INSTALLATION AND OPERATING MANUAL

Series PA/F, PA/S

Sampling Valves

PFA-lining or
investment cast stainless steel

Keep for future use!

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

9510-010-en Revision 22 Edition 04/2025

RICHTER
Process Pumps & Valves

List of Contents

Relevant documents

- 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
- For PAP/F, PAP/S: Operating manual for actuator

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@richter-ct.com
Internet: http://www.richter-ct.com/

Designation :

Series
PA/F → Plastic lined, lever can be removed
PA/S → Stainless steel version, without lining, lever can be removed
PAP/F → Option, prepared for pneumatic, hydraulic
PAP/S → or electric actuator to ISO 5211

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:
DIN EN 558-1 basic series 1, ISO 5752 series 1

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

Materials :

Body material: Ductile cast iron EN-JS 1049 or Stainless steel investment casting 1.4435

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

Temperature range : -60 °C to +200 °C
See pressure-temperature diagram in **Section 1.4**.

Operating pressure : from vacuum to max. 16 bar
See pressure-temperature diagram in **Section 1.4**.

Nominal sizes :

PA/F, PAP/F DN 25, 40, 50, 80
PA/S, PAP/S DN 25, 50

Weights: approx. kg

Nominal size	25	40	50	80
PA/F (manually actuated)	10	18	18	48
PA/S (manually actuated)	9	---	14	--

Installation position :

The installation position is normally horizontal with the bottle connection vertically downwards (deviations from this position require a special bottle connection). See **Sections 1.2, 9.6** and **9.8.**

Dimensions and individual parts:

See sectional drawings in **Section 10**.

Options :

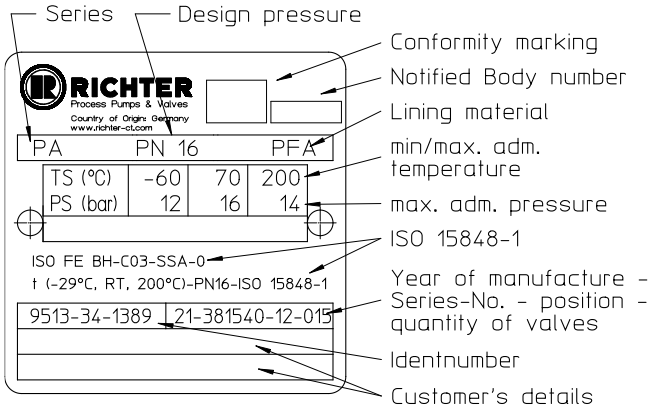
- Design for highly viscous media or applications with a low a low operating pressure.
  The special flat plug produces a full cross section of the outlet opening of 10 mm at a travel of 3 mm.
  PA/F see **Section 10.5**
  PA/S see **Section 10.8**
- Adapter for vertical valve installation
  PA/F see **Section 10.4**
  PA/S see **Section 10.9**
- Sampling valve with lever locking
  9510-00-0005
- Adapter for bottle holder, discharge spout
  PA/F 9510-00-0012
- Sampling valve with protective cabinet
  PA/F 9510-00-0011
  PA/S 9510-00-0014
- Sampling valve with protective housing and handwheel
  PA/S 9510-00-0015
- Sampling valve with handwheel
  PA/F 9510-00-0017
  PA/S 9510-00-0016
- Sampling valve with actuator
  See **Section 10.10**
- Adapter for sample bottle
- Prepared adapter for customer's own finishing
- Adapter for small bottles with centering
- Sampling valve with septum bottle
  PA/F 9510-00-0018
- Sampling valve with heating jacket
  PA/S 9510-00-0019

1.1 Type plate and body markings

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

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

Example of type plate:



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
- Cast date

1.2 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.

Rohrleitungsschrauben

Flange Nominal size [mm]	screws [ISO/DIN]	Tightening torque [Nm]
25	4 x M12	10
40	4 x M16	20
50	4 x M16	26
80	8 x M16	25

Pipe screws, flanges ISO/DIN drilled to ASME Class 150

Flange Nominal size		screws	Tightening torque	
[mm]	[inch]	[ASME]	[in-lbs]	[Nm]
25	1"	4 x ½“	70	8
40	1½"	4 x ½“	135	15
50	2"	4 x ⅝“	220	25
80	3“	4 x ⅝“	400	45

Body screws

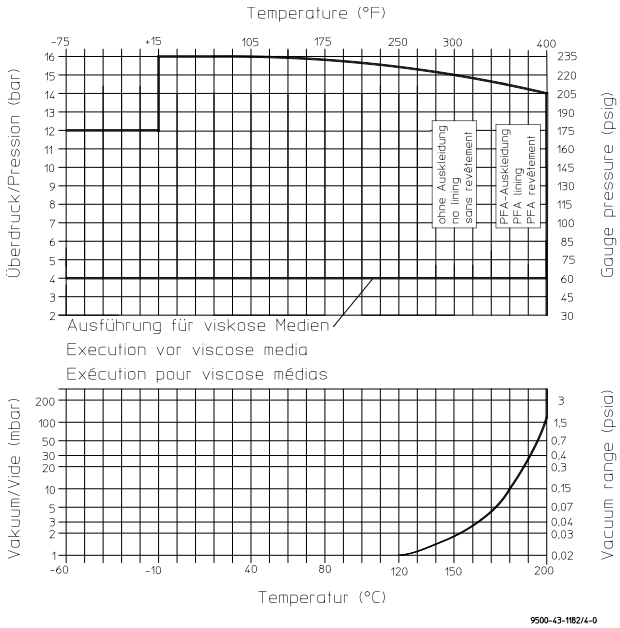
Nominal size [mm]	screws [ISO/DIN]	Tightening torque [Nm]
25	4 x M12	30
40	4 x M16	50
50	4 x M16	50
80	8 x M16	50

1.3 Flow rates

Nominal size		valve flow	Sampling at max. valve stroke	
		kv100 [Cv]		
[mm]	[inch]	[m³/h] [USgpm]		
25	1"	15 [17.5]	0.385 [0.448]	2.56 [2.98]
40	1½"	47 [54.8]		
50	2"	65 [75.7]		
80	3“	200 [233]		

1.4 Pressure-temperature diagram

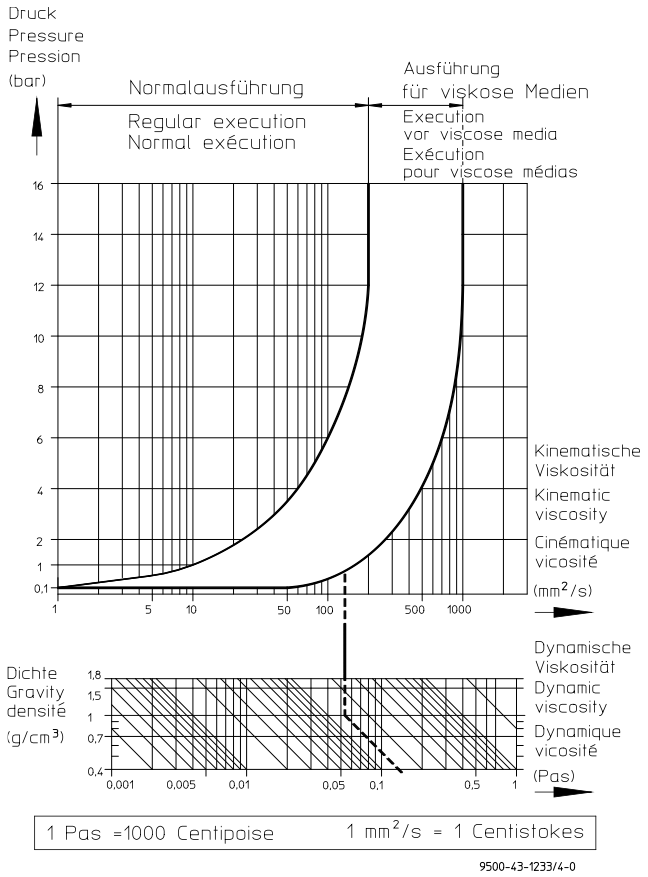
2014/68/EU (PED), AD2000, DIN EN 16668



DIN EN ISO 15848-1 certificate valid from -29°C to 200°C

1.5 Viscosity-pressure diagram

The appropriate valve plug is selected in accordance with this diagram. In the case of different operating parameters, please consult Richter.



2 Notes on 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 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 ball 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.

For example, 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 sampling valves are pressure-maintaining components in accordance with the Pressure Equipment Directive (DGRL) for taking liquid samples.

The standard PA/F and PA/S are only intended for horizontal installation (vertical installation only with special adapter).

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

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

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 valve is used, the operator must ensure that

- hot or cold valve parts are protected by the customer against being touched
- the valve has been properly installed in the pipe system
- the usual flow rates are not exceeded in continuous operation.
- an appropriate collection system is used to contain drip leaks/leaks locally and harmlessly.

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 reliability 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.

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 and can be operated both manually as well as mechanically/electrically.**
- **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.**

Supplementary notes:

- **Electric/mechanical actuators must be subjected to their own conformity assessment to ATEX.**

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

3.1 Intended use

Inadmissible modes of operation, even for brief periods, may result in serious damage to the unit.
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.
- For safe and reliable operation, it must be ensured with regular inspection intervals that the unit is properly serviced and kept in a perfect technical condition.
- 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.
- Attachments such as actuators, position controllers, limit switches etc. must satisfy the relevant safety regulations as regards explosion protection and, if required, be designed in compliance with ATEX.
- Special attention must be paid to the appropriate safety and explosion protection notes in the respective operating manuals.
- 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.

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

Transport securing:

Set the star grip so that the stroke is limited to the minimum flow. The lever has a safety function and must swing freely (dead man's position).

Transporting the valve using the lever is not permitted.

Do not damage paint protection.

5.1 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.

5.2 Return consignments

Valves which have conveyed aggressive or toxic media must be well rinsed and cleaned 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 methods are to be mentioned.

5.3 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

- Examine valve for in-transit damage, damaged ball 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.
- The lever must move freely (deadman's position).

Ensure that a remotely actuated actuator cannot be accidentally switched on.

6.1 Flange caps and gaskets

Leave protective caps on the flanges until just prior to installation.

Where there is a particularly high risk of damage to the plastic sealing surfaces, e.g. if the mating flanges are made of metal or enamel, PTFE-lined gaskets with a metal inlay should be used. These gaskets are available as accessories in the Richter range.

6.2 Direction of flow and installation position

Installation is independent of the direction of flow.

The installation position is normally horizontal with the bottle connection pointing vertically downwards (deviations from this position require a special bottle connection). See **Section 10.4** and **10.9**.

6.3 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.

Upon customer request a set screw M6 is attached to each flange with a hex nut and washer as an additional earthing connection.

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

6.4 Test pressure

The test pressure PT of a valve must not exceed the value of 1.5 x PS(PN) as per the identification of the valve.

6.5 Star knob

The stroke and thus the pressure reduction and medium flow can be influenced with the star knob.

Moreover, the star knob can be used to close the valve like a manual valve.

It also served to enforce tightness in case of damaged seat sealing surfaces or seized particles.

6.6 High-viscosity media / Low operating pressure

With the version "design for high-viscosity media" the changed operating limits acc. to the name plate must be observed and the travel must be set according to the setting instructions in **Section 6.7**.

