Bypass Level Indicators

NBK

- Measuring length:
  single-part max. 6000 mm
  >6000 mm two-part or multipart
- Pressure: max. PN 100/1500 lbs
- Temperature:
  -40…+400 °C (ceramic rollers)
  -40…+120 °C (PP-rollers)
- Viscosity: max. 200 mm²/s
- Connection
  DIN-flange DN 15…DN 32
  ANSI-flange ½ to 1¼
  R threads and NPT threads
- Material:
  stainless steel 1.4571
- Non-sensitive local magnetic roller indicator without auxiliary power
- Limit contacts
- Analogue output

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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. The following indication and monitoring devices are available:

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 or a magnetostrictive transducer can be mounted outside the bypass tube. A continuous standard signal of 4 - 20 mA is generated by means of a fitted transmitter. This standard signal can then be displayed on analogue or digital indicating devices.

Universal indicating unit: A universal indicating unit of type series ADI can be mounted on the bypass to display and evaluate the standard signal (4 - 20 mA) generated by the transmitter.

Limit contacts: One or more reed contacts for limit-value acquisition or also for level control can be secured to the bypass tube.

Applications

- Storage tanks
- Tanks on ships
- Impeller
- Water tanks

Technical Details

Process connection:	flange DIN EN 1092-1 Model 11, form B ANSI flange R-thread DIN EN 10226-1 NPT-tread 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 -40…+120 °C PP-rollers to -40…+400 °C ceramic rollers
Viscosity:	max. 200 mm²/s
Max. meas. length:	to 6000 mm single-part; longer two-part or multipart
Overall length:	see dimension drawing
ATEX & GL approval:	see separate description
Protection roller indicator:	IP 54

Technical Details Additional Features

Limit contacts, models NBK-R

Contact operation:	bistable changeover contact
Switching hysteresis:	approx. 15 mm
Max. switching capacity:	max. 60 W/VA, 230 $V_{AC/DC}$, 1 A
Resistance:	100 mΩ
Medium temperature:	-40…+100 °C
Ambient temperature:	-40…+75 °C
Connection:	3 m PVC-Kabel
Housing:	polycarbonate
Protection:	IP 67

Limit contact high temperature, model NBK-RT200, NBK-RT400

Contact operation:	bistable changeover contact
Switching hysteresis:	approx. 15 mm
Switching capacity:	max. 80 VA; 250 $V_{AC/DC}$; 1 A
Resistance:	<20 mΩ
Medium temperature:	-40…+200 °C/400 °C
Ambient temperature:	-40…+145 °C/350 °C
Housing:	aluminum pressure-cast
Protection:	IP 65

Reed contact resistor chain, model: ...W...

Total resistance:	approx. 5 kΩ
Meas. circuit voltage:	max. 24 V_{DC}
Measuring current:	max. 0.1 A
Medium temperature:	-40…+200 °C, -40…+400 °C with thermal screening (option N)
Ambient temperature:	max. 130 °C
Resolution:	10 mm (ML < 2000 mm) 20 mm (ML ≥ 2000 mm)
Housing:	aluminum pressure-casts
Protection:	IP 65

Reed contact resistor chain with 2-wire transmitter, model: ...M...

Output:	4 - 20 mA
Auxiliary energy:	16 - 32 V_{DC}
Load:	(U_B - 9 V)/0,02 A [Ω]
Ambient temperature:	-40…+80°C
Resolution:	10 mm (ML < 2000 mm) 20 mm (ML ≥ 2000 mm)
Housing:	aluminum pressure-cast
Protection:	IP 65

Magnetostrictive sensor with 4-wire transmitter, model: ...T...

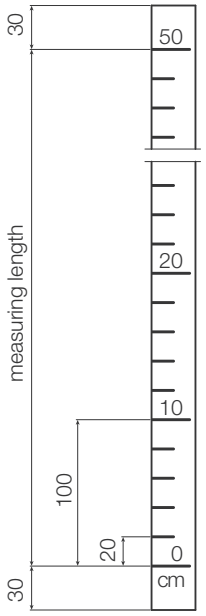
Output:	4 - 20 mA
Supply voltage:	24 V_{DC} , max. 150 mA
Load:	max. 500 Ω
Max. length:	4000 mm
Ambient temperature:	-25…+80 °C
Accuracy:	±1 mm
Housing:	aluminum pressure-cast
Protection:	IP 65

Options

- B* indicating unit type ADI-B with bargraph, rugged aluminium casing mounted on bypass tube, for description see brochure Z2
- C* indicating unit type ADI-K with bargraph and digital display, rugged aluminium casing, mounted on bypass tube, for description see brochure Z2
- D* indicating unit type ADI-D with digital display, rugged aluminium casing, mounted on bypass tube, for description see brochure Z2
- A connecting flange for two-part design
- E5 drain flange DN 20 stainless steel 1.4571
- E6 drain flange DN 25 stainless steel 1.4571
- F1 drain valve NAD-MZR 15 G½, stainless steel 1.4571
- F2 drain valve NAD-MMN15 ½ NPT, st. steel 1.4571
- H3 rinsing connection DN15, PN16, top and bottom for NBK-03
- H4 rinsing connection ½" ANSI, 150 lbs, top and bottom for NBK-03
- K Armaflex insulation (thermal conductance 0.025 kcal/m °C, to 105 °C)
- M1 measuring scale ambient temperature -40°C...+400°C, aluminium backing, engraved scale
- M2 measuring scale -40°C...+150°C, aluminium backing, polyester foil scale
- N thermal screening for transmitter type ...W...: 200-400 °C
- 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

* Use only with option T (magnetostrictive measuring sensor) or option M (resistor chain with measuring transducer)

Mesasuring scale engraved, aluminium backing Option M1



Float Types (closed design)

Model	Min. density [kg/dm³]	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 on request).
*option N is not possible.

