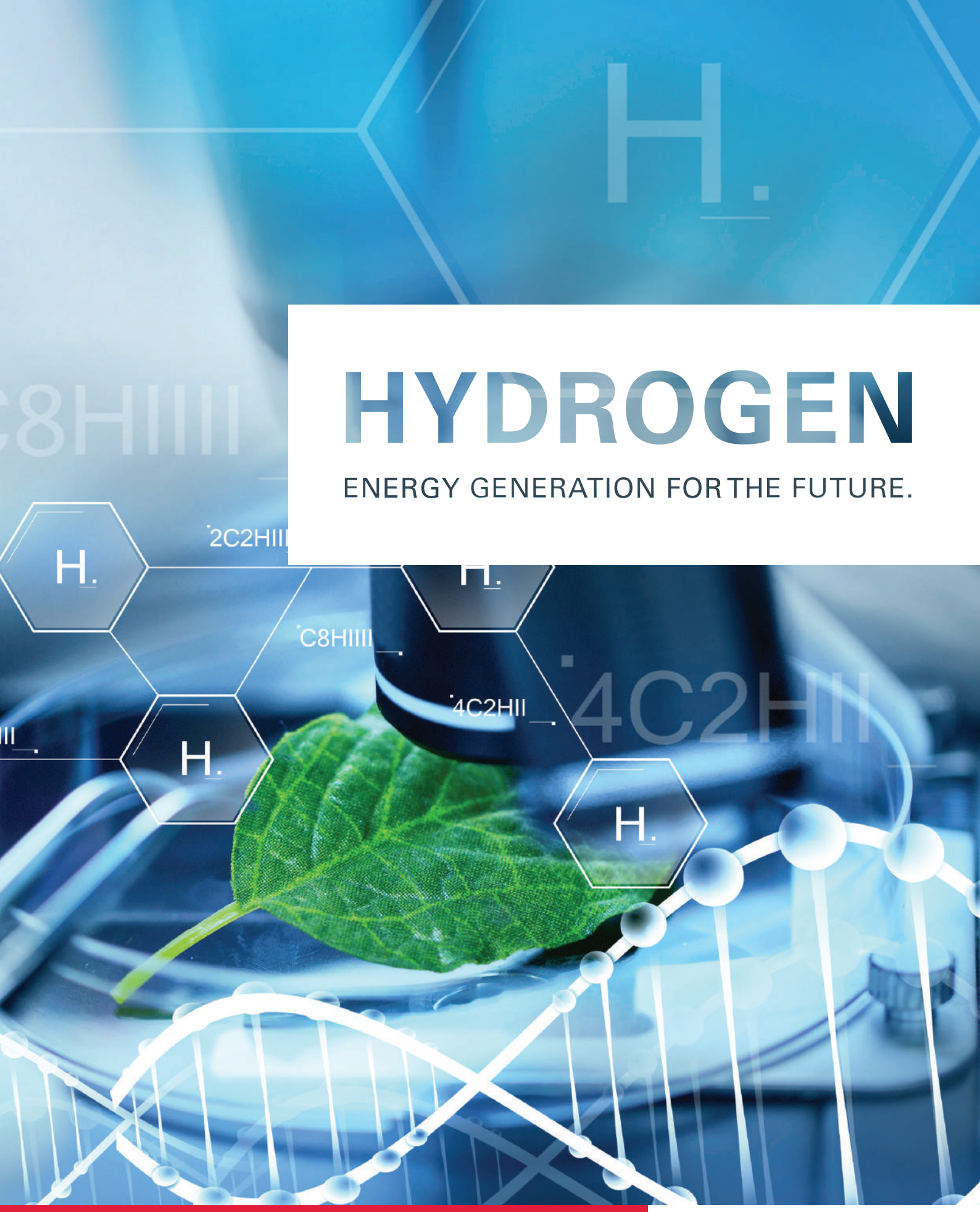
HYDROGEN

ENERGY GENERATION FOR THE FUTURE.



Customised **solutions**
for your business.

ARMATUREN GOETZE

HYDROGEN FILLING STATION **IN STUTTGART**

PIPES ON A **HYDROGEN TANK**


HYDROGEN RESEARCH CENTRE

HYDROGEN FUEL PUMPS


ELECTROLYSIS SYSTEM

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 power 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 vehicles. We protect filling processes, which are under high pressure or the storage of liquid hydrogen in tanks. This has a major impact on a safe handling and makes hydrogen appealing to human and nature in general.

