GESTRA Steam Systems

BK 15

GB

Installation Instructions 810682-02

Steam Trap
BK 15, DN 40 - 50

Contents

Contents – continued –

Important Notes

Usage for the intended purpose

Use steam trap BK 15 only for the discharge of condensate in steam lines or for air venting.
Use this equipment only within the specified pressure and temperature ratings and check corrosion resistance and chemical suitability for the application in question.

Safety Note

The equipment must only be installed and commissioned by qualified and competent staff.

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

Danger

The steam trap is under pressure during operation.
When loosening flanged connections, sealing plugs or the regulator hot water or steam may escape.
This presents the danger of severe scalds to the whole body.

Installation and maintenance work should only be carried out when the system is depressurized: isolate the trap from both upstream and downstream pressure.

The steam trap becomes hot during operation.
This presents the risk of severe burns to hands and arms.
Installation and maintenance work should only be carried out at room temperatures.

Sharp edges on internals present a danger of cuts to hands.
Always wear industrial gloves for installation and maintenance work.

Attention

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

PED (Pressure Equipment Directive)

The equipment fulfills the requirements of the Pressure Equipment Directive PED 97/23/EC.
Applicable with fluids of group 2.
According to section 3.3 the equipment is excluded from the scope of this directive and must therefore not be CE marked.

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

BK 15
1 Steam trap type BK 15
1 Installation manual

Description

Thermostatic/thermodynamic steam trap with corrosion-resistant regulator unaffected by water-hammer. The Duo stainless steel regulator is externally adjustable. With integral strainer and non-return valve action. Asbestos-free cover gasket (graphite). Installation in any position.

The steam trap is adjusted at our factory to discharge condensate with virtually no banking-up. More undercooling (banking-up of condensate) can be manually adjusted during operation from the outside.

Function

During start-up of the plant the Duo stainless steel plates are flat. The service pressure acts in the opening direction, the valve is completely open. As the condensate temperature rises, the plates deflect, drawing the stage nozzle towards the closed position. As the condensate temperature sinks, the deflection of the Duo stainless steel plates decreases and the steam trap opens at the adjusted opening temperature.

The thermostatic and spring characteristics of the stack of plates are balanced such that condensate is always discharged at a given undercooling temperature.

The trap provides automatic air-venting at start-up and during operation. The correct functioning of the BK 15 is neither affected by upstream pressure variations nor by back pressure. The BK 15 can also be used for thermal air-venting in steam systems.

Design

BK 15
Version for installation in horizontal and vertical lines.

Technical Data

Pressure / temperature ratings

BK 15
For pressure / temperature ratings see specification on trap body or name plate:
Pressure class PN/Class, material number, max. temperature, max. pressure, max. differential pressure.

Corrosion resistance

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

Sizing

The valve body must not be subjected to pulsating loads. The dimensional allowances for corrosion reflect the latest state of technology.

Name plate / Marking

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

According to EN 19 the name plate and the valve body indicate the type and design:

- Name / logo of the manufacturer
- Type designation
- Pressure class PN or Class
- Material number
- Max. temperature
- Max. pressure
- Flow direction
- Stamp on trap body, e. g. $\frac{3}{05}$ specifies the quarter and the year of production (Example: 3rd quarter 2005).

