

# CLEAN VALVES



## SAFETY & HYGIENE – GO HAND IN HAND

Safety valves and fittings for clean utilities.



## ANTICIPATED INNOVATION: Newly developed diaphragm valve is about to be launched on the market

The application of diaphragm valves spans a wide range of industries, all of which benefit from their reliability, precision and versatility.

Whether in the pharmaceutical, food, chemical or biotechnology industries, diaphragm valves offer customised solutions that meet the highest quality and safety standards. Their important role in these sectors emphasises their relevance and the innovative technology behind the new development from Goetze.

The diaphragm valves are real all-rounders and are suitable for use in numerous industries. The major advantage is that only two components - the shut-off diaphragm and the valve body - come into contact with the flow medium. This minimises flow turbulence and reduces the risk of product deposits, which improves cleaning and sterilisation.

A team of experts with exceptional expertise spent two years working on this development. The new solution will set new standards in precise control and will soon be launched on the market. Stay tuned for further announcements.

Goetze diaphragm valves impress with their robust design and long service life. They have been specially developed to function reliably even under demanding conditions and to ensure precise control of the media flow. The valves' design and the use of high-quality materials ensure that they meet aseptic requirements and are easy to clean.



## Safety after sterilisation thanks to optimised sealing system

The challenge of unreliable sealing after the first sterilisation was successfully overcome by developing the compensation element. Our diaphragm valves do not require undefined retightening to prevent leakage and contamination, thus ensuring the integrity of sterile processes.

Extensive research and development work was required to develop the compensation element, which is designed to prevent valve leakage after sterilisation. This included complex and lengthy tests on a specially designed steam test bench and the construction of various prototypes.

The decisive breakthrough came with the development of a high-strength moulded stainless steel spring. This innovation proved promising according to the finite element method (FEM). Extensive tests qualified this solution for sterile use.



## Precise installation: valves with integrated stop

Parallel to the development of the compensation element, a stop was developed to ensure a defined and reproducible assembly of the diaphragm valves. The development of the stop until it was ready for series production required extensive testing and several optimisation steps. Thanks to these developments, it is now possible to assemble the diaphragm valves precisely and reproducibly in accordance with SOP requirements without a torque spanner.

## Geometric optimisation of the diaphragm

We were able to make further progress in the development of the Goetze diaphragm valve by improving the diaphragms (seals) both in terms of external tightness and internal tightness through geometric optimisations.

These improvements are the result of two years of intensive research and development, with each membrane variant being tested on our specially designed steam test rig to ensure the highest performance and reliability. The release tests are carried out on a process test rig that simulates the plant conditions according to ASME-BPE.





# WHAT SETS GOETZE AND THEIR HYGIENIC PRODUCTS APART



## YOUR PARTNER FOR SOLUTIONS

We are a multifaceted team of qualified specialists from various fields. Behind the name and title you will find one thing in particular: an individual with expertise and experience! We strive to pass on this expertise so that we can offer tailor-made solutions to our customers.



## GOETZE HYGIENIC VALVES

Particularly high demands are placed on systems in the food and pharmaceutical industries with regard to the cleanability of the surfaces in contact with the medium. The hygienic products of Goetze KG consist of a very smooth and flawless surface with a standard surface roughness of Ra max. 0.75 µm, made of drawn or forged stainless steel bar stock.



## HIGH STANDARDS

Not only the products but also the raw materials used must meet the highest standards. Goetze hygienic and aseptic safety valves offer a wide range of options and are based on standards and guidelines (DIN 11866, ASME BPE (Bioprocessing Equipment), EN 1672-2, DIN ISO 14159, USP class VI and FDA 21 CFR).



## EASY AND QUICK MAINTENANCE

Hygienic valves are characterised by their simple and quick maintenance. Maintenance of the hygienic valves can easily be carried out in an installed position. The simple construction allows the operator to carry out a required and necessary exchange of the seal with a few simple steps.



## SHORT DELIVERY TIMES WORLDWIDE

Whether safety valves, overflow valves, hygienic valves or other products from our range, you have the advantage of short worldwide delivery times for all products. In general all orders are processed within 3-5 working days. Are you in a hurry? Then use our „Fast Track“ production option and your order can be ready for dispatch within 48 hours.

