kv values at 1 bar overpressure

Nominal diameter DN	10					15					20					25					32					40					50				
	Steam [kg/h]					Steam [kg/h]					Steam [kg/h]					Steam [kg/h]					Steam [kg/h]					Steam [kg/h]					Steam [kg/h]				
Pressure range bar	0,2 - 0,8	0,5 - 2,5	2-8	2-12	12-20	0,2 - 0,8	0,5 - 2,5	2-8	2-12	12-20	0,2 - 0,8	0,5 - 2,5	2-8	2-12	12-20	0,2 - 0,8	0,5 - 2,5	2-8	2-12	12-20	0,2 - 0,8	0,5 - 2,5	2-8	2-12	12-20	0,2 - 0,8	0,5 - 2,5	2-8	2-12	12-20	0,2 - 0,8	0,5 - 2,5	2-8	2-12	12-20
Set pressure bar																																		
0,2	**18**					41					**138**					156					**468**					726					**1172**				
0,5	**22**	65				47	**113**				**156**	163				172	**295**				**531**	509				757	**665**				**1265**	1100			
0,8	**25**	70				52	**120**				**172**	173				191	**305**				**547**	541				820	**700**				**1359**	1173			
1		74					**125**					181					**313**					553					**724**					1222				
1,5		81					**135**					200					**345**					615					**798**					1345				
2		86	**53**	40			**143**	98	**73**			221	**144**	126			**373**	280	**218**			642	**283**	194			**862**	455	**311**			1451				
2,5		93	**60**	45			**157**	104	**79**			235	**161**	141			**384**	302	**244**			619	**301**	218			**940**	510	**349**			1535	**787**	663		
3			**66**	43				111	**80**				**171**	156				309	**258**				**297**	223				506	**387**				**884**	698		
4			**79**	53				129	**79**				**187**	160				339	**308**				**333**	244				499	**428**				**876**	670		
5			**77**	66				135	**82**				**186**	176				412	**322**				**361**	283				579	**455**				**987**	740		
6			**78**	75				132	**88**				**212**	200				388	**326**				**441**	323				707	**518**				**1145**	859		
7			**84**	81				118	**93**				**225**	198				275	**298**				**429**	363				740	**635**				**1224**	816		
8			**89**	89				123	**96**				**249**	190				254	**279**				**475**	402				821	**645**				**1284**	916		
9				89					**98**					193					**250**					441					**707**					1015		
10				97					**106**					192					**273**					480					**770**					1002		
11				94					**106**					189					**262**					472					**833**					1090		
12			101	**79**					**105**	78				204	**183**				**282**	247				406	**457**				**814**	570				1179	**987**	
13				**84**						68					**174**					189					**489**					610					**1056**	
14				**90**						57					**162**					201					**521**					650					**1125**	
15				**95**						54					**123**					213					**552**					590					**1022**	
16				**94**						51					**130**					180					**584**					728					**1261**	
17				**99**						46					**110**					142					**615**					768					**1140**	
18				**96**						32					**87**					150					**576**					693					**1399**	
19				**101**						28					**61**					105					**604**					606					**1678**	
20				**105**						21					**32**					165					**632**					634					**1537**	

→ Series 418

Overflow and pressure control valves made of stainless steel, angle-type with threaded connections –externally adjustable–



SUITABLE FOR

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

EXAMPLES OF USE

For the protection of:
- pumps against overloading in closed circuits for neutral / non-neutral, non-sticking liquids

For the control of:
- systems under pressure for neutral/ non-neutral gases and vapours and – depending on the sealing material – also for steam.

- chemical plants, biogas plants
- desalination plants
- mechanical engineering and process equipment construction
- shipbuilding industry and marine equipment
- industrial applications
- secondary areas in the food-, beverage-, pharmaceutical- and cosmetics-industries

MATERIAL

SPECIFICATION

3/8“ – 1 1/4“ DN 10 – DN 32	– 60°C to + 225°C depending on version	0,2 – 30 bar

APPROVALS

European Pressure Equipment Directive

TR ZU 032/2013 - TR ZU 010/2011

Requirements

PED 2014/68/EU

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

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Series 418 ■ VALVE VERSION

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. Only available without lifting device. Adjustable under operating conditions without medium escaping into the atmosphere.

Complete functional cartridge available as replacement part (order code: 418 cartridge-DN..-seal) can be exchanged without removing the valve.

Valves can be delivered unset within a pressure range or set and sealed at the factory.

■ MEDIUM

GF	gaseous and liquid	Air, vapours, gases, liquids and - depending on seal - also for steam

■ TYPE OF LIFTING MECHANISM

0	without lifting device

■ AVAILABLE NOMINAL DIAMETERS AND CONNECTION SIZES

Nominal diameter DN		**10**	**15**	**20**	**25**	**32**
Inlet		3/8“ (10)	1/2“ (15)	3/4“ (20)	1“ (25)	1 1/4“ (32)
Outlet	3/8“ (10)	■				
	1/2“ (15)		■			
	3/4“ (20)			■		
	1“ (25)				■	
	1 1/4“ (32)					■

■ 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
KLSDIN / KLSDIN	On request	Clamp connection DIN / clamp connection DIN	DIN 32676 / DIN 32676

■ SEALS

NBR	Nitrile rubber (standard)	Elastomere flat seal 0,2 – 30 bar	–30°C to +130°C
EPDM	Ethylene propylene diene	Elastomere flat seal 0,2 – 30 bar	–50°C to +150°C
Against surcharge			
FKM	Fluorocarbon	Elastomere flat seal 0,2 – 30 bar	–20°C to +200°C
PTFE	Polytetrafluoroethylene	Flat seal 0,5 – 30 bar	–60°C to +225°C

If the seal is made of PTFE the O-rings of the cartridge are as standard made of FPM. FFPM possible on request against surcharge.

■ OPTIONS

Special versions on request.

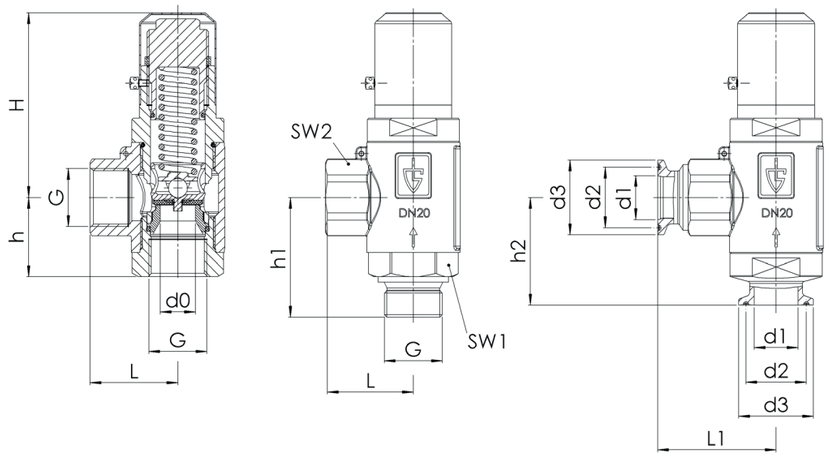
Against surcharge

O-rings of valve cartridge made of FFPM	Order code: in options **FFKM**

■ NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

Series 418: Connection, installation dimensions, ranges of adjustment						
Nominal diameter	**DN**	10	15	20	25	32
Connection DIN EN ISO 228	**G**	3/8" (10)	1/2" (15)	3/4" (20)	1" (25)	1 1/4" (32)
Outlet DIN EN ISO 228	**G**	3/8" (10)	1/2" (15)	3/4" (20)	1" (25)	1 1/4" (32)
Installation dimensions in mm	**L**	34	34	40	50	50
	L1	45	43,5	54	61	61
	H	73	73	84	98	98
	h	33	33	36	48	48
	h1	47,5	50	54,5	69	75
	h2	42,5	42,5	49	63	66
	d1	10	16	20	26	32
	d2	27,5	27,5	27,5	43,5	43,5
	d3	34	34	34	50,5	50,5
	SW1	30	30	36	50	50
	SW2	28	28	32	41	50
	do	10	14	16	25	25
Weight	**kg**	0,5	0,5	0,8	1,8	1,9
Set pressure	**bar**	0,2 - 30	0,2 - 30	0,2 - 30	0,2 - 30	0,2 - 30
Range of adjustment	**bar**	0,2-1,2 1,2-3 2-12 12-30	0,2-1,2 1,2-3 2-12 12-30	0,2-1,2 1,2-3 2-12 12-30	0,2-1,2 1,2-3 2-12 12-30	0,2-1,2 1,2-3 2-12 12-30

■ MAIN DIMENSIONS, INSTALLATION DIMENSIONS



■ INDIVIDUAL SELECTION / VALVE CONFIGURATION

Series	**Valve version**	**Medium**	**Lifting device**	**Nominal diameter DN**	**Connection type**		**Connection size**		**Seal**	**Options**	**Pressure range / set pressure**	**Quantity**
					Inlet	Outlet	Inlet	Outlet				
418	**t**	**GF**	**0**	*15*	*f*	*f*	*15*	*15*	*NBR*		*2 - 12*	*5*
418	**t**	**GF**	**0**	*25*	*KLSDIN*	*f*	*25*	*25*	*PTFE*	*FFKM*	*8*	*2*
418	**t**	**GF**	**0**									
418	**t**	**GF**	**0**									

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 / 488 94 88
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 418: Kv values at 1 bar overpressure

Nominal diameter DN	10				10				10			
	Air [Nm³/h]				Water [m³/h]				Steam [kg/h]			
Pressure range bar	0,2 - 1,2	1,2 - 3	2 - 12	12 - 30	0,2 - 1,2	1,2 - 3	2 - 12	12 - 30	0,2 - 1,2	1,2 - 3	2 - 12	12 - 30
Set pressure bar												
0,2	87				2,9				62,0			
0,7	106				3,0				74,7			
1,2	113	81			3,2	2,3			79,3	56,9		
2,0		96	47			2,6				67,0		
3,0		99	51			2,6	1,2			68,7	35,4	
4,0			56				1,2				38,8	
5,0			62				1,1				42,7	
6,0			65				1,1				44,7	
7,0			70				1,0				48,0	
8,0			77				1,0				52,6	
9,0			86				0,8				58,6	
10,0			94				0,7				63,9	
11,0			105				0,5				71,3	
12,0			108	81			0,4	0,7			73,1	54,9
13,0				78				0,6				52,9
14,0				74				0,6				50,1
15,0				72				0,6				48,6
16,0				62				0,6				41,8
17,0				55				0,6				37,1
18,0				48				0,5				32,3
19,0				40				0,4				26,9
20,0				29				0,4				19,5
21,0				22				0,4				14,8
22,0				16				0,3				10,8
23,0				12				0,3				8,1
24,0				6				0,2				4,0
25,0				3				0,2				2,0
26,0				< 1				0,2				< 1
27,0				< 1				0,1				< 1
28,0				< 1				0,1				< 1
29,0				< 1				0,1				< 1
30,0				< 1				0,1				< 1

Kv values at 1 bar overpressure

Nominal diameter DN	15				15				15			
	Air [Nm³/h]				Water [m³/h]				Steam [kg/h]			
Pressure range bar	0,2 - 1,2	1,2 - 3	2 - 12	12 - 30	0,2 - 1,2	1,2 - 3	2 - 12	12 - 30	0,2 - 1,2	1,2 - 3	2 - 12	12 - 30
Set pressure bar												
0,2	107				3,4				76,3			
0,7	119				3,7				83,9			
1,2	126	92			3,8	2,8			88,5	64,6		
2,0		107	47			2,4				74,7		
3,0		115	54			2,1	1,4			79,8	37,5	
4,0			63				1,4				43,6	
5,0			70				1,5				48,2	
6,0			81				1,5				55,7	
7,0			98				1,4				67,3	
8,0			103				1,3				70,4	
9,0			107				1,2				72,9	
10,0			112				1,1				76,2	
11,0			118				0,9				80,1	
12,0			122	61			0,8	0,7			82,6	41,3
13,0				70				0,6				47,5
14,0				78				0,6				52,8
15,0				85				0,5				57,4
16,0				97				0,5				65,4
17,0				105				0,5				70,7
18,0				114				0,5				76,8
19,0				78				0,5				52,5
20,0				34				0,4				22,9
21,0				12				0,4				8,1
22,0				< 1				0,4				< 1
23,0				< 1				0,3				< 1
24,0				< 1				0,3				< 1
25,0				< 1				0,2				< 1
26,0				< 1				0,2				< 1
27,0				< 1				0,2				< 1
28,0				< 1				0,1				< 1
29,0				< 1				0,1				< 1
30,0				< 1				0,1				< 1

Series 418: Kv values at 1 bar overpressure

Nominal diameter DN	20				20				20			
	Air [Nm³/h]				Water [m³/h]				Steam [kg/h]			
Pressure range bar	0,2 - 1,2	1,2 - 3	2 - 12	12 - 30	0,2 - 1,2	1,2 - 3	2 - 12	12 - 30	0,2 - 1,2	1,2 - 3	2 - 12	12 - 30
Set pressure bar												
0,2	151				4,7				107,7			
0,7	166				5,4				117,0			
1,2	182	123			5,8	3,5			127,8	86,4		
2,0		139	88			3,4				97,0		
3,0		150	97			2,8	1,7			104,1	67,3	
4,0			102				1,6				70,6	
5,0			111				1,6				76,4	
6,0			124				1,4				85,2	
7,0			132				1,3				90,6	
8,0			136				1,0				93,0	
9,0			143				0,8				97,5	
10,0			148				0,7				100,6	
11,0			153				0,6				103,9	
12,0			159	114			0,6	0,4			107,7	77,2
13,0				118				0,5				80,0
14,0				121				0,7				81,9
15,0				124				0,8				83,7
16,0				129				0,9				87,0
17,0				125				0,9				84,2
18,0				136				1,1				91,6
19,0				141				1,0				94,9
20,0				144				0,7				96,9
21,0				130				0,6				87,5
22,0				115				0,5				77,4
23,0				100				0,4				67,3
24,0				87				0,3				58,5
25,0				55				0,3				37,0
26,0				36				0,2				24,2
27,0				29				0,2				19,5
28,0				20				0,1				13,4
29,0				12				0,1				8,1
30,0				4				0,1				2,7

Kv values at 1 bar overpressure

Nominal diameter DN	25				25				25			
	Air [Nm³/h]				Water [m³/h]				Steam [kg/h]			
Pressure range bar	0,2 - 1,2	1,2 - 3	2 - 12	12 - 30	0,2 - 1,2	1,2 - 3	2 - 12	12 - 30	0,2 - 1,2	1,2 - 3	2 - 12	12 - 30
Set pressure bar												
0,2	348				10,3				248,1			
0,7	402				11,6				283,3			
1,2	431	381			11,2	9,4			302,6	267,5		
2,0		398	179			9,8				277,8		
3,0		372	212			8,5	4,3			258,3	147,2	
4,0			244				4,3				169,0	
5,0			288				4,4				198,3	
6,0			308				4,5				211,6	
7,0			314				4,7				215,5	
8,0			319				4,9				218,0	
9,0			331				5,2				225,7	
10,0			346				5,6				235,3	
11,0			351				5,3				238,3	
12,0			363	142			4,8	1,9			245,8	96,2
13,0				160				1,9				108,5
14,0				187				1,9				126,5
15,0				208				2,0				140,4
16,0				223				2,0				150,3
17,0				229				2,2				154,3
18,0				234				2,4				157,6
19,0				240				2,0				161,6
20,0				247				1,3				166,3
21,0				252				1,0				169,6
22,0				258				0,9				173,6
23,0				265				0,8				178,2
24,0				270				0,7				181,6
25,0				276				0,6				185,5
26,0				287				0,5				192,9
27,0				300				0,4				201,6
28,0				310				0,3				208,2
29,0				328				0,2				220,3
30,0				336				0,1				225,6

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Series 418: Kv values at 1 bar overpressure												
Nominal diameter	**32**				**32**				**32**			
DN	**Air [Nm³/h]**				**Water [m³/h]**				**Steam [kg/h]**			
Pressure range bar	**0,2 - 1,2**	**1,2 - 3**	**2 - 12**	**12 - 30**	**0,2 - 1,2**	**1,2 - 3**	**2 - 12**	**12 - 30**	**0,2 - 1,2**	**1,2 - 3**	**2 - 12**	**12 - 30**
Set pressure bar												
0,2	426				12,1				303,7			
0,7	457				14,2				322,0			
1,2	460	386			14,5	10,3			322,9	271,0		
2,0		441	187			10,9				307,8		
3,0		477	229			12,0	4,3			331,2	159,0	
4,0			278				4,4				192,5	
5,0			303				4,5				208,6	
6,0			326				4,6				224,0	
7,0			345				4,7				236,8	
8,0			369				4,8				252,2	
9,0			397				5,0				270,7	
10,0			413				5,2				280,8	
11,0			431				5,7				292,6	
12,0			448	167			6,5	2,1			303,4	113,1
13,0				192				2,5				130,2
14,0				220				2,7				148,8
15,0				245				3,1				165,3
16,0				252				3,2				169,9
17,0				261				2,6				175,9
18,0				267				2,2				179,8
19,0				275				1,9				185,1
20,0				283				1,7				190,5
21,0				307				1,5				206,6
22,0				328				1,3				220,7
23,0				347				1,2				233,4
24,0				359				1,0				241,4
25,0				373				0,8				250,7
26,0				381				0,6				256,1
27,0				394				0,5				264,7
28,0				401				0,4				269,4
29,0				406				0,3				272,7
30,0				412				0,2				276,6

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→ Series 617

617

Overflow and pressure control valves made of gunmetal, angle-type with threaded connections –externally adjustable–

SUITABLE FOR

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

EXAMPLES OF USE

For the protection of:
- pumps against overloading in closed circuits for neutral / non-neutral, non-sticking liquids

For the control of:
- systems under pressure for neutral / non-neutral gases and vapours and – depending on the sealing material – also for steam

- pump protection
- test rig construction
- process equipment construction
- shipbuilding industry and marine equipment
- de-icing technology
- mechanical engineering
- industrial applications

MATERIAL

SPECIFICATION

3/8“ – 2“

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

0,2 – 20 bar

APPROVALS

European Pressure Equipment Directive

TR ZU 032/2013 - TR ZU 010/2011

Requirements

PED 2014/68/EU

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

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Series 617 ■ VALVE VERSION

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. Adjustable under operating conditions without medium escaping into the atmosphere.

Valves can be delivered unset within a pressure range or set and sealed at the factory.

■ MEDIUM

GF	gaseous and liquid	Air, vapours, gases, liquids and - depending on safety valve version and seal - also for steam

■ TYPE OF LIFTING MECHANISM

0	without lifting device

■ AVAILABLE NOMINAL DIAMETERS AND CONNECTION SIZES

Nominal diameter DN		**10**	**15**	**20**	**25**	**32**	**40**	**50**
Inlet		3/8“ (10)	1/2“ (15)	3/4“ (20)	1“ (25)	1 1/4“ (32)	1 1/2“ (40)	2“ (50)
Outlet	3/8“ (10)	■						
	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

■ SEALS

NBR	Nitrile rubber (standard)	Elastomere flat seal 0,2 – 12 bar	–30°C to +130°C
FKM	Fluorocarbon	Elastomere flat seal 0,2 – 12 bar	–20°C to +200°C
EPDM	Ethylene propylene diene	Elastomere flat seal 0,2 – 12 bar	–50°C to +150°C
PTFE	Polytetrafluoroethylene	Flat seal 0,5 – 12 bar	–60°C to +225°C

If the seat seal is made of PTFE the O-rings of the body and setting spindle seal are made of FPM.

Against surcharge			
PTFE	Polytetrafluoroethylene	Flat seal 12 – 20 bar	–60°C to +225°C

■ OPTIONS

Fitted with **tamper-proof sealing cap** to avoid manipulation of set pressure Order code: **S48**

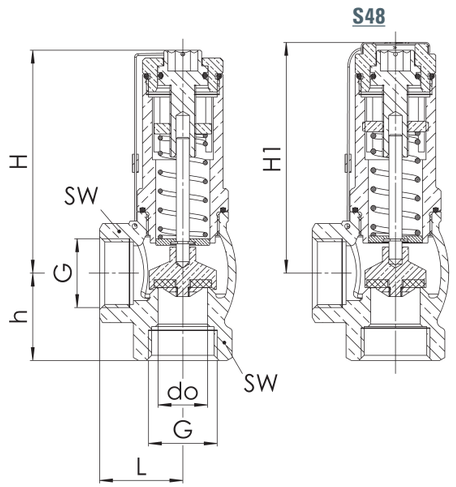
Special versions on request.

■ NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

Series 617: Connection, installation dimensions, ranges of adjustment								
Nominal diameter	**DN**	**10**	**15**	**20**	**25**	**32**	**40**	**50**
Connection DIN EN ISO 228	**G**	3/8" (10)	1/2" (15)	3/4" (20)	1" (25)	1 1/4" (32)	1 1/2" (40)	2" (50)
Outlet DIN EN ISO 228	**G**	3/8" (10)	1/2" (15)	3/4" (20)	1" (25)	1 1/4" (32)	1 1/2" (40)	2" (50)
Installation dimensions in mm	**L**	27	30	33	40	45	50	60
	H/H1	60/63	69/72	86/88,5	101/104	118/121	139/141,5	149/152
	h	26	30	35	41	45	51	60
	SW	24	28	34	41	52	58	70
	do	10	13	19	25	30	38	50
Weight	**kg**	0,3	0,4	0,7	1,2	1,9	2,5	3,8
Set pressure	**bar**	0,2 - 20	0,2 - 20	0,2 - 20	0,2 - 20	0,2 - 20	0,2 - 20	0,2 - 20
Range of adjustment	**bar**	0,2 - 0,8 0,5 - 2,5 2 - 8 2 - 12 12 - 20[1]	0,2 - 0,8 0,5 - 2,5 2 - 8 2 - 12 12 - 20[1]	0,2 - 0,8 0,5 - 2,5 2 - 8 2 - 12 12 - 20[1]	0,2 - 0,8 0,5 - 2,5 2 - 8 2 - 12 12 - 20[1]	0,2 - 0,8 0,5 - 2,5 2 - 8 2 - 12 12 - 20[1]	0,2 - 0,8 0,5 - 2,5 2 - 8 2 - 12 12 - 20[1]	0,2 - 0,8 0,5 - 2,5 2 - 8 2 - 12 12 - 20[1]

[1]Against surcharge, with PTFE seal

■ MAIN DIMENSIONS, INSTALLATION DIMENSIONS



■ INDIVIDUAL SELECTION / VALVE CONFIGURATION

Series	**Valve version**	**Medium**	**Lifting device**	**Nominal diameter DN**	**Connection type**		**Connection size**		**Seal**	**Options**	**Pressure range / set pressure**	**Quantity**
					Inlet	Outlet	Inlet	Outlet				
617	**t**	**GF**	**0**	*15*	**f**	**f**	*15*	*15*	*NBR*	*S48*	*2 - 12*	*10*
617	**t**	**GF**	**0**	*25*	**f**	**f**	*25*	*25*	*PTFE*		*16,0*	*2*
617	**t**	**GF**	**0**		**f**	**f**						
617	**t**	**GF**	**0**		**f**	**f**						

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 / 488 94 88
Please do not forget to add your personal data so that our sales team can contact you.

Name

First Name

Company

Telephone

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CAPACITY TABLE

Series 617: Kv values at 1 bar overpressure

Air [Nm³/h]

Nominal diameter DN	10					15					20					25					32					40					50				
Pressure range bar	0,2 - 0,8	0,5 - 2,5	2-8	2-12	12-20	0,2 - 0,8	0,5 - 2,5	2-8	2-12	12-20	0,2 - 0,8	0,5 - 2,5	2-8	2-12	12-20	0,2 - 0,8	0,5 - 2,5	2-8	2-12	12-20	0,2 - 0,8	0,5 - 2,5	2-8	2-12	12-20	0,2 - 0,8	0,5 - 2,5	2-8	2-12	12-20	0,2 - 0,8	0,5 - 2,5	2-8	2-12	12-20
Set pressure bar																																		
0,2	24					**53**					177					**200**					600					**930**					1500				
0,5	28	**83**				**61**	147				200	**209**				**220**	375				680	**717**				**970**	847				1620	**1376**			
0,8	32	**90**				**67**	153				220	**220**				**245**	384				700	**771**				**1050**	878				1740	**1478**			
1		**95**					158					**228**					390					**808**					899					**1546**				
1,5		**101**					173					**257**					433					**901**					1033					**1734**				
2		**111**	62	**48**			180	**126**	86			**287**	180	**159**			462	**335**	302			**977**	353	**233**			1104	**552**	426			**1904**	1001	**788**		
2,5		**119**	68	**50**			202	**132**	89			**306**	197	**168**			495	**351**	311			**1031**	361	**257**			1205	**564**	447			**1953**	1082	**802**		
3			75	**51**				**143**	95				226	**188**				**376**	322				369	**272**				**577**	481				1170	**821**		
4			83	**62**				**166**	101				239	**213**				**423**	341				417	**311**				**601**	527				1339	**878**		
5			95	**80**				**169**	105				233	**242**				**466**	361				459	**352**				**726**	566				1508	**942**		
6			101	**90**				**173**	111				269	**250**				**402**	380				502	**397**				**893**	597				1846	**994**		
7			106	**96**				**150**	118				303	**257**				**398**	391				549	**437**				**994**	764				2224	**1050**		
8			112	**114**				**139**	117				324	**314**				**391**	347				606	**492**				**1113**	910				2666	**1123**		
9				**115**					123					**324**					301					**546**					949					**1187**		
10				**122**					133					**331**					288					**600**					1023					**1280**		
11				**121**					138					**339**					274					**569**					1070					**1358**		
12				**126**	96				138	**112**				**354**	221				261	**305**				**538**	594				1095	**682**				**1480**	1237
13					109					**103**					206					**291**					625					**758**					1277
14					116					**94**					166					**282**					656					**834**					1388
15					120					**85**					140					**269**					687					**911**					1499
16					122					**76**					132					**257**					716					**987**					1609
17					124					**57**					115					**245**					737					**954**					1821
18					129					**56**					84					**233**					758					**922**					2033
19					134					**44**					50					**220**					779					**889**					2245
20					140					**36**					45					**208**					801					**851**					2357

Kv values at 1 bar overpressure

Water [m³/h]

Nominal diameter DN	10					15					20					25					32					40					50				
Pressure range bar	0,2 - 0,8	0,5 - 2,5	2-8	2-12	12-20	0,2 - 0,8	0,5 - 2,5	2-8	2-12	12-20	0,2 - 0,8	0,5 - 2,5	2-8	2-12	12-20	0,2 - 0,8	0,5 - 2,5	2-8	2-12	12-20	0,2 - 0,8	0,5 - 2,5	2-8	2-12	12-20	0,2 - 0,8	0,5 - 2,5	2-8	2-12	12-20	0,2 - 0,8	0,5 - 2,5	2-8	2-12	12-20
Set pressure bar																																		
0,2	2,7					**4,4**					5,6					**6,0**					18,3					**29,0**					41,0				
0,5	2,9	**2,7**				**4,6**	4,3				5,6	**6,1**				**6,4**	10,8				19,5	**16,0**				**29,0**	21,7				44,4	**31,6**			
0,8	2,9	**2,8**				**4,9**	4,5				5,6	**6,3**				**7,1**	11,5				20,0	**16,4**				**29,0**	22,6				47,0	**34,0**			
1		**3,0**					4,6					**6,5**					11,9					**16,7**					23,3					**35,6**				
1,5		**3,2**					4,8					**6,7**					12,6					**17,5**					24,0					**37,7**				
2		**3,4**	1,9	**1,6**			5,0	**2,2**	1,8			**6,9**	4,5	**3,7**			13,0	**8,5**	4,2			**18,1**	7,6	**6,2**			25,2	**10,9**	8,8			**40,6**	24,3	**17,9**		
2,5		**3,7**	2,2	**1,7**			5,2	**2,1**	1,8			**7,3**	4,8	**3,8**			13,7	**8,9**	4,3			**18,9**	7,5	**6,2**			26,1	**11,3**	9,1			**43,0**	26,2	**19,4**		
3			2,3	**1,9**				**1,9**	1,8				5,2	**4,1**				**9,3**	4,3				7,4	**6,1**				**11,8**	9,3				28,2	**21,1**		
4			2,7	**2,2**				**1,6**	1,7				5,7	**4,6**				**10,0**	4,5				7,3	**6,1**				**12,2**	9,7				31,3	**24,7**		
5			2,9	**2,5**				**1,4**	1,6				6,5	**5,1**				**10,4**	4,6				7,2	**6,0**				**12,5**	10,3				34,7	**28,9**		
6			3,4	**2,8**				**1,3**	1,5				7,1	**6,1**				**11,0**	4,7				7,0	**5,9**				**12,8**	10,6				36,3	**30,1**		
7			3,6	**2,9**				**1,1**	1,5				7,9	**6,5**				**11,2**	5,0				6,7	**5,8**				**13,7**	11,9				41,1	**31,7**		
8			3,9	**3,1**				**1,0**	1,4				8,5	**7,1**				**11,3**	5,1				6,5	**5,6**				**15,1**	13,1				47,4	**34,2**		
9				**3,2**					1,4					**7,3**					5,3					**5,5**					14,3					**37,4**		
10				**3,4**					1,4					**8,3**					5,5					**5,3**					15,7					**39,3**		
11				**3,5**					1,4					**9,1**					5,8					**5,2**					17,2					**42,4**		
12				**3,7**	1,7				1,3	**0,4**				**9,3**	2,8				5,9	**2,2**				**5,0**	6,8				17,6	**10,1**				**43,9**	18,9
13					1,4					**0,4**					2,4					**2,2**					6,5					**10,3**					21,2
14					1,3					**0,5**					2,2					**1,9**					6,3					**10,5**					24,1
15					1,1					**0,5**					1,7					**1,6**					6,1					**10,6**					25,7
16					0,8					**0,5**					1,4					**1,3**					6,0					**10,9**					27,6
17					0,6					**0,5**					1,1					**1,1**					5,8					**11,0**					29,3
18					0,4					**0,6**					0,9					**1,0**					5,6					**11,3**					31,8
19					0,2					**0,6**					0,7					**0,8**					5,1					**11,4**					34,6
20					0,2					**0,6**					0,7					**0,7**					5,0					**11,5**					36,6

Series 617: Kv values at 1 bar overpressure

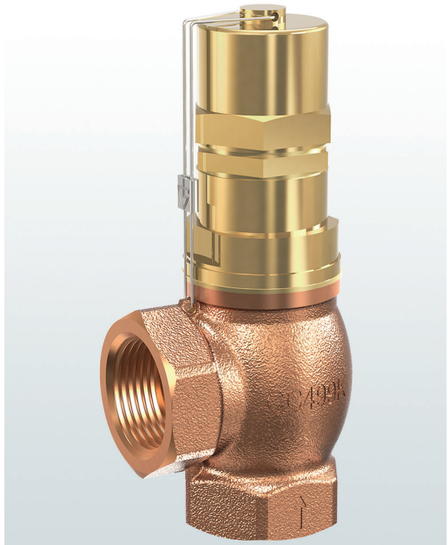
Steam [kg/h]

Nominal diameter DN	10					15					20					25					32					40					50				
Pressure range bar	0,2 - 0,8	0,5 - 2,5	2-8	2-12	12-20	0,2 - 0,8	0,5 - 2,5	2-8	2-12	12-20	0,2 - 0,8	0,5 - 2,5	2-8	2-12	12-20	0,2 - 0,8	0,5 - 2,5	2-8	2-12	12-20	0,2 - 0,8	0,5 - 2,5	2-8	2-12	12-20	0,2 - 0,8	0,5 - 2,5	2-8	2-12	12-20	0,2 - 0,8	0,5 - 2,5	2-8	2-12	12-20
Set pressure bar																																		
0,2	18					**41**					138					**156**					468					**726**					1172				
0,5	22	**65**				**47**	113				156	**163**				**172**	295				531	**509**				**757**	665				1265	**1100**			
0,8	25	**70**				**52**	120				172	**173**				**191**	305				547	**541**				**820**	700				1359	**1173**			
1		**74**					125					**181**					313					**553**					724					**1222**				
1,5		**81**					135					**200**					345					**615**					798					**1345**				
2		**86**	53	**40**			143	**98**	73			**221**	144	**126**			373	**280**	218			**642**	283	**194**			862	**455**	311			**1451**				
2,5		**93**	60	**45**			157	**104**	79			**235**	161	**141**			384	**302**	244			**619**	301	**218**			940	**510**	349			**1535**	787	**663**		
3			66	**43**				**111**	80				171	**156**				**309**	258				297	**223**				**506**	387				884	**698**		
4			79	**53**				**129**	79				187	**160**				**339**	308				333	**244**				**499**	428				876	**670**		
5			77	**66**				**135**	82				186	**176**				**412**	322				361	**283**				**579**	455				987	**740**		
6			78	**75**				**132**	88				212	**200**				**388**	326				441	**323**				**707**	518				1145	**859**		
7			84	**81**				**118**	93				225	**198**				**275**	298				429	**363**				**740**	635				1224	**816**		
8			89	**89**				**123**	96				249	**190**				**254**	279				475	**402**				**821**	645				1284	**916**		
9				**89**					98					**193**					250					**441**					707					**1015**		
10				**97**					106					**192**					273					**480**					770					**1002**		
11				**94**					106					**189**					262					**472**					833					**1090**		
12				**101**	79				105	**78**				**204**	183				282	**247**				**406**	457				814	**570**				**1179**	987
13					84					**68**					174					**189**					489					**610**					1056
14					90					**57**					162					**201**					521					**650**					1125
15					95					**54**					123					**213**					552					**590**					1022
16					94					**51**					130					**180**					584					**728**					1261
17					99					**46**					110					**142**					615					**768**					1140
18					96					**32**					87					**150**					576					**693**					1399
19					101					**28**					61					**105**					604					**606**					1678
20					105					**21**					32					**165**					632					**634**					1537

→ Series 618

618

Overflow and pressure control valves made of gunmetal, angle-type with threaded connections



SUITABLE FOR

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

EXAMPLES OF USE

For the protection of:
- pumps against overloading in closed circuits for neutral / non-neutral, non-sticking liquids

For the control of:
- systems under pressure for neutral/ non-neutral gases and vapours and – depending on the sealing material – also for steam

- pump protection
- test rig construction
- process equipment construction
- shipbuilding industry and marine equipment
- de-icing technology
- mechanical engineering
- industrial applications

MATERIAL

SPECIFICATION

3/8“ – 2“

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

0,2 – 20 bar

APPROVALS

European Pressure Equipment Directive

TR ZU 032/2013 - TR ZU 010/2011

Requirements

PED 2014/68/EU

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 / Gunmetal	CW617N / CC499K	CW617N / CC499K
Spring	Stainless steel	1.4310	302

Series 618 ■ VALVE VERSION

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

GF	gaseous and liquid	Air, vapours, gases, liquids and - depending on safety valve version and seal - also for steam

■ TYPE OF LIFTING MECHANISM

0	without lifting device, standard for gastight versions

■ AVAILABLE NOMINAL DIAMETERS AND CONNECTION SIZES

Nominal diameter DN		**10**	**15**	**20**	**25**	**32**	**40**	**50**
Inlet		3/8“ (10)	1/2“ (15)	3/4“ (20)	1“ (25)	1 1/4“ (32)	1 1/2“ (40)	2“ (50)
Outlet	3/8“ (10)	■						
	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

■ SEALS

NBR	Nitrile rubber	Elastomere flat seal up to 12 bar	–30°C to +130°C
FKM	Fluorocarbon	Elastomere flat seal up to 12 bar	–20°C to +200°C
PTFE	Polytetrafluoroethylene	Flat seal 0,2 – 12 bar	–60°C to +225°C
Against surcharge			
PTFE	Polytetrafluoroethylene	Flat seal 12 – 20 bar	–60°C to +225°C

■ OPTIONS

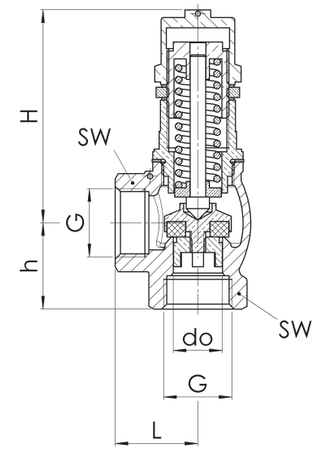
Special versions on request.

■ NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

Series 618: Connection, installation dimensions, ranges of adjustment								
Nominal diameter	**DN**	**10**	**15**	**20**	**25**	**32**	**40**	**50**
Connection DIN EN ISO 228	**G**	3/8" (10)	1/2" (15)	3/4" (20)	1" (25)	1 1/4" (32)	1 1/2" (40)	2" (50)
Outlet DIN EN ISO 228	**G**	3/8" (10)	1/2" (15)	3/4" (20)	1" (25)	1 1/4" (32)	1 1/2" (40)	2" (50)
Installation dimensions in mm	**L**	27	29	34	42	46	51	60
	H	66	74	83	100	117	136	146
	h	26	30	35	43	46	52	61
	SW	24	28	34	41	52	58	70
	do	10	13	19	25	30	38	50
Weight	**kg**	0,3	0,4	0,7	1,2	1,9	2,5	3,8
Set pressure	**bar**	0,2 - 20	0,2 - 20	0,2 - 20	0,2 - 20	0,2 - 20	0,2 - 20	0,2 - 20
Range of adjustment	**bar**	0,2-0,8 0,5-2,5 2-12 12-20[1]	0,2-0,8 0,5-2,5 2-12 12-20[1]	0,2-0,8 0,5-2,5 2-12 12-20[1]	0,2-0,8 0,5-2,5 2-12 12-20[1]	0,2-0,8 0,5-2,5 2-12 12-20[1]	0,2-0,8 0,5-2,5 2-12 12-20[1]	0,2-0,8 0,5-2,5 2-12 12-20[1]

[1]Against surcharge, with PTFE seal

■ MAIN DIMENSIONS, INSTALLATION DIMENSIONS



■ INDIVIDUAL SELECTION / VALVE CONFIGURATION

Series	**Valve version**	**Medium**	**Lifting device**	**Nominal diameter DN**	**Connection type**		**Connection size**		**Seal**	**Options**	**Pressure range / set pressure**	**Quantity**
					Inlet	Outlet	Inlet	Outlet				
618	**t**	**GF**	**0**	*15*	**f**	**f**	*15*	*15*	*NBR*		*2 - 12*	*10*
618	**t**	**GF**	**0**	*25*	**f**	**f**	*25*	*25*	*PTFE*		*8,0*	*3*
618	**t**	**GF**	**0**		**f**	**f**						
618	**t**	**GF**	**0**		**f**	**f**						

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 / 488 94 88
Please do not forget to add your personal data so that our sales team can contact you.

Name

First Name

Company

Telephone

E-Mail

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CAPACITY TABLE

Series 618: Kv values at 1 bar overpressure

Nominal diameter DN	10				10				10			
	Air [Nm³/h]				Water [m³/h]				Steam [kg/h]			
Pressure range bar	0,2 - 0,8	0,5 - 2,5	2 - 12	12 - 20	0,2 - 0,8	0,5 - 2,5	2 - 12	12 - 20	0,2 - 0,8	0,5 - 2,5	2 - 12	12 - 20
Set pressure bar												
0,2	49				1,6				38			
0,5	52	46*			1,7	0,4			41	35*		
0,8	58	47*			1,7	0,4			46	36*		
1,0		49*				0,4				37*		
1,5		50*				0,4				39*		
2,0		54*	13*			0,5	0,4			41*	10*	
2,5		56*	11*			0,5	0,4			43*	8,5*	
3,0			8*				0,4				6,2*	
4,0			7*				0,4				5,4*	
5,0			4*				0,4				3,1*	
6,0			3*				0,4				2,3	
7,0			< 1				0,5				< 1	
8,0			< 1				0,4				< 1	
9,0			< 1				0,4				< 1	
10,0			< 1				0,4				< 1	
11,0			< 1				0,3				< 1	
12,0			< 1	< 1			0,3	0,2			< 1	< 1
13,0				< 1				0,2				< 1
14,0				< 1				0,2				< 1
15,0				< 1				0,1				< 1
16,0				< 1				0,1				< 1
17,0				< 1				0,1				< 1
18,0				< 1				0,1				< 1
19,0				< 1				0,1				< 1
20,0				< 1				0,1				< 1

*Capacity at 2 bar overpressure

Kv values at 1 bar overpressure

Nominal diameter DN	15				15				15			
	Air [Nm³/h]				Water [m³/h]				Steam [kg/h]			
Pressure range bar	0,2 - 0,8	0,5 - 2,5	2 - 12	12 - 20	0,2 - 0,8	0,5 - 2,5	2 - 12	12 - 20	0,2 - 0,8	0,5 - 2,5	2 - 12	12 - 20
Set pressure bar												
0,2	85				2,7				68			
0,5	94	50			2,9	1,6			74	39		
0,8	104	57			3,0	1,6			81	42		
1,0		64				1,7				42		
1,5		66				1,8				49		
2,0		69	72*			1,8	0,9			50	56*	
2,5		70	72*			1,9	0,9			53	56*	
3,0			73*				0,8				57*	
4,0			75*				0,8				58*	
5,0			78*				0,8				60*	
6,0			79*				0,7				60*	
7,0			80*				0,6				61*	
8,0			84*				0,5				64*	
9,0			86*				0,4				65*	
10,0			89*				0,2				67*	
11,0			92*				0,2				69*	
12,0			95*	< 1			0,1	0,2			72*	< 1
13,0				< 1				0,2				< 1
14,0				< 1				0,2				< 1
15,0				< 1				0,2				< 1
16,0				5*				0,2				9*
17,0				12*				0,2				12*
18,0				38*				0,2				15*
19,0				51*				0,2				16*
20,0				65*				0,2				16*

*Capacity at 2 bar overpressure

Series 618: Kv values at 1 bar overpressure

Nominal diameter DN	20				20				20			
	Air [Nm³/h]				Water [m³/h]				Steam [kg/h]			
Pressure range bar	0,2 - 0,8	0,5 - 2,5	2 - 12	12 - 20	0,2 - 0,8	0,5 - 2,5	2 - 12	12 - 20	0,2 - 0,8	0,5 - 2,5	2 - 12	12 - 20
Set pressure bar												
0,2	125				3,6				98			
0,5	139	90			3,8	2,7			110	72		
0,8	152	94			4,1	2,9			118	80		
1,0		101				3,1				81		
1,5		118				3,2				89		
2,0		131	77			3,3	2,0			102	60	
2,5		155	83			3,5	2,1			121	67	
3,0			91				2,1				67	
4,0			98				2,1				80	
5,0			108				2,1				83	
6,0			112				2,2				94	
7,0			115				2,2				93	
8,0			116				2,0				88	
9,0			118				1,7				96	
10,0			121				1,6				87	
11,0			124				1,3				76	
12,0			125	74*			1,2	1,0			81	56*
13,0				82*				0,8				62*
14,0				97*				0,7				73*
15,0				111*				0,5				83*
16,0				125*				0,4				94*
17,0				132*				0,3				99*
18,0				148*				0,2				111*
19,0				169*				0,2				126*
20,0				180*				0,1				134*

*Capacity at 2 bar overpressure

Kv values at 1 bar overpressure

Nominal diameter DN	25				25				25			
	Air [Nm³/h]				Water [m³/h]				Steam [kg/h]			
Pressure range bar	0,2 - 0,8	0,5 - 2,5	2 - 12	12 - 20	0,2 - 0,8	0,5 - 2,5	2 - 12	12 - 20	0,2 - 0,8	0,5 - 2,5	2 - 12	12 - 20
Set pressure bar												
0,2	158				5,1				122			
0,5	177	99			5,4	3,1			137	79		
0,8	191	111			5,7	3,2			146	88		
1,0		124				3,3				94		
1,5		141				3,6				109		
2,0		162	101			3,8	2,6			124	83	
2,5		179	106			4,1	2,6			140	93	
3,0			118				2,7				90	
4,0			127				2,8				93	
5,0			136				2,9				107	
6,0			147				2,8				102	
7,0			154				2,7				114	
8,0			151				2,4				127	
9,0			146				2,2				111	
10,0			141				2,0				121	
11,0			136				1,9				98	
12,0			133	117*			1,7	0,6			106	88*
13,0				128*				0,6				96*
14,0				139*				0,5				104*
15,0				151*				0,5				113*
16,0				162*				0,5				121*
17,0				169*				0,5				126*
18,0				186*				0,4				139*
19,0				197*				0,4				147*
20,0				202*				0,4				151*

*Capacity at 2 bar overpressure

Series 618: Kv values at 1 bar overpressure

Nominal diameter	32				32				32			
DN	Air [Nm³/h]				Water [m³/h]				Steam [kg/h]			
Pressure range bar	0,2 - 0,8	0,5 - 2,5	2 - 12	12 - 20	0,2 - 0,8	0,5 - 2,5	2 - 12	12 - 20	0,2 - 0,8	0,5 - 2,5	2 - 12	12 - 20
Set pressure bar												
0,2	380				11,4				302			
0,5	428	261			11,9	7,3			339	207		
0,8	472	284			12,7	7,6			369	232		
1,0		314				8,0				248		
1,5		370				8,5				288		
2,0		419	161			9,1	4,1			328	119	
2,5		479	174			9,8	4,3			368	134	
3,0			195				4,4				148	
4,0			225				4,6				178	
5,0			241				4,9				206	
6,0			268				5,0				206	
7,0			289				5,1				231	
8,0			309				5,4				256	
9,0			329				4,8				240	
10,0			342				4,0				262	
11,0			369				3,7				283	
12,0			387	395*			3,4	1,5			304	298*
13,0				398*				1,4				299*
14,0				401*				1,4				301*
15,0				412*				1,3				309*
16,0				418*				1,2				313*
17,0				431*				1,2				323*
18,0				447*				1,1				334*
19,0				452*				1,1				338*
20,0				468*				1,0				350*

*Capacity at 2 bar overpressure

Kv values at 1 bar overpressure

Nominal diameter	40				40				40			
DN	Air [Nm³/h]				Water [m³/h]				Steam [kg/h]			
Pressure range bar	0,2 - 0,8	0,5 - 2,5	2 - 12	12 - 20	0,2 - 0,8	0,5 - 2,5	2 - 12	12 - 20	0,2 - 0,8	0,5 - 2,5	2 - 12	12 - 20
Set pressure bar												
0,2	638				17,8				498			
0,5	696	402			18,6	11,1			544	318		
0,8	737	436			19,4	11,4			575	355		
1,0		471				12,1				362		
1,5		546				13,0				420		
2,0		615	188			13,9	4,9			455	144	
2,5		677	204			14,9	5,0			510	161	
3,0			229				5,2				179	
4,0			265				5,3				214	
5,0			304				5,5				248	
6,0			347				5,6				283	
7,0			387				5,8				317	
8,0			421				5,8				352	
9,0			459				5,8				322	
10,0			495				5,9				350	
11,0			537				6,1				303	
12,0			567	423*			6,2	3,1			326	319*
13,0				427*				2,6				321*
14,0				435*				2,1				327*
15,0				445*				1,4				334*
16,0				458*				1,1				343*
17,0				487*				1,1				364*
18,0				521*				1,1				390*
19,0				561*				1,0				419*
20,0				595*				1,0				445*

*Capacity at 2 bar overpressure

Series 618: Kv values at 1 bar overpressure

Nominal diameter	50				50				50			
DN	Air [Nm³/h]				Water [m³/h]				Steam [kg/h]			
Pressure range bar	0,2 - 0,8	0,5 - 2,5	2 - 12	12 - 20	0,2 - 0,8	0,5 - 2,5	2 - 12	12 - 20	0,2 - 0,8	0,5 - 2,5	2 - 12	12 - 20
Set pressure bar												
0,2	1125				28,9				885			
0,5	1234	576			30,3	15,1			969	471		
0,8	1356	591			31,2	15,7			1054	527		
1,0		602				16,3				564		
1,5		825				17,2				618		
2,0		958	308			18,5	6,9			705	249	
2,5		1019	347			19,5	7,0			791	279	
3,0			381				7,3				309	
4,0			482				7,6				370	
5,0			576				7,9				430	
6,0			688				8,5				490	
7,0			767				9,0				549	
8,0			811				9,4				609	
9,0			855				9,8				557	
10,0			901				10,2				606	
11,0			935				10,6				655	
12,0			981	472*			11,0	2,8			705	356*
13,0				511*				3,1				385*
14,0				578*				3,3				434*
15,0				614*				3,5				460*
16,0				650*				3,7				487*
17,0				672*				3,8				503*
18,0				687*				3,9				514*
19,0				701*				3,9				524*
20,0				712*				4,0				532*

*Capacity at 2 bar overpressure

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→ Series 453

453

Overflow and pressure control valves made of stainless steel, angle-type with threaded connections –externally adjustable–

SUITABLE FOR

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

EXAMPLES OF USE

For the protection of:
- pumps against overloading in closed circuits for neutral / non-neutral, non-sticking liquids

For the control of:
- systems under pressure for neutral/ non-neutral gases and vapours and – depending on the sealing material – also for steam

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

MATERIAL

SPECIFICATION

1/2“ – 2“

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

0,5 – 25 bar

APPROVALS

European Pressure Equipment Directive

TR ZU 032/2013 - TR ZU 010/2011

Requirements

PED 2014/68/EU

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
Bellows	Stainless steel	1.4571	316 Ti
Spring	Stainless steel	1.4310	302

Series 453 ■ VALVE VERSION

b	with bellows	for neutral and non-neutral media, counter pressure compensated 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 and without hand wheel.
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.** Only available without lifting device and without hand wheel.

Can be adjusted by hand wheel under operating conditions without medium escaping into the environment.

Valves can be delivered unset within a pressure range or set and sealed at the factory.

■ MEDIUM

GF	gaseous and liquid	Air, vapours, gases, liquids and - depending on safety valve version and seal - also for steam

■ TYPE OF LIFTING MECHANISM

K	with twist-type lifting mechanism, sealed and not adjustable
O	without lifting device

■ 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-Tf / f		Female thread BSP-T / Female thread BSP-P	DIN EN 10226, ISO 7-1 / 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

Further connection types available on request.

■ 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

■ OPTIONS

Special versions on request.

