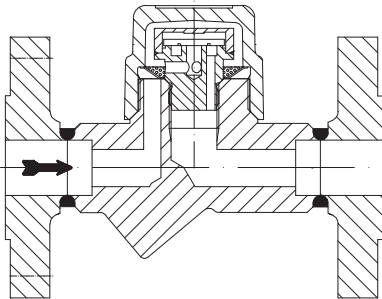


Operating and installation instructions

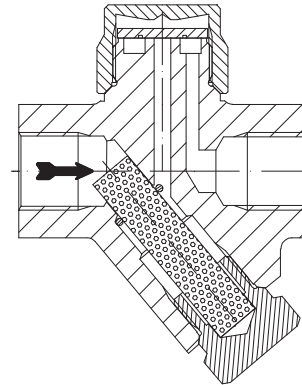
Thermodynamic steam traps

CONA[®]TD (PN40 - 63)



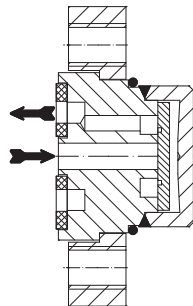
PN40

- with flanges (series 640/641....1)
- with screwed sockets (series 640/641....2)
- with socket weld ends (series 640/641....3)
- with butt weld ends (series 640/641....4)



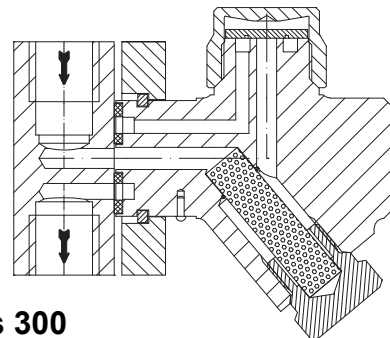
PN63

- with screwed sockets (series 640/641....2)
- with socket weld ends (series 640/641....3)



Class 300

- for quick assembly/disassembly on
AWH and foreign system connectors
- Loose flange (series 642/643....7)



Class 300

for quick assembly/disassembly on
AWH and foreign system connectors
with system connector

- screwed sockets (series 642/643....2)
- socket weld ends (series 642/643....3)

Contents

1.0 General information on operating instructions.....	2	5.4 Steam trap testing through ultrasonic measurement	8
2.0 Notes on possible dangers.....	2	5.5 Installation position.....	8
2.1 Significance of symbols	2	6.0 Putting the valve into operation	8
2.2 Explanatory notes on safety information	2	7.0 Care and maintenance	9
3.0 Storage and transport	2	7.1 Cleaning / replacing controller assembly.....	9
4.0 Description.....	3	7.1.1 Series 640/641	9
4.1 Scope of applications	3	7.1.2 Series 642/643 with loose flange or system connector.....	9
4.2 Operating principles	4	7.2 Option blow down valve	10
4.3 Diagram.....	5	7.3 Tightening torques.....	10
4.4 Technical data - remarks	7	8.0 Troubleshooting	10
4.5 Marking	7	9.0 Troubleshooting table	11
5.0 Installation.....	7	10.0 Dismantling the valve or the body	12
5.1 General notes on installation.....	7	11.0 Warranty / Guarantee	12
5.2 Installation instructions for welding	8	12.0 EC declaration of conformity	13
5.3 Controller adjustment.....	8		

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.

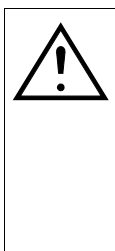
2.2 Explanatory notes on safety information

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">- <i>Protect against external force (like impact, vibration, etc.).</i>- <i>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.</i>- <i>Suitable materials handling and lifting equipment should be used.</i> <p><i>See catalog sheet for weights.</i></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

Thermodynamic steam traps 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 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

Series 640/641:

(refer to Fig. 1-Fig. 2 page 5, Fig. 7-Fig. 8 page 6)

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 (Pos. 25) 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 (Pos. 25) and presses the valve plate (Pos. 25) 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 (Pos. 25) 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.

The built-in controller is marked on the type plate.

Series 642/643:

(refer to Fig. 3-Fig. 4 page 5, Fig. 5-Fig. 6 page 6)

The thermodynamic steam trap has an axially movable, flat valve plate (Pos. 25), which is enclosed within a sealed cap (Pos. 6) and in its closed position simultaneously seals on the inner and outer annular seat. For control this steam trap makes use of the differing pressure and temperature conditions of steam and condensate flow during gradual expansion.

