TECHNICAL GASES & CRYO

ARMATUREN GOETZE

EXTREME CONDITIONS - SAFE SOLUTIONS

Safety valves and fittings for technical gases, hydrogen and cryogenic applications.

WHAT SETS GOETZE AND THEIR TECHNICAL GASES PRODUCTS APART

THE NEW DEFINITION OF HIGH-END! UP TO 1500 BAR!

With a truly big bang, Goetze KG breaks through the valve sound barrier. Through the further development of the existing series 492, pressures of up to 1500 bar are safeguarded in the DN6 version. At the same time, the Goetze safety valve is only half the weight and half the size of comparable valves.

INDIVIDUALITY

Our expertise enables us to implement new and custom-made developments in a short time. All valves are produced under premise of „individuality for more safety". In product development, individual custom-made solutions go hand-in-hand with our own new developments. This combined pool of development has now given rise to an extensive and high-quality range of products which is being continuously extended and leaves nothing to be desired.

SHORT DELIVERY TIMES AROUND THE GLOBE

Whether safety valves, overflow valves, ball diverter valves, pressure regulators, shut-off valves or other products from our range: you will benefit from the short global delivery times for all our products. All orders can generally be processed within 3-5 working days. You're in a hurry? Then use our express production and your order can be ready for dispatch within 48 hours.

OIL AND GREASE-FREE PROCESS

All components of the series are specially cleaned during the production process and are thus generally free from oil and grease in accordance with DIN EN ISO 23208 and various works standards of gas producers. Because of this every valve is suitable for use in systems using oxygen and is marked accordingly.

HIGH STANDARDS

Not only the products but also the raw materials used must meet the highest standards. The materials are examined by trained personnel as soon as they arrive, in order to ensure the best quality from the very beginning. After production, every individual valve is subjected to an ISO-certified quality control test before it is allowed to leave the factory.

TECHNICAL BASICS FOR TECHNICAL GASES PRODUCTS

Materials

STAINLESS STEEL

- high-quality material
- corrosion-resistant
- for plants with particularly aggressive media

GUNMETAL

- robust and of high quality
- potable- / sea-water resistant
- wide range of applications

BRASS

- good price / performance ratio
- brass turned from solid material

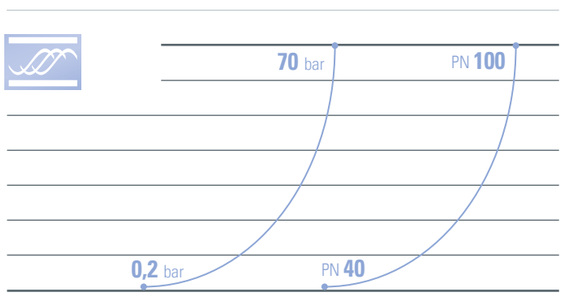
CAST STEEL

- robust material
- cost-effective material for standard applications

Media

LIQUIDS

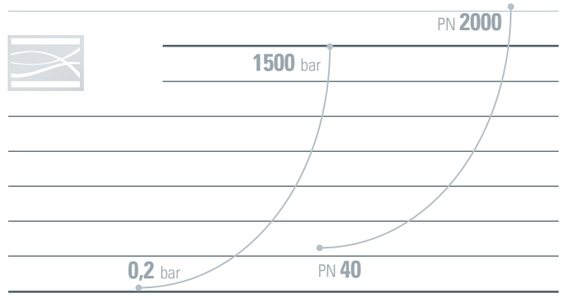
from -270 °C to +400 °C



- Storage of cryogenic liquefied gases
- Medical supply systems
- Foodstuff and Pharmaceutical
- Welding shops
- Cooling circuits

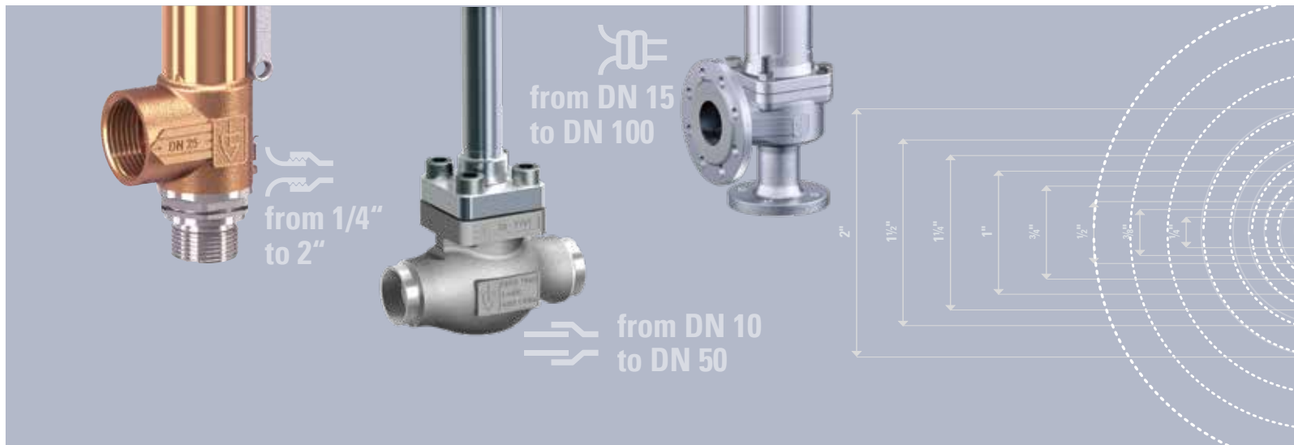
AIR, GASES AND VAPOURS

from -270 °C to +400 °C



- Refrigeration plants
- Dry ice blasting plants
- H2 storage and refuelling systems
- Electrolysis
- Compressors

Connections



OUR CERTIFICATES

We rely on quality – nationally and internationally

CE Certification according to the European Pressure Equipment Directive is mandatory for many products and markets. Additional certificates are however proof of our individual quality, such as: TÜV, DVGW, WRAS, ACS, EAC. Last but not least, DIN ISO 9001 stands for the internal quality management process, with its comprehensive functionality and performance assessment. The particularly strict regulations of the national rules guarantee the highest possible degree of safety – especially when it comes to the reliability of your plant.

OVERVIEW OF PRODUCTS FOR TECHNICAL GASES APPLICATIONS

Series	National Type Test (TÜV)	CE 2014/68/EU	EU Type Examination	ASME	CRN	EAC	TS	KC	DNV	Lloyd's Register	ABS	Bureau Veritas	ZIS	RINA
HYDROGEN VALVES														
492	■	■	■	■	■	■	■	■	■	■	■	■	■	■
2400	■	■	■	■	■	■	■	■			■	■	■	
455	■	■	■			■	■		■	■		■	■	
420	■	■	■			■	■		■	■	■	■	■	■
451	■	■	■	■	■	■	■	■	■	■	■	■	■	■
484/684		■	■			■			■	■		■	■	■
451FL	■	■	■	■	■	■	■	■						
461	■	■	■			■	■							
OXYGEN VALVES														
492GOX	■	■	■	■	■	■	■	■	■	■		■	■	
CRYOGENIC VALVES														
2400	■	■	■	■	■	■	■	■			■	■	■	
2480	■	■	■	■	■	■	■	■			■	■	■	
2580		■				■								
2140		■	■			■								
2142/2182		■	■			■								
2143/2183		■	■			■								
2180		■	■			■								
2700						■								
2780/2782						■								
2781/2783						■								
2980		■				■								
VALVES AND FITTINGS FOR TECHNICAL GASES														
460	■	■	■	■		■	■	■						
861	■	■	■			■	■							
255	■	■	■			■								
255 ANSI	■	■	■			■								
355	■	■	■			■	■							
455	■	■	■			■	■							
455 ANSI	■	■	■			■	■		■	■		■	■	■
451R	■	■							■	■		■	■	■
4420	■	■	■	■	■									
4450	■	■	■	■	■									
684		■	■			■								