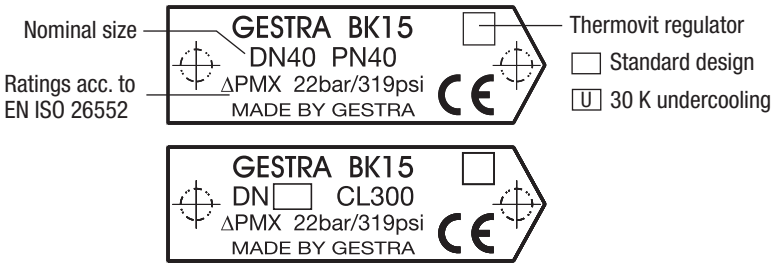

Fig. 1

Design

Component parts BK 15

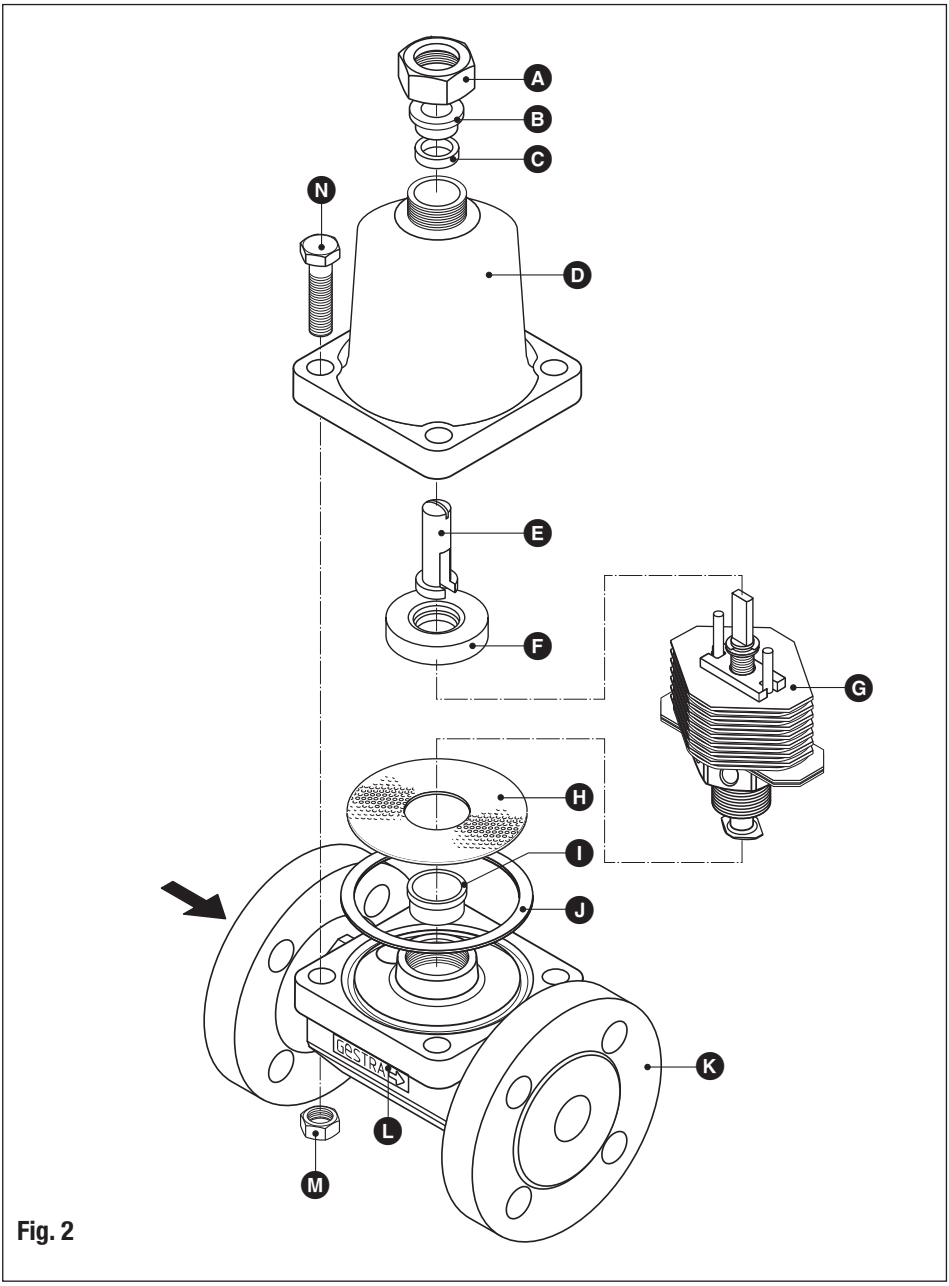

Fig. 2

Design – continued –

Key

- **A** Union nut ¾" BSP
- **B** Gland ring
- **C** Packing 9 x 14 x 7
- **D** Cover
- **E** Adjusting screw
- **F** Guide ring
- **G** Thermovit regulator
- **H** Strainer
- **I** Bush (force-fit, no spare part)
- **J** Cover gasket 92.7 x 102 x 1
- **K** Body
- **L** Name plate
- **M** Hexagon nut M 12
- **N** Hexagon bolt M 12

Installation

BK 15

The steam trap BK 15 can be installed in any position, taking the flow arrow into account. In the case of a horizontal installation, make sure that the cover is on top.

Flanged design

1. Take care of correct position of installation.
2. Take care of flow direction. The flow arrow is on the trap body.
3. Consider space required for opening trap. When the trap is installed a minimum space of **90 mm** is required for removing cover Ⓓ.
4. Remove plastic plugs. They are **only** used as transit protection.
5. Clean seating surfaces of both flanges.
6. Install steam trap.

