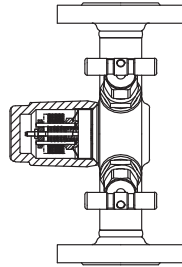


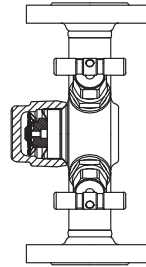
Operating and installation instructions

Steam trap station with integrated inlet and outlet valves CONA® All-in-one



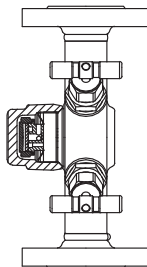
PN40

- with flanges (series 60a....1)
- with screwed sockets (series 60a....2)
- with socket weld ends (series 60a....3)
- with butt weld ends (series 60a....4)



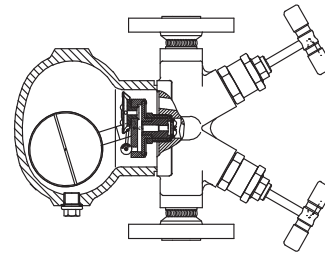
PN40

- with flanges (series 61a....1)
- with screwed sockets (series 61a....2)
- with socket weld ends (series 61a....3)
- with butt weld ends (series 61a....4)



PN40

- with flanges (series 64a....1)
- with screwed sockets (series 64a....2)
- with socket weld ends (series 64a....3)
- with butt weld ends (series 64a....4)



PN40

- with flanges (series 63a....1)
- with screwed sockets (series 63a....2)
- with socket weld ends (series 63a....3)
- with butt weld ends (series 63a....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

	<p>ATTENTION !</p> <ul style="list-style-type: none">- 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. <p>See catalog sheet for weights.</p>
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- 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

CONA All-in-one steam traps are used for "condensate-discharge from all kinds of steam systems".



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.

The information complies to the Pressure Equipment Directive 97/23/EC.

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. 1 - Fig. 2 page 2-6)

The product concept is based on a robust modular design with integrated shut-off valves (ball / seat chamfer). This modular design can be used as the basis for steam traps with several control systems.

- Bimetallic steam trap series 60A
- Thermostatic steam trap series 61A
- Thermodynamic steam traps series 64A
- Ball float steam traps series 63A

The valve is based on a hard-sealing (metal on metal) construction:

(refer to Fig. 8 page 2-12 - Fig. 9 page 2-13)

- body (pos. 1) / screw fitting (pos. 15)
- seat (pos. 3) / body (pos. 1)
- valve plug (pos. 4) / seat (pos. 3)
- safety back-sealing mechanism
 - Stop valve with gland packing: spindle (pos. 11) / screw fitting (pos. 15)
 - Stop valve with bellows seal: spindle (pos. 11) / spindle guide (pos. 16)

There are also graphite rings (pos. 5 / pos. 10) which take over external sealing in the position between "OPEN" or "SHUT".



ATTENTION !

Do not use shut-off valves for OPEN-SHUT function to throttle volume flow.

Valve position:

OPEN - Safety back-sealing mechanism effective when valve fully open.

SHUT - Valve plug (pos. 4) / chamfer at seat (Pos 3) seal effective.

a) Bimetallic steam trap series 60A

(refer to Fig. 3 page 2-7)

(for particular description of the control system, refer to the Operating and installation instruction of CONA B series 600)

For regulation the steam trap uses both condensate temperature as well as available upstream pressure and back pressure. As the temperature of the medium rises the bimetallic plates arch, automatically reducing valve lift. An intermediately mounted compression spring also influences valve lift in the lower pressure range, so that when acting together with the bimetallic plates the controller always opens and closes a few degrees below the upstream pressure boiling temperature. A pendulum-form support for the valve spindle ensures consistent operation, irrespective of the position in which the steam trap is mounted.

The steam trap vents air automatically during system start-up and operation.

The steam trap has a corrosion-resistant, water hammer-proof bimetallic controller, non-return protection, and a factory setting for average condensate sub-cooling of approx. 15K (PN16-40).

