



Bypass Level Indicators



measuring
•
monitoring
•
analysing

NBK -ATEX, -GL
-03, -06, -07, -10



- Measuring length:
single-part max. 5500 mm
über 5500 mm two-part or multipart
- Pressure: max. PN100/Class 600
- Temperature:
-40 °C ... +400 °C (ceramic rollers)
0 °C ... +120 °C (PP-rollers)
- Viscosity: max. 200 mm²/s Standard
(Option: 460 mm²/s, only NBK-03)
- Connection:
DIN flange DN 15 ... DN 50
ANSI flange ½" ... 2"
R- and NPT-threads
welding nipple DN 25
- Material:
stainless steel 1.4571
- Insensitive
magnet roller without auxiliary energy
- Limit contacts
- Analogue output, HART®,
PROFIBUS® PA,
Foundation™ Fieldbus



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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 a 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 2G Ex mb IIC T6/T5 Gb
 Limit contact NBK-RA: II 2D Ex mb IIIC IP67 T 105 °C Db

Immersible magnetic probe
 (Reed contact chain): II 1G EEx ia IIC / IIB T6
 Transmitter for option 2
 reed chain: II (1) G [EEx ia] IIC

GL version

In the pressure on stages PN 16 (NBK-03) and PN 40 (NBK-06) the bypass level indicators are available with GL approval (Germanischer Lloyd).
 Certificate-No. GL: 79 786-95 HH

Magnetic roller

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

Transmitter

To remotely transmit the level a transmitter with a chain of resistors or a magnetostrictive transducer can be mounted outside the bypass tube. A continuous standard signal of 4 - 20 mA is generated by means of a fitted transmitter. This standard signal can then be displayed on analogue or digital indicating devices. Optionally, HART®, PROFIBUS®-PA or Foundation™ Fieldbus. Communication protocols are possible.

Limit contacts

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

Applications

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

Technical Data

Process connection: flange DIN EN1092-1 type 11, forme B
 DN 15, DN 20, DN 25, DN 32, DN 40, DN 50,
 flange ASME B 16.5 RF-2003
 ½", ¾", 1", 1¼", 1½", 2"
 R-thread DIN EN 10226-1
 ½", ¾", 1", 1¼", 1½", 2"
 NPT ANSI/ASME B 1.20.1
 ½", ¾", 1", 1¼", 1½", 2"
 Bypass tube: Ø 60.3 mm, 1.4571
 NBK-03/06/07: flat gasket: <200 °C; PTFE, ≥200 °C, Klingerit SIL
 NBK-10: reinforced graphite
 Operating pressure: PN 16/40/63/100
 Operat. temperature: -40 °C ... +120 °C (PP-rollers)
 -40 °C ... +400 °C (ceramic rollers)
 Viscosity: max. 200 mm²/s standard
 (Option: up to max. 460 mm²/s for NBK-03)
 Max. meas. length: up to 5 500 mm single-part;
 longer two-part or multipart
 Overall length: see dimension drawing

Roller display RP (max. length 5 500 mm)

Material roller: Polypropylene
 Display glass: Plexiglas®
 Carrier frame material: Aluminium, brown anodised
 Operat. temperature: -40 °C ... 120 °C
 Protection: IP54
 Approval: ATEX and GL

Roller display RK (max. length 5 500 mm)

Material roller: Ceramic
 Display glass: Borosilicate glass
 Carrier frame material: Aluminium, brown anodised
 Operat. temperature: -40 °C ... 400 °C
 Protection: IP54
 Approval: ATEX and GL

ATEX approval

ATEX limit contact, model NBK-RA

Contact operation: bistable changeover contact encapsulated
 Switching hysteresis: approx. 15 mm
 Max. switch capacity: 45 VA, 230 V_{AC/DC}, 0.6 A
 Temperature class: T6 / T5
 Max. ambient temp.: 70 °C / 85 °C
 Connection: 3 m PVC-cable
 Housing: metallic, cast
 (GD-ZN Al 4 Cu1)
 Protection: IP67
 ATEX marking: II 2G Ex mb IIC T6 / T5 Gb
 II 2D Ex mb IIIC IP67 T 105 °C Db



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

Contact operation:	bistable changeover contact
Switching hysteresis:	approx. 15 mm
Max. switching capacity:	80 VA; 250 V _{AC/DC} , 1 A
Resistance:	< 20 mΩ
Medium temperature:	max. 200 °C
Ambient temperature:	max. 145 °C
Housing:	Aluminium pressure-cast, terminal connection
Protection:	IP 65

