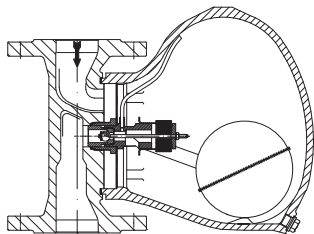


# Operating and installation instructions

## Ball float steam traps

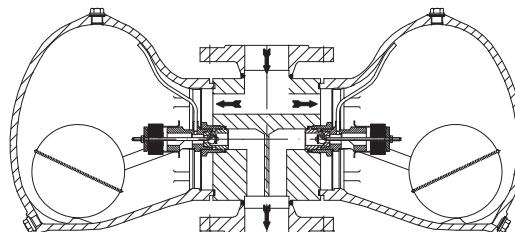
### CONA<sup>®</sup>S (PN16 - 160 / Class 125-900)



**PN16 / PN40**

**Class 125 / Class 150 / Class 300**

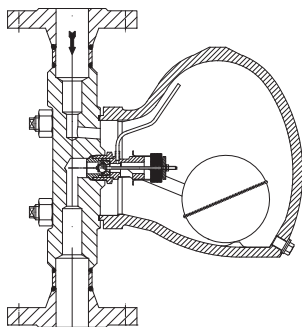
- with flanges (series 631....1)
- with screwed sockets (series 631....2)
- with socket weld ends (series 631....3)
- with butt weld ends (series 631....4)



**PN16 / PN40**

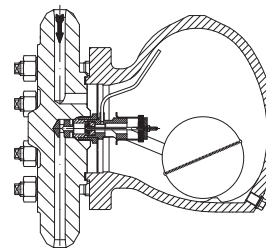
**Class 125 / Class 150 / Class 300**

- with flanges (series 639....1)



**PN63 / PN100**

- with flanges (series 631....1)
- with socket weld ends (series 631....3)
- with butt weld ends (series 631....4)



**PN160  
Class 900**

- with flanges (series 631....1)
  - with socket weld ends (series 631....3)
  - with butt weld ends (series 631....4)
- Angle pattern:**
- with flanges (series 632....1)
  - with butt weld ends (series 632....4)

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## 1.0 General information on operating instructions

These operating instructions provide information on mounting and maintaining the fittings. Please contact the supplier or the manufacturer in case of problems which cannot be solved by reference to the operating instructions.

They are binding on the transport, storage, installation, start-up, operation, maintenance and repair.

The notes and warnings must be observed and adhered to.

- Handling and all work must be carried out by expert personnel or all activities must be supervised and checked.

It is the owner's responsibility to define areas of responsibility and competence and to monitor the personnel.

- In addition, current regional safety requirements must be applied and observed when taking the fittings out of service as well as when maintaining and repairing them.

The manufacturer reserves the right to introduce technical modifications at any time.

These Operating Instructions comply with the requirements of EU Directives.

## 2.0 Notes on possible dangers

### 2.1 Significance of symbols



Warning of general danger.

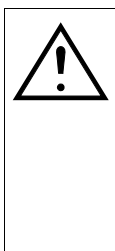
### 2.2 Explanatory notes on safety information

In these Operating and Installation Instructions dangers, risks and items of safety information are highlighted to attract special attention.

Information marked with the above symbol and "**ATTENTION!**" describe practices, a failure to comply with which can result in serious injury or danger of death for users or third parties or in material damage to the system or the environment. It is vital to comply with these practices and to monitor compliance.

All other information not specifically emphasised such as transport, installation, operating and maintenance instructions as well as technical data (in the operating instructions, product documentation and on the device itself) must also be complied with to the fullest extent in order to avoid faults which in turn can cause serious injury to persons or damage to property.

## 3.0 Storage and transport

**ATTENTION !**

- *Protect against external force (like impact, vibration, etc.).*
- *Valves must not be used to take external forces, e.g. they are not designed for use as climbing aids, or as connecting points for lifting gear.*
- *Suitable materials handling and lifting equipment should be used.*

*See catalog sheet for weights.*

- At -20°C to +65°C.

- The paint is a base coat to protect against corrosion during transportation and storage. Do not damage paint protection.

## 4.0 Description

### 4.1 Scope of application

Float-type steam traps with level control and thermal regulation are used for the drainage of industrial steam facilities.



