

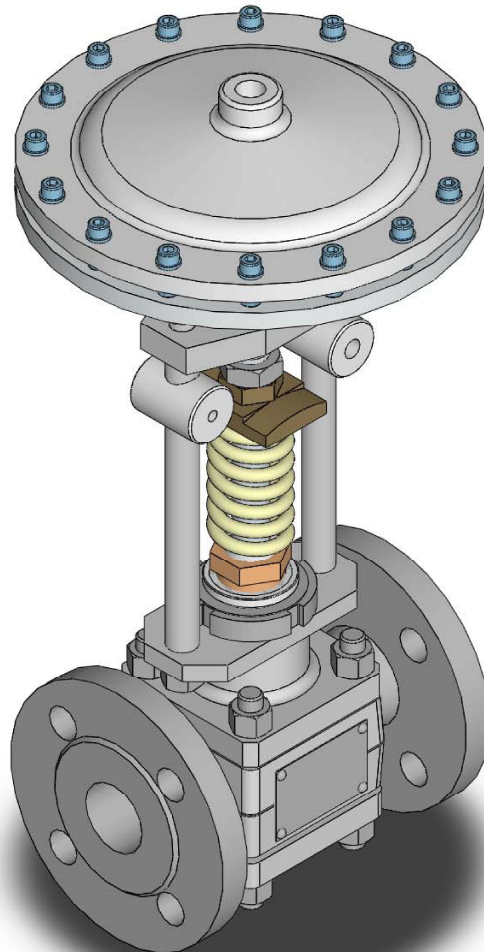


IGEMA GmbH
Measuring and control systems

Mounting and operating instructions

Blow-down valve type KAV.. R1-N

- KAV1 R1-N with hand lever
- KAV2 R1-N with diaphragm actuator



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Safety instructions



General health and safety instructions

1. Avoidance of danger for persons and property

- Only use unit for intended purpose.
- No additional mountings and modifications on the unit without our approval.
- Adhere to the standards for prevention of accidents and to the plant specific safety regulations.
- Read and observe installation and operating instructions.

2. Application limits

Only use this unit according to these operating instructions and to the parameters agreed upon in the delivery contract (see identification plate) including the agreed operating conditions.

3. Avoidance of danger and damages

- Distribute these mounting and operating instructions to appropriate department "arrival of goods, works transport, mounting, commissioning and maintenance".
- When passing the unit to a third party, these mounting and operating instructions must be enclosed in the national language of this third party.
- Only skilled and qualified personnel with special work order may work on the unit, which must be free of pipeline stress!
- Carefully read, observe and preserve these mounting and operating instructions.
- **Observe and adhere to the precautions marked in bold characters in the sections of these mounting and operating instructions!**
- Avoid shocks and impacts during transport which could damage the unit.
- In case of intermediate storage take care for a dry and appropriate place where the unit cannot be damaged.

4. Marking

In these mounting and operating instructions, the safety instructions are specially marked with the following symbols:



Danger

means danger to life and/or serious property damage in case of non-observance. Never ignore!



Attention

means that you must pay special attention to the technical relationships.

Unit-specific safety instructions

- ⇒ The fitting is under pressure during operation!
Hot water and steam will escape if flange connections, screw plugs or stuffing boxes are unfixed.
- ⇒ Carry out assembly and maintenance works only if plant is completely pressureless!
The lines before and behind the valve must be pressureless!
Control lines must be pressureless!
- ⇒ The valve is hot during operation!
Severe burns on hands and arms are possible.
Wait until the unit has cooled before carrying out assembly and maintenance works!
- ⇒ Severe burns and scaldings on the whole body are possible!
All connected lines must be pressureless (0 bar) and cooled to room temperature (20°C) before carrying out maintenance works on the valve or before unfastening flange connections, stuffing boxes or screw plugs!
- ⇒ Crushing hazard! Movable interior parts can cause severe hand injuries during operation. Never touch valve in operating condition! Blow-down valves are time-controlled and can open or close abruptly!
- ⇒ Sharp-edged interior parts can cause cutting damages on the hands!
Always wear work gloves when exchanging packing, valve seat and valve cone!

Exclusion of liability

Die IGEMA GmbH Mess- und Regelsysteme does not accept liability when a/m regulations, instructions and warning indications are not observed and adhered to. The operator is responsible for modifications on a unit of IGEMA (if they are not explicitly specified in the mounting and operating instructions).

2. Important information

2.1 Intended use

KAV1 R1-N , KAV2 R1-N:

Only use the blow-down valves to drain muddy boiler water with non-metallic solids from steam generators within the admissible pressure and temperature limits.

Only use compressed air (room temperature) or presswater (room temperature) as control medium for the IGEMA diaphragm actuator according to the fixed application limits.

2.2 Classification according to art. 9, PED 97/23/EEC

Type	KAV1 R1-N				KAV2 R1-N			
	Gas, steam		Liquid		Gas, steam		Liquid	
Fluid group	1	2	1	2	1	2	1	2
Use	no	yes	no	yes	no	yes	no	yes

	PN	Nominal diameter DN	
		Exception as per art. 3.3	Category II, Module D1
Typ KAV1	40	20,25,32	40,50
	63	25	40,50
Typ KAV2	40	20,25,32	40,50
	63	25	40,50
<i>CE mark</i>		<i>no</i>	<i>CE 0035</i>

3. Explanations

3.1 Contents of packing

KAV1/2 R1-N

- 1 blow-down valve
- 1 hand lever
- 1 mounting and operating instructions

3.2 System description

Blow-down valve for manual or automatic programme-controlled blowing down of land and ship steam generators especially for operation without permanent supervision as per TRD 604. The mud that deposits on the boiler end due to a precipitation from the boiler water during operation of steam generators is removed by the valves with short opening intervals.

