

Balancing, Measurement and Shut-off
Valve

BOA-Control/ BOA-Control IMS

Type Series Booklet



Legal information/Copyright

Type Series Booklet BOA-Control/ BOA-Control IMS

All rights reserved. The contents provided herein must neither be distributed, copied, reproduced, edited or processed for any other purpose, nor otherwise transmitted, published or made available to a third party without the manufacturer's express written consent.

Subject to technical modification without prior notice.

© KSB SE & Co. KGaA, Frankenthal 19/07/2019

Contents

Control Valves / Measurement Valves 4

- Balancing and Shut-off Valves to DIN/EN 4
- BOA-Control/BOA-Control IMS..... 4
 - Main applications..... 4
 - Fluids handled 4
 - Operating data..... 4
 - Valve body materials..... 4
 - Design details 4
 - Product benefits 5
 - Product information 5
 - Certification..... 5
 - Related documents 6
 - Purchase order specifications 6
 - Pressure/temperature ratings 6
 - Materials 7
 - Colour coding system 10
 - Dimensions and weights..... 11
 - Installation information..... 12
 - Accessories 13
 - Technical data of BOATRONIC MS, BOATRONIC MS-420 13
 - Characteristic curves of BOATRONIC MS-420 15
 - Chemical resistance chart 16

Control Valves / Measurement Valves

Balancing and Shut-off Valves to DIN/EN

BOA-Control/BOA-Control IMS



Main applications

- Hot-water heating systems
- Air-conditioning systems
- Cooling circuits
- Drinking water supply
- Permanent measurement set-ups

Fluids handled

- Hot water for heating systems, with or without glycol ($\leq 60\%$)
- Cold water for air-conditioning systems, with or without glycol ($\leq 60\%$)
- The fluid handled should meet the requirements as specified in VdTÜV/AGFW TCh 1466 or VDI 2035.
- Fluids containing gas or air can be measured with ultrasound equipment to a limited extent only. Proper venting of the systems is therefore essential.
- Drinking water (for variants BOA-Control EKB and BOA-Control IMS EKB only)
- Service water
- Not suitable for steam or fluids liable to attack EPDM and the electrostatic plastic coating.
- Other fluids on request.

Operating data

Operating properties

Characteristic	Value
Nominal pressure	PN 16
Nominal size	DN 15 - 350 ^{1) 2)}
Max. permissible pressure [bar]	16
Min. permissible temperature [°C]	≥ -10
Max. permissible temperature [°C]	$\leq +120$ ³⁾

Valve body materials

Overview of available materials

Material	Material number	Nominal size
EN-GJL-250	5.1301	\leq DN 300
EN-GJS-400-18-LT	5.3103	DN 350

Design details

Design

- BOA-Control IMS complete with sensors for measuring flow rate and temperature
- BOA-Control is suitable for mobile flow rate measurement and temperature measurement.
- Straight-way globe valve with slanted seat
- Non-rotating stem with protected, external thread
- Non-rising handwheel
- Locking device, travel stop, position indicator, throttling plug and insulating cap with anti-condensation feature as standard
- Compact EPDM-encapsulated throttling plug as soft main seat and back seat
- Maintenance-free stem seal with EPDM profile ring
- Face-to-face length to DIN EN 558/1
- Exterior coating: blue, RAL 5002

Measuring computer:

- Measuring flow rate and temperature requires the use of a measuring computer.
- Mobile short-term measurement with battery-powered BOATRONIC MS
- Permanent measurement set-up with BOATRONIC MS-420 (24 V DC power supply)

Variants

- Lead-sealable cap (prevents unauthorised actuation) as assembly set
- BOA CVE IMS: control valve with electric actuator (DN 15 - 200)
- BOA-Control EKB and BOA-Control IMS EKB for drinking water
 - Corrosion protection: internal and external electrostatic plastic coating (EKB), anthracite grey
 - Nominal sizes DN 15-100 are DIN-DVGW-approved for water in acc. with DIN 3546-1: NW-6150BQ0465. The elastomers and plastic parts in contact with the fluid handled and the (EKB) body coating comply with the

1) DN 250 - 350: type BOA-H
 2) Variants BOA-Control EKB and BOA-Control IMS EKB up to DN 200
 3) Variants BOA-Control EKB and BOA-Control IMS EKB $\leq 40\text{ °C}$

KTW recommendations for the use of elastomers in drinking water issued by the German Federal Office of Health.

The nominal sizes 15 - 100 of BOA-Control EKB and BOA-Control IMS EKB are DIN-DVGW-approved for water in acc. with DIN 3546-1: NW-6150BQ0465. The elastomers and plastic parts in contact with the fluid handled and the (EKB) body coating of all nominal sizes comply with the KTW recommendations for the use of elastomers in drinking water issued by the German Federal Office of Health.

Product benefits

- BOA-Control is ideally suited for use in heating systems.
- BOA-Control IMS is suitable for universal use in heating and cooling systems and as a permanent measurement valve.
- BOA-Control EKB/ BOA-Control IMS EKB variant for drinking water (DVGW-approved, DN 15 to DN 100)
- Innovative ultrasound technology for electronic flow rate measurement independent of minimum differential pressures.
- With BOA-Control, measuring time is saved due to the simple magnetic connection of the measurement sensors.
- With temperature sensor
- One model for shut-off and control duties due to EPDM-encapsulated throttling plug with linear characteristic
- Direct and straightforward measurement
- Minimised pressure loss and high flow rates due to hydraulically favourable flow passage.
- Ultrasonic measurement: no contact with fluid handled
- Simple body design and anti-condensation feature allow easy insulation, also for air-conditioning systems. Optional insulation shells available.
- Automatic identification of flow direction for optimised fault analysis
- Type series and nominal size can be identified reliably due to colour coding even on insulated valves; travel indicator scale provided
- Hydraulic balancing directly documented by free BOATRONIC S software.

Product information

Product information as per Regulation No. 1907/2006 (REACH)

For information as per chemicals Regulation (EC) No. 1907/2006 (REACH), see <http://www.ksb.com/reach>.

Product information as per Pressure Equipment Directive 2014/68/EU (PED)

The valves satisfy the safety requirements of Annex I of the European Pressure Equipment Directive 2014/68/EU (PED) for fluids in Groups 1 and 2.

