

Позиционные выключатели FC

Технические характеристики

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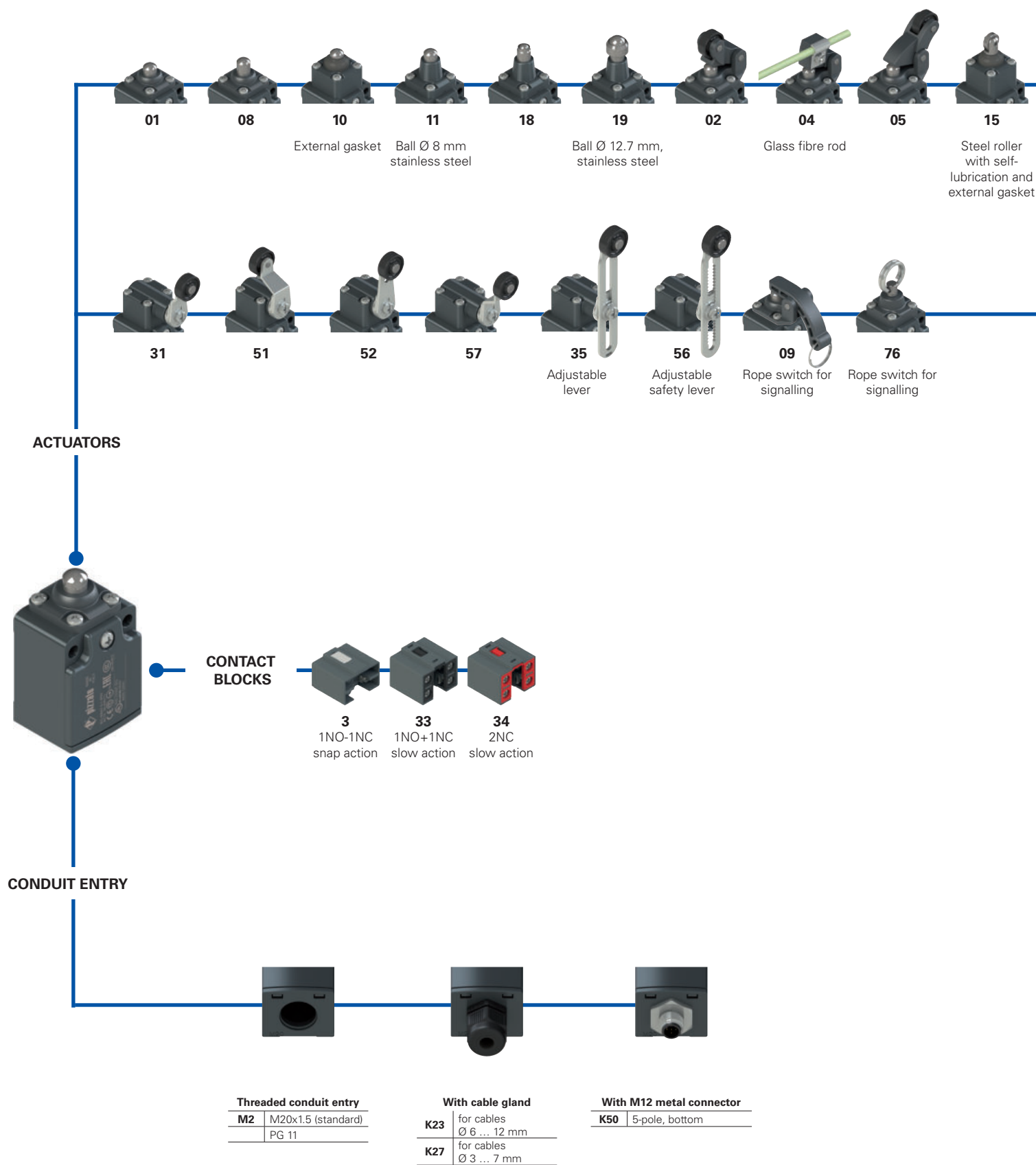
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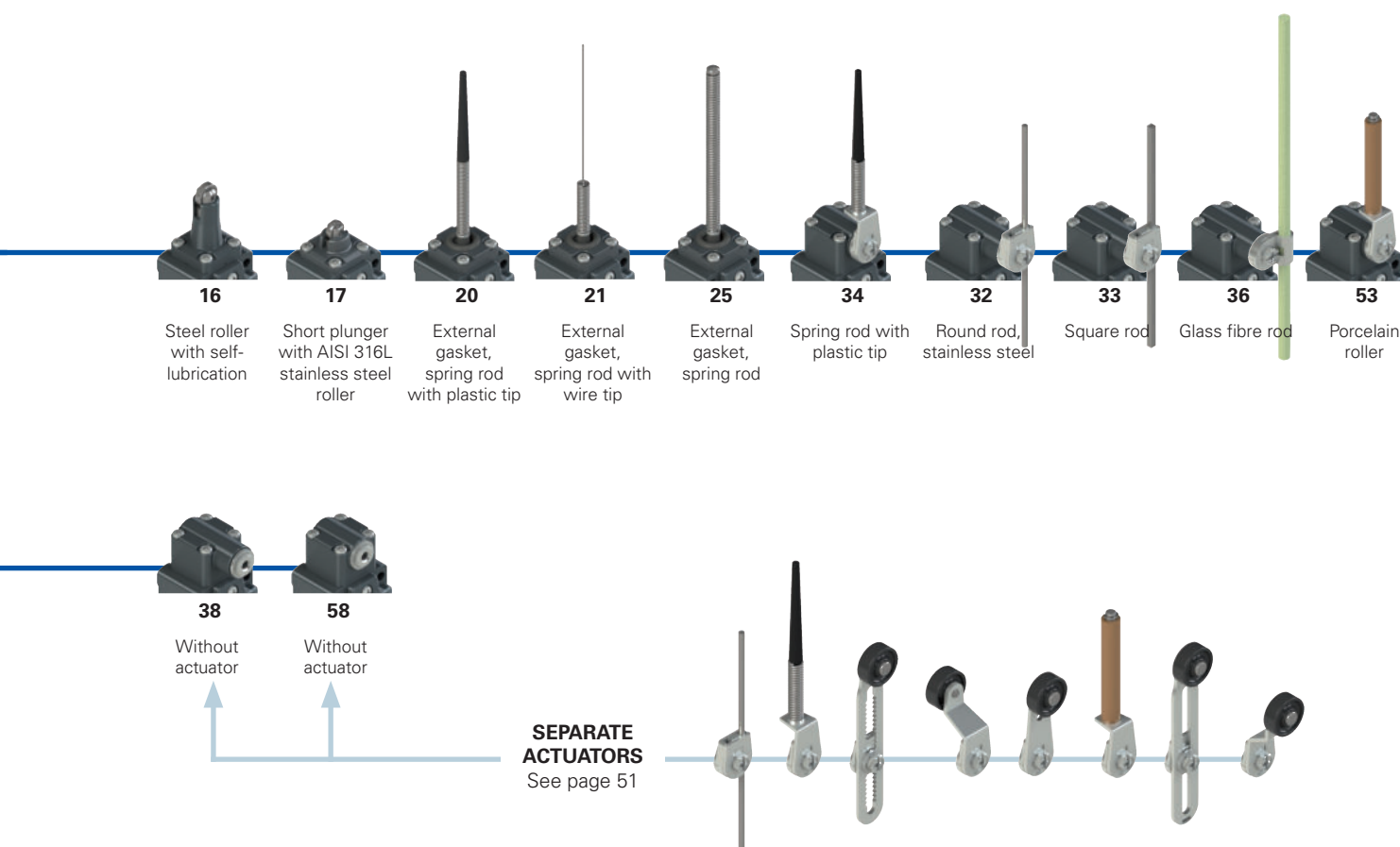
Киргизия +996(312)96-26-47

