Bypass magnetic level gauge RIZUR-NBK

Intended use and field of application

Bypass magnetic level gauges RIZUR-NBK are used for continuous measurement/indication of the liquid upper level or interface level of two liquid media in tanks.

RIZUR-NBK is designed to control the level of liquids in open or closed tanks, including the ones under pressure, in processing units at industrial facilities of chemical, petrochemical, pharmaceutical, food and other industries. It can also be used as an indicator of liquid presence/ absence at a predetermined height of the tank. Bypass magnetic level gauge RIZUR-NBK can be used both indoors and outdoors in a wide range of climatic conditions.

The operating principle of RIZUR-NBK is based on the law of interconnected vessels – the level of liquid in the bypass column is equal to the level of the measured liquid in the tank. A float with a built-in magnet moves along with the liquid level inside the column. By means of a magnetic field in a non-contact manner the float changes the position (turns) of one or a group of vertically arranged magnetic rollers or transmits information about the current level to some other control unit. Bypass magnetic level gauge RIZUR-NBK is a simple and reliable solution for measuring and displaying of liquid levels in large and small tanks.

Usually bypass magnetic level gauges RIZUR-NBK are attached to the side wall of the tank. If necessary, the connecting elements of the bypass gauge can be located on the side, top or bottom. Variants with different types of process connection are available: flange, male/female thread, sleeve nut, welding sleeve, etc. The top and the bottom of the chamber can be equipped by vent/drainage plugs, shut-off or needle valves, etc.

Technical regulations

TU 26.51.52-001-12189681-2018

TR Customs Union conformity certificate

№EAEU RU C-RU.HA91.B.00029/19

Benefits

- Time-proven and well-established design;
- High clarity (visibility) of indication;
- Wide measuring range;
- Various installation and mounting options;
- Variety of level gauge connections to a tank;
- Stainless steel construction, including gauge guide, as well as design versions from materials resistant to the aggressive impact of the measured liquids;
- Constant indication even in case of power supply absence;
- Simple construction, which requires minimum maintenance;
- Operation in a wide range of climatic conditions (from -60°C);
- Durable and reliable construction

Types of gauges

There're two standard versions of the level gauges RIZUR-NBK: for over-head and bypass mounting.

Bypass magnetic level gauges with side mounting type «side-side» are used most often. In that case the measuring range is equal to the distance between the connection centers.

There're also other versions of level gauges: with a side mounting «top-side», «side-bottom», «top-bottom». It's necessary to take into account that in these versions there's a «dead» area, meaning that the measuring range is smaller than the distance between the connection points.

Magnetic level gauge RIZUR-NBK is produced in over-head design version for the cases, when the control device must be mounted on top of the tank.

Side-mounted

Over-head

Examples of bypass chamber top/bottom end design versions

Blind cap

Cap with a threaded vent hole (with a plug)

Cap with a threaded vent ball valve

Cap with a threaded vent needle valve

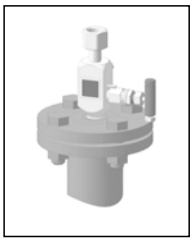
Cap with a weldneck

Cap with a vent flange

Blind flange

Flange with a threaded vent/ drainage hole (with a plug)

Flange with a threaded vent drainage ball valve



Flange with a threaded vent/ drainage needle valve

Flange with a weldneck

Flange with a vent/drainage flange

Technical specifications

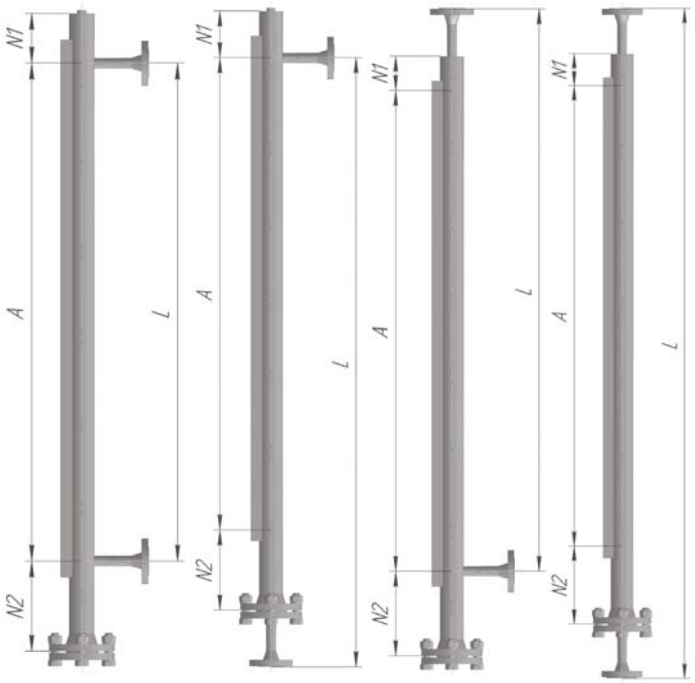
	Bypass magnetic level gauge RIZUR-NBK	Over-head magnetic level gauge RIZUR-NBK
Measuring range, mm	150...6000	150...6000
Minimum medium density, g/cm³	0,45	0,45
Maximum process pressure, MPa	42 (specify at the time of the order)	25 (specify at the time of the order)
Material	Stain. steel 12H18N1OT, 316L, other types of stain. steel, polypropylene, PVC, titanium alloy or any other material in acc. with the order requirements	Stain. steel 12H18N1OT, 316L, other types of stain. steel, polypropylene, PVC, titanium alloy or any other material in acc. with the order requirements
Medium temperature, °C	-196...+425	-196...+425
Process connection	Flange, thread, welded	DN80...250 (depends on the measured medium density)
Ingress protection	IP65 or IP67	IP65 or IP67
Ambient temperature, °C	-60...+60	-60...+60
Explosion marking	II Gb IIC T6...T1 X	II Gb IIC T6...T1 X

