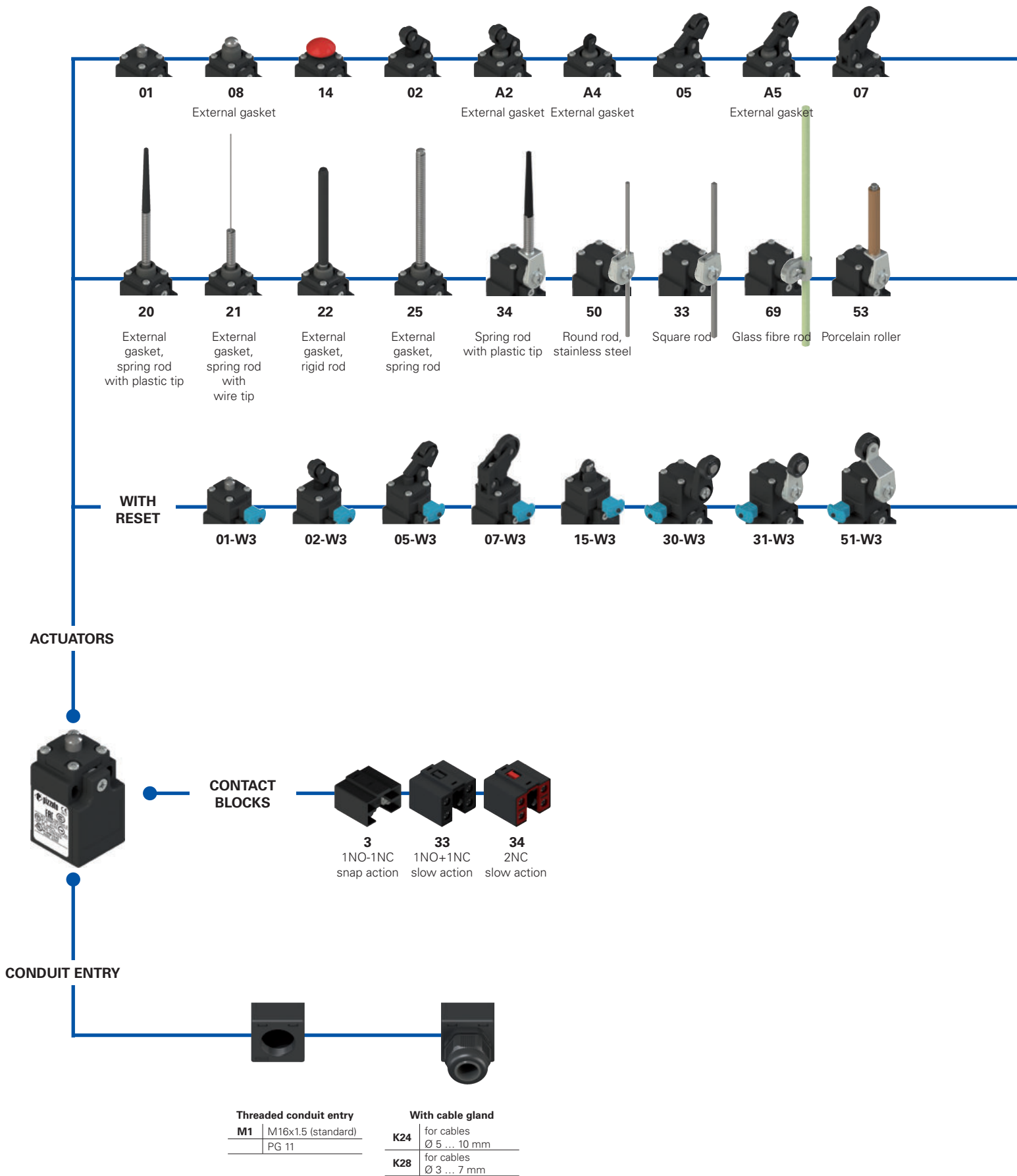


Selection diagram



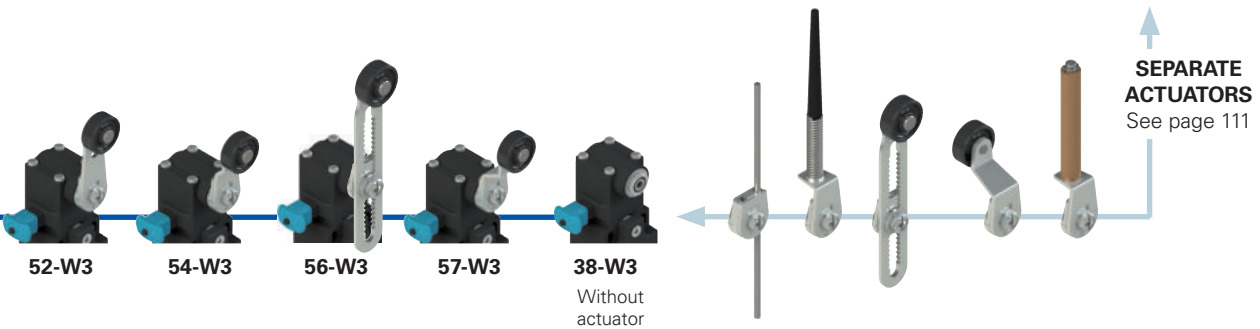
● Product options
→ Sold separately as accessory



A7	15	15-R28	16	10	17	12	13	76
External gasket	Roller Ø 11 mm	Roller Ø 12 mm, stainless steel	Roller Ø 20 mm		Roller Ø 12 mm, stainless steel		Roller Ø 12 mm, stainless steel	Rope switch for signalling



30	31	51	52	54	55	56	57	38
					Adjustable lever	Adjustable safety lever		Without actuator



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
FK 302-W3XGM1K24R23T6

Housing	
FK	technopolymer, one conduit entry

Contact block	
3	1NO+1NC, snap action
33	1NO+1NC, slow action
34	2NC, slow action

Actuators	
01	short plunger
02	roller lever
05	angled lever with roller
...

Reset	
	without reset (standard)
W3	simultaneous reset
W4	simultaneous reset, increased force

External metallic parts	
	zinc-plated steel (standard)
X	stainless steel

Ambient temperature	
	-25°C ... +80°C (standard)
T6	-40°C ... +80°C

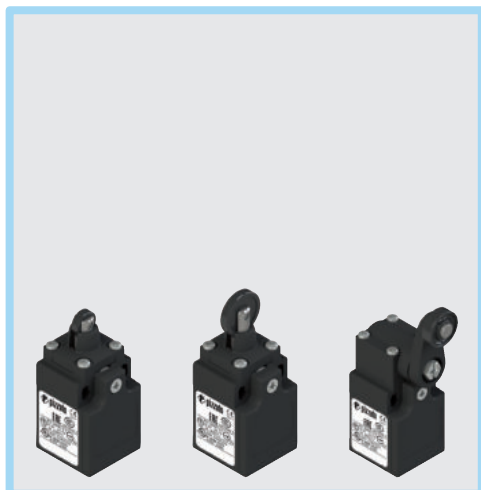
Pre-installed cable glands	
	no cable gland (standard)
K24	cable gland for cables Ø 5 ... 10°mm
K28	cable gland for cables Ø 3 ... 7°mm

For the complete list of possible combinations please contact our technical department.

Threaded conduit entry	
M1	M16x1.5 (standard)
	PG 11

Contact type	
	silver contacts (standard)
G	silver contacts, 1 µm gold coating

