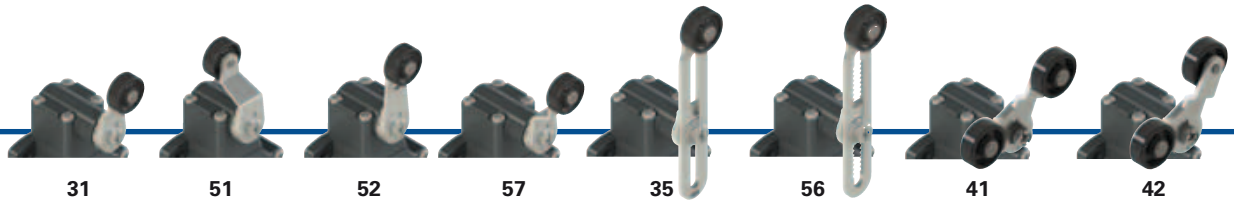
Selection diagram

01 **08** **10** **11** **18** **19** **02** **04** **05**

External rubber gasket — Ball Ø 8 mm, stainless steel — Ball Ø 12.7 mm, stainless steel — Glass fibre rod

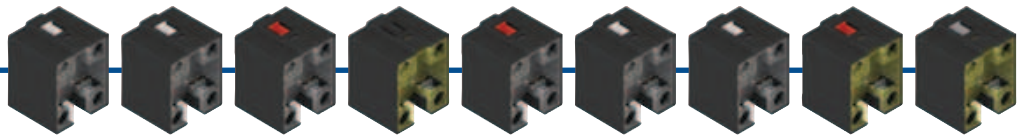


31 **51** **52** **57** **35** **56** **41** **42**

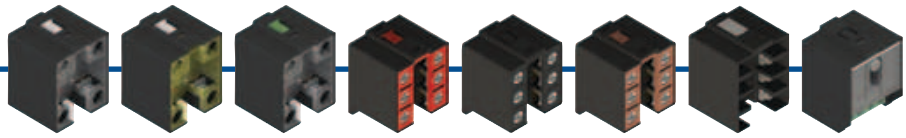
Adjustable lever — Adjustable safety lever — Bistable — Bistable

ACTUATORS

CONTACT BLOCKS



5 1NO+1NC snap action
6 1NO+1NC slow action
7 1NO+1NC slow action, make before break
9 2NC slow action
10 2NO slow action
11 2NC snap action
12 2NO snap action
13 2NC slow action shifted and spaced
14 2NC slow action, shifted



15 2NO slow action, shifted
16 2NC slow action independent
18 1NO+1NC slow action, close
20 1NO+2NC slow action
21 3NC slow action
22 2NO+1NC slow action
2 2x (1NO-1NC) snap action
E1 1NO-1NC electronic, PNP

CONDUIT ENTRY

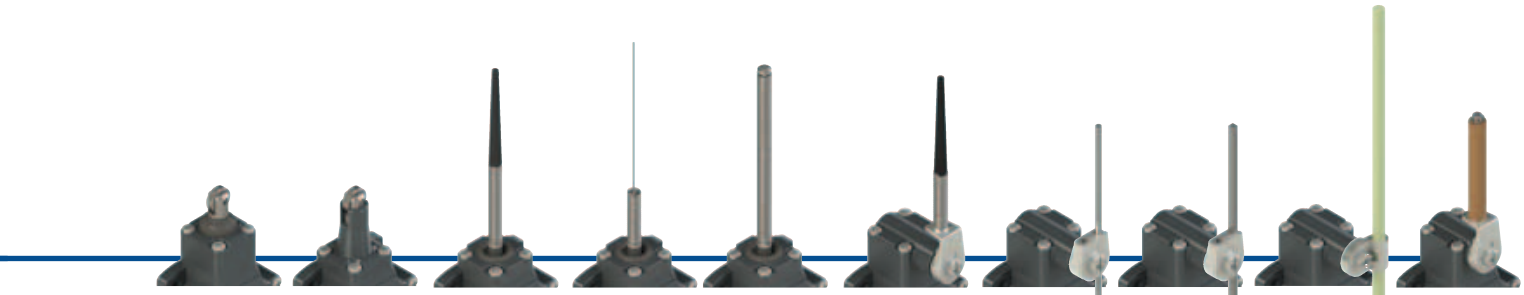
Threaded conduit entries	
M2	M20x1.5 (standard)
	PG 13.5

With cable gland	
K23	for cables Ø 6 … 12 mm on the bottom
K123	for cables Ø 6 … 12 mm on the right
K223	for cables Ø 6 … 12 mm on the left
K27	for cables Ø 3 … 7 mm on the bottom
K127	for cables Ø 3 … 7 mm on the right
K227	for cables Ø 3 … 7 mm on the left

With M12 metal connector	
K40	8-pole, bottom
K41	8-pole, right
K42	8-pole, left
K50	5-pole, bottom
K51	5-pole, right
K52	5-pole, left

product options

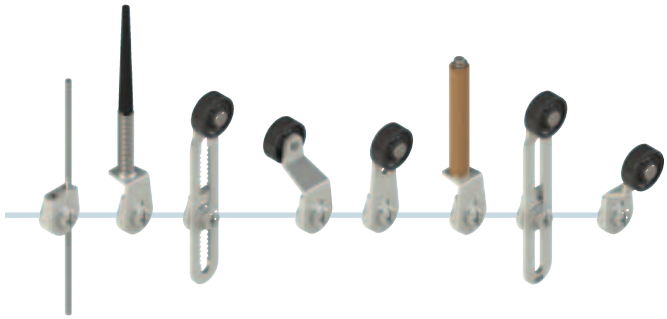
Sold separately as accessory



15	16	20	21	25	34	32	33	36	53
Roller, stainless steel External rubber gasket	Roller, stainless steel					Round rod, stainless steel	Square rod	Glass fibre rod	Porcelain roller

76	38	58	40
Rope switch for signalling	Without actuator	Without actuator	Bistable without actuator

SEPARATE ACTUATORS
See page 43



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

FL 502-GM2K50R24T6

Housing	
FL	metal, three conduit entries

Contact block	
5	1NO+1NC, snap action
6	1NO+1NC, slow action
7	1NO+1NC, slow action, make before break
...	.....

Actuators	
01	short plunger
02	roller lever
05	angled lever with roller
...	.....

Contact type	
	silver contacts (standard)
G	silver contacts, 1 µm gold coating (except contact block 2)
G1	silver contacts, 2.5 µm gold coating (not for contact block 2, 20, 21, 22)

Threaded conduit entries	
M2	M20x1.5 (standard)
	PG 13.5

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 or connectors	
	no cable gland or connector (standard)
K23	cable gland for cables Ø 6 … 12 mm
K50	M12 metal connector, 5-pole

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

FL series position switches

Technical data

Housing

Metal housing, powder-coated	
Three threaded conduit entries:	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 20, 21, 22, 33, 34:	min.	1 x 0.34 mm²	(1 x AWG 22)
	max.	2 x 1.5 mm²	(2 x AWG 16)
Contact blocks 5, 6, 7, 9, 10, 11, 12, 13, 14, 15, 16, 18:	min.	1 x 0.5 mm²	(1 x AWG 20)
	max.	2 x 2.5 mm²	(2 x AWG 14)
Contact block 2:	min.	1 x 0.5 mm²	(1 x AWG 20)
	max.	2 x 1.5 mm²	(2 x AWG 16)

Main features
- Metal housing, three conduit entries
- Protection degree IP67
- 17 contact blocks available
- 28 actuators available
- Versions with M12 connector
- Versions with gold-plated silver contacts

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.АД35.В.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, VDE 0660-206.