LOW

**DEAD SPACE RATIO**

$L/D < 0,33 \mu\text{m}$

COMPLETE

**SET OF SEALS**

IN EPDM OR FKM

**VARIOUS**

OPTIONS FOR

**VARIOUS**

SURFACES

RA MAX. 0,375 µm,  
mechanically- and e-polished

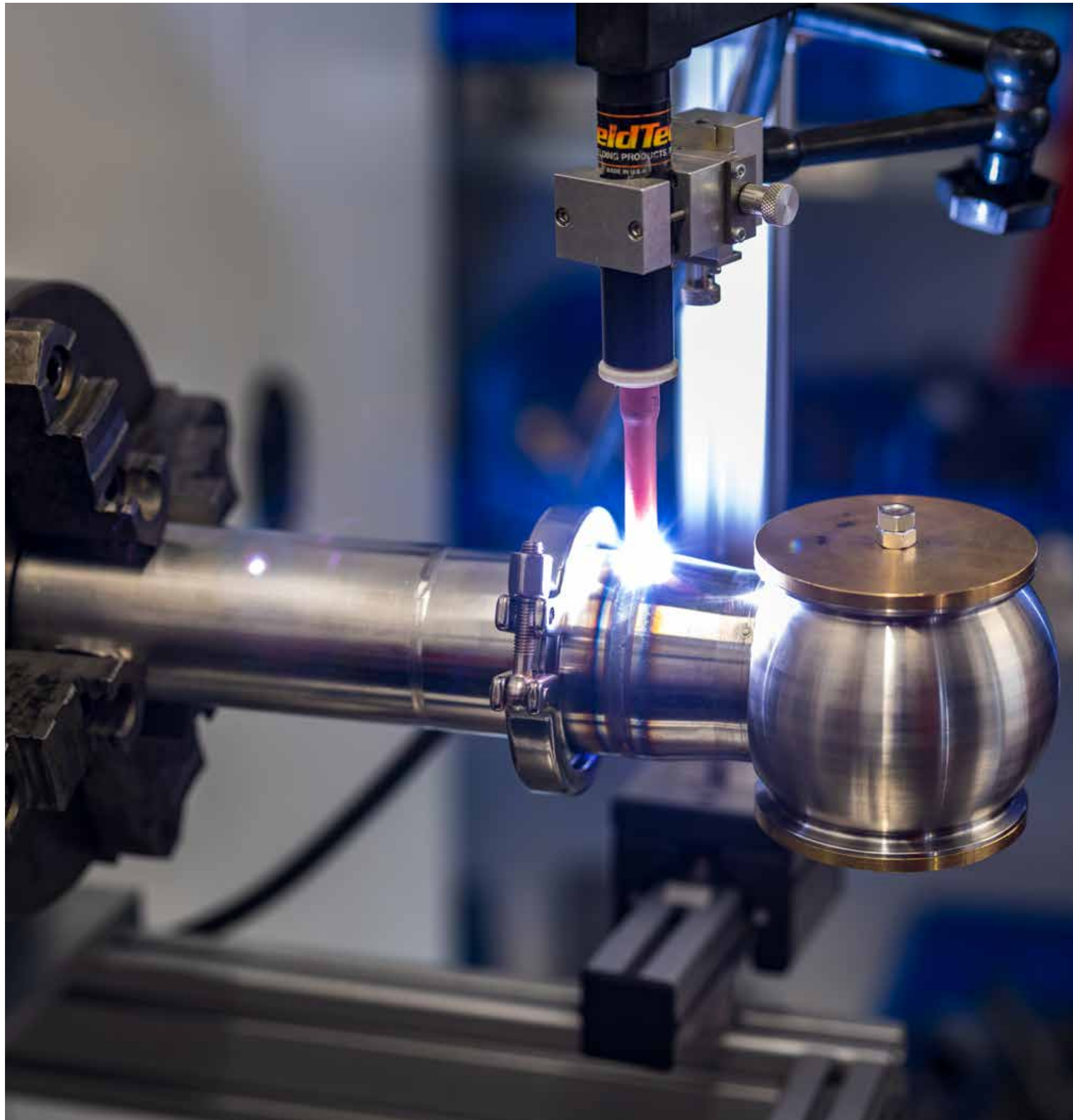
**OPTIMAL CLEANING**

THANKS TO THE LOW  
DEAD SPACE RATIO

More general information about the hygienic valves can be found here:



**SERIES**  
4020, 4040 & 4060



## Production process for hygienic applications

Safety valves, which are used especially for applications in hygienic areas, are used in a wide range of industries. In particular in the pharmaceutical and food industries, in breweries and in water treatment plants.

If a safety valve is used in hygienic applications, extreme care must be taken during the production process. Goetze KG takes these requirements into account with a production process that is specifically designed for aseptic valves. Before the valve is assembled, all parts are washed, among other things, so that they are oil- and greasefree.








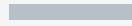

























































































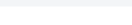



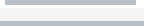



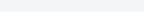
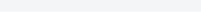







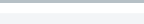
The valves are mounted on a special surface that is free of dust and grease. The assembler wears gloves at all times and ensures that the workplace is kept clean. At the end of the assembly process, protective caps are attached to the valve inlet and outlet and the products are packed directly into a welded bag to ensure that no particles or dirt can enter from the outside during delivery.

Specially trained personnel, compliance with all relevant regulations and recurring process monitoring of the oil- and greasefree cleaning, assembly, testing, packaging and labelling ensure that customers receive a hygiene-compliant safety valve for their applications.

Particularly high demands are placed on the cleanability of plants in the food and pharmaceutical sectors, and thus on the dead-space-free design of equipment. The aseptic valves from Goetze KG have a very smooth and flawless surface with various surface options in accordance with the requirements of ASME BPE.

If you wish, we can assemble your valves in our clean room, especially for high-purity applications in sensitive areas. Thanks to various air filters and an appropriate overpressure in the room, unwanted particles and substances do not even reach the valve during the production process.









Series	Materials	Media						Temperature in °C	Set pressure bar
		neutral			non neutral				
		liquid	air/gases	steam	liquid	air/gases	steam		
HYGIENIC VALVES									
400									
400.5									
4000									
4020									
4040									
4060									
4100									
SAFETY VALVES									
451									
451FL									
461									
6420									
410									
412									
410									





# SAFETY VALVES AND FITTINGS FOR HYGIENIC APPLICATIONS

<b>Materials</b> 	<b>Temperatures</b>  from -40 °C to +200 °C
<b>Media</b>   	<b>Pressures</b>  from 0,4 bar to 16 bar

These valves are characterised by their particularly smooth, flawless surfaces. This makes them perfect for cleaning. Our engineers took particular care that no gaps were created during the designing of the valves: whether on the valve inlet or the fitting of all elastomer components.

## GOETZE VALVES FOR HYGIENIC APPLICATIONS ARE USED HERE:





⊕ **ADVANTAGES OF THE SERIES  
4020 / 4040 / 4060**

- Due to the extremely small dead space ratio of up to L/D < 0,33 microbiological danger zones and soiling can be effectively avoided
- An optimal cleaning of the surface which comes into contact with the product in the inlet area – as stipulated in hygienic and aseptic processes – is therefore easily achievable at all times
- Exposed o-ring seals in contact with the medium
- Design of valve body avoids build-up of puddles after valve has opened
- Suitable for CIP/ SIP process due to pneumatic lifting option
- Gap-free installation of seals in contact with medium
- Possible surface qualities
- Ra max. 0,375 µm
  - mechanically polished
  - electropolished
- Moulded diaphragm to separate the product area from the spring area
- The flow-optimised, gap-free and hygienic valves are completely autoclavable and can be disassembled for cleaning in just a few steps and without destroying the set pressure seal

Series 4020

SAFETY VALVES SERIES 4020

made of stainless steel, angle-type, with hygienic connection



Particularly high demands are placed on the cleanability of systems in the food and pharmaceutical sectors and therefore on the dead space-free design of equipment parts. The 4020 series was developed with precisely these policies in mind.

Made of drawn stainless steel bar stock and with the usual slim and compact design, all medium residues can be perfectly removed thanks to the very smooth surface with an Ra <0.76µm finish.

 **Temperatures**  
from -40 °C to +200 °C

 **Pressures**  
from 0,4 bar to 16 bar

 **Threaded connections\***  
from DN 25 to DN 50

\* for further connections see p. 18 - 21.



Data sheet

Series 4040/4060

SAFETY VALVES SERIES 4040 / 4060

made of stainless steel, angle-type, with hygienic connection



Particularly high demands are placed on the cleanability of systems in the food and pharmaceutical sectors and therefore on the dead space-free design of equipment parts. The 4060 series was developed with precisely these policies in mind.

Made of drawn stainless steel bar stock and with the usual slim and compact design, all medium residues can be perfectly removed thanks to the very smooth surface with an Ra <0.76µm finish.

 **Temperatures**  
from -40 °C to +200 °C

 **Pressures**  
from 0,4 bar to 16 bar

 **Pipe connection\***  
DN 25

\* for further connections see p. 18 - 21.



Data sheet



Data sheet



# Safety fittings for hygienic applications

## SAFETY VALVES SERIES 400

made of stainless steel, angle-type,  
with clamp connections and food  
connections

with stainless steel bellows




The safety valves in the Goetze Hygienic series have been designed in compliance with the design features of Hygienic Design. These include smooth, flawless surfaces that are ideal for cleaning, minimised dead spaces, no gaps and many other details. Components that are difficult to clean are protected from contamination by stainless steel bellows.

The fulfilment of these design features is verified and confirmed by tests and certificates from the DGUV Food and Luxury Food Expert Committee and the EHEDG (European Hygienic Engineering & Design Group).

The safety valves are approved for world-wide use in accordance with numerous regulations.

 **Temperatures**  
from -40 °C to +200 °C

 **Pressures**  
from 0,4 bar to 16 bar

 **Clamp connections\***  
from DN 20 to DN 50

\* Further connection options:  
Threaded connections, aseptic connections



Data sheet

## OVERFLOW / PRESSURE CONTROL VALVES SERIES 400.5

made of stainless steel, angle-type,  
with clamp connections and food  
connections


with stainless steel bellows



As with the Hygienic safety valves, the design features of the Hygienic Design have also been implemented in these overflow and pressure control valves and confirmed by the DGUV Food and Luxury Food Expert Committee.

Depending on the application and medium, the seals are available with FDA, USP, 3-A and ADI-FREE approvals.