Rollers	
	standard roller
R28	stainless steel Ø 12 mm (for actuators A4, 15)
R23	stainless steel Ø 14 mm (for actuators A2, 02, A5, 05, 30, 31, 51, 52, 54, 55, 56, 57)
R24	stainless steel Ø 20 mm (for actuators 30, 31, 51, 52, 54, 55, 56, 57)
R36	stainless steel Ø 16 mm (for actuators A2, 02, A5, 05, 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 51, 52, 54, 55, 56, 57)
R27	rubber, protruding, Ø 50 mm (for actuators 55, 56)



Main features

- Technopolymer housing, one conduit entry
- Protection degree IP67
- 3 contact blocks available
- 47 actuators available
- Versions with external parts in stainless steel
- Versions with gold-plated silver contacts

Quality marks:



IMQ approval:	EG610
UL approval:	E131787
CCC approval:	2020970305002284
EAC approval:	RU C-IT.YT03.B.00035/19

Installation for safety applications:

Use only switches marked with the symbol \ominus 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 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 225 to 240.

Technical data

Housing

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

One threaded conduit entry:	M16x1.5 (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 247

In compliance with standards:

IEC 60947-5-1, EN 60947-5-1, EN 60947-1, IEC 60204-1, EN 60204-1, EN ISO 14119, EN ISO 12100, IEC 60529, EN 60529, EN IEC 63000, UL 508, CSA 22.2 No.14.

