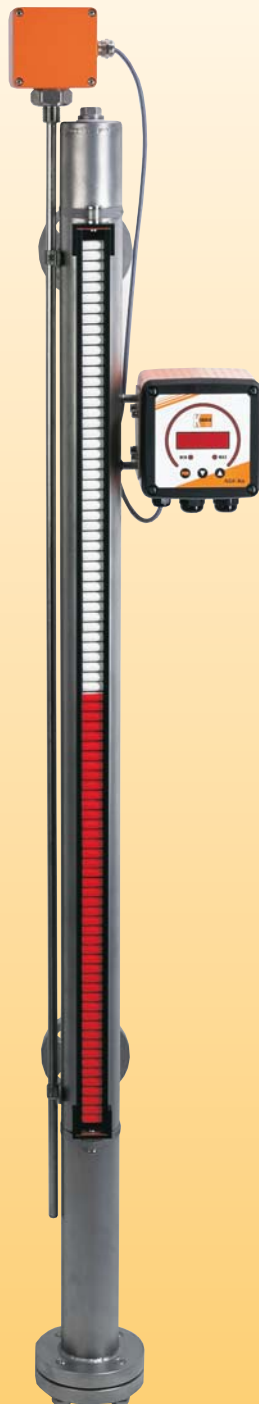




## Bypass Level Indicators ATEX or GL Approval



measuring  
•  
monitoring  
•  
analysing



- Measuring length:  
single-part max. 6000 mm  
> 6000 mm  
two-part or multipart
- Pressure:  
max. PN 100/1500 lbs
- Temperature: max. 400 °C
- Viscosity: max. 200 mm<sup>2</sup>/s
- Connection:  
DIN flange DN 15 to DN 32  
ANSI flange 1/2 to 1 1/4  
R threads and NPT threads
- Material:  
stainless steel 1.4571
- Local indication without  
auxiliary power
- Limit contacts
- Analogue output

N2



KOBOLD companies worldwide:

ARGENTINA, AUSTRIA, BELGIUM, CANADA, CHILE, CHINA, COLOMBIA,  
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**Model:**  
NBK-ATEX,  
-GL, -03, -06,  
-07, -10

125



## Description

KOBOLD bypass level indicators are used for continuous measurement, display and monitoring of liquid levels. The bypass tube is attached onto the side wall of the vessel. According to the law of communicating tubes the level in the bypass tube equals the level in the vessel. A float with embedded circular magnets in the bypass tube follows the liquid level and transfers it in a non-contacting manner to a display fitted outside the tube or to a monitoring device.

## ATEX version

The bypass level indicators are supplied with ATEX approval. Limit contacts and a reed contact chain with ATEX approval are available for level measurement and monitoring.

ATEX approval:

Bypass-level indicator:	Ex II 1G/2GD (mechanical)
Limit contact NBK-RA:	Ex II 2G EEx m II T6/T5
Immersible magnetic probe (Reed contact chain):	Ex II 1G EEx ia IIC/IIB T6
Transmitter for Reed chain:	Ex II (1) G [EEx ia] IIC

## GL version

In the pressure on stages PN 16 (NBK-03) and PN 40 (NBK-06) the bypass level indicators are available with GL approval (Germanischer Lloyd). The magnetic roller indication as well as limit contacts and a reed contact chain can be delivered for level indication and evaluation.

Certificate-No. GL: 79 786-95 HH

## Magnetic roller indicator

As the float passes by, the red/white rollers are rotated in succession by 180° around their own axes. The rollers change from white to red as the level rises and from red to white as the level falls. The level in a tank or a mixer is continuously displayed as a red column, even when the power fails.

## Transmitter

To remotely transmit the level a transmitter with a chain of resistors can be mounted outside the bypass tube. A continuous standard signal of 4 - 20 mA is generated by means of an external transmitter.

## Limit contacts

One or more reed contacts for limit-value acquisition or also for level control can be mounted on the bypass tube.

