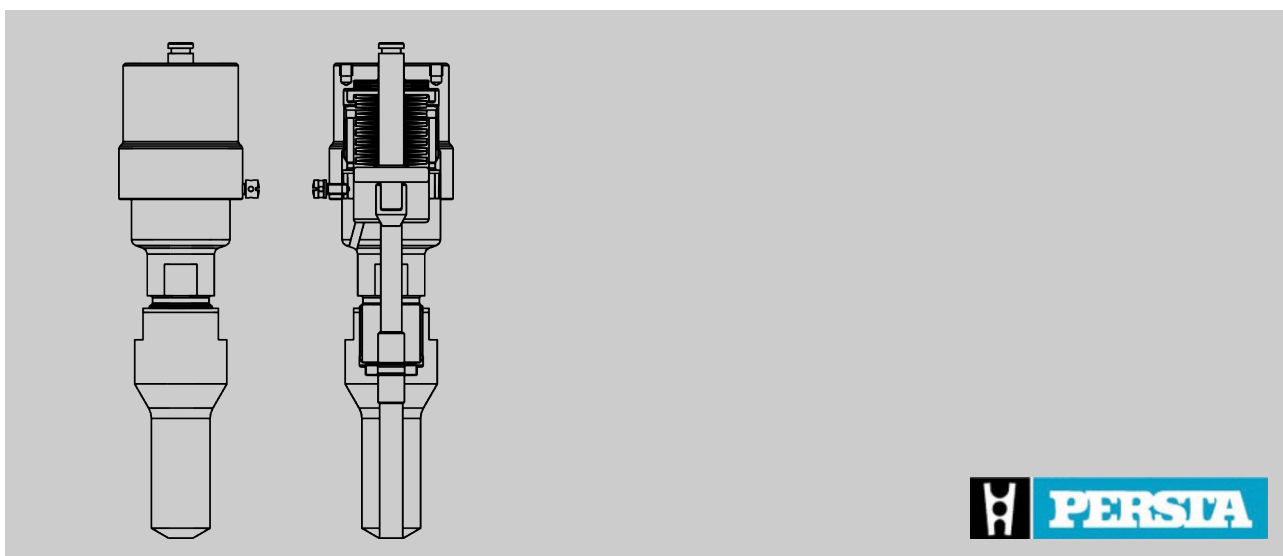


Operating instructions

Spring-loaded over pressure safety device
SV 97



Read the instructions prior to performing any task!

Stahl-Armaturen PERSTA GmbH
Mülheimer Str. 18
59581 Warstein-Belecke, Germany
Telephone: +49 2902 762-02
Fax: +49 2902 767-03
Email: info@persta.de
Internet: www.persta.com
Translation of the original operating instructions
6409.DE.STD.11.2013, 2, en_GB

Information about the operating instructions

This manual enables the safe and efficient handling of the over pressure safety device.

The manual is an integral part of the over pressure safety device and must be kept in the vicinity of the over pressure safety device so that it is available to the personnel at all times.

The personnel must have carefully read and understood this manual before starting any work. The basic prerequisite for safe work is compliance with all the specified safety instructions and other instructions.

Furthermore, the local occupational safety regulations and general safety regulations must be complied with for the area in which the over pressure safety device is used.

The illustrations in this manual are provided as examples only and may deviate from the actual version.

Other applicable documents

- GA04 ignition hazard assessment
- MRL risk assessment
- PED hazard analysis
- Technical data sheet
- Bolt tightening torques according to the website:
www.persta.com
- And other documents included in the delivery

Customer Service - Stahl-Armaturen PERSTA GmbH

Mülheimer Str. 18
59581 Warstein-Belecke
GERMANY
Phone: +49 2902 762-900
Fax: +49 2902 767-03
e-mail: info@persta.de

Revision overview

Revision number	Change/Supplemented information	Date
1	Updates to chapter <i>"Intended use"</i> .	05/05/2021

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1 Overview

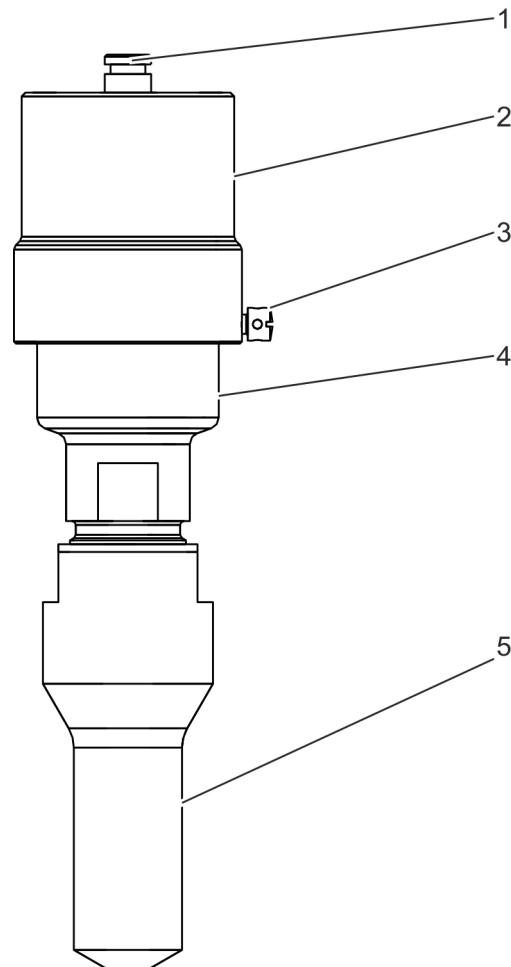


Fig. 1: General view

- | | | | |
|---|---------------|---|-------------|
| 1 | Guide | 4 | Body |
| 2 | Union nut | 5 | Pipe nozzle |
| 3 | Capstan screw | | |

Spring-loaded over pressure safety device

The spring-loaded over pressure safety device is a safety system for the operation of gate valves.

During operation, the pressure in the gate valve may increase for a variety of reasons resulting in the body being placed under an excessive strain.

The excessive pressure that develops in the gate valve in certain circumstances is released into the atmosphere with the assistance of the spring-loaded over pressure safety device.

When the spring-loaded over pressure safety device is triggered, a cone is lifted from its seat inside the body. The open spring-loaded over pressure safety device releases the excess pressure in the gate valve into the atmosphere.

Once the pressure falls below the triggering pressure, the spring assembly presses the cone into its seat and the spring-loaded over pressure safety device reverts to its normal state.

Using a spring-loaded over pressure safety device protects the body of the gate valve in all operating modes from overloads that could affect operational safety.

Spring-loaded over pressure safety device with an upstream bursting disc

Optionally, an upstream bursting disc can be added to the spring-loaded over pressure safety device.

If the triggering pressure is exceeded, the bursting disc breaks and the spring-loaded over pressure safety device is triggered as a result of the rising pressure in the body.

The spring-loaded over pressure safety device can continue being operated normally until the next inspection of the gate valve. Within the scope thereof, the broken bursting disc must be replaced with an intact one.

Tools

The following tools are required for the tasks described in the operating manual:

High temperature grease

High temperature resistant grease for the treatment of threaded fittings during the bursting disc replacement.

Paint

Paint for applying to the guide.

Screwdriver

Sturdy flat-bladed screwdriver. Two items are required for testing.

Spanner size 27

Spanner with a spanner width of 27 mm.

Spanner size 36

Spanner with a spanner width of 36 mm.

2 Safety

2.1 Symbols in this manual

Safety instructions

Safety instructions are indicated by symbols in this manual. The safety instructions are introduced by signal words that indicate the scope of the hazard.

**DANGER!**

This combination of symbol and signal word indicates a hazardous situation that, if not avoided, will result in death or serious injury.

**WARNING!**

This combination of symbol and signal word indicates a potentially hazardous situation that, if not avoided, may result in death or serious injury.

**CAUTION!**

This combination of symbol and signal word indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury.

**NOTICE!**

This combination of symbol and signal word indicates a potentially hazardous situation that, if not avoided, may result in damage to property.

**ENVIRONMENT!**

This combination of symbol and signal word indicates potential hazards for the environment.

Safety instructions in specific instructions

Safety instructions may refer to specific, individual instructions. Such safety instructions are integrated into the specific instruction, so that the flow of reading is not interrupted during performance of the task. The signal words described above are used.

Example:

1. ➤ Loosen the bolt.

2. ➤





CAUTION!
Risk of getting trapped by the cover!

Close the cover carefully.

3. ➤ Tighten the bolt.

Special safety instructions

The following symbols are used in the safety instructions to indicate special hazards:

Warning signs	Type of danger
	Warning – hot surface.
	Warning – danger zone.

Tips and recommendations



This symbol indicates useful tips and recommendations as well as information on efficient and trouble-free operation.

Additional symbols

The following symbols are used throughout these instructions to highlight specific instructions, results, lists, references and other elements:

Symbol	Explanation
➤	Step-by-step instructions
⇒	Results of an action
↗	References to sections of these operating instructions and other applicable documents
■	Lists without a defined sequence

2.2 Intended use

Spring-loaded over pressure safety devices of the specified series are designed to be used as safety systems on gate valves under the following conditions:

- Operation of the spring-loaded over pressure safety device with liquid media or steam, without particularly corrosive, chemical, or abrasive influences.
- Operation of the spring-loaded over pressure safety device without additional external influences, such as pipe forces, vibrations, wind loads, earthquakes, corrosive environments, fire, traffic loads, decomposition pressures of unstable fluids.
- Operation of the spring-loaded over pressure safety device only within the limits specified on the rating plate (↪ *“Rating plate” on page 14*).
- Operation of the spring-loaded over pressure safety device with the safety systems provided by the operating company:
 - Safety system around the blow-out opening (↪ *“Safety system around the blow-out opening” on page 13*) and
 - Cooling zone between the connection on the gate valve and the pipe nozzle (↪ *“Cooling zone” on page 14*).
- Any number of load cycles at pressure fluctuations of up to 10 % of the maximum permissible pressure PS.
- Maximum number of 1000 load cycles between a depressurised state and the maximum permissible pressure PS.
- Operation of the spring-loaded over pressure safety device after its suitability has been established by the operating company or the manufacturer of the plant for the relevant purpose.
- If the valve is operated in the creep range, the valve is designed for a maximum operating time of 100,000 h. The valve must be replaced afterwards.
- No temperature increases were considered. In case of use in the hot vapour area, temperature increases must be considered according to the regulations of the operating company.
- The test pressure for a recurring test must not exceed the maximum permitted pressure PS multiplied by 1.3.
- The valve may only be operated if internal pressure loading is predominantly dormant. Additional loads (e.g. stationary thermal stress, unsteady pressure and temperature loads in case of alternating loads or pipe loads) were not considered.

