Selection diagram

01
08
10 external rubber gasket
11
18 Ø 8 mm stainless steel sphere
19 Ø 12,7 mm stainless steel sphere
02
04 fiber glass rod
05

31
51
52
57
35 adjustable lever
56 safety adjustable lever
41 bistable
42 bistable

ACTUATORS

CONTACT BLOCKS

5 1NO+1NC snap action
6 1NO+1NC slow action
7 1NO+1NC slow action overlapped
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 closer
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 ENTRIES

Threaded conduit entries

	PG 13,5 (standard)
M2	M20x1,5

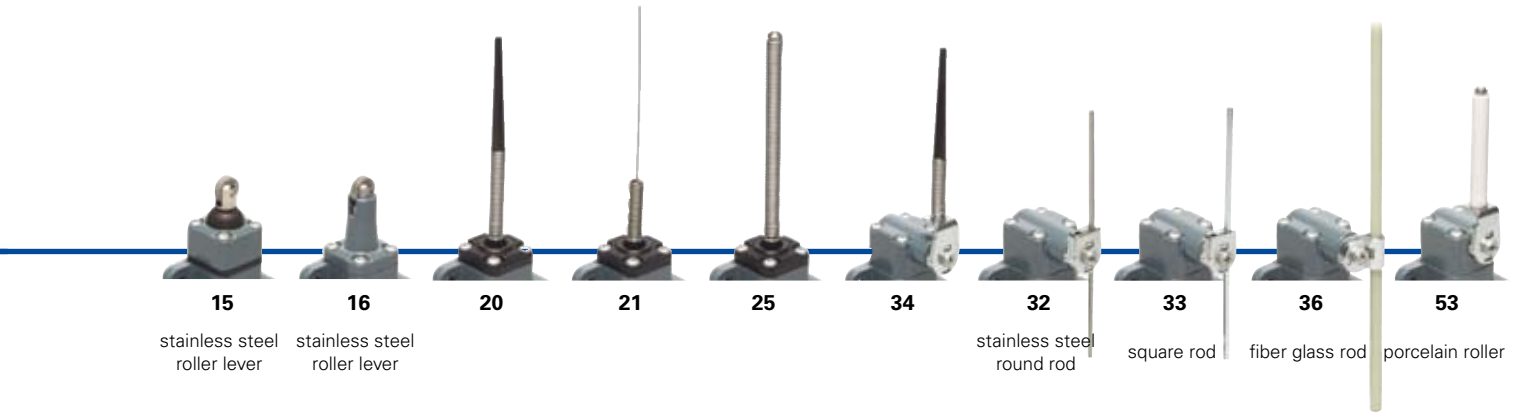
With assembled cable gland

PG 13,5	**K21**	for Ø 6 to Ø 12 mm cables range, from bottom
	K121	for Ø 6 to Ø 12 mm cables range, from right
	K221	for Ø 6 to Ø 12 mm cables range, from left
	K25	for Ø 3 to Ø 7 mm cables range, from bottom
	K125	for Ø 3 to Ø 7 mm cables range, from right
	K225	for Ø 3 to Ø 7 mm cables range, from left
M20x1,5	**K23**	for Ø 6 to Ø 12 mm cables range, from bottom
	K123	for Ø 6 to Ø 12 mm cables range, from right
	K223	for Ø 6 to Ø 12 mm cables range, from left
	K27	for Ø 3 to Ø 7 mm cables range, from bottom
	K127	for Ø 3 to Ø 7 mm cables range, from right
	K227	for Ø 3 to Ø 7 mm cables range, from left

With M12 metal connector assembled and wired

K40	8 poles from bottom
K41	8 poles from right
K42	8 poles from left
K50	5 poles from bottom
K51	5 poles from right
K52	5 poles from left

product option
accessory sold separately



15 stainless steel roller lever
16 stainless steel roller lever
20
21
25
34
32 stainless steel round rod
33 square rod
36 fiber glass rod
53 porcelain roller

76 rope switches for signalling
38 without actuator
58 without actuator
40 bistable without actuator

LOOSE ACTUATORS
See page 2/31

Code structure

Attention! The feasibility of a code number does not mean the effective availability of a product. Please contact our sales office.

article: **FL 502** — options: **-1GM2K50**

Housing

FL	metal housing, three conduit entries

Contact blocks

5	1NO+1NC, snap action
6	1NO+1NC, slow action
7	1NO+1NC, slow action overlapped
...	.....

Actuators

01	short plunger
02	roller lever
05	offset roller lever
...	.....

Suffix

	no suffix (standard)
1	with Ø 20 mm stainless steel roller for actuators 02, 05, 31, 35, 51, 52, 56, 57, 41, 42
2	with Ø 35 mm polymer roller (see special loose actuators on page 2/32)
3	with Ø 50 mm rubber roller (see special loose actuators on page 2/32)
4	with Ø 50 mm overhanging rubber roller (see special loose actuators on page 2/32)

Contacts type

	silver contacts (standard)
G	silver contacts gold plated 1 µm (contact block 2 excluded)

Threaded conduit entries

	PG 13,5 (standard)
M2	M20x1,5

Preinstalled cable gland or connectors

	no cable gland or connector (standard)
K21	with assembled cable gland suitable for Ø 6 to Ø 12 mm cables range
...	.....
K50	with 5 poles M12 metal connector
...	.....

For the complete list of all combinations, please contact our technical office.

Position switches **FL** series

Main data

- Metal housing, three conduit entries
- Protection degree IP67
- 17 contact blocks available
- 28 actuators available
- M12 assembled connector versions
- Silver contacts gold plated versions

Technical data

Housing

Metal housing, coated with baked epoxy powder
Three conduit entries
Protection degree: IP67 according to EN 60529

General data

Ambient temperature:	from -25°C to +80°C
Version for operation in ambient temperature from -40°C to +80° C on request	
Max actuation frequency:	3600 operations cycles[1]/hour
Mechanical endurance:	20 million operations cycles[1]
Assembling position:	any
Driving torque for installation:	see pages 7/1-7/10

(1) One operation cycle means two movements, one to close and one to open contacts, as foreseen by EN 60947-5-1 standard.

