

**Operating Instructions BA 219-HP  
High Pressure Gate, Globe and Check  
Valves**

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PHOENIX Armaturenwerke GmbH  
Brand Strack



Edition 08-2023-00



# Operating Instructions BA 219-HP High Pressure Gate, Globe and Check Valves

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## Declaration of Conformity acc. to Directive 2014/68/EU

The manufacturer  
**PHOENIX Armaturenwerke GmbH**

with its address  
**Am Stadtbruch 6, 34471 Volkmarsen, Germany**

hereby declares that the  
**Valves with brand STRACK**  
**Gate, globe and check valve types S15, S16, S22, S23, S25, S26, S72, S73 and S74**

- with actuator and hand wheel;
- prepared for gear or actuator assembly;
- valves without operation device and
- Spring-loaded body pressure relief valve with bursting disc

are considered pressure-bearing equipment within the meaning of the EC Pressure Equipment Directive 2014/68/ EU and are in full conformity with the requirements of this directive.

Such valves may only be used and operated according to the attached Operating Manual BA 219-HP.

*Related standards :*

**EN 16668**

**Industrial Valves – Requirements and testing for metallic valves as pressure accessories**

**EN 12516**

**Calculation of steel valve bodies – Part 1 : Table method**

**AD 2000 Standard**

**Regulations for Pressure Bearing Body Components**

*Body and cover materials are in compliance with AD 2000 AD-W-Series with Inspection Certificate 3.1 according to DIN 10204*

*Description of type and technical features :*

**STRACK data sheets for type S15, S15S, S16, S22, S23, S25, S26, S72, S73 and S74**

*NOTE: This Declaration of Conformity is also valid for all variations of valve types in the STRACK catalogue*

*Applied procedure for conformity evaluation :*

**acc. Annex II of the Pressure Equipment Directive 2014/68/EU Module “H”**

*Name of the notified body :*

**LRQA Deutschland GmbH**

*Identification N° of the notified body :*

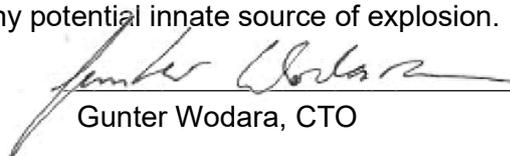
**0525**

Modifications to gate valves and/or components thereof which affect the technical features of the valve, and/or the defined use as according to Section 1 of the Operating Instructions, and/or which will essentially modify the valve shall make this Declaration invalid.

The gate, globe and check valves are not subject to the Guidelines for Usage 2014/34EU (94/4/EG) used for adapting legal requirements of member states for equipment and protection systems for usage in conventional explosive areas. It was proven via performance of an explosion analysis that gate, globe and check valves do not contain any potential innate source of explosion.

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Volkmarsen, August 24, 2023

  
Gunter Wodara, CTO

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# Operating Instructions BA 219-HP High Pressure Gate, Globe and Check Valves

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## Introduction

These operating instructions shall provide the user support for installation, operation and maintenance of gate valves types **S15, S15S, S16, S22, S23, S26, S72, S73 and S74**.

 <b>Warning</b>	<b>Failure to heed or comply with this warning could cause danger</b> and result in the in the revocation of the manufacturer's guarantee. For questions pertaining to this or any other matters, please contact the manufacturer at the address listed in Section 10.
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## 1 Defined Use

After installation in a piping system (either between flanges or by welding), the use of the valves types **S15, S15S, S16, S22, S23, S26, S72, S73 and S74** is exclusively defined as stopping or conveying the flow of media within the admitted pressure and temperature limits by manual operation. The use of these valves for media with solid matters, especially with abrasive particles, is not recommended.

 <b>Warning</b>	The valves must not be operated outside the permissible operating range, especially with regard to pressure and temperature. The limits are indicated on the name plate.
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The safety instructions in Section 2 shall be observed at all times.

When gate and globe valves are used in dusty environments, the use of a protecting cap for the open stem is recommended.

## 2 Safety Instructions

### 2.1 General Safety Instructions

Valves are subject to the same safety instructions applicable for the piping system in which the valves shall be installed. Hence, the present instructions mention only instructions which should additionally be taken into consideration for valves.

 <b>Life Threatening</b>	The valves must be operated within the permissible operating range, especially with regards to pressure and temperature. The limits are indicated on the name plate Valves for which the permissible pressure-temperature range is not sufficient for the operating conditions shall not be used. For materials, pressure or temperatures not indicated in the above-mentioned name plate, a release note from the manufacturer is mandatory. <b>Failure to comply with this warning can endanger life and physical condition and/or cause damage to the piping system.</b>
 <b>Note</b>	Gate valves are <b>not suitable for operation in intermediate position</b> . The final position of a gate valve is either completely open or completely closed.

