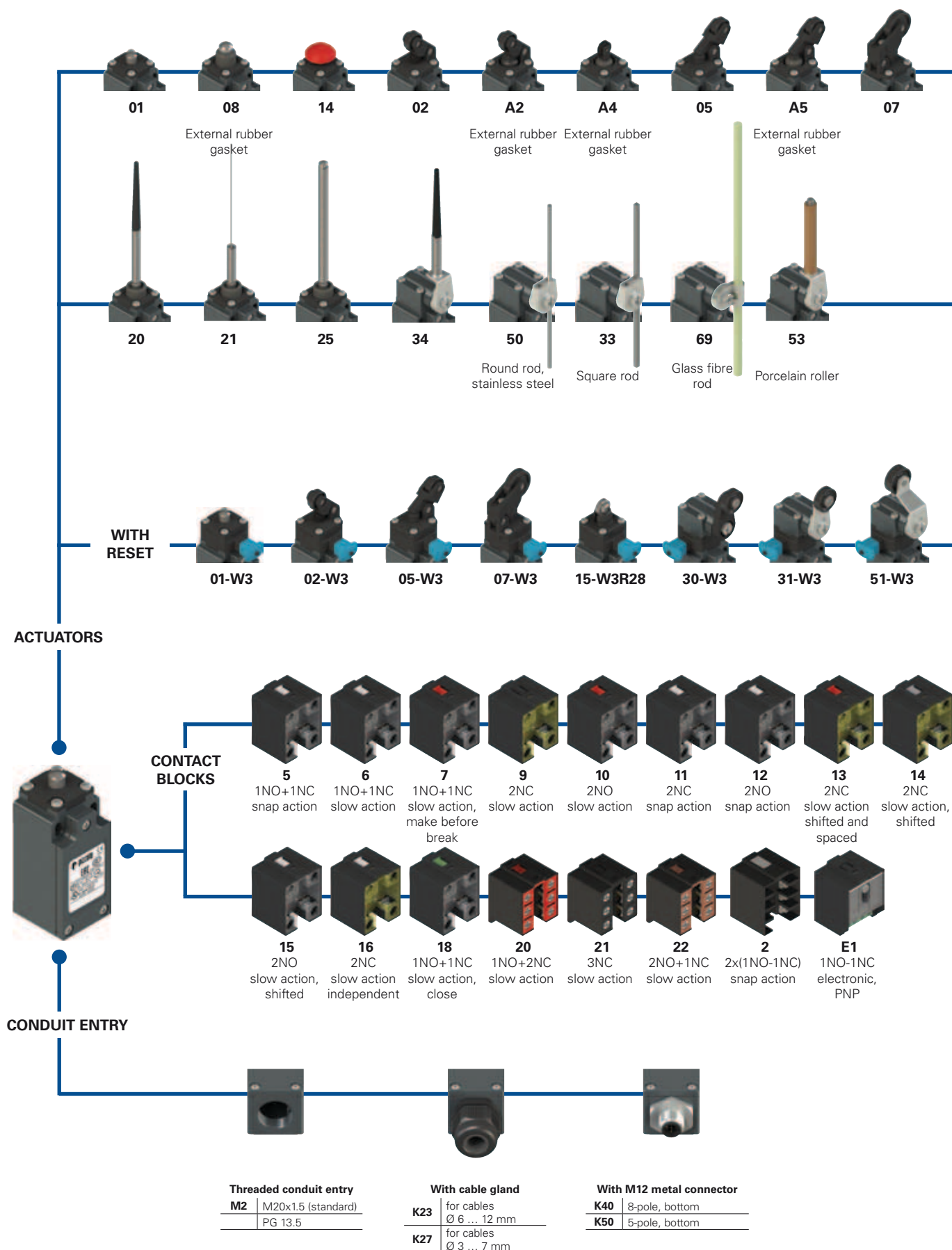
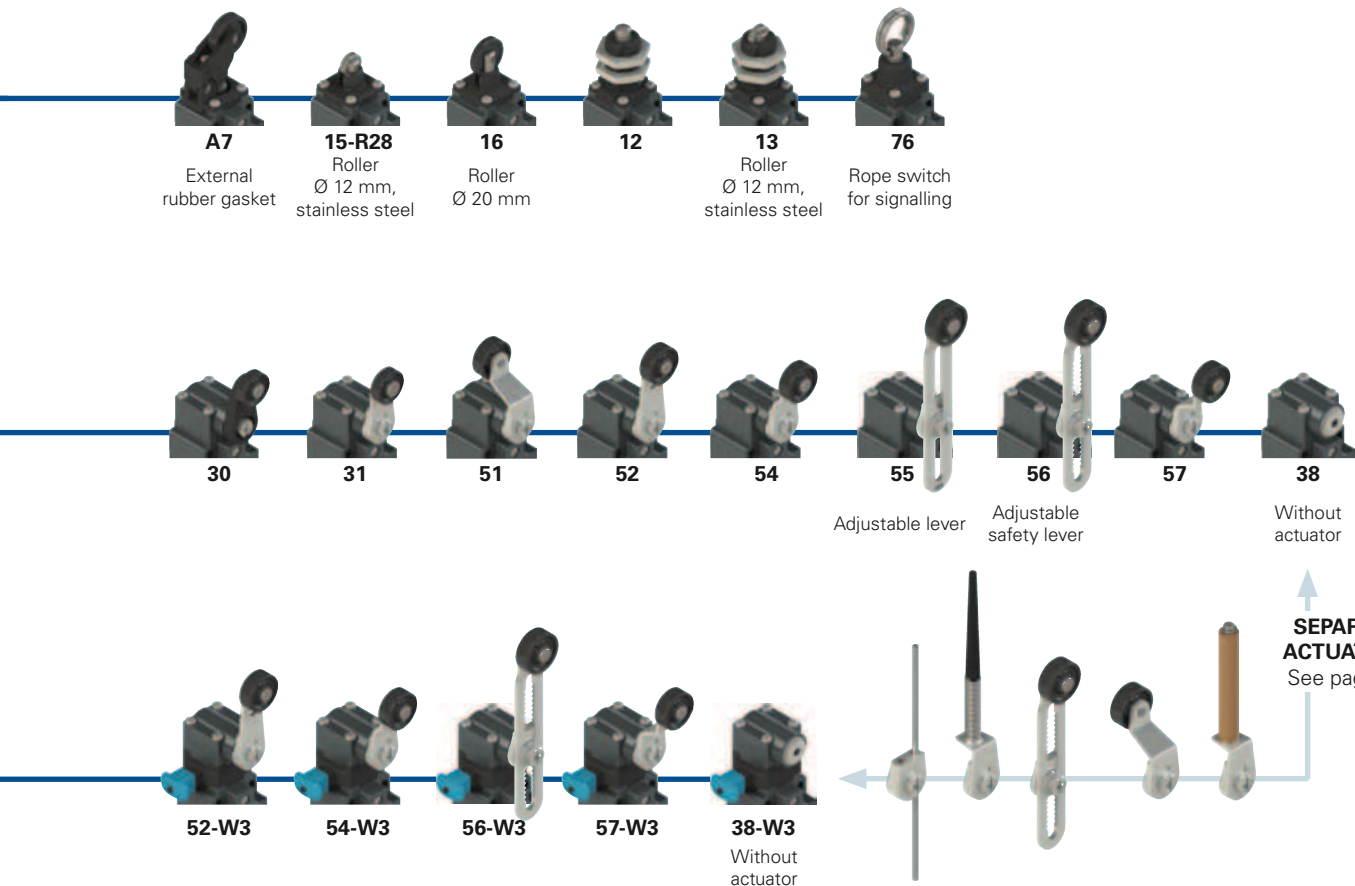


