



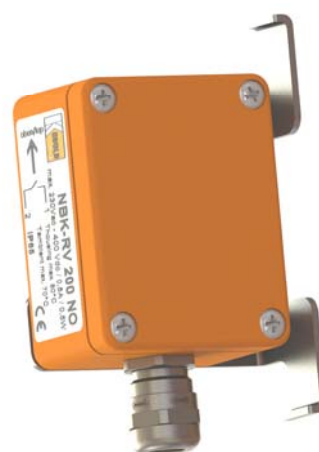
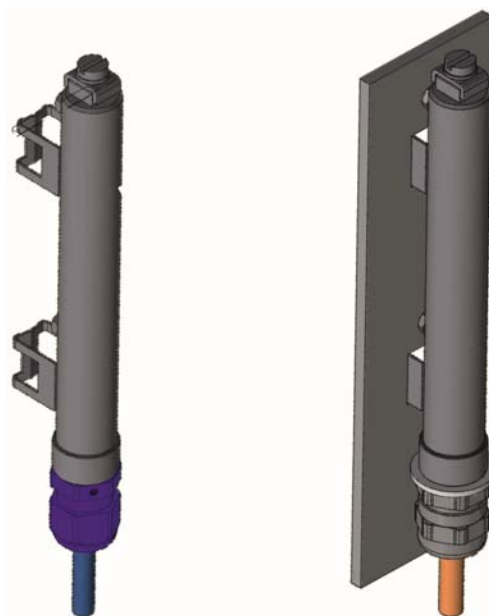
Operating Instructions for

Limit switch

Model: NBK-R/RM

NBK-RS/RH

NBK-RV/RN



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2. Note

2.1 General

Before unpacking and commissioning the device, the operating instructions and the “General Safety Instructions” document must be read and followed carefully. The general safety instructions, the operating instructions, the data sheet as well as approvals and further information can be downloaded via the QR code on the device or under the respective product on www.kobold.com.

Due to technical changes, the device documentation available online may not always correspond to the product version you have purchased. If you need an instruction manual that corresponds to the purchased product version, you can request it from us free of charge by email (info.de@kobold.com) in PDF format, specifying the relevant invoice number and serial number. If you wish, the operating instructions can also be sent to you by post in paper form.

Operating instructions, data sheet, approvals and further information via the QR code on the device or via www.kobold.com

The devices are only to be used, maintained and serviced by persons familiar with these operating instructions and in accordance with local regulations applying to Health & Safety and prevention of accidents.

When used in machines, the device should be used only when the entire machine fulfils the EU machinery directive.

2.2 Hazard warnings

The following instructions are intended to ensure your personal safety and to prevent damage to the product described or connected devices. Safety instructions and warnings to prevent danger to the life and health of users or maintenance personnel, or to prevent damage to property, are highlighted in this documentation using the symbols defined here. *The symbols and terms used have the following meaning in the documentation itself:*



Note

Is important information about the product, the handling of the product or the respective part of the documentation to which particular attention should be drawn.



Warning!

Indicates that death, serious injury or significant property damage can occur if proper precautions are not taken!



Caution!

Means that minor personal injury or property damage may occur if appropriate precautions are not taken!

3. Instrument Inspection

Instruments are inspected before shipping and sent out in perfect condition. Should damage to a device be visible, we recommend a thorough inspection of the delivery packaging. In case of damage, please inform your parcel service / forwarding agent immediately, since they are responsible for damages during transit.

Scope of delivery:

The standard delivery includes:

- Electrical Limit Switches Model: NBK-R/RM, NBK-RS/RH, NBK-RV/RN

4. Regulation Use

Any use of the device which exceeds the manufacturer's specification may invalidate its warranty. Therefore, any resulting damage is not the responsibility of the manufacturer. The user assumes all risk for such usage.

The Limit Switches for the NBK Bypass Level Indicators are used for continuous measuring, display and monitoring of liquids in tanks or vessels. Depending on the design they are suitable for applications with a higher operating temperature.

