

# Installation instructions

Original language: German



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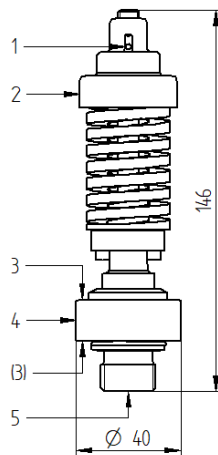
## Pressure relief valve ST-220 Product code: all variants

### Technical Data

Maximum permissible pressure	700.00 bar / 70.0 MPa
Minimum pressure	200 bar / 20 MPa
Maximum flow rate	50.0l/min / 13gpm
Water temperature permanently	60°C
Water temperature temporary	max. 85°C
Ambient temperature	up to 60°C
Inlet connector	G1/2 AG
Outlet connector	-
Weight	0.480 kg
Dimensions ( W / H / D )	146 x 40
Max. solid material size	50µm
pH value of water	6,5-8,0
electrical conductivity [µS/cm]	max. 2000 bei / at 20°C
pressure pulsation of the pump	< ±10 bar

Abbreviations and symbols	
FT; MT	Female thread; male thread
G	Whitworth pipe thread according to DIN ISO 228, ident. BSP= British Standard Pipe
PRV	Pressure Relief Valve

	<p>The PRV is designed for permanent use up to approx. 60°C. Temperatures up to 85°C are also permitted for short-term applications. In any case, the user must wear appropriate protective clothing, for example, in the form of gloves, shoes and goggles. The local safety regulations currently in force should always be observed.</p>
	<p>Please read these Operating Instructions carefully before using the equipment! Keep the Operating Instructions in a safe place for future use or for the next user! These Operating Instructions were prepared with great care. However, SUTTNER GmbH can not be held responsible for any possible errors in the Operating Instructions or for any consequences arising thereof!</p>



1 Hole for seal wire

2 Cover cap

3 Outlet

(3) Outlet (alternative)

4 Spray cover

5 Inlet

➔ Flow direction

# Description

## Pressure Relief Valve

The application purpose of the ST-220 PRV is to protect high-pressure devices from overpressure. The valve housing and sealing elements are made of stainless steel. The PRV operates according to the principle of a direct-acting, spring-loaded proportional seat valve. The PRV is infinitely adjustable.

## Intended use

The PRV is designed to relieve unwanted overpressure, i.e. pressure above the specified operating pressure, thus protecting the high-pressure device.

Operation of the PRV ST-220 without a spray cover (4) is not allowed.

The PRV is designed for use with water-operated high-pressure systems such as high-pressure cleaners.

The PRV is approved only for use with Group II fluids as per 2014/68/EU. This can include, for instance, water and diluted commercially available cleaning or disinfection agents. For further details, please refer to Guideline EGV 1272/2008. All safety regulations and rules for high-pressure washers apply as well, e.g. DIN EN 60335-79-2 and DIN EN 1829-1.



**Dispensing flammable, explosive, caustic or toxic substances is forbidden!**

The PRV may not be used with abrasive substances.

To avoid damaging the PRV, install a fine filter with a recommended mesh size of 50 µm into the water inlet to the high-pressure pump.

## Normative references

- The product is classed as a pressure-maintaining component within the terms of Pressure Equipment Directive 2014/68/EU. Due to the operating parameters, it comes under the scope of Article 4 / Paragraph 3 of this guideline ("good engineering practice") and therefore no Declaration of Conformity and CE marking are allowed!
- The product must not be installed in equipment complying with the Pressure Equipment Directive 2014/68/EU.
- The product is a standard part within the terms of Machinery Directive 2006/42/EC!

## Symbols and their meanings



### Hazard!

If these instructions are not followed there is a danger of physical injury, danger to life and material damage!



### Please comply with the Operating Instructions!

Incorrect operation can lead to severe injury. Read the Operating Instructions before using the equipment.



### Wear safety gloves!



### Wear protective goggles!



### Risk of injury due to high pressure!

Risk of injection or severe injury to persons. Keep clear of nozzle. Do not direct discharge stream at persons.