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 400 Vac 500 Vdc (contact blocks 2, 11, 12, 20, 21, 22, 33, 34)	Ue (V) 250 400 500 Ie (A) 6 4 1
	Rated impulse withstand voltage (U_{imp}):	6 kV 4 kV (contact blocks 20, 21, 22, 33, 34)	Direct current: DC13
	Conditional short circuit current:	1000 A acc. to EN 60947-5-1	Ue (V) 24 125 250
	Protection against short circuits:	type aM fuse 10 A 500 V	Ie (A) 6 1.1 0.4
	Pollution degree:	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) 24 120 250 Ie (A) 4 4 4
	Protection against short circuits:	type gG fuse 4 A 500 V	Direct current: DC13
	Pollution degree:	3	Ue (V) 24 125 250 Ie (A) 4 1.1 0.4
with M12 connector 8-pole	Thermal current (I_{th}):	2 A	Alternating current: AC15 (50÷60 Hz)
	Rated insulation voltage (U_i):	30 Vac 36 Vdc	Ue (V) 24 Ie (A) 2
	Protection against short circuits:	type gG fuse 2 A 500 V	Direct current: DC13
	Pollution degree:	3	Ue (V) 24 Ie (A) 2

Features approved by IMQ

Rated insulation voltage (U_i):	500 Vac 400 Vac (for contact blocks 2, 11, 12, 20, 21,22, 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 20, 21, 22, 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, Za+Za, Y+Y, X+X, Y+Y+X, Y+Y+Y, Y+X+X
Positive opening of contacts on contact blocks 5, 6, 7, 9, 11, 13, 14, 16, 18, 20, 21, 22, 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

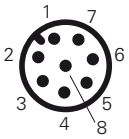
Utilization category Q300 (69 VA, 125-250 Vdc)
A600 (720 VA, 120-600 Vac)
Housing features type 1, 4X, 12, 13
For all contact blocks except 2 and 3 use 60 or 75°C copper (Cu) conductors, rigid or flexible, wire size 12, 14 AWG. Tightening torque for terminal screws of 7.1 lb in (0.8 Nm).
For contact 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

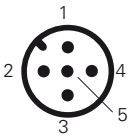
Contact block 2
1NO-1NC+1NO-1NC



M12 connector, 8-pole

Contacts	Pin no.
NO	3-4
NC	5-6
NC	7-8
NO	1-2

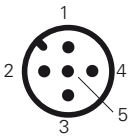
Contact block 5
1NO+1NC



M12 connector, 5-pole

Contacts	Pin no.
NC	1-2
NO	3-4
ground	5

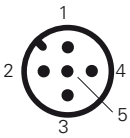
Contact block 6
1NO+1NC



M12 connector, 5-pole

Contacts	Pin no.
NC	1-2
NO	3-4
ground	5

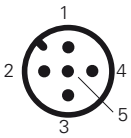
Contact block 7
1NO+1NC



M12 connector, 5-pole

Contacts	Pin no.
NC	1-2
NO	3-4
ground	5

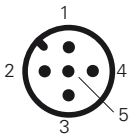
Contact block 9
2NC



M12 connector, 5-pole

Contacts	Pin no.
NC	1-2
NC	3-4
ground	5

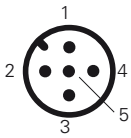
Contact block 10
2NO



M12 connector, 5-pole

Contacts	Pin no.
NO	1-2
NO	3-4
ground	5

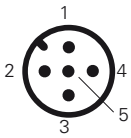
Contact block 11
2NC



M12 connector, 5-pole

Contacts	Pin no.
NC	1-2
NC	3-4
ground	5

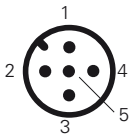
Contact block 12
2NO



M12 connector, 5-pole

Contacts	Pin no.
NO	1-2
NO	3-4
ground	5

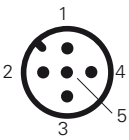
Contact block 13
2NC



M12 connector, 5-pole

Contacts	Pin no.
NC (1°)	1-2
NC (2°)	3-4
ground	5

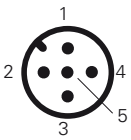
Contact block 14
2NC



M12 connector, 5-pole

Contacts	Pin no.
NC (1°)	1-2
NC (2°)	3-4
ground	5

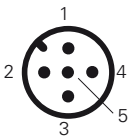
Contact block 15
2NO



M12 connector, 5-pole

Contacts	Pin no.
NO (1°)	1-2
NO (2°)	3-4
ground	5

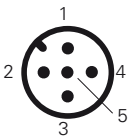
Contact block 16
2NC



M12 connector, 5-pole

Contacts	Pin no.
NC, lever to the right 1-2	
NC, lever to the left 3-4	
ground	5

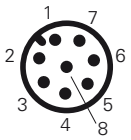
Contact block 18
1NO+1NC



M12 connector, 5-pole

Contacts	Pin no.
NC	1-2
NO	3-4
ground	5

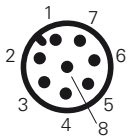
Contact block 20
2NC+1NO



M12 connector, 8-pole

Contacts	Pin no.
NC	3-4
NC	5-6
NO	7-8
ground	1

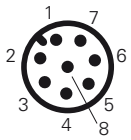
Contact block 21
3NC



M12 connector, 8-pole

Contacts	Pin no.
NC	3-4
NC	5-6
NC	7-8
ground	1

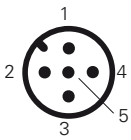
Contact block 22
1NC+2NO



M12 connector, 8-pole

Contacts	Pin no.
NC	3-4
NO	5-6
NO	7-8
ground	1

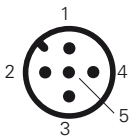
Contact block 33
1NC+1NO



M12 connector, 5-pole

Contacts	Pin no.
NC	1-2
NO	3-4
ground	5

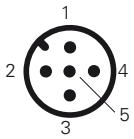
Contact block 34
2NC



M12 connector, 5-pole

Contacts	Pin no.
NC	1-2
NC	3-4
ground	5

Contact block E1
PNP



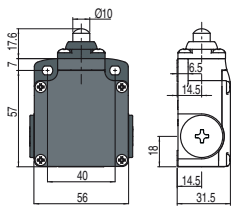
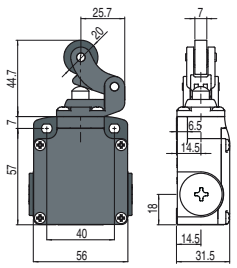
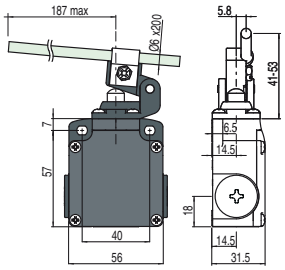
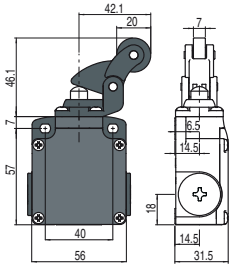
M12 connector, 5-pole