Selection diagram



● product options
→ Sold separately as accessory


Code structure

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

article
options
options
FM 502-W3GM2K50R23T6

Housing		Ambient temperature	
FM	metal, one conduit entry		-25°C ... +80°C (standard)
Contact block		T6 -40°C ... +80°C	
5	1NO+1NC, snap action	Pre-installed cable glands or connectors	
6	1NO+1NC, slow action		
7	1NO+1NC, slow action, make before break		
...	no cable gland or connector (standard)	
Actuators		K23 cable gland for cables Ø 6 ... 12 mm	
01	short plunger	K50 M12 metal connector, 5-pole	
02	roller lever	For the complete list of possible combinations please contact our technical department.	
05	angled lever with roller	Threaded conduit entry	
...	M2 M20x1.5 (standard)	
Reset		PG 13.5	
	without reset (standard)	Rollers	
W3	simultaneous reset		standard roller
W4	simultaneous reset, increased force	R28	stainless steel Ø 12 mm (for actuators A4, 15)
Contact type		R23	stainless steel Ø 14 mm (for actuators A2, 02, A5, 05, 30, 31, 51, 52, 54, 55, 56, 57)
	silver contacts (standard)	R24	stainless steel Ø 20 mm (for actuators 30, 31, 51, 52, 54, 55, 56, 57)
G	silver contacts, 1 µm gold coating (except contact block 2)	R25	technopolymer, Ø 35 mm (for actuators 30, 31, 51, 52, 54, 55, 56, 57)
G1	silver contacts, 2.5 µm gold coating (not for contact block 2, 20, 21, 22)	R5	rubber, Ø 40 mm (for actuators 30, 31, 51, 52, 54, 55, 56, 57)
		R26	rubber, Ø 50 mm (for actuators 51, 52, 54, 55, 56, 57)
		R27	rubber, protruding, Ø 50 mm (for actuators 55, 56)



Main features

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

Quality marks:



IMQ approval:	EG609
UL approval:	E131787
CCC approval:	2007010305229998
EAC approval:	RU C-IT.A135.B.00454

Technical data

Housing

Metal housing, powder-coated	
One threaded conduit entry:	M20x1.5 (standard)
Protection degree:	IP67 acc. to EN 60529 with cable gland presenting same or higher protection degree

General data

Ambient temperature:	-25°C ... +80°C
Max. actuation frequency:	3600 operating cycles/hour
Mechanical endurance:	20 million operating cycles
Mounting position:	any
Safety parameter B_{10D} :	40,000,000 for NC contacts
Mechanical interlock, not coded:	type 1 acc. to EN ISO 14119
Tightening torques for installation:	see page 211-222

Cable cross section (flexible copper strands)

Contact blocks 20, 21, 22, 33, 34:	min.	1 x 0.34 mm ²	(1 x AWG 22)
	max.	2 x 1.5 mm ²	(2 x AWG 16)
Contact 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 compliance with standards:

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

Approvals:

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

Compliance with the requirements of:

Low Voltage Directive 2014/35/EU, EMC Directive 2014/30/EU.

Positive contact opening in conformity with standards:

IEC 60947-5-1, EN 60947-5-1.

