

Continuous Blowdown Valve
Reaktomat®

BA 210

BA 211

BAE 210

BAE 211

BA 210 (K), PN 250, DN 25

BA 211 (K), PN 320, DN 25

BAE 210 (K), PN 250, DN 25

BAE 211 (K), PN 320, DN 25

Inhalt

Page

Important Notes

Usage for the intended purpose	5
Safety note	5
Danger	5
Attention	6
PED (Pressure Equipment Directive)	6
Machinery Directive (MD)	6
ATEX (Atmosphère Explosible)	6

Explanatory Notes

Scope of supply	7
Description	8

Technical Data

Name plate / marking	9
Capacity chart for BA 210, BA 211, BAE 210, BAE 211	10
Capacity chart for BA 210 K, BA 211 K, BAE 210 K, BAE 211 K	11

Component Parts

BA 2... ..	12
BAE 2... ..	13
Key	14

Installation

Danger	15
Attention	15
Installation instructions	15
Heat treatment of welds	15
Mounting sample valve (if provided)	15

Electrical Connection

Danger	16
BAE 210 (K), BAE 211 (K) with standard actuator EF..	16
BAE 210 (K), BAE 211 (K) with special actuator	16
Factory setting BAE 210 (K), BAE 211 (K)	17

Commissioning Procedure

Danger	18
Attention.....	18
BA 210 (K), BA 211 (K).....	19
BAE 210 (K), BAE 211 (K).....	19
Calculating the amount of boiler blowdown.....	19

Operation

Danger	20
Attention.....	20
BA 210 (K), BA 211 (K).....	20
Purging.....	20
BAE 210 (K), BAE 211 (K).....	20

Emergency operation

BAE 210 (K), BAE 211 (K).....	21
-------------------------------	----

Maintenance

BA 210 (K), BAE 210 (K), BA 211 (K), BAE 211 (K).....	21
Danger	21
Attention.....	21
Retightening stuffing box gland.....	22
BA 2..., BAE 2... Changing gland packing	22
BA 2..., BAE 2... Changing nozzle stem and nozzle insert	23
Tightening torques.....	24
Tools.....	24

Contents - continued -

Page

Retrofitting

Danger	25
Retrofitting of an actuator	25
List of parts for retrofitting	25

Spare Parts

Spare parts list	26
------------------------	----

Decommissioning

Danger	27
Disposal	27

Annex

Note on the Declaration of Conformity / Declaration by the Manufacturer	27
---	----

Important Notes

Usage for the intended purpose

BA 210 (K), BA 211 (K), BAE 210 (K), BAE 211 (K):

Use the continuous blowdown valve only for discharging boiler blowdown from steam boilers. 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.

BAE 210 (K), BAE 211 (K):

Use continuous blowdown valve BAE ...only in conjunction with control units KS 90, LRR 1-40 or LRR 1-5, LRR 1-6 for the discharge of boiler blowdown from steam boilers. 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.

To ensure safe operation of the BAE 210, BAE 211 only actuators named and specified by GESTRA may be installed on the valve. Specified and approved actuators are: ARIS EF 2, ARIS EF 2-1 and actuators produced by other manufacturers as stated in the attached documents.

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.

The regulating lever of the continuous blowdown valve and the coupling of the actuator are hot during operation.

Risk of severe burns and scalds to the whole body!

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

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

Always wear industrial gloves when servicing the equipment.

Danger of bruising! During operation moving parts can pinch one's hands or fingers, causing severe injuries. Do not touch moving parts. The continuous blowdown valves BAE 210, BAE 211 are remote-controlled and can open and close abruptly.

The terminal strips of the actuator are live during operation.

This presents the danger of electric shock!

Cut off power supply to the equipment before mounting or removing the equipment!

Important Notes - continued -



Attention

The name plate specifies the technical features of the equipment. Note that any item of equipment without its specific name plate must neither be commissioned nor operated.

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 BA 2... / BAE 2... 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 Article 3.3 and must not bear a CE marking.

Machinery Directive (MD)

The equipment BAE 2... is a partly completed machinery as specified in section 2, paragraph g of the Machinery Directive 2006/42/EC.

According to Annex II, section B of the Directive 2006/42/EC a Declaration of Incorporation for the equipment (Declaration of Manufacturer) is available on request.

ATEX (Atmosphère Explosible)

The equipment BA 2... can be used in potentially explosive areas, provided that the following notes are observed:

The service fluid must not generate excessively high operating temperatures.

Electrostatic charges that may be produced during operation must be discharged. The tight shut-off of the stuffing box must be ensured. The valve spindle must be able to move smoothly.

Applicable in Ex zones 1, 2, 21, 22 (1999/92/EG), **CE**  II 2 G/D c X.

According to the European Directive 94/9/EC the equipment BAE 2... must not be used in potentially explosive areas.

For more information refer to our ATEX Declaration of Conformity.

Explanatory Notes

Scope of supply

BA 210 (K)

- 1 Continuous blowdown valve REAKTOMAT BA 210 (K)
- 1 Sample valve (optional)
- 1 Installation manual GESTRA
- 1 Installation manual of the sample valve

BA 211 (K)

- 1 Continuous blowdown valve REAKTOMAT BA 211 (K)
- 1 Sample valve (optional)
- 1 Installation manual GESTRA
- 1 Installation manual of the sample valve

Retrofitting kit for BA 210 (K), BA 211 (K)

- 1 Actuator (electrical)
EF 2, EF 2-1 (217 °), EF 2-1 (270 °)
- 1 Mounting kit for support / jaw coupling
- 1 Installation manual of ARIS actuator EF..

