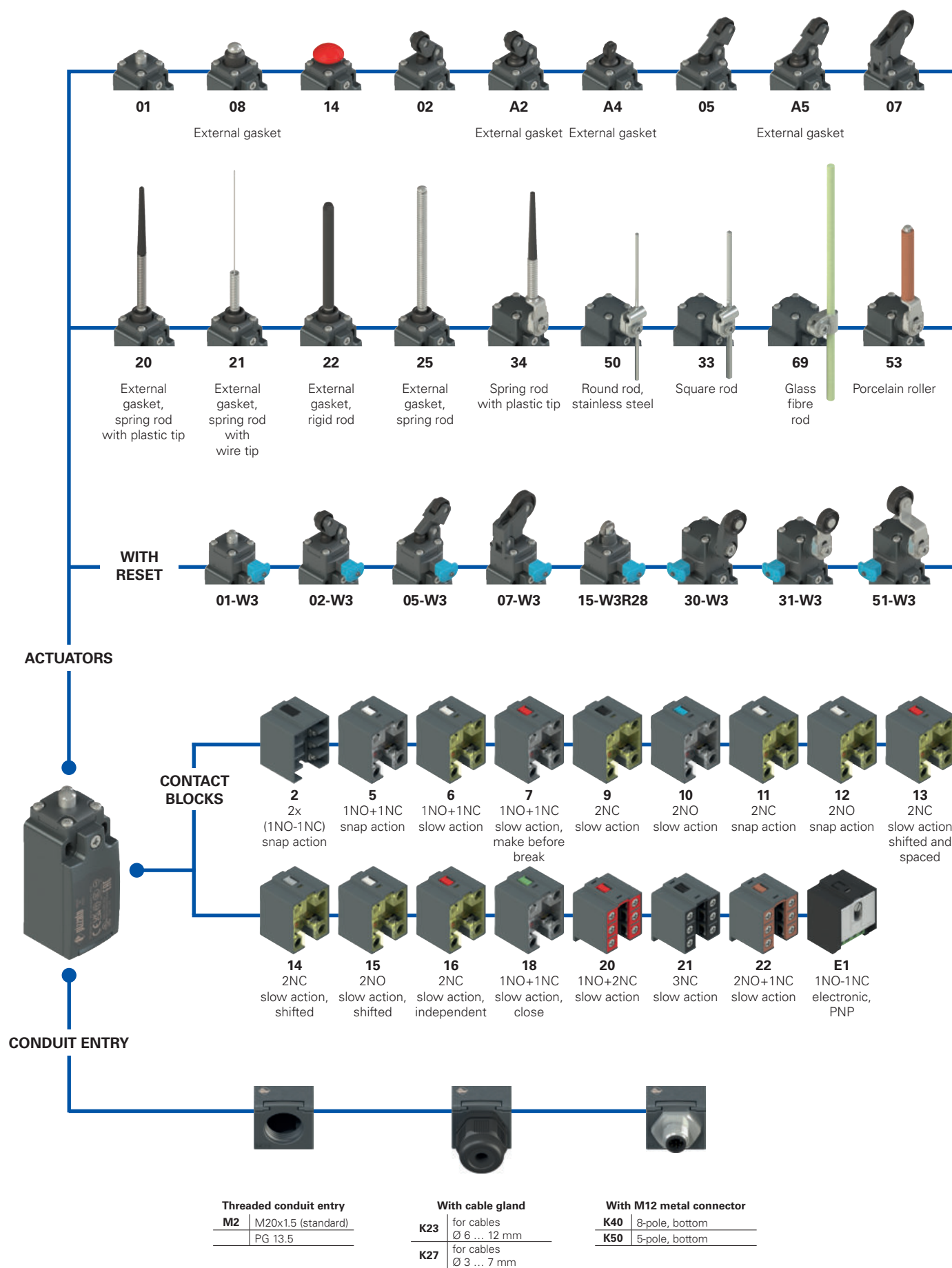
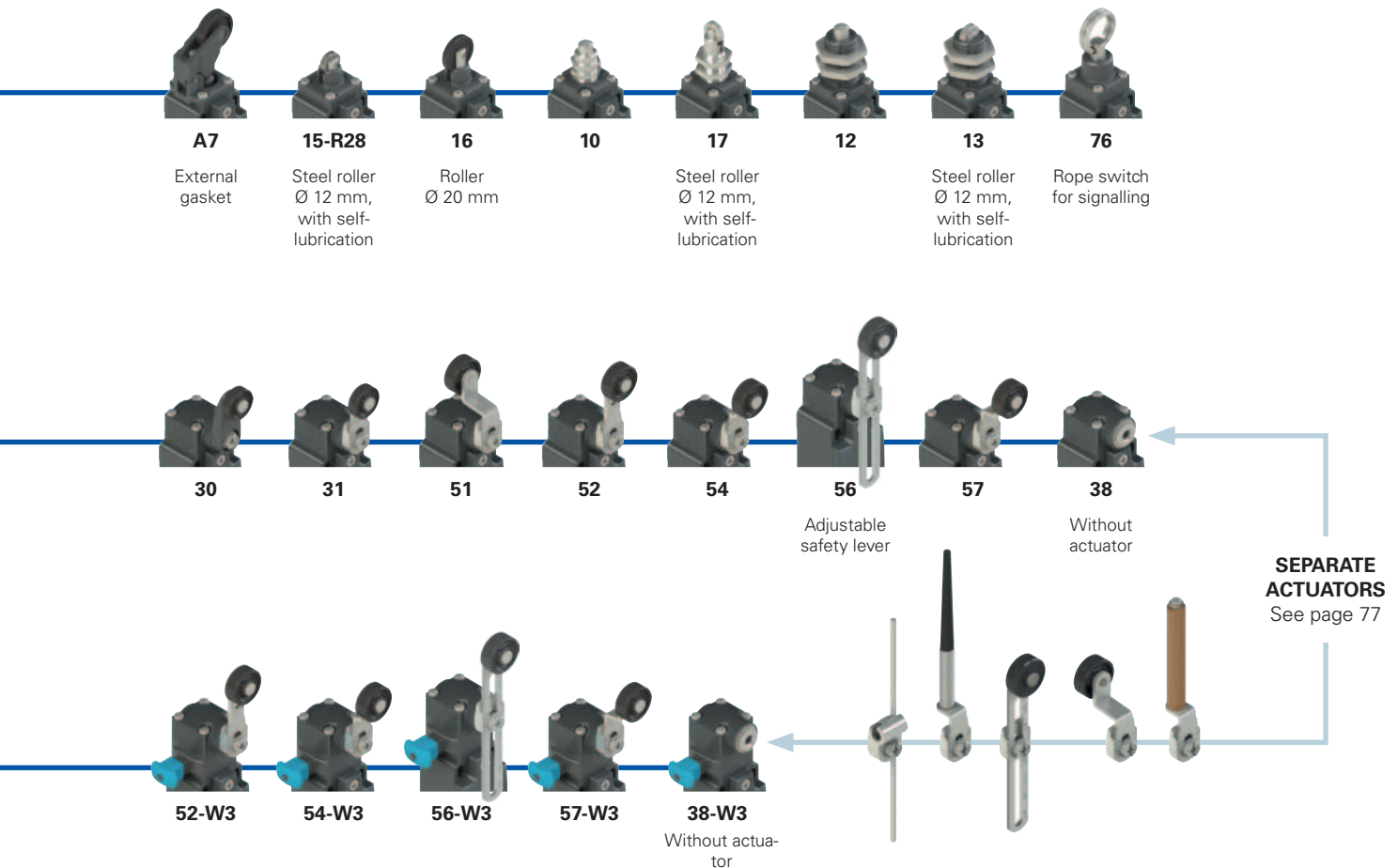