## Applications

- Storage tanks
- Tanks on ships
- Mixing vessels
- Water tanks

## Technical Details

Process connection:	Flange DIN EN 1092-1 type 11, form B ANSI flange R-thread DIN EN 10226-1 NPT thread DN 15, DN 20, DN 25, DN 32
Bypass tube:	Ø 60.3 mm, 1.4571
Flat gasket	
NBK-03, -06, -07:	< 200 °C: PTFE; ≥ 200 °C: Klingerit SIL
NBK-10:	reinforced graphite
Operating pressure:	PN 16/40/63/100
Operat. temperature:	to 120 °C PP (polypropylene) rollers to 400 °C ceramic rollers (not with GL approval)
Viscosity:	max. 200 mm <sup>2</sup> /s
Max. meas. length:	up to 6000 mm one piece; longer two-part or multipart (not with GL approval)
Overall length:	see dimension drawing
Protection roller indicator:	IP54

## Technical Details ATEX approval

### ATEX limit contact type NBK-RA

Contact operation:	bistable changeover contact encapsulated
Switching hysteresis:	approximately 15 mm
Max. Switch capacity:	45 VA, 230 V <sub>AC/DC</sub> , 0.6 A
Temperature class:	T6/T5
Max. ambient temperature:	70 °C / 85 °C
Electrical connection:	3 m PVC cable
Housing:	metallic, cast (GD-ZN Al 4 Cu1)
Protection:	IP 67
ATEX marking:	Ex II 2G EEx m II T6/T5 Ex II 2D IP67 T 105 °C

### Limit contacts high temperature type NBK-RT200 in conjunction with an external, intrinsically safe Isolated Switch Amplifier as »Simple Operator«

Contact operation:	bistable changeover contact
Switching hysteresis:	approximately 15 mm
Max. Switch capacity:	80 VA, 250 V <sub>AC/DC</sub> , 1 A
Resistance:	< 20 mΩ
Medium temperature:	max. 200 °C / 400 °C
Ambient temperature:	max. 145 °C / 350 °C
Housing:	Aluminum pressure-cast housing, terminal connection
Protection:	IP 65



**ATEX approval (continued)**

**ATEX Reed contact resistance chain type: ...5...**

In protection type intrinsically safe EEx ia IIC/IIB only for connection to a certified intrinsically safe current loop with the following maximum values:

Max. voltage:	$U_i = 24 \text{ V}$
Max. current:	$I_i = 100 \text{ mA}$
Max. capacity:	$P_i =$ see prototype verification certificate
Temperature class:	T1...T6 (see prototype verification certificate)
Resolution:	10 mm (ML < 2000 mm) 20 mm (ML $\geq$ 2000 mm)
Housing:	Aluminum pressure-cast
Protection:	IP 65
ATEX-marking:	Ex II 1G EEx ia IIC/IIB T6

**ATEX transmitter for reed contact resistance chain, type: REL-5114B1A**

ATEX certification:	Ex II (1) G [EEx ia] IIC
Input:	0...5 k $\Omega$ , 30 $\Omega$ min. span
Output:	0/4...20 mA, 0...10 V <sub>DC</sub>
Alteration of zero point:	50% of the determ. max. value
2-wire-supply:	> 18 V <sub>DC</sub>
Reference voltage:	2.5 V <sub>DC</sub>
Isolation:	Input/output/supply
Channels:	1 channel
Ambient temperature:	-20...+60 °C
Power supply:	24...230 V <sub>AC</sub> , 24...250 V <sub>DC</sub>
Response time:	250 ms...60 s
Installation:	DIN-rail mount

**GL approval**

**Limit contact, type NBK-R**

Contact operation:	bistable changeover contact
Switching hysteresis:	approximately 15 mm
Max. Switching capacity:	60 W/VA, 230 V <sub>AC/DC</sub> , 1 A
Resistance:	100 m $\Omega$
Medium temperature:	max. 100 °C
Ambient temperature:	max. 75 °C
Connection:	3 m PVC cable
Housing:	Polycarbonate
Protection:	IP 67

