INSTALLATION AND OPERATING MANUAL

Series KSE/F, KSE-C/F

Safety Valves

with cerification
spring-loaded

Keep for future use!

This operating manual must be strictly observed before transport, installation, operation and maintenance

9530-001-en Revision 23 Edition 04/2025

RICHTER
Process Pumps & Valves

List of Contents

Relevant documents

- Data sheet
- EG-Declaration of conformity
- Manufacturer Declaration ATEX Directive 2014/34/EU
- Manufacturer Declaration TA-Luft
- Form for Safety Information Concerning the Contamination QM 0912-16-2001_en

On request :

- Pressure spring table
- Bellows operating ranges, TIS 0587-02-0006
- VDTÜV data sheet "Safety valve 871" in German
- VDTÜV data sheet "Safety valve 100" in German
- Richter publication "Planning and using chemical safety valves" in German

1 Technical data

Manufacturer :

Richter Chemie-Technik GmbH
Otto-Schott-Str. 2
D-47906 Kempen
Telephone: +49 (0) 2152 146-0
Fax: +49 (0) 2152 146-190
E-Mail: richter-info@idexcorp.com
Internet: http://www.richter-ct.com

Designation :

Bellows safety valve with angle-type valve body. They are direct-acting and spring-loaded and classified as standard safety valves as regards their opening characteristic.

Series **KSE/F** → design standard
Series **KSE-C/F** → design conical sealing surfaces

Certified for vapours/gases and liquids:
(DN 25 and DN 50 16 bar) .
Certification number TÜV-SV...871 (S)D/G/(L)F.

Standard safety valve, design and operation to German AD data sheet A2 (on pressure vessels), ISO 4126

Certified to Clean Air Act (TA Luft)

Strength and tightness (P10, P11) of the pressure-bearing body tested to DIN EN 12266-1.

Gas-tight (P12) in the seat to DIN EN 12266-1, leak rate A

Face to face: for DN 25/50, 50/80 and 80/100
DIN EN 558-1 basic series 8, ISO 5752 series 8

Flange connecting dimensions: DIN EN 1092-2, type B
(ISO 7005-2 Typ B) PN 16.
or flanges drilled to ASME B16.5 Class 150

Materials :

Body material: Ductile cast iron EN-JS 1049 / ASTM A395

Lining material: PFA/PTFE .../F
On request: antistatic …/F-L

Set pressure :

Valve size KSE/F	Set pressure [bar]	Valve size KSE-C/F	Set pressure [bar]
25/50	0.25 - 13	**---**	---
50/80	0.1 - 13	**---**	---
80/100	0.1 - 10	**80/100**	0.15 - 1
100/150	0.15 - 10	**100/150**	0.15 - 1

Temperature range : -60 °C to +180 °C
See pressure-temperature diagram in **Section 1.4**.

Valve size inlet/outlet in mm:

KSE/F 25/50, 50/80, 80/100, 100/150
KSE-C/F 80/100, 100/150

Weight:

KSE/F	25/50	ca. 15 kg
KSE/F	50/80	ca. 25 kg
KSE/F, KSE-C/F	80/100	ca. 40 kg
KSE/F, KSE-C/F	100/150	ca. 85 kg

Installation position :

A direction arrow on the shell indicates the direction of flow. See Section **6.5**.

Dimensions and individual parts :

See drawing in **Section 10** and options in **Section 6.8** to **6.13**.

Options :

- Travel stop
- Blocking screw
- gas-tight design
- Signal transmitter
- Design for heavily permeating media (e.g. chlorine)
- shorted lifting lever
- without lifting lever
- See also **Section 6.8** to **6.13**.

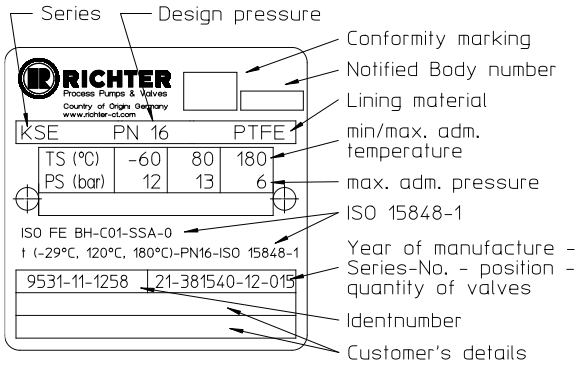
1.1 Type plate, conformity and body markings

The stainless steel name plate is undetachably riveted to the body.

Another stainless steel tag plate riveted to the valve indicates the test pressure.

If the operator attaches his identification, it must be ensured that the valve matches the application in question.

Example of type plate with conformity marking:



Body identification :

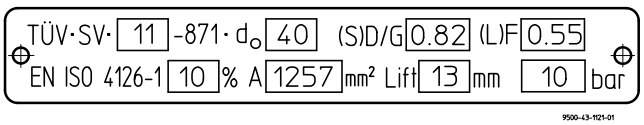
The following are visible on the body according to DIN EN 19 and AD 2000 A4:

- Nominal size
- Rated pressure
- Body material
- Manufacturer's identification
- Melt number/Foundry identification
- Foundry date
- Arrow for direction of flow

1.2 Component identification

Certified safety valves KSE/F and KSE-C/F are identified with a certification plate to the German data sheet A2 (on pressure vessels). This stainless steel plate is riveted to the valve body.

It contains the following details for example:



TÜV = TÜV symbol
SV = Safety valve
11 = Year of certification (here: 2011)
871 = Certification number (here: 871)
d0 = Narrowest flow Ø in mm (here: 40)
(S)D/G = intended for discharging vapours/ gases
(L)F = intended for discharging liquids
αw = Certified coefficient of discharge (here: 0.82 for (S)D/G and 0.55 for (L)F)
% = Opening pressure difference (here 10%)
A = Narrowest flow cross section (here 1257 mm²)
Lift = (here 13 mm)
p = Test pressure in bar (here 10 bar)

1.3 Tightening torques

All screws greased, tighten in diametrically opposite sequence!

The tightening torques for pipe screws and body screws mentioned must not be exceeded. For an exception, see **Section 8**, Flange connection valve / pipe is leaking.

The following tightening torques are recommended.

Pipe screws, flanges to ISO/DIN

Flange nom. size [mm]	screws [ISO/DIN]	Tightening torque [Nm]
25	4 x M12	10
50	4 x M16	26
80	8 x M16	25
100	8 x M16	35
150	8 x M20	65

Pipe screws, DIN/ISO flanges drilled to ASME

Flange nom. size		screws	Tightening torque	
[mm]	[inch]	[ASME]	[Nm]	[in-lbs]
25	1"	4 x ½“	8	70
50	2"	4 x ⅝“	25	220
80	3"	8 x ⅝“	45	400
100	4"	8 x ⅝“	35	310
150	6"	8 x ¾“	80	710

Screws body / inlet nozzle

Valve type	screws	Tightening torque	
		[Nm]	[in-lbs]
KSE 25/50	4 x M10	12	106
KSE 50/80	4 x M12	25	221
KSE, KSE-C 80/100	8 x M10	20	177
KSE, KSE-C 100/150	8 x M16	25	221

Screws body / spring bonnet

Valve type	screws	Tightening torque	
		[Nm]	[in-lbs]
KSE 25/50	4 x M12	25	221
KSE 50/80	4 x M12	25	221
KSE, KSE-C 80/100	4 x M12	25	221
KSE, KSE-C 100/150	8 x M12	25	221

Hex. socket screws 914/1 of the bellows gasket

Valve type	screws	Tightening torque	
		[Nm]	[in-lbs]
KSE 25/50	4 x M8	10	89
KSE 50/80	4 x M8	12	106
KSE, KSE-C 80/100	4 x M8	12	106
KSE, KSE-C 100/150	8 x M8	15	133

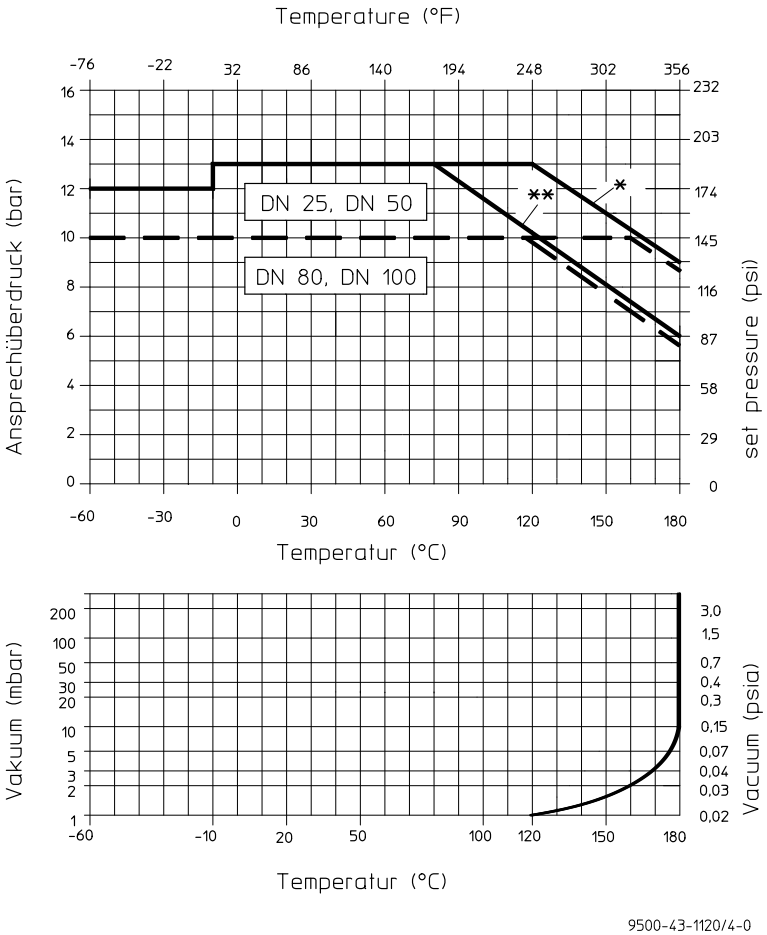
1.4 Pressure-temperature diagram

When used in the minus temperature range, the regulations applicable in the country in question must be observed.

The diagram shows the max. admissible pressure / temperature loading of the body.

For applications under -10 °C (+14 °F) to -60 °C (-76 °F) a special material must be selected for the thrust flange and spindle.

2014/68/EU (PED), AD2000, DIN EN 16668



* metal seat

** seat/plug PTFE carbon or TFM 1600/PTFE

DIN EN ISO 15848-1 certificate valid from -29°C to 180°C

2 Safety

This operating manual contains fundamental information which is to be observed during installation, operation and maintenance.
It must be read before installation and commissioning!

For overflow valves which are used in potentially explosive areas, see **Section 3**.

Installation, operation and maintenance are to be performed by qualified staff.

The area of responsibility, authority and supervision of the staff must be regulated by the customer.

General hazard symbol!
People may be put at risk.

Safety symbol! The ball valve and its function may be put at risk if this safety symbol is not observed.

It is imperative to observe warnings and signs attached directly to the valve and they are to be kept fully legible.

Non-observance of the notes on safety may result in the loss of any and all claims for damages.

Non-observance may involve the following hazards :

- Failure of important functions of the valve/plant.
- Risk to people from electric, mechanical and chemical effects.
- Risk to the environment through leaks of hazardous substances.

2.1 Intended use

Richter safety valves of the series KSE/F and KSE-C/F are pressure-maintaining components with safety function in accordance with the Pressure Equipment Directive (DGRL). They protect the pressure equipment if the admissible pressure limit is exceeded.
KSE/F and KSE-C/F are only intended for vertical installation.

The valves are suitable for vapours, gases and non-boiling liquids of group 1 in acc. with the Pressure Equipment Directive (DGRL).

They have a corrosion-resistant plastic lining.

Safety valves are intended to prevent inadmissible excessive pressures, e.g. in piping systems, pressure vessel plants and boilers. Risks to people, the environment and plants are thus avoided.

