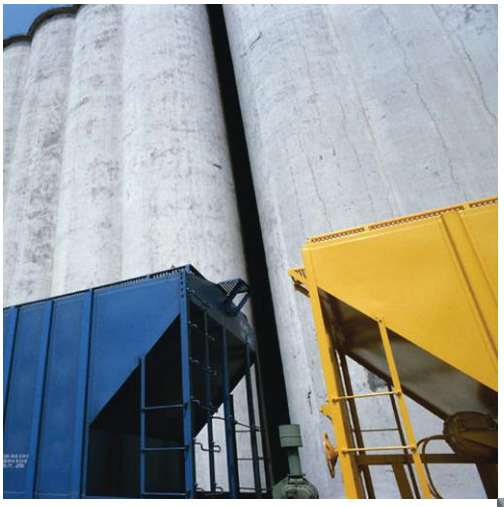


ATEX







Technical definitions

page 147

FD series position switches

page 149



Category	Zone	EPL	Approvals	Product code extension	ATEX/EPL category				
					M2/Mb	2G/Gb	2D/Db	3G/Gc	3D/Dc
3D	22	Dc	Ex II 3D Ex tc IIIC T80°C Dc	-EX4	-	-	-	-	■
2G M2	1 M2	Gb Mb	Ex II 2G Ex ia IIC T6 Gb Ex I M2 Ex ia I Mb	-EX7	■	■	-	■	-
2D	21	Db	Ex II 2D Ex tb IIIC T80°C Db	-EX8	-	-	■	-	■

FL series position switches

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Category	Zone	EPL	Approvals	Product code extension	ATEX/EPL category				
					M2/Mb	2G/Gb	2D/Db	3G/Gc	3D/Dc
3D	22	Dc	Ex II 3D Ex tc IIIC T80°C Dc	-EX4	-	-	-	-	■
2G M2	1 M2	Gb Mb	Ex II 2G Ex ia IIC T6 Gb Ex I M2 Ex ia I Mb	-EX7	■	■	-	■	-
2D	21	Db	Ex II 2D Ex tb IIIC T80°C Db	-EX8	-	-	■	-	■

FM series position switches

page 161



Category	Zone	EPL	Approvals	Product code extension	ATEX/EPL category				
					M2/Mb	2G/Gb	2D/Db	3G/Gc	3D/Dc
2G M2	1 M2	Gb Mb	Ex II 2G Ex ia IIC T6 Gb Ex I M2 Ex ia I Mb	-EX7	■	■	-	■	-

FA series pre-wired position switches

page 167



Category	Zone	EPL	Approvals	Product code extension	ATEX/EPL category				
					M2/Mb	2G/Gb	2D/Db	3G/Gc	3D/Dc
3D 3G	22 2	Dc Gc	Ex II 3D Ex tc IIIC T80°C Dc Ex II 3G Ex nC IIC T6 Gc	-EX5	-	-	-	■	■

Accessories

page 171





ATEX Directive

The acronym ATEX (**At**mospheres **Ex**plosives) refers to two European directives concerning the risk of deflagration in potentially explosive atmospheres:

- ATEX 2014/34/EU: concerns the requirements for electrical and non-electrical equipment for use in potentially explosive environments. According to this directive, the manufacturer has to comply with the provided requirements and mark its articles according to specific categories.
- ATEX 99/92/EC: lays down minimum requirements for the safety and health protection of workers potentially at risk from explosive atmospheres.

These directives define the requirements for the protection of safety and health of persons, domestic animals and property, as well as the conformity assessment procedures to prove that the devices comply with the directives' requirements.

Classification of potentially explosive atmospheres

A potentially explosive atmosphere is an atmosphere which could become explosive due to local and/or operational conditions. These environments present a mixture with air under atmospheric conditions of flammable substances in the form of in the form of gases, vapours, mists or dusts.
The ATEX 99/92/EC Directive classifies two types of potentially explosive atmospheres, depending on presence of combustible gases or dusts in the zone. These two types of explosive atmospheres are in turn classified in three zones each, according to the frequency and duration of the explosive atmosphere. Areas in atmospheres with explosive gases are classified in zones 0, 1 and 2; whereas in atmospheres with explosive dusts in zones 20, 21 and 22:

- Zone 0/20: A place in which the presence of flammable gas or dust is continuously present. Constant danger. It requires at least Category 1 equipment.
- Zone 1/21: A place in which the presence of flammable gas or dust is likely to occur in normal operation occasionally. Potential danger. It requires at least Category 2 equipment.
- Zone 2/22: A place in which the presence of flammable gas or dust is not likely to occur in normal operation or, if it does occur, will persist for a short period only. Or it occurs due to a failure. Lower danger. It requires at least Category 3 equipment.

The end user has the responsibility to identify and classify the different zones and to install appropriate equipment.

Equipment categories acc. to ATEX directive and IEC standards

According to the ATEX Directive 2014/34/EU equipment is classified into two main groups:

- Group I: equipment and systems for mining
- Group II: equipment and systems for all other applications

Equipment of the group I is divided in two further categories according to the required protection level:

- Category M1: Equipment designed to ensure a very high level of protection
- Category M2: Equipment designed to ensure a high level of protection

Equipment of the group II is further subdivided into three categories according to the required protection level:

- Category 1: Equipment designed to ensure a very high level of protection (for use in zone 0 and 20, 1 and 21, 2 and 22)
- Category 2: Equipment designed to ensure a high level of protection (for use in zone 1 and 21, 2 and 22)
- Category 3: Equipment designed to ensure a normal level of protection (for use in zone 2 and 22)

A comparison between the EPL (Equipment Protection Levels) defined by the IEC 60079-0 standard and the categories and applications of the ATEX Directive are shown in table 1.

Environment features				Equipment features				
				acc. to ATEX 2014/34/EU		acc. to IEC 60079-0		
Field of application	Flammable substance	Potentially explosive atmosphere	Classification of potentially explosive atmospheres: ZONE	Required marking of the device: CATEGORY	Required marking of the device: GROUP	Group	EPL	Required protection level
Mining				**M1**	**I**	**I**	**Ma**	very high
				M2			**Mb**	high
Surface	**Gases**	It is present continuously, or for long periods or frequently	**0**	**1G**	**II**	**II**	**Ga**	very high
		It is likely to occur	**1**	**2G**			**Gb**	high
		It is not likely to occur but, if it does occur, will persist for a short period only	**2**	**3G**			**Gc**	normal
	Dusts	It is present continuously, or for long periods or frequently	**20**	**1D**		**III**	**Da**	very high
		It is likely to occur	**21**	**2D**			**Db**	high
		It is not likely to occur but, if it does occur, will persist for a short period only	**22**	**3D**			**Dc**	normal

Table 1 – Classification of environment and equipment according to ATEX directive and IEC 60079-0 standard

Protective measures

To avoid the risk of explosions caused by an electrical trigger in a potentially explosive atmosphere, different protective measures can be taken:

- use of enclosures to encapsulate dangerous part in order to limit explosions to the inside of the housing itself;
- avoid contact between hot spots and the potentially explosive atmosphere by interposing solid, liquid or gaseous bodies;
- take measures to limit the generation of dangerous hot spots, eliminating the possibility of failures or limiting the system power so that it is insufficient to cause the ignition.

Various protective modes have been developed and standardised for each of these modes as listed in table 2.

Protective measure	Symbol	Engraving	Zone GAS	Zone DUSTS	IEC / EN standard
General requirements	/	/	0, 1, 2	20, 21, 22	IEC 60079-0 EN 60079-0
Oil immersion		Ex ob Ex oc	1 2	/	IEC 60079-6 EN 60079-6
Pressurized enclosure		Ex pv Ex pxb Ex pyb Ex pzc	1, 2 1 1 2	/ 21 21 22	IEC 60079-2 EN 60079-2
Powder filling		Ex q	1	/	IEC 60079-5 EN 60079-5
Flameproof enclosure		Ex da Ex db Ex dc	0 1 2	/	IEC 60079-1 EN 60079-1
Increased safety		Ex eb Ex ec	1 2	/	IEC 60079-7 EN 60079-7
Intrinsic safety		Ex ia Ex ib Ex ic	0 1 2	20 21 22	IEC 60079-11 EN 60079-11
Encapsulation		Ex ma Ex mb Ex mc	0 1 2	20 21 22	IEC 60079-18 EN 60079-18
Non sparking		Ex nA Ex nC Ex nR	2 2 2	/	IEC 60079-15 EN 60079-15
Protective housing		Ex ta Ex tb Ex tc	/	20 21 22	IEC 60079-31 EN 60079-31
Optical radiation		Ex op is Ex op pr Ex op sh	0, 1, 2 1, 2 0, 1, 2	20, 21, 22 21, 22 20, 21, 22	IEC 60079-28 EN 60079-28

Table 2 - Protective measures and applicable standards

Marking examples

Devices for places with presence of gas



① EU marking
② Equipment group (see table 1)
③ Protection category (see table 1)
④ Prefix for safety devices according to the IEC / EN standards
⑤ Type of protection (see table 2)
⑥ Classification of gases (see table 4)
⑦ Temperature class (see table 3)
⑧ EPL acc. to IEC 60079-0 (see table 1)

Devices for places with presence of dusts



① EU marking
② Equipment group (see table 1)
③ Protection category (see table 1)
④ Prefix for safety devices according to the IEC / EN standards
⑤ Type of protection (see table 2)
⑥ Classification of dusts (see table 5)
⑦ Maximum surface temperature of the equipment
⑧ EPL acc. to IEC 60079-0 (see table 1)

Class	T1	T2	T3	T4	T5	T6
Maximum surface temperature of the equipment	450 °C	300 °C	200 °C	135 °C	100 °C	85 °C

Table 3 - Temperatureclasses

	I	IIA	IIB	IIC
T1	methane	propane, industrial methane, ethane, benzene, ammoniac, acetic acid, carbon monoxide, methanol, toluene	acrylonitrile	hydrogen
T2		ethanol, amyl acetate, butane	ethylene	acetylene
T3		nafta, benzine, esano	hydrogen sulfide	
T4		acetaldehyde	ethyl ether	
T5				
T6				carbon disulfide

Table 4 – Classification of gases (excerpt from standard IEC/ CENELEC/NEC 505)

IIIA	IIIB	IIIC
combustible particles	non-conductive powder	conductive powder

Table 5 – Classification of dusts

Switches compliant with **ATEX** directive Ⓔx / **FD** series



Main features

- ATEX approval
- Metal housing, one conduit entry
- Protection degree IP66
- Versions with gold-plated silver contacts

ATEX markings:

Product code extension	Quality mark	Certificate type and notified body
-EX4	CE	EU declaration of conformity Pizzato Elettrica S.r.l.
-EX7	CE 0948	EU-type examination certificate TÜV Italia
-EX8	CE 0948	EU-type examination certificate TÜV Italia

Technical data

Housing
Metal housing, powder-coated

One threaded conduit entry:	M20x1.5
Protection degree acc. to EN 60529:	IP66 with cable gland of equal or higher protection degree

General data

Ambient temperature (-EX7):	-20°C … +60°C
Ambient temperature (-EX4/-EX8):	-20°C … +70°C
Max. actuation frequency:	3600 operating cycles/hour
Mechanical endurance:	
FD ••••-EX•	10 million operating cycles
FD ••93-EX•, FD ••78-EX•, FD ••8•-EX•, FD ••95-EX•	500,000 operating cycles
FD ••99-EX•, FD ••R2-EX•	250,000 operating cycles
Mounting position:	any
Safety parameters B_{10D} (NC contacts):	
FD ••••-EX•	20,000,000
FD ••93-EX•, FD ••78-EX•, FD ••8•-EX•	1,000,000
FD ••99-EX•, FD ••R2-EX•	500,000
FD ••95-EX•	2,500,00
Mechanical interlock, not coded:	type 1 acc. to EN ISO 14119
Tightening torques for installation:	see page 219
Wire cross-sections and wire stripping lengths:	see page 239

Contact blocks available:
2, 3, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 18, 20, 21, 22, 28, 29, 30, 33, 34, 37, 66, 67
Note: contact blocks 2 and 3 are not available for articles FD ••••-EX7, FD ••••-EX8.

In compliance with standards:
IEC 60947-5-1, EN 60947-5-1, IEC 60947-1, EN 60947-1, EN 50041, IEC 60204-1, EN 60204-1, EN ISO 14119, EN ISO 12100, IEC 60529, EN 60529, UL 508, CSA C22.2 No. 14, IEC 60079-0, EN 60079-0, IEC 60079-11, EN 60079-11, IEC 60079-31, EN 60079-31, EN IEC 63000.

Compliance with the requirements of:
ATEX Directive 2014/34/EU, EMC Directive 2014/30/EU, RoHS Directive 2011/65/EU.
Positive contact opening in conformity with standards:
IEC 60947-5-1, EN 60947-5-1.

Installation for safety applications:
Use only switches marked with the ⊖ symbol beside the product code. Always connect the safety circuit to the **NC contacts** (normally closed contacts: 11-12, 21-22 or 31-32) as required by **EN ISO 14119, paragraph 5.4** for specific interlock applications and **EN ISO 13849-2 tables D3** (well-tried components) and **D.8** (fault exclusions) for safety applications in general. Actuate the switch **at least up to the positive opening travel** shown in the travel diagrams on page 220. Actuate the switch **at least with the positive opening force**, reported in brackets below each article, next to the actuating force value.

