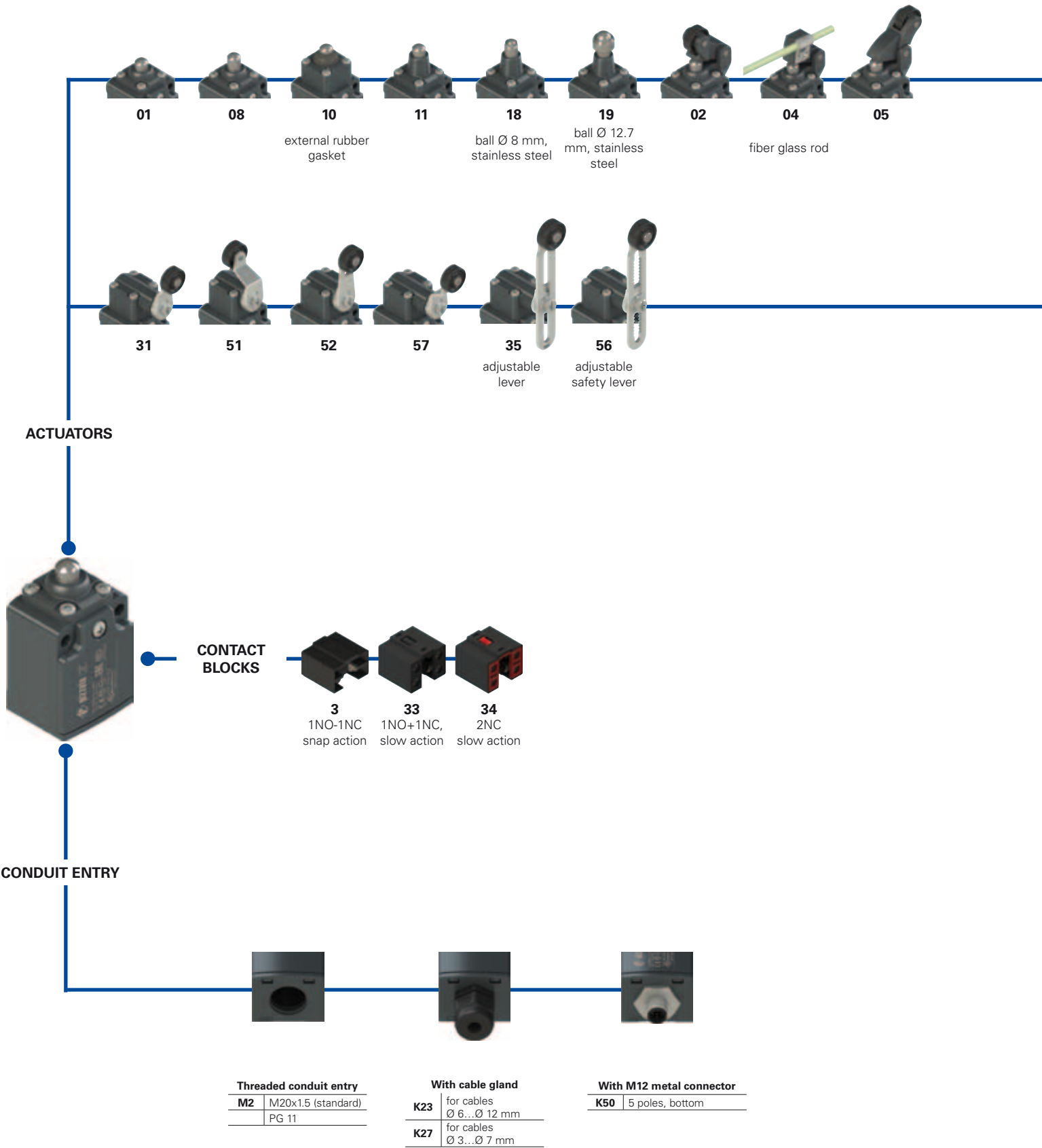