Selection diagram





Code structure

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

article	options	options	Ambient temperature
FM 502-W3GM2K50R23T6			
FM metal, one conduit entry			-25°C ... +80°C (standard)
5 1NO+1NC, snap action			T6 -40°C ... +80°C
6 1NO+1NC, slow action			
7 1NO+1NC, slow action, make before break			
...			
Actuators			
01 short plunger			
02 roller lever			
05 angled lever with roller			
...			
Reset			
without reset (standard)			
W3 simultaneous reset			
W4 simultaneous reset, increased force			
Contact type			
silver contacts (standard)			
G silver contacts, 1 µm gold coating			
G1 silver contacts, 2.5 µm gold coating (except contact blocks 2, 20, 21, 22)			
Pre-installed cable glands or connectors			
no cable gland or connector (standard)			
K23 cable gland for cables Ø 6 ... 12 mm			
K50 M12 metal connector, 5-pole			
For the complete list of possible combinations please contact our technical department.			
Threaded conduit entry			
M2 M20x1.5 (standard)			
PG 13.5			
Rollers			
standard roller			
R28 Steel, with self-lubrication, Ø 12 mm (for actuators A4, 15)			
R44 316L stainless steel, Ø 12 mm (for actuators A4, 13, 15)			
R23 Steel, with self-lubrication, Ø 14 mm (for actuators A2, 02, A5, 05, 30, 31, 51, 52, 54, 55, 56, 57)			
R43 316L stainless steel, Ø 14 mm (for actuators A2, 02, A5, 05, 30, 31, 51, 52, 54, 55, 56, 57)			
R24 steel, with self-lubrication, Ø 20 mm (for actuators 30, 31, 51, 52, 54, 55, 56, 57)			
R41 316L stainless steel, Ø 20 mm (for actuators 30, 31, 51, 52, 54, 55, 56, 57)			
R36 steel, with self-lubrication, Ø 16 mm (for actuators 30, 31, 51, 52, 54, 55, 56, 57)			
R25 technopolymer, Ø 35 mm (for actuators 30, 31, 51, 52, 54, 55, 56, 57)			
R5 rubber, Ø 40 mm (for actuators 30, 31, 51, 52, 54, 55, 56, 57)			
R26 rubber, Ø 50 mm (for actuators 30, 31, 51, 52, 54, 55, 56, 57)			
R27 rubber, protruding, Ø 50 mm (for actuators 55, 56)			



Main features

- Metal housing, one conduit entry
- Hinged cover, fixed with single captive screw
- Protection degree IP67 and up to IP69K for actuators without external gasket
- 17 contact blocks available
- 43 actuators available
- Versions with M12 connector
- Versions with gold-plated silver contacts

Quality marks:



IMQ approval: EG610
 UL approval: E131787
 CCC approval: 2024010305656753
 EAC approval: RU Д-IT.PA07.B.37848/24

Technical data

Housing

Metal housing, powder-coated

One threaded conduit entry:

M20x1.5 (standard)

Protection degree:

IP67 acc. to EN 60529 (with cable gland of equal or higher protection degree)

Protection degree with actuators 01, 02, 05, 07, 10, 12, 13, 14, 15, 15-R28, 16, 17, 30, 31, 33, 34, 38, 50, 51, 52, 53, 54, 56, 57, 69, 76

IP69K acc. to ISO 20653 (cable gland of equal or higher protection degree)

General data

Ambient temperature:

-25°C ... +80°C (standard)

-40°C ... +80°C (T6 option)

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 221

Wire cross-sections and

wire stripping lengths:

see page 239

In compliance with standards:

IEC 60947-5-1, EN 60947-5-1, IEC 60947-1, EN 60947-1, EN 50047, IEC 60204-1, EN 60204-1, EN ISO 14119, EN ISO 12100, IEC 60529, EN 60529, EN IEC 63000, UL 508, CSA C22.2 No. 14.

Approvals:

IEC 60947-5-1, UL 508, CSA C22.2 No. 14, GB/T14048.5.

Compliance with the requirements of:

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

RoHS Directive 2011/65/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 $\ominus$ symbol beside 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 222. 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 chapter Utilization requirements from page 217 to page 232.