⚠ **If not expressly indicated in this chapter, for correct installation and utilization of all articles see the instructions given in the registration certificate, in the operating manual and on pages 217 to 232.**

⚠ **For the correct use of the switch, please use appropriate cable glands suitable for the zone in compliance with the ATEX directive, see Accessories on page 171.**

Product code extension -EX4

Category	Zone	EPL	Approvals
3D	22	Dc	Ⓔx II 3D Ex tc IIIC T80°C Dc

Electrical data

Thermal current (I_{th}):	10 A
Rated insulation voltage (U_i):	500 Vac 600 Vdc
	400 Vac for contact blocks 20, 28
Conditional short circuit current:	1000 A acc. to EN 60947-5-1
Protection against short circuits:	Type aM fuse 10 A 500 V
Pollution degree:	3

Utilization category
Alternating current: AC15 (50÷60 Hz)

Ue (V)	250	400	500
Ie (A)	6	4	1

Direct current: DC13

Ue (V)	24	125	250
Ie (A)	3	0.55	0.3

Product code extension -EX7

Category	Zone	EPL	Approvals
2G	1	Gb	Ⓔx II 2G Ex ia IIC T6 Gb
M2	M2	Mb	Ⓔx I M2 Ex ia I Mb

⚠ **This switch type must be used only in intrinsic safety circuits in compliance with standard IEC 60079-11, EN 60079-11**

Electrical data

Maximum current (Ii):	2.5 A
Maximum voltage (Ui):	30 Vdc
Conditional short circuit current:	1000 A acc. to EN 60947-5-1
Protection against short circuits:	Type gG fuse 4 A 250 V
Pollution degree:	3

Product code extension -EX8

Category	Zone	EPL	Approvals
2D	21	Db	Ⓔx II 2D Ex tb IIIC T80°C Db

Electrical data

Thermal current (I_{th}):	6 A
Rated insulation voltage (U_i):	250 Vac/Vdc
Conditional short circuit current:	1000 A acc. to EN 60947-5-1
Protection against short circuits:	Type aM fuse 6 A 500 V
Pollution degree:	3

Utilization category
Alternating current: AC15 (50÷60 Hz)

Ue (V)	250
Ie (A)	6

Direct current: DC13

Ue (V)	24	125	250
Ie (A)	3	0.55	0.3

Quality marks of the product

UL approval: E131787
EAC approval: RU Д-IT.PA07.B.37848/24

Features approved by UL

Electrical Ratings: Q300 pilot duty (69 VA, 125-250 V dc)
A600 pilot duty (720 VA, 120-600 V ac)

Environmental Ratings: Types 1, 4X, 12, 13

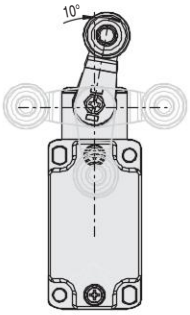
For all contact blocks except 2 and 3 use 60 or 75°C copper (Cu) conductors, rigid or flexible, wire size 12, 14 AWG. Tightening torque for terminal screws of 7.1 lb in (0.8 Nm).

For contact blocks 2 and 3 use 60 or 75°C copper (Cu) conductors, rigid or flexible, wire size 14 AWG. Tightening torque for terminal screws of 12 lb in (1.4 Nm).

Please contact our technical department for the list of approved products.

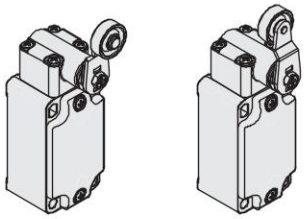
Adjustable levers

For these switches the lever can be adjusted in 10° steps over the entire 360° range. The positive movement transmission is always guaranteed thanks to the particular geometrical coupling between the lever and the revolving shaft as prescribed for safety applications by the German standard BG-GS-ET-15.



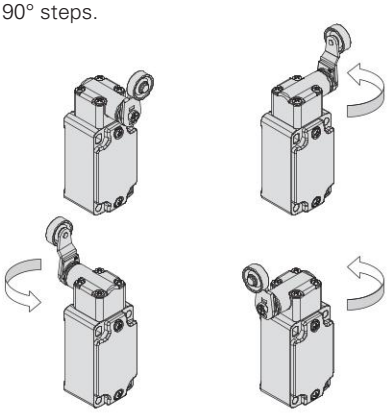
Reversible levers

With these switches, the lever can be secured in either the normal or reverse position, whereby positive coupling is retained. In this way two different working planes of the lever are possible.



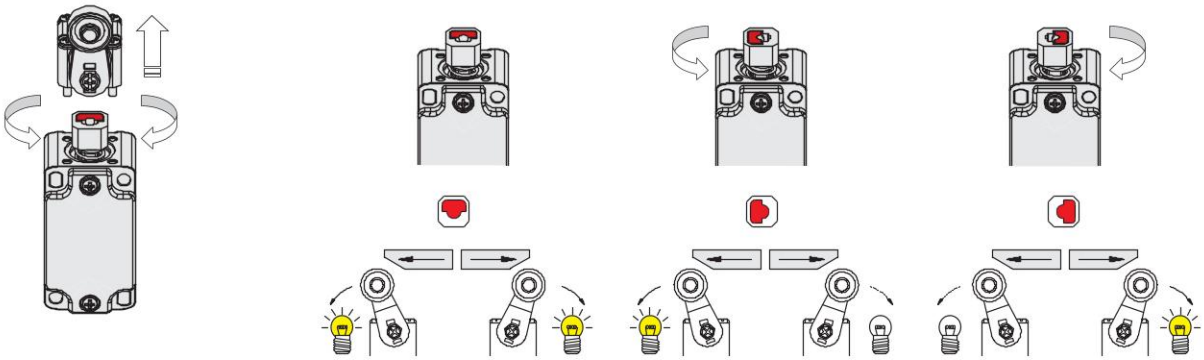
Head with variable orientation

For all switches the head can be rotated in 90° steps.



Unidirectional heads

For switches with swivelling lever, the unidirectional operation can be set by removing the four head screws and rotating the internal plunger.



Code structure

Attention! The feasibility of a code number does not mean the effective availability of a product. Please contact our sales office.

article | options | product code extension

FD 502-GM2-EX7

Housing	
FD	metal, one conduit entry

Contact block	
5	1NO+1NC, snap action
6	1NO+1NC, slow action
7	1NO+1NC, slow action, make before break
...	...

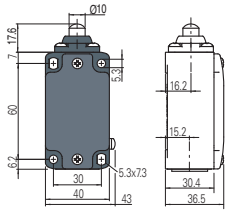
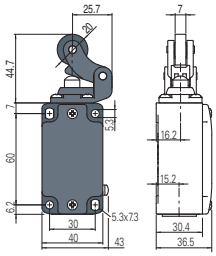
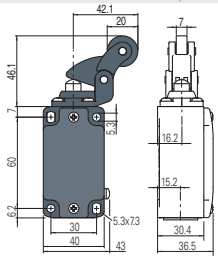
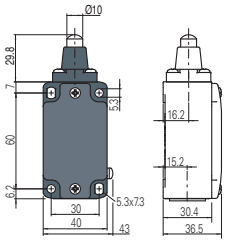
Actuators	
01	short plunger
02	roller lever
...	...

Contact type	
	silver contacts (standard)
G	silver contacts, 1 µm gold coating
G1	silver contacts, 2.5 µm gold coating (not for contact block 2, 20, 21, 22, 28, 29, 30)

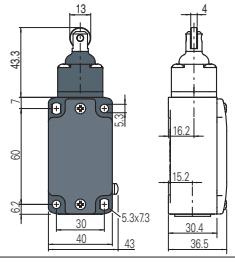
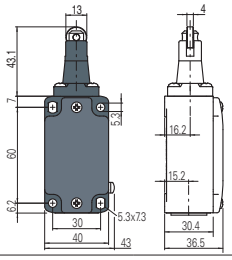
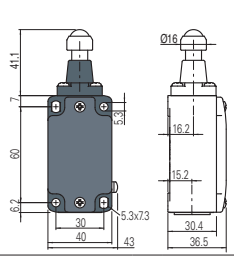
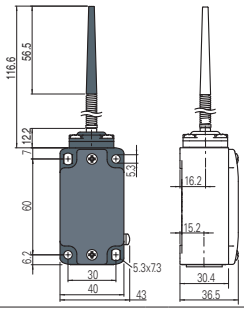
ATEX approval	
-EX4	Ex II 3D Ex tc IIIC T80°C Dc
-EX7	Ex II 2G Ex ia IIC T6 Gb Ex I M2 Ex ia I Mb
-EX8	Ex II 2D Ex tb IIIC T80°C Db

Switches compliant with **ATEX** directive Ex / **FD** series

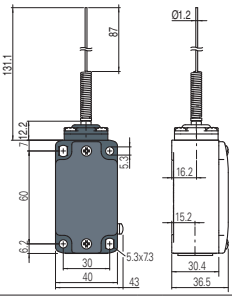
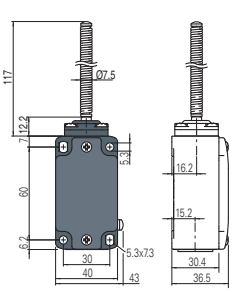
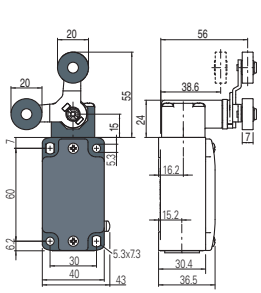
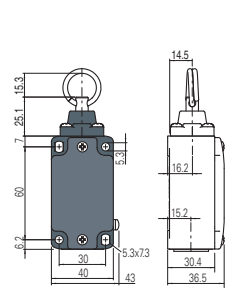
Contact type:
R = snap action
L = slow action

Category	Contact block															
					 With steel roller with self-lubrication or 316L stainless steel on request		 With steel roller with self-lubrication or 316L stainless steel on request			
3D	2	R	FD 201-M2-EX4	2x(1NO-1NC)	FD 202-M2-EX4	2x(1NO-1NC)	FD 205-M2-EX4	2x(1NO-1NC)	FD 211-M2-EX4	2x(1NO-1NC)
	5	R	FD 501-M2-EX4	1NO+1NC	FD 502-M2-EX4	1NO+1NC	FD 505-M2-EX4	1NO+1NC	FD 511-M2-EX4	1NO+1NC
	6	L	FD 601-M2-EX4	1NO+1NC	FD 602-M2-EX4	1NO+1NC	FD 605-M2-EX4	1NO+1NC	FD 611-M2-EX4	1NO+1NC
	20	L	FD 2001-M2-EX4	1NO+2NC	FD 2002-M2-EX4	1NO+2NC	FD 2005-M2-EX4	1NO+2NC	FD 2011-M2-EX4	1NO+2NC
2G M2	5	R	FD 501-M2-EX7	1NO+1NC	FD 502-M2-EX7	1NO+1NC	FD 505-M2-EX7	1NO+1NC	FD 511-M2-EX7	1NO+1NC
	20	L	FD 2001-M2-EX7	1NO+2NC	FD 2002-M2-EX7	1NO+2NC	FD 2005-M2-EX7	1NO+2NC	FD 2011-M2-EX7	1NO+2NC
2D	5	R	FD 501-M2-EX8	1NO+1NC	FD 502-M2-EX8	1NO+1NC	FD 505-M2-EX8	1NO+1NC	FD 511-M2-EX8	1NO+1NC
	20	L	FD 2001-M2-EX8	1NO+2NC	FD 2002-M2-EX8	1NO+2NC	FD 2005-M2-EX8	1NO+2NC	FD 2011-M2-EX8	1NO+2NC
Max. speed			0.5 m/s		0.5 m/s with cam at 30°		0.5 m/s with cam at 30°		0.5 m/s	
Actuating force			8 N (25 N →)		6 N (25 N →)		6 N (25 N →)		8 N (25 N →)	
Travel diagrams			page 220 - group 1		page 220 - group 2		page 220 - group 2		page 220 - group 1	

Contact type:
R = snap action
L = slow action

Category	Contact block															
			 External gasket				 Ball, Ø 12.7 mm, stainless steel		 External gasket	
3D	2	R	FD 215-M2-EX4	2x(1NO-1NC)	FD 216-M2-EX4	2x(1NO-1NC)	FD 219-M2-EX4	2x(1NO-1NC)	FD 220-M2-EX4	2x(1NO-1NC)
	5	R	FD 515-M2-EX4	1NO+1NC	FD 516-M2-EX4	1NO+1NC	FD 519-M2-EX4	1NO+1NC	FD 520-M2-EX4	1NO+1NC
	6	L	FD 615-M2-EX4	1NO+1NC	FD 616-M2-EX4	1NO+1NC	FD 619-M2-EX4	1NO+1NC	/	
	20	L	FD 2015-M2-EX4	1NO+2NC	FD 2016-M2-EX4	1NO+2NC	FD 2019-M2-EX4	1NO+2NC	FD 2020-M2-EX4	1NO+2NC
2G M2	5	R	FD 515-M2-EX7	1NO+1NC	FD 516-M2-EX7	1NO+1NC	FD 519-M2-EX7	1NO+1NC	FD 520-M2-EX7	1NO+1NC
	20	L	FD 2015-M2-EX7	1NO+2NC	FD 2016-M2-EX7	1NO+2NC	FD 2019-M2-EX7	1NO+2NC	FD 2020-M2-EX7	1NO+2NC
2D	5	R	/		FD 516-M2-EX8	1NO+1NC	FD 519-M2-EX8	1NO+1NC	/	
	20	L	/		FD 2016-M2-EX8	1NO+2NC	FD 2019-M2-EX8	1NO+2NC	/	
Max. speed			0.5 m/s with cam at 30°		0.5 m/s with cam at 30°		0.5 m/s		1 m/s	
Actuating force			11 N (25 N →)		8 N (25 N →)		8 N (25 N →)		0.09 Nm	
Travel diagrams			page 220 - group 1		page 220 - group 1		page 220 - group 1		page 220 - group 3	

Contact type:
R = snap action
L = slow action

Category	Contact block															
			 External gasket		 External gasket		 Bistable		 Rope switch for signalling	
3D	2	R	FD 221-M2-EX4	2x(1NO-1NC)	FD 225-M2-EX4	2x(1NO-1NC)	/		FD 276-M2-EX4	2x(1NO-1NC)
	5	R	FD 521-M2-EX4	1NO+1NC	FD 525-M2-EX4	1NO+1NC	FD 541-M2-EX4	1NO+1NC	FD 576-M2-EX4	1NO+1NC
	6	L	/		/		/		FD 676-M2-EX4	1NO+1NC
	20	L	FD 2021-M2-EX4	1NO+2NC	FD 2025-M2-EX4	1NO+2NC	/		FD 2076-M2-EX4	2NO+1NC
2G M2	5	R	FD 521-M2-EX7	1NO+1NC	FD 525-M2-EX7	1NO+1NC	FD 541-M2-EX7	1NO+1NC	FD 576-M2-EX7	1NO+1NC
	20	L	FD 2021-M2-EX7	1NO+2NC	FD 2025-M2-EX7	1NO+2NC	/		FD 2076-M2-EX7	2NO+1NC
2D	5	R	/		/		FD 541-M2-EX8	1NO+1NC	FD 576-M2-EX8	1NO+1NC
	20	L	/		/		/		FD 2076-M2-EX8	2NO+1NC
Max. speed			1 m/s		1 m/s		0.5 m/s with cam at 30°		0.5 m/s	
Actuating force			0.08 Nm		0.14 Nm		0.21 Nm (0.36 Nm →)		initial 20 N - final 40 N	
Travel diagrams			page 220 - group 3		page 220 - group 3		page 220 - group 4		page 220 - group 6	

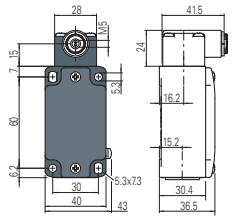
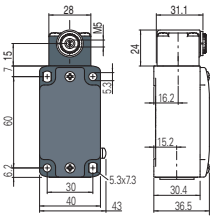
All values in the drawings are in mm

