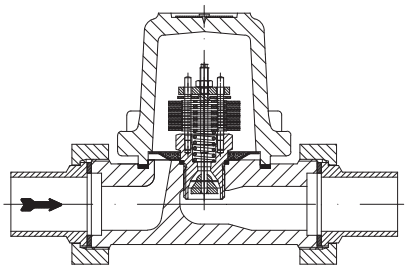
ARMATUREN

Operating and installation instructions

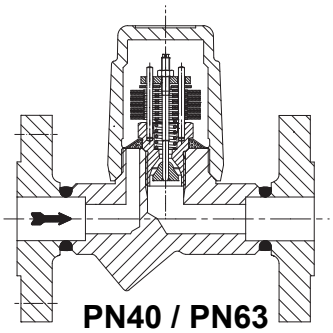
Bimetallic steam traps

CONA®B (PN16 - 630 / Class 150 -2500)



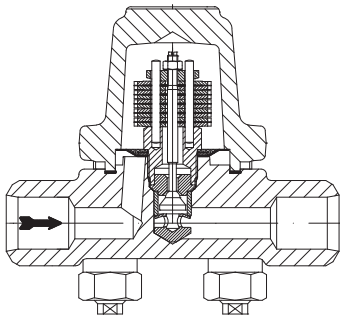
PN16

- with flanges (series 600....1)
- union with butt weld ends (series 600....5)



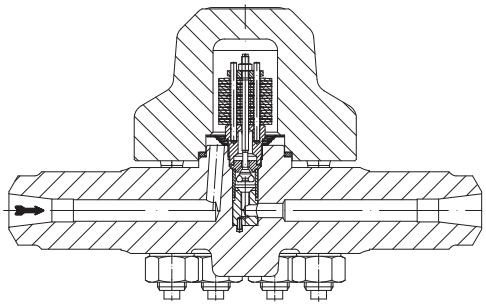
PN40 / PN63
Class 150 - 600

- with flanges (series 600/601....1)
- with screwed sockets (series 600/601....2)
- with socket weld ends (series 600/601....3)
- with butt weld ends (series 600/601....4)



PN63 - 250
Class 400 -1500

- with flanges (series 600....1)
- with socket weld ends (series 600....3)
- with butt weld ends (series 600....4)



PN320 - 630
Class 2500

- with flanges (up to PN400) (series 600....1)
- with butt weld ends (series 600....4)

Contents

1.0 General information on operating instructions 2-2
2.0 Notes on possible dangers 2-2
2.1 Significance of symbols 2-2
2.2 Explanatory notes on safety information 2-2
3.0 Storage and transport 2-2
4.0 Description 2-3
4.1 Scope of applications 2-3
4.2 Operating principles 2-3
4.3 Diagram 2-4
4.4 Technical data - remarks 2-7
4.5 Marking 2-7
5.0 Installation 2-8
5.1 General notes on installation 2-8
5.2 Installation instructions for welding 2-9
5.3 Controller adjustment 2-9
5.3.1 Factory setting 2-10
5.3.2 Special setting 2-10
5.3.3 Version with plug in screw cap (series 602/603) 2-10
5.4 Steam trap testing through ultrasonic measurement 2-10
5.5 Installation position 2-11
6.0 Putting the valve into operation 2-11
7.0 Care and maintenance 2-11
7.1 Cleaning/replacing controller assembly 2-11
7.2 Options 2-12
7.3 Tightening torques 2-13
8.0 Troubleshooting 2-14
9.0 Troubleshooting table 2-14
10.0 Dismantling the valve or the body 2-15
11.0 Warranty / Guarantee 2-15

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

Bimetallic steam traps with thermal controller 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

(refer to Fig. 10 and Fig. 11)

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 (pos. 24.6) arch, automatically reducing valve lift. An intermediately mounted compression spring (pos. 24.5 only required for PN16-100 / Class 150 - 600) also influences valve lift in the lower pressure range, so that when acting together with the bimetallic plates (Pos 24.6) the controller always opens and closes a few degrees below the upstream pressure boiling temperature. A pendulum-form support (pos. 24.7) for the valve spindle (pos. 24.3) 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 / Class 150 - 300) to approx. 30K (PN63-630 / Class 400 - 2500).