Certification

Overview

Label	Effective in:	Comment
	Germany	Approved in accordance with German drinking water regulation BOA-Control EKB / BOA-Control IMS EKB only
	Worldwide	Approved for marine applications
	Worldwide	Approved for marine applications

Note on DVGW approval:

7128.1/21-EN

Related documents

- The valves are also available as automated variants with electric actuators (continuous-action 24 V AC and 230 V AC) or 3-point (Open/Stop/Closed) actuators (24 V AC and 230 V AC) as BOA-CVE C/CS/W/IMS/EKB/IMS EKB globe valves.

Information/documents

Document	Reference number
BOA-CVE C/CS/W/IMS/EKB/IMS EKB type series booklet	7520.1
Flow characteristics	7128.4
Operating manual	0570.88
BOATRONIC MS, BOATRONIC MS-420 operating manual	7134.8
BOATRONIC MS, BOATRONIC MS-420 quick-reference operating manual	7134.81
Assembly instructions "Accessories Set: Lead-sealable Handwheel Cap"	0570.811
Typical tender for BOA-Control	7128.523
Typical tender for BOA-Control EKB	7128.524
Typical tender for BOA-Control IMS	7128.521
Typical tender for BOA-Control IMS EKB	7128.522

Purchase order specifications

Please specify the following information in all enquiries or purchase orders:

- Type
- Nominal pressure
- Nominal size
- Variants
- Reference number

Measuring computer:

- BOATRONIC MS: material No. 01624491
- BOATRONIC MS-420: material No. 01624492

Pressure/temperature ratings
Test pressure and operating pressure

PN	DN	Materials	Shell test	Leak test (seat)	Permissible operating pressure ⁴⁾
			With water		
			Tests P10 and P11 to DIN EN 12266-1 [bar]	Test procedure 1 to DIN EN 60534-4 [bar]	-10 to +120 °C ⁵⁾ [bar]
16 ⁶⁾	15-300	EN-GJL-250	24	17,6	16
	350	EN-GJS-400-18-LT			16

Valves from DN 250 can only be used for shut-off duties up to the differential pressures indicated below, even when handwheel levers are used!

Permissible differential pressures [bar]

PN	DN	Δ p [bar]
16	250	9
	300/350	6

- Static load
- Variants BOA-Control EKB and BOA-Control IMS EKB -10 to +40 °C
- PN 10 for variants BOA-Control EKB and BOA-Control IMS EKB available

Materials

BOA-Control/BOA-Control IMS, type BOA-CL, DN 15 - 200

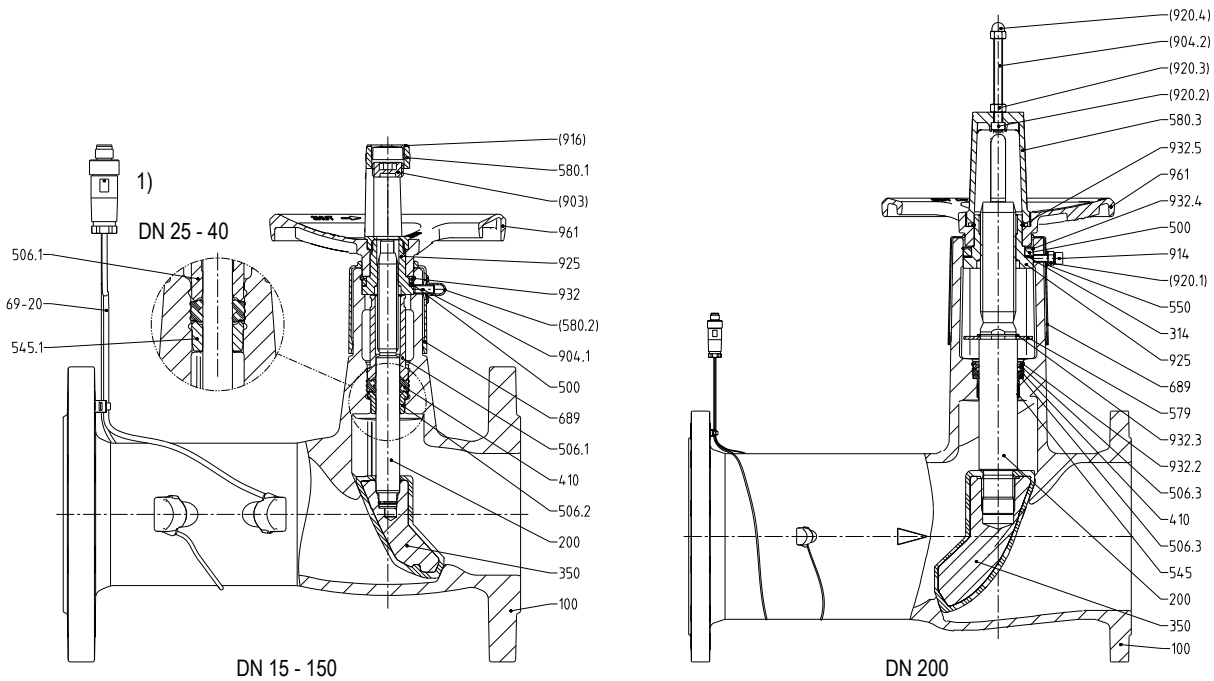


Fig. 1: Sectional drawings of type BOA-CL; 1) EKB variant DN 25 - 40

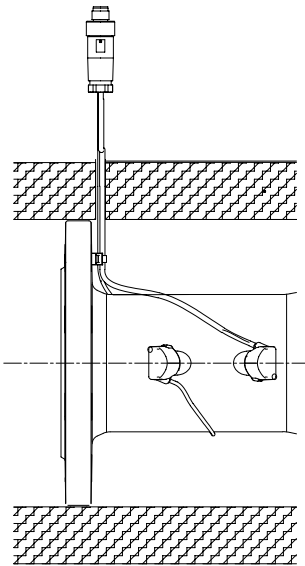


Fig. 2: Detail of insulation shell

Parts list

Part No.	Description	Standard material	Material of EKB variant	Note
100	Body	EN-GJL-250 (5.1301)	EN-GJL-250 (5.1301) / EKB (with internal and external electrostatic coating), as per KTW recommendation	-
200	Stem	Stainless steel, min. 13 % chrome (Cr)		-
314	Thrust bearing	Steel/PTFE		DN 50 - 200
350	Valve disc	EN-GJL-250 (5.1301) / EPDM	EN-GJL-250 (5.1301) / EPDM, as per KTW recommendation	-
410	Profile seal	Elastomer EPDM	Elastomer EPDM, as per KTW recommendation	-

