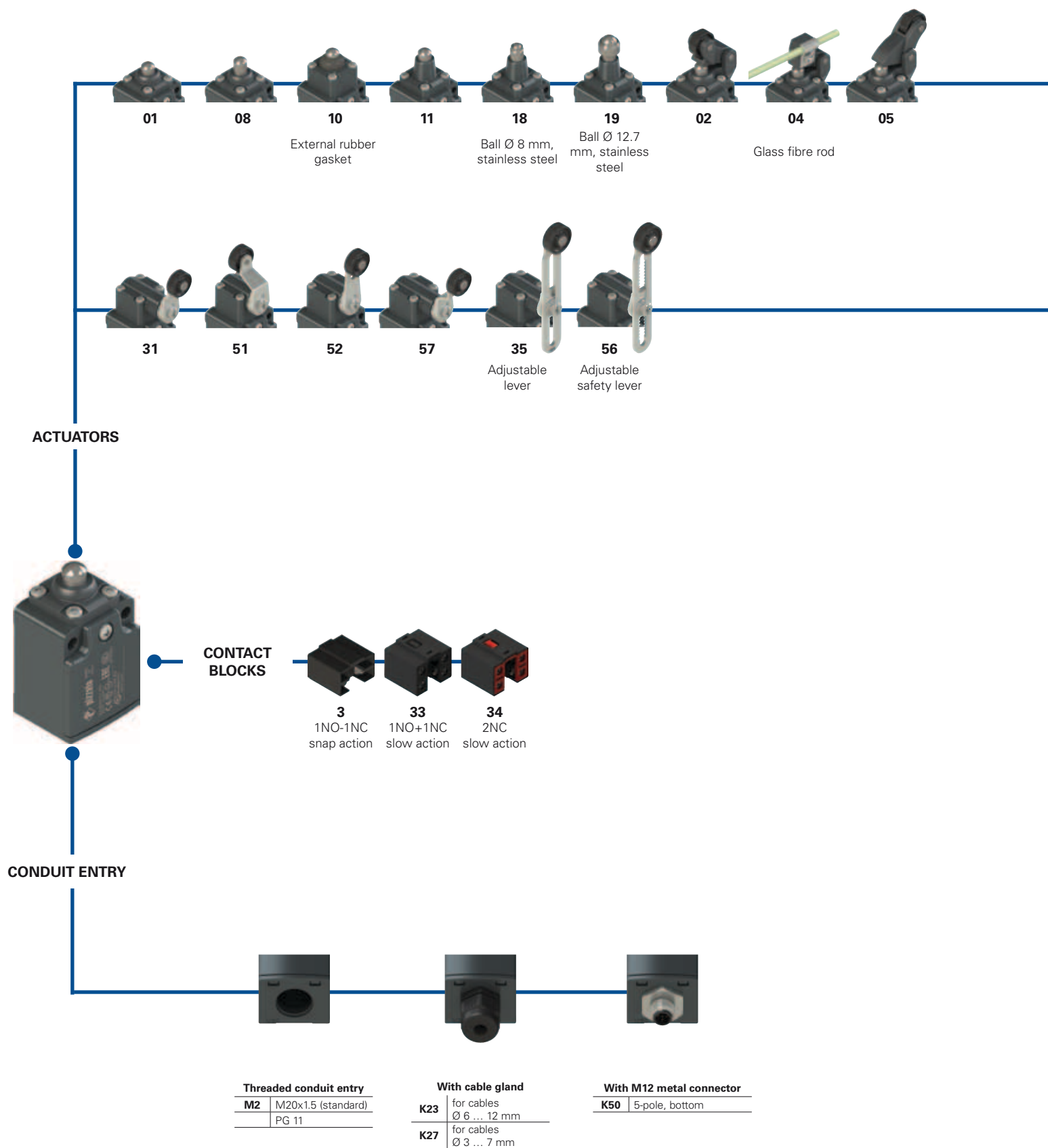
