

Description



Pizzato Elettrica position switches are daily installed in every type of industrial machinery all over the world for applications in the sector of wood, metal, plastic, automotive, packaging, lifting, medicinal, naval, etc.

In order to be used in a such wide variety of sectors and countries, Pizzato Elettrica position switches are made to be assembled in a lot of configurations thanks to the various body shapes, dozens of contact blocks, hundreds of actuators and materials, forces, assembling versions.

The product range that Pizzato Elettrica can offer in the field of position switches is one of the widest in the world. Moreover, the use of high quality materials, high reliability technologies as twin bridge contact blocks and the protection degree IP67, make this range of position switches one of the most technologically evolved.

Protection degree IP67

IP67

These devices are designed to be used in the toughest environmental conditions and they pass the IP67 immersion test acc. to

IEC 60529. They can therefore be used in all environments where the maximum protection of the housing is required.

Extended temperature range

-40°C

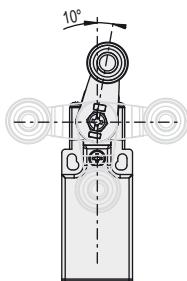
This range of switches is also available in a special version with an ambient operating temperature range of -40°C to +80°C.

They can be used for applications in cold stores, sterilisers and other devices with low temperature environments. Special materials that have been used to realize these versions, maintain unchanged their features also in these conditions, widening the installation possibilities.

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

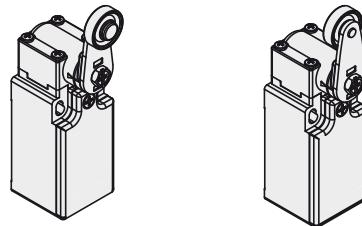
between the lever and the revolving shaft as prescribed for safety applications by the German standard BG-GS-ET-15.



Overturning levers

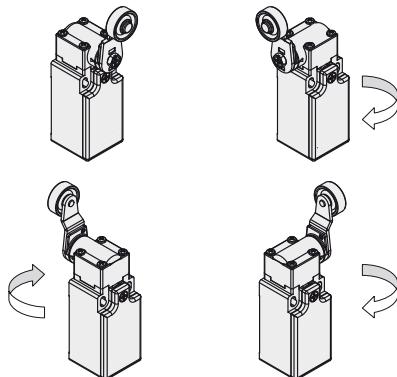
For switches with swivelling lever the lever can be fastened straight or reversed, maintaining the positive coupling.

This makes it possible to have two different work plans of the lever.



Orientable heads

In all switches, it is possible to rotate the head in 90° steps.



Adjustable safety lever

The code 56 adjustable lever (and variants) has a notching that prevents the sliding also in case the retaining screw becomes loose.

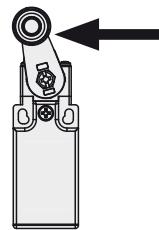
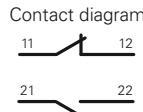
The particular positive locking makes it suitable for safety applications.



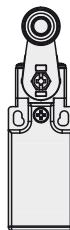
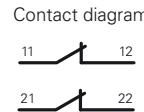
Independent contacts

The contact block 16 has two NC contacts, **both with positive opening** activated independently according to the operating direction of the lever.

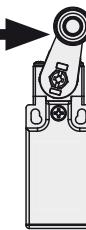
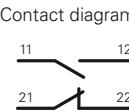
Lever turned to left



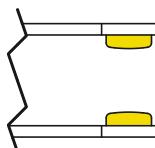
Lever not turned



Lever turned to right



Gold-plated contacts



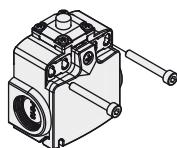
The contact blocks of these devices can be supplied gold-plated upon request. It is ideal for all applications with low voltages or currents and it ensures greater contact reliability. The high-thickness coating > 1 micron ensures the mechanical endurance of the coating over time.

Contact blocks



Contact blocks with captive screws, finger protection, twin bridge contacts and double interruption for a higher contact reliability. Available in multiple variants with shifted activation strokes, which can be simultaneous or overlapping. They are suitable for different kinds of applications.

Fixing plates



The technopolymer switches of the FX series come with two robust fixing plates. This solution makes it possible to avoid the underhead washer and ensures that the fixing of the switch is more stable over time.

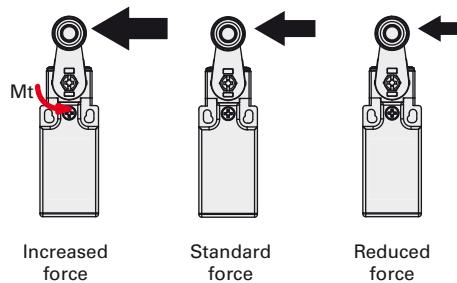
Stainless steel external metallic parts

AISI 304

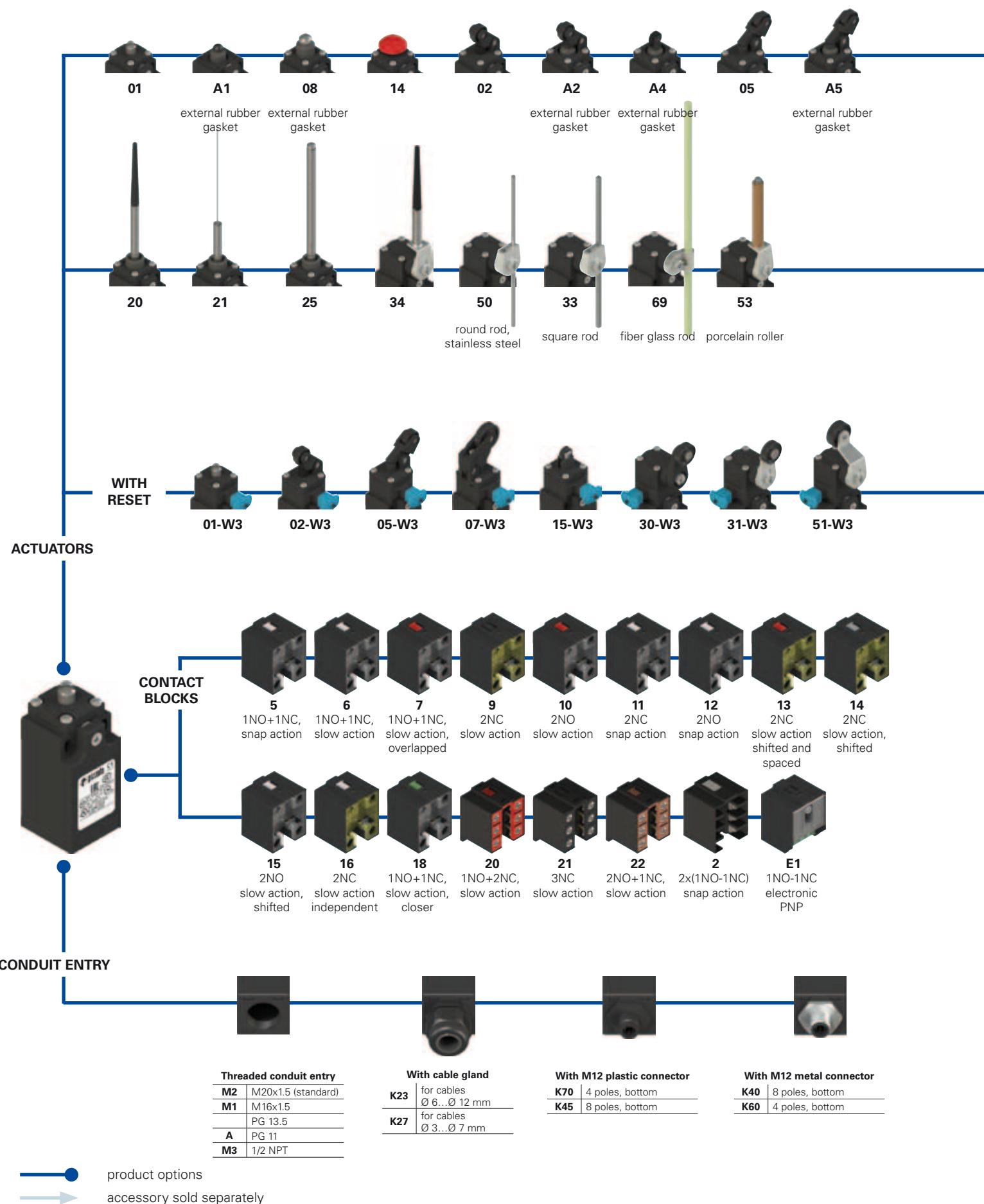
Upon request some of these devices can be supplied with stainless steel external metallic parts instead of the usual zinc-plated steel. It is an ideal solution for environments with the presence of aggressive chemical agents or saline mist. See page 219.

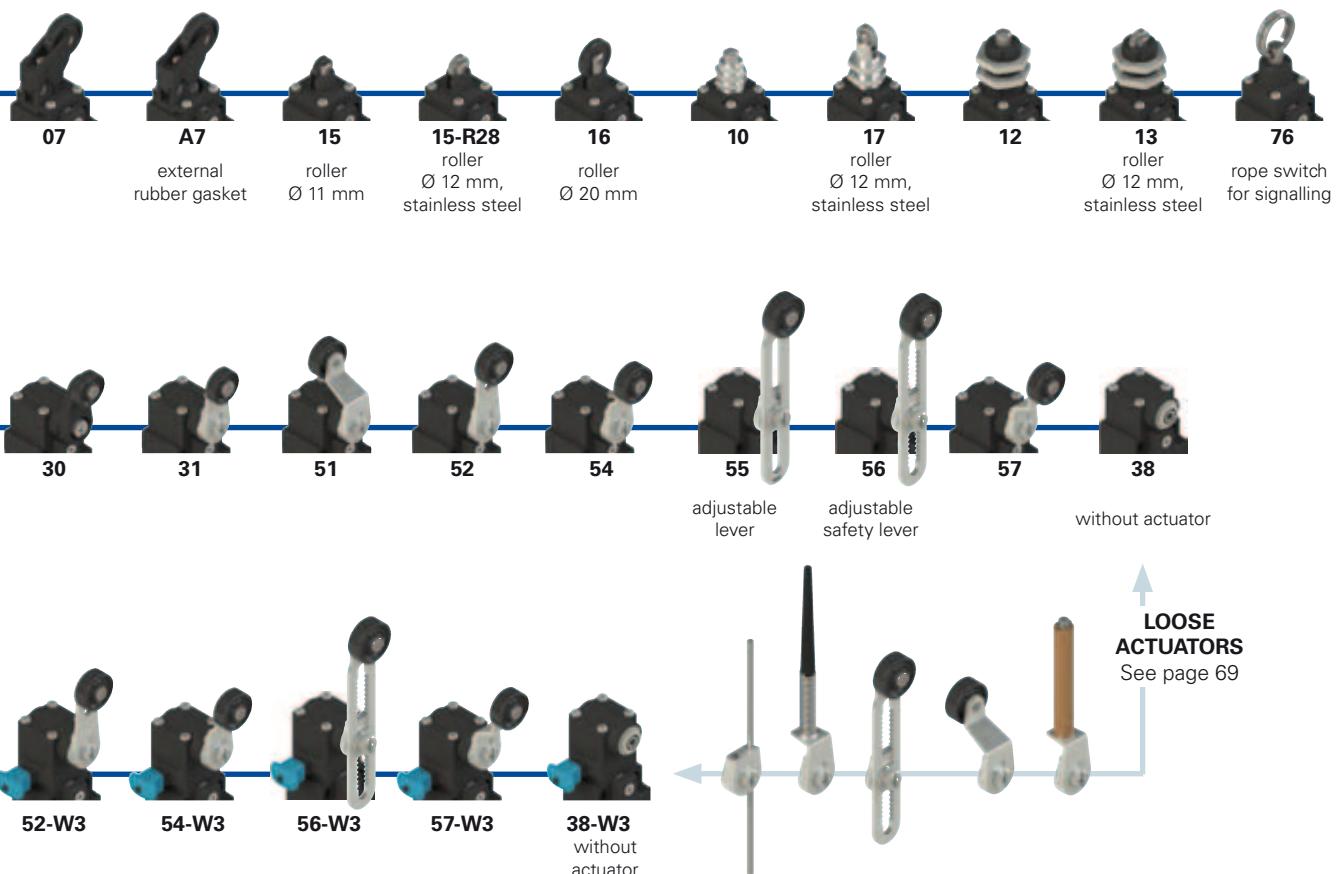
Increased or reduced actuating force

For actuators with swivelling levers, versions with increased or reduced actuating force are available on request. This feature allows selection of a switch perfectly tailored for the application. For further information contact the Technical Department.



Selection diagram





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 options
FR 502-W3XGM2K70R23T6

Housing

FR technopolymer, one conduit entry

Contact blocks

- 5** 1NO+1NC, snap action
- 6** 1NO+1NC, slow action
- 7** 1NO+1NC, slow action, overlapped
- ...

Actuators

- 01** short plunger
- 02** roller lever
- 05** angled roller lever
- ...

Reset

- without reset (standard)
- W3** simultaneous reset
- W4** simultaneous reset, increased force

External metallic parts

- zinc-plated steel (standard)
- X** stainless steel

Ambient temperature

- 25°C ... +80°C (standard)
- T6** -40°C ... +80°C

Pre-installed cable glands or connectors

- without cable gland or connector (standard)
- K23** cable gland for cables Ø 6...Ø 12 mm
- K70** M12 plastic connector, 4 poles

Please contact our technical service for the complete list of possible combinations.

Threaded conduit entry

- M2** M20x1.5 (standard)
- M1** M16x1.5
- A** PG 11
- M3** 1/2 NPT

Rollers

- standard roller
- R28** stainless steel, Ø 12 mm (for actuators A4, 15)
- R23** stainless steel, Ø 14 mm (for actuators A2, 02, A5, 05, 30, 31, 51, 52, 54, 55, 56, 57)
- R24** stainless steel, Ø 20 mm (for actuators 30, 31, 51, 52, 54, 55, 56, 57)
- R25** technopolymer, Ø 35 mm (for actuators 30, 31, 51, 52, 54, 55, 56, 57)
- R5** rubber, Ø 40 mm (for actuators 30, 31, 51, 52, 54, 55, 56, 57)
- R26** rubber, Ø 50 mm (for actuators 51, 52, 54, 55, 56, 57)
- R27** rubber, protruding, Ø 50 mm (for actuators 55, 56)

Contact type

- silver contacts (standard)
- G** silver contacts with 1 µm gold coating (not for contact block 2)



Technical data

Housing

Housing made of fiber glass reinforced technopolymer, self-extinguishing, shock-proof and with double insulation:
 M20x1.5 (standard)
 One threaded conduit entry:
 Protection degree: IP67 according to EN 60529 with cable gland having equal or higher protection degree

General data

Ambient temperature:	-25°C ... +80°C
Max. actuation frequency:	3600 operating cycles ¹ /hour
Mechanical endurance:	20 million operating cycles ¹
Mounting position:	any
Safety parameters:	40,000,000 for NC contacts
B _{10d} :	Mechanical interlock, not coded: type 1 according to EN ISO 14119
Tightening torques for installation:	see pages 235-246

(1) One operation cycle means two movements, one to close and one to open contacts, as defined in EN 60947-5-1.

Main features

- Technopolymer housing, one conduit entry
- Protection degree IP67
- 17 contact blocks available
- 48 actuators available
- Versions with stainless steel external parts
- Versions with M12 connector
- Versions with gold-plated silver contacts

Markings and quality marks:



IMQ approval: EG610
 UL approval: E131787
 CCC approval: 2007010305230013
 EAC approval: RU C-IT ДМ94.В.01024

Cable cross section (flexible copper strands)

Contact blocks 20, 21, 22, 33, 34:	min. 1 x 0.34 mm ²	(1 x AWG 22)
	max. 2 x 1.5 mm ²	(2 x AWG 16)
Contact block 5, 6, 7, 9, 10, 11, 12, 13, 14, 15, 16, 18:	min. 1 x 0.5 mm ²	(1 x AWG 20)
	max. 2 x 2.5 mm ²	(2 x AWG 14)
Contact block 2:	min. 1 x 0.5 mm ²	(1 x AWG 20)
	max. 2 x 1.5 mm ²	(2 x AWG 16)

In conformity with standards:

IEC 60947-5-1, EN 60947-5-1, EN 60947-1, EN 50047, IEC 60204-1, EN 60204-1, EN ISO 14119, EN ISO 12100, IEC 60529, EN 60529, UL 508, CSA 22.2 No.14

Approvals:

IEC 60947-5-1, UL 508, CSA 22.2 No.14, GB14048.5-2001.

In conformity with the requirements of:

Low Voltage Directive 2006/95/EC, Machinery Directive 2006/42/EC and EMC Directive 2004/108/EC.

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 aside the product code. Always connect the safety circuit to the **NC contacts** (normally closed contacts: 11-12, 21-22 or 31-32) as stated in **standard EN 60947-5-1, encl. K, par. 2**. Actuate the switch **at least up to the positive opening travel** shown in the travel diagrams on page 240. Operate the switch **at least with the positive opening force**, indicated between brackets below each article, aside the minimum force value.

If not expressly indicated in this chapter, for correct installation and utilization of all articles see chapter utilization requirements from page 235 to page 246.

Electrical data

Utilization category

without connector	Thermal current (I _{th}):	10 A	Alternating current: AC15 (50÷60 Hz)
	Rated insulation voltage (U _i):	500 Vac 600 Vdc	Ue (V) 250 400 500
		400 Vac 500 Vdc (contact blocks 2, 11, 12, 20, 21, 22, 33, 34)	Ie (A) 6 4 1
	Rated impulse withstand voltage (U _{imp}):	6 kV	Direct current: DC13
with connector M12, 4 poles	Conditional short circuit current:	4 kV (contact blocks 20, 21, 22, 33, 34)	Ue (V) 24 125 250
	Protection against short circuits:	1000 A according to EN 60947-5-1	Ie (A) 6 1.1 0.4
	Pollution degree:	type aM fuse 10 A 500 V	
		3	
with connector M12, 8 poles	Thermal current (I _{th}):	4 A	Alternating current: AC15 (50÷60 Hz)
	Rated insulation voltage (U _i):	250 Vac 300 Vdc	Ue (V) 24 120 250
	Protection against short circuits:	type gG fuse 4 A 500 V	Ie (A) 4 4 4
	Pollution degree:	3	Direct current: DC13
	Thermal current (I _{th}):	2 A	Ue (V) 24 125 250
	Rated insulation voltage (U _i):	30 Vac 36 Vdc	Ie (A) 4 1.1 0.4
	Protection against short circuits:	type gG fuse 2 A 500 V	Alternating current: AC15 (50÷60 Hz)
	Pollution degree:	3	Ue (V) 24



Characteristics approved by IMQ

Rated insulation voltage (Ui): 500 Vac

400 Vac (for contact blocks 2, 11, 12, 20, 21, 22, 33, 34)

Conventional free air thermal current (Ith): 10 A

Protection against short circuits: type aM fuse 10 A 500 V

Rated impulse withstand voltage (U_{imp}): 6 kV

4 kV (for contact blocks 20, 21, 22, 33, 34)

Protection degree of the housing: IP67

MV terminals (screw terminals)

Pollution degree 3

Utilization category: AC15

Operating voltage (Ue): 400 Vac (50 Hz)

Operating current (Ie): 3 A

Forms of the contact element: Za, Zb, Za+Za, Y+Y, X+X, Y+Y+X, Y+Y+Y, Y+X+X

Positive opening of contacts on contact blocks 5, 6, 7, 9, 11, 13, 14, 16, 18, 20, 21, 22, 33, 34

In conformity with standards: EN 60947-1, EN 60947-5-1+ A1:2009, fundamental requirements of the Low Voltage Directive 2006/95/EC.

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

Characteristics approved by UL

Utilization categories Q300 (69 VA, 125 ... 250 Vdc)

A600 (720 VA, 120 ... 600 Vac)

Data of housing type 1, 4X "indoor use only", 12, 13

For all contact blocks except 2 and 3 use 60 or 75°C copper (Cu) conductor, rigid or flexible, wire size AWG 12/14. Terminal tightening torque of 7.1 lb in (0.8 Nm).

For contact blocks 2 and 3 use 60 or 75 °C copper (Cu) conductor, rigid or flexible, wire size AWG 14. Terminal tightening torque of 12 lb in (1.4 Nm).

In conformity with standard: UL 508, CSA 22.2 No.14

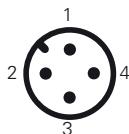
Please contact our technical service for the list of approved products.

Connection diagram for M12 connectors

Contact block 2 1NO+NC+1NO-1NC	Contact block 5 1NO+1NC	Contact block 6 1NO+1NC	Contact block 7 1NO+1NC	Contact block 9 2NC	Contact block 10 2NO	Contact block 11 2NC	Contact block 12 2NO	Contact block 13 2NC

Contact block 14 2NC	Contact block 15 2NO	Contact block 16 2NC	Contact block 18 1NO+1NC	Contact block 20 2NC+1NO	Contact block 21 3NC	Contact block 22 1NC+2NO	Contact block 33 1NC+1NO	Contact block 34 2NC

Contact block E1 PNP



M12 connector, 4 poles

Contacts	Pin no.
+	1
-	3
NC	2
NO	4

Position switches FR series

Contact type:

- R** = snap action
- L** = slow action
- LO** = slow action overlapped
- LS** = slow action shifted
- LV** = slow action shifted and spaced
- LI** = slow action independent
- LA** = slow action closer
- ↗** = electronic PNP

		With external rubber gasket	With stainless steel roller on request	With external rubber gasket
Contact blocks				
5 R	FR 501-M2 ⊕ 1NO+1NC	FR 5A1-M2 ⊕ 1NO+1NC	FR 502-M2 ⊕ 1NO+1NC	FR 5A2-M2 ⊕ 1NO+1NC
6 L	FR 601-M2 ⊕ 1NO+1NC	FR 6A1-M2 ⊕ 1NO+1NC	FR 602-M2 ⊕ 1NO+1NC	FR 6A2-M2 ⊕ 1NO+1NC
7 LO	FR 701-M2 ⊕ 1NO+1NC	FR 7A1-M2 ⊕ 1NO+1NC	FR 702-M2 ⊕ 1NO+1NC	FR 7A2-M2 ⊕ 1NO+1NC
9 L	FR 901-M2 ⊕ 2NC	FR 9A1-M2 ⊕ 2NC	FR 902-M2 ⊕ 2NC	FR 9A2-M2 ⊕ 2NC
10 L	FR 1001-M2 2NO	FR 10A1-M2 2NO	FR 1002-M2 2NO	FR 10A2-M2 2NO
11 R	FR 1101-M2 ⊕ 2NC	FR 11A1-M2 ⊕ 2NC	FR 1102-M2 ⊕ 2NC	FR 11A2-M2 ⊕ 2NC
12 R	FR 1201-M2 2NO	FR 12A1-M2 2NO	FR 1202-M2 2NO	FR 12A2-M2 2NO
13 LV	FR 1301-M2 ⊕ 2NC	FR 13A1-M2 ⊕ 2NC	FR 1302-M2 ⊕ 2NC	FR 13A2-M2 ⊕ 2NC
14 LS	FR 1401-M2 ⊕ 2NC	FR 14A1-M2 ⊕ 2NC	FR 1402-M2 ⊕ 2NC	FR 14A2-M2 ⊕ 2NC
15 LS	FR 1501-M2 2NO	FR 15A1-M2 2NO	FR 1502-M2 2NO	FR 15A2-M2 2NO
18 LA	FR 1801-M2 ⊕ 1NO+1NC	FR 18A1-M2 ⊕ 1NO+1NC	FR 1802-M2 ⊕ 1NO+1NC	FR 18A2-M2 ⊕ 1NO+1NC
20 L	FR 2001-M2 ⊕ 1NO+2NC	FR 20A1-M2 ⊕ 1NO+2NC	FR 2002-M2 ⊕ 1NO+2NC	FR 20A2-M2 ⊕ 1NO+2NC
21 L	FR 2101-M2 ⊕ 3NC	FR 21A1-M2 ⊕ 3NC	FR 2102-M2 ⊕ 3NC	FR 21A2-M2 ⊕ 3NC
22 L	FR 2201-M2 ⊕ 2NO+1NC	FR 22A1-M2 ⊕ 2NO+1NC	FR 2202-M2 ⊕ 2NO+1NC	FR 22A2-M2 ⊕ 2NO+1NC
2 R	FR 201-M2 2x(1NO-1NC)		FR 202-M2 2x(1NO-1NC)	FR 2A2-M2 2x(1NO-1NC)
E1 ↗	FR E101-M2 1NO-1NC	FR E1A1-M2 1NO-1NC	FR E102-M2 1NO-1NC	FR E1A2-M2 1NO-1NC
Max. speed	page 239 - type 4	page 239 - type 4	page 239 - type 3	page 239 - type 3
Min. force	8 N (25 N ⊕)	6 N (25 N ⊕)	6 N (25 N ⊕)	4.3 N (25 N ⊕)
Travel diagrams	page 240 - group 1	page 240 - group 1	page 240 - group 2	page 240 - group 2

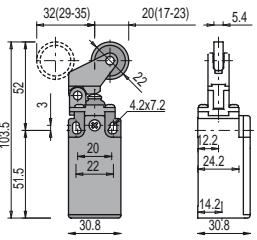
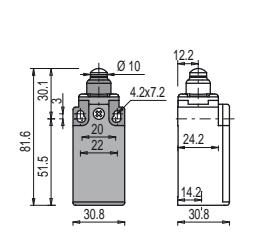
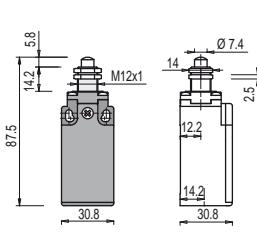
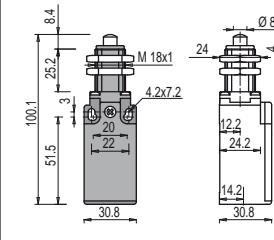
	With external rubber gasket	With stainless steel roller on request	With external rubber gasket	With stainless steel roller on request
Contact blocks				
5 R	FR 5A4-M2 ⊕ 1NO+1NC	FR 505-M2 ⊕ 1NO+1NC	FR 5A5-M2 ⊕ 1NO+1NC	FR 507-M2 ⊕ 1NO+1NC
6 L	FR 6A4-M2 ⊕ 1NO+1NC	FR 605-M2 ⊕ 1NO+1NC	FR 6A5-M2 ⊕ 1NO+1NC	FR 607-M2 ⊕ 1NO+1NC
7 LO	FR 7A4-M2 ⊕ 1NO+1NC	FR 705-M2 ⊕ 1NO+1NC	FR 7A5-M2 ⊕ 1NO+1NC	FR 707-M2 ⊕ 1NO+1NC
9 L	FR 9A4-M2 ⊕ 2NC	FR 905-M2 ⊕ 2NC	FR 9A5-M2 ⊕ 2NC	FR 907-M2 ⊕ 2NC
10 L	FR 10A4-M2 2NO	FR 1005-M2 2NO	FR 10A5-M2 2NO	FR 1007-M2 2NO
11 R	FR 11A4-M2 ⊕ 2NC	FR 1105-M2 ⊕ 2NC	FR 11A5-M2 ⊕ 2NC	FR 1107-M2 ⊕ 2NC
12 R	FR 12A4-M2 2NO	FR 1205-M2 2NO	FR 12A5-M2 2NO	FR 1207-M2 2NO
13 LV	FR 13A4-M2 ⊕ 2NC	FR 1305-M2 ⊕ 2NC	FR 13A5-M2 ⊕ 2NC	FR 1307-M2 ⊕ 2NC
14 LS	FR 14A4-M2 ⊕ 2NC	FR 1405-M2 ⊕ 2NC	FR 14A5-M2 ⊕ 2NC	FR 1407-M2 ⊕ 2NC
15 LS	FR 15A4-M2 2NO	FR 1505-M2 2NO	FR 15A5-M2 2NO	FR 1507-M2 2NO
18 LA	FR 18A4-M2 ⊕ 1NO+1NC	FR 1805-M2 ⊕ 1NO+1NC	FR 18A5-M2 ⊕ 1NO+1NC	FR 1807-M2 ⊕ 1NO+1NC
20 L	FR 20A4-M2 ⊕ 1NO+2NC	FR 2005-M2 ⊕ 1NO+2NC	FR 20A5-M2 ⊕ 1NO+2NC	FR 2007-M2 ⊕ 1NO+2NC
21 L	FR 21A4-M2 ⊕ 3NC	FR 2105-M2 ⊕ 3NC	FR 21A5-M2 ⊕ 3NC	FR 2107-M2 ⊕ 3NC
22 L	FR 22A4-M2 ⊕ 2NO+1NC	FR 2205-M2 ⊕ 2NO+1NC	FR 22A5-M2 ⊕ 2NO+1NC	FR 2207-M2 ⊕ 2NO+1NC
2 R	FR 205-M2 2x(1NO-1NC)	FR 205-M2 2x(1NO-1NC)	FR 2A5-M2 2x(1NO-1NC)	FR 207-M2 2x(1NO-1NC)
E1 ↗	FR E1A4-M2 1NO-1NC	FR E105-M2 1NO-1NC	FR E1A5-M2 1NO-1NC	FR E107-M2 1NO-1NC
Max. speed	page 239 - type 5	page 239 - type 3	page 239 - type 3	page 239 - type 3
Min. force	6 N (25 N ⊕)	6 N (25 N ⊕)	4.3 N (25 N ⊕)	4 N (25 N ⊕)
Travel diagrams	page 240 - group 1	page 240 - group 2	page 240 - group 2	page 240 - group 3

All measures in the drawings are in mm

Items with code on green background are stock items

Accessories See page 225

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

Contact type:	With external rubber gasket	With external rubber gasket	Fixed only by threaded head in vertical position	
[R] = snap action [L] = slow action [LO] = slow action overlapped [LS] = slow action shifted [LV] = slow action shifted and spaced [LI] = slow action independent [LA] = slow action closer [A] = electronic PNP				
Contact blocks				
5 [R] FR 5A7-M2 (NO+1NC)	FR 508-M2 (NO+1NC)	FR 510-M2 (NO+1NC)	FR 512-M2 (NO+1NC)	
6 [L] FR 6A7-M2 (NO+1NC)	FR 608-M2 (NO+1NC)	FR 610-M2 (NO+1NC)	FR 612-M2 (NO+1NC)	
7 [LO] FR 7A7-M2 (NO+1NC)	FR 708-M2 (NO+1NC)	FR 710-M2 (NO+1NC)	FR 712-M2 (NO+1NC)	
9 [L] FR 9A7-M2 (2NC)	FR 908-M2 (2NC)	FR 910-M2 (2NC)	FR 912-M2 (2NC)	
10 [L] FR 10A7-M2 (2NO)	FR 1008-M2 (2NO)	FR 1010-M2 (2NO)	FR 1012-M2 (2NO)	
11 [R] FR 11A7-M2 (2NC)	FR 1108-M2 (2NC)	FR 1110-M2 (2NC)	FR 1112-M2 (2NC)	
12 [R] FR 12A7-M2 (2NO)	FR 1208-M2 (2NO)	FR 1210-M2 (2NO)	FR 1212-M2 (2NO)	
13 [LV] FR 13A7-M2 (2NC)	FR 1308-M2 (2NC)	FR 1310-M2 (2NC)	FR 1312-M2 (2NC)	
14 [LS] FR 14A7-M2 (2NC)	FR 1408-M2 (2NC)	FR 1410-M2 (2NC)	FR 1412-M2 (2NC)	
15 [LS] FR 15A7-M2 (2NO)	FR 1508-M2 (2NO)	FR 1510-M2 (2NO)	FR 1512-M2 (2NO)	
18 [LA] FR 18A7-M2 (NO+1NC)	FR 1808-M2 (NO+1NC)	FR 1810-M2 (NO+1NC)	FR 1812-M2 (NO+1NC)	
20 [L] FR 20A7-M2 (NO+2NC)	FR 2008-M2 (NO+2NC)	FR 2010-M2 (NO+2NC)	FR 2012-M2 (NO+2NC)	
21 [L] FR 21A7-M2 (3NC)	FR 2108-M2 (3NC)	FR 2110-M2 (3NC)	FR 2112-M2 (3NC)	
22 [L] FR 22A7-M2 (2NO+1NC)	FR 2208-M2 (2NO+1NC)	FR 2210-M2 (2NO+1NC)	FR 2212-M2 (2NO+1NC)	
2 [R] FR 2A7-M2 (2x(1NO-1NC))	FR 208-M2 (2x(1NO-1NC))	FR 210-M2 (2x(1NO-1NC))	FR 212-M2 (2x(1NO-1NC))	
E1 [A] FR E1A7-M2 (1NO-1NC)	FR E108-M2 (1NO-1NC)	FR E110-M2 (1NO-1NC)	FR E112-M2 (1NO-1NC)	
Max. speed	page 239 - type 3	page 239 - type 4	page 239 - type 4	page 239 - type 4
Min. force	3 N (25 N)	8 N (25 N)	8 N (25 N)	8 N (25 N)
Travel diagrams	page 240 - group 3	page 240 - group 1	page 240 - group 1	page 240 - group 1