SERIES 492

Atmospheric discharge safety valve

made of stainless steel,
angle-type with threaded connection

The Series 492 atmospheric discharge safety valve is used in the field of high-pressure compressors and process plants, high-pressure air systems and to protect refuelling systems. It convinces through its compactness and design. This an optionally be ordered with a gas-tight swivel outlet for guided blow-off or for connecting a discharge pipe. Due to its special technical construction and design the series covers a pressure range that has not been catered for up to now. The valve is particularly suitable for hydrogen, as the PAI seal guarantees a very high level of tightness even after repeated response. Tightness for helium 10-6 mbar l/s.

Temperatures
from -60 °C to +200 °C

Pressures
from 50 bar to 630 bar

Threaded connections
from ¼“ to ¾“

SERIES 2400

Safety valve

made of stainless steel,
angle-type with threaded connection

Cryogenic valves must meet special requirements to provide reliable protection, for example in tanks and filling systems for liquid gases.

The Series 2400 safety valve therefore got fully approven for vapours and gases as well as for liquids according to ISO 4126-1 and ASME 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 12300. Because of this, every valve is suitable for use in systems using oxygen and is marked accordingly. The use of 1.4404 and 1.4408 high-grade stainless steels render the safety valves particularly resistant to extremely cold temperatures. For use with gases that are in contact with food an FDA-compliant sealing material is used. The valve setting and seat insert are separately sealable which makes unauthorised adjustments easily noticeable. Overpressure from 0,2 bar up to 70 bar is relieved 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 1½“

SERIES 455

Flanged safety valve

made of stainless steel,
angle-type with flange connections

The protection of tanks and filling systems in the liquid gas sector often requires flanged terminations for installation in existing pipe systems. High pressures are reached and even cryogenic media are protected. For this reason, Goetze has paid special attention to the performance in all nominal sizes of the Series 455, which is unique in the field of flanged safety valves. The high capacity of the entire series from DN 15 up to DN 100 is unique in the sector of flanged safety valves. By using exclusively high-quality materials with outstanding media resistance and the option to protect the tightness towards the atmosphere on a high level with backpressure compensating bellows, this safety valve is suitable for nearly any applications. The set pressure ranges from 0,2 to 40 bar and by using special sealing material such as sealing; even very low temperatures of down to -270 °C can be achieved. Also extremely high temperatures can be applied up to a limit of 400 °C.

Temperatures
from -270 °C to +400 °C

Pressures
from 0,2 bar to 40 bar

Flange connections
from DN 15 to DN 100

SERIES 420

Safety valve

made of stainless steel,
angle-type with threaded connection

For supporting the hydrogen production and electrolysis processes, reliable safety valves are required which can also handle low flow-volumes and pressures. Thanks to TÜV and European approvals, the miniature safety valve series 420 allow use in applications for neutral and non-neutral gaseous and liquid media.

The cutting ring threaded connections available as an option make this valve quick and easy to install for use in small pipelines.

Temperatures
from -40 °C to +260 °C

Pressures
from 0,5 bar to 50 bar

Threaded connections
from ¼“ to ⅜“

SERIES 451

Safety valve

made of stainless steel,
angle-type with threaded connection

In processes with lower volumes and low pressures, such as hydrogen production or the electrolysis process, the protection must still be reliable. The advantages and applications of Series 451 made of high-grade stainless steel begin, where versions made of gunmetal are at their limits.

The flexibility of the various versions guarantee an optimal configuration for every application. In addition to the basic version the numerous sealing possibilities and materials, back-pressure compensating metal bellows and/or a gastight cap offer the necessary optional extras required to fulfill the highest safety requirements.

Temperatures
from -60 °C to +400 °C

Pressures
from 0,5 bar to 70 bar

Threaded connections
from ½“ to 2“

→ Series 453

SUITABLE FOR

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

EXAMPLES OF USE

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

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

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

MATERIAL

SPECIFICATION

1/2“ – 2“

– 60°C to + 260°C
depending on version

0,5 – 25 bar

APPROVALS

European Pressure Equipment Directive

TR ZU 032/2013 -TR ZU 010/2011

Requirements

PED 2014/68/EU

Classification society

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

MATERIALS

Component	Material	DIN EN	ASME
Inlet body	Stainless steel	1.4404	316 L
Outlet body	Stainless steel	1.4408	CF8M
Internal parts	Stainless steel	1.4404	316 L
Bellows	Stainless steel	1.4571	316 Ti
Spring	Stainless steel	1.4310	302

