

# Operating Instructions for Bypass Level Indicator

**Model: NBK-ATEX**



## 1. Contents

---

1. Contents.....	2
2. Note .....	3
3. Instrument Inspection.....	4
4. Regulation Use .....	5
4.1 Bypass Measuring Tube System .....	5
4.2 Electrical Limit Switches (option) .....	5
4.3 Reed Contact Resistance Chain (ATEX: options ...2/...E/...R/...B/...4/...L/...K/...N).....	5
5. Operating Principle.....	6
6. Mechanical Connection.....	8
7. Electrical Connection .....	10
7.1 Limit contacts NBK-RA .....	10
7.2 Electrical transmitters.....	11
7.3 Safety Instructions .....	12
7.4 Ground connection for ATEX models .....	14
8. Commissioning.....	15
9. Trouble Shooting.....	16
10. Maintenance .....	16
11. Technical Information.....	17
12. Options.....	17
13. Order Codes .....	17
14. Dimensions .....	17
15. Disposal .....	18
16. EU Declaration of Conformance .....	19
17. EU Declaration of Conformance (ATEX).....	20
18. Certificates .....	21
18.1 NBK-EXAM.....	21
18.2 PED EU Type Examination Certificate.....	26

### Manufactured and sold by:

Kobold Messring GmbH  
Nordring 22-24  
D-65719 Hofheim  
Tel.: +49(0)6192-2990  
Fax: +49(0)6192-23398  
E-Mail: [info.de@kobold.com](mailto:info.de@kobold.com)  
Internet: [www.kobold.com](http://www.kobold.com)

## 2. Note

Please read these operating instructions before unpacking and setting the unit into operation. Follow the instructions precisely as described herein.

The instruction manuals on our website [www.kobold.com](http://www.kobold.com) are always for currently manufactured version of our products. Due to technical changes, the instruction manuals 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](mailto: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 against an applicable postage fee.

Operating instructions, data sheet, approvals and further information via the QR code on the device or via [www.kobold.com](http://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 measuring unit should be used only when the machines fulfil the EC-guidelines.

### Classification according to Pressure Equipment Directive 2014/68/EU NBK-03 to NBK-33

Category assignment for dangerous media (from diagram 1)										
	Density [kg/dm <sup>3</sup> ]	PN [bar]	Category	ML [mm]	Category	ML [mm]	Category	ML [mm]		
NBK-03	1,0	16	← Cat. II →	4711	← Cat. III →	6000	- / -			
	0,9/0,8/0,7/ 0,6/0,54			4600		6000	- / -			
NBK-06	1,0	40		1698		6000	← Cat. IV →	∞		
	0,9/0,8/0,7			1588		6000		∞		
NBK-07	1,0	63		1060		6000		∞		
	0,9/0,8/0,7			950		6000		∞		
NBK-10	1,0	100		577		4084		∞		
	0,9/0,8			467		3974		∞		
NBK-31	1,0	160				≤2090		← Cat. IV →	5600	
	0,9					≤2020			5600	
	0,8			≤1900	5400					
NBK-32	1,0	250		≤1180	5600					
	0,9			≤1110	5600					
	0,8			≤985	5400					
NBK-33	1,0	320		≤1040	5600					
	0,9			≤970	5500					
	0,8			≤830	5400					

ATTENTION! If the calculated bypass length is exactly within the range limit, then the stricter test method must be used

# NBK-03 to -33 ATEX

## Classification according to Pressure Equipment Directive 2014/68/EU NBK-03 to NBK-33

Category assignment for not dangerous media (from diagram 2)												
	Density [kg/dm <sup>3</sup> ]	PN [bar]	Kategorie	ML [mm]	Category	ML [mm]	Category	ML [mm]	Category	ML [mm]		
NBK-03	1,0	16	← Cat. I →	4711	← Cat. II →	6000	← Cat. III →	6000	- / -			
	0,9/0,8/0,7/ 0,6/0,54			4600		6000		6000	- / -			
NBK-06	1,0	40		1698		6000		6000	- / -			
	0,9/0,8/0,7			1588		6000		6000	- / -			
NBK-07	1,0	63		1060		6000		6000	∞			
	0,9/0,8/0,7			950		6000		6000	∞			
NBK-10	1,0	100		577		4084		6000	∞			
	0,9/0,8			467		3974		6000	∞			
NBK-31	1,0	160						≤2090	← Cat. III →	5600	- / -	
	0,9							≤2020		5600	- / -	
	0,8				≤1900		5400	← Cat. IV →	- / -			
NBK-32	1,0	250			≤1180		4410		5600			
	0,9				≤1110		4340		5600			
	0,8				≤985		4220		5400			
NBK-33	1,0	320			≤1040		4090		5600			
	0,9				≤970		4010		5500			
	0,8				≤830		3870		5400			

ATTENTION! If the calculated bypass length is exactly within the range limit, then the stricter test method must be used

## 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:

- Bypass Level Indicator model: NBK-...

## 4. Regulation Use

---

Any use of the Bypass level Indicator, model: NBK, 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 NBK Bypass Level Indicator is used for continuous measurement, indication, and monitoring of liquids in tanks, vessels, reservoirs, basins etc. The indication occurs via a magnetically coupled roller indicator.

### 4.1 Bypass Measuring Tube System

The bypass tube is attached at the side of the vessel with a connecting flange or a threaded pipe. The installation position is always vertical. The NBK should only be used for liquids with the medium density specified on the nameplate. Otherwise the indication will deviate (float too high or submerged).

Vessel inner pressure and medium temperature should not exceed the specified maximum values, as this can lead to the destruction and malfunction of the bypass system. It is imperative that the materials used are compatible with the liquid being measured.

Proper operation is also impaired by:

- high degree of soiling
- suspended solids
- crystallisation
- ferrite particles

### 4.2 Electrical Limit Switches (option)

The optional electrical limit switches serve to signal a preset level.

