

Membrane level indicator

Operating instructions



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- Read and follow these safety instructions first and take notice of the operating instructions.



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 precaused place and a cable has to be brought into the cable gland.
7. Using the device in ambient temperatures $> +60\text{ °C}$, the applied connection cables have to be made for temperatures of min. $+80\text{ °C}$.
8. 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.
9. 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.
10. The earth connection of the device has to be installed in such a way that mechanical damage will be excluded.
11. The device may put into operation with built-in cap-sealing and when it is closed, only.
12. Switch off the power supply, before opening the device. (touchdangerous voltage)
13. 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.
14. 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.
15. Clean the device with a moist towel only. Don't use any pointed objects or solvents.

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 30 mm and with a bulk weight of 0.3 ... 2.5 t/m³.

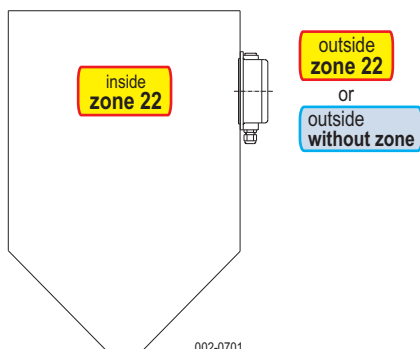
1.2 Function

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

1.3 Technical data

Manufacturer	MOLLET
	Füllstandtechnik GmbH
Address	Industriepark RIO 103 74706 Osterburken
Benennung	Membrane level indicator
Type	MFD-B0
Equipment group	II
Matter group	Dust D
Category	3D
Temperature range	T_a -20 °C ≤ T_a ≤ +70 °C
Signal contact	change-over contact, potentialfree
Capacity of the contact	Contact 4 A / 250 V AC
Switching voltage	24 V ... 250 V AC or 12 V ... 125 V DC
Sensitivity	60 g ... 200 g adjustable
Response delay	none
Cable entry	cable gland M20x1.5
Type of protection	IP IP 65 acc. to DIN EN 60529
Overpressure safety	up to 5 bar
Weight	0.73 kg
Maintenance	none
Mounting position	any position

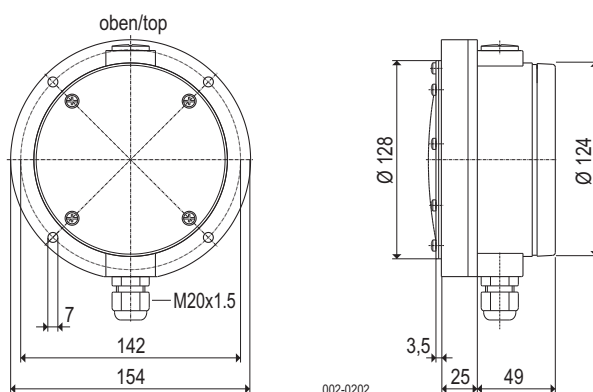
1.4 Approved zones



1.5 Materials

Housing	GRP (glass-fibre reinforced plastics)
Type	Membrane Mounting ring
MFD-NN =	NBR steel, galvanized
MFD-VN =	Viton steel, galvanized
MFD-NE =	NBR stainless steel, 304
MFD-VE =	Viton stainless steel, 304

1.6 Dimensions



2. Installation

2.1 Preparation

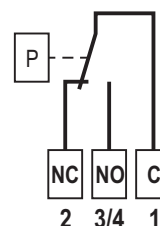
- Read and follow the safety instructions and the operating instructions before mounting the device!!
- After unpacking, check by visual inspection if the membrane has any damages in transit.

2.2 Mechanical connections

- The membrane level indicator has to be mounted always with the cable entry downwards.
- 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

The cable gland will be delivered together with the sealing washer. Therefore the housing is protected from entry of dust and soil, while the transport and storing outside of the explosion hazardous areas (Ex zones).

As soon as the device will be brought into the explosion hazardous area:

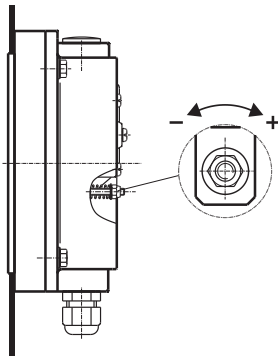
- It has to be mounted immediately at the pre-caused place and a cable has to be brought into the cable gland.
- Check if the cable gland or locking screw have got loose while the mounting or the transport. When it is loosened, it has to be fitted again with a torsional force of 3.75 Nm.
- After contraction of the cable and after electrical connection, the cap nut of the gland has to be fitted with a torsional force of min. 2.7 Nm.

CAUTION

The IP-protection can be impaired when the cap nut will be fastened too strong.

3. Putting into operation

- Put the membrane level indicator into operation only, when the mounting 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 with the adjusting screw.



002-0702

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 range has been exceeded or has 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 one.

