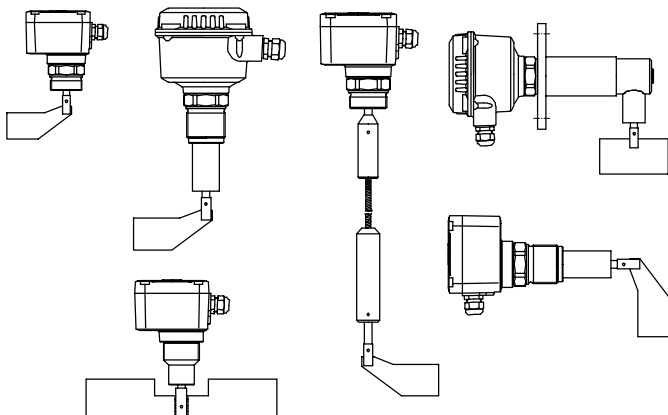


Series **RN 3000**  
**RN 4000**  
**RN 6000**



Instruction manual

010516

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Fax: +49 (0)831 76879 E-Mail: info@uwt.de

Scope of this instruction manual:	Types	RN 3001 / 3002 / 3003 / 3004 / 3005 RN 4001 RN 6001 / 6002 / 6003 / 6004
	Approvals	CE /TR-CU ATEX 1/2D / IEC-Ex t IIIC

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## **Safety /warning notes**

---

Installation, maintenance and commissioning may be accomplished only by qualified technical personnel.

For terminal connection of the device, the local regulations or VDE 0100 (Regulations of German electrotechnical Engineers) must be observed.

Switch off the supply voltage before opening the device.

All field wirings must have insulation suitable for at least 250V AC. The temperature rating must be at least 90°C (194°F).

In the case of handling by untrained personnel or handling malpractice, the safety of the device cannot be guaranteed.

## **Fields of application**

---

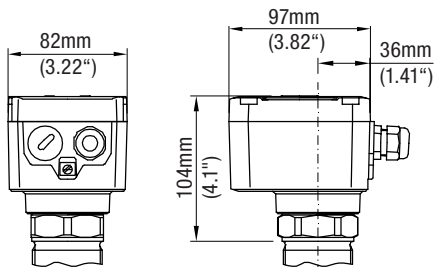
Level limit switch for point level limit detection in bulk materials.

Applicable as full -, demand - and empty detector.

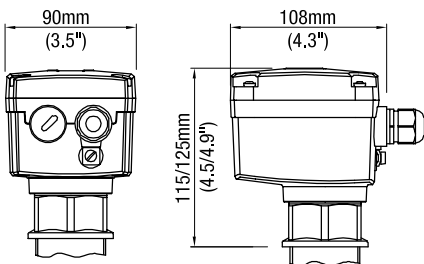
# Technical Data

## Housing

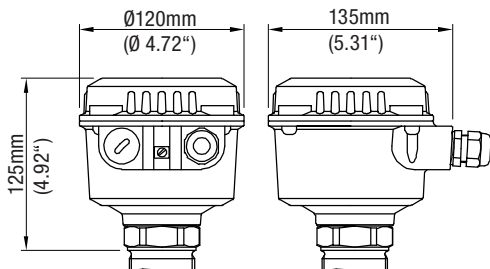
### RN 3000



### RN 4000



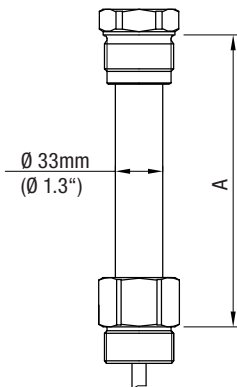
### RN 6000



## Temperature extended shaft

RN 3001  
RN 3002  
RN 3004

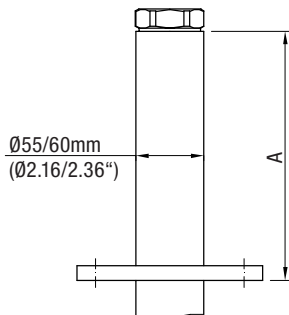
RN 6001  
RN 6002  
RN 6004

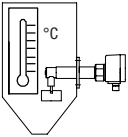
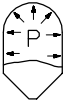


Dimension A	A = 0mm (0")	A = 200mm (7.87")	A = 300mm (11.8")	A = 400mm (15.7")
	80°C (176°F)	150/250°C (302/482°F)	350°C (662°F)	600°C (1112°F)

RN 3003

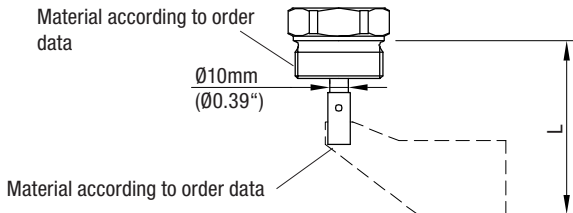
RN 6003



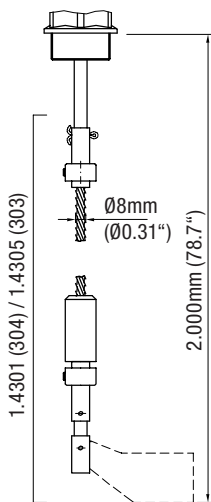
Dimension A	<b>A = 10mm</b> <b>(0.39")</b>	<b>A = 75mm</b> <b>(2.95")</b>	<b>A = 210mm</b> <b>(8.26")</b>
	80°C (176°F)	80°C (176°F)	150/250°C (302/482°F)
	0,8bar (11.6psi)	5/10bar (73/145psi)	0,8/5/10bar (11.6/73/145psi)