- *KAV1 R1-N* are dimensioned for manual operation (diaphragm actuator retrofittable)
- *KAV2 R1-N* have a diaphragm actuator for compressed air and presswater

3.3 Function

The blow-down valve type **KAV1 R1-N** is opened by means of a hand lever. The valve cone prestressed with elastic force is pressed out of the valve seat. A big opening is released and precipitated mud can escape through it outwards or into a mixing cooler. The valve must be fully opened by the hand lever for a short time (about 2 seconds) to reach the optimum blowing-down effect.

The blow-down valve type **KAV2 R1-N** is opened by means of a diaphragm actuator. The valve cone prestressed with elastic force is pressed out of the valve seat by the guide bolt of the diaphragm actuator. A big opening is released and precipitated mud can escape though it outwards or into a mixing cooler. Use compressed air (room temperature) or presswater (room temperature) as control medium for the IGEMA diaphragm actuator according to the fixed application limits (see diagram page 11).

The blowing-down impulse duration, i.e. the time where the valve is opened, should be about 2 seconds. The interval time, i.e. the time where the valve is closed, must be fixed depending on size and capacity of the steam generator. We recommend to drain about 10 per cent of the total boiler water quantity to be discharged with the blow-down valve.

The duration of the blowing-down impulses and intervals must be fixed individually by the operator depending on boiler water quality, size of steam generator and plant utilization.

4. Technical data

4.1 Type of connection

Standard : Flanges as per DIN EN 1092-1

On request : Flanges as per ASME Class 150, 300, 400 and DIN EN 1759-1
Welding ends as per DIN or ASME

4.2 Pressure stages

PN 40, 63
Class 150, 300, 400

4.3 Materials

Denomination	<i>DIN EN</i>	<i>DIN</i>	<i>ASTM</i>
Case	P250GH (1.0460)	C22.8 (1.0460)	A105
Stuffing box	CuZn40Pb2	CuZn40Pb2	-
Thrust ring	X5CrNi18-10 (1.4301)	X5CrNi18-10 (1.4301)	-
Guide ring	CuZn40Pb2	CuZn40Pb2	-
Seat	X2CrNiMoN22-5-3 (1.4462)	X2CrNiMoN22-5-3 (1.4462)	-
Valve spindle (hardened cone)	X20Cr13 (1.4021)	X20Cr13 (1.4021)	-
Pressure spring	67SiCr5 (1.7103)	67SiCr5 (1.7103)	-
Diaphragm actuator	GK-AISI12		-
Packing	Graphite (with Barium-Molybdat-Inhibitor)		
Control diaphragm	EPDM		

4.4 Application limits

Nominal pressure	40	63
Max. all. pressure PS	32 bar	50 bar
Max. all. temperature TS	239°C	265°C

4.5 Corrosion resistance

If used as intended, the safety of the valve is unaffected by corrosion.





4.6 Construction

The case is not construed for swelling load. Dimensioning and corrosion allowance are construed in accordance with the state of the art.

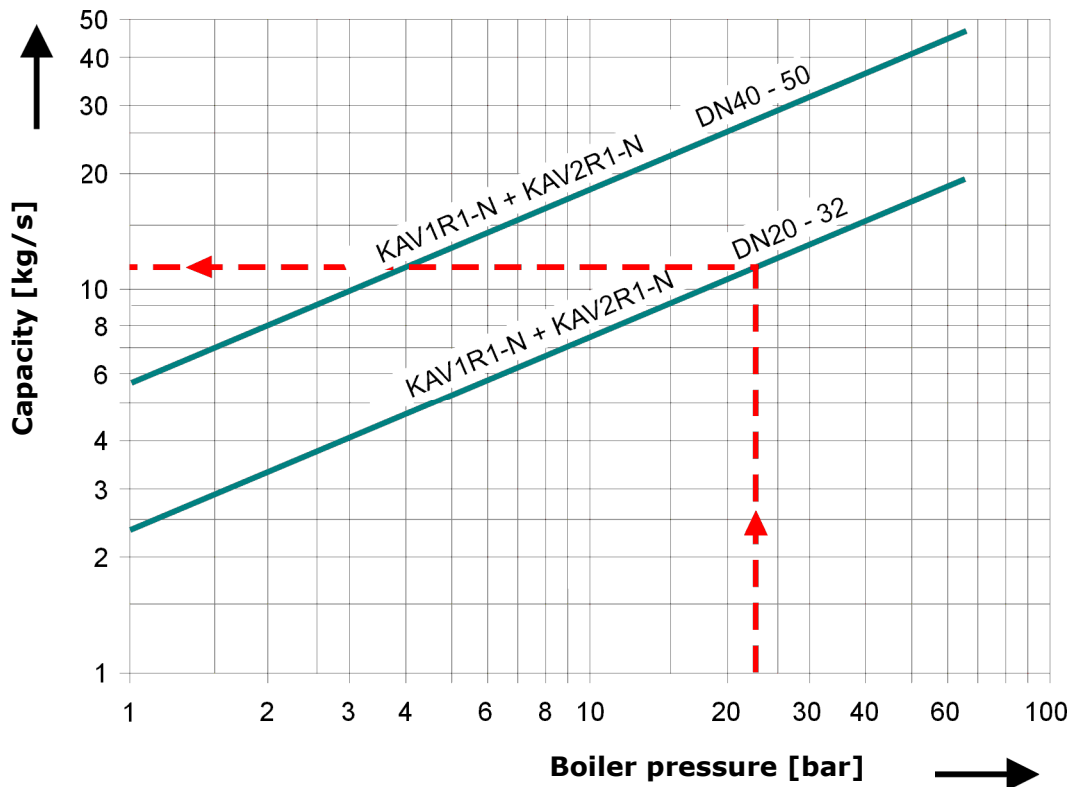
4.7 Identification plate / Marking

The following data are marked on the identification plate as per PED 97/23/EEC:

- A Date of manufacture
- B Type of instrument
- C Max. all. pressure
- D Max. all. temperature
- E Nominal pressure
- F Nominal size

