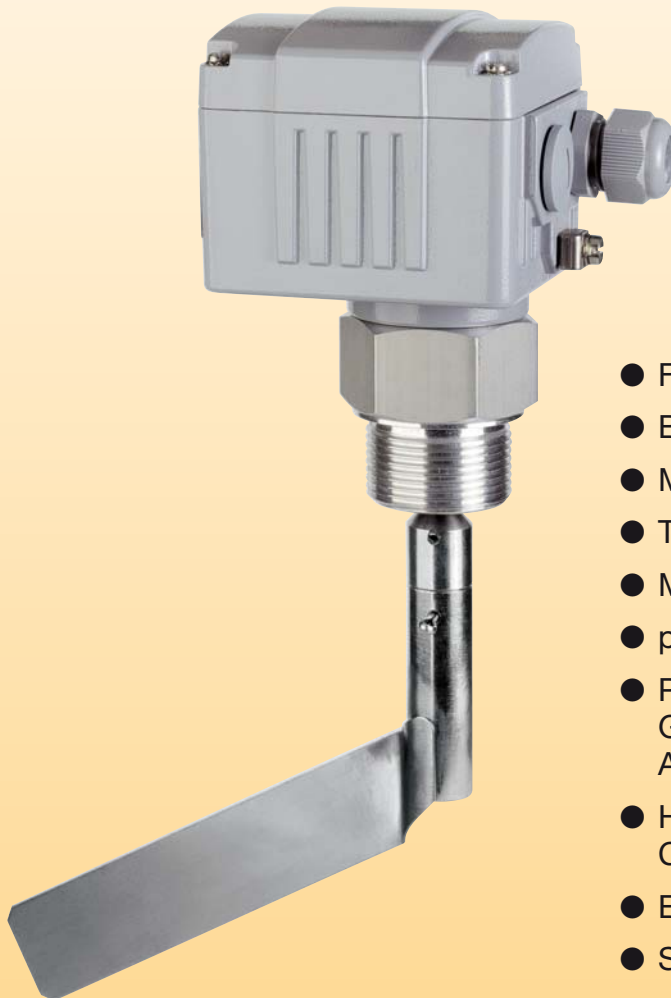


## Rotating Vane Level Monitor



- Fixed shaft or cable shaft
- Bulk materials: 0.2 to 2.5 t/m<sup>3</sup>
- Max. particle sizes: 50 mm
- Temperature: max. 85 °C
- Max. filling level: 5 m
- p<sub>max</sub>: 10 bar, t<sub>max</sub>: 150 °C
- Process connection:  
 G 1 1/4, G 1 1/2  
 Aluminium flange
- Housing material:  
 Cast aluminium
- Easy to install
- Suited for universal use



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**Model:**  
 NDM



### Description

KOBOLD rotating vane level monitors of model NDM serve as limit switches for dusty, powdery, granulated and grainy bulk materials.

They are suitable for use with bulk material densities up to 2.5 t/m<sup>3</sup> and particle size up to 50 mm. The max. filling level for bulk density of 0.6 t/m<sup>3</sup> should not exceed 5 m.

Different installation positions (horizontal, vertical, inclined) as well as a broad range of models allow the use of KOBOLD rotating vane level monitors for almost all applications.

### Method of Operation

A synchronous motor which pivots around a certain angle in a shaft extension is held to an end stop by a spring.

The motor drives a rotating vane protruding into a vessel by means of a shaft. As soon as the fill reaches the blade, its rotation is hindered and arrested.

The reaction torque twists the motor and operates a micro-switch (N/O contact).

The motor is switched off with a second switch. If the level sinks, the rotating vane is released and the motor is drawn back to its original position by the spring.

This switches the motor on once again and the contact is switched back.