The built-in controller is marked on the type plate as well as on the securing component.

b) Thermostatic steam trap series 61A

(refer to Fig. 4 page 2-7)

(for particular description of the control system, refer to the Operating and installation instruction of CONA M series 610)

The steam trap uses the condensate temperature and available upstream pressure for control. It vents automatically during system start-up and operation. It has a corrosion-resistant, water hammer-proof diaphragm capsule which always discharges the consistently supercooled condensate a few degrees below the upstream pressure-dependent boiling temperature.

c) Thermodynamic steam traps series 64A

(refer to Fig. 4 page 2-7)

(for particular description of the control system, refer to the Operating and installation instruction of CONA TD series 640)

For control the steam trap uses the condensate temperature as well as the available upstream pressure and back pressure.

In the controller (pos. 24) the valve plate is enclosed by the cap and the seat. When the boiling temperature of the medium is reached, a cushion of steam forms over the valve plate and presses the valve plate onto the seal faces of the seat.

To a very great extent the external sealing cap (pos. 6) frees the steam trap (in PN40) from environmental influences. The steam cushion collapses as a result of condensate formation and the associated temperature drop.

The system pressure lifts the valve plate from the seat face. The steam trap opens and removes condensate.

The steam trap vents air automatically during system start-up and operation, but with a time lag. The steam trap acts as a non-return valve.

d) Ball float steam traps series 63A

(refer to Fig. 6 page 2-7 and Fig. 10 page 2-16)

(for particular description of the control system, refer to the Operating and installation instruction of CONA SC series 634)

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.

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.

