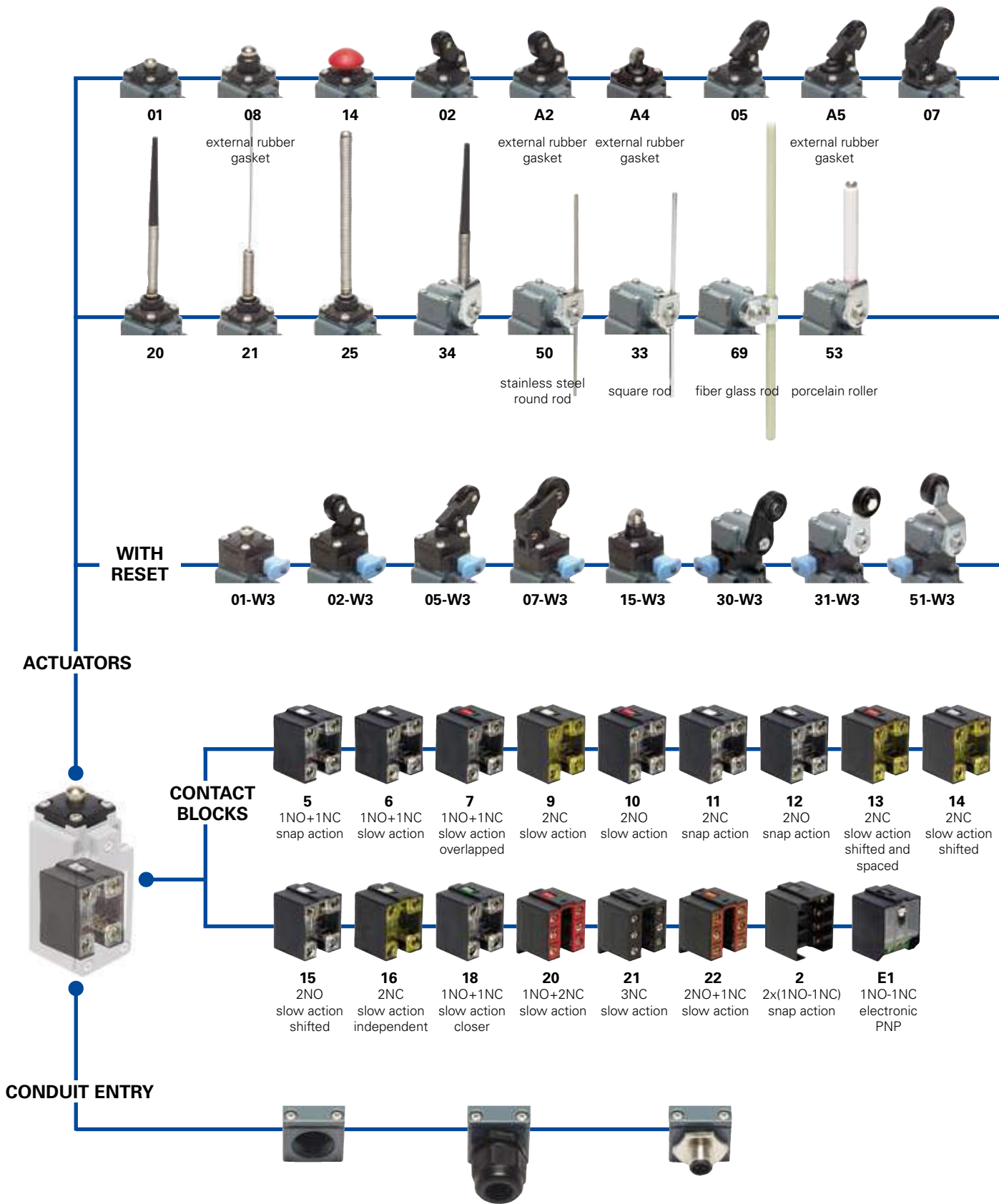


Selection diagram



**Threaded conduit entry**

	PG 13,5 (standard)
M2	M20x1,5

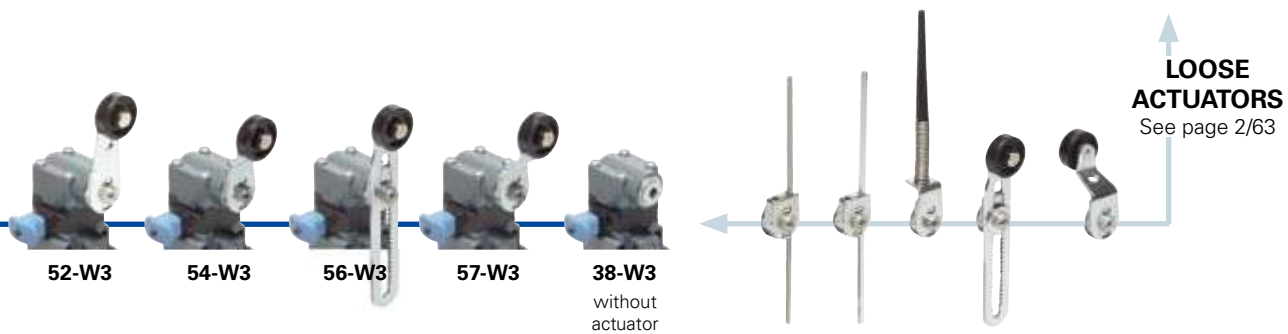
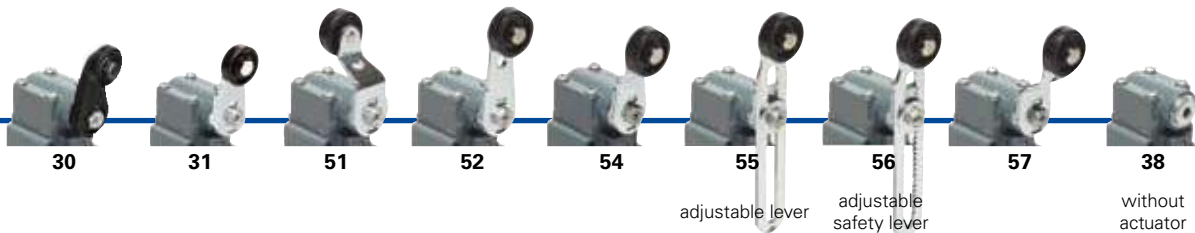
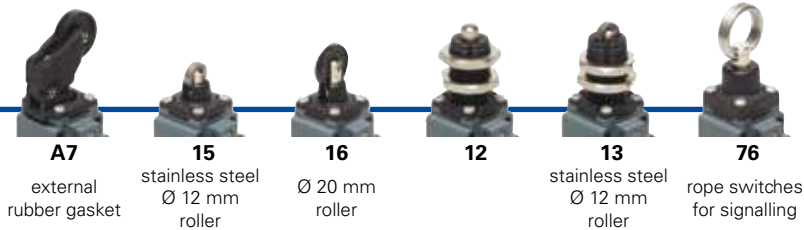
**With assembled cable gland**