BAE 210 (K)

- 1 Continuous blowdown valve REAKTOMAT BAE 210 (K)
- 1 Sample valve (optional)
- 1 Installation manual GESTRA
- 1 Installation manual of the sample valve
- 1 Installation manual of ARIS actuator EF..

BAE 211 (K)

- 1 Continuous blowdown valve REAKTOMAT BAE 211 (K)
- 1 Sample valve (optional)
- 1 Installation manual GESTRA
- 1 Installation manual of the sample valve
- 1 Installation manual of ARIS actuator EF..

The suffix "K" means that the valve is equipped with a special nozzle (optional) for small flowrates.

Description

Due to the continuous evaporation process in the steam boiler the density and hence the TDS (= Total Dissolved Solids) concentration of the boiler water is increased. The TDS level must remain within the limits specified by the boiler manufacturer and applicable guidelines. For this purpose a certain amount of boiler water (= boiler blowdown) is discharged continuously or periodically. The continuous blowdown valves BA... and BAE... feature specially designed and wear resistant nozzle stems that enter concentrically into a system of expansion chambers which are arranged one after the other, making the valve well suited for the continuous discharge of boiler blowdown at very high differential pressures. The continuous blowdown valves BA... and BAE... are suitable for operation in steam boiler plants according to TRD 604, EN 12952 and EN 12953.

BA 210	PN 250, scale range "0" to "160", manual operation
BA 211	PN 320, scale range "0" to "160", manual operation
BAE 210	PN 250, scale range "0" to "160", operated by electric actuator EF 2 ¹⁾
BAE 210	PN 250, scale range "0" to "160", operated by electric actuator, angle of rotation 217°, EF 2-1 ¹⁾
BAE 210 K	PN 250, scale range "0" to "255", operated by electric actuator, angle of rotation 270°, EF 2-1 ¹⁾
BAE 211	PN 320, scale range "0" to "160", operated by electric actuator EF 2 ¹⁾
BAE 211	PN 320, scale range "0" to "160", operated by electric actuator, angle of rotation 217°, EF 2-1 ¹⁾
BAE 211 K	PN 320, scale range "0" to "255", operated by electric actuator, angle of rotation 270°, EF 2-1 ¹⁾
EF 2	ARIS actuator with two position-controlled limit switches and an operating cam for intermediate positions. Angle of rotation 217° (actuator for continuous blowdown valve with standard nozzle)
EF 2-1	ARIS actuator 230 V AC with two position-controlled limit switches and an operating cam for intermediate positions and feedback potentiometer. Angle of rotation 217° (actuator for continuous blowdown valve with standard nozzle)
EF 2-1	ARIS actuator 230 V AC with two position-controlled limit switches and an operating cam for intermediate positions and feedback potentiometer. Angle of rotation 270° (actuator for continuous blowdown valve with nozzle type K for small flowrates)

¹⁾ Actuators of other manufacturers, explosion-proof actuators or actuators powered by d. c. or three-phase current are available on request.

Technical Data

Name plate / marking

The temperature/pressure ratings are indicated on the 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 indicates 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 / name plate, e. g. $\frac{4}{09}$ specifies the quarter and the year of production (example: 4.th quarter 2009)