Intended use includes compliance with all the information contained in this manual.

Any use that deviates from the intended use or any other form of use constitutes misuse.

Misuse



WARNING!

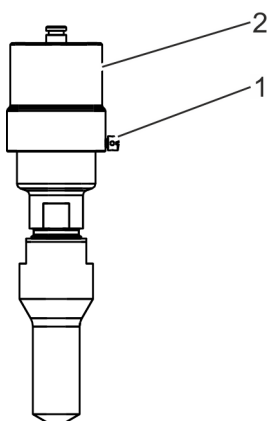
Danger in the event of misuse!

Misuse of the over pressure safety device can result in dangerous situations arising.

- Do not operate the spring-loaded over pressure safety device with gaseous media in the pipes (other than steam).
- Connect the pipes so that they are free of tension.
- Do not isolate the spring-loaded over pressure safety device and the cooling zone.
- Pay attention to the correct installation position of the spring-loaded over pressure safety device (☞ *Chapter 5.3 "Fitting the spring-loaded over pressure safety device" on page 35*).
- Do not use the spring-loaded over pressure safety device as an anchor point.
- Replace the broken optional bursting disc at the next inspection of the gate valve.
- Do not block the spring-loaded over pressure safety device during normal operation.
- Do not change the triggering pressure of the spring-loaded over pressure safety device.
- Do not use spring-loaded over pressure safety devices as safety systems for pipe systems.

2.3 Safety systems included in the scope of delivery

Sealed capstan screw



To prevent the triggering pressure of the spring-loaded over pressure safety device being changed or to establish that it has been changed, the union nut (Fig. 2/2) is fixed in its position by a capstan screw (Fig. 2/1).

Furthermore, the capstan screw (Fig. 2/1) is sealed.

Fig. 2: Sealed capstan screw

2.4 Safety systems provided by the operating company

The following safety systems are to be provided by the operating company:

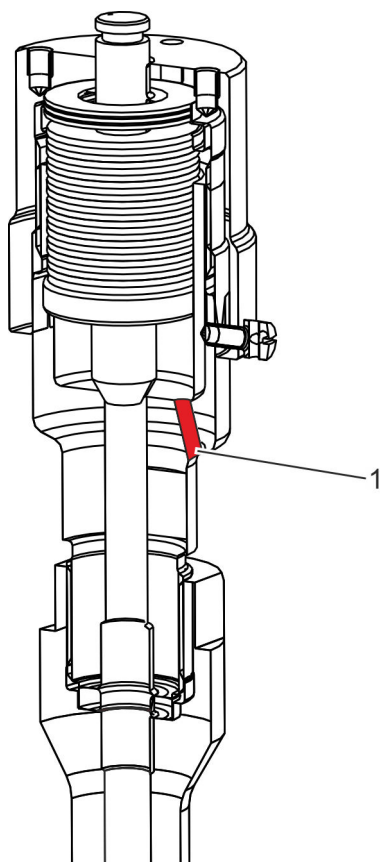
Safety system around the blow-out opening


Fig. 3: Blow-out opening without a safety system

A safety system must be installed around the blow-out opening (Fig. 3/1) to prevent the personnel from coming into contact with the (hot or cold) pipeline medium that is discharged when the spring-loaded over pressure safety device is triggered.



The triggering of the spring-loaded over pressure safety device can be recognised by

- pipeline medium escaping from the blow-out opening and
- the vertical movement of the guide that protrudes from the body.



As an option, the triggering of the spring-loaded over pressure safety device can be detected electronically.

This can be achieved by

- a fibre-optic sensor (☞ “Optional: fibre-optic sensor” on page 29) or
- a switch on the guide (☞ “Optional: switch on the guide” on page 30).

Cooling zone

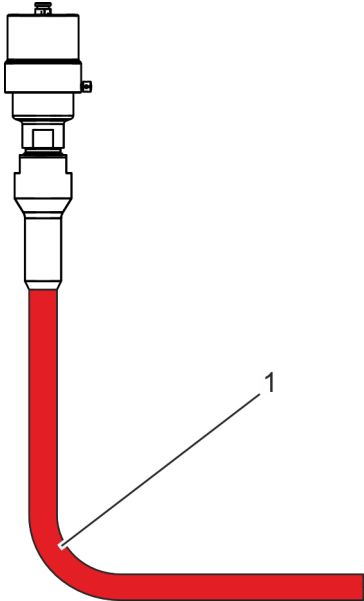


Fig. 4: Cooling zone (shown as an example only)

There must be a cooling zone (Fig. 4/1) between the connection on the gate valve and the pipe nozzle of the spring-loaded over pressure safety device.

For information on the cooling zone, see the functional description (☞ “Cooling zone” on page 30).



The cooling zone can be obtained separately through Stahl-Armaturen PERSTA GmbH (see page 3 for the contact details).

2.5 Safety signs

The following symbols and instruction signs are in the work area. These symbols and instruction signs refer to the immediate vicinity in which they are affixed.



WARNING!

Danger if signs are illegible!

Over time, stickers and signs can become fouled or can become illegible in some other manner, so that dangers are not recognised and necessary operating instructions cannot be complied with. This results in a danger of injury.

- Keep all safety, warning, and operating instructions that are affixed to the device in legible condition.
- Replace damaged signs or stickers immediately.

Rating plate

The rating plate is on the spring-loaded over pressure safety device. Depending on the version, the following information is on the rating plate:

- Manufacturer
- Confirmation number
- Type identification
- Material number
- Design triggering pressure

- Design temperature
- Flow direction
- CE marking

Rating plate of the optional bursting disc used

The rating plate of the bursting disc used is on the spring-loaded over pressure safety device.

Depending on the version, the following information is on the rating plate:

- Type designation
- Bursting pressures
- Nominal diameter

Painted dot on the version with an upstream bursting disc

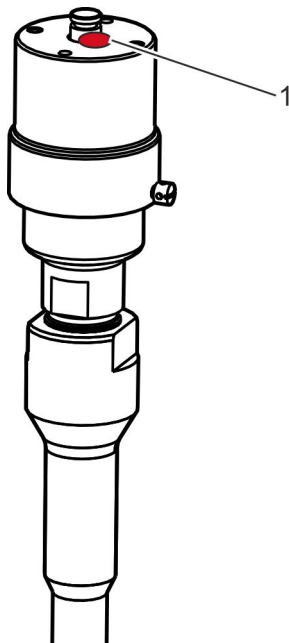


Fig. 5: Painted dot

If the spring-loaded over pressure safety device has of an upstream bursting disc, the guide that protrudes out of the body is marked with a painted dot (Fig. 5/1).

A broken painted dot indicates that the spring-loaded over pressure safety device has triggered or that the bursting disc has broken.



After replacing the bursting disc, the painted dot must renewed by the operating company.

Customer-specific markings

Additional markings (e.g. max. temperature limits) are available on customer request.

2.6 Residual risks

The spring-loaded over pressure safety device has been developed and manufactured according to the state of the art and in compliance with the currently applicable safety standards. Nevertheless, residual risks remain that require the exercise of caution. The residual risks and the resulting conduct and measures required are listed below.

2.6.1 Basic dangers at the workplace

Potentially explosive atmospheres



DANGER!

Life-threatening danger due to a failure to comply with the rules of conduct specified for potentially explosive atmospheres!

Depending on the version, the spring-loaded over pressure safety device can be used in potentially explosive atmospheres. There is life-threatening danger if the rules of conduct are not complied with within these areas.

- Ensure that tasks on the spring-loaded over pressure safety device can be executed at the installation site.

Blocked spring-loaded over pressure safety device



WARNING!

Risk of injury due to blocked spring-loaded over pressure safety device!

There is a risk of injuries of the most serious kind being sustained if the spring-loaded over pressure safety device is blocked during normal operation.

- Only block the spring-loaded over pressure safety device during the hydrostatic pressure test.
- Make sure that during the hydrostatic pressure test the maximum plant pressure does not exceed the conditions of the spring-loaded over pressure safety device.

Persons in the danger zone



WARNING!

Risk of injury due to the spring-loaded over pressure safety device being triggered!

With pressurised gate valves, there is always a risk that the spring-loaded over pressure safety device will be triggered and hot or cold pipeline medium will escape under high pressure.

- Only operate the spring-loaded over pressure safety device with safety systems around the blow-out opening.
- Only carry out work on the spring-loaded over pressure safety device in a depressurised state and while the gate valve is open.
- Wear the following protective equipment: safety goggles, protective gloves, protective work clothing, hearing protection.

Changing the triggering pressure

**WARNING!****Risk of injury due to the triggering pressure having been changed!**

The triggering pressure of the spring-loaded over pressure safety device has been set by the manufacturer.

There is a risk of injuries of the most serious kind being sustained if the triggering pressure of the spring-loaded over pressure safety device is subsequently changed.

- Never tighten or loosen the union nut.
- Never loosen the capstan screw.
- Regularly check that the seal of the capstan screw is intact.

2.6.2 Thermal dangers

Thermal dangers

**WARNING!****Danger of injury due to high or low temperatures!**

Depending on the application of the spring-loaded over pressure safety device or of the pipe, injuries can occur due to the high or low temperature of the components.

- Prior to performing work on these components, allow them to cool down or warm up to the ambient temperature.

2.6.3 Dangers due to hazardous substances and operating materials

Pipeline medium



WARNING!

