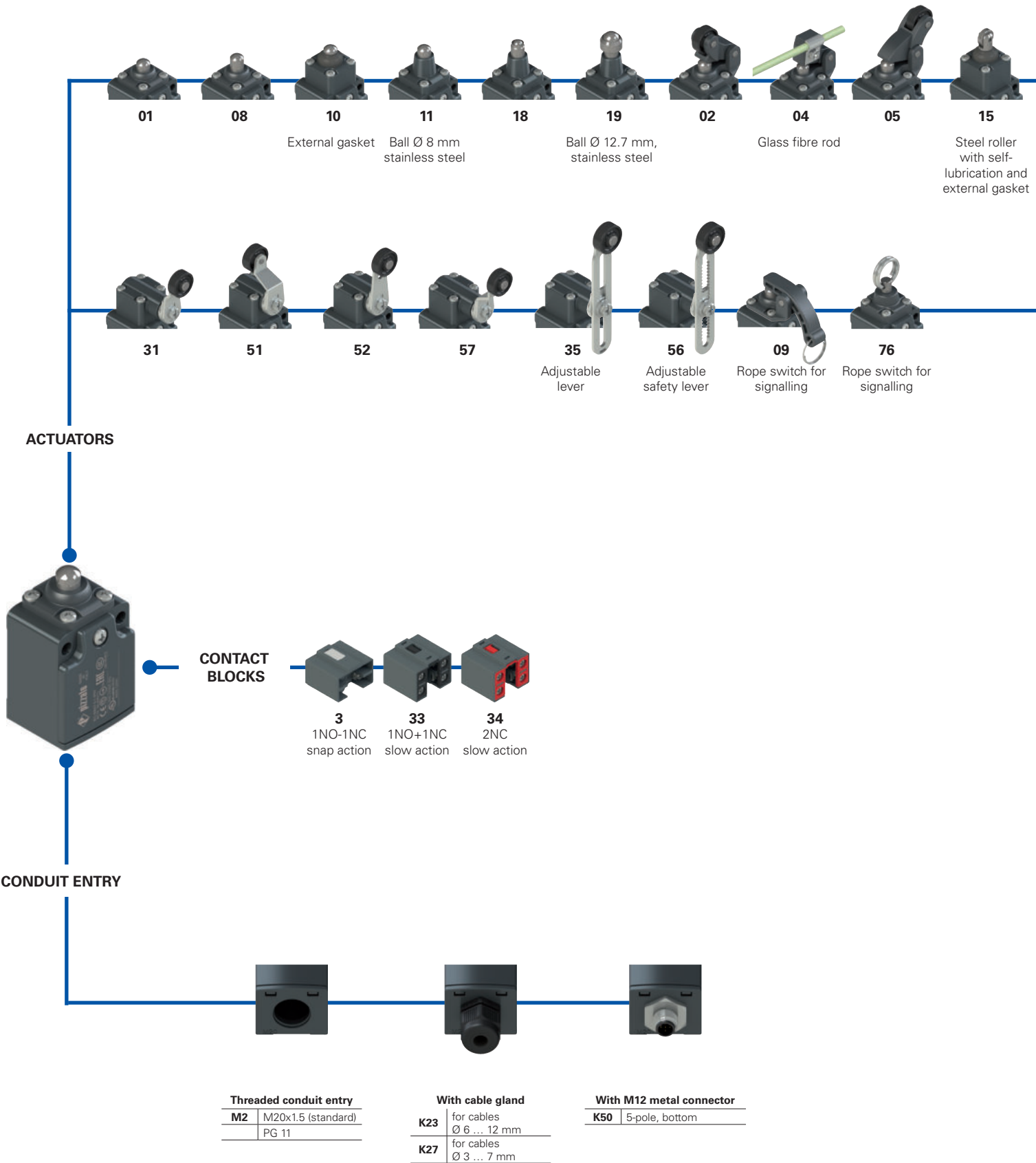
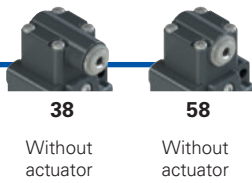
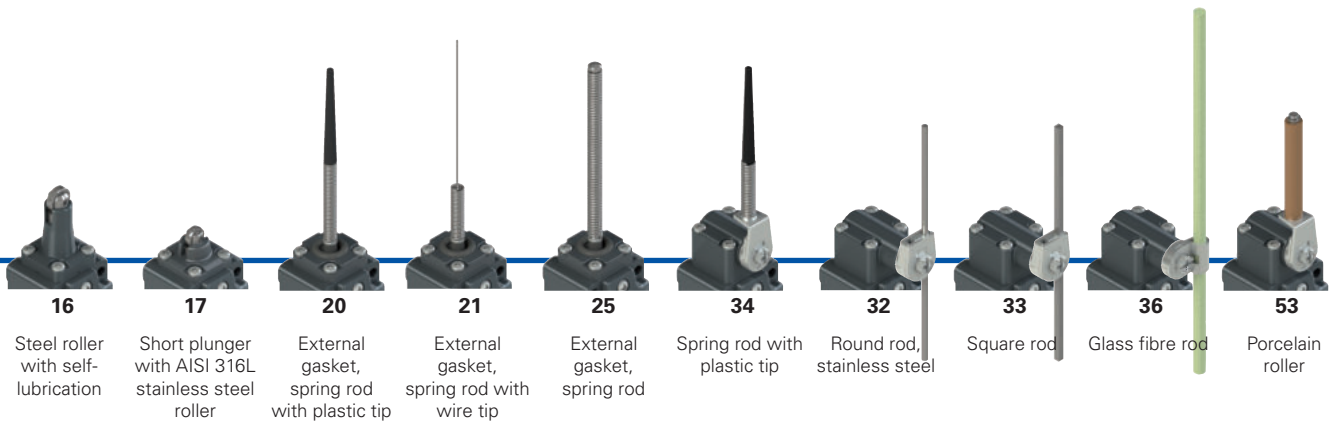