Solids can lead to increased wear, damage to sealing surfaces or to a reduction in the service life of the valve.

Safety valves have been set at the works to the desired test pressure, tested and lead-sealed.

Exact operating conditions of the safety valve selected are documented in the **data sheet**. There you will find the performance characteristics such as the certified coefficient of discharge, flow area, set pressure, opening pressure, reseating pressure and materials.

In case of the valve is intended for operating data other than those intended, the customer must carefully examine whether the design of the valve, accessories and materials are suitable for the new application. (Please consult the manufacturer).

2.2 For the customer / operator

If a safety valve is used, the operator must ensure that

- hot or cold valve parts are protected by the customer against being touched
- the safety valve has been properly installed in the pipe system
- the operating conditions stipulated in the data sheet are not exceeded in continuous operating mode.

This is not the manufacturer's responsibility.

Loads caused by earthquakes were not allowed for in the design.

Fire protection to DIN EN ISO 10497 is not possible (plastic lining and plastic components).

2.3 Improper operation

The operational safety of the valve supplied is only guaranteed if it is used properly in accordance with **Section 2.1** of this operating manual.

The operation limits specified on the name plate and in the pressure-temperature diagram must under no circumstances be exceeded.

See also improper operation and their consequences in **Section 7.4**.

3 Safety notes for applications in potentially explosive areas based on the Directive 2014/34/ EC (ATEX)

The valves are intended for use in a potentially explosive area and are therefore subject to the conformity assessment procedure of the directive 2014/34/EC (ATEX).
As part of this conformity assessment, an ignition hazard analysis to EN 13463-1 to satisfy the fundamental safety and health requirements was conducted with the following result:

- **The valves do not have any ignition source of their own.**
- **The valves are not covered by the scope of application of the ATEX directive and therefore do not need to be identified accordingly.**
- **The valves may be used in a potentially explosive area.**

It is imperative to observe the individual points of intended use for application in a potentially explosive area.

3.1 Intended use

Improper operation, even for brief periods, may result in serious damage to the valve.

In connection with explosion protection, potential sources of ignition (overheating, electrostatic and induced charges, mechanical and electric sparks) may result from these inadmissible modes of operation; their occurrence can only be prevented by adhering to the intended use.

Furthermore, reference is made in this connection to the Directive 95/C332/06 (ATEX 118a) which contains the minimum regulations for improving the occupational health and safety of the workers who may be at risk from an explosive atmosphere.

A difference is made between two cases for the use of chargeable liquids (conductivity < 10^{-8} S/m):

1. Chargeable liquid and non-conductive lining

Charges can occur on the lining surface. As a result, this can produce discharges inside and outside the valve.

a) Discharges inside the valve

However, these discharges inside the valve cannot cause ignitions if the valve is completely filled with medium.

If the valve is not completely filled with medium, e.g. during evacuation and filling, the formation of an explosive atmosphere must be prevented, e.g. by superimposing a layer of nitrogen. It is recommended to wait 1 hour before removing the valve from the plant in order to permit the elimination of static peak charges.

This means that, to safely prevent ignitions, the valve must be completely filled with medium at all times or else a potentially explosive atmosphere must be excluded by superimposing a layer of inert gas.

b) Discharges outside the valve

At the points where the non-conductive lining e.g. protrudes on the sealing surfaces to the outside or gets contact with the atmosphere on the outside, it may lead to discharges from the lining to nearby valves or attachments.

To safely avoid explosion hazards and accidents, therefore, the atmosphere surrounding the valve must not be explosive.

2. Chargeable liquid and conductive lining

No hazardous charges can occur as charges are discharged direct via the lining and shell (surface resistance < 10^9 Ohm, leakage resistance < 10^6 Ohm).

If non-conductive versions of individual components are installed in the valve, it may restrict the permitted ATEX zone and explosion subgroup when operating the valve despite the conductive lining of the armor plating (see “Technical rules for hazardous substances: Avoidance of ignition hazards due to electrostatic charges” (TRGS 727)).
In these cases, consult the manufacturer.
Static discharges of non-conductive linings are only produced through the interaction with a non-conductive medium and are therefore the responsibility of the plant operator.

Static discharges are not sources of ignition which stem from the valves themselves!

- The temperature of the medium must not exceed the temperature of the corresponding temperature class or the maximum admissible medium temperature as per the operating manual.
- If the valve is heated (e.g. heating jacket), it must be ensured that the temperature classes prescribed in the Annex are observed.
- To achieve safe and reliable operation, it must be ensured in inspections at regular intervals that the valve is properly serviced and kept in technically perfect order.
- Increased wear to the valve can be expected with the conveyance of liquids containing abrasive constituents. The inspection intervals are to be reduced compared with the usual times.
- Actuators and electric peripherals, such as temperature, pressure and flow sensors etc., must comply with the valid safety requirements and explosion protection provisions.

- The valve must be grounded.

  This can be achieved in the simplest way via the pipe screws using tooth lock washers.

  Otherwise grounding must be ensured by different measures e.g. a cable link.

- Plastic-lined valves must not be operated with carbon disulphide.

4 Safety note for valves, certified to Clean Air Act (TA Luft)

Certificate / Manufacturer Declaration Validity is dependent on the operating instructions being read and observed.

- Carry out regular maintenance intervals and check the tightness of the screw connections and tighten as necessary.

5 Transport, storage and disposal

For all transport work, observe generally accepted engineering practice and the accident prevention regulations.

The valve is supplied with flange caps. Do not remove them until just before installation. They protect the plastic surfaces against dirt and mechanical damage.

Handle the goods being transported with care. During transport protect the valve against impacts and collisions.

Never transport the valve using the lifting lever 238.

See sectional drawings in **Section 10**.

Place valve horizontally on the pallet with the discharge flange facing down and pad out the box; transport in this way and deposit gently on a flat surface.

Directly after receipt of the goods, check the consignment for completeness and any in-transit damage.

Do not damage paint protection.

With the KSE/F and KSE-C/F 100/150 valves, a ring bolt **900/1** is screwed into the lifting cap **535** which facilitates transport. It must be ensured that the ring bolt lies on the axis of the discharge flange so that equilibrium is guaranteed when the valve is lifted. See **View W** in **Section 10.4**.

5.1 Transport securing for KSE/F

Safety vales with set pressures ≤ 0.5 bar are fitted at the works with a transport fastening strap which holds the stem in the axial direction
and prevents damage to the shut-off element as a result of the stem shaking during transport. See **Fig. 1** and **Section 5.7**.

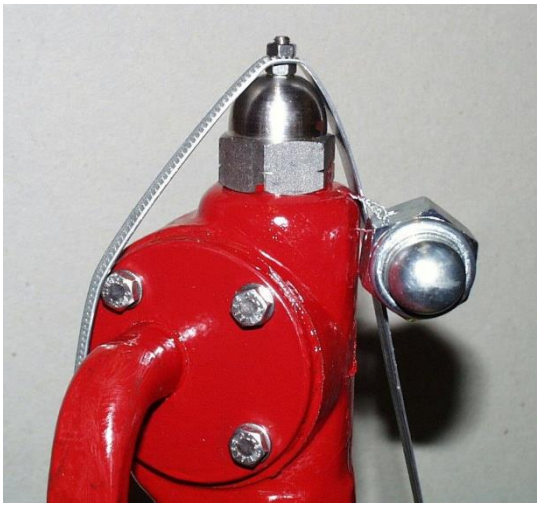


Fig. 1

Remove the safety wire between the lifting lever **238** and one connection screw **901/1** of the lifting cap **513** /body **100 prior to commissioning**.
See **Section 6.7** and **Fig. 2**.

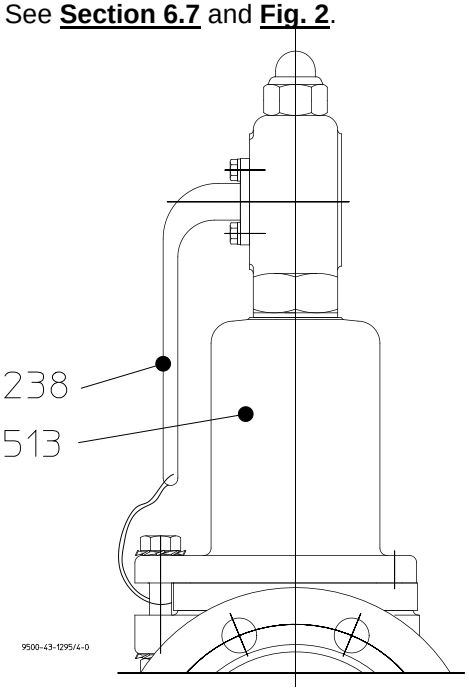


Fig. 2

5.2 Transport securing for KSE-C/F

The threaded rod is screwed through the inlet nozzle into the plug. It is inserted through the central bore of the flange cover and screwed against the inlet flange with a wooden disc and a self-locking hex. nut. See **Fig. 3**.

The flange cover can only be removed when the transport securing screw has been removed. This ensures that it is only possible to install the valve when the stem locking device has been removed.

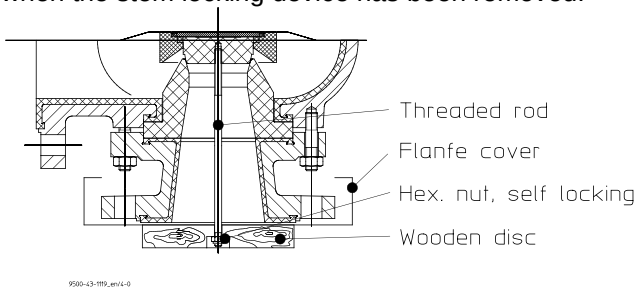


Fig. 3

5.3 Storage

If the valve is not installed immediately after delivery, store them properly.
It should be stored in a dry, vibration-free and well-ventilated room at as constant a temperature as possible.
Protect elastomers against UV light.
In general, a storage period of 10 years should not be exceeded.

Store the valve in an upright position and secure it from falling over!

In case of prolonged storage individual packing with a desiccant may be necessary. Pay attention to local site.

5.4 Return consignments

Valves which have conveyed aggressive or toxic media rinse and clean before being returned to the manufacturer's works.
It is **imperative** to enclose a **safety information sheet / general safety certificate** on the field of application with the return consignment.

Pre-printed forms are enclosed with the installation and operating manual.

Safety precautions and decontamination measures are to be mentioned.

5.5 Disposal

Parts of the valve may be contaminated with medium which is detrimental to health and the environment and therefore cleaning is not sufficient.

Risk of personal injury or damage to the environment due to the medium!

- Wear protective clothing when work is performed on the valve.
- Prior to the disposal of the valve:
  - Collect any medium, etc. which has escaped and dispose of it in accordance with the local regulations.
  - Neutralise any medium residues in the valve.
- Separate valve materials (plastics, metals, etc.) and dispose of them in accordance with the local regulations.

6 Installation

The installation conditions to the AD 2000 Code A2 (on pressure vessels) and TRD721 are to be observed. They are major preconditions for the safe operation of the valve.

- Examine valve for in-transit damage, damaged safety valves must not be installed.
- Before installation the valve and the connecting pipe must be carefully cleaned to remove any dirt, especially hard foreign matter.
- During installation, pay attention to the correct tightening torque, aligned pipes and tension-free assembly.

6.1 Sizing of the outlet line

The admissible pressure loss in the inlet line must not exceed 3% of the set pressure of the safety valve.

The determination of the pressure loss relates to the maximum flow of the valve at 110% of the set pressure and 110% of the certified coefficient of discharge.

- An excessive pressure loss at the inlet of the safety valve can cause rapid opening and reseating of the valve or chattering.
- Chattering results in a reduction in the discharge capacity and may cause an inadmissible rise in pressure in the system and damage to the seat sealing surfaces.
- **The inlet line must never be smaller than the nominal diameter of the safety valve inlet.**
- Lay supply lines as short as possible.
- Install, if at all possible, the valve directly on the container to be protected.
- At least chamfer the container nozzle in the inlet or even better provide with a radius.
- An inlet nozzle with a tapered design has the best shape in terms of flow.