Risk of impairing health due to the pipeline medium!

Coming into contact with the pipeline medium can adversely affect your health.

- Handle the pipeline medium in accordance with the instructions in the manufacturer's safety data sheet.
- Wear the following protective equipment: protective gloves, safety footwear, safety goggles, protective work clothing.
- Collect any pipeline medium that has run out without delay and dispose of it in an environmentally responsible manner.

Corrosion protection agent



WARNING!

Risk of impairing health due to the corrosion protection agent!

Direct contact with the corrosion protection agent used can adversely affect your health.

- Handle the corrosion protection agent in accordance with the instructions in the manufacturer's safety data sheet.
- Wear the following protective equipment: protective gloves, safety footwear, safety goggles, protective work clothing.
- Soak up any spilled corrosion protection agent without delay and dispose of it in an environmentally responsible manner.

Damage to sealing surfaces and slide faces**NOTICE!****Damage to sealing surfaces and slide faces due the metallic processing of sealing surfaces and slide faces!**

The metallic processing of sealing surfaces, slide faces and components can cause damage and result in the spring-loaded over pressure safety device malfunctioning.

- Sealing surfaces and slide faces of gaskets must not be
 - scratched with a scraper,
 - brushed with wire brushes.
- Sealing surfaces and slide faces must be
 - sanded using a fine emery cloth,
 - machined with suitable grinding tools or
 - scraped off with plastic or wooden tools.

2.7 Behaviour in the event of an emergency

1. ➤ Shut off the pipe sections affected.
2. ➤ Comply with the plant regulations.

2.8 Responsibility of the operating company**Operating company**

The operating company is the entity that operates the spring-loaded over pressure safety device for commercial or economic purposes itself or that provides it to a third party for use, and that, during operation, bears the statutory product responsibility for the protection of the user, personnel or third parties.

Obligations of the operating company

The spring-loaded over pressure safety device is used commercially. The operating company of the spring-loaded over pressure safety device is therefore subject to the statutory occupational health and safety obligations.

In addition to the safety notices in this manual, the applicable local occupational health and safety, accident prevention and environmental protection regulations must be complied with for the area in which the spring-loaded over pressure safety device is used.

In this regard, the following applies in particular:

- The operating company must ensure that the spring-loaded over pressure safety device is designed for the protection of the particular gate valve.
- The operating company is responsible for the installation and operation of the spring-loaded over pressure safety device on the gate valve.

- The operating company must ensure that the dangerous situations caused by the operating conditions are avoided by installing additional safety systems.
- The operating company must inform itself of the applicable occupational health and safety regulations and, in a hazard analysis, identify the additional hazards that exist at the installation site of the spring-loaded over pressure safety device due to the specific working conditions. The operating company must convert this information into operating instructions for the operation of the spring-loaded over pressure safety device.
- The operating company must ensure that the operating instructions drawn up by it are in accordance with the current state of the legislation throughout operating period of the spring-loaded over pressure safety device and, if necessary, amend the operating instructions.
- The operating company must clearly regulate and assign the responsibilities for installation, operation, fault correction, maintenance and cleaning.
- The operating company must ensure that all the personnel who will be handling the spring-loaded over pressure safety device have read and understood this manual. In addition, the operating company must train the personnel and inform them of the hazards at regular intervals.
- The operating company must provide the required protective equipment for the personnel and instruct the personnel that wearing the required protective equipment is compulsory.
- The operator must install additional safety systems that prevent contact with the medium located in the pipe system. Of particular importance in this regard is:
 - the installation of a collecting system for the pipeline medium that escapes under pressure below the blow-out opening as well as
 - a safety system around the blow-out opening
- The operating company must install a cooling zone between the gate valve and the connecting nozzle of the spring-loaded over pressure safety device to protect the spring-loaded over pressure safety device from the hot pipeline medium.
- The operating company must secure the spring-loaded over pressure safety device.
- The operating company must determine under what circumstances test procedures may be performed on the spring-loaded over pressure safety device while the plant is in operation.

The operating company is also responsible for keeping the spring-loaded over pressure safety device in a proper working condition at all times. Consequently, the following applies:

- The operating company must ensure that the maintenance intervals described in this manual are complied with.

2.9 Personnel requirements


WARNING!
Risk of injury due to inadequate qualification of the personnel!

If unqualified personnel work on the spring-loaded over pressure safety device or remain in the danger zone of the spring-loaded over pressure safety device, there is a risk that severe injuries and substantial damage to property may be caused.

- Only permit personnel to perform tasks for which they are qualified.
- Keep unqualified personnel away from the danger zones.

The qualifications of personnel for the various areas of activity are set out below in this manual:

Disposal contractor

A disposal contractor is a company qualified in accordance with local regulations to collect, transport, store, handle, recycle or dispose of waste and recyclables.

Industrial mechanic (high pressure valves)

Based on their specialised training, skills, experience and knowledge of the applicable standards and provisions, the industrial mechanic is able to carry out the work assigned to them on installations and valves in the high pressure area and to independently identify potential hazards and avoid them.

They have been instructed by the operator on how to handle the plant and receive regular training.

The industrial mechanic is capable of maintaining and repairing installations and valves in the high pressure area independently.

Pipeline engineer

Based on their specialised training, skills, experience and knowledge of the applicable standards and provisions, the pipeline engineer is able to carry out the work assigned to them and to independently identify potential hazards and avoid them.

The pipeline engineer is able to install valves safely and properly in the pipework.

Trained person (operator)

The trained person (operator) has been instructed, and can provide evidence of this, by the operating company on how to handle the plant and the potential hazards associated with improper behaviour. This knowledge will be refreshed in regular training provided by the operating company. The trained person (operator) is familiar with the content of this manual.

The trained person (operator) is familiar with the operating company's plant and the associated hazards. They are assigned with operating the plant by the operating company.

Basic requirements

Only persons who can be expected to perform their work reliably can be accepted as personnel. Persons whose ability to react is impaired, for example through drugs, alcohol or medication, are not acceptable.

Comply with the age-specific and job-specific regulations that apply at the location when selecting personnel.

Unauthorised persons



WARNING!

Risk of unauthorised persons sustaining fatal injuries due to the hazards in the danger zone and work area!

Unauthorised persons who do not satisfy the requirements described here are unable to appreciate the hazards in the work area. Consequently, there is a risk of unauthorised persons sustaining severe or fatal injuries.

- Unauthorised personnel must be kept away from the danger and working areas.
- If in doubt, speak to these persons and instruct them to leave the danger zone and work area.
- Interrupt work for as long as unauthorised persons remain in the danger zone and work area.

Training

The operating company must train the personnel at regular intervals. For improved tracking, a training log must be maintained with at least the following information:

- Date of training session
- Name of the person trained
- Contents of training session
- Name of trainer
- Signatures of the trainee and the trainer

2.10 Personal protective equipment

Personal protective equipment is used to protect personnel from risks to health and safety at work.

During the various tasks performed on and with the spring-loaded over pressure safety device, personnel must wear the personal protective equipment to which special reference is made in the individual sections of this manual.

Description of the personal protective equipment

The personal protective equipment is described below:


Protective gloves

Protective gloves protect hands from friction, abrasion, puncture wounds, or deeper injuries, as well as from contact with hot surfaces.


Protective work clothing

Protective work clothing is tight-fitting work clothing with low resistance to tearing, with tight sleeves, and without projecting parts.


Safety footwear

Safety footwear protects the feet from crushing injuries, falling parts and slipping on a slippery substrate.


Safety goggles

The protective goggles protect the eyes from flying parts and liquid splashes.

2.11 Spare parts

Incorrect spare parts


WARNING!
Risk of injury if the wrong spare parts are used!

Using the wrong or defective spare parts may pose a hazard for personnel, or result in damage, malfunctions or even total failure.

- Only use genuine spare parts from Stahl-Armaturen PERSTA GmbH or spare parts approved by Stahl-Armaturen PERSTA GmbH.
- If you have any questions or if anything is unclear, do not hesitate to contact our customer service department (contact details on page 3).

Selecting spare parts




Spare parts recommendation in the scope of delivery

The spare parts recommendation is included in the scope of delivery of the spring-loaded over pressure safety device.

Storing spare parts



Storage of spare parts

Please see  Chapter 4.3 “Storage of spare parts” on page 32 for information on storing spare parts.

Ordering spare parts

Order spare parts from Stahl-Armaturen PERSTA GmbH, specifying:

- Year of manufacture
- Type identification
- Design triggering pressure
- Material
- Confirmation number
- Consignment number (if possible)

. See page 3 for contact details.

2.12 Environmental protection



ENVIRONMENT!

Hazards for the environment due to improper handling of environmentally-harmful substances!

If environmentally-harmful substances are handled incorrectly, particularly if they are disposed of incorrectly, significant environmental damage can occur.

- Always comply with the instructions cited below for handling and disposal of environmentally-harmful substances.
- Comply with the guidelines for disposal of environmentally hazardous substances issued by the operating company.
- If environmentally-harmful substances inadvertently get into the environment, immediately implement suitable measures. If in doubt, inform the responsible municipal authorities of the damage and ask about suitable measures that should be implemented.

