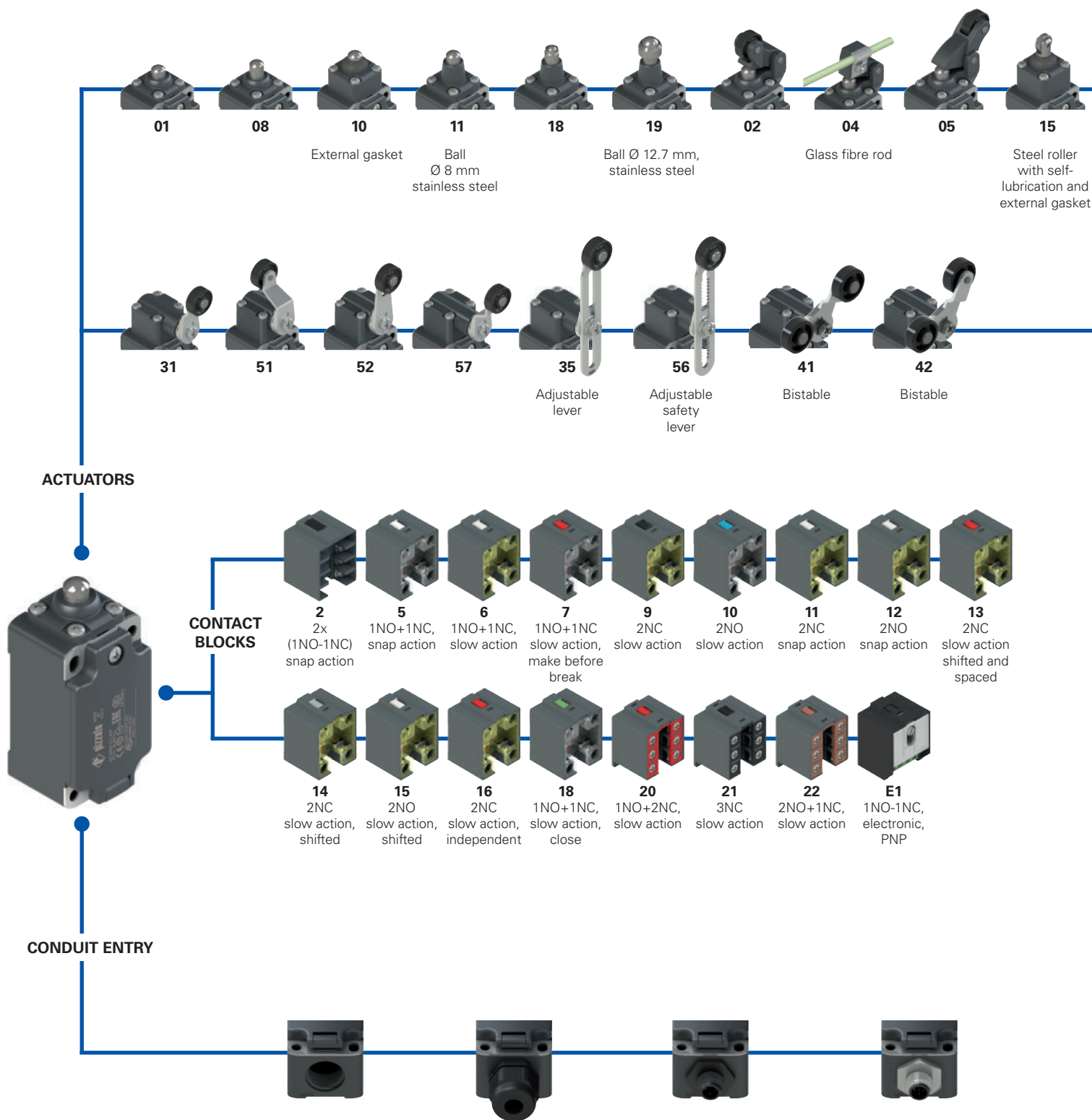


Selection diagram



Threaded conduit entry

| | |
|-----------|-------------------------------|
| M2 | M20x1.5 (standard) PG 13.5 |
|-----------|-------------------------------|

With cable gland

| | |
|------------|-----------------------------|
| K23 | for cables Ø 6 ... 12 mm |
| K27 | for cables Ø 3 ... 7 mm |