The built-in controller is marked on the type plate as well as on the securing component (pos. 24.7).

4.3 Diagram

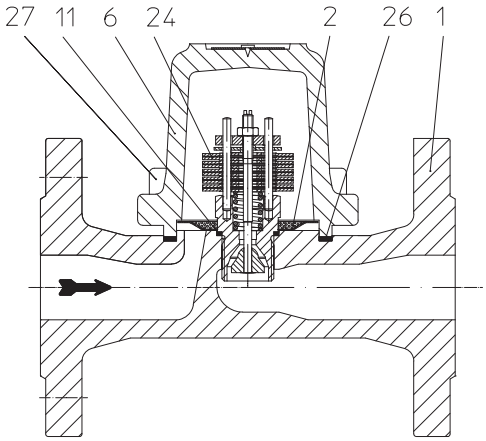


Fig. 1: CONA®B - series 600 PN16
DN15-50

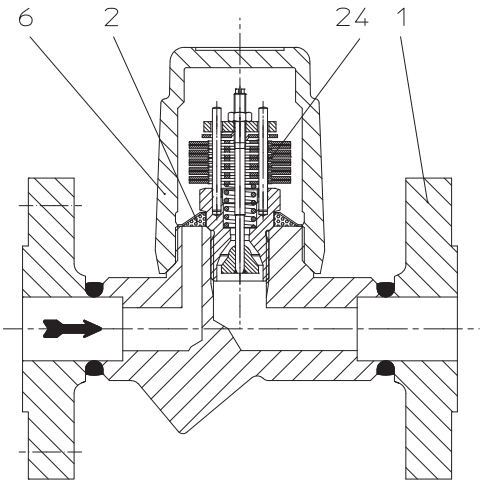


Fig. 2: CONA®B - series 600 PN40/63
DN15-25 / Class 150 - 600 NPS 1/2“ - 1“

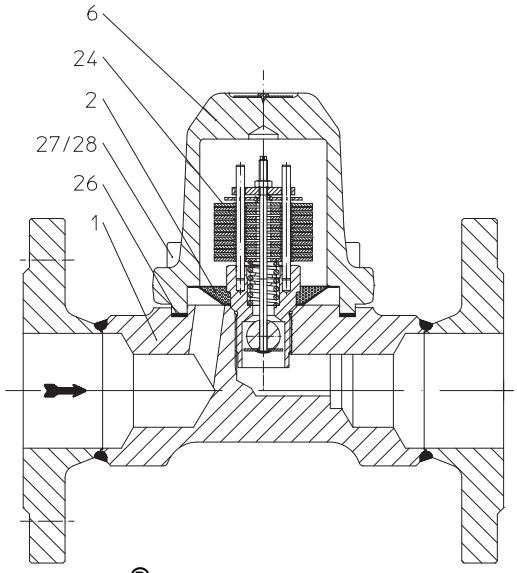


Fig. 3: CONA®B - series 600 PN40 DN32-50 /
Class 150 / Class 300 NPS 1 1/2“ - 2“

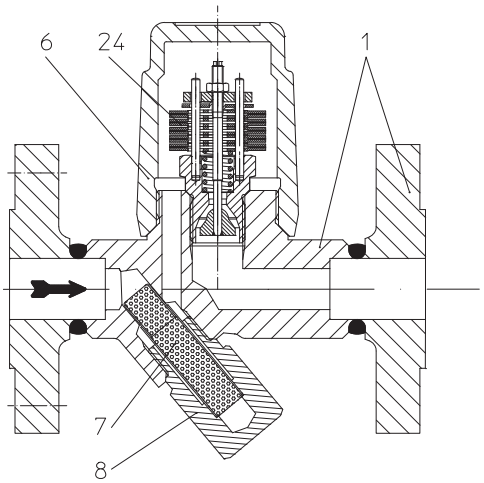


Fig. 4: CONA®B - series 601 PN40 DN15-25 /
