



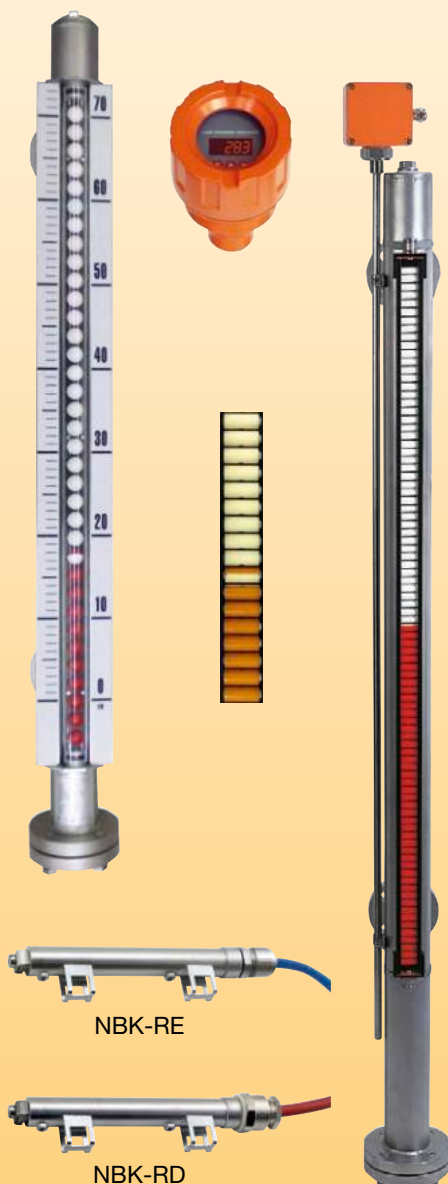
## Bypass Level Indicators ATEX Approval



measuring  
•  
monitoring  
•  
analysing

NBK-ATEX

-03, -06, -07, -10, -31, -32, -33



- Measuring length: single-part max. 5500 mm  
over 5500 mm two-part or multipart
- Pressure: max. PN320
- Temperature:
  - 20 ... +400 °C (ceramic rollers)
  - 20 ... +120 °C (POM rollers)
  - 104 ... +200 °C (ball display)
  - 60 ... +100 °C (NBK-31, -32, -33)
- Viscosity: max. 200 mm<sup>2</sup>/s standard  
(option: 460 mm<sup>2</sup>/s, only NBK-03)
- Connection:
  - DIN flange DN 15 ... DN 50
  - ASME flange ½" ... 2"
  - R- and NPT-threads
  - welding nipple DN 15 ... DN 32
- Material: stainless steel 1.4571
- Insensitive magnet roller or ball display  
without auxiliary energy
- Limit contacts
- Analogue output, HART®



N2

KOBOLD companies worldwide:

AUSTRALIA, AUSTRIA, BELGIUM, BULGARIA, CANADA, CHINA, CZECHIA, FRANCE, GERMANY, GREAT BRITAIN, HUNGARY, INDIA, INDONESIA, ITALY, MALAYSIA, MEXICO, NETHERLANDS, PERU, POLAND, REPUBLIC OF KOREA, SPAIN, SWITZERLAND, THAILAND, TUNISIA, TURKEY, USA, VIETNAM

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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:

### ATEX version

The bypass level indicators are supplied with ATEX approval. Limit contacts and an immersible magnetic probe (reed contact chain) with ATEX approval are available for level measurement and monitoring. The electrical components have their own ATEX-certification.

ATEX approval:

Bypass-level indicator:  II 1/2G Ex h IIC T4...T1 Ga/Gb  
 $-20^{\circ}\text{C} \leq T_a \leq +80^{\circ}\text{C}$   
 or  
 II 1G/2D Ex h IIC/IIIC  
 T4...T1/T 130°C...445°C Ga/Db  
 $-20^{\circ}\text{C} \leq T_a \leq +80^{\circ}\text{C}$   
 or  
 II 1/3G Ex h IIC T4...T1 Ga/Gc  
 $-20^{\circ}\text{C} \leq T_a \leq +80^{\circ}\text{C}$   
 or  
 II 1G/3D Ex h IIC/IIIC  
 T4...T1/T 130°C...445°C Ga/Dc  
 $-20^{\circ}\text{C} \leq T_a \leq +80^{\circ}\text{C}$

Limit contact:

NBK-RE:  II 2G Ex ib IIC T6...T3 Gb  
 II 2D Ex ib IIIC T80°C/95°C/130°C/150°C Db

NBK-RD:  II 2G Ex db IIC T6...T3 Gb  
 II 2D Ex tb IIIC T80°C/95°C/130°C/150°C Db

Reed contact

resistance chain:  II 1GD Ex ia IIC T6 Ga  
 II 1/2G Ex d IIC T6 Ga/Gb  
 II 1/2D Ex tb IIIC T85°C Da/Db

Magnetostrictive sensor:

 II 1 G Ex ia IIB T6...T5 Ga  
 II 2 G Ex db IIB T6...T5 Gb  
 II 1/2 G Ex db ia IIB T6...T5 Ga/Gb

### Magnetic roller/ball indicator

As the float passes by, the red/white\* rollers/balls are rotated in succession by 180° around their own axes. The rollers/balls change from white to red as the level rises and from red to white as the level falls. The advantage of ball display is the higher protection category, good visibility of 180° and higher vibration resistance with filled version. The level in a tank or a mixer is continuously displayed as a red column, even when the power fails.

\* ceramic rollers in orange/beige

## Transmitter

To remotely transmit the level a transmitter with a immersible magnetic probe (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. Optionally, HART®, Profibus®-PA or Foundation™ Fieldbus®. Communication protocols are possible.)

### Limit contacts

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

### Applications

- Storage tanks
- Tanks on ships
- Agitator vessel
- Water tanks

## Technical Details

|                                                      |                                                                                                                                                                                                                                                                 |
|------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Process connection:                                  | flange DIN EN 1092-1 type 11, forme B<br>DN 15, DN 20, DN 25, DN 32, DN 40, DN 50,<br>flange ASME B 16.5 RF-2009<br>1/2", 3/4", 1", 1 1/4", 1 1/2", 2"<br>R-thread DIN EN 10226-1<br>1/2", 3/4", 1", 1 1/4"<br>NPT ANSI/ASME B 1.20.1<br>1/2", 3/4", 1", 1 1/4" |
| Bypass tube:                                         | Ø 60.3 mm, 1.4571<br>(NBK-03/.../10)<br>Ø 71.0 mm, 1.4571 (NBK-31)<br>Ø 76.1 mm, 1.4571 (NBK-32/33)                                                                                                                                                             |
| NBK-03/06/07:                                        | flat gasket: <200°C; PTFE,<br>≥200°C, Klinger SIL®                                                                                                                                                                                                              |
| NBK-10:                                              | reinforced graphite                                                                                                                                                                                                                                             |
| NBK-31/32/33:                                        | RTJ-seal                                                                                                                                                                                                                                                        |
| Operating pressure:                                  | PN 16/40/63/100/160/250/320                                                                                                                                                                                                                                     |
| Operat. temperature:                                 | -20...+400°C (ceramic rollers)<br>-20...+120°C (POM rollers)<br>-104...+200°C (ball display)<br>-60...+100°C (NBK-31, -32, -33)                                                                                                                                 |
| Viscosity:                                           | max. 200 mm²/s standard<br>(Option: up to max. 460 mm²/s for NBK-03)                                                                                                                                                                                            |
| Max. meas. length:                                   | up to 5500 mm single-part;<br>longer two-part or multipart                                                                                                                                                                                                      |
| Overall length:                                      | see dimension drawing                                                                                                                                                                                                                                           |
| <b>Roller display model RP (max. length 5500 mm)</b> |                                                                                                                                                                                                                                                                 |
| Material roller:                                     | POM                                                                                                                                                                                                                                                             |
| Display glass:                                       | PMMA                                                                                                                                                                                                                                                            |
| Carrier frame material:                              | aluminium, black anodised                                                                                                                                                                                                                                       |
| Operat. temperature:                                 | -20...120°C                                                                                                                                                                                                                                                     |
| Ambient temperature:                                 | -20...+80°C                                                                                                                                                                                                                                                     |
| Protection:                                          | IP 54                                                                                                                                                                                                                                                           |

**Technical Details** (continuation)**Roller display model RK (max. length 5500 mm)**

|                         |                           |
|-------------------------|---------------------------|
| Material roller:        | Ceramic                   |
| Display glass:          | borosilicate glass        |
| Carrier frame material: | aluminium, black anodised |
| Medium temperature:     | -20...+400 °C             |
| Ambient temperature:    | -20...+80 °C              |
| Protection:             | IP54                      |

**Ball display model KP  
(max. length 3800 mm one-piece)\***

|                      |                                            |
|----------------------|--------------------------------------------|
| Material ball:       | PA                                         |
| Sight tube:          | PMMA                                       |
| Sealing plug:        | aluminium                                  |
| Seal:                | NBR                                        |
| Ball support rail:   | aluminium, black anodised                  |
| Carrier frame:       | stainless steel 1.4301                     |
| Scale:               | PVC,<br>stainless steel 1.4301 (option MV) |
| Medium temperature:  | -20...+80 °C                               |
| Ambient temperature: | -20...+80 °C                               |
| Protection:          | IP66                                       |