Limit contact high temperature model NBK-RV200NO in conjunction with an external, intrinsically safe Isolated Switch Amplifier as »Simple Apparatus«

Sensor type:	contact
Switching function:	N/O, bistable
Medium temperature:	-104 °C ... +200 °C
Ambient temperature:	-40 °C ... +70 °C
Max. operating voltage	
U _{max} :	30 V _{AC/DC}
Max. load current I _{max} :	100 mA
Max. switch capacity	
P _{max} :	1,2 W
Housing:	Aluminium pressure-cast, terminal connection
Protection housing:	IP 65

Attention should be paid, that none of the three parameters U_{max}, I_{max} and P_{max} are allowed to be exceeded!

Limit contact model NBK-RV200NC in conjunction with an external, intrinsically safe Isolated Switch Amplifier as »Simple Apparatus«

Sensor type:	contact
Switching function:	N/C, bistable
Other data:	as for NBK-RV200NO

Limit contact model NBK-RN200NO in conjunction with an external, intrinsically safe Isolated NAMUR Switch Amplifier as »Simple Apparatus«

Sensor type:	NAMUR
Switching function:	N/O, bistable
Max. operating voltage	
U _{max} :	15 V _{DC}
Other data:	as for NBK-RV200NO

Limit contact model NBK-RN200NC in conjunction with an external, intrinsically safe Isolated NAMUR Switch Amplifier as »Simple Apparatus«

Sensor type:	NAMUR
Switching function:	N/C, bistable
Max. operating voltage	
U _{max} :	15 V _{DC}
Other data:	as for NBK-RV200NO

ATEX Reed contact resistor chain model: ... 2....

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

Max. voltage:	U _i = 24 V
Max. current:	I _i = 100 mA
Max. capacity:	P _i = see prototype verification certificate
Temperature class:	T1 ... T6 (see prototype verification certificate)
Resolution:	10 mm (ML < 2000 mm) 20 mm (ML < 2000 mm)
Housing:	Aluminium pressure-cast
Protection:	IP 65
ATEX marking:	Ex II 1G EEx ia IIC/IIB T6

ATEX Reed contact resistor chain options A/R/B only in connection with an external intrinsically safe power supply

Usage Reed Chain Resistance as 'Simple Apparatus' from zone 1

Option A

Transmitter model: 5333D

Common specifications:

Power supply:	8.0 ... 35 V _{DC}
Communication interface	Loop Link 5905

Linear resistance input: 0 ... 10 kΩ

Current Output:

Signal range:	4 ... 20 mA
Min. signal range:	16 mA
Updating time:	135 ms
Load resistance:	≤ (V _{vers} - 8) / 0.023 [Ω]



Sensor error detection:

Programmable:	3.5 ... 23 mA
NAMUR NE43 upscale:	23 mA
NAMUR NE43	
Downscale:	3.5 mA

Data for intrinsically safe current circuit: see instruction manual

U _i :	28 VDC
I _i :	120 mADC
P _i :	0.84 W
L _i :	10 μH
C _i :	1.0 nF

ATEX approval transmitter:

KEMA 03ATEX1535:	 II 1G Ex ia IIC T4 oder T6
	 II 1D Ex iaD
Max. ambient temp.: for T1...T4:	85 °C
Max. ambient temp.: for T5 and T6:	60 °C
Applicable in zone:	0,1, 2, 20, 21 or 22
Medium temperature:	-40 ... +120 °C (with option N up to 250 °C)
Ambient temperature:	-40 ... +80 °C
Resolution:	10 mm (ML < 2000 mm) 20 mm (ML ≥ 2000 mm)
Housing:	Aluminium pressure-cast
Protection:	IP 66

Option R

Transmitter model:	5335D
Common specifications:	
Power supply:	8.0 ... 30 V _{DC}
Communication interface:	Loop Link 5905A & HART®

Linear resistance input: 0...7 kΩ



Current Output:

Signal range:	4 ... 20 mA
Min. signal range:	16 mA
Updating time:	440 ms
Load resistance:	≤ (V _{vars} - 8) / 0.023 [Ω]

Sensor error detection:

(programmable)	3.5 ... 23 mA
Data for intrinsically safe current circuit:	see instruction manual

