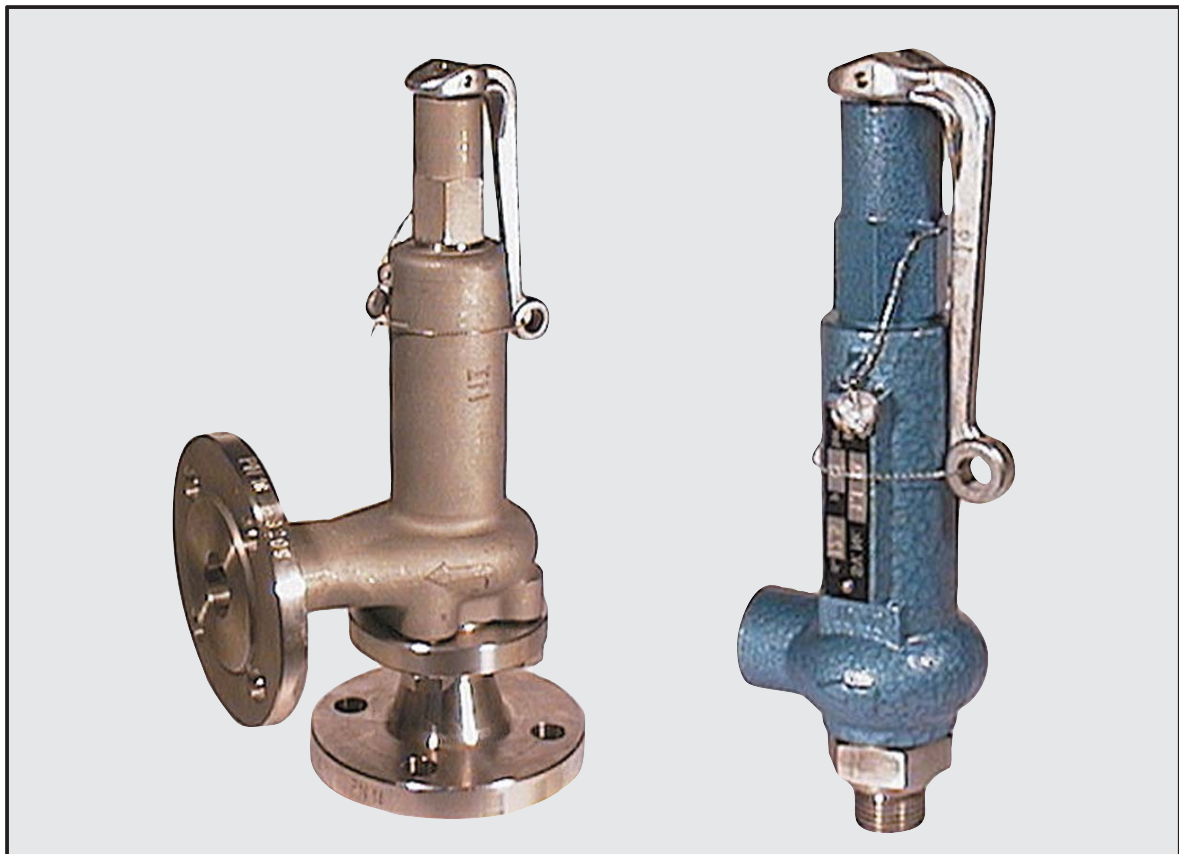




*Qualität von Anfang an.*

# Original Operating Manual Pressure Relief Valves

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Edition: 02/11

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## 1 Foreword

Dear customer,  
Dear assembler / user,

these operation and installation manuals are intended to give you the knowledge, which is necessary for you to be able to carry out the mounting and adjustment of the Pressure Relief Valves rapidly and correctly.



Please read these instructions carefully and pay particular attention to the advice and warning notes.

Only instructed and qualified mechanician should mount, adjust or maintain the Pressure Relief Valves.

If you have any questions in relation to the Pressure Relief Valves we shall be pleased to answer them.

The telephone number will be found on the inside cover of these operation and installation manual.

Yours  
**END-Armaturen GmbH & Co. KG**

### 2 General advice

#### 2.1 Validity

These mounting and installation manual is valid for the standard version of the Pressure Relief Valves.

#### 2.2 Inward monitoring

Please check

- directly after delivery the Pressure Relief Valves for any transport damages and deficiencies
- with reference to the accompanying delivery note the number of parts.

Do not leave any parts in the package.

#### 2.3 Complaints

Claims for replacement or goods which relate to transport damage can only be considered valid if the delivery company is notified without delay.

In case of returns (because of transport damage / repairs), please make a damage protocol and send the parts back to the manufacturer, if possible in the original packaging.

In case of a return, please mention the following:

- Name and address of the consignee
- Stock-/ ordering-/ article-number
- Description of the defect

#### 2.4 Warranty

For our ball valves we give a guarantee period in accordance with the sales contract. The end of the normal duration of life of the wearing parts represents no defect.

The warranty and guarantee rules of **END-Armaturen GmbH & Co. KG** are applicable.