The valves are primarily used for regulating processes and systems in the food and pharmaceutical industries. The medium suitability ranges from air to a wide variety of neutral and non-neutral vapours, gases and liquids.

 **Temperatures**  
from -40 °C to +200 °C

 **Pressures**  
from 0,4 bar to 16 bar

 **Clamp connections\***  
from DN 20 to DN 50

\* Further connection options:  
Threaded connections, aseptic connections



Data sheet

## SAFETY VALVES SERIES 4000

made of stainless steel, angle-type,  
with stainless steel spring




In the field of hygienic or clean service applications, particularly high demands are placed on the cleanability and therefore the dead space-free design of equipment parts.


The development of the series 4000 safety valve, which ranges from DN 25 to DN 100, has realised precisely these policies.

By using a cone-shaped diaphragm instead of a rubber bellows, the area in contact with the medium is optimally separated from the spring chamber of the valve. The design principles have been fully implemented for all surfaces, the primary valve cone seal and the body seals. This means that all surfaces are easy to clean.

A pneumatic piston actuator and an optional proximity switch to indicate the opening of the safety valve are also available for lifting the valves.

 **Temperatures**  
from -40 °C to +200 °C

 **Pressures**  
from 0,4 bar to 16 bar

 **Clamp connections\***  
from DN 20 to DN 100

\* Further connection options:  
Threaded connections, aseptic connections,  
flange connections



Data sheet

# Type test approved safety valves angle-type

## SAFETY VALVES SERIES 420

made of stainless steel, angle-type,  
with hygienic connection




The 420 series is characterised by its outstanding blow-off capacity compared to its size as a hygienic valve for pharmaceutical applications.

One of our smallest angle safety valves offers a unique continuous and hygienic flat seal in the inlet area, which often makes it the optimal choice for hygienic applications in the pharmaceutical industry.

Other options include an e-polished surface and a wide range of hygienic connections.

 **Temperatures**  
from -40 °C to +260 °C

 **Pressures**  
from 0,5 bar to 50 bar

 **Clamp connections\***  
from DN 8 to DN 10

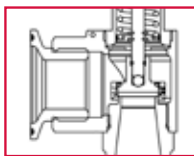
\* Further connection options:  
Threaded connections, aseptic connections,  
flange connections



Data sheet

## SAFETY VALVES SERIES 451

made of stainless steel, angle-type,  
with hygienic connection



A valve made of stainless steel is often required in the secondary process. Compared to the primary process, the hygiene requirements, e.g. in terms of cleanability, are somewhat lower.

This is where our 451 series valves are used. All components are made of durable stainless steel. The different sizes from DN15 to DN32 can be designed with all the connections required in the food and pharmaceutical sectors. In combination with its hygienic, directly pressurised area, the safety valve offers a flexible and cost-effective solution for fulfilling the necessary hygiene requirements.

In addition to the basic version, a wide variety of seal designs and materials, a back-pressure compensating stainless steel bellows and/or a gas-tight bonnet offer the necessary special equipment to fulfil the highest safety requirements.

 **Temperatures**  
from -60 °C to +400 °C

 **Pressures**  
from 0,5 bar to 25 bar

 **Clamp connections\***  
from DN 15 to DN 50

\* Further connection options:  
Threaded connections, aseptic connections,  
flange connections



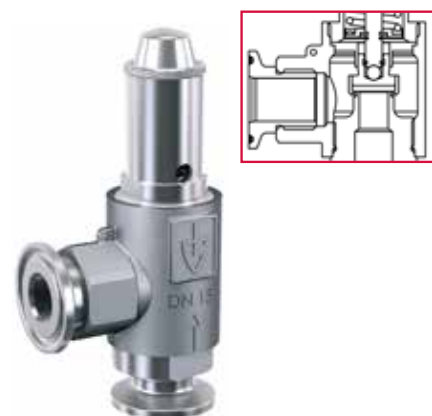
Data sheet



## Type test approved safety valves angle-type

### SAFETY VALVES SERIES 461

made of stainless steel, angle-type,  
with hygienic connection



The consistent expansion with smaller nominal diameters now also enables the safety valve to be optimised and thus economically sized for smaller blow-off quantities.

The proven diversity of variants means that the valve can be used for a wide variety of media in different states of aggregation.

Possible applications include medical apparatus engineering and secondary applications in the food, beverage, pharmaceutical and cosmetics industries. Furthermore, all components are made of durable stainless steel.

### SAFETY VALVES SERIES 4420/4450

made of gunmetal, angle-type,  
with clamp connections



The new stainless steel valves in the 4420/4450 series are designed for use in pressure vessels and systems for the protection of neutral and non-neutral gases, vapours and liquids.

The single-trim design of the series, which includes a uniform spindle assembly over the entire pressure range, facilitates maintenance and makes the valves ideal for service workshops. In addition to the standard threaded connections (male/female thread ISO/NPT), aseptic and special connections are also possible.

This flexibility also makes the valves suitable for sensitive areas such as food, beverage, pharmaceutical and biotechnology applications.

### SAFETY VALVES SERIES 6420

made of gunmetal, angle-type,  
with clamp connections



With the 6420 series, Goetze offers an all-round safety valve for numerous applications.

Just like the inlet on the product side, the parts inside the valve that come into contact with the product are also made entirely of stainless steel. This allows the 6420 series to be used in beverage processing or the food industry, for example. However, a graduated hygienic standard is also often required in the secondary sector of these industries.

The valve impresses with its diverse designs, application options and easy handling. In addition, the safety valve offers numerous professional connection options, e.g. with clamp connections, especially for hygienic applications, but also with classic thread or flange connections.



**Temperatures**  
from -60 °C to +225 °C



**Pressures**  
from 0,5 bar to 25 bar | Clamp connections  
from 0,5 bar to 70 bar | Threaded connections



**Clamp connections\***  
from DN 10 to DN 15

\* Further connection options:  
Threaded connections, aseptic connections,  
flange connections



Data sheet



**Temperatures**  
from -50 °C to +205 °C



**4420 | 4450**  
from 0,2 bar to 25 bar |  
from 0,5 bar to 16 bar



**4420 | 4450**  
from ½" to 1¼" | from ½" to 1"



Data sheet 4420



Data sheet 4450



**Temperatures**  
from -50 °C to +205 °C



**Pressures**  
from 0,5 bar to 16 bar



**Clamp connections\***  
from DN 15 to DN 65

\* Further connection options:  
Threaded connections, aseptic connections

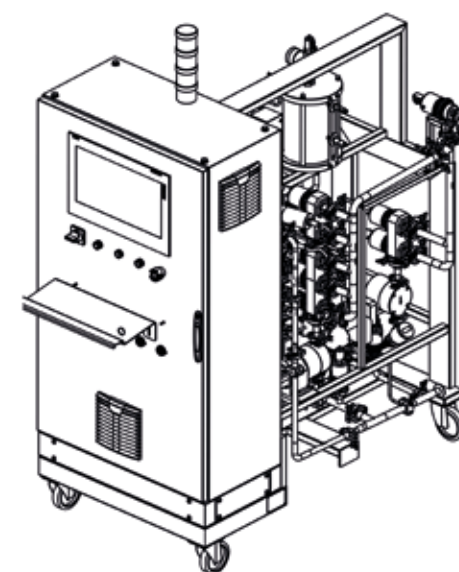


Data sheet

## Hygienic safety valves for liquid chromatography systems

Challenges in choosing the right safety valve and extensive certifications also go hand in hand here and ensure that smooth operation, even under demanding cleaning and environmental conditions, is guaranteed at all times.