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## 2.2 Safety Instructions for the User

It is not within the responsibility of the manufacturer and therefore must be ensured by the user of the gate, globe or check valve that

⇒ the valve is only to be used as described in Section 1 “Defined Use”.

 <b>Danger</b>	<p><b>Protection against improper use of the valves :</b>            In particular it must be ensured that the selected materials of the wetted parts of the valve are suitable for the handled media. The manufacturer is not responsible for damage to the valves caused by corrosive agents.  <b>Failure to heed or comply with this warning can cause danger to the user and/or cause damage to the piping system.</b></p>
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- ⇒ the direction of the flow of the line corresponds to the arrow indicated on the valve body. Valves without the arrow are bi-directional.
- ⇒ a gear operator which is fitted to the valve later on shall be adapted to this valve. In the closed position the final stop shall be in the seat of the valve.
- ⇒ the valve shall be professionally installed in the piping system, especially such types of valves which are fitted into the piping system by welding.
- ⇒ in this piping system, the usual flow rates in continuous operation shall not be exceeded and exceptional operating conditions such as vibrations, water hammers, cavitation and higher percentages of solid matters in the media – especially abrasive ones – shall be cleared with the manufacturer,
- ⇒ valves used at operating temperatures  $>+50^{\circ}\text{C}$  or  $<-10^{\circ}\text{C}$ , together with the pipeline connections are protected against contact,
- ⇒ only competent employees qualified for pressure bearing piping systems shall operate and maintain the valves.

## 2.3 Special Risks

 <b>Life Threatening</b>	<p>For gate and globe valves: the operating stem is sealed by a stuffing box. Before loosening the nuts on the gland follower, the <b>piping system shall be completely depressurized</b> to avoid any leakage of the media out of the stuffing box.</p>
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 <b>Life Threatening</b>	<p>Before removing the valve from the piping system and/or before loosening the bolts and nuts of the bonnet the <b>piping system shall be completely depressurized</b> to avoid any uncontrollable fugitive emission of the media. It must be ensured that <b>the valve is in a semi-open position</b> to enable the pressure to escape from both sides of the valve.</p>
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 <b>Danger</b>	<p><i>Gate or globe valves which are used as final shut-off valves:</i>            For normal operation, especially with gaseous, hot and/or dangerous media a blind flange or a cover plate shall be fitted on the free outlet or adequately secured against unauthorized operation acc. to the directives of EN 292 – Part 2.</p>
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 <b>Danger</b>	<p><i>Gate or globe valves which are not gradually started up at service temperatures of <math>&gt;250^{\circ}\text{C}</math> :</i>            Leakage might occur. Please also see Section 6.1. &lt;Starting-up phase&gt;</p>
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 <b>Danger</b>	When a gate or globe valve is used as final valve and is opened under pressure load, this must be performed with extraordinary care and in such a manner as to ensure that the escaping media cannot cause any damage.
 <b>Danger</b>	When a valve is removed from the piping system, media can escape either from the piping and/or the valve. For liquids which are harmful to health or dangerous, the piping system must be completely drained before the valve can be removed from the system. Be careful of <b>residues coming out of or remaining in dead spots of the valve or the piping system itself.</b>

## 2.4 Marking of the Valve

Each valve body is generally hard stamped as follows

For	Marking	Note
Body material	e.g.: <b>1.7383 / A182 F22</b>	N° of material standard to EN 12516, Part 1 or/and ASME material standard
Heat-/ Melt N°	e.g.: <b>566212</b>	Heat-/Melt N° of the forging shop

Each valve is generally fitted with a name plate as follows:

For	Marking	Note
CE mark	<b>CE</b>	In accordance with PED 2014/68/EU Art. 4 valves without safety functions >DN 32 and above shall bear the CE mark.
Code	<b>0525</b>	Identified according to EU Guideline as Lloyds Register
Brand	<b>STRACK (SAG)</b>	Brand STRACK, STRACK Armaturenwerke GmbH
Manufacturer	<b>PHOENIX (PAG)</b>	PHOENIX Armaturenwrke GmbH
Manufacturer-Ref.	e.g.: <b>105098/02/1</b>	The first figures represent the factory number, the second figure and the last figure are the position number
Date of manufacture	e.g.: <b>05/09</b>	The first figures indicate the calendar week of manufacture, the last figures are the year of manufacture, e.g. (09 = 2009)
Valve type	<b>Type</b> (and numerical value)	e.g. Type S15.025, see STRACK data sheet
Material	e.g.: <b>1.7383</b>	N° of body material standard to EN 12516, Part 1 or/and ASME material standard
Trim	e.g.: <b>Stellite</b>	
Size	<b>DN or NPS</b> (and numerical value)	Numerical value in mm (e.g. DN 200) or inch (NPS 8)
Design Pressure	e.g.: <b>200 bar</b>	Numerical value in [bar]
Design Temperature	e.g.: <b>550 °C</b>	Numerical value in [°C]
Shell Test Pressure	e.g.: <b>200 bar</b>	Numerical value in [bar]
Tag No	e.g.: <b>KKS no: W1LCC27BP001</b>	Additional information