Approvals:

IEC 60947-5-1, UL 508, CSA 22.2 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.

Electrical data

Utilization category

without con- nector	Thermal current (I_{th}):	10 A	Alternating current: AC15 (50-60 Hz)			
	Rated insulation voltage (U):	500 Vac 600 Vdc	Ue (V)	250	400	500
		400 Vac 500 Vdc (contact blocks 33, 34)	Ie (A)	6	4	1
	Rated impulse withstand voltage (U_{imp}):	6 kV	Direct current: DC13			
		4 kV (contact block 33, 34)	Ue (V)	24	125	250
	Conditional short circuit current:	1000 A acc. to EN 60947-5-1	Ie (A)	3	0.55	0.3
Protection against short circuits:	type aM fuse 10 A 500 V					
Pollution degree:	3					



Features approved by IMQ

Rated insulation voltage (U_i):	500 Vac 400 Vac (for contact blocks 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 33, 34)
Protection degree of the housing: MV terminals (screw terminals)	IP67
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, Zb, Y+Y, Y.
Positive opening of contacts on contact blocks 33, 34.	
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

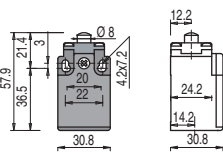
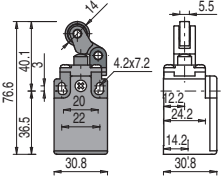
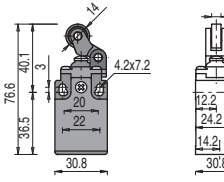
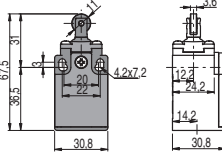
Electrical Ratings:	Q300 pilot duty (69 VA, 125-250 V dc) A600 pilot duty (720 VA, 120-600 V ac)
Environmental Ratings:	Types 1, 4X, 12, 13
For all contact blocks except 2 and 3 use 60 or 75°C copper (Cu) conductors, rigid or flexible, wire size 12, 14 AWG. Tightening torque for terminal screws of 7.1 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.

FK series position switches

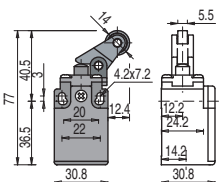
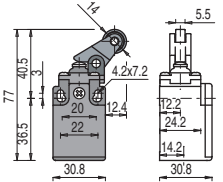
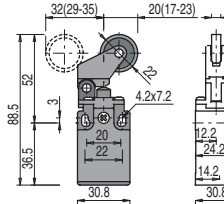
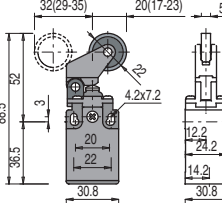
Contact type
R = snap action
L = slow action

Contact block

		With stainless steel roller on request	External gasket With stainless steel roller on request	External gasket With Ø 12 mm stainless steel roller on request
				
3 R	FK 301-M1 1NO-1NC	FK 302-M1 1NO-1NC	FK 3A2-M1 1NO-1NC	FK 3A4-M1 1NO-1NC
33 L	FK 3301-M1 \oplus 1NO+1NC	FK 3302-M1 \oplus 1NO+1NC	FK 33A2-M1 \oplus 1NO+1NC	FK 33A4-M1 \oplus 1NO+1NC
34 L	FK 3401-M1 \oplus 2NC	FK 3402-M1 \oplus 2NC	FK 34A2-M1 \oplus 2NC	FK 34A4-M1 \oplus 2NC
Max. speed	page 229 - type 4	page 229 - type 3	page 229 - type 3	page 229 - type 5
Actuating force	5 N (25 N \oplus)	4 N (25 N \oplus)	4.3 N (25 N \oplus)	4.3 N (25 N \oplus)
Travel diagrams	page 230 - group 1	page 230 - group 2	page 230 - group 2	page 230 - group 1

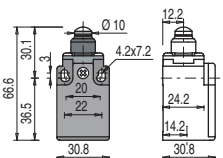
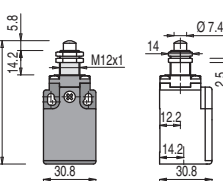
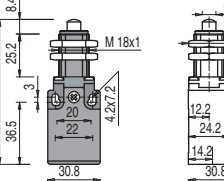
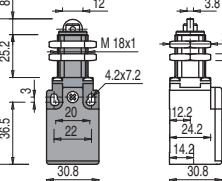
Contact type
R = snap action
L = slow action