6.2 Sizing of the outlet line

Outlet lines are to be sized so that reliable functioning of the valve is ensured under all expected operating conditions.

The medium is to be discharged so that there is no risk to people and the environment. The statutory provisions (e.g. accident prevention regulations, and the equivalents of the German Pollution Control Act or the German Clean Air Code) as well as local regulations (works standards) are to be observed.

Lines for the drainage of condensate are to have adequate cross sections. They are to be laid with a gradient and must ensure safe drainage of the medium.

- There must be no possibility of the safety valves becoming ineffective due to shut-off elements.

6.2.1 Admissible back pressure

- **The outlet line must never be smaller than the nominal diameter of the safety valve outlet.**
- The admissible back pressure in the valve outlet must not be exceeded in order to prevent destruction of the bellows or a reduction in the discharge capacity.

Manufacturer's information on permissible back pressures contains the safety valve test certificate or the Richter publication "Component-tested chemical safety valves, KSE series".

Detailed instructions for calculating the supply and blow-off line are contained in the Richter publication "Planning and implementing chemical safety valves". This can be requested from Richter.

6.2.2 Drainage of condensate

Lay horizontal pipes with a gradient away from the valve so that the liquid medium cannot accumulate in the valve body and that, in the case of gases, no condensate collects in the body.

If outlet lines are laid with a geodetic level difference (e.g. for vapours or gases with a 90° vertical upright pipe bend out of the valve), the bend must not be located directly downstream of the valve.

A horizontal pipe section with a gradient must firstly be installed downstream of the valve.

A draining facility must be provided at the lowest point in the pipe. This opening for the drainage of condensate must be lower than the flow chamber of the body.

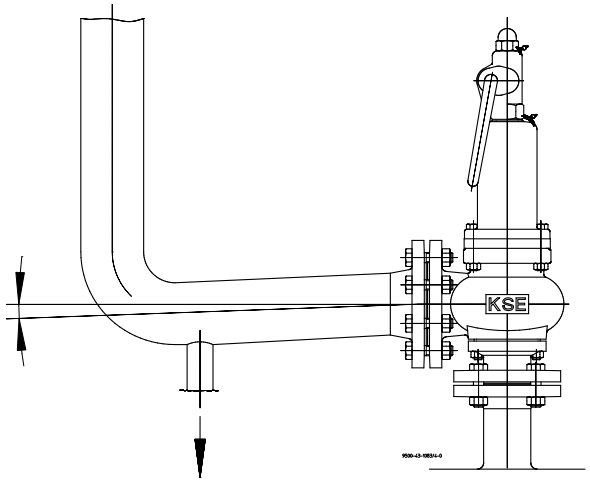


Fig. 4

6.2.3 Discharge conditions and reaction forces

At low temperatures:

Outlet lines must be protected against freezing. This applies in particular if gas cooling as a result of expansion is to be expected or lines are laid outdoors.

With crystallising media:

In the case of media which tend to crystallise, solidify or stick, appropriate action must be taken to ensure that the solidification process cannot take place in the inlet or outlet lines or in the body (e.g. installed rupture disc, insulation, heating). e.g. installed rupture disc, insulation, heating

With gassing media

In the case of gassing or vaporising liquids, adequately dimensioned flashtraps must be located in the direct vicinity of the valve.

Reaction forces during discharge

The pipes and their holders are to be dimensioned so that their weight forces and the reaction forces and thermal loads produced during discharge can be safely absorbed.

Instructions for calculating the reaction forces are contained in the Richter publication "Plan and install safety valves".

6.3 Valve connecting dimensions

The main dimensions are contained in the dimensional drawing in **Section 10.5**.

6.4 Flange caps and gaskets

- Contamination of or damage to the sealing surfaces is best avoided if the protective caps remain on the flanges until just before installation.

If plastic sealing surfaces, e.g. on mating flanges made of metal or enamel, can be damaged, use PTFE-lined seals with a metal inlay. These gaskets are available as special accessories in the Richter range.

6.5 Direction of flow and installation position

The direction of flow must be observed when installing the valve. It is indicated by a direction arrow on the valve body.

- A mix-up of the inlet and outlet will result in the valve becoming ineffective and the bellows may be destroyed.
- Always install the safety valve with the stem in a vertical position.

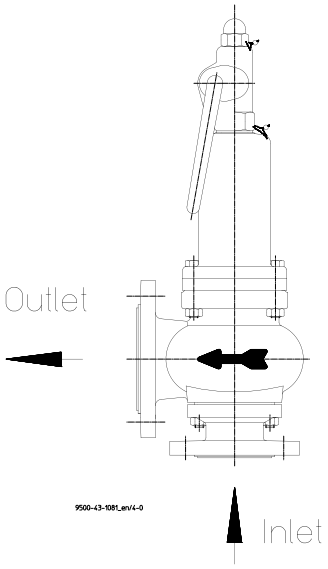


Fig. 5

6.6 Grounding

The valve must be grounded. This can be achieved in the simplest way via the pipe screws using tooth lock washers. One pipe screw per flange is underlaid with toothed disks.

At the customer's request a setscrew M6 with a hex. nut and washer will be provided at each flange as an additional grounding connection.

Otherwise grounding must be ensured by different measures e.g. a cable link.

6.7 Installation

- The plant components to be protected are to be cleaned thoroughly prior to installation of the valve.
- Solids jeopardise the soft-sealing, high-precision surfaces of the seat and plug and permanent leaks could arise. The valve will leak.
- The safety valve must be installed so that no inadmissible mechanical or thermal stresses are transmitted from the attached pipes to the body.
- Changes in length of the pipes due to temperature are to be allowed for, e.g. through the installation of expansion joints.
- Remove the flange covers.
- For KSE/F:

  Before installation (vales with set pressures ≤ 0.5 bar), remove metallic transport securing strip and cap nut for securing the valve during transport. Screw on attached lead-sealed cap nut **927/1**. See **Section 5.1**.
- For KSE-C/F:

  Before commissioning, remove transport securing device. See **Section 5.2**.
- Remove the securing wire between the bonnet **513** and the lifting lever **238**.
- Position and align the safety valve and any additional gaskets. Then tighten the pipe screws with a torque wrench in diametrically opposite sequence.

  For tightening torques, see **Section 1.3**.

6.8 Blocking screw (option)

During the pressure test of the plant the safety valve cannot discharge through the blocking screw.

- This blocking screw may only be used for this purpose. **Always remove again immediately**.
- Damage to the valve could occur and pressure protection is then no longer provided.
- The lead-sealed cap nut **927/1** is replaced during the pressure test of the plant by a cap nut **927/1B with an additional tapped bore** for the blocking screw **901/4**.
- In the **KSE/F 100/150** the lead-sealed hex. screw **901/3** is replaced by a threaded rod **918/1** with a prevailing torque type hex. nut **929/2**.

  The cap nut/blocking screw or the threaded rod/hex. nut are supplied separately. See also **Fig. 6**.
- After the pressure test **remove** the cap nut **927/1B** with the blocking screw **901/4** or threaded rod **918/1** with the hex. nut **929/2** again.
- Screw in the cap nut **927/1** or the hex. screw **901/3** with the bore for the lead seal again and have them lead-sealed again. See also **Fig. 6**.

DN 100/150 **DN 80/100**

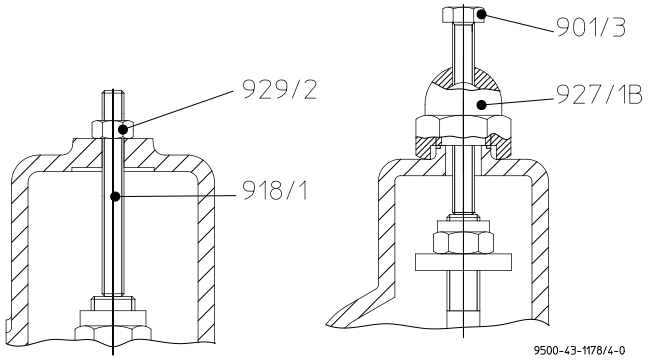


Fig. 6

Legend see **Section 10.1**

6.9 Gas-tight design (Option)

An O-ring **400/4** seals the lifting lever **238**.

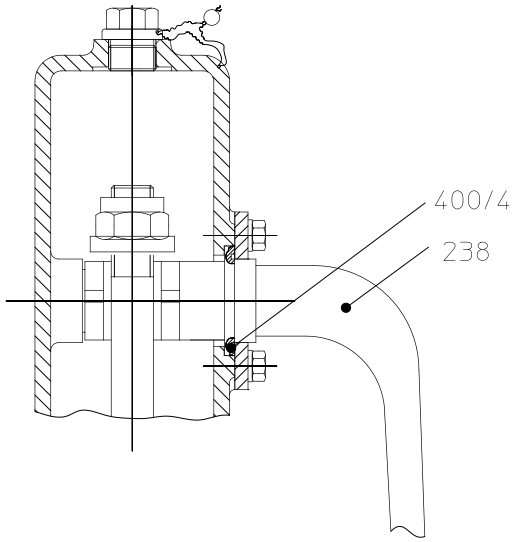


Fig. 7

Legend see **Section 10.1**

6.10 Signal transmitter (Option)

On request, an signal transmitter is available for remote monitoring.

- Glue in stem extension **805** (e.g. Loctite 638) and secure with a hex. nut **920/4**.
- The support, lower part, **542** is screwed on instead of the cap nut **927/1**.
- Insert the O-ring **400/3**.
- Mount support, upper part, **541**.
- Screw in signal transmitter **859**; after adjustment, counter with hex. nut.
- Secure support, upper part, with setscrew **904/1**.
- Design with blocking screw:

  Insert the O-ring **400/2**, screw in hex. screw **901/4** and lead-seal. See **Fig. 10.**

DN 25/50, 50/80, 80/100

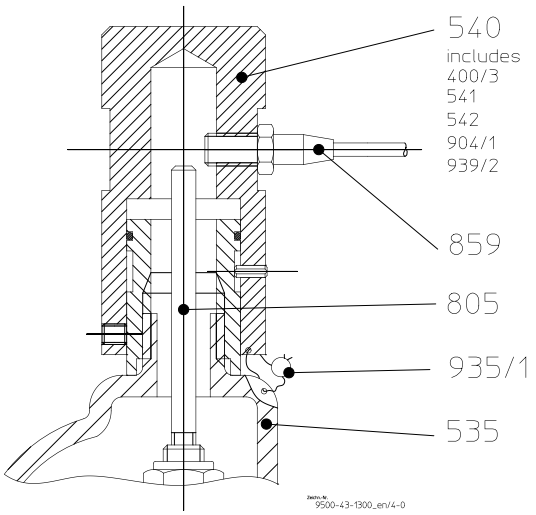


Fig. 8

DN 100/150

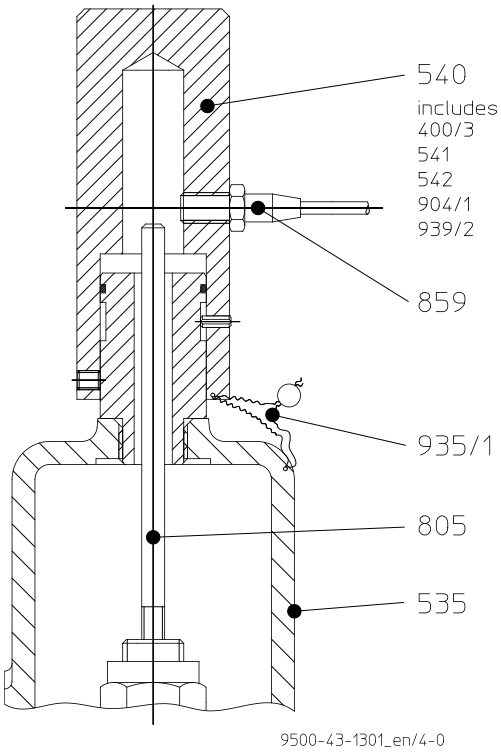


Fig. 9

Design signal transmitter for blocking screw

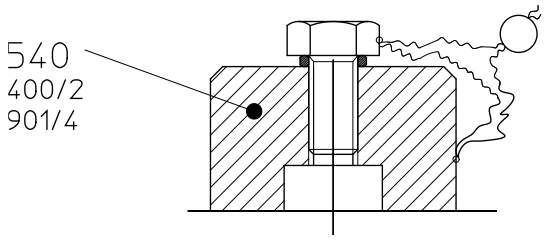


Fig. 10

Legend see **Section 10.1**

6.11 Design for heavily permeating media (Option)

Spindle **802**, insert sleeve **308**, cylindrical pin **561/1**, pressure ring **124**, bearing guide **305** and adjusting screw **538** are made of HC-4. See sectional drawing in **sections 9.2** and **9.3**.