PG 13,5	K21	for Ø 6 to Ø 12 mm cables range
	K25	for Ø 3 to Ø 7 mm cables range
	K23	for Ø 6 to Ø 12 mm cables range
		for Ø 3 to Ø 7 mm cables range
M20x1,5	K27	for Ø 3 to Ø 7 mm cables range

**With M12 metal connector assembled and wired**

K40	8 poles from bottom
K50	5 poles from bottom

● product option  
 → accessory sold separately



### 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  
**FM 502-1W3GM2K50**

Housing	
<b>FM</b>	metal housing, one conduit entry
Contact blocks	
<b>5</b>	1NO+1NC, snap action
<b>6</b>	1NO+1NC, slow action
<b>7</b>	1NO+1NC, slow action overlapped
...	.....
Actuators	
<b>01</b>	short plunger
<b>02</b>	roller lever
<b>05</b>	offset roller lever
...	.....
Suffix	
	no suffix (standard)
<b>1</b>	with stainless steel roller: - Ø 14 mm for actuators A2, 02, A5, 05 - Ø 20 mm for actuators 30, 31, 51, 52, 54, 55, 56, 57
<b>2</b>	with Ø 35 mm polymer roller (see special loose actuators on page 2/64)
<b>3</b>	with Ø 50 mm rubber roller (see special loose actuators on page 2/64)
<b>4</b>	with Ø 50 mm overhanging rubber roller (see special loose actuators on page 2/64)

Preinstalled cable gland or connectors	
	no cable gland or connector (standard)
<b>K21</b>	with assembled cable gland suitable for Ø 6 to Ø 12 mm cables range
...	.....
<b>K50</b>	with 5 poles M12 metal connector
...	.....

For the complete list of all combinations, please contact our technical office.

Threaded conduit entry	
	PG 13,5 (standard)
<b>M2</b>	M20x1,5

Contacts type	
	silver contacts (standard)
<b>G</b>	silver contacts gold plated 1 µm (contact block 2 excluded)

Reset hooking	
	without reset (standard)
<b>W3</b>	simultaneous reset hooking



**Main data**

- Metal housing, one conduit entry
- Protection degree IP67
- 17 contact blocks available
- 43 actuators available
- M12 assembled connector versions
- Silver contacts gold plated versions

**Technical data**

**Housing**

Metal housing, coated with baked epoxy powder  
 One threaded conduit entry  
 Protection degree: IP67 according to EN 60529

**General data**

Ambient temperature: from -25°C to +80°C  
 Version for operation in ambient temperature from -40°C to +80° C on request  
 Max actuation frequency: 3600 operations cycles<sup>1</sup>/hour  
 Mechanical endurance: 20 million operations cycles<sup>1</sup>  
 Assembling position: any  
 Driving torque for installation: see pages 7/1-7/10  
 (1) One operation cycle means two movements, one to close and one to open contacts, as foreseen by EN 60947-5-1 standard.

**Cross section of the conductors (flexible copper wire)**

Contact blocks 20, 21, 22, 33, 34:	min.	1 x 0,34 mm <sup>2</sup>	(1 x AWG 22)
	max.	2 x 1,5 mm <sup>2</sup>	(2 x AWG 16)
Contact blocks 5, 6, 7, 9, 10, 11, 12, 13, 14, 15, 16, 18:	min.	1 x 0,5 mm <sup>2</sup>	(1 x AWG 20)
	max.	2 x 2,5 mm <sup>2</sup>	(2 x AWG 14)
Contact block 2:	min.	1 x 0,5 mm <sup>2</sup>	(1 x AWG 20)
	max.	2 x 1,5 mm <sup>2</sup>	(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 1088, EN ISO 12100-1, EN ISO 12100-2, IEC 60529, EN 60529, NFC 63-140, VDE 0660-200, VDE 0113.

**Approvals:**

IEC 60947-5-1, UL 508, GB14048.5-2001.

**Markings and quality marks:**

Approval IMO: EG609  
 Approval UL: E131787  
 Approval CCC: 2007010305229998  
 Approval ECU: 1010151

**In conformity with requirements requested by:**

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

**Positive contact opening in conformity with standards:**

IEC 60947-5-1, EN 60947-5-1, VDE 0660-206.

**Installation for safety applications:**

Use only switches marked with the symbol ⊕. The safety circuit must always be connected with the **NC contacts** (normally closed contacts: 11-12, 21-22 or 31-32) as stated in the **standard EN 60947-5-1, encl. K, par. 2**. The switch must be actuated with **at least up to the positive opening travel** shown in the travels diagrams on page 7/6. The switch must be actuated **at least with the positive opening force**, shown in brackets, underneath each article, near the value of the min. force.

**⚠ If not expressly indicated in this chapter, for the right installation and the correct utilization of all articles see requirements indicated from page 7/1 to page 7/10.**

	<b>Electrical data</b>	<b>Utilization categories</b>	
without connector	Thermal current (I <sub>th</sub> ):	10 A	
	Rated insulation voltage (U <sub>i</sub> ):	500 Vac 600 Vdc	
	Rated impulse withstand voltage (U <sub>imp</sub> ):	400Vac500Vdc(contactblocks2,11,12,20,21,22,33,34)	Alternate current: AC15 (50...60 Hz)
		6 kV	Ue (V) 250 400 500
	4 kV (contact blocks 20, 21, 22, 33, 34)	le (A) 6 4 1	
Conditional shot circuit current:	1000 A according to EN 60947-5-1	Direct current: DC13	
Protection against short circuits:	fuse 10 A 500 V type aM	Ue (V) 24 125 250	
Pollution degree:	3	le (A) 6 1,1 0,4	
with 5 poles M12 connector	Thermal current (I <sub>th</sub> ):	4 A	
	Rated insulation voltage (U <sub>i</sub> ):	250 Vac 300 Vdc	
	Protection against short circuits:	fuse 4 A 500 V type gG	Alternate current: AC15 (50...60 Hz)
	Pollution degree:	3	Ue (V) 24 120 250
			le (A) 4 4 4
		Direct current: DC13	
		Ue (V) 24 125 250	
		le (A) 4 1,1 0,4	
with 8 poles M12 connector	Thermal current (I <sub>th</sub> ):	2 A	
	Rated insulation voltage (U <sub>i</sub> ):	30 Vac 36 Vdc	
	Protection against short circuits:	fuse 2 A 500 V type gG	Alternate current: AC15 (50...60 Hz)
	Pollution degree:	3	Ue (V) 24
			le (A) 2
		Direct current: DC13	
		Ue (V) 24	
		le (A) 2	