## Extension

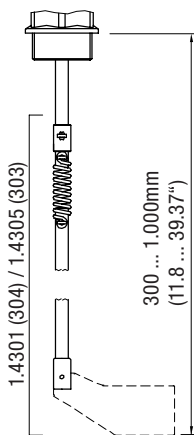
RN 3001  
RN 4001  
RN 6001



L = 70mm ... 1500mm (2.75" ... 59")



Rope extension

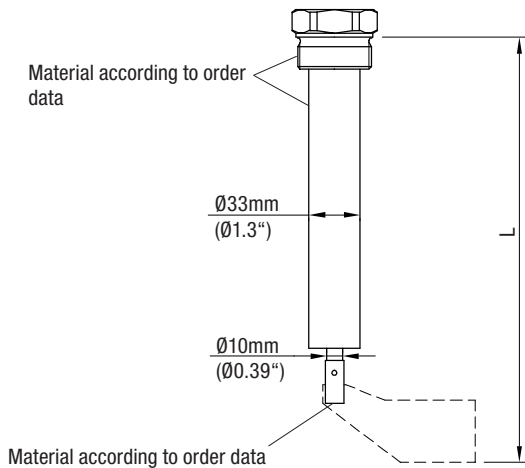


Pendulum shaft



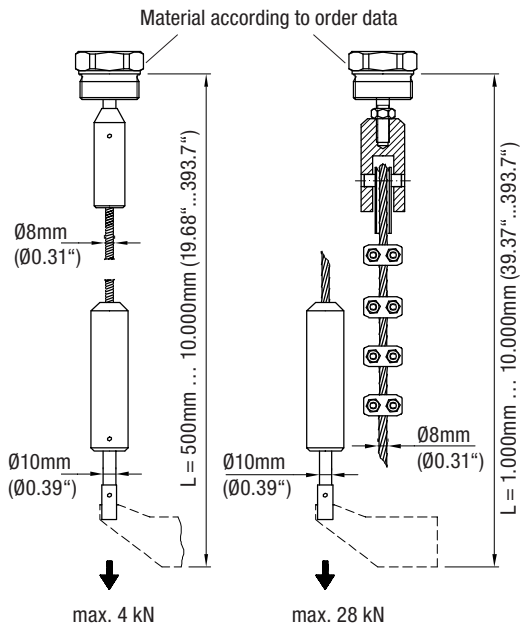
RN 3002

RN 6002

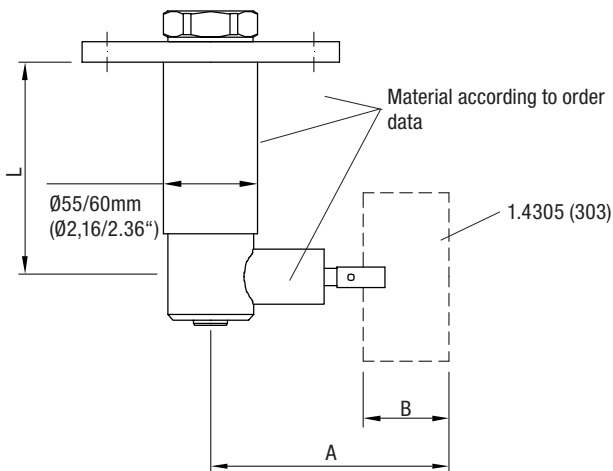


L = 250mm ... 4000mm (9.84" ... 158")

RN 3002-Rope  
RN 6002-Rope



**RN 3003**  
**RN 6003**



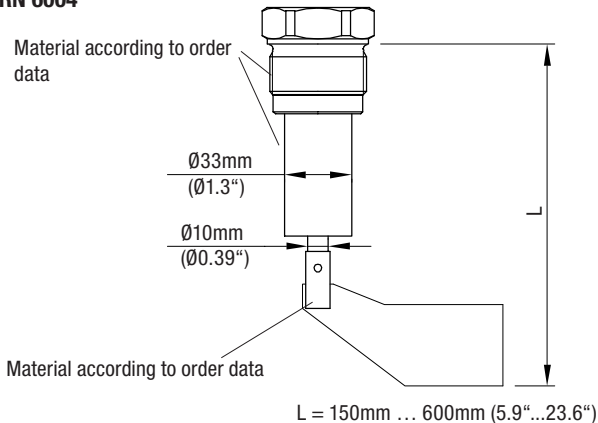
L = 125mm ... 300mm (4.92" ... 11.81")

A	B
139mm (5.47")	50mm (1.97")
187mm (7.28")	98mm (3.9")