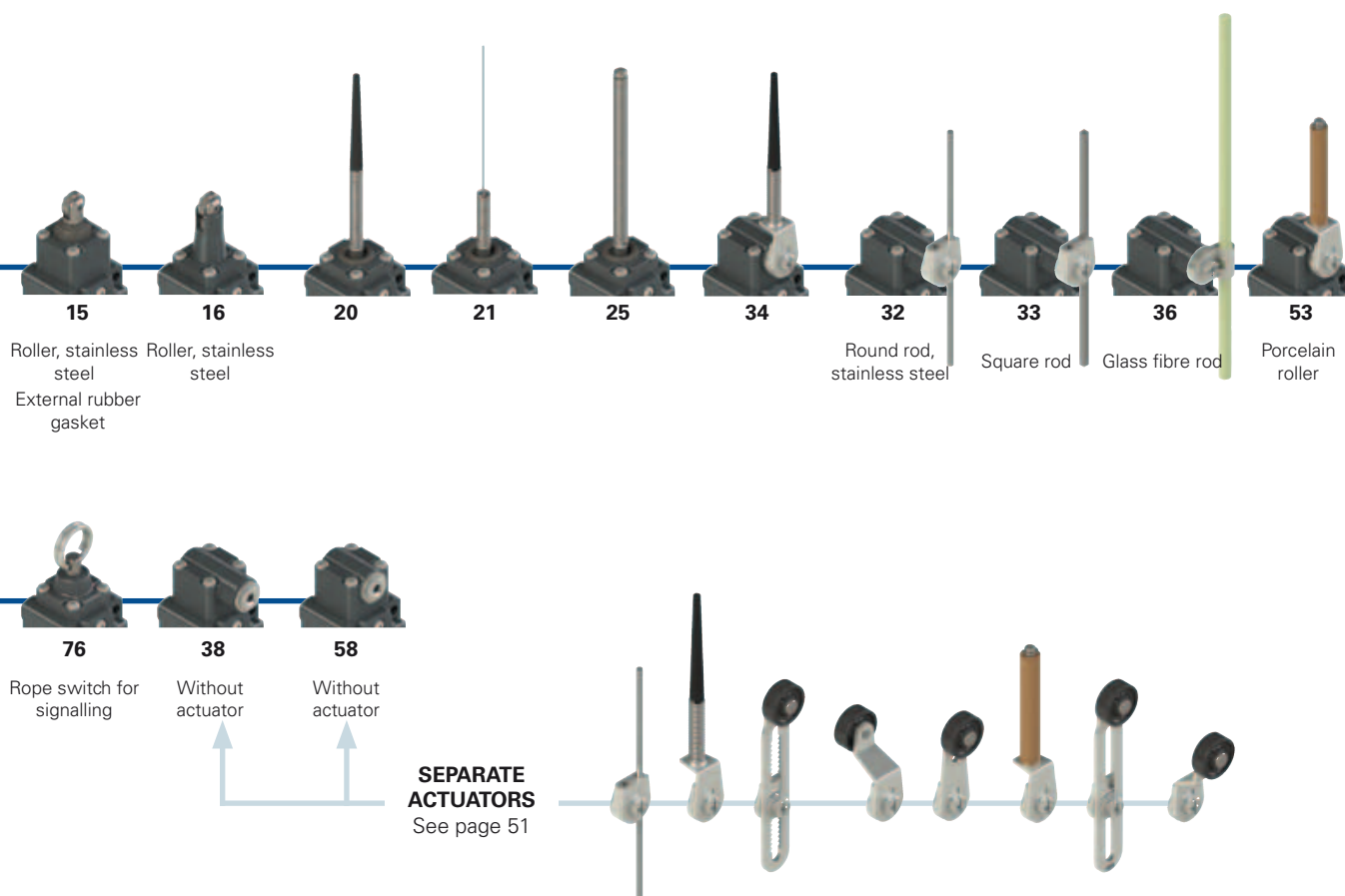