**Ball display model KM  
(max. length 3800 mm one-piece)\***

|                      |                                            |
|----------------------|--------------------------------------------|
| Material ball:       | PA - high temperature strength             |
| Sight tube:          | PC                                         |
| Sealing plug:        | aluminium                                  |
| Seal:                | FKM                                        |
| Ball support rail:   | aluminium, black anodised                  |
| Carrier frame:       | stainless steel 1.4301                     |
| Scale:               | PVC,<br>stainless steel 1.4301 (option MV) |
| Medium temperature:  | -60...+120 °C                              |
| Ambient temperature: | -20...+80 °C                               |
| Protection:          | IP66                                       |

**Ball display model KF  
(max. length 3800 mm one-piece)\***

|                      |                                                 |
|----------------------|-------------------------------------------------|
| Filling:             | silicone oil                                    |
| Material ball:       | PA - high temperature strength                  |
| Sight tube:          | PC                                              |
| Sealing plug:        | stainless steel 1.4571                          |
| Seal:                | FKM                                             |
| Ball support rail:   | aluminium, black anodised                       |
| Carrier frame:       | stainless steel 1.4301                          |
| Scale:               | Hart-PVC,<br>stainless steel 1.4301 (option MV) |
| Medium temperature:  | -104...+120 °C                                  |
| Ambient temperature: | -20...+80 °C                                    |
| Protection:          | IP66                                            |

**Ball display model KG (max. length 3000 mm one-piece)**

|                      |                           |
|----------------------|---------------------------|
| Material ball:       | PA                        |
| Sight tube:          | borosilicate glass        |
| Sealing plug:        | stainless steel           |
| Seal:                | FKM                       |
| Ball support rail:   | aluminium, black anodised |
| Carrier frame:       | stainless steel 1.4301    |
| Scale:               | stainless steel 1.4301    |
| Medium temperature:  | -20...+200 °C             |
| Ambient temperature: | -20...+80 °C              |
| Protection:          | IP66                      |

\* In case of multi port design, a display length from 32 mm is not readable

**ATEX approval****Limit contact, model NBK-RA**

|                        |                                             |
|------------------------|---------------------------------------------|
| contact sales office   |                                             |
| Contact operation:     | bistable changeover contact<br>encapsulated |
| Switching hysteresis:  | approximately 15 mm                         |
| Max. switch. capacity: | 45 VA, 230 V <sub>AC/DC</sub> , 0.6 A       |
| Temperature class:     | T5/T6                                       |
| Max. ambient temp.:    | 70 °C / 85 °C                               |
| Connection:            | 3 m PVC-cable                               |
| Housing:               | metallic, cast<br>(GD-ZN Al 4 Cu1)          |
| Protection:            | IP67                                        |

**Limit contact, type NBK-RE/ NBK-RD**

|                          |                                                                          |
|--------------------------|--------------------------------------------------------------------------|
| Contact function:        | bistable changeover switch                                               |
| Switching hysteresis:    | approx. 15 mm                                                            |
| Max. switching capacity: |                                                                          |
| NBK-RE:                  | 60 V <sub>AC/DC</sub> , 1A, 60 W/VA                                      |
| NBK-RD:                  | 230 V <sub>AC/DC</sub> , 1A, 60 W/VA                                     |
| Contact resistance:      | approx. 100 mΩ                                                           |
| Ambient temperature:     | See Ex marking                                                           |
| Medium temperature:      | See Ex marking                                                           |
| Cable connection:        |                                                                          |
| NBK-RE:                  | PVC cable, shielded<br>number-coded 3x0.75 mm <sup>2</sup>               |
| NBK-RD:                  | Silicone cable, colour-coded<br>4Gx1 mm <sup>2</sup>                     |
| Cable gland:             | NBK-RE: M16x1.5 polyamide<br>NBK-RD: M16x1.5 brass                       |
| Housing:                 | Stainless steel 1.4301                                                   |
| Protection class:        | IP67                                                                     |
| ATEX marking:            |                                                                          |
| NBK-RE:                  | II 2G Ex ib IIC T6...T3 Gb<br>II 2D Ex ib IIIC T80°C/95°C/130°C/150°C Db |
| NBK-RD:                  | II 2G Ex db IIC T6...T3 Gb<br>II 2D Ex tb IIIC T80°C/95°C/130°C/150°C Db |

## Technical Details (continuation)

### Option 2

**ATEX reed contact resistor chain, in type of protection intrinsic safety Ex ia IIC only for connection to certified intrinsically safe circuits with the following maximum values:**

|                      |                                                                                                          |
|----------------------|----------------------------------------------------------------------------------------------------------|
| Total resistance:    | 0.7 ... 7 kΩ                                                                                             |
| Max. Voltage:        | $U_i = 24 \text{ V}$                                                                                     |
| Max. Power:          | $P_i = 1.2 \text{ W}$                                                                                    |
| Temperature class:   | T6                                                                                                       |
| Resolution:          | 10 mm                                                                                                    |
| Housing:             | Die-cast aluminium                                                                                       |
| Protection class:    | IP 65                                                                                                    |
| ATEX marking:        |  II 1GD Ex ia IIC T6 Ga |
| Application in zone: | 0, 1, 2, 20, 21 or 22                                                                                    |
| Ambient temperature: | -20 ... +60 °C                                                                                           |

**ATEX transmitter for resistance chain options E and R (only in conjunction with an external intrinsically safe supply isolator)**

### Option E

**ATEX reed contact resistance chain with analogue current output in type of protection intrinsic safety Ex ia IIC**

**Transmitter type: 5333D**

#### General data:

|                          |                            |
|--------------------------|----------------------------|
| Supply voltage:          | 8.0 ... 30 V <sub>DC</sub> |
| Communication interface: | Loop Link 5905             |
| Linear Resistance input: | 0 ... 10 kΩ                |

#### Current output:

|                    |                                                         |
|--------------------|---------------------------------------------------------|
| Signal range:      | 4 ... 20 mA                                             |
| Min. signal range: | 16 mA                                                   |
| Update time:       | 135 ms                                                  |
| Load resistance:   | $\leq (V_{\text{Vers}} - 8 \text{ V}) / 0.023 [\Omega]$ |

#### Sensor error display:

|               |                         |
|---------------|-------------------------|
| Programmable: | 3.5 ... 23 mA           |
| NAMUR NE43    |                         |
| open-circuit: | 23 mA (factory setting) |
| triggering:   | 3.5 mA                  |

#### ATEX approval Transmitter:

ATEX marking:  II 1G Ex ia IIC T6...T4 Ga  
 II 2D Ex ia IIC Db

Application in zone: 0, 1, 2, 21 or 22

Parameters for the intrinsically safe circuit: see operating instructions

|         |                    |
|---------|--------------------|
| $U_i$ : | 30 V <sub>DC</sub> |
| $I_i$ : | 120 mA             |
| $P_i$ : | 0,75 W / 0,84 W    |
| $L_i$ : | 10 μH              |
| $C_i$ : | 1,0 nF             |

|                           |                                                 |
|---------------------------|-------------------------------------------------|
| Max. ambient temperature: | -20 °C to max.                                  |
| T4/T5:                    | 60 °C                                           |
| T6:                       | 47 °C / 50 °C<br>(see operating instructions)   |
| Medium temperature:       | -40 ... +120 °C<br>(with option N up to 250 °C) |
| Resolution:               | 10 mm                                           |
| Housing:                  | Die-cast aluminium                              |
| Protection class:         | IP 66                                           |

### Option R

**ATEX reed contact resistance chain with analogue current output and HART communication in type of protection intrinsic safety Ex ia IIC**

**Transmitter type: 5337D**

#### General data:

|                          |                            |
|--------------------------|----------------------------|
| Supply voltage:          | 8.0 ... 30 V <sub>DC</sub> |
| Communication interface: | Loop Link 5905A and HART®  |
| Linear resistance input: | 0 ... 7 kΩ                 |

#### Current output:

|                    |                                               |
|--------------------|-----------------------------------------------|
| Signal range:      | 4 ... 20 mA                                   |
| Min. signal range: | 16 mA                                         |
| Update time:       | 440 ms                                        |
| Load resistance:   | $\leq (V_{\text{Vers}} - 8) / 0.023 [\Omega]$ |

#### Sensor error display:

|               |                                          |
|---------------|------------------------------------------|
| Programmable: | 3.5 ... 23 mA<br>23 mA (factory setting) |
|---------------|------------------------------------------|

#### ATEX approval Transmitter:

ATEX marking:  II 1G Ex ia IIC T6...T4 Ga  
 II 2D Ex ia IIC Db

Application in zone: 0, 1, 2, 21 or 22

Parameters for the intrinsically safe circuit: see operating instructions

|         |                    |
|---------|--------------------|
| $U_i$ : | 30 V <sub>DC</sub> |
| $I_i$ : | 120 mA             |
| $P_i$ : | 0,75 W / 0,84 W    |
| $L_i$ : | 0 μH               |
| $C_i$ : | 1,0 nF             |

|                           |                                                  |
|---------------------------|--------------------------------------------------|
| Max. ambient temperature: | -20 °C to max.                                   |
| T4/T5:                    | 60 °C                                            |
| T6:                       | 47 °C / 50 °C<br>(see operating instructions)    |
| Medium temperature:       | -40 ... +120 °C<br>(with option N up to +250 °C) |
| Resolution:               | 10 mm                                            |
| Housing:                  | Die-cast aluminium                               |
| Protection class:         | IP 66                                            |