QUICKFINDER VALVES

Series	Materials	Medium: neutral – liquid	Medium: neutral – air/gases	Medium: neutral – potable water cold	Medium: neutral – potable water hot	Medium: non neutral – flüssig	Medium: non neutral – air/gases	Medium: non neutral – potable water cold	Medium: non neutral – potable water hot	Temperature in °C: –300 –200 –100 –50 0 50 100 150 200 250 300 350 400	Set pressure bar: 0 50 100 150 200 300 400 500 600 700 1500
HYDROGEN VALVES											
492											
2400											
455											
420											
451											
484											Inlet pressure / Outlet pressure
OXYGEN VALVES											
492GOX											
CRYOGENIC VALVES											
2400											
2480											
2580											
2140											PN 63
2142											PN 63
2143											PN 63
2180											PN 63
2182											PN 63
2183											PN 63
2700											PN 63
2780/2782											PN 63
2781/2783											PN 63
2980											PN 40
VALVES AND FITTINGS FOR TECHNICAL GASES											
460											
861											
451R											
255											
255 ANSI											
355											
455											
455 ANSI											
4420											
4450											
684											Inlet pressure / Outlet pressure

HYDROGEN

Multiple energy source for the future

The industry for electricity generation is facing challenges to find green and sustainable resources and ways to produce electricity and so are engineers and companies for sustainable and green mobility concepts.

The production of hydrogen is already possible by using fossil fuels. But recently innovative processes are becoming more common, like electrolysis. In this case water is split into hydrogen and oxygen. If the required electricity for this process comes from renewable sources, the hydrogen is defined as green. This process for gaining a source of energy and a potential storage method for electricity (as the process can be reversed) makes it innovative in general and also for future mobility. One thing is clear: green energy is the future.

In this field Goetze is your partner regarding safety (valves). We assure the handling of hydrogen from the retrieval to the application – either in the electric part of the process or at the hydrogen filling station for the fuel cell vehicle. We protect filling processes, which are under high pressure or the storage of liquid hydrogen in tanks. This has a major impact on safe handling and makes hydrogen more appealing to humans and nature.

HYDROGEN FILLING STATION **IN STUTTGART**

PIPES ON A **HYDROGEN TANK**

HYDROGEN RESEARCH CENTRE

HYDROGEN FUEL PUMPS

ELECTROLYSIS SYSTEM

SAFETY IN HYDROGEN APPLICATIONS

As the last mechanical component in the chain of safety, safety valves are an important and indispensable part of hydrogen applications. It is therefore even more important that every component of a safety valve, as well as the manufacturing process, have specific properties.

MATERIALS

The use of high quality stainless steels. Austenitic steels with a nickel content > 10% have proven to be effective.

SEALS

Pressure, temperature, permeation (diffusion) play an important role here. The elastomer sealing materials which comply with the NORSOK M-710 standard, are prepared against explosive decompression in the material and prevent the loss of the seal.

MANUFACTURING PROCESS

Do you place high standards on the cleanness of your system components? In addition to the production which is free of oil, grease and particle, which is explicitly recommended for a hydrogen purity of > 5.0 (> 99.999 %).

APPROVALS

Even if there are currently no specific H2 approvals, only use type-test approved safety valves to protect your systems.

Sound technical advice from the valve manufacturer is in any case indispensable. This is the only way to take your specific conditions into account and to design the valve correctly according to the conditions prevailing on site. Our technical experts will be happy to help you - quickly and reliably: **+49 (0) 7141 / 488 94 60**.

HYDROGEN AS THE ENERGY CARRIER OF THE FUTURE

The initial situation is clear: A way is needed to make electricity from renewable sources storable.

The technology required for this ranges from electrolysis to pure hydrogen and oxygen to the production of ammonia and synthetic hydrocarbon compounds produced with PtX processes. Valves are required for all these processes.

Our product range is qualified for use with hydrogen as a medium. This ranges from specific material testing to the fulfilment of special standards for seals. Especially for the application for storing high-pressure hydrogen, we have significantly expanded the possibilities in production with new test benches.

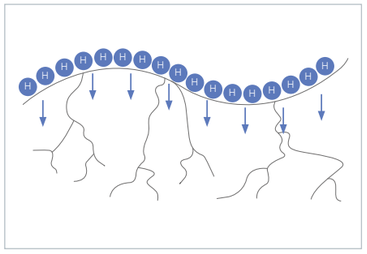
Goetze is your partner in safety here too. As a manufacturer of safety valves, pressure reducing valves and overflow valves, Goetze products are used in almost all areas of the hydrogen value chain - from generation via electrolysis or other thermal processes and storage at high pressures, or cryogenically liquefied, right through to the point-of-use at the user.

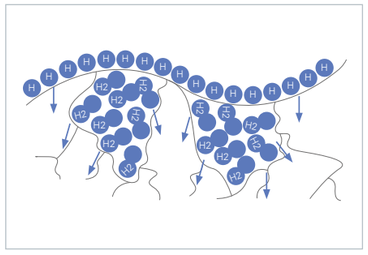
The journey is the destination

For us, the challenge lies less in the use of hydrogen, but rather in the way to get there, in order to then have its use widely available as quickly as possible.

Internally, we look at proven designs that we improve and optimise for hydrogen applications and realise with high-quality, tested materials. In particular, we rely on stainless steels with a higher nickel content to prevent hydrogen embrittlement, for example.

For seals, compliance with certain standards is important. The very small H_2 molecule can accumulate in sealing materials, penetrate them and destroy them from the inside. The seal must therefore be manufactured and specially tested with this in mind.





Good to KNOW

Hydrogen embrittlement: What does this mean?

Hydrogen embrittlement occurs when ionised hydrogen is formed on the metal surface and diffuses into the material faster than it assembles into molecules on the material surface.

Further technical information on hydrogen can be found in this white paper.

SAFETY VALVES AND FITTINGS FOR HYDROGEN APPLICATIONS

Materials

Temperatures
from -255 °C to + 400 °C

Pressures
from 0,2 bar to 1500 bar

Media

Threaded connections
from ¼“ to 2“

Flange connections
from DN 15 to DN 100

Goetze also has a wide portfolio of safety valves and pressure reducers for the hydrogen sector in the non-cryogenic area. The products on the following page are examples of this. In particular, gas applications in the high-pressure range and gas pressure control systems in a wide variety of applications are always in focus. Oxygen also plays a special role, whether in electrolysis or storage.

GOETZE VALVES FOR GAS APPLICATIONS ARE USED HERE:

Hydrogen filling station in China

Electrolyser in Stuttgart

H2 high-pressure accumulator

Production of technical gases

Saftey valves and fittings for hydrogen applications

SAFETY VALVES SERIES 492

made of stainless steel, with gas-tight, 360° rotatable outlet

The 492 series safety valve with rotating outlet cover is used in high-pressure compressors and process systems as well as for protecting refuelling systems. It impresses with its compactness and design.

Thanks to its special technical design and construction, the 492 series covers an unrivalled pressure range of up to 1500 bar.