### Data type approved by IMQ, CCC and EZU

Rated insulation voltage (Ui): 500 Vac  
400 Vac (for contact blocks 2, 11, 12, 20, 21, 22, 33, 34)

Thermal current (Ith): 10 A

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

Rated impulse withstand voltage (U<sub>imp</sub>): 6 kV  
4 kV (for contact blocks 20, 21, 22, 33, 34)

Protection degree: IP67

MV terminals (screw clamps)

Pollution degree 3

Utilization category: AC15

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

Operation 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 block 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/CE.

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

### Data type approved by UL

Utilization categories Q300 (69 VA, 125-250 Vdc)  
A600 (720 VA, 120-600 Vac)

Data of the 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 and wire size No. 12-14 AWG. Terminal tightening torque of 7,1 lb in (0,8 Nm).

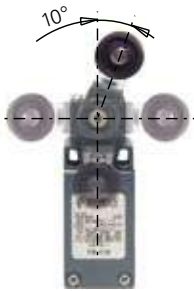
For contact blocks 2 and 3 use 60 or 75 °C copper (Cu) conductor and wire size No. 14 AWG. Terminal tightening torque of 12 lb in (1.4 Nm).

In conformity with standard: UL 508

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

### Adjustable levers

In switches with revolving lever it is possible to adjust the lever with 10° steps for the whole 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

It's possible to fasten the lever on switches on straight or reverse side, maintaining the positive coupling. In this way it is possible to obtain two different work plans of the lever.



### Rotating heads

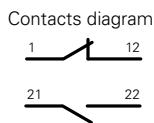
In all switches, it is possible to rotate the head in 90° steps.



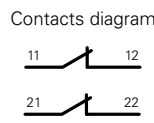
### Working operation of contact block 16 with independent contacts

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

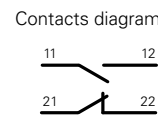
Lever turned to left



Lever not turned



Lever turned to right



Position switches FM series

Contacts 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

Contact blocks

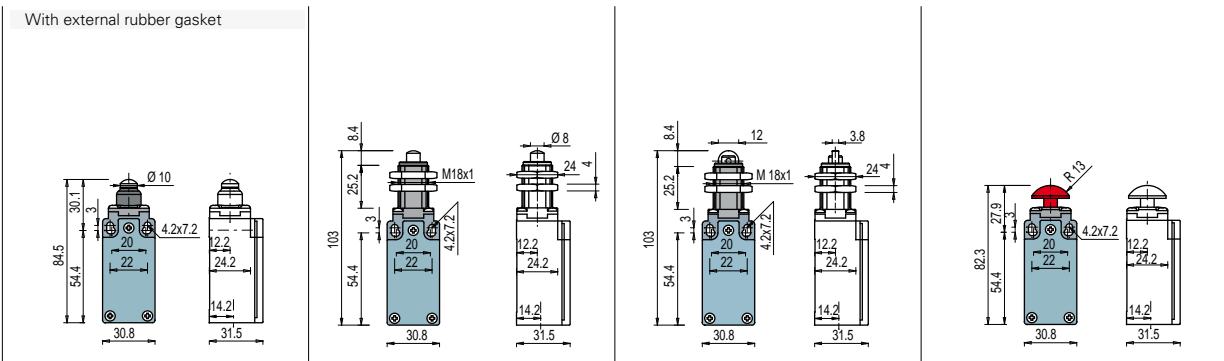
5	<b>R</b> FM 501 → 1NO+1NC	FM 502 → 1NO+1NC	FM 5A2 → 1NO+1NC	FM 5A4 → 1NO+1NC
6	<b>L</b> FM 601 → 1NO+1NC	FM 602 → 1NO+1NC	FM 6A2 → 1NO+1NC	FM 6A4 → 1NO+1NC
7	<b>LO</b> FM 701 → 1NO+1NC	FM 702 → 1NO+1NC	FM 7A2 → 1NO+1NC	FM 7A4 → 1NO+1NC
9	<b>L</b> FM 901 → 2NC	FM 902 → 2NC	FM 9A2 → 2NC	FM 9A4 → 2NC
10	<b>L</b> FM 1001 2NO	FM 1002 2NO	FM 10A2 2NO	FM 10A4 2NO
11	<b>R</b> FM 1101 → 2NC	FM 1102 → 2NC	FM 11A2 → 2NC	FM 11A4 → 2NC
12	<b>R</b> FM 1201 2NO	FM 1202 2NO	FM 12A2 2NO	FM 12A4 2NO
13	<b>LV</b> FM 1301 → 2NC	FM 1302 → 2NC	FM 13A2 → 2NC	FM 13A4 → 2NC
14	<b>LS</b> FM 1401 → 2NC	FM 1402 → 2NC	FM 14A2 → 2NC	FM 14A4 → 2NC
15	<b>LS</b> FM 1501 2NO	FM 1502 2NO	FM 15A2 2NO	FM 15A4 2NO
18	<b>LA</b> FM 1801 → 1NO+1NC	FM 1802 → 1NO+1NC	FM 18A2 → 1NO+1NC	FM 18A4 → 1NO+1NC
20	<b>L</b> FM 2001 → 1NO+2NC	FM 2002 → 1NO+2NC	FM 20A2 → 1NO+2NC	FM 20A4 → 1NO+2NC
21	<b>L</b> FM 2101 → 3NC	FM 2102 → 3NC	FM 21A2 → 3NC	FM 21A4 → 3NC
22	<b>L</b> FM 2201 → 2NO+1NC	FM 2202 → 2NO+1NC	FM 22A2 → 2NO+1NC	FM 22A4 → 2NO+1NC
2	<b>R</b> FM 201 2x(1NO-1NC)	FM 202 2x(1NO-1NC)	FM 2A2 2x(1NO-1NC)	FM 2A4 2x(1NO-1NC)
E1	FM E101 1NO-1NC	FM E102 1NO-1NC	FM E1A2 1NO-1NC	FM E1A4 1NO-1NC
Max speed	page 7/5 - type 4	page 7/5 - type 3	page 7/5 - type 3	page 7/5 - 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 7/6 - group 1	page 7/6 - group 2	page 7/6 - group 2	page 7/6 - group 2

