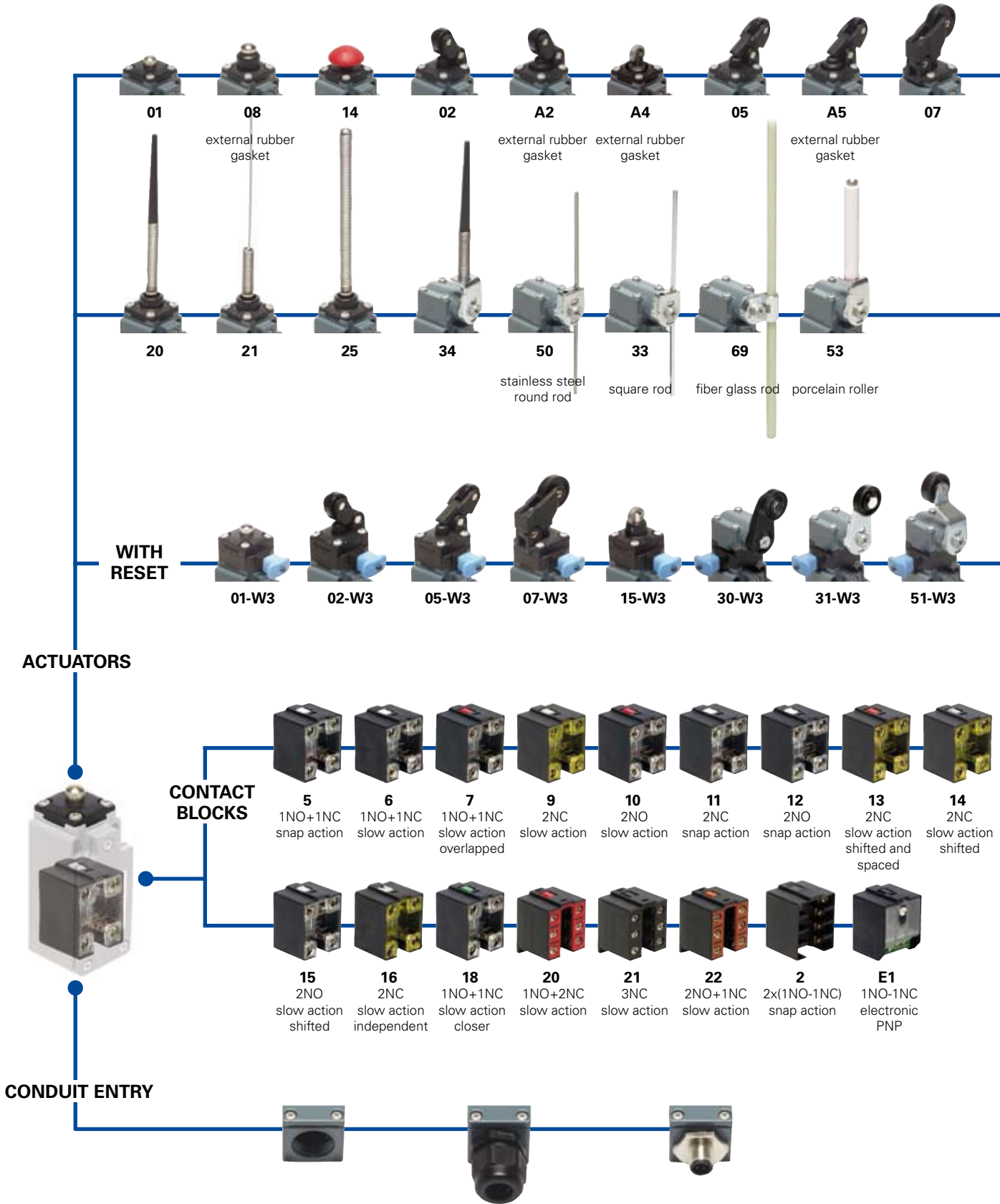


Selection diagram



Threaded conduit entry

	PG 13,5 (standard)
M2	M20x1,5

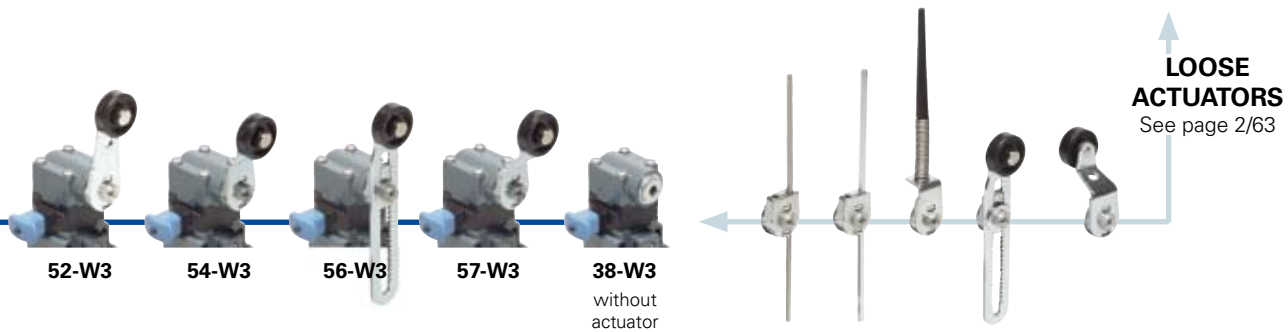
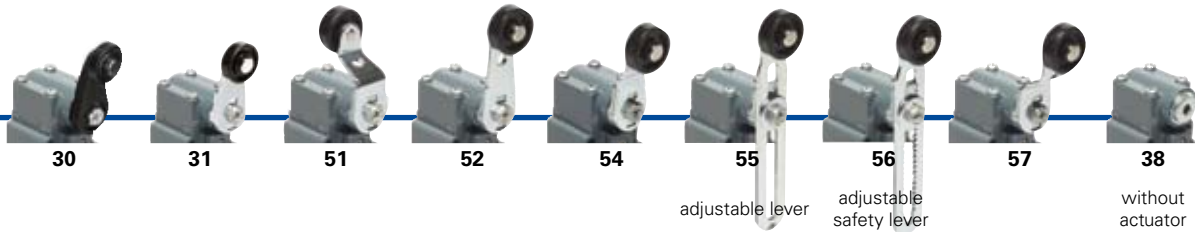
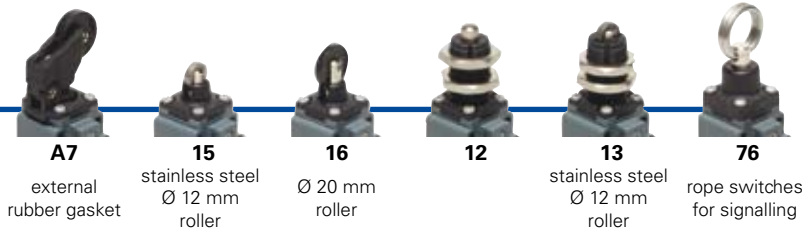
With assembled cable gland

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	
FM	metal housing, 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	offset roller lever
...
Suffix	
	no suffix (standard)
1	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
2	with Ø 35 mm polymer roller (see special loose actuators on page 2/64)
3	with Ø 50 mm rubber roller (see special loose actuators on page 2/64)
4	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)
K21	with assembled cable gland suitable for Ø 6 to Ø 12 mm cables range
...
K50	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)
M2	M20x1,5

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

Reset hooking	
	without reset (standard)
W3	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 cycles¹/hour
 Mechanical endurance: 20 million operations cycles¹
 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 ²	(1 x AWG 22)
	max.	2 x 1,5 mm ²	(2 x AWG 16)
Contact blocks 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 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.

