



By use in explosive hazardous areas read and follow the

special conditions and instructions for safe application

of the attached

explosive protection information

B1



first and take notice of the operating instructions.

Operating instructions

1. Description

1.1 Intended use

As a sturdy limit switch, as counter switch of bags and sacs, as a controller of material flow in discharging pipes at the end of a pneumatical conveyor system. A safety switch in screw conveyors and chain conveyors, control of loading high at conveyor belts etc.

1.2 Function

If the rod will be moved out of its normal position in any direction, a switch registers this and gives a signal.

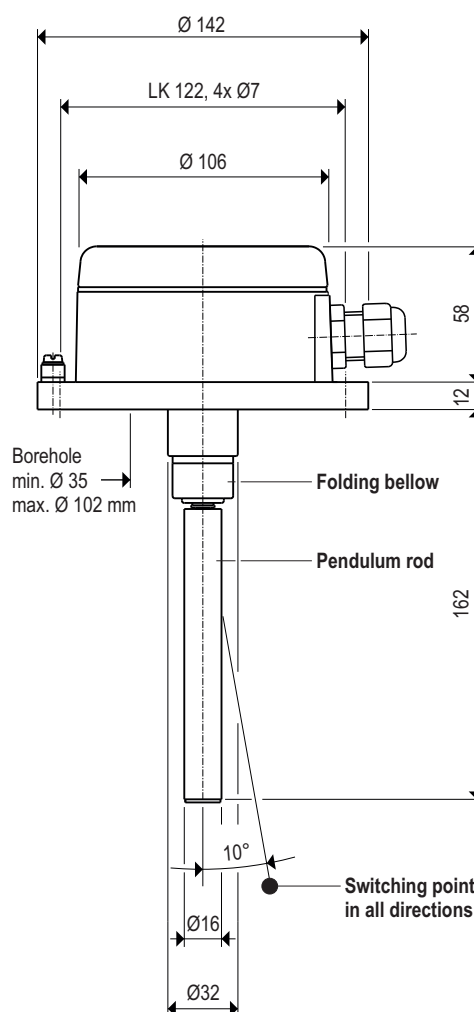
1.3 Technical data

Manufacturer	MOLLET Füllstandtechnik GmbH
Address	Industriepark RIO 103 74706 Osterburken
Name	Pendulum rod switch
Type	PF-B1 -S
Bulk good temperature T_s	-25 °C ... +80 °C
Ambient temperature T_a	-20 °C ... +70 °C
Signal contact	change-over contact, potentialfree
Capacity of the contact	Contact 4 A / 250 V AC
Switching voltage	24 V ... 250 V AC or 12 V ... 125 V DC
Response delay	none
Cable connection	Screw M4
Cable entry	Gland M20x1.5
Type of protection	IP IP66 acc. to DIN EN 60529
Overpressure safety	up to 0.5 bar
Weight	1.18 kg
Maintenance	none
Mounting position	any position

1.4 Materials

Housing	GAL, RAL7001 coated
Folding bellow	NBR, black
Pendulum rod	NBR, black with centre of aluminium

1.5 Dimensions



003-0202

2. Installation

2.1 Preparation

Read and follow the safety instructions and the operating instructions, before handling with the device !

2.2 Mounting in the vessel

Position the pendulum rod switch with the gasket at the provided flange and fix it with 4 washers and screws M6.

2.3 Electrical connection

Circuit diagram



2.4 Cable gland

- After electrical connection, tighten the cable gland.
- Screw the cap nut, until the cable entry is closed tightly.

3. Commissioning

- Put the pendulum rod switch into operation only, if the installation and the electrical connection have been done correctly.
- The pendulum rod switch is presetted at sensitive.
- With the adjusting nut the device can be adjustable insensitive. Clockwise insensitive.



4. Utilization

4.1 Normal operation

- Use the pendulum rod switch in its intended application only.
- Comply with the specifications on the data plate.
- Damaged devices have to put out of operation immediately.

4.2 Inexpert handling

- Ignoring of the safety instructions and the operating instructions.
- Not intended use.
- Mounting of spare parts which are no original parts.
- Violation against applicable law and standards.

5. Maintenance and servicing

5.1 Maintenance

- The pendulum rod switch needs no maintenance.

5.2 Servicing

- Damaged parts have immediately replaced with similar.
- Until the complete reconstruction of the proper function, the pendulum rod switch must not be used any more.

6. Storage

Store the pendulum rod switch dry and dust-free.

7. Disposal

- The pendulum rod switch can be recycled.
- The disposal applies to the valid environmental guidelines according to the location of the carrier and the local manufacturing conditions.