Contact block

	With stainless steel roller on request	External gasket With stainless steel roller on request	External gasket	External gasket
				
3 R	FK 305-M1 1NO-1NC	FK 3A5-M1 1NO-1NC	FK 307-M1 1NO-1NC	FK 3A7-M1 1NO-1NC
33 L	FK 3305-M1 \oplus 1NO+1NC	FK 33A5-M1 \oplus 1NO+1NC	FK 3307-M1 \oplus 1NO+1NC	FK 33A7-M1 \oplus 1NO+1NC
34 L	FK 3405-M1 \oplus 2NC	FK 34A5-M1 \oplus 2NC	FK 3407-M1 \oplus 2NC	FK 34A7-M1 \oplus 2NC
Max. speed	page 229 - type 3	page 229 - type 3	page 229 - type 3	page 229 - type 3
Actuating force	4 N (25 N \oplus)	4.3 N (25 N \oplus)	4 N (25 N \oplus)	3 N (25 N \oplus)
Travel diagrams	page 230 - group 2	page 230 - group 2	page 230 - group 3	page 230 - group 3

Contact type
R = snap action
L = slow action

Contact block

	External gasket	Secured only by means of threaded head in vertical position	External gasket	External gasket
				
3 R	FK 308-M1 1NO-1NC	FK 310-M1 1NO-1NC	FK 312-M1 1NO-1NC	FK 313-M1 1NO-1NC
33 L	FK 3308-M1 \oplus 1NO+1NC	FK 3310-M1 \oplus 1NO+1NC	FK 3312-M1 \oplus 1NO+1NC	FK 3313-M1 \oplus 1NO+1NC
34 L	FK 3408-M1 \oplus 2NC	FK 3410-M1 \oplus 2NC	FK 3412-M1 \oplus 2NC	FK 3413-M1 \oplus 2NC
Max. speed	page 229 - type 4	page 229 - type 4	page 229 - type 4	page 229 - type 2
Actuating force	5 N (25 N \oplus)	5 N (25 N \oplus)	5 N (25 N \oplus)	5 N (25 N \oplus)
Travel diagrams	page 230 - group 1	page 230 - group 1	page 230 - group 1	page 230 - group 1

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	Roller, Ø 11 mm, technopolymer		Roller, Ø 12 mm, stainless steel	
3 R	FK 314-M1 1NO-1NC	FK 315-M1 1NO-1NC	FK 315-M1R28 1NO-1NC	FK 316-M1 1NO-1NC
33 L	FK 3314-M1 \odot 1NO+1NC	FK 3315-M1 \odot 1NO+1NC	FK 3315-M1R28 \odot 1NO+1NC	FK 3316-M1 \odot 1NO+1NC
34 L	FK 3414-M1 \odot 2NC	FK 3415-M1 \odot 2NC	FK 3415-M1R28 \odot 2NC	FK 3416-M1 \odot 2NC
Max. speed	page 229 - type 4	page 229 - type 2	page 229 - type 2	page 229 - type 2
Actuating force	6 N (25 N \odot)	5 N (25 N \odot)	5 N (25 N \odot)	5 N (25 N \odot)
Travel diagrams	page 230 - group 1	page 230 - group 1	page 230 - group 1	page 230 - group 1

Contact type R = snap action L = slow action	Secured only by means of threaded head in vertical position	External gasket Spring rod	External gasket Spring rod	External gasket Rigid rod
3 R	FK 317-M1 1NO-1NC	FK 320-M1 1NO-1NC	FK 321-M1 1NO-1NC	FK 322-M1 1NO-1NC
33 L	FK 3317-M1 \odot 1NO+1NC	FK 3320-M1 1NO+1NC	FK 3321-M1 1NO+1NC	FK 3322-M1 \odot 1NO+1NC
34 L	FK 3417-M1 \odot 2NC	FK 3420-M1 2NC	FK 3421-M1 2NC	FK 3422-M1 \odot 2NC
Max. speed	page 229 - type 2	1 m/s	1 m/s	1 m/s
Actuating force	5 N (25 N \odot)	0.05 Nm	0.05 Nm	0.05 Nm (0.25 Nm \odot)
Travel diagrams	page 230 - group 1	page 230 - group 4	page 230 - group 4	page 230 - group 4