In addition, with the **sizes 80/100** and **100/150** the adjusting screw **538** has a guide bush **307/2** made of PTFE. See **Fig. 11.**

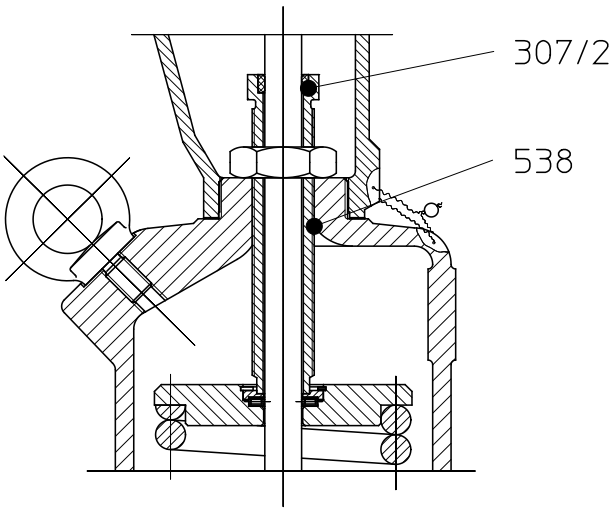


Fig. 11

With **size 100/150** the bellows guide **860** made of PTFE protects the stem guide **306**. See **Fig. 12**.

With the other sizes the stem guide is made of HC-4.

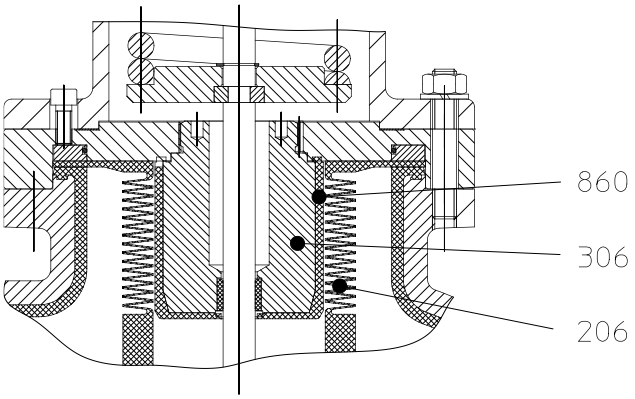


Fig. 12

Legend see **Section 10.1**

6.12 Shortened or no lifting lever (Option)

In order to exclude unauthorised activation,

- the lifting lever **238** can be shortened; a lever is supplied loose. See **Fig. 13.**
- the valve can be without a lifting lever; the locking plate **539** is not bored. See **Fig. 14.**

Fig. 13

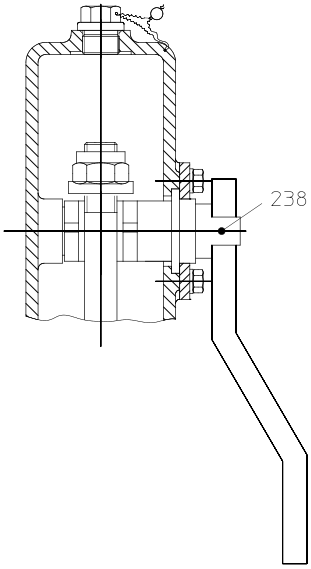
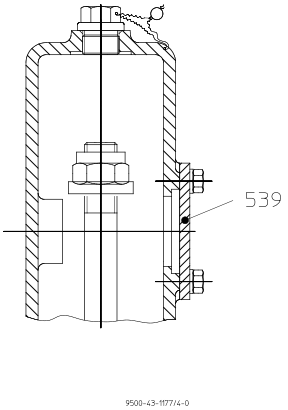


Fig. 14



Legend see **Section 10.1**

6.13 Travel stop (Option)

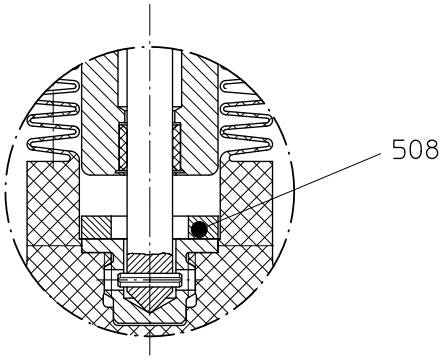


Fig. 15

Legend see **Section 10.1**

7 Operation

7.1 Initial commissioning

Normally, the valves have been tested for leaks with air or water.

Unless otherwise agreed there could be residual amounts of water in the flow section of the valve. This could result in a possible reaction with the medium.

The max. operating pressure of the plant must generally be less than the reseating pressure of the safety valve.

To prevent external leaks, it is possible to retighten all connecting screws after the valve has been subjected to the initial operating pressure and temperature.
For tightening torques, see **Section 1.3**.
.

7.2 Shutdown

- The local regulations are to be observed when dismantling the valve.

Prior to undoing the flange connection ensure, that the plant is depressurised and emptied.

- Prior to starting any repair work, the valve is to be thoroughly cleaned. Medium residue may be in the valve even if it has been properly drained and flushed.
- After dismantling, immediately protect the valve flanges against mechanical damage by using flange caps. See also **Section 7.4**.

7.3 Recommissioning

When recommissioning the valve, make sure that all the appropriate steps as described in **Section 6.1** to **6.7** and **Section 7.1** are repeated.

7.4 Improper operation and their consequences

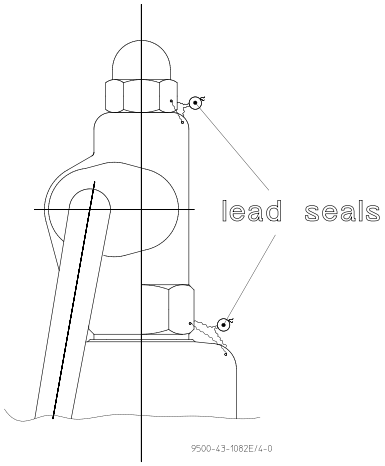


Fig. 16

- The test pressure, checked by the manufacturer, an approved authority or the supervisory company responsible is secured against unauthorised adjustment by a lead seal.
- A broken lead seal must be replaced without delay. This can either be done by the manufacturer, the approved authority or the supervisory company responsible.

It is emphasised that in the case of the operating company adding the lead seal itself, it automatically assumes full responsibility for any operational hazard and resulting damage.

- The travel set at the manufacturer's works ensures reliable operation of the valve. It is forbidden to arbitrarily alter the travel or to totally block the valve.
- During operation of the valve, no hard foreign matter may be found between the seat and the plug of the valve.
- If foreign matter is deposited on the sealing surfaces during reseating of the valve, the valve is probably not tight. Damage may also occur to the plastic sealing surfaces.

8 Malfunctions

♦ Safety valve is leaking

Is there foreign matter between the seat and plug?

Is there any wear or damage to the seat or plug?

Have the nuts at the inlet nozzle been unevenly tightened?

Actuation of the lifting lever can help to regain the required sealing effect. If this does not succeed in stopping the leak, the sealing surface of the plug must either be reworked or the plug or seat must be replaced.

♦ The lift given in the test certificate is not achieved

Are the bellows impeded in their movement by external influences (e.g. foreign matter, solidified medium between the folds etc.)?

Has the insert sleeve **308** been screwed out of the thread of the bellows?

For measuring the valve lift, see **Section 9.9.1**.

If the required lift is still not attainable after elimination of the disorders, an examination at the manufacturer's is necessary.

♦ Medium is escaping at the bonnet

Have the hex. socket screws **914/1** not been tightened?

If, after tightening the screws, tightness still cannot be restored, either the plastic lining or the bellows is damaged.

The cause of cracked bellows could have been, for example, an inadmissibly high back pressure during operation of the safety valve. Dismantle the safety valve and have it repaired.

♦ Flange connection ball valve/pipe is leaking

Check the torque of the pipe screws with a torque wrench. (see **Section 1.3**) If tightness is not achieved, the recommended torque may be exceeded by 10%.

If it still proves impossible to stop the leak, then the lining is damaged. Dismount valve and repair.

♦ The safety valve chatters during discharge

Do the inlet and outlet lines conform to the relevant regulations?

See also **Section 6.1** and **6.2**.

Is the valve oversized ?

Valves which are too large can subsequently be adapted to the mass flow reducing the lift. To this end, the required lift is determined and a travel stop ring is mounted inside the valve.

9 Maintenance

Safety valves must be checked for operability at regular intervals according to the national regulations (in Germany: UVV - pressure vessels, VBG 17 § 32 and TRD 601 sheet 2, paragraph 3.4).

- The intervals for regular checks are to be laid down by the customer in line with the operating conditions.
- The lifting lever **238** allows the valves to be actuated from outside, they then open at the operating pressure available. For lifting, the pressure is to be at least 85% of the test pressure.
- All repair work is to be performed by qualified personnel using the appropriate tools.
- For the arrangement, designation and item numbers of all parts of the valve, see **Section 10**.
- Spare parts are to be ordered with all the details in acc. with the valve identification.
- Only original spare parts may be installed.

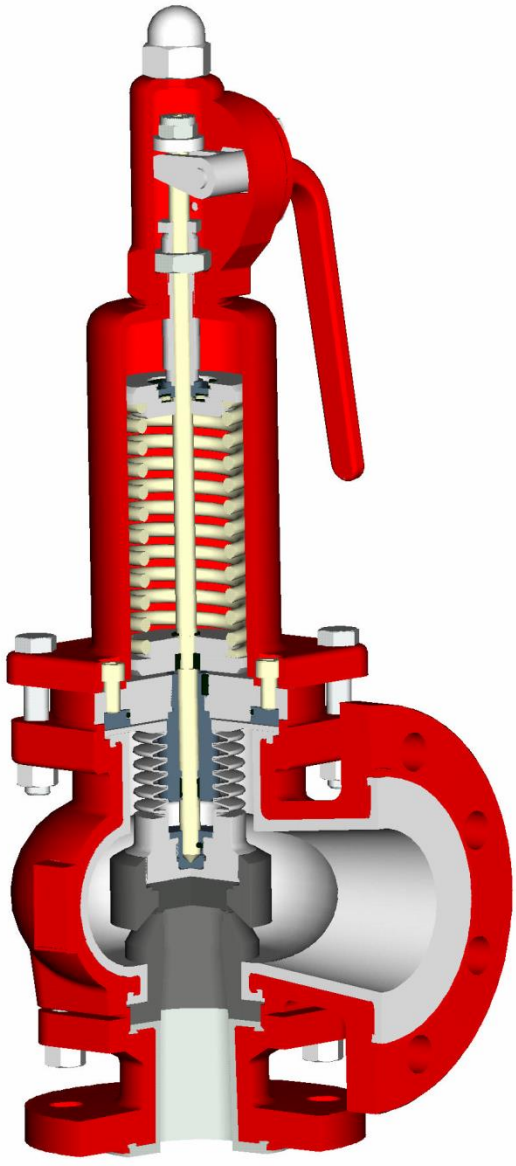


Fig. 17

9.1 Screw connections

- To prevent leaks, a regular check of the connection screws should be made in line with the operating requirements.