For standard applications:

NBK-R/NBK-RM: Bistable changeover contact in a polycarbonate housing with connecting cable

NBK-RS: Bistable changeover contact in a stainless steel housing with connecting cable

NBK-RV/RN: Bistable normally open contact in aluminum housing with cable gland

For high temperature applications:

NBK-RH: Bistable changeover contact in a stainless steel housing with connecting cable and heat protection shield for medium temperatures up to +350°C

5. Operating Principle

Kobold Bypass Limit Transmitter are used for the monitoring of limit values in tanks or vessels.

They are firmly attached with mounting plates and ribbon clamps to the Bypass Level Indicator, model NBK, and can be moved to any position on the bypass-tube within the measuring length.

The reed-contacts in all limit switches operate bistable and they are switched by the magnetic float inside the NBK tube as passing by.

One or more limit switches can be mounted on the bypass.

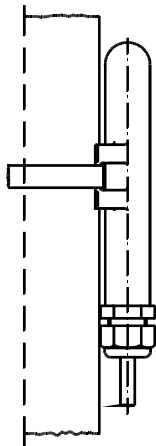
In the event of a power failure and return, the switching status is always updated thanks to magnetic storage. The switches are also well suited for use in systems with strong vibrations due to the low-mass switching element.

The NBK-R/RM/RS/RT and -RV limit switches have a reed small signal switch for low AC/DC voltages. Type NBK-RN also contains a resistor circuit that conforms to two-wire sensors according to EN 60947-5-6 (NAMUR).

Type NBK-RH is also equipped with a heat shield and can be used at medium temperatures of up to +350°C.

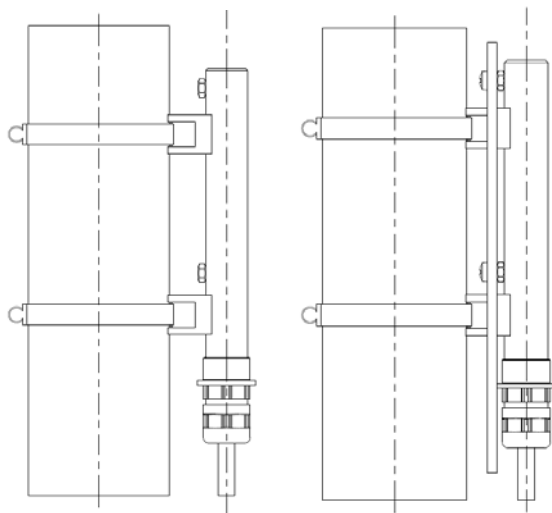
6. Mechanical Connection

NBK-R/RM



Attach and tighten the limit indicators (NBK-R, NBK-RM) to the bypass pipe on the opposite side of the roller display using the tension strap provided. The height of the switch contacts may be selected at will. The cable connection must point downwards. The switch must be attached close to the bypass tube. Due to technical adaptations, it may come to malfunctions, when installing new contacts in an existing plant. If the contact does not switch when the float passes by it, the preassembled spacer (plastic) must be removed.