	Electrical data	Utilization categories	
without connector	Thermal current (I _{th}):	10 A	
	Rated insulation voltage (U _i):	500 Vac 600 Vdc	
	Rated impulse withstand voltage (U _{imp}):	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)	Ie (A) 6 4 1
Conditional short 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	Ie (A) 6 1,1 0,4	
with 5 poles M12 connector	Thermal current (I _{th}):	4 A	
	Rated insulation voltage (U _i):	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
			Ie (A) 4 4 4
		Direct current: DC13	
		Ue (V) 24 125 250	
		Ie (A) 4 1,1 0,4	
with 8 poles M12 connector	Thermal current (I _{th}):	2 A	
	Rated insulation voltage (U _i):	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
			Ie (A) 2
		Direct current: DC13	
		Ue (V) 24	
		Ie (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_{imp}): 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

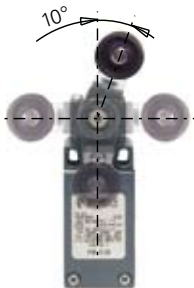
For all contact blocks except 2 and 3 use 60 or 75 °C copper (Cu) conductor and wire size No. 12-14 AWG. Terminal tightening torque of 7,1 lb in (0,8 Nm).
For contact blocks 2 and 3 use 60 or 75 °C copper (Cu) conductor and wire size No. 14 AWG. Terminal tightening torque of 12 lb in (1,4 Nm).

