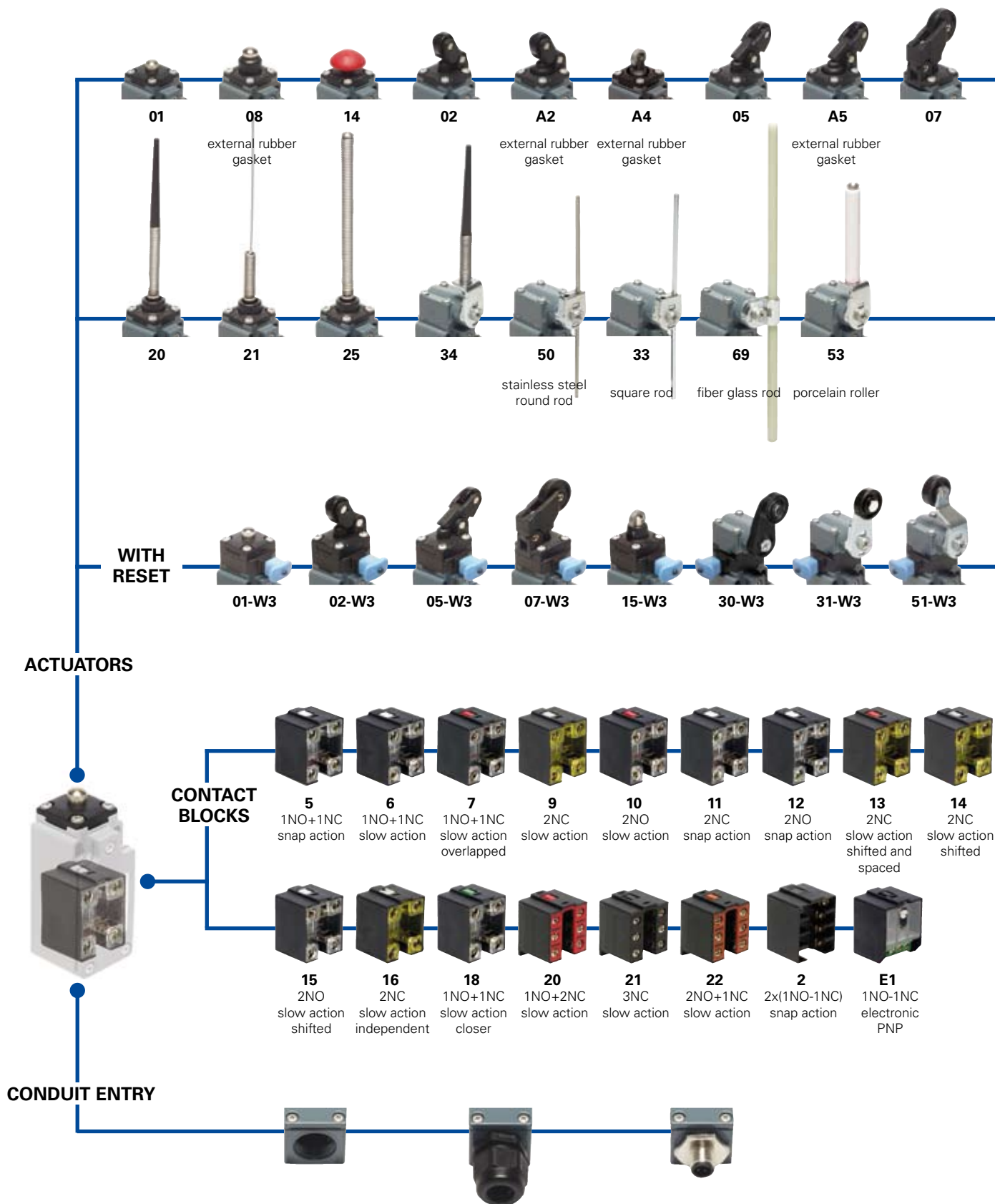


Selection diagram



**Threaded conduit entry**

	PG 13,5 (standard)
M2	M20x1,5

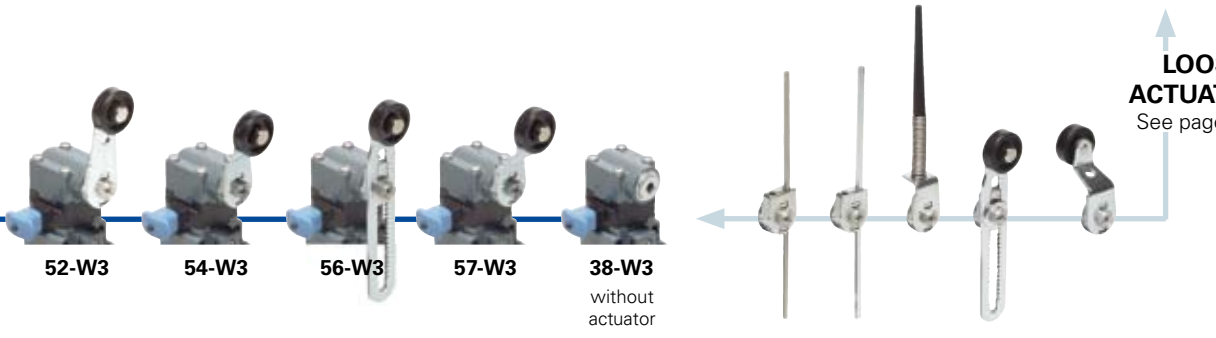
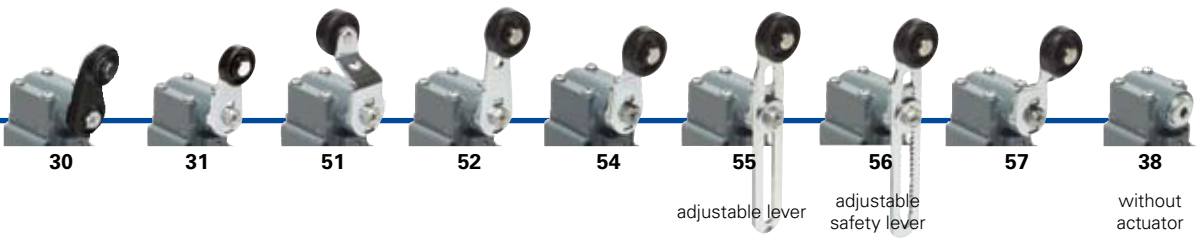
**With assembled cable gland**

PG 13,5	K21	for Ø 6 to Ø 12 mm cables range	
	K25	for Ø 3 to Ø 7 mm cables range	
	M20x1,5	K23	for Ø 6 to Ø 12 mm cables range
		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 400Vac500Vdc(contactblocks2,11,12,20,21,22,33,34)
	Rated impulse withstand voltage (U <sub>imp</sub> ):	6 kV 4 kV (contact blocks 20, 21, 22, 33, 34)
	Conditional shot circuit current: Protection against short circuits: Pollution degree:	1000 A according to EN 60947-5-1 fuse 10 A 500 V type aM 3
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: Pollution degree:	fuse 4 A 500 V type gG 3
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: Pollution degree:	fuse 2 A 500 V type gG 3



### 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

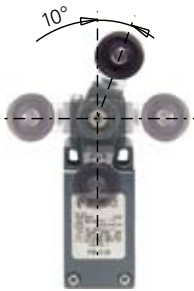
For all contact blocks except 2 and 3 use 60 or 75 °C copper (Cu) conductor and wire size No. 12-14 AWG. Terminal tightening torque of 7,1 lb in (0,8 Nm).  
For contact blocks 2 and 3 use 60 or 75 °C copper (Cu) conductor and wire size No. 14 AWG. Terminal tightening torque of 12 lb in (1,4 Nm).