**Description of imminent hazard and failure to avoid hazard will result death**



**Description of hazard and possible resulting injuries or death.**



**Description of hazard that could result in minor or moderate injury.**

## For your safety

This Suttner product is state of the art and complies with generally recognised health and safety regulations. Due to the high pressures and temperatures nonetheless there is the danger of material damage and injury for users and other persons. Please comply with these Operating Instructions at all times and the relevant regulations for liquid jet sprayers.

For details regarding personal protective equipment, refer to the local prevention regulations "Personal protective equipment". Personal protective equipment includes for example overalls, head protection, easy-grip protective gloves and non-slip boots, metatarsal foot protection, respiratory protection, ear protection, eye or face protection.

- Before starting work, check the high-pressure system (spray equipment, hoses, screw connectors, etc.) for signs of leakage and damage.
- Cease operation immediately if any leakage or malfunctions occur.
- Malfunctions that may affect safety are to be rectified immediately.
- The PRV may only be used in a technically perfect condition, unmodified in any way, for the purpose intended, in awareness of and compliance with safety requirements and potential hazards and when following these Operating Instructions. Any other or additional use is deemed inappropriate.
- All assembly or installation work must be carried out by authorised specialist personnel.
- Also comply with the operating instructions for equipment and accessories connected to the PRV and with the applicable regulations for cleaning agents.



### Risk of injury due to spray medium!

Ensure the safe escape of the water in case of overpressure.



### Risk of burning or scalding due to hot media!

Do not touch anything which is not insulated if you are working with consumables and additives where the temperature exceeds 45°C. Wear protective gloves!

## Assembly

### Delivery scope

The PRV is delivered unadjusted and unsealed. Leaden seal and sealing wire are not included in the delivery.



### Usage notes!

PRVs are high-quality fittings, which must be handled with particular care. The sealing surfaces on the seat and ball are smooth machined to achieve the necessary tightness. The penetration of foreign bodies into the valve must be avoided during assembly, installation and during operation. The tightness of a PRV can be impaired by hemp, Teflon tape or other sealant as well as by welding beads. Even rough treatment of the finished PRV during storage, transport and assembly may cause a PRV to leak. If the PRVs are painted, care must be taken that the sliding parts do not come into contact with paint.

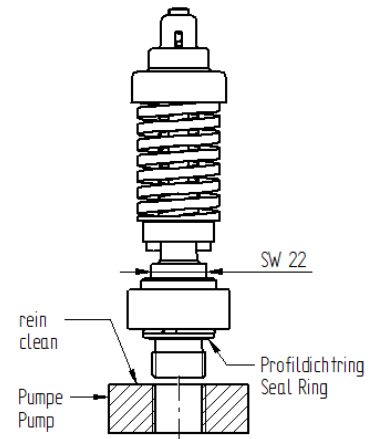
ST-220 PRVs may be installed vertically or horizontally. The safety function of the valves is tested and confirmed in both installation positions. In order to ensure proper functioning of the PRVs, they must be installed in such a way that no impermissible static, dynamic or thermal stresses may act on the PRV. During assembly, ensure the maximum tightening torque is not exceeded. If the medium emerging from the outlet may directly or indirectly cause danger to persons or the environment, appropriate protective measures such as the installation of a protective hood or blow-off line must be carried out.



### Risk of injury!

- Switch the high-pressure washer off before carrying out assembly work on the high-pressure system.
- Secure the high-pressure washer against being unintentionally switched on.
- Turn the water supply off.
- Release residual pressure by triggering spray gun.
- Check the flow direction before mounting!
- Seal the screw connectors in accordance with your intended use with an appropriate sealant such as Teflon sealing tape or a liquid sealant (see R+M Catalogue, Chapter 06, Adhesives and sealing materials).
- Mount the PRV firmly on a pipe or pump housing. Secure the PRV against twisting
- Ensure the equipment meets the requirements of the machine guideline after installing the PRV in a machine/system!
- If necessary, set up warning signs to prevent unintentional start-up of the equipment/machines/ systems!
- Carry out the assembly/repair work in accordance with the applicable safety and accident prevention regulations of the employers' liability insurance association!
- Check the correct functioning of the safety devices during commissioning!