Installation for safety applications:

Use only switches marked with the symbol ⊕ next to the product code. Always connect the safety circuit to the **NC contacts** (normally closed contacts: 11-12, 21-22 or 31-32) as required by **EN ISO 14119, paragraph 5.4** for specific interlock applications and **EN ISO 13849-2 tables D3** (well-tried components) and **D.8** (fault exclusions) for safety applications in general. Actuate the switch **at least up to the positive opening travel** shown in the travel diagrams on page 216. Actuate the switch **at least with the positive opening force**, reported in brackets below each article, next to the actuating force value.

⚠ **If not expressly indicated in this chapter, for correct installation and utilization of all articles see the instructions given on pages 211 to 222.**

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



Features approved by IMQ

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

Conventional free air thermal current (I_{th}): 10 A

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

Rated impulse withstand voltage (U_{imp}): 6 kV
4 kV (for contact blocks 20, 21, 22, 33, 34)

Protection degree of the housing: IP67

MV terminals (screw terminals): 3

Pollution degree: AC15

Utilization category: 400 Vac (50 Hz)

Operating voltage (U_e): 3 A

Operating current (I_e): 3 A

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

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

In compliance with standards: EN 60947-1, EN 60947-5-1 + A1:2009, fundamental requirements of the Low Voltage Directive 2014/35/EU.

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

Features approved by UL

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

Housing features type 1, 4X, 12, 13

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

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

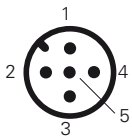
In compliance with standard: UL 508, CSA 22.2 No.14

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

Wiring diagram for M12 connectors

Contact block 2 1NO-1NC+1NO-1NC	Contact block 5 1NO+1NC	Contact block 6 1NO+1NC	Contact block 7 1NO+1NC	Contact block 9 2NC	Contact block 10 2NO	Contact block 11 2NC	Contact block 12 2NO	Contact block 13 2NC
Contacts Pin no. NO 3-4 NC 5-6 NC 7-8 NO 1-2	Contacts Pin no. NC 1-2 NO 3-4 ground 5	Contacts Pin no. NC 1-2 NO 3-4 ground 5	Contacts Pin no. NC 1-2 NO 3-4 ground 5	Contacts Pin no. NC 1-2 NC 3-4 ground 5	Contacts Pin no. NO 1-2 NO 3-4 ground 5	Contacts Pin no. NC 1-2 NC 3-4 ground 5	Contacts Pin no. NO 1-2 NO 3-4 ground 5	Contacts Pin no. NC (1°) 1-2 NC (2°) 3-4 ground 5
Contact block 14 2NC	Contact block 15 2NO	Contact block 16 2NC	Contact block 18 1NO+1NC	Contact block 20 2NC+1NO	Contact block 21 3NC	Contact block 22 1NC+2NO	Contact block 33 1NC+1NO	Contact block 34 2NC
Contacts Pin no. NC (1°) 1-2 NC (2°) 3-4 ground 5	Contacts Pin no. NO (1°) 1-2 NO (2°) 3-4 ground 5	Contacts Pin no. NC, lever to the right 1-2 NC, lever to the left 3-4 ground 5	Contacts Pin no. NC 1-2 NO 3-4 ground 5	Contacts Pin no. NC 3-4 NC 5-6 NO 7-8 ground 1	Contacts Pin no. NC 3-4 NC 5-6 NC 7-8 ground 1	Contacts Pin no. NC 3-4 NO 5-6 NO 7-8 ground 1	Contacts Pin no. NC 1-2 NO 3-4 ground 5	Contacts Pin no. NC 1-2 NC 3-4 ground 5

Contact block E1
PNP



M12 connector, 5-pole

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

Contact type:

- R** = snap action
- L** = slow action
- LO** = slow action make before break
- LS** = slow action shifted
- LV** = slow action shifted and spaced
- LI** = slow action independent
- LA** = slow action close
- ⏏** = electronic PNP

Contact block

		With stainless steel roller on request	With external rubber gasket	With external rubber gasket
5	R FM 501-M2	1NO+1NC	FM 502-M2	1NO+1NC
6	L FM 601-M2	1NO+1NC	FM 602-M2	1NO+1NC
7	LO FM 701-M2	1NO+1NC	FM 702-M2	1NO+1NC
9	L FM 901-M2	2NC	FM 902-M2	2NC
10	L FM 1001-M2	2NO	FM 1002-M2	2NO
11	R FM 1101-M2	2NC	FM 1102-M2	2NC
12	R FM 1201-M2	2NO	FM 1202-M2	2NO
13	LV FM 1301-M2	2NC	FM 1302-M2	2NC
14	LS FM 1401-M2	2NC	FM 1402-M2	2NC
15	LS FM 1501-M2	2NO	FM 1502-M2	2NO
18	LA FM 1801-M2	1NO+1NC	FM 1802-M2	1NO+1NC
20	L FM 2001-M2	1NO+2NC	FM 2002-M2	1NO+2NC
21	L FM 2101-M2	3NC	FM 2102-M2	3NC
22	L FM 2201-M2	2NO+1NC	FM 2202-M2	2NO+1NC
2	R FM 201-M2	2x(1NO-1NC)	FM 202-M2	2x(1NO-1NC)
E1	⏏ FM E101-M2	1NO-1NC	FM E102-M2	1NO-1NC
Max. speed	page 215 - type 4	page 215 - type 3	page 215 - type 3	page 215 - type 5
Actuating force	8 N (25 N ⊕)	6 N (25 N ⊕)	4.3 N (25 N ⊕)	4.3 N (25 N ⊕)
Travel diagrams	page 216 - group 1	page 216 - group 2	page 216 - group 2	page 216 - group 1

