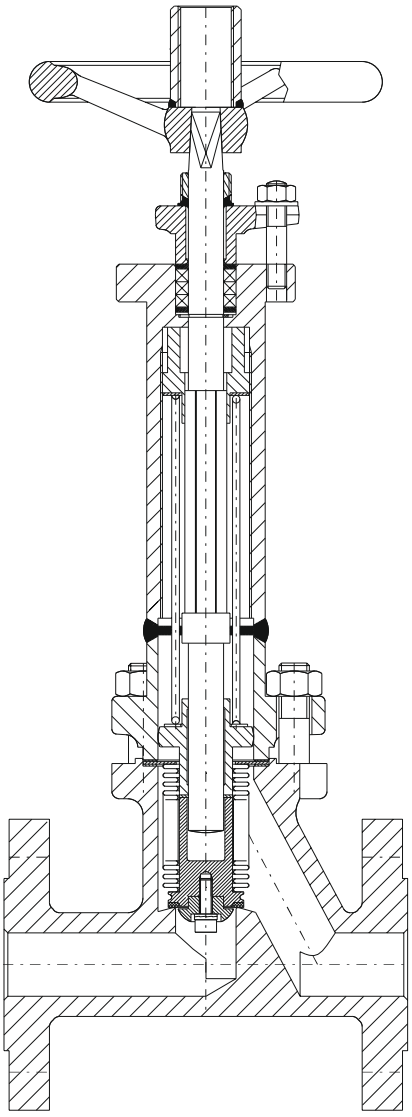
PHOENIX – Armaturenwerke GmbH

Instruction for Pressure Relief Valve
BA 125-ÜV-E

Edition 2023-08-00



Edition		00							
Date	Name	08/23	Wo						
Edition									
Date	Name								

Declaration of conformity acc. to Directive 2014/68/EU

The manufacturer	PHOENIX Armaturenwerke GmbH 34471 Volkmarsen
declares that the valves	**Pressure Relief Valve with bellows seal and secondary stuffing box seal types 141**

1. are pressure bearing equipments within the meaning of the EC Pressure Equipment Directive 2014/68/EU and in conformity with the requirements of this directive,

   Note: Pressure Relief Valves < DN 32 are not concerned by this directive

2. can only be used and operated under observance of the attached operation manual N° BA 125-ÜV.

Related standards:

DIN EN 16668	**Requirements and testing for metallic valves as pressure accessories** **Direction for pressure bearing body components** Body- and Bonnet Material acc. AD 2000 AD-A4 with Inspection Certificate 3.1 to DIN EN 10204
DIN EN 19	**Marking of metallic valves**

Description of type and technical features:

PHOENIX-type datasheets <141 >

NOTE: This manufacturer declaration is valid for all variants of types mentioned in the PHOENIX catalogue

Applied procedure for the rating of the conformity:

to Annex II of the Pressure Equipment Directive 2014/68/EU Module „H“

Name od the notified body:	*Identification N° of the notified body:*
LRQA Deutschland GmbH	**0525**

Modifications on Pressure Relief Valves and/or components with consequences for the technical features of the valve, of the <defined use> acc. to section 1 of the operation instruction and which will modifiy the valve essentially cancel these declarations.

According to the guidelines for the application of the Council`s general direction 2014/34/EU of 26.02.2014 for adapting legal regulations valid in the single member countries and dealing with appartuses and safety systems and their application in areas endangered by explosion, Pressure Relief Valves do not have an integrated potential source of sparks as revealed by the danger of releasing sparks analysis. Due to this, Pressure Relief Valves are not subject to the guidline mentioned above.

Volkmarsen, 31.08.2023

Gunter Wodara, CTO

0 Introduction

This instruction shall support the user for installation, operation, and maintenance of **Pressure Relief Valve types 141**.

Attention	**The non observance** of the following attention and warning notes **might cause dangers** with the consequence that the manufacturer's guarantee becomes void. For questions in this regard contact the manufacturer, adresses see section 8.

1 Defined use

After their installation in a piping system (either between flanges or by welding) the use of the Pressure Relief Valve **types 141** is exclusively defined as to stop or convey the flow of media within the admitted pressure and temperature limits by manual operation.