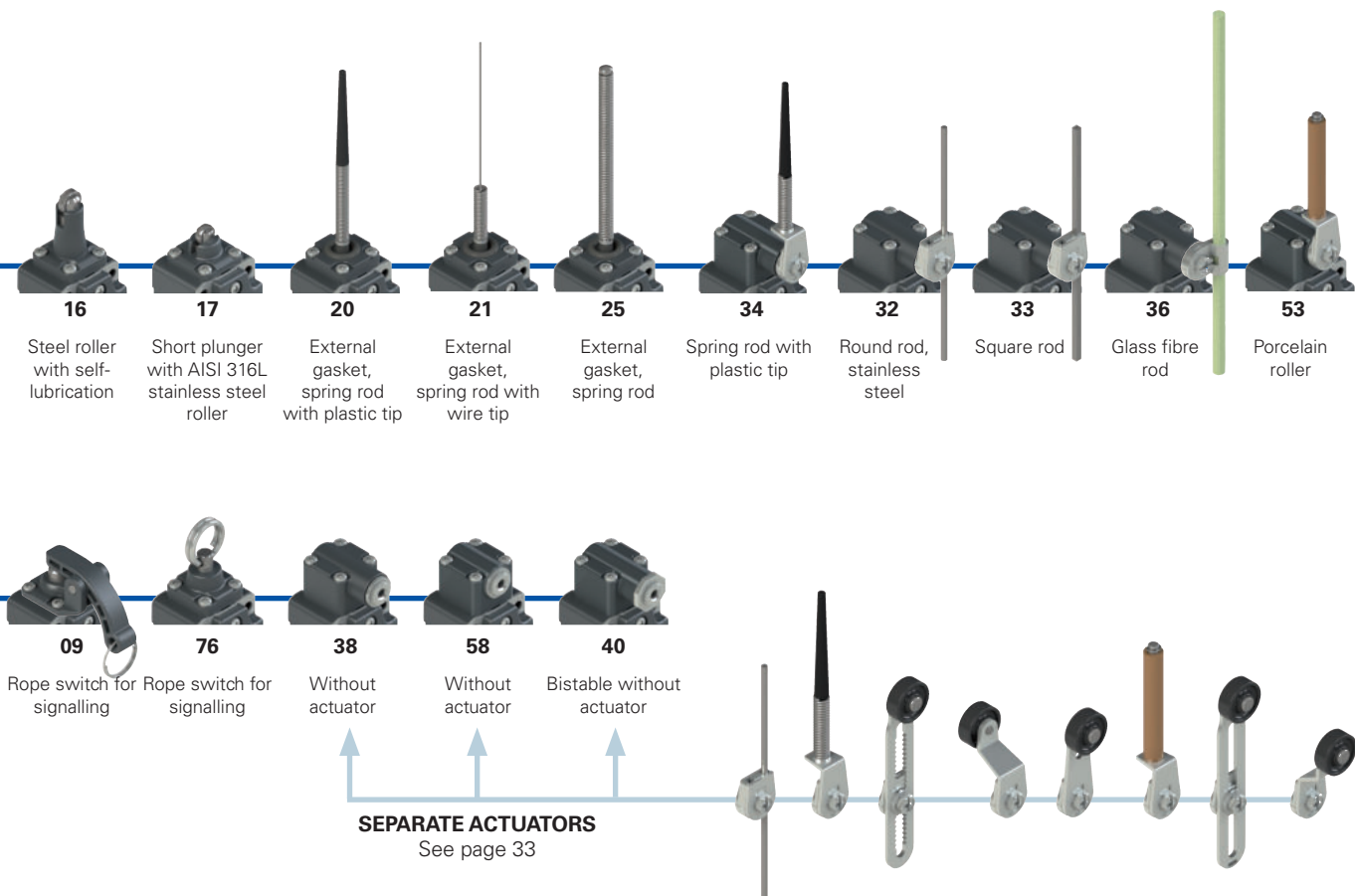
With M12 plastic connector

| | |
|------------|----------------|
| K70 | 4-pole, bottom |
| K45 | 8-pole, bottom |

With M12 metal connector

| | |
|------------|----------------|
| K40 | 8-pole, bottom |
| K60 | 4-pole, bottom |

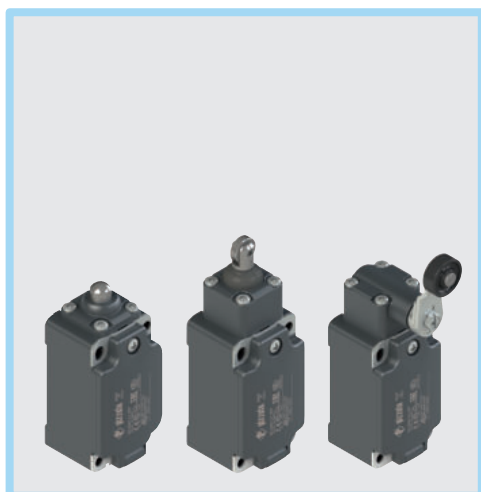
● Product options
→ Sold separately as accessory



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
FP 502-GM2K70R24T6

| | | | |
|-------------------------------|--|---|--|
| Housing | | Ambient temperature | |
| FP | technopolymer, one conduit entry | | -25°C ... +80°C (standard) |
| Contact block | | T6 | -40°C ... +80°C |
| 5 | 1NO+1NC, snap action | Rollers | |
| 6 | 1NO+1NC, slow action | | standard roller |
| 7 | 1NO+1NC, slow action, make before break | R24 | Steel, with self-lubrication, Ø 20 mm (for actuators 02, 05, 31, 35, 51, 52, 56, 57) |
| ... | ... | R41 | 316L stainless steel, Ø 20 mm (for actuators 02, 05, 31, 35, 51, 52, 56, 57) |
| Actuators | | R25 | technopolymer, Ø 35 mm (for actuators 31, 35, 51, 52, 56, 57) |
| 01 | short plunger | R5 | rubber, Ø 40 mm (for actuators 31, 35, 51, 52, 56, 57) |
| 02 | roller lever | R26 | rubber, Ø 50 mm (for actuators 31, 35, 51, 52, 56, 57) |
| 05 | angled lever with roller | R27 | rubber, protruding, Ø 50 mm (for actuators 35 and 56) |
| ... | ... | Pre-installed cable glands or connectors | |
| Contact type | | | no cable gland or connector (standard) |
| | silver contacts (standard) | K23 | cable gland for cables Ø 6 ... 12 mm |
| G | silver contacts, 1 µm gold coating | K27 | cable gland for cables Ø 3 ... 7 mm |
| G1 | silver contacts, 2.5 µm gold coating (not for contact block 2, 20, 21, 22) | K45 | M12 plastic connector, 8-pole |
| Threaded conduit entry | | K70 | M12 plastic connector, 4-pole |
| M2 | M20x1.5 (standard) | For the complete list of possible combinations please contact our technical department. | |
| | PG 13.5 | | |



Main features

- Technopolymer housing, one conduit entry
- Protection degree IP67
- Stainless steel fixing plates
- 17 contact blocks available
- 29 actuators available
- Versions with M12 connector
- Versions with gold-plated silver contacts

Technical data

Housing

Housing made of glass fibre reinforced technopolymer, self-extinguishing, shock-proof and with double insulation:

One threaded conduit entry:

M20x1.5 (standard)

Protection degree acc. to EN 60529:

IP67 with 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 229

Wire cross-sections and wire stripping lengths: see page 249

In compliance with standards:

IEC 60947-5-1, EN 60947-5-1, EN 60947-1, EN 50041, 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.

Quality marks:



IMQ approval: EG605

UL approval: E131787

CCC approval: 2021000305000099

EAC approval: RU C-IT.YT03.B.00035/19

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 230. 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 227 to 242.

| | 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) |
| | Rated impulse withstand voltage (U_{imp}): | 6 kV 4 kV (contact blocks 20, 21, 22) |
| with M12 connector, 4-pole | Thermal current (I_{th}): | 4 A |
| | Rated insulation voltage (U): | 250 Vac 300 Vdc |
| | Protection against short circuits: | type gG fuse 4 A 500 V |
| with M12 connector, 8-pole | Thermal current (I_{th}): | 2 A |
| | Rated insulation voltage (U): | 30 Vac 36 Vdc |
| | Protection against short circuits: | type gG fuse 2 A 500 V |
| | Pollution degree: | 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) 3 0.55 0.3 |
| | | Alternating current: AC15 (50±60 Hz) |
| | | Ue (V) 24 120 250 |
| | | Ie (A) 4 4 4 |
| | | Direct current: DC13 |
| | | Ue (V) 24 125 250 |
| | | Ie (A) 3 0.55 0.3 |
| | | 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, 28, 29, 30, 33, 34, 37)

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_e): 400 Vac (50 Hz)

Operating current (I_e): 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).