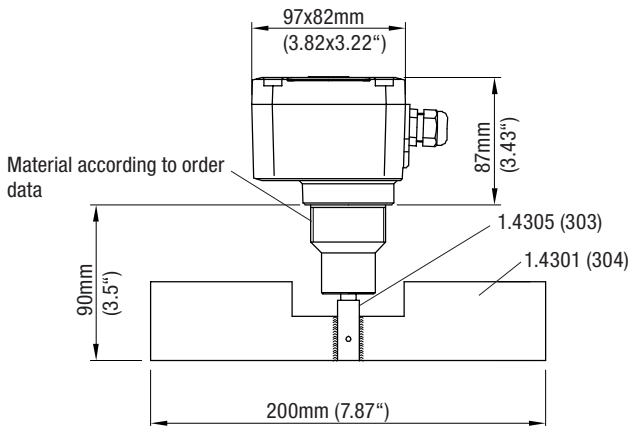
## Extension

**RN 3004**

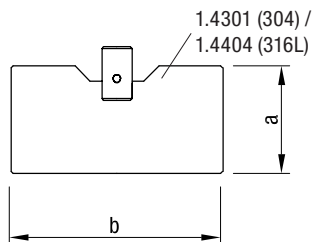
**RN 6004**



**RN 3005**

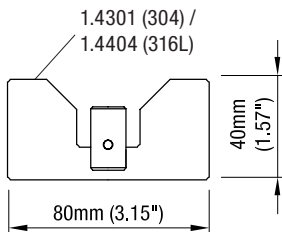


## Rectangular vane



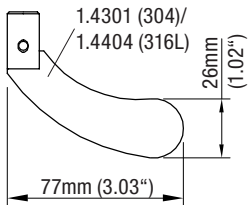
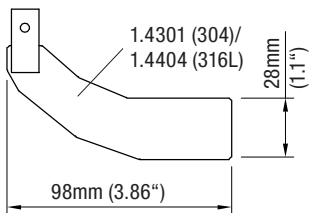
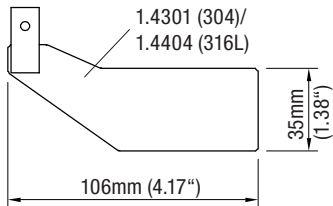
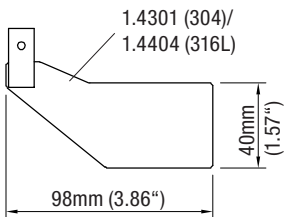
A	B
50mm (1.97")	98mm (3.86")
50mm (1.97")	150mm (5.9")
50mm (1.97")	250mm (9.84")
98mm (3.86")	98mm (3.86")
98mm (3.86")	150mm (5.9")
98mm (3.86")	250mm (9.84")

## Notched

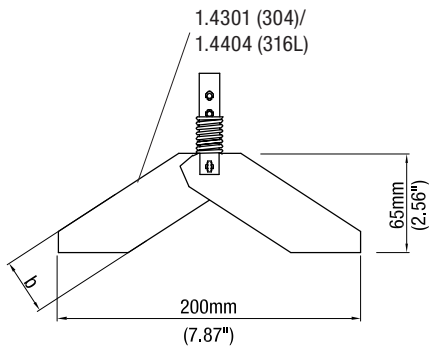


## Measuring vane

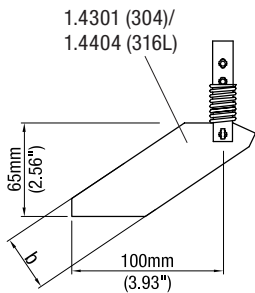
### Boot shaped vane



Hinged vane double side



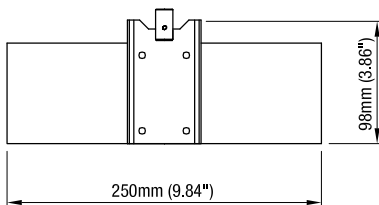
Hinged vane single side



b=28mm (1.1") / 37mm (1.46")

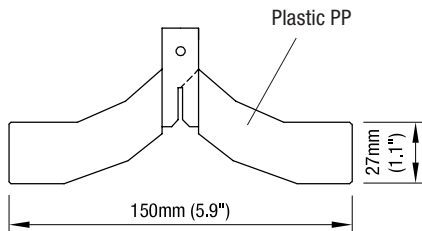
## Measuring vane

### Rubber vane



---

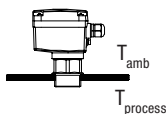
### Universal vane



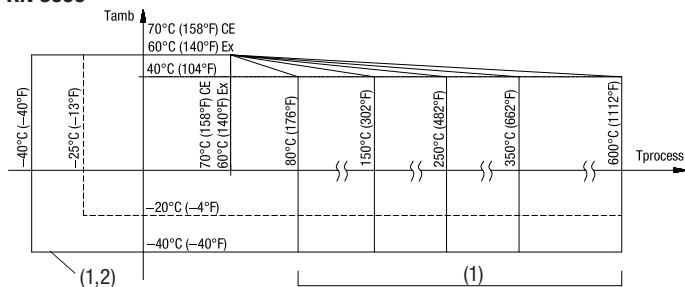




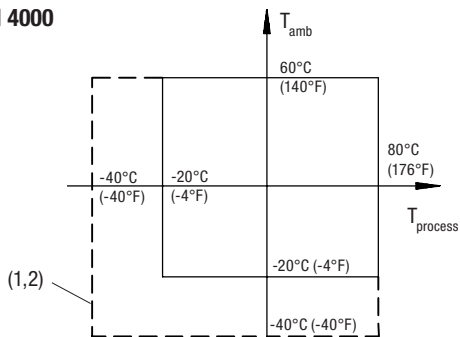
°C



## RN 3000

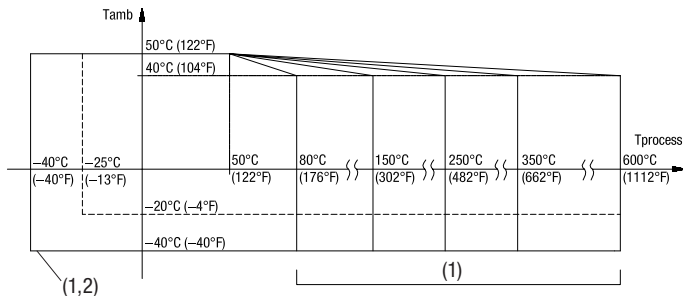


## RN 4000

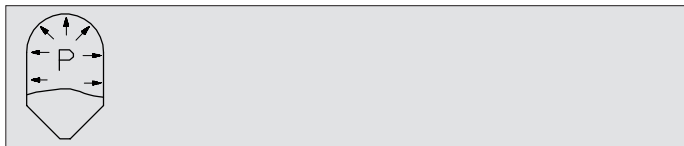


- (1) See type plate
- (2) with internal heating

## RN 6000



- (1) See type plate  
 (2) with internal heating



### RN 3000 / RN 6000

min.  $-0,9\text{bar}$  ( $-13.1\text{psi}$ )  
<sup>(1)</sup> max.  $0,8 / 5 / 10\text{bar}$  ( $11.6 / 73 / 145\text{psi}$ )

