



By use in explosive hazardous areas read and follow the

## special conditions and instructions for safe application

of the attached

## explosive protection information

first and take notice of the operating instructions.

# Operating instructions

## 1. Description

### 1.1 Intended use

The level indicator observes the filling level as a limit switch in silos and containers. It can be used as full, demand and empty indicator for dusty and powdery, granulated and grainy bulk goods with a max. grain size up to 100 mm and with a bulk weight of 0.3 ... 2.5 t/m<sup>3</sup>.

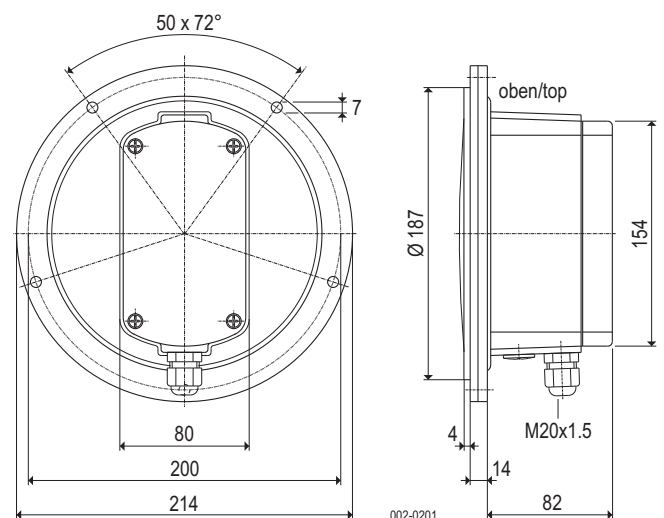
### 1.2 Function

The bulk material presses with its weight against the membrane. A tappet directly transfers the pressure from the membrane to the switch. When the bulk goods are decreasing, pressure is taken off the membrane and the switch will be interconnected.

### 1.3 Technical data

<b>Manufacturer</b>	<b>MOLLET</b> Füllstandtechnik GmbH
<b>Address</b>	Industriepark RIO 103 74706 Osterburken
<b>Name</b>	Membrane level indicator
<b>Type</b>	MFB
<b>Bulk goods temperature</b>	NBR -20 °C ... +80 °C Viton -20 °C ... +150 °C stainless steel -30 °C ... +200 °C
<b>Ambient temperature</b>	T <sub>a</sub> -20 °C ... +80 °C
<b>Signal contact</b>	change-over contact, potentialfree
<b>Capacity of the contact</b>	see Type plate
<b>Switching voltage</b>	<b>Contact</b> see Type plate
<b>Response delay</b>	none
<b>Cable entry</b>	cable gland M20x1.5
<b>Type of protection</b> acc. to DIN EN 60529	IP 40 IP 53 if compensating filter is downwards IP 65 with stainless steel membrane
<b>Overpressure safety</b>	up to 5 bar
<b>Weight</b>	1.85 kg
<b>Maintenance</b>	none
<b>Mounting position</b>	any position

### 1.4 Dimensions



### 1.5 Sensitivity adjustable

NBR	from 100 g ... 200 g
Viton	from 100 g ... 200 g
Stainless steel	from 200 g ... 500 g

### 1.6 Materials

<b>Housing</b>	aluminium
<b>Type</b>	<b>Membrane</b> <b>Mounting ring</b>
<b>MFB-NA</b> =	NBR                      aluminium
<b>MFB-NE</b> =	NBR                      stainless steel, 304
<b>MFB-VA</b> =	Viton                     aluminium
<b>MFB-VE</b> =	Viton                     stainless steel, 304
<b>MFB-EA</b> =	stainless steel        aluminium

## 2. Installation

### 2.1 Preparation

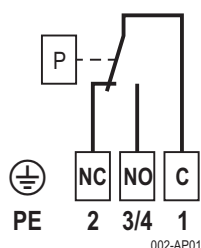
- Read and follow the safety instructions and the operating instructions before mounting the device!
- After unpacking, check by visual inspection if the membrane has any damages in transit.

### 2.2 Mechanical connections

- Put the membrane level indicator together with the sealing at the flange of the silo or container and screw it tightly with screws M6 and washers.

### 2.3 Electrical connection

connection plan



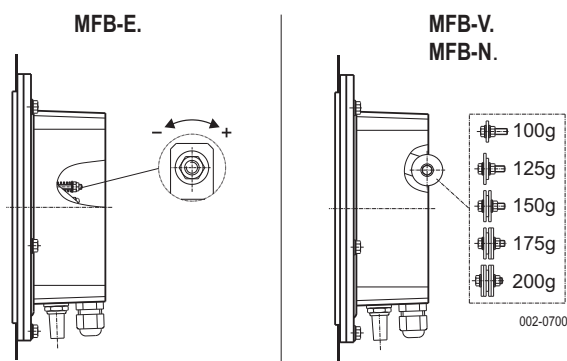
### 2.4 Cable gland

After the electrical connection

- the cable gland has to be screwed tightly,
- the cap nut has to be screwed until the cable gland is fixed and closed tightly,
- the screws of the strain relief shackle has to be screwed tightly (when threaded cable grommet, only).