эл.почта: poz@nt-rt.ru || сайт: <https://pizzato.nt-rt.ru/>

Selection diagram



Product options
 Sold separately as accessory

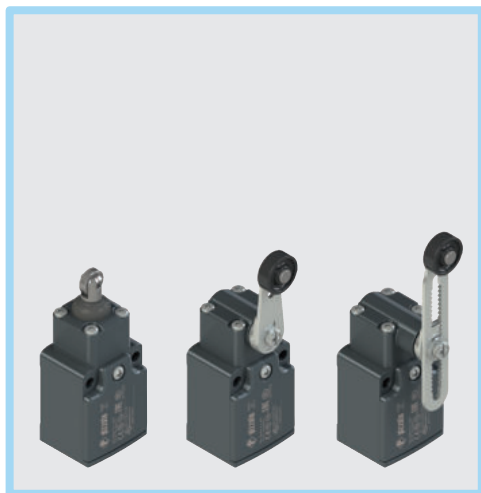


Code structure

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		Ambient temperature -25°C ... +80°C (standard) T6 -40°C ... +80°C
Contact block 3 1NO+1NC, snap action 33 1NO+1NC, slow action 34 2NC, slow action		Rollers standard roller 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) 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 56)
Actuators 01 short plunger 02 roller lever 05 angled lever with roller		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
Contact type silver contacts (standard) G silver contacts, 1 µm gold coating		Threaded conduit entry M2 M20x1.5 (standard) PG11