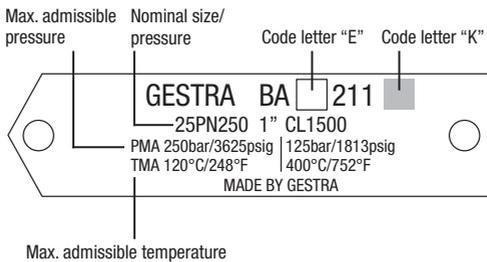


Fig. 1

Capacity chart for BA 210, BA 211, BAE 210, BAE 211

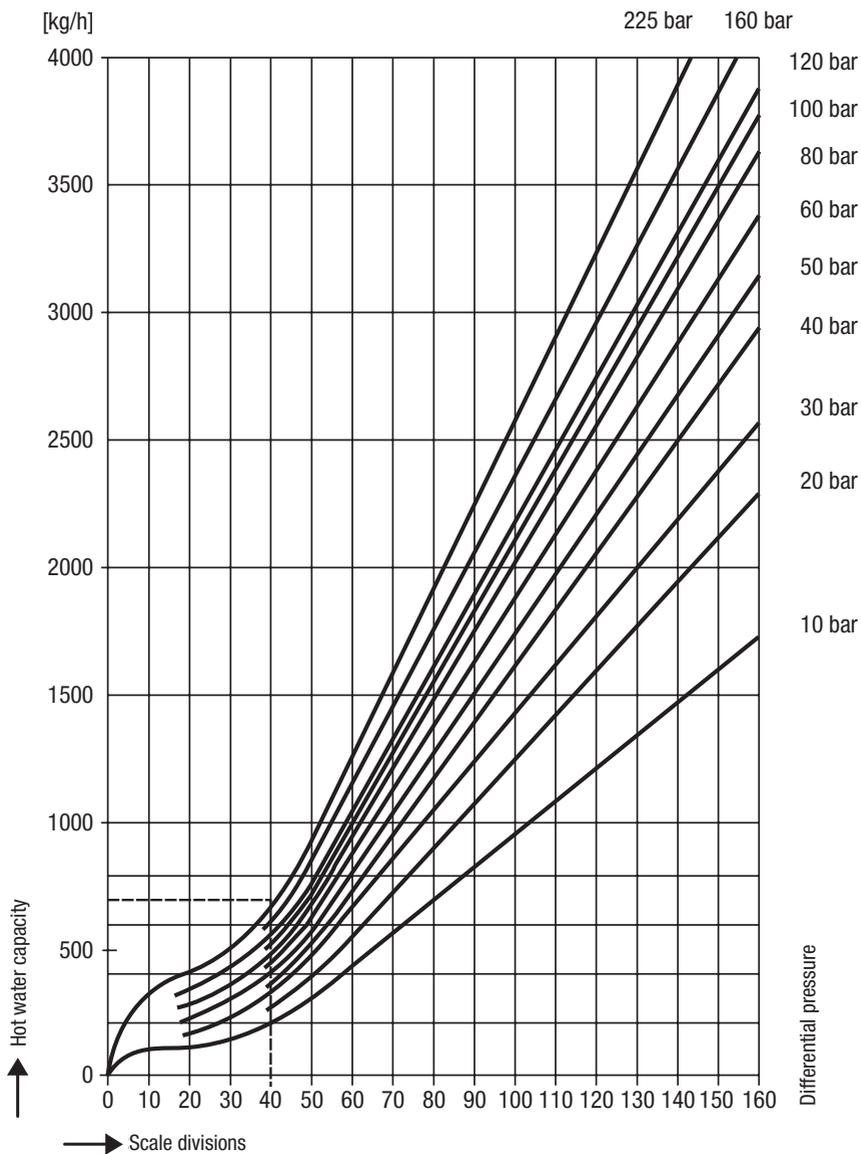


Fig. 2

Capacity chart for BA 210 K, BA 211 K, BAE 210 K, BAE 211 K

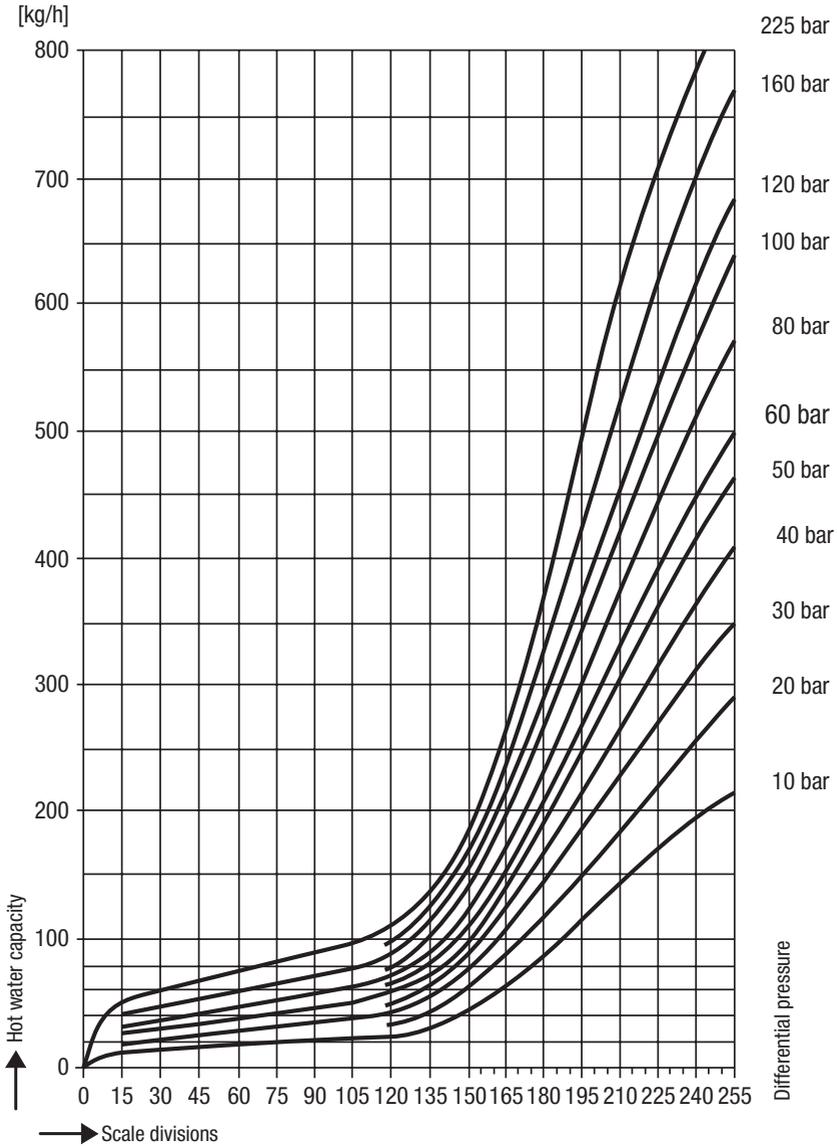


Fig. 3

Component Parts

BA 2...