#### **ATTENTION !**

- Refer to the data sheet for applications, limits on use and possibilities.
- Certain media require or preclude the use of special materials.
- The valves are designed for standard operating conditions. If conditions exceed these requirements, e.g. aggressive or abrasive media, the operator should state the higher requirements when ordering.
- Valves made from grey cast iron are not authorised for use in systems subject to TRD 110.

The information complies to the Pressure Equipment Directive 2014/68/EU.

It is the responsibility of the machine planner to ensure compliance.

The special markings on the valve must be taken into account.

Refer to the catalogue sheet to see which materials are used in standard versions.

Please contact the supplier or the manufacturer if you have any questions.

### 4.2 Operating principles

(see Fig. 7a and b page 11)

The steam trap is controlled by a swivel-mounted ball float (Pos. 24.16). An integral bimetallic element (Pos. 24.6) provides automatic starting ventilation in the cold state.

At temperatures less than 90°C, the bi-metallic element holds the discharge orifice open, allowing air and other gasses to escape. At 90°C the bi-metallic element is fully closed and discharge is controlled only by the float mechanism (Pos. 24.16). At the higher temperatures, air is automatically evacuated (Pos. 24.12), ejector style, with the condensate.

If the amount of condensate decreases or if there is no condensate, the ball float (Pos. 24.16) faces and locks the valve ball (Pos. 24.4) on the seat (Pos. 24.1). If the steam trap is acted upon only by vapour, the condensate-flooded seat (Pos. 24.1) remains shut.

The valve ball (Pos. 24.4) also works with the seat (Pos. 24.1) as a non-return valve.

### 4.3 Diagram

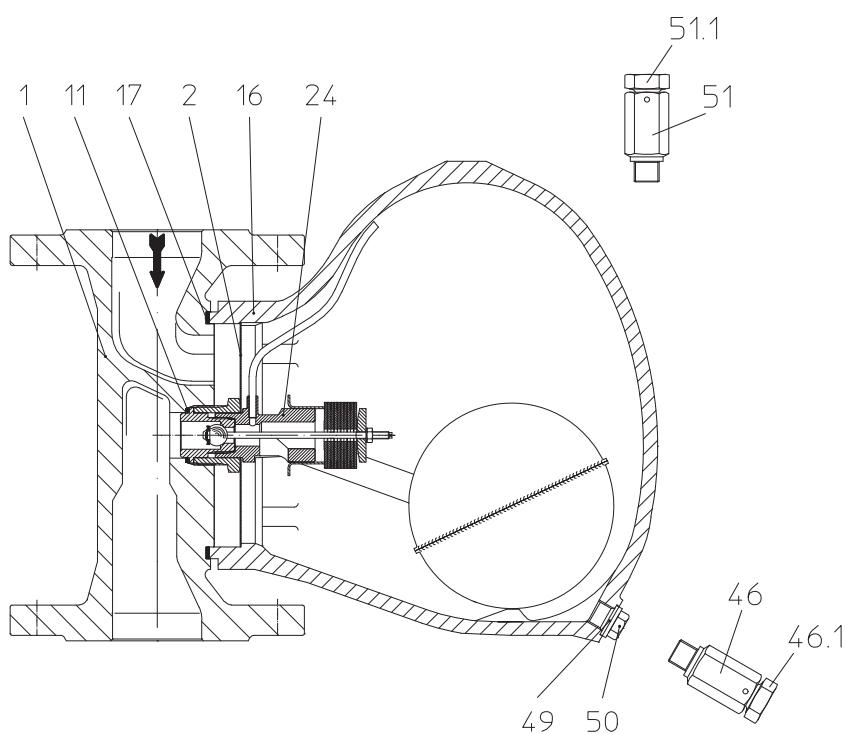


Fig. 1: CONA<sup>®</sup>S - series 631 PN16-40 DN15-50  
Class 125 / Class 150 / Class 300 NPS 1/2"-2"

