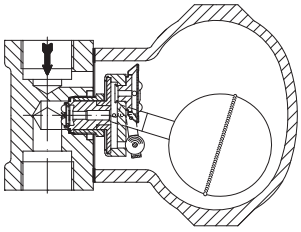
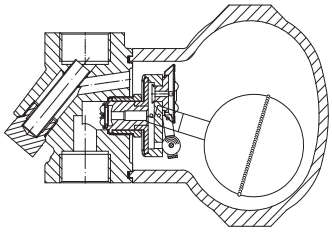
Operating and installation instructions

Ball float steam traps

CONA®SC (PN16/25/40) / CONA®SC-Plus (PN16/40)

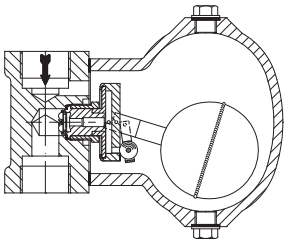


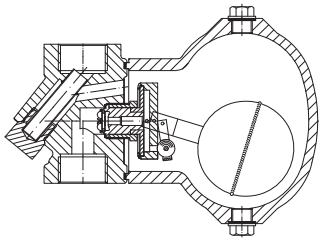


with capsule for rapid system start-up

PN16 / PN25; PN40 with outside strainer

- **with flanges (series 634....1)**
- **with screwed sockets (series 634....2)**
- **with socket weld ends (series 634....3)**
- **with butt weld ends (series 634....4)**

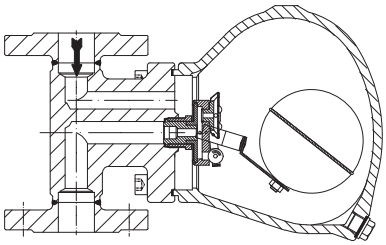




for drainage of water from compressed air and gas systems

PN16 / PN25; PN40 with outside strainer

- **with flanges (series 636....1)**
- **with screwed sockets (series 636....2)**
- **with socket weld ends (series 636....3)**
- **with butt weld ends (series 636....4)**



with capsule for rapid system start-up

PN16 / PN40

- **with flanges (series 635....1)**
- **with screwed sockets (series 635....2)**

Contents

Rev. 0040805003 3616 englisch

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

ATTENTION !

. . .

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 applications

Series 634/635: Float-type steam traps with level- and thermal control are used for the drainage of steam facilities.

Series 636: Float-type steam traps with level control are used for the drainage of systems with compressed air or aqueous gases.

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

(refer to Fig. 7 page 10)

The steam trap is controlled by a swivel-mounted ball float (pos. 24.16).
If condensate is flowing towards the steam trap, the ball float (pos. 24.16) rises and opens the discharge valve using the lever mechanism.

At series 634/635 (version with diaphragm capsule):
An intercoupled diaphragm capsule (pos. 24.17) ensures automatic start-up air venting when cold.

If the amount of condensate decreases or if there is no condensate, the float ball (pos. 24.16) falls and shuts the discharge valve.

The compact float ball (pos. 24.16) exerts level-dependent control on the valve ball (pos. 24.4) by means of a lever mechanism. As the level of condensate rises, the valve ball (pos. 24.4) is rolled off the valve bore by the lever mechanism, thus opening the valve. The condensate can now drain away.
If the amount of inflowing condensate is less than the possible valve output or if there is no condensate flow, the ball float (pos. 24.16) falls and the valve ball (pos. 24.4) rolls back onto the valve bore. The valve is now closed.

If the steam trap is only acted upon by gas, the float ball (pos. 24.16) remains in equilibrium, the valve stays shut.