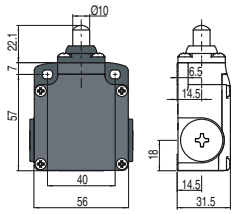
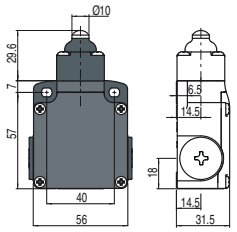
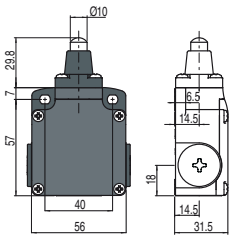
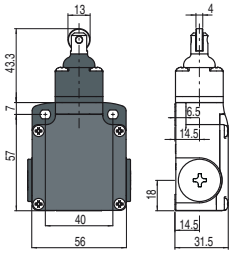
Contacts	Pin no.
+	1
-	3
NC	2
NO	4
ground	5

FL series position switches

Contact type:

- R = snap action
- L = slow action
- LO = slow action make before break
- LS = slow action shifted
- LV = slow action shifted and spaced
- LI = slow action independent
- LA = slow action close
- = electronic PNP

Contact block					
			With stainless steel roller on request 		With stainless steel roller on request 
5	R	FL 501-M2 1NO+1NC	FL 502-M2 1NO+1NC	FL 504-M2 1NO+1NC	FL 505-M2 1NO+1NC
6	L	FL 601-M2 1NO+1NC	FL 602-M2 1NO+1NC	FL 604-M2 1NO+1NC	FL 605-M2 1NO+1NC
7	LO	FL 701-M2 1NO+1NC	FL 702-M2 1NO+1NC	FL 704-M2 1NO+1NC	FL 705-M2 1NO+1NC
9	L	FL 901-M2 2NC	FL 902-M2 2NC	FL 904-M2 2NC	FL 905-M2 2NC
10	L	FL 1001-M2 2NO	FL 1002-M2 2NO	FL 1004-M2 2NO	FL 1005-M2 2NO
11	R	FL 1101-M2 2NC	FL 1102-M2 2NC	FL 1104-M2 2NC	FL 1105-M2 2NC
12	R	FL 1201-M2 2NO	FL 1202-M2 2NO	FL 1204-M2 2NO	FL 1205-M2 2NO
13	LV	FL 1301-M2 2NC	FL 1302-M2 2NC	FL 1304-M2 2NC	FL 1305-M2 2NC
14	LS	FL 1401-M2 2NC	FL 1402-M2 2NC	FL 1404-M2 2NC	FL 1405-M2 2NC
15	LS	FL 1501-M2 2NO	FL 1502-M2 2NO	FL 1504-M2 2NO	FL 1505-M2 2NO
18	LA	FL 1801-M2 1NO+1NC	FL 1802-M2 1NO+1NC	FL 1804-M2 1NO+1NC	FL 1805-M2 1NO+1NC
20	L	FL 2001-M2 1NO+2NC	FL 2002-M2 1NO+2NC	FL 2004-M2 1NO+2NC	FL 2005-M2 1NO+2NC
21	L	FL 2101-M2 3NC	FL 2102-M2 3NC	FL 2104-M2 3NC	FL 2105-M2 3NC
22	L	FL 2201-M2 2NO+1NC	FL 2202-M2 2NO+1NC	FL 2204-M2 2NO+1NC	FL 2205-M2 2NO+1NC
2	R	FL 201-M2 2x(1NO-1NC)	FL 202-M2 2x(1NO-1NC)	FL 204-M2 2x(1NO-1NC)	FL 205-M2 2x(1NO-1NC)
E1		FL E101-M2 1NO-1NC	FL E102-M2 1NO-1NC	FL E104-M2 1NO-1NC	FL E105-M2 1NO-1NC
Max. speed		page 213 - type 4	page 213 - type 3	0.5 m/s	page 213 - type 3
Actuating force		8 N (25 N)	6 N (25 N)	0.17 Nm	6 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 
5	R	FL 508-M2 1NO+1NC.	FL 510-M2 1NO+1NC	FL 511-M2 1NO+1NC	FL 515-M2 1NO+1NC
6	L	FL 608-M2 1NO+1NC	FL 610-M2 1NO+1NC	FL 611-M2 1NO+1NC	FL 615-M2 1NO+1NC
7	LO	FL 708-M2 1NO+1NC	FL 710-M2 1NO+1NC	FL 711-M2 1NO+1NC	FL 715-M2 1NO+1NC
9	L	FL 908-M2 2NC	FL 910-M2 2NC	FL 911-M2 2NC	FL 915-M2 2NC
10	L	FL 1008-M2 2NO	FL 1010-M2 2NO	FL 1011-M2 2NO	FL 1015-M2 2NO
11	R	FL 1108-M2 2NC	FL 1110-M2 2NC	FL 1111-M2 2NC	FL 1115-M2 2NC
12	R	FL 1208-M2 2NO	FL 1210-M2 2NO	FL 1211-M2 2NO	FL 1215-M2 2NO
13	LV	FL 1308-M2 2NC	FL 1310-M2 2NC	FL 1311-M2 2NC	FL 1315-M2 2NC
14	LS	FL 1408-M2 2NC	FL 1410-M2 2NC	FL 1411-M2 2NC	FL 1415-M2 2NC
15	LS	FL 1508-M2 2NO	FL 1510-M2 2NO	FL 1511-M2 2NO	FL 1515-M2 2NO
18	LA	FL 1808-M2 1NO+1NC	FL 1810-M2 1NO+1NC	FL 1811-M2 1NO+1NC	FL 1815-M2 1NO+1NC
20	L	FL 2008-M2 1NO+2NC	FL 2010-M2 1NO+2NC	FL 2011-M2 1NO+2NC	FL 2015-M2 1NO+2NC
21	L	FL 2108-M2 3NC	FL 2110-M2 3NC	FL 2111-M2 3NC	FL 2115-M2 3NC
22	L	FL 2208-M2 2NO+1NC	FL 2210-M2 2NO+1NC	FL 2211-M2 2NO+1NC	FL 2215-M2 2NO+1NC
2	R	FL 208-M2 2x(1NO-1NC)	FL 210-M2 2x(1NO-1NC)	FL 211-M2 2x(1NO-1NC)	FL 215-M2 2x(1NO-1NC)
E1		FL E108-M2 1NO-1NC	FL E110-M2 1NO-1NC	FL E111-M2 1NO-1NC	FL E115-M2 1NO-1NC
Max. speed		page 213 - type 4	page 213 - type 4	page 213 - type 4	page 213 - type 2
Actuating force		8 N (25 N)	11 N (25 N)	8 N (25 N)	11 N (25 N)
Travel diagrams		page 214 - group 1	page 214 - group 1	page 214 - group 1	page 214 - group 1