Contact blocks	Roller, Ø 11 mm, technopolymer	Roller, Ø 12 mm, stainless steel
5 [R] FR 513-M2 (NO+1NC)	FR 514-M2 (NO+1NC)	FR 515-M2 (NO+1NC)
6 [L] FR 613-M2 (NO+1NC)	FR 614-M2 (NO+1NC)	FR 615-M2 (NO+1NC)
7 [LO] FR 713-M2 (NO+1NC)	FR 714-M2 (NO+1NC)	FR 715-M2 (NO+1NC)
9 [L] FR 913-M2 (2NC)	FR 914-M2 (2NC)	FR 915-M2 (2NC)
10 [L] FR 1013-M2 (2NO)	FR 1014-M2 (2NO)	FR 1015-M2 (2NO)
11 [R] FR 1113-M2 (2NC)	FR 1114-M2 (2NC)	FR 1115-M2 (2NC)
12 [R] FR 1213-M2 (2NO)	FR 1214-M2 (2NO)	FR 1215-M2 (2NO)
13 [LV] FR 1313-M2 (2NC)	FR 1314-M2 (2NC)	FR 1315-M2 (2NC)
14 [LS] FR 1413-M2 (2NC)	FR 1414-M2 (2NC)	FR 1415-M2 (2NC)
15 [LS] FR 1513-M2 (2NO)	FR 1514-M2 (2NO)	FR 1515-M2 (2NO)
18 [LA] FR 1813-M2 (NO+1NC)	FR 1814-M2 (NO+1NC)	FR 1815-M2 (NO+1NC)
20 [L] FR 2013-M2 (NO+2NC)	FR 2014-M2 (NO+2NC)	FR 2015-M2 (NO+2NC)
21 [L] FR 2113-M2 (3NC)	FR 2114-M2 (3NC)	FR 2115-M2 (3NC)
22 [L] FR 2213-M2 (2NO+1NC)	FR 2214-M2 (2NO+1NC)	FR 2215-M2 (2NO+1NC)
2 [R] FR 213-M2 (2x(1NO-1NC))	FR 214-M2 (2x(1NO-1NC))	FR 215-M2 (2x(1NO-1NC))
E1 [A] FR E113-M2 (1NO-1NC)	FR E114-M2 (1NO-1NC)	FR E115-M2 (1NO-1NC)
Max. speed	page 239 - type 2	page 239 - type 2
Min. force	8 N (25 N)	8 N (25 N)
Travel diagrams	page 240 - group 1	page 240 - group 1

All measures in the drawings are in mm

Items with code on green background are stock items

Accessories See page 225

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

Position switches FR series

Contact type:

- [R] = snap action
- [L] = slow action
- [LO] = slow action overlapped
- [LS] = slow action shifted
- [LV] = slow action shifted and spaced
- [LI] = slow action independent
- [LA] = slow action closer
- [E] = electronic PNP

Contact blocks

5 [R]	FR 516-M2	1NO+1NC	FR 517-M2	1NO+1NC	FR 520-M2	1NO+1NC	FR 521-M2	1NO+1NC
6 [L]	FR 616-M2	1NO+1NC	FR 617-M2	1NO+1NC				
7 [LO]	FR 716-M2	1NO+1NC	FR 717-M2	1NO+1NC				
9 [L]	FR 916-M2	2NC	FR 917-M2	2NC				
10 [L]	FR 1016-M2	2NO	FR 1017-M2	2NO	FR 1020-M2	2NO	FR 1021-M2	2NO
11 [R]	FR 1116-M2	2NC	FR 1117-M2	2NC				
12 [R]	FR 1216-M2	2NO	FR 1217-M2	2NO	FR 1220-M2	2NO	FR 1221-M2	2NO
13 [LV]	FR 1316-M2	2NC	FR 1317-M2	2NC				
14 [LS]	FR 1416-M2	2NC	FR 1417-M2	2NC				
15 [LS]	FR 1516-M2	2NO	FR 1517-M2	2NO				
18 [LA]	FR 1816-M2	1NO+1NC	FR 1817-M2	1NO+1NC	FR 1820-M2	1NO+1NC	FR 1821-M2	1NO+1NC
20 [L]	FR 2016-M2	1NO+2NC	FR 2017-M2	1NO+2NC	FR 2020-M2	1NO+2NC	FR 2021-M2	1NO+2NC
21 [L]	FR 2116-M2	3NC	FR 2117-M2	3NC	FR 2120-M2	3NC	FR 2121-M2	3NC
22 [L]	FR 2216-M2	2NO+1NC	FR 2217-M2	2NO+1NC	FR 2220-M2	2NO+1NC	FR 2221-M2	2NO+1NC
2 [R]	FR 216-M2	2x(1NO-1NC)	FR 217-M2	2x(1NO-1NC)	FR 220-M2	2x(1NO-1NC)	FR 221-M2	2x(1NO-1NC)
E1 [E]	FR E116-M2	1NO-1NC	FR E117-M2	1NO-1NC	FR E120-M2	1NO-1NC	FR E121-M2	1NO-1NC
Max. speed	page 239 - type 2	page 239 - type 2			1 m/s		1 m/s	
Min. force	8 N (25 N)	8 N (25 N)			0.07 Nm		0.07 Nm	
Travel diagrams	page 240 - group 1	page 240 - group 1			page 240 - group 4		page 240 - group 4	

With external rubber gasket		With Ø 20 mm stainless steel roller on request	Other rollers available. See on page 70	Square rod, 3x3 mm
Contact blocks				
5 [R]	FR 525-M2	1NO+1NC	FR 530-M2	1NO+1NC
6 [L]			FR 630-M2	1NO+1NC
7 [LO]			FR 730-M2	1NO+1NC
9 [L]			FR 930-M2	2NC
10 [L]	FR 1025-M2	2NO	FR 1030-M2	2NO
11 [R]			FR 1031-M2	2NO
12 [R]	FR 1225-M2	2NO	FR 1130-M2	2NC
13 [LV]			FR 1131-M2	2NC
14 [LS]			FR 1230-M2	2NO
15 [LS]			FR 1330-M2	2NC
16 [LI]			FR 1430-M2	2NC
18 [LA]	FR 1825-M2	1NO+1NC	FR 1530-M2	2NO
20 [L]	FR 2025-M2	1NO+2NC	FR 1630-M2	2NC
21 [L]	FR 2125-M2	3NC	FR 1830-M2	1NO+1NC
22 [L]	FR 2225-M2	2NO+1NC	FR 2030-M2	1NO+2NC
2 [R]	FR 225-M2	2x(1NO-1NC)	FR 2130-M2	3NC
E1 [E]	FR E125-M2	1NO-1NC	FR 2230-M2	2NO+1NC
Max. speed	1 m/s	page 239 - type 1	page 239 - type 1	1.5 m/s
Min. force	0.12 Nm	0.06 Nm (0.25 N)	0.06 Nm (0.25 N)	0.06 Nm
Travel diagrams	page 240 - group 4	page 240 - group 5	page 240 - group 5	page 240 - group 5

All measures in the drawings are in mm

Items with code on green background are stock items

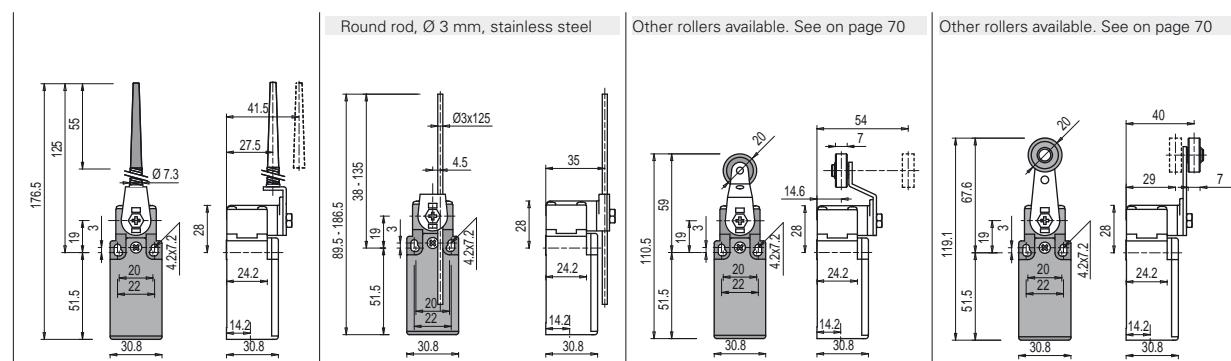
Accessories See page 225

The 2D/3D files are available at www.pizzato.com



Contact type:

- [R] = snap action
 [L] = slow action
 [LO] = slow action overlapped
 [LS] = slow action shifted
 [LV] = slow action shifted and spaced
 [LI] = slow action independent
 [LA] = slow action closer
 [A] = electronic PNP



Contact blocks

5 [R]	FR 534-M2	1NO+1NC	FR 550-M2	1NO+1NC	FR 551-M2	1NO+1NC	FR 552-M2	1NO+1NC
6 [L]	FR 634-M2	1NO+1NC	FR 650-M2	1NO+1NC	FR 651-M2	1NO+1NC	FR 652-M2	1NO+1NC
7 [LO]	FR 734-M2	1NO+1NC	FR 750-M2	1NO+1NC	FR 751-M2	1NO+1NC	FR 752-M2	1NO+1NC
9 [L]	FR 934-M2	2NC	FR 950-M2	2NC	FR 951-M2	2NC	FR 952-M2	2NC
10 [L]	FR 1034-M2	2NO	FR 1050-M2	2NO	FR 1051-M2	2NO	FR 1052-M2	2NO
11 [R]	FR 1134-M2	2NC	FR 1150-M2	2NC	FR 1151-M2	2NC	FR 1152-M2	2NC
12 [R]	FR 1234-M2	2NO	FR 1250-M2	2NO	FR 1251-M2	2NO	FR 1252-M2	2NO
13 [LV]	FR 1334-M2	2NC	FR 1350-M2	2NC	FR 1351-M2	2NC	FR 1352-M2	2NC
14 [LS]	FR 1434-M2	2NC	FR 1450-M2	2NC	FR 1451-M2	2NC	FR 1452-M2	2NC
15 [LS]	FR 1534-M2	2NO	FR 1550-M2	2NO	FR 1551-M2	2NO	FR 1552-M2	2NO
16 [LI]	FR 1634-M2	2NC	FR 1650-M2	2NC	FR 1651-M2	2NC	FR 1652-M2	2NC
18 [LA]	FR 1834-M2	1NO+1NC	FR 1850-M2	1NO+1NC	FR 1851-M2	1NO+1NC	FR 1852-M2	1NO+1NC
20 [L]	FR 2034-M2	1NO+2NC	FR 2050-M2	1NO+2NC	FR 2051-M2	1NO+2NC	FR 2052-M2	1NO+2NC
21 [L]	FR 2134-M2	3NC	FR 2150-M2	3NC	FR 2151-M2	3NC	FR 2152-M2	3NC
22 [L]	FR 2234-M2	2NO+1NC	FR 2250-M2	2NO+1NC	FR 2251-M2	2NO+1NC	FR 2252-M2	2NO+1NC
2 [R]	FR 234-M2	2x(1NO-1NC)	FR 250-M2	2x(1NO-1NC)	FR 251-M2	2x(1NO-1NC)	FR 252-M2	2x(1NO-1NC)
E1 [A]	FR E134-M2	1NO-1NC	FR E150-M2	1NO-1NC	FR E151-M2	1NO-1NC	FR E152-M2	1NO-1NC
Max. speed	1.5 m/s		1.5 m/s		page 239 - type 1		page 239 - type 1	
Min. force	0.06 Nm		0.06 Nm		0.06 Nm (0.25 Nm ⊗)		0.06 Nm (0.25 Nm ⊗)	
Travel diagrams	page 240 - group 5		page 240 - group 5		page 240 - group 5		page 240 - group 5	

89	Porcelain roller	Other rollers available. See on page 70	Other rollers available. See on page 70	Other rollers available. See on page 70
Contact blocks				
5 [R]	FR 553-E0M2V9	1NO+1NC	FR 554-M2	1NO+1NC
6 [L]	FR 653-E0M2V9	1NO+1NC	FR 654-M2	1NO+1NC
7 [LO]	FR 753-E0M2V9	1NO+1NC	FR 754-M2	1NO+1NC
9 [L]	FR 953-E0M2V9	2NC	FR 954-M2	2NC
10 [L]	FR 1053-E0M2V9	2NO	FR 1054-M2	2NO
11 [R]			FR 1154-M2	2NC
12 [R]	FR 1253-E0M2V9	2NO	FR 1254-M2	2NO
13 [LV]	FR 1353-E0M2V9	2NC	FR 1354-M2	2NC
14 [LS]	FR 1453-E0M2V9	2NC	FR 1454-M2	2NC
15 [LS]	FR 1553-E0M2V9	2NO	FR 1554-M2	2NO
16 [LI]			FR 1654-M2	2NC
18 [LA]	FR 1853-E0M2V9	1NO+1NC	FR 1854-M2	1NO+1NC
20 [L]	FR 2053-E0M2V9	1NO+2NC	FR 2054-M2	1NO+2NC
21 [L]	FR 2153-E0M2V9	3NC	FR 2154-M2	3NC
22 [L]	FR 2253-E0M2V9	2NO+1NC	FR 2254-M2	2NO+1NC
2 [R]	FR 253-E0M2	2x(1NO-1NC)	FR 254-M2	2x(1NO-1NC)
E1 [A]	FR E153-E0M2V9	1NO-1NC	FR E154-M2	1NO-1NC
Max. speed	0.5 m/s		page 239 - type 1	
Min. force	0.03 Nm (0.25 Nm ⊗)		0.06 Nm (0.25 Nm ⊗)	
Travel diagrams	page 240 - group 6		page 240 - group 5	

(1) Positive opening only with actuator set to max. See page 69.

All measures in the drawings are in mm

Items with code on green background are stock items

Accessories See page 225

The 2D/3D files are available at www.pizzato.com

Position switches FR series

Contact type:	Other rollers available. See on page 70		Fiber glass rod	Rope switch for signalling
[R] = snap action [L] = slow action [LO] = slow action overlapped [LS] = slow action shifted [LV] = slow action shifted and spaced [LI] = slow action independent [LA] = slow action closer [A] = electronic PNP				
5 [R]	FR 557-M2	⊕ 1NO+1NC	FR 569-M2	1NO+1NC
6 [L]	FR 657-M2	⊕ 1NO+1NC	FR 669-M2	1NO+1NC
7 [LO]	FR 757-M2	⊕ 1NO+1NC	FR 769-M2	1NO+1NC
9 [L]	FR 957-M2	⊕ 2NC	FR 969-M2	2NC
10 [L]	FR 1057-M2	2NO	FR 1069-M2	2NO
11 [R]	FR 1157-M2	⊕ 2NC	FR 1169-M2	2NC
12 [R]	FR 1257-M2	2NO	FR 1269-M2	2NO
13 [LV]	FR 1357-M2	⊕ 2NC	FR 1369-M2	2NC
14 [LS]	FR 1457-M2	⊕ 2NC	FR 1469-M2	2NC
15 [LS]	FR 1557-M2	2NO	FR 1569-M2	2NO
16 [LI]	FR 1657-M2	⊕ 2NC	FR 1669-M2	2NC
18 [LA]	FR 1857-M2	⊕ 1NO+1NC	FR 1869-M2	1NO+1NC
20 [L]	FR 2057-M2	⊕ 1NO+2NC	FR 2069-M2	1NO+2NC
21 [L]	FR 2157-M2	⊕ 3NC	FR 2169-M2	3NC
22 [L]	FR 2257-M2	⊕ 2NO+1NC	FR 2269-M2	2NO+1NC
2 [R]	FR 257-M2	2x(1NO-1NC)	FR 269-M2	2x(1NO-1NC)
E1 [A]	FR E157-M2	1NO-1NC	FR E169-M2	1NO-1NC
Max. speed	page 239 - type 1	1.5 m/s	0.5 m/s	
Min. force	0.06 Nm (0.25 N ⊕)	0.06 Nm	initial 20 N - final 40 N	
Travel diagrams	page 240 - group 5	page 240 - group 5	page 240 - group 7	

Position switches FR series with reset



Pizzato Elettrica has developed a reset device code W3 to make perfectly simultaneous the actuator and the contact block tripping. The device is a block inserted between the switch body and the head, and could be rotated independently from this last one. This new device has following advantages:

- The reset device can be integrated into almost all standard actuator heads
- Contact blocks with snap action are no more necessary because the tripping movement is made by the reset device itself
- The reset device can be rotated independently from the head for maximum flexibility during installation
- Two driving forces: standard and increased for applications with vibrations
- Mechanical endurance: 1 million operating cycles.

Contact blocks	With stainless steel roller on request			
6 [L]	FR 601-W3M2	⊕ 1NO+1NC	FR 602-W3M2	⊕ 1NO+1NC
9 [L]	FR 901-W3M2	⊕ 2NC	FR 902-W3M2	⊕ 2NC
10 [L]	FR 1001-W3M2	2NO	FR 1002-W3M2	2NO
20 [L]	FR 2001-W3M2	⊕ 1NO+2NC	FR 2002-W3M2	⊕ 1NO+2NC
21 [L]	FR 2101-W3M2	⊕ 3NC	FR 2102-W3M2	⊕ 3NC
22 [L]	FR 2201-W3M2	⊕ 2NO+1NC	FR 2202-W3M2	⊕ 2NO+1NC
2 [R]	FR 201-W3M2	2NO+2NC	FR 202-W3M2	2NO+2NC
Max. speed	page 239 - type 4	page 239 - type 3	page 239 - type 3	page 239 - type 3
Min. force	4.5 N (25 N ⊕)	4 N (25 N ⊕)	4 N (25 N ⊕)	2.5 N (25 N ⊕)
Travel diagrams	page 241 - group 1	page 241 - group 2	page 241 - group 2	page 241 - group 3

All measures in the drawings are in mm

Items with code on green background are stock items

Accessories See page 225

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



Contact type:

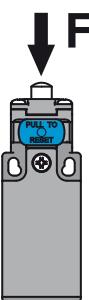
R = snap action
L = slow action

	With Ø 12 mm stainless steel roller on request	With Ø 20 mm stainless steel roller on request	Other rollers available. See on page 70	Other rollers available. See on page 70
Contact blocks				
6 L	FR 615-W3M2	FR 630-W3M2	FR 631-W3M2	FR 651-W3M2
9 L	FR 915-W3M2	FR 930-W3M2	FR 931-W3M2	FR 951-W3M2
10 L	FR 1015-W3M2 2NO	FR 1030-W3M2 2NO	FR 1031-W3M2 2NO	FR 1051-W3M2 2NO
20 L	FR 2015-W3M2 1NO+2NC	FR 2030-W3M2 1NO+2NC	FR 2031-W3M2 1NO+2NC	FR 2051-W3M2 1NO+2NC
21 L	FR 2115-W3M2 3NC	FR 2130-W3M2 3NC	FR 2131-W3M2 3NC	FR 2151-W3M2 3NC
22 L	FR 2215-W3M2 2NO+1NC	FR 2230-W3M2 2NO+1NC	FR 2231-W3M2 2NO+1NC	FR 2251-W3M2 2NO+1NC
2 R	FR 215-W3M2 2NO+2NC	FR 230-W3M2 2NO+2NC	FR 231-W3M2 2NO+2NC	FR 251-W3M2 2NO+2NC
Max. speed	page 239 - type 2	page 239 - type 1	page 239 - type 1	page 239 - type 1
Min. force	4.5 N (25 N	0.07 Nm (0.25 Nm	0.07 Nm (0.25 Nm	0.07 Nm (0.25 Nm
Travel diagrams	page 241 - group 1	page 241 - group 4	page 241 - group 4	page 241 - group 4

	Other rollers available. See on page 70			
Contact blocks				
6 L	FR 652-W3M2 1NO+1NC	FR 654-W3M2 1NO+1NC	FR 656-W3M2 1NO+1NC	FR 657-W3M2 1NO+1NC
9 L	FR 952-W3M2 2NC	FR 954-W3M2 2NC	FR 956-W3M2 2NC	FR 957-W3M2 2NC
10 L	FR 1052-W3M2 2NO	FR 1054-W3M2 2NO	FR 1056-W3M2 2NO	FR 1057-W3M2 2NO
20 L	FR 2052-W3M2 1NO+2NC	FR 2054-W3M2 1NO+2NC	FR 2056-W3M2 1NO+2NC	FR 2057-W3M2 1NO+2NC
21 L	FR 2152-W3M2 3NC	FR 2154-W3M2 3NC	FR 2156-W3M2 3NC	FR 2157-W3M2 3NC
22 L	FR 2252-W3M2 2NO+1NC	FR 2254-W3M2 2NO+1NC	FR 2256-W3M2 2NO+1NC	FR 2257-W3M2 2NO+1NC
2 R	FR 252-W3M2 2NO+2NC	FR 254-W3M2 2NO+2NC	FR 256-W3M2 2NO+2NC	FR 257-W3M2 2NO+2NC
Max. speed	page 239 - type 1			
Min. force	0.07 Nm (0.25 Nm			
Travel diagrams	page 241 - group 4			

All measures in the drawings are in mm

Increased actuating force



The switch can be delivered with increased actuating force (option W4). Ideal for applications with vibrations.

Actuators	Min. force
01, 14, 15, 16	7 N
02, 05	6 N
07	3.5 N
30 ... 57	0.08 Nm

Accessories See page 225

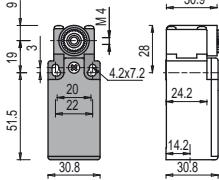
→ The 2D/3D files are available at www.pizzato.com

Position switches with revolving lever without actuator

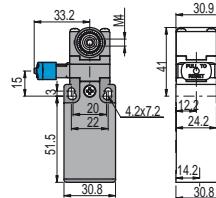
All measures in the drawings are in mm

Contact type:

- [R] = snap action
 - [L] = slow action
 - [LO] = slow action overlapped
 - [LS] = slow action shifted
 - [LV] = slow action shifted and spaced
 - [LI] = slow action independent
 - [LA] = slow action closer
 - [A] = electronic PNP
- Contact blocks



With manual reset knob

**IMPORTANT**

For safety applications: join only switches and actuators marked with symbol ⊕ aside the product code.
For more information about safety applications see details on page 235.

5 [R]	FR 538-M2	⊕ 1NO+1NC	
6 [L]	FR 638-M2	⊕ 1NO+1NC	FR 638-W3M2
7 [LO]	FR 738-M2	⊕ 1NO+1NC	⊕ 1NO+1NC
9 [L]	FR 938-M2	⊕ 2NC	FR 938-W3M2
10 [L]	FR 1038-M2	2NO	FR 1038-W3M2
11 [R]	FR 1138-M2	⊕ 2NC	
12 [R]	FR 1238-M2	2NO	
13 [LV]	FR 1338-M2	⊕ 2NC	
14 [LS]	FR 1438-M2	⊕ 2NC	
15 [LS]	FR 1538-M2	2NO	
16 [LI]	FR 1638-M2	⊕ 2NC	
18 [LA]	FR 1838-M2	⊕ 1NO+1NC	
20 [L]	FR 2038-M2	⊕ 1NO+2NC	FR 2038-W3M2
21 [L]	FR 2138-M2	⊕ 3NC	⊕ 3NC
22 [L]	FR 2238-M2	⊕ 2NO+1NC	FR 2238-W3M2
2 [R]	FR 238-M2	2x(1NO-1NC)	FR 238-W3M2
E1 [A]	FR E138-M2	1NO-1NC	
Min. force	0.06 Nm (0.25 Nm ⊕)	0.07 Nm (0.25 Nm ⊕)	
Travel diagrams	page 240 - group 5	page 241 - group 4	

All measures in the drawings are in mm

Loose actuators

All measures in the drawings are in mm

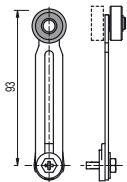
IMPORTANT: These loose actuators can be used with items of series FR, FM, FX, FZ and FK only.

Technopolymer roller Ø 18 mm	Technopolymer roller Ø 18 mm	Adjustable square rod, 3x3x125 mm	Flexible rod with pointed end	Adjustable round rod Ø 3x125 mm	Technopolymer roller Ø 20 mm	
VF LE30 ⊕	VF LE31 ⊕	VF LE33	VF LE34	VF LE50	VF LE51 ⊕	
Technopolymer roller Ø 20 mm	Porcelain roller	Technopolymer roller Ø 20 mm	Adjustable actuator with technopolymer roller	Adjustable safety actuator with technopolymer roller	Technopolymer roller Ø 20 mm	Adjustable fiber glass rod
VF LE52 ⊕	VF LE53 ⊕ (2)	VF LE54 ⊕	VF LE55 ⊕ (1)	VF LE56 ⊕	VF LE57 ⊕	VF LE69

- (1) Actuator VF LE55 can only be used in safety applications if adjusted to its max. length, as shown in figure beside. If you need an adjustable lever for safety applications, use the adjustable safety lever VF LE56.

- (2) The position switch obtained by assembling switch FR •38-M2 (e.g. FR 538-M2, FR 638-M2...) with actuator VF L53 will not present the same travel diagrams and actuating forces as switch FR •53-E0M2V9 (e.g. FR 553-E0M2V9, FR 653-E0M2V9...).

- (4) The actuator cannot be rotated to the inside because it will mechanically interfere with the switch head.



Items with code on green background are stock items

Accessories See page 225

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



Special loose actuators

All measures in the drawings are in mm

IMPORTANT: These loose actuators can be used with items of series FR, FM, FX, FZ and FK only.

Stainless steel rollers, Ø 20 mm

VF LE31-R24 (4)	VF LE51-R24 (4)	VF LE52-R24 (4)	VF LE54-R24 (4)	VF LE55-R24 (1)	VF LE56-R24 (4)	VF LE57-R24 (4)

Technopolymer rollers, Ø 35 mm

VF LE31-R25 (4)	VF LE51-R25 (4)	VF LE52-R25 (4)	VF LE54-R25 (4)	VF LE55-R25 (1)	VF LE56-R25 (4)	VF LE57-R25 (4)

Rubber rollers, Ø 40 mm

VF LE31-R5 (4)	VF LE51-R5 (4)	VF LE52-R5 (4)	VF LE54-R5 (4)	VF LE55-R5 (1)	VF LE56-R5 (4)	VF LE57-R5 (4)

Rubber rollers, Ø 50 mm

VF LE51-R26 (4)	VF LE52-R26 (4)	VF LE54-R26 (4)	VF LE55-R26 (1)	VF LE56-R26 (4)	VF LE57-R26 (4)

Protruding rubber rollers, Ø 50 mm

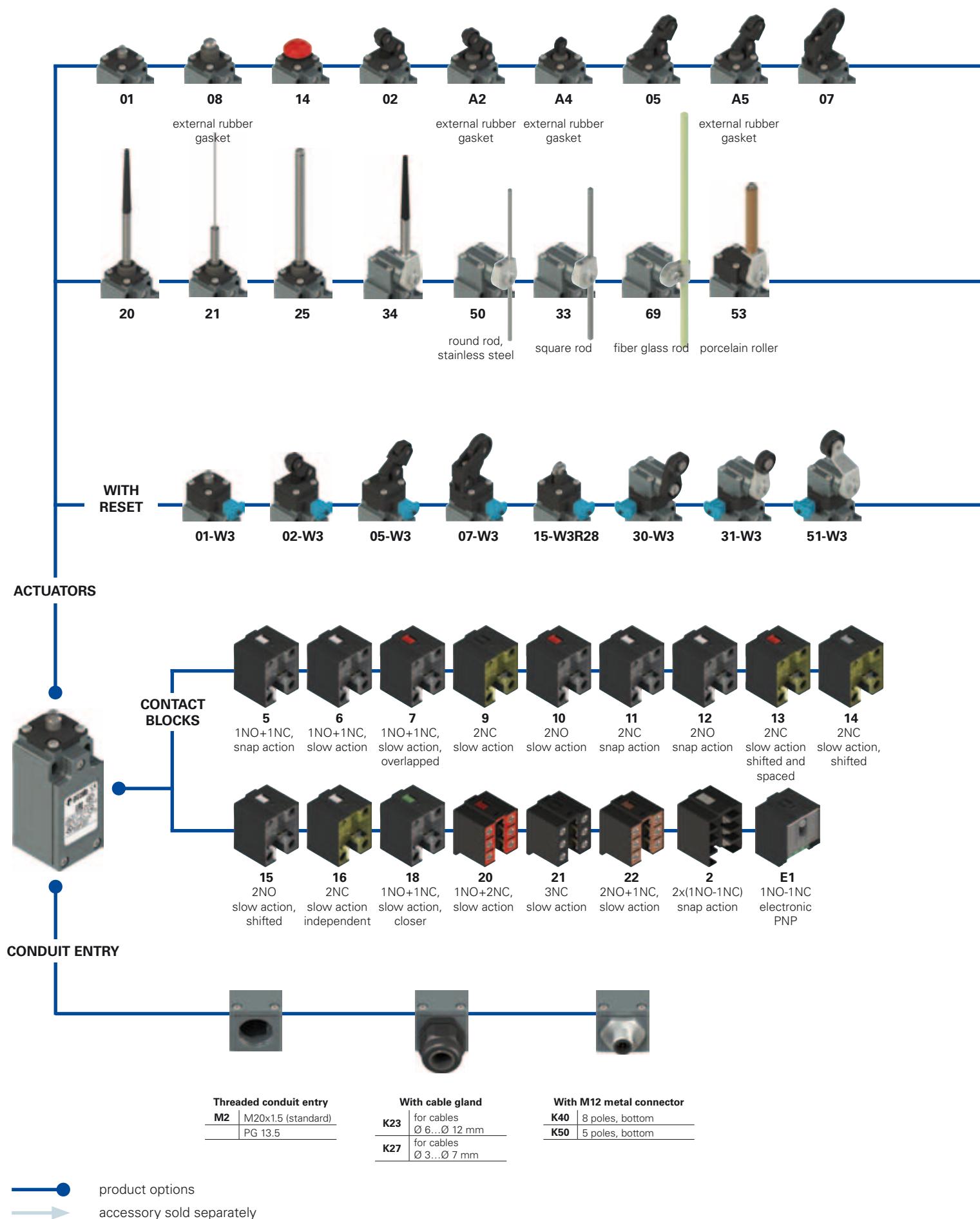
VF LE55-R27 (1)	VF LE56-R27 (4)

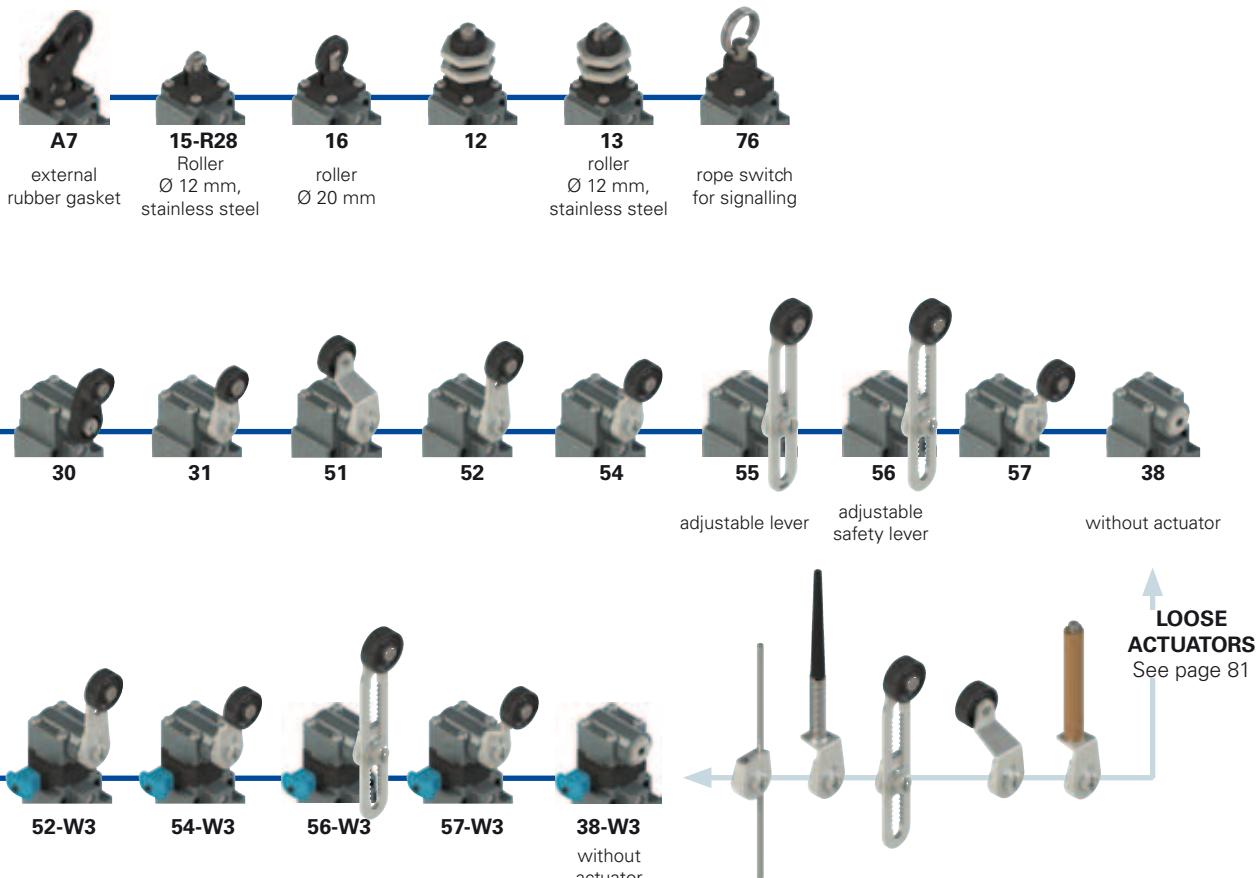
Items with code on green background are stock items

Accessories See page 225

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

Selection diagram





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 options

FM 502-W3GM2K50R23T6

Housing

FM metal, one conduit entry

Contact blocks

- | | |
|----------|----------------------------------|
| 5 | 1NO+1NC, snap action |
| 6 | 1NO+1NC, slow action |
| 7 | 1NO+1NC, slow action, overlapped |
| ... | |

Actuators

- | | |
|-----------|---------------------|
| 01 | short plunger |
| 02 | roller lever |
| 05 | angled roller lever |
| ... | |

Reset

- | | |
|-----------|-------------------------------------|
| | without reset (standard) |
| W3 | simultaneous reset |
| W4 | simultaneous reset, increased force |

Contact type

- | | |
|----------|------------------------------------------------------------------|
| | silver contacts (standard) |
| G | silver contacts with 1 µm gold coating (not for contact block 2) |

Ambient temperature

- | |
|----------------------------|
| -25°C ... +80°C (standard) |
| T6 -40°C ... +80°C |

Pre-installed cable glands or connectors

- | |
|-------------------------------------------------|
| without cable gland or connector (standard) |
| K23 cable gland for cables Ø 6...Ø 12 mm |
| K50 M12 metal connector, 5 poles |

Please contact our technical service for the complete list of possible combinations.