**Reed contact resistance chain,**

**Type: ...6...**

Total resistance:	approx. 5 k $\Omega$
Measuring voltage:	max. 24 V <sub>DC</sub>
Measuring current:	max. 0.1 A
Medium temperature:	max. 200 °C, 400 °C with thermal screening (Option N)
Ambient temperature:	max. 130 °C
Resolution:	10 mm (ML < 2000 mm) 20 mm (ML $\geq$ 2000 mm)
Housing:	Aluminum pressure-cast
Protection:	IP 65

**Reed contact resistance chain with 2-wire transmitter, Type: ...7...**

Output:	4 - 20 mA
Power supply:	16 - 32 V <sub>DC</sub>
Load:	(U <sub>B</sub> - 9 V)/0.02 A [ $\Omega$ ]
Medium temperature:	max. 120 °C
Ambient temperature:	max. 80 °C
Resolution:	10 mm (ML < 2000 mm) 20 mm (ML $\geq$ 2000 mm)
Housing:	Aluminum pressure-cast
Protection:	IP 65

**Options**

**for NBK with ATEX or GL approval**

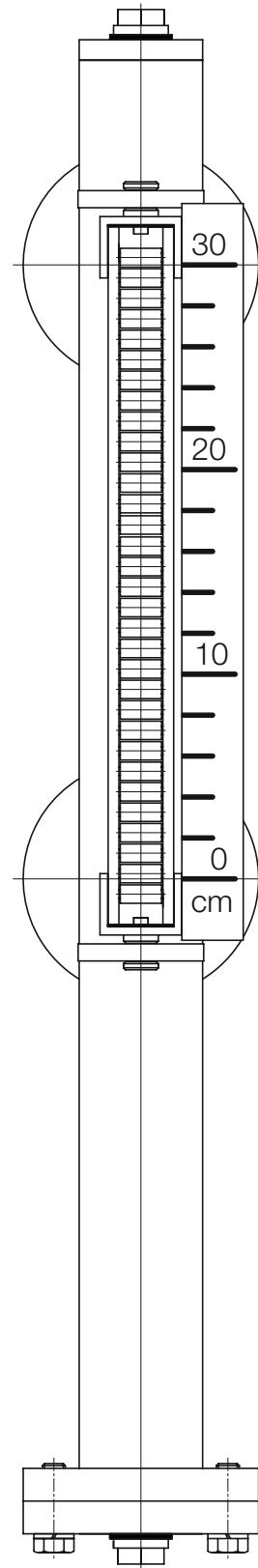
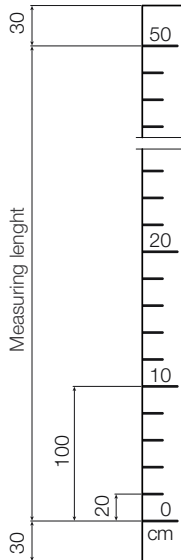
- E5 drain flange DN 20 stainless steel 1.4571
- E6 drain flange DN 25 stainless steel 1.4571
- F1 drain valve NAD-MZR15 G 1/2, stainless steel 1.4571
- F2 drain valve NAD-MMN15 1/2 NPT, stainless steel 1.4571
- H3 rinsing connection DN15, PN16, top and bottom for NBK-03
- H4 rinsing connection 1/2" ANSI, 150 lbs, top and bottom for NBK-03
- M1 Measuring scale to 400 °C (120 °C with GL approval), aluminium carrier, engraved scale
- P radiographic examination DIN 54 111 T1
- Q dye penetration test DIN EN 571-1
- X pressure test with water 1.5 x PN
- Z 3.1 certificate according to EN 10204

No GL-approval:

- A Connection flange for two-part and multipart design



**Measuring scale, engraved, aluminium carrier  
Option M1**



**Float types (closed design)**

Type	Min. density [kg/dm <sup>3</sup> ]	Material
A	1.0	Titanium
B	0.9	Titanium
C	0.8	Titanium
D	0.7	Titanium
E	0.6	Titanium
F*	0.54	Titanium

Other special versions (for example: other densities, reduced submersible length and so forth upon request).

