

CRYOGENIC VALVES



COOL SOLUTIONS!

Safety valves and fittings for cryogenic & technical gas applications.

WHAT SETS GOETZE AND THEIR CRYOGENIC PRODUCTS APART



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.



INDIVIDUALITY

Our expertise enables us to implement new and custom-made developments in a short time. All valves are produced on the 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.



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 12300 and various works standards from gas producers. Because of this every valve is suitable for use in systems using oxygen and is marked accordingly.



DEPENDABLE COMPETENCE

Not only does our in-house team focus on technical advice. We offer our customers our support throughout the complete life cycle of the valve and support and help those who work with the valves on a daily basis by providing them with the necessary information and instructions. Our representatives in the field have the task of providing our customers with the best possible technical advice and support relating to our products, on the spot at the customer's plant.



HIGH STANDARDS

Not only the products but also the raw materials used must meet the highest standards. This is why 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, each individual valve is subjected to an ISO-certified quality control test before it is allowed to leave the factory.

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

400.000 VALVES PER YEAR

out of a wide product portfolio – "Made in Germany"

Our locations

GERMANY, LUDWIGSBURG

CHINA, RUSSIA, UNITED KINGDOM, BRAZIL | SALES DISTRIBUTORS

-200°C – +400°C

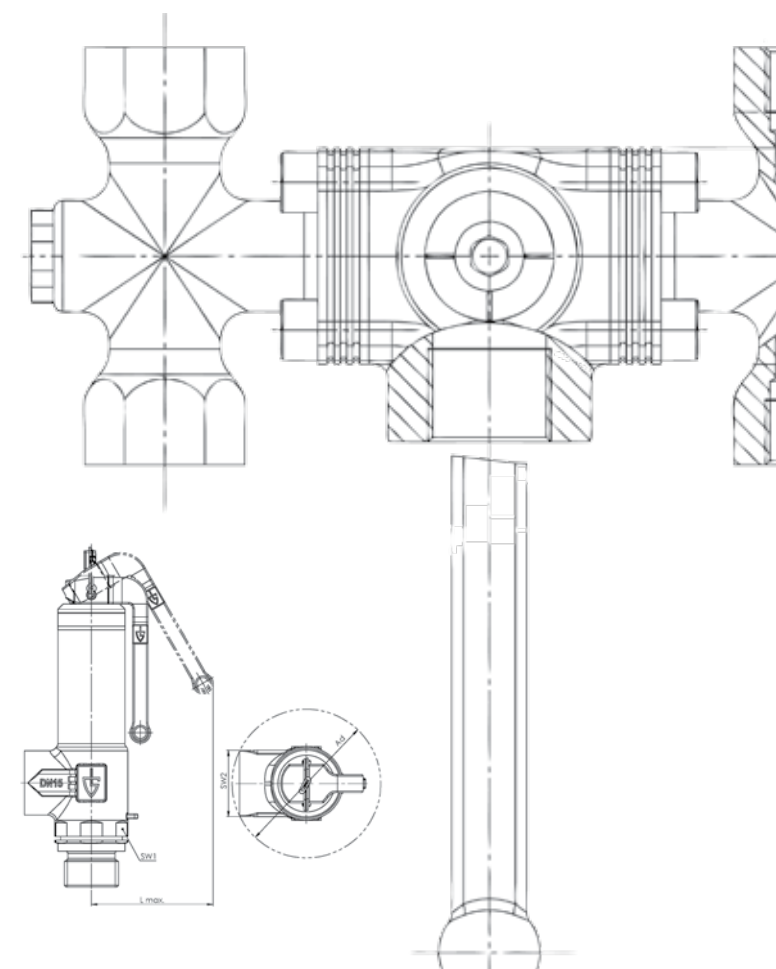
uncompromising performance

0,2 BAR – 630 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.