### 2.5 Symbols and their signification



Paragraphs which are identified with this symbol contain very important advices; this also includes advices for averting health risks. Observe these paragraphs without fail!



Paragraphs which are identified with this symbol contain very important advices, this also includes how to avoid damage to property. Observe these paragraphs without fail!



This symbol indicates paragraphs which contain comments / advices or tips.



This spanner identifies the description of actions which you should carry out.

### 3 Safety advice

Depending on the technical circumstances and the time under and at which the armatures and valves are mounted, adjusted and commissioned, you must take into account particular safety aspects in each case!

If, for example, a pneumatic actuator works a slide in an operational chemical plant, the potential hazards of commissioning have another dimension from that when this is only being carried out for test purposes in a „dry“ part of the plant in the assembly room!

Since we do not know the circumstances at the time of the mounting/adjustment/commissioning, you may find advices on hazards in the following descriptions which are not relevant to you.

Please observe (only) the advices which applies to your situation!

#### 3.1 Personal advice

##### 3.1.1 Safety advices for mounting



**We wish to point out expressly that the mounting, adjusting and at accessories the pneumatically and electrical installation of the armatures and valves must be carried out by trained specialist personnel having mechanical, pneumatically and electrical knowledge!**



**Secure that the machine / plant come up to the Machinery Directive after the mounting and installing of the armatures and valves.**



**Switch off all the devices / machines / plant affected by mounting or repair.  
If appropriate, isolate the devices / machines / plant from the mains.**



**Check (for example in chemical plants) whether the switching off of devices / machines / plant will cause potential danger.**



**If appropriate, in the event of a fault in the armature / valve (in a plant which is in operation) inform the shift foreman / safety engineer or the works manager without delay about the fault, in order, for example, to avoid an outflow / overflow of chemicals or the discharge of gases in good time by means of suitable measures!**



**Before mounting or repairing, remove the pressure from pneumatic / hydraulic devices / machines / plant.**



**If necessary, set up warning signs in order to prevent the inadvertent starting up of the devices / machines / plant.**



**Observe the respective relevant professional safety and accident prevention regulations when carrying out the mounting / repair work.**



**Check the correct functioning of the safety equipment (for example the emergency push off buttons/ Safety Valves, etc)!**

### 3.1.2 Safety advice for adjustment / starting



**As a result of the starting (pneumatic, electric or by hand) of the armatures and valves the flow of gases, steam, liquids, etc. may be enabled or interrupted!** Satisfy yourself that, as a result of the starting or the test adjustment no potential hazards will be produced for the personnel or the environment!



**If necessary, set up warning signs in order to prevent the inadvertent starting up or shutting down of the device / machine / plant.!**



**By ending the adjustment check the correct function of the armature.**



**Check the right function of all safety devices (for example emergency push off buttons / Safety Valves)!**



**Carry out the starting and the adjustments only in accordance with the instructions described in this documentation!**

### 3.1.3 Safety advice for maintaining / repairing



**Do not carry out any maintenances / repairs if the armature will be under pressure.**

Before disassembling or a armature or valve some essential points should be clarified!

- Will the armature/valve to be disassembled be replaced by another immediately?
- If appropriate, does the production process of the plant needed to be stopped?
- Is it necessary to inform specific personnel about the disassembly?



**If necessary, inform the shift foreman/ safety engineer or the manager about the maintenance or repair without delay in order, for example, to avoid an outflow/ overflow of chemicals or a discharge of gases in good time by means of suitable measures!**



**Observe that some valves / armatures are able to enclose the pressured medium e.g. the ball in the ball valve. You have to relieve the pressure in the pipes in which the armature/valve is mounted.**



**Switch off pilot pressure and the power supply and relieve the pressure in the pipes.**



**If necessary, set up warning signs in order to prevent the inadvertent starting up or shutting down of the device / machine / plant.!**



**In case of defect in the armature/valve make contact to the supplier. The telephone number will be found on the back cover of these mounting and installation manual.**



**If you ascertain a damage of the armature/valve, isolate the device from the mains. Please observe the safety advices.**



**Do not mount, start or adjust the armature/valve if itself, the pipes or a mounted actuator will be damaged.**



**After the maintenance or repair check the right function of the armature/valve and the tightness of the pipe connections.**

### 3.2 Device safety

The armatures/valves

- are quality products which are produced in accordance to the recognized industrial regulations.
- left the manufacturer`s work in a perfect safety condition.



**In order to maintain this condition, as installer / user you must carry out your task in accordance with the description in these instructions, technically correctly and with the greatest possible precision .**

We assume, as a trained specialist you are having mechanical and electrical knowledge!