 0035		IGEMA GmbH Mess- und Regelsysteme Zieglerstraße 10-16 Germany - 52078 Aachen made by LECOS GmbH a company of the IGEMA group
 See installation instructions		
Built <input type="checkbox"/> A	Type <input type="checkbox"/> B	
PS <input type="checkbox"/> C bar	TS <input type="checkbox"/> D °C	
PN <input type="checkbox"/> E	DN <input type="checkbox"/> F	
 		

4.8 Flow diagram



Reading example: boiler pressure: 25 bar, nominal diameter of valve: DN 32
Result: capacity about 12 kg/s

Calculation of boiler water quantity to be drained:

Formula 1.0:
$$A = \frac{Q \cdot S}{K - S}$$

Conductivity of feed water:	S [$\mu\text{S}/\text{cm}$]
All. conductivity of boiler water:	K [$\mu\text{S}/\text{cm}$]
Boiler capacity:	Q [kg/h]
Boiler water quantity to be drained:	A [kg/h]

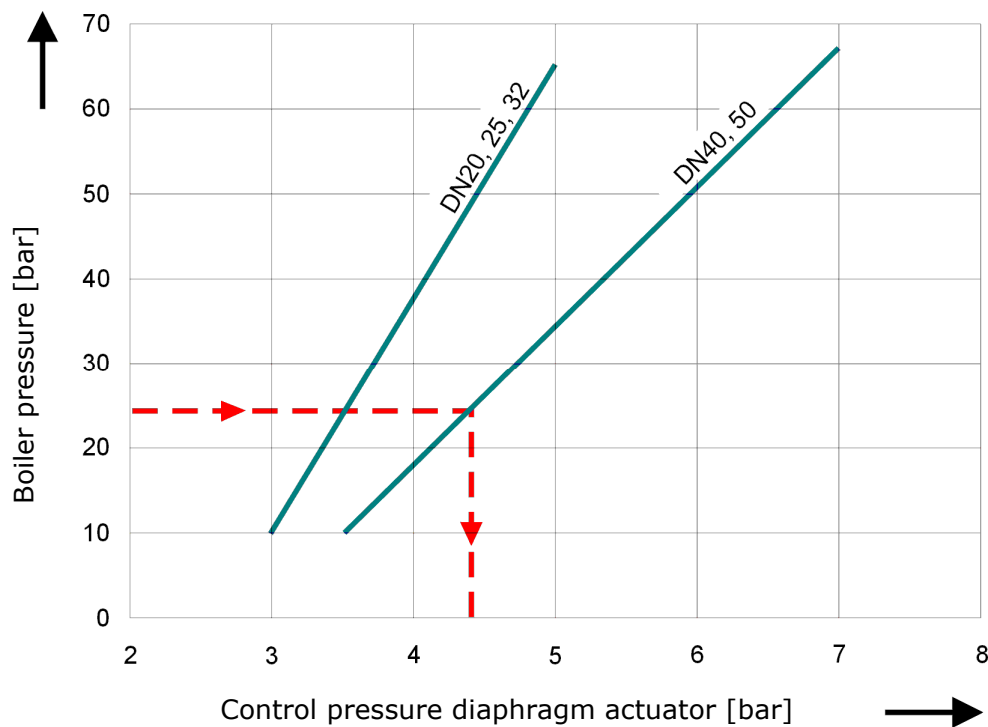
Calculation example:

S = 20 $\mu\text{S}/\text{cm}$
 K = 4.000 $\mu\text{S}/\text{cm}$
 Q = 9.500 kg/h

Result as per formula 1.0:

Boiler water quantity to be drained: about 48 kg/h

4.9 Control pressure diagram of diaphragm actuator



Reading example:

Boiler pressure: 25 bar

Nominal diameter of valve: DN 40

Result: control pressure 4,3 bar

The determined control pressure may be exceeded by max. 10%.

Note:

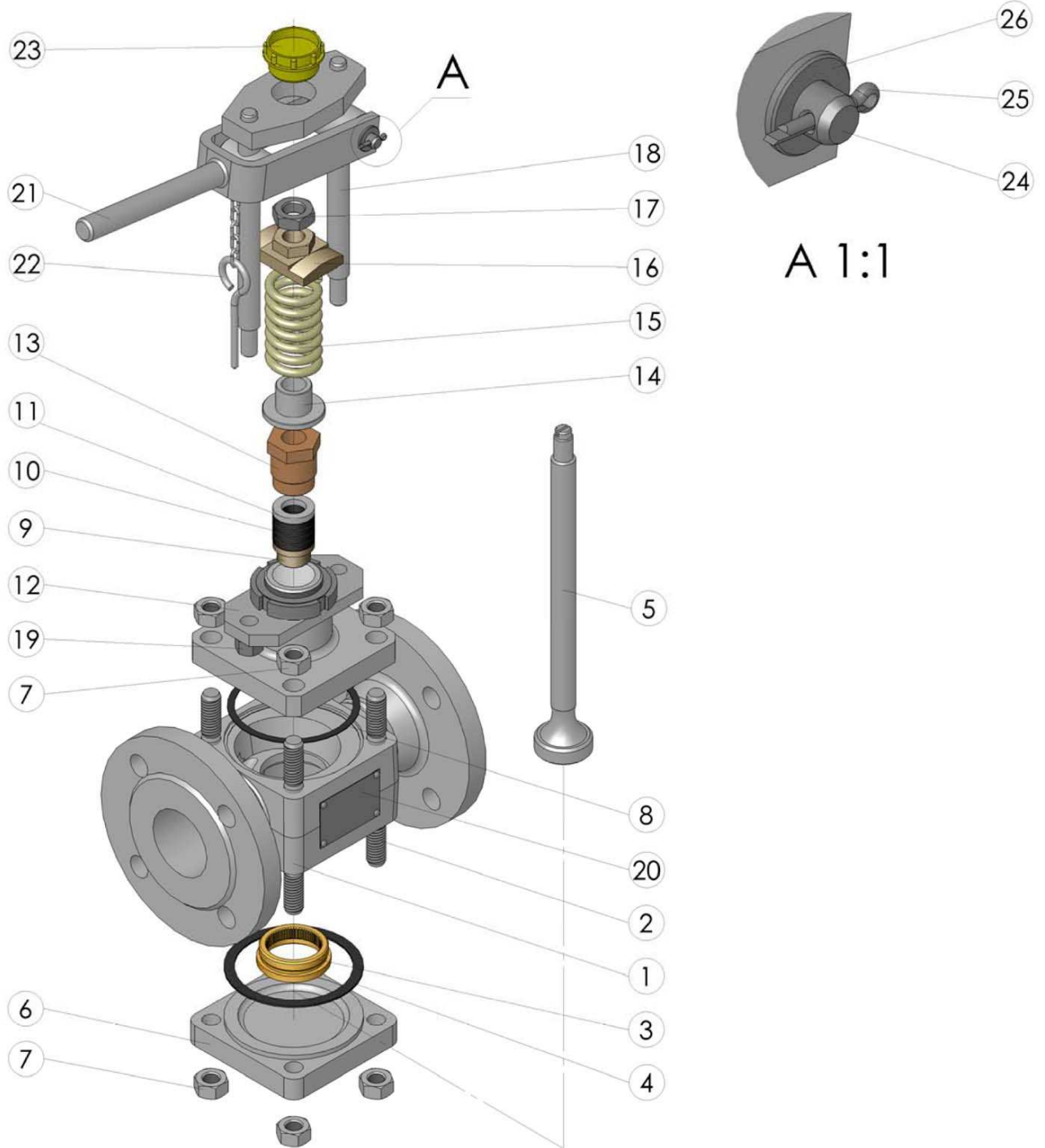
The filling volume of the diaphragm actuator amounts to 0,55 l per blowing-down process.



