von Rohr
Armaturen AG

Operating and maintenance manual Series 8B

Original instructions

Table of contents

1 General data

This operating manual contains instructions that enable the product to be safely and properly installed, put into operation and maintained.
The target group for this operating manual is exclusively specially trained and authorised technical personnel.
Please contact the manufacturer if you encounter problems that cannot be solved with the aid of this operating manual
The product is subject to technical changes at any time.

1.1 Contact details

Further information about the product can be obtained from:

Manufacturer's address

von Rohr Armaturen AG
Fichtenhagstrasse 4
CH - 4132 Muttenz
Tel.: +41 (0)61 467 91 20
Fax: +41 (0)61 467 91 21
E-Mail: info@von-rohr.ch
Web: www.von-rohr.ch

1.2 Other applicable documents

The product can be delivered as part of an actuator and equipped with additional components that are described in their own operating manuals. The instructions as well as the warning and safety information contained therein must also be observed.

1.3 Place of storage of manual

The operating manual and all other applicable documents are part of the product. They must be kept in the immediate vicinity of the product and must be accessible to the personnel at all times.

2 Safety

2.1 General safety information

The operating manual contains detailed descriptions for the safe installation, commissioning and maintenance of the product.

- Read this operating manual attentively in its entirety in order to familiarise yourself with the product.
- Particular attention must be paid to the information in this chapter.

2.2 Symbols and notices

Safety and warning instructions are intended to avoid hazards to the life or health of operating or maintenance personnel, and to avoid material damage. They are highlighted by the use of the signal terms defined herein. In addition, the warning symbols (pictograms) are marked where they appear. The signal terms used have the following meanings:

⚠ DANGER

means that death, serious injuries and/or considerable damage to property will occur if the corresponding preventive measures are not taken and maintained.

⚠ WARNING

means that death, serious injuries and/or considerable damage to property can occur if the corresponding preventive measures are not taken and maintained.

⚠ CAUTION

means that minor injuries and/or damage to property can occur if the corresponding preventive measures are not taken and maintained.

NOTICE

Indicates important information about the product itself or the handling of the product, to which special attention should be paid.

2.3 Structure of warning notices

Section-related warning notice

Section-related warning notices refer to the entire chapter, sections or several paragraphs within this operating manual. Section-related warning notices are structured as follows:

⚠ DANGER

Type and source of the danger

Possible consequences of disregard

► Measure to avoid the danger

► Further measures

Embedded warning notice

Embedded warning notices refer to a certain area within a section. They apply to smaller information units than the section-related warning notices. Embedded warning notices are structured as follows:

⚠DANGER! Instructions to avoid dangerous situations.

2.4 Intended use

The product complies with laws, regulations and standards valid at the time of delivery.

The product does not pose a danger to people, property or environment if it is used for its intended purpose and the warning notices contained in this operating manual and attached to the product are observed. This applies to the entire lifetime, from delivery, over assembly and operation to the disassembly and disposal.

The following shall be regarded as the intended use:

- Operate the product exclusively in accordance with this operating manual and in accordance with the specification in the order confirmation and the device pass.
- Use exclusively original von Rohr spare parts for the maintenance of the product

⚠ DANGER

Risk of death and serious injuries as well as damage to property and the environment!

Risk of death and serious injuries as well as damage to property and the environment due to hazardous operating media, high temperatures and pressures as well as moving parts.

► it is imperative to comply with the following requirements and conditions.

► Observe warning notices.

Maintenance

Ensure or observe the following before performing any maintenance work:

- Depressurise the pipeline.
- Completely empty the pipeline and, in the case of hazardous media, flush thoroughly with suitable cleaning fluid.
- Be aware of possible hazards that could be caused by residues of the operating medium and take appropriate measures if necessary. (Wear protective equipment, etc.).
- If necessary, cool the actuator down or heat it up to ambient temperature.
- Disconnect the power supply to the actuator and move the actuator into its safety position.
- Ensure that the system cannot be started up by third parties.
- Explicit reference is made to the need to comply with the regulations for potentially explosive atmospheres, if applicable.

Limits of use

Operate the actuator only within the following limits of use.

Min. operating temperature [°C]	Max. operating temperature [°C]
Low temperature version - 196	Spacer tube + 450

NOTICE! The design temperature min. and max. is defined in the order and may not be exceeded!

NOTICE! If the valve is complemented with a third-party actuator, the operating temperatures must be reviewed.

2.5 Inappropriate use

Inappropriate use is use of the product other than as described in the chapter entitled *[2.4} intended use*.

In addition, the following applies:

- Unauthorised modifications to the product can lead to injuries, damage to property and malfunctions. The user alone bears the risk for this. Warranty and liability claims are excluded.

2.6 Use in potentially explosive atmospheres

The product can be used in explosion group IIB if the layer thickness including special paint and stickers is less than 2 mm. In the corresponding special version SC, the product can also be used in potentially explosive atmospheres of explosion group IIC. The temperature class depends on the order and can vary from T1 to T6.

DANGER! Only use the valve in the explosion group defined on the type plate! If there is no indication, the valve cannot be used in a potentially explosive atmosphere!

⚠ WARNING

Inappropriate product for potentially explosive atmospheres area

Risk of explosion

► Only use products that are approved for use in Ex areas and labelled accordingly.

► Make sure that the product is appropriate for the intended use.

⚠ WARNING

Unauthorised accessories and spare parts

Explosion hazard or product damage!

► Make sure to use only original accessories and/or original spare parts.

► Comply with all relevant installation and safety instructions specified in the manuals for the product, accessories and spare parts.

⚠ WARNING

Exceeding the maximum environment or media temperature

Explosion hazard due to increased surface temperature!

If the maximum permissible environment or media temperature is exceeded, the temperature class of the product is no longer valid!

► Make sure the maximum permissible environment or media temperature of the product is not exceeded.

⚠ WARNING

Contaminated operating medium

Danger of explosion due to blockage and damage to the product

► Make sure that there are no foreign particles in the operating medium.

► A filter is recommended in front of each fitting.

⚠ WARNING

Charging operating medium

Risk of explosion due to charging of the operating medium inside the valve

► It is important that this ignition source is avoided by appropriate process control of the operator. For this purpose, the relevant regulations and codes of practice (e.g. CLC/TR 60079-32-1 or TRGS 727) for avoiding electrostatic charging when handling liquids must be consulted.

⚠ WARNING

Decrease in ignition temperature as a result of increasing operating pressure (>0.1 bar)

Explosion hazard increases when operating pressure rises (>0.1 bar) to significantly reduced ignition temperature!

► The operator must check on a case-by-case basis whether the explosive gases and vapours in question are still within the relevant temperature class at the given pressure.

⚠ WARNING

Thermal radiation

Risk of explosion due to increased surface temperature as a result of heat radiation from additionally mounted components!

- ► If necessary, insulate or decouple attached items with increased thermal radiation.
- ► To avoid ignition on hot surfaces, limit values for the maximum temperature of the medium and the maximum temperature of the heating medium (for heating jacket design) must be observed, depending on the temperature class. The following limits are set for the maximum permissible media temperature.

	Maximum permissible temperature of the medium as well as of the heating jacket	
Explosion hazard due to gases and vapours of temperature class	Zone 1 in the inside On the outside zone 1, 2 or zone free	Zone 2 or zone free in the inside On the outside zone 1, 2 or zone free
T6	68 °C Furthermore, the maximum ambient temperature in this case may not exceed 68 °C	80 °C
T5	80 °C	95 °C
T4	108 °C	130 °C
T3	160 °C	190 °C
T2	240 °C	290 °C
T1	360 °C	440 °C

Please note that according to the Pressure Equipment Directive, the valves are only designed for a certain maximum temperature (see marking on the type plate). This temperature must not be exceeded

- ► The operator has to ensure by appropriate measures that the temperature limits specified in the table are not exceeded. This is also to be ensured in the event of any expected malfunctions and failures.

