



**FLOWSERVE**

GESTRA

## GESTRA Steam Systems

**BK 45**

**BK 45U**

**BK 46**

**EN**

English

### **Installation Instructions 810437-06**

Steam Traps BK 45, BK 45U, BK 46



**RHOMBUS***line*<sup>®</sup>

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## Important Notes

### Usage for the intended purpose

Use steam trap only for discharging condensate or air-venting from steam lines. Use the equipment only within the allowable pressure and temperature ratings and only if the chemical and corrosive influences on the equipment are taken into account.

### Safety note

Installation, commissioning, retrofitting and maintenance work must only be performed by qualified staff who – through adequate training – have achieved a recognised level of competence.



#### Danger

The equipment is under pressure and hot during operation. Risk of severe burns and injuries to the whole body.

Installation and maintenance work should only be carried out when the system is depressurized (0 bar) and cold (20 °C).

The equipment must be isolated and vented from both upstream and downstream pressure before installation or maintenance work is performed.

Sharp edges on internals present a danger of cuts to hands. Always wear industrial gloves when servicing the equipment.



#### Attention

The name plate specifies the technical features of the equipment.

Do not commission or operate any item of equipment that does not bear its specific name plate. The pressure and temperature ratings on the name plate of the equipment must meet the requirements of the installation.

### PED (Pressure Equipment Directive)

The equipment fulfills the requirements of the Pressure Equipment Directive PED 97/23/EC. For use with fluids of group 2.

The equipment is excluded from the scope of the PED according to section 3.3 and must not bear a CE marking.

### 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.

Applicable in Ex zones 0, 1, 2, 20, 21, 22 (1999/92/EC). The equipment is not Ex marked.

## Explanatory Notes

### Scope of supply

**BK 45:**

1 Steam trap BK 45  
1 Installation manual

**BK 45U:**

1 Steam trap BK 45U  
1 Installation manual

**BK 46:**

1 Steam trap BK 46  
1 Installation manual

### Description

Thermostatic/thermodynamic steam trap with corrosion resistant Thermovit® regulator (bimetallic plates) able to withstand waterhammer. With internal strainer and integral non-return valve action. Asbestos-free body gasket (graphite/CrNi).

The standard version discharges the condensate with virutally no banking-up, the version "U" with approx. 30 K undercooling.

### Function

During start-up of the plant the steam trap is completely open. Cold condensate and air are discharged. As the temperature rises, the bimetallic plates deflect, drawing the stage nozzle towards the closed position.

Just before the condensate reaches saturated steam temperature the orifice will be shut off tight. The thermodynamic effect of the stage nozzle chamber assists in the closing process.

The steam trap provides automatic air-venting at start-up and during operation of the plant and can also be used for thermal air-venting.

## Technical Data

### Corrosion resistance

If the equipment is used for the intended purpose, its safety is not impaired by corrosion.

### Name plate / marking

The temperature/pressure ratings are indicated on the trap body or on the name plate. For more information see GESTRA technical documents such as data sheets and the Technical Information.

The name plate or the trap body indicate the type and design:

- Name/logo of the manufacturer
- Type designation
- Pressure class PN or Class
- Material number
- Max. temperature
- Max. pressure
- Direction of flow
- Stamp on trap body, e. g.  $\frac{4}{09}$  specifies the quarter and the year of production (example: 4th quarter 2009)