Cross section of the conductors (flexible copper wire)

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)

In conformity with standards:
IEC 60947-5-1, EN 60947-5-1, EN 60947-1, IEC 60204-1, EN 60204-1, EN 1088, EN ISO 12100-1, EN ISO 12100-2, IEC 60529, EN 60529, NFC 63-140, VDE 0660-200, VDE 0113.
Approvals:
IEC 60947-5-1, UL 508, GB14048.5-2001.

Markings and quality marks:

Approval IMQ:	EG605
Approval UL:	E131787
Approval CCC:	2007010305230000
Approval EZU:	1010151

In conformity with requirements requested by:
Low Voltage Directive 2006/95/EC, Machinery Directive 2006/42/EC and Electromagnetic Compatibility 2004/108/EC.
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 ⊖. The safety circuit must always be connected with the **NC contacts** (normally closed contacts: 11-12, 21-22 or 31-32) as stated in the **standard EN 60947-5-1, encl. K, par. 2**. The switch must be actuated with **at least up to the positive opening travel** shown in the travels diagrams on page 7/4. The switch must be actuated **at least with the positive opening force**, shown in brackets, underneath each article, near the value of the min. force.

⚠ If not expressly indicated in this chapter, for the right installation and the correct utilization of all articles see requirements indicated from page 7/1 to page 7/10.

Electrical data		Utilization categories
without connector	Thermal current (Ith): 10 A Rated insulation voltage (Ui): 500 Vac 600 Vdc 400Vac500Vdc (contact blocks 2, 11, 12, 20, 21, 22, 33, 34) Rated impulse withstand voltage (U_{imp}): 6 kV 4 kV (contact blocks 20, 21, 22, 33, 34) Conditional shot circuit current: 1000 A according to EN 60947-5-1 Protection against short circuits: fuse 10 A 500 V type aM Pollution degree: 3	Alternate 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
with 5 poles M12 connector	Thermal current (Ith): 4 A Rated insulation voltage (Ui): 250 Vac 300 Vdc Protection against short circuits: fuse 4 A 500 V type gG Pollution degree: 3	Alternate 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
with 8 poles M12 connector	Thermal current (Ith): 2 A Rated insulation voltage (Ui): 30 Vac 36 Vdc Protection against short circuits: fuse 2 A 500 V type gG Pollution degree: 3	Alternate current: AC15 (50...60 Hz) Ue (V) 24 Ie (A) 2 Direct current: DC13 Ue (V) 24 Ie (A) 2

Data type approved by IMQ, CCC and EZU

Rated insulation voltage (Ui): 500 Vac
400 Vac (for contact blocks 2, 11, 12, 20, 21, 22, 33, 34)
Thermal current (Ith): 10 A
Protection against short circuits: fuse 10 A 500 V type aM
Rated impulse withstand voltage (U_{imp}): 6 kV
4 kV (for contact blocks 20, 21, 22, 33, 34)
Protection degree: IP67
MV terminals (screw clamps)
Pollution degree 3
Utilization category: AC15
Operation voltage (Ue): 400 Vac (50 Hz)
Operation current (Ie): 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 block 5, 6, 7, 9, 11, 13, 14, 16, 18, 20, 21, 22, 33, 34

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

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

Data type approved by UL

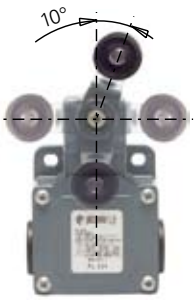
Utilization categories Q300 (69 VA, 125-250 Vdc)
A600 (720 VA, 120-600 Vac)
Data of the housing type 1, 4X "indoor use only", 12, 13
For all contact blocks except 2 and 3 use 60 or 75 °C copper (Cu) conductor and wire size No. 12-14 AWG. Terminal tightening torque of 7,1 lb in (0.8 Nm).
For contact blocks 2 and 3 use 60 or 75 °C copper (Cu) conductor and wire size No. 14 AWG. Terminal tightening torque of 12 lb in (1.4 Nm).

In conformity with standard: UL 508

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

Adjustable levers

In switches with revolving lever it is possible to adjust the lever with 10° steps for the whole 360° range. The positive movement transmission is always guaranteed thanks to the particular geometrical coupling between the lever and the revolving shaft as prescribed for safety applications by the German standard BG-GS-ET-15.



Overturning levers

It's possible to fasten the lever on switches on straight or reverse side, maintaining the positive coupling.
In this way it is possible to obtain two different work plans of the lever.

Rotating heads

In all switches, it is possible to rotate the head in 90° steps.

Working operation of contact block 16 with independent contacts

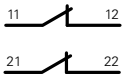
The contact block 16 has two NC contacts**, both with positive opening** activated independently according to the lever turning direction.

Lever turned to left

Contacts diagram

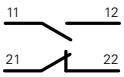
Lever not turned

Contacts diagram



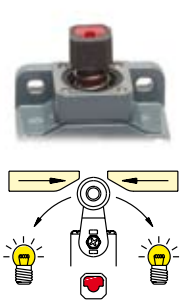
Lever turned to right

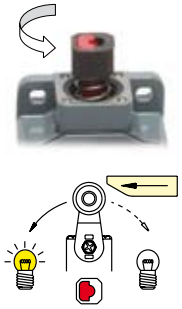
Contacts diagram

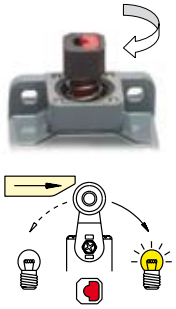


Unidirectional heads

In the switches with revolving lever, it is possible to select the directional operation by removing the four screws of the head and revolving the internal piston (contact block 16 excluded).



