Goetze Product Service

REVISION AND ADJUSTMENT

ARMATUREN GOETZE

CONTENTS

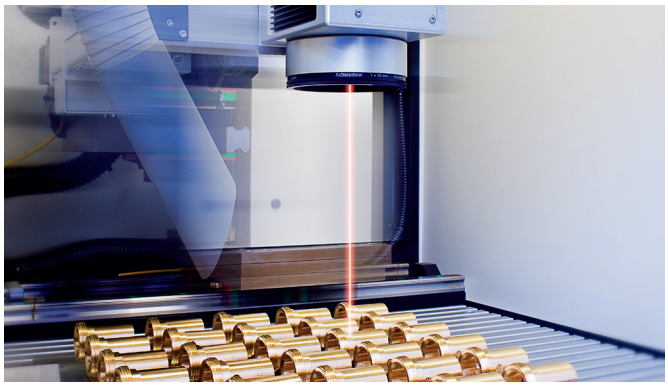
COMPETENT PARTNER: GOETZE KG

Individuality for more safety

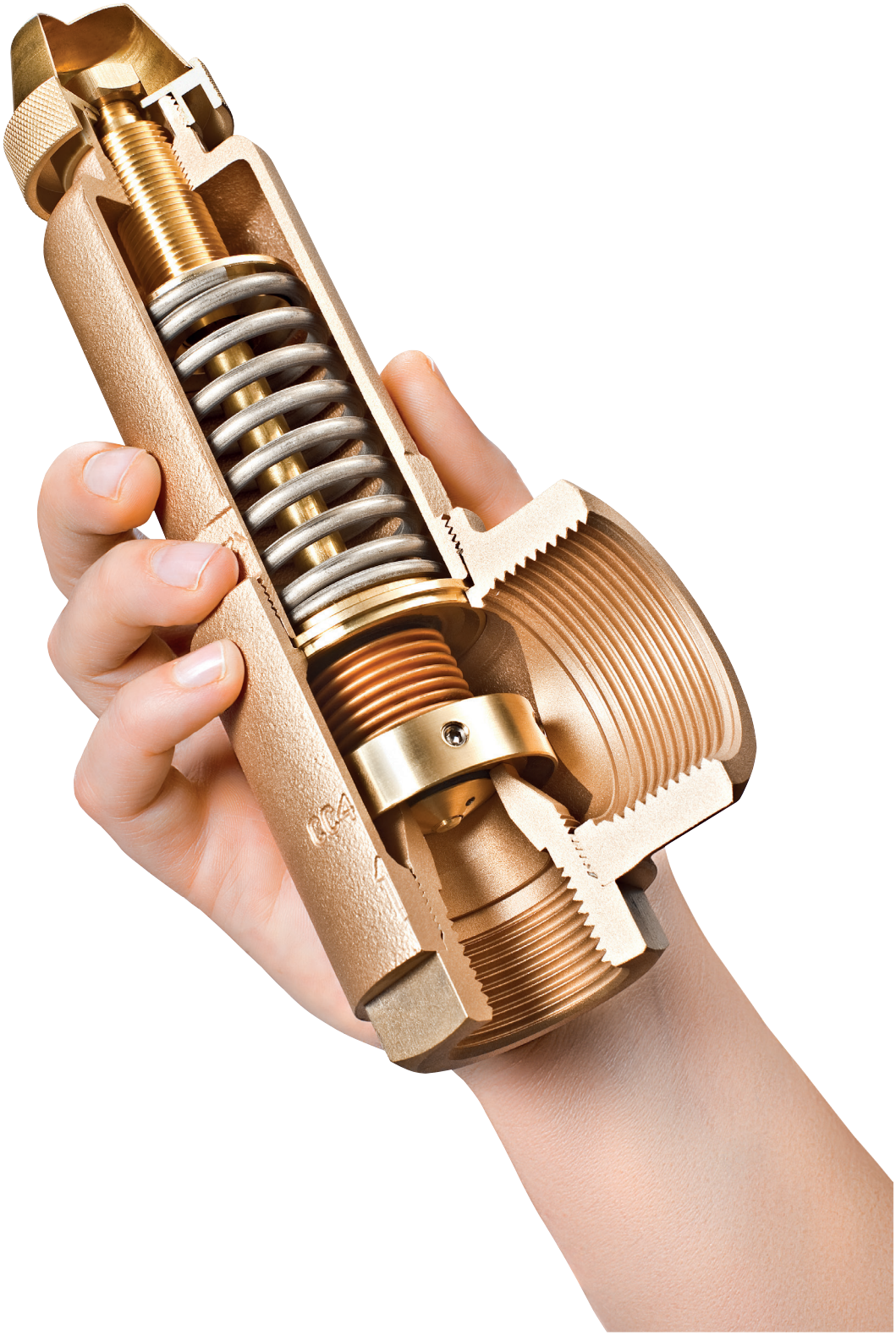
The competence of Goetze KG Armaturen has been in demand for more than 65 years. Our wealth of experience is as broad and varied as our areas of application for our high-performance fittings. Our well thought-out family of products covers every industrial application: Liquids of all kinds, gases, technical 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.

We have the right solution for you: Take us at our word! We have been designing and manufacturing safety valves for a highly diversified range of applications for over 65 years. With over 300.000 valves per year „Made in Germany", we are your competent partner for all matters relating to the handling of pressure.

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, per mail or per chat, there is a personal multilingual consultant at your disposal.



GENERAL PRINCIPLES:
SAFETY VALVES



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EXEMPTION FROM LIABILITY

Notes on GOETZE exemption from liability for certified service companies

- Declaration of exemption from liability.
- Service company is liable.
- The company Goetze KG Armaturen allows customers to adjust the supplied valves themselves and to use their own seals. In this case the company Goetze KG Armaturen does not assume any warranty for defects or damages, unless the customer proves that the damage was not caused by the adjustment or modification carried out by him/her.
- Goetze KG Armaturen does not assume any warranty for defects or damage caused by unauthorised adjustment and sealing of safety valves.

What happens to the manufacturer's warranty when the seal is opened?

In general, the manufacturer's warranty expires when the seal is opened.

PURPOSE OF SAFETY VALVE

A safety valve serves one single purpose: to protect against unacceptable overpressure in installations or parts of installations which would result in the system bursting. A safety valve is a mechanical safety device that responds when all other control and monitoring devices fail and an impermissibly high pressure occurs in a vessel, storage tank, pipeline or something similar. For example, this can occur due to cooling failure, incorrect dosing or a blocked discharge line. If the pressure in a vessel protected by a safety valve rises above a permissible value, the valve opens and allows a part of the pressurised Media to escape from the vessel. As a result, the pressure drops again. When the pressure has dropped far enough, the safety valve closes. As a result, a safety valve does not allow the entire contents of a vessel to escape but only as much as is necessary to reduce the pressure back to a permissible value.

STRUCTURE / FUNCTION

A spring-loaded safety valve (Figure 1) is a mechanical component consisting of the following main components: seat, disc, lifting ring, spring, spindle and a pressure screw for adjusting the spring preload. These components are installed in a body with connections for the supply and discharge lines and a spring spring housing.

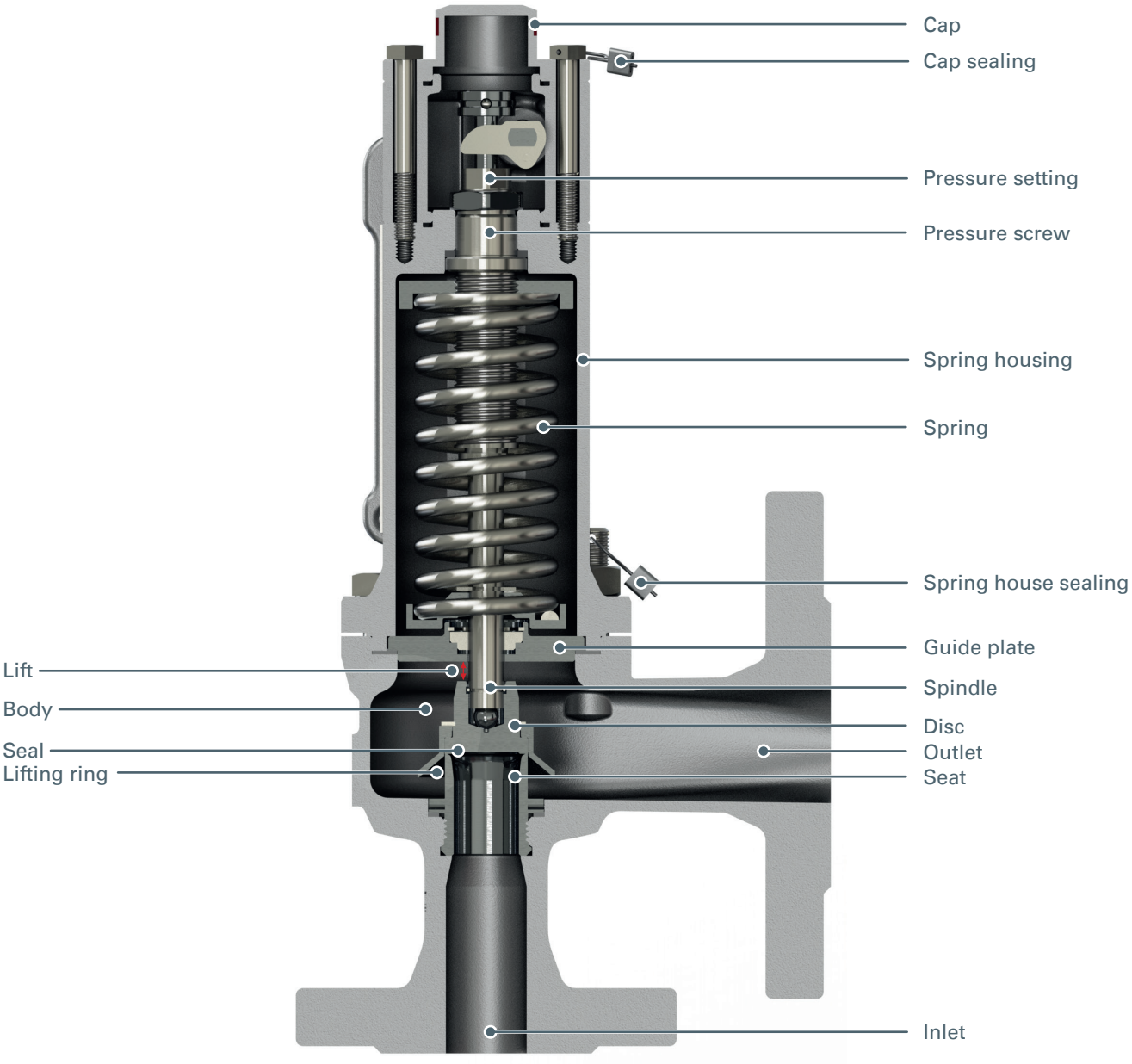

Figure 1: Cross section of a spring-loaded safety valve.

Via the supply line, the fluid enters the safety valve vertically from below. During normal operation, the valve plate sits on the valve seat and closes the opening. The force required for this is applied by the spring. It is clamped between an upper fixed and a lower movable valve disc. The pressure screw, which determines the position of the upper valve disc, can be used to adjust the contraction of the spring. This results in the pretension of the spring, and therefore the response pressure. The spindle guides the disc and transmits the force of the spring via the spring plate. The seat has a defined internal diameter, which is used to determine the maximum mass flowto which the valve can dissipate, taking the flow coefficient into account.

When closed, the spring force F1 outweighs the Media force F2 (Figure 2). If the pressure in the system increases and therefore the force F2, the spring force F1 can no longer keep the valve completely closed above a certain pressure. A soft hissing sound from the valve can be heard. This is the response point of the safety valve (response point = lowest pressure at which the valve is audibly leaking). If the pressure continues to rise, the valve opens completely and the Media can flow out (Figure 3).

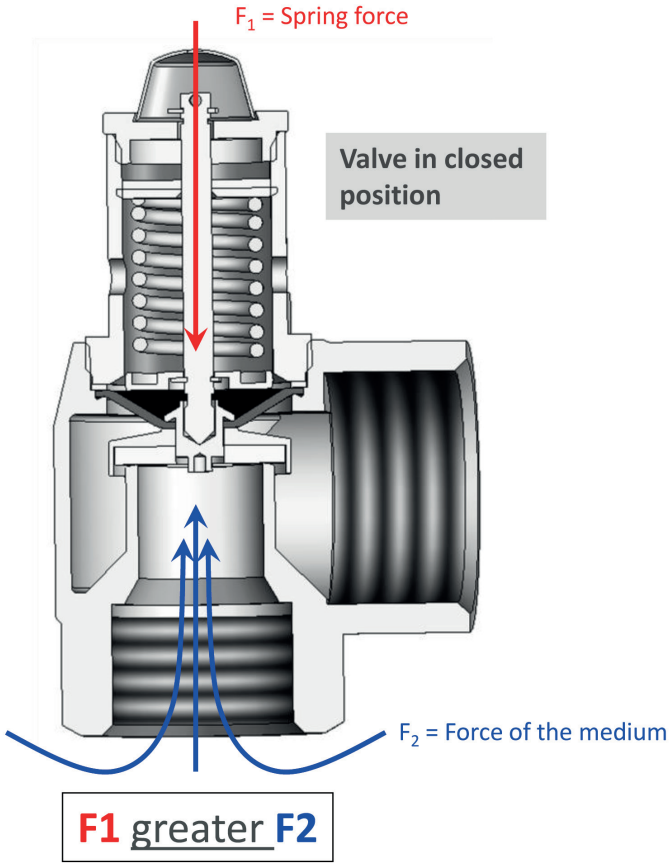

Figure 2: Illustration of the forces in the valve in the closed state

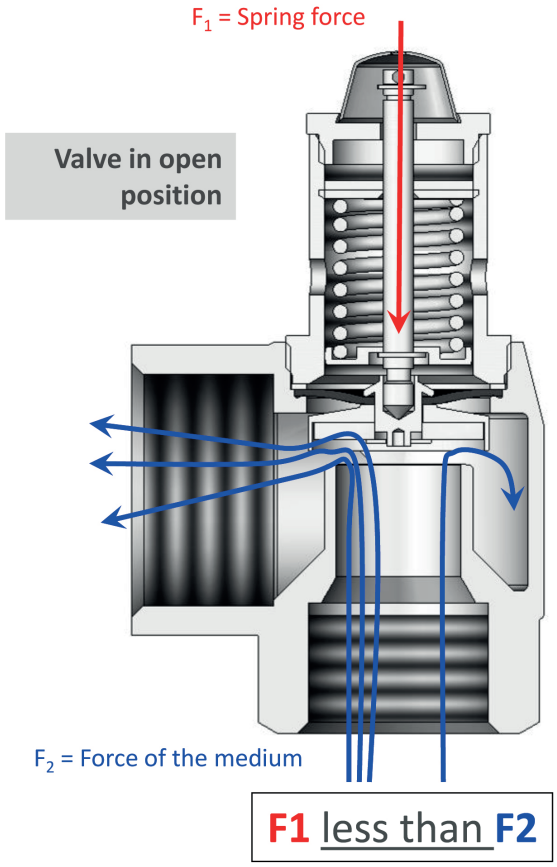

Figure 3: Illustration of the forces in the valve in the open state

A distinction is made between valves with different opening characteristics. The opening behaviour of a valve can best be illustrated in a stroke-pressure diagram (Figure 4) as a hysteresis curve. The stroke over the pressure is plotted in it. The regular maximum operating pressure is approximately 85% of the valve response pressure. When the response pressure (1) is reached, the valve opens. First proportional to the increase in pressure, at the "pop point" (2) abruptly to its maximum stroke. In terms of design, this is achieved by increasing the area exposed to pressure. The pressure acts only on the cone when the valve is closed. When the valve is open, pressure is also applied to the stroke ring. This suddenly increases the force and the valve opens. The pressure at which the valve reaches its full opening is the opening pressure (3) of the valve. The pressure difference between response pressure and opening pressure is called the opening pressure difference.

If the pressure drops below the response pressure (4), the valve closes slowly at first, then abruptly again. The pressure difference between the closing pressure (5) and the response pressure is referred to as the closing pressure difference. It is caused by the impulse current of the flowing fluid and the increase in the pressure contact area caused by the lifting ring of the valve. The valve must comply with certain opening and closing pressure differentials (according to DIN EN ISO 4126-1 and AD2000-A2) depending on the type (standard valve or full globe valve) and Media (compressible or incompressible):

Opening pressure difference:
- 10% for normal and proportional safety valves (all media)
- 5% for full stroke safety valves (all media)

Closing pressure difference:
- 10% for compressible media (both types)
- 20% for non-compressible media (both types)

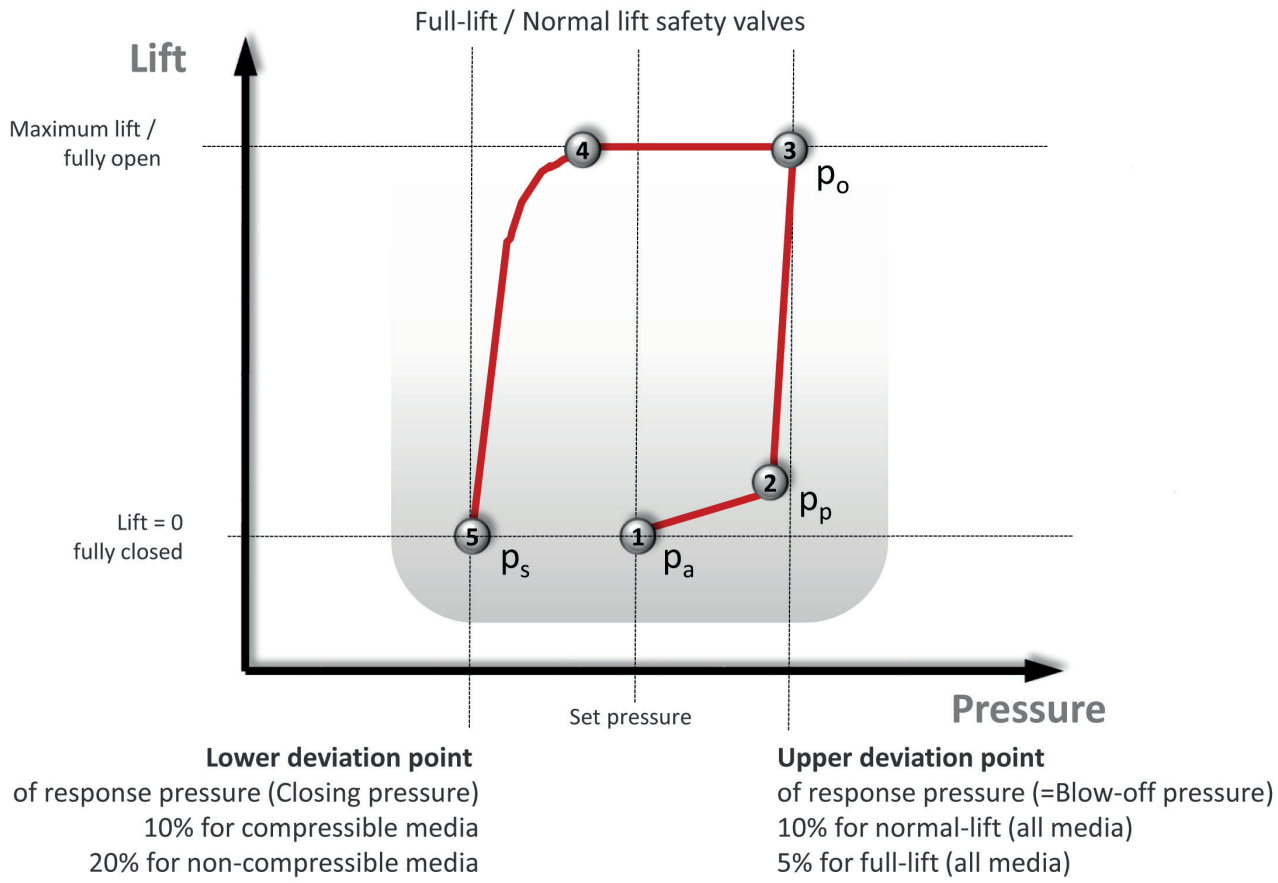

Figure 4: Stroke-pressure diagram describing the opening and closing behaviour of spring-loaded full-stroke or normal safety valves

Abbildung 4: Hub-Druck-Diagramm zur Beschreibung des Öffnungs- und Schließverhaltens federbelasteter Vollhub- oder Normal-Sicherheitsventile

In the case of full stroke valves, there is an additional requirement that the proportion of the stroke up to sudden opening (proportional safety valves according to AD2000-A2) must not exceed 20% of the total stroke.

With the third type of valve, the proportional safety valve, the stroke of the valve increases or decreases almost continuously with increasing or decreasing pressure. A sudden opening without pressure increase over a range of more than 10% of the stroke does not occur. After tripping, these safety valves achieve the stroke required for the mass flow to be discharged (DIN EN ISO 4126-1 and AD2000-A2) within a maximum pressure rise of 10%.

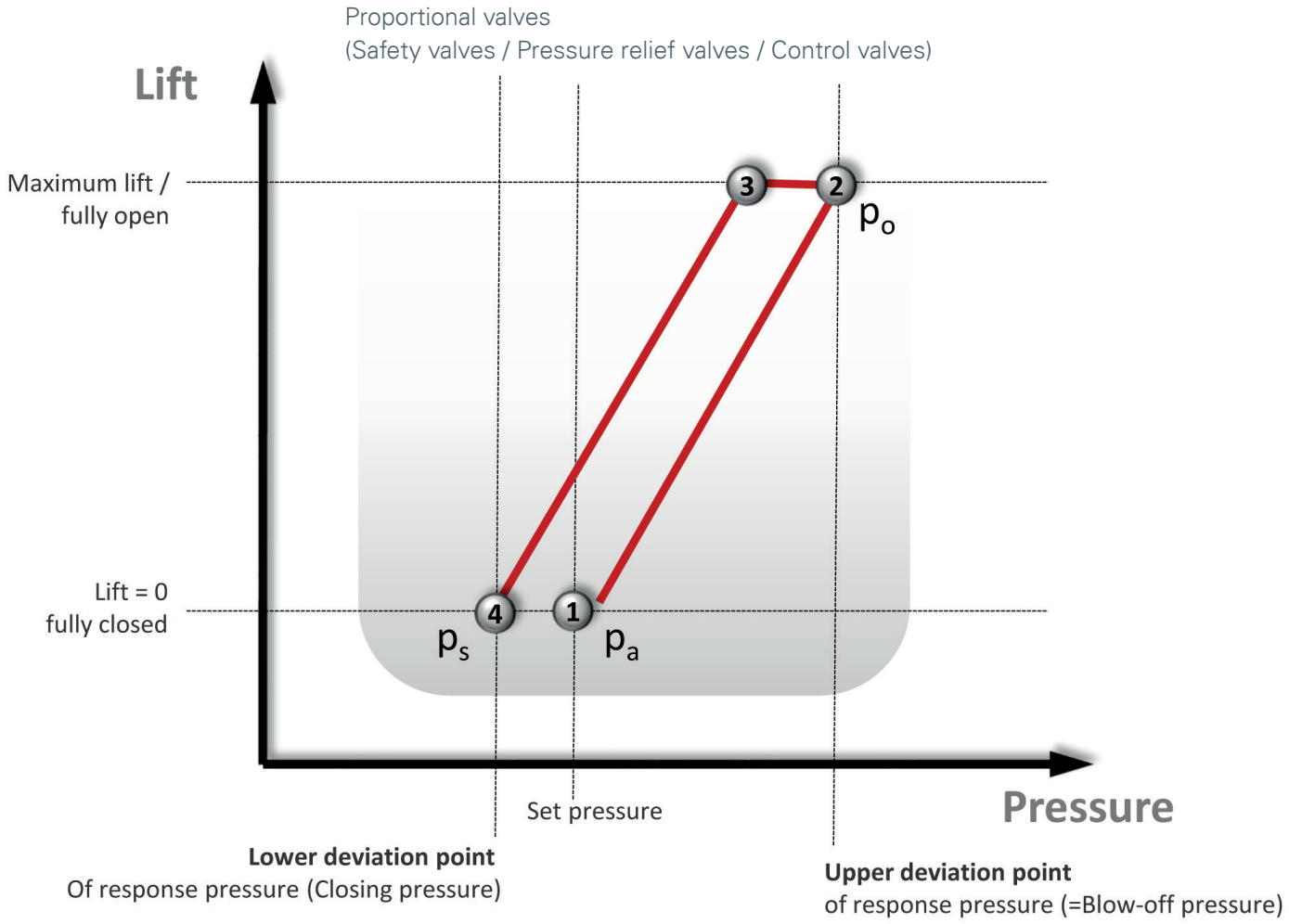

Figure 5: Stroke-pressure diagram to describe the opening and closing behaviour of spring-loaded proportional safety valves

① Response pressure (first audible air noise or first visible drops of water)
② Blow-off pressure (maximum stroke reached)
③ The pressure at which the valve begins to close
④ Closing pressure (valve is closed and tight

VARIANTS

Various versions of individual valve components are available for individual valve adaptation to the conditions in the plant.

Lifting

There is a possibility of a version with rotary lifting or lever lifting for manual opening and lifting of the valve.

For a rotary lift (Figure 6), turning a knurled nut on the bonnet of the valve raises the stem. This pulls the disc located on the spindle up with it. This creates a gap between the seat and disc and fluid can flow through the valve. Rotary lifting is usually used for threaded valves up to 2'' and for air and water applications.

Pulling on a lever causes the spindle and disc to lift off the seat for lever lifting (Figure 7). Lever lifting is usually used with flange safety valves and steam valves. For the latter, the installation of a lever lift is mandatory.

A version without lifting device (Figure 8) is also available.

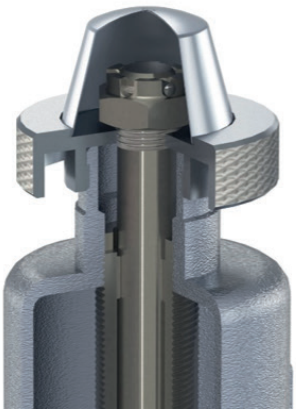

Figure 6: Rotary lifting device

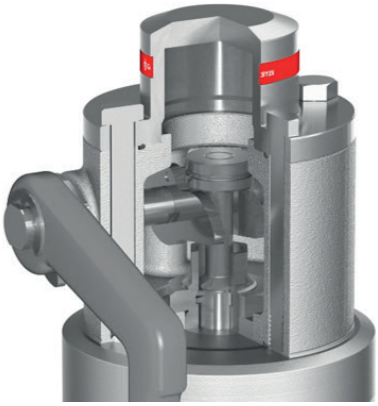

Figure 7: Lever lifting device

Figure 8: without lifting device

Blocking Screw (Option A01)

If the valve in the system is to be closed and tight beyond its response pressure, for example for a pressure test, a blocking screw is used. This is screwed into a threaded hole provided for this purpose in the cap of the valve from above to the spindle (Figure 9). This prevents the valve from opening. After the pressure test, the pressure screw must be removed again as otherwise the valve will not be able to open even in an emergency. Close the threaded hole in the cap with another screw (Figure 10).

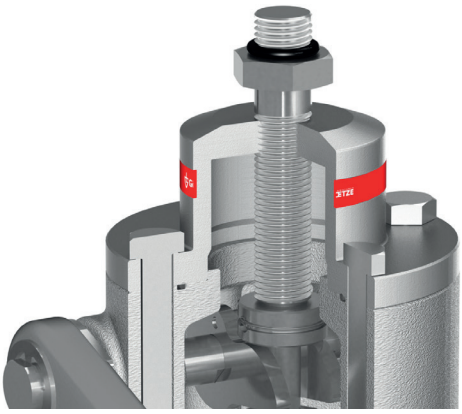

Figure 9: The spindle is locked

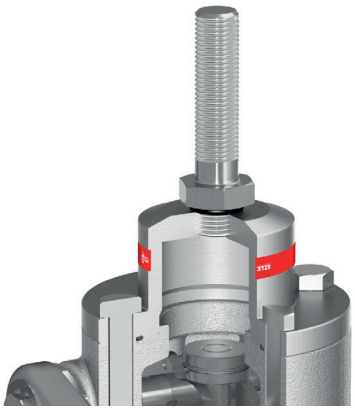

Figure 10: The spindle is free and the cap is sealed gas-tight

Stroke Sensor (Option S62)

A stroke sensor is offered for monitoring the response of a valve. This is screwed into the cap from above like the blocking screw (Figure 12). It strikes when the valve reaches its full stroke. This means that the control station of the system in which the valve is installed directly notices that the safety valve has blown off. For some series, lateral installation of the sensor is also possible (Figure 11).

Figure 11: Installation of the stroke sensor from the side

Figure 12: Installation of the stroke sensor from above

Gas-Tight / Open

With some media it may be necessary to protect the environment from the influences of the Media even when the valve responds. Goetze offers valves in a gas-tight version for this purpose. However, if the Media does not pose any danger to the environment, an open or non-gas-tight version can be selected.

Figure 13: Safety valve in open version

Figure 14: Safety valve in gas-tight design

Bellows / Diaphragm

If the spring chamber must also be protected from the Media in the event of a response, the use of a bellows is recommended. This connects the guide plate with the disc and thus prevents the Media from entering the spring chamber through the spindle guide. In this way, it also prevents soiling or sticking of the sliding parts and ensures perfect functioning of the valve even with sticky or viscous media. In addition, the metallic bellows compensates for counter pressure. The response pressure of the valve remains the same regardless of whether it is an external back pressure or the intrinsic back pressure. In the event of a blowdown, the natural back pressure can build up at the outlet of the valve depending on the dimensions and design of the installed blowdown line.

An elastomer diaphragm or an elastomer bellows can prevent the Media from penetrating into the spring chamber instead of a metal bellows, depending on the valve type, if back pressure compensation is not required and the Media is neutral.

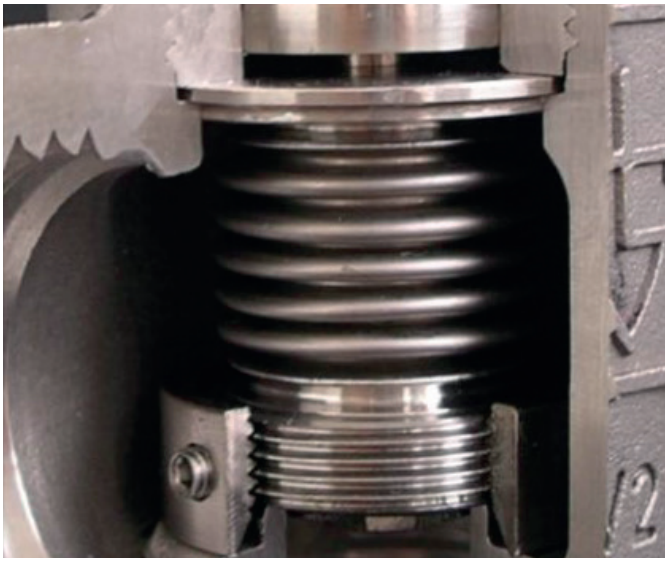

Figure 15: Cutaway model of valve with bellows

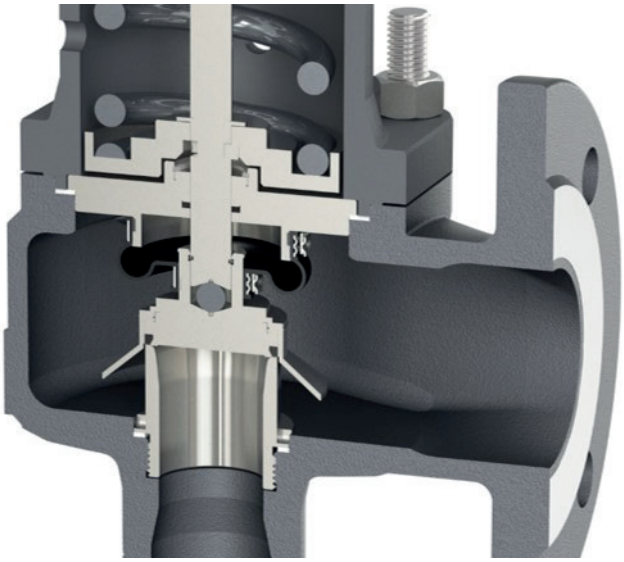

Figure 16: Cross section of a valve with elastomer bellows

COMPARISON

There are different types of valves that perform different tasks in plants and require appropriate approvals and tests.

- **Safety valves** are safety equipment in accordance with Directive 2014/68/EU, Pressure Equipment Directive. As the last link in a series of safety measures, they prevent the plant component from bursting due to an impermissibly high pressure. They are set to the desired response pressure, marked accordingly and sealed. A later change of the setting pressure is only possible in experienced workshops. The set pressure of all safety valves is checked before delivery, if required also in the presence of an inspection company. A safety valve must pass an EU type examination and, if necessary, a TÜV component test before it can be sold in series.
- **Pressure relief valves** fulfil the same function as safety valves. However, they have no safety function and are therefore not classified as safety equipment but only as pressure equipment according to the Pressure Equipment Directive. No special examination is necessary. As a rule, they have a proportional opening characteristic. Pressure relief valves do not achieve the performance of safety valves and can be delivered adjusted, marked and sealed, but do not have to be.
- The **set pressure** within the spring range can be adjusted by the plant operator as required in the case of overflow/control valves. They perform a "pressure control task" in the system. As this is not a safety-relevant function, overflow/regulating valves are only classified as pressure-maintaining equipment according to the Pressure Equipment Directive. No special examination is necessary. These valves have a proportional opening characteristic in order to avoid pressure surges in the system. Overflow valves must always be gas-tight
- **Pressure reducing valves** require a component approval for building services engineering if they are used for drinking water installations. Their task is to reduce the pressure in a part of the plant. While with pressure relief valves the presence of an excessively high pressure on the inlet side and therefore a flow through the valve is the exception, with pressure reducing valves a higher applied pressure on the inlet side is the rule. They are continuously flowed through and ensure a uniform fluid flow with constant, reduced pressure on the outlet side even with fluctuating pressure on the inlet side (e.g. after a pump).

Safety valve (TÜV/CE)	Pressure relief valve	Overflow- / Control valve	Pressure reducing valve
▪ TÜV/CE Type Test Approval ▪ Last “line of defence” in equipment under pressure ▪ Used on equipment requiring official approval according to PED ▪ Opening characteristic > full lift > normal lift > proportional ▪ **Must** be set, sealed and marked ▪ Set pressure pre-set / non adjustable	▪ No TÜV/CE Type Test Approval ▪ No safety function according to PED ▪ Can be used on equipment not requiring official approval according to PED ▪ Proportional opening characteristic ▪ **Can** be set, sealed and marked	▪ No TÜV/CE Type Test approval ▪ No safety function according to PED ▪ „Control / relief“ task in system oder plant ▪ Proportional opening characteristic ▪ Gastight version ▪ Adjustable spring range	▪ Type Test Approval for building services applications ▪ No safety function ▪ Task of pressure reduction on outlet side of a valve in a system
			

Figure 17: Valve type comparison

APPROVALS

In order to be allowed to sell a safety valve, it must pass an EU type examination and, if applicable, a TÜV component examination.

Basically, an entrance examination consists of four parts:

1. The test on the sufficient dimensioning of the components as well as the suitability of the materials used.
2. Ensuring that the specific design requirements required by the application have been met.
3. The certification of the performances (discharge figures) with the media air and water.
4. Compliance with the functional characteristics (opening and closing pressure differences) with the media air and water to demonstrate suitability for:
   - Air:
     - Air, gases and technical vapours
     - Steam
     - Heating water (up to 120 °C)
     - Solar heating systems
   - Water:
     - Liquids
     - Hot water (up to 95 °C)

These tests are described in detail in the VdTÜV data sheet "Safety Valve 100" and other applicable documents.

EU Type Examination

An EU type examination is a type approval by an independent "notified body" according to the Pressure Equipment Directive 2014/68/EU. It checks whether the minimum requirements are met for a safety valve as required in Annex 1 of the DGR and in the harmonised standard ISO 4126-1.

During a type examination, the valves can be approved for the following media:

- L for liquids
- S/G for steam/gas

The manufacturer is also obliged to supply the valve with assembly and operating instructions including a declaration of conformity in accordance with DGR 2014/68/EU. These inspection certificates are valid for a period of 10 years.

TÜV Component Test

In order to pass a TÜV component test, the requirements of the following standards must be met as well:

- VdTÜV data sheet SV 100
- AD2000 data sheet A2

This allows an additional application-specific marking of the valves:

- D/G/H for hot water with permissible flow temperatures up to 120 °C (heating systems according to DIN EN 12828)
- H for hot water of 2.5 bar and 3 bar with a permissible flow temperature of up to 120 °C and a permissible heat output of up to 2700 kW (water heating systems to DIN EN 12828)
- SOL for closed intrinsically safe solar heating systems with water or water mixtures as heat transfer Media according to DIN EN 12976-1
- W for water heating systems according to DIN EN 12897 up to 10 bar
- F/K/S for stationary pressure vessels and vehicle containers for liquid, granular and powdery goods according to TRB 801 No. 22 and 23

Further Approvals

Goetze valves also meet the criteria for various other approvals. An overview of which approvals or certificates are valid for which series can be found on the Goetze homepage (https://www.goetze-armaturen.com/en/company/certificates/products-and-corresponding-certificates/).