Substances used**The following environmentally harmful substances are used:**

- Residue of the pipeline medium
- Anticorrosive

3 Functional description

3.1 Mode of operation the spring-loaded over pressure safety device

General view and sectional view

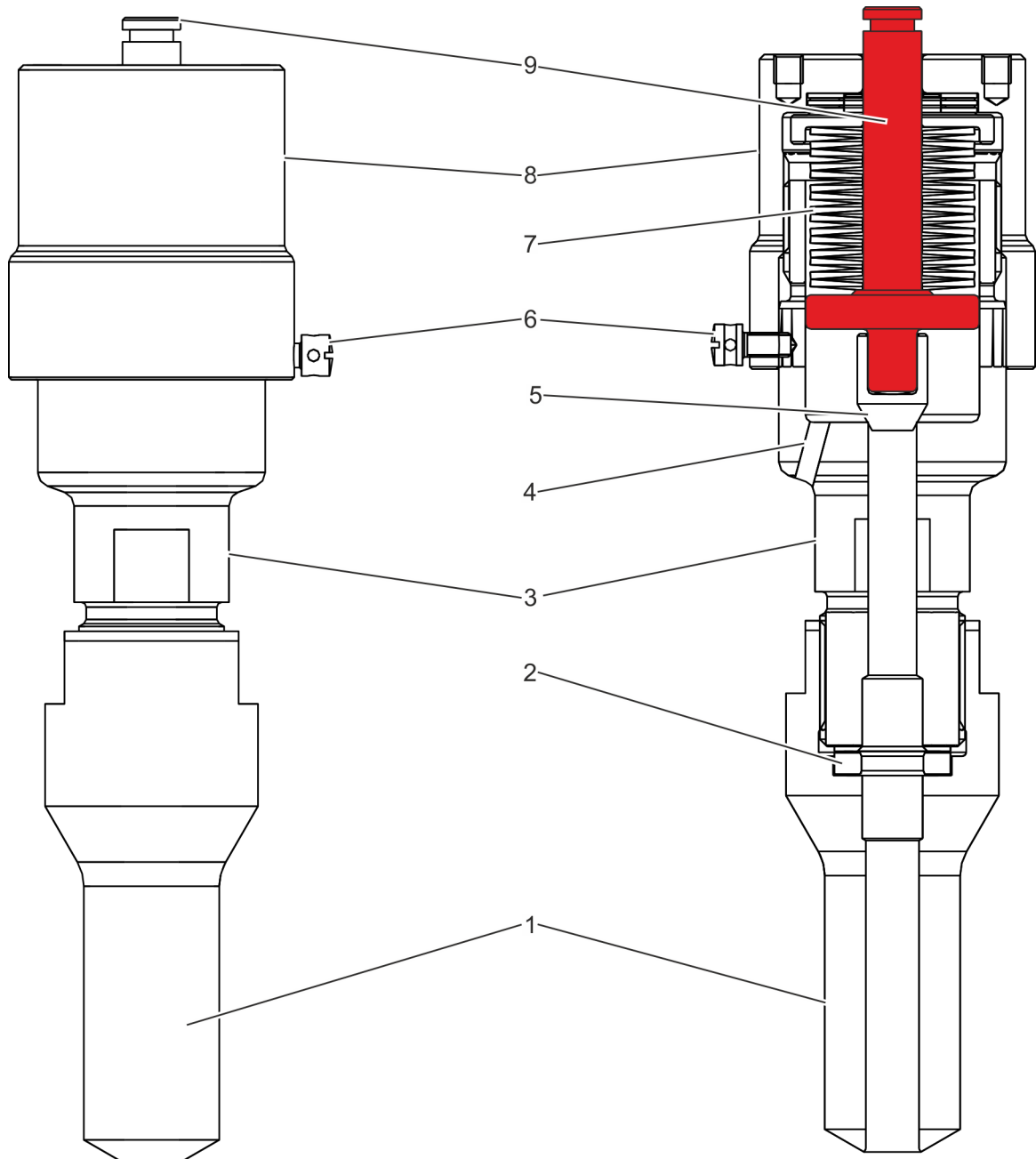


Fig. 6: General view (left) and sectional view (right)

- | | | | |
|---|------------------|---|-----------------|
| 1 | Pipe nozzle | 6 | Capstan screw |
| 2 | Pressure ring | 7 | Spring assembly |
| 3 | Body | 8 | Union nut |
| 4 | Blow-out opening | 9 | Guide |
| 5 | Cone | | |

Normal state: over pressure safety device has not been triggered

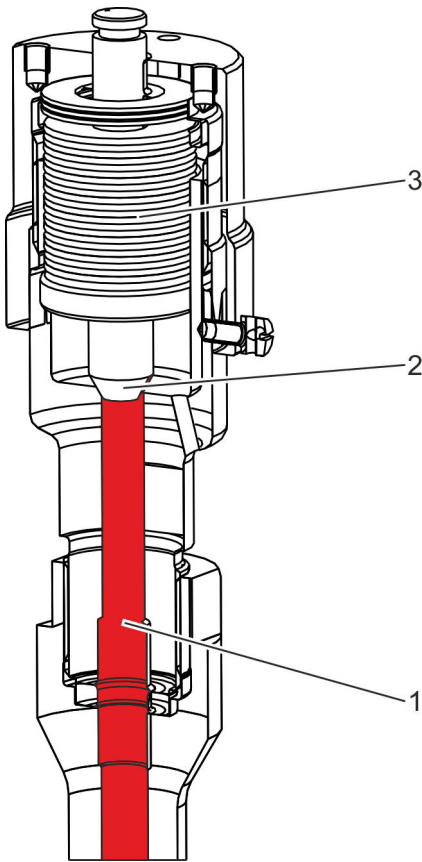


Fig. 7: Normal state

In the normal state (Fig. 7/1), the cone (Fig. 7/2) mounted on the guide is pressed into the seat of the body by the pre-tensioned spring assembly (Fig. 7/3) and seals this from the atmosphere.

The pre-tensioning of the spring assembly is set by the union nut (Fig. 6/8) ex-works and is secured against being adjusted by the capstan screw (Fig. 6/6). Furthermore, the capstan screw is sealed so that an adjustment of the ex-works setting is traceable.

Triggering the over pressure safety device

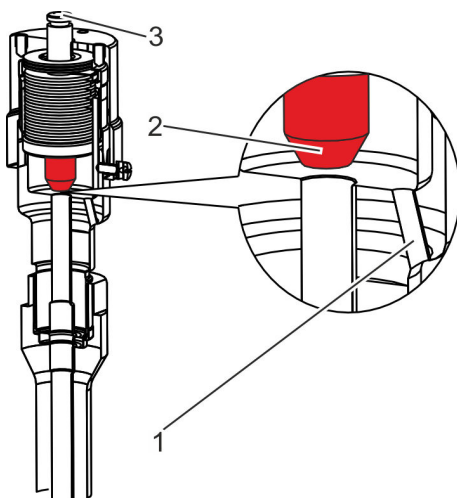


Fig. 8: Exceeding the triggering pressure

If the pressure in the gate valve exceeds the triggering pressure of the spring-loaded over pressure safety device, the cone (Fig. 8/2) is lifted out of the seat and the excess pressure is reduced via the blow-out opening (Fig. 8/1). The body is relieved.

Once the pressure falls below the triggering pressure, the cone mounted on the guide is pressed into the seat again by the force of the spring and the over pressure safety device is closed.



The triggering of the spring-loaded over pressure safety device can be recognised by

- pipeline medium escaping from the blow-out opening as well as
- the vertical movement of the guide that protrudes from the body (Fig. 8/3)

3.2 Mode of operation of the spring-loaded over pressure safety device with an upstream bursting disc

Deviation from the standard version of the spring-loaded over pressure safety device

Optionally, an upstream bursting disc can supplement the spring-loaded over pressure safety device, as described in [Chapter 3.1](#) “Mode of operation the spring-loaded over pressure safety device” on page 27.

The upstream bursting disc is located between the pressure ring (Fig. 6/2) and pipe nozzle (Fig. 6/1).

Triggering the spring-loaded over pressure safety device with an upstream bursting disc

If the pressure at the pipe nozzle exceeds the triggering pressure of the bursting disc, it breaks and the pressure inside the over pressure safety device rises. Depending on the design and the triggering pressure, this results in triggering the over pressure safety device as described in [Chapter 3.2](#) “Triggering the over pressure safety device” on page 28.



Depending on the design, the triggering pressure of the spring-loaded over pressure safety device may vary from that of the bursting disc.

Situation after triggering the spring-loaded over pressure safety device with a bursting disc

After the bursting disc has broken, the gate valve can continue being operated normally without it until the next inspection. At the next inspection, the broken bursting disc must be replaced with an intact one.

3.3 Optional bursting discs

Standard version

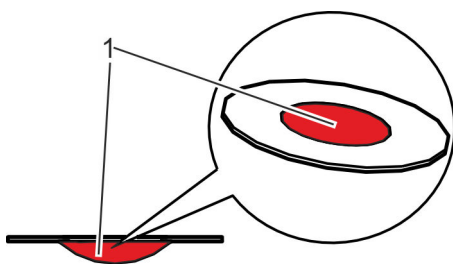


Fig. 9: Bursting disc

The bursting disc has a convex element in its centre (Fig. 9/1). If the design pressure is exceeded, the element breaks and the excess pressure can be released into the atmosphere.

Optional: fibre-optic sensor

In addition, the spring-loaded over pressure safety device can be equipped with a fibre-optic sensor.

The fibre-optic sensor signals the triggering of the bursting disc via a digital switching output.

The triggering of the over pressure safety device can be displayed centrally, without personnel having to be physically present to check for escaping pipeline medium at the blow-out opening (Fig. 6/4).

3.4 Connections

Connection to the gate valve

The spring-loaded over pressure safety device is welded with the cooling zone to the nozzle on the body of the gate valve.

Cooling zone

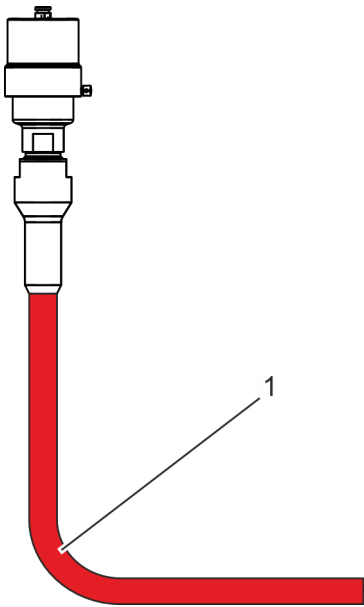


Fig. 10: Cooling zone (shown as an example only)

A cooling zone (Fig. 10/1) must be fitted between the connection on the gate valve and the pipe nozzle of the spring-loaded over pressure safety device.

The cooling zone

- reduces pressure surges in the medium when it enters the spring-loaded over pressure safety device and
- lowers the temperature of the medium before it enters the spring-loaded over pressure safety device.