### RN 4000

min.  $-0,9\text{bar}$  ( $-13.1\text{psi}$ )  
 max.  $0,8\text{bar}$  ( $11.6\text{psi}$ )

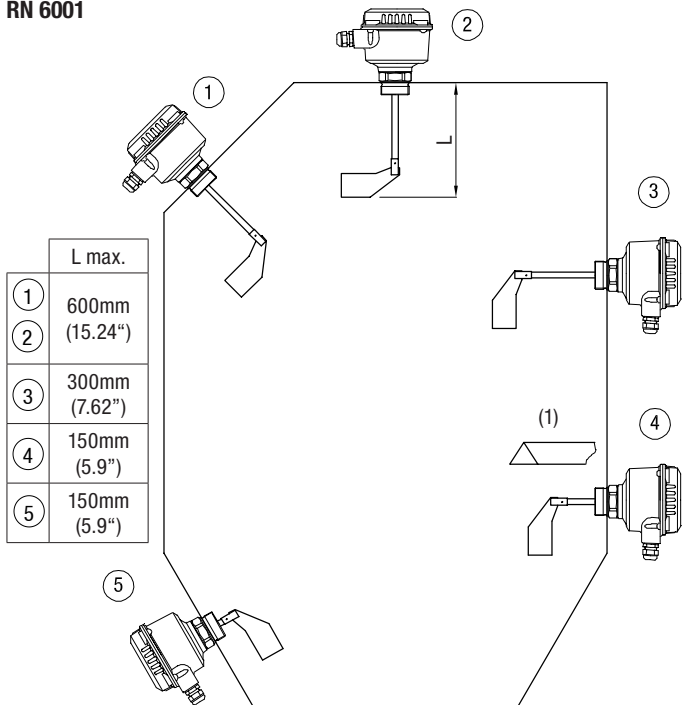
- (1) See type plate

## Application

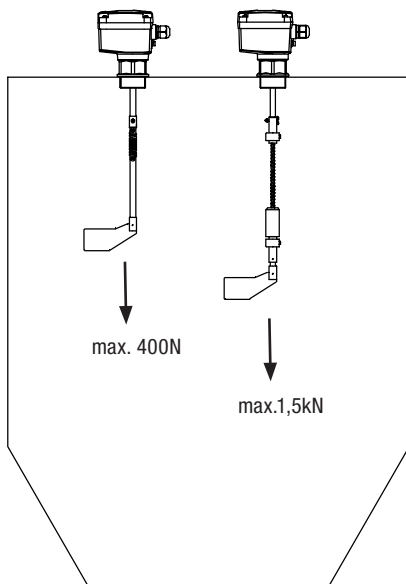
RN 3001

RN 4001

RN 6001



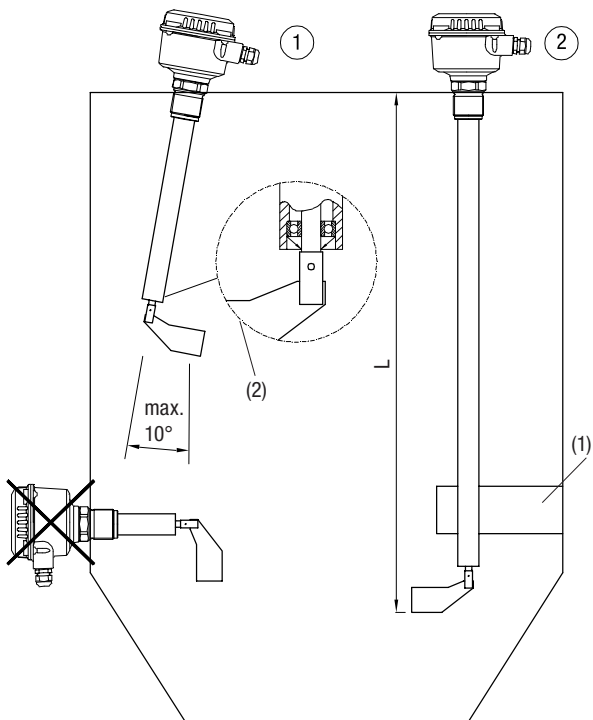
RN 3001  
RN 4001  
RN 6001



Pendulum shaft

Rope extension

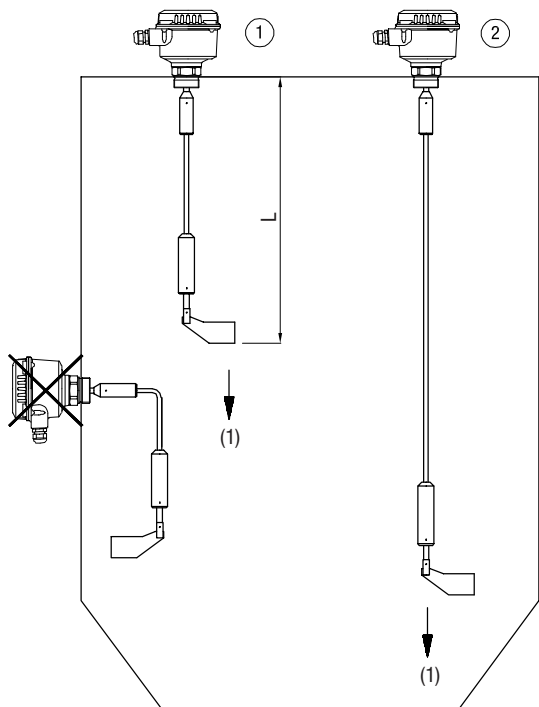
**RN 3002**  
**RN 6002**



	L max.
①	3.000mm (118.1")
②	4000mm (158")