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

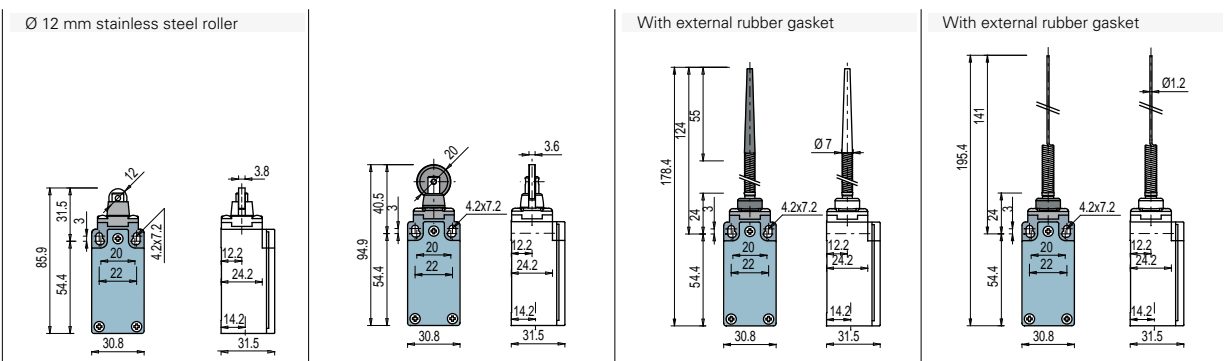
Accessories See page 6/1

All measures in the drawings are in mm

- Contacts 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



Contact blocks	FM 508	FM 512	FM 513	FM 514
5	<b>R</b> FM 508	<b>R</b> FM 512	<b>R</b> FM 513	<b>R</b> FM 514
6	<b>L</b> FM 608	<b>L</b> FM 612	<b>L</b> FM 613	<b>L</b> FM 614
7	<b>LO</b> FM 708	<b>LO</b> FM 712	<b>LO</b> FM 713	<b>LO</b> FM 714
9	<b>L</b> FM 908	<b>L</b> FM 912	<b>L</b> FM 913	<b>L</b> FM 914
10	<b>L</b> FM 1008	<b>L</b> FM 1012	<b>L</b> FM 1013	<b>L</b> FM 1014
11	<b>R</b> FM 1108	<b>R</b> FM 1112	<b>R</b> FM 1113	<b>R</b> FM 1114
12	<b>R</b> FM 1208	<b>R</b> FM 1212	<b>R</b> FM 1213	<b>R</b> FM 1214
13	<b>LV</b> FM 1308	<b>LV</b> FM 1312	<b>LV</b> FM 1313	<b>LV</b> FM 1314
14	<b>LS</b> FM 1408	<b>LS</b> FM 1412	<b>LS</b> FM 1413	<b>LS</b> FM 1414
15	<b>LS</b> FM 1508	<b>LS</b> FM 1512	<b>LS</b> FM 1513	<b>LS</b> FM 1514
18	<b>LA</b> FM 1808	<b>LA</b> FM 1812	<b>LA</b> FM 1813	<b>LA</b> FM 1814
20	<b>L</b> FM 2008	<b>L</b> FM 2012	<b>L</b> FM 2013	<b>L</b> FM 2014
21	<b>L</b> FM 2108	<b>L</b> FM 2112	<b>L</b> FM 2113	<b>L</b> FM 2114
22	<b>L</b> FM 2208	<b>L</b> FM 2212	<b>L</b> FM 2213	<b>L</b> FM 2214
2	<b>R</b> FM 208	<b>R</b> FM 212	<b>R</b> FM 213	<b>R</b> FM 214
E1	<b>⚡</b> FM E108	<b>⚡</b> FM E112	<b>⚡</b> FM E113	<b>⚡</b> FM E114
Max speed	page 7/5 - type 4	page 7/5 - type 4	page 7/5 - type 2	page 7/5 - type 4
Min. force	8 N (25 N <b>R</b> )	8 N (25 N <b>R</b> )	8 N (25 N <b>R</b> )	8 N (25 N <b>R</b> )
Travel diagrams	page 7/6 - group 1	page 7/6 - group 1	page 7/6 - group 1	page 7/6 - group 1



Contact blocks	FM 515	FM 516	FM 520	FM 521
5	<b>R</b> FM 515	<b>R</b> FM 516	<b>R</b> FM 520	<b>R</b> FM 521
6	<b>L</b> FM 615	<b>L</b> FM 616	<b>L</b> FM 620	<b>L</b> FM 621
7	<b>LO</b> FM 715	<b>LO</b> FM 716	<b>LO</b> FM 720	<b>LO</b> FM 721
9	<b>L</b> FM 915	<b>L</b> FM 916	<b>L</b> FM 920	<b>L</b> FM 921
10	<b>L</b> FM 1015	<b>L</b> FM 1016	<b>L</b> FM 1020	<b>L</b> FM 1021
11	<b>R</b> FM 1115	<b>R</b> FM 1116	<b>R</b> FM 1120	<b>R</b> FM 1121
12	<b>R</b> FM 1215	<b>R</b> FM 1216	<b>R</b> FM 1220	<b>R</b> FM 1221
13	<b>LV</b> FM 1315	<b>LV</b> FM 1316	<b>LV</b> FM 1320	<b>LV</b> FM 1321
14	<b>LS</b> FM 1415	<b>LS</b> FM 1416	<b>LS</b> FM 1420	<b>LS</b> FM 1421
15	<b>LS</b> FM 1515	<b>LS</b> FM 1516	<b>LS</b> FM 1520	<b>LS</b> FM 1521
18	<b>LA</b> FM 1815	<b>LA</b> FM 1816	<b>LA</b> FM 1820	<b>LA</b> FM 1821
20	<b>L</b> FM 2015	<b>L</b> FM 2016	<b>L</b> FM 2020	<b>L</b> FM 2021
21	<b>L</b> FM 2115	<b>L</b> FM 2116	<b>L</b> FM 2120	<b>L</b> FM 2121
22	<b>L</b> FM 2215	<b>L</b> FM 2216	<b>L</b> FM 2220	<b>L</b> FM 2221
2	<b>R</b> FM 215	<b>R</b> FM 216	<b>R</b> FM 220	<b>R</b> FM 221
E1	<b>⚡</b> FM E115	<b>⚡</b> FM E116	<b>⚡</b> FM E120	<b>⚡</b> FM E121
Max speed	page 7/5 - type 2	page 7/5 - type 2	1 m/s	1 m/s
Min. force	8 N (25 N <b>R</b> )	8 N (25 N <b>R</b> )	0,07 Nm	0,07 Nm
Travel diagrams	page 7/6 - group 1	page 7/6 - group 1	page 7/6 - group 4	page 7/6 - group 4