→ Series 430

430

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

SUITABLE FOR

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

EXAMPLES OF USE

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

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

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

MATERIAL

SPECIFICATION

1/2“ – 2“ | – 20°C to + 120°C | 0,5 – 10 bar

APPROVALS

European Pressure Equipment Directive

TR ZU 032/2013 - TR ZU 010/2011

Requirements

PED 2014/68/EU

Classification society

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

MATERIALS

Component	Material	DIN EN	ASME
Inlet body	Stainless steel	1.4408	CF8M
Outlet body	Stainless steel	1.4408	CF8M
Internal parts	Stainless steel	1.4408	CF8M
	Stainless steel	1.4404	316 L
Valve seat	Stainless steel	1.4404	316 L
Spring	Spring steel with anti-rust protection	1.1200	ASTM A228

→ Series 481

481

Pressure reducing valves made of stainless steel with threaded connections

SUITABLE FOR

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

EXAMPLES OF USE

For the protection of:
- domestic water supply systems
- commercial and industrial plants

against too high supply pressure.
Pressure reducers are used, if within a piping system despite of varying pressures on the inlet side a certain pressure must not be exceeded on the outlet side.

- potable water supply according to DIN 1988
- process water supply in industrial- and building technology
- snow-making equipment
- fire-fighting equipment and sprinkler systems
- shipbuilding industry and offshore plants
- secondary areas in the food-, pharmaceutical- and cosmetics-industries.

MATERIAL

Rost frei

SPECIFICATION

1/2“ – 2“

–20°C to +120°C

Inlet pressure: up to 40 bar
Outlet pressure: 0,5 to 15 bar
depending on version

APPROVALS

DIN-DVGW type examination (up to 80°C)

Type approval ACS

Type approval WRAS (up to 85°C)

TR ZU 032/2013 -TR ZU 010/2011

Requirements

DIN DVGW guidelines	DIN EN ISO 3822
DIN EN 1567	DGR 2014/68/EU
DIN 1988	

Classification society

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

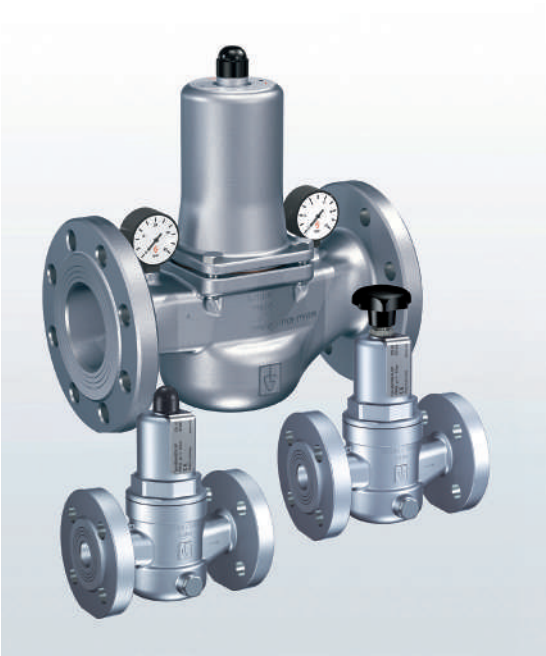
MATERIALS

Component	Material	DIN EN	ASME
Inlet body	Stainless steel	1.4408	CF8M
Outlet body	Stainless steel	1.4408	CF8M
Internal parts	Stainless steel	1.4408	CF8M
	Stainless steel	1.4404	316 L
Spring	Spring steel with anti-rust protection	1.1200	ASTM A228
Strainer	Stainless steel	1.4404	316 L

→ Series 482

482

Pressure reducing valves made of stainless steel with flange connections



SUITABLE FOR

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

EXAMPLES OF USE

For the protection of:
- domestic water supply systems
- commercial and industrial plants

against too high supply pressure.
Pressure reducers are used, if within a piping system despite of varying pressures on the inlet side a certain pressure must not be exceeded on the outlet side.

- potable water supply according to DIN 1988
- process water supply in industrial- and building technology
- fire-fighting equipment and sprinkler systems
- shipbuilding industry and offshore plants
- secondary areas in the food-, pharmaceutical- and cosmetics industries

MATERIAL

SPECIFICATION

DN 15 to DN 100 – 20°C to + 120°C

Inlet pressure: up to 40 bar
Outlet pressure: 0,5 to 15 bar
depending on version

APPROVALS

DIN-DVGW type examination (up to 80°C)

Type approval ACS

Type approval WRAS (up to 85°C)

TR ZU 032/2013 - TR ZU 010/2011

Requirements

DIN DVGW guidelines	DIN EN ISO 3822
DIN EN 1567	DGR 2014/68/EU
DIN 1988	

Classification society

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

MATERIALS

Component	Material	DIN EN	ASME
Inlet body	Stainless steel	1.4408	CF8M
Outlet body	Stainless steel	1.4408	CF8M
Internal parts	Stainless steel	1.4408	CF8M
	Stainless steel	1.4404	316 L
Spring	Spring steel with anti-rust protection	1.1200	ASTM A228
Strainer	Stainless steel	1.4404	316 L

→ Series 484

SUITABLE FOR

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

EXAMPLES OF USE

For the protection of:
- commercial and industrial plants
against too high supply pressure.
Use of pressure reducing valves, when in a piping system inspite of varying pressures on the inlet side a specific pressure on the outlet side must be kept.