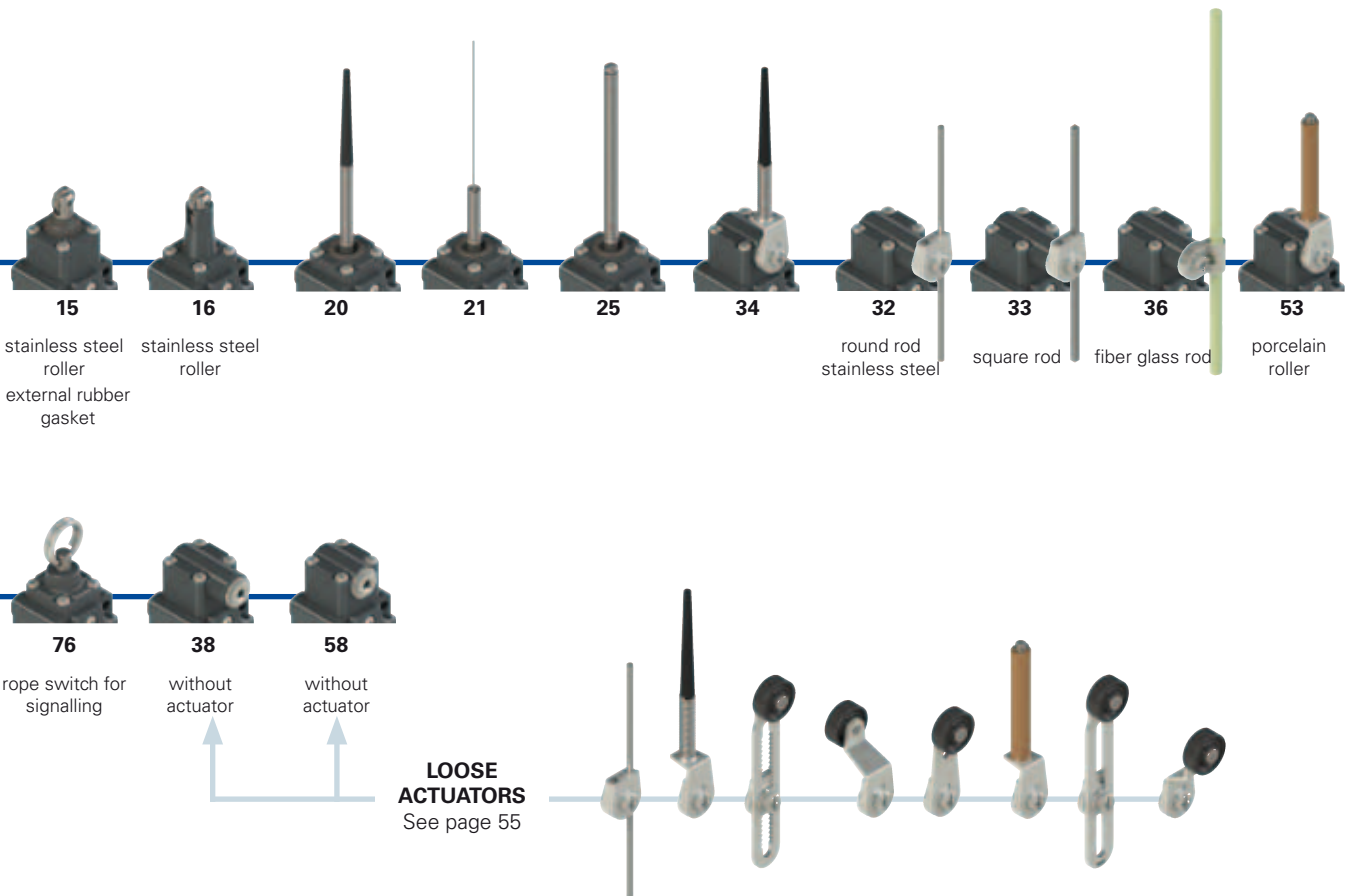