⚠ WARNING

Dust deposits

Explosion hazard due to increased product temperature as a result of dust deposits!

- ► Remove dust deposits regularly.
- ► Do not use any operating equipment.
- ► Avoid static charging of the surface, remove dust deposits properly without rubbing the surface.
- ► Use only damp cloths for cleaning.

⚠ WARNING

Damaged surface coating

Risk of explosion due to damage to the surface coating in connection with corrosion and aluminium!

- ► Ensure that the surface coating is not damaged and no corrosion exists.

⚠ WARNING

Exceeding the layer thickness of the surface coating

Explosion hazard due to static charge of the electrically non-conductive surface coating!

- ► In the case of overcoating, ensure that the surface coating does not exceed a total layer thickness of 2 mm for IIB and 0.2 mm for IIC.
- ► Ensure that only suitable stickers are used.

⚠ WARNING

External impact

Danger of explosion due to sparks following impact!

- ► Avoid external impact to the product.

⚠ WARNING

Disassembly of the product

Risk of explosion due to ingress of explosive atmosphere!

- ► The product should only be opened if it is proven that there is no explosive atmosphere in the environment of the product.
- ► If this is not possible, move the product into an ex-free zone.

⚠ WARNING

Non-conductive materials for piping work

Explosion hazard due to potential differences when using non-conductive materials!

- ► When using non-conductive materials for piping or sealing, make sure that they are conductively bridged.
- ► Only use damp cloths when cleaning.
- ► Hoses must be mounted as tightly as possible and may not be wound up.

⚠ WARNING

Non-conductive lubricants

Explosion hazard due to potential differences when using non-conductive lubricants!

- ► Make sure to only use electrically conductive lubricants to lubricate the components.
- ► The lubricants used must have an ignition temperature of at least 50 K above the media temperature. If no ignition temperature is available, the flash point can be used as a criterion instead.

⚠ WARNING

Exceeding the max. surface temperature in the packing room

Danger of explosion due to increased surface temperature in case of insufficient lubrication and dust deposits in the packing chamber!

- ► Make sure that the max. permissible surface temperature is not exceeded and adjust the switching frequency of the actuator accordingly.
- ► A check of the lubrication and dust deposits at the bearing points must be carried out after 100,000 switching cycles, at least twice a year or as required.

⚠ WARNING

Exceeding the max. surface, ambient and media temperature

Danger of explosion due to increased surface, ambient and media temperature if the heating jacket is not used properly!

- ► Ensure that the max. permissible surface, ambient and media temperature is not exceeded and adjust the heating jacket temperature accordingly.
- ► Check the heating jacket temperature regularly.

2.7 Remaining risks

⚠ DANGER

Risk of serious injury, environmental damage

Bruising, hearing loss, burnings, environmental damage

► Secure actuator

► Wear protective clothing according to chapter *[2.10 Personal protective equipment]*

► Notes on safety and commissioning

► Refer to operating instructions

There may still be residual risks even if the product is used for its intended purpose.

- Danger of being crushed by unsecured actuators

In case of negligent use of personal protective equipment:

- Danger due to noise resulting in hearing loss
- Thermal hazards (incineration, scalding, etc.)
- Danger due to escape of the operating medium

Furthermore, there may be unapparent residual risks despite all precautions taken

Residual risks can be minimised if the notes of safety and commissioning as well as the operating manual as a whole are observed.

2.8 Qualification of personnel

The product is exclusively intended for use in plants and installations in which trained technical personnel carry out the necessary work. Technical personnel are persons who are entrusted with the installation, commissioning and operation of this product and who have the appropriate qualifications for their work activities, such as, for example:

- Training or instruction in accordance with current technical safety standards in the maintenance and usage of appropriate safety equipment.
- Training in First Aid.
- In the case of systems with explosion protection: training or instruction and authorisation to carry out work on potentially explosive systems.

Repair work may be carried out only by trained and qualified technical personnel.

Work on electrical equipment may be carried out only by trained electricians or persons who have received electrotechnical instructions.

Persons Activity	Instructed persons	Persons with a recognised technical education	Persons with a recognised electro-technical education	Superiors with relevant skills	von Rohr Service technician
Transport	X	X	X	X	X
Installation	X	X	X	X	X
Commissioning		X	X	X	X
Maintenance	X	X	X	X	X
Troubleshooting		X	X	X	X
Mechanical troubleshooting		X			X
Electrical troubleshooting			X		X
Repairs		X	X	X	X
Disposal	X	X	X	X	X

2.9 Operator's duty of care

To avoid accidents, malfunctions and environmental impacts, the respective person responsible for the transport, commissioning, operation, maintenance and disposal of the product must ensure the following:

- Observation of all warning and danger notices.
- Regular instruction of personnel in all applicable questions of work safety, the operating manual and in particular the safety instruction.
- Keep regulations and operating instructions for safe working and the corresponding instructions for the behaviour in case of accidents and fire handy at all times. If necessary, display them on the notice board at the operating site.
- Operate the product only if it is in perfect working order.
- Use only spare parts, lubricants and operating resources approved by the manufacturer.
- Observe the specified operating conditions and requirements at the place of installation.
- Provide all necessary devices and the personal protective equipment required for the respective task.
- Refer to the chapter entitled *[10.2 Maintenance]* for the prescribed maintenance intervals and comply with the corresponding regulations.
- Allow installation, commissioning and maintenance of the product to be carried out only by qualified and trained personnel in accordance with this operating manual and not by third parties.
- The operator must ensure that the product is used for its intended purpose.
- Before commissioning the product, the operator must carry out a risk assessment and define appropriate inspection and maintenance intervals according to the operating conditions.

2.10 Personal protective equipment

Personal protective equipment must be worn during work in order to minimise health risks.

- During work, always wear the protective equipment necessary for the respective work.
- Follow the notices about personal protective equipment displayed in the working area.

Basic equipment	
	**Protective clothing** Tight-fitting work clothes with a low tear resistance, with narrow sleeves and without protruding parts. They primarily serve to protect against being caught up by moving machine parts. Do not wear rings, chains or other jewellery.
	**Safety shoes** To protect against heavy falling parts and slipping on smooth floors.
	**Hand protectors** To protect against residues of the operating medium.

Additional equipment	**Clothing appropriate to the environment must be ensured at all times.** **The following additional protective equipment may be necessary.**
	**Safety glasses** To protect the eyes against flying parts and splashes of liquids.
	**Helmet** To protect against falling and flying parts and materials.
	**Hearing protection** To protect against hearing damage.

3 Transport, storage and packaging

3.1 Transport

⚠ WARNING

Tipping or falling load!

Danger of death and danger of damage to property due to load tipping over or falling!

- ► Only suitable and approved means of transport and lifting equipment may be used for transporting the product.
- ► Lifting equipment must generally be attached to the housing of the product, not to attachments.
- ► Allow only instructed persons to select and attach the lifting equipment.
- ► Do not stand under suspended loads.

Transport at temperatures below -40°C or above +80°C is not permitted.

Attachment points on actuators (lifting eyes, eyebolts, etc.) are only dimensioned for the transport of the actuator and are available on customer request. Under no circumstances may these attachment points be used if the actuator is coupled to a valve.

3.2 Storage

NOTICE

Improper storage!

If stored improperly, there is a risk of the product and in particular the attached electronic accessories no longer functioning if stored improperly.

- ► Storage at temperatures below -40°C or above +80°C is not permitted.
- ► Product must be stored in roofed-over and weather-proof storage places.

To protect against contamination and to protect the sealing surfaces, openings such as nozzles, flanges, etc. must be sealed using suitable means. These should be removed by technical personnel upon installation.