4.3 Diagram

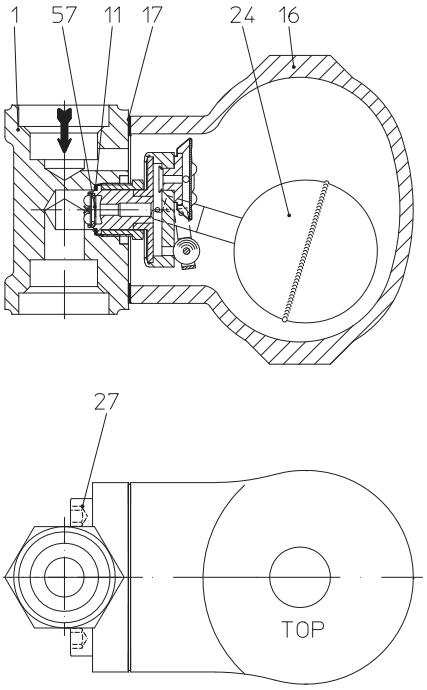


Fig. 1: CONA®SC - series 634
PN16/25, DN15-25

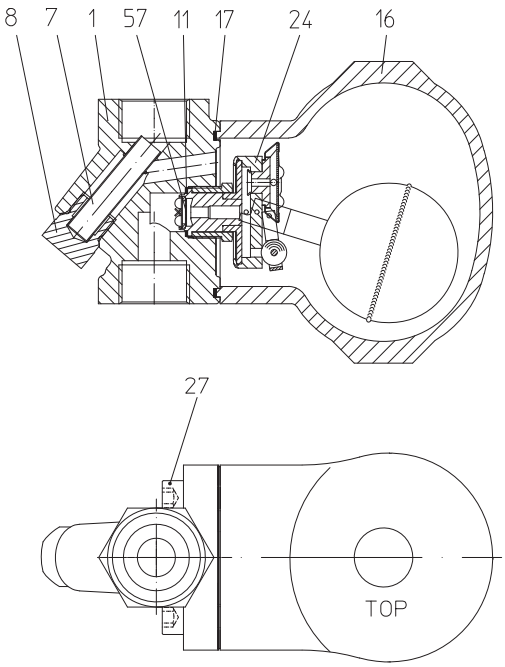


Fig. 2: CONA®SC - series 634 (Y)
PN40, DN15-25

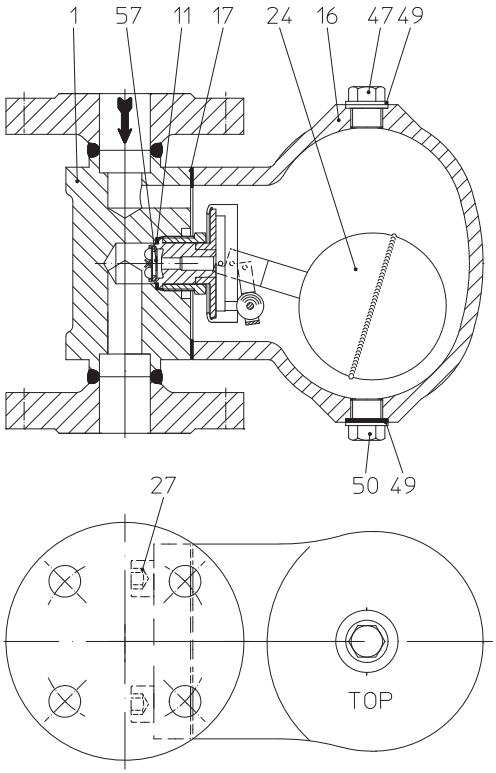


Fig. 3: CONA®SC - series 636
PN16/25, DN15-25

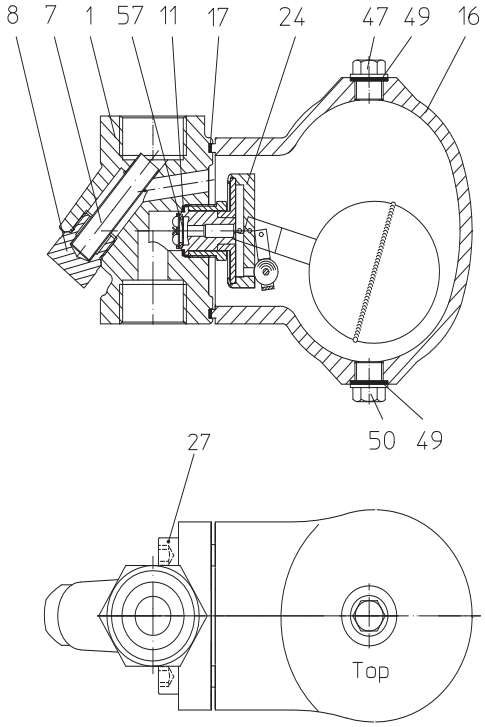


Fig. 4: CONA®SC - series 636 (Y)
PN40, DN15-25

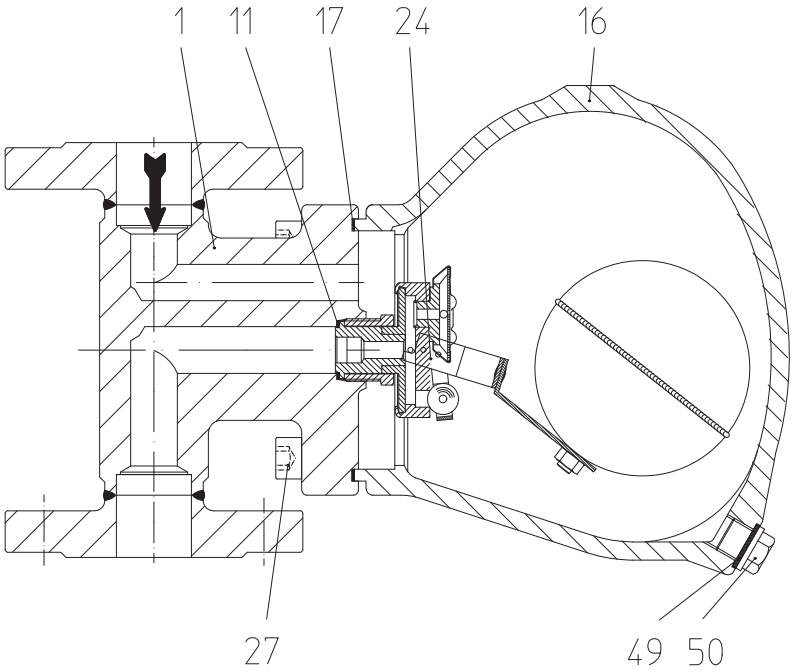


Fig. 5: CONA®SC-Plus - series 635
PN16/40, DN25

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

AWH	Manufacturer	Address of manufacturer: refer to item 11.0 Warranty / Guarantee
Typ	Type	
Bj.	Year of manufacture	

According to the Pressure Equipment Directive appendix 2 diagram 7 valves acc. to article 1 paragraph 2.1.2 (pipes) only show the CE-marking from DN40 onwards.

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 ball float steam trap may 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. 2 page 4 and item 7.3).

- 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. 1 page 4)

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 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 (refer to 7.1). In such an event please contact the manufacturer.

5.3 Controller adjustment

The controller is manufactured in several pressure stages and is not adjustable.

5.4 Steam trap testing through ultrasonic measurement

Testing the operation of the steam trap in the installed state is straightforward with the “ARImetec®-S” mulitfunctional testing device.

Refer to data sheet “ARImetec®-S”.