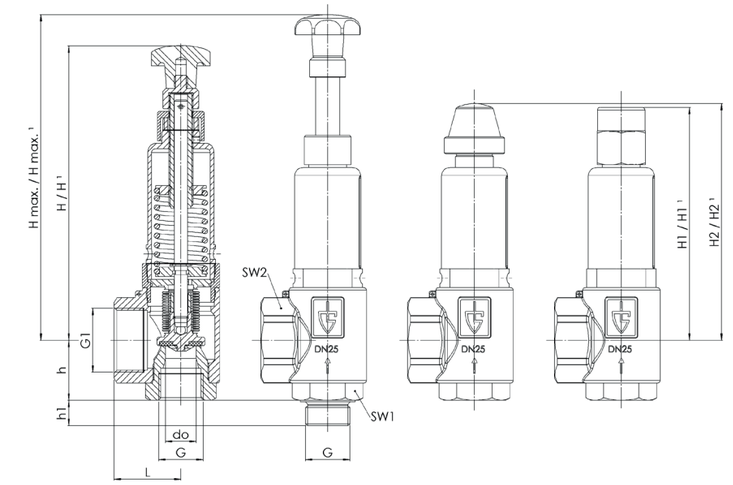
■ NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

Series 453: 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
	H / H¹	102 / 102	156 / 169,5	205 / 223	296 / 318	296 / 318	296 / 318
	H max. / H max. ¹	120 / 120	177 / 190,5	230 / 248,5	320 / 344	320 / 344	320 / 344
	H1 / H1¹	76 / 76	139 /152,5	175 / 193	241 / 263	241 / 263	241 / 263
	H2 / H2¹	77 / 77	138 / 151,5	177 / 195	241 / 263	263 / 285	263 / 285
	h	30	39	45	55	69	74
	h1	16	14	19	21	22,5	25,0
	SW1	30	36	46	55	55	70
	SW2	40	50	58	70	70	70
	do	16	18	23	30	30	30
Weight	**kg**	0,5	1,0	2,0	4,2	4,5	4,7
Set pressure	**bar**	0,5 - 25	0,5 - 25	0,5 - 25	0,5 - 25	0,5 - 25	0,5 - 25
Range of adjustment	**bar**	0,5-0,9 1-1,3 1,3-2,9 2,9-3,9 3,9-7,9 8-11,5 11-16 16-25	0,5-1 1-1,6 1,6-2,8 2,8-5,3 5,4-10 10-12 12-25	0,5-0,9 0,9-1,5 1,5-2 2,1-4,5 4,6-8 8,1-14 14-25	0,5-0,9 1-1,3 1,4-3 3,1-5,5 5,6-11 11-16 16-25	0,5-0,9 1-1,3 1,4-3 3,1-5,5 5,6-11 11-16 16-25	0,5-0,9 1-1,3 1,4-3 3,1-5,5 5,6-11 11-16 16-25

v

■ 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				
453	*b*	**GF**	*O*	*25*	*m*	*f*	*25*	*40*	*FKM*		*7,5*	*2*
453	*b*	**GF**	*K*	*32*	*f*	*f*	*40*	*50*	*FFKM*		*3,1 - 5,5*	*1*
453												
453												

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 / 488 94 88
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 453: Kv values at 1 bar overpressure

Nominal diameter DN	15								15								15							
	Air [Nm³/h]								Water [m³/h]								Steam [kg/h]							
Pressure range bar	0,5 - 0,9	1 - 1,3	1,3 - 2,9	2,9 - 3,9	3,9 - 7,9	8 - 11,5	11 - 16	16 - 25	0,5 - 0,9	1 - 1,3	1,3 - 2,9	2,9 - 3,9	3,9 - 7,9	8 - 11,5	11 - 16	16 - 25	0,5 - 0,9	1 - 1,3	1,3 - 2,9	2,9 - 3,9	3,9 - 7,9	8 - 11,5	11 - 16	16 - 25
Set pressure bar																								
0,5	120								4,4								97							
0,7	135								4,6								110							
0,9	150								5								127							
1,0		105								4,8								81						
1,1		116								4,9								94						
1,3		133	124							5,2	4,1							106	96					
2,1			134								4,4								85					
2,9			148	120							5,2	5,1							111	96				
3,4				139								5,2								106				
3,9				154	86							5,3	3,1							121	67			
5,9					106								3,7								81			
7,9					135								3,9								100			
8,0						142								3,6								101		
9,7						140								2,7								118		
11,0						138	28							2,4	2,2							111	26	
11,5						137	39							2,3	2,1							109	32	
13,5							73								1,7								47	
16,0							96	67							1,2	1,4							72	54
20,5								125								1,3								90
25,0								184								1,1								134

Kv values at 1 bar overpressure

Nominal diameter DN	20							20							20						
	Air [Nm³/h]							Water [m³/h]							Steam [kg/h]						
Pressure range bar	0,5 - 1	1 - 1,6	1,6 - 2,8	2,8 - 5,3	5,4 - 10	10 - 12	12 - 25	0,5 - 1	1 - 1,6	1,6 - 2,8	2,8 - 5,3	5,4 - 10	10 - 12	12 - 25	0,5 - 1	1 - 1,6	1,6 - 2,8	2,8 - 5,3	5,4 - 10	10 - 12	12 - 25
Set pressure bar																					
0,5	275							8,6							214						
0,7	295							9,1							227						
1,0	327	309						9,6	9,2						256	240					
1,3		344							9,5							267					
1,6		368	333						10	8,8						281	262				
2,2			379							9,5							293				
2,8			428	365						10,4	8,3						327	282			
4,1				482							9,6							357			
5,3				541							10,2							416			
5,4					420							7,9							323		
7,7					562							10,7							434		
10,0					685	497						14,3	11						518	393	
11,0						526							11,6							374	
12,0						558	326						11,8	5,3						420	238
18,5							423							3,1							319
25,0							606							1,6							453

Series 453: Kv values at 1 bar overpressure

Nominal diameter DN	25								25								25							
	Air [Nm³/h]								Water [m³/h]								Steam [kg/h]							
Pressure range bar	0,5 - 0,9	0,9 - 1,5	1,5 - 2	2,1 - 4,5	4,6 - 8	8,1 - 14	14 - 25		0,5 - 0,9	0,9 - 1,5	1,5 - 2	2,1 - 4,5	4,6 - 8	8,1 - 14	14 - 25		0,5 - 0,9	0,9 - 1,5	1,5 - 2	2,1 - 4,5	4,6 - 8	8,1 - 14	14 - 25	
Set pressure bar																								
0,5	503								13,6								393							
0,7	543								14,3								424							
0,9	592	586							15,1	14,6							462	455						
1,2		655								15,1								508						
1,5		726	697							15,8	14,9							562	539					
1,8			783								15,7								592					
2,0			836								16,3								631					
2,1				748								15,3								584				
3,3				985								17,5								751				
4,5				1221								19,8								931				
4,6					784								15,6								601			
6,3					1097								18,1								823			
8,0					1514								21,7								1138			
8,1						1208								17,7								904		
11,1						1553								22,3								1146		
14,0						2090	805							22,7	13,8							1564	612	
19,5							1107								15,2								818	
25,0							1179								17,2								854	

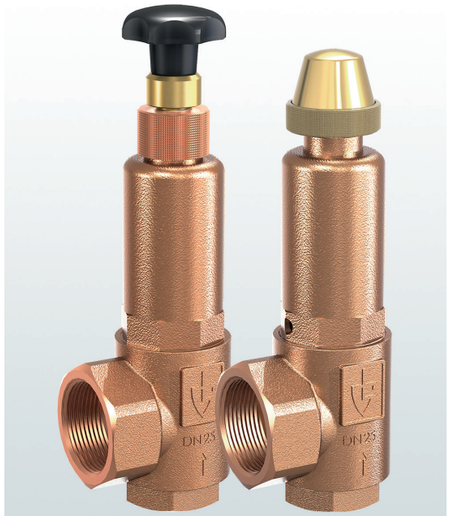
Kv values at 1 bar overpressure

Nominal diameter DN	32							32							32						
	Air [Nm³/h]							Water [m³/h]							Steam [kg/h]						
Pressure range bar	0,5 - 0,9	1 - 1,3	1,4 - 3	3,1 - 5,5	5,6 - 11	11 - 16	16 - 25	0,5 - 0,9	1 - 1,3	1,4 - 3	3,1 - 5,5	5,6 - 11	11 - 16	16 - 25	0,5 - 0,9	1 - 1,3	1,4 - 3	3,1 - 5,5	5,6 - 11	11 - 16	16 - 25
Set pressure bar																					
0,5	844							23,3							660						
0,7	915							24,8							712						
0,9	986							26,1							775						
1,0		1009							26,9							711					
1,1		1066							28,1							734					
1,3		1123							28,8							792					
1,4			1183							27,4							827				
2,2			1402							30,0							986				
3,0			1665							32,0							1150				
3,1				1409							26,5							984			
4,3				1695							28,0							1187			
5,5				1842							31,1							1269			
5,6					1322							24,3							922		
8,3					1893							28,7							1267		
11,0					2496	1918						36,4	27,8						1698	1321	
13,5						2175							34,6							1458	
16,0						2595	1248						35,6	18,2						1686	843
20,5							2155							29,9							1374
25,0							2332							36,8							1550

→ Series 853

853

Overflow and pressure control valves made of gunmetal, angle-type with threaded connections –externally adjustable–



SUITABLE FOR

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

EXAMPLES OF USE

For the protection of:
- pumps against overloading in closed circuits for neutral / non-neutral, non-sticking liquids

For the control of:
- systems under pressure for neutral / non-neutral gases and vapours and – depending on the sealing material – also for steam

- pump protection
- test rig construction
- process equipment construction
- shipbuilding industry and marine equipment
- de-icing technology
- mechanical engineering
- industrial applications

MATERIAL

SPECIFICATION

1/2“ – 2“

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

0,5 – 25 bar

APPROVALS

European Pressure Equipment Directive

TR ZU 032/2013 - TR ZU 010/2011

Requirements

PED 2014/68/EU

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	Stainless steel	1.4404	316 L
Bellows	Stainless steel	1.4571	316 Ti
Spring	Stainless steel	1.4310	302

Series 853 ■ VALVE VERSION

b	with bellows	for neutral and non-neutral media, counter pressure compensated 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 and without hand wheel.
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.** Only available without lifting device and without hand wheel.

Can be adjusted by hand wheel under operating conditions without medium escaping into the environment.

Valves can be delivered unset within a pressure range or set and sealed at the factory.

■ MEDIUM

GF	gaseous and liquid	Air, vapours, gases, liquids and - depending on safety valve version and seal - also for steam

■ TYPE OF LIFTING MECHANISM

K	with twist-type lifting mechanism, sealed and not adjustable
O	without lifting device

■ 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-Tf / f		Female thread BSP-T / Female thread BSP-P	DIN EN 10226, ISO 7-1 / 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

Further connection types available on request.

■ 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

■ OPTIONS

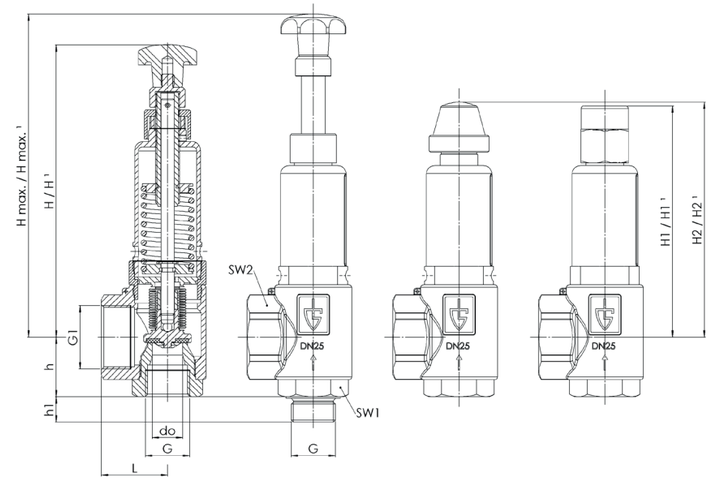
Special versions on request.

■ NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

Series 853: 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
	H / H [1]	102 / 102	156 / 169,5	205 / 223	296 / 318	296 / 318	296 / 318
	H max. / H max. [1]	120 / 120	177 / 190,5	230 / 248,5	320 / 344	320 / 344	320 / 344
	H1 / H1 [1]	76 / 76	139 /152,5	175 / 193	241 / 263	241 / 263	241 / 263
	H2 / H2[1]	77 / 77	138 / 151,5	177 / 195	241 / 263	263 / 285	263 /285
	h	30	39	45	55	69	74
	h1	16	14	19	21	22,5	25,0
	SW1	30	36	46	55	55	70
	SW2	40	50	58	70	70	70
	do	16	18	23	30	30	30
Weight	**kg**	0,5	1,0	2,0	4,2	4,5	4,7
Set pressure	**bar**	0,5 - 25	0,5 - 25	0,5 - 25	0,5 - 25	0,5 - 25	0,5 - 25
Range of adjustment	**bar**	0,5-0,9 1-1,3 1,3-2,9 2,9-3,9 3,9-7,9 8-11,5 11-16 16-25	0,5-1 1-1,6 1,6-2,8 2,8-5,3 5,4-10 10-12 12-25	0,5-0,9 0,9-1,5 1,5-2 2,1-4,5 4,6-8 8,1-14 14-25	0,5-0,9 1-1,3 1,4-3 3,1-5,5 5,6-11 11-16 16-25	0,5-0,9 1-1,3 1,4-3 3,1-5,5 5,6-11 11-16 16-25	0,5-0,9 1-1,3 1,4-3 3,1-5,5 5,6-11 11-16 16-25

[1]Dimension 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				
853	*b*	**GF**	*O*	*25*	*m*	*f*	*25*	*40*	*FKM*		*7,5*	*2*
853	*b*	**GF**	*K*	*32*	*f*	*f*	*40*	*50*	*FFKM*		*3,1 - 5,5*	*1*
853												
853												

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 / 488 94 88
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 853: Kv values at 1 bar overpressure

Nominal diameter DN	15								15								15							
	Air [Nm³/h]								Water [m³/h]								Steam [kg/h]							
Pressure range bar	0,5 - 0,9	1 - 1,3	1,3 - 2,9	2,9 - 3,9	3,9 - 7,9	8 - 11,5	11 - 16	16 - 25	0,5 - 0,9	1 - 1,3	1,3 - 2,9	2,9 - 3,9	3,9 - 7,9	8 - 11,5	11 - 16	16 - 25	0,5 - 0,9	1 - 1,3	1,3 - 2,9	2,9 - 3,9	3,9 - 7,9	8 - 11,5	11 - 16	16 - 25
Set pressure bar																								
0,5	120								4,4								97							
0,7	135								4,6								110							
0,9	150								5								127							
1,0		105								4,8								81						
1,1		116								4,9								94						
1,3		133	124							5,2	4,1							106	96					
2,1			134								4,4								85					
2,9			148	120							5,2	5,1							111	96				
3,4				139								5,2								106				
3,9				154	86							5,3	3,1							121	67			
5,9					106								3,7								81			
7,9					135								3,9								100			
8,0						142								3,6								101		
9,7						140								2,7								118		
11,0						138	28							2,4	2,2							111	26	
11,5						137	39							2,3	2,1							109	32	
13,5							73								1,7								47	
16,0							96	67							1,2	1,4							72	54
20,5								125								1,3								90
25,0								184								1,1								134

Kv values at 1 bar overpressure

Nominal diameter DN	20							20							20						
	Air [Nm³/h]							Water [m³/h]							Steam [kg/h]						
Pressure range bar	0,5 - 1	1 - 1,6	1,6 - 2,8	2,8 - 5,3	5,4 - 10	10 - 12	12 - 25	0,5 - 1	1 - 1,6	1,6 - 2,8	2,8 - 5,3	5,4 - 10	10 - 12	12 - 25	0,5 - 1	1 - 1,6	1,6 - 2,8	2,8 - 5,3	5,4 - 10	10 - 12	12 - 25
Set pressure bar																					
0,5	275							8,6							214						
0,7	295							9,1							227						
1,0	327	309						9,6	9,2						256	240					
1,3		344							9,5							267					
1,6		368	333						10	8,8						281	262				
2,2			379							9,5							293				
2,8			428	365						10,4	8,3						327	282			
4,1				482							9,6							357			
5,3				541							10,2							416			
5,4					420							7,9							323		
7,7					562							10,7							434		
10,0					685	497						14,3	11						518	393	
11,0						526							11,6							374	
12,0						558	326						11,8	5,3						420	238
18,5							423							3,1							319
25,0							606							1,6							453

Series 853: Kv values at 1 bar overpressure

Nominal diameter DN	25								25								25							
	Air [Nm³/h]								Water [m³/h]								Steam [kg/h]							
Pressure range bar	0,5 - 0,9	0,9 - 1,5	1,5 - 2	2,1 - 4,5	4,6 - 8	8,1 - 14	14 - 25		0,5 - 0,9	0,9 - 1,5	1,5 - 2	2,1 - 4,5	4,6 - 8	8,1 - 14	14 - 25		0,5 - 0,9	0,9 - 1,5	1,5 - 2	2,1 - 4,5	4,6 - 8	8,1 - 14	14 - 25	
Set pressure bar																								
0,5	503								13,6								393							
0,7	543								14,3								424							
0,9	592	586							15,1	14,6							462	455						
1,2		655								15,1								508						
1,5		726	697							15,8	14,9							562	539					
1,8			783								15,7								592					
2,0			836								16,3								631					
2,1				748								15,3								584				
3,3				985								17,5								751				
4,5				1221								19,8								931				
4,6					784								15,6								601			
6,3					1097								18,1								823			
8,0					1514								21,7								1138			
8,1						1208								17,7								904		
11,1						1553								22,3								1146		
14,0						2090	805							22,7	13,8							1564	612	
19,5							1107								15,2								818	
25,0							1179								17,2								854	

Kv values at 1 bar overpressure

Nominal diameter DN	32								32								32							
	Air [Nm³/h]								Water [m³/h]								Steam [kg/h]							
Pressure range bar	0,5 - 0,9	1 - 1,3	1,4 - 3	3,1 - 5,5	5,6 - 11	11 - 16	16 - 25		0,5 - 0,9	1 - 1,3	1,4 - 3	3,1 - 5,5	5,6 - 11	11 - 16	16 - 25		0,5 - 0,9	1 - 1,3	1,4 - 3	3,1 - 5,5	5,6 - 11	11 - 16	16 - 25	
Set pressure bar																								
0,5	844								23,3								660							
0,7	915								24,8								712							
0,9	986								26,1								775							
1,0		1009								26,9								711						
1,1		1066								28,1								734						
1,3		1123								28,8								792						
1,4			1183								27,4								827					
2,2			1402								30,0								986					
3,0			1665								32,0								1150					
3,1				1409								26,5								984				
4,3				1695								28,0								1187				
5,5				1842								31,1								1269				
5,6					1322								24,3								922			
8,3					1893								28,7								1267			
11,0					2496	1918							36,4	27,8							1698	1321		
13,5						2175								34,6								1458		
16,0						2595	1248							35,6	18,2							1686	843	
20,5							2155								29,9								1374	
25,0							2332								36,8								1550	

→ Series 608

608

Overflow and pressure control valves made of gunmetal, angle-type with threaded connections –externally adjustable–

SUITABLE FOR

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

EXAMPLES OF USE

For the protection of:
- pumps against overloading in closed circuits for neutral / non-neutral, non-sticking liquids

For the control of:
- systems under pressure for neutral / non-neutral gases and vapours and – depending on the sealing material – also for steam

- pressure control valve in test rig construction
- bypass valve as pump protection
- process equipment construction
- mechanical engineering

MATERIAL

SPECIFICATION

3/8“	– 60°C to + 225°C depending on version	0,2 – 20 bar

APPROVALS

European Pressure Equipment Directive

Requirements
PED 2014/68/EU

Classification society
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

Series 608 ■ VALVE VERSION

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. Adjustable by hand wheel under operating conditions without medium escaping into the atmosphere.

Valves can be delivered unset within a pressure range or set and sealed at the factory.

■ MEDIUM

GF	gaseous and liquid	Air, vapours, gases, liquids and - depending on safety valve version and seal - also for steam

■ TYPE OF LIFTING MECHANISM

0	without lifting device

■ AVAILABLE NOMINAL DIAMETERS AND CONNECTION SIZES

Nominal diameter DN	**10**
Inlet	3/8“ (10)
Outlet 3/8“ (10)	■

■ 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

■ SEALS

NBR	Nitrile rubber (standard)	Elastomere flat seal 0,2 – 12 bar	–30°C to +130°C
FKM	Fluorocarbon	Elastomere flat seal 0,5 – 12 bar	–20°C to +200°C
PTFE	Polytetrafluoroethylene	Flat seal 0,2 – 12 bar	–60°C to +225°C
Against surcharge			
PTFE	Polytetrafluoroethylene	Flat seal 12 – 20 bar	–60°C to +225°C

■ OPTIONS

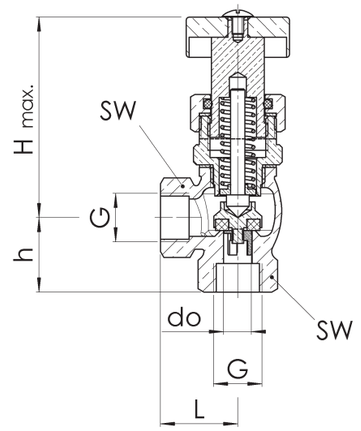
Special versions on request.

■ NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

Series 608: Connection, installation dimensions, ranges of adjustment		
Nominal diameter	**DN**	**10**
Connection DIN EN ISO 228	**G**	3/8" (10)
Outlet DIN EN ISO 228	**G**	3/8" (10)
Installation dimensions in mm	**L**	27
	Hmax	93
	h	26
	SW	24
	do	10
Weight	**kg**	0,4
Set pressure	**bar**	0,2-20
Range of adjustment	**bar**	0,2-0,8 0,5-2,5 2-12 12-20[1]

[1]only available with PTEFE seal against surcharge

■ MAIN DIMENSIONS, INSTALLATION DIMENSIONS



■ INDIVIDUAL SELECTION / VALVE CONFIGURATION

Series	Valve version	Medium	Lifting device	Nominal diameter DN	Connection type		Connection size		Seal	Options	Pressure range / set pressure	Quantity
					Inlet	Outlet	Inlet	Outlet				
608	**t**	**GF**	**0**	**10**	**f**	**f**	**10**	**10**	*NBR*		*2 - 12*	*10*
608	**t**	**GF**	**0**	**10**	**f**	**f**	**10**	**10**	*PTFE*		*6,5*	*3*
608	**t**	**GF**	**0**	**10**	**f**	**f**	**10**	**10**				
608	**t**	**GF**	**0**	**10**	**f**	**f**	**10**	**10**				

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 / 488 94 88
Please do not forget to add your personal data so that our sales team can contact you.

Name

First Name

Company

Telephone

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CAPACITY TABLE

Series 608: Kv values at 1 bar overpressure

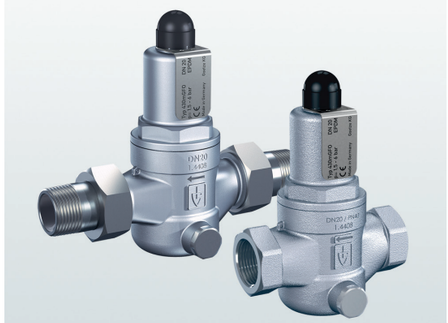
Nominal diameter DN	10				10				10			
	Air [Nm³/h]				Water [m³/h]				Steam [kg/h]			
Pressure range bar	0,2 - 0,8	0,5 - 2,5	2 - 12	12 - 20	0,2 - 0,8	0,5 - 2,5	2 - 12	12 - 20	0,2 - 0,8	0,5 - 2,5	2 - 12	12 - 20
Set pressure bar												
0,2	49				1,6				38			
0,5	52	461			1,7	0,4			41	351		
0,8	58	471			1,7	0,4			46	361		
1,0		491				0,4				371		
1,5		501				0,4				391		
2,0		541	131			0,5	0,4			411	101	
2,5		561	111			0,5	0,4			431	8,51	
3,0			81				0,4				6,21	
4,0			71				0,4				5,41	
5,0			41				0,4				3,11	
6,0			31				0,4				2,31	
7,0			< 1				0,5				< 1	
8,0			< 1				0,4				< 1	
9,0			< 1				0,4				< 1	
10,0			< 1				0,4				< 1	
11,0			< 1				0,3				< 1	
12,0			< 1	< 1			0,3	0,2			< 1	< 1
13,0				< 1				0,2				< 1
14,0				< 1				0,2				< 1
15,0				< 1				0,1				< 1
16,0				< 1				0,1				< 1
17,0				< 1				0,1				< 1
18,0				< 1				0,1				< 1
19,0				< 1				0,1				< 1
20,0				< 1				0,1				< 1

[1]Capacity at 2 bar overpressure

→ Series 430

430

Overflow and pressure control valves made of stainless steel, straightway form, with threaded connections –externally adjustable–



SUITABLE FOR

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

EXAMPLES OF USE

For the protection of:
- pumps against overloading in closed circuits for neutral / non-neutral, non-sticking liquids

For the control of:
- systems under pressure for air, neutral / non-neutral gases and vapours

- test rig construction
- process equipment construction
- laboratories
- mechanical engineering
- secondary areas in the food-, beverage-, pharmaceutical- and cosmetics-industries

MATERIAL

SPECIFICATION

1/2“ – 2“ | – 10°C to + 95°C | 0,5 – 10 bar

APPROVALS

European Pressure Equipment Directive

TR ZU 032/2013 - TR ZU 010/2011

Requirements

PED 2014/68/EU

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	1.4408	CF8M
Outlet body	Stainless steel	1.4408	CF8M
Internal parts	Stainless steel	1.4408	CF8M
	Stainless steel	1.4404	316 L
Valve seat	Stainless steel	1.4404	316 L
Spring	Spring steel with anti-rust protection	1.1200	ASTM A228

Series 430 ■ VALVE VERSION

m	with diaphragm	High-quality, heat-resistant moulded elastomere, fabric-reinforced diaphragm. Valves in straightway form, closed version. Can be adjusted under operating conditions without medium escaping into the atmosphere. Adjustment can be directly read-off an optional pressure gauge (accessory). Optimal control response and large flow volumes even in cases of small pressure differences due to diaphragm operating principle.

Complete valve cartridge available as replacement part (order code: 430 cartridge-DN..-seal) can be exchanged without removing the valve.

Valves can be delivered unset within a pressure range or set and sealed at the factory (against surcharge).

■ MEDIUM

GF	gaseous and liquid	for water and distilled water, neutral and non-sticking liquids, compressed air and neutral gases; optionally with FPM elastomere seals for non-neutral media i.e. oils, fuels, oil-laden compressed air etc.

■ TYPE OF LIFTING MECHANISM

0	without lifting device

■ 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

BSP-Tm / BSP-Tm	Standard threaded connections	Male thread BSP-T / Male thread BSP-T	DIN EN 10226, ISO 7-1 / DIN EN 10226, ISO 7-1
f / f	Version with female thread available in sizes DN15, DN20 and DN25	Female thread BSP-P / Female thread BSP-P	DIN EN ISO 228-1 / DIN EN ISO 228-1

■ SEALS

EPDM	Ethylene propylene diene	Elastomere moulded diaphragm and seals approvals according to drinking water directive	–10°C to +95°C
Against surcharge			
FKM	Fluorocarbon	Elastomere moulded diaphragm and seals	–10°C to +95°C

■ OPTIONS

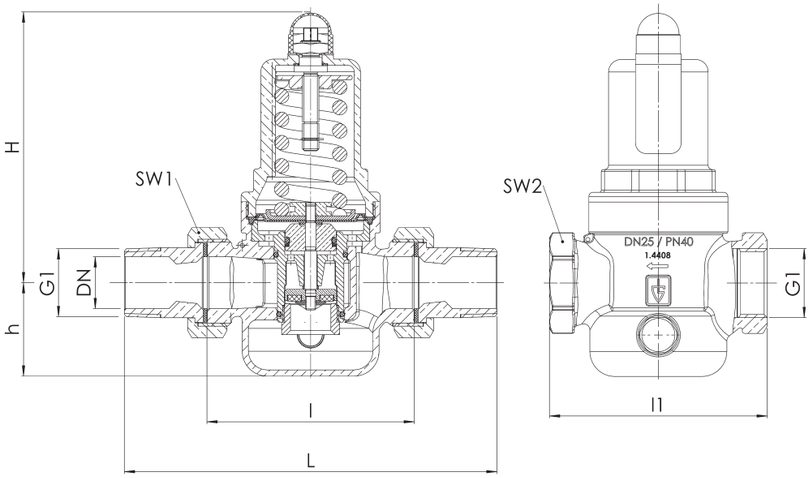
Against surcharge	
Pressure gauges 36, 39 or 40	Chapter Accessories
Pressure gauges 41, 42 or 43 made of stainless steel	Chapter Accessories

■ NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

Series 430: Connection, installation dimensions, ranges of adjustment							
Nominal diameter	**DN**	**15**	**20**	**25**	**32**	**40**	**50**
Inlet DIN EN 10226	**G1**	1/2" (15)	3/4" (20)	1" (25)	1 1/4" (32)	1 1/2" (40)	2" (50)
Outlet DIN EN 10226	**G1**	1/2" (15)	3/4" (20)	1" (25)	1 1/4" (32)	1 1/2" (40)	2" (50)
Installation dimensions in mm	**L**	142	158	180	193	226	252
	l	80	90	100	105	130	140
	l1	85	95	105			
	H	102	102	130	130	165	165
	h	33	33	45	45	70	70
	SW1	30	37	46	52	65	75
	SW2	28	35	43	48	57	68
Weight	**kg**	1,2	1,3	2,3	2,5	5,2	5,7
Set pressure	**bar**	0,5-10	0,5-10	0,5-10	0,5-10	0,5-10	0,5-10
Range of adjustment	**bar**	0,5-2 1,5-6 5,5-10	0,5-2 1,5-6 5,5-10	0,5-2 1,5-6 5,5-10	0,5-2 1,5-6 5,5-10	0,5-2 1,5-6 5,5-10	0,5-2 1,5-6 5,5-10
Coefficient of flow K_{VS}	**m^3/h**	2,1	2,4	5,1	5,5	10,5	11,5

The K_{VS} value was determined according to DIN EN 60534-2-3. Instructions on how to determine size and capacity are to be found under section 2.

■ MAIN DIMENSIONS, INSTALLATION DIMENSIONS



■ INDIVIDUAL SELECTION / VALVE CONFIGURATION

Series	**Valve version**	**Medium**	**Lifting device**	**Nominal diameter DN**	**Connection type** Inlet	Outlet	**Connection size** Inlet	Outlet	**Seal**	**Options**	**Pressure range / set pressure**	**Quantity**
430	**m**	**GF**	**0**	*20*	*BSP-T m*	*BSP-T m*	*20*	*20*	*EPDM*		*5,5 - 10*	*5*
430	**m**	**GF**	**0**	*25*	*f*	*f*	*25*	*25*	*EPDM*		*0,5 - 2*	*3*
430	**m**	**GF**	**0**									
430	**m**	**GF**	**0**									

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 / 488 94 88
Please do not forget to add your personal data so that our sales team can contact you.

Name

First Name

Company

Telephone

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CAPACITY TABLE

Series 430: Kv values at 1 bar overpressure

Nominal diameter DN	15			20			25			32			40			50		
	Air [Nm³/h]			Air [Nm³/h]			Air [Nm³/h]			Air [Nm³/h]			Air [Nm³/h]			Air [Nm³/h]		
Pressure range bar	0,5-2	1,5-6	5,5-10	1,5-6	0,5-2	5,5-10	0,5-2	1,5-6	5,5-10	1,5-6	0,5-2	5,5-10	0,5-2	1,5-6	5,5-10	1,5-6	0,5-2	5,5-10
Set pressure bar																		
0,5	73			77			189			193			417			445		
1	89			94			231			239			498			537		
1,5	102	103		108	107		264	185		273	196		587	370		624	408	
2	117	119		121	126		303	226		314	238		636	429		683	472	
3		146			153			282			291			506			557	
4		170			176			330			338			543			615	
5		187			194			367			379			625			684	
5,5		195	139		206	157		386	183		394	186		653	375		719	417
6		203	147		216	163		405	194		418	202		708	395		760	443
7			162			178			223			229			400			502
8			179			190			259			264			407			517
9			218			225			285			289			432			564
10			255			261			303			314			465			601

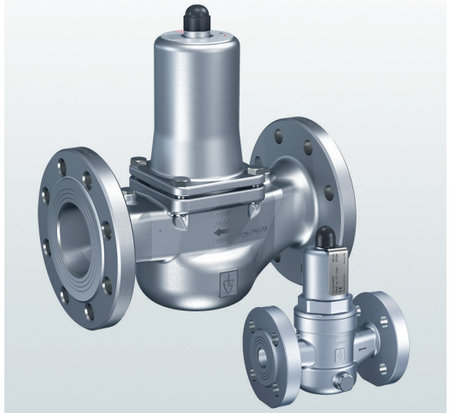
Kv values at 1 bar overpressure

Nominal diameter DN	15			20			25			32			40			50		
	Water [m³/h]			Water [m³/h]			Water [m³/h]			Water [m³/h]			Water [m³/h]			Water [m³/h]		
Pressure range bar	0,5-2	1,5-6	5,5-10	1,5-6	0,5-2	5,5-10	0,5-2	1,5-6	5,5-10	1,5-6	0,5-2	5,5-10	0,5-2	1,5-6	5,5-10	1,5-6	0,5-2	5,5-10
Set pressure bar																		
0,5	2,7			2,9			5,5			6,2			12,4			12,9		
1	2,9			3,3			6,1			6,9			12,9			13,8		
1,5	3,4	3,1		3,6	3,4		6,6	5,6		7,5	6,4		13,2	9,0		14,4	9,4	
2	3,6	3,2		3,9	3,4		6,9	5,7		7,8	6,4		13,5	9,1		14,9	9,4	
3		3,3			3,5			5,9			6,5			9,3			9,5	
4		3,4			3,7			6,1			7,2			9,5			9,9	
5		3,3			3,7			6,2			7,5			9,7			10,2	
5,5		3,0	2,3		3,6	2,7		5,8	3,2		6,9	4,1		10,1	7,2		10,5	7,7
6		2,9	2,4		3,6	2,7		5,4	3,3		6,7	4,2		10,4	7,3		10,9	8,0
7			2,4			2,6			3,9			4,5			7,5			8,1
8			2,4			2,6			3,8			4,4			7,3			7,8
9			2,3			2,5			3,7			4,2			6,9			7,4
10			2,2			2,5			3,6			4,0			6,5			7,1

→ Series 431

431

Overflow and pressure control valves made of stainless steel, straightway form with flange connections –externally adjustable–



SUITABLE FOR

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

EXAMPLES OF USE

For the protection of:
- pumps against overloading in closed circuits for neutral / non-neutral, non-sticking liquids

For the control of:
- systems under pressure for air, neutral / non-neutral gases and vapours

- industrial plants
- power plant technology
- pump systems
- mechanical engineering
- secondary areas in the food-, beverage-, pharmaceutical- and cosmetics-industries

MATERIAL

SPECIFICATION

DN 15 to DN 80 | – 10°C to + 95°C | 0,5 – 10 bar

APPROVALS

European Pressure Equipment Directive

TR ZU 032/2013 - TR ZU 010/2011

Requirements

PED 2014/68/EU

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	1.4408	CF8M
Outlet body	Stainless steel	1.4408	CF8M
Internal parts	Stainless steel	1.4408	CF8M
	Stainless steel	1.4404	316 L
Valve seat	Stainless steel	1.4404	316 L
Spring	Spring steel with anti-rust protection	1.1200	ASTM A228

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Series 431 ■ VALVE VERSION

m	with diaphragm	High-quality, heat-resistant moulded elastomere, fabric-reinforced diaphragm. Valves in straightway form, closed version. Can be adjusted under operating conditions without medium escaping into the atmosphere. Adjustment can be directly read-off an optional pressure gauge (accessory). Optimal control response and large flow volumes even in cases of small pressure differences due to diaphragm operating principle.

Complete valve cartridge available as replacement part (order code: 431 cartridge-DN..-seal) can be exchanged without removing the valve.

Valves can be delivered unset within a pressure range or set and sealed at the factory (against surcharge).

■ MEDIUM

GF	gaseous and liquid	for water and distilled water, neutral and non-sticking liquids, compressed air and neutral gases; optionally with FPM elastomere seals for non-neutral media i.e. oils, fuels, oil-laden compressed air etc.

■ TYPE OF LIFTING MECHANISM

0	without lifting device

■ AVAILABLE NOMINAL DIAMETERS AND CONNECTION SIZES

Nominal diameter DN	**15**	**20**	**25**	**32**	**40**	**50**	**65**	**80**
Inlet / Outlet	15/15	20/20	25/25	32/32	40/40	50/50	65/65	80/80
	■	■	■	■	■	■	■	■

■ TYPE OF CONNECTION INLET / OUTLET FLANGE CONNECTIONS

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

■ SEALS

EPDM	Ethylene propylene diene	Elastomere moulded diaphragm and seals approvals according to drinking water directive	–10°C to +95°C
Against surcharge			
FKM	Fluorocarbon	Elastomere moulded diaphragm and seals	–10°C to +95°C

■ OPTIONS

Against surcharge	
Pressure gauges 33, 36, 39 or 40	Chapter Accessories
Pressure gauge 37, 38, 41, 42 or 43 made of stainless steel	Chapter Accessories

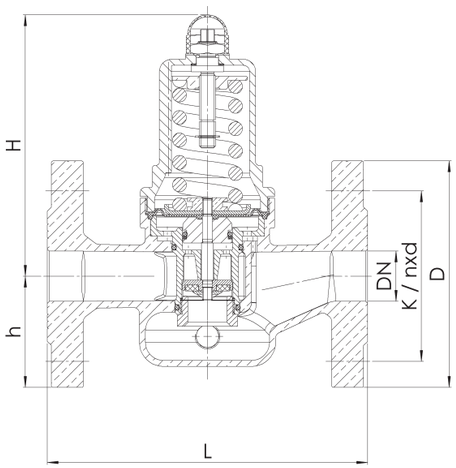
■ NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

Series 431: Connection, installation dimensions, ranges of adjustment

Nominal diameter	**DN / PN**	**15 / 40**	**20 / 40**	**25 / 40**	**32 / 40**	**40 / 40**	**50 / 40**	**65 / 16**	**65 / 40**	**80 / 40**
Inlet DIN EN 1092	**DN**	15	20	25	32	40	50	65	65	80
Outlet DIN EN 1092	**DN**	15	20	25	32	40	50	65	65	80
Installation dimensions in mm	**L**	130	150	160	180	200	230	290	290	310
	D	95	105	115	140	150	165	185	185	200
	H	102	130	130	130	166	166	245	245	245
	h	46	50	55	68	73	80	89	89	97
	K / nxd	65 / 4xM12	75 / 4xM12	85 / 4xM12	100 / 4xM16	110 / 4xM16	125 / 4xM16	145 / 4xM16	145 / 8xM16	160 / 8xM16
Weight	**kg**	2,8	3,9	4,3	5,5	8,4	10,2	18,7	19	20,5
Set pressure	**bar**	0,5-10	0,5-10	0,5-10	0,5-10	0,5-10	0,5-10	1-6	1-6	1-6
Range of adjustment	**bar**	0,5-2 1,5-6 5,5-10	0,5-2 1,5-6 5,5-10	0,5-2 1,5-6 5,5-10	0,5-2 1,5-6 5,5-10	0,5-2 1,5-6 5,5-10	0,5-2 1,5-6 5,5-10	1-6	1-6	1-6
Coefficient of flow K_{VS}	**m³/h**	2,1	4,7	5,1	5,5	10,5	11,5	20,5	20,5	21,5

The K_{VS} value was determined according to DIN EN 60534-2-3. Instructions on how to determine size and capacity are to be found under section 2.

■ MAIN DIMENSIONS, INSTALLATION DIMENSIONS



■ INDIVIDUAL SELECTION / VALVE CONFIGURATION

Series	**Valve version**	**Medium**	**Lifting device**	**Nominal diameter DN**	**Connection type** Inlet	Outlet	**Connection size** Inlet	Outlet	**Seal**	**Options**	**Pressure range / set pressure**	**Quantity**
431	**m**	**GF**	**0**	*25*	**FL**	**FL**	*25*	*25*	*EPDM*		*1,5 - 6*	*8*
431	**m**	**GF**	**0**	*80*	**FL**	**FL**	*80*	*80*	*FKM*	*Manometer 37*	*5,0*	*3*
431	**m**	**GF**	**0**		**FL**	**FL**						
431	**m**	**GF**	**0**		**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 / 488 94 88
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 431: Kv values at 1 bar overpressure

Nominal diameter DN	15			20			25			32			40			50			65	80
	Air [Nm³/h]																			
Pressure range bar	0,5-2	1,5-6	5,5-10	0,5-2	1,5-6	5,5-10	0,5-2	1,5-6	5,5-10	0,5-2	1,5-6	5,5-10	0,5-2	1,5-6	5,5-10	0,5-2	1,5-6	5,5-10	1-6	1-6
Set pressure bar																				
0,5	73			175			189			193			417			445				
1	89			208			231			239			498			537			945	1010
1,5	102	103		247	175		264	185		273	196		587	370		624	408		1020	1115
2	117	119		285	214		303	226		314	238		636	429		683	472		1255	1315
3		146			245			282			291			506			557		1480	1620
4		170			292			330			338			543			615		1810	1890
5		187			329			367			379			625			684		1895	2060
5,5		195	139		354	173		386	183		394	186		653	375		719	417	1930	2150
6		203	147		375	186		405	194		418	202		708	395		760	443	1965	2230
7			162			210			223			229			400			502		
8			179			249			259			264			407			517		
9			218			273			285			289			432			564		
10			255			294			303			314			465			601		

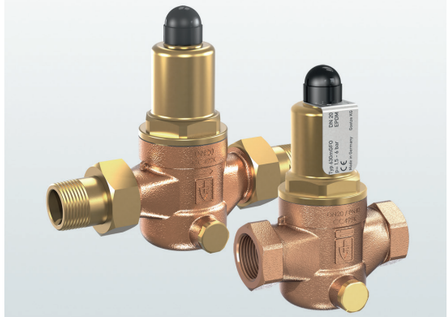
Kv values at 1 bar overpressure

Nominal diameter DN	15			20			25			32			40			50			65	80
	Water [m³/h]																			
Pressure range bar	0,5-2	1,5-6	5,5-10	0,5-2	1,5-6	5,5-10	0,5-2	1,5-6	5,5-10	0,5-2	1,5-6	5,5-10	0,5-2	1,5-6	5,5-10	0,5-2	1,5-6	5,5-10	1-6	1-6
Set pressure bar																				
0,5	2,7			5,1			5,5			6,2			12,4			12,9				
1	2,9			5,4			6,1			6,9			12,9			13,8			23,0	26,0
1,5	3,4	3,1		5,9	5,2		6,6	5,6		7,5	6,4		13,2	9,0		14,4	9,4		24,0	26,0
2	3,6	3,2		6,3	5,2		6,9	5,7		7,8	6,4		13,5	9,1		14,9	9,4		25,0	27,0
3		3,3			5,3			5,9			6,5			9,3			9,5		26,0	29,0
4		3,4			5,3			6,1			7,2			9,5			9,9		28,0	30,0
5		3,3			5,4			6,2			7,5			9,7			10,2		28,0	31,0
5,5		3,0	2,3		5,2	2,9		5,8	3,2		6,9	4,1		10,1	7,2		10,5	7,7	28,0	32,0
6		2,9	2,4		5,1	3,0		5,4	3,3		6,7	4,2		10,4	7,3		10,9	8,0	29,0	32,0
7			2,4			3,3			3,9			4,5			7,5			8,1		
8			2,4			3,2			3,8			4,4			7,3			7,8		
9			2,3			3,1			3,7			4,2			6,9			7,4		
10			2,2			3,1			3,6			4,0			6,5			7,1		

→ Series 630

630

Overflow and pressure control valves made of gunmetal, straightway form with threaded connections –externally adjustable–



SUITABLE FOR

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

EXAMPLES OF USE

For the protection of:
- pumps against overloading in closed circuits for neutral / non-neutral, non-sticking liquids

For the control of:
- systems under pressure for air, neutral / non-neutral gases and vapours

- test rig construction
- process equipment construction
- de-icing technology
- mechanical engineering
- industrial applications

MATERIAL

SPECIFICATION

1/2“ – 2“ | – 10°C to + 95°C | 0,5 – 10 bar

APPROVALS

European Pressure Equipment Directive

TR ZU 032/2013 - TR ZU 010/2011

Requirements

PED 2014/68/EU

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	Gunmetal	CC499K	CC499K
	Brass	CW617N	CW617N
Valve seat	Stainless steel	1.4404	316 L
Spring	Spring steel with anti-rust protection	1.1200	ASTM A228

Series 630 ■ VALVE VERSION

m	with diaphragm	High-quality, heat-resistant moulded elastomere, fabric-reinforced diaphragm. Valves in straightway form, closed version. Can be adjusted under operating conditions without medium escaping into the atmosphere. Adjustment can be directly read-off an optional pressure gauge (accessory). Optimal control response and large flow volumes even in cases of small pressure differences due to diaphragm operating principle.

Complete valve cartridge available as replacement part (order code: 630 cartridge-DN..-seal) can be exchanged without removing the valve.

Valves can be delivered unset within a pressure range or set and sealed at the factory (against surcharge).

■ MEDIUM

GF	gaseous and liquid	for water, neutral and non-sticking liquids, compressed air and neutral gases; optionally with FPM elastomere seals for non-neutral media i.e. oils, fuels, oil-laden compressed air, etc.

■ TYPE OF LIFTING MECHANISM

0	without lifting device

■ 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

BSP-Tm / BSP-Tm	Standard threaded connections	Male thread BSP-T / Male thread BSP-T	DIN EN 10226, ISO 7-1 / DIN EN 10226, ISO 7-1
f / f	Version with female thread available in sizes DN15, DN20 and DN25	Female thread BSP-P / Female thread BSP-P	DIN EN ISO 228-1 / DIN EN ISO 228-1

■ SEALS

EPDM	Ethylene propylene diene	Elastomere moulded diaphragm and seals approvals according to drinking water directive	–10°C to +95°C
Against surcharge			
FKM	Fluorocarbon	Elastomere moulded diaphragm and seals	–10°C to +95°C

■ OPTIONS

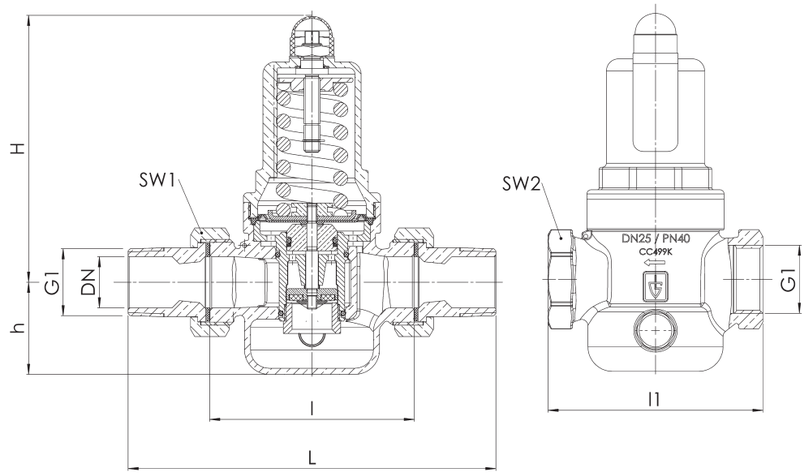
Against surcharge	
Pressure gauges 36, 39 or 40	Chapter Accessories

■ NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

Series 630: Connection, installation dimensions, ranges of adjustment							
Nominal diameter	**DN**	**15**	**20**	**25**	**32**	**40**	**50**
Inlet DIN EN 10226	**G1**	1/2" (15)	3/4" (20)	1" (25)	1 1/4" (32)	1 1/2" (40)	2" (50)
Outlet DIN EN 10226	**G1**	1/2" (15)	3/4" (20)	1" (25)	1 1/4" (32)	1 1/2" (40)	2" (50)
Installation dimensions in mm	**L**	142	158	180	193	226	252
	l	80	90	100	105	130	140
	l1	85	95	105			
	H	102	102	130	130	165	165
	h	33	33	45	45	70	70
	SW1	30	37	46	52	65	75
	SW2	28	35	43	48	57	68
Weight	**kg**	1,2	1,4	2,4	2,6	5,5	6
Set pressure	**bar**	0,5-10	0,5-10	0,5-10	0,5-10	0,5-10	0,5-10
Range of adjustment	**bar**	0,5-2 1,5-6 5,5-10	0,5-2 1,5-6 5,5-10	0,5-2 1,5-6 5,5-10	0,5-2 1,5-6 5,5-10	0,5-2 1,5-6 5,5-10	0,5-2 1,5-6 5,5-10
Coefficient of flow K_{VS}	**m³/h**	2,1	2,4	5,1	5,5	10,5	11,5

The K_{VS} value was determined according to DIN EN 60534-2-3. Instructions on how to determine size and capacity are to be found under section 2.

