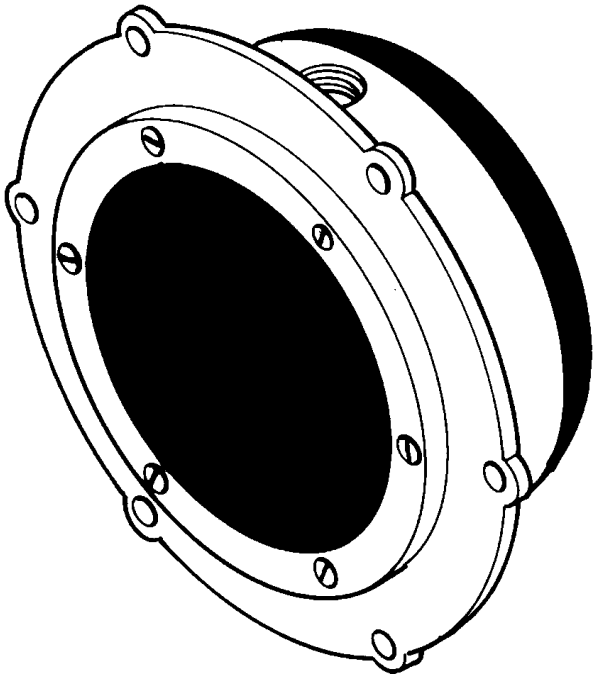
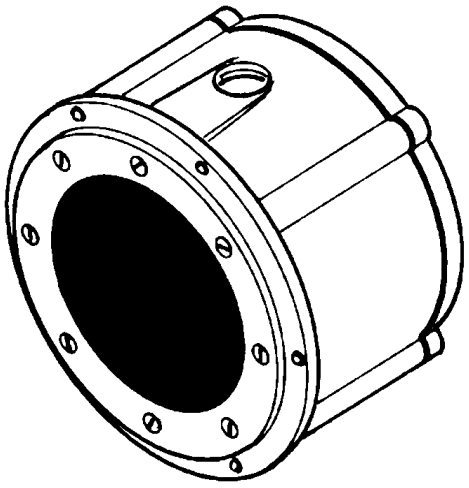
# INSTRUCTION MANUAL

**Please read before use!**



**FMN 113**



**FMK 508**

## Level Indicator

Type **FMN** and **FMK**

ZIMSOTEC Sebastian Zimmermann
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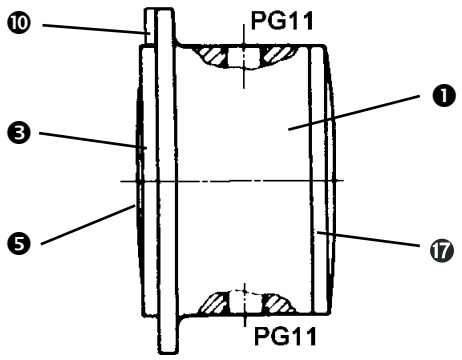
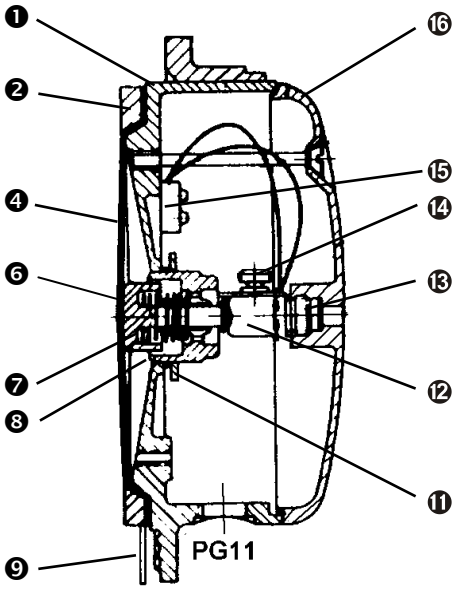
## Component Parts




FMK 508




FMN 113

1. Body
2. Diaphragm guard ring FMK
3. Diaphragm guard ring FMN
4. Flat diaphragm FMN
5. Flat diaphragm FMK
6. Tapped / Ram
7. Reset spring 20-60-250p
8. Adjustable lining
9. Gasket FMN
10. Gasket FMK
11. Locking ring
12. Micro switch
13. Balancing filter
14. Knurled nut
15. Connecting terminal
16. Housing cover FMN
17. Housing cover FMK

## Packaging Content

**Standard-contents**

- 1 level indicator,
- 1 exchange spring.....60 p,
- 1 exchange spring....250 p,
- 1 instruction manual,
- 1 gasket.