Socket-weld design

1. Take care of correct position of installation.
2. Take care of flow direction. The flow arrow is on the trap body.
3. Consider space required for opening trap. When the trap is installed a minimum space of **90 mm** is required for removing the cover Ⓓ.
4. Remove plastic plugs. They are **only** used as transit protection.
5. Remove regulator as described under **Maintenance**.
6. Clean socket-weld ends.
7. Arc-weld trap (welding process 111 and 141 in accordance with DIN EN 24063) in place.

Butt-weld design

1. Take care of correct position of installation.
2. Take care of flow direction. The flow arrow is on the trap body.
3. Consider space required for opening trap. When the trap is installed a minimum space of **90 mm** is required for removing the cover Ⓓ.
4. Remove plastic plugs. They are **only** used as transit protection.
5. Clean butt-weld ends.
6. Arc-weld trap in place (welding process 111 and 141 in accordance with DIN EN 24063) or use gas-welding process (welding process 3 in accordance with DIN EN 24063).

Installation – continued –

Attention

- Only qualified welders certified e. g. according to DIN EN 287 may weld the steam trap into pressurized lines.
- Do **not** insulate the steam trap.

Heat treatment of welds

A subsequent heat treatment of the welds is not required provided that the pipe is made from a material that is similar to that used for the trap body.

If a particular pipe material makes a heat treatment necessary make sure the heat treatment is restricted to the close vicinity of the weld. Should this not be possible remove the Thermovit regulator before carrying out the heat treatment.

Commissioning

BK 15

Make sure that all flange bolts are firmly fastened, ensuring tight shut-off.

Danger

The steam trap is under pressure at start-up and during operation.
When loosening the union nut Ⓐ hot water or steam may escape.
This presents the danger of severe burns and scalds to the whole body.
The steam trap becomes hot during operation.
This presents the risk of severe burns to hands and arms.
Installation and maintenance work should only be carried out at room temperatures.
Always wear industrial gloves when adjusting the regulator.

Adjusting regulator (undercooling, controlled steam flowrate)

The regulator of the BK 15 is adjusted at our factory to close steam-tight and open as soon as condensate is formed. If a certain undercooling and, consequently, banking-up of condensate is required for e. g. a heating process, the trap setting can be modified at start-up and during operation:

1. Take notice of the danger note. Slacken union nut Ⓐ (**one** turn) and turn adjustment screw Ⓔ clockwise with a screwdriver. 1/8 turn corresponds to approx. 4 K (degC) change in discharge temperature. Starting from factory setting you can turn the adjustment screw Ⓔ up to 1.5 turns to the right.
2. If required you can also adjust a controlled steam flowrate. Starting from factory setting turn the adjustment screw Ⓔ for this purpose 1.5 turns to the left.
3. Tighten union nut Ⓐ with the torque indicated in the table “Torques” on page 13.

Restoring factory setting

The regulator of the BK 15 is adjusted at our factory to close steam-tight and open as soon as condensate is formed. If necessary, the factory setting can be restored as follows:

1. To depressurize the steam trap cut off steam and – in the case of back pressure – condensate line(s). Let the trap cool down to room temperature.
2. Undo union nut Ⓐ and turn adjustment screw Ⓔ with a screwdriver clockwise until a resistance is felt.
3. Turn adjustment screw Ⓔ 3 turns anticlockwise. The steam trap will now discharge condensate with virtually no banking-up (factory setting).
4. Tighten union nut Ⓐ with the torque indicated in the table “Torques” on page 13.

Tools

- Screwdriver 5.5/100 mm to DIN 5265, form A
- Spanner A.F. 36 mm to DIN 3113, form B
- Torque spanner 20 – 160 Nm to DIN ISO 6789

Operation

BK 15

The BK 15 can be serviced (see **Maintenance**).

Maintenance

GESTRA steam traps type BK 15 do 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 BK 15 for steam loss during operation using the ultrasonic measuring unit VAPOPHONE® or the test unit TRAP*test*®.
Should you detect any loss of live steam clean the trap and/or replace the regulator.