The cooling zone can be obtained separately through Stahl-Armaturen PERSTA GmbH (see page 3 for the contact details).

Optional: switch on the guide

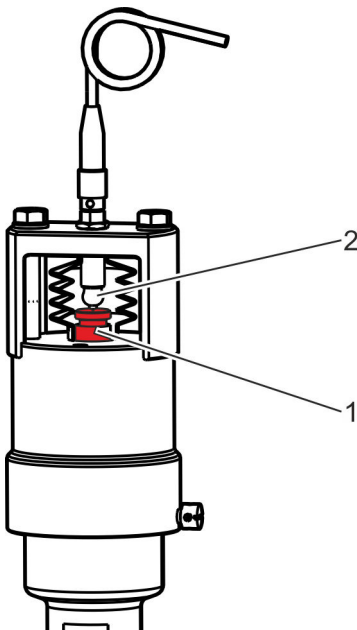


Fig. 11: Switch on the guide

The spring-loaded over pressure safety device can optionally be equipped with a switch (Fig. 11/2).

The switch (Fig. 11/2) is fitted to the guide (Fig. 11/1) and signals the triggering of the spring-loaded over pressure safety device via a digital switching output.

The triggering of the spring-loaded over pressure safety device can be displayed centrally, without personnel having to be physically present to check for escaping pipeline medium at the blow-out opening (Fig. 6/4).

4 Transport and storage

4.1 Safety notices for transport and storage

Corrosion protection agent

**WARNING!****Risk of impairing health due to the corrosion protection agent!**

Direct contact with the corrosion protection agent used can adversely affect your health.

- Handle the corrosion protection agent in accordance with the instructions in the manufacturer's safety data sheet.
- Wear the following protective equipment: protective gloves, safety footwear, safety goggles, protective work clothing.
- Soak up any spilled corrosion protection agent without delay and dispose of it in an environmentally responsible manner.

Improper transport

**NOTICE!****Damage caused by improper transport!**

The spring-loaded over pressure safety device can fall or tip over if transported improperly. This can cause considerable damage.

- When unloading the spring-loaded over pressure safety device on delivery, as well as during in-house transportation, proceed carefully and pay attention to the symbols and instructions on the packaging.
- Protect the spring-loaded over pressure safety device from impacts.
- Do not throw the spring-loaded over pressure safety device.
- Only remove the packaging just before installation.

4.2 Storing the spring-loaded over pressure safety device

Storage requirements

Comply with the following requirements when storing the spring-loaded over pressure safety device:

- Store the spring-loaded over pressure safety device in a closed state (delivery state).
- Do not store outdoors.
- Store in a dry and dust-free location.
- Do not expose to any aggressive media.
- Protect from direct sunlight.

- Avoid mechanical vibrations.
- Storage temperature: 15–35 °C.
- Relative humidity: max. 60%.
- Check the state of the protective caps attached in the factory. If necessary, replace the protective caps.
- When storing for longer than 3 months, check the general condition of all the parts and the packaging on a regular basis. Touch up or reapply preservation agent as required.



There may be storage instructions affixed to the packaged items that extend beyond the requirements set out in this manual. Comply with the terms of those instructions.

4.3 Storage of spare parts



NOTICE!

Material damage due to reduced service life if stored incorrectly!

Due to incorrect storage of soft-sealing spare parts, the service life may be reduced.

- Store soft-sealing elements, plastics or lubricants in a dry location at room temperature where they are protected against light.

5 Installation

5.1 Safety notices for installation

Faulty installation

**WARNING!****Danger due to incorrectly installed spring-loaded over pressure safety device!**

A faulty installation can result in injuries due to a malfunction of the spring-loaded over pressure safety device.

- Only carry out an installation after the affected pipe section has been shut off.
- For butt-weld valves:
 - Fasten the welding counterpole on the body, if possible in the vicinity of the welding point.
 - Execute the welding and the subsequent heat treatment in compliance with the valid welding regulations.
 - Partially execute the thermal treatment.
- Do not isolate the spring-loaded over pressure safety device.
- Pay attention to the correct installation position:
Fit the spring-loaded over pressure safety device vertically with the union nut pointing upwards.

Missing safety systems

**WARNING!****Risk of injury due to missing safety systems!**

There is a risk of serious injury if the operating company fails to install any safety systems.

- Fit a safety system around the blow-out opening.
- Fit the cooling zone.

5.2 Before the installation

Prerequisites



NOTICE!

Cooling zone

The spring-loaded over pressure safety device must be protected from pressure surges and the effect of the temperature of the pipeline medium.

In order to do so, a cooling zone must be inserted between the nozzle on the gate valve and the pipe nozzle of the spring-loaded over pressure safety device.



Nozzle on the gate valve

For the installation of the spring-loaded over pressure safety device, the gate valve must have a nozzle on the body that is to be protected.

The nozzle may

- already be present when the gate valve is delivered or*
- be properly welded to the body by an expert in consultation with Stahl-Armaturen PERSTA GmbH.*

Preparing for the installation

- Personnel: ■ Pipeline engineer
- Protective equipment: ■ Protective work clothing
- Protective gloves
- Safety footwear

- 1.** ➤ Shut off the pipe section affected.
- 2.** ➤ Check the design parameters and material.
- 3.** ➤ Remove any protective caps and preserving agents from the spring-loaded over pressure safety device.
- 4.** ➤ Open the nozzle on the body of the gate valve, which is delivered sealed ex-works.
- 5.** ➤ Prepare the nozzle on the gate valve for welding to the spring-loaded over pressure safety device.
- 6.** ➤ Make sure that the distance between the body of the gate valve and the spring-loaded over pressure safety device is sufficient.

5.3 Fitting the spring-loaded over pressure safety device

- Personnel: ■ Pipeline engineer
- Protective equipment: ■ Protective work clothing
 ■ Protective gloves
 ■ Safety footwear

1. → Check butt-welding ends for damage and cleanliness.
2. → Centre the cooling zone and pipe nozzle.

Pay attention to the correct installation position

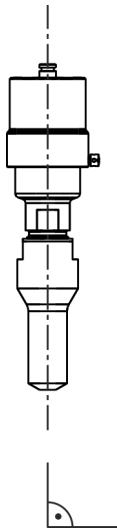


Fig. 12: Aligning the spring-loaded over pressure safety device

3. →



WARNING!

Do not incorrectly align the blow-out opening!

Make sure that the pipe nozzle points vertically downwards (Fig. 12).

4. →

Weld the cooling zone to the nozzle on the body of the gate valve.

5. →

Weld the pipe nozzle of the spring-loaded over pressure safety device to the cooling zone.

6. →



CAUTION!

Risk of breaking during operation by reactive forces when blowing out!

Take appropriate measures to secure the spring-loaded over pressure safety device on to the pipe nozzle.

7. →

Ensure that the pipes are properly sealed.

5.4 Fitting the safety systems

Fitting a safety system around the blow-out opening.

- Personnel: ■ Pipeline engineer
- Protective equipment: ■ Protective work clothing
■ Protective gloves
■ Safety footwear

→ Fit safety systems to collect and drain the medium that escapes from the blow-out opening (Fig. 13/1).

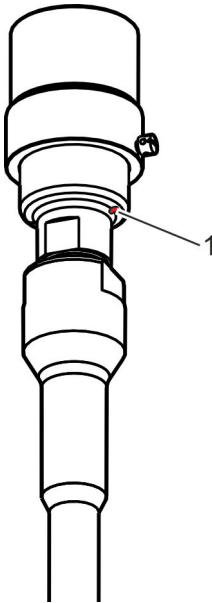


Fig. 13: Blow-out opening

6 Initial start-up

Once it has been successfully installed, the spring-loaded over pressure safety device is ready for use.

For information on replacing the bursting disc, see ↗ *Chapter 7.3 "Replacing the optional bursting disc" on page 44.*

7 Operation

7.1 Safety instructions for operation

Escaping hot medium

**WARNING!****Risk of injury when working on the spring-loaded over pressure safety device!**

While replacing the bursting disc or exchanging the spring-loaded over pressure safety device, injuries can be caused by the pipeline medium escaping from the pipe nozzle.

- Make sure that the gate valve is depressurised while replacing the bursting disc and that it is open.
- While carrying out these tasks, wear the following protective equipment: safety goggles, protective gloves, protective work clothing.

Changing the triggering pressure

**WARNING!****Risk of injury due to the triggering pressure having been changed!**

The triggering pressure of the spring-loaded over pressure safety device has been set by the manufacturer.

There is a risk of injuries of the most serious kind being sustained if the triggering pressure of the spring-loaded over pressure safety device is subsequently changed.

- Never tighten or loosen the union nut.
- Never loosen the capstan screw.
- Regularly check that the seal of the capstan screw is intact.

Pipeline medium



WARNING!

Risk of impairing health due to the pipeline medium!

Coming into contact with the pipeline medium can adversely affect your health.

- Handle the pipeline medium in accordance with the instructions in the manufacturer's safety data sheet.
- Wear the following protective equipment: protective gloves, safety footwear, safety goggles, protective work clothing.
- Collect any pipeline medium that has run out without delay and dispose of it in an environmentally responsible manner.

Spring elements



CAUTION!

Danger of injury due to spring elements!

The spring elements are located inside the body. Risk of injury due the prohibited opening of the body.

- Never open the body.
- If the spring-loaded over pressure safety device is damaged, take it out of operation and have it checked by the manufacturer.

7.2 Replacing the spring-loaded over pressure safety device

Personnel:	■ Industrial mechanic (high pressure valves)
Protective equipment:	■ Protective work clothing
	■ Safety goggles
	■ Protective gloves
	■ Safety footwear
Special tool:	■ Spanner size 36
	■ Spanner size 27
	■ High temperature grease

1. →



WARNING!
Risk of scalding!



WARNING!
Risk of frostbite!

Avoid coming into contact with the medium escaping from the blow-out opening.

2. →

Make sure that the gate valve is depressurised and that it can be opened.