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

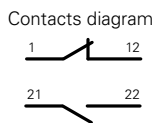
In all switches, it is possible to rotate the head in 90° steps.



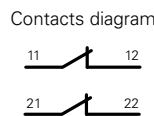
### Working operation of contact block 16 with independent contacts

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

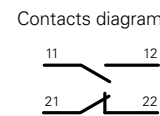
Lever turned to left




Lever not turned






Lever turned to right






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

	With stainless steel roller on request	With external rubber gasket With stainless steel roller on request	With external rubber gasket Ø 12 mm stainless steel roller
5	<b>R</b> FM 501	<b>R</b> FM 502	<b>R</b> FM 5A2
6	<b>L</b> FM 601	<b>L</b> FM 602	<b>L</b> FM 6A2
7	<b>LO</b> FM 701	<b>LO</b> FM 702	<b>LO</b> FM 7A2
9	<b>L</b> FM 901	<b>L</b> FM 902	<b>L</b> FM 9A2
10	<b>L</b> FM 1001	<b>L</b> FM 1002	<b>L</b> FM 10A2
11	<b>R</b> FM 1101	<b>R</b> FM 1102	<b>R</b> FM 11A2
12	<b>R</b> FM 1201	<b>R</b> FM 1202	<b>R</b> FM 12A2
13	<b>LV</b> FM 1301	<b>LV</b> FM 1302	<b>LV</b> FM 13A2
14	<b>LS</b> FM 1401	<b>LS</b> FM 1402	<b>LS</b> FM 14A2
15	<b>LS</b> FM 1501	<b>LS</b> FM 1502	<b>LS</b> FM 15A2
18	<b>LA</b> FM 1801	<b>LA</b> FM 1802	<b>LA</b> FM 18A2
20	<b>L</b> FM 2001	<b>L</b> FM 2002	<b>L</b> FM 20A2
21	<b>L</b> FM 2101	<b>L</b> FM 2102	<b>L</b> FM 21A2
22	<b>L</b> FM 2201	<b>L</b> FM 2202	<b>L</b> FM 22A2
2	<b>R</b> FM 201	<b>R</b> FM 202	<b>R</b> FM 2A2
E1	 FM E101	 FM E102	 FM E1A2
Max speed	page 7/5 - type 4	page 7/5 - type 3	page 7/5 - type 3
Min. force	8 N (25 N ⊕)	6 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

	With stainless steel roller on request	With external rubber gasket With stainless steel roller on request	With external rubber gasket
5	<b>R</b> FM 505	<b>R</b> FM 5A5	<b>R</b> FM 507
6	<b>L</b> FM 605	<b>L</b> FM 6A5	<b>L</b> FM 607
7	<b>LO</b> FM 705	<b>LO</b> FM 7A5	<b>LO</b> FM 707
9	<b>L</b> FM 905	<b>L</b> FM 9A5	<b>L</b> FM 907
10	<b>L</b> FM 1005	<b>L</b> FM 10A5	<b>L</b> FM 1007
11	<b>R</b> FM 1105	<b>R</b> FM 11A5	<b>R</b> FM 1107
12	<b>R</b> FM 1205	<b>R</b> FM 12A5	<b>R</b> FM 1207
13	<b>LV</b> FM 1305	<b>LV</b> FM 13A5	<b>LV</b> FM 1307
14	<b>LS</b> FM 1405	<b>LS</b> FM 14A5	<b>LS</b> FM 1407
15	<b>LS</b> FM 1505	<b>LS</b> FM 15A5	<b>LS</b> FM 1507
18	<b>LA</b> FM 1805	<b>LA</b> FM 18A5	<b>LA</b> FM 1807
20	<b>L</b> FM 2005	<b>L</b> FM 20A5	<b>L</b> FM 2007
21	<b>L</b> FM 2105	<b>L</b> FM 21A5	<b>L</b> FM 2107
22	<b>L</b> FM 2205	<b>L</b> FM 22A5	<b>L</b> FM 2207
2	<b>R</b> FM 205	<b>R</b> FM 2A5	<b>R</b> FM 207
E1	 FM E105	 FM E1A5	 FM E107
Max speed	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 ⊕)
Travel diagrams	page 7/6 - group 2	page 7/6 - group 2	page 7/6 - group 3