**Satisfy yourself that the armatures/vales will only be used within their admissible limiting value (see the technical data) .**

**The armatures/valves must be used only for a purpose corresponding to their construction!**



**The armatures/valves must be used within the values specified in the technical data!**

**The operating of the armature/valve outside the nominal temperature range could destroy the sealing and the bearings.**



**The operating of the armatures/valves outside the nominal pressure range could destroy the inner parts and the body.**

**Never remove a cap or a other component part if the armature/valve will be under pressure.**



**Do not mount, start or adjust the armature/valve if itself, the pipes or a mounted actuator will be damaged.**



**After the maintenance or repair check the right function of the armature/valve and the tightness of the pipe connections.**



**Also check the function of the accessories e.g. actuators, limit switches, etc.**

## 4 Identification of Pressure Relief Valves



The Pressure Relief Valves have no type-test approval. Pressure Relief Valves are according to the Pressure Equipment Directive 97/23/EC.

Pressure Relief Valves with nominal diameter  $DN \leq 25$  may not be furnished with a CE- mark (article 3, paragraph 3 of the directive 97/23/EC).

**Pressure Relief Valves bear the following markings:**

- embedded in the cast surface or stamped into the surface:
  - nominal width
  - nominal pressure
  - material
  - flow direction
  
- indicated on a nameplate (sometimes stamped into the surface):
  - smallest flow diameter
  - set pressure
  - type



The Pressure Relief Valves will always be set by the manufacturer.

### 5 Pressure Relief Valves

#### 5.1 General

**Before you are mount, adjust, operate or disassemble a Pressure Relief Valve you have to read**



→ Safety advices

**If you have not read the safety advices until now, read this important advices now and turn back to this point..**

#### 5.2 Corresponding use



**Pressure relief valves are no equipment parts with safety function as defined at Art.1 of the European Directive 97/23/EC.**



**In contrast to a safety valve - the last component in the chain to prevent a pressure device from bursting - a pressure relief valve is a internal component designed to guarantee trouble-free operation of the system. Pressure relief valves have to protect the downstream safety valves. Pressure relief is created by the relief valve responding before the safety valves responds. Therefore, the pressure relief valve`s operating range must be below the set pressure of the safety valve.**



**It should only be used clean liquids and gases on which the material of the Pressure Relief Valve will be resistant. Pollution and using outside the nominal pressure and/or the nominal temperature range should causes damages on the Pressure Relief Valve especially on the seals.**

#### 5.3 Operation

**Pressure Relief Valves do not need any special operation. But the ventilation should be operated in periodical turns.** (see chapter 5.6. „maintenance“).

##### 5.3.1 Advice for storage and starting of Pressure Relief Valves

After transport and storage for some time at armatures with a formerly adjusted action pressure a delayed opening at the first time will be normal. This effect causes by the pasting up seat and cone of a valve. This will be happen at sealing areas metal / elastomer and also at sealing areas metal / metal.

After mounting the valve the sealing areas will be loosen by actuating the ventilation knob / lever and feeding the valve with compressed air and increasing the pressure range above the action pressure.

After this procedure the armature will be serviceable with the formerly adjusted action pressure in consideration for the permitted increasing pressure / closing pressure.

## 5.4 Mounting / Disassembly



**Pressure Relief Valves are high-grade armatures, which will be handle with great care. The sealing areas at the seat and the cones are hardened resp. tempered and abraded. The Pressure Relief Valve will be damage by inexpert handling. Therefore observe the following notes:**

- In- and outlet port have to been close for delivery.
- Do not drop the Pressure Relief Valves.
- You have to avoid the insert or pollution during the mounting or during working.
- The tightness of the Pressure Relief Valve could be impaired by using hemp, PTFE-ribbon or something similar like that.
- If the Pressure Relief Valve will be painted you have to observe that no sliding part will be come into contact with the paint.



The hole system has to be rinsed before installation of the valve. If the plant should not be sufficiently clean in the case of an appropriate assembly, the valve may be leaky already upon first response.



The assembly of the threaded valves should be carried through without using hemp or PTFE- tape. Metal sealing rings are to be preferred.



Pressure Relief Valves are to be installed always in a vertical direction, while taking into account the flow direction, that is with spring bonnet standing upright.



To ensure a satisfactory operation of the Pressure Relief Valves they must be installed in such a way that the Pressure Relief Valve is not exposed to any impermissible static, dynamic or thermal loads.



**It is not permitted to have the possibility to make Pressure Relief Valves ineffective by blocking devices, neither upstream nor downstream of the valve.**