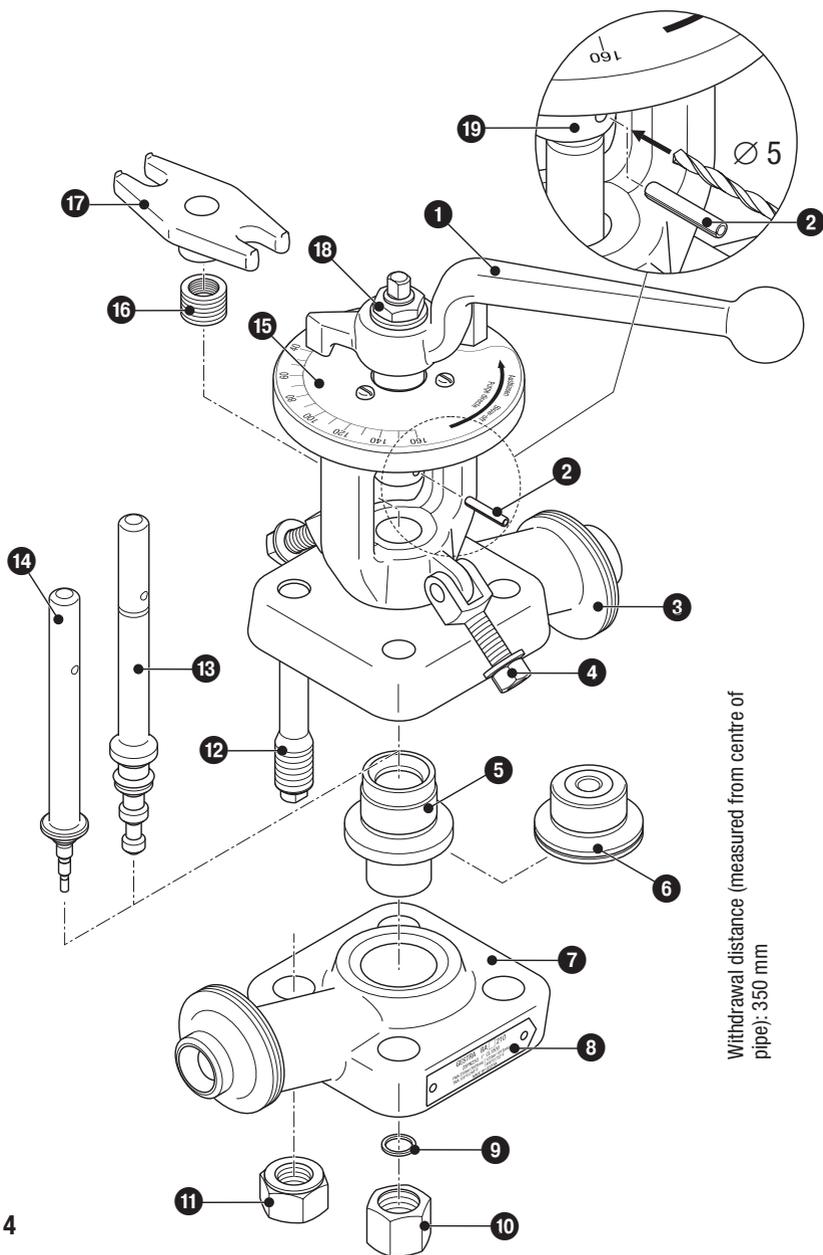
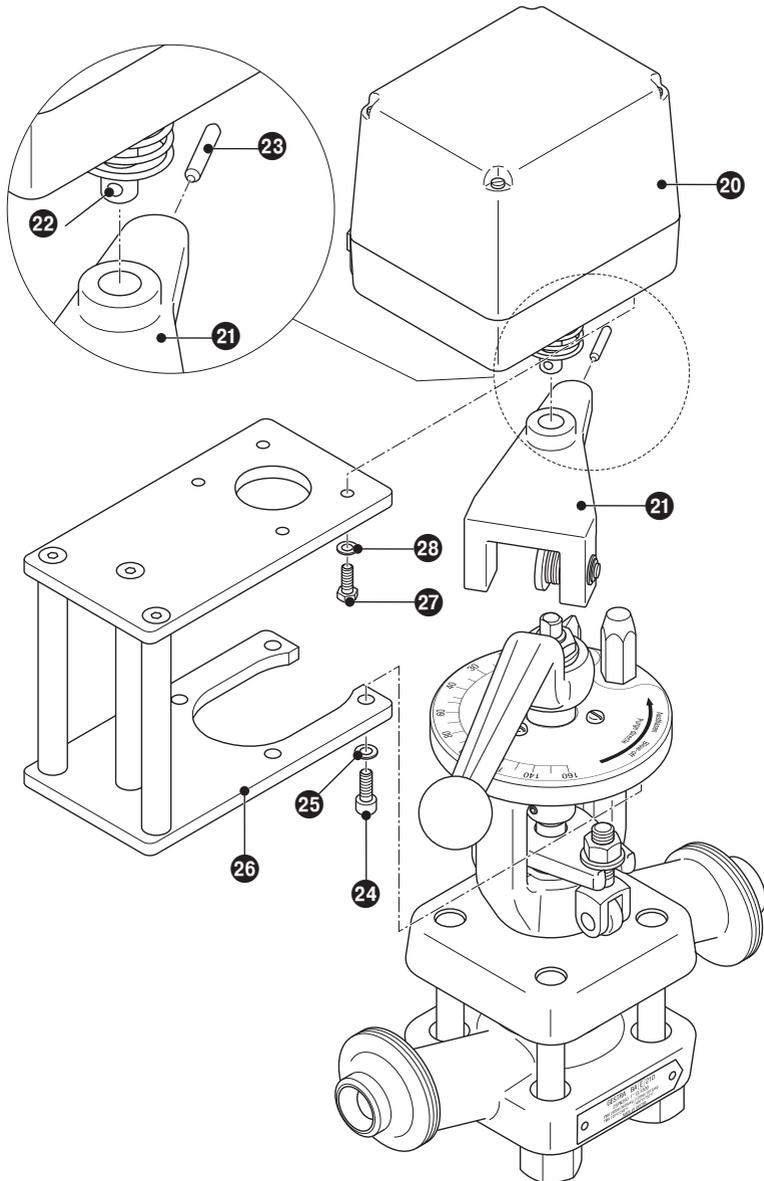