Accessories See page 6/1

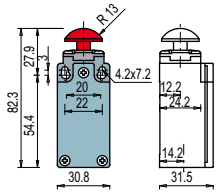
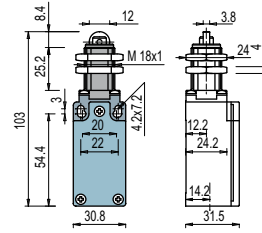
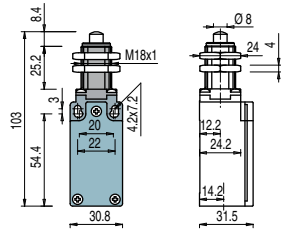
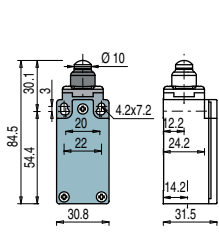
All measures in the drawings are in mm



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

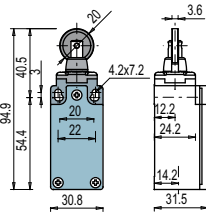
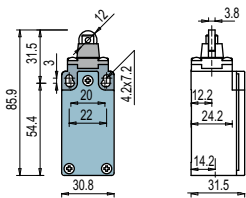
With external rubber gasket



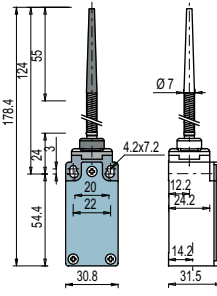
Contact blocks

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

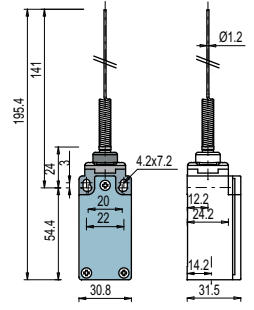
Ø 12 mm stainless steel roller



With external rubber gasket



With external rubber gasket



Contact blocks

5	<b>R</b>	<b>FM 515</b>	➔ 1NO+1NC	<b>FM 516</b>	➔ 1NO+1NC	<b>FM 520</b>	1NO+1NC	<b>FM 521</b>	1NO+1NC
6	<b>L</b>	<b>FM 615</b>	➔ 1NO+1NC	<b>FM 616</b>	➔ 1NO+1NC				
7	<b>LO</b>	<b>FM 715</b>	➔ 1NO+1NC	<b>FM 716</b>	➔ 1NO+1NC				
9	<b>L</b>	<b>FM 915</b>	➔ 2NC	<b>FM 916</b>	➔ 2NC				
10	<b>L</b>	<b>FM 1015</b>	2NO	<b>FM 1016</b>	2NO	<b>FM 1020</b>	2NO	<b>FM 1021</b>	2NO
11	<b>R</b>	<b>FM 1115</b>	➔ 2NC	<b>FM 1116</b>	➔ 2NC				
12	<b>R</b>	<b>FM 1215</b>	2NO	<b>FM 1216</b>	2NO	<b>FM 1220</b>	2NO	<b>FM 1221</b>	2NO
13	<b>LV</b>	<b>FM 1315</b>	➔ 2NC	<b>FM 1316</b>	➔ 2NC				
14	<b>LS</b>	<b>FM 1415</b>	➔ 2NC	<b>FM 1416</b>	➔ 2NC				
15	<b>LS</b>	<b>FM 1515</b>	2NO	<b>FM 1516</b>	2NO				
18	<b>LA</b>	<b>FM 1815</b>	➔ 1S+1Ö	<b>FM 1816</b>	➔ 1S+1Ö	<b>FM 1820</b>	1NO+1NC	<b>FM 1821</b>	1NO+1NC
20	<b>L</b>	<b>FM 2015</b>	➔ 1NO+2NC	<b>FM 2016</b>	➔ 1NO+2NC	<b>FM 2020</b>	1NO+2NC	<b>FM 2021</b>	1NO+2NC
21	<b>L</b>	<b>FM 2115</b>	➔ 3NC	<b>FM 2116</b>	➔ 3NC	<b>FM 2120</b>	3NC	<b>FM 2121</b>	3NC
22	<b>L</b>	<b>FM 2215</b>	➔ 2NO+1NC	<b>FM 2216</b>	➔ 2NO+1NC	<b>FM 2220</b>	2NO+1NC	<b>FM 2221</b>	2NO+1NC
2	<b>R</b>	<b>FM 215</b>	2x(1NO-1NC)	<b>FM 216</b>	2x(1NO-1NC)	<b>FM 220</b>	2x(1NO-1NC)	<b>FM 221</b>	2x(1NO-1NC)
E1	<b>⚡</b>	<b>FM E115</b>	1NO-1NC	<b>FM E116</b>	1NO-1NC	<b>FM E120</b>	1NO-1NC	<b>FM E121</b>	1NO-1NC
Max speed		page 7/5 - type 2		page 7/5 - 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 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