# Operating Instructions BA 219-HP High Pressure Gate, Globe and Check Valves

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## 3 Adjustment of Electric Actuators

### 3.1 General

A torque calculation is made for each valve equipped with an actuator. The size of the actuator is selected on the basis of this calculation.

The calculated torque is set in the open and closed direction on the actuator.

Before mounting an actuator on the valve, it is necessary to check:

- the technical data of the actuator; and
- if the torque figure is correctly set in both directions.

The operating instructions for the actuator must be read carefully.

The setting of the limit switch has to be performed after the actuator has been assembled on the valve.

 <b>Note</b>	The calculated torque figure from STRACK must be set. The closing speed of the stem shall not be too fast because the energy in the closed position is dependent on the actuator speed.
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### 3.2 Actuator Adjustment for Gate Valve

 <b>Warning</b>	The stop for the open position has to be set with the torque switch. If torque switch is has not been set, the backseat could be destroyed.
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 <b>Warning</b>	In the closed position, the end-stop has to be set with the torque switch as the first stop. The limit switch in the end position has to be set as the second stop. This is necessary to avoid thermal binding and to ensure a long lifetime of the valve.
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The adjustment for a wedge gate valve (S15 and S16) is the same as for a parallel gate valve (S15S).

### 3.3 Actuator Adjustment for Globe Valve

The open direction is the same as for the gate valve.

In closed position the end-stop has to be set with the torque switch.

 <b>Warning</b>	Testing without pressure under the disc is to be avoided, otherwise the actuator runs full speed into the seat without counter pressure from the medium.
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# Operating Instructions BA 219-HP High Pressure Gate, Globe and Check Valves

## 4 Safety Device

 <b>Warning</b>	<p>A safety device for the STRACK pressure seal gate valve is not included as part of the standard equipment. It is the responsibility of the customer, depending on the desired function of the valve, to order a safety device as an extra accessory.</p>
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In a closed gate valve with the disc pressed into both seats, there is the possibility that fluid remains in the valve cavity and can be trapped inside. If that fluid is then exposed to heat, an increase in pressure will occur.

The more the inner volume of the gate valve is filled with fluid, the greater the increase in pressure will be. An increase of the entire volume due to temperature expansion and pressure has not been taken into consideration and is not accounted for in this case.

However, even small changes in temperature can result in high pressure which leads to deformation of the exposed parts, especially when a high percentage of the inner volume of the gate valve is filled with fluid. In many cases, even when a low percentage of the inner volume is filled with fluid, an increase in pressure will not lead to deformation but can impact the long term functional properties of the valve. This then results in a higher force necessary to open the valve.

We therefore recommend an over pressure protection with rupture disc (order code C).

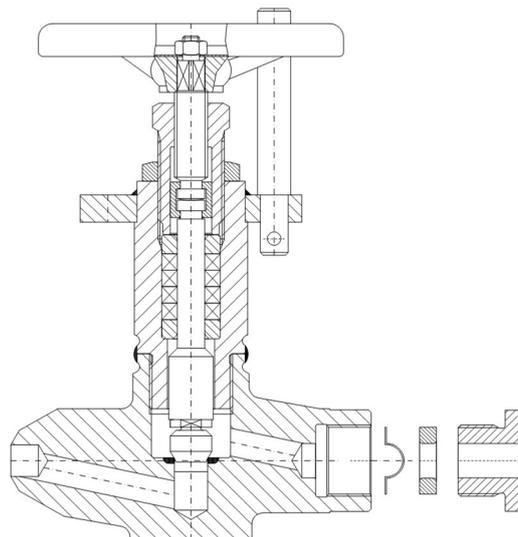
STRACK order code: **C**

Over pressure protection with **rupture disc**

Parts of this safety device:

- nozzle on the valve body without cap
- coiled tube
- globe valve with locking device and integrated rupture disc

The installation of the safety device on site is the responsibility of the customer.