Selection diagram



● Product options
→ Sold separately as accessory



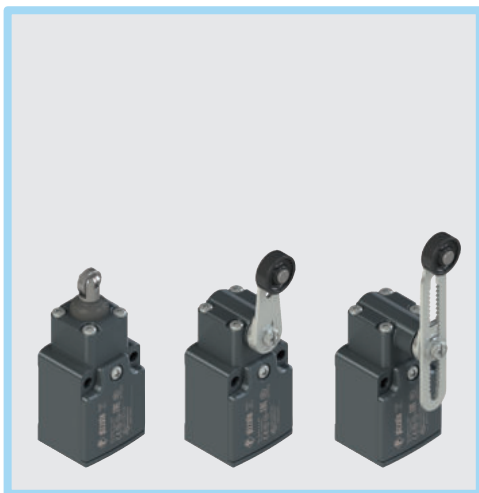
SEPARATE ACTUATORS
See page 51



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		Rollers	
		33 1NO+1NC, slow action		standard roller	
		34 2NC, slow action		R24 Steel, with self-lubrication, Ø 20 mm (for actuators 02, 05, 31, 35, 51, 52, 56, 57)	
Actuators		01 short plunger		R41 316L stainless steel, Ø 20 mm (for actuators 02, 05, 31, 35, 51, 52, 56, 57)	
		02 roller lever		R25 technopolymer, Ø 35 mm (for actuators 31, 35, 51, 52, 56, 57)	
		05 angled lever with roller		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)	
Contact type		silver contacts (standard)		Pre-installed cable glands	
G silver contacts, 1 µm gold coating				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	
Threaded conduit entry		M2 M20x1.5 (standard)		For the complete list of possible combinations please contact our technical department.	
		PG11			



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
	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
		Alternating current: AC15 (50+60 Hz) U _e (V) 250 400 500 I _e (A) 6 4 1 Direct current: DC13 U _e (V) 24 125 250 I _e (A) 3 0.55 0.3
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) U _e (V) 24 120 250 I _e (A) 4 4 4 Direct current: DC13 U _e (V) 24 125 250 I _e (A) 3 0.55 0.3

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: 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.

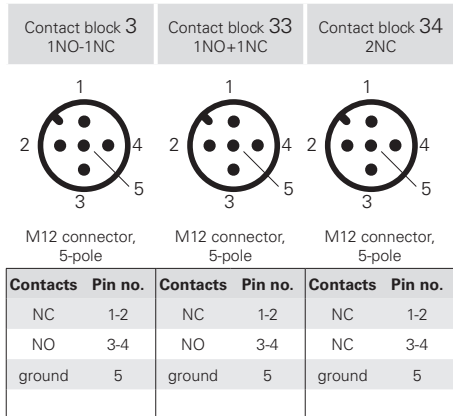
Please contact our technical department for the list of approved products.