**Technical Details** (continuation)**Option 4**

**ATEX reed contact resistance chain in type of protection flameproof enclosure Ex d and protection by enclosure Ex t**

|                          |                                                                                                |
|--------------------------|------------------------------------------------------------------------------------------------|
| Total resistance:        | 0.7 ... 7 k $\Omega$                                                                           |
| max. voltage:            | U: 24 V <sub>DC</sub>                                                                          |
| max. switching capacity: | 125 mW                                                                                         |
| Temperature class:       | T6                                                                                             |
| Resolution:              | 10 mm                                                                                          |
| Housing:                 | Die-cast aluminium                                                                             |
| Protection class:        | IP 65                                                                                          |
| Type of protection:      | II 1/2G Ex d IIC T1T6 Ga/Gb<br>II 2D Ex t IIC T*°C Db<br>(T* according to process temperature) |
| Application in zone:     | 0/1, 2, 21 or 22                                                                               |
| Ambient temperature:     | -20 ... +60 °C                                                                                 |
| Medium temperature:      | ≤ 400 °C<br>(see operating instructions)                                                       |

**Option L**

**ATEX reed contact resistance chain with analogue current output in type of protection flameproof enclosure Ex d and protection by enclosure Ex t**

**Transmitter type: 5333D**

**General data:**

|                          |                            |
|--------------------------|----------------------------|
| Supply voltage:          | 8.0 ... 30 V <sub>DC</sub> |
| Communication interface: | Loop Link 5905             |
| Linear Resistance input: | 0 ... 10 k $\Omega$        |

**Current output:**

|                    |                                                  |
|--------------------|--------------------------------------------------|
| Signal range:      | 4 ... 20 mA                                      |
| Min. signal range: | 16 mA                                            |
| Update time:       | 135 ms                                           |
| Load resistance:   | ≤ (V <sub>Vers</sub> - 8 V) / 0.023 [ $\Omega$ ] |

**Sensor error display:**

|               |                         |
|---------------|-------------------------|
| Programmable: | 3.5 ... 23 mA           |
| NAMUR NE43    |                         |
| open-circuit: | 23 mA (factory setting) |
| activating:   | 3.5 mA                  |

**LED or LCD display (LE/LC options):**

|                      |                                                       |
|----------------------|-------------------------------------------------------|
| Supply:              | via current loop                                      |
| Voltage drop:        | LED 3.3 V at 4 mA<br>3.7 V at 20 mA<br>LCD max. 2.5 V |
| Medium temperature:  | -40 ... +120 °C<br>(with option N up to 250 °C)       |
| Ambient temperature: | -20 ... +60 °C                                        |
| Resolution:          | 10 mm                                                 |
| Housing:             | Die-cast aluminium                                    |
| Protection class:    | IP 66                                                 |

**Option K**

**ATEX reed contact resistance chain with analogue current output and HART communication in type of protection flameproof enclosure Ex d and protection by enclosure Ex t**

**Transmitter type: 5337D**

**General data:**

|                          |                            |
|--------------------------|----------------------------|
| Supply voltage:          | 8.0 ... 30 V <sub>DC</sub> |
| Communication interface: | Loop Link 5905A and HART®  |
| Linear resistance input: | 0 ... 7 k $\Omega$         |

**Current output:**

|                    |                                                |
|--------------------|------------------------------------------------|
| Signal range:      | 4 ... 20 mA                                    |
| Min. signal range: | 16 mA                                          |
| Update time:       | 440 ms                                         |
| Load resistance:   | ≤ (V <sub>Vers</sub> - 8) / 0.023 [ $\Omega$ ] |

**Sensor error display:**

|               |                                          |
|---------------|------------------------------------------|
| Programmable: | 3.5 ... 23 mA<br>23 mA (factory setting) |
|---------------|------------------------------------------|

**LED or LCD display (LE/LC options):**

|                      |                                                       |
|----------------------|-------------------------------------------------------|
| Supply:              | via current loop                                      |
| Voltage drop:        | LED 3.3 V at 4 mA<br>3.7 V at 20 mA<br>LCD max. 2.5 V |
| Medium temperature:  | -40 ... +120 °C<br>(with option N up to 250 °C)       |
| Ambient temperature: | -20 ... +60 °C                                        |
| Resolution:          | 10 mm                                                 |
| Housing:             | Die-cast aluminium                                    |
| Protection class:    | IP 66                                                 |

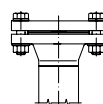
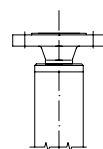
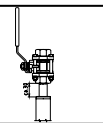
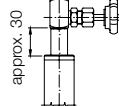
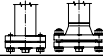
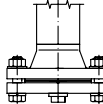
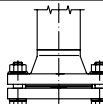
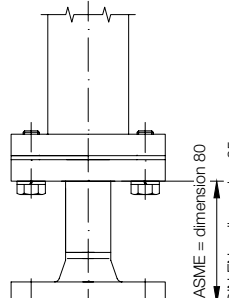
**Options: 6/8/P/Q/S/U**

**Magnetostrictive transducer with 2-wire transmitter 4 ... 20 mA**

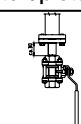
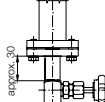
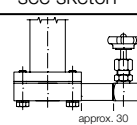
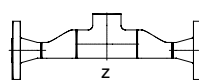
|                           |                                                                                                  |
|---------------------------|--------------------------------------------------------------------------------------------------|
| Output:                   | 4 ... 20 mA with HART®<br>(for options 8/Q/U)                                                    |
| Power supply:             | 12.5 ... 36 V <sub>DC</sub>                                                                      |
| Resolution:               | 1 mm or 0.1 mm<br>(for options P/Q/S/U)                                                          |
| Max. length:              | 4500 mm                                                                                          |
| Housing:                  | Die-cast aluminium (standard),<br>stainless steel on request                                     |
| Protection class:         | IP 67                                                                                            |
| Medium temperature*:      | -40 ... +90 °C                                                                                   |
| Ambient temperature:      | -20 ... +70 °C                                                                                   |
| ATEX marking:             | II 1G Ex ia IIB T6...T5 Ga<br>II 2G Ex db IIB T6...T5 Gb<br>II 1/2G Ex db ia IIB T6...T5 Ga/Gb   |
| Application in zone:      | 0, 1 and 2<br>(see separate data sheet for special type NMB for further technical specification) |
| * see temperature diagram |                                                                                                  |



**Options for NBK with ATEX Approval**

| Code                                                      | Description                                                                              | Sketch/picture                                                                                           | Availability                              |
|-----------------------------------------------------------|------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|-------------------------------------------|
| Top bypass tube connections                               |                                                                                          |                                                                                                          |                                           |
| V0                                                        | Without vent plug                                                                        |                         | NBK-03/06/07<br>NBK-10/31/32/33 standard  |
| VG                                                        | With vent plug G ½                                                                       |                         | NBK-10/31/32/33<br>NBK-03/06/07, standard |
| VF <sup>1)</sup>                                          | Flange connection DN50 (pressure rating as process flange)                               |                        | NBK-03/06/07/10                           |
| VA <sup>1)</sup>                                          | Flange connection 2" ASME (pressure rating as process flange)                            |                                                                                                          | NBK-03/06/07/10                           |
| V4                                                        | Vent flange DN15, stainless steel 1.4571 (pressure rating as process flange)             |                        | NBK-03/06                                 |
| V5                                                        | Vent flange DN20, stainless steel 1.4571 (pressure rating as process flange)             |                                                                                                          | NBK-03/06                                 |
| V6                                                        | Vent flange DN25, stainless steel 1.4571 (pressure rating as process flange)             |                                                                                                          | NBK-03/06                                 |
| V7                                                        | Vent flange ½" ASME, stainless steel 1.4571 (316Ti) (pressure rating as process flange)  |                                                                                                          | NBK-03/06                                 |
| V8                                                        | Vent flange ¾" ASME, stainless steel 1.4571 (316Ti) (pressure rating as process flange)  |                                                                                                          | NBK-03/06                                 |
| V9                                                        | Vent flange 1" ASME, stainless steel 1.4571 (316Ti) (pressure rating as process flange)  |                                                                                                          | NBK-03/06                                 |
| K3                                                        | Vent ball valve KUG-ZER15, G ½ female, max. 180 °C                                       |                      | NBK-03/06/07                              |
| K2                                                        | Vent ball valve KUG-ZEN15, ½" NPT female, max. 180 °C                                    |                                                                                                          | NBK-03/06/07                              |
| V2                                                        | Vent valve NAD-MMN15, ½" NPT, stainless steel 316Ti, max. temp.: +120 °C                 |                      | NBK-03/06                                 |
| V3                                                        | Vent valve NAD-MMR15, G ½, stainless steel 1.4571, max. temp.: +120 °C                   |                                                                                                          | NBK-03/06                                 |
| <sup>1)</sup> Not possible with transmitter options E/R/B |                                                                                          |                                                                                                          |                                           |
| Bottom bypass tube connections                            |                                                                                          |                                                                                                          |                                           |
| D0                                                        | Without drain plug                                                                       |                       | NBK-03/06/07<br>NBK-10/31/32/33 standard  |
| DG                                                        | With drain plug G ½                                                                      | NBK-03/06  NBK-07/10 | NBK-10/31/32/33<br>NBK-03/06/07, standard |
| DF                                                        | Flange connection DN50 (pressure rating as process flange), with drain plug G ½          |                      | NBK-03/06                                 |
| DA                                                        | Flange connection 2" ASME (pressure rating as process flange), with drain plug ½" NPT    |                                                                                                          | NBK-03/06                                 |
| DC                                                        | Flange connection DN50 (pressure rating as process flange), without drain plug           |                      | NBK-03/06/07                              |
| DD                                                        | Flange connection 2" ASME (pressure rating as process flange), without drain plug        |                                                                                                          | NBK-03/06/07                              |
| EF                                                        | Drain flange DN15, stainless steel 1.4571 (pressure rating as process flange)            |                      | NBK-03/06                                 |
| E5                                                        | Drain flange DN20, stainless steel 1.4571 (pressure rating as process flange)            |                                                                                                          | NBK-03/06                                 |
| E6                                                        | Drain flange DN25, stainless steel 1.4571 (pressure rating as process flange)            |                                                                                                          | NBK-03/06                                 |
| E7                                                        | Drain flange ½" ASME, stainless steel 1.4571 (316Ti) (pressure rating as process flange) |                                                                                                          | NBK-03/06                                 |
| E8                                                        | Drain flange ¾" ASME, stainless steel 1.4571 (316Ti) (pressure rating as process flange) |                                                                                                          | NBK-03/06                                 |
| E9                                                        | Drain flange 1" ASME, stainless steel 1.4571 (316Ti) (pressure rating as process flange) |                                                                                                          | NBK-03/06                                 |

