

**Operating Instructions
for
Ball Type Flow Indicator**

Model: DKB



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2. Note

Please read these operating instructions before unpacking and putting the unit into operation. Follow the instructions precisely as described herein.

The devices are only to be used, maintained and serviced by persons familiar with these operating instructions and in accordance with local regulations applying to Health & Safety and prevention of accidents.

When used in machines, the measuring unit should be used only when the machines fulfil the EC-machine guidelines.

as per PED 2014/68/EU

In acc. with Article 4 Paragraph (3), "Sound Engineering Practice", of the PED 2014/68/EU no CE mark.

Diagram 8, Pipe, Group 1 dangerous fluids

3. Instrument Inspection

Instruments are inspected before shipping and sent out in perfect condition.

Should damage to a device be visible, we recommend a thorough inspection of the delivery packaging. In case of damage, please inform your parcel service / forwarding agent immediately, since they are responsible for damages during transit.

Scope of delivery:

The standard delivery includes:

- Ball Type Flow Indicator model: DKB
- Operating Instructions

4. Regulation Use

Any use of the Ball Type Flow Indicator, model: DKB, which exceeds the manufacturer's specification may invalidate its warranty. Therefore, any resulting damage is not the responsibility of the manufacturer. The user assumes all risk for such usage.

5. Operating Principle

During flow the plastic ball heaves out of its seat and indicates a flow movement in the pipeline. If the flow stops the ball will fall back into its seat.

6. Mechanical Connection

Before installation

- Remove all transport restraints and make sure that none of the packing remains in the instrument.
- Make sure that the maximum allowed operating pressures and service temperatures are not exceeded (see 7. Technical Information)
- Mount the Flow Indicator horizontally with the glass dome on top and tension-free into the pipe.
- Avoid water hammer in the measuring tube e.g. caused through a sudden shut off the flow.
- If possible, check after mechanical installation that the threaded joint/pipe connection is tight.

7. Technical Information

DKB-11...

Housing:	brass (MS-58)
Glass dome:	Borosilicate glass
Ball:	POM
Sealing:	EPDM
Rings:	brass (MS-58)
Screws:	st. steel

DKB-21...

Housing:	brass (MS-58)
Glass dome:	Borosilicate glass
Ball:	PTFE
Sealing:	FPM
Rings:	brass (MS-58)
Screws:	st. steel

DKB-22...

Housing:	stainless steel 1.4436, 1.4410
Glass dome:	Borosilicate glass
Ball:	PTFE
Rings:	Klinger SIL [®] C4400, FPM
Screws:	st. steel, rust-proof

Connection DKB-x1

G 1/8 R06	G 1/4 R08	G 3/8 R10	G 1/2 R15	G 3/4 R20	G 1 R25
1/8" NPT N06	1/4" NPT N08	3/8" NPT N10	1/2" NPT N15	3/4" NPT N20	1" NPT N25

Connection DKB-22

G 1/4 R08	G 3/8 R10	G 1/2 R15	G 3/4 R20	G 1 R25	G 1 1/2 R40
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8. Order Codes

Order example: **DKB-1101H R06**

Indication range		Model		Connection	
Water [L/min]	ΔP^* [bar]	DKB-11..	DKB-21..	G-thread	NPT-thread
0.05 - 15	1	DKB-1101H..	DKB-2101H..	R06	N06
0.05 - 20	1	DKB-1102H..	DKB-2102H..	R08	N08
0.06 - 45	1	DKB-1103H..	DKB-2103H..	R10	N10
0.07 - 50	1	DKB-1104H..	DKB-2104H..	R15	N15
0.18 - 105	0.5	DKB-1105H..	DKB-2105H..	R20	N20
0.14 - 105	0.5	DKB-1106H..	DKB-2106H..	R25	N25