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

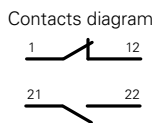
In all switches, it is possible to rotate the head in 90° steps.



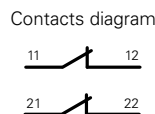
Working operation of contact block 16 with independent contacts

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

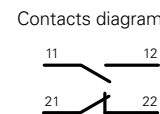
Lever turned to left




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	R FM 501	R FM 502	R FM 5A2
6	L FM 601	L FM 602	L FM 6A2
7	LO FM 701	LO FM 702	LO FM 7A2
9	L FM 901	L FM 902	L FM 9A2
10	L FM 1001	L FM 1002	L FM 10A2
11	R FM 1101	R FM 1102	R FM 11A2
12	R FM 1201	R FM 1202	R FM 12A2
13	LV FM 1301	LV FM 1302	LV FM 13A2
14	LS FM 1401	LS FM 1402	LS FM 14A2
15	LS FM 1501	LS FM 1502	LS FM 15A2
18	LA FM 1801	LA FM 1802	LA FM 18A2
20	L FM 2001	L FM 2002	L FM 20A2
21	L FM 2101	L FM 2102	L FM 21A2
22	L FM 2201	L FM 2202	L FM 22A2
2	R FM 201	R FM 202	R 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 \ominus)	6 N (25 N \ominus)	4,3 N (25 N \ominus)
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	R FM 505	R FM 5A5	R FM 507
6	L FM 605	L FM 6A5	L FM 607
7	LO FM 705	LO FM 7A5	LO FM 707
9	L FM 905	L FM 9A5	L FM 907
10	L FM 1005	L FM 10A5	L FM 1007
11	R FM 1105	R FM 11A5	R FM 1107
12	R FM 1205	R FM 12A5	R FM 1207
13	LV FM 1305	LV FM 13A5	LV FM 1307
14	LS FM 1405	LS FM 14A5	LS FM 1407
15	LS FM 1505	LS FM 15A5	LS FM 1507
18	LA FM 1805	LA FM 18A5	LA FM 1807
20	L FM 2005	L FM 20A5	L FM 2007
21	L FM 2105	L FM 21A5	L FM 2107
22	L FM 2205	L FM 22A5	L FM 2207
2	R FM 205	R FM 2A5	R 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 \ominus)	4,3 N (25 N \ominus)	4 N (25 N \ominus)
Travel diagrams	page 7/6 - group 2	page 7/6 - group 2	page 7/6 - group 3

Accessories See page 6/1

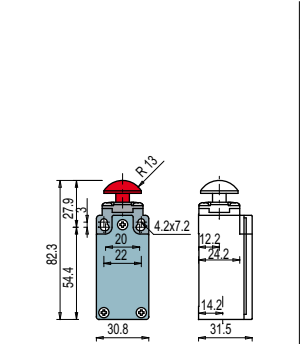
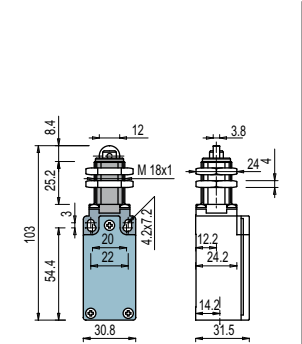
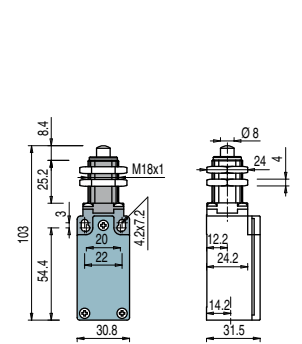
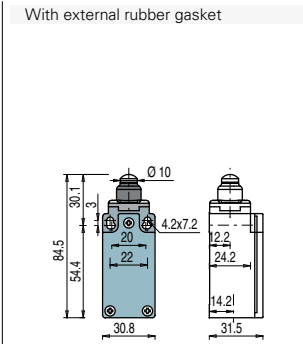
All measures in the drawings are in mm



Contacts type:

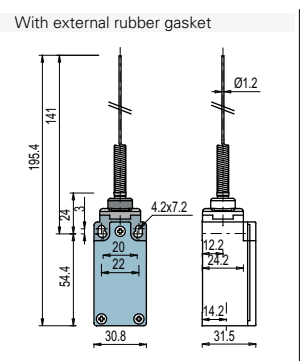
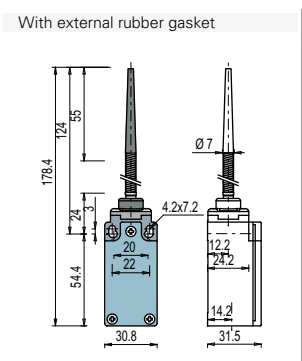
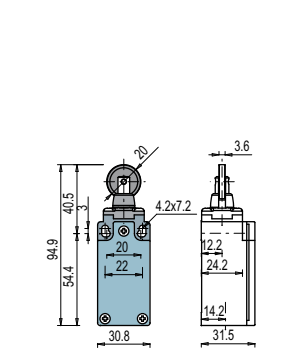
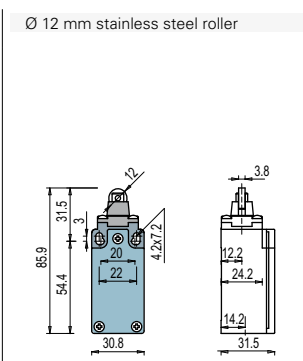
- R** = snap action
- L** = slow action
- LO** = slow action overlapped
- LS** = slow action shifted
- LV** = slow action shifted and spaced
- LI** = slow action independent
- LA** = slow action closer
- E** = electronic PNP

Contact blocks



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



Contact blocks

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

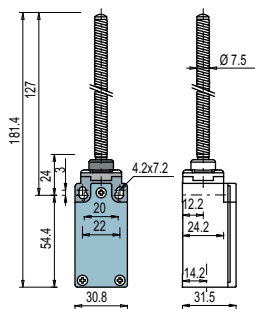
Max speed	page 7/5 - type 2	page 7/5 - type 2	1 m/s	1 m/s
Min. force	8 N (25 N ➔)	8 N (25 N ➔)	0,07 Nm	0,07 Nm
Travel diagrams	page 7/6 - group 1	page 7/6 - group 1	page 7/6 - group 4	page 7/6 - group 4

Items with code on the green background are available in stock

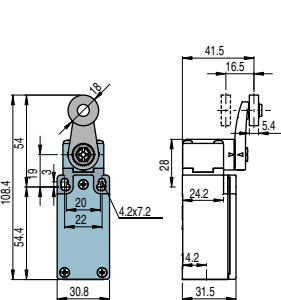
- Contacts type:
- R** = snap action
 - L** = slow action
 - LO** = slow action overlapped
 - LS** = slow action shifted
 - LV** = slow action shifted and spaced
 - LI** = slow action independent
 - LA** = slow action closer
 - E1** = electronic PNP

Contact blocks

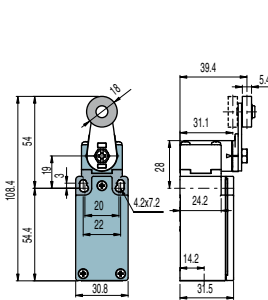
With external rubber gasket



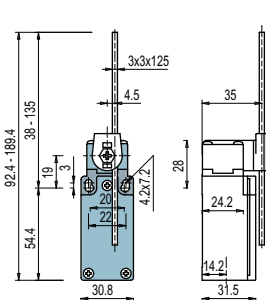
With Ø 20 mm stainless steel roller on request