- 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	FM 530	FM 531	FM 533
6 <b>L</b>		FM 630	FM 631	FM 633
7 <b>LO</b>		FM 730	FM 731	FM 733
9 <b>L</b>		FM 930	FM 931	FM 933
10 <b>L</b>	FM 1025	FM 1030	FM 1031	FM 1033
11 <b>R</b>		FM 1130	FM 1131	FM 1133
12 <b>R</b>	FM 1225	FM 1230	FM 1231	FM 1233
13 <b>LV</b>		FM 1330	FM 1331	FM 1333
14 <b>LS</b>		FM 1430	FM 1431	FM 1433
15 <b>LS</b>		FM 1530	FM 1531	FM 1533
16 <b>LI</b>		FM 1630	FM 1631	FM 1633
18 <b>LA</b>	FM 1825	FM 1830	FM 1831	FM 1833
20 <b>L</b>	FM 2025	FM 2030	FM 2031	FM 2033
21 <b>L</b>	FM 2125	FM 2130	FM 2131	FM 2133
22 <b>L</b>	FM 2225	FM 2230	FM 2231	FM 2233
2 <b>R</b>	FM 225	FM 230	FM 231	FM 233
E1 <b>E1</b>	FM E125	FM E130	FM E131	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	FM 551	FM 552
6 <b>L</b>	FM 634	FM 651	FM 652
7 <b>LO</b>	FM 734	FM 751	FM 752
9 <b>L</b>	FM 934	FM 951	FM 952
10 <b>L</b>	FM 1034	FM 1051	FM 1052
11 <b>R</b>	FM 1134	FM 1151	FM 1152
12 <b>R</b>	FM 1234	FM 1251	FM 1252
13 <b>LV</b>	FM 1334	FM 1351	FM 1352
14 <b>LS</b>	FM 1434	FM 1451	FM 1452
15 <b>LS</b>	FM 1534	FM 1551	FM 1552
16 <b>LI</b>	FM 1634	FM 1651	FM 1652
18 <b>LA</b>	FM 1834	FM 1851	FM 1852
20 <b>L</b>	FM 2034	FM 2051	FM 2052
21 <b>L</b>	FM 2134	FM 2151	FM 2152
22 <b>L</b>	FM 2234	FM 2251	FM 2252
2 <b>R</b>	FM 234	FM 251	FM 252
E1 <b>E1</b>	FM E134	FM E151	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 1NO+1NC	FM 554 1NO+1NC	FM 555 (1) 1NO+1NC	FM 556 1NO+1NC
6	<b>L</b> FM 653-E0V9 1NO+1NC	FM 654 1NO+1NC	FM 655 (1) 1NO+1NC	FM 656 1NO+1NC
7	<b>LO</b> FM 753-E0V9 1NO+1NC	FM 754 1NO+1NC	FM 755 (1) 1NO+1NC	FM 756 1NO+1NC
9	<b>L</b> FM 953-E0V9 2NC	FM 954 2NC	FM 955 (1) 2NC	FM 956 2NC
10	<b>L</b> FM 1053-E0V9 2NO	FM 1054 2NO	FM 1055 2NO	FM 1056 2NO
11	<b>R</b> FM 1253-E0V9 2NO	FM 1154 2NC	FM 1155 (1) 2NC	FM 1156 2NC
12	<b>R</b> FM 1253-E0V9 2NO	FM 1254 2NO	FM 1255 2NO	FM 1256 2NO