The annular clearance areas between valve plate (Pos. 25) and seat (incorporated in body (Pos. 1)) or toroidal chamber, as well as the flow channels in the supply and discharge area, are selected so that hot water flow in the valve area already produces intensive evaporation, and at the same time the pressure chamber above the valve plate (Pos. 25) is laden with this flash steam.

This presses the valve plate (Pos. 25) onto the seat opposite (incorporated in the body (Pos. 1)).

If cooling/condensation causes the pressure of the steam enclosed in the pressure chamber to drop, as the inner annular valve seat (inflow) falls below the opposing surface force the valve plate (Pos. 25) is lifted and the steam trap opens.

If no evaporation occurs in the annular clearance area (e.g. cold water inflow), the steam trap stays open. The valve system is dimensioned so that the valve is shut shortly before the boiling temperature of the inflowing condensate is reached.

4.3 Diagram

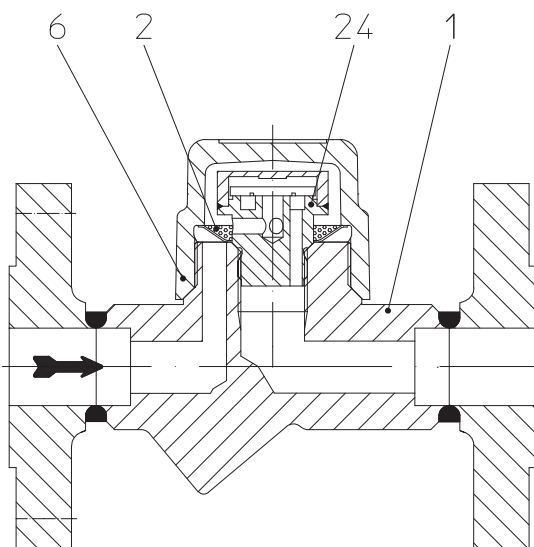


Fig. 1: CONA[®]TD - series 640 PN40

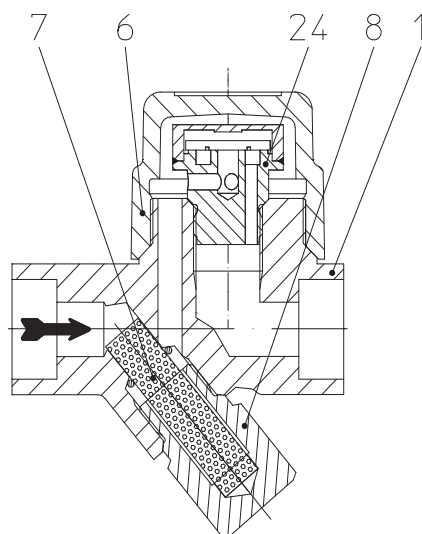


Fig. 2: CONA[®]TD - series 641 PN40

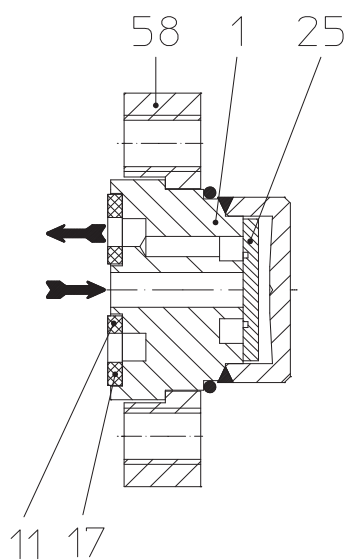


Fig. 3: CONA[®]TD -
series 642 with loose flange Class 300

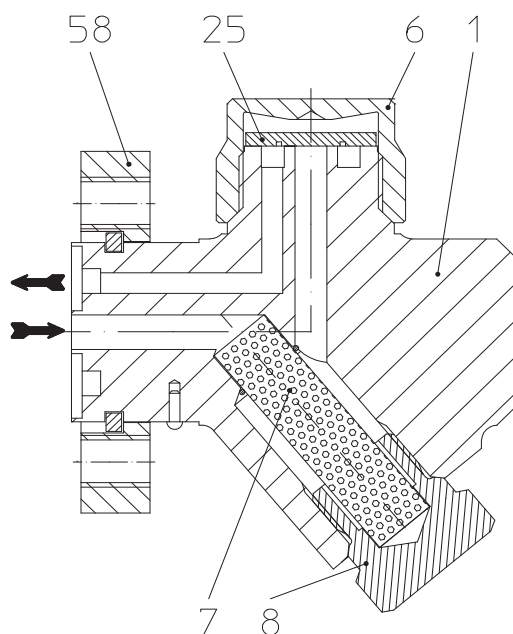


Fig. 4: CONA[®]TD -
series 643 with loose flange Class 300

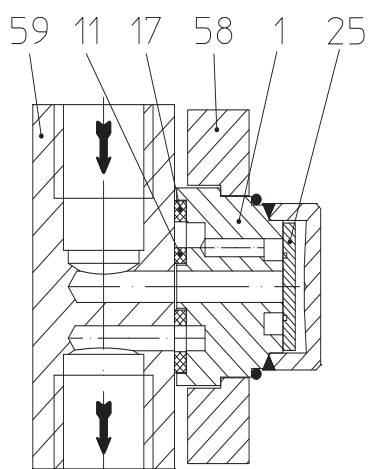


Fig. 5: CONA[®]TD - series 642
with system connector Class 300

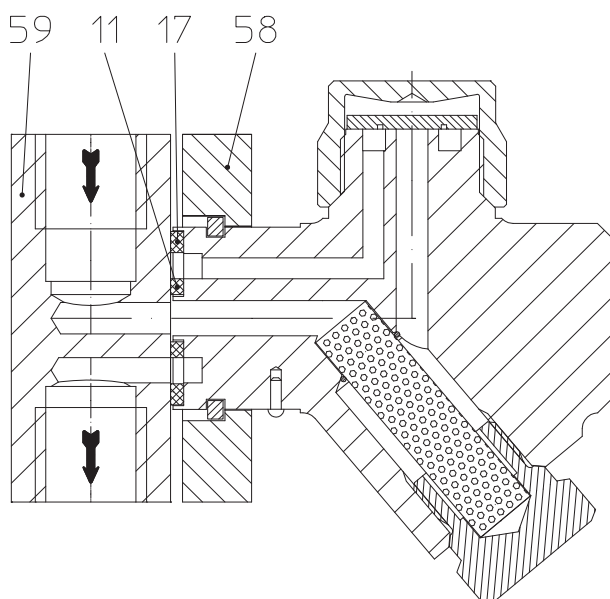


Fig. 6: CONA[®]TD - series 643
with system connector Class 300

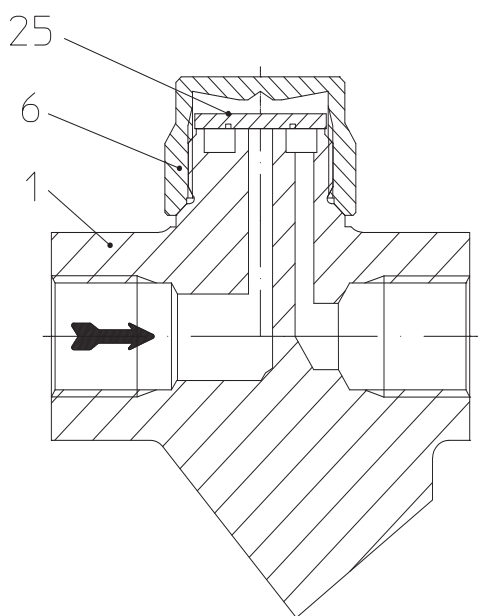


Fig. 7: CONA[®]TD - series 640 PN63

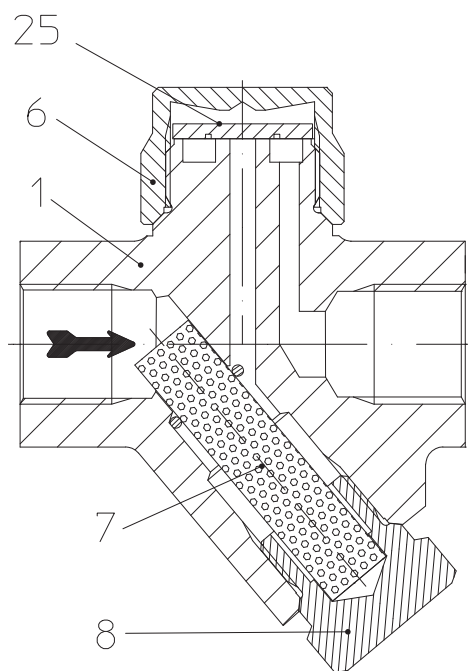


Fig. 8: CONA[®]TD - series 641 PN63

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.*
- *Installation in any position. 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. 2 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 the sealing ring (Pos. 11 and 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.