Class 150 - 600 NPS 1/2“ - 1“

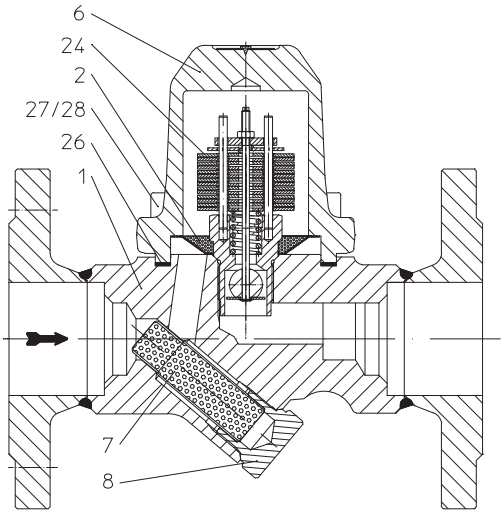


Fig. 5: CONA®B - series 601 PN40 DN32-50 /
Class 150 / Class 300 NPS 1 1/2“ - 2“

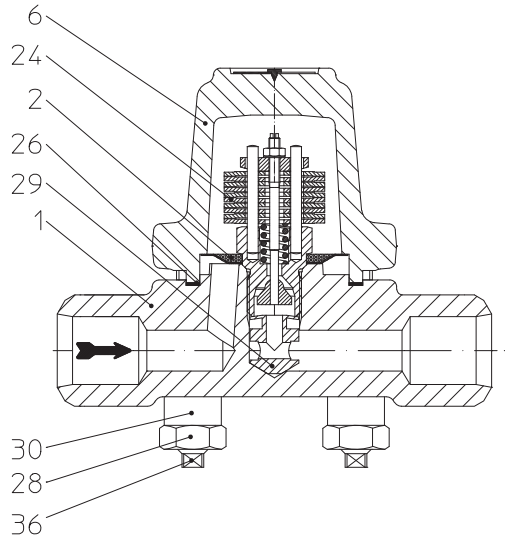


Fig. 6: CONA®B - series 600 PN63/100 DN15-25 / Class 400 / Class 600 NPS 1/2“ - 1“

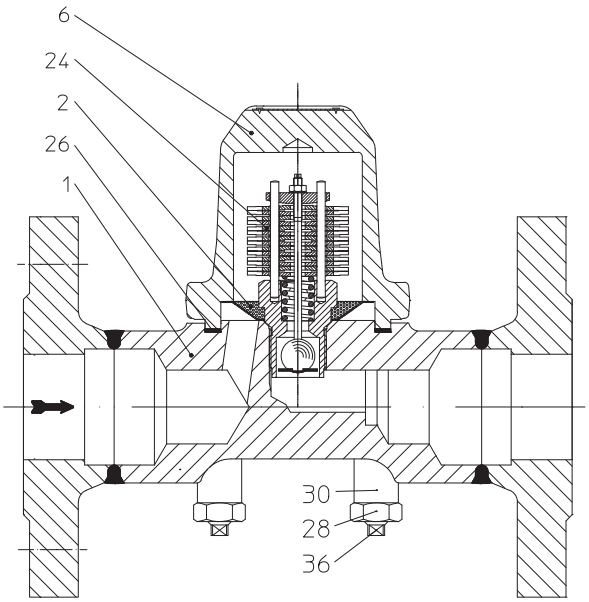


Fig. 7: CONA®B - series 600 PN63 DN32-50

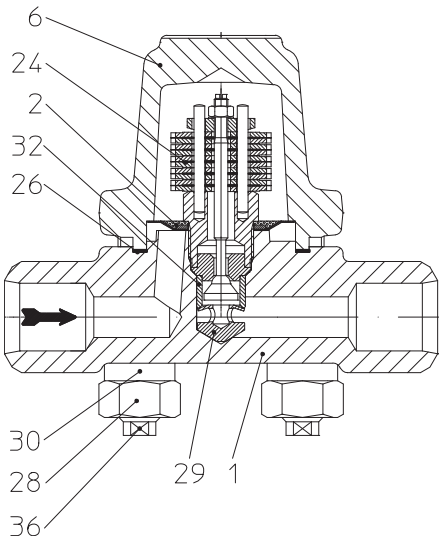


Fig. 8: CONA®B - series 600 PN160/250 DN15-25 / Class 900 / Class 1500 NPS 1/2“ - 1“

