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Operating Instructions

FF03

Rotating vane level switch
for bulk goods

Index

Please, read and follow these safety instructions first and take notice of the operating instructions.

Safety instructions

1.1 The installation, initial operation and maintenance may be done by a qualified expert with electrical know-how only.

1.2 The connection of the single components as like as measuring blade, anti-buckling protection, shaft extension are permissible only with the attached pins.

1.3 For the electrical connection take notice of the local and statutory rules and regulations and/or the VDE 0100.

1.4 Before electrical connection, compare the supply voltage with the details at the data plate.

1.5 Afuse (with max. 4A) has to be connected in series to the voltage supply.

1.6 Protect the signal contacts from voltage peaks when inductive loads are connected.

1.7 The device may put into operation with intact cap-sealing and if it is closed, only.

1.8 Switch off the power supply, before opening the device (touchdangerous voltage).

Cable entry

2.1 The level indicator will be delivered with a cable gland M20x1.5.

2.2 The second drill-hole is closed with a plug screw M20x1.5.
Optional a further cable gland can be delivered.

2.3 The cable gland and the plug screw were screwed on at the factory.
Please check if the cable gland or the plug screw were loose during the mounting or the transportation. If so, tighten it again.

2.4 The cable gland will be delivered with a PE sealing disc. With it, the level indicator is protected against dust and dirt entry during transportation and storage.
When the indicator is brought into the dusty area it has to be installed immediately at its destine place, the PE sealing disc has to be removed, a cable has to be pulled into the cable gland and the pressure screw has to be screwed on to maintain the type of protection.

ATTENTION
Excessive screw on may injure the type of protection

By use in explosive hazardous areas read and follow the

special conditions and instructions for safe applicate

of the

explosive protection information

first and take notice of the operating instructions.

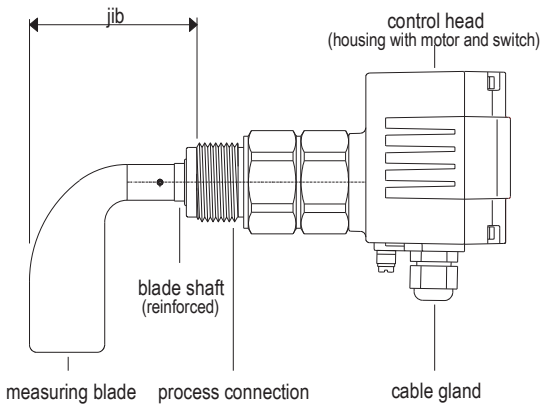
Operatinginstructions

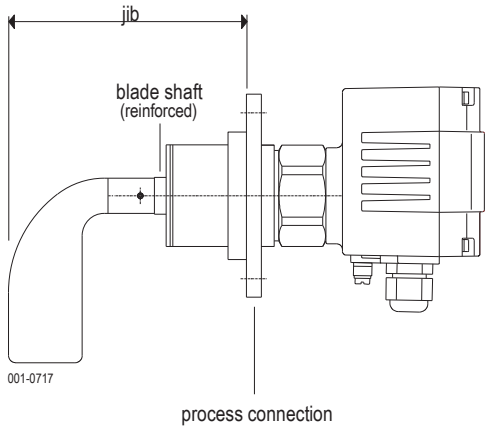
1. Description

1.1 Intended use

The electromechanical level limit switch is monitoring the filling level of bulk goods in silos, bunkers, containers, hoppers, weighers, etc..

1.2 Construction





1.3 Function

The rotating measuring blade, projecting into the silo or container, is driven by a gearmotor.

If the bulk material is reaching the measuring blade, the rotation will be hindered and it will be stopped.

The return torque turns the pivoted motor from its end position and actuates the signal switch.

Asecond switch turns the motor off.

If the filling level of the bulk material sinks, the blade becomes freely again and a spring will turn back the motor into its original end position.
Thereby the motor will be turned on again and the signal switch will be switched back.

1.4 Technical data

Name	rotary blade level indicator
Type	
Bulk goods temperature	see data plate
Ambient temperature	-20 °C ... +70 °C
Pressure range	see data plate
Measuring blade speed	1 U/min
Response delay	approx. 1.20 sec.
Maintenance	none

1.5 Electrical data

Supply voltage	see data plate
Power consumption	**AC** 4 VA **DC** 4 W
Cable entry	cable gland M20 x 1.5
Type of protection	IP66 acc. to DIN 60529
Connection clamps	max. 1.5 mm²
Signal contact	change-over contact potentialfree
Switching voltage	4 V DC ... 250 VAC
Capacity of the contact	1mA... 2A

The signal contact is a multivoltage and multicurrent switch. It is suitable for use in circuits with low currents and low voltages as well as for medium currents with control voltages up to 250 V ~AC.

Caution!

During the whole working life, the switch may be used in the same kind of circuit types, only.
When the switch has been used once with medium switching capacity, it cannot be used any more for the low switching capacity.

1.6 Materials

Housing		aluminium
	or	stainless steel 1.4401
Process connection		aluminium
	or	stainless steel 1.4301
Blade shaft		stainless steel 1.4301
Measuring blade		stainless steel 1.4301
Sealing ring	order code **R6**	NBR, black
	R7	Viton/Teflon

2. Installation

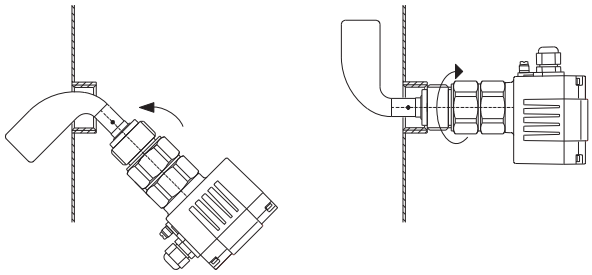
2.1 Preparation

- Read and follow the safety instructions and the operating instructions before mounting the device!
- Inspect if the delivery is complete.
  The delivery volume is different, depending on the options.

2.2 Mounting

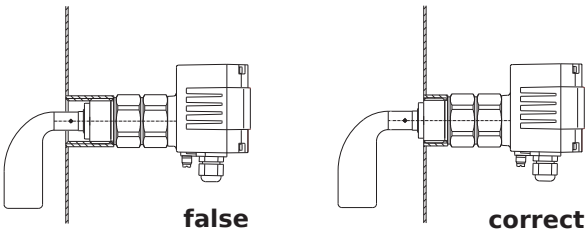
Thread connection

Put the level indicator together with the sealring at the provided position in the silo or container wall and screw it tightly by means of appropriate tools.



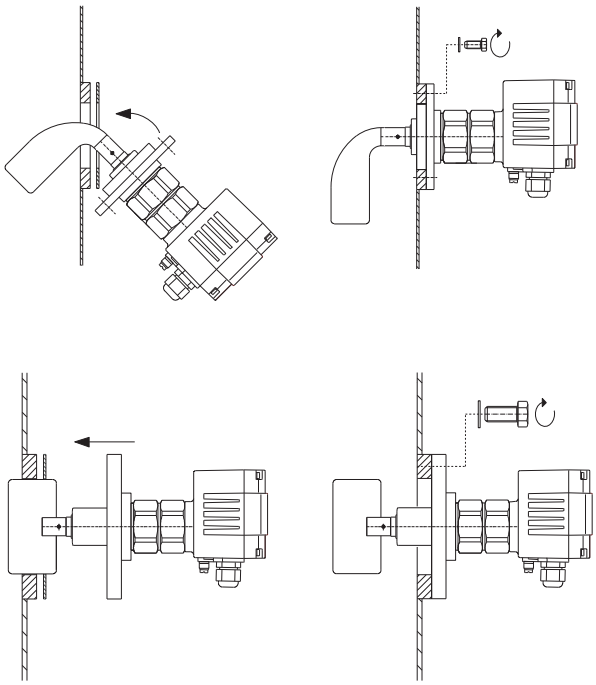
Attention !

Make sure the level indicators with thread connection have no deposit of bulk goods inside of the socket.



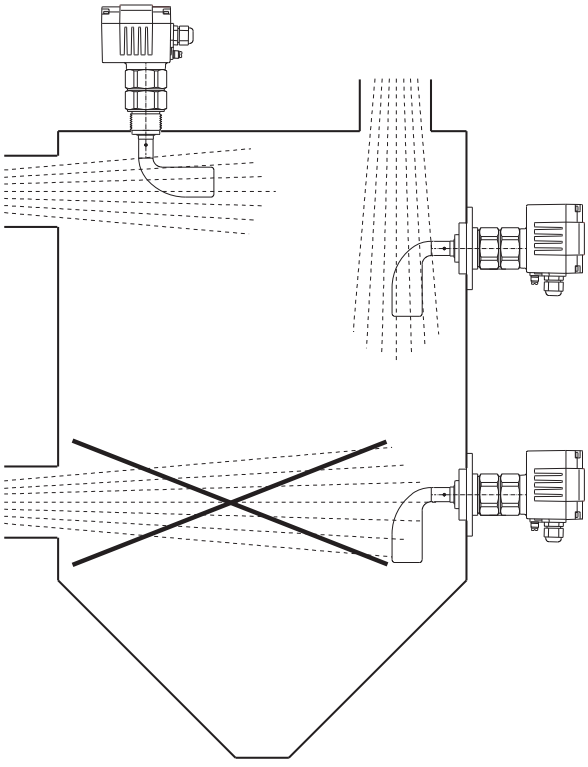
Flange connection

Put the level indicator together with the sealring at the container and fix the flange by means of suitable screws.

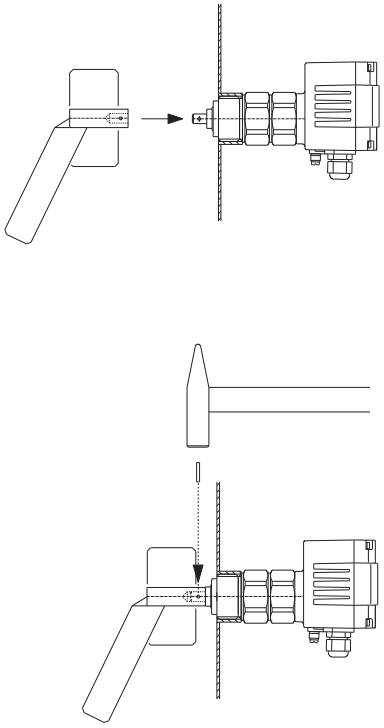


Attention!