Selection diagram



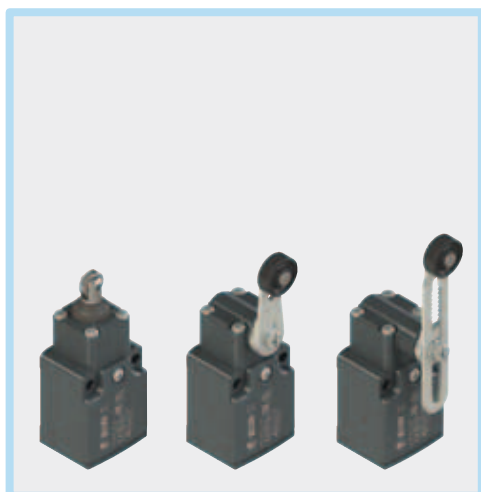
● product options
→ accessory sold separately


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		Ambient temperature	
FC	metal, one conduit entry		-25°C ... +80°C (standard)
Contact blocks		T6	-40°C ... +80°C
3	1NO-1NC, snap action	Rollers	
33	1NO+1NC, slow action		standard roller
34	2NC, slow action	R24	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 roller lever	R27	rubber, protruding, Ø 50 mm (for actuators 35 e 36)
...	Pre-installed cable glands	
Contact type			without cable gland (standard)
	silver contacts (standard)	K23	cable gland for cables Ø 6...Ø 12 mm
G	silver contacts with 1 µm gold coating (not for contact block 3)	K27	cable gland for cables Ø 3...Ø 7 mm
Threaded conduit entry		K50	M12 metal connector, 5 poles
M2	M20x1.5 (standard)	Please contact our technical service for the complete list of possible combinations.	
	PG11		



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, baked powder coating
 One threaded conduit entry: M20x1.5 (standard)
 Protection degree: IP67 according to EN 60529 with cable gland having equal or higher protection degree

General data

Ambient temperature: -25°C ... +80°C
 Max. actuation frequency: 3600 operating cycles¹/hour
 Mechanical endurance: 20 million operating cycles¹
 Mounting position: any
 Safety parameters:
 B_{10d}: 40,000,000 for NC contacts
 Mechanical interlock, not coded: type 1 according to EN ISO 14119
 Tightening torques for installation: see pages 235-246
 (1) One operation cycle means two movements, one to close and one to open contacts, as defined in EN 60947-5-1.

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 conformity 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.

Markings and quality marks:



IMQ approval: EG605
 UL approval: E131787
 CCC approval: 2007010305230000
 EAC approval: RU C-IT ДМ94.В.01024

In conformity with the requirements of:

Low Voltage Directive 2006/95/EC, Machinery Directive 2006/42/EC and EMC Directive 2004/108/EC.

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 ⊕ aside the product code. Always connect the safety circuit to the **NC contacts** (normally closed contacts: 11-12, 21-22 or 31-32) as stated in **standard EN 60947-5-1, encl. K, par. 2**. Actuate the switch **at least up to the positive opening travel** shown in the travel diagrams on page 238. Operate the switch **at least with the positive opening force**, indicated between brackets below each article, aside the minimum force value.

⚠ **If not expressly indicated in this chapter, for correct installation and utilization of all articles see chapter utilization requirements from page 235 to page 246.**

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	U _e (V)	250	400	500
	Rated impulse withstand voltage (U _{imp}):	400 Vac 500 Vdc (contact blocks 33, 34)	I _e (A)	6	4	1
		6 kV	Direct current: DC13			
	4 kV(contact blocks 33, 34)	U _e (V)	24	125	250	
Conditional short circuit current:	1000 A according to EN 60947-5-1	I _e (A)	6	1.1	0.4	
Protection against short circuits:	type aM fuse 10 A 500 V					
Pollution degree:	3					

with M12 connector 5 poles	Thermal current (I _{th}):	4 A	Alternating current: AC15 (50÷60 Hz)			
	Rated insulation voltage (U _i):	250 Vac 300 Vdc	U _e (V)	24	120	250
	Protection against short circuits:	type gG fuse 4 A 500 V	I _e (A)	4	4	4
		4 A	Direct current: DC13			
	U _e (V)	24	125	250		
Pollution degree:	3	I _e (A)	4	1.1	0.4	

Characteristics approved by IMO

Rated insulation voltage (Ui): 500 Vac
 400 Vac (for contact blocks 33, 34)
 Conventional free air thermal current (Ith): 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 (Ue): 400 Vac (50 Hz)
 Operating current (Ie): 3 A
 Forms of the contact element: Zb, Y+Y
 Positive opening of contacts on contact blocks 33, 34

In conformity with standards: EN 60947-1, EN 60947-5-1+ A1:2009, fundamental requirements of the Low Voltage Directive 2006/95/EC.