7128.1/21-EN

Part No.	Description	Standard material	Material of EKB variant	Note
500	Ring	Steel, electro-galvanised and thick-film passivated		DN 32 - 200
506.1	Retaining ring	Plastic	Plastic, as per KTW recommendation	DN 50 - 150
506.2		Plastic	Plastic	DN 15 - 150
506.3		Stainless steel		DN 200
545.1	Bearing bush	-	Brass (CW614N)	DN 25 - 40, below profile seal
545.2		Steel/PTFE	Plastic	DN 200
579	Stop	Steel, electro-galvanised and thick-film passivated		DN 200
580.1⁷⁾	Cap assembly incl. travel stop, comprising:			
	580.1	Cap	Plastic, glass-fibre reinforced, impact-resistant	DN 15 - 150
	903	Screw plug	Steel, electro-galvanised, blue chromated	
	916	Plug	Plastic	
580.3⁷⁾	Cap assembly incl. travel stop, comprising:			
	580.3	Cap	Plastic, glass-fibre reinforced, impact-resistant	DN 200
	904.2	Grub screw	Galvanised steel	
	920.2	Square nut	Galvanised steel	
	920.3	Hexagon nut	Galvanised steel	
	920.4	Cap nut	Plastic	
689	Insulation	Plastic	-	-
69-20	Sensor set	Plastic with ceramics		BOA-Control IMS and BOA-Control IMS EKB only
81-73	Cable tie	Plastic		BOA-Control IMS and BOA-Control IMS EKB only
904.1⁷⁾	Locking device assembly, comprising:			
	904.1	Grub screw	Galvanised steel	DN 15 - 150
	580.2	Cap	Plastic	
914⁷⁾	Locking device assembly, comprising:			
	914	Hexagon socket head cap screw	Stainless steel	DN 200
	920.1	Hexagon nut	Galvanised steel	
925	Stem nut	Steel, electro-galvanised and thick-film passivated		-
932.1	Circlip	Stainless spring steel		DN 15 - 150
932.2		Stainless spring steel		DN 200
932.3		Stainless spring steel		DN 200
932.4		Stainless spring steel		-
932.5		Stainless spring steel		DN 200
961	Handwheel	Plastic, glass-fibre reinforced, impact-resistant		DN 15 - 50
		Die-cast aluminium		DN 65 - 150
		EN-GJL-200 (5.1300)		DN 200
-	Insulation shell	Polystyrene shell with hard polyurethane foam		Accessories

7) Spare part

BOA-Control/BOA-Control IMS, type BOA-H, DN 250 - 350

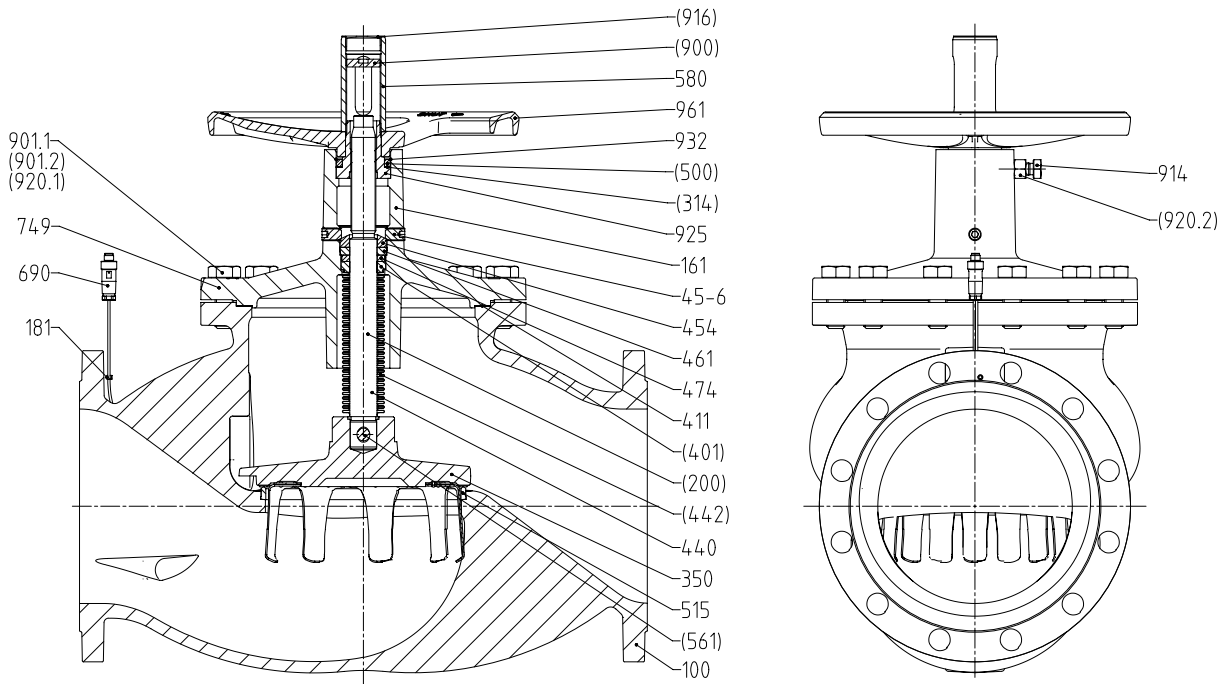


Fig. 3: Sectional drawings of type BOA-H



Parts list

Part No.	Description	Material	Note
100⁸⁾	Complete body assembly, comprising:		
100	Body	EN-GJL-250 (5.1301)	DN 250 - 300
		EN-GJS-400-18-LT	DN 350
411 ⁸⁾	Joint ring	CrNi steel/graphite 1 F	-
515	Seat ring	1.4301	-
901.1	Hexagon head bolt	8.8	DN 250 - 300
901.2	Stud	C35E+QT	DN 350
920.1	Hexagon nut	C35E+N	DN 350
181	Cable tie	PA	-
690	Sensor set	Acc. to manufacturer	-
749⁸⁾	Complete bonnet assembly, comprising:		
161	Body bonnet	EN-GJL-250 (5.1301)	DN 250- 350
		EN-GJS-400-18-LT	DN 350
350⁸⁾	Complete V-port plug assembly, comprising:		
350	V-port plug	EN-GJL-250 (5.1301)	-
561	Grooved pin	45 H+A2A	-
411 ⁸⁾	Joint ring	CrNi steel/graphite 1 F	-
440	Bellows assembly, comprising:		
200	Stem	Stainless steel, min. 13 % chrome (Cr)	-
401	Weld ring	1.4021+QT800	-
442	Bellows	1.4541	-
45-6	Stuffing box screw	45 H	-
454	Stuffing box ring	46S20+C	-
461	Gland packing	GH 1,4-IA	-
474	Thrust ring	1.4104	-
580⁸⁾	Complete cap assembly for V-port plug incl. travel stop, comprising:		
580	Cap	1.4027	-
900	Screw	1.4021+QT800	-
916	Plug	PE-LD	-