	With stainless steel roller on request	With external rubber gasket	With external rubber gasket
5	R FM 505-M2	FM 5A5-M2	FM 507-M2
6	L FM 605-M2	FM 6A5-M2	FM 607-M2
7	LO FM 705-M2	FM 7A5-M2	FM 707-M2
9	L FM 905-M2	FM 9A5-M2	FM 907-M2
10	L FM 1005-M2	FM 10A5-M2	FM 1007-M2
11	R FM 1105-M2	FM 11A5-M2	FM 1107-M2
12	R FM 1205-M2	FM 12A5-M2	FM 1207-M2
13	LV FM 1305-M2	FM 13A5-M2	FM 1307-M2
14	LS FM 1405-M2	FM 14A5-M2	FM 1407-M2
15	LS FM 1505-M2	FM 15A5-M2	FM 1507-M2
18	LA FM 1805-M2	FM 18A5-M2	FM 1807-M2
20	L FM 2005-M2	FM 20A5-M2	FM 2007-M2
21	L FM 2105-M2	FM 21A5-M2	FM 2107-M2
22	L FM 2205-M2	FM 22A5-M2	FM 2207-M2
2	R FM 205-M2	FM 2A5-M2	FM 207-M2
E1	⏏ FM E105-M2	FM E1A5-M2	FM E107-M2
Max. speed	page 215 - type 3	page 215 - type 3	page 215 - type 3
Actuating force	6 N (25 N ⊕)	4.3 N (25 N ⊕)	4 N (25 N ⊕)
Travel diagrams	page 216 - group 2	page 216 - group 2	page 216 - group 3

All values in the drawings are in mm

Items with code on green background are stock items

Accessories See page 197

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



		With external rubber gasket			
Contact type:					
<ul style="list-style-type: none"> R = snap action L = slow action LO = slow action make before break LS = slow action shifted LV = slow action shifted and spaced LI = slow action independent LA = slow action close ⚡ = electronic PNP 					
Contact block					
5	R FM 508-M2 ⊕ 1NO+1NC	FM 512-M2 ⊕ 1NO+1NC	FM 513-M2 ⊕ 1NO+1NC	FM 514-M2 ⊕ 1NO+1NC	
6	L FM 608-M2 ⊕ 1NO+1NC	FM 612-M2 ⊕ 1NO+1NC	FM 613-M2 ⊕ 1NO+1NC	FM 614-M2 ⊕ 1NO+1NC	
7	LO FM 708-M2 ⊕ 1NO+1NC	FM 712-M2 ⊕ 1NO+1NC	FM 713-M2 ⊕ 1NO+1NC	FM 714-M2 ⊕ 1NO+1NC	
9	L FM 908-M2 ⊕ 2NC	FM 912-M2 ⊕ 2NC	FM 913-M2 ⊕ 2NC	FM 914-M2 ⊕ 2NC	
10	L FM 1008-M2 2NO	FM 1012-M2 2NO	FM 1013-M2 2NO	FM 1014-M2 2NO	
11	R FM 1108-M2 ⊕ 2NC	FM 1112-M2 ⊕ 2NC	FM 1113-M2 ⊕ 2NC	FM 1114-M2 ⊕ 2NC	
12	R FM 1208-M2 2NO	FM 1212-M2 2NO	FM 1213-M2 2NO	FM 1214-M2 2NO	
13	LV FM 1308-M2 ⊕ 2NC	FM 1312-M2 ⊕ 2NC	FM 1313-M2 ⊕ 2NC	FM 1314-M2 ⊕ 2NC	
14	LS FM 1408-M2 ⊕ 2NC	FM 1412-M2 ⊕ 2NC	FM 1413-M2 ⊕ 2NC	FM 1414-M2 ⊕ 2NC	
15	LS FM 1508-M2 2NO	FM 1512-M2 2NO	FM 1513-M2 2NO	FM 1514-M2 2NO	
18	LA FM 1808-M2 ⊕ 1NO+1NC	FM 1812-M2 ⊕ 1NO+1NC	FM 1813-M2 ⊕ 1NO+1NC	FM 1814-M2 ⊕ 1NO+1NC	
20	L FM 2008-M2 ⊕ 1NO+2NC	FM 2012-M2 ⊕ 1NO+2NC	FM 2013-M2 ⊕ 1NO+2NC	FM 2014-M2 ⊕ 1NO+2NC	
21	L FM 2108-M2 ⊕ 3NC	FM 2112-M2 ⊕ 3NC	FM 2113-M2 ⊕ 3NC	FM 2114-M2 ⊕ 3NC	
22	L FM 2208-M2 ⊕ 2NO+1NC	FM 2212-M2 ⊕ 2NO+1NC	FM 2213-M2 ⊕ 2NO+1NC	FM 2214-M2 ⊕ 2NO+1NC	
2	R FM 208-M2 2x(1NO-1NC)	FM 212-M2 2x(1NO-1NC)	FM 213-M2 2x(1NO-1NC)	FM 214-M2 2x(1NO-1NC)	
E1	⚡ FM E108-M2 1NO-1NC	FM E112-M2 1NO-1NC	FM E113-M2 1NO-1NC	FM E114-M2 1NO-1NC	
Max. speed	page 215 - type 4	page 215 - type 4	page 215 - type 2	page 215 - type 4	
Actuating force	8 N (25 N ⊕)	8 N (25 N ⊕)	8 N (25 N ⊕)	8 N (25 N ⊕)	
Travel diagrams	page 216 - group 1	page 216 - group 1	page 216 - group 1	page 216 - group 1	