Features approved by UL

Electrical Ratings: Q300 pilot duty (69 VA, 125-250 Vdc)
 A600 pilot duty (720 VA, 120 ... 600V 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
33	L	FC 3301-M2	1NO+1NC	FC 3302-M2	1NO+1NC	FC 3304-M2	1NO+1NC
34	L	FC 3401-M2	2NC	FC 3402-M2	2NC	FC 3404-M2	2NC
Max. speed		page 229 - type 4		page 229 - type 3		0.5 m/s	
Actuating force		6 N (25 N)		4 N (25 N)		0.17 Nm	
Travel diagrams		page 230 - group 1		page 230 - group 2		page 230 - group 1	

Contact type
R = snap action
L = slow action

		Rope switch for signalling		External gasket			
Contact block							
3	R	FC 308-M2	1NO-1NC	FC 310-M2	1NO-1NC	FC 311-M2	1NO-1NC
33	L	FC 3308-M2	1NO+1NC	FC 3310-M2	1NO+1NC	FC 3311-M2	1NO+1NC
34	L	FC 3408-M2	2NC	FC 3410-M2	2NC	FC 3411-M2	2NC
Max. speed		page 229 - type 4		page 229 - type 4		page 229 - type 4	
Actuating force		6 N (25 N)		7 N		7 N (25 N)	
Travel diagrams		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 318-M2	1NO-1NC	FC 319-M2	1NO-1NC
33	L	FC 3315-M2	1NO+1NC	FC 3318-M2	1NO+1NC	FC 3319-M2	1NO+1NC
34	L	FC 3415-M2	2NC	FC 3418-M2	2NC	FC 3419-M2	2NC
Max. speed		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)	
Travel diagrams		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		External gasket		External gasket		External gasket		Other rollers available. See page 52	
R	= snap action								
L	= slow action								
Contact block		FC 320-M2		FC 321-M2		FC 325-M2		FC 331-M2	
3	R	1NO-1NC	FC 321-M2	1NO-1NC	FC 325-M2	1NO-1NC	FC 331-M2	1NO-1NC	
33	L	1NO+1NC	FC 3321-M2	1NO+1NC	FC 3325-M2	1NO+1NC	FC 3331-M2	1NO+1NC	⊕
34	L	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		Round rod, Ø 3 mm, stainless steel		Square rod, 3x3 mm		Other rollers available. See page 52			
R	= snap action								
L	= slow action								
Contact block		FC 332-M2		FC 333-M2		FC 334-M2			
3	R	1NO-1NC	FC 333-M2	1NO-1NC	FC 334-M2	1NO-1NC	FC 335-M2		
33	L	1NO+1NC	FC 3332-M2	1NO+1NC	FC 3333-M2	1NO+1NC	FC 3335-M2		
34	L	2NC	FC 3432-M2	2NC	FC 3433-M2	2NC	FC 3435-M2		
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		Glass fibre rod		Other rollers available. See page 52		Other rollers available. See page 52		Porcelain roller	
R	= snap action								
L	= slow action								
Contact block		FC 336-M2		FC 351-M2		FC 352-M2		FC 353-E11M2	
3	R	1NO-1NC	FC 3351-M2	1NO-1NC	FC 352-M2	1NO-1NC	FC 353-E11M2	1NO-1NC	
33	L	1NO+1NC	FC 3351-M2	1NO+1NC	FC 3352-M2	1NO+1NC	FC 3353-E11M2V9	1NO+1NC	⊕
34	L	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	

(1) Positive opening only with actuator set to max. See page 52.

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

	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 ⊕ 1NO+1NC	FC 3357-M2 ⊕ 1NO+1NC	FC 3376-M2 1NO+1NC
34 L	FC 3456-M2 ⊕ 2NC	FC 3457-M2 ⊕ 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 ⊕)	0.09 Nm (0.25 Nm ⊕)	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 ⊕ 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 230 - group 4	page 230 - 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 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 ⊕	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 ⊕	

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 FD, FP, FL and FC series.

Steel rollers, \varnothing 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, \varnothing 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, \varnothing 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, \varnothing 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, \varnothing 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

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