## Options (continuation)

| Code                                                                                        | Description                                                                                                                             | Sketch/picture                                                                      | Availability             |
|---------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------|
| B3                                                                                          | Drain ball valve KUG-ZER15, G½ female, max. 180 °C                                                                                      |   | NBK-03/06/07             |
| B2                                                                                          | Drain ball valve KUG-ZEN15, ½" NPT female, max. 180 °C                                                                                  |                                                                                     | NBK-03/06/07             |
| F1                                                                                          | Drain valve NAD-MMR15, G½, stainless steel 1.4571, max. temp.: +120 °C                                                                  |   | NBK-03/06                |
| F2                                                                                          | Drain valve NAD-MMN15, ½" NPT, stainless steel 316Ti, max. temp.: +120 °C                                                               |                                                                                     | NBK-03/06                |
| DS                                                                                          | Drain socket DN15                                                                                                                       | see sketch                                                                          | NBK-03                   |
| D2                                                                                          | Drain valve NAD-MMN15, ½" NPT, horizontally mounted, stainless steel 1.4571 (316Ti) , max. temp.: +120 °C                               |   | NBK-03/06                |
| D3                                                                                          | Drain valve NAD-MMR15, G½, horizontally mounted, stainless steel 1.4571 (316Ti) , max. temp.: +120 °C                                   |                                                                                     | NBK-03/06                |
| RF <sup>1)</sup>                                                                            | Dead space free version DN25, stainless steel 1.4571 (pressure rating as process flange)                                                |   | NBK-06                   |
| RA <sup>1)</sup>                                                                            | Dead space free version 1" ASME, stainless steel 31.4571 (316Ti) (pressure rating as process flange)                                    |                                                                                     | NBK-03/06                |
| Process connection options                                                                  |                                                                                                                                         |                                                                                     |                          |
| ST                                                                                          | 1 x process connection side, 1 process connection vertical on top                                                                       | see sketch                                                                          | NBK-03/06/07/10          |
| TS                                                                                          | 1 x process connection side, 1 process connection vertical at bottom                                                                    | see sketch                                                                          | NBK-03/06/07/10          |
| TT                                                                                          | 2 x process connection vertical, up to DN25 or 1" ASME                                                                                  | see sketch                                                                          | NBK-03/06/07/10          |
| Scales                                                                                      |                                                                                                                                         |                                                                                     |                          |
| (Ball displays are always delivered with scales, see technical data/ sketch for resolution) |                                                                                                                                         |                                                                                     |                          |
| MV                                                                                          | Scale made of stainless steel 1.4301 (only with ball display model KP/KM/KF, standard with model KG)                                    | see sketch                                                                          | NBK-03/06/07/10/31/32/33 |
| M1                                                                                          | Measuring scale, medium temperature -40 °C ... +400 °C, engraved scale made of aluminium                                                | see sketch                                                                          | NBK-03/06/07/10/31/32/33 |
| M2                                                                                          | Measuring scale, medium temperature -40 °C ... +150 °C, scale backing made of aluminium with polyester foil                             | see sketch                                                                          | NBK-03/06/07/10/31/32/33 |
| Thermal screening                                                                           |                                                                                                                                         |                                                                                     |                          |
| N                                                                                           | Thermal screening for sensor                                                                                                            | see sketch                                                                          | NBK-03/06/07/10/31/32/33 |
| Electrical outputs                                                                          |                                                                                                                                         |                                                                                     |                          |
| MU <sup>2)</sup>                                                                            | Option with connection box at bottom, for easy access to connection box                                                                 |                                                                                     | NBK-03/06/07/10          |
| MS <sup>2)</sup>                                                                            | Option and connection box at 100 mm distance, max. medium temperature = +300 °C (Thermal screening option N mandatory with this option) |                                                                                     | NBK-03/06/07/10          |
| Display options                                                                             |                                                                                                                                         |                                                                                     |                          |
| LE                                                                                          | Aluminium die-cast housing, LED digital display, connection box at bottom (only in combination with transmitter option L)               |  | NBK-03/06/07/10          |
| LC                                                                                          | Aluminium die-cast housing, LCD digital display, connection box at bottom (only in combination with transmitter option L)               | as LE, however with LCD display                                                     | NBK-03/06/07/10          |
| KE                                                                                          | Aluminium die-cast housing, LED digital display, connection box at bottom (only in combination with transmitter option K)               |  | NBK-03/06/07/10          |
| KC                                                                                          | Aluminium die-cast housing, LCD digital display, connection box at bottom (only in combination with transmitter option K)               | as KE, however with LCD display                                                     | NBK-03/06/07/10          |

<sup>1)</sup> On request<sup>2)</sup> Only in addition with optional sensor/transmitter



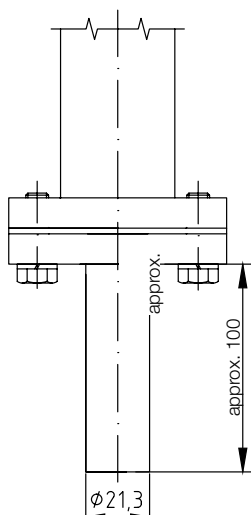
**Options** (continuation)

| Code                        | Description                                                                                               | Sketch/picture | Availability             |
|-----------------------------|-----------------------------------------------------------------------------------------------------------|----------------|--------------------------|
| <b>Additional options</b>   |                                                                                                           |                |                          |
| <b>A</b>                    | Connection flange for 2-part version (not possible with sensor), split roller display and scale possible. | see sketch     | NBK-03/06/07/10          |
| <b>HL</b>                   | Retaining plate, centric between process connections, necessary from L > 5000 mm (alternative option HF)  | see sketch     | NBK-03/06/07/10/31/32/33 |
| <b>HF</b>                   | Retaining flange, centric between process connections, necessary from L > 5000 mm (alternative option HL) | see sketch     | NBK-03/06/07/10/31/32/33 |
| <b>Tests / certificates</b> |                                                                                                           |                |                          |
| <b>P</b>                    | Radiographic examination DIN 54 111 T1 (only for V-seam)                                                  | -              | NBK-03/06/07/10/31/32/33 |
| <b>Q</b>                    | Dye penetration test DIN EN 571-1                                                                         | -              | NBK-03/06/07/10/31/32/33 |
| <b>X</b>                    | Pressure test with water 1.5 x PN                                                                         | -              | NBK-03/06/07/10/31/32/33 |
| <b>Z</b>                    | Material certificate 3.1 acc. to EN 10204                                                                 | -              | NBK-03/06/07/10/31/32/33 |
| <b>MR</b>                   | Material acc. to NACE MR 0103/ISO15156 (MR0175), Declaration of conformance                               | -              | NBK-03/06/07/10/31/32/33 |
| <b>WV</b>                   | Positive Material Identification (PMI)                                                                    | -              | NBK-03/06/07/10/31/32/33 |
| <b>SF</b>                   | Oil and fat free                                                                                          | -              | NBK-03/06/07/10/31/32/33 |

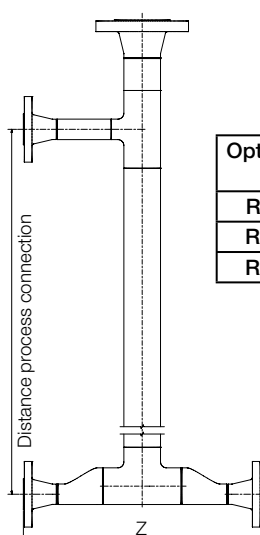
**Note:** Please pay attention to max. permissible temperature limits of individual components!