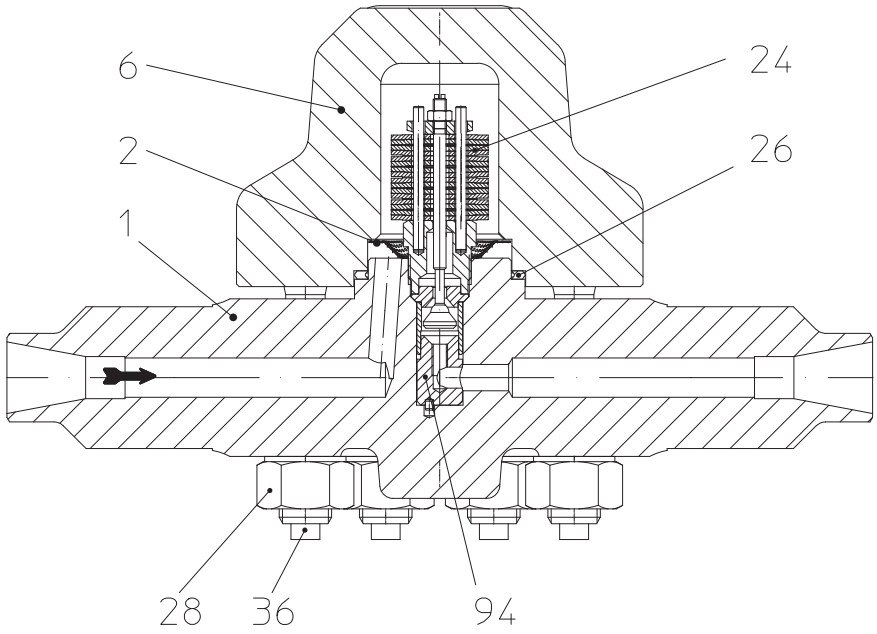


Fig. 9: CONA®B - series 600 PN320-630 DN15-25
Class 2500 NPS 1/2“ - 1“

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	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.

- Installation in any position (except screw cap/cover downwards). 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.

- 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. 6, Fig. 8 and Fig. 9)

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. 26). The heat-affected zone should be restricted to the immediate weld seam area!
At face-to-face dimension 95mm, and also at nominal pressures PN63-630 / Class 400-Class 2500 before welding or stress relief annealing, the controllers have to be extended (see 7.1).
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

ATTENTION !