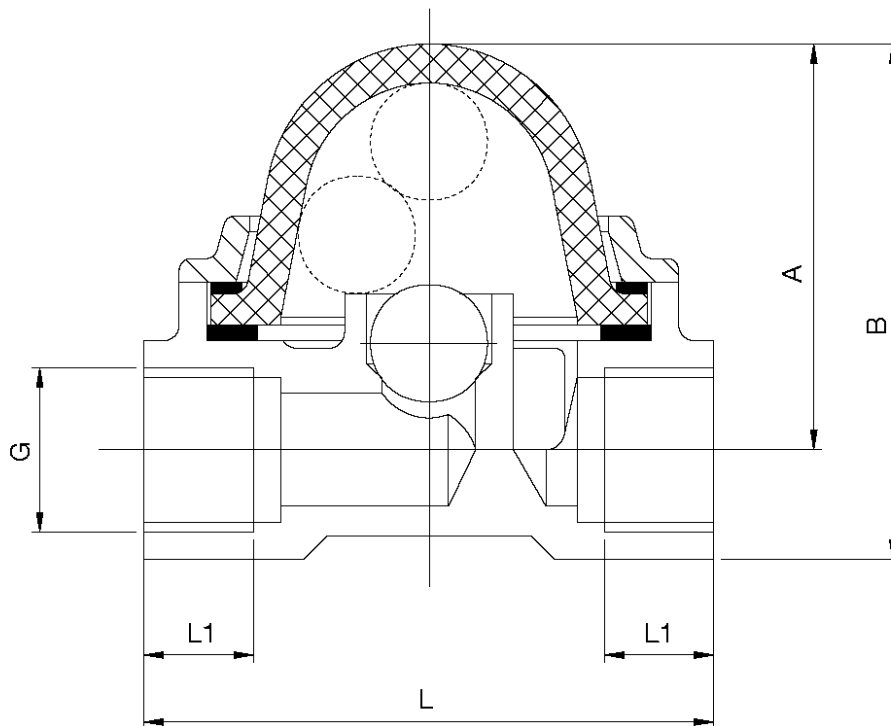
* max. flow

Order example: **DKB-2202H R08**

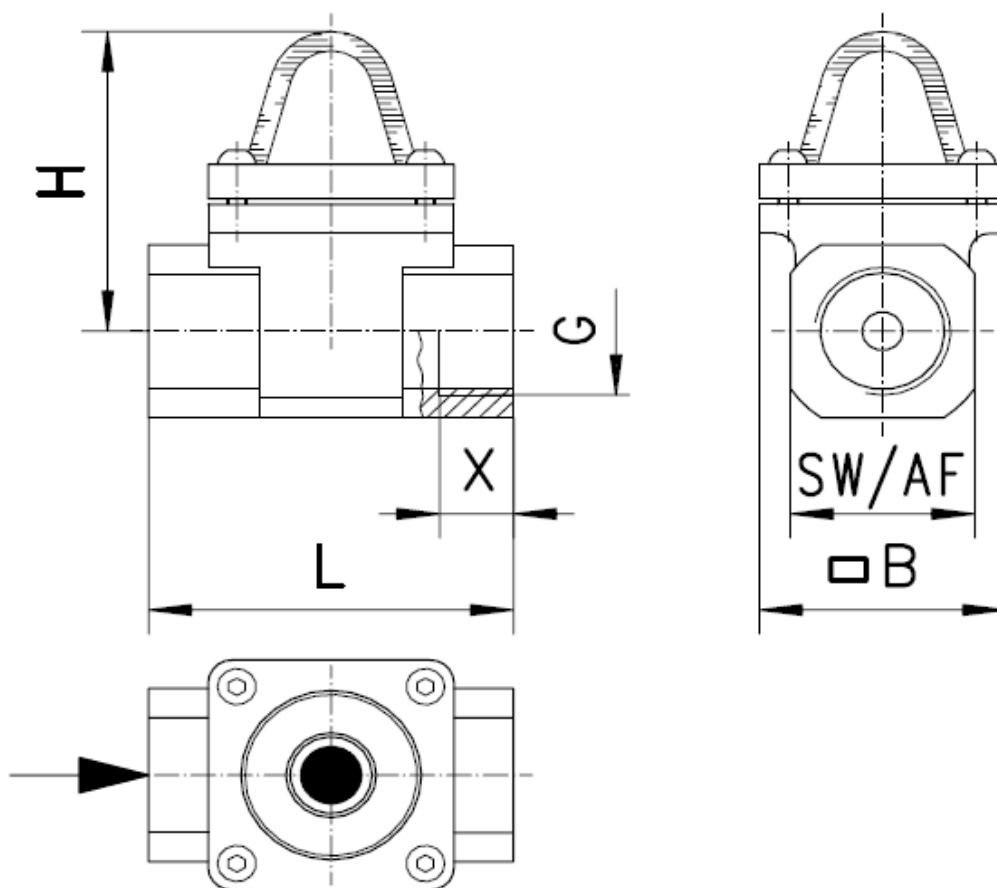
Indication range		Model	Connection
Water [L/min]	ΔP^* [bar]	DKB-22..	G-thread
0.3 - 4	0.1	DKB-2202H..	R08
0.3 - 8	0.1	DKB-2203H..	R10
0.3 - 12	0.1	DKB-2204H..	R15
2.5 - 25	0.2	DKB-2205H..	R20
4 - 40	0.2	DKB-2206H..	R25
11 - 60	0.3	DKB-2207H..	R40