- Compressed air supply plants
- Pneumatic control units
- Pressure booster plants air-side
- Shipbuilding industry and offshore plants
- Industrial gas plant construction
- PET blow moulding machines
- Blasting plants

MATERIAL

SPECIFICATION

1/4“ – 2“

– 40°C to + 120°C
depending on version

Inlet pressure:
up to 60 bar
Outlet pressure:
0,5 to 50 bar
depending on version

APPROVALS

European Pressure Equipment Directive

TR ZU 032/2013 -TR ZU 010/2011

Requirements

PED 2014/68/EU

Classification society

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

MATERIALS

Component	Material	DIN EN	ASME
Inlet body	Stainless steel	1.4408	CF8M
Outlet body	Stainless steel	1.4408	CF8M
Internal parts	Stainless steel	1.4404	316 L
Spring	Stainless steel	1.4568	631

Series 484 ■ VALVE VERSION

m	with diaphragm	High-quality heat-resistant elastomere, fabric reinforced diaphragm. Adjustment by means of non-rising spindle. Balanced single seat valve, pressure gauge connection G1/4“ on both sides of body. Please take note of the outlet pressure range.
k	with piston	Stainless steel piston with seal and support ring. Adjustment by means of non-rising spindle. Balanced single seat valve, pressure gauge connection G1/4“ on both sides of body. Please take note of the outlet pressure ranges.

■ MEDIUM

GS	gaseous with secondary venting	Compressed air and gases. Non-neutral, poisonous gases only in combination with ducted exhaust.
GFO	gaseous and liquid without secondary venting	for water and non-sticking liquids, compressed air and gases

■ OUTLET PRESSURE RANGES

SM	Standard version with diaphragm	Inlet pressure: up to 60 bar	Outlet pressure: 0,5 to 15 bar
SK **HK**	Standard version with piston High-pressure version with piston	Inlet pressure: up to 60 bar Inlet pressure: up to 60 bar	Outlet pressure: 5 to 30 bar Outlet pressure: 10 to 50 bar
Fixed setting at a required outlet pressure against surcharge			

■ AVAILABLE NOMINAL DIAMETERS AND CONNECTION SIZES

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

■ TYPE OF CONNECTION INLET / OUTLET THREADED CONNECTIONS

f / f	Standard	Female thread BSP-P / Female thread BSP-P	DIN EN ISO 228-1 / DIN EN ISO 228-1

■ SEALS

FKM	Fluorocarbon	Elastomere moulded diaphragm and seals	–10°C to +120°C
EPDM	Ethylene propylene diene	Elastomere moulded diaphragm and seals	–40°C to +120°C

■ OPTIONS AGAINST SURCHARGE

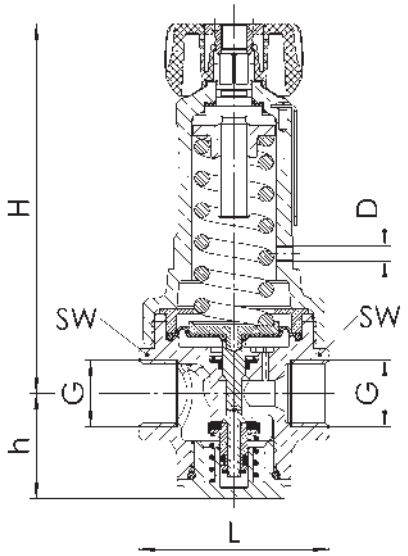
Pressure gauges 40, 42, 44, 45, 46 and 47	Chapter Accessories
GA: ducted exhaust air in case of medium GS (specific ducting of secondary venting)	
GA - SV	Cutting ring threaded connection according to EN ISO 8434-1 for pipe diameter 6mm.
GA - CK	CK-Quick connector for pipe diameter 6mm up to 10 bar.
Wall mount	Order code: 484 Wall mount -DN
Service parts:	
Service Pack (seals and disc) 484 piston version **k**; FKM or EPDM	Order code: 484k-DN... <FKM or EPDM> Service Pack
Service Pack (seals and disc) 484 diaphragm version **mGS**; FKM or EPDM	Order code: 484mGS-DN... <FKM or EPDM> Service Pack
Service Pack (seals and disc) 484 diaphragm version **mGFO**; FKM or EPDM	Order code: 484mGFO-DN... <FKM or EPDM> Service Pack