Threaded conduit entry

- | | |
|-----------|--------------------|
| M2 | M20x1.5 (standard) |
| | PG 13.5 |

Rollers

- | | |
|------------|-----------------------------------------------------------------------------------------|
| | standard roller |
| R28 | stainless steel, Ø 12 mm (for actuators A4, 15) |
| R23 | stainless steel, Ø 14 mm (for actuators A2, 02, A5, 05, 30, 31, 51, 52, 54, 55, 56, 57) |
| R24 | stainless steel, Ø 20 mm (for actuators 30, 31, 51, 52, 54, 55, 56, 57) |
| R25 | technopolymer, Ø 35 mm (for actuators 30, 31, 51, 52, 54, 55, 56, 57) |
| R5 | rubber, Ø 40 mm (for actuators 30, 31, 51, 52, 54, 55, 56, 57) |
| R26 | rubber, Ø 50 mm (for actuators 51, 52, 54, 55, 56, 57) |
| R27 | rubber, protruding, Ø 50 mm (for actuators 55, 56) |

**Main features**

- Metal housing, one conduit entry
- Protection degree IP67
- 17 contact blocks available
- 43 actuators available
- Versions with M12 connector
- Versions with gold-plated silver contacts

Markings and quality marks:

IMQ approval: EG609
 UL approval: E131787
 CCC approval: 2007010305229998
 EAC approval: RU C-IT ДМ94.В.01024

Technical data**Housing**

Metal housing, baked powder coating
 One threaded conduit entry:
 Protection degree:

M20x1.5 (standard)
 IP67 according to EN 60529 with
 cable gland having equal or higher
 protection degree

General data

Ambient temperature:	-25°C ... +80°C
Max. actuation frequency:	3600 operating cycles ¹ /hour
Mechanical endurance:	20 million operating cycles ¹
Mounting position:	any
Safety parameters:	40,000,000 for NC contacts
B _{10d} :	type 1 according to EN ISO 14119
Mechanical interlock, not coded:	see pages 235-246
Tightening torques for installation:	(1) One operation cycle means two movements, one to close and one to open contacts, as defined in EN 60947-5-1.

Cable cross section (flexible copper strands)

Contact blocks 20, 21, 22, 33, 34:	min. 1 x 0.34 mm ² max. 2 x 1.5 mm ²	(1 x AWG 22) (2 x AWG 16)
Contact block 5, 6, 7, 9, 10, 11, 12, 13, 14, 15, 16, 18:	min. 1 x 0.5 mm ² max. 2 x 2.5 mm ²	(1 x AWG 20) (2 x AWG 14)
Contact block 2:	min. 1 x 0.5 mm ² max. 2 x 1.5 mm ²	(1 x AWG 20) (2 x AWG 16)

In conformity with standards:

IEC 60947-5-1, EN 60947-5-1, EN 60947-1, EN 50047, IEC 60204-1, EN 60204-1,
 EN ISO 14119, EN ISO 12100, IEC 60529, EN 60529, UL 508, CSA 22.2 No.14 .

Approvals:

IEC 60947-5-1, UL 508, CSA 22.2 No.14, GB14048.5-2001.

In conformity with the requirements of:

Low Voltage Directive 2006/95/EC, Machinery Directive 2006/42/EC and
 EMC Directive 2004/108/EC.

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 aside the product code. Always connect the safety circuit to the **NC contacts** (normally closed contacts: 11-12, 21-22 or 31-32) as stated in **standard EN 60947-5-1, encl. K, par. 2**. Actuate the switch **at least up to the positive opening travel** shown in the travel diagrams on page 240. Operate the switch **at least with the positive opening force**, indicated between brackets below each article, aside the minimum force value.

If not expressly indicated in this chapter, for correct installation and utilization of all articles see chapter utilization requirements from page 235 to page 246.

Electrical data**Utilization category**

without connector	Thermal current (I _{th}):	10 A	Alternating current: AC15 (50÷60 Hz)
	Rated insulation voltage (U _i):	500 Vac 600 Vdc 400 Vac 500 Vdc (contact blocks 2, 11, 12, 20, 21, 22, 33, 34)	Ue (V) 250 400 500 Ie (A) 6 4 1
	Rated impulse withstand voltage (U _{imp}):	6 kV 4 kV (contact blocks 20, 21, 22, 33, 34)	Direct current: DC13 Ue (V) 24 125 250 Ie (A) 6 1.1 0.4
	Conditional short circuit current: Protection against short circuits: Pollution degree:	1000 A according to EN 60947-5-1 type aM fuse 10 A 500 V 3	
with M12 connector 5 poles	Thermal current (I _{th}):	4 A	Alternating current: AC15 (50÷60 Hz)
	Rated insulation voltage (U _i):	250 Vac 300 Vdc	Ue (V) 24 120 250 Ie (A) 4 4 4
	Protection against short circuits:	type gG fuse 4 A 500 V	Direct current: DC13 Ue (V) 24 125 250 Ie (A) 4 1.1 0.4
	Pollution degree:	3	
with M12 connector 8 poles	Thermal current (I _{th}):	2 A	Alternating current: AC15 (50÷60 Hz)
	Rated insulation voltage (U _i):	30 Vac 36 Vdc	Ue (V) 24 Ie (A) 2
	Protection against short circuits:	type gG fuse 2 A 500 V	Direct current: DC13 Ue (V) 24 Ie (A) 2
	Pollution degree:	3	



Characteristics approved by IMQ

Rated insulation voltage (Ui):	500 Vac 400 Vac (for contact blocks 2, 11, 12, 20, 21, 22, 33, 34)
Conventional free air thermal current (Ith):	10 A
Protection against short circuits:	type aM fuse 10 A 500 V
Rated impulse withstand voltage (U _{imp}):	6 kV 4 kV (for contact blocks 20, 21, 22, 33, 34)
Protection degree of the housing: IP67	
MV terminals (screw terminals)	
Pollution degree 3	
Utilization category: AC15	
Operating voltage (Ue): 400 Vac (50 Hz)	
Operating current (Ie): 3 A	
Forms of the contact element: Za, Zb, Za+Za, Y+Y, X+X, Y+Y+X, Y+Y+Y, Y+X+X	
Positive opening of contacts on contact blocks 5, 6, 7, 9, 11, 13, 14, 16, 18, 20, 21, 22, 33, 34	
In conformity with standards: EN 60947-1, EN 60947-5-1+A1:2009, fundamental requirements of the Low Voltage Directive 2006/95/EC.	

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

Characteristics approved by UL

Utilization categories Q300 (69 VA, 125 ... 250 Vdc) A600 (720 VA, 120 ... 600 Vac)
Data of housing type 1, 4X "indoor use only", 12, 13
For all contact blocks except 2 and 3 use 60 or 75°C copper (Cu) conductor, rigid or flexible, wire size AWG 12/14. Terminal tightening torque of 7.1 lb in (0.8 Nm).
For contact blocks 2 and 3 use 60 or 75 °C copper (Cu) conductor, rigid or flexible, wire size AWG 14. Terminal tightening torque of 12 lb in (1.4 Nm).

In conformity with standard: UL 508, CSA 22.2 No.14

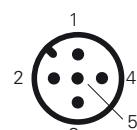
Please contact our technical service for the list of approved products.

Connection diagram for M12 connectors

Contact block 2 1NO-1NC+1NO-1NC	Contact block 5 1NO+1NC	Contact block 6 1NO+1NC	Contact block 7 1NO+1NC	Contact block 9 2NC	Contact block 10 2NO	Contact block 11 2NC	Contact block 12 2NO	Contact block 13 2NC
M12 connector, 8 poles	M12 connector, 5 poles	M12 connector, 5 poles	M12 connector, 5 poles	M12 connector, 5 poles	M12 connector, 5 poles	M12 connector, 5 poles	M12 connector, 5 poles	M12 connector, 5 poles
Contacts Pin no.	Contacts Pin no.	Contacts Pin no.	Contacts Pin no.	Contacts Pin no.	Contacts Pin no.	Contacts Pin no.	Contacts Pin no.	Contacts Pin no.
NO 3-4	NC 1-2	NC 1-2	NC 1-2	NC 1-2	NO 1-2	NC 1-2	NO 1-2	NC 1-2
NC 5-6	NO 3-4	NO 3-4	NO 3-4	NO 3-4	NO 3-4	NC 3-4	NO 3-4	NC 3-4
NC 7-8	ground 5	ground 5	ground 5	ground 5	ground 5	ground 5	ground 5	ground 5
NO 1-2								

Contact block 14 2NC	Contact block 15 2NO	Contact block 16 2NC	Contact block 18 1NO+1NC	Contact block 20 2NC+1NO	Contact block 21 3NC	Contact block 22 1NC+2NO	Contact block 33 1NC+1NO	Contact block 34 2NC
M12 connector, 5 poles	M12 connector, 5 poles	M12 connector, 5 poles	M12 connector, 5 poles	M12 connector, 8 poles	M12 connector, 8 poles	M12 connector, 8 poles	M12 connector, 5 poles	M12 connector, 5 poles
Contacts Pin no.	Contacts Pin no.	Contacts Pin no.	Contacts Pin no.	Contacts Pin no.	Contacts Pin no.	Contacts Pin no.	Contacts Pin no.	Contacts Pin no.
NC (1°) 1-2	NO (1°) 1-2	NC, lever at the right 1-2	NC, lever to the left 3-4	NC 1-2	NC 3-4	NC 3-4	NC 1-2	NC 1-2
NC (2°) 3-4	NO (2°) 3-4			NO 3-4	NC 5-6	NC 5-6	NO 3-4	NC 3-4
ground 5	ground 5	ground 5	ground 5	ground 5	NO 7-8	NC 7-8	NO 7-8	ground 5
					ground 1	ground 1	ground 1	ground 5

Contact block E1 PNP

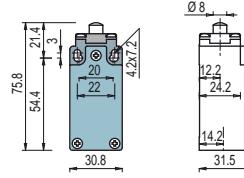


M12 connector, 5 poles

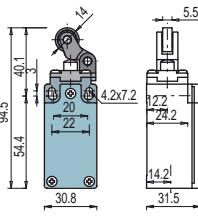
Contacts	Pin no.
+	1
-	3
NC	2
NO	4
ground	5

Contact type:

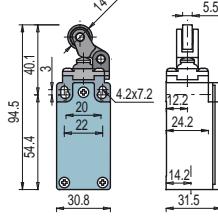
- [R] = snap action
- [L] = slow action
- [LO] = slow action overlapped
- [LS] = slow action shifted
- [LV] = slow action shifted and spaced
- [LI] = slow action independent
- [LA] = slow action closer
- [A] = electronic PNP



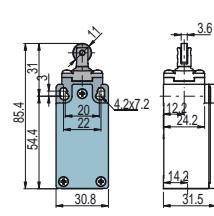
With stainless steel roller on request



With external rubber gasket

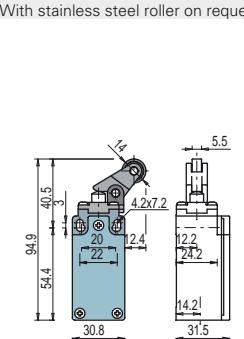


With external rubber gasket

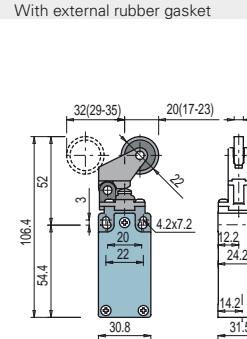
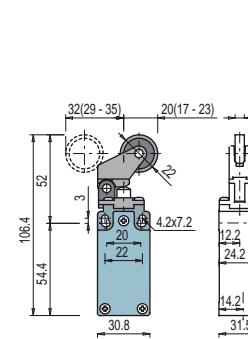
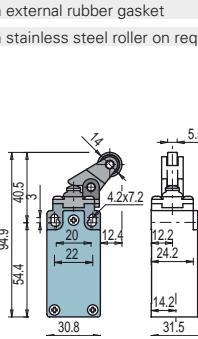


Contact blocks

5 [R]	FM 501-M2	1NO+1NC	FM 502-M2	1NO+1NC	FM 5A2-M2	1NO+1NC	FM 5A4-M2	1NO+1NC
6 [L]	FM 601-M2	1NO+1NC	FM 602-M2	1NO+1NC	FM 6A2-M2	1NO+1NC	FM 6A4-M2	1NO+1NC
7 [LO]	FM 701-M2	1NO+1NC	FM 702-M2	1NO+1NC	FM 7A2-M2	1NO+1NC	FM 7A4-M2	1NO+1NC
9 [L]	FM 901-M2	2NC	FM 902-M2	2NC	FM 9A2-M2	2NC	FM 9A4-M2	2NC
10 [L]	FM 1001-M2	2NO	FM 1002-M2	2NO	FM 10A2-M2	2NO	FM 10A4-M2	2NO
11 [R]	FM 1101-M2	2NC	FM 1102-M2	2NC	FM 11A2-M2	2NC	FM 11A4-M2	2NC
12 [R]	FM 1201-M2	2NO	FM 1202-M2	2NO	FM 12A2-M2	2NO	FM 12A4-M2	2NO
13 [LV]	FM 1301-M2	2NC	FM 1302-M2	2NC	FM 13A2-M2	2NC	FM 13A4-M2	2NC
14 [LS]	FM 1401-M2	2NC	FM 1402-M2	2NC	FM 14A2-M2	2NC	FM 14A4-M2	2NC
15 [LS]	FM 1501-M2	2NO	FM 1502-M2	2NO	FM 15A2-M2	2NO	FM 15A4-M2	2NO
18 [LA]	FM 1801-M2	1NO+1NC	FM 1802-M2	1NO+1NC	FM 18A2-M2	1NO+1NC	FM 18A4-M2	1NO+1NC
20 [L]	FM 2001-M2	1NO+2NC	FM 2002-M2	1NO+2NC	FM 20A2-M2	1NO+2NC	FM 20A4-M2	1NO+2NC
21 [L]	FM 2101-M2	3NC	FM 2102-M2	3NC	FM 21A2-M2	3NC	FM 21A4-M2	3NC
22 [L]	FM 2201-M2	2NO+1NC	FM 2202-M2	2NO+1NC	FM 22A2-M2	2NO+1NC	FM 22A4-M2	2NO+1NC
2 [R]	FM 201-M2	2x(1NO-1NC)	FM 202-M2	2x(1NO-1NC)	FM 2A2-M2	2x(1NO-1NC)	FM 2A4-M2	2x(1NO-1NC)
E1 [A]	FM E101-M2	1NO-1NC	FM E102-M2	1NO-1NC	FM E1A2-M2	1NO-1NC	FM E1A4-M2	1NO-1NC
Max. speed	page 239 - type 4		page 239 - type 3		page 239 - type 3		page 239 - type 5	
Min. force	8 N (25 N ⊕)		6 N (25 N ⊕)		4.3 N (25 N ⊕)		4.3 N (25 N ⊕)	
Travel diagrams	page 240 - group 1		page 240 - group 2		page 240 - group 2		page 240 - group 1	



With stainless steel roller on request



Contact blocks

5 [R]	FM 505-M2	1NO+1NC	FM 5A5-M2	1NO+1NC	FM 507-M2	1NO+1NC	FM 5A7-M2	1NO+1NC
6 [L]	FM 605-M2	1NO+1NC	FM 6A5-M2	1NO+1NC	FM 607-M2	1NO+1NC	FM 6A7-M2	1NO+1NC
7 [LO]	FM 705-M2	1NO+1NC	FM 7A5-M2	1NO+1NC	FM 707-M2	1NO+1NC	FM 7A7-M2	1NO+1NC
9 [L]	FM 905-M2	2NC	FM 9A5-M2	2NC	FM 907-M2	2NC	FM 9A7-M2	2NC
10 [L]	FM 1005-M2	2NO	FM 10A5-M2	2NO	FM 1007-M2	2NO	FM 10A7-M2	2NO
11 [R]	FM 1105-M2	2NC	FM 11A5-M2	2NC	FM 1107-M2	2NC	FM 11A7-M2	2NC
12 [R]	FM 1205-M2	2NO	FM 12A5-M2	2NO	FM 1207-M2	2NO	FM 12A7-M2	2NO
13 [LV]	FM 1305-M2	2NC	FM 13A5-M2	2NC	FM 1307-M2	2NC	FM 13A7-M2	2NC
14 [LS]	FM 1405-M2	2NC	FM 14A5-M2	2NC	FM 1407-M2	2NC	FM 14A7-M2	2NC
15 [LS]	FM 1505-M2	2NO	FM 15A5-M2	2NO	FM 1507-M2	2NO	FM 15A7-M2	2NO
18 [LA]	FM 1805-M2	1NO+1NC	FM 18A5-M2	1NO+1NC	FM 1807-M2	1NO+1NC	FM 18A7-M2	1NO+1NC
20 [L]	FM 2005-M2	1NO+2NC	FM 20A5-M2	1NO+2NC	FM 2007-M2	1NO+2NC	FM 20A7-M2	1NO+2NC
21 [L]	FM 2105-M2	3NC	FM 21A5-M2	3NC	FM 2107-M2	3NC	FM 21A7-M2	3NC
22 [L]	FM 2205-M2	2NO+1NC	FM 22A5-M2	2NO+1NC	FM 2207-M2	2NO+1NC	FM 22A7-M2	2NO+1NC
2 [R]	FM 205-M2	2x(1NO-1NC)	FM 2A5-M2	2x(1NO-1NC)	FM 207-M2	2x(1NO-1NC)	FM 2A7-M2	2x(1NO-1NC)
E1 [A]	FM E105-M2	1NO-1NC	FM E1A5-M2	1NO-1NC	FM E107-M2	1NO-1NC	FM E1A7-M2	1NO-1NC
Max. speed	page 239 - type 3							
Min. force	6 N (25 N ⊕)		4.3 N (25 N ⊕)		4 N (25 N ⊕)		3 N (25 N ⊕)	
Travel diagrams	page 240 - group 2		page 240 - group 2		page 240 - group 3		page 240 - group 3	

All measures in the drawings are in mm

Items with code on green background are stock items

Accessories See page 225

The 2D/3D files are available at www.pizzato.com



		With external rubber gasket			
Contact type:					
[R]	= snap action				
[L]	= slow action				
[LO]	= slow action overlapped				
[LS]	= slow action shifted				
[LV]	= slow action shifted and spaced				
[LI]	= slow action independent				
[LA]	= slow action closer				
[A]	= electronic PNP				
Contact blocks					
5	[R]	FM 508-M2	1NO+1NC	FM 512-M2	1NO+1NC
6	[L]	FM 608-M2	1NO+1NC	FM 612-M2	1NO+1NC
7	[LO]	FM 708-M2	1NO+1NC	FM 712-M2	1NO+1NC
9	[L]	FM 908-M2	2NC	FM 912-M2	2NC
10	[L]	FM 1008-M2	2NO	FM 1012-M2	2NO
11	[R]	FM 1108-M2	2NC	FM 1112-M2	2NC
12	[R]	FM 1208-M2	2NO	FM 1212-M2	2NO
13	[LV]	FM 1308-M2	2NC	FM 1312-M2	2NC
14	[LS]	FM 1408-M2	2NC	FM 1412-M2	2NC
15	[LS]	FM 1508-M2	2NO	FM 1512-M2	2NO
18	[LA]	FM 1808-M2	1NO+1NC	FM 1812-M2	1NO+1NC
20	[L]	FM 2008-M2	1NO+2NC	FM 2012-M2	1NO+2NC
21	[L]	FM 2108-M2	3NC	FM 2112-M2	3NC
22	[L]	FM 2208-M2	2NO+1NC	FM 2212-M2	2NO+1NC
2	[R]	FM 208-M2	2x(1NO-1NC)	FM 212-M2	2x(1NO-1NC)
E1	[A]	FM E108-M2	1NO-1NC	FM E112-M2	1NO-1NC
Max. speed		page 239 - type 4		page 239 - type 4	
Min. force		8 N (25 N ⊕)		8 N (25 N ⊕)	
Travel diagrams		page 240 - group 1		page 240 - group 1	

		With external rubber gasket		With external rubber gasket	
Contact blocks					
5	[R]	FM 515-M2R28	1NO+1NC	FM 516-M2	1NO+1NC
6	[L]	FM 615-M2R28	1NO+1NC	FM 616-M2	1NO+1NC
7	[LO]	FM 715-M2R28	1NO+1NC	FM 716-M2	1NO+1NC
9	[L]	FM 915-M2R28	2NC	FM 916-M2	2NC
10	[L]	FM 1015-M2R28	2NO	FM 1016-M2	2NO
11	[R]	FM 1115-M2R28	2NC	FM 1116-M2	2NC
12	[R]	FM 1215-M2R28	2NO	FM 1216-M2	2NO
13	[LV]	FM 1315-M2R28	2NC	FM 1316-M2	2NC
14	[LS]	FM 1415-M2R28	2NC	FM 1416-M2	2NC
15	[LS]	FM 1515-M2R28	2NO	FM 1516-M2	2NO
18	[LA]	FM 1815-M2R28	1NO+1NC	FM 1816-M2	1NO+1NC
20	[L]	FM 2015-M2R28	1NO+2NC	FM 2016-M2	1NO+2NC
21	[L]	FM 2115-M2R28	3NC	FM 2116-M2	3NC
22	[L]	FM 2215-M2R28	2NO+1NC	FM 2216-M2	2NO+1NC
2	[R]	FM 215-M2R28	2x(1NO-1NC)	FM 216-M2	2x(1NO-1NC)
E1	[A]	FM E115-M2R28	1NO-1NC	FM E116-M2	1NO-1NC
Max. speed		page 239 - type 2		1 m/s	
Min. force		8 N (25 N ⊕)		0.07 Nm	
Travel diagrams		page 240 - group 1		page 240 - group 4	

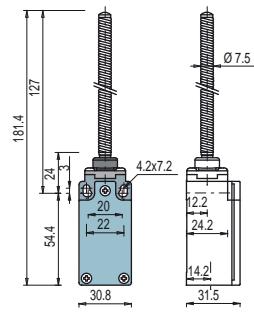
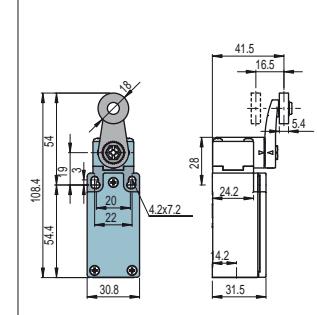
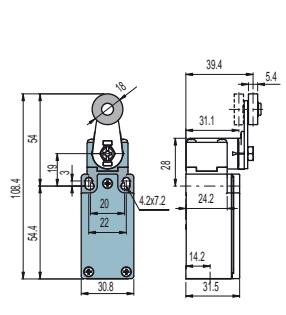
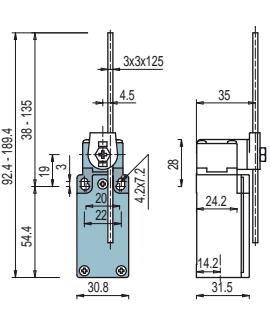
All measures in the drawings are in mm

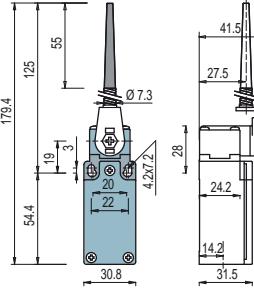
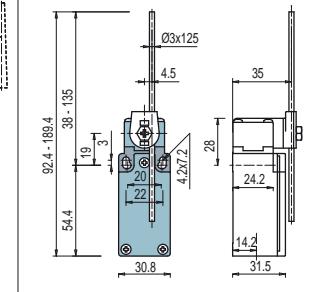
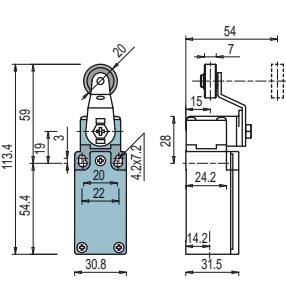
Items with code on green background are stock items

Accessories See page 225

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

Position switches FM series

	With external rubber gasket	With Ø 20 mm stainless steel roller on request	Other rollers available. See on page 82	Square rod, 3x3 mm
Contact type:				
R = snap action				
L = slow action				
LO = slow action overlapped				
LS = slow action shifted				
LV = slow action shifted and spaced				
LI = slow action independent				
LA = slow action closer				
A = electronic PNP				
Contact blocks				
5 R FM 525-M2 1NO+1NC	FM 530-M2 1NO+1NC	FM 531-M2 1NO+1NC	FM 533-M2 1NO+1NC	
6 L FM 630-M2 1NO+1NC	FM 631-M2 1NO+1NC	FM 633-M2 1NO+1NC		
7 LO FM 730-M2 1NO+1NC	FM 731-M2 1NO+1NC	FM 733-M2 1NO+1NC		
9 L FM 930-M2 2NC	FM 931-M2 2NC	FM 933-M2 2NC		
10 L FM 1025-M2 2NO	FM 1030-M2 2NO	FM 1031-M2 2NO	FM 1033-M2 2NO	
11 R FM 1130-M2 2NC	FM 1131-M2 2NC	FM 1133-M2 2NC		
12 R FM 1225-M2 2NO	FM 1230-M2 2NO	FM 1231-M2 2NO	FM 1233-M2 2NO	
13 LV FM 1330-M2 2NC	FM 1331-M2 2NC	FM 1333-M2 2NC		
14 LS FM 1430-M2 2NC	FM 1431-M2 2NC	FM 1433-M2 2NC		
15 LS FM 1530-M2 2NO	FM 1531-M2 2NO	FM 1533-M2 2NO		
16 LI FM 1630-M2 2NC	FM 1631-M2 2NC	FM 1633-M2 2NC		
18 LA FM 1825-M2 1NO+1NC	FM 1830-M2 1NO+1NC	FM 1831-M2 1NO+1NC	FM 1833-M2 1NO+1NC	
20 L FM 2025-M2 1NO+2NC	FM 2030-M2 1NO+2NC	FM 2031-M2 1NO+2NC	FM 2033-M2 1NO+2NC	
21 L FM 2125-M2 3NC	FM 2130-M2 3NC	FM 2131-M2 3NC	FM 2133-M2 3NC	
22 L FM 2225-M2 2NO+1NC	FM 2230-M2 2NO+1NC	FM 2231-M2 2NO+1NC	FM 2233-M2 2NO+1NC	
2 R FM 225-M2 2x(1NO-1NC)	FM 230-M2 2x(1NO-1NC)	FM 231-M2 2x(1NO-1NC)	FM 233-M2 2x(1NO-1NC)	
E1 A FM E125-M2 1NO-1NC	FM E130-M2 1NO-1NC	FM E131-M2 1NO-1NC	FM E133-M2 1NO-1NC	
Max. speed	1 m/s	page 239 - type 1	page 239 - type 1	1.5 m/s
Min. force	0.12 Nm	0.06 Nm (0.25 Nm 	0.06 Nm (0.25 Nm 	0.06 Nm
Travel diagrams	page 240 - group 4	page 240 - group 5	page 240 - group 5	page 240 - group 5

	Round rod, Ø 3 mm, stainless steel	Other rollers available. See on page 82	Other rollers available. See on page 82
Contact blocks			
5 R FM 534-M2 1NO+1NC	FM 550-M2 1NO+1NC	FM 551-M2 1NO+1NC	FM 552-M2 1NO+1NC
6 L FM 634-M2 1NO+1NC	FM 650-M2 1NO+1NC	FM 651-M2 1NO+1NC	FM 652-M2 1NO+1NC
7 LO FM 734-M2 1NO+1NC	FM 750-M2 1NO+1NC	FM 751-M2 1NO+1NC	FM 752-M2 1NO+1NC
9 L FM 934-M2 2NC	FM 950-M2 2NC	FM 951-M2 2NC	FM 952-M2 2NC
10 L FM 1034-M2 2NO	FM 1050-M2 2NO	FM 1051-M2 2NO	FM 1052-M2 2NO
11 R FM 1134-M2 2NC	FM 1150-M2 2NC	FM 1151-M2 2NC	FM 1152-M2 2NC
12 R FM 1234-M2 2NO	FM 1250-M2 2NO	FM 1251-M2 2NO	FM 1252-M2 2NO
13 LV FM 1334-M2 2NC	FM 1350-M2 2NC	FM 1351-M2 2NC	FM 1352-M2 2NC
14 LS FM 1434-M2 2NC	FM 1450-M2 2NC	FM 1451-M2 2NC	FM 1452-M2 2NC
15 LS FM 1534-M2 2NO	FM 1550-M2 2NO	FM 1551-M2 2NO	FM 1552-M2 2NO
16 LI FM 1634-M2 2NC	FM 1650-M2 2NC	FM 1651-M2 2NC	FM 1652-M2 2NC
18 LA FM 1834-M2 1NO+1NC	FM 1850-M2 1NO+1NC	FM 1851-M2 1NO+1NC	FM 1852-M2 1NO+1NC
20 L FM 2034-M2 1NO+2NC	FM 2050-M2 1NO+2NC	FM 2051-M2 1NO+2NC	FM 2052-M2 1NO+2NC
21 L FM 2134-M2 3NC	FM 2150-M2 3NC	FM 2151-M2 3NC	FM 2152-M2 3NC
22 L FM 2234-M2 2NO+1NC	FM 2250-M2 2NO+1NC	FM 2251-M2 2NO+1NC	FM 2252-M2 2NO+1NC
2 R FM 234-M2 2x(1NO-1NC)	FM 250-M2 2x(1NO-1NC)	FM 251-M2 2x(1NO-1NC)	FM 252-M2 2x(1NO-1NC)
E1 A FM E134-M2 1NO-1NC	FM E150-M2 1NO-1NC	FM E151-M2 1NO-1NC	FM E152-M2 1NO-1NC
Max. speed	1.5 m/s	1.5 m/s	page 239 - type 1
Min. force	0.06 Nm	0.06 Nm	0.06 Nm (0.25 Nm 
Travel diagrams	page 240 - group 5	page 240 - group 5	page 240 - group 5