### 4.3 Reed Contact Resistance Chain

**(ATEX: options ...2/...E/...R/...B/...4/...L/...K/...N)**

The optional reed contact resistance chain (model: MM..., see separate EC-Type Examination Certificate LOM14ATEX2075X) converts the liquid level to a resistance value. It serves to electrically transfer the level value. An optional available transmitter converts the resistance value into a standard signal (e.g. 4-20 mA).

---

**Please pay attention to the maximum medium and ambient temperatures.**

---

## 5. Operating Principle

---

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 or a monitoring device fitted outside the tube. The following indication and monitoring devices are available:

### **Magnetic roller 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 displays 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 supply fails.

\* ceramic rollers in orange/beige

### **Transmitter**

To remotely transmit the level a transmitter with an immersible magnetic probe (chain of resistors) or a magnetostrictive transducer can be mounted outside the bypass tube. The contacts of a reed contact chain are connected or disconnected via the float movement in a non-contacting manner. Depending on the level the number of connected resistors changes and as a consequence the output of the total resistor value. A continuous standard signal of 4 to 20 mA is generated by means of a fitted transmitter. This standard signal can then be displayed on analogue or digital indicating devices.

### **Limit contacts**

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

### **ATEX-version only NBK-03...NBK-10**

The bypass level indicators are ATEX approved. For level evaluation, limit switches and a magnetic submersible probe (reed contact chain) with ATEX approval are offered. The electrical add-on parts have their own ATEX approval.

ATEX approval:

Bypass-level indicator:

⊕ II 1/2G Ex h IIC T4...T1 Ga/Gb  
-20 °C ≤ T<sub>a</sub> ≤ +80 °C

or

⊕ II 1G/2D Ex h IIC/IIIC  
T4...T1/T130 °C...445 °C Ga/Db  
-20 °C ≤ T<sub>a</sub> ≤ +80 °C

or

⊕ II 1/3G Ex h IIC T4...T1 Ga/Gc  
-20 °C ≤ T<sub>a</sub> ≤ +80 °C

or

⊕ II 1G/3D Ex h IIC/IIIC  
T4...T1/T130 °C...445 °C Ga/Dc  
-20 °C ≤ T<sub>a</sub> ≤ +80 °C

Reed Contact Resistance Chain: ⊕ II 1GD Ex ia IIC T6 Ga

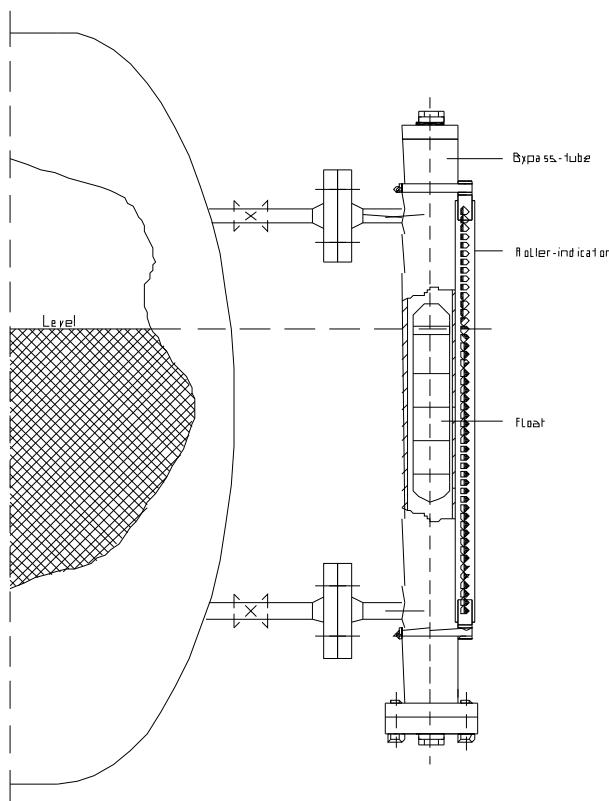
⊕ II 1/2G Exd II C T6 Ga/Gb

⊕ II 1/2D Ex tb IIIC T85 °C Da/Db

Limit contact NBK-RA:

contact sales department

## 6. Mechanical Connection

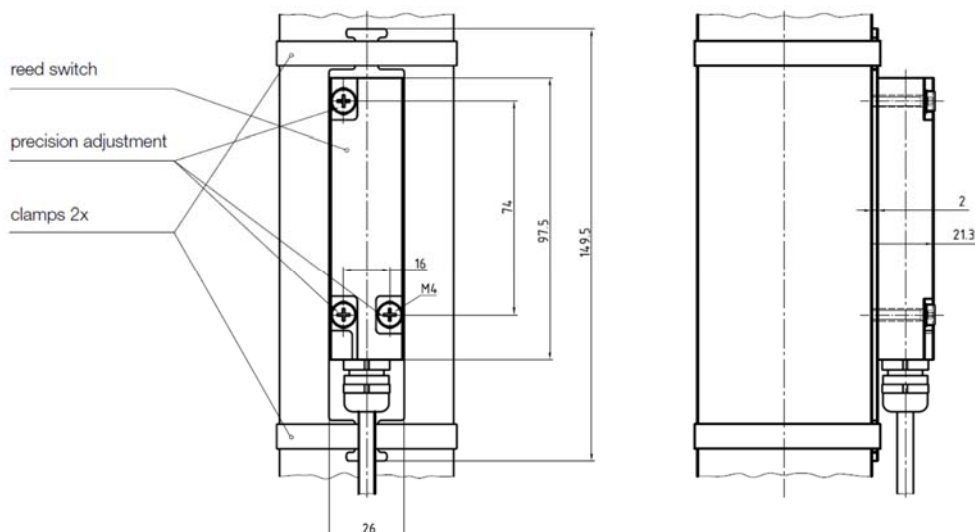


Remove the bottom flange from the bypass tube, and insert the cylindrical float in the NBK bypass tube with the designation "TOP" upturned. Reposition the gasket and close the bottom flange again; firmly tighten with screws.