ATEX approval transmitter:

KEMA 03 ATEX 1537:	 II 1G Ex ia IIC T6 oder T4 Ga
	 II 1D Ex ia IIIC Da
Max. ambient temp.: for T1...T4:	85 °C
Max. ambient temp.: for T5 or T6:	60 °C
Applicable in zone:	1, 2, 20, 21 or 22
Medium temperature:	-40 ... +120 °C (with option N up to +250 °C)
Ambient temperature:	-40 ... +80 °C
Resolution:	10 mm (ML < 2000 mm) 20 mm (ML ≥ 2000 mm)
Housing:	Aluminium pressure-cast
Protection:	IP 66

Option B

Transmitter model:	5350B
Common specifications:	
Power supply:	9 ... 30 V _{DC}
Consumption:	< 11 mA
Isolation voltage, test / operation:	1.5 kV _{AC} / 50 V _{AC}
Signal / noise ratio:	min. 60 dB
Response time (programmable):	1 ... 60 s
Updating time:	< 400 ms
Dimensions:	Ø 44 x 20.2 mm

Linear resistance input: 0 ... 10 kΩ

Output:




FOUNDATION™ Fieldbus connection:

FOUNDATION™	
Fieldbus version:	ITK 4.6
FOUNDATION™	
F. capability:	Basic or LAS
FOUNDATION™	
F. function blocks:	2 analogue and 1 PID



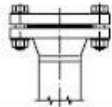
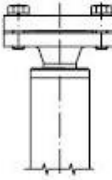
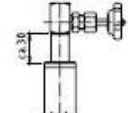


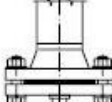
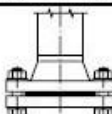
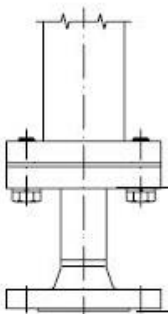
PROFIBUS® PA connection:

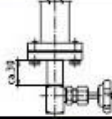
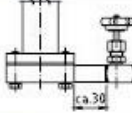
PROFIBUS® PA	
protocol standard:	EN 50170 vol. 2
PROFIBUS® PA	
function blocks:	2 analogue
Data for intrinsically safe current circuit:	see instruction manual

ATEX approval transmitter:

KEMA 02ATEX1318:	 II 1 G Ex ia IIC T4... T6 or
	 II 2 (1) G Ex ib [ia] IIC T4... T6
	 II 1 D Ex iaD
Applicable in zone:	1, 2, 20, 21 or 22
Medium temperature:	-40 ... +120 °C (with option N up to +250 °C)
Ambient temperature:	-40 ... +80 °C
Resolution:	10 mm (ML < 2000 mm) 20 mm (ML ≥ 2000 mm)
Housing:	Aluminium pressure-cast
Protection:	IP 66

Optionen

Code	Description	Sketch/picture	Availability	
Top bypass tube connections				
V0	Without vent plug		for NBK-03/06/07, standard for NBK-10	
VG	With vent plug G 1/2		for NBK-10, standard for NBK-03/06/07	
VF ¹⁾	Flange connection DN 50 (pressure rating as process flange)		NBK-03/06/07/10	
VA ¹⁾	Flange connection 2" ASME (pressure rating as process flange)		NBK-03/06/07/10	
V4	Vent flange DN 15, stainless steel 1.4571 (pressure rating as process flange)		NBK-03/06	
V5	Vent flange DN 20, stainless steel 1.4571 (pressure rating as process flange)		NBK-03/06	
V6	Vent flange DN 25, stainless steel 1.4571 (pressure rating as process flange)		NBK-03/06	
V7	Vent flange 1/2" ASME, stainless steel 316Ti (pressure rating as process flange)		NBK-03/06	
V8	Vent flange 3/4" ASME, stainless steel 316Ti (pressure rating as process flange)		NBK-03/06	
V9	Vent flange 1" ASME, stainless steel 316Ti (pressure rating as process flange)		NBK-03/06	
V2	vent valve NAD-MMN15, 1/2" NPT, stainless steel 316Ti, max. temp.: +120°C			NBK-03/06
V3	Vent valve NAD-MMR15, G 1/2, stainless steel 1.4571, max. temp.: +120°C			NBK-03/06
¹⁾ not possible with transmitter options A/R/B				
Bottom bypass tube connections				
D0	Without drain plug		NBK-03/06	
DG	With drain plug G 1/2	 NBK-03/06 NBK-07/10	NBK-10, standard for NBK-03/06/07	
DF	Flange connection DN 50 (pressure rating as process flange), mit Ablassschraube G1/2		NBK-03/06	
DA	Flange connection 2" ASME (pressure rating as process flange), with drain plug 1/2" NPT		NBK-03/06	
DC	Flange connection DN 50 (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 DN 15, stainless steel 1.4571 (pressure rating as process flange)		NBK-03/06	
E5	Drain flange DN 20, stainless steel 1.4571 (pressure rating as process flange)		NBK-03/06	
E6	Drain flange DN 25, stainless steel 1.4571 (pressure rating as process flange)		NBK-03/06	
E7	Drain flange 1/2" ASME, stainless steel 316Ti (pressure rating as process flange)		NBK-03/06	
E8	Drain flange 3/4" ASME, stainless steel 316Ti (pressure rating as process flange)		NBK-03/06	
E9	Drain flange 1" ASME, stainless steel 316Ti (pressure rating as process flange)		NBK-03/06	