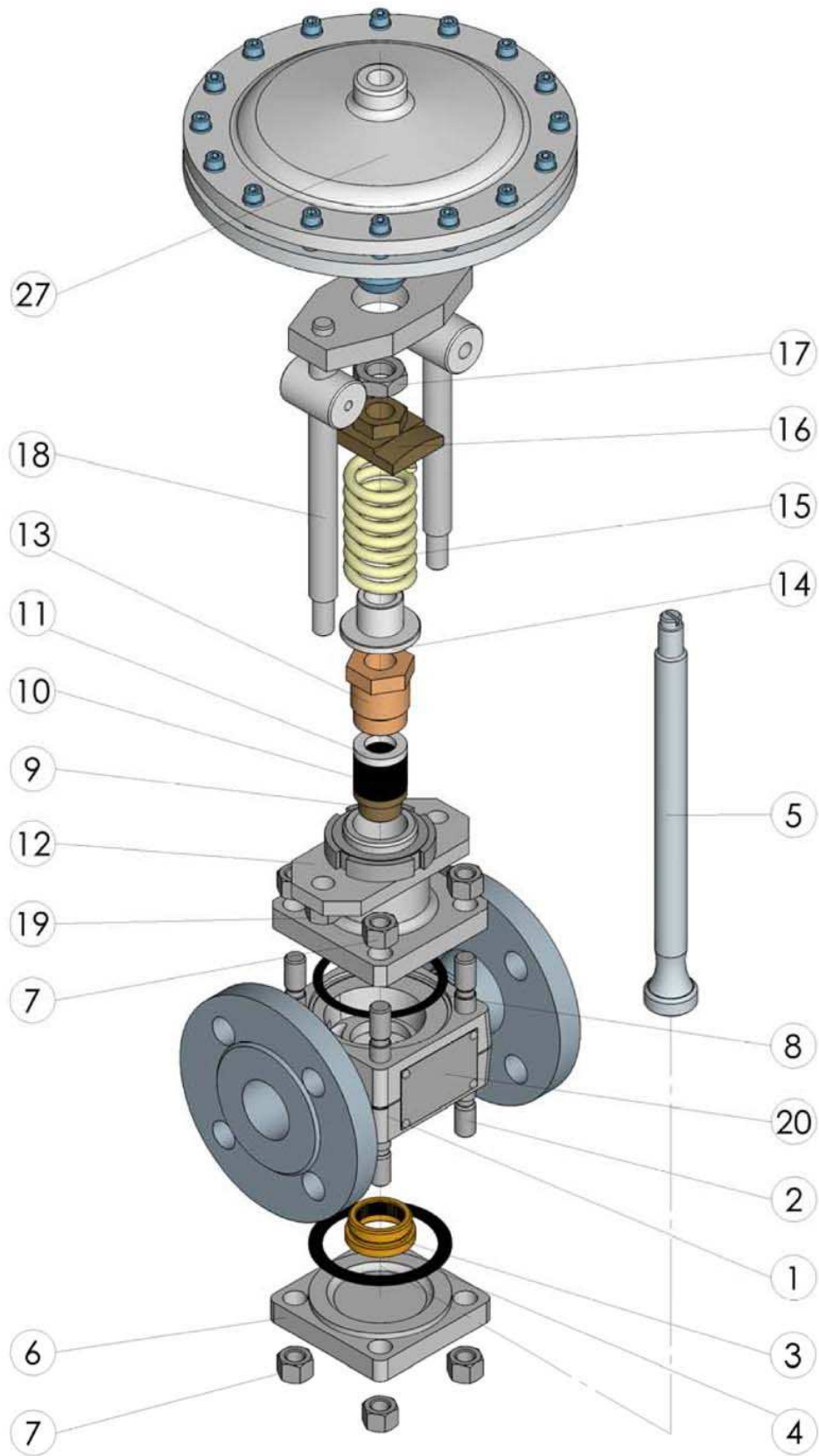
The diaphragm actuator may only be operated with a control pressure of **max. 7 bar** to exclude a destruction of the actuator or the diaphragm.