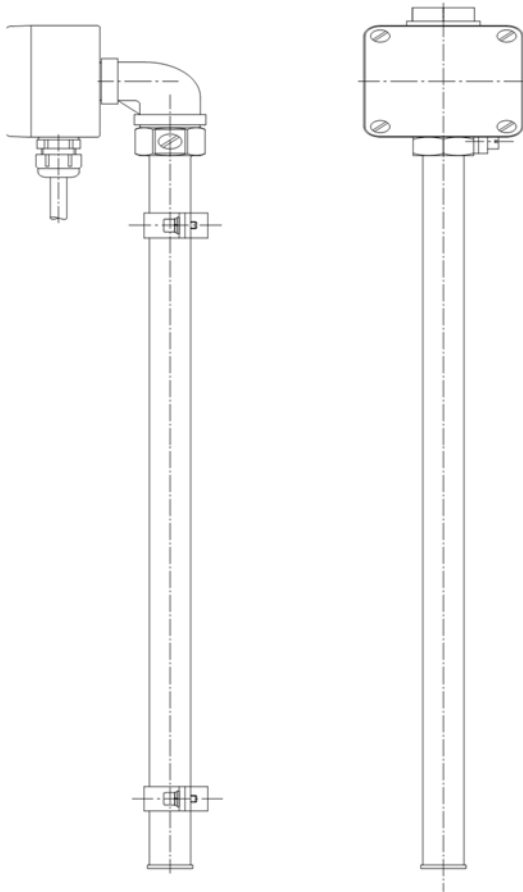
Mount the bypass tube to the vessel to be monitored via the process connection and seal with an appropriate device. Normally it is sufficient to fix the complete NBK with both process connections. However the NBK should be subjected to constant shock or strong vibrations it is recommended that the instrument is secured with rubber-damped tube clips. No welding is allowed on the bypass tube.

Mount and tighten the **magnetic roller indicator** - if not already mounted - on the bypass tube with the two provided ribbon clamps.

Mount and tighten the **reed switch** - if available - on the bypass tube at the opposite side of the roller indicator with the provided ribbon clamps (ex contact: two ribbon clamps). 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. The switching function of the switch is impaired by an enlarged air gap.







Mount and tighten the **remote sensor** - if available and not already mounted - on the bypass tube with the ribbon clamps. The remote sensor must fully cover both process connections. The cable terminal box is situated at the top.

## 7. Electrical Connection

---

### 7.1 Limit contacts NBK-RA



---

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

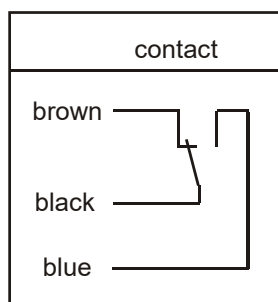
---

Maximum values	NBK-RA-contact
Switching capacity:	45 W/VA
Switching current:	0,6 A
Switching voltage:	230 V <sub>AC/DC</sub>

Install the switch (if available) according to the diagram and connect it to the electrical controller.

When switching inductive loads, such as contactors, relays, etc., electrical limit values should not, also temporarily, be exceeded by e.g. voltage peaks. The use of a contact protection relay is recommended to avoid overloading the reed contacts.

Valid regulations for hazardous areas and regulations for installation (DIN/VDE 0165) should be observed when installing the NBK level indicator in zone 1 or 2 hazardous areas (no combustible liquids).



NBK-RA

**Note to NBK-RA:**

Protect the circuit of the limit contact with a fuse. This fuse must tolerate the permitted nominal current of the switching contact and must have a deactivating ability according to the possible short circuit current of the power system at the place of installation. The contact is activated by the North Pole of a magnet and deactivated by its South Pole.

## 7.2 Electrical transmitters

- Ensure that the electrical supply lines are powerless.
- To avoid faults caused by electrical fields from other circuits, the cables should not be installed adjacent to other high voltage power lines.
- Unscrew cover and run supply lines through cable gland.
- Connect the remote sensor to the electronics according to the following table.

The electrical connection and other technical data on the NBK measuring transducers can be found in the "MM" operating instructions.

## 7.3 Safety Instructions

### 7.3.1 Guidelines

Temperature class and/or surface temperature relates only to a device operated at ambient temperature. On installation, the actual temperature class for process operation has to be determined.

Inlet bushing and cable glands must conform to the certification for their type in accordance with the directive.

The use in zone 0 of heads made of aluminium should be restricted to locations where the risk of ignition due to mechanical impact is not probable.

Verify that all data written on the label of the device matches the data required for the installation.

Verify that there is no mechanical stress or deformation due to installation in the tank.

Remove power supply and verify that no explosion risk is present before opening the housing cover and check that the cover is correctly mounted before applying power to the instruments **MM...F** Series.

The installation of instruments in hazardous areas must be exclusively done by trained staff.

### 7.3.2 Protection against ESD (Electro Static Discharges)

Instruments with plastic parts that can produce Electro Static Discharges, have a label for it.

It is important to follow some rules to avoid ESD:

- Avoid rubbing the device.
- Never clean the device in dry.
- Do not install the device near material airflows or near steam outlets.

### 7.3.3 Chemical resistance

Ensure that the device construction materials have chemical resistance sufficient to prevent mechanical deformations that may affect the device. The responsibility for suitability and intended use lies solely with the operator.

## **7.3.4 Maintenance and repairs**

The instrument does not require maintenance or servicing. By measuring substances, which tend to deposit and contamination, cleaning may be necessary. Repairs must be only carried out by Kobold Mesura (manufacturer).