All values in the drawings are in mm

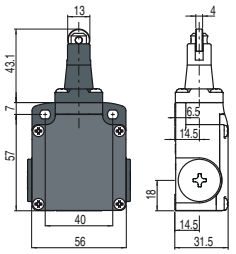
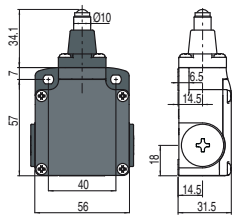
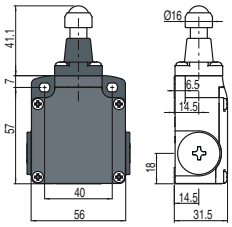
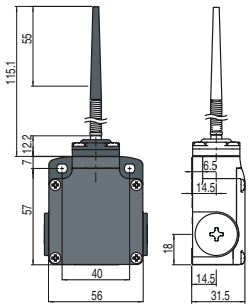
Items with code on **green** background are stock items

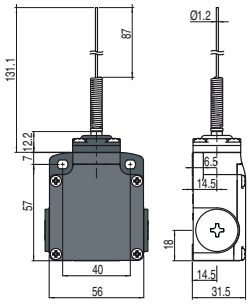
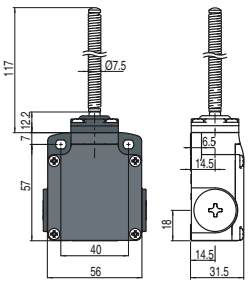
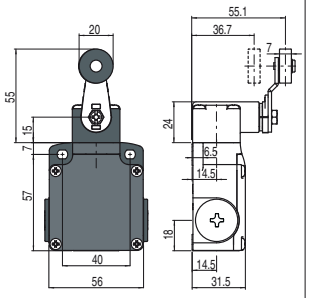
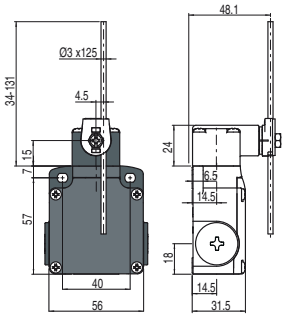
Accessories See page 197

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

Contact type:

- R = snap action
- L = slow action
- LO = slow action make before break
- LS = slow action shifted
- LV = slow action shifted and spaced
- LI = slow action independent
- LA = slow action close
- ⅄ = electronic PNP

Contact block			Ball, Ø 8 mm, stainless steel	Ball, Ø 12.7 mm, stainless steel	With external rubber gasket
					
5	R	FL 516-M2 → 1NO+1NC	FL 518-M2 → 1NO+1NC	FL 519-M2 → 1NO+1NC	FL 520-M2 1NO+1NC
6	L	FL 616-M2 → 1NO+1NC	FL 618-M2 → 1NO+1NC	FL 619-M2 → 1NO+1NC	
7	LO	FL 716-M2 → 1NO+1NC	FL 718-M2 → 1NO+1NC	FL 719-M2 → 1NO+1NC	
9	L	FL 916-M2 → 2NC	FL 918-M2 → 2NC	FL 919-M2 → 2NC	
10	L	FL 1016-M2 2NO	FL 1018-M2 2NO	FL 1019-M2 2NO	FL 1020-M2 2NO
11	R	FL 1116-M2 → 2NC	FL 1118-M2 → 2NC	FL 1119-M2 → 2NC	
12	R	FL 1216-M2 2NO	FL 1218-M2 2NO	FL 1219-M2 2NO	
13	LV	FL 1316-M2 → 2NC	FL 1318-M2 → 2NC	FL 1319-M2 → 2NC	
14	LS	FL 1416-M2 → 2NC	FL 1418-M2 → 2NC	FL 1419-M2 → 2NC	
15	LS	FL 1516-M2 2NO	FL 1518-M2 2NO	FL 1519-M2 2NO	
18	LA	FL 1816-M2 → 1NO+1NC	FL 1818-M2 → 1NO+1NC	FL 1819-M2 → 1NO+1NC	FL 1820-M2 1NO+1NC
20	L	FL 2016-M2 → 1NO+2NC	FL 2018-M2 → 1NO+2NC	FL 2019-M2 → 1NO+2NC	FL 2020-M2 1NO+2NC
21	L	FL 2116-M2 → 3NC	FL 2118-M2 → 3NC	FL 2119-M2 → 3NC	FL 2120-M2 3NC
22	L	FL 2216-M2 → 2NO+1NC	FL 2218-M2 → 2NO+1NC	FL 2219-M2 → 2NO+1NC	FL 2220-M2 2NO+1NC
2	R	FL 216-M2 2x(1NO-1NC)	FL 218-M2 2x(1NO-1NC)	FL 219-M2 2x(1NO-1NC)	FL 220-M2 2x(1NO-1NC)
E1	⅄	FL E116-M2 1NO-1NC	FL E118-M2 1NO-1NC	FL E119-M2 1NO-1NC	FL E120-M2 1NO-1NC
Max. speed		page 213 - type 2	page 213 - type 4	page 213 - type 4	1 m/s
Actuating force		8 N (25 N →)	8 N (25 N →)	8 N (25 N →)	0.09 Nm
Travel diagrams		page 214 - group 1	page 214 - group 1	page 214 - group 1	page 214 - group 3

Contact block		With external rubber gasket	With external rubber gasket	Other rollers available. See page 44	Round rod, Ø 3 mm, stainless steel
					
5	R	FL 521-M2 1NO+1NC	FL 525-M2 1NO+1NC	FL 531-M2 → 1NO+1NC	FL 532-M2 1NO+1NC
6	L			FL 631-M2 → 1NO+1NC	FL 632-M2 1NO+1NC
7	LO			FL 731-M2 → 1NO+1NC	FL 732-M2 1NO+1NC
9	L			FL 931-M2 → 2NC	FL 932-M2 2NC
10	L	FL 1021-M2 2NO	FL 1025-M2 2NO	FL 1031-M2 2NO	FL 1032-M2 2NO
11	R			FL 1131-M2 → 2NC	FL 1132-M2 2NC
12	R			FL 1231-M2 2NO	FL 1232-M2 2NO
13	LV			FL 1331-M2 → 2NC	FL 1332-M2 2NC
14	LS			FL 1431-M2 → 2NC	FL 1432-M2 2NC
15	LS			FL 1531-M2 2NO	FL 1532-M2 2NO
16	LI			FL 1631-M2 → 2NC	FL 1632-M2 2NC
18	LA	FL 1821-M2 1NO+1NC	FL 1825-M2 1NO+1NC	FL 1831-M2 → 1NO+1NC	FL 1832-M2 1NO+1NC
20	L	FL 2021-M2 1NO+2NC	FL 2025-M2 1NO+2NC	FL 2031-M2 → 1NO+2NC	FL 2032-M2 1NO+2NC
21	L	FL 2121-M2 3NC	FL 2125-M2 3NC	FL 2131-M2 → 3NC	FL 2132-M2 3NC
22	L	FL 2221-M2 2NO+1NC	FL 2225-M2 2NO+1NC	FL 2231-M2 → 2NO+1NC	FL 2232-M2 2NO+1NC
2	R	FL 221-M2 2x(1NO-1NC)	FL 225-M2 2x(1NO-1NC)	FL 231-M2 2x(1NO-1NC)	FL 232-M2 2x(1NO-1NC)
E1	⅄	FL E121-M2 1NO-1NC	FL E125-M2 1NO-1NC	FL E131-M2 1NO-1NC	FL E132-M2 1NO-1NC
Max. speed		1 m/s	1 m/s	page 213 - type 1	1.5 m/s
Actuating force		0.08 Nm	0.14 Nm	0.1 Nm (0.25 Nm →)	0.1 Nm
Travel diagrams		page 214 - group 3	page 214 - group 3	page 214 - group 4	page 214 - group 4