3.3 Packaging

The product is packed inside its outer packaging (cardboard box, wooden crate, pallet, lattice box).

For transport of the product by ship, plane, train or lorry, the product must be packed weatherproof or seaworthy.

4 Name plate

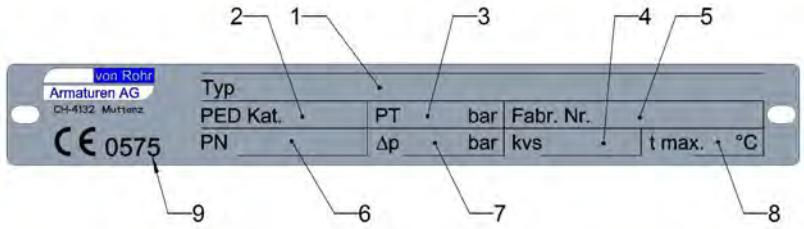

Illustration 1: Standard name plate

Place of installation

The name plate is always attached to the front of the crossbeam.

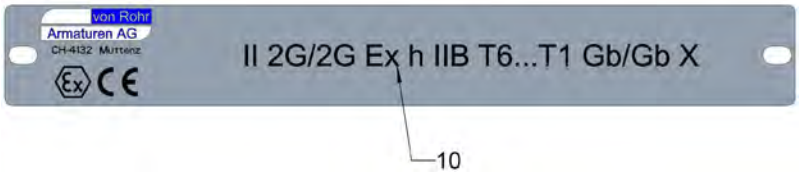

Illustration 2: Name plate IIB

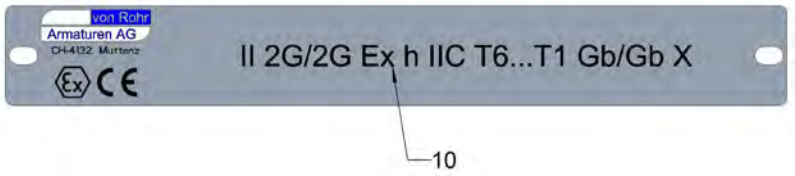

Illustration 3: Name plate IIC

Place of installation

Depending on the version, the Atex type plate is attached to the back of the crossbeam.

1	Type designation
2	PED category
3	Testing pressure
4	KVS Value
5	Serial number
6	Nominal pressure
7	Max. Delta P.
8	Max. Temperature
9	Number of the designated place where the technical data are deposited (PED)
10	Atex type code (depending on version)

Example for 9 *Atex type code* see page 18.

ATEX Type key:

Devices with surface coatings thinner than 0.2 mm:

II 2G / 2G Ex h IIC T6…T1 Gb/Gb X
-40 °C < T_a < +68 °C…+80 °C

Devices with surface coatings thinner than 0.2 mm:

II 2G / 2G Ex h IIB T6…T1 Gb/Gb X
-40 °C < T_a < +68 °C…+80 °C

Explanation of the labelling:

Equipment Group II =	Non-mining
Device category 2G / =	Devices that ensure a high level of safety suitable for zone 1 (indoors)
Device category / 2G =	Devices that ensure a high level of safety suitable for zone 1 (outdoors)
G =	explosive atmosphere generated by gases, vapours or mists
Ex h =	Non-electrical explosion protection
IIC =	Gases, vapours or mists of explosion group IIC (includes IIA and IIB)
T6…T1 =	Temperature class of the valves, depending on the temperature of the media flowing through and the temperature of the heating jacket
Gb/Gb =	Equipment protection level EPL inside/outside, analogue to equipment category
-40°C < Ta < +68°C…+80°C =	Permitted ambient temperature from -40°C to +68°C resp. from -40°C to +80°C
X =	For the safe use of the units, special conditions are applicable

5 Type key

VG	P	40	F	CA	A	F	8	B	B	5.	40	A	25	W	T	SC	S..
[1]	[4]	[5]	[6]	[7]	[8]	[9]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[22]	[21]	[22]

1. Type of valve

4. Choke element

5. Nominal pressure of housing PN

6. Connector

7. Material

8. Material inner parts

9. Stem sealing and assembly

12. Series

13. Implementation index

14. Stuffing boxes / sealing variants

15. Material of the stuffing box inner parts

16. Nominal size

17. Stroke

18. Flow rate indicator

19. Type of seat

22. Type of seat seal

21. Use in potentially explosive atmospheres

22. Special version

6 Sectional drawings

Some versions of the valve are illustrated below. Further versions are possible by combining the different components.

6.1 Parts list

Position		Naming
1		Housing
2	*	Stud screw
3		Removable seat
4		Cone
21	*	Seal
22		Body
25	*	Stud screws
26	*	Seal
27		Spindle
28		Spindle with bellow
29		Cylindrical pin
34		Upper part
35	*	Hex nut
45	*	Compression spring
46	*	Washer
47	*	Packaging
49	*	Spacer ring
50	*	Packaging
52	*	Packaging
53		Stuffing box insert
55		Screw plug
57		Crossbeam
58	*	Hexagon head screws
59		Coupling halves
60	*	Hexagon head screw
61	*	Hex nut
66		Name plate
67		Half-round grooved pin
70	*	Palin bearing
71		Intermediate layer
72		Guide bush
73	*	Plain bearing