Electrical data		Utilization category			
without connector	Thermal current (I_{th}):	10 A	Alternating current: AC15 (50÷60 Hz)		
	Rated insulation voltage (U_i):	500 Vac 600 Vdc	Ue (V)	250	400
		400 Vac 500 Vdc	le (A)	6	4
		(contact blocks 2, 11, 12, 20, 21, 22)			1
with M12 connector, 5-pole	Rated impulse withstand voltage (U_{imp}):	6 kV	Direct current: DC13		
		4 kV (contact blocks 20, 21, 22)	Ue (V)	24	125
	Conditional short circuit current:	1000 A acc. to EN 60947-5-1	le (A)	3	0.55
	Protection against short circuits:	type aM fuse 10 A 500 V			0.3
with M12 connector, 8-pole	Pollution degree:	3	Alternating current: AC15 (50÷60 Hz)		
	Thermal current (I_{th}):	4 A	Ue (V)	24	120
	Rated insulation voltage (U_i):	250 Vac 300 Vdc	le (A)	4	4
	Protection against short circuits:	type gG fuse 4 A 500 V	Direct current: DC13		
with M12 connector, 8-pole	Pollution degree:	3	Ue (V)	24	125
	Thermal current (I_{th}):	2 A	le (A)	3	0.55
	Rated insulation voltage (U_i):	30 Vac 36 Vdc			0.3
	Protection against short circuits:	type gG fuse 2 A 500 V	Direct current: DC13		
with M12 connector, 8-pole	Pollution degree:	3	Ue (V)	24	
	Thermal current (I_{th}):	2 A	le (A)	2	
	Rated insulation voltage (U_i):	30 Vac 36 Vdc	Direct current: DC13		
	Protection against short circuits:	type gG fuse 2 A 500 V			
with M12 connector, 8-pole	Pollution degree:	3	Ue (V)	24	
	Thermal current (I_{th}):	2 A	le (A)	2	
	Rated insulation voltage (U_i):	30 Vac 36 Vdc	Direct current: DC13		
	Protection against short circuits:	type gG fuse 2 A 500 V			
with M12 connector, 8-pole	Pollution degree:	3	Ue (V)	24	
	Thermal current (I_{th}):	2 A	le (A)	2	
	Rated insulation voltage (U_i):	30 Vac 36 Vdc	Direct current: DC13		
	Protection against short circuits:	type gG fuse 2 A 500 V			
with M12 connector, 8-pole	Pollution degree:	3	Ue (V)	24	
	Thermal current (I_{th}):	2 A	le (A)	2	
	Rated insulation voltage (U_i):	30 Vac 36 Vdc	Direct current: DC13		
	Protection against short circuits:	type gG fuse 2 A 500 V			



Features approved by IMO

Rated insulation voltage (U_i): 500 Vac
400 Vac (for contact blocks 2, 11, 12, 20, 21, 22, 28, 29, 30, 37, 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, 28, 29, 30, 33, 34)

Protection degree of the housing: IP67

MV terminals (screw terminals)

Pollution degree: 3

Utilization category: AC15

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

Operating current (I_o): 3 A

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

Positive opening of contacts on contact blocks 5, 6, 7, 8, 9, 11, 13, 14, 16, 17, 18, 19, 20, 21, 22, 28, 29, 30, 33, 34, 37, 38, 39, 66.

In compliance with standards: EN 60947-1, EN 60947-5-1, 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

Electrical Ratings: Q300 pilot duty (69 VA, 125-250 V dc)
A600 pilot duty (720 VA, 120-600 V ac)

Environmental Ratings: Types 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).

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

Wiring diagram for M12 connectors

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

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

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
- A** = electronic, PNP

Contact block

2		FM 201-M2	2x(1NO-1NC)	FM 202-M2	2x(1NO-1NC)	FM 2A2-M2	2x(1NO-1NC)	FM 2A4-M2	2x(1NO-1NC)
5		FM 501-M2	 1NO+1NC	FM 502-M2	 1NO+1NC	FM 5A2-M2	 1NO+1NC	FM 5A4-M2	 1NO+1NC
6		FM 601-M2	 1NO+1NC	FM 602-M2	 1NO+1NC	FM 6A2-M2	 1NO+1NC	FM 6A4-M2	 1NO+1NC
7		FM 701-M2	 1NO+1NC	FM 702-M2	 1NO+1NC	FM 7A2-M2	 1NO+1NC	FM 7A4-M2	 1NO+1NC
9		FM 901-M2	 2NC	FM 902-M2	 2NC	FM 9A2-M2	 2NC	FM 9A4-M2	 2NC
10		FM 1001-M2	2NO	FM 1002-M2	2NO	FM 10A2-M2	2NO	FM 10A4-M2	2NO
11		FM 1101-M2	 2NC	FM 1102-M2	 2NC	FM 11A2-M2	 2NC	FM 11A4-M2	 2NC
12		FM 1201-M2	2NO	FM 1202-M2	2NO	FM 12A2-M2	2NO	FM 12A4-M2	2NO
13		FM 1301-M2	 2NC	FM 1302-M2	 2NC	FM 13A2-M2	 2NC	FM 13A4-M2	 2NC
14		FM 1401-M2	 2NC	FM 1402-M2	 2NC	FM 14A2-M2	 2NC	FM 14A4-M2	 2NC
15		FM 1501-M2	2NO	FM 1502-M2	2NO	FM 15A2-M2	2NO	FM 15A4-M2	2NO
18		FM 1801-M2	 1NO+1NC	FM 1802-M2	 1NO+1NC	FM 18A2-M2	 1NO+1NC	FM 18A4-M2	 1NO+1NC
20		FM 2001-M2	 1NO+2NC	FM 2002-M2	 1NO+2NC	FM 20A2-M2	 1NO+2NC	FM 20A4-M2	 1NO+2NC
21		FM 2101-M2	 3NC	FM 2102-M2	 3NC	FM 21A2-M2	 3NC	FM 21A4-M2	 3NC
22		FM 2201-M2	 2NO+1NC	FM 2202-M2	 2NO+1NC	FM 22A2-M2	 2NO+1NC	FM 22A4-M2	 2NO+1NC
E1		FM E101-M2	1NO-1NC	FM E102-M2	1NO-1NC	FM E1A2-M2	1NO-1NC	FM E1A4-M2	1NO-1NC
Max. speed		page 221 - type 4		page 221 - type 3		page 221 - type 3		page 221 - 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 222 - group 1		page 222 - group 2		page 222 - group 2		page 222 - group 1	