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

All values in the drawings are in mm

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

Accessories See page 197

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

FM series position switches

Contact type:

- R** = snap action
- L** = slow action
- LO** = slow action make before break
- LS** = slow action shifted
- LV** = slow action shifted and spaced
- LI** = slow action independent
- LA** = slow action close
- △** = electronic PNP

Contact block

	With external rubber gasket	With Ø 20 mm stainless steel roller on request	Other rollers available. See on page 78	Square rod, 3x3 mm
5	FM 525-M2 1NO+1NC	FM 530-M2 1NO+1NC	FM 531-M2 1NO+1NC	FM 533-M2 1NO+1NC
6		FM 630-M2 1NO+1NC	FM 631-M2 1NO+1NC	FM 633-M2 1NO+1NC
7		FM 730-M2 1NO+1NC	FM 731-M2 1NO+1NC	FM 733-M2 1NO+1NC
9		FM 930-M2 2NC	FM 931-M2 2NC	FM 933-M2 2NC
10	FM 1025-M2 2NO	FM 1030-M2 2NO	FM 1031-M2 2NO	FM 1033-M2 2NO
11		FM 1130-M2 2NC	FM 1131-M2 2NC	FM 1133-M2 2NC
12	FM 1225-M2 2NO	FM 1230-M2 2NO	FM 1231-M2 2NO	FM 1233-M2 2NO
13		FM 1330-M2 2NC	FM 1331-M2 2NC	FM 1333-M2 2NC
14		FM 1430-M2 2NC	FM 1431-M2 2NC	FM 1433-M2 2NC
15		FM 1530-M2 2NO	FM 1531-M2 2NO	FM 1533-M2 2NO
16		FM 1630-M2 2NC	FM 1631-M2 2NC	FM 1633-M2 2NC
18	FM 1825-M2 1NO+1NC	FM 1830-M2 1NO+1NC	FM 1831-M2 1NO+1NC	FM 1833-M2 1NO+1NC
20	FM 2025-M2 1NO+2NC	FM 2030-M2 1NO+2NC	FM 2031-M2 1NO+2NC	FM 2033-M2 1NO+2NC
21	FM 2125-M2 3NC	FM 2130-M2 3NC	FM 2131-M2 3NC	FM 2133-M2 3NC
22	FM 2225-M2 2NO+1NC	FM 2230-M2 2NO+1NC	FM 2231-M2 2NO+1NC	FM 2233-M2 2NO+1NC
2	FM 225-M2 2x(1NO-1NC)	FM 230-M2 2x(1NO-1NC)	FM 231-M2 2x(1NO-1NC)	FM 233-M2 2x(1NO-1NC)
E1	FM E125-M2 1NO-1NC	FM E130-M2 1NO-1NC	FM E131-M2 1NO-1NC	FM E133-M2 1NO-1NC
Max. speed	1 m/s	page 215 - type 1	page 215 - type 1	1.5 m/s
Actuating force	0.12 Nm	0.06 Nm (0.25 Nm ⊕)	0.06 Nm (0.25 Nm ⊕)	0.06 Nm
Travel diagrams	page 216 - group 4	page 216 - group 5	page 216 - group 5	page 216 - group 5

	Round rod, Ø 3 mm, stainless steel	Other rollers available. See on page 78	Other rollers available. See on page 78
5	FM 534-M2 1NO+1NC	FM 550-M2 1NO+1NC	FM 551-M2 1NO+1NC
6	FM 634-M2 1NO+1NC	FM 650-M2 1NO+1NC	FM 651-M2 1NO+1NC
7	FM 734-M2 1NO+1NC	FM 750-M2 1NO+1NC	FM 751-M2 1NO+1NC
9	FM 934-M2 2NC	FM 950-M2 2NC	FM 951-M2 2NC
10	FM 1034-M2 2NO	FM 1050-M2 2NO	FM 1051-M2 2NO
11	FM 1134-M2 2NC	FM 1150-M2 2NC	FM 1151-M2 2NC
12	FM 1234-M2 2NO	FM 1250-M2 2NO	FM 1251-M2 2NO
13	FM 1334-M2 2NC	FM 1350-M2 2NC	FM 1351-M2 2NC
14	FM 1434-M2 2NC	FM 1450-M2 2NC	FM 1451-M2 2NC
15	FM 1534-M2 2NO	FM 1550-M2 2NO	FM 1551-M2 2NO
16	FM 1634-M2 2NC	FM 1650-M2 2NC	FM 1651-M2 2NC
18	FM 1834-M2 1NO+1NC	FM 1850-M2 1NO+1NC	FM 1851-M2 1NO+1NC
20	FM 2034-M2 1NO+2NC	FM 2050-M2 1NO+2NC	FM 2051-M2 1NO+2NC
21	FM 2134-M2 3NC	FM 2150-M2 3NC	FM 2151-M2 3NC
22	FM 2234-M2 2NO+1NC	FM 2250-M2 2NO+1NC	FM 2251-M2 2NO+1NC
2	FM 234-M2 2x(1NO-1NC)	FM 250-M2 2x(1NO-1NC)	FM 251-M2 2x(1NO-1NC)
E1	FM E134-M2 1NO-1NC	FM E150-M2 1NO-1NC	FM E151-M2 1NO-1NC
Max. speed	1.5 m/s	1.5 m/s	page 215 - type 1
Actuating force	0.06 Nm	0.06 Nm	0.06 Nm (0.25 Nm ⊕)
Travel diagrams	page 216 - group 5	page 216 - group 5	page 216 - group 5