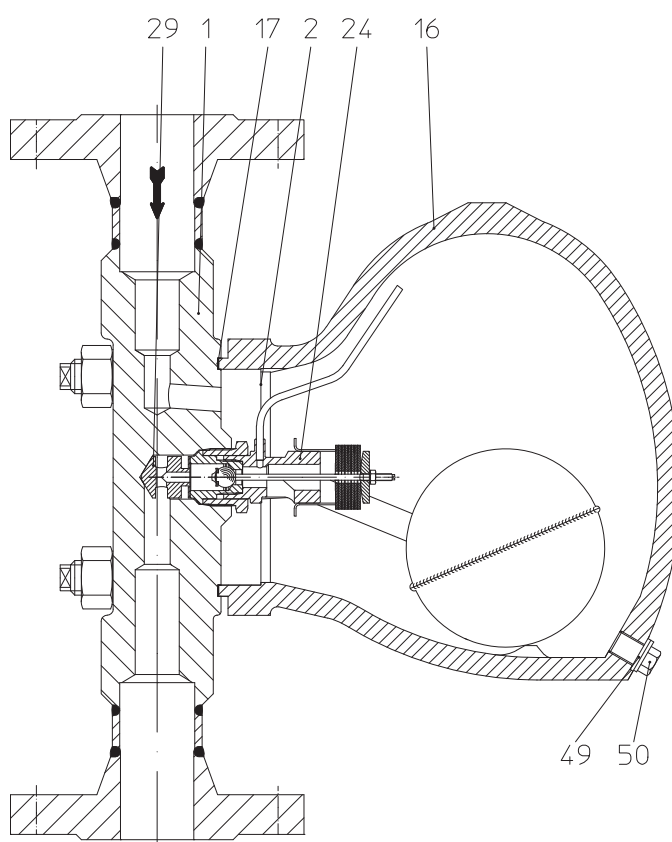
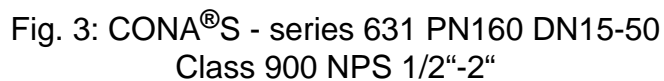


Fig. 2: CONA<sup>®</sup>S - series 631 PN63-100  
PN63 without erosion deflector (pos. 29)  
DN15-50



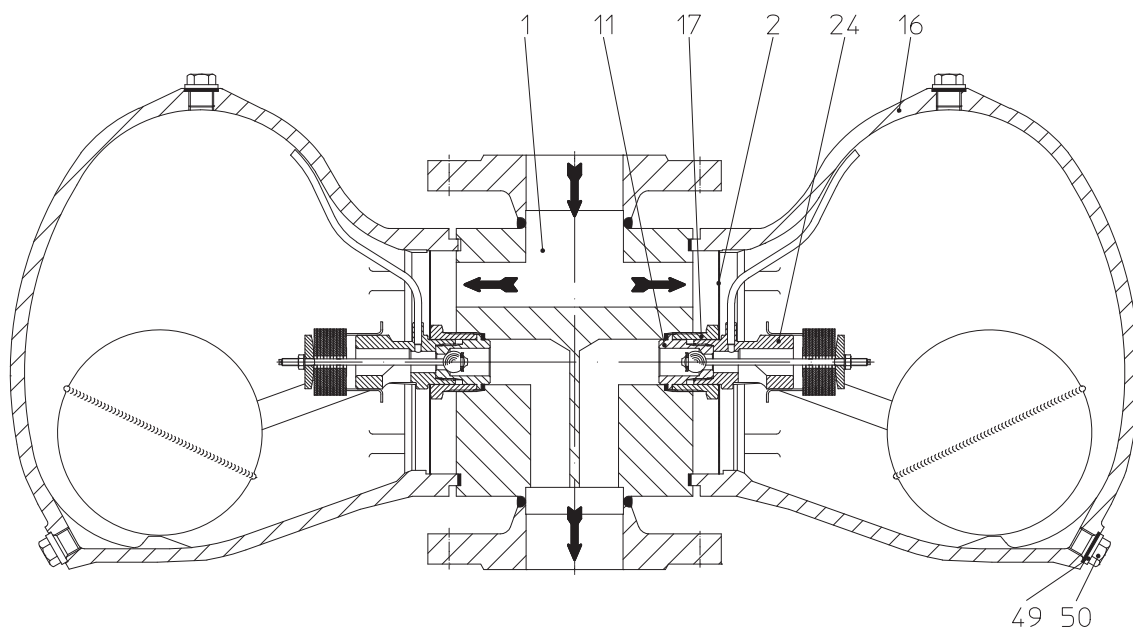


Fig. 5: CONA<sup>®</sup>S - series 639 PN16-40 DN50-100  
Class 125 / Class 150 / Class 300 NPS 2"-4"

Refer to the data sheet for information about materials with designations and figure numbers.