* = Recommended spare part / wear part

6.2 DN15 – DN65 (Standard)

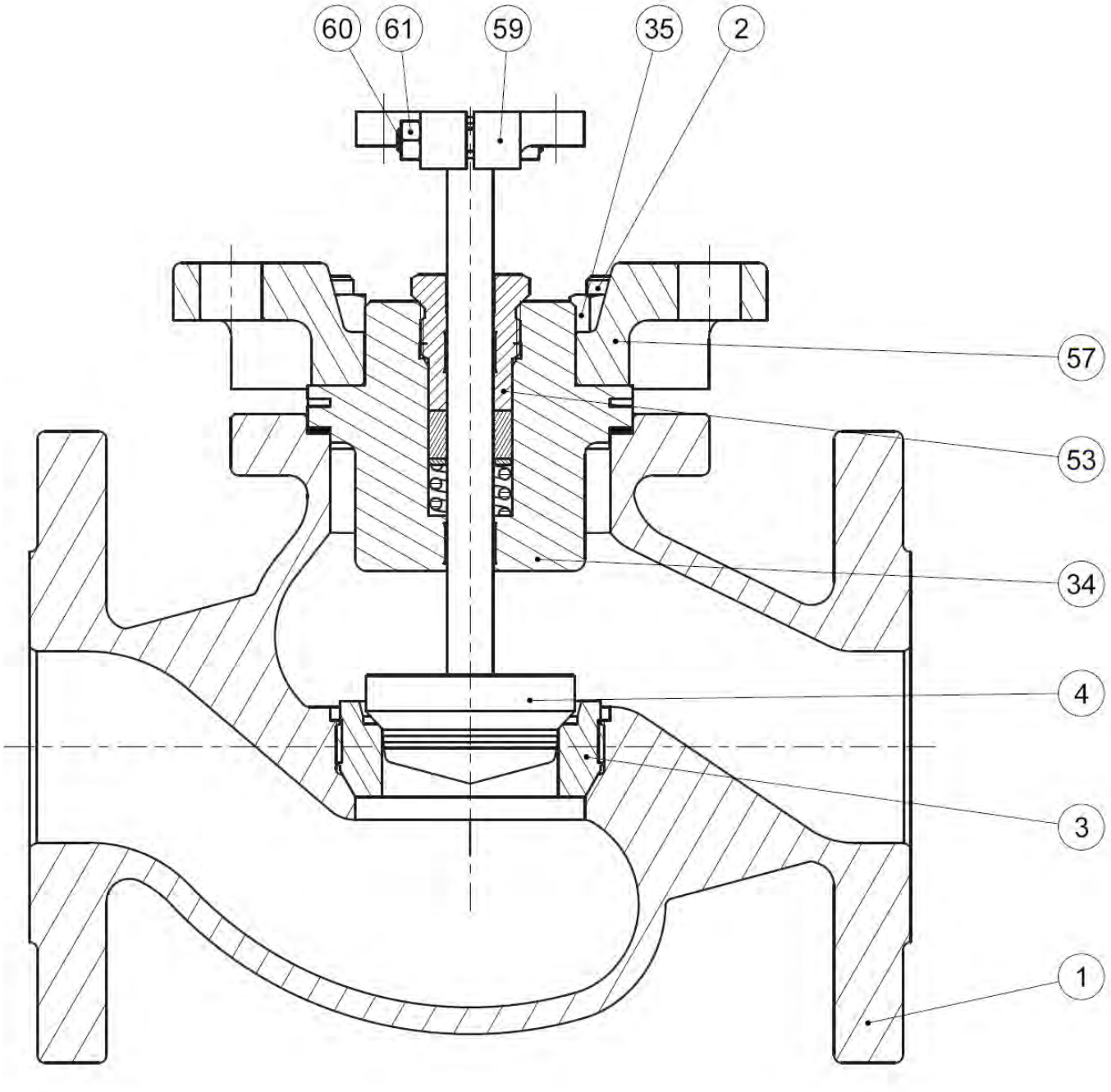

Illustration 4: DN15 - DN65 (Standard)

6.3 DN80 – DN100 (Standard)

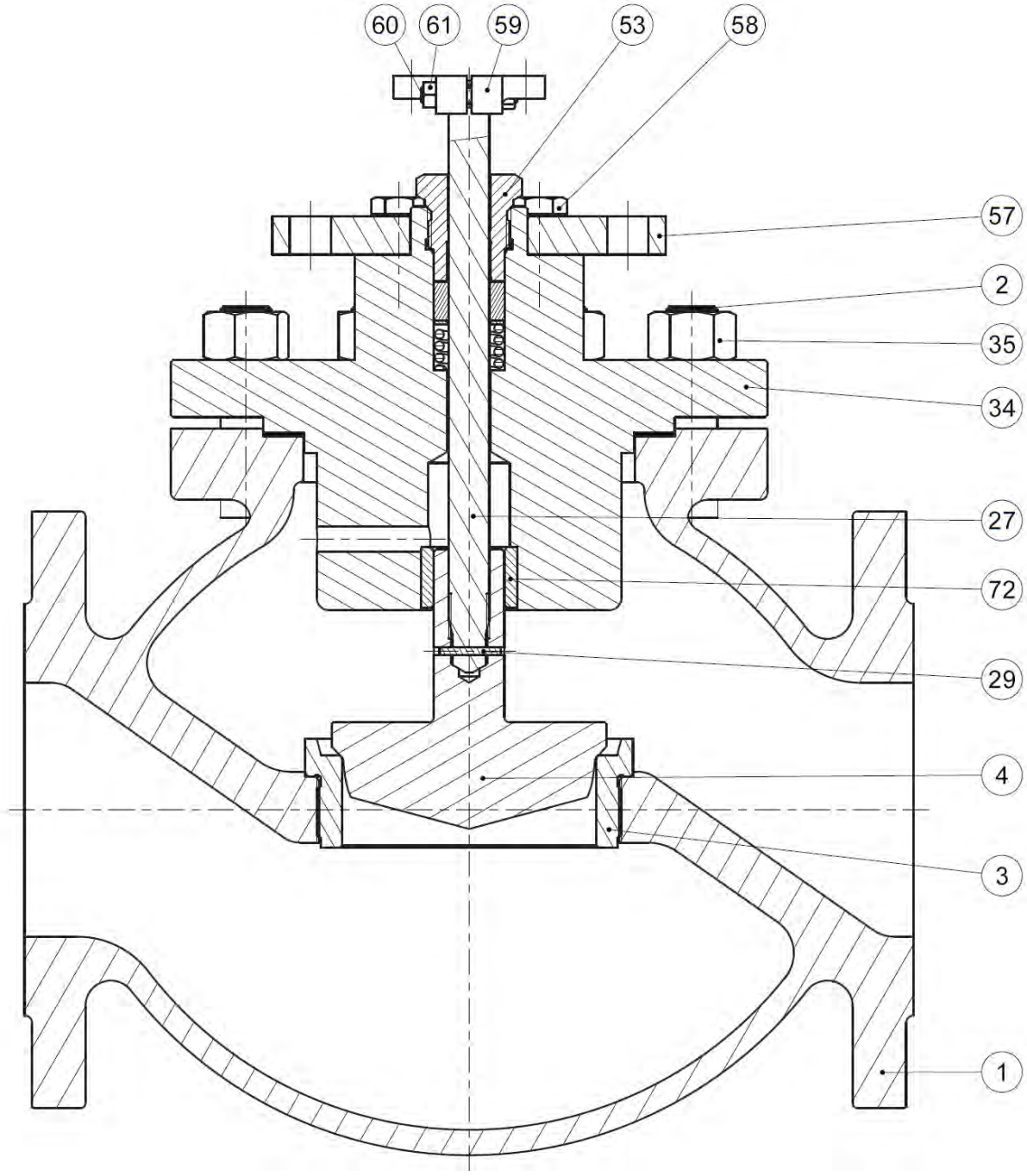

Illustration 5: DN80 -DN100 (Standard)