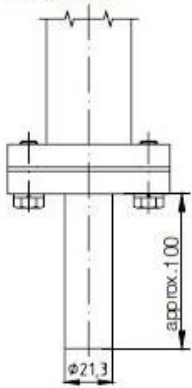
Code	Description	Sketch/picture	Availability
F1	Drain valve NAD-MMR15, G $\frac{1}{2}$, stainless steel 1.4571, max. temp.: +120°C		NBK-03/06
F2	Drain valve NAD-MMN15, $\frac{1}{2}$ " NPT, stainless steel 316Ti, max. temp.: +120°C		NBK-03/06
DS	Drain socket DN15	see sketch	NBK-03
D2	Drain valve NAD-MMN15, $\frac{1}{2}$ " NPT, horizontally mounted, stainless steel 316Ti, max. temp.: +120°C		NBK-03/06
D3	Drain valve NAD-MMR15, G $\frac{1}{2}$, horizontally mounted, stainless steel 316Ti, max. temp.: +120°C		NBK-03/06
Process connection options			
ST	1 x process connection side, 1 process connection vertical on top	see sketch	NBK-03/06/07
TS	1 x process connection side, 1 process connection vertical at bottom	see sketch	NBK-03/06/07
TT	2 x process connection vertical, up to DN25 or 1" ASME	see sketch	NBK-03/06
Scales			
(Ball displays are always delivered with scales, see technical data/ sketch for resolution)			
M1	Measuring scale, medium temperature -40°C ... +400°C, engraved scale made of aluminium	see sketch	NBK-03/06/07/10
M2	Measuring scale, medium temperature -40°C ... +150°C, scale backing made of aluminium with polyester foil	see sketch	NBK-03/06/07/10
Thermal screening			
N	Thermal screening for sensor	see sketch	NBK-03/06/07/10

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

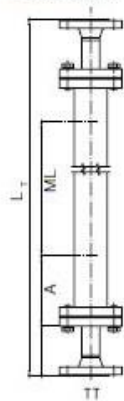
Note: Please pay attention to max. permissible temperature limits of individual components

Sketches of selected options

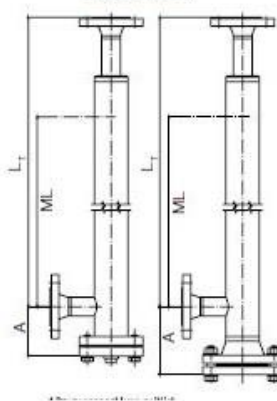
Option DS



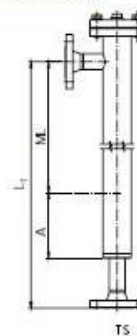
Option TT



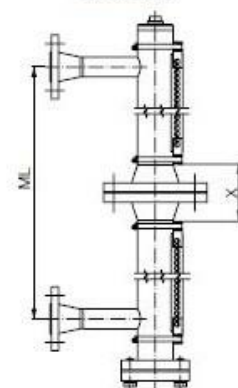
Option ST



Option TS



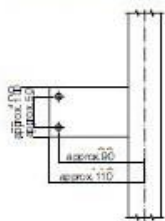
Option A



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

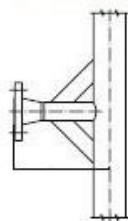
Option HL

(centred to dimens. L)