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

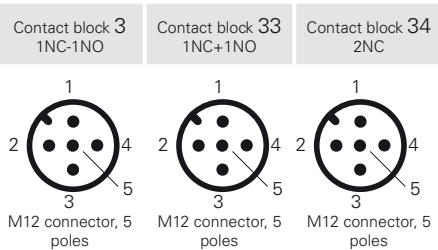
Characteristics approved by UL

Utilization categories Q300 (69 VA, 125 ... 250 Vdc)
 A600 (720 VA, 120 ... 600 Vac)
 Data of housing type 1, 4X "indoor use only", 12, 13
 For all contact blocks except 2 and 3 use 60 or 75°C copper (Cu) conductor, rigid or flexible, wire size AWG 12/14. Terminal tightening torque of 7.1 lb in (0.8 Nm).
 For contact blocks 2 and 3 use 60 or 75 °C copper (Cu) conductor, rigid or flexible, wire size AWG 14. Terminal tightening torque of 12 lb in (1.4 Nm).

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

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

Connection diagram for M12 connectors



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

Contact type:

R = snap action
L = slow action

Contact blocks

		With stainless steel roller on request	With stainless steel roller on request
3	R	FC 301-M2 1NO-1NC	FC 302-M2 1NO-1NC
33	L	FC 3301-M2 1NO+1NC	FC 3302-M2 1NO+1NC
34	L	FC 3401-M2 2NC	FC 3402-M2 2NC
Max. speed		page 237 - type 4	page 237 - type 3
Min. force		6 N (25 N \ominus)	4 N (25 N \ominus)
Travel diagrams		page 238 - group 1	page 238 - group 2

Contact blocks

		With external rubber gasket	With external rubber gasket
3	R	FC 308-M2 1NO-1NC	FC 310-M2 1NO-1NC
33	L	FC 3308-M2 1NO+1NC	FC 3310-M2 1NO+1NC
34	L	FC 3408-M2 2NC	FC 3410-M2 2NC
Max. speed		page 237 - type 4	page 237 - type 4
Min. force		6 N (25 N \ominus)	7 N (25 N \ominus)
Travel diagrams		page 238 - group 1	page 238 - group 1

Contact blocks

		Ball, \varnothing 8 mm, stainless steel	Ball, \varnothing 12.7 mm, stainless steel	With external rubber gasket
3	R	FC 316-M2 1NO-1NC	FC 318-M2 1NO-1NC	FC 320-M2 1NO-1NC
33	L	FC 3316-M2 1NO+1NC	FC 3318-M2 1NO+1NC	FC 3320-M2 1NO+1NC
34	L	FC 3416-M2 2NC	FC 3418-M2 2NC	FC 3420-M2 2NC
Max. speed		page 237 - type 2	page 237 - type 4	1 m/s
Min. force		6 N (25 N \ominus)	6 N (25 N \ominus)	0.07 Nm
Travel diagrams		page 238 - group 1	page 238 - group 1	page 238 - group 3

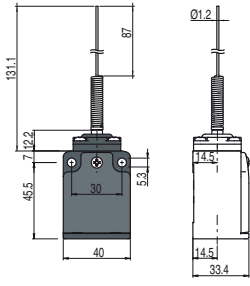
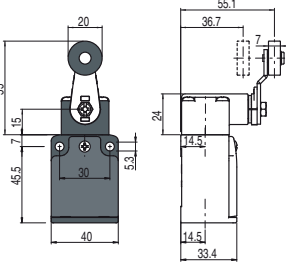
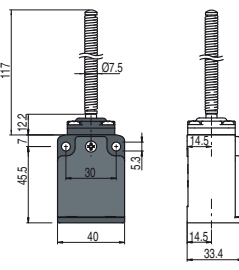
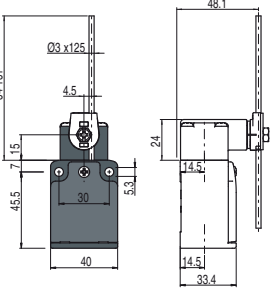
All measures in the drawings are in mm