## Intended application and Security

- The level indicator is to be assembled following approved safety guidelines.
- The level indicator is intended exclusively for trained personnel. the indirect display of container / silo levels.

Another use is not intended.

The manufacturer is not responsible for damage resulting from inappropriate use. That risk is carried by the user

- Follow the instruction manual.
- Electrical installations may only be done by trained.
- Only work on the equipment if it is powered off.

## Assembly

You can install this level indicator in any orientation
provided it is adjusted appropriately (see chapter **adjustment**).

**Installation in silo walls:** **FMN 113 … to approx. 10 mm FMK**
**FMN 508 … to approx. 6 mm FMK**

**Location:** **Fitted tightly to the inner wall**

You will achieve this for thin-walled containers / silos by

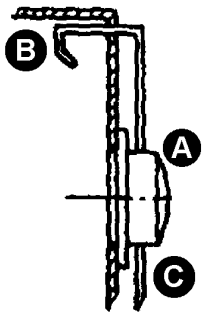
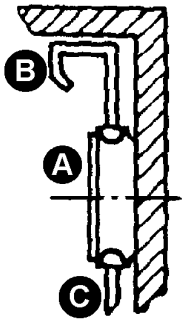
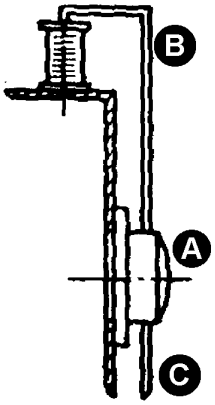
- **Applying additional gaskets and / or**
- **Adjusting the flange.**

| | |
|---|---|
|  | **The fixing bolts must not project into the inside of the silo! This will avoid a possible accumulation of the filling material** |
|  | **The level indicator must not lie in the filling flow of the material! This prevents damage to the level indicator and especially to the diaphragm** |

### The electrical conductions

- To be installed on the outside wall of the silo,,
- Insert into the housing of the level indicator by the tapped holes PG11. Attach strain relief.

| | |
|---|---|
|  | **Seal unnecessary tapped holes with plugs! This prevents the penetration of dust and humidity** |

| Installation pattern | | | Explanation |
|---|---|---|---|
| Preferably granular, dusty filling material | | Floury filling material | |
| Anbau | Einbau | mit Filter | |
|  |  |  | **A = level indicator**<br>**B = conduction if necessary***<br>**C = conduction if necessary***<br>* (steel tube, if required) |

### Installation at higher temperatures

| Allowed temperature | Materials in level indicator |
|---|---|
| max. 100°C | Standard version<br>➢ Plastic tappet<br>➢ BUNA-N diaphragms |
| max. 200°C | Exchange into<br>➢ Metal tappet<br>➢ Viton diaphragms |

## Installation with high pressure

**Installation with slightly high pressure:**

* Use a stronger spring.
  The level indicator will then function perfectly

**<u>With stronger high pressure</u>:**

* Always manage a pressure balance between silo and indicator interior.
  You will reach pressure balance, if you:
  + Install a steel tube,
  + Attach the steel tube to the tapped holes PG 11,
  + Install the conductions within the steel tube,
  + Lock the rear cover of the level indicator FMN 113 hermetically.

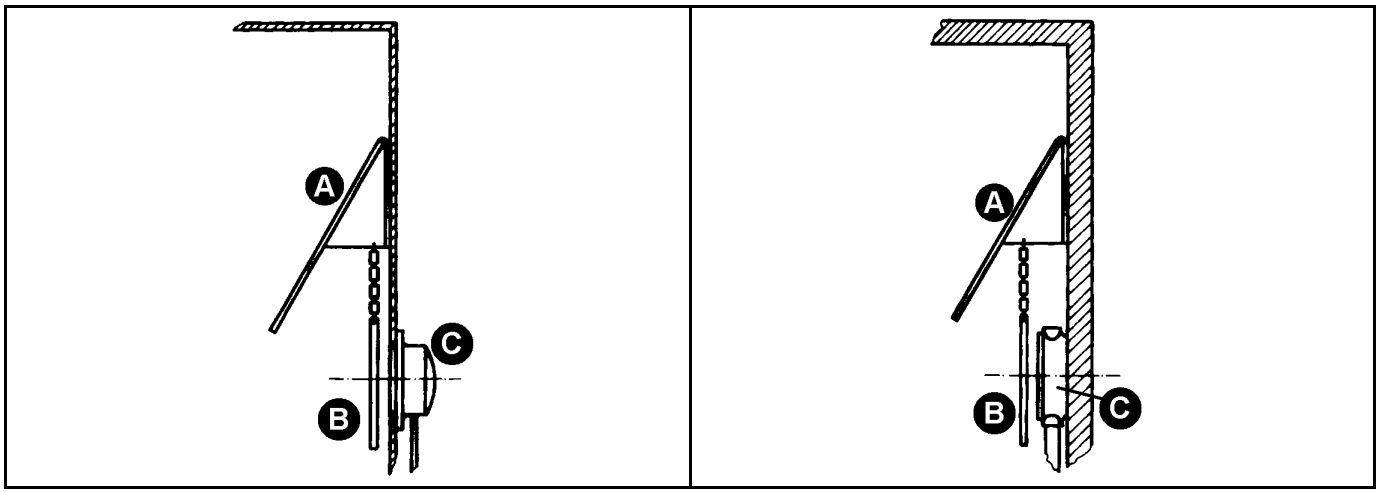
**Install a small filter at the end of the open tube, if you utilize the level indicator with granular goods. This protects from the material.**