All values in the drawings are in mm

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

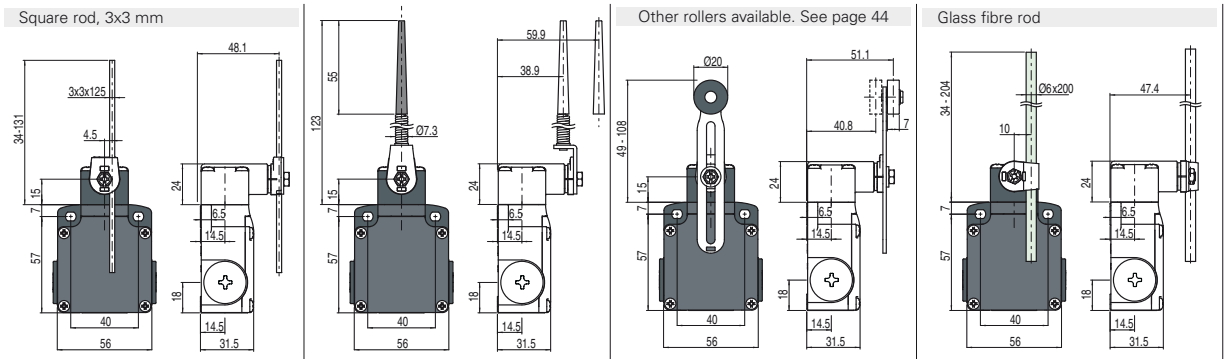
Accessories See page 197

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

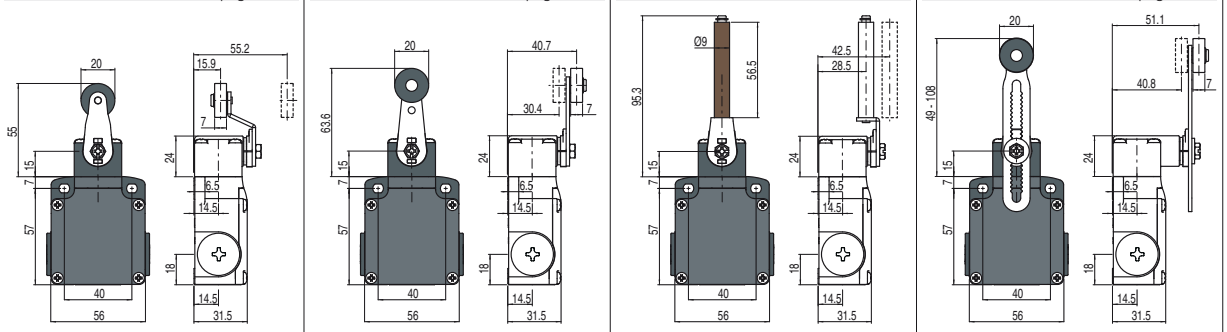
FL series position switches

Contact type:

- R = snap action
- L = slow action
- LO = slow action make before break
- LS = slow action shifted
- LV = slow action shifted and spaced
- LI = slow action independent
- LA = slow action close
- = electronic PNP



Contact block		Square rod, 3x3 mm			Other rollers available. See page 44			Glass fibre rod	
5	R	FL 533-M2	1NO+1NC	FL 534-M2	1NO+1NC	FL 535-M2 (1)	1NO+1NC	FL 536-M2	1NO+1NC
6	L	FL 633-M2	1NO+1NC	FL 634-M2	1NO+1NC	FL 635-M2 (1)	1NO+1NC	FL 636-M2	1NO+1NC
7	LO	FL 733-M2	1NO+1NC	FL 734-M2	1NO+1NC	FL 735-M2 (1)	1NO+1NC	FL 736-M2	1NO+1NC
9	L	FL 933-M2	2NC	FL 934-M2	2NC	FL 935-M2 (1)	2NC	FL 936-M2	2NC
10	L	FL 1033-M2	2NO	FL 1034-M2	2NO	FL 1035-M2	2NO	FL 1036-M2	2NO
11	R	FL 1133-M2	2NC	FL 1134-M2	2NC	FL 1135-M2 (1)	2NC	FL 1136-M2	2NC
12	R	FL 1233-M2	2NO	FL 1234-M2	2NO	FL 1235-M2	2NO	FL 1236-M2	2NO
13	LV	FL 1333-M2	2NC	FL 1334-M2	2NC	FL 1335-M2 (1)	2NC	FL 1336-M2	2NC
14	LS	FL 1433-M2	2NC	FL 1434-M2	2NC	FL 1435-M2 (1)	2NC	FL 1436-M2	2NC
15	LS	FL 1533-M2	2NO	FL 1534-M2	2NO	FL 1535-M2	2NO	FL 1536-M2	2NO
16	LI	FL 1633-M2	2NC	FL 1634-M2	2NC	FL 1635-M2 (1)	2NC	FL 1636-M2	2NC
18	LA	FL 1833-M2	1NO+1NC	FL 1834-M2	1NO+1NC	FL 1835-M2 (1)	1NO+1NC	FL 1836-M2	1NO+1NC
20	L	FL 2033-M2	1NO+2NC	FL 2034-M2	1NO+2NC	FL 2035-M2 (1)	1NO+2NC	FL 2036-M2	1NO+2NC
21	L	FL 2133-M2	3NC	FL 2134-M2	3NC	FL 2135-M2 (1)	3NC	FL 2136-M2	3NC
22	L	FL 2233-M2	2NO+1NC	FL 2234-M2	2NO+1NC	FL 2235-M2 (1)	2NO+1NC	FL 2236-M2	2NO+1NC
2	R	FL 233-M2	2x(1NO-1NC)	FL 234-M2	2x(1NO-1NC)	FL 235-M2	2x(1NO-1NC)	FL 236-M2	2x(1NO-1NC)
E1		FL E133-M2	1NO-1NC	FL E134-M2	1NO-1NC	FL E135-M2	1NO-1NC	FL E136-M2	1NO-1NC
Max. speed		1.5 m/s		1 m/s		page 213 - type 1		1.5 m/s	
Actuating force		0.1 Nm		0.1 Nm		0.1 Nm (0.25 Nm)		0.1 Nm	
Travel diagrams		page 214 - group 4		page 214 - group 4		page 214 - group 4		page 214 - group 4	