Fig. 4



Withdrawal distance (measured from centre of pipe): 525 mm

Fig. 5

Component Parts - continued -

Key

- 1 Regulating lever
- 2 Spring pin
- 3 Upper part of the body
- 4 Hinged bolt
- 5 Nozzle insert (standard)
- 6 Nozzle insert K (for small flowrates)
- 7 Lower part of the body
- 8 Name plate
- 9 Gasket A 14 x 18, form A (optional)
- 10 Sealing nut (optional connection for a sample valve)
- 11 Hexagon nut, M20, form NF
- 12 Threaded bolt M20 x 130, form L
- 13 Nozzle stem (standard)
- 14 Nozzle stem K (for small flowrates)
- 15 Scale
- 16 Packing rings 16 x 24 x 4 (6 pieces)
- 17 Stuffing box gland
- 18 Hexagon nut
- 19 Spindle yoke
- 20 Actuator EF 2 (other actuators available on request)
- 21 Jaw coupling
- 22 Bore in drive shaft of actuator
- 23 Spring pin
- 24 Socket-head cap screw M8 x 20
- 25 Washer
- 26 Support for actuator
- 27 Hexagon-head cap screw M6 x 18
- 28 Locking washer

Installation



Danger

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



Attention

- The continuous blowdown standpipe must be located **below the low level mark** and close to the steam outlet of the steam boiler!
- Mount the (optional) sample valve only to the correct connection of the continuous blowdown valve, following the rules of the state of the technical art!
- The nominal size of this equipment is designed for DN 25. Note that the admissible loads (forces, torques) acting on pipe connections with end connections larger than DN 25 are limited to the permissible pipe end loads of a size DN 25 device. Should the pipe end connection loads exceed this limit, take appropriate measures to provide additional support so as to protect the equipment.
- Make sure that the inclination of the actuator does not exceed 90° when installed!
- Only qualified welders certified according to EN 287-1 (or equivalent national standards) may weld continuous blowdown valves into lines.

Installation instructions

1. Observe position of installation. The regulating lever ❶ must be freely movable!
2. Observe direction of flow. The arrow indicating the flow direction is on the valve body.
3. Consider space required for servicing the trap. When the continuous blowdown valve is installed observe the withdrawal distance for subsequent mounting or servicing of the actuator! **Fig. 4, Fig. 5**
4. Remove plastic plugs, they are only used as transit protection.
5. Clean end connections.
 - 6.1 Install valve with releasable end connections (e. g. flanges).
 - 6.2 For equipment with socket-weld ends or butt-weld ends: Apply arc welding processes 111 and 141 according to ISO 4063 (or equivalent standard).

Heat treatment of welds

After welding the continuous blowdown valve in place a heat treatment of the welds is required (stress-relief annealing in compliance with the accredited state of the technical art).

The heat treatment must be restricted to the immediate area of the weld.

The internals of the blowdown valve need **not** be removed before the heat treatment.

Mounting sample valve (if provided)

1. Unscrew sealing nut ❷. Remove gasket ❸.
2. Install sample valve in compliance with the accredited state of the technical art.

Electrical Connection



Danger

Danger of bruising! During operation moving parts can pinch one's hands or fingers, causing severe injuries. Do not touch moving parts. The continuous blowdown valves BAE 210, BAE 211 are remote-controlled and can open and close abruptly.

The terminal strips of the actuator are live during operation.

This presents the risk of severe cases of electric shock!

Cut off power supply before mounting or removing the equipment!

BAE 210 (K), BAE 211 (K) with standard actuator EF..

The electrical connection of the actuator EF.. must be established as specified in the attached installation manual "Actuator EF ...".

Apart from the positions "CLOSED" (scale position "0") and "OPEN" (scale position "160/255")

it is also possible to set an OPERATING POSITION for the actuator **EF 2**.

The OPERATING POSITION allows the continuous discharge of a specified amount of boiler water.

The OPERATING POSITION can be adjusted in the actuator by means of a switching cam.

The actuator **EF 2** has an angle of rotation of 217°. For the adjustment follow the instructions given in the attached installation manual for the actuator EF...

The actuator **EF 2-1** for the continuous blowdown valves **BAE 210, BAE 211** has an angle of rotation of 217°, is equipped with a feedback potentiometer (0 to 1000 ohm) and a switching cam for setting the OPERATING POSITION. For the adjustment follow the instructions given in the attached installation manual for the actuator EF...

The actuator **EF 2-1** for the continuous blowdown valves **BAE 210 K, BAE 211 K** has an angle of rotation of 270°, is equipped with a feedback potentiometer (0 to 1000 ohm) and a switching cam for setting the OPERATING POSITION. For the adjustment follow the instructions given in the attached installation manual for the actuator EF...

BAE 210 (K), BAE 211 (K) with special actuator

For the adjustment refer to the attached documents.