NBK-RS/RH



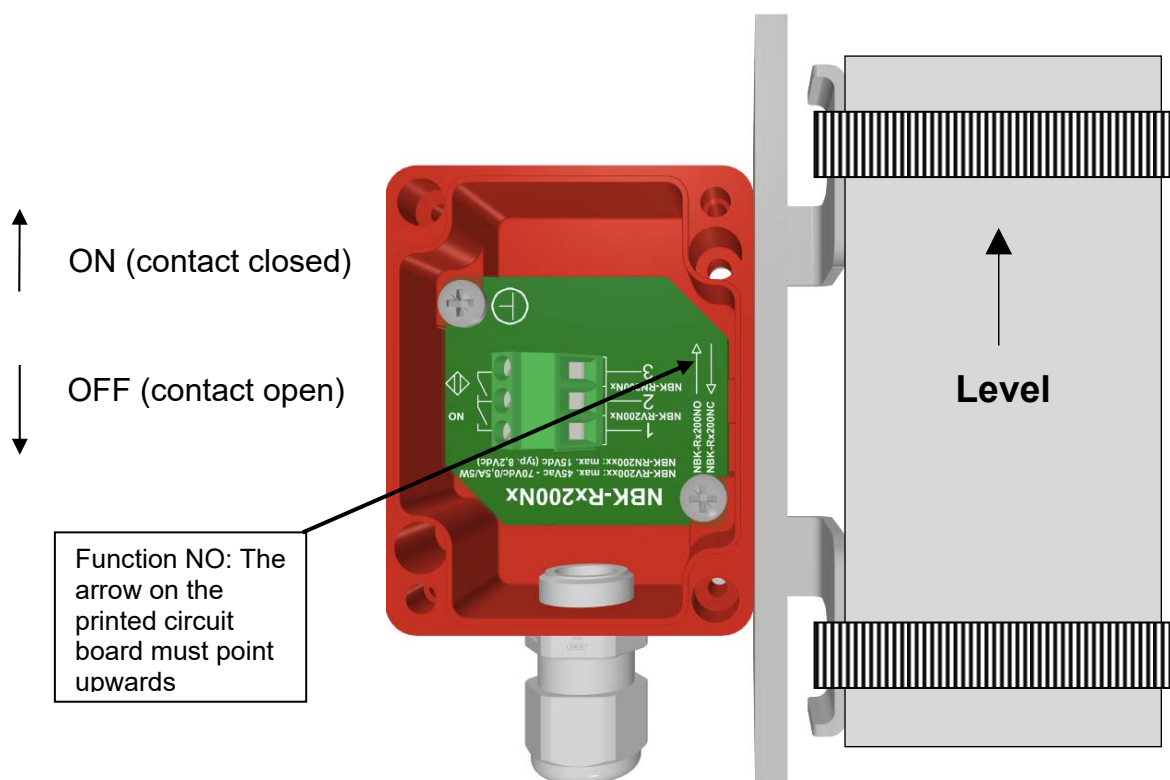
Attach and tighten the limit indicators (NBK-RS, NBK-RH) to the bypass pipe on the opposite side of the roller display using the 2 tension straps provided. The height of the switching contacts can be freely selected. The cable connection must point downwards. The switch must rest firmly on the standpipe.

When installing the NBK-RH, please note that when using the maximum medium temperature of +350 °C, the limit indicator must not be insulated together with the bypass! The maximum housing temperature at the limit indicator must not exceed +120 °C.