Pendulum rod switch

PF-B1-S

Dust



Explosion protection information and supplement to the operating instructions

Type plate details B1



<p>Manufacturer and address</p> <p>MOLLET Industriepark RIO 103 Füllstandtechnik GmbH D-74706 Osterburken Tel. +49 62 91 64 400</p>		<p>CE sign with the number of the "Notified Body" which is involved in the production control phase</p> <p>CE 0044</p>		<p>Connection diagram</p>	
<p>Model designation</p> <p>Typ PF-B1-S</p>		<p>CE marking</p> <p>Ex II 1/2D Ex ta/tb IIIC T 80 °C Da/Db</p>		<p>Details to loadability of the signal contact</p> <p>Contact 4 A 240 V~</p>	
<p>Vessel pressure (tested pressure)</p> <p>Δp -0,08 bar...+0,08 bar</p>		<p>Operating temperature</p> <p>-25 °C ≤ Ta ≤ +80 °C / -20 °C ≤ Ta ≤ +70 °C</p>		<p>Type of protection</p> <p>IP66</p>	
<p>Unique serial number</p> <p>S# 1234567890</p>		<p>Month and year of delivery</p> <p>A.-Nr. 1234567890 03/21</p>		<p>Dust marking</p> <p>IBExU05ATEX1174</p>	
<p>Number which the order was handled</p>		<p>Ambient temperature (Operation temperature)</p>		<p>EU-type examination certificate number</p>	

Marking in accordance with ATEX and DIN EN IEC 60079-0

Pendulum rod switch for use on the boundary from zone 20 to zone 21.

Ex II 1/2 D Ex ta/tb IIIC T80°C Da/Db

Equivalent to valid ATEX-Product-Directive

Equipment group II = everything except mining

Equipment category Category 1 for zone 20, 21 and 22
Category 2 for zone 21 and 22

/ = Level indicators, which are installed on the boundary between different zones

D = Dust - Type of explosive atmosphere

the Ex - symbol according to DIN EN IEC 60079-0

t = Protection by enclosure

a = Device with „very high“ protection standard. . . .for zone 20, 21 and 22

b = Device with „high“ protection standard.for zone 21 and 22

IIIC for flammable conductive dust, flammable non-conductive dust and flammable fibres and flyings

T..°C maximum surface temperature

Equipment Protection Level (EPL)

D = Dust - Type of explosive atmosphere

a = Device with “very high level of protection” for use in potentially explosive atmospheres where in normal operation, foreseeable or infrequent faults/malfunctions no ignition hazard is given.

b = Device with “high level of protection” for use in potentially explosive atmospheres where in normal operation or foreseeable faults/malfunctions no ignition hazard is given.

Order code **B1**

Marking: II 1D / 2D



Equipment category appropriation by zones

Pendulum rod switch for use on the boundary from zone 20 to zone 21.

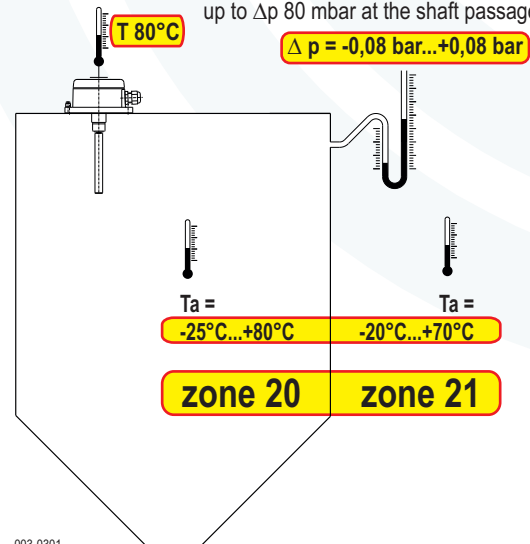
Ambient temperatures Ta

The ambient temperature **Ta** defines the maximum operating temperature of the device. Inside the vessel this is process temperature (the air or the bulk goods temperature) nearby the device.

maximum surface temperature T

The maximum surface temperature means the hottest point at the equipment.

The device can be installed in the walls of vessels with deviating atmospheric conditions with a difference in pressure up to Δp 80 mbar at the shaft passage.