### Advantages

- Reliable with two switches
- Floating contact
- Internally flush mounted
- Various methods of fixing
- Delivery with seal
- Maintenance-free

### Technical Details

Housing:	Cast aluminium, coated
Bulk material weights:	0.2 to 2.5 t/m <sup>3</sup>
Bulk materials max. grain size:	50 mm
Filling level above vanes (for bulk density to 0.6 t/m <sup>3</sup> ):	5 m
Max. pressure:	10 bar (see Type code)
Max. bulk material temp.:	150 °C (see Type code)
Max. shaft length (fixed):	1 m
Max. shaft length (rope):	10 m
Process connection:	G 1 1/4, G 1 1/2, Aluminium Aluminium flange F 70, Aluminium flange F 100
Rotating vane:	Plastic (PP) 150 x 27 mm Vane 98 x 50 mm, st. st. 1.4301 Sleeve vane 95 x 30 mm, st. st. 1.4301 Sleeve vane 120 x 30 mm, st. st. 1.4301 Cruciform vane 98 x 50 mm, st. st. 1.4301 Cruciform vane 98 x 100 mm, st. st. 1.4301 Flap vane 200 x 30 mm, st. st. 1.4301
Shaft extension:	optional available (see Type code) The shaft should normally only be extended beyond 500 mm with vertical instrument installation. In case of lengths above 500 mm the shaft should always be secured mechanically with a bending protection device.
Protection type:	IP 66
Floating contact:	change-over contact max: 2 A, 240 V <sub>AC</sub> min: 1 mA, 4 V <sub>AC</sub> suitable for PLC
Power supply:	220...240 V <sub>AC</sub> , 50 - 60 Hz 110...120 V <sub>AC</sub> , 50 - 60 Hz 24 V <sub>AC</sub> , 50 - 60 Hz 24 V <sub>DC</sub> , +10 %/-15 %
Consumption:	AC: 3 VA; DC: 3.5 W
Operating display:	LED with display (not with NDM-11)
Monitoring:	optional available Monitoring and Contact function in case of <ul style="list-style-type: none"> <li>● cable break</li> <li>● voltage drop</li> <li>● DC/AC-converter for motor voltage</li> <li>● motor damage</li> <li>● gear damage</li> </ul>



**Order Details** (Example: **NDM-11 1 Z G7 A 0 0 L**)

Model	Functioning LED	Power Supply	Functioning Monitoring	Process Connection
NDM-	11 = without LED	1 = 220...240 V <sub>AC</sub> 2 = 110...120 V <sub>AC</sub> 3 = 24 V <sub>AC</sub> 5 = 24 V <sub>DC</sub>	Z = without	G7 = G 1¼, Alum. G8 = G 1½, Alum.
	21 = with LED	1 = 220...240 V <sub>AC</sub> 2 = 110...120 V <sub>AC</sub> 3 = 24 V <sub>AC</sub> 5 = 24 V <sub>DC</sub>	Z = without R = Funct. monitoring	G7 = G 1¼, Alum. G8 = G 1½, Alum. F7 = Alum. flange F 70 F1 = Alum. flange F 100
	31 = Rope model with LED	1 = 220...240 V <sub>AC</sub> 2 = 110...120 V <sub>AC</sub> 3 = 24 V <sub>AC</sub> 5 = 24 V <sub>DC</sub>	Z = without R = Funct. monitoring	G7 = G 1¼, Alum. G8 = G 1½, Alum. F7 = Alum. flange F 70 F1 = Alum. flange F 100

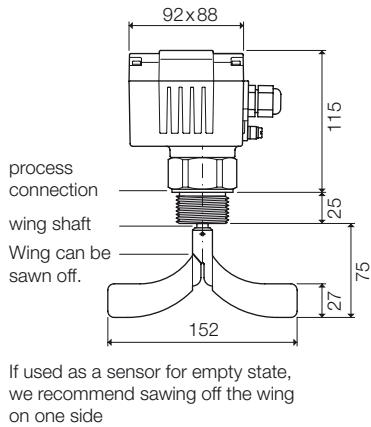
Order Details (continued)