\*Not possible for NBK-10



**ATEX version**

**Order Details** (Example: **NBK-03 F 15 00 1 A**)

Model	Nominal pressure	Connection	Nominal size	Roller indication	Electrical attached parts	Medium density Float
NBK-03...	PN 16/150 lbs	F=DIN flange	15=DN 15, 1/2"	00= without RP=PP rollers RK=ceramic rollers	1 = without electrical attached parts ATEX - II 1G / 2G D  2 = with immersible magnetic probe (reed contact chain) ATEX - II 1G EEx ia IIC/ IIB T6	A=1.0 kg/dm <sup>3</sup> , Titanium B=0.90 kg/dm <sup>3</sup> , Titanium C=0.80 kg/dm <sup>3</sup> , Titanium D=0.70 kg/dm <sup>3</sup> , Titanium E=0.60 kg/dm <sup>3</sup> , Titanium F*=0.54 kg/dm <sup>3</sup> , Titanium
NBK-06...	PN 40/300 lbs	A=ANSI flange	20=DN 20, 3/4"			
NBK-07...	PN 63/600 lbs	R=R thread	25=DN 25, 1"			
NBK-10...	PN 100/1500 lbs	N=NPT thread	32=DN 32, 1 1/4"			
NBK-RA	ATEX limit contact, encapsulated, Ex II2G EEx m II T6/T5					
NBK-RT200	High temperature limit contact, in conjunction with an external, intrinsically safe Isolated Switch Amplifier as »Simple Operator«					
REL-5114B1A	ATEX transmitter for immersible magnetic probe (Reed contact chain) EX II (1) G [EEx ia] IIC, DIN rail mounting					

\*not possible with NBK-10

Please specify measuring length L, density, pressure and temperature in writing

**GL version**

**Order Details** (Example: **NBK-03 F 15 00 5 A**)

Model	Nominal pressure	Connection	Nominal size	Roller indication	Electrical attached parts	Medium density Float
NBK-03...	PN 16/150 lbs	F=DIN flange	15=DN 15, 1/2"	00= without RP=PP rollers	5 = without electrical attached parts  6 = chain of resistors  7 = chain of resistors with transmitter	A=1.0 kg/dm <sup>3</sup> , Titanium B=0.90 kg/dm <sup>3</sup> , Titanium C=0.80 kg/dm <sup>3</sup> , Titanium D=0.70 kg/dm <sup>3</sup> , Titanium E=0.60 kg/dm <sup>3</sup> , Titanium F*=0.54 kg/dm <sup>3</sup> , Titanium
NBK-06...		PN 40/300 lbs	A=ANSI flange			
		R=R thread	25=DN 25, 1"			
		N=NPT thread	32=DN 32, 1 1/4"			
NBK-R	Standard limit contact (bistable changeover contact)					