 <b>Warning</b>	<p>The safety device has to be installed to the side of the valve with outlet downwards. For gate valves used in steam service it is necessary to use a condensate filling pipe piece.</p>
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 <b>Warning</b>	<p><i>To protect the valve against damage :</i> Make sure that the globe valve with locking device is locked only in the open position.</p>
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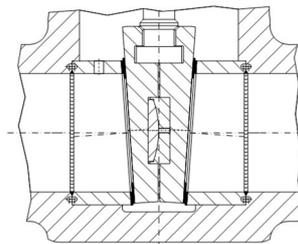
 <b>Note</b>	<p>With this option the valve is sealed in both directions.</p>
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# Operating Instructions BA 219-HP High Pressure Gate, Globe and Check Valves

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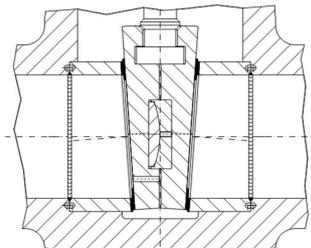
STRACK order code: **A**

Over pressure protection with **hole in the seat ring**



STRACK order code: **B**

Over pressure protection with **hole in the wedge**



**Note**

With these options the valve is sealed in one direction only.

## 5 Unauthorized Modification and Manufacture of Spare Parts

Modifications or alterations to the valve are only permitted after consultation with the manufacturer. Original spare parts and accessories authorized by the manufacture ensure safety. The use of other parts can invalidate any liability of the manufacture for subsequent damage.

## 6 Transport and Storage

Gate valves shall be carefully handled, transported and stored:

- ⇒ The valve shall be stored in its protective packing and/or with its protective caps on the inlet and outlet. Valves weighing more than 10 kilos shall be stored and transported on pallets (or similar), even during transport to the installation site.



**Warning**

*To protect the valve against damage :*

Ropes and belts shall only be fixed on body or yoke but never on the hand wheel, stem or actuator!

- ⇒ Before installation the valve shall be stored in a closed area and shall be protected against detrimental influences such as dirt and humidity.
- ⇒ In particular, the hand wheel and the end orifices of the gate valves for the connection with the piping system shall not be damaged by mechanical or other influences.
- ⇒ Gate valves are supplied by the manufacturer in the closed position and shall be stored and transported in this position as well.

# Operating Instructions BA 219-HP High Pressure Gate, Globe and Check Valves

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## 7 Installation into the piping system

### 7.1 General

Responsibility for the positioning and installing the valves always lies with the engineering company, Construction Company or the plant user. Planning and installation errors may impair the reliable function of the valves and pose a substantial safety hazard.

For the installation of valves into a system, the same instructions are valid as for the connection of pipes and similar piping components. For the transport to the installation site please read the information provided in Section 4 of this manual.

 <b>Note</b>	<p><b>Gate valves</b> which are to be installed in a horizontal pipeline should, if possible, be installed with the stem pointing upwards. The valves can also be installed in vertical or horizontal pipelines with other stem positions, but this makes the maintenance much more difficult.</p> <p>Inclined or horizontal installation positions (for example in vertical pipelines) are permitted if the actuator is adequately supported.</p> <p><b>Swing check valves</b> should be preferably installed in horizontal pipelines. If these valves are installed in vertical pipelines, the flow direction must be upwards.</p>
 <b>Warning</b>	<p>To avoid damage to gate valves with welded ends: During the welding of the valves into the piping system, the welding procedure shall be performed in such a way that the applied heat energy is limited and distortion of the valve body is avoided. Therefore, larger sizes shall be welded in alternating procedures once from one side and then from the other to avoid distorting the valve body.</p> <p>During the welding procedure, the gate valve shall be kept in the open position until the weld conjunction has cooled down to &lt;math&gt;&lt;100^{\circ}\text{C}&lt;/math&gt;.</p>
 <b>Life Threatening</b>	<p>Should a valve be retrofitted with a gear operator, then the connection interface, the nominal moment and the rotation direction must be adapted to the valve.</p> <p><b>The valve shall be closed by turning the hand wheel clockwise. Negligence of this warning can be life-threatening and/or cause damage to the piping system.</b></p>

Hand wheels:

 <b>Danger</b>	<p><i>Hand wheels are neither "step boards" nor "ladders".</i> Heavy loads shall not be placed on hand wheels; as this can damage or destroy both the hand wheel and/or the valve.</p>
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# Operating Instructions BA 219-HP High Pressure Gate, Globe and Check Valves

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## 7.2 Working steps

- ⇒ Transport the valve in its protective packing to the installation site and unpack the valve just before fitting it into the piping system. This ensures that the valve is protected against contamination.
- ⇒ Inspect the valve for possible transport damage. Damaged valves shall not be installed.
- ⇒ Before installation a functional test shall be performed. The valve must close and open correctly. Any noticeable functional failures must be repaired before the commissioning of the valve. Please contact the manufacturer at the address listed in Section 10.
- ⇒ Make sure that only valves are installed whose pressure rating, type and dimensions of connections correspond to the operating conditions. In this regard, please also see the related marking of the valve.

