

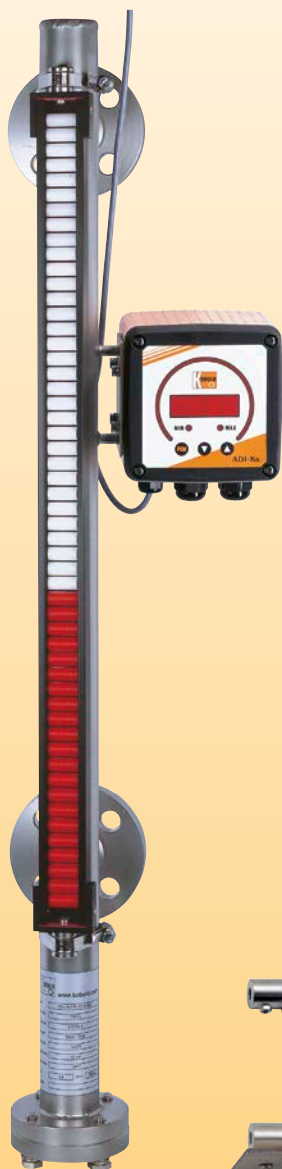


## Mini Bypass Level Indicator



measuring  
•  
monitoring  
•  
analysing

### NBK-M



- Measuring length:  
max. 3000 mm, one-piece
- Pressure: max. PN 40/300 lbs
- Temperature: -20 °C ... +200 °C
- Viscosity: max. 200 mm<sup>2</sup>/s
- Connection:  
DIN flange DN 10 ... 25  
ANSI flange ½" ... 1"
- Material:  
stainless steel 1.4571
- Rugged, reliable magnetic roller-indicator; requires no auxiliary power source
- Limit contacts
- Analogue output



NBK-RS



NBK-RH



N2

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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
- Mixing vessels
- Tanks on ships
- Water tanks

## Technical Details

Process connection:	flange DIN EN1092-1 type 11, form B ANSI-flange R-thread DIN EN 10226-1 NPT thread DN 10, DN 15, DN 20, DN 25
Bypass tube:	Ø 40 mm
Material:	stainless steel, 1.4571
O-ring (bottom flange):	NBR 70 (-20 °C...+100 °C) other materials as an option
Operating pressure:	PN 6/16/40 - 150/300 lbs
Operat. temperature:	-20 °C... +120 °C POM rollers -20 °C... +200 °C ceramic rollers
Protection roller indicator:	IP 54
Viscosity:	max. 200 mm <sup>2</sup> /s
Max. meas. length:	3000 mm, one piece
Overall length:	see dimension drawing
Float:	titanium, enclosed special design on request
PED 97/23/EG:	article 3 §3, diagram 1, Gr. 1 no CE marking

## Technical Details Additional Features

### Limit contacts, model NBK-RM

Contact operation:	bi-stable changeover contact
Switching hysteresis:	approximately 15 mm
Max. switch capacity:	60 W/VA; 230 V <sub>AC/DC</sub> , 1 A
Resistance:	100 mΩ
Medium temperature:	-20 °C... +100 °C
Ambient temperature:	-20 °C... +75 °C
Connection:	3 m PVC cable
Housing:	Polycarbonate
Protection:	IP 67

### Limit contact model NBK-RS/ NBK-RH

Contact operation:	bistable changeover contact
Switching hysteresis:	approx. 15 mm
Max. switching capacity:	230 V <sub>AC/DC</sub> , 1A, 60 W/VA
Resistance:	approx. 100 mΩ
Ambient temperature:	NBK-RS -40... +100 °C NBK-RH -40... +100 °C *
Medium temperature:	NBK-RS -40... +120 °C NBK-RH -40... +350 °C *
Cable connection:	silicone cable, colour coded 4Gx1 mm <sup>2</sup>
Cable gland:	M16x1.5 brass
Housing:	stainless steel 1.4301
Protection:	IP 67

\* Note: Limitation of maximum medium temperature to +120 °C/ +200 °C due to bypass level indicator