  For tightening torques, see **Section 1.3**.
- To prevent screw connections from becoming loose in the event of pressure fluctuations or plant vibrations, we recommend the installation of expansion joints or pulsation dampers.

9.2 Cleaning

Prior to starting any repair work, the valve is to be thoroughly cleaned. Even if the valve has been properly emptied and rinsed, residual medium may still be found in the valve, e.g. between the lining and body or in the bonnet.

Plastic parts may absorb medium which gradually emerges from the material after cleaning.

Wear the prescribed protective clothing!

Safety valves which have been cleaned with water or other media must be dried before re-assembly of the parts and installation of the valve in the plant.

9.3 Modification of the safety valve

If modifications to the valve are required, the manufacturer must always be consulted.

Examples: Modification with changed test pressure, replacement of the spring or adaption to the mass flow by reducing the travel.

After approval by the manufacturer, these modifications can be performed either by the manufacturer or by the customer under the guidance of a technical supervisory agency or any other approval authority.

9.4 Adjustment of the test pressure

- Undo locking plate **539**, dismantle lifting lever **238** and unscrew the lifting cap **535**.
- Undo nut **920/3**.
- Adjust the spring tension with the adjusting screw **538** to the specified test pressure.
- Counter adjusting screw **538** with a hex. thin nut **920/3** resp. with centering nut **555** (DN 25/50).
- Check test pressure.

- Screw on lifting cap **535** and tighten.
- Insert lifting lever **238**.
- Mount locking plate **539**.
- Have valve lead-sealed.
- The data specified in the test certificates are to be observed.

9.5 Important notes on dismantling / installation

First relieve plug **204** and lift it off the seat.

- The seat and plug could otherwise be destroyed. Read the precise instructions in **Section 9.6**, **9.7** and **9.8**..
- Then undo the screws between the body **100** and the inlet nozzle **122** or between the bonnet **513** and body **100**.
- Always replace the seat and plug **pairwise** and always rework them **completely**.
- Reworking of the seat and plug requires specialised knowledge of the material as well as special lapping wheels.
- It is therefore recommended to have this work carried out by the manufacturer.
- After dismantling, check all parts for wear and damage.
- Observe sectional drawings in **Section 10**.

9.6 Replacement of components

9.6.1 Dismantling of the plug

- Undo locking plate **539**, dismantle lifting lever **238** and unscrew the lifting cap **535**.
- Mark the position of the stem nut **534**.
- Unscrew the prevailing torque type hexagon nut **929/1** and stem nut **534** off the stem **802**.
- When undoing or tightening the prevailing torque type hexagon nut **929/1**, carefully hold the spindle tight with pliers to prevent it from turning.

  Do not turn the entire stem 802! There is a risk that the insert sleeve **308** will be screwed out of the bellows **206** and the folds or the spring-type pin **939/1** will be damaged!
- Mount a suitable distance sleeve (not included in the scope of delivery) over the stem **802**.
- Screw the stem nut **534** against the distance sleeve. The plug **204** is lifted off the seat **205** and the closing force becomes ineffective.
- Loosen the bolts **901/1**, **936/1**, **936/2** and **920/2** (in the case of KSE/F and KSE-C/F 100/150 **902/2**, **934/1**, **936/1** and **920/2**) from body **100** and spring bonnet **513** and lift the bonnet with internals completely off.
- Grip the bellows **206** in the reinforced section just above the lifting aid **237**. Unscrew the lifting aid off the bellows and remove the plug **204**.

9.6.2 Dismantling of the seat

- Remove spring bonnet **513** from the body **100**.
- See **Section 9.6.1**.
- Dismantle inlet nozzle **122** from the body **100** and remove the seat **205**.

9.6.3 Installation of the seat

- Insert the new or reworked seat **205** at the bottom into the corresponding centring of the body **100**.
- Then insert the inlet nozzle **122** into the centring of the body **100**.

  The components must be smooth running, i.e. can be centred without any constraining forces.
  If necessary, the inlet nozzle is to be turned through 90°.
- First tighten the attachment nuts **920/1** hand-tight and then with a torque wrench evenly and in diametrically opposite sequence.

  It is imperative to observe the prescribed torques for the connection body / inlet nozzle! See **Section 9.3**.

9.6.4 Installation of the plug

- All parts are to be thoroughly cleaned before assembly.
- Centre the new or reworked plug **204** in the lifting aid **237** and screw completely onto the thread of the bellows hand-tight. **Hold the bellows 206 at the reinforced section.**
- Undo the hex. socket screws **914/1**. Centre the spring bonnet **513** with internals on the body **100**. Ensure that there is metallic contact between the body and the spring bonnet. Then tighten the screws **901/1**, **936/1**, **936/2** and **920/2** (on KSE/F and KSE-C/F 100/150 **902/2**, **934/1**, **936/1** and **920/2**).

- Tighten the hex. socket screws **914/1** for the bellows seal evenly in line with the tightening torques
- Undo stem nut **534**.
- Remove distance sleeve.
- Screw stem nut **534** onto the stem **802** up to the marking. Then counter with the self-locking hex. nut **929/1**.
- When screwing on and countering the prevailing torque type hexagon nut **929/1**, carefully hold the spindle tight with pliers to prevent it from turning.

Do not turn the entire stem 802! There is a risk of the folds in the bellows **206** or the spring-type pin **939/1** being damaged!

- Screw on lifting cap **535** and mount lifting lever **238** with locking plate **539**.

9.6.5 Installation of the thrust ring

Make sure that the O-ring **400/1** is positioned completely inside the groove of the pressure ring **124** so that it is not damaged when the thrust ring is inserted into the thrust flange **117**.
If the O-ring **400/1** has been damaged by improper assembly, water may enter from outside into the valve mechanism and the bellows and cause corrosion damage.
A defective O-ring must be replaced before the valve is installed in the plant.

9.7 Dismantling KSE/F 50/80, 80/100, 100/150 KSE-C/F 80/100, 100/150

Caution: During dismantling of the entire KSE/F, the nuts of the fitting between the body and the inlet nozzle must under no circumstances be undone – **Risk of accident!**
The springs must firstly be completely relieved!

9.7.1 Dismantling of the entire upper section / Removal of the seat and plug

- To remove the seat and plug undamaged, the plug **204** must be lifted off the seat **205**.
- Unscrew the cap nut **927/1** from the lifting cap **535** and remove the cap.
- Unscrew the self-locking hex. nut **929/1** and stem nut **534** off the stem **802**.
- When loosening and unscrewing the prevailing torque type hexagon nut **929/1**, carefully hold the spindle tight with pliers to prevent it from turning.

Do not turn the entire stem 802! There is a risk of the folds in the bellows **206** or the spring-type pin **939/1** being damaged!

Lifting plug off the seat

- Mount a spacer sleeve (approx. 35 mm long) on the end of the spindle **802** and screw on a nut and counter it with another hex. nut. (Not included in scope of delivery).
- Grease the end surfaces of the spacer sleeve well so that these surfaces cannot "seize" when raising the adjusting screw **538**.
- The spacer sleeve may also be replaced by hex. nuts. See **Fig. 18.**

Fig. 18

- In order to lift the plug **204** off the seat **205**, raise the entire spindle.
- Undo adjusting screw **538** and turn it out of the spring bonnet **513**.
- When undoing the adjusting screw **538**, hold the spindle with a wrench on the counter nut so that the bellows **206** or the spring-type pin **939/1** are not damaged. See **Fig. 19.**

Fig. 19

- Unscrew hex. socket screw **914/1** off the pressure ring **124**.
- Clean and grease the two threaded rods (approx. 150 mm) long / 180° offset).
- Undo hex. nuts **920/2** to attach the spring bonnet **513** and thrust flange **117**.
- Remove complete upper section.

- Press the bellows collar out of the guide of the thrust flanges and then screw the bellows **206** off the spindle **802**.
- Assemble the entire upper section (without bellows) again with the body **100**.
- Screw hex. nut onto the threaded rod (up to flange contact with spring bonnet **513**).
- Screw hex. nuts onto both ends of the threaded rods and counter with more hex. nuts.
- Tighten adjusting screw **538** (turn into the spring bonnet **513**) until the spacer sleeve is loose.
- Undo hex. nuts at the end of the spindle and also remove spacer sleeve.
- Undo adjusting screw **538** and screw it out of the spring bonnet **513**.
- **The pressure spring 952/1 is only partially relieved in this situation.**
- In order to completely relieve the spring, the two nuts per threaded rod are evenly turned upwards until the spring bonnet is loose.

It is imperative to secure the threaded rods against turning (turning out of the body flange) with a wrench on the counter nut – **Risk of accident!**

See **Fig. 20.**

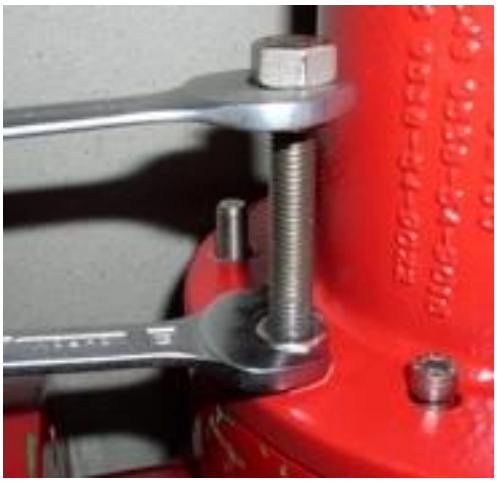


Fig. 20

- The KSE/F can now be further dismantled. See relevant **Sections** in **9.4** to **9.6**.

9.8 Assembly KSE/F 50/80, 80/100, 100/150 KSE-C/F 80/100, 100/150

- **Assembly** the complete upper section with its internals without the bellows **206**, plug **204** and lifting aid **237**.
- Grease the outside thread of the adjusting screw and the inside thread in the spring bonnet (for adjusting screw) well and, if difficult to screw, also spray with torsion spray.
- Mount a hex. nut on the free end of the spindle so that when the complete unit is raised the internals are held and they do not fall down. See **Fig. 21.**

Fig. 21

- Completely mount the lower valve section (body, seat, inlet nozzle). The pressure ring **124** is placed on the sealing strip of the body.

See **Fig. 22.**

Fig. 22

- Mount the complete upper section (without bellows **206**, plug **204** and lifting aid **237**) onto the valve body.
- Clean and grease the two threaded rods (approx. 150 mm) lining / 180° offset).
- Tighten spring bonnet **513** with hex. nuts until they sit tightly on the body **100**. See **Fig. 19.**
- The pressure spring **952/1** is now partially pretensioned. The view into the outlet flange shows the position of the spindle (distance between the insert sleeve **308** and stem guide **306**).

See **Fig. 23.**

Fig. 23

- This must be raised further until the distance between the upper edge of the insert sleeve and the edge of the stem guide is approx. 5 mm.
- In order to raise the spindle **802** into this position, the adjusting screw **538** is now pre-tensioned approx. 25 mm (turned into the bonnet). Then mount a distance sleeve approx. 35 mm long (or hex. nuts with U-washer, see **Fig. 18**) onto the now free spindle end.
- Grease the end surfaces of the spacer sleeve well so that these surfaces cannot "seize".
- A hex. nut is screwed onto the spindle end and countered with another hex. nut. See **Fig. 18.**
- Undo adjusting screw **538** (turn out of the spring bonnet **513**) until the distance between the upper edge of the insert sleeve and the edge of the stem guide is approx. 5 mm. See **Fig. 24.**
- When undoing the adjusting screw **538**, hold the spindle **802** with a wrench on the counter nut to prevent it from turning so that the bellows **206** or the spring-type pin **939/1** are not damaged.