The level indicator has to be installed in this way that the jib won´t be hit by the filling stream of incoming bulk goods.

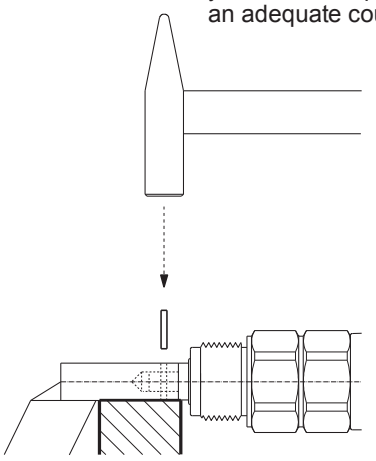


2.3 Mounting of the measuring blades



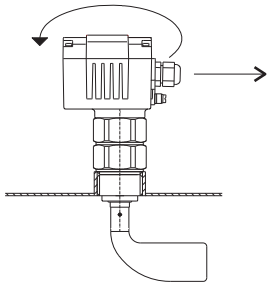
Attention!

During beating the pin into the shaft, you have to support the shaft with an adequate counterpart.



2.4 Orientation of the housing

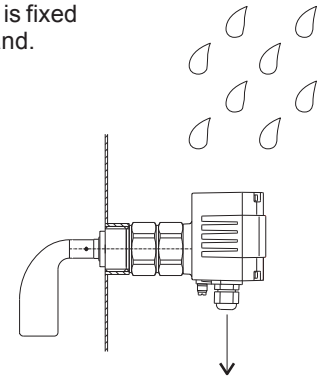
After mounting, the housing has to be orientated by turning in such a way, that in case of vertical mounting the cable gland is directed towards the cable duct.
In case of all the other mounting positions the cable gland has to be directed vertical to the bottom.



Cable gland
in direction to
the cable duct

Attention!

Ensure that the cable is fixed tightly in the cable gland.

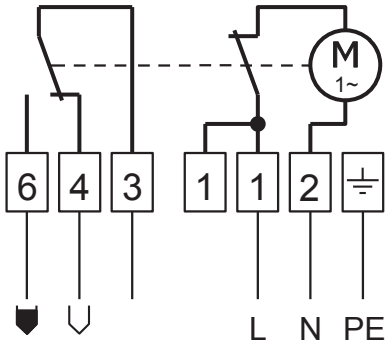


Cable gland
always downwards!

3. Electrical connection

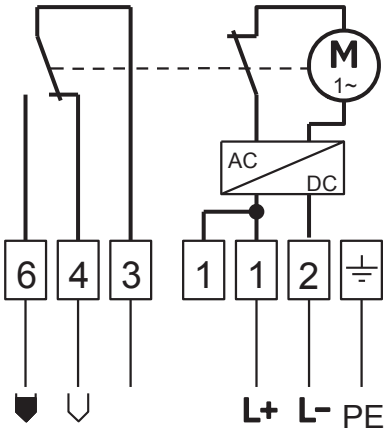
- Install thewiring and electrical connection in compliance with the circuit diagrams.
- Run the cable between housing and cable protection, in order that the switches and the motor will not be hampered at their necessary movement.
- After the electrical connection the cap nut of the cable gland has to be screwed and please ensure that the cable is fixed strongly and tightly in the cable screwing.

3.1 Circuit diagram AC



001-AP00

3.2 Circuit diagram DC



001-AP02

Attention!

Wiring of the level indicator in a way that no undesirable switching function can occur in case of mains voltage failure.

4. Switching logics and function displays

Symbol-Bedeutung

= under voltage

= full

= empty

= LED "OFF"

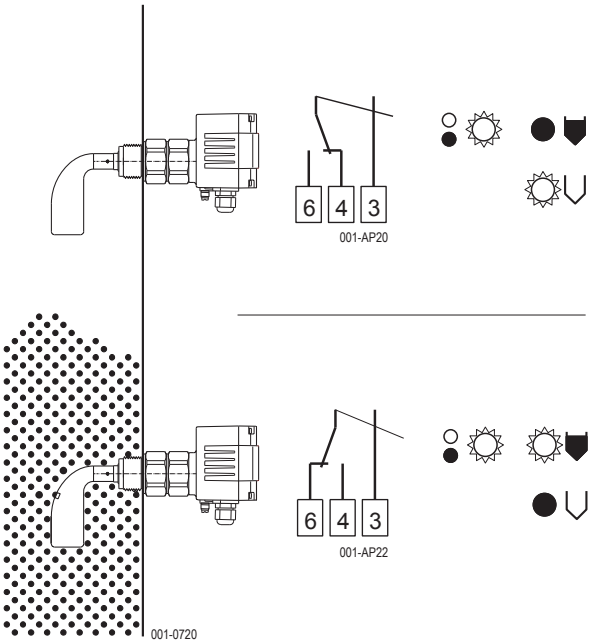
= LED "ON"

Arrangement and colours of the LEDs for function display

yellow **green**

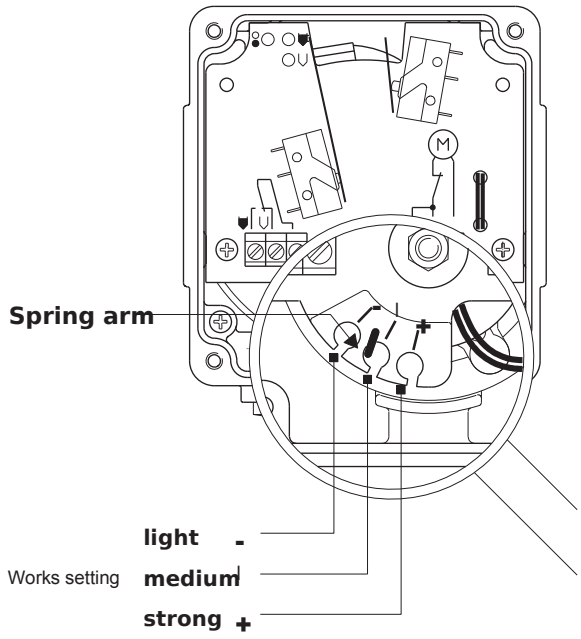
green

Switching logics



5. Setting of the sensitivity

As occasion demands, the sensitivity of the level indicator can be adjusted, referring to the characteristics of the bulk goods, by shifting the spring arm.



Three settings are possible:

1. **light** for very light bulk goods
2. **medium** suitable for almost all bulk goods
3. **strong** for sticking bulk goods

Fluidised bulk goods are lighter during filling and draining process.This has to be taken appropriately into consideration when setting the spring force and selecting the size of the measuring blade.

6. Use of the measuring blades

Lowest bulk density, the measuring blades can be used for.

	Bulk density ϱ_{SS} in	
Filling level up to 100mm above measuring blade	kg/l	t/m³
Filling level until measuring blade is compl. covered	t/m³	kg/l

Measuring blade	Blade size	Spring force setting light	medium
S1 Socket blade	100x30	0,25 / 0,4	0,35 / 0,6
S2 Socket blade	130x30	0,2 / 0,35	0,3 / 0,5
M1 Socket blade	90x28	0,15 / 0,3	0,2 / 0,5
M2 Socket blade	90x40	0,1 / 0,2	0,15 / 0,3
T0 BladeT200	68x220	0,15 / 0,3	0,25 / 0,5
T1 Blade T50	98x50	0,15 / 0,3	0,25 / 0,5
T2 Blade T100	98x100	0,1 / 0,2	0,2 / 0,45
T5 Blade T250	250x100	0,015 / 0,02	0,02 / 0,03
T8 Rubber blade	250x100	0,015 / 0,02	0,02 / 0,03
X1 Blade X50	98x50	0,15 / 0,3	0,25 / 0,5
X2 Blade X100	98x100	0,1 / 0,2	0,2 / 0,45
X3 Blade X200	180x100	0,025 / 0,05	0,075 / 0,15
XM Blade X40	44x50	0,25 / 0,4	0,35 / 0,6
K1 Hinged bladeT230	200x30	0,05 / 0,08	0,07 / 0,12
SG Blade	126x8	0,45 / 0,55	0,65 / 0,75
TG Blade	98x8	0,5 / 0,6	0,7 / 0,8

7. Utilization

7.1 Putting into operation

- Commissioning of the rotary blade level indicator only, if the installation will be done correctly and if it will be fixed tightly with the electrical contact.
- During operation, the housing and the cable entry must be closed tightly.

7.2 Normal operation

- Use the rotary blade level indicator in its intended application only.
- Operatethelevelindicatorwithintheintended temperaturerangesforthe ambientandbulkgoods temperature.
- Protecttheinsideofthecontrolheadfromsoiling.
- Whentheindicatorhastobedamaged,youhaveto takethedeviceoutofoperationimmediately.

7.3 Inexpert handling

- Ignoring of the safety instructions and the operating instructions.
- Utilization of therotarybladelevelindicatorinnot intendeduse.
- Mountingofsparepartswhicharenooriginal parts.
- Remove,addingorchangeofassemblingparts, unlessthishasbeendescribedinthedocumentsof themanufacturer.
- Violationagainstapplicablelawandstandards.

8. Maintenance and servicing

8.1 Maintenance

- In case of intended use, the rotary blade level indicator needs no maintenance.
- Remove deposits and stickings from the blades or wrinkles with a brush or with a scraper.
  Don´t use any force and don´t damage the sealring of the shaft.
- Inspect the assemblings inside of the container about signs of wear and tear, in regular intervals. Define the intervals of the control, depending on the bulk goods characteristics.

8.2 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 rotary blade level indicator must not be used any more.