## 3. Putting into operation

- Put the membrane level indicator into operation only, when the installation in the container or silo has been done correctly and when it has been fixed tightly with the electrical connection.
- The membrane level indicator is presetted at a medium sensitivity.
- The sensitivity is adjustable by the adjusting screw (MFB-E.) resp. by adding or removing of weights (MFB-N. and MFB-V.).



## 4. Utilization

### 4.1 Normal operation

- Use the membrane level indicator in its intended **application** only.
- **The membrane level indicator is provided for use in silos or containers with pressureless operation.**
- Comply with the details about max. temperatures, stated on the data plate. Check the membrane of the level indicator, when the permissible temperature of bulk goods **was exceeded or was fallen short off.**
- If the indicator will be damaged, take the device out of operation immediately.

### 4.2 Inexpert handling

- Ignoring of the safety instructions and the operating instructions.
- **Utilization** of the membrane level indicator in not intended use.
- Mounting of spare parts which are no original parts.
- Violation against applicable law and standards.

## 5. Maintenance and servicing

### 5.1 General informations

- Do maintenance work at the level indicator only, if the silo or the container is empty and if there is no overpressure or vacuum.
- Use original spare parts only.

### 5.2 Maintenance

- Inspect in **regular intervals** if there is any wear or abrasion at the indicator's membrane. Define the control intervals, depending on the characteristics of the bulk goods.
- In case of damage or abrasion, replace the membrane immediately with a new membrane.

### 5.3 Servicing

- Damaged parts, contacts or connections have to be repaired immediately or being replaced with parts of the same kind.
- Until the complete restoration of the proper function, the membrane level indicator must not be used any more.

## 6. Storage

- Store the membrane level indicator at a dry place.
- Protect the membrane from pointed objects as well as from strong radiation from the sun.

## 7. Disposal

- The level indicator can be recycled.
- The disposal applies to the valid environmental guidelines according to the location of the carrier and the local manufacturing conditions.



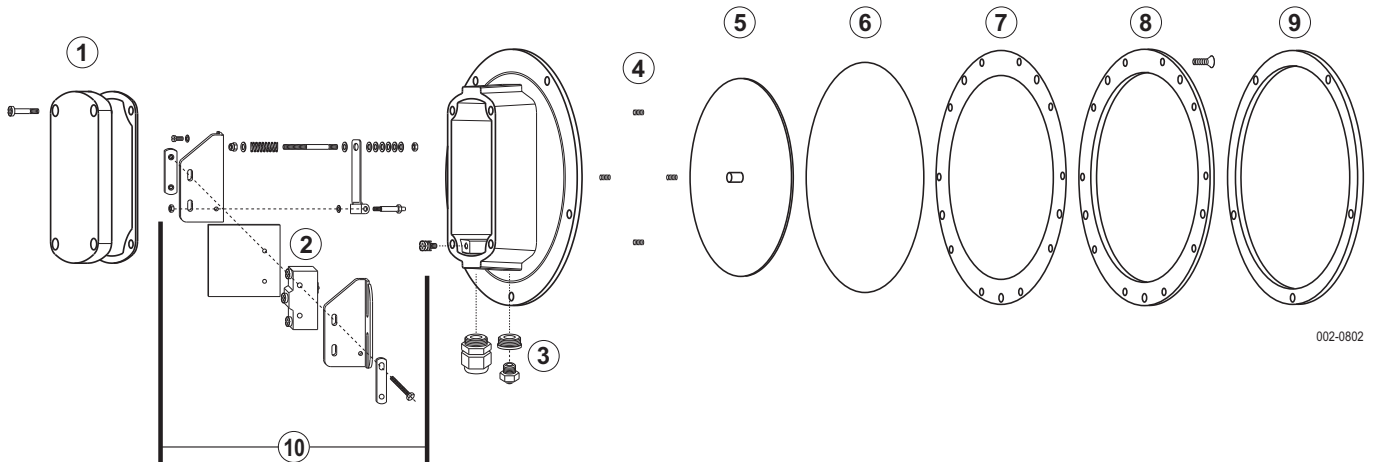
## Special conditions and instructions for safe application