6.4 DN15 – DN100 (Spacer tube)

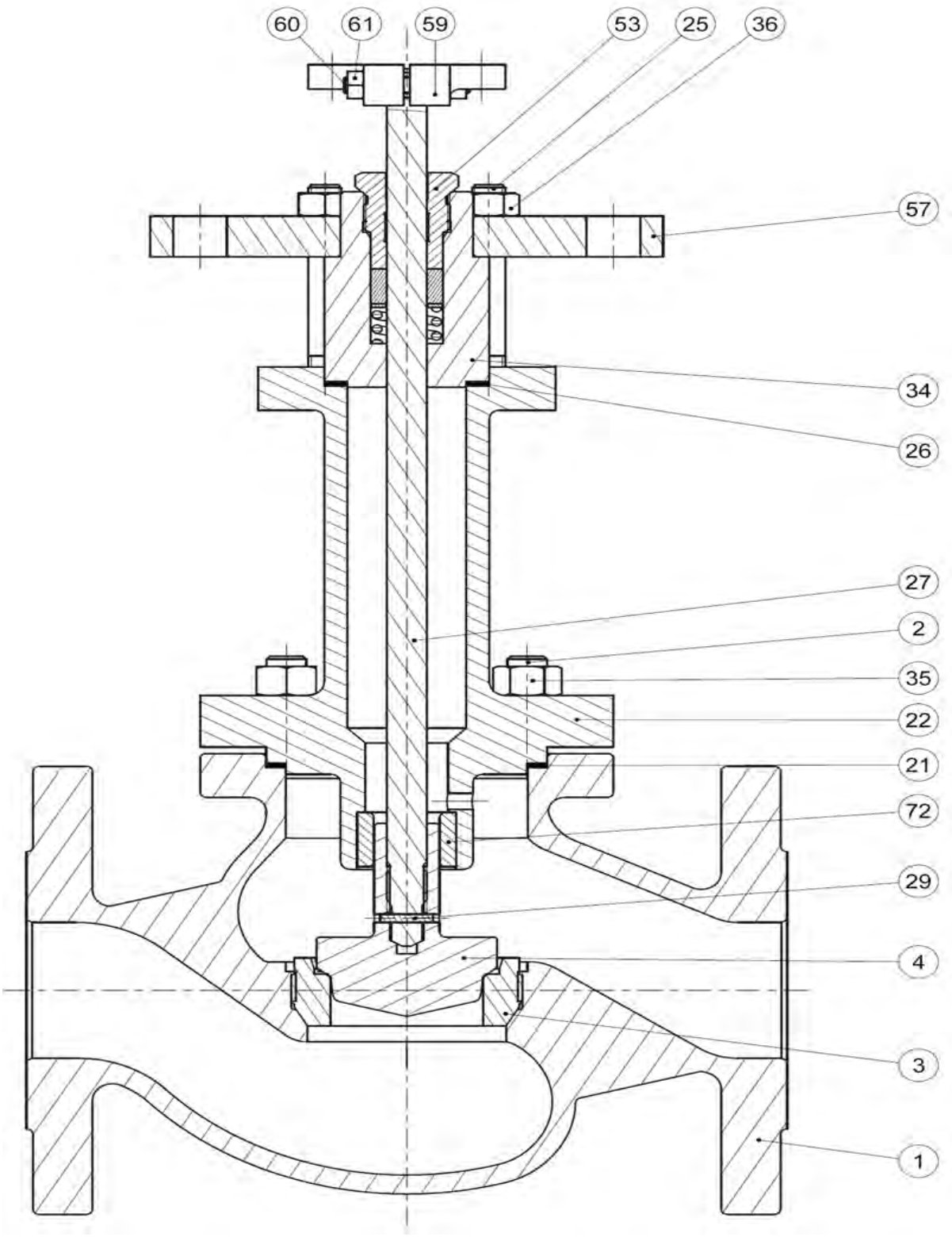

Illustration 6: DN15 - DN100 (Spacer tube)

6.5 DN15 – DN100 (Gaiter)

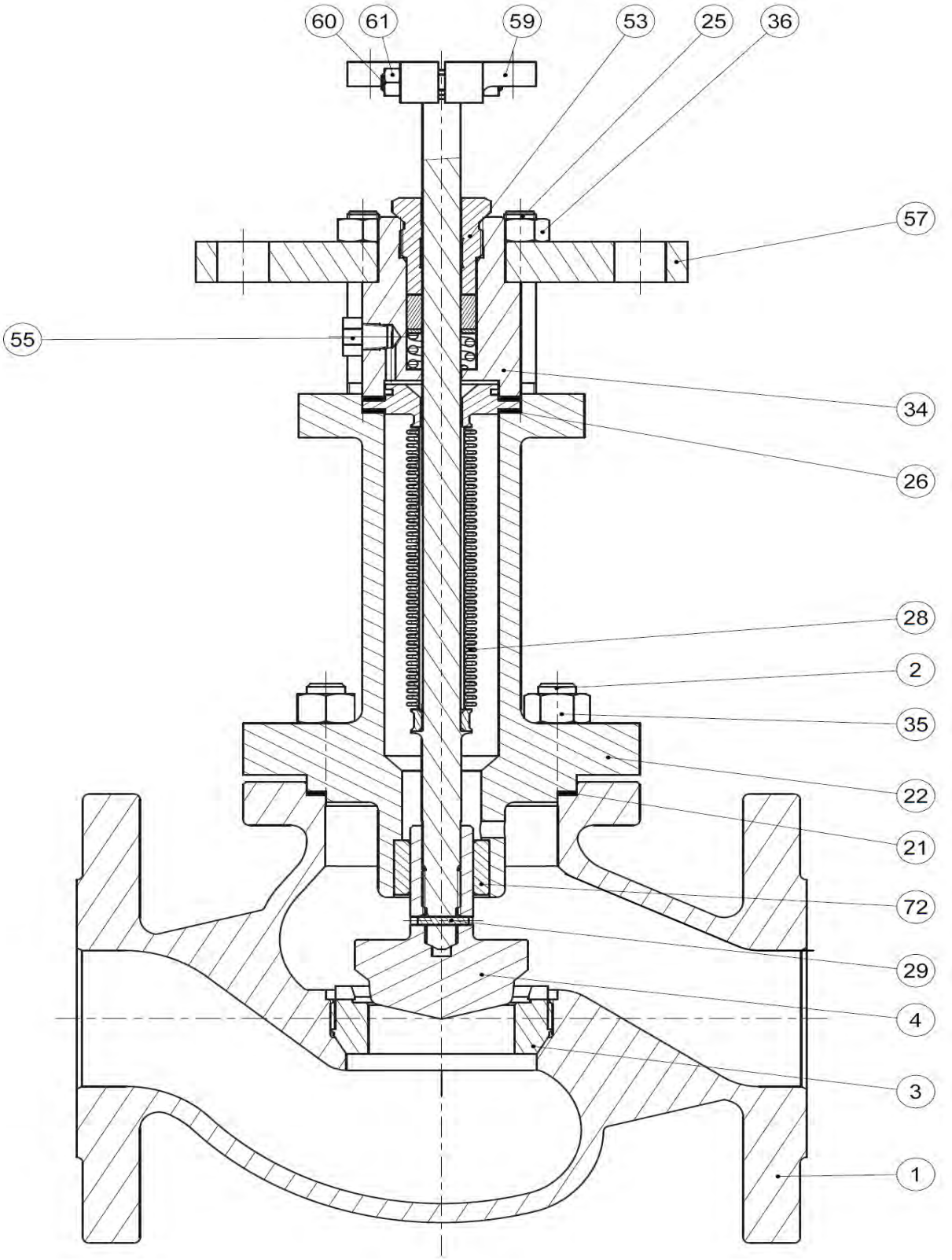

Illustration 7: DN15 - DN100 (Gaiter)

7 Functional description

Valves of this series are normally used as actuators in the sense of DIN IEC 60050-351.

The valve is used to reduce the pressure and the flow rate of the medium flowing through the cone. (4).

The media flow through the seat (3) is regulated by the position of the cone. The cone is mostly adjusted via the spindle by means of a built-on actuator.