- (1) Mechanical support
- (2) Incline installation with option 32 (bearing at tube end)

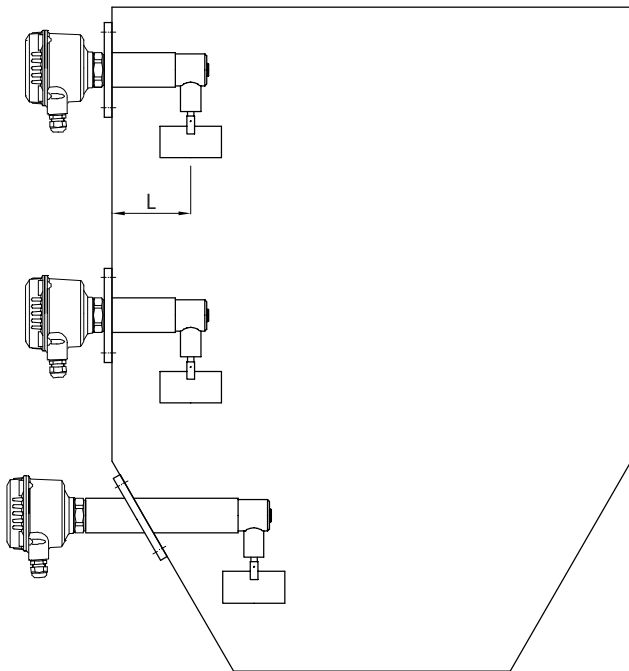
**RN 3002-Rope**  
**RN 6002-Rope**



	L
①	min. 500mm (19.68")
②	max. 10.000mm (394")

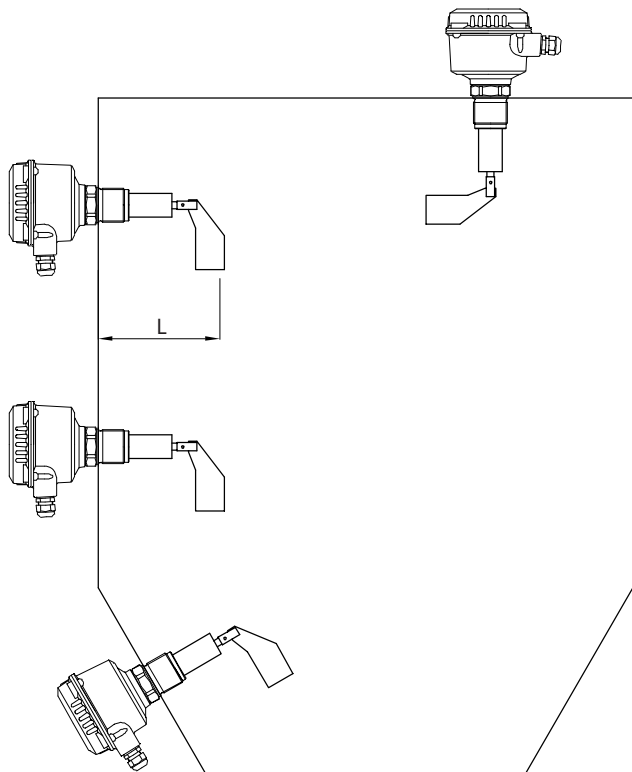
(1) Max. pulling force 4kN / 28kN, see type plate

**RN 3003**  
**RN 6003**



L max.
300mm (11.81")

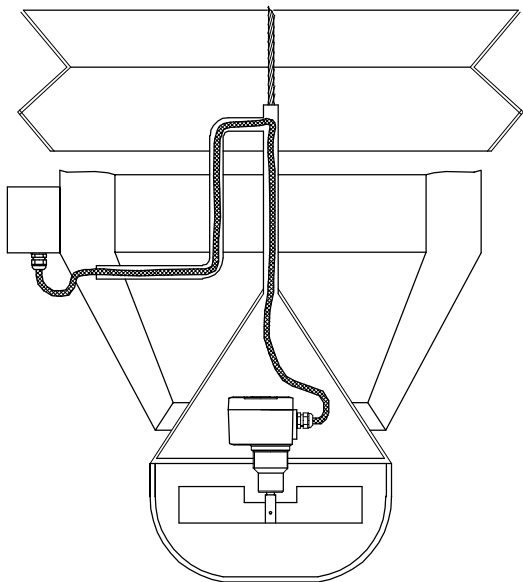
**RN 3004**  
**RN 6004**



L max.

300mm (11.81")

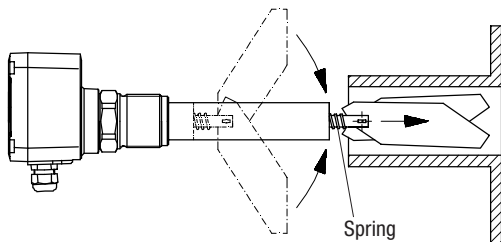




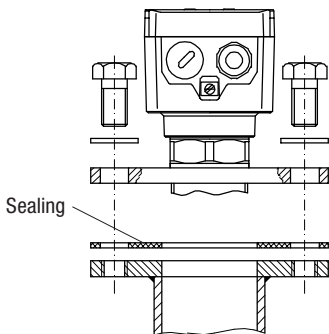
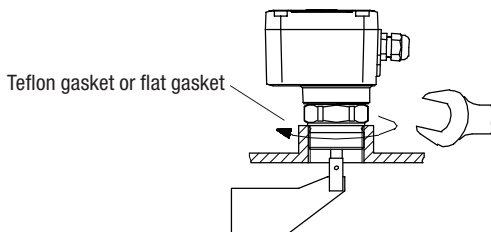
Loading bellow