The safety instructions of section 2 <safety instructions> shall be observed. The use of these valves for media with solid matters, especially with wearing particles is not re-commended.

The design document <Pressure-Temperature-Tables TDB3/1 to 3/5> (see section 8.1 <Information>) shows the admitted pressure-temperature-range for these Pressure Relief Valves.

2. Safety instruction

2.1 General safety instructions

Valves are subject to the same safety impositions which are valid for the piping system where the valves shall be installed. Therefore, the present instruction mentions only such kind of safety notes which must additionally be considered for valves.

2.2 Safety instructions for the user

It is not within the responsibility of the manufacturer and must be safeguarded by the user of the Pressure Relief Valve that.

⇒ the valve is only used as required by the "defined use" as described in section 1,

Danger to life	**The disregard of this ordinance can provoke danger to life and cause damages in the piping system.**
Danger to life	Valves whose admitted pressure-temperature range (="Rating") is not sufficient for the operating conditions shall not be used. For materials or pressures or temperatures not indicated in the a.m. **<Pressure-Temperature-Tables TDB 3/1 to 3/5>** a release note from the manufacturer is mandatory. **The disregard of this ordinance can provoke danger to life and cause damages in the piping system.**
Note	Before changing the setting, pressures or change of scope is the manufacturer of contact, see section <8 Information>
Danger	Pressure Relief Valve are manufactured according to customer specifications for a one-set pressure provided: An accidental change of set pressure is achieved by design measures to ensure the manufacturer.

Danger	***Protection against wrong use of the Pressure Relief Valve:*** It must be absolutely assured that the selected materials of the wetted parts of the Pressure Relief Valve are suitable for the handled media. The manufacturer is not responsible for damages of the Pressure Relief Valve caused by corrosive agents. **The disregard of this ordinance can provoke danger for the user and cause damages in the piping system.**

⇒ The Pressure Relief Valve will be installed workmanlike in the piping system, especially such types of valves which are fitted into the piping system by welding. The wall thickness of the valve body shall be calculated in such a way that an additional load F_z within the usual order of magnitude ($F_z = \pi/4 \cdot DN^2 \cdot PS$) is taken into account for such a workmanlike mounted piping system.

(PS = max. admitted design pressure at ambien temperature),

⇒ the valve shall be fitted workmanlike with these systems,

⇒ inside 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 wearing ones – had been cleared with the manufacturer,

⇒ Pressure Relief Valves used at operating temperatures >+50°C or <–20°C, are protected against contact as it is intended for the pertinent piping system,

⇒ Only qualifed staff is used for the operation and maintenance of pressure bearing piping systems.

2.3 Special risks

Danger to life	Before the disassembling of the valve out of the piping system and/or before the loosening of the bolts and nuts of the bonnet the **system shall be completely depressurised** to avoid an uncontrollable fugitive emission of the media. It must be assured that **the valve is completely open** to enable that the pressure can escape on both sides of the valve.
Danger	*Pressure Relief Valves which are not slowly operated in the starting up phase at service temperatures of >250°C:* Leakages might occure. See also section 6.1. <Starting-up phase>
Danger	When a valve shall be disassembled from the piping system there exists the risk that the media can flow out off the piping or the valve. In case of liquids which are harmfull for the health or dangerous the piping system shall be completely drained before the valve can be removed from the system. Caution of **residues coming out off or remaining in dead holes of the valve or the piping system itself.**

2.4 Marking of the Pressure Relief Valve

Each Pressure Relief Valve is normally marked as follows:

For	Marking	**Note**
CE-Mark	**CE**	Corresponding to PED 2014/68/EU valves shall be marked with the CE-mark only for sizes DN32 and more
CE-Mark	**0525**	Nominated body to EU Directive = LRQA Deutschland GmbH Register
Manufacturer	PHOENIX (PAG)	Logo for <PHOENIX Armaturenwerke GmbH>
Manufacturer-N°	**e.g.:98898/02**	The first figures before the strike are the factory number, the last figures after the strike = item n° g.g. /02 = item 2 of the order
Date of manu-fact	**e.g.: 05/02**	The first figures before the strike indicate the month of manufacture (05= May), the figures after the strike = year of manufacture, e.g. (02= 2002)
Valve type	**Type** (and numerical value)	e.g. Type 141, see Datasheet PHOENIX
Body material	**e.g.: 1.0619.01**	N° of material standard to EN 10027, Part 2
Size	**DN or NPS** (and numerical value)	Numerical value in mm, e.g. DN 200 or NPS 8
Max. pressure	**PS or PN** (and numerical value)	Numerical value in [bar] at 20°C, e.g. PS 40
	ANSI and Class (numerical value)	e.g. ANSI 300
relief pressure	dp and numerical value	Numerical value in [bar] relief pressure e.g. dp = 12 (please sea also valve info tag plate)
Heat-/ Melt N°	**e.g.: 25652 or GHW**	Heat-/Melt N° of the foundry