Overview of existing approvals and certificates:

GENERAL TYPE TEST APPROVALS

CE
↗ EUROPEAN PED

National Type Test (TÜV)
↗ NATIONAL TYPE TEST (TÜV)

EU type test
↗ EC-TYPE TEST

ASME
↗ TYPE TEST (USA)

CRN
↗ CANADIAN REGISTRATION NUMBER (CRN)

EAC
↗ TR ZU 032/2013 (RU)

TS
↗ MANUFACTURE LICENSE (CHINA) TSG ZF001-2006

KC
↗ KOREA GAS SAFETY (KR)

KCs
↗ KOSHA

UKCA
↗ TYPE APPROVAL (UK)

APPLICATIONS: POTABLE WATER AND BUILDING TECHNOLOGY

DIN DVGW
↗ TYPE APPROVAL (DE)

ATTESTATION DE CONFORMITÉ SANITAIRE ACS
↗ TYPE APPROVAL (FR)

WRAS APPROVED PRODUCT
↗ TYPE APPROVAL (EN)

SVGW SSIGE
↗ TYPE APPROVAL

PZH PIB PRODUKT Z ATESTEM
↗ TYPE APPROVAL (PL)

SINTEF
↗ TYPE APPROVAL (NO)

APPLICATIONS: SHIPBUILDING AND RAILWAY

DNV
↗ TYPE APPROVAL

Lloyd's Register
↗ TYPE APPROVAL

ABS
↗ TYPE APPROVAL

BUREAU VERITAS
↗ TYPE APPROVAL

RINA
↗ TYPE APPROVAL

DB
↗ DEUTSCHE BAHN

Definition, Standards and Regulations

National:

- TRD 421: **Safety devices against excess pressure**
  For safety valves for group I, III and IV steam boilers
- TRD 721: **Safety devices against excess pressure**
  For safety valves for group II steam boilers
- DIN 4751: **Water heating**
  For closed, thermostatically protected heat generation systems with flow temperatures up to 120°C as safety equipment
- DIN 4753: **Domestic hot water heaters, domestic hot water heating systems and DHW storage tanks**
- DIN 4747: **District heating systems**
  As safety-related equipment for substations, house stations and house systems for connection to heating water district heating networks
- AD 2000 A2: **Safety devices against excess pressure**
  General for safety valves

European / International:

- DIN EN ISO 4126 series: **Safety devices against impermissible overpressure**
  in particular Part 1: Safety valves and Part 7: General data
- RL 2014/68/EU: **European Pressure Equipment**
  Directive for pressure equipment with a maximum allowable pressure (PS) of more than 0.5 bar
- DIN EN 12828: **Heating systems in buildings**
  For the planning of hot water heating systems
- DIN EN 12952: **Water-tube boilers and system components**
  Particularly part 10: Requirements for safety devices against excessive pressure
- DIN EN 12953: **Shell boilers**
  Particularly Part 8: Requirements for safety devices against excessive pressure

Further application-specific standards:

- DIN EN 764-7: **Safety devices for unfired pressure equipment**
- DIN EN 13648: **Safety valves for cryogenic operation**
- DIN SPEC 4683: **Liquid helium cryostats - Safety devices against excess pressure**

MARKING / TESTING

The labelling is carried out in accordance with the standards and regulations applied. The data is either entered on a nameplate attached to the valve or lasered directly onto the valve spring housing.

① Valve type
② Nominal size
③ Narrowest cross-section of flow
④ Valve stroke
⑤ Seat seal material
⑥ Serial number
⑦ Setting pressure
⑧ Allowable back pressure
⑨ Set temperature
⑩ General and application-specific standards as required
⑪ Opening pressure difference for steam
⑫ Opening pressure difference for gas
⑬ Opening pressure difference for water
⑭ TÜV-mark - Safety valve - Year of component test - Test number Narrowest flow diameter
⑮ Co-efficient for steam / gases
⑯ Co-efficient for liquids
⑰ Data matrix code (serial number)
⑱ CE labelling

…urkes geprüft. Für unsere Produkte leisten … Teile gegen Rückgabe kostenlos instand … off- oder Fabrikationsfehlern vorzeitig un- … Schadenersatz und dergleichen andere … ei Beschädigungen der Werksplombierung, …llation, Nichtbeachtung dieser Montage-, …nutzung oder normalem Verschleiß erlischt

Figure 18: Identification on a nameplate attached to the valve

REVISION INSTRUCTIONS

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V-0195
REVISION AND ADJUSTMENT INSTRUCTIONS

Series:
455 / 355 / 255

Variant:
sGO / sGL / tGFO / tGFL / tbGFO / tbGFL / bGFO / bGFL / bHL

Scope of application

The scope of these revision and adjustment instructions (V-0195) covers the series 455 / 355 / 255. Details on the areas of application and application limits can be found in the data sheets for the series.

Other applicable documents

Available at www.goetze-group.com

- Data sheets
- Installation, maintenance and operating instructions
- EU type examination certificate
- TÜV component test certificate

Available on request from technical sales on +49 7141 4889460 | info@goetze.de

- V-0196: Overview of spare parts
- V-0197: Overview of assembly aids
- V-0219: Spring tables
- V-0220: Labelling tables of the applicable discharge figures
- V-0221: Tightening torques
- V-0223: Lapping dimensions

1 GENERAL INFORMATION

a) General specifications

- Observe accident prevention regulations and wear suitable and sufficient personal protective equipment.
- Ensure a clean workplace and protect valves from contamination and damage.
- Do not use worn tools to avoid slipping.
- The instructions in the installation, maintenance and operating instructions must be observed.
- The specifications in the applicable specification documents (V-xxxx) must be observed.
- Do not damage sealing surfaces before and during installation, take particular care with the seat, plug and housing flanges as well as surfaces for graphite seals and O-Rings.
- Do not install any damaged or contaminated parts, take special care with seals, all surfaces of the seat, plug and stroke ring as well as threads.
- Repairs may only be carried out using original spare parts from the Company Goetze KG Armaturen.

b) Replacing the secondary seals

For valves in single or double gas-tight design, Goetze recommends replacing the graphite seal between the bonnet and body after dismantling the bonnet; in the version with metallic bellows, the graphite seal between the bonnet adapter and body as well as the bonnet adapter and bellows unit should also be replaced. If used graphite gaskets are used, the initial tightness cannot be guaranteed due to the plastic deformation of the graphite gaskets.

The O-Ring seals between the bonnet, lifting device and cap can be used several times and only need to be replaced if they are damaged or show signs of ageing. It is recommended to check the condition of O-Rings when dismantling the valve.

In the "P13" version for cryogenic operating temperatures, sealing rings made of high-performance plastics are installed between the bonnet, lifting device and cap instead of O-Rings. Due to the plastic deformation of the sealing rings, Goetze also recommends replacing them after removing the bonnet.

c) Different design stages

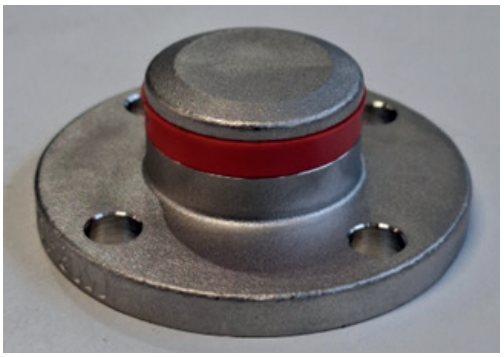
Depending on the series, variant and manufacturing period, the valves can be in two design stages with small design differences. If these have an effect on the maintenance of the valves, a distinction is made between the two design stages in the following chapters; otherwise the procedure is identical.

To determine the version in each case, the information in document V-0196 can be consulted or information can be obtained from the technical sales department: +49 7141 4889460 | info@goetze.de

Practical tip

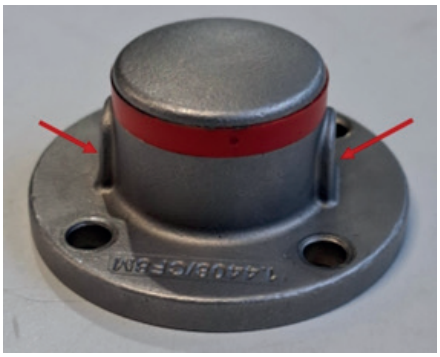
The shape of the cap serves as a simple distinguishing feature between the design variants:

Design 1 - Series 355, 455



Completely cylindrical cap attachment

Design 2 - Series 255, 255 ANSI, 455 Redesign, 455 ANSI



Two lateral sprues on the top of the cap

2 PRESSURE MODIFICATION AND SPRING CHANGE

a) Design 1 – Series 355, 455

Disassembly

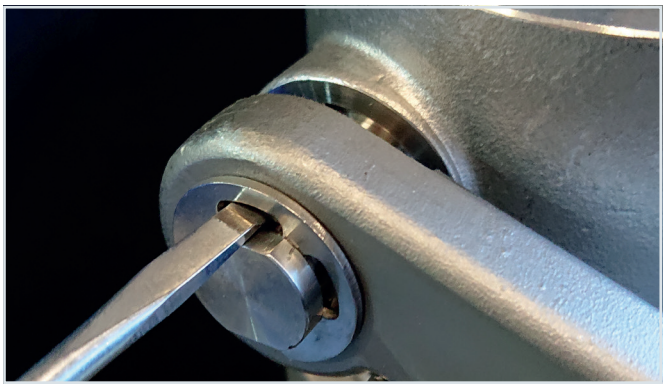
2.1
Remove the seal..

2.2
Loosen the hexagon head screws on the cap.

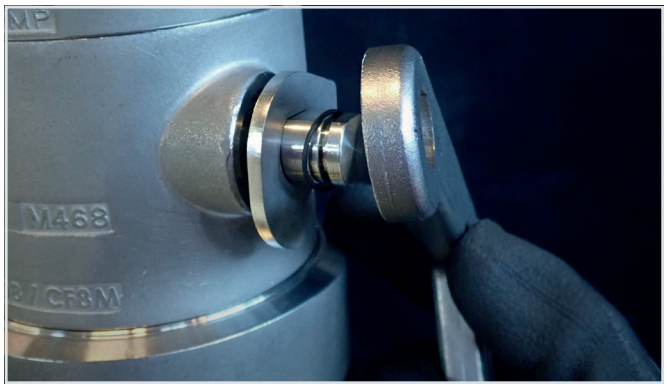
2.3
Remove the O-Ring seal from the groove.

Attention! Only DN 15 – DN 25 & DN 100
Remove the second, small O-Ring from the groove of the measuring hole (see 2.17).

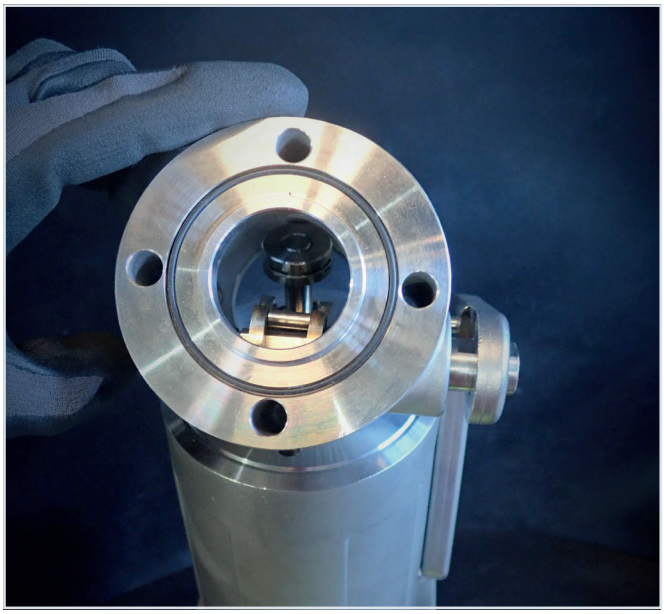
Steps 2.4 to 2.9 only for variants with lifting device



2.4
Remove the locking disc from the lever axle.



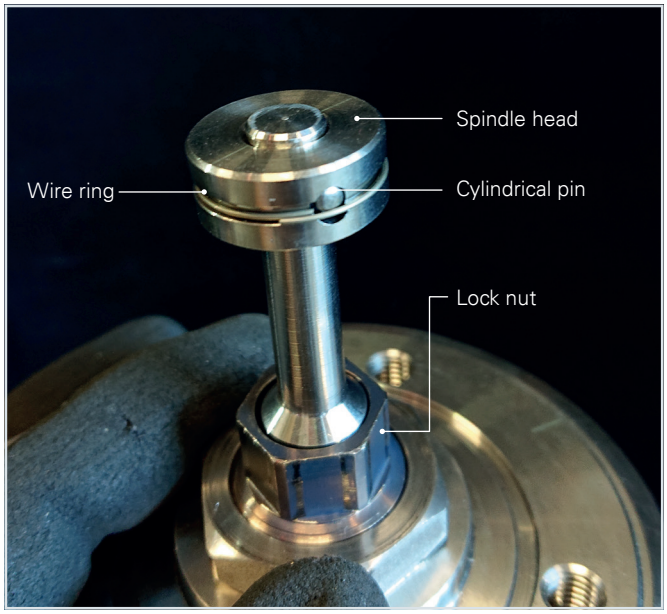
2.5
Remove the Lever and stop plate.



2.6
Remove the lifting device from the bonnet, turning the lever axle so that the lifting device can be removed. If necessary, place the lever back on the axle to make it easier to turn the axle.

2.7
Remove the O-Ring seal from the groove.

ATTENTION! Only DN 15 – DN 25 and DN 100
Remove the second, small O-Ring from the groove of the measuring hole (see 2.17).



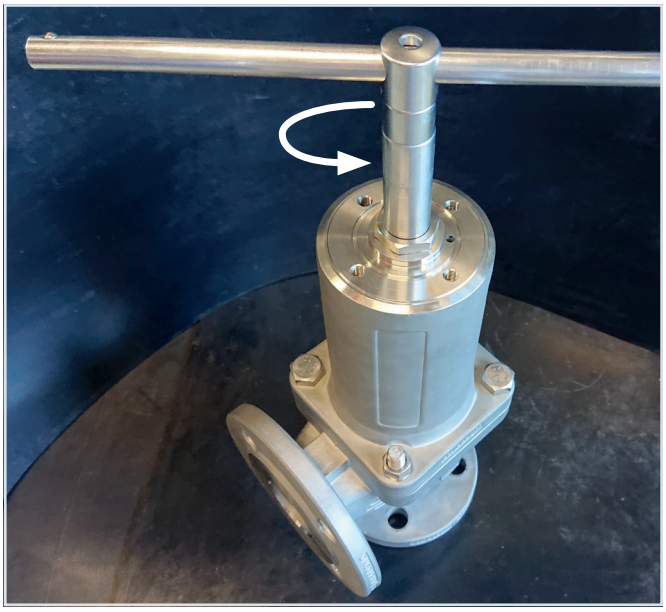
2.8
Remove the wire ring from the outer groove of the spindle head and push out the dowel pin using a pin punch.

2.9
Remove the spindle head from the spindle.

2.10
Loosen the lock nut on the pressure screw, do not unscrew it completely.

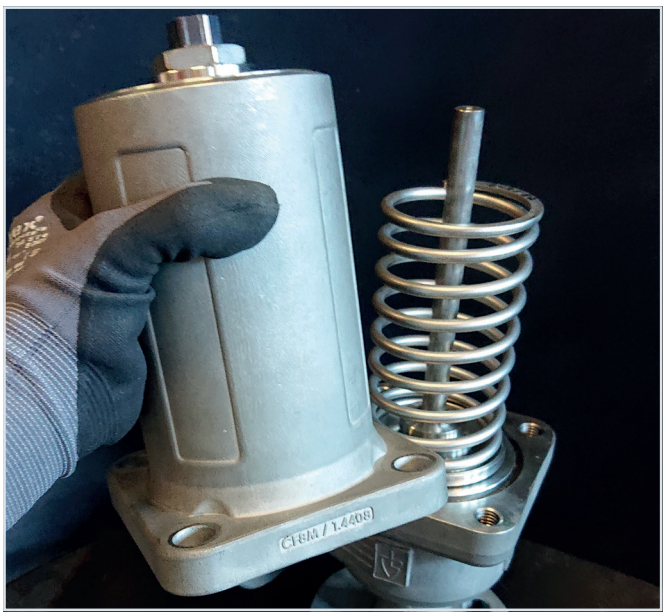
ATTENTION! If it is not necessary to change the spring, the new pressure can now be set. See notes at the end of this chapter. Only set the pressure range according to V-0219.

Then continue with 2.17



2.11
Fully release the spring by turning the pressure screw anti-clockwise.

ATTENTION! If the pressure screw is stiff, it is recommended to check that the thread is intact and replace the pressure screw if necessary.



2.12
Loosen the hexagon head screws between the bonnet and body as well as the nuts on the stud screws and remove the bonnet.

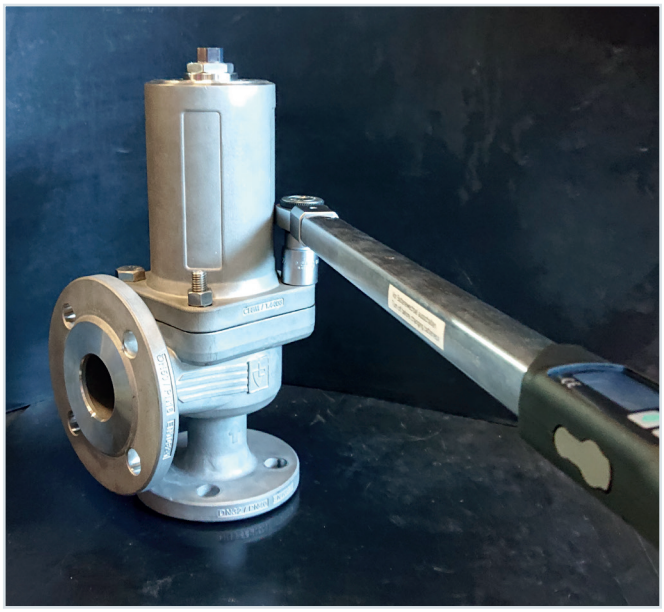
2.13
Remove the spring.

Assembly

2.14
Place the Spring over the Spindle on the lower spring plate.

2.15
Guide the bonnet with the pressure screw fitted over the Spindle and place on the body.

ATTENTION! Align the bonnet so that the type plate faces the outlet opening.



2.16
Screw the bonnet to the body using hexagon nuts and grub screws as well as hexagon bolts to the specified torque.

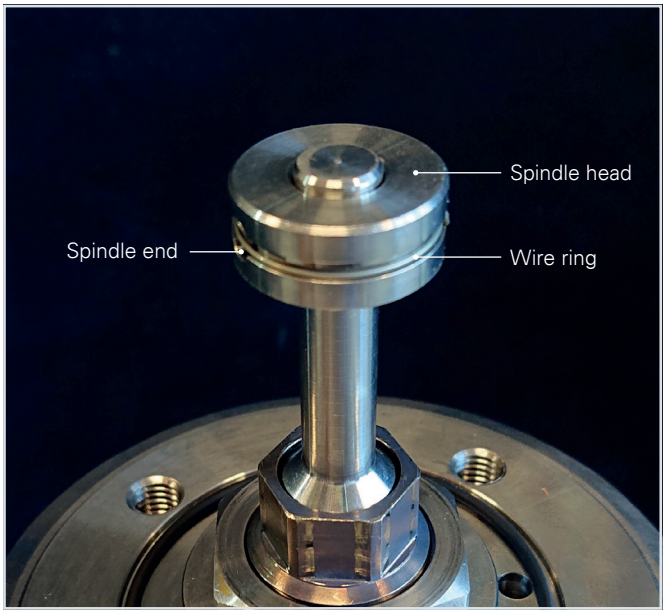
The pressure can now be adjusted. Please refer to the instructions in chapter12 on p.59 and at the end of this chapter. Only set the pressure range in accordance with V-0219.

After setting the pressure, you can continue with the assembly:

2.17
Grease the O-Ring with lubricant and insert it into the groove of the bonnet.

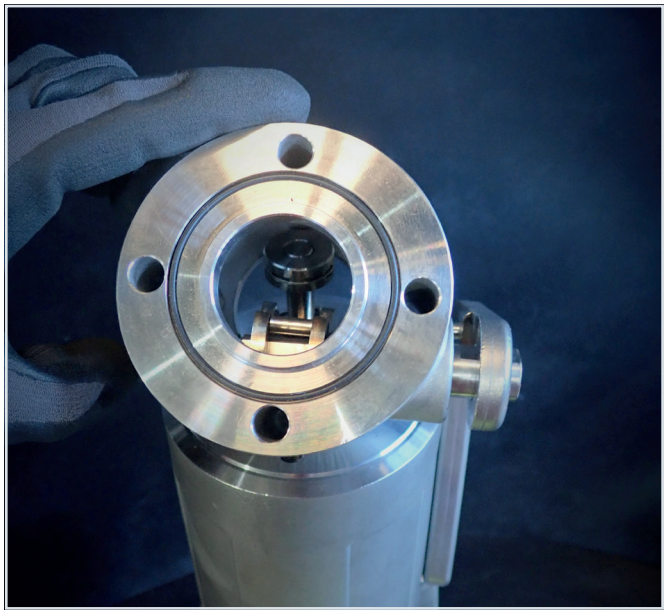
ATTENTION! Only DN 15 – DN 25 and DN 100
Insert the second, small O-Ring into the groove of the measuring hole.

Steps 2.18 to 2.22 only for variants with lifting device.



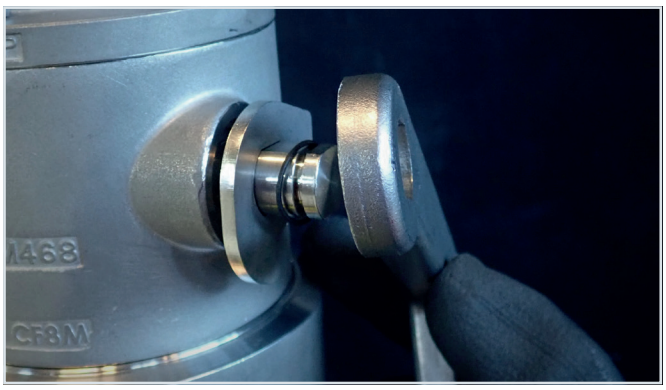
2.18
Place spindle head on spindle end and insert dowel pin through openings in spindle head and spindle.

2.19
Slide the wire ring over the spindle head into the outer groove.



2.20
Position the lifting device on the bonnet. Turn the lever axle so that the lever fork is positioned under the spindle head. The lifting device must rest completely on the bonnet; the O-Ring must not be crushed at the edge of the groove!

2.21
Grease the O-Ring with lubricant and place it in the lifting device groove.



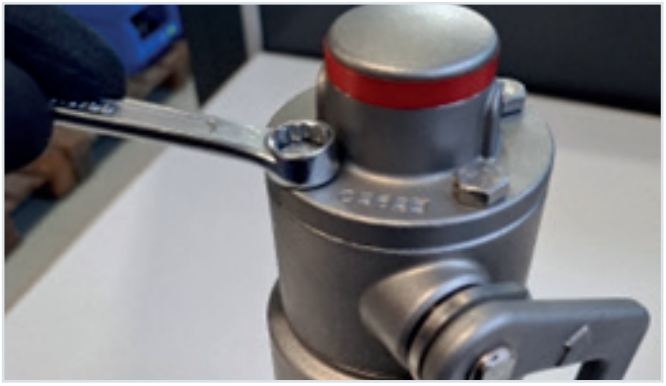
2.22
Place the stop plate, O-Ring and Lever on the lever axle in this order. Ensure alignment! Then fit the lock washer onto the lever axle.

2.23
Place the cap on the lifting device (tGFL) or bonnet (tGFO) and screw the hexagon head screws through the cap and, if necessary, the lifting device to the bonnet. Cap must be fully seated; O-Ring must not be crushed at the edge of the groove!

2.24
Position the hexagon head screws so that two screws with a hole in the screw head are next to each other. This is important for sealing (see page 59).

b) Design 2 - Series 255, 255 ANSI, 455 Redesign, 455 ANSI

Disassembly



2.25
Remove the seal from the screw connection on the cap.

2.26
Loosen the hexagon head screws on the cap.

Steps 2.27 to 2.30 only for variant with lifting device, without lifting device continue with step 2.31

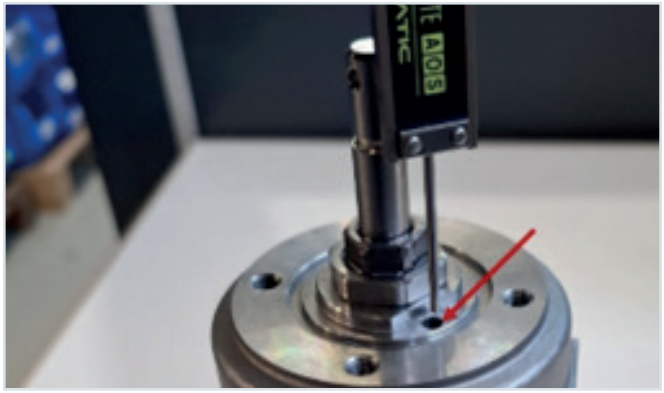
2.27
Pull the wire ring out of the spindle head groove.

2.28
Slide the dowel pin out of the spindle head.

2.29
Lift the spindle head from the Spindle.

2.30
Remove the lifting device as a complete assembly from the bonnet.

2.31
Loosen the lock nut from the pressure screw, holding the pressure screw against the hexagon.



2.32
If necessary, record the position of the upper spring plate via the measuring hole in the bonnet for documentation purposes before releasing the Spring; e.g. using a caliper gauge.

Note: The pressure screw is non-rising, i.e. the preload of the Spring cannot be determined via the axial distance of the pressure screw to the bonnet.

Pressure modification is possible within the permissible pressure range of the installed spring in accordance with V-0219: Observe the notes in chapter12 and at the end of this chapter.

2.33
No further disassembly is required

2.34
To set a lower response pressure, reduce the preload of the Spring by turning the pressure screw anti-clockwise via the hexagon.

2.35
To set a higher response pressure, increase the pre-tension of the Spring by turning the pressure screw clockwise via the hexagon.

2.36
After setting in accordance with chapter 12 , the valve is installed, continue with step .2.50.

Spring change / pressure modification not possible within the permissible pressure range of the installed spring according to V-0219:

2.37
Fully release the Spring by turning the pressure screw anti-clockwise via the hexagon.

2.38
Then continue with step .2.39

Note: If the pressure screw is very difficult to turn, check the threads of the pressure screw and upper spring plate for sufficient lubrication, contamination and damage after disassembly. If necessary, replace the pressure screw and upper spring plate as described in chapter6 .

2.39
Loosen the screw connection from the bonnet to the body.

Note: Loosen the hexagon nuts of the stud screws last and check that the bonnet is no longer under pre-tension from the Spring and that it is fully relieved.

2.40
Lift the bonnet with the pressure screw and upper spring plate vertically upwards over the Spindle.

Note: For larger nominal diameters, to make disassembly easier, first remove the lock nut from the pressure screw, lift the bonnet vertically over the spindle and then lift the pressure screw with the upper spring plate over the spindle.

For assembly after changing the Spring, separate assembly of the pressure screw with upper spring plate and bonnet is recommended for all sizes.

2.41
Completely loosen the lock nut on the pressure screw and pull the pressure screw with thrust bearing and upper spring plate out of the bonnet.

Note: This step serves to prepare the assembly, see step 2.46 , as well as to check the threads of the pressure screw and upper spring plate for sufficient lubrication, contamination and damage. If necessary, replace the pressure screw and upper spring plate as described in chapter 6.

Replacing the spring

2.42
Lift Spring from lower spring plate via spindle.

2.43
Identification of the Spring via unique three- or four-digit article number with prefix "L-".

2.44
Replace the Spring according to the pressure range assignment in document **V-0219**.

Assembly

2.45
Place the Spring on the lower spring plate via the Spindle. Ensure that the Spring rests completely on the lower spring plate and does not hang on the centring shoulder of the spring plate.

2.46
Position the pressure screw with mounted axial bearing and upper spring plate over the Spindle on the Spring. Pay attention to the alignment of the double flat (DN15 - DN50) or groove (DN65 - DN100) of the spring plate for bonnet mounting. Ensure that the Spring rests completely on the upper spring plate and does not hang on the centring shoulder of the spring plate.

2.47
Guide the bonnet over the Spindle, taking care to align the flats or groove/rib on the spring plate and bonnet, align the holes on the stud screws and place on the body. Align the bonnet so that the type plate base faces away from the body outlet flange.

2.48
Screw the bonnet to the body using hexagon nuts and grub screws as well as hexagon bolts crosswise in two steps: first hand-tight, then with torque. Observe torques according to **V-0221**!

Adjustment

2.49
The valve can now be adjusted. To do this, follow the instructions in chapter12 and at the end of this chapter. Only set the pressure range in accordance with **V-0219**.

Steps 2.50 to 2.52 only for variant with lifting device, without lifting device continue with step 2.53

2.50
Place the complete lifting device on the bonnet, making sure that the lifting adapter is located between the forks of the lever fork. The lifting device must be fully seated; the O-Ring must not be crushed at the edge of the groove! Unless otherwise specified, position the lifting device so that the lever axis points to the right when looking from the outlet flange.

2.51
Place the spindle head on the end of the spindle and insert the dowel pin through the holes in the spindle head and spindle.

2.52
Push the wire ring over the spindle head into the outer groove.

2.53

Place the cap on the lifting device or bonnet and screw the hexagon head screws through the cap and, if necessary, the lifting device with the bonnet. Cap must be fully seated; O-Ring must not be crushed at the edge of the groove!

Position the hexagon head screws so that two screws with a hole in the screw head are next to each other in the direction in which the stud screw with hole is screwed into the body.

Observe torques according to **V-0221**!

2.54

Seal in accordance with chapter 9.

c) Notes on pressure setting

Pressure ranges

Document **V-0219** contains the spring tables with assignment of spring number to pressure range depending on nominal diameter and variant.

All springs are labelled with a unique article number starting with "L-" and a three or four-digit number sequence. The article numbers (L-numbers) are assigned unique spare part numbers (E-numbers) in each case in the spring tables, which can be used to order the springs as replacement or spare parts from Goetze.

Caution: The same spring can have different functional ranges in different variants or be used in several nominal diameters. Please refer to V-0219.

Outflow figures

Document **V-0220** contains the tables of discharge coefficients with the assignment of the discharge coefficient (K_{dr} or α_w value) to the set pressure depending on the nominal diameter and variant.

For incompressible media (liquids), the discharge coefficient is constant over the entire pressure range.

For compressible media (vapours/gases), the discharge coefficient is not constant in the subcritical pressure range, but varies depending on the set pressure. See also the diagram "Allocated discharge coefficient □wor Kdras a function of the pressure ratio pa0/ p0for vapours and gases" in the data sheets in each case.

Nameplate labelling

If the set pressure marked on the nameplate (see chapter11) has been changed due to pressure modification, the old set pressure must be made unrecognisable on the nameplate and the new set pressure must be permanently marked on the nameplate.

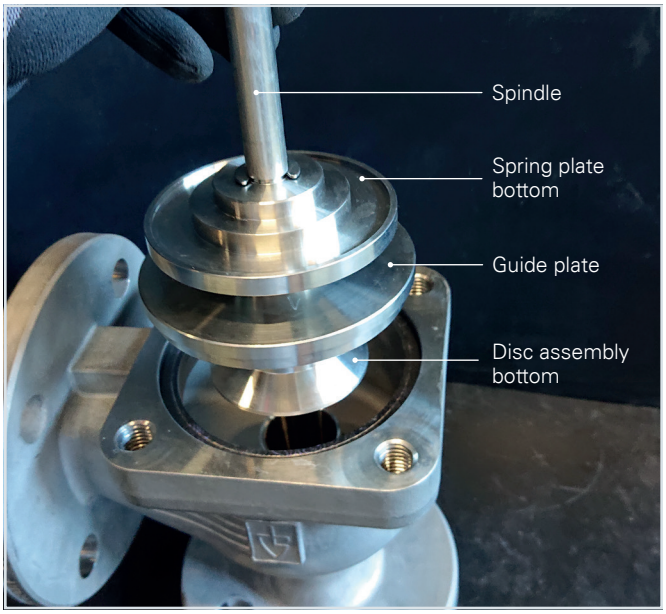
If the discharge number for compressible media (vapours/gases) marked on the nameplate (see chapter11) has been changed due to pressure modification in the subcritical pressure range, the old discharge number must be made unrecognisable on the nameplate and the new discharge number must be permanently marked on the nameplate.

3 MACHINING METALLIC SEALING SURFACES OF SEAT AND PLUG

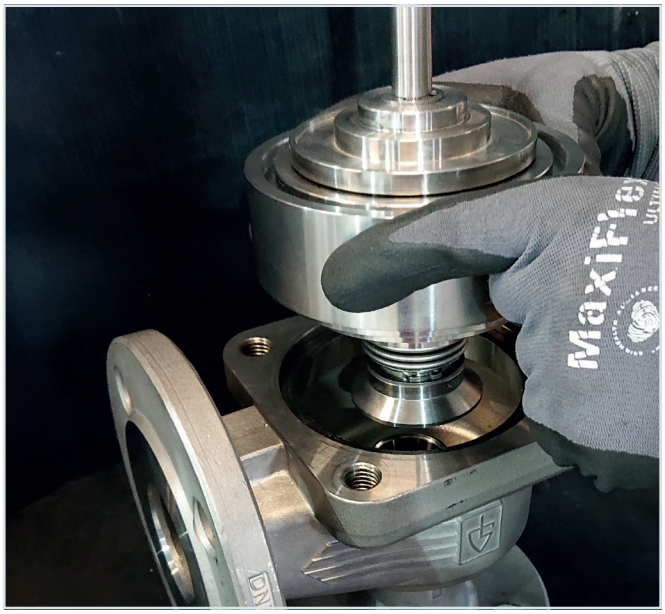
a) Design 1 – Series 355, 455

Disassembly

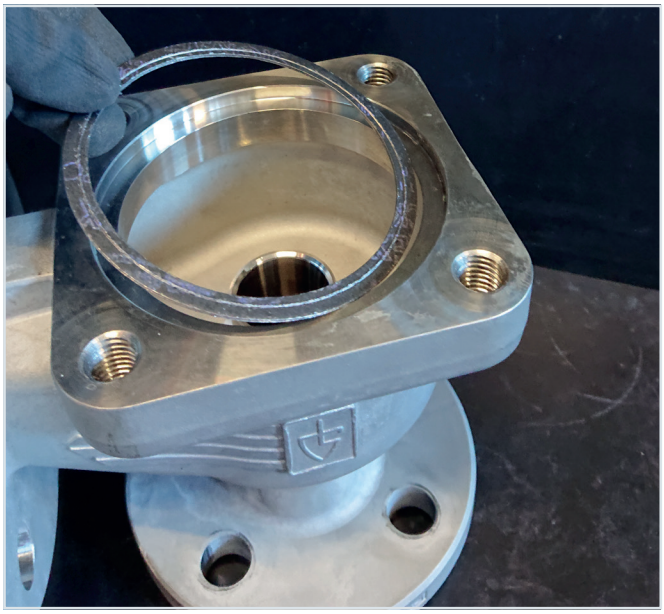
3.1
Carry out steps 2.1 to 2.13 as described above.



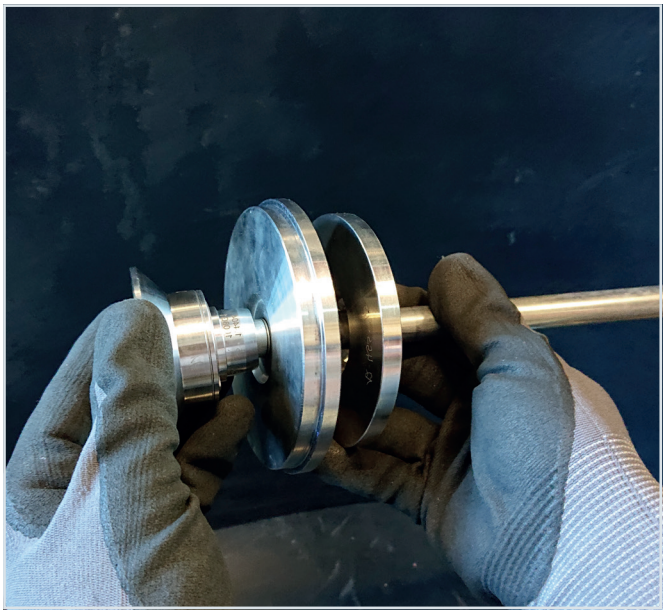
3.2
Remove the spindle assembly. The spindle assembly consists of the spindle, spring plate at the bottom, guide plate and cone assembly.



ATTENTION! In the bellows version, the bellows with upper and lower weld-on plate and a protective sleeve are also attached to the Spindle. Always hold the spindle assembly by the weld-on plate.



3.3
Remove the graphite packing from the body. If necessary, remove any remains of the graphite packing from the sealing surface of the body without damaging it.

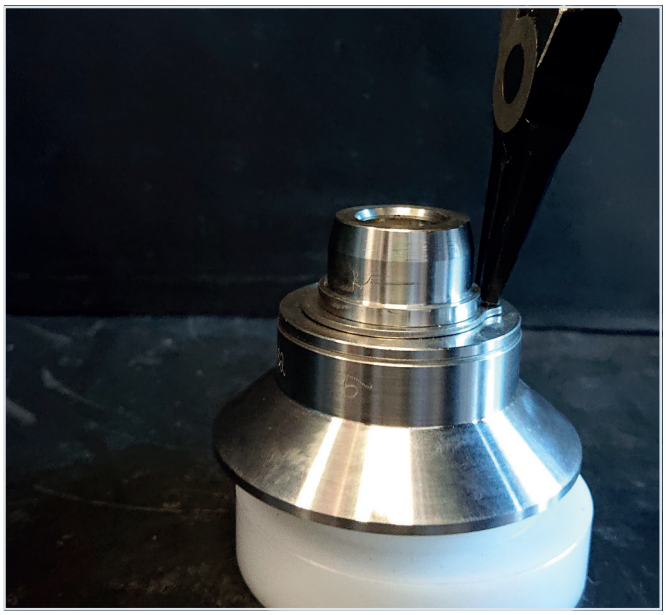


3.4
Detach the disc assembly from the spindle:

- DN 15 - DN 50 Remove the cone assembly from the spindle by pulling and turning it at the same time. If necessary, remove the snap ring from the cone and mount it on the spindle.
- DN 65 - DN 100 by pulling out the cotter pin.

CAUTION! With the bellows version, make sure that the bellows is not overstretched when removing the plug (do not pull on the bellows).

3.5
Remove the Ball from the cone.



3.6
Place the cone on the mounting support. This should prevent damage to the lapped sealing surface on the cone. The lifting ring should hang in the air.

3.7
Remove the circlip from the cone.

3.8
Lift the spacer ring, shim discs and lifting ring off the plug.

The seat in the body and the plug can now be re-lapped.