Accessories See page 195

→ The 2D and 3D files are available at **www.pizzato.com**

Position switches with swivelling lever without actuator

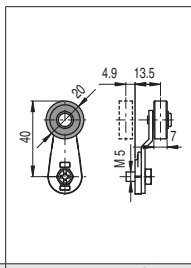
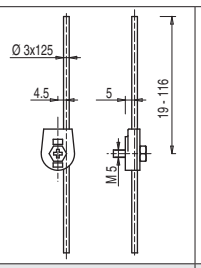
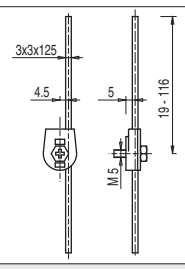
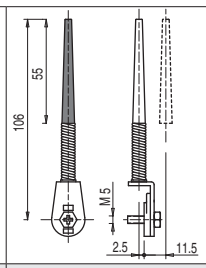
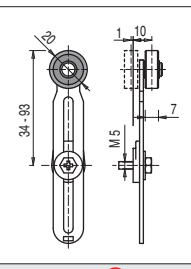
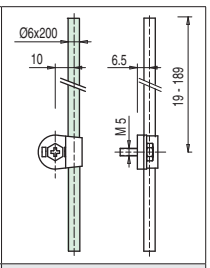
Contact type:
R = snap action
L = slow action

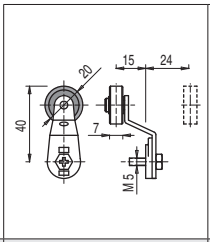
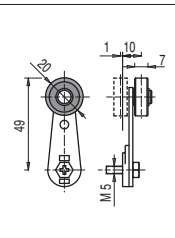
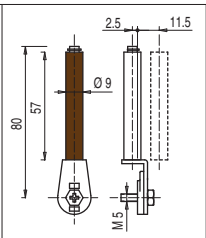
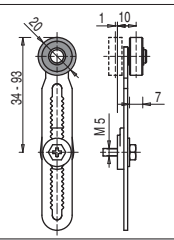
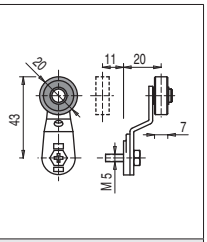
Category	Contact block		Regular head	Compact head
				
3D	2	R	FD 238-M2-EX4 2x(1NO-1NC)	FD 258-M2-EX4 2x(1NO-1NC)
	5	R	FD 538-M2-EX4 → 1NO+1NC	FD 558-M2-EX4 → 1NO+1NC
	6	L	FD 638-M2-EX4 → 1NO+1NC	FD 658-M2-EX4 → 1NO+1NC
	20	L	FD 2038-M2-EX4 → 1NO+2NC	FD 2058-M2-EX4 → 1NO+2NC
2G M2	5	R	FD 538-M2-EX7 → 1NO+1NC	FD 558-M2-EX7 → 1NO+1NC
	20	L	FD 2038-M2-EX7 → 1NO+2NC	FD 2058-M2-EX7 → 1NO+2NC
2D	5	R	FD 538-M2-EX8 → 1NO+1NC	FD 558-M2-EX8 → 1NO+1NC
	20	L	FD 2038-M2-EX8 → 1NO+2NC	FD 2058-M2-EX8 → 1NO+2NC
Actuating force			0.1 Nm (0.25 Nm →)	0.06 Nm (0.25 Nm →)
Travel diagrams			page 220 - group 4	page 220 - group 4

IMPORTANT
For safety applications: join only switches and actuators marked with symbol → next to the product code.
For more information about safety applications see details on page 217.

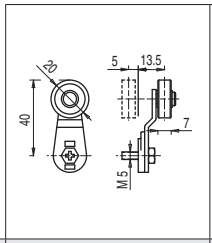
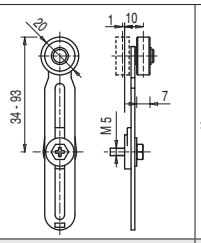
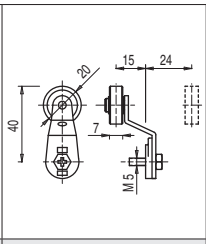
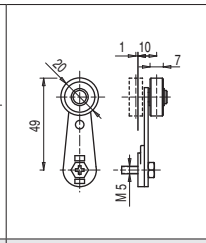
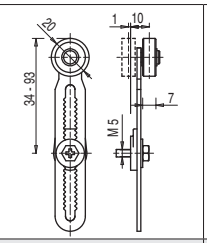
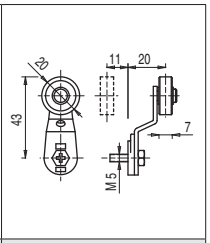
Separate actuators

IMPORTANT: These separate actuators can be used only with items of the FD series.

	Technopolymer roller Ø 20 mm	Adjustable round rod Ø 3x125 mm	Adjustable square rod, 3x3x125 mm	Spring rod with plastic tip	Adjustable actuator with techno-polymer roller	Adjustable glass fibre rod
						
Article	VF L31 →	VF L32 (2)	VF L33 (2)	VF L34	VF L35 → (1) (2)	VF L36 (2)
Max. speed	1.5 m/s (cam at 30°)	1.5 m/s	1.5 m/s	1 m/s	1.5 m/s (cam at 30°)	1.5 m/s

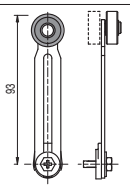
	Technopolymer roller Ø 20 mm	Technopolymer roller Ø 20 mm	Porcelain roller	Adjustable safety actuator with technopolymer roller	Technopolymer roller Ø 20 mm
					
Article	VF L51 →	VF L52 →	VF L53 →	VF L56 → (2)	VF L57 →
Max. speed	1.5 m/s (cam at 30°)	1.5 m/s (cam at 30°)	0.5 m/s	1.5 m/s (cam at 30°)	1.5 m/s (cam at 30°)

Steel rollers, Ø 20 mm, with self-lubrication

						
Article	VF L31-R24 →	VF L35-R24 → (1) (2)	VF L51-R24 →	VF L52-R24 →	VF L56-R24 → (2)	VF L57-R24 →
Max. speed	1.5 m/s (cam at 30°)	1.5 m/s (cam at 30°)	1.5 m/s (cam at 30°)	1.5 m/s (cam at 30°)	1.5 m/s (cam at 30°)	1.5 m/s (cam at 30°)

Note: To order with 316L stainless steel roller: replace R24 with R41 in the order numbers.

- (1) Lever VF L35 can only be used in safety applications if adjusted to its max. length, as shown in the figure to the right.
  If an adjustable lever is required for safety applications, use the VF L56 adjustable safety lever.
- (2) If installed with switch FD •58-M2-EX (e.g. FD 558-M2-EX•, FD 658-M2-EX•...) the actuator may hit the housing of the switch upon actuation. This possible interference depends on the fixing position of actuator and switch head.



All values in the drawings are in mm

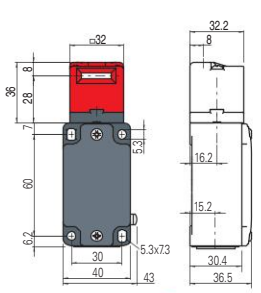
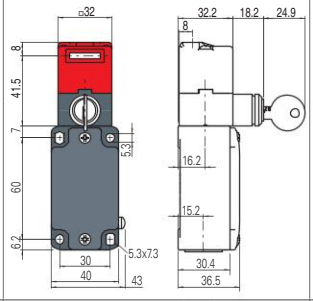
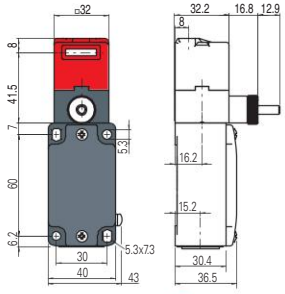
Accessories See page 195

→ The 2D and 3D files are available at **www.pizzato.com**

Switches compliant with **ATEX** directive ⟨Ex⟩ / **FD** series

Safety switches with separate actuator

Contact type:
L = slow action

Category	Contact block		Switches with separate actuator	Switches with separate actuator and key release	Switches with manual mechanical delay
			Switch without actuator	Switch without actuator	Switch without actuator
					
3D	6	L	FD 693-M2-EX4 → 1NO+1NC	/	FD 6R2-M2-EX4 → 1NO+1NC
	18	L	/	FD 1899-M2-EX4 → 1NO+1NC	/
	20	L	FD 2093-M2-EX4 → 1NO+2NC	FD 2099-M2-EX4 → 1NO+2NC	FD 20R2-M2-EX4 → 1NO+2NC
	28	L	/	FD 2899-M2-EX4 → 1NO+2NC	/
2G M2	20	L	FD 2093-M2-EX7 → 1NO+2NC	FD 2099-M2-EX7 → 1NO+2NC	FD 20R2-M2-EX7 → 1NO+2NC
	28	L	/	FD 2899-M2-EX7 → 1NO+2NC	/
2D	20	L	FD 2093-M2-EX8 → 1NO+2NC	FD 2099-M2-EX8 → 1NO+2NC	FD 20R2-M2-EX8 → 1NO+2NC
	28	L	/	FD 2899-M2-EX8 → 1NO+2NC	/
Actuating force			10 N (18 N →)	30 N (40 N →)	10 N (18 N →)
Travel diagrams			see General Catalogue Safety Devices 2025-2026	see General Catalogue Safety Devices 2025-2026	see General Catalogue Safety Devices 2025-2026

Actuators





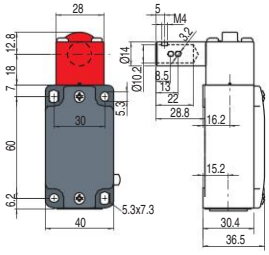



VF KEYF	VF KEYF1	VF KEYF2	VF KEYF3	VF KEYF7	VF KEYF8
Straight actuator	Angled actuator	Swivelling actuator	Actuator adjustable in two directions	Actuator adjustable in one direction	Universal actuator

IMPORTANT: These actuators can be used only with items of the FD series (e.g. FD 2093-M2-EX7).
Actuators with low coding level acc. to EN ISO 14119.

Safety switches for hinges

Contact type:
L = slow action

Category	Contact block		
			
3D	18	L	FD 1895-M2-EX4 → 1NO+1NC
	20	L	FD 2095-M2-EX4 → 1NO+2NC
2G M2	20	L	FD 2095-M2-EX7 → 1NO+2NC
2D	20	L	FD 2095-M2-EX8 → 1NO+2NC
Actuating force			0,15 Nm (0,4 Nm →)
Travel diagrams			see General Catalogue Safety Devices 2025-2026

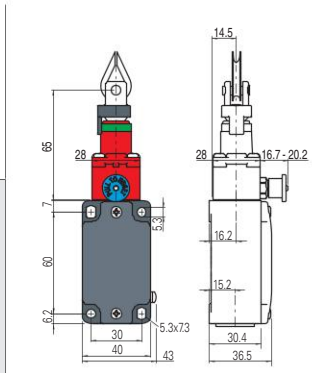
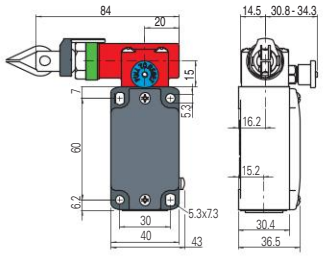
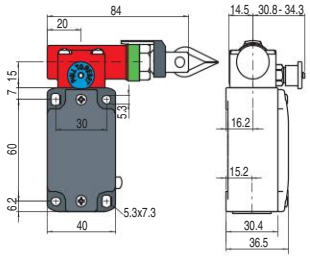
All values in the drawings are in mm

Accessories See page 195

→ The 2D and 3D files are available at **www.pizzato.com**

Safety rope switches with reset for emergency stops

Contact type:
L = slow action

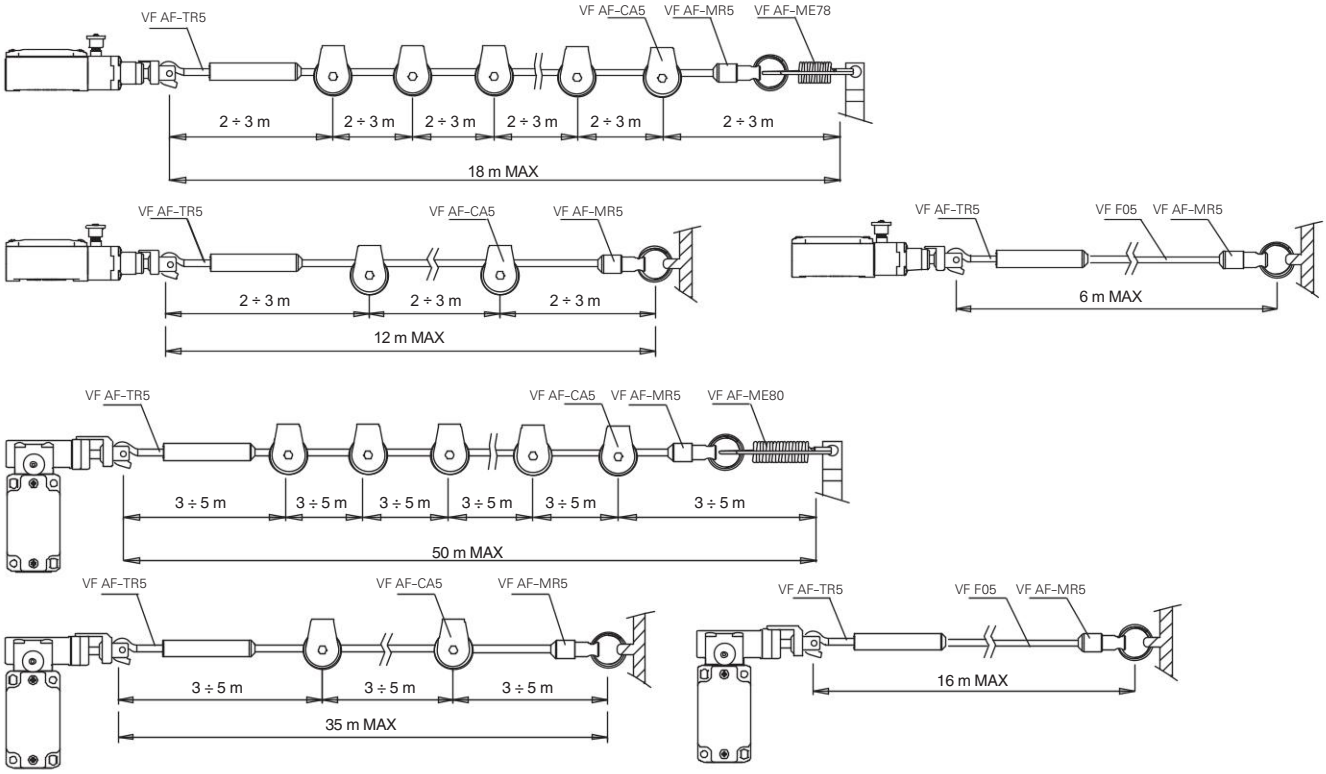
Category	Contact block								
									
3D	18	L	FD 1878-M2-EX4	1NO+1NC	FD 1883-M2-EX4	1NO+1NC	FD 1884-M2-EX4	1NO+1NC
	20	L	FD 2078-M2-EX4	1NO+2NC	FD 2083-M2-EX4	1NO+2NC	FD 2084-M2-EX4	1NO+2NC
2G M2	20	L	FD 2078-M2-EX7	1NO+2NC	FD 2083-M2-EX7	1NO+2NC	FD 2084-M2-EX7	1NO+2NC
2D	18	L	FD 1878-M2-EX8	1NO+1NC	FD 1883-M2-EX8	1NO+1NC	FD 1884-M2-EX8	1NO+1NC
	20	L	FD 2078-M2-EX8	1NO+2NC	FD 2083-M2-EX8	1NO+2NC	FD 2084-M2-EX8	1NO+2NC
Actuating force			initial 63 N … final 83 N (90 N ⊕)		initial 147 N … final 235 N (250 N ⊕)		initial 147 N … final 235 N (250 N ⊕)	
Travel diagrams			see General Catalogue Safety Devices 2025-2026		see General Catalogue Safety Devices 2025-2026		see General Catalogue Safety Devices 2025-2026	