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

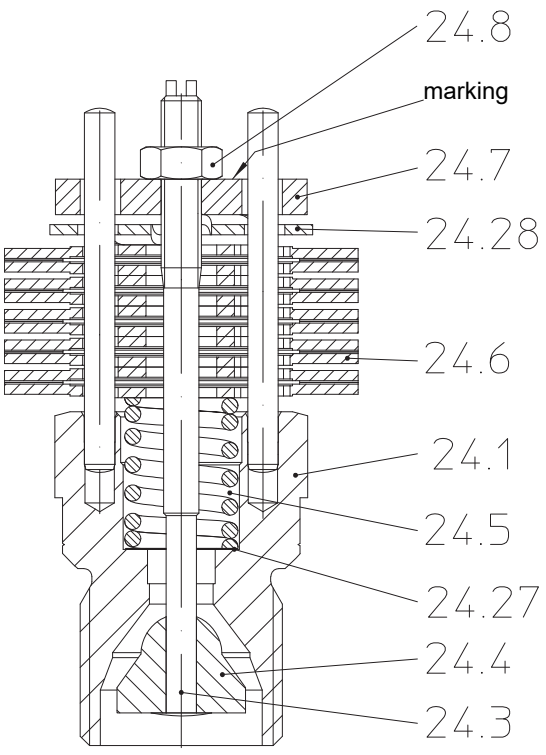


Fig. 10: Bimetallic controller PN16-100 / Class 150-600

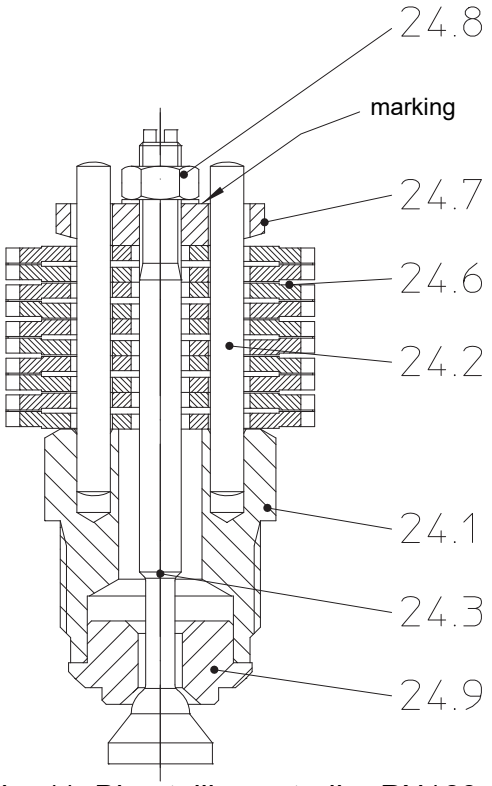


Fig. 11: Bimetallic controller PN160-630 / Class 900-2500

5.3.1 Factory setting

(see Fig. 10 - Fig. 11)

The bimetallic controller is set at the factory, but may be adjusted for special operating conditions if required. Should the controller be inadvertently misadjusted by the operator, the factory setting can be roughly reset as follows:

- Let bimetallic controller cool to room temperature (20-25°C)
- Slacken hexagon nut (pos. 24.8)
- Rotate spindle (pos. 24.3) to the left with a screwdriver until a slight resistance is felt. The valve ball (pos. 24.4) now rests against seat (pos. 24.1) or seat bushing (pos. 24.9).
- Rotate spindle (pos. 24.3) back to the right as shown in the table:

	rotations			rotations
controller	**DN15-25 / NPS 1/2“-1“**	**DN32-50 / NPS 1 1/2“-2“**	**controller**	**DN15-25 / NPS 1/2“-1“**
R13	3,25	5,7	**R90**	2,25
R22	2,5	5,7	**R130**	3,5
R32	3	5,9	**R150**	3,5
R46	2,75	--	**R270**	2,75
R56	2,75	6	**R320**	2,5

- Tighten hexagon nut (pos. 24.8), holding against bimetallic assembly (see 7.3).

5.3.2 Special setting

(see Fig. 10 and Fig. 11)

If increased sub-cooling is required for the heating process, the spindle (pos. 24.3) must be rotated to the left. If less condensate sub-cooling or maximum hot water output is required, rotate spindle (pos. 24.3) to the right. A 1/4 turn is roughly equal to a temperature change of 10K.

Please note that settings should only be changed when the unit is cold. After correcting the setting, properly retighten the hexagon nut (pos. 24.8) (see 7.3).

5.3.3 Version with plug in screw cap (series 602/603)

In this version the controller setting can be changed without dismantling the screw cap/cover.

To do this remove the plug (pos. 43) **in the unpressurised state** and, using a screwdriver, adjust the spindle (pos. 24.3) direct from outside. The same particulars apply as in items 5.3.1 and 5.3.2. After adjustment, tighten the plug (pos. 43) (see 7.3).

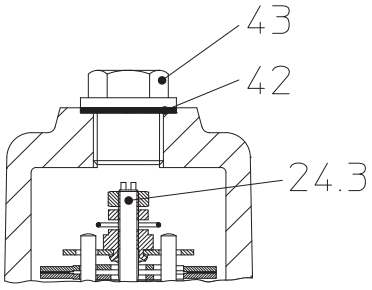


Fig. 12

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

The steam trap can be installed in any position except screw cap/cover (pos. 6) down. Note installation position relative to flow, see marking on the valve.

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 PN 16-40 / Class 150 / Class 300 or “Rivolta” lubricant and parting agent for PN 63 / Class 900 onwards).