TECHNICAL BASICS FOR CRYOGENIC PRODUCTS

Materials

STAINLESS STEEL



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

GUNMETAL

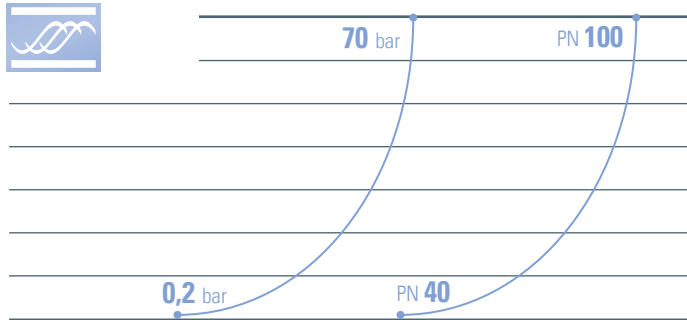


- robust and of high quality
- wide range of applications

Media

LIQUIDS

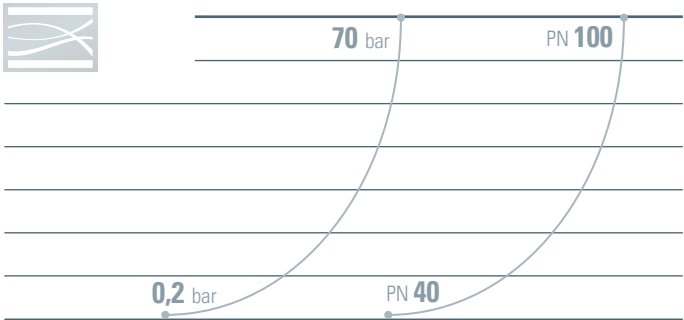
from -200 °C to +200 °C



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

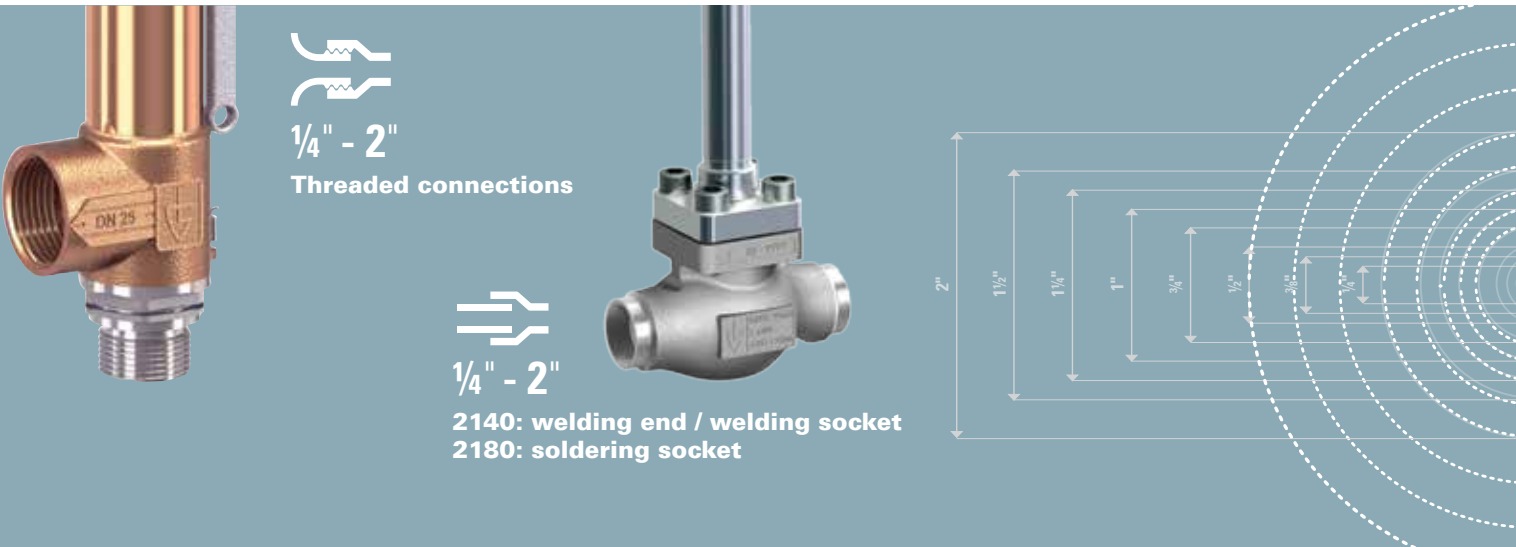
AIR, GASES AND VAPOURS

from -200 °C to +200 °C



- Refrigeration plants
- Dry ice blasting plants
- Ground freezing plants
- Cryogenic machining
- Foodstuffs and Pharmaceuticals

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.

GENERAL TYPE TEST APPROVALS

➤ EUROPEAN PED

➤ National Type Test (TÜV)

➤ EU TYPE EXAMINATION

➤ TYPE TEST (USA)

➤ CANADIAN REGISTRATION NUMBER (CRN)

➤ TR ZU 032/2013 (RU)

➤ MANUFACTURE LICENSE (CHINA) TSG ZF001-2006

➤ KOREA GAS SAFETY (KR)

APPLICATIONS: SHIPBUILDING

➤ TYPE APPROVAL




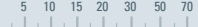














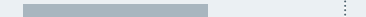
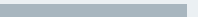
















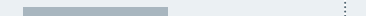

































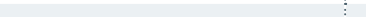






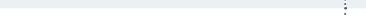
➤ TYPE APPROVAL

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OVERVIEW OF PRODUCTS FOR CRYOGENIC APPLICATIONS

Series	National Type Test (TÜV)	CE 2014/68/EU	EU Type Examination	ASME	CRN	EAC	TS	K	L	ABS	RINA	Registro Italiano Navale (RINA)
2400	■	■	■	■	■	■	■	■	■	■	■	■
2480	■	■	■	■	■	■	■	■	■	■	■	■
2580	■	■	■	■	■	■	■	■	■	■	■	■
2140	■	■	■	■	■	■	■	■	■	■	■	■
2160	■	■	■	■	■	■	■	■	■	■	■	■
2700						■						
2780/2782						■						
2781/2783						■						
2980		■				■						

Series	Materials	Connection type	Media				 Temperature in °C	 Set pressure bar
			neutral		non-neutral			
			liquid	air / gases	liquid	air / gases		
2400								
2480								
2580								
2140		  						PN 63
2180		  						PN 63