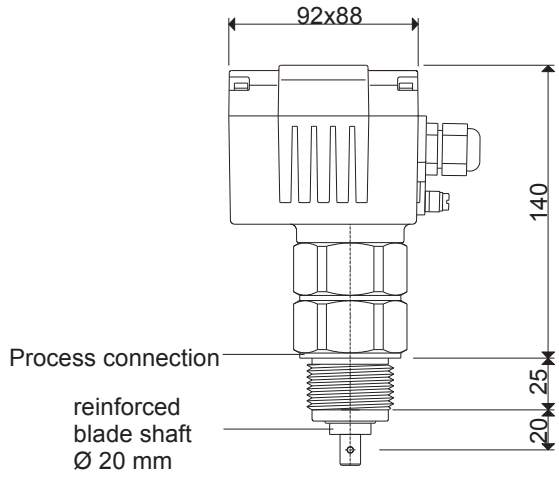
9. Storage

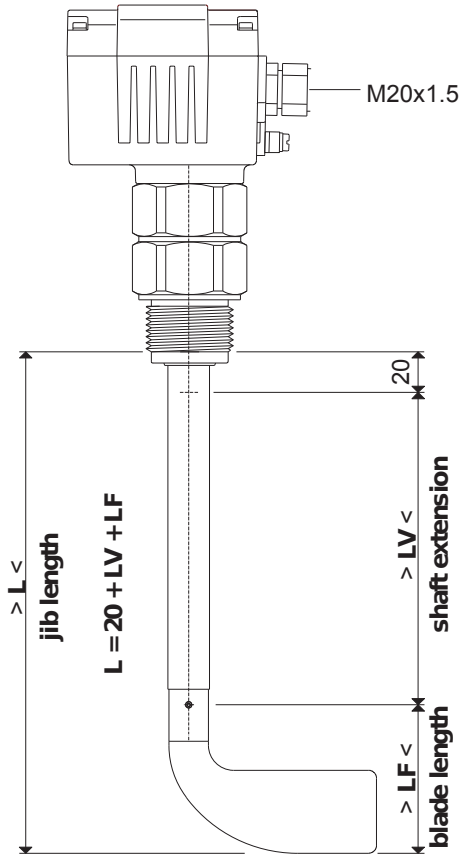
- While storage, the level indicator has to be protected from dust and humidity.
- Please ensure that the shaft of level indicators with jib extension will not be buckled or bended.

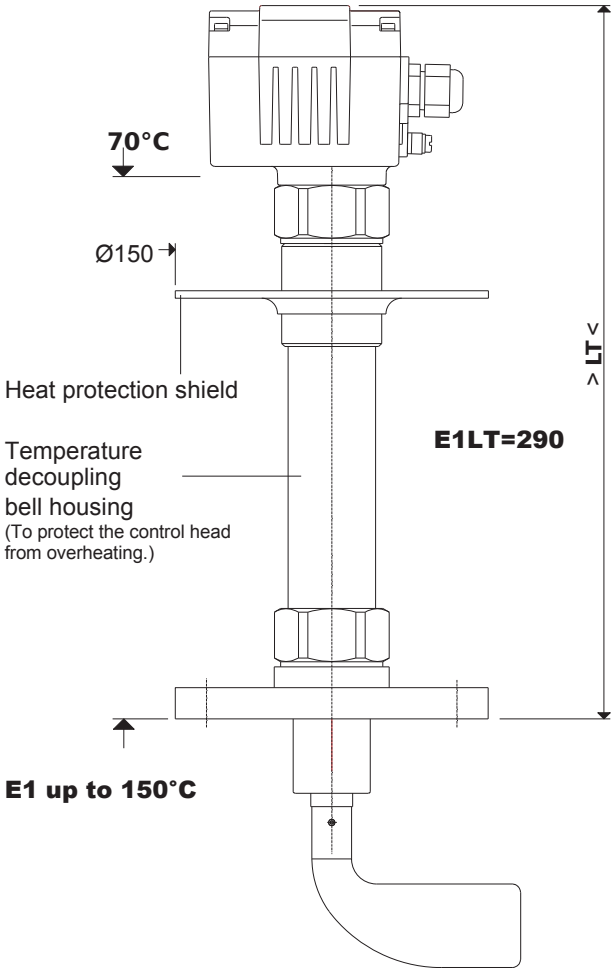
10. Disposal

- 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.

Dimensions



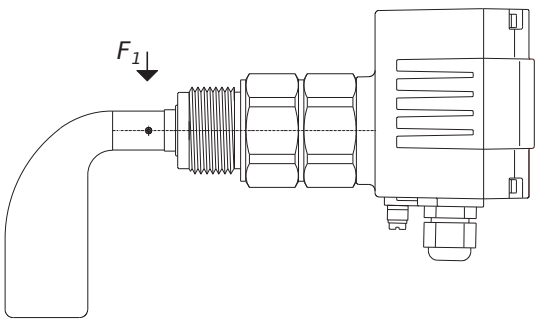




Application instructions

Mounting position **any**

Loadability of the blades F_1 max. **390 Nm**



FF03

Rotating Vane Level Switch for Bulk Materials

- for bulk materials up to a grain size of 150 mm and bulk densities from 0,01 to over 2,0 t/m³
- robust aluminium die-cast housing or stainless steel housing
- low-cost version
- industrial versions with pendulum shaft, rope shaft, reinforced bearings
- temp. range -40 °C ... +500 °C
- easy mounting
- can be used as full and empty detector
- protection class IP66
- Ex version according to ATEX optional

Description:

A geared motor mounted in the extension of a shaft and rotatable by a certain angle is held by a spring at a stop. The motor drives the blade protruding into a container via the shafts. As soon as the product reaches the vane, it is prevented from rotating. The reverse torque turns the motor out of its end position and actuates a switch. The motor is switched off by a second switch. If the filling level drops, the leaf is released and the motor is retracted by the spring to its end position. The motor is switched on again and the output signal is switched back.

The geared motor and the two switches are mounted in a plastic housing. The exact running of the blade shaft is ensured by ball bearings. A locking clutch prevents damage to the motor in the event of blockages. An optional special seal on the shaft protects against penetration of dust and moisture into the housing or ball bearing.

Typical applications:

For all bulk materials from free-flowing to difficult to flow and for goods that tend to bridge, mat or crust.

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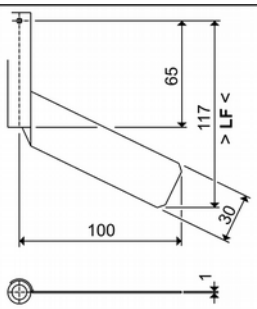
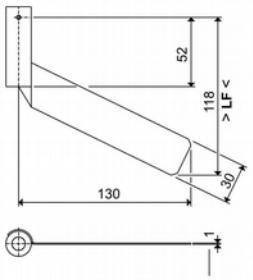
Models and Dimensions of Measuring Blades:

S1 Socket blade

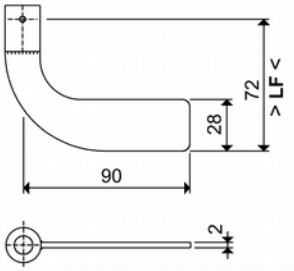


S2 Socket blade

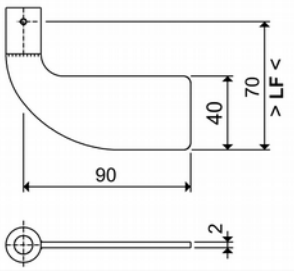


2mm S2V socket blade, reinforced

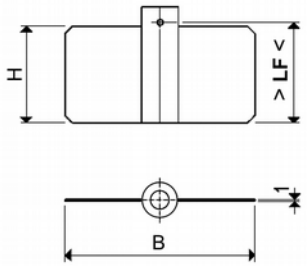
M1V Socket blade, reinforced



M2V Socket blade, reinforced



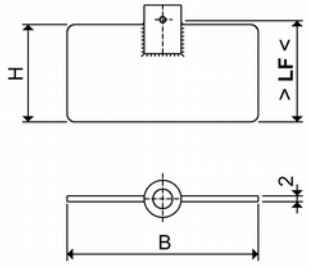
T-blade



	B	H	LF
T1	98	50	52
T2	98	100	102
T3	200	100	102
T5	250	100	102
T8[1])	250	100	102

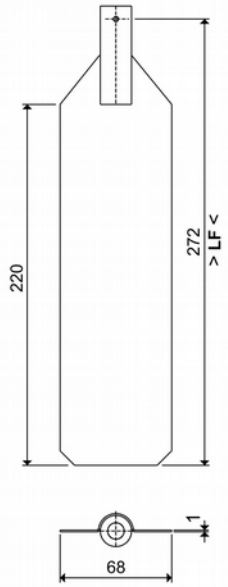
[1]) Blades 10 mm thick made of rubber NBR, black

T-blade, reinforced

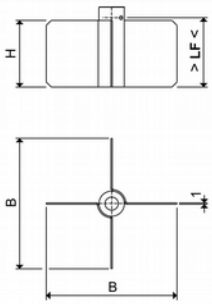


	B	H	LF
T1V	98	50	52
T2V	98	100	102

TO blade

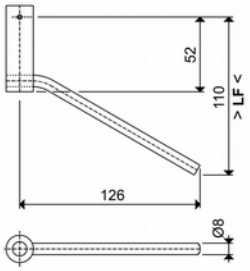


X blade

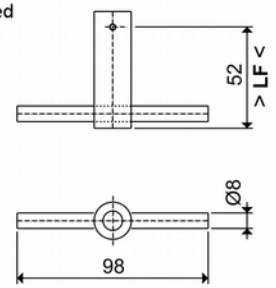


	B	H	LF
X1	98	50	52
X2	98	100	102
X3	180	100	102

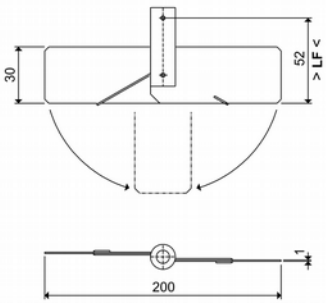
SG socket blade, reinforced



TG blade, reinforced



K1 Flap- blade



Level

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Models:

Full, empty and demand detectors for general applications.
Inexpensive version with aluminium housing.