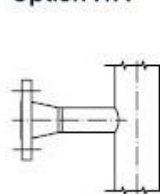
Option HF

(centred to dimens. L)

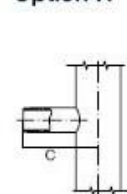


Options process connection

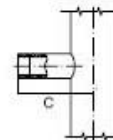
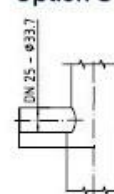
Option F/A



Option R



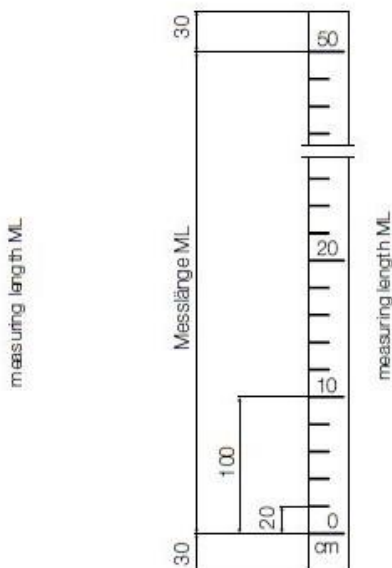
Option S



Measuring scale, aluminium

Option M1 - engraved scale

Option M2 - polyester foil



Float models (closed design)

Model	min. density [kg/dm ³]	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
Interface float	min. density difference = 150 kg/dm ³ (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 0 A)

Model	Rated pressure	Connection	Nominal size	Roller/ ball indicator	Sensor/ Transmitter	Medium density float	Options
NBK-03...	PN16/Class 150						
NBK-06...	PN40/Class 300	F = DIN-flange A = ASME-flange R ³⁾ = R-male thread N ³⁾ = NPT-male thread S ⁴⁾ = welding-nipple	15 = DN15, ½" 20 = DN20, ¾" 25 = DN25, 1" 32 = DN32, 1¼" 40 = DN40, 1½" 50 = DN50, 2" XX = special-connection ⁷⁾	00 = without RP = PP-roller RK = ceramic-roller	1 = without electrical attached parts ATEX II 1G / 2G D 2 = with immersible magnetic probe (reed contact chain) ATEX II 1G EEx ia IIC/without A = reed chain/ 4...20 mA, 2-wire R = reed chain/ 4...20 mA, HART®, 2-wire B = reed chain/ PROFIBUS® PA FOUNDATION™ Fieldbus	A = 1.0 kg/dm ³ , Titan for viscosity up to 200 cP B ⁶⁾ = 0.90 kg/dm ³ , Titan for viscosity up to 200 cP C = 0.80 kg/dm ³ , Titan for viscosity up to 200 cP D = 0.70 kg/dm ³ , Titan for viscosity up to 200 cP E = 0.60 kg/dm ³ , Titan for viscosity up to 200 cP F ⁶⁾ = 0.54 kg/dm ³ , Titan for viscosity up to 200 cP V ⁶⁾ = 1.0 kg/dm ³ , stainless steel for viscosity up to 460 mm ² /s W ⁶⁾ = 0.8 kg/dm ³ , stainless steel for viscosity up to 460 mm ² /s Y = special density, Titan (specify in clear text)	0 = without options or options as in list and description (see separate options list)
NBK-07...	PN63/Class 600						
NBK-10...	PN100/Class 600						
NBK-RA	ATEX limit contact, encapsulated, Ex II2G EEx m II T6/T5						
NBK-RT200	limit contact high-temperature max. 200 °C; *Simple Apparatus*, zone 1						
NBK-RV-200NO	limit contact, bistable, N/O, max. +200 °C (suitable for vessels with strong vibrations); *Simple Apparatus*, zone 1						
NBK-RV200NC	limit contact, bistable, N/C, max. +200 °C (suitable for vessels with strong vibrations); *Simple Apparatus*, zone 1						
NBK-RN-200NO	limit contact, bistable, NAMUR, N/O, max. +200 °C (suitable for vessels with strong vibrations); *Simple Apparatus*, zone 1						
NBK-RN200NC	limit contact, bistable, NAMUR, N/C, max. +200 °C (suitable for vessels with strong vibrations); *Simple Apparatus*, zone 1						