## **7.3.5 Storage**

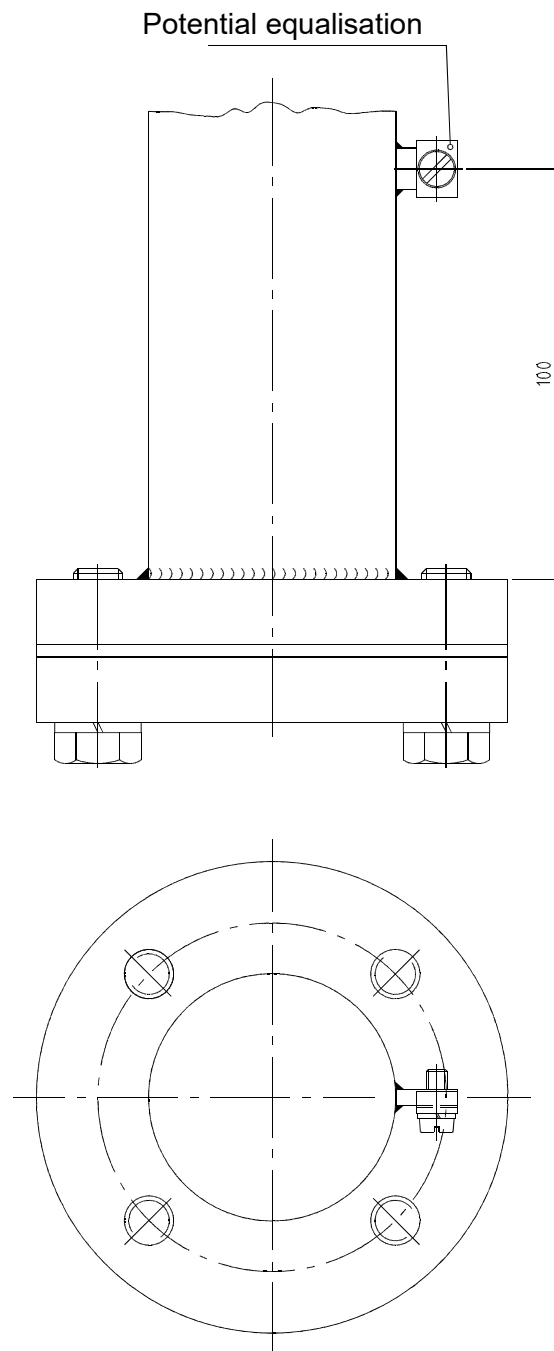
Measuring instruments should be protected against humidity and dust.  
Storage temperature: -5...+55 °C

# NBK-03 to -33 ATEX

---

## 7.4 Ground connection for ATEX models

The bypass has to be integrated into the potential equalisation system of the installation. This can be carried out through the earth terminal which is shown in the following drawing:



## 8. Commissioning

Because of the setting behaviour of seals, all screw connections must be retightened.

Fill vessel and switch on electrical controller, if available. If there are gate valves between bypass process connection and tank, first slowly open the upper valve (pressure equalisation) and then the lower valve (liquid side). If vent and drain valves have been installed, close them before filling.

The liquid that now enters the bypass tube raises the float until the level between tank and bypass tube is balanced. The roller indicator indicates the liquid level.

### Commissioning electrical reed switches NBK-RA

#### Function of switches

All switches have three connection poles (black (2), blue (1) and brown (3)).

The black wire (2) is the common pole for both switching functions (N/C and N/O contact).

The float must pass the switch once in both directions so that the switching function is in line with the terminal connection diagram and table below.

These instructions are often ignored when an alarm lamp is connected directly with the result that the alarm lamp incorrectly indicates a fault.

When the switch has been passed, it is ready for operation and requires no maintenance.

	<b>black (2) / blue (1)</b>	<b>black (2) / brown (3)</b>
float above	open	closed
float below	closed	open

#### 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. Trouble Shooting

---

**Error: The tank is full but there is no indication**

- Check that both flanges (process connection), top and bottom, are open to the vessel, and that the bypass tube fills with liquid.
- Check that there is a float in the system.
- When the float is installed, check whether it is being blocked by foreign objects or dirt deposits.

**Error: The tank is full but the indication is too low.**

- Check that the density of the liquid is the same as the density given on the nameplate.
- Check that the float has been correctly installed with the marking "TOP" upturned.
- Check if dirt deposits in the bypass tube are blocking the float.

## 10. Maintenance

---

The drain plug should be opened occasionally, to wash out any deposits in case the liquid to be measured contains dirt particles, which could settle in the bypass tube.

If crust formation or crystallisation has taken place, the tank must be emptied or shut off; the lower cover flange must then be removed. The float should then be taken carefully out of the bypass. The bypass tube can now be mechanically cleaned.

The inspection window for the roller indication is made of high-quality plexiglass (glass for high-temperature display). It should be cleaned with a suitable cleaning agent.

The indicator requires no further maintenance.



## 11. Technical Information

---

Operating instructions, data sheet, approvals and further information via the QR code on the device or via [www.kobold.com](http://www.kobold.com)

## 12. Options

---

Operating instructions, data sheet, approvals and further information via the QR code on the device or via [www.kobold.com](http://www.kobold.com)

## 13. Order Codes

---

Operating instructions, data sheet, approvals and further information via the QR code on the device or via [www.kobold.com](http://www.kobold.com)

## 14. Dimensions

---

Operating instructions, data sheet, approvals and further information via the QR code on the device or via [www.kobold.com](http://www.kobold.com)

## 15. Disposal

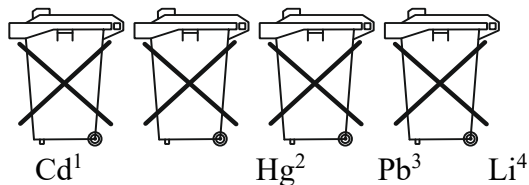
---

### Note!

- Avoid environmental damage caused by media-contaminated parts
- Dispose of the device and packaging in an environmentally friendly manner
- Comply with applicable national and international disposal regulations and environmental regulations.