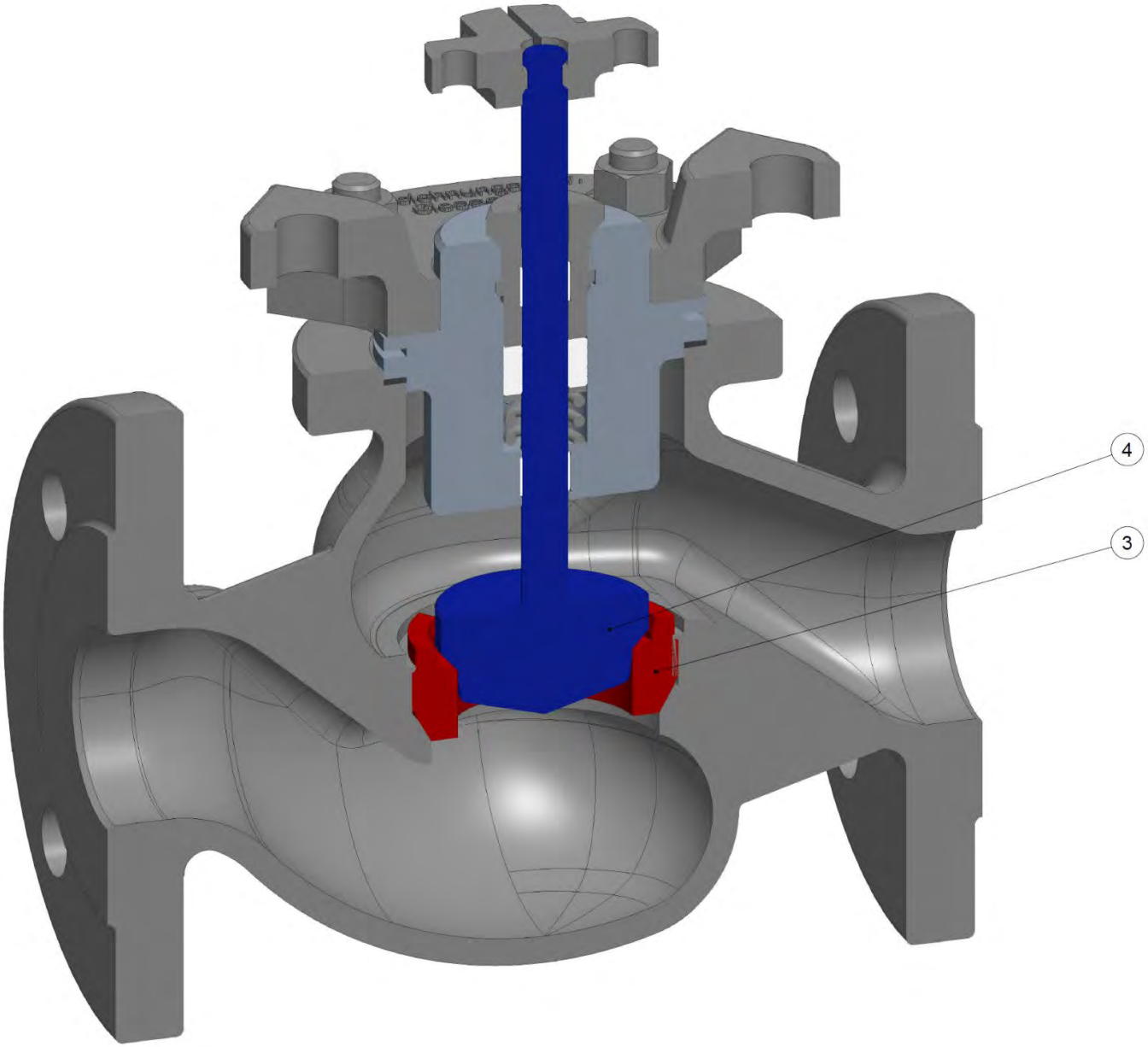

Illustration 8: Sectional view

8 Installation

Place of installation

The valve should be easily accessible from at least one side.

In case of installation at height, include a stage or similar in the planning.

Use lifting equipment as required.

Valve with flanges

Valve with flanges are installed in the pipeline after removing the protective caps from the inlet and outlet sealing surfaces, using the seals and screws provided by the customer. After installation, check the flange connection and the surface coating, in particular the area around the contact surfaces of the screwed flange connections. Damage to the coating due to transport or installation in the pipeline must be treated with a suitable coating system to restore the corrosion protection that was provided at the manufacturer.

Valve with welding ends

Valve with welding ends are welded into the pipeline. After installation, the welded joint and the surface coating are to be checked. Damage to the coating due to transport or installation in the pipeline must be treated with a suitable coating system to restore the factory corrosion protection.

Installation position

Please note:

⚠ CAUTION

Installation position

- ► Pipeline must be horizontal
- ► Actuator upwards
- ► Pay attention to the flow arrows on the flange of the housing

For other installation positions, special measures must be taken to support the weight of the actuator! Please consult the manufacturer!

- No pipeline forces may be t ransmitted onto the valve
- A straight pipe section with a length of at least 10x the nominal diameter of the pipe must be installed both in front - and behind the valve.
- Fixtures and junctions are not admissible.
- A bypass line with shut-off valves before and after the fitting is recommended.

NOTICE! After the valve has been installed, an inspection must be carried out to ensure that the specified installation conditions have been complied with.

For transporting the valve, see chapter *[3.1 Transport]*

Grounding

The valves must be integrated into the equipotential bonding of the entire system. Equipotential bonding is normally achieved by the metallic contact of the pipe connections with the pipeline. If this equipotential bonding cannot be guaranteed (e.g when using seals or thick paintwork), additional earthing cables are to be fitted.

Lightning conductor

The operator must provide a lightning conductor in accordance with the applicable standards and regulations.

Fittings of an actuator

The valve enables the assembly of a variety of actuators. Various mounting kits and couplings are available for this purpose. The actuator must be installed in accordance with the operating instructions of the original equipment manufacturer. The maximum permissible positioning forces are to be considered.

⚠ CAUTION

When setting up an electric or hydraulic actuator, the following is to be noted additionally:

- ► Shut-off in closing direction via torque switch
- ► Switch-off in opening direction via limit switch

9 Commissioning / Decommissioning

Exclude commissioning / decommissioning by third parties!

Before first commissioning

In order to avoid damage to the inner fittings due to possible contamination in the tubing network, the tube network must be cleaned by flushing and, if necessary, pickling.

The following procedures are recommended:

Rinse with spacer

A spacer is installed in the pipeline instead of the valve.

- Remove the valve from the pipeline (flange valves only)
- Install the spacer in the pipeline
- Rinse and pickle if necessary
- Remove the spacer from the pipe.
- Insert seals
- Reinstall the fitting in the pipeline

Commissioning

- Note chapter *[2 Safety]*
- Avoid thermal shock
  - o Slowly bring the valve to operating temperature. From a temperature difference of 300 K, the temperature change rate of max. 2 K/min must be complied with.
- Check the sealing of the flange connection
  - o Tighten the screw connection crosswise. Tightening torque see chapter *[12 Torque table]*
- Verify the tightness of the spindle seal
  - o See chapter *[10.3 Spindle sealing]*

Decommissioning

To decommission the valve, the following procedures are recommended:

Valve remains installed

In case of a longer standstill period, the valve and the pipeline must be drained and flushed in accordance with the operating medium.

Valve is dismantled

- Note chapter *[2 Safety]*
- Remove the valve from the pipeline
- Apply appropriate protective substance to the interior of the housing, close the openings with suitable caps.
  To protect against corrosion, apply a suitable conservation medium to all unpainted parts and surfaces made of non-corrosion-resistant materials.

Recommissioning

NOTICE! If the unit is taken out of service for more than one year, all seals must be replaced.

- Mount the valve according to chapter *[8 Installation]*
- Carry out work according to chapter *[10.1 Maintenance]*
- Commission the valve according to chapter *[9 Commissioning / Decommissioning]*

10 Maintenance

Exclude maintenance by third parties!

10.1 Care

- Clean the stem (27) if necessary
  - o Clean the stem (27) of adhering dirt using a soft cloth

NOTICE! Never use sanding paper, as this will damage the surface of the stem and reduce the lifetime of the stem sealing.

10.2 Maintenance

The actuator requires almost no maintenance.

However, the tightness of the flange connections and the gland seal must be checked at regular intervals. If necessary, carry out the work in accordance with chapter *[9 Commissioning / Decommissioning]*. Depending on the operating conditions of the valve, the operator is responsible for setting appropriate inspection and maintenance intervals.

10.3 Stem sealing

NOTICE

Generally, we would like to point out that all types of stuffing box seals are subject to wear and tear due to the relevant operating conditions and must be checked or replaced at regular intervals.

Stuffing box sealing with V-collars

The gland seal with V-collars is not adjustable.
In case of leakage, the complete seal set must be replaced.

Stuffing box sealing with packing rings

The packing gland seal with packing rings is adjustable.
If leakage occurs in the stuffing box seal, the stuffing box insert (53) can be retightened.
Tighten the gland insert (53) only as far as the force of the actuator allows the spindle (27) to be adjusted without jerking. If the gland insert (53) is tightened too much and the spindle (27) is blocked or jerks, loosen the gland insert (53) again until jerk-free operation is possible. Nevertheless, the tightness must be ensured.

Adding packing rings

.

Split gland rings can be added temporarily
However, replacement of the complete gland seal should be carried out as soon as possible.