The hub is to be connected to the conduit before the hub is connected to the enclosure.

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, 4-pole | M12 connector, 4-pole | M12 connector, 4-pole | M12 connector, 4-pole | M12 connector, 4-pole | M12 connector, 4-pole | M12 connector, 4-pole | M12 connector, 4-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 | | | | | | | | |
| NO 1-2 | | | | | | | | |

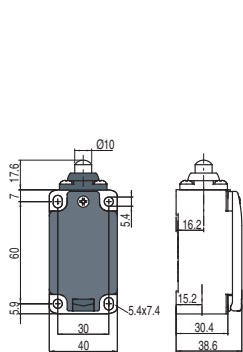
| Contact block 14 2NC | Contact block 15 2NO | Contact block 16 2NC | Contact block 18 1NO+1NC | Contact block 20 1NO+2NC | Contact block 21 3NC | Contact block 22 2NO+1NC | Contact block 33 1NO+1NC | Contact block 34 2NC |
|-------------------------|-------------------------|----------------------------|-----------------------------|-----------------------------|-------------------------|-----------------------------|-----------------------------|-------------------------|
| | | | | | | | | |
| M12 connector, 4-pole | M12 connector, 4-pole | M12 connector, 4-pole | M12 connector, 4-pole | M12 connector, 8-pole | M12 connector, 8-pole | M12 connector, 8-pole | M12 connector, 4-pole | M12 connector, 4-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 |
| | | | | NO 7-8 | NC 7-8 | NO 7-8 | | |

Contact block E1
PNP

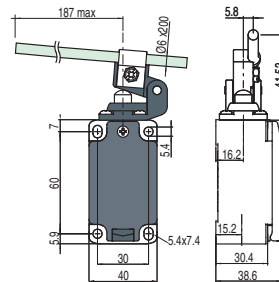
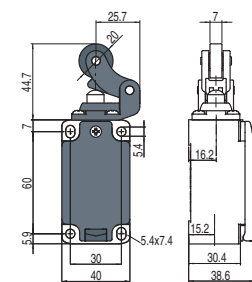
M12 connector, 4-pole

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

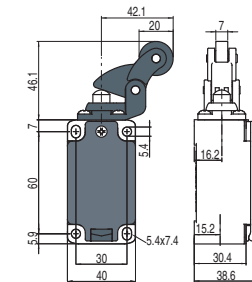
- Contact type
- R** = snap action
 - L** = slow action
 - LO** = slow action, make before break
 - LS** = slow action, shifted
 - LV** = slow action, shifted and spaced
 - LI** = slow action, independent
 - LA** = slow action, close
 - A** = electronic, PNP



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



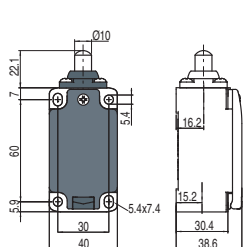
With steel roller with self-lubrication or 316L stainless steel on request



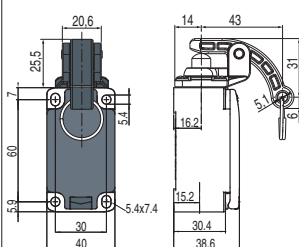
Contact block

| | | | | | | | | | |
|-----------------|-----------|--------------------|-------------|--------------------|-------------|--------------------|-------------|--------------------|-------------|
| 2 | R | FP 201-M2 | 2x(1NO-1NC) | FP 202-M2 | 2x(1NO-1NC) | FP 204-M2 | 2x(1NO-1NC) | FP 205-M2 | 2x(1NO-1NC) |
| 5 | R | FP 501-M2 | 1NO+1NC | FP 502-M2 | 1NO+1NC | FP 504-M2 | 1NO+1NC | FP 505-M2 | 1NO+1NC |
| 6 | L | FP 601-M2 | 1NO+1NC | FP 602-M2 | 1NO+1NC | FP 604-M2 | 1NO+1NC | FP 605-M2 | 1NO+1NC |
| 7 | LO | FP 701-M2 | 1NO+1NC | FP 702-M2 | 1NO+1NC | FP 704-M2 | 1NO+1NC | FP 705-M2 | 1NO+1NC |
| 9 | L | FP 901-M2 | 2NC | FP 902-M2 | 2NC | FP 904-M2 | 2NC | FP 905-M2 | 2NC |
| 10 | L | FP 1001-M2 | 2NO | FP 1002-M2 | 2NO | FP 1004-M2 | 2NO | FP 1005-M2 | 2NO |
| 11 | R | FP 1101-M2 | 2NC | FP 1102-M2 | 2NC | FP 1104-M2 | 2NC | FP 1105-M2 | 2NC |
| 12 | R | FP 1201-M2 | 2NO | FP 1202-M2 | 2NO | FP 1204-M2 | 2NO | FP 1205-M2 | 2NO |
| 13 | LV | FP 1301-M2 | 2NC | FP 1302-M2 | 2NC | FP 1304-M2 | 2NC | FP 1305-M2 | 2NC |
| 14 | LS | FP 1401-M2 | 2NC | FP 1402-M2 | 2NC | FP 1404-M2 | 2NC | FP 1405-M2 | 2NC |
| 15 | LS | FP 1501-M2 | 2NO | FP 1502-M2 | 2NO | FP 1504-M2 | 2NO | FP 1505-M2 | 2NO |
| 18 | LA | FP 1801-M2 | 1NO+1NC | FP 1802-M2 | 1NO+1NC | FP 1804-M2 | 1NO+1NC | FP 1805-M2 | 1NO+1NC |
| 20 | L | FP 2001-M2 | 1NO+2NC | FP 2002-M2 | 1NO+2NC | FP 2004-M2 | 1NO+2NC | FP 2005-M2 | 1NO+2NC |
| 21 | L | FP 2101-M2 | 3NC | FP 2102-M2 | 3NC | FP 2104-M2 | 3NC | FP 2105-M2 | 3NC |
| 22 | L | FP 2201-M2 | 2NO+1NC | FP 2202-M2 | 2NO+1NC | FP 2204-M2 | 2NO+1NC | FP 2205-M2 | 2NO+1NC |
| E1 | A | FP E101-M2 | 1NO-1NC | FP E102-M2 | 1NO-1NC | FP E104-M2 | 1NO-1NC | FP E105-M2 | 1NO-1NC |
| Max. speed | | page 229 - type 4 | | page 229 - type 3 | | 0.5 m/s | | page 229 - type 3 | |
| Actuating force | | 8 N (25 N ⊕) | | 6 N (25 N ⊕) | | 0.17 Nm | | 6 N (25 N ⊕) | |
| Travel diagrams | | page 230 - group 1 | | page 230 - group 2 | | page 230 - group 1 | | page 230 - group 2 | |