Items with code on the green background are available in stock

# Position switches FM series

- Contacts 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
  - E1** = electronic PNP

Contact blocks

	With external rubber gasket	With Ø 20 mm stainless steel roller on request	Other rollers available. See page 2/64	3x3 mm square rod
5	<b>R</b> FM 525	<b>R</b> FM 530	<b>R</b> FM 531	<b>R</b> FM 533
6	<b>L</b> FM 525	<b>L</b> FM 530	<b>L</b> FM 531	<b>L</b> FM 533
7	<b>LO</b> FM 525	<b>LO</b> FM 530	<b>LO</b> FM 531	<b>LO</b> FM 533
9	<b>L</b> FM 525	<b>L</b> FM 530	<b>L</b> FM 531	<b>L</b> FM 533
10	<b>L</b> FM 1025	<b>L</b> FM 1030	<b>L</b> FM 1031	<b>L</b> FM 1033
11	<b>R</b> FM 1225	<b>R</b> FM 1230	<b>R</b> FM 1231	<b>R</b> FM 1233
12	<b>R</b> FM 1225	<b>R</b> FM 1230	<b>R</b> FM 1231	<b>R</b> FM 1233
13	<b>LV</b> FM 1225	<b>LV</b> FM 1230	<b>LV</b> FM 1231	<b>LV</b> FM 1233
14	<b>LS</b> FM 1225	<b>LS</b> FM 1230	<b>LS</b> FM 1231	<b>LS</b> FM 1233
15	<b>LS</b> FM 1225	<b>LS</b> FM 1230	<b>LS</b> FM 1231	<b>LS</b> FM 1233
16	<b>LI</b> FM 1225	<b>LI</b> FM 1230	<b>LI</b> FM 1231	<b>LI</b> FM 1233
18	<b>LA</b> FM 1825	<b>LA</b> FM 1830	<b>LA</b> FM 1831	<b>LA</b> FM 1833
20	<b>L</b> FM 2025	<b>L</b> FM 2030	<b>L</b> FM 2031	<b>L</b> FM 2033
21	<b>L</b> FM 2125	<b>L</b> FM 2130	<b>L</b> FM 2131	<b>L</b> FM 2133
22	<b>L</b> FM 2225	<b>L</b> FM 2230	<b>L</b> FM 2231	<b>L</b> FM 2233
2	<b>R</b> FM 225	<b>R</b> FM 230	<b>R</b> FM 231	<b>R</b> FM 233
E1	<b>E1</b> FM E125	<b>E1</b> FM E130	<b>E1</b> FM E131	<b>E1</b> FM E133
Max speed	1 m/s	page 7/5 - type 1	page 7/5 - 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 7/6 - group 4	page 7/6 - group 5	page 7/6 - group 5	page 7/6 - group 5

	Ø 3 mm stainless steel round rod	Other rollers available. See page 2/64	Other rollers available. See page 2/64
5	<b>R</b> FM 534	<b>R</b> FM 551	<b>R</b> FM 552
6	<b>L</b> FM 634	<b>L</b> FM 651	<b>L</b> FM 652
7	<b>LO</b> FM 734	<b>LO</b> FM 751	<b>LO</b> FM 752
9	<b>L</b> FM 934	<b>L</b> FM 951	<b>L</b> FM 952
10	<b>L</b> FM 1034	<b>L</b> FM 1051	<b>L</b> FM 1052
11	<b>R</b> FM 1134	<b>R</b> FM 1151	<b>R</b> FM 1152
12	<b>R</b> FM 1234	<b>R</b> FM 1251	<b>R</b> FM 1252
13	<b>LV</b> FM 1334	<b>LV</b> FM 1351	<b>LV</b> FM 1352
14	<b>LS</b> FM 1434	<b>LS</b> FM 1451	<b>LS</b> FM 1452
15	<b>LS</b> FM 1534	<b>LS</b> FM 1551	<b>LS</b> FM 1552
16	<b>LI</b> FM 1634	<b>LI</b> FM 1651	<b>LI</b> FM 1652
18	<b>LA</b> FM 1834	<b>LA</b> FM 1851	<b>LA</b> FM 1852
20	<b>L</b> FM 2034	<b>L</b> FM 2051	<b>L</b> FM 2052
21	<b>L</b> FM 2134	<b>L</b> FM 2151	<b>L</b> FM 2152
22	<b>L</b> FM 2234	<b>L</b> FM 2251	<b>L</b> FM 2252
2	<b>R</b> FM 234	<b>R</b> FM 251	<b>R</b> FM 252
E1	<b>E1</b> FM E134	<b>E1</b> FM E151	<b>E1</b> FM E152
Max speed	1,5 m/s	page 7/5 - type 1	page 7/5 - type 1
Min. force	0,06 Nm	0,06 Nm (0,25 Nm ⊕)	0,06 Nm (0,25 Nm ⊕)
Travel diagrams	page 7/6 - group 5	page 7/6 - group 5	page 7/6 - group 5