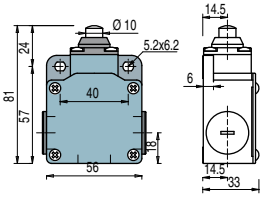
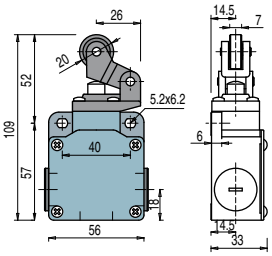
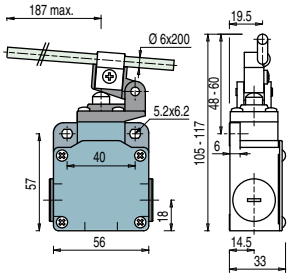
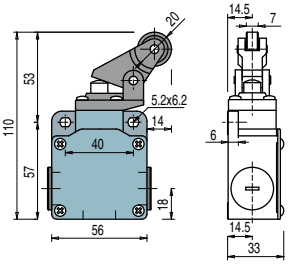


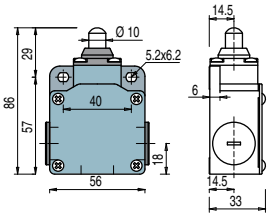
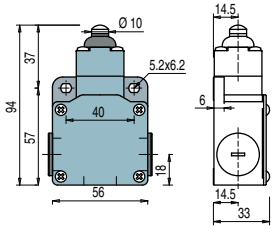
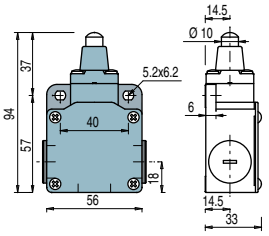
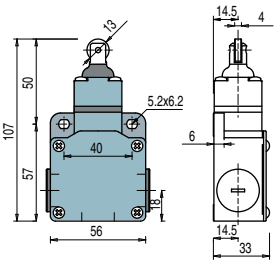


Position switches **FL** series

Contacts type:

- R = snap action
- L = slow action
- LO = slow action overlapped
- LS = slow action shifted
- LV = slow action shifted and spaced
- LI = slow action independent
- LA = slow action closer
- = electronic PNP

Contact blocks				With stainless steel roller on request			With stainless steel roller on request
							
5	R	FL 501	1NO+1NC	FL 502	1NO+1NC	FL 504	1NO+1NC	FL 505	1NO+1NC
6	L	FL 601	1NO+1NC	FL 602	1NO+1NC	FL 604	1NO+1NC	FL 605	1NO+1NC
7	LO	FL 701	1NO+1NC	FL 702	1NO+1NC	FL 704	1NO+1NC	FL 705	1NO+1NC
9	L	FL 901	2NC	FL 902	2NC	FL 904	2NC	FL 905	2NC
10	L	FL 1001	2NO	FL 1002	2NO	FL 1004	2NO	FL 1005	2NO
11	R	FL 1101	2NC	FL 1102	2NC	FL 1104	2NC	FL 1105	2NC
12	R	FL 1201	2NO	FL 1202	2NO	FL 1204	2NO	FL 1205	2NO
13	LV	FL 1301	2NC	FL 1302	2NC	FL 1304	2NC	FL 1305	2NC
14	LS	FL 1401	2NC	FL 1402	2NC	FL 1404	2NC	FL 1405	2NC
15	LS	FL 1501	2NO	FL 1502	2NO	FL 1504	2NO	FL 1505	2NO
18	LA	FL 1801	1NO+1NC	FL 1802	1NO+1NC	FL 1804	1NO+1NC	FL 1805	1S+1Ö
20	L	FL 2001	1NO+2NC	FL 2002	1NO+2NC	FL 2004	1NO+2NC	FL 2005	1NO+2NC
21	L	FL 2101	3NC	FL 2102	3NC	FL 2104	3NC	FL 2105	3NC
22	L	FL 2201	2NO+1NC	FL 2202	2NO+1NC	FL 2204	2NO+1NC	FL 2205	2NO+1NC
2	R	FL 201	2x(1NO-1NC)	FL 202	2x(1NO-1NC)	FL 204	2x(1NO-1NC)	FL 205	2x(1NO-1NC)
E1		FL E101	1NO-1NC	FL E102	1NO-1NC	FL E104	1NO-1NC	FL E105	1NO-1NC
Max speed		page 7/3 - type 4		page 7/3 - type 3		0,5 m/s		page 7/3 - type 3	
Min. force		8 N (25 N ⊖)		6 N (25 N ⊖)		0,17 Nm		6 N (25 N ⊖)	
Travel diagrams		page 7/4 - group 1		page 7/4 - group 2		page 7/4 - group 1		page 7/4 - group 2	

Contact blocks			With external rubber gasket			With external rubber gasket
							
5	R	FL 508	1NO+1NC	FL 510	1NO+1NC	FL 511	1NO+1NC	FL 515	1NO+1NC
6	L	FL 608	1NO+1NC	FL 610	1NO+1NC	FL 611	1NO+1NC	FL 615	1NO+1NC
7	LO	FL 708	1NO+1NC	FL 710	1NO+1NC	FL 711	1NO+1NC	FL 715	1NO+1NC
9	L	FL 908	2NC	FL 910	2NC	FL 911	2NC	FL 915	2NC
10	L	FL 1008	2NO	FL 1010	2NO	FL 1011	2NO	FL 1015	2NO
11	R	FL 1108	2NC	FL 1110	2NC	FL 1111	2NC	FL 1115	2NC
12	R	FL 1208	2NO	FL 1210	2NO	FL 1211	2NO	FL 1215	2NO
13	LV	FL 1308	2NC	FL 1310	2NC	FL 1311	2NC	FL 1315	2NC
14	LS	FL 1408	2NC	FL 1410	2NC	FL 1411	2NC	FL 1415	2NC
15	LS	FL 1508	2NO	FL 1510	2NO	FL 1511	2NO	FL 1515	2NO
18	LA	FL 1808	1NO+1NC	FL 1810	1NO+1NC	FL 1811	1NO+1NC	FL 1815	1S+1Ö
20	L	FL 2008	1NO+2NC	FL 2010	1NO+2NC	FL 2011	1NO+2NC	FL 2015	1NO+2NC
21	L	FL 2108	3NC	FL 2110	3NC	FL 2111	3NC	FL 2115	3NC
22	L	FL 2208	2NO+1NC	FL 2210	2NO+1NC	FL 2211	2NO+1NC	FL 2215	2NO+1NC
2	R	FL 208	2x(1NO-1NC)	FL 210	2x(1NO-1NC)	FL 211	2x(1NO-1NC)	FL 215	2x(1NO-1NC)
E1		FL E108	1NO-1NC	FL E110	1NO-1NC	FL E111	1NO-1NC	FL E115	1NO-1NC
Max speed		page 7/3 - type 4		page 7/3 - type 4		page 7/3 - type 4		page 7/3 - type 2	
Min. force		8 N (25 N ⊖)		11 N (25 N ⊖)		8 N (25 N ⊖)		11 N (25 N ⊖)	
Travel diagrams		page 7/4 - group 1		page 7/4 - group 1		page 7/4 - group 1		page 7/4 - group 1	