■ MAIN DIMENSIONS, INSTALLATION DIMENSIONS



■ INDIVIDUAL SELECTION / VALVE CONFIGURATION

Series	**Valve version**	**Medium**	**Lifting device**	**Nominal diameter DN**	**Connection type**		**Connection size**		**Seal**	**Options**	**Pressure range / set pressure**	**Quantity**
					Inlet	Outlet	Inlet	Outlet				
630	**m**	**GF**	**0**	*25*	*BSP-T m*	*BSP-T m*	*25*	*25*	*FKM*		*7,0*	*1*
630	**m**	**GF**	**0**	*20*	*f*	*f*	*20*	*20*	*EPDM*		*5,5 - 10*	*2*
630	**m**	**GF**	**0**									
630	**m**	**GF**	**0**									

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 / 488 94 88
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Version 2016 / 10
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CAPACITY TABLE

Series 630: Kv values at 1 bar overpressure

Nominal diameter DN	15			20			25			32			40			50		
	Air [Nm³/h]			Air [Nm³/h]			Air [Nm³/h]			Air [Nm³/h]			Air [Nm³/h]			Air [Nm³/h]		
Pressure range bar	0,5-2	1,5-6	5,5-10	0,5-2	1,5-6	5,5-10	0,5-2	1,5-6	5,5-10	0,5-2	1,5-6	5,5-10	0,5-2	1,5-6	5,5-10	0,5-2	1,5-6	5,5-10
Set pressure bar																		
0,5	73			77			189			193			417			445		
1	89			94			231			239			498			537		
1,5	102	103		108	107		264	185		273	196		587	370		624	408	
2	117	119		121	126		303	226		314	238		636	429		683	472	
3		146			153			282			291			506			557	
4		170			176			330			338			543			615	
5		187			194			367			379			625			684	
5,5		195	139		206	157		386	183		394	186		653	375		719	417
6		203	147		216	163		405	194		418	202		708	395		760	443
7			162			178			223			229			400			502
8			179			190			259			264			407			517
9			218			225			285			289			432			564
10			255			261			303			314			465			601

Kv values at 1 bar overpressure

Nominal diameter DN	15			20			25			32			40			50		
	Water [m³/h]			Water [m³/h]			Water [m³/h]			Water [m³/h]			Water [m³/h]			Water [m³/h]		
Pressure range bar	0,5-2	1,5-6	5,5-10	0,5-2	1,5-6	5,5-10	0,5-2	1,5-6	5,5-10	0,5-2	1,5-6	5,5-10	0,5-2	1,5-6	5,5-10	0,5-2	1,5-6	5,5-10
Set pressure bar																		
0,5	2,7			2,9			5,5			6,2			12,4			12,9		
1	2,9			3,3			6,1			6,9			12,9			13,8		
1,5	3,4	3,1		3,6	3,4		6,6	5,6		7,5	6,4		13,2	9,0		14,4	9,4	
2	3,6	3,2		3,9	3,4		6,9	5,7		7,8	6,4		13,5	9,1		14,9	9,4	
3		3,3			3,5			5,9			6,5			9,3			9,5	
4		3,4			3,7			6,1			7,2			9,5			9,9	
5		3,3			3,7			6,2			7,5			9,7			10,2	
5,5		3,0	2,3		3,6	2,7		5,8	3,2		6,9	4,1		10,1	7,2		10,5	7,7
6		2,9	2,4		3,6	2,7		5,4	3,3		6,7	4,2		10,4	7,3		10,9	8,0
7			2,4			2,6			3,9			4,5			7,5			8,1
8			2,4			2,6			3,8			4,4			7,3			7,8
9			2,3			2,5			3,7			4,2			6,9			7,4
10			2,2			2,5			3,6			4,0			6,5			7,1

→ Series 631

631

Overflow and pressure control valves made of gunmetal, straightway form with flange connections –external adjustment–

SUITABLE FOR

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

EXAMPLES OF USE

For the protection of:
- pumps against overloading in closed circuits for neutral / non-neutral, non-sticking liquids

For the control of:
- systems under pressure for air, neutral / non-neutral gases and vapours

- industrial plants
- power plant technology
- pump stations
- mechanical engineering

MATERIAL

SPECIFICATION

DN 15 to DN 100 | – 10°C to + 95°C | 0,5 – 10 bar

APPROVALS

European Pressure Equipment Directive

TR ZU 032/2013 - TR ZU 010/2011

Requirements

PED 2014/68/EU

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	Gunmetal	CC499K	CC499K
	Brass	CW617N	CW617N
	Stainless steel	1.4404	316 L
Valve seat	Stainless steel	1.4404	316 L
Spring	Spring steel with anti-rust protection	1.1200	ASTM A228

Series 631 ■ VALVE VERSION

m	with diaphragm	High-quality, heat-resistant moulded elastomere, fabric-reinforced diaphragm. Valves in straightway form, closed version. Can be adjusted under operating conditions without medium escaping into the atmosphere. Adjustment can be directly read-off an optional pressure gauge (accessory). Optimal control response and large flow volumes even in cases of small pressure differences due to diaphragm operating principle.

Complete valve cartridge available as replacement part (order code: 431 cartridge-DN..-seal) can be exchanged without removing the valve.

Valves can be delivered unset within a pressure range or set and sealed at the factory (against surcharge).

■ MEDIUM

GF	gaseous and liquid	for water, neutral and non-sticking liquids, compressed air and neutral gases; optionally with FPM elastomere seals for non-neutral media i.e. oils, fuels, oil-laden compressed air, etc.

■ TYPE OF LIFTING MECHANISM

0	without lifting device

■ AVAILABLE NOMINAL DIAMETERS AND CONNECTION SIZES

Nominal diameter DN	**15**	**20**	**25**	**32**	**40**	**50**	**65**	**80**	**100**
Inlet / Outlet	15/15	20/20	25/25	32/32	40/40	50/50	65/65	80/80	100/100
	■	■	■	■	■	■	■	■	■

■ TYPE OF CONNECTION INLET / OUTLET FLANGE CONNECTIONS

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

■ SEALS

EPDM	Ethylene propylene diene	Elastomere moulded diaphragm and seals approvals according to drinking water directive	–10°C to +95°C
Against surcharge			
FKM	Fluorocarbon	Elastomere moulded diaphragm and seals	–10°C to +95°C

■ OPTIONS

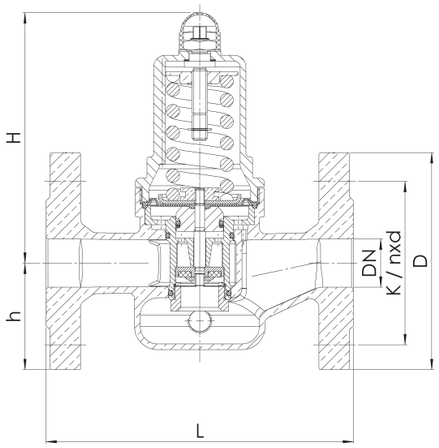
Against surcharge	
Pressure gauges 33, 36, 39 or 40	Chapter Accessories

■ NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

Series 631: Connection, installation dimensions, ranges of adjustment										
Nominal diameter	**DN / PN**	**15/40**	**20 / 40**	**25 / 40**	**32 / 40**	**40 / 40**	**50 / 40**	**65 / 16**	**65 / 40**	**80 / 40**	**100 / 16**
Inlet DIN EN 1092	**DN**	15	20	25	32	40	50	65	65	80	100
Connection DIN EN 1092	**DN**	15	20	25	32	40	50	65	65	80	100
Installation dimensions in mm	**L**	130	150	160	180	200	230	290	290	310	350
	D	95	105	115	140	150	165	185	185	200	220
	H	102	130	130	130	166	166	245	245	245	320
	h	46	50	55	68	73	80	89	89	97	112
	K / nxd	65 / 4xM12	75 / 4xM12	85 / 4xM12	100 / 4xM16	110 / 4xM16	125 / 4xM16	145 / 4xM16	145 / 8xM16	160 / 8xM16	180 / 8xM16
Weight	**kg**	2,8	4,2	4,7	5,9	8,6	10,5	20	20	22	40
Set pressure	**bar**	0,5-10	0,5-10	0,5-10	0,5-10	0,5-10	0,5-10	1-6	1-6	1-6	1 - 5,5
Range of adjustment	**bar**	0,5-2 1,5-6 5,5-10	0,5-2 1,5-6 5,5-10	0,5-2 1,5-6 5,5-10	0,5-2 1,5-6 5,5-10	0,5-2 1,5-6 5,5-10	0,5-2 1,5-6 5,5-10	1-6	1-6	1-6	1 - 5,5
Coefficient of flow K_{VS}	**m^3/h**	2,1	4,7	5,1	5,5	10,5	11,5	20,5	20,5	21,5	42

The K_{VS} value was determined according to DIN EN 60534-2-3. Instructions on how to determine size and capacity are to be found under section 2.

■ MAIN DIMENSIONS, INSTALLATION DIMENSIONS



■ INDIVIDUAL SELECTION / VALVE CONFIGURATION

Series	**Valve version**	**Medium**	**Lifting device**	**Nominal diameter DN**	**Connection type**		**Connection size**		**Seal**	**Options**	**Pressure range / set pressure**	**Quantity**
					Inlet	Outlet	Inlet	Outlet				
631	**m**	**GF**	**0**	*20*	**FL**	**FL**	*20*	*20*	*EPDM*	*Manometer 33*	*5,0*	*4*
631	**m**	**GF**	**0**	*65*	**FL**	**FL**	*65*	*65*	*FKM*	*PN16*	*1 - 6*	*1*
631	**m**	**GF**	**0**		**FL**	**FL**						
631	**m**	**GF**	**0**		**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 / 488 94 88
Please do not forget to add your personal data so that our sales team can contact you.

Name _____

First Name _____

Company _____

Telephone _____

E-Mail _____

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CAPACITY TABLE

Series 631: Kv values at 1 bar overpressure

Nominal diameter DN	15			20			25			32			40			50			65	80	100
	Air [Nm³/h]																				
Pressure range bar	0,5-2	1,5-6	5,5-10	0,5-2	1,5-6	5,5-10	0,5-2	1,5-6	5,5-10	0,5-2	1,5-6	5,5-10	0,5-2	1,5-6	5,5-10	0,5-2	1,5-6	5,5-10	1-6	1-6	1 -5,5
Set pressure bar																					
0,5	73			175			189			193			417			445					
1	89			208			231			239			498			537			945	1010	1230
1,5	102	103		247	175		264	185		273	196		587	370		624	408		1020	1115	1350
2	117	119		285	214		303	226		314	238		636	429		683	472		1255	1315	1510
3		146			245			282			291			506			557		1480	1620	1820
4		170			292			330			338			543			615		1810	1890	2090
5		187			329			367			379			625			684		1895	2060	2320
5,5		195	139		354	173		386	183		394	186		653	375		719	417	1930	2150	2450
6		203	147		375	186		405	194		418	202		708	395		760	443	1965	2230	
7			162			210			223			229			400			502			
8			179			249			259			264			407			517			
9			218			273			285			289			432			564			
10			255			294			303			314			465			601			

Kv values at 1 bar overpressure

Nominal diameter DN	15			20			25			32			40			50			65	80	100
	Water [m³/h]																				
Pressure range bar	0,5-2	1,5-6	5,5-10	0,5-2	1,5-6	5,5-10	0,5-2	1,5-6	5,5-10	0,5-2	1,5-6	5,5-10	0,5-2	1,5-6	5,5-10	0,5-2	1,5-6	5,5-10	1-6	1-6	1 -5,5
Set pressure bar																					
0,5	2,7			5,1			5,5			6,2			12,4			12,9					
1	2,9			5,4			6,1			6,9			12,9			13,8			23,0	26,0	31,0
1,5	3,4	3,1		5,9	5,2		6,6	5,6		7,5	6,4		13,2	9,0		14,4	9,4		24,0	26,0	31,7
2	3,6	3,2		6,3	5,2		6,9	5,7		7,8	6,4		13,5	9,1		14,9	9,4		25,0	27,0	33,0
3		3,3			5,3			5,9			6,5			9,3			9,5		26,0	29,0	34,5
4		3,4			5,3			6,1			7,2			9,5			9,9		28,0	30,0	36,0
5		3,3			5,4			6,2			7,5			9,7			10,2		28,0	31,0	38,7
5,5		3,0	2,3		5,2	2,9		5,8	3,2		6,9	4,1		10,1	7,2		10,5	7,7	28,0	32,0	40,0
6		2,9	2,4		5,1	3,0		5,4	3,3		6,7	4,2		10,4	7,3		10,9	8,0	29,0	32,0	
7			2,4			3,3			3,9			4,5			7,5			8,1				
8			2,4			3,2			3,8			4,4			7,3			7,8				
9			2,3			3,1			3,7			4,2			6,9			7,4				
10			2,2			3,1			3,6			4,0			6,5			7,1				

ARMATUREN GOETZE

→ Overview

SAFETY FITTINGS FOR HYGIENIC APPLICATIONS

Series	Materials	Temperatures	Pressures	Media	Clamp connection	Page
400		–40 °C – +200 °C	0.4 bar – 16 bar		DN 20 – DN 32	7.1
400.5		–40 °C – +200 °C	0.4 bar – 16 bar		DN 20 – DN 32	7.2
4000		–40 °C – +200 °C	0,4 bar – 16 bar		DN 25 – DN 100	7.3

→ Series Hygienic 400

Hygienic 400

Safety valve made of stainless steel, angle type, with stainless steel spring

SUITABLE FOR

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

EXAMPLES OF USE

For the protection of:
- processes, plants and containers in the food and pharmaceutical industry for air, neutral and non-neutral vapours and gases, steam and liquids

taking into account the operation- and plant-specific regulations and making use of the suitable valve version and sealing material.

- food industry
- breweries and beverage industry
- pharmaceutical industry
- cosmetic industry
- medical technology
- clean Service applications

FEATURES

- Smooth and faultless surface finish optimized for cleaning process
- Minimal dead space in inlet area and no gaps in the valve
- Exposed and rinsed o-ring seals
- Shape of valve body avoids forming of puddles in the valve after it has opened
- Possible to carry-out CIP/SIP by lifting the disc from the seat
- Gap-free installation of seals
- Surface roughness standard Ra<0,8 um
- Option: mechanically polished and/or electro-polished

APPROVALS

TÜV-Type test approval 2062	**D/G, F, F/K/S**
EC type examination	**S/G, L, F/K/S**
TSG ZF001-2006	**S/G, L, F/K/S**
KGS	**G**
TR ZU 032/2013 -TR ZU 010/2011	**S/G, L, F/K/S**
EHEDG	
DGUV Test	
Requirements	
DIN EN ISO 4126-1	TRD 421
PED 2014/68/EU	AD 2000 Data sheet A2
TRB 801 No. 22 and 23	KGS AA 319
Additional hygienic requirements	
EG No. 852/2004	GS-NG 2 and 5
DIN EN 1672-2	EHEDG Aseptik
9. GPSGV	
Classification society	
DNVGL	DNVGL
Bureau Veritas	BV
Russian Maritime Register of Shipping	RS

MATERIAL

SPECIFICATION

Clamp connection DN 20 – DN 32

–40°C to + 200°C

0,4–16 bar

MATERIALS

Component	Material	DIN EN	ASME
Body	Stainless steel	1.4435	316 L
Inner parts, wetted	Stainless steel	1.4435	316 L
Upper section, other inner parts	Stainless steel	1.4404	316 L
Spring	Stainless steel	1.4310	302
Bellows	Stainless steel	1.4571	316 Ti

Series 400 ■ VALVE VERSION

b	Standard 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.

Parts which are difficult to clean in the guide, the spring housing and the spindle / disc combination are protected against soiling by stainless steel bellows

■ MEDIUM

GF	gaseous and liquid	Air, vapours, gases, liquids and - depending on safety valve version and seal - also for steam

■ TYPE OF LIFTING MECHANISM

K	Standard with twist-type lifting mechanism

■ AVAILABLE NOMINAL DIAMETERS AND CONNECTION SIZES

Nominal diameter		**20**									
Connection type		**Clamp connection**						**Threaded ferrule connection**			
		DIN 11864-3 / DIN 11853-3			**DIN 32676**			**DIN 11864-1 / DIN 11853-1**		**DIN 11851**	
Inlet		DN 20	DN 25	DN 32	DN 20	DN 25	DN 32	DN 20	DN 25	DN 20	DN 25
Outlet	**DN 25**	■	■	■	■	■	■	■	■	■	■
	DN 32	■	■	■	■	■	■				

■ TYPE OF CONNECTION INLET / OUTLET Special connections

A / A	Standard	Aseptic collar clamp connection / Aseptic collar clamp connection	DIN 11864-3 / DIN 11864-3 DIN 11853-3 / DIN 11853-3	Pipe Standard DIN 11850
KLSDIN / KLSDIN	On request	Clamp connection / Clamp connection	DIN 32676 / DIN 32676	Pipe Standard DIN 11850
Against surcharge				
N / N		Aseptic-Threaded ferrule connection A/ Aseptic-Threaded ferrule connection A	DIN 11864-1 / DIN 11864-1 DIN 11853-1 / DIN 11853-1	Pipe Standard DIN 11850
GSDIN / GSDIN		Threaded ferrule connection / Threaded ferrule connection	DIN 11851 / DIN 11851	Pipe Standard DIN 11850
Further connection types available on request				

■ SEALS

FKM	Fluorcarbon	Elastomere moulded seal	FDA, USP, 3-A, ADI-free	–20°C to +200°C
EPDM	Ethylene propylene diene	Elastomere moulded seal	FDA	–40°C to +170°C

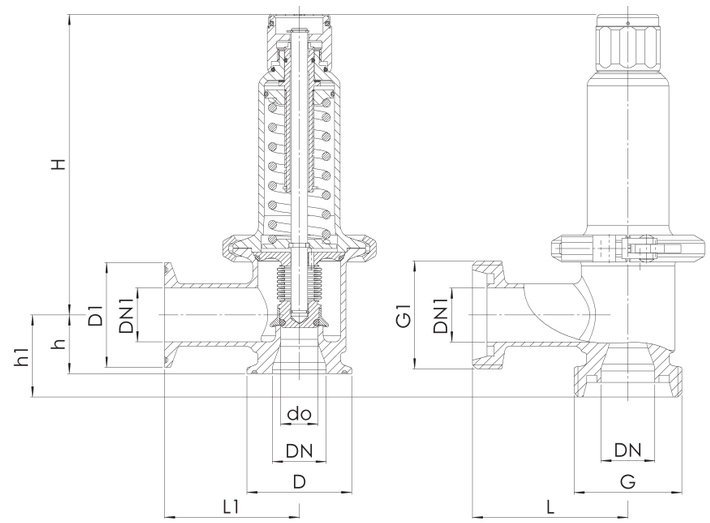
■ OPTIONS

Surface mechanically polished	**MP**
Surface mechanically polished and electro-polished	**MEP**
Special versions on request.	

■ NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

Series Hygienic 400: Connection, installation dimensions, ranges of adjustment						
Nominal diameter	**DN**	**20**				
Connection		Aseptic collar clamp connection **DIN 11864-3 / DIN 11853-1** Clamp connection **DIN 32676**			Aseptic-Threaded ferrule connection A **DIN 11864-1 / DIN 11853-1** Threaded ferrule connection **DIN 11851**	
Inlet	**DN**	20	25	32	20	25
	G	-	-	-	20 (Rd 44 x 1/6")	25 (Rd 52 x 1/6")
Outlet	**DN1**	25, 32	25, 32	32	25	25
	G1	-	-	-	25 (Rd 52 x 1/6")	25 (Rd 52 x 1/6")
Installation dimensions in mm	**L**	-	-	-	75	75
	L1	65	65	65	-	-
	H	145	145	145	145	145
	h	29	29	29	-	-
	h1	-	-	-	40	40
	D	34	50,5	50,5	-	-
	D1	50,5	50,5	50,5	-	-
	do	18	18	18	18	18
Weight	**kg**	1,3	1,3	1,3	1,4	1,4
Range of adjustment	**bar**	0,4-16	0,4-16	0,4-16	0,4-16	0,4-16

■ 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				
400	**b**	**GF**	**K**	**20**	*A*	*A*	*25*	*25*	*FKM*	*MEP*	*2,5*	*2*
400	**b**	**GF**	**K**	**20**	*KLSDIN*	*KLSDIN*	*20*	*25*	*EPDM*	*MP*	*3,2*	*1*
400	**b**	**GF**	**K**	**20**								
400	**b**	**GF**	**K**	**20**								
400	**b**	**GF**	**K**	**20**								

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 / 488 94 88
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Name

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CAPACITY TABLE

Series Hygienic 400: Blowing-off rates at 10% above set pressure

Nominal diameter DN		20		
	Set pressure bar	I	II	III
	0,5	127	96	3,1
	1	189	151	4,5
	1,5	257	204	6,7
	2	332	262	7,7
Air I	2,5	390	305	8,6
Nm³/h	3	447	349	9,4
	3,5	504	392	10,2
	4	561	435	10,9
Steam II	4,5	618	478	11,5
kg/h	5	675	521	12,2
	5,5	732	564	14,0
	6	790	608	14,6
Water III	6,5	847	650	15,2
m³/h	7	904	692	15,8
	7,5	961	735	16,4
	8	1018	777	16,9
	8,5	1075	820	17,4
	9	1132	862	17,9
	9,5	1190	905	18,4
	10	1247	947	18,9
	11	1361	1031	19,8
	12	1475	1115	20,7
	13	1590	1199	21,6
	14	1704	1284	23,4
	15	1818	1368	24,2
	16	1932	1453	25,0

Subject to technical modifications.

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→ Series Hygienic 400.5

Hygienic 400.5

Overflow / Pressure control valve made of stainless steel, angle type
–External adjustment–

SUITABLE FOR

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

EXAMPLES OF USE

For the protection of:
- Pumps against overloading in closed circuits for neutral / non-neutral liquids

For the control of:
- processes, plants and containers in the food and pharmaceutical industry for air, neutral and non-neutral vapours and gases, steam and liquids

- food industry
- breweries and beverage industry
- pharmaceutical industry
- cosmetic industry
- medical technology
- clean Service applications

FEATURES

- Smooth and faultless surface finish optimized for cleaning process
- Minimal dead space in inlet area and no gaps in the valve
- Exposed and rinsed o-ring seals
- Shape of valve body avoids forming of puddles in the valve
- Adjustable and settable during operation
- Possible to carry-out CIP/SIP by lifting the disc from the seat
- Gap-free installation of seals
- Surface roughness standard Ra<0,8 um
- Option: mechanically polished and/or electro-polished

MATERIAL

SPECIFICATION

Clamp connection DN 20 – DN 32

–40°C to + 200°C

0,4 – 16 bar

APPROVALS

TR ZU 032/2013 - TR ZU 010/2011

DGUV Test

REQUIREMENTS
DGR 97/23/EG

Additional hygienic requirements

EG No. 852/2004	9. GPSGV
DIN EN 1672-2	GS-NG 2 and 5

Classification society

Russian Maritime Register of Shipping	RS
DNVGL	DNVGL

MATERIALS

Component	Material	DIN EN	ASME
Body	Stainless steel	1.4435	316 L
Inner parts, wetted	Stainless steel	1.4435	316 L
Upper section, other inner parts	Stainless steel	1.4404	316 L
Spring	Stainless steel	1.4310	302
Bellows	Stainless steel	1.4571	316 Ti

Series 400.5 ■ VALVE VERSION

b	Standard 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.

Parts which are difficult to clean in the guide, the spring housing and the spindle / disc combination are protected against soiling by stainless steel bellows

Valves can be delivered unset within a pressure range or set and sealed at the factory.
Can be adjusted by hand wheel under operating conditions without medium escaping into the environment.

■ MEDIUM

GF	gaseous and liquid	Air, vapours, gases, liquids and - depending on safety valve version and seal - also for steam

■ TYPE OF LIFTING MECHANISM

K	Standard with twist-type lifting mechanism

■ AVAILABLE NOMINAL DIAMETERS AND CONNECTION SIZES

Nominal diameter		**20**								
Connection type		**Clamp connection**						**Threaded ferrule connection**		
		DIN 11864-3 / DIN 11853-3			**DIN 32676**			**DIN 11864-1 / DIN 11853-1**		**DIN 11851**	
Inlet		DN 20	DN 25	DN 32	DN 20	DN 25	DN 32	DN 20	DN 25	DN 20	DN 25
Outlet	**DN 25**	■	■	■	■	■	■	■	■	■	■
	DN 32	■	■	■	■	■	■				

■ TYPE OF CONNECTION INLET / OUTLET Special connections

A / A	Standard	Aseptic collar clamp connection / Aseptic collar clamp connection	DIN 11864-3 / DIN 11864-3 DIN 11853-3 / DIN 11853-3	Pipe Standard DIN 11850
KLSDIN / KLSDIN	On request	Clamp connection / Clamp connection	DIN 32676 / DIN 32676	Pipe Standard DIN 11850
Against surcharge				
N / N		Aseptic-Threaded ferrule connection A/ Aseptic-Threaded ferrule connection A	DIN 11864-1 / DIN 11864-1 DIN 11853-1 / DIN 11853-1	Pipe Standard DIN 11850
GSDIN / GSDIN		Threaded ferrule connection / Threaded ferrule connection	DIN 11851 / DIN 11851	Pipe Standard DIN 11850
Further connection types available on request				

■ SEALS

FKM	Fluorcarbon	Elastomere moulded seal	FDA, USP, 3-A, ADI-free	–20°C to +200°C
EPDM	Ethylene propylene diene	Elastomere moulded seal	FDA	–40°C to +170°C

■ OPTIONS

Surface mechanically polished	**MP**
Surface mechanically polished and electro-polished	**MEP**

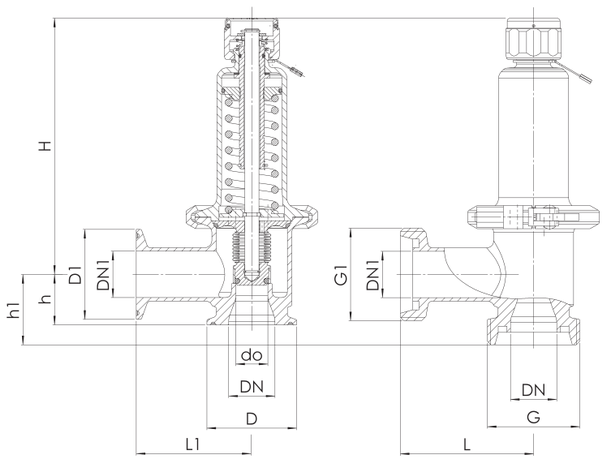
Special versions on request.

■ NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

Series Hygienic 400.5: Connection, installation dimensions, ranges of adjustment

Nominal diameter	**DN**	**20**				
Connection		Aseptic collar clamp connection **DIN 11864-3 / DIN 11853-1** Clamp connection **DIN 32676**			Aseptic-Threaded ferrule connection A **DIN 11864-1 / DIN 11853-1** Threaded ferrule connection **DIN 11851**	
Inlet	**DN**	20	25	32	20	25
	G	-	-	-	20 (Rd 44 x 1/6")	25 (Rd 52 x 1/6")
Outlet	**DN1**	25, 32	25, 32	32	25	25
	G1	-	-	-	25 (Rd 52 x 1/6")	25 (Rd 52 x 1/6")
Installation dimensions in mm	**L**	-	-	-	75	75
	L1	65	65	65	-	-
	H	145	145	145	145	145
	h	29	29	29	-	-
	h1	-	-	-	40	40
	D	34	50,5	50,5	-	-
	D1	50,5	50,5	50,5	-	-
	do	18	18	18	18	18
Weight	**kg**	1,3	1,3	1,3	1,4	1,4
Set pressure	**bar**	0,4-16	0,4-16	0,4-16	0,4-16	0,4-16
Range of adjustment	**bar**	0,4 - 1,5 1,5 - 4,5 4,5 - 7 7 - 10 10 - 14 14 - 16	0,4 - 1,5 1,5 - 4,5 4,5 - 7 7 - 10 10 - 14 14 - 16	0,4 - 1,5 1,5 - 4,5 4,5 - 7 7 - 10 10 - 14 14 - 16	0,4 - 1,5 1,5 - 4,5 4,5 - 7 7 - 10 10 - 14 14 - 16	0,4 - 1,5 1,5 - 4,5 4,5 - 7 7 - 10 10 - 14 14 - 16

■ 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				
400.5	**b**	**GF**	**K**	**20**	*A*	*A*	*25*	*25*	*FKM*	*MEP*	*1,5–4,5*	*2*
400.5	**b**	**GF**	**K**	**20**	*GSDIN*	*GSDIN*	*25*	*25*	*EPDM*	*–*	*3,5*	*1*
400.5	**b**	**GF**	**K**	**20**								
400.5	**b**	**GF**	**K**	**20**								
400.5	**b**	**GF**	**K**	**20**								

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CAPACITY TABLE

Series Hygienic 400.5: Kv values at 1 bar overpressure

Nominal diameter DN	20					
	Air [Nm³/h]					
Pressure range bar	0,4 - 1,5	1,5 - 4,5	4,5 - 7	7 - 10	10 - 14	14 - 16
Set pressure bar						
0,4	215					
1,0	278					
1,5	318	330				
3,0		455				
4,5		596	398			
5,7			428			
7,0			482	424		
8,5				435		
10,0				444	442	
12,0					531	
14,0					619	415
15,0						433
16,0						510

Kv values at 1 bar overpressure

Nominal diameter DN	20					
	Water [m³/h]					
Pressure range bar	0,4 - 1,5	1,5 - 4,5	4,5 - 7	7 - 10	10 - 14	14 - 16
Set pressure bar						
0,4	7					
1,0	7,5					
1,5	8,1	6,7				
3,0		8,2				
4,5		9,9	7,0			
5,7			8,1			
7,0			9	7,5		
8,5				8,5		
10,0				9,1	6,9	
12,0					7,4	
14,0					8,8	4,9
15,0						6,0
16,0						6,3

Kv values at 1 bar overpressure

Nominal diameter DN	20					
	Steam [kg/h]					
Pressure range bar	0,4 - 1,5	1,5 - 4,5	4,5 - 7	7 - 10	10 - 14	14 - 16
Set pressure bar						
0,4	163					
1,0	224					
1,5	250	195				
3,0		360				
4,5		466	306			
5,7			331			
7,0			374	325		
8,5				336		
10,0				340	336	
12,0					408	
14,0					466	317
15,0						337
16,0						380

→ Series Hygienic 4000

Hygienic 4000

Safety valve made of stainless steel, angle type, with stainless steel spring

SUITABLE FOR

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

EXAMPLES OF USE

For the protection of:
- processes, plants and containers in the food and pharmaceutical industry for air, neutral and non-neutral vapours and gases, steam and liquids

- food industry
- Dairy industry
- breweries and beverage industry
- pharmaceutical industry
- cosmetic industry
- medical technology
- clean Service applications

FEATURES

- Smooth and faultless surface finish optimized for cleaning process
- Minimal dead space in inlet area and no gaps in the valve
- Exposed and rinsed o-ring seals
- Shape of valve body avoids forming of puddles in the valve after it has opened
- Suitable for CIP/SIP due to pneumatic lifting device
- Gap-free installation of seals in contact with the medium
- Surface roughness standard Ra<0,8 um
- Option: mechanically polished and/or electro-polished
- Moulded diaphragm to divide the product chamber from the spring housing

MATERIAL

SPECIFICATION

Clamp connection DN 25 – DN 100

–40°C to + 200°C

0,4–16 bar

APPROVALS

TÜV-Type test approval 2095	**D/G, F**
EC type examination	**S/G, L**
KGS	**G**
TR ZU 032/2013 - TR ZU 010/2011	**S/G, L**
Requirements	
DIN EN ISO 4126-1	AD 2000 Data sheet A2
PED 2014/68/EU	VdTÜV Guideline SV 100
TRD 421	KGS AA 319
Classification society	
Bureau Veritas	BV

MATERIALS

Component	Material	DIN EN	ASME
Body	Stainless steel	1.4404	316 L
Inner parts, wetted	Stainless steel	1.4404	316 L
Upper section, other inner parts	Stainless steel	1.4404	316 L
Spring	Stainless steel	1.4310	302
Diaphragm	Elastomer	FKM, EPDM	FKM, EPDM

Series 4000 ■ VALVE VERSION

t	Standard with diaphragm	for neutral and non-neutral media. Spring, moving parts and the environment are protected from being affected by the medium.

Parts which are difficult to clean in the guide, the spring housing and the spindle / disc combination are protected against soiling by elastomer diaphragm.

■ MEDIUM

GF	gaseous and liquid	Air, vapours, gases, liquids and - depending on safety valve version and seal - also for steam

■ TYPE OF LIFTING MECHANISM

P	Pneumatic lifting device
O	without lifting device

■ AVAILABLE NOMINAL DIAMETERS AND CONNECTION SIZES

Nominal diameter		**25**	**40**	**50**	**65**	**80**	**100**
Inlet		25	40	50	65	80	100
Outlet DN	**40**	■					
	65		■				
	80			■			
	100				■		
	125					■	
	150						■

■ TYPE OF CONNECTION INLET / OUTLET Special connections

KLSDIN / KLSDIN	Standard	Clamp connection / Clamp connection	DIN 32676 / DIN 32676	Pipe Standard DIN 11850
Against surcharge				
N / N		Aseptic-Threaded ferrule connection A/ Aseptic-Threaded ferrule connection A	DIN 11864-1 / DIN 11864-1 DIN 11853-1 / DIN 11853-1	Pipe Standard DIN 11850
GSDIN / GSDIN		Threaded ferrule connection / Threaded ferrule connection	DIN 11851 / DIN 11851	Pipe Standard DIN 11850
Further connection types available on request				

■ SEALS

FKM	Fluorcarbon	Elastomere moulded seal	FDA, USP	–20°C to +200°C
EPDM	Ethylene propylene diene	Elastomere moulded seal	FDA, USP	–40°C to +170°C

■ OPTIONS

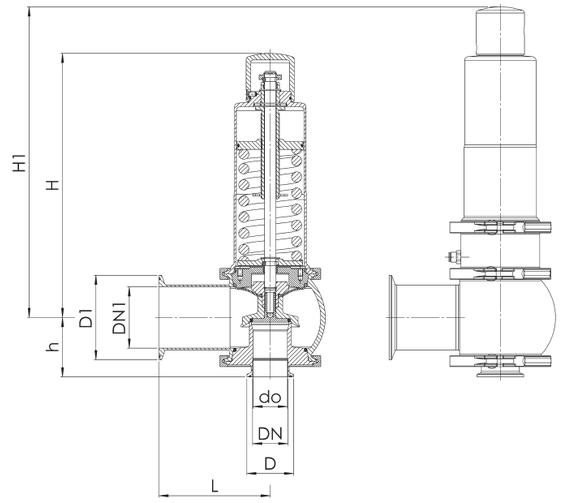
Surface mechanically polished	**MP**
Surface mechanically polished and electro-polished	**MEP**
Proximity switch for indication of valve position	**Order description: S62**
Special versions on request.	

■ NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

Series Hygienic 4000: Connection, installation dimensions, ranges of adjustment							
Nominal diameter	**DN**	**25**	**40**	**50**	**65**	**80**	**100**
Connection				**Clamp connection DIN 32676**			
Inlet	**DN**	25	40	50	65	80	100
Outlet	**DN1**	40	65	80	100	125	150
Installation dimensions in mm	**L**	80	120	140	153	178	181
	h	47	64	80	92	112	126
	D	51	51	64	91	106	119
	D1	51	91	106	119	155	183
	H	183	285	354	445	513	586
	H1[2]	216	335	414	515	613	701
	α_w / K_{dr} (F)	0,45	0,45	0,45	0,45	0,45	0,45
	α_w / K_{dr} (D/G)[1]	0,70	0,70	0,70	0,70	0,70	0,70
	do	23,0	37,0	46,0	60,0	74,0	92,0
Weight tGFO	**kg**	2,2	7,0	13,0	24,5	41,3	64,0
Weight tGFP	**kg**[2]	3	8	15	29	50	76
Range of adjustment	**bar**	0,4-16	0,4-16	0,4-16	0,4-16	0,4-16	0,4-16

[1] Coefficient of flow for S/G valid for 6,00 bar or more, for smaller set pressures see values in capacity table
[2] Values for version with pneumatic lifting device

■ 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**				
4000	**t**	**GF**	*P*	*25*	*KLSDIN*	*KLSDIN*	*25*	*40*	*EPDM*	*MP*	*3,2*	*1*
4000	**t**	**GF**										
4000	**t**	**GF**										
4000	**t**	**GF**										
4000	**t**	**GF**										

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 / 488 94 88
Please do not forget to add your personal data so that our sales team can contact you.

Name

First Name

Company

Telephone

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CAPACITY TABLE

Series Hygienic 4000: Blowing-off rates at 10% above set pressure

Nominal diameter DN		25			40			50		
Set pressure bar		d0 = 23 mm			d0 = 37 mm			d0 = 46 mm		
		I	II	III	I	II	III	I	II	III
	0,4	88,1	177,5	6,6	227,9	459,4	17,2	352,2	710,1	26,6
	0,7	117,4	230,2	8,5	303,7	595,9	21,9	469,5	921,0	33,8
Air I	1	352,7	280,8	9,9	912,8	726,7	25,7	1410,9	1123,2	39,7
Nm³/h	1,5	477,8	377,6	12,2	1236,4	977,1	31,5	1911,0	1510,3	48,8
	2	596,3	468,5	14,1	1543,1	1212,4	36,5	2385,2	1873,9	56,4
Steam II	2,5	713,4	557,8	15,8	1846,2	1443,4	40,8	2853,5	2231,1	63,0
kg/h	3	830,2	646,5	17,3	2148,5	1673,0	44,7	3320,9	2585,9	69,1
	3,5	945,5	733,6	18,7	2446,8	1898,5	48,3	3782,0	2934,4	74,6
Water III	4	1058,7	818,9	20,0	2739,7	2119,2	51,6	4234,7	3275,6	79,8
m³/h	4,5	1171,1	903,4	21,2	3030,8	2337,9	54,8	4684,5	3613,6	84,7
	5	1284,4	988,4	22,3	3324,0	2558,0	57,8	5137,8	3953,7	89,3
	5,5	1398,3	1073,6	23,4	3618,6	2778,5	60,6	5593,0	4294,6	93,6
	6	1507,3	1155,0	24,5	3900,9	2989,1	63,3	6029,4	4620,2	97,8
	6,5	1616,4	1236,5	25,5	4183,2	3200,0	65,9	6465,7	4946,1	101,8
	7	1725,5	1317,9	26,4	4465,5	3410,7	68,4	6902,0	5271,7	105,7
	7,5	1834,6	1399,2	27,3	4747,8	3621,0	70,8	7338,4	5596,8	109,4
	8	1943,7	1480,3	28,2	5030,0	3831,0	73,1	7774,7	5921,4	113,0
	8,5	2052,8	1561,4	29,1	5312,3	4040,8	75,3	8211,1	6245,7	116,4
	9	2161,8	1642,5	30,0	5594,6	4250,5	77,5	8647,4	6569,9	119,8
	9,5	2270,9	1723,6	30,8	5876,9	4460,4	79,7	9083,7	6894,3	123,1
	10	2380,0	1804,6	31,6	6159,2	4670,1	81,7	9520,1	7218,4	126,3
	11	2598,2	1966,8	33,1	6723,8	5089,8	85,7	10392,7	7867,1	132,5
	12	2816,4	2128,6	34,6	7288,4	5508,7	89,5	11265,4	8514,5	138,4
	13	3034,5	2290,2	36,0	7853,0	5926,9	93,2	12138,1	9160,9	144,0
	14	3252,7	2452,5	37,4	8417,6	6346,9	96,7	13010,7	9810,2	149,5
	15	3470,9	2614,8	38,7	8982,2	6766,8	100,1	13883,4	10459,2	154,7
	16	3689,0	2776,4	40,0	9546,8	7185,0	103,4	14756,1	11105,6	159,8

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CAPACITY TABLE

CONTINUATION - Series Hygienic 4000: Blowing-off rates at 10% above set pressure

Nominal diameter DN		65			80			100		
Set pressure bar		d0 = 60 mm			d0 = 74 mm			d0 = 92 mm		
		I	II	III	I	II	III	I	II	III
	0,4	599,3	1208,0	45,2	911,6	1837,6	68,8	1409,0	2840,2	106,4
	0,7	798,7	1566,9	57,5	1214,9	2383,4	87,5	1877,9	3684,0	135,2
Air I	1	2400,4	1911,0	67,6	3651,2	2906,8	102,8	5643,6	4493,0	158,9
Nm³/h	1,5	3251,2	2569,5	82,9	4945,5	3908,5	126,2	7644,0	6041,2	195,0
	2	4057,9	3188,2	95,9	6172,6	4849,6	145,8	9540,6	7495,8	225,4
Steam II	2,5	4854,8	3795,8	107,3	7384,7	5773,8	163,2	11414,2	8924,3	252,2
kg/h	3	5649,9	4399,5	117,5	8594,2	6692,1	178,8	13283,6	10343,7	276,4
	3,5	6434,3	4992,4	127,0	9787,3	7594,0	193,2	15127,8	11737,6	298,6
Water III	4	7204,5	5572,9	135,8	10958,9	8477,0	206,6	16938,6	13102,5	319,3
m³/h	4,5	7969,9	6148,0	144,1	12123,1	9351,8	219,1	18738,1	14454,6	338,7
	5	8741,0	6726,6	151,9	13296,1	10231,9	231,0	20551,2	15814,9	357,1
	5,5	9515,6	7306,5	159,3	14474,2	11114,0	242,3	22372,1	17178,4	374,5
	6	10257,9	7860,4	166,4	15603,4	11956,5	253,1	24117,5	18480,6	391,2
	6,5	11000,3	8414,9	173,2	16732,6	12800,0	263,5	25862,8	19784,3	407,2
	7	11742,6	8968,9	179,8	17861,8	13642,7	273,4	27608,2	21086,9	422,6
	7,5	12485,0	9522,0	186,1	18991,0	14484,1	283,0	29353,5	22387,3	437,5
	8	13227,3	10074,2	192,2	20120,2	15323,9	292,3	31098,9	23685,5	451,9
	8,5	13969,7	10626,0	198,1	21249,4	16163,4	301,4	32844,2	24983,0	465,8
	9	14712,0	11177,4	203,9	22378,6	17002,1	310,1	34589,5	26279,4	479,3
	9,5	15454,3	11729,5	209,5	23507,8	17841,8	318,6	36334,9	27577,2	492,5
	10	16196,7	12280,8	214,9	24637,0	18680,4	326,9	38080,2	28873,5	505,3
	11	17681,4	13384,5	225,4	26895,4	20359,3	342,9	41570,9	31468,4	530,0
	12	19166,1	14486,0	235,4	29153,8	22034,7	358,1	45061,6	34058,1	553,5
	13	20650,8	15585,7	245,1	31412,1	23707,6	372,8	48552,3	36643,7	576,2
	14	22135,5	16690,2	254,3	33670,5	25387,7	386,9	52043,0	39240,6	597,9
	15	23620,2	17794,4	263,3	35928,9	27067,3	400,4	55533,7	41836,7	618,9
	16	25104,9	18894,2	271,9	38187,3	28740,2	413,6	59024,4	44422,4	639,3

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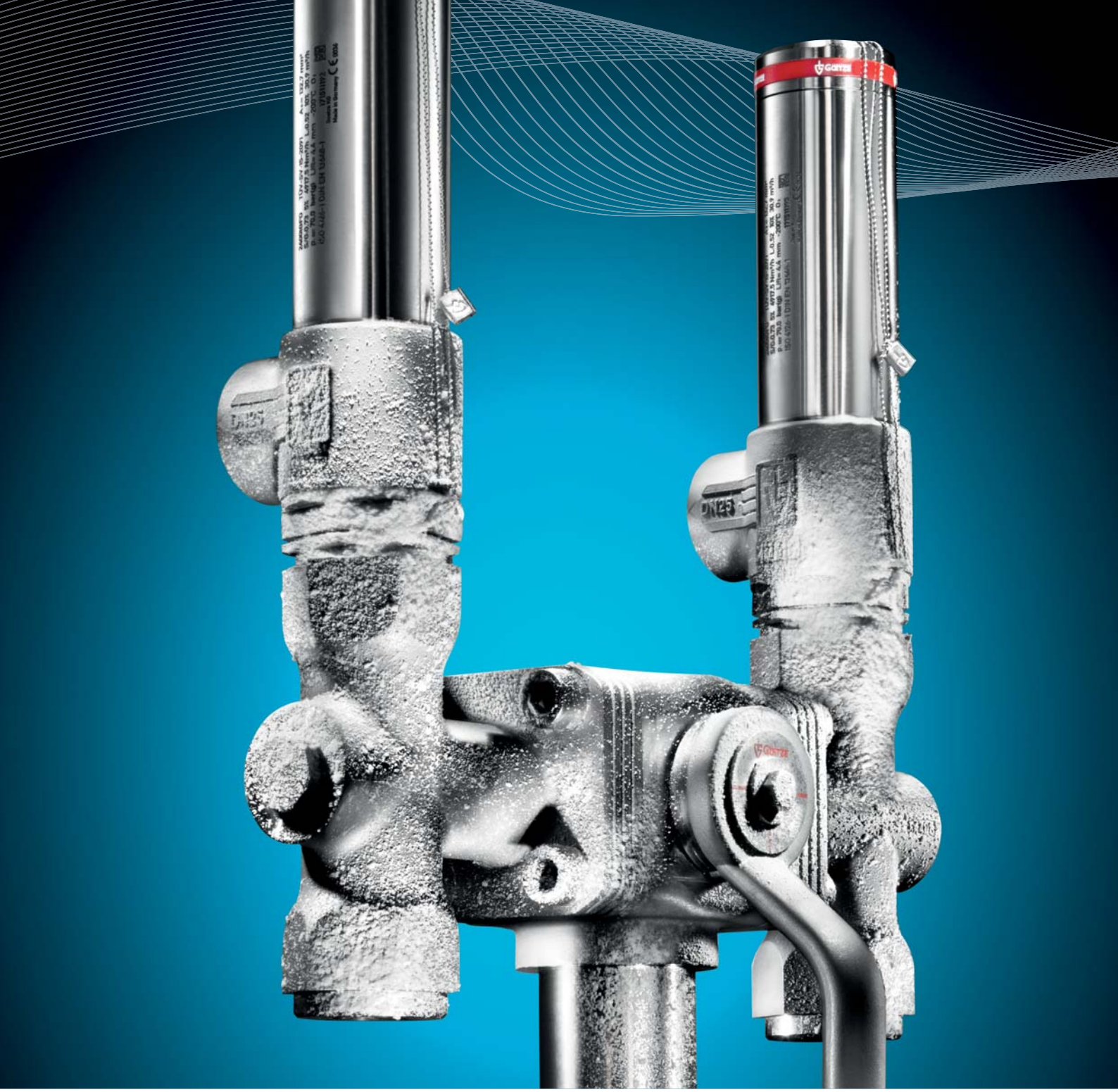

ARMATUREN GOETZE

→ Overview

SAFETY VALVES AND FITTINGS FOR CRYOGENIC APPLICATIONS

Series	Materials	Temperatures	Pressures	Media	Threaded connection	Page
2400		–200 °C – +200 °C	0.2 bar – 70 bar		1/4“ – 1 1/2“	8.1
2480		–200 °C – +200 °C	0,2 bar – 70 bar		1/4“ – 1“	8.2
2700		–200 °C – +120 °C	up to PN 63		3/4“ – 1 1/4“	8.3
2780		–200 °C – +120 °C	up to PN 63		3/4“ – 1 1/4“	8.4

→ Series 2400

2400

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

SUITABLE FOR

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

EXAMPLES OF USE

Full-lift safety valve for the protection of:
- Containers and pipelines for the storage and transport of cryogenic liquified gases such as LIN, LOX, LAr, CO_2, LNG.

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

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

MATERIAL

SPECIFICATION

1/4“ – 1 1/2“ | – 200°C to + 200°C | 0,2 – 70 bar

APPROVALS

TÜV-Type test approval 2091	**D/G, F**
EC type examination	**S/G, L**
ASME	**G, L**
TSG ZF001-2006	**D/G (S/G), F (L)**
KGS	**G**
TR ZU 032/2013 - TR ZU 010/2011	**D/G (S/G), F (L)**

Requirements

AD 2000 Data sheet A2	TPED 2010/35/EU, ADR/RID 2015
DIN EN ISO 4126-1	FDA 21 CFR 177.1550
PED 2014/68/EU	FDA 21 CFR 178.3570
DIN EN 13648-1	NSF-H1
ASME-Code Sec. VIII Div. 1	KGS AA 319

Classification society

Bureau Veritas	BV
American Bureau of Shipping	ABS
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
Seal	PTFE	PTFE	PTFE

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Series 2400 ■ VALVE VERSION

s	non-gastight version of spring housing	for neutral media. Not suitable for oxygen.
t	gastight version of spring housing	for neutral and non-neutral media. The environment is protected from being affected by the medium.

■ MEDIUM

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

■ TYPE OF LIFTING MECHANISM

K	Standard with twist-type lifting mechanism, non-gastight version (not for DN25 and DN32). Not suitable for oxygen.
L	with lifting lever
O	without lifting device, standard for gastight versions

■ AVAILABLE NOMINAL DIAMETERS AND CONNECTION SIZES

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

■ TYPE OF CONNECTION INLET / OUTLET THREADED CONNECTIONS

m / f	Standard	Male thread BSP-P / Female thread BSP-P	DIN EN ISO 228-1 / DIN EN ISO 228-1
f / f	On request	Female thread BSP-P / Female thread BSP-P	DIN EN ISO 228-1 / DIN EN ISO 228-1
NPT-m / f	On request	Male thread NPT / Female thread BSP-P	ANSI B1.20.1 / DIN EN ISO 228-1

■ SEALS

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

■ OPTIONS

Locking sleeve unit	Chapter Accessories

Special versions on request.