## Sketches of selected options

Option DS

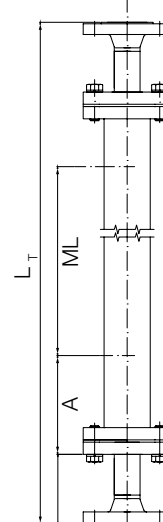


Option RF/RA

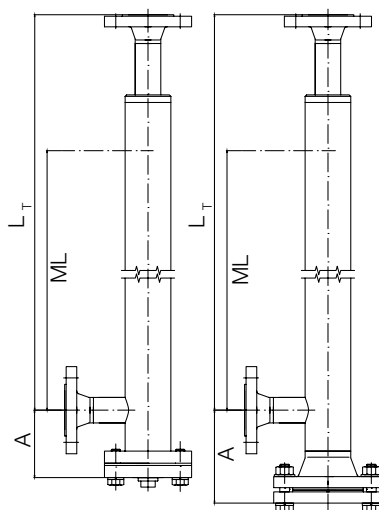


| Option | Process connection below | Dimension Z |
|--------|--------------------------|-------------|
| RF     | V-flange DN25 PN40       | approx. 360 |
| RA     | V-flange CI 150 1"       | approx. 390 |
| RA     | V-flange CI 300 1"       | approx. 405 |

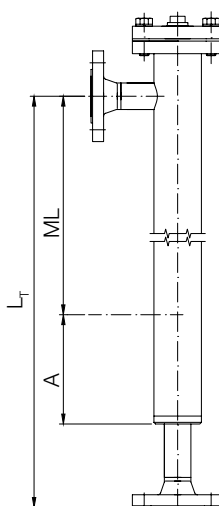
Option TT



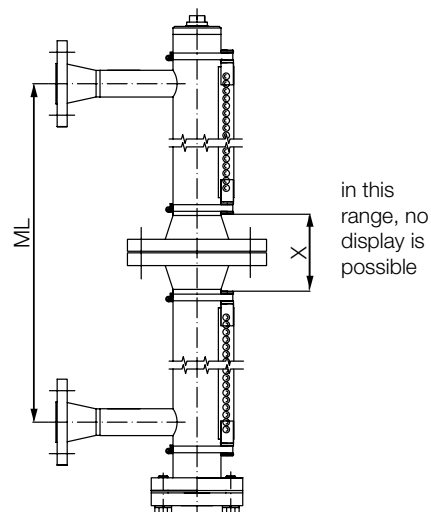
Option ST



Option TS



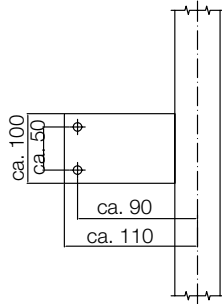
Option A



| Model  | Dimension X |
|--------|-------------|
| NBK-03 | 92          |
| NBK-06 | 98          |
| NBK-07 | 127         |
| NBK-10 | 139         |

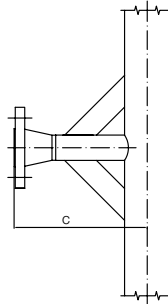
### Option HL

(centred to dimens. L)



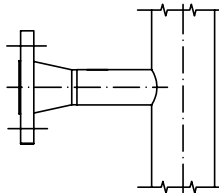
### Option HF

(centred to dimens. L)

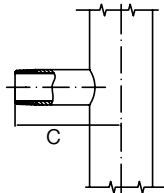


### Options process connection

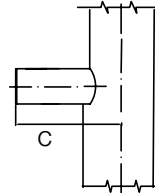
#### Option F/A



#### Option R/N

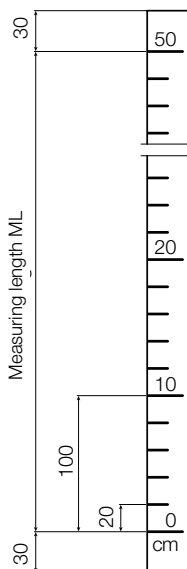


#### Option S



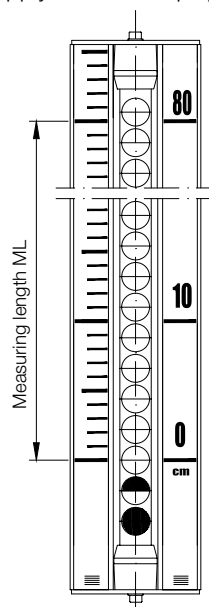
### Measuring scale, aluminium

Option M1 - engraved scale  
Option M2 - polyester foil



### Measuring scale screen print st. steel carrier

(standard scope of supply with ball display)



### Float models (closed design)

| Model           | min. density [kg/dm³]                                          | Material        |
|-----------------|----------------------------------------------------------------|-----------------|
| A               | 1.0                                                            | Titan           |
| B               | 0.9                                                            | Titan           |
| C               | 0.8                                                            | Titan           |
| D               | 0.7                                                            | Titan           |
| E               | 0.6                                                            | Titan           |
| F*              | 0.54                                                           | Titan           |
| V               | 1.0                                                            | stainless steel |
| W               | 0.8                                                            | stainless steel |
| H               | 0.8                                                            | CF340           |
| Interface float | min. density difference = 150 kg/dm³ (indicate both densities) | Titan           |

\*Option N not possible. Not for NBK-10, special float for special medium densities (taring) or reduced length A on request

## ATEX version

Order Details (Example: NBK-03 F15 00 1 A 0)

| Model                     | Rated pressure                                                                                      | Connection                                                                                                                                        | Nominal size                                                                                                    | Roller/ ball indicator                                                                                                                                                                                                                                       | Sensor/ Transmitter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Medium density float                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Options                                                                               |
|---------------------------|-----------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| NBK-03...                 | PN 16/Class 150                                                                                     | F = DIN-flange<br>A = ASME-flange<br>R <sup>3)</sup> = R-male thread<br><br>N <sup>3)</sup> = NPT-male thread<br>S <sup>4)</sup> =wel-ding-nipple | 15 = DN 15, ½"<br>20 = DN 20, ¾"<br>25 = DN 25, 1"<br><br>32 = DN 32, 1 ¼"<br>40 = DN 40, 1½"<br>50 = DN 50, 2" | 00 = without<br>RP = POM roller<br>RK = ceramic roller<br><br>KP = ball display with Plexiglas®-sight tube<br><br>KM = ball display with Makrolon®-sight tube<br><br>KF = like KM but with oil filling<br><br>KG = ball display with borosilicate sight tube | 1 = without electrical attached parts ATEX II 1G / 2G D<br><br>2 <sup>1)</sup> = with reed contact chain II 1GD Exia IIC T6<br><br>E <sup>1)</sup> = immersible magnetic probe (reed chain)/ 4...20 mA, 2-wire, ATEX Exia<br><br>R = immersible magnetic probe (reed chain)/ 4...20 mA, HART®, 2-wire, ATEX Exia<br><br>4 = with reed contact chain ATEX II 1/2G Exd IIC T6 Ga/Gb<br><br>L = immersible magnetic probe (reed chain)/ 4...20 mA, 2-wire, ATEX Exd<br><br>K = immersible magnetic probe (reed chain)/ 4...20 mA, HART®, 2-wire, ATEX Exd<br><br>6 <sup>8)</sup> = magnetostrictive probe 4...20 mA, 1 mm, Ex ia<br>8 <sup>8)</sup> = magnetostrictive probe 4...20 mA HART®, 1 mm, Ex ia<br>P <sup>8)</sup> = magnetostrictive probe 4...20 mA, 0.1mm, Exd<br>Q <sup>8)</sup> = magnetostrictive probe 4...20 mA HART®, 0,1 mm, Exd<br>S <sup>8)</sup> = magnetostrictive probe 4...20 mA, 0.1 mm, Ex d ia<br>U <sup>8)</sup> = magnetostrictive probe 4...20 mA HART®, 0,1 mm, Ex d ia | A = 1.0 kg/dm³, titan for viscosity up to 200 cP<br>B = 0.90 kg/dm³, titan for viscosity up to 200 cP<br>C = 0.80 kg/dm³, titan for viscosity up to 200 cP<br>D = 0.70 kg/dm³, titan for viscosity up to 200 cP<br>E = 0.60 kg/dm³, titan for viscosity up to 200 cP<br>F <sup>6)</sup> = 0.54 kg/dm³, titan for viscosity up to 200 cP<br>V <sup>6)</sup> = 1.0 kg/dm³, stainless steel for viscosity up to 460 mm²/s<br>W <sup>6)</sup> = 0.8 kg/dm³, stainless steel for viscosity up to 460 mm²/s<br>Y = special density, titan (specify in clear text) | 0 = without options or options as in list and description (see separate options list) |
| NBK-06...                 | PN 40/Class 300                                                                                     |                                                                                                                                                   |                                                                                                                 |                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                       |
| NBK-07...                 | PN 63/Class 400                                                                                     |                                                                                                                                                   |                                                                                                                 |                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                       |
| NBK-10...                 | PN 100/Class 600                                                                                    |                                                                                                                                                   |                                                                                                                 |                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                       |
| NBK-31...                 | PN 160/Class 900                                                                                    | F = DIN-flange<br>A = ASME-flange                                                                                                                 | 15 = DN 15, ½"<br>20 <sup>7)</sup> = DN 20, ¾"<br>25 = DN 25, 1"                                                |                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | H = high pressure float, CF340 viscosity up to 200cP (medium S. G.: ≥0.8; specify in clear text writing)                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                       |
| NBK-32...                 | PN 250/Class 1500                                                                                   |                                                                                                                                                   |                                                                                                                 |                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                       |
| NBK-33...                 | PN 320                                                                                              |                                                                                                                                                   |                                                                                                                 |                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                       |
| NBK-RA                    | Limit contact, encapsulated                                                                         |                                                                                                                                                   |                                                                                                                 |                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                       |
| NBK-RE01U03 <sup>9)</sup> | Limit contact, bistable, Change-over contact, ATEX, Exi, max. +120°C, 3 m PVC cable, weight: 363 g  |                                                                                                                                                   |                                                                                                                 |                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                       |
| NBK-RE01U06 <sup>9)</sup> | Limit contact, bistable, Change-over contact, ATEX, Exi, max. +120°C, 6 m PVC cable, weight: 567 g  |                                                                                                                                                   |                                                                                                                 |                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                       |
| NBK-RE01U10 <sup>9)</sup> | Limit contact, bistable, Change-over contact, ATEX, Exi, max. +120°C, 10 m PVC cable, weight: 839 g |                                                                                                                                                   |                                                                                                                 |                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                       |
| NBK-RD01U03 <sup>9)</sup> | Limit contact, bistable, Change-over contact, ATEX, Exd, 3 m silicone cable, weight: 544 g          |                                                                                                                                                   |                                                                                                                 |                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                       |
| NBK-RD01U06 <sup>9)</sup> | Limit contact, bistable, Change-over contact, ATEX, Exd, 6 m silicone cable, weight: 865 g          |                                                                                                                                                   |                                                                                                                 |                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                       |
| NBK-RD01U10 <sup>9)</sup> | Limit contact, bistable, Change-over contact, ATEX, Exd, 10 m silicone cable, weight: 1293 g        |                                                                                                                                                   |                                                                                                                 |                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                       |