Rotating Vane	Tube Extension	Vessel Pressure	Bulk Material Temperature
A = Plastic 150 x 27 C = Sleeve v. 100 x 30 E = Cruciform v. 98 x 50 G = Cruciform v. 98 x 100	0 = without extension F = fixed shaft 450 mm S = cable shaft 2000 mm K = pendulum-type shaft 1000 mm w. bending protec.	0 = -0.5...+1 bar	L = -20...+70 °C
B = Vane 98 x 50 D = Sleeve v. 130 x 30 E = Cruciform v. 98 x 50 G = Cruciform v. 98 x 100 H = Flap vane 200 x 30	0 = without extension P = pendulum-type shaft with bending protection W = special length*	1 = -0.5...+5 bar 2 = -0.5...+10 bar	L = -25...+80 °C T = -25...+150 °C
B = Vane 98 x 50 E = Cruciform v. 98 x 50 G = Cruciform v. 98 x 100 H = Flap vane 200 x 30	L = cable length*	1 = -0.5...+5 bar 2 = -0.5...+10 bar	L = -25...+80 °C T = -25...+150 °C

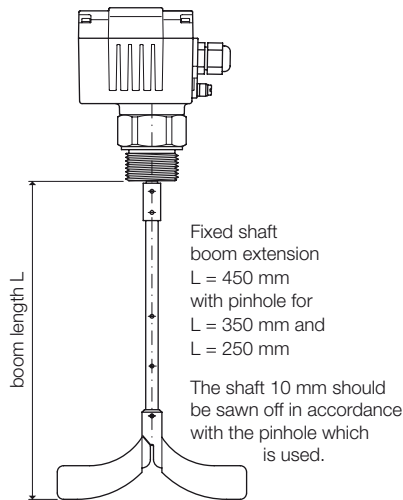
\* Please specify length in writing

**Dimensions**

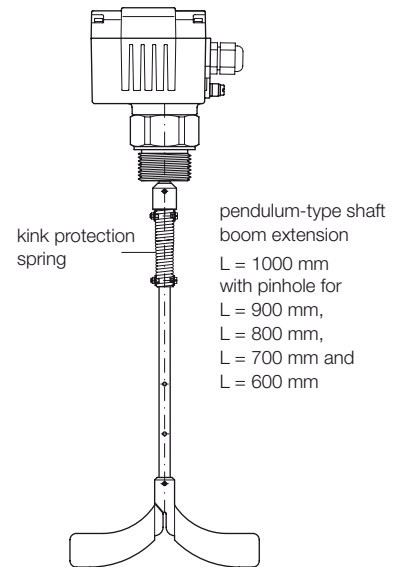
**NDM-11**



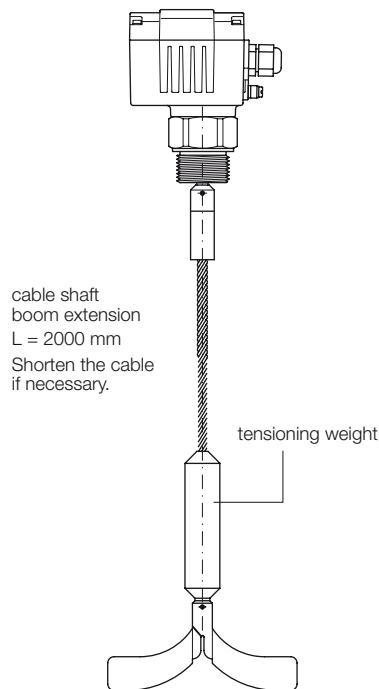
**NDM-11 with Tube Extension**



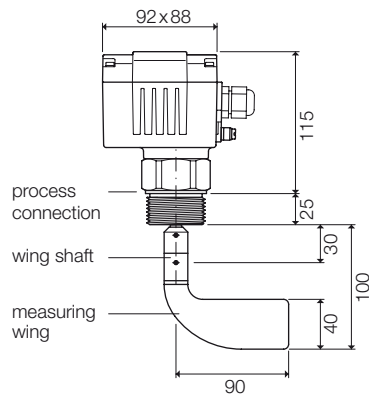
**NDM-11 with Pendulum-type shaft and Bending Protection**