The total height of the seat or plug after the lapping process must not be less than the heights specified in document V-0223 after the lapping process (siehe S. 117).

Assembly

3.9
Place the cone on the mounting support and mount the lifting ring on the cone.

3.10
Place shim washers, thickness 0.1 mm and 0.3 mm, and spacer ring on the lifting ring.

3.11
Before fitting a new (!) circlip, check with it laterally in the taper groove whether the assembly clearance is relevant or too large or too small. Axial play should be as small as possible, i.e. if an additional 0.1 mm shim washer is used, the circlip would no longer fit completely in the groove. If necessary, add or remove appropriate shim washers.

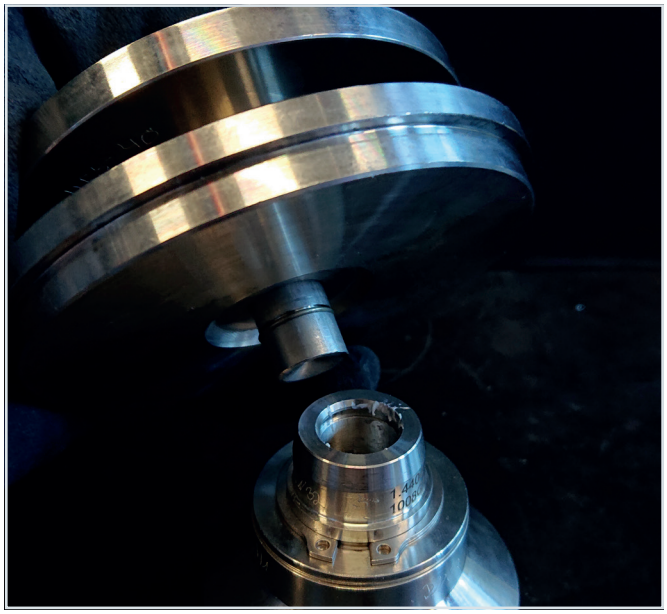
3.12
Fitting the retaining ring in the groove.

3.13
Install the retaining ring in the groove. When installing the retaining ring, make sure that it is not overstretched. We recommend using the installation tool (see V-0197, see p. 90). Place the installation cone on the cone, place the retaining ring on the installation cone and push the retaining ring into the cone groove with the installation sleeve until it clicks into place.

ATTENTION! If the cone assembly has to be dismantled again, a new retaining ring must be used!

3.14
Coat the base of the taper bore with a little stainless steel grease and insert the Ball.

3.15
Coat the contact surface of the Spindle for the Ball with a little stainless steel grease.



3.16
Insert the Spindle into the plug.

- DN 15 - DN 50 Spindle must engage in the groove of the plug with round wire snap ring.
- DN 65 - DN 100 Push the cotter pin sideways into the groove

3.17
Insert the new graphite packing into the body and carefully place the spindle assembly with the mounted plug assembly onto the screwed-in seat.

ATTENTION! Hold the spindle assembly vertically to prevent the cone assembly from coming loose.

ATTENTION! With the bellows version, it is essential to hold the spindle assembly by the weld-on plate.

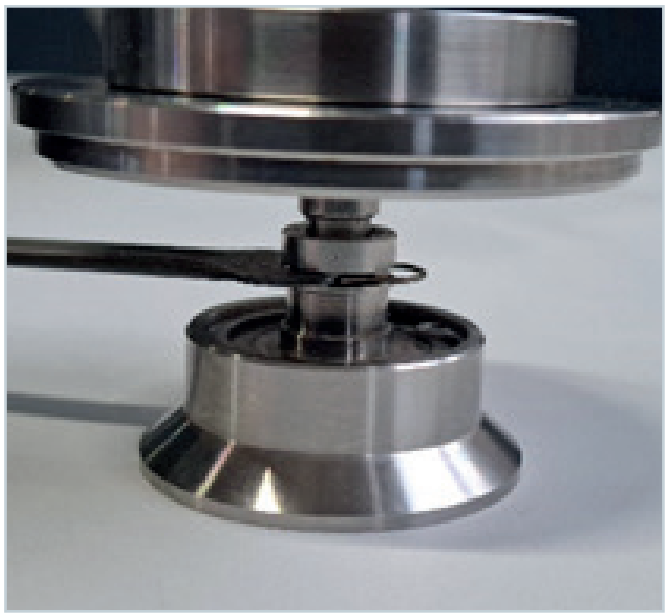
3.18
Continue with 2.14 on page 23 (Assembly spring replacement).

b) Series 255, 255 ANSI, 455 Redesign, 455 ANSI

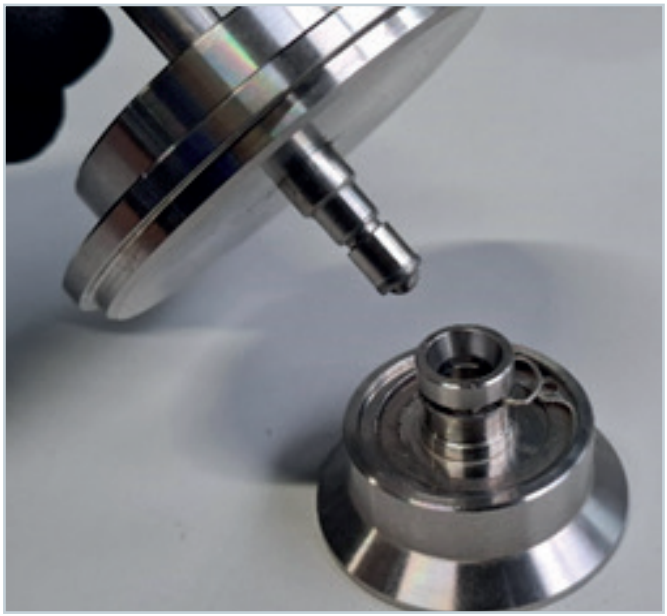
Disassembly

3.19
Dismantle the valve as described in steps 2.25 to 2.42.

3.20
Carefully lift the complete spindle assembly vertically upwards out of the body.

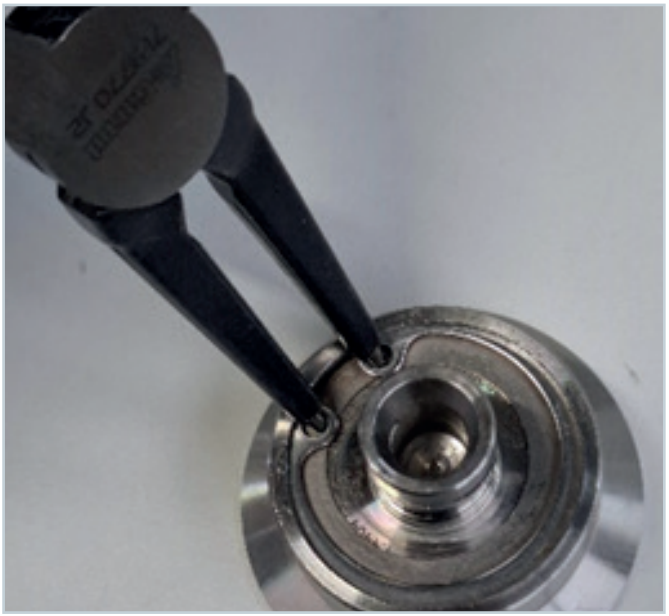


3.21
Use a flat open-end spanner to push the cotter pin (spindle/plug connection) out of the groove in the plug.n.



3.22
Pull the Spindle out of the cone and remove the Ball from the cone if necessary.

Note: Ball can adhere to the spindle due to lubricant or lie in the cone. In both cases, the ball is guided back into the correct position when it is reassembled; it is not necessary to remove the ball from the spindle.



3.23
Place the tapered lifting ring assembly on a flat surface and remove the circlip.

3.24
Pull the cone with the shim disc lying on it out of the lifting ring as vertically as possible, with a slight rotary movement if it is stuck.

3.25
The metallic sealing surface of the cone can now be cleaned and, if necessary, reworked by grinding or lapping. Observe the maximum permissible material removal according to **V-0233**!

3.26
The metallic sealing surface of the seat can now also be cleaned and, if necessary, reworked by grinding or lapping.

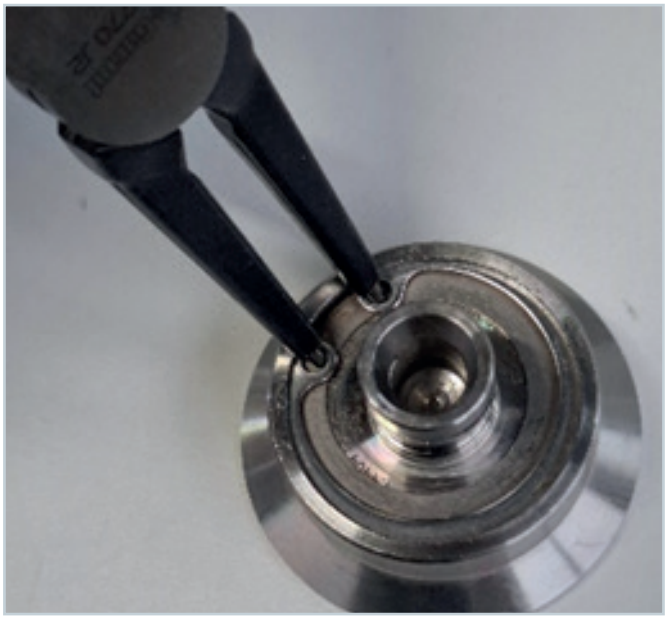
Note: Goetze recommends reworking the seat sealing surfaces when installed in the body. If the machining options are not available, the seat can be removed from the body and reinstalled as described in chapter 8.

Assembly

3.27
Insert the cone into the lifting ring as vertically as possible.

3.28
Place shim discs on the cone as required; select the number and thickness so that the circlip can engage in the groove of the lifting ring with minimum axial play.

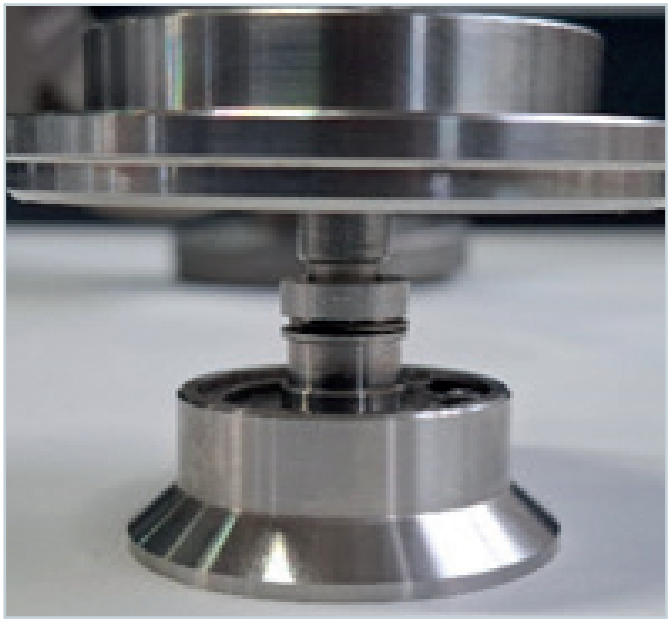
Note: If several shim discs of different thicknesses are installed, place the disc with the greatest thickness last.



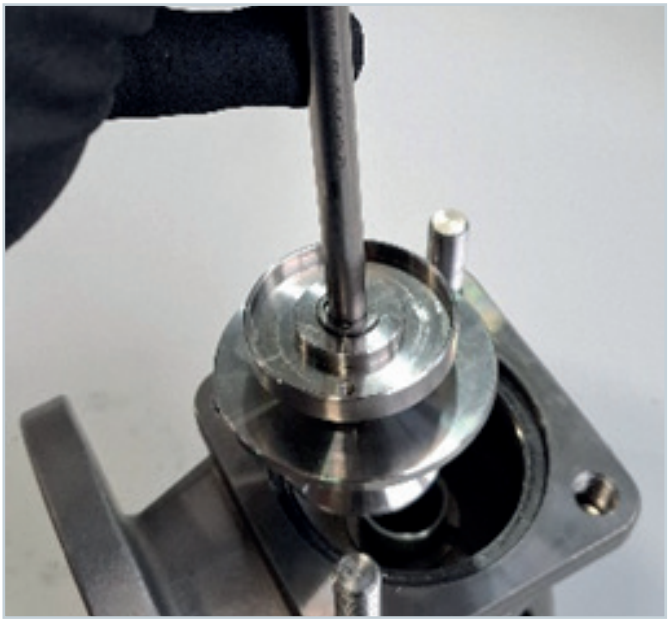
3.29
Place the circlip in the groove of the lifting ring; ensure that the circlip is fully seated in the groove over the entire circumference.

Note: Goetze strongly recommends replacing the circlip if it has lost its clamping force or become deformed due to repeated disassembly.

3.30
If necessary, place the Ball in the cone, see step 3.22, and insert the Spindle in the cone.



3.31
Insert the cotter pin into the slot of the cone until it engages fully in the groove of the spindle.



3.32
Carefully insert the complete spindle assembly into the body; make sure that the guide plate sits evenly in the body around the entire circumference without tilting.

Note: When installing the spindle assembly, avoid relative movements between the seat and cone sealing surface as far as possible so as not to damage them.

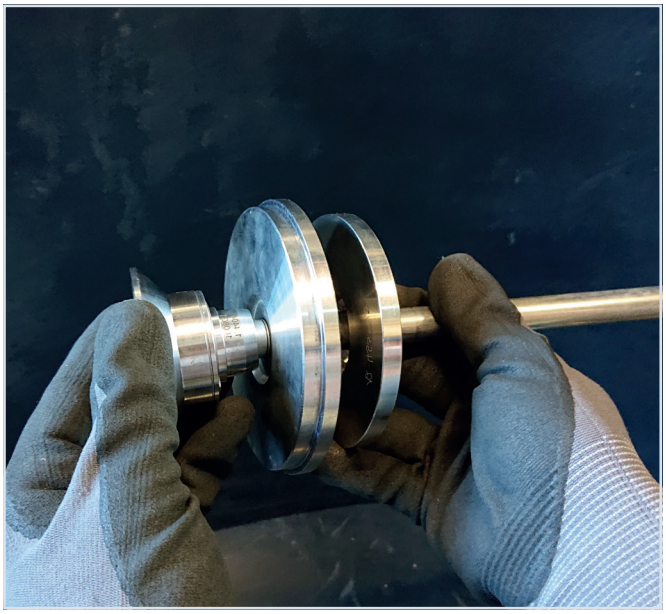
3.33
Further assembly of the valve as described from step 2.45 .

4 REPLACING THE FLAT SEAL

a) Design 1 - Serie 355, 455

Disassembly

4.1
Carry out steps3.1 to3.2 as described above.

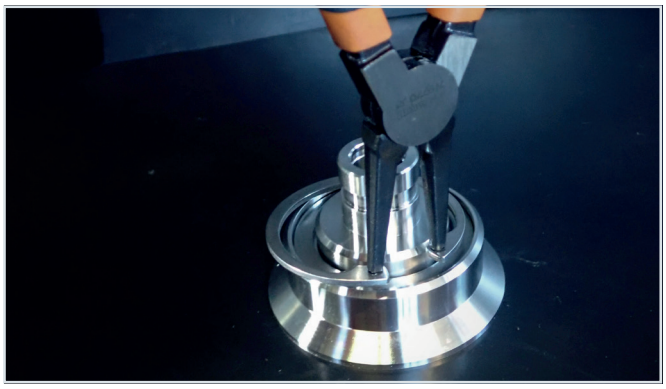


4.2
Detach the disc assembly from the spindle:

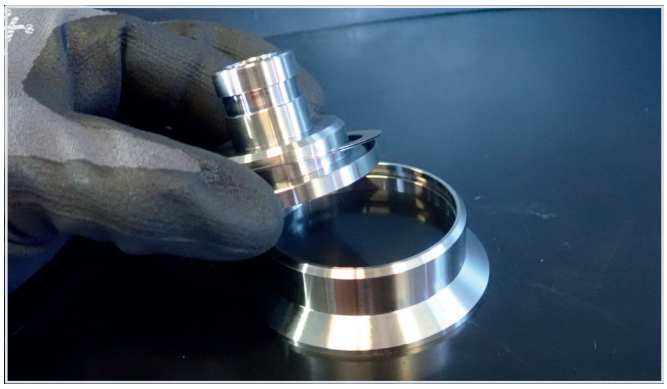
- DN15 - DN50 Remove the plug assembly from the spindle by pulling and turning it at the same time. If necessary, remove the snap ring from the plug and fit it on the spindle.
- DN65 - DN100 by pulling out the cotter pin.

CAUTION! With the bellows version, make sure that the bellows is not overstretched when removing the plug (do not pull on the bellows).

4.3
Remove the ball from the cone.



4.4
Remove the circlip from the groove of the lifting ring.

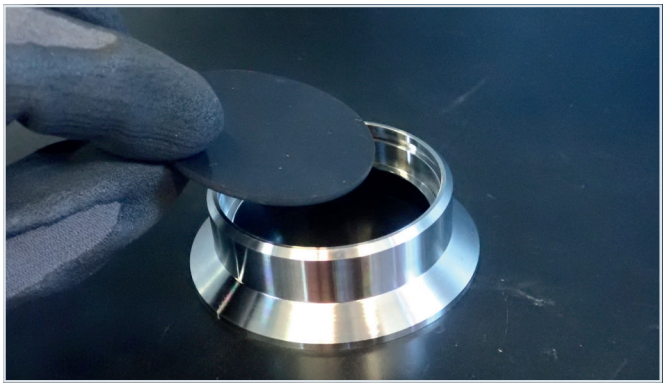


4.5
Remove the cone and shim discs from the stroke ring.

4.6
Remove the seal.

A new seal can now be inserted.

Assembly



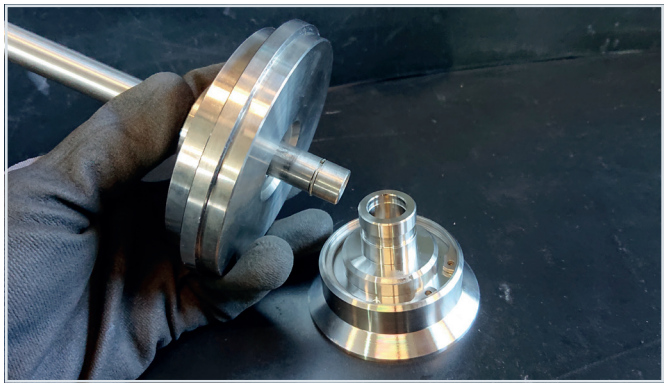
4.7
Insert new seal.

4.8
Insert the cone and shim discs.

4.9
Secure with new circlip.

4.10
Coat the base of the cone bore with a little stainless steel grease and insert the ball.

4.11
Coat the contact surface of the spindle for ball with a little stainless steel grease.



4.12
Insert the spindle into the cone.

- DN 15 - DN 50 Spindle must engage with round wire snap ring in the groove of the cone.
- DN 65 - DN 100 Push the cotter pin sideways into the groove.

4.13
Carefully place the spindle assembly with the mounted plug assembly onto the screwed-in seat.

ATTENTION! Hold the spindle assembly vertically to prevent it from coming loose.

ATTENTION! With the bellows version, it is essential to hold the spindle assembly by the weld-on plate.

4.13.1
Continue with 2.14 on page 23 (assembly spring replacement).

b) Series 255, 255 ANSI, 455 Redesign, 455 ANSI

Disassembly

4.15
Dismantle the valve as described in steps 3.19 to 3.24 .

4.16
After removing the plug, remove the Flat seal from the lifting ring.

The Flat seal can now be cleaned, checked for damage and replaced if necessary.

Assembly

4.17
Insert the Flat seal into the lifting ring; ensure that it is fully seated on the shoulder of the lifting ring.

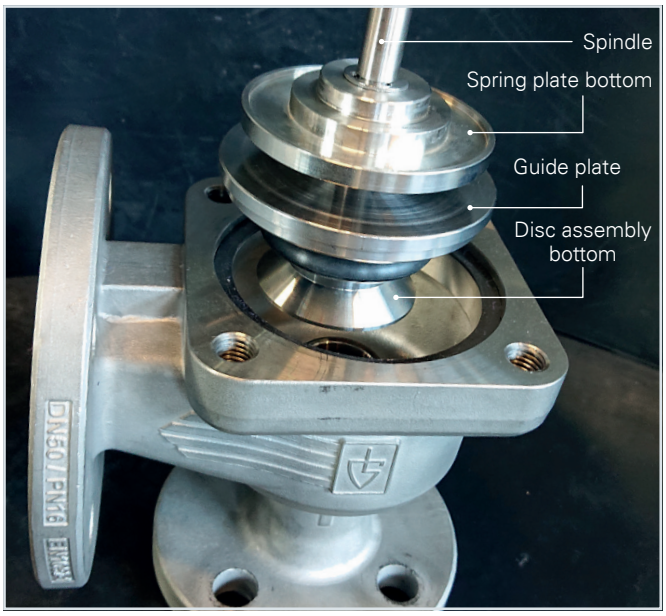
4.18
Install the valve as described in steps 3.27 to 3.33.

5 REPLACE ELASTOMER BELLOWS AND SEAL (DGH VARIANT)

Disassembly

5.1

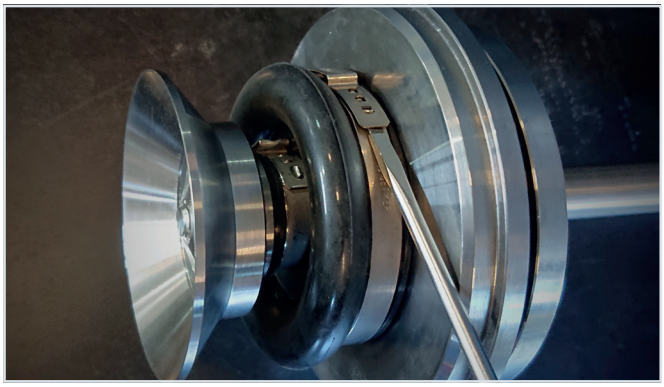
Carry out steps2.1 to2.13 as described above.



5.2

Remove the spindle assembly. The spindle assembly consists of the spindle, spring plate at the bottom, guide plate, elastomer bellows and cone assembly.

Only carry out steps 5.3 to 5.5 if the bellows is to be replaced.



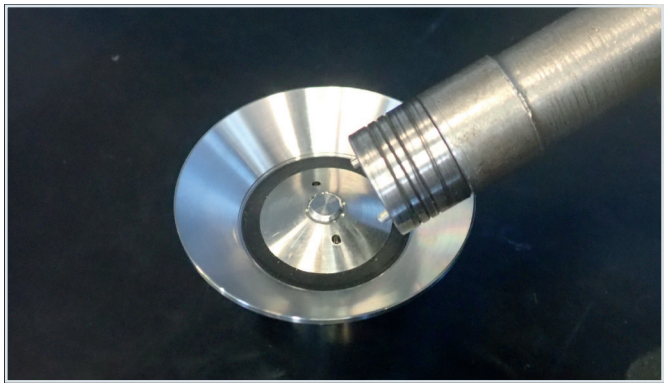
5.3

Using slotted screwdrivers, go under the ends of the ear clamps and bend the end of the band upwards until the toothing is released so that the ear clamp can be removed.

5.4

Detach elastomer bellows from guide plate and taper. Detach the plug assembly from the spindle:

- DN15 - DN50 Detach the plug assembly from the spindle by pulling and turning at the same time.
- DN65 - DN100 by pulling out the spring cotter pin



5.5

Remove the ball.

5.6

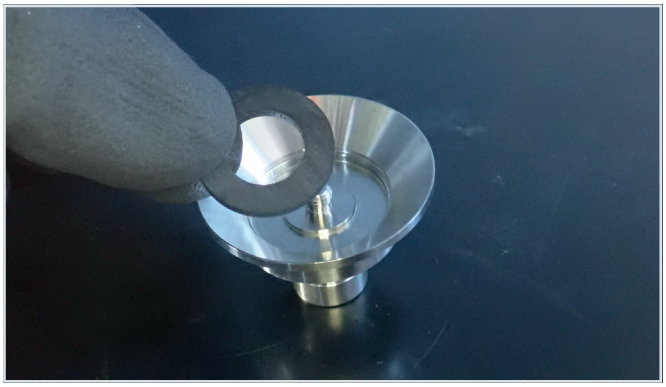
Unscrew the seal holder using the assembly tool.

5.7

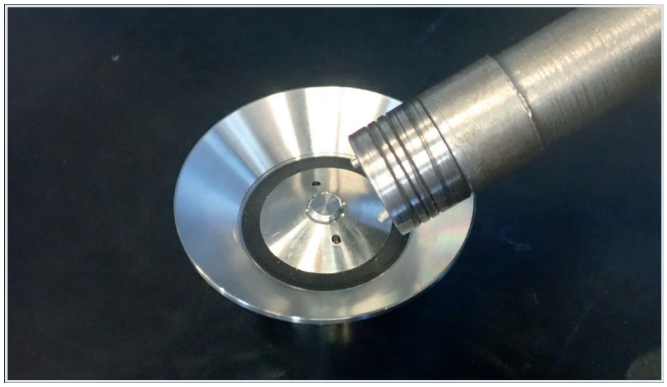
Remove the seal.

A new seal can now be inserted.

Assembly



5.8
Insert new seal.



5.9
Screw on the seal holder and tighten with the assembly tool.

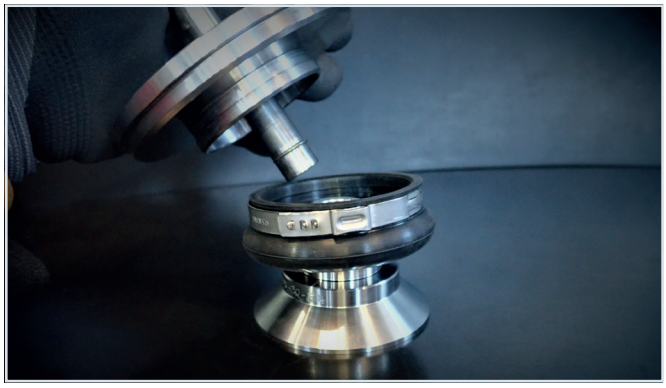
5.10
Secure screw connection with centre punch

Only carry out steps 5.11 to 5.18 if elastomer bellows are to be replaced.

5.11
Insert the ear clamps into the outer groove of the elastomer bellows.

5.12
Place the elastomer bellows together with the ear clamp with the relevant opening over the cone. Press the bellows down until the rib of the bellows lies in the groove of the cone

5.13
Tighten the ear clamp with pliers. When tightening, make sure that the ear clamp lies in the groove of the elastomer bellows everywhere.

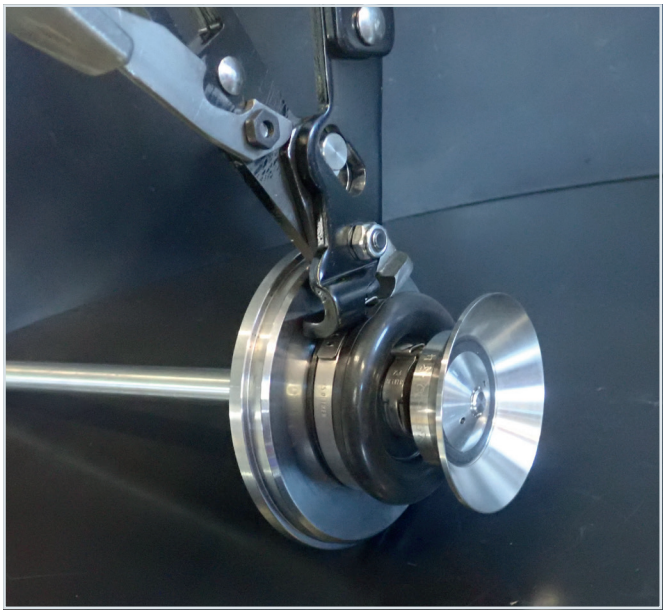


5.14
Coat the base of the cone bore with a little stainless steel grease and insert the Ball.

5.15
Push the guide plate and, if necessary, the stroke limiter onto the spindle from below. If necessary, remove the snap ring from the cone and mount it on the spindle

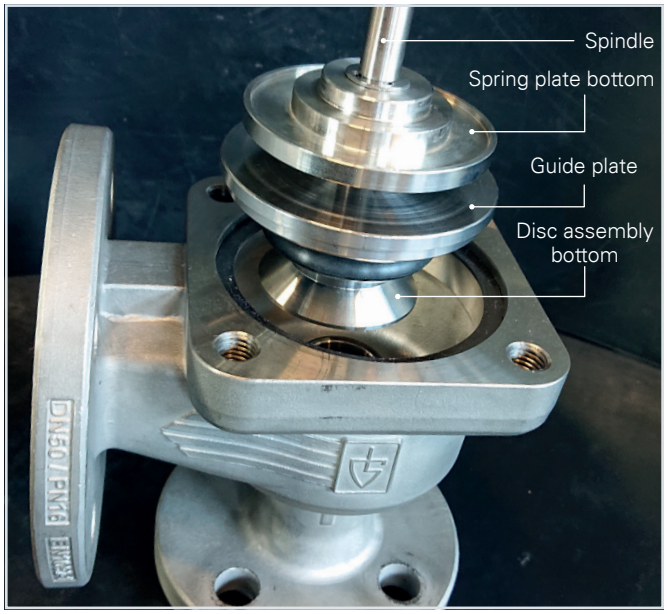
5.16
Coat the contact surface of the spindle for the ball with a little stainless steel grease and then insert the spindle into the plug.

- DN 15 - DN 50: Spindle must engage with round wire snap ring in the groove of the cone.
- DN 65 - DN 100: Insert the cotter pin into the side of the groove



5.17
Place the elastomer bellows together with the ear clamp with the other opening over the attachment of the guide plate. Press down the elastomer bellows until the rib of the bellows lies in the groove.

5.18
Tighten the ear clamp with pliers. When tightening, make sure that the ear clamp lies in the groove of the elastomer bellows everywhere.



5.19
Carefully place the spindle assembly with the mounted cone assembly onto the screwed-in seat.

ATTENTION! Hold the spindle assembly vertically to prevent the cone assembly from coming loose.

5.20
Continue with 2.14 on page 23 (assembly spring replacement).

6 REPLACING THE PRESSURE SCREW

Disassembly

6.1
Carry out steps 2.1 to 2.11 as described above.

6.2
Completely loosen and remove the lock nut.

6.3
Loosen the hexagon head screws between the bonnet and body as well as the nuts on the stud screws and remove the bonnet.

6.4
Remove the slide ring or axial discs and axial bearing from the pressure screw.

6.5
Remove the old pressure screw.

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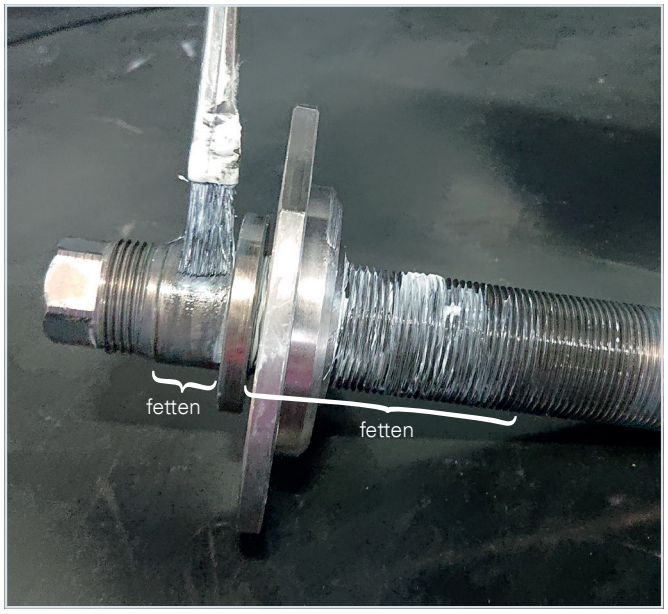
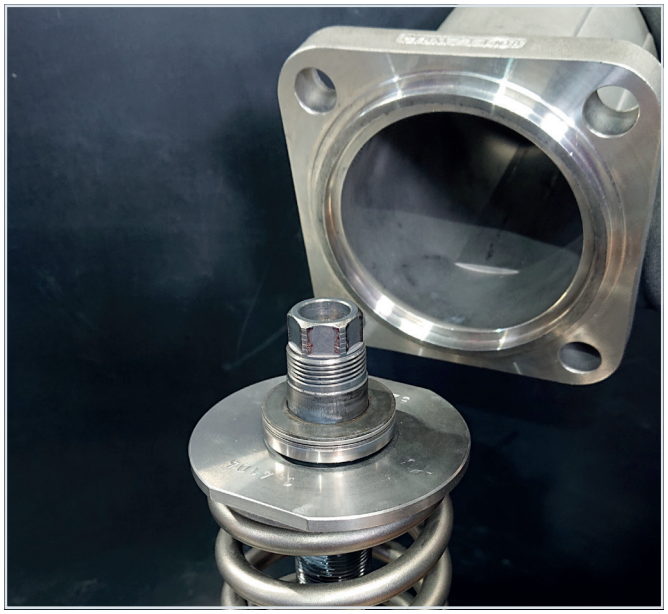
Assembly



6.6
Screw the spring plate onto the new pressure screw - note the left-hand thread! - and, if necessary, fit round wire snap ring in groove of pressure screw.

6.7
Measure the guide diameter and coat approx. 2/3 of the thread of the pressure screw with stainless steel grease from above, including at the point of the spring plate.



6.9
Fit the bonnet, ensuring that it is orientated towards the upper spring plate.

6.10
Screw on the lock nut.

ATTENTION! If it is not necessary to change the spring, the new pressure can now be set.

6.11
Weiter mit 2.12 auf S.22.

6.8
Place the pressure screw over the spindle and spring and place the sliding ring or axial discs and axial bearing on the pressure screw.

7 REPLACING THE BELLOWS

a) Design 1 - Series 355, 455

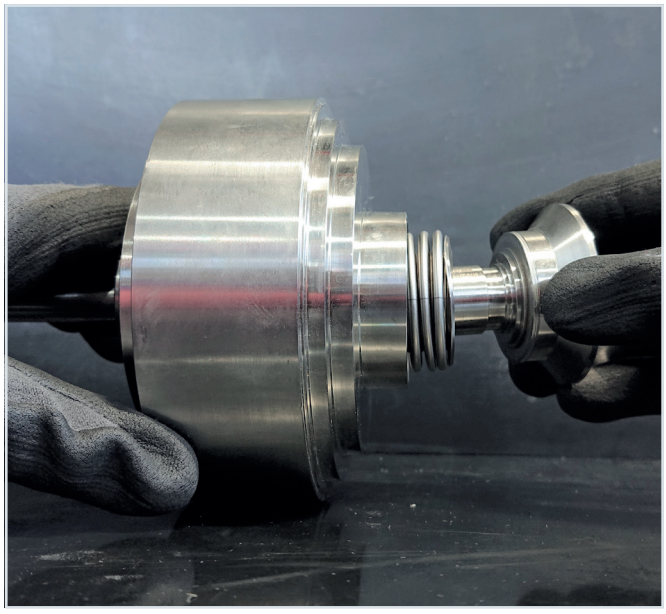
Disassembly

7.1

Carry out steps 2.1 to 2.13 as described above.

7.2

Remove the spindle assembly. The spindle assembly consists of the spindle, spring plate at the bottom, guide plate, bellows with upper and lower weld-on plate and a protective sleeve and taper assembly It is essential to hold the spindle assembly by the weld-on plate.

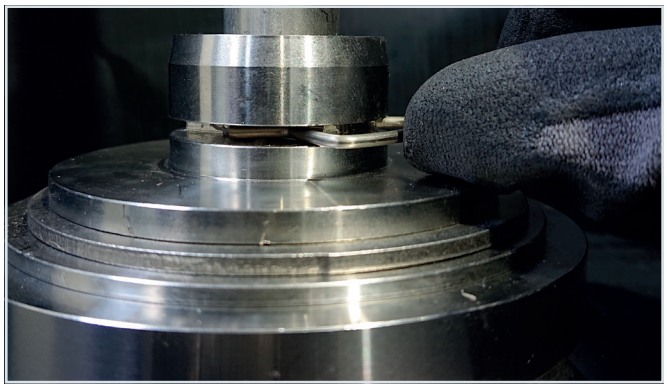


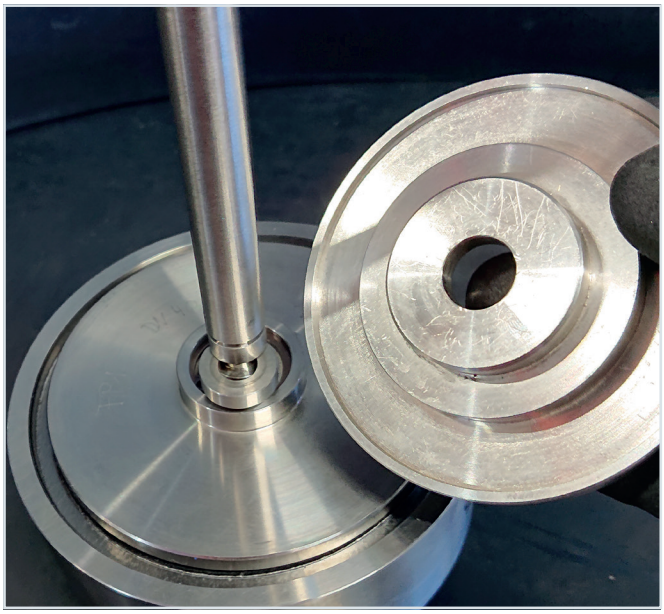
7.3

Detach the cone assembly from the spindle:

- DN 15 - DN 50 Detach the taper assembly from the Spindle by pulling and turning at the same time.
- DN 65 - DN 100 by pulling out the cotter pin.

ATTENTION! When removing the taper, ensure that the bellows is not overstretched (do not pull on the bellows).