The valve is particularly suitable for hydrogen, whereby the high-performance materials used, such as PAI or PEEK, enable a very high level of tightness. This high level of tightness is maintained even after the valve has responded several times.

Temperatures
from - 60 °C to + 200 °C

Pressures
from 50 bar to 1500 bar

Threaded connections
from ¼“ to 1“

Data sheet

SAFETY VALVES SERIES 451

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

The advantages and applications of the 451 series made of high-alloy stainless steel begin where gunmetal versions reach their limits.

These safety valves in the 451 series are particularly suitable for applications involving hydrogen. Thanks to the versatility of the 451 valve with optionally available back pressure compensating stainless steel bellows or lifting, this safety valve is in demand throughout the entire hydrogen value chain.

Temperatures
from - 60 °C to + 400 °C

Pressures
from 0,5 bar to 70 bar

Threaded connections
from ½“ to 2“

Data sheet

SAFETY VALVES SERIES 420

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

To support hydrogen production, e.g. in the electrolysis process, safety valves are required that reliably protect the systems even at low pressures and low volumes.

Thanks to TÜV and European component approval, the miniature safety valves in the 420 series enable the use of tested and approved quality, even in these applications, with neutral and non-neutral gaseous and liquid media.

The optionally available cutting ring threaded connections make this valve quick and easy to install when used in small pipelines.

Temperatures
from - 40 °C to + 260 °C

Pressures
from 0,5 bar to 50 bar

Threaded connections
from ¼“ to ⅜“

Data sheet

SAFETY VALVES SERIES 2400

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

The safety valves in the 2400 series are fully approved for vapours and gases as well as liquids. All valve components are specially cleaned during the manufacturing process and are therefore generally oil- and grease-free in accordance with DIN EN 12300.

The use of high-alloy stainless steels 1.4404 and 1.4408 makes the safety valves extremely resistant in extremely cold temperature ranges. An FDA-compliant sealing material is used for use with gases that come into contact with foodstuffs.

Overpressure in the range of 0.2 to 70 bar is safely dissipated with consistently high performance.

Temperatures
from - 200 °C to + 200 °C

Pressures
from 0,2 bar to 70 bar

Threaded connections
from ¼“ to 1½“

Data sheet

SAFETY VALVES SERIES 455

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

Our flange series 455 is used in applications where large volume flows need to be protected. In this area of system protection, flange connections are often installed in existing pipework systems.

We pay particular attention to the performance of the 455 series in all nominal diameters. This is unique in the field of flanged safety valves.

Thanks to the use of high-quality materials with excellent media resistance and the option of achieving the highest level of tightness to the atmosphere by means of a back-pressure compensating bellows, this safety valve is suitable for almost any application.

The pressure range extends from 0.2 to 40 bar and the operating temperature limit of +400 °C allows the valve to be used in a wide range of temperatures.

Temperatures
from - 255 °C to + 400 °C

Pressures
from 0,2 bar to 40 bar

Flange connections
from DN 15 to DN 100

Data sheet

PRESSURE REDUCING VALVES SERIES 484

made of stainless steel, with female threaded connections

This diaphragm or piston pressure reducing valve made of stainless steel, with sleeve connections for pneumatic and hydraulic applications, is characterised above all by its particularly high flow rates and its low pressure loss, even with high power requirements.

The fully balanced valve, which compensates for inlet pressure fluctuations, is available with and without secondary venting, either as a diaphragm or piston version.

The pressure is set without tools using the ergonomically shaped handwheel. The extremely small pressure drop in the control operating range makes this high-performance pressure regulator unrivalled.

Temperatures
from -40 °C to + 120 °C

Inlet pressure up to 60 bar,
Outlet pressure adjustable
from 0,5 bar to 50 bar

Threaded connections
from ¼“ to 2“

Data sheet

Saftey valves and fittings for hydrogen applications

SAFETY VALVES SERIES 451FL

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

In the production of hydrogen, such as in electrolysis, safety valves are required that reliably protect the systems even at low pressures and low volumes. Thanks to TÜV and European component approval, the miniature safety valves in the 420 series are also used in these applications. The tested and approved materials and the quality of this safety valve make it suitable for use with neutral and non-neutral, gaseous and liquid media.

The optionally available cutting ring threaded connections make this valve quick and easy to install when used in small pipelines.

Temperatures
from - 60 °C to + 400 °C

Pressures
from 0,5 bar to 70 bar

Flange connections
from DN 15 to DN 50

Data sheet

SAFETY VALVES SERIES 461

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

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

The proven range of variants allows the valve to be used for different media in different states of aggregation. This series is very well suited and frequently used in measurement and control technology systems and in gas mixing stations, for example.

Temperatures
from - 60 °C to + 225 °C

Pressures
from 0,5 bar to 70 bar

Threaded connections
from ¼“ to ½“

Data sheet

WATER ELECTROLYSIS

Made in Baden-Württemberg

The industrialisation of water electrolysis in Germany is to be driven forward by the ZSW project: "Electrolysis made in Baden-Württemberg".

Particularly in view of the growing awareness of the need to meet the Paris climate protection targets and the increasing pressure to act, new, long-term viable options for the economy, especially for industrial companies, must be developed as quickly as possible.

Water electrolysis is the key technology here. It enables the production of hydrogen from water and electricity and thus helps to minimise to compensate for fluctuations in the supply of renewable electricity sources. Renewable energy can be stored and is available for further energy supply when there is a lull in the wind or low solar radiation.

Goetze is your partner when it comes to safety.

The series 461 angle safety valve made of stainless steel with PTFE seal has been cleaned oil- and greasefree for use with hydrogen. Equipped with these properties, **the series 461 stainless steel valve** protects the gaseous phase of the electrolyser. A special GOX version is available for oxygen applications (use of special materials including oil- and greasefree production).

The gunmetal angle safety valve of the 652 series secures the water supply to the electrolyser and is therefore used in the liquid phase.

As the entire system falls under the ATEX directive, ATEX approval was also requested for all safety valves installed and the corresponding certificates were enclosed.

HIGH PRESSURE SAFTEY VALVES FOR OXYGEN APPLICATIONS

Materials

Media

Temperatures
from -40 °C to +60 °C

Pressures
from 50 bar to 420 bar

Threaded connections
from ¼" to ¾"

With increasing pressures and/or temperatures in oxygen applications, the risk of fire also increases. Due to the fire-promoting effect of oxygen, the ignition temperature of materials is significantly reduced. As a result, materials that are not combustible under normal ambient conditions are now completely burnt under the effect of the oxygen. At high pressures, pressure surges can cause very high temperatures. These significantly exceed the ignition temperature of metallic materials, which is lower under the influence of oxygen and can lead to catastrophic fires. For critical applications of this kind, Goetze has developed a suitable and safe solution with the 492GOX series. Here, the pressure-bearing parts have been replaced by correspondingly safe materials such as monel and brass.

GOETZE VALVES FOR OXYGEN APPLICATIONS ARE USED HERE:

Production of industrial gases

O2 injection in steel production

SAFETY VALVES SERIES 492GOX

made of brass,
with threaded connections

Safety valves that are specially designed for oxygen applications are used in a wide range of industries. In particular in the production of technical gases, medical gases, compressor manufacturers, component manufacturers and plant engineers.

Due to the special requirements for high-pressure oxygen, the 492GOX safety valve has components made of Monel to reliably prevent oxygen burnout.