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

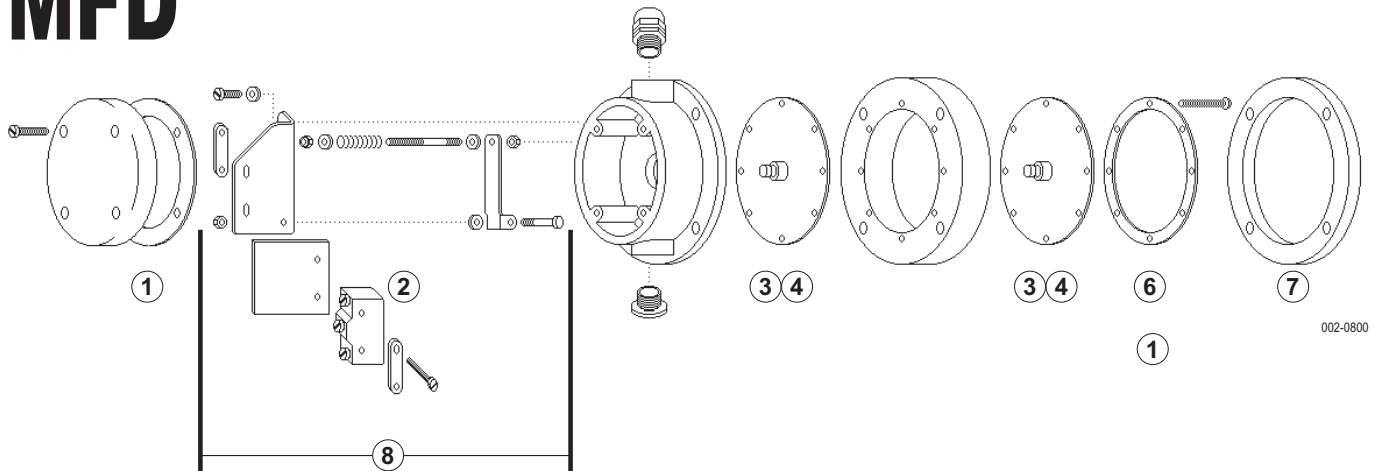
- Store the membrane level indicator at a dry place.
- Protect the membrane from pointed objects as well as from strong radiation from the sun.

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.

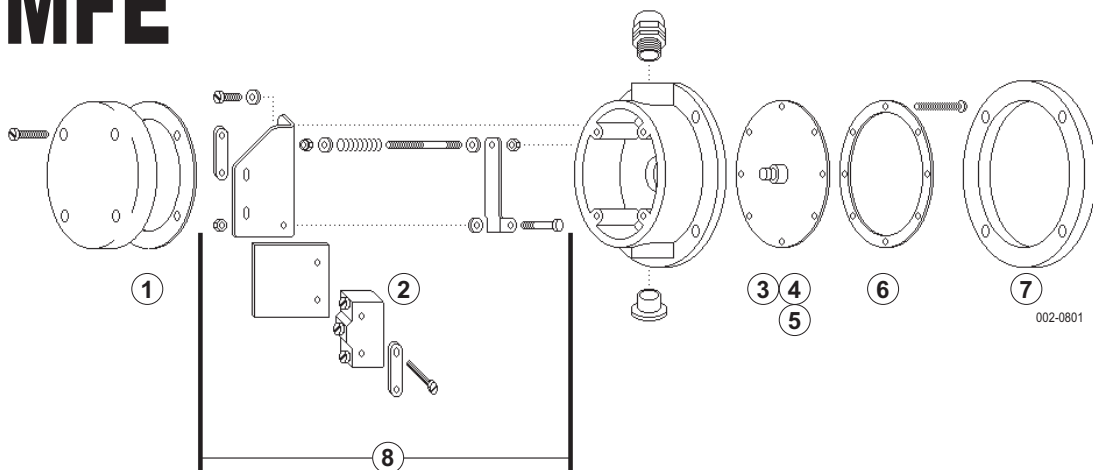
 Ersatzteile / spare parts

 **MFD**



Ersatzteile / spare parts

MFE



Pos.	Benennung / Reference	Artikel-Nr. / Order code	Werkstoff / Material
1	Deckeldichtung / cap seal	MF-DS001	NBR
2	Schalter / switch	BZ-2R-A2	
3	Stößel / tappet	MF-WE001	Aluminium
4	Membrane / membrane N . Membrane / membrane V .	MF-MB-NR MF-MB-VI	NBR VITON
5	Membrane / membrane E .	MF-MB-VA	1.4301 / stainless steel
6	Haltering / mounting ring N . Haltering / mounting ring E .	MF-HR-ST MF-HR-VA	Stahl, verzinkt / zinc-plated steel 1.4301 / stainless steel
7	Flanschdichtung / flange seal	MF-FD-NR	NBR-Schaumstoff / NBR foam
8	Ersatzteilpaket inkl. Schalter spare part kit incl. switch	MF-EP001 MF-EP001	





EG-Konformitätserklärung EC-Declaration of Conformity

Wir/We

MOLLET Füllstandtechnik GmbH

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erklären hiermit, dass die Geräte:

declare that the devices:

Membran-Füllstand-Grenzschalter

Membran-Füllstandanzeiger

Membrane limit switch

Membrane level indicator

Typ **MFD-...-B0**

Type **MFD-...-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-04-910X

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.