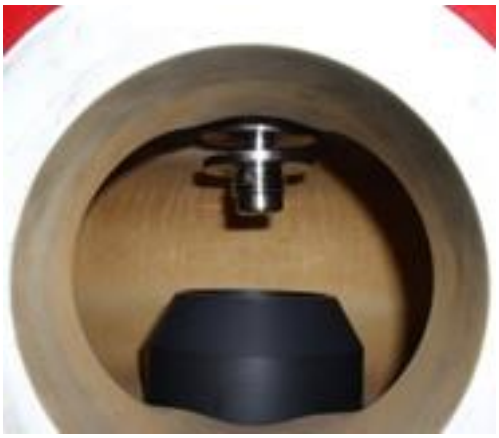


Fig. 24

- Undo the hex. nuts **920/1** (on the flange of the spring bonnet **513**) and lift off the entire upper section.
- Install pressure ring **124** in the thrust flange **117** (observe **Section 8.6.5**) and screw bellows **206** with plug **204** and lifting aid **237** onto the spindle **802**. See **Fig. 25.**

Fig. 25

- Assemble the entire upper section with the body **100**. Tighten the hex. nuts **920/2** and hex. socket screws **914/1** for the pressure ring **124**.

Lowering the bellows onto the seat

- For this purpose screw the adjusting screw **538** into the spring bonnet **513** until the spacer can be freely moved.

When tightening the adjusting screw **538**, hold the spindle **802** with a wrench on the counter nut to prevent it from turning so that the bellows **206** or the spring-type pin **939/1** are not damaged. See **Fig. 26.**

Fig. 26

- Undo the counter nut and remove the spacer.
- Now the valve can be set to the specified set pressure.
- Secure the spindle nut **534** and prevailing torque type hexagon nut **929/1** on the end of the spindle and counter against each other. Set the adjusting screw **538** accordingly.

When screwing the prevailing torque type hexagon nut **929/1** on or off the spindle **802** or when setting the adjusting screw **538**, hold the spindle with a wrench on the counter nut to prevent it from turning so that the bellows **206** or the spring-type pin **939/1** are not damaged. See **Fig. 26.**

9.9 Tests

Following the assembly of the valve, the stroke and the test pressure must be checked.

9.9.1 Stroke

Lift check:

- Remove cap nut **927/1** (with KSE / F 100/150 hex. head screw plug **938/1**) from the lifting cap **535** and determine the height dimension of the spindle **802** up to the upper edge of the lifting cap **535**.
- Determine this measurement in both the closed and fully opened state.
- Actuate the lifting lever **238** until the mechanical travel stop can be felt.

The measurement can be made with a slide calliper gauge and a depth indicator to DIN 862.

The lift is derived from the difference in the two heights. It must be at least as high as the lift given in the test certificate.

9.9.2 Test pressure

This test should take place on a test bench with a neutral medium such as air or water. Regarding their suitability and precision, the pressure gauges must conform to the requirements of current national regulations (in Germany: e.g. VdTÜV data sheet "Safety Valve 100" of the Association of the German Technical Supervisory Boards).

- All pressure tests should be carried out in compliance with DIN EN 12266-1 or API 527.
- It is recommended to perform a bubble test with a 5 mm diameter hose positioned 5 mm below the surface of water. The other end of the hose is sealed to the outlet of the valve by means of a stopper.
- To check the test pressure, the pressure in the valve inlet is slowly increased until the valve commences to open.
- To check the reseating pressure, the pressure in the valve inlet is slowly decreased until the valve is bubble-tight.

10 Drawings

10.1 Legend

100 Body
117 thrust flange
122 inlet nozzle
124 pressure ring
204 plug
205 Seat
206 bellows
237 lifting aid
238 lifting lever
305 bearing guide
306 stem guide
307/1 guide bush
308 insert sleeve
395 axial-needle roller cage
396 axial-washer
400/1 O-Ring
420 thrust ring, two pieces
513 spring bonnet
534 stem nut
535 lifting cap
536 upper spring plate
537 lower spring plate
538 adjusting screw
539 locking plate
554/2 washer
555 centering nut
561/1 grooved pin
802 spindle
900/1 ring bolt
901/x hex. screw
902/x stud screw
914/1 hex. socket screw
920/x hex. nut
920/3 hex. nut, plain
927/1 cap nut
929/1 prevailing torque type hex. nut
932/x snap ring
934/1 lock washer
935/x lead seal
936/x tooth lock washer
938/1 hex. head screw plug
939/x spring-type pin
952/1 pressure spring
982/1 plug

Option blocking screw (see section 6.8)

901/3 Hex. screw
918/1 threaded rod
927/1B cap nut
929/2 prevailing torque type hex. nut

Option gas-tight design (see section 6.9)

238 lifting lever
400/4 O-Ring

Option signal transmitter (see section 6.10)

540 support, signal transmitter
includes:
- **400/2** O-Ring (design with blocking screw)
- **400/3** O-Ring
- **541** support. upper part
- **542** support, lower part
- **901/4** hex. screw (design with blocking screw)
- **904/1** setscrew
- **939/2** spring-type pin

805 stem extension
859 signal transmitter
920/4 hex. nut

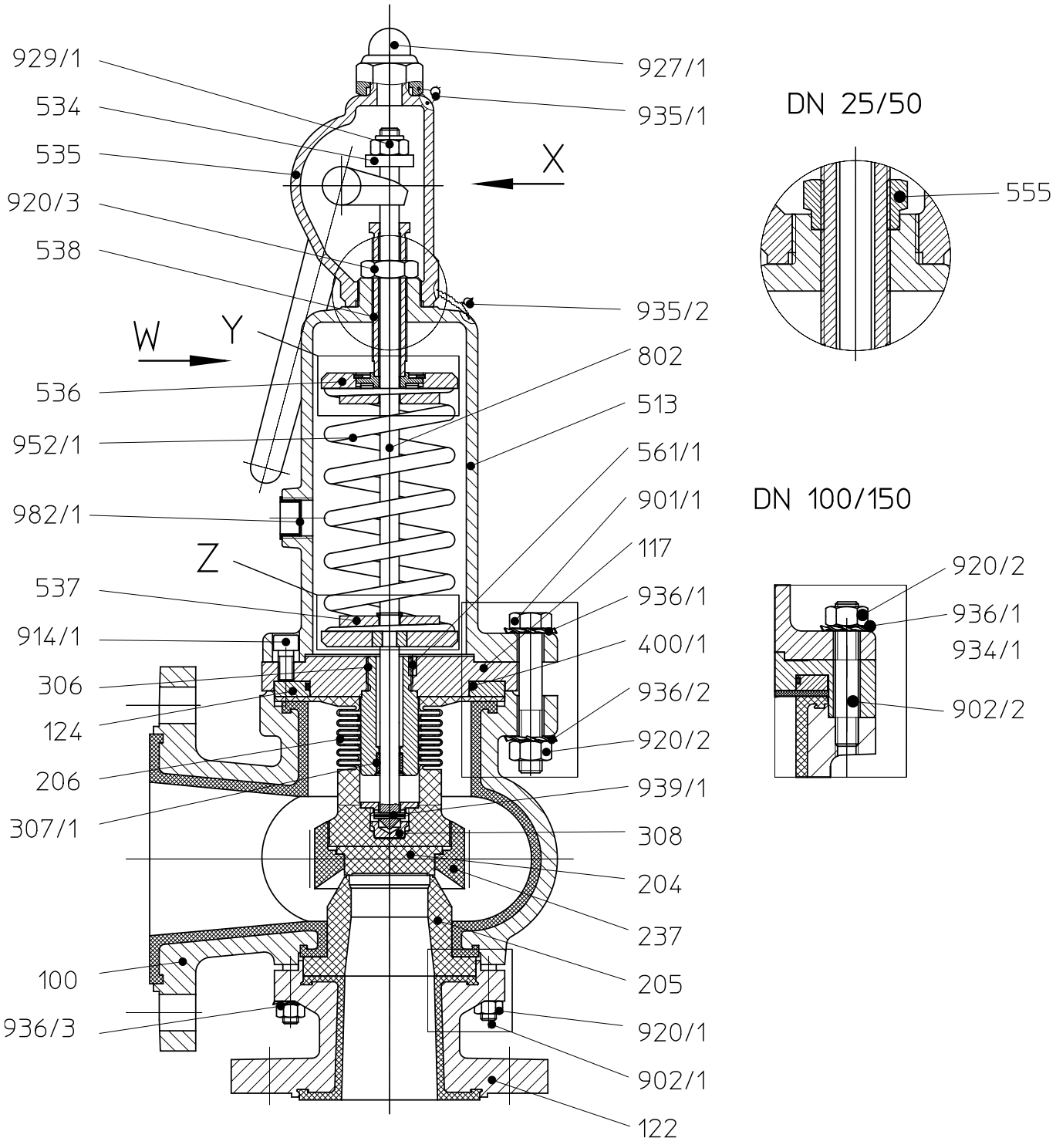
Option travel stop (see section 6.13)

508 Travel stop

Option design for highly permeating media (see section 6.11)