In addition, the 492GOX safety valve has undergone a special oxygen pressure surge test. The compact design and the rotatable outlet with threaded connections, which allows the valve to be positioned in the desired blow-out direction even after installation, make the 492GOX safety valve an innovative addition to the product portfolio.

Temperatures
from - 40 °C to + 60 °C

Pressures
from 50 bar to 420 bar

Threaded connections
from ¼" to ¾"

Data sheet

EXTREME CONDITIONS - SAFE SOLUTIONS

With increasing pressures and/or temperatures in oxygen applications, the risk of fire also increases.

Due to the fire-promoting effect of oxygen, the ignition temperature of materials is significantly reduced. As a result, materials that are not flammable under normal ambient conditions are now completely burnt under the effect of the oxygen.

At high pressures, pressure surges can cause very high temperatures. These significantly exceed the ignition temperature of metallic materials, which is lower under the influence of oxygen, which can lead to catastrophic fires.

For critical applications of this kind, GOETZE has developed a suitable and safe solution with the series 492GOX. The pressure-bearing parts here have been replaced by correspondingly safe materials such as Monel and brass.

APPLICATIONS WITH OXYGEN? BUT SAFE!

Oxygen valves in use

Safety valves that are specially designed for oxygen applications are used in a wide variety of industries. In particular, in the area of the production of technical gases, medical gases, with compressor manufacturers as well as component manufacturers and plant constructors.

Due to the special requirements for high-pressure oxygen, the 492GOX safety valve has components made of Monel to safely prevent oxygen burnout. In addition, the 492GOX safety valve was subjected to a special oxygen pressure surge test.

More technical information on the 492 series can be found in the data sheet.

Production process Purified Gases

In many areas of the application of technical gases, particularly high demands are placed on the purity of the gases and on the fittings in use.

They are used above all in the production of technical and medical gases, for hydrogen in fuel cells, by compressor manufacturers and plant constructors. manufacturers and plant constructors.

The handling of high-purity gases requires extreme care throughout the entire production process. This is the only way to avoid hazards in the application. In order to meet these high standards, Goetze has a production process (Purified Gases) specially designed for high-purity gases.

PRODUCTION PROCESS:

- Receipt of the enquiry followed by a technical check by our sales department whether the sealing materials and lubricants are suitable for the pressures and temperatures required in the application.

  For critical gases, such as oxygen and hydrogen, compliance with essential processes is necessary. In the area of oxygen applications, it is necessary to use sealing materials that have been tested by the Federal Institute for Materials Testing (BAM) for this specific application. In applications with hydrogen, there are also requirements for the purity (e.g. in fuel cell systems) of the gas and thus for the components, as well as for the properties of the sealing materials to be used (Norsok Standard M-710 for o-rings).

- Cleaning of the individual parts with specific solvents and ultrasound. The individual parts are then packed in closed transport boxes.

- The assembly, testing, packaging and labelling of the valves is carried out at our own assembly stations. These steps serve the purpose of achieving corresponding limit values of hydrocarbon compounds and particle impurities.
  - Limit value for hydrocarbon impurities: ≤ 100 mg/m^2
  - Limit value for particle impurities: ≤ 100 µm

- Dispatch of the valves to the customer.

Professionally trained personnel, compliance with all relevant regulations and recurring processes, monitoring of the cleaning which is free of oil, grease and particles, assembly, testing, packaging and labelling guarantee customers a valve which conforms to high-purity gas standards for their applications.

Separate assembly area for valves in high purity gas applications

SAFETY VALVES AND FITTINGS FOR CRYOGENIC APPLICATIONS

Materials

Temperatures
from -200 °C to +200 °C

Pressures
from 0,2 bar to 70 bar
PN40, PN63 and PN100

Media

Threaded connections
from ¼“ to 1½“

Welding end /
Welding socket
DN10 to DN50

The cryogenic valves by Goetze KG are pioneering in their application and can be used in many industries. Low-temperature gases are used in many industries, ranging from food processing, medical equipment down to energy production. The outstanding quality of the new cryogenic valves by Goetze has been confirmed by their approval for use with both gases and vapours – and as well as for liquids.

GOETZE VALVES FOR CRYOGENIC APPLICATIONS ARE USED HERE:


Tunnel cooling systems


Cryogenic machining


LNG applications

Safety valves and fittings for cryogenic applications

SAFETY VALVES SERIES 2400

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

In cryogenic technology, valves must fulfil special requirements in order to provide reliable protection, e.g. for tanks and filling systems filled with cryogenic liquefied gas. The safety valves in the 2400 series have therefore been fully approved for vapours and gases as well as for liquids in accordance with ISO 4126-1 and ASME Code Sec. VIII Div. 1.

This means that every valve is suitable for use in systems with oxygen and is labelled accordingly.

The use of high-alloy stainless steels 1.4404 and 1.4408 makes the safety valves extremely resistant in extremely cold temperature ranges. An FDA-compliant sealing material was used for use with gases that come into contact with foodstuffs. Overpressure in the range from 0.2 to 70 bar is safely dissipated with consistently high performance.

Temperatures
from - 200 °C to +200 °C

Pressures
from 0,2 bar to 70 bar

Threaded connections
from ¼“ to 2“

Data sheet

SAFETY VALVES SERIES 2480

made of gunmetal, angle-type, with threaded connections

The now tried-and-tested 2400 series safety valves in stainless steel now have a sister series in gunmetal with the 2480 variant. This series is characterised in particular by the fact that the outlet is enlarged by one or two nominal diameters, meaning that two different performance classes are available in one valve size.

The function and performance are based exactly on the sister series and are as stable in function as they are high in performance. The fact that the approvals according to ISO 4126-1 and ASME Code Sec. VIII Div. 1 are also covered is a prerequisite for us.

All gunmetal valves are of course suitable for oxygen service and fulfil all current delivery requirements according to international standards such as DIN EN, ASTM, EIGA and CGA as well as the specifications of gas manufacturers.

Temperatures
from - 200 °C to +200 °C

Pressures
from 0,2 bar to 70 bar

Threaded connections
from ¼“ to 1“

Data sheet

OVERFLOW VALVES SERIES 2580

made of gunmetal, angle-type, with threaded connections

The overflow valve is characterised by a continuous and quiet pressure reduction, as can occur in the application on tanks for the storage of cryogenic liquefied technical gases such as argon, oxygen, nitrogen or carbon dioxide.

It is set to a pressure below the response pressure of the safety valves and thus prevents the safety valves of the tank from responding.

By using the Type 2580 overflow valve, only the amount of gas generated by the heat input into the container is ever discharged. When gas is removed, the valve closes so that no gas is lost unnecessarily. The overflow valve is easily mounted on the lower connections of the diverter ball valve. The connecting pipe bend required for this can be supplied directly.

Temperatures
from -200 °C to +200 °C

Pressures
from 0,2 bar to 70 bar

Threaded connections
from ¼“ to ½“

Data sheet

SHUT-OFF VALVES SERIES 2140

made of stainless steel, in straight form

The main function of the 2140 shut-off valve is the controlled opening and closing of pipe sections via the valve seat integrated in the body.

Thanks to the use of high-quality stainless steel materials, the valve can be used for cryogenic operation at temperatures down to -196 °C. The shut-off valves are approved in accordance with DIN EN 1626.

The series is available in nominal diameters DN10 - DN50 and can be designed with connection options for butt welds and socket welds. The manual valve actuator is operated via an ergonomically shaped handwheel; the open/closed position can be recognised at any time via a visual position indicator.