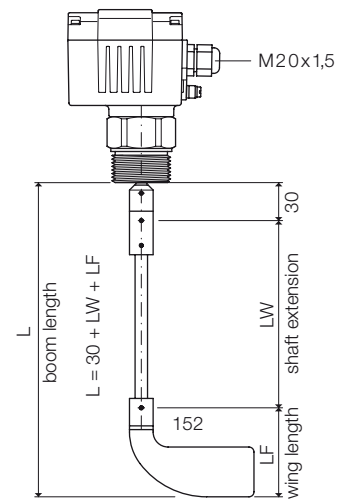
**NDM-11 Cable design**



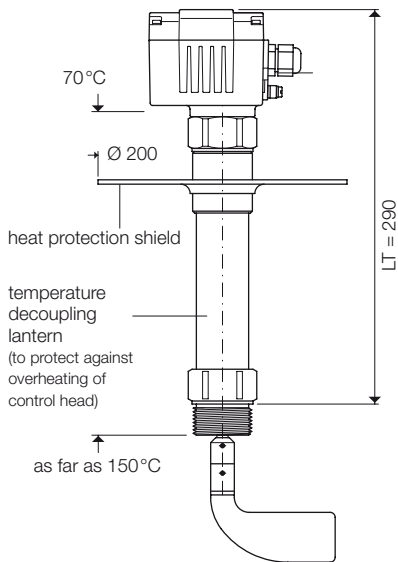
**NDM-21**



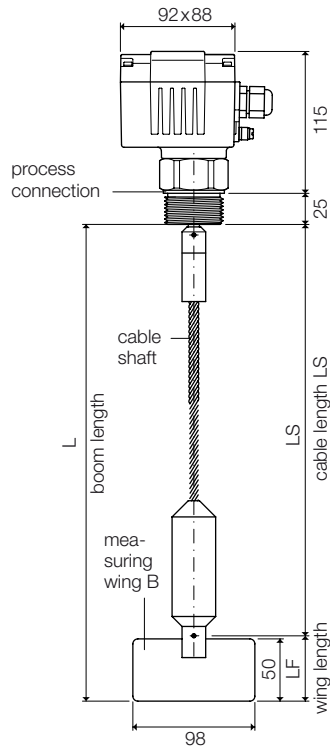
**NDM-21 with Tube Extension**



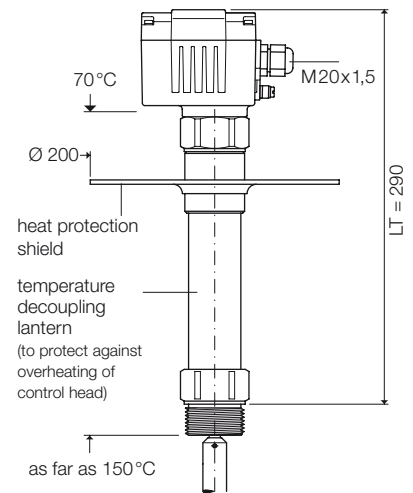
**NDM-21 for Bulk Material**  
Temperatures up to 150 °C



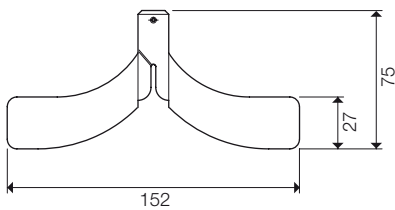
**NDM-31**



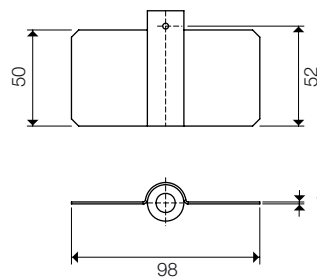
**NDM-31 for Bulk Material**  
Temperature up to 150 °C



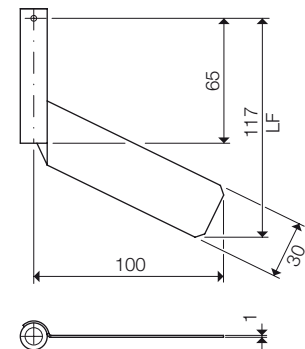
**Rotating Vane A,**  
Plastic 150 x 27 mm  
Polypropylene