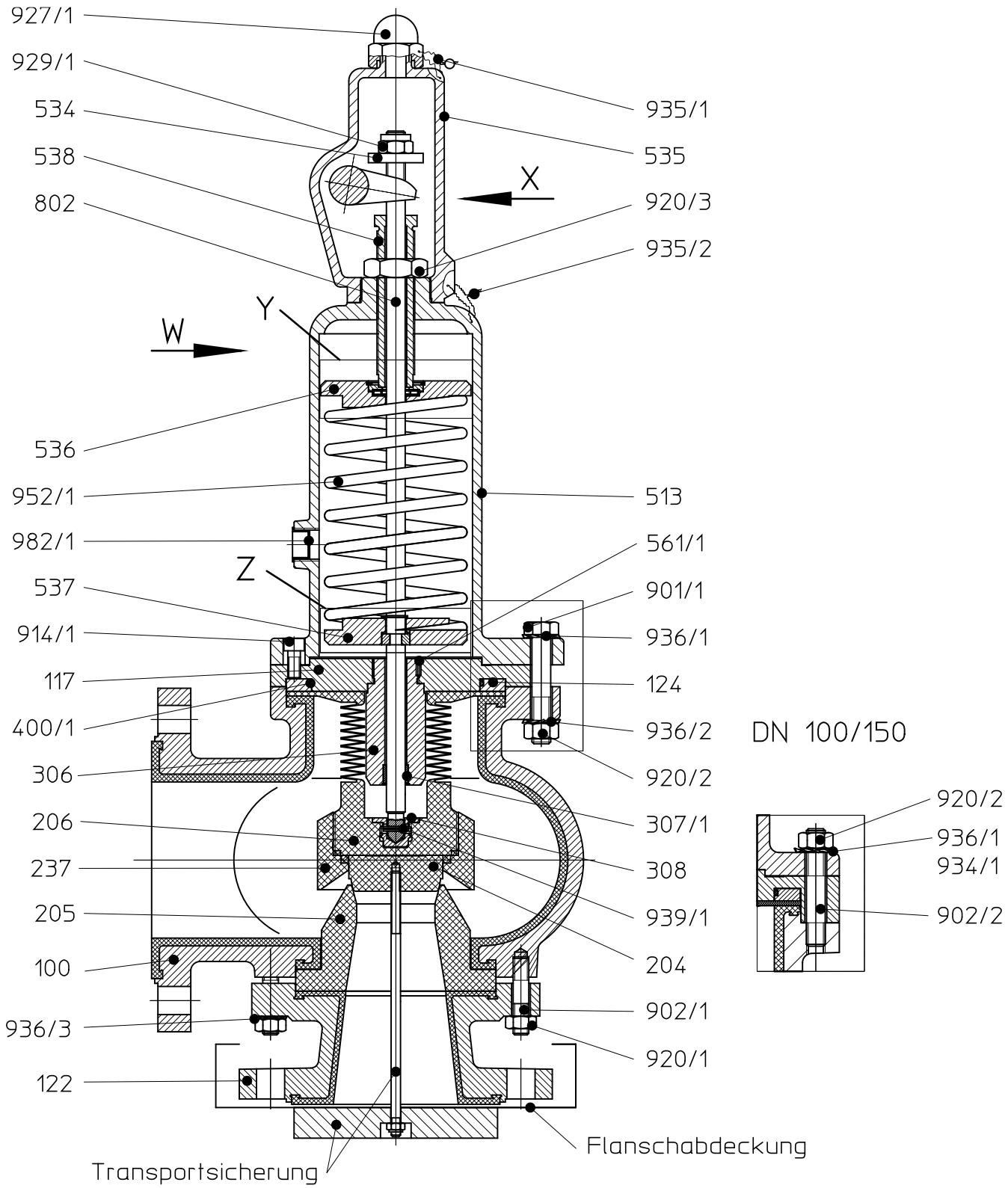
307/2 guide bush
860 spring turn unit

10.2 Sectional drawing KSE/F



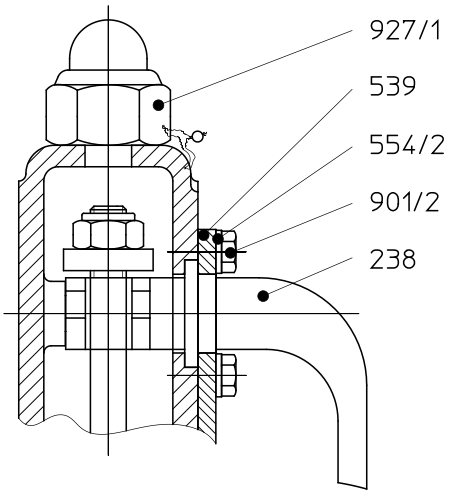
10.3 Sectional drawing KSE-C/F

DN 80/100, 100/150



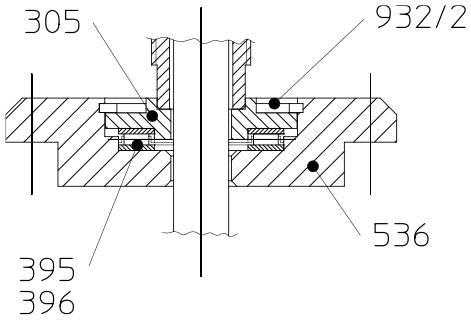
10.4 Views

View X



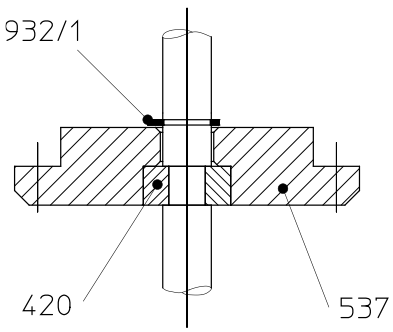
Detail Y

upper spring plate



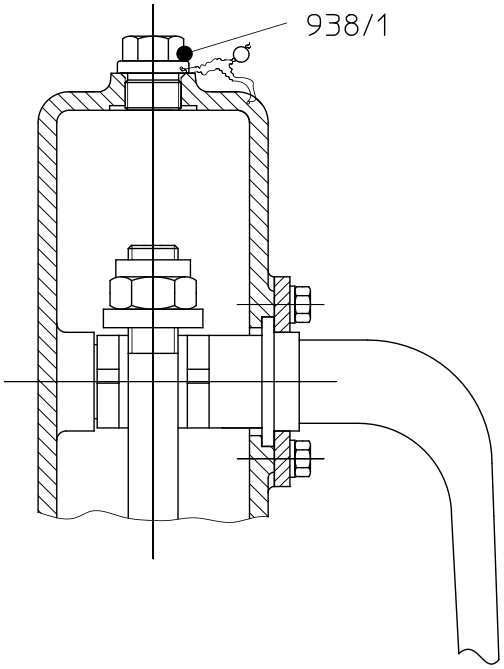
Detail Z

lower spring plate



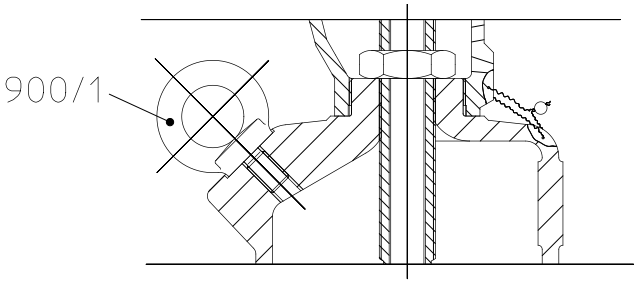
View X

DN 100/150

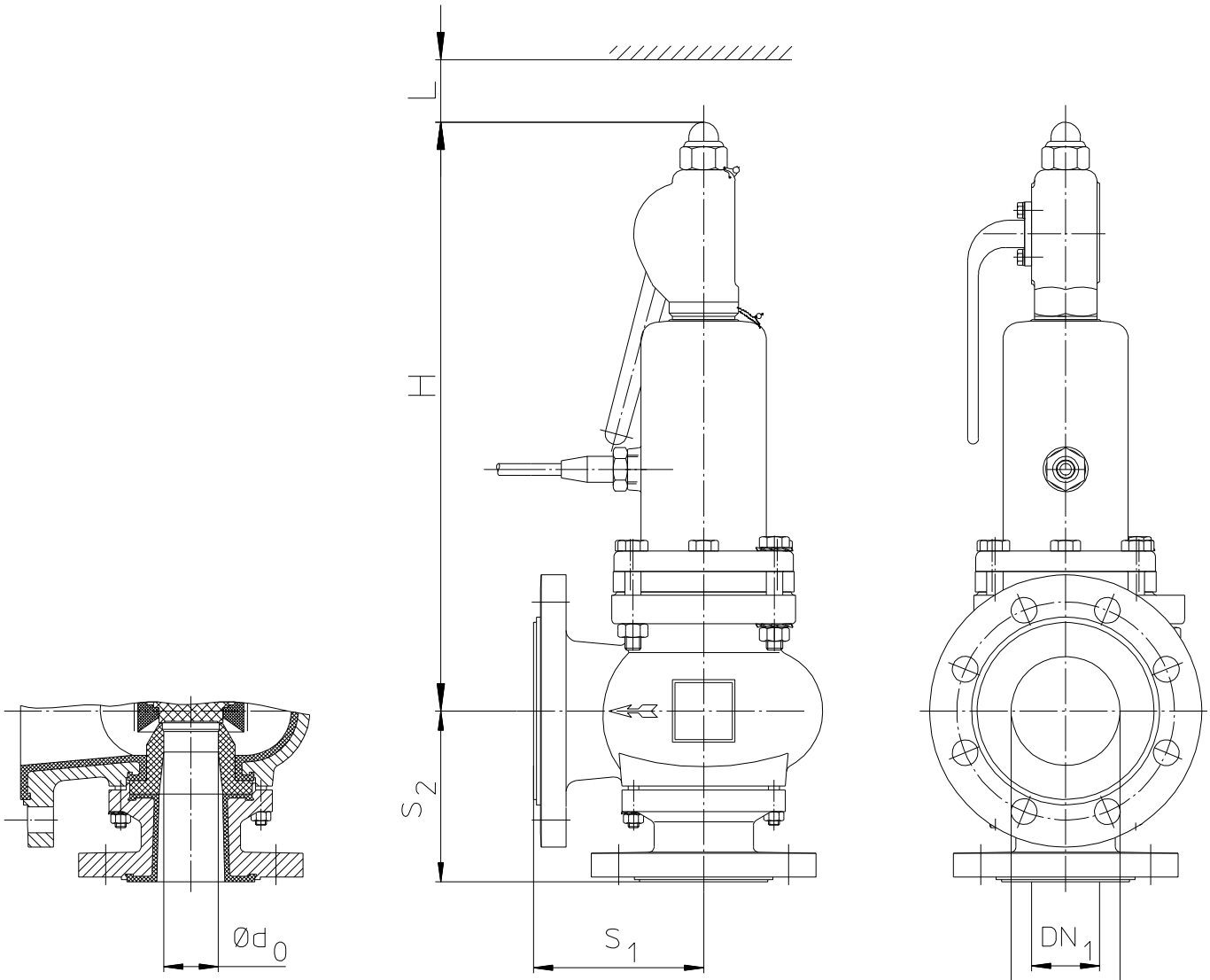


View W

DN 100/150



10.5 Dimensional drawing KSE/F and KSE-C/F



Nominal size	Inlet		Outlet					
	DN_1	S_1	DN_2	S_2	KSE-C d_0	KSE d_0	H	L
25/50	25	100	50	100		22	355	120
50/80	50	125	80	125		40	435	120
80/100	80	155	100	155	50	50	525	140
100/150	100	200	150	220	95	80	735	180

all dimensions in mm

Flange connecting dimensions:
DIN EN 1092-2, type B (ISO 7005-2, type B) PN 16 or flanges drilled to ASME 16.5 Class 150

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RICHTER
Process Pumps & Valves
A Unit of IDEX Corporation

CE Konformitätserklärung nach EN ISO//IEC 17050
Declaration of Conformity according to EN ISO//IEC 17050

Produkt *Product*	Kunststoffausgekleidete Sicherheitsventile *Plastic lined safety valves*
Bauart *Design*	Sicherheitsventil *Safety valve*
Baureihe *Serie*	KSE, KSE-C
Nennweite *Size*	DN 25/50, 50/80, 80/100, 100/150
Seriennummer *Series number*	ab/*from* 01.09.2024
EU-Richtlinie *EU-Directive*	2014/68/EU Druckgeräterichtlinie 2014/68/EU *Pressure Equipment Directive*
Angewandte Technische Spezifikation *Applied Technical Specification*	DIN EN 16668 DIN EN ISO 4126 AD 2000 A2, A4, W-Reihe VdTÜV-Merkblatt Sicherheitsventil 100 DIN EN ISO 12100
EG-Baumusterprüfung CE type-examination	01 202 642-B11009 TÜV SV 11-871 TÜV Anlagentechnik GmbH Am Grauen Stein 51105 Köln
Überwachungsverfahren *Surveillance Procedure*	2014/68/EU Zertifizierungsstelle für Druckgeräte der TÜV Nord Systems GmbH & Co. KG Große Bahnstraße 31 D-22525 Hamburg Notified Body 0045
Konformitätsbewertungs-verfahren 2014/68/EU *Conformity assessment procedure 2014/68/EU*	Modul B + D Zertifikats Nr. Modul D: 0045/202/1411/Z/00471/22/D/001(00) Zertifikats Nr. Modul B: 01 202 642/B-11009, Revision 3
Kennzeichnung *Marking*	2014/68/EU CE 0045

Das Unternehmen Richter Chemie-Technik GmbH bescheinigt hiermit, dass die o.a. Baureihen die grundsätzlichen Anforderungen der aufgeführten Richtlinien und Normen erfüllen.
Richter Chemie-Technik GmbH confirms that the basic requirements of the above-specified directives and standards have been fulfilled.

Kempen, 01.09.2024

i.V. C. Muders

Christian Muders
Director Global Engineering

Manuel Müller
Quality Manager

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RICHTER
Process Pumps & Valves
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Konformitätserklärung FDA & 2014/68/EU
Declaration of Conformity

Produkt *Product*	PFA ausgekleidete Sicherheitsventile, Be- und Entlüftungsventile und Überströmventile *PFA lined safety valves, aerating and deaerating valve and overflow valves*
Bauarten *Design*	Sicherheitsventil, Be- und Entlüftungsventil, Überström- und Druckhalteventil *Diaphragm safety valve, aerating and deaerating valve, overflow and pressure relief valve*
Baureihen *Series*	KSE, KSE-C, LPV-A, LPV-D, GU, GUT
Richtlinie Directive	FDA Regulation 21 CFR §177.15 50 2014/68/EU, EU Nr. 10/2011, EU Nr. 1935/2004, 84/500/EWG, 2005/31/EG
Mediumberührte Werkstoffe Materials of media-wetted parts	PFA PTFE

Das Unternehmen Richter Chemie-Technik GmbH bescheinigt hiermit, dass in medium berührten Teilen der o.a. Baureihen Materialien verwendet wurden, welche die Vorschriften der FDA Regulation 21 CFR §177.15 50, die Verordnungen 2014/68/EU, EU Nr. 10/2011, EU Nr. 1935/2004, 84/500/EWG und 2005/31/EG erfüllen bzw. dafür die allgemeinen Unbedenklichkeitsbescheinigungen des Herstellers/Lieferanten oder Prüflabors vorliegen. Entsprechende Einzelnachweise sind vorhanden.