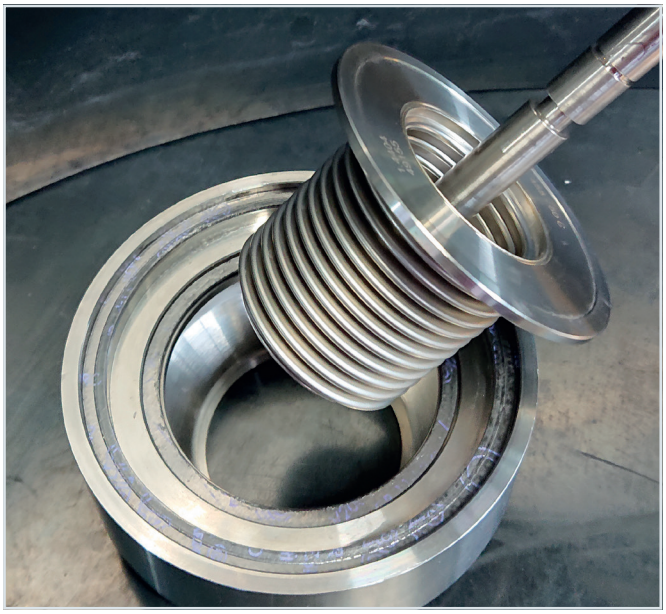




7.4
Remove the spring plate and guide plate from the spindle.

7.5
Remove the graphite packings from the body and weld-on plate.

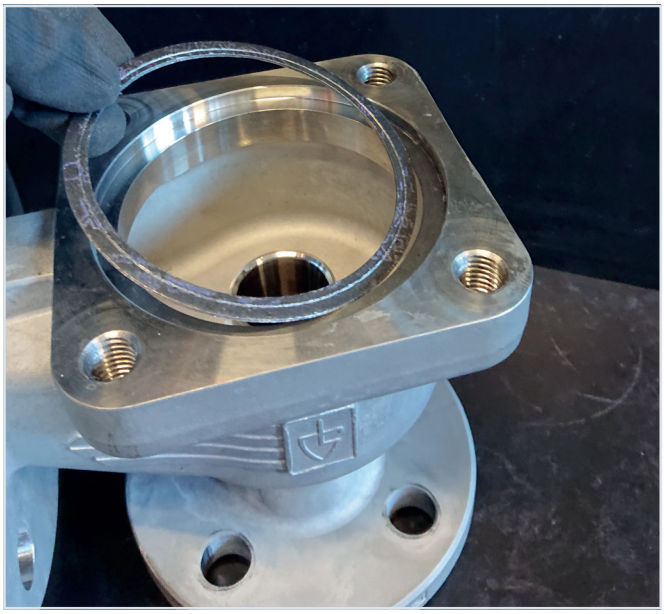
Steps 7.6 to 7.7 only for DN 50



7.6
Remove the spindle with bellows from the weld-on plate.

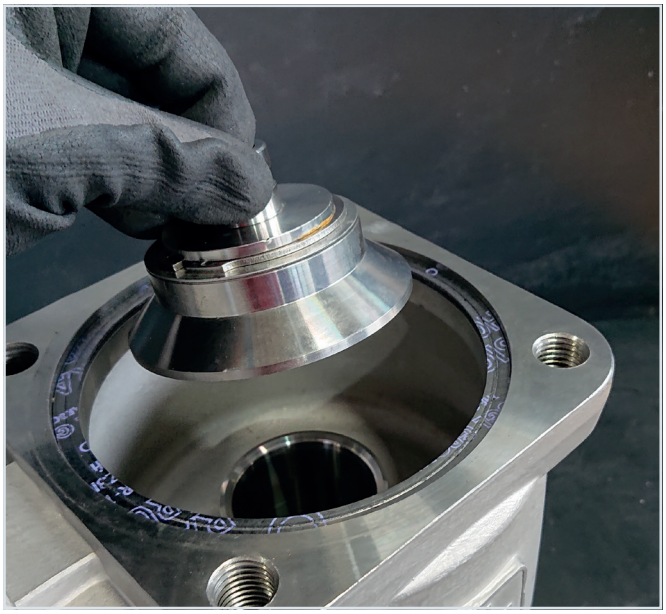
7.7
Pull the Spindle out of the bellows.

Assembly

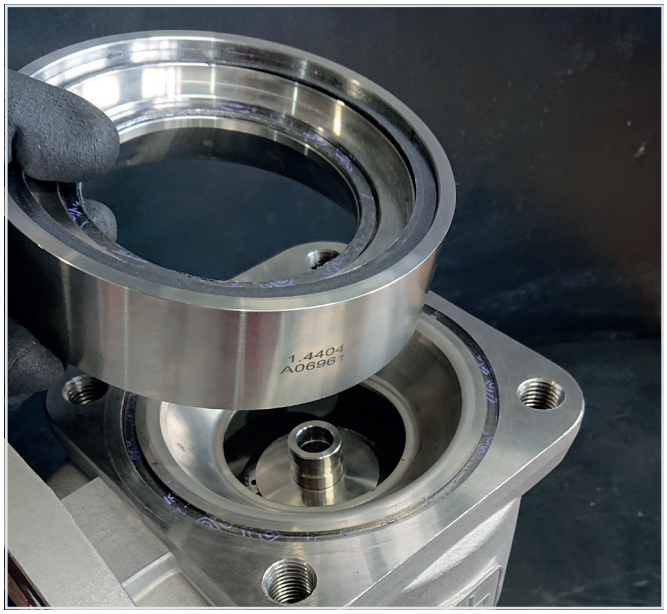


7.8
Place new graphite packings in the body and weld-on plate.

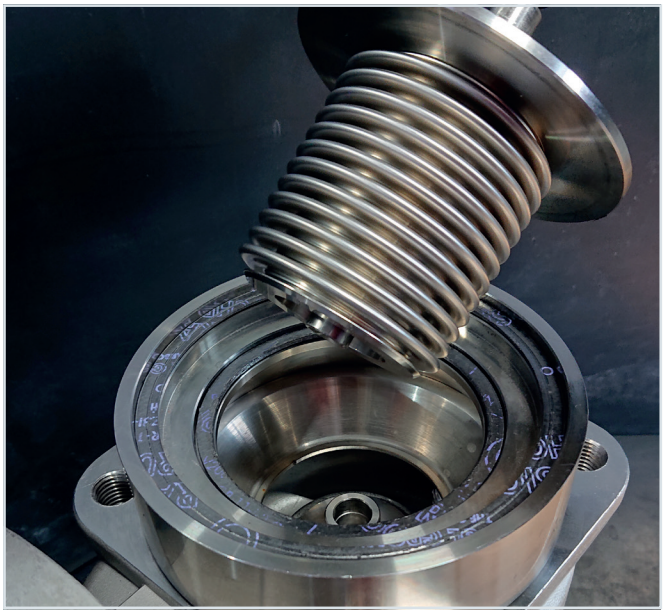
Steps 7.9 to 7.11 only for DN 50



7.9
Place cone assembly with greased Ball inserted onto seat.

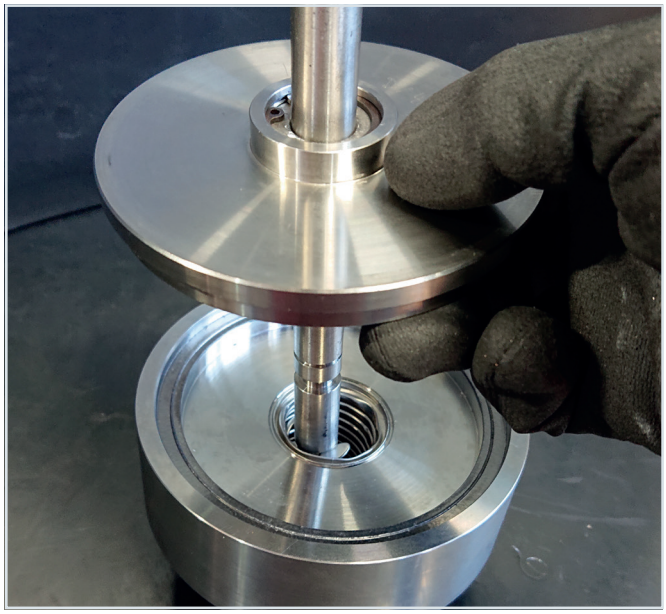


7.10
Place bellows protection and weld-on plate on body.



7.11
Insert the spindle into the bellows assembly.

7.12
Insert bellows into weld-on plate and insert into cone.



7.13
Fit guide plate and spring plate on the spindle.

Steps 7.14 to 7.15 for DN 15 - DN 40 and DN 65 - DN 100

7.14
Insert the spindle into the cone with the greased ball inserted.

- DN 15 - DN 40 spindle must engage with round wire snap ring in groove of taper.
- DN 65 - DN 100 Push the cotter pin sideways into the groove

7.15
Carefully place the spindle assembly with the assembled plug assembly onto the screwed-in seat.

ATTENTION! Hold the spindle assembly vertically to prevent it from coming loose. Always hold the spindle assembly by the weld-on plate.

7.16
Continue with 2.14 on page 23 (assembly spring replacement).

Series 255, 255 ANSI, 455 Redesign, 455 ANSI

Disassembly

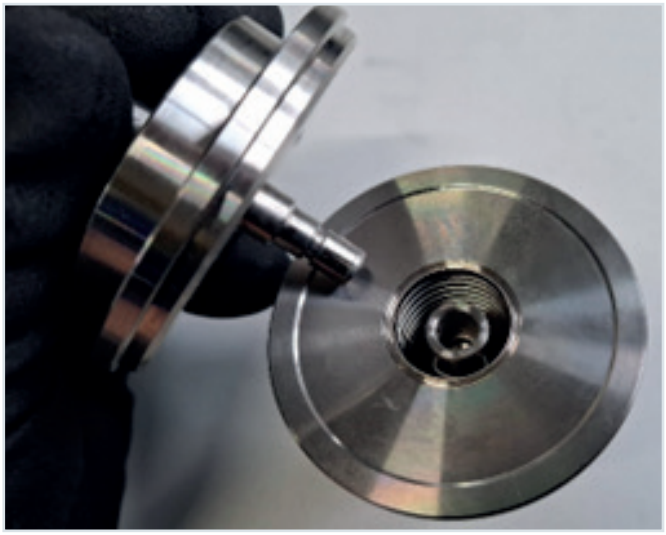
7.17
Dismantle the valve as described in steps 2.25 to 2.42.

7.18
Carefully lift the complete spindle assembly including bellows unit (only DN65 - DN100: additionally with bellows protection) vertically upwards out of the bonnet adapter.

7.19
Press the bellows together until the groove with the cotter pin can be reached from the side.

Note: Only compress the bellows as far as necessary to avoid overloading.

7.20
Push the cotter pin (bellows-spindle connection) out of the groove of the spindle adapter using a flat open-end spanner.

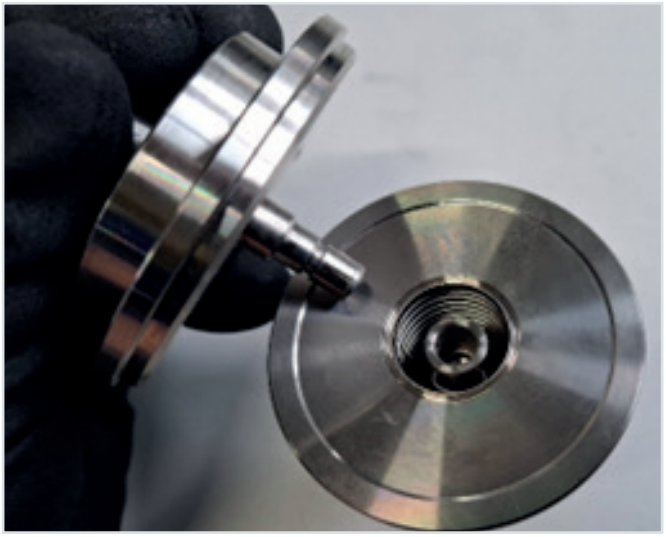


7.21
Pull the spindle with the lower spring plate and guide plate out of the spindle adapter.

7.22
Push the cotter pin (bellows-cone connection) out of the groove of the cone using a flat open-end spanner.

7.23
Pull the spindle adapter (only DN65 - DN100: also with bellows protection) out of the cone and remove the Ball from the cone if necessary.

Note: Ball may adhere to the spindle adapter due to lubricant or lie in the cone. In both cases, the ball is guided back into the correct position when it is reassembled; it is not necessary to remove the ball from the spindle adapter.



7.21
Pull the spindle with the lower spring plate and guide plate out of the spindle adapter.

7.22
Push the cotter pin (bellows-cone connection) out of the groove of the cone using a flat open-end spanner.

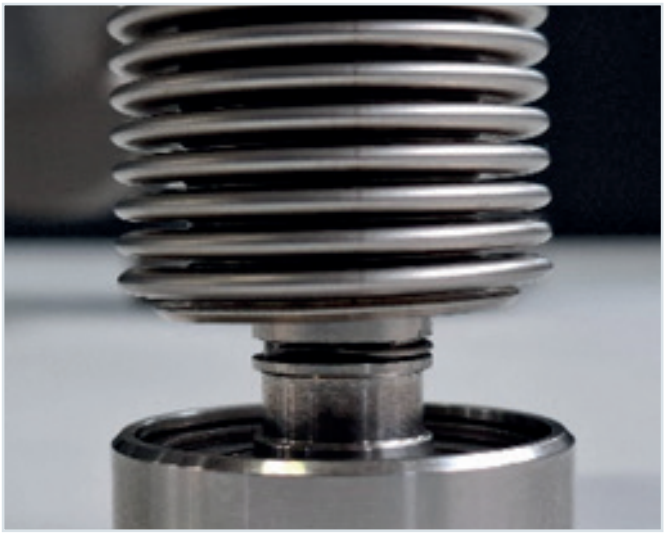
7.23
Pull the spindle adapter (only DN65 - DN100: also with bellows protection) out of the cone and remove the Ball from the cone if necessary.

Note: Ball may adhere to the spindle adapter due to lubricant or lie in the cone. In both cases, the ball is guided back into the correct position when it is reassembled; it is not necessary to remove the ball from the spindle adapter.

The bellows can now be cleaned, checked for leaks or replaced.

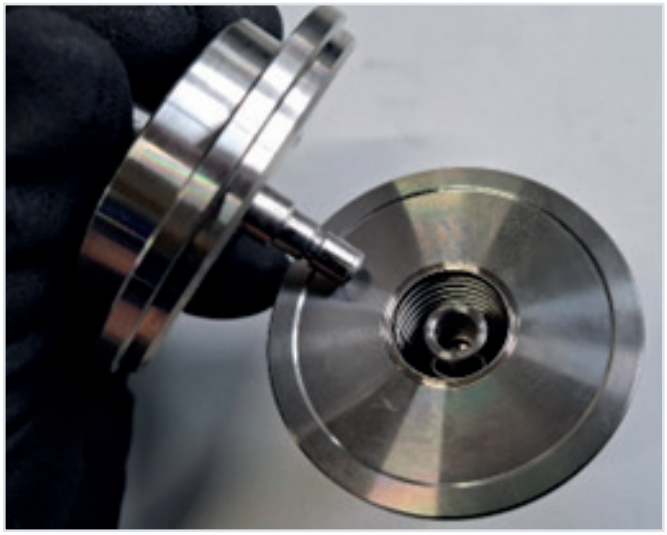
7.24
If the seat needs to be removed as described in chapter 8 , remove the bonnet adapter from the body first.

Assembly

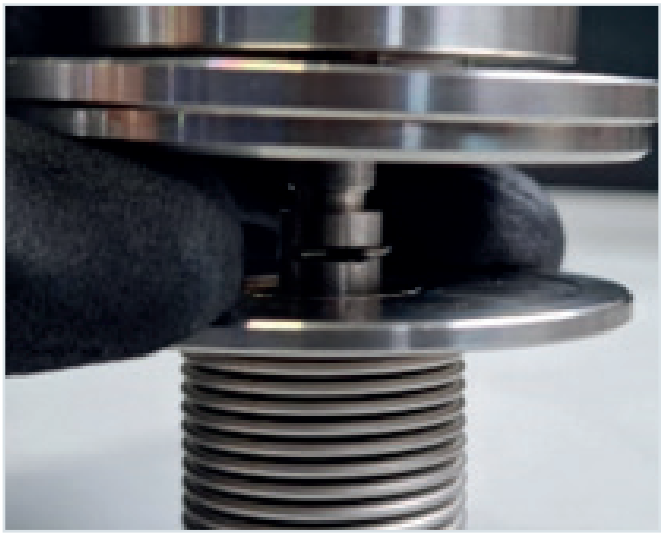


7.25
If necessary, place the Ball in the plug, see step 7.23 and insert the stem adapter (only DN65 - DN100: additionally with bellows protection) into the plug.

7.26
Insert the spring cotter into the slot of the plug until it engages fully in the groove of the spindle adapter.



7.27
Insert the spindle, with the lower spring plate and guide plate fitted, into the spindle adapter.



7.28
Press the bellows together until the groove with the spring cotter can be reached from the side.

Note: Only compress the bellows as far as necessary to avoid overloading.

7.29
Insert the cotter pin into the slot of the spindle adapter until it engages fully in the groove of the spindle.

7.31
Carefully insert the complete spindle assembly including bellows unit (only DN65 - DN100: additionally with bellows protection) into the bonnet adapter; make sure that the guide plate sits evenly in the bonnet adapter around the entire circumference without tilting.

Note: When installing the spindle assembly, avoid relative movements between the seat and cone sealing surface as far as possible so as not to damage them.

7.32
Further assembly of the valve as described from step 2.45.

7.30
If necessary, replace the bonnet adapter on the body; ensure that the bonnet adapter is seated evenly in the body around its entire circumference without tilting.

8 REPLACING THE SEAT

Disassembly

8.1
Carry out steps 3.1 to 3.3 as described above.

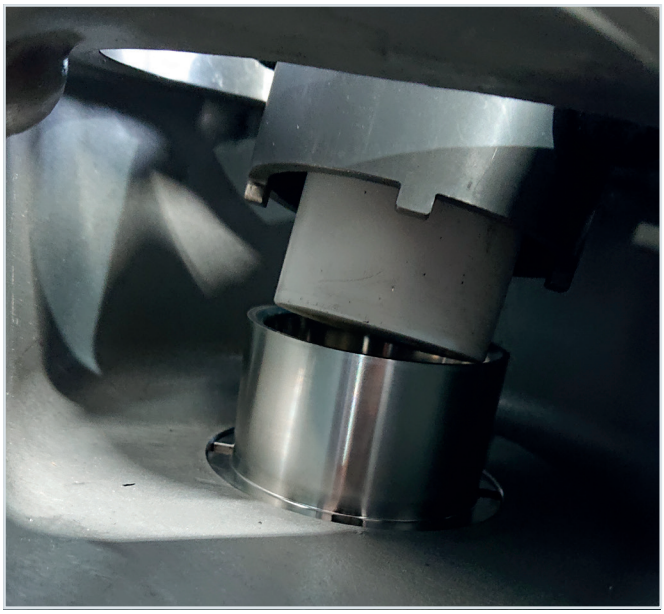
8.2
Place the assembly tool carefully and as vertically as possible on the seat and unscrew the seat from the body by turning the hexagon of the tool anti-clockwise.

8.3
Remove the graphite packing from the body.

8.4
Remove the remains of the graphite packing from the sealing surface of the body without damaging it.

A new seat can now be installed in the body.

Assembly



8.5

Insert the new seat gasket into the body.

8.6

Screw the new seat into the body. Tighten to the specified torque using the assembly tool.

8.7

Continue with 3.9 on page 35.

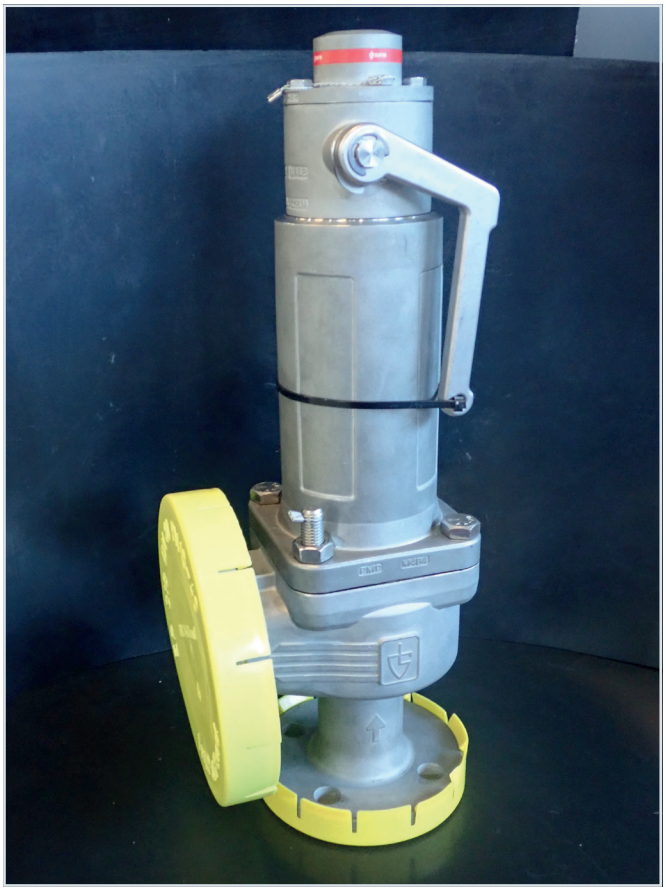
9 SEALING

9.1
Insert the sealing wire through the hole in the stud screw on the body and seal both ends.

9.2
Insert the sealing wire through the hole in a hexagon head screw on the cap, twist until it reaches the second screw and insert one end through the second hexagon head screw with hole. Guide the other end around the second screw head, insert it under the twisted wire and seal it together with the other end.

ATTENTION! The seal must provide information about the person responsible for the setting (company or personnel identification).

10 SHIPPING PREPARATION



10.1
Seal the flange connections with relevant flange covers.

Steps 10.2 only for variants with lifting device

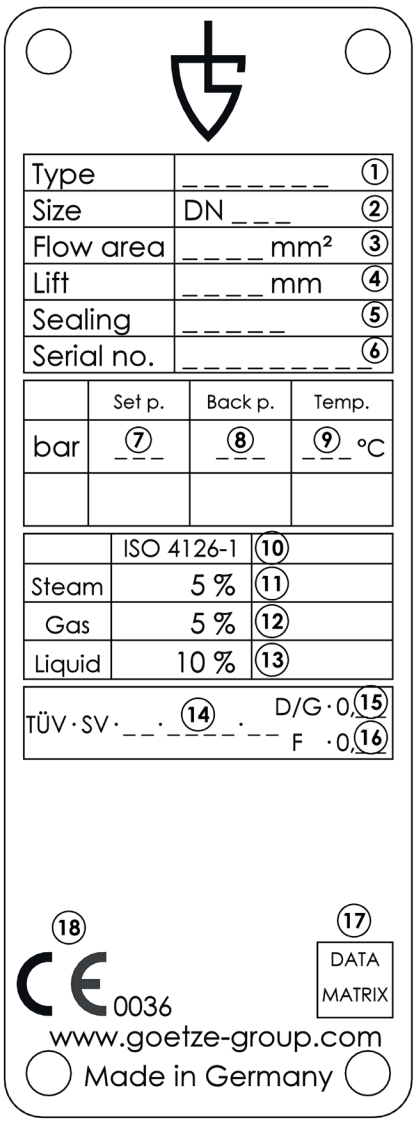
10.2
Secure the Lever to the valve with cable ties until it reaches the place of use

10.3
Pack the valves so that they are protected from damage and dirt during transport and possible subsequent storage.

11 MARKING / TESTING

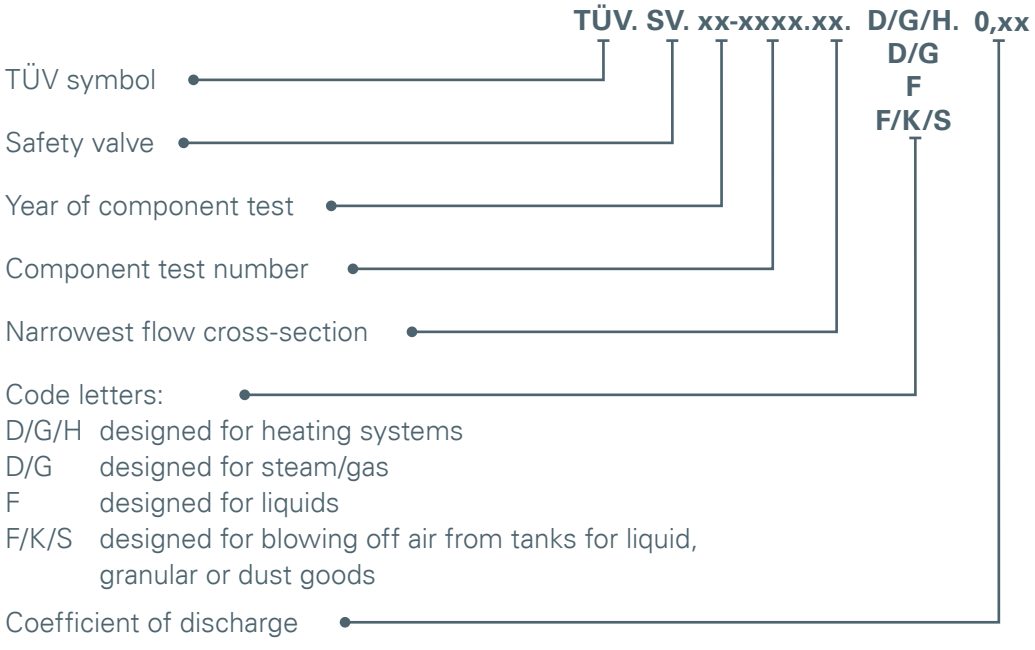
Auf dem Typenschild sind alle wichtigen Informationen zum Ventil eingetragen.

① Valve type
② Nominal size
③ Narrowest cross-section of flow
④ Valve stroke
⑤ Seat seal material
⑥ Serial number
⑦ **Setting pressure**
⑧ Allowable back pressure
⑨ Set temperature
⑩ General and application-specific standards as required
⑪ Opening pressure difference for steam
⑫ Opening pressure difference for gas
⑬ Opening pressure difference for water
⑭ TÜV-mark
⑮ **Co-efficient for steam / gases**
⑯ Co-efficient for liquids
⑰ Data matrix code (serial number)
⑱ CE labelling



Pressure conversion

The change in response pressure and the associated possible change in the discharge coefficient for vapours/gases must be permanently marked on the nameplate (item numbers 7 and 15). The corresponding discharge coefficient can be found in the performance table.



12 ADJUST VALVES

12.1

Set the valve on a test bench suitable for flanged valves. Observe the operating instructions for the test bench.

12.2
Select the relevant holder for the housing inlet, fit the valve and clamp or screw it on tightly enough.

12.3
Select the relevant pressure gauge. The pressure gauge must have a valid calibration of accuracy class 0.6. It must be selected so that the set pressure is within the reading range of 25% to 75%.

12.4
Pretension the spring by turning the pressure screw on the hexagon (clockwise rotation) (note: pressure screw is non-rising) (see also 2.11 page 22).

12.5
Pressurise the valve and turn the pressure screw until the set pressure is reached.

- Set pressure: first audible leakage
- Setting tolerance: +3% of the set pressure or +0.1 bar for set pressures <3.4 bar

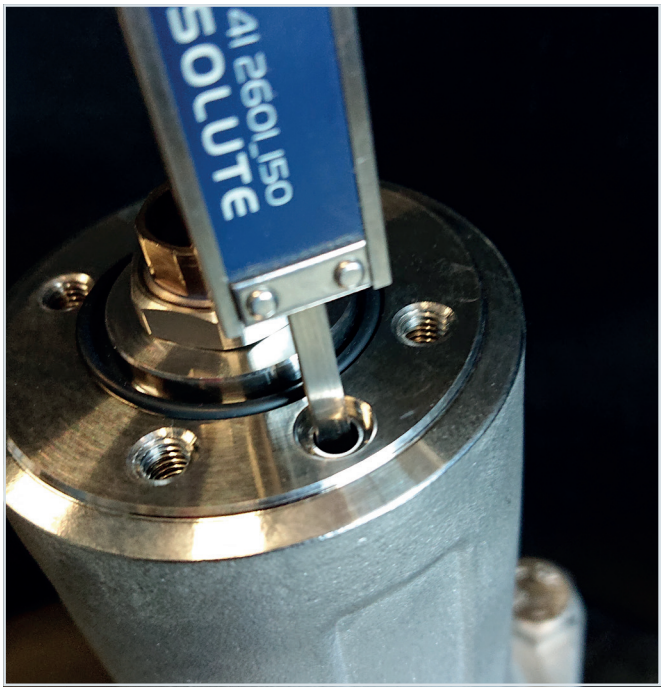
ATTENTION! Take particular care when handling the valve, especially in the area of the outlet and Spindle end, as long as pressure is applied! Risk of injury! Observe the rules of conduct for handling pressurised systems and fittings!

12.6
Secure the pressure screw with a lock nut by fixing the pressure screw to the hexagon and tightening the lock nut (clockwise rotation). Ensure that the setting of the pressure screw is not adjusted when the lock nut is tightened. Then check the set pressure again.

12.7
After adjustment, check the seat tightness: audibly tight at at least 90% of the Set pressure. For higher tightness requirements, see chapter 13.

12.8
Depressurise the valve and remove it from the test station.

12.9
The position of the upper spring plate can be determined using the measuring hole in the valve bonnet. To do this, insert the depth gauge of a caliper gauge through the measuring hole until it touches the spring plate. Note the measurement for documentation.



13 GAS TIGHTNESS TEST

13.1 Test basis

For increased tightness requirements, a tightness test similar to API 527 (bubble test) can be carried out if necessary; the procedure and test device correspond to the requirements stated there and the following specifications.

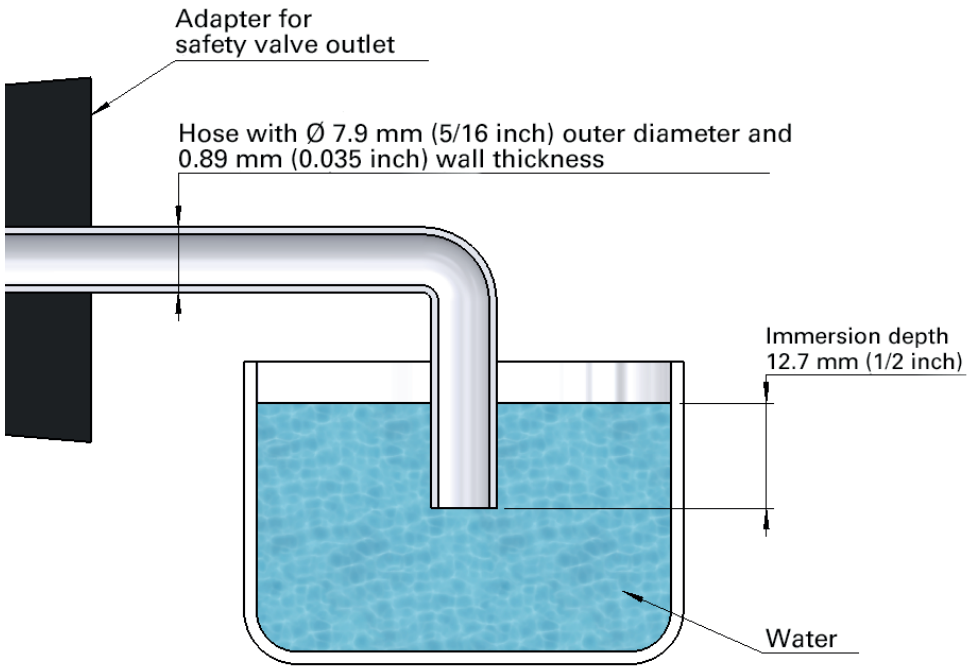
13.2 Valve design

- Gas-tight variant or with bellows (areas exposed to media tight to the environment)
- Variant with open bonnet: permissible leakage rate from the following table "Test criteria" reduced by 50%

13.3 Test setup

- Test is carried out at room temperature
- Compressed air or nitrogen is used as the test medium
- Test device according to API 527
- Valve outlet is closed with a sealing plug
- Plug has feed-through for hose with 6.12 mm inner diameter and 0.89 mm wall thickness (generation of bubbles with 295 mm³ volume)
- End of the tube is immersed vertically in a vessel filled with water to 12.7 mm below the water surface

Test setup according to API 527



13.4 Test sequence

- Mount the valve vertically on the test stand
- Start up valve to Set pressure
- Relieve pressure completely
- Start up to test pressure according to the "Test pressure" table below
- Close the outlet of the valve with a plug and connect the test device
- Caution: Take appropriate safety measures to prevent the valve from opening accidentally during the leak test!
- Maintain the test pressure in accordance with the "Test criteria" table below
- Count the number of bubbles over the test period according to the "Test criteria" table below

Test pressure

Set Pressure Pset	Test pressure Ptest
Pset > 3,45 bar(g)	0,9 x Pset
0,7 bar(g) ≤ Pset ≤ 3,45 bar(g)	Pset – 0,345 bar(g)
Pset < 0,7 bar(g)	0,5 x Pset

Test criteria

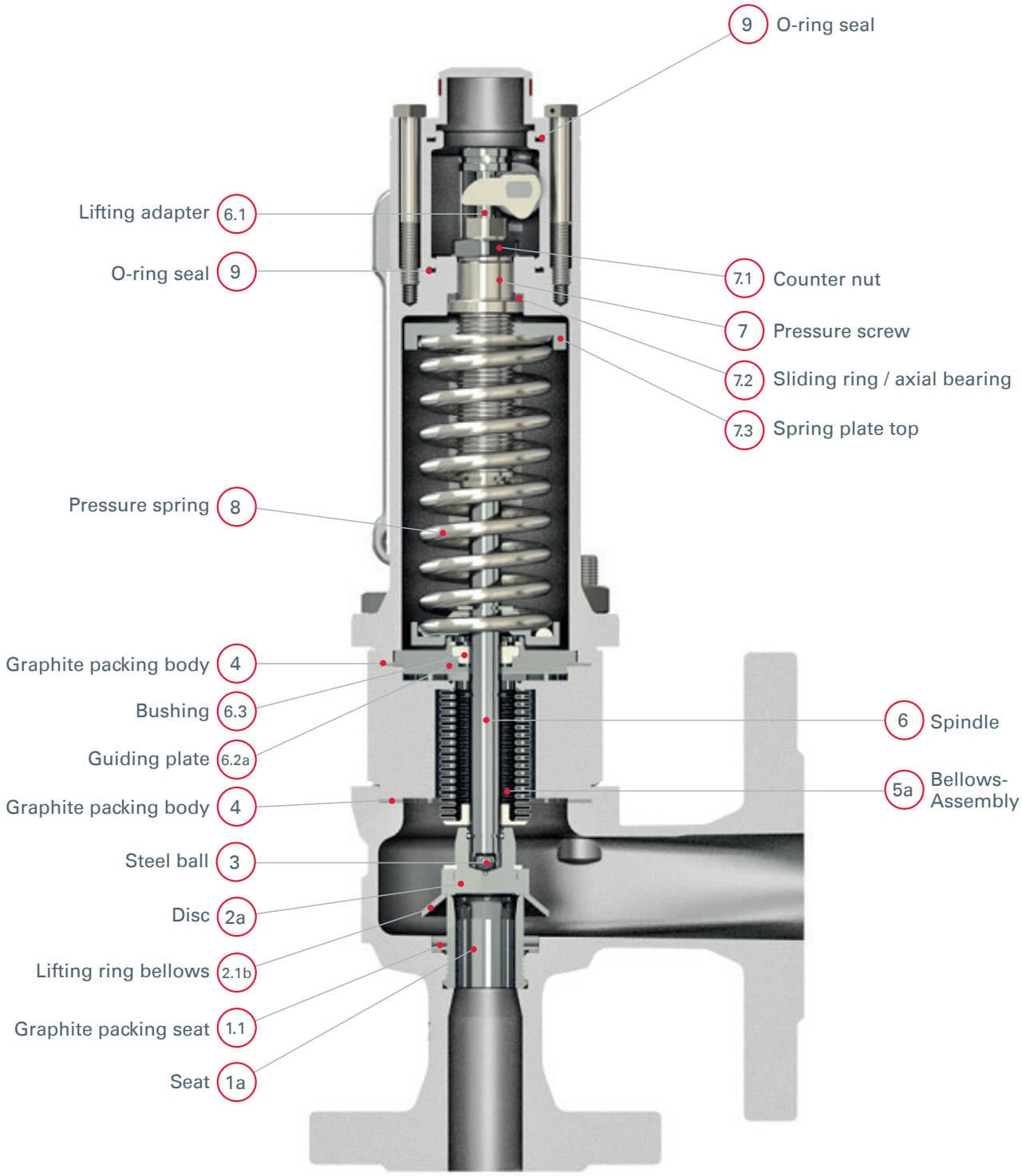
Nominal diameter	Holding time [min]	Test time [min]	Permissible leakage rate metal-to-metal sealing [bubbles/min]	Permissible leakage rate soft seal [bubbles/min]
DN15 – DN20	1	1	40	0
DN25 – DN50	1	1	20	0
DN65 – DN100	2	1	20	0

ADDITIONAL MATERIAL

V-0196 SPARE PARTS OVERVIEW

Series 355, 455

1.1 Metallic bellows design, lifting device, metal-to-metal sealing

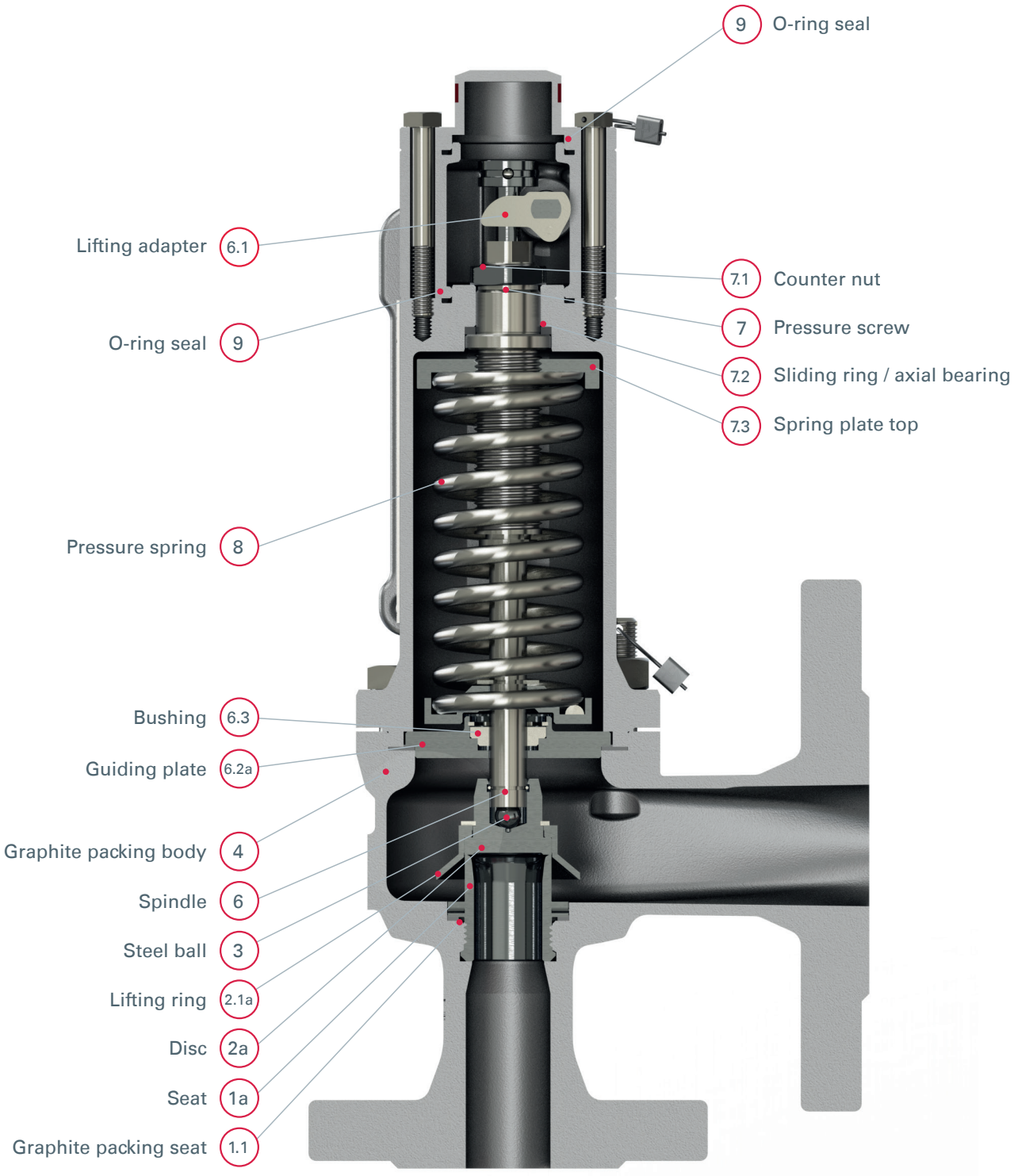


■ SINGLE PARTS METALLIC BELLOWS DESIGN, LIFTING DEVICE, METAL-TO-METAL SEALING

Pos.	Description	Material 455	Material 355
1a	Seat	1.4404 / 316L	1.4404 / 316L
1.1	Graphite packing seat	Graphite + 1.4401 / Graphite + 316L	Graphite + 1.4401 / Graphite + 316L
2a	Disc	1.4404 / 316L	1.4122 / Hardened stainless steel
2.1b	Lifting ring bellows	1.4404 / 316L	1.4021 / 420
3	Steel ball	1.4401 / 316L	1.4401 / 316L
4	Graphite packing body	Graphite + 1.4401 / Graphite + 316L	Graphite + 1.4401 / Graphite + 316L
5a	Bellows-Assembly	1.4571 / 316Ti	1.4571 / 316Ti
6	Spindle	1.4404 / 316L	1.4021 / 420
6.1	Lifting Adapter	1.4404 / 316L	1.4021 / 420
6.2a	Guiding plate	1.4404 / 316L	1.4021 / 420
6.3	Bushing	Ni-Graphite	Ni-Graphite
7	Pressure screw	1.4404 / 316L	1.4122 / Hardened stainless steel
7.1	Counter nut	1.4404 / 316L	1.4404 / 316L
7.2	Sliding rind / axial bearing	PEEK, steel	PEEK, steel
7.3	Spring plate top	1.4404 / 316L	1.4104 / 430F
8	Pressure spring	1.4310 / 302	1.8159 / 6150
9	O-ring seal	EPDM	EPDM

Changes in material selection may occur depending on the application.