Accessories See page 6/1

All measures in the drawings are in mm

Contacts type:

R = snap action
L = slow action
LO = slow action overlapped
LS = slow action shifted
LV = slow action shifted and spaced
LI = slow action independent
LA = slow action closer
= electronic PNP

Contact blocks		Ø 8 mm stainless steel sphere		Ø 12,7 mm stainless steel sphere		With external rubber gasket	
5	R	FL 516	1NO+1NC	FL 518	1NO+1NC	FL 519	1NO+1NC	FL 520	1NO+1NC
6	L	FL 616	1NO+1NC	FL 618	1NO+1NC	FL 619	1NO+1NC		
7	LO	FL 716	1NO+1NC	FL 718	1NO+1NC	FL 719	1NO+1NC		
9	L	FL 916	2NC	FL 918	2NC	FL 919	2NC		
10	L	FL 1016	2NO	FL 1018	2NO	FL 1019	2NO	FL 1020	2NO
11	R	FL 1116	2NC	FL 1118	2NC	FL 1119	2NC		
12	R	FL 1216	2NO	FL 1218	2NO	FL 1219	2NO		
13	LV	FL 1316	2NC	FL 1318	2NC	FL 1319	2NC		
14	LS	FL 1416	2NC	FL 1418	2NC	FL 1419	2NC		
15	LS	FL 1516	2NO	FL 1518	2NO	FL 1519	2NO		
18	LA	FL 1816	1S+1Ö	FL 1818	1S+1Ö	FL 1819	1S+1Ö	FL 1820	1NO+1NC
20	L	FL 2016	1NO+2NC	FL 2018	1NO+2NC	FL 2019	1NO+2NC	FL 2020	1NO+2NC
21	L	FL 2116	3NC	FL 2118	3NC	FL 2119	3NC	FL 2120	3NC
22	L	FL 2216	2NO+1NC	FL 2218	2NO+1NC	FL 2219	2NO+1NC	FL 2220	2NO+1NC
2	R	FL 216	2x(1NO-1NC)	FL 218	2x(1NO-1NC)	FL 219	2x(1NO-1NC)	FL 220	2x(1NO-1NC)
E1		FL E116	1NO-1NC	FL E118	1NO-1NC	FL E119	1NO-1NC	FL E120	1NO-1NC
Max speed		page 7/3 - type 2		page 7/3 - type 4		page 7/3 - type 4		1 m/s	
Min. force		8 N (25 N ⊕)		8 N (25 N ⊕)		8 N (25 N ⊕)		0,09 Nm	
Travel diagrams		page 7/4 - group 1		page 7/4 - group 1		page 7/4 - group 1		page 7/4 - group 3	

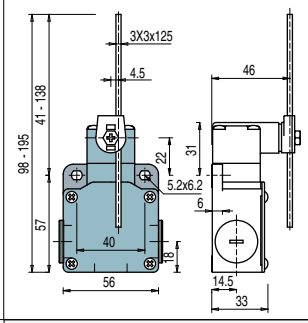
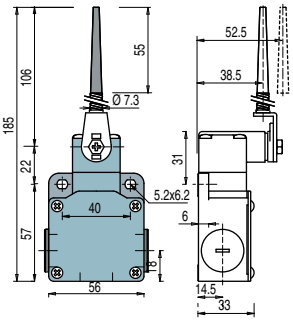
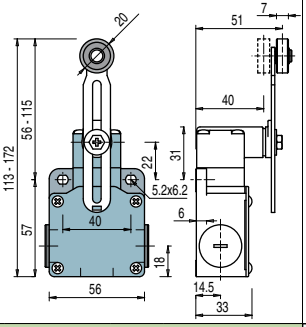
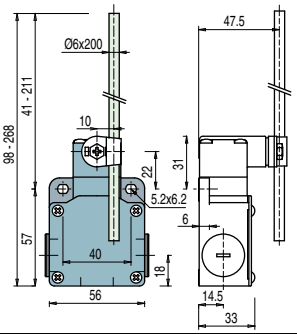
Contact blocks		With external rubber gasket		With external rubber gasket		Other rollers available. See page 2/32		Ø 3 mm stainless steel round rod	
5	R	FL 521	1NO+1NC	FL 525	1NO+1NC	FL 531	1NO+1NC	FL 532	1NO+1NC
6	L					FL 631	1NO+1NC	FL 632	1NO+1NC
7	LO					FL 731	1NO+1NC	FL 732	1NO+1NC
9	L					FL 931	2NC	FL 932	2NC
10	L	FL 1021	2NO	FL 1025	2NO	FL 1031	2NO	FL 1032	2NO
11	R					FL 1131	2NC	FL 1132	2NC
12	R					FL 1231	2NO	FL 1232	2NO
13	LV					FL 1331	2NC	FL 1332	2NC
14	LS					FL 1431	2NC	FL 1432	2NC
15	LS					FL 1531	2NO	FL 1532	2NO
16	LI					FL 1631	2NC	FL 1632	2NC
18	LA	FL 1821	1NO+1NC	FL 1825	1NO+1NC	FL 1831	1NO+1NC	FL 1832	1S+1Ö
20	L	FL 2021	1NO+2NC	FL 2025	1NO+2NC	FL 2031	1NO+2NC	FL 2032	1NO+2NC
21	L	FL 2121	3NC	FL 2125	3NC	FL 2131	3NC	FL 2132	3NC
22	L	FL 2221	2NO+1NC	FL 2225	2NO+1NC	FL 2231	2NO+1NC	FL 2232	2NO+1NC
2	R	FL 221	2x(1NO-1NC)	FL 225	2x(1NO-1NC)	FL 231	2x(1NO-1NC)	FL 232	2x(1NO-1NC)
E1		FL E121	1NO-1NC	FL E125	1NO-1NC	FL E131	1NO-1NC	FL E132	1NO-1NC
Max speed		1 m/s		1 m/s		page 7/3 - type 1		1,5 m/s	
Min. force		0,08 Nm		0,14 Nm		0,1 Nm (0,25 Nm ⊕)		0,1 Nm	
Travel diagrams		page 7/4 - group 3		page 7/4 - group 3		page 7/4 - group 4		page 7/4 - group 4	