6.7 Setting instructions

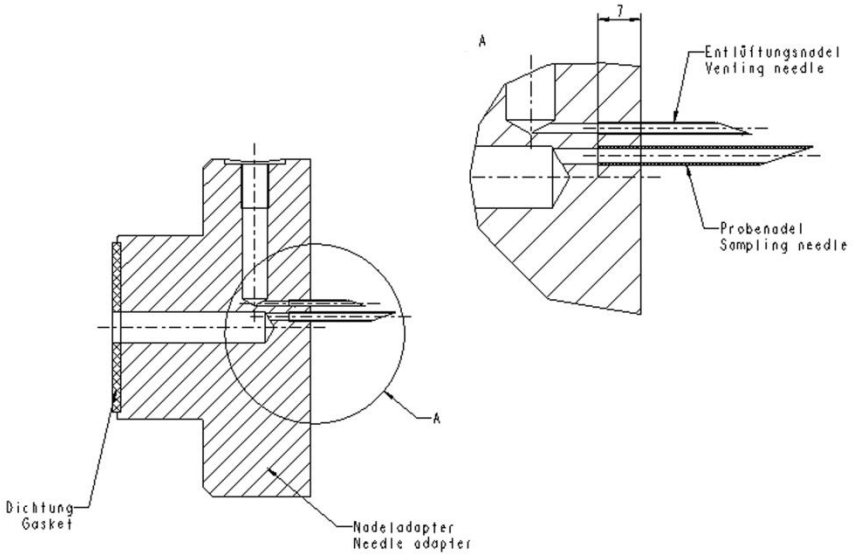
- Press the sampling lever in the direction of the valve.
- Slowly turn the star knob counterclockwise until the flow into the sampling bottle corresponds to the intensity you want.
- Release lever and lock the star knob in this position.

This procedure guarantees that with each further sampling process (with the same internal pressure) the flow of the sample into the bottle remains within the desired range without any risk to the person taking the sample.

If the operating pressures vary, we recommend you for safety's sake to turn the star knob after every sampling operation clockwise again until it reaches zero point (lever cannot execute any travel).

6.8 Needle adapter for PA/S DN25

When you use a stainless steel needle adapter for PA/S DN25 make sure that you insert the flat gasket.



7 Operation

7.1 Initial commissioning

Normally, the valves have been tested for leaks with air or water. Prior to initial operation check cover screws. For tightening torques, see **Section 1.2**.

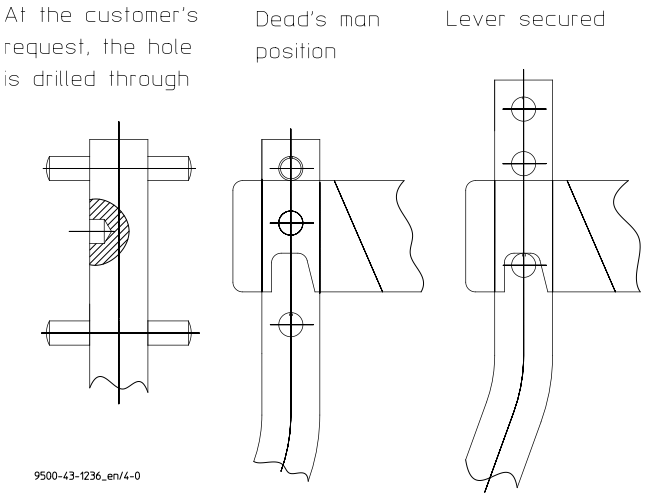
Unless otherwise agreed there could be residual amounts of water in the flow section of the valve. This could result in a possible reaction with the medium.

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 1.2**.

7.2 Improper operation and their consequences

- Crystallisation must be prevented, e.g. by heating. Damage to the seat or cone would be inevitable. In extreme cases a leak may occur.
- Increased wear occurs in operation with solids contents.
- Violent opening or rapid filling may cause the bottle to burst.
- Non-observance of the pressure-temperature diagram can lead to damage.
- Do not transport the valve using the lever.
- Do not use a lever extension as otherwise there is a risk of damage.
- At the customer's request, the middle hole in the lever is drilled through. If the lever is then locked in the lower hole to take samples and if, in addition, a pin is inserted into the middle hole, it must be ensured that sampling does not take place accidentally.

7.3 Sampling (Standard)



- Screw bottle into the bottle connection **226**.
- Check travel set on the star knob **963/1**.
- Lever **203** is in the dead man's position.
- For sampling, lock lever in the top groove.
- If it is requested that the lever is firmly locked, drill through the middle hole and insert an additional pin into the middle hole.
  CAUTION! Sampling may also take place accidentally.
- Press in direction of valve.
- Sampling can take place.

A lock is available from Richter as an option.

A device, screw fitting **917** for example, for the riskfree discharge of the medium must be connected to the venting connection. Sealing plugs are not allowed because this results in overpressure in the bottle.

7.4 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 6.1**.

Make sure that a remote-controlled actuator cannot be switched on by accident.

8 Malfunctions

- Flange connection ball valve/pipe is leaking
  Retighten the flange screws to a tightening torque according to **Section 1.2**. If this does not remedy the leak, the recommended torques may be exceeded by 10%.
  If this also fails to stop the leak, dismantle and inspect the valve.
- Flange connection body/seat or body/cover is leaking
  Retighten body screws. See paragraph "Flange connection ball valve/pipe is leaking".
- Packing is leaking
  Bellows leaking.
  Retighten safety packing and switch off plant as quickly as possible and isolate pipe section with valve.
- Valve does not close tight
  Loosen lock nut under the star grip and close the valve by means of the star grip.

9 Maintenance

- 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.
- To prevent leaks, a regular check of the connection screws should be made in line with the operating requirements.
  For tightening torques, see **Section 1.2**.

Make sure that when working on the sampling valve it is drained.
See also **Section 7.4**.

9.1 Disassembling PA/F and removing the packing rings

- Undo clip **937** and unscrew bottle connection **226**.
- Undo groove nut **509**. Star grip **963** can remain screwed in.

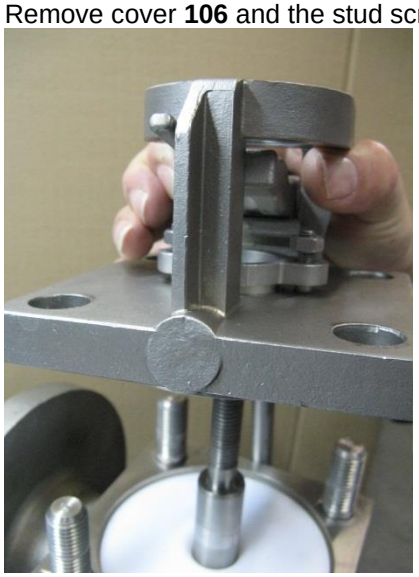
- Undo spring bonnet **513**.

- Pull pressure spring **952** from stem **855**.
- Loosen setscrew **904** in spring bush **514**.

- Undo spring bush **514**.

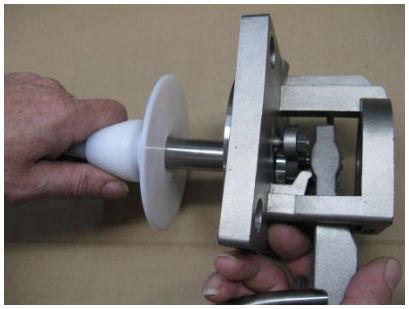
- Undo hex nut **920** with tooth lock washer **936**, and remove seat **205**.

- Remove cover **106** and the stud screws **902**.



- Pull out bellows **206** with stem **855** downwards.

- Remove actuation **515** from cover **106**.



- Undo both hex nuts **920** of packing gland follower **503**.

- Remove stud screws **902**.
- Remove packing gland follower **503**.
- Remove thrust ring **405** from cover **106**.

- Remove packing rings **402**.

- Turn cover **106** around and remove guide ring **302**.

9.2 Disassembling PA/S and removing the packing rings

- Unscrew cap nut **927**, remove disc **550** and bottle connection **226**.
- Undo groove nut **509**. Star grip **963** can remain screwed in.

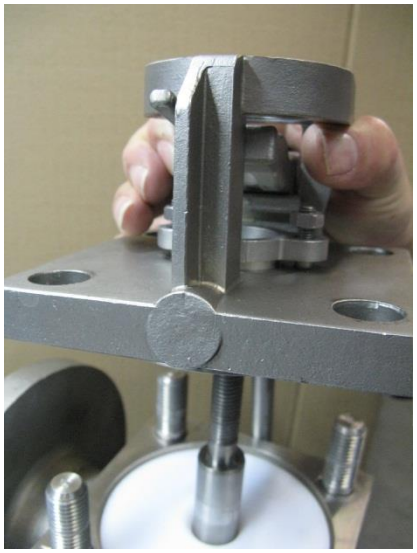
- Undo spring bonnet **513**.

- Pull pressure spring **952** from stem **855**.
- Loosen setscrew **904** in spring bush **514**.

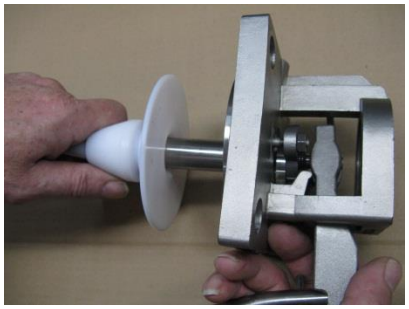
- Undo spring bush **514**.

- Undo hex nuts **920** of cover **106**.

- Remove cover **106** and the stud screws **902**.



- Pull out bellows **206** with stem **855** downwards.
- Remove actuation **515** from cover **106**.



- Undo both hex nuts **920** of packing gland follower **503**.

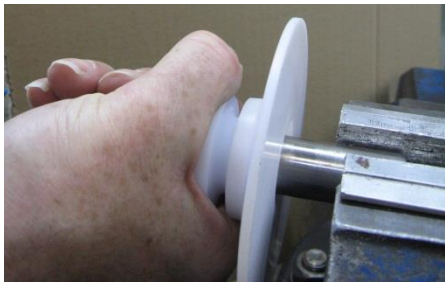
- Remove stud screws **902**.
- Remove packing gland follower **503**.
- Remove thrust ring **405** from cover **106**.

- Remove packing rings **402**.

- Turn cover **106** around and remove guide ring **302**.

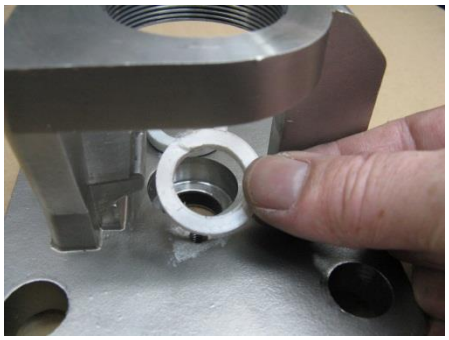
9.3 Assembling PA/F and inserting the packing rings

- Mount seat **205** and tighten with hex nut **920** and tooth lock washer **936**.
- Screw stem **855** into bellows **206**.



- Insert guide ring **302** from the bottom into cover **106**, and push the ring into the groove.

- Turn cover **106** around, and insert two packing rings **402**.
  ATTENTION: Offset overlapping from ring to ring by 60° to 90°.

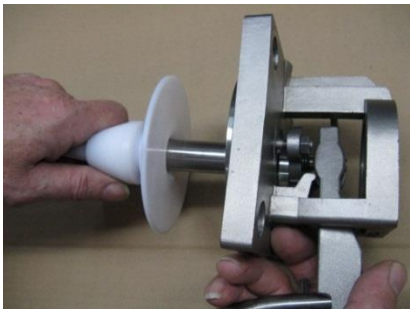


- Insert thrust ring **405**.