2700								PN 63
2780 / 2782		  						PN 63
2781 / 2783		  						PN 63
2980								PN 40

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.

The stable functioning of a safety valve is not only affected by the amount of medium which has to be relieved, but also it is just as important to take into account the pressure losses prevailing in the inlet piping. According to standard regulations the pressure loss in the inlet piping should not be more than 3%. Due to the length of the inlet piping involved, this safety-relevant requirement plays an important role in particular in the protection of vessels used for the storage of cryogenic liquefied gases.

This is where the diverter ball valve **series 2700/2780** in combination with the **series 2400/2480** comes into play. The flow channels of the diverter ball valve have been optimised in their design. This results in high flow capacities and reduced pressure drops in the inlet piping to the safety valves combined with a stable functioning. Furthermore, the various connection options available for the diverter ball valve make diverse protection measures possible. For example by means of a bursting disc fitted in parallel.

Due to the varying operating conditions of the tank installations, as for example product discharge in a gaseous and/or liquid state, filling of the tank during the gaseous or liquid phase, or in case of maintenance, different valves are required. The new shut-off valve **series 2140/2180** is tailor-made for this purpose and designed according to DIN EN1626 for applications in cryogenic plants. The straight-through design valve consists of a flow-optimized valve body made either of high-quality stainless steel 1.4409 or lead content reduced gunmetal CC499K. Depending on the application environment three different valve drive options are available. Highest tightness requirements are guaranteed by means of a self-adjusting PTFE spindle seal integrated into the valve housing.