4.3 Diagram

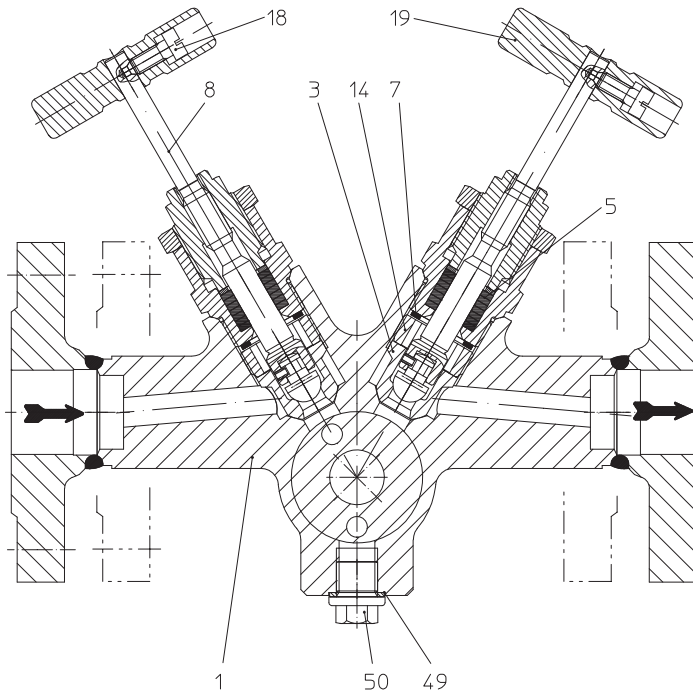


Fig. 1: Stop valve with gland packing

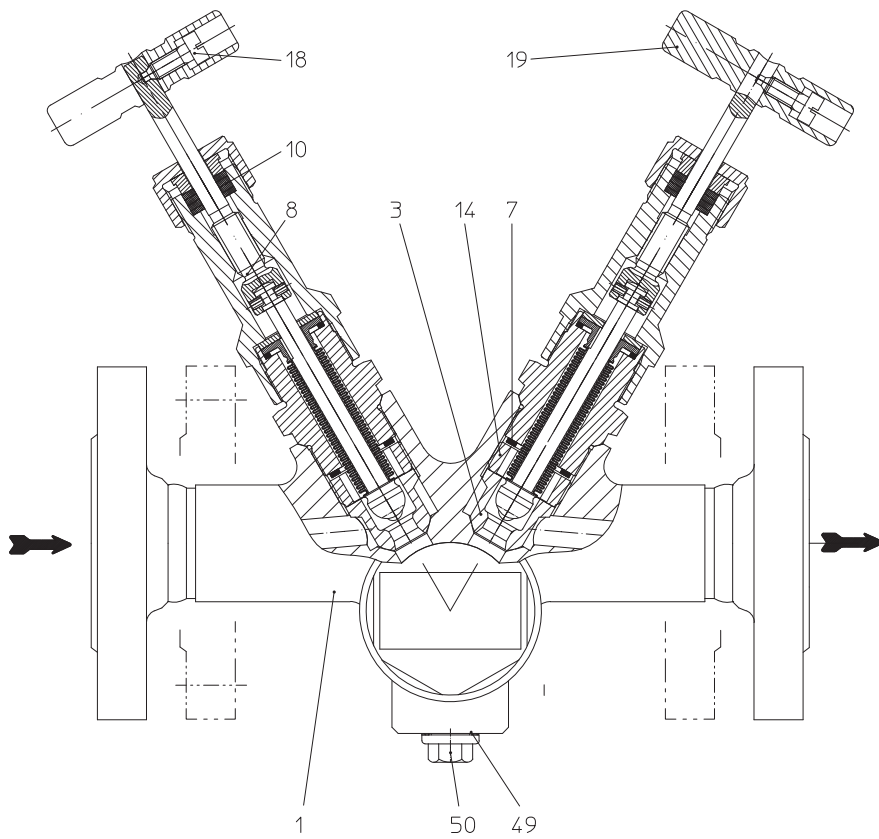


Fig. 2: Stop valve with bellows seal

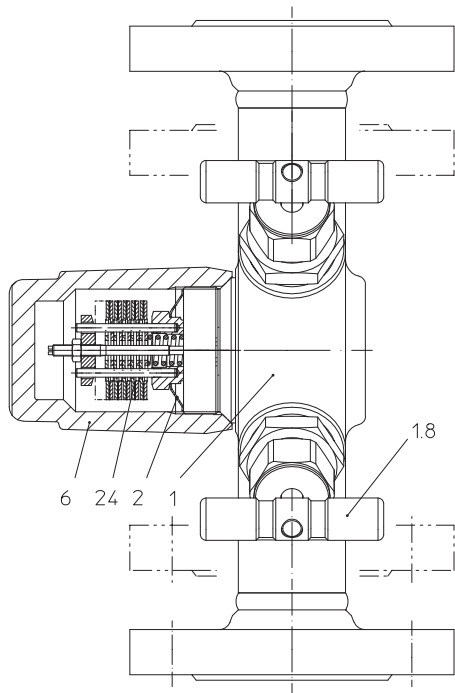


Fig. 3: CONA[®]B All-in-one - BR60A

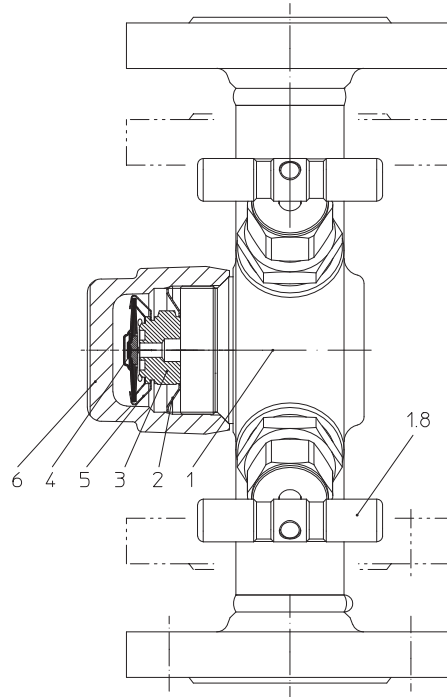


Fig. 4: CONA[®]M All-in-one - BR61A

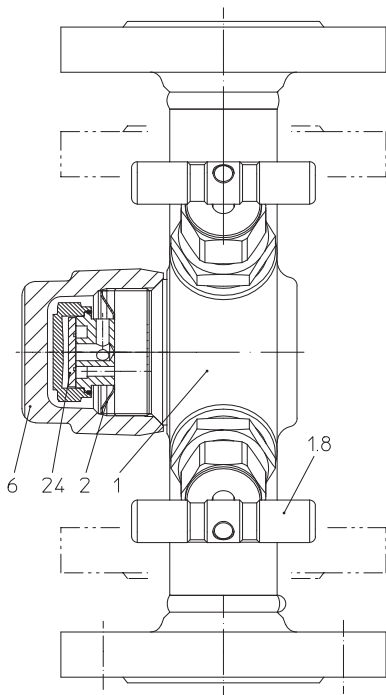


Fig. 5: CONA[®]TD All-in-one - BR64A

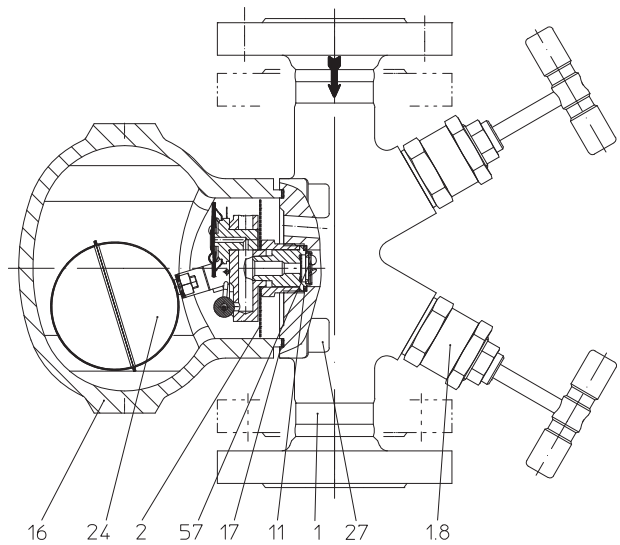


Fig. 6: CONA[®]SC All-in-one - BR63A

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:

AWH Manufacturer Anschrift des Herstellers:
 siehe Pkt 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.
- Installation position vertical (series 671/675) or horizontal (series 672/676).
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 all facilities susceptible to frost.