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

2		FM 205-M2	2x(1NO-1NC)	FM 2A5-M2	2x(1NO-1NC)	FM 207-M2	2x(1NO-1NC)	FM 2A7-M2	2x(1NO-1NC)
5		FM 505-M2	 1NO+1NC	FM 5A5-M2	 1NO+1NC	FM 507-M2	 1NO+1NC	FM 5A7-M2	 1NO+1NC
6		FM 605-M2	 1NO+1NC	FM 6A5-M2	 1NO+1NC	FM 607-M2	 1NO+1NC	FM 6A7-M2	 1NO+1NC
7		FM 705-M2	 1NO+1NC	FM 7A5-M2	 1NO+1NC	FM 707-M2	 1NO+1NC	FM 7A7-M2	 1NO+1NC
9		FM 905-M2	 2NC	FM 9A5-M2	 2NC	FM 907-M2	 2NC	FM 9A7-M2	 2NC
10		FM 1005-M2	2NO	FM 10A5-M2	2NO	FM 1007-M2	2NO	FM 10A7-M2	2NO
11		FM 1105-M2	 2NC	FM 11A5-M2	 2NC	FM 1107-M2	 2NC	FM 11A7-M2	 2NC
12		FM 1205-M2	2NO	FM 12A5-M2	2NO	FM 1207-M2	2NO	FM 12A7-M2	2NO
13		FM 1305-M2	 2NC	FM 13A5-M2	 2NC	FM 1307-M2	 2NC	FM 13A7-M2	 2NC
14		FM 1405-M2	 2NC	FM 14A5-M2	 2NC	FM 1407-M2	 2NC	FM 14A7-M2	 2NC
15		FM 1505-M2	2NO	FM 15A5-M2	2NO	FM 1507-M2	2NO	FM 15A7-M2	2NO
18		FM 1805-M2	 1NO+1NC	FM 18A5-M2	 1NO+1NC	FM 1807-M2	 1NO+1NC	FM 18A7-M2	 1NO+1NC
20		FM 2005-M2	 1NO+2NC	FM 20A5-M2	 1NO+2NC	FM 2007-M2	 1NO+2NC	FM 20A7-M2	 1NO+2NC
21		FM 2105-M2	 3NC	FM 21A5-M2	 3NC	FM 2107-M2	 3NC	FM 21A7-M2	 3NC
22		FM 2205-M2	 2NO+1NC	FM 22A5-M2	 2NO+1NC	FM 2207-M2	 2NO+1NC	FM 22A7-M2	 2NO+1NC
E1		FM E105-M2	1NO-1NC	FM E1A5-M2	1NO-1NC	FM E107-M2	1NO-1NC	FM E1A7-M2	1NO-1NC
Max. speed		page 221 - type 3		page 221 - type 3		page 221 - type 3		page 221 - type 3	
Actuating force		6 N (25 N )		4.3 N (25 N )		4 N (25 N )		3 N (25 N )	
Travel diagrams		page 222 - group 2		page 222 - group 2		page 222 - group 3		page 222 - group 3	

All values in the drawings are in mm

Accessories See page 195

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



Contact type	External gasket		Secured only by means of threaded head in vertical position	
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				
2 R	FM 208-M2	2x(1NO-1NC)	FM 210-M2	2x(1NO-1NC)
5 R	FM 508-M2	1NO+1NC	FM 510-M2	1NO+1NC
6 L	FM 608-M2	1NO+1NC	FM 610-M2	1NO+1NC
7 LO	FM 708-M2	1NO+1NC	FM 710-M2	1NO+1NC
9 L	FM 908-M2	2NC	FM 910-M2	2NC
10 L	FM 1008-M2	2NO	FM 1010-M2	2NO
11 R	FM 1108-M2	2NC	FM 1110-M2	2NC
12 R	FM 1208-M2	2NO	FM 1210-M2	2NO
13 LV	FM 1308-M2	2NC	FM 1310-M2	2NC
14 LS	FM 1408-M2	2NC	FM 1410-M2	2NC
15 LS	FM 1508-M2	2NO	FM 1510-M2	2NO
18 LA	FM 1808-M2	1NO+1NC	FM 1810-M2	1NO+1NC
20 L	FM 2008-M2	1NO+2NC	FM 2010-M2	1NO+2NC
21 L	FM 2108-M2	3NC	FM 2110-M2	3NC
22 L	FM 2208-M2	2NO+1NC	FM 2210-M2	2NO+1NC
E1	FM E108-M2	1NO-1NC	FM E110-M2	1NO-1NC
Max. speed	page 221 - type 4		page 221 - type 4	
Actuating force	8 N (25 N)		8 N (25 N)	
Travel diagrams	page 222 - group 1		page 222 - group 1	

Contact type	External gasket		Secured only by means of threaded head in vertical position	
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				
2 R	FM 214-M2	2x(1NO-1NC)	FM 215-M2R28	2x(1NO-1NC)
5 R	FM 514-M2	1NO+1NC	FM 515-M2R28	1NO+1NC
6 L	FM 614-M2	1NO+1NC	FM 615-M2R28	1NO+1NC
7 LO	FM 714-M2	1NO+1NC	FM 715-M2R28	1NO+1NC
9 L	FM 914-M2	2NC	FM 915-M2R28	2NC
10 L	FM 1014-M2	2NO	FM 1015-M2R28	2NO
11 R	FM 1114-M2	2NC	FM 1115-M2R28	2NC
12 R	FM 1214-M2	2NO	FM 1215-M2R28	2NO
13 LV	FM 1314-M2	2NC	FM 1315-M2R28	2NC
14 LS	FM 1414-M2	2NC	FM 1415-M2R28	2NC
15 LS	FM 1514-M2	2NO	FM 1515-M2R28	2NO
18 LA	FM 1814-M2	1NO+1NC	FM 1815-M2R28	1NO+1NC
20 L	FM 2014-M2	1NO+2NC	FM 2015-M2R28	1NO+2NC
21 L	FM 2114-M2	3NC	FM 2115-M2R28	3NC
22 L	FM 2214-M2	2NO+1NC	FM 2215-M2R28	2NO+1NC
E1	FM E114-M2	1NO-1NC	FM E115-M2R28	1NO-1NC
Max. speed	page 221 - type 4		page 221 - type 2	
Actuating force	8 N (25 N)		8 N (25 N)	
Travel diagrams	page 222 - group 1		page 222 - group 1	