**Technical Details Additional Features** (continued)

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

Total resistance: 0.7 ... 7 kΩ  
 Meas. circuit voltage: max. 24 V<sub>DC</sub>  
 Measuring current: max. 0.1 A  
 Medium temperature: -20 °C ... +200 °C  
 Ambient temperature: -20 °C ... +130 °C  
 Resolution: 10 mm (ML < 2000 mm)  
 20 mm (ML > 2000 mm)  
 Housing: aluminum pressure-cast  
 Protection: IP 65

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

Output: 4-20 mA  
 Auxiliary energy: 16 - 32 V<sub>DC</sub>  
 Load: (U<sub>B</sub> - 9 V) / 0,02A [Ω]  
 Medium temperature: -20 °C ... +120 °C  
 Ambient temperature: -20 °C ... +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...**

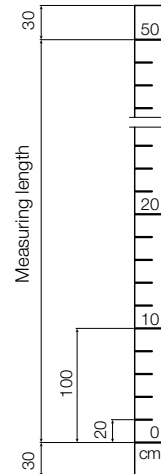
Output: 4 - 20 mA  
 Supply voltage: 24 V<sub>DC</sub>, max. 150 mA  
 Load: max. 500 Ω  
 Max. length: 4000 mm  
 Medium temperature: -20 °C ... +120 °C  
 Ambient temperature: -20 °C ... +80 °C  
 Accuracy: ± 1 mm  
 Housing: aluminum pressure-cast  
 Protection: IP 65

Pressure/temperature assignment for flanges made of austenite steel; 0.2% permanent elongation limit in accordance with DIN EN 1092-1: 2001 (D).

**Maximum permitted pressure**

Type	-10...+50 °C	<100 °C	<150 °C	<200 °C
PN 6	5.6 bar	5.1 bar	4.7 bar	4.4 bar
PN 16	14.9 bar	13.5 bar	12.5 bar	11.7 bar
PN 40	37.3 bar	33.8 bar	31.3 bar	29.3 bar

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



**Magnetostrictive sensor**

**with 2-wire transmitter 4 ... 20 mA model: ...D/J...**

Output: 4...20 mA (Option "J" with HART)  
 Supply: 12.5 ... 36 V<sub>DC</sub>  
 max. length: 3500 mm  
 Medium temperature\*: -40 ... +90 °C  
 Ambient temperature: -40 (-25\*\*) ... +70 °C  
 Resolution \*\*\*: ± 1 mm  
 Accuracy\*\*\*\*: 5 mm

(see separate data sheets for probe types NMB)

\* see temperature diagram

\*\* with display

**Magnetostrictive sensor**

**with 2-wire transmitter 4 ... 20 mA model: ...I...**

Output: 4 ... 20 mA  
 Supply: 12.5 ... 36 V<sub>DC</sub>  
 max. length: 4000 mm  
 Medium temperature: -40 ... +90 °C  
 Ambient temperature: -40 ... +70 °C  
 Resolution \*\*\*: ± 1 mm  
 Accuracy\*\*\*\*: 5 mm

(see separate data sheets for probe types NMS)

\*\*\* for displayed and HART® transmitted values

\*\*\*\* under reference conditions and with factory setting, with factory calibrated float for NBK-M



**Options**

- C<sup>1)</sup> Display appliance model ADI-1V30W2F0 with bar graph and digital display, sturdy aluminium housing, mounted on the bypass tube. For description see data sheet ADI-1
  - E1<sup>2)</sup> Drain flange DN 15, stainless steel 1.4571
  - E2<sup>2)</sup> Drain flange DN 20, stainless steel 1.4571
  - E3 Drain flange ANSI 1/2", stainless steel 1.4571
  - E4 Drain flange ANSI 3/4", stainless steel 1.4571
  - L1 Drain valve G 1/4, stainless steel 1.4571
  - L2 Drain valve 1/4" NPT, stainless steel 1.4571
  - H1 Rinsing connection DN 15/PN 16, top and bottom
  - H2 Rinsing connection ANSI 1/2", 150 lbs, top and bottom
  - M1 Measuring scale ambient temperature -20 °C ... +200 °C, aluminum backing, engraved scale
  - M2 Measuring scale ambient temperature -20 °C ... +150 °C, aluminum backing, polyester foil 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 as per EN 10204
  - R1 Bottom drain screw G 1/4, seal PTFE
  - R2 Bottom drain screw 1/4" NPT, no seal
  - S1<sup>2)</sup> Vent plug G 1/4, seal PTFE
  - S2 Vent plug 1/4" NPT, no seal
  - W1 O-ring (bottom flange) material: FPM (-15 °C ... +200 °C)
  - W2 O-ring (bottom flange) material: silicone (-60 °C ... +200 °C)
  - W3 O-ring (bottom flange) material: PTFE (-20 °C ... +120 °C)
  - W4 O-ring (bottom flange) material: perfluorelastomer (-20 °C ... +200 °C)
- <sup>1)</sup> Use only with option T (magnetostrictive measuring sensor) or option M (resistor chain with measuring transducer)  
<sup>2)</sup> See drawing last page