- 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 - Fig. 6 page 2-7)

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 sealing ring (pos. 17). The heat-affected zone should be restricted to the immediate weld seam area!

If there are plans to etch the facility before putting it into operation, the complete shut-off valve assembly (pos. 8) should be removed, replaced by etch inserts, and refitted after etching (see 7.1). In such an event please contact the manufacturer.

5.3 Steam trap testing through ultrasonic measurement

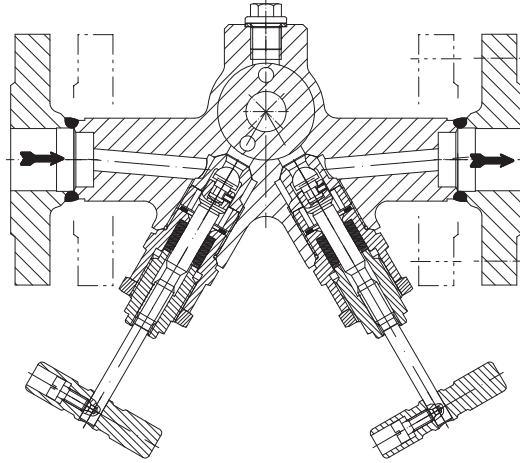
Testing the operation of the steam trap in the installed state is straightforward with the “ARImetec[®]-S” multifunctional testing device.

Refer to data sheet “ARImetec[®]-S”.