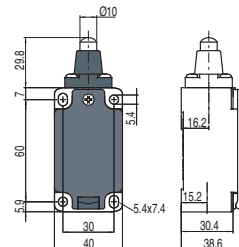
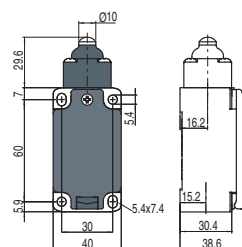
- Contact type
- R** = snap action
 - L** = slow action
 - LO** = slow action, make before break
 - LS** = slow action, shifted
 - LV** = slow action, shifted and spaced
 - LI** = slow action, independent
 - LA** = slow action, close
 - A** = electronic, PNP



Rope switch for signalling



External gasket



Contact block

| | | | | | | | | | |
|-----------------|-----------|--------------------|-------------|------------|-------------|--------------------|-------------|--------------------|-------------|
| 2 | R | FP 208-M2 | 2x(1NO-1NC) | FP 209-M2 | 2x(1NO-1NC) | FP 210-M2 | 2x(1NO-1NC) | FP 211-M2 | 2x(1NO-1NC) |
| 5 | R | FP 508-M2 | 1NO+1NC | FP 509-M2 | 1NO+1NC | FP 510-M2 | 1NO+1NC | FP 511-M2 | 1NO+1NC |
| 6 | L | FP 608-M2 | 1NO+1NC | FP 609-M2 | 1NO+1NC | FP 610-M2 | 1NO+1NC | FP 611-M2 | 1NO+1NC |
| 7 | LO | FP 708-M2 | 1NO+1NC | FP 709-M2 | 1NO+1NC | FP 710-M2 | 1NO+1NC | FP 711-M2 | 1NO+1NC |
| 9 | L | FP 908-M2 | 2NC | FP 909-M2 | 2NC | FP 910-M2 | 2NC | FP 911-M2 | 2NC |
| 10 | L | FP 1008-M2 | 2NO | FP 1009-M2 | 2NO | FP 1010-M2 | 2NO | FP 1011-M2 | 2NO |
| 11 | R | FP 1108-M2 | 2NC | FP 1109-M2 | 2NC | FP 1110-M2 | 2NC | FP 1111-M2 | 2NC |
| 12 | R | FP 1208-M2 | 2NO | FP 1209-M2 | 2NO | FP 1210-M2 | 2NO | FP 1211-M2 | 2NO |
| 13 | LV | FP 1308-M2 | 2NC | FP 1309-M2 | 2NC | FP 1310-M2 | 2NC | FP 1311-M2 | 2NC |
| 14 | LS | FP 1408-M2 | 2NC | FP 1409-M2 | 2NC | FP 1410-M2 | 2NC | FP 1411-M2 | 2NC |
| 15 | LS | FP 1508-M2 | 2NO | FP 1509-M2 | 2NO | FP 1510-M2 | 2NO | FP 1511-M2 | 2NO |
| 18 | LA | FP 1808-M2 | 1NO+1NC | FP 1809-M2 | 1NO+1NC | FP 1810-M2 | 1NO+1NC | FP 1811-M2 | 1NO+1NC |
| 20 | L | FP 2008-M2 | 1NO+2NC | FP 2009-M2 | 1NO+2NC | FP 2010-M2 | 1NO+2NC | FP 2011-M2 | 1NO+2NC |
| 21 | L | FP 2108-M2 | 3NC | FP 2109-M2 | 3NC | FP 2110-M2 | 3NC | FP 2111-M2 | 3NC |
| 22 | L | FP 2208-M2 | 2NO+1NC | FP 2209-M2 | 2NO+1NC | FP 2210-M2 | 2NO+1NC | FP 2211-M2 | 2NO+1NC |
| E1 | A | FP E108-M2 | 1NO-1NC | FP E109-M2 | 1NO-1NC | FP E110-M2 | 1NO-1NC | FP E111-M2 | 1NO-1NC |
| Max. speed | | page 229 - type 4 | | 0.5 m/s | | page 229 - type 4 | | page 229 - type 4 | |
| Actuating force | | 8 N (25 N ⊕) | | 7 N | | 11 N (25 N ⊕) | | 8 N (25 N ⊕) | |
| Travel diagrams | | page 230 - group 1 | | / | | page 230 - group 1 | | page 230 - group 1 | |