**Order Details** (Example: **NBK-M 1 F 10 0 0 8 0**)

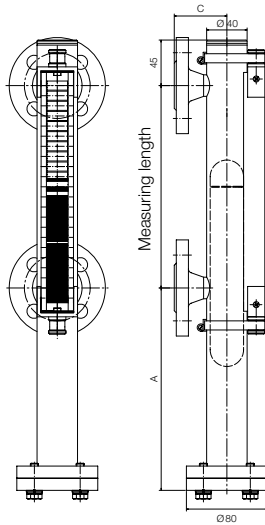
Model	Nominal pressure	Connection	Nominal width	Roller display	Measuring sensor	Medium density	Options
<b>NBK-M</b>	<b>1</b> = PN6 (not with ANSI flange) <b>2</b> = PN16 (150 lbs) <b>3</b> = PN40 (300 lbs)	<b>F</b> = DIN flange <b>A</b> = ANSI- flange <b>R</b> = tube thread <b>N</b> = NPT thread	<b>10</b> = DN 10 (only with DIN-flange) <b>15</b> = DN 15, 1/2" <b>20</b> = DN 20, 3/4" <b>25</b> = DN 25, 1"	<b>0</b> = without <b>P</b> = POM roller <b>K</b> = ceramic roller	<b>0</b> = without <b>T</b> = magneto-strictive <b>W</b> = resistor chain <b>M</b> = resistor chain with meas. transducer <b>D</b> <sup>2)</sup> = magneto-strictive probe + 4...20 mA, 1 mm <b>J</b> <sup>2)</sup> = magneto-strictive probe + 4...20 mA HART®, 1 mm <b>I</b> <sup>3)</sup> = magneto-strictive probe + 4...20 mA HART®, 1 mm, DIN plug	<b>8</b> = from 0.8 kg/dm <sup>3</sup> <b>1</b> = from 1.0 kg/dm <sup>3</sup>	<b>0</b> = without ... = according to list
<b>NBK-RM</b>	Standard limit contact						
<b>NBK-RS01U03</b> <sup>1)</sup>	Limit contact, bistable, change-over contact, max. +120 °C, 3 m silicone cable, weight: 505 g						
<b>NBK-RS01U06</b> <sup>1)</sup>	Limit contact, bistable, change-over contact, max. +120 °C, 6 m silicone cable, weight: 826 g						
<b>NBK-RS01U10</b> <sup>1)</sup>	Limit contact, bistable, change-over contact, max. +120 °C, 10 m silicone cable, weight: 1254 g						
<b>NBK-RH01U03</b> <sup>1)</sup>	Limit contact, bistable, change-over contact, max. +350 °C, 3 m silicone cable, weight: 580 g						
<b>NBK-RH01U06</b> <sup>1)</sup>	Limit contact, bistable, change-over contact, max. +350 °C, 6 m silicone cable, weight: 901 g						
<b>NBK-RH01U10</b> <sup>1)</sup>	Limit contact, bistable, change-over contact, max. +350 °C, 10 m silicone cable, weight: 1329 g						

<sup>1)</sup> Add Suffix „/NBK“, when ordered together with NBK    <sup>2)</sup> Model NMB-TR00UAxxx0 (see separate data sheet for model NMB)  
<sup>3)</sup> Model NMS-S000UExxM0 (see separate data sheet for model NMS)