The electrical connection of the special actuator must be established as specified in the attached installation manual of the actuator manufacturer.

Factory setting BAE 210 (K), BAE 211 (K)

For the adjustment follow the instructions given in the attached installation manual for the actuator EF...

BAE 210, BAE 211: The default factory settings of the actuator **EF 2** are "CLOSED" (scale position 0), "OPERATING POSITION" (scale position 120) and "OPEN" (scale position 160). **Fig. 5**

The default factory setting of the feedback potentiometer of the actuator **EF 2-1** is $50 \Omega \pm 5 \Omega$ at scale position "0" and $940 \Omega \pm 5 \Omega$ at scale position "160".

BAE 210 K, BAE 211 K: The default factory settings of the actuator **EF 2** are "CLOSED" (scale position 0), "OPERATING POSITION" (scale position 40) and "OPEN" (scale position 255). **Fig. 6**

The default factory setting of the feedback potentiometer of the actuator **EF 2-1** is $50 \Omega \pm 5 \Omega$ at scale position "0" and $940 \Omega \pm 5 \Omega$ at scale position "255".

The OPERATING POSITION allows the continuous discharge of a specified amount of boiler water.

The OPERATING POSITION can be adjusted in the actuator by means of a switching cam or the feedback potentiometer.

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.

The regulating lever of the continuous blowdown valve and the coupling of the actuator are hot during operation.

Risk of severe burns and scalds to the whole body!

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

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

Always wear industrial gloves when servicing the equipment.

Danger of bruising! During operation moving parts can pinch one's hands or fingers, causing severe injuries. Do not touch moving parts. The continuous blowdown valves BAE 210, BAE 211 are remote-controlled and can open and close abruptly.

The terminal strips of the actuator are live during operation.

This presents the danger of electric shock!

Cut off power supply to the equipment before mounting or removing the equipment!



Attention

- Make sure that the flanged connections of the BA 2..., BAE 2... are tightly bolted together and leakproof.
- The stuffing box gland **17** must be re-tightened if leaks occur (see **Maintenance**)!
- As the stuffing box screws are tightened the break-out force and the frictional forces of the nozzle stem are increased.
- The break-away force and the friction force of the nozzle stem must not exceed the maximum operating force of the actuator.
- Excessive fastening of the stuffing box screws impairs the correct functioning of the continuous blowdown valve and can cause jamming of the nozzle stem.
- If the nozzle stem is blocked, the continuous blowdown valve can no longer open, regulate or close.

Commissioning - continued -

BA 210 (K), BA 211 (K)

Ascertain the required boiler blowdown in accordance with your specific operating conditions. Please use the capacity charts on pages 10 and 11. Use the scale 15 to set the regulating lever 1 to the desired flowrate ("OPERATING POSITION").

BAE 210 (K), BAE 211 (K)

Adjust the required boiler water conductivity values in KS 90, LRR 1-40, LRR 1-5 or LRR 1-6. Please compare the resulting valve positions (see scale on regulating lever) with the values indicated in the capacity charts on pages 10 and 11.

Calculating the amount of boiler blowdown

Boiler water to be discharged:

$$A = \frac{Q \cdot S}{K - S}$$

A = Amount of boiler water to be discharged [kg/h]

Q = Boiler capacity [kg/h]

S = Conductivity of feedwater [μ S/cm]

K = Conductivity of feedwater [μ S/cm]

Example

Differential pressure: 60 bar

Nominal size of continuous blowdown valve: DN 25 with standard nozzle

Boiler capacity: Q = 30,000 kg/h

Conductivity of feedwater: S = 5 μ S/cm

Admissible conductivity of boiler water: K = 100 μ S/cm

Boiler water to be discharged: A \approx 1,580 kg/h

of which approx. 10 % by means of continuous blowdown: \approx 80 kg/h

Boiler blowdown: A₁ \approx 1,500 kg/h

Set regulating lever to 85 scale divisions. **Fig. 2**

Operation



Danger

The equipment is under pressure and hot during operation. The regulating lever of the continuous blowdown valve and the coupling of the actuator are hot during operation.

Risk of severe burns and scalds to the whole body!

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

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

Danger of bruising! During operation moving parts can pinch one's hands or fingers, causing severe injuries. Do not touch moving parts. The continuous blowdown valves BAE 210, BAE 211 are remote-controlled and can open and close abruptly.

The terminal strips of the actuator are live during operation.

This presents the danger of electric shock!

Cut off power supply to the equipment before mounting or removing the equipment!



Attention

- The stuffing box gland **17** must be re-tightened if leaks occur (see **Maintenance**)!
- As the stuffing box screws are tightened the break-out force and the frictional forces of the nozzle stem are increased.
- The break-away force and the friction force of the nozzle stem must not exceed the maximum operating force of the actuator.
- Excessive fastening of the stuffing box screws impairs the correct functioning of the continuous blowdown valve and can cause jamming of the nozzle stem.
- If the nozzle stem is blocked, the continuous blowdown valve can no longer open, regulate or close.

BA 210 (K), BA 211 (K)

Positions of regulating lever: CLOSED (scale position 0), OPEN (scale position 160/255), OPERATING POSITION (see **Commissioning**) and PURGING.

The PURGING position of the regulating lever allows the brief purging of the continuous blowdown valve.

Purging

Fully open the continuous blowdown valve once a day (purging). For this purpose set the regulating lever **1** briefly to the "PURGING" position. Please observe the installation manuals for plant equipment that is installed downstream of the valve.