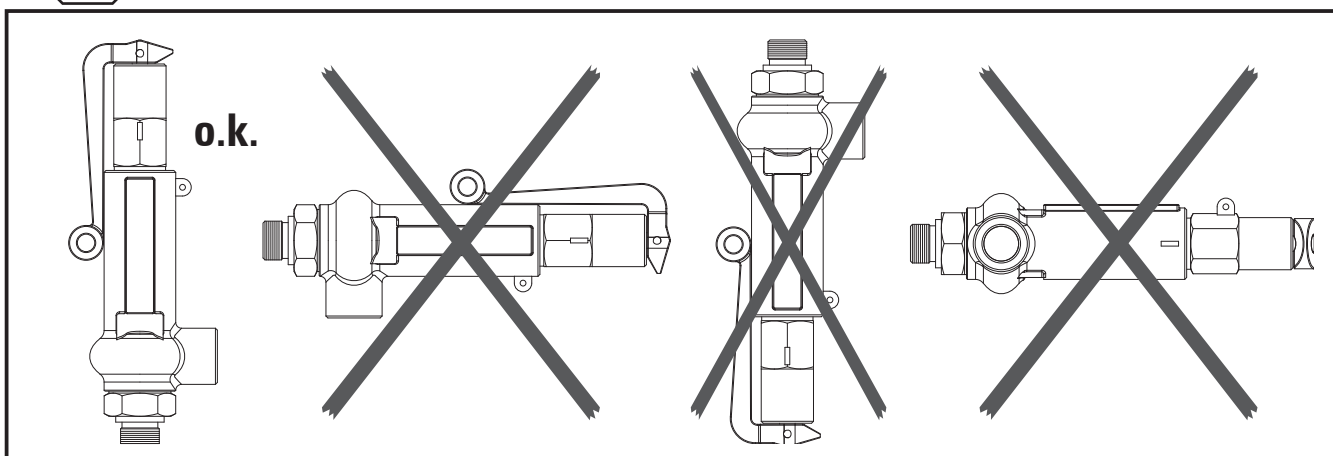


Fig.4.1 - Pressure Relief Valves, Installation (Fig. shows Art. NG301023 with head „A“)

### 5.4.1. Inlet pipe



The feed nozzle for the valve must be as short as possible and must have at least the same nominal width as the valve.



The pressure loss in the inlet pipe of the Pressure Relief Valves should not exceed 3% of the set pressure.

## 5.4.2. Blow-off pipe



Suitable protective measures should be taken at the installation point in the case of any Pressure Relief Valves posing a direct or indirect risk to persons or the environment as a result of discharge of the operating medium. Precautions must also be taken against fumes escaping through the relief vents in the spring cap.



Blow-off pipe for vapours and gases are to be installed in a rising position, for liquids in a falling position.



The blow-off pipe of the Pressure Relief Valves must be designed to ensure that the required mass flow can be discharged during the blowing-off process. The cross section should be equal at least as the feed-out cross section of the Pressure Relief Valve.

Inside the blow-off pipe the counter pressure of max. 10% of the set pressure should not be exceeded.



Precautions must be taken by means of suitable devices to ensure that foreign bodies or rain water can not penetrate into the blow-off pipe.



The discharging of the blow-off pipe must not present a risk. Risks caused by emerging fluid are to be prevented by suitable measures.