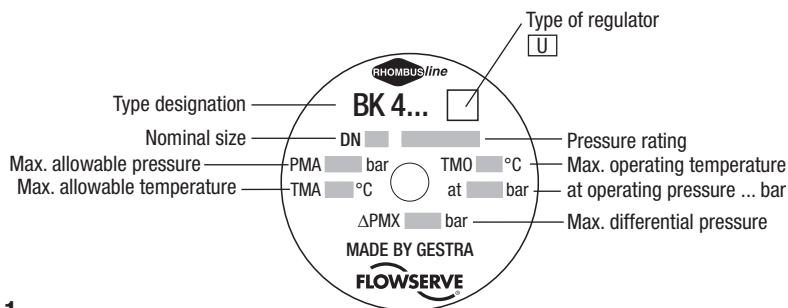


Fig. 1

# Component Parts

Component parts BK 45, BK 45U, BK 46

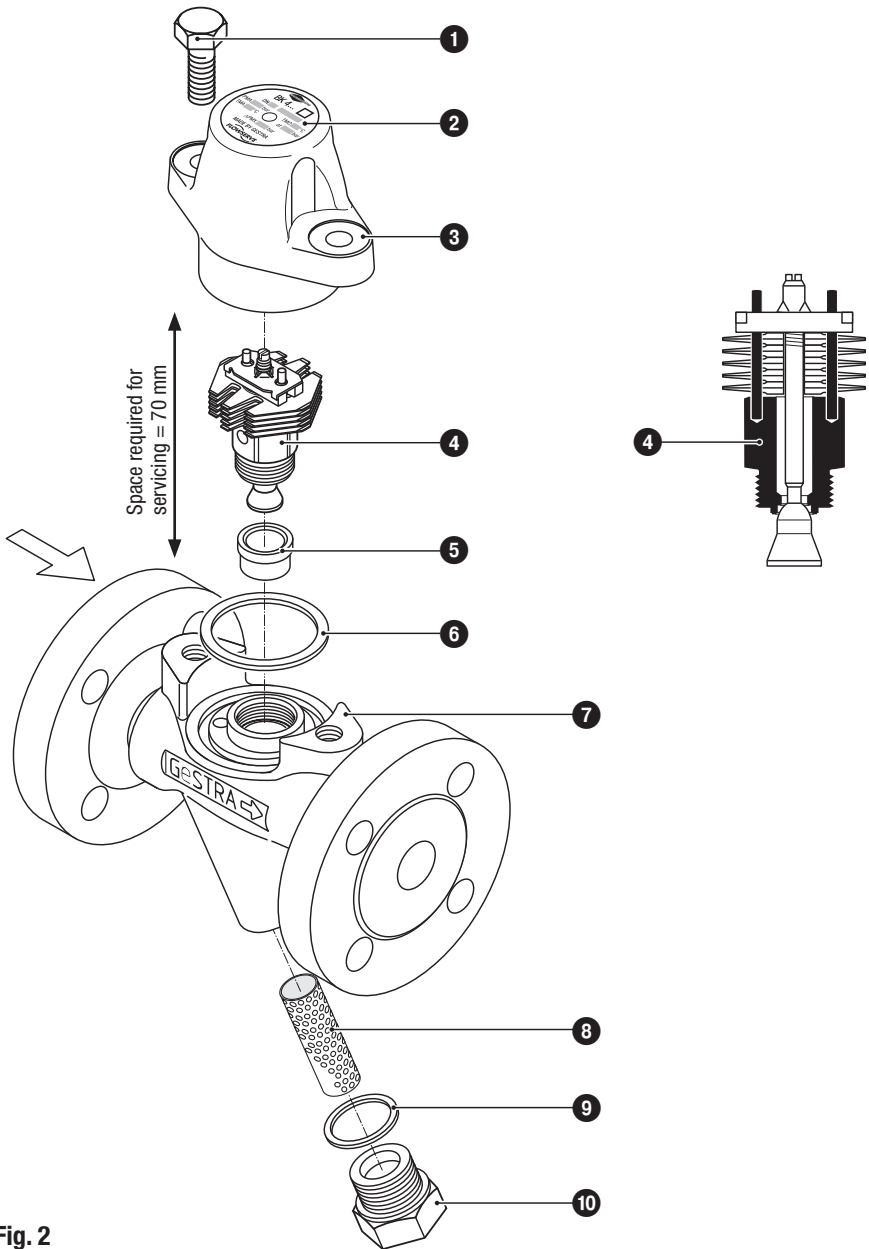


Fig. 2

## Componen Parts – continued –

### Key

- ① Hexagon-head screw M 10 x 25
- ② Name plate
- ③ Cover
- ④ Thermovit regulator
- ⑤ Bushing (interference fitted, no spare part)
- ⑥ Gasket 40 x 48 x 2
- ⑦ Enclosure
- ⑧ Strainer
- ⑨ Gasket A 24 x 29
- ⑩ Sealing plug