- Place packing gland follower **503**.
- Insert two stud screws **902**, and loosely fasten them with hex nuts **920**. Do not yet tighten the hex nuts!

- Insert actuation **515** into cover **106**.

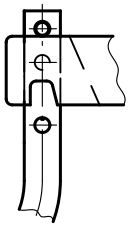
- Insert stem **855** and bellows **206** into cover **106**.



- Place cover **106** on body **100**. Make sure that actuation **515** is located on the same side as the name plate.

- Attach cover **106** with stud screws **902** and hex nuts **920** to body **100**. See **Section 1.2** for the tightening torques of the body screws.

- Move actuation **515** into dead man´s position.



- Screw on spring bush **514**.
  Note: Use your right hand to push actuation **515** up, and at the same time use your left hand to tighten spring bush **514** until the stop.

- Insert spring pressure **952**.
- Mount spring bonnet **513** with groove nut **509**. Note: The thread of spring bonnet **513** must be just visible at the bottom.

- Use a hook wrench to tighten groove nut **509**.

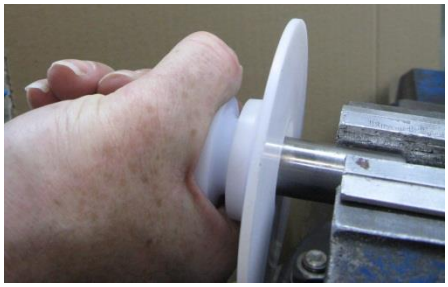
- Tighten both stud screws **920** of packing gland follower **503**.

- Tighten setscrew **904** in spring bush **514**.

- Standard: Screw in bottle connection **226** and secure with clip **937**.
- Set stroke with star knob. See **Section 6.7**.

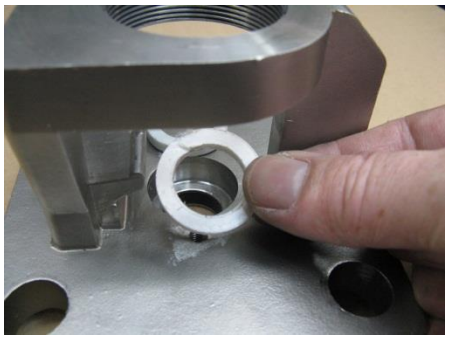
9.4 Assembling PA/S and inserting the packing rings

- Screw stem **855** into bellows **206**.



- Insert guide ring **302** from the bottom into cover **106**, and push the ring into the groove.

- Turn cover **106** around, and insert two packing rings **402**.
  ATTENTION: Offset overlapping from ring to ring by 60° to 90°.

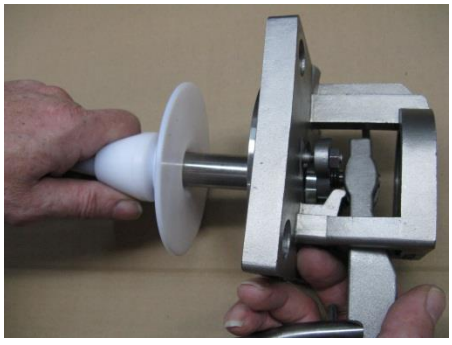


- Insert thrust ring **405**.

- Place packing gland follower **503**.
- Insert two stud screws **902**, and loosely fasten them with hex nuts **920**. Do not yet tighten the hex nuts!

- Attach actuation **515** to cover **106**.

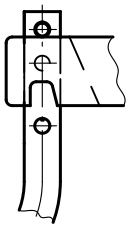
- Insert stem **855** and bellows **206** into cover **106**.



- Mount spring bonnet **513** with groove nut **509**. Note: The thread of spring bonnet **513** must be just visible at the bottom.
- Place cover **106** on body **100**. Make sure that actuation **515** is located on the same side as the name plate.

- Attach cover **106** with stud screws **902** and hex nuts **920** to body **100**. See **Section 1.2** for the tightening torques of the body screws.

- Move actuation **515** into dead man´s position.



- Screw on spring bush **514**.
  Note: Use your right hand to push actuation **515** up, and at the same time use your left hand to tighten spring bush **514** until the stop.

- Insert spring pressure **952**.

- Use a hook wrench to tighten groove nut **509**.

- Tighten both stud screws **920** of packing gland follower **503**.

- Tighten setscrew **904** in spring bush **514**.

- Standard: Secure bottle connection **226** with threaded rod **918** and cap nut **927**.
- Set stroke with star knob. See **Section 6.7**.

10 Sectional drawings and options

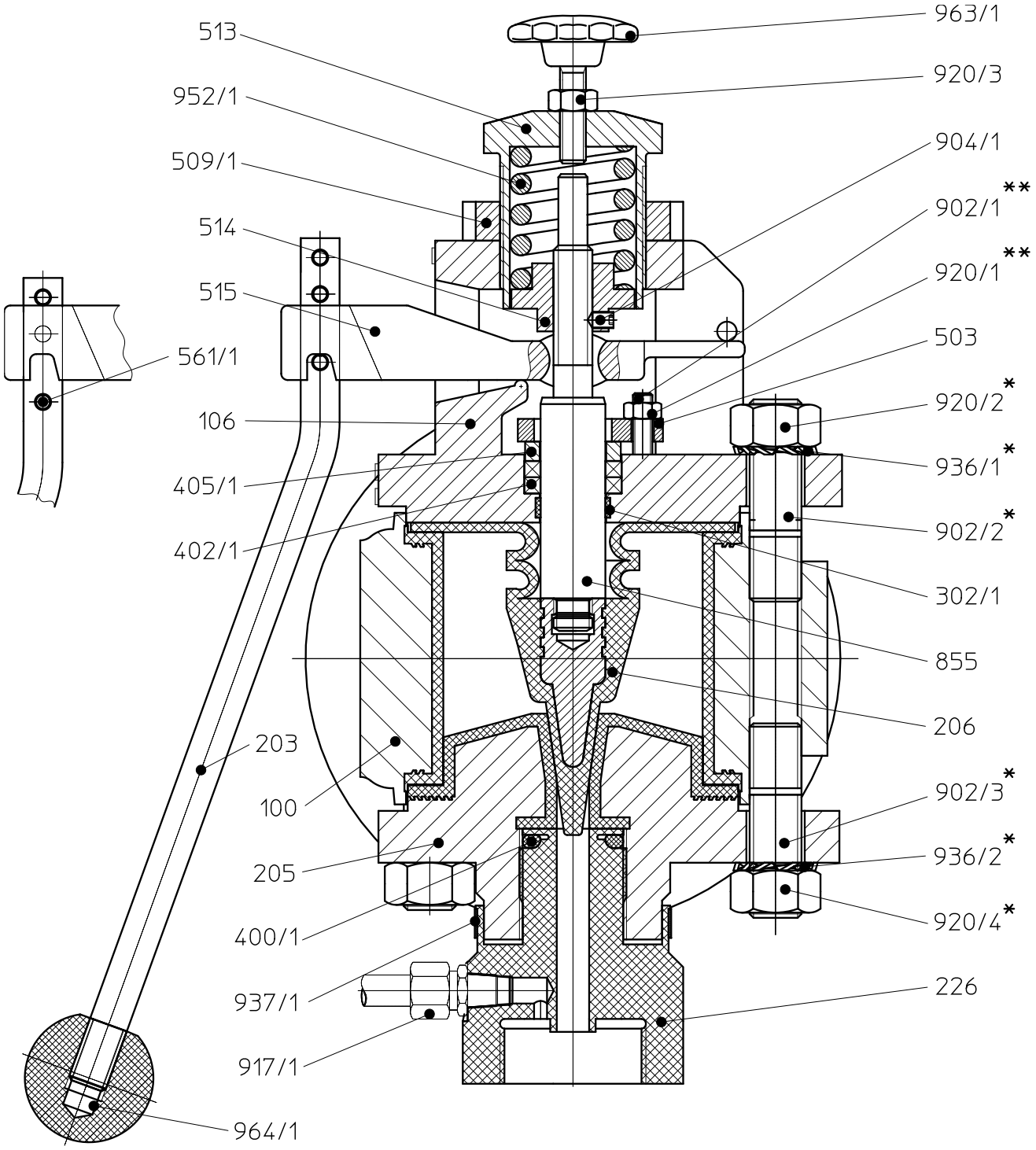
10.1 Legend PA/F

100	Body
104	transistion flange (DN 40, 80)
106	Cover
203	lever
205	Seat
206	bellows
226	bottle connection
302/x	guide ring
400	O-ring
402	Packing ring
405	thrust ring
408	Flat gasket (DN 40, 80)
500	Ring
503	packing gland follower
509	groove nut
510	bracket
513	spring bonnet
514	spring bushing
515	actuation
554	washer (DN 25, 40)
561	grooved pin
804	Coupling
850	actuator
855	Stem
902/x	stud screw
904	setscrew
917	screw-in pipe connector
920/x	hex nut
936/x	tooth lock washer
937	Clip
952	pressure spring
963	star knob
964	ball head

10.2 Legend PA/S

100	Body
104	transistion flange (DN 40, 80)
106	Cover
203	lever
206	bellows
226	bottle connection
302/x	guide ring
400	O-ring
402	Packing ring
405	thrust ring
408	Flat gasket (DN 40, 80)
500	Ring
503	packing gland follower
505	tie-rod
509	groove nut
510	bracket
513	spring bonnet
514	spring bushing
515	actuation
550	disc
554	washer (DN 25, 40)
561	grooved pin
804	Coupling
850	actuator
855	Stem
902/x	stud screw
904/x	setscrew
917	screw-in pipe connector
918	threaded rod
920/x	hex nut
927	cap nut
950	cup spring
952	pressure spring
963	star knob
964	ball head

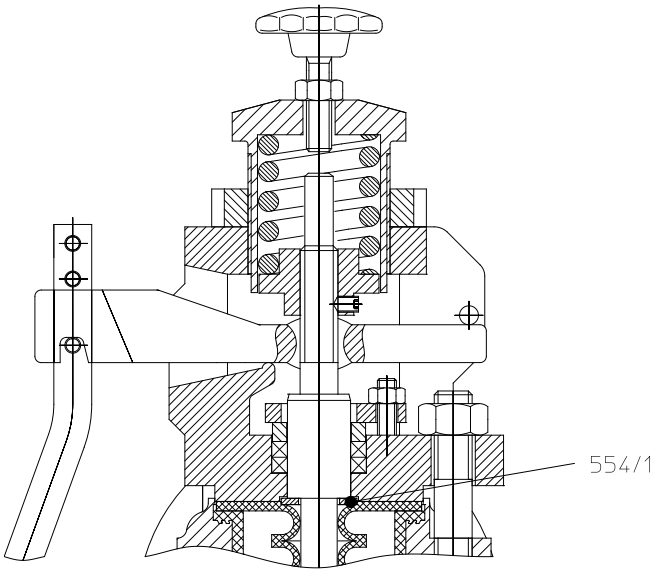
10.3 Sectional drawing PA/F



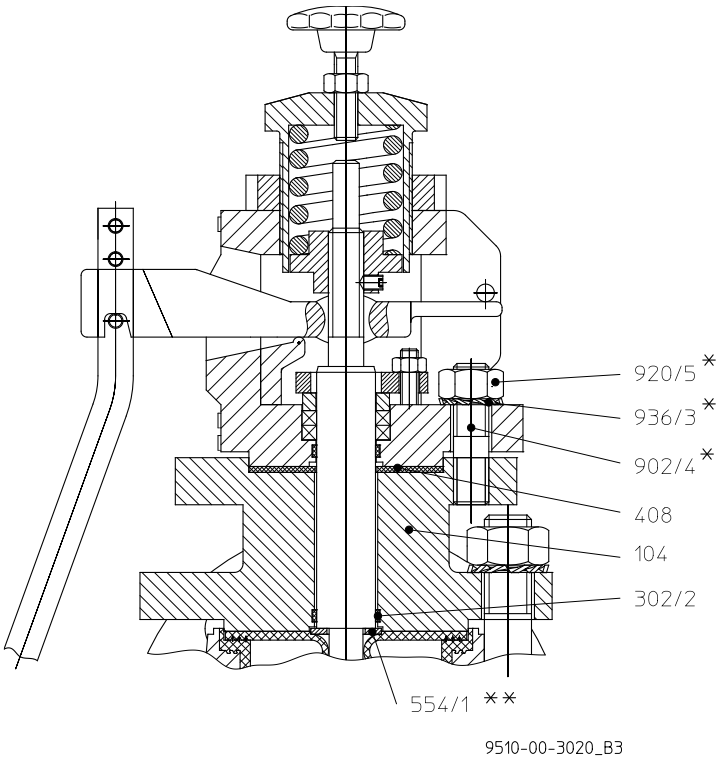
* view displaced by 90°
** view displaced by 45°