The process liquid is heated up to 75 °C in different circuits before it is passed through the chromatography columns. These circuits must be protected against overpressure. The protection is primarily for thermal expansion, as well as protection against overpressure due to pump or valve failures.



The customised product solution according to customer specifications provides the Goetze product portfolio for life science and pharmaceutical processes of this type with several possible matching valve series.

The challenge in choosing the right safety valve are as follows:

- high response pressure of up to 21 bar
- different blow-off capacities due to small and large CT systems
- hygienic design
- hygienic, electropolished surface on the inlet side according to customer specifications
- special ASME compliant connections according to customer requirements
- special certifications according to customer requirements (ATEX, ASME)

### Here we are your partner in security.

Our safety valves of the 420 and 451 series in a particularly hygienic design and with electropolished surfaces in contact with the process, especially in the inlet area. In addition, in this application, the valve position is transmitted to the control system at all times via proximity sensors.

Both valve series are available in different sizes, which means that the same series can be used for both small and large chromatography systems.



Series 420

Series 451

# Type test approved safety valves angle-type

## SAFETY VALVES SERIES 451FL

made of stainless steel, angle-type,  
with flange connections



A valve made of stainless steel is often required in the secondary process, although the hygiene requirements, e.g. in terms of cleanability, are lower than in the primary process.

The valves in the 451FL series are made entirely of high-quality stainless steel. All components are made of durable stainless steel. With their variable sizes from DN15 to DN32, they offer a wide range of compatibility for various connections. In addition to the basic version, a wide range of seal designs and materials, a back-pressure compensating stainless steel bellows and/or a gas-tight bonnet offer the necessary special equipment to fulfil the highest safety requirements.

## SAFETY VALVES SERIES 410

made of stainless steel, atmospheric  
discharge, with hygienic connection



Our smallest and most compact hygienic safety valve with gigantic blow-off capacities. The 410 series in sizes DN8 to DN25 is ideal for protecting small and large pressure vessels, e.g. made of stainless steel.

It is also used in many areas with aggressive cleaning media, for example, as well as in secondary areas of the food, pharmaceutical and cosmetics industries.


Manufactured entirely from stainless steel as standard and with an male thread, additional connections such as flanges or clamps are possible at any time on the inlet side.


## SAFETY VALVES SERIES 412


made of stainless steel, atmospheric  
discharge, with hygienic connection



Free blow-off stainless steel safety valves with a hygienic design are often used on both small and large mobile production containers. The uniqueness of the 412 series is demonstrated not only by the continuous and hygienic flat seal in the inlet area but also by the variety of sizes from DN15 to DN50.


**Temperatures**  
from -60 °C to +400 °C


**Pressures**  
from 0,5 bar to 70 bar


**Clamp connections**  
from DN 15 to DN 50



Data sheet

**Temperatures**  
from -60 °C to +225 °C


**Pressures**  
from 0,2 bar to 25 bar | Clamp connections  
from 0,2 bar to 50 bar | Threaded connections


**Clamp connections\***  
from DN 8 to DN 25


\* Further connection options:  
Threaded connections, aseptic connections,  
flange connections



Data sheet

**Temperatures**  
from -60 °C to +225 °C

**Pressures**  
from 0,2 bar to 25 bar | Clamp connections  
from 0,2 bar to 50 bar | Threaded connections

**Clamp connections\***  
from DN 8 to DN 50

\* Further connection options:  
Threaded connections, aseptic connections,  
flange connections



Data sheet

# Overflow and pressure control valves

## OVERFLOW AND PRESSURE CONTROL VALVES SERIES 417

made of stainless steel, angle-type,  
with hygienic connection



Overflow and pressure control valves from the 417 and 418 series are suitable for protecting pumps. The valves are also ideal for relieving pressure and regulating containers and tanks (e.g. CO2 blanketing) and are ideal for relieving pressure in closed pipework systems. This is because the escaping medium can be discharged or returned in a controlled manner.

The valves are made entirely of stainless steel and are also suitable for use in hygienic processes such as CIP or SIP cleaning. Thanks to the use of stainless steel as a material, the valves are particularly resistant to corrosion and aggressive media.

Thanks to the closed and gas-tight design of the 417 series, the series covers an even wider range of applications. The main advantage of the 418 overflow valve is its high operating pressure of up to 30 bar. Maximum ease of maintenance is guaranteed by a replaceable valve cartridge.


Applications from -60 to +225 °C are possible thanks to a variety of possible seals. The valves can be conveniently adjusted during operation via the external adjustment. This enables optimum adaptation to the operating conditions of the system. However, the valves can also be supplied permanently set and sealed at the factory.


Overflow valves are not considered to be safety accessories in the sense of Directive 2014/68/EU and therefore do not have a type examination.


## OVERFLOW AND PRESSURE CONTROL VALVES SERIES 418

made of stainless steel, angle-type,  
with hygienic connection



**Temperatures**  
from -60 °C to +225 °C


**Pressures**  
from 0,2 bar to 20 bar


**Clamp connections\***  
from DN 10 to DN 50


\* Further connection options:  
Threaded connections, aseptic connections,  
flange connections



Data sheet

**Temperatures**  
from -60 °C to +225 °C

**Pressures**  
from 0,2 bar to 30 bar

**Clamp connections\***  
from DN 10 to DN 32

\* Further connection options:  
Threaded connections, aseptic connections,  
flange connections



Data sheet



# Overflow and pressure control valves

## OVERFLOW AND PRESSURE CONTROL VALVES SERIES 453

made of stainless steel, angle-type, with hygienic connection



The adjustable aseptic overflow valves in the 453 series are characterised by a back-pressure compensating stainless steel bellows. This ensures that back pressure acting on the outlet side does not impair the efficiency and functionality of the valve.


Springs that are designed for the pressure ranges, in combination with the technically sophisticated design of the functional parts in the flow area and the body, provide proportional control behaviour.

Overflow valves are not considered to be safety accessories in accordance with the directive 2014/68/EU and therefore do not have a type examination certificate.

Series 453 valves are often used in plants in the beverage industry.

 **Temperatures**  
from -60 °C to +225 °C

 **Pressures**  
from 0,5 bar to 25 bar

 **Clamp connections\***  
from DN 15 to DN 50

\* Further connection options:  
Threaded connections, aseptic connections, flange connections



Data sheet

# Vacuum and air valves

## VENT VALVES TYPE 1940/45

made of stainless steel, with hygienic connection



The valves in the 1940 and 1945 series are used to protect vessels or systems against underpressure.

This prevents, for example, the formation of a vacuum and the resulting damage to the pipework or a tank. This protection against vacuum formation is mainly used when emptying containers, in tanks, pipelines, heat exchangers and containers in vapour systems.

Other applications include systems in which the pressure should not fall below atmospheric pressure.

 **Temperatures**  
from -60 °C to +225 °C

 **Pressures**  
from -6 mbar to - 800 mbar

 **Clamp connections\***  
from DN 15 to DN 25

\* Further connection options:  
Threaded connections, aseptic connections, flange connections



Data sheet



Data sheet

# Pressure reducing valves

## PRESSURE REDUCING VALVES SERIES 9040

made of stainless steel, with threaded connections



The 9040 series is made of stainless steel.