**<u>Installation with very coarse-grained and sharp edged filling material</u>**

Install a rejection device with

- Filling material with rough granulations,
- Filling material with sharp edges,
- Filling material with high density.

**The diagram shows an example:**



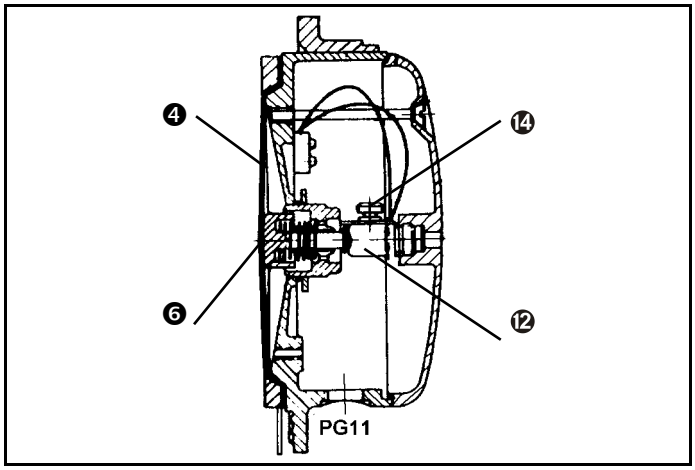

**Ⓐ = Rejection device** **Ⓑ = Curtain made of rubber or plastic** **Ⓒ = level indicator**

- The rejection device protects the level indicator and diaphragm from damages caused by falling filling material
- The curtain protects the diaphragm against high abrasion, because it lies over the diaphragm, if the filling level increases.

**The indicator may not lie in the flow of the filling material, otherwise the indicator and diaphragm will be damaged rapidly.**

## Adjustment

The level indicators are adjustable for optimal sensitivity when delivered.




**You must readjust your level indicator according to the different installation positions:**

* Detach knurled nut ⓮.
* Turn micro switch ⓬ and
* Press tappet ❻,
  Until the micro switch ⓬ produces an audible "click" (**working point**) when pressing slightly on the diaphragm ❹.

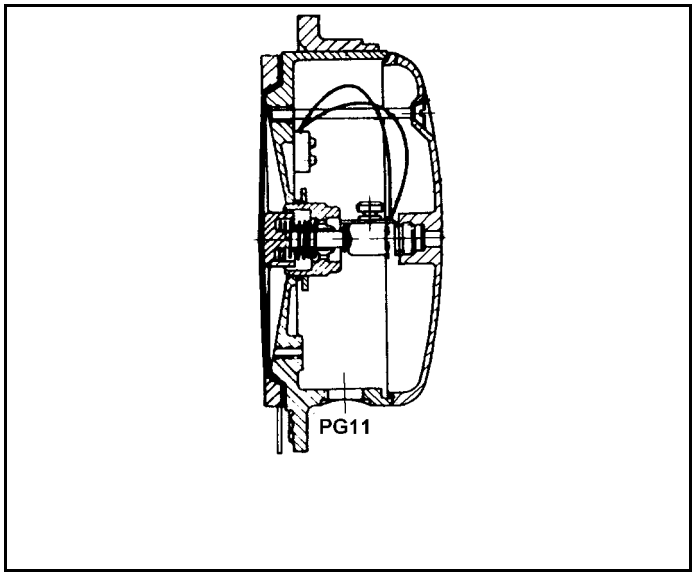
The optimal operating point also depends on the filling material. During the micro-adjustment, pay attention:

The micro switch ⓬ must switch back into its resting position, if the filling material decreases.