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
- 27 actuators available
- Versions with M12 connector
- Versions with gold-plated silver contacts

Technical data

Housing

Metal housing, powder-coated
 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, 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	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)		500	
	Rated impulse withstand voltage (U_{imp}):	6 kV	Ie (A)	6	4
		4 kV (contact block 33, 34)		1	
with M12 connector, 5-pole	Conditional short circuit current:	1000 A acc. to EN 60947-5-1	Direct current: DC13		
	Protection against short circuits:	type aM fuse 10 A 500 V	Ue (V)	24	125
	Pollution degree:	3	Ie (A)	3	0.55
				250	0.3
with M12 connector, 5-pole	Thermal current (I_{th}):	4 A	Alternating current: AC15 (50÷60 Hz)		
	Rated insulation voltage (U_i):	250 Vac 300 Vdc	Ue (V)	24	120
	Protection against short circuits:	type gG fuse 4 A 500 V	Ie (A)	4	4
	Pollution degree:	3	Direct current: DC13		
			Ue (V)	24	125
			Ie (A)	3	0.55
				250	0.3

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: Za, Zb, 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.

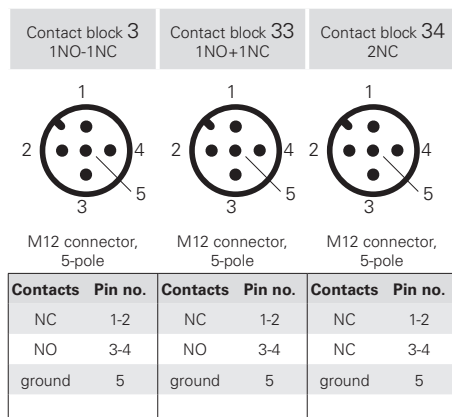
Please contact our technical department for the list of approved products.

Features approved by UL

Electrical Ratings: Q300 pilot duty (69 VA, 125-250 Vdc)
A600 pilot duty (720 VA, 120 ... 600 V ac)
Environmental Ratings: Types 1, 4X, 12, 13
For all contact blocks except 2 and 3 use 60 or 75°C copper (Cu) conductors, rigid or flexible, wire size 12, 14 AWG. Tightening torque for terminal screws of 7.1 lb in (0.8 Nm).
For contact blocks 2 and 3 use 60 or 75°C copper (Cu) conductors, rigid or flexible, wire size 14 AWG. Tightening torque for terminal screws of 12 lb in (1.4 Nm).

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

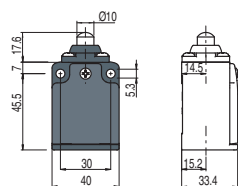
Wiring diagram for M12 connectors



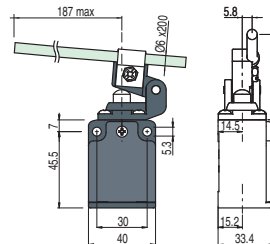
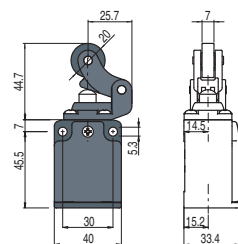
2 FC series position switches