Accessories for rope installation



VF AF-TR5	VF AF-TR8	VF AF-MR5	VF AF-ME78	VF AF-ME80	VF F05-100	VF AF-IF1GR11	VF AF-CA5	VF AF-CA10
Adjustable stay bolt	Stay bolt	End clamp	Safety spring for longitudinal heads	Safety spring for transversal heads	Rope coil Ø 5 mm length 100 m	Rope function indicator	Stainless steel pulley	Angular pulley, stainless steel

Application examples and max. rope length



All values in the drawings are in mm

Accessories See page 195

➔ The 2D and 3D files are available at **www.pizzato.com**

Switches compliant with **ATEX** directive Ⓔx / **FL** series



Main features

- ATEX approval
- Metal housing, three conduit entries
- Protection degree IP66
- Versions with gold-plated silver contacts

ATEX markings:

Product code extension	Quality mark	Certificate type and notified body
-EX4	CE	EU declaration of conformity Pizzato Elettrica S.r.l.
-EX7	CE 0948	EU-type examination certificate TÜV Italia
-EX8	CE 0948	EU-type examination certificate TÜV Italia

Technical data

Housing

Metal housing, powder-coated	
Three threaded conduit entries:	M20x1.5
Protection degree acc. to EN 60529:	IP66 with cable gland of equal or higher protection degree

General data

Ambient temperature (-EX7):	-20°C … +60°C
Ambient temperature (-EX4/-EX8):	-20°C ... +70°C
Max. actuation frequency:	3600 operating cycles/hour
Mechanical endurance:	
FL ••••-EX•	10 million operating cycles
FL ••93-EX•, FL ••78-EX•, FL ••8•-EX•, FL ••95-EX•	500,000 operating cycles
Mounting position:	any
Safety parameters B_{10D} (NC contacts):	
FL ••••-EX•	20,000,000
FL ••93-EX•, FL ••78-EX•, FL ••8•-EX•	1,000,000
FL ••95-EX•	2,500,00
Mechanical interlock, not coded:	type 1 acc. to EN ISO 14119
Tightening torques for installation:	see page 219
Wire cross-sections and wire stripping lengths:	see page 239

Contact blocks available:
2, 3, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 18, 20, 21, 22, 28, 29, 30, 33, 34, 37, 66, 67
Note: contact blocks 2 and 3 are not available for articles FL ••••-EX7, FL ••••-EX8.

In compliance with standards:
IEC 60947-5-1, EN 60947-5-1, IEC 60947-1, EN 60947-1, EN 50041, IEC 60204-1, EN 60204-1, EN ISO 14119, EN ISO 12100, IEC 60529, EN 60529, UL 508, CSA C22.2 No. 14, IEC 60079-0, EN 60079-0, IEC 60079-11, EN 60079-11, IEC 60079-31, EN 60079-31, EN IEC 63000.

Compliance with the requirements of:
ATEX Directive 2014/34/EU, EMC Directive 2014/30/EU, RoHS Directive 2011/65/EU.
Positive contact opening in conformity with standards:
IEC 60947-5-1, EN 60947-5-1.

Installation for safety applications:
Use only switches marked with the ⊖ symbol beside the product code. Always connect the safety circuit to the **NC contacts** (normally closed contacts: 11-12, 21-22 or 31-32) as required by **EN ISO 14119, paragraph 5.4** for specific interlock applications and **EN ISO 13849-2 tables D3** (well-tried components) and **D.8** (fault exclusions) for safety applications in general. Actuate the switch **at least up to the positive opening travel** shown in the travel diagrams on page 220. Actuate the switch **at least with the positive opening force**, reported in brackets below each article, next to the actuating force value.

⚠ **If not expressly indicated in this chapter, for correct installation and utilization of all articles see the instructions given in the registration certificate, in the operating manual and on pages 217 to 232.**

⚠ **For the correct use of the switch, please use appropriate cable glands suitable for the zone in compliance with the ATEX directive, see Accessories on page 171.**

Product code extension **-EX4**

Category	Zone	EPL	Approvals
3D	22	Dc	Ⓔx II 3D Ex tc IIIC T80°C Dc

Electrical data

Thermal current (I_{th}):	10 A
Rated insulation voltage (U_i):	500 Vac 600 Vdc
	400 Vac for contact blocks 20, 28
Conditional short circuit current:	1000 A acc. to EN 60947-5-1
Protection against short circuits:	Type aM fuse 10 A 500 V
Pollution degree:	3

Utilization category
Alternating current: AC15 (50÷60 Hz)

Ue (V)	250	400	500
Ie (A)	6	4	1

Direct current: DC13

Ue (V)	24	125	250
Ie (A)	3	0.55	0.3

Product code extension **-EX7**

Category	Zone	EPL	Approvals
2G	1	Gb	Ⓔx II 2G Ex ia IIC T6 Gb
M2	M2	Mb	Ⓔx I M2 Ex ia I Mb

⚠ **This switch type must be used only in intrinsic safety circuits in compliance with standard IEC 60079-11, EN 60079-11**

Electrical data

Maximum current (Ii):	2.5 A
Maximum voltage (Ui):	30 Vdc
Conditional short circuit current:	1000 A acc. to EN 60947-5-1
Protection against short circuits:	Type gG fuse 4 A 250 V
Pollution degree:	3

Product code extension **-EX8**

Category	Zone	EPL	Approvals
2D	21	Db	Ⓔx II 2D Ex tb IIIC T80°C Db

Electrical data

Thermal current (I_{th}):	6 A
Rated insulation voltage (U_i):	250 Vac/Vdc
Conditional short circuit current:	1000 A acc. to EN 60947-5-1
Protection against short circuits:	Type aM fuse 6 A 500 V
Pollution degree:	3

Utilization category
Alternating current: AC15 (50÷60 Hz)

Ue (V)	250
Ie (A)	6

Direct current: DC13

Ue (V)	24	125	250
Ie (A)	3	0.55	0.3

Quality marks of the product

UL approval: E131787
EAC approval: RU Д-IT.PA07.B.37848/24

Features approved by UL

Electrical Ratings: Q300 pilot duty (69 VA, 125-250 V dc)
A600 pilot duty (720 VA, 120-600 V ac)

Environmental Ratings: Types 1, 4X, 12, 13

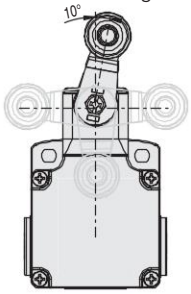
For all contact blocks except 2 and 3 use 60 or 75°C copper (Cu) conductors, rigid or flexible, wire size 12, 14 AWG. Tightening torque for terminal screws of 7.1 lb in (0.8 Nm).

For contact blocks 2 and 3 use 60 or 75°C copper (Cu) conductors, rigid or flexible, wire size 14 AWG. Tightening torque for terminal screws of 12 lb in (1.4 Nm).

Please contact our technical department for the list of approved products.

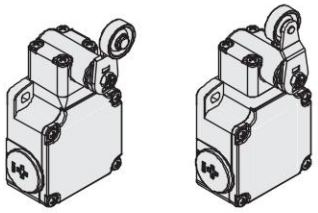
Adjustable levers

For switches with swivelling lever, the lever can be adjusted in 10° steps over the entire 360° range. The positive movement transmission is always guaranteed thanks to the particular geometrical coupling between the lever and the revolving shaft as prescribed for safety applications by the German standard BG-GS-ET-15.



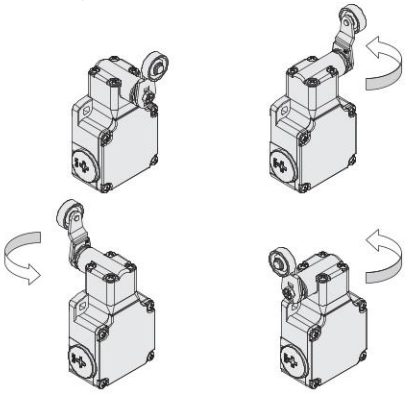
Reversible levers

For switches with swivelling lever, the lever can be fastened on straight or reverse side maintaining the positive coupling.
In this way two different working planes of the lever are possible.



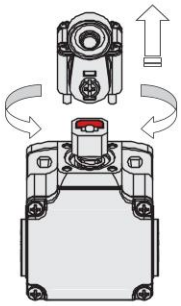
Head with variable orientation

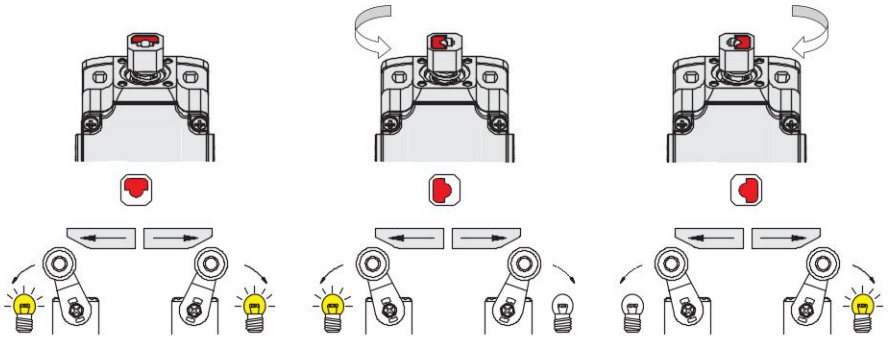
For all switches the head can be rotated in 90° steps.



Unidirectional heads

For switches with swivelling lever, the unidirectional operation can be set by removing the four head screws and rotating the internal plunger (except contact block 16).





Code structure

Attention! The feasibility of a code number does not mean the effective availability of a product. Please contact our sales office.

article | options | product code extension

FL 502-GM2-EX7

Housing	
FL	metal, three conduit entries

Contact block	
5	1NO+1NC, snap action
6	1NO+1NC, slow action
7	1NO+1NC, slow action, make before break
...	...

Actuators	
01	short plunger
02	roller lever
...	...

Contact type	
	silver contacts (standard)
G	silver contacts, 1 µm gold coating
G1	silver contacts, 2.5 µm gold coating (not for contact block 2, 20, 21, 22, 28, 29, 30)

ATEX approval	
-EX4	Ex II 3D Ex tc IIIC T80°C Dc
-EX7	Ex II 2G Ex ia IIC T6 Gb Ex I M2 Ex ia I Mb
-EX8	Ex II 2D Ex tb IIIC T80°C Db

Switches compliant with **ATEX** directive / **FL** series

Contact type:
R = snap action
L = slow action

Category	Contact block							
			With steel roller with self-lubrication or 316L stainless steel on request		With steel roller with self-lubrication or 316L stainless steel on request			
3D	2 R	FL 201-M2-EX4	2x(1NO-1NC)	FL 202-M2-EX4	2x(1NO-1NC)	FL 205-M2-EX4	2x(1NO-1NC)	FL 211-M2-EX4	2x(1NO-1NC)
	5 R	FL 501-M2-EX4	1NO+1NC	FL 502-M2-EX4	1NO+1NC	FL 505-M2-EX4	1NO+1NC	FL 511-M2-EX4	1NO+1NC
	6 L	FL 601-M2-EX4	1NO+1NC	FL 602-M2-EX4	1NO+1NC	FL 605-M2-EX4	1NO+1NC	FL 611-M2-EX4	1NO+1NC
	20 L	FL 2001-M2-EX4	1NO+2NC	FL 2002-M2-EX4	1NO+2NC	FL 2005-M2-EX4	1NO+2NC	FL 2011-M2-EX4	1NO+2NC
2G M2	5 R	FL 501-M2-EX7	1NO+1NC	FL 502-M2-EX7	1NO+1NC	FL 505-M2-EX7	1NO+1NC	FL 511-M2-EX7	1NO+1NC
	20 L	FL 2001-M2-EX7	1NO+2NC	FL 2002-M2-EX7	1NO+2NC	FL 2005-M2-EX7	1NO+2NC	FL 2011-M2-EX7	1NO+2NC
2D	5 R	FL 501-M2-EX8	1NO+1NC	FL 502-M2-EX8	1NO+1NC	FL 505-M2-EX8	1NO+1NC	FL 511-M2-EX8	1NO+1NC
	20 L	FL 2001-M2-EX8	1NO+2NC	FL 2002-M2-EX8	1NO+2NC	FL 2005-M2-EX8	1NO+2NC	FL 2011-M2-EX8	1NO+2NC
Max. speed		0.5 m/s		0.5 m/s with cam at 30°		0.5 m/s with cam at 30°		0.5 m/s	
Actuating force		8 N (25 N →)		6 N (25 N →)		6 N (25 N →)		8 N (25 N →)	
Travel diagrams		page 220 - group 1		page 220 - group 2		page 220 - group 2		page 220 - group 1	