The valve bonnets can be configured with four different actuator lengths depending on the application and operating environment.

Temperatures
from -196 °C to +120 °C

Pressures
PN 63

Butt weld / Socket weld
from DN 10 to DN 50

Data sheet

SHUT-OFF VALVES SERIES 2180

made of gunmetal, in straight form

The 2180 series is characterised by a corrosion-resistant, lead-reduced gunmetal body and a valve bonnet made of stainless steel.

The design of the 2180 series is identical to that of the 2140 series and therefore offers an excellent price-performance ratio.

The valve cone is made of brass CW617N and is adapted to the high-quality stainless steel valve spindle.

Threaded and soldered socket connections are available as connection options.

The series complies with the requirements of DIN EN 1626.

Temperatures
from -196 °C to +120 °C

Pressures
PN 63

Butt weld / Socket weld
from DN 10 to DN 50

Data sheet

NON-RETURN VALVES SERIES 2142/2182

made of stainless steel / of gunmetal, in straight form

The non-return valves are used in pipelines for the storage, transport and production of liquefied gases and ensure protection against the unwanted backflow of gases or liquids.

The check valves are used at operating temperatures from -196°C to +120°C and are available in nominal diameters of DN10 - DN50 and in pressure ranges up to 63 bar.

The valves can be designed with stainless steel (series 2142) or gunmetal bodies (series 2182).

Temperatures
from -196 °C to +120 °C

Pressures
PN 63

Butt weld / Socket weld
Thread / Soldering socket
from DN 10 to DN 50

Data sheet 2142

Data sheet 2182

Safety valves and fittings for cryogenic applications

DIVERTER BALL VALVES SERIES 2700

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

The optimised design of the flow channels within the diverter ball valve enables particularly high flow rates. As a result, the flow pressure losses to the safety valves are significantly reduced and safe functioning is guaranteed. The use of high-alloy stainless steels 1.4404 and 1.4408 ensures high resistance to internal and external influences.

An FDA-compliant sealing material was used for use with gases that come into contact with food.

Due to the oil- and greasefree production, the diverter ball valves are generally suitable for use in systems with oxygen. With the ergonomically shaped handle and the separate test connections, the diverter ball valve is optimally prepared for the maintenance of safety valves.

Temperatures
from -200 °C to +120 °C

Pressures
PN 63

Threaded connections
from ¾“ to 1¼“

Data sheet

DIVERTER BALL VALVES SERIES 2780/2782

made of gunmetal, with threaded connections

As already implemented in the 2700 stainless steel series, the 2780 gunmetal diverter ball valve also has a flow geometry with very low pressure loss. The safe function of the safety valves mounted on the diverter ball valve is therefore always guaranteed.

In addition, compared to the vertically mounted safety valves, connections for bursting discs are also available here. Thanks to the consistent cleaning of all individual parts, the gunmetal diverter ball valve is also ideally equipped for use in oxygen systems.

Our series 2782 offers you additional connection options.

Temperatures
from -200 °C to +120 °C

Pressures
PN 63

Threaded connections
from ¾“ to 1¼“

Data sheet 2780 Data sheet 2782

DIVERTER BALL VALVES SERIES 2781/2783

made of gunmetal, with threaded connections

Diverter ball valve for the installation of e.g. two safety valves in combination with bursting discs to protect containers for the storage of cryogenic liquefied gases.

The requirements of the Pressure Equipment Directive for redundant or different types of safety devices are met with this valve and in conjunction with the safety valves of the 2400 / 2480 series. Two additional connections for suitable bursting discs are available on each side.

If the safety valves require maintenance or the bursting discs need to be replaced, the side requiring maintenance is shut off from the tank.

Our series 2783 also offers you additional connection options for this type.

Temperatures
from -200 °C to +120 °C

Pressures
PN 63

Screw connection with welding end / solder nipple
DN 25

Data sheet 2781 Data sheet 2783

PRESSURE REGULATORS SERIES 2980

made of gunmetal, with pipe or threaded connections

The series 2980 pressure regulator is designed to control the vessel pressure on tanks for the storage of cryogenic liquefied gases such as LIN, LOX, CO2, LAr, LNG and operates in 3 functions as a combination regulator.

Thanks to the use of two high-quality stainless steel bellows and the housing material made of lead-reduced gunmetal, the combination regulator operates vibration-free. Thanks to the special PTFE seat seal in conjunction with the improved seat/plug contour design, the regulator has a permanently tight seal.

The pressure regulator is available in three different pressure ranges and can be individually adjusted up to 38 bar. The pressure regulator is characterised by a wide temperature range and excellent control quality. For use with cryogenic liquefied oxygen, the combination regulator is always manufactured oil- and greasefree.

Temperatures
from - 196 °C to +200 °C

Pressures
PN 40

Threaded connections
DN 25

Data sheet

DIRT TRAP SERIES 2143/2183

made of stainless steel / of gunmetal, in straight form

The dirt traps in the 2143 series consist of a straight-through housing made of high-quality stainless steel and, in the 2183 series, of lead-reduced gunmetal.

The strainer unit integrated between the body and lid is available in various mesh thicknesses.

Installing the dirt traps prevents contamination in the medium and in the downstream process.

Temperatures
from - 196 °C to +200 °C

Pressures
PN 63

Butt weld / Socket weld
Thread / Soldering socket
from DN 10 to DN 50

Data sheet 2143 Data sheet 2183

LOCKING SLEEVE UNIT

made of stainless steel or brass, angle-type with threaded connections

For easy alignment and positioning of the safety valves on the diverter ball valve. The versions are available in different sizes and materials. Delivery is always oil- and greasefree and the PTFE seals are FDA-compliant.