Selection diagram



—●— product options
—→— Sold separately as accessory



Code structure

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

article options options
FC 302-GM2K50R24T6

Housing

FC metal, 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
... ..

Contact type

silver contacts (standard)
G silver contacts, 1 µm gold coating (not for contact block 3)

Threaded conduit entry

M2 M20x1.5 (standard)
PG11

Ambient temperature

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

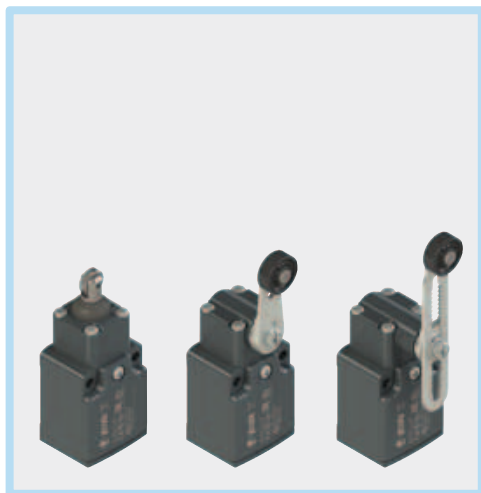
Rollers

standard roller
R24 stainless steel Ø 20 mm
(for actuators 02, 05, 31, 35, 51, 52, 56, 57)
R25 technopolymer, Ø 35 mm
(for actuators 31, 35, 51, 52, 56, 57)
R5 rubber, Ø 40 mm
(for actuators 31, 35, 51, 52, 56, 57)
R26 rubber, Ø 50 mm
(for actuators 31, 35, 51, 52, 56, 57)
R27 rubber, protruding, Ø 50 mm
(for actuators 35 and 36)

Pre-installed cable glands

no cable gland (standard)
K23 cable gland for cables Ø 6 ... 12 mm
K27 cable gland for cables Ø 3 ... 7 mm
K50 M12 metal connector, 5-pole

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



Main features

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

Technical data

Housing

Metal housing, powder-coated
One threaded conduit entry:
Protection degree:

M20x1.5 (standard)
IP67 acc. to EN 60529
with cable gland presenting same or
higher protection degree

General data

Ambient temperature:
Max. actuation frequency:
Mechanical endurance:
Mounting position:
Safety parameter B_{10D} :
Mechanical interlock, not coded:
Tightening torques for installation:

-25°C ... +80°C
3600 operating cycles/hour
20 million operating cycles
any
40,000,000 for NC contacts
type 1 acc. to EN ISO 14119
see page 211-222

Cable cross section (flexible copper strands)

Contact blocks 33, 34:	min.	1 x 0.34 mm ²	(1 x AWG 22)
	max.	2 x 1.5 mm ²	(2 x AWG 16)
Contact block 3:	min.	1 x 0.5 mm ²	(1 x AWG 20)
	max.	2 x 1.5 mm ²	(2 x AWG 16)

In compliance with standards:

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

Approvals:

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

Quality marks:



IMQ approval: EG605
UL approval: E131787
CCC approval: 2007010305230000
EAC approval: RU C-IT.AQ35.B.00454

Compliance with the requirements of:

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

Positive contact opening in conformity with standards:

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

Installation for safety applications:

Use only switches marked with the symbol  next to the product code. Always connect the safety circuit to the **NC contacts** (normally closed contacts: 11-12, 21-22 or 31-32) as required by **EN ISO 14119, paragraph 5.4** for specific interlock applications and **EN ISO 13849-2 tables D3** (well-tried components) and **D.8** (fault exclusions) for safety applications in general. Actuate the switch **at least up to the positive opening travel** shown in the travel diagrams on page 214. Actuate the switch **at least with the positive opening force**, reported in brackets below each article, next to the actuating force value.

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

Electrical data		Utilization category			
without connector	Thermal current (I_{th}):	10 A	Alternating current: AC15 (50÷60 Hz)		
	Rated insulation voltage (U_i):	500 Vac 600 Vdc	Ue (V)	250	400
		400 Vac 500 Vdc (contact blocks 33, 34)	Ie (A)	6	4
	Rated impulse withstand voltage (U_{imp}):	6 kV			1
		4 kV (contact block 33, 34)	Direct current: DC13		
with M12 connector 5-pole	Conditional short circuit current:	1000 A acc. to EN 60947-5-1	Ue (V)	24	125
	Protection against short circuits:	type aM fuse 10 A 500 V	Ie (A)	6	1.1
	Pollution degree:	3			0.4
			Alternating current: AC15 (50÷60 Hz)		
with M12 connector 5-pole	Thermal current (I_{th}):	4 A	Ue (V)	24	120
	Rated insulation voltage (U_i):	250 Vac 300 Vdc	Ie (A)	4	4
	Protection against short circuits:	type gG fuse 4 A 500 V	Direct current: DC13		
	Pollution degree:	3	Ue (V)	24	125
			Ie (A)	4	1.1

Features approved by IMO

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:	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:	Zb, Y+Y
Positive opening of contacts on contact blocks 33, 34	
In compliance with standards: EN 60947-1, EN 60947-5-1+ A1:2009, fundamental requirements of the Low Voltage Directive 2014/35/EU.	