10.4 Details

PA/F DN 25

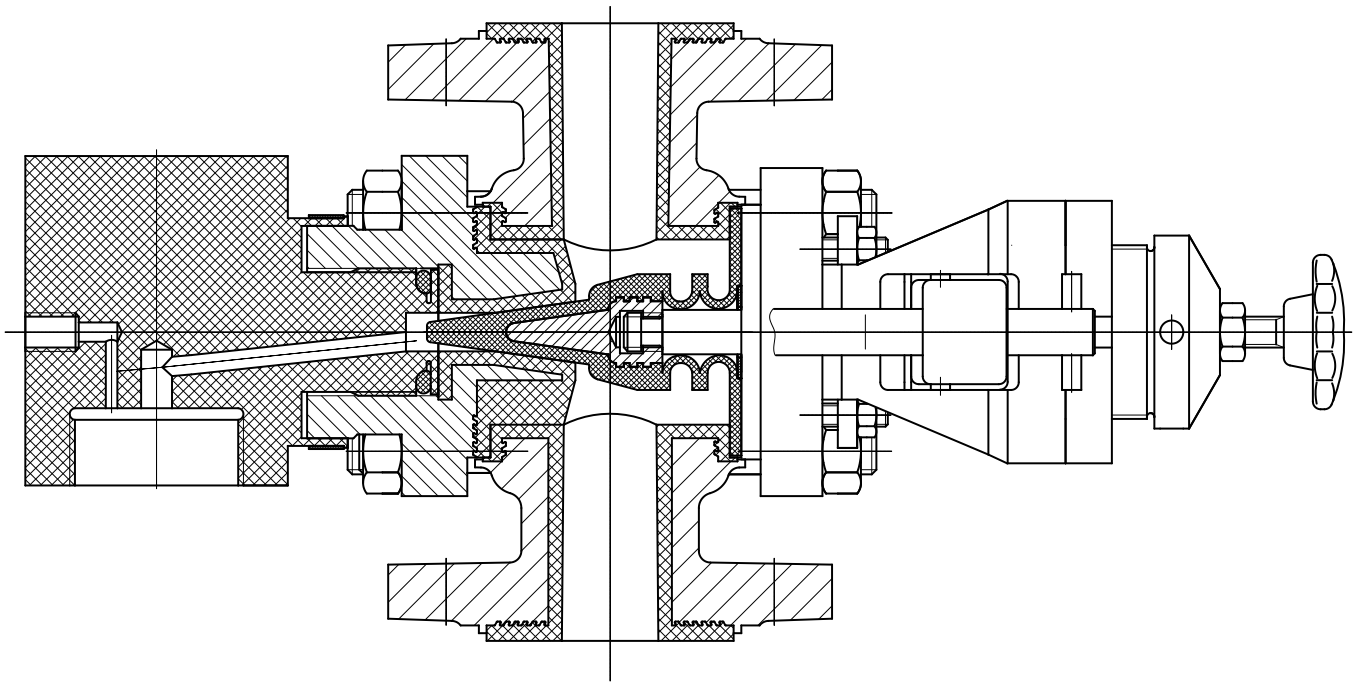


PA/F DN 40, 80



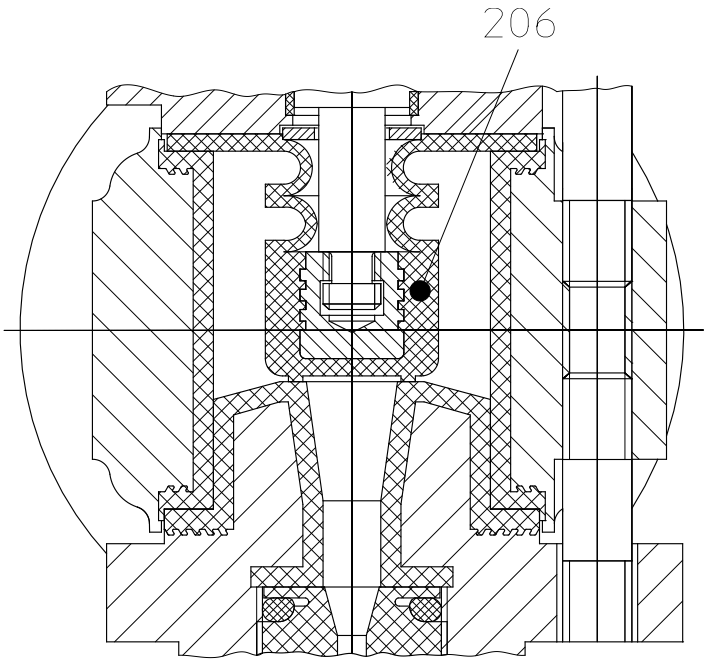
* view displaced
** not DN 80

10.5 PA/F vertical installation



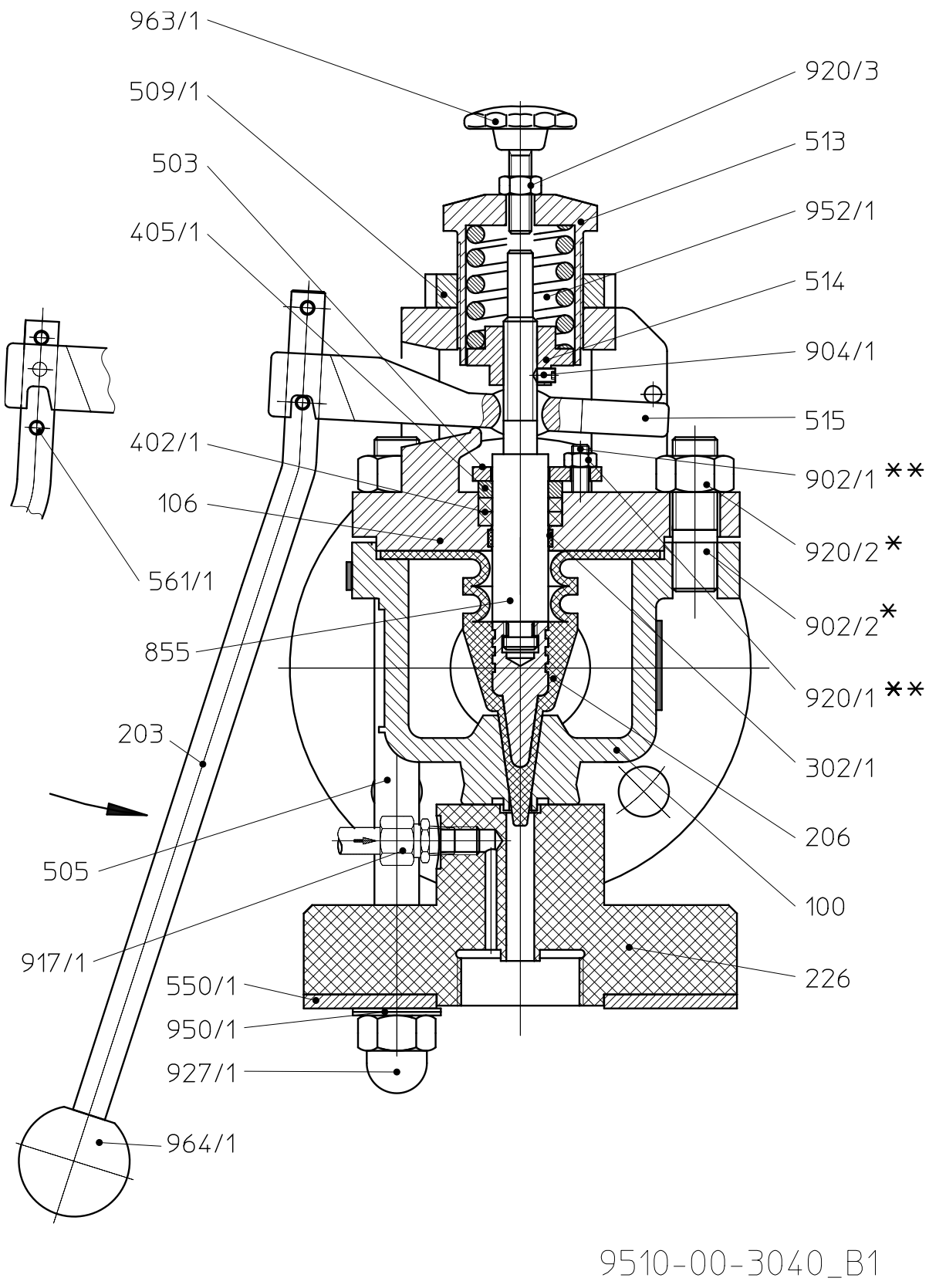
9510-00-3020_B4

10.6 PA/F, PAP/F Option high-viscosity media



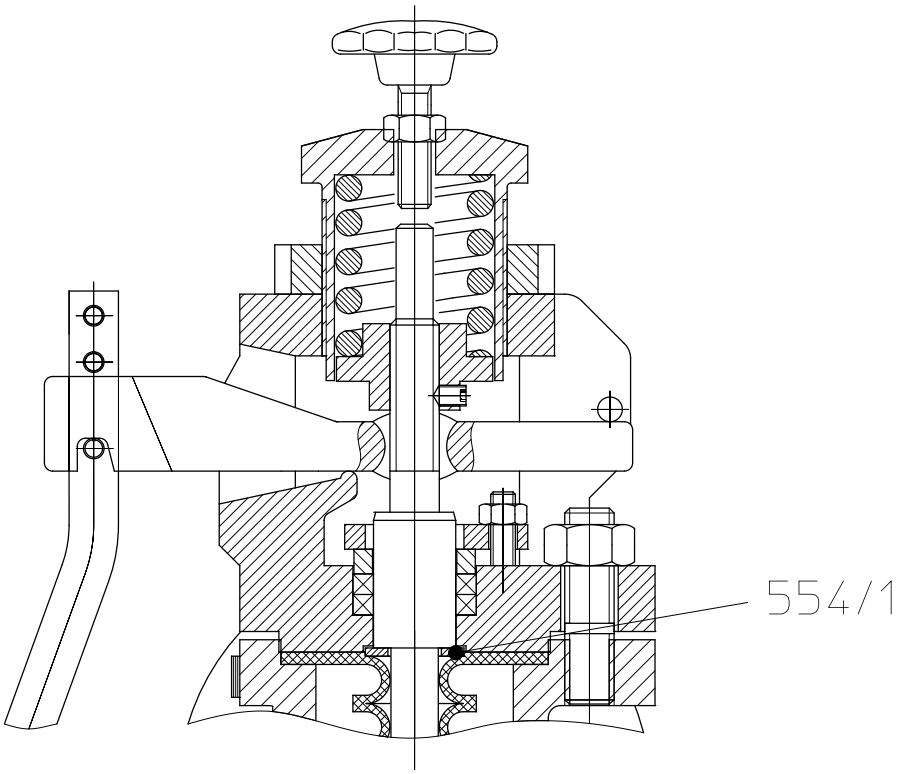
9510-00-3020_B2

10.7 Sectional drawing PA/S

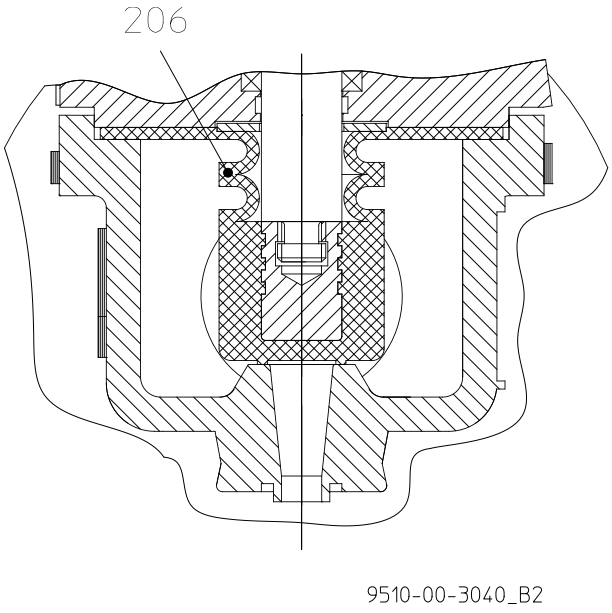


* view displaced by 90°
** view displaced by 45°

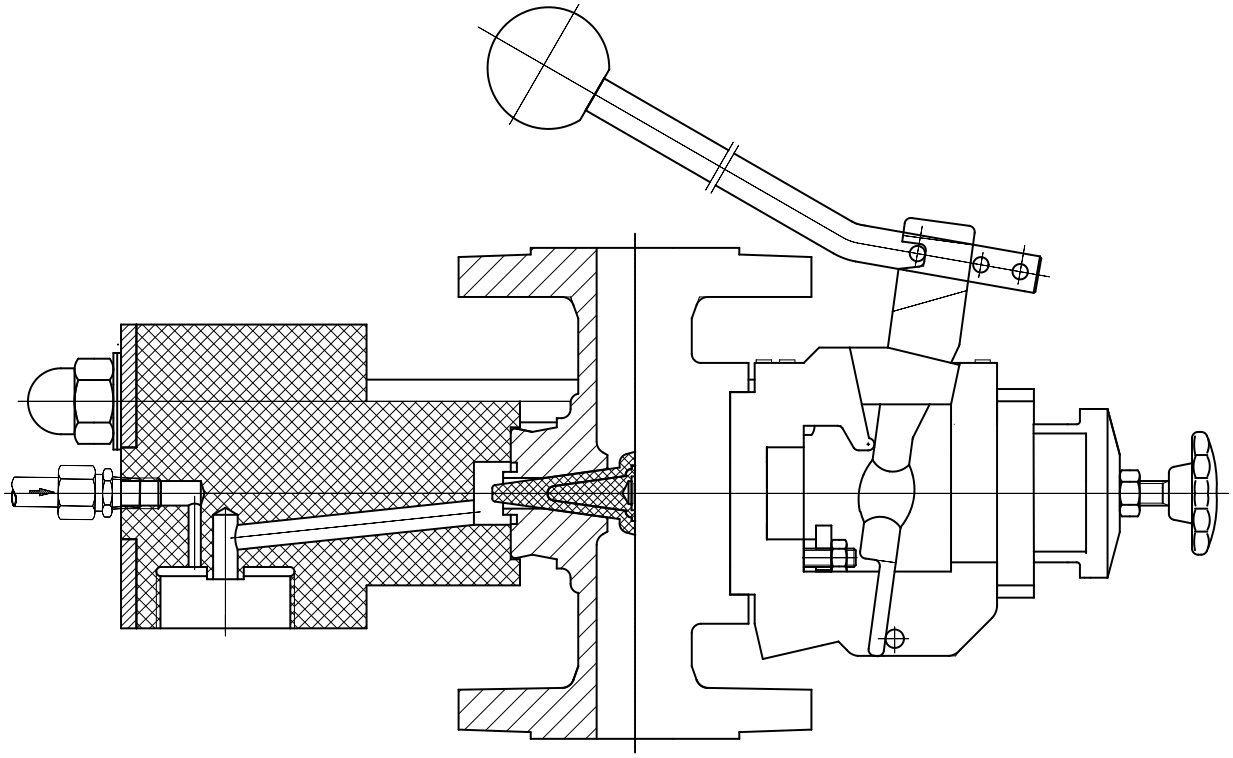
10.8 Detail PA/S DN 25



10.9 PA/S, PAP/S Option high-viscosity media

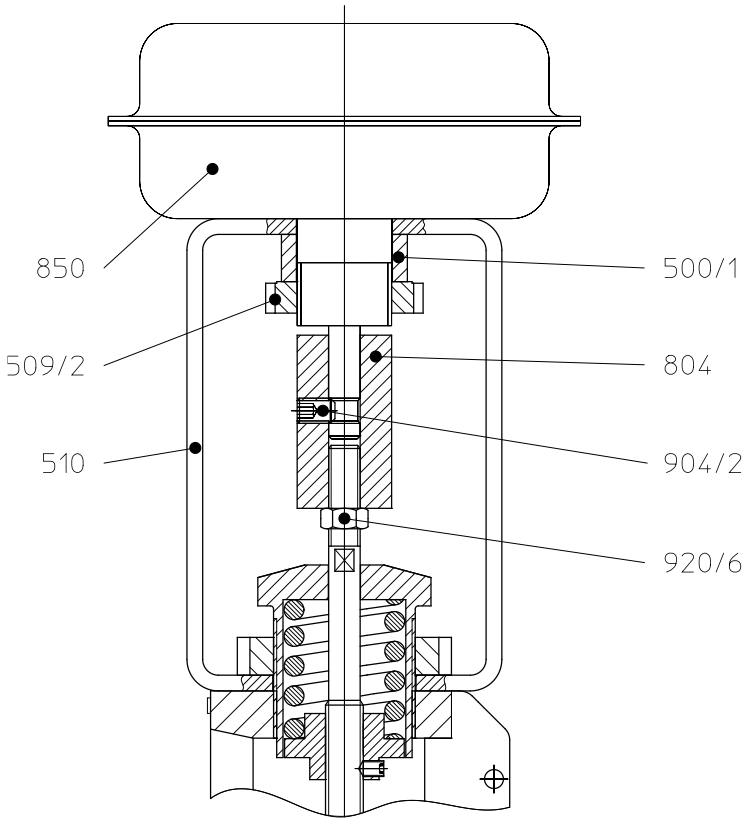


10.10 PA/S Vertical installation