5.5 Installation position

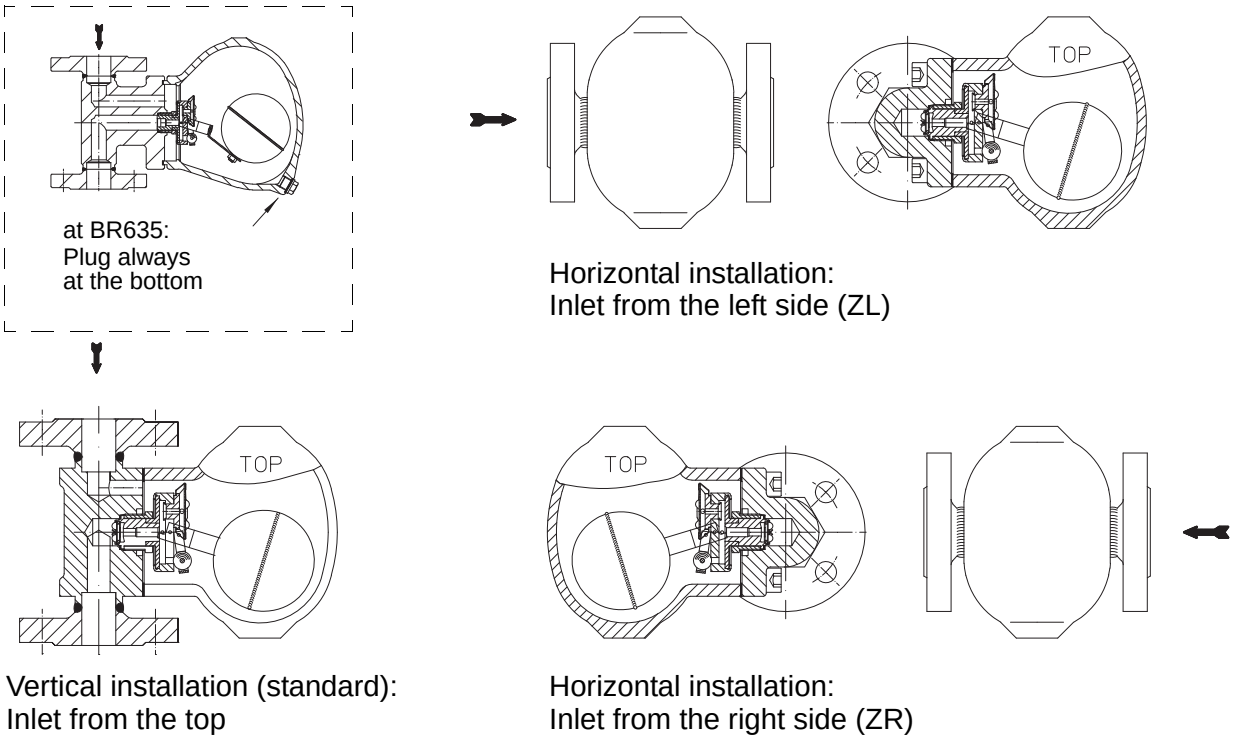
(refer to Fig. 6 page 8 and Fig. 7 - Fig. 9 page 10)

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 (L->R).

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

However, the controller (pos. 24) must always be installed so that the ball float (pos. 24.16) operates in a vertical plane.

5.5.1 Possible installation positions



Horizontal installation:
Inlet from the left side (ZL)

Vertical installation (standard):
Inlet from the top

Horizontal installation:
Inlet from the right side (ZR)

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 °C) or low (< 0 °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

Maintanance 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 PN16-40 or “Rivolta” lubricant and parting agent silver for PN63 onwards).

7.1 Cleaning / replacing controller assembly

(refer to Fig. 1 - Fig. 5 page 5 and Fig. 7 - Fig. 9 page 10)

- Dismantle hood (pos. 16) by slackening cheese-head screw (pos. 27).
- 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).
- 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).
- Check lifting force of ball float (pos. 24.16) by immersing the whole controller (pos. 24) in a water bath. 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!

At series 634/635 (version with diaphragm capsule only):

- Pull spring clip (pos. 24.18) off radially and remove diaphragm capsule (pos. 24.17) from seat (pos. 24.19).
- Clean and inspect diaphragm capsule (pos. 24.17) (see 7.4).
- Form-fit diaphragm capsule (pos. 24.17) to seat (pos. 24.19) and push the spring clip (pos. 24.18) radially into slot of seat (pos. 24.19), at the same time pushing the two angled ends of the spring clip legs (pos. 24.18) onto the diaphragm capsule (pos. 24.17).

Series 634/636 PN40 (Y):

- Unscrew strainer plug (pos. 8), remove strainer sleeve (pos. 7) and clean components/ seal faces.
- Fit strainer sleeve (pos. 7), making sure seal faces are clean
- Tighten strainer plug (pos. 8) (see 7.5).