8) Spare part

Part No.	Description	Material	Note
914 ⁸⁾	Locking device assembly, comprising:		
914	Hexagon head bolt	8.8	-
920.2	Hexagon nut	8+A2A	-
925	Stem nut assembly, comprising:		
314	Thrust bearing	Steel/PTFE	-
500	Ring	ST+GAL ZN	-
925	Stem nut	46S20+C	-
932	Circlip	1.4310	-
961 ⁸⁾	Handwheel	AC-46200F-D	-

Colour coding system

(BOA-Control / BOA-Control IMS / BOA-Control EKB / BOA-Control IMS EKB) Soft-seated valve disc	(BOA-Control IMS until 2015) Soft-seated valve disc
	
Red plug / grey cap with scale	Red plug / grey cap

Dimensions and weights

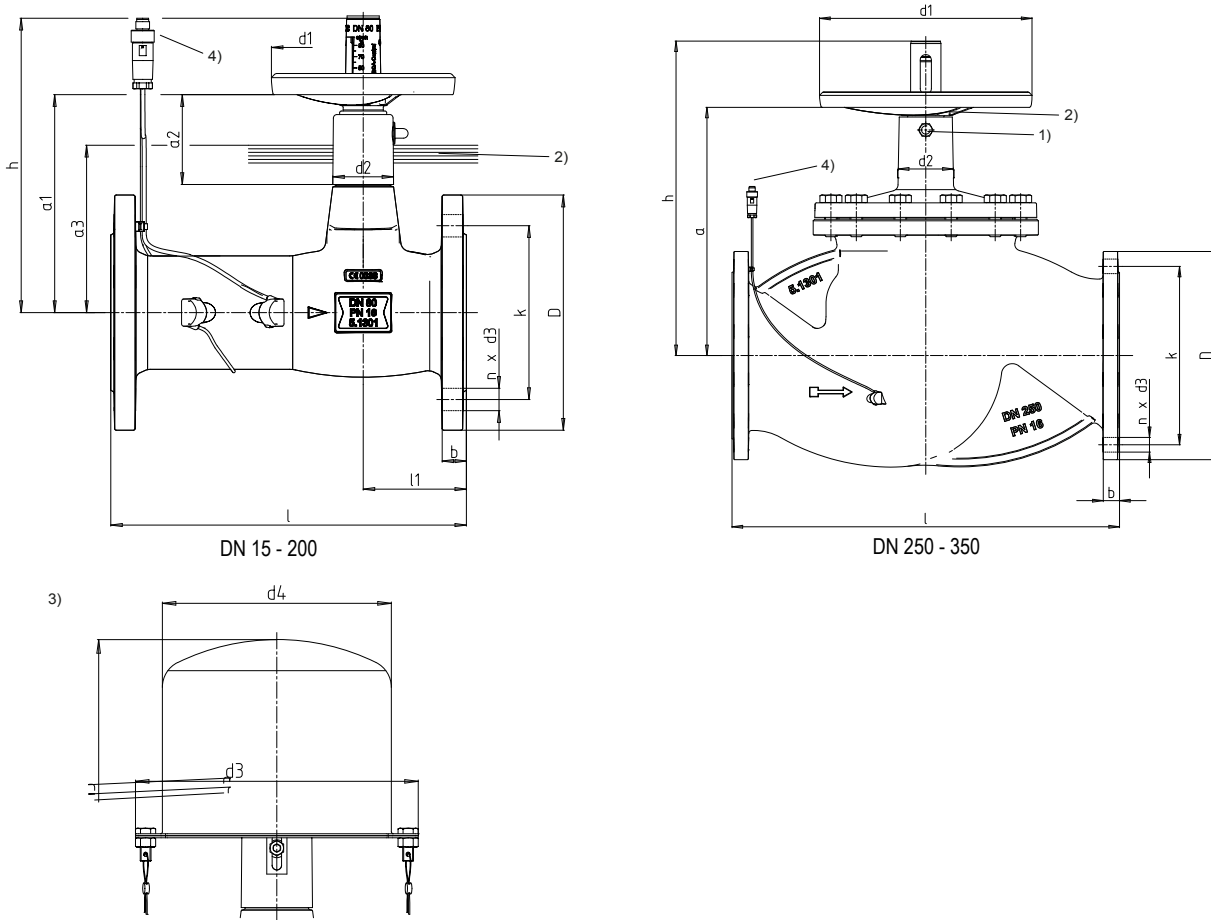


Fig. 4: Dimensions

1)	shown offset by 90°	2)	Insulation boundary ⁹⁾
3)	Lead-sealable cap (prevents unauthorised actuation) as assembly set	4)	Sensor

Dimensions and weights

PN	DN	a ₁	a ₂	a ₃	b	D	d ₁	d ₂ ≈	h	k	l	l ₁	n × d ₃	Capped valve			
		[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[kg]	h ₃	d ₄	a ₄
16	15	93	29	57,5	14	95	50	33	130	65	130	42,5	4 × 14	2,0	181,5	130	166
	20	93	29	62,5	16	105	50	33	130	75	150	48	4 × 14	2,4	181,5	130	166
	25	105	46	72,5	16	115	80	35	156	85	160	54,5	4 × 14	3,1	191,5	130	166
	32	122	46	85	18	140	100	43	178	100	180	65	4 × 19	5,0	205,0	130	166
	40	122	46	95	18	150	100	43	178	110	200	70	4 × 19	5,8	207,5	130	166
	50	133	46	107,5	20	165	100	43	189	125	230	75	4 × 19	7,6	218,5	130	166
	65	175	66	125	20	185	125	47	247	145	290	85	4 × 19	11,5	258,5	130	166
	80	186	76	140	22	200	160	52	251	160	310	90	8 × 19	14,5	330,5	170	210
	100	224	73	160	24	220	160	63	305	180	350	95	8 × 19	20,7	346,5	170	210
	125	271	115	175	26	250	200	85	371	210	400	125	8 × 19	31,7	431,0	220	270
	150	283	113	192,5	26	285	250	85	385	240	480	150	8 × 23	41,6	453,0	340	390
200	434	175	220	30	340	315	136	697	295	600	180,5	12 × 23	90,7	597,0	340	390	