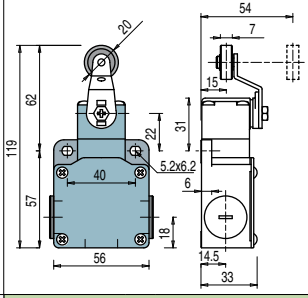
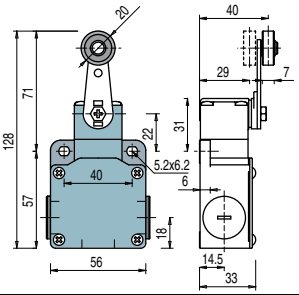
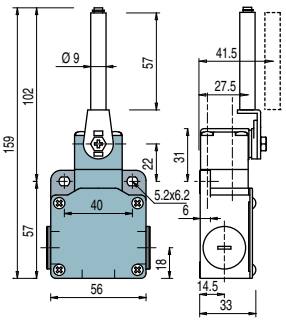
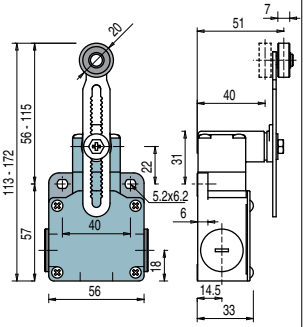
Items with code on the **green** background are available in stock

Position switches **FL** series

Contacts type:

- R = snap action
- L = slow action
- LO = slow action overlapped
- LS = slow action shifted
- LV = slow action shifted and spaced
- LI = slow action independent
- LA = slow action closer
- = electronic PNP

Contact blocks		3x3 mm square rod		Other rollers available. See page 2/32	Fiber glass rod
					
5	R	FL 533 1NO+1NC	FL 534 1NO+1NC	FL 535 (1) 1NO+1NC	FL 536 1NO+1NC
6	L	FL 633 1NO+1NC	FL 634 1NO+1NC	FL 635 (1) 1NO+1NC	FL 636 1NO+1NC
7	LO	FL 733 1NO+1NC	FL 734 1NO+1NC	FL 735 (1) 1NO+1NC	FL 736 1NO+1NC
9	L	FL 933 2NC	FL 934 2NC	FL 935 (1) 2NC	FL 936 2NC
10	L	FL 1033 2NO	FL 1034 2NO	FL 1035 2NO	FL 1036 2NO
11	R	FL 1133 2NC	FL 1134 2NC	FL 1135 (1) 2NC	FL 1136 2NC
12	R	FL 1233 2NO	FL 1234 2NO	FL 1235 2NO	FL 1236 2NO
13	LV	FL 1333 2NC	FL 1334 2NC	FL 1335 (1) 2NC	FL 1336 2NC
14	LS	FL 1433 2NC	FL 1434 2NC	FL 1435 (1) 2NC	FL 1436 2NC
15	LS	FL 1533 2NO	FL 1534 2NO	FL 1535 2NO	FL 1536 2NO
16	LI	FL 1633 2NC	FL 1634 2NC	FL 1635 (1) 2NC	FL 1636 2NC
18	LA	FL 1833 1S+1Ö	FL 1834 1S+1Ö	FL 1835 (1) 1S+1Ö	FL 1836 1S+1Ö
20	L	FL 2033 1NO+2NC	FL 2034 1NO+2NC	FL 2035 (1) 1NO+2NC	FL 2036 1NO+2NC
21	L	FL 2133 3NC	FL 2134 3NC	FL 2135 (1) 3NC	FL 2136 3NC
22	L	FL 2233 2NO+1NC	FL 2234 2NO+1NC	FL 2235 (1) 2NO+1NC	FL 2236 2NO+1NC
2	R	FL 233 2x(1NO-1NC)	FL 234 2x(1NO-1NC)	FL 235 2x(1NO-1NC)	FL 236 2x(1NO-1NC)
E1		FL E133 1NO-1NC	FL E134 1NO-1NC	FL E135 1NO-1NC	FL E136 1NO-1NC
Max speed		1,5 m/s	1 m/s	page 7/3 - type 1	1,5 m/s
Min. force		0,1 Nm	0,1 Nm	0,1 Nm (0,25 Nm →)	0,1 Nm
Travel diagrams		page 7/4 - group 4	page 7/4 - group 4	page 7/4 - group 4	page 7/4 - group 4

Contact blocks		Other rollers available. See page 2/32	Other rollers available. See page 2/32	Porcelain roller	Other rollers available. See page 2/32
					
5	R	FL 551 → 1NO+1NC	FL 552 → 1NO+1NC	FL 553-E11V9 → 1NO+1NC	FL 556 → 1NO+1NC
6	L	FL 651 → 1NO+1NC	FL 652 → 1NO+1NC	FL 653-E11V9 → 1NO+1NC	FL 656 → 1NO+1NC
7	LO	FL 751 → 1NO+1NC	FL 752 → 1NO+1NC	FL 753-E11V9 → 1NO+1NC	FL 756 → 1NO+1NC
9	L	FL 951 → 2NC	FL 952 → 2NC	FL 953-E11V9 → 2NC	FL 956 → 2NC
10	L	FL 1051 2NO	FL 1052 2NO	FL 1053-E11V9 2NO	FL 1056 2NO
11	R	FL 1151 → 2NC	FL 1152 → 2NC		FL 1156 → 2NC
12	R	FL 1251 2NO	FL 1252 2NO	FL 1253-E11V9 2NO	FL 1256 2NO
13	LV	FL 1351 → 2NC	FL 1352 → 2NC	FL 1353-E11V9 → 2NC	FL 1356 → 2NC
14	LS	FL 1451 → 2NC	FL 1452 → 2NC	FL 1453-E11V9 → 2NC	FL 1456 → 2NC
15	LS	FL 1551 2NO	FL 1552 2NO	FL 1553-E11V9 2NO	FL 1556 2NO
16	LI				FL 1656 → 2NC
18	LA	FL 1851 → 1NO+1NC	FL 1852 → 1S+1Ö	FL 1853-E11V9 → 1S+1Ö	FL 1856 → 1S+1Ö
20	L	FL 2051 → 1NO+2NC	FL 2052 → 1NO+2NC	FL 2053-E11V9 → 1NO+2NC	FL 2056 → 1NO+2NC
21	L	FL 2151 → 3NC	FL 2152 → 3NC	FL 2153-E11V9 → 3NC	FL 2156 → 3NC
22	L	FL 2251 → 2NO+1NC	FL 2252 → 2NO+1NC	FL 2253-E11V9 → 2NO+1NC	FL 2256 → 2NO+1NC
2	R	FL 251 2x(1NO-1NC)	FL 252 2x(1NO-1NC)	FL 253-E11 2x(1NO-1NC)	FL 256 2x(1NO-1NC)
E1		FL E151 1NO-1NC	FL E152 1NO-1NC	FL E153-E11V9 1NO-1NC	FL E156 1NO-1NC
Max speed		page 7/3 - type 1	page 7/3 - type 1	0,5 m/s	page 7/3 - type 1
Min. 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 7/4 - group 4	page 7/4 - group 4	page 7/4 - group 5	page 7/4 - group 4