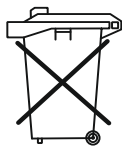
### Batteries

Batteries containing pollutants are marked with a sign consisting of a crossed-out garbage can and the chemical symbol (Cd, Hg, Li or Pb) of the heavy metal that is decisive for the classification as containing pollutants:



1. „Cd" stands for cadmium
2. „Hg" stands for mercury
3. „Pb" stands for lead
4. „Li" stands for lithium

### Electrical and electronic equipment



## 16. EU Declaration of Conformance

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

### NBK Bypass Level Indicator

Fulfils the following EU directives:

- 2011/65/EU**      RoHS (category 9)  
**2015/863/EU**    Delegated Directive (RoHS III)  
**2014/68/EU**      PED
- Category III (IV) Diagram 1, vessel, group 1 dangerous fluids
  - Module D, marking CE0575
  - Notified body: DNV AS
  - Certificate No. PEDD000000R

Model	EU type examination certificate
NBK-03	PEDB000004D
NBK-06	PEDB000004D
NBK-07	PEDB000004D
NBK-10	PEDB000004D
NBK-31	PED-B-171
NBK-32	PED-B-171
NBK-33	PED-B-171

Also, the following standards are fulfilled:

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

Hofheim, 17. Nov. 2023



H. Volz  
General Manager

J. Burke  
Compliance Manager

## 17. EU Declaration of Conformance (ATEX)

**EU-Konformitätserklärung zur  
Bestätigung der Übereinstimmung mit  
der Richtlinie 2014/34/EU**

**EU-Declaration of conformity for  
confirmation with the Directive  
2014/34/EU**

Der Hersteller:

The Manufacturer:

**Kobold Messring GmbH, Nordring 22-24, D65719 Hofheim am Taunus**

erklärt hiermit in alleiniger Verantwortung, dass das  
nicht-elektrische Gerät;

hereby declares under its sole responsibility, that the  
non-electrical equipment;

**NBK-\*\***

mit dem Modell, aus der EU-Baumusterprüf-  
bescheinigung mit der Nummer BVS 04 ATEX H 042  
X, sowie mit den Bestimmungen folgender  
harmonisierter Normen der Europäischen Union  
übereinstimmt:

complies with the model, assessed during the EU-Type  
Approval with the certificate number BVS 04 ATEX H  
042 X and is conform with the provisions of the  
following harmonised standards of the European  
Union:

<b>Norm –Ref. Nr. / Standard Ref. Nº.</b>	<b>Ausgabe Edition</b>	<b>Normbeschreibung Standard Description</b>
EN ISO 80079-36	2016	Nicht-elektrische Geräte – Grundlagen und Anforderungen <i>Non-electrical equipment – Basic method and requirements</i>
EN ISO 80079-37	2012	Nicht-elektrische Geräte – Konstruktive Sicherheit "c" <i>Non-electrical equipment – Constructional safety "c"</i>
IEC/TS 60079-32-1	2013	Elektrostatische Gefahren – Vermeidung von Zündung <i>Electrostatic Hazards – Guidance to avoid ignition</i>

**Kennzeichnungen:**

**Markings:**

⊕ II 1/2G Ex h IIC T4...T1 Ga/Gb or ⊕ II 1/2D Ex h IIC/IIIC T4...T1/T130°C..T445°C Ga/Db  
or  
⊕ II 1/3G Ex h IIC T4...T1 Ga/Gc or ⊕ II 1/3D Ex h IIC/IIIC T4...T1/ T130°C..T445°C Ga/Dc

**Name und Anschrift der Benannten Stelle**

**Name and Address of the Notified Body**

DEKRA Testing and Certification GmbH, Carl-Beyling-Haus, Dinnendahlstr. 9, D-44809 Bochum  
RL 2014/34/EU ID-Nr. / ID-Nº.: 0158

Ausgefertigt in Hofheim am 12.06.2023

Issued at Hofheim on 12<sup>th</sup> June 2023




Hans Volz      Geschäftsführer / CEO

Joseph Burke      ExB / ExR

Unterschiedet für und im Namen der / Signed for and on behalf of Kobold Messring GmbH

## 18. Certificates

### 18.1 NBK-EXAM



TRANSLATION

## 1<sup>st</sup> Supplement to the EC-Type Examination Certificate

**Equipment or Protective System intended for use in potentially explosive atmospheres  
Directive 2014/34/EU**

Number of Type Examination Certificate Supplement: **BVS 04 ATEX H 042 X N1**

Equipment: Bypass level indicators, types NBK -03, -04, -06, -07, -10, -31, -32 and -33

Manufacturer: KOBOLD Messring GmbH

Address: Nordring 22-24  
65719 Hofheim/Taunus, Germany

The design and construction of this equipment and any acceptable variation thereto are specified in the appendix to this supplement.

The certification body of DEKRA EXAM GmbH, Notified Body No. 0158 according to Article 17 of Directive 2014/34/EU of the European Parliament and the Council, dated 26 February 2014, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres, given in Annex II to the Directive.  
The examination and test results are recorded in the confidential reports no. BVS PP 1100/019/04 and BVS PP 1100/019/04 N1.





The Essential Health and Safety Requirements have been assured by compliance with:

**EN ISO 80079-36:2016      EN ISO 80079-37:2016      IEC/TS 60079-32-1:2013**

If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the appendix to this supplement.

This supplement to the EC-Type Examination Certificate relates only to the design, examination and tests of the specified product.  
Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this supplement.


The marking of the product shall include the certificate reference no (3) and the following:

 II 1/2G Ex h IIC T4...T1 Ga/Gb -20°C ≤ T <sub>a</sub> ≤ +80°C	or	 II 1/3G Ex h IIC T4...T1 Ga/Gc -20°C ≤ T <sub>a</sub> ≤ +80°C
or		
 II 1G/2D Ex h IIC/IIIC T4...T1/T130°C...445°C Ga/Db -20°C ≤ T <sub>a</sub> ≤ +80°C	or	 II 1G/3D Ex h IIC/IIIC T4...T1/T130°C...445°C Ga/Dc -20°C ≤ T <sub>a</sub> ≤ +80°C

DEKRA EXAM GmbH  
Bochum, Germany, dated 2018-07-24

signed: Koch	signed: Dr Hübner
_____ Certifier	_____ Approver

Page 1 of 5 of BVS 04 ATEX H 042 X N1  
This supplement may only be reproduced in its entirety and without change.  
DEKRA EXAM GmbH, Dinnendahlstr. 9, 44809 Bochum, Germany  
phone +49.234.3696-105, fax +49.234.3696-110, email: zs-exam@dekra.com





13 Appendix to  
14 1<sup>st</sup> Supplement to the EC-Type Examination Certificate

BVS 04 ATEX H 042 X

15 Description of Product

15.1 Subject and Type

Bypass level indicator of types NBK -03, -04, -06, -07, -10, -31, -32 and 33

15.2 Description

The bypass level indicators of types NBK -03, -04, -06, -07, 10, -31, -32 and -33 are used for continuous measurement, display and monitoring of liquid levels in tanks, vessels, basins, vats etc. The bypass tube is attached to the side wall of the vessel. According to the law of communicating tubes, the fill level in the bypass tube will equal the fill level in the vessel. Inside the bypass tube a float equipped with embedded circular magnets follows the fill level of the liquid and transfers this level contactless to a display installed outside the tube (roller display).