3. →

Open the gate valve completely.

4. →



CAUTION!
Do not overstress the welding seams and pipes!

Use a size 36 spanner in the area of the spanner flats (Fig. 14/1) to hold the pipe nozzle in position.

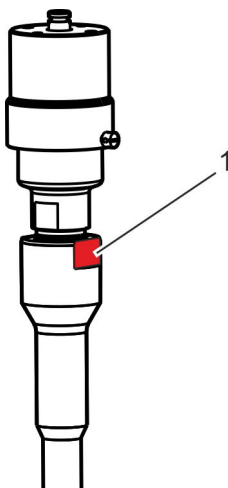


Fig. 14: Holding the spanner flats in position

Replacing the spring-loaded over pressure safety device

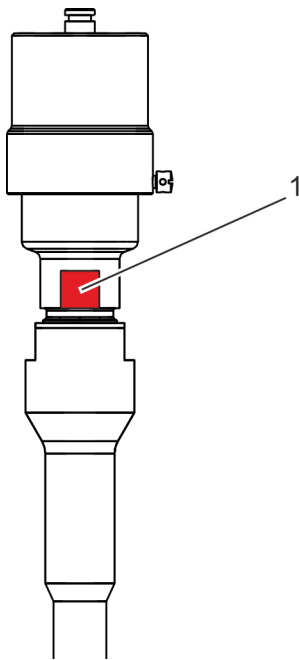


Fig. 15: Unscrewing the body

5. ➤ Position a size 27 spanner on the spanner flats (Fig. 15/1) of the body of the spring-loaded over pressure safety device.

6. ➤



NOTICE!

Do not drop the spring-loaded over pressure safety device!

Turn the spring-loaded over pressure safety device anticlockwise.

7. ➤ Remove the spring-loaded over pressure safety device.

8. ➤



WARNING!

Risk of scalding!



WARNING!

Risk of frostbite!

Allow the pressure ring to cool down or warm up to the ambient temperature.

9. ➤ Remove the pressure ring (Fig. 16/2) from the pipe nozzle (Fig. 16/1).

10. ➤ Clean all the threaded fittings and treat them with high temperature grease (e.g. graphite grease or copper grease).

11. ➤ Insert a new pressure ring (Fig. 16/2) into the pipe nozzle (Fig. 16/1).

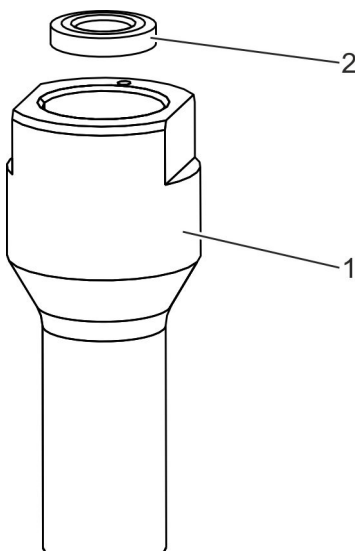


Fig. 16: Removing the pressure ring

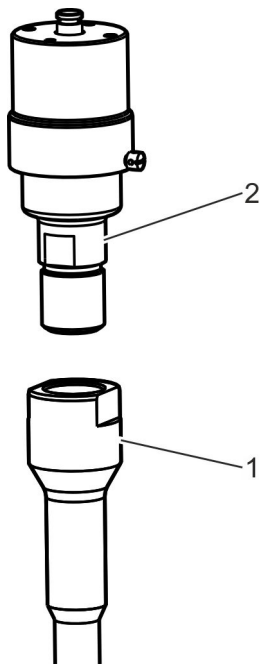


Fig. 17: Inserting the body

- 12.** Screw the body (Fig. 17/2) of the new spring-loaded over pressure safety device on to the pipe nozzle (Fig. 17/1), turning it clockwise and without tightening it fully.

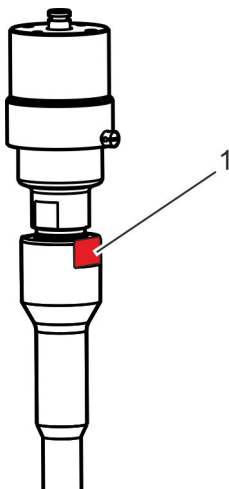


Fig. 18: Holding the spanner flats in position

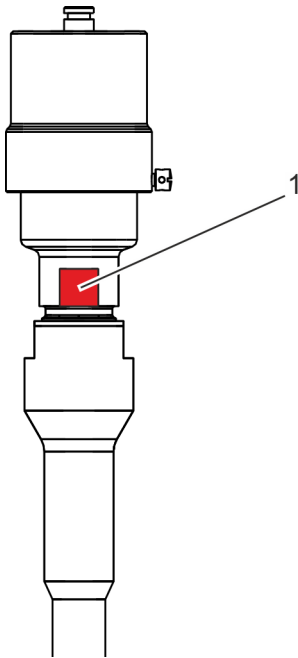
- 13.**



CAUTION!

Do not overstress the welding seams and pipes!

Use a size 36 spanner in the area of the spanner flats (Fig. 18/1) to hold the pipe nozzle in position.



- 14.▶ Tighten the body at the spanner flats (Fig. 19/1) using a size 27 spanner and applying a tightening torque of 120 Nm.

Fig. 19: Bolting the body together

7.3 Replacing the optional bursting disc

Version of the spring-loaded over pressure safety device with an upstream bursting disc

After the spring-loaded over pressure safety device with an upstream bursting disc has been triggered, the bursting disc must be replaced by an intact one at the next inspection of the gate valve.

- | | |
|-----------------------|--|
| Personnel: | ■ Industrial mechanic (high pressure valves) |
| Protective equipment: | ■ Protective work clothing |
| | ■ Safety goggles |
| | ■ Protective gloves |
| | ■ Safety footwear |
| Special tool: | ■ Spanner size 36 |
| | ■ Spanner size 27 |
| | ■ High temperature grease |

1. →



WARNING!
Risk of scalding!



WARNING!
Risk of frostbite!

Avoid coming into contact with the medium escaping from the blow-out opening.

2. →

Make sure that the gate valve is depressurised and that it can be opened.

3. →

Open the gate valve completely.

4. →



CAUTION!
Do not overstress the welding seams and pipes!

Use a size 36 spanner in the area of the spanner flats (Fig. 20/1) to hold the pipe nozzle in position.

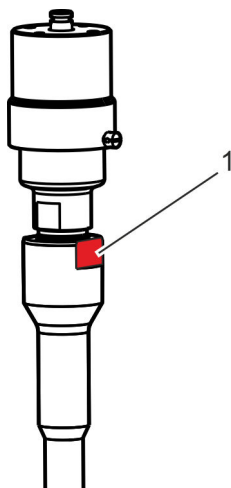


Fig. 20: Holding the spanner flats in position

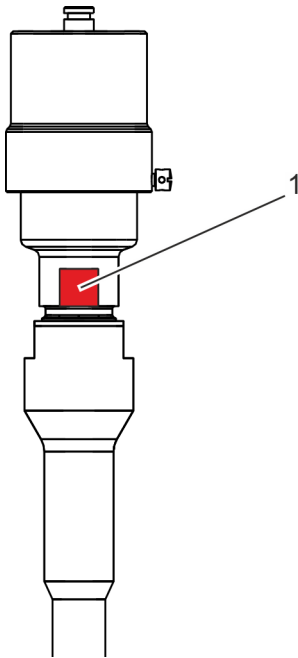


Fig. 21: Unscrewing the body

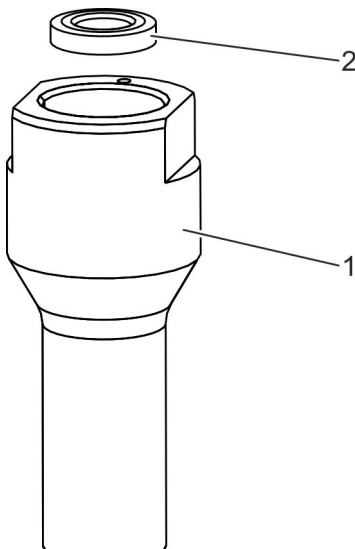


Fig. 22: Removing the pressure ring

5. ➤ Position a size 27 spanner on the spanner flats of the body of the spring-loaded over pressure safety device.

6. ➤ **NOTICE!**
Do not drop the spring-loaded over pressure safety device!

Turn the spring-loaded over pressure safety device anticlockwise.

7. ➤ Remove the spring-loaded over pressure safety device.

8. ➤ **WARNING!**
Risk of scalding!

WARNING!
Risk of frostbite!

Allow the pressure ring to cool down or warm up to the ambient temperature.

9. ➤ Remove the pressure ring (Fig. 22/2) from the pipe nozzle (Fig. 22/1).

10. ➤ Remove the remaining pieces, if any, of the broken optional bursting disc from the pipe nozzle.

11. ➤ Clean all the threaded fittings and treat them with high temperature grease (e.g. graphite grease or copper grease).

12. ➤ **CAUTION!**
Do not select the wrong optional bursting disc!

NOTICE!
Risk of irreparable damage to the new optional bursting disc!

Check the nominal burst pressure on the edge of the disk and compare this with the design data as well as the delivery documentation from the manufacturer.

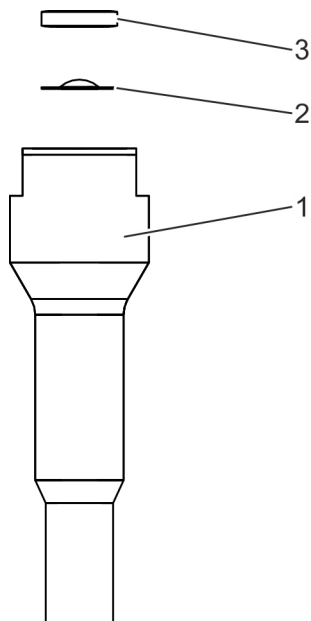


Fig. 23: Inserting a new bursting disc

13.▶



CAUTION!
Do not orient the optional bursting disc in the wrong direction!