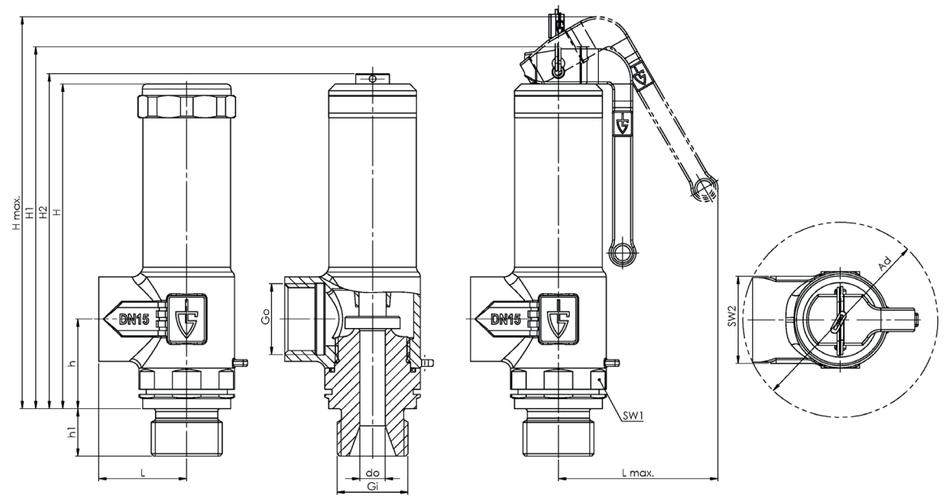
■ NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

Series 2400: Connection, installation dimensions, ranges of adjustment

Nominal diameter	**DN**	**8**					**10**		**15**		**20**		**25**		**32**	
Connection DIN EN ISO 228	**Gi**	1/4" (8)	3/8" (10)	1/4" (8)	3/8" (10)	1/2" (15)	3/8" (10)	1/2" (15)	1/2" (15)	3/4" (20)	3/4" (20)	1" (25)	1" (25)	1 1/4" (32)	1 1/4" (32)	1 1/2" (40)
Outlet DIN EN ISO 228	**Go**	3/8" (10)	3/8" (10)	1/2" (15)	1/2" (15)	1/2" (15)	1/2" (15)	1/2" (15)	3/4" (20)	3/4" (20)	1" (25)	1" (25)	1 1/2" (40)	1 1/2" (40)	2" (50)	2" (50)
Installation dimensions in mm	**h1**	12		12		14	12	14	14	16	16	18	18	20	20	20
	h	22		26			26		31		39		56		66	
	L	21		26			26		31		38		53		66	
	Lmax	43		47			47		66		86		140		187	
	H	60		70			70		98		134		-		-	
	H1	70		81			81		113		146		203		264	
	H2	64		73			73		103		133		215		275	
	Hmax	78		89			89		124		162		230		300	
	SW1	22		27			27		34		41		50		55	
	SW2	22		26			26		32		39		56		70	
	Ad	47		58			58		69		85		120		150	
	α_w / K_{dr} (F)	0,52		0,52			0,52		0,52		0,52		0,52		0,52	
	α_w / K_{dr} (D/G)[1]	0,73		0,73			0,73		0,73		0,73		0,73		0,73	
	d_o	6,0		6,0			7,5		10,5		13,0		18,0		23,0	
Weight	**kg**	0,2		0,4			0,4		0,7		1,3		2,8		6,4	
Range of adjustment	**bar**	0,2 - 70		0,2-70			0,2 - 70		0,2 - 70		0,2 - 70		0,2 - 50		0,2 - 50	
Range of adjustment ASME	**psi**	40 - 1015		40 - 1015			40 - 1015		40 - 1015		40 - 1015		40 - 725		40 - 725	

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

■ MAIN DIMENSIONS, INSTALLATION DIMENSIONS



■ INDIVIDUAL SELECTION / VALVE CONFIGURATION

Series	**Valve version**	**Medium**	**Lifting device**	**Nominal diameter DN**	**Connection type**		**Connection size**		**Seal**	**Set pressure**	**Quantity**
					Inlet	Outlet	Inlet	Outlet			
2400	*s*	**GF**	*K*	*20*	*m*	*f*	*20*	*25*	*PTFE*	*6,0*	*2*
2400		**GF**									
2400		**GF**									
2400		**GF**									

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 / 488 94 88
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Name

First Name

Company

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CAPACITY TABLE

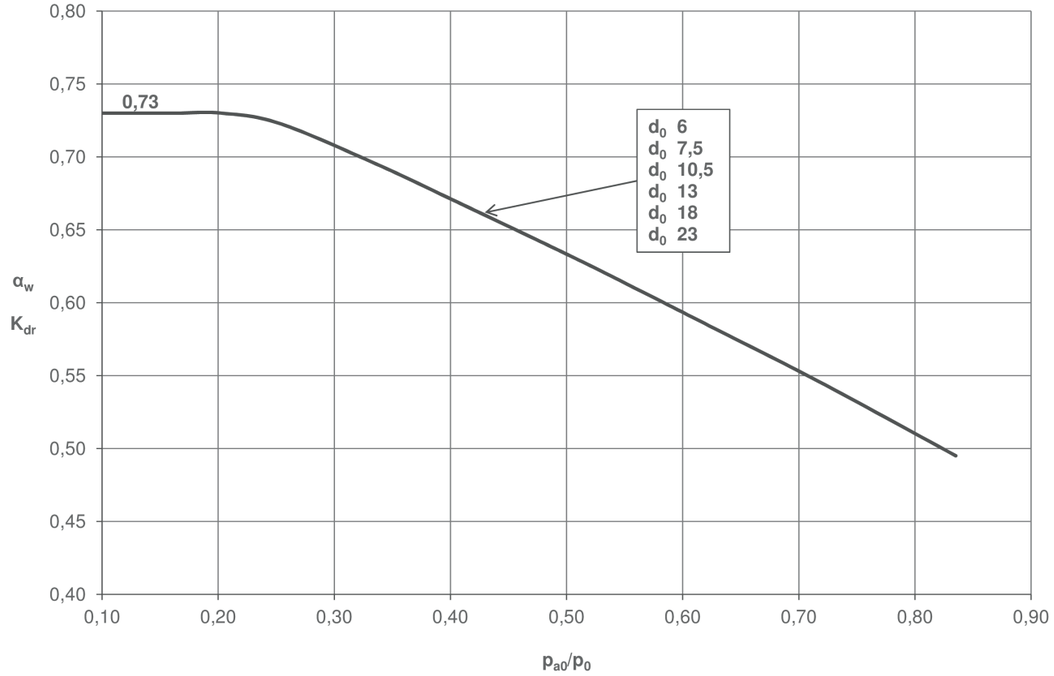
Series 2400: Blowing-off rates at 10% above set pressure

Nominal diameter DN		8		10		15		20		25		32	
flow diameter		d0 = 6 mm		d0 = 7,5 mm		d0 = 10,5 mm		d0 = 13 mm		d0 = 18 mm		d0 = 23 mm	
Set pressure bar		I	II	I	II	I	II	I	II	I	II	I	II
	0,2	11,1	0,4	17,3	0,6	33,9	1,2	51,9	1,9	99,5	3,6	162,5	5,9
	0,5	17,4	0,6	27,2	0,9	53,3	1,8	81,7	2,7	156,7	5,2	255,8	8,4
Air l	1	25,8	0,8	40,3	1,2	79,0	2,4	121,1	3,7	232,2	7,0	379,2	11,5
Nm³/h	1,5	34,5	1,0	54,0	1,5	105,8	2,9	162,1	4,5	310,8	8,6	507,5	14,1
	2	43,2	1,1	67,5	1,7	132,2	3,4	202,7	5,2	388,6	10,0	634,4	16,3
Water II	2,5	51,7	1,2	80,8	1,9	158,4	3,8	242,7	5,8	465,4	11,2	759,8	18,2
m³/h	3	60,1	1,4	93,9	2,1	184,1	4,2	282,1	6,4	540,9	12,2	883,2	20,0
	3,5	68,1	1,5	106,5	2,3	208,7	4,5	319,9	6,9	613,3	13,2	1001,4	21,6
	4	76,0	1,6	118,8	2,5	232,8	4,8	356,8	7,4	684,1	14,1	1116,9	23,1
	4,5	83,8	1,7	130,9	2,6	256,5	5,1	393,2	7,8	753,8	15,0	1230,7	24,5
	5	91,5	1,8	143,0	2,7	280,2	5,4	429,5	8,2	823,4	15,8	1344,4	25,8
	5,5	99,2	1,8	155,1	2,9	303,9	5,6	465,8	8,6	893,1	16,6	1458,2	27,0
	6	107,0	1,9	167,1	3,0	327,6	5,9	502,2	9,0	962,8	17,3	1571,9	28,3
	6,5	114,7	2,0	179,2	3,1	351,3	6,1	538,5	9,4	1032,5	18,0	1685,7	29,4
	7	122,5	2,1	191,3	3,2	375,0	6,4	574,9	9,8	1102,1	18,7	1799,5	30,5
	7,5	130,2	2,2	203,4	3,4	398,7	6,6	611,2	10,1	1171,8	19,4	1913,2	31,6
	8	137,9	2,2	215,5	3,5	422,4	6,8	647,6	10,4	1241,5	20,0	2027,0	32,6
	8,5	145,7	2,3	227,6	3,6	446,2	7,0	683,9	10,7	1311,2	20,6	2140,7	33,6
	9	153,4	2,4	239,7	3,7	469,9	7,2	720,2	11,1	1380,8	21,2	2254,5	34,6
	9,5	161,2	2,4	251,8	3,8	493,6	7,4	756,6	11,4	1450,5	21,8	2368,3	35,6
	10	168,9	2,5	263,9	3,9	517,3	7,6	792,9	11,7	1520,2	22,4	2482,0	36,5
	11	184,4	2,6	288,1	4,1	564,7	8,0	865,6	12,2	1659,5	23,4	2709,5	38,3
	12	199,9	2,7	312,3	4,3	612,1	8,3	938,3	12,8	1798,9	24,5	2937,1	40,0
	13	215,4	2,8	336,5	4,4	659,5	8,7	1011,0	13,3	1938,2	25,5	3164,6	41,6
	14	230,8	2,9	360,7	4,6	707,0	9,0	1083,7	13,8	2077,6	26,4	3392,1	43,2
	15	246,3	3,0	384,9	4,8	754,4	9,3	1156,4	14,3	2216,9	27,4	3619,6	44,7
	16	261,8	3,1	409,1	4,9	801,8	9,6	1229,0	14,7	2356,3	28,3	3847,1	46,2
	17	277,3	3,2	433,3	5,1	849,2	9,9	1301,7	15,2	2495,6	29,1	4074,6	47,6
	18	292,8	3,3	457,5	5,2	896,6	10,2	1374,4	15,6	2635,0	30,0	4302,2	49,0
	19	308,3	3,4	481,7	5,4	944,0	10,5	1447,1	16,1	2774,3	30,8	4529,7	50,3
	20	323,7	3,5	505,8	5,5	991,5	10,8	1519,8	16,5	2913,7	31,6	4757,2	51,6
	21	339,2	3,6	530,0	5,6	1038,9	11,0	1592,5	16,9	3053,0	32,4	4984,7	52,9
	22	354,7	3,7	554,2	5,8	1086,3	11,3	1665,2	17,3	3192,4	33,2	5212,2	54,1
	23	370,2	3,8	578,4	5,9	1133,7	11,5	1737,8	17,7	3331,7	33,9	5439,8	55,4
	24	385,7	3,8	602,6	6,0	1181,1	11,8	1810,5	18,1	3471,1	34,6	5667,3	56,6
	25	401,2	3,9	626,8	6,1	1228,5	12,0	1883,2	18,4	3610,4	35,4	5894,8	57,7
	26	416,6	4,0	651,0	6,3	1276,0	12,3	1955,9	18,8	3749,8	36,1	6122,3	58,9
	27	432,1	4,1	675,2	6,4	1323,4	12,5	2028,6	19,2	3889,1	36,7	6349,8	60,0
	28	447,6	4,2	699,4	6,5	1370,8	12,7	2101,3	19,5	4028,5	37,4	6577,3	61,1
	29	463,1	4,2	723,6	6,6	1418,2	13,0	2174,0	19,9	4167,8	38,1	6804,9	62,2
	30	478,6	4,3	747,8	6,7	1465,6	13,2	2246,6	20,2	4307,2	38,7	7032,4	63,2
	32	509,5	4,4	796,2	6,9	1560,5	13,6	2392,0	20,9	4585,9	40,0	7487,4	65,3
	34	540,5	4,6	844,5	7,2	1655,3	14,0	2537,4	21,5	4864,6	41,2	7942,4	67,3
	36	571,5	4,7	892,9	7,4	1750,1	14,4	2682,8	22,1	5143,3	42,4	8397,5	69,3
	38	602,4	4,8	941,3	7,6	1845,0	14,8	2828,1	22,7	5422,0	43,6	8852,5	71,2
	40	633,4	5,0	989,7	7,8	1939,8	15,2	2973,5	23,3	5700,7	44,7	9307,6	73,0
	42	664,4	5,1	1038,1	8,0	2034,6	15,6	3118,9	23,9	5979,4	45,8	9762,6	74,8
	44	695,3	5,2	1086,5	8,1	2129,5	16,0	3264,2	24,5	6258,1	46,9	10217,6	76,6
	46	726,3	5,3	1134,9	8,3	2224,3	16,3	3409,6	25,0	6536,8	48,0	10672,7	78,3
	48	757,3	5,4	1183,2	8,5	2319,1	16,7	3555,0	25,6	6815,5	49,0	11127,7	80,0
	50	788,2	5,6	1231,6	8,7	2414,0	17,0	3700,3	26,1	7094,2	50,0	11582,7	81,6
	52	819,2	5,7	1280,0	8,9	2508,8	17,4	3845,7	26,6				
	54	850,2	5,8	1328,4	9,0	2603,7	17,7	3991,1	27,1				
	56	881,1	5,9	1376,8	9,2	2698,5	18,0	4136,5	27,6				
	58	912,1	6,0	1425,2	9,3	2793,3	18,3	4281,8	28,1				
	60	943,1	6,1	1473,6	9,5	2888,2	18,6	4427,2	28,6				
	62	974,0	6,2	1521,9	9,7	2983,0	18,9	4572,6	29,0				
	64	1005,0	6,3	1570,3	9,8	3077,8	19,2	4717,9	29,5				
	66	1036,0	6,4	1618,7	10,0	3172,7	19,5	4863,3	30,0				
	68	1066,9	6,5	1667,1	10,1	3267,5	19,8	5008,7	30,4				
	70	1097,9	6,6	1715,5	10,3	3362,3	20,1	5154,1	30,9				

FLOW COEFFICIENTS CHART

Series 2400

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



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

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

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

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

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

Consequently:

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

Units:
bar(a) ≙ absolute pressure - pressure in relation to absolute vacuum (zero), e.g. p_{atm} = 1,01325 bar(a)
bar(g) ≙ overpressure - pressure above i.e. in relation to p_{atm} = 1,01325 bar(a)

CAPACITY TABLE ASME

Series 2400: Blowing-off rates at 10% above set pressure

Nominal diameter DN		8		10		15	
flow diameter		d0 = 0,2362 inch (6,0 mm)		d0 = 0,2953 inch (7,5 mm)		d0 = 0,4134 inch (10,5 mm)	
Set pressure bar psi(g)		I	II	I	II	I	II
	40	38	Due to nominal size < DN15 (1/2"), certification according to ASME Code Sec. VIII Div. 1 not possible	59	Due to nominal size < DN15 (1/2"), certification according to ASME Code Sec. VIII Div. 1 not possible	115	19
Air l	50	45		70		137	22
SCFM	60	52		81		159	24
	70	59		92		180	26
Water II	87	71		111		217	28
GPM	90	73		114		223	29
	100	80		125		245	31
	110	87		136		267	32
	120	94		147		288	33
	130	101		158		310	35
	140	108		169		331	36
	150	115		180		353	37
	160	122		191		375	39
	170	129		202		396	40
	180	136		213		418	41
	190	143		224		439	42
	200	151		235		461	43
	210	158		246		483	44
	220	165		257		504	45
	230	172		268		526	46
	240	179		279		548	47
	250	186		290		569	48
	260	193		301		591	49
	270	200		312		612	50
	280	207		323		634	51
	290	214		334		656	52
	300	221		345		677	53
	320	235		368		720	55
	340	249		390		764	56
	360	263		412		807	58
	380	278		434		850	59
	400	292		456		893	61
	420	306		478		936	63
	440	320		500		980	64
	460	334		522		1023	65
	480	348		544		1066	67
	500	362		566		1109	68
	550	398		621		1217	72
	600	433		676		1325	75
	650	468		731		1434	78
	700	503		787		1542	81
	725	521		814		1596	82
	750	539		842		1650	84
	800	574		897		1758	86
	850	609		952		1866	89
	900	644		1007		1974	92
	950	680		1062		2082	94
	1015	726		1134		2222	97

CAPACITY TABLE ASME

CONTINUATION -Series 2400: Blowing-off rates at 10% above set pressure

Nominal diameter DN		20		25		32	
°flow diameter		d0 = 0,5118 inch (13,0 mm)		d0 = 0,7087 inch (18,0 mm)		d0 = 0,9055 inch (23,0 mm)	
Set pressure bar psi(g)		I	II	I	II	I	II
	40	177	30	339	57	553	93
Air l	50	210	33	402	63	657	103
SCFM	60	243	36	466	69	761	113
	70	276	39	529	75	864	122
Water II	87	332	44	637	84	1041	137
GPM	90	342	44	656	85	1072	139
	100	376	47	720	90	1175	146
	110	409	49	783	94	1279	153
	120	442	51	847	98	1383	160
	130	475	53	910	102	1486	167
	140	508	55	974	106	1590	173
	150	541	57	1037	110	1694	179
	160	574	59	1101	113	1798	185
	170	607	61	1164	117	1901	191
	180	641	63	1228	120	2005	196
	190	674	64	1291	124	2109	202
	200	707	66	1355	127	2212	207
	210	740	68	1418	130	2316	212
	220	773	69	1482	133	2420	217
	230	806	71	1546	136	2523	222
	240	839	72	1609	139	2627	227
	250	872	74	1673	142	2731	231
	260	906	75	1736	145	2834	236
	270	939	77	1800	147	2938	240
	280	972	78	1863	150	3042	245
	290	1005	80	1927	153	3145	249
	300	1038	81	1990	155	3249	253
	320	1104	84	2117	160	3457	262
	340	1171	86	2244	165	3664	270
	360	1237	89	2371	170	3871	278
	380	1303	91	2498	175	4079	285
	400	1369	94	2625	179	4286	293
	420	1436	96	2752	184	4493	300
	440	1502	98	2879	188	4701	307
	460	1568	100	3006	192	4908	314
	480	1634	102	3133	196	5116	321
	500	1701	105	3260	200	5323	327
	550	1866	110	3578	210	5841	343
	600	2032	115	3895	220	6360	358
	650	2197	119	4213	229	6878	373
	700	2363	124	4530	237	7397	387
	725	2446	126	4689	241	7656	394
	750	2529	128				
	800	2694	132				
	850	2860	136				
	900	3026	140				
	950	3191	144				
	1015	3406	149				

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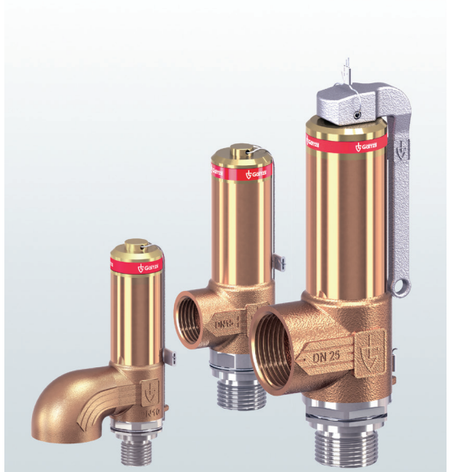
→ Series 2480

2480

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



SUITABLE FOR

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

EXAMPLES OF USE

Full-lift safety valve for the protection of:
- Containers and pipelines for the storage and transport of cryogenic liquified gases such as LIN, LOX, LAr, CO_2, LNG.

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

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

MATERIAL

SPECIFICATION

1/4“ – 1“

– 200°C to + 200°C

0,2 – 70 bar

APPROVALS

TÜV-Type test approval 2091	**D/G, F**
EC type examination	**S/G, L**
ASME	**G, L**
TSG ZF001-2006	**D/G (S/G), F (L)**
KGS	**G**
TR ZU 032/2013 - TR ZU 010/2011	**D/G (S/G), F (L)**

Requirements

AD 2000 Data sheet A2	TPED 2010/35/EU, ADR/RID 2015
DIN EN ISO 4126-1	FDA 21 CFR 177.1550
DGR 2014/68/EU	FDA 21 CFR 178.3570
DIN EN 13648-1	NSF-H1
ASME-Code Sec. VIII Div. 1	KGS AA 319

Classification society

Bureau Veritas	BV
American Bureau of Shipping	ABS

MATERIALS

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

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Series 2480 ■ VALVE VERSION

t	gastight version of spring housing	for neutral and non-neutral media. The environment is protected from being affected by the medium.

■ MEDIUM

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

■ TYPE OF LIFTING MECHANISM

L	with lifting lever
0	without lifting device

■ AVAILABLE NOMINAL DIAMETERS AND CONNECTION SIZES

Nominal diameter DN		**8**			**10**			**15**		
Inlet		1/4" (8)	3/8" (10)	1/2" (15)	3/8" (10)	1/2" (15)	3/4" (20)	1/2" (15)	3/4" (20)	1" (25)
Outlet	3/8" (10)	■	■	■						
	1/2" (15)	■	■	■	■	■				
	1" (25)					■	■	■	■	■

■ TYPE OF CONNECTION INLET / OUTLET THREADED CONNECTIONS

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

■ SEALS

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

■ OPTIONS

Locking sleeve unit	Chapter Accessories
Inlet and seat made of brass CW 617 N	Order code: S27

Special versions on request.

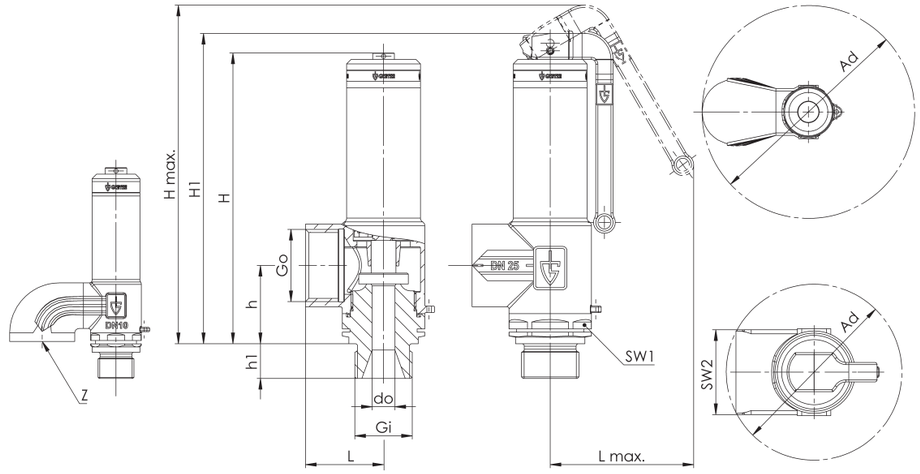
■ NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

Series 2480: Connection, installation dimensions, ranges of adjustment

Nominal diameter	**DN**	**8**						**10**						**15**		
Connection DIN EN ISO 228	**Gi**	1/4" (8)	3/8" (10)	1/2" (15)	1/4" (8)	3/8" (10)	1/2" (15)	3/8" (10)	1/2" (15)	1/2" (15)	3/4" (20)	1/2" (15)	3/4" (20)	1" (25)
Outlet DIN EN ISO 228	**Go**	3/8" (10)	3/8" (10)	3/8" (10)	1/2" (15)	1/2" (15)	1/2" (15)	1/2" (15)	1/2" (15)	1" (25)	1" (25)	1" (25)	1" (25)	1" (25)
Installation dimensions in mm	**h1**	12		14	12		14	12	14	14	16	14	16	18
	h	22			26			26		36			36	
	L	21			26			26		36			36	
	Lmax	43			47			47		66			66	
	H	85			99			99		134			134	
	H1	91			107			107		144			144	
	Hmax	99			116			116		156			156	
	SW1	22			27			27		34			34	
	SW2	22			26			26		39			39	
	Ad	47 / 98[2]			58			58		69			69	
	α_w / K_{dr} (F)	0,52			0,52			0,52		0,49			0,52	
	α_w / K_{dr} (D/G)[1]	0,73			0,73			0,73		0,73			0,73	
	d_o	6,0			6,0			7,5		7,5			10,5	
Weight	**kg**	0,2			0,3			0,3		0,7			0,7	
Range of adjustment	**bar**	0,2 - 70			0,2 - 70			0,2 - 70		0,2 - 50			0,2 - 50	
Outlet with insect protection screen	**Z**	- / Yes			-			-		-			-	

[1] Flow coefficients for blow-off pressures < 3,0 bar: Please refer to the Flow Coefficients Chart.
[2] Daimeter for body with insect protection screen

■ MAIN DIMENSIONS, INSTALLATION DIMENSIONS



■ INDIVIDUAL SELECTION / VALVE CONFIGURATION

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

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 / 488 94 88
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

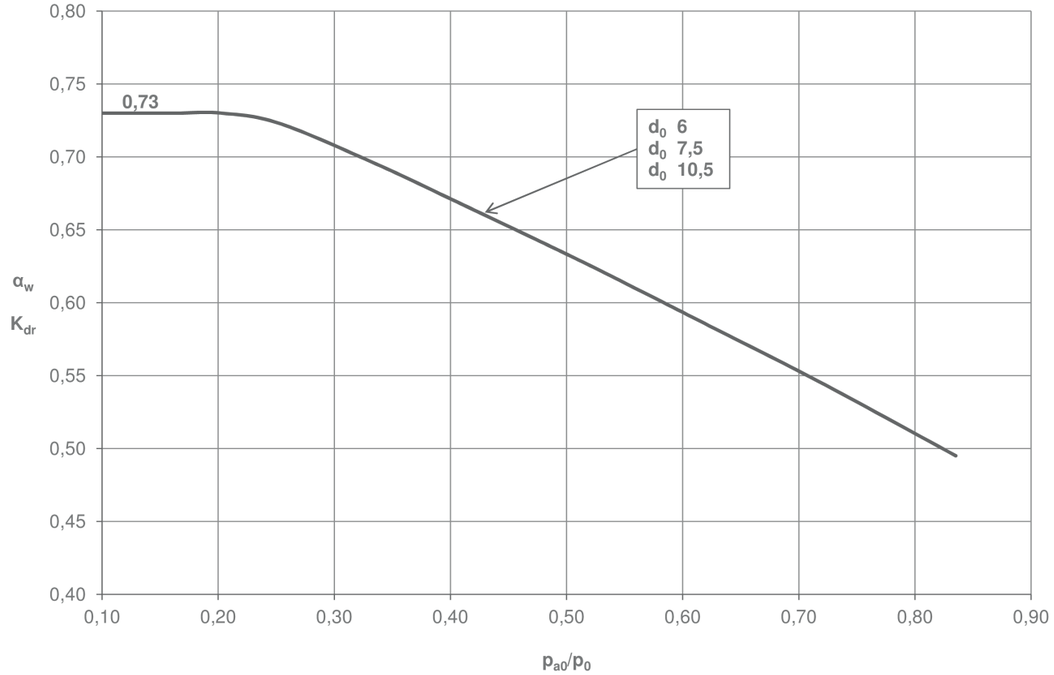
Series 2480: Blowing-off rates at 10% above set pressure

Nominal diameter DN		8		10		15	
flow diameter		d0 = 6 mm		d0 = 7,5 mm		d0 = 10,5 mm	
Set pressure bar		I	II	I	II	I	II
	0,2	11,1	0,4	17,3	0,6	33,9	1,2
	0,5	17,4	0,6	27,2	0,9	53,3	1,8
	1	25,8	0,8	40,3	1,2	79,0	2,4
Air l	1,5	34,5	1,0	54,0	1,5	105,8	2,9
Nm³/h	2	43,2	1,1	67,5	1,7	132,2	3,4
	2,5	51,7	1,2	80,8	1,9	158,4	3,8
Water II	3	60,1	1,4	93,9	2,1	184,1	4,2
m³/h	3,5	68,1	1,5	106,5	2,3	208,7	4,5
	4	76,0	1,6	118,8	2,5	232,8	4,8
	4,5	83,8	1,7	130,9	2,6	256,5	5,1
	5	91,5	1,8	143,0	2,7	280,2	5,4
	5,5	99,2	1,8	155,1	2,9	303,9	5,6
	6	107,0	1,9	167,1	3,0	327,6	5,9
	6,5	114,7	2,0	179,2	3,1	351,3	6,1
	7	122,5	2,1	191,3	3,2	375,0	6,4
	7,5	130,2	2,2	203,4	3,4	398,7	6,6
	8	137,9	2,2	215,5	3,5	422,4	6,8
	8,5	145,7	2,3	227,6	3,6	446,2	7,0
	9	153,4	2,4	239,7	3,7	469,9	7,2
	9,5	161,2	2,4	251,8	3,8	493,6	7,4
	10	168,9	2,5	263,9	3,9	517,3	7,6
	11	184,4	2,6	288,1	4,1	564,7	8,0
	12	199,9	2,7	312,3	4,3	612,1	8,3
	13	215,4	2,8	336,5	4,4	659,5	8,7
	14	230,8	2,9	360,7	4,6	707,0	9,0
	15	246,3	3,0	384,9	4,8	754,4	9,3
	16	261,8	3,1	409,1	4,9	801,8	9,6
	17	277,3	3,2	433,3	5,1	849,2	9,9
	18	292,8	3,3	457,5	5,2	896,6	10,2
	19	308,3	3,4	481,7	5,4	944,0	10,5
	20	323,7	3,5	505,8	5,5	991,5	10,8
	21	339,2	3,6	530,0	5,6	1038,9	11,0
	22	354,7	3,7	554,2	5,8	1086,3	11,3
	23	370,2	3,8	578,4	5,9	1133,7	11,5
	24	385,7	3,8	602,6	6,0	1181,1	11,8
	25	401,2	3,9	626,8	6,1	1228,5	12,0
	26	416,6	4,0	651,0	6,3	1276,0	12,3
	27	432,1	4,1	675,2	6,4	1323,4	12,5
	28	447,6	4,2	699,4	6,5	1370,8	12,7
	29	463,1	4,2	723,6	6,6	1418,2	13,0
	30	478,6	4,3	747,8	6,7	1465,6	13,2
	32	509,5	4,4	796,2	6,9	1560,5	13,6
	34	540,5	4,6	844,5	7,2	1655,3	14,0
	36	571,5	4,7	892,9	7,4	1750,1	14,4
	38	602,4	4,8	941,3	7,6	1845,0	14,8
	40	633,4	5,0	989,7	7,8	1939,8	15,2
	42	664,4	5,1	1038,1	8,0	2034,6	15,6
	44	695,3	5,2	1086,5	8,1	2129,5	16,0
	46	726,3	5,3	1134,9	8,3	2224,3	16,3
	48	757,3	5,4	1183,2	8,5	2319,1	16,7
	50	788,2	5,6	1231,6	8,7	2414,0	17,0
	52	819,2	5,7	1280,0	8,9		
	54	850,2	5,8	1328,4	9,0		
	56	881,1	5,9	1376,8	9,2		
	58	912,1	6,0	1425,2	9,3		
	60	943,1	6,1	1473,6	9,5		
	62	974,0	6,2	1521,9	9,7		
	64	1005,0	6,3	1570,3	9,8		
	66	1036,0	6,4	1618,7	10,0		
	68	1066,9	6,5	1667,1	10,1		
	70	1097,9	6,6	1715,5	10,3		

FLOW COEFFICIENTS CHART

Series 2480

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



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

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

Set-pressure	Blow-off pressure
p_{set} bar(g)	p_0 bar(a)
≤ 1	p_{set} + p_{atm} + 0,1 bar
> 1	p_{set} x 1,1 + p_{atm}

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

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

Consequently:

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

Units:
bar(a) ≙ absolute pressure - pressure in relation to absolute vacuum (zero), e.g. p_{atm} = 1,01325 bar(a)
bar(g) ≙ overpressure - pressure above i.e. in relation to p_{atm} = 1,01325 bar(a)

CAPACITY TABLE ASME

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

Nominal diameter DN		8		10		15	
flow diameter		d0 = 0,2362 inch (6,0 mm)		d0 = 0,2953 inch (7,5 mm)		d0 = 0,4134 inch (10,5 mm)	
Set pressure bar psi(g)		I	II	I	II	I	II
	40	38	Due to small nominal diameter, certification according to ASME Code Sec. VIII Div. 1 not possible	59	Due to small nominal diameter, certification according to ASME Code Sec. VIII Div. 1 not possible	115	19
Air l	50	45		70		137	22
SCFM	60	52		81		159	24
	70	59		92		180	26
Water II	87	71		111		217	28
GPM	90	73		114		223	29
	100	80		125		245	31
	110	87		136		267	32
	120	94		147		288	33
	130	101		158		310	35
	140	108		169		331	36
	150	115		180		353	37
	160	122		191		375	39
	170	129		202		396	40
	180	136		213		418	41
	190	143		224		439	42
	200	151		235		461	43
	210	158		246		483	44
	220	165		257		504	45
	230	172		268		526	46
	240	179		279		548	47
	250	186		290		569	48
	260	193		301		591	49
	270	200		312		612	50
	280	207		323		634	51
	290	214		334		656	52
	300	221		345		677	53
	320	235		368		720	55
	340	249		390		764	56
	360	263		412		807	58
	380	278		434		850	59
	400	292		456		893	61
	420	306		478		936	63
	440	320		500		980	64
	460	334		522		1023	65
	480	348		544		1066	67
	500	362		566		1109	68
	550	398		621		1217	72
	600	433		676		1325	75
	650	468		731		1434	78
	700	503		787		1542	81
	725	521		814		1596	82
	750	539		842		1650	84
	800	574		897		1758	86
	850	609		952		1866	89
	900	644		1007		1974	92
	950	680		1062		2082	94
	1015	726		1134		2222	97

→ Series 2700

2700

Diverter ball valve made of stainless steel with threaded connections

SUITABLE FOR

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

EXAMPLES OF USE

Diverter ball valve for the installation of for example two safety valves in combination with bursting discs for the protection of containers designed for the storage of cryogenic gases. The requirements of the PED relating to redundant or diverse safety devices are fulfilled by this fitting in combination with safety valves of the 2400 series. On each side two additional connections for bursting discs are available.

In case the safety valves need to be maintained or the bursting discs replaced, the side requiring maintenance can be shut off.

- For the storage of cryogenic liquified gases, such as LIN, LOX, LAr, CO_2, LNG.
- N_2 in pharmaceutical / foodstuffs applications
- O_2 for medical supply equipment
- CO_2 for foodstuffs/ industrial applications
- LAr for welding
- Cooling plants

The ball-valves are oil- and grease-free as standard.

APPROVALS

TR ZU 032/2013 - TR ZU 010/2011

Requirements

AD 2000 Data sheet A2
PED 2014/68/EU

MATERIAL

SPECIFICATION

3/4“ – 1 1/4“ | – 200°C to + 120°C | PN 63

POSSIBLE MATERIAL COMBINATIONS

Material Combination	Body	Internal parts	Primary Seal	Secondary Seal
M4541	1.4408	1.4404	PTFE mod.	PTFE

further versions on request

www.goetze-armaturen.de | info@goetze-armaturen.de | Phone: +49 (0) 7141 / 488 94 60

B01	L-Bore	
B02	T-Bore	

■ MEDIUM

GF	gaseous and liquid	Cryogenic liquified gases, vapours and liquids

■ MEANS OF OPERATION

A01	Cranked handle made of stainless steel

■ AVAILABLE NOMINAL DIAMETERS AND CONNECTION SIZES

Nominal diameter DN		**15**	**20**	**25**
Inlet		3/4“ (20)	1“ (25)	1 1/4“ (32)
Outlet	1/2“ (15)	■		
	3/4“ (20)		■	
	1“ (25)			■

■ 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
NPT-f / NPT-f	On request	Female thread NPT-f / Female thread NPT-f	ANSI 1.20.1 / ANSI 1.20.1

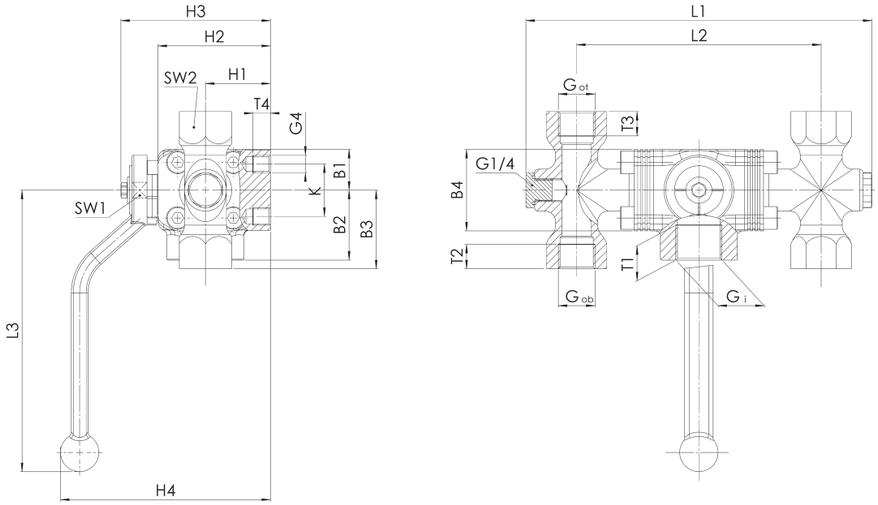
■ OPTIONS

Special versions on request.

■ NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

Series 2700: Connection, installation dimensions				
Nominal diameter	**DN**	**15**	**20**	**25**
Connection DIN EN ISO 228	**Gi**	3/4" (20)	1" (25)	1 1/4" (32)
Outlet DIN EN ISO 228	**Got / Gob**	1/2" (15)	3/4" (20)	1" (25)
Installation dimensions in mm	**T1**	20	20	21
	T2/T3	14	16	18
	H1	37	41	46
	H2	64	72	82
	H3	86	94	105
	H4	120	128	142
	B1	23	23	33
	B2	40	50	50
	B3	45	52	55
	B4	47	62	66
	L1	198	231	265
	L2	140	165	195
	L3	161	161	184
	SW1	9	9	14
	SW2	30	36	41
	K	30	30	30
	G4	M10	M10	M10
	T4	10	10	10
Test port	**G1/4**	1/4"	1/4"	1/4"
Weight	**kg**	2,3	3,8	5,0
Kvs-value	**m3/h**	6,9	12,2	23,6

■ MAIN DIMENSIONS, INSTALLATION DIMENSIONS



■ INDIVIDUAL SELECTION / VALVE CONFIGURATION

Series	**Ball Version**	**Medium**	**Operation**	**Nominal diameter DN**	**Connection type**		**Connection size**		**Material Combination**	**Options**	**Quantity**
					Inlet	Outlet	Inlet	Outlet			
2700	*B02*	**GF**	**A01**	*15*	*f*	*f*	*20*	*15*	**M4541**		*2*
2700		**GF**	**A01**						**M4541**		
2700		**GF**	**A01**						**M4541**		
2700		**GF**	**A01**						**M4541**		

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 / 488 94 88
Please do not forget to add your personal data so that our sales team can contact you.

Name

First Name

Company

Telephone

E-Mail

→ Series 2780

2780

Diverter ball valve made of gunmetal with threaded connections

SUITABLE FOR

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

EXAMPLES OF USE

Diverter ball valve for the installation of for example two safety valves in combination with bursting discs for the protection of containers designed for the storage of cryogenic gases. The requirements of the PED relating to redundant or diverse safety devices are fulfilled by this fitting in combination with safety valves of the 2400 / 24800 series. On each side two additional connections for bursting discs are available.

In case the safety valves need to be maintained or the bursting discs replaced, the side requiring maintenance can be shut off.

- For the storage of cryogenic liquified gases, such as LIN, LOX, LAr, CO_2, LNG.
- N_2 in pharmaceutical / foodstuffs applications
- O_2 for medical supply equipment
- CO_2 for foodstuffs/ industrial applications
- LAr for welding
- Cooling plants

The ball-valves are oil- and grease-free as standard.

MATERIAL

SPECIFICATION

3/4“ – 1 1/4“ | – 200°C to + 120°C | PN 63

APPROVALS

TR ZU 032/2013 - TR ZU 010/2011

Requirements

AD 2000 Data sheet A2
PED 2014/68/EU

POSSIBLE MATERIAL COMBINATIONS

Material Combination	Body	Internal parts	Primary Seal	Secondary Seal
M7541	CC499K	1.4404	PTFE mod.	PTFE

further versions on request

Series 2780 ■ BALL VERSION

B01	L-Bore
B02	T-Bore

■ MEDIUM

GF	gaseous and liquid	Cryogenic liquified gases, vapours and liquids

■ MEANS OF OPERATION

A01	Cranked handle made of gunmetal

■ AVAILABLE NOMINAL DIAMETERS AND CONNECTION SIZES

Nominal diameter DN		**15**	**20**	**25**
Inlet		3/4“ (20)	1“ (25)	1 1/4“ (32)
Outlet	1/2“ (15)	■		
	3/4“ (20)		■	
	1“ (25)			■

■ 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
NPT-f / NPT-f	On request	Female thread NPT-f / Female thread NPT-f	ANSI 1.20.1 / ANSI 1.20.1

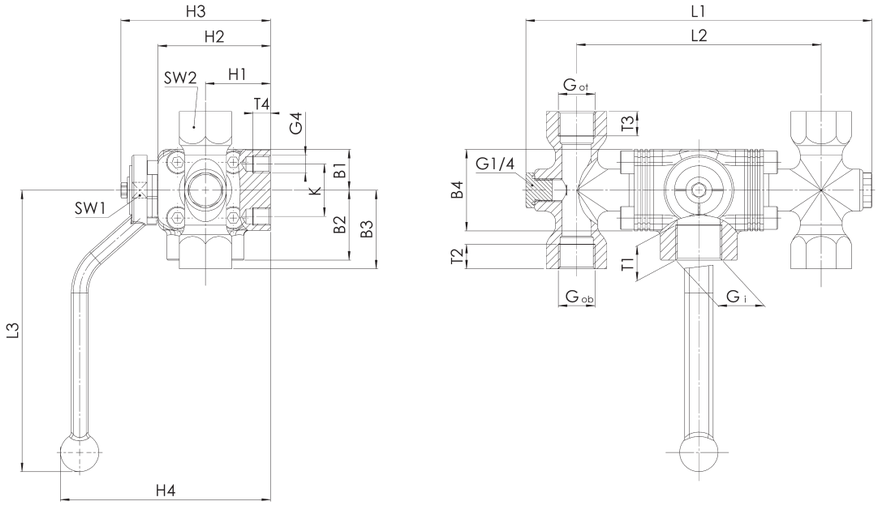
■ OPTIONS

Special versions on request.

■ NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

Series 2780: Connection, installation dimensions				
Nominal diameter	**DN**	**15**	**20**	**25**
Connection DIN EN ISO 228	**Gi**	3/4" (20)	1" (25)	1 1/4" (32)
Outlet DIN EN ISO 228	**Got / Gob**	1/2" (15)	3/4" (20)	1" (25)
Installation dimensions in mm	**T1**	20	20	21
	T2/T3	14	16	18
	H1	37	41	46
	H2	64	72	82
	H3	86	94	105
	H4	120	128	142
	B1	23	23	33
	B2	40	50	50
	B3	45	52	55
	B4	47	62	66
	L1	198	231	265
	L2	140	165	195
	L3	161	161	184
	SW1	9	9	14
	SW2	30	36	41
	K	30	30	30
	G4	M10	M10	M10
	T4	10	10	10
Test port	**G1/4**	1/4"	1/4"	1/4"
Weight	**kg**	2,7	4,1	5,5
Kvs-value	**m3/h**	6,9	12,2	23,6

■ MAIN DIMENSIONS, INSTALLATION DIMENSIONS



■ INDIVIDUAL SELECTION / VALVE CONFIGURATION

Series	**Ball Version**	**Medium**	**Operation**	**Nominal diameter DN**	**Connection type**		**Connection size**		**Material Combination**	**Options**	**Quantity**
					Inlet	Outlet	Inlet	Outlet			
2780	*B02*	**GF**	**A01**	*15*	*f*	*f*	*20*	*15*	**M7541**		*2*
2780		**GF**	**A01**						**M7541**		
2780		**GF**	**A01**						**M7541**		
2780		**GF**	**A01**						**M7541**		

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Please do not forget to add your personal data so that our sales team can contact you.

Name

First Name

Company

Telephone

E-Mail

ARMATUREN GOETZE

→ Overview

PRESSURE REDUCING VALVES

Series	Materials	Temperatures	Pressures	Media	Threaded connection	Flange connection	Page
481		–20 °C – +120 °C	Inlet pressure up to 40 bar Outlet pressure from 0.5 to 15		1/2" – 2"		9.1
681		–20 °C – +120 °C	Inlet pressure up to 40 bar Outlet pressure from 0.5 to 15		1/2" – 2"		9.2
482		–20 °C – +120 °C	Inlet pressure up to 40 bar Outlet pressure from 0.5 to 15			DN 15 – DN 100	9.3
682		–20 °C – +120 °C	Inlet pressure up to 40 bar Outlet pressure from 0.5 to 15			DN 15 – DN 100	9.4
683		–10 °C – +95 °C	Inlet pressure up to 50 bar Outlet pressure from 1.5 to 10		3/8" – 1 1/4"		9.5
484		–40 °C – +120 °C	Inlet pressure up to 60 bar Outlet pressure from 0.5 to 50		1/4" – 2"		9.6
684		–40 °C – +120 °C	Inlet pressure up to 60 bar Outlet pressure from 0.5 to 50		1/4" – 2"		9.7

→ Series 481

481

Pressure reducing valves made of stainless steel with threaded connections

SUITABLE FOR

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

EXAMPLES OF USE

For the protection of:
- domestic water supply systems
- commercial and industrial plants

against too high supply pressure.
Pressure reducers are used, if within a piping system despite of varying pressures on the inlet side a certain pressure must not be exceeded on the outlet side.

- potable water supply according to DIN 1988
- process water supply in industrial- and building technology
- snow-making equipment
- fire-fighting equipment and sprinkler systems
- shipbuilding industry and offshore plants
- secondary areas in the food-, pharmaceutical- and cosmetics-industries.

MATERIAL

SPECIFICATION

1/2“ – 2“

–20°C to +120°C

Inlet pressure: up to 40 bar
Outlet pressure: 0,5 to 15 bar
depending on version

APPROVALS

DIN-DVGW type examination (up to 80°C)

Type approval ACS

Type approval WRAS (up to 85°C)

TR ZU 032/2013 -TR ZU 010/2011

Requirements

DIN DVGW guidelines	DIN EN ISO 3822
DIN EN 1567	DGR 2014/68/EU
DIN 1988	

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	1.4408	CF8M
Outlet body	Stainless steel	1.4408	CF8M
Internal parts	Stainless steel	1.4408	CF8M
	Stainless steel	1.4404	316 L
Spring	Spring steel with anti-rust protection	1.1200	ASTM A228
Strainer	Stainless steel	1.4404	316 L

Series 481 ■ VALVE VERSION

m	with diaphragm	High-quality, heat-resistant moulded elastomere, fabric-reinforced diaphragm. Pressure adjustment by means of non-rising spindle. Valve insert with balanced single seat valve completely made of stainless steel.

Complete valve insert SP/HP (order code: 481 Insert-DN..-seal) available as replacement part can be exchanged without removing the valve.

Complete valve insert LP (order code: 481 LP Insert-DN..-seal) available as replacement part can be exchanged without removing the valve.

Built-in dirt trap made of stainless steel.

Mesh size: DN 15 to DN 32 0,60 mm
DN 40 and DN 50 0,75 mm

■ MEDIUM

GF	gaseous and liquid	for water and distilled water, neutral and non-sticking liquids, compressed air and neutral gases; optionally with FPM elastomere seals for non-neutral media i.e. oils, fuels, oil-laden compressed air etc. Not suitable with steam.

■ TYPE OF LIFTING MECHANISM

O	without lifting device

■ OUTLET PRESSURE RANGES

SP	Standard version	Inlet pressure: up to 40 bar	Outlet pressure: from 1 to 8 bar
HP	High-pressure version	Inlet pressure: up to 40 bar	Outlet pressure: from 5 to 15 bar
LP	Low-pressure version	Inlet pressure: up to 25 bar	Outlet pressure: from 0,5 to 2 bar

Fixed setting at a required outlet pressure against surcharge.

■ 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

BSP-Tm / BSP-Tm	Standard threaded connections	Male thread BSP-T / Male thread BSP-T	DIN EN 10226, ISO 7-1 / DIN EN 10226, ISO 7-1
f / f	Version with female thread available in sizes DN15, DN20 and DN25	Female thread BSP-P / Female thread BSP-P	DIN EN ISO 228-1 / DIN EN ISO 228-1

■ SEALS

EPDM	Ethylene propylene diene	Elastomere moulded diaphragm and seals approvals according to drinking water directive	–20°C to +120°C (up to 8 bar outlet pressure) –20°C to +95°C (from 8 bar outlet pressure)
Against surcharge			
FKM	Fluorocarbon	Elastomere moulded diaphragm and seals	–10°C to +120°C (up to 8 bar outlet pressure) –10°C to +95°C (from 8 bar outlet pressure)

■ OPTIONS

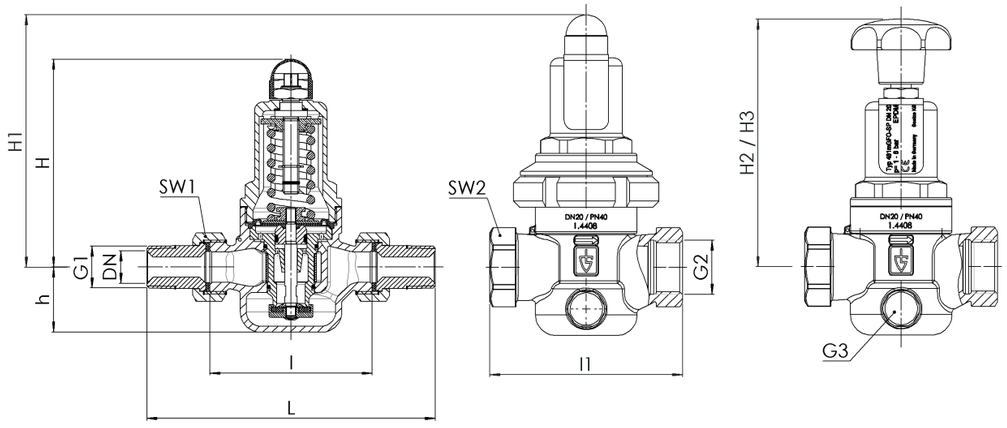
Against surcharge	
Pressure gauges 36, 39 or 40	Chapter Accessories
Pressure gauges 41, 42 or 43 made of stainless steel	Chapter Accessories
Hand wheel (plastic) for tool-free setting of outlet pressure for DN15 to DN50 outlet pressure ranges LP / SP	Order code: **S15**
Preliminary setup for protection against manipulation of the preset pressure (seal)	Order code: **S71**

■ NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

Series 481: Connection, installation dimensions, ranges of adjustment							
Connection	**DN**	**15**	**20**	**25**	**32**	**40**	**50**
Inlet DIN EN 10226	**G1**	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"
Outlet DIN EN 10226	**G2**	1/2"	3/4"	1"			
Inlet pressure SP, HP up to	**bar**	40	40	40	40	40	40
Inlet pressure LP up to	**bar**	25	25	25	25	25	25
Outlet pressure	**bar**	0,5 - 2	0,5 - 2	0,5 - 2	0,5 - 2	0,5 - 2	0,5 - 2
		1 - 8	1 - 8	1 - 8	1 - 8	1 - 8	1 - 8
		5 - 15	5 - 15	5 - 15	5 - 15	5 - 15	5 - 15
Installation dimensions in mm	**L**	142	158	180	193	226	252
	l	80	90	100	105	130	140
	l1	85	95	105			
	H (H1)	102 (128[1])	102 (128[1])	130 (150[1])	130 (150[1])	165 (185[1])	165 (185[1])
	H2 (H3)	124 (150[2])	124(150[2])	161 (181[2])	161 (181[2])	198 (218[2])	198 (218[2])
	h	33	33	45	45	70	70
	SW1	30	37	46	52	65	75
	SW2	28	35	43	48	57	68
Pressure gauge connection Outlet pressure	**G3**	1/4“ axial	1/4“ axial	1/4“ axial	1/4“ axial	1/4“ axial	1/4“ axial
Weight	**kg**	1,2 (1,5[1])	1,3 (1,6[1])	2,3 (2,8[1])	2,5 (3,0[1])	5,2 (5,9[1])	5,7 (6,4[1])
Coefficient of flow K_{vs}[3]	**m³/h**	3	3,5	6,7	7,6	12,5	15

[1]for type 481mGFO-LP
[2]for type 481mGFO-LP S15
[3]The K_{vs} value was determined according to DIN EN 60534-2-3. Instructions on how to determine size and capacity are to be found under section 2.