Temperatures
from -200 °C to +200 °C

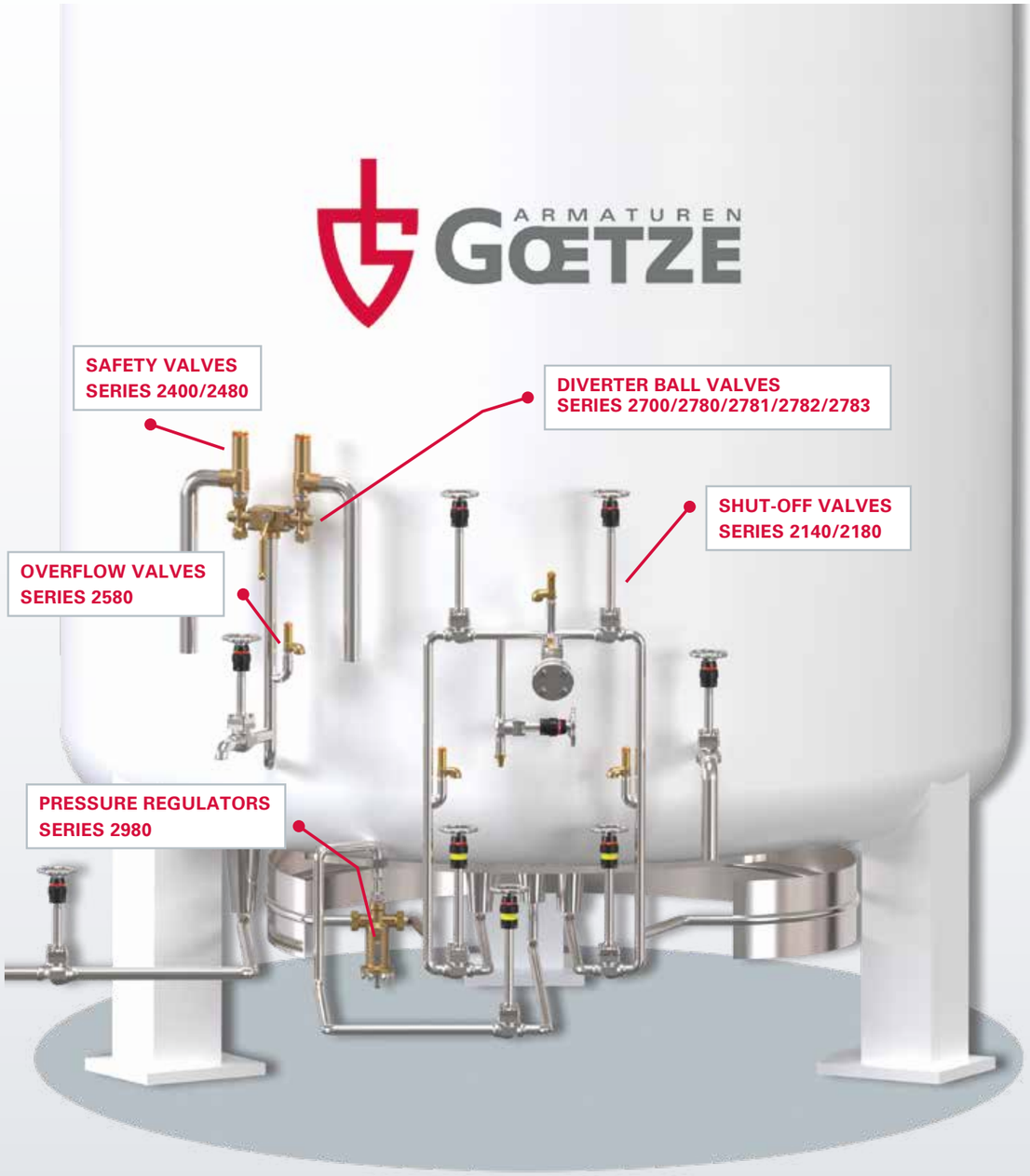
Pressures
PN 100

Threaded connections
from ½“ to 1“

Data sheet

EVERYTHING FROM A SINGLE SOURCE
Goetze valves in combination

Protect, Shut-off, Control or Divert – with the products for cryogenic applications from Goetze KG Armaturen you can source everything from one single supplier. Goetze is also your partner when it comes to the subject of safety. With our cryogenic valve package we guarantee safe installations and storage tanks.



▶ SAFETY VALVES SERIES 2400/2480
- high blow-off capacity
- compact design
- FDA compliant sealing material
- high-quality materials 1.4404 / C499K

▶ OVERFLOW VALVES SERIES 2580
- safe discharge of boil off gas
- easy and quick installation and adjustment of the set point with a hexagonal key
- can be sealed to prevent unauthorised adjustment

▶ SHUT-OFF VALVES SERIES 2140/2180
- straight-through housing with flow-optimised housing geometry
- high Kvs-value
- open / closed position clearly visible via optical position indicator
- manually operated actuator (open & close) via ergonomically designed stainless steel handwheels
- executable with non-return function

▶ DIVERTER BALL VALVES SERIES 2700/2780/2781/2782/2783
- flow-optimised housing
- separate test connections
- ergonomically shaped handle

▶ PRESSURE REGULATORS SERIES 2980
- wide setpoint range and simple, convenient mechanical pressure adjustment
- high flow capacity due to bellows control made of high-quality stainless steel
- compatible, market-standard overall length
- standard, integrated fine filter on valve inlet and outlet

▶ NON-RETURN VALVE SERIES 2142 / 2182
- low opening pressure
- high Kvs-value

▶ DIRT TRAP SERIES 2143 / 2183
- standard mesh size 250µm
- optional mesh sizes on request

SAFETY VALVES AND FITTINGS FOR TECHNICAL GASES

Materials

Temperatures
from -85 °C to +400 °C

Pressures
from 0,2 bar to 70 bar
PN40, PN63 and PN100

Media

Threaded connections
from ¼“ to 1½“

flange connections
DN15 to DN100

Technical gases such as hydrogen, nitrogen and oxygen. Safety and hygiene under extreme conditions. - Only the best materials and designs can master these parameters. High-quality, robust and corrosion-resistant, our safety valves and fittings for technical gases offer you the perfect conditions for smooth operation.

THE GOETZE VALVES ARE USED HERE:


Manufacture of pharmaceuticals


Petrochemical industry


Desalination plants

Safety valves and fittings for technical gases

SAFETY VALVES SERIES 255/255 ANSI

made of cast steel, angle type, with flange connections

made of stainless steel, angle type, with flange connectionsThe 255 series is characterised by robust cast steel and a wide range of variants for a variety of industrial applications. These safety valves cover nominal diameters from DN 15 to DN 100 and offer a consistent performance, function and design concept that enables both vertical and horizontal installation. The series is particularly easy to maintain thanks to its low overall height and the option of using a full-nozzle design. Ideal for fast-reacting processes in chemical plants.

For US standards, the ANSI version is available with ASME B16.5 flanges and API 526 valve stem lengths, which facilitates integration into corresponding systems.

Temperatures
from - 85 °C to +400 °C

Pressures
from 0,2 bar to 40 bar

Flange connections
from DN 15 to DN 100

Data sheet 355

Data sheet 355 ANSI

SAFETY VALVES SERIES 355

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

The 355 series of our flanged safety valve impresses with its consistent concept in terms of performance, function and design.

The use of spheroidal graphite cast iron as the body material results in a particularly cost-effective valve variant. This safety valve is particularly interesting in gas systems without corrosive effects of the media used, but where high performance is still required.

Temperatures
from - 10 °C to +350 °C

Pressures
from 0,2 bar to 40 bar

Flange connections
from DN 15 to DN 100

Data sheet

SAFETY VALVES SERIES 455/455 ANSI

made of stainless steel, angle type, with flange connections

Our 455 flange series is used in applications where large volume flows need to be ensured. Flange connections are often installed in existing pipework systems in this area of system protection.

Thanks to the use of high-quality materials with excellent media resistance and the option of a back-pressure compensating bellows to ensure the highest level of tightness to the atmosphere, this safety valve is suitable for almost any application.

For US standards, the ANSI version is available with ASME B16.5 flanges and API 526 valve stem lengths, which facilitates integration into corresponding systems.

Temperatures
from - 255 °C to +400 °C

Pressures
from 0,2 bar to 40 bar

Flange connections
from DN 15 to DN 100

Data sheet 455

Data sheet 455 ANSI

SAFETY VALVES SERIES 460

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

If the high-performance safety valves with their numerous equipment variations are technically too complex and oversized in terms of performance for standard applications, but the highest attention is paid to quality and corrosion resistance, this all-round safety valve from the 460 series made of stainless steel is the optimum solution.

Whether with or without lifting, the bonnet is always gas-tight.

Temperatures
from - 60 °C to +225 °C

Pressures
from 0,2 bar to 25 bar

Threaded connections
from 3/8“ to 1“

Data sheet

SAFETY VALVES SERIES 861

made of gunmetal, angle-type, with threaded connections

A compact and price-conscious gunmetal angle-type housing safety valve for use in systems without special corrosivity requirements. With the GOX option, also very suitable for applications with oxygen.