5. Construction

5.1 KAV1 R1-N



5.2 KAV2 R1-N



5.3 Legend

- (1) Valve housing
 - (2) Stud
 - (3) Valve seat
 - (4) Lower sealing ring
 - (5) Valve spindle
 - (6) Valve cover
 - (7) Hex nut
 - (8) Upper sealing ring
 - (9) Guide socket
 - (10) Packing ring
 - (11) Thrust ring
 - (12) Upper part of valve
 - (13) Stuffing box
 - (14) Spring cage
 - (15) Pressure spring
 - (16) Clamping nut
 - (17) Plain nut
 - (18) Lantern
 - (19) Hex nut
 - (20) Identification plate
 - (21) Hand lever
 - (22) Safety pin
 - (23) Screw plug
 - (24) Bolt
 - (25) Splint
 - (26) Disk
 - (27) Diaphragm actuator
-
- (27.1) Clamp-in piece
 - (27.2) Lower part of diaphragm case
 - (27.3) Stem
 - (27.4) Diaphragm disk
 - (27.5) Rubber diaphragm
 - (27.6) Upper part of diaphragm case
 - (27.7) Hexagon socket screw
 - (27.8) Disk

6. Assembly



Severe injuries, death and destruction through explosion of ignitable mixtures are possible!
Static electricity can build up in case of electrically insulated installation between pipe flanges!
Take measures (grounding) to conduct static electricity if the valves are used in explosion-hazardous areas!

6.1 KAV1/2 R1-N

The blow-down valve can be installed in a horizontal or vertical piping. Hand lever of KAV1 R1-N and hand lever for emergency actuation of KAV2 R1-N must be movable.



We recommend to assemble a sloping piping behind the blow-down valve to avoid water hammers or to drain the piping before the blow-down process!
The drain piping must correspond at least to the nominal diameter of the KAV and has to be protected from pressure peaks.
Ensure that drain piping has free outlet to atmosphere.
The piping between steam generator and blow-down valve **may not exceed 2 meters**.

6.2 Version with flange

- Respect installation position!
- Hand lever (21) must stay movable!
- Observe flow direction (see arrow on valve housing).
- Respect service measure. If blow-down valve is firmly mounted a free size of at least 150 mm is required for disassembly or subsequent mounting of actuator!
- Remove plastic sealing plugs on flanges. They only serve as transport protection for the flanges.
- Clean sealing surfaces on both flanges.
- Install blow-down valve.

6.3 Version with welding end

- Respect installation position!
- Hand lever (21) must stay movable!
- Observe flow direction (see arrow on valve housing).
- Respect service measure. If blow-down valve is firmly mounted a free size of at least 150 mm is required for disassembly or subsequent mounting of actuator!
- Remove plastic sealing plugs on welding end. They only serve as transport protection for the welding ends.
- Assembly only with:
 - a. Manual arc welding (welding process 11 and 141 according to ISO 4063)
 - b. Gas welding (welding process 3 according to ISO 4063)



Only welders with a test certificate according to EN 287-1 may carry out the welding of blow-down valves into pressure-holding pipings.

6.4 Heat treatment of welding seams

A subsequent heat treatment of the welding seams is not necessary.

6.5 Assembly of hand lever

- Slide hand lever (21) over lantern (18), fix with bolts (24) and secure with disk (26) and splint (25).

7. Commissioning

7.1 KAV1/2 R1-N

The flange connections on the KAV must be firmly screwed and tight.

Fully actuate the blow-down valve once after starting up the steam generator or pressure vessel. The valve must automatically close tightly!

The stuffing box must be tight! Check if medium escapes at stuffing box.

In new and unflushed plants we recommend to shorten the intervals between the blow-down processes a little in the beginning.

8. Operation

8.1 Blowing down duration and interval

Lye solution is drained for a short time when opening an IGEMA blow-down valve. With the first suction the mud is removed from the steam generator. The blowing down duration (aperture time of KAV) is about 2 seconds. The exact time between the single blow-down intervals depends on the operating data of the plant.

1. With the formula of point 4.8 is calculated how much boiler water in *kg/h* must be drained to avoid that the allowable value of the boiler water conductivity is exceeded, e.g. **48 kg/h**
 2. The capacity in *kg/s* is determined by means of the flow diagram (point 4.8) for the existing valve or the valve selected according to the nominal diameter of the boiler nozzle, e.g. **12 kg/s**
 3. With the partial results of 1st and 2nd a blowing down duration of **4 seconds** every hour is calculated.
- ⇒ With an aperture time of only 2 seconds/process i.e. **2 processes/hour**. So the blowing down interval (pause time) is **30 minutes**.

The control of the KAV2 R1-N is made by the program-controlled magnetic valve type PGM1 and PGM2 (see operating instructions for PGM1 and PGM2 D-09-B-03973-0-GB).

9. Emergency operation KAV2 R1-N



Severe injuries on the whole body are possible!
The piping for the control medium of the diaphragm actuator must be pressureless (0 bar) and shut off during emergency operation of the KAV2 R1-N! Shortly insert hand lever only for emergency operation of the valve and take off directly after actuation.

9.1 Utilization of hand lever for emergency actuation

1. Insert hand lever (21) and secure with bolt (24), disk (26) and splint (25).
2. Take off hand lever (21) directly after actuation.

10. Maintenance

IGEMA blow-down valves are basically maintenance-free!
Fully actuate the blow-down valve once after starting up the steam generator or pressure vessel.

The valve must automatically close tightly!

The stuffing box (13) must be tight! Check if medium escapes at stuffing box (13).



Severe burnings and scaldings on the whole body are possible!
All connected lines including the control pressure line (diaphragm actuator KAV2 R1-N) must be pressureless (0 bar) and cooled to room temperature (20°C) before carrying out maintenance works at the valve or before detaching flange connections, stuffing box screwing or screw plugs!

10.1 Re-tightening of stuffing box

1. Re-tighten stuffing box (13) if medium escapes there!
2. Actuate valve once. Valve must automatically close tightly!



Change packing rings (10) if stuffing box cannot be readjusted further!
Slightly unfasten stuffing box (13) if the valve does not close automatically due to the elastic force. Change packing rings (10) if medium escapes at stuffing box (13).