All values in the drawings are in mm



| Contact type | External gasket | | Ball, Ø 8 mm, stainless steel | | Ball, Ø 12.7 mm, stainless steel | | | | | | | | |
|-----------------|-----------------------------------|------------|-------------------------------|-----------|----------------------------------|-----------|--------------------|------------|-------------|---------|------------|--|---------|
| | | | | | | | | | | | | | |
| | = snap action | | | | | | | | | | | | |
| | = slow action | | | | | | | | | | | | |
| | = slow action, make before break | | | | | | | | | | | | |
| | = slow action, shifted | | | | | | | | | | | | |
| | = slow action, shifted and spaced | | | | | | | | | | | | |
| | = slow action, independent | | | | | | | | | | | | |
| | = slow action, close | | | | | | | | | | | | |
| | = electronic, PNP | | | | | | | | | | | | |
| Contact block | | | | | | | | | | | | | |
| 2 | | FP 215-M2 | 2x(1NO-1NC) | FP 216-M2 | 2x(1NO-1NC) | FP 218-M2 | 2x(1NO-1NC) | FP 219-M2 | 2x(1NO-1NC) | | | | |
| 5 | | FP 515-M2 | | 1NO+1NC | FP 516-M2 | | 1NO+1NC | FP 518-M2 | | 1NO+1NC | FP 519-M2 | | 1NO+1NC |
| 6 | | FP 615-M2 | | 1NO+1NC | FP 616-M2 | | 1NO+1NC | FP 618-M2 | | 1NO+1NC | FP 619-M2 | | 1NO+1NC |
| 7 | | FP 715-M2 | | 1NO+1NC | FP 716-M2 | | 1NO+1NC | FP 718-M2 | | 1NO+1NC | FP 719-M2 | | 1NO+1NC |
| 9 | | FP 915-M2 | | 2NC | FP 916-M2 | | 2NC | FP 918-M2 | | 2NC | FP 919-M2 | | 2NC |
| 10 | | FP 1015-M2 | | 2NO | FP 1016-M2 | | 2NO | FP 1018-M2 | | 2NO | FP 1019-M2 | | 2NO |
| 11 | | FP 1115-M2 | | 2NC | FP 1116-M2 | | 2NC | FP 1118-M2 | | 2NC | FP 1119-M2 | | 2NC |
| 12 | | FP 1215-M2 | | 2NO | FP 1216-M2 | | 2NO | FP 1218-M2 | | 2NO | FP 1219-M2 | | 2NO |
| 13 | | FP 1315-M2 | | 2NC | FP 1316-M2 | | 2NC | FP 1318-M2 | | 2NC | FP 1319-M2 | | 2NC |
| 14 | | FP 1415-M2 | | 2NC | FP 1416-M2 | | 2NC | FP 1418-M2 | | 2NC | FP 1419-M2 | | 2NC |
| 15 | | FP 1515-M2 | | 2NO | FP 1516-M2 | | 2NO | FP 1518-M2 | | 2NO | FP 1519-M2 | | 2NO |
| 18 | | FP 1815-M2 | | 1NO+1NC | FP 1816-M2 | | 1NO+1NC | FP 1818-M2 | | 1NO+1NC | FP 1819-M2 | | 1NO+1NC |
| 20 | | FP 2015-M2 | | 1NO+2NC | FP 2016-M2 | | 1NO+2NC | FP 2018-M2 | | 1NO+2NC | FP 2019-M2 | | 1NO+2NC |
| 21 | | FP 2115-M2 | | 3NC | FP 2116-M2 | | 3NC | FP 2118-M2 | | 3NC | FP 2119-M2 | | 3NC |
| 22 | | FP 2215-M2 | | 2NO+1NC | FP 2216-M2 | | 2NO+1NC | FP 2218-M2 | | 2NO+1NC | FP 2219-M2 | | 2NO+1NC |
| E1 | | FP E115-M2 | | 1NO-1NC | FP E116-M2 | | 1NO-1NC | FP E118-M2 | | 1NO-1NC | FP E119-M2 | | 1NO-1NC |
| Max. speed | page 229 - type 2 | | page 229 - type 2 | | page 229 - type 4 | | page 229 - type 4 | | | | | | |
| Actuating force | 11 N (25 N | | 8 N (25 N | | 8 N (25 N | | 8 N (25 N | | | | | | |
| Travel diagrams | page 230 - group 1 | | page 230 - group 1 | | page 230 - group 1 | | page 230 - group 1 | | | | | | |

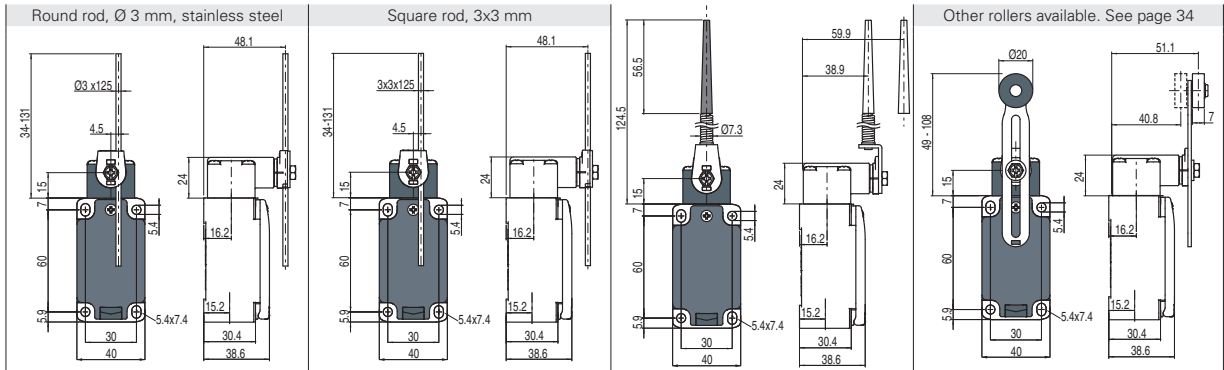
| Contact type | External gasket | | External gasket | | External gasket | | Other rollers available. See page 34 | | | |
|-----------------|-----------------------------------|------------|--------------------|------------|--------------------|------------|--------------------------------------|------------|-------------|---------|
| | | | | | | | | | | |
| | = snap action | | | | | | | | | |
| | = slow action | | | | | | | | | |
| | = slow action, make before break | | | | | | | | | |
| | = slow action, shifted | | | | | | | | | |
| | = slow action, shifted and spaced | | | | | | | | | |
| | = slow action, independent | | | | | | | | | |
| | = slow action, close | | | | | | | | | |
| | = electronic, PNP | | | | | | | | | |
| Contact block | | | | | | | | | | |
| 2 | | FP 220-M2 | 2x(1NO-1NC) | FP 221-M2 | 2x(1NO-1NC) | FP 225-M2 | 2x(1NO-1NC) | FP 231-M2 | 2x(1NO-1NC) | |
| 5 | | FP 520-M2 | 1NO+1NC | FP 521-M2 | 1NO+1NC | FP 525-M2 | 1NO+1NC | FP 531-M2 | | 1NO+1NC |
| 6 | | / | / | / | / | / | / | FP 631-M2 | | 1NO+1NC |
| 7 | | / | / | / | / | / | / | FP 731-M2 | | 1NO+1NC |
| 9 | | / | / | / | / | / | / | FP 931-M2 | | 2NC |
| 10 | | FP 1020-M2 | 2NO | FP 1021-M2 | 2NO | FP 1025-M2 | 2NO | FP 1031-M2 | | 2NO |
| 11 | | / | / | / | / | / | / | FP 1131-M2 | | 2NC |
| 12 | | / | / | / | / | / | / | FP 1231-M2 | | 2NO |
| 13 | | / | / | / | / | / | / | FP 1331-M2 | | 2NC |
| 14 | | / | / | / | / | / | / | FP 1431-M2 | | 2NC |
| 15 | | / | / | / | / | / | / | FP 1531-M2 | | 2NO |
| 16 | | / | / | / | / | / | / | FP 1631-M2 | | 2NC |
| 18 | | FP 1820-M2 | 1NO+1NC | FP 1821-M2 | 1NO+1NC | FP 1825-M2 | 1NO+1NC | FP 1831-M2 | | 1NO+1NC |
| 20 | | FP 2020-M2 | 1NO+2NC | FP 2021-M2 | 1NO+2NC | FP 2025-M2 | 1NO+2NC | FP 2031-M2 | | 1NO+2NC |
| 21 | | FP 2120-M2 | 3NC | FP 2121-M2 | 3NC | FP 2125-M2 | 3NC | FP 2131-M2 | | 3NC |
| 22 | | FP 2220-M2 | 2NO+1NC | FP 2221-M2 | 2NO+1NC | FP 2225-M2 | 2NO+1NC | FP 2231-M2 | | 2NO+1NC |
| E1 | | FP E120-M2 | 1NO-1NC | FP E121-M2 | 1NO-1NC | FP E125-M2 | 1NO-1NC | FP E131-M2 | | 1NO-1NC |
| Max. speed | 1 m/s | | 1 m/s | | 1 m/s | | page 229 - type 1 | | | |
| Actuating force | 0.09 Nm | | 0.08 Nm | | 0.14 Nm | | 0.1 Nm (0.25 Nm | | | |
| Travel diagrams | page 230 - group 3 | | page 230 - group 3 | | page 230 - group 3 | | page 230 - group 4 | | | |