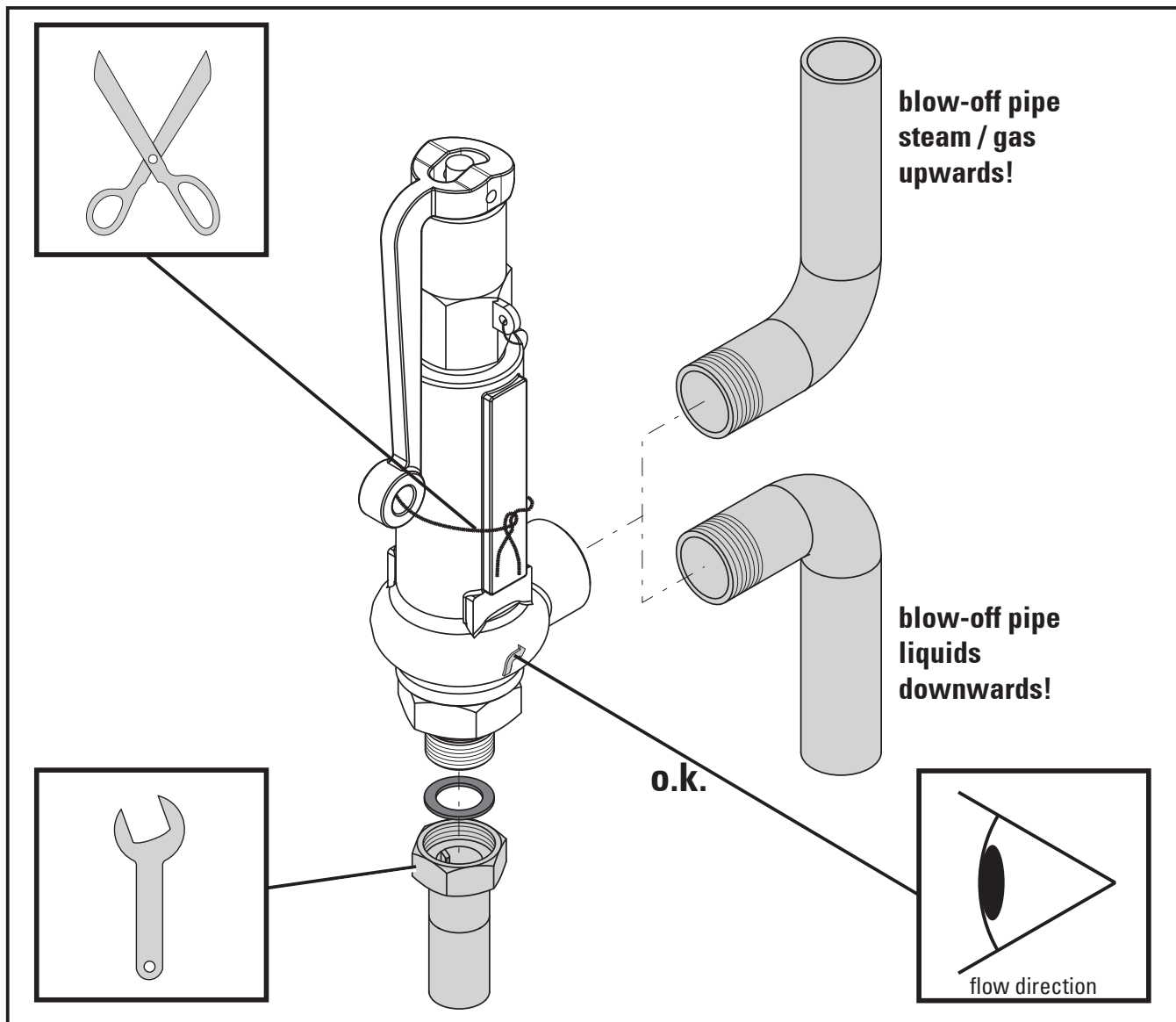


Fig. 4.2 - Pressure Relief Valves, Mounting with threaded connection (Fig. shows Art. NG301023 with head „A“)

## 5.4.3. Open discharge Pressure Relief Valves



The spring bonnet of the open discharge Pressure Relief Valve has to be protected against pollution.



**In case of blowing-off by a open discharge Pressure Relief Valve the operating medium will flow off through the spring bonnet. Therefore open discharge safety will only be used for non-toxic and non-flamable media.**

Appropriate protection devices must be installed to protect people or the environment against hazards.

## 5.4.4. Condensate diversion



**Any fluid or condensate is not permitted to remain in the Pressure Relief Valve housing since the functioning of the Pressure Relief Valve is impaired as a consequence.**



The discharging of the condensate is usually effected via the blowing off pipe. At the lowest point a draining tube with sufficient dimensions must be installed.



Hazard-free removal of the condensate or medium discharge must be ensured. The body, pipes and silencers must be protected against freezing.

## 5.4.5 Mounting with threaded connection



Before lay on sealing compounds, check the hardly screwing by the pipes into the valve body.



The assembly of the threaded connection should be carried out by using metal sealing rings.



Screw the pipes into the connection ends of the Pressure Relief Valve.



Check the tightness of all connections.

## 5.4.6 Mounting with flanged connection



**In the following description we assume that you have mounted the flanges at the end of the pipes and the Pressure Relief Valve (welded flanges) and they are cooled down.**



Insert the Pressure Relief Valve and the flange seals between the flanges.



Align the flange boring and put fit screws through the boring.



Put fit nuts onto the screws and tighten them equally and crosswise. Observe the max. torque of the screws.



Check the tightness of all connections.

## 5.4.7 Disassembly

Before you disassemble the Pressure Relief Valve you have to read the



→ Safety advice

If you have not read the safety advices until now, read this important advices now and turn back to this point.



Prior to the disassembly of a Pressure Relief Valve, the device is to be made unpressurized.



Residues of fluid in a Pressure Relief Valve or the spring bonnet bear a great risk of burning and poisoning. Prior to the disassembly of a Pressure Relief Valve from the device, it must be determined which fluid might be contained in the Pressure Relief Valve, and corresponding safety measures have to be taken.

## 5.5. Commissioning



After transportation and prolonged storage of the Pressure Relief Valves with a pre-set reaction pressure it is possible that there will be a delayed initial opening due to what is called a sticky effect of the seat and the cone of the Pressure Relief Valve.



After the valve has been installed the sealing surfaces are separated from each other through an increased pressurization above the release pressure as proper as well as through the activation of the release of the sealing surfaces. Subsequently, the Pressure Relief Valve is again fully functioning with the pre-set reaction pressure, taking into account the permissible pressure increase / closing pressure.