Insert the new optional bursting disc (Fig. 23/2) with the convex curvature pointing in the blow-out direction into the pipe nozzle (Fig. 23/1).

14.▶

Place a new pressure ring (Fig. 23/3) on the new optional bursting disc (Fig. 23/2) in the pipe nozzle (Fig. 23/1).

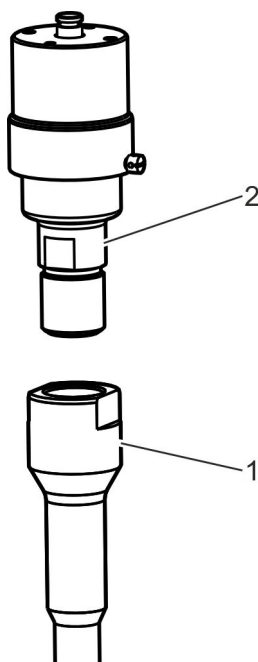


Fig. 24: Inserting the body

15.▶

Screw the body (Fig. 24/2) of the spring-loaded over pressure safety device on to the pipe nozzle (Fig. 24/1), turning it clockwise and without tightening it fully.

Replacing the optional bursting disc

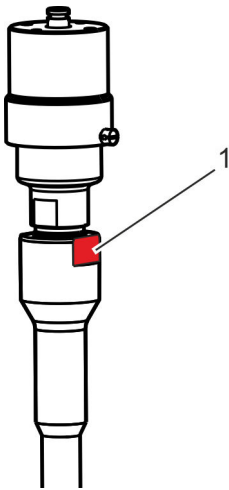


Fig. 25: Holding the spanner flats in position

16.▶



CAUTION!

Do not overstress the welding seams and pipes!

Use a size 36 spanner in the area of the spanner flats (Fig. 25/1) to hold the pipe nozzle in position.

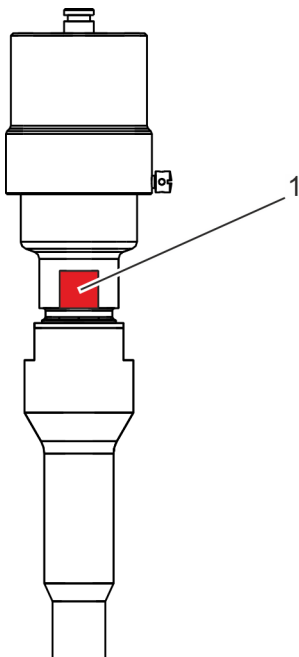


Fig. 26: Bolting the body together

17.▶

Tighten the body at the spanner flats (Fig. 26/1) using a size 27 spanner and applying a tightening torque of 120 Nm.

Visually displaying the replacement of the bursting disc

Personnel: ■ Industrial mechanic (high pressure valves)

Special tool: ■ Paint

1. ➤ Remove the rating plate of the broken optional bursting disc from the spring-loaded over pressure safety device.
2. ➤ Fasten the rating plate of the new optional bursting disc to the spring-loaded over pressure safety device so that it cannot be lost (e.g. with a lead wire seal).
 - ⇒ This ensures that the bursting disc can be replaced with a bursting disc of the same type.
3. ➤ Mark the position of the guide with a painted dot (Fig. 27/1).

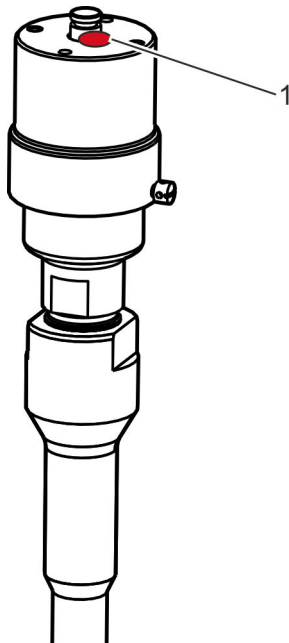


Fig. 27: Applying a painted dot



The bursting disc breaking is visually displayed by the destruction of the painted dot.

7.4 Completing the replacement of the bursting disc or spring-loaded over pressure safety device

- | | |
|-----------------------|--|
| Personnel: | ■ Industrial mechanic (high pressure valves) |
| Protective equipment: | ■ Protective work clothing |
| | ■ Safety goggles |
| | ■ Protective gloves |
| | ■ Safety footwear |

1. ➤



WARNING!
Risk of scalding!



WARNING!
Risk of frostbite!

Make sure that there is no medium escaping.

2. ➤ Make sure that the replacement of the bursting disc is visually displayed.
3. ➤ Make sure that the gate valve can be closed again.
4. ➤ Close the gate valve in accordance with the operating mode of the plant.
5. ➤ If the bursting disc breaks again within a short period of operation, check the mode of operation of the gate valve and, if necessary, have this changed.

7.5 Blocking the spring-loaded over pressure safety device for pressure test

Blocked spring-loaded over pressure safety device



WARNING!
Risk of injury due to blocked spring-loaded over pressure safety device!

There is a risk of injuries of the most serious kind being sustained if the spring-loaded over pressure safety device is blocked during normal operation.

- Only block the spring-loaded over pressure safety device during the hydrostatic pressure test.
- Make sure that during the hydrostatic pressure test the maximum plant pressure does not exceed the conditions of the spring-loaded over pressure safety device.

Pressure test

In order to carry out a pressure test of the plant, the spring-loaded over pressure safety device must be prevented from triggering.

This is the only reason for which it is permissible to fit a blocking device to the spring-loaded over pressure safety device.

This results in the cone being kept in the closed position.

Fitting the blocking device

Personnel: ■ Industrial mechanic (high pressure valves)

Protective equipment: ■ Protective work clothing
■ Safety goggles
■ Protective gloves
■ Safety footwear

1. →



WARNING!
Risk of scalding!



WARNING!
Risk of frostbite!

Avoid coming into contact with any medium that may escape from the blow-out opening.

2. → Make sure that the gate valve can be opened.

3. → Open the gate valve completely.

Blocking the spring-loaded over pressure safety device for pressure test

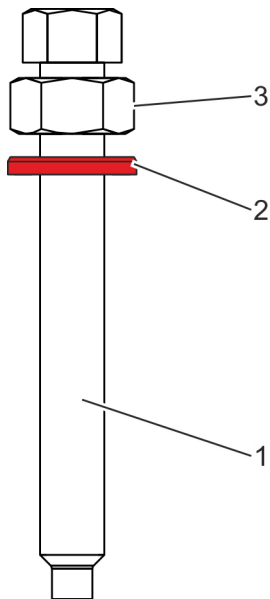


Fig. 28: Preparing the fastening screws

4. ➤ Screw a nut (Fig. 28/3) completely on to each of the fastening screws (Fig. 28/1) of the blocking device.
5. ➤ Insert a washer (Fig. 28/2) on each of the fastening screws (Fig. 28/1) of the blocking device.

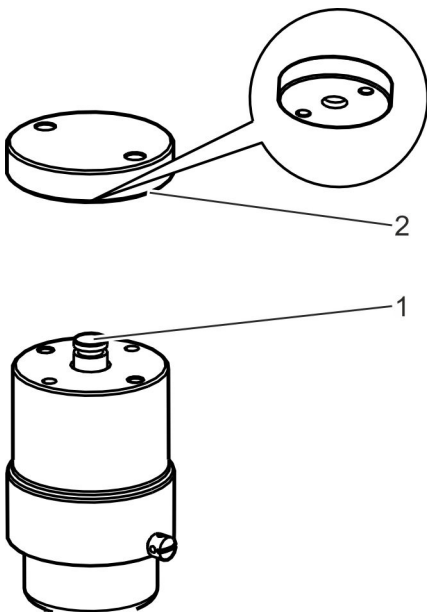


Fig. 29: Attaching the blocking device

6. ➤ Place the blocking device (Fig. 29/2) on top of the guide (Fig. 29/1) that protrudes from the body.

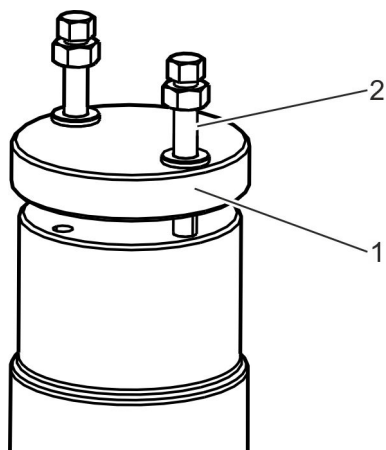


Fig. 30: Inserting the fastening screws

- 7.** ➤ Insert the fastening screws (Fig. 30/2) into the blocking device (Fig. 30/1) and bolt them into the two holes on the opposite side of the body of the spring-loaded over pressure safety device by evenly applying a tightening torque of 7 Nm.

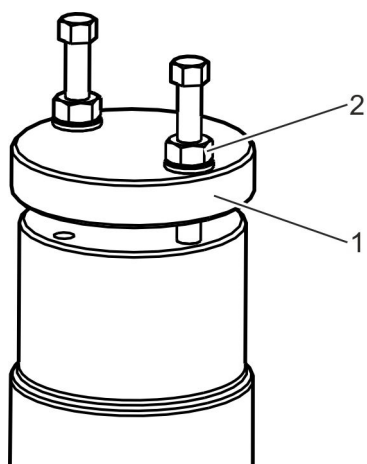


Fig. 31: Fastening the blocking device

- 8.** ➤ Press the blocking device (Fig. 31/1) using the two previously fitted nuts (Fig. 31/2) evenly down on to the guide that protrudes from the body.
- ⇒ The spring-loaded over pressure safety device is blocked.
- 9.** ➤ Allow the operating company to perform the pressure test.
- 10.** ➤ Make sure that the gate valve can be opened.
- 11.** ➤ Open the gate valve completely.
- 12.** ➤ Unscrew the nuts (Fig. 31/2).