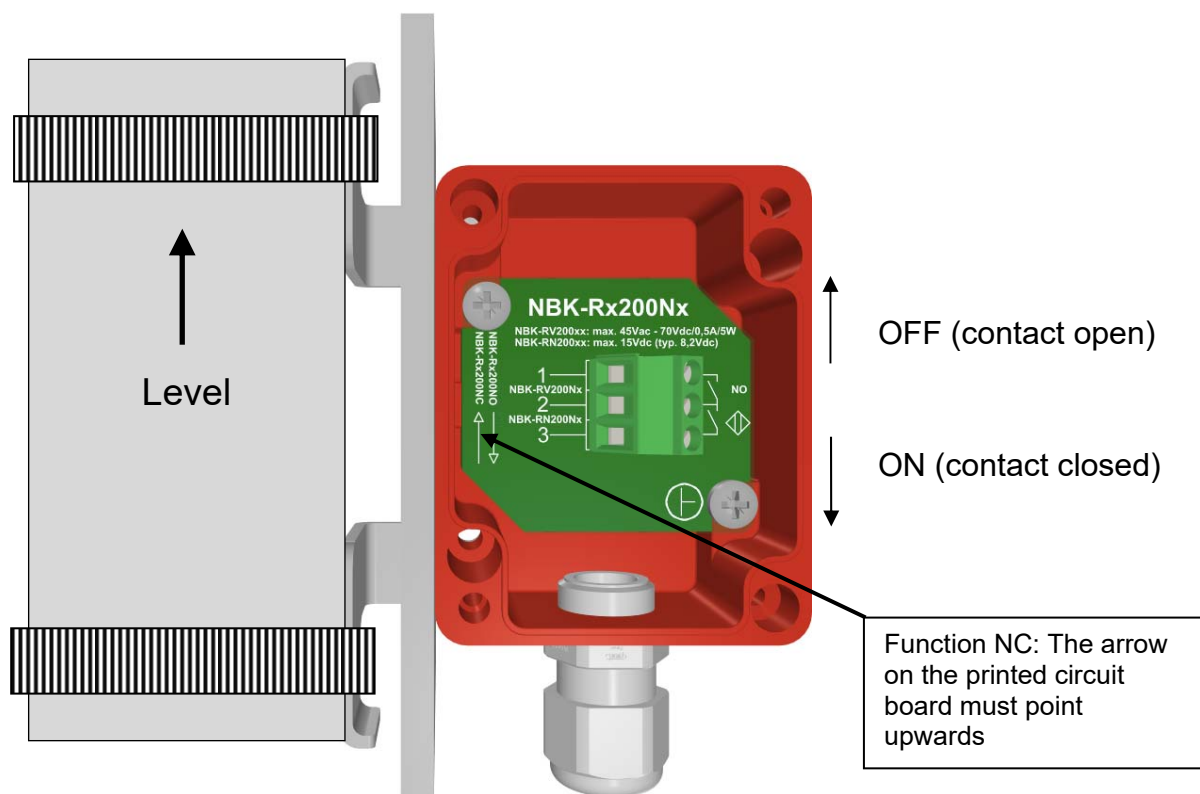
NBK-RN/RV

The limit switch NBK-RN/RV is installed using the included pipe clamps. The cable gland must always point downwards. The switching point is about halfway up the housing. The heat protection shield is situated between the switch box and the mounting bracket.

The switches are factory-configured for the respective switching logic NO (make contact) or NC (break contact). However, the switching logic can be reconfigured on site by rotating the circuit board in the aluminum housing by 180° and at the same time rotating the aluminum housing itself by 180° on the pipe mounting bracket. After the conversion, the switch structure must always correspond to Fig. 3 or Fig. 4.



Mounting NBK-RN200NO and NBK-RV200NO



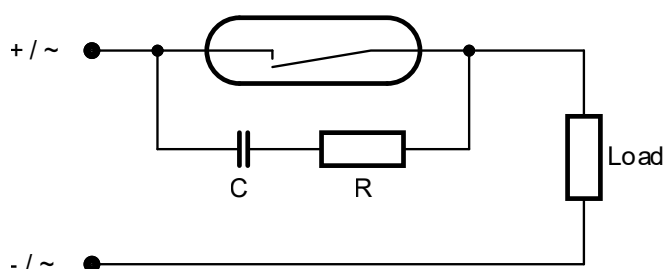
Mounting NBK-RN200NC and NBK-RV200NC

7. Electrical Connection

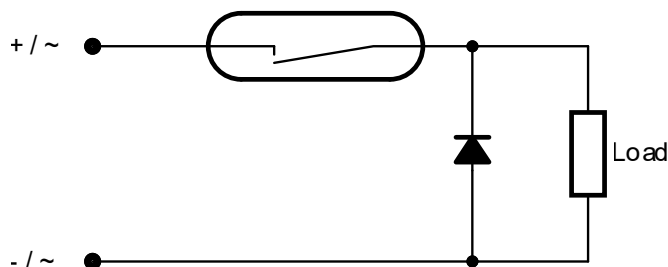


Attention!
Observe the allowed electrical ratings for the limit switch.

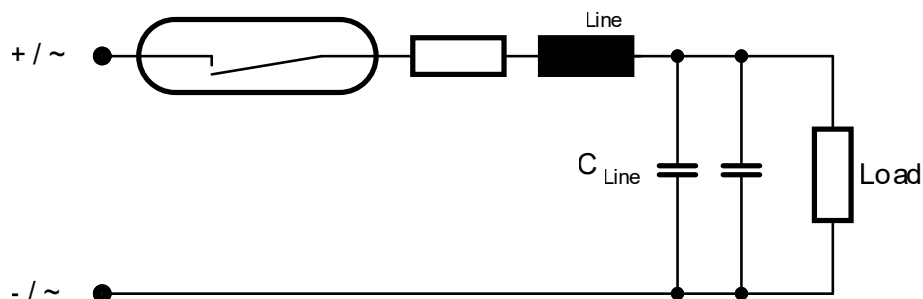
When switching inductive loads such as contactors, relays, etc., it must always be ensured that the electrical limit values are not exceeded, even for short periods, e.g. due to voltage peaks. Higher switching values can significantly reduce the service life and even destroy the contact. To avoid overloading the reed contacts, a contact protection relay is used recommended.