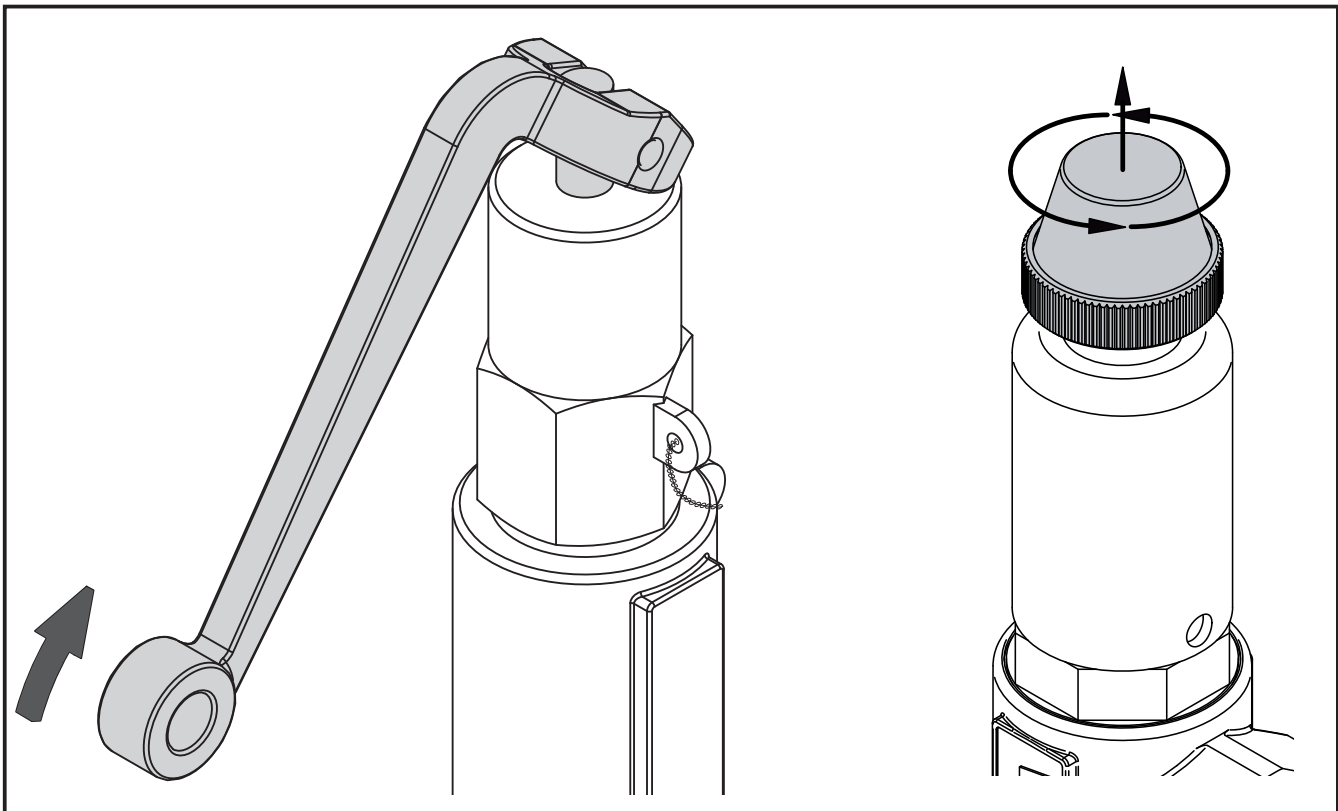


Fig. 4.3 - Pressure Relief Valve, Operating of the ventilation

## 5.5.1 Pressure Relief Valve with lifting device



A Pressure Relief Valve with a lifting lever will be secured by a binding wire. This locking device of the lifting lever is to be removed only after the installation has been completed.



Increase the pressure in the pipes to 85% of the set pressure.



Carry out the lifting either by means of a knurled nut above the spring bonnet or by actuating the lifting lever on the upper part of the Pressure Relief Valve.



In the event of minor leaks, which may be caused by contamination between the sealing surfaces, the valve can be made to blow off through lifting, for cleaning purposes.

## 5.5.2 Pressure Relief Valve without lifting device



Pressure Relief Valves without lifting device, like e.g. valves with head "C" (gas tight with cap) should be brought to the release pressure only externally with gas or at a 100% clean device.

## 5.6 Maintenance

**Before you maintain or shut down the Pressure Relief Valve you have to read the**



→ **Safety advice**

**If you have not read the safety advices until now, read this important advices now and turn back to this point.**



Pressure Relief Valves are designed regarding design and construction in such a way the an optimum of quality is achieved, and that they are easy to service. Therefore a minimum of care and maintenance for the Pressure Relief Valves is required.



**The maintenance work, however, is permitted to be carried out only by trained personnel.**

### 5.6.1 Test intervals



**In steam generating equipment, testing the ease of movement of Pressure Relief Valves must be carried out at least every 4 weeks in compliance with TRD601.**



Test intervals for other applications must be determined by the use in compliance with the operating conditions.



Tests and examinations are to be executed at least during each internal and external examination of the pertaining pressure device.

## 5.6.2 Regular releasing of the Pressure Relief Valve



It is recommended to make the Pressure Relief Valve blow off from time to time through lifting, in dependence for the respective system, in order to check the correct operation of the Pressure Relief Valve. The lifting device is not to be operated when in a pressure-free state.



For safety valves with lifting device you have to increase the pressure in the pipes to 85% of the set pressure.



Carry out the lifting either by means of a knurled nut above the spring bonnet or by actuating the lifting lever on the upper part of the Pressure Relief Valve.



Pressure Relief Valves without lifting device, like e.g. valves with head "C" (gas tight with cap) should be brought to the release pressure only externally with gas or at a 100% clean device.

## 5.6.3 Leaks



Leaks may be caused in the case of Pressure Relief Valves due to pollution between the valve disc and seat. By operating the lifting device small deposits of pollution can be effectively cleared from the valve disc and seat. (In doing this, a clear stroke of the valve stem must be achieved).