Accessories See page 6/1



- Contacts 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

	Porcelain roller	Other rollers available. See page 2/64	Other rollers available. See page 2/64	Other rollers available. See page 2/64
5	<b>R</b> FM 553-E0V9	<b>R</b> FM 554	<b>R</b> FM 555	<b>R</b> FM 556
6	<b>L</b> FM 653-E0V9	<b>L</b> FM 654	<b>L</b> FM 655	<b>L</b> FM 656
7	<b>LO</b> FM 753-E0V9	<b>LO</b> FM 754	<b>LO</b> FM 755	<b>LO</b> FM 756
9	<b>L</b> FM 953-E0V9	<b>L</b> FM 954	<b>L</b> FM 955	<b>L</b> FM 956
10	<b>L</b> FM 1053-E0V9	<b>L</b> FM 1054	<b>L</b> FM 1055	<b>L</b> FM 1056
11	<b>R</b> FM 1153-E0V9	<b>R</b> FM 1154	<b>R</b> FM 1155	<b>R</b> FM 1156
12	<b>R</b> FM 1253-E0V9	<b>R</b> FM 1254	<b>R</b> FM 1255	<b>R</b> FM 1256
13	<b>LV</b> FM 1353-E0V9	<b>LV</b> FM 1354	<b>LV</b> FM 1355	<b>LV</b> FM 1356
14	<b>LS</b> FM 1453-E0V9	<b>LS</b> FM 1454	<b>LS</b> FM 1455	<b>LS</b> FM 1456
15	<b>LS</b> FM 1553-E0V9	<b>LS</b> FM 1554	<b>LS</b> FM 1555	<b>LS</b> FM 1556
16	<b>LI</b> FM 1653-E0V9	<b>LI</b> FM 1654	<b>LI</b> FM 1655	<b>LI</b> FM 1656
18	<b>LA</b> FM 1853-E0V9	<b>LA</b> FM 1854	<b>LA</b> FM 1855	<b>LA</b> FM 1856
20	<b>L</b> FM 2053-E0V9	<b>L</b> FM 2054	<b>L</b> FM 2055	<b>L</b> FM 2056
21	<b>L</b> FM 2153-E0V9	<b>L</b> FM 2154	<b>L</b> FM 2155	<b>L</b> FM 2156
22	<b>L</b> FM 2253-E0V9	<b>L</b> FM 2254	<b>L</b> FM 2255	<b>L</b> FM 2256
2	<b>R</b> FM 253-E0	<b>R</b> FM 254	<b>R</b> FM 255	<b>R</b> FM 256
E1	<b>A</b> FM E153-E0V9	<b>A</b> FM E154	<b>A</b> FM E155	<b>A</b> FM E156
Max speed	0,5 m/s	page 7/5 - type 1	page 7/5 - type 1	page 7/5 - type 1
Min. force	0,03 Nm (0,25 Nm <b>⊕</b> )	0,06 Nm (0,25 Nm <b>⊕</b> )	0,06 Nm (0,25 Nm <b>⊕</b> )	0,06 Nm (0,25 Nm <b>⊕</b> )
Travel diagrams	page 7/6 - group 6	page 7/6 - group 5	page 7/6 - group 5	page 7/6 - group 5

	Other rollers available. See page 2/64	Fiber glass rod	Rope switches for signalling
5	<b>R</b> FM 557	<b>R</b> FM 569	<b>R</b> FM 576
6	<b>L</b> FM 657	<b>L</b> FM 669	<b>L</b> FM 676
7	<b>LO</b> FM 757	<b>LO</b> FM 769	<b>LO</b> FM 776
9	<b>L</b> FM 957	<b>L</b> FM 969	<b>L</b> FM 976
10	<b>L</b> FM 1057	<b>L</b> FM 1069	<b>L</b> FM 1076
11	<b>R</b> FM 1157	<b>R</b> FM 1169	<b>R</b> FM 1176
12	<b>R</b> FM 1257	<b>R</b> FM 1269	<b>R</b> FM 1276
13	<b>LV</b> FM 1357	<b>LV</b> FM 1369	<b>LV</b> FM 1376
14	<b>LS</b> FM 1457	<b>LS</b> FM 1469	<b>LS</b> FM 1476
15	<b>LS</b> FM 1557	<b>LS</b> FM 1569	<b>LS</b> FM 1576
16	<b>LI</b> FM 1657	<b>LI</b> FM 1669	<b>LI</b> FM 1676
18	<b>LA</b> FM 1857	<b>LA</b> FM 1869	<b>LA</b> FM 1876
20	<b>L</b> FM 2057	<b>L</b> FM 2069	<b>L</b> FM 2076
21	<b>L</b> FM 2157	<b>L</b> FM 2169	<b>L</b> FM 2176
22	<b>L</b> FM 2257	<b>L</b> FM 2269	<b>L</b> FM 2276
2	<b>R</b> FM 257	<b>R</b> FM 269	<b>R</b> FM 276
E1	<b>A</b> FM E157	<b>A</b> FM E169	<b>A</b> FM E176
Max speed	page 7/5 - type 1	1,5 m/s	0,5 m/s
Min. force	0,06 Nm (0,25 Nm <b>⊕</b> )	0,06 Nm	initial 20 N - final 40 N
Travel diagrams	page 7/6 - group 5	page 7/6 - group 5	page 7/6 - group 7

Items with code on the **green** background are available in stock

<sup>(1)</sup> Positive opening only with lever adjusted on the max. See page 2/63.  
General Catalog 2011-2012





# Position switches FM series with reset

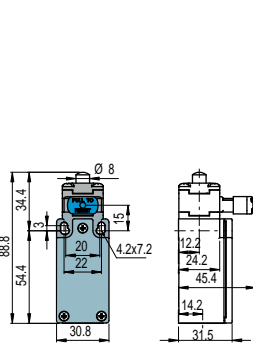


Pizzato Elettrica has developed a reset device code W3 to make perfectly simultaneous the actuator and the contact block tripping. The new device is a block inserted between the switch body and the head, and could be rotated independently from this last one. This new device has following advantages:

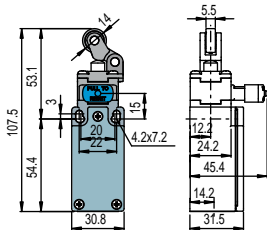
- \* The reset device integrate in any standard actuation head
- \* Contact blocks with snap action are no more necessary because the tripping movement is made by the reset device itself
- \* The reset device can be rotated independently from the head for the maximum flexibility during the assembling.