The company, Richter Chemie-Technik GmbH, herewith certifies that in medium-wetted parts of the above-mentioned series materials were used which satisfy the provisions of the FDA Regulation 21 CFR §177.15 50 and Directives 2014/68/EU, EU no. 10/2011, EU Nr. 1935/2004, 84/500/EWG and 2005/31/EG or for which general compliance certificates of the manufacturer/supplier/test laboratory are available. Relevant *individual proof can be provided.*

Kempen, 01.09.2024

i. V. C. Muders

Christian Muders
Director Global Engineering

i. A. S

Manuel Müller
Quality Manager

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RICHTER
Process Pumps & Valves

IDEX
FLUID & METERING

Herstellererklärung ATEX Richtlinie 2014/34/EU

Manufacturer's Declaration ATEX Directive 2014/34/EU

Alle Richter Armaturen inkl. Absperr-, Regel- und Sicherheitsventile
All Richter Valves incl. Shut-off, Control and Safety Valves

Die oben bezeichneten Armaturen wurden einer Risikoanalyse nach der Richtlinie 2014/34/EU mit folgendem Ergebnis unterzogen:
The valves specified above underwent a risk analysis according to Directive 2014/34/EU with the following result:

- **Richter Armaturen besitzen keine eigenen potentiellen Zündquellen. Die Armaturen können sowohl manuell als auch mechanisch/elektrisch angetrieben werden.**
  Die Armaturen fallen nicht in den Anwendungsbereich der ATEX-Richtlinie 2014/34/EU und dürfen deshalb auch nicht danach gekennzeichnet werden.
  Richter valves do not have their own potential sources of ignition. The valves can be actuated manually as well as mechanically/electrically.
  ATEX Directive 2014/34/EU is not applicable to these valves. Therefore, it is not allowed to mark the valves according to that Directive.

- **Die Armaturen dürfen in explosionsgefährdeten Bereichen eingesetzt werden.**
  The valves can be used in potentially explosive atmospheres.

- **Dennoch müssen für den Armatureneinsatz in explosionsgefährdeten Bereichen Sicherheitshinweise bzgl. des Explosionsschutzes beachtet werden. Richter hat hierzu die Betriebsanleitungen um den Zusatz „Sicherheitshinweise für den Einsatz in explosionsgefährdeten Bereichen in Anlehnung an die Richtlinie 2014/34/EU" erweitert.**
  However, when using the valves in potentially explosive atmospheres, specific safety notes on explosion protection must be observed. Here, Richter has extended their operating manuals to include the supplement „Safety notes for applications in potentially explosive atmospheres based on Directive 2014/34/EU ".

Ergänzender Hinweis: *Supplementary note:*

- **Elektrische/mechanische Antriebe müssen einer eigenen Konformitätsbewertung nach ATEX unterzogen werden.**
  Electrical/mechanical actuators must undergo a separate conformity assessment.

Kempen, 01.09.2021

i. V. Kleining

Gregor Kleining
Director Global Engineering

i. A. Watermann

Ivo Watermann
ATEX Beauftragter

RICHTER
Process Pumps & Valves
A Unit of IDEX Corporation

Herstellererklärung / *Manufacturer´s Declaration*

TA-Luft / *German Clean Air Act*

Richter Sicherheitsventile
Richter Safety Relief Valve

Hiermit erklären wir, dass die Sicherheitsventile der Baureihen
Hereby we declare, that the Safety Relief Valves of the series

KSE, KSE-C

die Anforderung der Leckagerate L_B (≤ 10^{-4} mg/s·m) gemäß Ziffer 5.2.6.4 der Technischen Anleitung-zur Reinhaltung der Luft (TA-Luft) von 2021 erfüllen.

Grundlage sind die Prüfungen sowie deren Bewertung und Qualifikation nach DIN EN ISO 15848-1 vom TÜV Süd Industrie Service GmbH.

Voraussetzung für die Gültigkeit der Herstellererklärung ist das Beachten und Einhalten der Betriebsanleitung.

meet the requirement of the leakage rate L_B (≤ 10^{-4} mg/s·m) according to clause 5.2.6.4 of German Clean Air Act (TA-Luft) of 2021.

This is based on the tests as well as their evaluation and qualification according to DIN EN ISO 15848-1 by TÜV Süd Industrie Service GmbH.

A prerequisite for the validity of the manufacturer's declaration is that the operating instruction manuals are observed and complied with.

Kempen, 01.09.2024

i.V. C. Muders

Christian Muders
Director Global Engineering

Manuel Müller
Quality Manager

RICHTER
Process Pumps & Valves

IDEX

Richter Chemie-Technik GmbH · Postfach 10 06 09 · D-47883 Kempen

08.01.2015

Declaration of no objection

Dear Sirs,

The compliance with laws for the industrial safety obligates all commercial enterprises to protect their employees and/or humans and environment against harmful effects while handling dangerous materials.
The laws are such as: the Health and Safety at Work Act (ArbStättV), the Ordinance on Harzadous Substances (GefStoffV, BIOSTOFFV), the procedures for the prevention of accidents as well as regulations to environmental protection, e.g. the Waste Management Law (AbfG) and the Water Resources Act (WHG)

An inspection/repair of Richter products and parts will only take place, if the attached explanation is filled out correctly and completely by authorized and qualified technical personnel and is available.

In principle, radioactively loaded devices sent in, are not accepted.

Despite careful draining and cleaning of the devices, safety precautions should be necessary however, the essential information must be given.

The enclosed declaration of no objection is part of the inspection/repair order. Even if this certificate is available, we reserve the right to reject the acceptance of this order for other reasons.

Best regards
RICHTER CHEMIE-TECHNIK GMBH

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Sitz der Gesellschaft: Kempen · Amtsgericht Krefeld HRB 9635
Geschäftsführer: Barbara Wladarz, Bret A. Prybylski

Safety Information / Declaration of No Objection Concerning the Contamination of Richter-Pumps, -Valves and Components

1 SCOPE AND PURPOSE

Each entrepreneur (operator) carries the responsibility for the health and safety of his employees. This extends also to the personnel, who implements repairs with the operator or with the contractor.

Enclosed declaration is for the information of the contractor concerning the possible contamination of the pumps, valves and component sent in for repair. On the basis of this information for the contractor is it possible to meet the necessary preventive action during the execution of the repair.

Note: The same regulations apply to repairs **on-site**.

2 PREPARATION OF DISPATCH

Before the dispatch of the aggregates the operator must fill in the following declaration completely and attach it to the shipping documents. The shipping instructions indicated in the respective manual are to be considered, for example:

- Discharge of operational liquids
- remove filter inserts
- lock all openings hermetically
- proper packing
- Dispatch in suitable transport container
- Declaration of the contamination fixed **outside!!** on the packing

Declaration about the Contamination of Richter Pumps, -Valves and Components

RICHTER Process Pumps & Valves

The repair and/or maintenance of pumps, valves and components can only be implemented if a completely filled out declaration is available. If this is not the case, delay of the work will occur. If this declaration is not attached to the devices, which have to be repaired, the transmission can be rejected.

Every aggregate has to have it's own declaration.

This declaration may be filled out and signed only by authorized technical personnel of the operator.

Contractor/dep./institute :	Reason for transmitting ❄ Please mark the applicable
	Repair: o subject to fee o Warranty
Street :	**Austausch:** o subject to fee o Warranty
Postcode, city :	o Exchange/ Replacement already initiated/received
Contact person :	**Return**: o Leasing o Loan o for credit note
Phone : Fax :	
End user :	

A. Details of Richter-product:

Classification:
Article number:
Serial number:

Failure description:

B. Condition of the Richter-product:

	no[1]	yes	no
Was it in operation ?	o	o	
Drained (product/operating supply item) ?		o	o
All openings hermetically locked!		o	
Cleaned ?		o	o
If yes, with which cleaning agent:			
and with which cleaning method:			

Contamination :	no[1]	yes
toxic	o	o
caustic	o	o
inflammable	o	o
explosive[2]	o	o
mikrobiological[2]	o	o
radioactive[3]		
other pollutant	o	o

[1] if "no", then forward to **D**.

[2] Aggregates, which are contaminated with microbiological or explosive substances, are only accepted with documented evidence of an approved cleaning.

[3] Aggregates, which are contaminated with radioactive substances, are not accepted in principle.

C. Details of the discharged materials (must be filled out imperatively)

1. **With which materials did the aggregate come into contact ?** Trade name and/or chemical designation of operational funds and discharged materials, material properties, e.g. as per safety data sheet (e.g. toxic, inflammable, caustic)

X	Trade name:	Chemical designation:
a)		
b)		
c)		
d)		

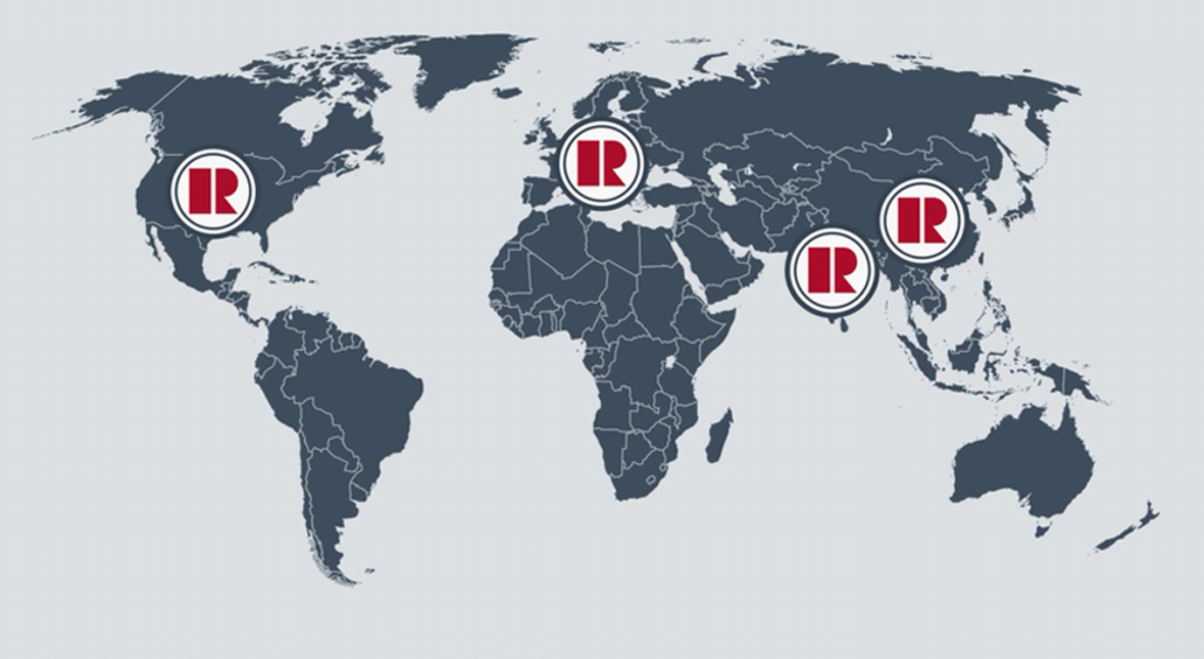
	no	yes
2. **Are the materials specified above harmful to health ?**	o	o
3. **Dangerous decomposition products during thermal load ?**	o	o
If yes, which ones?		

D. Mandatory declaration: We assure that the data in this explanation are truthful and complete and as a signatory I am able to form an opinion about this. We are aware that we are responsible towards the contractor for damages, which results from incomplete and incorrect data. We commit ourselves to exempt the contractor from claims for damages of thirds resulting from incomplete or incorrect data. We are aware that we are directly responsible towards thirds, irrespective of this declaration, which belongs in particularly to the employees of the contractor consigned with the handling repair of the product.

Name of the authorized person (in block letters): _____

Date _____ Signature _____

Company stamp



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RICHTER
KEEP ON FLOWING