BAE 210 (K), BAE 211 (K)

The continuous blowdown valves BAE 210 (K) and BAE 211 (K) operate fully automatically (see **Commissioning**).

Emergency operation

BAE 210 (K), BAE 211 (K)

1. Cut off power supply to actuator and lift jaw coupling **21** manually by approx. 2 cm. **Fig. 5**
2. Use the scale **15** to set the regulating lever **1** to the desired flowrate.

Maintenance

BA 210 (K), BAE 210 (K), BA 211 (K), BAE 211 (K)

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.

The regulating lever of the continuous blowdown valve and the coupling of the actuator are hot during operation.

Risk of severe burns and scalds to the whole body!

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

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

Always wear industrial gloves when servicing the equipment.

Danger of bruising! During operation moving parts can pinch one's hands or fingers, causing severe injuries. Do not touch moving parts. The continuous blowdown valves BAE 210, BAE 211 are remote-controlled and can open and close abruptly.

The terminal strips of the actuator are live during operation.

This presents the danger of electric shock!

Cut off power supply to the equipment before mounting or removing the equipment!



Attention

- The stuffing box gland **17** must be re-tightened if leaks occur (see **Maintenance**)!
- As the stuffing box screws are tightened the break-out force and the frictional forces of the nozzle stem are increased.
- The break-away force and the friction force of the nozzle stem must not exceed the maximum operating force of the actuator.
- Excessive fastening of the stuffing box screws impairs the correct functioning of the continuous blowdown valve and can cause jamming of the nozzle stem.
- If the nozzle stem is blocked, the continuous blowdown valve can no longer open, regulate or close.

Retightening stuffing box gland

Before servicing the equipment observe the danger note!

1. Re-tighten hinged bolts ④ with equal torque in several steps until the stuffing box does not leak any more.
2. Check that the regulating lever ① can move freely. If it cannot move, discard and replace packing.

BA 2..., BAE 2... Changing gland packing

Before servicing the equipment observe the danger note!

1. Push the jaw coupling ②① upwards against the spring force (only BAE 2...) and set regulating lever ① to scale position "40" or "75" (K nozzle).
2. Use a pin punch to drive out the spring pin ②.
3. Slacken the hexagon nuts of the hinged bolts ④ and swing hinged bolts to one side.
4. Unscrew hexagon nuts ①①.
5. Remove lower part of the body ⑦ and nozzle insert ⑤/⑥.
6. Pull nozzle stem ⑬/⑭ down and out.
7. Lift stuffing box gland ⑰ off the stuffing box and pull it out from the side.
8. Remove old packing rings ⑯ from stuffing box.
9. Clean upper and lower parts of valve body, nozzle insert, nozzle stem, sealing surfaces and stuffing box.
10. Insert new packing rings ⑯.
11. Put stuffing box gland ⑰ into stuffing box and fix it manually with the aid of hinged bolts ④.
12. Insert nozzle stem ⑬/⑭ from below. Turn nozzle stem until the bores for the spring pin ② are in alignment.
13. Insert new spring pin ②.
14. Set regulating lever ① to the "PURGING" position.
15. Apply lubricant type "OKS® 217" to threaded bolt ⑫.
16. Push lower part of the valve body ⑦ together with nozzle insert ⑤/⑥ over the threaded bolts ⑫ and fix it manually with hexagon nuts ①①.
17. Tighten hexagon nuts ①① to the torque indicated in the table **Tightening Torques** in diagonally opposite pairs.
18. BA 2... : Set regulating lever ① to the OPERATING position.
BAE 2... : Engage jaw coupling ②①.

BA 2..., BAE 2... Changing nozzle stem and nozzle insert

Before servicing the equipment observe the danger note!

1. Push the jaw coupling **21** upwards against the spring force (only BAE 2...) and set regulating lever **1** to scale position "40" or "75" (K nozzle).
2. Use a pin punch to drive out the spring pin **2**.
3. Slacken the hexagon nuts of the hinged bolts **4** and swing hinged bolts to one side.
4. Unscrew hexagon nuts **11**.
5. Remove lower part of the body **7** and nozzle insert **5/6**.
6. Pull nozzle stem **13/14** down and out.
7. Lift stuffing box gland **17** off the stuffing box and pull it out from the side.
8. Remove old packing rings **16** from stuffing box.
9. Clean upper and lower parts of valve body, sealing surfaces and stuffing box.
10. Insert new packing rings **16**.
11. Put stuffing box gland **17** into stuffing box and fix it manually with the aid of hinged bolts.
12. Insert nozzle stem **13/14** from below until it hits the stop. Provide nozzle stem and spindle yoke **19** with a bore (\varnothing 5 mm). **Fig. 4**
13. Insert new spring pin **2**.
14. Set regulating lever **1** to the "PURGING" position.
15. Apply lubricant type "OKS[®] 217" to threaded bolt **12**.
16. Push lower part of the valve body **7** together with new nozzle insert **5/6** over the threaded bolts **12** and fix it manually with hexagon nuts **11**.
17. Tighten hexagon nuts **11** to the torque indicated in the table **Tightening Torques** in diagonally opposite pairs.
18. Use regulating lever **1** to close the continuous blowdown valve. Slacken hexagon nut **18** and set regulating lever to scale position "0". Tighten hexagon nut **18** to the torque indicated in the table **Tightening Torques**.
19. BA 2...: Set regulating lever **1** to the OPERATING position.
BAE 2...: Engage jaw coupling **21**.