The stainless steel pressure reducers in the 9040 series are used in various systems and pipes in the food, cosmetics and beverage industries.

The 9040 series is the right choice, especially in dosing devices, water treatment systems, water supply to steam generators and CIP systems or in CIP rinsing systems.

As an option and also for hygienic applications, a stainless steel filter bowl can be fitted.

 **Temperatures**  
from +5 °C to +85 °C

 **Inlet pressure** up to 25 bar,  
**Outlet pressure adjustable**  
from 0,5 bar to 12 bar

 **Threaded connections\***  
from ½" to 2"

\* Further connection options:  
Clamp connections, aseptic connections, flange connections



Data sheet

## PRESSURE REDUCING VALVES SERIES 481

made of stainless steel, with threaded connections




The stainless steel pressure reducing valves in the 481 series can be supplied with a wide range of connections.

This is the right choice for harsh operating conditions in the secondary area of hygienic processes.

The high inlet pressure of up to 40 bar results in a very wide range of applications.

 **Temperatures**  
from -20 °C to +120 °C

 **Inlet pressure** up to 40 bar,  
**Outlet pressure adjustable**  
from 0,5 bar to 15 bar

 **Threaded connections\***  
from ½" to 2"

\* Further connection options:  
Clamp connections, aseptic connections, flange connections



Data sheet

## PRESSURE REDUCING VALVES SERIES 482

made of stainless steel and gunmetal with flange connections



The 482 series stainless steel pressure reducer with flange connections is ideal for large flow rates.

The options of a high-pressure and low-pressure version offer a very wide variety.

A stainless steel pressure gauge is also possible, as is a replaceable function cartridge with dirt trap strainer.

 **Temperatures**  
from -20 °C to +120 °C

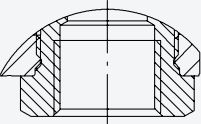
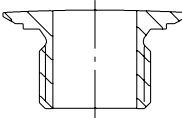
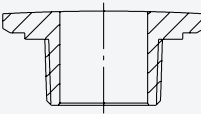
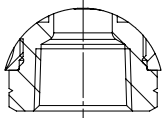
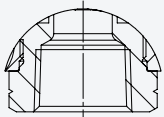
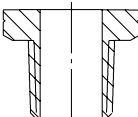
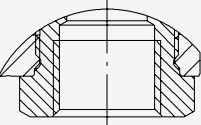
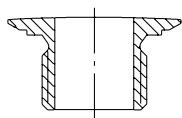
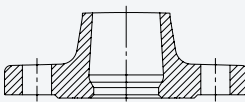
 **Inlet pressure** up to 40 bar,  
**Outlet pressure adjustable**  
from 0,5 bar to 15 bar

 **Flange connections**  
from DN 15 to DN 100

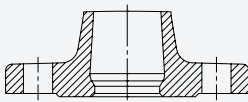
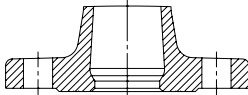
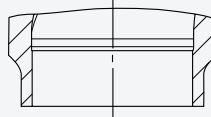
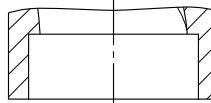
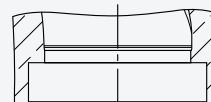
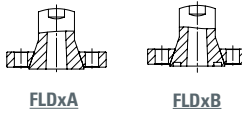
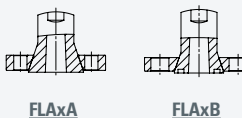
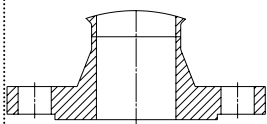
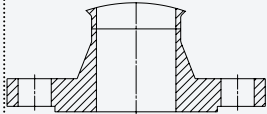


Data sheet

# CONNECTION POSSIBILITIES

Connection type	Drawing	Description
<b>f</b>		Whitworth male threaded pipe connection cylindrical; seal not made on thread BSP-P according to DIN ISO 228
<b>m</b>		Whitworth male threaded pipe connection cylindrical; seal not made on thread BSP-P according to DIN ISO 228
<b>BSP-Tm</b>		Whitworth male threaded pipe connection tapered; seal made on thread male connection BSP-T according to DIN EN 10226
<b>NPTf</b>		US standard tapered pipe thread NPT female threaded pipe connection NPT according to ANSI / ASME B 1.20.1 seal made on thread
<b>NPTFf</b>		US tapered pipe thread for dry closure NPTF female threaded pipe connection NPTF according to ANSI / ASME B1.20.3 seal made on thread
<b>NPTm</b>		US standard tapered pipe thread NPT male threaded pipe connection NPT according to ANSI / ASME B 1.20.1 seal made on thread
<b>METf</b>		Metric ISO female connection according to DIN 13 seal not made on thread
<b>METm</b>		Metric ISO male connection according to DIN 13 seal not made on thread
<b>FCDxA</b>		FCD = Flange connection moulded to DIN EN 1092 x = Pressure rating PN   1 = PN10; 2 = PN16; 3= PN25; 4 = PN40 A = Standard with sealing strip form B <sup>1</sup>

<sup>1</sup> Other versions of the sealing strip on request.

Connection type	Drawing	Description
<b>FCAxA</b>		FCA = flange connections moulded according to ASME B 16.5 x = Pressure rating / class   1 = Class 150; 2= Class 300 A = Standard with sealing strip raised face <sup>1</sup>
<b>FCBxA</b>		FCB = Cast flange connections according to ASME B 16.24 x = Pressure rating / class   1 = Class 150; 2= Class 300 A = Standard with raised face sealing strip <sup>1</sup>
<b>SE</b>		Welding end SE1 for pipes according to DIN EN ISO 1127 SE2 for pipes according to ASTM A312 S10 SE3 for pipes according to ASTM A312 S40 SE4 for pipes according to DIN 11850 row 2; DIN 11866-A; DIN EN 10357 series A SE5 for pipes according to DIN EN ISO 1127; DIN 11866-B; DIN EN 10357 series C SE6 for pipes according to BS 4825-1; DIN 11866-C
<b>SM</b>		Welding socket SM1 for pipes according to DIN EN ISO 1127 SM2 for pipes according to ASTM A312 S10 SM3 for pipes according to ASTM A312 S40
<b>LM</b>		Soldering socket LM1 for pipes according to DIN EN ISO 1127 LM2 for pipes according to ASTM A312 S10 LM3 for pipes according to ASTM A312 S40 LM4 for pipes according to DIN EN 12449
<b>FLDxA, FLDxB</b>		FLD = loose flange to DIN EN 1092 up to max. PN100 x = Pressure class PN   1 = PN10; 2 = PN16; 3= PN25; 4 = PN40; 5 = PN63; 6= PN100 A = Standard with raised face form B <sup>1</sup> B = Sealing strip with groove form D <sup>1</sup>
<b>FLAxA, FLAxB</b>		FLA = loose flange according to ASME B 16.5 up to max. 600 lbs x = Pressure rating / class   1 = Class 150; 2 = Class 300; 3 = Class 400; 4 = Class 600 A = Standard with sealing strip raised face <sup>1</sup> B = Sealing strip with ring joint face <sup>1</sup>
<b>FWDxA</b>		FWD = Welding neck flange according to DIN EN 1092 x = Pressure class PN   1 = PN10; 2 = PN16; 3= PN25; 4 = PN40; 5 = PN63; 6= PN100 A = Standard with sealing strip form B <sup>1</sup>
<b>FWAxA</b>		FWA = Welding neck flange according to ASME B 16.5 x = Pressure rating / class   1 = Class 150; 2 = Class 300; 3 = Class 400; 4 = Class 600 A = Standard with sealing strip raised face <sup>1</sup>

<sup>1</sup> Other versions of the sealing strip on request.