Options (for all of the design variants)

Steam heating	
• steam pressure	0,6 mPa (specify if pressure > 0,6mPa)
• steam tracer connection	male thread R½" or other (specify at the time of the order)
Electrical heating	
• safety shield from stainless steel or aluminium	supplied complete with a self-regulating heating cable
Magnet limit switch (actuation from the magnetic field of the float)	
• output signal type	changeover «dry» contact NAMUR
• max. voltage supply	230 V, max. current 0,5 A
• ingress protection	not lower than IP65
• explosion protection	0Ex ia IIC T6...T1 Ga X; 1Ex d IIC T6...T5 Gb X; 1Ex d [ia Ga] IIC T6...T5 Gb X
Ultrasonic level switch RIZUR-900	
(see detailed description on page 4)	
Level transmitter	
• output signal	4 ~ 20 mA, 4-20 mA + HART
• display	LED, without display
• voltage supply	24 V DC
• ingress protection	IP65...IP67
• explosion protection	0Ex ia IIC T6...T1 Ga X; 1Ex d IIC T6...T5 Gb X; 1Ex d [ia Ga] IIC T6...T5 Gb X

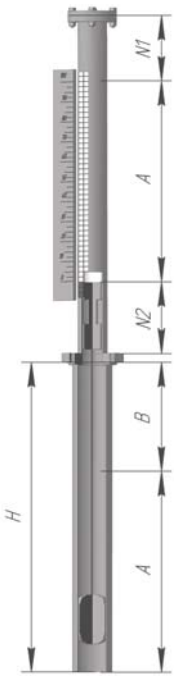
Side mounting

Design variant «side-side» | Design variant «side-bottom» | Design variant «top-side» | Design variant «top-bottom»



L= distance between process connection centers
A = measuring range
N1, N2 = «dead» area

Over-head mounting



A = measuring range
N1, N2 = «dead» area
B = non-measurable area (is specified at order placement)
H = length of the immersed part (H=A+B)

Note:
N1 and N2 minimal values are calculated by the manufacturer and depend on the measured liquid parameters and process conditions.
By default, over-head magnetic level gauge RIZURNBK is produced with a still pipe. The level gauge can be made without a still pipe for the purpose of cost reduction. This requirement must be specified at order placement.

* For BB-design variant (bypass mounting «side-side»)
measuring range = distance between process connection centers. Only one value should be specified. For NM-design variant (overhead mounting) it is necessary to specify two values: non-measurable area from the upper point of the process connection / measuring range.

Order code for bypass magnetic level gauge RIZUR-NBK

Ordering information:

RIZUR-NBK-1-NM-2/20/16-1000/550-1-F/0-0-0-2/M/200;450-I-1066/1,6/50
1 2 3 4 5 6 7 8 9 10 11

1. Chamber material	
1	Stainless steel, 316L
C	Other material (specified in writing outside the order code)
2. Design variant	
BB	Bypass mounting («side-side»)
BN	Bypass mounting («side-bottom»)
VB	Bypass mounting («top-side»)
VN	Bypass mounting («top-bottom»)
NM	Over-head mounting
3. Type of process connection	
THREAD (thread type)	
R1	M20x1,5, male thread
R2	M27x1,5, male thread
R3	NPT ¾", male thread
R4	NPT ½", male thread
R5	G ¾", male thread
R6	G ½", male thread
R7	M20x1,5, sleeve nut
X	Other type (specified in writing outside the order code)
WELDED (nominal inside diameter, mm)	
P15	DN15
P20	DN20
P25	DN25
P32	DN32
X	Other type (specified in writing outside the order code)
FLANGE (acc. to GOST 33259-2015)	
XX/_ /_	Flange face
A	Type A, flat face
B	Type B, raised face
C	Type C, tongue
D	Type D, groove
E	Type E, spigot
F	Type F, recess
J	Type J, O-ring gasket
K	Type K, oval section gasket
X	Other type (specified in writing outside the order code)
_ /XX/_	Nominal inside diameter, mm
10	DN10
15	DN15
20	DN20
25	DN25
32	DN32
X	Other type (specified in writing outside the order code)
_ /_ /XX	Nominal pressure, kgf/cm²
16	PN 16
25	PN 25
40	PN 40
63	PN 63
100	PN 100
160	PN 160
320	PN 320
420	PN 420
X	Other type (specified in writing outside the order code)
4. The distance between the centers / measurement range	
XXX/XXX	Specify the required distance between connection centers in mm / Specify the measurement range in mm*

* For BB-design variant measuring range = distance between centers of process connection. Only one value should be specified. For NM-design variant it is necessary to specify two values: nonmeasurable area from the upper point of the process connection / measuring range.

5. Scale	
0	No
1	Yes
6. Top end of the chamber	
0	Process connection for VB, VN*
KG/0	Blind cap
KZ/XX	Cap with a screw plug (specify thread type and size)
KV/XX	Cap with a vent valve (specify thread type and size)
F/0	Blind flange
FZ/XX	Flange with a screw plug (specify thread type and size)
FV/XX	Flange with a vent valve (specify thread type and size)
C	Other type (specified in writing outside the order code)
* For VB, VN variants it is necessary to choose «0» as the top end of the chamber is connected to a tank	
7. Bottom end of the chamber	
0	Process connection for BN, NM, VN*
F/0	Blind flange
FZ/XX	Flange with a screw plug (specify thread type and size)
FV/XX	Flange with a drainage valve (specify thread type and size)
C	Other type (specified in writing outside the order code)
* For VB, VN variants it is necessary to choose «0» as the top end of the chamber is connected to a tank	
8. Output signal	
0	No
1	4-20mA, without display
2	4-20mA+ HART, with display
C	Other type (specified in writing outside the order code)
9. Level limit switching	
XX/_ /_	Number of switching points
0	No
1	One switching point
2	Two switching points
3	Three switching points
XXX	Specify the required number of switching points
_/XX /_	Level switch type
0	No
M	Magnet limit switch (actuation from the magnetic field of the float)
U	Ultrasonic level switch RIZUR-900 (actuation doesn't depend on the float integrity)
_/_ /XX	Distance to switching points (It is specified from «zero» point of measuring range. This number should correspond to the number of switching points. The values are separated by «;»)
10. Type of electronic component explosion protection	
0	Without ex-protection
I	Intrinsically safe circuit
D	Explosion-proof housing
11. Medium parameters (All three parameters should be specified)	
XX/XX/XX	Medium density, kg/m³ /Operating pressure, MPa/Operating temperature, °C

+7 (4912) 20-20-80
marketing@rizur.ru

ООО «НПО RIZUR» www.rizur.ru +7 (4912) 20-20-80

INQUIRY FORM №_____

Bypass magnetic level gauge RIZUR-NBK

Technical regulations
TU 26.51.52-001-12189681-2018

Company name	
Contact person, position	
Contact details, tel., e-mail	
Number of level gauges, pcs.	
Operating medium	
Liquid density, kg/m^3	
Viscosity, cP	
Process temperature / design temperature, °C	
Process pressure / design pressure, MPa	
Medium characteristics: aggressive to stainless steel	
Ambient temperature, °C	
Mounting type - bypass mounting («side-side») - bypass mounting («side-bottom») - bypass mounting («top-side») - bypass mounting («top-bottom») - over-head mounting	
Process connection type: - welding pipe (specify DN) - thread (specify type) - flange (specify DN, PN and sealing surface)	
Distance between process connection centers, mm	
Measuring range, mm	
Non-measurable area, mm (Only for «over-head mounting» version. Is specified from the upper point of process connection)	
Scale (yes/no)	
Chamber top end - cap blind / with a valve / with a screw plug - flange blind / with a valve / with a screw plug (please specify the connection size, thread type, flange facing)	
Chamber bottom end - flange blind / with a valve /with a screw plug (please specify the connection size, thread type, flange facing)	
Type of output signal - 4-20 mA (without display) - 4-20 mA+HART (with display)	
Level limit switching: - number of limit switches - switch type (magnet, ultrasonic) - distance to switching points (It is specified from «zero» point of measuring range)	
Type of electronic component explosion protection	
Electrically heated enclosure/soft enclosure (please specify the maintained temperature)	
Additional requirements	

marketing@rizur.ru
+7 (4912) 20-20-80