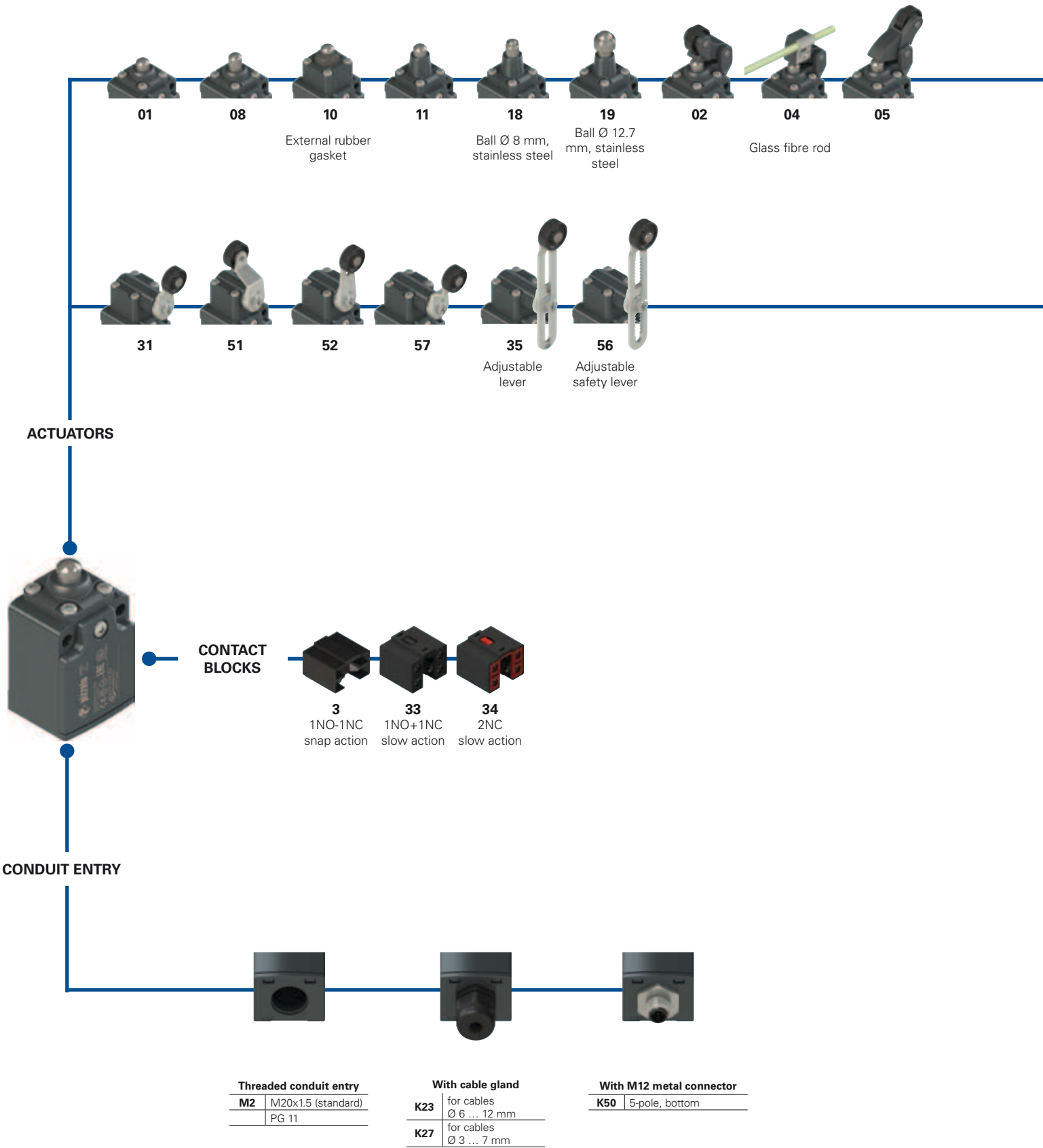