Contact block		Other rollers available. See page 44		Other rollers available. See page 44		Porcelain roller		Other rollers available. See page 44	
5	R	FL 551-M2	1NO+1NC	FL 552-M2	1NO+1NC	FL 553-E11M2V9	1NO+1NC	FL 556-M2	1NO+1NC
6	L	FL 651-M2	1NO+1NC	FL 652-M2	1NO+1NC	FL 653-E11M2V9	1NO+1NC	FL 656-M2	1NO+1NC
7	LO	FL 751-M2	1NO+1NC	FL 752-M2	1NO+1NC	FL 753-E11M2V9	1NO+1NC	FL 756-M2	1NO+1NC
9	L	FL 951-M2	2NC	FL 952-M2	2NC	FL 953-E11M2V9	2NC	FL 956-M2	2NC
10	L	FL 1051-M2	2NO	FL 1052-M2	2NO	FL 1053-E11M2V9	2NO	FL 1056-M2	2NO
11	R	FL 1151-M2	2NC	FL 1152-M2	2NC			FL 1156-M2	2NC
12	R	FL 1251-M2	2NO	FL 1252-M2	2NO	FL 1253-E11M2V9	2NO	FL 1256-M2	2NO
13	LV	FL 1351-M2	2NC	FL 1352-M2	2NC	FL 1353-E11M2V9	2NC	FL 1356-M2	2NC
14	LS	FL 1451-M2	2NC	FL 1452-M2	2NC	FL 1453-E11M2V9	2NC	FL 1456-M2	2NC
15	LS	FL 1551-M2	2NO	FL 1552-M2	2NO	FL 1553-E11M2V9	2NO	FL 1556-M2	2NO
16	LI							FL 1656-M2	2NC
18	LA	FL 1851-M2	1NO+1NC	FL 1852-M2	1NO+1NC	FL 1853-E11M2V9	1NO+1NC	FL 1856-M2	1NO+1NC
20	L	FL 2051-M2	1NO+2NC	FL 2052-M2	1NO+2NC	FL 2053-E11M2V9	1NO+2NC	FL 2056-M2	1NO+2NC
21	L	FL 2151-M2	3NC	FL 2152-M2	3NC	FL 2153-E11M2V9	3NC	FL 2156-M2	3NC
22	L	FL 2251-M2	2NO+1NC	FL 2252-M2	2NO+1NC	FL 2253-E11M2V9	2NO+1NC	FL 2256-M2	2NO+1NC
2	R	FL 251-M2	2x(1NO-1NC)	FL 252-M2	2x(1NO-1NC)	FL 253-E11M2	2x(1NO-1NC)	FL 256-M2	2x(1NO-1NC)
E1		FL E151-M2	1NO-1NC	FL E152-M2	1NO-1NC	FL E153-E11M2V9	1NO-1NC	FL E156-M2	1NO-1NC
Max. speed		page 213 - type 1		page 213 - type 1		0.5 m/s		page 213 - type 1	
Actuating force		0.06 Nm (0.25 Nm)		0.06 Nm (0.25 Nm)		0.03 Nm (0.25 Nm)		0.1 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 43.

All values in the drawings are in mm

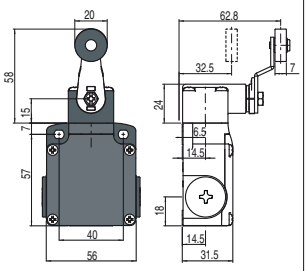
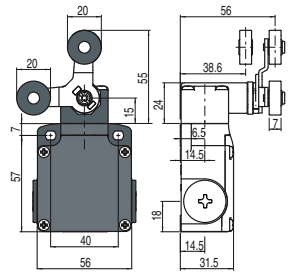
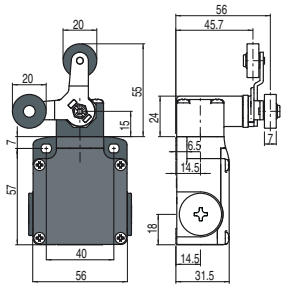
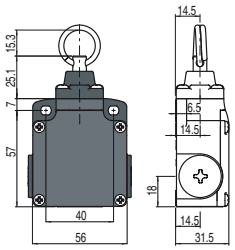
Items with code on **green** background are stock items

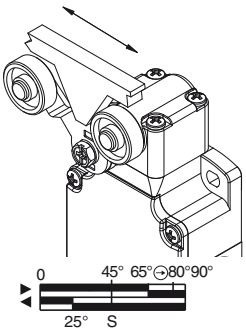
Accessories See page 197

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

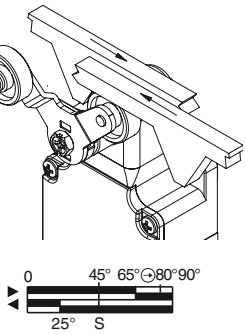
Contact type:

- R = snap action
- L = slow action
- LO = slow action make before break
- LS = slow action shifted
- LV = slow action shifted and spaced
- LI = slow action independent
- LA = slow action close
- = electronic PNP

Contact block		Other rollers available. See page 44	With stainless steel rollers on request	With stainless steel rollers on request	Rope switch for signalling
					
5	R	FL 557-M2 ⊖ 1NO+1NC	FL 541-M2 ⊖ 1NO+1NC	FL 542-M2 ⊖ 1NO+1NC	FL 576-M2 1NO+1NC
6	L	FL 657-M2 ⊖ 1NO+1NC	Bistable switch with lyra lever, single track	Bistable switch with lyra lever, dual track	FL 676-M2 1NO+1NC
7	LO	FL 757-M2 ⊖ 1NO+1NC			FL 776-M2 1NO+1NC
9	L	FL 957-M2 ⊖ 2NC			FL 976-M2 2NO
10	L	FL 1057-M2 2NO			FL 1076-M2 2NC
11	R	FL 1157-M2 ⊖ 2NC			FL 1176-M2 2NO
12	R	FL 1257-M2 2NO			FL 1276-M2 2NC
13	LV	FL 1357-M2 ⊖ 2NC			FL 1376-M2 2NO
14	LS	FL 1457-M2 ⊖ 2NC			FL 1476-M2 2NO
15	LS	FL 1557-M2 2NO			FL 1576-M2 2NC
16	LI	FL 1657-M2 ⊖ 2NC			
18	LA	FL 1857-M2 ⊖ 1NO+1NC			FL 1876-M2 1NO+1NC
20	L	FL 2057-M2 ⊖ 1NO+2NC			FL 2076-M2 2NO+1NC
21	L	FL 2157-M2 ⊖ 3NC			FL 2176-M2 3NO
22	L	FL 2257-M2 ⊖ 2NO+1NC			FL 2276-M2 1NO+2NC
2	R	FL 257-M2 2x(1NO-1NC)			FL 276-M2 2x(1NO-1NC)
E1		FL E157-M2 1NO-1NC			
Max. speed		page 213 - type 1	0.5 m/s with cam at 30°	0.5 m/s with cam at 30°	0.5 m/s
Actuating force		0.1 Nm (0.25 Nm ⊖)	0.21 Nm (0.36 Nm ⊖)	0.21 Nm (0.36 Nm ⊖)	initial 20 N - final 40 N
Travel diagrams		page 214 - group 4			page 214 - group 6



S = mechanical switching point positive opening on contacts 21-22 only



S = mechanical switching point positive opening on contacts 21-22 only

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**

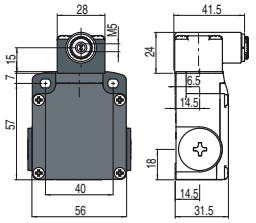
Position switches with swivelling lever without actuator