Table 1: Marking of the Pressure Relief Valve

Adjust area for Spring	PF from ... to ... (and number value)	For exemble: PF= 6 to 12 bar
Respond pressure	PA (and number value)	For exemble: PA= 8 bar

Extra label for spring adjust to pressure.

3 Transport and Storage

Pressure Relief Valves shall be carefully treated, transported, and stored:

⇒ The valve shall be stored with its protectecting packing and/or with its protecting caps on the inlet and outlet. Valves with a weight of more than 10 kos shall be stored on pallets (or similar) and be transported in such a state (even on the transport to the installation point).

 **Attention**	*To protect the valve against damages:* Ropes and belts shall only be fixed on the bonnet but never on the handwheel!

⇒ Before its installation the valve shall be normally stored in closed area and be protected against detrimental influences such as dirt and humidity.

⇒ In particular the handwheel and the end orifices of the Pressure Relief Valves for the connection with the piping system shall not be damaged neither by mechanical nor other influences.

⇒ Pressure Relief Valves will be supplied with disc in closed position and shall be stored in this state.

4 Installation into the piping system

4.1 General

For the installation of valves into a system the same instructions are valid as for the connection of pipes among themselves and similar piping components. When in a plant the piping and other equipment are isolated, this must also be applied to the built-in Pressure Relief Valves. In addition, the following instructions are valid for Pressure Relief Valves. For the transport to the installation place please mind the information given in section 3 of this manual.

Danger to life	If Pressure Relief Valves are installed in insulated piping systems, or in the area of other isolated equipment, so they must also be isolate. In absence of insulation, Pressure Relief Valves can be damaged. In serious cases, the pressurized parts could be damaged.
Attention	*To avoid damages of Pressure Relief Valves with weld ends:* During the welding of the valves into the piping system the weld procedure shall be performed in such a way that the applied heat energy is limited and distorsions of the valve body are avoided. Therefore, larger sizes shall be welded in alternating pro-cedures once from one side and then from the other to avoid restraints in the valve's body.

As far as handwheels are concerned:

Danger	***Handwheels are neither "stepboards nor ladders"!*** Handwheel shall not be charged with heavy loads; this can damage or distruct both the handwheel and/or the Pressure Relief Valve.

4.2 Working steps.

⇒ Transport the Pressure Relief Valve in its protecting packing to the installation site and unpack the valve just before its immediate fitting into the system to ensure that the valve is protected against each kind of contamination.

⇒ Inspect the valve on possible transport damages. Damaged valves shall not be installed.

⇒ Make sure that only Pressure Relief Valves will be installed whose pressure rating, type and dimen-sions of connections correspond to the operating conditions. In this regard also see related marking of the Pressure Relief Valve.

Danger to life	**Disregard of this precautionary measure can provoke danger to life for the user and damages in the piping system.**
Danger to life	Pressure Relief Valves whose admitted pressure-/temperature rating is not sufficient for the operating conditions shall not be installed. This admitted range results in the marking and/or in the design document **<Pressure-Temperature-Tables TDB3/1 to 3/5>** see also section 1 <Defined use>. **Disregard of this precautionary measure can provoke danger to life for the user and damages in the piping system.**

⇒ The connections of the piping system shall be in strict alignment with the end connections of the Pressure Relief Valve and have plane-parallel ends.

⇒ Before the installation the valve and the corresponding pipe shall be carefully cleaned from dirt and contaminations, especially hard foreign particles shall be removed.