GL version

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

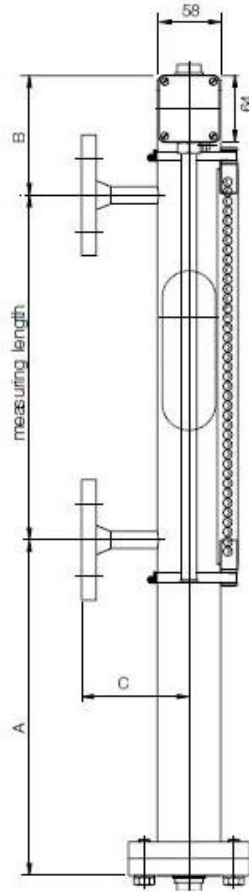
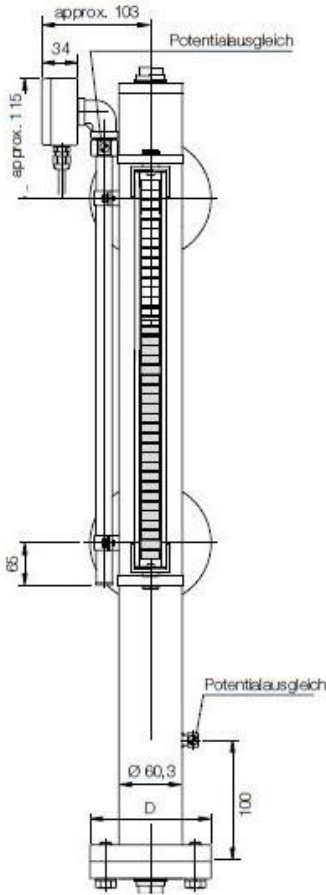
Model	Nominal pressure	Connection	Nominal size	Roller/ ball indicator	Sensor/ Transmitter	Medium density float	Options
NBK-03...	PN16/Class 150						
NBK-06...	PN40/Class 300	F = DIN-flange A = ASME-flange R = R-thread N = NPT-thread	15 = DN15, ½" 20 = DN20, ¾" 25 = DN25, 1" 32 = DN32, 1¼"	00 = without RP = PP-roller RK = ceramic-roller	5 = without electrical attached parts	A = 1.0 kg/dm ³ , Titan B = 0.90 kg/dm ³ , Titan C = 0.80 kg/dm ³ , Titan D = 0.70 kg/dm ³ , Titan E = 0.60 kg/dm ³ , Titan F ⁶⁾ = 0.54 kg/dm ³ , Titan V = 1.0 kg/dm ³ , stainless steel for viscosity up to 460 mm ² /s W ⁶⁾ = 0.8 kg/dm ³ , stainless steel for viscosity up to 460 mm ² /s Y = special density, Titan (specify in clear text)	0 = without options or options as in list and description (see separate options list)

³⁾ female thread on request ⁴⁾ only possible with NBK-03/06 and nominal size Code 25 ⁵⁾ only possible with NBK-03
⁶⁾ not possible with NBK-10 ⁷⁾ only possible for DN15 and DN25 bzw. ½", ¾" and 1" ASME

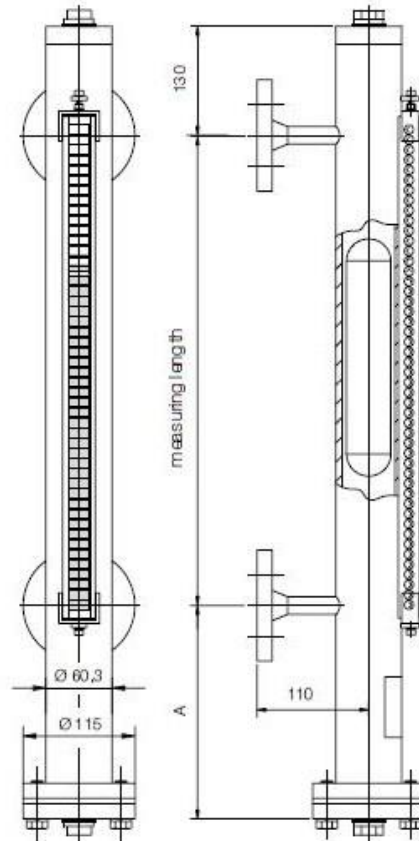
Measuring length L, density and temperature please specify in clear text!