Contact type

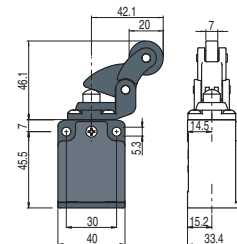
R = snap action
L = slow action



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



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

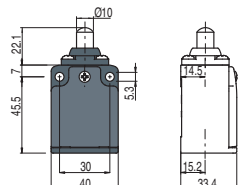


Contact block

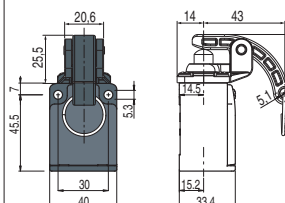
3	R	FC 301-M2	1NO-1NC	FC 302-M2	1NO-1NC	FC 304-M2	1NO-1NC	FC 305-M2	1NO-1NC
33	L	FC 3301-M2	1NO+1NC	FC 3302-M2	1NO+1NC	FC 3304-M2	1NO+1NC	FC 3305-M2	1NO+1NC
34	L	FC 3401-M2	2NC	FC 3402-M2	2NC	FC 3404-M2	2NC	FC 3405-M2	2NC
Max. speed		page 229 - type 4		page 229 - type 3		0.5 m/s		page 229 - type 3	
Actuating force		6 N (25 N)		4 N (25 N)		0.17 Nm		4 N (25 N)	
Travel diagrams		page 230 - group 1		page 230 - group 2		page 230 - group 1		page 230 - group 2	

Contact type

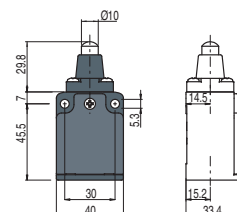
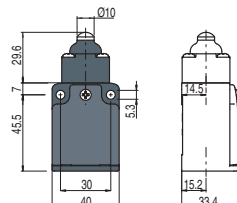
R = snap action
L = slow action



Rope switch for signalling



External gasket



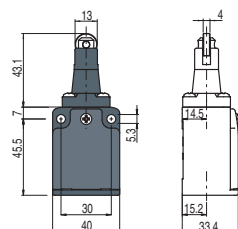
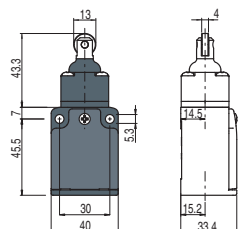
Contact block

3	R	FC 308-M2	1NO-1NC	FC 309-M2	1NO-1NC	FC 310-M2	1NO-1NC	FC 311-M2	1NO-1NC
33	L	FC 3308-M2	1NO+1NC	FC 3309-M2	1NO+1NC	FC 3310-M2	1NO+1NC	FC 3311-M2	1NO+1NC
34	L	FC 3408-M2	2NC	FC 3409-M2	2NC	FC 3410-M2	2NC	FC 3411-M2	2NC
Max. speed		page 229 - type 4		0.5 m/s		page 229 - type 4		page 229 - type 4	
Actuating force		6 N (25 N)		7 N		7 N (25 N)		6 N (25 N)	
Travel diagrams		page 230 - group 1		/		page 230 - group 1		page 230 - group 1	

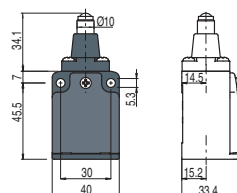
Contact type

R = snap action
L = slow action

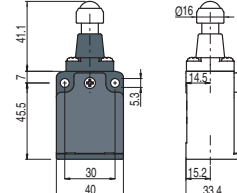
External gasket



Ball, Ø 8 mm, stainless steel



Ball, Ø 12.7 mm, stainless steel



Contact block

3	R	FC 315-M2	1NO-1NC	FC 316-M2	1NO-1NC	FC 318-M2	1NO-1NC	FC 319-M2	1NO-1NC
33	L	FC 3315-M2	1NO+1NC	FC 3316-M2	1NO+1NC	FC 3318-M2	1NO+1NC	FC 3319-M2	1NO+1NC
34	L	FC 3415-M2	2NC	FC 3416-M2	2NC	FC 3418-M2	2NC	FC 3419-M2	2NC
Max. speed		page 229 - type 2		page 229 - type 2		page 229 - type 4		page 229 - type 4	
Actuating force		7 N (25 N)		6 N (25 N)		6 N (25 N)		6 N (25 N)	
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	External gasket		External gasket		External gasket		Other rollers available. See page 52	
3 R	FC 320-M2	1NO-1NC	FC 321-M2	1NO-1NC	FC 325-M2	1NO-1NC	FC 331-M2	1NO-1NC
33 L	FC 3320-M2	1NO+1NC	FC 3321-M2	1NO+1NC	FC 3325-M2	1NO+1NC	FC 3331-M2	1NO+1NC
34 L	FC 3420-M2	2NC	FC 3421-M2	2NC	FC 3425-M2	2NC	FC 3431-M2	2NC
Max. speed	1 m/s		1 m/s		1 m/s		page 229 - type 1	
Actuating force	0.07 Nm		0.06 Nm		0.1 Nm		0.09 Nm (0.25 Nm)	
Travel diagrams	page 230 - group 3		page 230 - group 3		page 230 - group 3		page 230 - group 4	