* Now tighten knurled nut ⓮.

## Exchange the reset spring

The standard reset spring force is 20p.
The two reset springs provided in addition have a resetting force of 60p and 250p.




**You should install a stronger reset spring for:**

- "Empty indicators" in the lower part of larger silos,
- Level indicators in silos with filling materials of higher density (sand, gravel etc.).

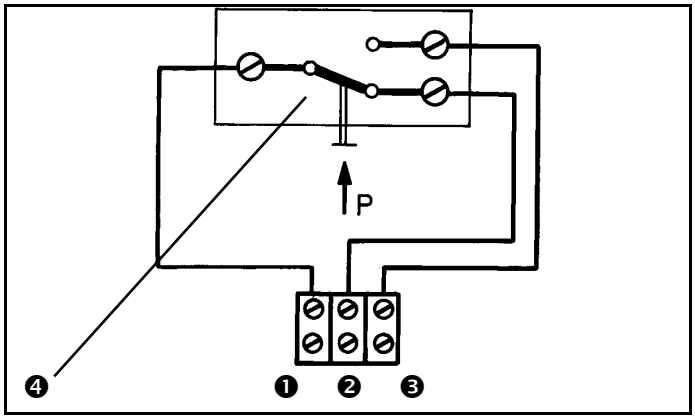
* Remove locking ring ⓫,
* Completely unscrew adjustable lining ❽, reset spring ❼ and tappet ❻ komplett herausschrauben.
* Now remove tappet ❻ from adjustable lining ❽.
  (The reset spring is now removable)
* Reassemble in the reverse order.

**During reassembly, pay attention to:**

- The adjustable lining ❽ should fit almost flush with the metal wall behind the diaphragm ❹, if you reinstall ❽,❼,❻ again.

* Adjust the level indicator afterwards.

## Circuit diagram

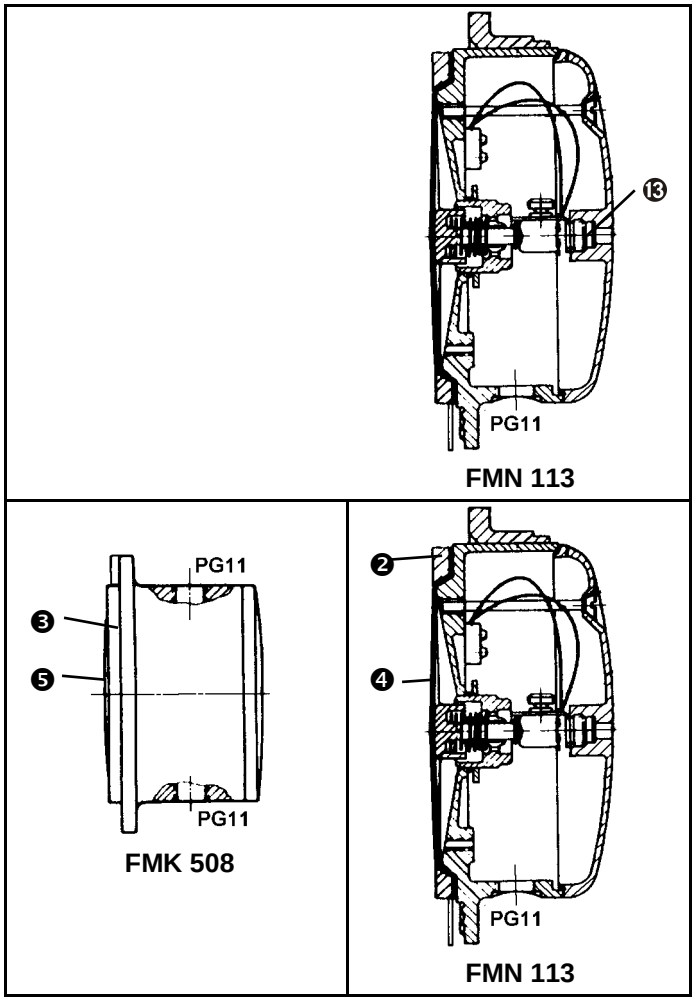



**❶ = Input lead**
**❷ = Normally closed contact (e.g. empty alarm)**
**❸ = Normally opened contact (e.g. full alarm)**
**❹ = Micro switch**
The single-pole two-way contact of the micro switch is loadable up to max. 15 A with an operating voltage of 250V alternating current.