13	<b>LV</b> FM 1353-E0V9 2NC	FM 1354 2NC	FM 1355 (1) 2NC	FM 1356 2NC
14	<b>LS</b> FM 1453-E0V9 2NC	FM 1454 2NC	FM 1455 (1) 2NC	FM 1456 2NC
15	<b>LS</b> FM 1553-E0V9 2NO	FM 1554 2NO	FM 1555 2NO	FM 1556 2NO
16	<b>LI</b> FM 1653-E0V9 2NC	FM 1654 2NC	FM 1655 (1) 2NC	FM 1656 2NC
18	<b>LA</b> FM 1853-E0V9 1S+1Ö	FM 1854 1S+1Ö	FM 1855 1S+1Ö	FM 1856 1S+1Ö
20	<b>L</b> FM 2053-E0V9 1NO+2NC	FM 2054 1NO+2NC	FM 2055 (1) 1NO+2NC	FM 2056 1NO+2NC
21	<b>L</b> FM 2153-E0V9 3NC	FM 2154 3NC	FM 2155 (1) 3NC	FM 2156 3NC
22	<b>L</b> FM 2253-E0V9 2NO+1NC	FM 2254 2NO+1NC	FM 2255 (1) 2NO+1NC	FM 2256 2NO+1NC
2	<b>R</b> FM 253-E0 2x(1NO-1NC)	FM 254 2x(1NO-1NC)	FM 255 2x(1NO-1NC)	FM 256 2x(1NO-1NC)
E1	<b>A</b> FM E153-E0V9 1NO-1NC	FM E154 1NO-1NC	FM E155 1NO-1NC	FM E156 1NO-1NC
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 ⊕)	0,06 Nm (0,25 Nm ⊕)	0,06 Nm (0,25 Nm ⊕)	0,06 Nm (0,25 Nm ⊕)
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 1NO+1NC	FM 569 1NO+1NC	FM 576 1NO+1NC
6	<b>L</b> FM 657 1NO+1NC	FM 669 1NO+1NC	FM 676 1NO+1NC
7	<b>LO</b> FM 757 1NO+1NC	FM 769 1NO+1NC	FM 776 1NO+1NC
9	<b>L</b> FM 957 2NC	FM 969 2NC	FM 976 2NO
10	<b>L</b> FM 1057 2NO	FM 1069 2NO	FM 1076 2NC
11	<b>R</b> FM 1157 2NC	FM 1169 2NC	FM 1176 2NO
12	<b>R</b> FM 1257 2NO	FM 1269 2NO	FM 1276 2NC
13	<b>LV</b> FM 1357 2NC	FM 1369 2NC	FM 1376 2NO
14	<b>LS</b> FM 1457 2NC	FM 1469 2NC	FM 1476 2NO
15	<b>LS</b> FM 1557 2NO	FM 1569 2NO	FM 1576 2NC
16	<b>LI</b> FM 1657 2NC	FM 1669 2NC	
18	<b>LA</b> FM 1857 1S+1Ö	FM 1869 1S+1Ö	FM 1876 1NO+1NC
20	<b>L</b> FM 2057 1NO+2NC	FM 2069 1NO+2NC	FM 2076 2NO+1NC
21	<b>L</b> FM 2157 3NC	FM 2169 3NC	FM 2176 3NO
22	<b>L</b> FM 2257 2NO+1NC	FM 2269 2NO+1NC	FM 2276 1NO+2NC
2	<b>R</b> FM 257 2x(1NO-1NC)	FM 269 2x(1NO-1NC)	FM 276 2x(1NO-1NC)
E1	<b>A</b> FM E157 1NO-1NC	FM E169 1NO-1NC	
Max speed	page 7/5 - 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 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