<sup>1)</sup> See separate ATEX certification of model MM-...

<sup>3)</sup> Only possible with nominal size code 15/20/25/32 (female thread on request)

<sup>4)</sup> Only possible with nominal size code 15/20/25/32

<sup>5)</sup> Only possible with NBK-03

<sup>6)</sup> Not possible with NBK-10

<sup>7)</sup> Only possible for connection A, ASME

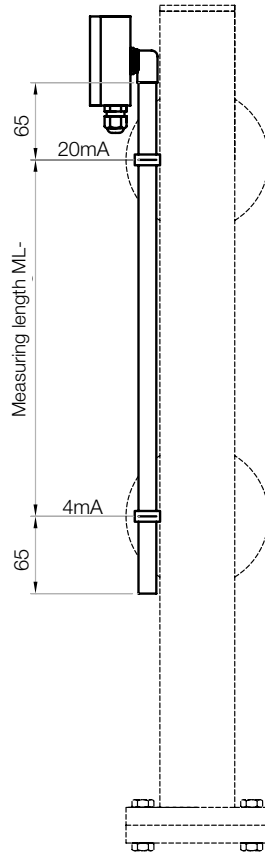
<sup>8)</sup> Model NMB-TR00UAxxx0 (see separate data sheet for model NMB) Not possible with NBK-31/-32/-33

<sup>9)</sup> Add Suffix „/NBK“, when ordered together with NBK

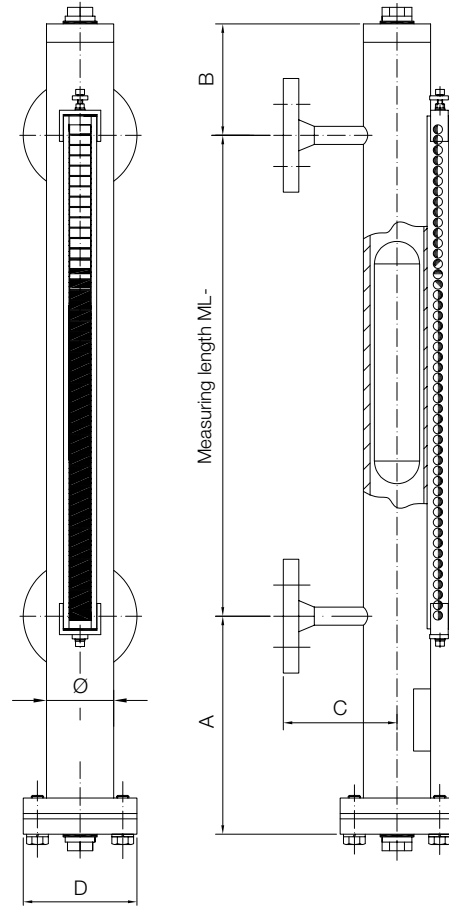
Measuring length L, density and temperature please specify in clear text!

### Dimensions [mm]

#### NBK-ATEX version reed chain Model 2

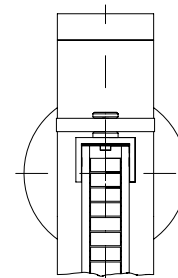


#### NBK



### Dimensions NBK [mm]

| Model     | Rated pressure | Ø    | B   | D   | x15...x25 | x32 | C   |     |     |     |
|-----------|----------------|------|-----|-----|-----------|-----|-----|-----|-----|-----|
|           |                |      |     |     |           |     | F40 | A40 | F50 | A50 |
| NBK-03... | PN 16          | 60.3 | 130 | 115 | 110       | 110 | 130 | -   | 140 | -   |
|           | Class 150      |      |     |     |           |     | -   | 145 | -   | 160 |
| NBK-06... | PN 40          |      |     | 180 | 150       | 150 | -   | 155 | -   | 165 |
|           | Class 300      |      |     |     |           |     | -   | 160 | -   | 175 |
| NBK-07... | PN 63          | 71   | 150 | 195 | 180       | 180 | 145 | -   | 160 | -   |
|           | Class 400      |      |     |     |           |     | -   | 160 | -   | 175 |
| NBK-10... | PN 100         |      |     | 195 | 180       | 180 | 145 | -   | 165 | -   |
|           | Class 600      |      |     |     |           |     | -   | 160 | -   | 175 |
| NBK-31... | PN 160         | 76.1 | 170 | 265 | 210       | 210 |     |     |     |     |
|           | Class 900      |      |     |     |           |     |     |     |     |     |
| NBK-32... | PN 250         | 76.1 | 170 | 265 | 210       | 210 |     |     |     |     |
|           | Class 1500     |      |     |     |           |     |     |     |     |     |
| NBK-33... | PN 320         | 76.1 | 170 | 265 | 210       | 210 |     |     |     |     |

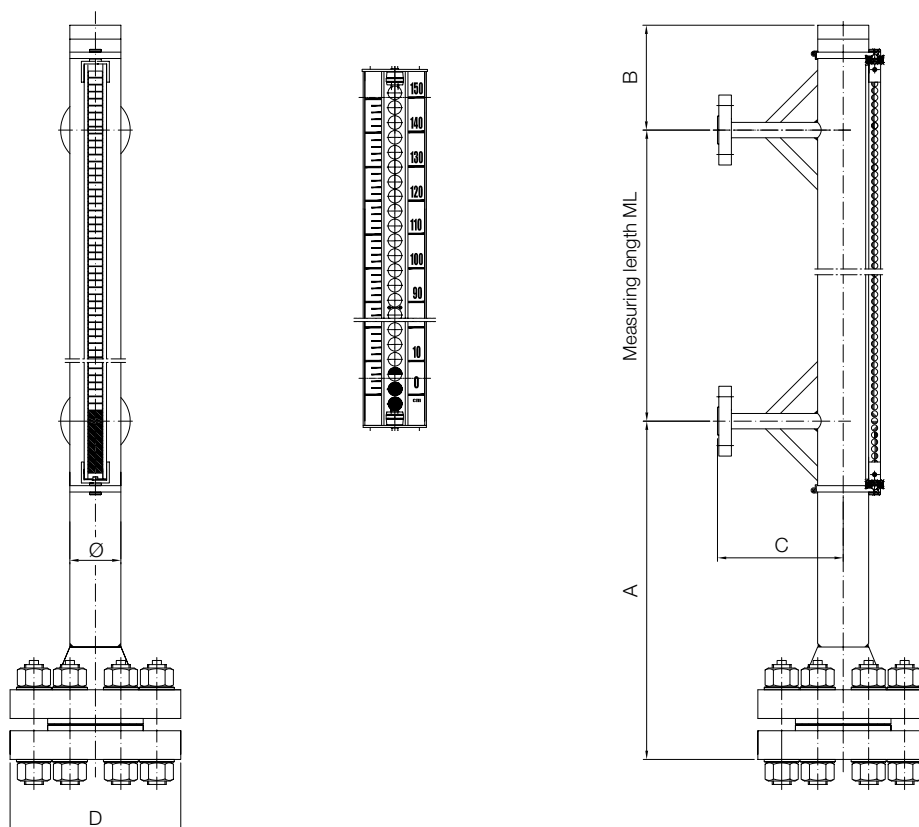


### Clearance dimension A [mm]

| Model     | Rated 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 / Class 150   | 320            | 320          | 320          | 320          | 320          | 210        |
| NBK-06... | PN 40 / Class 300   | 410            | 410          | 320          | 320          | 320          | 210        |
| NBK-07... | PN 63 / Class 400   | 410            | 410          | 320          | 320          | 320          | 210        |
| NBK-10... | PN 100 / Class 600  | -              | 700*         | 410**        | 320          | 320          | 210        |
| NBK-31... | PN 160 / Class 900  | -              | -            | -            | 540          | 415          | 345        |
| NBK-32... | PN 250 / Class 1500 | -              | -            | -            | 540          | 415          | 345        |
| NBK-33... | PN 320              | -              | -            | -            | 595          | 460          | 385        |

\* 800 for units with thermal screening; \*\*450 for units with thermal screening