■ MAIN DIMENSIONS, INSTALLATION DIMENSIONS



■ INDIVIDUAL SELECTION / VALVE CONFIGURATION

Series	**Valve version**	**Medium**	**Lifting device**	**Outlet pressure**	**Nominal diameter DN**	**Connection type**		**Connection size**		**Seal**	**Options**	**Optional: fixed setting**	**Quantity**
						Inlet	Outlet	Inlet	Outlet				
481	**m**	**GF**	**O**	*SP*	*25*	*BSP-T m*	*BSP-T m*	*25*	*25*	*EPDM*	*Pressure Gauge 41*		*5*
481	**m**	**GF**	**O**	*SP*	*15*	*f*	*f*	*15*	*15*	*EPDM*			*4*
481	**m**	**GF**	**O**										
481	**m**	**GF**	**O**										

In this table you can configure a valve according to your individual requirements (similar to the *example* shown, which sh*ould 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 / 488 94 88
Please do not forget to add your personal data so that our sales team can contact you.

Name

First Name

Company

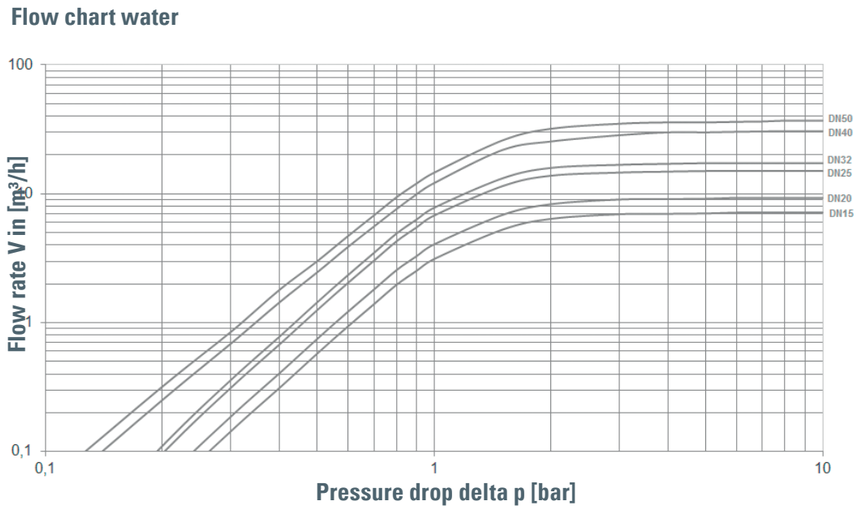
Telephone

E-Mail

CAPACITY CHARTS

Series 481:

Dimensioning by pressure loss on the outlet pressure side



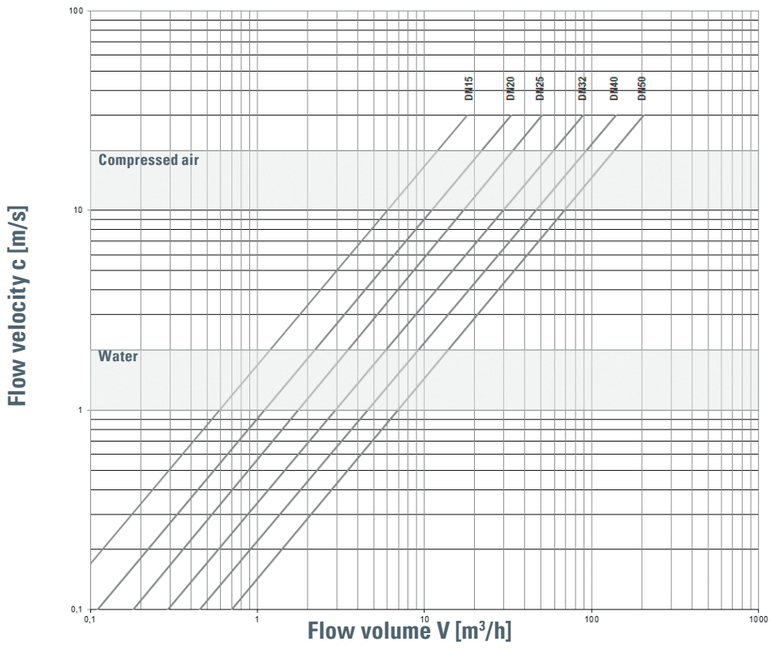
Dimensioning by flow velocity

For Liquids:
With help of the chart you can determine the nominal diameter (DN) for a given flow volume V (m³/h). According to DVGW-guidelines (DIN 1988) a flow velocity of 2 m/s in domestic water supply systems should not be exceeded.

For compressed air and other gaseous media:
The usual flow velocity for compressed air is 10 - 20 m/s. For gaseous media the flow volume V should always be shown in actual cubic meters/hour. If the flow volume is given in standard cubic meters, these should be converted into actual cubic meters before using the diagram.

$$V\,(m^3/h) = \frac{V_{Norm}\,(Nm^3/h)}{p_{absolut}\,(bar)} = \frac{V_{Norm}}{p_0+1}$$

Actual cubic meters are based on the prevailing pressure of the medium on the outlet side of the pressure reducer.



→ Series 681

SUITABLE FOR

Liquids	neutral and non-neutral	
Air, gases and vapours	neutral and non-neutral	
Warm water		85°C

EXAMPLES OF USE

For the protection of:
- domestic water supply systems
- commercial and industrial plants

against too high supply pressure.
Pressure reducers are used, if within a piping system despite of varying pressures on the inlet side a certain pressure must not be exceeded on the outlet side.

- potable water supply according to DIN 1988
- process water supply in industrial-and building technology
- snow-making equipment
- fire-fighting equipment and sprinkler systems
- shipbuilding industry and offshore plants

MATERIAL

SPECIFICATION

1/2“ – 2“

–20°C to + 120°C

Inlet pressure:
up to 40 bar
Outlet pressure:
0,5 to 15 bar
depending on version

APPROVALS

DIN-DVGW type examination (up to 80°C)

Type approval ACS

Type approval WRAS (up to 85°C)

TR ZU 032/2013 - TR ZU 010/2011

Requirements

DIN DVGW guidelines	DIN EN ISO 3822
DIN EN 1567	DGR 2014/68/EU
DIN 1988	

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	Gunmetal	CC499K	CC499K
Outlet body	Gunmetal	CC499K	CC499K
Internal parts	Gunmetal	CC499K	CC499K
	Stainless Steel	1.4404	316 L
Spring	Spring steel with anti-rust protection	1.1200	ASTM A228
Strainer	Stainless Steel	1.4404	316 L

Series 681 ■ VALVE VERSION

m	with diaphragm	High-quality, heat-resistant moulded elastomere, fabric-reinforced diaphragm. Adjustment by means of non-rising spindle. Insert with balanced single seat valve made of gunmetal.

Complete valve insert SP/HP (order code: 681 Insert-DN..-seal) available as replacement part can be exchanged without removing the valve.

Complete valve insert LP (order code: 681 LP Insert-DN..-seal) available as replacement part can be exchanged without removing the valve.

Built-in dirt trap made of stainless steel.

Mesh size:	DN 15 to DN 32	0,60 mm
	DN 40 and DN 50	0,75 mm

■ MEDIUM

GF	gaseous and liquid	for water, neutral and non-sticking liquids, compressed air and neutral gases; optionally with FPM elastomere seals for non-neutral media i.e. oils, fuels, oil-laden compressed air, etc. Not suitable with steam.

■ TYPE OF LIFTING MECHANISM

0	without lifting device

■ OUTLET PRESSURE RANGES

SP	Standard version	Inlet pressure: up to 40 bar	Outlet pressure: from 1 to 8 bar
HP	High-pressure version	Inlet pressure: up to 40 bar	Outlet pressure: from 5 to 15 bar
LP	Low-pressure version	Inlet pressure: up to 25 bar	Outlet pressure: from 0,5 to 2 bar

Fixed setting at a required outlet pressure against surcharge.

■ 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

BSP-Tm / BSP-Tm	Standard threaded connections	Male thread BSP-T / Male thread BSP-T	DIN EN 10226, ISO 7-1 / DIN EN 10226, ISO 7-1
f / f	Version with female thread available in sizes DN15, DN20 and DN25	Female thread BSP-P / Female thread BSP-P	DIN EN ISO 228-1 / DIN EN ISO 228-1

■ SEALS

EPDM	Ethylene propylene diene	Elastomere moulded diaphragm and seals approvals according to drinking water directive	–20°C to +120°C (up to 8 bar outlet pressure) –20°C to +95°C (from 8 bar outlet pressure)
Against surcharge			
FKM	Fluorocarbon	Elastomere moulded diaphragm and seals	–10°C to +120°C (up to 8 bar outlet pressure) –10°C to +95°C (from 8 bar outlet pressure)

■ OPTIONS

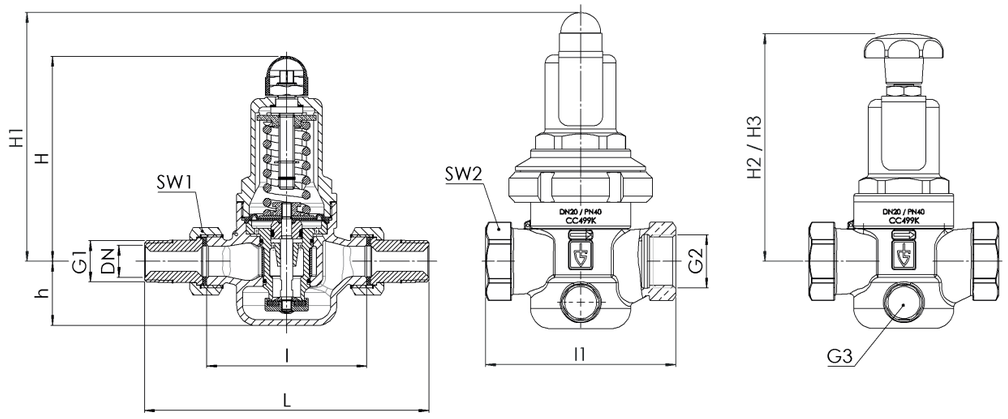
Against surcharge	
Pressure gauges 36, 39 or 40	Chapter Accessories
Valve insert SP/HP completely made of stainless steel	Order code: 481 Insert-DN…seal
Valve insert LP completely made of stainless steel	Order code: 481 LP Insert-DN...seal
Hand wheel (plastic) for tool-free setting of outlet pressure for DN15 to DN50 outlet pressure ranges LP / SP	Order code: **S15**
Preliminary setup for protection against manipulation of the preset pressure (seal)	Order code: **S71**

■ NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

Series 681: Connection, installation dimensions, ranges of adjustment							
Connection	**DN**	**15**	**20**	**25**	**32**	**40**	**50**
Inlet DIN EN 10226	**G1**	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"
Outlet DIN EN 10226	**G2**	1/2"	3/4"	1"			
Inlet pressure SP, HP up to	**bar**	40	40	40	40	40	40
Inlet pressure LP up to	**bar**	25	25	25	25	25	25
Outlet pressure	**bar**	0,5 - 2	0,5 - 2	0,5 - 2	0,5 - 2	0,5 - 2	0,5 - 2
		1 - 8	1 - 8	1 - 8	1 - 8	1 - 8	1 - 8
		5 - 15	5 - 15	5 - 15	5 - 15	5 - 15	5 - 15
Installation dimensions in mm	**L**	142	158	180	193	226	252
	l	80	90	100	105	130	140
	l1	85	95	105			
	H (H1)	102 (128[1])	102 (128[1])	130 (150[1])	130 (150[1])	165 (185[1])	165 (185[1])
	H2 (H3)	124 (150[2])	124(150[2])	161 (181[2])	161 (181[2])	198 (218[2])	198 (218[2])
	h	33	33	45	45	70	70
	SW1	30	37	46	52	65	75
	SW2	28	35	43			
Pressure gauge connection Outlet pressure	**G3**	1/4“ axial	1/4“ axial	1/4“ axial	1/4“ axial	1/4“ axial	1/4“ axial
Weight	**kg**	1,2 (1,5[1])	1,3 (1,6[1])	2,4 (2,9[1])	2,6 (3,1[1])	5,5 (6,2[1])	6,0 (6,7[1])
Coefficient of flow K_{VS}[3]	**m³/h**	3	3,5	6,7	7,6	12,5	15

[1]for type 681mGFO-LP
[2]for type 681mGFO-LP S15
[3]The K_{VS} value was determined according to DIN EN 60534-2-3. Instructions on how to determine size and capacity are to be found under section 2.

■ MAIN DIMENSIONS, INSTALLATION DIMENSIONS



■ INDIVIDUAL SELECTION / VALVE CONFIGURATION

Series	**Valve version**	**Medium**	**Lifting device**	**Outlet pressure**	**Nominal diameter DN**	**Connection type**		**Connection size**		**Seal**	**Options**	**Optional: fixed setting**	**Quantity**
						Inlet	Outlet	Inlet	Outlet				
681	**m**	**GF**	**0**	*SP*	*20*	*BSP-T m*	*BSP-T m*	*20*	*20*	*EPDM*	*Pressure Gauge 36*		*8*
681	**m**	**GF**	**0**	*SP*	*15*	*f*	*f*	*15*	*15*	*EPDM*			*4*
681	**m**	**GF**	**0**										
681	**m**	**GF**	**0**										

In this table you can configure a valve according to your individual requirements (similar to the *example* shown, which sh*ould 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 / 488 94 88
Please do not forget to add your personal data so that our sales team can contact you.

Name

First Name

Company

Telephone

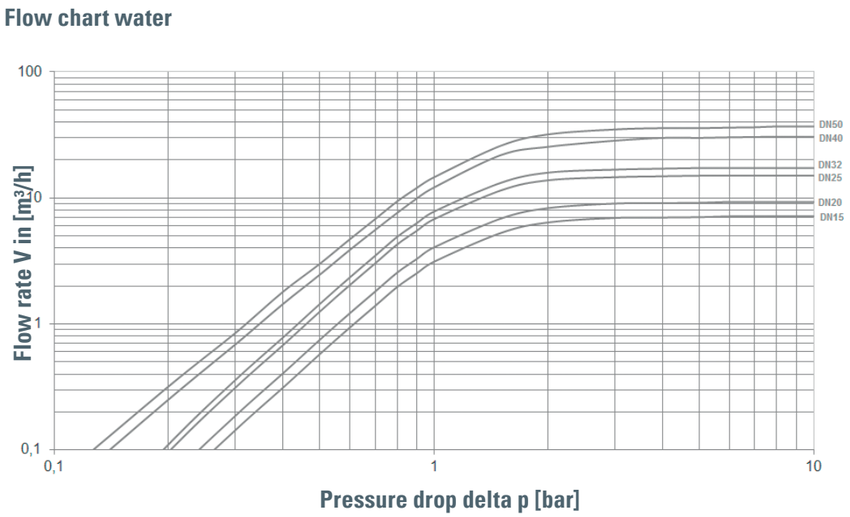
E-Mail

GOETZE ARMATUREN
Version 2018 / 03
www.goetze-armaturen.de | info@goetze-armaturen.de | Phone: +49 (0) 7141 / 488 94 60

■ CAPACITY CHARTS

Series 681:

Dimensioning by pressure loss on the outlet pressure side



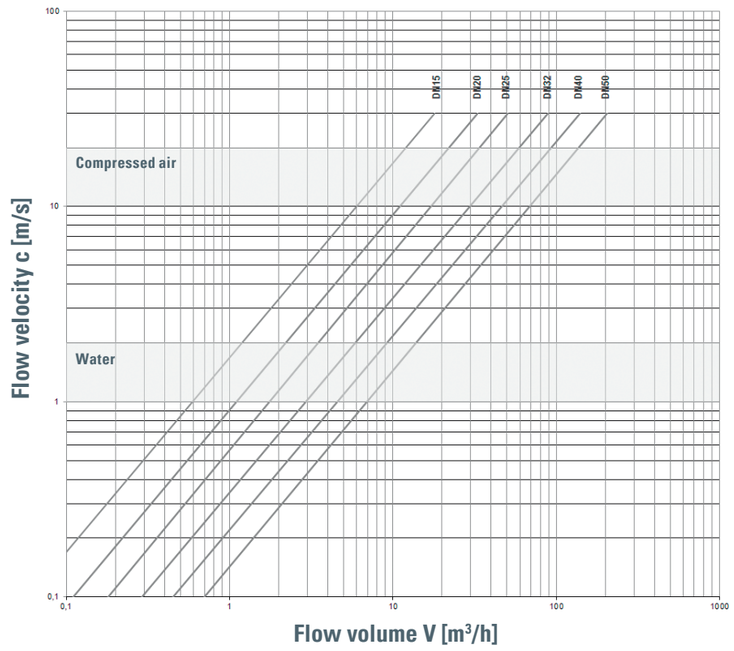
Dimensioning by flow velocity

For liquids:
With help of the chart you can determine the nominal diameter (DN) for a given flow volume V (m³/h). According to DVGW-guidelines (DIN 1988) a flow velocity of 2 m/s in domestic water supply systems should not be exceeded.

For compressed air and other gaseous media:
The usual flow velocity for compressed air is 10 - 20 m/s. For gaseous media the flow volume V should always be shown in actual cubic meters/hour.
If the flow volume is given in standard cubic meters, these should be converted into actual cubic meters before using the diagram.

$$V\,(m^3/h) = \frac{V_{Norm}\,(Nm^3/h)}{p_{absolut}\,(bar)} = \frac{V_{Norm}}{p_0+1}$$

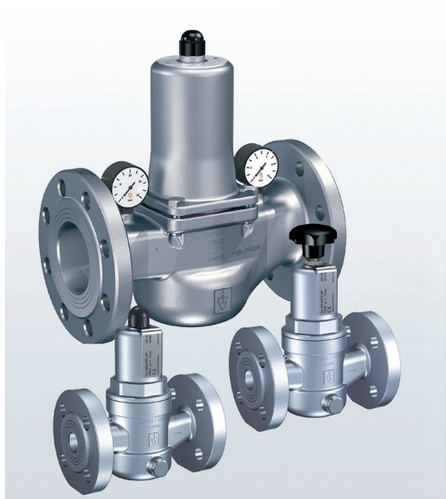
Actual cubic meters are based on the prevailing pressure of the medium on the outlet side of the pressure reducer.



→ Series 482

482

Pressure reducing valves made of stainless steel with flange connections



■ SUITABLE FOR

Liquids	neutral and non-neutral	
Air, gases and vapours	neutral and non-neutral	
Warm water		95°C

■ EXAMPLES OF USE

For the protection of:
- domestic water supply systems
- commercial and industrial plants

against too high supply pressure.
Pressure reducers are used, if within a piping system despite of varying pressures on the inlet side a certain pressure must not be exceeded on the outlet side.

- potable water supply according to DIN 1988
- process water supply in industrial- and building technology
- fire-fighting equipment and sprinkler systems
- shipbuilding industry and offshore plants
- secondary areas in the food-, pharmaceutical- and cosmetics industries

■ MATERIAL

EDELSTAHL Rostfrei

■ SPECIFICATION

DN 15 to DN 100 – 20°C to + 120°C

Inlet pressure:
up to 40 bar
Outlet pressure:
0,5 to 15 bar
depending on version

■ APPROVALS

DIN-DVGW type examination (up to 80°C)

Type approval ACS

Type approval WRAS (up to 85°C)

TR ZU 032/2013 - TR ZU 010/2011

Requirements

DIN DVGW guidelines	DIN EN ISO 3822
DIN EN 1567	DGR 2014/68/EU
DIN 1988	

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	1.4408	CF8M
Outlet body	Stainless steel	1.4408	CF8M
Internal parts	Stainless steel	1.4408	CF8M
	Stainless steel	1.4404	316 L
Spring	Spring steel with anti-rust protection	1.1200	ASTM A228
Strainer	Stainless steel	1.4404	316 L

Series 482 ■ VALVE VERSION

m	with diaphragm	High-quality, heat-resistant moulded elastomere, fabric-reinforced diaphragm. Pressure adjustment by means of non-rising spindle. Valve insert with balanced single seat valve completely made of stainless steel.
k	with piston	Stainless steel piston (only for DN 100) Adjustment by means of non-rising spindle. Balanced single seat valve.

Complete valve cartridge SP/HP (order code: 482 Insert-DN..-seal) available as replacement part can be exchanged without removing the valve.

Complete valve cartridge LP (order code: 482 LP Insert-DN..-seal) available as replacement part can be exchanged without removing the valve.

Built-in dirt trap made of stainless steel.

Mesh size: DN 15 to DN 32 0,60 mm
DN 40 to DN 100 0,75 mm

■ MEDIUM

GF	gaseous and liquid	for water and distilled water, neutral and non-sticking liquids, compressed air and neutral gases; optionally with FPM elastomere seals for non-neutral media i.e. oils, fuels, oil-laden compressed air etc. Not suitable for steam.

■ TYPE OF LIFTING MECHANISM

O	without lifting device

■ OUTLET PRESSURE RANGES

SP	Standard version	Inlet pressure: up to 16 bar (PN 16) or 40 bar (PN 40)	Outlet pressure: from 1 to 8 bar
HP	High-pressure version (not for DN 65 and DN 80)	Inlet pressure: up to 16 bar (PN 16) or 40 bar (PN 40)	Outlet pressure: from 5 to 15 bar (5 to 13 bar, DN 100 with piston)
LP	Low-pressure version (not for DN 65, DN 80 and DN 100)	Inlet pressure: up to 25 bar	Outlet pressure: from 0,5 to 2 bar

Fixed setting at a required outlet pressure against surcharge.

■ AVAILABLE NOMINAL DIAMETERS AND CONNECTION SIZES

Nominal diameter DN	**15**	**20**	**25**	**32**	**40**	**50**	**65**	**80**	**100**
Inlet / Outlet	15/15	20/20	25/25	32/32	40/40	50/50	65/65	80/80	100/100
	■	■	■	■	■	■	■	■	■

■ TYPE OF CONNECTION INLET / OUTLET FLANGE CONNECTIONS

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

■ SEALS

EPDM	Ethylene propylene diene	Elastomere moulded diaphragm and seals approvals according to drinking water directive	–20°C to +120°C (up to 8 bar outlet pressure) –20°C to +95°C (from 8 bar outlet pressure)
Against surcharge			
FKM	Fluorocarbon	Elastomere moulded diaphragm and seals	–10°C to +120°C (up to 8 bar outlet pressure) –10°C to +95°C (from 8 bar outlet pressure)

■ OPTIONS

Against surcharge	
Pressure gauges 33, 34, 35, 36, 39 and 40	Chapter Accessories
Pressure gauge 37, 38, 41, 42 or 43 made of stainless steel	Chapter Accessories
Hand wheel (plastic) for tool-free setting of outlet pressure for DN15 to DN50 outlet pressure ranges LP / SP	Order code: **S15**
Preliminary setup for protection against manipulation of the preset pressure (seal)	Order code: **S71**

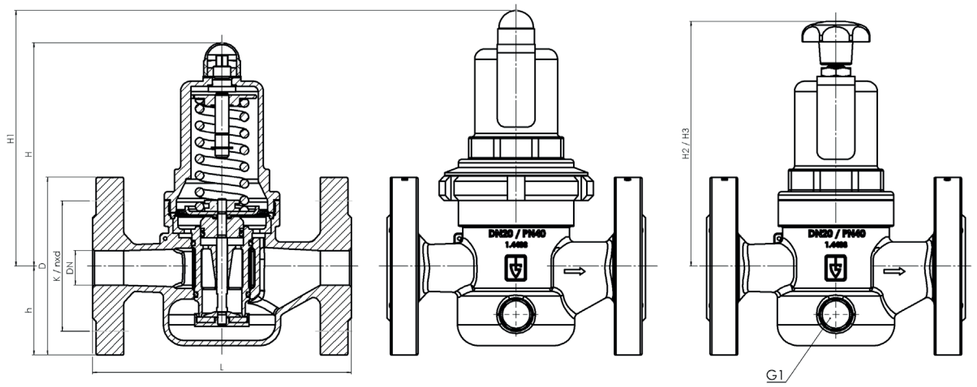
■ NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

Series 482: Connection, installation dimensions, ranges of adjustment

Connection		**DN15 PN40**	**DN20 PN40**	**DN25 PN40**	**DN32 PN40**	**DN40 PN40**	**DN50 PN40**	**DN65 PN16**	**DN65 PN40**	**DN80 PN40**	**DN100 PN16**
Inlet pressure SP, HP up to	bar	40	40	40	40	40	40	16	40	40	16
Inlet pressure LP up to	bar	25	25	25	25	25	25				
Outlet pressure	bar	0,5 – 2 1 – 8 5 – 15	0,5 – 2 1 – 8 5 – 15	0,5 – 2 1 – 8 5 – 15	0,5 – 2 1 – 8 5 – 15	0,5 – 2 1 – 8 5 – 15	0,5 – 2 1 – 8 5 – 15	1 – 8	1 – 8	1 – 8	1 – 8 5 – 13
Installation dimensions in mm	**D**	95	105	115	140	150	165	185	185	200	220
	L	130	150	160	180	200	230	290	290	310	350
	H (H1)	102 (128[1])	130 (150[1])	130 (150[1])	130 (150[1])	165 (185[1])	165 (185[1])	235	235	235	320 (340[3])
	H2 (H3)	124 (150[2])	161 (181[2])	161 (181[2])	161 (181[2])	198 (218[2])	198 (218[2])				
	h	46	50	55	68	73	80	89	89	96	112
	K /nxd	65 / 4xM12	75 / 4xM12	85 / 4xM12	100 / 4xM16	110 / 4xM16	125 / 4xM16	145 / 4xM16	145 / 8xM16	160 / 8xM16	180 / 8xM16
Pressure gauge connections											
Inlet pressure	**G1**							1/4“ radial	1/4“ radial	1/4“ radial	1/4“ axial
Outlet pressure	**G1**	1/4“ axial	1/4“ axial	1/4“ axial	1/4“ axial	1/4“ axial	1/4“ axial	1/4“ radial	1/4“ radial	1/4“ radial	1/4“ axial
Weight	**kg**	2,7 (2,9[1])	3,9 (4,3[1])	4,3 (4,7[1])	5,5 (5,9[1])	8,4 (9,1[1])	10,2 (10,9[1])	18,7	19	20,5	37 (40[3])
Coefficient of flow K_{VS}[4]	**m³/h**	3	5,8	6,7	7,6	12,5	15	40	40	50	80

[1]for type 482mGFO-LP
[2]for type 482mGFO-LP S15
[3]for type 482kGFO-HP
[4]The K_{VS} value was determined according to DIN EN 60534-2-3. Instructions on how to determine size and capacity are to be found under section 2.

■ MAIN DIMENSIONS, INSTALLATION DIMENSIONS



■ INDIVIDUAL SELECTION / VALVE CONFIGURATION

Series	**Valve version**	**Medium**	**Lifting device**	**Outlet pressure**	**Nominal diameter DN**	**Connection type**		**Connection size**		**Seal**	**Options**	**Optional: fixed setting**	**Quantity**
						Inlet	Outlet	Inlet	Outlet				
482	**m**	**GF**	**O**	*SP*	*65*	**FL**	**FL**	*65*	*65*	*EPDM*	*PN16*		*5*
482	**k**	**GF**	**O**	*HP*	*100*	**FL**	**FL**	*100*	*100*	*FKM*	*S71*	*7*	*2*
482		**GF**	**O**			**FL**	**FL**						
482		**GF**	**O**			**FL**	**FL**						

In this table you can configure a valve according to your individual requirements (similar to the *example* shown, which s*hould 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 / 488 94 88
Please do not forget to add your personal data so that our sales team can contact you.

Name

First Name

Company

Telephone

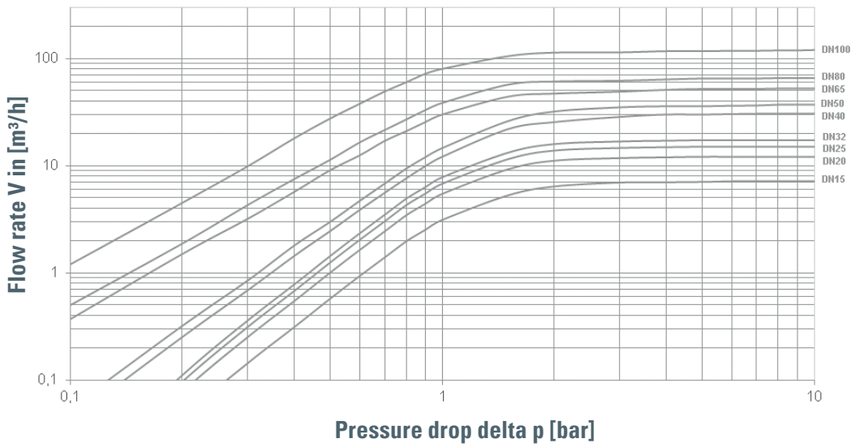
E-Mail

CAPACITY CHARTS

Series 482:

Dimensioning by pressure loss on the outlet pressure side

Flow chart water



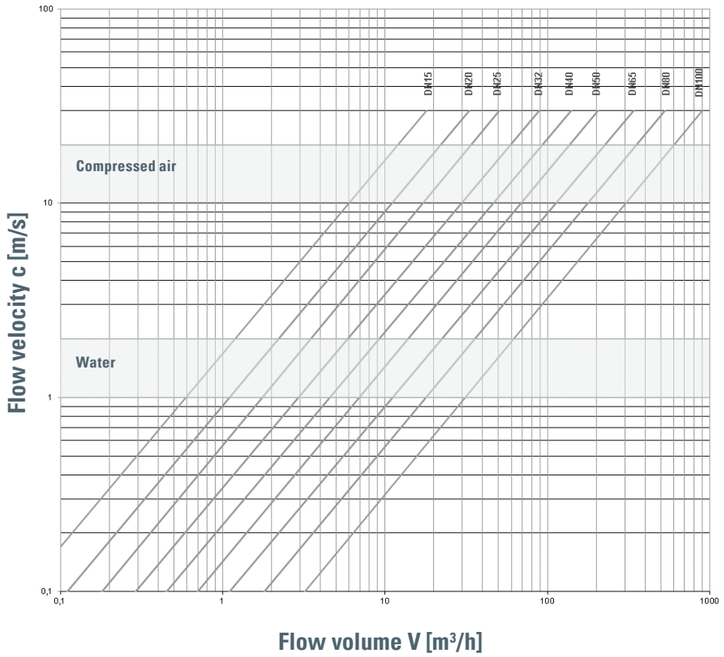
Dimensioning by flow velocity

For Liquids:
With help of the chart you can determine the nominal diameter (DN) for a given flow volume V (m³/h). According to DVGW-guidelines (DIN 1988) a flow velocity of 2 m/s in domestic water supply systems should not be exceeded.

For compressed air and other gaseous media:
The usual flow velocity for compressed air is 10 - 20 m/s. For gaseous media the flow volume V should always be shown in actual cubic meters/hour.
If the flow volume is given in standard cubic meters, these should be converted into actual cubic meters before using the diagram.

$$V\,(m^3/h) = \frac{V_{Norm}\,(Nm^3/h)}{p_{absolut}\,(bar)} = \frac{V_{Norm}}{p_{ü}+1}$$

Actual cubic meters are based on the prevailing pressure of the medium on the outlet side of the pressure reducer.



→ Series 682

682

Pressure reducing valves made of gunmetal with flange connections

SUITABLE FOR

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

EXAMPLES OF USE

For the protection of:
- domestic water supply systems
- commercial and industrial plants

against an excess supply pressure.
Pressure reducers are used, if within a piping system despite of varying pressures on the inlet side a certain pressure must not be exceeded on the outlet side.

- potable water supply according to DIN 1988
- process water supply in industrial- and building technology applications
- fire-fighting equipment and sprinkler systems
- shipbuilding industry and offshore plants

MATERIAL

SPECIFICATION

DN 15 to DN 100

– 20°C to + 120°C

Inlet pressure:
up to 40 bar
Outlet pressure:
0,5 to 15 bar
depending on version

APPROVALS

DIN-DVGW type examination (up to 80°C)

Type approval ACS

Type approval WRAS (up to 85°C)

TR ZU 032/2013 - TR ZU 010/2011

Requirements

DIN DVGW guidelines	DIN EN ISO 3822
DIN EN 1567	DGR 2014/68/EU
DIN 1988	

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	Gunmetal	CC499K	CC499K
Outlet body	Gunmetal	CC499K	CC499K
Inner parts, wetted	Gunmetal	CC499K	CC499K
	Stainless Steel	1.4404	316 L
Spring	Spring steel with anti-rust protection	1.1200	ASTM A228
Strainer	Stainless Steel	1.4404	316 L

Series 682 ■ VALVE VERSION

m	with diaphragm	High-quality, heat-resistant moulded elastomere, fabric-reinforced diaphragm. Pressure adjustment by means of non-rising spindle. Valve insert with balanced single seat valve completely made of stainless steel.
k	with piston	Stainless steel piston (only for DN 100) Adjustment by means of non-rising spindle. Balanced single seat valve.

Complete valve cartridge SP/HP (order code: 482 Insert-DN..-seal) available as replacement part can be exchanged without removing the valve.

Complete valve cartridge LP (order code: 482 LP Insert-DN..-seal) available as replacement part can be exchanged without removing the valve.

Built-in dirt trap made of stainless steel.

Mesh size: DN 15 to DN 32 0,60 mm
DN 40 to DN 80 0,75 mm

■ MEDIUM

GF	gaseous and liquid	for water, neutral and non-sticking liquids, compressed air and neutral gases; optionally with FPM elastomere seals for non-neutral media i.e. oils, fuels, oil-laden compressed air, etc. Not suitable with steam.

■ TYPE OF LIFTING MECHANISM

O	without lifting device

■ OUTLET PRESSURE RANGES

SP	Standard version	Inlet pressure: up to 16 bar (PN 16) or 40 bar (PN 40)	Outlet pressure: from 1 to 8 bar
HP	High-pressure version (not for DN 65 and DN 80)	Inlet pressure: up to 16 bar (PN 16) or 40 bar (PN 40)	Outlet pressure: from 5 to 15 bar (5 to 13 bar, DN 100 with piston)
LP	Low-pressure version (not for DN 65, DN 80 and DN 100)	Inlet pressure: up to 16 bar (PN 16) or 25 bar (PN 40)	Outlet pressure: from 0,5 to 2 bar

Fixed setting at a required outlet pressure against surcharge.

■ AVAILABLE NOMINAL DIAMETERS AND CONNECTION SIZES

Nominal diameter DN	**15**	**20**	**25**	**32**	**40**	**50**	**65**	**80**	**100**
Inlet / Outlet	15/15	20/20	25/25	32/32	40/40	50/50	65/65	80/80	100/100
	■	■	■	■	■	■	■	■	■

■ TYPE OF CONNECTION INLET / OUTLET FLANGE CONNECTIONS

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

■ SEALS

EPDM	Ethylene propylene diene	Elastomere moulded diaphragm and seals approvals according to drinking water directive	–20°C to +120°C (up to 8 bar outlet pressure) –20°C to +95°C (from 8 bar outlet pressure)
Against surcharge			
FKM	Fluorocarbon	Elastomere moulded diaphragm and seals	–10°C to +120°C (up to 8 bar outlet pressure) –10°C to +95°C (from 8 bar outlet pressure)

■ OPTIONS

PN 16	nominal pressure rating
PN 40	nominal pressure rating
Against surcharge	
Pressure gauges 33, 34, 35, 36, 39 and 40	Chapter Accessories
Valve insert SP/HP completely made of stainless steel	Order code: 482 Insert-DN..seal
Valve insert LP completely made of stainless steel	Order code: 482 LP Insert-DN..seal
Servicepack: (seal/ diaphragm) DN65- DN100	Order code: 682 Servicepack-DN…seal
Hand wheel (plastic) for tool-free setting of outlet pressure for DN15 to DN50 outlet pressure ranges LP / SP	Order code: **S15**
Preliminary setup for protection against manipulation of the preset pressure (seal)	Order code: **S71**

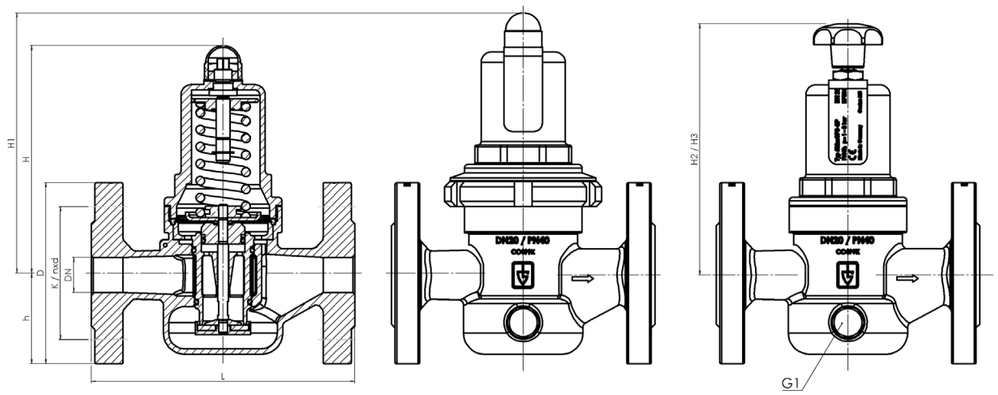
■ NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

Series 682: Connection, installation dimensions, ranges of adjustment

Connection		**DN15 PN16 / PN40**	**DN20 PN16 / PN40**	**DN25 PN16 / PN40**	**DN32 PN16 / PN40**	**DN40 PN16 / PN40**	**DN50 PN16 / PN40**	**DN65 PN16**	**DN65 PN40**	**DN80 PN16 / PN40**	**DN100 PN16**
Inlet pressure SP, HP up to	bar	16 / 40	16 / 40	16 / 40	16 / 40	16 / 40	16 / 40	16	40	16 / 40	16
Inlet pressure LP up to	bar	16 / 25	16 / 25	16 / 25	16 / 25	16 / 25	16 / 25				
Outlet pressure	bar	0,5 – 2 1 – 8 5 – 15	0,5 – 2 1 – 8 5 – 15	0,5 – 2 1 – 8 5 – 15	0,5 – 2 1 – 8 5 – 15	0,5 – 2 1 – 8 5 – 15	0,5 – 2 1 – 8 5 – 15	1 – 8	1 – 8	1 – 8	1 – 8 5 – 13
Installation dimensions in mm	**D**	95	105	115	140	150	165	185	185	200	220
	L	130	150	160	180	200	230	290	290	310	350
	H (H1)	102 (128[1])	130 (150[1])	130 (150[1])	130 (150[1])	165 (185[1])	165 (185[1])	235	235	235	320 (340[3])
	H2 (H3)	124 (150[2])	161 (181[2])	161 (181[2])	161 (181[2])	198 (218[2])	198 (218[2])				
	h	46	50	55	68	73	80	89	89	96	112
	K /nxd	65 / 4xM12	75 / 4xM12	85 / 4xM12	100 / 4xM16	110 / 4xM16	125 / 4xM16	145 / 4xM16	145 / 8xM16	160 / 8xM16	180 / 8xM16
Pressure gauge connections											
Inlet pressure	**G1**							1/4" radial	1/4" radial	1/4" radial	1/4" axial
Outlet pressure	**G1**	1/4" axial	1/4" axial	1/4" axial	1/4" axial	1/4" axial	1/4" axial	1/4" radial	1/4" radial	1/4" radial	1/4" axial
Weight	kg	2,8 (3,1[1])	4,2 (4,6[1])	4,7 (5,1[1])	5,9 (6,3[1])	8,6 (9,3[1])	10,5 (11,2[1])	20	20	22	40 (43[3])
Coefficient of flow K_{vs}[4]	m^3/h	3	5,8	6,7	7,6	12,5	15	40	40	50	80

[1]for type 682mGFO-LP
[2]for type 682mGFO-LP S15
[3]for type 682kGFO-HP
[4]The K_{vs} value was determined according to DIN EN 60534-2-3. Instructions on how to determine size and capacity are to be found under section 2.

■ MAIN DIMENSIONS, INSTALLATION DIMENSIONS



■ INDIVIDUAL SELECTION / VALVE CONFIGURATION

Series	**Valve version**	**Medium**	**Lifting device**	**Outlet pressure**	**Nominal diameter DN**	**Connection type**		**Connection size**		**Seal**	**Options**	**Optional: fixed setting**	**Quantity**
						Inlet	Outlet	Inlet	Outlet				
682	**m**	**GF**	**O**	*SP*	*80*	*FL*	*FL*	*80*	*80*	*EPDM*	*PN40*	*3,0*	*1*
682	**k**	**GF**	**O**	*SP*	*100*	**FL**	**FL**	*100*	*100*	*FKM*	*S71*	*7*	*2*
682		**GF**	**O**										
682		**GF**	**O**										

In this table you can configure a valve according to your individual requirements (similar to the *example* shown, which s*hould 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 / 488 94 88
Please do not forget to add your personal data so that our sales team can contact you.

Name

First Name

Company

Telephone

E-Mail

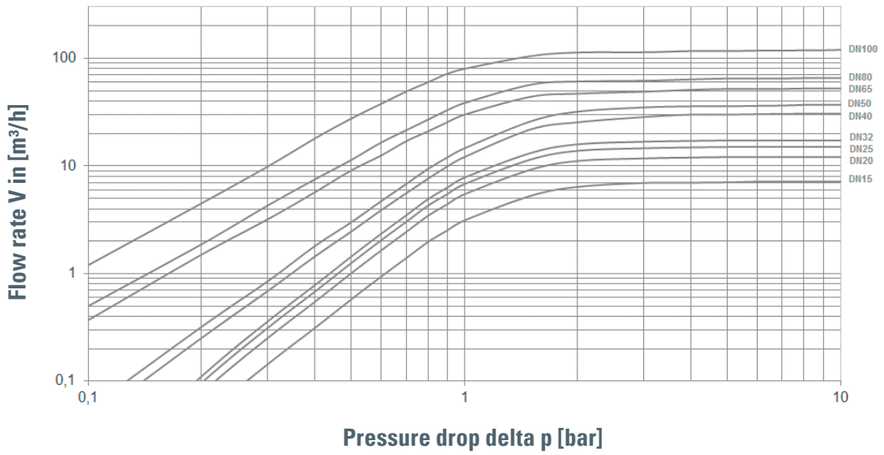
GOETZE ARMATUREN
Version 2018 / 03
www.goetze-armaturen.de | info@goetze-armaturen.de | Phone: +49 (0) 7141 / 488 94 60

CAPACITY CHARTS

Series 682:

Dimensioning by pressure loss on the outlet pressure side

Flow chart water



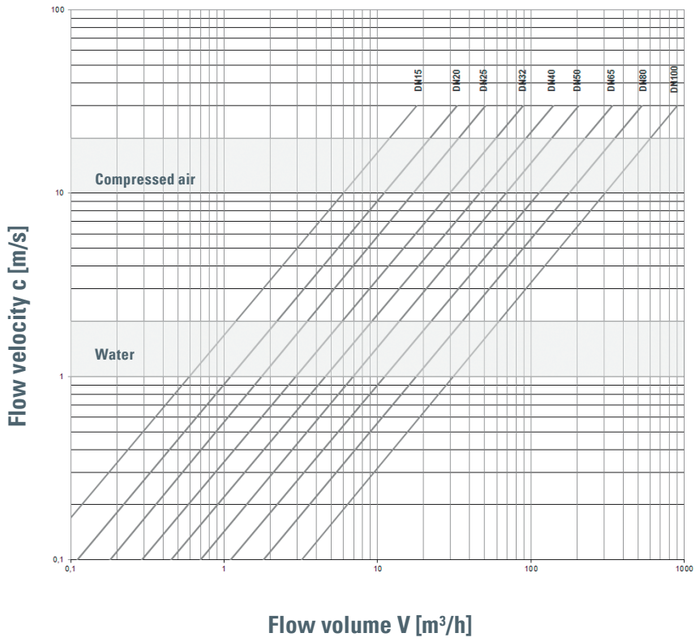
Dimensioning by flow velocity

For liquids:
With help of the chart you can determine the nominal diameter (DN) for a given flow volume V (m³/h). According to DVGW-guidelines (DIN 1988) a flow velocity of 2 m/s in domestic water supply systems should not be exceeded.

For compressed air and other gaseous media:
The usual flow velocity for compressed air is 10 - 20 m/s. For gaseous media the flow volume V should always be shown in actual cubic meters/hour.
If the flow volume is given in standard cubic meters, these should be converted into actual cubic meters before using the diagram.

$$V\,(m^3/h) = \frac{V_{Norm}\,(Nm^3/h)}{p_{absolut}\,(bar)} = \frac{V_{Norm}}{p_0+1}$$

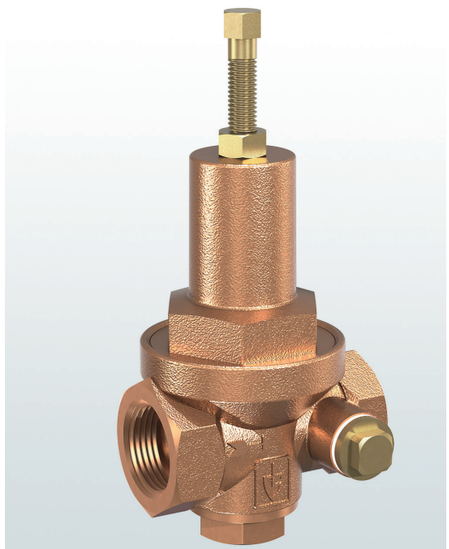
Actual cubic meters are based on the prevailing pressure of the medium on the outlet side of the pressure reducer.



→ Series 683

683

Pressure reducing valves made of gunmetal with female threaded connections



SUITABLE FOR

Air, gases and vapours — neutral

EXAMPLES OF USE

For the protection of:
- commercial and industrial plants
against too high supply pressure.
Pressure reducers are used, if within a piping system despite of varying pressures on the inlet side a certain pressure must not be exceeded on the outlet side.

- compressed air supply plants
- pneumatic control units
- pressure booster plants air-side
- shipbuilding industry and offshore plants

CE EAC

MATERIAL

SPECIFICATION

3/8“ – 1 1/4“

– 10°C to + 95°C

Inlet pressure:
up to 50 bar
Outlet pressure:
1,5 to 10 bar
depending on version

APPROVALS

European Pressure Equipment Directive

TR ZU 032/2013 - TR ZU 010/2011

Requirements
PED 2014/68/EU

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	1.1200	ASTM A228

Series 683 ■ VALVE VERSION

m	with diaphragm	High-quality, heat-resistant moulded elastomere, fabric-reinforced diaphragm. Pressure adjustment by means of spindle. Version completely made of metal. Balanced single seat valve, body with G 1/4“ connection for pressure gauge on both sides.	

■ MEDIUM

G	gaseous	Compressed air and neutral gases	

■ TYPE OF LIFTING MECHANISM

0	without lifting device		

■ OUTLET PRESSURE RANGES

SP	Standard version	Inlet pressure: up to 50 bar (size 1 1/4“ up to 30 bar) **Largest reduction ratio 10:1**	Outlet pressure: from 1,5 to 10 bar

Fixed setting at a required outlet pressure against surcharge.

■ AVAILABLE NOMINAL DIAMETERS AND CONNECTION SIZES

Nominal diameter DN	**10**	**15**	**20**	**25**	**32**
Inlet female connection	3/8“ (10)	1/2“ (15)	3/4“ (20)	1“ (25)	1 1/4“ (32)
Outlet female connection	3/8“ (10)	1/2“ (15)	3/4“ (20)	1“ (25)	1 1/4“ (32)

■ 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

■ SEALS

NBR	Nitrile rubber	Elastomere diaphragms and seals	–10°C to +95°C

■ OPTIONS

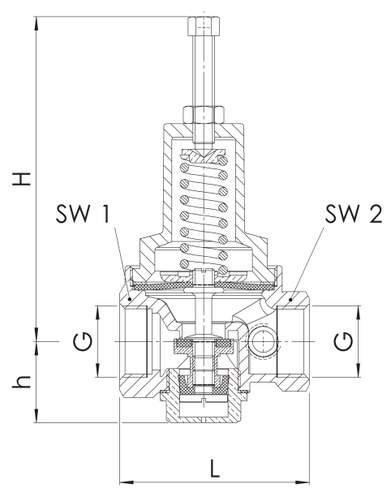
Against surcharge	
Pressure gauges 36 and 40	Chapter Accessories

■ NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

Series 683: Connection, installation dimensions, ranges of adjustment						
Nominal diameter	**DN**	**10**	**15**	**20**	**25**	**32**
Connection DIN EN ISO 228	**G**	3/8" (10)	1/2" (15)	3/4" (20)	1" (25)	1 1/4" (32)
Inlet pressure to	**bar**	50	50	50	50	30
Outlet pressure[1]	**bar**	1,5-10	1,5-10	1,5-10	1,5-10	1,5-10
Installation dimensions in mm	**L**	73	73	70	87	100
	H	100	100	120	165	175
	h	22	22	30	35	43
	SW1	27	27	36	44	54
	SW2	27	27	32	40	49
Weight	**kg**	0,5	0,5	0,8	1,4	2,0

[1]Largest reduction ratio 10:1

■ MAIN DIMENSIONS, INSTALLATION DIMENSIONS



■ INDIVIDUAL SELECTION / VALVE CONFIGURATION

Series	**Valve version**	**Medium**	**Lifting device**	**Outlet pressure**	**Nominal diameter DN**	**Connection type**		**Connection size**		**Seal**	**Options**	Optional: fixed setting	**Quantity**
						Inlet	Outlet	Inlet	Outlet				
683	**m**	**G**	**0**	**SP**	*20*	**f**	**f**	*20*	*20*	**NBR**	*Pressure Gauge 36*		*5*
683	**m**	**G**	**0**	**SP**	*32*	**f**	**f**	*32*	*32*	**NBR**		*4,0*	*1*
683	**m**	**G**	**0**	**SP**		**f**	**f**			**NBR**			
683	**m**	**G**	**0**	**SP**		**f**	**f**			**NBR**			

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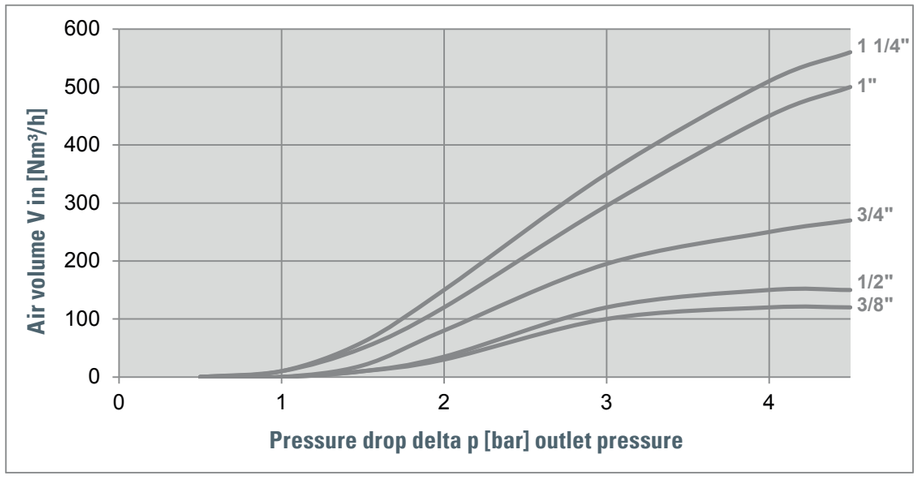
CAPACITY CHART

Series 683:

Determination of the size and capacity



→ Series 484

SUITABLE FOR

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

EXAMPLES OF USE

For the protection of:
- commercial and industrial plants
against too high supply pressure.
Use of pressure reducing valves, when in a piping system inspite of varying pressures on the inlet side a specific pressure on the outlet side must be kept.