* at 2m/s

9. Dimensions



Model	P _{max}	T _{max}	G	NPT	L1 [mm]	L [mm]	A [mm]	B [mm]	Weight [kg]
DKB--01H	6 bar	120 °C	G 1/8	1/8"	8	56	41	50	0,3
DKB--02H	6 bar	120 °C	G 1/4	1/4"	10	56	41	50	0,28
DKB--03H	6 bar	120 °C	G 3/8	3/8"	14	73	53	67	0,57
DKB--04H	6 bar	120 °C	G 1/2	1/2"	14	73	53	67	0,54
DKB--05H	6 bar	120 °C	G 3/4	3/4"	16	109	72	94	1,41
DKB--06H	6 bar	120 °C	G 1	1"	18	109	72	94	1,30



Model	P _{max}	T _{max}	G	SW	X [mm]	L [mm]	H [mm]	B [mm]	Weight [kg]
DKB-2202H	16 bar	200 °C	G ¼	28	12	76	67	60	0,8
DKB-2203H	16 bar	200 °C	G ⅜	28	16	76	67	60	0,7
DKB-2204H	16 bar	200 °C	G ½	28	14	76	67	60	0,7
DKB-2205H	16 bar	200 °C	G ¾	45	18	89	78	60	1,4
DKB-2206H	16 bar	200 °C	G 1	45	18	89	78	60	1,3
DKB-2207H	16 bar	200 °C	G 1½	62	30	118	95	77	2,5

10. ATEX - Declaration of the Manufacturer

10.1 General

Risk analysis report pursuant to EN 13463 (positive list) for use in category 2 Explosion Risk Area was done.

When used properly, and being a piece of mechanical equipment, the ball type flow indicator type DKB-x1***** does not have its own potential source of ignition; **it is not assigned an ID in the sense of the ATEX Directive.**

10.2 Areas of use

The units can be used as follows:

- In the Zone 2 (Gas-Ex, Cat. 3G) into explosion group of IIA, IIB and IIC
- In the Zone 22 (Dust-Ex, Category 3D) at non-conductive dusts with a minimum igniting energy of > 3 mJ
- In the Zone 1 (Gas-Ex, Cat. 2G) into explosion group of IIA, IIB and IIC
- In the Zone 21 (Dust-Ex, Category 2D) at non-conductive dusts with a minimum igniting energy of > 3 mJ
- In normal use, the flow indicators are **completely filled with medium**. Zone 2 – or Zone 1 – conditions may prevail for a short time.

10.3 Evaluation

Adherence to EN 13463, Parts 1 to 8 (Mechanical Explosion Prevention)

When used properly, the flow indicator does not have its own potential source of ignition as per the conditions of Categories 2 and 3. It does however fulfil the following requirements:

- The manufacturer has subjected all exposed parts of the device to the impact and environmental strain tests pursuant to EN 13463-1.



When installed, the device must be protected against external energy impact – or measures should be taken to take into account any possible zone violations in the system.

- The outer casing of the device is made of brass and borosilicate glass; there are no light metal parts.

Hofheim, 12. Nov. 2015

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