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

Features approved by UL

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

Housing features type 1, 4X, 12, 13

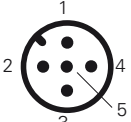
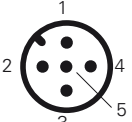
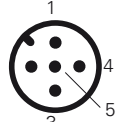
For all contact blocks except 2 and 3 use 60 or 75°C copper (Cu) conductors, rigid or flexible, wire size 12, 14 AWG. Tightening torque for terminal screws of 7.1 lb in (0.8 Nm).

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

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

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

Wiring diagram for M12 connectors

Contact block 3 1NC-1NO	Contact block 33 1NC+1NO	Contact block 34 2NC			
					
M12 connector, 5-pole	M12 connector, 5-pole	M12 connector, 5-pole			
Contacts	Pin no.	Contacts	Pin no.	Contacts	Pin no.
NC	1-2	NC	1-2	NC	1-2
NO	3-4	NO	3-4	NC	3-4
ground	5	ground	5	ground	5

2 FC series position switches

Contact type:

R = snap action
L = slow action

Contact block

3	R	FC 301-M2	1NO-1NC	FC 302-M2	1NO-1NC	FC 304-M2	1NO-1NC	FC 305-M2	1NO-1NC
33	L	FC 3301-M2	1NO+1NC	FC 3302-M2	1NO+1NC	FC 3304-M2	1NO+1NC	FC 3305-M2	1NO+1NC
34	L	FC 3401-M2	2NC	FC 3402-M2	2NC	FC 3404-M2	2NC	FC 3405-M2	2NC
Max. speed		page 213 - type 4		page 213 - type 3		0.5 m/s		page 213 - type 3	
Actuating force		6 N (25 N)		4 N (25 N)		0.17 Nm		4 N (25 N)	
Travel diagrams		page 214 - group 1		page 214 - group 2		page 214 - group 1		page 214 - group 2	

Contact block

3	R	FC 308-M2	1NO-1NC	FC 310-M2	1NO-1NC	FC 311-M2	1NO-1NC	FC 315-M2	1NO-1NC
33	L	FC 3308-M2	1NO+1NC	FC 3310-M2	1NO+1NC	FC 3311-M2	1NO+1NC	FC 3315-M2	1NO+1NC
34	L	FC 3408-M2	2NC	FC 3410-M2	2NC	FC 3411-M2	2NC	FC 3415-M2	2NC
Max. speed		page 213 - type 4		page 213 - type 4		page 213 - type 4		page 213 - type 2	
Actuating force		6 N (25 N)		7 N (25 N)		6 N (25 N)		7 N (25 N)	
Travel diagrams		page 214 - group 1		page 214 - group 1		page 214 - group 1		page 214 - group 1	

Contact block

3	R	FC 316-M2	1NO-1NC	FC 318-M2	1NO-1NC	FC 319-M2	1NO-1NC	FC 320-M2	1NO-1NC
33	L	FC 3316-M2	1NO+1NC	FC 3318-M2	1NO+1NC	FC 3319-M2	1NO+1NC	FC 3320-M2	1NO+1NC
34	L	FC 3416-M2	2NC	FC 3418-M2	2NC	FC 3419-M2	2NC	FC 3420-M2	2NC
Max. speed		page 213 - type 2		page 213 - type 4		page 213 - type 4		1 m/s	
Actuating force		6 N (25 N)		6 N (25 N)		6 N (25 N)		0.07 Nm	
Travel diagrams		page 214 - group 1		page 214 - group 1		page 214 - group 1		page 214 - group 3	

All values in the drawings are in mm

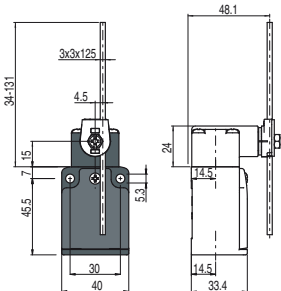
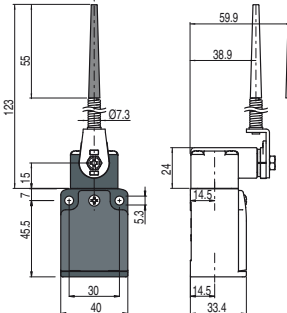
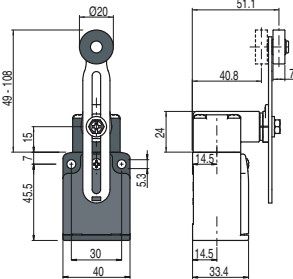
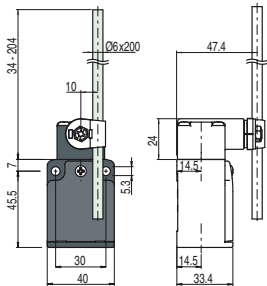
Items with code on **green** background are stock items