Cleaning / replacing regulator and strainer

1. Take notice of the note “Danger” on page 4.
2. Undo hexagon bolts ⓝ. Remove cover ⓓ from the body ⓚ.
3. Remove and clean regulator ⓖ.
4. Remove and clean strainer ⓗ.
5. Clean body ⓚ, internals and all gasket surfaces.
6. Replace regulator ⓖ in case of visible signs of wear or damage.
7. Apply heat-resistant lubricant to all threads and the seating surface of the nozzle insert and the cover (use for instance WINIX® 2150).
8. Insert new gasket ⓙ.
9. Insert strainer ⓗ.
10. Screw in regulator ⓖ and tighten with the torque indicated in the table “Torques”.
11. Place cover ⓓ onto the body ⓚ. Tighten hexagon bolts ⓝ with hexagon nuts ⓜ in diagonally opposite pairs to the torque indicated in the table “Torques”.

Tools

- Spanner A. F. 32 mm to DIN 3113, form B
- Spanner A. F. 18 mm to DIN 3113, form B
- Torque spanner 20 – 120 Nm to DIN ISO 6789

WINIX® 2150 is a registered trademark of WINIX GmbH, Norderstedt

Maintenance – continued –

Torques

Item	Designation	Torque [Nm]
G	Thermovit regulator	140
N M	Hexagon bolts / nuts	45
A	Union nuts	30

All torques given in the table are based at a room temperature of 20 °C. Threads without lubricant.

Spare Parts

Spare parts list

Item	Designation	Stock code	Stock code
C	Packing*) 9 x 14 x 7	376552	376552
C G J	Thermovit regulator, gasket kit	098847	098847
H J	Strainer, body gasket	375698	375698
J	Body gasket*) 92.7 x 102 x 1, graphite	375699	375699

*) Minimum purchasing quantity 20 pcs. For smaller quantities please contact your local dealer.

Annex

CE Declaration of Conformity

We hereby declare that the pressure equipment **BK 15** conforms to the following European Directive:

- EC Pressure Equipment Directive (PED) No. 97/23 of 29 May 1997, unless excluded from the scope of the Directive acc. to section 3.3.
- Applied conformity assessment procedure: Annex III, module H, verified by the Notified Body 0525.

This declaration is no longer valid if modifications are made to the equipment without consultation with us.

Bremen, 26th September 2006
GESTRA AG

i. V. U. Bledschun

Head of the Design Dept.
Uwe Bledschun
Academically qualified engineer

i. V.

Quality Assurance Representative
Lars Bohl
Academically qualified engineer

For your notes

FLOWSERVE GESTRA

Agencies all over the world:

www.gestra.de

España

GESTRA ESPAÑOLA S.A.
Luis Cabrera, 86-88
E-28002 Madrid
Tel. 00 34 91 / 5 15 20 32
Fax 00 34 91 / 4 13 67 47; 5 15 20 36
E-mail: aromero@flowserve.com

Great Britain

Flowserve Flow Control (UK) Ltd.
Burrel Road, Haywards Heath
West Sussex RH 16 1TL
Tel. 00 44 14 44 / 31 44 00
Fax 00 44 14 44 / 31 45 57
E-mail: gestraukinfo@flowserve.com

Italia

Flowserve S.p.A.
Flow Control Division
Via Prealpi, 30
I-20032 Cormano (MI)
Tel. 00 39 02 / 66 32 51
Fax 00 39 02 / 66 32 55 60
E-mail: infoitaly@flowserve.com

Polska

GESTRA POLONIA Spolka z.o.o.
Ul. Schuberta 104
PL - 80-172 Gdansk
Tel. 00 48 58 / 3 06 10 -02 od 10
Fax 00 48 58 / 3 06 33 00
E-mail: gestra@gestra.pl

Portugal

Flowserve Portuguesa, Lda.
Av. Dr. Antunes Guimarães, 1159
Porto 4100-082
Tel. 0 03 51 22 / 6 19 87 70
Fax 0 03 51 22 / 6 10 75 75
E-mail: jtavares@flowserve.com

USA

Flowserve GESTRA U.S.
2341 Ampere Drive
Louisville, KY 40299
Tel.: 00 15 02 / 267 2205
Fax: 00 15 02 / 266 5397
E-mail: dgoodwin@flowserve.com

GESTRA AG

P. O. Box 10 54 60, D-28054 Bremen
Münchener Str. 77, D-28215 Bremen
Telephone +49 (0) 421 35 03 - 0
Fax +49 (0) 421 35 03 - 393
E-Mail gestra.ag@flowserve.com
Internet www.gestra.de

GESTRA

810682-02/407cm · 2001 GESTRA AG · Bremen · Printed in Germany