MOLLET Füllstandtechnik GmbH Industriepark RIO 103 D-74706 Osterburken Tel. +49 62 91 64 400		0044	NO NC
Typ PF B1-S	II 1/2D Ex ta/tb IIIC T 80 °C Da/Db	Contact	4 A 240 V~
Δ p -0,08 bar...+0,08 bar	-25 °C ≤ Ta ≤ +80 °C / -20 °C ≤ Ta ≤ +70 °C		
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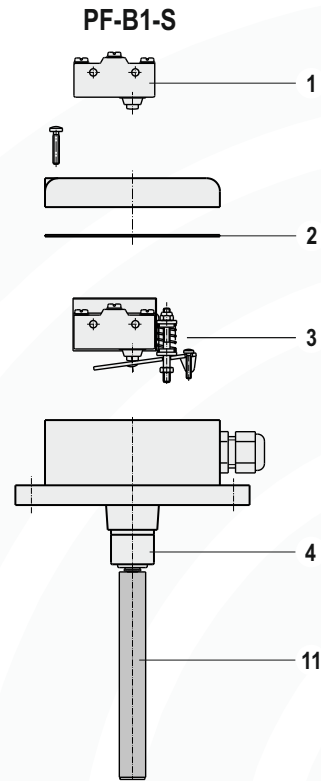
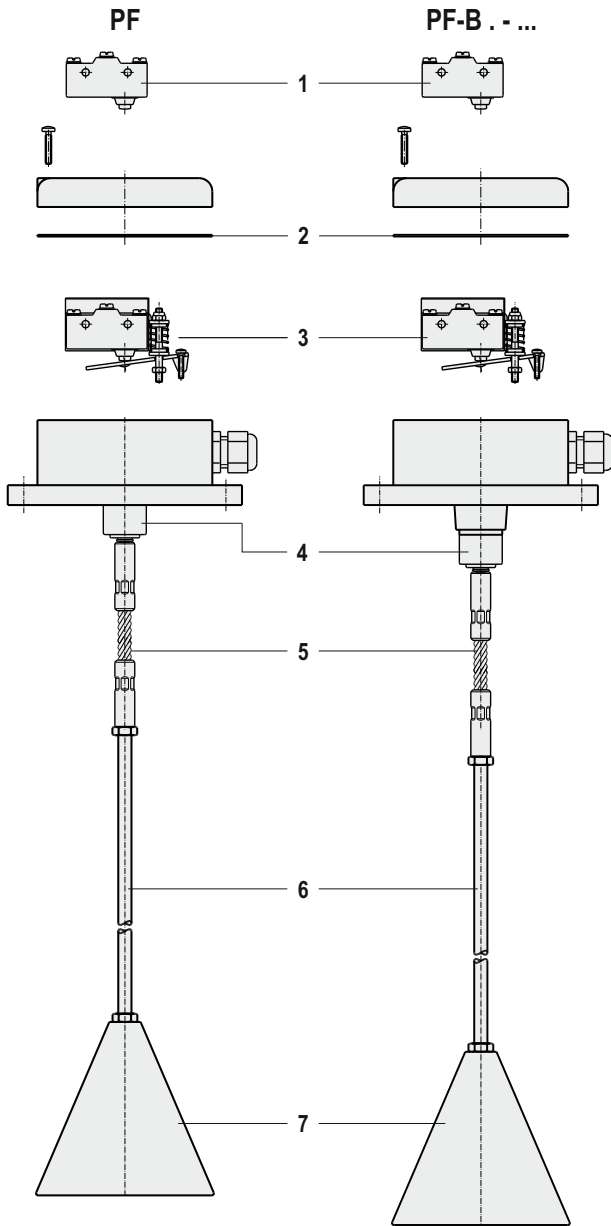


Special conditions and instructions for safe application

1. The installation, maintenance, initial operation, removal and repair have to be controlled resp. checked by an "authorized person" for explosion protection.
2. For the electrical connection you have to take notice of the local and statutory requirements and/or the VDE 0100.
3. Take notice of the specifications on the data plate.
4. A fuse (with max. 4A) has to be connected in series to the voltage supply.
5. Protect the signal contact from voltage peaks when inductive loads are connected.
6. Using the device in ambient temperatures $> +60\text{ °C}$, the applied connection cables have to be made for temperatures of min. $+80\text{ °C}$.
7. As soon as the device will be brought into the explosion hazardous area it has to be mounted immediately at the pre-caused place and a cable has to be brought into the cable gland.
8. The cable gland were screwed and protected at the factory. Please check if the cable gland have loosened during on the mounting or at the transport. When it is loosened, it has to be fitted again.
9. To secure the type of protection, the screw nut of the cable gland has to be fixed at the installation with a torsional force of min. 5.0 Nm.
ATTENTION! If it will be fastened too strong, the IP-protection can be affected.
10. The earth connection of the device has to be installed in such a way that mechanical damage will be excluded.
11. Using the pendulum rod switch in the wall from silos, containers, discharge pipes etc. under deviating atmospheric conditions, the maximum difference in pressure at the shaft passage must not exceed 80 mbar and the working temperature at the shaft passage has not to exceed $+80\text{ °C}$.
12. The device may put into operation with built-in cap-sealing and when it is closed, only.
13. Switch off the power supply, before opening the device. (touchdangerous voltage)
14. Take notice of the requirements of DIN EN 60079-14, DIN EN 60079-17 and DIN EN 1127-1 especially regarding the dust deposits and temperatures and follow the pertinent rules and regulations.