## NBK-31/32/33 roller/ball indicator



## Pressure-/temperature-assignment for flange made of stainless steel

| DIN EN 1092-1:2008-09 (extract)                 |                  |                                        |       |      |      |      |      |      |      |
|-------------------------------------------------|------------------|----------------------------------------|-------|------|------|------|------|------|------|
| PN                                              | Material         | Maximum allowable temperature TS in °C |       |      |      |      |      |      |      |
|                                                 |                  | RT                                     | 100   | 150  | 200  | 250  | 300  | 350  | 400  |
| 6<br>16<br>40<br>63<br>100<br>160<br>250<br>320 | 1.4571<br>(15E0) | Maximum allowable pressure PS in bar   |       |      |      |      |      |      |      |
|                                                 |                  | 6.0                                    | 6.0   | 5.8  | 5.6  | 5.3  | 5.0  | 4.8  | 4.6  |
|                                                 |                  | 16.0                                   | 16.0  | 15.6 | 14.9 | 14.1 | 13.3 | 12.8 | 12.4 |
|                                                 |                  | 40.0                                   | 40.0  | 39.2 | 37.3 | 35.4 | 33.3 | 32.1 | 31.2 |
|                                                 |                  | 63.0                                   | 63.0  | 61.8 | 58.8 | 55.8 | 52.5 | 50.7 | 49.2 |
|                                                 |                  | 100.0                                  | 100.0 | 98.0 | 93.3 | 88.5 | 83.3 | 80.4 | 78.0 |
|                                                 |                  | 160.0                                  | 160.0 |      |      |      |      |      |      |
|                                                 |                  | 250.0                                  | 250.0 |      |      |      |      |      |      |
|                                                 |                  | 320.0                                  | 320.0 |      |      |      |      |      |      |

Remarks:

RT = -10 °C up to +50 °C

TS = maximum allowable temperature in °C, temperature which is defined by pressure equipment manufacturer, for which the pressure equipment is designed.

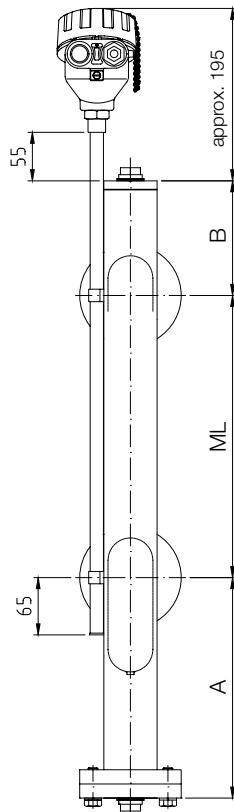
PS = maximum allowable pressure, pressure which is defined by pressure equipment manufacturer, for which the plant is designed. 1.4571 (15E0) was calculated with help of creep resistance values of 100 000 h acc. to EN-Material Norms considering the safety value.

At intermediate temperatures e.g. 120 °C, a linear interpolation is to be carried out between 2 following creep resistance values, e.g. of 100 °C and 150 °C.

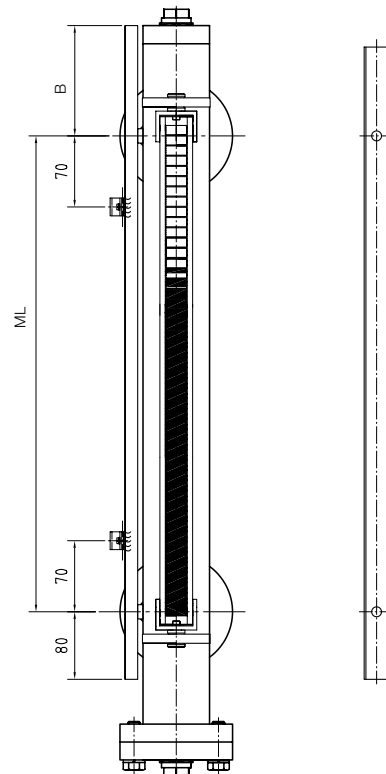
The pressure/temperature assignment is valid for the following flange models with sizes up to DN 100 used by KOBOLD.

Model No. and nomination: 05 Blind flange, 11 Welding neck flange

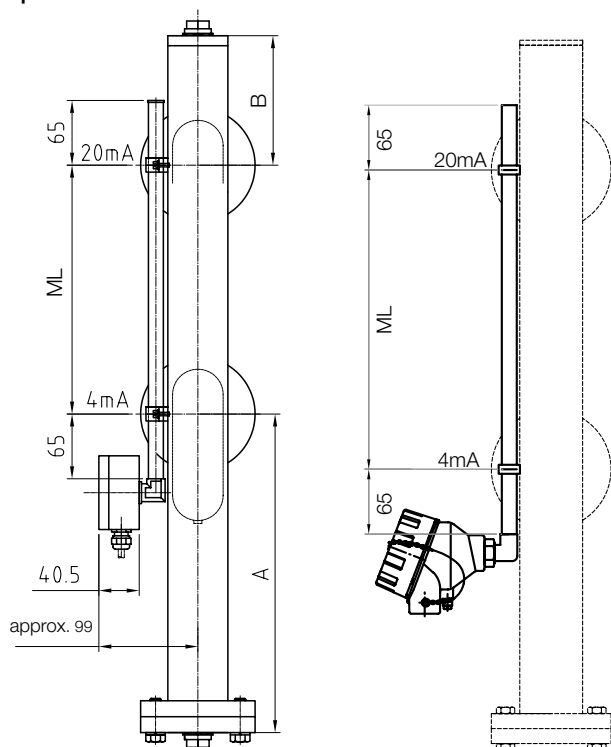
NBK-... with transmitter options E/R/B/4/L/K/N  
(not possible with options VA/VF)



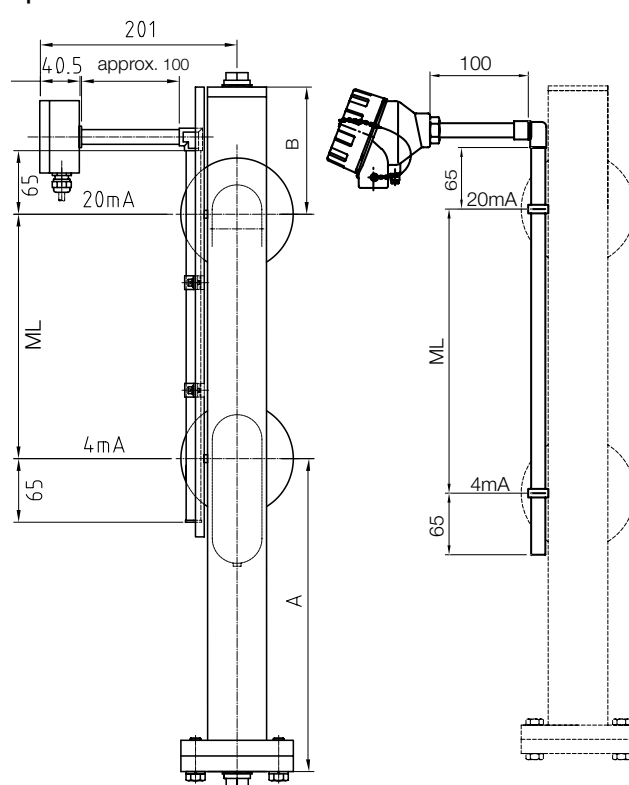
NBK-... with thermal screen option N



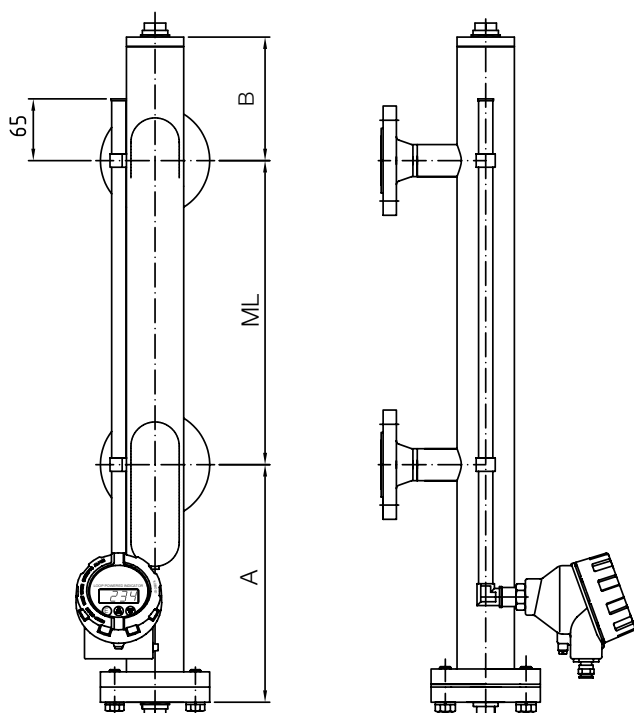
NBK-... with transmitter options 2/E/R/B/4/L/K/N and option MU