Contacts type:

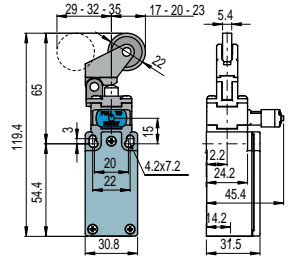
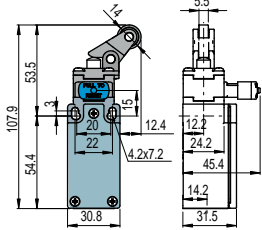
- R** = snap action
- L** = slow action



With stainless steel roller on request

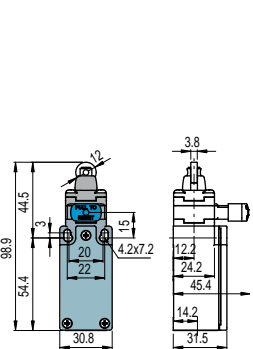


With stainless steel roller on request

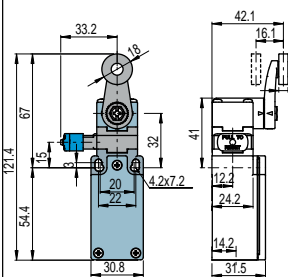


Contact blocks

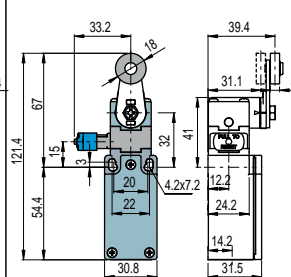
6	<b>L</b>	FM 601-W3	⊕ 1NO+1NC	FM 602-W3	⊕ 1NO+1NC	FM 605-W3	⊕ 1NO+1NC	FM 607-W3	⊕ 1NO+1NC
9	<b>L</b>	FM 901-W3	⊕ 2NC	FM 902-W3	⊕ 2NC	FM 905-W3	⊕ 2NC	FM 907-W3	⊕ 2NC
10	<b>L</b>	FM 1001-W3	2NO	FM 1002-W3	2NO	FM 1005-W3	2NO	FM 1007-W3	2NO
20	<b>L</b>	FM 2001-W3	⊕ 1NO+2NC	FM 2002-W3	⊕ 1NO+2NC	FM 2005-W3	⊕ 1NO+2NC	FM 2007-W3	⊕ 1NO+2NC
21	<b>L</b>	FM 2101-W3	⊕ 3NC	FM 2102-W3	⊕ 3NC	FM 2105-W3	⊕ 3NC	FM 2107-W3	⊕ 3NC
22	<b>L</b>	FM 2201-W3	⊕ 2NO+1NC	FM 2202-W3	⊕ 2NO+1NC	FM 2205-W3	⊕ 2NO+1NC	FM 2207-W3	⊕ 2NO+1NC
2	<b>R</b>	FM 201-W3	2NO+2NC	FM 202-W3	2NO+2NC	FM 205-W3	2NO+2NC	FM 207-W3	2NO+2NC
Max speed		page 7/5 - type 4		page 7/5 - type 3		page 7/5 - type 3		page 7/5 - type 3	
Min. force		8 N (25 N ⊕)		6 N (25 N ⊕)		6 N (25 N ⊕)		4 N (25 N ⊕)	
Travel diagrams		page 7/7 - group 1		page 7/7 - group 2		page 7/7 - group 2		page 7/7 - group 3	



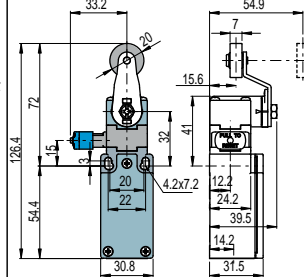
With Ø 20 mm stainless steel roller on request



Other rollers available. See page 2/64



Other rollers available. See page 2/64



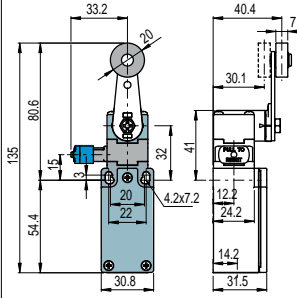
Contact blocks

6	<b>L</b>	FM 615-W3	⊕ 1NO+1NC	FM 630-W3	⊕ 1NO+1NC	FM 631-W3	⊕ 1NO+1NC	FM 651-W3	⊕ 1NO+1NC
9	<b>L</b>	FM 915-W3	⊕ 2NC	FM 930-W3	⊕ 2NC	FM 931-W3	⊕ 2NC	FM 951-W3	⊕ 2NC
10	<b>L</b>	FM 1015-W3	2NO	FM 1030-W3	2NO	FM 1031-W3	2NO	FM 1051-W3	2NO
20	<b>L</b>	FM 2015-W3	⊕ 1NO+2NC	FM 2030-W3	⊕ 1NO+2NC	FM 2031-W3	⊕ 1NO+2NC	FM 2051-W3	⊕ 1NO+2NC
21	<b>L</b>	FM 2115-W3	⊕ 3NC	FM 2130-W3	⊕ 3NC	FM 2131-W3	⊕ 3NC	FM 2151-W3	⊕ 3NC
22	<b>L</b>	FM 2215-W3	⊕ 2NO+1NC	FM 2230-W3	⊕ 2NO+1NC	FM 2231-W3	⊕ 2NO+1NC	FM 2251-W3	⊕ 2NO+1NC
2	<b>R</b>	FM 215-W3	2NO+2NC	FM 230-W3	2NO+2NC	FM 231-W3	2NO+2NC	FM 251-W3	2NO+2NC
Max speed		page 7/5 - type 2		page 7/5 - type 1		page 7/5 - type 1		page 7/5 - type 1	
Min. force		8 N (25 N ⊕)		0,06 Nm (0,25 Nm ⊕)		0,06 Nm (0,25 Nm ⊕)		0,06 Nm (0,25 Nm ⊕)	
Travel diagrams		page 7/7 - group 1		page 7/7 - group 4		page 7/7 - group 4		page 7/7 - group 4	

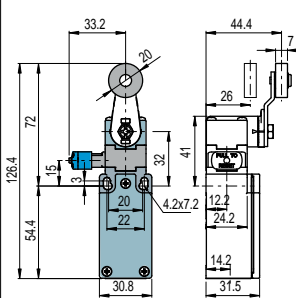
Contacts type:

**R** = snap action  
**L** = slow action

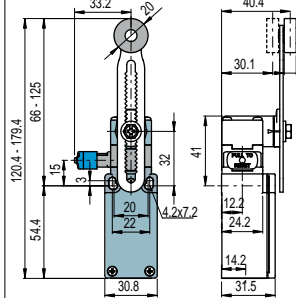
Other rollers available. See page 2/64



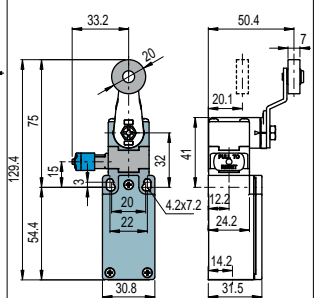
Other rollers available. See page 2/64



Other rollers available. See page 2/64



Other rollers available. See page 2/64



Contact blocks

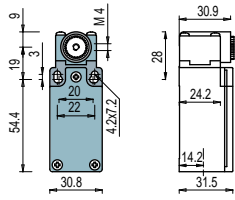
6	<b>L</b>	FM 652-W3	➔ 1NO+1NC	FM 654-W3	➔ 1NO+1NC	FM 656-W3	➔ 1NO+1NC	FM 657-W3	➔ 1NO+1NC
9	<b>L</b>	FM 952-W3	➔ 2NC	FM 954-W3	➔ 2NC	FM 956-W3	➔ 2NC	FM 957-W3	➔ 2NC
10	<b>L</b>	FM 1052-W3	2NO	FM 1054-W3	2NO	FM 1056-W3	2NO	FM 1057-W3	2NO
20	<b>L</b>	FM 2052-W3	➔ 1NO+2NC	FM 2054-W3	➔ 1NO+2NC	FM 2056-W3	➔ 1NO+2NC	FM 2057-W3	➔ 1NO+2NC
21	<b>L</b>	FM 2152-W3	➔ 3NC	FM 2154-W3	➔ 3NC	FM 2156-W3	➔ 3NC	FM 2157-W3	➔ 3NC
22	<b>L</b>	FM 2252-W3	➔ 2NO+1NC	FM 2254-W3	➔ 2NO+1NC	FM 2256-W3	➔ 2NO+1NC	FM 2257-W3	➔ 2NO+1NC
2	<b>R</b>	FM 252-W3	2NO+2NC	FM 254-W3	2NO+2NC	FM 256-W3	2NO+2NC	FM 257-W3	2NO+2NC
Max speed		page 7/5 - type 1		page 7/5 - type 1		page 7/5 - type 1		page 7/5 - type 1	
Min. force		0,06 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 7/7 - group 4		page 7/7 - group 4		page 7/7 - group 4		page 7/7 - group 4	

 Items with code on the **green** background are available in stock

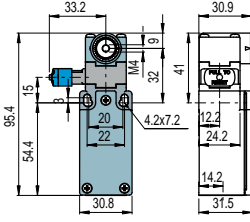
**Position switches with revolving lever without actuator**

Contacts 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
- PNP** = electronic PNP



With manual reset knob



**IMPORTANT**

**For safety applications:** join only switches and actuators marked with symbol ⊕.  
For more information about safety applications see page 7/1.

Contact blocks

5	<b>R</b>	<b>FM 538</b> ⊕	1NO+1NC	
6	<b>L</b>	<b>FM 638</b> ⊕	1NO+1NC	<b>FM 638-W3</b> ⊕ 1NO+1NC
7	<b>LO</b>	<b>FM 738</b> ⊕	1NO+1NC	
9	<b>L</b>	<b>FM 938</b> ⊕	2NC	<b>FM 938-W3</b> ⊕ 2NC
10	<b>L</b>	<b>FM 1038</b>	2NO	<b>FM 1038-W3</b> 2NO
11	<b>R</b>	<b>FM 1138</b> ⊕	2NC	
12	<b>R</b>	<b>FM 1238</b>	2NO	
13	<b>LV</b>	<b>FM 1338</b> ⊕	2NC	
14	<b>LS</b>	<b>FM 1438</b> ⊕	2NC	
15	<b>LS</b>	<b>FM 1538</b>	2NO	
16	<b>LI</b>	<b>FM 1638</b> ⊕	2NC	
18	<b>LA</b>	<b>FM 1838</b> ⊕	1NO+1NC	
20	<b>L</b>	<b>FM 2038</b> ⊕	1NO+2NC	<b>FM 2038-W3</b> ⊕ 1NO+2NC
21	<b>L</b>	<b>FM 2138</b> ⊕	3NC	<b>FM 2138-W3</b> ⊕ 3NC
22	<b>L</b>	<b>FM 2238</b> ⊕	2NO+1NC	<b>FM 2238-W3</b> ⊕ 2NO+1NC
2	<b>R</b>	<b>FM 238</b>	2x(1NO-1NC)	<b>FM 238-W3</b> 2NO+2NC
E1	<b>PNP</b>	<b>FM E138</b>	1NO-1NC	
Min. force		0,06 Nm (0,25 Nm) ⊕		0,06 Nm (0,25 Nm) ⊕
Travel diagrams		page 7/6 - group 5		page 7/7 - group 4

**Loose actuators**

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

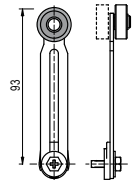
Polymer roller Ø 18 mm	Polymer roller Ø 18 mm	Adjustable square rod 3x3x125 mm	Flexible rod actuator	Adjustable round rod Ø 3x125 mm	Polymer roller Ø 20 mm	
<b>VF LE30</b> ⊕	<b>VF LE31</b> ⊕	<b>VF LE33</b>	<b>VF LE34</b>	<b>VF LE50</b>	<b>VF LE51</b> ⊕	
Polymer roller Ø 20 mm	Porcelain roller	Polymer roller Ø 20 mm	Adjustable actuator with polymer roller	Adjustable safety actuator with polymer roller	Polymer roller Ø 20 mm	Adjustable fiber glass rod
<b>VF LE52</b> ⊕	<b>VF LE53</b> ⊕ (2)	<b>VF LE54</b> ⊕	<b>VF LE55</b> ⊕ (1)	<b>VF LE56</b> ⊕	<b>VF LE57</b> ⊕	<b>VF LE69</b>

- Only orders for multiple quantities of the packs are accepted.

(1) Actuator VF LE55 suits to safety applications only if adjusted to its max length, as you can see 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 the switch FM •38 (e.g. FM 538, FM 638) with the actuator VF LE53 will not present the same travel diagrams and actuating forces as the position switch FM •53-E0V9 (e.g. FM 553-E0V9, FM 653-E0V9...).

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



**Accessories** See page 6/1



### Special loose actuators

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

Ø 20 mm stainless steel rollers

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

Ø 35 mm polymer rollers

VF LE31-2 (4)	VF LE51-2 (4)	VF LE52-2 (4)	VF LE54-2 (4)	VF LE55-2 (1)	VF LE56-2 (4)	VF LE57-2 (4)

Ø 40 mm rubber rollers

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)

Ø 50 mm rubber rollers

VF LE51-3 (4)	VF LE52-3 (4)	VF LE54-3 (4)	VF LE55-3 (1)	VF LE56-3 (4)	VF LE57-3 (4)

Ø 50 mm overhanging rubber rollers

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

Items with code on the green background are available in stock