

Bypass level indicator with magnetic roller display Model BNA

WIKA data sheet LM 10.01



Applications

- Continuous level measurement with visual display of the filling level, without power supply.
- Volume- or depth-proportional display of the filling level
- Individual design and corrosion resistant materials enable a wide spectrum of application
- Chemical industry, petrochemical industry, natural gas, offshore, shipbuilding, machine building, power generating equipment, power stations
- Process water and drinking water treatment, food and beverage industry, pharmaceutical industry

Special features

- Process- and system-specific solutions possible
- Operating limits:
 - Operating temperature: $T = -160 \dots +450 \text{ }^\circ\text{C}$
 - Working pressure: $P = \text{Vacuum to } 420 \text{ bar}$
 - Limit S. G.: $\rho \geq 400 \text{ kg/m}^3$
- Wide variety of different process connections and materials
- Level sensor or magnetic switch mounted externally (option)
- Explosion-protected version (optional)

Description

The WIKA model BNA bypass level indicator consists of a bypass chamber, which, as a communicating interface, is connected laterally to a vessel via 2 process connections (flanged, threaded or welded). Through this type of arrangement, the level in the bypass chamber corresponds to the level in the vessel. The cylindrical float (with a permanent magnet system, mounted within the bypass chamber) transmits the liquid level, contact free, to the outside via the magnetic roller display mounted on the bypass chamber. In this are fitted, at 10 mm intervals, red/white plastic or ceramic rollers with bar magnets.



Bypass level indicator, model BNA with option level sensor and magnetic switch

Through the directional magnetic field of the permanent magnet system in the cylindrical float, the magnetic rollers, through the wall of the bypass chamber, are turned through 180° . For an increasing level from white to red; for a falling level from red to white.

Thus the bypass level indicator displays the level of a vessel **without a power supply** - visible as a red column.



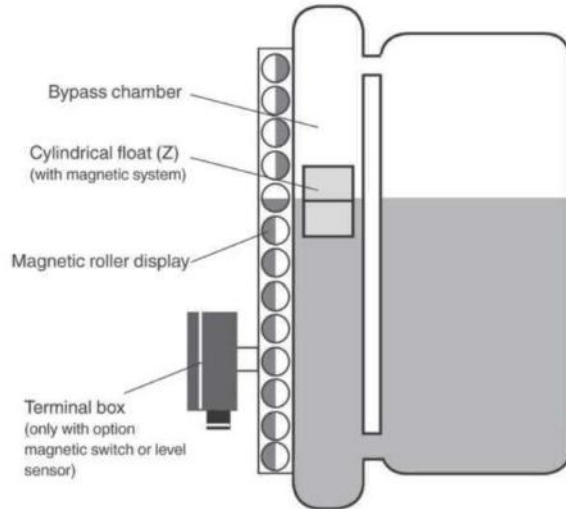
Further special features

- Simple, robust and solid design, long service life
- Bypass chamber made of stainless steel 1.4571
- Pressure- and gas-tight separation between measuring and display chamber
- Measuring and indicating of the level of aggressive, combustible, toxic, hot, agitated and contaminated media
- Without power supply the functioning of the magnetic roller display is guaranteed even in the case of power failures
- Available for applications in all areas of industry through use of highly corrosion-resistant materials
- Continuous measurement of the liquid levels irrespective of physical or chemical changes of state of the measured media, such as: foaming, conductivity, dielectric constant, pressure, vacuum, temperature, vapour, condensation, blistering, effects of boiling
- Volume-proportional or depth-proportional display of the filling level
- Interface layer measurement and overall level from Δ -density of more than 50 kg/m^3

Options

- Explosion-protected versions
- Customer-specific solutions
- Bypass chamber and float made of different materials
- Magnetic switch or level sensor mounted externally
- Bypass chamber end

Illustration of the principle



Design and operating principle

- In a communicating bypass chamber mounted to the side of a vessel a float moves with the liquid level of the medium to be measured.
- The radial-symmetric magnetic system, which is positioned to immersion height inside the float, simultaneously activates the magnetic roller display, which is fixed to the outside of the bypass chamber, and the switching and measuring elements through its magnetic field.