Operation of the adjustment mechanism is carried-out by means of a high-quality stainless steel hand-wheel, which is fitted with an optical position indicator on its underside. By means of this feature the operator can easily see the exact position of the valve at a glance, which guarantees extra safety in the handling of cryogenic media.

Constant pressure in the storage tank is guaranteed by means of the pressure regulator **series 2980**. The required tank pressure is set on the regulator by means of an integrated adjustment screw. Depending on the spring combination fitted, a set pressure between 2 and 38 bar is possible.

During product discharge the main function of the pressure regulator is as a pressure booster. If the valve disc is lifted the vessel pressure is increased and held constant at the set level.

A further function of the regulator is as an overflow valve which enables excess pressure to be relieved. A pressure increase resulting from temperature effects and times of no usage is relieved via the upper connection on the user side. As a result of this, it is unlikely that the safety valve will operate and unwanted loss of gas occurs.

Additional protection of the valves and fittings is offered by the safety function. Due to the combination of a valve disc with metal bellows, which in the case of a rise in pressure opens on the inlet side e.g. due to evaporation of captive liquids. In this way, an equilibrium of pressure between the two other connections is achieved. Due to these combined functions a saving on valves and piping can be achieved.

SAFETY VALVES SERIES 2400/2480

- high blow-off capacity
- compact design
- FDA compliant sealing material
- high-quality materials 1.4404 / C499K

OVERFLOW VALVE 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

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



Series 2700 in combination with series 2400

Series 2980

Series 2140 / 2180

SAFETY VALVES AND FITTINGS FOR CRYOGENIC APPLICATIONS

Materials



Temperatures
from -200 °C to +200 °C



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

Media



Threaded connections
from 1/4" to 1 1/2"



**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



The safety valves of this series have been awarded full approval for vapours and gases as well as for liquids, according to ISO 4126-1 and AS ME Code Sec. VIII Div. 1. All components of the valve are specially cleaned during the production process and are thus oil- and grease free in accordance with DIN EN ISO 23208. Because of this every valve is suitable for use in systems using oxygen and is accordingly marked.

The use of 1.4404 and 1.4408 high-alloy stainless steels renders the safety valves particularly resistant to extremely cold temperatures. For the use with gases that are in contact with food an FDA -compliant sealing material has been used. Overpressure from 0,2 bar up to 70 bar is purged safely with a consistently high level of 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 well proven safety valve series 2400 made of stainless steel has received a variant sister series, type 2480, that is made of gunmetal. This is characterised in particular by the fact that the outlet can be enlarged by one to two nominal widths.

Functionality and performance comply exactly with the sister series and it is just as stable in terms of function and high performance capability. A fundamental requirement for us is that the approvals in accordance with ISO 4126-1 and AS ME Code Sec. VIII Div. 1 are also covered.

All valves made of gunmetal are as a matter of course suitable for oxygen use and comply with basically all common delivery requirements of international standards like DIN EN, AST M, EIGA and CGA as well as the specifications of the gas producers.

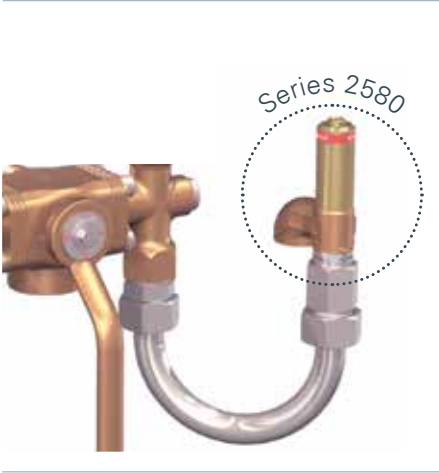
- Temperatures**
from - 200 °C to +200 °C
- Pressures**
from 0,2 bar to 70 bar
- Threaded connections**
from ¼" to 1"



Data sheet

OVERFLOW VALVES
SERIES 2580

made of gunmetal,
angle-type with threaded connections



The overflow valve is characterised by the fact that it ensures a continuous and quiet pressure reduction when used on tanks for the storage of cryogenic liquefied technical gases such as argon, oxygen, nitrogen or carbon dioxide.

