GESTRA®

Steam Trap

DK 45

RHOMBUS*line*®

EN
English

Original Installation Instructions

818676-00

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Important Notes

Usage for the intended purpose

Use steam trap only for the discharge of condensed water in pipe lines or for air-venting within the admissible pressure/temperature ratings. Check the corrosion resistance and chemical suitability of the steam trap for the application in question.

For information on the application in potentially explosive areas see section “ATEX Directive 94/9/EC, 1999/92/EC” on page 5.

Safety note

The equipment must only be installed and commissioned by qualified staff.
Maintenance and service work must only be performed by adequately trained persons who have a recognized level of competence.

Danger

The equipment is under pressure during operation.
When loosening flanged connections or sealing plugs, hot water and/or steam may escape.

This presents the risk of severe scalding.

Installation and maintenance work should only be carried out when the system is depressurized (0 bar): isolate the equipment from both upstream and downstream pressure.

The equipment becomes hot during operation. This presents the danger of severe burns to hands and arms. Installation and maintenance work should only be carried out when the system is cold.

Before carrying out any kind of maintenance work or undoing flanged connections or sealing plugs make sure that all connected lines are depressurized (0 bar) and cooled down to room temperature.

Sharp edges on internal parts present a danger of cuts to hands. Always wear industrial gloves when replacing the regulator or the strainer.

Attention

The name plate indicates the technical specification of the equipment.
Do not commission or operate a steam trap without name plate.

Important Notes – continued –

PED (Pressure Equipment Directive)

The equipment fulfils the requirements of the Pressure Equipment Directive 97/23/EC.
DK 45 can be used with fluids of group 1 and 2.
With CE marking (apart from equipment according to section 3.3).

ATEX (Atmosphère Explosible)

The equipment does not have its own potential source of ignition and is therefore not subject to the ATEX Directive 94/9/EC. The equipment can be used in potentially explosive areas 0, 1, 2, 20, 21, 22 (1999/92/EC). The equipment is not Ex marked.

Explanatory Notes

Scope of supply

DK 45

1 Steam trap

1 Installation manual

Description

Thermodynamic steam trap for discharging condensate with virtually not banking-up. With integrated non-return valve and Y-type strainer. Asbestos-free body gasket (graphite).
Installation in any position.

Function

The thermodynamic steam trap features a movable valve disk that rests on a double seat. The condensate enters the steam trap from below, thereby lifting the disk off its seat. It is then deflected by 180° and flows through the small seat orifice into the discharge line. As the temperature of the condensate increases, upstream pressure builds up in the space above the valve disk. When the condensate evaporates into steam, a low-pressure area is formed under the disk due to the increased flow velocity, forcing the disk downwards against its bearing surface and stopping all flow. Since the pressure above the valve disk is acting on a larger surface area, the closing force is much higher than the pressure pushing against the disk from the inlet side. As the steam loses heat, some of it condenses, reducing the pressure above the valve disk and hence the closing force. As soon as the pressure on top of the disk has dropped to a value that equals the opening pressure produced by the upstream pressure, the disk is lift off its seat, and the cycle repeats itself. External factors such as heat, wind, precipitation etc. can effect the functioning and performance of the thermodynamic steam trap considerably. However, the DK 45 is not influenced by these environmental factors because the regulator is protected by the permanently mounted cap.

Technical Data

Corrosion resistance

When used for its intended purpose, the safe functioning of the equipment will not be impaired by corrosion.

Sizing

The trap body must not be subjected to sharp increases in pressure.
The dimensional allowances and additives for corrosion reflect the latest state of technology.

Name plate / marking

The temperature/pressure limit is indicated on the trap body. For more information see GESTRA technical documents such as data sheets and Technical Information.

According to EN 19 the type and design must be specified on the name plate and trap body.