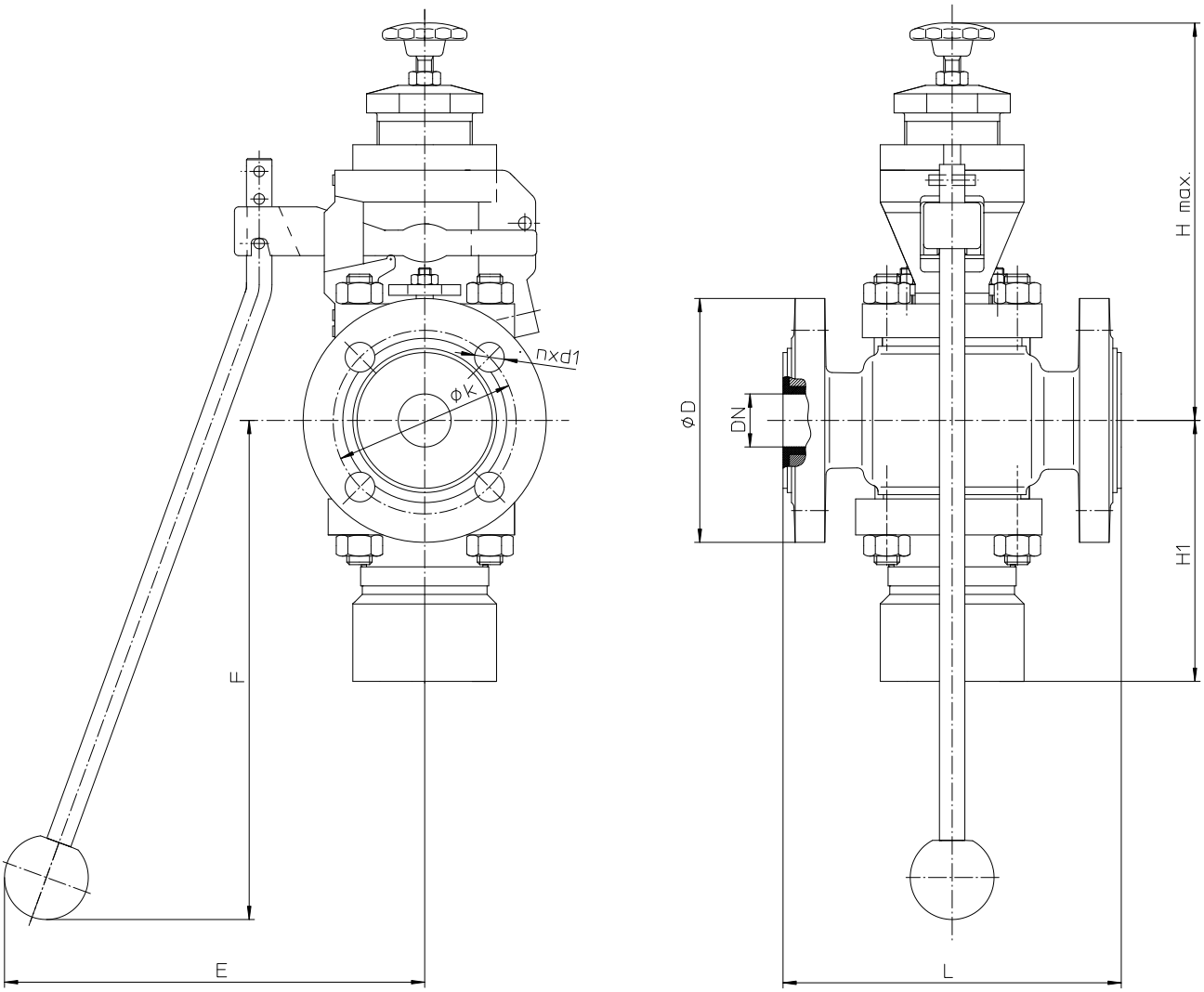
9510-00-3040_B6

10.11 PAP/F, PAP/S



9510-00-3020_B8

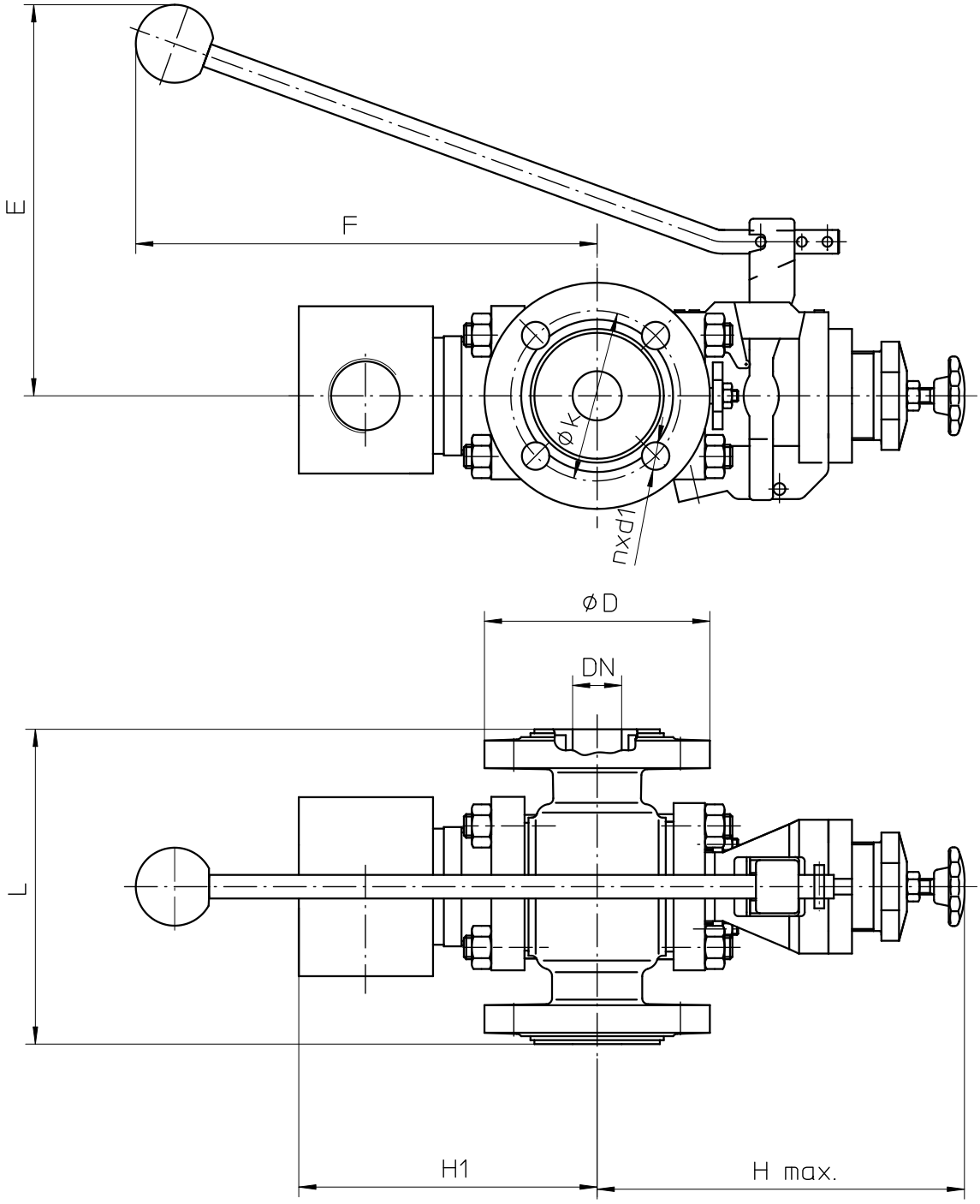
10.12 Dimensional drawing PA/F horizontal installation



DN		H1		H max.		E		F		L EN 558 Reihe 1	
mm	**inch**	**mm**	**inch**	**mm**	**inch**	**mm**	**inch**	**mm**	**inch**	**mm**	**inch**
25	**1**	123	4.84	190	7.48	approx. 200	approx. 7.87	approx. 235	approx. 9.25	160	6.3
40	**1½**	127	5.0	250	9.84			approx. 175	approx. 6.89	200	7.87
50	**2**	131	5.16	195	7.68			approx. 230	approx. 9.06	230	9.06
80	**3**	173	6.81	310	12.2	approx. 211	approx.8.3	approx. 97	approx. 3.81	310	12.2

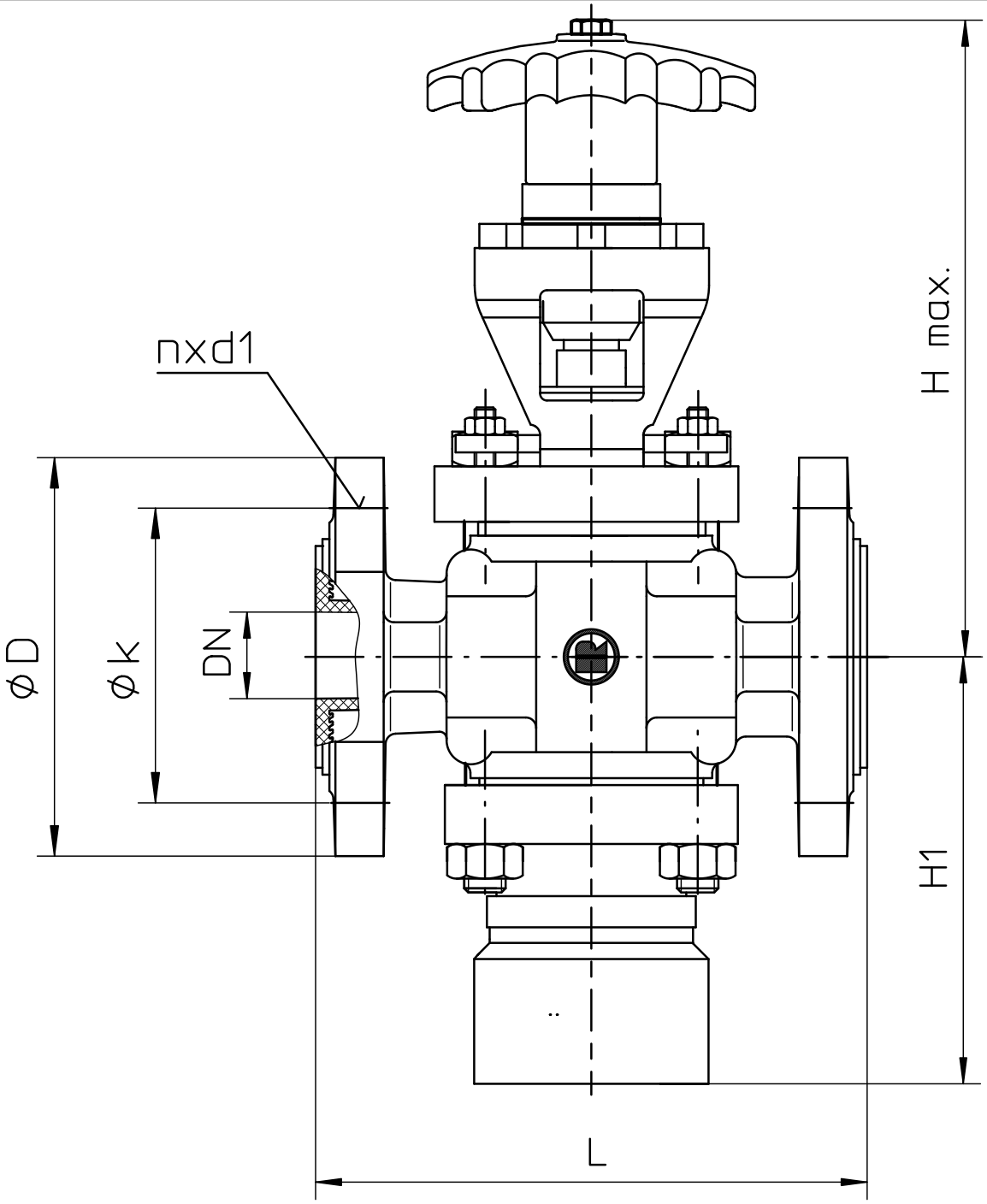