Overall, the equipment consists of a vertically mounted tube, a float (with a magnet inside) that moves freely inside the tube and a roller display attached to the outside of the tube. The float is lifted by the liquid inside the tube. The magnetic field causes the rollers of the roller display to rotate, indicating the fill level of the vessel. The measuring length can be up to 6500 mm. The tube consists of stainless steel, the float can be made of stainless steel or titanium.

All conductive components of the bypass level indicators are conductively interconnected due to permanent metallic contact. The maximum surface temperature depends on the temperature of the medium for which the bypass level indicators are used. The inside of the bypass level indicators complies with the requirements of equipment category 1 G; their outside complies with the requirements of equipment categories 2 GD or 3 GD.

Optionally, the bypass level indicators can be equipped with electric transmitters, attached on the outside, for remote sensing of the fill level and with electric limit contacts for sensing limit levels. Those are not subject of this EU-type examination.

Additionally, the bypass level indicators are also supposed to comply with the requirements of Directive 2014/68/EU where this applies if they are intended for use in overpressure areas. The test of sufficient pressure resistance is not subject of this EU-type examination; where required, a separate EU-type examination according to Directive 2014/68/EU has to be carried out.

15.3 Parameters

Bypass tube

Measuring length: max. 5.5 m (two-part if above)

Process connection: DIN flange DN15...DN100

ANSI flange ½" ..6"

Bypass tube: Ø 60.3 mm, 1.4571 (NBK-03/.../10)

Ø 71.0 mm, 1.4571 (NBK-31)

Ø 76.1 mm, 1.4571 (NBK-32/33)

Seal: NBK-03, -06, -07 flat gasket < 200 °C: PTFE;  
> 200 °C: Klinger SIL®

NBK-10: reinforced graphite

NBK-31/32/33: RTJ-seal

Nominal pressure: maximal PN 320

Viscosity: maximum 200 mm<sup>2</sup>/s standard)  
(optional: 460 mm<sup>2</sup>/s, NBK-03 only)



Page 2 of 5 of BVS 04 ATEX H 042 X N1  
This supplement may only be reproduced in its entirety and without change.

DEKRA EXAM GmbH, Dinnendahlstr. 9, 44809 Bochum, Germany  
phone +49 234 3696-105, fax +49 234 3696-110, email: zs-exam@dekra.com

Roller display RP (max. length 5500 mm)

Roller material: POM  
 Display glass: PMMA  
 Carrier frame material: aluminium, black, anodised  
 Medium temperature: -20 °C... 120 °C  
 Ambient temperature: -20 °C... 80 °C  
 Degrees of protection: IP 54

Roller display RK (max. length 5500 mm)

Roller material: ceramic  
 Display glass: borosilicate glass  
 Carrier material: aluminium, black, anodised  
 Medium temperature: -20 °C... 400 °C  
 Ambient temperature: -20 °C... 80 °C  
 Degrees of protection: IP 54

## 15.4 Description of the Supplement

The bypass fill level displays are supplemented by the types NBK -31, -32 and -33. The magnetic roller displays mounted outside the tube of types RK and RP are supplemented by the ball indicating displays of types KP, KM, KF, KG:

Ball indicating display KP (max. length 3800 mm, single-part)

Ball material: PA  
 Sight tube: PMMA  
 Sealing plug: aluminium  
 Seal: NBR  
 Ball support rail: aluminium, black, anodised  
 Carrier frame: stainless steel 1.4301  
 Scale: PVC (stainless steel 1.4301 optional)  
 Medium temperature: -20 °C... 80 °C  
 Ambient temperature: -20 °C... 80 °C  
 Degrees of protection: IP 66

Ball indicating display KM (max. length 3800 mm, single-part)

Ball material: PA  
 Sight tube: PC  
 Sealing plug: aluminium  
 Seal: FKM  
 Ball support rail: aluminium, black, anodised  
 Carrier frame: stainless steel 1.4301  
 Scale: PVC (stainless steel 1.4301 optional)  
 Medium temperature: -60 °C... 120 °C  
 Ambient temperature: -20 °C... 80 °C  
 Degrees of protection: IP 66

Ball indicating display KF (max. length 3800 mm, single-part)

Fill liquid: silicone oil  
 Ball material: PA  
 Sight tube: PC  
 Sealing plug: stainless steel  
 Seal: FKM  
 Ball support rail: aluminium, black, anodised  
 Carrier frame: stainless steel 1.4301  
 Scale: PVC (stainless steel 1.4301 optional)  
 Medium temperature: -104 °C... 120 °C  
 Ambient temperature: -20 °C... 80 °C  
 Degrees of protection: IP 66



## Ball indicating display KG (max. length 3000 mm, single-part)

Ball material:	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 °C...200 °C
Ambient temperature:	-20 °C...80 °C
Degrees of protection:	IP 66

## 16 Test and Assessment Reports

PP BVS PP 1100/019/04, as of 30.07.2004  
PP BVS PP 1100/019/04 N1, as of 24.07.2018

## 17 Special Conditions for Safe Use

The bypass level indicators have to be integrated into the equipotential bonding by earthing; here, the resistance to earth has to be of a value of  $< 10^6 \Omega$ .

The maximum surface temperature of the bypass level indicators depends on the temperature of the medium for which the bypass level indicators are used.