Other rollers available. See page 2/64



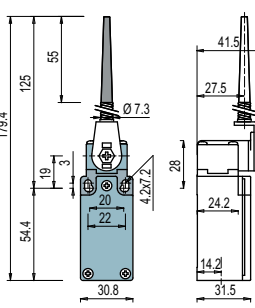
3x3 mm square rod



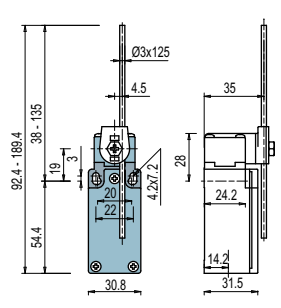
5	R	FM 525	1NO+1NC	FM 530	⊕ 1NO+1NC	FM 531	⊕ 1NO+1NC	FM 533	1NO+1NC
6	L			FM 630	⊕ 1NO+1NC	FM 631	⊕ 1NO+1NC	FM 633	1NO+1NC
7	LO			FM 730	⊕ 1NO+1NC	FM 731	⊕ 1NO+1NC	FM 733	1NO+1NC
9	L			FM 930	⊕ 2NC	FM 931	⊕ 2NC	FM 933	2NC
10	L	FM 1025	2NO	FM 1030	2NO	FM 1031	2NO	FM 1033	2NO
11	R			FM 1130	⊕ 2NC	FM 1131	⊕ 2NC	FM 1133	2NC
12	R	FM 1225	2NO	FM 1230	2NO	FM 1231	2NO	FM 1233	2NO
13	LV			FM 1330	⊕ 2NC	FM 1331	⊕ 2NC	FM 1333	2NC
14	LS			FM 1430	⊕ 2NC	FM 1431	⊕ 2NC	FM 1433	2NC
15	LS			FM 1530	2NO	FM 1531	2NO	FM 1533	2NO
16	LI			FM 1630	⊕ 2NC	FM 1631	⊕ 2NC	FM 1633	2NC
18	LA	FM 1825	1NO+1NC	FM 1830	⊕ 1NO+1NC	FM 1831	⊕ 1NO+1NC	FM 1833	1S+1Ö
20	L	FM 2025	1NO+2NC	FM 2030	⊕ 1NO+2NC	FM 2031	⊕ 1NO+2NC	FM 2033	1NO+2NC
21	L	FM 2125	3NC	FM 2130	⊕ 3NC	FM 2131	⊕ 3NC	FM 2133	3NC
22	L	FM 2225	2NO+1NC	FM 2230	⊕ 2NO+1NC	FM 2231	⊕ 2NO+1NC	FM 2233	2NO+1NC
2	R	FM 225	2x(1NO-1NC)	FM 230	2x(1NO-1NC)	FM 231	2x(1NO-1NC)	FM 233	2x(1NO-1NC)
E1	E1	FM E125	1NO-1NC	FM E130	1NO-1NC	FM E131	1NO-1NC	FM E133	1NO-1NC
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	

Contact blocks

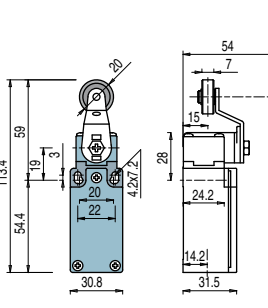
Ø 3 mm stainless steel round rod



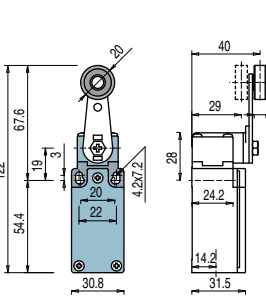
Other rollers available. See page 2/64



Other rollers available. See page 2/64



Other rollers available. See page 2/64



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



- 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	R FM 553-E0V9	R FM 554	R FM 555	R FM 556
6	L FM 653-E0V9	L FM 654	L FM 655	L FM 656
7	LO FM 753-E0V9	LO FM 754	LO FM 755	LO FM 756
9	L FM 953-E0V9	L FM 954	L FM 955	L FM 956
10	L FM 1053-E0V9	L FM 1054	L FM 1055	L FM 1056
11	R FM 1153-E0V9	R FM 1154	R FM 1155	R FM 1156
12	R FM 1253-E0V9	R FM 1254	R FM 1255	R FM 1256
13	LV FM 1353-E0V9	LV FM 1354	LV FM 1355	LV FM 1356
14	LS FM 1453-E0V9	LS FM 1454	LS FM 1455	LS FM 1456
15	LS FM 1553-E0V9	LS FM 1554	LS FM 1555	LS FM 1556
16	LI FM 1653-E0V9	LI FM 1654	LI FM 1655	LI FM 1656
18	LA FM 1853-E0V9	LA FM 1854	LA FM 1855	LA FM 1856
20	L FM 2053-E0V9	L FM 2054	L FM 2055	L FM 2056
21	L FM 2153-E0V9	L FM 2154	L FM 2155	L FM 2156
22	L FM 2253-E0V9	L FM 2254	L FM 2255	L FM 2256
2	R FM 253-E0	R FM 254	R FM 255	R FM 256
E1	A FM E153-E0V9	A FM E154	A FM E155	A 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 \oplus)	0,06 Nm (0,25 Nm \oplus)	0,06 Nm (0,25 Nm \oplus)	0,06 Nm (0,25 Nm \oplus)
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	R FM 557	R FM 569	R FM 576
6	L FM 657	L FM 669	L FM 676
7	LO FM 757	LO FM 769	LO FM 776
9	L FM 957	L FM 969	L FM 976
10	L FM 1057	L FM 1069	L FM 1076
11	R FM 1157	R FM 1169	R FM 1176
12	R FM 1257	R FM 1269	R FM 1276
13	LV FM 1357	LV FM 1369	LV FM 1376
14	LS FM 1457	LS FM 1469	LS FM 1476
15	LS FM 1557	LS FM 1569	LS FM 1576
16	LI FM 1657	LI FM 1669	LI FM 1676
18	LA FM 1857	LA FM 1869	LA FM 1876
20	L FM 2057	L FM 2069	L FM 2076
21	L FM 2157	L FM 2169	L FM 2176
22	L FM 2257	L FM 2269	L FM 2276
2	R FM 257	R FM 269	R FM 276
E1	A FM E157	A FM E169	A 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 \oplus)	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