- Note chapter *[2 Safety*]
- ⚠ **WARNING!** Move actuator to the upper end position and secure it
- Dismantle coupling halves (59)
- Unscrew the gland insert (53)
- Carry out work according to chapter *[10.1 Maintenance]*
- Insert split packing ring
- Fit the gland insert (53)
- Commission the valve according to chapter *[9 Commissioning / Decommissioning]*

10.4 V-Collars

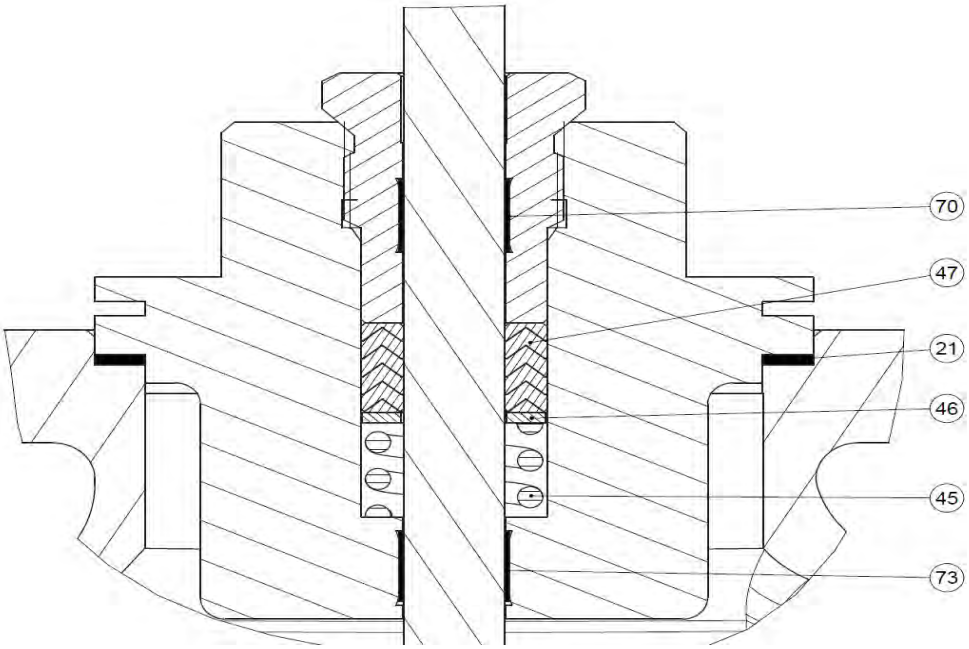

Illustration 9: Sectional view of V-collars

10.5 Packing ring

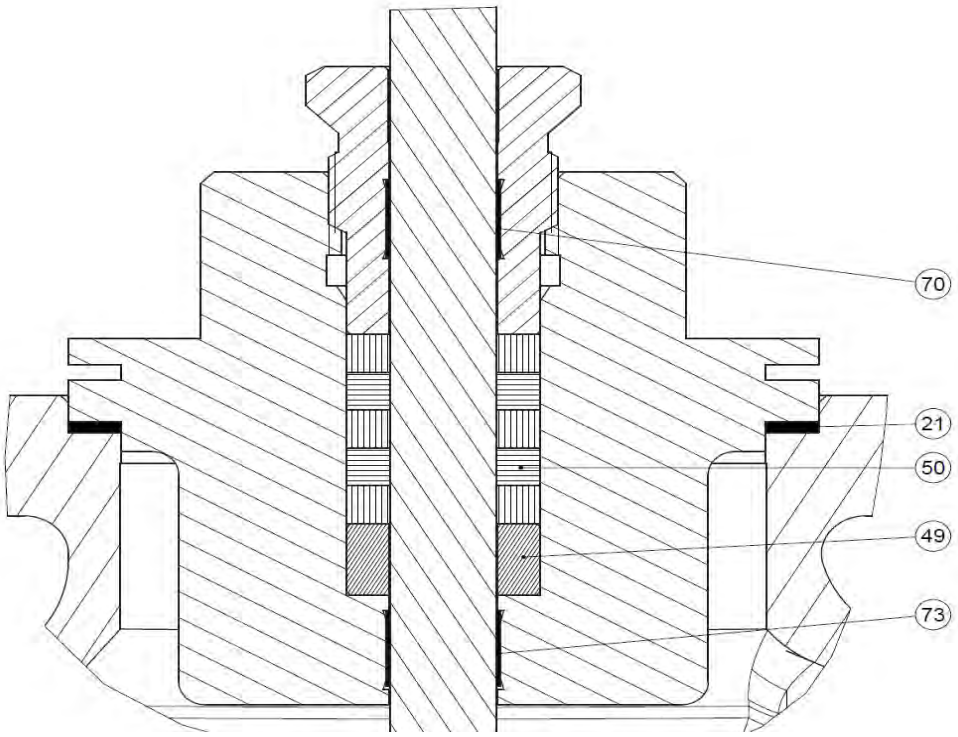

Illustration 10: Sectional view of packing ring

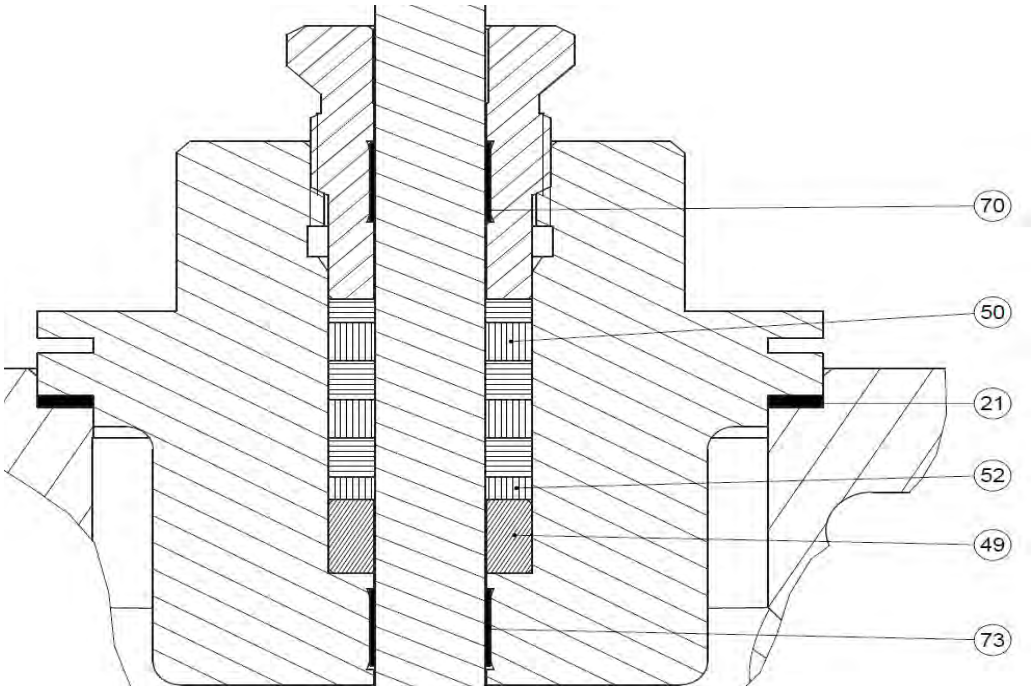

Illustration 11: Sectional view of packing ring

11 Disassembly / assembly of valve

⚠ WARNING

Non-compliance with the safety instructions

Risk of injury!

► Observe the notes in chapter entitled *[2 Safety]*

11.1 Procedure

- Disassembly of the valve
  - o Disassembled parts must be carefully secured against falling down (risk of injury or damage).
- Clean all components
- Assembly in reverse order, including the new components
  - o Seals and packings are generally to be replaced.
  - o Use any dynamically loaded O-rings and moulded rings with a suitable lubricant, provided that the operating conditions allow this.
  - o Torque for bolt connection see chapter *[12 Torque table].*
  - o After assembly, the cone must be moved by hand or auxiliary power to the upper and lower end positions, without jerking or scraping.
  - o If necessary, loosen the connection between the housing (1) and the crossbar (57), re-centre the components and retighten the connections.
  - o Subsequently, put the fitting into operation according to chapter *[9 Commissioning / Decommissioning].*

In aggressive atmospheres, humidity, salty air or similar, the spring pack must be replaced at regular intervals.