The overflow valve is adjusted to a pressure below the set pressure of the safety valves and thus prevents the safety valves of the tank from reacting.

Using the overflow valve of type 2580 ensures that the amount of gas that is discharged is no greater than that generated in the tank due to the heat input. When tapping the gas, the valve closes so that no gas is lost unnecessarily. The overflow valve is easily fitted to the lower connections of the diverter ball valve. The connection pipe elbow required for this purpose can be included in the delivery.

- 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-line sections via the valve seat integrated in the body.

Due to the use of high-quality materials, the fitting can be used for cryogenic operation at temperatures down to -196°C. The shut-off valves are approved according to DIN EN 1626.

The series is available in the nominal widths DN10 - DN50 and can be designed with connection options for welding ends and welding sockets. The manual valve actuator is operated via an ergonomically shaped handwheel, the open/closed position can be seen at all times via a visual position indicator.

The valve upper section can be configured with three 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 series 2180 is characterised by a corrosion-resistant, lead-reduced gunmetal housing and a stainless steel valve upper section. The design is identical to that of the series 2140 and therefore offers an excellent price-performance ratio.

The valve cone is made of CW617N brass and adapted to the high-quality stainless steel valve spindle. Threaded and soldered sleeve connections are available.

The series also meets the requirements of DIN EN 1626.

- Temperatures**
from - 196 °C to +120 °C
- Pressures**
PN 63
- Thread / soldering socket**
DN 25, DN 40



Data sheet


DIVERTER BALL VALVES
SERIES 2700

made of stainless steel,
with threaded connections




The optimal design of the flow channels within the diverter ball valve enable particularly high flow rates. This significantly reduces flow pressure losses to the safety valves and safe operation remains ensured. The use of 1.4404 and 1.4408 high-alloy stainless steels enables high resistance against internal and external influences.

For the use with gases that are in contact with food an FDA -compliant sealing material has been used. Thanks to the oil- and grease-free manufacturing process, the diverter ball valve are suitable for use in systems using oxygen. With the ergonomically shaped handle and the separate testing connections, the diverter ball valve is optimally prepared for the maintenance of the safety valves.

 **Temperatures**
from -200 °C to +120 °C

 **Pressures**
PN 63

 **Threaded connections**
from ¾" to 1 ¼"

DIVERTER BALL VALVES
SERIES 2780/2782

made of gunmetal,
with threaded connections




As already implemented with the stainless steel series 2700, the gunmetal diverter ball valve 2780 possesses a flow geometry with very low pressure loss. The safe functionality of the safety valves mounted on the diverter ball valve is therefore better ensured.

Additionally, opposite to the vertically mounted safety valves, there are also connections for bursting discs available. Due to the consistent cleaning of all component parts, the gunmetal diverter ball valve is also optimally suited for use in systems using oxygen.

Additional connection options are provided for series 2782.

 **Temperatures**
from -200 °C to +120 °C

 **Pressures**
PN 63

 **Threaded connections**
from ¾" to 1 ¼"

DIVERTER BALL VALVES
SERIES 2781/2783

made of gunmetal,
with threaded connections



Ball diverter valve for the installation of for example two safety valves in combination with bursting discs for the protection of containers designed for the storage of cryogenic gases.

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

In case of maintenance of the safety valves or replacement of the bursting discs, the side to be maintained is shut off from the tank.

With the series 2783, an extension of the connection options is also available for this type.

 **Temperatures**
from -200 °C to +120 °C

 **Pressures**
PN 63

 **butt weld / socket weld**
DN 25

PRESSURE REGULATORS
SERIES 2980

made of gunmetal,
with pipe or threaded connections



The pressure regulator of the series 2980 is designed for setting and controlling the vessel pressure on tanks used for the storage of cryogenic liquefied gases, such as LIN, LOX, LAr, LNG.