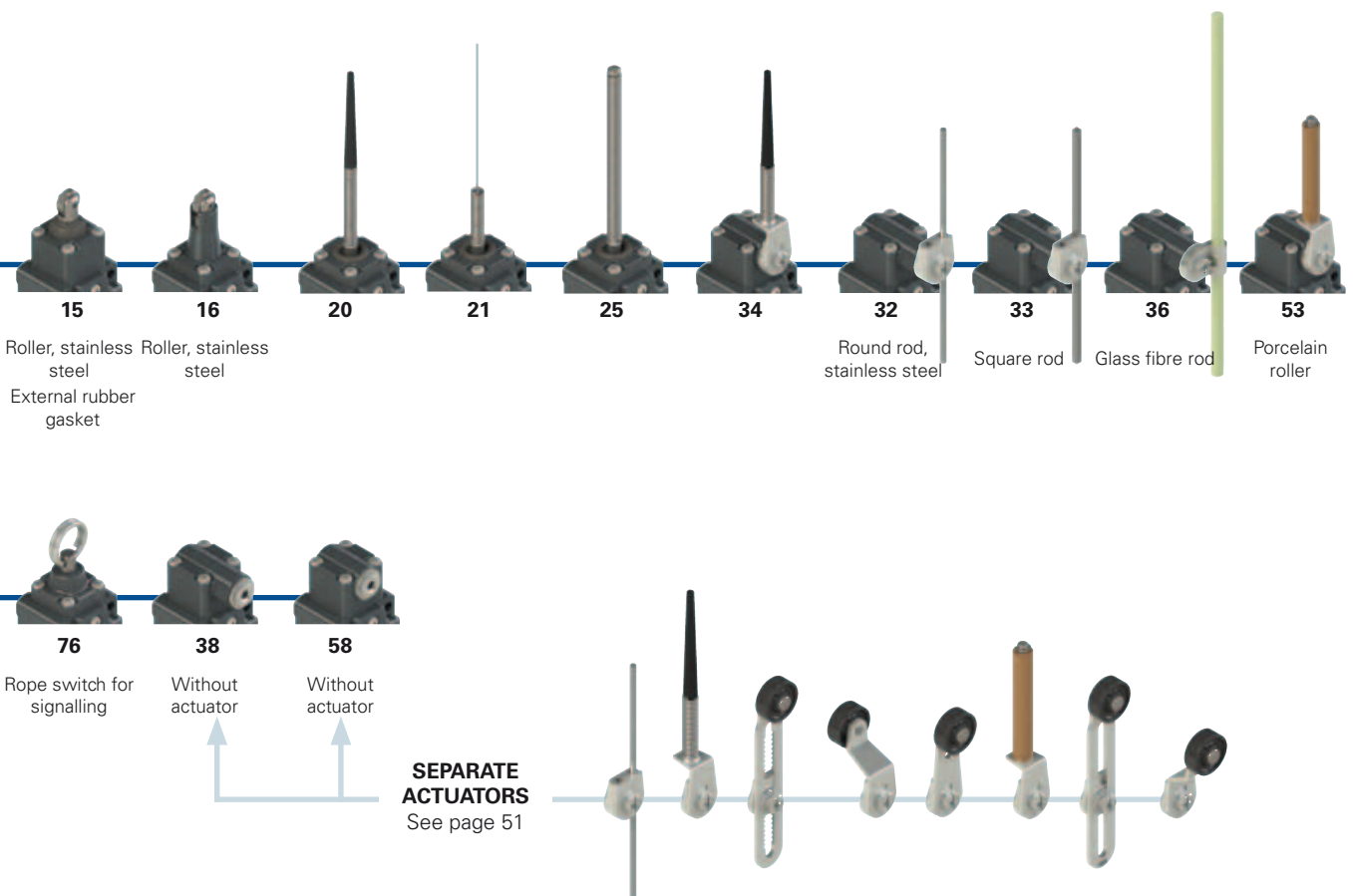


