

## Membrane Level Switch for Bulk Media



measuring  
•  
monitoring  
•  
analyzing

NMF



- Max. Pressure: 14.5 PSI
- Max. Temperature: 392°F
- Density: Min. 3.2 lb/ft<sup>3</sup>
- Easy to Install
- Self-Cleaning
- Handles a Wide Range of Bulk Materials
- Membrane Material: NBR, FKM, or Stainless Steel



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### Areas of Application

Membrane level switches allow economic level monitoring of bulk media in storage tanks. They may be used to indicate full and empty states and load demand for dusty, powdery, granulated, and grainy bulk solids. They are suitable for use with bulk materials (19 to 144 lb/ft<sup>3</sup>) and particle sizes up to 30 mm. They will operate properly provided the bulk media flows easily and does not pile up at a sharp angle. Only such materials exert sufficient operating pressure on the detector fitted in the wall of the silo.

### Method of Operation

The housing, made of cast aluminum or glass reinforced plastic, incorporates the membrane retained by a screwed on ring. With its own weight, the bulk material presses against the membrane which is prestressed with a spring through to a support. A plunger fixed to the membrane transfers the pressure directly to a microswitch with a SPDT contact. If the bulk material subsides, the membrane is relieved and the contact is switched back. The sensitivity can be adjusted with a spring. The switch can thus be optimized for the type of fill and the installation conditions.

### Installation with Very Coarse and/or Sharp-Edged Bulk Media:

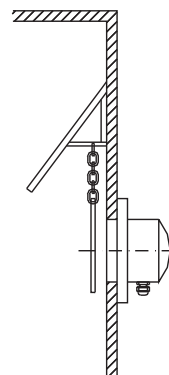
The installation of a guard is recommended for very large grained and/or sharp-edged materials with high bulk density. A proposal for such a guard is shown to the left. The guard mounted over the level switch protects sensor and membrane from damage from incoming bulk material. The curtain (made of rubber or plastic, for instance) protects the membrane from excessive wear by hanging against the membrane as the amount of bulk material increases. Make sure that the switch is not in the path of the incoming material, as the switch and membrane could be destroyed very quickly.

### Common Media

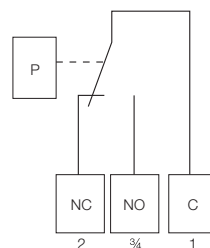
- Alum
- Bauxite
- Ceramics
- Dolomite
- Peas, Peanuts
- Fish Meal
- Gravel
- Oats, Hazelnuts
- Insulating Materials
- Coffee Beans
- Long Grain Rice
- Corn, Almonds
- Nuts
- Fruit
- Pearlite
- Quartz sand
- Rice
- Sand, Slag
- Clay
- Various Granulates
- Wheat
- Miscellaneous Grains
- Sugar



Example Guard



Wiring Diagram

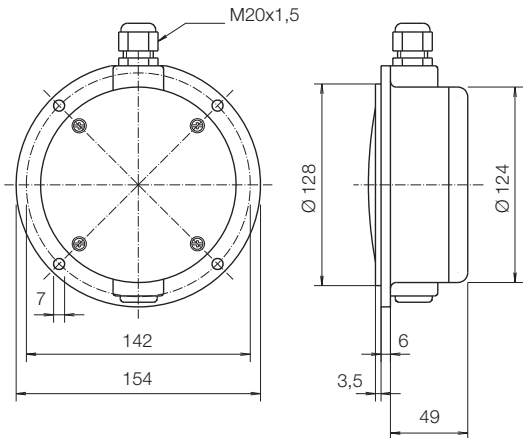


### Technical Details

<b>Installation Position:</b>	Vertical
<b>Maintenance:</b>	None
<b>Cable Entry Fitting:</b>	M20 x 1.5
<b>Contact Loading Capacity:</b>	4 A at 250 V <sub>AC</sub> Floating SPDT Contact

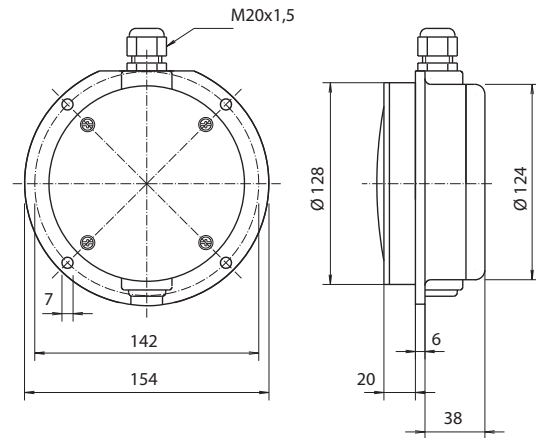
### Model NMF-E..