ATEX version on request

Technical Data:

Materials:

Housing:	aluminium die-cast
Process connection:	aluminium
Wave rope:	stainless steel 1.4301
Gravity weight:	stainless steel 1.4301
Blade TK:	plastic PP
Blade TD:	stainless steel 1.4301

Electrical Data:

Power consumption:	AC: 4 VA DC: 4 W
Terminal blocks:	max: 1,5 mm²
Cable entry:	screw connection M20x1,5
Signal contact:	2 A / 250 V AC potential free
Protection class:	IP66 acc. to DIN EN 60529
Temp. range:	–20…70 °C
Pressure range:	–0,5…1 bar
Maintenance:	none

Accessories:

– **SH00** weather protection hood made of PVC, RAL 7001
only approved for zone 22 and zone free

– **SM1A** hexagon nut G1, aluminium
– **SM2A** hexagon nut G 1 1/4, aluminium
– **SM3A** hexagon nut G 1 1/2, aluminium
– **SM5A** hexagon nut M30 x1,5, aluminium
– **SM6A** hexagon nut M32 x 1,5, aluminium

Order Code:

Order number: **FF03-11 C1. H5. G1A. X1. W0**

Rotating vane level switch

Model:
11 = for general applications

Operating voltage:
C1 = 220…240 VAC (50…60 Hz)
C2 = 110…120 VAC (50…60 Hz)
C3 = 48 VAC (50…60 Hz)
C4 = 24 VAC (50…60 Hz)
C5 = 24 VDC

Signal lights:
0 = without
H5 = with function LEDs
H6 = function LEDs with calotte
H7 = signal lights LED, yellow/green

Process connection: (aluminium)
G1A = G 1
G2A = G 1 1/4
G3A = G 1 1/2
G5A = M 30x1,5
G6A = M 32x1,5

Measuring blades: (versions see page „Measuring Blade“)
M0 = without measuring blades
TK = 150 x 27 (plastic)
TK3 = 150 x 27,3 pieces (plastic)
TD = 140 x 85 (st. steel, not with extension)
S1 = sleeve blade 100 x 30 diagonal
X1 = blade 98 x 50
X2 = blade 98 x 100
X3 = blade 180 x 100

Shaft extension:
W0 = without extension
W1 = fixed wave 450 mm
W3 = pendulum wave 500 mm
W4 = pendulum wave 1000 mm
W6 = rope wave 2000 mm

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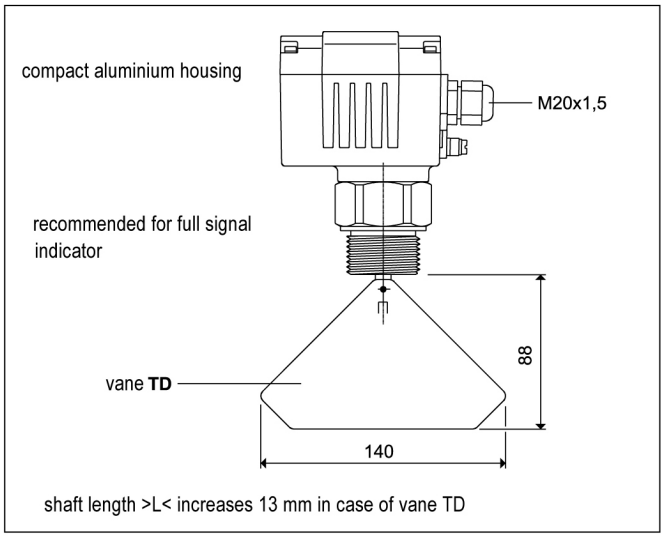
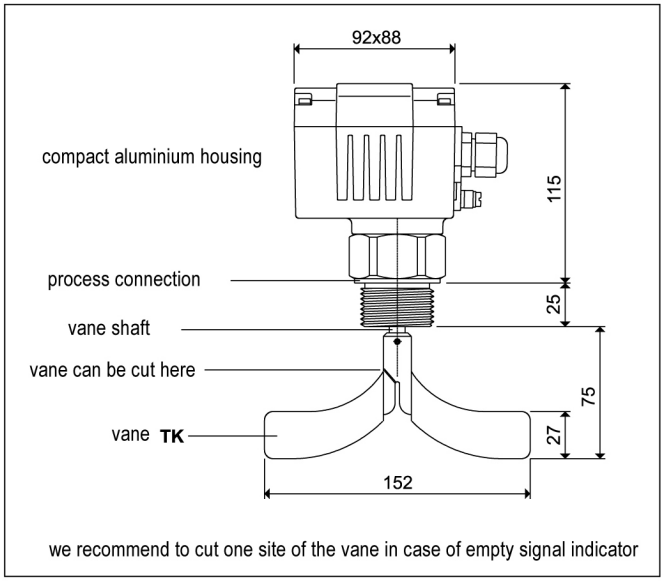
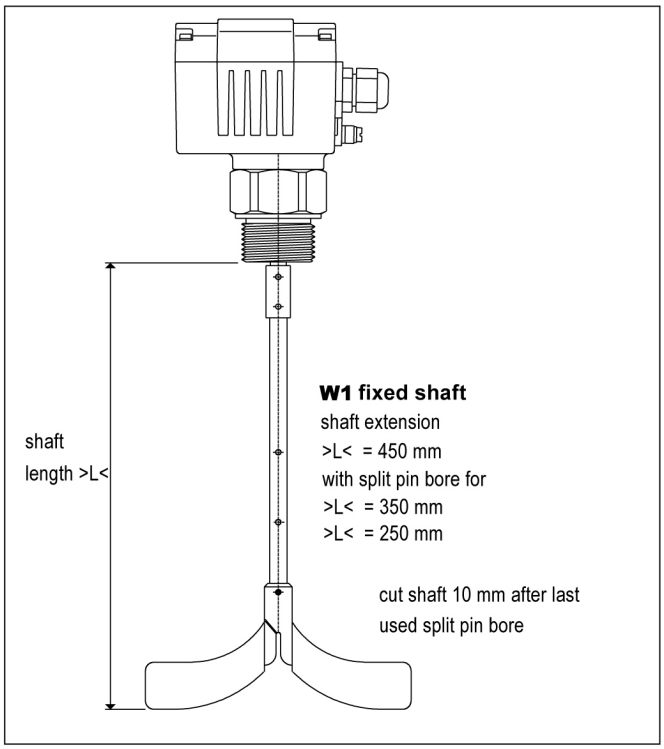
Models and Dimensions FF03-11:

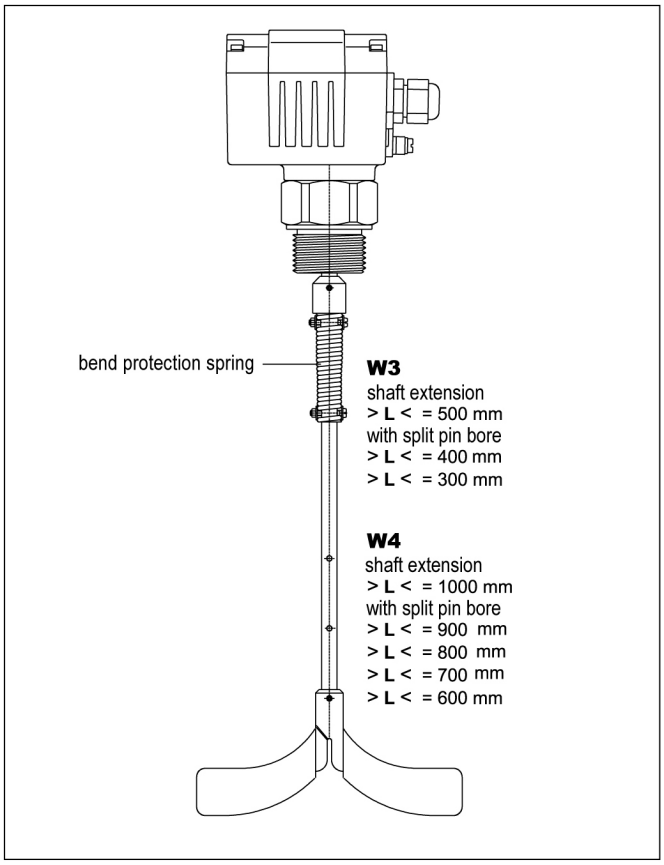


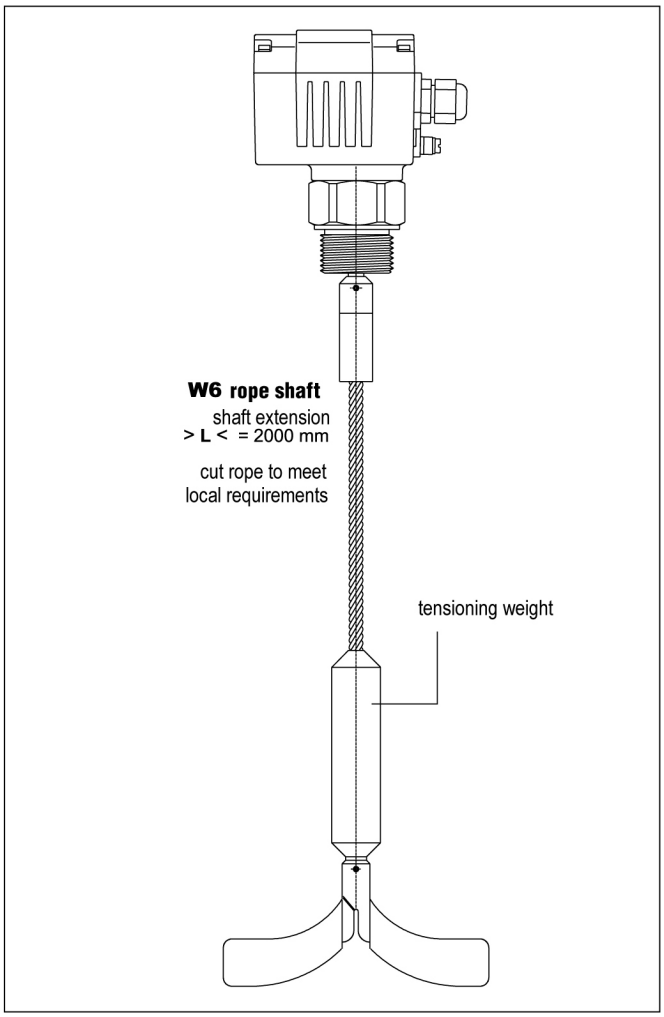
shaft length >L< increases 13 mm in case of vane TD



we recommend to cut one site of the vane in case of empty signal indicator







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Models:

Full, empty and demand detectors for a wide range of applications and any installation position..