10.2 Exchange of stuffing box *KAV1 R1-N*

1. Pull out splint (25) from bolt (24), remove bolt (24) and take off hand lever (21).
2. Unfasten hex nuts (19) and remove lantern (18) upwards.
3. Unscrew plain nut (17), hold clamping nut (16) with open-end wrench and carefully screw out valve spindle (3) with screwdriver.
4. Remove pressure spring (15) and spring cage (14) and screw off stuffing box (13) with open-end wrench SW 34.
5. Unfix hex nuts (7) and remove valve cover (6).
6. Pull out valve spindle (5) downwards.
7. Unfasten hex nuts (7) and take off upper part of valve (12).
8. Remove inner parts of stuffing box (9, 10, 11).
9. Clean stuffing box (13), guide socket (9), thrust ring (11), valve housing (1), valve seat (3) and valve spindle (5).
10. Grease thread of stuffing box with temperature-resistant lubricant.
11. Insert inner parts of stuffing box in the following order into upper part of valve (12): guide socket (9), 4 x packing ring (10) and thrust ring (11) and slightly screw in stuffing box (13).
12. Insert upper part of valve (12) with new sealing ring (8) into valve housing and tighten with hex nuts (7) with 65 Nm using successively opposite diagonal tightening.
13. Insert valve spindle (3) from below.
14. Slide spring cage (14) and pressure spring (15) on valve spindle (3).
15. Screw clamping nut (16) on valve spindle (3) and hold with open-end wrench. Screw valve spindle (3) with screwdriver in the position that the pressure spring is compressed by about 15 mm. Then lock clamping nut (16) with plain nut (17).
16. Re-tighten stuffing box (13) sturdily.
17. Insert valve cover (6) with new sealing ring (4) into valve housing and tighten with hex nuts (7) with 65 Nm using successively opposite diagonal tightening.
18. Insert lantern (18) into upper part of valve (12) and fix with hex nuts (19).
19. Push in hand lever (21) and secure with bolt (24), disk (26) and splint (25).
20. Actuate valve once (fully open up to the stop).

10.3 Exchange of stuffing box, valve seat and spindle *KAV1 R1-N*

1. Remove splint (25) from bolt (24). Pull out bolt (24) and take off hand lever (21).
2. Unfasten hex nuts (19) and remove lantern (18) upwards.
3. Screw off plain nut (17), hold clamping nut (16) with open-end wrench and carefully screw out valve spindle (3) with screwdriver.
4. Remove pressure spring (15) and spring cage (14) and screw off stuffing box (13) with open-end wrench SW 34.
5. Unfix hex nuts (7) and remove valve cover (6).
6. Pull out valve spindle (5) downwards.
7. Unfasten hex nuts (7) and remove upper part of valve (12).
8. Remove inner parts of stuffing box (9, 10, 11).
9. Screw out valve seat (3) with seat wrench (optional accessory).
10. Clean guide socket (9), thrust ring (11) and valve housing.
11. Screw in new valve seat (3) with seat wrench and tighten with 135 Nm.

12. Grease thread of stuffing box with temperature-resistant lubricant.
13. Insert inner parts of stuffing box into upper part of valve (12) in the following order: guide socket (9), 4 x packing ring (10) and thrust ring (11) and slightly screw in new stuffing box (13).
14. Insert upper part of valve (12) with new sealing ring (8) into valve housing and tighten with hex nuts (7) with 65 Nm using successively opposite diagonal tightening.
15. Insert new valve spindle (3) from below.
16. Slide spring cage (14) and pressure spring (15) on valve spindle (3).
17. Screw clamping nut (16) on valve spindle (3) and hold with open-end wrench. Screw valve spindle (3) with screwdriver in the position that the pressure spring is compressed by about 15 mm. Then lock clamping nut (16) with plain nut (17).
18. Re-tighten stuffing box (13) sturdily.
19. Insert valve cover (6) with new sealing ring (4) into valve housing and tighten with hex nuts (7) with 65 Nm using successively opposite diagonal tightening.
20. Insert lantern (18) into upper part of valve (12) and fix with hex nuts (19).
21. Push in hand lever (21) and secure with bolt (24), disk (26) and splint (25).
21. Actuate valve once (fully open up to the stop).

10.4 Exchange of stuffing box KAV2 R1-N

1. Detach pressure line for the control of the diaphragm actuator (27) from splice.
2. Unscrew diaphragm actuator (27) (external screw part SW 41) and pull out from the lantern (18) upwards.
3. Unfasten hex nuts (19) and remove lantern (18) upwards.
4. Screw off plain nut (17), hold clamping nut (16) with open-end wrench and carefully screw out valve spindle (3) with screwdriver.
5. Remove pressure spring (15) and spring cage (14) and screw off stuffing box (13) with open-end wrench SW 34.
6. Unfasten hex nuts (7) and remove upper part of valve (6).
7. Pull out valve spindle (5) downwards.
8. Unfasten hex nuts (7) and remove upper part of valve (12).
9. Take out inner parts of stuffing box (9, 10, 11).
10. Clean stuffing box (13), guide socket (9), thrust ring (11), valve housing (1), valve seat (3) and valve spindle (5).
11. Grease thread of stuffing box with heat-resistant lubricant.
12. Insert inner parts of stuffing box into upper part of valve (12) in the following order: guide socket (9), 4 x packing ring (10) and thrust ring (11) and slightly screw in new stuffing box (13).
13. Insert upper part of valve (12) with new sealing ring (8) into valve housing and tighten with hex nuts (7) with 65 Nm using successively opposite diagonal tightening.
14. Insert valve spindle (3) from below.
15. Slide spring cage (14) and pressure spring (15) on valve spindle (3).
16. Screw clamping nut (16) on valve spindle (3) and hold with open-end wrench. Screw valve spindle (3) with screwdriver in the position that the pressure spring is compressed by about 15 mm. Then lock clamping nut (16) with plain nut (17).
17. Re-tighten stuffing box (13) sturdily.