Tightening torques

Item	Designation	Torque for tightening [Nm]
		DN 25
4	Hinged bolt	35
10	Sealing nut	170
11	Hexagon nut	225
18	Hexagon nut	70
24	Socket-head cap screw	10
27	Hexagon-head cap screw	8

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

Tools

- Combination spanner (US: wrench) A. F. 10 mm
- Combination spanner (US: wrench) A. F. 18 mm
- Combination spanner (US: wrench) A. F. 24 mm
- Combination spanner (US: wrench) A. F. 30 mm
- Combination spanner (US: wrench) A. F. 32 mm
- Offset screwdriver A. F. 6 mm
- Torque spanner (US. wrench) 5 - 100 Nm
- Torque spanner (US. wrench) 80 - 400 Nm
- Pin punch 4 mm
- Hammer 300 g

Retrofitting



Danger

The equipment is under pressure and hot during operation.

The regulating lever of the continuous blowdown valve and the coupling of the actuator are hot during operation.

Risk of severe burns and scalds to the whole body!

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

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

Always wear industrial gloves when servicing the equipment.

Danger of bruising! During operation moving parts can pinch one's hands or fingers, causing severe injuries. Do not touch moving parts. The continuous blowdown valves BAE 210, BAE 211 are remote-controlled and can open and close abruptly.

The terminal strips of the actuator are live during operation.

This presents the danger of electric shock!

Cut off power supply to the equipment before mounting or removing the equipment!

Retrofitting of an actuator

1. Observe the installation instructions of the actuator manufacturer.
2. Fit support for actuator 26 to continuous blowdown valve, using socket-head cap screws 24 and washers 25. Tighten socket-head cap screws 24 to the torque indicated in the table **Tightening Torques. Fig. 5**
3. Mount actuator EF... 20 onto the support 26, using hexagon-head cap screws 27 and locking washers 28. Tighten hexagon-head cap screws 27 to the torque indicated in the table **Tightening Torques**.
4. Push jaw coupling 21 from below onto the drive shaft of the actuator and fix it by means of the spring pin 29. For this purpose put the spring pin 29 through the bore in the drive shaft 22 until it hits the stop.
5. Push the jaw coupling 21 upwards against the spring force and turn the regulating lever 1 until the jaw coupling is positioned above the regulating lever. Engage the jaw coupling.

List of parts for retrofitting

Item	Designation	Stock code	Stock code
		BA 2... BAE 2...	BA 2... K BAE 2... K
20 21	Actuator EF 2, 230 V, 50/60 Hz (with switching cams), incl. assembly kit	336037	336037
23 24 25 26	Actuator EF 2-1, 230 V, 50/60 Hz (with feedback potentiometer, angle of rotation 217°), incl. assembly kit	336038	
27 28	Actuator EF 2-1, 230 V, 50/60 Hz (with feedback potentiometer, angle of rotation 270°), incl. assembly kit		336039

Spare Parts

Spare parts list

Item	Designation	Stock code	Stock code
		BA 2... BAE 2...	BA 2... K BAE 2... K
2 5 / 6 13 / 14 16	Strainer set, cpl.: 1 Nozzle stem, 1 nozzle insert, 6 packing rings, 1 spring pin 5 x 28	333565	334036
16	Packing rings: 6 Packing rings 16 x 24 x 4	333697	333697
20	Actuator EF 2 , 230 V, 50/60 Hz (with switching cams, angle of rotation 217°)	333313	333313
20	Actuator EF 2-1 , 230 V, 50/60 Hz (with feedback potentiometer, angle of rotation 217°)	333966	
20	Actuator EF 2-1 , 230 V, 50/60 Hz (with feedback potentiometer, angle of rotation 270°)		335860
	Sample valve for BA 210 (K), BAE 210 (K): 1 Sample valve PN 320, 1.0460, 1 Gasket 14 x 18, form A	332935	332935
	Sample valve for BA 211 (K), BAE 211 (K): 1 Sample valve PN 320, 1.7335, 1 Gasket 14 x 18, form A	332936	332936

Explosion-proof actuators or actuators powered by d. c. or three-phase current are available on request.

Decommissioning



Danger

The equipment is under pressure and hot during operation.

The regulating lever of the continuous blowdown valve and the coupling of the actuator are hot during operation.

Risk of severe burns and scalds to the whole body!

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

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

Always wear industrial gloves when servicing the equipment.

Danger of bruising! During operation moving parts can pinch one's hands or fingers, causing severe injuries. Do not touch moving parts. The continuous blowdown valves BAE 210, BAE 211 are remote-controlled and can open and close abruptly.

The terminal strips of the actuator are live during operation.

This presents the danger of electric shock!

Cut off power supply to the equipment before mounting or removing the equipment!

Disposal

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

Annex

Note on the Declaration of Conformity / Declaration by the Manufacturer

For details on the conformity assessment according to the European Directives see our Declaration of Conformity or our Declaration of Manufacturer.

The current Declaration of Conformity / Declaration of Manufacturer are available in the Internet under www.gestra./de/xxx or can be requested from us.



Agencies all over the world: www.gestra.de

GESTRA AG

Münchener Straße 77

28215 Bremen

Germany

Telefon +49 421 3503-0

Telefax +49 421 3503-393

E-mail info@de.gestra.com

Web www.gestra.de