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





# Position switches FM series with reset

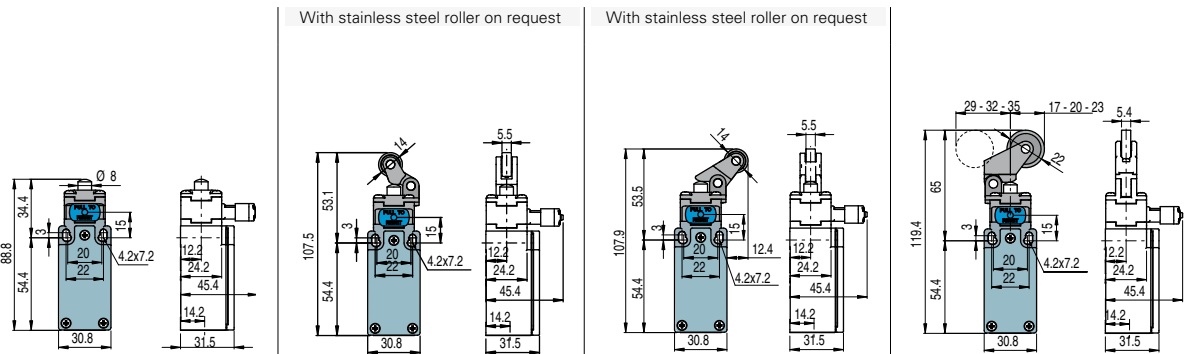


Pizzato Elettrica has developed a reset device code W3 to make perfectly simultaneous the actuator and the contact block tripping. The new device is a block inserted between the switch body and the head, and could be rotated independently from this last one. This new device has following advantages:

- \* 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.

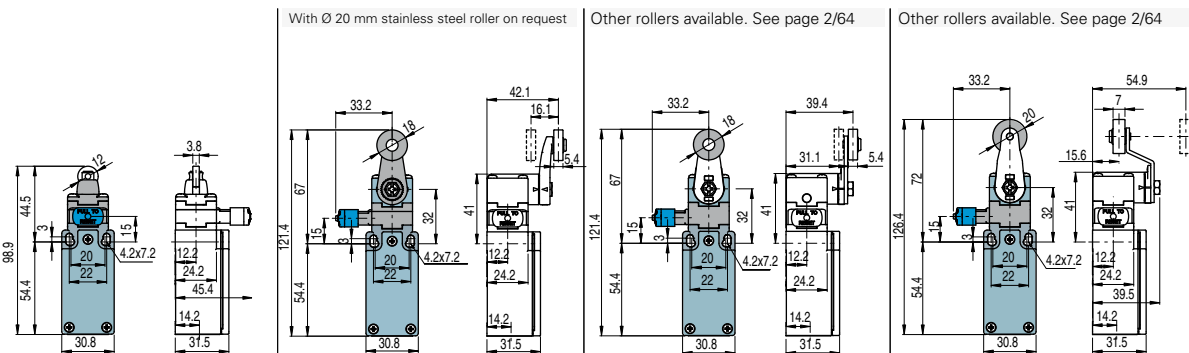
Contacts type:

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



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	



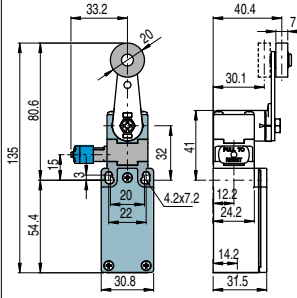
Contact blocks

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	

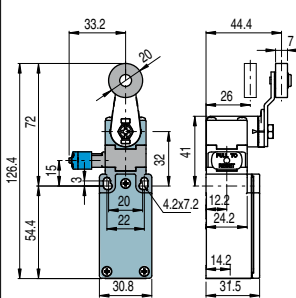
Contacts type:

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

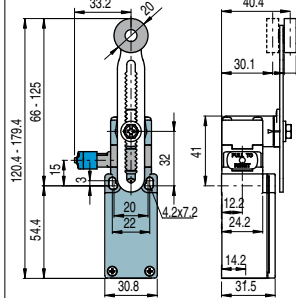
Other rollers available. See page 2/64



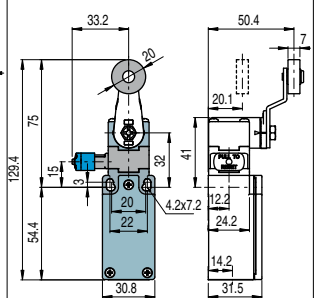
Other rollers available. See page 2/64



Other rollers available. See page 2/64



Other rollers available. See page 2/64



Contact blocks

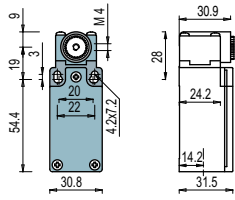
6	<b>L</b>	<b>FM 652-W3</b>	1NO+1NC	<b>FM 654-W3</b>	1NO+1NC	<b>FM 656-W3</b>	1NO+1NC	<b>FM 657-W3</b>	1NO+1NC
9	<b>L</b>	<b>FM 952-W3</b>	2NC	<b>FM 954-W3</b>	2NC	<b>FM 956-W3</b>	2NC	<b>FM 957-W3</b>	2NC
10	<b>L</b>	<b>FM 1052-W3</b>	2NO	<b>FM 1054-W3</b>	2NO	<b>FM 1056-W3</b>	2NO	<b>FM 1057-W3</b>	2NO
20	<b>L</b>	<b>FM 2052-W3</b>	1NO+2NC	<b>FM 2054-W3</b>	1NO+2NC	<b>FM 2056-W3</b>	1NO+2NC	<b>FM 2057-W3</b>	1NO+2NC
21	<b>L</b>	<b>FM 2152-W3</b>	3NC	<b>FM 2154-W3</b>	3NC	<b>FM 2156-W3</b>	3NC	<b>FM 2157-W3</b>	3NC
22	<b>L</b>	<b>FM 2252-W3</b>	2NO+1NC	<b>FM 2254-W3</b>	2NO+1NC	<b>FM 2256-W3</b>	2NO+1NC	<b>FM 2257-W3</b>	2NO+1NC
2	<b>R</b>	<b>FM 252-W3</b>	2NO+2NC	<b>FM 254-W3</b>	2NO+2NC	<b>FM 256-W3</b>	2NO+2NC	<b>FM 257-W3</b>	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

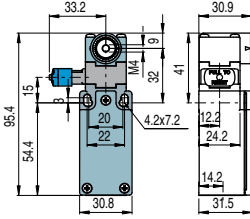
**Position switches with revolving lever without actuator**

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
- = 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>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.

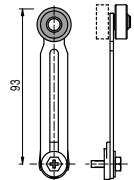
Polymer roller Ø 18 mm	Polymer roller Ø 18 mm	Adjustable square rod 3x3x125 mm	Flexible rod actuator	Adjustable round rod Ø 3x125 mm	Polymer roller Ø 20 mm	
<b>VF LE30</b> ⊕	<b>VF LE31</b> ⊕	<b>VF LE33</b>	<b>VF LE34</b>	<b>VF LE50</b>	<b>VF LE51</b> ⊕	
Polymer roller Ø 20 mm	Porcelain roller	Polymer 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

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