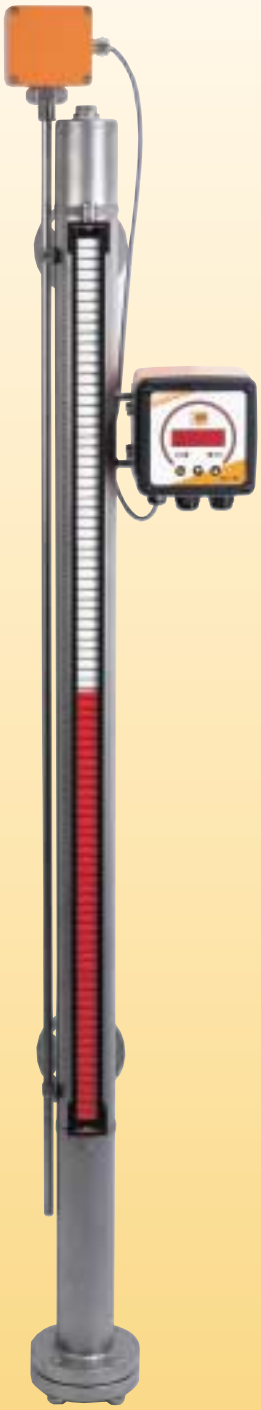
Bypass Level Indicators



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

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Model:
NBK
-03, -06,
-07, -10

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 to 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
- Mixing vessels
- Tanks on ships
- Water tanks

Technical Details

Bypass tube:	Ø 60.3 mm
Material:	1.4571
Operating pressure:	PN 16/40/64/100
Operating temperature:	to 120°C PP (polypropylene) rollers to 400°C ceramic rollers
Viscosity:	max. 200 mm²/s
Max. measuring length:	to 6000 mm single-part; longer two-part or multipart
Total length:	depending on measuring length, see dimension drawing

Technical Details Additional Features

Limit contacts model NBK-R, NBK-REx

Contact operation:	bistable changeover contact
Switching hysteresis:	approximately 15 mm
Switch capacity:	40 W/VA, 230 V/O, 8 A (NBK-R)
Switch capacity:	20 W/45 VA, 220 V, 0, 8 A (NBK-REx)
Medium temperature:	max. 100°C
Ambient temperature:	max. 75°C
Protection:	IP 67
Connection:	3 m PVC cable
Protection category:	EEx-d-IIc-T6 (NBK-REx only)

Plastic housing

Limit contacts model NBK-RT200, NBK-RT400

Contact operation:	bistable changeover contact
Switching hysteresis:	approximately 15 mm
Switch capacity:	80 VA; 220 V; 1 A
Medium temperature:	max. 200°C/400°C
Ambient temperature:	max. 145°C/350°C
Protection:	IP 65

Aluminium pressure casing, clamp connection

Transmitter type: ...W...

Reed contact chain of resistors

Total resistance:	approximately 5 kOhm
Measuring-circuit voltage:	max. 24 VDC
Measuring current:	max. 0.1 A
Medium temperature:	max. 200°C
Ambient temperature:	max. 130°C
Resolution:	10 mm (ML<2000 mm) 20 mm (ML>2000 mm)

Transmitter type: ...M...

Reed contact chain of resistors with 2-wire transmitter

Output:	4–20 mA
Auxiliary supply:	16–32 VDC
Load:	(U_B-9 V) /0.02 A [Ω]
Medium temperature:	max. 130°C
Ambient temperature:	max. 80°C
Resolution:	10 mm (ML<2000 mm) 20 mm (ML>2000 mm)

Type: ...T...

Magnetostrictive transducer with 4-wire transmitter

Output:	4–20 mA /load max. 500 Ohm
Max. length:	4000 mm
Supply voltage:	24 VDC
Accuracy:	±1 mm
Medium temperature:	max. 120°C
Ambient temperature:	max. 80°C
Protection:	IP 65

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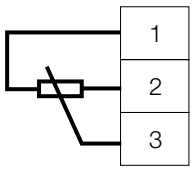
subject to change without prior notice.

Options

- A- connecting flange for two-part design
- 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 bar graph 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
- E- drain flange DN 20/25 stainless steel 1.4571
- F- drain valve NAD-MZ15 G 1/2 stainless steel 1.4571
- H- rinsing connection DN 15/PN 16 top and bottom
- K- Armaflex insulation (thermal conductance 0.025 kcal/m°C)
- M- aluminium scale
- N- thermal screening for transmitter > 200°C (float must be used)
- P- radiographic examination DIN 54111 T1
- Q- dye penetration test DIN 541152
- X- pressure test with water 1.5 x PN
- Z- 3.1 B certificate according to DIN 50049i

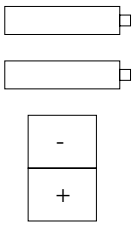
Electrical connection

Transmitter with chain of resistors type: ...W...

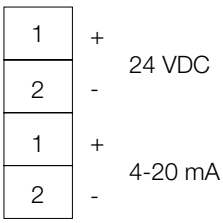


approx. 5 kOhm

Chain of resistors with transmitter type: ...M...