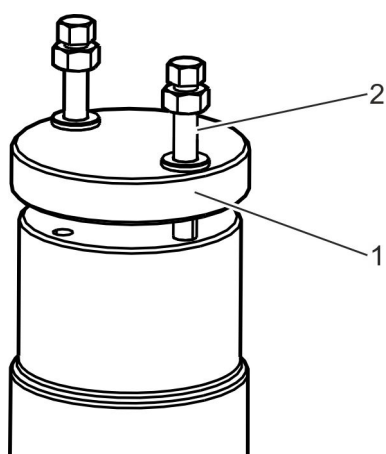


Fig. 32: Removing the fastening screws

- 13.** ➤ Remove the fastening screws (Fig. 32/2) with the washers from the body of the spring-loaded over pressure safety device.
- 14.** ➤ Remove the blocking device (Fig. 32/1).
- ⇒ The spring-loaded over pressure safety device is ready for use.

Blocking the spring-loaded over pressure safety device for pressure test

8 Maintenance

Maintenance schedule

Interval	Maintenance work	Personnel
To be determined by the operating company	Checking the spring-loaded over pressure safety device for leaks. If necessary (on the onset of signs of fatigue or after consultation with the manufacturer), replace the spring-loaded over pressure safety device.	Industrial mechanic (high pressure valves)
	Regularly check that the seal of the capstan screw is intact.	Industrial mechanic (high pressure valves)
	On the version with an upstream bursting disc, check that the painted dot is properly intact.	Industrial mechanic (high pressure valves)

9 Faults and fault correction

9.1 Safety notices for fault correction

Improperly executed fault correction tasks

**WARNING!****Danger of injury due to improper fault correction!**

Improperly executed fault correction tasks can cause severe injuries and significant damage to property.

- If in doubt, obtain the assistance of experienced persons or contact Stahl-Armaturen PERSTA GmbH Customer Service.
- Comply with the following before restarting the plant:
 - Ensure that all fault correction tasks have been properly executed and concluded in accordance with the instructions in this manual.
 - Ensure that nobody is in the danger zone.
 - Ensure that all covers and safety systems are installed correctly and that they function properly.

Thermal dangers

**WARNING!****Danger of injury due to high or low temperatures!**

Depending on the application of the spring-loaded over pressure safety device or of the pipe, injuries can occur due to the high or low temperature of the components.

- When working on components, wear the following protective equipment: protective gloves, safety goggles.

Pipeline medium



WARNING!

Risk of impairing health due to the pipeline medium!

Coming into contact with the pipeline medium can adversely affect your health.

- Handle the pipeline medium in accordance with the instructions in the manufacturer's safety data sheet.
- Wear the following protective equipment: protective gloves, safety footwear, safety goggles, protective work clothing.
- Collect any pipeline medium that has run out without delay and dispose of it in an environmentally responsible manner.

Conduct in the event of dangerous faults

In general, the following applies:

- 1.** ▶ In respect of faults that constitute an immediate danger to persons or property, immediately trigger the emergency stop function.
- 2.** ▶ Determine the cause of the fault.
- 3.** ▶ If correction of the fault requires work in the danger zone, secure the area of the plant in question and open the gate valve.
- 4.** ▶ Depressurise the gate valve.
- 5.** ▶ Have the manufacturer correct faults that affect the safe operation of the spring-loaded over pressure safety device.

9.2 Fault table

Fault description	Cause	Remedy	Personnel
On the version with an upstream bursting disc, medium escapes from the blow-out opening.	Bursting disc is broken.	Take the gate valve and spring-loaded over pressure safety device out of operation. Replace the bursting disc (☞ <i>Chapter 7.3 "Replacing the optional bursting disc" on page 44</i>) or the entire spring-loaded over pressure safety device (☞ <i>Chapter 7.2 "Replacing the spring-loaded over pressure safety device" on page 41</i>).	Industrial mechanic (high pressure valves)
Bursting disc breaks shortly after having been replaced.	Wrong type of bursting disc (incorrect triggering pressure) was selected.	Take the gate valve and spring-loaded over pressure safety device out of operation. Select a bursting disc with the correct triggering pressure. If you have any questions or if anything is unclear, contact the manufacturer (contact details on page 3).	Industrial mechanic (high pressure valves)
	Bursting disc is incorrectly oriented.	Take the gate valve and spring-loaded over pressure safety device out of operation. Insert the bursting disc correctly oriented (☞ <i>Chapter 7.3 "Replacing the optional bursting disc" on page 44</i>).	Industrial mechanic (high pressure valves)
Medium escapes from the blow-out opening without the specified triggering pressure of the spring-loaded over pressure safety device having been exceeded.	Triggering pressure incorrectly set.	Take the gate valve and spring-loaded over pressure safety device out of operation. Have the triggering pressure reset by the manufacturer.	Industrial mechanic (high pressure valves)
	Defective spring assembly.	Take the gate valve and spring-loaded over pressure safety device out of operation. Have the spring assembly replaced and the triggering pressure of the spring-loaded over pressure safety device reset by the manufacturer.	Industrial mechanic (high pressure valves)
	Damaged pressure ring (Fig. 6/2).	Take the gate valve and spring-loaded over pressure safety device out of operation. Have the damaged components replaced. Determine the cause of the deformation and have it eliminated.	Industrial mechanic (high pressure valves)
Leakage at the seat.	Damaged components of the spring-loaded over pressure safety device.	Take the gate valve and spring-loaded over pressure safety device out of operation. Replace the entire spring-loaded over pressure safety device.	Industrial mechanic (high pressure valves)
	Foreign object lodged between body seat and the cone.	Perform tests (☞ <i>Chapter 9.2 "Fault table" on page 59</i>) and determine the cause of the leakage.	Industrial mechanic (high pressure valves)

Eliminating leakages at the seat



WARNING!

Risk of injury due to testing during operation!

There is a risk of serious injuries if tests are performed while the plant is in operation!

- Close the gate valve, before starting the test activities.
- Comply with requirements of the operating company, subject to which testing may be carried out while the plant is in operation.
- Wear the following protective equipment: protective work clothing, safety goggles, protective gloves, safety footwear.



Whether the leakage at the seat has been caused by a foreign object or is due to damage of the seat surface can be tested by the activities set out below.

Personnel: ■ Industrial mechanic (high pressure valves)

Protective equipment: ■ Protective work clothing
 ■ Safety goggles
 ■ Protective gloves
 ■ Safety footwear

Special tool: ■ Screwdriver

Prerequisites:

- The gate valve has been closed.
- The requirements specified by the operating company for the test have been fulfilled.

1. ➤ Insert two flat-bladed screwdrivers on opposite sides into the groove (Fig. 33/1) of the guide.

2. ➤



CAUTION!

Risk of screwdriver slipping!

Carefully lever the guide upwards using both flat-bladed screwdrivers.

3. ➤ Release the guide down again.

4. ➤ Test whether there is a leak. If there is a leak, replace the entire spring-loaded over pressure safety device.

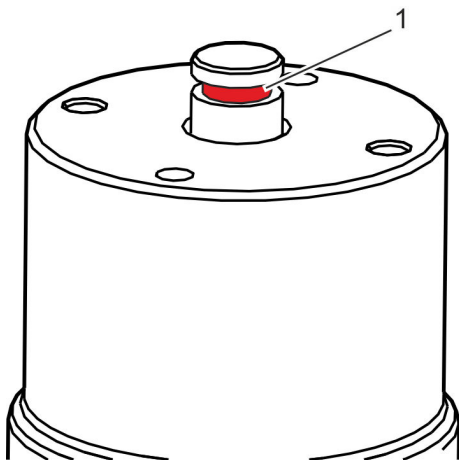


Fig. 33: Groove on the guide

10 Dismantling, disposal

10.1 Safety notice for dismantling and disposal

Improper dismantling

**WARNING!****Danger of injury due to improper dismantling!**

Stored residual energy, sharp-edged components, points and corners on or in the valve, or on the required tools can cause serious injury.

- Prior to starting work ensure that there is adequate free space.
- Handle open, sharp-edged components carefully.
- Ensure order and cleanliness at the workstation! Loosely stacked components or components and tools that are lying about can cause accidents.
- Dismantle components properly. Pay attention to the high dead weight of some of the components. If necessary use hoists.
- Secure the components so that they do not fall down or fall over.
- If anything is unclear obtain the assistance of Stahl-Armaturen contact PERSTA GmbH customer service (contact details p. 3).

Pipeline medium

**WARNING!****Pumping medium is a health hazard!**

Contact with the pumping medium can have health implications.

- Handle pumping medium in accordance with the instructions in the manufacturer's safety data sheet.
- Wear protective equipment: Protective gloves, safety footwear, protective goggles, protective work clothing.
- Soak up escaped pumping medium without delay and dispose of it in an environmentally responsible manner.

10.2 Dismantling

- Personnel:
- Industrial mechanic (high pressure valves)
 - Trained person (operator)
 - Disposal contractor
- Protective equipment:
- Safety goggles
 - Protective work clothing
 - Protective gloves
 - Safety footwear

Prerequisites:

- The relevant pipe section has been shut-off.
 - The gate valve has been opened.
1. ▶ Have an additional person hold the spring-loaded over pressure safety device in position.
 2. ▶ Disconnect the spring-loaded over pressure safety device from the cooling zone.
 3. ▶ If necessary, remove the existing nozzles.
 4. ▶ Remove and set down the spring-loaded over pressure safety device.

5. ▶



CAUTION!

Danger of injury due to spring elements!

Properly clean the assemblies and components and take them apart.

In this process, comply with local occupational health and safety regulations.

10.3 Disposal

Improper disposal



ENVIRONMENT!

Danger for the environment due to improper disposal!

Risks for the environment can arise due to improper disposal.

- Have electrical scrap and electronic components, lubricants and other auxiliary materials recycled or disposed of by approved specialist companies.
- If in doubt, contact the local authorities or specialist disposal companies for information regarding the environmentally sound disposal.

If a return or disposal agreement has not been concluded, then recycle the disassembled components as follows:

- Scrap the metals.
- Send the plastic elements for recycling.
- Sort and dispose of all the other components according to the properties of their materials.

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