Flange connecting dimensions:
DIN EN 1092-2, type B (ISO 7005-2, type B) PN 16 or flanges drilled to ASME 16.5 Class 150

10.13 Dimensional drawing PA/F vertical installation



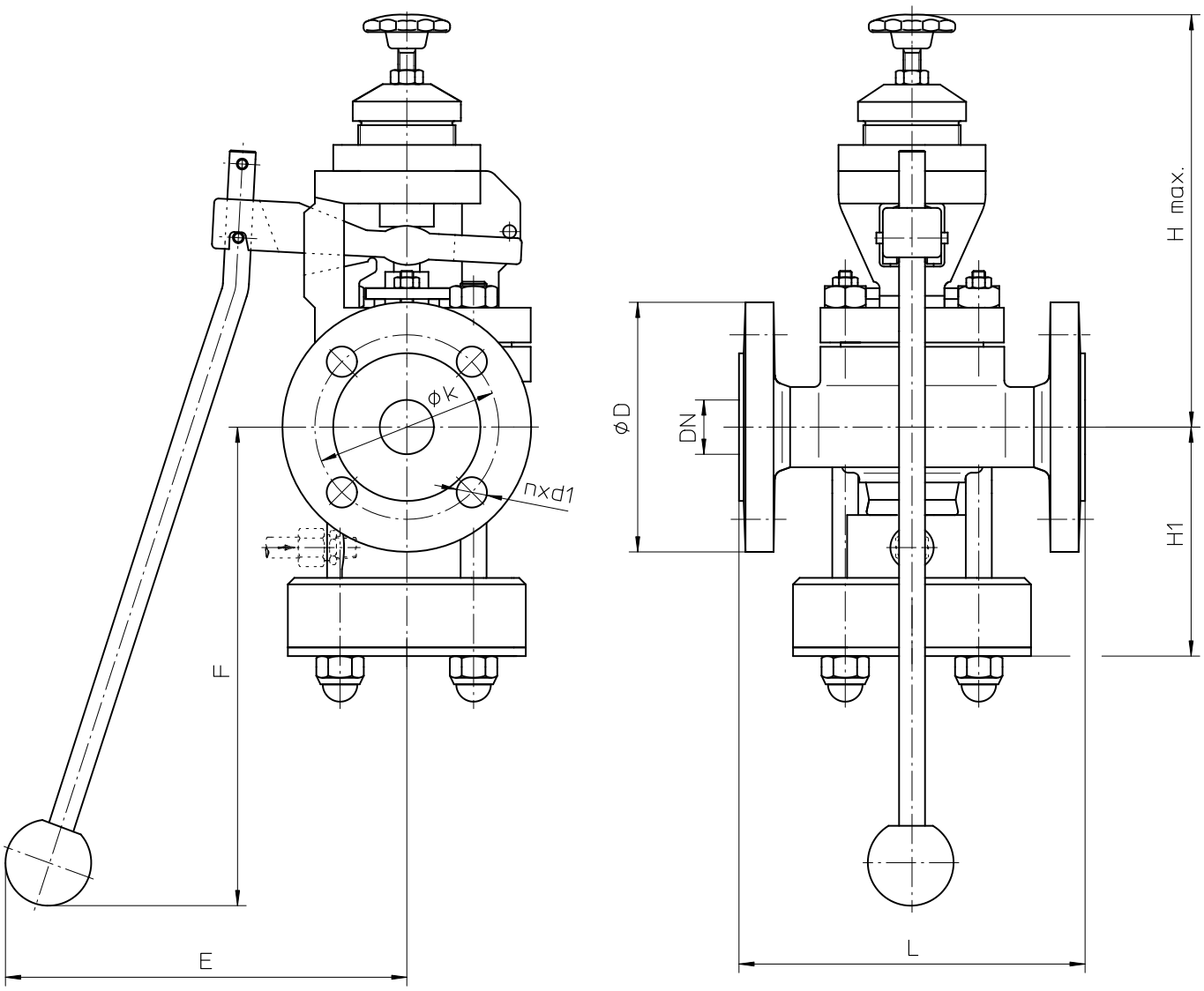
DN		H1		H max.		E		F		L EN 558 Reihe 1	
mm	**inch**	**mm**	**inch**	**mm**	**inch**	**mm**	**inch**	**mm**	**inch**	**mm**	**inch**
25	**1**	152	5.98	190	7.48	approx. 200	approx. 7.87	approx. 235	approx. 9.25	160	6.3
40	**1½**	156	6.14	250	9.84			approx. 175	approx. 6.89	200	7.87
50	**2**	160	6.29	195	7.68			approx. 230	approx. 9.06	230	9.06
80	**3**	202	7.95	310	12.2	approx. 211	approx. 8.3	approx. 97	approx. 3.81	310	12.2