Selection diagram



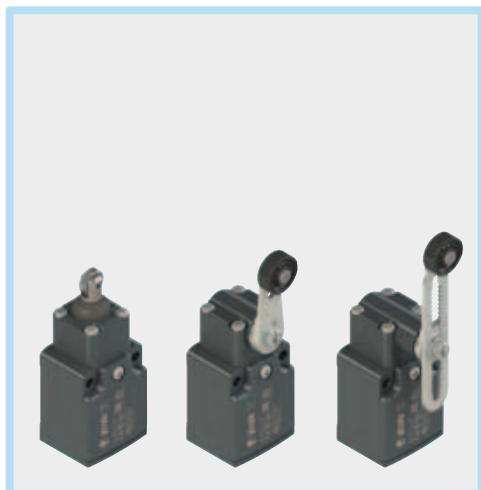
● product options
→ Sold separately as accessory



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

<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><th colspan="2">Housing</th></tr> <tr><td style="width: 20px;">FC</td><td>metal, one conduit entry</td></tr> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><th colspan="2">Contact block</th></tr> <tr><td style="width: 20px;">3</td><td>1NO+1NC, snap action</td></tr> <tr><td>33</td><td>1NO+1NC, slow action</td></tr> <tr><td>34</td><td>2NC, slow action</td></tr> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><th colspan="2">Actuators</th></tr> <tr><td style="width: 20px;">01</td><td>short plunger</td></tr> <tr><td>02</td><td>roller lever</td></tr> <tr><td>05</td><td>angled lever with roller</td></tr> <tr><td>...</td><td>.....</td></tr> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><th colspan="2">Contact type</th></tr> <tr><td style="width: 20px;"></td><td>silver contacts (standard)</td></tr> <tr><td>G</td><td>silver contacts, 1 µm gold coating (not for contact block 3)</td></tr> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><th colspan="2">Threaded conduit entry</th></tr> <tr><td style="width: 20px;">M2</td><td>M20x1.5 (standard)</td></tr> <tr><td></td><td>PG11</td></tr> </table>	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	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><th colspan="2">Ambient temperature</th></tr> <tr><td style="width: 20px;"></td><td>-25°C ... +80°C (standard)</td></tr> <tr><td>T6</td><td>-40°C ... +80°C</td></tr> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><th colspan="2">Rollers</th></tr> <tr><td style="width: 20px;"></td><td>standard roller</td></tr> <tr><td>R24</td><td>stainless steel Ø 20 mm (for actuators 31, 35, 51, 52, 56, 57)</td></tr> <tr><td>R25</td><td>technopolymer, Ø 35 mm (for actuators 31, 35, 51, 52, 56, 57)</td></tr> <tr><td>R5</td><td>rubber, Ø 40 mm (for actuators 31, 35, 51, 52, 56, 57)</td></tr> <tr><td>R26</td><td>rubber, Ø 50 mm (for actuators 31, 35, 51, 52, 56, 57)</td></tr> <tr><td>R27</td><td>rubber, protruding, Ø 50 mm (for actuators 35 and 36)</td></tr> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><th colspan="2">Pre-installed cable glands</th></tr> <tr><td style="width: 20px;"></td><td>no cable gland (standard)</td></tr> <tr><td>K23</td><td>cable gland for cables Ø 6 ... 12 mm</td></tr> <tr><td>K27</td><td>cable gland for cables Ø 3 ... 7°mm</td></tr> <tr><td>K50</td><td>M12 metal connector, 5-pole</td></tr> </table>	Ambient temperature			-25°C ... +80°C (standard)	T6	-40°C ... +80°C	Rollers			standard roller	R24	stainless steel Ø 20 mm (for actuators 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	<p>For the complete list of possible combinations please contact our technical department.</p>
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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:	M20x1.5 (standard)
Protection degree:	IP67 acc. to EN 60529 with cable gland presenting same or higher protection degree

General data

Ambient temperature:	-25°C ... +80°C
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 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 \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 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

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

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: 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.

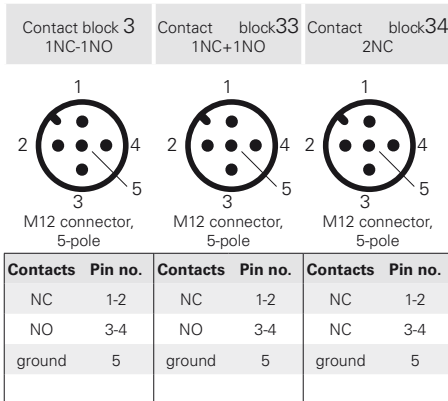
Please contact our technical department for the list of approved products.

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.