# HYGIENIC AND ASEPTIC CONNECTIONS

Connection type	Drawing	Description	Standard		Pipe standard
KLSDIN KLSISO KLSASME KLSIX		Clamp connection Clamp connection Clamp connection Clamp connection	DIN 32676-A DIN 32676-B DIN 32676-C ISO 2852		Pipe standard DIN 11850-2 / 11866-A Pipe standard DIN EN ISO 1127 / DIN 11866-B Pipe standard BS 4825-1 / DIN 11866-C Pipe standard ISO 2037
GS1		Threaded ferrule connection	DIN 11851-SC		Pipe standard DIN 11850-2 / 11866-A
KS1		Taper nipple with groove cap nut	DIN 11851-SD		Pipe standard DIN 11850-2 / 11866-A
A-NKS1 A-NKS2 A-NKS3		Aseptic groove clamp connection Aseptic groove clamp connection Aseptic groove clamp connection	DIN 11864-3-NKS DIN 11864-3-NKS DIN 11864-3-NKS		Pipe standard DIN 11850-2 / DIN 11866-A Pipe standard DIN EN ISO 1127 / DIN 11866-B Pipe standard BS 4825-1 / DIN 11866-C
A-BKS1 A-BKS2 A-BKS3		Aseptic collar clamp connection Aseptic collar clamp connection Aseptic collar clamp connection	DIN 11864-3-BKS DIN 11864-3-BKS DIN 11864-3-BKS		Pipe standard DIN 11850-2 / DIN 11866-A Pipe standard DIN EN ISO 1127 / DIN 11866-B Pipe standard BS 4825-1 / DIN 11866-C
A-GS1 A-GS2 A-GS3		Aseptic threaded ferrule connection Aseptic threaded ferrule connection Aseptic threaded ferrule connection	DIN 11864-1-GS DIN 11864-1-GS DIN 11864-1-GS		Pipe standard DIN 11850-2 / DIN 11866-A Pipe standard DIN EN ISO 1127 / DIN 11866-B Pipe standard BS 4825-1 / DIN 11866-C
A-KS1 A-KS2 A-KS3		Aseptic collar connection with groove cap nut Aseptic collar connection with groove cap nut Aseptic collar connection with groove cap nut	DIN 11864-1-BS DIN 11864-1-BS DIN 11864-1-BS		Pipe standard DIN 11850-2 / DIN 11866-A Pipe standard DIN EN ISO 1127 / DIN 11866-B Pipe standard BS 4825-1 / DIN 11866-C
A-BF1 A-BF2 A-BF3		Aseptic flanged connection Aseptic flanged connection Aseptic flanged connection	DIN 11864-2-BF DIN 11864-2-BF DIN 11864-2-BF		Pipe standard DIN 11850-2 / DIN 11866-A Pipe standard DIN EN ISO 1127 / DIN 11866-B Pipe standard BS 4825-1 / DIN 11866-C
A-NF1 A-NF2 A-NF3		Aseptic grooved flanged connection Aseptic grooved flanged connection Aseptic grooved flanged connection	DIN 11864-2-NF DIN 11864-2-NF DIN 11864-2-NF		Pipe standard DIN 11850-2 / DIN 11866-A Pipe standard DIN EN ISO 1127 / DIN 11866-B Pipe standard BS 4825-1 / DIN 11866-C
SE4 SE5 SE6		Butt weld Butt weld Butt weld			Pipe standard DIN 11850-2 / DIN 11866-A Pipe standard DIN EN ISO 1127 / DIN 11866-B Pipe standard BS 4825-1 / DIN 11866-C
VC		Container flange at valve inlet			

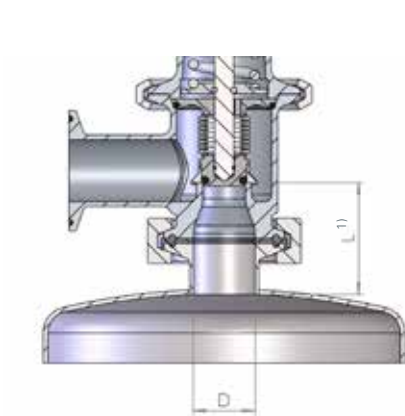
Other connection types such as flange connection according to DIN EN 1092 / ASME B16.5, APV plain / grooved flanges, NA Connect, SMS threaded / tapered connection pieces are available on request.

# GENERAL INFORMATION ABOUT THE HYGIENIC VALVES

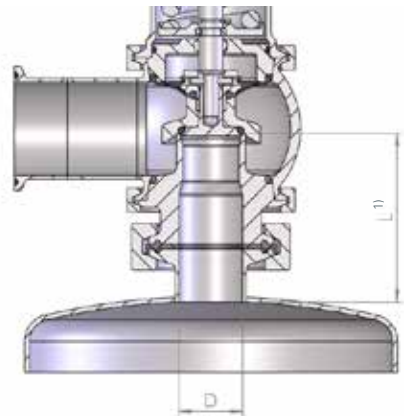
## DEAD SPACE RATIO

The dead space ratio is determined by the ratio of the total inlet length L (usually the base of the container lid to the top of the seat) to the diameter of the inlet pipe at the widest point D. A large dead space ratio generally leads to poorer cleanability of the area under consideration. Therefore, the smaller the dead space ratio, the better the cleanability of this area.

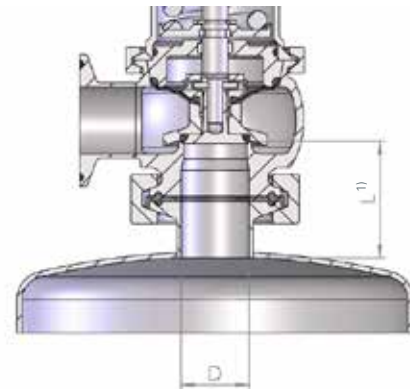
Below you will find a schematic diagram of the dead space ratio. The information on the actual dead space ratio L/D is given in the corresponding data sheet or in a separate dimensional drawing (for special connections).