**You can use level indicators:**

- to generate optical and acoustic signals, if a certain level is reached
- to control switches (automatic on/off-switching of transportation equipment).
- to automatically refill a silo after an empty alarm.
- to automatically stop the filling after a full alarm

## Maintenance




**<u>Dust deposits</u>**

**Can make the balancing filter ⑬ of level indicator FMN 113 ineffective after a long operation time:**

* Clean the dust collectors regularly (**if necessary replace them**).

**<u>Sharp edged filling material</u>**

**Can cause abrasion of the diaphragm**

* Regularly check the diaphragms (**if necessary replace them**).

**<u>Exchanging diaphragms:</u>**

* Detach and remove the screws of the diaphragm guard ring ❷ (❸)
* Exchange diaphragm ❹ (❺) auswechseln.

➢ **The plane surface of the diaphragm must be outside**

* Plug the screws into the holes of the new diaphragm and the guard ring and tighten adequately.

➢ **The bolt circle on the flat diaphragm is deliberately a little larger than the guard ring.**

Thus the initial tension of the diaphragm isn't too high.

* Readjust the level indicator afterwards.

# SPARE PART LIST

13.01.2024

| FMK 508 | |
|---|---|
| 13-772 | Level indicator FMK 508 Pb |
| 13-780 | Level indicator FMK 508 Vt |
| | |
| 13-839 | Housing cover FMK |
| 13-821 | Diaphragm guard ring (Plastic) |
| | |
| | |
| 15-934 | Tapped / Ram |
| 15-918 | Adjustable lining |
| 13-798 | Diaphragm MF 08 Pb |
| 13-805 | Diaphragm MF 08 Vt |
| 15-835 | Micro switch |
| | |
| 13-813 | Gasket |
| 53-364 | Gasket cover 508 |
| | |
| 15-885 | Pressure spring 20p |
| 15-893 | Pressure spring 60p |
| 15-900 | Pressure spring 250p |

| FMN 113 | |
|---|---|
| 13-772 | Level indicator FMN 113 Pb |
| 13-780 | Level indicator FMN 113 Vt |
| | |
| 13-904 | Housing cover FMN |
| 13-897 | Diaphragm guard ring (Plastic) |
| 14-005 | Diaphragm guard ring (Stainless steel) |
| | |
| 15-934 | Tapped / Ram |
| 15-918 | Adjustable lining |
| 13-863 | Diaphragm MF 13 Pb |
| 13-871 | Diaphragm MF 13 Vt |
| 15-835 | Micro switch |
| | |
| 13-889 | Gasket |
| 53-348 | Gasket cover 113 |
| | |
| 15-885 | Pressure spring 20p |
| 15-893 | Pressure spring 60p |
| 15-900 | Pressure spring 250p |

Please request spare parts for "FMN 113 Metal" separately

Spare parts from the FMK and FMN series
are compatible with former manufacturers.

**TECHNISCHES BÜRO GRIEB**
Germany

**EMIL NIETHAMMER GMBH**
Germany

Please refer to the spare parts list for the part number
or send questions to info@zimsotec.de

# EU-DECLARATION OF CONFORMITY

**Manufacturer:** **ZIMSOTEC Sebastian Zimmermann**
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Web: www.zimsotec.de

declares under our sole responsibility, that the product:

| | |
|---|---|
| **Designation:** | **Membran-Füllstandsmelder** |
| **Type** | **FM** |
| **Modell** | **FMN 113 und FMK 508** |

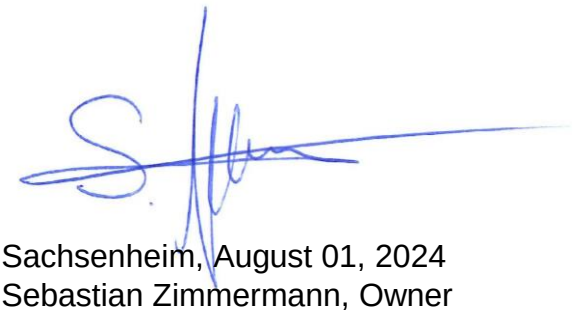
complies with the following EU directives:

| | |
|---|---|
| **2014/35/EU** | **Low Voltage Directive** |
| **2011/65/EU** | **RoHS** |

applied harmonized standards:

**DIN EN ISO 12100**

**DIN EN 60529 (VDE 0470-1)**



Sachsenheim, August 01, 2024
Sebastian Zimmermann, Owner