All values in the drawings are in mm

Accessories See page 207

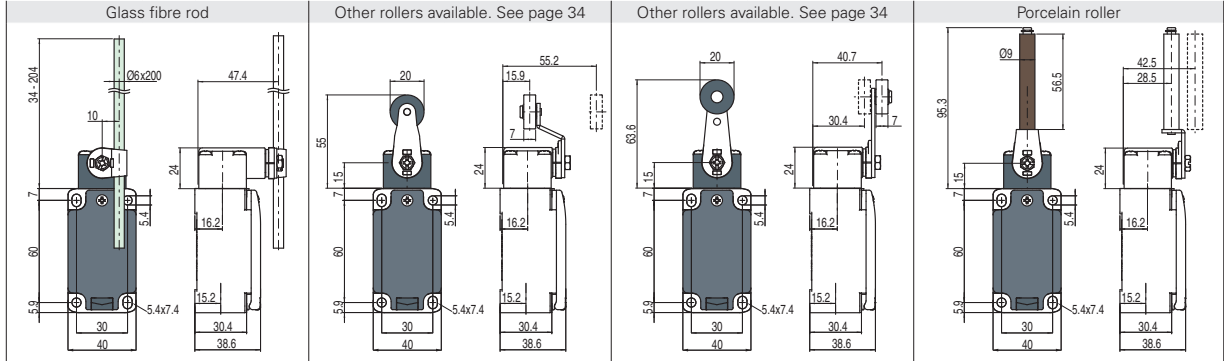
→ The 2D and 3D files are available at www.pizzato.com

- 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 | Square rod, 3x3 mm | Other rollers available. See page 34 |
|-----------------|------------------------------------|-----------------------|--------------------------------------|
| 2 | R FP 232-M2 2x(1NO-1NC) | FP 233-M2 2x(1NO-1NC) | FP 234-M2 2x(1NO-1NC) |
| 5 | R FP 532-M2 1NO+1NC | FP 533-M2 1NO+1NC | FP 534-M2 1NO+1NC |
| 6 | L FP 632-M2 1NO+1NC | FP 633-M2 1NO+1NC | FP 634-M2 1NO+1NC |
| 7 | LO FP 732-M2 1NO+1NC | FP 733-M2 1NO+1NC | FP 734-M2 1NO+1NC |
| 9 | L FP 932-M2 2NC | FP 933-M2 2NC | FP 934-M2 2NC |
| 10 | L FP 1032-M2 2NO | FP 1033-M2 2NO | FP 1034-M2 2NO |
| 11 | R FP 1132-M2 2NC | FP 1133-M2 2NC | FP 1134-M2 2NC |
| 12 | R FP 1232-M2 2NO | FP 1233-M2 2NO | FP 1234-M2 2NO |
| 13 | LV FP 1332-M2 2NC | FP 1333-M2 2NC | FP 1334-M2 2NC |
| 14 | LS FP 1432-M2 2NC | FP 1433-M2 2NC | FP 1434-M2 2NC |
| 15 | LS FP 1532-M2 2NO | FP 1533-M2 2NO | FP 1534-M2 2NO |
| 16 | LI FP 1632-M2 2NC | FP 1633-M2 2NC | FP 1634-M2 2NC |
| 18 | LA FP 1832-M2 1NO+1NC | FP 1833-M2 1NO+1NC | FP 1834-M2 1NO+1NC |
| 20 | L FP 2032-M2 1NO+2NC | FP 2033-M2 1NO+2NC | FP 2034-M2 1NO+2NC |
| 21 | L FP 2132-M2 3NC | FP 2133-M2 3NC | FP 2134-M2 3NC |
| 22 | L FP 2232-M2 2NO+1NC | FP 2233-M2 2NO+1NC | FP 2234-M2 2NO+1NC |
| E1 | ⏏ FP E132-M2 1NO-1NC | FP E133-M2 1NO-1NC | FP E134-M2 1NO-1NC |
| Max. speed | 1.5 m/s | 1.5 m/s | 1 m/s |
| Actuating force | 0.1 Nm | 0.1 Nm | 0.1 Nm |
| Travel diagrams | page 230 - group 4 | page 230 - group 4 | page 230 - 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 | Glass fibre rod | Other rollers available. See page 34 | Other rollers available. See page 34 | Porcelain roller |
|-----------------|--------------------------------|--------------------------------------|--------------------------------------|--------------------------|
| 2 | R FP 236-M2 2x(1NO-1NC) | FP 251-M2 2x(1NO-1NC) | FP 252-M2 2x(1NO-1NC) | FP 253-E11M2 2x(1NO-1NC) |
| 5 | R FP 536-M2 1NO+1NC | FP 551-M2 1NO+1NC | FP 552-M2 1NO+1NC | FP 553-E11M2V9 1NO+1NC |
| 6 | L FP 636-M2 1NO+1NC | FP 651-M2 1NO+1NC | FP 652-M2 1NO+1NC | FP 653-E11M2V9 1NO+1NC |
| 7 | LO FP 736-M2 1NO+1NC | FP 751-M2 1NO+1NC | FP 752-M2 1NO+1NC | FP 753-E11M2V9 1NO+1NC |
| 9 | L FP 936-M2 2NC | FP 951-M2 2NC | FP 952-M2 2NC | FP 953-E11M2V9 2NC |
| 10 | L FP 1036-M2 2NO | FP 1051-M2 2NO | FP 1052-M2 2NO | FP 1053-E11M2V9 2NO |
| 11 | R FP 1136-M2 2NC | FP 1151-M2 2NC | FP 1152-M2 2NC | / |
| 12 | R FP 1236-M2 2NO | FP 1251-M2 2NO | FP 1252-M2 2NO | FP 1253-E11M2V9 2NO |
| 13 | LV FP 1336-M2 2NC | FP 1351-M2 2NC | FP 1352-M2 2NC | FP 1353-E11M2V9 2NC |
| 14 | LS FP 1436-M2 2NC | FP 1451-M2 2NC | FP 1452-M2 2NC | FP 1453-E11M2V9 2NC |
| 15 | LS FP 1536-M2 2NO | FP 1551-M2 2NO | FP 1552-M2 2NO | FP 1553-E11M2V9 2NO |
| 16 | LI FP 1636-M2 2NC | / | / | / |
| 18 | LA FP 1836-M2 1NO+1NC | FP 1851-M2 1NO+1NC | FP 1852-M2 1NO+1NC | FP 1853-E11M2V9 1NO+1NC |
| 20 | L FP 2036-M2 1NO+2NC | FP 2051-M2 1NO+2NC | FP 2052-M2 1NO+2NC | FP 2053-E11M2V9 1NO+2NC |
| 21 | L FP 2136-M2 3NC | FP 2151-M2 3NC | FP 2152-M2 3NC | FP 2153-E11M2V9 3NC |
| 22 | L FP 2236-M2 2NO+1NC | FP 2251-M2 2NO+1NC | FP 2252-M2 2NO+1NC | FP 2253-E11M2V9 2NO+1NC |
| E1 | ⏏ FP E136-M2 1NO-1NC | FP E151-M2 1NO-1NC | FP E152-M2 1NO-1NC | FP E153-E11M2V9 1NO-1NC |
| Max. speed | 1.5 m/s | page 229 - type 1 | page 229 - type 1 | 0.5 m/s |
| Actuating force | 0.1 Nm | 0.06 Nm (0.25 Nm) | 0.06 Nm (0.25 Nm) | 0.03 Nm (0.25 Nm) |
| Travel diagrams | page 230 - group 4 | page 230 - group 4 | page 230 - group 4 | page 230 - group 5 |