Protection for inductive loads through RC element parallel to the contact



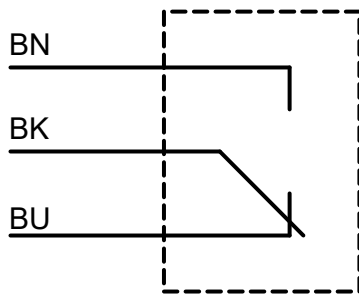
Protection for inductive loads through a freewheeling diode parallel to the load



Protection for long connecting cables through series resistance in series with the contact

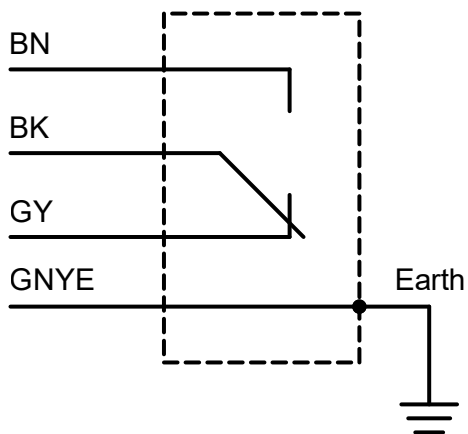
If available, connect the switch according to the circuit diagram and connect it to the electrical control.

Limit switches NBK-R, NBK-RM



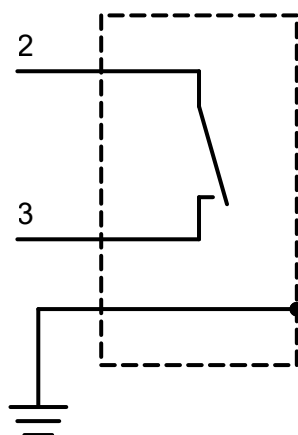
Colour of connecting wire	Function
Black	COM
Brown	NO normally open contact
Blue	NC normally closed contact

Limit switches NBK-RS, NBK-RH



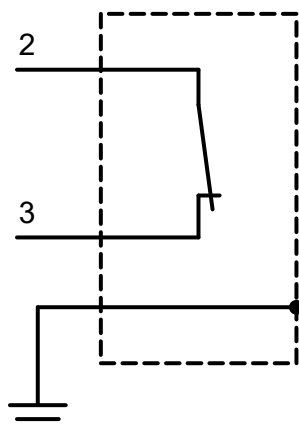
Colour of connecting wire	Function
Black	COM
Brown	NO normally open contact
Grey	NC normally closed contact
Green/Yellow	Housing potential / ground (optional)

Limit switch NBK-RN***NO



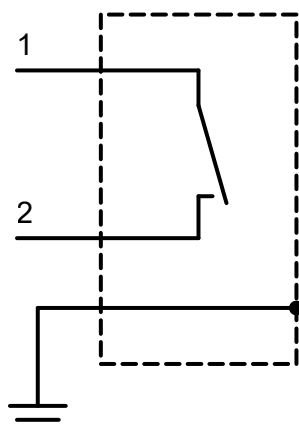
Connection no.	Function
2	NO contact
3	NO contact
Ground	Housing potential / Ground (optional)

Limit switch NBK-RN***NC



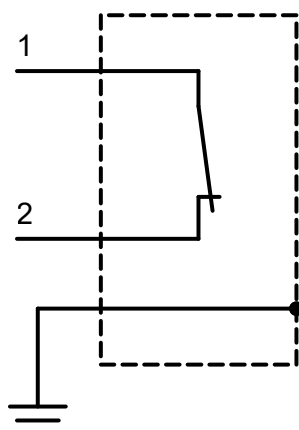
Connection no.	Function
2	NC contact
3	NC contact
Ground	Housing potential / Ground (optional)

Limit switch NBK-RV***NO



Connection no.	Function
1	NO contact
2	NO contact
Ground	Housing potential / Ground (optional)

Limit switch NBK-RV***NC



Connection no.	Function
1	NC contact
2	NC contact
Ground	Housing potential / Ground (optional)