The use of two high-quality stainless steel bellows, the lead-reduced gunmetal body material and the PTFE seat seal make the pressure regulator suitable for a wide temperature range.

The pressure regulator is available in three different spring packages and can be individually adjusted up to 38 bar. The pressure regulator is characterised by temperature resistance and an excellent control quality combined with a compact design.

 **Temperatures**
from -196 °C to +200 °C

 **Pressures**
PN 40

 **Threaded connections**
DN 25


LOCKING
SLEEVE UNIT

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




For simple alignment and positioning of safety valves on the diverter ball valve (DBV). Available in various sizes and materials.

Standard delivery oil- and grease-free with seals made of PTFE with FDA Approval.

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

 **Pressures**
PN 100

 **Threaded connections**
from ½" to 1"



Data sheet



Data sheet



Data sheet



Data sheet



Data sheet



Data sheet



Data sheet

SAFETY VALVES AND FITTINGS FOR GAS APPLICATIONS

Materials



Temperatures
from -60 °C to +180 °C



Pressures
from 0,5 bar to 630 bar

Media



Threaded connections
from 1/4" to 2"

Goetze also has a wide portfolio of safety valves and pressure reducers for the industrial gas 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 always plays a special role, whether high-pressure or medical technology.

GOETZE VALVES FOR GAS APPLICATIONS ARE USED HERE:



Hydrogen filling station in Stuttgart



O2 injection in steel production

Safety valves and fittings for gas applications

SAFETY VALVES
SERIES 492

made of stainless steel, atmospheric discharge, with threaded connection



A safety valve which impresses with its small dimensions and design for the protection of high-pressure compressed air systems and high-pressure compressors.

Can optionally be ordered with a gas-tight angled swivel outlet for guided blow-off or for connecting a discharge pipe for non-neutral gaseous media.

Due to its special technical construction and design the series covers a pressure range that has not been catered for up to now.

- Temperatures**
from - 60 °C to + 180 °C
- Pressures**
from 50 bar to 630 bar
- Threaded connections**
from ¼" to ¾"



Data sheet

SAFETY VALVES
SERIES 492GOX

made of brass, atmospheric discharge, with threaded connection



Safety valves specially used for applications with oxygen are used in a wide range of industries. Particularly in the production of technical gases, medical gases, by compressor manufacturers as well as component manufacturers and plant manufacturers.

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 was subjected to a special oxygen pressure surge test. The compact design and the angled swivel outlet with threaded connection allow for adjustment of the valve's discharge angle even after installation making the safety valve 492GOX an innovative gain in Goetze's product portfolio.

- Temperatures**
from - 40 °C to + 60 °C
- Pressures**
from 50 bar to 420 bar
- Threaded connections**
from ¼" to ¾"



Data sheet

PRESSURE REDUCING VALVES
SERIES 484 / 684

made of stainless steel / made of gunmetal, with female threaded connections



These diaphragm and operated pressure reducing valves made of stainless steel or gunmetal and with female threaded connections for pneumatic and hydraulic applications are distinguished particularly by high flow rates and low pressure losses even in situations of high performance demands.

These valves are fully relieved avoiding inlet pressure variations and are available with or without secondary venting and in a diaphragm or piston version. Adjustment can be carried-out without any tools by means of the ergonomically shaped hand-wheel.

The extremely low pressure loss across the whole adjustment range means that these high-performance pressure reducing valves are almost unrivalled on the market.