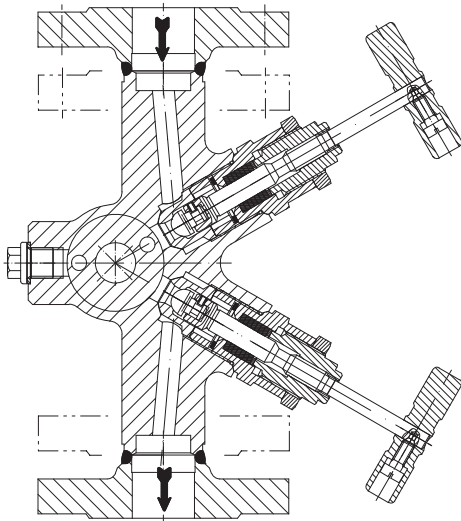
5.4 Installation position

Note installation position relative to flow, see mark on valve.
 (refer to Fig. 7 page 2-10)

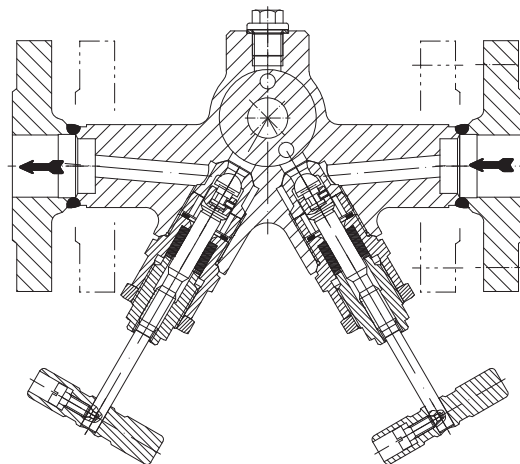
5.4.1 Possible installation positions



Horizontal installation:
 Inlet from the left side (ZL)



Vertical installation (standard):
 Inlet from the top



Horizontal installation:
 Inlet from the right side (ZR)

Fig. 7

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

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).

7.1 Disassembling/assembling complete shut-off valve assembly

(see Fig. 1 page 2-6 - Fig. 2 page 2-6)

- Open spindle (pos. 11) fully as far as the stop.
- Unscrew shut-off valve assembly (pos. 8) from body (pos. 1) by rotating to the left.
- Remove graphite insert (pos. 7).
- Unscrew hollow-core screw (pos. 14) using AWH assembly spanner.
- Remove seat (pos. 3).
- Assemble in reverse order (see 7.6).

7.2 Replacing the packing rings

- Dismantle shut-off valve assembly (pos. 8) as described in 7.1.



ATTENTION !

It is vital to avoid damage to spindle surface and packing chamber surface.

- Rotate spindle (pos. 11) in closing direction.
- Slacken cheese-head screw (pos. 18).
- Pull handle (pos. 19) away from spindle (pos. 11).
- Release lock nut (pos. 13).
- Unscrew threaded bush (pos. 12).
- Withdraw spindle (pos. 11) downwards from threaded bush (pos. 12).
- Dismantle cover ring (pos. 20) and packing rings (pos. 5).
- Clean packing chamber and spindle surface.
- Push spindle (pos. 11) into screw fitting (pos. 15) and fit new packing rings (pos. 5).
- Assemble in reverse order (see 7.6).

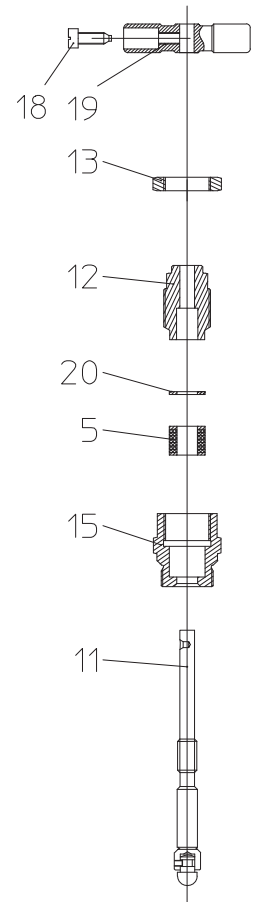



Fig. 8

7.3 Replacing packing rings of the secondary sealing gland packing

- Dismantle shut-off valve assembly (pos. 8) as described in 7.1.



ATTENTION !
It is vital to avoid damage to spindle surface and packing chamber surface.