Temperatures
from - 60 °C to +225 °C

Pressures
from 0,5 bar to 50 bar

Threaded connections
from ¼“ to ½“

Data sheet

SAFETY VALVES SERIES 451R

made of stainless steel, in conjunction with pre bursting disc and clamp connections

With the 451r series in combination with the KUB-Clean bursting disc, Goetze provides comprehensive protection for systems.

If the system has to be operated at high operating pressure, the bursting disc prevents the initial release of operating fluids that should not be released into the environment. This achieves a high level of technical system tightness.

Temperatures
from - 40 °C to +200 °C

Pressures
from 2,0 bar to 25 bar

Flange connections
from DN 20 to DN 32

Data sheet

Safety valves and fittings for technical gases

SAFETY VALVES SERIES 4420/4450

made of stainless steel, angle type,
with threaded connections

The all-round safety valves in the 4420/4450 series focus on connection flexibility and corrosion resistance. Depending on the pressure range, the valves can be designed with either a high-quality moulded diaphragm or a gas-tight valve bonnet. The two-part design of the valve body offers the possibility of numerous connection types at the valve inlet; in combination with the highly corrosion-resistant stainless steel, the valves can be used in a wider range of applications.

Temperatures
from -50 °C to +205 °C

Pressures
from 0,5 bar to 25 bar

Threaded connections
from ¾“ to 1¼“

Data sheet 4420

Data sheet 4450

PRESSURE REDUCING VALVES SERIES 684

made of gunmetal,
with female threaded connections

All the special and technical features of the stainless steel versions are also available in the corrosion-resistant gunmetal series 684.

The fully balanced valve, which equalises upstream pressure fluctuations, is available with and without secondary venting, either as a diaphragm or piston version.

The pressure is set without tools using the ergonomically shaped handwheel. The extremely small pressure drop in the control operating range makes these high-performance pressure reducing valves almost unrivalled.

The GOX option for gaseous oxygen makes them ideal for use in oxygen measuring and control stations, for example.

Temperatures
from -40 °C to + 120 °C

Inlet pressure to 60 bar,
Outlet pressure adjustable
from 0,5 bar to 50 bar

Threaded connections
from ¼“ to 2“

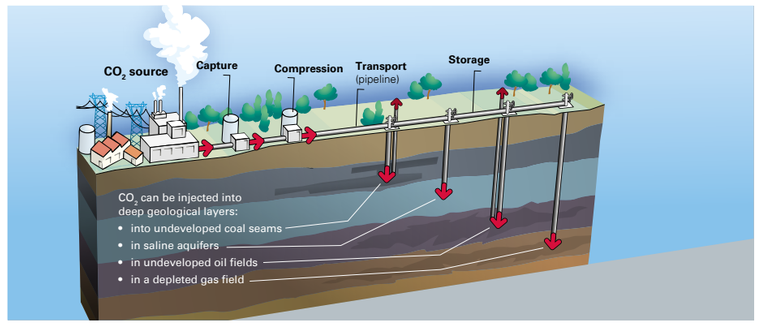
Data sheet

CARBON CAPTURE & STORAGE CCS

Storing carbon dioxide (CO_2) underground in an environmentally friendly and permanent manner

As industrial CO_2 emissions are largely responsible for increasing the temperature in the atmosphere, the CO_2 is captured and separated directly from the industrial processes, i.e. on site at the producer. The CO_2 is then liquefied under high pressure so that it can be transported via existing infrastructure, e.g. the rail network, to safety storage facilities.

This approach is particularly suitable for emission-intensive process industries such as steel, cement, lime, fertilisers, pulp and paper, petrochemicals and waste incineration plants.



A way to reduce greenhouse gases with GOETZE safety valves:

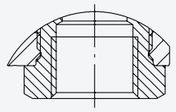
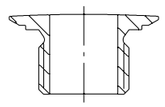
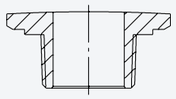
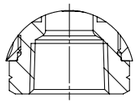
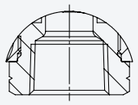
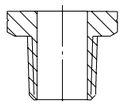
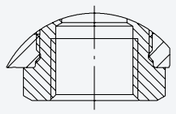
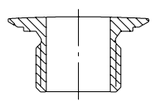
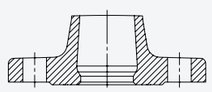
GOETZE safety valves are involved in all steps from capture to injection of the CO_2 into the underground storage facilities. The processes required for this take place under overpressure. In the event of failure of control systems and regulators, which are responsible for filling levels, temperatures and, in particular, internal overpressure, for example, the tanks and apparatus must be protected by mechanically operating overpressure protection.

In addition to overpressure protection for tanks and apparatus, there are additional requirements for the valves and fittings that need to be taken into account due to the **chemical resistance of the sealing and housing materials** used.

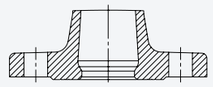
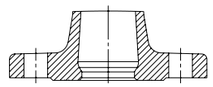
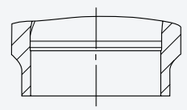
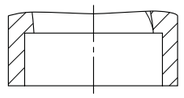
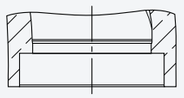
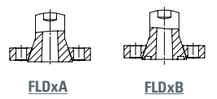
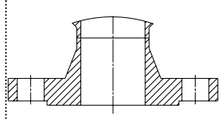
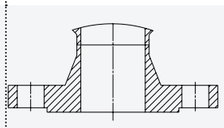
Because not all CO_2 is the same

It depends on whether the CO_2 is present in a pure dry or moist state, or whether it contains admixtures of other substances. GOETZE can support you with a large selection of suitable body and sealing materials.

CONNECTION POSSIBILITIES

Connection type	Drawing	Description
f		Whitworth male threaded pipe connection cylindrical; seal not made on thread BSP-P according to DIN ISO 228
m		Whitworth male threaded pipe connection cylindrical; seal not made on thread BSP-P according to DIN ISO 228
BSP-Tm		Whitworth male threaded pipe connection tapered; seal made on thread male connection BSP-T according to DIN EN 10226
NPTf		US standard tapered pipe thread NPT female threaded pipe connection NPT according to ANSI / ASME B 1.20.1 seal made on thread
NPTFf		US tapered pipe thread for dry closure NPTF female threaded pipe connection NPTF according to ANSI / ASME B1.20.3 seal made on thread
NPTm		US standard tapered pipe thread NPT male threaded pipe connection NPT 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
FCDxA		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[1]

[1] Other versions of the sealing strip on request.

Connection type	Drawing	Description
FCAxA		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[1]
FCBxA		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[1]
SE		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
SM		Welding socket SM1 for pipes according to DIN EN ISO 1127 SM2 for pipes according toh ASTM A312 S10 SM3 for pipes according to ASTM A312 S40
LM		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
FLDxA, FLDxB		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[1] B = Sealing strip with groove form D[1]
FLAxA, FLAxB		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[1] B = Sealing strip with ring joint face[1]
FWDxA		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[1]
FWAxA		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[1]

[1] Other versions of the sealing strip on request.

HOW TO HANDLE PRESSURE

Quality. Safety. Competence. This is what Goetze stands for. Like hardly any other company in the field of safety valves and fittings, we combine the experience of tradition with the esprit of innovation. We support our customers with high-quality products, comprehensive service and know-how.