Contact type:
R = snap action
L = slow action

Category	Contact block							
			External gasket		Ball, Ø 12.7 mm, stainless steel		External gasket	
3D	2 R	FL 215-M2-EX4	2x(1NO-1NC)	FL 216-M2-EX4	2x(1NO-1NC)	FL 219-M2-EX4	2x(1NO-1NC)	FL 220-M2-EX4	2x(1NO-1NC)
	5 R	FL 515-M2-EX4	1NO+1NC	FL 516-M2-EX4	1NO+1NC	FL 519-M2-EX4	1NO+1NC	FL 520-M2-EX4	1NO+1NC
	6 L	FL 615-M2-EX4	1NO+1NC	FL 616-M2-EX4	1NO+1NC	FL 619-M2-EX4	1NO+1NC	/	
	20 L	FL 2015-M2-EX4	1NO+2NC	FL 2016-M2-EX4	1NO+2NC	FL 2019-M2-EX4	1NO+2NC	FL 2020-M2-EX4	1NO+2NC
2G M2	5 R	FL 515-M2-EX7	1NO+1NC	FL 516-M2-EX7	1NO+1NC	FL 519-M2-EX7	1NO+1NC	FL 520-M2-EX7	1NO+1NC
	20 L	FL 2015-M2-EX7	1NO+2NC	FL 2016-M2-EX7	1NO+2NC	FL 2019-M2-EX7	1NO+2NC	FL 2020-M2-EX7	1NO+2NC
2D	5 R	/		FL 516-M2-EX8	1NO+1NC	FL 519-M2-EX8	1NO+1NC	/	
	20 L	/		FL 2016-M2-EX8	1NO+2NC	FL 2019-M2-EX8	1NO+2NC	/	
Max. speed		0.5 m/s with cam at 30°		0.5 m/s with cam at 30°		0.5 m/s		1 m/s	
Actuating force		11 N (25 N →)		8 N (25 N →)		8 N (25 N →)		0.09 Nm	
Travel diagrams		page 220 - group 1		page 220 - group 1		page 220 - group 1		page 220 - group 3	

Contact type:
R = snap action
L = slow action

Category	Contact block							
			External gasket		External gasket		Bistable		Rope switch for signalling	
3D	2 R	FL 221-M2-EX4	2x(1NO-1NC)	FL 225-M2-EX4	2x(1NO-1NC)	/		FL 276-M2-EX4	2x(1NO-1NC)
	5 R	FL 521-M2-EX4	1NO+1NC	FL 525-M2-EX4	1NO+1NC	FL 541-M2-EX4	1NO+1NC	FL 576-M2-EX4	1NO+1NC
	6 L	/		/		/		FL 676-M2-EX4	1NO+1NC
	20 L	FL 2021-M2-EX4	1NO+2NC	FL 2025-M2-EX4	1NO+2NC	/		FL 2076-M2-EX4	2NO+1NC
2G M2	5 R	FL 521-M2-EX7	1NO+1NC	FL 525-M2-EX7	1NO+1NC	FL 541-M2-EX7	1NO+1NC	FL 576-M2-EX7	1NO+1NC
	20 L	FL 2021-M2-EX7	1NO+2NC	FL 2025-M2-EX7	1NO+2NC	/		FL 2076-M2-EX7	2NO+1NC
2D	5 R	/		/		FL 541-M2-EX8	1NO+1NC	FL 576-M2-EX8	1NO+1NC
	20 L	/		/		/		FL 2076-M2-EX8	2NO+1NC
Max. speed		1 m/s		1 m/s		0.5 m/s with cam at 30°		0.5 m/s	
Actuating force		0.08 Nm		0.14 Nm		0.21 Nm (0.36 Nm →)		initial 20 N - final 40 N	
Travel diagrams		page 220 - group 3		page 220 - group 3		page 220 - group 4		page 220 - group 6	

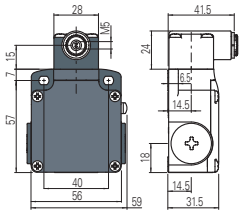
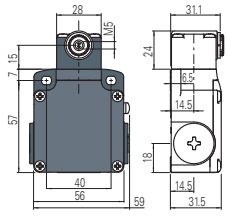
All values in the drawings are in mm

Accessories See page 195

→ The 2D and 3D files are available at **www.pizzato.com**

Position switches with swivelling lever without actuator

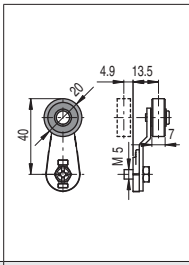
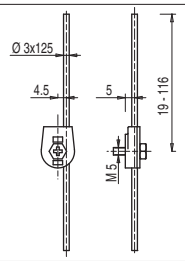
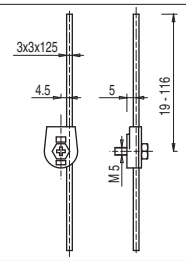
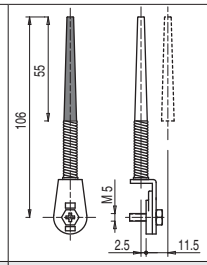
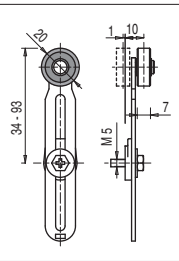
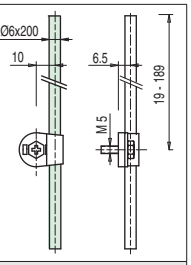
Contact type:
R = snap action
L = slow action

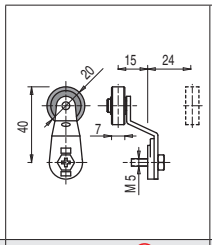
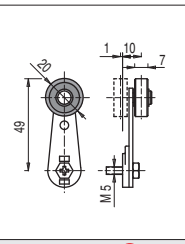
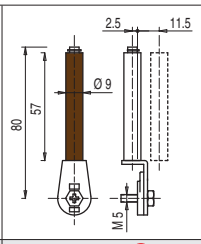
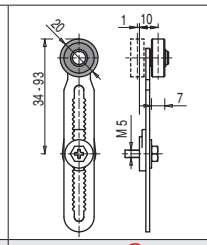
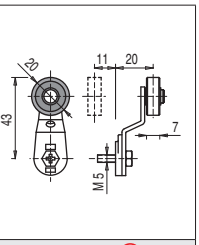
Category	Contact block		Regular head	Compact head
				
3D	2	R	FL 238-M2-EX4 2x(1NO-1NC)	FL 258-M2-EX4 2x(1NO-1NC)
	5	R	FL 538-M2-EX4 → 1NO+1NC	FL 558-M2-EX4 → 1NO+1NC
	6	L	FL 638-M2-EX4 → 1NO+1NC	FL 658-M2-EX4 → 1NO+1NC
	20	L	FL 2038-M2-EX4 → 1NO+2NC	FL 2058-M2-EX4 → 1NO+2NC
2G M2	5	R	FL 538-M2-EX7 → 1NO+1NC	FL 558-M2-EX7 → 1NO+1NC
	20	L	FL 2038-M2-EX7 → 1NO+2NC	FL 2058-M2-EX7 → 1NO+2NC
2D	5	R	FL 538-M2-EX8 → 1NO+1NC	FL 558-M2-EX8 → 1NO+1NC
	20	L	FL 2038-M2-EX8 → 1NO+2NC	FL 2058-M2-EX8 → 1NO+2NC
Actuating force			0.1 Nm (0.25 Nm →)	0.06 Nm (0.25 Nm →)
Travel diagrams			page 220 - group 4	page 220 - group 4

IMPORTANT
For safety applications: join only switches and actuators marked with symbol → next to the product code.
For more information about safety applications see details on page 217.

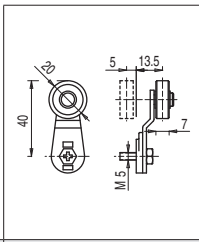
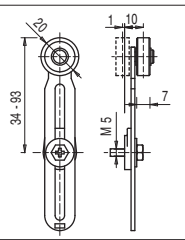
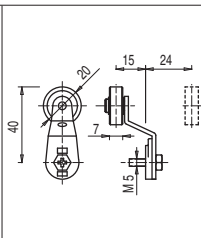
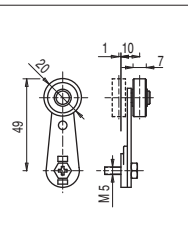
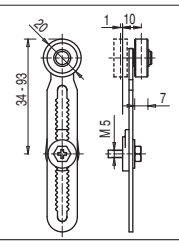
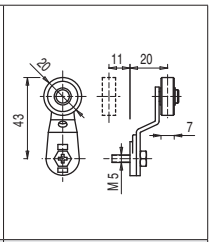
Separate actuators

IMPORTANT: These separate actuators can be used only with items of the FL series.

	Technopolymer roller Ø 20 mm	Adjustable round rod Ø 3x125 mm	Adjustable square rod, 3x3x125 mm	Spring rod with plastic tip	Adjustable actuator with techno-polymer roller	Adjustable glass fibre rod
						
Article	VF L31 →	VF L32 (2)	VF L33 (2)	VF L34	VF L35 → (1) (2)	VF L36 (2)
Max. speed	1.5 m/s (cam at 30°)	1.5 m/s	1.5 m/s	1 m/s	1.5 m/s (cam at 30°)	1.5 m/s

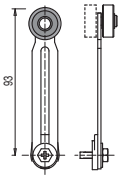
	Technopolymer roller Ø 20 mm	Technopolymer roller Ø 20 mm	Porcelain roller	Adjustable safety actuator with technopolymer roller	Technopolymer roller Ø 20 mm
					
Article	VF L51 →	VF L52 →	VF L53 →	VF L56 → (2)	VF L57 →
Max. speed	1.5 m/s (cam at 30°)	1.5 m/s (cam at 30°)	0.5 m/s	1.5 m/s (cam at 30°)	1.5 m/s (cam at 30°)

Steel rollers, Ø 20 mm, with self-lubrication

						
Article	VF L31-R24 →	VF L35-R24 → (1) (2)	VF L51-R24 →	VF L52-R24 →	VF L56-R24 → (2)	VF L57-R24 →
Max. speed	1.5 m/s (cam at 30°)	1.5 m/s (cam at 30°)	1.5 m/s (cam at 30°)	1.5 m/s (cam at 30°)	1.5 m/s (cam at 30°)	1.5 m/s (cam at 30°)

Note: To order with 316L stainless steel roller: replace R24 with R41 in the order numbers.

- (1) Lever VF L35 can only be used in safety applications if adjusted to its max. length, as shown in the figure to the right.
If an adjustable lever is required for safety applications, use the VF L56 adjustable safety lever.
- (2) If installed with switch FL •58-M2-EX (e.g. FL 558-M2-EX•, FL 658-M2-EX•...) the actuator may hit the housing of the switch upon actuation. This possible interference depends on the fixing position of actuator and switch head.



All values in the drawings are in mm

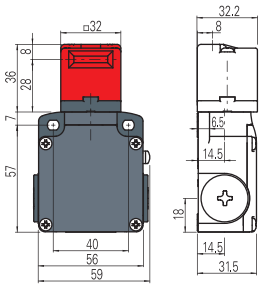
Accessories See page 195

→ The 2D and 3D files are available at **www.pizzato.com**

Safety switches with separate actuator

Contact type:
L = slow action

Category	Contact block		Switches with separate actuator Switch without actuator	
3D	6	L	FL 693-M2-EX4	1NO+1NC
	20	L	FL 2093-M2-EX4	1NO+2NC
2G M2	20	L	FL 2093-M2-EX7	1NO+2NC
2D	20	L	FL 2093-M2-EX8	1NO+2NC
Actuating force			10 N (18 N →)	
Travel diagrams			see General Catalogue Safety Devices 2025-2026	



Actuators







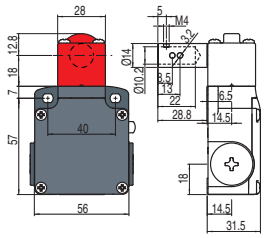

VF KEYF	VF KEYF1	VF KEYF2	VF KEYF3	VF KEYF7	VF KEYF8
Straight actuator	Angled actuator	Swivelling actuator	Actuator adjustable in two directions	Actuator adjustable in one direction	Universal actuator

IMPORTANT: These actuators can be used only with items of the FL series (e.g. FL 2093-M2-EX7).
Actuators with low coding level acc. to EN ISO 14119.

Safety switches for hinges

Contact type:
L = slow action

Category	Contact block			
3D	18	L	FL 1895-M2-EX4	1NO+1NC
	20	L	FL 2095-M2-EX4	1NO+2NC
2G M2	20	L	FL 2095-M2-EX7	1NO+2NC
2D	20	L	FL 2095-M2-EX8	1NO+2NC
Actuating force			0,15 Nm (0,4 Nm →)	
Travel diagrams			see General Catalogue Safety Devices 2025-2026	



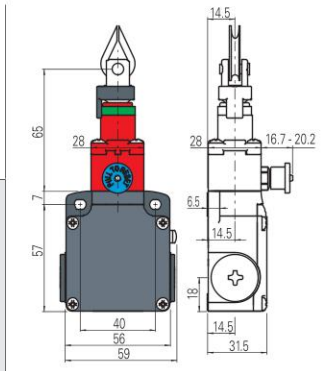
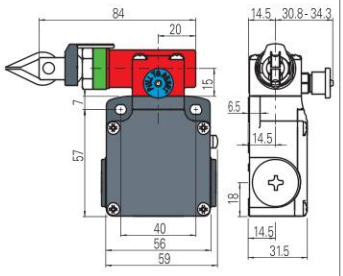
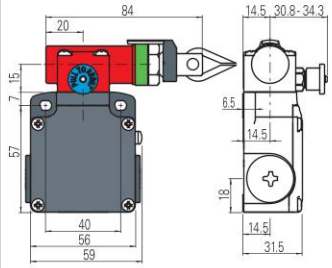
All values in the drawings are in mm