Dimensions

PN	DN	a	b	D	d ₁	d ₂ ≈	h	k	l	n × d ₃	[kg]
16	250	476	32	405	400	93	606	355	730	12 × 28	239
	300	530	32	460	400	93	660	410	850	12 × 28	343

9) In acc. with EnEV

PN	DN	a	b	D	d ₁	d ₂ ≈	h	k	l	n × d ₃	[kg]
		[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	
16	350	530	36	520	400	93	660	470	980	16 × 28	390

Mating dimensions as per standard

Face-to-face lengths: DIN EN 558/1, ISO 5752/1
 Flanges: DIN EN 1092-2, flange type 21
 Flange facing: DIN EN 1092-2, type B

Installation information

i Non-compliance with the following installation information may result in failure of the measuring functions!

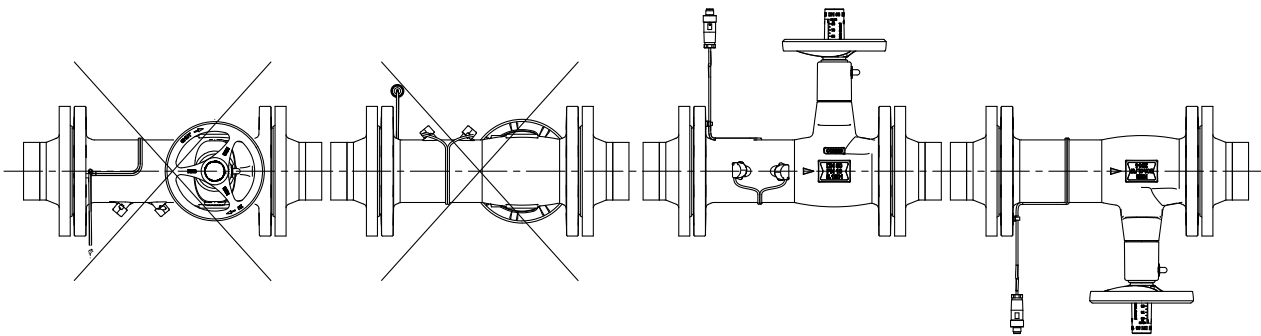
For measuring purposes, the flow direction through BOA-Control/BOA-Control IMS balancing, measurement and shut-off valves of the BOA-CL series (DN 15 - 200) must correspond to the direction indicated by the flow direction arrow cast on the valve body. An alternating flow direction is permissible for shut-off duty.

Flow through valve type BOA-H (DN 250 - 350) must be in the direction indicated by the flow direction arrow cast on the valve body.

Insulate the globe valves when using them for hot water and high-temperature hot water applications.

Vertical installation: For installation in vertical piping, no restrictions apply with regard to the installation position of the valves.

Horizontal installation: Installation with the valve stem in a horizontal position is not allowed, to prevent air bubbles or deposits in the measuring plane.



1) Sensor below, handwheel in front. Arrangement is not allowed.	2) Sensor on top, handwheel in back. Arrangement is not allowed.	3) Sensor in front, handwheel on top.	4) Sensor in back, handwheel below.
---	---	---------------------------------------	-------------------------------------

i For optimum measuring accuracy, the following straight, minimum upstream stabilisation distances free from any sources of potential interference must be provided, irrespective of the installation position:

- At least 5 x DN between BOA-Control/BOA-Control IMS and single sources of interference such as single 90° pipe bends or open shut-off valves
- At least 10 x DN between BOA-Control/BOA-Control IMS and turbulence-producing elements such as pumps, control valves or combinations of pipe bends.

Installation in the return line is recommended. Installation at the highest points of a system must be avoided.

Any sources of potential interference in the upstream stabilisation area (such as, for example, immersion sensors or non-standardised sealing elements) must be avoided.

Any sources of interference must be assessed in accordance with EN ISO 5167-1, section 7.3 (previously DIN 1952, section 6).

A downstream stabilisation distance is not required!

i To avoid thermal damage to the valve disc and sensors, welding work in the area of the pipe flanges may only be carried out after the valve has been removed.

i Avoid installing valves of DN 250 - 350 with the stem pointing downwards to prevent dirt deposits between the folds of the bellows which might cause valve failure.

i The cable connecting the sensors to the BOATRONIC must only be extended using the extension cable available as an accessory.

Accessories

- Insulation shells¹⁰⁾ for thermal insulation up to 130 °C with a thermal conductivity at 40 °C of 0.029 W/mk
Material: polyurethane
- Lead-sealable cap (prevents unauthorised actuation) as assembly set
- Mobile measuring computer BOATRONIC MS incl. mobile sensor set
- Stationary measuring computer BOATRONIC MS-420
- Extension cable (1.2 m)
- Upgrade from BOA-Control (EKB) to BOA-Control IMS (EKB) by KSB Service (sensors glued to valve)
- Free update software for BOATRONIC MS/MS-420 firmware
- Free BOATRONIC S analysing and logging software for hydraulic balancing

Technical data of BOATRONIC MS, BOATRONIC MS-420

Technical data of BOATRONIC MS, BOATRONIC MS-420

Characteristic		Measuring computer	
		BOATRONIC MS	BOATRONIC MS-420
Power supply		1.5 volt batteries, 4 pcs, AA Mignon	24 V DC ± 25 %
Output Q [m ³ /h]		Display Q in m ³ /h, alternatively in [l/s] or [l/min] OR V in [m/s]	Display and current output 4 - 20 mA (0 m ³ /h = 4 mA) (max. m ³ /h "depending on DN" = 20 mA)
Output T (-10 to +120 °C)		Display T in [°C], alternatively in [°F]	Display and current output 4 - 20 mA (-10 °C = 4 mA) (+120 °C = 20 mA) ¹¹⁾
Current requirement [mA]		150	190
Low voltage monitoring		Battery status icon flashes when battery is very low (7.2 V) 1. Under 10 % voltage, error F16: Measuring still possible 2. Under 5 % voltage, message "Change batteries": No measurement possible 3. Under 1 % voltage, message "Low battery": Device switches off.	-
Terminals: Output/power supply		- / 2 battery holder	Spring-type
Enclosure to EN 60529		IP54	IP54
Safety class		III	III
Shock test, drop from 1 m		Passed	Passed
In-service ambient temperature		-20 to +50 °C	
In-storage ambient temperature		-20 to +50 °C	
Measuring range	Temperature	-10 to +120 °C ¹²⁾	
	Flow velocity	0.1 to 4 m/s	
Measurement accuracy ¹³⁾	Flow rate	± 5 % of actual value	
Measurement cable	Sensor connection	Length: 1 m	