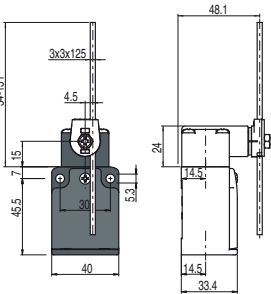
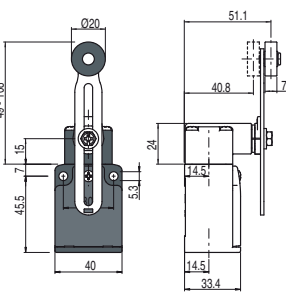
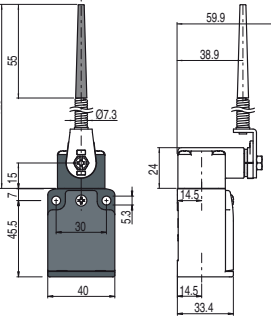
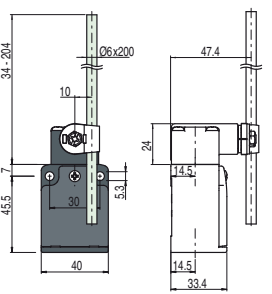
Items with code on green background are stock items

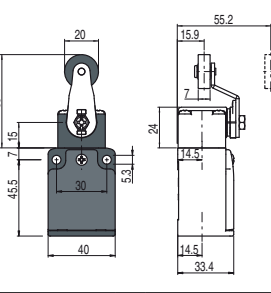
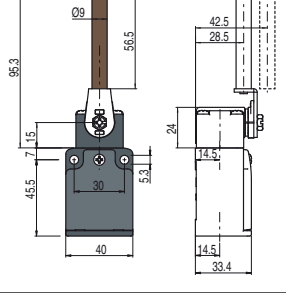
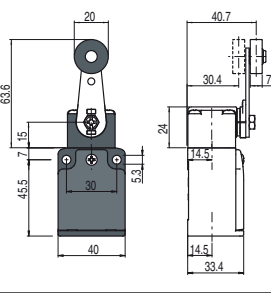
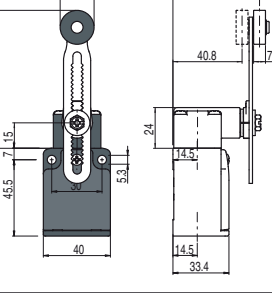
Accessories See page 225

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



		With external rubber gasket	With external rubber gasket	Other rollers available. See on page 56	Round rod, Ø 3 mm, stainless steel
Contact type:					
R = snap action L = slow action					
Contact blocks					
3	R	FC 321-M2	1NO-1NC	FC 331-M2	1NO-1NC
33	L	FC 3321-M2	1NO+1NC	FC 3331-M2	1NO+1NC
34	L	FC 3421-M2	2NC	FC 3431-M2	2NC
Max. speed		1 m/s	1 m/s	page 237 - type 1	1.5 m/s
Min. force		0.06 Nm	0.1 Nm	0.09 Nm (0.25 Nm \ominus)	0.09 Nm
Travel diagrams		page 238 - group 3	page 238 - group 3	page 238 - group 4	page 238 - group 4

		Square rod, 3x3 mm	Other rollers available. See on page 56	Fiber glass rod	
Contact blocks					
					
3	R	FC 333-M2	1NO-1NC	FC 335-M2	1NO-1NC
33	L	FC 3333-M2	1NO+1NC	FC 3335-M2	1NO+1NC
34	L	FC 3433-M2	2NC	FC 3435-M2	2NC
Max. speed		1.5 m/s	1 m/s	page 237 - type 1	1.5 m/s
Min. force		0.09 Nm	0.09 Nm	0.09 Nm (0.25 Nm \ominus)	0.09 Nm
Travel diagrams		page 238 - group 4	page 238 - group 4	page 238 - group 4	page 238 - group 4

		Other rollers available. See on page 56	Other rollers available. See on page 56	Porcelain roller	Other rollers available. See on page 56
Contact blocks					
					
3	R	FC 351-M2	1NO-1NC	FC 353-E11M2	1NO-1NC
33	L	FC 3351-M2	1NO+1NC	FC 3353-E11M2V9	1NO+1NC
34	L	FC 3451-M2	2NC	FC 3453-E11M2V9	2NC
Max. speed		page 237 - type 1	page 237 - type 1	0.5 m/s	page 237 - type 1
Min. force		0.05 Nm (0.25 Nm \ominus)	0.05 Nm (0.25 Nm \ominus)	0.02 Nm (0.25 Nm \ominus)	0.09 Nm (0.25 Nm \ominus)
Travel diagrams		page 238 - group 4	page 238 - group 4	page 238 - group 5	page 238 - group 4

⁽¹⁾ Positive opening only with actuator set to max. See page 55.