All values in the drawings are in mm

Accessories See page 195

➔ 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
 = electronic, PNP

Contact block

	External gasket Spring rod	External gasket Spring rod	External gasket Rigid rod	External gasket Spring rod
2 R	FM 220-M2 2x(1NO-1NC)	FM 221-M2 2x(1NO-1NC)	FM 222-M2 2x(1NO-1NC)	FM 225-M2 2x(1NO-1NC)
5 R	FM 520-M2 1NO+1NC	FM 521-M2 1NO+1NC	/	FM 525-M2 1NO+1NC
6 L	/	/	/	/
7 LO	/	/	/	/
9 L	/	/	/	/
10 L	FM 1020-M2 2NO	FM 1021-M2 2NO	FM 1022-M2 2NO	FM 1025-M2 2NO
11 R	/	/	/	/
12 R	FM 1220-M2 2NO	FM 1221-M2 2NO	FM 1222-M2 2NO	FM 1225-M2 2NO
13 LV	/	/	/	/
14 LS	/	/	/	/
15 LS	/	/	/	/
16 LI	/	/	/	/
18 LA	FM 1820-M2 1NO+1NC	FM 1821-M2 1NO+1NC	FM 1822-M2 1NO+1NC	FM 1825-M2 1NO+1NC
20 L	FM 2020-M2 1NO+2NC	FM 2021-M2 1NO+2NC	FM 2022-M2 1NO+2NC	FM 2025-M2 1NO+2NC
21 L	FM 2120-M2 3NC	FM 2121-M2 3NC	FM 2122-M2 3NC	FM 2125-M2 3NC
22 L	FM 2220-M2 2NO+1NC	FM 2221-M2 2NO+1NC	FM 2222-M2 2NO+1NC	FM 2225-M2 2NO+1NC
E1 	FM E120-M2 1NO-1NC	FM E121-M2 1NO-1NC	FM E122-M2 1NO-1NC	FM E125-M2 1NO-1NC
Max. speed	1 m/s	1 m/s	1 m/s	1 m/s
Actuating force	0.07 Nm	0.07 Nm	0.12 Nm (0.25 Nm )	0.12 Nm
Travel diagrams	page 222 - group 4	page 222 - group 4	page 222 - group 4	page 222 - group 4

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 Ø 20 mm steel roller with self-lubrication or 316L stainless steel on request	Other rollers available. See page 78	Square rod, 3x3 mm	Spring rod
2 R	FM 230-M2 2x(1NO-1NC)	FM 231-M2 2x(1NO-1NC)	FM 233-M2 2x(1NO-1NC)	FM 234-M2 2x(1NO-1NC)
5 R	FM 530-M2 1NO+1NC	FM 531-M2 1NO+1NC	FM 533-M2 1NO+1NC	FM 534-M2 1NO+1NC
6 L	FM 630-M2 1NO+1NC	FM 631-M2 1NO+1NC	FM 633-M2 1NO+1NC	FM 634-M2 1NO+1NC
7 LO	FM 730-M2 1NO+1NC	FM 731-M2 1NO+1NC	FM 733-M2 1NO+1NC	FM 734-M2 1NO+1NC
9 L	FM 930-M2 2NC	FM 931-M2 2NC	FM 933-M2 2NC	FM 934-M2 2NC
10 L	FM 1030-M2 2NO	FM 1031-M2 2NO	FM 1033-M2 2NO	FM 1034-M2 2NO
11 R	FM 1130-M2 2NC	FM 1131-M2 2NC	FM 1133-M2 2NC	FM 1134-M2 2NC
12 R	FM 1230-M2 2NO	FM 1231-M2 2NO	FM 1233-M2 2NO	FM 1234-M2 2NO
13 LV	FM 1330-M2 2NC	FM 1331-M2 2NC	FM 1333-M2 2NC	FM 1343-M2 2NC
14 LS	FM 1430-M2 2NC	FM 1431-M2 2NC	FM 1433-M2 2NC	FM 1434-M2 2NC
15 LS	FM 1530-M2 2NO	FM 1531-M2 2NO	FM 1533-M2 2NO	FM 1534-M2 2NO
16 LI	FM 1630-M2 2NC	FM 1631-M2 2NC	FM 1633-M2 2NC	FM 1634-M2 2NC
18 LA	FM 1830-M2 1NO+1NC	FM 1831-M2 1NO+1NC	FM 1833-M2 1NO+1NC	FM 1834-M2 1NO+1NC
20 L	FM 2030-M2 1NO+2NC	FM 2031-M2 1NO+2NC	FM 2033-M2 1NO+2NC	FM 2034-M2 1NO+2NC
21 L	FM 2130-M2 3NC	FM 2131-M2 3NC	FM 2133-M2 3NC	FM 2134-M2 3NC
22 L	FM 2230-M2 2NO+1NC	FM 2231-M2 2NO+1NC	FM 2233-M2 2NO+1NC	FM 2234-M2 2NO+1NC
E1 	FM E130-M2 1NO-1NC	FM E131-M2 1NO-1NC	FM E133-M2 1NO-1NC	FM E134-M2 1NO-1NC
Max. speed	page 221 - type 1	page 221 - type 1	1.5 m/s	1.5 m/s
Actuating force	0.06 Nm (0.25 Nm )	0.06 Nm (0.25 Nm )	0.06 Nm	0.06 Nm
Travel diagrams	page 222 - group 5	page 222 - group 5	page 222 - group 5	page 222 - group 5