Accessories See page 197

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



		With external rubber gasket	With external rubber gasket	Other rollers available. See page 52	Round rod, Ø 3 mm, stainless steel				
Contact type:									
Contact block									
3	R	FC 321-M2	1NO-1NC	FC 325-M2	1NO-1NC	FC 331-M2	1NO-1NC	FC 332-M2	1NO-1NC
33	L	FC 3321-M2	1NO+1NC	FC 3325-M2	1NO+1NC	FC 3331-M2	➔ 1NO+1NC	FC 3332-M2	1NO+1NC
34	L	FC 3421-M2	2NC	FC 3425-M2	2NC	FC 3431-M2	➔ 2NC	FC 3432-M2	2NC
Max. speed		1 m/s		1 m/s		page 213 - type 1		1.5 m/s	
Actuating force		0.06 Nm		0.1 Nm		0.09 Nm (0.25 Nm ➔)		0.09 Nm	
Travel diagrams		page 214 - group 3		page 214 - group 3		page 214 - group 4		page 214 - group 4	

		Square rod, 3x3 mm		Other rollers available. See page 52		Glass fibre rod			
Contact block									
3	R	FC 333-M2	1NO-1NC	FC 334-M2	1NO-1NC	FC 335-M2	1NO-1NC	FC 336-M2	1NO-1NC
33	L	FC 3333-M2	1NO+1NC	FC 3334-M2	1NO+1NC	FC 3335-M2  (1)	1NO+1NC	FC 3336-M2	1NO+1NC
34	L	FC 3433-M2	2NC	FC 3434-M2	2NC	FC 3435-M2  (1)	2NC	FC 3436-M2	2NC
Max. speed		1.5 m/s		1 m/s		page 213 - type 1		1.5 m/s	
Actuating force		0.09 Nm		0.09 Nm		0.09 Nm (0.25 Nm )		0.09 Nm	
Travel diagrams		page 214 - group 4		page 214 - group 4		page 214 - group 4		page 214 - group 4	

		Other rollers available. See page 52	Other rollers available. See page 52	Porcelain roller	Other rollers available. See page 52
Contact block					
3	R	FC 351-M2 1NO-1NC	FC 352-M2 1NO-1NC	FC 353-E11M2 1NO-1NC	FC 356-M2 1NO-1NC
33	L	FC 3351-M2 1NO+1NC	FC 3352-M2 1NO+1NC	FC 3353-E11M2V9 1NO+1NC	FC 3356-M2 1NO+1NC
34	L	FC 3451-M2 2NC	FC 3452-M2 2NC	FC 3453-E11M2V9 2NC	FC 3456-M2 2NC
Max. speed		page 213 - type 1	page 213 - type 1	0.5 m/s	page 213 - type 1
Actuating force		0.05 Nm (0.25 Nm)	0.05 Nm (0.25 Nm)	0.02 Nm (0.25 Nm)	0.09 Nm (0.25 Nm)
Travel diagrams		page 214 - group 4	page 214 - group 4	page 214 - group 5	page 214 - group 4

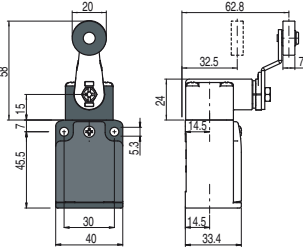
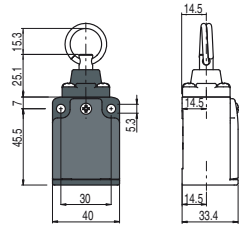
(1) Positive opening only with actuator set to max. See page 51.