Contact type R = snap action L = slow action	Round rod, Ø 3 mm, stainless steel		Square rod, 3x3 mm		Other rollers available. See page 52		Other rollers available. See page 52	
3 R	FC 332-M2	1NO-1NC	FC 333-M2	1NO-1NC	FC 334-M2	1NO-1NC	FC 335-M2	1NO-1NC
33 L	FC 3332-M2	1NO+1NC	FC 3333-M2	1NO+1NC	FC 3334-M2	1NO+1NC	FC 3335-M2	1NO+1NC
34 L	FC 3432-M2	2NC	FC 3433-M2	2NC	FC 3434-M2	2NC	FC 3435-M2	2NC
Max. speed	1.5 m/s		1.5 m/s		1 m/s		page 229 - type 1	
Actuating force	0.09 Nm		0.09 Nm		0.09 Nm		0.09 Nm (0.25 Nm)	
Travel diagrams	page 230 - group 4		page 230 - group 4		page 230 - group 4		page 230 - group 4	

Contact type R = snap action L = slow action	Glass fibre rod		Other rollers available. See page 52		Other rollers available. See page 52		Porcelain roller	
3 R	FC 336-M2	1NO-1NC	FC 351-M2	1NO-1NC	FC 352-M2	1NO-1NC	FC 353-E11M2	1NO-1NC
33 L	FC 3336-M2	1NO+1NC	FC 3351-M2	1NO+1NC	FC 3352-M2	1NO+1NC	FC 3353-E11M2V9	1NO+1NC
34 L	FC 3436-M2	2NC	FC 3451-M2	2NC	FC 3452-M2	2NC	FC 3453-E11M2V9	2NC
Max. speed	1.5 m/s		page 229 - type 1		page 229 - type 1		0.5 m/s	
Actuating force	0.09 Nm		0.05 Nm (0.25 Nm)		0.05 Nm (0.25 Nm)		0.02 Nm (0.25 Nm)	
Travel diagrams	page 230 - group 4		page 230 - group 4		page 230 - group 4		page 230 - group 5	

Contact type

R = snap action
L = slow action

	Other rollers available. See page 52	Other rollers available. See page 52	Rope switch for signalling
Contact block			
3 R	FC 356-M2 1NO-1NC	FC 357-M2 1NO-1NC	FC 376-M2 1NO-1NC
33 L	FC 3356-M2 $\rightarrow$ 1NO+1NC	FC 3357-M2 $\rightarrow$ 1NO+1NC	FC 3376-M2 1NO+1NC
34 L	FC 3456-M2 $\rightarrow$ 2NC	FC 3457-M2 $\rightarrow$ 2NC	FC 3476-M2 2NO
Max. speed	page 229 - type 1	page 229 - type 1	0.5 m/s
Actuating force	0.09 Nm (0.25 Nm $\rightarrow$)	0.09 Nm (0.25 Nm $\rightarrow$)	initial 20 N - final 40 N
Travel diagrams	page 230 - group 4	page 230 - group 4	page 230 - group 6

Position switches with swivelling lever without actuator

Contact type

R = snap action
L = slow action

	Regular head	Compact head
Contact block		
3 R	FC 338-M2 1NO-1NC	FC 358-M2 1NO-1NC
33 L	FC 3338-M2 $\rightarrow$ 1NO+1NC	FC 3358-M2 $\rightarrow$ 1NO+1NC
34 L	FC 3438-M2 $\rightarrow$ 2NC	FC 3458-M2 $\rightarrow$ 2NC
Actuating force	0.09 Nm (0.25 Nm $\rightarrow$)	0.05 Nm (0.25 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 and 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)
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 $\rightarrow$	VF L52 $\rightarrow$	VF L53 $\rightarrow$ (2)	VF L56 $\rightarrow$ (3)	VF L57 $\rightarrow$	



Special separate actuators

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

Steel rollers, Ø 20 mm, with self-lubrication

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)

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)	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)

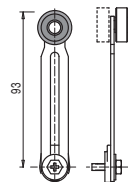
Protruding rubber rollers, Ø 50 mm

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

- (1) 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 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.

All values in the drawings are in mm

Accessories See page 207



По вопросам продаж и поддержки обращайтесь:

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