### 4.4 Technical data - remarks

for

- Principal dimensions,
- Pressure-temperature-ratings, operating limits,
- Valves with different types of connection, etc.  
refer to datasheet.

### 4.5 Marking

Details of the CE-marking on the valve:

**CE** CE-marking

0090 Notified body

**EAC** EAC-marking

**AWH** Manufacturer

Typ Type

Bj. Year of manufacture

Address of manufacturer:  
refer to item 11.0 Warranty / Guarantee

## 5.0 Installation

### 5.1 General notes on installation

The following points should be taken into account besides the general principles governing installation work:



#### **ATTENTION !**

- Remove flange covers if present.
- The interior of valve and pipeline must be free from foreign particles.
- The float steam trap can be installed for vertical or horizontal flow. Note installation position with reference to flow, see mark on valve.
- Steam line systems should be designed to prevent water accumulation.
- Lay pipelines so that damaging transverse, bending and torsional forces are avoided.
- Protect valves from dirt during construction work.
- Connection flanges must mate exactly.
- Valves must not be used to take external forces, e.g. they are not designed for use as climbing aids, or as connecting points for lifting gear.
- Suitable materials handling and lifting equipment should be used.  
See data sheet for weights.
- Centre gaskets between the flanges.
- Precautions against freezing should be taken as a matter of course in any facilities susceptible to frost. If a system not in operation is in a position susceptible to freezing, we recommend that the drain plug (Pos. 50) on the unpressurised steam trap be unscrewed, the residual condensate drained off, the seal faces cleaned and the plug screwed down again.  
The sealing ring (Pos. 49) should be replaced if necessary.  
(see Fig. 1 page 4 - Fig. 5 page 6)

- Planners / construction companies or operators are responsible for positioning and installing products.
- The valves are designed for application, not influenced from weather.
- For application outside or in adverse environments like corrosion-promoting conditions (sea water, chemical vapours, etc.), special constructions or protective measures are recommended.

## 5.2 Installation instructions for welding

(refer to Fig. 3 page 5)

Please note that only qualified persons using appropriate equipment and working in accordance with technical rules are allowed to install fittings by welding.

The responsibility for this lies with the system owner.

Please refer to the catalogue sheet for information on type and instructions relating to welding socket weld ends/butt weld ends.

When welding products to the pipeline system they should be adequately cooled to prevent any adverse effect on the complete controller assembly (Pos. 24) or possibly the flat gasket (Pos. 17). The heat-affected zone should be restricted to the immediate weld seam area!

Note pre- and post-welding heat treatment in accordance with Material Fact Sheet DIN EN 10222.

If there are plans to acid clean the facility before putting it into operation, the controllers (Pos. 24) should be dismantled completely, replaced by acid cleaning inserts, and reassembled after acid cleaning (see 7.1). In such an event please contact the manufacturer.

## 5.3 Controller adjustment

The controller is set by the manufacturer as stated in the order and does not need changing. Should the operating parameters have changed fundamentally compared with the particulars in the order, please contact the manufacturer to change the controller!

## 5.4 Steam trap testing through ultrasonic measurement

Testing the operation of the steam trap in the installed state is straightforward with the "ARImetec<sup>®</sup>-S" multifunctional testing device.

Refer to data sheet "ARImetec<sup>®</sup>-S".

## 5.5 Installation position

(refer to Fig. 6 page 9 and Fig. 7a and b page 11)

The float steam trap can be installed for vertical or horizontal flow. This should be stated when ordering.

If the installation position is not stated it will be supplied for vertical flow.

It is possible to change the installation position at a later stage (see 7.2).

However the steam trap must always be installed so that the ball float (Pos. 24.16) can work in a vertical plane.