1.2 Version without bellows, lifting device, metal-to-metal sealing

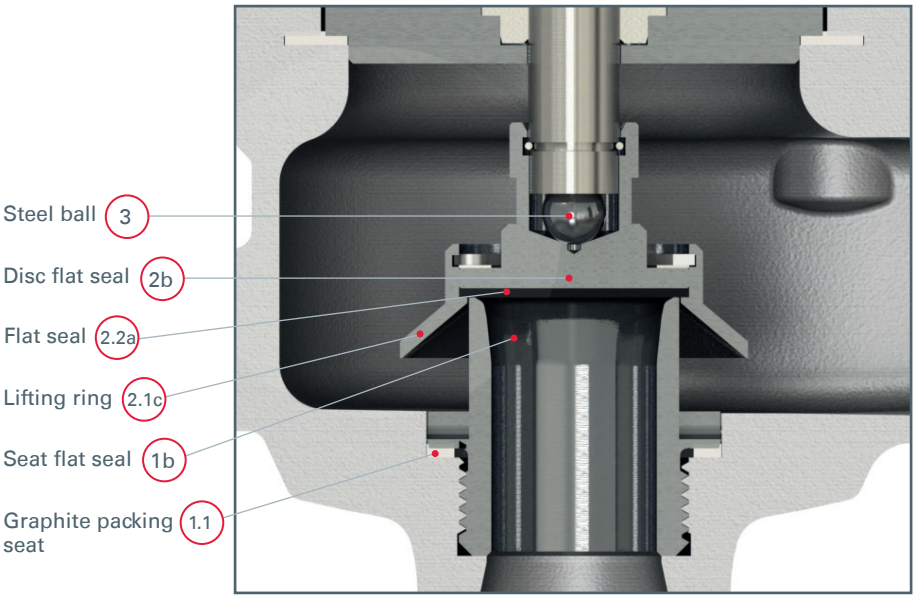


■ SINGLE PARTS VERSION WITHOUT BELLOWS, LIFTING DEVICE, METAL-TO-METAL SEALING

Pos.	Description	Material 455	Material 355
1a	Seat	1.4404 / 316L	1.4404 / 316L
1.1	Graphite packing seat	Graphite + 1.4401 / Graphite + 316L	Graphite + 1.4401 / Graphite + 316L
2a	Disc	1.4404 / 316L	1.4122 / Hardened stainless steel
2.1a	Lifting ring	1.4404 / 316L	1.4021 / 420
3	Steel ball	1.4401 / 316L	1.4401 / 316L
4	Graphite packing body	Graphite + 1.4401 / Graphite + 316L	Graphite + 1.4401 / Graphite + 316L
6	Spindle	1.4404 / 316L	1.4021 / 420
6.1	Lifting Adapter	1.4404 / 316L	1.4021 / 420
6.2a	Guiding plate	1.4404 / 316L	1.4021 / 420
6.3	Bushing	Ni-Graphite	Ni-Graphite
7	Pressure screw	1.4404 / 316L	1.4122 / Hardened stainless steel
7.1	Counter nut	1.4404 / 316L	1.4404 / 316L
7.2	Sliding rind / axial bearing	PEEK, steel	PEEK, steel
7.3	Spring plate top	1.4404 / 316L	1.4104 / 430F
8	Pressure spring	1.4310 / 302	1.8159 / 6150
9	O-ring seal	EPDM	EPDM

Changes in material selection may occur depending on the application.

1.3 Version with continuous flat seal

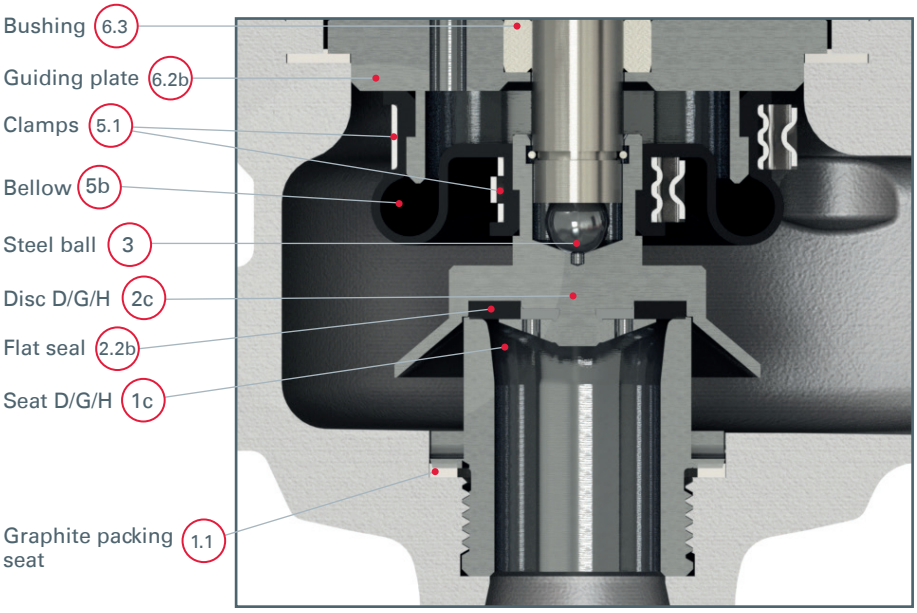


■ SPARE PARTS VERSION WITH CONTINUOUS FLAT SEAL

Pos.	Description	Material 455	Material 355
1b	Seat flat seal	1.4404 / 316L	1.4404 / 316L
1.1	Graphite packing seat	Graphite + 1.4401 / Graphite + 316L	Graphite + 1.4401 / Graphite + 316L
2b	Disc flat seal	1.4404 / 316L	1.4122 / Hardened stainless steel
2.1c	Lifting ring flat seal	1.4404 / 316L	1.4021 / 420
2.2a	Flat seal	EPDM, FKM, PTFE	EPDM, FKM, PTFE
3	Steel ball	1.4401 / 316L	1.4401 / 316L

Changes in material selection may occur depending on the application.

1.4 Version D/G/H



■ SPARE PARTS VERSION D/G/H

Pos.	Description	Material 455	Material 355
1c	Seat D/G/H	1.4404 / 316L	1.4404 / 316L
1.1	Graphite packing seat	Graphite + 1.4401 / Graphite + 316L	Graphite + 1.4401 / Graphite + 316L
2c	Disc D/G/H	1.4404 / 316L	1.4122 / Hardened stainless steel
2.2b	Flat seal D/G/H	EPDM	EPDM
3	Steel ball	1.4401 / 316L	1.4401 / 316L
5b	Bellow DGH	EPDM	EPDM
5.1	Clamps	1.4301 / 304	1.4301 / 304
6.2b	Guiding plate D/G/H	1.4404 / 316L	1.4021 / 420
6.3	Bushing	Ni-Graphite	Ni-Graphite

Changes in material selection may occur depending on the application.

Spare parts sets in series 455

Valid for standard version; please enquire about options Sxx, Axx, Pxx and GOX.

Pos.	Maintenance Kits	DN15	DN20	DN25[8]	DN32	DN40[10]	DN50[9]	DN65	DN80	DN100[11]
1.1, 2.3, 3, 4, 9, 10	Maintenance Kits	E0455.015.001	E0455.020.001	E0455.025.001	E0455.032.001	E0455.040.001	E0455.050.001	E0455.065.001	E0455.080.001	E0455.100.001

Pos.	Primary seal set	DN15	DN20	DN25[8]	DN32	DN40[10]	DN50[9]	DN65	DN80	DN100[11]
2 a, 2.3, 3, 10	Plug Metal-to-metal sealing	E0455.015.002	E0455.020.002	E0455.025.002	E0455.032.002	E0455.040.002	E0455.050.002[1] / E0455.050.031[2]	E0455.065.002	E0455.080.002	E0455.100.002[3] / E0455.100.030[4]
2.2 a, 2.3, 3, 10	Flat seal EPDM	E0455.015.003	E0455.020.003	E0455.025.003	E0455.032.003	E0455.040.003	E0455.050.003	E0455.065.003	E0455.080.003	E0455.100.003
2.2 a, 2.3, 3, 10	Flat seal FKMVI	E0455.015.004	E0455.020.004	E0455.025.004	E0455.032.004	E0455.040.004	E0455.050.004	E0455.065.004	E0455.080.004	E0455.100.004
2.2 a, 2.3, 3, 10	Flat seal PTFE	E0455.015.005	E0455.020.005	E0455.025.005	E0455.032.005	E0455.040.005	E0455.050.005	E0455.065.005	E0455.080.005	E0455.100.005
2.2 a, 2.3, 3, 10	Flat seal PTFE K	E0455.015.006	E0455.020.006	E0455.025.006	E0455.032.006	E0455.040.006	E0455.050.006	E0455.065.006	E0455.080.006	E0455.100.006
2.2 b, 2.3, 2.4, 2.5, 3, 10	Flat seal DGH	E0455.015.007	E0455.020.007	E0455.025.007	E0455.032.007	E0455.040.007	E0455.050.007	E0455.065.007	E0455.080.007	E0455.100.007

Pos.	Seat set	DN15	DN20	DN25[8]	DN32	DN40	DN50[9]	DN65	DN80	DN100
1 a, 1.1	Metal-to-metal sealing	E0455.015.008	E0455.020.008	E0455.025.008	E0455.032.008	E0455.040.008	E0455.050.008[1] / E0455.050.009[2]	E0455.065.008	E0455.080.008	E0455.100.008
1 b, 1.1	Flat seal	E0455.015.009	E0455.020.009	E0455.025.009	E0455.032.009	E0455.040.009	E0455.050.010	E0455.065.009	E0455.080.009	E0455.100.009
1 c, 1.1	DGH	E0455.015.010	E0455.020.010	E0455.025.010	E0455.032.010	E0455.040.010	E0455.050.010	E0455.065.009	E0455.080.009	E0455.100.009

Pos.	Seat assembly tool	DN15	DN20	DN25	DN32	DN40	DN50[9]	DN65	DN80	DN100
	Seat assembly tool	E0455.015.000	E0455.020.000	E0455.025.000	E0455.032.000	E0455.040.000	E0455.050.000	E0455.065.000	E0455.080.000	E0455.100.000

Pos.	Cone assembly	DN15	DN20	DN25[8]	DN32	DN40[10]	DN50[9]	DN65	DN80	DN100[11]
2 a, 2.1 a, 2.3, 3, 10	Metal-to-metal sealing	E0455.015.011	E0455.020.011	E0455.025.011	E0455.032.011	E0455.040.011	E0455.050.011[1] / E0455.050.012[2]	E0455.065.010	E0455.080.010	E0455.100.010[3] / E0455.100.011[4]
2 a, 2.1 b, 2.3, 3, 10	Metal-to-metal sealing bellows	E0455.015.012	E0455.020.012	E0455.025.012	E0455.032.012	E0455.040.012	E0455.050.0131 / E0455.050.014[2]	E0455.065.011	E0455.080.011	E0455.100.012
2 b, 2.1 c, 2.2 a, 2.3, 3, 10	Flat seal EPDM	E0455.015.013	E0455.020.013	E0455.025.013	E0455.032.013	E0455.040.013	E0455.050.015	E0455.065.012	E0455.080.012	E0455.100.013
2 b, 2.1 d, 2.2 a, 2.3, 3, 10	Flat seal EPDM bellows	E0455.015.014	E0455.020.014	E0455.025.014	E0455.032.014	E0455.040.014	E0455.050.016	E0455.065.013	E0455.080.013	E0455.100.014
2 b, 2.1 c, 2.2 a, 2.3, 3, 10	Flat seal FKMVI	E0455.015.015	E0455.020.015	E0455.025.015	E0455.032.015	E0455.040.015	E0455.050.017	E0455.065.014	E0455.080.014	E0455.100.015
2 b, 2.1 d, 2.2 a, 2.3, 3, 10	Flat seal FKMVI bellows	E0455.015.016	E0455.020.016	E0455.025.016	E0455.032.016	E0455.040.016	E0455.050.018	E0455.065.015	E0455.080.015	E0455.100.016
2 b, 2.1 c, 2.2 a, 2.3, 3, 10	Flat seal PTFE	E0455.015.017	E0455.020.017	E0455.025.017	E0455.032.017	E0455.040.017	E0455.050.019	E0455.065.016	E0455.080.016	E0455.100.017
2 b, 2.1 d, 2.2 a, 2.3, 3, 10	Flat seal PTFE bellows	E0455.015.018	E0455.020.018	E0455.025.018	E0455.032.018	E0455.040.018	E0455.050.020	E0455.065.017	E0455.080.017	E0455.100.018

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Pos.	Cone assembly	DN15	DN20	DN25[8]	DN32	DN40[10]	DN50[9]	DN65	DN80	DN100[11]
2 b, 2.1 c, 2.2 a, 2.3, 3, 10	Flat seal PTFE carbon	E0455.015.019	E0455.020.019	E0455.025.019	E0455.032.019	E0455.040.019	E0455.050.021	E0455.065.018	E0455.080.018	E0455.100.019
2 b, 2.1 d, 2.2 a, 2.3, 3, 10	Flat seal PTFE carbon bellows	E0455.015.020	E0455.020.020	E0455.025.020	E0455.032.020	E0455.040.020	E0455.050.022	E0455.065.019	E0455.080.019	E0455.100.020
2 c, 2.2 b, 2.3, 2.4, 2.5, 3, 10	Flat seal DGH	E0455.015.021	E0455.020.021	E0455.025.021	E0455.032.021	E0455.040.021	E0455.050.023	E0455.065.020	E0455.080.020	E0455.100.021

Pos.	Spindle set	DN15	DN20	DN25[8]	DN32	DN40[10]	DN50[9]	DN65	DN80	DN100[11]
3, 6, 6.2 a, 6.3, 10	without air lift[5]	E0455.015.022	E0455.020.022	E0455.025.022	E0455.032.022	E0455.040.022	E0455.050.024[1] / E0455.050.026[2]	E0455.065.021	E0455.080.021	E0455.100.022[3] / E0455.100.024[4]
3, 6, 6.1 6.2 a, 6.3, 10	Air lift[5]	E0455.015.023	E0455.020.023	E0455.025.023	E0455.032.023	E0455.040.023	E0455.050.025[1] / E0455.050.027[2]	E0455.065.022	E0455.080.022	E0455.100.023[3] / E0455.100.025[4]
3, 6, 6.1 6.2 b, 6.3, 10	DGH	E0455.015.042	E0455.020.028	E0455.025.041	E0455.032.040	E0455.040.042	E0455.050.047	E0455.065.041	E0455.080.040	E0455.100.040

Pos.	Pressure screw set	DN15	DN20	DN25[8]	DN32	DN40	DN50[9]	DN65	DN80	DN100
7, 7.1, 7.2, 7.3	Pressure screw	E0455.020.024	E0455.020.024	E0455.025.024	E0455.040.024	E0455.040.024	E0455.050.028	E0455.065.023	E0455.080.023	E0455.100.026[3] / E0455.100.027[4]

Pos.	Bellows set	DN15	DN20	DN25[8]	DN32	DN40[10]	DN50[9]	DN65	DN80	DN100[11]
5 a, 3, 10	Bellows, metal[6]	E0455.015.024	E0455.020.025	E0455.025.025	E0455.032.025	E0455.040.025	E0455.050.029	E0455.065.024	E0455.080.024	E0455.100.028
5 a, 3, 10	Bellows, metal LowPressure[7]	E0455.015.025	E0455.020.026	E0455.025.026	E0455.032.026	E0455.040.026	E0455.050.030	E0455.065.025	E0455.080.025	E0455.100.029
5 b, 5.1, 3, 10	Elastomer bellows DGH	E0455.020.027	E0455.020.027	E0455.020.027	E0455.040.027	E0455.040.027	E0455.040.027	E0455.080.026	E0455.080.026	E0455.080.026

Pos.	Pressure spring	DN15	DN20	DN25	DN32	DN40	DN50	DN65	DN80	DN100
8	Spring	Spare part numbers for springs, see document V-0219 Spring tables								

[1] Set pressure > 3.0 bar for version without bellows
[2] Set pressure ≤ 3.0 bar for version without bellows, always for version with bellows
[3] Set pressure ≤ 10.0 bar
[4] Set pressure > 10.0 bar
[5] For versions with metal bellows, please enquire about spare part numbers
[6] DN15 - DN40 Set pressure > 5.0 bar, DN50 Set pressure > 4.0 bar, DN65 - DN100 Set pressure > 3.5 bar
[7] DN15 - DN40 Set pressure ≤ 5.0 bar, DN50 Set pressure ≤ 4.0 bar, DN65 - DN100 Set pressure ≤ 3.5 bar
[8] From serial number 1000442176, please use spare part numbers for version 455 Redesign.
[9] From serial number 1001326120, please use spare part numbers for version 455 Redesign.

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For new enquiries, please specify the complete type code and set pressure; for existing valves, please also specify the serial number.

Spare parts sets in series 355

Valid for standard version; please enquire about options Sxx, Axx, and Pxx.

Pos.	Maintenance kits	DN15	DN20	DN25	DN32	DN40[10]	DN50	DN65	DN80	DN100[11]
1.1, 2.3, 3, 4, 9, 10	Maintenance kit	E0455.015.001	E0455.020.001	E0455.025.001	E0455.032.001	E0455.040.001	E0455.050.001	E0455.065.001	E0455.080.001	E0455.100.001

Pos.	Primary seal set	DN15	DN20	DN25	DN32	DN40[10]	DN50	DN65	DN80	DN100[11]
2 a, 2.3, 3, 10	Cone Metallic seal[1]	E0355.015.009	E0355.020.009	E0355.025.009	E0355.032.009	E0355.040.009	E0355.050.009	E0355.065.009	E0355.080.009	E0355.100.009
2.2 a, 2.3, 3, 10	Flat seal EPDM	E0455.015.003	E0455.020.003	E0455.025.003	E0455.032.003	E0455.040.003	E0455.050.003	E0455.065.003	E0455.080.003	E0455.100.003
2.2 a, 2.3, 3, 10	Flat seal FKMVI	E0455.015.004	E0455.020.004	E0455.025.004	E0455.032.004	E0455.040.004	E0455.050.004	E0455.065.004	E0455.080.004	E0455.100.004
2.2 a, 2.3, 3, 10	Flat seal PTFE	E0455.015.005	E0455.020.005	E0455.025.005	E0455.032.005	E0455.040.005	E0455.050.005	E0455.065.005	E0455.080.005	E0455.100.005
2.2 a, 2.3, 3, 10	Flat seal PTFE K	E0455.015.006	E0455.020.006	E0455.025.006	E0455.032.006	E0455.040.006	E0455.050.006	E0455.065.006	E0455.080.006	E0455.100.006
2.2 b, 2.3, 2.4, 2.5, 3, 10	Flat seal DGH	E0455.015.007	E0455.020.007	E0455.025.007	E0455.032.007	E0455.040.007	E0455.050.007	E0455.065.007	E0455.080.007	E0455.100.007

Pos.	Seat set	DN15	DN20	DN25[9]	DN32	DN40	DN50	DN65	DN80	DN100
1 a, 1.1	Metal-to-metal sealing	E0455.015.008	E0455.020.008	E0455.025.008	E0455.032.008	E0455.040.008	E0455.050.009	E0455.065.008	E0455.080.008	E0455.100.008
1 b, 1.1	Flat seal	E0455.015.009	E0455.020.009	E0455.025.009	E0455.032.009	E0455.040.009	E0455.050.010	E0455.065.009	E0455.080.009	E0455.100.009
1 c, 1.1	DGH	E0455.015.010	E0455.020.010	E0455.025.010	E0455.032.010	E0455.040.010	E0455.050.010	E0455.065.009	E0455.080.009	E0455.100.009

Pos.	Seat assembly tool	DN15	DN20	DN25	DN32	DN40	DN50	DN65	DN80	DN100
	Seat assembly tool	E0455.015.000	E0455.020.000	E0455.025.000	E0455.032.000	E0455.040.000	E0455.050.000	E0455.065.000	E0455.080.000	E0455.100.000

Pos.	Cone assembly	DN15	DN20	DN25	DN32	DN40[10]	DN50	DN65	DN80	DN100[11]
2 a, 2.1 a, 2.3, 3, 10	Metal-to-metal sealing	E0355.015.001	E0355.020.001	E0355.025.001	E0355.032.001	E0355.040.001	E0355.050.001	E0355.065.001	E0355.080.001	E0355.100.001
2 a, 2.1 b, 2.3, 3, 10	Metal-to-metal sealing bellows	E0455.015.012	E0455.020.012	E0455.025.012	E0455.032.012	E0455.040.012	E0455.050.013[3] / E0455.050.014[4]	E0455.065.011	E0455.080.011	E0455.100.012
2 b, 2.1 c, 2.2 a, 2.3, 3, 10	Flat seal EPDM	E0355.015.002	E0355.020.002	E0355.025.002	E0355.032.002	E0355.040.002	E0355.050.002	E0355.065.002	E0355.080.002	E0355.100.002
2 b, 2.1 d, 2.2 a, 2.3, 3, 10	Flat seal EPDM bellows	E0455.015.014	E0455.020.014	E0455.025.014	E0455.032.014	E0455.040.014	E0455.050.016	E0455.065.013	E0455.080.013	E0455.100.014
2 b, 2.1 c, 2.2 a, 2.3, 3, 10	Flat seal FKMVI	E0355.015.003	E0355.020.003	E0355.025.003	E0355.032.003	E0355.040.003	E0355.050.003	E0355.065.003	E0355.080.003	E0355.100.003
2 b, 2.1 d, 2.2 a, 2.3, 3, 10	Flat seal FKMVI bellows	E0455.015.016	E0455.020.016	E0455.025.016	E0455.032.016	E0455.040.016	E0455.050.018	E0455.065.015	E0455.080.015	E0455.100.016
2 b, 2.1 c, 2.2 a, 2.3, 3, 10	Flat seal PTFE	E0355.015.004	E0355.020.004	E0355.025.004	E0355.032.004	E0355.040.004	E0355.050.004	E0355.065.004	E0355.080.004	E0355.100.004
2 b, 2.1 d, 2.2 a, 2.3, 3, 10	Flat seal PTFE bellows	E0455.015.018	E0455.020.018	E0455.025.018	E0455.032.018	E0455.040.018	E0455.050.020	E0455.065.017	E0455.080.017	E0455.100.018

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Pos.	Cone assembly	DN15	DN20	DN25	DN32	DN40[10]	DN50	DN65	DN80	DN100[11]
2 b, 2.1 c, 2.2 a, 2.3, 3, 10	Flat seal PTFE carbon	E0355.015.005	E0355.020.005	E0355.025.005	E0355.032.005	E0355.040.005	E0355.050.005	E0355.065.005	E0355.080.005	E0355.100.005
2 b, 2.1 d, 2.2 a, 2.3, 3, 10	Flat seal PTFE carbon bellows	E0455.015.020	E0455.020.020	E0455.025.020	E0455.032.020	E0455.040.020	E0455.050.022	E0455.065.019	E0455.080.019	E0455.100.020
2 c, 2.2 b, 2.3, 2.4, 2.5, 3, 10	Flat seal DGH	E0355.015.006	E0355.020.006	E0355.025.006	E0355.032.006	E0355.040.006	E0355.050.006	E0355.065.006	E0355.080.006	E0355.100.006

Pos.	Spindle set	DN15	DN20	DN25	DN32	DN40[10]	DN50	DN65	DN80	DN100[11]
3, 6, 6.2 a, 6.3, 10	without air lift[5]	E0355.015.007	E0355.020.007	E0355.025.007	E0355.032.007	E0355.040.007	E0355.050.007	E0355.065.007	E0355.080.007	E0355.100.007
3, 6, 6.1 6.2 a, 6.3, 10	Air lift[5]	E0355.015.008	E0355.020.008	E0355.025.008	E0355.032.008	E0355.040.008	E0355.050.008	E0355.065.008	E0355.080.008	E0355.100.008
3, 6, 6.1 6.2 b, 6.3, 10	DGH	E0355.015.026	E0355.020.011	E0355.025.025	E0355.032.023	E0355.040.025	E0355.050.026	E0355.065.026	E0355.080.025	E0355.100.020

Pos.	Pressure screw set	DN15	DN20	DN25	DN32	DN40	DN50	DN65	DN80	DN100
7, 7.1, 7.2, 7.3	Pressure screw [1,2]	E0355.020.010	E0355.020.010	E0355.025.010	E0355.040.010	E0355.040.010	E0355.050.010	E0355.065.010	E0355.080.010 / E0355.080.011[6]	E0355.100.010

Pos.	Bellows set	DN15	DN20	DN25	DN32	DN40[10]	DN50	DN65	DN80	DN100[11]
5 a, 3, 10	Metallic bellows[7]	E0455.015.025	E0455.020.025	E0455.025.025	E0455.032.025	E0455.040.025	E0455.050.029	E0455.065.024	E0455.080.024	E0455.100.028
5 a, 3, 10	Metallic bellows LowPressure[8]	E0455.015.026	E0455.020.026	E0455.025.026	E0455.032.026	E0455.040.026	E0455.050.030	E0455.065.025	E0455.080.025	E0455.100.029
5 b, 5.1, 3, 10	Elastomer bellows DGH	E0455.020.027	E0455.020.027	E0455.020.027	E0455.040.027	E0455.040.027	E0455.040.027	E0455.080.026	E0455.080.026	E0455.080.026

Pos.	Pressure spring	DN15	DN20	DN25	DN32	DN40	DN50	DN65	DN80	DN100
8	Spring[1]	Spare part numbers for springs, see document V-0219 Spring tables								

[1] For versions with metal bellows, please use spare part number from series 455, except for pressure screw DN80
[2] For DGH versions, please use spare part number from series 455, except for DN15 and DN32
[3] Set pressure > 3.0 bar for version without bellows
[4] Set pressure ≤ 3.0 bar for version without bellows, always for version with bellows
[5] For version with metal bellows, please enquire for spare part numbers
[6] Metal bellows version
[7] DN15 - DN40 Set pressure > 5.0 bar, DN50 Set pressure > 4.0 bar, DN65 - DN100 Set pressure > 3.5 bar
[8] DN15 - DN40 Set pressure ≤ 5.0 bar, DN50 Set pressure ≤ 4.0 bar, DN65 - DN100 Set pressure ≤ 3.5 bar
[9] From serial number 1001084255, please use spare part numbers for version 455 Redesign
[10] For versions with metal bellows from serial number 1001573762, please enquire about spare part numbers
[11] For versions with metal bellows from serial number 1001533617, please enquire about spare part numbers

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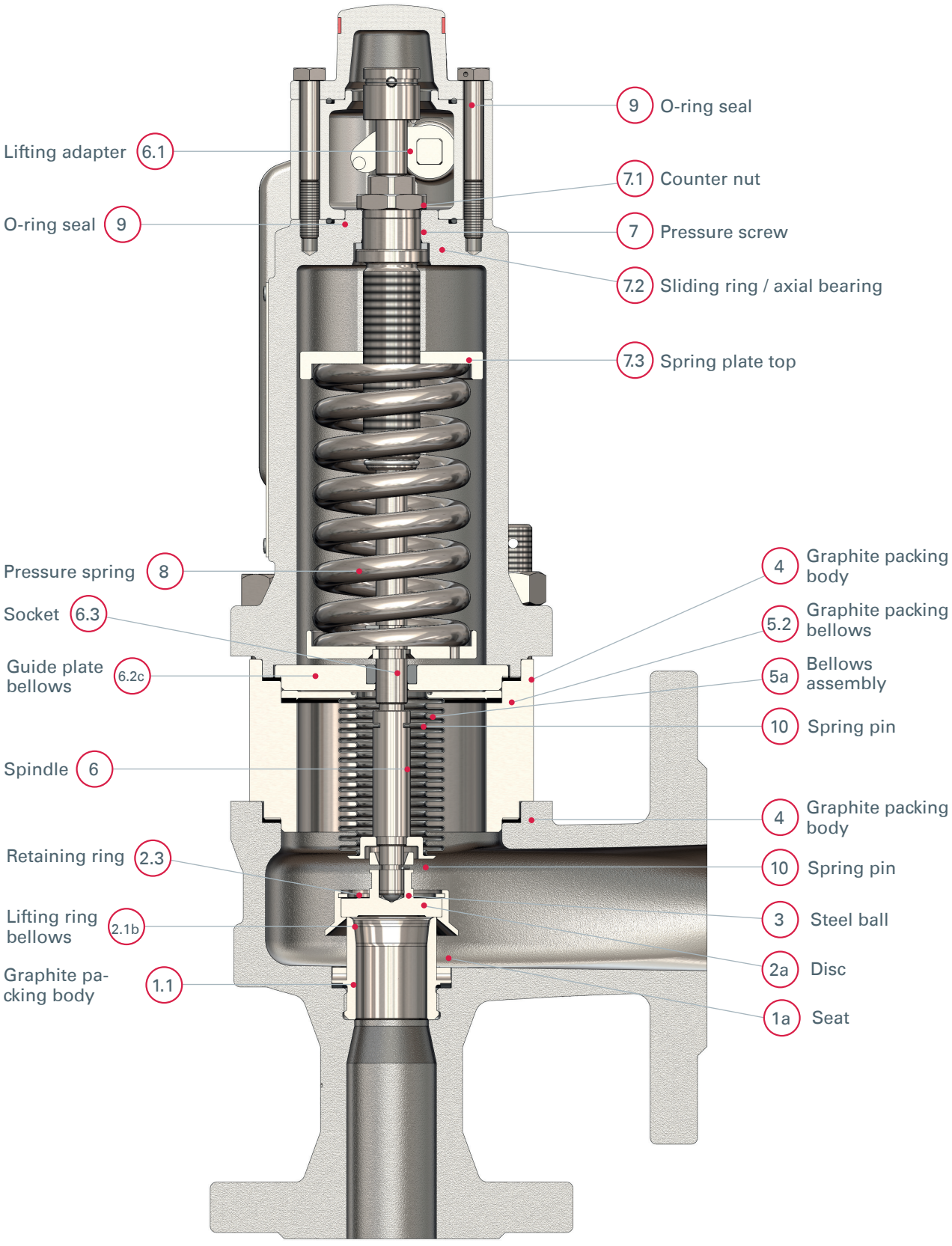
For new enquiries, please specify the complete type code and set pressure; for existing valves, please also specify the serial number.