1. A seal is integrated into the PRV ST-220, no other sealants are needed
2. Clean the sealing surface on the pump housing
3. Wet the thread on the PRV with anti-seize paste.
4. Screw the PRV into the pump housing at the spanner flats SW22



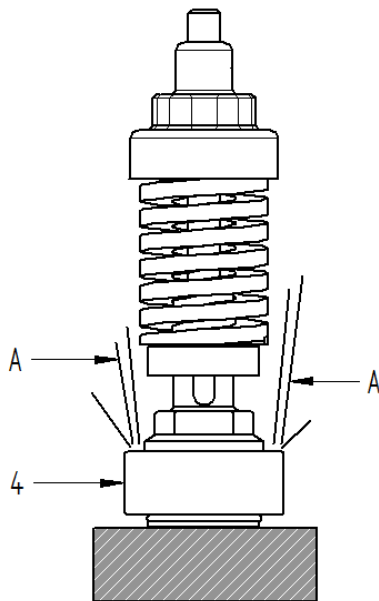
## Modification

### Spray cover

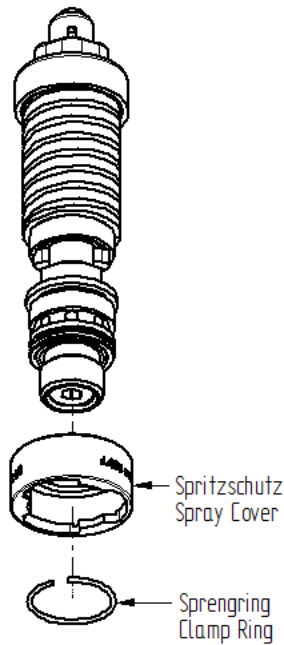
In case of overpressure, the water escapes through the channels (3) in the spray cover (4) in axial direction. The spraying direction can be changed by turning the spray cover.

Make sure that after this modification, the spray cover and clamp ring are back in the correct position.