NOMINAL DIAMETERS, CONNECTIONS, INSTALLATION DIMENSIONS

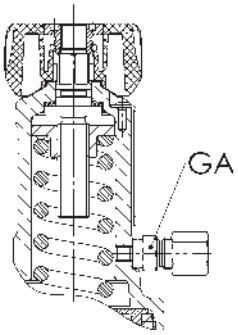
Series 484: Connection, installation dimensions, ranges of adjustment								
Nominal diameter	DN	8	10	15	20	25	40	50
Connection DIN EN ISO 228	G	1/4“ (8)	3/8“ (10)	1/2“ (15)	3/4“ (20)	1“ (25)	1 1/2“ (40)	2“ (50)
Inlet pressure up to	bar	60	60	60	60	60	60	60
Outlet pressure: SM	bar	0,5-15	0,5-15	0,5-15	0,5-15	0,5-15	0,5-15	0,5-15
SK	bar	5-30	5-30	5-30	5-30	5-30	5-30	5-30
HK	bar	10-50	10-50	10-50	10-50	10-50	10-50	10-50
Installation dimensions in mm	L	68	68	60	78	102	136	136
	H	120	120	120	180	215	260	270
	h	33	33	33	40	56	63	70
	SW	26	26	26	32	44	58	70
Ducted exhaust connection	D	M5	M5	M5	M5	1/8“	1/8“	1/8“
Dimensions of optional wall mount	L1	38	38	38	51	61	85	85
	H1 / H2	18 / 62	18 / 62	18 / 62	18/58	22 / 80	15	15
	B / B1	5,5	5,5	5,5	6,5	8,5	10,5 / 90	10,5 / 90
Weight	kg	1,1	1,1	1,1	2,5	4,5	8,1	8,8
Coefficient of flow K_{VS}	m³/h	1,6	1,6	1,6	3,4	5,5	12,7	12,7

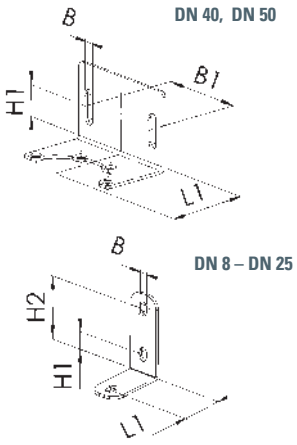
The K_{VS} value was determined according to DIN EN 60534-2-3. Instructions on how to determine size and capacity are to be found under section 2.

MAIN DIMENSIONS, INSTALLATION DIMENSIONS



Options





INDIVIDUAL SELECTION / VALVE CONFIGURATION

Series	Valve version	Medium	Outlet pressure	Nominal diameter DN	Connection type		Connection size		Seal	Option	Optional feature	Quantity
					Inlet	Outlet	Inlet	Outlet				
484	*m*	*GS*	*SM*	*20*	f	f	*20*	*20*	*FKM*	*Pressure Gauge 40*	*GA-SV*	*5*
484	*k*	*GFO*	*SK*	*40*	f	f	*40*	*40*	*EPDM*			*1*
484					f	f						
484					f	f						

In this table you can configure a valve according to your individual requirements (similar to the *example* shown, which s*hould be deleted before* you enter your own data). Please complete the table by hand using the abbreviations in this datasheet and then fax it to: +49 (0) 7141 / 488 94 88
Please do not forget to add your personal data so that our sales team can contact you.

Name

First Name

Company

Telephone

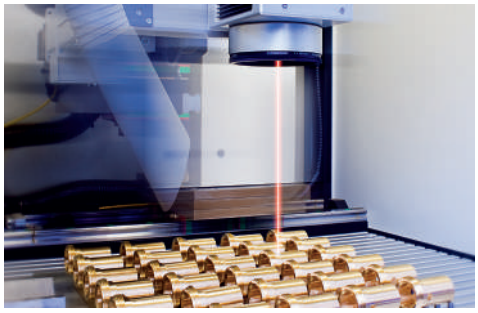
E-Mail

THE GOETZE KG

Individuality for more safety

The competence of Goetze KG Armaturen has been in demand for 70 years. Our wealth of experience is as broad and varied as our areas of application for our high-performance fittings. Our well thought-out family of products 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 and the greatest possible safety is a priority.

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 over 400.000 valves per year „Made in Germany", we are your competent partner for all matters relating to the handling of pressure.



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