Dimensions (mm)

NBK-ATEX version with reed chain model 2



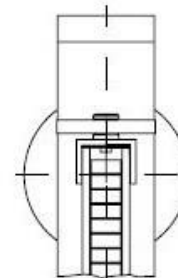
NBK-GL version



Dimension NBK

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

NBK 10/31/32/33 always without vent plug and without drain plug



Clearance dimension A [mm]

Model	Rated pressure	Medium density					
		0.54 [kg/dm ³]	0.6 [kg/dm ³]	0.7 [kg/dm ³]	0.8 [kg/dm ³]	0.9 [kg/dm ³]	1 [kg/dm ³]
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 600	410	410	320	320	320	210
NBK-10...	PN 100 / Class 600	-	700*	410**	320	320	210

* 800 by instruments with thermal screening

**450 by instruments with thermal screening

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
		Maximum allowable pressure PS in bar							
16	1.4571 (15E0)	16.0	16.0	15.6	14.9	14.1	13.3	12.8	12.4
40		40.0	40.0	39.2	37.3	35.4	33.3	32.1	31.2
63		63.0	63.0	61.8	58.8	55.8	52.5	50.7	49.2
100		100.0	100.0	98.0	93.3	88.5	83.3	80.4	78.0

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

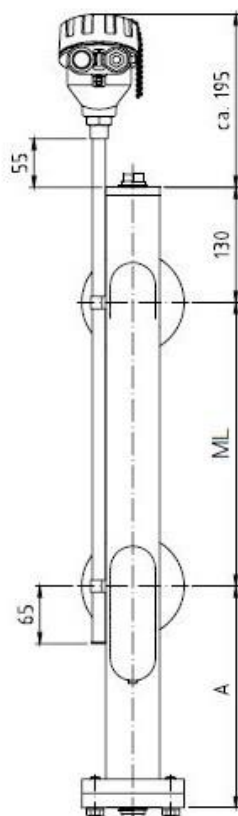
PS = maximum allowable pressure, pressure which is defined by pressure equipment manufacturer, for which the plant is designed. 1.4571 (15E0) was calculated with help of creep resistance values of 100.000 h acc. to EN-Material Norms considering the safety value.

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.

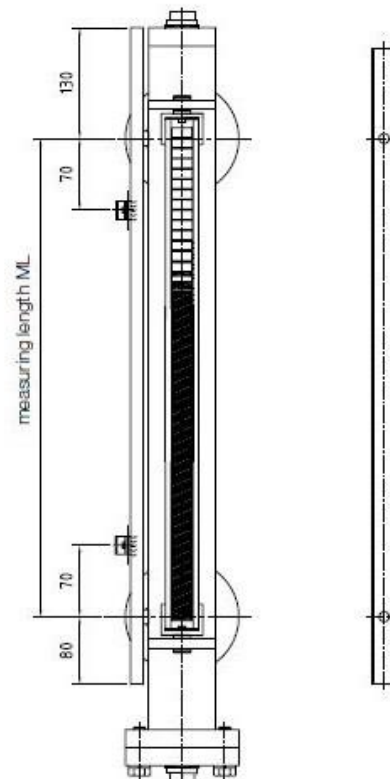
The pressure/temperature assignment is valid for the following flange models with sizes up to DN 100 used by KOBOLD.

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

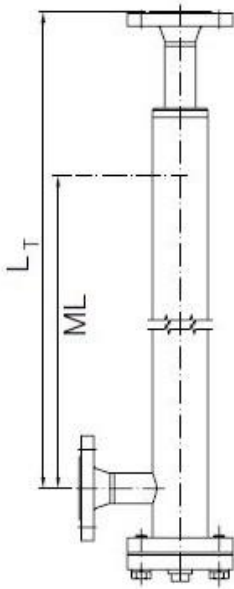
**NBK-... with transmitter options A/R/B
(not possible with options VA/VF)**