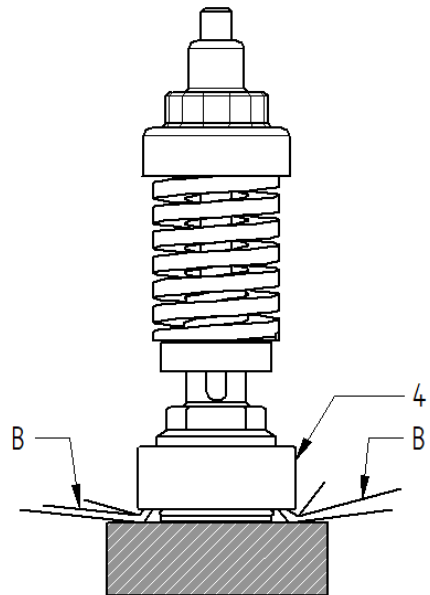
*Spraying direction A*



*Turning the spray cover*



*Spraying direction B*



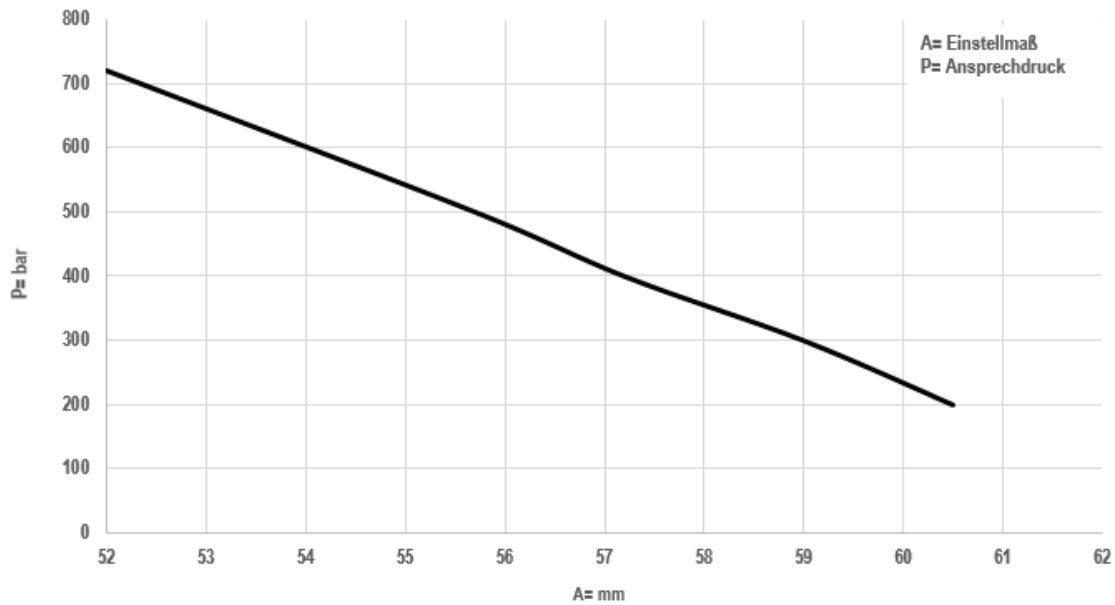
Any further modifications to the PRV are not permitted!

## Presetting

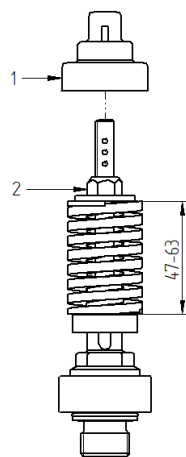
As outlined by DIN EN 1829-1, a PRV, when used as a safety device against inadmissible overpressure in high-pressure systems, must be set to a response pressure of 15% above the maximum operating pressure. Upon delivery, the valve is not set and must be adjusted and sealed by the manufacturer of the high-pressure system. To do this, proceed as follows:

The manufacturer of the high-pressure system is responsible for the correct setting and awareness of safety requirements and potential hazards during installation!

- Determine the parameters of your high pressure system (operating pressure, switching pressure, pressure peaks)
- Remove the cover cap (1)
- Refer to the setting value for your equipment in the chart.
- Tension the spring via the hexagon nut (2) to the required dimension.
- Check the PRV valve for function. Check the response pressure. If necessary, adjust the setting.
- Screw on the cover cap (1) by hand
- Seal the PRV to prevent it from being adjusted by third parties. To do this, feed the sealing wire through the cover cap and a hole in the grub screw. Place a leaden seal on both ends of the wire.

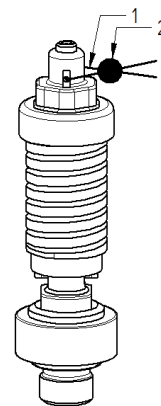


Setting of the PRV



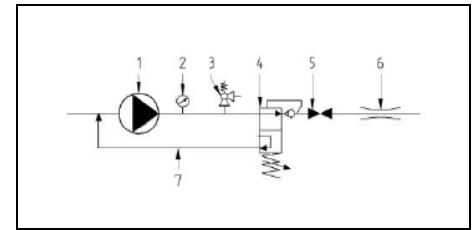
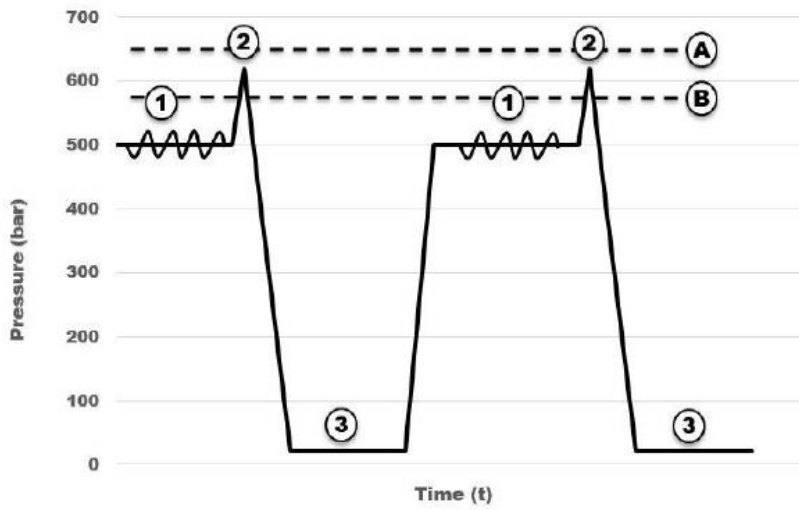
- 1 Cover cap
- 2 Adjusting nut (SW13)