The ignition temperature of the individual dusts intended for use must be at least 1.5 times the value of the maximum surface temperature of bypass level indicators. The smouldering temperature of the individual dusts intended for use must be at least 75 K above the maximum surface temperature of the bypass level indicators. The dust accumulated shall only reach a layer thickness of 5 mm maximum. Where dust layers of  $> 5$  mm thickness are formed, the safety distance between the minimum ignition temperature of the settled dusts and maximum surface temperature of the equipment must be increased taking e.g. the requirements of EN 60079-14 in its valid edition into account.

The highest medium temperature permitted for the gases, vapours and mists to be used shall not exceed the following:

- at bypass level indicators with EPL Ga: 80 % of the maximum medium temperature according to the temperature class marked;
- at bypass level indicators with EPL Gb and EPL Gc the limit of the temperature class minus 5 K for temperature classes T4 and T3, and minus 10 K at temperature classes T2 and T1.

The bypass level indicators shall not be used with substances that are susceptible to ignition or explosion caused by sparks or friction (e.g. according to class 4.1 ADR); neither shall they be used in hybrid mixtures.

During operation no potential ignition sources (e.g. smouldering or burning particles, smouldering nests or foreign particles) shall enter the bypass level indicators.

If the bypass level indicators are to be used in hazardous areas, any apparatus it is operated in conjunction with have to be suitable for this purpose and supplied according to Directive 2014/34/EU. If the bypass level indicator is assembled with apparatus that have not been subject of this EU-type examination (e.g. the electric limit contacts), a separate risk assessment with regard to additional ignition hazards has to be carried out.

The bypass level indicators shall not be coated by the end user.

Additionally, the bypass level indicators are also supposed to comply with the requirements of Directive 2014/68/EU where this applies if they are intended for use in overpressure areas. The test of sufficient pressure resistance is not subject of this EU-Type Examination Certification; where required, a separate EU-type examination according to Directive 2014/68/EU has to be carried out.

## 18 Essential Health and Safety Requirements

The Essential Health and Safety Requirements covered by the standards listed under item 9.



Page 4 of 5 of BVS 04 ATEX H 042 X N1  
This supplement may only be reproduced in its entirety and without change.  
DEKRA EXAM GmbH, Dinnendahlstr. 9, 44809 Bochum, Germany  
phone +49.234.3696-105, fax +49.234.3696-110, email: zs-exam@dekra.com





## 19 Drawings and Documents

The drawings and documents are listed in the test and assessment report.

In the case of arbitration only the German wording shall be valid and binding.

44809 Bochum, Germany, dated 29.08.2018  
18EXAM 10375

DEKRA EXAM GmbH

Certifier

Approver



Page 5 of 5 of BVS 04 ATEX H 042 X N1  
This supplement may only be reproduced in its entirety and without change.  
DEKRA EXAM GmbH, Dinnendahlstr. 9, 44809 Bochum, Germany  
phone +49.234.3696-105, fax +49.234.3696-110, email: zs-exam@dekra.com

# NBK-03 to -33 ATEX

## 18.2 PED EU Type Examination Certificate



### EU TYPE EXAMINATION CERTIFICATE - PRODUCTION TYPE

Certificate No:  
**PEDB000004D**

**This is to certify:**

That representative samples of the product(s) **Pressure Accessory**

with name and/or type designation(s)

**Level Indicators NBK-03, NBK-06, NBK-07 and NBK-10**

Manufactured by

**Kobold Messring GmbH**  
**Hofheim am Taunus, Hessen, Germany**

has been assessed with respect to the conformity assessment procedure described in Annex III Module B Production Type of Directive 2014/68/EU on Pressure Equipment, and found to comply with the requirements in Annex I – Essential Safety Requirements of the Directive.

Further details are given overleaf

This Certificate is valid until **2032-07-15**.

Issued at **Høvik** on **2022-07-16**



for the Notified Body 0575

**DNV AS**

van der Merwe, Bosman  
Høvik  
2023.02.17 16:09:36  
+01'00'



**Bosman van der Merwe**  
**Head of Notified Body**

Lack of fulfilment of conditions as set out in the Product Certification Agreement may render this Certificate invalid.

The digitally signed and electronically distributed document is the original and valid certificate.

DNV AS, Veritasveien 1, 1363 Høvik, Norway. Tlf.: +47 67 57 91 00. Email: [PED@dnv.com](mailto:PED@dnv.com)

**LEGAL DISCLAIMER:** Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.



Form code: PED 321

Revision: 2022-09

[www.dnv.com](http://www.dnv.com)

Page 1 of 3



Job Id: 341.4-000337-2  
Certificate No: PEDB000004D

## Jurisdiction

Application of Directive 2014/68/EU and Norwegian Regulation FOR-2017-10-10-1631 "Forskrift om trykkpåkjent utstyr", as amended, issued by the Norwegian Directorate of Civil Protection and Emergency Planning and by the Petroleum Safety Authority Norway.

## Certificate history

Revision	Description	Issue Date
-	Original certificate	2022-07-16

## Products covered by this Certificate

Product Name	Product Description	PED Category	Product Std.
NBK-03	Pressure Accessory	I to III	AD 2000
NBK-06	Pressure Accessory	I to IV	AD 2000
NBK-07	Pressure Accessory	I to IV	AD 2000
NBK-10	Pressure Accessory	I to IV	AD 2000

## Design Data

Product Name	Max. allowable Pressure (PS)	Min. allowable Temperature	Max. allowable Temperature (TS)	Test Pressure
NBK-03	16 bar	-104°C	400°C	24 bar
NBK-06	40 bar	-104°C	400°C	60 bar
NBK-07	63 bar	-104°C	400°C	95 bar
NBK-10	100 bar	-104°C	400°C	150 bar

## Design Data

Product Name	Volume	DN	Fluid	Fluid Group
NBK-03	depending on the length	50	div.	1 / 2
NBK-06	depending on the length	50	div.	1 / 2
NBK-07	depending on the length	50	div.	1 / 2
NBK-10	depending on the length	50	div.	1 / 2

## Prototype Test reference

Site Name	Site Address	Inspected by	Date	Report ID
Kobold Messring GmbH	Nordring 22-24 D-65719 Hofheim Germany	DNV HAM	2015-05-28	341.4-000337-1
		DNV AUG	2021-08-06	341.4-000907-3