ATEX version on request

Technical Data:

Materials:

Housing:	aluminium compact housing stainless steel compact housing
Blade:	stainless steel 1.4301
Process connection:	aluminium or stainless steel

Electrical Data:

Power consumption:	AC: 4 VA DC: 4 W
Terminal blocks:	max: 1,5 mm²
Cable entry:	screwing M20x1,5
Signal contact:	potential free changeover contact

Self monitoring:

Function monitoring of:
– cable break
– voltage drop
– DC/AC converter for motor voltage
– motor
– gearbox

Voltage monitoring:

Monitoring of:
- cable break
- voltage drop

Accessories:

– **SH00** weather protection hood made of PVC, RAL 7001
only approved for zone 22 and zone free
– **SM1** hexagon nut G 1
– **SM2** hexagon nut G 1 ¼
– **SM3** hexagon nut G 1 ½
– **SM5** hexagon nut M30 x1,5
– **SM6** hexagon nut M32 x 1,5

Material nut:

A-aluminium
E-stainless steel

Order Code:

Order number:	FF03-21	A1.	C1.	0.	H0.	E0.	P0.	G1.	A.	T8.	W0

Rotating vane level switch

Model:
21 = Industrial version

Housing selection:
A1 = aluminium compact housing
A2 = st. steel compact housing

Operating voltage:
C1 = 220…240 VAC (50…60 Hz)
C2 = 110…120 VAC (50…60 Hz)
C3 = 48 VAC (50…60 Hz)
C4 = 24 VAC (50…60 Hz)
C5 = 24 VDC
C9 = special voltage (on request)

Self monitoring:
0 = without monitoring
D1 = function monitoring
D2 = voltage monitoring

Signal lights:
H0 = with function LEDs (standard)
H1 = calotte for function LEDs
H2 = signal lights, LED green
H8 = large Signal lights LED, green

Bulk material temperature:
E0 = -25…80 °C (standard)
E1 = -40…150 °C
E2 = -25…200 °C
E3 = -25…260 °C
E4 = -25…500 °C
E7 = device heating 2,5 Watt
E9 = +1000 °C (on request)

Tank pressure:
P0 = -0,5…5 bar (standard)
P1 = -0,5…10 bar
P2 = -0,95…25 bar**
P6 = -0,9…10 bar
P7 = -0,9…10 bar**

Process connection:
G1 = G 1
G2 = G 1 1/4
G3 = G 1 1/2
G5 = M30x1,5
G6 = M32x1,5
G9 = other threads (on request)
F1 = flange F70 diameter.110, 4 x diameter.9, bolt circle 90
F2 = flange F100 150x150, 4 x diameter.18, bolt circle 170
F5 = flange DN 32 PN 10 (only in stainless steel)
F6 = flange DN 100 PN 6 (only in stainless steel)

Material process connection:
A = aluminium
E = stainless steel
X = other materials (on request)

Measuring blade: (versions see page „Measuring Blades“)
M0 = without measuring blade
S2V = sleeve blade 130x30 diagonal*
M1V = sleeve blade 90x28*
M2V = sleeve blade 90x40*
T1V = blade T50 98x50 *
T2V = blade T100 98x100*
T8 = rubber blade
X1 = blade X50 98x50
X2 = blade X100 98x100
X3 = blade X200 180x100
K1 = folding blade T230 200x30
M9 = other measuring blades on request

Shaft extension:
W0 = without extension
Wxxx = specify desired length in mm (e.g. W1-300)

* reinforced version
** with pressure decoupling lantern

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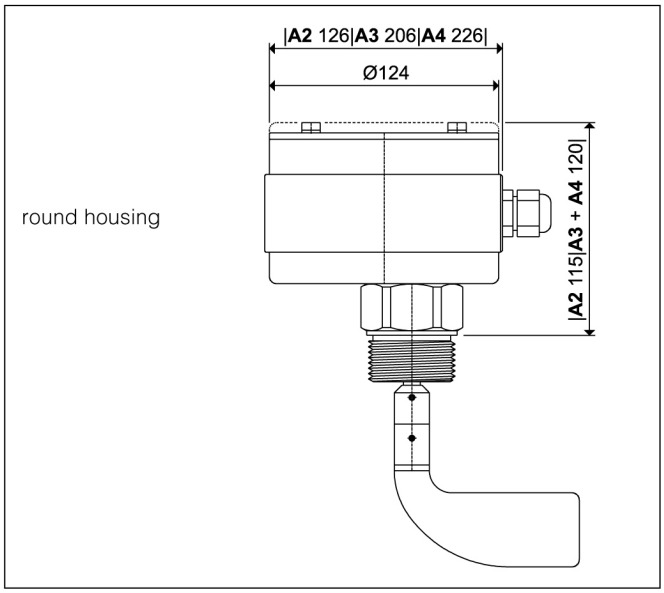
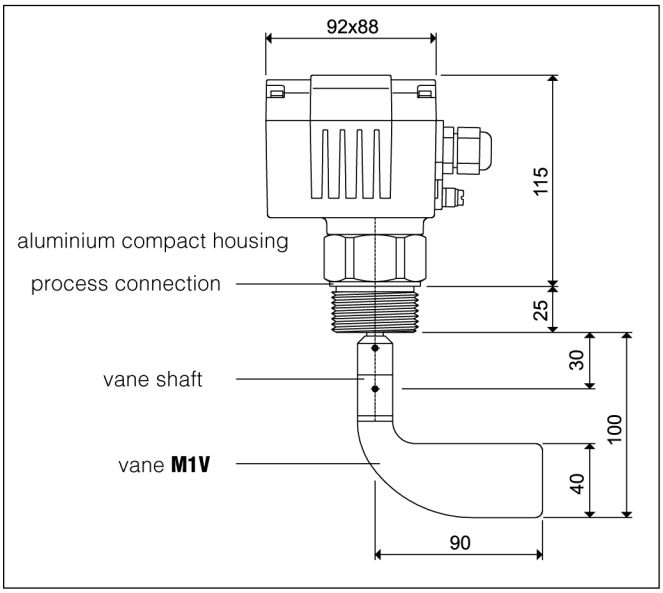
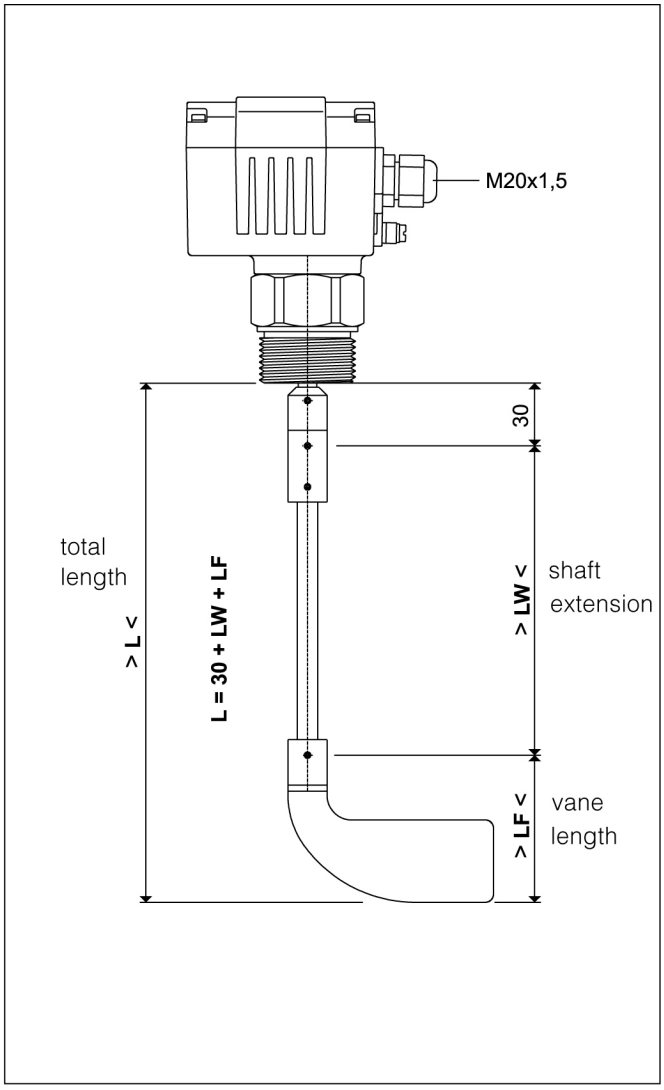
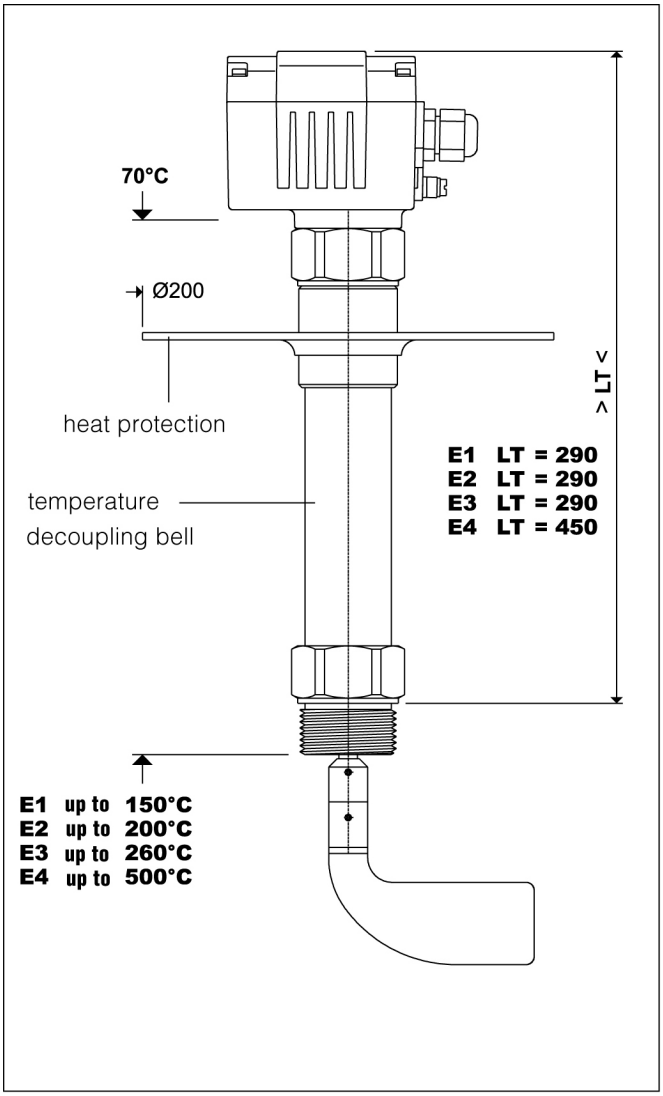
Models and Dimensions FF03-21:









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Models:

Full, empty and demand detectors for a wide range of applications and any mounting position with reinforced bearing.