- Compressed air supply plants
- Pneumatic control units
- Pressure booster plants air-side
- Shipbuilding industry and offshore plants
- Industrial gas plant construction
- PET blow moulding machines
- Blasting plants

MATERIAL

SPECIFICATION

1/4“ – 2“

– 40°C to + 120°C
depending on version

Inlet pressure:
up to 60 bar
Outlet pressure:
0,5 to 50 bar
depending on version

APPROVALS

European Pressure Equipment Directive

TR ZU 032/2013 - TR ZU 010/2011

Requirements

PED 2014/68/EU

Classification society

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

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	1.4568	631

Series 484 ■ VALVE VERSION

m	with diaphragm	High-quality heat-resistant elastomere, fabric reinforced diaphragm. Adjustment by means of non-rising spindle. Balanced single seat valve, pressure gauge connection G1/4“ on both sides of body. Please take note of the outlet pressure range.
k	with piston	Stainless steel piston with seal and support ring. Adjustment by means of non-rising spindle. Balanced single seat valve, pressure gauge connection G1/4“ on both sides of body. Please take note of the outlet pressure ranges.

■ MEDIUM

GS	gaseous with secondary venting	Compressed air and gases. Non-neutral, poisonous gases only in combination with ducted exhaust.
GFO	gaseous and liquid without secondary venting	for water and non-sticking liquids, compressed air and gases

■ OUTLET PRESSURE RANGES

SM	Standard version with diaphragm	Inlet pressure: up to 60 bar	Outlet pressure: 0,5 to 15 bar
SK	Standard version with piston	Inlet pressure: up to 60 bar	Outlet pressure: 5 to 30 bar
HK	High-pressure version with piston	Inlet pressure: up to 60 bar	Outlet pressure: 10 to 50 bar

Fixed setting at a required outlet pressure against surcharge

■ AVAILABLE NOMINAL DIAMETERS AND CONNECTION SIZES

Nominal diameter DN	**8**	**10**	**15**	**20**	**25**	**40**	**50**
Inlet female connection	1/4“ (8)	3/8“ (10)	1/2“ (15)	3/4“ (20)	1“ (25)	1 1/2“ (40)	2“ (50)
Outlet female connection	1/4“ (8)	3/8“ (10)	1/2“ (15)	3/4“ (20)	1“ (25)	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

■ SEALS

FKM	Fluorocarbon	Elastomere moulded diaphragm and seals	–10°C to +120°C
EPDM	Ethylene propylene diene	Elastomere moulded diaphragm and seals	–40°C to +120°C

■ OPTIONS AGAINST SURCHARGE

Pressure gauges 40, 42, 44, 45, 46 and 47	Chapter Accessories
GA: ducted exhaust air in case of medium GS (specific ducting of secondary venting)	
GA - SV	Cutting ring threaded connection according to EN ISO 8434-1 for pipe diameter 6mm.
GA - CK	CK-Quick connector for pipe diameter 6mm up to 10 bar.
Wall mount	Order code: 484 Wall mount -DN
Service parts:	
Service Pack (seals and disc) 484 piston version **k**; FKM or EPDM	Order code: 484k-DN... <FKM or EPDM> Service Pack
Service Pack (seals and disc) 484 diaphragm version **mGS**; FKM or EPDM	Order code: 484mGS-DN... <FKM or EPDM> Service Pack
Service Pack (seals and disc) 484 diaphragm version **mGFO**; FKM or EPDM	Order code: 484mGFO-DN... <FKM or EPDM> Service Pack

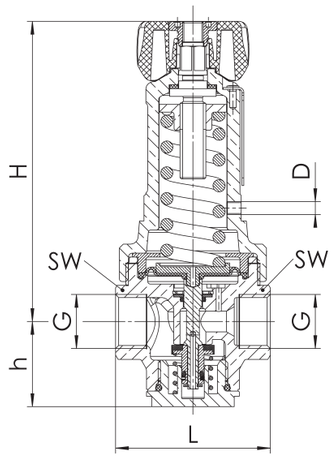
■ NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

Series 484: Connection, installation dimensions, ranges of adjustment

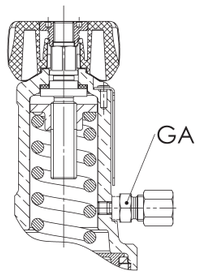
Nominal diameter	**DN**	**8**	**10**	**15**	**20**	**25**	**40**	**50**
Connection DIN EN ISO 228	**G**	1/4“ (8)	3/8“ (10)	1/2“ (15)	3/4“ (20)	1“ (25)	1 1/2“ (40)	2“ (50)
Inlet pressure up to	**bar**	60	60	60	60	60	60	60
Outlet pressure:	**SM bar**	0,5-15	0,5-15	0,5-15	0,5-15	0,5-15	0,5-15	0,5-15
	SK bar	5-30	5-30	5-30	5-30	5-30	5-30	5-30
	HK bar	10-50	10-50	10-50	10-50	10-50	10-50	10-50
Installation dimensions in mm	**L**	68	68	60	78	102	136	136
	H	120	120	120	180	215	260	270
	h	33	33	33	40	56	63	70
	SW	26	26	26	32	44	58	70
Ducted exhaust connection	**D**	M5	M5	M5	M5	1/8“	1/8“	1/8“
Dimensions of optional wall mount	**L1**	38	38	38	51	61	85	85
	H1 / H2	18 / 62	18 / 62	18 / 62	18/58	22 / 80	15	15
	B / B1	5,5	5,5	5,5	6,5	8,5	10,5 / 90	10,5 / 90
Weight	**kg**	1,1	1,1	1,1	2,5	4,5	8,1	8,8
Coefficient of flow K_{VS}	**m³/h**	1,6	1,6	1,6	3,4	5,5	12,7	12,7

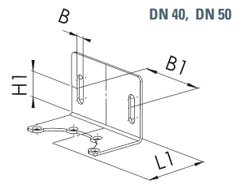
The K_{VS} value was determined according to DIN EN 60534-2-3. Instructions on how to determine size and capacity are to be found under section 2.

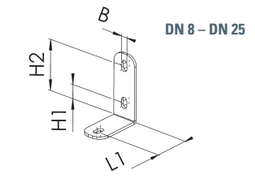
■ MAIN DIMENSIONS, INSTALLATION DIMENSIONS



Options







■ INDIVIDUAL SELECTION / VALVE CONFIGURATION

Series	**Valve version**	**Medium**	**Outlet pressure**	**Nominal diameter DN**	**Connection type**		**Connection size**		**Seal**	**Option**	**Optional feature**	**Quantity**
					Inlet	Outlet	Inlet	Outlet				
484	*m*	*GS*	*SM*	*20*	**f**	**f**	*20*	*20*	*FKM*	*Pressure Gauge 40*	*GA-SV*	*5*
484	*k*	*GFO*	*SK*	*40*	**f**	**f**	*40*	*40*	*EPDM*			*1*
484					**f**	**f**						
484					**f**	**f**						

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Name

First Name

Company

Telephone

E-Mail

→ Series 684

684

Pressure reducing valves made of gunmetal with female threaded connections

SUITABLE FOR

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

EXAMPLES OF USE

For the protection of:
- commercial and industrial plants
against too high supply pressure.
Use of pressure reducing valves, when in a piping system inspite of varying pressures on the inlet side a specific pressure on the outlet side must be kept.

- Compressed air supply plants
- Pneumatic control units
- Pressure booster plants air-side
- Shipbuilding industry and offshore plants
- Industrial gas plant construction
- PET blow moulding machines
- Blasting plants

MATERIAL

SPECIFICATION

1/4“ – 2“

– 40°C to + 120°C
depending on version

Inlet pressure:
up to 60 bar
Outlet pressure:
0,5 to 50 bar
depending on version

APPROVALS

European Pressure Equipment Directive

TR ZU 032/2013 - TR ZU 010/2011

Requirements
PED 2014/68/EU

Classification society

DNVGL	DNVGL
Lloyd's Register EMEA	LR EMEA
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

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Series 684 ■ VALVE VERSION

m	with diaphragm	High-quality heat-resistant elastomere, fabric reinforced diaphragm. Adjustment by means of non-rising spindle. Balanced single seat valve, pressure gauge connection G1/4“ on both sides of body. Please take note of the outlet pressure range.
k	with piston	Brass piston with seal and support ring. Adjustment by means of non-rising spindle. Balanced single seat valve, pressure gauge connection G1/4“ on both sides of body. Please take note of the outlet pressure ranges.

■ MEDIUM

GS	gaseous with secondary venting	Compressed air and gases. Non-neutral, poisonous gases only in combination with ducted exhaust.
GFO	gaseous and liquid without secondary venting	for water and non-sticking liquids, compressed air and gases

■ OUTLET PRESSURE RANGES

SM	Standard version with diaphragm	Inlet pressure: up to 60 bar	Outlet pressure: 0,5 to 15 bar
SK	Standard version with piston	Inlet pressure: up to 60 bar	Outlet pressure: 5 to 30 bar
HK	High-pressure version with piston	Inlet pressure: up to 60 bar	Outlet pressure: 10 to 50 bar

Fixed setting at a required outlet pressure against surcharge

■ AVAILABLE NOMINAL DIAMETERS AND CONNECTION SIZES

Nominal diameter DN	**8**	**10**	**15**	**20**	**25**	**40**	**50**
Inlet female connection	1/4“ (8)	3/8“ (10)	1/2“ (15)	3/4“ (20)	1“ (25)	1 1/2“ (40)	2“ (50)
Outlet female connection	1/4“ (8)	3/8“ (10)	1/2“ (15)	3/4“ (20)	1“ (25)	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

■ SEALS

FKM	Fluorocarbon	Elastomere moulded diaphragm and seals	–10°C to +120°C
EPDM	Ethylene propylene diene	Elastomere moulded diaphragm and seals	–40°C to +120°C

■ OPTIONS AGAINST SURCHARGE

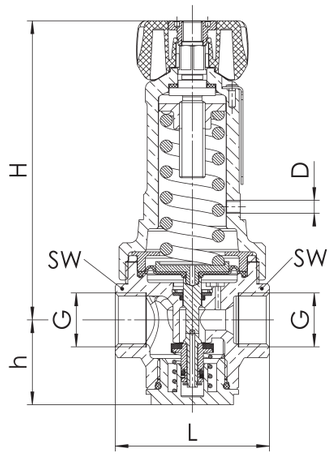
Pressure gauge 40, 42, 44, 45, 46 and 47	Chapter Accessories
GA: ducted exhaust air in case of medium GS (specific ducting of secondary venting)	
GA - SV	Cutting ring threaded connection according to EN ISO 8434-1 for pipe diameter 6mm.
GA - CK	CK-Quick connector for pipe diameter 6mm up to 10 bar.
Wall mount	Order code: 684 Wall mount -DN
Service parts:	
Service Pack (seals and disc) 684 piston version **k**; FKM or EPDM	Order code: 684k-DN... <FKM or EPDM> Service Pack
Service Pack (seals and disc) 684 diaphragm version **mGS**; FKM or EPDM	Order code: 684mGS-DN... <FKM or EPDM> Service Pack
Service Pack (seals and disc) 684 diaphragm version **mGFO**; FKM or EPDM	Order code: 684mGFO-DN... <FKM or EPDM> Service Pack

■ NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

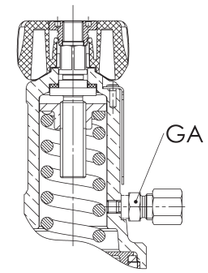
Series 684: Connection, installation dimensions, ranges of adjustment								
Nominal diameter	**DN**	**8**	**10**	**15**	**20**	**25**	**40**	**50**
Connection DIN EN ISO 228	**G**	1/4“ (8)	3/8“ (10)	1/2“ (15)	3/4“ (20)	1“ (25)	1 1/2“ (40)	2“ (50)
Inlet pressure up to	**bar**	60	60	60	60	60	60	60
Outlet pressure:	**SM** bar	0,5-15	0,5-15	0,5-15	0,5-15	0,5-15	0,5-15	0,5-15
	SK bar	5-30	5-30	5-30	5-30	5-30	5-30	5-30
	HK bar	10-50	10-50	10-50	10-50	10-50	10-50	10-50
Installation dimensions in mm	**L**	68	68	60	78	102	136	136
	H	120	120	120	180	215	260	270
	h	33	33	33	40	56	63	70
	SW	26	26	26	32	44	58	70
Ducted exhaust connection	**D**	M5	M5	M5	M5	1/8“	1/8“	1/8“
Dimensions of optional wall mount	**L1**	38	38	38	51	61	85	85
	H1 / H2	18 / 62	18 / 62	18 / 62	18/58	22 / 80	15	15
	B / B1	5,5	5,5	5,5	6,5	8,5	10,5 / 90	10,5 / 90
Weight	**kg**	1,2	1,2	1,2	2,8	5,3	9,4	10,2
Coefficient of flow K_{VS}	**m^3/h**	1,6	1,6	1,6	3,4	5,5	12,7	12,7

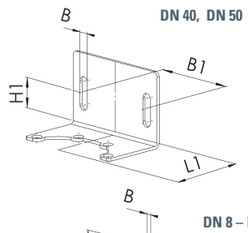
The K_{VS} value was determined according to DIN EN 60534-2-3. Instructions on how to determine size and capacity are to be found under section 2.

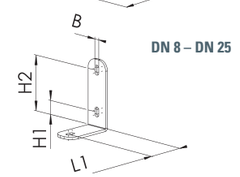
■ MAIN DIMENSIONS, INSTALLATION DIMENSIONS



Options







■ INDIVIDUAL SELECTION / VALVE CONFIGURATION

Series	**Valve version**	**Medium**	**Outlet pressure**	**Nominal diameter DN**	**Connection type**		**Connection size**		**Seal**	**Option**	**Optional feature**	**Quantity**
					Inlet	Outlet	Inlet	Outlet				
684	*m*	*GS*	*SM*	*20*	**f**	**f**	*20*	*20*	*FKM*	*Pressure Gauge 40*	*GA-SV*	*5*
684	*k*	*GFO*	*SK*	*40*	**f**	**f**	*40*	*40*	*EPDM*			*1*
684					**f**	**f**						
684					**f**	**f**						

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→ Overview

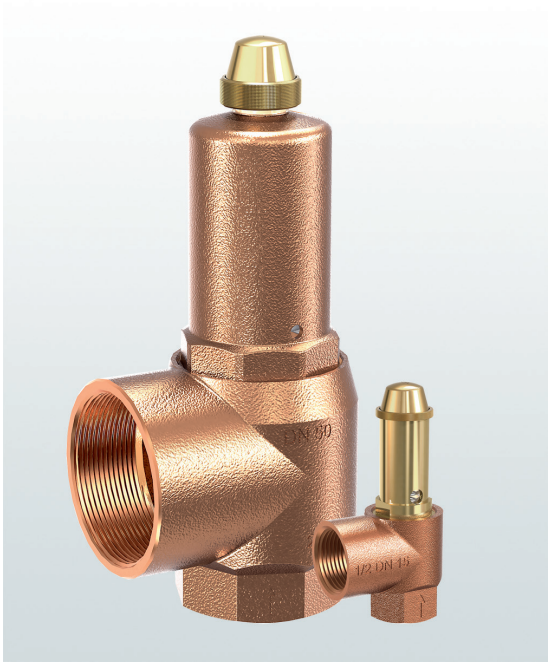
TÜV/CE SAFETY VALVES FOR HEATING AND COOLING

Series	Materials	Temperatures	Pressures	Media	Threaded connection	Flange connection	Page
651mHNK		–10 °C – +120 °C	2.5 bar + 3 bar		1/2" – 2"		10.1
651mHIK		–10 °C – +120 °C	2.5 bar, 3 bar + 3.5 bar		1/2" – 1 1/2"		10.2
451bH		–10 °C – +120 °C	0.5 bar – 25 bar		1/2" – 2"		10.3
851bH		–10 °C – +120 °C	0.5 bar – 25 bar		1/2" – 2"		10.4
452bHL		–10 °C – +120 °C	0.5 bar – 25 bar			DN 40 + DN 50	10.5
852bHL		–10 °C – +120 °C	0.5 bar – 25 bar			DN 40 + DN 50	10.6
352bHL		–10 °C – +120 °C	0.5 bar – 16 bar			DN 40 + DN 50	10.7
451bHF		–40 °C – +120 °C	0.5 bar – 25 bar		1/2" – 2"		10.8
851bHF		–40 °C – +120 °C	0.5 bar – 25 bar		1/2" – 2"		10.9
652mFK		–50 °C – +150 °C	1 bar – 16 bar		1/2" – 2"		10.10

→ Series 651mHNK

651mHNK

Safety valves made of gunmetal, 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 and a permissible heating output of up to 2.700 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. Thanks to the all-metal design these safety valves can also be installed in cases of high environmental or radiation temperatures

- heating systems for building technology- and industrial-applications
- co-generation plants (CHP)

Safety valves are set and sealed at the factory.

MATERIAL

SPECIFICATION

1/2“ – 2“	– 10°C to + 120°C	2,5 bar and 3,0 bar

APPROVALS

TÜV Type test approval 516	**H**
EC type examination	**H**
TSG ZF001-2006	**H**
TR ZU 032/2013 - TR ZU 010/2011	**H**

Requirements

TRD 721
DIN 4751 Part 2
DIN EN 12828
DIN EN ISO 4126-1
PED 2014/68/EU

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

m	Standard with diaphragm	The diaphragm prevents the medium entering into the spring housing and protects moving parts from being affected by the medium.

■ MEDIUM

HN	Hot water (national for Germany)	Flow temperature ≤ 120°C in water heating systems

■ TYPE OF LIFTING MECHANISM

K	Standard with twist-type lifting mechanism

■ 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)					■	
	2 1/2“ (65)						■

■ TYPE OF CONNECTION INLET / OUTLET THREADED CONNECTIONS

f / f	Standard	Female thread BSP-P /Female thread BSP-P	DIN EN 10226, ISO 7-1 / DIN EN 10226, ISO 7-1

■ SEALS

EPDM	Ethylene propylene diene	Elastomere flat seal and diaphragm (up to 100% glycol resistant)	–10°C to +120°C

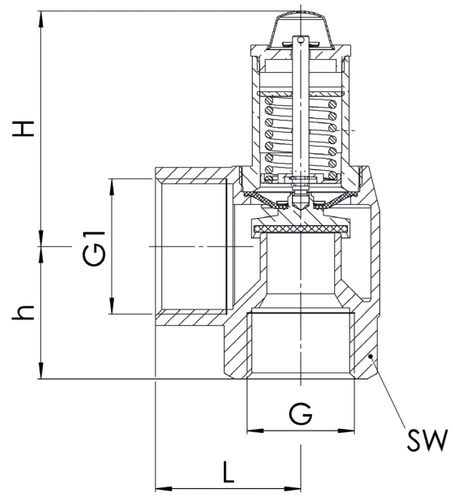
■ OPTIONS

Special versions on request.

■ NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

Series 651mHNK: Connection, installation dimensions, ranges of adjustment							
Nominal diameter	**DN**	**15**	**20**	**25**	**32**	**40**	**50**
Connection DIN EN 10226-1	**G**	1/2" (15)	3/4" (20)	1" (25)	1 1/4" (32)	1 1/2" (40)	2" (50)
Outlet DIN EN 10226-1	**G1**	3/4" (20)	1" (25)	1 1/4" (32)	1 1/2" (40)	2" (50)	2 1/2" (65)
Installation dimensions in mm	**L**	34	40	45	55	62	75
	H	70	65	75	85	155	185
	h	28	34	41	47	54	65
	SW	27	32	40	49	56	68
Weight	**kg**	0,3	0,45	0,75	1,1	2,2	3,2
Set pressure	**bar**	2,5 bar 3 bar	2,5 bar 3 bar	2,5 bar 3 bar	2,5 bar 3 bar	2,5 bar 3 bar	2,5 bar 3 bar

■ 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				
651	**m**	**HN**	**K**	*15*	*f*	*f*	*15*	*20*	**EPDM**		*2,5*	*2*
651	**m**	**HN**	**K**						**EPDM**			
651	**m**	**HN**	**K**						**EPDM**			
651	**m**	**HN**	**K**						**EPDM**			

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Company

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E-Mail

CAPACITY TABLE

Series 651mHNK: Blowing-off rates at 0,5 bar above set pressure

	Nominal diameter DN	15		20		25		32		40		50	
	Set pressure bar	kW	Kcal/h	kW	Kcal/h	kW	Kcal/h	kW	Kcal/h	kW	Kcal/h	kW	Kcal/h
Heating	2,50	50	45.000	100	90.000	200	175.000	350	300.000	600	500.000	900	750.000
	3,00	50	45.000	100	90.000	200	175.000	350	300.000	600	500.000	900	750.000

To achieve heating output according to TRD 721, up to three valves per system with separate discharge pipes can be installed.

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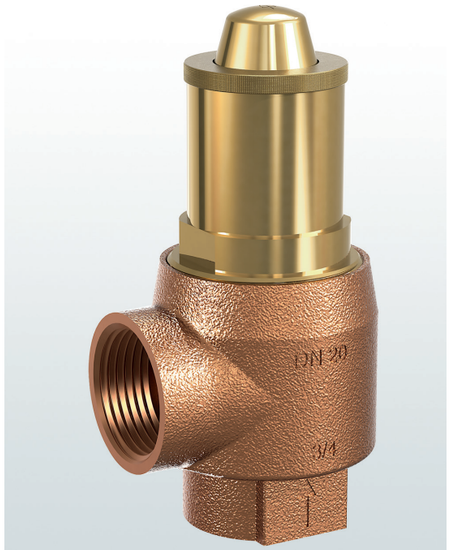
→ Series 651mHIK



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.

Not permitted in Germany.
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.
As these valves are completely made of metal they can also be installed at high environmental or radiation temperatures.

- heating systems for building technology- and industrial-applications
- co-generation plants (CHP)

Safety valves are set and sealed at the factory.

MATERIAL

SPECIFICATION

1/2“ – 1 1/2“

– 10°C to + 120°C

2,5 bar, 3,0 bar and 3,5 bar

APPROVALS

EC type examination

TSG ZF001-2006

TR ZU 032/2013 - TR ZU 010/2011

Requirements

PED 2014/68/EU

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 651mHIK ■ VALVE VERSION

m	Standard with diaphragm	The diaphragm prevents the medium entering into the spring housing and protects moving parts from being affected by the medium.

■ MEDIUM

HI	Hot water (international)	Flow temperature ≤ 120°C in water heating systems

■ TYPE OF LIFTING MECHANISM

K	Standard with twist-type lifting mechanism

■ AVAILABLE NOMINAL DIAMETERS AND CONNECTION SIZES

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

■ TYPE OF CONNECTION INLET / OUTLET THREADED CONNECTIONS

f / f	Standard	Female thread BSP-P /Female thread BSP-P	DIN EN 10226, ISO 7-1 / DIN EN 10226, ISO 7-1

■ SEALS

EPDM	Ethylene propylene diene	Elastomere flat seal and diaphragm (up to 100% glycol resistant)	–10°C to +120°C

■ OPTIONS

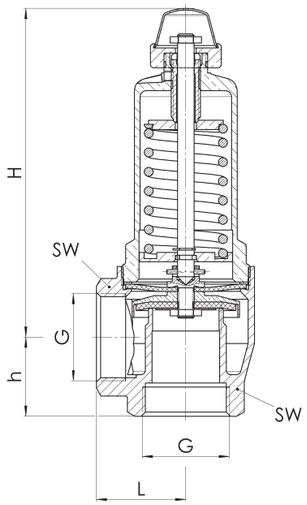
MA	Gauge connection	in size 1/2“ also with gauge connection G 1/4“ available
Against surcharge		
Pressure gauge type 32		Chapter Accessories

■ NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

Series 651mHIK: Connection, installation dimensions, ranges of adjustment						
Nominal diameter	**DN**	**15**	**20**	**25**	**32**	**40**
Connection DIN EN ISO 228	**G**	1/2" (15)	3/4" (20)	1" (25)	1 1/4" (32)	1 1/2" (40)
Outlet DIN EN ISO 228	**G**	1/2" (15)	3/4" (20)	1" (25)	1 1/4" (32)	1 1/2" (40)
Installation dimensions in mm	**L**	26	30	38	42	53
	H	65	72	86	160	183
	h	24	28	30	40	40
	SW	26	32	39	49	56
Weight	**kg**	0,25	0,4	0,7	1,6	2,5
Set pressure[1]	**bar**	2,5 3 3,5	2,5 3 3,5	2,5 3 3,5	2,5 3 3,5	2,5 3 3,5

[1]Other set pressures available on request against surcharge

■ 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				
651	**m**	**HI**	**K**	*15*	**f**	**f**	*15*	*15*	**EPDM**	*MA*	*2,5*	*30*
651	**m**	**HI**	**K**	*25*	**f**	**f**	*25*	*25*	**EPDM**		*3,5*	*5*
651	**m**	**HI**	**K**		**f**	**f**			**EPDM**			
651	**m**	**HI**	**K**		**f**	**f**			**EPDM**			

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CAPACITY TABLE

Series 651mHIK: Blowing-off rates at 0,5 bar above set pressure

	Nominal diameter DN	15		20		25		32		40	
	Set pressure bar	kW	Kcal/h	kW	Kcal/h	kW	Kcal/h	kW	Kcal/h	kW	Kcal/h
Heating	2,50	148	127.000	235	202.000	442	380.000	576	495.000	712	612.000
	3,00	170	146.000	270	232.000	504	433.000	657	565.000	814	700.000
	3,50	191	164.000	304	261.000	568	488.000	739	635.000	913	785.000

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→ Series 451bH

451bH

Safety valves made of stainless steel, with bellows, 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 and 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 and 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.

MATERIAL

SPECIFICATION

1/2" – 2"

– 10°C to + 120°C

0,5 – 25 bar

APPROVALS

TÜV Type test approval 665	**D/G/H**
EC 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 4757 Part 1 and Part 2
AGFW 505	DIN EN 12828
DIN 4751 Part 2	DIN EN ISO 4126-1
DIN 4747 Part 1	PED 2014/68/EU

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	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.

■ MEDIUM

H	Hot water	Flow temperature ≤ 120°C in water heating systems

■ 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

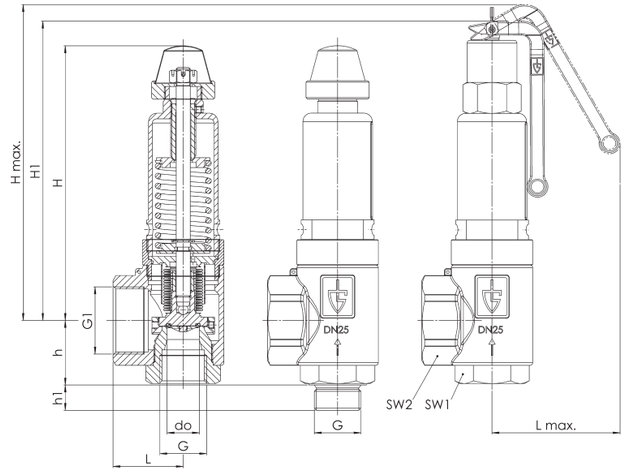
■ OPTIONS

Special versions on request.

■ 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**			

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 / 488 94 88
Please do not forget to add your personal data so that our sales team can contact you.

Name

First Name

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Telephone

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CAPACITY TABLE

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
	0,5	-	-	62	96	96	150	171	266
Heating I	1	44	70	95	151	146	232	258	411
kW	1,5	56	90	124	200	192	309	336	542
	2	68	111	152	249	236	385	401	656
Steam II	2,5	79	129	182	300	277	457	481	793
kg/h	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

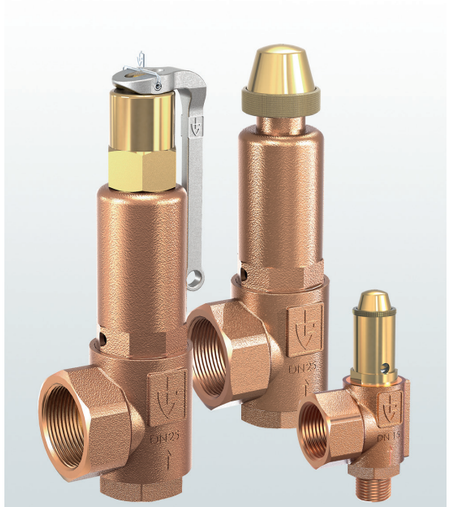
In order to achieve the highest possible heating output, up to three valves per system can be installed.

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 m^3/h water see capacity chart **451bHF on datasheet 10.8**

→ Series 851bH

851bH

Safety valves made of gunmetal, 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 DIN 4757-1 and 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 and AGFW 505.

- heating systems 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.

MATERIAL

SPECIFICATION

1/2“ – 2“ | – 10°C to + 120°C | 0,5 – 25 bar

APPROVALS

TÜV Type test approval 665	**D/G/H**
EC 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 4757 Part 1 and Part 2
AGFW 505	DIN EN 12828
DIN 4751 Part 2	DIN EN ISO 4126-1
DIN 4747 Part 1	PED 2014/68/EU

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	Bronze	CW452K	C51900

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.

■ MEDIUM

H	Hot water	Flow temperature ≤ 120°C in water heating systems

■ 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

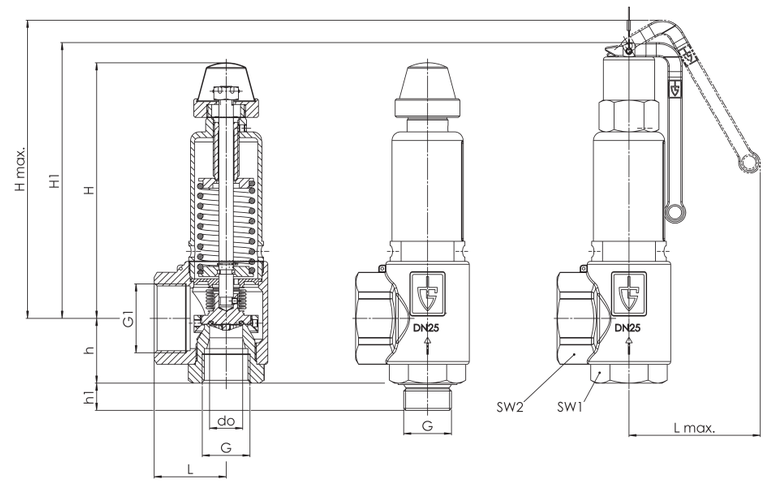
■ OPTIONS

Special versions on request.

■ NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

Series 851bH: 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	138	178	241	241	241
	H1	91	158	192	264	264	264
	Hmax	103	173	207	277	277	277
	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**	0,5-25	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				
851	**b**	**H**	*K*	*25*	*f*	*f*	*25*	*40*	**EPDM**		*4,5*	*5*
851	**b**	**H**	*L*	*32*	*f*	*f*	*40*	*50*	**EPDM**		*5,0*	*2*
851	**b**	**H**							**EPDM**			
851	**b**	**H**							**EPDM**			

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 / 488 94 88
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CAPACITY TABLE

Series 851bH: 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
	0,5	27	42	62	96	96	150	171	266
Heating I	1	44	69	95	151	146	232	258	411
kW	1,5	56	90	124	200	192	309	336	542
	2	68	111	152	249	236	385	401	656
Steam II	2,5	79	129	182	300	277	457	481	793
kg/h	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

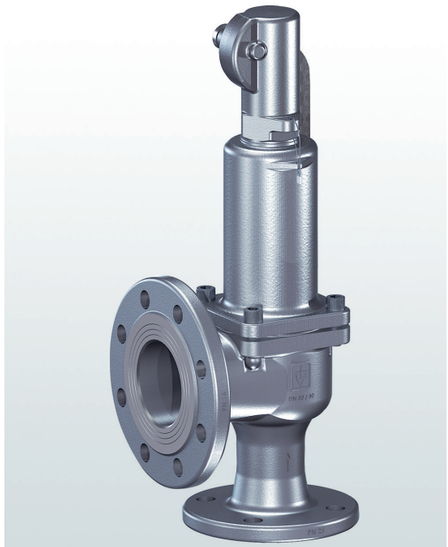
In order to achieve the highest possible heating output, up to three valves per system can be installed.

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 m^3/h water see capacity chart **851bHF on datasheet 10.9**

→ Series 452bHL

452bHL

Safety valves made of stainless steel, with bellows, angle-type with flange 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.
As these valves are completely made of metal, they can also be installed at high environmental or radiation temperatures.

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

Safety valves are set and sealed at the factory.

APPROVALS

TÜV Type test approval 2007	**D/G/H**
EC type examination	**D/G/H**
TR ZU 032/2013 - TR ZU 010/2011	**D/G/H**

Requirements

TRD 721	DIN EN 12828
TRD 421	DIN EN ISO 4126-1
DIN 4751 Part 2	PED 2014/68/EU
DIN 4757 Part 1 and Part 2	

Classification society

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

MATERIAL

SPECIFICATION

DN 40 and DN 50 – 10°C to + 120°C 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	Elastomere	EPDM	

Series 452bHL ■ VALVE VERSION

b	with bellows	for neutral and non-neutral media. Spring, moving parts and the environment are protected from being affected by the medium.

■ MEDIUM

H	Hot water	Flow temperature ≤ 120°C in water heating systems

■ TYPE OF LIFTING MECHANISM

L	Standard with lifting lever

■ AVAILABLE NOMINAL DIAMETERS AND CONNECTION SIZES

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

■ TYPE OF CONNECTION INLET / OUTLET FLANGE CONNECTIONS

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

■ SEALS

EPDM	Ethylene propylene diene	Elastomere moulded seal with metallic support	–10°C to +120°C

■ OPTIONS

Special versions on request.

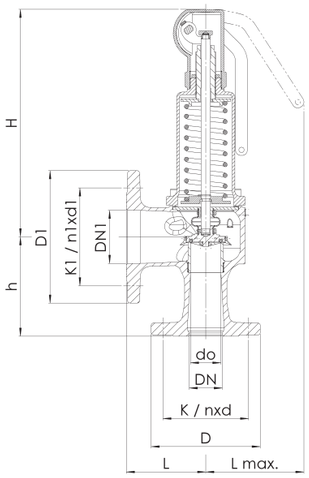
Against surcharge

Connection for condensate pipe G 1/4“ with sealing plug	Order description: **AKL**

■ NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

Series 452bHL: 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	345	345
	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**	17	19
Range of adjustment	**bar**	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				
452	**b**	**H**	**L**	*40*	**FL**	**FL**	*40*	*65*	**EPDM**	*AKL*	*4,5*	*3*
452	**b**	**H**	**L**	*50*	**FL**	**FL**	*50*	*80*	**EPDM**		*4,0*	*1*
452	**b**	**H**	**L**		**FL**	**FL**			**EPDM**			
452	**b**	**H**	**L**		**FL**	**FL**			**EPDM**			

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 / 488 94 88
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

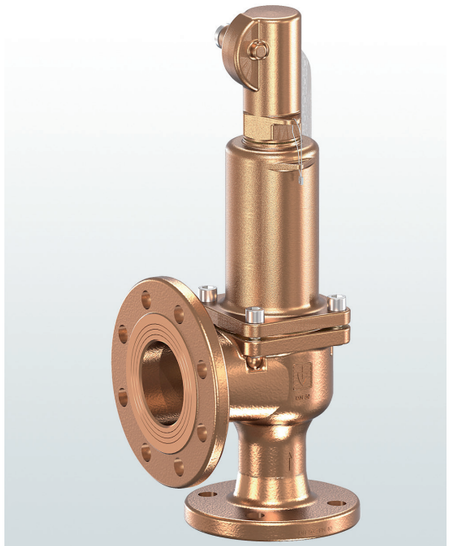
Series 452bHL: Blowing-off rates at 10% above set pressure

Nominal diameter DN		40		50	
	Set pressure bar	I	II	I	II
	0,5	320	503	480	750
Heating I	1	490	785	740	1176
kW	1,5	640	1032	960	1547
	2	780	1273	1190	1939
Steam II	2,5	920	1510	1400	2294
kg/h	3	1040	1726	1600	2661
	3,5	1160	1937	1790	2985
	4	1280	2151	1980	3315
	4,5	1400	2364	2160	3643
	5	1510	2575	2330	3970
	5,5	1630	2789	2520	4299
	6	1750	3003	2690	4629
	6,5	1860	3212	2860	4951
	7	1970	3420	3040	5272
	7,5	2080	3632	3210	5598
	8	2190	3843	3380	5923
	8,5	2300	4053	3540	6247
	9	2410	4263	3710	6570
	9,5	2520	4472	3880	6893
	10	2620	4681	4040	7215
	11	2840	5097	4380	7856
	12	3050	5511	4700	8494
	13	3260	5928	5030	9138
	14	3470	6348	5340	9784
	15	3670	6763	5660	10425
	16	3880	7181	5980	11069
	17	4080	7586	6280	11693
	18	4280	8002	6590	12334
	19	4470	8416	6880	12973
	20	4660	8835	7190	13617
	21	4860	9253	7490	14261
	22	5040	9670	7770	14905
	23	5240	10087	8070	15547
	24	5430	10503	8370	16190
	25	5620	10920	8660	16831

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 m^3/h water see capacity chart **452 on datasheet 3.8**

→ Series 852bHL



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.
As these valves are completely made of metal they can also be installed at high environmental or radiation temperatures.

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

Safety valves are set and sealed at the factory.

MATERIAL

SPECIFICATION

DN 40 and DN 50 | – 10°C to + 120°C | 0,5 – 25 bar

APPROVALS

TÜV Type test approval 2007	**D/G/H**
EC type examination	**D/G/H**
TR ZU 032/2013 - TR ZU 010/2011	**D/G/H**

Requirements

TRD 721	DIN EN 12828
TRD 421	DIN EN ISO 4126-1
DIN 4751 Part 2	PED 2014/68/EU
DIN 4757 Part 1 and Part 2	

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	Stainless steel	1.4404	316 L
Spring	Stainless steel	1.4310	302
Bellows	Elastomere	EPDM	

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■ VALVE VERSION

b	with bellows	for neutral and non-neutral media. Spring, moving parts and the environment are protected from being affected by the medium.

■ MEDIUM

H	Hot water	Flow temperature ≤ 120°C in water heating systems

■ TYPE OF LIFTING MECHANISM

L	Standard with lifting lever

■ AVAILABLE NOMINAL DIAMETERS AND CONNECTION SIZES

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

■ TYPE OF CONNECTION INLET / OUTLET FLANGE CONNECTIONS

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

■ SEALS

EPDM	Ethylene propylene diene	Elastomere moulded seal with metallic support	–10°C to +120°C

■ OPTIONS

Special versions on request.

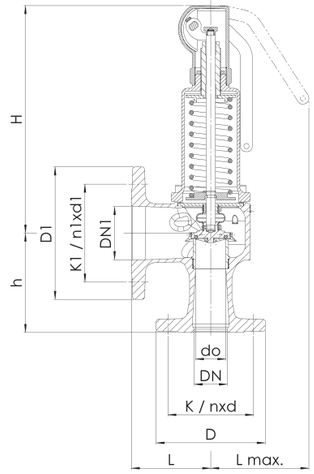
Against surcharge

Connection for condensate pipe G 1/4“ with sealing plug	Order description: **AKL**

■ NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

Series 852bHL: 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	345	345
	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**	17	19
Range of adjustment	**bar**	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				
852	**b**	**H**	**L**	*40*	**FL**	**FL**	*40*	*65*	**EPDM**	*AKL*	*6,5*	*3*
852	**b**	**H**	**L**	*50*	**FL**	**FL**	*50*	*80*	**EPDM**		*4,0*	*1*
852	**b**	**H**	**L**		**FL**	**FL**			**EPDM**			
852	**b**	**H**	**L**		**FL**	**FL**			**EPDM**			

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 / 488 94 88
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CAPACITY TABLE

Series 852bHL: Blowing-off rates at 10% above set pressure

Nominal diameter DN		40		50	
	Set pressure bar	I	II	I	II
	0,5	320	503	480	750
Heating I	1	490	785	740	1176
kW	1,5	640	1032	960	1547
	2	780	1273	1190	1939
Steam II	2,5	920	1510	1400	2294
kg/h	3	1040	1726	1600	2661
	3,5	1160	1937	1790	2985
	4	1280	2151	1980	3315
	4,5	1400	2364	2160	3643
	5	1510	2575	2330	3970
	5,5	1630	2789	2520	4299
	6	1750	3003	2690	4629
	6,5	1860	3212	2860	4951
	7	1970	3420	3040	5272
	7,5	2080	3632	3210	5598
	8	2190	3843	3380	5923
	8,5	2300	4053	3540	6247
	9	2410	4263	3710	6570
	9,5	2520	4472	3880	6893
	10	2620	4681	4040	7215
	11	2840	5097	4380	7856
	12	3050	5511	4700	8494
	13	3260	5928	5030	9138
	14	3470	6348	5340	9784
	15	3670	6763	5660	10425
	16	3880	7181	5980	11069
	17	4080	7586	6280	11693
	18	4280	8002	6590	12334
	19	4470	8416	6880	12973
	20	4660	8835	7190	13617
	21	4860	9253	7490	14261
	22	5040	9670	7770	14905
	23	5240	10087	8070	15547
	24	5430	10503	8370	16190
	25	5620	10920	8660	16831

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 m^3/h water see capacity chart **852 on datasheet 3.9**

→ Series 352bHL

352bHL

Safety valves made of spheroidal graphite cast iron, angle-type with flange 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.
As these valves are completely made of metal, they can also be installed at high environmental or radiation temperatures.

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

Safety valves are set and sealed at the factory.

APPROVALS

TÜV Type test approval 2007	**D/G/H**
EC 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
AGFW 505
DIN 4751 Part 2
DIN EN 12828
DIN EN ISO 4126-1
PED 2014/68/EU

Classification society

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

MATERIAL

SPECIFICATION

DN 40 and DN 50 – 10°C to + 120°C 0,5 – 16 bar

MATERIALS

Component	Material	DIN EN	ASME
Inlet body	Spheroidal graphite cast iron	0.7043	Gr. 60-40-18
Outlet body	Spheroidal graphite cast iron	0.7043	Gr. 60-40-18
Internal parts	Stainless steel	1.4404	316 L
Spring	Stainless steel	1.4310	302
Bellows	Elastomere	EPDM	

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Series 352bHL ■ VALVE VERSION

b	with bellows	for neutral and non-neutral media. Spring, moving parts and the environment are protected from being affected by the medium.

■ MEDIUM

H	Hot water	Flow temperature ≤ 120°C in water heating systems

■ TYPE OF LIFTING MECHANISM

L	Standard with lifting lever

■ AVAILABLE NOMINAL DIAMETERS AND CONNECTION SIZES

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

■ TYPE OF CONNECTION INLET / OUTLET FLANGE CONNECTIONS

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

■ SEALS

EPDM	Ethylene propylene diene	Elastomere moulded seal with metallic support	–10°C to +120°C

■ OPTIONS

Special versions on request.

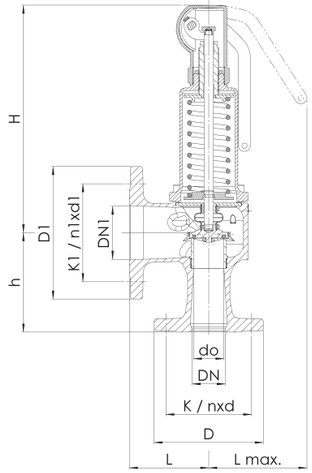
Against surcharge

Connection for condensate pipe G 1/4“ with sealing plug	Order description: **AKL**

■ NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

Series 352bHL: 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	345	345
	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**	17	19
Range of adjustment	**bar**	0,5-16	0,5-16

■ 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				
352	**b**	**H**	**L**	*40*	**FL**	**FL**	*40*	*65*	**EPDM**		*4,5*	*3*
352	**b**	**H**	**L**	*50*	**FL**	**FL**	*50*	*80*	**EPDM**	*AKL*	*3,5*	*1*
352	**b**	**H**	**L**		**FL**	**FL**			**EPDM**			
352	**b**	**H**	**L**		**FL**	**FL**			**EPDM**			

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 / 488 94 88
Please do not forget to add your personal data so that our sales team can contact you.

Name

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Telephone

E-Mail

CAPACITY TABLE

Series 352bHL: Blowing-off rates at 10% above set pressure

Nominal diameter DN		40		50	
	Set pressure bar	I	II	I	II
	0,5	320	503	480	750
Heating I	1	490	785	740	1176
kW	1,5	640	1032	960	1547
	2	780	1273	1190	1939
Steam II	2,5	920	1510	1400	2294
kg/h	3	1040	1726	1600	2661
	3,5	1160	1937	1790	2985
	4	1280	2151	1980	3315
	4,5	1400	2364	2160	3643
	5	1510	2575	2330	3970
	5,5	1630	2789	2520	4299
	6	1750	3003	2690	4629
	6,5	1860	3212	2860	4951
	7	1970	3420	3040	5272
	7,5	2080	3632	3210	5598
	8	2190	3843	3380	5923
	8,5	2300	4053	3540	6247
	9	2410	4263	3710	6570
	9,5	2520	4472	3880	6893
	10	2620	4681	4040	7215
	11	2840	5097	4380	7856
	12	3050	5511	4700	8494
	13	3260	5928	5030	9138
	14	3470	6348	5340	9784
	15	3670	6763	5660	10425
	16	3880	7181	5980	11069

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 m^3/h water see capacity chart **352 on datasheet 3.10**

→ Series 451bHF

451bHF

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

SUITABLE FOR

Liquids	neutral and non-neutral
Hot water	

EXAMPLES OF USE

For the protection of:
- combined heating- and cooling systems
- cooling- and/or heating circuits as well as heat exchanger of co-generation plants (CHP)
- cooling systems and closed cooling circuits

as well as:
- thermostatically protected closed-circuit water heating systems with flow temperatures up to 120°C for all static heights or rated output above 350 kW.

- heating- and cooling plants in building- and industrial technology
- co-generation plants (CHP)
- cooling- and chilling technology

Safety valves are set and sealed at the factory.

MATERIAL

SPECIFICATION

1/2“ – 2“ | – 40°C to + 120°C | 0,5 – 25 bar

APPROVALS

TÜV Type test approval 665, 684	**D/G/H, F**
EC type examination	**D/G/H, L**
TSG ZF001-2006	**D/G/H, L**
TR ZU 032/2013 - TR ZU 010/2011	**D/G/H, F (L)**

Requirements

TRD 721	DIN EN 12828
TRD 421	DIN EN ISO 4126-1
DIN 4751 Part 2	PED 2014/68/EU
DIN 4757 Part 1 and Part 2	

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	Stainless steel	1.4571	316 Ti

Series 451bHF ■ 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.

■ MEDIUM

HF	Hot water and liquid	Hot water with flow temperature ≤ 120°C in hot water systems and/or liquids in cooling or chilling circuits with up to 100% glycol

■ 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	–40°C to +120°C

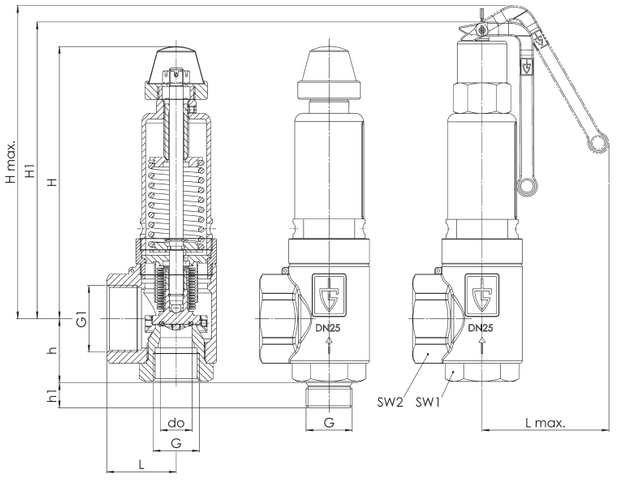
■ OPTIONS

Special versions on request.

■ NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

Series 451bHF: 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**	**HF**	*K*	*20*	*m*	*f*	*20*	*32*	**EPDM**		*4,5*	*3*
451	**b**	**HF**	*L*	*32*	*f*	*f*	*40*	*50*	**EPDM**		*6,0*	*2*
451	**b**	**HF**							**EPDM**			
451	**b**	**HF**							**EPDM**			

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CAPACITY TABLE

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

Nominal diameter DN		15			20			25			32		
Set pressure bar		I	II	III	I	II	III	I	II	III	I	II	III
	0,5	-	-	-	62	96	5,4	96	150	8,8	171	266	15,4
Heating I	1	44	69	2,5	95	151	7,3	146	232	12,0	258	411	20,8
kW	1,5	56	90	3,1	124	200	9,0	192	309	14,7	336	542	25,5
	2	68	111	3,6	152	249	10,4	236	385	16,9	401	656	29,4
Steam II	2,5	79	129	4,0	182	300	11,6	277	457	18,9	481	793	32,9
kg/h	3	89	148	4,4	210	349	12,7	320	532	20,8	555	924	36,0
	3,5	99	166	4,7	234	392	13,7	357	597	22,4	619	1036	38,9
Water III	4	109	184	5,0	258	435	14,7	393	663	24,0	682	1151	41,6
m^3/h	4,5	119	203	5,3	282	478	15,6	430	729	25,4	746	1265	44,1
	5	129	221	5,6	305	521	16,4	465	794	26,8	808	1378	46,5
	5,5	139	239	5,9	329	564	17,2	501	860	28,1	870	1492	48,8
	6	149	257	6,2	352	608	18,0	537	926	29,3	931	1607	50,9
	6,5	159	275	6,4	375	650	18,7	571	990	30,5	992	1719	53,0
	7	168	293	6,6	397	692	19,4	605	1054	31,7	1051	1830	55,0
	7,5	178	311	6,9	420	735	20,1	640	1119	32,8	1111	1943	56,9
	8	187	329	7,1	442	777	20,8	674	1184	33,9	1170	2056	58,8
	8,5	197	347	7,3	465	820	21,4	708	1249	34,9	1229	2168	60,6
	9	206	365	7,5	487	862	22,0	742	1314	35,9	1287	2281	62,4
	9,5	215	383	7,7	508	905	22,6	775	1379	36,9	1345	2392	64,1
	10	225	401	7,9	530	947	23,2	808	1443	37,9	1402	2504	65,8
	11	243	437	8,3	573	1031	24,3	873	1571	39,7	1516	2727	69,0
	12	261	472	8,7	615	1115	25,4	938	1699	41,5	1628	2948	72,0
	13	279	508	9,1	658	1199	26,5	1002	1827	43,2	1739	3172	75,0
	14	296	544	9,4	699	1284	27,5	1066	1957	44,8	1849	3396	77,8
	15	314	580	9,7	740	1368	28,4	1127	2085	46,4	1957	3618	80,5
	16	331	616	10,1	781	1453	29,4	1190	2214	47,9	2065	3842	83,2
	17	348	650	10,4	820	1535	30,3	1250	2339	49,4	2169	4059	85,7
	18	364	686	10,7	860	1619	31,1	1311	2467	50,8	2274	4281	88,2
	19	381	721	11,0	899	1703	32,0	1370	2594	52,2	2378	4503	90,6
	20	398	757	11,2	938	1787	32,8	1430	2723	53,6	2482	4726	93,0
	21	414	793	11,5	978	1872	33,6	1490	2852	54,9	2586	4950	95,3
	22	431	829	11,8	1017	1956	34,4	1549	2981	56,2	2689	5173	97,5
	23	447	865	12,1	1055	2040	35,2	1608	3109	57,5	2791	5396	99,7
	24	463	900	12,3	1093	2125	35,9	1666	3238	58,7	2891	5619	101,9
	25	479	936	12,6	1131	2209	36,7	1723	3366	59,9	2990	5842	104,0

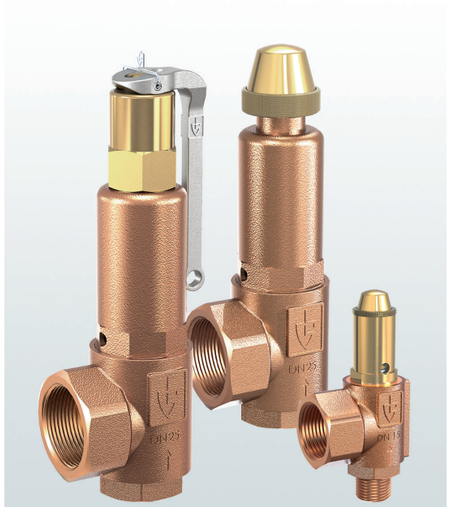
In order to achieve the highest possible heating output, up to three valves per system can be installed.