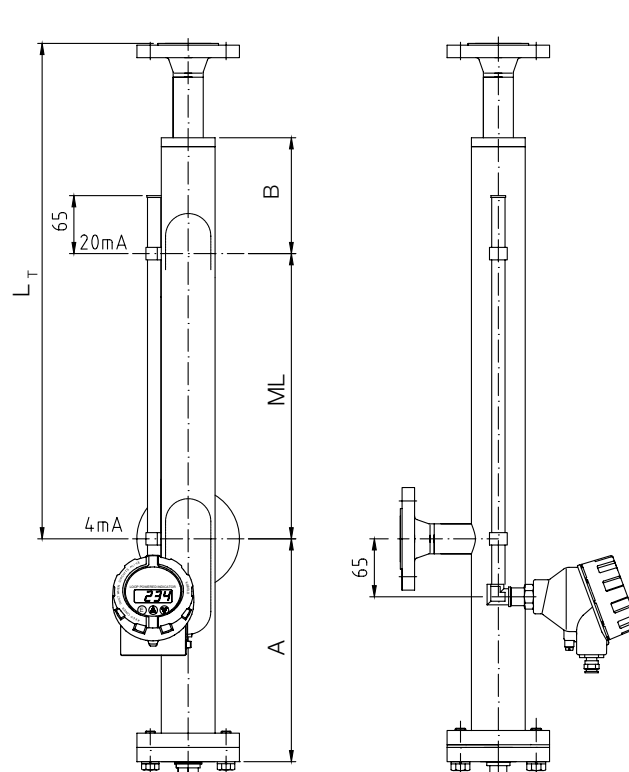
NBK-... with transmitter options 2/E/R/B/4/L/K/N and option MS



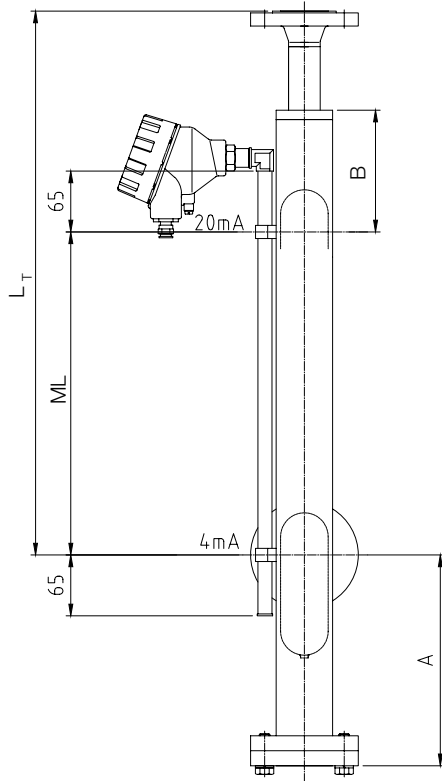
NBK-... with transmitter options E/R/L/K/ and display options LE/KE or LC/KC



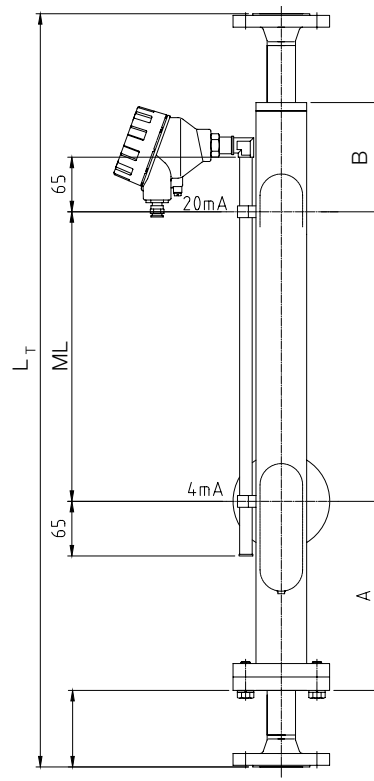
NBK-... with transmitter options E/R/L/K/ and display options LE/KE or LC/KC and option ST



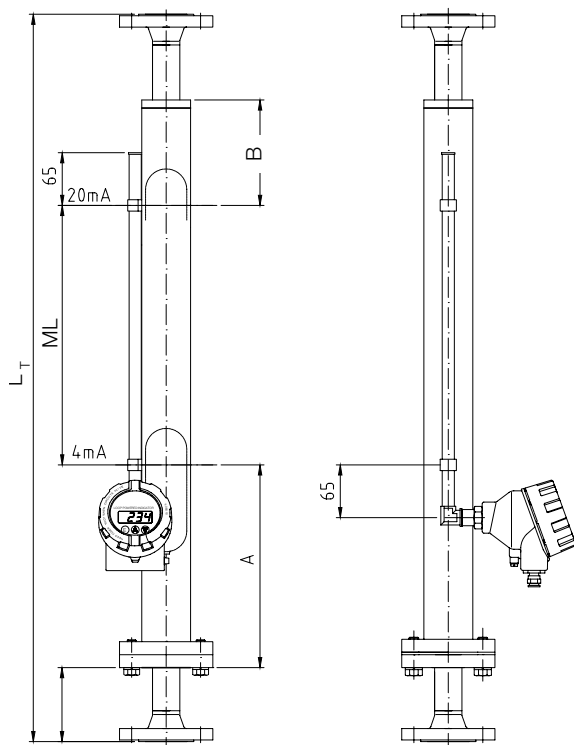
**NBK-... with transmitter**  
model E/R/B/L/K/N option ST



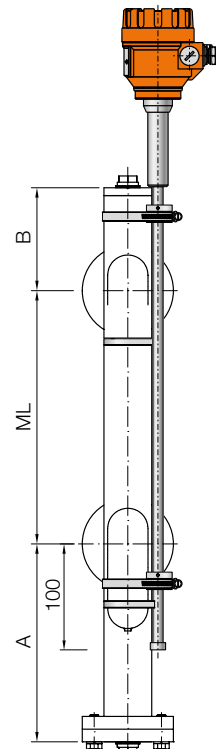
**NBK-... with transmitter**  
model E/R/B/L/K/N option TT



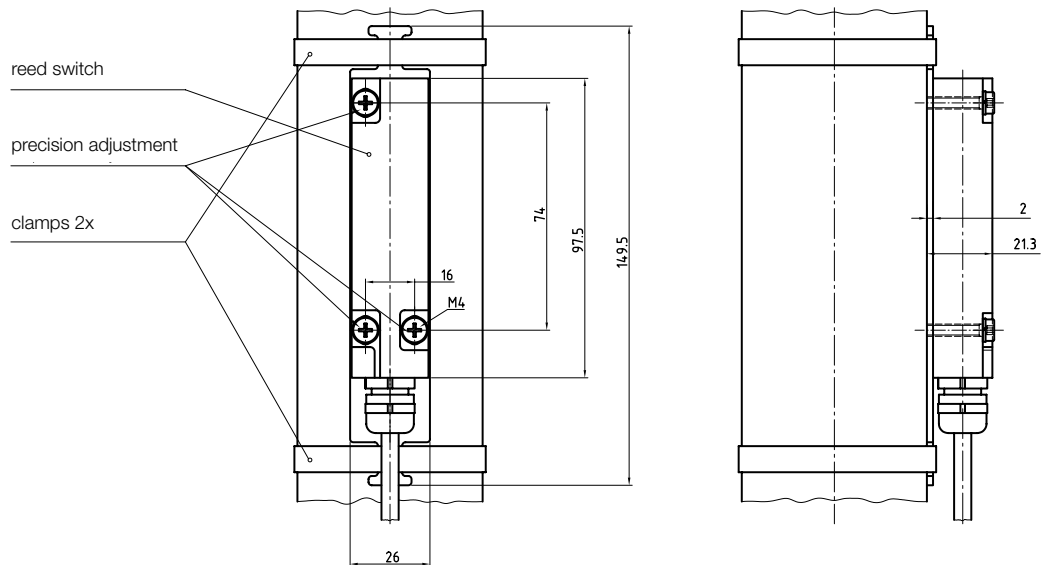
**NBK-... with transmitter display options**  
LE/KE or LC/KC and option TT



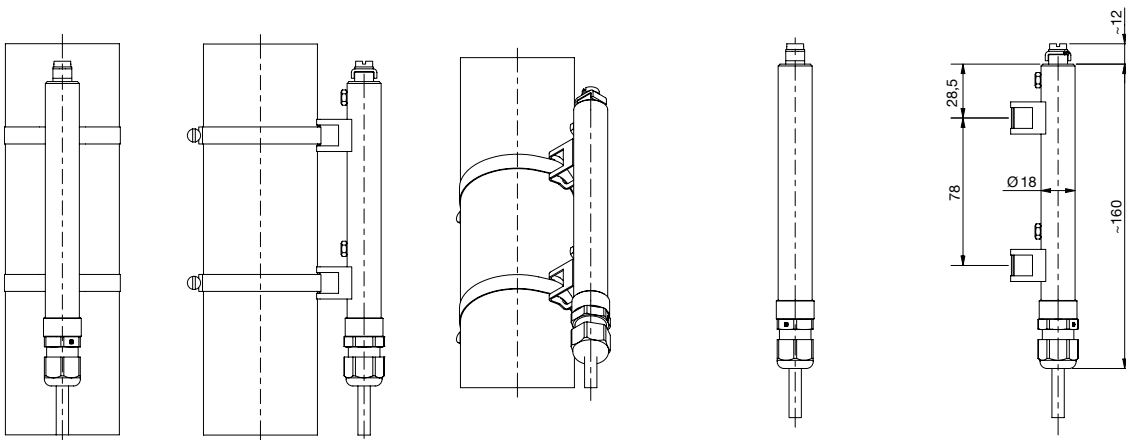
**NBK-... with transmitter model 6/8/P/Q/S/U**



### NBK-RA



### NBK-RE



### NBK-RD