### **ATTENTION !**

**The vent tube (Pos. 24.12) must point up!**

### 5.5.1 Possible installation positions

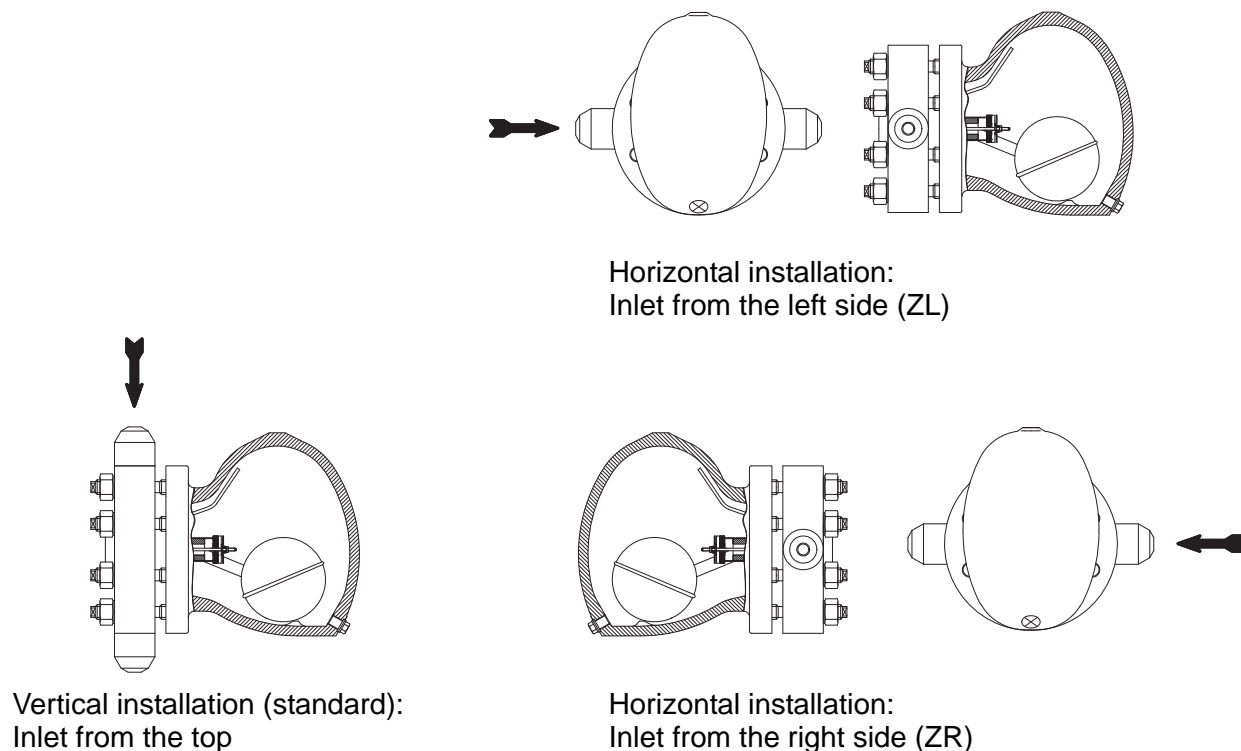


Fig. 6

## 6.0 Putting the valve into operation



### ATTENTION !

- Before putting the valve into operation, check material, pressure, temperature and direction of flow.
- Regional safety instructions must be adhered to.
- Residues in piping and valves (dirt, weld beads, etc.) inevitably lead to leakage.
- Touching the valve when it is operating at high ( $> 50\text{ °C}$ ) or low ( $< 0\text{ °C}$ ) media temperatures can cause injury.

*Affix warning notice or protective insulation as appropriate!*

*Before putting a new plant into operation or restarting a plant after repairs or modification, always make sure that:*

- All works has been completed!
- The valve is in the correct position for its function.
- Safety devices have been attached.

## 7.0 Care and maintenance

Maintenance and maintenance-intervals have to be defined by the operator according to the requirements.



### **ATTENTION !**

- refer to item 10.0 and 11.0 prior to dismantling and repair work!
- refer to item 6.0 before restarting the plant !