Contact type R = snap action L = slow action	External gasket Spring rod	With Ø 20 mm stainless steel roller on request	Other rollers available. See page 112	Square rod, 3x3 mm
3 R	FK 325-M1 1NO-1NC	FK 330-M1 1NO-1NC	FK 331-M1 1NO-1NC	FK 333-M1 1NO-1NC
33 L	FK 3325-M1 1NO+1NC	FK 3330-M1 \odot 1NO+1NC	FK 3331-M1 \odot 1NO+1NC	FK 3333-M1 1NO+1NC
34 L	FK 3425-M1 2NC	FK 3430-M1 \odot 2NC	FK 3431-M1 \odot 2NC	FK 3433-M1 2NC
Max. speed	1 m/s	page 229 - type 1	page 229 - type 1	1.5 m/s
Actuating force	0.1 Nm	0.05 Nm (0.25 Nm \odot)	0.05 Nm (0.25 Nm \odot)	0.05 Nm
Travel diagrams	page 230 - group 4	page 230 - group 5	page 230 - group 5	page 230 - group 5

All values in the drawings are in mm

Accessories See page 207

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

FK series position switches

Contact type
R = snap action
L = slow action

		Round rod, Ø 3 mm, stainless steel	Other rollers available. See page 112	Other rollers available. See page 112		
Contact block						
3	R FK 334-M1	1NO-1NC	FK 351-M1	1NO-1NC	FK 352-M1	1NO-1NC
33	L FK 3334-M1	1NO+1NC	FK 3351-M1	1NO+1NC	FK 3352-M1	1NO+1NC
34	L FK 3434-M1	2NC	FK 3451-M1	2NC	FK 3452-M1	2NC
Max. speed	1.5 m/s	1.5 m/s	page 229 - type 1	page 229 - type 1		
Actuating force	0.05 Nm	0.05 Nm	0.05 Nm (0.25 Nm ⊕)	0.05 Nm (0.25 Nm ⊕)		
Travel diagrams	page 230 - group 5	page 230 - group 5	page 230 - group 5	page 230 - group 5		

Contact type
R = snap action
L = slow action

	Porcelain roller	Other rollers available. See page 112	Other rollers available. See page 112	Other rollers available. See page 112		
Contact block						
3	R FK 353-E0M1	1NO-1NC	FK 355-M1	1NO-1NC	FK 356-M1	1NO-1NC
33	L FK 3353-E0M1V9	1NO+1NC	FK 3355-M1	1NO+1NC	FK 3356-M1	1NO+1NC
34	L FK 3453-E0M1V9	2NC	FK 3455-M1	2NC	FK 3456-M1	2NC
Max. speed	0.5 m/s	page 229 - type 1	page 229 - type 1	page 229 - type 1		
Actuating force	0.02 Nm (0.25 Nm ⊕)	0.05 Nm (0.25 Nm ⊕)	0.05 Nm (0.25 Nm ⊕)	0.05 Nm (0.25 Nm ⊕)		
Travel diagrams	page 230 - group 6	page 230 - group 5	page 230 - group 5	page 230 - group 5		

Contact type
R = snap action
L = slow action

	Other rollers available. See page 112	Glass fibre rod	Rope switch for signalling	
Contact block				
3	R FK 357-M1	1NO-1NC	FK 376-M1	1NO-1NC
33	L FK 3357-M1	1NO+1NC	FK 3376-M1	1NO+1NC
34	L FK 3457-M1	2NC	FK 3476-M1	2NO
Max. speed	page 229 - type 1	1.5 m/s	0.5 m/s	
Actuating force	0.05 Nm (0.25 Nm ⊕)	0.05 Nm	initial 20 N - final 40 N	
Travel diagrams	page 230 - group 5	page 230 - group 5	page 230 - group 7	

(1) Positive opening only with actuator set to max. See page 112.

All values in the drawings are in mm

Accessories See page 207

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



FK 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		With stainless steel roller on request	With stainless steel roller on request	With stainless steel roller on request
R = snap action L = slow action				
Contact block				
33 L	FK 3301-W3M1 \rightarrow 1NO+1NC	FK 3302-W3M1 \rightarrow 1NO+1NC	FK 3305-W3M1 \rightarrow 1NO+1NC	FK 3307-W3M1 \rightarrow 1NO+1NC
34 L	FK 3401-W3M1 \rightarrow 2NC	FK 3402-W3M1 \rightarrow 2NC	FK 3405-W3M1 \rightarrow 2NC	FK 3407-W3M1 \rightarrow 2NC
Max. speed	page 229 - type 4	page 229 - type 3	page 229 - type 3	page 229 - type 3
Actuating force	4.5 N (25 N \rightarrow)	4 N (25 N \rightarrow)	4 N (25 N \rightarrow)	2.5 N (25 N \rightarrow)
Travel diagrams	page 231 - group 1	page 231 - group 2	page 231 - group 2	page 231 - group 3