All measures in the drawings are in mm

Items with code on green background are stock items

Accessories See page 225

The 2D/3D files are available at www.pizzato.com



		Porcelain roller	Other rollers available. See on page 82	Other rollers available. See on page 82	Other rollers available. See on page 82
Contact type:					
R	= snap action				
L	= slow action				
LO	= slow action overlapped				
LS	= slow action shifted				
LV	= slow action shifted and spaced				
LI	= slow action independent				
LA	= slow action closer				
A	= electronic PNP				
Contact blocks					
5	R	FM 553-E0M2V9	⊕ 1NO+1NC	FM 554-M2	⊕ 1NO+1NC
6	L	FM 653-E0M2V9	⊕ 1NO+1NC	FM 654-M2	⊕ 1NO+1NC
7	LO	FM 753-E0M2V9	⊕ 1NO+1NC	FM 754-M2	⊕ 1NO+1NC
9	L	FM 953-E0M2V9	⊕ 2NC	FM 954-M2	⊕ 2NC
10	L	FM 1053-E0M2V9	2NO	FM 1054-M2	2NO
11	R			FM 1154-M2	⊕ 2NC
12	R	FM 1253-E0M2V9	2NO	FM 1254-M2	2NO
13	LV	FM 1353-E0M2V9	⊕ 2NC	FM 1354-M2	⊕ 2NC
14	LS	FM 1453-E0M2V9	⊕ 2NC	FM 1454-M2	⊕ 2NC
15	LS	FM 1553-E0M2V9	2NO	FM 1554-M2	2NO
16	LI			FM 1654-M2	⊕ 2NC
18	LA	FM 1853-E0M2V9	⊕ 1NO+1NC	FM 1854-M2	⊕ 1NO+1NC
20	L	FM 2053-E0M2V9	⊕ 1NO+2NC	FM 2054-M2	⊕ 1NO+2NC
21	L	FM 2153-E0M2V9	⊕ 3NC	FM 2154-M2	⊕ 3NC
22	L	FM 2253-E0M2V9	⊕ 2NO+1NC	FM 2254-M2	⊕ 2NO+1NC
2	R	FM 253-E0M2	2x(1NO-1NC)	FM 254-M2	2x(1NO-1NC)
E1	A	FM E153-E0M2V9	1NO-1NC	FM E154-M2	1NO-1NC
Max. speed		0.5 m/s	page 239 - type 1	page 239 - type 1	page 239 - type 1
Min. force		0.03 Nm (0.25 Nm ⊕)	0.06 Nm (0.25 Nm ⊕)	0.06 Nm (0.25 Nm ⊕)	0.06 Nm (0.25 Nm ⊕)
Travel diagrams		page 240 - group 6	page 240 - group 5	page 240 - group 5	page 240 - group 5

		Other rollers available. See on page 82	Fiber glass rod	Rope switch for signalling	
Contact blocks					
5	R	FM 557-M2	⊕ 1NO+1NC	FM 569-M2	1NO+1NC
6	L	FM 657-M2	⊕ 1NO+1NC	FM 669-M2	1NO+1NC
7	LO	FM 757-M2	⊕ 1NO+1NC	FM 769-M2	1NO+1NC
9	L	FM 957-M2	⊕ 2NC	FM 969-M2	2NC
10	L	FM 1057-M2	2NO	FM 1069-M2	2NO
11	R	FM 1157-M2	⊕ 2NC	FM 1169-M2	2NC
12	R	FM 1257-M2	2NO	FM 1269-M2	2NO
13	LV	FM 1357-M2	⊕ 2NC	FM 1369-M2	2NC
14	LS	FM 1457-M2	⊕ 2NC	FM 1469-M2	2NC
15	LS	FM 1557-M2	2NO	FM 1569-M2	2NO
16	LI	FM 1657-M2	⊕ 2NC	FM 1669-M2	2NC
18	LA	FM 1857-M2	⊕ 1NO+1NC	FM 1869-M2	1NO+1NC
20	L	FM 2057-M2	⊕ 1NO+2NC	FM 2069-M2	1NO+2NC
21	L	FM 2157-M2	⊕ 3NC	FM 2169-M2	3NC
22	L	FM 2257-M2	⊕ 2NO+1NC	FM 2269-M2	2NO+1NC
2	R	FM 257-M2	2x(1NO-1NC)	FM 269-M2	2x(1NO-1NC)
E1	A	FM E157-M2	1NO-1NC	FM E169-M2	1NO-1NC
Max. speed		page 239 - type 1	1.5 m/s	0.5 m/s	
Min. force		0.06 Nm (0.25 Nm ⊕)	0.06 Nm	initial 20 N - final 40 N	
Travel diagrams		page 240 - group 5	page 240 - group 5	page 240 - group 7	

(1) Positive opening only with actuator set to max. See page 81.

All measures in the drawings are in mm

Accessories See page 225

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

Position switches FM series with reset



Pizzato Elettrica has developed a reset device code W3 to make perfectly simultaneous the actuator and the contact block tripping. The new device is a block inserted between the switch body and the head, and could be rotated independently from this last one. This new device has following advantages:

- The reset device can be integrated into almost all standard actuator heads
- Contact blocks with snap action are no more necessary because the tripping movement is made by the reset device itself
- The reset device can be rotated independently from the head for maximum flexibility during installation
- Two driving forces: standard and increased for applications with vibrations
- Mechanical endurance: 1 million operating cycles.

Contact type:

R = snap action
L = slow action

	With stainless steel roller on request	With stainless steel roller on request	
Contact type:			
Contact blocks:	FM 601-W3M2 1NO+1NC FM 901-W3M2 2NC FM 1001-W3M2 2NO FM 2001-W3M2 1NO+2NC FM 2101-W3M2 3NC FM 2201-W3M2 2NO+1NC FM 201-W3M2 2NO+2NC	FM 602-W3M2 1NO+1NC FM 902-W3M2 2NC FM 1002-W3M2 2NO FM 2002-W3M2 1NO+2NC FM 2102-W3M2 3NC FM 2202-W3M2 2NO+1NC FM 202-W3M2 2NO+2NC	FM 605-W3M2 1NO+1NC FM 905-W3M2 2NC FM 1005-W3M2 2NO FM 2005-W3M2 1NO+2NC FM 2105-W3M2 3NC FM 2205-W3M2 2NO+1NC FM 205-W3M2 2NO+2NC
Max. speed	page 239 - type 4	page 239 - type 3	page 239 - type 3
Min. force	4.5 N (25 N	4 N (25 N	4 N (25 N
Travel diagrams	page 241 - group 1	page 241 - group 2	page 241 - group 2
			page 239 - type 3
			2.5 N (25 N
			page 241 - group 3

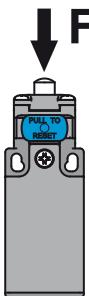
	With Ø 12 mm stainless steel roller on request	With Ø 20 mm stainless steel roller on request	Other rollers available. See on page 82	Other rollers available. See on page 82
Contact blocks:				
6 FM 615-W3M2R28 1NO+1NC	FM 630-W3M2 1NO+1NC	FM 631-W3M2 1NO+1NC	FM 651-W3M2 1NO+1NC	
9 FM 915-W3M2R28 2NC	FM 930-W3M2 2NC	FM 931-W3M2 2NC	FM 951-W3M2 2NC	
10 FM 1015-W3M2R28 2NO	FM 1030-W3M2 2NO	FM 1031-W3M2 2NO	FM 1051-W3M2 2NO	
20 FM 2015-W3M2R28 1NO+2NC	FM 2030-W3M2 1NO+2NC	FM 2031-W3M2 1NO+2NC	FM 2051-W3M2 1NO+2NC	
21 FM 2115-W3M2R28 3NC	FM 2130-W3M2 3NC	FM 2131-W3M2 3NC	FM 2151-W3M2 3NC	
22 FM 2215-W3M2R28 2NO+1NC	FM 2230-W3M2 2NO+1NC	FM 2231-W3M2 2NO+1NC	FM 2251-W3M2 2NO+1NC	
2 FM 215-W3M2R28 2NO+2NC	FM 230-W3M2 2NO+2NC	FM 231-W3M2 2NO+2NC	FM 251-W3M2 2NO+2NC	
Max. speed	page 239 - type 2	page 239 - type 1	page 239 - type 1	page 239 - type 1
Min. force	4.5 N (25 N	0.07 Nm (0.25 Nm	0.07 Nm (0.25 Nm	0.07 Nm (0.25 Nm
Travel diagrams	page 241 - group 1	page 241 - group 4	page 241 - group 4	page 241 - group 4

All measures in the drawings are in mm

Contact type:	Other rollers available. See on page 82			
R = snap action L = slow action				
Contact blocks				
6 L	FM 652-W3M2 1NO+1NC	FM 654-W3M2 1NO+1NC	FM 656-W3M2 1NO+1NC	FM 657-W3M2 1NO+1NC
9 L	FM 952-W3M2 2NC	FM 954-W3M2 2NC	FM 956-W3M2 2NC	FM 957-W3M2 2NC
10 L	FM 1052-W3M2 2NO	FM 1054-W3M2 2NO	FM 1056-W3M2 2NO	FM 1057-W3M2 2NO
20 L	FM 2052-W3M2 1NO+2NC	FM 2054-W3M2 1NO+2NC	FM 2056-W3M2 1NO+2NC	FM 2057-W3M2 1NO+2NC
21 L	FM 2152-W3M2 3NC	FM 2154-W3M2 3NC	FM 2156-W3M2 3NC	FM 2157-W3M2 3NC
22 L	FM 2252-W3M2 2NO+1NC	FM 2254-W3M2 2NO+1NC	FM 2256-W3M2 2NO+1NC	FM 2257-W3M2 2NO+1NC
2 R	FM 252-W3M2 2NO+2NC	FM 254-W3M2 2NO+2NC	FM 256-W3M2 2NO+2NC	FM 257-W3M2 2NO+2NC
Max. speed	page 239 - type 1			
Min. force	0.07 Nm (0.25 Nm			
Travel diagrams	page 241 - group 4			

All measures in the drawings are in mm

Increased actuating force



The switch can be delivered with increased actuating force (option W4). Ideal for applications with vibrations.

Actuators	Min. force
01, 14, 15, 16	7 N
02, 05	6 N
07	3.5 N
30 ... 57	0.08 Nm

Accessories See page 225

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

Position switches FM series

Position switches with revolving lever without actuator

All measures in the drawings are in mm

Contact type:

- [R] = snap action
- [L] = slow action
- [LO] = slow action overlapped
- [LS] = slow action shifted
- [LV] = slow action shifted and spaced
- [LI] = slow action independent
- [LA] = slow action closer
- [A] = electronic PNP

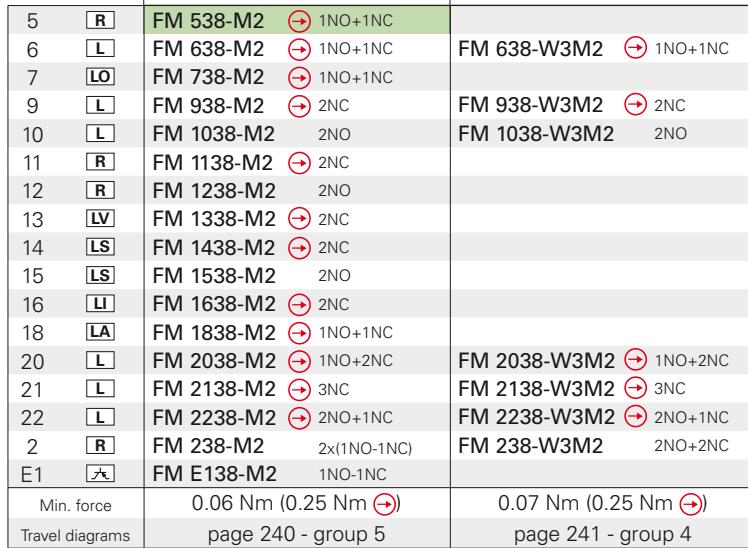
Contact blocks

5 [R]	FM 538-M2	① 1NO+1NC	
6 [L]	FM 638-M2	① 1NO+1NC	FM 638-W3M2 ① 1NO+1NC
7 [LO]	FM 738-M2	① 1NO+1NC	
9 [L]	FM 938-M2	① 2NC	FM 938-W3M2 ① 2NC
10 [L]	FM 1038-M2	2NO	FM 1038-W3M2 2NO
11 [R]	FM 1138-M2	① 2NC	
12 [R]	FM 1238-M2	2NO	
13 [LV]	FM 1338-M2	① 2NC	
14 [LS]	FM 1438-M2	① 2NC	
15 [LS]	FM 1538-M2	2NO	
16 [LI]	FM 1638-M2	① 2NC	
18 [LA]	FM 1838-M2	① 1NO+1NC	
20 [L]	FM 2038-M2	① 1NO+2NC	FM 2038-W3M2 ① 1NO+2NC
21 [L]	FM 2138-M2	① 3NC	FM 2138-W3M2 ① 3NC
22 [L]	FM 2238-M2	① 2NO+1NC	FM 2238-W3M2 ① 2NO+1NC
2 [R]	FM 238-M2	2x(1NO-1NC)	FM 238-W3M2 2NO+2NC
E1 [A]	FM E138-M2	1NO-1NC	
Min. force		0.06 Nm (0.25 Nm ①)	0.07 Nm (0.25 Nm ①)
Travel diagrams		page 240 - group 5	page 241 - group 4

All measures in the drawings are in mm

IMPORTANT

For safety applications: join only switches and actuators marked with symbol ① aside the product code.
For more information about safety applications see details on page 235.



Loose actuators

All measures in the drawings are in mm

IMPORTANT: These loose actuators can be used with items of series FR, FM, FX, FZ and FK only.

Technopolymer roller Ø 18 mm	Technopolymer roller Ø 18 mm	Adjustable square rod, 3x3x125 mm	Flexible rod with pointed end	Adjustable round rod Ø 3x125 mm	Technopolymer roller Ø 20 mm
VF LE30 ①	VF LE31 ①	VF LE33	VF LE34	VF LE50	VF LE51 ①
Technopolymer roller Ø 20 mm	Porcelain roller	Technopolymer roller Ø 20 mm	Adjustable actuator with technopolymer roller	Adjustable safety actuator with technopolymer roller	Technopolymer roller Ø 20 mm
VF LE52 ①	VF LE53 ① (2)	VF LE54 ①	VF LE55 ① (1)	VF LE56 ①	VF LE57 ①
Adjustable fiber glass rod					
					VF LE69

- (1) Actuator VF LE55 can only be used in safety applications if adjusted to its max. length, as shown in figure beside. If you need an adjustable lever for safety applications, use the adjustable safety lever VF LE56.

- (2) The position switch obtained by assembling switch FM •38-M2 (e.g. FM 538-M2, FM 638-M2...) with actuator VF L53 will not present the same travel diagrams and actuating forces as switch FM •53-E0M2V9 (e.g. FM 553-E0M2V9, FM 653-E0M2V9...).

- (4) The actuator cannot be rotated to the inside because it will mechanically interfere with the switch head.

Items with code on green background are stock items

Accessories See page 225

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



Special loose actuators

All measures in the drawings are in mm

IMPORTANT: These loose actuators can be used with items of series FR, FM, FX, FZ and FK only.

Stainless steel rollers, Ø 20 mm

VF LE31-R24 (4)	VF LE51-R24 (4)	VF LE52-R24 (4)	VF LE54-R24 (4)	VF LE55-R24 (1)	VF LE56-R24 (4)	VF LE57-R24 (4)

Technopolymer rollers, Ø 35 mm

VF LE31-R25 (4)	VF LE51-R25 (4)	VF LE52-R25 (4)	VF LE54-R25 (4)	VF LE55-R25 (1)	VF LE56-R25 (4)	VF LE57-R25 (4)

Rubber rollers, Ø 40 mm

VF LE31-R5 (4)	VF LE51-R5 (4)	VF LE52-R5 (4)	VF LE54-R5 (4)	VF LE55-R5 (1)	VF LE56-R5 (4)	VF LE57-R5 (4)

Rubber rollers, Ø 50 mm

VF LE51-R26 (4)	VF LE52-R26 (4)	VF LE54-R26 (4)	VF LE55-R26 (1)	VF LE56-R26 (4)	VF LE57-R26 (4)

Protruding rubber rollers, Ø 50 mm

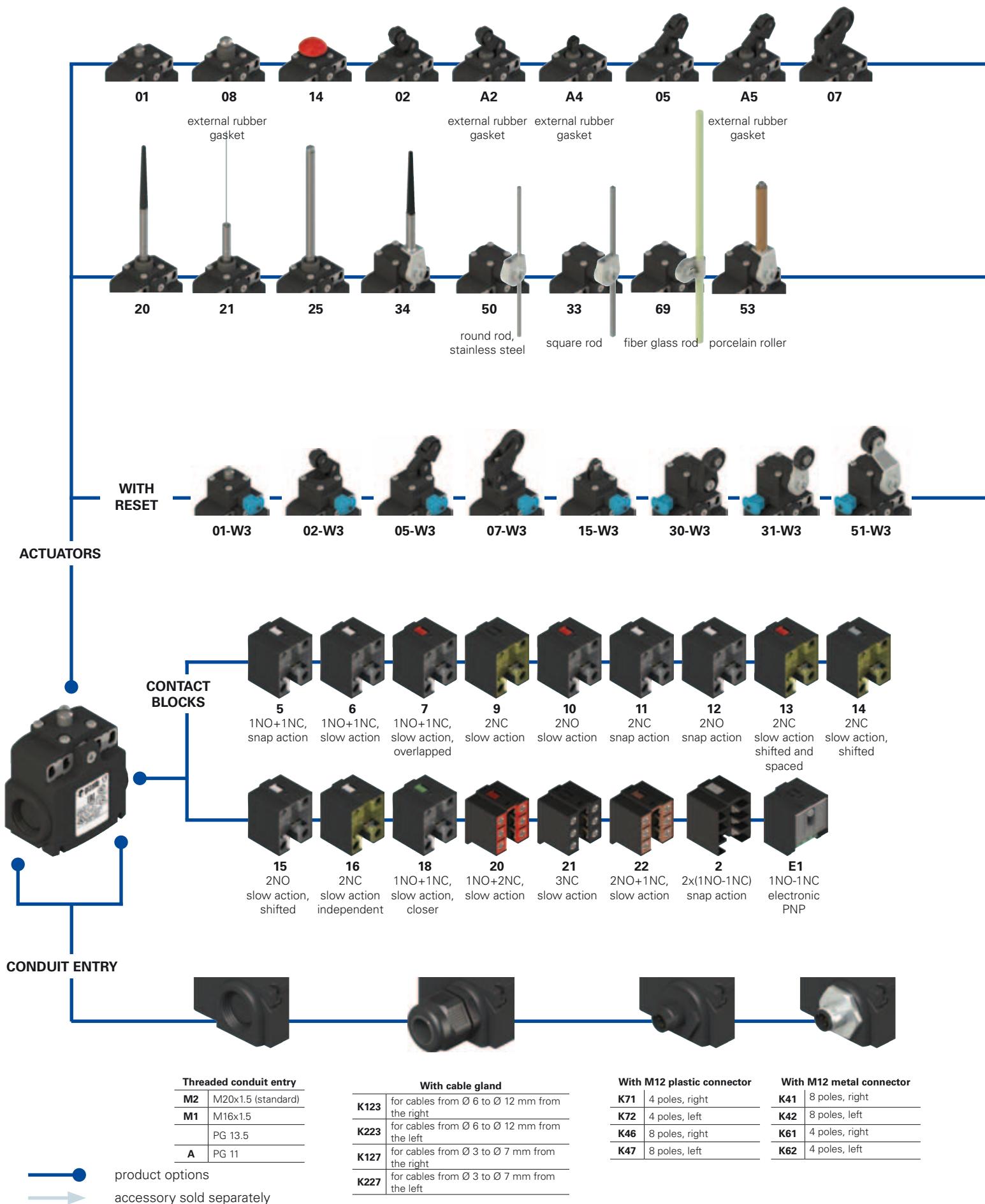
VF LE55-R27 (1)	VF LE56-R27 (4)

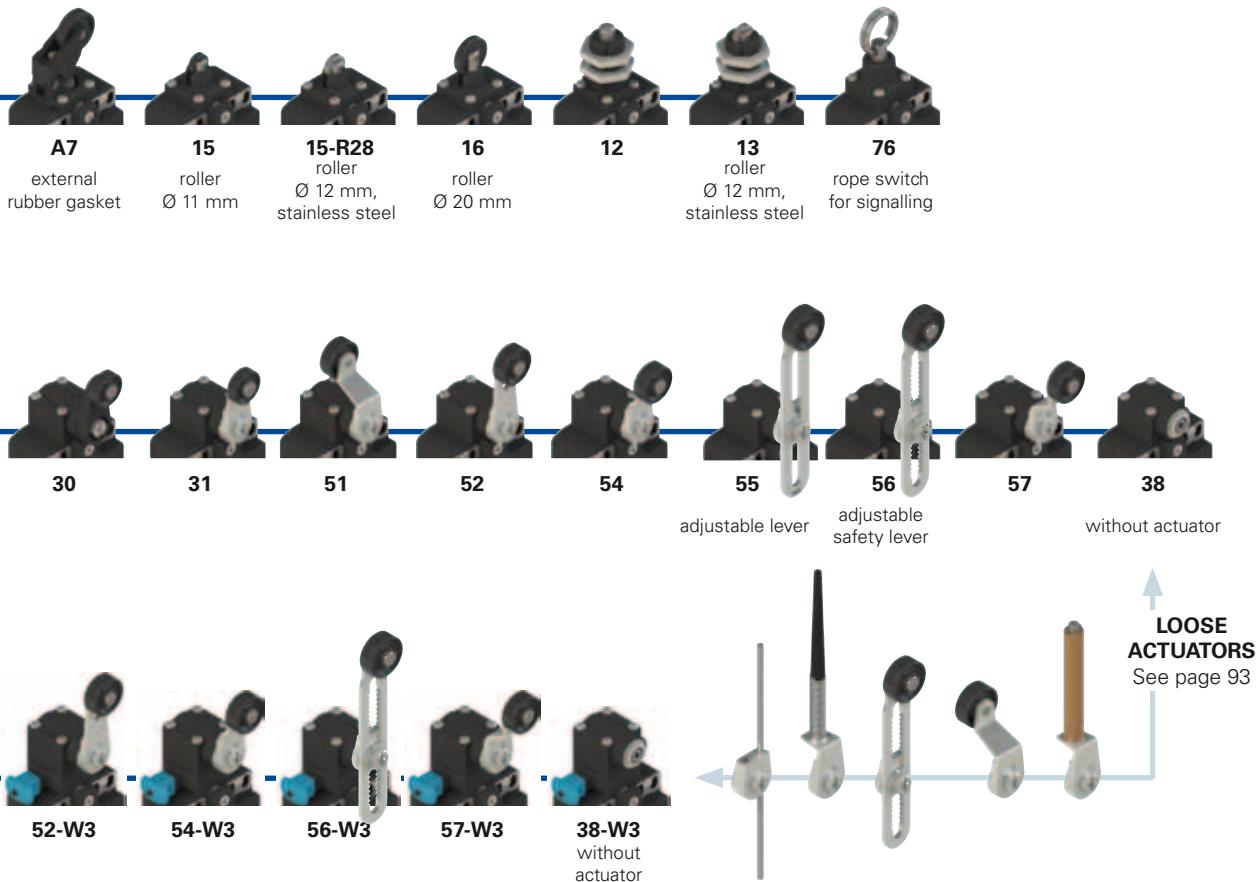
Items with code on green background are stock items

Accessories See page 225

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

Selection diagram





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 options

FX 502-W3XGM2K71R23T6

Housing

FX technopolymer, two conduit entries

Contact blocks

5	1NO+1NC, snap action
6	1NO+1NC, slow action
7	1NO+1NC, slow action, overlapped
...

Actuators

01	short plunger
02	roller lever
05	angled roller lever
...

Reset

without reset (standard)
W3 simultaneous reset
W4 simultaneous reset, increased force

External metallic parts

zinc-plated steel (standard)
X stainless steel

Ambient temperature

-25°C ... +80°C (standard)
T6 -40°C ... +80°C

Pre-installed cable glands or connectors

without cable gland or connector (standard)
K123 cable gland for cables from Ø 6 to Ø 12 mm from the right
K71 M12 plastic connector, 4 poles, right

Please contact our technical service for the complete list of possible combinations.

Threaded conduit entry

M2	M20x1.5 (standard)
M1	M16x1.5
	PG 13.5
A	PG11

Rollers

standard roller
R28 stainless steel, Ø 12 mm (for actuators A4, 15)
R23 stainless steel, Ø 14 mm (for actuators A2, 02, A5, 05, 30, 31, 51, 52, 54, 55, 56, 57)
R24 stainless steel, Ø 20 mm (for actuators 30, 31, 51, 52, 54, 55, 56, 57)
R25 technopolymer, Ø 35 mm (for actuators 30, 31, 51, 52, 54, 55, 56, 57)
R5 rubber, Ø 40 mm (for actuators 30, 31, 51, 52, 54, 55, 56, 57)
R26 rubber, Ø 50 mm (for actuators 51, 52, 54, 55, 56, 57)
R27 rubber, protruding, Ø 50 mm (for actuators 55, 56)

**Main features**

- Technopolymer housing, two conduit entries
- Protection degree IP67
- 17 contact blocks available
- 43 actuators available
- Versions with stainless steel external parts
- Versions with M12 connector
- Versions with gold-plated silver contacts

Technical data**Housing**

Housing made of fiber glass reinforced technopolymer, self-extinguishing, shock-proof and with double insulation:
 M20x1.5 (standard)
 Protection degree: IP67 according to EN 60529 with cable gland having equal or higher protection degree

General data

Ambient temperature:	-25°C ... +80°C
Max. actuation frequency:	3600 operating cycles ¹ /hour
Mechanical endurance:	20 million operating cycles ¹
Mounting position:	any
Safety parameters:	40,000,000 for NC contacts
B _{10d} :	type 1 according to EN ISO 14119
Mechanical interlock, not coded:	see pages 235-246
Tightening torques for installation:	

(1) One operation cycle means two movements, one to close and one to open contacts, as defined in EN 60947-5-1.

Cable cross section (flexible copper strands)

Contact blocks 20, 21, 22, 33, 34:	min. 1 x 0.34 mm ²	(1 x AWG 22)
	max. 2 x 1.5 mm ²	(2 x AWG 16)
Contact block 5, 6, 7, 9, 10, 11, 12, 13, 14, 15, 16, 18:	min. 1 x 0.5 mm ²	(1 x AWG 20)
	max. 2 x 2.5 mm ²	(2 x AWG 14)
Contact block 2:	min. 1 x 0.5 mm ²	(1 x AWG 20)
	max. 2 x 1.5 mm ²	(2 x AWG 16)

In conformity with standards:

IEC 60947-5-1, EN 60947-5-1, EN 60947-1, IEC 60204-1, EN 60204-1, EN ISO 14119, EN ISO 12100, IEC 60529, EN 60529, UL 508, CSA 22.2 No.14 .

Approvals:

IEC 60947-5-1, UL 508, CSA 22.2 No.14, GB14048.5-2001.

Markings and quality marks:

IMQ approval: EG610
 UL approval: E131787
 CCC approval: 2007010305230013
 EAC approval: RU C-IT ДМ94.В.01024

Installation for safety applications:

Use only switches marked with the symbol aside the product code. Always connect the safety circuit to the **NC contacts** (normally closed contacts: 11-12, 21-22 or 31-32) as stated in **standard EN 60947-5-1, encl. K, par. 2**. Actuate the switch **at least up to the positive opening travel** shown in the travel diagrams on page 240. Operate the switch **at least with the positive opening force**, indicated between brackets below each article, aside the minimum force value.

If not expressly indicated in this chapter, for correct installation and utilization of all articles see chapter utilization requirements from page 235 to page 246.

Electrical data**Utilization category**

without connector	Thermal current (I _{th}):	10 A	Alternating current: AC15 (50÷60 Hz)
	Rated insulation voltage (U _i):	500 Vac 600 Vdc	Ue (V) 250 400 500
	Rated impulse withstand voltage (U _{imp}):	400 Vac 500 Vdc (contact blocks 2, 11, 12, 20, 21, 22, 33, 34) 6 kV	Ie (A) 6 4 1
	Conditional short circuit current: Protection against short circuits: Pollution degree:	4 kV (contact blocks 20, 21, 22, 33, 34) 1000 A according to EN 60947-5-1 type aM fuse 10 A 500 V 3	Direct current: DC13 Ue (V) 24 125 250 Ie (A) 6 1.1 0.4
with connector M12, 4 poles	Thermal current (I _{th}):	4 A	Alternating current: AC15 (50÷60 Hz)
	Rated insulation voltage (U _i):	250 Vac 300 Vdc	Ue (V) 24 120 250
	Protection against short circuits:	fuse 4 A 500 V type gG	Ie (A) 4 4 4
	Pollution degree:	3	Direct current: DC13 Ue (V) 24 125 250 Ie (A) 4 1.1 0.4
with connector M12, 8 poles	Thermal current (I _{th}):	2 A	Alternating current: AC15 (50÷60 Hz)
	Rated insulation voltage (U _i):	30 Vac 36 Vdc	Ue (V) 24
	Protection against short circuits:	fuse 2 A 500 V type gG	Ie (A) 2
	Pollution degree:	3	Direct current: DC13 Ue (V) 24 Ie (A) 2



Characteristics approved by IMQ

Rated insulation voltage (Ui):	500 Vac 400 Vac (for contact blocks 2, 11, 12, 20, 21, 22, 33, 34)
Conventional free air thermal current (Ith):	10 A
Protection against short circuits: t	type AM fuse 10 A 500 V
Rated impulse withstand voltage (U_{imp}):	6 kV 4 kV (for contact blocks 20, 21, 22, 33, 34)
Protection degree of the housing: IP67	
MV terminals (screw terminals)	
Pollution degree 3	
Utilization category: AC15	
Operating voltage (Ue):	400 Vac (50 Hz)
Operating current (Ie):	3 A
Forms of the contact element:	Za, Zb, Za+Za, Y+Y, X+X, Y+Y+X, Y+Y+Y, Y+X+X
Positive opening of contacts on contact blocks 5, 6, 7, 9, 11, 13, 14, 16, 18, 20, 21, 22, 33, 34	
In conformity with standards:	EN 60947-1, EN 60947-5-1+A1:2009, fundamental requirements of the Low Voltage Directive 2006/95/EC.

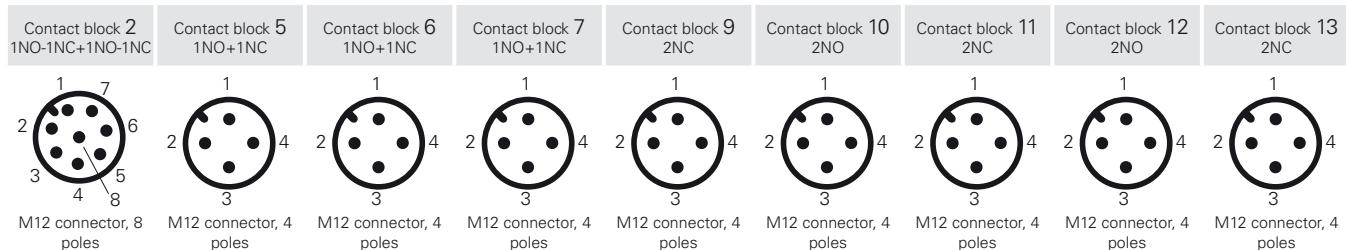
Please contact our technical service for the list of approved products.