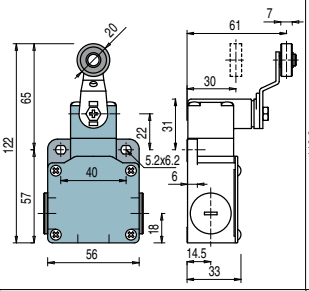
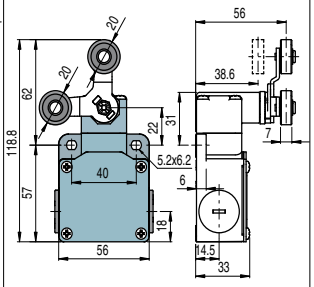
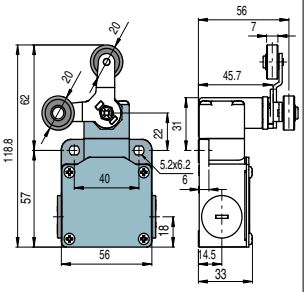
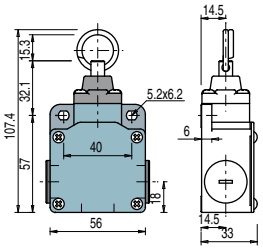
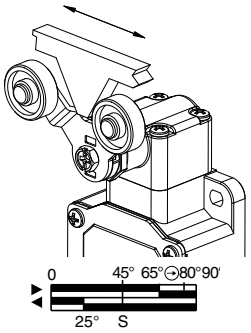
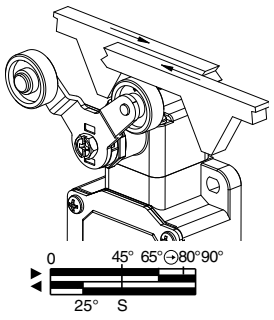
Accessories See page 6/1

(1) Positive opening only with lever adjusted on the max. See page 2/31.

Contacts type:

R = snap action
L = slow action
LO = slow action overlapped
LS = slow action shifted
LV = slow action shifted and spaced
LI = slow action independent
LA = slow action closer
= electronic PNP

Contact blocks

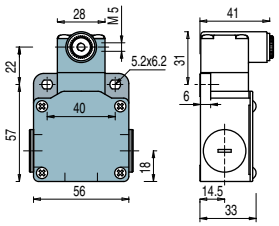
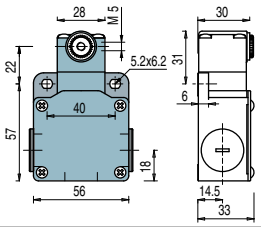
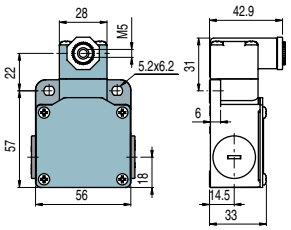
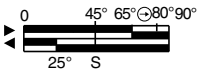
		Other rollers available. See page 2/32		With stainless steel rollers on request		With stainless steel rollers on request		Rope switches for signalling	
									
5	R	FL 557	1NO+1NC	FL 541	1NO+1NC	FL 542	1NO+1NC	FL 576	1NO+1NC
6	L	FL 657	1NO+1NC					FL 676	1NO+1NC
7	LO	FL 757	1NO+1NC					FL 776	1NO+1NC
9	L	FL 957	2NC					FL 976	2NO
10	L	FL 1057	2NO					FL 1076	2NC
11	R	FL 1157	2NC					FL 1176	2NO
12	R	FL 1257	2NO					FL 1276	2NC
13	LV	FL 1357	2NC					FL 1376	2NO
14	LS	FL 1457	2NC					FL 1476	2NO
15	LS	FL 1557	2NO					FL 1576	2NC
16	LI	FL 1657	2NC						
18	LA	FL 1857	1S+1Ö					FL 1876	1NO+1NC
20	L	FL 2057	1NO+2NC					FL 2076	2NO+1NC
21	L	FL 2157	3NC					FL 2176	3NO
22	L	FL 2257	2NO+1NC					FL 2276	1NO+2NC
2	R	FL 257	2x(1NO-1NC)					FL 276	2x(1NO-1NC)
E1		FL E157	1NO-1NC						
				Bistable switch with single track lyra lever		Bistable switch with double track lyra lever			
									
				S = mechanical snap point positive opening with 21-22 contact only		S = mechanical snap point positive opening with 21-22 contact only			
Max speed		page 7/3 - type 1		0,5 m/s with 30° cam		0,5 m/s with 30° cam		0,5 m/s	
Min. force		0,1 Nm (0,25 Nm ⊕)		0,21 Nm		0,21 Nm		initial 20 N - final 40 N	
Travel diagrams		page 7/4 - group 4						page 7/4 - group 6	

Position switches with revolving lever without actuator

Contacts type:

- R = snap action
- L = slow action
- LO = slow action overlapped
- LS = slow action shifted
- LV = slow action shifted and spaced
- LI = slow action independent
- LA = slow action closer
- = electronic PNP