All values in the drawings are in mm

Accessories See page 195

→ 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
 - = electronic, PNP

Contact block

	Round rod, Ø 3 mm, stainless steel	Other rollers available. See page 78	Other rollers available. See page 78	Porcelain roller
2	R FM 250-M2 2x(1NO-1NC)	FM 251-M2 2x(1NO-1NC)	FM 252-M2 2x(1NO-1NC)	FM 253-E0M2 2x(1NO-1NC)
5	R FM 550-M2 1NO+1NC	FM 551-M2 1NO+1NC	FM 552-M2 1NO+1NC	FM 553-E0M2V9 1NO+1NC
6	L FM 650-M2 1NO+1NC	FM 651-M2 1NO+1NC	FM 652-M2 1NO+1NC	FM 653-E0M2V9 1NO+1NC
7	LO FM 750-M2 1NO+1NC	FM 751-M2 1NO+1NC	FM 752-M2 1NO+1NC	FM 753-E0M2V9 1NO+1NC
9	L FM 950-M2 2NC	FM 951-M2 2NC	FM 952-M2 2NC	FM 953-E0M2V9 2NC
10	L FM 1050-M2 2NO	FM 1051-M2 2NO	FM 1052-M2 2NO	FM 1053-E0M2V9 2NO
11	R FM 1150-M2 2NC	FM 1151-M2 2NC	FM 1152-M2 2NC	/
12	R FM 1250-M2 2NO	FM 1251-M2 2NO	FM 1252-M2 2NO	FM 1253-E0M2V9 2NO
13	LV FM 1350-M2 2NC	FM 1351-M2 2NC	FM 1352-M2 2NC	FM 1353-E0M2V9 2NC
14	LS FM 1450-M2 2NC	FM 1451-M2 2NC	FM 1452-M2 2NC	FM 1453-E0M2V9 2NC
15	LS FM 1550-M2 2NO	FM 1551-M2 2NO	FM 1552-M2 2NO	FM 1553-E0M2V9 2NO
16	LI FM 1650-M2 2NC	FM 1651-M2 2NC	FM 1652-M2 2NC	/
18	LA FM 1850-M2 1NO+1NC	FM 1851-M2 1NO+1NC	FM 1852-M2 1NO+1NC	FM 1853-E0M2V9 1NO+1NC
20	L FM 2050-M2 1NO+2NC	FM 2051-M2 1NO+2NC	FM 2052-M2 1NO+2NC	FM 2053-E0M2V9 1NO+2NC
21	L FM 2150-M2 3NC	FM 2151-M2 3NC	FM 2152-M2 3NC	FM 2153-E0M2V9 3NC
22	L FM 2250-M2 2NO+1NC	FM 2251-M2 2NO+1NC	FM 2252-M2 2NO+1NC	FM 2253-E0M2V9 2NO+1NC
E1	FM E150-M2 1NO-1NC	FM E151-M2 1NO-1NC	FM E152-M2 1NO-1NC	FM E153-E0M2V9 1NO-1NC
Max. speed	1.5 m/s	page 221 - type 1	page 221 - type 1	0.5 m/s
Actuating force	0.06 Nm	0.06 Nm (0.25 Nm)	0.06 Nm (0.25 Nm)	0.03 Nm (0.25 Nm)
Travel diagrams	page 222 - group 5	page 222 - group 5	page 222 - group 5	page 222 - group 6

- 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

	Other rollers available. See page 78	Other rollers available. See page 78	Other rollers available. See page 78	Glass fibre rod
2	R FM 254-M2 2x(1NO-1NC)	FM 256-M2 2x(1NO-1NC)	FM 257-M2 2x(1NO-1NC)	FM 269-M2 2x(1NO-1NC)
5	R FM 554-M2 1NO+1NC	FM 556-M2 1NO+1NC	FM 557-M2 1NO+1NC	FM 569-M2 1NO+1NC
6	L FM 654-M2 1NO+1NC	FM 656-M2 1NO+1NC	FM 657-M2 1NO+1NC	FM 669-M2 1NO+1NC
7	LO FM 754-M2 1NO+1NC	FM 756-M2 1NO+1NC	FM 757-M2 1NO+1NC	FM 769-M2 1NO+1NC
9	L FM 954-M2 2NC	FM 956-M2 2NC	FM 957-M2 2NC	FM 969-M2 2NC
10	L FM 1054-M2 2NO	FM 1056-M2 2NO	FM 1057-M2 2NO	FM 1069-M2 2NO
11	R FM 1154-M2 2NC	FM 1156-M2 2NC	FM 1157-M2 2NC	FM 1169-M2 2NC
12	R FM 1254-M2 2NO	FM 1256-M2 2NO	FM 1257-M2 2NO	FM 1269-M2 2NO
13	LV FM 1354-M2 2NC	FM 1356-M2 2NC	FM 1357-M2 2NC	FM 1369-M2 2NC
14	LS FM 1454-M2 2NC	FM 1456-M2 2NC	FM 1457-M2 2NC	FM 1469-M2 2NC
15	LS FM 1554-M2 2NO	FM 1556-M2 2NO	FM 1557-M2 2NO	FM 1569-M2 2NO
16	LI FM 1654-M2 2NC	FM 1656-M2 2NC	FM 1657-M2 2NC	FM 1669-M2 2NC
18	LA FM 1854-M2 1NO+1NC	FM 1856-M2 1NO+1NC	FM 1857-M2 1NO+1NC	FM 1869-M2 1NO+1NC
20	L FM 2054-M2 1NO+2NC	FM 2056-M2 1NO+2NC	FM 2057-M2 1NO+2NC	FM 2069-M2 1NO+2NC
21	L FM 2154-M2 3NC	FM 2156-M2 3NC	FM 2157-M2 3NC	FM 2169-M2 3NC
22	L FM 2254-M2 2NO+1NC	FM 2256-M2 2NO+1NC	FM 2257-M2 2NO+1NC	FM 2269-M2 2NO+1NC
E1	FM E154-M2 1NO-1NC	FM E156-M2 1NO-1NC	FM E157-M2 1NO-1NC	FM E169-M2 1NO-1NC
Max. speed	page 221 - type 1	page 221 - type 1	page 221 - type 1	1.5 m/s
Actuating force	0.06 Nm (0.25 Nm)	0.06 Nm (0.25 Nm)	0.06 N (0.25 N)	0.06 Nm
Travel diagrams	page 222 - group 5	page 222 - group 5	page 222 - group 5	page 222 - group 5