Accessories See page 195

→ The 2D and 3D files are available at **www.pizzato.com**

Safety rope switches with reset for emergency stops

Contact type:
L = slow action

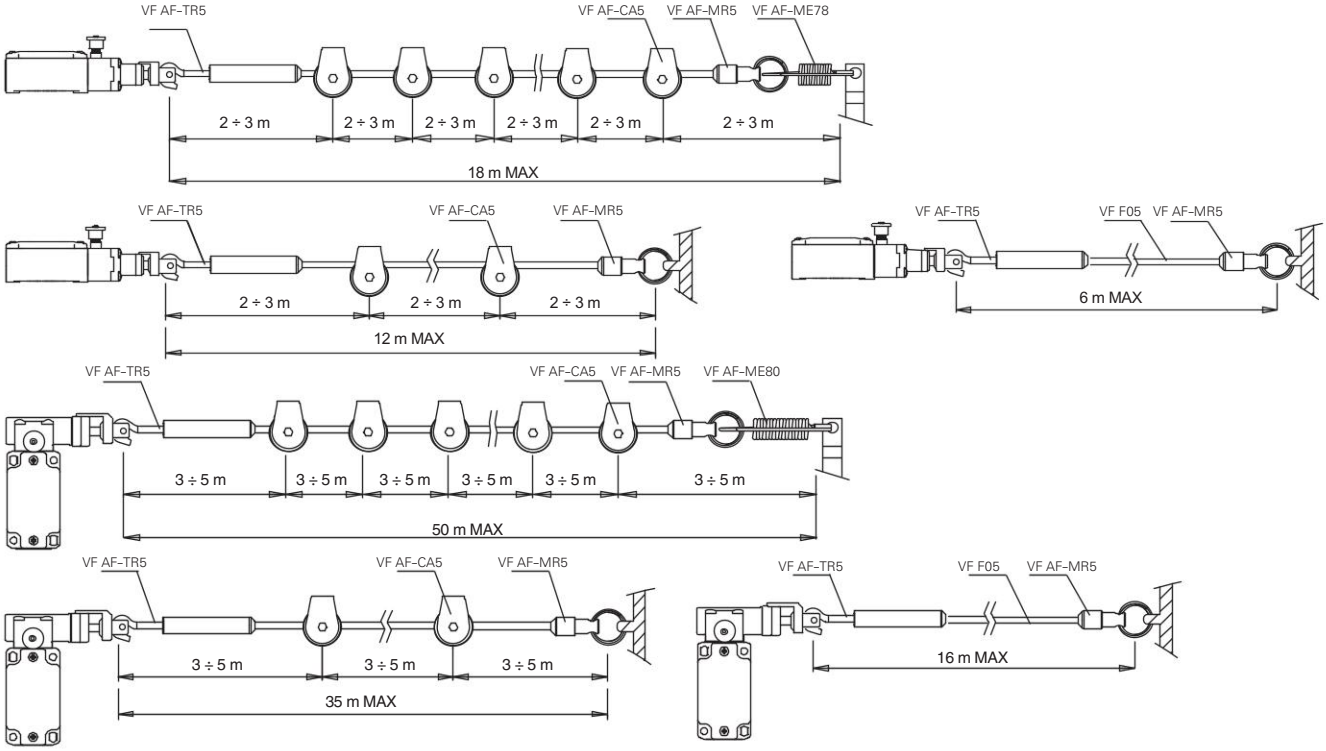
Category	Contact block								
									
3D	18	L	FL 1878-M2-EX4	1NO+1NC	FL 1883-M2-EX4	1NO+1NC	FL 1884-M2-EX4	1NO+1NC
	20	L	FL 2078-M2-EX4	1NO+2NC	FL 2083-M2-EX4	1NO+2NC	FL 2084-M2-EX4	1NO+2NC
2G M2	20	L	FL 2078-M2-EX7	1NO+2NC	FL 2083-M2-EX7	1NO+2NC	FL 2084-M2-EX7	1NO+2NC
2D	18	L	FL 1878-M2-EX8	1NO+1NC	FL 1883-M2-EX8	1NO+1NC	FL 1884-M2-EX8	1NO+1NC
	20	L	FL 2078-M2-EX8	1NO+2NC	FL 2083-M2-EX8	1NO+2NC	FL 2084-M2-EX8	1NO+2NC
Actuating force			initial 63 N … final 83 N (90 N)		initial 147 N … final 235 N (250 N)		initial 147 N … final 235 N (250 N)	
Travel diagrams			see General Catalogue Safety Devices 2025-2026		see General Catalogue Safety Devices 2025-2026		see General Catalogue Safety Devices 2025-2026	

Accessories for rope installation



VF AF-TR5	VF AF-TR8	VF AF-MR5	VF AF-ME78	VF AF-ME80	VF F05-100	VF AF-IF1GR11	VF AF-CA5	VF AF-CA10
Adjustable stay bolt	Stay bolt	End clamp	Safety spring for longitudinal heads	Safety spring for transversal heads	Rope coil Ø 5 mm length 100 m	Rope function indicator.	Stainless steel pulley	Angular pulley, stainless steel

Application examples and max. rope length



All values in the drawings are in mm

Accessories See page 195

→ The 2D and 3D files are available at **www.pizzato.com**

Switches compliant with **ATEX** directive Ⓔx / **FM** series



Main features

- ATEX approval
- Metal housing, one conduit entry
- Protection degree IP67
- Versions with gold-plated silver contacts

ATEX markings:

Product code extension	Quality mark	Certificate type and notified body
-EX7	CE 0948	EU-type examination certificate TÜV Italia

Technical data

Housing
Metal housing, powder-coated

One threaded conduit entry:	M20x1.5
Protection degree acc. to EN 60529:	IP67 with cable gland of equal or higher protection degree

General data

Ambient temperature:	-20°C … +60°C
Max. actuation frequency:	3600 operating cycles/hour
Mechanical endurance:	
FM ••••-EX•	10 million operating cycles
FM ••C•-EX•, FM ••96-EX•	500,000 operating cycles
Mounting position:	any
Safety parameters B_{10D} (NC contacts):	
FM ••••-EX•	20,000,000
FM ••C•-EX•	1,000,000
FM ••96-EX•	2,500,000
Mechanical interlock, not coded:	type 1 acc. to EN ISO 14119
Tightening torques for installation:	see page 221
Wire cross-sections and wire stripping lengths:	see page 239

Contact blocks available:
5, 6, 7, 8, 9, 10 , 11, 12, 13, 14, 15, 16, 18, 20, 21, 22, 28, 29, 30, 33, 34, 37, 66, 67

In compliance with standards:
IEC 60947-5-1, EN 60947-5-1, IEC 60947-1, EN 60947-1, EN 50047, IEC 60204-1, EN 60204-1, EN ISO 14119, EN ISO 12100, IEC 60529, EN 60529, UL 508, CSA C22.2 No. 14, IEC 60079-0, EN 60079-0, IEC 60079-11, EN 60079-11, EN IEC 63000

Compliance with the requirements of:
ATEX Directive 2014/34/EU, EMC Directive 2014/30/EU, RoHS Directive 2011/65/EU.
Positive contact opening in conformity with standards:
IEC 60947-5-1, EN 60947-5-1.

Installation for safety applications:
Use only switches marked with the ⊖ symbol beside the product code. Always connect the safety circuit to the **NC contacts** (normally closed contacts: 11-12, 21-22 or 31-32) as required by **EN ISO 14119, paragraph 5.4** for specific interlock applications and **EN ISO 13849-2 tables D3** (well-tried components) and **D.8** (fault exclusions) for safety applications in general. Actuate the switch **at least up to the positive opening travel** shown in the travel diagrams on page 222. Actuate the switch **at least with the positive opening force**, reported in brackets below each article, next to the actuating force value.

⚠ **If not expressly indicated in this chapter, for correct installation and utilization of all articles see the instructions given in the registration certificate, in the operating manual and on pages 217 to 232.**

⚠ **For the correct use of the switch, please use appropriate cable glands suitable for the zone in compliance with the ATEX directive, see Accessories on page 171.**

Product code extension **-EX7**

Category	Zone	EPL	Approvals
2G	1	Gb	Ⓔx II 2G Ex ia IIC T6 Gb
M2	M2	Mb	Ⓔx I M2 Ex ia I Mb

⚠ **This switch type must be used only in intrinsic safety circuits in compliance with standard IEC 60079-11, EN 60079-11**

Electrical data

Maximum current (Ii):	2.5 A
Maximum voltage (Ui):	30 Vdc
Conditional short circuit current:	1000 A acc. to EN 60947-5-1
Protection against short circuits:	Type gG fuse 4 A 250 V
Pollution degree:	3

Quality marks of the product

UL approval: E131787
EAC approval: RU Д-IT.PA07.B.37848/24

Features approved by UL

Electrical Ratings: Q300 pilot duty (69 VA, 125-250 V dc)
A600 pilot duty (720 VA, 120-600 V ac)
Environmental Ratings: Types 1, 4X, 12, 13

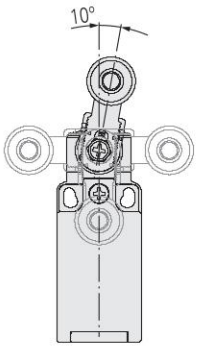
For all contact blocks except 2 and 3 use 60 or 75°C copper (Cu) conductors, rigid or flexible, wire size 12, 14 AWG. Tightening torque for terminal screws of 7.1 lb in (0.8 Nm).

For contact blocks 2 and 3 use 60 or 75°C copper (Cu) conductors, rigid or flexible, wire size 14 AWG. Tightening torque for terminal screws of 12 lb in (1.4 Nm).

Please contact our technical department for the list of approved products.

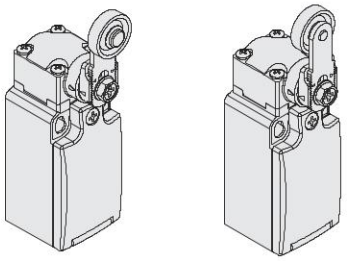
Adjustable levers

For these switches the lever can be adjusted in 10° steps over the entire 360° range. The positive movement transmission is always guaranteed thanks to the particular geometrical coupling between the lever and the revolving shaft as prescribed for safety applications by the German standard BG-GS-ET-15.



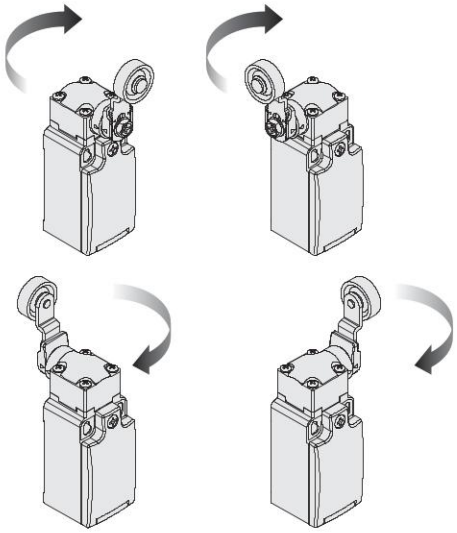
Reversible levers

With these switches, the lever can be secured in either the normal or reverse position, whereby positive coupling is retained. In this way two different working planes of the lever are possible.



Head with variable orientation

For all switches the head can be rotated in 90° steps.



Code structure

Attention! The feasibility of a code number does not mean the effective availability of a product. Please contact our sales office.

article | options | product code extension

FM 502-GM2-EX7

Housing

FM	metal, one conduit entry

Contact block

5	1NO+1NC, snap action
11	2NC, snap action
12	2NO, snap action
20	1NO+2NC, slow action
21	3NC, slow action
22	2NO+1NC, slow action

Actuators

01	short plunger
02	roller lever
...	...

Contact type

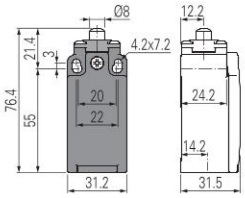
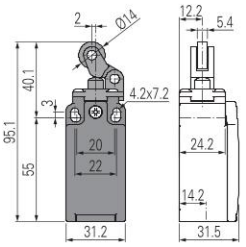
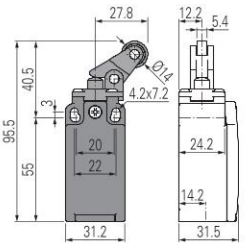
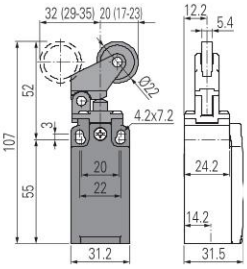
	silver contacts (standard)
G	silver contacts, 1 µm gold coating
G1	silver contacts, 2.5 µm gold coating (not for contact block 20, 21, 22, 28, 29, 30, 33, 34)

ATEX approval

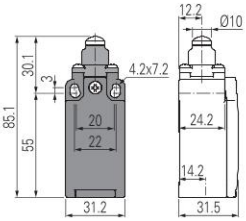
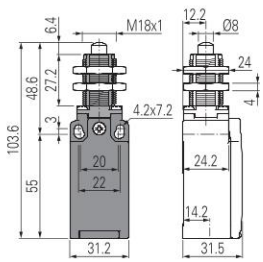
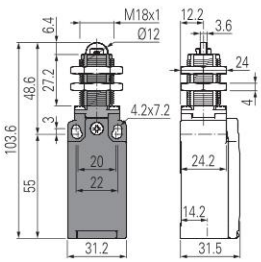
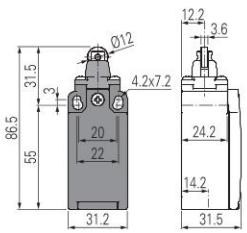
-EX7	Ex II 2G Ex ia IIC T6 Gb Ex I M2 Ex ia I Mb

Switches compliant with **ATEX** directive Ⓔx / **FM** series

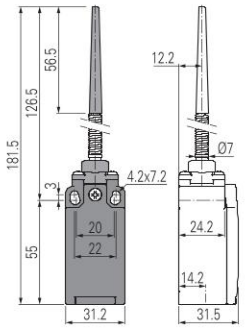
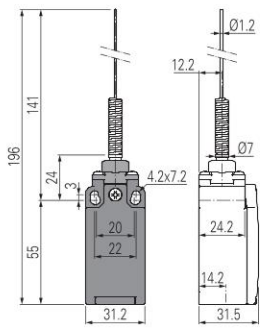
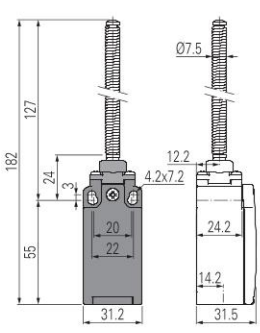
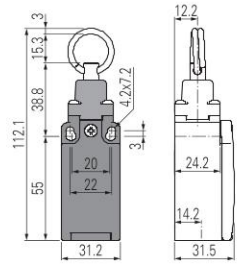
Contact type:
R = snap action
L = slow action

Category	Contact block							
				With steel roller with self-lubrication or 316L stainless steel on request 	With steel roller with self-lubrication or 316L stainless steel on request 			
2G M2	5	R	FM 501-M2-EX7 → 1NO+1NC	FM 502-M2-EX7 → 1NO+1NC	FM 505-M2-EX7 → 1NO+1NC	FM 507-M2-EX7 → 1NO+1NC		
	20	L	FM 2001-M2-EX7 → 1NO+2NC	FM 2002-M2-EX7 → 1NO+2NC	FM 2005-M2-EX7 → 1NO+2NC	FM 2007-M2-EX7 → 1NO+2NC		
Max. speed			0.5 m/s	0.5 m/s with cam at 30°	0.5 m/s with cam at 30°	0.5 m/s with cam at 30°		
Actuating force			8 N (25 N →)	6 N (25 N →)	6 N (25 N →)	4 N (25 N →)		
Travel diagrams			page 222 - group 1	page 222 - group 2	page 222 - group 2	page 222 - group 3		