Order Details (Example: **NBK-03 F15 00 0 A**)

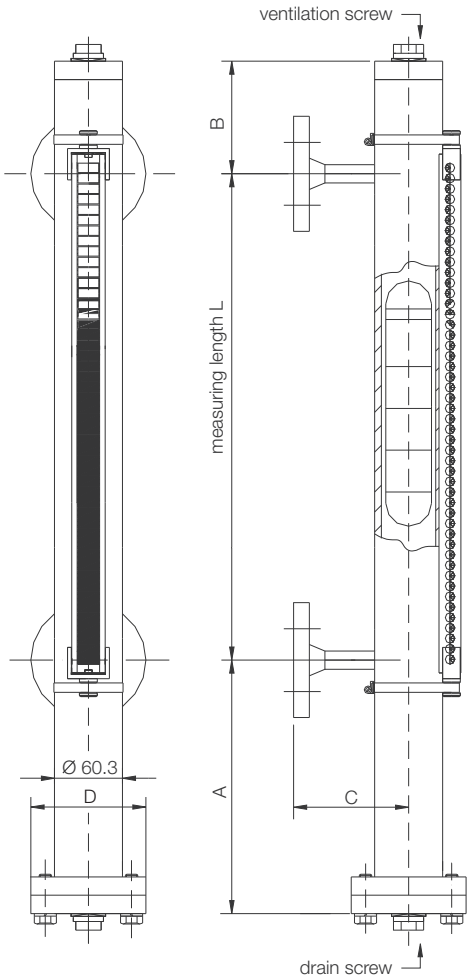
Model	Nominal pressure	Connection	Nominal size	Roller indication	Transmitter	Medium density float
NBK-03... **NBK-06...** **NBK-07...** **NBK-10...**	PN 16/150 lbs PN 40/300 lbs PN 63/600 lbs PN 100/1500 lbs	**F** = DIN flange **A** = ANSI flange **R** = R thread male **N** = NPT thread male	**15** = DN 15, ½" **20** = DN 20, ¾" **25** = DN 25, 1" **32** = DN 32, 1 ¼"	**00** = without **RP** = PP rollers **RK** = ceramic rollers	**0** = without transmitter **T** = magnetostrictive **W** = with chain of resistors **M** = with chain of resistors and transmitter	**A**=1.0 kg/dm³, titanium **B**=0.90 kg/dm³, titanium **C**=0.80 kg/dm³, titanium **D**=0.70 kg/dm³, titanium **E**=0.60 kg/dm³, titanium **F***=0.54 kg/dm³, titanium
NBK-R	standard limit contact (bistable changeover contact)					
NBK-RT200	high-temperature limit contact max. 200 °C					
NBK-RT400	high-temperature limit contact max. 400 °C					

*not possible with NBK-10

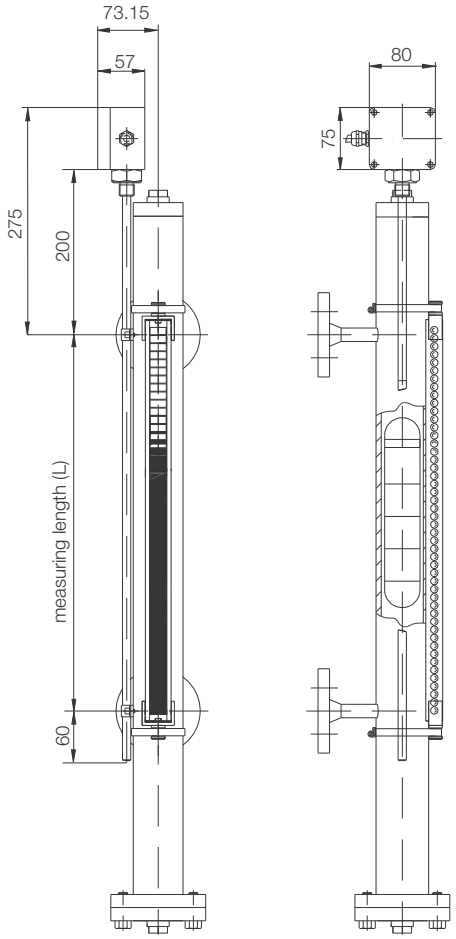
Please specify measuring length L, density, pressure and temperature in writing!

Dimensions

NBK-... with roller indication



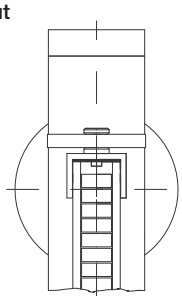
NBK-... with roller indication and magnetostrictive transmitter



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

NBK 10 always without ventilation screw and drain screw



Clearance Dimension A [mm]

Model	Nominal pressure	Medium density					
		0.54 [kg/dm³]	0.6 [kg/dm³]	0.7 [kg/dm³]	0.8 [kg/dm³]	0.9 [kg/dm³]	1 [kg/dm³]
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