10.14 Dimensional drawing PA/F with handwheel



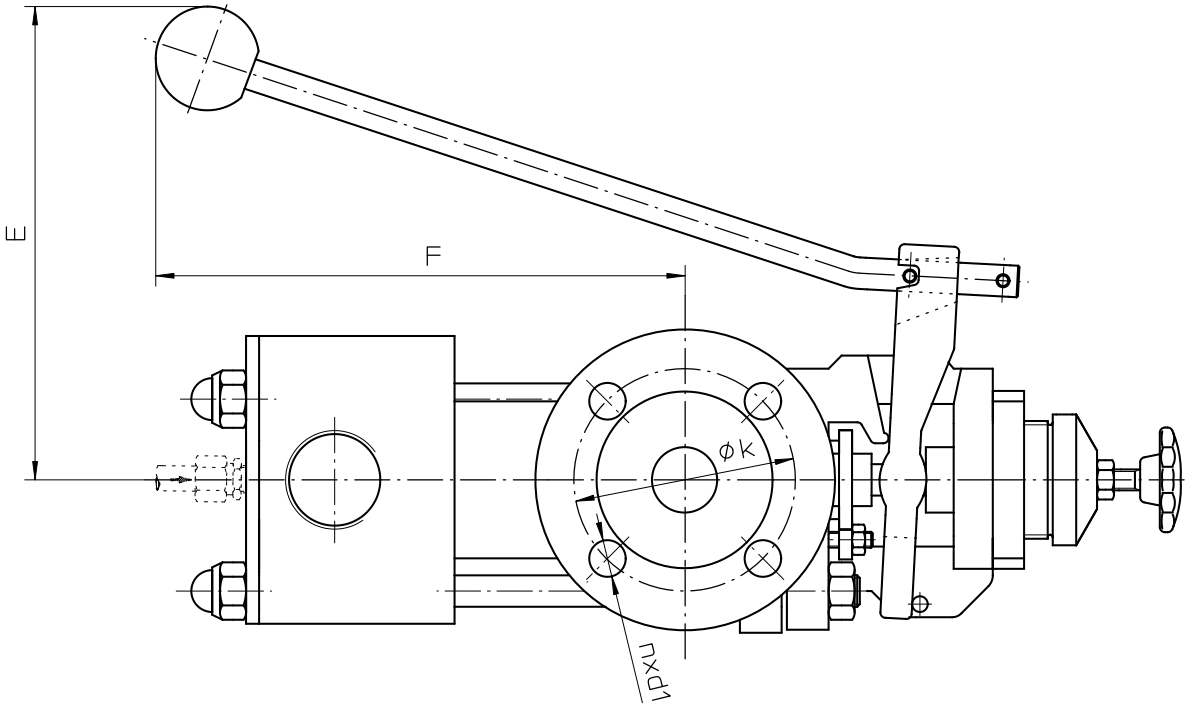
DN		H1		H max.		L EN 558 Reihe 1	
mm	inch	mm	inch	mm	inch	mm	inch
25	**1**	123	4.84	187	7.36	160	6.3
40*	**1½**	--	--	--	--	--	--
50*	**2**	--	--	--	--	--	--
80*	**3**	--	--	--	--	--	--

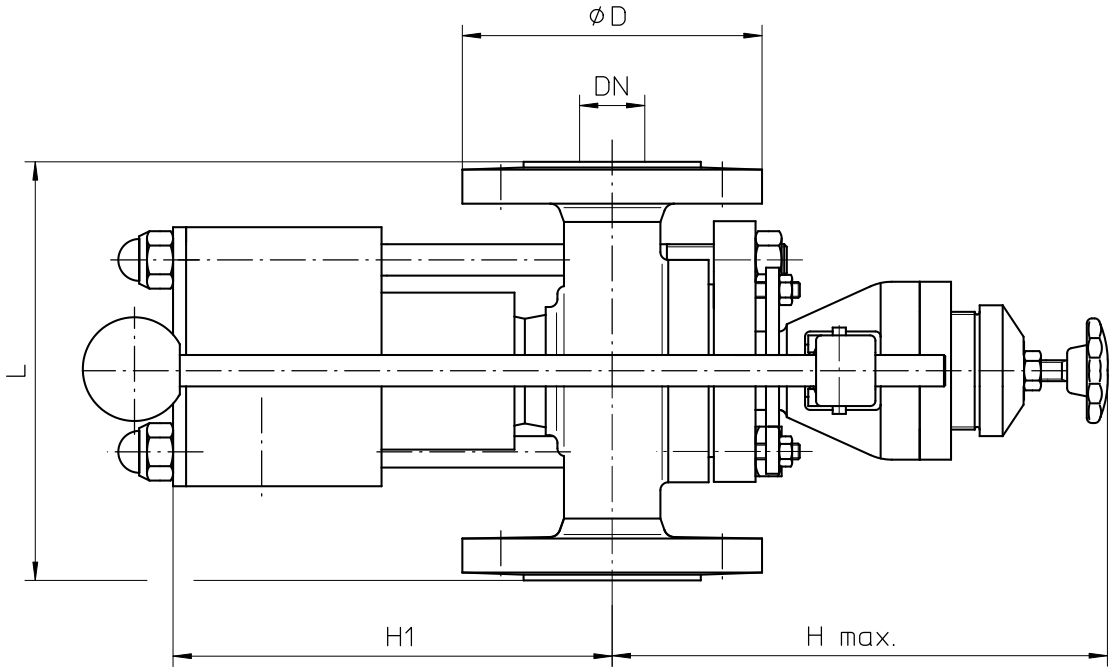
10.15 Dimensional drawing PA/S horizontal installation



DN		H1		H max.		E		F		L EN 558 Reihe 1	
mm	**inch**	**mm**	**inch**	**mm**	**inch**	**mm**	**inch**	**mm**	**inch**	**mm**	**inch**
25	**1**	106	4.17	190	7.48	approx. 185	approx. 7.28	approx. 220	approx. 8.66	160	6.3
50	**2**	122	4.80	195	7.68			approx. 212	approx. 8.34	230	9.06

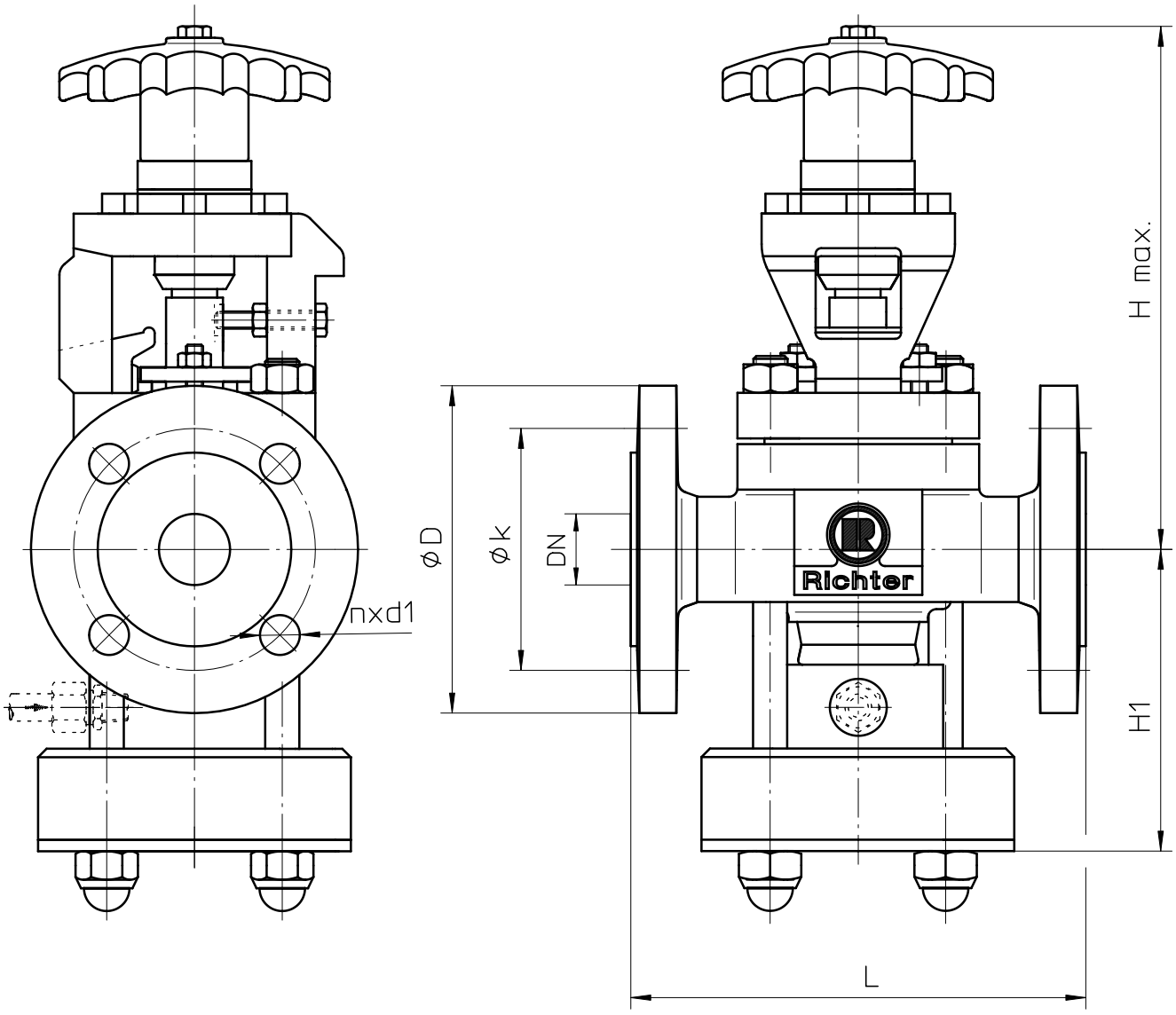
10.16 Dimensional drawing PA/S vertical installation





DN		H1		H max.		E		F		L EN 558 Reihe 1	
mm	**inch**	**mm**	**inch**	**mm**	**inch**	**mm**	**inch**	**mm**	**inch**	**mm**	**inch**
25	**1**	168.5	6.63	190	7.48	approx. 181	approx. 7.12	approx. 203	approx. 8.00	160	6.3
50	**2**	178.5	7.02	195	7.68			approx. 230	approx. 9.06	230	9.06