- Rotate spindle (pos. 11) in closing direction.
- Slacken cheese-head screw (pos. 18).
- Pull handle (pos. 19) away from spindle (pos. 11).
- Unscrew sleeve nut (pos. 6).
- Remove pressure plate (pos. 21).
- Unscrew spindle guide (pos. 16) from screw fitting (pos. 15) and withdraw from spindle (pos. 11).
- Dismantle packing rings (pos. 10).
- Clean packing chamber and spindle surface.
- Push spindle (pos. 11) into spindle guide (pos. 16) and fit new packing rings (pos. 10).
- Assemble in reverse order (see 7.6).

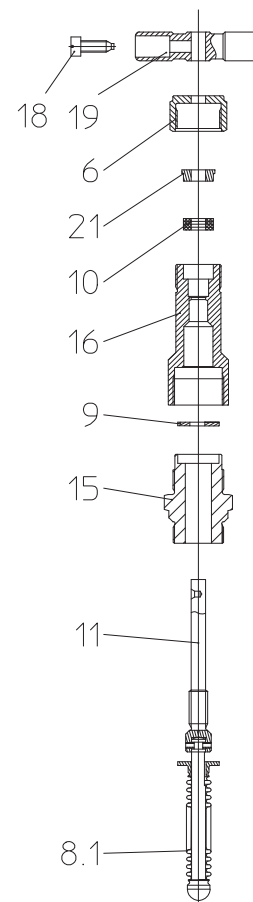


Fig. 9

7.4 Cleaning/replacing controller assembly

a) Bimetallic steam trap series 60A

(refer to Fig. 3 page 2-7)

- Depressurise equipment (isolate supply line, also discharge line if there is back pressure).
- Release and dismantle sealing cap (pos. 6).
- Unscrew bimetallic controller (pos. 24) and remove strainer (pos. 2).
- Clean body (pos. 1), sealing cap (pos. 6) and strainer (pos. 2) as well as all seal faces.
- Clean bimetallic controller (pos. 24) and check sealing components at seat (pos. 24.1). If the operator thinks there is unwarranted leakage of steam at the steam trap, we recommend checking the controller setting or replacing the complete bimetallic controller (pos. 24)
- Insert strainer (pos. 2), making sure the sealing faces are clean.
- Screw in bimetallic controller (pos. 24) and tighten (see 7.6)
- Replace sealing cap (pos. 6) (see 7.6).

b) Thermostatic steam traps series 61A

(refer to Fig. 4 page 2-7)

- Release sealing cap (pos. 6).
- Pull spring clip (pos. 5) off radially and remove diaphragm capsule (pos. 4) from seat (pos. 3).
- remove strainer (pos. 2).
- Clean body (pos. 1), sealing cap (pos. 6) and strainer (pos. 2) as well as all seal faces.
- Clean diaphragm capsule (pos. 4) and check sealing components at seat (pos. 3). If the operator thinks there is unwarranted leakage of steam at the steam trap, we recommend replacing the membrane capsule (pos. 6). If the seal faces at the seat (pos. 3) are damaged, these should also be replaced with new components.
- Insert strainer (pos. 3), making sure seat/body sealing faces are clean.
- Screw seat (pos. 3) in and tighten (see 7.6).
- Fit diaphragm capsule (pos. 4) to seat (pos. 3) and push the spring clip (pos. 5) radially into slot of seat (pos. 3), at the same time pushing the two angled ends of the spring clip legs (pos. 5) onto the diaphragm capsule (pos. 4).

c) Thermodynamic steam traps series 64A

(refer to Fig. 4 page 2-7)

- Release sealing cap (pos. 6) and unscrew.
- Unscrew controller (pos. 24) and remove strainer (pos. 2).
- Clean body (pos. 1), sealing cap (pos. 6) and strainer (pos. 2) plus all seal faces.
- Clean controller (pos. 24).). If the operator thinks there is unwarranted leakage of steam at the steam trap, we recommend replacing the complete controller (pos. 24).
- Insert strainer (pos. 2), making sure controller/body seal faces are clean.
- Screw in and tighten controller (pos. 24).
- Put on and tighten sealing cap (pos. 6).

d) Ball float steam traps series 63A

(refer to Fig. 6 page 2-7 and Fig. 10 page 2-16)

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

7.5 Changing the installation position

a) Ball float steam traps series 63A

(refer to Fig. 6 page 2-7)

- 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 7.6) and tighten crosswise.