18. Insert valve cover (6) with new sealing ring (4) into valve housing and tighten with hex nuts (7) with 65 Nm using successively opposite diagonal tightening.
19. Insert lantern (18) into upper part of valve (12) and fix with hex nuts (19).
20. Actuate valve once (fully open up to the stop).

10.5 Exchange of stuffing box, valve seat and spindle

KAV2 R1-N

1. Detach pressure line for the control of the diaphragm actuator (27) from splice.
2. Unscrew diaphragm actuator (27) (external screw part SW 41) and pull out from the lantern (18) upwards.
3. Unfasten hex nuts (19) and remove lantern (18) upwards.
4. Screw off plain nut (17), hold clamping nut (16) with open-end wrench and carefully screw out valve spindle (3) with screwdriver.
5. Remove pressure spring (15) and spring cage (14) and screw off stuffing box (13) with open-end wrench SW 34.
6. Unfasten hex nuts (7) and remove valve cover (6).
7. Pull out valve spindle (5) downwards.
8. Unfasten hex nuts (7) and remove upper part of valve (12).
9. Take out inner parts of stuffing box (9, 10, 11).
10. Screw out valve seat (3) with seat wrench (optional accessory).
11. Clean guide socket (9), thrust ring (11) and valve housing.
12. Screw in new valve seat (3) with seat wrench and tighten with 135 Nm.
13. Grease thread of stuffing box with temperature-resistant lubricant.
14. Insert inner parts of stuffing box into upper part of valve (12) in the following order: guide socket (9), 4 x packing ring (10) and thrust ring (11) and slightly screw in new stuffing box (13).
15. Insert upper part of valve (12) with new sealing ring (8) into valve housing and tighten with hex nuts (7) with 65 Nm using successively opposite diagonal tightening.
16. Insert new valve spindle (3) from below.
17. Slide spring cage (14) and pressure spring (15) on valve spindle (3).
18. Screw clamping nut (16) on valve spindle (3) and hold with open-end wrench. Screw valve spindle (3) with screwdriver in the position that the pressure spring is compressed by about 15 mm. Then lock clamping nut (16) with plain nut (17).
19. Re-tighten stuffing box (13) sturdily.
20. Insert valve cover (6) with new sealing ring (4) into valve housing and tighten with hex nuts (7) with 65 Nm using successively opposite diagonal tightening.
21. Insert lantern (18) into upper part of valve (12) and fix with hex nuts (19).
22. Actuate valve once (fully open up to the stop).

10.6 Exchange of rubber diaphragm in diaphragm actuator

1. Detach pressure line for the control of the diaphragm actuator (27) from splice.
2. Unfasten hexagon socket screws (27.7) and remove together with disks (27.8).
3. Take off upper part of diaphragm case (27.6) and remove rubber diaphragm (27.5).
4. Clean upper and lower diaphragm case (27.6) (27.2) as well as diaphragm disk (27.4).
5. Insert new rubber diaphragm (27.5).
6. Place upper part of diaphragm case (27.6), screw in hexagon socket screws (27.7) with disks (27.8) und tighten in several steps with 5 Nm using successively opposite diagonal tightening.

Attention! The screw ends terminate with the plan surface of the case.



The hexagon socket screws (27.7) may only be tightened with **5 Nm** at most. The rubber diaphragm can be damaged with higher tightening torques!

10.7 Tightening torques

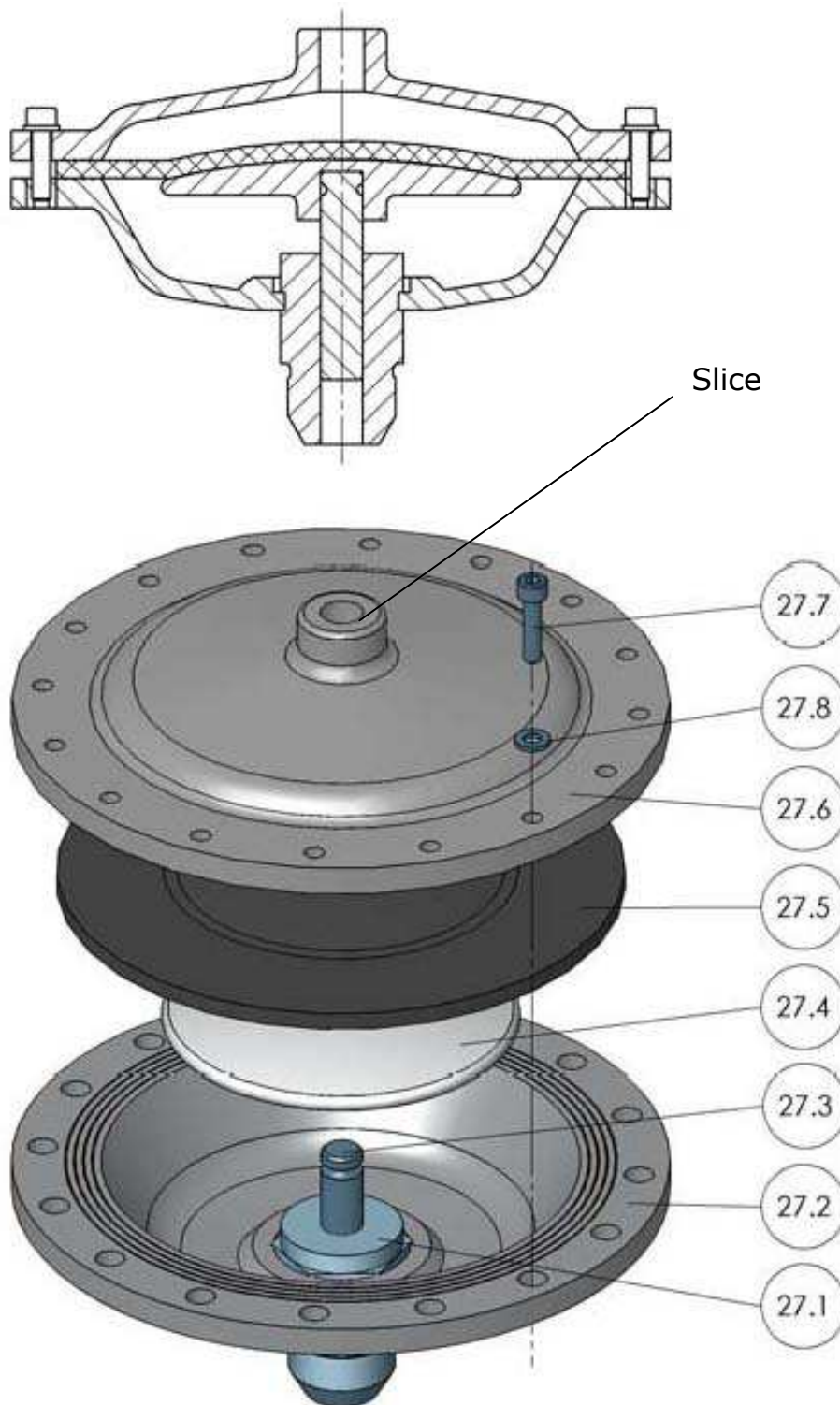
<i>Part</i>	<i>Tightening torque Nm</i>	
3	135	
7	65	
27.7	5	Only for KAV2