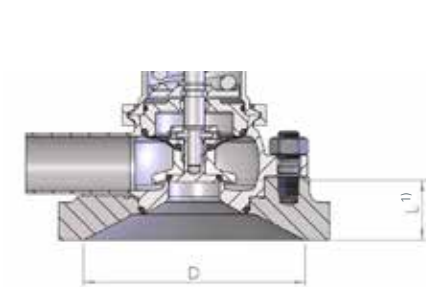
Type 400



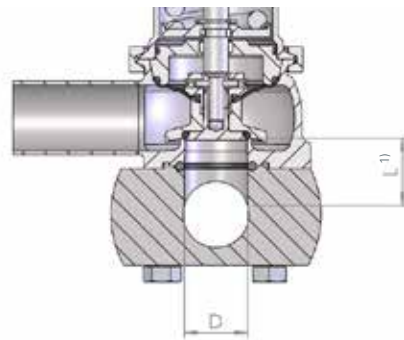
Type 4000



Type 4020



Type 4040

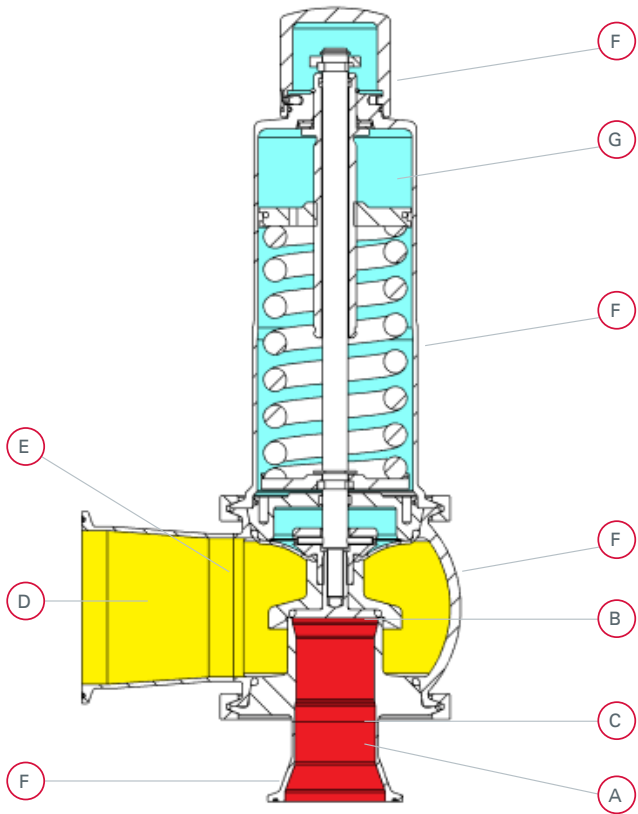


Type 4060

<sup>1)</sup> Actual dimension L depends on the connection piece on the container side.

# SURFACE QUALITY FOR HYGIENIC SAFETY VALVES ACCORDING TO GOETZE STANDARD

Surface position	Comment	Surface definition according to Goetze standard
Primary surface in contact with medium Ⓐ : Valve inlet area Ⓑ : Valve disc lower surface Ⓒ : Weld seam (if present)	Primary area in permanent contact with medium	If necessary, increased surface quality as an additional option. The weld seam is ground internally in the inlet area as standard.
Secondary surface in contact with medium Ⓓ : inner surface blow-out area Ⓔ : Weld seam	Surface is not in contact with medium when the valve is closed, the surface should be suitable to ensure efficient cleaning (CIP and COP).	Taken into account seam is not ground as standard and is therefore not considered in the surface quality.
Outer surface Ⓕ : Outer surface of body, housing, cap that is not in contact with the medium	The surface is not in contact with the medium and is therefore not relevant for CIP/COP cleaning. A clean, smooth surface is nevertheless required.	No technical requirements for the surface quality. Taken into account seam is not ground as standard and is therefore not included in the surface quality. If necessary, increased surface quality, as an additional option. Add-on components such as valve clamps or lifting levers are not included.
Area not in contact with medium Ⓖ : area above the spindle seal which is shielded from the medium	For valve versions with diaphragm or bellows, this area is permanently separated from the medium.	No surface quality requirements, as not in contact with the medium.





# SAFETY & HYGIENE – GO HAND IN HAND



Systems for the food and pharmaceutical industry need to comply to very strict requirements regarding their cleanability. In order to meet the highest demands here, Goetze gave top priority to precisely these requirements during development of this safety valve series.

The result is our hygienic safety valve 4000, made of drawn stainless steel bar stock and with the usual slim and compact design. However, one thing distinguishes the 4000 valve series from previous Goetze safety valves. The valve sets new standards when it comes to cleaning: With a very smooth surface of  $0,75\mu\text{m}$  (optional  $\text{Ra max. } 0,375\mu\text{m}$ ) all residues can be removed effortlessly.

In order to ensure a constant hygienic standard during the entire service life of the valve, usually cleaning and if necessary, disinfection must be carried out at regular intervals.

The Goetze valve can be disassembled and cleaned in just a few simple steps. This can be done without either removal of the valve from the plant nor destruction of the setting seal. Cleaning and Sterilisation in place (CIP and SIP) is very easy. It is also possible to partially disassemble the valve for cleaning. Step one: Loosen the valve clamp between the body and the spring housing in the pressureless state using common tools.

This is easily possible without any effort. Now the complete spring housing can be removed from the body.

Now, all surfaces that were in contact with the medium can be professionally cleaned and sanitized.

After this, the valve is reassembled in reverse order – the valve is ready for use again without the need to reset the pressure. Valuable time is not lost due to downtime and the duration of the cleaning process is kept to a minimum.

Although cleanability has a high priority, the most important characteristic is safety. The valve is protected against unauthorised adjustment by a visible setting-seal disc pressed into the cap. Therefore, there is no need for a conventional sealing wire, which is not easy to clean. This allows simple assembly or disassembly with common tools without changing or affecting the set pressure of the valve. This is a unique feature of our safety valves used in such applications.

# ASSEMBLY / MAINTENANCE

## The cleaning process

Hygiene is an omnipresent topic, especially in the food processing industry. Particularly high demands are placed on the surface in contact with the media. Therefore, a dead space-free design of components is essential.



### + ADVANTAGES

Maintenance without breaking the seal

Simple and quick replacement of sealing elements

Maintenance in the installed position is fuss-free

Watch our cleaning and disassembling video.



# EXPAND YOUR POSSIBILITIES

## Discover industrial valves for aseptic applications

In this brochure, we show you a variety of specially developed valves that have been optimised for use in hygienic applications. But did you know that some of our industrial valves can also play a valuable role in this area?

Our valves play a crucial role in the food and beverage industry, in pharmaceuticals and in biotechnological processes. Thanks to their aseptic design and high reliability, they ensure efficient and safe operations in these demanding environments – from sterile production to safe pressure control in sensitive production chains.

Would you like to learn more about the versatile applications of these valves? Simply scan the QR code to go directly to our 'Industrial Brochure', where you will find detailed information on the following valve series:

- **Series 455:**  
This safety valve provides precise pressure relief for sensitive applications such as the pharmaceutical and food industries.
- **Series 4420:**  
This all-rounder made of stainless steel offers an ideal solution for applications where the highest quality and corrosion resistance are required, but not high-performance safety valves.
- **Series 492:**  
The spring-loaded safety valve provides reliable overpressure protection for hygienic applications.
- **Series 413:**  
These spring-loaded safety valves are perfect for sterile processes and offer a high level of protection against overpressure.
- **Series 430 & 431:**  
These valves are suitable for sterile steam processes and offer reliable protection in hygienic environments where aseptic conditions and pressure control are crucial.



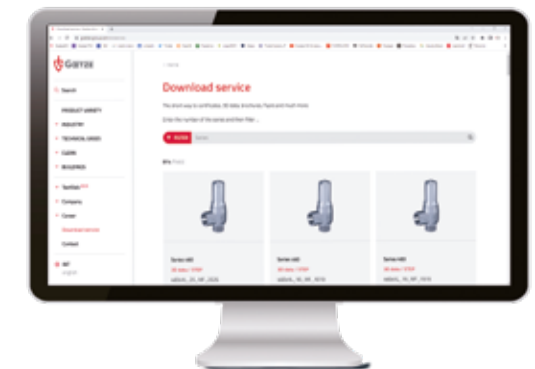
# INTERNET SERVICE OF GOETZE

## DESIGN AND CALCULATION OF SAFETY VALVES

With the help of a design programme and with the alpha-w value as well as the narrowest flow diameter of our safety valves, the valve suitable for discharging the required volume can be determined according to AD regulation A2-2000, in accordance with the international and European standard DIN EN ISO 4126, API 520 and ASME BPVC-VIII. Our experts offer you competent advice on the optimal and economical sizing of your valve.