All values in the drawings are in mm

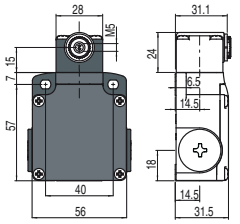
Contact type:

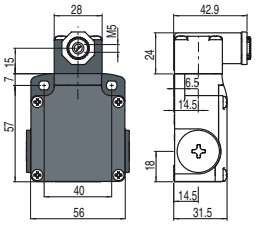
- R = snap action
- L = slow action
- LO = slow action make before break
- LS = slow action shifted
- LV = slow action shifted and spaced
- LI = slow action independent
- LA = slow action close
- = electronic PNP

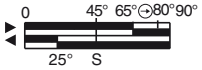
Regular head



Compact head





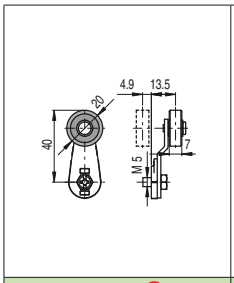
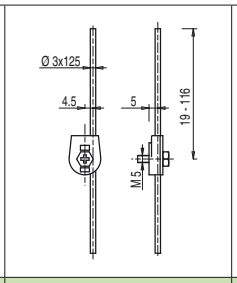
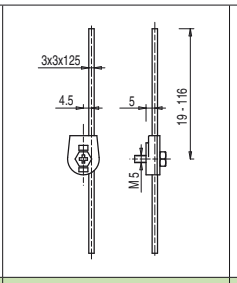
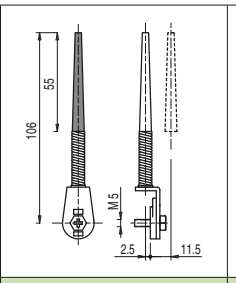
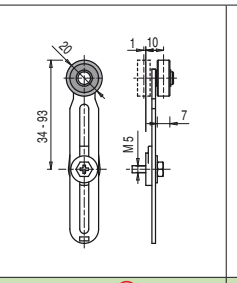
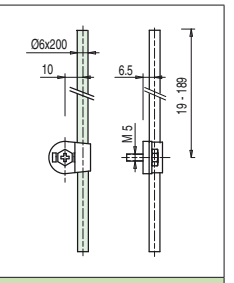
Contact block		Regular head	Compact head	
5	R	FL 538-M2 → 1NO+1NC	FL 558-M2 → 1NO+1NC	FL 540-M2 → 1NO+1NC
6	L	FL 638-M2 → 1NO+1NC	FL 658-M2 → 1NO+1NC	Bistable switch
7	LO	FL 738-M2 → 1NO+1NC	FL 758-M2 → 1NO+1NC	
9	L	FL 938-M2 → 2NC	FL 958-M2 → 2NC	S = mechanical switching point positive opening on contacts 21-22 only
10	L	FL 1038-M2 2NO	FL 1058-M2 2NO	
11	R	FL 1138-M2 → 2NC	FL 1158-M2 → 2NC	
12	R	FL 1238-M2 2NO	FL 1258-M2 2NO	
13	LV	FL 1338-M2 → 2NC	FL 1358-M2 → 2NC	
14	LS	FL 1438-M2 → 2NC	FL 1458-M2 → 2NC	
15	LS	FL 1538-M2 2NO	FL 1558-M2 2NO	
16	LI	FL 1638-M2 → 2NC		
18	LA	FL 1838-M2 → 1NO+1NC	FL 1858-M2 → 1NO+1NC	
20	L	FL 2038-M2 → 1NO+2NC	FL 2058-M2 → 1NO+2NC	
21	L	FL 2138-M2 → 3NC	FL 2158-M2 → 3NC	
22	L	FL 2238-M2 → 2NO+1NC	FL 2258-M2 → 2NO+1NC	
2	R	FL 238-M2 2x(1NO-1NC)	FL 258-M2 2x(1NO-1NC)	
E1		FL E138-M2 1NO-1NC	FL E158-M2 1NO-1NC	
Actuating force		0.1 Nm (0.25 Nm →)	0.06 Nm (0.25 Nm →)	0.5 m/s with cam at 30°
Travel diagrams		page 214 - group 4	page 214 - group 4	0.21 Nm (0.36 Nm →)

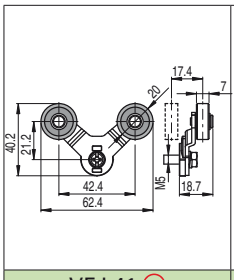
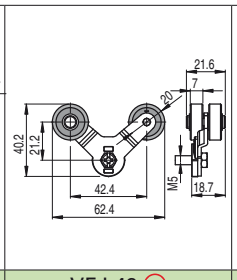
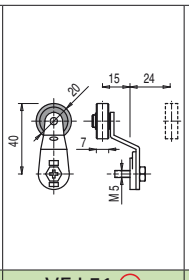
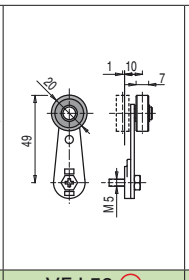
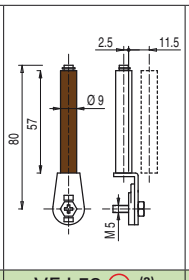
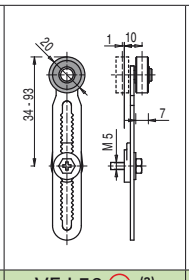
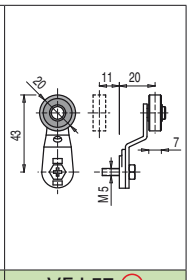
IMPORTANT
For safety applications: join only switches and actuators marked with symbol → next to the product code.
For more information about safety applications see details on page 211.

Separate actuators

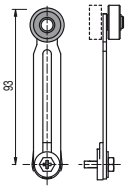
All values in the drawings are in mm

IMPORTANT: These separate actuators can be used only with items of the FD, 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)

Lyra actuator, single track	Lyra actuator, dual track	Technopolymer roller, Ø 20 mm	Technopolymer roller, Ø 20 mm	Porcelain roller	Adjustable safety actuator with technopolymer roller	Technopolymer roller, Ø 20 mm
						
VF L41 →	VF L42 →	VF L51 →	VF L52 →	VF L53 → (2)	VF L56 → (3)	VF L57 →

- (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 FL •58-M2 (e.g. FL 558-M2, FL 658-M2…) with actuator VF L53 will not present the same travel diagrams and actuating forces as switch FL •53-E11M2V9 (e.g. FL 553-E11M2V9, FL 653-E11M2V9…).
- (3) If installed with switch FL •58-M2 (e.g. FL 558-M2, FL 658-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.