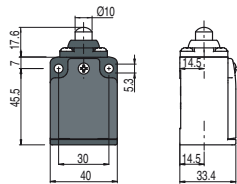
Wiring diagram for M12 connectors



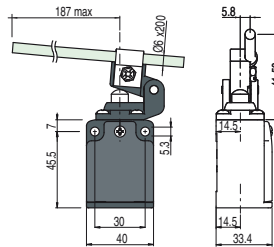
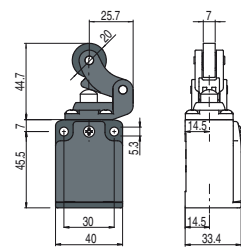
Contact type:

R = snap action
L = slow action

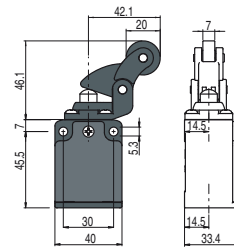
Contact block



With stainless steel roller on request

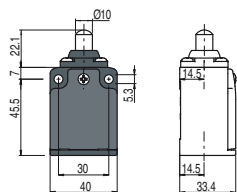


With stainless steel roller on request

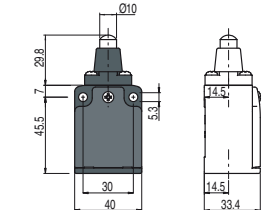
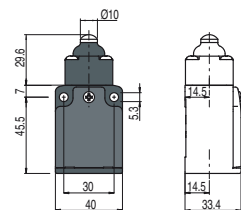


3	R	FC 301-M2	1NO-1NC	FC 302-M2	1NO-1NC	FC 304-M2	1NO-1NC	FC 305-M2	1NO-1NC
33	L	FC 3301-M2	1NO+1NC	FC 3302-M2	1NO+1NC	FC 3304-M2	1NO+1NC	FC 3305-M2	1NO+1NC
34	L	FC 3401-M2	2NC	FC 3402-M2	2NC	FC 3404-M2	2NC	FC 3405-M2	2NC
Max. speed		page 213 - type 4		page 213 - type 3		0.5 m/s		page 213 - type 3	
Actuating 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	

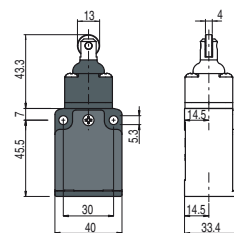
Contact block



With external rubber gasket

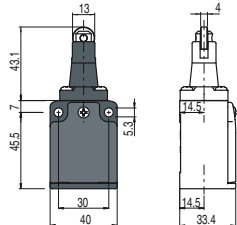


With external rubber gasket

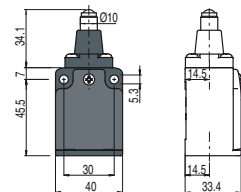


3	R	FC 308-M2	1NO-1NC	FC 310-M2	1NO-1NC	FC 311-M2	1NO-1NC	FC 315-M2	1NO-1NC
33	L	FC 3308-M2	1NO+1NC	FC 3310-M2	1NO+1NC	FC 3311-M2	1NO+1NC	FC 3315-M2	1NO+1NC
34	L	FC 3408-M2	2NC	FC 3410-M2	2NC	FC 3411-M2	2NC	FC 3415-M2	2NC
Max. speed		page 213 - type 4		page 213 - type 4		page 213 - type 4		page 213 - 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	

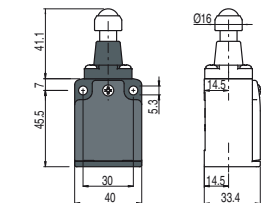
Contact block



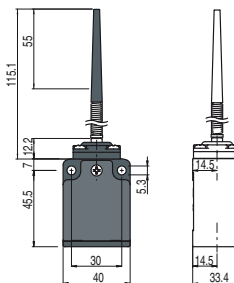
Ball, Ø 8 mm, stainless steel



Ball, Ø 12.7 mm, stainless steel



With external rubber gasket



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 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 213 - type 1	1.5 m/s
Actuating force		0.06 Nm	0.1 Nm	0.09 Nm (0.25 Nm \ominus)	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					
Contact block					
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 213 - type 1	1.5 m/s
Actuating force		0.09 Nm	0.09 Nm	0.09 Nm (0.25 Nm \ominus)	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					
Contact block					
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 213 - type 1	page 213 - type 1	0.5 m/s	page 213 - type 1
Actuating 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 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:
R = snap action
L = slow action

Other rollers available. See page 52

Rope switch for signalling

Contact block		Other rollers available. See page 52	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 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

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.

Contact block		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
Actuating force		0.09 Nm (0.25 Nm ⊕)	0.05 Nm (0.25 Nm ⊕)
Travel diagrams		page 214 - group 4	page 214 - group 4

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.

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

Technopolymer rollers, Ø 35 mm

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

Rubber rollers, Ø 40 mm

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