If it fails to remove the pollution by operating the lifting device, it must be assumed that the sealing surfaces are damaged. The damage can be removed by post-processing the sealing surfaces or by changing the seat seal.



**Repair work on Pressure Relief Valves is only to be carried out by the manufacturer or by officially approved specialist workshops authorized by the manufacturer.**



Leaks may also occur when the operating pressure is too close to the set pressure of the Pressure Relief Valve.

**The operating pressure of the device is to be at least 5% lower than the closing pressure of the Pressure Relief Valve.**





Qualität von Anfang an.

(1) **Declaration in conformity**  
(2) **as defined by Pressure-Equipment-Directive 97/23/EC**

(3) This declaration apply to the article groups with the nominal sizes:

Articles	Nominal size	Articles	Nominal size	Articles	Nominal size	Articles	Nominal size
<b>Gate valves</b>		BT	1/2" ... 1"	VN	1/4" ... 1"	CK3003	DN15 ... DN50
AA	1/2" ... 2"	BV	1/4" ... 3/4"	VO	DN25	CK5000	DN40 ... DN250
AB	1/4" ... 1"	CB	1/4" ... 2 1/2"	VS	DN15 ... DN25	CK5003	DN40 ... DN25
AC	1/8" ... 2"	CO-CO	1/2" ... 2"	VT	DN15 ... DN25	CK5100	DN40 ... DN50
AD	1/2" ... 2"	HF	1/4" ... 1"	ZA	1/4" ... 1", DN10 ... DN25	CK5200	DN40 ... DN50
AE	1/2" ... 1", DN15 ... DN25	HO	DN10 ... DN15	ZB	1/4" ... 1", DN15 ... DN25	CW5400	DN40 ... DN50
AV	1/4" ... 1"	IB	1/4" ... 2"	ZD	1/2" ... 1", DN15 ... DN25	DR	DN50 ... DN300
BE	3/8" ... 3"	IK	1/4" ... 1"	ZE	1/4" ... 1", DN10 ... DN25	EB	1/2" ... 1", DN15 ... DN25
BF	1/4" ... 3"	IL	1/4" ... 1"	ZF	1/4" ... 1"	MR	1/4" ... 3"
BS	1/2" ... 1 1/4"	IW	1/4" ... 1"	ZG	1/4" ... 1"	RG	DN15 ... DN25
CA5014	DN40 ... DN80	KA	1/2" ... 1"	ZH	1/2" ... 1"	TD	3/8" ... 3"
CA5015	DN40 ... DN50	KFE	3/8" ... 3/4"	ZK	DN15 ... DN25	TG	1/2" ... 2"
CA5214	DN40 ... DN32	NK	3/8" ... 4", DN10 ... DN100	ZL	1/4" ... 1"	TR	3/8" ... 4"
CD5010	DN15 ... DN25	PB	1/2" ... 2"	ZM	1/4" ... 1"	VB	1/4" ... 2"
CV3010	DN15 ... DN25	PD	1/2" ... 1"	ZP	DN15 ... DN25	ZR	DN15 ... DN200
CV5010	DN15 ... DN25	SK	1/2" ... 3", DN10 ... DN80	ZU	1/4" ... 1"	<b>Sight glasses</b>	
CV5020	DN15 ... DN25	TB	1/4" ... 1"	<b>Pipe fittings</b>		SG	1/4" ... 2", DN15 ... DN150
IC	1/4" ... 4"	TE	1/2" ... 2"	FG	1/8" ... 4"	<b>Strainer</b>	
MV	1/2"	TF	DN20 ... DN25	FS	DN15 ... DN150	AS	1/4" ... 1"
TC	1/4" ... 4"	TH	1/2" ... 1"	GE	Ø6 ... Ø20	AS	DN15 ... DN25
<b>Pressure reducer</b>		TT	3/8" ... 1"	GR	Ø8 ... Ø28	BG	3/8" ... 2"
ID	3/8" ... 3/4"	TV	3/8" ... 1"	GV	Ø6 ... Ø20	CU	DN15 ... DN250
MB	1/2" ... 2"	VD	1/4" ... 1"	TE	Ø6 ... Ø25	EA	1/2" ... 1", DN15 ... DN25
MC	1/2" ... 2"	VD	DN10 ... DN25	TV	Ø6 ... Ø20	IG	1/4" ... 4"
<b>Pressure relief valves</b>		VE	1/4" ... 1"	WE	Ø6 ... Ø38	KU	DN15 ... DN100
NG	3/8" ... 1", DN15 ... DN25	VF	1/2" ... 1/2"	WV	Ø6 ... Ø20	<b>Water-shock damper</b>	
<b>Ball valves</b>		VH	1/8" ... 1"	<b>Non-return valves</b>		TS	1/2"
AG	1/4" ... 1"	VH3100	1/2" ... 1"	AH	1/4" ... 1 1/2"		
BC	1/8" ... 3/4"	VK	DN15 ... DN25	AR	1/2" ... 1"		
BK	DN15 ... DN25	VL	1/4" ... 1"	BH	3/8" ... 3"		

and all variations of these articles

(4) of the company **END-Armaturen GmbH & Co. KG**  
D-32547 Bad Oeynhausen  
Germany

(5) Herewith we declare that the above-mentioned articles in the conditions of our delivery are in conformity with the regulations of Article 3 Part 3 of the directive 97/23/EG. These products bear no CE mark, but are in line to the good engineering practice designed and manufactured.