## 3D MODELS AND TENDER DOCUMENTS

We provide free-of-charge our 3D models in various and common formats.



## MOBILE WEBSITE

Our website is also available in a version optimised for smart phones. As usual, you may find your products simply and easily – also when you are out and about.

Curious? Just take a look!

**www.goetze-group.com**



# HOW TO HANDLE PRESSURE

The competence of Goetze KG Armaturen has been in demand for more than 70 years. Our wealth of experience is as broad and varied as our areas of application for our high-performance fittings.

## The Goetze product range

Our locations

**GERMANY, LUDWIGSBURG**

CHINA, BRAZIL, USA | OWN DISTRIBUTORS

**-270 °C – +400 °C**

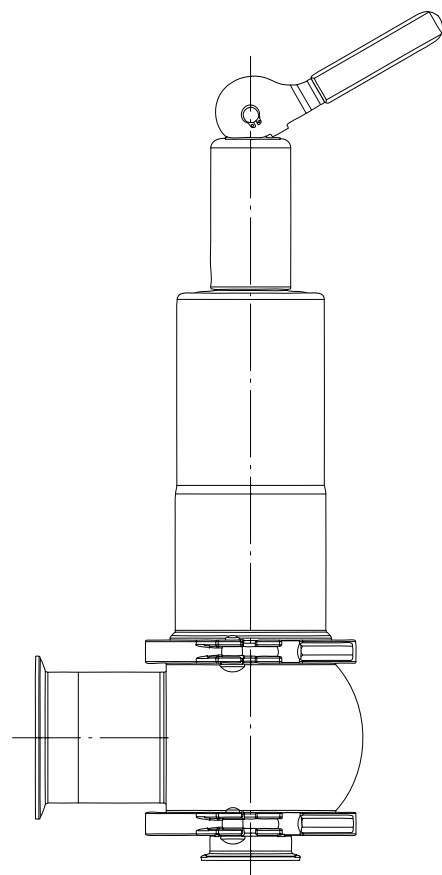
uncompromising performance

**0,2 BAR – 1500 BAR**

extensive pressure range

## Goetze's concentrated expertise

We support our customers with our many years of experience in this sector at the highest level. Thanks to the expertise of our qualified development team, we are able to continuously develop new and innovative products and adapt to individual customer requirements. Using precise manual work and precision manufacturing, we are able to advance the ideas and product innovations of our customers – customer-focused, solution-oriented, flexible and always in German brand quality.



# THE GOETZE KG ARMATUREN

## Individuality for more safety

**The competence of Goetze KG Armaturen** has been in demand for 75 years. Our wealth of experience is as broad and varied as our areas of application for our high-performance fittings. Our well thought-out product portfolio covers every industrial application: Liquids of all kinds, gases, technical vapours and steam. Goetze valves are used with temperatures ranging from -270 °C up to +400 °C. The greatest possible safety is a priority.

### PROFESSIONAL AND COMPETENT ADVICE

At any time, you can reach a competent contact partner as part of our in-house team at Goetze. Whether it is for the product selection, the configuration of the right valve, urgent requests, whether per telephone call or per mail, there is a personal multilingual consultant at your disposal. With our valves and fittings - "Made in Germany" - we are your competent partner for all matters relating to the handling of pressure.

Technical consulting is not only the focus of our in-house team. We provide support for our customers with the necessary information and instructions throughout the entire life cycle of the valve thereby assisting those persons who have to work with the fittings every day. Our field representatives are tasked with providing customers with the best possible consultation service at the customer's facility and supporting them in all questions concerning our products.

### GLOBAL TRADE

Goetze products – available worldwide, directly and quickly. No matter whether through Goetze or our trading partners. Our sales subsidiaries and local dealers will always provide the advice you need to find the product that suits you best. Discover our dealer network and find your local dealer.



# WELDING PROCESSES AT GOETZE – PRECISE AND CLEAN

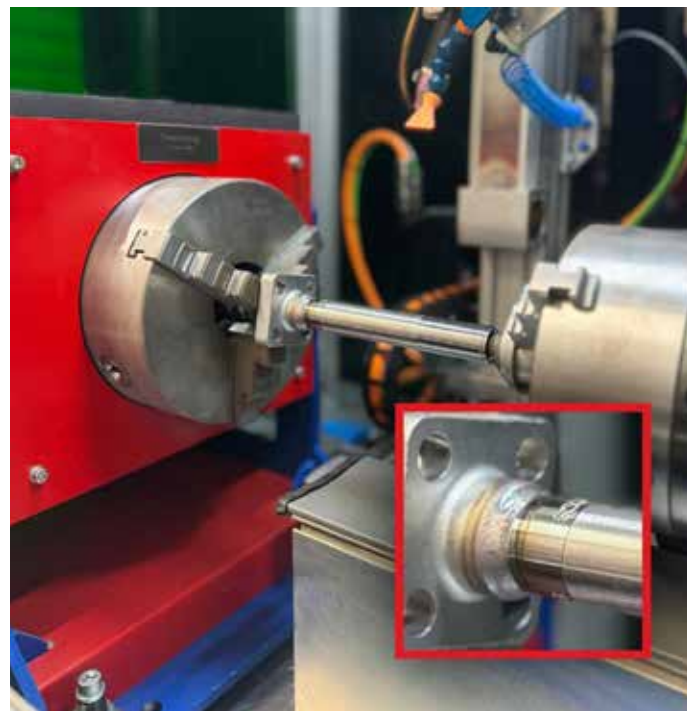
## Welding at GOETZE – Which materials and series do we weld?

At Goetze, we rely on high-precision welding processes to ensure the quality of our products. Our welding work is mainly focused on stainless steel, the primary material for our customer products. The main series for our welding work include the series 4000 and 400 as well as the shut-off valves 2140.

### What are the advantages of in-house welding?

Our in-house welding shop offers significant advantages in terms of flexibility and time savings, which directly benefit our customers. We can respond quickly and precisely to errors, while always meeting high standards such as ASME approval. Each welded product is 100% tested to ensure the highest quality.

Goetze is certified to weld pressure-bearing parts and has its welding technology inspected annually. In addition to manual welding processes, we also use orbital machines that enable uniform and precise weld seams. TIG welding also allows root welding, which is often not permitted with other processes.



## How are the valves cleaned?

### Passivation after welding

At Goetze, we place great emphasis on thoroughly cleaning and passivating the weld seams after the welding process. Our high-quality stainless steel valves undergo a careful treatment in an electrolytic solution that removes any residue and protects the surface of the welds. This passivation process forms a protective layer on the stainless steel that prevents corrosion and ensures the longevity of our products. Through this meticulous post-treatment, we guarantee that our valves are spotlessly clean and meet the highest aseptic standards.



## NOTES





Robert-Mayer-Straße 21  
71636 Ludwigsburg

Fon: +49(0)7141 / 4889460  
Fax: +49(0)7141 / 4889488

info@goetze.de  
www.goetze-group.com

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