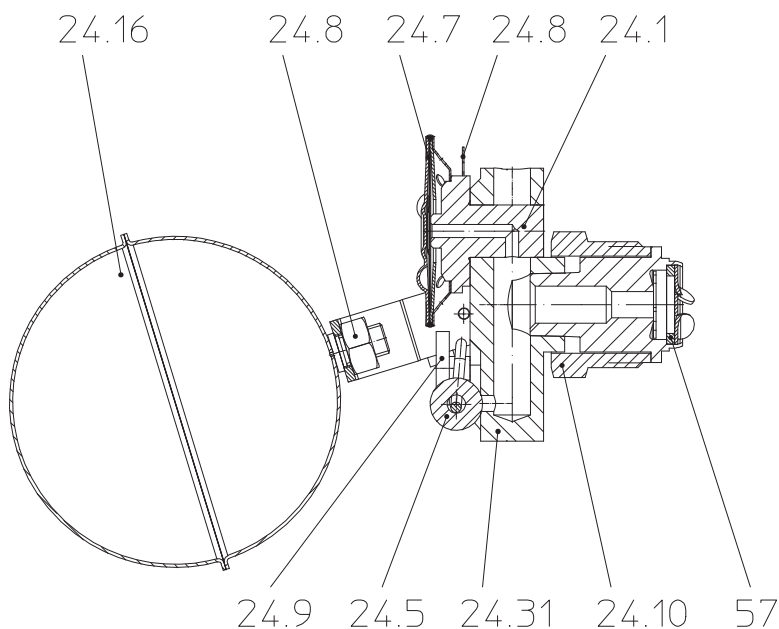


Fig. 10: Controller series 63A, kpl.

7.6 Tightening torques

(refer to Fig. 3 page 2-7 - Fig. 10 page 2-16)

pos.	Designation	Torque (Nm)
6	Screw cap	100
12	Threaded bush	10
13	Safety nut	70
14	Banjo bolt	70
15	Fitting	90
16	Stem guiding	90
24	Controller / seat	80

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
	Flange covers not removed	Remove flange covers
	at series 63A: Ball float (pos. 24.16) defective	Check lifting force
Little flow	Piping system clogged	Check piping system
	Strainer clogged (pos. 2)	Clean / replace strainer; refer to item 7.4
	Wrong controller size chosen	Correct selection acc. to flow diagram
	Changed upstream pressure or back pressure operating conditions	Correct selection acc. to flow diagram
	Wrong installation position	Note installation position; refer to item 5.4! Correct installation position; refer to item 7.5
No closure, or internal leakage	Shut-off valve clogged	Clean shut-off valve; refer to item 7.1
	Shut-off valve worn	Replace shut-off valve; refer to item 7.1
	Shot-off valve operated above safe operating pressure	Observe operating limits as per data sheet
	Controller clogged	Clean strainer and controller; refer to item 7.4
	Controller worn out	Replace controller; refer to item 7.4
	Controller incorrectly screwed into body	Check seal face between body and controller, tighten controller correctly ; refer to item 7.6
	Diaphragm capsule (pos. 4) clogged	Clean strainer and diaphragm capsule; refer to item 7.4
	Diaphragm capsule worn out	Replace diaphragm capsule; refer to item 7.4
External leakage	Shut-off valve not properly tightened	Tighten; see 7.6
	Seal (pos. 5, 10) defective	Replace sealing; refer to item 7.2 and 7.3
	Screw cap (pos. 6) not properly tightened	Tighten; refer to item 7.6
	Seal (pos. 26) defective	Replace sealing; refer to item 7.6
	Hood (pos. 16) not properly tightened with cheese-head screw (pos. 27)	Tighten; refer to item 7.6
	Flat gasket (pos. 17) defective	Replace sealing; refer to item 7.4

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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