All measures in the drawings are in mm

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

Accessories See page 225

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

Contact type:

R = snap action
L = slow action

Contact type	Other rollers available. See on page 56	Rope switch for signalling
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 237 - type 1	0.5 m/s
Min. force	0.09 Nm (0.25 Nm ⊕)	initial 20 N - final 40 N
Travel diagrams	page 238 - group 4	page 238 - group 6

All measures in the drawings are in mm

Position switches with revolving lever without actuator

All measures in the drawings are in mm

Contact type	Regular head	Compact head
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
Min. force	0.09 Nm (0.25 Nm ⊕)	0.05 Nm (0.25 Nm ⊕)
Travel diagrams	page 238 - group 4	page 238 - group 4

All measures in the drawings are in mm

IMPORTANT

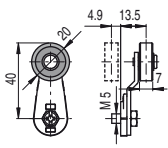
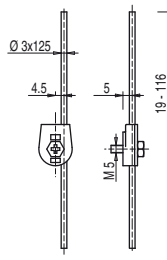
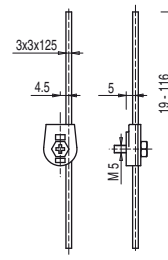
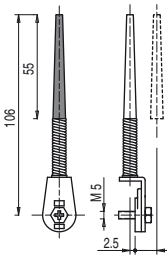
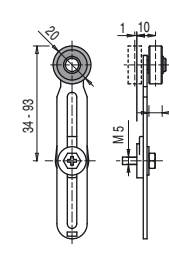
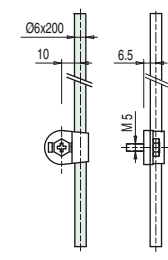
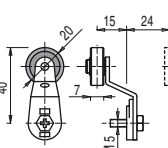
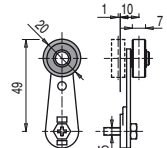
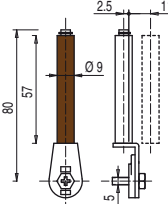
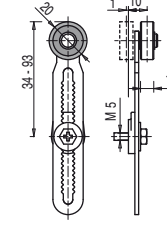
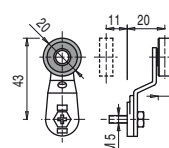
For safety applications: join only switches and actuators marked with symbol ⊕ aside the product code.

For more information about safety applications see details on page 235.

Loose actuators

All measures in the drawings are in mm

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

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 fiber glass 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 225

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



Special loose actuators

All measures in the drawings are in mm

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

Stainless steel rollers, Ø 20 mm

VF L31-R24 (2)	VF L35-R24 (2) (1) (3)	VF L51-R24 (2)	VF L52-R24 (2)	VF L56-R24 (2) (3)	VF L57-R24 (2)

Technopolymer rollers, Ø 35 mm

VF L31-R25 (2) (4)	VF L35-R25 (2) (1) (3)	VF L51-R25 (2) (4)	VF L52-R25 (2)	VF L56-R25 (2) (3)	VF L57-R25 (2)

Rubber rollers, Ø 40 mm

VF L31-R5 (2) (4)	VF L35-R5 (2) (1) (3)	VF L51-R5 (2) (4)	VF L52-R5 (2)	VF L56-R5 (2) (3)	VF L57-R5 (2) (4)

Rubber rollers, Ø 50 mm

VF L31-R26 (2) (4)	VF L35-R26 (2) (1) (3)	VF L51-R26 (2) (4)	VF L52-R26 (2) (4)	VF L56-R26 (2) (3)	VF L57-R26 (2) (4)

Protruding rubber rollers, Ø 50 mm

VF L35-R27 (2) (1) (3)	VF L56-R27 (2) (3)

- (1) Actuator VF L35 can only be used in safety applications if adjusted to its max. length, as shown in figure beside. If you need an adjustable lever for safety applications, use the adjustable safety lever VF L56.
- (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 could mechanically interfere with the housing of the switch. The interference could happen or not according to the actuator and the head fixing position.
- (4) The actuator cannot be rotated to the inside because it will mechanically interfere with the switch head.

Accessories See page 225

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