*Prior to installation, threads and seal faces should be coated with temperature-stable lubricant (e.g. "OKS Anti-Seize Paste" white/metal-free for PN 16-40 / Class 125 / Class 150 / Class 300 or "Rivolta" lubricant and parting agent for PN 63 / Class 900 onwards).*

## 7.1 Cleaning and/or replacing the steam trap

(refer to Fig. 1 page 4- Fig. 5 page 6 and Fig. 7a and b page 11)

- Dismantle hood (Pos. 16) by slackening hexagonal nuts (Pos. 28) and cheese-head screw (Pos. 27).
- While removing the hood (Pos. 16) swivel it upwards through approx. 45° to avoid twisting the vent tube (Pos. 24.12).  
Dismantle studs (Pos. 27) PN63-160 / Class 900 if necessary.
- Remove dirt from body (Pos. 1) and hood (Pos. 16); tiny dirt particles can be removed by flushing out the ducts and rinsing the body (Pos. 1). Clean the strainer (Pos. 2).
- If necessary dismantle the float controller (Pos. 24) and clean separately or change float controller.
- Unscrew the hollow-core screw (Pos. 24.10) of the float controller (Pos. 24) from the body (Pos. 1).
- Pull complete float controller (Pos. 24) out to remove, taking care with the sealing ring (Pos. 11). (From PN63 onwards metal seal with no sealing ring (Pos. 11)).
- Do not make any changes to spindle adjustment (Pos. 24.3), the float controller (Pos. 24) is set by the manufacturer (except in the case of extremely high back pressures, when please consult the manufacturer).
- Check lifting force of the ball float (Pos. 24.16) by immersing the whole controller (Pos. 24) in a water bath with the vent tube (Pos. 24.12) pointing upwards – spindle (Pos. 24.3) in a horizontal position. When immersed in the water bath the ball float (Pos. 24.16) must float to the top. If the ball float (Pos. 24.16) sinks (i.e. goes under) the complete controller (Pos. 24) should be replaced!
- The flat gasket (Pos. 17) and sealing ring (Pos. 11) should be replaced if used.

### **PN100-160 / Class 900:**

- Special wear bushing is used. This can, if necessary, be changed after dismantling the controller (Pos. 24). It is used to protect the body (Pos. 1) from blasting wear.
- Assemble in reverse order (refer to item 7.5).

### 7.2 Changing the installation position

(refer to Fig. 1 page 4- Fig. 5 page 6 und Fig. 7a and b page 11)

- Position body (Pos. 1) as desired, bearing in mind the direction of flow.
- Remove hood (Pos 16), then slacken hollow-core screw (Pos. 24.10) approximately 1/2 turn.
- Rotate controller (Pos. 24) 90° in the direction required



#### **ATTENTION !**

**The vent tube (Pos. 24.12) must point upwards!**

- Tighten hollow-core screw (Pos. 24.10) by holding against nozzle part (Pos. 24.11).
- Inspect and if necessary replace body seal (Pos. 17).
- Put on hood (Pos. 16) with the drain plug (Pos. 50) pointing diagonally down.
- Fit hexagonal nuts (Pos. 28) (see 7.5) and tighten crosswise.

#### **PN63:**

- A resilient sleeve (Pos. 30) is also fitted to the union of body (Pos. 1) and hood (Pos 16).