- 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



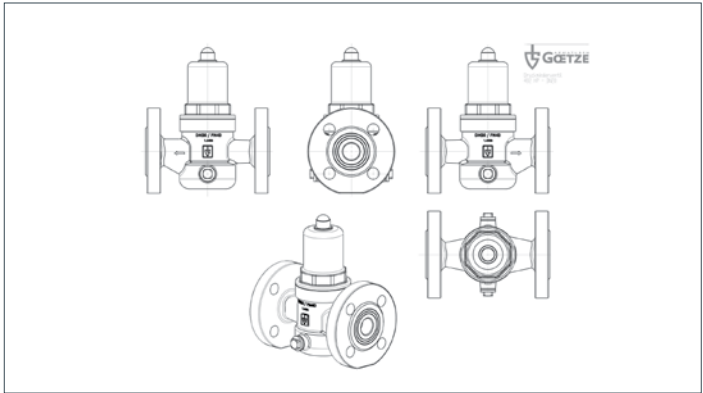
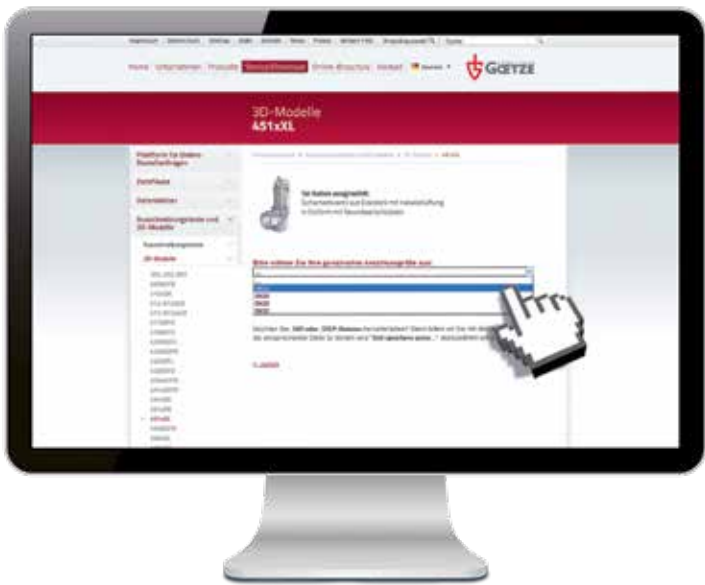
Data sheet

INTERNET SERVICE OF GOETZE

GOETZE PRODUCT NAVIGATOR

You want to find the series you are looking for quicker? Using the Goetze configurator, you can select the desired specifications and characteristics and will be shown a list of matching products. The navigator is for orientation purposes only and does not replace consultation with a technical expert. Give it a try and find the right product for your applications.

www.goetze-armaturen.com/navigator-en



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3D MODELS AND
TENDER DOCUMENTS

For your planning and tenders, we voluntarily provide data of our 3D models in various and common formats. On our website, you will find them in the sector "Service/Download". Just request once your password and you will get immediate access to all relevant data. Beside the 3D models, we offer prefabricated tender documents that you may simply integrate in your offers.

Here is the link for your registration to the download of our tender documents and 3D models:

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CONNECTION POSSIBILITIES

Connection type	Drawing	Description
f		Whitworth threaded cylindrical pipe connection cylindrical, seal not made on thread BSP-P according to DIN ISO 228
m		Whitworth threaded cylindrical pipe connection cylindrical, seal not made on thread BSP-P according to DIN ISO 228
BSP-Tm		Whitworth threaded tapered pipe connection conical, seal made on thread male connection BSP-T according to DIN EN 10226
NPTf		US standard tapered pipe thread NPT threaded pipe connection NPT according to ANSI / ASME B 1.20.1 seal made on thread
NPTf1		USA tapered pipe thread for dry closure NPTF threaded pipe connection NPTF according to ANSI / ASME B1.20.3 seal made on thread
NPTm		USA Standard tapered pipe thread NPT threaded tapered pipe connection NPT according to ANSI / ASME B1.20.1 seal made on thread

Connection type	Drawing	Description
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
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
SM		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
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		Loose flange connection according to DIN EN 1092 up to max. PN 100 x = Pressure rating A = Without sealing groove B = With sealing groove
FLAxA, FLaXB		Loose flange connection according to ASME B 16.5 up to max. 600 lbs x = Pressure rating A = Without sealing groove B = With sealing groove



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