All values in the drawings are in mm

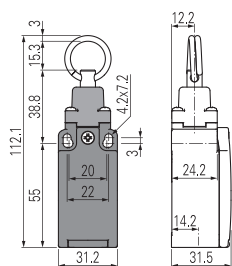
Accessories See page 195

→ 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
 = electronic, PNP

Rope switch for signalling



Contact block

2	R	FM 276-M2	2x(1NO-1NC)
5	R	FM 576-M2	1NO+1NC
6	L	FM 676-M2	1NO+1NC
7	LO	FM 776-M2	1NO+1NC
9	L	FM 976-M2	2NO
10	L	FM 1076-M2	2NC
11	R	FM 1176-M2	2NO
12	R	FM 1276-M2	2NC
13	LV	FM 1376-M2	2NO
14	LS	FM 1476-M2	2NO
15	LS	FM 1576-M2	2NC
16	LI	/	
18	LA	FM 1876-M2	1NO+1NC
20	L	FM 2076-M2	2NO+1NC
21	L	FM 2176-M2	3NO
22	L	FM 2276-M2	1NO+2NC
E1		/	
Max. speed		0.5 m/s	
Actuating force		initial 20 N - final 40 N	
Travel diagrams		page 222 - group 7	

FM series position switches with reset

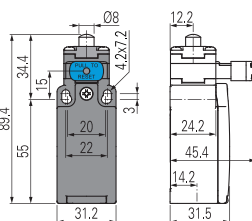


The majority of switches can be equipped with a reset device (option W3) which enables the simultaneous actuation of actuator and contact block. The device is a module that is mounted between the body and the head of the switch that can be rotated independently from the head. The reset device has the following advantages:

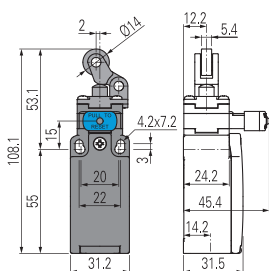
- can be integrated into the majority of standard actuator heads;
- contact blocks with snap action are no more necessary because the tripping movement is executed by the reset device itself;
- can be rotated independently from the head ensuring maximum flexibility during installation;
- can be delivered with two different actuating forces: standard and increased for vibration applications;
- mechanical endurance: 1 million operating cycles.

Contact type

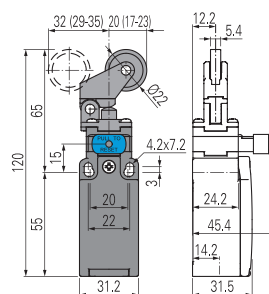
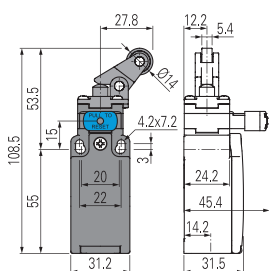
R = snap action
L = slow action



With steel roller with self-lubrication or 316L stainless steel on request



With steel roller with self-lubrication or 316L stainless steel on request



Contact block

2	R	FM 201-W3M2	2x(1NO-1NC)	FM 202-W3M2	2x(1NO-1NC)	FM 205-W3M2	2x(1NO-1NC)	FM 207-W3M2	2x(1NO-1NC)
6	L	FM 601-W3M2	1NO+1NC	FM 602-W3M2	1NO+1NC	FM 605-W3M2	1NO+1NC	FM 607-W3M2	1NO+1NC
9	L	FM 901-W3M2	2NC	FM 902-W3M2	2NC	FM 905-W3M2	2NC	FM 907-W3M2	2NC
10	L	FM 1001-W3M2	2NO	FM 1002-W3M2	2NO	FM 1005-W3M2	2NO	FM 1007-W3M2	2NO
20	L	FM 2001-W3M2	1NO+2NC	FM 2002-W3M2	1NO+2NC	FM 2005-W3M2	1NO+2NC	FM 2007-W3M2	1NO+2NC
21	L	FM 2101-W3M2	3NC	FM 2102-W3M2	3NC	FM 2105-W3M2	3NC	FM 2107-W3M2	3NC
22	L	FM 2201-W3M2	2NO+1NC	FM 2202-W3M2	2NO+1NC	FM 2205-W3M2	2NO+1NC	FM 2207-W3M2	2NO+1NC
Max. speed		page 221 - type 4		page 221 - type 3		page 221 - type 3		page 221 - 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 223 - group 1		page 223 - group 2		page 223 - group 2		page 223 - group 3	

All values in the drawings are in mm

Accessories See page 195

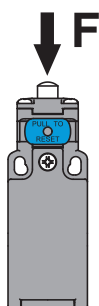
→ The 2D and 3D files are available at www.pizzato.com