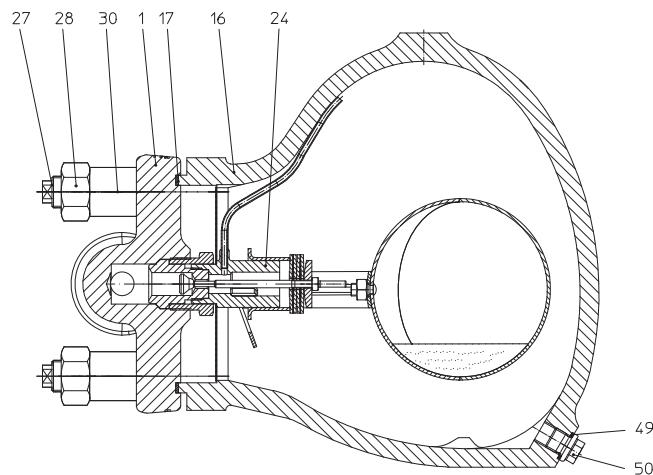


Fig. 7a: CONA<sup>®</sup>S - series 631 PN63

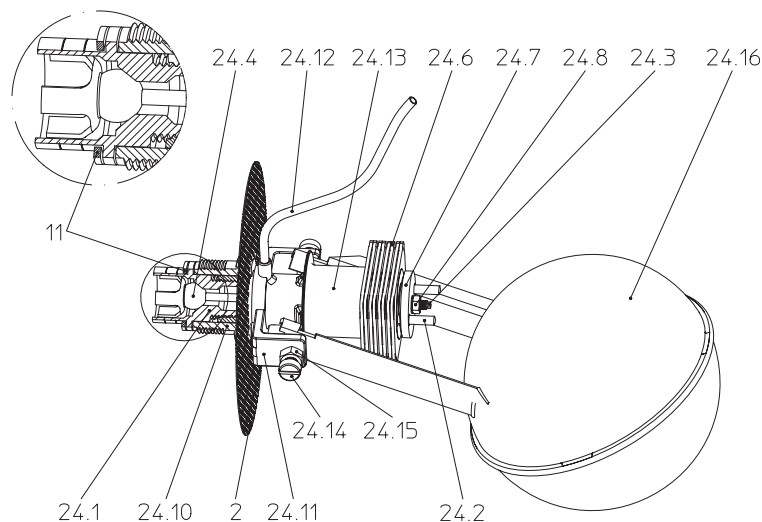


Bild 7b: Controller, cpl

### 7.3 Options blow down valve / manual air vent valve

(siehe Fig. 1 page 4 and Fig. 8 page 12)



#### **ATTENTION !**

***Escape of hot medium under pressure!***  
***Observe item 2.2 !***

Accumulated dirt and condensate can be removed from the hood (Pos. 16) through the blow down valve by opening the pressure screw (Pos. 46.1). When opening, hold against blow down valve (Pos. 46).

Accumulating inert gases can also be discharged to the environment using the manual air vent valve (Pos. 51) by opening the pressure screw (Pos 51.1).

During operation it is imperative to observe general working safety conditions and possibly fit devices to guard against scalding/injury.

Note section 7.5 when installing and operating the option.

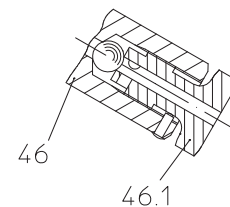
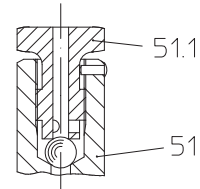


Fig. 8

### 7.4 Union for pressure compension line resp. external vent

By connecting a pressure compensation line to the union (Pos. 52) it is possible to return the accumulating inert gases to the system and to bypass the controller using a Series 614 diverter as an external vent.

Note section 7.5 when installing the option.

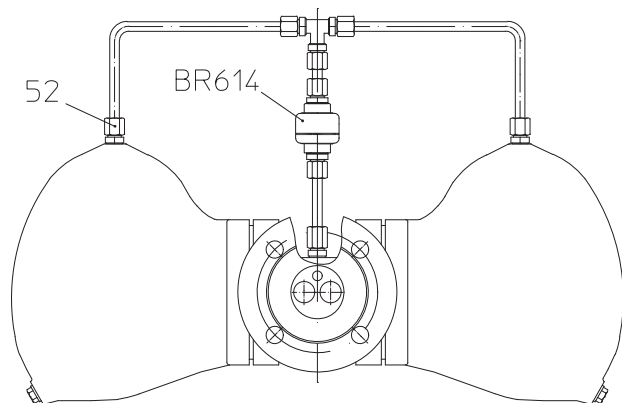


Fig. 9

### 7.5 Tightening torques

(siehe Fig. 1 page 4 - Fig. 9 page 12)

Pos.	CONA S PN16 / Class 125	Torque (Nm)		
		DN15-20 / NPS 1/2"-3/4"	DN25 / NPS 1"	DN32-50 / NPS 1 1/2"-2"
24	Controller	60	60	100
50	Plug	50	50	50
27	Cheese head screw M10 / M12 / M16	15	25	50
51	Manual air vent valve	50	50	50
51.1	Pressure screw	30	30	30
46	Blow down valve	50	50	50
46.1	Pressure screw	30	30	30
52	Union for pressure compension line	50	50	50

Pos.	CONA S PN40-160 / Class 300 / Class 900	Torque (Nm)		
		DN15-20 / NPS 1/2"-3/4"	DN25 / NPS 1"	DN32-50 / NPS 1 1/2"-2"
24.8	Hex. nut M4	5	5	10
50	Plug	70	70	70
51	Manual air vent valve	70	70	70
51.1	Pressure screw	30	30	30
46	Blow down valve	70	70	70
46.1	Pressure screw	30	30	30