V-0196 SPARE PARTS OVERVIEW

Series 255, 255 ANSI, 455 Redesign, 455 ANSI

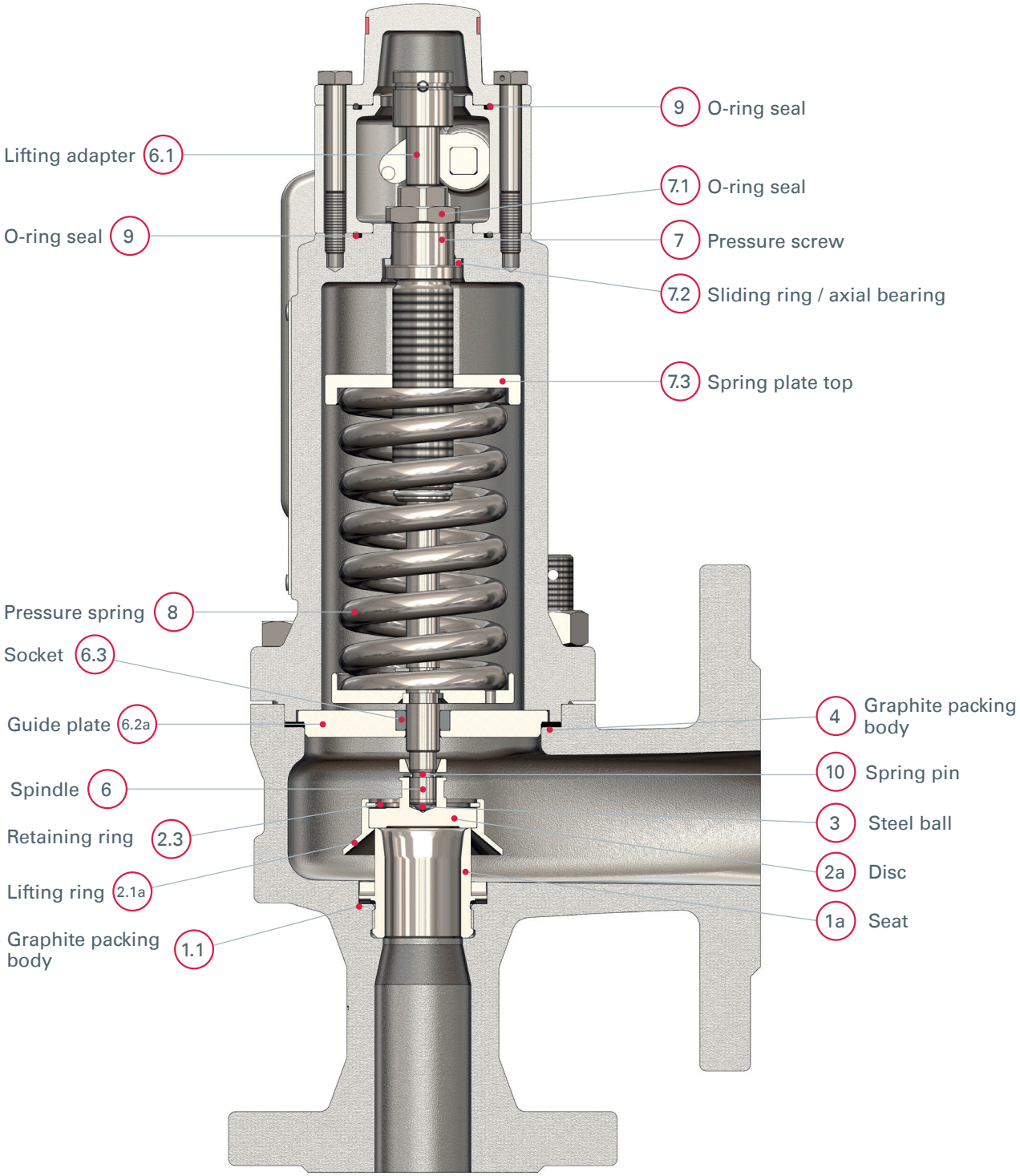
2.1 Metallic bellows design, lifting device, metal-to-metal sealing



■ INDIVIDUAL PARTS METAL BELLOWS DESIGN, LIFTING DEVICE, METAL-TO-METAL SEALING

Pos.	Description	Material 455 Redesign	Material 255
1a	Seat	1.4404 / 316L	1.4404 / 316L
1.1	Graphite packing Seat	Graphite + 1.4401 / Graphite + 316L	Graphit + 1.4401 / Graphit + 316L
2a	Plug	1.4404 / 316L	1.4122 / Hardened stainless steel
2.1b	Lift ring Bellows	1.4404 / 316L	1.4021 / 420
2.3	Retaining ring	Stainless steel	stainless steel
3	Steel ball	1.4401 / 316L	1.4401 / 316L
4	Graphite packing Body	Graphite + 1.4401 / Graphite + 316L	Graphit + 1.4401 / Graphit + 316L
5a	Bellows assembly	1.4571 / 316Ti	1.4571 / 316Ti
5.2	Graphite packing Bellows	Graphite + 1.4401 / Graphite + 316L	Graphit + 1.4401 / Graphit + 316L
6	Spindle	1.4404 / 316L	1.4021 / 420
6.1	Lifting adapter	1.4404 / 316L	1.4404 / 316L
6.2c	Guide plate Bellows	1.4404 / 316L	1.4021 / 420
6.3	Bushing	Ni-graphite	Ni-Graphit
7	Pressure screw	1.4404 / 316L	1.4122 / Hardened stainless steel
7.1	Lock nut	1.4404 / 316L	1.4404 / 316L
7.2	Sliding disc / axial bearing	PEEK, steel / PEEL, steel	PEEK, Stahl / PEEL, steel
7.3	Upper spring plate	1.4404 / 316L	1.4104 / 430F
8	Spring	1.4310 / 302	1.8159 / 6150
9	O-ring seal	EPDM	EPDM
10	Spring pin	1.4310 / 302	1.4310 / 302

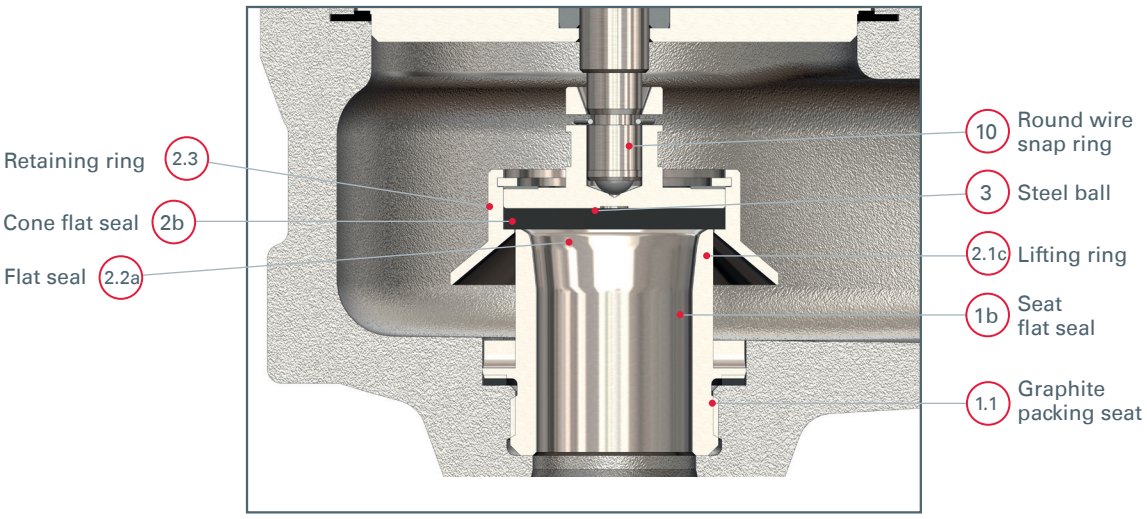
2.2 Version without bellows, lifting device, metal-to-metal sealing



■ INDIVIDUAL PARTS VERSION WITHOUT BELLOWS, LIFTING DEVICE, METAL-TO-METAL SEALING

Pos.	Description	Material 455 Redesign	Material 255
1a	Seat	1.4404 / 316L	1.4404 / 316L
1.1	Graphite packing Seat	Graphite + 1.4401 / Graphite + 316L	Graphit + 1.4401 / Graphit + 316L
2a	Cone	1.4404 / 316L	1.4122 / Hardened stainless steel
2.1a	Lift ring	1.4404 / 316L	1.4021 / 420
2.3	Retaining ring	Stainless steel	stainless steel
3	Steel ball	1.4401 / 316L	1.4401 / 316L
4	Graphite packing Body	Graphite + 1.4401 / Graphite + 316L	Graphit + 1.4401 / Graphit + 316L
6	Spindle	1.4404 / 316L	1.4021 / 420
6.1	Lifting adapter	1.4404 / 316L	1.4404 / 316L
6.2a	Guide plate	1.4404 / 316L	1.4021 / 420
6.3	Bushing	Ni-graphite	Ni-Graphit
7	Pressure screw	1.4404 / 316L	1.4122 / Hardened stainless steel
7.1	Lock nut	1.4404 / 316L	1.4404 / 316L
7.2	Sliding disc / axial bearing	PEEK, steel / PEEL, steel	PEEK, Stahl / PEEL, steel
7.3	Spring plate, top	1.4404 / 316L	1.4104 / 430F
8	Spring	1.4310 / 302	1.8159 / 6150
9	O-ring seal	EPDM	EPDM
10	Spring pin	1.4310 / 302	1.4310 / 302

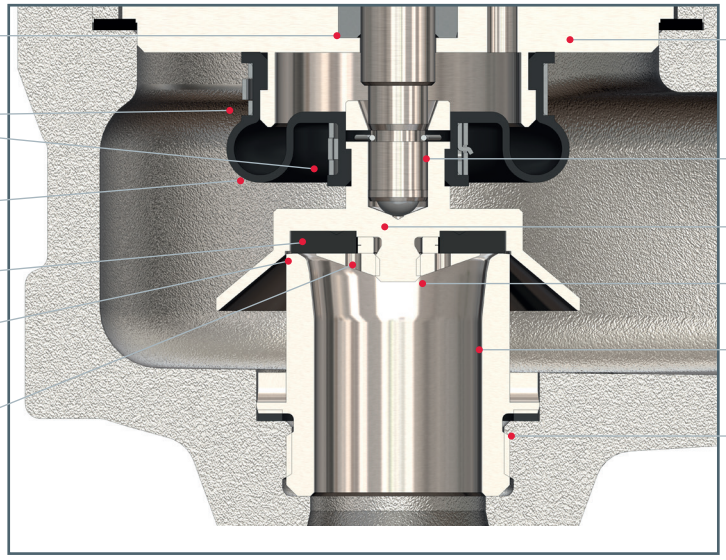
2.3 Version with continuous flat seal



■ INDIVIDUAL PART VERSION WITH CONTINUOUS FLAT SEAL

Pos.	Description	Material 455	Material 355	Material 455 Redesign	Material 255
1b	Seat flat seal	1.4404 / 316L	1.4404 / 316L	1.4404 / 316L	1.4404 / 316L
1.1	Graphite packing seat	Graphite + 1.4401 / Graphite + 316L	Graphite + 1.4401 / Graphite + 316L	Graphite + 1.4401 / Graphite + 316L	Graphite + 1.4401 / Graphite + 316L
2b	Cone flat seal	1.4404 / 316L	1.4122 / Hardened stainless steel	1.4404 / 316L	1.4122 / Hardened stainless steel
2.1c	Lift ring flat seal	1.4404 / 316L	1.4021 / 420	1.4404 / 316L	1.4021 / 420
2.2a	Flat seal	EPDM, FKM, PTFE	EPDM, FKM, PTFE	EPDM, FKM, PTFE	EPDM, FKM, PTFE
2.3	Retaining ring	Stainless steel	Stainless steel	Stainless steel	Stainless steel
3	Steel ball	1.4401 / 316L	1.4401 / 316L	1.4401 / 316L	1.4401 / 316L
10	Round wire snap ring	Stainless steel	Stainless steel	1.4310 / 302	1.4310 / 302

2.4 Version D/G/H



■ SPARE PARTS VERSION DGH

Pos.	Description	Material 455 Redesign	Material 255
1c	Seat D/G/H	1.4404 / 316L	1.4404 / 316L
1.1	Graphite packing Seat	Graphite + 1.4401 / Graphite + 316L	Graphite + 1.4401 / Graphite + 316L
2c	Plug D/G/H	1.4404 / 316L	1.4122 / Hardened stainless steel
2.2b	Flat seal D/G/H	EPDM	EPDM
2.3	Retaining ring	Stainless steel	Stainless steel
2.4	Plug nut	1.4404 / 316L	1.4404 / 316L
2.5	Wedge lock washer	Stainless steel	Stainless steel
3	Steel ball	1.4401 / 316L	1.4401 / 316L
5b	Bellows D/G/H	EPDM	EPDM
5.1	Clamps	1.4301 / 304	1.4301 / 304
6.2b	Guide plate D/G/H	1.4404 / 316L	1.4021 / 420
6.3	Bushing	Ni-graphite	Ni-graphite
10	Spring pin	1.4310 / 302	1.4310 / 302

Spare parts sets in series 455 redesign

Valid for standard version; please enquire about options Sxx, Axx and Pxx.

Pos.	Maintenance kits	DN15	DN20	DN25	DN32	DN40	DN50	DN65	DN80	DN100
1.1, 2.3, 3, 4, 5.2, 9, 10	Maintenance kit	E0455.015.046	E0455.020.029	E0455.025.044	E0455.032.043	E0455.040.047	E0455.050.051	E0455.065.043	E0455.080.044	E0455.100.044

Pos.	Primary seal set	DN15	DN20	DN25	DN32	DN40	DN50	DN65	DN80	DN100
2 a, 2.3, 3, 10	Plug Metal-to-metal sealing	E0455.015.047	E0455.020.030	E0455.025.045	E0455.032.044	E0455.040.048	E0455.050.052	E0455.065.044	E0455.080.045	E0455.100.045
2.2 a, 2.3, 3, 10	Flat seal EPDM	E0455.015.048	E0455.020.031	E0455.025.046	E0455.032.045	E0455.040.049	E0455.050.053	E0455.065.045	E0455.080.046	E0455.100.046
2.2 a, 2.3, 3, 10	Flat seal FKMVI	E0455.015.049	E0455.020.032	E0455.025.047	E0455.032.046	E0455.040.050	E0455.050.054	E0455.065.046	E0455.080.047	E0455.100.047
2.2 a, 2.3, 3, 10	Flat seal PTFE	E0455.015.050	E0455.020.033	E0455.025.048	E0455.032.047	E0455.040.051	E0455.050.055	E0455.065.047	E0455.080.048	E0455.100.048
2.2 a, 2.3, 3, 10	Flat seal PTFE K	E0455.015.051	E0455.020.034	E0455.025.049	E0455.032.048	E0455.040.052	E0455.050.056	E0455.065.048	E0455.080.049	E0455.100.049
2.2 b, 2.3, 2.4, 2.5, 3, 10	Flat seal DGH	E0455.015.052	E0455.020.035	E0455.025.050	E0455.032.049	E0455.040.053	E0455.050.057	E0455.065.049	E0455.080.050	E0455.100.050

Pos.	Seat set	DN15	DN20	DN25	DN32	DN40	DN50	DN65	DN80	DN100
1 a, 1.1	Metal-to-metal sealing	E0455.015.008	E0455.020.008	E0455.025.051	E0455.032.008	E0455.040.008	E0455.050.009	E0455.065.008	E0455.080.008	E0455.100.008
1 b, 1.1	Flat seal	E0455.015.009	E0455.020.009	E0455.025.052	E0455.032.009	E0455.040.009	E0455.050.010	E0455.065.009	E0455.080.009	E0455.100.009
1 c, 1.1	DGH	E0455.015.010	E0455.020.010	E0455.025.053	E0455.032.010	E0455.040.010	E0455.050.010	E0455.065.009	E0455.080.009	E0455.100.009

Pos.	Seat assembly tool	DN15	DN20	DN25	DN32	DN40	DN50	DN65	DN80	DN100
	Seat assembly tool	E0455.015.000	E0455.020.000	E0455.025.000	E0455.032.000	E0455.040.000	E0455.050.000	E0455.065.000	E0455.080.000	E0455.100.000

Pos.	Cone assembly	DN15	DN20	DN25	DN32	DN40	DN50	DN65	DN80	DN100
2 a, 2.1 a, 2.3, 3, 10	Metal-to-metal sealing	E0455.015.056	E0455.020.039	E0455.025.054	E0455.032.053	E0455.040.057	E0455.050.060	E0455.065.052	E0455.080.053	E0455.100.053
2 a, 2.1 b, 2.3, 3, 10	Metal-to-metal sealing bellows	E0455.015.057	E0455.020.040	E0455.025.055	E0455.032.054	E0455.040.058	E0455.050.061	E0455.065.053	E0455.080.054	E0455.100.054
2 b, 2.1 c, 2.2 a, 2.3, 3, 10	Flat seal EPDM	E0455.015.058	E0455.020.041	E0455.025.056	E0455.032.055	E0455.040.059	E0455.050.062	E0455.065.054	E0455.080.055	E0455.100.055
2 b, 2.1 d, 2.2 a, 2.3, 3, 10	Flat seal EPDM bellows	E0455.015.059	E0455.020.042	E0455.025.057	E0455.032.056	E0455.040.060	E0455.050.063	E0455.065.055	E0455.080.056	E0455.100.056
2 b, 2.1 c, 2.2 a, 2.3, 3, 10	Flat seal FKMVI	E0455.015.060	E0455.020.043	E0455.025.058	E0455.032.057	E0455.040.061	E0455.050.064	E0455.065.056	E0455.080.057	E0455.100.057
2 b, 2.1 d, 2.2 a, 2.3, 3, 10	Flat seal FKMVI bellows	E0455.015.061	E0455.020.044	E0455.025.059	E0455.032.058	E0455.040.062	E0455.050.065	E0455.065.057	E0455.080.058	E0455.100.058
2 b, 2.1 c, 2.2 a, 2.3, 3, 10	Flat seal PTFE	E0455.015.062	E0455.020.045	E0455.025.060	E0455.032.059	E0455.040.063	E0455.050.066	E0455.065.058	E0455.080.059	E0455.100.059
2 b, 2.1 d, 2.2 a, 2.3, 3, 10	Flat seal PTFE bellows	E0455.015.063	E0455.020.046	E0455.025.061	E0455.032.060	E0455.040.064	E0455.050.067	E0455.065.059	E0455.080.060	E0455.100.060

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Pos.	Cone assembly	DN15	DN20	DN25	DN32	DN40	DN50	DN65	DN80	DN100
2 b, 2.1 c, 2.2 a, 2.3, 3, 10	Flat seal PTFE carbon	E0455.015.064	E0455.020.047	E0455.025.062	E0455.032.061	E0455.040.065	E0455.050.068	E0455.065.060	E0455.080.061	E0455.100.061
2 b, 2.1 d, 2.2 a, 2.3, 3, 10	Flat seal PTFE carbon bellows	E0455.015.065	E0455.020.048	E0455.025.063	E0455.032.062	E0455.040.066	E0455.050.069	E0455.065.061	E0455.080.062	E0455.100.062
2 c, 2.2 b, 2.3, 2.4, 2.5, 3, 10	Flat seal DGH	E0455.015.066	E0455.020.049	E0455.025.064	E0455.032.063	E0455.040.067	E0455.050.070	E0455.065.062	E0455.080.063	E0455.100.063

Pos.	Spindle set	DN15	DN20	DN25	DN32	DN40	DN50	DN65	DN80	DN100
3, 6, 6.2 a, 6.3, 10	without lifting device	E0455.020.050	E0455.020.050	E0455.025.065	E0455.032.064	E0455.040.068	E0455.050.071	E0455.065.063	E0455.080.064	E0455.100.064
3, 6, 6.1 6.2 a, 6.3, 10	Lifting device	E0455.020.051	E0455.020.051	E0455.025.066	E0455.032.065	E0455.040.069	E0455.050.072	E0455.065.064	E0455.080.065	E0455.100.065
3, 6, 6.2 c, 6.3, 10	Bellows, without lifting device[3]	E0455.020.052	E0455.020.052	E0455.025.067	E0455.032.066	E0455.040.070	E0455.050.073	E0455.065.065	E0455.080.066	E0455.100.066
3, 6, 6.1 6.2 c, 6.3, 10	Bellows, lifting device[3]	E0455.020.053	E0455.020.053	E0455.025.068	E0455.032.067	E0455.040.071	E0455.050.074	E0455.065.066	E0455.080.067	E0455.100.067
3, 6, 6.1 6.2 b, 6.3, 10	DGH	E0455.020.054	E0455.020.054	E0455.025.069	E0455.032.068	E0455.040.072	E0455.050.075	E0455.065.067	E0455.080.068	E0455.100.068

Pos.	Pressure screw set	DN15	DN20	DN25	DN32	DN40	DN50	DN65	DN80	DN100
7, 7.1, 7.2, 7.3	Pressure screw	E0455.020.055	E0455.020.055	E0455.025.070	E0455.040.073	E0455.040.073	E0455.050.076	E0455.065.068	E0455.080.069	E0455.100.069

Pos.	Bellows set	DN15	DN20	DN25	DN32	DN40	DN50	DN65	DN80	DN100
5 a, 5.2, 3, 10	Metallic bellows[1]	E0455.015.067	E0455.020.056	E0455.025.071	E0455.032.069	E0455.040.074	E0455.050.077	E0455.065.069	E0455.080.070	E0455.100.070
5 a, 5.2, 3, 10	Metallic bellows LowPressure[2]	E0455.015.068	E0455.020.057	E0455.025.072	E0455.032.070	E0455.040.075	E0455.050.078	E0455.065.070	E0455.080.071	E0455.100.071
5 b, 5.1, 3, 10	Elastomer bellows DGH	E0455.020.058	E0455.020.058	E0455.020.058	E0455.040.076	E0455.040.076	E0455.040.076	E0455.080.072	E0455.080.072	E0455.080.072

Pos.	Pressure spring	DN15	DN20	DN25	DN32	DN40	DN50	DN65	DN80	DN100
8	Spring	Spare part numbers for springs, see document V-0219 spring tables								

[1] DN15 - DN40 Set pressure > 5.0 bar, DN50 Set pressure > 4.0 bar, DN65 - DN100 Set pressure > 3.5 bar
[2] DN15 - DN40 Set pressure ≤ 5.0 bar, DN50 Set pressure ≤ 4.0 bar, DN65 - DN100 Set pressure ≤ 3.5 bar
[3] only with metallic bellows LowPressure, see note[2]

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Spare parts sets in series 455 ANSI

Valid for standard version; please enquire about options Sxx, Axx and Pxx.

Pos.	Maintenance kits	DN15	DN25	DN32	DN40	DN50	DN65	DN100
1.1, 2.3, 3, 4, 5.2, 9, 10	Maintenance kit	E0455.015.046	E0455.025.044	E0455.032.043	E0455.040.047	E0455.050.051	E0455.065.043	E0455.100.044

Pos.	Primary seal set	DN15	DN25	DN32	DN40	DN50	DN65	DN100
2 a, 2.3, 3, 10	Plug Metal-to-metal sealing	E0455.015.047	E0455.025.045	E0455.032.044	E0455.040.048	E0455.050.052	E0455.065.044	E0455.100.045
2.2 a, 2.3, 3, 10	Flat seal EPDM	E0455.015.048	E0455.025.046	E0455.032.045	E0455.040.049	E0455.050.053	E0455.065.045	E0455.100.046
2.2 a, 2.3, 3, 10	Flat seal FKMVI	E0455.015.049	E0455.025.047	E0455.032.046	E0455.040.050	E0455.050.054	E0455.065.046	E0455.100.047
2.2 a, 2.3, 3, 10	Flat seal PTFE	E0455.015.050	E0455.025.048	E0455.032.047	E0455.040.051	E0455.050.055	E0455.065.047	E0455.100.048
2.2 a, 2.3, 3, 10	Flat seal PTFE K	E0455.015.051	E0455.025.049	E0455.032.048	E0455.040.052	E0455.050.056	E0455.065.048	E0455.100.049
2.2 b, 2.3, 2.4, 2.5, 3, 10	Flat seal DGH	E0455.015.052	E0455.020.035	E0455.025.050	E0455.032.049	E0455.040.053	E0455.050.057	E0455.065.049

Pos.	Seat set	DN15	DN25	DN32	DN40	DN50	DN65	DN100
1 a, 1.1	Metal-to-metal sealing	E0455.015.008	E0455.025.051	E0455.032.008	E0455.040.008	E0455.050.009	E0455.065.008	E0455.100.008
1 b, 1.1	Flat seal	E0455.015.009	E0455.025.052	E0455.032.009	E0455.040.009	E0455.050.010	E0455.065.009	E0455.100.009

Pos.	Seat assembly tool	DN15	DN25	DN32	DN40	DN50	DN65	DN100
	Seat assembly tool	E0455.015.000	E0455.025.000	E0455.032.000	E0455.040.000	E0455.050.000	E0455.065.000	E0455.100.000

Pos.	Cone assembly	DN15	DN25	DN32	DN40	DN50	DN65	DN100
2 a, 2.1 a, 2.3, 3, 10	Metal-to-metal sealing	E0455.015.056	E0455.025.055	E0455.032.054	E0455.040.058	E0455.050.060	E0455.065.052	E0455.100.072
2 a, 2.1 b, 2.3, 3, 10	Metal-to-metal sealing bellows	E0455.015.057	E0455.025.055	E0455.032.054	E0455.040.058	E0455.050.061	t.b.d.	t.b.d.
2 b, 2.1 c, 2.2 a, 2.3, 3, 10	Flat seal EPDM	E0455.015.058	E0455.025.057	E0455.032.056	E0455.040.060	E0455.050.062	E0455.065.054	E0455.100.074
2 b, 2.1 d, 2.2 a, 2.3, 3, 10	Flat seal EPDM bellows	E0455.015.059	E0455.025.057	E0455.032.056	E0455.040.060	E0455.050.063	t.b.d.	t.b.d.
2 b, 2.1 c, 2.2 a, 2.3, 3, 10	Flat seal FKMVI	E0455.015.060	E0455.025.059	E0455.032.058	E0455.040.062	E0455.050.064	E0455.065.056	E0455.100.076
2 b, 2.1 d, 2.2 a, 2.3, 3, 10	Flat seal FKMVI bellows	E0455.015.061	E0455.025.059	E0455.032.058	E0455.040.062	E0455.050.065	t.b.d.	t.b.d.
2 b, 2.1 c, 2.2 a, 2.3, 3, 10	Flat seal PTFE	E0455.015.062	E0455.025.061	E0455.032.060	E0455.040.064	E0455.050.066	E0455.065.058	E0455.100.078
2 b, 2.1 d, 2.2 a, 2.3, 3, 10	Flat seal PTFE bellows	E0455.015.063	E0455.020.046	E0455.025.061	E0455.032.060	E0455.040.064	E0455.050.067	E0455.065.059

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Pos.	Cone assembly	DN15	DN25	DN32	DN40	DN50	DN65	DN100
2 b, 2.1 d, 2.2 a, 2.3, 3, 10	Flat seal PTFE Bellows	E0455.015.063	E0455.025.061	E0455.032.060	E0455.040.064	E0455.050.067	t.b.d.	t.b.d.
2 b, 2.1 c, 2.2 a, 2.3, 3, 10	Flat seal PTFE carbon	E0455.015.064	E0455.025.063	E0455.032.062	E0455.040.066	E0455.050.068	E0455.065.060	E0455.100.080
2 b, 2.1 d, 2.2 a, 2.3, 3, 10	Flat seal PTFE carbon bellows	E0455.015.065	E0455.025.063	E0455.032.062	E0455.040.066	E0455.050.069	t.b.d.	t.b.d.

Pos.	Spindle set	DN15	DN25	DN32	DN40	DN50	DN65	DN100
3, 6, 6.2 a, 6.3, 10	without lifting device	E0455.020.050	E0455.025.065	E0455.032.064	E0455.040.068	E0455.050.071	E0455.065.063	E0455.100.064
3, 6, 6.1 6.2 a, 6.3, 10	Lifting device	E0455.020.051	E0455.025.066	E0455.032.065	E0455.040.069	E0455.050.072	E0455.065.064	E0455.100.065
3, 6, 6.2 c, 6.3, 10	Bellows, without lifting device	E0455.020.052	E0455.025.067	E0455.032.066	E0455.040.070	E0455.050.073	E0455.065.065	E0455.100.066
3, 6, 6.1 6.2 c, 6.3, 10	Bellows, lifting device	E0455.020.053	E0455.025.068	E0455.032.067	E0455.040.071	E0455.050.074	E0455.065.066	E0455.100.067

Pos.	Pressure screw set	DN15	DN25	DN32	DN40	DN50	DN65	DN100
7, 7.1, 7.2, 7.3	Pressure screw	E0455.020.055	E0455.025.070	E0455.040.073	E0455.040.073	E0455.050.076	E0455.065.068	E0455.100.069

Pos.	Bellows set	DN15	DN25	DN32	DN40	DN50	DN65	DN100
5 a, 5.2, 3, 10	Metallic bellows[1]	E0455.015.067	E0455.025.071	E0455.032.069	E0455.040.074	E0455.050.077	E0455.065.069	E0455.100.070
5 a, 5.2, 3, 10	Metallic bellows LowPressure[2]	E0455.015.068	E0455.025.072	E0455.032.070	E0455.040.075	E0455.050.078	E0455.065.070	E0455.100.071

Pos.	Pressure spring	DN15	DN20	DN25	DN32	DN40	DN50	DN65
8	Spring	Spare part numbers for springs, see document V-0219 spring tables						

[1] DN15 - DN40 Set pressure > 5.0 bar, DN50 Set pressure > 4.0 bar, DN65 - DN100 Set pressure > 3.5 bar
[2] DN15 - DN40 Set pressure ≤ 5.0 bar, DN50 Set pressure ≤ 4.0 bar, DN65 - DN100 Set pressure ≤ 3.5 bar

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Spare parts sets in series 255

Valid for standard version; please enquire about options Sxx, Axx and Pxx.

Pos.	Maintenance kits	DN15	DN20	DN25	DN32	DN40	DN50	DN65	DN80	DN100
1.1, 2.3, 3, 4, 5.2, 9, 10	Maintenance kit	E0455.015.046	E0455.020.029	E0455.025.044	E0455.032.043	E0455.040.047	E0455.050.051	E0455.065.043	E0455.080.044	E0455.100.044

Pos.	Primary seal set	DN15	DN20	DN25	DN32	DN40	DN50	DN65	DN80	DN100
2 a, 2.3, 3, 10	Plug Metal-to-metal sealing	E0255.015.001	E0255.020.001	E0255.025.001	E0255.032.001	E0255.040.001	E0255.050.001	E0255.065.001	E0255.080.001	E0255.100.001
2.2 a, 2.3, 3, 10	Flat seal EPDM	E0455.015.048	E0455.020.031	E0455.025.046	E0455.032.045	E0455.040.049	E0455.050.053	E0455.065.045	E0455.080.046	E0455.100.046
2.2 a, 2.3, 3, 10	Flat seal FKMVI	E0455.015.049	E0455.020.032	E0455.025.047	E0455.032.046	E0455.040.050	E0455.050.054	E0455.065.046	E0455.080.047	E0455.100.047
2.2 a, 2.3, 3, 10	Flat seal PTFE	E0455.015.050	E0455.020.033	E0455.025.048	E0455.032.047	E0455.040.051	E0455.050.055	E0455.065.047	E0455.080.048	E0455.100.048
2.2 a, 2.3, 3, 10	Flat seal PTFE K	E0455.015.051	E0455.020.034	E0455.025.049	E0455.032.048	E0455.040.052	E0455.050.056	E0455.065.048	E0455.080.049	E0455.100.049
2.2 b, 2.3, 2.4, 2.5, 3, 10	Flat seal DGH	E0455.015.052	E0455.020.035	E0455.025.050	E0455.032.049	E0455.040.053	E0455.050.057	E0455.065.049	E0455.080.050	E0455.100.050

Pos.	Seat set	DN15	DN20	DN25	DN32	DN40	DN50	DN65	DN80	DN100
1 a, 1.1	Metal-to-metal sealing	E0455.015.008	E0455.020.008	E0455.025.051	E0455.032.008	E0455.040.008	E0455.050.009	E0455.065.008	E0455.080.008	E0455.100.008
1 b, 1.1	Flat seal	E0455.015.009	E0455.020.009	E0455.025.052	E0455.032.009	E0455.040.009	E0455.050.010	E0455.065.009	E0455.080.009	E0455.100.009
1 c, 1.1	DGH	E0455.015.010	E0455.020.010	E0455.025.053	E0455.032.010	E0455.040.010	E0455.050.010	E0455.065.009	E0455.080.009	E0455.100.009

Pos.	Seat assembly tool	DN15	DN20	DN25	DN32	DN40	DN50	DN65	DN80	DN100
	Seat assembly tool	E0455.015.000	E0455.020.000	E0455.025.000	E0455.032.000	E0455.040.000	E0455.050.000	E0455.065.000	E0455.080.000	E0455.100.000

Pos.	Cone assembly	DN15	DN20	DN25	DN32	DN40	DN50	DN65	DN80	DN100
2 a, 2.1 a, 2.3, 3, 10	Metal-to-metal sealing	E0255.015.002	E0255.020.002	E0255.025.002	E0255.032.002	E0255.040.002	E0255.050.002	E0255.065.002	E0255.080.002	E0255.100.002
2 a, 2.1 b, 2.3, 3, 10	Metal-to-metal sealing bellows	E0255.015.003	E0255.020.003	E0255.025.003	E0255.032.003	E0255.040.003	E0255.050.003	E0255.065.003	E0255.080.003	E0255.100.003
2 b, 2.1 c, 2.2 a, 2.3, 3, 10	Flat seal EPDM	E0255.015.004	E0255.020.004	E0255.025.004	E0255.032.004	E0255.040.004	E0255.050.004	E0255.065.004	E0255.080.004	E0255.100.004
2 b, 2.1 d, 2.2 a, 2.3, 3, 10	Flat seal EPDM bellows	E0255.015.005	E0255.020.005	E0255.025.005	E0255.032.005	E0255.040.005	E0255.050.005	E0255.065.005	E0255.080.005	E0255.100.005
2 b, 2.1 c, 2.2 a, 2.3, 3, 10	Flat seal FKMVI	E0255.015.006	E0255.020.006	E0255.025.006	E0255.032.006	E0255.040.006	E0255.050.006	E0255.065.006	E0255.080.006	E0255.100.006
2 b, 2.1 d, 2.2 a, 2.3, 3, 10	Flat seal FKMVI bellows	E0255.015.007	E0255.020.007	E0255.025.007	E0255.032.007	E0255.040.007	E0255.050.007	E0255.065.007	E0255.080.007	E0255.100.007
2 b, 2.1 c, 2.2 a, 2.3, 3, 10	Flat seal PTFE	E0255.015.008	E0255.020.008	E0255.025.008	E0255.032.008	E0255.040.008	E0255.050.008	E0255.065.008	E0255.080.008	E0255.100.008
2 b, 2.1 d, 2.2 a, 2.3, 3, 10	Flat seal PTFE bellows	E0255.015.009	E0255.020.009	E0255.025.009	E0255.032.009	E0255.040.009	E0255.050.009	E0255.065.009	E0255.080.009	E0255.100.009

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Pos.	Cone assembly	DN15	DN25	DN32	DN40	DN50	DN65	DN100	DN80	DN100
2 b, 2.1 c, 2.2 a, 2.3, 3, 10	Flat seal PTFE carbon	E0255.015.010	E0255.020.010	E0255.025.010	E0255.032.010	E0255.040.010	E0255.050.010	E0255.065.010	E0255.080.010	E0255.100.010
2 b, 2.1 d, 2.2 a, 2.3, 3, 10	Flat seal PTFE carbon Bellows	E0255.015.011	E0255.020.011	E0255.025.011	E0255.032.011	E0255.040.011	E0255.050.011	E0255.065.011	E0255.080.011	E0255.100.011
2 c, 2.2 b, 2.3, 2.4, 2.5, 3, 10	Flat seal DGH	E0255.015.012	E0255.020.012	E0255.025.012	E0255.032.012	E0255.040.012	E0255.050.012	E0255.065.012	E0255.080.012	E0255.100.012

Pos.	Spindle set	DN15	DN20	DN25	DN32	DN40	DN50	DN65	DN80	DN100
3, 6, 6.2 a, 6.3, 10	without lifting device	E0255.020.013	E0255.020.013	E0255.025.013	E0255.032.013	E0255.040.013	E0255.050.013	E0255.065.013	E0255.080.013	E0255.100.013
3, 6, 6.1 6.2 a, 6.3, 10	Lifting device	E0255.020.014	E0255.020.014	E0255.025.014	E0255.032.014	E0255.040.014	E0255.050.014	E0255.065.014	E0255.080.014	E0255.100.014
3, 6, 6.2 c, 6.3, 10	Bellows, without lifting device[3]	E0255.020.015	E0255.020.015	E0255.025.015	E0255.032.015	E0255.040.015	E0255.050.015	E0255.065.015	E0255.080.015	E0255.100.015
3, 6, 6.1 6.2 c, 6.3, 10	Bellows, lifting device[3]	E0255.020.016	E0255.020.016	E0255.025.016	E0255.032.016	E0255.040.016	E0255.050.016	E0255.065.016	E0255.080.016	E0255.100.016
3, 6, 6.1 6.2 b, 6.3, 10	DGH	E0255.020.017	E0255.020.017	E0255.025.017	E0255.032.017	E0255.040.017	E0255.050.017	E0255.065.017	E0255.080.017	E0255.100.017

Pos.	Pressure screw set	DN15	DN20	DN25	DN32	DN40	DN50	DN65	DN80	DN100
7, 7.1, 7.2, 7.3	Pressure screw	E0255.020.018	E0255.020.018	E0255.025.018	E0255.040.018	E0255.040.018	E0255.050.018	E0255.065.018	E0255.080.018	E0255.100.018
7, 7.1, 7.2, 7.3	Pressure screw bellows HighPressure[4]							E0255.065.019	E0255.080.019	E0255.100.019

Pos.	Bellows set	DN15	DN20	DN25	DN32	DN40	DN50	DN65	DN80	DN100
5 a, 5.2, 3, 10	Metallic bellows[1]	E0455.015.067	E0455.020.056	E0455.025.071	E0455.032.069	E0455.040.074	E0455.050.077	E0455.065.069	E0455.080.070	E0455.100.070
5 a, 5.2, 3, 10	Metallic bellows LowPressure[2]	E0455.015.068	E0455.020.057	E0455.025.072	E0455.032.070	E0455.040.075	E0455.050.078	E0455.065.070	E0455.080.071	E0455.100.071
5 b, 5.1, 3, 10	Elastomer bellows DGH	E0455.020.058	E0455.020.058	E0455.020.058	E0455.040.076	E0455.040.076	E0455.040.076	E0455.080.072	E0455.080.072	E0455.080.072

Pos.	Pressure spring	DN15	DN20	DN25	DN32	DN40	DN50	DN65	DN80	DN100
8	Spring	Spare part numbers for springs, see document V-0219 spring tables								

[1] DN15 - DN40 Set pressure > 5.0 bar, DN50 Set pressure > 4.0 bar, DN65 - DN100 Set pressure > 3.5 bar
[2] DN15 - DN40 Set pressure ≤ 5.0 bar, DN50 Set pressure ≤ 4.0 bar, DN65 - DN100 Set pressure ≤ 3.5 bar
[3] Only with metallic bellows LowPressure, see note[2]
[4] Only with metallic bellows DN65 Set pressure > 30 bar, DN80 Set pressure > 29 bar, DN100 Set pressure > 25 bar

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Spare parts sets in series 255 ANSI

Valid for standard version; please enquire about options Sxx, Axx and Pxx.