- Name/logo of the manufacturer
- Type designation: DK 45
- Pressure rating PN
- Marking according to ATEX: The equipment is not Ex marked.
- Material number
- Max. temperature
- Max. pressure
- Flow direction
- Stamp on name plate, e. g. $\frac{1}{05}$ specifies the manufacturing year and quarter, (in this case the 1st quarter 2005)

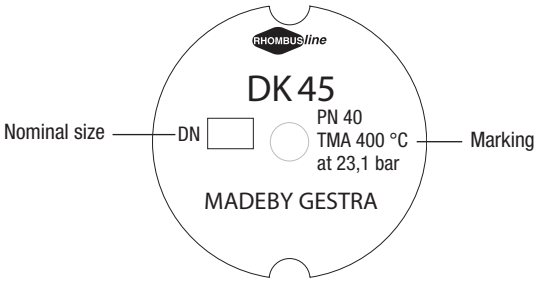

Fig. 1

Design

DK 45

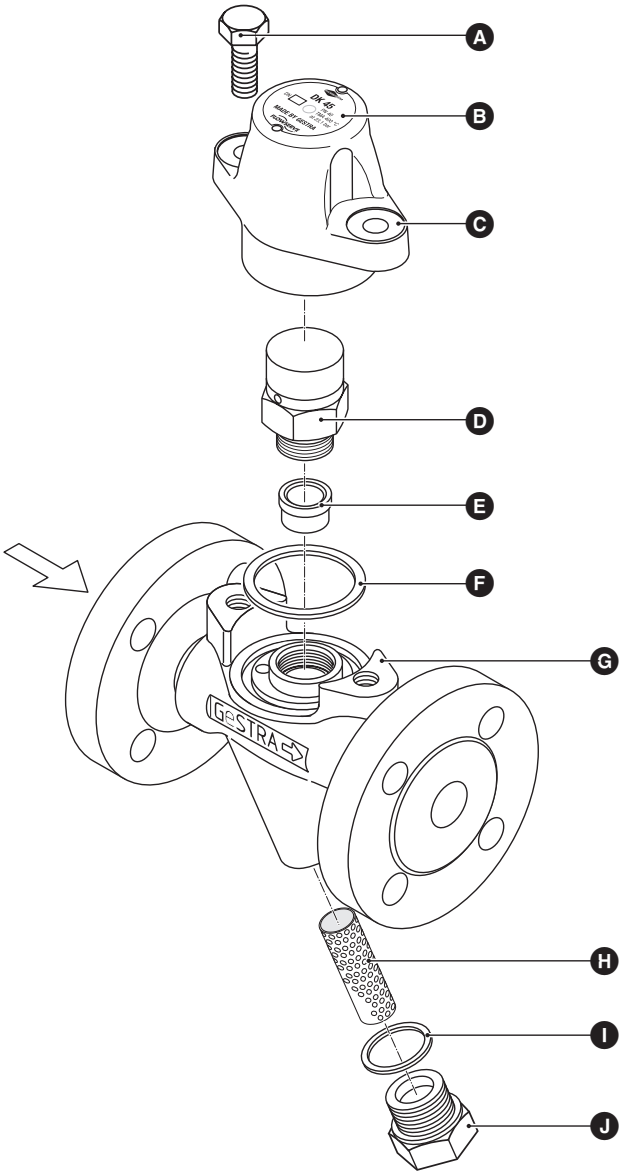

Fig. 2

Design – continued –

Key

- **A** Hexagon-socket screw M 10 x 25
- **B** Name plate
- **C** Cover
- **D** Regulator
- **E** Bushing (interference-fitted, cannot be replaced)
- **F** Gasket 40 x 48 x 2
- **G** Body
- **H** Strainer
- **I** Gasket A 24 x 29
- **J** Sealing plug

Installation

Danger

Danger of severe injuries, death and destruction caused by the explosion of explosive mixtures.

An electrically insulated installation of the equipment between pipe flanges can generate static electricity. If the equipment is to be installed in explosive-risk areas, appropriate measures have to be taken in order to discharge static electricity (earthing)!

DK 45

The DK 45 can be installed in horizontal and vertical lines.
In the case of a horizontal installation, make sure that the cover it at the top.

Steam trap with flanges

1. Observe correct position of installation.
2. Observe direction of flow. The flow arrow is on the trap body.
3. Consider space required for opening trap. When the trap is installed a minimum space of at least **70 mm** is required for removing the cover **C**.
4. Remove plastic plug. They are only used as transit protection.
5. Clean seating surfaces of both flanges.
6. Install steam trap.

Steam trap with screwed sockets

1. Observe correct position of installation.
2. Observe direction of flow. The flow arrow is on the trap body.
3. Consider space required for opening trap. When the trap is installed a minimum space of at least **70 mm** is required for removing the cover **C**.
4. Remove plastic plug. They are only used as transit protection.
5. Clean threads of screwed sockets.
6. Install steam trap.