Characteristics approved by UL

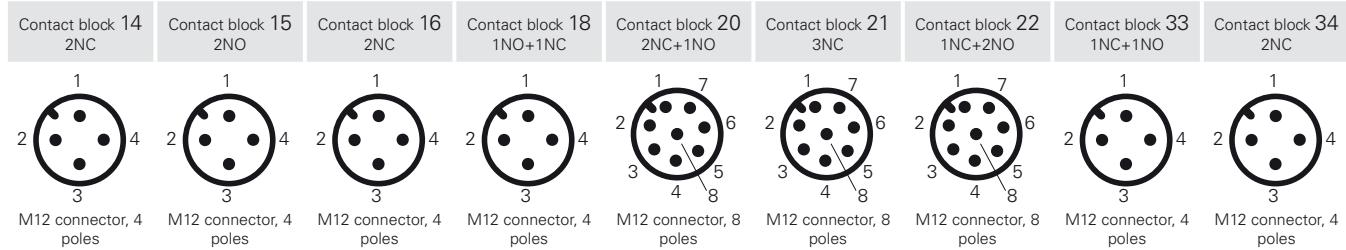
Utilization categories Q300 (69 VA, 125 ... 250 Vdc) A600 (720 VA, 120 ... 600 Vac)
Data of housing type 1, 4X "indoor use only", 12, 13
For all contact blocks except 2 and 3 use 60 or 75°C copper (Cu) conductor, rigid or flexible, wire size AWG 12/14. Terminal tightening torque of 7.1 lb in (0.8 Nm).
For contact blocks 2 and 3 use 60 or 75 °C copper (Cu) conductor, rigid or flexible, wire size AWG 14. Terminal tightening torque of 12 lb in (1.4 Nm).
In conformity with standard: UL 508, CSA 22.2 No.14

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

Connection diagram for M12 connectors

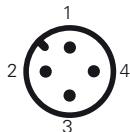


Contacts	Pin no.												
NO	3-4	NC	1-2	NC	1-2	NC	1-2	NO	1-2	NC	1-2	NO	1-2
NC	5-6	NO	3-4	NO	3-4	NO	3-4	NO	3-4	NC	3-4	NO	3-4
NC	7-8												
NO	1-2												



Contacts	Pin no.	Contacts	Pin no.	Contacts	Pin no.	Contacts	Pin no.	Contacts	Pin no.	Contacts	Pin no.	Contacts	Pin no.
NC (1°)	1-2	NO (1°)	1-2	NC, lever at the right	1-2	NC	1-2	NC	3-4	NC	3-4	NC	1-2
NC (2°)	3-4	NO (2°)	3-4	NC, lever to the left	3-4	NO	3-4	NC	5-6	NC	5-6	NO	5-6
						NO	7-8	NC	7-8	NO	7-8	NO	3-4

Contact block E1 PNP



M12 connector, 4 poles

Contacts	Pin no.
+	1
-	3
NC	2
NO	4

Position switches FX series

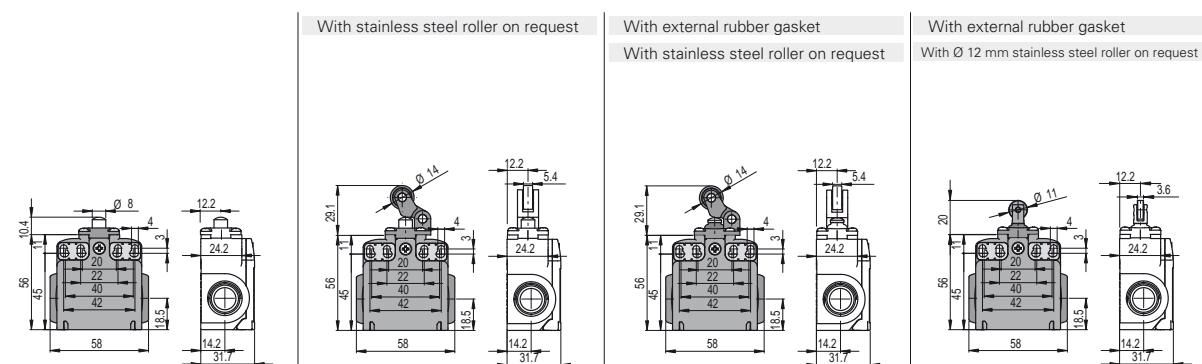
Contact type:

- [R] = snap action
- [L] = slow action
- [LO] = slow action overlapped
- [LS] = slow action shifted
- [LV] = slow action shifted and spaced
- [LI] = slow action independent
- [LA] = slow action closer
- [A] = electronic PNP

Contact blocks

		With stainless steel roller on request	With external rubber gasket	With external rubber gasket
		With stainless steel roller on request	With stainless steel roller on request	With Ø 12 mm stainless steel roller on request
5 [R]	FX 501-M2	1NO+1NC	FX 502-M2	1NO+1NC
6 [L]	FX 601-M2	1NO+1NC	FX 602-M2	1NO+1NC
7 [LO]	FX 701-M2	1NO+1NC	FX 702-M2	1NO+1NC
9 [L]	FX 901-M2	2NC	FX 902-M2	2NC
10 [L]	FX 1001-M2	2NO	FX 1002-M2	2NO
11 [R]	FX 1101-M2	2NC	FX 1102-M2	2NC
12 [R]	FX 1201-M2	2NO	FX 1202-M2	2NO
13 [LV]	FX 1301-M2	2NC	FX 1302-M2	2NC
14 [LS]	FX 1401-M2	2NC	FX 1402-M2	2NC
15 [LS]	FX 1501-M2	2NO	FX 1502-M2	2NO
18 [LA]	FX 1801-M2	1NO+1NC	FX 1802-M2	1NO+1NC
20 [L]	FX 2001-M2	1NO+2NC	FX 2002-M2	1NO+2NC
21 [L]	FX 2101-M2	3NC	FX 2102-M2	3NC
22 [L]	FX 2201-M2	2NO+1NC	FX 2202-M2	2NO+1NC
2 [R]	FX 201-M2	2x(1NO-1NC)	FX 202-M2	2x(1NO-1NC)
E1 [A]	FX E101-M2	1NO-1NC	FX E102-M2	1NO-1NC
Max. speed	page 239 - type 4	page 239 - type 3	page 239 - type 3	page 239 - type 5
Min. force	8 N (25 N ☺)	6 N (25 N ☺)	4.3 N (25 N ☺)	4.3 N (25 N ☺)
Travel diagrams	page 240 - group 1	page 240 - group 2	page 240 - group 2	page 240 - group 1

Contact blocks



		With stainless steel roller on request	With external rubber gasket	With external rubber gasket
		With stainless steel roller on request	With stainless steel roller on request	With Ø 12 mm stainless steel roller on request
5 [R]	FX 505-M2	1NO+1NC	FX 5A5-M2	1NO+1NC
6 [L]	FX 605-M2	1NO+1NC	FX 6A5-M2	1NO+1NC
7 [LO]	FX 705-M2	1NO+1NC	FX 7A5-M2	1NO+1NC
9 [L]	FX 905-M2	2NC	FX 9A5-M2	2NC
10 [L]	FX 1005-M2	2NO	FX 10A5-M2	2NO
11 [R]	FX 1105-M2	2NC	FX 11A5-M2	2NC
12 [R]	FX 1205-M2	2NO	FX 12A5-M2	2NO
13 [LV]	FX 1305-M2	2NC	FX 13A5-M2	2NC
14 [LS]	FX 1405-M2	2NC	FX 14A5-M2	2NC
15 [LS]	FX 1505-M2	2NO	FX 15A5-M2	2NO
18 [LA]	FX 1805-M2	1NO+1NC	FX 18A5-M2	1NO+1NC
20 [L]	FX 2005-M2	1NO+2NC	FX 20A5-M2	1NO+2NC
21 [L]	FX 2105-M2	3NC	FX 21A5-M2	3NC
22 [L]	FX 2205-M2	2NO+1NC	FX 22A5-M2	2NO+1NC
2 [R]	FX 205-M2	2x(1NO-1NC)	FX 2A5-M2	2x(1NO-1NC)
E1 [A]	FX E105-M2	1NO-1NC	FX E1A5-M2	1NO-1NC
Max. speed	page 239 - type 3	page 239 - type 3	page 239 - type 3	page 239 - type 3
Min. force	6 N (25 N ☺)	4.3 N (25 N ☺)	4 N (25 N ☺)	3 N (25 N ☺)
Travel diagrams	page 240 - group 2	page 240 - group 2	page 240 - group 3	page 240 - group 3

All measures in the drawings are in mm

Items with code on green background are stock items

Accessories See page 225

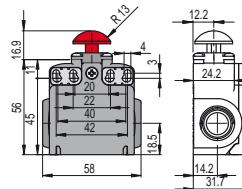
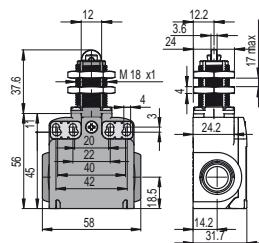
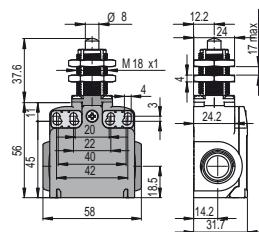
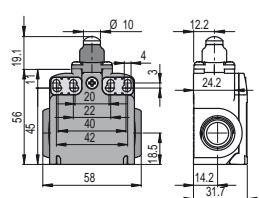
→ The 2D/3D files are available at www.pizzato.com



With external rubber gasket

Contact type:

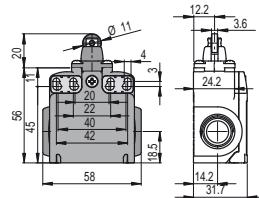
- [R] = snap action
- [L] = slow action
- [LO] = slow action overlapped
- [LS] = slow action shifted
- [LV] = slow action shifted and spaced
- [LI] = slow action independent
- [LA] = slow action closer
- [A] = electronic PNP



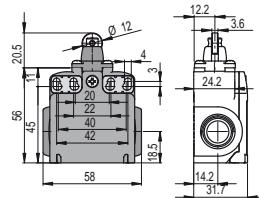
Contact blocks

5 [R]	FX 508-M2	① 1NO+1NC	FX 512-M2	① 1NO+1NC	FX 513-M2	① 1NO+1NC	FX 514-M2	① 1NO+1NC
6 [L]	FX 608-M2	① 1NO+1NC	FX 612-M2	① 1NO+1NC	FX 613-M2	① 1NO+1NC	FX 614-M2	① 1NO+1NC
7 [LO]	FX 708-M2	① 1NO+1NC	FX 712-M2	① 1NO+1NC	FX 713-M2	① 1NO+1NC	FX 714-M2	① 1NO+1NC
9 [L]	FX 908-M2	② 2NC	FX 912-M2	② 2NC	FX 913-M2	② 2NC	FX 914-M2	② 2NC
10 [L]	FX 1008-M2	2NO	FX 1012-M2	2NO	FX 1013-M2	2NO	FX 1014-M2	2NO
11 [R]	FX 1108-M2	② 2NC	FX 1112-M2	② 2NC	FX 1113-M2	② 2NC	FX 1114-M2	② 2NC
12 [R]	FX 1208-M2	2NO	FX 1212-M2	2NO	FX 1213-M2	2NO	FX 1214-M2	2NO
13 [LV]	FX 1308-M2	② 2NC	FX 1312-M2	② 2NC	FX 1313-M2	② 2NC	FX 1314-M2	② 2NC
14 [LS]	FX 1408-M2	② 2NC	FX 1412-M2	② 2NC	FX 1413-M2	② 2NC	FX 1414-M2	② 2NC
15 [LS]	FX 1508-M2	2NO	FX 1512-M2	2NO	FX 1513-M2	2NO	FX 1514-M2	2NO
18 [LA]	FX 1808-M2	① 1NO+1NC	FX 1812-M2	① 1NO+1NC	FX 1813-M2	① 1NO+1NC	FX 1814-M2	① 1NO+1NC
20 [L]	FX 2008-M2	① 1NO+2NC	FX 2012-M2	① 1NO+2NC	FX 2013-M2	① 1NO+2NC	FX 2014-M2	① 1NO+2NC
21 [L]	FX 2108-M2	③ 3NC	FX 2112-M2	③ 3NC	FX 2113-M2	③ 3NC	FX 2114-M2	③ 3NC
22 [L]	FX 2208-M2	④ 2NO+1NC	FX 2212-M2	④ 2NO+1NC	FX 2213-M2	④ 2NO+1NC	FX 2214-M2	④ 2NO+1NC
2 [R]	FX 208-M2	2x(1NO-1NC)	FX 212-M2	2x(1NO-1NC)	FX 213-M2	2x(1NO-1NC)	FX 214-M2	2x(1NO-1NC)
E1 [A]	FX E108-M2	1NO-1NC	FX E112-M2	1NO-1NC	FX E113-M2	1NO-1NC	FX E114-M2	1NO-1NC
Max. speed	page 239 - type 4		page 239 - type 4		page 239 - type 2		page 239 - type 4	
Min. force	8 N (25 N ②)							
Travel diagrams	page 240 - group 1							

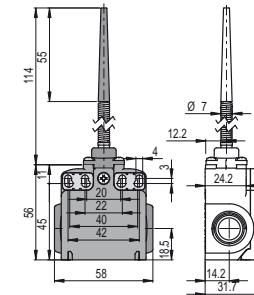
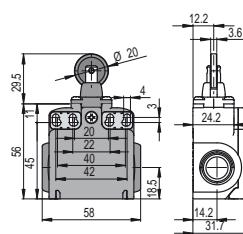
Roller, Ø 11 mm, technopolymer



Roller, Ø 12 mm, stainless steel



With external rubber gasket



Contact blocks

5 [R]	FX 515-M2	① 1NO+1NC	FX 515-M2R28	① 1NO+1NC	FX 516-M2	① 1NO+1NC	FX 520-M2	1NO+1NC
6 [L]	FX 615-M2	① 1NO+1NC	FX 615-M2R28	① 1NO+1NC	FX 616-M2	① 1NO+1NC	FX 620-M2	1NO+1NC
7 [LO]	FX 715-M2	① 1NO+1NC	FX 715-M2R28	① 1NO+1NC	FX 716-M2	① 1NO+1NC	FX 720-M2	1NO+1NC
9 [L]	FX 915-M2	② 2NC	FX 915-M2R28	② 2NC	FX 916-M2	② 2NC	FX 920-M2	1NO+1NC
10 [L]	FX 1015-M2	2NO	FX 1015-M2R28	2NO	FX 1016-M2	2NO	FX 1020-M2	2NO
11 [R]	FX 1115-M2	② 2NC	FX 1115-M2R28	② 2NC	FX 1116-M2	② 2NC	FX 1120-M2	2NO
12 [R]	FX 1215-M2	2NO	FX 1215-M2R28	2NO	FX 1216-M2	2NO	FX 1220-M2	2NO
13 [LV]	FX 1315-M2	② 2NC	FX 1315-M2R28	② 2NC	FX 1316-M2	② 2NC	FX 1320-M2	2NO
14 [LS]	FX 1415-M2	② 2NC	FX 1415-M2R28	② 2NC	FX 1416-M2	② 2NC	FX 1420-M2	2NO
15 [LS]	FX 1515-M2	2NO	FX 1515-M2R28	2NO	FX 1516-M2	2NO	FX 1520-M2	2NO
18 [LA]	FX 1815-M2	① 1NO+1NC	FX 1815-M2R28	① 1NO+1NC	FX 1816-M2	① 1NO+1NC	FX 1820-M2	1NO+1NC
20 [L]	FX 2015-M2	① 1NO+2NC	FX 2015-M2R28	① 1NO+2NC	FX 2016-M2	① 1NO+2NC	FX 2020-M2	1NO+2NC
21 [L]	FX 2115-M2	③ 3NC	FX 2115-M2R28	③ 3NC	FX 2116-M2	③ 3NC	FX 2120-M2	3NC
22 [L]	FX 2215-M2	④ 2NO+1NC	FX 2215-M2R28	④ 2NO+1NC	FX 2216-M2	④ 2NO+1NC	FX 2220-M2	2NO+1NC
2 [R]	FX 215-M2	2x(1NO-1NC)	FX 215-M2R28	2x(1NO-1NC)	FX 216-M2	2x(1NO-1NC)	FX 220-M2	2x(1NO-1NC)
E1 [A]	FX E115-M2	1NO-1NC	FX E115-M2R28	1NO-1NC	FX E116-M2	1NO-1NC	FX E120-M2	1NO-1NC
Max. speed	page 239 - type 2		page 239 - type 2		page 239 - type 2		1 m/s	
Min. force	8 N (25 N ②)		8 N (25 N ②)		8 N (25 N ②)		0.07 Nm	
Travel diagrams	page 240 - group 1		page 240 - group 1		page 240 - group 1		page 240 - group 4	

All measures in the drawings are in mm

Items with code on green background are stock items

Accessories See page 225

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

Position switches FX series

Contact type:	With external rubber gasket	With external rubber gasket	With Ø 20 mm stainless steel roller on request	Other rollers available. See on page 94
R = snap action L = slow action LO = slow action overlapped LS = slow action shifted LV = slow action shifted and spaced LI = slow action independent LA = slow action closer A = electronic PNP				
Contact blocks				
5 R	FX 521-M2 1NO+1NC	FX 525-M2 1NO+1NC	FX 530-M2 1NO+1NC	FX 531-M2 1NO+1NC
6 L			FX 630-M2 1NO+1NC	FX 631-M2 1NO+1NC
7 LO			FX 730-M2 1NO+1NC	FX 731-M2 1NO+1NC
9 L			FX 930-M2 2NC	FX 931-M2 2NC
10 L	FX 1021-M2 2NO	FX 1025-M2 2NO	FX 1030-M2 2NO	FX 1031-M2 2NO
11 R			FX 1130-M2 2NC	FX 1131-M2 2NC
12 R	FX 1221-M2 2NO	FX 1225-M2 2NO	FX 1230-M2 2NO	FX 1231-M2 2NO
13 LV			FX 1330-M2 2NC	FX 1331-M2 2NC
14 LS			FX 1430-M2 2NC	FX 1431-M2 2NC
15 LS			FX 1530-M2 2NO	FX 1531-M2 2NO
16 LI			FX 1630-M2 2NC	FX 1631-M2 2NC
18 LA	FX 1821-M2 1NO+1NC	FX 1825-M2 1NO+1NC	FX 1830-M2 1NO+1NC	FX 1831-M2 1NO+1NC
20 L	FX 2021-M2 1NO+2NC	FX 2025-M2 1NO+2NC	FX 2030-M2 1NO+2NC	FX 2031-M2 1NO+2NC
21 L	FX 2121-M2 3NC	FX 2125-M2 3NC	FX 2130-M2 3NC	FX 2131-M2 3NC
22 L	FX 2221-M2 2NO+1NC	FX 2225-M2 2NO+1NC	FX 2230-M2 2NO+1NC	FX 2231-M2 2NO+1NC
2 R	FX 221-M2 2x(1NO-1NC)	FX 225-M2 2x(1NO-1NC)	FX 230-M2 2x(1NO-1NC)	FX 231-M2 2x(1NO-1NC)
E1 A	FX E121-M2 1NO-1NC	FX E125-M2 1NO-1NC	FX E130-M2 1NO-1NC	FX E131-M2 1NO-1NC
Max. speed	1 m/s	1 m/s	page 239 - type 1	page 239 - type 1
Min. force	0.07 Nm	0.12 Nm	0.06 Nm (0.25 Nm ⊕)	0.06 Nm (0.25 Nm ⊕)
Travel diagrams	page 240 - group 4	page 240 - group 4	page 240 - group 5	page 240 - group 5

Contact blocks	Square rod, 3x3 mm	Round rod, Ø 3 mm, stainless steel	Other rollers available. See on page 94
5 R	FX 533-M2 1NO+1NC	FX 534-M2 1NO+1NC	FX 550-M2 1NO+1NC
6 L	FX 633-M2 1NO+1NC	FX 634-M2 1NO+1NC	FX 650-M2 1NO+1NC
7 LO	FX 733-M2 1NO+1NC	FX 734-M2 1NO+1NC	FX 750-M2 1NO+1NC
9 L	FX 933-M2 2NC	FX 934-M2 2NC	FX 950-M2 2NC
10 L	FX 1033-M2 2NO	FX 1034-M2 2NO	FX 1050-M2 2NO
11 R	FX 1133-M2 2NC	FX 1134-M2 2NC	FX 1150-M2 2NC
12 R	FX 1233-M2 2NO	FX 1234-M2 2NO	FX 1250-M2 2NO
13 LV	FX 1333-M2 2NC	FX 1334-M2 2NC	FX 1350-M2 2NC
14 LS	FX 1433-M2 2NC	FX 1434-M2 2NC	FX 1450-M2 2NC
15 LS	FX 1533-M2 2NO	FX 1534-M2 2NO	FX 1550-M2 2NO
16 LI	FX 1633-M2 2NC	FX 1634-M2 2NC	FX 1650-M2 2NC
18 LA	FX 1833-M2 1NO+1NC	FX 1834-M2 1NO+1NC	FX 1850-M2 1NO+1NC
20 L	FX 2033-M2 1NO+2NC	FX 2034-M2 1NO+2NC	FX 2050-M2 1NO+2NC
21 L	FX 2133-M2 3NC	FX 2134-M2 3NC	FX 2150-M2 3NC
22 L	FX 2233-M2 2NO+1NC	FX 2234-M2 2NO+1NC	FX 2250-M2 2NO+1NC
2 R	FX 233-M2 2x(1NO-1NC)	FX 234-M2 2x(1NO-1NC)	FX 250-M2 2x(1NO-1NC)
E1 A	FX E133-M2 1NO-1NC	FX E134-M2 1NO-1NC	FX E150-M2 1NO-1NC
Max. speed	1.5 m/s	1.5 m/s	page 239 - type 1
Min. force	0.06 Nm	0.06 Nm	0.06 Nm (0.25 Nm ⊕)
Travel diagrams	page 240 - group 5	page 240 - group 5	page 240 - group 5

All measures in the drawings are in mm

Accessories See page 225

The 2D/3D files are available at www.pizzato.com



Contact type:	Other rollers available. See on page 94	Porcelain roller	Other rollers available. See on page 94	Other rollers available. See on page 94																																																																																																																																								
Contact blocks	<table border="1"> <tbody> <tr><td>5</td><td>R</td><td>FX 552-M2</td><td>① 1NO+1NC</td></tr> <tr><td>6</td><td>L</td><td>FX 652-M2</td><td>① 1NO+1NC</td></tr> <tr><td>7</td><td>LO</td><td>FX 752-M2</td><td>① 1NO+1NC</td></tr> <tr><td>9</td><td>L</td><td>FX 952-M2</td><td>② 2NC</td></tr> <tr><td>10</td><td>L</td><td>FX 1052-M2</td><td>2NO</td></tr> <tr><td>11</td><td>R</td><td>FX 1152-M2</td><td>② 2NC</td></tr> <tr><td>12</td><td>R</td><td>FX 1252-M2</td><td>2NO</td></tr> <tr><td>13</td><td>LV</td><td>FX 1352-M2</td><td>② 2NC</td></tr> <tr><td>14</td><td>LS</td><td>FX 1452-M2</td><td>② 2NC</td></tr> <tr><td>15</td><td>LS</td><td>FX 1552-M2</td><td>2NO</td></tr> <tr><td>16</td><td>LI</td><td>FX 1652-M2</td><td>② 2NC</td></tr> <tr><td>18</td><td>LA</td><td>FX 1852-M2</td><td>② 1NO+1NC</td></tr> <tr><td>20</td><td>L</td><td>FX 2052-M2</td><td>② 1NO+2NC</td></tr> <tr><td>21</td><td>L</td><td>FX 2152-M2</td><td>③ 3NC</td></tr> <tr><td>22</td><td>L</td><td>FX 2252-M2</td><td>② 2NO+1NC</td></tr> <tr><td>2</td><td>R</td><td>FX 252-M2</td><td>2x(1NO-1NC)</td></tr> <tr><td>E1</td><td>A</td><td>FX E152-M2</td><td>1NO-1NC</td></tr> </tbody> </table>	5	R	FX 552-M2	① 1NO+1NC	6	L	FX 652-M2	① 1NO+1NC	7	LO	FX 752-M2	① 1NO+1NC	9	L	FX 952-M2	② 2NC	10	L	FX 1052-M2	2NO	11	R	FX 1152-M2	② 2NC	12	R	FX 1252-M2	2NO	13	LV	FX 1352-M2	② 2NC	14	LS	FX 1452-M2	② 2NC	15	LS	FX 1552-M2	2NO	16	LI	FX 1652-M2	② 2NC	18	LA	FX 1852-M2	② 1NO+1NC	20	L	FX 2052-M2	② 1NO+2NC	21	L	FX 2152-M2	③ 3NC	22	L	FX 2252-M2	② 2NO+1NC	2	R	FX 252-M2	2x(1NO-1NC)	E1	A	FX E152-M2	1NO-1NC		<table border="1"> <tbody> <tr><td>5</td><td>R</td><td>FX 553-E0M2V9</td><td>① 1NO+1NC</td></tr> <tr><td>6</td><td>L</td><td>FX 653-E0M2V9</td><td>① 1NO+1NC</td></tr> <tr><td>7</td><td>LO</td><td>FX 753-E0M2V9</td><td>① 1NO+1NC</td></tr> <tr><td>9</td><td>L</td><td>FX 953-E0M2V9</td><td>② 2NC</td></tr> <tr><td>10</td><td>L</td><td>FX 1053-E0M2V9</td><td>2NO</td></tr> <tr><td>11</td><td>R</td><td>FX 1153-E0M2V9</td><td>② 2NC</td></tr> <tr><td>12</td><td>R</td><td>FX 1253-E0M2V9</td><td>2NO</td></tr> <tr><td>13</td><td>LV</td><td>FX 1353-E0M2V9</td><td>② 2NC</td></tr> <tr><td>14</td><td>LS</td><td>FX 1453-E0M2V9</td><td>② 2NC</td></tr> <tr><td>15</td><td>LS</td><td>FX 1553-E0M2V9</td><td>2NO</td></tr> <tr><td>16</td><td>LI</td><td>FX 1653-E0M2V9</td><td>② 2NC</td></tr> <tr><td>18</td><td>LA</td><td>FX 1853-E0M2V9</td><td>① 1NO+1NC</td></tr> <tr><td>20</td><td>L</td><td>FX 2053-E0M2V9</td><td>① 1NO+2NC</td></tr> <tr><td>21</td><td>L</td><td>FX 2153-E0M2V9</td><td>③ 3NC</td></tr> <tr><td>22</td><td>L</td><td>FX 2253-E0M2V9</td><td>② 2NO+1NC</td></tr> <tr><td>2</td><td>R</td><td>FX 253-E0M2</td><td>2x(1NO-1NC)</td></tr> <tr><td>E1</td><td>A</td><td>FX E153-E0M2V9</td><td>1NO-1NC</td></tr> </tbody> </table>	5	R	FX 553-E0M2V9	① 1NO+1NC	6	L	FX 653-E0M2V9	① 1NO+1NC	7	LO	FX 753-E0M2V9	① 1NO+1NC	9	L	FX 953-E0M2V9	② 2NC	10	L	FX 1053-E0M2V9	2NO	11	R	FX 1153-E0M2V9	② 2NC	12	R	FX 1253-E0M2V9	2NO	13	LV	FX 1353-E0M2V9	② 2NC	14	LS	FX 1453-E0M2V9	② 2NC	15	LS	FX 1553-E0M2V9	2NO	16	LI	FX 1653-E0M2V9	② 2NC	18	LA	FX 1853-E0M2V9	① 1NO+1NC	20	L	FX 2053-E0M2V9	① 1NO+2NC	21	L	FX 2153-E0M2V9	③ 3NC	22	L	FX 2253-E0M2V9	② 2NO+1NC	2	R	FX 253-E0M2	2x(1NO-1NC)	E1	A	FX E153-E0M2V9	1NO-1NC	
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Max. speed	page 239 - type 1	0.5 m/s	page 239 - type 1	page 239 - type 1																																																																																																																																								
Min. force	0.06 Nm (0.25 Nm ②)	0.03 Nm (0.25 Nm ②)	0.06 Nm (0.25 Nm ②)	0.06 Nm (0.25 Nm ②)																																																																																																																																								
Travel diagrams	page 240 - group 5	page 240 - group 6	page 240 - group 5	page 240 - group 5																																																																																																																																								

Contact type:	Other rollers available. See on page 94	Other rollers available. See on page 94	Fiber glass rod	Rope switch for signalling																																																																			
Contact blocks	<table border="1"> <tbody> <tr><td>5</td><td>R</td><td>FX 556-M2</td><td>① 1NO+1NC</td></tr> <tr><td>6</td><td>L</td><td>FX 656-M2</td><td>① 1NO+1NC</td></tr> <tr><td>7</td><td>LO</td><td>FX 756-M2</td><td>① 1NO+1NC</td></tr> <tr><td>9</td><td>L</td><td>FX 956-M2</td><td>② 2NC</td></tr> <tr><td>10</td><td>L</td><td>FX 1056-M2</td><td>2NO</td></tr> <tr><td>11</td><td>R</td><td>FX 1156-M2</td><td>② 2NC</td></tr> <tr><td>12</td><td>R</td><td>FX 1256-M2</td><td>2NO</td></tr> <tr><td>13</td><td>LV</td><td>FX 1356-M2</td><td>② 2NC</td></tr> <tr><td>14</td><td>LS</td><td>FX 1456-M2</td><td>② 2NC</td></tr> <tr><td>15</td><td>LS</td><td>FX 1556-M2</td><td>2NO</td></tr> <tr><td>16</td><td>LI</td><td>FX 1656-M2</td><td>② 2NC</td></tr> <tr><td>18</td><td>LA</td><td>FX 1856-M2</td><td>② 1NO+1NC</td></tr> <tr><td>20</td><td>L</td><td>FX 2056-M2</td><td>① 1NO+2NC</td></tr> <tr><td>21</td><td>L</td><td>FX 2156-M2</td><td>③ 3NC</td></tr> <tr><td>22</td><td>L</td><td>FX 2256-M2</td><td>② 2NO+1NC</td></tr> <tr><td>2</td><td>R</td><td>FX 256-M2</td><td>2x(1NO-1NC)</td></tr> <tr><td>E1</td><td>A</td><td>FX E156-M2</td><td>1NO-1NC</td></tr> </tbody> </table>	5	R	FX 556-M2	① 1NO+1NC	6	L	FX 656-M2	① 1NO+1NC	7	LO	FX 756-M2	① 1NO+1NC	9	L	FX 956-M2	② 2NC	10	L	FX 1056-M2	2NO	11	R	FX 1156-M2	② 2NC	12	R	FX 1256-M2	2NO	13	LV	FX 1356-M2	② 2NC	14	LS	FX 1456-M2	② 2NC	15	LS	FX 1556-M2	2NO	16	LI	FX 1656-M2	② 2NC	18	LA	FX 1856-M2	② 1NO+1NC	20	L	FX 2056-M2	① 1NO+2NC	21	L	FX 2156-M2	③ 3NC	22	L	FX 2256-M2	② 2NO+1NC	2	R	FX 256-M2	2x(1NO-1NC)	E1	A	FX E156-M2	1NO-1NC		
5	R	FX 556-M2	① 1NO+1NC																																																																				
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E1	A	FX E156-M2	1NO-1NC																																																																				
Max. speed	page 239 - type 1	page 239 - type 1	1.5 m/s	0.5 m/s																																																																			
Min. force	0.06 Nm (0.25 Nm ②)	0.06 Nm (0.25 Nm ②)	0.06 Nm	initial 20 N - final 40 N																																																																			
Travel diagrams	page 240 - group 5	page 240 - group 5	page 240 - group 5	page 240 - group 7																																																																			

(1) Positive opening only with actuator set to max. See page 93.