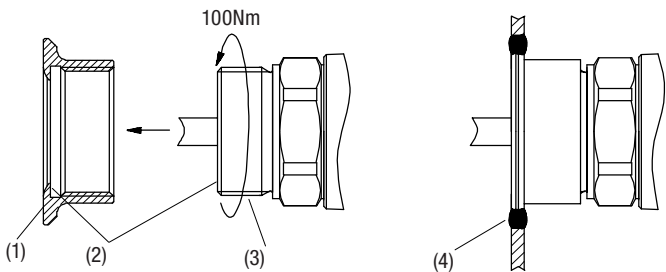
## Assembly

### Example: Insertion of the hinged vane in a long socket



### Fixing / Sealing

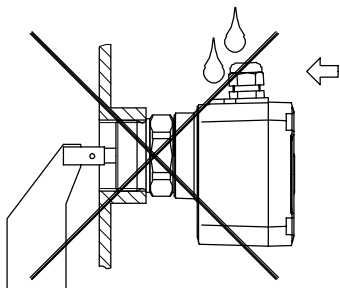
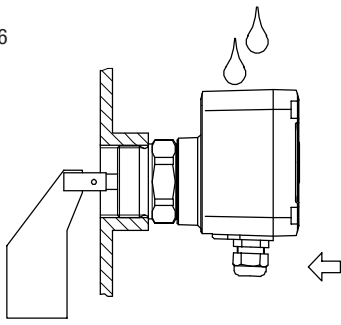




- (1) Certified welding sleeve prescribed
- (2) Metal-metal support gap-free
- (3) Teflon tape
- (4) Welding (observe hygiene guidelines)

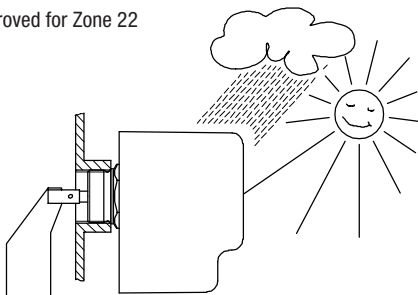
## Alignment

Ingress protection IP 66



## Option: Weather protection cover

for Ex only approved for Zone 22

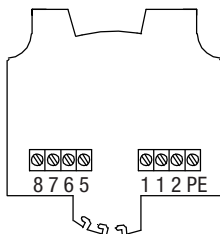


## Electrical connection

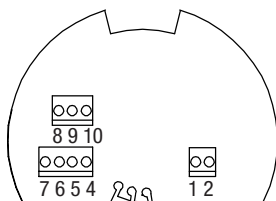
---

**RN 3000**

**RN 4000**



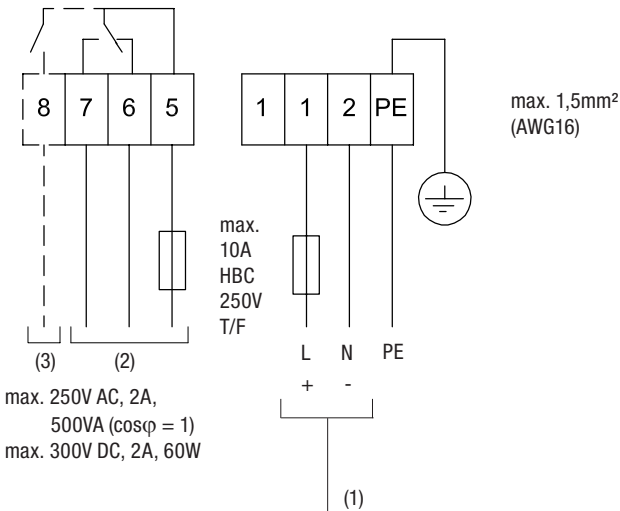
**RN 6000**



Terminals according to selected version

Version

- AC
- DC
- Universal voltage

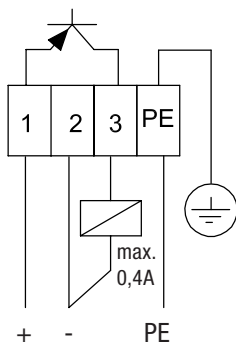


Version <sup>(4)</sup>

AC	24/48/115/230V ±10% <sup>(5)</sup> , 50/60Hz max. 4VA
DC	24V DC ±15% <sup>(5)</sup> , max. 2,5W
Universal voltage	24V DC ±15% <sup>(5)</sup> , max. 4W 22...230V ±10% <sup>(5)</sup> , 50/60Hz, max. 10VA

- (1) Supply
- (2) Signal output
- (3) Alarm outout
- (4) see typeplate
- (5) including 10% from EN 61010