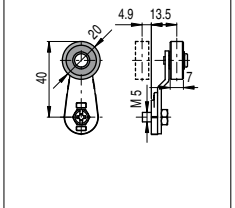
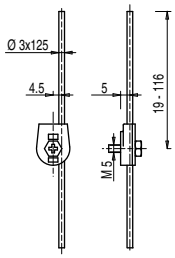
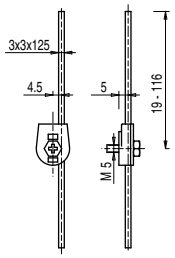
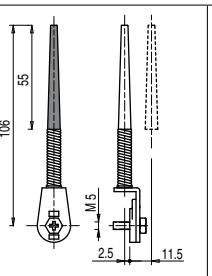
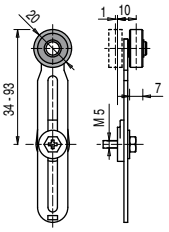
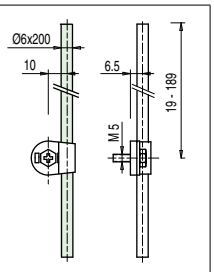
Contact blocks

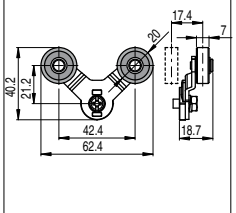
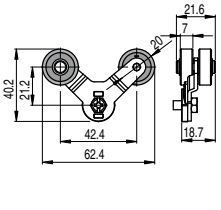
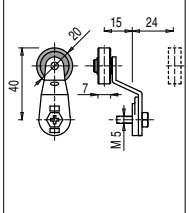
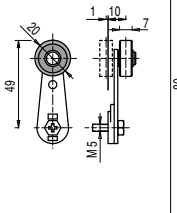
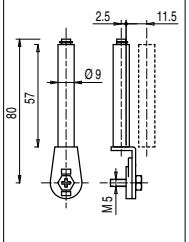
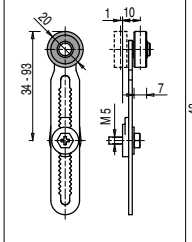
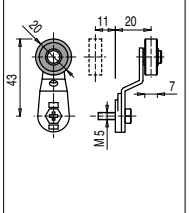
		Regular head		Compact head		
						
5	R	FL 538	1NO+1NC	FL 558	1NO+1NC	FL 540 1NO+1NC
6	L	FL 638	1NO+1NC	FL 658	1NO+1NC	Bistable switch
7	LO	FL 738	1NO+1NC	FL 758	1NO+1NC	
9	L	FL 938	2NC	FL 958	2NC	S = mechanical snap point positive opening with 21-22 contact only
10	L	FL 1038	2NO	FL 1058	2NO	
11	R	FL 1138	2NC	FL 1158	2NC	
12	R	FL 1238	2NO	FL 1258	2NO	
13	LV	FL 1338	2NC	FL 1358	2NC	
14	LS	FL 1438	2NC	FL 1458	2NC	
15	LS	FL 1538	2NO	FL 1558	2NO	
16	LI	FL 1638	2NC			
18	LA	FL 1838	1NO+1NC	FL 1858	1NO+1NC	
20	L	FL 2038	1NO+2NC	FL 2058	1NO+2NC	
21	L	FL 2138	3NC	FL 2158	3NC	
22	L	FL 2238	2NO+1NC	FL 2258	2NO+1NC	
2	R	FL 238	2x(1NO-1NC)	FL 258	2x(1NO-1NC)	
E1		FL E138	1NO-1NC	FL E158	1NO-1NC	
Min. force		0,1 Nm (0,25 Nm ⊖)		0,06 Nm (0,25 Nm ⊖)		0,5 m/s with 30° cam
Travel diagrams		page 7/4 - group 4		page 7/4 - group 4		0,21 Nm

IMPORTANT
For safety applications: join only switches and actuators marked with symbol ⊖.
For more information about safety applications see page 7/1.

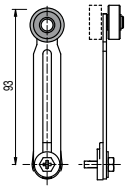
Loose actuators

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

Polymer roller Ø 20 mm	Adjustable round rod Ø 3x125 mm	Adjustable square rod 3x3x125 mm	Flexible rod actuator	Adjustable actuator with polymer roller	Adjustable fiber glass rod
					
VF L31 ⊖	VF L32 (3)	VF L33 (3)	VF L34	VF L35 ⊖ (1) (3)	VF L36 (3)

Single track lyra actuator	Double tracks lyra actuator	Polymer roller Ø 20 mm	Polymer roller Ø 20 mm	Porcelain roller	Adjustable safety actuator with polymer roller	Polymer roller Ø 20 mm
						
VF L41 ⊖	VF L42 ⊖	VF L51 ⊖	VF L52 ⊖	VF L53 ⊖ (2)	VF L56 ⊖ (3)	VF L57 ⊖

- Only orders for multiple quantities of the packs are accepted.
- (1) Actuator VF L35 suits to safety applications only if adjusted to its max length, as you can see in figure beside. If you need an adjustable lever for safety applications, use the adjustable safety lever VF L56.
- (2) The position switch obtained by assembling the switch FL •58 (e.g. FL 558, FL 658) with the actuator VF L53 will not present the same travel diagrams and actuating forces as the position switch FL •53-E11V9 (e.g. FL 553-E11V9, FL 653-E11V9...).
- (3) If it is installed with switch FL •58 (e.g. FL 558, FL 658..), the actuator can mechanically interfere with the housing of the switch. The interference could happen or not according to the actuator and the head fixing position.
- (4) The actuator cannot be oriented to inside direction because it will mechanically interfere with the switch head.