ATEX version on request

Technical Data:

Materials:

Housing:	aluminium compact housing stainless steel compact housing
Blade:	stainless steel 1.4301
Process connection:	aluminium or stainless steel

Electrical Data:

Power consumption:	AC: 4 VA DC: 4 W
Terminal blocks:	max: 1,5 mm²
Cable entry:	screwing M20 x 1,5
Signal contact:	potential free changeover contact

Self monitoring:

Function monitoring of:
- cable break
- voltage drop
- DC/AC converter for motor voltage
- motor
- gearbox

Voltage monitoring:

Monitoring of:
- cable break
- voltage drop

Accessories:

- SH00 weather protection hood made of PVC, RAL 7001
only approved for zone 22 and zone free

- SM4 hexagon nut G 2

Material nut:

A-aluminium

E-stainless steel

Order Code:

Order number:	FF03-23	A1.	C1.	0.	H0.	E0.	P0.	G4.	A.	M0.	W0

Rotating vane level switch

Model:
23 = with reinforced bearing

Housing selection:
A1 = aluminium compact hou.
A2 = st. steel compact hou.

Operating voltage:
C1 = 220…240 VAC (50…60 Hz)
C2 = 110…120 VAC (50…60 Hz)
C3 = 48 VAC (50…60 Hz)
C4 = 24 VAC (50…60 Hz)
C5 = 24 VDC
C9 = special voltage (on request)

Self monitoring:
0 = without monitoring
D1 = function monitoring
D2 = voltage monitoring

Signal lights:
H0 = with function LEDs (standard)
H1 = calotte for function LEDs
H2 = signal lights, LED green
H8 = large Signal lights LED, green

Bulk material temperature:
E0 = -25…80 °C (standard)
E1 = -40…150 °C
E7 = device heating 2,5 Watt

Tank pressure:
P0 = -0,5…5 bar (standard)
P1 = -0,5…10 bar
P2 = -0,95…25 bar**
P6 = -0,9…10 bar
P7 = -0,9…10 bar**

Process connection:
G4 = G2
F1 = flange F70 diameter.110, 4 x diameter.9, bc 90
F2 = flange F100 150 x 150, 4 x diameter.18, bc 170
F9 = other materials on request

Material process connection:
A = aluminium
E = stainless steel

Measuring blade: (versions see page „Measuring Blades“)
MO = without measuring blades
S2V = sleeve blade 120 x 30 diagonal*
SGV = sleeve blade 120 x 8*
M2V = sleeve blade 90 x 40*
T1V = blade T50 98 x 50 *
M9 = other measuring blades on request

Shaft extension:
WO = without extension
Wvxxxx = specify desired length in mm (e.g. W1-300), max. 2000 mm*

* reinforced version
** with pressure decoupling lantern

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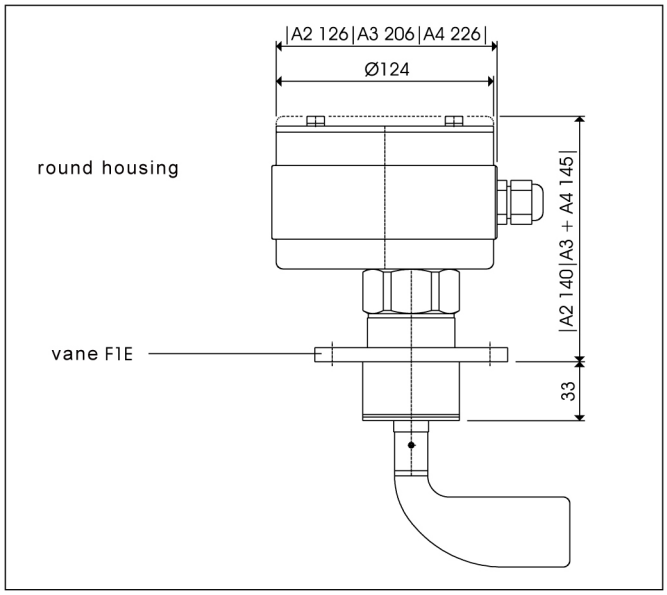
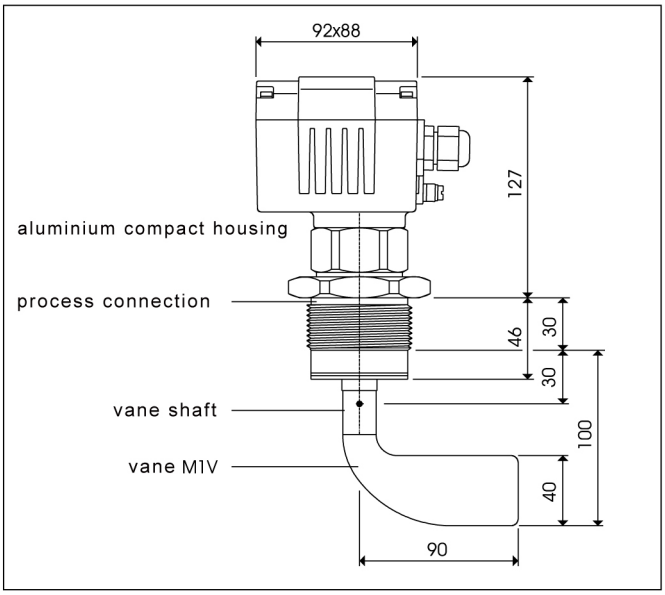
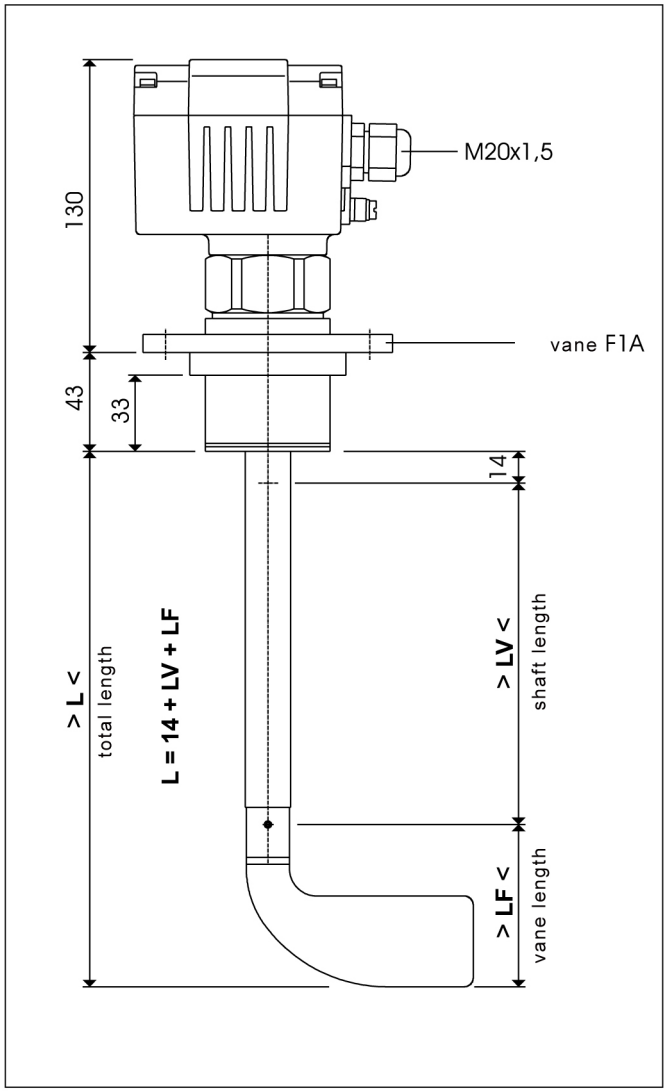
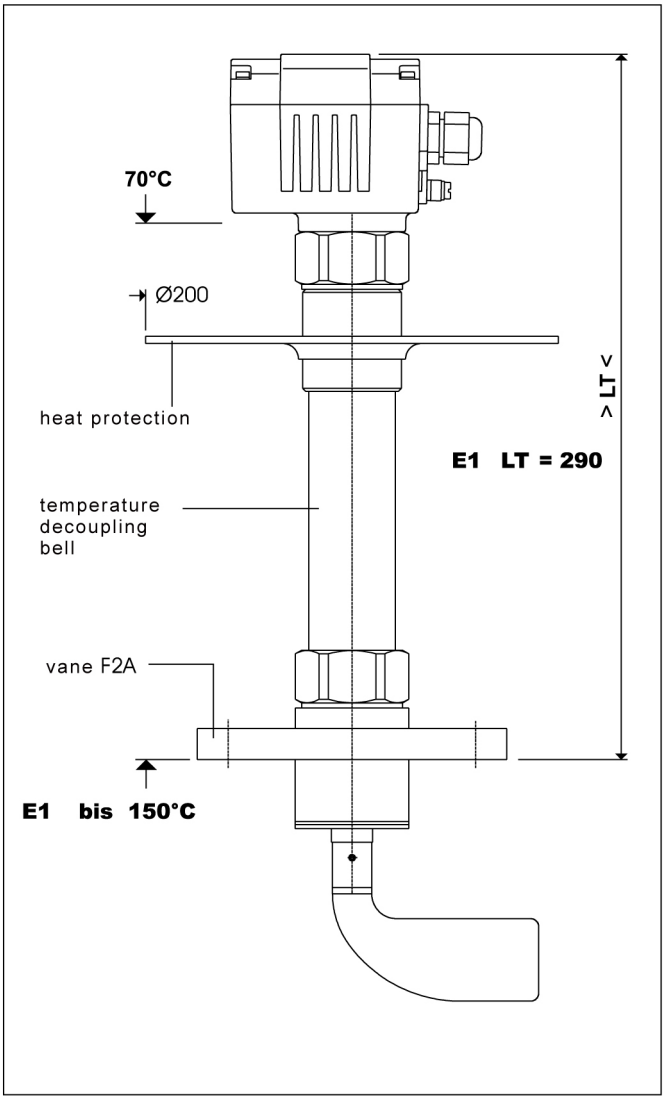
Models and Dimensions FF03-23:









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Models:

Full, empty and demand detectors for a wide range of applications and vertical mounting position with pendulum shaft.