(1) Positive opening only with actuator set to max. See page 34.



| Contact type | Other rollers available. See page 34 | | Other rollers available. See page 34 | | With steel roller with self-lubrication or 316L stainless steel on request | With steel roller with self-lubrication or 316L stainless steel on request | | | | |
|-----------------|---|------------|--------------------------------------|------------|--|--|--|-------------------------|--|--|
| | <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 A = electronic, PNP | | | | | | | | | |
| Contact block | | | | | | | | | | |
| 2 | R | FP 256-M2 | 2x(1NO-1NC) | FP 257-M2 | 2x(1NO-1NC) | / | / | | | |
| 5 | R | FP 556-M2 | 1NO+1NC | FP 557-M2 | 1NO+1NC | FP 541-M2 | 1NO+1NC | | | |
| 6 | L | FP 656-M2 | 1NO+1NC | FP 657-M2 | 1NO+1NC | Bistable switch with lyra lever, single track S = mechanical switching point positive opening on contacts 21-22 only | Bistable switch with lyra lever, dual track S = mechanical switching point positive opening on contacts 21-22 only | | | |
| 7 | LO | FP 756-M2 | 1NO+1NC | FP 757-M2 | 1NO+1NC | | | | | |
| 9 | L | FP 956-M2 | 2NC | FP 957-M2 | 2NC | | | | | |
| 10 | L | FP 1056-M2 | 2NO | FP 1057-M2 | 2NO | | | | | |
| 11 | R | FP 1156-M2 | 2NC | FP 1157-M2 | 2NC | | | | | |
| 12 | R | FP 1256-M2 | 2NO | FP 1257-M2 | 2NO | | | | | |
| 13 | LV | FP 1356-M2 | 2NC | FP 1357-M2 | 2NC | | | | | |
| 14 | LS | FP 1456-M2 | 2NC | FP 1457-M2 | 2NC | | | | | |
| 15 | LS | FP 1556-M2 | 2NO | FP 1557-M2 | 2NO | | | | | |
| 16 | LI | FP 1656-M2 | 2NC | FP 1657-M2 | 2NC | | | | | |
| 18 | LA | FP 1856-M2 | 1NO+1NC | FP 1857-M2 | 1NO+1NC | | | | | |
| 20 | L | FP 2056-M2 | 1NO+2NC | FP 2057-M2 | 1NO+2NC | | | | | |
| 21 | L | FP 2156-M2 | 3NC | FP 2157-M2 | 3NC | | | | | |
| 22 | L | FP 2256-M2 | 2NO+1NC | FP 2257-M2 | 2NO+1NC | | | | | |
| E1 | A | FP E156-M2 | 1NO-1NC | FP E157-M2 | 1NO-1NC | | | | | |
| Max. speed | page 229 - type 1 | | page 229 - type 1 | | 0.5 m/s with cam at 30° | | | 0.5 m/s with cam at 30° | | |
| Actuating force | 0.1 Nm (0.25 Nm ⊕) | | 0.1 Nm (0.25 Nm ⊕) | | 0.21 Nm (0.36 Nm ⊕) | | | 0.21 Nm (0.36 Nm ⊕) | | |
| Travel diagrams | page 230 - group 4 | | page 230 - group 4 | | / | | | / | | |

| Contact type | Rope switch for signalling | | |
|-----------------|---|------------|-------------|
| | <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 A = electronic, PNP | | |
| Contact block | | | |
| 2 | R | FP 276-M2 | 2x(1NO-1NC) |
| 5 | R | FP 576-M2 | 1NO+1NC |
| 6 | L | FP 676-M2 | 1NO+1NC |
| 7 | LO | FP 776-M2 | 1NO+1NC |
| 9 | L | FP 976-M2 | 2NO |
| 10 | L | FP 1076-M2 | 2NC |
| 11 | R | FP 1176-M2 | 2NO |
| 12 | R | FP 1276-M2 | 2NC |
| 13 | LV | FP 1376-M2 | 2NO |
| 14 | LS | FP 1476-M2 | 2NO |
| 15 | LS | FP 1576-M2 | 2NC |
| 16 | LI | / | |
| 18 | LA | FP 1876-M2 | 1NO+1NC |
| 20 | L | FP 2076-M2 | 2NO+1NC |
| 21 | L | FP 2176-M2 | 3NO |
| 22 | L | FP 2276-M2 | 1NO+2NC |
| E1 | A | / | |
| Max. speed | 0.5 m/s | | |
| Actuating force | initial 20 N - final 40 N | | |
| Travel diagrams | page 230 - group 6 | | |