All tightening torques refer to ambient temperature 20°C.

10.8 Tools

- Combination wrench SW18
- Combination wrench SW22
- Combination wrench SW27
- Combination wrench SW34
- Socket wrench SW5 (for hexagon socket screws)
- Torque wrench 1-12 Nm
- Torque wrench 20-120 Nm
- Torque wrench 80-400 Nm
- Seat wrench (optional for DN20-32)
- Seat wrench (optional for DN40-50)
- Slot screwdriver (broad blade)

10.9 Disassembly / Assembly rubber diaphragm



11. Retrofitting

The KAV1 R1-N can be equipped subsequently with a diaphragm actuator!



Severe burnings and scaldings on the whole body are possible!
All connected lines must be pressureless (0 bar) and cooled to ambient temperature (20°C) before carrying out conversion works at the valve or before detaching flange connections, stuffing box screws or screw plugs!

Mount hand lever for emergency operation temporarily for the actuation of the valve and then remove directly!

11.1 Assembly of diaphragm actuator

1. Unfasten screw plug (23) and remove.
2. Pull out splint (25) from bolt (24), then pull out bolt (24) and remove hand lever (21).
3. Grease thread of diaphragm actuator with temperature-resistant lubricant and screw on diaphragm actuator (27).
4. Mount pressure line for the control of the diaphragm actuator.

12. Spare parts

12.1 Spare parts list

Part	Designation	Article no.	
		KAV1 R1-N	KAV2 R1-N
10 11 13	Packing set DN20-50 4 x packing ring (10) 1 x thrust ring (11) 1 x Gland packing DN 20-50 (13)	15-04206	15-04206
9	guide socket	25-04350	25-04350
3	Valve seat DN20-32	25-02728	25-02728
4	Lower sealing ring DN20-32	40-01041	40-01041
8	Upper sealing ring DN20-32	40-01986	40-01986
5	Valve spindle DN20-32	25-04928	25-04928
3	Valve seat DN40-50	25-02708	25-02708
4	Lower sealing ring DN40-50	40-00197	40-00197
8	Upper sealing ring DN40-50	40-01985	40-01985
5	Valve spindle DN40-50	25-04351	25-04351
27.5	Diaphragm DN20-50		40-00139
27	Diaphragm actuator DN20-50		15-00264

13. Retrofitting parts

13.1 Retrofitting parts list

Part	Designation	Article no.	
		KAV1 R1-N	KAV2 R1-N
27	Diaphragm actuator		15-00264

14. Decommissioning



Severe burns and scaldings on the whole body are possible!

All connected lines must be pressureless (0 bar) and cooled to ambient temperature (20°C) before detaching flange connections, stuffing box screws or screw plugs!

14.1 Disposal

Dismount valve and separate waste products according to the different materials indicated in the table on page 8.

When disposing the valve, observe legal regulations for waste disposal.

15. Supplement

15.1 Warranty

We accord a warranty period of 24 months on our products. A condition for that is the appropriate treatment according to these mounting and operating instructions. The warranty for wear and spare parts is restricted to material defects and construction faults.

CE Declaration of Conformity

Declaration of Conformity in accordance with the PED Directive 97/23/EEC, annex VII

We, the company:

IGEMA GmbH
LECOS GmbH
J.G. Merckens Mess- und
Regelsysteme GmbH & Co. KG
Zieglerstraße 10-16
52078 Aachen
Deutschland

declare as IGEMA group that the product „blow-down valve“
as pressure holding part

Type of product:

Blow-down valve
KAV1 R1-N (DN 40-50, PN 40-63)
KAV2 R1-N (DN 40-50, PN 40-63)

complies with the PED Directive 97/23/EEC
and that the following Conformity Assurance System was used:

Category II, Module D1

Applicable standards:
TRD, AD2000, ASME-Boilers

Notified body for the modules:

TÜV Industrieservice GmbH
TÜV Rheinland Group
Am Grauen Stein
51105 Köln
Deutschland

Identification no. 0035

Aachen, 04.07.2005



E.H. Kilchert
(Managing director)



A. Scholl
(QM representative)



P. Barth
(Development)



This high quality IGEMA product has been developed, manufactured and inspected in accordance with a quality management system according to DIN EN ISO 9001:2000.

If on receipt of this unit you notice damage in transit or another cause for complaint despite our final quality inspection, please contact immediately our customer service, phone no. +49 (0) 241-56 87-0.