The Goetze product range

Our locations

GERMANY, LUDWIGSBURG

CHINA, BRAZIL, USA | SALES DISTRIBUTORS

-270°C – +400 °C

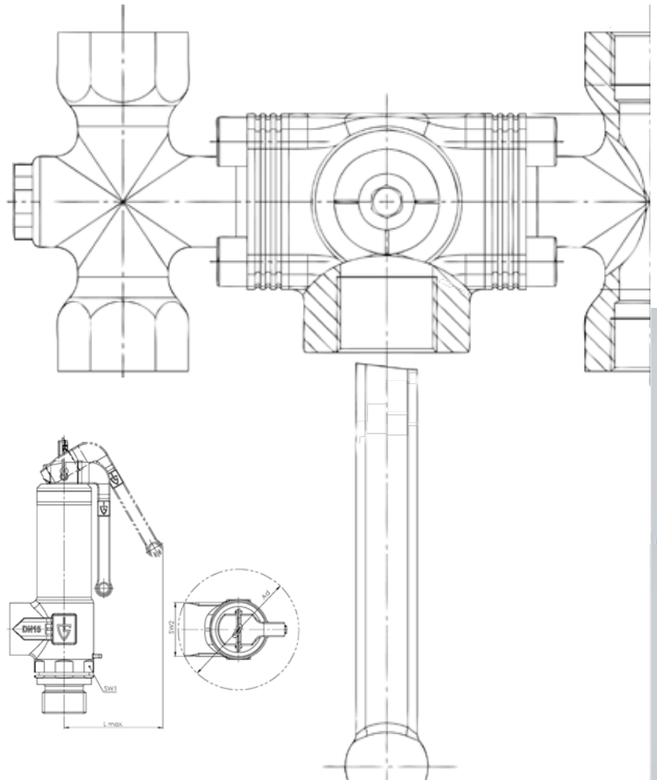
uncompromising performance

0,2 BAR – 1500 BAR

impressive 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 over 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.

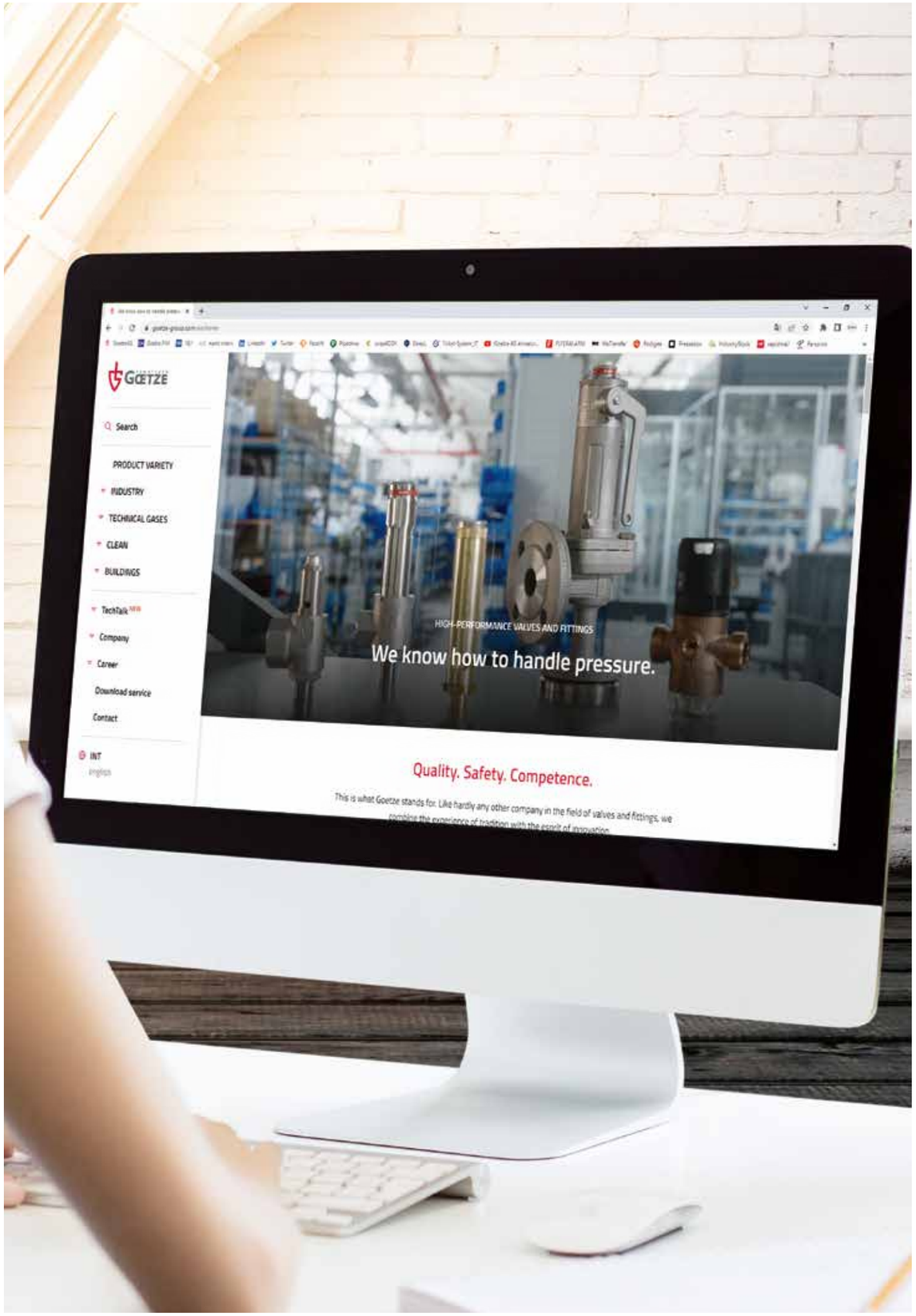
PROFESSIONAL AND COMPETENT ADVICE

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.



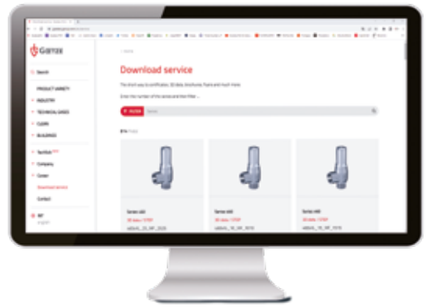
INTERNET SERVICE OF GOETZE

DESIGN AND CALCULATION OF SAFETY VALVES

With the help of our design programme and with the certified discharge number 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.

DOWNLOAD SERVICE

The short route to data sheets, installation instructions, certificates, brochures, flyers and much more. Easy to find via our website in the "Service" section.



MOBILE WEBSITE

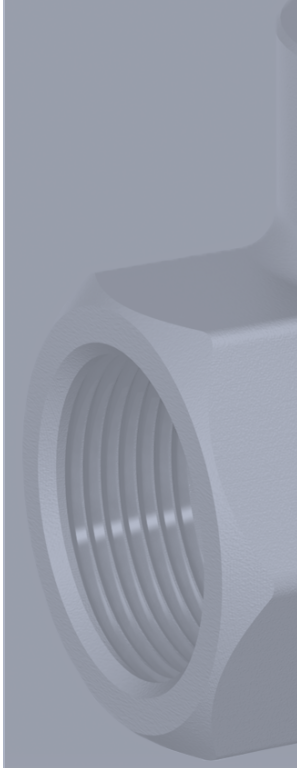
Our website is also available in a version optimised for smart phones. As usual, you may find your products simply and easily – also when you are out and about.

Curious? Just take a look!

www.goetze-group.com

NOTES

NOTES



ARMATUREN GOETZE

Robert-Mayer-Straße 21
71636 Ludwigsburg

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

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