10.17 Dimensional drawing PA/S with handwheel



DN		H1		H max.		L EN 558 Reihe 1	
mm	**inch**	**mm**	**inch**	**mm**	**inch**	**mm**	**inch**
25	**1**	106	4.17	187	7.36	160	6.3
50*	**2**	--	--	--	--	--	--

10.18 Flange connection

DN		EN 558 Reihe 1			ASME B16.5 Class 150			
		ØD	Øk	n x d1	Øk		n x d1	
mm	**inch**	**mm**	**mm**	**mm**	**mm**	**inch**	**mm**	**inch**
25	**1**	115	85	4x14	79.5	3.12	4x16	4 x ⅝
40	**1½**	150	110	4x18	98.5	3.87	4x16	4 x ⅝
50	**2**	165	125	4x18	120.5	4.74	4x19	4 x ¾
80	**3**	200	160	8x18	152.5	6.00	4x19	4 x ¾

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

Richter Chemie-Technik GmbH
Otto-Schott-Straße 2
D-47906 Kempen
www.richter-ct.com

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 Hubventile *Plastic lined globe control valves*
Bauart *Design*	Membranabsperrventil, Probenahmeventil, Bodenauslaufventil *Diaphragm shut-off or control valve, sampling valve, drain valve*
Baureihe *Series*	MV, MVM, MVP, MVMP, PA, PA/S, PAP, PAP/S, BAV, BAVM
Nennweite *Size*	DN 15 bis DN 150, ½" bis 6" *DN 15 to DN 150, ½" to 6"*
Seriennummer *Series number*	ab/*from* 01.09.2024
EU-Richtlinie *EU-Directive*	2014/68/EU Druckgeräterichtlinie 2006/42/EG [2] Maschinenrichtlinie Anhang II, Nr. 1A 2014/68/EU *Pressure Equipment* *2006/42/EC [2] Directive Machinery Annex II, No. 1A*
Angewandte Technische Spezifikation *Applied Technical Specification*	DIN EN 16668, AD2000 DIN EN ISO 12100
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 H Zertifikats Nr. 0045/202/1411/Z/00470/22/D/001(00)
Kennzeichnung *Marking*	2014/68/EU[1] ≥ DN 32, ≥ 1" CE 0045 2006/42/EG *2006/42/EC* CE

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.

1) Für nicht aufgeführte Nennweiten ist eine Kennzeichnung nicht zulässig.
For sizes not listed a marking is not permitted.
2) Armaturen mit freiem Wellenende, vorbereitet für Antrieb oder mit Antrieb und Zubehör. Ausgenommen sind handbetätigte Armaturen.
Valves with a bare shaft, prepared for actuator or with actuator and accessories. Excluded are manually actuated valves.

Kempen, 01.09.2024

i.V. C. Muders

Christian Muders
Director Global Engineering

Manuel Müller
Quality Manager

Richter Chemie-Technik GmbH
Otto-Schott-Straße 2
D-47906 Kempen
www.richter-ct.com

RICHTER
Process Pumps & Valves
A Unit of IDEX Corporation

UK CA

Konformitätserklärung
Declaration of Conformity

In Übereinstimmung mit den Leitlinien der britischen Regierung
in accordance with UK government guidance

Produkt *Product*	Kunststoffausgekleidete Hubventile *Plastic lined globe control valves*
Bauart *Design*	Membranabsperrventil, Probenahmeventil, Bodenauslaufventil *Diaphragm shut-off or control valve, sampling valve, drain valve*
Baureihe *Serie*	MV, MVM, MVP, MVMP, PA, PA/S, PAP, PAP/S, BAV, BAVM
Nennweite *Size*	DN 15 bis DN 150, ½" bis 6" *DN 15 to DN 150, ½" to 6"*
Seriennummer *Series number*	ab/*from* 01.09.2024
UK Gesetzliche Vorschriften *UK Statutory instruments*	2016 No. 1105 Druckgeräteverordnung 2016 2008 No. 1597 [1] Maschinenverordnung 2008 *2016 No. 1105 The Pressure Equipment Regulations 2016* *2008 No. 1597 [1] The Supply of Machinery Regulations 2008*
Angewandte Technische Spezifikation *Applied Technical Specification*	DIN EN ISO 12100 DIN EN 16668, EN 13445
Überwachungsverfahren *Surveillance Procedure*	2016 No. 1105, 2008 No. 1597 Conformity Assessment Durchgeführt gemäß dem bestehenden PED-Modul H-Zertifikat im Rahmen der Erleichterungen der britischen Regierung vom Juni 2022. Applied according to existing PED Module H certificate under the UK government June 2022 easements.
Konformitätsbewertungs-verfahren 2014/68/EU *Conformity assessment procedure 2014/68/EU*	Modul H Zertifikats Nr. 0045/202/1411/Z/00771/19/D/001(00), TÜV Nord CE 0045 *Module H* *Certificate no.* 0045/202/1411/Z/00771/19/D/001(00), *TÜV Nord CE 0045*
Kennzeichnung *Marking*	2016 No. 1105, 2008 No. 1597 [1] *2016 No. 1105, 2008 No. 1597 [1]* UK CA

Das Unternehmen Richter Chemie-Technik GmbH bescheinigt hiermit, dass die o.a. Baureihen die grundsätzlichen Anforderungen der aufgeführten Richtlinien und Normen erfüllen. Diese Erklärung wird unter der alleinigen Verantwortung des Herstellers abgegeben.
Richter Chemie-Technik GmbH confirms that the basic requirements of the above specified directives and standards have been fulfilled. This declaration is issued under the sole responsibility of the manufacturer.

[1] Armaturen mit freiem Wellenende, vorbereitet für Antrieb oder mit Antrieb und Zubehör. Ausgenommen sind handbetätigte Armaturen.
Valves with a bare shaft, prepared for actuator or with actuator and accessories. Excluded are manually actuated valves.

Kempen, 01.09.2024

i.V. C. Muders

Christian Muders
Director Global Engineering

Manuel Müller
Quality Manager

Richter Chemie-Technik GmbH
Otto-Schott-Straße 2
D-47906 Kempen
www.richter-ct.com

RICHTER
Process Pumps & Valves
A Unit of IDEX Corporation

Konformitätserklärung FDA & 2014/68/EU
Declaration of Conformity

Produkt *Product*	PFA ausgekleidete Hubventile *PFA lined globe control valves*
Bauarten *Design*	Membranabsperrventil, Probenahmeventil, Bodenauslaufventil *Diaphragm shut-off or control valve, sampling valve, drain valve*
Baureihen *Series*	MV, MVM, MVP, MVMP, PA, PA/S, PAP, PAP/S, BAV, BAVM
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 Mod. 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.V.

Manuel Müller
Quality Manager

Richter Chemie-Technik GmbH
Qualitätsmanagement
Otto-Schott-Str. 2
D-47906 Kempen
Germany
Tel.: +49 / (0) 21 52 / 146-0
Fax: +49 / (0) 21 52 / 146-190
richter-info@idexcorp.com

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 Probenahme-Ventil / *Richter Sampling Valve*

Hiermit erklären wir, dass die Probenahme-Ventile der Baureihen
Hereby we declare, that the Sampling Valves of the series

PA/F, PA/S

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

Richter Chemie-Technik GmbH
Otto-Schott-Straße 2
D-47906 Kempen
USt. Id. Nr. DE 811 127 054

Telefon + 49 (0) 21 52 / 146- 0
Telefax + 49 (0) 21 52 / 146- 190
richter-info@idexcorp.com
www.richter-ct.com

J.P. Morgan AG, Frankfurt/Main · Kto. Nr. 6 161 507 538 (BLZ 501 108 00)
BIC/SWIFT: CHASDEFX · IBAN Code: DE61 5011 0800 6161 5075 38
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)		

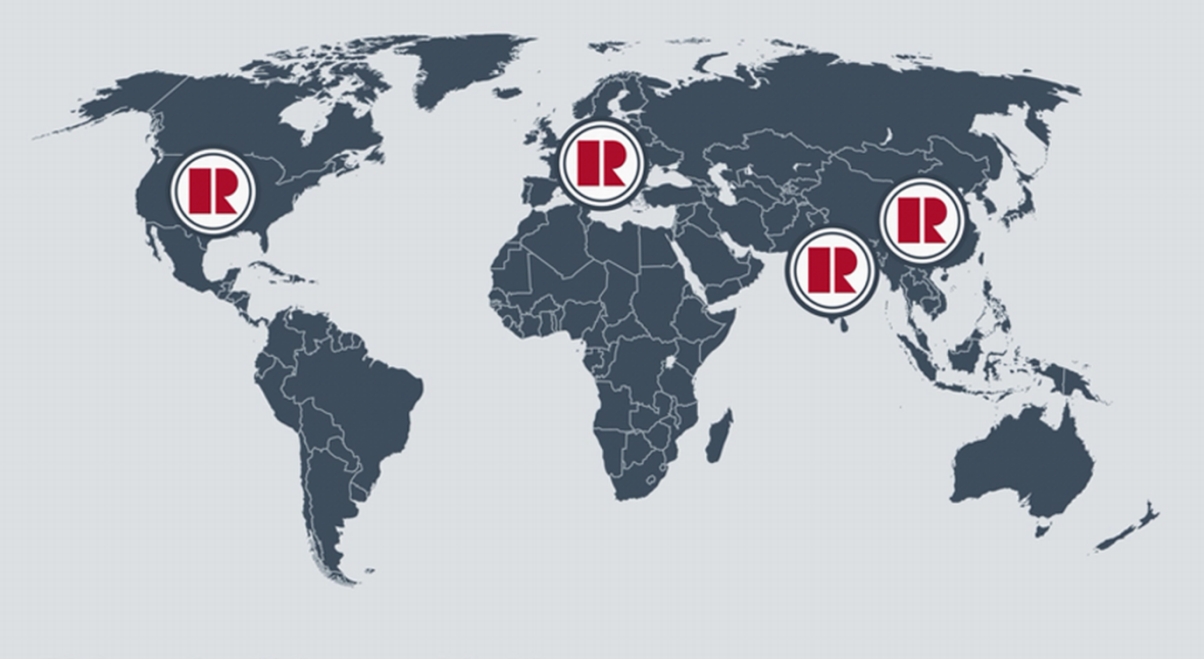
	no	yes
2. **Are the materials specified above harmful to health ?**	o	o
3. **Dangerous decomposition products during thermal load ?**	o	o
If yes, which ones?		

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



Richter Chemie-Technik GmbH
Otto-Schott-Str. 2
D-47906 Kempen / Germany
Tel: +49 (0) 2152 146-0
Email: Richter-Info@idexcorp.com
Internet: www.richter-ct.com

Richter Pumps and Valves
6041 Industrial Drive
Geismar, 70734, USA
Tel.: +1 225-673-9990
Email: RichterIncSales@idexcorp.com
Internet: www.richter-ct.com

Richter (EP), Nanjing, Shanghai Office
Room 3502 - 3504, Zhaofeng Plaza
No. 1027, Changning Road, Shanghai 200050 / China
Tel: +86 / 21 / 6150 - 9812
Email: RichterShanghai-Info@idexcorp.com
Internet: www.richter-ct.com

Richter Pumps & Valves Pvt. Ltd.
Survey No. 256, near Bombardier Circle, GIDC
Manjusar, Savli, Dist. Vadodara 391770, Gujarat / India
Tel: +91 2667-662-001
Email: info.fmt@idex
Internet: www.richter-ct.com

Edition 05/2025
Revision 9.0
9510B010-en

RICHTER
KEEP ON FLOWING