⇒ The flow direction of Pressure Relief Valve is marked by an arrow. For special applications and information regarding “equilibrating disc” see section 8 < Information>

Danger to life	Pressure Relief Valves shall not be installed against the marked flow direction. **Disregard of this precautionary measure can provoke danger to life for the user and damages in the piping system**.

For Pressure Relief Valves with weld ends only:

⇒ The weld ends of the valve shall be in true alignment and shall have parallel faces and must be of identic type and materials as the pipes – see type plate of the valve. Opposite weld ends must fit to each other as far as diameters and weld joints are concerned.

⇒ Make sure by workmanlike welding that neither worth mentioning tensions will be produced in this piping section or on the valve nor that the Pressure Relief Valve body might get distorted due to unilateral heat introduction during the weld procedure. Only temperatures of <300°C, mea-sured on the body wall, are admitted.

⇒ The weldings must be performed workmanlike in such a way that the weld seam has all rounds about a uniform temperature. Gate valves>DN 300 shall be welded in alternation on their opposite sides.

⇒ Weld cables shall not be fixed on the valve itself but exclusively on the pipings.

Attention	**Disregard of these impositions can provoke distorsion of the valve body.** A permanent distorsion in the seat area of the valve can signify that the valve becomes unserviceable.

5 Pressure test of the piping section.

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

⇒ Newly installed pipe system shall be carefully cleansed to flush off all foreign particles.

⇒ The test pressure “PT” of a **valve** by virtue of the marking of the valve**.**

6 Starting up/commissioning, normal operation and maintenance.

6.1 Starting up/Commissioning.

When **an Pressure Relief Valve is installed in or as final shut-off device**, during the “starting up phase” of a piping section it must be assured at temperatures of >100°C – especially when Pressure Relief Valves of >DN 300 are involved - that the handled medium will be slowly fed-in. Otherwise, the valve’s body gets distorted, and the valve will leak.

6.2 Normal operation and maintenance

Turning the handwheel clockwise provokes the closing of the Pressure Relief Valves and an anticlockwise operation opens the valve. Normal hand force is sufficient for the operation of the handwheel. Only for a tight closure or in the opening phase of the valve increased hand force might be necessary for a short transition time.

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

Note	*Pressure Relief Valves are **not suitable for an operation in intermediate position**.* Pressure Relief Valves shall only be used in their final position, i.e., either completely opened or closed.

	When an intermediate/throttling position is required, the valve shall be equipped with a rigid regulating disc, i.e. no loose disc..

Regular maintenance work is not required for Pressure Relief Valves, however, during the inspection of the piping section no leakage shall appear neither on the flanged and/or screwed connections nor on the stuffing box. In case of leakages and repairs please see section 2 – <Safety instructions> and section 7 <Failures>

7 Trouble shooting

During the remedy of failures section 2 <Safety instructions> shall be absolutely considered.

 **Danger**	*When an Pressure Relief Valve is removed from systems conveying dangerous media and shall be carried away fromt he plant:* Then the Pressure Relief Valve must be professionally decontaminated.

Kind of failures	Procedures for remedy	Note
Leakage on the flanges to the system or between body and bonnet	Tighten bolts and nuts. *When the valve is still leaking:* Remove the valve, considering always the notes in sec-tion 2.3 <Special risks> and ask for spare gaskets for the bonnet and correlated instructions at PHOENIX: To protect the staff against possible risks the complete system shall be absolutely depressurised. Mind and consider section 2.3 <Special risks>.	***Note 1:*** *Spare parts shall be ordered with all indications of the marking of the valve. Only the original PHOENIX spare parts*