Pos.	Maintenance kits	DN15	DN25	DN32	DN40	DN50	DN65	DN100
1.1, 2.3, 3, 4, 5.2, 9, 10	Maintenance kit	E0455.015.046	E0455.025.044	E0455.032.043	E0455.040.047	E0455.050.051	E0455.065.043	E0455.100.044

Pos.	Primary seal kit	DN15	DN25	DN32	DN40	DN50	DN65	DN100
2 a, 2.3, 3, 10	Plug Metal-to-metal sealing	E0255.015.001	E0255.025.001	E0255.032.001	E0255.040.001	E0255.050.001	E0255.065.001	E0255.100.001
2.2 a, 2.3, 3, 10	Flat seal EPDM	E0455.015.048	E0455.025.046	E0455.032.045	E0455.040.049	E0455.050.053	E0455.065.045	E0455.100.046
2.2 a, 2.3, 3, 10	Flat seal FKMVI	E0455.015.049	E0455.025.047	E0455.032.046	E0455.040.050	E0455.050.054	E0455.065.046	E0455.100.047
2.2 a, 2.3, 3, 10	Flat seal PTFE	E0455.015.050	E0455.025.048	E0455.032.047	E0455.040.051	E0455.050.055	E0455.065.047	E0455.100.048
2.2 a, 2.3, 3, 10	Flat seal PTFE K	E0455.015.051	E0455.025.049	E0455.032.048	E0455.040.052	E0455.050.056	E0455.065.048	E0455.100.049

Pos.	Seat set	DN15	DN25	DN32	DN40	DN50	DN65	DN100
1 a, 1.1	Metal-to-metal sealing	E0455.015.008	E0455.025.051	E0455.032.008	E0455.040.008	E0455.050.009	E0455.065.008	E0455.100.008
1 b, 1.1	Flat seal	E0455.015.009	E0455.025.052	E0455.032.009	E0455.040.009	E0455.050.010	E0455.065.009	E0455.100.009

Pos.	Seat assembly tool	DN15	DN25	DN32	DN40	DN50	DN65	DN100
	Seat assembly tool	E0455.015.000	E0455.025.000	E0455.032.000	E0455.040.000	E0455.050.000	E0455.065.000	E0455.100.000

Pos.	Cone assembly	DN15	DN25	DN32	DN40	DN50	DN65	DN100
2 a, 2.1 a, 2.3, 3, 10	Metal-to-metal sealing	E0255.015.002	E0255.025.003	E0255.032.003	E0255.040.003	E0255.050.002	E0255.065.002	E0255.100.020
2 a, 2.1 b, 2.3, 3, 10	Metal-to-metal sealing bellows	E0255.015.003	E0255.025.003	E0255.032.003	E0255.040.003	E0255.050.003	t.b.d.	t.b.d.
2 b, 2.1 c, 2.2 a, 2.3, 3, 10	Flat seal EPDM	E0255.015.004	E0255.025.005	E0255.032.005	E0255.040.005	E0255.050.004	E0255.065.004	E0255.100.022
2 b, 2.1 d, 2.2 a, 2.3, 3, 10	Flat seal EPDM bellows	E0255.015.005	E0255.025.005	E0255.032.005	E0255.040.005	E0255.050.005	t.b.d.	t.b.d.
2 b, 2.1 c, 2.2 a, 2.3, 3, 10	Flat seal FKMVI	E0255.015.006	E0255.025.007	E0255.032.007	E0255.040.007	E0255.050.006	E0255.065.006	E0255.100.024
2 b, 2.1 d, 2.2 a, 2.3, 3, 10	Flat seal FKMVI bellows	E0255.015.007	E0255.025.007	E0255.032.007	E0255.040.007	E0255.050.007	t.b.d.	t.b.d.
2 b, 2.1 c, 2.2 a, 2.3, 3, 10	Flat seal PTFE	E0255.015.008	E0255.025.009	E0255.032.009	E0255.040.009	E0255.050.008	E0255.065.008	E0255.100.026
2 b, 2.1 d, 2.2 a, 2.3, 3, 10	Flat seal PTFE bellows	E0255.015.009	E0255.020.009	E0255.025.009	E0255.032.009	E0255.040.009	E0255.050.009	E0255.065.009

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Pos.	Cone assembly	DN15	DN25	DN32	DN40	DN50	DN65	DN100
2 b, 2.1 d, 2.2 a, 2.3, 3, 10	Flat seal PTFE bellows	E0255.015.009	E0255.025.009	E0255.032.009	E0255.040.009	E0255.050.009	t.b.d.	t.b.d.
2 b, 2.1 c, 2.2 a, 2.3, 3, 10	Flat seal PTFE carbon	E0255.015.010	E0255.025.011	E0255.032.011	E0255.040.011	E0255.050.010	E0255.065.010	E0255.100.028
2 b, 2.1 d, 2.2 a, 2.3, 3, 10	Flat seal PTFE carbon bellows	E0255.015.011	E0255.025.011	E0255.032.011	E0255.040.011	E0255.050.011	t.b.d.	t.b.d.

Pos.	Spindle set	DN15	DN25	DN32	DN40	DN50	DN65	DN100
3, 6, 6.2 a, 6.3, 10	without lifting device	E0255.020.013	E0255.025.013	E0255.032.013	E0255.040.013	E0255.050.013	E0255.065.013	E0255.100.013
3, 6, 6.1 6.2 a, 6.3, 10	Lifting device	E0255.020.014	E0255.025.014	E0255.032.014	E0255.040.014	E0255.050.014	E0255.065.014	E0255.100.014
3, 6, 6.2 c, 6.3, 10	Bellows, without lifting device	E0255.020.015	E0255.025.015	E0255.032.015	E0255.040.015	E0255.050.015	E0255.065.015	E0255.100.015
3, 6, 6.1 6.2 c, 6.3, 10	Bellows, lifting device	E0255.020.016	E0255.025.016	E0255.032.016	E0255.040.016	E0255.050.016	E0255.065.016	E0255.100.016

Pos.	Pressure screw set	DN15	DN25	DN32	DN40	DN50	DN65	DN100
7, 7.1, 7.2, 7.3	Pressure screw	E0255.020.018	E0255.025.018	E0255.040.018	E0255.040.018	E0255.050.018	E0255.065.018	E0255.100.018
7, 7.1, 7.2, 7.3	Pressure screw bellows HighPressure[3]						t.b.d.	t.b.d.

Pos.	Bellows set	DN15	DN25	DN32	DN40	DN50	DN65	DN100
5 a, 5.2, 3, 10	Bellows, metallic[1]	E0455.015.067	E0455.025.071	E0455.032.069	E0455.040.074	E0455.050.077	E0455.065.069	E0455.100.070
5 a, 5.2, 3, 10	Bellows, metallic, low pressure[2]	E0455.015.068	E0455.025.072	E0455.032.070	E0455.040.075	E0455.050.078	E0455.065.070	E0455.100.071

Pos.	Pressure spring	DN15	DN20	DN25	DN32	DN40	DN50	DN65
8	Spring	Spare part numbers for springs, see document V-0219 spring tables						

[1] DN15 - DN40 Set pressure > 5.0 bar, DN50 Set pressure > 4.0 bar, DN65 - DN100 Set pressure > 3.5 bar
[2] DN15 - DN40 Set pressure ≤ 5.0 bar, DN50 Set pressure ≤ 4.0 bar, DN65 - DN100 Set pressure ≤ 3.5 bar
[3] t.b.d.

Our technical sales team will be happy to help you select the right spare parts package: www.goetze-group.com | info@goetze.de | Telephone: +49 (0) 7141 / 488 94 60
For new enquiries, please specify the complete type code and set pressure; for existing valves, please also specify the serial number.

V-0197 OVERVIEW OF ASSEMBLY AIDS

Usage	Tools	DN 15	DN 20	DN 25	DN 32	DN 40	DN 50	DN 65	DN 80	DN 100
Screws for spring housing/body	jaw insertion tool	SW16/17	SW16/17	SW18	SW22	SW22	SW24	SW24	SW24	SW24
Screws for cap/spring housing	jaw insertion tool	SW10	SW10	SW10	SW13	SW13	SW13	SW16/17	SW16/17	SW16/17
255 / 355 pressure screw	combination wrench	SW13	SW13	SW15	SW20	SW20	SW20	SW24	SW24	SW30
455 pressure screw	combination wrench	SW13	SW13	SW15	SW20	SW20	SW20	SW24	SW24	SW30
Lock nut	combination wrench	SW20	SW20	SW20	SW32	SW32	SW32	SW41	SW41	SW41
Circlip for disc	snap ring pliers	A1	A1	A1	A2	A2	A2	A2	A3	A3
Drive seat tool	socket wrench insert	SW13	SW13	SW13	SW24	SW24	SW24	SW30	SW30	SW30
Screw-in seat	assembly tool [1]	H-455-15-003 B	H-455-20-007 B	H-455-25-007 B [2]	H-455-32-003 B	H-455-40-007 B	H-455-50-013 B	H-455-65-003 B	H-455-80-008 B	H-455-100-008 B

[1] Necessary for seat assembly / disassembly, can be obtained from Goetze under the stated item number
[2] for the bHL variant, a different tool is required for this nominal width: H-455-25-007 FD B G

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V-0219 SPRING TABLES

1. Series 255, 355, 455, 455 Redesign

Metallic sealing and flat seal

DN 15					
d0 = 15mm		tGFO, tGFL, sGO, sGL			
Pressure range [bar]		Spring			
from	to	455		355 + 255	
0,2	0,8	L-1420	E0455.015.026	L-2827	E0355.015.010
0,81	1,5	L-525 N	E0455.015.027	L-2828	E0355.015.011
1,51	1,9	L-1422	E0455.015.028	L-2829	E0355.015.012
1,91	2,4	L-526 N	E0455.015.029	L-2830	E0355.015.013
2,41	2,7	L-2509	E0455.015.030	L-2831	E0355.015.014
2,71	3	L-2015	E0455.015.031	L-2832	E0355.015.015
3,01	3,5	L-1423	E0455.015.032	L-2833	E0355.015.016
3,51	3,9	L-2016	E0455.015.033	L-3140	E0355.015.017
3,91	6	L-527 N	E0455.015.034	L-2834	E0355.015.018
6,01	8,5	L-2017	E0455.015.035	L-2835	E0355.015.019
8,51	11	L-2505	E0455.015.036	L-2836	E0355.015.020
11,01	14,7	L-2018	E0455.015.037	L-2837	E0355.015.021
14,71	18	L-1433	E0455.015.038	L-2838	E0355.015.022
18,01	21,5	L-529 N	E0455.015.039	L-2839	E0355.015.023
21,51	28,5	L-2510	E0455.015.040	L-2840	E0355.015.024
28,51	40	L-1434	E0455.015.041	L-2841	E0355.015.025

DN 20					
d0 = 18mm		tGFO, tGFL, sGO, sGL			
Pressure range [bar]		Spring			
from	to	455		355 + 255	
0,2	1	L-1420	E0455.015.026	L-2827	E0355.015.010
1,01	1,6	L-525 N	E0455.015.027	L-2828	E0355.015.011
1,61	2,4	L-1422	E0455.015.028	L-2829	E0355.015.012
2,41	3,5	L-2509	E0455.015.030	L-2831	E0355.015.014
3,51	4,5	L-2015	E0455.015.031	L-2832	E0355.015.015
4,51	8,8	L-1423	E0455.015.032	L-2833	E0355.015.016
8,81	13	L-527 N	E0455.015.034	L-2834	E0355.015.018
13,01	18,8	L-2505	E0455.015.036	L-2836	E0355.015.020
18,81	25,4	L-1433	E0455.015.038	L-2838	E0355.015.022
25,41	27,7	L-529 N	E0455.015.039	L-2839	E0355.015.023
27,71	40	L-2510	E0455.015.040	L-2840	E0355.015.024

DN 25					
d0 = 22,5mm		tGFO, tGFL, sGO, sGL			
Pressure range [bar]		Spring			
from	to	455		355 + 255	
0,2	0,9	L-1848	E0455.025.027	L-2842	E0355.025.011
0,91	1,49	L-1849	E0455.025.028	L-2843	E0355.025.012
1,5	1,94	L-1850	E0455.025.029	L-2844	E0355.025.013
1,95	2,44	L-1858	E0455.025.030	L-2845	E0355.025.014
2,45	2,89	L-2405	E0455.025.031	L-2846	E0355.025.015
2,9	3,69	L-1851	E0455.025.032	L-2847	E0355.025.016
3,7	5,89	L-1852	E0455.025.033	L-2848	E0355.025.017
5,9	8,59	L-2406	E0455.025.034	L-2849	E0355.025.018
8,6	13,29	L-1853	E0455.025.035	L-2851	E0355.025.019
13,3	21,69	L-1854	E0455.025.036	L-2852	E0355.025.020
21,7	30,79	L-1855	E0455.025.037	L-2853	E0355.025.021
30,8	40	L-1856	E0455.025.038	L-2854	E0355.025.022

DN 32					
d0 = 29,3mm		tGFO, tGFL, sGO, sGL			
Pressure range [bar]		Spring			
from	to	455		355 + 255	
0,2	1	L-2581	E0455.032.027	L-2855	E0355.032.010
1,01	1,6	L-2582	E0455.032.028	L-2856	E0355.032.011
1,61	2,2	L-2583	E0455.032.029	L-2857	E0355.032.012
2,21	2,7	L-2584	E0455.032.030	L-2858	E0355.032.013
2,71	3,2	L-2585	E0455.032.031	L-2859	E0355.032.014
3,21	3,9	L-2586	E0455.032.032	L-2860	E0355.032.015
3,91	6,5	L-2587	E0455.032.033	L-2861	E0355.032.016
6,51	8	L-2588	E0455.032.034	L-2862	E0355.032.017
8,01	15	L-2589	E0455.032.035	L-2863	E0355.032.018
15,01	25	L-2590	E0455.032.036	L-2864	E0355.032.019
25,01	40	L-2590 + L-2592	E0455.032.036 + E0455.032.037	L-2864 + L-2865	E0355.032.019 + E0355.032.020

DN 40					
d0 = 36mm		tGFO, tGFL, sGO, sGL			
Pressure range [bar]		Spring			
from	to	455		355 + 255	
0,2	1,1	L-1879	E0455.040.028	L-2866	E0355.040.011
1,11	1,6	L-2425	E0455.040.029	L-2867	E0355.040.012
1,61	2,1	L-2435	E0455.040.030	L-2868	E0355.040.013
2,11	2,6	L-1882	E0455.040.031	L-2869	E0355.040.014
2,61	2,9	L-2436	E0455.040.032	L-2870	E0355.040.015
2,91	3,4	L-2437	E0455.040.033	L-2871	E0355.040.016
3,41	4,1	L-2438	E0455.040.034	L-2872	E0355.040.017
4,11	5,8	L-1883	E0455.040.035	L-2873	E0355.040.018
5,81	10,8	L-1884	E0455.040.036	L-2874	E0355.040.019
10,81	24	L-1885	E0455.040.037	L-2875	E0355.040.020
24,01	25,5	L-2426	E0455.040.038	L-2876	E0355.040.021
25,51	40	L-2503 + L-2504	E0455.040.039 + E0455.040.040	L-2877 + L-2878	E0355.040.022 + E0355.040.023

DN 50					
d0 = 45mm		tGFO, tGFL, sGO, sGL			
Pressure range [bar]		Spring			
from	to	455		355 + 255	
0,2	0,8	L-1860	E0455.050.032	L-2879	E0355.050.011
0,81	1	L-1861	E0455.050.033	L-2880	E0355.050.012
1,01	1,7	L-1862	E0455.050.034	L-2881	E0355.050.013
1,71	2	L-1869	E0455.050.035	L-2882	E0355.050.014
2,01	2,6	L-1863	E0455.050.036	L-2883	E0355.050.015
2,61	3,2	L-1864	E0455.050.037	L-2884	E0355.050.016
3,21	3,7	L-3002	E0455.050.038	L-3152	E0355.050.017
3,71	4,9	L-1865	E0455.050.039	L-2885	E0355.050.018
4,91	5,5	L-3003	E0455.050.040	L-3153	E0355.050.019
5,51	8,5	L-1866	E0455.050.041	L-2886	E0355.050.020
8,51	12,5	L-1867	E0455.050.042	L-2887	E0355.050.021
12,51	13,5	L-3004	E0455.050.044	L-3154	E0355.050.023
13,51	24,5	L-1868	E0455.050.045	L-2888	E0355.050.024
24,51	40	L-3005	E0455.050.046	L-3155 + L-3154	E0355.050.025 + E0355.050.023

For 455 DN50 up to serial number 1001326120, please enquire about spring ranges.

DN 65					
d0 = 59mm		tGFO, tGFL, sGO, sGL			
Pressure range [bar]		Spring			
from	to	455		355 + 255	
0,2	1,1	L-2607	E0455.065.026	L-2889	E0355.065.011
1,11	1,7	L-2608	E0455.065.027	L-2890	E0355.065.012
1,71	2,2	L-2609	E0455.065.028	L-2891	E0355.065.013
2,21	2,5	L-2610	E0455.065.029	L-2892	E0355.065.014
2,51	2,8	L-2611	E0455.065.030	L-2893	E0355.065.015
2,81	3,2	L-2612	E0455.065.031	L-2894	E0355.065.016
3,21	4,3	L-2613	E0455.065.032	L-2895	E0355.065.017
4,31	5,1	L-2614	E0455.065.033	L-2896	E0355.065.018
5,11	5,4	L-2615	E0455.065.034	L-2897	E0355.065.019
5,41	7,7	L-2616	E0455.065.035	L-2898	E0355.065.020
7,71	12,2	L-2617	E0455.065.036	L-2899	E0355.065.021
12,21	24	L-2618 + L-2619	E0455.065.037 + E0455.065.038	L-2900 + L-2901	E0355.065.022 + E0355.065.023

DN 80					
d0 = 72mm		tGFO, tGFL, sGO, sGL			
Pressure range [bar]		Spring			
from	to	455		355 + 255	
0,2	0,9	L-1960	E0455.080.027	L-2902	E0355.080.012
0,91	1,4	L-1962	E0455.080.028	L-2903	E0355.080.013
1,41	2	L-1963	E0455.080.029	L-2904	E0355.080.014
2,01	2,4	L-2636	E0455.080.030	L-2905	E0355.080.015
2,41	4,9	L-1964	E0455.080.031	L-2906	E0355.080.016
4,91	6,5	L-1965	E0455.080.032	L-2907	E0355.080.017
6,51	11,7	L-1966	E0455.080.033	L-2908	E0355.080.018
11,71	20	L-1967	E0455.080.034	L-2909	E0355.080.019
20,01	25,5	L-1968 + L-2637	E0455.080.035 + E0455.080.036	L-2910 + L-1911	E0355.080.020 + E0355.080.021

DN 100					
d0 = 90mm		tGFO, tGFL, sGO, sGL			
Pressure range [bar]		Spring			
from	to	455		355 + 255	
0,2	1	L-2639	E0455.100.031	L-2912	E0355.100.011
1,01	1,6	L-2640	E0455.100.032	L-2913	E0355.100.012
1,61	2,4	L-2641	E0455.100.033	L-2914	E0355.100.013
2,41	3,2	L-2642	E0455.100.034	L-2915	E0355.100.014
3,21	5	L-2643	E0455.100.035	L-2916	E0355.100.015
5,01	8,1	L-2644	E0455.100.036	L-2917	E0355.100.016
8,11	14	L-2645	E0455.100.037	L-2918	E0355.100.017
14,01	20	L-2645 + L-2647	E0455.100.037 + E0455.100.038	L-2918 + L-2919	E0355.100.018 + E0355.100.019

Metallic sealing and flat seal, with bellows

DN 15 LP					
d0 = 15mm		tbGFO, tbGFL, bGFO, bGFL			
Pressure range [bar]		Spring			
from	to	455 + 355		255	
1	1,4	L-1420	E0455.015.026	L-2827	E0355.015.010
1,41	2	L-516 N	E0455.015.043	L-4355	E0355.015.028
2,01	2,4	L-517 N	E0455.015.044	L-3329	E0355.015.027
2,41	2,7	L-525 N	E0455.015.027	L-2828	E0355.015.011
2,71	3,3	L-1422	E0455.015.028	L-2829	E0355.015.012
3,31	4	L-526 N	E0455.015.029	L-2830	E0355.015.013
4,01	4,4	L-2509	E0455.015.030	L-2831	E0355.015.014
4,41	5	L-2015	E0455.015.031	L-2832	E0355.015.015

DN 15 HP					
d0 = 15mm		tbGFO, tbGFL, bGFO, bGFL			
Pressure range [bar]		Spring			
from	to	455 + 355		255	
5,01	5,3	L-2509	E0455.015.030	L-2831	E0355.015.014
5,31	6,6	L-2015	E0455.015.031	L-2832	E0355.015.015
6,61	7,7	L-1423	E0455.015.032	L-2833	E0355.015.016
7,71	9,5	L-527 N	E0455.015.034	L-2834	E0355.015.018
9,51	11	L-2017	E0455.015.035	L-2835	E0355.015.019
11,01	14	L-2505	E0455.015.036	L-2836	E0355.015.020
14,01	16	L-2018	E0455.015.037	L-2837	E0355.015.021
16,01	18,7	L-1433	E0455.015.038	L-2838	E0355.015.022
18,71	20	L-529 N	E0455.015.039	L-2839	E0355.015.023
22,31	25	L-2510	E0455.015.040	L-2840	E0355.015.024
25,01	34	L-1434	E0455.015.041	L-2841	E0355.015.025
34,01	40	L-695 N	E0455.015.045	L-4356	E0355.015.029

DN 20 LP					
d0 = 18mm		tbGFO, tbGFL, bGFO, bGFL			
Pressure range [bar]		Spring			
from	to	455 + 355		255	
0,4	1	L-1420	E0455.015.026	L-2827	E0355.015.010
1,01	1,4	L-517 N	E0455.015.044	L-3329	E0355.015.027
1,41	2,2	L-525 N	E0455.015.027	L-2828	E0355.015.011
2,21	2,73	L-1422	E0455.015.028	L-2829	E0355.015.012
2,74	3,15	L-526 N	E0455.015.029	L-2830	E0355.015.013
3,16	3,75	L-2509	E0455.015.030	L-2831	E0355.015.014
3,76	5	L-1423	E0455.015.032	L-2833	E0355.015.016

DN 20 HP					
d0 = 18mm		tbGFO, tbGFL, bGFO, bGFL			
Pressure range [bar]		Spring			
from	to	455 + 355		255	
5,01	6	L-1423	E0455.015.032	L-2833	E0355.015.016
6,01	7,4	L-527 N	E0455.015.034	L-2834	E0355.015.018
7,41	8,6	L-2017	E0455.015.035	L-2835	E0355.015.019
8,61	11	L-2505	E0455.015.036	L-2836	E0355.015.020
11,01	12,5	L-2018	E0455.015.037	L-2837	E0355.015.021
12,51	15	L-1433	E0455.015.038	L-2838	E0355.015.022
15,01	21	L-529 N	E0455.015.039	L-2839	E0355.015.023
21,01	24,5	L-2510	E0455.015.040	L-2840	E0355.015.024
24,51	32	L-1434	E0455.015.041	L-2841	E0355.015.025
32,01	40	L-695 N	E0455.015.045	L-4356	E0355.015.029

DN 25 LP					
d0 = 22,5mm		tbGFO, tbGFL, bGFO, bGFL			
Pressure range [bar]		Spring			
from	to	455 + 355		255	
0,3	1,1	L-1848	E0455.025.027	L-2842	E0355.025.011
1,11	1,65	L-1849	E0455.025.028	L-2843	E0355.025.012
1,66	2,2	L-1850	E0455.025.029	L-2844	E0355.025.013
2,21	2,7	L-1858	E0455.025.030	L-2845	E0355.025.014
2,71	3,4	L-2405	E0455.025.031	L-2846	E0355.025.015
3,41	4,1	L-1851	E0455.025.032	L-2847	E0355.025.016
4,11	5	L-1852	E0455.025.033	L-2848	E0355.025.017

DN 25 HP					
d0 = 22,5mm		tbGFO, tbGFL, bGFO, bGFL			
Pressure range [bar]		Spring			
from	to	455 + 355		255	
5,01	5,55	L-1852	E0455.025.033	L-2848	E0355.025.017
5,56	7,3	L-2406	E0455.025.034	L-2849	E0355.025.018
7,31	8,6	L-1853	E0455.025.035	L-2851	E0355.025.019
8,61	13	L-1854	E0455.025.036	L-2852	E0355.025.020
13,01	16	L-1855	E0455.025.037	L-2853	E0355.025.021
16,01	23	L-1857	E0455.025.039	L-3302	E0355.025.023
23,01	28	L-1856	E0455.025.038	L-2854	E0355.025.022
28,01	35	L-2525	E0455.025.042	L-4357	E0355.025.026
35,01	40	L-3187	E0455.025.043	L-4358	E0355.025.027

DN 32 LP					
d0 = 29,3mm		tbGFO, tbGFL, bGFO, bGFL			
Pressure range [bar]		Spring			
from	to	455 + 355		255	
0,5	1,6	L-2581	E0455.032.027	L-2855	E0355.032.010
1,61	2,5	L-2582	E0455.032.028	L-2856	E0355.032.011
2,51	3	L-2583	E0455.032.029	L-2857	E0355.032.012
3,01	3,5	L-2584	E0455.032.030	L-2858	E0355.032.013
3,51	4	L-2585	E0455.032.031	L-2859	E0355.032.014
4,01	4,5	L-2586	E0455.032.032	L-2860	E0355.032.015
4,51	5	L-2587	E0455.032.033	L-2861	E0355.032.016

DN 32 HP					
d0 = 29,3mm		tGFO, tGFL, sGO, sGL			
Pressure range [bar]		Spring			
from	to	455 + 355		255	
5,01	6	L-2586	E0455.032.032	L-2860	E0355.032.015
6,01	7,1	L-2594	E0455.032.041	L-4359	E0355.032.024
7,11	9	L-2588	E0455.032.034	L-2862	E0355.032.017
9,01	12	L-2589	E0455.032.035	L-2863	E0355.032.018
12,01	14	L-2595	E0455.032.038	L-3330	E0355.032.021
14,01	17	L-2590	E0455.032.036	L-2864	E0355.032.019
17,01	22	L-2591	E0455.032.039	L-3331	E0355.032.022
22,01	29	L-2590 + L-2592	E0455.032.036 + E0455.032.037	L-2864 L-2865	E0355.032.019 E0355.032.020
29,01	35	L-2591 + L-2592	E0455.032.039 + E0455.032.037	L-3331 L-2865	E0355.032.022 E0355.032.020
35,01	40	L-2591 + L-3209	E0455.032.039 + E0455.032.042	L-3331 L-4360	E0355.032.022 E0355.032.025

DN 40 LP					
d0 = 36mm		tbGFO, tbGFL, bGFO, bGFL			
Pressure range [bar]		Spring			
from	to	455 + 355		255	
0,5	1,7	L-1879	E0455.040.028	L-2866	E0355.040.011
1,71	2	L-2582	E0455.032.028	L-2856	E0355.032.011
2,01	2,4	L-1881	E0455.040.044	L-4361	E0355.040.026
2,41	2,6	L-2435	E0455.040.030	L-2868	E0355.040.013
2,61	3,1	L-1882	E0455.040.031	L-2869	E0355.040.014
3,11	3,6	L-2436	E0455.040.032	L-2870	E0355.040.015
3,61	4,2	L-2437	E0455.040.033	L-2871	E0355.040.016
4,21	5	L-2438	E0455.040.034	L-2872	E0355.040.017

DN 40 HP					
d0 = 36mm		tbGFO, tbGFL, bGFO, bGFL			
Pressure range [bar]		Spring			
from	to	455 + 355		255	
5,01	5,3	L-2436	E0455.040.032	L-2870	E0355.040.015
5,31	6	L-2437	E0455.040.033	L-2871	E0355.040.016
6,01	7,2	L-2438	E0455.040.034	L-2872	E0355.040.017
7,21	10,3	L-1884	E0455.040.036	L-2874	E0355.040.019
10,31	14,8	L-1885	E0455.040.037	L-2875	E0355.040.020
14,81	18,5	L-2426	E0455.040.038	L-2876	E0355.040.021
18,51	23,8	L-2503 + L-2504	E0455.040.039 + E0455.040.040	L-2877 + L-2878	E0355.040.022 + E0355.040.023
23,81	30	L-2809	E0455.040.045	L-4362	E0355.040.027
30,01	40	L-3210	E0455.040.046	L-4363	E0355.040.028

DN 50 LP					
d0 = 45mm		tbGFO, tbGFL, bGFO, bGFL			
Pressure range [bar]		Spring			
from	to	455 + 355		255	
0,2	1,2	L-1860	E0455.050.032	L-2879	E0355.050.011
1,21	1,7	L-1861	E0455.050.033	L-2880	E0355.050.012
1,71	2	L-1862	E0455.050.034	L-2881	E0355.050.013
2,01	2,4	L-2437	E0455.040.033	L-2871	E0355.040.016
2,41	2,5	L-1869	E0455.050.035	L-2882	E0355.050.014
2,51	2,9	L-2438	E0455.040.034	L-2872	E0355.040.017
2,91	3,3	L-1863	E0455.050.036	L-2883	E0355.050.015
3,31	4	L-1864	E0455.050.037	L-2884	E0355.050.016

For 455 DN50 up to serial number 1001326120, please enquire about spring ranges.

DN 50 HP					
d0 = 45mm		tbGFO, tbGFL, bGFO, bGFL			
Pressure range [bar]		Spring			
from	to	455 + 355		255	
4,01	4,5	L-1863	E0455.050.036	L-2883	E0355.050.015
4,51	5	L-1864	E0455.050.037	L-2884	E0355.050.016
5,01	7	L-1865	E0455.050.039	L-2885	E0355.050.018
7,01	10	L-1866	E0455.050.041	L-2886	E0355.050.020
10,01	12	L-1867	E0455.050.042	L-2887	E0355.050.021
12,01	17	L-3004	E0455.050.044	L-3154	E0355.050.023
17,01	26	L-3005	E0455.050.046	L-3155 + L-3154	E0355.050.025 + E0355.050.023
26,01	30,5	L-3006	E0455.050.048	L-4364	E0355.050.027
30,51	37	L-3007	E0455.050.049	L-4365	E0355.050.028
37,01	40	L-3421	E0455.050.050	L-4366	E0355.050.029

For 455 DN50 up to serial number 1001326120, please enquire about spring ranges.

DN 65 LP					
d0 = 59mm		tbGFO, tbGFL, bGFO, bGFL			
Pressure range [bar]		Spring			
from	to	455 + 355		255	
0,2	1	L-2607	E0455.065.026	L-2889	E0355.065.011
1,01	1,7	L-2608	E0455.065.027	L-2890	E0355.065.012
1,71	2,2	L-2609	E0455.065.028	L-2891	E0355.065.013
2,21	2,5	L-2610	E0455.065.029	L-2892	E0355.065.014
2,51	2,8	L-2611	E0455.065.030	L-2893	E0355.065.015
2,81	3	L-2612	E0455.065.031	L-2894	E0355.065.016
3,01	3,5	L-2613	E0455.065.032	L-2895	E0355.065.017

DN 65 HP					
d0 = 59mm		tbGFO, tbGFL, bGFO, bGFL			
Pressure range [bar]		Spring			
from	to	455 + 355		255	
3,51	4,5	L-2613	E0455.065.032	L-2895	E0355.065.017
4,51	5,5	L-2614	E0455.065.033	L-2896	E0355.065.018
5,51	5,7	L-2615	E0455.065.034	L-2897	E0355.065.019
5,71	6,8	L-2616	E0455.065.035	L-2898	E0355.065.020
6,81	8,3	L-2617	E0455.065.036	L-2899	E0355.065.021
8,31	12,5	L-2618 + L-2619	E0455.065.037 + E0455.065.038	L-2900 + L-2901	E0355.065.022 + E0355.065.023
12,51	18,5	L-3193	E0455.065.039	L-3472 + L-2901	E0355.065.024 + E0355.065.023
18,51	30	L-3194	E0455.065.040	L-3472 + L-3473	E0355.065.024 + E0355.065.025
30,01	40	L-3611	E0455.065.042	see 455	

DN 80 LP					
d0 = 72mm		tbGFO, tbGFL, bGFO, bGFL			
Pressure range [bar]		Spring			
from	to	455 + 355		255	
0,2	1	L-1960	E0455.080.027	L-2902	E0355.080.012
1,01	1,4	L-1962	E0455.080.028	L-2903	E0355.080.013
1,41	2	L-1963	E0455.080.029	L-2904	E0355.080.014
2,01	2,4	L-2636	E0455.080.030	L-2905	E0355.080.015
2,41	3	L-1964	E0455.080.031	L-2906	E0355.080.016
3,01	3,5	L-1965	E0455.080.032	L-2907	E0355.080.017

DN 80 HP					
d0 = 72mm		tbGFO, tbGFL, bGFO, bGFL			
Pressure range [bar]		Spring			
from	to	455 + 355		255	
3,51	4,4	L-1964	E0455.080.031	L-2906	E0355.080.016
4,41	5,5	L-1965	E0455.080.032	L-2907	E0355.080.017
5,51	7,5	L-1966	E0455.080.033	L-2908	E0355.080.018
7,51	10,3	L-1967	E0455.080.034	L-2909	E0355.080.019
10,31	13,3	L-1968 + L-2637	E0455.080.035 + E0455.080.036	L-2910 + L-1911	E0355.080.020 + E0355.080.021
13,31	17	L-2811	E0455.080.038	L-3520 + L-3513	E0355.080.023 + E0355.080.022
17,01	25	L-2812	E0455.080.039	L-3521 + L-3513	E0355.080.024 + E0355.080.022
25,01	29	L-2813	E0455.080.041	L-4367 L-3513	E0355.080.026 E0355.080.022
29,01	40	L-3612 + L-3613	E0455.080.042 + E0455.080.043	see 455	

DN 100 LP					
d0 = 90mm		tbGFO, tbGFL, bGFO, bGFL			
Pressure range [bar]		Spring			
from	to	455 + 355		255	
0,2	1,1	L-2639	E0455.100.031	L-2912	E0355.100.011
1,11	1,6	L-2640	E0455.100.032	L-2913	E0355.100.012
1,61	2,1	L-2641	E0455.100.033	L-2914	E0355.100.013
2,11	2,8	L-2642	E0455.100.034	L-2915	E0355.100.014
2,81	3,5	L-2643	E0455.100.035	L-2916	E0355.100.015

DN 100 HP					
d0 = 90mm		tbGFO, tbGFL, bGFO, bGFL			
Pressure range [bar]		Spring			
from	to	455 + 355		255	
3,51	4	L-2642	E0455.100.034	L-2915	E0355.100.014
4,01	4,2	L-2643	E0455.100.035	L-2916	E0355.100.015
4,21	6	L-2644	E0455.100.036	L-2917	E0355.100.016
6,01	10,5	L-2645	E0455.100.037	L-2918	E0355.100.017
10,51	18	L-2645 + L-2647	E0455.100.037 + E0455.100.038	L-2918 + L-2919	E0355.100.018 + E0355.100.019
18,01	22,5	L-2645 + L-3195	E0455.100.037 + E0455.100.039	L-2918 + L-3550	E0355.100.018 + E0355.100.019
22,51	25	L-2645 + L-3196	E0455.100.037 + E0455.100.041	L-2918 + L-4368	E0355.100.018 + E0355.100.021
25,01	40	L-3614+ L-3615	E0455.100.042 + E0455.100.043	see 455	

D/G/H

DN 15					
bHL					
Pressure range [bar]		Spring			
from	to	455		355 + 255	
0,5	0,9	L-1420	E0455.015.026	L-2827	E0355.015.010
0,91	1	L-516 N	E0455.015.043	L-516 N	E0455.015.043
1,01	1,2	L-517 N	E0455.015.044	L-3329	E0355.015.027
1,21	1,5	L-525 N	E0455.015.027	L-2828	E0355.015.011
1,51	2	L-1422	E0455.015.028	L-2829	E0355.015.012
2,01	2,7	L-2509	E0455.015.030	L-2831	E0355.015.014
2,71	3,4	L-2015	E0455.015.031	L-2832	E0355.015.015
3,41	4,1	L-1423	E0455.015.032	L-2833	E0355.015.016
4,11	5,2	L-527 N	E0455.015.034	L-2834	E0355.015.018
5,21	6,8	L-2017	E0455.015.035	L-2835	E0355.015.019
6,81	9	L-2505	E0455.015.036	L-2836	E0355.015.020
9,01	10,8	L-2018	E0455.015.037	L-2837	E0355.015.021
10,81	13,2	L-1433	E0455.015.038	L-2838	E0355.015.022
13,21	15	L-529 N	E0455.015.039	L-2839	E0355.015.023

DN 20					
bHL					
Pressure range [bar]		Spring			
from	to	455		355 + 255	
0,5	1,02	L-1420	E0455.015.026	L-2827	E0355.015.010
1,03	1,4	L-517 N	E0455.015.044	L-3329	E0355.015.027
1,41	1,65	L-525 N	E0455.015.027	L-2828	E0355.015.011
1,66	2,05	L-1422	E0455.015.028	L-2829	E0355.015.012
2,06	2,5	L-2509	E0455.015.030	L-2831	E0355.015.014
2,51	3	L-1423	E0455.015.032	L-2833	E0355.015.016
3,01	3,9	L-527 N	E0455.015.034	L-2834	E0355.015.018
3,91	6,1	L-2017	E0455.015.035	L-2835	E0355.015.019
6,11	9,1	L-2505	E0455.015.036	L-2836	E0355.015.020
9,11	15	L-2018	E0455.015.037	L-2837	E0355.015.021
15,01	17,5	L-1433	E0455.015.038	L-2838	E0355.015.022
17,51	25	L-529 N	E0455.015.039	L-2839	E0355.015.023

DN 25					
bHL					
Pressure range [bar]		Spring			
from	to	455		355 + 255	
0,5	0,9	L-1848	E0455.025.027	L-2842	E0355.025.011
0,91	1,15	L-1849	E0455.025.028	L-2843	E0355.025.012
1,16	1,44	L-1596	E0455.025.040	L-3423	E0355.025.024
1,45	2	L-1850	E0455.025.029	L-2844	E0355.025.013
2,01	2,4	L-2405	E0455.025.031	L-2846	E0355.025.015
2,41	2,7	L-1851	E0455.025.032	L-2847	E0355.025.016
2,71	3,4	L-1852	E0455.025.033	L-2848	E0355.025.017
3,41	4,8	L-2406	E0455.025.034	L-2849	E0355.025.018
4,81	5,8	L-1853	E0455.025.035	L-2851	E0355.025.019
5,81	11	L-1854	E0455.025.036	L-2852	E0355.025.020
11,01	13	L-1855	E0455.025.037	L-2853	E0355.025.021
13,01	19,8	L-1857	E0455.025.039	L-3302	E0355.025.023
19,81	25	L-1856	E0455.025.038	L-2854	E0355.025.022

DN 32					
bHL					
Pressure range [bar]		Spring			
from	to	455		355 + 255	
0,5	0,8	L-2581	E0455.032.027	L-2855	E0355.032.010
0,81	1,3	L-2582	E0455.032.028	L-2856	E0355.032.011
1,31	1,8	L-2583	E0455.032.029	L-2857	E0355.032.012
1,81	2,1	L-2584	E0455.032.030	L-2858	E0355.032.013
2,11	2,3	L-2585	E0455.032.031	L-2859	E0355.032.014
2,31	2,7	L-2586	E0455.032.032	L-2860	E0355.032.015
2,71	3,35	L-2587	E0455.032.033	L-2861	E0355.032.016
3,36	4,6	L-2588	E0455.032.034	L-2862	E0355.032.017
4,61	5,5	L-2589	E0455.032.035	L-2863	E0355.032.018
5,51	6,7	L-2595	E0455.032.038	L-3330	E0355.032.021
6,71	8,2	L-2590	E0455.032.036	L-2864	E0355.032.019
8,21	11	L-2591	E0455.032.039	L-3331	E0355.032.022
11,01	14,5	L-2590 + L-2592	E0455.032.036 + E0455.032.037	L-2864 + L-2865	E0355.032.019 + E0355.032.020
14,51	25	L-2591 + L-2592	E0455.032.039 + E0455.032.037	L-3331+ L-2865	E0355.032.022+ E0355.032.020