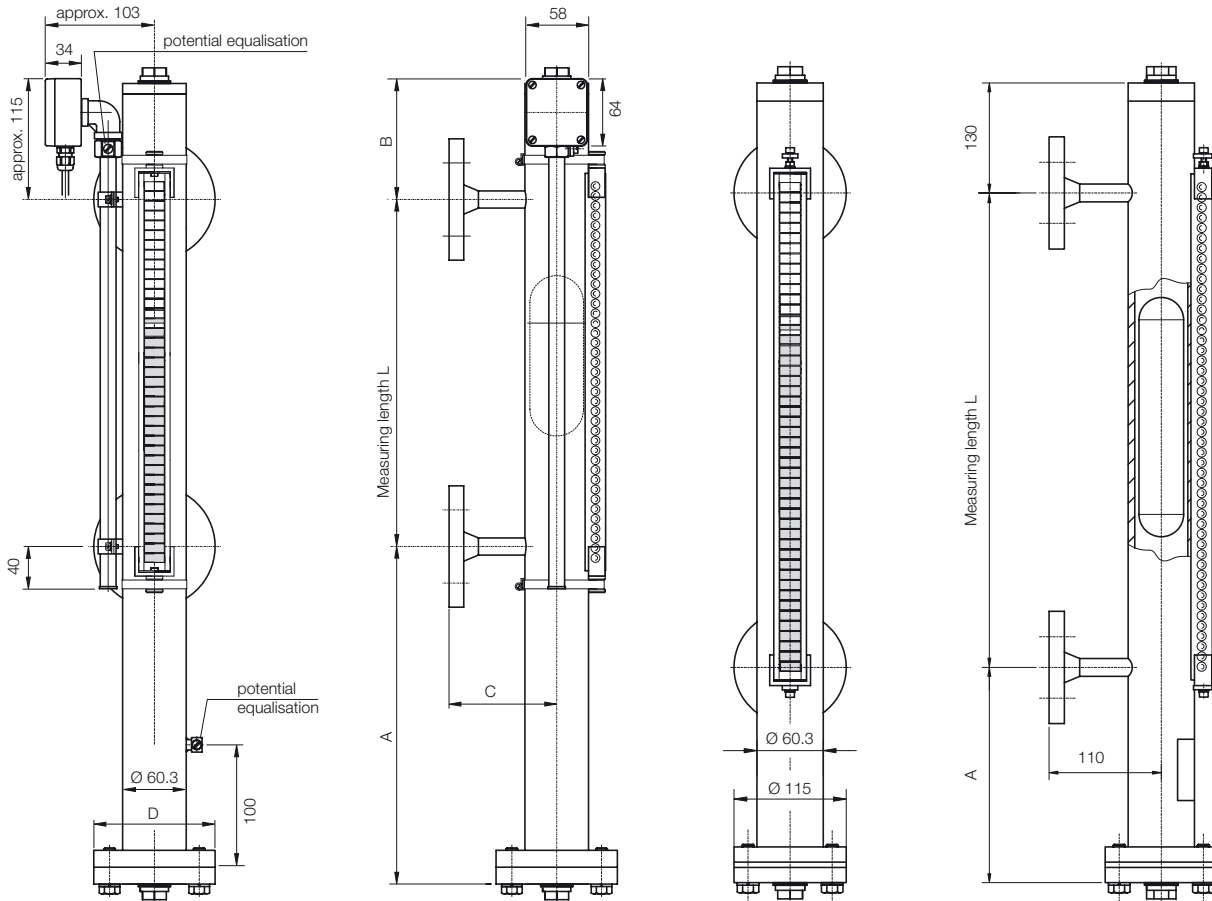
Please specify measuring length L, density, pressure and temperature in writing



**Dimensions**

NBK-ATEX-version with immersible magnetic probe

NBK-GL-version



**Dimensions NBK**

Model	Nominal pressure	Dimensions [mm]		
		B	C	D
NBK-03...	PN 16 / 150 lbs	130	110	115
NBK-06...	PN 40 / 300 lbs	130	110	115
NBK-07...	PN 63 / 600 lbs	130	130	180
NBK-10...	PN 100 / 1500 lbs	130	130	195

**Clearance dimension A [mm]**

Model	Nominal pressure	Medium density					
		0.54 [kg/dm <sup>3</sup> ]	0.6 [kg/dm <sup>3</sup> ]	0.7 [kg/dm <sup>3</sup> ]	0.8 [kg/dm <sup>3</sup> ]	0.9 [kg/dm <sup>3</sup> ]	1 [kg/dm <sup>3</sup> ]
NBK-03...	PN 16 / 150 lbs	320	320	320	320	320	210
NBK-06...	PN 40 / 300 lbs	410	410	320	320	320	210
NBK-07...	PN 63 / 600 lbs	410	410	320	320	320	210
NBK-10...	PN 100 / 1500 lbs	-	700*	410**	320	320	210

\*800 by instruments with thermal screening; \*\*450 by instruments with thermal screening