10) Insulation in accordance with German energy-saving regulations EnEV 2002 Annex 5

11) For variants BOA-Control EKB / BOA-Control IMS EKB (+40 °C = 20 mA)

12) -10 to 40 °C for variants BOA-Control EKB / BOA-Control IMS EKB

 13) Applies to BOA-Control IMS and BOA-Control IMS EKB with H₂O at 20 °C, v ≥ 0.5 m/s with manual zero point calibration

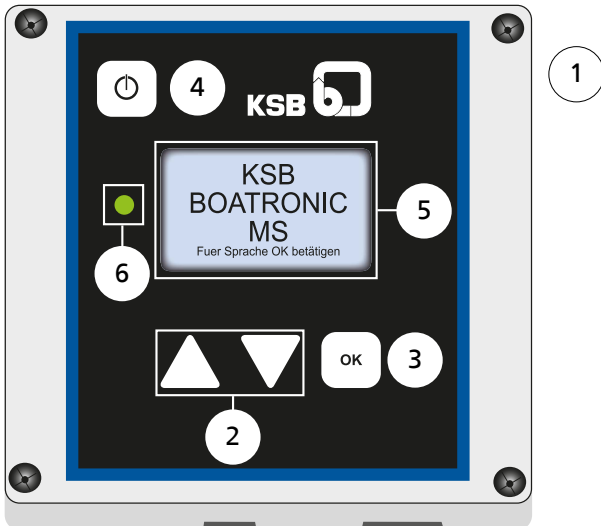
Design

Overview of BOATRONIC models

Type	Function
BOATRONIC MS	<ul style="list-style-type: none"> For short-term measurement Mobile device (battery-powered) With USB interface for uploading and downloading data and for software update Mobile sensor set included
BOATRONIC MS-420	<ul style="list-style-type: none"> For permanent measurement Power supply: 24 V DC Current output 4 - 20 mA/2 - 10 V for Q and T With USB interface for software update

Configuration and function

For measuring flow rate and temperature, the measuring computer must be connected to any balancing valve or shut-off valve of the BOA-Control type series. The measuring computer is operated via a 3-key membrane keypad. This measuring computer features a multi-line LCD display and multicolour LED.

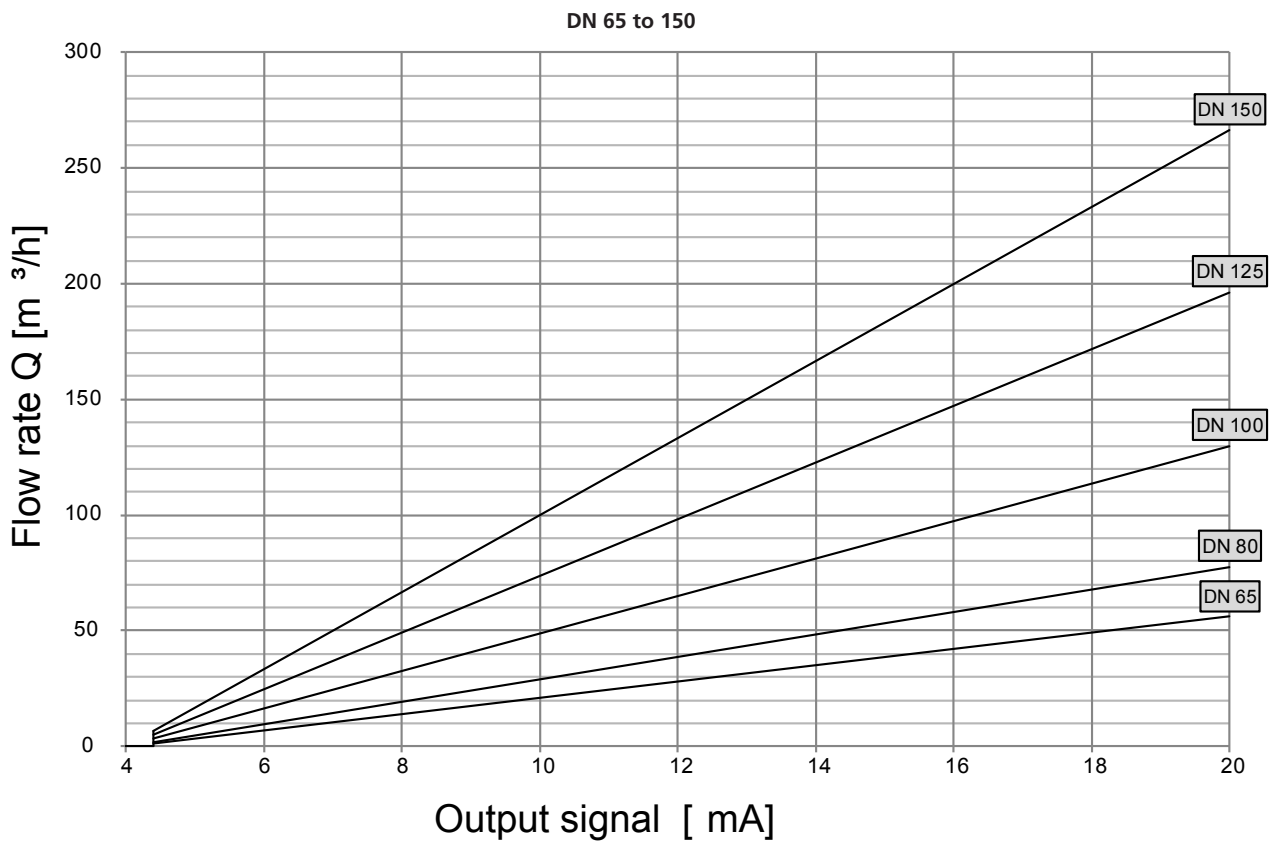
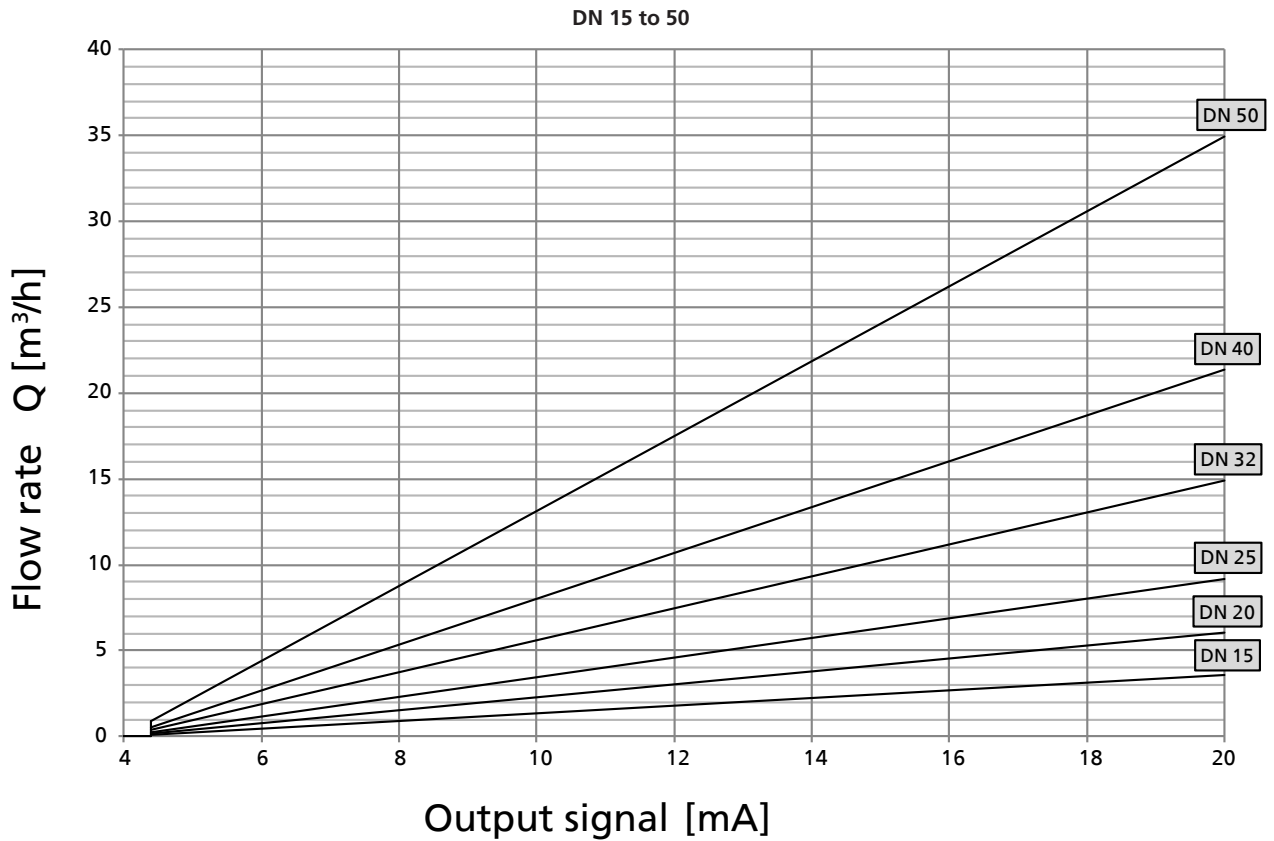