**Version**  
**- PNP**

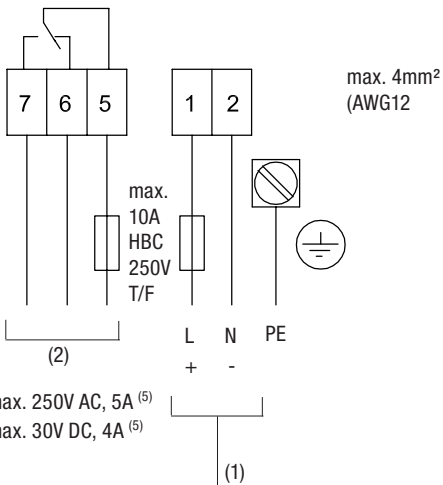


24V DC  $\pm 15\%$  <sup>(1)</sup>  
max. 0,6A

(1) including 10% from EN 61010

Version

- AC
- DC



Version <sup>(4)</sup>

AC 24/48/115/230V ±10% <sup>(4)</sup>, 50/60Hz max. 4VA

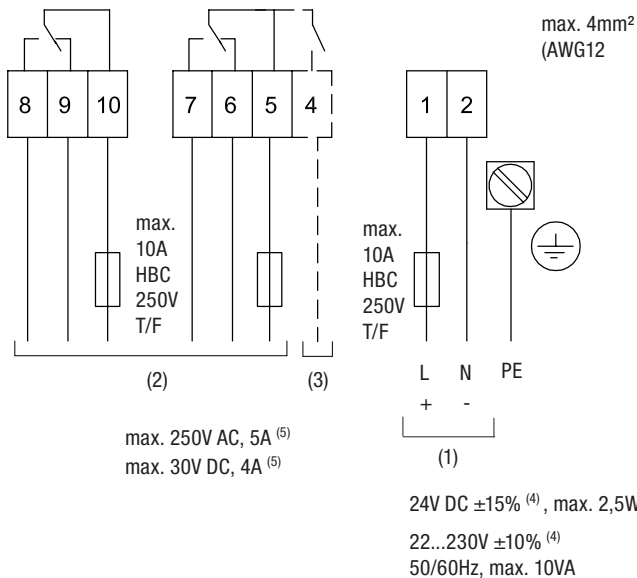
DC 24V DC ±15% <sup>(4)</sup>, max. 2,5W

- (1) Supply
- (2) Signal output
- (3) see typeplate
- (4) including 10% from EN 61010
- (5) not inductive



Version

- Universal voltage

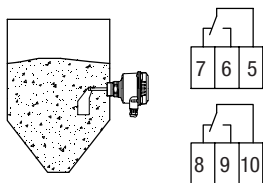
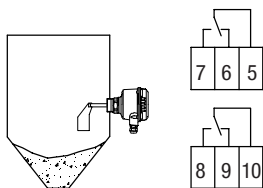


- (1) Supply
- (2) Signal output
- (3) Alarm output
- (4) including 10% from EN 61010
- (5) not inductive

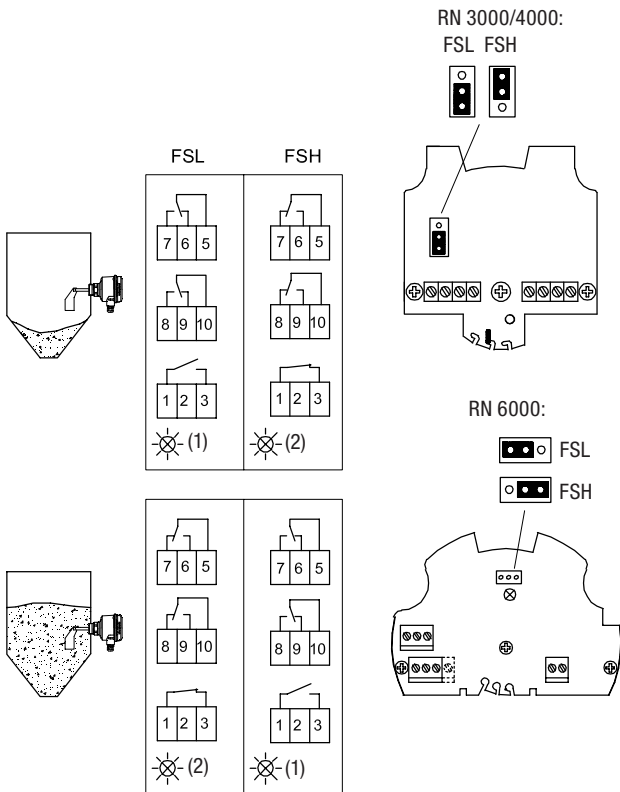
## Switching logic

---

### Signal output without FSL/FSH



## Signal output with FSL/FSH

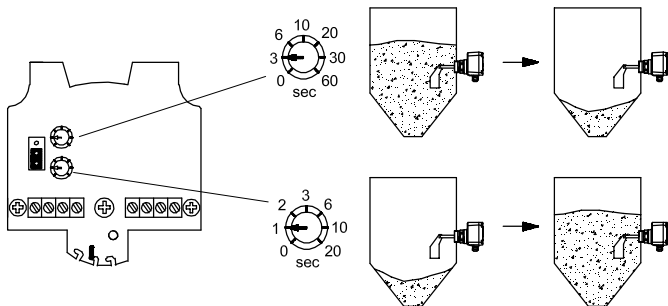


- (1) yellow
- (2) green

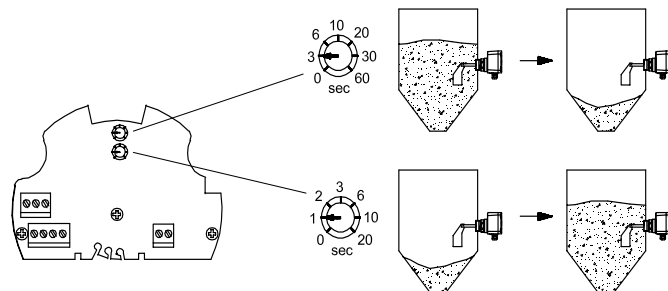
## Signal output delay

**RN 3000**

**RN 4000**



**RN 6000**



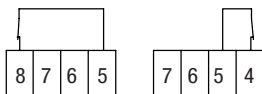
## Alarm output

Version with rotation control

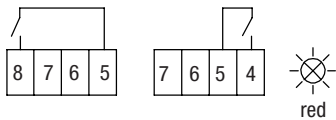
No error

RN 3000/4000:

RN 6000:



Error



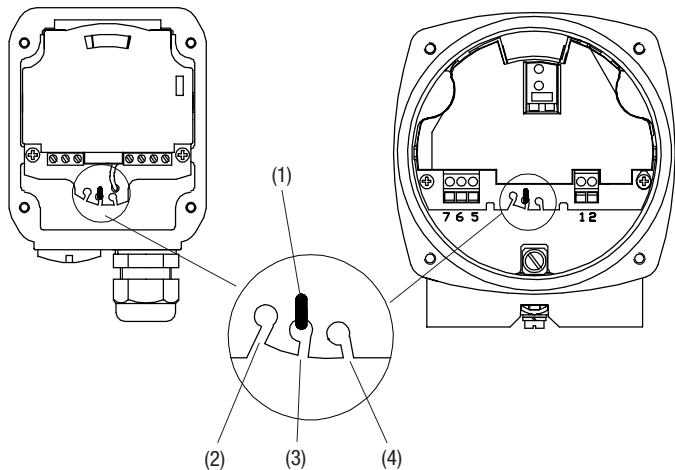
## Setting

---

### Setting of the spring force

RN 3000  
RN 4000

RN 6000



- (1) Spring
- (2) light: for light material
- (3) central: universal
- (4) strong: for very sticky material

## Maintenance

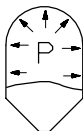
---

Normally not necessary

# ATEX II 1/2D + IEC-Ex t IIIC Da/Db

## Notes

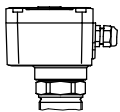
### Permitted relative pressure



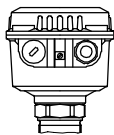
-0,2...+0,1bar  
(-2.9...+1.45psi)

### Zone borders

**RN 3000**  
**RN 4000**

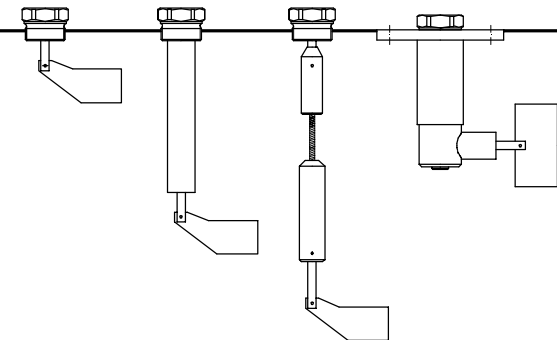


**RN 6000**



- (1) **2D**
- (2) **Db**
- (3) **21**

- (1) **1D**
- (2) **Da**
- (3) **20**



(1) Category ATEX

(2) EPL (IEC-Ex)

(3) Zone

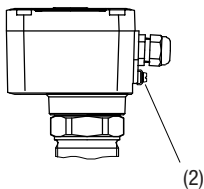
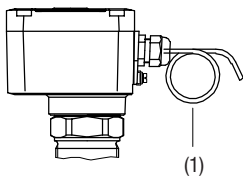
**Ambient temperature**
**Max. surface temperature**


Ambient temperature		Max. surface temperature	
Zone 21	Zone 20		
30°C (86°F)	50°C (122°F)	90°C (194°F) 120°C (248°F) <sup>(1)</sup>	
40°C (104°F)	60°C (140°F)	100°C (212°F) 120°C (248°F) <sup>(1)</sup>	
50°C (122°F)	70°C (158°F)	110°C (230°F) 120°C (248°F) <sup>(1)</sup>	
50°C (122°F)/ 60°C (140°F)	80°C (176°F)	120°C (248°F)	
50°C (122°F)/ 60°C (140°F)	90°C (194°F)	120°C (248°F)	
	100°C (212°F)	120°C (248°F)	
	110°C (230°F)	120°C (248°F)	
	120°C (248°F)	120°C (248°F)	
	130°C (266°F)	130°C (266°F)	
	140°C (284°F)	140°C (284°F)	
	150°C (302°F)	150°C (302°F)	
	160°C (320°F)	160°C (320°F)	
	170°C (338°F)	170°C (338°F)	
	180°C (356°F)	180°C (356°F)	
	190°C (374°F)	190°C (374°F)	
	200°C (392°F)	200°C (392°F)	
	210°C (410°F)	210°C (410°F)	
	220°C (428°F)	220°C (428°F)	
	230°C (446°F)	230°C (446°F)	
240°C (464°F)	240°C (464°F)		
250°C (482°F)	250°C (482°F)		

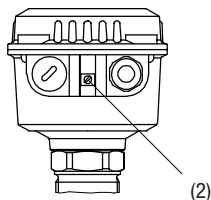
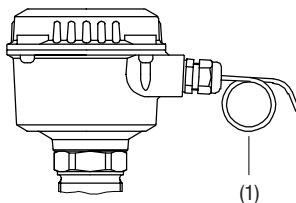
(1) When using the electronic "universal voltage".



**RN 3000  
RN 4000**



**RN 6000**



- (1) A mech. pull relief must be provided
- (2) Connect to plant ground

## ATEX / IEC-Ex: Further Remarks

For installation and field wiring the respectively valid installation regulations of the respective country must be observed.

Commissioning only with closed lid.

Do not remove the lid (cover) while circuits are alive.

Before opening the lid take care, that no dust deposits or whirlings are present.

The installation has to be done in a way, that mechanical friction or impact does not cause sparks between the aluminium enclosure and steel.

For process temperatures over 230°C the delivered sealings of the flanges and of the sliding sleeve must be checked regularly for good order and condition.

Cable Glands:

Installation according to the regulations of the country, where the product is installed.

Not used entries have to be closed with blanking elements certified for this purpose.

Where applicable the factory provided parts must be used.

A strain relief must be provided for the field wiring cables, when the device is installed with the factory provided cable glands.

The diameter of the field wiring cable must match to the clamping range of the cable clamp.

If other than the factory provided parts are used, following must be ensured:

The parts must have an approval adequate to the approval of the level sensor (certificate and type of protection).

The approved temperature range must be from the min. ambient temperature of the level sensor to the max. ambient temperature of the level sensor increased by 10Kelvin.

The parts must be mounted according to the instructions of the supplier.