- Replace the sealing rings (pos. 17 and Pos. 11).
- Assemble in reverse order (see 7.5).

7.2 Changing the installation position

(see Fig. 1 page 4 - Fig. 2 page 4 and Fig. 7 page 10)

- 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.
- Always fit controller (pos. 24) so that the ball float (pos. 24.16) can work in the vertical plane.
- Tighten hollow-core screw (pos. 24.10).
- Inspect and if necessary replace body seal (pos. 17).
- Put on hood (pos. 16) with drain plug (pos. 50) pointing down.
- Fit cheese head screws (pos. 27) (see 7.5) and tighten crosswise.

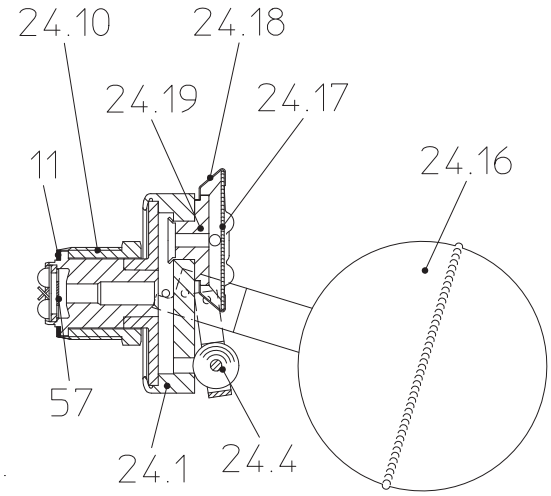


Fig. 7: Controller series 634, cpl.

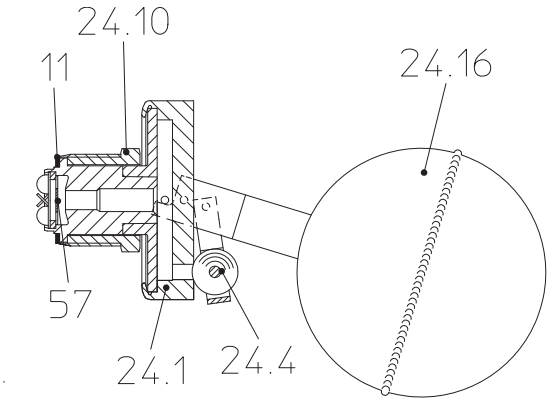


Fig. 8: Controller series 636, cpl.

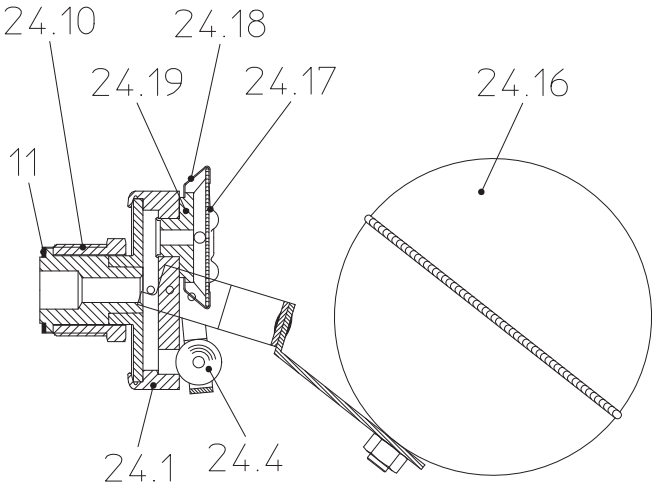


Fig. 9: Controller series 635, cpl.

7.3 Options

(refer to Fig. 2 page 4 and Fig. 10 page 11)

ATTENTION !

Escape of hot medium under pressure!
Observe item 2.2!

Accumulated inert gases can be discharged to the environment with the manual air vent valve (pos. 51) by opening the pressure screw (Pos 51.1).

It is possible to return the accumulating gases to the system by connecting a pressure compensation line to the union (pos. 52).

In Series 634 the residual condensate can be drained by way of the drain plug (pos. 50) (see 5.1)
(standard in series 636/635).