 <b>Life Threatening</b>	<p>The valves must be operated inside the permissible operating range, especially with regards to pressure and temperature. The limits are indicated on the name plate. Valves whose admitted pressure-temperature range is not sufficient for the operating conditions shall not be used. For materials or pressures or temperatures not indicated in the above-mentioned name plate a, a release note from the manufacturer is mandatory.</p> <p><b>Failure to comply with this warning can be life-threatening and/or cause damage to the piping system.</b></p>
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- ⇒ The connections of the pipeline shall be in complete alignment with the end connections of the valve and have plane-parallel ends.
- ⇒ Before installation, both the valve and the connecting pipe must be carefully cleaned to remove dirt, contaminations and especially any hard foreign particles.
- ⇒ The flow direction of valves is optional. However, for special designs with relief holes, the direction indicated by the arrow on the body shall be observed.
- ⇒ When inserting the valve (and the flange gasket) into an existing piping system, e.g. in case of replacement, the distance between the pipe ends must be measured in such a way that the sealing surfaces of the flanges and the gaskets will not be damaged.

### **For gate valves with welded ends:**

- ⇒ The welded ends of the valve shall be in true alignment, plane parallel and must be similar to and suitable for the pipe material – please see type plate on the valve. Opposite welded ends must match each other as far as diameter and weld joints are concerned.
- ⇒ Responsibility for the welding the valve into the piping and for any heat treatment required lies with the contractor or the plant user.
- ⇒ When welding is performed in a professional manner, it can be certain that no considerable tension will be created in the piping section or be transferred to the valve nor will the valve body be distorted due to unilateral heat exposure during the welding procedure. Only temperatures of < 300°C, measured on the body wall, are permitted.
- ⇒ Weldings must be performed in a professional manner
- ⇒ Welding cables shall be affixed to the pipeline and not to the valve.

 <b>Warning</b>	<p><b>Negligence of this warning can cause distortion to the valve body.</b> Even 1/10 mm of permanent distortion in the seat area of the valve can result in the valve becoming unusable.</p>
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# Operating Instructions BA 219-HP High Pressure Gate, Globe and Check Valves

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## 8 Pressure Test of the Piping Section

For the pressure test of valves, the same instructions are valid as for the piping system. In addition the following shall be considered:

- ⇒ Newly installed piping systems shall be carefully flushed clean to remove all foreign particles.
- ⇒ The test pressure of an **opened valve** shall **not exceed the Shell test pressure according to the nameplate**. The test pressure of a **closed valve** shall **not exceed 1.1 times the value of the design pressure according to the name plate**.

## 9 Commissioning, Normal Operation

### 9.1 Commissioning

During the start-up phase of a piping section in which **a valve is installed in closed position or as final shut-off device**, it must be ensured that at temperatures of  $>100^{\circ}\text{C}$  – especially for valves  $>\text{DN } 300$  – that the handled medium will be slowly fed-in. Otherwise the valve body could become distorted and the valve could leak.

### 9.2 Normal Operation

Turning the hand wheel clockwise closes the valves and turning the hand wheel anticlockwise opens the valve. Normal hand force is sufficient for the operation of the hand wheel. Only for a tight closure or in the opening phase of the valve may increased hand force be briefly necessary.

The use of **extension rods, levers and similar items to increase the operation moment** is not permissible.

 <b>Note</b>	<p><i>Gate valves are <b>not suitable for operation in intermediate position</b>.</i></p> <p>Gate valves shall only be used in their final position, which is either completely opened or completely closed. Opening and closing of gate valves shall be performed smoothly, without any interruption during operation.</p>
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Regular maintenance work is not required for valves; however, during the inspection of the piping section no leakage shall occur either on the flanged and/or screwed connections or in the stuffing box. For more information on leakages and repairs, please see Section 2 – <Safety Instructions> or please contact the manufacturer at the address listed in Section 10

We recommend that valves, which are operated in a permanently open position, be brought for a short period into the closed position three to four times a year.

## 10 Information

The data sheets, drawings and maintenance instructions and other information are also available in other languages. Please direct your request to:

[Info@phoenix-valvegroup.com](mailto:Info@phoenix-valvegroup.com) oder <http://www.phoenix-valvegroup.com>

or to the following address:

<p><b>PHOENIX Armaturenwerke GmbH</b> <b>STRACK Armaturenwerke GmbH</b> <b>Am Stadtbruch 6</b> <b>34471 Volkmarsen</b></p> <p><b>Tel.: 05693-988-0</b> <b>Fax.: 05693-988-140</b></p>
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# Operating Instructions BA 219-HP High Pressure Gate, Globe and Check Valves

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## Appendix A Manual and Installation Instructions for spring-loaded body pressure relief valve with bursting disc

### A.1 General

Heat buildup of trapped liquid volumes is a phenomenon which mainly affects gate valves.