Sealing of the PRV



- 1 Sealing wire
- 2 Leaden seal

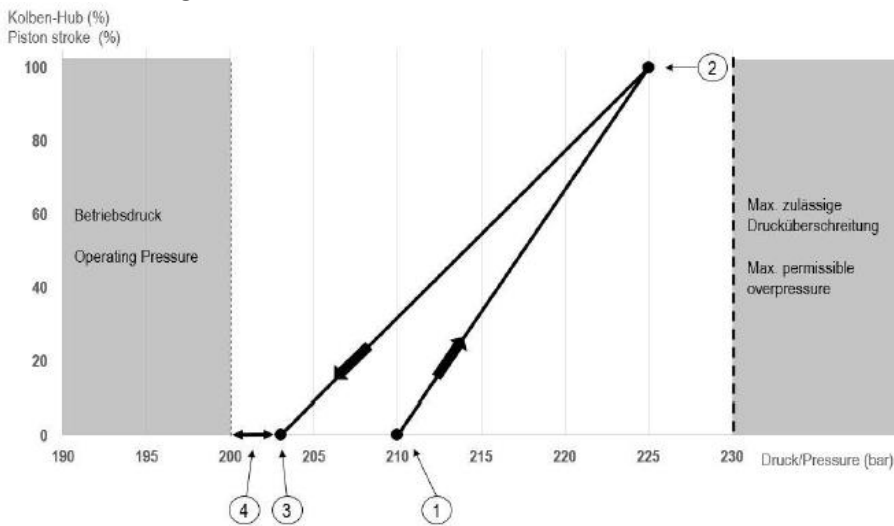
## Operating mode



1	Pump
2	Pressure gauge
3	PRV
4	Unloader valve
5	Spray gun
6	Return line

1	Operation
2	Pressure peak
3	Idle
A	PRV properly set
B	PRV incorrect set

## Functional diagram



- 1 Response pressure
- 2 Opening pressure
- 3 Closing pressure
- 4 Reserve

## Transportation and storage

Please ensure the PRV is cleaned and protected from contamination during transportation and storage. Protect the PRV against frost. The effect of frost can damage the PRV so badly that it no longer works perfectly.

## Maintenance



Assembly, maintenance and repair work may only be carried out by persons trained in maintenance and repair work on high-pressure systems. Use only spare parts approved by Suttner GmbH. Only use high-pressure components (hoses, connectors, etc.) approved for the respective pressure and temperature range.

- Perform an annual exterior visual inspection to make sure the PRV is safe to use.
- Are the markings and inscriptions legible?
- Does the PRV leak?
- Does the PRV show signs of mechanical damage?

**After max. 1000 operating hours** or a year or if hot water (exceeding 95°C) and chemicals are used after 500 operating hours or 6 months: Check valve parts (O-rings, support rings, hose clips) for damage and if necessary replace completely with a Suttner repair kit.

**After max. 3000 operating hours** or 3 years or if hot water (exceeding 90°C) and chemicals are used after 1500 operating hours or 18 months: Replace valve parts (O-rings, support rings, hose clips) completely with a Suttner repair kit.

## Disposal



**Please dispose of old equipment in an environmentally friendly manner.**

Old equipment contains valuable recyclable materials which should be salvaged for recycling. Please therefore dispose of old equipment at suitable collection points.

## Manufacturer

Suttner GmbH  
Hauptstraße 15-17  
33818 Leopoldshöhe  
Germany

info@rm-suttner.com  
www.rm-suttner.com