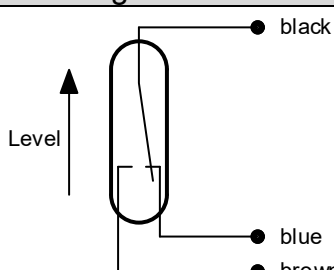
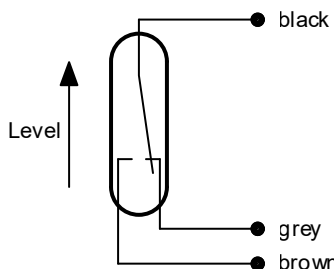
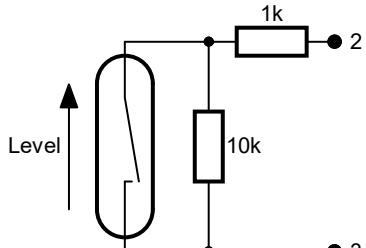
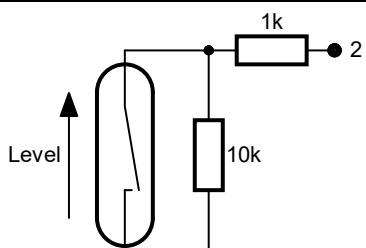
8. Commissioning

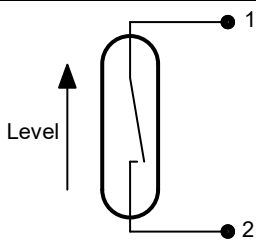
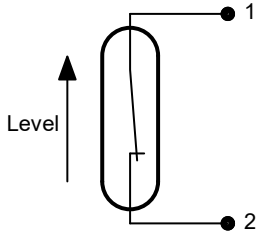
Commissioning of the electrical reed switch

Function

So that the switching function corresponds to the connection diagram or the like. According to the table, the float must pass over the switch once in both directions. **When an alarm lamp is switched on directly, this point is often ignored and it is assumed that the switch is defective.** Once the switch has been passed, it is ready for operation and does not require any maintenance.

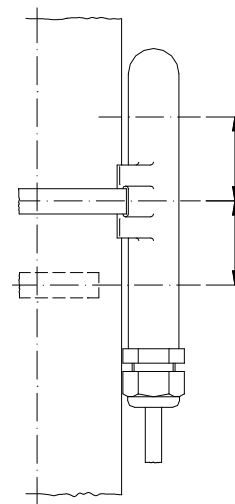
The following table shows the switching status of the contacts when the float is below the limit indicator (idle state). If the contact is overrun by the float as the fill level increases, the contacts change their switching state.

Type	Switching status with float below the contact
NBK-R/RM	
NBK-RS/RH	
NBK-RN NO	
NBK-RN NC	

Type	Switching status with float below the contact
NBK-RV NO	
NBK-RV NO	

Hysteresis

Hysteresis is the difference between contact closing and opening points. A hysteresis of approximately 15 mm float travel is achieved by factory tuning of the float magnet and contact strength.



9. Technical Information

Operating instructions, data sheet, approvals and further information via the QR code on the device or via www.kobold.com

10. Order Codes

Operating instructions, data sheet, approvals and further information via the QR code on the device or via www.kobold.com

11. Dimensions

Operating instructions, data sheet, approvals and further information via the QR code on the device or via www.kobold.com

12. Disposal

See "General Safety Instructions" - via the QR code on the device or via www.kobold.com

13. EU Declaration of Conformance

We, KOBOLD Messring GmbH, Nordring 22-24, 65719 Hofheim, Germany, declare under our sole responsibility that the product:

Limit Contact model: NBK-R / NBK-RM / NBK-RS / NBK-RH / NBK-RV / NBK-RN

to which this declaration relates is in conformity with the following EU directives stated below:

2011/65/EU RoHS
2015/863/EU Delegated Directive (RoHS III)

Also, the following standards are fulfilled:

EN 61010-1:2010+A1:2019+A1:2019/AC:2019 Safety requirements for electrical measuring, control and laboratory instruments

EN 60529:2014 Protection type through case (IP code)

EN IEC 63000:2018 Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances.

Additionally, for NBK-RN:

EN 60947-5-6:2000 Low-voltage switchgear and controlgear - Part 5-6: Control circuit devices and switching elements, DC interface for proximity sensors and switching amplifiers (NAMUR)

Hofheim, 29 May 2024



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Compliance Manager