## Installation

### BK 45, BK 45U, BK 46

When installing the steam trap make sure that the flow arrow on the trap body matches the direction of flow of the steam. Preferred installation of the steam trap with the strainer insert hanging downwards to facilitate cleaning. Other installation orientations are possible, please consult the factory with installation details. We recommend not to insulate the steam trap.



#### Danger

The equipment is under pressure and hot during operation. Risk of severe burns and injuries to the whole body.

Installation and maintenance work should only be carried out when the system is depressurized (0 bar) and cold (20 °C).

The equipment must be isolated and vented from both upstream and downstream pressure before installation or maintenance work is performed.

Sharp edges on internals present a danger of cuts to hands.  
Always wear industrial gloves when servicing the equipment.

### Installation instructions

1. Make sure that the flow arrow on the trap body matches the direction of flow of the steam.
2. Consider space required for servicing the trap. When the trap is installed a minimum withdrawal space for servicing is required for removing trap parts (see **Design, Component Parts BK...**).
3. Remove plastic plugs. They are only used as transit protection.
4. Clean end connections.
- 5.1 Install steam trap with releasable end connections (e. g. flanges).
- 5.2 For equipment with socket-weld ends or butt-weld ends: Apply arc welding processes 111 and 141 according to ISO 4063 (or equivalent standard).



#### Attention

- Welded trap installation should only be performed by qualified welders (certified according to DIN EN 287 or equivalent).

## Installation – continued –

### Heat treatment of welds

A subsequent heat treatment of the welds is not required.

### Tools

- Combination spanner A. F. 16 mm, DIN 3113, Form B
- Combination spanner A. F. 22 mm, DIN 3113, Form B
- Torque spanner (US: torque wrench) 20-120 Nm, ISO 6789

## Commissioning Procedure

Make sure that all connections are subjected to a suitable pressure test according to the pertinent rules and regulations.



### Danger

The equipment is under pressure and hot during operation. Risk of severe burns and injuries to the whole body.

Installation and maintenance work should only be carried out when the system is depressurized (0 bar) and cold (20 °C).

The equipment must be isolated and vented from both upstream and downstream pressure before installation or maintenance work is performed.

Sharp edges on internals present a danger of cuts to hands.  
Always wear industrial gloves when servicing the equipment.

## Operation



### Attention

Drain steam trap if the installation is shut down and ambient temperatures  $\leq 0$  °C (frost) are to be expected.

## Maintenance

Periodic testing and maintenance of the trap is recommended to ensure proper functioning. Continuous monitoring is recommended for critical applications.



### Danger

The equipment is under pressure and hot during operation. Risk of severe burns and injuries to the whole body.

Installation and maintenance work should only be carried out when the system is depressurized (0 bar) and cold (20 °C).

The equipment must be isolated and vented from both upstream and downstream pressure before installation or maintenance work is performed.

Sharp edges on internals present a danger of cuts to hands.

Always wear industrial gloves when servicing the equipment.

## BK 45, BK 45U, BK 46

GESTRA steam traps BK 45, BK 45U and BK 46 do not require any special maintenance. However, if used in new installations which have not been rinsed check and clean the Thermovit regulator after the commissioning procedure.

### Checking steam traps

You can check the GESTRA steam traps BK 45, BK 45U and BK 46 for correct operation using the GESTRA ultrasonic measuring unit VAPOPHONE® or TRAPTEST®.

We recommend that you perform the measurement at the lower part of the cover ③.

Should you detect any loss of live steam clean the steam trap or discard and replace the Thermovit regulator (see table **List of Spare Parts**).