If there are liquid residues in the valve body after the hydrostatic pressure test, for instance, or condensate has collected in the valve body due to a particular operating condition, there is a risk of an impermissible pressure rise when the body is heated up by hot water or steam in one or both of the adjoining pipes. The potential pressure rise depends on the temperature and the degree to which the body is filled and may rapidly reach unallowable values for the body.

The problem of heat buildup of trapped liquid volumes is particularly dangerous when the gate valve is fitted with a pressure seal, as the cover seal will become even tighter as the pressure rises.

On gate valves with flanged covers, unallowable pressure rises are relieved through leaks developing at the cover gaskets.

Gate valves with pressure seal therefore have to be equipped with a body safety valve whenever there is a risk of trapped liquid volumes heating up. This prevents excessive loads on the valve body and potential deformation under all operating conditions and thus ensures safety.

Heat-up potential differs among individual plants and must be checked by the customer for every individual gate valve. For this reason, body pressure relief valves must be ordered separately for every gate valve.

All gate valves with pressure seals are provided with an opened or closed connecting nozzle (part No. 13) with butt welding end for connection with pipe DN 15 / NPS ½.

 <b>Attention</b>	<p>The body pressure relief valve must not be welded directly to the nozzle (part No. 13). It has to be connected via a pipe (part No. 1.2) in a vertical, upright position outside the insulating material. The minimum distance between the body pressure relief valve and the insulation shall be 200 mm. The pipe (part No. 1.2) is not included in our scope of supply.</p> <p><b>Body pressure relief valves shall only be used to protect valve bodies, not piping systems, etc.</b></p>
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 <b>Warning</b>	<p>The pressure relief valves are designed to discharge (blow off) vertically downwards. The area around the blow-off point shall be marked as a hazardous area by the operator (e.g. warning sign) or suitable protective equipment shall be used.</p>
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The body pressure relief valve is available in three different designs:

- I. **Design 1 Spring-loaded body pressure relief valve with bursting disc**
- II. **Design 2.0/2.1 Spring-loaded body pressure relief valve with bursting disc and drain nozzle**
- III. **Design 3 Spring-loaded body pressure relief valve with bursting disc and blocking and lifting system,**

All designs are shown in section A.5.

Alternatively, the gate valve can also be supplied with pressure relief hole (in seat or in wedge) or an external relief pipe (each on the inlet side). In this case, however, the gate valve can be used for one flow direction only.

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## A.2 Design and function

The spring-loaded body pressure relief valve with bursting disc consists mainly of two assemblies:

- bursting disc with related fixing elements
- spring-loaded body pressure relief valve, connected in series with the above

The design of the spring-loaded body pressure relief valve with bursting disc is shown in the drawing.

The disc (part No. 2) is pressed onto the stellited seat of the bushing (part No. 4) via the stem (part No. 7) and the ring (part No. 5) by an adjustable spring pack (part No. 11), thus closing the safety valve.

The necessary tension of the cup springs is adjusted by means of the screw-type bushing (part No. 4). A needle bearing (part No. 1) facilitates this procedure. The screw-type bushing (part No. 4) is locked with the stud (part No. 10).

The blowing-off pressure is always set at the factory and stamped onto the body pressure relief valve. It depends on the valve type, the operating data and the max. allowable load on the body.

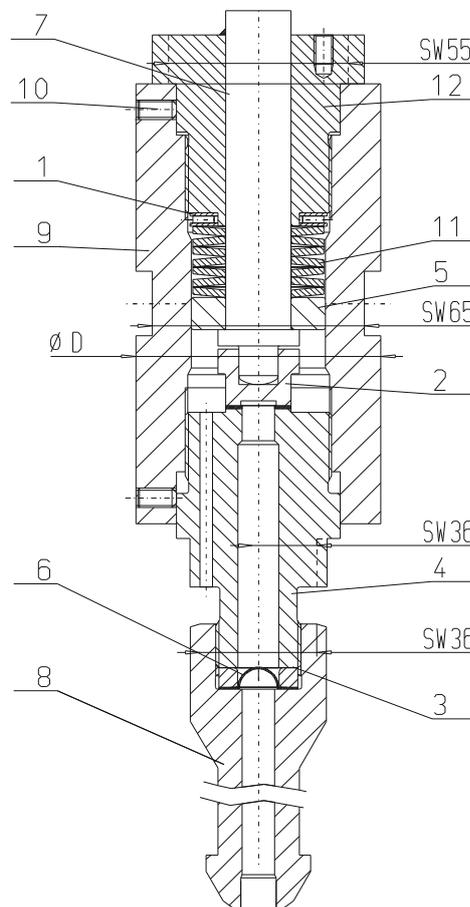
Setting the blowing-off pressure and testing the pressure relief valve is performed in a special test stand on the basis of work instructions or instructions specified in the parts list. The setting can only be changed in the manufacturer's factory.