All values in the drawings are in mm

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

Accessories See page 197

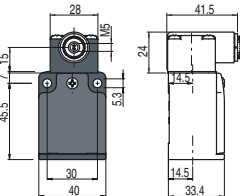
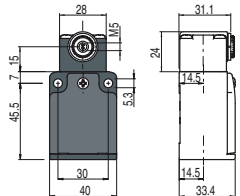
→ The 2D and 3D files are available at www.pizzato.com

Contact type:		Other rollers available. See page 52		Rope switch for signalling	
R = snap action L = slow action					
Contact block					
3	R	FC 357-M2	1NO-1NC	FC 376-M2	1NO-1NC
33	L	FC 3357-M2 ⊕	1NO+1NC	FC 3376-M2	1NO+1NC
34	L	FC 3457-M2 ⊕	2NC	FC 3476-M2	2NC
Max. speed		page 213 - type 1		0.5 m/s	
Actuating force		0.09 Nm (0.25 Nm ⊕)		initial 20 N - final 40 N	
Travel diagrams		page 214 - group 4		page 214 - group 6	

All values in the drawings are in mm

Position switches with swivelling lever without actuator

All values in the drawings are in mm

		Regular head		Compact head	
					
Contact block					
3	R	FC 338-M2	1NO-1NC	FC 358-M2	1NO-1NC
33	L	FC 3338-M2 ➔	1NO+1NC	FC 3358-M2 ➔	1NO+1NC
34	L	FC 3438-M2 ➔	2NC	FC 3458-M2 ➔	2NC
Actuating force		0.09 Nm (0.25 Nm ➔)		0.05 Nm (0.25 Nm ➔)	
Travel diagrams		page 214 - group 4		page 214 - group 4	

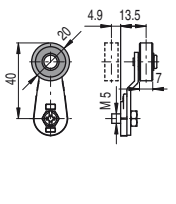
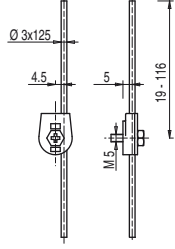
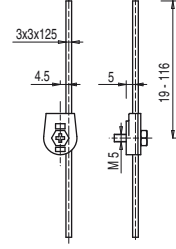
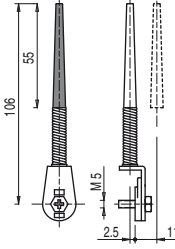
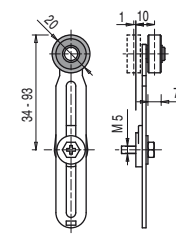
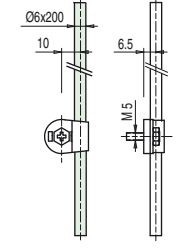
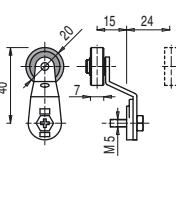
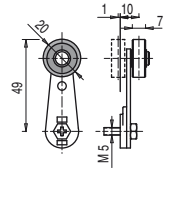
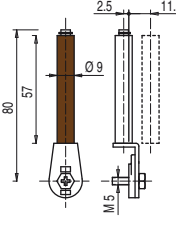
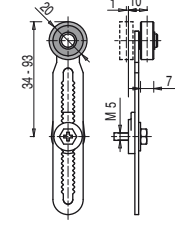
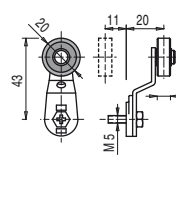
IMPORTANT

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

Separate actuators

All values in the drawings are in mm

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

Technopolymer roller Ø 20 mm	Adjustable round rod Ø 3x125 mm	Adjustable square rod, 3x3x125 mm	Flexible rod with pointed end	Adjustable actuator with technopolymer roller	Adjustable glass fibre rod
					
VF L31 ⊕	VF L32 (3)	VF L33 (3)	VF L34	VF L35 ⊕ (1) (3)	VF L36 (3)
Technopolymer roller Ø 20 mm	Technopolymer roller Ø 20 mm	Porcelain roller	Adjustable safety actuator with technopolymer roller	Technopolymer roller Ø 20 mm	
					
VF L51 ⊕	VF L52 ⊕	VF L53 ⊕ (2)	VF L56 ⊕ (3)	VF L57 ⊕	

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

Accessories See page 197

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



Special separate actuators

All values in the drawings are in mm

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

Stainless steel rollers, Ø 20 mm

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

Technopolymer rollers, Ø 35 mm

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

Rubber rollers, Ø 40 mm

VF L31-R5 (4)	VF L35-R5 (1) (3)	VF L51-R5 (4)	VF L52-R5 (1)	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) Actuator 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 FC •58-M2 (e.g. FC 358-M2, FC 3358-M2...) with actuator VF L53 will not present the same travel diagrams and actuating forces as switch FC •53-E11M2 (e.g. FC 353-E11M2, FC 3353-E11M2V9...).
- (3) If installed with switch FC •58-M2 (e.g. FC 358-M2, FC 3358-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.

Accessories See page 197

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