### Cleaning / exchanging Thermovit regulator and nozzle insert

1. Unscrew body screws ① and remove cover ③ from body ⑦.
2. Unscrew and clean Thermovit regulator ④.
3. Discard and replace Thermovit regulator ④ in case of visible signs of wear or damage (see table **List of Spare Parts**).
4. Clean body and internals. Clean all gasket surfaces.
5. Apply heat-resistant lubricant to all threads, the seating surfaces of the nozzle insert and the cover (use for instance OKS® 217)
6. Screw in Thermovit regulator and tighten with the torque indicated in the table **Torques required for tightening**.
7. Gasket ⑥ **must** be discarded and replaced if there are visible signs of damage. Use the same cover ③. Always discard and replace gasket ⑥ when using a new cover ③ or the cover of another steam trap (see table **List of Spare Parts**).
8. Put cover onto body. Tighten body screws ① alternately and in several steps with the torque indicated in the table **Torques required for tightening**.

# Maintenance

## Cleaning / replacing strainer

1. Unscrew sealing plug ⑩ and strainer ⑧.
2. Clean strainer, sealing plug and gasket surfaces.
3. Discard and replace strainer and sealing plug in case of visible signs of wear or damage (see table **List of Spare Parts**).
4. Discard and replace gasket ⑨ if damaged (see table **List of Spare Parts**).
5. Apply heat-resistant lubricant to the thread of the sealing plug (e. g. OKS® 217).
6. Unscrew sealing plug ⑩ with gasket ⑨ and strainer ⑧. Screw in Thermovit regulator and tighten with the torque indicated in the table **Torques required for tightening**.

## Tools

- Combination spanner A. F. 16 mm, DIN 3113, Form B
- Combination spanner A. F. 22 mm, DIN 3113, Form B
- Combination spanner A. F. 30 mm, DIN 3113, Form B
- Torque spanner (US: torque wrench) 20-120 Nm, ISO 6789

## Tightening torques

Item	Designation	Torque [Nm]
④	Thermovit® regulator	90
①	Body screws	25
⑩	Sealing plug	75

All torques indicated in the table are based at a room temperature of 20 °C.

## Spare Parts

BK 45, BK 45U, BK 46

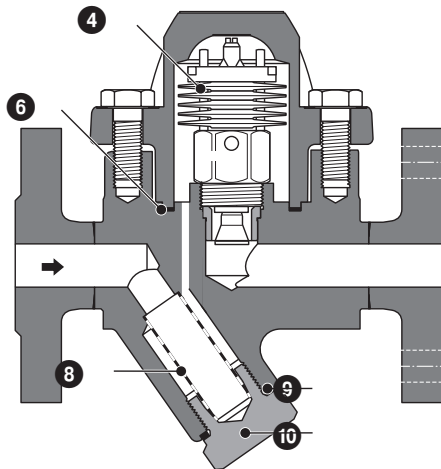


Fig. 3

### Spare parts list

Item	Designation	Stock code BK 45	Stock code BK 45U	Stock code BK 46
4	Thermovit regulator	375 234	375235	375464
8 9 10	Strainer set, cpl.	375 113	375 113	375113
6	Gasket*) 40 x 48 x 2, graphite	375 159	375 159	375159
9	Gasket*) A 24 x 29, stainless steel	375 162	375 162	375162

\*) Minimum purchasing quantity 50 items. For smaller quantities please contact your local dealer.

## Decommissioning



### Danger

The equipment is under pressure and hot during operation. Risk of severe burns and injuries to the whole body.

Installation and maintenance work should only be carried out when the system is depressurized (0 bar) and cold (20 °C).

The equipment must be isolated and vented from both upstream and downstream pressure before installation or maintenance work is performed.

Sharp edges on internals present a danger of cuts to hands.  
Always wear industrial gloves when servicing the equipment.



### Attention

Drain steam trap if the installation is shut down and ambient temperatures  $\leq 0$  °C (frost) are to be expected.

## Disposal

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

**For your notes.**



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