Contact type:
R = snap action
L = slow action

Category	Contact block							
			External gasket 					
2G M2	5	R	FM 508-M2-EX7 → 1NO+1NC	FM 512-M2-EX7 → 1NO+1NC	FM 513-M2-EX7 → 1NO+1NC	FM 515-M2R28-EX7 → 1NO+1NC		
	20	L	FM 2008-M2-EX7 → 1NO+2NC	FM 2012-M2-EX7 → 1NO+2NC	FM 2013-M2-EX7 → 1NO+2NC	FM 2015-M2R28-EX7 → 1NO+2NC		
Max. speed			0.5 m/s	0.5 m/s	0.5 m/s with cam at 30°	0.5 m/s with cam at 30°		
Actuating force			8 N (25 N →)	8 N (25 N →)	8 N (25 N →)	8 N (25 N →)		
Travel diagrams			page 222 - group 1	page 222 - group 1	page 222 - group 1	page 222 - group 1		

Contact type:
R = snap action
L = slow action

Category	Contact block							
			External gasket 	External gasket 	External gasket 	Rope switch for signalling 		
2G M2	5	R	FM 520-M2-EX7	1NO+1NC	FM 521-M2-EX7	1NO+1NC	FM 525-M2-EX7	1NO+1NC	FM 576-M2-EX7	1NO+1NC
	20	L	FM 2020-M2-EX7	1NO+2NC	FM 2021-M2-EX7	1NO+2NC	FM 2025-M2-EX7	1NO+2NC	FM 2076-M2-EX7	2NO+1NC
Max. speed			1 m/s		1 m/s		1 m/s		0.5 m/s	
Actuating force			0.06 Nm		0.04 Nm		0.11 Nm		initial 20 N - final 40 N	
Travel diagrams			page 222 - group 4		page 222 - group 4		page 222 - group 4		page 222 - group 7	

All values in the drawings are in mm

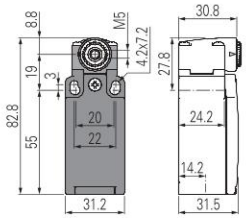
Accessories See page 195

→ The 2D and 3D files are available at **www.pizzato.com**

Position switches with swivelling lever without actuator

Contact type:
R = snap action
L = slow action

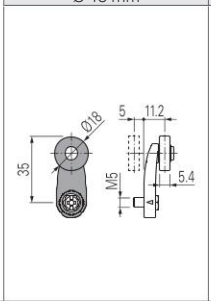
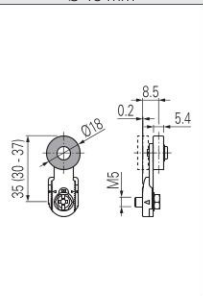
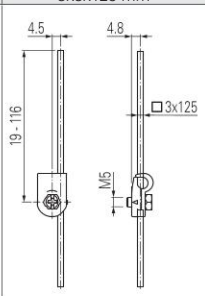
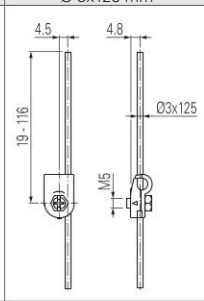
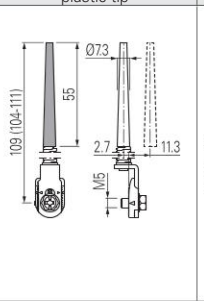
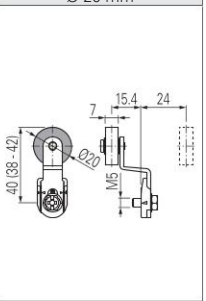
Category	Contact block		
2G M2	5	R	FM 538-M2-EX7 ⊖ 1NO+1NC
	20	L	FM 2038-M2-EX7 ⊖ 1NO+2NC
Actuating force			0.06 Nm (0.25 Nm ⊖)
Travel diagrams			page 222 - group 5

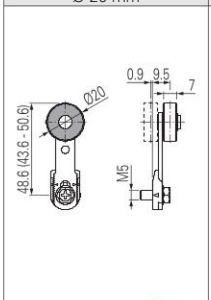
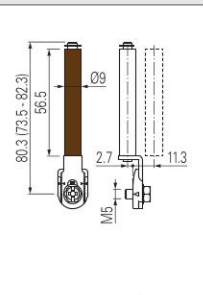
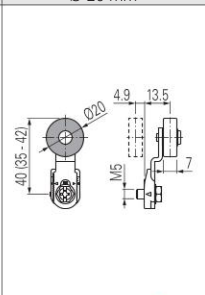
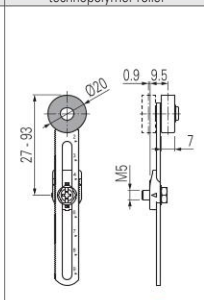
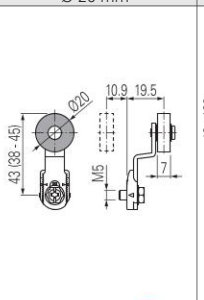
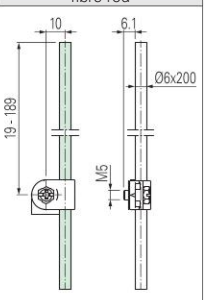


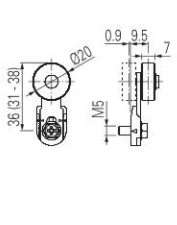
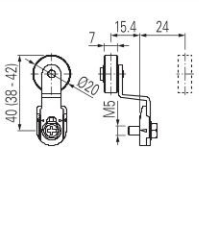
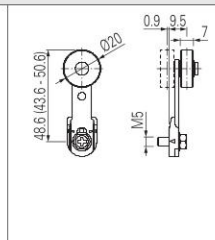
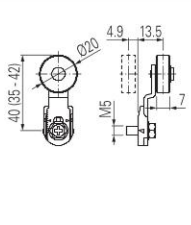
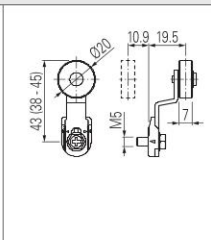
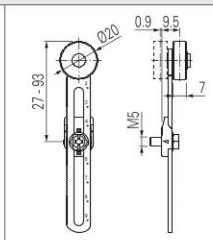
IMPORTANT
For safety applications: join only switches and actuators marked with symbol ⊖ next to the product code.
For more information about safety applications see details on page 217.

Separate actuators

IMPORTANT: These separate actuators can be used only with items of the FM series.

	Technopolymer roller Ø 18 mm	Technopolymer roller Ø 18 mm	Adjustable square rod, 3x3x125 mm	Adjustable round rod Ø 3x125 mm	Spring rod with plastic tip	Technopolymer roller Ø 20 mm
						
Article	VN A00KA ⊖	VN A00KB ⊖	VN A00LB	VN A00LE	VN A00LL	VN A00KE ⊖
Max. speed	1.5 m/s (cam at 30°)	1.5 m/s (cam at 30°)	1.5 m/s	1.5 m/s	1.5 m/s	1.5 m/s (cam at 30°)

	Technopolymer roller Ø 20 mm	Porcelain roller	Technopolymer roller Ø 20 mm	Adjustable safety actuator with technopolymer roller	Technopolymer roller Ø 20 mm	Adjustable glass fibre rod
						
Article	VN A00KF ⊖	VN A00LP ⊖ (2)	VN A00KG ⊖	VN A00KP ⊖	VN A00KH ⊖	VN A00LH
Max. speed	1.5 m/s (cam at 30°)	0.5 ms	1.5 m/s (cam at 30°)	1.5 m/s (cam at 30°)	1.5 m/s (cam at 30°)	1.5 m/s

Steel rollers, Ø 20 mm, with self-lubrication					
					
VN A00KB-R24 ⊖	VN A00KE-R24 ⊖	VN A00KF-R24 ⊖	VN A00KG-R24 ⊖	VN A00KH-R24 ⊖	VN A00KP-R24 ⊖

Note: To order with 316L stainless steel roller: replace R24 with R41 in the order numbers.

Note: To check the correspondence with previous lever codes, please consult the table "Changed article codes" on page 277. Example: VF LE30 -> VN A00KA

All values in the drawings are in mm

Accessories See page 195

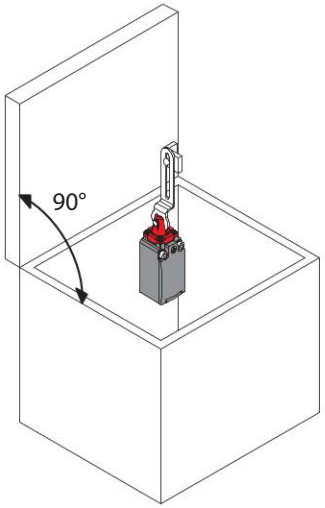
➔ The 2D and 3D files are available at **www.pizzato.com**

Safety switches with slotted hole lever

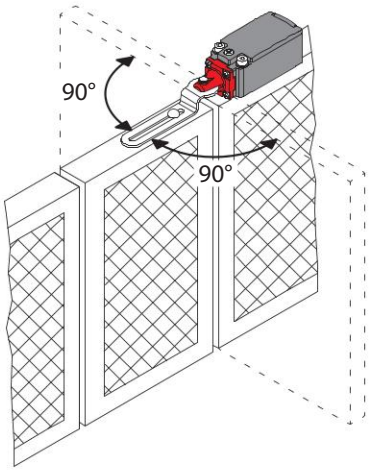
Contact type:
L = slow action

Category	Contact block				
2G M2	20	L	FM 20C1-M2-EX7 → 1NO+2NC	FM 20C2-M2-EX7 → 1NO+2NC	FM 20C3-M2-EX7 → 1NO+2NC
Actuating force			11 N (15 N →)	11 N (15 N →)	11 N (15 N →)
Travel diagrams			page 224 - group 10	page 224 - group 11	page 224 - group 10

Application examples



Safety switch with slotted hole lever, mounting inside the safety guard



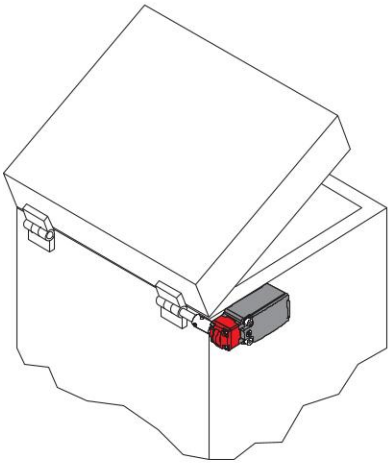
Safety switch with slotted hole lever, mounting on doors with a pivoting range of 180°

Safety switches for hinges

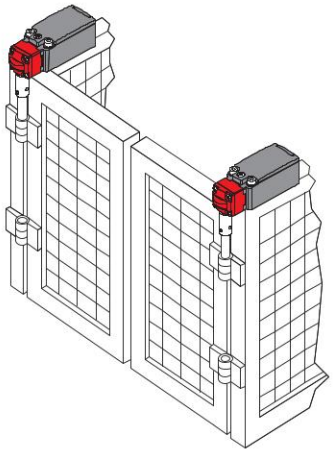
Contact type:
L = slow action

Category	Contact block			
2G M2	20	L	FM 2096-M2-EX7 → 1NO+2NC	
Actuating force			0,15 Nm (0,4 Nm →)	
Travel diagrams			page 224 - group 9	

Application examples



Safety switch for hinges, mounting outside the safety guard



Safety switches for hinges, mounting on double door

All values in the drawings are in mm

Accessories See page 195

→ The 2D and 3D files are available at **www.pizzato.com**

Notes

Switches compliant with **ATEX** directive Ⓔx / **FA** series



Technical data

Housing
Metal housing, powder-coated
With cable in halogen-free polyurethane, 2 m, other lengths on request
Protection degree acc. to EN 60529: IP67

General data

Ambient temperature:	-20°C … +60°C
Max. actuation frequency:	3600 operating cycles/hour
Mechanical endurance:	10 million operating cycles
Mounting position:	any
Safety parameters B_{10D} (NC contacts):	20,000,000
Mechanical interlock, not coded:	type 1 acc. to EN ISO 14119
Tightening torques for installation:	see page 227

Main features
- ATEX approval
- Metal housing
- Protection degree IP67
- Cable, halogen-free polyurethane

In compliance with standards:
IEC 60947-5-1, EN 60947-5-1, IEC 60947-1, EN 60947-1, IEC 60204-1, EN 60204-1, EN ISO 14119, EN ISO 12100, IEC 60529, EN 60529, UL 508, CSA C22.2 No. 14, IEC 60079-0, EN 60079-0, IEC 60079-31, EN 60079-31, IEC 60079-15, EN 60079-15, EN IEC 63000.

ATEX markings:

Product code extension	Quality mark	Certificate type and notified body
-EX5	CE	EU declaration of conformity Pizzato Elettrica S.r.l.

Compliance with the requirements of:
ATEX Directive 2014/34/EU, EMC Directive 2014/30/EU, RoHS Directive 2011/65/EU.
Positive contact opening in conformity with standards:
IEC 60947-5-1, EN 60947-5-1.

Installation for safety applications:
Use only switches marked with the ⊖ symbol beside the product code. Always connect the safety circuit to the **NC contacts** (normally closed contacts: see "Internal wiring") as required by **EN ISO 14119, paragraph 5.4** for specific interlock applications and **EN ISO 13849-2 tables D3** (well-tried components) and **D.8** (fault exclusions) for safety applications in general. Actuate the switch **at least up to the positive opening travel** shown in the travel diagrams on page 228. Actuate the switch **at least with the positive opening force**, reported in brackets below each article, next to the actuating force value.