1. The installation, maintenance, initial operation, removal and repair have to be controlled resp. checked by an “authorized person” for explosion protection.
2. For the electrical connection you have to take notice of the local and statutory requirements and/or the VDE 0100.
3. Take notice of the specifications on the data plate.
4. A fuse (with max. 4A) has to be connected in series to the voltage supply.
5. Protect the signal contact from voltage peaks when inductive loads are connected.
6. As soon as the device will be brought into the explosion hazardous area it has to be mounted immediately at the pre-caused place and a cable has to be brought into the cable gland.
7. Please check if the cable gland have loosened during on the mounting or at the transport. When it is loosened, it has to be fitted again with a torsional force of 3.75 Nm.
8. To secure the type of protection, the screw nut of the cable gland has to be fixed at the installation with a torsional force of min. 2.7 Nm. **ATTENTION** If it will be fastened too strong, the IP-protection can be affected.
9. The earth connection of the device has to be installed in such a way that mechanical damage will be excluded.
10. The device may put into operation with built-in cap-sealing and when it is closed, only.
11. Switch off the power supply, before opening the device. (touchdangerous voltage)
12. Depending on the bulk goods characteristics and the wear, the carrier has to define resp. to find out in which intervals the membrane of the level indicator has to be checked for leakage to keep the type of protection (dust-proof). This inspection has to be repeated regularly. If there is a fault, the membrane has to be replaced with a new membrane.
13. Take notice of the requirements of DIN EN 61241-14 and DIN EN 60079-17, especially regarding the dust deposits and temperatures and follow the pertinent rules and regulations.
14. Clean the device with a moist towel only. Don't use any pointed objects or solvents.



 Ersatzteile / spare parts

 MFB



002-0802

Pos.	Benennung / Reference	Artikel-Nr./Order code	Werkstoff / Material
1	Deckeldichtung / cap seal	MFB-DS01	NBR
2	Schalter / switch	Z-15G-B	
3	Filter / filter	395028-AVS	Messing / Brass
4	Feder / spring	MFB-FR01	Federstahl /spring steel
5	Membrane / membrane <b>V</b> . Membrane / membrane <b>N</b> .	MFB-MB-VI MFB-MB-NR	VITON NBR
6	Membrane / membrane <b>E</b> .	MFB-MB-VA	1.4301
7	Dichtring / seal ring	MFB-DS02	
8	Haltering / mounting ring <b>.E</b> Haltering / mounting ring <b>.A</b>	MFB-HR-VA MFB-HR-AL	1.4301 Aluminium
9	Flanschdichtung / flange seal	MFB-FD01	NBR-Schaumstoff
10	Ersatzteilpaket inkl. Schalter für <b>MFB-E</b> . spare part kit incl. switch for <b>MFB-E</b> .	MFB-EP01	
10	Ersatzteilpaket inkl. Schalter für <b>MFB-V</b> / <b>MFB-N</b> . spare part kit incl. switch for <b>MFB-V</b> / <b>MFB-N</b> .	MFB-EP02	





# EG-Konformitätserklärung EC-Declaration of Conformity

Wir/We

**MOLLET Füllstandtechnik GmbH**

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D-74706 Osterburken  
Tel. 06291 64400 Fax 06291 9846

erklären hiermit, dass die Geräte:

declare that the devices:

**Membran-Füllstand-Grenzscharter**  
Membran-Füllstandanzeiger

**Membrane limit switch**  
Membrane level indicator

Typ **MFB - EA - B0** und **MFB - EE - B0**

Type **MFB - EA - B0** and **MFB - EE - B0**

auf die sich diese Erklärung bezieht, den folgenden Normen  
oder normativen Dokumenten entsprechen:

to which this declaration relates is in accordance with  
the following standards or other normative documents:

**Richtlinie 94/9/EG** (Explosionsschutz-Richtlinie)

**Directive 94/9/EC** (Directive ATEX)

und

and

**EN 60079-0:2009, EN 60079-31:2009**

**EN 60079-0:2009, EN 60079-31:2009**

Die grundlegenden Sicherheits- und Gesundheitsanforderungen werden erfüllt gemäß den Bestimmungen der Richtlinien und durch Einhaltung der Normen.

The Essential Health and Safety Requirements are assured by compliance with the directive and observance of the normative documents.

Die Geräte sind mit folgenden Angaben gekennzeichnet:

The marking of the equipment includes the following:

CE  II 3D Ex tc IIIC T 80 °C

$-20\text{ °C} \leq T_a \leq +70\text{ °C}$

Prüfprotokollnummer

**ATEX-PP-06-917X**

Test report number

Osterburken, den 20.05.2010

Osterburken, May 20th 2010



  
Wolfgang Hageleit

Diese Erklärung darf nur unverändert  
weiterverbreitet werden.

This declaration is only allowed to  
hand out in unchanged form.