Magnetostrictive transmitter type: ...T...



Float types

Type	min. density (g/cm³)	Material	Design		Usage
			PN 16/40	PN 64/100	
1	1.0	Stainless steel	Closed	Open	Standard
8	0.8	Stainless steel	Closed	Open	Standard
A	1.0	Titanium	Closed	Open	Standard
E	0.61	Titanium	Closed	Open	with thermal screening
F	0.54	Titanium	Closed	Open	Standard

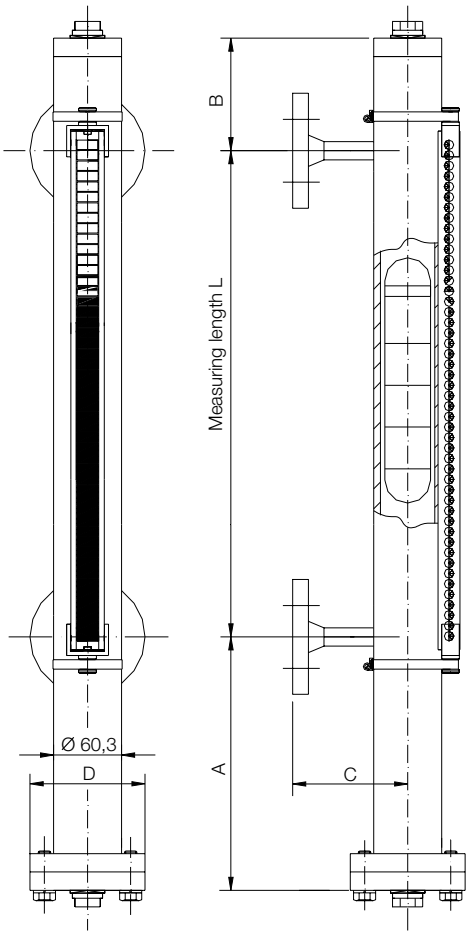
Other special versions (for example: other densities, reduced submersible length and so forth upon request)

Order Details (Example: NBK-03 F15 00T8 Y)

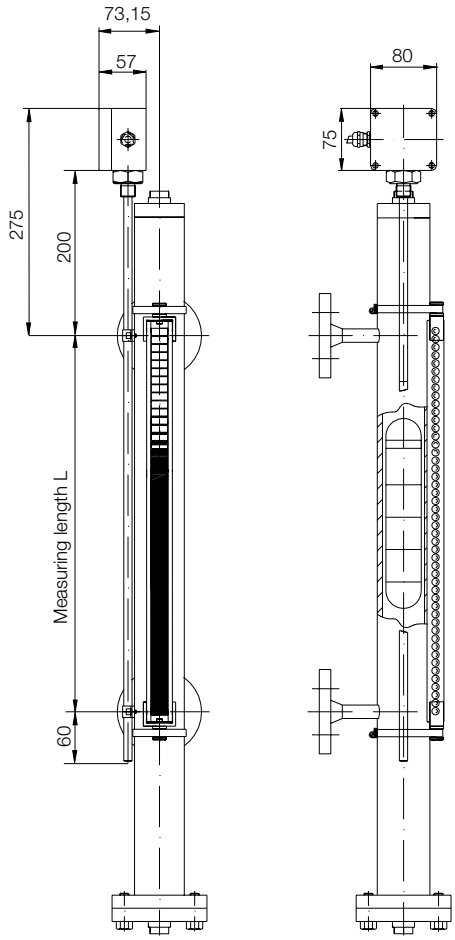
Model	Nominal pressure	Connection	Nominal size	Roller indication	Transmitter	Medium density	Options
NBK-03...	PN 16/150 lbs	**F**=DIN flange	**15**=DN 15, 1/2"	**00**=without	**0**=without	**8**= > 0.8 g/cm³	**0**= without
NBK-06...	PN 40/300 lbs	**A**=ANSI flange	**20**=DN 20, 3/4"	**RP**=PP (polypro-pylene) rollers	**T**=magnetostrictive	**1**= > 1.0 g/ccm³	**Y**= mixed list
NBK-07...	PN 64/600 lbs		**25**=DN 25, 1"		**W**=chain of resistors	**F**= > 0.54 g/cm³	**(Please place**
NBK-10...	PN 100/1500 lbs		**32**=DN 32, 1 1/4"	**RK**=ceramic rollers	**M**=with transmitter	**A**= > 1.0 g/cm³	**order in writing)**
NBK-R	Standard limit contact						
NBK-REx	Limit contact EEx d IIC T6						
NBK-RT200	High-temperature limit contact max. 200°C						
NBK-RT400	High-temperature limit contact max. 200°C						

Dimensions

NBK-... with roller indication



NBK-... with roller indication and magnetostrictive transmitter



Model	Nominal pressure	Dimensions (mm)			
		A	B	C	D
NBK-03...	PN 16 / 150 lbs	320	130	110	115
NBK-06...	PN 40 / 300 lbs	320	130	110	115
NBK-07...	PN 64 / 600 lbs	320	160	130	180
NBK-10...	PN 100 / 1500 lbs	320	160	130	195

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