## Documents Reviewed

Document No.	Rev.	Date	Title	Status <sup>1</sup>
203.048	1	2012-07-19	Bypass Typ: NBK-03-GL	A
203.049	2	2012-07-19	Bypass Typ: NBK-06-GL	A
203.080	1	2012-07-19	Bypass Typ: NBK-07	A
203.081	1	2012-07-19	Bypass Typ: NBK-07	A
203.082	2	2012-07-19	Bypass Typ: NBK-10	A
203.083	2	2012-07-19	Bypass Typ: NBK-10	A
NBK K05/0722		2022-03-18	Bedienungsanleitung für Bypass-Niveaustandanzeiger Typ NBK	FI

## Applications/Limitations

<sup>1</sup> A = Approved, AC = Approved with comments, FI = For information

# NBK-03 to -33 ATEX

---



Job Id: **341.4-000337-2**  
Certificate No: **PEDB000004D**

- This Certificate only relates to directives described above. Other directives, covering other phenomena, and also having requirements related to CE marking, might also apply.

## Terms and conditions

Valid Terms and Conditions are found in the Product Certification Agreement which includes DNV's PED Certification Requirements.

This Certificate alone does not give the right to CE mark and put the product(s) listed in this Certificate on the market. Only after the product(s) have been found to comply with the requirements in one of the following Conformity Assessment Modules C2 or E (if product category III), D or F (if product category IV) the Manufacturer may draw up an EU declaration of conformity and legally affix the CE mark followed by the identification number of the Notified Body involved in these modules.

**DNV·GL**

Certificate No:  
**PED-B-171**

## EC-TYPE EXAMINATION CERTIFICATE

### This is to certify:

That the product(s) **Pressure Accessory**

with name and/or type designation(s)  
**Level Indicators NBK-31, NBK-32 and NBK-33**

Manufactured by  
**Kobold Messring GmbH**  
**Hofheim, Germany**

has been assessed with respect to  
the conformity assessment procedure described in annex III (Module B) of Council Directive 97/23/EC on  
Pressure Equipment, as amended, and found to comply

Further details are given overleaf

**Høvik, 2015-07-22**  
for **DNV GL**

This Certificate is valid until  
**2025-07-21**

Notified Body No.: **0575**



on behalf of  
**Marianne Spæren Marveng**  
Certification Manager

DNV GL local office:  
**Hamburg**

**Vishnumurthi Ragavendhra Rao**  
Technical Reviewer

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid. Except for any liability caused by DNV GL's gross negligence or wilful misconduct, DNV GL's maximum cumulative liability arising out of or related to the use of or reliance on this document shall be limited to USD 300 000. The digitally signed and electronically distributed document is the original and valid certificate. Ref.: [www.dnv.com/digitalsignatures](http://www.dnv.com/digitalsignatures)

# NBK-03 to -33 ATEX

Job Id: **341.4-000337-1**  
Certificate No: **PED-B-171**

## Jurisdiction

Application of Council Directive 97/23/EC of 29 May 1997 on Pressure Equipment, adopted as regulation of 1999-06-09 no. 721 "Forskrift for Trykkpåkjet Utstyr" by the Norwegian Directorate of Civil Protection and Emergency Planning and by the Petroleum Safety Authority Norway.

## Certificate history

Revision	Description	Issue Date
-	Original certificate	2015-07-22

## Products covered by this Certificate

Product Name	Product Description	Category*	Applied Product Std.
NBK-31	Level indicator	II to IV	AD 2000
NBK-32	Level indicator	II to IV	AD 2000
NBK-33	Level indicator	II to IV	AD 2000

\*depending on the length and fluid group

## Design Data

Maximum allowable pressure (PS)	Maximum / Minimum allowable temperature (TS)	Fluid	Fluid group
NBK-31: 160 bar	100 / -60°C	div.	1 / 2
NBK-32: 250 bar	100 / -60°C	div.	1 / 2
NBK-33: 320 bar	100 / -60°C	div.	1 / 2

## Applications/Limitations

- This Certificate only relates to directives described above. Other directives, covering other phenomena, and also having requirements related to CE marking, might also apply.

## Tests carried out on

Product Name / Identification	Tests
S-Nr. 363677-79D	acc. to protocol QS 07-14
Production Site Name	Address
Kobold Messring GmbH	Nordring 22-24, D-65719 Hofheim, Germany

Inspection of manufacturing and testing of prototype(s) has been carried out by DNV GL Hamburg, ref. Assessment Report dated 2015-05-28.

## Documents reviewed

Drawing/Document No	Rev.	Date	Title	Status <sup>1</sup>
203.096-1		2014.11.13	Bypass Typ: NBK-31	A
203.097-1		2014.11.13	Bypass Typ: NBK-32	A
203.098-1		2014.11.13	Bypass Typ: NBK-33	A
NBK K02/0713		2014.11.18	Bedienungsanleitung für Bypass-Niveaustandanzeiger Typ: NBK	FI

<sup>1</sup> A = Approved, AC = Approved with comments, FI = For information



Job Id: **341.4-000337-1**  
Certificate No: **PED-B-171**

## Terms and conditions

The certificate is subject to the following terms and conditions:

- In case of damages caused by defective products, directive 85/374/EEC, as amended, will apply
- The Certificate is only valid for the product(s) listed above
- The Certificate is concerned with the design and prototype testing of the product, only

The following may render this Certificate invalid:

- Changes in the design or construction of the product(s)
- Changes or amendments to the referenced directive(s)
- Changes or amendments in the standard(s) which form the basis for documenting compliance with the essential requirements of the directive(s)

## Conformity declaration and marking of product

This Certificate does not give the Manufacturer the right to CE mark and put on the market the product(s) listed on this Certificate. Only after the product(s) have been found to comply with the requirements in one of the following Conformity Assessment Modules C1, D, E or F, the Manufacturer may draw up an EC declaration of conformity and legally affix the CE mark followed by the identification number of the Notified Body involved in these modules.