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 m^3/h water see this capacity chart.

→ Series 851bHF

851bHF

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



SUITABLE FOR

Liquids	neutral and non-neutral
Hot water	

EXAMPLES OF USE

For the protection of:
- combined heating-/ cooling systems
- cooling- and/or heating circuits as well as heat exchangers of co-generation plants (CHP)
- cooling plants and closed cooling circuits

as well as:
- thermostatically protected closed-circuit water heating systems with flow temperatures up to 120°C for all static heights or rated output above 350 kW.

- heating- and cooling plants in building- and industrial technology
- co-generation plants (CHP)
- cooling- and chilling technology

Safety valves are set and sealed at the factory.

MATERIAL

SPECIFICATION

1/2“ – 2“ | – 40°C to + 120°C | 0,5 – 25 bar

APPROVALS

TÜV Type test approval 665, 684	**D/G/H, F**
EC type examination	**D/G/H, L**
TSG ZF001-2006	**D/G/H, F (L)**
TR ZU 032/2013 - TR ZU 010/2011	**D/G/H, F (L)**

Requirements

TRD 721	DIN EN 12828
TRD 421	DIN EN ISO 4126-1
DIN 4751 Part 2	PED 2014/68/EU
DIN 4757 Part 1 and Part 2	

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	Bronze	CW452K	C51900

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Series 851bHF ■ 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.

■ MEDIUM

HF	Hot water and liquid	Hot water with flow temperature ≤ 120°C in hot water systems and/or liquids in cooling or chilling circuits with up to 100% glycol

■ 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	–40°C to +120°C

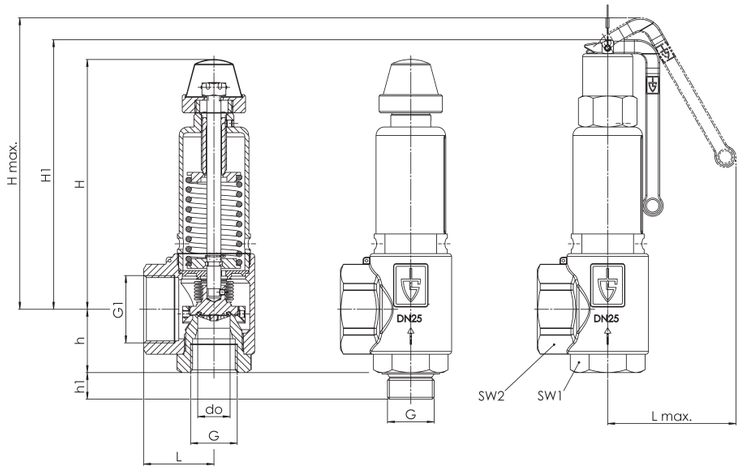
■ OPTIONS

Special versions on request.

■ NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

Series 851bHF: 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	138	178	241	241	241
	H1	91	158	192	264	264	264
	Hmax	103	173	207	277	277	277
	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**	0,5-25	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				
851	**b**	**HF**	*K*	*15*	*m*	*f*	*15*	*25*	**EPDM**		*5*	*3*
851	**b**	**HF**	*L*	*32*	*f*	*f*	*40*	*50*	**EPDM**		*16*	*8*
851	**b**	**HF**							**EPDM**			
851	**b**	**HF**							**EPDM**			

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 / 488 94 88
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CAPACITY TABLE

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

Nominal diameter DN		15			20			25			32		
Set pressure bar		I	II	III	I	II	III	I	II	III	I	II	III
	0,5	27	42	1,9	62	96	5,4	96	150	8,8	205	319	15,4
Heating I	1	44	69	2,5	95	151	7,3	146	232	12,0	258	411	20,8
kW	1,5	56	90	3,1	124	200	9,0	192	309	14,7	336	542	25,5
	2	68	111	3,6	152	249	10,4	236	385	16,9	401	656	29,4
Steam II	2,5	79	129	4,0	182	300	11,6	277	457	18,9	481	793	32,9
kg/h	3	89	148	4,4	210	349	12,7	320	532	20,8	555	924	36,0
	3,5	99	166	4,7	234	392	13,7	357	597	22,4	619	1036	38,9
Water III	4	109	184	5,0	258	435	14,7	393	663	24,0	682	1151	41,6
m^3/h	4,5	119	203	5,3	282	478	15,6	430	729	25,4	746	1265	44,1
	5	129	221	5,6	305	521	16,4	465	794	26,8	808	1378	46,5
	5,5	139	239	5,9	329	564	17,2	501	860	28,1	870	1492	48,8
	6	149	257	6,2	352	608	18,0	537	926	29,3	931	1607	50,9
	6,5	159	275	6,4	375	650	18,7	571	990	30,5	992	1719	53,0
	7	168	293	6,6	397	692	19,4	605	1054	31,7	1051	1830	55,0
	7,5	178	311	6,9	420	735	20,1	640	1119	32,8	1111	1943	56,9
	8	187	329	7,1	442	777	20,8	674	1184	33,9	1170	2056	58,8
	8,5	197	347	7,3	465	820	21,4	708	1249	34,9	1229	2168	60,6
	9	206	365	7,5	487	862	22,0	742	1314	35,9	1287	2281	62,4
	9,5	215	383	7,7	508	905	22,6	775	1379	36,9	1345	2392	64,1
	10	225	401	7,9	530	947	23,2	808	1443	37,9	1402	2504	65,8
	11	243	437	8,3	573	1031	24,3	873	1571	39,7	1516	2727	69,0
	12	261	472	8,7	615	1115	25,4	938	1699	41,5	1628	2948	72,0
	13	279	508	9,1	658	1199	26,5	1002	1827	43,2	1739	3172	75,0
	14	296	544	9,4	699	1284	27,5	1066	1957	44,8	1849	3396	77,8
	15	314	580	9,7	740	1368	28,4	1127	2085	46,4	1957	3618	80,5
	16	331	616	10,1	781	1453	29,4	1190	2214	47,9	2065	3842	83,2
	17	348	650	10,4	820	1535	30,3	1250	2339	49,4	2169	4059	85,7
	18	364	686	10,7	860	1619	31,1	1311	2467	50,8	2274	4281	88,2
	19	381	721	11,0	899	1703	32,0	1370	2594	52,2	2378	4503	90,6
	20	398	757	11,2	938	1787	32,8	1430	2723	53,6	2482	4726	93,0
	21	414	793	11,5	978	1872	33,6	1490	2852	54,9	2586	4950	95,3
	22	431	829	11,8	1017	1956	34,4	1549	2981	56,2	2689	5173	97,5
	23	447	865	12,1	1055	2040	35,2	1608	3109	57,5	2791	5396	99,7
	24	463	900	12,3	1093	2125	35,9	1666	3238	58,7	2891	5619	101,9
	25	479	936	12,6	1131	2209	36,7	1723	3366	59,9	2990	5842	104,0

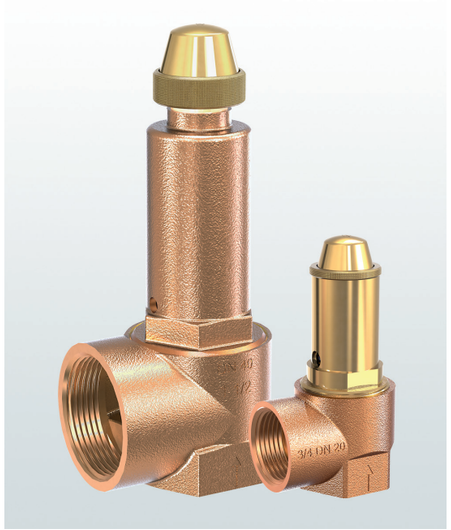
In order to achieve the highest possible heating output, up to three valves per system can be installed.

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 m^3/h water see this capacity chart.

→ Series 652mFK

652mFK

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



SUITABLE FOR

Liquids	neutral and non-neutral

EXAMPLES OF USE

For the protection of:
- cooling plants and closed cooling circuits
- pressure tanks/-systems for water and cooling liquids with a glycol contents of up to 100 %

Please observe plant-specific regulations.

- cooling-/ chilling plants

APPROVALS

TÜV Type test approval 293	**F**
EC type examination	**L**
TR ZU 032/2013 - TR ZU 010/2011	**F (L)**

Requirements

AD 2000 Data sheet A2
DIN EN ISO 4126-1
PED 2014/68/EU

Classification society

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

MATERIAL

SPECIFICATION

1/2" – 2"

– 50°C to + 150°C

1,0 – 16 bar

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

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Series 652mFK ■ VALVE VERSION

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

■ TYPE OF LIFTING MECHANISM

K	Standard with twist-type lifting mechanism

■ 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

■ SEALS

EPDM	Ethylene propylene diene	Elastomere flat seal (up to 100% Glykol)	–50°C to +150°C

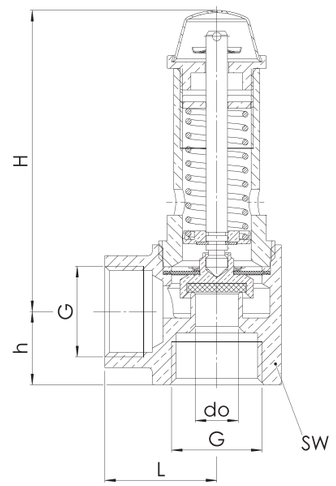
■ OPTIONS

Special versions on request.

■ NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

Series 652mFK: 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



■ 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				
652	**m**	**F**	**K**	*15*	**f**	**f**	*15*	*15*	**EPDM**		*6,5*	*2*
652	**m**	**F**	**K**		**f**	**f**			**EPDM**			
652	**m**	**F**	**K**		**f**	**f**			**EPDM**			
652	**m**	**F**	**K**		**f**	**f**			**EPDM**			

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Version 2015 / 06

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LEISTUNGSTABELLE

Baureihe 652mFK: Abblaseleistung bei 10% Drucküberschreitung							
	Nennweite DN	15	20	25	32	40	50
	Einstelldruck bar						
	1	1,5	2,6	3,9	4,9	7,3	9,4
Wasser	1,5	1,8	3,1	4,7	6,0	8,9	11,6
m^3/h	2	2,1	3,6	5,5	6,9	10,3	13,3
	2,5	2,4	4,0	6,1	7,7	11,6	14,9
	3	2,6	4,4	6,7	8,5	12,7	16,3
	3,5	2,8	4,8	7,2	9,2	13,7	17,7
	4	3,0	5,1	7,7	9,8	14,6	18,9
	4,5	3,2	5,4	8,2	10,4	15,5	20,0
	5	3,4	5,7	8,6	10,9	16,3	21,1
	5,5	3,5	6,0	9,1	11,5	17,1	22,1
	6	3,7	6,3	9,5	12,0	17,9	23,1
	6,5	3,8	6,5	9,9	12,5	18,6	24,1
	7	4,0	6,8	10,2	12,9	19,3	25,0
	7,5	4,1	7,0	10,6	13,4	20,0	25,8
	8	4,3	7,2	10,9	13,8	20,7	26,7
	8,5	4,4	7,4	11,3	14,3	21,3	27,5
	9	4,5	7,7	11,6	14,7	21,9	28,3
	9,5	4,7	7,9	11,9	15,1	22,5	29,1
	10	4,8	8,1	12,2	15,5	23,1	29,8
	11	2,8	6,8	12,8	14,4	23,6	31,3
	12	2,9	7,1	13,4	15,1	24,6	32,7
	13	3,0	7,4	13,9	15,7	25,6	34,0
	14	3,1	7,7	14,5	16,3	26,6	35,3
	15	3,2	8,0	15,0	16,8	27,5	36,5
	16	3,4	8,2	15,5	17,4	28,4	37,7

ARMATUREN GOETZE

→ Overview

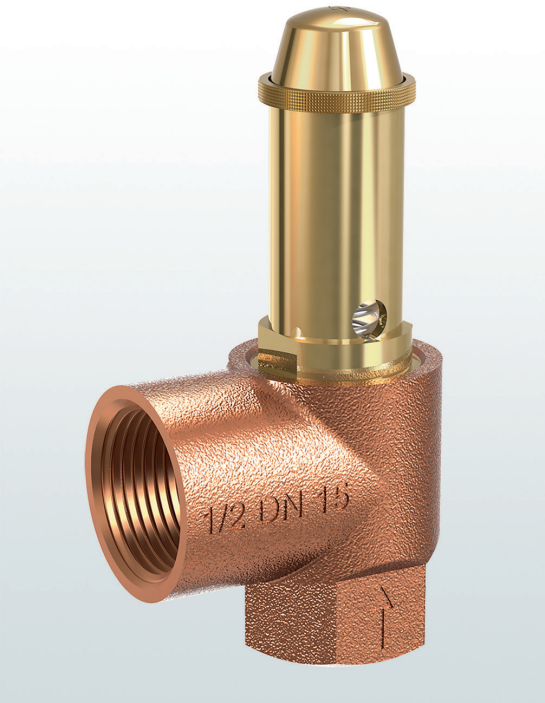
TÜV/CE SAFETY VALVES FOR SOLAR PLANTS AND DISTRICT HEATING

Series	Materials	Temperatures	Pressures	Media	Threaded connection	Flange connection	Page
651mSK		–10 °C – +120 °C	2 bar – 10 bar		1/2" – 1"		11.1
451bG		–60 °C – +400 °C	0.5 bar – 70 bar		1/2" – 2"		11.2
851bG		–60 °C – +225 °C	0.5 bar – 50 bar		1/2" – 2"		11.3
452bGL		–60 °C – +400 °C	0.5 bar – 25 bar			DN 40 + DN 50	11.4
852bGL		–60 °C – +225 °C	0.5 bar – 25 bar			DN 40 + DN 50	11.5
451bH		–10 °C – +120 °C	0.5 bar – 25 bar		1/2" – 2"		11.6
851bH		–10 °C – +120 °C	0.5 bar – 25 bar		1/2" – 2"		11.7

→ Series 651mSK

651mSK

Diaphragm safety valves made of gunmetal, angle-type with threaded connections



SUITABLE FOR

Solar heating systems

EXAMPLES OF USE

For the protection of:
- closed-circuit, intrinsically safe solar heating systems with water or water mixtures as a heat transfer medium, with permissible supply temperatures of up to 120°C.

As these valves are completely made of metal, they can also be installed at high environmental or radiation temperatures. All materials suitable for max. temperatures up to 160°C.

- intrinsically safe, thermal solar plants

For non intrinsically safe plants and temperatures >120°C please use the safety valves 451/851bG series or 452/852bGL series.

Safety valves are set and sealed at the factory.

MATERIAL

SPECIFICATION

1/2“ – 1“	– 10°C to + 120°C	2,0 – 10 bar

APPROVALS

TÜV Type test approval 2013	**SOL**
EC type examination	**SOL**
TSG ZF001-2006	**SOL**
TR ZU 032/2013 -TR ZU 010/2011	**SOL**

Requirements

TRD 721
DIN 4757 Part 1
DIN EN 12976
DIN EN ISO 4126-1
PED 2014/68/EU

Classification society

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

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 651mFK ■ VALVE VERSION

m	Standard with diaphragm	The diaphragm prevents the medium entering into the spring housing and protects moving parts from being affected by the medium.

■ MEDIUM

S	Solar hot-water or solar hot-water mixtures	Flow temperature ≤ 120°C in intrinisically safe solar systems

■ TYPE OF LIFTING MECHANISM

K	Standard with twist-type lifting mechanism

■ AVAILABLE NOMINAL DIAMETERS AND CONNECTION SIZES

Nominal diameter DN		**15**	**20**	**25**
Inlet		1/2“ (15)	3/4“ (20)	1“ (25)
Outlet	1/2“ (15)			
	3/4“ (20)	■		
	1“ (25)		■	
	1 1/4“ (32)			■

■ TYPE OF CONNECTION INLET / OUTLET THREADED CONNECTIONS

f / f	Standard	Female thread BSP-P /Female thread BSP-P	DIN EN 10226, ISO 7-1 / DIN EN 10226, ISO 7-1
m / f	On request for DN 15	Male thread BSP-P /Female thread BSP-P	DIN EN 10226, ISO 7-1 / DIN EN 10226, ISO 7-1

■ SEALS

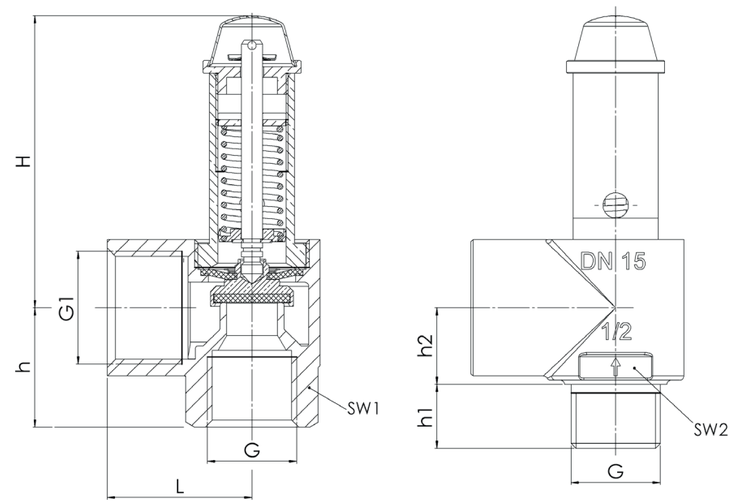
EPDM	Ethylene propylene diene	Elastomere flat seal and diaphragm (up to 100% glycol resistant)	–10°C to +120°C

■ NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

Series 651mSK: Connection, installation dimensions, ranges of adjustment				
Nominal diameter	**DN**	**15**	**20**	**25**
Connection DIN EN 10226-1	**G**	1/2" (15)	3/4" (20)	1" (25)
Outlet DIN EN 10226-1	**G1**	3/4" (20)	1" (25)	1 1/4" (32)
Installation dimensions in mm	**L**	34	40	45
	H	70	65	75
	h	28	34	41
	h1	15	-	-
	h2	18	-	-
	SW1	27	32	40
	SW2	27	-	-
Weight	**kg**	0,30	0,45	0,75
Set pressure[1]	**bar**	3, 4, 6, 8, 10	3, 4, 6, 8, 10	3, 4, 6, 8, 10

[1]Other pressures between 2 bar and 10 bar against surcharge

■ 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				
651	**m**	**S**	**K**	*25*	*f*	**f**	*25*	*32*	**EPDM**		*3,0*	*10*
651	**m**	**S**	**K**	*15*	*m*	**f**	*15*	*20*	**EPDM**		*6,0*	*2*
651	**m**	**S**	**K**			**f**			**EPDM**			
651	**m**	**S**	**K**			**f**			**EPDM**			

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 / 488 94 88
Please do not forget to add your personal data so that our sales team can contact you.

Name

First Name

Company

Telephone

E-Mail

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CAPACITY TABLE

Series 651mSK: Blowing-off rates at 0,5 bar or 10% above set pressure

	Nominal diameter	DN	15		20		25	
Solar plants	Capacity		kW	Kcal/h	kW	Kcal/h	kW	Kcal/h
			50	45.000	100	90.000	200	175.000
	DIN 4757							
	Surface of the collector inlet	m²	50		100		200	

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→ Series 451bG

451bG

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

SUITABLE FOR

Air, gases and vapours	neutral and non-neutral	
Steam		
Solar heating systems		

EXAMPLES OF USE

For the protection of:
- pressure tanks/-systems for neutral / non-neutral vapours and gases
- boilers
- closed-circuit solar systems with temperatures > 120°C and for all static heights.
- district heating systems with temperatures >120°C

- district heating systems primary side
- solar plants in building and industrial technology
- steam- and industrial boiler plants

Safety valves are set and sealed at the factory.

MATERIAL

SPECIFICATION

1/2“ – 2“	– 60°C to + 400°C depending on version	0,5 – 70 bar

APPROVALS

TÜV Type test approval 666	**D/G**
EC type examination	**S/G**
TR ZU 032/2013 - TR ZU 010/2011	**D/G (S/G)**

Requirements

AD 2000 Data sheet A2	DIN EN 12976
TRD 421	DIN EN 12977
AGFW 505	DIN EN ISO 4126-1
DIN 4747 Part 1	PED 2014/68/EU
DIN 4757 Part 1 and Part 2	

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	Stainless steel	1.4571	316 Ti

Series 451bG ■ 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.

■ MEDIUM

G	gaseous	Air, vapours, gases and steam

■ 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	–40°C to +170°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
Against surcharge			
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

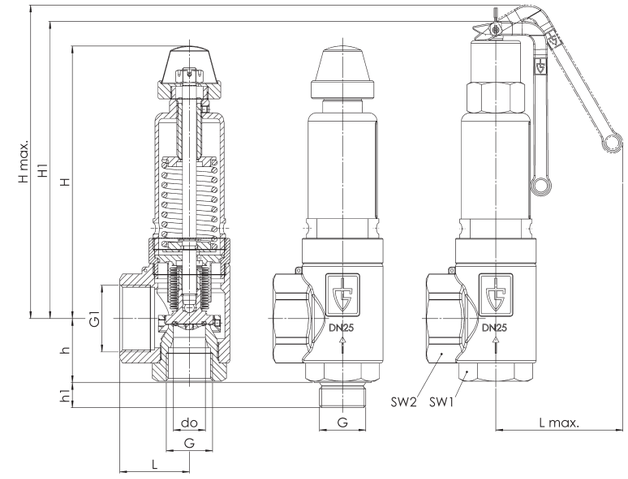
■ OPTIONS

Special versions on request.

■ NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

Series 451bG: 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" (25)	1 1/4" (32)	1 1/2" (40)	2" (50)	2" (50)	2" (50)
Installation dimensions in mm	**L**	40	40	43	50	61	61	61
	Lmax	65	65	91	92	92	92	92
	H	77	131	152	196	263	263	263
	H1	91	149	174	210	286	286	286
	Hmax	103	164	184	225	299	299	299
	h	30	30	39	45	55	69	74
	h1	15	15	16	18	20	23	25
	SW1	30	30	36	46	55	55	70
	SW2	40	40	50	58	70	70	70
	do	15,8	15,8	18	23	30,3	30,3	30,3
Weight	**kg**	0,4	0,8	1,0	1,8	4,0	4,0	4,0
Range of adjustment	**bar**	1-25	25,1-70	0,5-70	0,5-70	0,5-70	0,5-70	0,5-70

■ 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**	**G**	*L*	*25*	*f*	*f*	*25*	*40*	*PTFE*		*16,0*	*5*
451	**b**	**G**	*K*	*32*	*m*	*f*	*40*	*50*	*MD*		*8,5*	*3*
451	**b**	**G**										
451	**b**	**G**										

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 / 488 94 88
Please do not forget to add your personal data so that our sales team can contact you.

Name

First Name

Company

Telephone

E-Mail

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CAPACITY TABLE

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

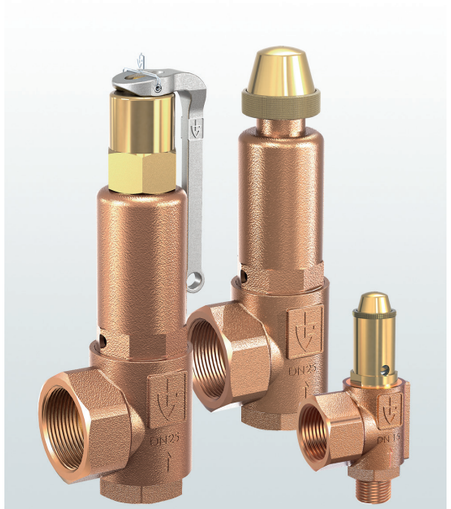
Nominal diameter DN		15		20		25		32	
Set pressure bar		I	II	I	II	I	II	I	II
	0,5	56**	42**	127	96	199	150	353	266
Air I	1	87	70	189	151	291	232	515	411
Nm³/h	1,5	113	90	252	200	390	309	683	542
	2	141	111	316	249	489	385	832	656
Steam II	2,5	165	129	383	300	583	457	1012	793
kg/h	3	189	148	447	349	681	532	1182	924
	3,5	214	166	504	392	768	597	1333	1036
	4	238	184	561	435	855	663	1484	1151
	4,5	262	203	618	478	942	729	1635	1265
	5	286	221	675	521	1029	794	1786	1378
	5,5	310	239	732	564	1116	860	1937	1492
	6	335	257	790	608	1203	926	2088	1607
	6,5	359	275	847	650	1290	990	2239	1719
	7	383	293	904	692	1377	1054	2390	1830
	7,5	407	311	961	735	1464	1119	2542	1943
	8	431	329	1018	777	1552	1184	2693	2056
	8,5	456	347	1075	820	1639	1249	2844	2168
	9	480	365	1132	862	1726	1314	2995	2281
	9,5	504	383	1190	905	1813	1379	3146	2392
	10	528	401	1247	947	1900	1443	3297	2504
	11	577	437	1361	1031	2074	1571	3599	2727
	12	625	472	1475	1115	2248	1699	3902	2948
	13	674	508	1590	1199	2422	1827	4204	3172
	14	722	544	1704	1284	2596	1957	4506	3396
	15	770	580	1818	1368	2771	2085	4808	3618
	16	819	616	1932	1453	2945	2214	5111	3842
	17	867	650	2047	1535	3119	2339	5413	4059
	18	916	686	2161	1619	3293	2467	5715	4281
	19	964	721	2275	1703	3467	2594	6017	4503
	20	1013	757	2390	1787	3641	2723	6320	4726
	21	1061	793	2504	1872	3816	2852	6622	4950
	22	1109	829	2618	1956	3990	2981	6924	5173
	23	1158	865	2732	2040	4164	3109	7226	5396
	24	1206	900	2847	2125	4338	3238	7529	5619
	25	1255	936	2961	2209	4512	3366	7831	5842
	26	1303	972*	3075	2294*	4686	3496*	8133	6067*
	27	1352	1008*	3190	2379*	4860	3626*	8435	6293*
	28	1400	1044*	3304	2465*	5035	3756*	8738	6518*
	29	1449	1081*	3418	2550*	5209	3886*	9040	6744*
	30	1497	1114*	3532	2628*	5383	4005*	9342	6951*
	32	1594	1186*	3761	2799*	5731	4265*	9947	7401*
	34	1691	1258*	3990	2969*	6080	4524*	10551	7851*
	36	1788	1330*	4218	3139*	6428	4783*	11156	8301*
	38	1884	1402*	4447	3309*	6776	5042*	11760	8751*
	40	1981	1474*	4675	3479*	7124	5301*	12365	9200*
	42	2078	1547*	4904	3650*	7473	5562*	12969	9653*
	44	2175	1619*	5132	3821*	7821	5823*	13574	10105*
	46	2272	1692*	5361	3992*	8169	6083*	14178	10558*
	48	2369	1764*	5589	4163*	8518	6344*	14783	11011*
	50	2466	1837*	5818	4335*	8866	6606*	15387	11464*
	52	2562	1910*	6047	4506*	9214	6867*	15992	11917*
	54	2659	1984*	6275	4681*	9563	7134*	16596	12380*
	56	2756	2061*	6504	4868*	9911	7412*	17200	12864*
	58	2853	2136*	6732	5040*	10259	7681*	17805	13330*
	60	2950	2209*	6961	5213*	10608	7943*	18409	13786*
	62	3047	2282*	7189	5385*	10956	8206*	19014	14242*
	64	3144	2355*	7418	5558*	11304	8469*	19618	14699*
	66	3240	2428*	7647	5730*	11652	8732*	20223	15155*
	68	3337	2502*	7875	5905*	12001	8998*	20827	15616*
	70	3434	2578*	8104	6082*	12349	9269*	21432	16086*

*) only possible with metal-to-metal sealing
**) Version with bellows only available from 1 bar

→ Series 851bG

851bG

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



SUITABLE FOR

Air, gases and vapours	neutral and non-neutral	
Steam		
Solar heating systems		

EXAMPLES OF USE

For the protection of:
- pressure tanks/-systems for neutral / non-neutral vapours and gases
- boilers
- Closed-circuit solar systems with temperatures > 120°C and for all static heights.
- district heating systems with temperatures >120°C

- district heating systems primary side
- solar plants in building and industrial technology
- steam- and industrial boiler plants

Safety valves are set and sealed at the factory.

MATERIAL

SPECIFICATION

1/2“ – 2“	– 60°C to + 225°C depending on version	0,5 – 50 bar

APPROVALS

TÜV Type test approval 666	**D/G**
EC type examination	**S/G**
TR ZU 032/2013 - TR ZU 010/2011	**D/G (S/G)**

Requirements

AD 2000 Data sheet A2	DIN EN 12976
TRD 421	DIN EN 12977
AGFW 505	DIN EN ISO 4126-1
DIN 4747 Part 1	PED 2014/68/EU
DIN 4757 Part 1 and Part 2	

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	Bronze	CW452K	C51900

Series 851bG ■ 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.

■ MEDIUM

G	gaseous	Air, vapours, gases and steam

■ 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-Tf / f		Female thread BSP-T /Female thread BSP-P	DIN EN 10226, ISO 7-1 / 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

Further connection types available on request.

■ SEALS

EPDM	Ethylene propylene diene	Elastomere moulded seal with metallic support up to 25 bar	–40°C to +170°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
Against surcharge			
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

■ OPTIONS

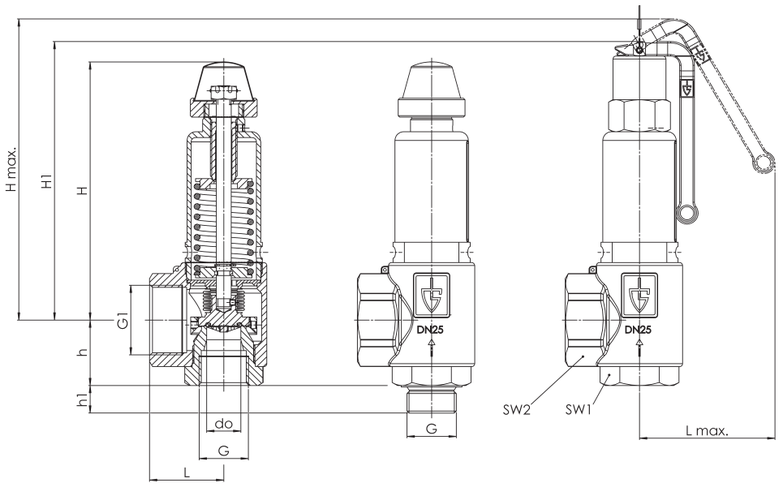
Special versions on request.

■ NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

Series 851bG: 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" (25)	1 1/4" (32)	1 1/2" (40)	2" (50)	2" (50)	2" (50)
Installation dimensions in mm	**L**	40	40	43	50	61	61	61
	Lmax	65	65	91	92	92	92	92
	H	77	131	138	178	241	241	241
	H1	91	149	158	192	264	264	264
	Hmax	103	164	173	207	277	277	277
	h	30	30	39	45	55	69	74
	h1	15	15	16	18	20	23	25
	SW1	30	30	36	46	55	55	70
	SW2	40	40	50	58	70	70	70
	do	15,8	15,8	18	23	30,3	30,3	30,3
Weight	**kg**	0,4	0,8	1,0	1,8	4,0	4,0	4,0
Range of adjustment	**bar**	0,5-25	25,1-50	0,5-50	0,5-50	0,5-50	0,5-50	0,5-50

■ 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				
851	**b**	**G**	*K*	*20*	*m*	*f*	*20*	*32*	*PTFE*		*4,5*	*2*
851	**b**	**G**	*L*	*32*	*f*	*f*	*40*	*50*	*MD*		*10,0*	*1*
851	**b**	**G**										
851	**b**	**G**										

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Name

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CAPACITY TABLE

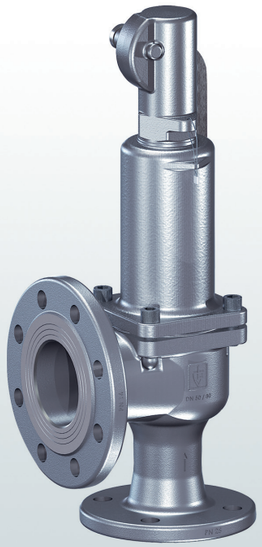
Series 851bG: Blowing-off rates at 10% above set pressure

Nominal diameter DN		15		20		25		32	
Set pressure bar		I	II	I	II	I	II	I	II
	0,5	56	42	127	96	199	150	353	266
Air l	1	88	70	189	151	291	232	515	411
Nm³/h	1,5	113	90	252	200	390	309	683	542
	2	141	111	316	249	489	385	832	656
Steam II	2,5	165	129	383	300	583	457	1012	793
kg/h	3	189	148	447	349	681	532	1182	924
	3,5	214	166	504	392	768	597	1333	1036
	4	238	184	561	435	855	663	1484	1151
	4,5	262	203	618	478	942	729	1635	1265
	5	286	221	675	521	1029	794	1786	1378
	5,5	310	239	732	564	1116	860	1937	1492
	6	335	257	790	608	1203	926	2088	1607
	6,5	359	275	847	650	1290	990	2239	1719
	7	383	293	904	692	1377	1054	2390	1830
	7,5	407	311	961	735	1464	1119	2542	1943
	8	431	329	1018	777	1552	1184	2693	2056
	8,5	456	347	1075	820	1639	1249	2844	2168
	9	480	365	1132	862	1726	1314	2995	2281
	9,5	504	383	1190	905	1813	1379	3146	2392
	10	528	401	1247	947	1900	1443	3297	2504
	11	577	437	1361	1031	2074	1571	3599	2727
	12	625	472	1475	1115	2248	1699	3902	2948
	13	674	508	1590	1199	2422	1827	4204	3172
	14	722	544	1704	1284	2596	1957	4506	3396
	15	770	580	1818	1368	2771	2085	4808	3618
	16	819	616	1932	1453	2945	2214	5111	3842
	17	867	650	2047	1535	3119	2339	5413	4059
	18	916	686	2161	1619	3293	2467	5715	4281
	19	964	721	2275	1703	3467	2594	6017	4503
	20	1013	757	2390	1787	3641	2723	6320	4726
	21	1061	793	2504	1872	3816	2852	6622	4950
	22	1109	829	2618	1956	3990	2981	6924	5173
	23	1158	865	2732	2040	4164	3109	7226	5396
	24	1206	900	2847	2125	4338	3238	7529	5619
	25	1255	936	2961	2209	4512	3366	7831	5842
	26	1303	-	3075	-	4686	-	8133	-
	27	1352	-	3190	-	4860	-	8435	-
	28	1400	-	3304	-	5035	-	8738	-
	29	1449	-	3418	-	5209	-	9040	-
	30	1497	-	3532	-	5383	-	9342	-
	32	1594	-	3761	-	5731	-	9947	-
	34	1691	-	3990	-	6080	-	10551	-
	36	1788	-	4218	-	6428	-	11156	-
	38	1884	-	4447	-	6776	-	11760	-
	40	1981	-	4675	-	7124	-	12365	-
	42	2078	-	4904	-	7473	-	12969	-
	44	2175	-	5132	-	7821	-	13574	-
	46	2272	-	5361	-	8169	-	14178	-
	48	2369	-	5589	-	8518	-	14783	-
	50	2466	-	5818	-	8866	-	15387	-

→ Series 452bGL

452bGL

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



SUITABLE FOR

Air, gases and vapours	neutral and non-neutral	
Steam		
Solar heating systems		

EXAMPLES OF USE

For the protection of:
- pressure tanks/-systems for neutral / non-neutral vapours and gases
- boilers
- closed-circuit solar systems with temperatures > 120°C and for all static heights.
- district heating systems with temperatures >120°C

- district heating systems primary side
- solar plants in building and industrial technology
- solar power stations
- steam- and industrial boiler plants

Safety valves are set and sealed at the factory.

MATERIAL

SPECIFICATION

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

APPROVALS

TÜV Type test approval 2007	**D/G**
EC type examination	**S/G**
TR ZU 032/2013 - TR ZU 010/2011	**D/G (S/G)**

Requirements

AD 2000 Data sheet A2	DIN EN 12976
TRD 421	DIN EN 12977
AGFW 505	DIN EN ISO 4126-1
DIN 4747 Part 1	PED 2014/68/EU
DIN 4757 Part 1 and Part 2	

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	1.4408	CF8M
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 452bGL ■ 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.

■ MEDIUM

G	gaseous	Air, vapours, gases and steam

■ TYPE OF LIFTING MECHANISM

L	Standard with lifting lever

■ AVAILABLE NOMINAL DIAMETERS AND CONNECTION SIZES

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

■ TYPE OF CONNECTION INLET / OUTLET FLANGE CONNECTIONS

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

■ SEALS

EPDM	Ethylene propylene diene	Elastomere moulded seal with metallic support	–40°C to +170°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.

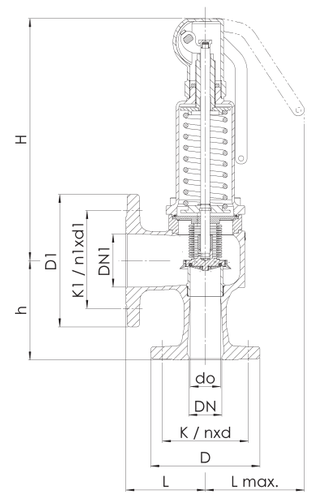
Against surcharge

Connection for condensate pipe G 1/4“ with sealing plug	Order description: **AKL**

■ NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

Series 452bGL: 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	345	345
	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**	17	19
Range of adjustment	**bar**	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				
452	**b**	**G**	**L**	*50*	**FL**	**FL**	*50*	*80*	*EPDM*		*5,0*	*2*
452	**b**	**G**	**L**	*40*	**FL**	**FL**	*40*	*65*	*PTFE*	*AKL*	*16,0*	*3*
452	**b**	**G**	**L**		**FL**	**FL**						
452	**b**	**G**	**L**		**FL**	**FL**						

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CAPACITY TABLE

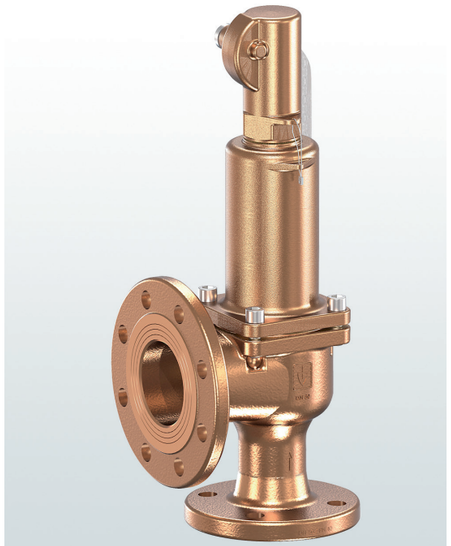
Series 452bGL: Blowing-off rates at 10% above set pressure

Nominal diameter DN		40		50	
Set pressure bar		I	II	I	II
	0,5	667	503	995	750
Air l	1	983	785	1472	1176
Nm³/h	1,5	1299	1032	1948	1547
	2	1615	1273	2461	1939
Steam II	2,5	1926	1510	2926	2294
kg/h	3	2208	1726	3404	2661
	3,5	2491	1937	3839	2985
	4	2773	2151	4275	3315
	4,5	3056	2364	4710	3643
	5	3338	2575	5146	3970
	5,5	3621	2789	5581	4299
	6	3903	3003	6016	4629
	6,5	4186	3212	6452	4951
	7	4468	3420	6887	5272
	7,5	4751	3632	7323	5598
	8	5033	3843	7758	5923
	8,5	5316	4053	8194	6247
	9	5598	4263	8629	6570
	9,5	5881	4472	9064	6893
	10	6163	4681	9500	7215
	11	6728	5097	10371	7856
	12	7293	5511	11241	8494
	13	7858	5928	12112	9138
	14	8423	6348	12983	9784
	15	8988	6763	13854	10425
	16	9553	7181	14725	11069
	17	10118	7586	15595	11693
	18	10683	8002	16466	12334
	19	11248	8416	17337	12973
	20	11813	8835	18208	13617
	21	12378	9253	19079	14261
	22	12943	9670	19949	14905
	23	13508	10087	20820	15547
	24	14073	10503	21691	16190
	25	14638	10920	22562	16831

→ Series 852bGL

852bGL

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



SUITABLE FOR

Air, gases and vapours	neutral and non-neutral	
Steam		
Solar heating systems		

EXAMPLES OF USE

For the protection of:
- pressure tanks/-systems for neutral / non-neutral vapours and gases
- boilers
- closed-circuit solar systems with temperatures > 120°C and for all static heights.
- district heating systems with temperatures >120°C

- district heating systems primary side
- solar plants in building and industrial technology
- steam- and industrial boiler plants

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**
EC type examination	**S/G**
TR ZU 032/2013 - TR ZU 010/2011	**D/G (S/G)**

Requirements

AD 2000 Data sheet A2	DIN EN 12976
TRD 421	DIN EN 12977
AGFW 505	DIN EN ISO 4126-1
DIN 4747 Part 1	PED 2014/68/EU
DIN 4757 Part 1 and Part 2	

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	Stainless steel	1.4404	316 L
Spring	Stainless steel	1.4310	302
Bellows	Stainless steel	1.4571	316 Ti

Series 852bGL ■ 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.

■ MEDIUM

G	gaseous	Air, vapours, gases and steam

■ TYPE OF LIFTING MECHANISM

L	Standard with lifting lever

■ AVAILABLE NOMINAL DIAMETERS AND CONNECTION SIZES

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

■ TYPE OF CONNECTION INLET / OUTLET FLANGE CONNECTIONS

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

■ SEALS

EPDM	Ethylene propylene diene	Elastomere moulded seal with metallic support	–40°C to +170°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.

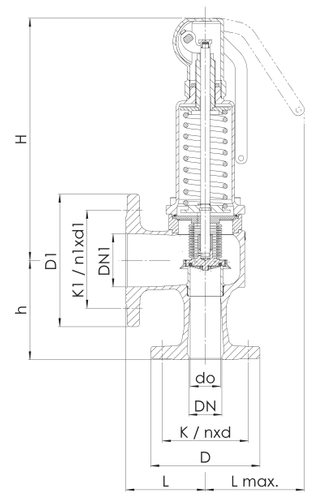
Against surcharge

Connection for condensate pipe G 1/4“ with sealing plug	Order description: **AKL**

■ NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

Series 852bGL: 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	345	345
	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**	17	19
Range of adjustment	**bar**	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				
852	**b**	**G**	**L**	*40*	**FL**	**FL**	*40*	*65*	*PTFE*		*18,0*	*3*
852	**b**	**G**	**L**	*50*	**FL**	**FL**	*50*	*80*	*EPDM*	*AKL*	*5,4*	*2*
852	**b**	**G**	**L**		**FL**	**FL**						
852	**b**	**G**	**L**		**FL**	**FL**						

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CAPACITY TABLE

Series 852bGL: Blowing-off rates at 10% above set pressure

Nominal diameter DN		40		50	
Set pressure bar		I	II	I	II
	0,5	667	503	995	750
Air I	1	983	785	1472	1176
Nm^3/h	1,5	1299	1032	1948	1547
	2	1615	1273	2461	1939
Steam II	2,5	1926	1510	2926	2294
kg/h	3	2208	1726	3404	2661
	3,5	2491	1937	3839	2985
	4	2773	2151	4275	3315
	4,5	3056	2364	4710	3643
	5	3338	2575	5146	3970
	5,5	3621	2789	5581	4299
	6	3903	3003	6016	4629
	6,5	4186	3212	6452	4951
	7	4468	3420	6887	5272
	7,5	4751	3632	7323	5598
	8	5033	3843	7758	5923
	8,5	5316	4053	8194	6247
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	20	11813	8835	18208	13617
	21	12378	9253	19079	14261
	22	12943	9670	19949	14905
	23	13508	10087	20820	15547
	24	14073	10503	21691	16190
	25	14638	10920	22562	16831

→ 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.

MATERIAL

SPECIFICATION

1/2“ – 2“ | – 10°C to + 120°C | 0,5 – 25 bar

APPROVALS

TÜV Type test approval 665	**D/G/H**
EC 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 4757 Part 1 and Part 2
AGFW 505	DIN EN 12828
DIN 4751 Part 2	DIN EN ISO 4126-1
DIN 4747 Part 1	PED 2014/68/EU

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	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.

■ MEDIUM

H	Hot water	Flow temperature ≤ 120°C in water heating systems

■ 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

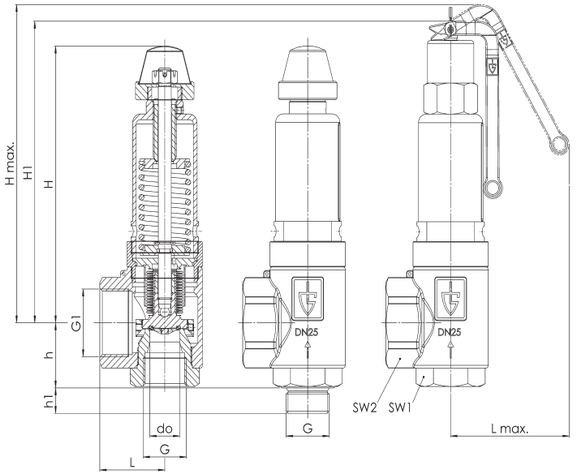
■ OPTIONS

Special versions on request.

■ 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**			

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CAPACITY TABLE

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
	0,5	-	-	62	96	96	150	171	266
Heating I	1	44	70	95	151	146	232	258	411
kW	1,5	56	90	124	200	192	309	336	542
	2	68	111	152	249	236	385	401	656
Steam II	2,5	79	129	182	300	277	457	481	793
kg/h	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

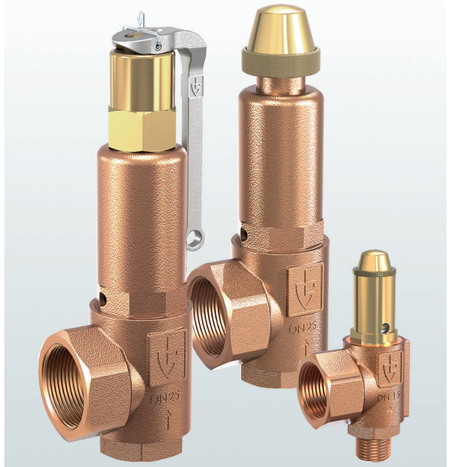
In order to achieve the highest possible heating output, up to three valves per system can be installed.

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 m^3/h water see capacity chart **451bHF on datasheet 9.8**

→ Series 851bH

851bH

Safety valves made of gunmetal, 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 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 and AGFW 505.

- heating systems 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.

MATERIAL

SPECIFICATION

1/2“ – 2“ | – 10°C to + 120°C | 0,5 – 25 bar

APPROVALS

TÜV Type test approval 665	**D/G/H**
EC 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 4757 Part 1 and Part 2
AGFW 505	DIN EN 12828
DIN 4751 Part 2	DIN EN ISO 4126-1
DIN 4747 Part 1	PED 2014/68/EU

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	Bronze	CW452K	C51900

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.	

■ MEDIUM

H	Hot water	Flow temperature ≤ 120°C in water heating systems

■ 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

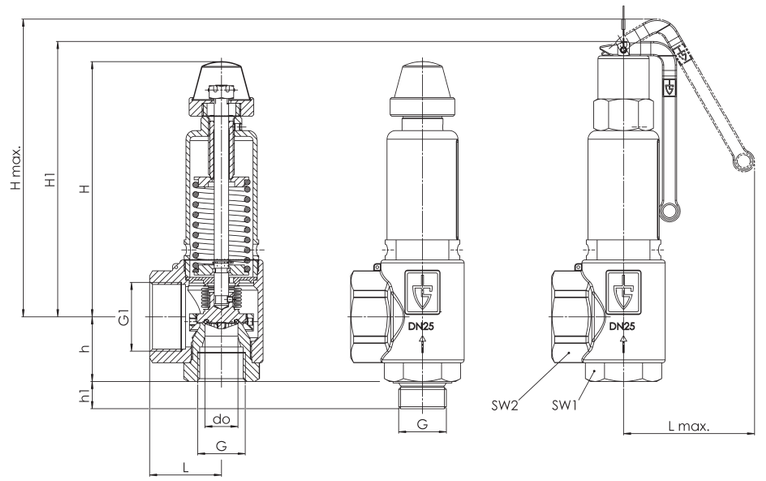
■ OPTIONS

Special versions on request.

■ NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

Series 851bH: 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	138	178	241	241	241
	H1	91	158	192	264	264	264
	Hmax	103	173	207	277	277	277
	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**	0,5-25	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** Inlet	Outlet	**Connection size** Inlet	Outlet	**Seal**	**Options**	**Set pressure**	**Quantity**
851	**b**	**H**	*K*	*25*	*f*	*f*	*25*	*40*	**EPDM**		*4,5*	*5*
851	**b**	**H**	*L*	*32*	*f*	*f*	*40*	*50*	**EPDM**		*5,0*	*2*
851	**b**	**H**							**EPDM**			
851	**b**	**H**							**EPDM**			

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CAPACITY TABLE

Series 851bH: 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
	0,5	27	42	62	96	96	150	171	266
Heating I	1	44	69	95	151	146	232	258	411
kW	1,5	56	90	124	200	192	309	336	542
	2	68	111	152	249	236	385	401	656
Steam II	2,5	79	129	182	300	277	457	481	793
kg/h	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 **851bHF on datasheet 9.9**

ARMATUREN GOETZE

→ Overview

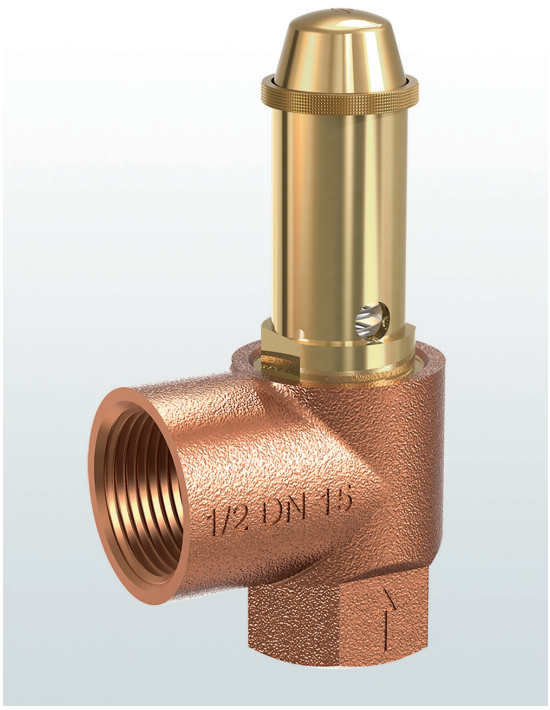
SAFETY FITTINGS FOR WATER SUPPLY IN THE BUILDING TECHNOLOGY SECTOR

Series	Materials	Temperatures	Pressures	Media	Threaded connection	Flange connection	Page
651mWNK		–10 °C – +95 °C	3 bar – 10 bar		1/2“ – 1 1/4“		12.1
651mWIK		–10 °C – +95 °C	3 bar – 10 bar		1/2“ – 2“		12.2
669		–10 °C – +95 °C	3 bar – 10 bar		1/2“ – 3/4“		12.3

→ Series 651mWNK

651mWNK

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



SUITABLE FOR

Warm water

EXAMPLES OF USE

For the protection of:
- closed circuit water heaters for drinking water and process water according to TRD 721, DIN 4753 and DIN 1988 for temperatures up to max. 95°C.

The safety valve is installed in the cold water inlet of the hot water heater according to DIN 1988.

- water heaters for potable and process water and -storage tanks

Safety valves are set and sealed at the factory.

MATERIAL

SPECIFICATION

1/2“ – 1 1/4“	– 10°C to + 95°C	3,0 – 10 bar

APPROVALS

TÜV Type test approval 532	**W**
EC type examination	**W**
TSG ZF001-2006	**W**
TR ZU 032/2013 - TR ZU 010/2011	**W**
Type approval ACS	

Requirements

TRD 721
DIN 4753
DIN 1988
PED 2014/68/EU

Classification society

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

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 651mWNK ■ VALVE VERSION

m	Standard with diaphragm	The diaphragm prevents the medium entering into the spring housing and protects moving parts from being affected by the medium.

■ MEDIUM

WN	Warm water (national for Germany)	Water heaters with temperatures ≤ 95°C

■ TYPE OF LIFTING MECHANISM

K	Standard with twist-type lifting mechanism

■ 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)
Outlet	1/2“ (15)				
	3/4“ (20)	■			
	1“ (25)		■		
	1 1/4“ (32)			■	
	1 1/2“ (40)				■

■ TYPE OF CONNECTION INLET / OUTLET THREADED CONNECTIONS

f / f	Standard	Female thread BSP-P /Female thread BSP-P	DIN EN 10226, ISO 7-1 / DIN EN 10226, ISO 7-1

■ SEALS

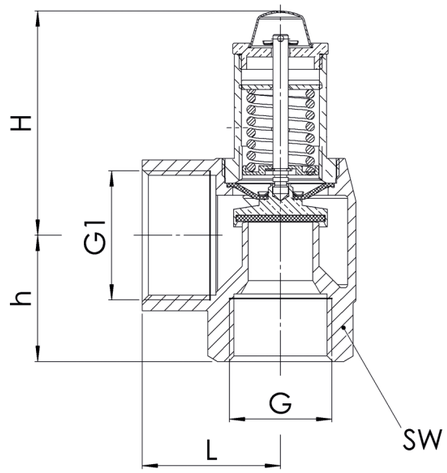
EPDM	Ethylene propylene diene	Elastomere flat seal and diaphragm (up to 100% glycol resistant)	–10°C to +95°C

■ NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

Series 651mWNK: Connection, installation dimensions, ranges of adjustment					
Nominal diameter	**DN**	**15**	**20**	**25**	**32**
Connection DIN EN 10226-1	**G**	1/2" (15)	3/4" (20)	1" (25)	1 1/4" (32)
Outlet DIN EN 10226-1	**G1**	3/4" (20)	1" (25)	1 1/4" (32)	1 1/2" (40)
Installation dimensions in mm	**L**	34	40	45	55
	H	70	65	75	85
	h	28	34	41	47
	SW	27	32	41	50
Weight	**kg**	0,3	0,45	0,75	1,1
Set pressure[1]	**bar**	6; 8; 10	6; 8; 10	6; 8; 10	6; 8; 10

[1]Other set pressures available on request against surcharge

■ MAIN DIMENSIONS, INSTALLATION DIMENSIONS



■ INDIVIDUAL SELECTION / VALVE CONFIGURATION

Series	**Valve version**	**Medium**	**Lifting device**	**Nominal diameter DN**	**Connection type**		**Connectiongröße**		**Seal**	**Options**	**Set pressure**	**Quantity**
					Inlet	Outlet	Inlet	Outlet				
651	**m**	**WN**	**K**	*25*	**f**	**f**	*25*	*32*	**EPDM**		*6,0*	*10*
651	**m**	**WN**	**K**		**f**	**f**			**EPDM**			
651	**m**	**WN**	**K**		**f**	**f**			**EPDM**			
651	**m**	**WN**	**K**		**f**	**f**			**EPDM**			

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CAPACITY TABLE

Series 651mWNK: Blowing-off rates at 10% above set pressure						
	Nominal diameter DN		15	20	25	32
	Set pressure bar		6; 8; 10	6; 8; 10	6; 8; 10	6; 8; 10
Warm water	Contents of the service water tank in l	over		200	1.000	
		to	200	1.000	5.000	5.000
	Max. permissible heating output in kW		75	150	250	
	Above 5000 l the heat output determines the parameters	Heating output in kW				26.000

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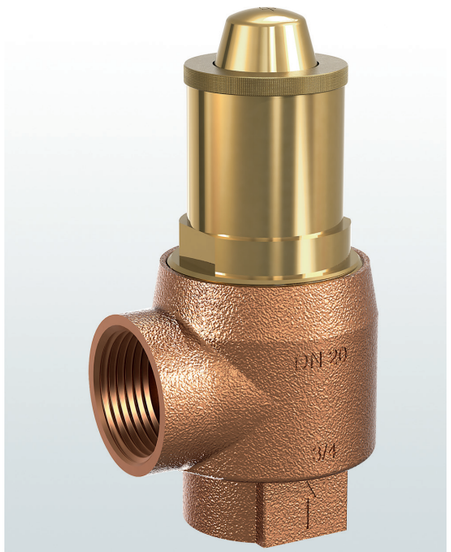
→ Series 651mWIK

651mWIK

Diaphragm safety valves made of gunmetal, angle-type with threaded connections



SUITABLE FOR

Warm water

EXAMPLES OF USE

For the protection of:
- closed circuit water heaters for drinking water and process water.
The safety valve is installed in the cold water inlet of the hot water heater.
Not permitted in Germany.

- water heaters for potable and process water and -storage tanks

Safety valves are set and sealed at the factory.

APPROVALS

European Pressure Equipment Directive

TSG ZF001-2006

TR ZU 032/2013 - TR ZU 010/2011

Type approval ACS

Requirements
PED 2014/68/EU

Classification society

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

MATERIAL

SPECIFICATION

1/2" – 2"

– 10°C to + 95°C

3,0 – 10 bar

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 651mWIK ■ VALVE VERSION

m	Standard with diaphragm	The diaphragm prevents the medium entering into the spring housing and protects moving parts from being affected by the medium.

■ MEDIUM

WI	Warm water (international)	Water heaters with temperatures ≤ 95°C

■ TYPE OF LIFTING MECHANISM

K	Standard with twist-type lifting mechanism

■ 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

■ SEALS

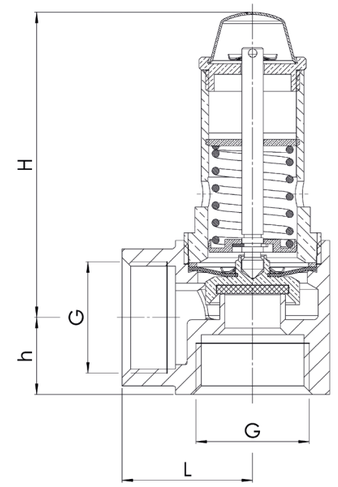
EPDM	Ethylene propylene diene	Elastomere flat seal and diaphragm (up to 100% glycol resistant)	–10°C to +95°C

■ NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

Series 651mWIK: 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
Set pressure[1]	**bar**	6; 8; 10	6; 8; 10	6; 8; 10	6; 8; 10	6; 8; 10	6; 8; 10

[1]Other set pressures available on request against surcharge

■ 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				
651	**m**	**WI**	**K**	*20*	**f**	**f**	*20*	*20*	**EPDM**		*7,0*	*3*
651	**m**	**WI**	**K**		**f**	**f**			**EPDM**			
651	**m**	**WI**	**K**		**f**	**f**			**EPDM**			
651	**m**	**WI**	**K**		**f**	**f**			**EPDM**			

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CAPACITY TABLE

Series 651mWIK: Blowing-off rates at 0,6 bar or 10% above set pressure								
	Nominal diameter DN		15	20	25	32	40	50
	Set pressure bar		6; 8; 10	6; 8; 10	6; 8; 10	6; 8; 10	6; 8; 10	6; 8; 10
						For 8000 liters or more the heating power determines the connection size		
	Contents of the service water tank in l	over		120	1.000			
		to	120	1.000	8.000			
Warm water	Heating output in Gcal/h	1 bar				12,6	18,4	22,2
		2 bar				13,4	22,6	26,4
		3 bar				16,8	23,6	30,0
		4 bar				18,5	24,6	34,1
		5 bar				17,6	28,5	37,3
		6 bar				20,0	30,2	39,0
		7 bar				23,5	35,2	41,0
		8 bar				23,5	36,9	43,5
		9 bar				24,4	38,7	44,1
		10 bar				25,2	43,6	46,0

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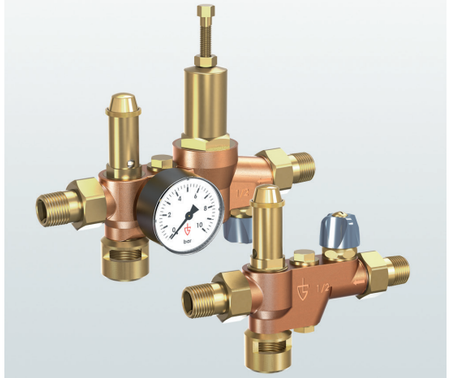
→ Series 669

669

Safety valve assembly made of gunmetal, straightway form with threaded connections



SUITABLE FOR

Warm water

EXAMPLES OF USE

For the protection of:
- closed circuit water heaters for drinking water and process water.
The safety valve assembly is installed in the cold water inlet of the hot water heater. The use of this compact valve assembly ensures that the correct order of the valves according to DIN 1988 is adhered to.

- water heaters for potable and process water and -storage tanks

The safety valve of the valve assemby is set and sealed at the factory.

MATERIAL

SPECIFICATION

1/2“ and 3/4“

– 10°C to + 95°C

3,0 – 10 bar

APPROVALS

European Pressure Equipment Directive

Requirements

PED 2014/68/EU

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

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Series 669 ■ VALVE VERSION

s	Standard	consisting of: shut-off valve, dirt trap with fine stainless steel strainer, control screw for non-return valve, non-return valve, diaphragm safety valve with drain valve, threaded connections on both ends.
p	Version with pressure reducer	in addition to standard version equipped with a pressure reducer and a pressure gauge for the outlet pressure. For water pressures over 4,5 bar it is necessary to install a pressure reducer on the inlet side. The replaceable pressure reducing valve that is integrated in the safety valve assembly consists of a pressure-relieved single seat valve with stainless steel seat, strainer made of stainless steel and fabric-reinforced elastomere diaphragm.

■ MEDIUM

W	Warm water	Water heaters with temperatures ≤ 95°C

■ TYPE OF LIFTING MECHANISM

K	Standard with twist-type lifting mechanism

■ AVAILABLE NOMINAL DIAMETERS AND CONNECTION SIZES

Nominal diameter DN	**15**	**20**
Inlet threaded connection	1/2“ (15)	3/4“ (20)
Outlet threaded connection	1/2“ (15)	3/4“ (20)

■ TYPE OF CONNECTION INLET / OUTLET THREADED CONNECTIONS

BSP-Tm / BSP-Tm	Standard threaded connections	Male thread BSP-T / Male thread BSP-T	DIN EN 10226, ISO 7-1 / DIN EN 10226, ISO 7-1

■ SEALS

EPDM / NBR	Ethylene propylene diene / Nitrile rubber	Elaatomere seals and diaphragm	–10°C to +95°C

■ OPTIONS

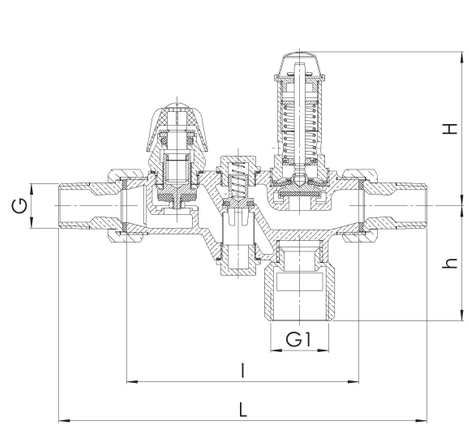
Against surcharge	
Galvanically nickel-plated + 25%	
Mirror finish chrome-plated + 40%	
Pressure gauge 36 (as standard for 669pWK)	Chapter Accessories

■ NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

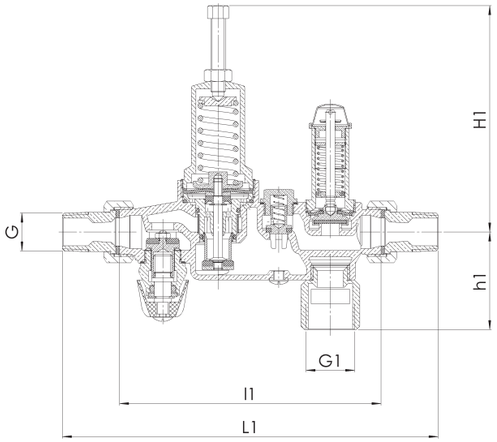
Series 669: Connection, installation dimensions, ranges of adjustment			
Nominal diameter	**DN**	**15**	**20**
Inlet DIN EN 10226	**G**	1/2" (15)	3/4" (20)
Outlet DIN EN 10226	**G**	1/2" (15)	3/4" (20)
Installation dimensions in mm	**L / L1**	160 / 205	185 / 237
	l / l1	106 / 142	115 / 167
	H / H1	75 / 110	80 / 130
	h / h1	53 / 53	55 / 60
	G1	3/4"	1"
Weight	**kg / kg1**	1 / 1,4	1,3 / 2,2
Set pressure of the safety valve[1]			
– Standard	**bar**	6	6
– on request	**bar**	8; 10	8; 10
Pressures for pressure reducer at Version pWK			
– Inlet pressure up to	**bar**	25	25
– Outlet pressure (pre-set[1])	**bar**	1-7 (4,5)	1-7 (4,5)
for contents in litres up to	**l**	200	1000

[1]Other set pressures available on request against surcharge

■ MAIN DIMENSIONS, INSTALLATION DIMENSIONS



669sWK



669pWK

■ 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				
669	*p*	**W**	**K**	*20*	**BSP-T m**	**BSP-T m**	*20*	*20*	**EPDM / NBR**		*10,0*	*5*
669	*s*	**W**	**K**	*15*	**BSP-T m**	**BSP-T m**	*15*	*15*	**EPDM / NBR**	*HV, Manometer*	*6,0*	*1*
669		**W**	**K**		**BSP-T m**	**BSP-T m**			**EPDM / NBR**			
669		**W**	**K**		**BSP-T m**	**BSP-T m**			**EPDM / NBR**			

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 / 488 94 88
Please do not forget to add your personal data so that our sales team can contact you.

First Name

Name

Company

Telephone

E-Mail

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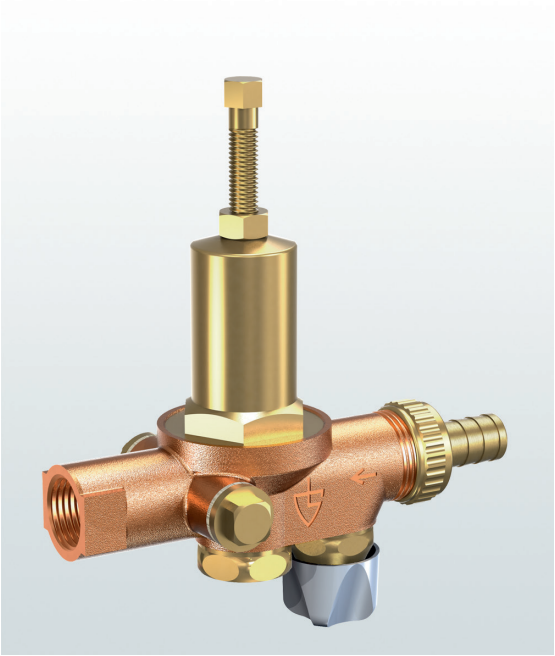
ARMATUREN GOETZE

→ Overview

■ ACCESSORIES

Series	Materials	Temperatures	Pressures	Media	Threaded connection	Flange connection	Page
905H		–10 °C – +95 °C	Inlet pressure: up to 25 bar / Outlet pressure: from 0.5 bar to 3.5 bar		1/2“		13.1
646		–10 °C – +225 °C	pressure-tight up to 16 bar		1/2“ – 1 1/2“		13.2
647		–10 °C – +95 °C	pressure-tight up to 10 bar		1/2“ – 1 1/2“		13.3
685		–10 °C – +130 °C	pressure-tight up to 16 bar		3/8“ – 2“		13.4
620		–30 °C – +120 °C	pressure-tight up to 6 bar		3/8“ – 1/2“		13.5
622		–10 °C – +225 °C	pressureless		3/8“ – 3/4“		13.6
625		–10 °C – +225 °C	pressureless		3/8“ – 1“		13.7
Pressure gauge							13.8
Locking sleeve unit							13.9
1940 / 1945		–60 °C – +225 °C	-6 mbar to -800 mbar		1/2“ – 1“		13.10
1960 / 1965		–60 °C – +225 °C	-6 mbar to -800 mbar		1/2“ – 1“		13.11

→ Type 905H



SUITABLE FOR

Liquids	neutral	

EXAMPLES OF USE

For the protection of:
- heating systems according to DIN 4751 and DIN EN 12828 to prevent damage due to excess pressure during filling.

The filling valve is installed in the feed line. The filling of the system is automatically controlled by the built-in pressure reducer. The filling valve shuts off when the set pressure is reached and thus prevents overfilling.

For use in Germany the hose connection has to be disconnected from the filling valve after filling of the plant. For use outside Germany this valve can be supplied with a male union joint G 1/2" on the inlet side. Please inform us when ordering which kind of connection you require.

VALVE VERSION

Consists of shut-off valve, pressure reducer, stainless steel strainer insert with mesh size 0,25 mm, gauge connection G 1/4" on both ends, non-return valve, control screw for non-return valve,hose connection on inlet side 1/2" (Germany) or threaded male connection G1/2" and threaded female connection on the outlet side.
Order example for filling valve 905H-15

Optional: Pressure gauge 36 or 39 (see Chapter Accessories)

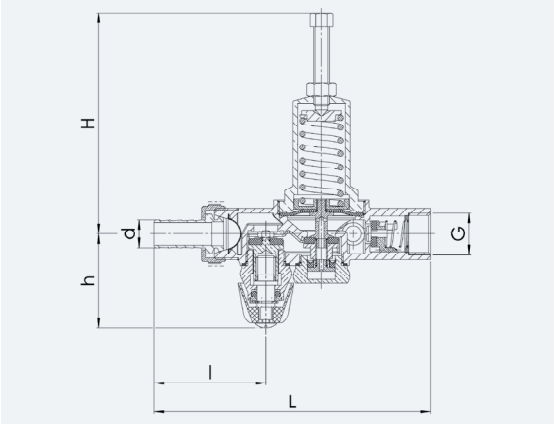
MATERIAL

SPECIFICATION

1/2"

from –10°C to + 95°C

Inlet pressure: up to 25 bar
Outlet pressure: from 0,5 to 3,5 bar



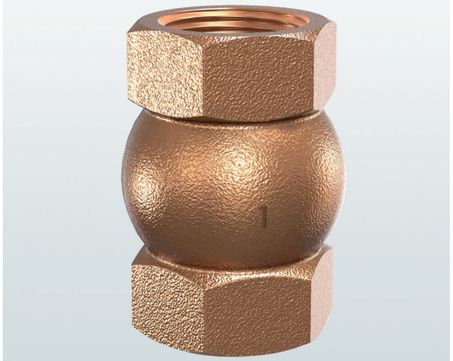
NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

Type 905: Connection, installation dimensions, ranges of adjustment		
Nominal diameter	DN	15
Connection DIN EN ISO 228	G	1/2" (15)
Inlet pressure up to	bar	25
Outlet pressure	bar	0,5–3,5
Installation dimensions in mm	L	142
	l	58
	H	115
	h	50
	d	15
Weight	kg	0,75

MATERIALS

Component	Material	DIN EN	ASME
Body	Gunmetal	CC499K	CC499K
Internal parts	Brass	CW617N	CW617N
Spring	Spring steel	1.1200	ASTM A228
Seals	NBR, EPDM		

→ Type 646



SUITABLE FOR

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

EXAMPLES OF USE

For automatic shut-off in vertical piping systems.
Heavy version without spring. Closes only by means of flowing media or the weight of the sealing element.

Due to all-metal design with metal-to-metal sealing for high temperatures, these valves are suitable for harsh operating conditions and hydraulic-automatic control.

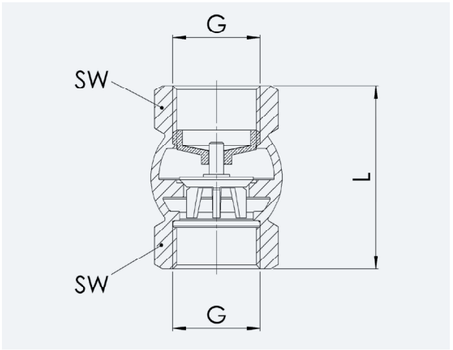
MATERIAL

SPECIFICATION

1/2“ – 1 1/2“

from –10°C to + 225°C

pressure-tight up to 16 bar



NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

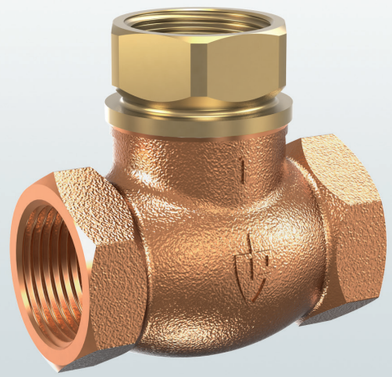
Type 646: Connection, Installation dimensions, Weight

Nominal diameter	DN	15	20	25	32	40
Connection DIN EN ISO 228	G	1/2“ (15)	3/4“ (20)	1“ (25)	1 1/4“ (32)	1 1/2“ (40)
Installation dimensions in mm	L	60	64	70	78	86
	SW	27	33	41	51	58
Weight	kg	0,2	0,3	0,5	0,7	1

MATERIALS

Component	Material	DIN EN	ASME
Body	Gunmetal	CC499K	CC499K
Internal parts	Brass/Gunmetal	CW617N/CC499K	CW617N/CC499K
Seal	Brass/Gunmetal	CW617N/CC499K	CW617N/CC499K

→ Type 647



SUITABLE FOR

Liquids	neutral

EXAMPLES OF USE

For automatic shut-off in closed-circuit piping systems with gravitational circulation in the warm water distribution circuit.

- distribution of drinking- and process water

SIZE DETERMINATION

In order to avoid erratic movements of the valve disc while in use, it is essential to choose the right nominal size of the double non-return valve in relation to the rate of output. The rates of flow should be according to the following table:

Type 647: Flow volumes						
Nominal diameter	**DN**	**15**	**20**	**25**	**32**	**40**
Connection DIN EN ISO 228	**G**	1/2“ (15)	3/4“ (20)	1“ (25)	1 1/4“ (32)	1 1/2“ (40)
Flow volume	**l/min**	5–25	20–50	40–75	65–120	100–200

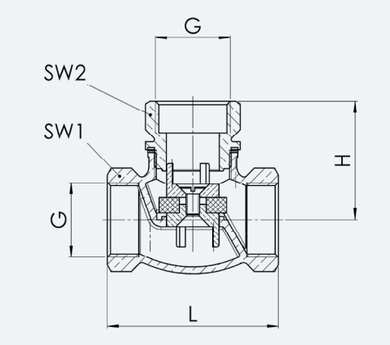
MATERIAL

SPECIFICATION

1/2“ – 1 1/2“

from –10°C to + 95°C

pressure-tight up to 10 bar



NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

Type 647: Connection, Installation dimensions, Weight						
Nominal diameter	**DN**	**15**	**20**	**25**	**32**	**40**
Connection DIN EN ISO 228	**G**	1/2“ (15)	3/4“ (20)	1“ (25)	1 1/4“ (32)	1 1/2“ (40)
Installation dimensions in mm	**L**	54	64	76	95	108
	H	35	45	51	73	78
	SW1	26	31	40	51	59
	SW2	26	31	38	51	58
Weight	**kg**	0,25	0,35	0,55	1,2	1,7

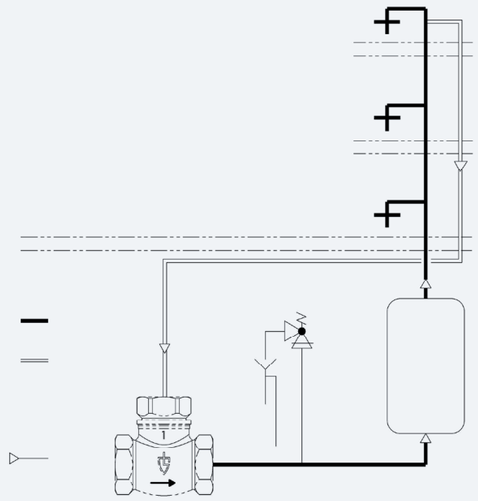
MATERIALS

Component	Material	DIN EN	ASME
Body	Gunmetal	CC499K	CC499K
Internal parts	Brass	CW617N	CW617N
Seal	NBR		

TYPE 647 ■ INSTALLATION NOTE FOR DOUBLE NON-RETURN VALVES

To acheive the best functional effect, the piping system should be connected to the boiler in the lowest possible position. This is assured by the non-return valve. For hot water heaters with gravity circulation it offers these **Advantages:**

- Hot water at any time
- No entry of cold water into hot water pipe
- No return flow of the hot water into the cold water pipe, the pressure reducer and water meter are protected against calcification
- Economization of energy and drinking water



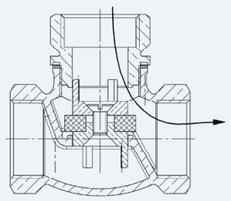
Function:

Open circulation pipe (picture 1)

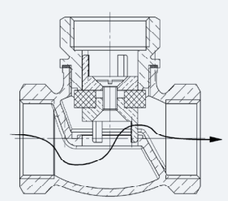
If no hot water is drawn the cold water is shut off by lower part of the valve cone.

Closed circulation (picture 2)

If hot water is drawn the valve cone is lifted by the water flow from the cold water pipe to the boiler. The upper part of the cone blocks the circulation pipe so that no cold water can enter into the warm water pipe.



Picture 1



Picture 2

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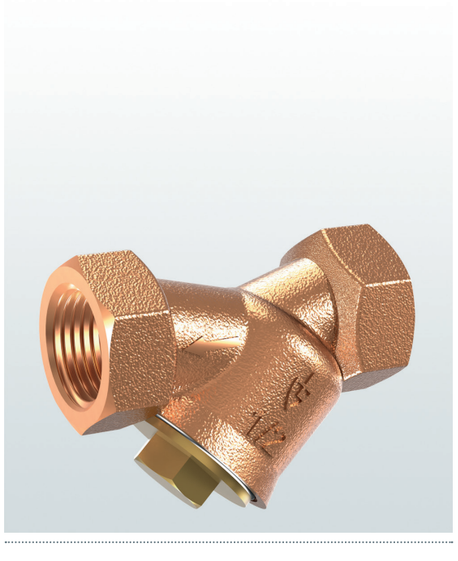
→ Type 685



SUITABLE FOR

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

EXAMPLES OF USE

For the protection of downstream plants and valves against contamination. Suitable for water, neutral / non-neutral liquids, oil, compressed air and neutral/ non-neutral gases. Please observe chemical resistance of the seal.

The dirt traps are equipped with double strainers made of stainless steel. On request without surcharge also possible with coarse strainer.
Order example for type 685 with connection 1“ and version with coarse strainer: 685-25-GR

Replacement part: double strainer made of stainless steel
Order code: 685DS-DN..

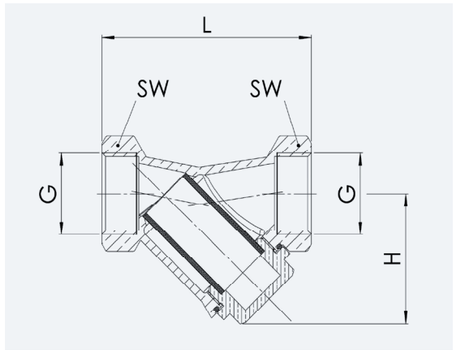
MATERIAL

SPECIFICATION

3/8“ – 2“

from –10°C to + 130°C

pressure-tight up to 16 bar



NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

Type 685: Connection, Installation dimensions, Weight

Nominal diameter	DN	10	15	20	25	32	40	50
Connection DIN EN ISO 228	G	3/8“ (10)	1/2“ (15)	3/4“ (20)	1“ (25)	1 1/4“ (32)	1 1/2“ (40)	2“ (50)
Mesh size								
Double strainer (standard)	mm	0,25	0,25	0,25	0,25	0,25	0,25	0,25
Coarse strainer (on request)	mm	0,5	0,5	0,5	0,5	0,7	0,7	0,7
Installation dimensions in mm	L	60	60	73	85	105	117	146
	H[1]	31	31	38	51	60	68	91
	SW	27	27	34	41	50	58	70
Weight	kg	0,2	0,2	0,3	0,5	0,8	1,1	1,8

[1] For maintenance and to replace the strainer insert, please keep a free space of at least 2 x H from the center of the pipe.

MATERIALS

Component	Material	DIN EN	ASME
Body	Gunmetal	CC499K	CC499K
Strainer	Stainless steel	1.4301	304
Seal	NBR		

→ Type 620

SUITABLE FOR

Liquids	neutral and non-neutral

EXAMPLES OF USE

Venting of pressure tanks and -systems for filling and emptying and to purge liquid residues.

- heating systems in industrial- and building-technology
- venting of piping systems

The float valve has to be installed vertically at the highest point of the plant and at places where air build-ups can occur.

Decompression takes place, when the ball float is in the lowest position. In this position the air can freely escape through the valve. After decompression, the flowing water lifts the float and closes the valve so that no water can escape.

Venting takes place when the water level has dropped and the float releases the valve.

VALVE VERSION

Type 620
Air inlet and outlet via lateral bore holes in the seat screw
Order example for type 620 with connection 3/8“: 620-10

Type 620d
Air inlet and outlet via seat screw with female threaded connection for size 1/4“, 3/8“ or 1/2“.
Order example for type 620d with connection 1/2“ and seat screw with female connection 1/2“: 620d-15 / 15

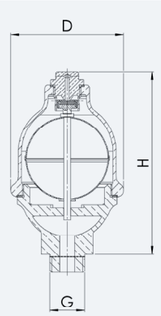
MATERIAL

SPECIFICATION

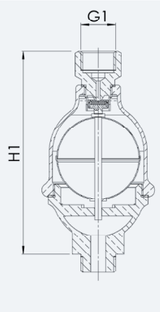
3/8“ – 1/2“

from –30°C to + 120°C

pressure-tight up to 6 bar



Type 620



Type 620d

NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

Type 620: Connection, Installation dimensions, Ranges of adjustment			
Nominal diameter	**DN**	**10**	**15**
Inlet DIN EN ISO 228	**G**	3/8“ (10)	1/2“ (15)
Decompression 620d DIN EN ISO 228	**G1**	3/8“ (10)	1/2“ (15)
Installation dimensions in mm	**D**	65	65
	H/H1	110 / 115	110 / 115
Weight	**kg**	0,75	0,8

MATERIALS

Component	Material	DIN EN	ASME
Body	Gunmetal	CC499K	CC499K
Internal parts	Brass	CW617N	CW617N
Float	Copper	CW024A	C12200
Seal	NBR		

[1] Other sealing materials against surcharge

→ Type 622

SUITABLE FOR

Air, gases and vapours	neutral	

EXAMPLES OF USE

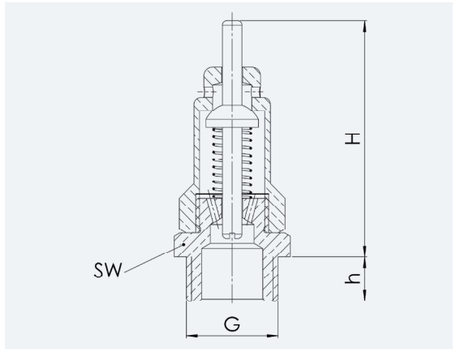
For the protection of pressureless tanks and piping systems to avoid vacuum during discharging or cooling-down. These vacuum valves are also called „sniffing valves“. They open in case of a vacuum and release the air until the vacuum has been alleviated.

- emptying of tanks

MATERIAL

SPECIFICATION

3/8“ – 3/4“	from –10°C to + 225°C	pressure-less



NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

Type 622: Connection, Installation dimensions, Weight				
Nominal diameter	**DN**	**10**	**15**	**20**
Connection DIN EN ISO 228	**G**	3/8“ (10)	1/2“ (15)	3/4“ (20)
Installation dimensions in mm	**H**	55	55	66
	h	10	11	12
	SW	22	22	29
Weight	**kg**	0,08	0,08	0,15

MATERIALS

Component	Material	DIN EN	ASME
Body	Brass	CW617N	CW617N
Internal parts	Brass	CW617N	CW617N
Seal	Brass	CW617N	CW617N

→ Type 625

SUITABLE FOR

Air, gases and vapours | neutral

EXAMPLES OF USE

For the protection of pressureless tanks and piping systems to avoid vacuum during discharging or cooling-down. These vacuum valves are also called „sniffing valves“. They open in case of a vacuum and release the air until the vacuum has been alleviated.

- emptying of tanks

MATERIAL

SPECIFICATION

3/8“ – 1“

from –10°C to + 225°C

pressure-less

NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

Type 625: Connection, Installation dimensions, Weight					
Nominal diameter	**DN**	**10**	**15**	**20**	**25**
Connection DIN EN ISO 228	**G**	3/8“ (10)	1/2“ (15)	3/4“ (20)	1“ (25)
Installation dimensions in mm	**L**	48	48	54	54
	h	10	13	12	14
	SW	22	27	30	34
Weight	**kg**	0,05	0,06	0,08	0,11

MATERIALS

Component	Material	DIN EN	ASME
Body	Brass	CW617N	CW617N
Internal parts	Brass	CW617N	CW617N
Seal	Brass	CW617N	CW617N

→ Pressure gauge

Fig. 1: Axial connection

Fig. 2: Radial connection

SUITABLE FOR

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

EXAMPLES OF USE

For the measurement and indication of pressure as accessories for:
- Pressure reducing valves
- Safety valve assemblies
- Filling valves
- Overflow- and pressure-relief valves

VERSION

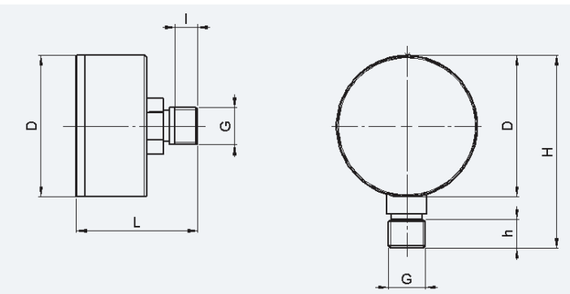
Pressure gauges with brass connection have a high-quality plastic casing.

The pressure gauges with stainless steel connection have a stainless steel body. These can be used for aggressive media and in aggressive environments.

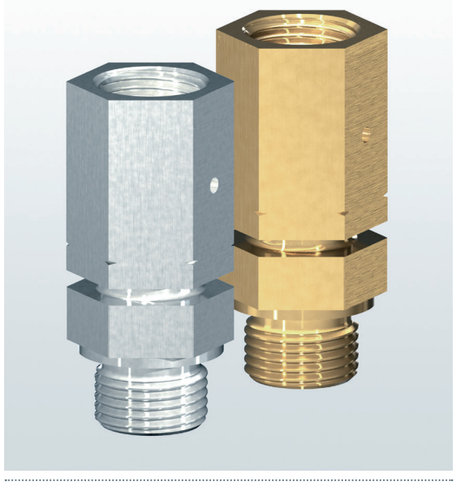
NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

Pressure gauge: Installation dimensions, Connections, Scale

			Installation dimensions in mm					
Item	**Scale in bar**	**Connections**	**D**	**L**	**l**	**H**	**h**	**Material**
Type 33	0–10	G 1/4“ radial	50			68	10	Brass
Type 34	0–25	G 1/4“ radial	50			68	10	Brass
Type 35	0–40	G 1/4“ radial	50			68	10	Brass
Type 36	0–10	G 1/4“ axial	50	43	8			Brass
Type 37	0–10	G 1/4“ radial	53			73	13	Stainless steel
Type 38	0–40	G 1/4“ radial	53			73	13	Stainless steel
Type 39	0–4	G 1/4“ axial	50	43	8			Brass
Type 40	0–25	G 1/4“ axial	50	43	8			Brass
Type 41	0–10	G 1/4“ axial	63	56	13			Stainless steel
Type 42	0–25	G 1/4“ axial	63	56	13			Stainless steel
Type 43	0–4	G 1/4“ axial	63	56	13			Stainless steel
Type 44	0–40	G 1/4“ axial	50	43	8			Brass
Type 45	0–60	G 1/4“ axial	50	43	8			Brass
Type 46	0–40	G 1/4“ axial	63	56	13			Stainless steel
Type 47	0–60	G 1/4“ axial	63	56	13			Stainless steel



→ Locking sleeve unit



SUITABLE FOR

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

EXAMPLES OF USE

For simple alignment and positioning of safety valves on the diverter ball valve (DBV). Available in various sizes and materials. Standard delivery oil- and grease-free with seals made of PTFE with FDA Approval.

SPECIFICATION

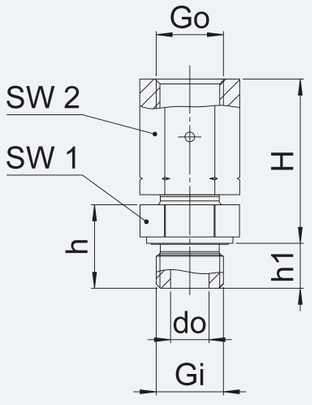
–200°C to + 200°C

NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

Installation dimensions, Connections, Scale

	Connections		Installation dimensions in mm									
Item	Gi	Go	do	h	h1	H	SW1	SW2	Material	Seal	PN	DBV*
L-2125	G1/2	G1/2	12	26	14	51	27	27	1.4571	PTFE	100	DN15
L-2128	G3/4	G1/2	12	35	16	57	32	27	1.4571	PTFE	100	DN20
L-2131	G1	G1	23	35	18	63	41	41	1.4571	PTFE/Copper	100	DN25
L-2139	G1/2	G1/2	12	26	14	51	27	27	CW617N	PTFE	100	DN15
L-2142	G3/4	G1/2	12	35	16	57	32	27	CW617N	PTFE	100	DN20
L-2145	G1	G1	23	35	18	63	41	41	CW617N	PTFE/Copper	100	DN25

*Suitable for diverter ball valves with nominal diameter



→ Type 1940 / 1945

SUITABLE FOR

Air, gases and vapours | neutral

EXAMPLES OF USE

Vent valve for pipelines, pipeline systems, vessels and heat exchangers, in which the pressure should not fall below atmospheric pressure.

- Vessel emptying
- Protection against vacuum build-up in tanks, piping systems, heat exchangers and vessels in steam plants

MATERIAL

SPECIFICATION

1/2“ to 1“

–60°C to + 225°C

-6 mbar to -800 mbar

NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

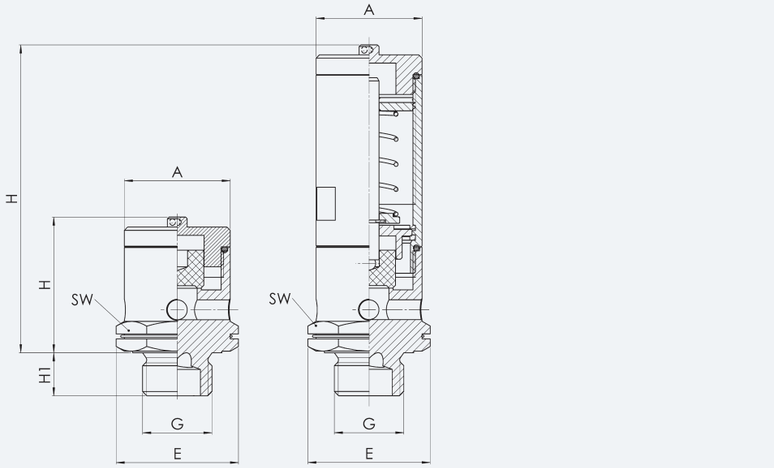
Type 1940 / 1945: Connection, Installation dimensions, Weight

		1940			1945		
Nominal diameter	**DN**	**15**	**20**	**25**	**15**	**20**	**25**
	PN	40	40	40	40	40	40
Inlet / Outlet	**G**	1/2" (15)	3/4" (20)	1" (25)	1/2" (15)	3/4" (20)	1" (25)
Installation dimensions in mm	**H**	41	44	54	93	96	106
	H1	13	13	15	13	13	15
	E	37	53	69	37	53	69
	A	32	46	60	32	46	60
	SW	32	46	60	32	46	60
Weight	**kg**	0,19	0,40	0,85	0,35	0,64	1,41
Range of adjustment	**mbar**	-6	-6	-6	-100 to -800	-100 to -800	-100 to -800

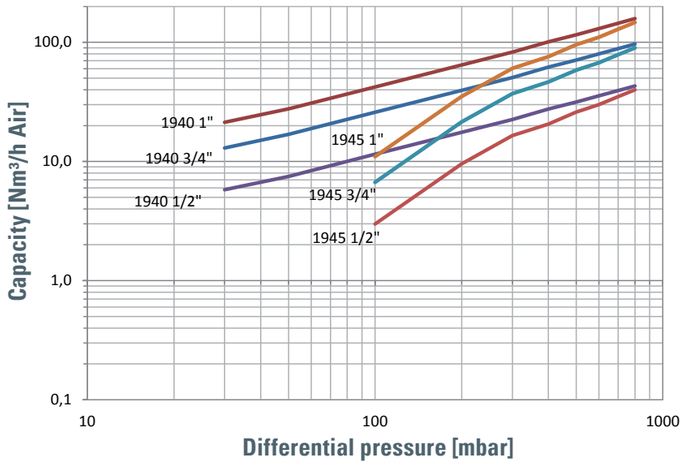
MATERIALS

Component	Material	DIN EN	ASME
Inlet body	Stainless steel	1.4404	316L
Outlet body	Stainless steel	1.4404	316L
Internal parts	Stainless steel	1.4404	316L
Primary Seal	PTFE / PTFE + carbon	PTFE / PTFE + carbon	PTFE / PTFE + carbon
Secondary Seal	EPDM	EPDM	EPDM

Type 1940/1945 ■ MAIN DIMENSIONS, INSTALLATION DIMENSIONS



■ CAPACITY CHART



Conversion: Nm³/h x $\frac{1000}{3600}$ = Nl/s

Type 1940 opening at -6 mbar (=0,994 bar abs.)

The flow rate increases with rising differential pressure.

Example size 1“:

The flow rate at a differential pressure of 60 mbar amounts to 30 Nm³/h air which corresponds to 8,3 Nl/s

The flow rate at a differential pressure of 200 mbar amounts to 65 Nm³/h air which corresponds to 18,1 Nl/s

Type 1945 adjustable from -100 up to -800 mbar (from 0.9 to 0.2 bar abs.)

The flow rate is independent of the set pressure, however it increases with rising differential pressure.

Example size 1/2“:

The flow rate at a differential pressure of 100 mbar amounts to 3 Nm³/h air which corresponds to 0.8 Nl/s

The flow rate at a differential pressure of 400 mbar amounts to 20 Nm³/h air which corresponds to 5.6 Nl/s.

→ Type 1960 / 1965

SUITABLE FOR

Air, gases and vapours | neutral

EXAMPLES OF USE

Vent valve for pipelines, pipeline systems, vessels and heat exchangers, in which the pressure should not fall below atmospheric pressure.

- Vessel emptying
- Protection against vacuum build-up in tanks, piping systems, heat exchangers and vessels in steam plants

MATERIAL

SPECIFICATION

1/2“ to 1“

–60°C to + 225°C

-6 mbar to -800 mbar

NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

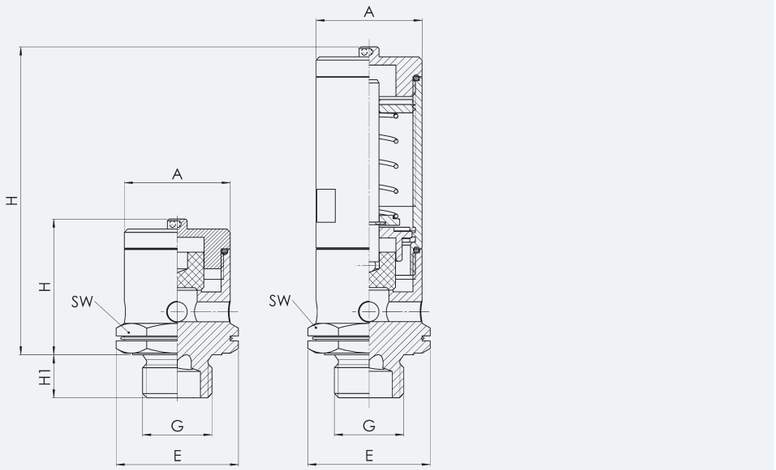
Type 1960 / 1965: Connection, Installation dimensions, Weight

		1960			1965		
Nominal diameter	**DN**	**15**	**20**	**25**	**15**	**20**	**25**
	PN	40	40	40	40	40	40
Inlet / Outlet	**G**	1/2" (15)	3/4" (20)	1" (25)	1/2" (15)	3/4" (20)	1" (25)
Installation dimensions in mm	**H**	41	44	54	93	96	106
	H1	13	13	15	13	13	15
	E	37	53	69	37	53	69
	A	32	46	60	32	46	60
	SW	32	46	60	32	46	60
Weight	**kg**	0,19	0,40	0,85	0,35	0,64	1,41
Range of adjustment	**mbar**	-6	-6	-6	-100 to -800	-100 to -800	-100 to -800

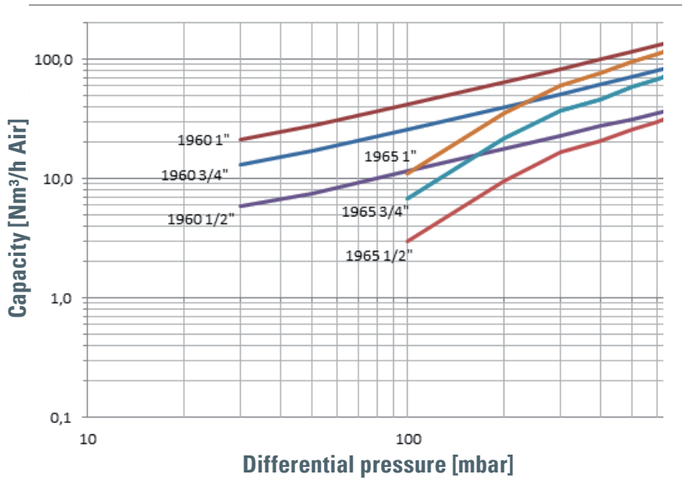
MATERIALS

Component	Material	DIN EN	ASME
Inlet body	Brass	CW617N	CW617N
Outlet body	Brass	CW617N	CW617N
Internal parts	Brass	CW617N	CW617N
Primary Seal	PTFE / PTFE + carbon	PTFE / PTFE + carbon	PTFE / PTFE + carbon
Secondary Seal	EPDM	EPDM	EPDM

Type 1960/1965 ■ MAIN DIMENSIONS, INSTALLATION DIMENSIONS



■ CAPACITY CHART



Conversion: Nm³/h x $\frac{1000}{3600}$ = Nl/s

Type 1960 opening at -6 mbar (=0,994 bar abs.)

The flow rate increases with rising differential pressure.

Example size 1“:

The flow rate at a differential pressure of 60 mbar amounts to 30 Nm³/h air which corresponds to 8,3 Nl/s

The flow rate at a differential pressure of 200 mbar amounts to 65 Nm³/h air which corresponds to 18,1 Nl/s

Type 1965 adjustable from -100 up to -800 mbar (from 0.9 to 0.2 bar abs.)

The flow rate is independent of the set pressure, however it increases with rising differential pressure.

Example size 1/2“:

The flow rate at a differential pressure of 100 mbar amounts to 3 Nm³/h air which corresponds to 0.8 Nl/s

The flow rate at a differential pressure of 400 mbar amounts to 20 Nm³/h air which corresponds to 5.6 Nl/s.

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