Contact type R = snap action L = slow action		With Ø 20 mm steel roller with self-lubrication or 316L stainless steel on request		Other rollers available. See page 78		Other rollers available. See page 78	
Contact block							
2	R	FM 215-W3M2R28	2x(1NO-1NC)	FM 230-W3M2	2x(1NO-1NC)	FM 231-W3M2	2x(1NO-1NC)
6	L	FM 615-W3M2R28	➔ 1NO+1NC	FM 630-W3M2	➔ 1NO+1NC	FM 631-W3M2	➔ 1NO+1NC
9	L	FM 915-W3M2R28	➔ 2NC	FM 930-W3M2	➔ 2NC	FM 931-W3M2	➔ 2NC
10	L	FM 1015-W3M2R28	2NO	FM 1030-W3M2	2NO	FM 1031-W3M2	2NO
20	L	FM 2015-W3M2R28	➔ 1NO+2NC	FM 2030-W3M2	➔ 1NO+2NC	FM 2031-W3M2	➔ 1NO+2NC
21	L	FM 2115-W3M2R28	➔ 3NC	FM 2130-W3M2	➔ 3NC	FM 2131-W3M2	➔ 3NC
22	L	FM 2215-W3M2R28	➔ 2NO+1NC	FM 2230-W3M2	➔ 2NO+1NC	FM 2231-W3M2	➔ 2NO+1NC
Max. speed		page 221 - type 2		page 221 - type 1		page 221 - type 1	
Actuating force		4.5 N (25 N ➔)		0.07 Nm (0.25 Nm ➔)		0.07 Nm (0.25 Nm ➔)	
Travel diagrams		page 223 - group 1		page 223 - group 4		page 223 - group 4	

Contact type		Other rollers available. See page 78		Other rollers available. See page 78		Other rollers available. See page 78		Other rollers available. See page 78	
R	= snap action								
L	= slow action								
Contact block									
2	R	FM 252-W3M2	2x(1NO-1NC)	FM 254-W3M2	2x(1NO-1NC)	FM 256-W3M2	2x(1NO-1NC)	FM 257-W3M2	2x(1NO-1NC)
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
Max. speed		page 221 - type 1		page 221 - type 1		page 221 - type 1		page 221 - 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 223 - group 4		page 223 - group 4		page 223 - group 4		page 223 - group 4	

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

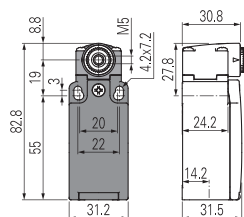
To order the switch with reset and increased actuating force, replace the -W3 option with -W4 in the order code.

Example: FM 601-W3M2 ➔ FM 601-W4M2

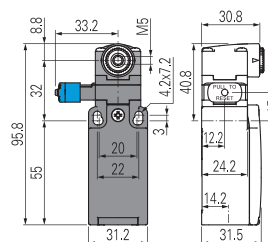
Position switches with swivelling lever without actuator

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



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 217.

2	R	FM 238-M2	2x(1NO-1NC)	FM 238-W3M2	2x(1NO-1NC)
5	R	FM 538-M2	1NO+1NC	/	/
6	L	FM 638-M2	1NO+1NC	FM 638-W3M2	1NO+1NC
7	LO	FM 738-M2	1NO+1NC	/	/
9	L	FM 938-M2	2NC	FM 938-W3M2	2NC
10	L	FM 1038-M2	2NO	FM 1038-W3M2	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	FM 2038-W3M2	1NO+2NC
21	L	FM 2138-M2	3NC	FM 2138-W3M2	3NC
22	L	FM 2238-M2	2NO+1NC	FM 2238-W3M2	2NO+1NC
E1	A	FM E138-M2	1NO-1NC	/	/
Actuating force		0.06 Nm (0.25 Nm)		0.07 Nm (0.25 Nm)	
Travel diagrams		page 222 - group 5		page 223 - group 4	

Separate actuators

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

Technopolymer roller Ø 18 mm	Technopolymer roller Ø 18 mm	Technopolymer roller Ø 14 mm	Technopolymer roller Ø 14 mm	Technopolymer roller Ø 20 mm	Technopolymer roller Ø 20 mm
VN A00KA	VN A00KB	VN A00KC	VN A00KD	VN A00KE	VN A00KF
Technopolymer roller Ø 20 mm	Technopolymer roller Ø 20 mm	Adjustable safety actuator with technopolymer roller	Adjustable square rod, 3x3x125 mm	Adjustable round rod Ø 3x125 mm	Adjustable glass fibre rod
VN A00KG	VN A00KH	VN A00KP	VN A00LB	VN A00LE	VN A00LH
Spring rod with plastic tip	Porcelain roller	Technopolymer roller Ø 18 mm	Technopolymer roller Ø 20 mm	Technopolymer roller Ø 20 mm	Adjustable safety lever with Ø 20 mm technopolymer roller
		With metallic parts in stainless steel			
VN A00LL	VN A00LP	VN A00KB-V38	VN A00KE-V38	VN A00KG-V38	VN A00KP-V38

All values in the drawings are in mm

Accessories See page 195

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

Special separate actuators

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

Steel rollers, Ø 20 mm, with self-lubrication

VN A00KB-R24 → (1)	VN A00KE-R24 → (1)	VN A00KF-R24 → (1)	VN A00KG-R24 → (1)	VN A00KH-R24 → (1)	VN A00KP-R24 → (1)

Note: To order with 316L stainless steel roller: replace R24 with R41 in the order numbers.

Technopolymer rollers, Ø 35 mm

VN A00KB-R25 → (1)	VN A00KE-R25 → (1)	VN A00KF-R25 → (1)	VN A00KG-R25 → (1)	VN A00KH-R25 → (1)	VN A00KP-R25 → (1)

Rubber rollers, Ø 40 mm

VN A00KB-R5 → (1)	VN A00KE-R5 → (1)	VN A00KF-R5 → (1)	VN A00KG-R5 → (1)	VN A00KH-R5 → (1)	VN A00KP-R5 → (1)

Rubber rollers, Ø 50 mm

VN A00KE-R26 → (1)	VN A00KF-R26 → (1)	VN A00KG-R26 → (1)	VN A00KH-R26 → (1)	VN A00KP-R26 → (1)

Protruding rubber rollers, Ø 50 mm

VN A00KP-R27 → (1)

- (1) The actuator cannot be rotated to the inside because it will hit the switch head upon actuation.

- (2) The position switch obtained by assembling switch FM •38-M2 (e.g. FM 538-M2, FM 638-M2, ...) with actuator VN A00LP will not present the same travel diagrams and actuating forces as switch FM •53-E0M2V9 (e.g. FM 553-E0M2V9, FM 653-E0M2V9, ...).

Note: To check the correspondence with previous lever codes, please consult the table "Changed article codes" on page 277. Example: VF LE30 -> VN A00KA