The bursting disc (part No. 6) is clamped between the nozzle (part No. 8) and the bushing (part No. 4) and sealed by means of the ring (part No. 3).

If the bursting disc is ruptured due to excessive pressure in the body of the gate valve, the space between the bursting disc and the seat of the body pressure relief valve will be pressurised as well.

The disc is then lifted off the seat and the body pressure relief valve blows off the excess pressure, thus relieving the gate valve body. After this process the body pressure relief safety valve will close again.

In spite of the damaged bursting disc, the gate valve may continue to operate until the next revision, due to the fact that the body pressure relief valve connected in series to the bursting disc is still in operation. The bursting disc, however, will have to be replaced then. A small blotch of paint at the passage of the stem (part No. 7) through the threaded bushing (part No. 12) serves as a visual indicator of the fact that the body pressure relief valve has responded and the bursting disc must have been destroyed, as the blotch of paint will rupture when the spring-loaded body pressure relief valve responds. We therefore recommend checking the condition of the paint blotch at regular intervals. The paint blotch has no influence on the functioning of the body pressure relief valve.



 <b>Note</b>	<p>A ruptured bursting disc always indicates an excessive pressure rise. This malfunction should be investigated before replacing the bursting disc, to avoid negative consequences on the functioning of the gate valve.</p>
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# Operating Instructions BA 219-HP High Pressure Gate, Globe and Check Valves

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## A.3 Assembly

The body pressure relief valve with bursting disc is always supplied fully assembled, i.e. with the bursting disc installed.

Every gate valve with pressure seal is supplied with a closed or opened connecting nozzle (part No.13) with butt welding end for connection with pipe DN 15 / NPS ½.

The nozzle position is shown in A.6. The material of the connecting connecting and of the pressure relief valve's nozzle (part No. 8) is mentioned on the order documents and data sheets for every delivered gate valve.

Other materials on request. The body pressure relief valve is supplied loosely attached to the gate valve, so that it can be easily adapted to the constructional requirements on site. When welding the body pressure relief valve to the gate valve, make sure that it is fixed in an upright position, otherwise there is a risk of the seat being damaged or contaminated by possible condensate residues (see A.6).

If the gate valve is equipped with an insulating jacket, the body pressure relief valve must be located outside and at a distance of at least 200 mm from the insulation. The body pressure relief valve is then cooled by the surrounding air, which reduces the thermal load.

If the connecting nozzle (part No. 13) is closed, open it by cutting off the nozzle end (to dimension 70) and machine to obtain a welding groove (see A.6), before welding on the body pressure relief valve.

When machining the welding groove on the connecting nozzle (part No. 13) and the pipe (part No. 1.2), absolute cleanliness is essential to avoid contamination of the body pressure relief valve and thus ensure tightness.

It is of utmost importance to make sure that the body pressure relief valve does not respond during system commissioning (e.g. pressure test of the pipeline), in order to prevent damage to the seating surfaces by foreign particles (e.g. scale).

For this purpose see Design 3, the body pressure relief valve can be locked in a closed position with the unit for blocking/lifting (see A.5) being mounted on the threaded bushing (part No. 12). The stem (part 7) pushes the disc (part 2) in the closed position and will reliably shut off the valve.