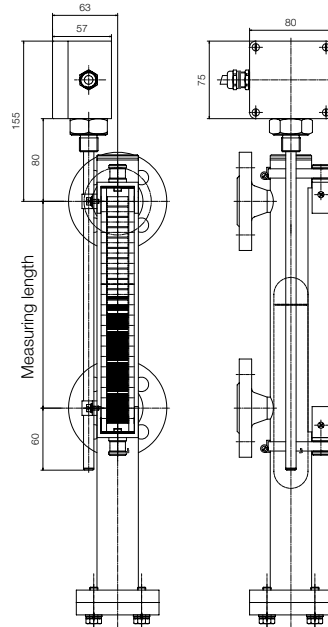
**Note:** Please show the measuring length and medium viscosity in clear text ( if they deviate from 0.8 kg/dm<sup>3</sup> or 1.0 kg/dm<sup>3</sup>).

**Dimensions [mm]**

**NBK-M... with roller-type display**



**NBK-M... with roller-type display and magnetostrictive transmitter**



**Clearance dimensions C [mm] with DIN V flange**

Type	DN 10	DN 15	DN 20	DN 25
PN 6	46	47	47	72
PN 16/40	53	55	55	75

**Clearance**

**dimension A: Medium density 0,8 kg/dm<sup>3</sup>: 290 mm**

**Medium density 1,0 kg/dm<sup>3</sup>: 185 mm**

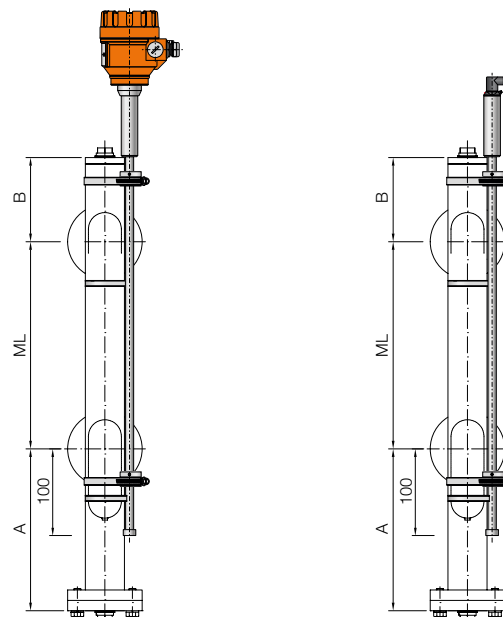
(with special float design dimension A may change)

**Clearance dimensions C [mm] with ANSI V flange**

Type	1/2"	3/4"	1"
150 lbs	64	67	66
300 lbs	69	72	73

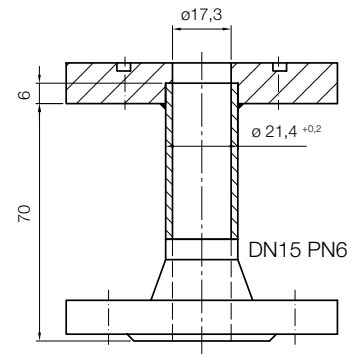
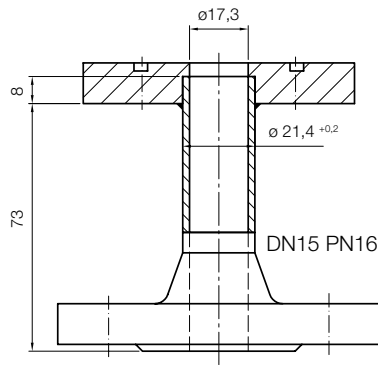
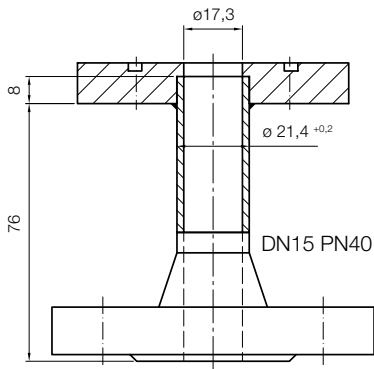
**NBK-... with transmitter model D/J**