(6) Applied harmonized standards, in particular:

**DIN EN 12516:2005**

**Industriearmaturen - Gehäusefestigkeit**

(7) On behalf

Friedhelm König  
Technical Manager

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Bad Oeynhausen, 04. July 2011

Michael End  
Quality Manager

Declaration without signature or company stamp shall not be valid. The declaration may be circulated only without alternation. Extracts or alternations are subject to approval by END-Armaturen GmbH & Co. KG.



END-Armaturen GmbH & Co. KG





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(3) This declaration apply to the article groups with the nominal sizes:

Articles	Nominal size	Articles	Nominal size	Articles	Nominal size	Articles	Nominal size
<b>Butterfly valves</b>		NG	DN32 ... DN100	VO	DN32 ... DN200	<b>Non-return valves</b>	
HA	DN50 ... DN300	<b>Ball valves</b>		VS	DN32 ... DN200	AR	1 1/4" ... 2"
TA	DN40 ... DN300	AG	1 1/4" ... 2"	VT	DN32 ... DN100	CK3003	DN65 ... DN200
WA	DN50 ... DN300	BK	DN32 ... DN100	VU	4"	CK5003	DN32 ... DN200
WM	DN50 ... DN300	IK	1 1/4" ... 2"	ZA	1 1/4" ... 4"	CK5100	DN65 ... DN250
<b>Gate valves</b>		IL	1 1/4" ... 4"	ZA	DN32 ... DN100	CK5200	DN65 ... DN250
AB	1 1/4" ... 2"	IW	1 1/4" ... 2"	ZB	1 1/4" ... 2"	CW5400	DN65 ... DN250
AE	1 1/4" ... 3"	KA	1 1/4" ... 3"	ZB	DN32 ... DN50	EB	1 1/4" ... 3"
AE	DN32 ... DN80	PD	1 1/4" ... 2"	ZD	1 1/4" ... 4"	EB	DN32 ... DN80
CA5014	DN100 ... DN300	TB	1 1/4" ... 4"	ZD	DN32 ... DN100	RG1300	DN32 ... DN100
CA5015	DN65 ... DN300	TF	DN32 ... DN200	ZE	1 1/4" ... 4"	RG33xx	DN32 ... DN200
CA5214	DN40 ... DN200	TH	1 1/4"	ZE	DN32 ... DN100	RK	DN32 ... DN400
CD5010	DN32 ... DN200	VD	1 1/4" ... 4"	ZF	1 1/4" ... 4"	TD	4"
CV3010	DN32 ... DN150	VD	DN32 ... DN100	ZG	1 1/4" ... 2"	<b>Strainer</b>	
CV5010	DN32 ... DN200	VH	1 1/4" ... 2"	ZH	1 1/4" ... 2"	AS	1 1/4" ... 3"
CV5020	DN32 ... DN200	VH3100	1 1/4" ... 2"	ZK	DN32 ... DN100	AS	DN32 ... DN200
<b>Pressure reducer</b>		VK	DN32 ... DN200	ZL	1 1/4" ... 3"	EA	1 1/4" ... 3"
SD	3/4" ... 2"	VK/PN40	DN32 ... DN200	ZM	1 1/4" ... 2"	EA	DN32 ... DN80
<b>Pressure relief valves</b>		VL	1 1/4" ... 2", 3"	ZP	DN32 ... DN200		
NG	1 1/4" ... 1 1/2"	VN	1 1/4" ... 2"	ZU	1 1/4" ... 3"		

and all variations of these articles

(4) of the company **END-Armaturen GmbH & Co. KG**  
D-32547 Bad Oeynhausen  
Germany

(5) Herewith we declare that the above-mentioned articles in the conditions of our delivery are in conformity with the regulations of the Pressure Equipment Directive 97/23/EG.

(6) Applied conformity assessment procedure: Modul H.

(7) Notified body for conformity assessment PED an Quality-Management-System:



**Bureau Veritas S.A.**  
Paris / Frankreich  
Kennzeichen 0062

(8) Certificate numbers: Quality Management System: INT110198DE  
Certificate of System approval PED: 2011/70.10.1777/P

(9) Applied harmonized standards, in particular:

**DIN EN 12516:2005 Industriearmaturen - Gehäusefestigkeit**

(10) On behalf **END-Armaturen GmbH & Co. KG** Bad Oeynhausen, 07. July 2011

Friedhelm König  
Technical Manager

Michael End  
Quality Manager

Declaration without signature or company stamp shall not be valid. The declaration may be circulated only without alteration. Extracts or alternations are subject to approval by END-Armaturen GmbH & Co. KG.



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Qualität von Anfang an.

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N° INT80209DE