Example

Mounted bypass level indicator, model BNA

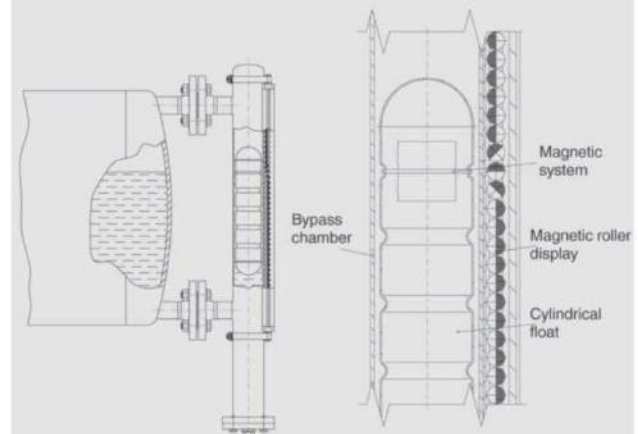
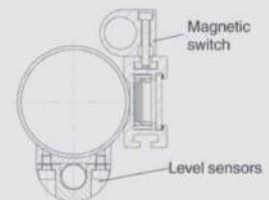
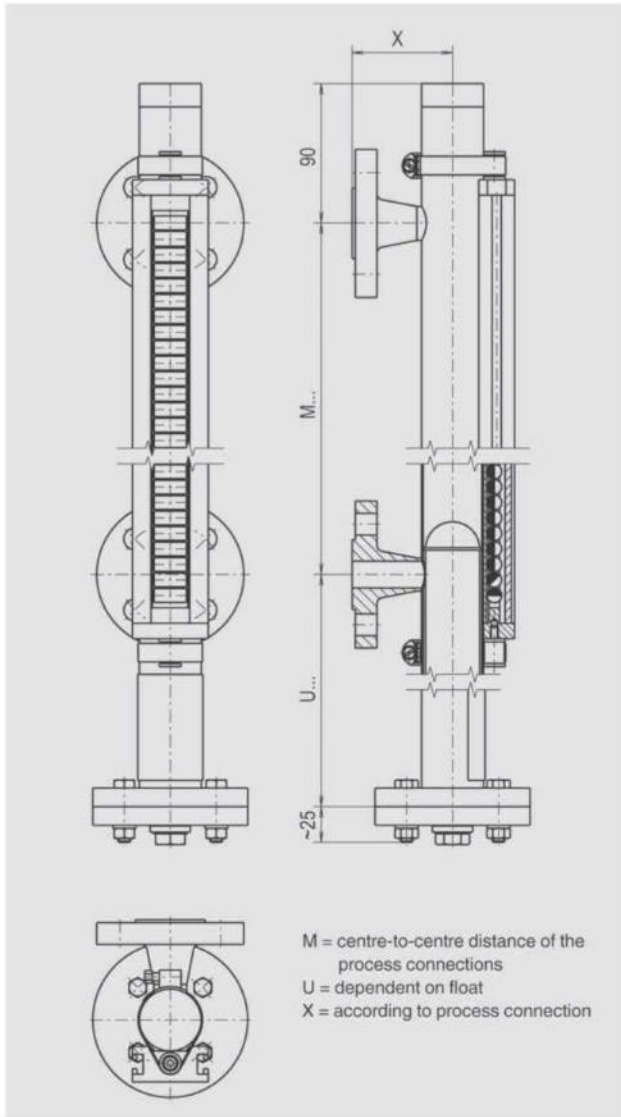


Illustration with option magnetic switch and level sensor



Mini bypass level indicator

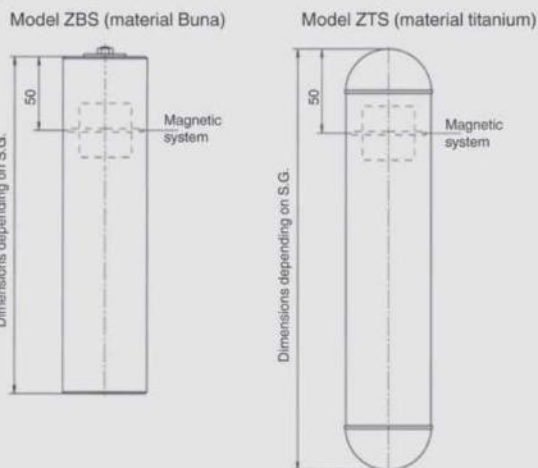
Bypass chamber made of stainless steel 1.4571



Specifications

Bypass chamber	Ø 42 x 2 mm
Chamber end top	Flat top Options: (see page 24) ■ Vent plug G 1/2" ■ Vent valve ■ Vent flange
Chamber end bottom	Flange connection with drain plug G 1/2" Options: (see page 24) - Drain valve - Drain flange
Process connections	Side-side (options see page 23) Flanges DN 10 - DN 25, PN 6, DIN 2631 DN 10 - DN 25, PN 16, DIN 2633 DN 10 - DN 25, PN 40, DIN 2635 DN 32 - DN 100, DIN 2527 1/2" - 4", ANSI B 16.5 class 150 or class 300 Thread or weld stubs GM /... = female thread / size GN /... = male thread / size S /... = weld stubs / Ø
Centre-to-centre distance	Min. 150 mm to max. 2000 mm
Nominal pressure	Max. 16 bar (according to float design)
Temperature range	Max. 150 °C (according to float design)
Float	Model ZTS - Material titanium 3.7035 - S.G. min. 800 kg/m ³ - Pressure max. 16 bar - Temperature max. 150 °C Model ZBS - Material Buna - S.G. min. 800 kg/m ³ - Pressure max. 6 bar - Temperature max. 80 °C
Magnetic roller display	Model MRA For specifications and further designs and options see page 16
Further options:	
Magnetic switch	See page 17 ... 20
Level sensor	See page 21 and 22