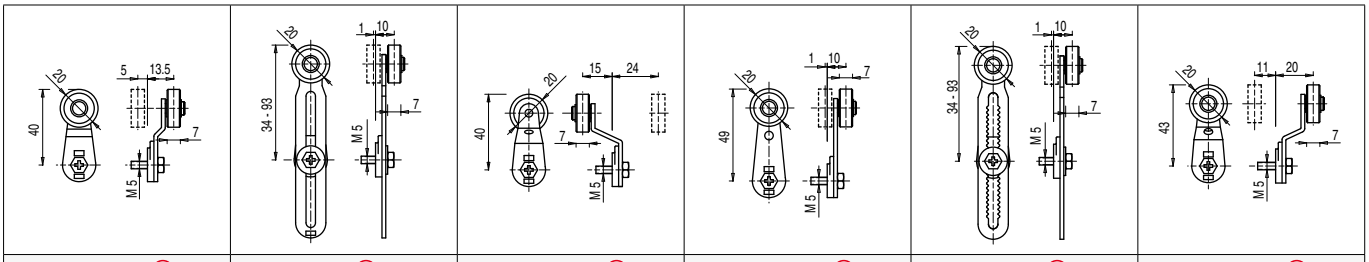
Accessories See page 6/1

Items with code on the **green** background are available in stock

Special loose actuators

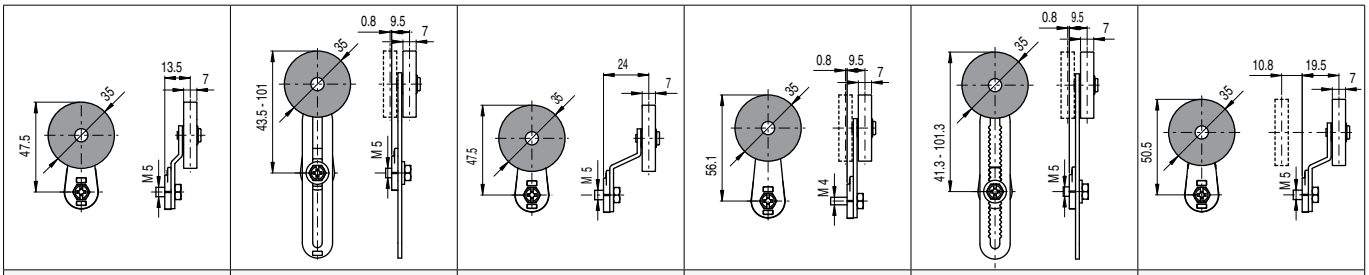
IMPORTANT: These loose actuators can be used with items of series FD, FP, FL, FC only.

Ø 20 mm stainless steel rollers



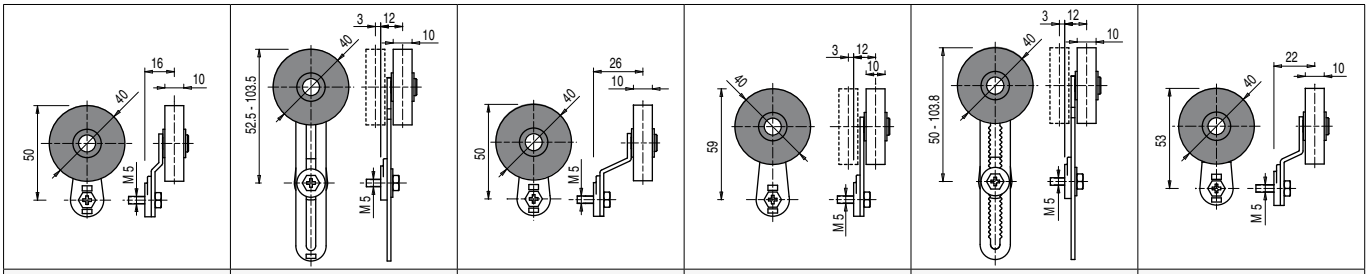
VF L31-1 | VF L35-1 (1) (3) | VF L51-1 | VF L52-1 | VF L56-1 (3) | VF L57-1

Ø 35 mm polymer rollers



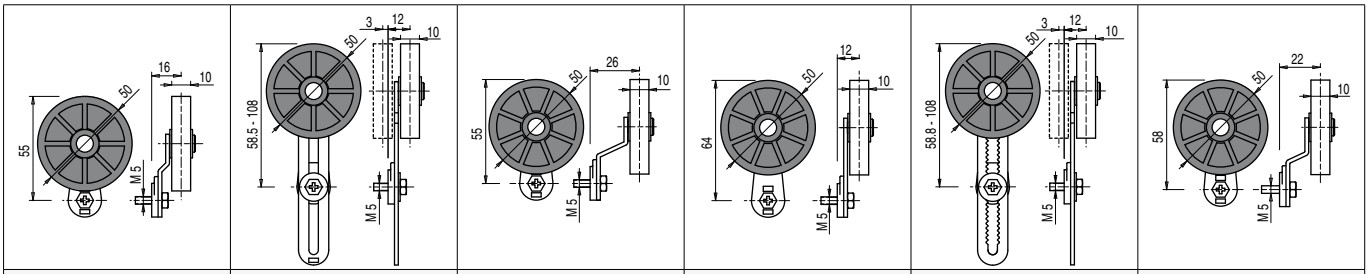
VF L31-2 (4) | VF L35-2 (1) (3) | VF L51-2 (4) | VF L52-2 | VF L56-2 (3) | VF L57-2

Ø 40 mm rubber rollers



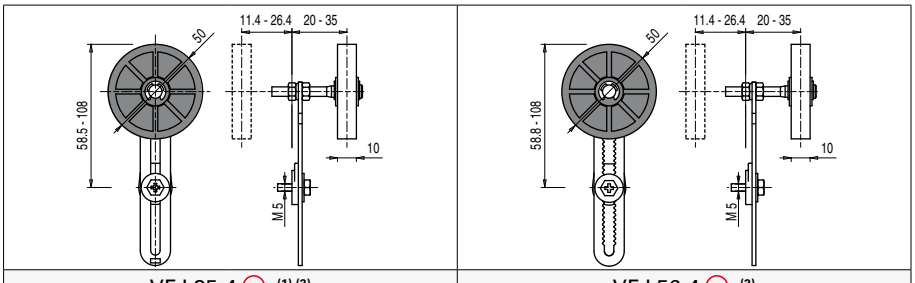
VF L31-R5 (4) | VF L35-R5 (1) (3) | VF L51-R5 (4) | VF L52-R5 | VF L56-R5 (3) | VF L57-R5 (4)

Ø 50 mm rubber rollers



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

Ø 50 mm overhanging rubber rollers



VF L35-4 (1) (3) | VF L56-4 (3)