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

Accessories See page 197

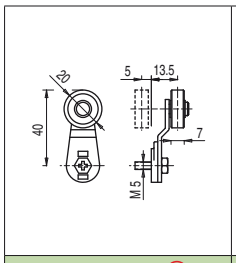
→ The 2D and 3D files are available at **www.pizzato.com**

Special separate actuators

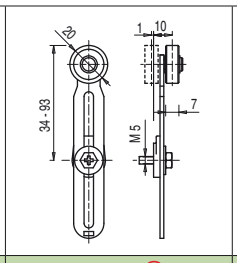
All values in the drawings are in mm

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

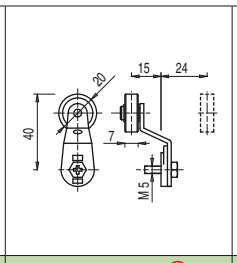
Stainless steel rollers, Ø 20 mm



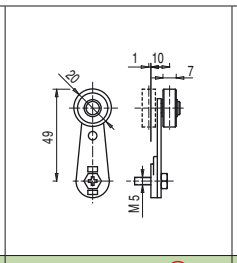
VF L31-R24



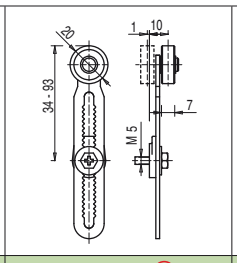
VF L35-R24 (1) (3)



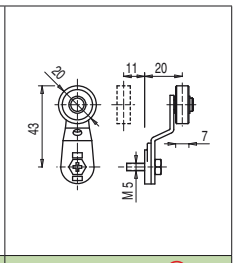
VF L51-R24



VF L52-R24

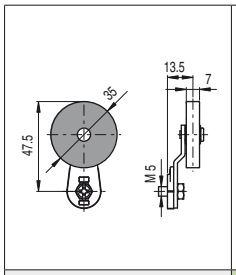


VF L56-R24 (3)

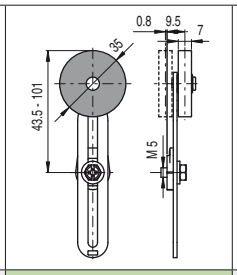


VF L57-R24

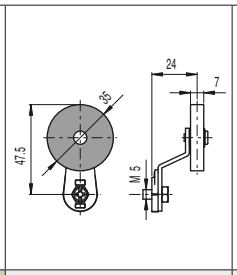
Technopolymer rollers, Ø 35 mm



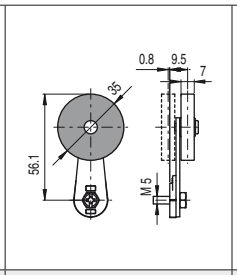
VF L31-R25 (4)



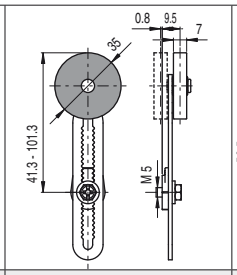
VF L35-R25 (1) (3)



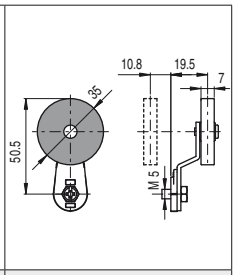
VF L51-R25 (4)



VF L52-R25

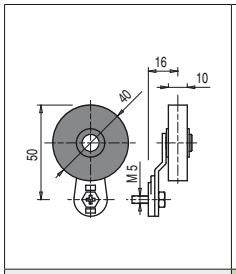


VF L56-R25 (3)

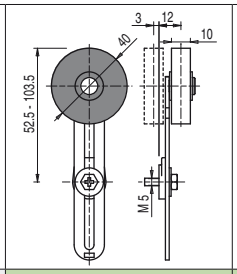


VF L57-R25

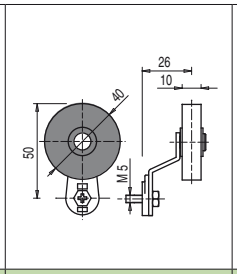
Rubber rollers, Ø 40 mm



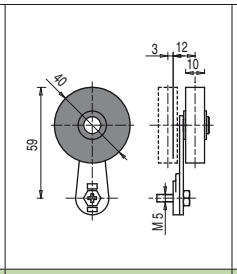
VF L31-R5 (4)



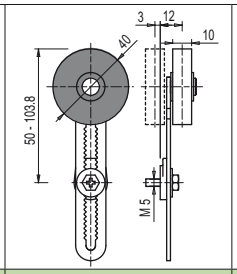
VF L35-R5 (1) (3)



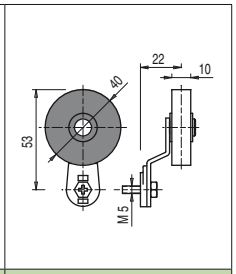
VF L51-R5 (4)



VF L52-R5

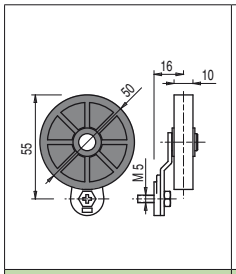


VF L56-R5 (3)

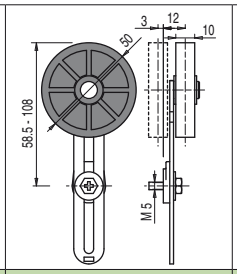


VF L57-R5 (4)

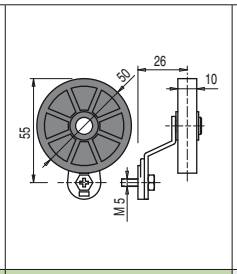
Rubber rollers, Ø 50 mm



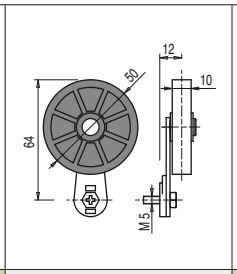
VF L31-R26 (4)



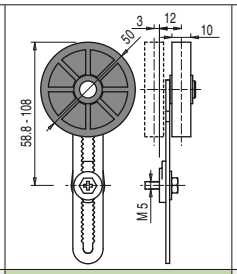
VF L35-R26 (1) (3)



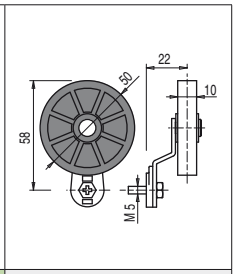
VF L51-R26 (4)



VF L52-R26 (4)

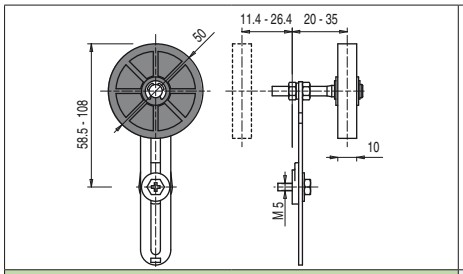


VF L56-R26 (3)

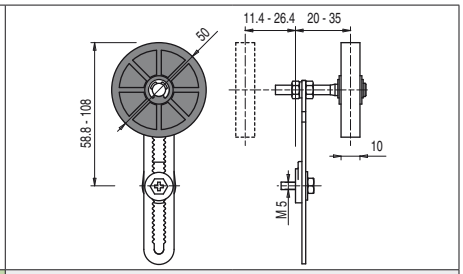


VF L57-R26 (4)

Protruding rubber rollers, Ø 50 mm



VF L35-R27 (1) (3)



VF L56-R27 (3)

Accessories See page 197

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