7.1 Cleaning/replacing controller assembly

(see Fig. 1 and Fig. 11)

- Depressurise equipment (isolate supply line, also discharge line if there is back pressure).
- Release and dismantle screw cap (pos. 6) and cover screw connection (pos. 28).
- Unscrew bimetallic controller (pos. 24) and remove strainer (pos. 2).
- Clean body (pos. 1), screw cap/cover (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 7.3).
- Replace screw cap/cover (pos. 6) and assemble hexagon nuts (pos. 28) (see 7.3).
- If the model has sealing rings (pos. 11) and (pos. 26) they should be replaced.

Series 601:

- 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 7.3).

PN63-250 / Class 400-1500:

- Special wear bushing (pos. 29) and adapter sleeves (pos. 32) are used. If necessary these may be replaced after dismantling the controller (pos. 24). They are used to protect the body (pos. 1) from blasting wear.
- A resilient sleeve (pos. 30) is then also fitted.

PN320-630 / Class 2500:

- Special erosion deflector (pos. 94) is used. If necessary these may be replaced after dismantling the controller (pos. 24). They are used to protect the body (pos. 1) from blasting wear.

- Assemble in reverse order (see 7.3).

7.2 Options

ATTENTION !

Escape of hot medium under pressure!
Observe item 2.2 !

Accumulated dirt can be blown out of the strainer sleeve (pos. 7) through the **blow down valve** (pos. 46) by opening the pressure screw (pos. 46.1).
When opening, hold against blow down valve (pos. 46).

Accumulated dirt can also be removed from screen by 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 7.3 when installing and operating the option.

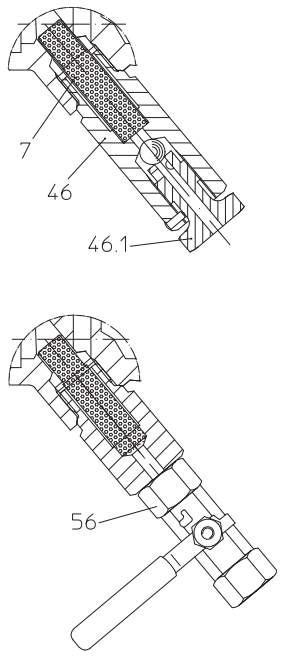


Fig. 13

7.3 Tightening torques

(refer to Fig. 1 and Fig. 11)

Pos.	CONA B PN16	Torque (Nm)
27	Cheese head screw M10	30
24	Controller	60
24.8	Hexagon nut	10

Pos.	CONA B PN40 / Class 150-600	Torque (Nm)
6	Screw cap	100
24	Controller	80
24.8	Hexagon nut	10
8	Strainer plug	70
43	Plug (series 602/603)	70
46	Blow down valve	70
46.1	Pressure screw	15

Pos.	CONA B PN63-100 / Class 400-600	Torque (Nm)
28	Hexagon nut M12 / M16	50 / 80
24	Controller	100
24.8	Hexagon nut	10

Pos.	CONA B PN160-250 / Class 900-1500	Torque (Nm)
28	Hexagon nut M16	80
24	Controller	120
24.8	Hexagon nut	10

Pos.	CONA B PN320-630 / Class 2500	Torque (Nm)
28	Hexagon nut M20	200
24	Controller	120
24.8	Hexagon nut	10
34	Service screw	200

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
	Flange covers not removed	Remove flange covers
Little flow	Strainer clogged (pos. 2)	Clean / replace strainer; refer to item 7.1
	Piping system clogged	Check piping system
	Wrong controller size choosen	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	Controller clogged	Clean strainer and controller; refer to item 7.1
	Controller worn out	Replace controller; refer to item 7.1
	Controller misadjusted/incorrectly set	Change setting; refer to item 5.3
	Controller incorrectly screwed into body	Check seal face between body and controller, tighten controller correctly ; refer to item 7.3
	Controller operated above safe operating pressure	Observe operating limits as per data sheet, i.e. possibly select a different controller
External leakage	Screw cap (pos. 6) or cover with hex. nut (pos. 28) not properly tightened	Tighten; refer to item 7.3
	Seal (pos. 26) defective	Replace sealing; refer to item 7.3

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.

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