Pos.	CONA S PN40 / Class 150 / Class 300	Torque (Nm)		
		DN15-20 / NPS 1/2"-3/4"	DN25 / NPS 1"	DN32-100 / NPS 1 1/2"-4"
24	Controller	60	60	100
27	Cheese head screw M12 / M12 / M16	25	30	60
52	Union for pressure compension line	70	70	70

Pos.	CONA S PN63-100	Torque (Nm)		
		DN15-20	DN25	DN32-50
24	Controller	130	130	130
28	Hex. nut M20	150	150	150

Pos.	CONA S PN160 / Class 900	Torque (Nm)		
		DN15-20 / NPS 1/2"-3/4"	DN25 / NPS 1"	DN32-50 / NPS 1 1/2"-2"
24	Controller	130	130	130
28	Hex. nut M20	180	180	180

## 8.0 Troubleshooting

In the event of malfunction or faulty operating performance check that the installation and adjustment work has been carried out and completed in accordance with these Operating Instructions.



### ATTENTION !

It is essential that the safety regulations are observed when identifying faults.

If malfunctions cannot be eliminated with the help of the following table "9.0 troubleshooting table", the supplier or manufacturer should be consulted.

## 9.0 Troubleshooting table



### ATTENTION !

- refer to item 10.0 and 11.0 prior to dismantling and repair work!
- refer to item 6.0 before restarting the plant !

Fault	Possible cause	Corrective measures
No flow	Installed in wrong flow direction	Fit valve in direction of flow arrow. Note installation position; refer to item 5.5.1!
	Flange covers not removed	Remove flange covers
	Ball float (Pos. 24.16) defective	Check lifting force; refer to item 7.1
Little flow	Wrong installation position	Note installation position; refer to item 5.5.1 Correct installation position; refer to item 7.2
	Strainer clogged (Pos. 2)	Clean strainer; refer to item 7.1
	Piping system clogged	Check piping system
	Wrong controller size chosen	Correct selection acc. to flow diagram
	Changed upstream pressure or back pressure operating conditions	Correct selection acc. to flow diagram
No closure or internal leakage	Excessive amount of inert gases in system	Use pressure compensation line and external vent option; refer to item 7.4
	Controller clogged	Clean strainer and controller; refer to item 7.1
	Controller worn out	Change controller; refer to item 7.1
	Controller incorrectly screwed into body	Check seal face between body and controller, tighten controller correctly; refer to item 7.5
External leakage	Controller operated above safe operating pressure	Observe operating limits as per data sheet, i.e. possibly select different controller
	Hood (Pos. 16) not properly tightened with hex. nut (Pos. 28) or cheese-head screw (Pos. 27)	Tighten; refer to item 7.5
	Flat gasket (Pos. 17) defective	Replace sealing; refer to item 7.1

## 10.0 Dismantling the valve or the body



### **ATTENTION !**

*The following points must be observed:*

- *Pressureless pipe system.*
- *Medium must be cool.*
- *Plant must be drained.*

## 11.0 Warranty / Guarantee

The extent and period of warranty cover are specified in the "Standard Terms and Conditions of Albert Richter GmbH & Co. KG" valid at the time of delivery or, by way of departure, in the contract of sale itself.

We guarantee freedom of faults in compliance with state-of-the-art technology and the confirmed application.

No warranty claims can be made for any damage caused as the result of incorrect handling or disregard of operating and installation instructions, datasheets and relevant regulations.

This warranty also does not cover any damage which occurs during operation under conditions deviating from those laid down by specifications or other agreements.

Justified complaints will be eliminated by repair carried out by us or by a specialist appointed by us.

No claims will be accepted beyond the scope of this warranty. The right to replacement delivery is excluded.

The warranty shall not cover maintenance work, installation of external parts, design modifications or natural wear.

Any damage incurred during transport should not be reported to us but *rather* to the competent cargo-handling depot, the railway company or carrier company immediately or else claims for replacements from these companies will be invalidated.



**Technology for the Future.**

**GERMAN QUALITY VALVES**

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