**NBK-... with transmitter model I**

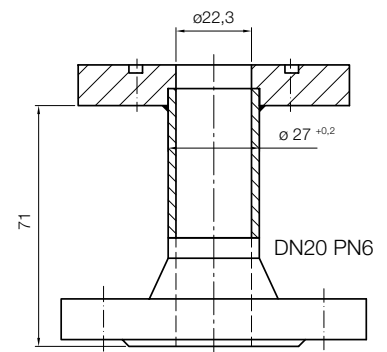
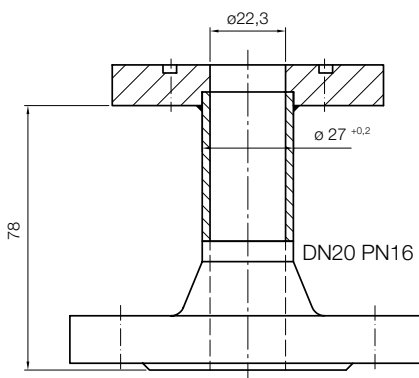
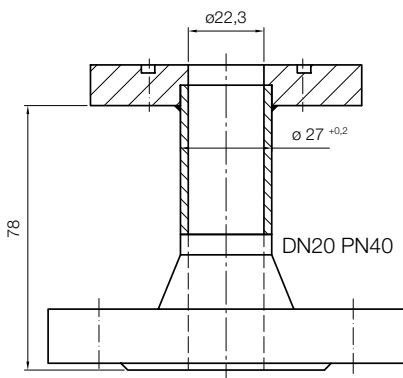


**Clearance dimension C with R or NPT thread: 60 mm**

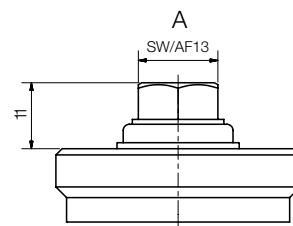
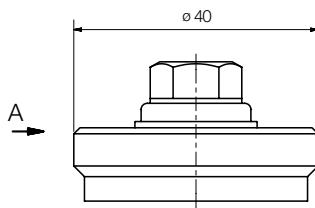
Drain flange E1



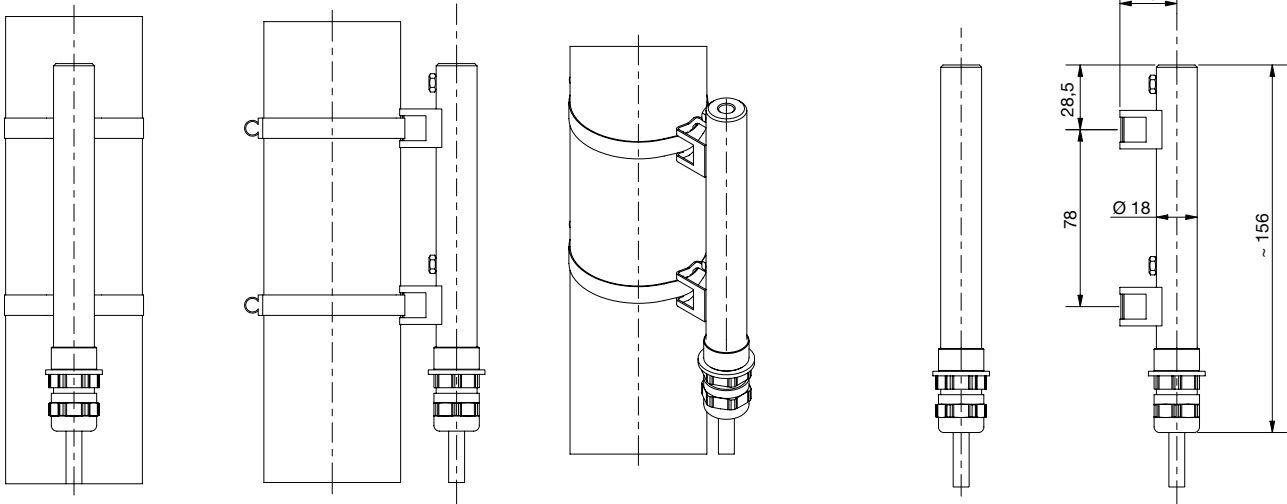
Drain flange E2



Option S1



NBK-RS



NBK-RH