All values in the drawings are in mm

Accessories See page 207

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

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

| | Regular head | | Compact head | | | |
|-----------------|---------------------------------|-------------|----------------------------------|-------------|----------------------------------|---------|
| | | | | | | |
| 2 | R FP 238-M2 | 2x(1NO-1NC) | R FP 258-M2 | 2x(1NO-1NC) | / | |
| 5 | R FP 538-M2 | 1NO+1NC | R FP 558-M2 | 1NO+1NC | R FP 540-M2 | 1NO+1NC |
| 6 | L FP 638-M2 | 1NO+1NC | L FP 658-M2 | 1NO+1NC | | |
| 7 | LO FP 738-M2 | 1NO+1NC | LO FP 758-M2 | 1NO+1NC | | |
| 9 | L FP 938-M2 | 2NC | L FP 958-M2 | 2NC | | |
| 10 | L FP 1038-M2 | 2NO | L FP 1058-M2 | 2NO | | |
| 11 | R FP 1138-M2 | 2NC | R FP 1158-M2 | 2NC | | |
| 12 | R FP 1238-M2 | 2NO | R FP 1258-M2 | 2NO | | |
| 13 | LV FP 1338-M2 | 2NC | LV FP 1358-M2 | 2NC | | |
| 14 | LS FP 1438-M2 | 2NC | LS FP 1458-M2 | 2NC | | |
| 15 | LS FP 1538-M2 | 2NO | LS FP 1558-M2 | 2NO | | |
| 16 | LI FP 1638-M2 | 2NC | / | | | |
| 18 | LA FP 1838-M2 | 1NO+1NC | LA FP 1858-M2 | 1NO+1NC | | |
| 20 | L FP 2038-M2 | 1NO+2NC | L FP 2058-M2 | 1NO+2NC | | |
| 21 | L FP 2138-M2 | 3NC | L FP 2158-M2 | 3NC | | |
| 22 | L FP 2238-M2 | 2NO+1NC | L FP 2258-M2 | 2NO+1NC | | |
| E1 | A FP E138-M2 | 1NO-1NC | A FP E158-M2 | 1NO-1NC | | |
| Actuating force | 0.1 Nm (0.25 Nm \rightarrow) | | 0.06 Nm (0.25 Nm \rightarrow) | | 0.21 Nm (0.36 Nm \rightarrow) | |
| Travel diagrams | page 230 - group 4 | | page 230 - group 4 | | / | |

IMPORTANT

For safety applications: join only switches and actuators marked with symbol \rightarrow next to the product code.

For more information about safety applications see details on page 225.

Separate actuators

IMPORTANT: These separate actuators can be used only with items of the FD, FP, FL, FC series.

| Technopolymer roller Ø 20 mm | Adjustable round rod Ø 3x125 mm | Adjustable square rod, 3x3x125 mm | Spring rod with plastic tip | Adjustable actuator with technopolymer roller | Adjustable glass fibre rod | |
|---------------------------------|------------------------------------|--------------------------------------|----------------------------------|--|---|----------------------------------|
| | | | | | | |
| VF L31 \rightarrow | VF L32 \rightarrow (3) | VF L33 \rightarrow (3) | VF L34 | VF L35 \rightarrow (1) (3) | VF L36 \rightarrow (3) | |
| Lyra actuator, single track | Lyra actuator, dual track | Technopolymer roller, Ø 20 mm | Technopolymer roller, Ø 20 mm | Porcelain roller | Adjustable safety actuator with technopolymer roller | Technopolymer roller, Ø 20 mm |
| | | | | | | |
| VF L41 \rightarrow | VF L42 \rightarrow | VF L51 \rightarrow | VF L52 \rightarrow | VF L53 \rightarrow (2) | VF L56 \rightarrow (3) | VF L57 \rightarrow |

All values in the drawings are in mm

Accessories See page 207

\rightarrow 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 FD, FP, FL, FC series.

Steel rollers, Ø 20 mm, with self-lubrication

| | | | | | |
|--------------------|--------------------|--------------------|--------------------|----------------|--------------------|
| | | | | | |
| VF L31-R24 (1) (3) | VF L35-R24 (1) (3) | VF L51-R24 (1) (3) | VF L52-R24 (1) (3) | VF L56-R24 (3) | VF L57-R24 (1) (3) |

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

Technopolymer rollers, Ø 35 mm

| | | | | | |
|----------------|--------------------|----------------|--------------------|----------------|--------------------|
| | | | | | |
| VF L31-R25 (4) | VF L35-R25 (1) (3) | VF L51-R25 (4) | VF L52-R25 (1) (3) | VF L56-R25 (3) | VF L57-R25 (1) (3) |

Rubber rollers, Ø 40 mm

| | | | | | |
|---------------|-------------------|---------------|-------------------|---------------|---------------|
| | | | | | |
| VF L31-R5 (4) | VF L35-R5 (1) (3) | VF L51-R5 (4) | VF L52-R5 (1) (3) | VF L56-R5 (3) | VF L57-R5 (4) |

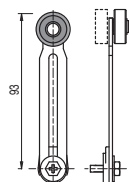
Rubber rollers, Ø 50 mm

| | | | | | |
|----------------|--------------------|----------------|----------------|----------------|----------------|
| | | | | | |
| VF L31-R26 (4) | VF L35-R26 (1) (3) | VF L51-R26 (4) | VF L52-R26 (4) | VF L56-R26 (3) | VF L57-R26 (4) |

Protruding rubber rollers, Ø 50 mm

| | |
|--------------------|----------------|
| | |
| VF L35-R27 (1) (3) | VF L56-R27 (3) |

- (1) Lever VF L35 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 L56 adjustable safety lever.
- (2) The position switch obtained by assembling switch FP •58-M2 (e.g. FP 558-M2, FP 658-M2, ...) with actuator VF L53 will not present the same travel diagrams and actuating forces as switch FP •53-E11M2V9 (e.g. FP 553-E11M2V9, FP 653-E11M2V9, ...)
- (3) If installed with switch FP •58-M2 (e.g. FP 558-M2, FP 658-M2, ...) the actuator may hit the housing of the switch upon actuation. This possible interference depends on the fixing position of actuator and switch head.
- (4) The actuator cannot be rotated to the inside because it will hit the switch head upon actuation.



All values in the drawings are in mm

Accessories See page 207

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