Leakage on the flanges to the system or bet-ween body and bonnet	***Pressure Relief Valves with bellows seal:*** *The bellows is damaged and shall be replaced as soon as possible, especially when used with corrosive/hazardous media:* Repair necessary. Remove the valve from the line, consider section 2.3 <Special risks>. Ask PHOENIX for required spares and corresponding instructions. *As long as not exchanged can be exchanged:* Retighten stuffing box as described above. Tighten the nuts of the gland follower alternating and clockwise in little steps of max. ¼ turn to ¼ turn until the leakage stops. In the document <A114R> *please see section 8* the max. admitted torque for the tightening is specified. *In case the leakage cannot be eliminated by this procdure:* Repair will be necessary. Ask PHOENIX for new packing and corresponding instructions. *In case the nuts of the gland follower shall be loosend or removed (anticlockwise turning):* **Danger to life** To protect the staff against possible risks the complete system shall be absolutely depressurised. Mind and consider section 2.3 <Special risks>.	*shall be used for repairs and replacements.* ***Note 2:*** *When it is noted after the disassembling of the valve that the body and/or trim is not sufficiently resistant against at-tacks of the media opt for more suitable materials of design*
Kind of failures	**Procedures for remedy**	
Leakage in the closed position	Remove the valve (Mind and consider notes of section 2.3 <Special risks) and check the valve. *In case of damaged seats:* Repair necessary: Remove the valve, mind the notes of section 2.3 <Special risks>. Ask PHOENIX for correspon-ding instructions or send the valve back to PHOENIX for repair.	
Functional failures	Check stem and stem nut. *When these functional components are ok but not sufficiently lubricated:* Clean stem from dirt and contaminations and lubricate with grease compatible with the operating temperatures. For normal operating temperatures lithium saponyfied greases are sufficient. (Standard grease.....). *When this procedure will not remedy the failure:* Repair necessary: Remove the valve and inspect, mind the notes of section 2.3 <Special risks>. Ask PHOENIX for corresponding spares and required instructions.	

In case of failures on the actuators see attached instructions.

8 Information

The mentioned <Datasheets>, <Design documents> Repair instructions and other information – also in other languages - you can ask for under

Info@phoenix-valvegroup.com oder http://www.phoenix-valvegroup.com

or at the following address:

PHOENIX Armaturenwerke GmbH
Am Stadtbruch 6
34471 Volkmarsen

Tel.: 05693-988-0
Fax.: 05693-988-140

8.1 Standard area of adjust for Typ 141 PN 40

DN	Area of adjust [bar]
15 to 25	0,5 – 1,5 1,5 – 2,5 2,5 – 9,0 9,0 – 19,0 19,0 – 33,0
32 to 50	0,5 – 1,5 1,5 – 3,0 3,0 – 5,0 5,0 – 10,0 10,0 – 17,0 17,0 – 22,0

8.2 Pressure – Temperature-Rating, Excerpt TDB 3/1 to 3/5

The requirements of DIN EN 12516 – 1 are principally fullfilled.

- **Low alloyed and not alloyed steels**

PN	DN-range	Admitted oper. pressure (bar) at oper. temperatures (°C)						
		-60*	-10	120	200	300	400	450
10	15-500	7,5	10	10	8	6	6	5
16	15-500	12	16	16	**15**	**12**	**9**	6
25	15-500	18,75	25	25	**23**	**18**	**14**	12
40	15-300	30	40	40	**38**	**30**	**24**	20
63	15-150	47,25	63	63	**55**	**41**	**35**	32
100	15-150	75	100	100	**85**	**62**	**53**	51
160	15-150	120	160	160	130	96	**84**	81

***** AD-W10, Load case II

- **Stainless steels**

PN	DN-range	Admitted oper. pressure (bar) at oper. temperatures (°C)					
		-196*	-10	120	200	300	400
10	15-500	10	10	10	8	6	6
16	15-500	16	16	16	**15**	**12**	**11**
25	15-500	25	25	25	**23**	**18**	**16**

40	15-300	40	40	40	**36**	**30**	**25**
63	15-150	63	63	63	50	**44**	**40**
100	15-150	100	100	100	80	**70**	**64**
160	15-150	160	160	160	130	**112**	**103**

***** Not valid for SS 1.4581

- **Low temperature steels**

PN	**DN-range**	**Admitted oper. pressure (bar) at oper. temperatures (°C)**					
		-60*	-50	-10	120	200	300
10	15-500	10	10	10	10	8	6
16	15-500	16	16	16	16	**15**	**12**
25	15-500	25	25	25	25	**23**	**18**
40	15-300	40	40	40	40	**36**	**30**
63	15-150	63	63	63	63	**55**	**41**
100	15-150	100	100	100	100	**85**	**62**
160	15-150	160	160	160	160	130	96

***** 1.0488

For steels not mentioned in these tables the user shall contact the manufacturer/supplier of the valve.