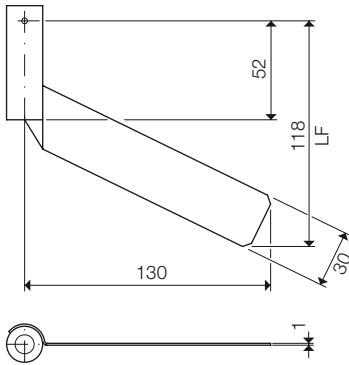
**Rotating Vane B,**  
Vane 98 x 50 mm  
st. st. 1.4301



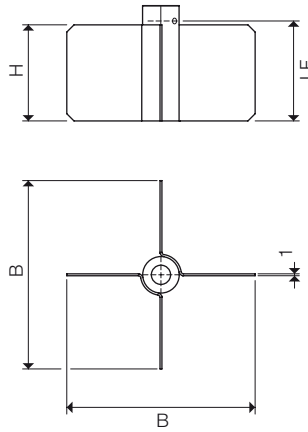
**Rotating Vane C,**  
Sleeve Vane 100 x 30 mm  
st. st. 1.4301



**Rotating Vane D,  
Sleeve Vane 130 x 30 mm  
st. st. 1.4301**

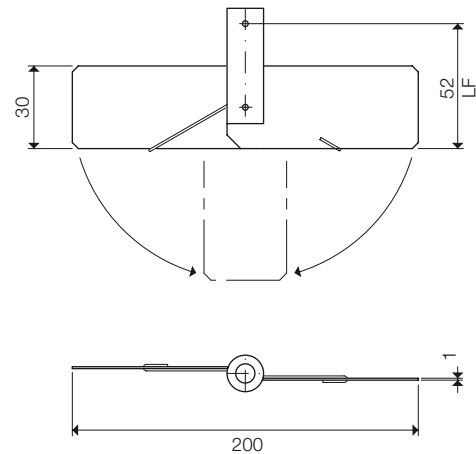


**Rotating Vane E,  
Cruciform Vane 98 x 50 mm  
Rotating Vane G,  
Cruciform Vane 98 x 100 mm  
st. st. 1.4301**

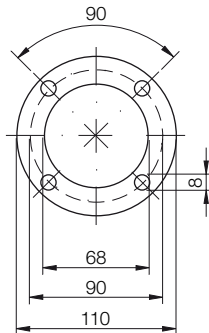


	B	H	LF
E	98	50	52
G	98	100	102

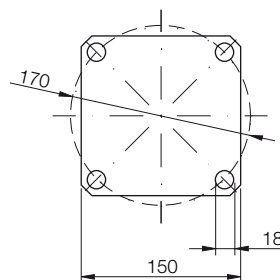
**Rotating Vane H,  
Flap Vane 200 x 300 mm  
st. st. 1.4301**



**Flange Connection F 7  
F 70: Aluminium**



**Flange Connection F 1  
F 100: Aluminium**



**We recommend a flange connection in the following cases:**

- When the shaft is extended to securely fix the instrument.
- When using a cruciform vane for installation and removal without dismantling the vane.

**Selection help for rotating vanes**

Lowest weight of bulk material for the use of the rotating vane.

Bulk weight in		
Filling level up to 100 mm above rotating vane	kg/L	t/m <sup>3</sup>
Filling level until vane is completely covered	t/m <sup>3</sup>	kg/L

Rotating vane	Vane size	Setting of the spring	
		easy	medium
C Sleeve	100 x 30	$\frac{0.25}{0.40}$	$\frac{0.35}{0.60}$
D Sleeve	130 x 30	$\frac{0.20}{0.35}$	$\frac{0.30}{0.50}$
B Vane	98 x 50	$\frac{0.15}{0.30}$	$\frac{0.25}{0.50}$
A Plastic vane	150 x 27	$\frac{0.25}{0.40}$	$\frac{0.35}{0.60}$
E Cruciform vane	98 x 50	$\frac{0.15}{0.30}$	$\frac{0.25}{0.50}$
G Cruciform vane	98 x 100	$\frac{0.10}{0.20}$	$\frac{0.20}{0.45}$
H Flap vane	200 x 300	$\frac{0.05}{0.08}$	$\frac{0.07}{0.12}$

Fluidized bulk materials are lighter during filling and emptying. This must be considered when choosing the rotating vane and when adjusting the spring load.