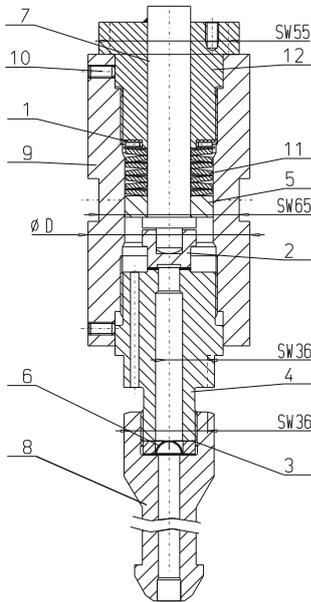
 <b>Attention</b>	<b>It is of paramount importance that this lock be removed after the pressure test! Therefor remove the coupling and rise the upper stem connected to the handwheel.</b>
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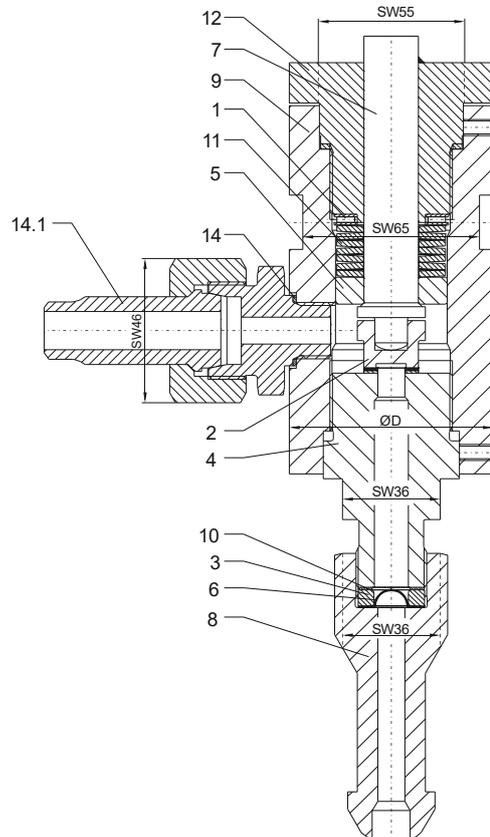
# Operating Instructions BA 219-HP High Pressure Gate, Globe and Check Valves

## A.5 Available designs for spring-loaded pressure relief valves

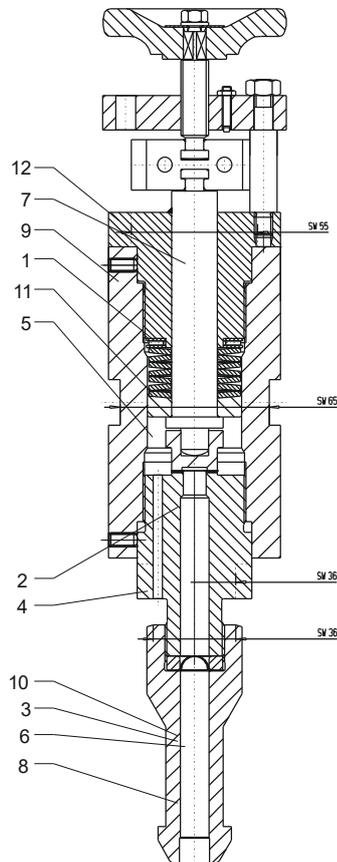
**Design 1** Spring-loaded body pressure relief valve with bursting disc



**Design 2.0/2.1** Spring-loaded body pressure relief valve with bursting disc and drain nozzle



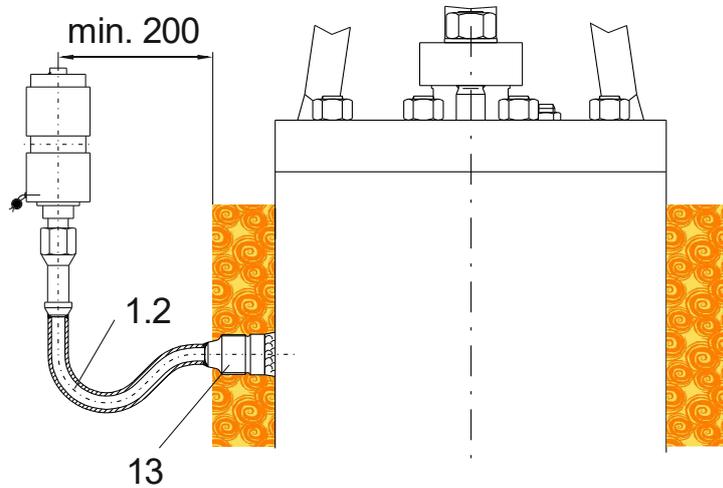
**Design 3** Spring-loaded body pressure relief valve with bursting disc and blocking and lifting system



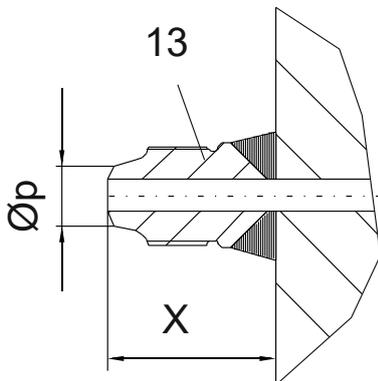
# Operating Instructions BA 219-HP High Pressure Gate, Globe and Check Valves

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## A.6 Assembling / Fitting the spring-loaded body pressure relief valve



The pipe (1.2) between connecting nozzle (13) and body pressure relief valve is not included in our scope of supply.



Øp Pipe dimensions
Ø21,3 x 3,6
Ø21,3 x 3,73
Ø21,3 x 4,5
Ø21,3 x 4,78