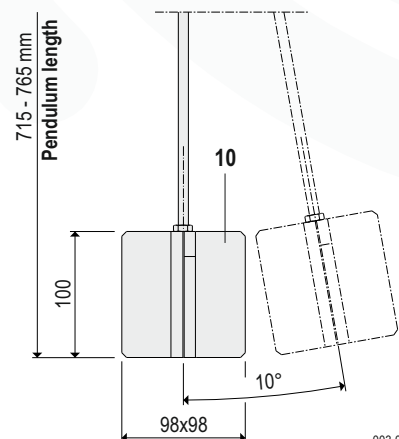
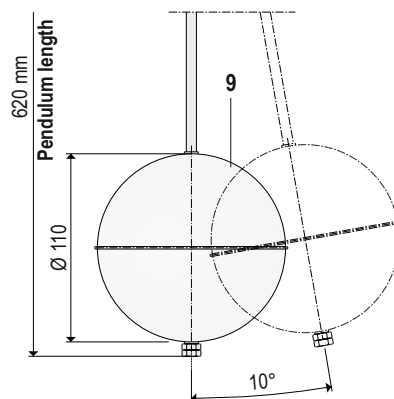
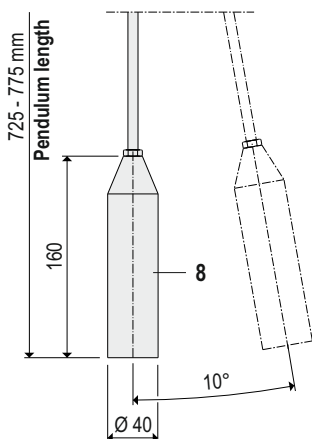
Single parts

Pendulum switch



Item	Reference	Order code	Material
1	Switch	Z-15GD-B	
2	Cap seal	PF-DS001	EPDM
3	Spare part kit incl. switch	PF-EP001	
4	Folding bellow	PF-FB001	NBR
5	Buckling protector	PF-KSD01	1.4301 / 304
6	Pendulum rod incl. nuts	PF-WE005-AL	Aluminium
6	Pendulum rod incl. nuts	PF-WE005-VA	1.4301 / 304
7	KF cone vane	PF-KF-AL	Aluminium
8	RFA pipe vane	PF-RF-AL	Aluminium
8	RFE pipe vane	PF-RF-VA	1.4301 / 304
9	OF ball vane	PF-OF-VA	1.4301 / 304
10	XF cross vane	PF-XF-VA	1.4301 / 304
11	Pendulum rod	PF-ST-NR	NBR, aluminium core

003-0800



003-0291

EU-Konformitätserklärung EU-Declaration of Conformity

Wir/We

MOLLET Füllstandtechnik GmbH

Industriepark RIO 103
D-74706 Osterburken
Tel. 06291 64400 Fax 06291 9846

erklären in alleiniger Verantwortung, dass das Produkt:
declares under our sole responsibility, that the product:

Pendel-Füllstand-Grenzschalter / Pendulum limit switch
Pendel-Füllstandanzeiger / Pendulum level indicator



Typ/Type **PF...**

den folgenden Europäischen Richtlinien entspricht:
conforms with the following European directives:

Niederspannungsrichtlinie **Low voltage directive** **2014/35/EU**

Angewandte harmonisierte Normen oder normative Dokumente:
Applied harmonized standards or normative documents:

DIN EN 61010-1:2020 **DIN EN 60529:2014**

Und die Geräte mit  - Kennzeichnung entsprechen zusätzlich der folgenden Europäischen Richtlinie:
And the devices with  - marking conform additional with the following European directive:

ATEX-Richtlinie **ATEX directive** **2014/34/EU**

Je nach Ausführungsvariante angewandte harmonisierte Normen oder normative Dokumente:
Depending on the design applied harmonized standards or normative documents:

DIN EN IEC 60079-0:2019 **DIN EN 60079-11:2012** **DIN EN 60079-31:2014**

EU-Baumusterprüfbescheinigungsnummer:
EU-Type Examination Certificate:

IBExU05ATEX1174

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Issued by:

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Qualitätssicherung:
Quality assurance:

TÜV NORD CERT GmbH, 30159 Hannover (0044)

Osterburken, den 03.03.2020



Wolfgang Hageleit
Geschäftsführer / Managing director

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This declaration is only allowed to hand out in unchanged form.