ATEX version on request

Technical Data:

Materials:

Housing:	aluminium compact housing stainless steel compact housing
Blade:	stainless steel 1.4301
Process connection:	aluminium or stainless steel

Electrical Data:

Power consumption:	AC: 4 VA DC: 4 W
Terminal blocks:	max: 1,5 mm²
Cable entry:	screwing M20 x 1,5
Signal contact:	potential free changeover contact

Self monitoring:
Function monitoring of:
- cable break
- voltage drop
- DC/AC converter for motor voltage
- motor
- gearbox

Voltage monitoring:
Monitoring of:
- cable break
- voltage drop

Accessories:

- **SH00** weather protection hood made of PVC, RAL 7001
  only approved for zone 22 and zone free
- **SM2** hexagon nut G 1 ¼
- **SM3** hexagon nut G 1 ½

Material nut:
A-aluminium
E-stainless steel

Order Code:

Order number:	FF03-26	A1.	C1.	0.	H0.	E0.	P0.	G2.	A.	T0.	W8

Rotating vane level switch

Model:
26 = with pendulum shaft

Housing selection:
A1 = aluminium compact hou.
A2 = st. steel compact housing

Operating voltage:
C1 = 220…240 VAC (50…60 Hz)
C2 = 110…120 VAC (50…60 Hz)
C3 = 48 VAC (50…60 Hz)
C4 = 24 VAC (50…60 Hz)
C5 = 24 VDC
C9 = special voltage (on request)

Self monitoring:
0 = without monitoring
D1 = function monitoring
D2 = voltage monitoring

Signal lights:
H0 = with function LEDs (standard)
H1 = calotte for function LEDs
H2 = signal lights, LED green
H8 = large Signal lights LED, green

Bulk material temperature:
E0 = –25…80 °C (standard)
E1 = –40…150 °C
E2 = –25…200 °C
E3 = –25…260 °C
E4 = –25…500 °C
E7 = device heating 2,5 Watt

Tank pressure:
P0 = –0,5…5 bar (Standard)
P1 = –0,5…10 bar
P2 = –0,95…25 bar**
P6 = –0,9…10 bar
P7 = –0,9…10 bar**

Process connection:
G2 = G 1 ¼
G3 = G 1 ½
G9 = other threads on request
F1 = flange F70 diameter.110, 4 x diameter.9, bc 90
F2 = flange F100 150x150, 4 x diameter.18, bc 170
F5 = flange DN 32, PN 10 (only in stainless steel)
F6 = flange DN 100, PN 6 (only in stainless steel)
F9 = other flanges on request

Material process connection:
A = aluminium
E = stainless steel
X = other materials on request

Measuring blade: (versions see page „Measuring Blades“)
T0 = blade T220 68x220
T1V = blade T50 98x50*
T2V = blade T100 98x100*
T5 = blade T250 250x100
T8 = rubber blade 250x100
X1 = blade X50 98x50
X2 = blade X100 98x100
X3 = blade X200 180x100
K1 = folding blade T230 200x30
M9 = other measuring blades on request

Shaft extension:
W8 = 800 mm (standard)
Wxxxx = special length (e.g. W1-1000), max. 1500 mm

* reinforced version
** with pressure decoupling lantern

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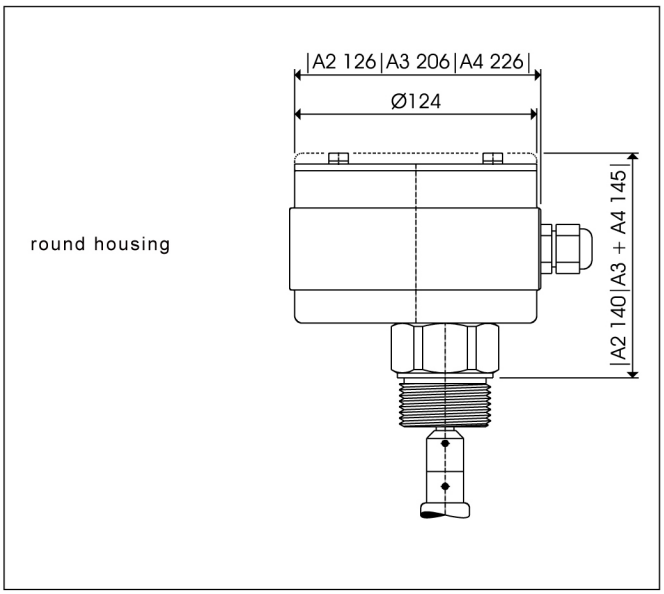
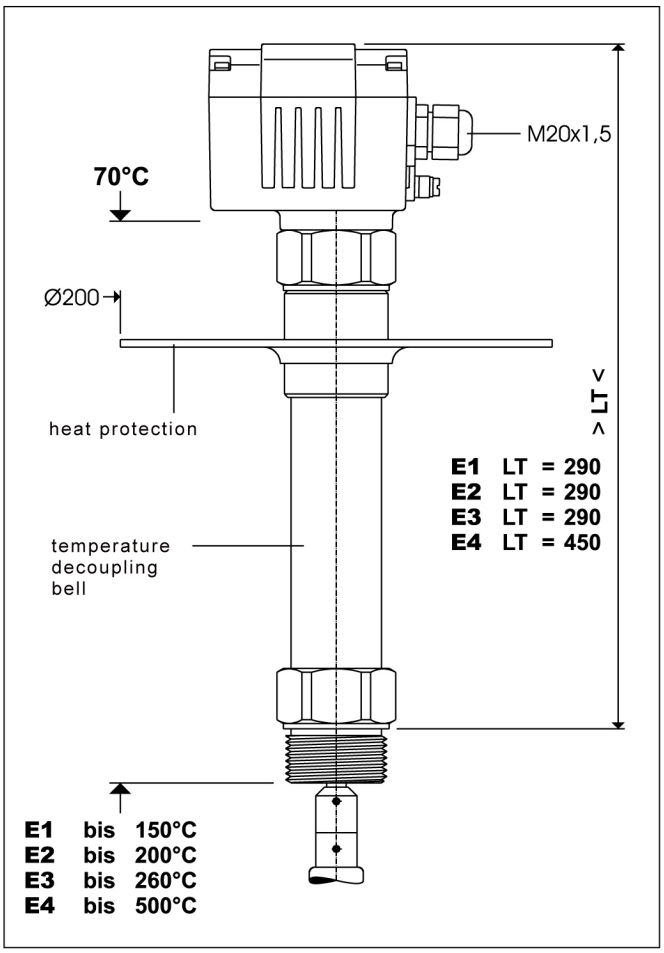
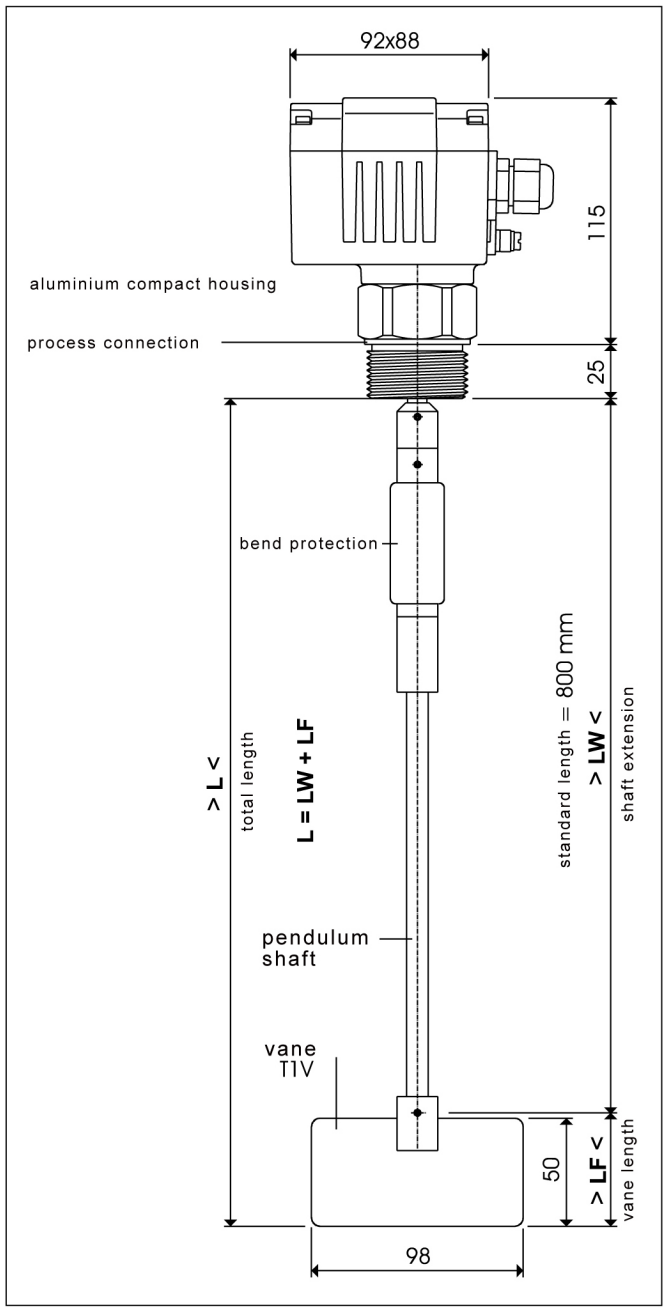
Models and Dimensions FF03-26:







Level

Models:

Full, empty and demand detectors for a wide range of applications and vertical mounting position with rope shaft.