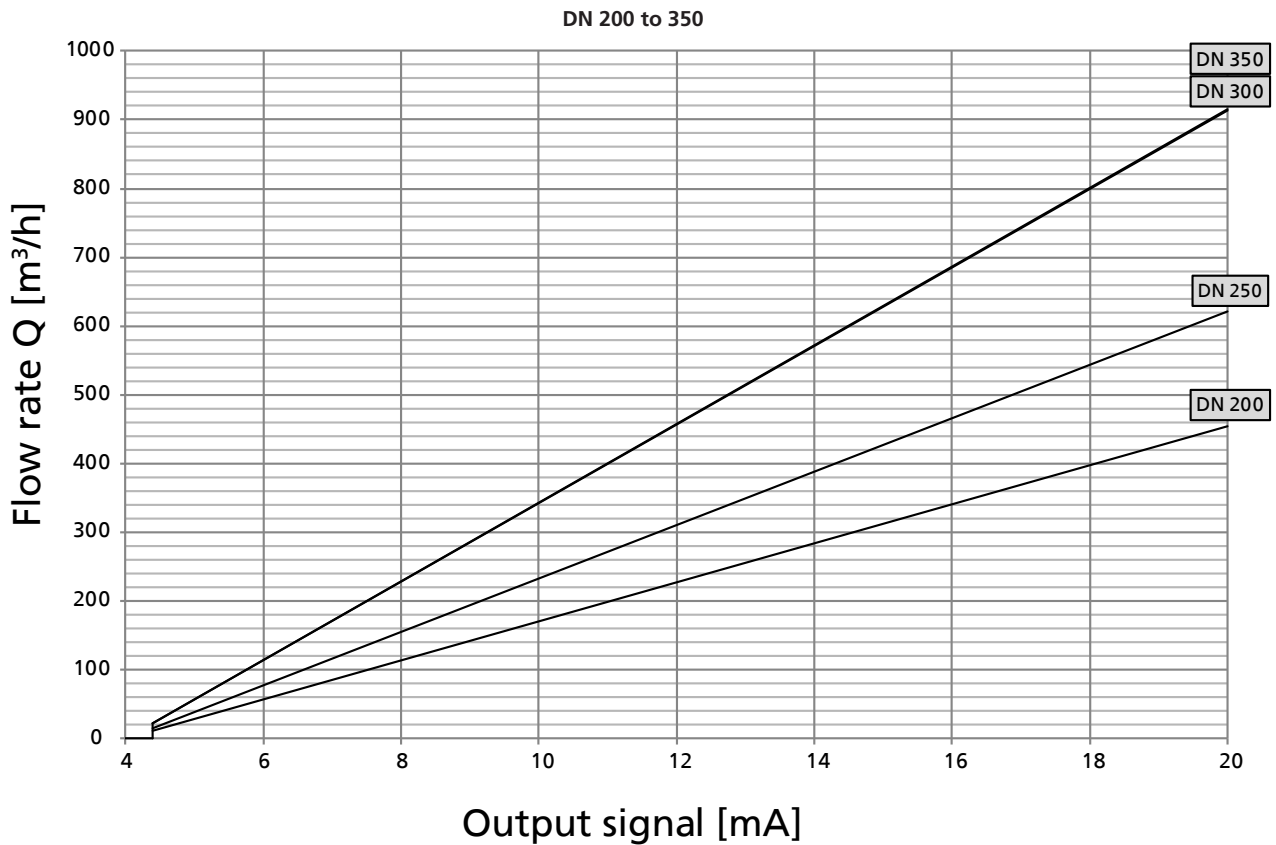
Display/indicator elements and operating elements