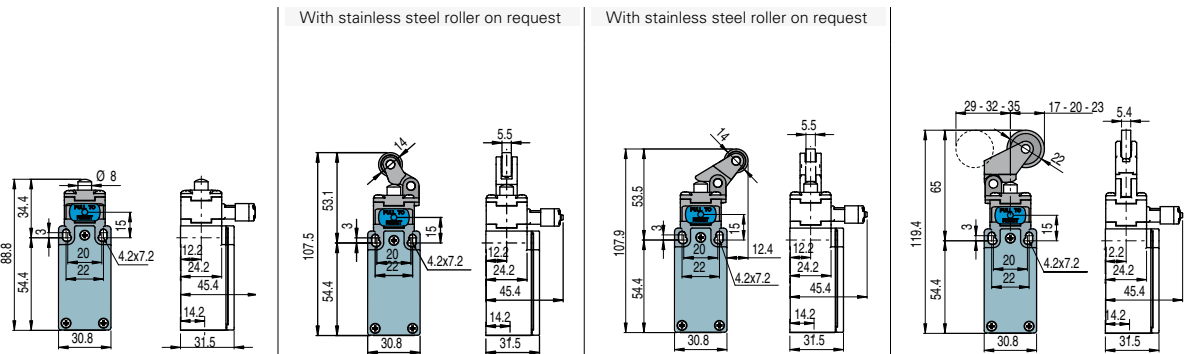


Pizzato Elettrica has developed a reset device code W3 to make perfectly simultaneous the actuator and the contact block tripping. The new device is a block inserted between the switch body and the head, and could be rotated independently from this last one. This new device has following advantages:

- * 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.

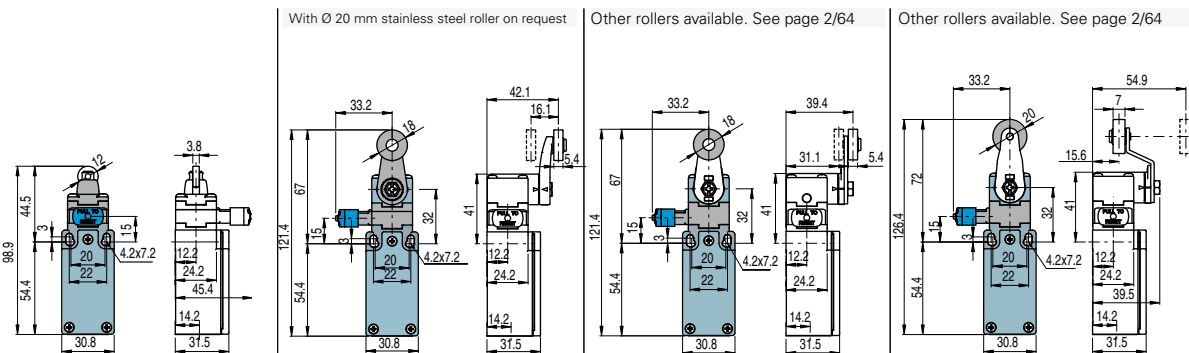
Contacts type:

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



Contact blocks

6	L	FM 601-W3	⊕ 1NO+1NC	FM 602-W3	⊕ 1NO+1NC	FM 605-W3	⊕ 1NO+1NC	FM 607-W3	⊕ 1NO+1NC
9	L	FM 901-W3	⊕ 2NC	FM 902-W3	⊕ 2NC	FM 905-W3	⊕ 2NC	FM 907-W3	⊕ 2NC
10	L	FM 1001-W3	2NO	FM 1002-W3	2NO	FM 1005-W3	2NO	FM 1007-W3	2NO
20	L	FM 2001-W3	⊕ 1NO+2NC	FM 2002-W3	⊕ 1NO+2NC	FM 2005-W3	⊕ 1NO+2NC	FM 2007-W3	⊕ 1NO+2NC
21	L	FM 2101-W3	⊕ 3NC	FM 2102-W3	⊕ 3NC	FM 2105-W3	⊕ 3NC	FM 2107-W3	⊕ 3NC
22	L	FM 2201-W3	⊕ 2NO+1NC	FM 2202-W3	⊕ 2NO+1NC	FM 2205-W3	⊕ 2NO+1NC	FM 2207-W3	⊕ 2NO+1NC
2	R	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	