All values in the drawings are in mm

Items with code on green background are stock items

Accessories See page 197

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



Contact type:

- R** = snap action
- L** = slow action
- LO** = slow action make before break
- LS** = slow action shifted
- LV** = slow action shifted and spaced
- LI** = slow action independent
- LA** = slow action close
- A** = electronic PNP

Contact block

	Porcelain roller	Other rollers available. See on page 78	Other rollers available. See on page 78	Other rollers available. See on page 78
5	R FM 553-E0M2V9 1NO+1NC	R FM 554-M2 1NO+1NC	R FM 555-M2 (1) 1NO+1NC	R FM 556-M2 1NO+1NC
6	L FM 653-E0M2V9 1NO+1NC	L FM 654-M2 1NO+1NC	L FM 655-M2 (1) 1NO+1NC	L FM 656-M2 1NO+1NC
7	LO FM 753-E0M2V9 1NO+1NC	LO FM 754-M2 1NO+1NC	LO FM 755-M2 (1) 1NO+1NC	LO FM 756-M2 1NO+1NC
9	L FM 953-E0M2V9 2NC	L FM 954-M2 2NC	L FM 955-M2 (1) 2NC	L FM 956-M2 2NC
10	L FM 1053-E0M2V9 2NO	L FM 1054-M2 2NO	L FM 1055-M2 2NO	L FM 1056-M2 2NO
11	R FM 1253-E0M2V9 2NO	R FM 1254-M2 2NO	R FM 1255-M2 2NO	R FM 1256-M2 2NO
13	LV FM 1353-E0M2V9 2NC	LV FM 1354-M2 2NC	LV FM 1355-M2 (1) 2NC	LV FM 1356-M2 2NC
14	LS FM 1453-E0M2V9 2NC	LS FM 1454-M2 2NC	LS FM 1455-M2 (1) 2NC	LS FM 1456-M2 2NC
15	LS FM 1553-E0M2V9 2NO	LS FM 1554-M2 2NO	LS FM 1555-M2 2NO	LS FM 1556-M2 2NO
16	LI FM 1653-E0M2V9 2NC	LI FM 1654-M2 2NC	LI FM 1655-M2 (1) 2NC	LI FM 1656-M2 2NC
18	LA FM 1853-E0M2V9 1NO+1NC	LA FM 1854-M2 1NO+1NC	LA FM 1855-M2 (1) 1NO+1NC	LA FM 1856-M2 1NO+1NC
20	L FM 2053-E0M2V9 1NO+2NC	L FM 2054-M2 1NO+2NC	L FM 2055-M2 (1) 1NO+2NC	L FM 2056-M2 1NO+2NC
21	L FM 2153-E0M2V9 3NC	L FM 2154-M2 3NC	L FM 2155-M2 (1) 3NC	L FM 2156-M2 3NC
22	L FM 2253-E0M2V9 2NO+1NC	L FM 2254-M2 2NO+1NC	L FM 2255-M2 (1) 2NO+1NC	L FM 2256-M2 2NO+1NC
2	R FM 253-E0M2 2x(1NO-1NC)	R FM 254-M2 2x(1NO-1NC)	R FM 255-M2 2x(1NO-1NC)	R FM 256-M2 2x(1NO-1NC)
E1	A FM E153-E0M2V9 1NO-1NC	A FM E154-M2 1NO-1NC	A FM E155-M2 1NO-1NC	A FM E156-M2 1NO-1NC
Max. speed	0.5 m/s	page 215 - type 1	page 215 - type 1	page 215 - type 1
Actuating 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 216 - group 6	page 216 - group 5	page 216 - group 5	page 216 - group 5

	Other rollers available. See on page 78	Glass fibre rod	Rope switch for signalling
5	R FM 557-M2 1NO+1NC	R FM 569-M2 1NO+1NC	R FM 576-M2 1NO+1NC
6	L FM 657-M2 1NO+1NC	L FM 669-M2 1NO+1NC	L FM 676-M2 1NO+1NC
7	LO FM 757-M2 1NO+1NC	LO FM 769-M2 1NO+1NC	LO FM 776-M2 1NO+1NC
9	L FM 957-M2 2NC	L FM 969-M2 2NC	L FM 976-M2 2NO
10	L FM 1057-M2 2NO	L FM 1069-M2 2NO	L FM 1076-M2 2NC
11	R FM 1157-M2 2NC	R FM 1169-M2 2NC	R FM 1176-M2 2NO
12	R FM 1257-M2 2NO	R FM 1269-M2 2NO	R FM 1276-M2 2NC
13	LV FM 1357-M2 2NC	LV FM 1369-M2 2NC	LV FM 1376-M2 2NO
14	LS FM 1457-M2 2NC	LS FM 1469-M2 2NC	LS FM 1476-M2 2NO
15	LS FM 1557-M2 2NO	LS FM 1569-M2 2NO	LS FM 1576-M2 2NC
16	LI FM 1657-M2 2NC	LI FM 1669-M2 2NC	
18	LA FM 1857-M2 1NO+1NC	LA FM 1869-M2 1NO+1NC	LA FM 1876-M2 1NO+1NC
20	L FM 2057-M2 1NO+2NC	L FM 2069-M2 1NO+2NC	L FM 2076-M2 2NO+1NC
21	L FM 2157-M2 3NC	L FM 2169-M2 3NC	L FM 2176-M2 3NO
22	L FM 2257-M2 2NO+1NC	L FM 2269-M2 2NO+1NC	L FM 2276-M2 1NO+2NC
2	R FM 257-M2 2x(1NO-1NC)	R FM 269-M2 2x(1NO-1NC)	R FM 276-M2 2x(1NO-1NC)
E1	A FM E157-M2 1NO-1NC	A FM E169-M2 1NO-1NC	
Max. speed	page 215 - type 1	1.5 m/s	0.5 m/s
Actuating force	0.06 Nm (0.25 Nm ⊕)	0.06 Nm	initial 20 N - final 40 N
Travel diagrams	page 216 - group 5	page 216 - group 5	page 216 - group 7