DN 40					
bHL					
Pressure range [bar]		Spring			
from	to	455		355 + 255	
0,5	0,9	L-1879	E0455.040.028	L-2866	E0355.040.011
0,91	1,4	L-2425	E0455.040.029	L-2867	E0355.040.012
1,41	2	L-1882	E0455.040.031	L-2869	E0355.040.014
2,01	2,3	L-2437	E0455.040.033	L-2871	E0355.040.016
2,31	2,7	L-2438	E0455.040.034	L-2872	E0355.040.017
2,71	3,2	L-1883	E0455.040.035	L-2873	E0355.040.018
3,21	5	L-1884	E0455.040.036	L-2874	E0355.040.019
5,01	6,7	L-1885	E0455.040.037	L-2875	E0355.040.020
6,71	8,5	L-2426	E0455.040.038	L-2876	E0355.040.021
8,51	15	L-1886	E0455.040.041	L-3303	E0355.040.024
15,01	25	L-2503 + L-2504	E0455.040.039 + E0455.040.040	L-2877 + L-2878	E0355.040.022 + E0355.040.023

DN 50					
bHL					
Pressure range [bar]		Spring			
from	to	455		355 + 255	
0,5	0,77	L-1860	E0455.050.032	L-2879	E0355.050.011
0,78	1,05	L-1861	E0455.050.033	L-2880	E0355.050.012
1,06	1,4	L-1862	E0455.050.034	L-2881	E0355.050.013
1,41	1,72	L-1869	E0455.050.035	L-2882	E0355.050.014
1,73	2,2	L-1863	E0455.050.036	L-2883	E0355.050.015
2,21	2,75	L-1864	E0455.050.037	L-2884	E0355.050.016
2,76	4	L-1865	E0455.050.039	L-2885	E0355.050.018
4,01	5	L-3003	E0455.050.040	L-3153	E0355.050.019
5,01	6,2	L-1866	E0455.050.041	L-2886	E0355.050.020
6,21	8	L-1867	E0455.050.042	L-2887	E0355.050.021
8,01	8,5	L-1841	E0455.050.043	L-3363	E0355.050.022
8,51	14	L-3004	E0455.050.044	L-3154	E0355.050.023
14,01	17	L-1868	E0455.050.045	L-2888	E0355.050.024
17,01	25	L-3005	E0455.050.046	L-3155	E0355.050.025

DN 65					
bHL					
Pressure range [bar]		Spring			
from	to	455		355 + 255	
0,5	1,4	L-2607	E0455.065.026	L-2889	E0355.065.011
1,41	1,7	L-2608	E0455.065.027	L-2890	E0355.065.012
1,71	2,2	L-2609	E0455.065.028	L-2891	E0355.065.013
2,21	2,6	L-2610	E0455.065.029	L-2892	E0355.065.014
2,61	2,9	L-2611	E0455.065.030	L-2893	E0355.065.015
2,91	3,3	L-2612	E0455.065.031	L-2894	E0355.065.016
3,31	3,8	L-2613	E0455.065.032	L-2895	E0355.065.017
3,81	4,2	L-2614	E0455.065.033	L-2896	E0355.065.018
4,21	4,7	L-2615	E0455.065.034	L-2897	E0355.065.019
4,71	5,7	L-2616	E0455.065.035	L-2898	E0355.065.020
5,71	6,6	L-2617	E0455.065.036	L-2899	E0355.065.021
6,61	7,6	L-2615 + L-2619	E0455.065.034 + E0455.065.038	L-2897 + L-2901	E0355.065.019 + E0355.065.023
7,61	13	L-2618 + L-2619	E0455.065.037 + E0455.065.038	L-2900 + L-2901	E0355.065.022 + E0355.065.023
13,01	20,2	L-3193	E0455.065.039	L-2901 + L-3472	E0355.065.023 + E0355.065.024
20,21	25	L-3194	E0455.065.040	L-3473 + L-3472	E0355.065.025 + E0355.065.024

DN 80					
bHL					
Pressure range [bar]		Spring			
from	to	455		355 + 255	
0,5	0,9	L-1960	E0455.080.027	L-2902	E0355.080.012
0,91	1,4	L-1962	E0455.080.028	L-2903	E0355.080.013
1,41	1,9	L-1963	E0455.080.029	L-2904	E0355.080.014
1,91	2,4	L-2636	E0455.080.030	L-2905	E0355.080.015
2,41	3	L-1964	E0455.080.031	L-2906	E0355.080.016
3,01	3,5	L-1965	E0455.080.032	L-2907	E0355.080.017
3,51	4	L-3512	E0455.080.037	L-3513	E0355.080.022
4,01	5	L-1966	E0455.080.033	L-2908	E0355.080.018
5,01	6	L-1968	E0455.080.035	L-2910	E0355.080.020
6,01	7	L-3512 + L-2636	E0455.080.037 + E0455.080.030	L-3513 + L-2905	E0355.080.022 + E0355.080.015
7,01	8	L-1967	E0455.080.034	L-2909	E0355.080.019
8,01	12,5	L-1966 + L-2637	E0455.080.033 + E0455.080.036	L-2908 + L-2911	E0355.080.018 +E0355.080.021
12,51	18	L-1968 + L-2637	E0455.080.035 + E0455.080.036	L-2910 + L-2911	E0355.080.020 + E0355.080.021
18,01	23	L-2811	E0455.080.038	L-3520 + L-3513	E0355.080.023 + E0355.080.022
23,01	25	L-2812	E0455.080.039	L-3521 + L-3513	E0355.080.024 + E0355.080.022

DN 100					
bHL					
Pressure range [bar]		Spring			
from	to	455		355 + 255	
0,5	1	L-2639	E0455.100.031	L-2912	E0355.100.011
1,01	1,6	L-2640	E0455.100.032	L-2913	E0355.100.012
1,61	2,1	L-2641	E0455.100.033	L-2914	E0355.100.013
2,11	2,6	L-2642	E0455.100.034	L-2915	E0355.100.014
2,61	3,1	L-2643	E0455.100.035	L-2916	E0355.100.015
3,11	5,3	L-2644	E0455.100.036	L-2917	E0355.100.016
5,31	6,6	L-2645	E0455.100.037	L-2918	E0355.100.017
6,61	7,5	L-2644 + L-2647	E0455.100.036 + E0455.100.038	L-2917 + L-2919	E0355.100.016 + E0355.100.018
7,51	10,5	L-2641 + L-3195	E0455.100.033 + E0455.100.039	L-2914 + L-3550	E0355.100.013 + E0355.100.019
10,51	17,8	L-2645 + L-2647	E0455.100.037 + E0455.100.038	L-2918 + L-2919	E0355.100.017 + E0355.100.018
17,81	22,5	L-2645 + L-3195	E0455.100.037 + E0455.100.039	L-2918 + L-3550	E0355.100.017 + E0355.100.019

2. Series 255 ANSI, 455 ANSI

Metallic sealing and flat seal

DN15					
d0 = 15mm		tGFO, tGFL, sGO, sGL			
Pressure range [bar]		Spring			
from	to	455		255	
0,2	0,8	L-1420	E0455.015.026	L-2827	E0355.015.010
0,81	1,5	L-525 N	E0455.015.027	L-2828	E0355.015.011
1,51	1,9	L-1422	E0455.015.028	L-2829	E0355.015.012
1,91	2,4	L-526 N	E0455.015.029	L-2830	E0355.015.013
2,41	2,7	L-2509	E0455.015.030	L-2831	E0355.015.014
2,71	3	L-2015	E0455.015.031	L-2832	E0355.015.015
3,01	3,5	L-1423	E0455.015.032	L-2833	E0355.015.016
3,51	3,9	L-2016	E0455.015.033	L-3140	E0355.015.017
3,91	6	L-527 N	E0455.015.034	L-2834	E0355.015.018
6,01	8,5	L-2017	E0455.015.035	L-2835	E0355.015.019
8,51	11	L-2505	E0455.015.036	L-2836	E0355.015.020
11,01	14,7	L-2018	E0455.015.037	L-2837	E0355.015.021
14,71	18	L-1433	E0455.015.038	L-2838	E0355.015.022
18,01	20	L-529 N	E0455.015.039	L-2839	E0355.015.023

DN25					
d0 = 22,5mm		tGFO, tGFL, sGO, sGL			
Pressure range [bar]		Spring			
from	to	455		255	
0,2	0,9	L-1848	E0455.025.027	L-2842	E0355.025.011
0,91	1,6	L-1849	E0455.025.028	L-2843	E0355.025.012
1,61	2,4	L-1850	E0455.025.029	L-2844	E0355.025.013
2,41	2,8	L-1858	E0455.025.030	L-2845	E0355.025.014
2,81	3,6	L-2405	E0455.025.031	L-2846	E0355.025.015
3,61	4	L-1851	E0455.025.032	L-2847	E0355.025.016
4,01	5,1	L-1852	E0455.025.033	L-2848	E0355.025.017
5,11	6	L-2406	E0455.025.034	L-2849	E0355.025.018
6,01	8,4	L-1853	E0455.025.035	L-2851	E0355.025.019
8,41	12,5	L-1854	E0455.025.036	L-2852	E0355.025.020
12,51	19	L-1855	E0455.025.037	L-2853	E0355.025.021
19,01	20	L-1857	E0455.025.039	L-3302	E0355.025.023

DN32					
d0 = 29,3mm		tGFO, tGFL, sGO, sGL			
Pressure range [bar]		Spring			
from	to	455		255	
0,2	1,2	L-2581	E0455.032.027	L-2855	E0355.032.010
1,21	1,6	L-2582	E0455.032.028	L-2856	E0355.032.011
1,61	2,3	L-2583	E0455.032.029	L-2857	E0355.032.012
2,31	3	L-2584	E0455.032.030	L-2858	E0355.032.013
3,01	3,7	L-2585	E0455.032.031	L-2859	E0355.032.014
3,71	4,5	L-2586	E0455.032.032	L-2860	E0355.032.015
4,51	6,5	L-2587	E0455.032.033	L-2861	E0355.032.016
6,51	8	L-2588	E0455.032.034	L-2862	E0355.032.017
8,01	15	L-2589	E0455.032.035	L-2863	E0355.032.018
15,01	20	L-2590	E0455.032.036	L-2864	E0355.032.019

DN40					
d0 = 36mm		tGFO, tGFL, sGO, sGL			
Pressure range [bar]		Spring			
from	to	455		255	
0,2	1,1	L-1879	E0455.040.028	L-2866	E0355.040.011
1,11	1,4	L-2425	E0455.040.029	L-2867	E0355.040.012
1,41	1,8	L-2435	E0455.040.030	L-2868	E0355.040.013
1,81	2,3	L-1882	E0455.040.031	L-2869	E0355.040.014
2,31	3	L-2437	E0455.040.033	L-2871	E0355.040.016
3,01	3,5	L-2438	E0455.040.034	L-2872	E0355.040.017
3,51	5,3	L-1883	E0455.040.035	L-2873	E0355.040.018
5,31	6,9	L-1884	E0455.040.036	L-2874	E0355.040.019
6,91	10	L-1885	E0455.040.037	L-2875	E0355.040.020
10,01	13	L-2426	E0455.040.038	L-2876	E0355.040.021
13,01	19	L-2503 + L-2504	E0455.040.039 + E0455.040.040	L-2877 + L-2878	E0355.040.022 + E0355.040.023
19,01	20	L-2809	E0455.040.045	L-4362	E0355.040.027

DN50					
d0 = 45mm		tGFO, tGFL, sGO, sGL			
Pressure range [bar]		Spring			
from	to	455		255	
0,2	0,8	L-1860	E0455.050.032	L-2879	E0355.050.011
0,81	1,2	L-1861	E0455.050.033	L-2880	E0355.050.012
1,21	1,7	L-1862	E0455.050.034	L-2881	E0355.050.013
1,71	2,5	L-1869	E0455.050.035	L-2882	E0355.050.014
2,51	3,1	L-1863	E0455.050.036	L-2883	E0355.050.015
3,11	4,5	L-1864	E0455.050.037	L-2884	E0355.050.016
4,51	7,7	L-1865	E0455.050.039	L-2885	E0355.050.018
7,71	15,4	L-1866	E0455.050.041	L-2886	E0355.050.020
15,41	20	L-1867	E0455.050.042	L-2887	E0355.050.021

DN65					
d0 = 59mm		tGFO, tGFL, sGO, sGL			
Pressure range [bar]		Spring			
from	to	455		255	
0,2	1	L-2607	E0455.065.026	L-2889	E0355.065.011
1,01	1,6	L-2608	E0455.065.027	L-2890	E0355.065.012
1,61	2,5	L-2609	E0455.065.028	L-2891	E0355.065.013
2,51	4	L-2611	E0455.065.030	L-2893	E0355.065.015
4,01	8,5	L-2615	E0455.065.034	L-2897	E0355.065.019
8,51	20	L-2615 L-2619	E0455.065.034 E0455.065.038	L-2897 L-2901	E0355.065.019 E0355.065.023

DN100					
d0 = 90mm		tGFO, tGFL, sGO, sGL			
Pressure range [bar]		Spring			
from	to	455		255	
0,2	0,9	L-2639	E0455.100.031	L-2912	E0355.100.011
0,91	1,5	L-2640	E0455.100.032	L-2913	E0355.100.012
1,51	2,5	L-2641	E0455.100.033	L-2914	E0355.100.013
2,51	3,2	L-2642	E0455.100.034	L-2915	E0355.100.014
3,21	4,5	L-2643	E0455.100.035	L-2916	E0355.100.015
4,51	7,5	L-2644	E0455.100.036	L-2917	E0355.100.016
7,51	13	L-2645	E0455.100.037	L-2918	E0355.100.017
13,01	20	L-2644 L-2647	E0455.100.036 E0455.100.038	L-2917 L-2919	E0355.100.016 E0355.100.019

Metallic sealing and flat seal, with bellows

DN15 LP					
d0 = 15mm		tbGFO, tbGFL, bGFO, bGFL			
Pressure range [bar]		Spring			
from	to	455		255	
1	1,4	L-1420	E0455.015.026	L-2827	E0355.015.010
1,41	2	L-516 N	E0455.015.043	L-4355	E0355.015.028
2,01	2,4	L-517 N	E0455.015.044	L-3329	E0355.015.027
2,41	2,7	L-525 N	E0455.015.027	L-2828	E0355.015.011
2,71	3,3	L-1422	E0455.015.028	L-2829	E0355.015.012
3,31	4	L-526 N	E0455.015.029	L-2830	E0355.015.013
4,01	4,4	L-2509	E0455.015.030	L-2831	E0355.015.014
4,41	5	L-2015	E0455.015.031	L-2832	E0355.015.015

DN15 HP					
d0 = 15mm		tGFO, tGFL, sGO, sGL			
Pressure range [bar]		Spring			
from	to	455		255	
5,01	5,3	L-2509	E0455.015.030	L-2831	E0355.015.014
5,31	6,6	L-2015	E0455.015.031	L-2832	E0355.015.015
6,61	7,7	L-1423	E0455.015.032	L-2833	E0355.015.016
7,71	9,5	L-527 N	E0455.015.034	L-2834	E0355.015.018
9,51	11	L-2017	E0455.015.035	L-2835	E0355.015.019
11,01	14	L-2505	E0455.015.036	L-2836	E0355.015.020
14,01	16	L-2018	E0455.015.037	L-2837	E0355.015.021
16,01	18,7	L-1433	E0455.015.038	L-2838	E0355.015.022
18,71	20	L-529 N	E0455.015.039	L-2839	E0355.015.023

DN25 LP					
d0 = 22,5mm		tbGFO, tbGFL, bGFO, bGFL			
Pressure range [bar]		Spring			
from	to	455		255	
0,3	1,1	L-1848	E0455.025.027	L-2842	E0355.025.011
1,11	1,65	L-1849	E0455.025.028	L-2843	E0355.025.012
1,66	2,2	L-1850	E0455.025.029	L-2844	E0355.025.013
2,21	2,7	L-1858	E0455.025.030	L-2845	E0355.025.014
2,71	3,4	L-2405	E0455.025.031	L-2846	E0355.025.015
3,41	4,1	L-1851	E0455.025.032	L-2847	E0355.025.016
4,11	5	L-1852	E0455.025.033	L-2848	E0355.025.017

DN25 HP					
d0 = 22,5mm		tbGFO, tbGFL, bGFO, bGFL			
Pressure range [bar]		Spring			
from	to	455		255	
5,01	5,5	L-1852	E0455.025.033	L-2848	E0355.025.017
5,51	7	L-2406	E0455.025.034	L-2849	E0355.025.018
7,01	8	L-1853	E0455.025.035	L-2851	E0355.025.019
8,01	10,8	L-1854	E0455.025.036	L-2852	E0355.025.020
10,81	14	L-1855	E0455.025.037	L-2853	E0355.025.021
14,01	20	L-1857	E0455.025.039	L-3302	E0355.025.023

DN32 LP					
d0 = 29,3mm		tbGFO, tbGFL, bGFO, bGFL			
Pressure range [bar]		Spring			
from	to	455		255	
0,5	1,1	L-2581	E0455.032.027	L-2855	E0355.032.010
1,11	1,9	L-2582	E0455.032.028	L-2856	E0355.032.011
1,91	2,5	L-2583	E0455.032.029	L-2857	E0355.032.012
2,51	3	L-2584	E0455.032.030	L-2858	E0355.032.013
3,01	3,5	L-2585	E0455.032.031	L-2859	E0355.032.014
3,51	4	L-2586	E0455.032.032	L-2860	E0355.032.015
4,01	5	L-2587	E0455.032.033	L-2861	E0355.032.016

DN32 HP					
d0 = 29,3mm		tbGFO, tbGFL, bGFO, bGFL			
Pressure range [bar]		Spring			
from	to	455		255	
5,01	5,9	L-2594	E0455.032.041	L-4359	E0355.032.024
5,91	7	L-2588	E0455.032.034	L-2862	E0355.032.017
7,01	8,3	L-2589	E0455.032.035	L-2863	E0355.032.018
8,31	11	L-2595	E0455.032.038	L-3330	E0355.032.021
11,01	13,5	L-2590	E0455.032.036	L-2864	E0355.032.019
13,51	15	L-2591	E0455.032.039	L-3331	E0355.032.022
15,01	18	L-2590 + L-2592	E0455.032.036 + E0455.032.037	L-2864 + L-2865	E0355.032.019 + E0355.032.020
18,01	20	L-2591 + L-2592	E0455.032.039 + E0455.032.037	L-3331 + L-2865	E0355.032.022 + E0355.032.020

DN40 LP					
d0 = 36mm		tbGFO, tbGFL, bGFO, bGFL			
Pressure range [bar]		Spring			
from	to	455		255	
0,5	1,5	L-1879	E0455.040.028	L-2866	E0355.040.011
1,51	1,8	L-2582	E0455.032.028	L-2856	E0355.032.011
1,81	2,2	L-1881	E0455.040.044	L-4361	E0355.040.026
2,21	2,3	L-2435	E0455.040.030	L-2868	E0355.040.013
2,31	2,7	L-1882	E0455.040.031	L-2869	E0355.040.014
2,71	2,9	L-2436	E0455.040.032	L-2870	E0355.040.015
2,91	3,6	L-2437	E0455.040.033	L-2871	E0355.040.016
3,61	4	L-2438	E0455.040.034	L-2872	E0355.040.017
4,01	5	L-1883	E0455.040.035	L-2873	E0355.040.018

DN40 HP					
d0 = 36mm		tbGFO, tbGFL, bGFO, bGFL			
Pressure range [bar]		Spring			
from	to	455		255	
5	5,5	L-2438	E0455.040.034	L-2872	E0355.040.017
5,51	6,5	L-1883	E0455.040.035	L-2873	E0355.040.018
6,51	8	L-1884	E0455.040.036	L-2874	E0355.040.019
8,01	11	L-1885	E0455.040.037	L-2875	E0355.040.020
11,01	13	L-2426	E0455.040.038	L-2876	E0355.040.021
13,01	15	L-2503 + L-2504	E0455.040.039 + E0455.040.040	L-2877 + L-2878	E0355.040.022 + E0355.040.023
15,01	20	L-2809	E0455.040.045	L-4362	E0355.040.027

DN50 LP					
d0 = 45mm		tbGFO, tbGFL, bGFO, bGFL			
Pressure range [bar]		Spring			
from	to	455		255	
0,2	1	L-1860	E0455.050.032	L-2879	E0355.050.011
1,01	1,4	L-1861	E0455.050.033	L-2880	E0355.050.012
1,41	1,8	L-1862	E0455.050.034	L-2881	E0355.050.013
1,81	2,2	L-1869	E0455.050.035	L-2882	E0355.050.014
2,21	2,5	L-2438	E0455.040.034	L-2872	E0355.040.017
2,51	3,1	L-1863	E0455.050.036	L-2883	E0355.050.015
3,11	4	L-1864	E0455.050.037	L-2884	E0355.050.016

DN50 HP					
d0 = 45mm		tbGFO, tbGFL, bGFO, bGFL			
Pressure range [bar]		Spring			
from	to	455		255	
4	4,3	L-1863	E0455.050.036	L-2883	E0355.050.015
4,31	4,8	L-1864	E0455.050.037	L-2884	E0355.050.016
4,81	6,8	L-1865	E0455.050.039	L-2885	E0355.050.018
6,81	9,8	L-1866	E0455.050.041	L-2886	E0355.050.020
9,81	12	L-1867	E0455.050.042	L-2887	E0355.050.021
12,01	17	L-3004	E0455.050.044	L-3154	E0355.050.023
17,01	20	L-1868	E0455.050.045	L-2888	E0355.050.024

V-0220 COEFFICIENTS OF FLOW

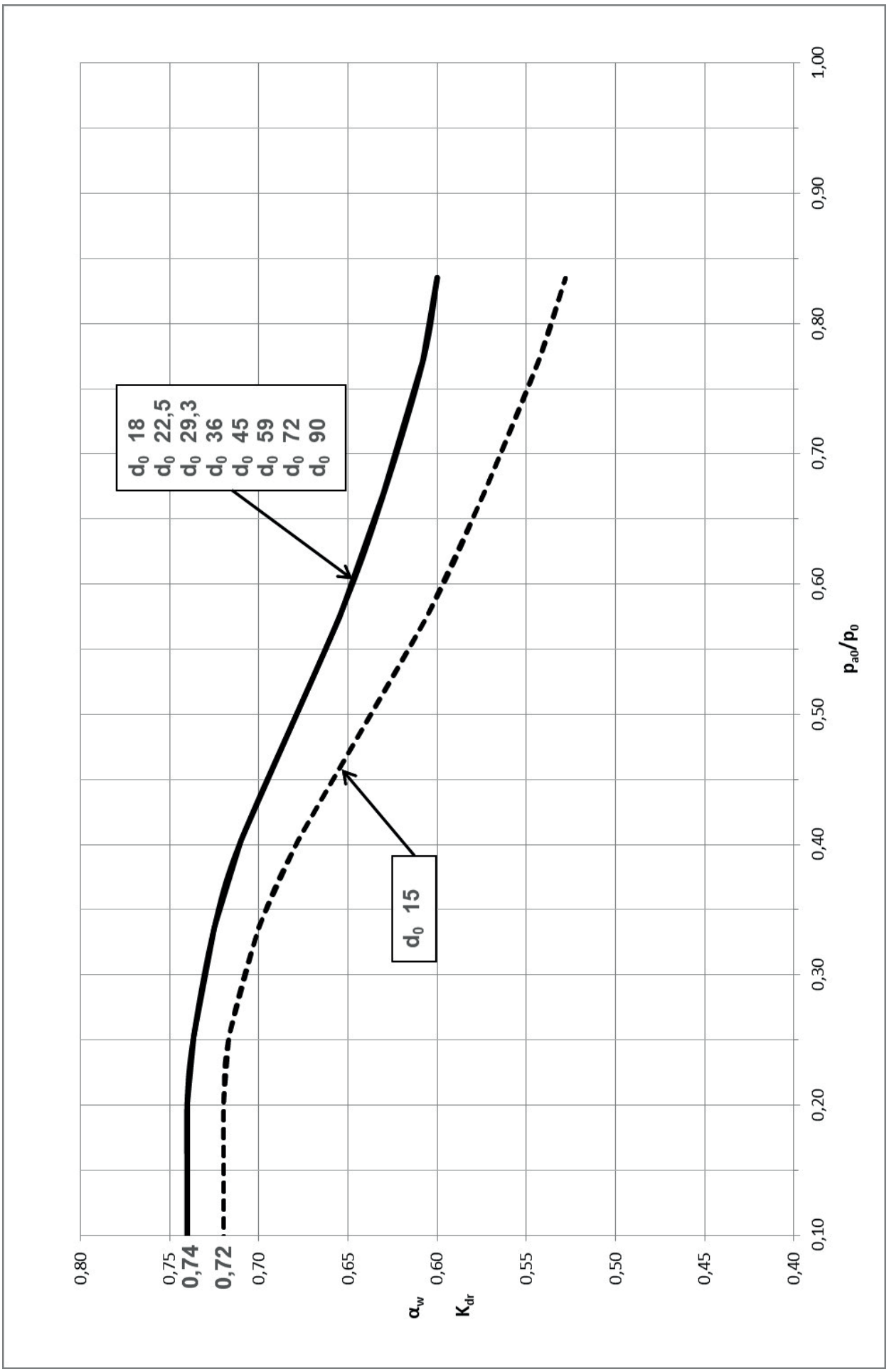
For nominal sizes DN 20 to DN 100

Pressure Range [bar]			
from	to	K_{dr}- or α_w-value	Media
0,2	0,39	0,6	Air
0,4	0,59	0,619	Air
0,6	0,79	0,64	Air
0,8	0,99	0,66	Air
1	1,49	0,68	Air
1,5	1,99	0,712	Air
2	2,99	0,725	Air
3	40	0,74	Air
0,2	40	0,54	Water

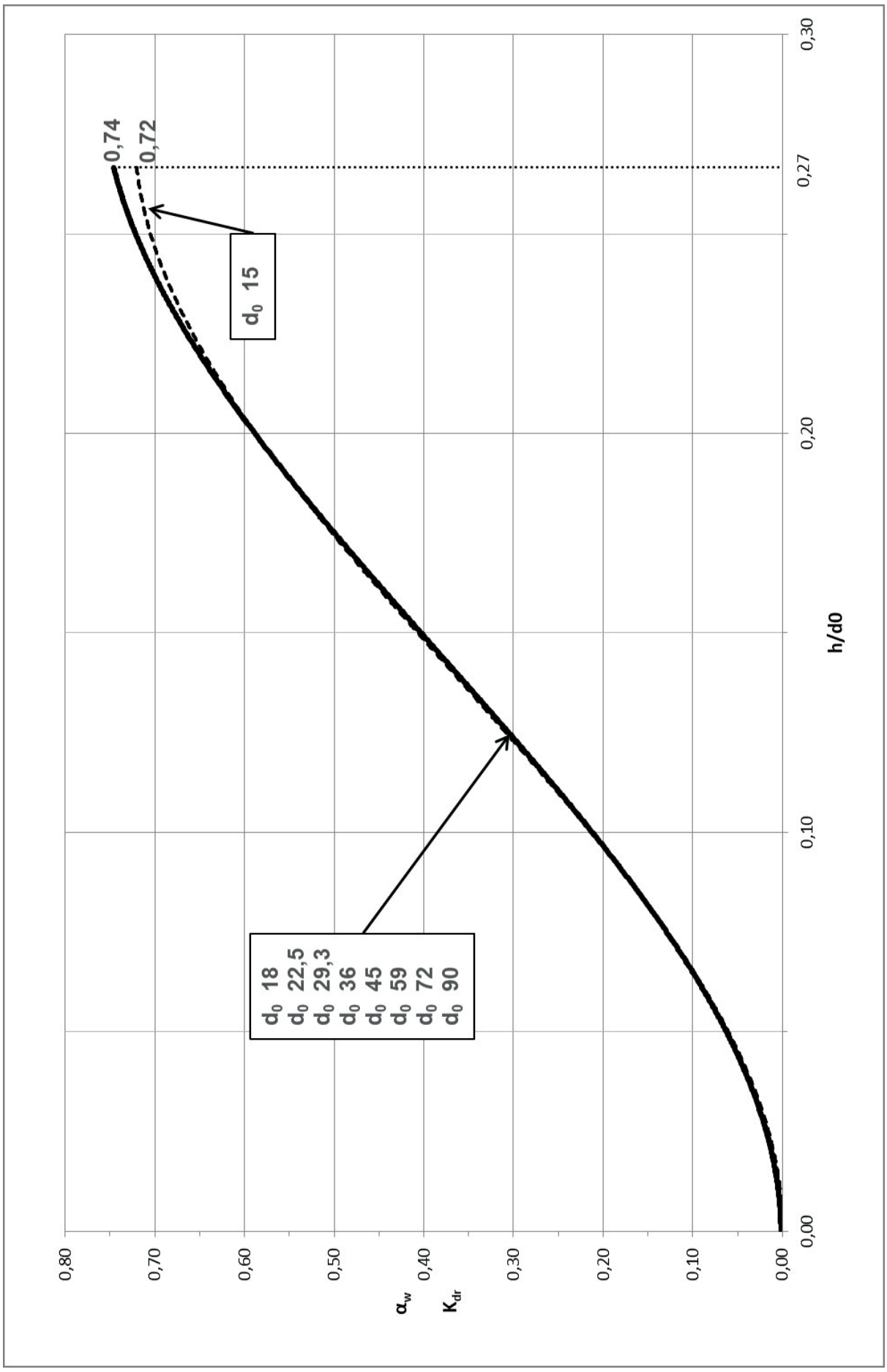
For nominal sizes DN 15

Pressure Range [bar]			
from	to	K_{dr}- or α_w-value	Media
0,2	0,39	0,518	Air
0,4	0,59	0,55	Air
0,6	0,79	0,6	Air
0,8	0,99	0,625	Air
1	1,49	0,652	Air
1,5	1,99	0,699	Air
2	2,99	0,718	Air
3	40	0,72	Air
0,2	40	0,49	Water

Outflow coefficient over back pressure ratio p_{a0}/p_a



Outflow coefficient above h/d_0 - Ratio for determining required stroke reduction



V-0221 TIGHTENING TORQUES

Tightening torque seat

DN	Screw	Tightening torque	Top
15	H-455-15-003 G	55 Nm	SW13
20	H-455-20-007 G	70 Nm	SW13
25	H-455-25-007 G[1)]	85 Nm	SW13
32	H-455-32-003 G	105 Nm	SW24
40	H-455-40-007 G	125 Nm	SW24
50	H-455-50-013 G	165 Nm	SW24
65	H-455-65-003 G	300 Nm	SW30
80	H-455-80-008 G	500 Nm	SW30
100	H-455-100-008 G	750 Nm	SW30

[1)] for the bHL variant, a different tool is required for this nominal width: H-455-25-007 FD B G

Screwing seat into body.

Tightening torque of body screws and nuts

DN	Screw	Tightening torque	Tool
15	M10	45 Nm	SW16/SW17
20	M10	45 Nm	SW16/SW17
25	M12	70 Nm	SW18
32	M14	110 Nm	SW22
40	M14	110 Nm	SW22
50	M16	150 Nm	SW24
65	M16	150 Nm	SW24
80	M16	150 Nm	SW24
100	M16	150 Nm	SW24

Screw connection of spring housing and body.

Tightening torque of cap screws

DN	Screw	Tightening torque	Tool
15	M6	10 Nm	SW10
20	M6	10 Nm	SW10
25	M6	10 Nm	SW10
32	M8	25 Nm	SW13
40	M8	25 Nm	SW13
50	M8	25 Nm	SW13
65	M10	45 Nm	SW16/SW17
80	M10	45 Nm	SW16/SW17
100	M10	45 Nm	SW16/SW17

Screw connection of cap with body with and without lifting device.

V-0223 MACHINING DIMENSIONS FOR METALLIC SEALING SURFACES

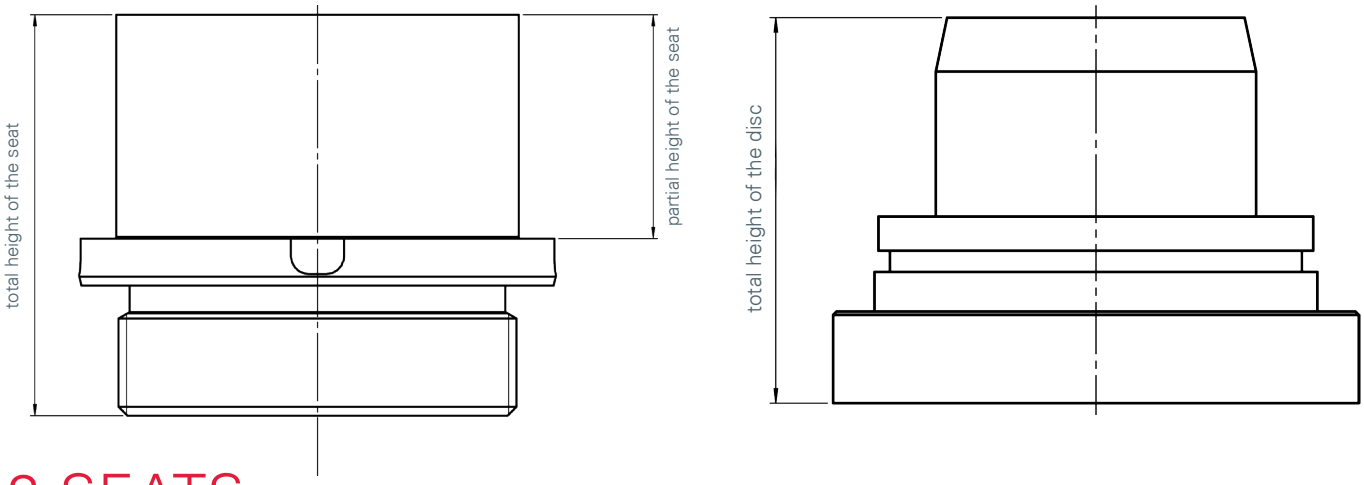
1 MACHINING OF SEALING SURFACES

If the metallic sealing surfaces of the seat or plug are damaged, they can be reconditioned by suitable mechanical processing, e.g. lapping or grinding, to restore the tightness.

In order not to adversely affect the functional and performance characteristics of the safety valve, the total material removal across all machining steps (especially in the case of multiple overhauls) must not result in the seat and cone falling below the minimum heights specified below.

If the damage to the sealing surfaces cannot be repaired while observing the maximum permissible material removal, the affected component must be replaced.

Inspection measures for seat and cone



2 SEATS

Goetze recommends machining the seat sealing surface while it is installed in the body. If this is not possible, the seat can be removed from the body and reinstalled as described in the revision and adjustment instructions V-0195.

The total height of the seats must not fall below the minimum heights specified in the following table after all machining operations. When installed, the partial height shown in the figure below can be used as a reference dimension instead of the total height of the seat.

Minimum seat height in mm:

Series	255, 255 ANSI, 355, 455, 455 Redesign, 455 ANSI								
DN	**15**	**20**	**25**	**32**	**40**	**50**	**65**	**80**	**100**
Total height	23,35	28,00	32,55	37,15	45,25	50,65	66,55	84,35	92,95
Partial height	8,15	12,15	15,75	19,95	25,05	31,95	40,65	50,15	58,55

3 CONES

The total height of the cones must not fall below the minimum heights specified in the following table across all machining operations.

Minimum cone height in mm:

Series	255, 255 ANSI, 455 Redesign, 455 ANSI								
DN	**15**	**20**	**25**	**32**	**40**	**50**	**65**	**80**	**100**
Total	20,95	18,85	20,35	27,95	32,35	25,35	29,95	31,15	34,25

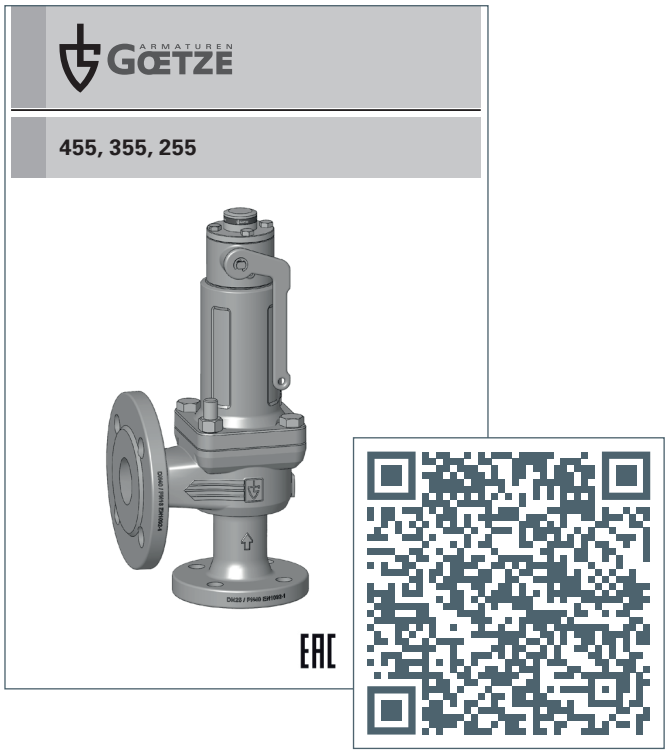
Series	455									
DN	**15**	**20**	**25**	**32**	**40**	**50**	**65**	**80**	**100[1]**	**100[2]**
Total	22,05	19,95	19,95	28,05	33,60	33,45	41,15	43,45	45,45	44,95

[1] Set pressure ≤10bar
[2] Set pressure >10bar

Series	355								
DN	**15**	**20**	**25**	**32**	**40**	**50**	**65**	**80**	**100**
Total	21,05	18,95	20,45	28,05	32,45	35,45	30,15	34,35	44,95

For version with metallic bellows, see cone 455.

ASSEMBLY INSTRUCTIONS 255/355/455



DATA SHEET 255

DATA SHEET 255 ANSI

DATA SHEET 355

DATA SHEET 455

DATA SHEET 455 ANSI