5.3 Controller adjustment

The steam trap cannot be adjusted.

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" multifunctional testing device.

Refer to data sheet "ARImetec[®]-S".

5.5 Installation position

The steam trap can be installed in any position.

Note direction of flow when installing, see marking on 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 ($> 50\text{ °C}$) 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).

7.1 Cleaning / replacing controller assembly

7.1.1 Series 640/641

(see Fig. 1-Fig. 2 page 5, Fig. 7-Fig. 8 page 6)

- 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).

Series 641:

- 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).

7.1.2 Series 642/643 with loose flange or system connector

(see Fig. 3-Fig. 4 page 5, Fig. 5-Fig. 6 page 6)

- Slacken hexagon nuts (Pos. 27) to disassemble steam trap.
- Remove steam trap (Pos. 1 with 58) from system connection (Pos. 59).
- Remove seal inside (Pos.11) and out (Pos. 17).
- Remove dirt from body (Pos. 1), e.g. by flushing ducts
- If an unwarranted amount of steam is leaking, the cause may also be excessive wearing of the valve plate (Pos. 25) or valve seat (incorporated in Pos. 1).
In this case we recommend replacing the complete steam trap.
- Assemble in reverse order (see 7.3).
- Replace sealing rings (Pos. 11 and 17).

Series 643:

- 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).

7.2 Option blow down valve



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 by opening the pressure screw (Pos. 46.1) (PN40 only).

When opening, hold against blow down valve (Pos. 46).

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.

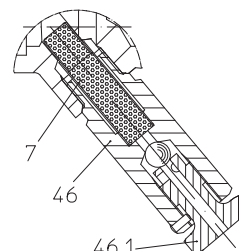


Fig. 9

7.3 Tightening torques

(refer to Fig. 1 page 5-Fig. 8 page 6, Fig. 9 page 10)

Pos.	CONA TD	Torque (Nm)
6	Screw cap (PN40)	100
6	Screw cap (PN63)	80
24	Controller	80
8	Strainer plug	70
46	Blow down valve	70
46.1	Pressure screw	15
27	Hex. nut	20

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
	Flange covers not removed	Remove flange covers
Little flow	Strainer clogged (Pos. 2)	Clean / change strainer; refer to item 7.1
	Piping system clogged	Check piping system
	Changed upstream pressure or back pressure operating conditions	Correct selection acc. to flow diagram
No closure, or internal leakage	Controller (Pos. 24) clogged	Clean strainer and controller; refer to item 7.1
	Controller worn out	Replace controller or valve; refer to item 7.1
	Controller (Pos. 24) incorrectly screwed into body	Check seal face between body and controller, tighten controller correctly, refer to item 7.3
External leakage	Sealing cap (Pos. 6) or system connection with hex. nuts (Pos. 27) not properly tightened	Tighten; refer to item 7.3
	Seals (Pos. 11 and 17) defective	Replace seals; 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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Telephone (+49 5207) 994-0 Telefax (+49 5207) 994-158 or 159

Internet: <http://www.ari-armaturen.com> E-mail: info.vertrieb@ari-armaturen.com

12.0 EC declaration of conformity



AWH Armaturenwerk Halle GmbH,
Turmstrasse 118, D-06110 Halle/Saale

EC declaration of conformity
as defined by
the Pressure Equipment Directive 97/23/EC

We hereby declare

that pursuant to the aforementioned Pressure Equipment Directive the products listed below were executed and classified in accordance with Directive 97/23/EC (Article 3, paragraph 3).

Pursuant to Article 3, paragraph 3 these products need not carry a CE mark.

Thermodynamic steam traps
CONA[®]TD

series	nominal pressure	material	DN
640/641	PN 40-63	all	15-25
642/643	Class 300	all	1/2" - 1"

Applied standards:

DIN 3840
AD 2000-leaflet
ASME VIII/1

Halle/Saale, 27.02.2004



.....
(Dr. Urbanek, Managing director)