Installation – continued –

Steam trap with socket-weld ends

1. Observe correct position of installation.
2. Observe direction of flow. The flow arrow is on the trap body.
3. Consider space required for opening trap. When the trap is installed a minimum space of at least **70 mm** is required for removing the cover ⓒ.
4. Remove plastic plug. They are only used as transit protection.
5. Remove regulator as described in section **Maintenance**.
6. Clean socket-weld ends.
7. Apply **only** electric arc welding process (welding process 111 and 141 in accordance with ISO 4063).

Steam trap with butt-weld ends

1. Observe correct position of installation.
2. Observe direction of flow. The flow arrow is on the trap body.
3. Consider space required for opening trap. When the trap is installed a minimum space of at least **70 mm** is required for removing the cover ⓒ.
4. Remove plastic plug. They are only used as transit protection.
5. Remove regulator as described in section **Maintenance**.
6. Clean butt-weld ends.
7. Apply electric arc welding process (welding process 111 and 141 in accordance with ISO 4063) or gas welding (welding process 3 in accordance to ISO 4063).

Attention

- Only qualified welders certified e. g. according to EN 287-1 may weld the steam trap into pressurized lines.
- The steam trap must **not** be insulated.

Heat treatment of welds

A subsequent heat treatment of the welds is not required.

Commissioning

Make sure that the flanged connections of the DK 45 are tightly bolted together and leakproof.

Operation

Certain operating modes of the DK 45 may require servicing. For more information see section **Maintenance**.

Maintenance

The GESTRA steam trap DK 45 does not require any special maintenance.
However, if used in new installations which have not been rinsed it may be necessary to check and clean the trap.

Checking steam trap

You can check the steam trap DK 45 for loss of live steam during operation using the ultrasonic measuring unit VAPOPHONE® or the test unit TRAP*test*®.
The points of reference for the sensor are located on the name plate, **Fig. 2**
Should you detect any loss of live steam clean the trap and/or replace the regulator.

Cleaning / replacing the regulator und the nozzle insert

1. Observe the danger note on page 4!
2. Undo the body screws Ⓐ and take the cover Ⓒ off the body Ⓖ.
3. Unscrew the regulator Ⓓ and insert a new regulator.
4. Clean body, internals and all gasket surfaces.
5. Apply heat-resistant lubricant to all threads and seating surfaces of the nozzle insert and the cover (e. g. WINIX® 2150).
6. Screw in regulator and tighten with a torque of **90 Nm**.
7. Replace gasket Ⓕ if there are visual signs of damage. Use the same cover Ⓒ. Always replace gasket Ⓕ when using a new cover Ⓒ or the cover or another steam trap.
8. Put cover onto the trap body. Tighten body screws Ⓐ alternately and in several steps to a torque of **25 Nm**.

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Maintenance – continued –

Cleaning / replacing the strainer

1. Observe danger note on page 4!
2. Unscrew sealing plug Ⓙ and remove strainer Ⓗ.
3. Clean strainer, sealing plug and gasket seats.
4. Replace strainer and sealing plug in case of visible signs of wear or damage.
5. Replace gasket Ⓘ if damaged.
6. Apply heat-resistant lubricant to the thread of the sealing plug (use for instance WINIX® 2150).
7. Install sealing plug Ⓙ with gasket Ⓘ and strainer Ⓗ. Tighten sealing plug with a torque of **120 Nm**.

Tools

- Spanner A. F. 16 mm to DIN 3113, form B
- Spanner A. F. 22 mm to DIN 3113, form B
- Spanner A. F. 30 mm to DIN 3113, form B
- Torque spanner 20 – 120 Nm, ISO 6789

Torques

Item	Designation	Torque [Nm]
Ⓓ	Regulator	90
Ⓐ	Body screws	25
Ⓙ	Sealing plug	120

All torques are based at 20 °C room temperature.

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Spare Parts

Spare parts list

Item	Designation	Stock code no.
D	Regulator	377735
H I J	Strainer, cpl.	375113
F	Gasket*) 40 x 48 x 2, graphite	375159
I	Gasket*) A24 x 29, stainless steel	375162

*) Minimum order quantity: 50 pcs. Contact your local dealer for smaller quantities.

Decommissioning

Danger

Risk of severe burns and scalds to the whole body!

Before loosening flanged connections or sealing plugs make sure that all connected lines are depressurized (0 bar) and cooled down to room temperature.

Disposal

Dismantle the valve and separate the waste materials, using the specifications in the table “Materials” on page 7.

For the disposal of the valve observe the pertinent legal regulations concerning waste disposal.

For your notes

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