Most Economical (Dim. in mm)



### Model NMF-F..

For Thicker Walls (Dim. in mm)



### Materials

**Membrane:** NBR or FKM  
**Retaining Ring:** Galvanized Steel or 301 Stainless Steel\*  
**Housing:** Glass Reinforced Plastic GRP  
**Weight:** 480 g  
**Sensitivity:** Adjustable between 60 g and 200 g  
**Protection:** IP40 (Screwed Fitting Bottom) IP53 (Screwed Fitting Top)  
**Contact Loading:** Max. 4 A at 250 V<sub>AC</sub>  
**Temperature Range:** -4 ... 140 °F  
**Pressure:** Vented, Max. 14.5 PSI  
**Cable Entry:** M20 x 1.5 Fitting  
**Mounting:** Vertical

### Materials

**Membrane:** NBR or FKM  
**Retaining Ring:** Galvanized Steel or 301 Stainless Steel\*  
**Housing:** Glass Reinforced Plastic GRP  
**Weight:** 530 g  
**Sensitivity:** Adjustable between 60 g and 200 g  
**Protection:** IP40 (Screwed Fitting Bottom) IP53 (Screwed Fitting Top)  
**Contact Loading:** Max. 4 A at 250 V<sub>AC</sub>  
**Temperature Range:** -4 ... 140 °F  
**Pressure:** Vented, Max. 14.5 PSI  
**Cable Entry:** M20 x 1.5 Fitting  
**Mounting:** Vertical

### Order Details (Example: NMF-ENN)

Membrane	Retaining Ring	Order Number
NBR	Galvanized Steel	<b>NMF-ENN</b>
	301 St. Steel*	<b>NMF-ENE</b>
FKM	Galvanized Steel	<b>NMF-EVN</b>
	301 St. Steel*	<b>NMF-EVE</b>

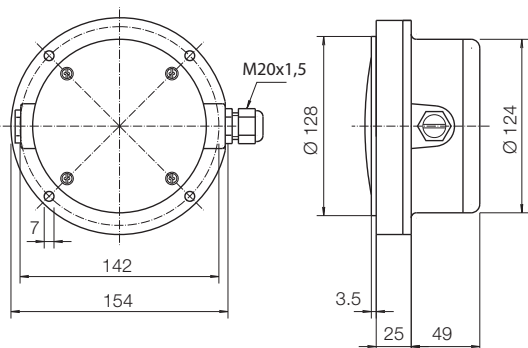
### Order Details (Example: NMF-FNN)

Membrane	Retaining Ring	Order Number
NBR	Galvanized Steel	<b>NMF-FNN</b>
	301 St. Steel*	<b>NMF-FNE</b>
FKM	Galvanized Steel	<b>NMF-FVN</b>
	301 St. Steel*	<b>NMF-FVE</b>

\*Closest AISI Equivalent to 1.4324 Stainless Steel

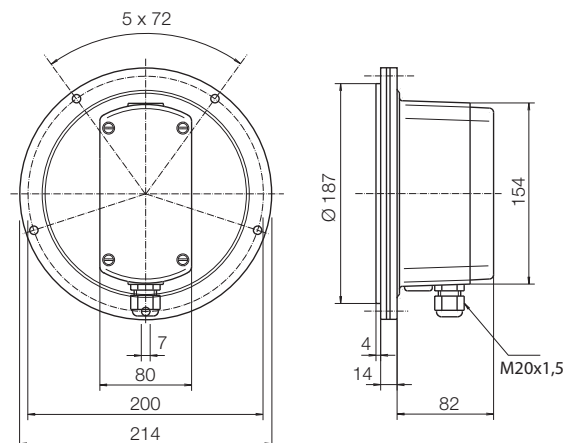
## Model NMF-D..

Double-Membrane Version (Dim. in mm)



## Model NMF-B..

High Temperature Version (Dim. in mm)



### Materials

<b>Membrane:</b>	NBR or FKM
<b>Retaining Ring:</b>	Galvanized Steel or 301 Stainless Steel*
<b>Housing:</b>	Glass Reinforced Plastic GRP
<b>Weight:</b>	750 g
<b>Sensitivity:</b>	Adjustable between 60 g and 200 g
<b>Protection:</b>	IP 65
<b>Contact Loading:</b>	Max. 4 A at 250 V <sub>AC</sub>
<b>Temperature Range:</b>	-4 ... 158 °F
<b>Pressure:</b>	Vented, Max. 14.5 PSI
<b>Cable Entry:</b>	M20 x 1.5 Fitting
<b>Mounting:</b>	Vertical

### Materials

<b>Membrane:</b>	NBR, FKM or 304 Stainless Steel
<b>Retaining Ring:</b>	Cast Aluminum
<b>Housing:</b>	Cast Aluminum
<b>Weight:</b>	1700 g
<b>Sensitivity:</b>	Adjustable between 100 g and 200 g (NMF-BNA, NMF-BVA) Adjustable between 200 g and 500 g (NMF-BEA)
<b>Protection:</b>	IP 40 (Screwed Fitting Top) IP 53 (Screwed Fitting Bottom)
<b>Contact Loading:</b>	Max. 4 A at 250 V <sub>AC</sub>
<b>Temperature Range</b>	
<b>NBR Membrane:</b>	-4 ... 175 °F
<b>FKM Membrane:</b>	-4 ... 302 °F
<b>SS Membrane:</b>	-4 ... 392 °F
<b>Pressure:</b>	Vented, Max. 14.5 PSI
<b>Cable Entry:</b>	M20 x 1.5 Fitting
<b>Mounting:</b>	Vertical

### Order Details (Example: NMF-DNN)

Membrane	Retaining Ring	Order Number
NBR	Galvanized Steel	NMF-DNN
	301 St. Steel*	NMF-DNE
FKM	Galvanized Steel	NMF-DVN
	301 St. Steel*	NMF-DVE

### Order Details (Example: NMF-BNA)

Membrane	Retaining Ring	Order Number
NBR	Cast Aluminum	NMF-BNA
FKM	Cast Aluminum	NMF-BVA
Stainless Steel	Cast Aluminum	NMF-BEA

\*Closest AISI Equivalent to 1.4324 Stainless Steel