All measures in the drawings are in mm

Accessories See page 225

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

Position switches FX series with reset



Pizzato Elettrica has developed a reset device code W3 to make perfectly simultaneous the actuator and the contact block tripping. The new device is a block inserted between the switch body and the head, and could be rotated independently from this last one. This new device has following advantages:

- The reset device can be integrated into almost all standard actuator heads
- Contact blocks with snap action are no more necessary because the tripping movement is made by the reset device itself
- The reset device can be rotated independently from the head for maximum flexibility during installation
- Two driving forces: standard and increased for applications with vibrations
- Mechanical endurance: 1 million operating cycles.

Contact type:

R = snap action
L = slow action

		With stainless steel roller on request	With stainless steel roller on request	
Contact type:				
Contact blocks:				
6 L	FX 601-W3M2	① 1NO+1NC	FX 602-W3M2	① 1NO+1NC
9 L	FX 901-W3M2	① 2NC	FX 902-W3M2	① 2NC
10 L	FX 1001-W3M2	2NO	FX 1002-W3M2	2NO
20 L	FX 2001-W3M2	① 1NO+2NC	FX 2002-W3M2	① 1NO+2NC
21 L	FX 2101-W3M2	① 3NC	FX 2102-W3M2	① 3NC
22 L	FX 2201-W3M2	① 2NO+1NC	FX 2202-W3M2	① 2NO+1NC
2 R	FX 201-W3M2	2NO+2NC	FX 202-W3M2	2NO+2NC
Max. speed	page 239 - type 4	page 239 - type 3	page 239 - type 3	page 239 - type 3
Min. force	4.5 N (25 N ①)	4 N (25 N ①)	4 N (25 N ①)	2.5 N (25 N ①)
Travel diagrams	page 241 - group 1	page 241 - group 2	page 241 - group 2	page 241 - group 3

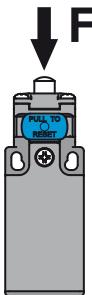
	With Ø 12 mm stainless steel roller on request	With Ø 20 mm stainless steel roller on request	Other rollers available. See on page 94	Other rollers available. See on page 94
6 L	FX 615-W3M2	① 1NO+1NC	FX 630-W3M2	① 1NO+1NC
9 L	FX 915-W3M2	① 2NC	FX 930-W3M2	① 2NC
10 L	FX 1015-W3M2	2NO	FX 1030-W3M2	2NO
20 L	FX 2015-W3M2	① 1NO+2NC	FX 2030-W3M2	① 1NO+2NC
21 L	FX 2115-W3M2	① 3NC	FX 2130-W3M2	① 3NC
22 L	FX 2215-W3M2	① 2NO+1NC	FX 2230-W3M2	① 2NO+1NC
2 R	FX 215-W3M2	2NO+2NC	FX 230-W3M2	2NO+2NC
Max. speed	page 239 - type 2	page 239 - type 1	page 239 - type 1	page 239 - type 1
Min. force	4.5 N (25 N ①)	0.07 Nm (0.25 Nm ①)	0.07 Nm (0.25 Nm ①)	0.07 Nm (0.25 Nm ①)
Travel diagrams	page 241 - group 1	page 241 - group 4	page 241 - group 4	page 241 - group 4

All measures in the drawings are in mm

Contact type:	Other rollers available. See on page 94		Other rollers available. See on page 94		Other rollers available. See on page 94		Other rollers available. See on page 94	
	R = snap action L = slow action							
Contact blocks								
6 L	FX 652-W3M2	⊕ 1NO+1NC	FX 654-W3M2	⊕ 1NO+1NC	FX 656-W3M2	⊕ 1NO+1NC	FX 657-W3M2	⊕ 1NO+1NC
9 L	FX 952-W3M2	⊕ 2NC	FX 954-W3M2	⊕ 2NC	FX 956-W3M2	⊕ 2NC	FX 957-W3M2	⊕ 2NC
10 L	FX 1052-W3M2	2NO	FX 1054-W3M2	2NO	FX 1056-W3M2	2NO	FX 1057-W3M2	2NO
20 L	FX 2052-W3M2	⊕ 1NO+2NC	FX 2054-W3M2	⊕ 1NO+2NC	FX 2056-W3M2	⊕ 1NO+2NC	FX 2057-W3M2	⊕ 1NO+2NC
21 L	FX 2152-W3M2	⊕ 3NC	FX 2154-W3M2	⊕ 3NC	FX 2156-W3M2	⊕ 3NC	FX 2157-W3M2	⊕ 3NC
22 L	FX 2252-W3M2	⊕ 2NO+1NC	FX 2254-W3M2	⊕ 2NO+1NC	FX 2256-W3M2	⊕ 2NO+1NC	FX 2257-W3M2	⊕ 2NO+1NC
2 R	FX 252-W3M2	2NO+2NC	FX 254-W3M2	2NO+2NC	FX 256-W3M2	2NO+2NC	FX 257-W3M2	2NO+2NC
Max. speed	page 239 - type 1		page 239 - type 1		page 239 - type 1		page 239 - type 1	
Min. force	0.07 Nm (0.25 Nm ⊕)		0.07 Nm (0.25 Nm ⊕)		0.07 Nm (0.25 Nm ⊕)		0.07 Nm (0.25 Nm ⊕)	
Travel diagrams	page 241 - group 4		page 241 - group 4		page 241 - group 4		page 241 - group 4	

All measures in the drawings are in mm

Increased actuating force



The switch can be delivered with increased actuating force (option W4). Ideal for applications with vibrations.

Actuators	Min. force
01, 14, 15, 16	7 N
02, 05	6 N
07	3.5 N
30 ... 57	0.08 Nm

Accessories See page 225

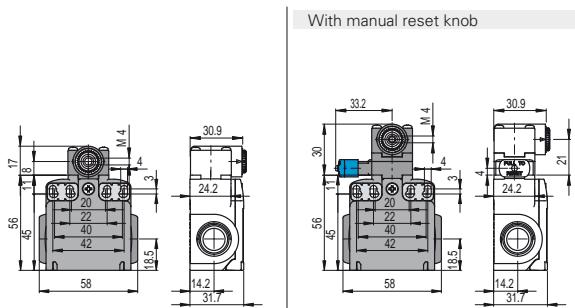
→ The 2D/3D files are available at www.pizzato.com

Position switches with revolving lever without actuator

All measures in the drawings are in mm

Contact type:

- [R] = snap action
- [L] = slow action
- [LO] = slow action overlapped
- [LS] = slow action shifted
- [LV] = slow action shifted and spaced
- [LI] = slow action independent
- [LA] = slow action closer
- [A] = electronic PNP



IMPORTANT

For safety applications: join only switches and actuators marked with symbol \oplus aside the product code.
For more information about safety applications see details on page 235.

Contact blocks

5 [R]	FX 538-M2 \oplus 1NO+1NC	
6 [L]	FX 638-M2 \oplus 1NO+1NC	FX 638-W3M2 \oplus 1NO+1NC
7 [LO]	FX 738-M2 \oplus 1NO+1NC	
9 [L]	FX 938-M2 \oplus 2NC	FX 938-W3M2 \oplus 2NC
10 [L]	FX 1038-M2 2NO	FX 1038-W3M2 2NO
11 [R]	FX 1138-M2 \oplus 2NC	
12 [R]	FX 1238-M2 2NO	
13 [LV]	FX 1338-M2 \oplus 2NC	
14 [LS]	FX 1438-M2 \oplus 2NC	
15 [LS]	FX 1538-M2 2NO	
16 [LI]	FX 1638-M2 \oplus 2NC	
18 [LA]	FX 1838-M2 \oplus 1NO+1NC	
20 [L]	FX 2038-M2 \oplus 1NO+2NC	FX 2038-W3M2 \oplus 1NO+2NC
21 [L]	FX 2138-M2 \oplus 3NC	FX 2138-W3M2 \oplus 3NC
22 [L]	FX 2238-M2 \oplus 2NO+1NC	FX 2238-W3M2 \oplus 2NO+1NC
2 [R]	FX 238-M2 2x(1NO-1NC)	FX 238-W3M2 2NO+2NC
E1 [A]	FX E138-M2 1NO-1NC	
Min. force	0.06 Nm (0.25 Nm \oplus)	0.07 Nm (0.25 Nm \oplus)
Travel diagrams	page 240 - group 5	page 241 - group 4

All measures in the drawings are in mm

Loose actuators

All measures in the drawings are in mm

IMPORTANT: These loose actuators can be used with items of series FR, FM, FX, FZ and FK only.

Technopolymer roller \varnothing 18 mm	Technopolymer roller \varnothing 18 mm	Adjustable square rod, 3x3x125 mm	Flexible rod with pointed end	Adjustable round rod \varnothing 3x125 mm	Technopolymer roller \varnothing 20 mm
VF LE30 \oplus	VF LE31 \oplus	VF LE33	VF LE34	VF LE50	VF LE51 \oplus
Technopolymer roller \varnothing 20 mm	Porcelain roller	Technopolymer roller \varnothing 20 mm	Adjustable actuator with technopolymer roller	Adjustable safety actuator with technopolymer roller	Technopolymer roller \varnothing 20 mm
VF LE52 \oplus	VF LE53 \oplus (2)	VF LE54 \oplus	VF LE55 \oplus (1)	VF LE56 \oplus	VF LE57 \oplus
(1) Actuator VF LE55 can only be used in safety applications if adjusted to its max. length, as shown in figure beside. If you need an adjustable lever for safety applications, use the adjustable safety lever VF LE56.					
(2) The position switch obtained by assembling switch FX•38-M2 (e.g. FX 538-M2, FX 638-M2...) with actuator VF L53 will not present the same travel diagrams and actuating forces as switch FX•53-E0M2V9 (e.g. FX 553-E0M2V9, FX 653-E0M2V9...).					
(4) The actuator cannot be rotated to the inside because it will mechanically interfere with the switch head.					

Items with code on green background are stock items

Accessories See page 225

The 2D/3D files are available at www.pizzato.com



Special loose actuators

All measures in the drawings are in mm

IMPORTANT: These loose actuators can be used with items of series FR, FM, FX, FZ and FK only.

Stainless steel rollers, Ø 20 mm

VF LE31-R24 (4)	VF LE51-R24 (4)	VF LE52-R24 (4)	VF LE54-R24 (4)	VF LE55-R24 (1)	VF LE56-R24 (4)	VF LE57-R24 (4)

Technopolymer rollers, Ø 35 mm

VF LE31-R25 (4)	VF LE51-R25 (4)	VF LE52-R25 (4)	VF LE54-R25 (4)	VF LE55-R25 (1)	VF LE56-R25 (4)	VF LE57-R25 (4)

Rubber rollers, Ø 40 mm

VF LE31-R5 (4)	VF LE51-R5 (4)	VF LE52-R5 (4)	VF LE54-R5 (4)	VF LE55-R5 (1)	VF LE56-R5 (4)	VF LE57-R5 (4)

Rubber rollers, Ø 50 mm

VF LE51-R26 (4)	VF LE52-R26 (4)	VF LE54-R26 (4)	VF LE55-R26 (1)	VF LE56-R26 (4)	VF LE57-R26 (4)

Protruding rubber rollers, Ø 50 mm

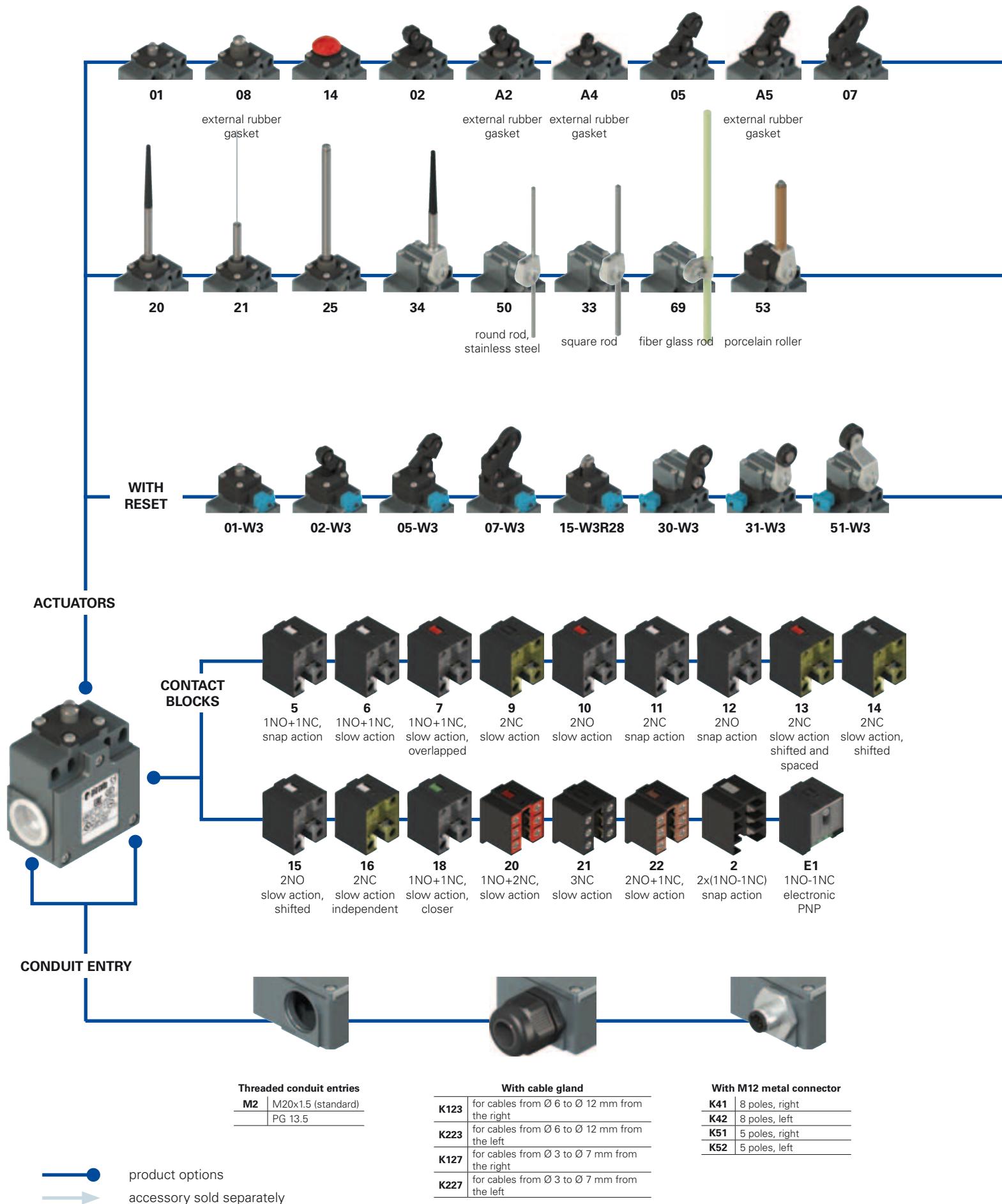
VF LE55-R27 (1)	VF LE56-R27 (4)

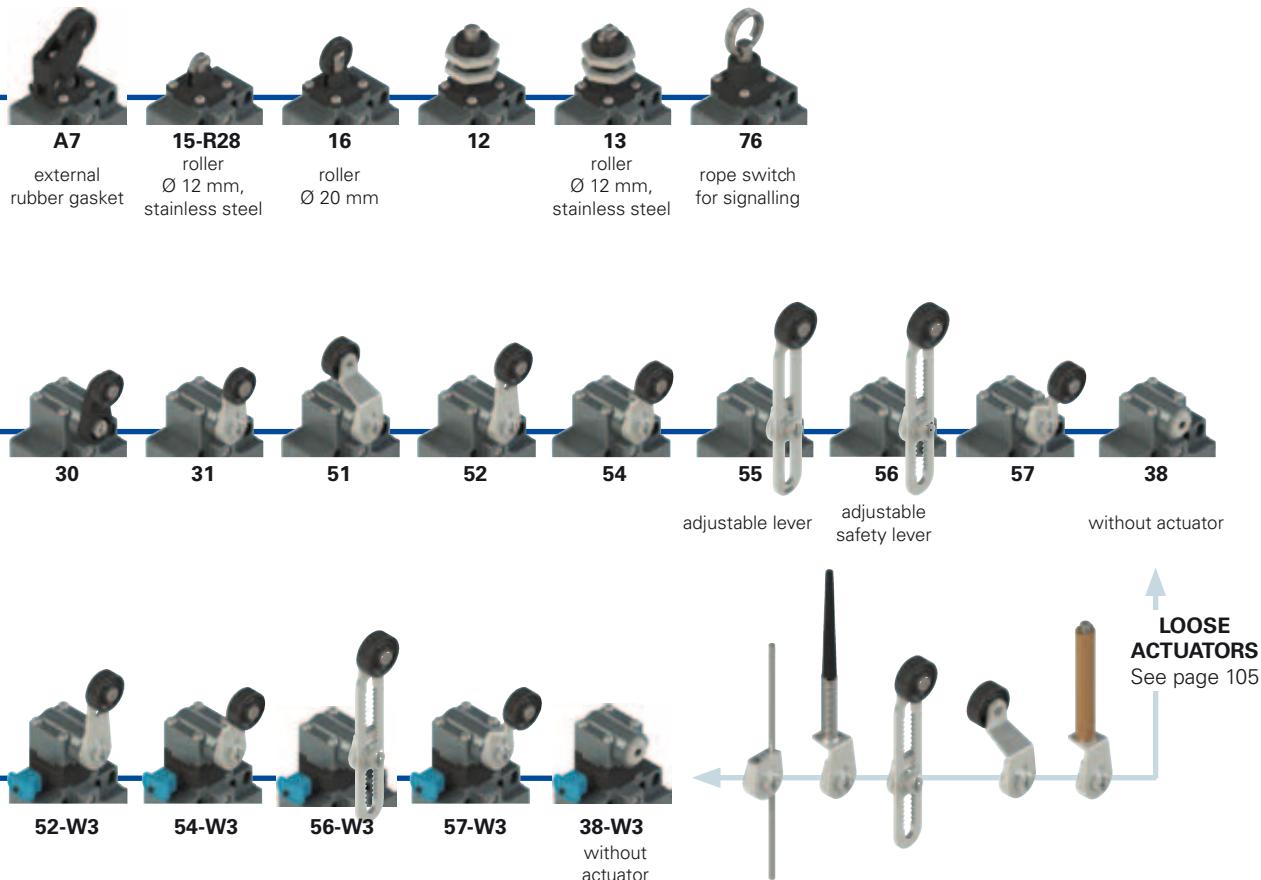
Items with code on green background are stock items

Accessories See page 225

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

Selection diagram





Code structure

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

FZ 502-W3GM2K51R23T6

Housing

FZ metal, two conduit entries

Contact blocks

- 5** 1NO+1NC, snap action
- 6** 1NO+1NC, slow action
- 7** 1NO+1NC, slow action, overlapped
- ...

Actuators

- 01** short plunger
- 02** roller lever
- 05** angled roller lever
- ...

Reset

- without reset (standard)
- W3** simultaneous reset
- W4** simultaneous reset, increased force

Contact type

- silver contacts (standard)
- G** silver contacts with 1 µm gold coating (not for contact block 2)

Ambient temperature

- 25°C ... +80°C (standard)
- T6** -40°C ... +80°C

Pre-installed cable glands or connectors

- without cable gland or connector (standard)
- K123** cable gland for cables from Ø 6 to Ø 12 mm from the right
- K51** M12 metal connector, 5 poles, right

Please contact our technical service for the complete list of possible combinations.

Threaded conduit entry

- M2** M20x1.5 (standard)
- PG 13.5

Rollers

- standard roller
- R28** stainless steel, Ø 12 mm (for actuators A4, 15)
- stainless steel, Ø 14 mm
- R23** (for actuators A2, 02, A5, 05, 30, 31, 51, 52, 54, 55, 56, 57)
- stainless steel, Ø 20 mm
- R24** (for actuators 30, 31, 51, 52, 54, 55, 56, 57)
- technopolymer, Ø 35 mm
- (for actuators 30, 31, 51, 52, 54, 55, 56, 57)
- rubber, Ø 40 mm
- R5** (for actuators 30, 31, 51, 52, 54, 55, 56, 57)
- rubber, Ø 50 mm
- R26** (for actuators 51, 52, 54, 55, 56, 57)
- rubber, protruding, Ø 50 mm (for actuators 55, 56)

**Main features**

- Metal housing, two conduit entries
- Protection degree IP67
- 17 contact blocks available
- 42 actuators available
- Versions with M12 connector
- Versions with gold-plated silver contacts

Markings and quality marks:

IMQ approval: EG609
 UL approval: E131787
 CCC approval: 2007010305229998
 EAC approval: RU C-IT ДМ94.В.01024

Technical data**Housing**

Metal housing, baked powder coating
 Two threaded conduit entries:
 Protection degree:

M20x1.5 (standard)
 IP67 according to EN 60529 with
 cable gland having equal or higher
 protection degree

General data

Ambient temperature: -25°C ... +80°C
 Max. actuation frequency: 3600 operating cycles¹/hour
 Mechanical endurance: 20 million operating cycles¹
 Mounting position: any
 Safety parameters: B_{10d}: 40,000,00 for NC contacts
 Mechanical interlock, not coded: type 1 according to EN ISO 14119
 Tightening torques for installation: see pages 235-246
 (1) One operation cycle means two movements, one to close and one to open contacts, as defined in EN 60947-5-1.

Cable cross section (flexible copper strands)

Contact blocks 20, 21, 22, 33, 34:	min. 1 x 0.34 mm ²	(1 x AWG 22)
	max. 2 x 1.5 mm ²	(2 x AWG 16)
Contact block 5, 6, 7, 9, 10, 11, 12, 13, 14, 15, 16, 18:	min. 1 x 0.5 mm ²	(1 x AWG 20)
	max. 2 x 2.5 mm ²	(2 x AWG 14)
Contact block 2:	min. 1 x 0.5 mm ²	(1 x AWG 20)
	max. 2 x 1.5 mm ²	(2 x AWG 16)

In conformity with standards:

IEC 60947-5-1, EN 60947-5-1, EN 60947-1, IEC 60204-1, EN 60204-1, EN ISO 14119, EN ISO 12100, IEC 60529, EN 60529, UL 508, CSA 22.2 No.14 .

Approvals:

IEC 60947-5-1, UL 508, CSA 22.2 No.14, GB14048.5-2001.

In conformity with the requirements of:

Low Voltage Directive 2006/95/EC, Machinery Directive 2006/42/EC and
 EMC Directive 2004/108/EC.

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 aside the product code. Always connect the safety circuit to the **NC contacts** (normally closed contacts: 11-12, 21-22 or 31-32) as stated in **standard EN 60947-5-1, encl. K, par. 2**. Actuate the switch **at least up to the positive opening travel** shown in the travel diagrams on page 240. Operate the switch **at least with the positive opening force**, indicated between brackets below each article, aside the minimum force value.

If not expressly indicated in this chapter, for correct installation and utilization of all articles see chapter utilization requirements from page 235 to page 246.

Electrical data**Utilization category**

without connector	Thermal current (I _{th}):	10 A	Alternating current: AC15 (50÷60 Hz)
	Rated insulation voltage (U _i):	500 Vac 600 Vdc 400 Vac 500 Vdc (contact blocks 2, 11, 12, 20, 21, 22, 33, 34)	Ue (V) 250 400 500 Ie (A) 6 4 1
	Rated impulse withstand voltage (U _{imp}):	6 kV 4 kV (contact blocks 20, 21, 22, 33, 34)	Direct current: DC13 Ue (V) 24 125 250 Ie (A) 6 1.1 0.4
	Conditional short circuit current: Protection against short circuits: Pollution degree:	1000 A according to EN 60947-5-1 type aM fuse 10 A 500 V 3	
with M12 connector 5 poles	Thermal current (I _{th}):	4 A	Alternating current: AC15 (50÷60 Hz)
	Rated insulation voltage (U _i):	250 Vac 300 Vdc	Ue (V) 24 120 250 Ie (A) 4 4 4
	Protection against short circuits:	type gG fuse 4 A 500 V	Direct current: DC13 Ue (V) 24 125 250 Ie (A) 4 1.1 0.4
	Pollution degree:	3	
with M12 connector 8 poles	Thermal current (I _{th}):	2 A	Alternating current: AC15 (50÷60 Hz)
	Rated insulation voltage (U _i):	30 Vac 36 Vdc	Ue (V) 24 Ie (A) 2
	Protection against short circuits:	type gG fuse 2 A 500 V	Direct current: DC13 Ue (V) 24 Ie (A) 2
	Pollution degree:	3	



Characteristics approved by IMQ

Rated insulation voltage (Ui):	500 Vac 400 Vac (for contact blocks 2, 11, 12, 20, 21, 22, 33, 34)
Conventional free air thermal current (Ith):	10 A
Protection against short circuits:	type aM fuse 10 A 500 V
Rated impulse withstand voltage (U _{imp}):	6 kV 4 kV (for contact blocks 20, 21, 22, 33, 34)
Protection degree of the housing: IP67	
MV terminals (screw terminals)	
Pollution degree 3	
Utilization category: AC15	
Operating voltage (Ue): 400 Vac (50 Hz)	
Operating current (Ie): 3 A	
Forms of the contact element: Za, Zb, Za+Za, Y+Y, X+X, Y+Y+X, Y+Y+Y, Y+X+X	
Positive opening of contacts on contact blocks 5, 6, 7, 9, 11, 13, 14, 16, 18, 20, 21, 22, 33, 34	
In conformity with standards: EN 60947-1, EN 60947-5-1+ A1:2009, fundamental requirements of the Low Voltage Directive 2006/95/EC.	

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

Characteristics approved by UL

Utilization categories Q300 (69 VA, 125 ... 250 Vdc) A600 (720 VA, 120 ... 600 Vac)
Data of housing type 1, 4X "indoor use only", 12, 13
For all contact blocks except 2 and 3 use 60 or 75°C copper (Cu) conductor, rigid or flexible, wire size AWG 12/14. Terminal tightening torque of 7.1 lb in (0.8 Nm).
For contact blocks 2 and 3 use 60 or 75 °C copper (Cu) conductor, rigid or flexible, wire size AWG 14. Terminal tightening torque of 12 lb in (1.4 Nm).
In conformity with standard: UL 508, CSA 22.2 No.14

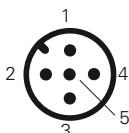
Please contact our technical service for the list of approved products.

Connection diagram for M12 connectors

Contact block 2 1NO-1NC+1NO-1NC	Contact block 5 1NO+1NC	Contact block 6 1NO+1NC	Contact block 7 1NO+1NC	Contact block 9 2NC	Contact block 10 2NO	Contact block 11 2NC	Contact block 12 2NO	Contact block 13 2NC	
M12 connector, 8 poles	M12 connector, 5 poles	M12 connector, 5 poles	M12 connector, 5 poles	M12 connector, 5 poles	M12 connector, 5 poles	M12 connector, 5 poles	M12 connector, 5 poles	M12 connector, 5 poles	
Contacts	Pin no.	Contacts	Pin no.	Contacts	Pin no.	Contacts	Pin no.	Contacts	Pin no.
NO	3-4	NC	1-2	NC	1-2	NO	1-2	NC	1-2
NC	5-6	NO	3-4	NO	3-4	NO	3-4	NO	3-4
NC	7-8	ground	5	ground	5	ground	5	ground	5
NO	1-2								

Contact block 14 2NC	Contact block 15 2NO	Contact block 16 2NC	Contact block 18 1NO+1NC	Contact block 20 2NC+1NO	Contact block 21 3NC	Contact block 22 1NC+2NO	Contact block 33 1NC+1NO	Contact block 34 2NC		
M12 connector, 5 poles	M12 connector, 8 poles	M12 connector, 8 poles	M12 connector, 8 poles	M12 connector, 5 poles	M12 connector, 5 poles					
Contacts	Pin no.	Contacts	Pin no.	Contacts	Pin no.	Contacts	Pin no.	Contacts	Pin no.	
NC (1°)	1-2	NO (1°)	1-2	NC, lever at the right 1-2	NC	3-4	NC	3-4	NC	1-2
NC (2°)	3-4	NO (2°)	3-4	NC, lever to the left 3-4	NO	3-4	NC	5-6	NO	5-6
ground	5	ground	5	ground	5	NO	7-8	NO	7-8	
						ground	1	ground	1	

Contact block E1 PNP



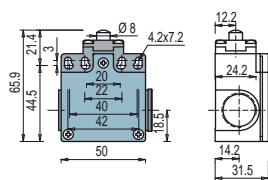
M12 connector, 5 poles

Contacts	Pin no.
+	1
-	3
NC	2
NO	4
ground	5

Position switches FZ series

Contact type:

- [R] = snap action
- [L] = slow action
- [LO] = slow action overlapped
- [LS] = slow action shifted
- [LV] = slow action shifted and spaced
- [LI] = slow action independent
- [LA] = slow action closer
- [A] = electronic PNP



With stainless steel roller on request

With external rubber gasket

With stainless steel roller on request

With external rubber gasket

With stainless steel roller on request

With external rubber gasket

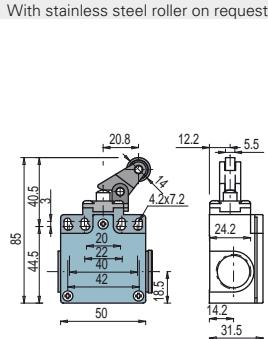
With external rubber gasket

With stainless steel roller on request

With external rubber gasket

Contact blocks

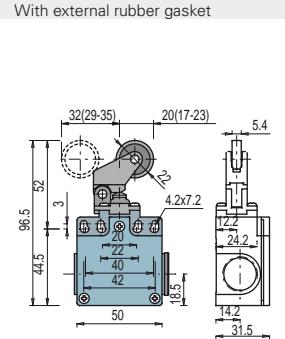
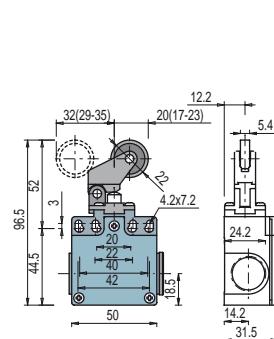
5 [R]	FZ 501-M2	1NO+1NC	FZ 502-M2	1NO+1NC	FZ 5A2-M2	1NO+1NC	FZ 5A4-M2	1NO+1NC
6 [L]	FZ 601-M2	1NO+1NC	FZ 602-M2	1NO+1NC	FZ 6A2-M2	1NO+1NC	FZ 6A4-M2	1NO+1NC
7 [LO]	FZ 701-M2	1NO+1NC	FZ 702-M2	1NO+1NC	FZ 7A2-M2	1NO+1NC	FZ 7A4-M2	1NO+1NC
9 [L]	FZ 901-M2	2NC	FZ 902-M2	2NC	FZ 9A2-M2	2NC	FZ 9A4-M2	2NC
10 [L]	FZ 1001-M2	2NO	FZ 1002-M2	2NO	FZ 10A2-M2	2NO	FZ 10A4-M2	2NO
11 [R]	FZ 1101-M2	2NC	FZ 1102-M2	2NC	FZ 11A2-M2	2NC	FZ 11A4-M2	2NC
12 [R]	FZ 1201-M2	2NO	FZ 1202-M2	2NO	FZ 12A2-M2	2NO	FZ 12A4-M2	2NO
13 [LV]	FZ 1301-M2	2NC	FZ 1302-M2	2NC	FZ 13A2-M2	2NC	FZ 13A4-M2	2NC
14 [LS]	FZ 1401-M2	2NC	FZ 1402-M2	2NC	FZ 14A2-M2	2NC	FZ 14A4-M2	2NC
15 [LS]	FZ 1501-M2	2NO	FZ 1502-M2	2NO	FZ 15A2-M2	2NO	FZ 15A4-M2	2NO
18 [LA]	FZ 1801-M2	1NO+1NC	FZ 1802-M2	1NO+1NC	FZ 18A2-M2	1NO+1NC	FZ 18A4-M2	1NO+1NC
20 [L]	FZ 2001-M2	1NO+2NC	FZ 2002-M2	1NO+2NC	FZ 20A2-M2	1NO+2NC	FZ 20A4-M2	1NO+2NC
21 [L]	FZ 2101-M2	3NC	FZ 2102-M2	3NC	FZ 21A2-M2	3NC	FZ 21A4-M2	3NC
22 [L]	FZ 2201-M2	2NO+1NC	FZ 2202-M2	2NO+1NC	FZ 22A2-M2	2NO+1NC	FZ 22A4-M2	2NO+1NC
2 [R]	FZ 201-M2	2x(1NO-1NC)	FZ 202-M2	2x(1NO-1NC)	FZ 2A2-M2	2x(1NO-1NC)	FZ 2A4-M2	2x(1NO-1NC)
E1 [A]	FZ E101-M2	1NO-1NC	FZ E102-M2	1NO-1NC	FZ E1A2-M2	1NO-1NC	FZ E1A4-M2	1NO-1NC
Max. speed	page 239 - type 4	page 239 - type 3	page 239 - type 5	page 239 - type 5				
Min. force	8 N (25 N ⊕)	6 N (25 N ⊕)	4.3 N (25 N ⊕)	4.3 N (25 N ⊕)	4.3 N (25 N ⊕)	4.3 N (25 N ⊕)	4.3 N (25 N ⊕)	
Travel diagrams	page 240 - group 1	page 240 - group 2	page 240 - group 1	page 240 - group 1				