Accumulated dirt and condensate can also be removed from the hood (pos. 16) using a ball valve (pos. 56).

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.

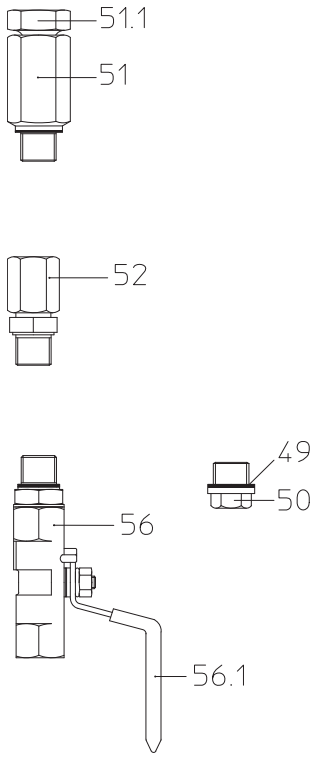


Fig. 10

7.4 Function testing of diaphragm capsule

With a dry, cold diaphragm capsule the diaphragm surface with the circular bead must rest against the top part of the wall (with 3 knobs), capsule is open (see Fig. 11).

If it rests against the bottom part of the wall, this is a sign that it is defective and must be replaced with a new diaphragm capsule (see Fig. 12).
It should also be replaced if there are visible deformations on the surface.

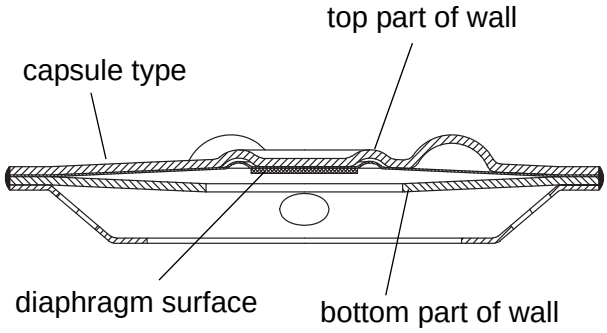


Fig. 11: Capsule OPEN

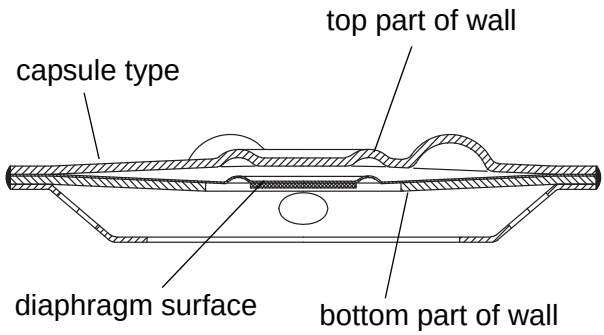


Fig. 12: Capsule CLOSED

7.5 Tightening torques

(refer to Fig. 1 page 4 - Fig. 10 page 11)

Pos.	CONA SC PN16/25/40 CONA SC-Plus PN16/40	Torque (Nm)	
		CONA SC DN15-25	CONA SC-Plus DN25
8	Strainer plug	70	--
24	Controller	60	100
27	Cheese head screw M10/M12	PN16/25 = 15 PN40 = 20	PN16 = 25 PN40 = 30
47	Plug	50	
50	Plug	50	
51	Manual ari vent valve	50	
51.1	Pressure screw	30	
52	Union for pressur compension line	50	
56	Ball valve for blow down valve	50	

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 eliminate 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 Check lifting force; refer to item 5.5.1!
	Flange covers not removed	Remove flange covers
	Ball float (pos. 24.16) defective	Note installation position; refer to item 7.1
Reduced 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
	Excessive amount of inert gases in system	Use pressure compensation line option; refer to item 7.3
No closure, or internal leakage	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
	Controller operated below safe operating pressure	Observe operating limits as per data sheet, i.e. possibly select different controller
External leakage	Hood (pos. 16) not properly tightened with 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 relavant 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.
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