Contact type		With \varnothing 12 mm stainless steel roller on request	With \varnothing 20 mm stainless steel roller on request	Other rollers available. See page 112	Other rollers available. See page 112
R = snap action L = slow action					
Contact block					
33 L	FK 3315-W3M1 \rightarrow 1NO+1NC	FK 3330-W3M1 \rightarrow 1NO+1NC	FK 3331-W3M1 \rightarrow 1NO+1NC	FK 3351-W3M1 \rightarrow 1NO+1NC	
34 L	FK 3415-W3M1 \rightarrow 2NC	FK 3430-W3M1 \rightarrow 2NC	FK 3431-W3M1 \rightarrow 2NC	FK 3451-W3M1 \rightarrow 2NC	
Max. speed	page 229 - type 2	page 229 - type 1	page 229 - type 1	page 229 - type 1	
Actuating force	4.5 N (25 N \rightarrow)	0.07 Nm (0.25 Nm \rightarrow)	0.07 Nm (0.25 Nm \rightarrow)	0.07 Nm (0.25 Nm \rightarrow)	
Travel diagrams	page 231 - group 1	page 231 - group 4	page 231 - group 4	page 231 - group 4	

Contact type		Other rollers available. See page 112	Other rollers available. See page 112	Other rollers available. See page 112	Other rollers available. See page 112
R = snap action L = slow action					
Contact block					
33 L	FK 3352-W3M1 \rightarrow 1NO+1NC	FK 3354-W3M1 \rightarrow 1NO+1NC	FK 3356-W3M1 \rightarrow 1NO+1NC	FK 3357-W3M1 \rightarrow 1NO+1NC	
34 L	FK 3452-W3M1 \rightarrow 2NC	FK 3454-W3M1 \rightarrow 2NC	FK 3456-W3M1 \rightarrow 2NC	FK 3457-W3M1 \rightarrow 2NC	
Max. speed	page 229 - type 1	page 229 - type 1	page 229 - type 1	page 229 - type 1	
Actuating force	0.07 Nm (0.25 Nm \rightarrow)	0.07 Nm (0.25 Nm \rightarrow)	0.07 Nm (0.25 Nm \rightarrow)	0.07 Nm (0.25 Nm \rightarrow)	
Travel diagrams	page 231 - group 4	page 231 - group 4	page 231 - group 4	page 231 - group 4	

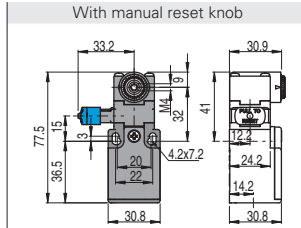
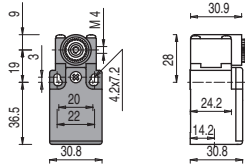
All values in the drawings are in mm

Accessories See page 207

\rightarrow 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



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 225.

Contact block				
3	R	FK 338-M1	1NO-1NC	/
33	L	FK 3338-M1	1NO+1NC	FK 3338-W3M1
34	L	FK 3438-M1	2NC	FK 3438-W3M1
Actuating force		0.06 Nm (0.25 Nm		0.07 Nm (0.25 Nm
Travel diagrams		page 230 - group 5		page 231 - 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: FK 3301-W3M1 → FK 3301-W4M1

Separate actuators

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	Spring rod with plastic tip	Adjustable round rod Ø 3x125 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	VF LE54	VF LE55	VF LE56	VF LE57	VF LE69

All values in the drawings are in mm

Accessories See page 207

→ 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, 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) (1)	VF LE56-R24 (4)	VF LE57-R24 (4)

Technopolymer rollers, Ø 35 mm

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

Rubber rollers, Ø 40 mm

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

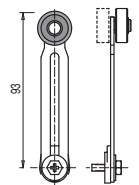
Rubber rollers, Ø 50 mm

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

Protruding rubber rollers, Ø 50 mm

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

- (1) Lever 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 FK •38-M1 (e.g. FK 338-M1, FK 3338-M1, ...) with actuator VF LE53 will not present the same travel diagrams and actuating forces as switch FK •53-E0M1V9 (e.g. FK 353-E0M1, FK 3353-E0M1V9, ...)
- (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