Elements	Key	Function/design
BOATRONIC front membrane	①	Membrane keypad with display/indicator elements
Direction keys	②	Selection of menu items
OK key	③	Confirmation of input/selection
ON/OFF key	④	Press and hold to switch the analysing unit on or off. Press briefly to switch the display backlight on or off.
Display/indicator elements	⑤	Graphical LCD display
	⑥	Red LED indicates fault. Green LED indicates measurement in progress.

Characteristic curves of BOATRONIC MS-420

Correlation between volume flow rate and output signal for BOATRONIC MS-420





Data table

DN	[mA]	[m³/h]	[mA]	[m³/h]	[mA]	[m³/h]
15	4,4	0,09	12	1,80	20	3,61
20	4,4	0,15	12	3,01	20	6,02
25	4,4	0,23	12	4,59	20	9,17
32	4,4	0,37	12	7,46	20	14,93
40	4,4	0,53	12	10,67	20	21,33
50	4,4	0,87	12	17,46	20	34,93
65	4,4	1,41	12	28,24	20	56,48
80	4,4	1,93	12	38,69	20	77,37
100	4,4	3,24	12	64,85	20	129,70
125	4,4	4,90	12	98,08	20	196,17
150	4,4	6,65	12	133,08	20	266,16
200	4,4	11,37	12	227,33	20	454,65
250	4,4	15,51	12	310,17	20	620,33
300	4,4	22,84	12	456,74	20	913,48
350	4,4	22,87	12	457,38	20	914,77

Chemical resistance chart

The information provided in this chemical resistance chart is based on experience, the Dechema lists as well as manufacturer information. Corrosion resistance is largely dependent on the operating conditions, temperatures and concentrations. Hydroabrasive wear in fluids containing solids is not covered in this list. The information provided in this list is for orientation only. Warranty claims may not be asserted on the basis of this list.

Symbols key

Symbol	Description
✓	The fluid handled is not normally aggressive toward the materials. Valve can be used if ¹⁴⁾ and are observed.
X	The fluid handled is aggressive toward the materials. Valve cannot be used. The fluid handled is not suitable or applicable for sensor measurement.
○	The materials and/or the valve can only be used under certain operating conditions. Please enquire accordingly, stating the operating conditions such as concentration, temperature, pH and composition of the fluid handled.

Chemical resistance chart for water

Fluids handled	BOA Control/ BOA Control IMS	BOA Control EKB/ BOA Control IMS EKB
Bathing water (fresh water)	○	✓
Bathing water (seawater)	X	X
Brackish water	X	X
Service water	○	✓
Chlorinated water (≤ 0.6 mg/kg)	✓	✓
Deionised water (demineralised water)	○ ¹⁵⁾	✓
Distilled water	○ ¹⁵⁾	✓
Heating water ¹⁵⁾	✓	○ ¹⁶⁾
Condensate	○	✓
Oil-free cooling water	○	✓
Oil-containing cooling water	X	X
Seawater	X	X
Ozonised water (≤ 0.5 mg/kg)	✓	✓
Pure water	✓	✓
Raw water	○	✓
Grey water ¹⁷⁾	○	✓
Partly desalinated water	○ ¹⁵⁾	✓
Thermal water	X	○
Drinking water	X	✓
Fully desalinated water	○ ¹⁵⁾	✓

Chemical resistance chart for oils (aromatic content 5 mg/kg)

Fluids handled	BOA Control/ BOA Control IMS	BOA Control EKB/ BOA Control IMS EKB
Vegetable oils	X	X
Mineral oils	X	X
Synthetic oils	X	X
Petroleum	X	X
Oil/water emulsion	X	X
Kerosene	X	X

Chemical resistance chart for refrigerants

Fluids handled	BOA Control/ BOA Control IMS	BOA Control EKB/ BOA Control IMS EKB
Ammonium hydroxide (≤ 25 %, ≤ 25 °C)	X	X
Glycol (ethylene glycol)	X	X
Water/glycol mixture (20 % $\leq c \leq 60$ %, ≤ 90 °C)	✓	○ ¹⁶⁾
Inorganic cooling brine, pH 7.5 ¹⁸⁾	○	○

- 14) General criteria for water to be handled by products made of non-alloyed materials: pH > 7; chlorides (Cl-) < 150 mg/kg; chlorine (Cl) < 0.6 mg/kg. Other factors to be considered: hardness, carbon dioxide content (CO₂), oxygen (O₂) and dissolved substances. Contact KSB if limits are exceeded.
- 15) Can only be used with systems and water qualities complying with VdTÜV 1466 or VDI 2035 guidelines. A pH ≥ 9.5 and an oxygen content of ≤ 0.02 mg/l are also recommended.
- 16) Variants BOA-Control EKB / BOA-Control IMS EKB up to a max. fluid temperature of 40 °C
- 17) Without larger solids or stringy material
- 18) Reduced accuracy of flow measurement

Chemical resistance chart for cleaning agents

Fluids handled	BOA Control/ BOA Control IMS	BOA Control EKB/ BOA Control IMS EKB
Lye for bottle rinsers (e.g. P3)	X	X
Lye for metal cleaning	X	X

Chemical resistance chart for other fluids

Fluids handled	BOA Control/ BOA Control IMS	BOA Control EKB/ BOA Control IMS EKB
Landfill gas	X	X
Oil-containing compressed air	X	X
Aqueous glycerine	X	X
Carbon dioxide (gas)	X	X
Carbon dioxide (aqueous solution)	X	X
Oxygen O ₂	X	X



KSB SE & Co. KGaA
Johann-Klein-Straße 9 • 67227 Frankenthal (Germany)
Tel. +49 6233 86-0
www.ksb.com