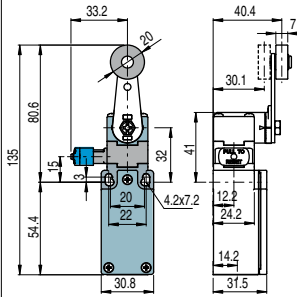
Contact blocks

6	L	FM 615-W3	⊕ 1NO+1NC	FM 630-W3	⊕ 1NO+1NC	FM 631-W3	⊕ 1NO+1NC	FM 651-W3	⊕ 1NO+1NC
9	L	FM 915-W3	⊕ 2NC	FM 930-W3	⊕ 2NC	FM 931-W3	⊕ 2NC	FM 951-W3	⊕ 2NC
10	L	FM 1015-W3	2NO	FM 1030-W3	2NO	FM 1031-W3	2NO	FM 1051-W3	2NO
20	L	FM 2015-W3	⊕ 1NO+2NC	FM 2030-W3	⊕ 1NO+2NC	FM 2031-W3	⊕ 1NO+2NC	FM 2051-W3	⊕ 1NO+2NC
21	L	FM 2115-W3	⊕ 3NC	FM 2130-W3	⊕ 3NC	FM 2131-W3	⊕ 3NC	FM 2151-W3	⊕ 3NC
22	L	FM 2215-W3	⊕ 2NO+1NC	FM 2230-W3	⊕ 2NO+1NC	FM 2231-W3	⊕ 2NO+1NC	FM 2251-W3	⊕ 2NO+1NC
2	R	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	

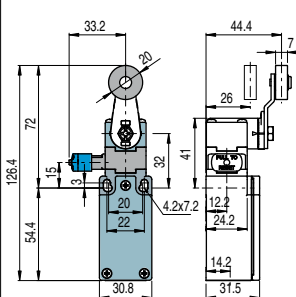
Contacts type:

R = snap action
L = slow action

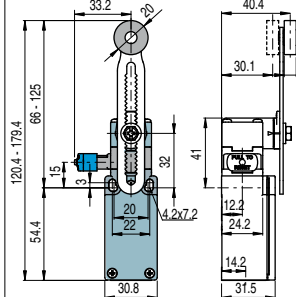
Other rollers available. See page 2/64



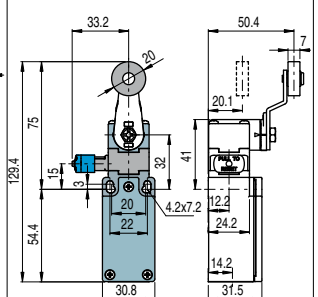
Other rollers available. See page 2/64



Other rollers available. See page 2/64



Other rollers available. See page 2/64




Contact blocks

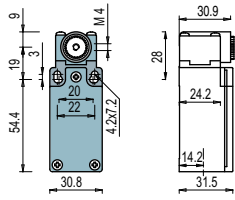
6	L	FM 652-W3	1NO+1NC	FM 654-W3	1NO+1NC	FM 656-W3	1NO+1NC	FM 657-W3	1NO+1NC
9	L	FM 952-W3	2NC	FM 954-W3	2NC	FM 956-W3	2NC	FM 957-W3	2NC
10	L	FM 1052-W3	2NO	FM 1054-W3	2NO	FM 1056-W3	2NO	FM 1057-W3	2NO
20	L	FM 2052-W3	1NO+2NC	FM 2054-W3	1NO+2NC	FM 2056-W3	1NO+2NC	FM 2057-W3	1NO+2NC
21	L	FM 2152-W3	3NC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

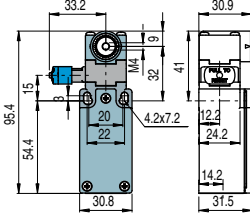
Position switches with revolving lever without actuator