11.2 Actuator

- **⚠ WARNING!** Move actuator to upper end position and secure
- Uncouple actuator and dismantle actuator.
  - o Follow the installation instructions of the actuator manufacturer!

11.3 Upper part (34)

Standard version

- Remove coupling halves (59)
- Unscrew gland insert (53)
  - o See also chapter *[10.3 Spindle sealing]*
- Loosen the screw connection of the housing (1) and the upper part (34)
- Lift off the upper part (34) with the crosspiece (57), cone and spindle.
- ⚠ **CAUTION!** Possibly the cone (4) is lifted off with the upper part (34)

Spacer tube/bellow version

- Remove coupling halves (59)
- Unscrew gland insert (53)
  - o See also chapter *[10.3 Spindle sealing]*
- Loosen the screw connection between the body (22) and the upper part (34)
- Loosen upper part (34)
- ⚠ **CAUTION!** Do not twist the spindle (27)

11.4 Spindle sealing

V-collars

- Remove the seal set consisting of V-collars (47), washer (46) and pressure spring (45)
  - o See also chapter *[10.3 Spindle sealing]]*

Packing rings

- Remove sealing set consisting of spacer ring (49) and packing (50/52).
  - o See also chapter *[10.3 Spindle sealing]*

11.5 Plain bearing

- Remove plain bearing (70) from the gland insert (53)
- Remove the plain bearing (73) from the upper part (34)

NOTICE! When mounting the plain bearing (70/73) note the following:

- Coated side faces the spindle (27)
- Fabric side faces the gland insert (53) or upper part (34)

11.6 Mounting (Spacer tube)

- Loosen the screw connection between the housing (1) and the body (22)
- Lift off body (22) with spindle (27) and cone (4)

⚠ **CAUTION! Note the following when taking off:**

- Do not bend or damage spindle (27)!
- Do not twist the spindle (27) towards the cone (4)!

11.7 Mounting (Gaiter)

- Loosen the screw connection between the housing (1) and the body (22)
- Lift off body (22) with spindle (27) and cone (4)

⚠ **CAUTION! Note the following when taking off:**

- Do not bend or damage spindle with bellows (28)!
- Do not twist the spindle with bellows (28) towards the cone (4)!

11.8 Cone / Spindle

Standard DN15-65

- Pull the cone (4) with the spindle (27) out of the upper part (34)
  Cone with spindle are welded and can only be exchanged together

Standard DN80-100

- Pull the cone (4) with the spindle (27) out of the upper part (34)
- Remove cylindrical pin (29)
- Screw the cone (4) off the spindle (27)

⚠CAUTION! The cone (4) can only be replaced in conjunction with a new spindle (27). However, replacement of the spindle (27) is possible without a new cone (4).

NOTICE! When assembling cone (4) to spindle (27), the cone (4) is turned to the spindle stop and then pinned. The hole of the cone (4) is used as the centring point for drilling.

Spacer tube

- Pull the cone (4) with the spindle (27) out of the body (22).
- Remove cylindrical pin (29)
- Screw the cone (4) off the spindle (27

⚠CAUTION! The cone (4) can only be replaced in conjunction with a new spindle (27). However, replacement of the spindle (27) is possible without a new cone (4).

NOTICE! When assembling cone (4) to spindle (27), the cone (4) is turned to the spindle stop and then pinned. The hole of the cone (4) is used as the centring point for drilling.

Gaiter

- Pull the cone (4) together with spindle with bellows (28) out of the body (22).
- Remove cylindrical pin (29)
- Screw cone (4) from spindle with bellows (28)

⚠CAUTION! The cone (4) is only replaceable in connection with a new spindle with bellows (28). However, replacement of the spindle with bellows (28) is possible without a new cone (4).

⚠CAUTION! The spindle with bellows (28) must not be subjected to torsional stress!

NOTICE! When assembling cone (4) to spindle with bellows (28), the cone (4) is turned to the spindle stop and then pinned. The hole of the cone (4) is used as the centring point for drilling.

12 Torque tables – Bolt connections

12.1 Table 1: Removable seat

DN	PN	Thread	Tightening torque [NM]
15 – 32	40	M 45 x 1.5	200
40 – 65	40	M 70 x 1.5	450
80	40	M 100 x 2	1500
100	40	M 120 x 2	17

12.2 Table 2: Screws according to DIN 2510

DN	Housing – upper part					
	Screw		Seal			
	Dimension	Quantity	Rivatherm		PTFE	
			opt.	max.	opt.	max.
15 – 32	M10	4	16	27	16	21
40 – 65	M12	4	40	46	41	46
80	M20	8	89	157	93	118
100	M20	8	132	210	137	177

DN	Upper part – spacer tube / bellows					
	Screw		Seal			
	Dimension	Quantity	Rivatherm		PTFE	
			opt.	max.	opt.	max.
15 – 32	M10	4	16	32	17	24
40 – 65	M10	4	16	32	17	24
80	M12	4	19	40	20	30
100	M12	4	19	40	20	30

13 Troubleshooting

⚠ WARNING

Inappropriate work to rectify faults

Risk of injury!

► For any troubleshooting work, the relevant instructions, in particular the safety instructions, in this operating manual or the operating instructions of the additionally attached components must be complied with.

In case of problems that are not described in the following table, please contact the manufacturer.

Malfunction	Possible cause	Action
No flow of medium	Valve closed	Open the valve by means of the actuator
	Flange covers (transport protection) were not removed	Remove flange covers
Flow rate too low	Fitting not opened sufficiently	Open the valve by means of the actuator
	Blockage in the piping system	Check pipeline
	Wrong fitting or wrong Kvs-value selected	Insert fitting with correct Kvs value
Spindle moves jerkily	Stuffing box screw too tight (for fittings with adjustable stem seal)	Loosen the stuffing box screw a little, sealing must be maintained.
Spindle or cone does not move	Stuffing box screw too tight (for fittings with adjustable stem seal)	Loosen the stuffing box screw a little, sealing must be maintained
	Seat and cone heavily soiled	Clean seat and cone
	Spindle or cone have seized in their guide due to impurities in the medium.	Replace spindle, cone and guides
Spindle seal is leaking	Stuffing box seal damaged or worn out	Replace sealing elements
	Stuffing box preloading too low (for valves with adjustable stem seal)	Retighten the stuffing box screw
Excessive leakage rate in sealed condition	Sealing edges of plug and/or seat damaged	Rework or replace the cone and/or seat.
	Soiling/foreign bodies in the fitting	Clean the interior of the fitting, provide a dirt trap if necessary.
	Relief seal worn on pressure-relieved fittings	Replace sealing element
	Closing force of the actuator too low	Use stronger actuator, check operating data

14 Disposal and recycling

⚠ WARNING

Operating media and auxiliary materials that are hazardous to health

Danger to people and the environment!

- ► Wear suitable protective equipment according to chapter *[2.10 Personal protective equipment].*
- ► If applicable, collect and dispose of rinsing medium or residual medium. Particular attention is to be paid to dead spaces (pressure compensation, bellows, etc.)
- ► Observe the legal regulations for the disposal of media that is hazardous to health.

von Rohr products are modularly constructed and can be sorted by material into the following components.

- Electronic components
- Metals
- Plastics
- Greases and oils
- Packaging material

The general rules are:

- Greases and oils are usually water pollutants and must not be allowed to escape into the environment.
- Dispose of dismantled materials properly or recycle the separate materials.
- Observe national disposal rules and regulations.