With stainless steel roller on request

With external rubber gasket

With stainless steel roller on request



Contact blocks

5 [R]	FZ 505-M2	1NO+1NC	FZ 5A5-M2	1NO+1NC	FZ 507-M2	1NO+1NC	FZ 5A7-M2	1NO+1NC
6 [L]	FZ 605-M2	1NO+1NC	FZ 6A5-M2	1NO+1NC	FZ 607-M2	1NO+1NC	FZ 6A7-M2	1NO+1NC
7 [LO]	FZ 705-M2	1NO+1NC	FZ 7A5-M2	1NO+1NC	FZ 707-M2	1NO+1NC	FZ 7A7-M2	1NO+1NC
9 [L]	FZ 905-M2	2NC	FZ 9A5-M2	2NC	FZ 907-M2	2NC	FZ 9A7-M2	2NC
10 [L]	FZ 1005-M2	2NO	FZ 10A5-M2	2NO	FZ 1007-M2	2NO	FZ 10A7-M2	2NO
11 [R]	FZ 1105-M2	2NC	FZ 11A5-M2	2NC	FZ 1107-M2	2NC	FZ 11A7-M2	2NC
12 [R]	FZ 1205-M2	2NO	FZ 12A5-M2	2NO	FZ 1207-M2	2NO	FZ 12A7-M2	2NO
13 [LV]	FZ 1305-M2	2NC	FZ 13A5-M2	2NC	FZ 1307-M2	2NC	FZ 13A7-M2	2NC
14 [LS]	FZ 1405-M2	2NC	FZ 14A5-M2	2NC	FZ 1407-M2	2NC	FZ 14A7-M2	2NC
15 [LS]	FZ 1505-M2	2NO	FZ 15A5-M2	2NO	FZ 1507-M2	2NO	FZ 15A7-M2	2NO
18 [LA]	FZ 1805-M2	1NO+1NC	FZ 18A5-M2	1NO+1NC	FZ 1807-M2	1NO+1NC	FZ 18A7-M2	1NO+1NC
20 [L]	FZ 2005-M2	1NO+2NC	FZ 20A5-M2	1NO+2NC	FZ 2007-M2	1NO+2NC	FZ 20A7-M2	1NO+2NC
21 [L]	FZ 2105-M2	3NC	FZ 21A5-M2	3NC	FZ 2107-M2	3NC	FZ 21A7-M2	3NC
22 [L]	FZ 2205-M2	2NO+1NC	FZ 22A5-M2	2NO+1NC	FZ 2207-M2	2NO+1NC	FZ 22A7-M2	2NO+1NC
2 [R]	FZ 205-M2	2x(1NO-1NC)	FZ 2A5-M2	2x(1NO-1NC)	FZ 207-M2	2x(1NO-1NC)	FZ 2A7-M2	2x(1NO-1NC)
E1 [A]	FZ E105-M2	1NO-1NC	FZ E1A5-M2	1NO-1NC	FZ E107-M2	1NO-1NC	FZ E1A7-M2	1NO-1NC
Max. speed	page 239 - type 3							
Min. force	6 N (25 N ⊕)	4.3 N (25 N ⊕)	4.3 N (25 N ⊕)	4.3 N (25 N ⊕)	4.3 N (25 N ⊕)	3 N (25 N ⊕)	3 N (25 N ⊕)	
Travel diagrams	page 240 - group 2	page 240 - group 2	page 240 - group 2	page 240 - group 3				

All measures in the drawings are in mm

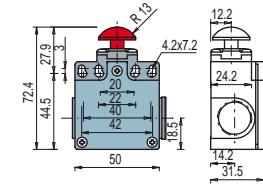
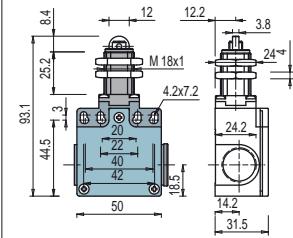
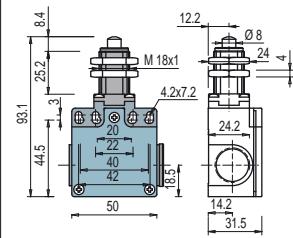
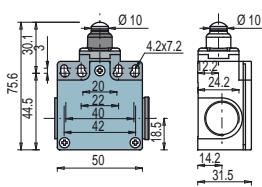
Accessories See page 225

The 2D/3D files are available at www.pizzato.com


With external rubber gasket

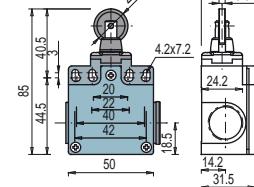
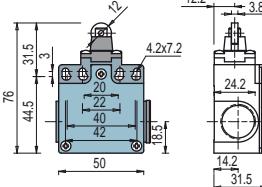
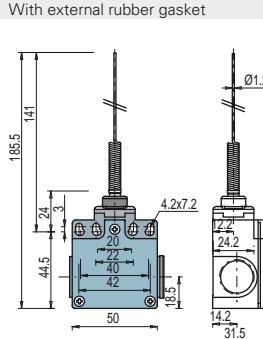
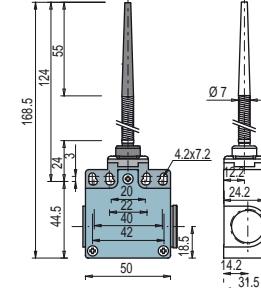
Contact type:

- [R] = snap action
- [L] = slow action
- [LO] = slow action overlapped
- [LS] = slow action shifted
- [LV] = slow action shifted and spaced
- [LI] = slow action independent
- [LA] = slow action closer
- [A] = electronic PNP



Contact blocks

5 [R]	FZ 508-M2	① 1NO+1NC	FZ 512-M2	① 1NO+1NC	FZ 513-M2	① 1NO+1NC	FZ 514-M2	① 1NO+1NC
6 [L]	FZ 608-M2	① 1NO+1NC	FZ 612-M2	① 1NO+1NC	FZ 613-M2	① 1NO+1NC	FZ 614-M2	① 1NO+1NC
7 [LO]	FZ 708-M2	① 1NO+1NC	FZ 712-M2	① 1NO+1NC	FZ 713-M2	① 1NO+1NC	FZ 714-M2	① 1NO+1NC
9 [L]	FZ 908-M2	② 2NC	FZ 912-M2	② 2NC	FZ 913-M2	② 2NC	FZ 914-M2	② 2NC
10 [L]	FZ 1008-M2	2NO	FZ 1012-M2	2NO	FZ 1013-M2	2NO	FZ 1014-M2	2NO
11 [R]	FZ 1108-M2	② 2NC	FZ 1112-M2	② 2NC	FZ 1113-M2	② 2NC	FZ 1114-M2	② 2NC
12 [R]	FZ 1208-M2	2NO	FZ 1212-M2	2NO	FZ 1213-M2	2NO	FZ 1214-M2	2NO
13 [LV]	FZ 1308-M2	② 2NC	FZ 1312-M2	② 2NC	FZ 1313-M2	② 2NC	FZ 1314-M2	② 2NC
14 [LS]	FZ 1408-M2	② 2NC	FZ 1412-M2	② 2NC	FZ 1413-M2	② 2NC	FZ 1414-M2	② 2NC
15 [LS]	FZ 1508-M2	2NO	FZ 1512-M2	2NO	FZ 1513-M2	2NO	FZ 1514-M2	2NO
18 [LA]	FZ 1808-M2	① 1NO+1NC	FZ 1812-M2	① 1NO+1NC	FZ 1813-M2	① 1NO+1NC	FZ 1814-M2	① 1NO+1NC
20 [L]	FZ 2008-M2	① 1NO+2NC	FZ 2012-M2	① 1NO+2NC	FZ 2013-M2	① 1NO+2NC	FZ 2014-M2	① 1NO+2NC
21 [L]	FZ 2108-M2	③ 3NC	FZ 2112-M2	③ 3NC	FZ 2113-M2	③ 3NC	FZ 2114-M2	③ 3NC
22 [L]	FZ 2208-M2	④ 2NO+1NC	FZ 2212-M2	④ 2NO+1NC	FZ 2213-M2	④ 2NO+1NC	FZ 2214-M2	④ 2NO+1NC
2 [R]	FZ 208-M2	2x(1NO-1NC)	FZ 212-M2	2x(1NO-1NC)	FZ 213-M2	2x(1NO-1NC)	FZ 214-M2	2x(1NO-1NC)
E1 [A]	FZ E108-M2	1NO-1NC	FZ E112-M2	1NO-1NC	FZ E113-M2	1NO-1NC	FZ E114-M2	1NO-1NC
Max. speed	page 239 - type 4	page 239 - type 4	page 239 - type 2	page 239 - type 2	page 239 - type 4			
Min. force	8 N (25 N ②)							
Travel diagrams	page 240 - group 1							

Roller, Ø 12 mm, stainless steel

With external rubber gasket


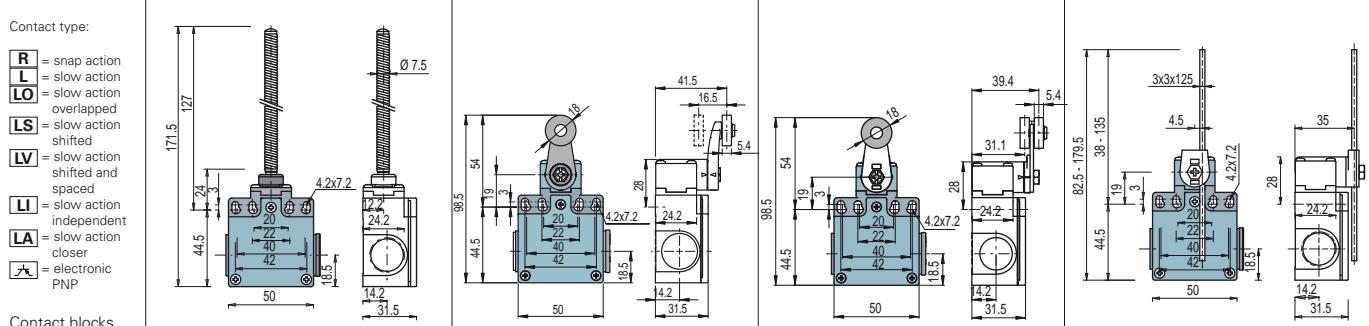
Contact blocks

5 [R]	FZ 515-M2R28	① 1NO+1NC	FZ 516-M2	① 1NO+1NC	FZ 520-M2	1NO+1NC	FZ 521-M2	1NO+1NC
6 [L]	FZ 615-M2R28	① 1NO+1NC	FZ 616-M2	① 1NO+1NC	FZ 1020-M2	2NO	FZ 1021-M2	2NO
7 [LO]	FZ 715-M2R28	① 1NO+1NC	FZ 716-M2	① 1NO+1NC	FZ 1220-M2	2NO	FZ 1221-M2	2NO
9 [L]	FZ 915-M2R28	② 2NC	FZ 916-M2	② 2NC				
10 [L]	FZ 1015-M2R28	2NO	FZ 1016-M2	2NO				
11 [R]	FZ 1115-M2R28	② 2NC	FZ 1116-M2	② 2NC				
12 [R]	FZ 1215-M2R28	2NO	FZ 1216-M2	2NO				
13 [LV]	FZ 1315-M2R28	② 2NC	FZ 1316-M2	② 2NC				
14 [LS]	FZ 1415-M2R28	② 2NC	FZ 1416-M2	② 2NC				
15 [LS]	FZ 1515-M2R28	2NO	FZ 1516-M2	2NO				
18 [LA]	FZ 1815-M2R28	① 1NO+1NC	FZ 1816-M2	① 1NO+1NC	FZ 1820-M2	1NO+1NC	FZ 1821-M2	1NO+1NC
20 [L]	FZ 2015-M2R28	① 1NO+2NC	FZ 2016-M2	① 1NO+2NC	FZ 2020-M2	1NO+2NC	FZ 2021-M2	1NO+2NC
21 [L]	FZ 2115-M2R28	③ 3NC	FZ 2116-M2	③ 3NC	FZ 2120-M2	3NC	FZ 2121-M2	3NC
22 [L]	FZ 2215-M2R28	④ 2NO+1NC	FZ 2216-M2	④ 2NO+1NC	FZ 2220-M2	2NO+1NC	FZ 2221-M2	2NO+1NC
2 [R]	FZ 215-M2R28	2x(1NO-1NC)	FZ 216-M2	2x(1NO-1NC)	FZ 220-M2	2x(1NO-1NC)	FZ 221-M2	2x(1NO-1NC)
E1 [A]	FZ E115-M2R28	1NO-1NC	FZ E116-M2	1NO-1NC	FZ E120-M2	1NO-1NC	FZ E121-M2	1NO-1NC
Max. speed	page 239 - type 2	page 239 - type 2			1 m/s		1 m/s	
Min. force	8 N (25 N ②)	0.07 Nm		0.07 Nm				
Travel diagrams	page 240 - group 1	page 240 - group 1	page 240 - group 1	page 240 - group 4	page 240 - group 4		page 240 - group 4	

All measures in the drawings are in mm

Accessories See page 225→ The 2D/3D files are available at www.pizzato.com

Position switches FZ series



Contact type:	With external rubber gasket	With Ø 20 mm stainless steel roller on request	Other rollers available. See on page 106	Square rod, 3x3 mm
[R] = snap action [L] = slow action [LO] = slow action overlapped [LS] = slow action shifted [LV] = slow action shifted and spaced [LI] = slow action independent [LA] = slow action closer [A] = electronic PNP				
Contact blocks				
5 [R]	FZ 525-M2 1NO+1NC	FZ 530-M2 1NO+1NC	FZ 531-M2 1NO+1NC	FZ 533-M2 1NO+1NC
6 [L]	FZ 630-M2 1NO+1NC	FZ 631-M2 1NO+1NC	FZ 633-M2 1NO+1NC	FZ 733-M2 1NO+1NC
7 [LO]	FZ 730-M2 1NO+1NC	FZ 731-M2 1NO+1NC	FZ 933-M2 2NC	
9 [L]	FZ 930-M2 2NC	FZ 931-M2 2NC		
10 [L]	FZ 1025-M2 2NO	FZ 1030-M2 2NO	FZ 1031-M2 2NO	FZ 1033-M2 2NO
11 [R]	FZ 1130-M2 2NC	FZ 1131-M2 2NC	FZ 1133-M2 2NC	
12 [R]	FZ 1225-M2 2NO	FZ 1230-M2 2NO	FZ 1231-M2 2NO	FZ 1233-M2 2NO
13 [LV]	FZ 1330-M2 2NC	FZ 1331-M2 2NC	FZ 1333-M2 2NC	
14 [LS]	FZ 1430-M2 2NC	FZ 1431-M2 2NC	FZ 1433-M2 2NC	
15 [LS]	FZ 1530-M2 2NO	FZ 1531-M2 2NO	FZ 1533-M2 2NO	
16 [LI]	FZ 1630-M2 2NC	FZ 1631-M2 2NC	FZ 1633-M2 2NC	
18 [LA]	FZ 1825-M2 1NO+1NC	FZ 1830-M2 1NO+1NC	FZ 1831-M2 1NO+1NC	FZ 1833-M2 1NO+1NC
20 [L]	FZ 2025-M2 1NO+2NC	FZ 2030-M2 1NO+2NC	FZ 2031-M2 1NO+2NC	FZ 2033-M2 1NO+2NC
21 [L]	FZ 2125-M2 3NC	FZ 2130-M2 3NC	FZ 2131-M2 3NC	FZ 2133-M2 3NC
22 [L]	FZ 2225-M2 2NO+1NC	FZ 2230-M2 2NO+1NC	FZ 2231-M2 2NO+1NC	FZ 2233-M2 2NO+1NC
2 [R]	FZ 225-M2 2x(1NO-1NC)	FZ 230-M2 2x(1NO-1NC)	FZ 231-M2 2x(1NO-1NC)	FZ 233-M2 2x(1NO-1NC)
E1 [A]	FZ E125-M2 1NO-1NC	FZ E130-M2 1NO-1NC	FZ E131-M2 1NO-1NC	FZ E133-M2 1NO-1NC
Max. speed	1 m/s	page 239 - type 1	page 239 - type 1	1.5 m/s
Min. force	0.12 Nm	0.06 Nm (0.25 Nm	0.06 Nm (0.25 Nm	0.06 Nm
Travel diagrams	page 240 - group 4	page 240 - group 5	page 240 - group 5	page 240 - group 5

Contact blocks	Round rod, Ø 3 mm, stainless steel	Other rollers available. See on page 106	Other rollers available. See on page 106
5 [R]			
6 [L]	FZ 634-M2 1NO+1NC	FZ 650-M2 1NO+1NC	FZ 651-M2 1NO+1NC
7 [LO]	FZ 734-M2 1NO+1NC	FZ 750-M2 1NO+1NC	FZ 751-M2 1NO+1NC
9 [L]	FZ 934-M2 2NC	FZ 950-M2 2NC	FZ 951-M2 2NC
10 [L]	FZ 1034-M2 2NO	FZ 1050-M2 2NO	FZ 1051-M2 2NO
11 [R]	FZ 1134-M2 2NC	FZ 1150-M2 2NC	FZ 1151-M2 2NC
12 [R]	FZ 1234-M2 2NO	FZ 1250-M2 2NO	FZ 1251-M2 2NO
13 [LV]	FZ 1334-M2 2NC	FZ 1350-M2 2NC	FZ 1351-M2 2NC
14 [LS]	FZ 1434-M2 2NC	FZ 1450-M2 2NC	FZ 1451-M2 2NC
15 [LS]	FZ 1534-M2 2NO	FZ 1550-M2 2NO	FZ 1551-M2 2NO
16 [LI]	FZ 1634-M2 2NC	FZ 1650-M2 2NC	FZ 1651-M2 2NC
18 [LA]	FZ 1834-M2 1NO+1NC	FZ 1850-M2 1NO+1NC	FZ 1851-M2 1NO+1NC
20 [L]	FZ 2034-M2 1NO+2NC	FZ 2050-M2 1NO+2NC	FZ 2051-M2 1NO+2NC
21 [L]	FZ 2134-M2 3NC	FZ 2150-M2 3NC	FZ 2151-M2 3NC
22 [L]	FZ 2234-M2 2NO+1NC	FZ 2250-M2 2NO+1NC	FZ 2251-M2 2NO+1NC
2 [R]	FZ 234-M2 2x(1NO-1NC)	FZ 250-M2 2x(1NO-1NC)	FZ 251-M2 2x(1NO-1NC)
E1 [A]	FZ E134-M2 1NO-1NC	FZ E150-M2 1NO-1NC	FZ E151-M2 1NO-1NC
Max. speed	1.5 m/s	1.5 m/s	page 239 - type 1
Min. force	0.06 Nm	0.06 Nm	0.06 Nm (0.25 Nm
Travel diagrams	page 240 - group 5	page 240 - group 5	page 240 - group 5

All measures in the drawings are in mm

Accessories See page 225

The 2D/3D files are available at www.pizzato.com



		Porcelain roller	Other rollers available. See on page 106	Other rollers available. See on page 106	Other rollers available. See on page 106
Contact type:		<p>R = snap action L = slow action LO = slow action overlapped LS = slow action shifted LV = slow action shifted and spaced LI = slow action independent LA = slow action closer A = electronic PNP </p>			
5	R	FZ 553-E0M2V9	① 1NO+1NC	FZ 554-M2	① 1NO+1NC
6	L	FZ 653-E0M2V9	① 1NO+1NC	FZ 654-M2	① 1NO+1NC
7	LO	FZ 753-E0M2V9	① 1NO+1NC	FZ 754-M2	① 1NO+1NC
9	L	FZ 953-E0M2V9	② 2NC	FZ 954-M2	② 2NC
10	L	FZ 1053-E0M2V9	2NO	FZ 1054-M2	2NO
11	R			FZ 1154-M2	② 2NC
12	R	FZ 1253-E0M2V9	2NO	FZ 1254-M2	2NO
13	LV	FZ 1353-E0M2V9	② 2NC	FZ 1354-M2	② 2NC
14	LS	FZ 1453-E0M2V9	② 2NC	FZ 1454-M2	② 2NC
15	LS	FZ 1553-E0M2V9	2NO	FZ 1554-M2	2NO
16	LI			FZ 1654-M2	② 2NC
18	LA	FZ 1853-E0M2V9	① 1NO+1NC	FZ 1854-M2	① 1NO+1NC
20	L	FZ 2053-E0M2V9	① 1NO+2NC	FZ 2054-M2	① 1NO+2NC
21	L	FZ 2153-E0M2V9	③ 3NC	FZ 2154-M2	③ 3NC
22	L	FZ 2253-E0M2V9	② 2NO+1NC	FZ 2254-M2	② 2NO+1NC
2	R	FZ 253-E0M2	2x(1NO-1NC)	FZ 254-M2	2x(1NO-1NC)
E1	A	FZ E153-E0M2V9	1NO-1NC	FZ E154-M2	1NO-1NC
Max. speed		0.5 m/s	page 239 - type 1	page 239 - type 1	page 239 - type 1
Min. force		0.03 Nm (0.25 Nm ②)	0.06 Nm (0.25 Nm ②)	0.06 Nm (0.25 Nm ②)	0.06 Nm (0.25 Nm ②)
Travel diagrams		page 240 - group 6	page 240 - group 5	page 240 - group 5	page 240 - group 5

		Other rollers available. See on page 106	Fiber glass rod	Rope switch for signalling	
Contact blocks					
5	R	FZ 557-M2	① 1NO+1NC	FZ 569-M2	1NO+1NC
6	L	FZ 657-M2	① 1NO+1NC	FZ 669-M2	1NO+1NC
7	LO	FZ 757-M2	① 1NO+1NC	FZ 769-M2	1NO+1NC
9	L	FZ 957-M2	② 2NC	FZ 969-M2	2NC
10	L	FZ 1057-M2	2NO	FZ 1069-M2	2NO
11	R	FZ 1157-M2	② 2NC	FZ 1169-M2	2NC
12	R	FZ 1257-M2	2NO	FZ 1269-M2	2NO
13	LV	FZ 1357-M2	② 2NC	FZ 1369-M2	2NC
14	LS	FZ 1457-M2	② 2NC	FZ 1469-M2	2NC
15	LS	FZ 1557-M2	2NO	FZ 1569-M2	2NO
16	LI	FZ 1657-M2	② 2NC	FZ 1669-M2	2NC
18	LA	FZ 1857-M2	① 1NO+1NC	FZ 1869-M2	1NO+1NC
20	L	FZ 2057-M2	① 1NO+2NC	FZ 2069-M2	1NO+2NC
21	L	FZ 2157-M2	③ 3NC	FZ 2169-M2	3NC
22	L	FZ 2257-M2	② 2NO+1NC	FZ 2269-M2	2NO+1NC
2	R	FZ 257-M2	2x(1NO-1NC)	FZ 269-M2	2x(1NO-1NC)
E1	A	FZ E157-M2	1NO-1NC	FZ E169-M2	1NO-1NC
Max. speed		page 239 - type 1	1.5 m/s	0.5 m/s	
Min. force		0.06 Nm (0.25 Nm ②)	0.06 Nm	initial 20 N - final 40 N	
Travel diagrams		page 240 - group 5	page 240 - group 5	page 240 - group 7	

(1) Positive opening only with actuator set to max. See page 105.

All measures in the drawings are in mm

Accessories See page 225

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

Position switches FZ series with reset



Pizzato Elettrica has developed a reset device code W3 to make perfectly simultaneous the actuator and the contact block tripping. The new device is a block inserted between the switch body and the head, and could be rotated independently from this last one. This new device has following advantages:

- The reset device can be integrated into almost all standard actuator heads
- Contact blocks with snap action are no more necessary because the tripping movement is made by the reset device itself
- The reset device can be rotated independently from the head for maximum flexibility during installation
- Two driving forces: standard and increased for applications with vibrations
- Mechanical endurance: 1 million operating cycles.

Contact type:

R = snap action
L = slow action

	With stainless steel roller on request	With stainless steel roller on request	
Contact blocks			
6 L	FZ 601-W3M2	FZ 602-W3M2	FZ 605-W3M2
9 L	FZ 901-W3M2	FZ 902-W3M2	FZ 905-W3M2
10 L	FZ 1001-W3M2 2NO	FZ 1002-W3M2 2NO	FZ 1005-W3M2 2NO
20 L	FZ 2001-W3M2 1NO+2NC	FZ 2002-W3M2 1NO+2NC	FZ 2005-W3M2 1NO+2NC
21 L	FZ 2101-W3M2 3NC	FZ 2102-W3M2 3NC	FZ 2105-W3M2 3NC
22 L	FZ 2201-W3M2 2NO+1NC	FZ 2202-W3M2 2NO+1NC	FZ 2205-W3M2 2NO+1NC
2 R	FZ 201-W3M2 2NO+2NC	FZ 202-W3M2 2NO+2NC	FZ 205-W3M2 2NO+2NC
Max. speed	page 239 - type 4	page 239 - type 3	page 239 - type 3
Min. force	4.5 N (25 N)	4 N (25 N)	4 N (25 N)
Travel diagrams	page 241 - group 1	page 241 - group 2	page 241 - group 2
	page 239 - type 3	page 239 - type 3	page 239 - type 3
	2.5 N (25 N)	2.5 N (25 N)	2.5 N (25 N)
	page 241 - group 3	page 241 - group 3	page 241 - group 3

	With Ø 12 mm stainless steel roller on request	With Ø 20 mm stainless steel roller on request	Other rollers available. See on page 106	Other rollers available. See on page 106
Contact blocks				
6 L	FZ 615-W3M2R28 1NO+1NC	FZ 630-W3M2 1NO+1NC	FZ 631-W3M2 1NO+1NC	FZ 651-W3M2 1NO+1NC
9 L	FZ 915-W3M2R28 2NC	FZ 930-W3M2 2NC	FZ 931-W3M2 2NC	FZ 951-W3M2 2NC
10 L	FZ 1015-W3M2R28 2NO	FZ 1030-W3M2 2NO	FZ 1031-W3M2 2NO	FZ 1051-W3M2 2NO
20 L	FZ 2015-W3M2R28 1NO+2NC	FZ 2030-W3M2 1NO+2NC	FZ 2031-W3M2 1NO+2NC	FZ 2051-W3M2 1NO+2NC
21 L	FZ 2115-W3M2R28 3NC	FZ 2130-W3M2 3NC	FZ 2131-W3M2 3NC	FZ 2151-W3M2 3NC
22 L	FZ 2215-W3M2R28 2NO+1NC	FZ 2230-W3M2 2NO+1NC	FZ 2231-W3M2 2NO+1NC	FZ 2251-W3M2 2NO+1NC
2 R	FZ 215-W3M2R28 2NO+2NC	FZ 230-W3M2 2NO+2NC	FZ 231-W3M2 2NO+2NC	FZ 251-W3M2 2NO+2NC
Max. speed	page 239 - type 2	page 239 - type 1	page 239 - type 1	page 239 - type 1
Min. force	4.5 N (25 N)	0.07 Nm (0.25 Nm)	0.07 Nm (0.25 Nm)	0.07 Nm (0.25 Nm)
Travel diagrams	page 241 - group 1	page 241 - group 4	page 241 - group 4	page 241 - group 4

All measures in the drawings are in mm



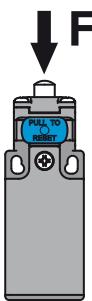
Contact type:

R = snap action
L = slow action

	Other rollers available. See on page 106			
Contact blocks				
6 L	FZ 652-W3M2	FZ 654-W3M2	FZ 656-W3M2	FZ 657-W3M2
9 L	FZ 952-W3M2	FZ 954-W3M2	FZ 956-W3M2	FZ 957-W3M2
10 L	FZ 1052-W3M2 2NO	FZ 1054-W3M2 2NO	FZ 1056-W3M2 2NO	FZ 1057-W3M2 2NO
20 L	FZ 2052-W3M2 1NO+2NC	FZ 2054-W3M2 1NO+2NC	FZ 2056-W3M2 1NO+2NC	FZ 2057-W3M2 1NO+2NC
21 L	FZ 2152-W3M2 3NC	FZ 2154-W3M2 3NC	FZ 2156-W3M2 3NC	FZ 2157-W3M2 3NC
22 L	FZ 2252-W3M2 2NO+1NC	FZ 2254-W3M2 2NO+1NC	FZ 2256-W3M2 2NO+1NC	FZ 2257-W3M2 2NO+1NC
2 R	FZ 252-W3M2 2NO+2NC	FZ 254-W3M2 2NO+2NC	FZ 256-W3M2 2NO+2NC	FZ 257-W3M2 2NO+2NC
Max. speed	page 239 - type 1			
Min. force	0.07 Nm (0.25 Nm)			
Travel diagrams	page 241 - group 4			

All measures in the drawings are in mm

Increased actuating force



The switch can be delivered with increased actuating force (option W4). Ideal for applications with vibrations.

Actuators	Min. force
01, 14, 15, 16	7 N
02, 05	6 N
07	3.5 N
30 ... 57	0.08 Nm

Accessories See page 225

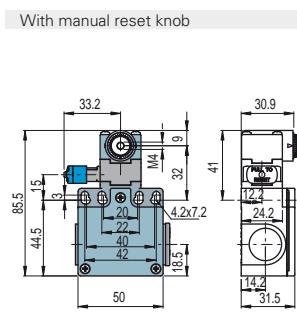
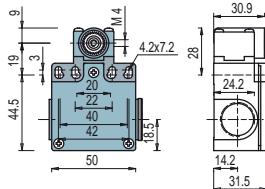
→ The 2D/3D files are available at www.pizzato.com

Position switches with revolving lever without actuator

All measures in the drawings are in mm

Contact type:

- [R] = snap action
- [L] = slow action
- [LO] = slow action overlapped
- [LS] = slow action shifted
- [LV] = slow action shifted and spaced
- [LI] = slow action independent
- [LA] = slow action closer
- [] = electronic PNP



IMPORTANT

For safety applications: join only switches and actuators marked with symbol \oplus aside the product code.
For more information about safety applications see details on page 235.

Contact blocks

5 [R]	FZ 538-M2	\oplus 1NO+1NC	
6 [L]	FZ 638-M2	\oplus 1NO+1NC	
7 [LO]	FZ 738-M2	\oplus 1NO+1NC	
9 [L]	FZ 938-M2	\oplus 2NC	
10 [L]	FZ 1038-M2	2NO	
11 [R]	FZ 1138-M2	\oplus 2NC	
12 [R]	FZ 1238-M2	2NO	
13 [LV]	FZ 1338-M2	\oplus 2NC	
14 [LS]	FZ 1438-M2	\oplus 2NC	
15 [LS]	FZ 1538-M2	2NO	
16 [LI]	FZ 1638-M2	\oplus 2NC	
18 [LA]	FZ 1838-M2	\oplus 1NO+1NC	
20 [L]	FZ 2038-M2	\oplus 1NO+2NC	FZ 2038-W3M2 \oplus 1NO+2NC
21 [L]	FZ 2138-M2	\oplus 3NC	FZ 2138-W3M2 \oplus 3NC
22 [L]	FZ 2238-M2	\oplus 2NO+1NC	FZ 2238-W3M2 \oplus 2NO+1NC
2 [R]	FZ 238-M2	2x(1NO-1NC)	FZ 238-W3M2 2NO+2NC
E1 []	FZ E138-M2	1NO-1NC	
Min. force		0.06 Nm (0.25 Nm \oplus)	0.07 Nm (0.25 Nm \oplus)
Travel diagrams		page 240 - group 5	page 241 - group 4

All measures in the drawings are in mm

Loose actuators

All measures in the drawings are in mm

IMPORTANT: These loose actuators can be used with items of series FR, FM, FX, FZ and FK only.