(1) Positive opening only with actuator set to max. See page 77.

All values in the drawings are in mm

Accessories See page 197

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

FM series position switches with reset



Pizzato Elettrica has developed a reset device code W3 to make perfectly simultaneous the actuator and the contact block tripping. This new device consists in a block to be mounted between the body and the head of the switch that can be rotated independently from the head. This new device offers the following advantages:

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

Contact type:

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

		With stainless steel roller on request	With stainless steel roller on request	With stainless steel roller on request
Contact block				
6	L FM 601-W3M2	1NO+1NC	1NO+1NC	1NO+1NC
9	L FM 901-W3M2	2NC	2NC	2NC
10	L FM 1001-W3M2	2NO	2NO	2NO
20	L FM 2001-W3M2	1NO+2NC	1NO+2NC	1NO+2NC
21	L FM 2101-W3M2	3NC	3NC	3NC
22	L FM 2201-W3M2	2NO+1NC	2NO+1NC	2NO+1NC
2	R FM 201-W3M2	2NO+2NC	2NO+2NC	2NO+2NC
Max. speed	page 215 - type 4	page 215 - type 3	page 215 - type 3	page 215 - type 3
Actuating force	4.5 N (25 N ⊕)	4 N (25 N ⊕)	4 N (25 N ⊕)	2.5 N (25 N ⊕)
Travel diagrams	page 217 - group 1	page 217 - group 2	page 217 - group 2	page 217 - group 3

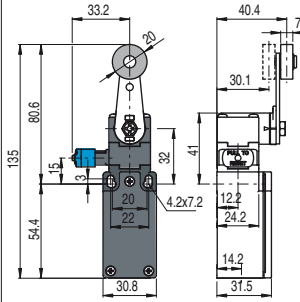
		With Ø 20 mm stainless steel roller on request	Other rollers available. See on page 78	Other rollers available. See on page 78
Contact block				
6	L FM 615-W3M2R28	1NO+1NC	1NO+1NC	1NO+1NC
9	L FM 915-W3M2R28	2NC	2NC	2NC
10	L FM 1015-W3M2R28	2NO	2NO	2NO
20	L FM 2015-W3M2R28	1NO+2NC	1NO+2NC	1NO+2NC
21	L FM 2115-W3M2R28	3NC	3NC	3NC
22	L FM 2215-W3M2R28	2NO+1NC	2NO+1NC	2NO+1NC
2	R FM 215-W3M2R28	2NO+2NC	2NO+2NC	2NO+2NC
Max. speed	page 215 - type 2	page 215 - type 1	page 215 - type 1	page 215 - type 1
Actuating force	4.5 N (25 N ⊕)	0.07 Nm (0.25 Nm ⊕)	0.07 Nm (0.25 Nm ⊕)	0.07 Nm (0.25 Nm ⊕)
Travel diagrams	page 217 - group 1	page 217 - group 4	page 217 - group 4	page 217 - group 4

All values in the drawings are in mm

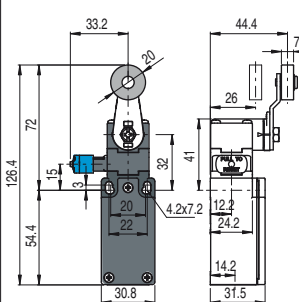
Contact type:

R = snap action
L = slow action

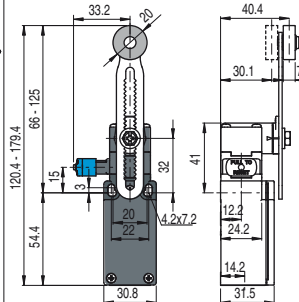
Other rollers available. See on page 78



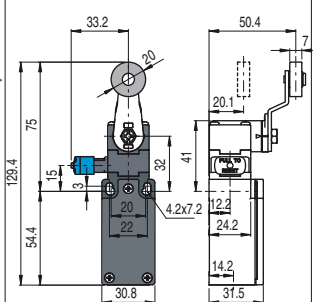
Other rollers available. See on page 78



Other rollers available. See on page 78



Other rollers available. See on page 78

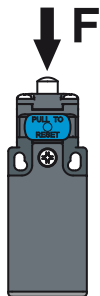


Contact block

6	L	FM 652-W3M2	⊕ 1NO+1NC	FM 654-W3M2	⊕ 1NO+1NC	FM 656-W3M2	⊕ 1NO+1NC	FM 657-W3M2	⊕ 1NO+1NC
9	L	FM 952-W3M2	⊕ 2NC	FM 954-W3M2	⊕ 2NC	FM 956-W3M2	⊕ 2NC	FM 957-W3M2	⊕ 2NC
10	L	FM 1052-W3M2	2NO	FM 1054-W3M2	2NO	FM 1056-W3M2	2NO	FM 1057-W3M2	2NO
20	L	FM 2052-W3M2	⊕ 1NO+2NC	FM 2054-W3M2	⊕ 1NO+2NC	FM 2056-W3M2	⊕ 1NO+2NC	FM 2057-W3M2	⊕ 1NO+2NC
21	L	FM 2152-W3M2	⊕ 3NC	FM 2154-W3M2	⊕ 3NC	FM 2156-W3M2	⊕ 3NC	FM 2157-W3M2	⊕ 3NC
22	L	FM 2252-W3M2	⊕ 2NO+1NC	FM 2254-W3M2	⊕ 2NO+1NC	FM 2256-W3M2	⊕ 2NO+1NC	FM 2257-W3M2	⊕ 2NO+1NC
2	R	FM 252-W3M2	2NO+2NC	FM 254-W3M2	2NO+2NC	FM 256-W3M2	2NO+2NC	FM 257-W3M2	2NO+2NC
Max. speed		page 215 - type 1		page 215 - type 1		page 215 - type 1		page 215 - type 1	
Actuating force		0.07 Nm (0.25 Nm ⊕)		0.07 Nm (0.25 Nm ⊕)		0.07 Nm (0.25 Nm ⊕)		0.07 Nm (0.25 Nm ⊕)	
Travel diagrams		page 217 - group 4		page 217 - group 4		page 217 - group 4		page 217 - group 4	

All values in the drawings are in mm

Increased actuating force



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

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

To order the switch with reset and increased actuating force, replace the -W3 option with -W4 in the order code.

Example: FM 601-W3M2 → FM 601-W4M2

Position switches with swivelling lever without actuator

All values in the drawings are in mm

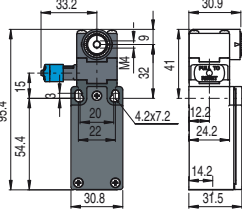
Contact type:

- R** = snap action
- L** = slow action
- LO** = slow action make before break
- LS** = slow action shifted
- LV** = slow action shifted and spaced
- LI** = slow action independent
- LA** = slow action close
- E** = electronic PNP

Contact block

Contact block	Symbol	Model	Configuration	Actuating force	Travel diagrams		
5	R	FM 538-M2	1NO+1NC	0.06 Nm (0.25 Nm)	page 216 - group 5		
6	L	FM 638-M2	1NO+1NC				
7	LO	FM 738-M2	1NO+1NC				
9	L	FM 938-M2	2NC				
10	L	FM 1038-M2	2NO				
11	R	FM 1138-M2	2NC				
12	R	FM 1238-M2	2NO				
13	LV	FM 1338-M2	2NC				
14	LS	FM 1438-M2	2NC				
15	LS	FM 1538-M2	2NO				
16	LI	FM 1638-M2	2NC				
18	LA	FM 1838-M2	1NO+1NC				
20	L	FM 2038-M2	1NO+2NC			0.07 Nm (0.25 Nm)	page 217 - group 4
21	L	FM 2138-M2	3NC				
22	L	FM 2238-M2	2NO+1NC				
2	R	FM 238-M2	2x(1NO-1NC)				
E1	E	FM E138-M2	1NO-1NC				

With manual reset knob



IMPORTANT

For safety applications: join only switches and actuators marked with symbol next to the product code. For more information about safety applications see details on page 211.

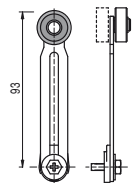
Separate actuators

All values in the drawings are in mm

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

Technopolymer roller Ø 18 mm	Technopolymer roller Ø 18 mm	Adjustable square rod, 3x3x125 mm	Flexible rod with pointed end	Adjustable round rod Ø 3 x 125 mm	Technopolymer roller Ø 20 mm	
VF LE30	VF LE31	VF LE33	VF LE34	VF LE50	VF LE51	
Technopolymer roller Ø 20 mm	Porcelain roller	Technopolymer roller Ø 20 mm	Adjustable actuator with technopolymer roller	Adjustable safety actuator with technopolymer roller	Technopolymer roller Ø 20 mm	Adjustable glass fibre rod
VF LE52	VF LE53 ⁽²⁾	VF LE54	VF LE55 ⁽¹⁾	VF LE56	VF LE57	VF LE69

- ⁽¹⁾ Actuator VF LE55 can only be used in safety applications if adjusted to its max. length, as shown in the figure to the right. If an adjustable lever is required for safety applications, use the VF LE56 adjustable safety lever.
- ⁽²⁾ The position switch obtained by assembling switch FM •38-M2 (e.g. FM 538-M2, FM 638-M2...) with actuator VF L53 will not present the same travel diagrams and actuating forces as switch FM •53-E0M2V9 (e.g. FM 553-E0M2V9, FM 653-E0M2V9...).
- ⁽⁴⁾ The actuator cannot be rotated to the inside because it will hit the switch head upon actuation.



Items with code on green background are stock items

Accessories See page 197

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



Special separate actuators

All values in the drawings are in mm

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

Stainless steel rollers, Ø 20 mm

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

Technopolymer rollers, Ø 35 mm

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

Rubber rollers, Ø 40 mm

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

Rubber rollers, Ø 50 mm

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

Protruding rubber rollers, Ø 50 mm

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

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

Accessories See page 197

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