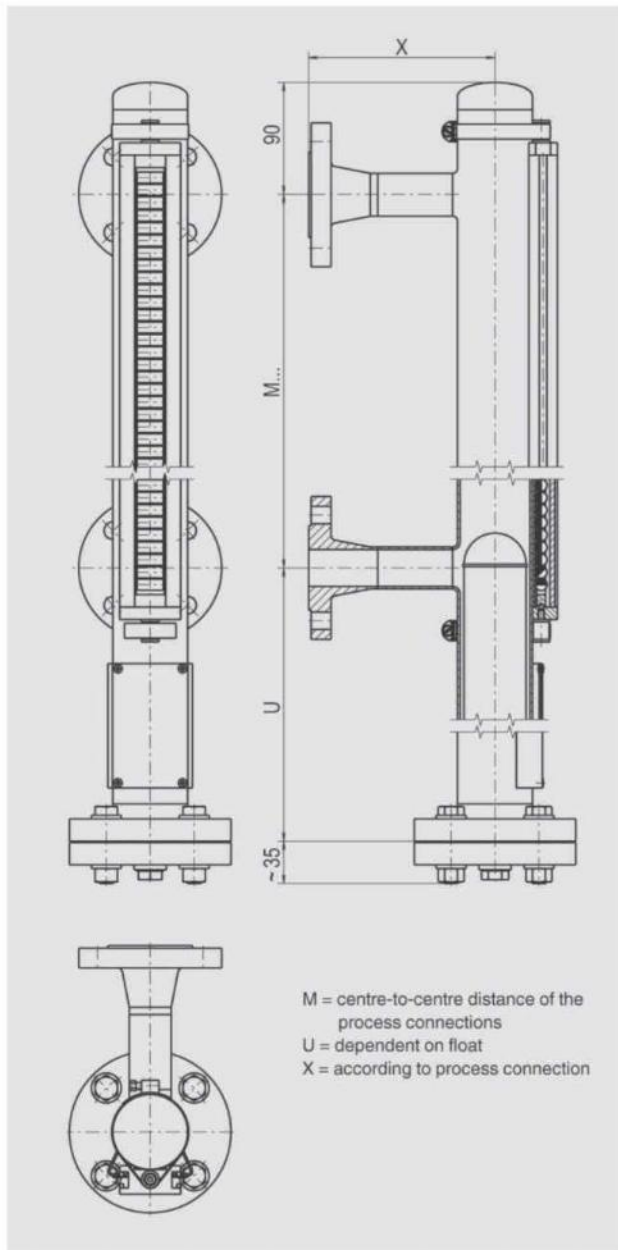
Float



Specification is subject to change without prior notice

Version PN 6 - PN 40

Bypass chamber made of stainless steel 1.4571
Option: Explosion-protected version



Specifications

Bypass chamber	Ø 60.3 x 2 mm or Ø 64 x 2 mm
Chamber end top	Flat top, welding cap or flange connection Options: (see page 24) ■ Vent plug G 1/2" ■ Vent valve ■ Vent flange
Chamber end bottom	Flange connection with drain plug G 1/2" Options: (see page 24) - Drain valve - Drain flange
Process connections	Side-side (options see page 23) Flanges DN 10 - DN 25, PN 6, DIN 2631 DN 10 - DN 25, PN 16, DIN 2633 DN 10 - DN 25, PN 40, DIN 2635 DN 32 - DN 100, DIN 2527 1/2" - 4", ANSI B 16.5 class 150 or class 300 Thread or weld stubs GM /... = female thread / size GN /... = male thread / size S /... = weld stubs / Ø
Centre-to-centre distance	Min. 150 mm to max. 6000 mm (larger distances on request)
Nominal pressure	Max. 40 bar (according to flange design)
Temperature range	-196 °C ... +450 °C
Temperature class	T1 T2 T3 T4 T5 T6
Max. process temperature	320 °C 240 °C 160 °C 108 °C 80 °C 68 °C
Float	Model ZTSS / ZVSS - P ≤ 25 bar (titanium 3.7035, stainless steel 1.4571) - Float length depending on S.G. - Specifications (see page 14) Model ZTS / ZVS - Float design according to process parameters S.G., pressure and temperature (see page 15)
Magnetic roller display	Model MRA: < 200 °C Model MRK: > 200 °C For specifications and further designs and options see page 16
Further options:	
Magnetic switch	See page 17 ... 20
Level sensor	See page 21 and 22
Electrical trace heating	On request
Bypass chamber insulation	On request