Technopolymer roller \varnothing 18 mm	Technopolymer roller \varnothing 18 mm	Adjustable square rod, 3x3x125 mm	Flexible rod with pointed end	Adjustable round rod \varnothing 3x125 mm	Technopolymer roller \varnothing 20 mm
VF LE30 \oplus	VF LE31 \oplus	VF LE33	VF LE34	VF LE50	VF LE51 \oplus
Technopolymer roller \varnothing 20 mm	Porcelain roller	Technopolymer roller \varnothing 20 mm	Adjustable actuator with technopolymer roller	Adjustable safety actuator with technopolymer roller	Technopolymer roller \varnothing 20 mm
VF LE52 \oplus	VF LE53 \oplus (2)	VF LE54 \oplus	VF LE55 \oplus (1)	VF LE56 \oplus	VF LE57 \oplus
					VF LE69

(1) Actuator VF LE55 can only be used in safety applications if adjusted to its max. length, as shown in figure beside. If you need an adjustable lever for safety applications, use the adjustable safety lever VF LE56.

(2) The position switch obtained by assembling switch FZ •38-M2 (e.g. FZ 538-M2, FZ 638-M2...) with actuator VF LE53 will not present the same travel diagrams and actuating forces as switch FZ •53 E0M2V9 (e.g. FZ 553-E0M2V9, FZ 653-E0M2V9...).

(4) The actuator cannot be rotated to the inside because it will mechanically interfere with the switch head.

Items with code on green background are stock items

Accessories See page 225

The 2D/3D files are available at www.pizzato.com



Special loose actuators

All measures in the drawings are in mm

IMPORTANT: These loose actuators can be used with items of series FR, FM, FX, FZ and FK only.

Stainless steel rollers, Ø 20 mm

VF LE31-R24 (1)	VF LE51-R24 (1)	VF LE52-R24 (1)	VF LE54-R24 (1)	VF LE55-R24 (1)	VF LE56-R24 (1)	VF LE57-R24 (1)

Technopolymer rollers, Ø 35 mm

VF LE31-R25 (4)	VF LE51-R25 (4)	VF LE52-R25 (1)	VF LE54-R25 (4)	VF LE55-R25 (1)	VF LE56-R25 (1)	VF LE57-R25 (1)

Rubber rollers, Ø 40 mm

VF LE31-R5 (4)	VF LE51-R5 (4)	VF LE52-R5 (1)	VF LE54-R5 (4)	VF LE55-R5 (1)	VF LE56-R5 (1)	VF LE57-R5 (4)

Rubber rollers, Ø 50 mm

VF LE51-R26 (4)	VF LE52-R26 (4)	VF LE54-R26 (4)	VF LE55-R26 (1)	VF LE56-R26 (1)	VF LE57-R26 (4)

Protruding rubber rollers, Ø 50 mm

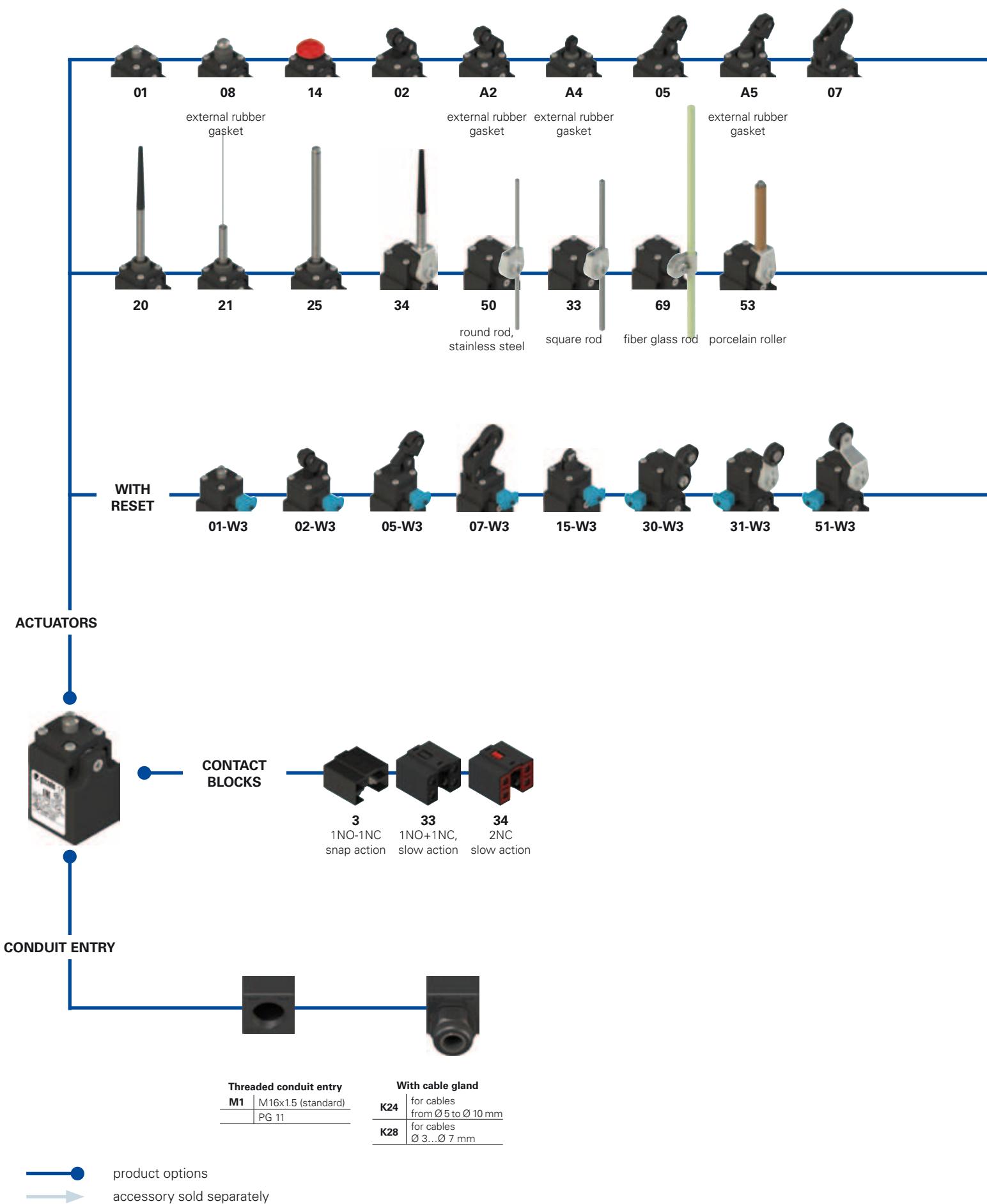
VF LE55-R27 (1)	VF LE56-R27 (1)

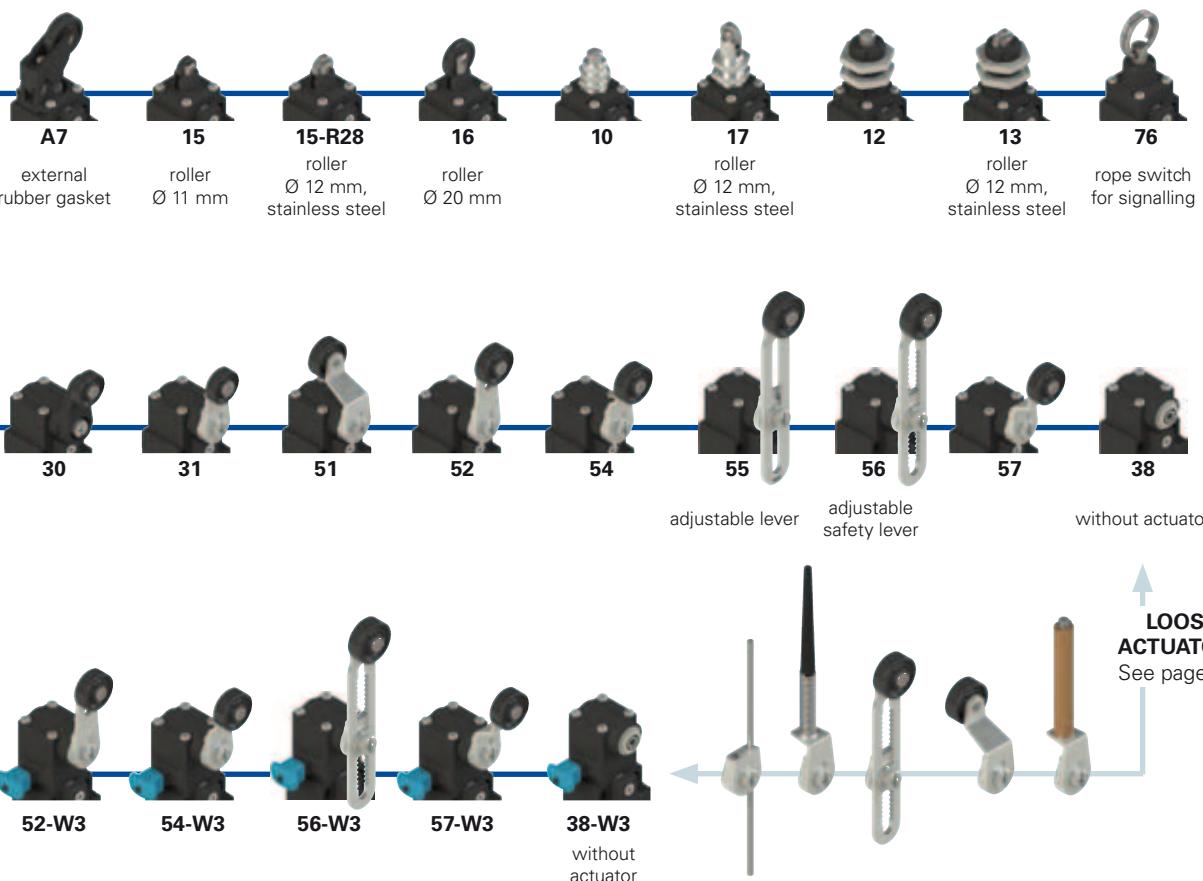
Items with code on **green** background are stock items

Accessories See page 225

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

Selection diagram





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 options

FK 302-W3XGM1K24R23T6

Housing

FK technopolymer, one conduit entry

Contact blocks

- 3** 1NO-1NC, snap action
- 33** 1NO+1NC, slow action
- 34** 2NC, slow action

Actuators

- 01** short plunger
- 02** roller lever
- 05** angled roller lever
- ...

Reset

- without reset (standard)
- W3** simultaneous reset
- W4** simultaneous reset, increased force

External metallic parts

- zinc-plated steel (standard)
- X** stainless steel

Ambient temperature

- 25°C ... +80°C (standard)
- T6** -40°C ... +80°C

Pre-installed cable glands

- without cable gland (standard)
- K24** cable gland for cables Ø 5...Ø 10 mm
- K28** cable gland for cables Ø 3...Ø 7 mm

Please contact our technical service for the complete list of possible combinations.

Threaded conduit entry

- M1** M16x1.5 (standard)
- PG 11

Rollers

- standard roller
- R28** stainless steel, Ø 12 mm (for actuators A4, 15)
- stainless steel, Ø 14 mm
- R23** (for actuators A2, 02, A5, 05, 30, 31, 51, 52, 54, 55, 56, 57)
- stainless steel, Ø 20 mm
- R24** (for actuators 30, 31, 51, 52, 54, 55, 56, 57)
- technopolymer, Ø 35 mm (for actuators 30, 31, 51, 52, 54, 55, 56, 57)
- R25** rubber, Ø 40 mm (for actuators 30, 31, 51, 52, 54, 55, 56, 57)
- R5** rubber, Ø 50 mm (for actuators 30, 31, 51, 52, 54, 55, 56, 57)
- R26** rubber, Ø 50 mm (for actuators 51, 52, 54, 55, 56, 57)
- R27** rubber, protruding, Ø 50 mm (for actuators 55, 56)



Technical data

Housing

Housing made of fiber glass reinforced technopolymer, self-extinguishing, shock-proof and with double insulation:
 M16x1.5 (standard)
 One threaded conduit entry:
 Protection degree: IP67 according to EN 60529 with cable gland having equal or higher protection degree

General data

Ambient temperature:	-25°C ... +80°C
Max. actuation frequency:	3600 operating cycles ¹ /hour
Mechanical endurance:	20 million operating cycles ¹
Mounting position:	any
Safety parameters:	B _{10d} :
	40,000,000 for NC contacts
Mechanical interlock, not coded:	type 1 according to EN ISO 14119
Tightening torques for installation:	see pages 235-246
(1) One operation cycle means two movements, one to close and one to open contacts, as defined in EN 60947-5-1.	

Main features

- Technopolymer housing, one conduit entry
- Protection degree IP67
- 3 contact blocks available
- 46 actuators available
- Versions with stainless steel external parts
- Versions with gold-plated silver contacts

Cable cross section (flexible copper strands)

Contact block 33, 34:	min.	1 x 0.34 mm ²	(1 x AWG 22)
	max.	2 x 1.5 mm ²	(2 x AWG 16)
Contact block 3:	min.	1 x 0.5 mm ²	(1 x AWG 20)
	max.	2 x 1.5 mm ²	(2 x AWG 16)

In conformity with standards:

IEC 60947-5-1, EN 60947-5-1, EN 60947-1, IEC 60204-1, EN 60204-1, EN ISO 14119, EN ISO 12100, IEC 60529, EN 60529, UL 508, CSA 22.2 No.14 .

Approvals:

IEC 60947-5-1, UL 508, CSA 22.2 No.14, GB14048.5-2001.

Markings and quality marks:



IMQ approval:	EG610
UL approval:	E131787
CCC approval:	2007010305230013
EAC approval:	RU C-IT ДМ94.В.01024

Installation for safety applications:

Use only switches marked with the symbol aside the product code. Always connect the safety circuit to the **NC contacts** (normally closed contacts: 11-12, 21-22 or 31-32) as stated in **standard EN 60947-5-1, encl. K, par. 2**. Actuate the switch **at least up to the positive opening travel** shown in the travel diagrams on page 240. Operate the switch **at least with the positive opening force**, indicated between brackets below each article, aside the minimum force value.

If not expressly indicated in this chapter, for correct installation and utilization of all articles see chapter utilization requirements from page 235 to page 246.

Electrical data

without connector

Thermal current (I _{th}):	10 A	Utilization category		
Rated insulation voltage (U _i):	500 Vac 600 Vdc	Alternating current: AC15 (50÷60 Hz)		
Rated impulse withstand voltage (U _{imp}):	400 Vac 500 Vdc (contact blocks 33, 34) 6 kV 4 kV (contact block 33, 34)	Ue (V)	250	400
Conditional short circuit current:	1000 A according to EN 60947-5-1	Ie (A)	6	4
Protection against short circuits:	type aM fuse 10 A 500 V		1	
Pollution degree:	3	Direct current: DC13		
		Ue (V)	24	125
		Ie (A)	6	1.1
				0.4



Characteristics approved by IMQ

Rated insulation voltage (Ui):	500 Vac
	400 Vac (for contact blocks 33, 34)
Conventional free air thermal current (I _{th}):	10 A
Protection against short circuits:	type aM fuse 10 A 500 V
Rated impulse withstand voltage (U _{imp}):	6 kV
	4 kV (for contact blocks 33, 34)
Protection degree of the housing: IP67	
MV terminals (screw terminals)	
Pollution degree 3	
Utilization category: AC15	
Operating voltage (Ue): 400 Vac (50 Hz)	
Operating current (Ie): 3 A	
Forms of the contact element: Zb, Y+Y	
Positive opening of contacts on contact blocks 33, 34	

In conformity with standards: EN 60947-1, EN 60947-5-1+A1:2009, fundamental requirements of the Low Voltage Directive 2006/95/EC.

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

Characteristics approved by UL

Utilization categories Q300 (69 VA, 125 ... 250 Vdc)	A600 (720 VA, 120 ... 600 Vac)
Data of housing type 1, 4X "indoor use only", 12, 13	
For all contact blocks except 2 and 3 use 60 or 75°C copper (Cu) conductor, rigid or flexible, wire size AWG 12/14. Terminal tightening torque of 7.1 lb in (0.8 Nm).	
For contact blocks 2 and 3 use 60 or 75 °C copper (Cu) conductor, rigid or flexible, wire size AWG 14. Terminal tightening torque of 12 lb in (1.4 Nm).	

In conformity with standard: UL 508, CSA 22.2 No.14

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

Position switches FK series

Contact type:
R = snap action
L = slow action

	With stainless steel roller on request	With external rubber gasket	With stainless steel roller on request	With external rubber gasket
Contact blocks				
3 R	FK 301-M1 1NO-1NC	FK 302-M1 1NO-1NC	FK 3A2-M1 1NO-1NC	FK 3A4-M1 1NO-1NC
33 L	FK 3301-M1 1NO+1NC	FK 3302-M1 1NO+1NC	FK 33A2-M1 1NO+1NC	FK 33A4-M1 1NO+1NC
34 L	FK 3401-M1 2NC	FK 3402-M1 2NC	FK 34A2-M1 2NC	FK 34A4-M1 2NC
Max. speed	page 239 - type 4	page 239 - type 3	page 239 - type 3	page 239 - type 5
Min. force	5 N (25 N	4 N (25 N	4.3 N (25 N	4.3 N (25 N
Travel diagrams	page 240 - group 1	page 240 - group 2	page 240 - group 2	page 240 - group 1

	With stainless steel roller on request	With external rubber gasket	With stainless steel roller on request	With external rubber gasket
Contact blocks				
3 R	FK 305-M1 1NO-1NC	FK 3A5-M1 1NO-1NC	FK 307-M1 1NO-1NC	FK 3A7-M1 1NO-1NC
33 L	FK 3305-M1 1NO+1NC	FK 33A5-M1 1NO+1NC	FK 3307-M1 1NO+1NC	FK 33A7-M1 1NO+1NC
34 L	FK 3405-M1 2NC	FK 34A5-M1 2NC	FK 3407-M1 2NC	FK 34A7-M1 2NC
Max. speed	page 239 - type 3	page 239 - type 3	page 239 - type 3	page 239 - type 3
Min. force	4 N (25 N	4.3 N (25 N	4 N (25 N	3 N (25 N
Travel diagrams	page 240 - group 2	page 240 - group 2	page 240 - group 3	page 240 - group 3

	With external rubber gasket	Fixed only by threaded head in vertical position		
Contact blocks				
3 R	FK 308-M1 1NO-1NC	FK 310-M1 1NO-1NC	FK 312-M1 1NO-1NC	FK 313-M1 1NO-1NC
33 L	FK 3308-M1 1NO+1NC	FK 3310-M1 1NO+1NC	FK 3312-M1 1NO+1NC	FK 3313-M1 1NO+1NC
34 L	FK 3408-M1 2NC	FK 3410-M1 2NC	FK 3412-M1 2NC	FK 3413-M1 2NC
Max. speed	page 239 - type 4	page 239 - type 4	page 239 - type 4	page 239 - type 2
Min. force	5 N (25 N	5 N (25 N	5 N (25 N	5 N (25 N
Travel diagrams	page 240 - group 1	page 240 - group 1	page 240 - group 1	page 240 - group 1

All measures in the drawings are in mm

Accessories See page 225

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



Contact type:

R = snap action
L = slow action

	Roller, Ø 11 mm, technopolymer	Roller, Ø 12 mm, stainless steel	
Contact blocks			
3 R	FK 314-M1 1NO-1NC	FK 315-M1 1NO-1NC	FK 316-M1 1NO-1NC
33 L	FK 3314-M1 1NO+1NC	FK 3315-M1 1NO+1NC	FK 3316-M1 1NO+1NC
34 L	FK 3414-M1 2NC	FK 3415-M1 2NC	FK 3416-M1 2NC
Max. speed	page 239 - type 4	page 239 - type 2	page 239 - type 2
Min. force	6 N (25 N ⊖)	5 N (25 N ⊖)	5 N (25 N ⊖)
Travel diagrams	page 240 - group 1	page 240 - group 1	page 240 - group 1

	Fixed only by threaded head in vertical position	With external rubber gasket	With external rubber gasket	With external rubber gasket
Contact blocks				
3 R	FK 317-M1 1NO-1NC	FK 320-M1 1NO-1NC	FK 321-M1 1NO-1NC	FK 325-M1 1NO-1NC
33 L	FK 3317-M1 1NO+1NC	FK 3320-M1 1NO+1NC	FK 3321-M1 1NO+1NC	FK 3325-M1 1NO+1NC
34 L	FK 3417-M1 2NC	FK 3420-M1 2NC	FK 3421-M1 2NC	FK 3425-M1 2NC
Max. speed	page 239 - type 2	1 m/s	1 m/s	1 m/s
Min. force	5 N (25 N ⊖)	0.05 Nm	0.05 Nm	0.1 Nm
Travel diagrams	page 240 - group 1	page 240 - group 4	page 240 - group 4	page 240 - group 4

	With Ø 20 mm stainless steel roller on request	Other rollers available. See on page 116	Square rod, 3x3 mm	
Contact blocks				
3 R	FK 330-M1 1NO-1NC	FK 331-M1 1NO-1NC	FK 333-M1 1NO-1NC	FK 334-M1 1NO-1NC
33 L	FK 3330-M1 1NO+1NC	FK 3331-M1 1NO+1NC	FK 3333-M1 1NO+1NC	FK 3334-M1 1NO+1NC
34 L	FK 3430-M1 2NC	FK 3431-M1 2NC	FK 3433-M1 2NC	FK 3434-M1 2NC
Max. speed	page 239 - type 1	page 239 - type 1	1.5 m/s	1.5 m/s
Min. force	0.05 Nm (0.25 Nm ⊖)	0.05 Nm (0.25 Nm ⊖)	0.05 Nm	0.05 Nm
Travel diagrams	page 240 - group 5	page 240 - group 5	page 240 - group 5	page 240 - group 5

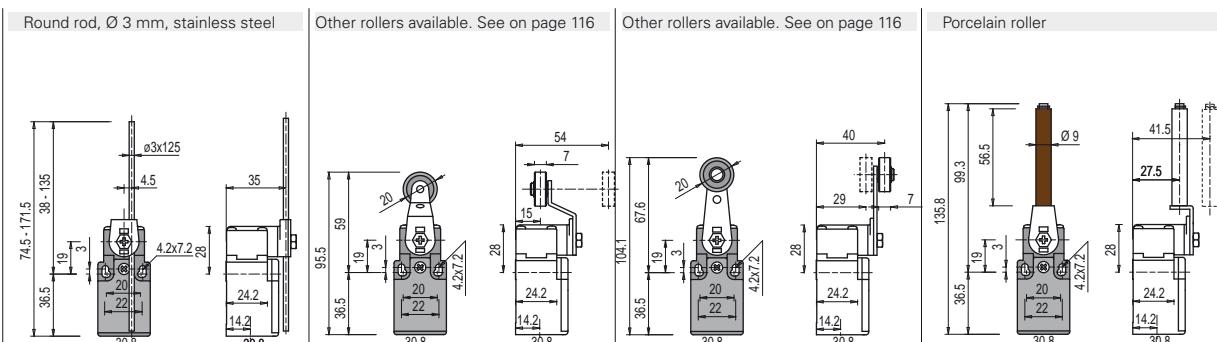
All measures in the drawings are in mm

Accessories See page 225→ The 2D/3D files are available at www.pizzato.com

Position switches FK series

Contact type:

R = snap action
L = slow action



Contact blocks

3 R	FK 350-M1	1NO-1NC	FK 351-M1	1NO-1NC	FK 352-M1	1NO-1NC	FK 353-E0M1	1NO-1NC
33 L	FK 3350-M1	1NO+1NC	FK 3351-M1	② 1NO+1NC	FK 3352-M1	② 1NO+1NC	FK 3353-E0M1V9	② 1NO+1NC
34 L	FK 3450-M1	2NC	FK 3451-M1	② 2NC	FK 3452-M1	② 2NC	FK 3453-E0M1V9	② 2NC
Max. speed	1.5 m/s							0.5 m/s
Min. force	0.05 Nm							0.02 Nm (0.25 Nm ②)
Travel diagrams	page 240 - group 5							page 240 - group 6

Contact blocks

3 R	FK 354-M1	1NO-1NC	FK 355-M1	1NO-1NC	FK 356-M1	1NO-1NC	FK 357-M1	1NO-1NC
33 L	FK 3354-M1	② 1NO+1NC	FK 3355-M1	② (1) 1NO+1NC	FK 3356-M1	② 1NO+1NC	FK 3357-M1	② 1NO+1NC
34 L	FK 3454-M1	② 2NC	FK 3455-M1	② (1) 2NC	FK 3456-M1	② 2NC	FK 3457-M1	② 2NC
Max. speed	page 239 - type 1							page 239 - type 1
Min. force	0.05 Nm (0.25 Nm ②)							0.05 Nm (0.25 Nm ②)
Travel diagrams	page 240 - group 5							page 240 - group 5

Contact blocks

3 R	FK 369-M1	1NO-1NC	FK 376-M1	1NO-1NC				
33 L	FK 3369-M1	1NO+1NC	FK 3376-M1	1NO+1NC				
34 L	FK 3469-M1	2NC	FK 3476-M1	2NO				
Max. speed	1.5 m/s							0.5 m/s
Min. force	0.05 Nm							initial 20 N - final 40 N
Travel diagrams	page 240 - group 5							page 240 - group 7

(1) Positive opening only with actuator set to max. See page 115.

All measures in the drawings are in mm

Accessories See page 225

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

Position switches FK series with reset



Pizzato Elettrica has developed a reset device code W3 to make perfectly simultaneous the actuator and the contact block tripping. The new device is a block inserted between the switch body and the head, and could be rotated independently from this last one. This new device has following advantages:

- The reset device can be integrated into almost all standard actuator heads
- Contact blocks with snap action are no more necessary because the tripping movement is made by the reset device itself
- The reset device can be rotated independently from the head for maximum flexibility during installation
- Two driving forces: standard and increased for applications with vibrations
- Mechanical endurance: 1 million operating cycles.

Contact type:

R = snap action
L = slow action

	With stainless steel roller on request	With stainless steel roller on request	With stainless steel roller on request
Contact blocks			
33 L	FK 3301-W3M1 1NO+1NC	FK 3302-W3M1 1NO+1NC	FK 3305-W3M1 1NO+1NC
34 L	FK 3401-W3M1 2NC	FK 3402-W3M1 2NC	FK 3405-W3M1 2NC
Max. speed	page 239 - type 4	page 239 - type 3	page 239 - type 3
Min. force	4.5 N (25 N)	4 N (25 N)	4 N (25 N)
Travel diagrams	page 241 - group 1	page 241 - group 2	page 241 - group 2
	page 241 - group 3	page 241 - group 3	page 241 - group 3

	With Ø 12 mm stainless steel roller on request	With Ø 20 mm stainless steel roller on request	Other rollers available. See on page 116	Other rollers available. See on page 116
Contact blocks				
33 L	FK 3315-W3M1 1NO+1NC	FK 3330-W3M1 1NO+1NC	FK 3331-W3M1 1NO+1NC	FK 3351-W3M1 1NO+1NC
34 L	FK 3415-W3M1 2NC	FK 3430-W3M1 2NC	FK 3431-W3M1 2NC	FK 3451-W3M1 2NC
Max. speed	page 239 - type 2	page 239 - type 1	page 239 - type 1	page 239 - type 1
Min. force	4.5 N (25 N)	0.07 Nm (0.25 Nm)	0.07 Nm (0.25 Nm)	0.07 Nm (0.25 Nm)
Travel diagrams	page 241 - group 1	page 241 - group 4	page 241 - group 4	page 241 - group 4

	Other rollers available. See on page 116			
Contact blocks				
33 L	FK 3352-W3M1 1NO+1NC	FK 3354-W3M1 1NO+1NC	FK 3356-W3M1 1NO+1NC	FK 3357-W3M1 1NO+1NC
34 L	FK 3452-W3M1 2NC	FK 3454-W3M1 2NC	FK 3456-W3M1 2NC	FK 3457-W3M1 2NC
Max. speed	page 239 - type 1			
Min. force	0.07 Nm (0.25 Nm)			
Travel diagrams	page 241 - group 4			

All measures in the drawings are in mm

Accessories See page 225

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

Position switches with revolving lever without actuator

All measures in the drawings are in mm

Contact type:

R = snap action
L = slow action

Contact blocks	With manual reset knob	
3	FK 338-M1 1NO-1NC	
33	FK 3338-M1 1NO+1NC	FK 3338-W3M1 1NO+1NC
34	FK 3438-M1 2NC	FK 3438-W3M1 2NC
Min. force	0.05 Nm (0.25 Nm)	0.07 Nm (0.25 Nm)
Travel diagrams	page 240 - group 5	page 241 - group 4

IMPORTANT**For safety applications:** join only switches and actuators marked with symbol

aside the product code.

For more information about safety applications see details on page 235.

Increased actuating force



The switch can be delivered with increased actuating force (option W4). Ideal for applications with vibrations.

Actuators	Min. force
01, 14, 15, 16	7 N
02, 05	6 N
07	3.5 N
30 ... 57	0.08 Nm

Loose actuators

All measures in the drawings are in mm

IMPORTANT: These loose actuators can be used with items of series FR, FM, FX, FZ and FK only.

Technopolymer roller Ø 18 mm	Technopolymer roller Ø 18 mm	Adjustable square rod, 3x3x125 mm	Flexible rod with pointed end	Adjustable round rod Ø 3x125 mm	Technopolymer roller Ø 20 mm
VF LE30	VF LE31	VF LE33	VF LE34	VF LE50	VF LE51
Technopolymer roller Ø 20 mm	Porcelain roller	Technopolymer roller Ø 20 mm	Adjustable actuator with technopolymer roller	Adjustable safety actuator with technopolymer roller	Technopolymer roller Ø 20 mm
VF LE52	VF LE53 (2)	VF LE54	VF LE55 (1)	VF LE56	VF LE57
					VF LE69

(1) Actuator VF LE55 can only be used in safety applications if adjusted to its max. length, as shown in figure beside. If you need an adjustable lever for safety applications, use the adjustable safety lever VF LE56.

(2) The position switch obtained by assembling switch FK •38-M1 (e.g. FK 338-M1, FK 3338-M1...) with actuator VF LE53 will not present the same travel diagrams and actuating forces as switch FK •53-E0M1V9 (e.g. FK 353-E0M1, FK 3353-E0M1V9...).

(4) The actuator cannot be rotated to the inside because it will mechanically interfere with the switch head.

Items with code on green background are stock items

Accessories See page 225

The 2D/3D files are available at www.pizzato.com



Special loose actuators

All measures in the drawings are in mm

IMPORTANT: These loose actuators can be used with items of series FR, FM, FX, FZ and FK only.

Stainless steel rollers, Ø 20 mm

VF LE31-R24 (4)	VF LE51-R24 (4)	VF LE52-R24 (4)	VF LE54-R24 (4)	VF LE55-R24 (1)	VF LE56-R24 (4)	VF LE57-R24 (4)

Technopolymer rollers, Ø 35 mm

VF LE31-R25 (4)	VF LE51-R25 (4)	VF LE52-R25 (4)	VF LE54-R25 (4)	VF LE55-R25 (1)	VF LE56-R25 (4)	VF LE57-R25 (4)

Rubber rollers, Ø 40 mm

VF LE31-R5 (4)	VF LE51-R5 (4)	VF LE52-R5 (4)	VF LE54-R5 (4)	VF LE55-R5 (1)	VF LE56-R5 (4)	VF LE57-R5 (4)

Rubber rollers, Ø 50 mm

VF LE51-R26 (4)	VF LE52-R26 (4)	VF LE54-R26 (4)	VF LE55-R26 (1)	VF LE56-R26 (4)	VF LE57-R26 (4)

Protruding rubber rollers, Ø 50 mm

VF LE55-R27 (1)	VF LE56-R27 (4)

Items with code on green background are stock items

Accessories See page 225

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