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
-  = electronic PNP




With manual reset knob



IMPORTANT

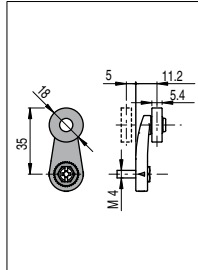
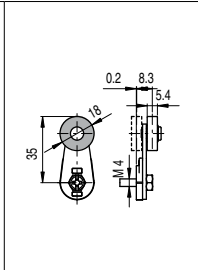
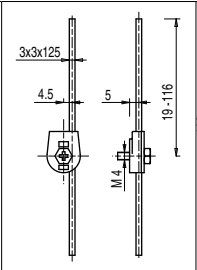
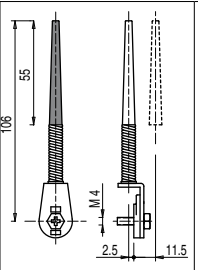
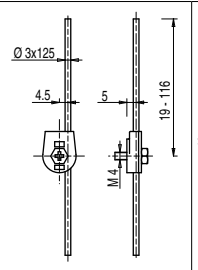
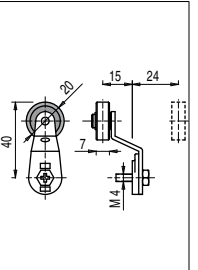
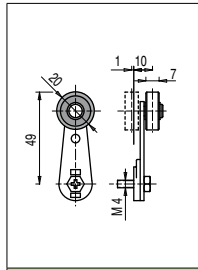
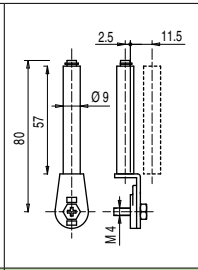
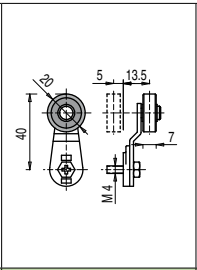
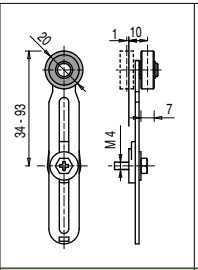
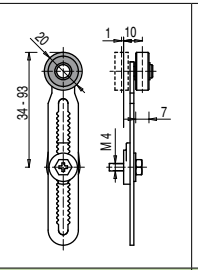
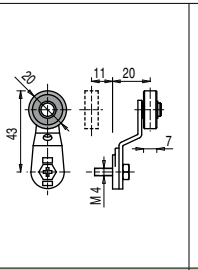
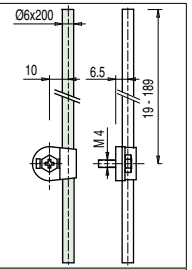
For safety applications: join only switches and actuators marked with symbol ⊕.
For more information about safety applications see page 7/1.

Contact blocks

5	R	FM 538 ⊕	1NO+1NC	
6	L	FM 638 ⊕	1NO+1NC	FM 638-W3 ⊕ 1NO+1NC
7	LO	FM 738 ⊕	1NO+1NC	
9	L	FM 938 ⊕	2NC	FM 938-W3 ⊕ 2NC
10	L	FM 1038	2NO	FM 1038-W3 2NO
11	R	FM 1138 ⊕	2NC	
12	R	FM 1238	2NO	
13	LV	FM 1338 ⊕	2NC	
14	LS	FM 1438 ⊕	2NC	
15	LS	FM 1538	2NO	
16	LI	FM 1638 ⊕	2NC	
18	LA	FM 1838 ⊕	1NO+1NC	
20	L	FM 2038 ⊕	1NO+2NC	FM 2038-W3 ⊕ 1NO+2NC
21	L	FM 2138 ⊕	3NC	FM 2138-W3 ⊕ 3NC
22	L	FM 2238 ⊕	2NO+1NC	FM 2238-W3 ⊕ 2NO+1NC
2	R	FM 238	2x(1NO-1NC)	FM 238-W3 2NO+2NC
E1		FM E138	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.

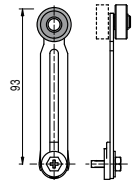
Polymer roller Ø 18 mm	Polymer roller Ø 18 mm	Adjustable square rod 3x3x125 mm	Flexible rod actuator	Adjustable round rod Ø 3x125 mm	Polymer roller Ø 20 mm	
						
VF LE30 ⊕	VF LE31 ⊕	VF LE33	VF LE34	VF LE50	VF LE51 ⊕	
Polymer roller Ø 20 mm	Porcelain roller	Polymer roller Ø 20 mm	Adjustable actuator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

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

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) (1)	VF LE56-2 (1)	VF LE57-2 (1)

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) (1)	VF LE56-R5 (1)	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) (1)	VF LE56-3 (1)	VF LE57-3 (4)

Ø 50 mm overhanging rubber rollers

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

Items with code on the green background are available in stock