ATEX version on request

Technical Data:

Materials:

Housing:	aluminium compact housing stainless steel compact housing
Blade:	stainless steel 1.4301
Process connection:	aluminium or stainless steel

Electrical Data:

Power consumption:	AC: 4 VA DC: 4 W
Terminal blocks:	max: 1,5 mm²
Cable entry:	screwing M20 x 1,5
Signal contact:	potential free changeover contact

Self monitoring:

Function monitoring of:
- cable break
- voltage drop
- DC/AC converter for motor voltage
- motor
- gearbox

Voltage monitoring:

Monitoring of:
- cable break
- voltage drop

Accessories:

- **SH00** weather protection hood made of PVC, RAL 7001
  only approved for zone 22 and zone free
- **SM2** hexagon nut G 1 ¼
- **SM3** hexagon nut G 1 ½

Material nut:

A-aluminium

E-stainless steel

Order Code:

Order number:	FF03-27	A1.	C1.	0.	H0.	E0.	P0.	G2.	A.	T0.	W8

Rotating vane level switch

Model:
27 = with rope shaft

Housing selection:
A1 = aluminium compact housing
A2 = st. steel compact housing

Operating voltage:
C1 = 220…240 VAC (50…60 Hz)
C2 = 110…120 VAC (50…60 Hz)
C3 = 48 VAC (50…60 Hz)
C4 = 24 VAC (50…60 Hz)
C5 = 24 VDC
C9 = special voltage (on request)

Self monitoring:
0 = without monitoring
D1 = function monitoring
D2 = voltage monitoring

Signal lights:
H0 = with function LEDs (standard)
H1 = calotte for function LEDs
H2 = signal lights, LED green
H8 = large Signal lights LED, green

Bulk material temperature:
E0 = –25…80 °C (standard)
E1 = –40…150 °C
E2 = –25…200 °C
E3 = –25…260 °C
E4 = –25…500 °C
E7 = device heating 2,5 Watt

Tank pressure:
P0 = –0,5…5 bar (standard)
P1 = –0,5…10 bar
P2 = –0,95…25 bar**
P6 = –0,9…10 bar
P7 = –0,9…10 bar**

Process connection:
G2 = G 1 ¼
G3 = G 1 ½
G9 = other threads on request
F1 = flange F70 diameter.110, 4 x diameter.9, bc 90
F2 = flange F100 150x150, 4 x diameter.18, bc 170
F5 = flange DN 32, PN 10 (only in stainless steel)
F6 = flange DN 100, PN 6 (only in stainless steel)
F9 = other flanges on request

Material process connection:
A = aluminium
E = stainless steel
X = other materials on request

Measuring blade: (versions see page „Measuring Blades“)
T0 = blade T220 68x220
T1V = blade T50 98x50*
T2V = blade T100 98x100*
T5 = blade T250 250x100
T8 = rubber blade 250x100
X1 = blade X50 98x50
X2 = blade X100 98x100
X3 = blade X200 180x100
K1 = folding blade T230 200x30
M9 = other measuring blades on request

Shaft extension:
W8 = 800 mm (standard)
Wxxxx = special length (e.g. W1-1000), max. 1500 mm

* reinforced version
** with pressure decoupling lantern

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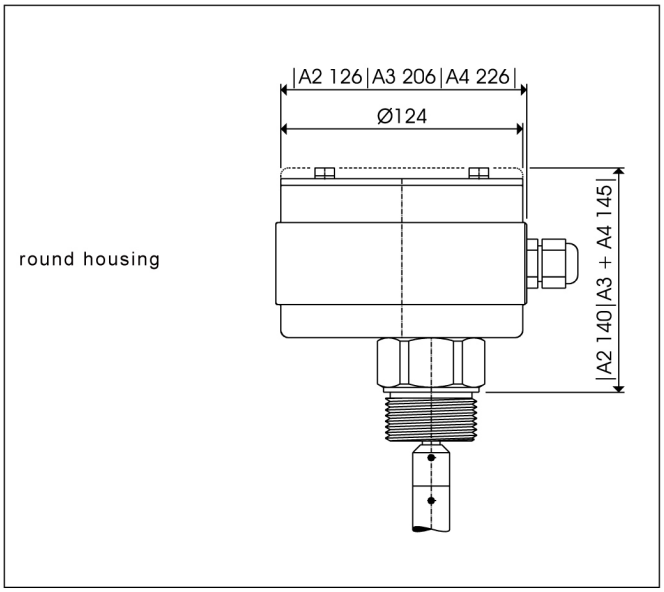
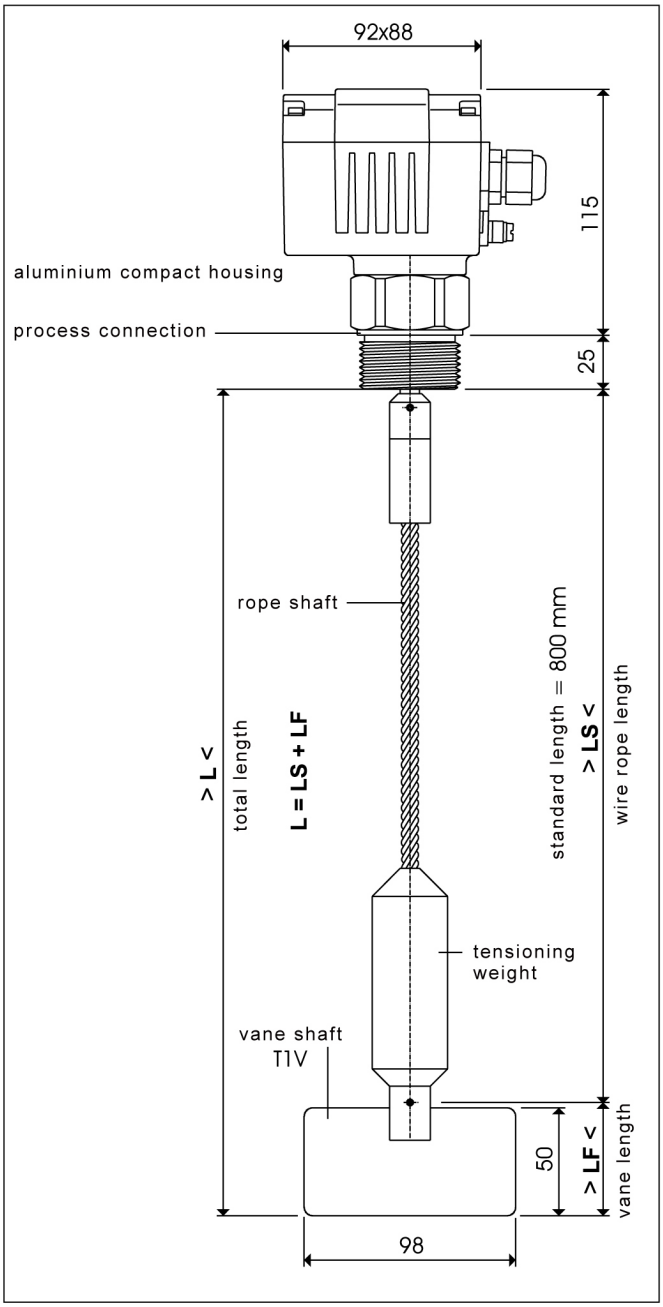
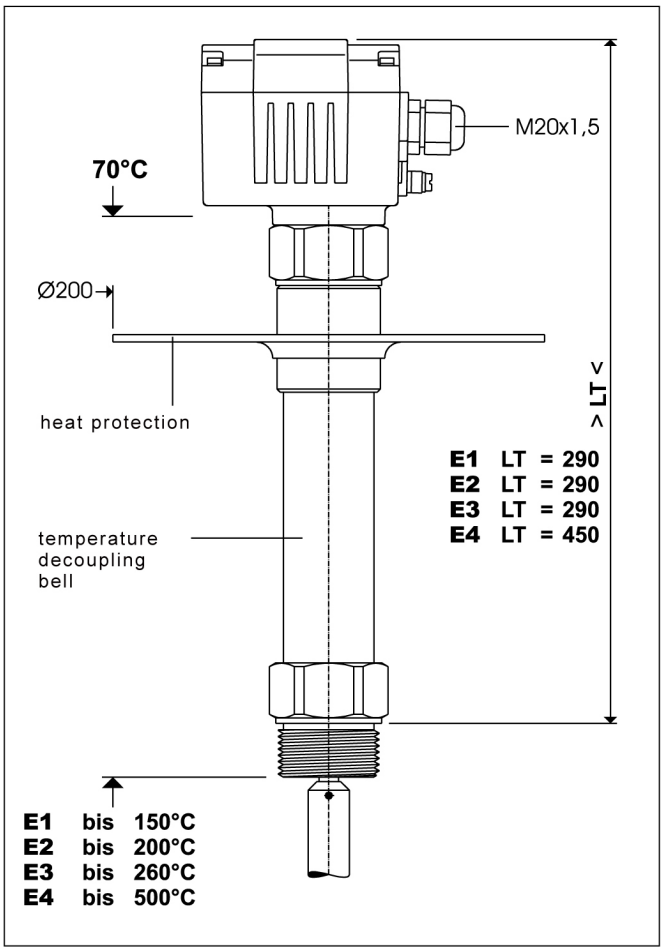
Models and Dimensions FF03-27:







Level