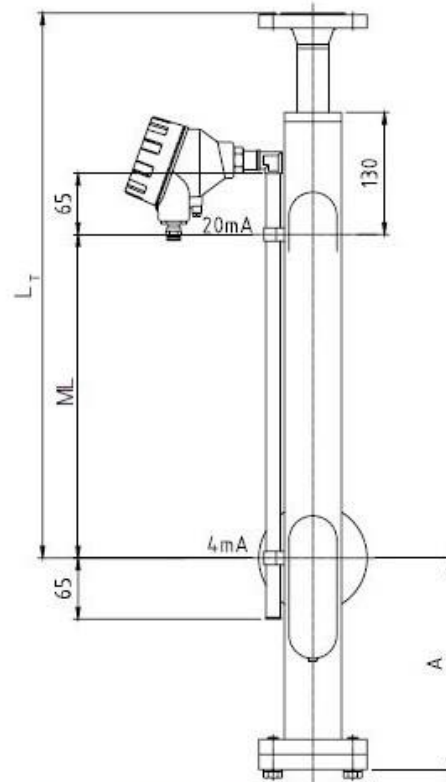
NBK-... with thermal screen option N



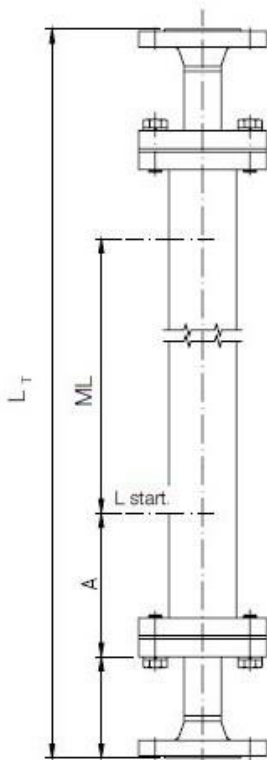
Process connection option ST



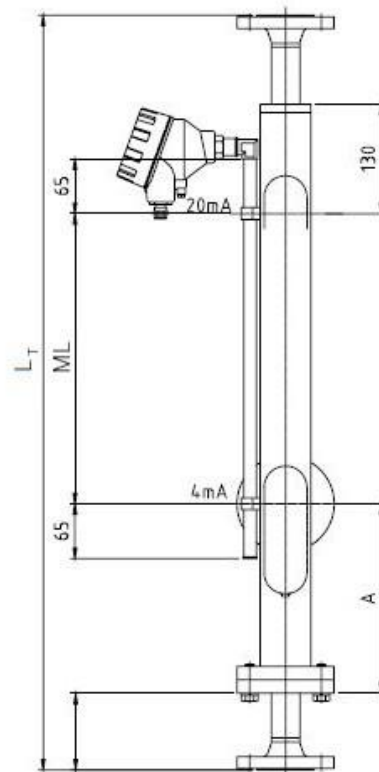
NBK... with transmitter model A/R/B option ST



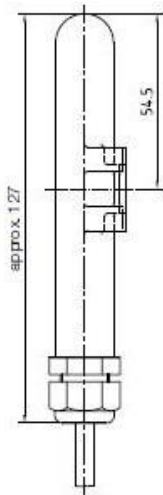
Process connection option TT



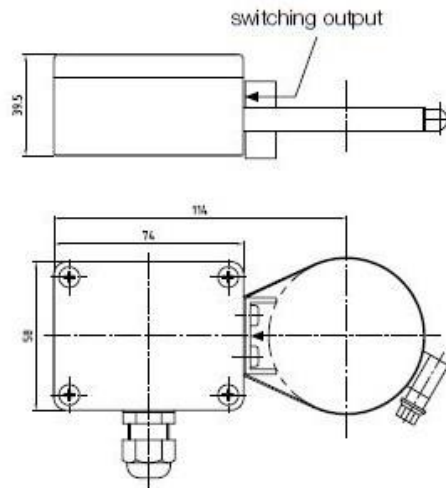
NBK... with transmitter model A/R/B option TT



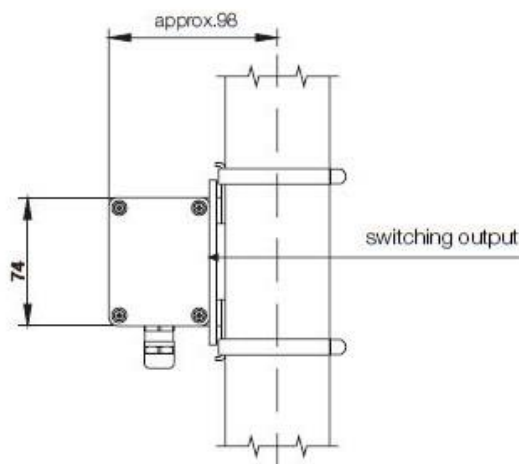
NBK-R



NBK-RT200



NBK-RV/RN



NBK-RA