⚠ **If not expressly indicated in this chapter, for correct installation and utilization of all articles see the instructions given in the operating manual and on pages 217 to 232.**

Product code extension **-EX5**

Category	Zone	EPL	Approvals
3D	22	Dc	Ⓔx II 3D Ex tc IIIC T80°C Dc
3G	2	Gc	Ⓔx II 3G Ex nC IIC T6 Gc

Electrical data

Thermal current (I_{th}):	10 A
Rated insulation voltage (U_i):	400 Vac/dc
Conditional short circuit current:	1000 A acc. to EN 60947-5-1
Protection against short circuits:	Type aM fuse 10 A 500 V
Pollution degree:	3

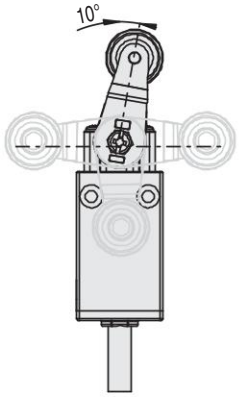
Utilization category
Alternating current: AC15 (50÷60 Hz)

Ue (V)	120	250	400
Ie (A)	6	4	3

Direct current: DC13

Ue (V)	24	125	250
Ie (A)	2.5	0.55	0.27

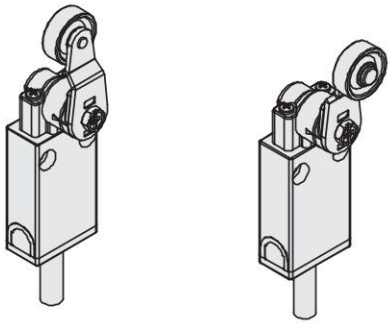
Adjustable levers



For these switches the lever can be adjusted in 10° steps over the entire 360° range. The positive movement transmission is always guaranteed thanks to the particular geometrical coupling between the lever and the revolving shaft as prescribed for safety applications by the German standard BG-GS-ET-15.

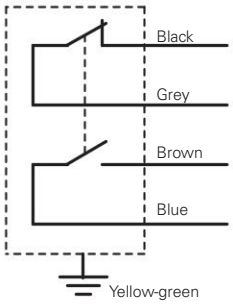
Reversible levers

With these switches, the lever can be secured in either the normal or reverse position, whereby positive coupling is retained.
In this way two different working planes of the lever are possible.



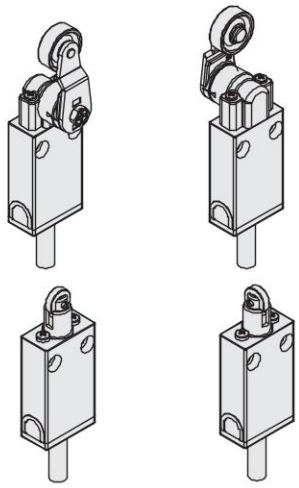
Internal wiring

1NO+1NC



Head with variable orientation

Depending on the model, it is possible to rotate the head in 90° or 180° steps.



Code structure

Attention! The feasibility of a code number does not mean the effective availability of a product. Please contact our sales office.

article | options | product code extension

FA 4501-2SHG-EX5

Housing	
FA	metal

Contact block	
45	1NO+1NC, snap action
46	1NO+1NC, slow action

Actuators	
01	short plunger
02	unidirectional lever
08	plunger
...	...

Connection type	
1	cable, length: 1 m
2	cable length: 2 m
...	...
0	cable, length: 10 m

Other lengths on request.

Output direction	
S	bottom output

Cable type	
H	PUR cable, halogen free

Contact type	
	silver contacts (standard)
G	silver contacts, 1 µm gold coating

ATEX approval	
-EX5	Ⓔx II 3D Ex tc IIIC T80°C Dc Ⓔx II 3G Ex nC IIC T6 Gc

Switches compliant with **ATEX** directive ⟨Ex⟩ / **FA** series

Contact type:
R = snap action
L = slow action

Category	Contact block					
			Unidirectional operation It does not switch → ← It switches	External gasket	Secured only by means of threaded head
3D 3G	45 R	FA 4501-2SH-EX5 → 1NO+1NC	FA 4502-2SH-EX5 → 1NO+1NC	FA 4508-2SH-EX5 → 1NO+1NC	FA 4510-2SH-EX5 → 1NO+1NC
3D 3G	46 L	FA 4601-2SH-EX5 → 1NO+1NC	FA 4602-2SH-EX5 → 1NO+1NC	FA 4608-2SH-EX5 → 1NO+1NC	FA 4610-2SH-EX5 → 1NO+1NC
Max. speed		0.5 m/s	0.5 m/s	0.5 m/s	0.5 m/s
Actuating force		10 N (25 N →)	5 N (25 N →)	10 N (25 N →)	10 N (25 N →)
Travel diagrams		page 228 - group 1	page 228 - group 2	page 228 - group 1	page 228 - group 1

Contact type:
R = snap action
L = slow action

Category	Contact block		Secured only by means of threaded head	Secured only by means of threaded head	External gasket	Steel roller, Ø 12 mm, with self-lubrication
3D 3G	45 R		FA 4511-2SH-EX5 → 1NO+1NC	FA 4512-2SH-EX5 → 1NO+1NC	FA 4513-2SH-EX5 → 1NO+1NC	FA 4515-2SH-EX5 → 1NO+1NC
3D 3G	46 L		FA 4611-2SH-EX5 → 1NO+1NC	FA 4612-2SH-EX5 → 1NO+1NC	FA 4613-2SH-EX5 → 1NO+1NC	FA 4615-2SH-EX5 → 1NO+1NC
Max. speed			0.1 m/s with cam at 30°	0.1 m/s with cam at 30°	0.5 m/s	0.1 m/s with cam at 30°
Actuating force			10 N (25 N →)	10 N (25 N →)	10 N (25 N →)	10 N (25 N →)
Travel diagrams			page 228 - group 1	page 228 - group 1	page 228 - group 1	page 228 - group 1

Contact type:
R = snap action
L = slow action

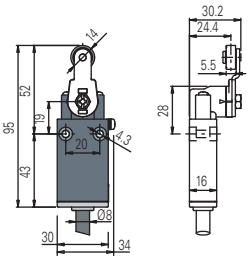
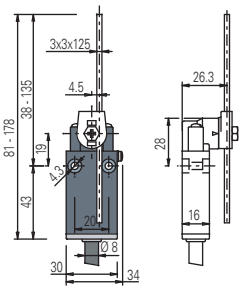
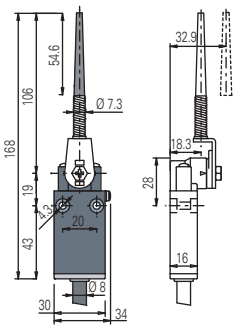
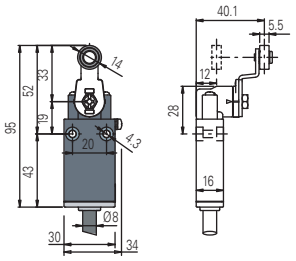
Category	Contact block		Steel roller, Ø 12 mm, with self-lubrication	External gasket	External gasket	With Ø 20 mm steel roller with self-lubrication on request
3D 3G	45 R		FA 4517-2SH-EX5 → 1NO+1NC	FA 4520-2SH-EX5 1NO+1NC	FA 4525-2SH-EX5 1NO+1NC	FA 4530-2SH-EX5 → 1NO+1NC
3D 3G	46 L		FA 4617-2SH-EX5 → 1NO+1NC	/	/	FA 4630-2SH-EX5 → 1NO+1NC
Max. speed			0.1 m/s with cam at 30°	1 m/s	1 m/s	1.5 m/s with cam at 30°
Actuating force			10 N (25 N →)	0.03 Nm	0.06 Nm	0.03 Nm (25 N →)
Travel diagrams			page 228 - group 1	page 228 - group 3	page 228 - group 3	page 228 - group 4

All values in the drawings are in mm

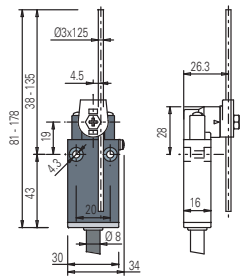
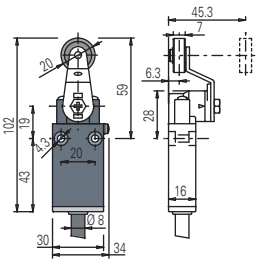
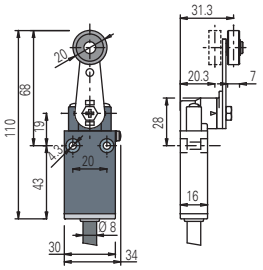
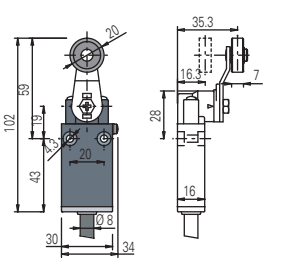
Accessories See page 195

→ The 2D and 3D files are available at **www.pizzato.com**

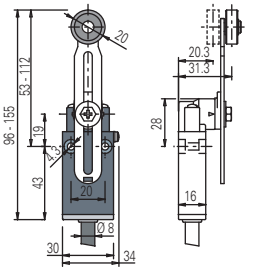
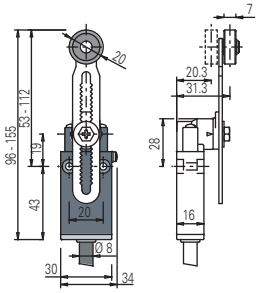
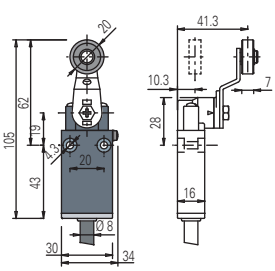
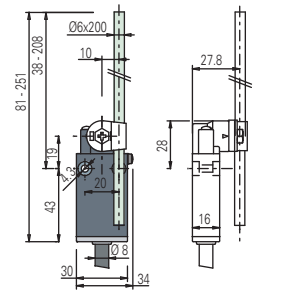
Contact type:
R = snap action
L = slow action

Category	Contact block		With steel roller with self-lubrication on request	Square rod, 3x3 mm		With steel roller with self-lubrication on request
						
3D 3G	45	R	FA 4531-2SH-EX5 → 1NO+1NC	FA 4533-2SH-EX5 1NO+1NC	FA 4534-2SH-EX5 1NO+1NC	FA 4540-2SH-EX5 → 1NO+1NC
	46	L	FA 4631-2SH-EX5 → 1NO+1NC	FA 4633-2SH-EX5 1NO+1NC	FA 4634-2SH-EX5 1NO+1NC	FA 4640-2SH-EX5 → 1NO+1NC
Max. speed			1.5 m/s with cam at 30°	1.5 m/s	1.5 m/s	1.5 m/s with cam at 30°
Actuating force			0.03 Nm (0.25 Nm →)	0.03 Nm	0.03 Nm	0.03 Nm (0.25 Nm →)
Travel diagrams			page 228 - group 4	page 228 - group 4	page 228 - group 4	page 228 - group 4

Contact type:
R = snap action
L = slow action

Category	Contact block		Stainless steel round rod, Ø 3 mm, with self-lubrication	With steel roller with self-lubrication on request	With steel roller with self-lubrication on request	With steel roller with self-lubrication on request
						
3D 3G	45	R	FA 4550-2SH-EX5 1NO+1NC	FA 4551-2SH-EX5 → 1NO+1NC	FA 4552-2SH-EX5 → 1NO+1NC	FA 4554-2SH-EX5 → 1NO+1NC
	46	L	FA 4650-2SH-EX5 1NO+1NC	FA 4651-2SH-EX5 → 1NO+1NC	FA 4652-2SH-EX5 → 1NO+1NC	FA 4654-2SH-EX5 → 1NO+1NC
Max. speed			1.5 m/s	1.5 m/s with cam at 30°	1.5 m/s with cam at 30°	1.5 m/s with cam at 30°
Actuating force			0.03 Nm	0.03 Nm (0.25 Nm →)	0.03 Nm (0.25 Nm →)	0.03 Nm (0.25 Nm →)
Travel diagrams			page 228 - group 4	page 228 - group 4	page 228 - group 4	page 228 - group 4

Contact type:
R = snap action
L = slow action

Category	Contact block		With steel roller with self-lubrication on request	With steel roller with self-lubrication on request	With steel roller with self-lubrication on request	Glass fibre rod
						
3D 3G	45	R	FA 4555-2SH-EX5 →(1) 1NO+1NC	FA 4556-2SH-EX5 → 1NO+1NC	FA 4557-2SH-EX5 → 1NO+1NC	FA 4569-2SH-EX5 1NO+1NC
	46	L	FA 4655-2SH-EX5 →(1) 1NO+1NC	FA 4656-2SH-EX5 → 1NO+1NC	FA 4657-2SH-EX5 → 1NO+1NC	FA 4669-2SH-EX5 1NO+1NC
Max. speed			1.5 m/s with cam at 30°	1.5 m/s with cam at 30°	1.5 m/s with cam at 30°	1.5 m/s
Actuating force			0.03 Nm (0.25 Nm →)	0.03 Nm (0.25 Nm →)	0.03 Nm (0.25 Nm →)	0.03 Nm
Travel diagrams			page 228 - group 4	page 228 - group 4	page 228 - group 4	page 228 - group 4

(1) Positive opening only with actuator set to max.

All values in the drawings are in mm

Accessories See page 195

→ The 2D and 3D files are available at **www.pizzato.com**

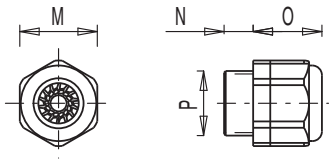
Accessories

ATEX cable gland, technopolymer



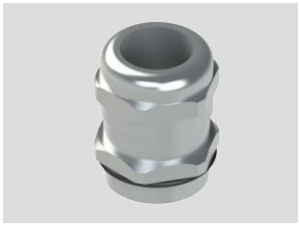
Technical data:

ATEX marking:	Ex II 2G Ex eb IIC Gb Ex II 1D Ex ta IIIC Da
Body and ring material:	Plastic PA V0 acc. to UL 94
Ambient temperature:	-20°C ... +85°C
Protection degree:	IP68 (≤ 10 bar)



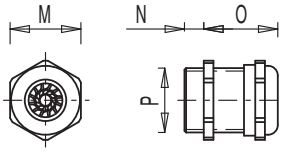
Article	Description	ATEX certificate number	⬡M	N	O	P
VF PBM20C6P-2GD	M20x1.5 technopolymer cable gland for multipolar cables Ø 6.5 … 12 mm	IECEx BVS 14.0020X BVS 14 ATEX E 025 X	24	9	24	M20x1.5

ATEX cable gland, metal



Technical data:

ATEX marking:	Ex II 2G Ex e II Ex II 1D Ex tD A20 IP68
Body and ring material:	Nickel-plated brass
Ambient temperature:	-20°C … +95°C
Protection degree:	IP68 (≤ 10 bar)



Article	Description	ATEX certificate number	⬡M	N	O	P
VF PBM20C6M-2GD	M20x1.5 brass cable gland for multipolar cables Ø 6 … 12 mm	KEMA 99ATEX6971 X	24	9	24	M20x1.5

All values in the drawings are in mm

Accessories See page 195

→ The 2D and 3D files are available at **www.pizzato.com**

Notes