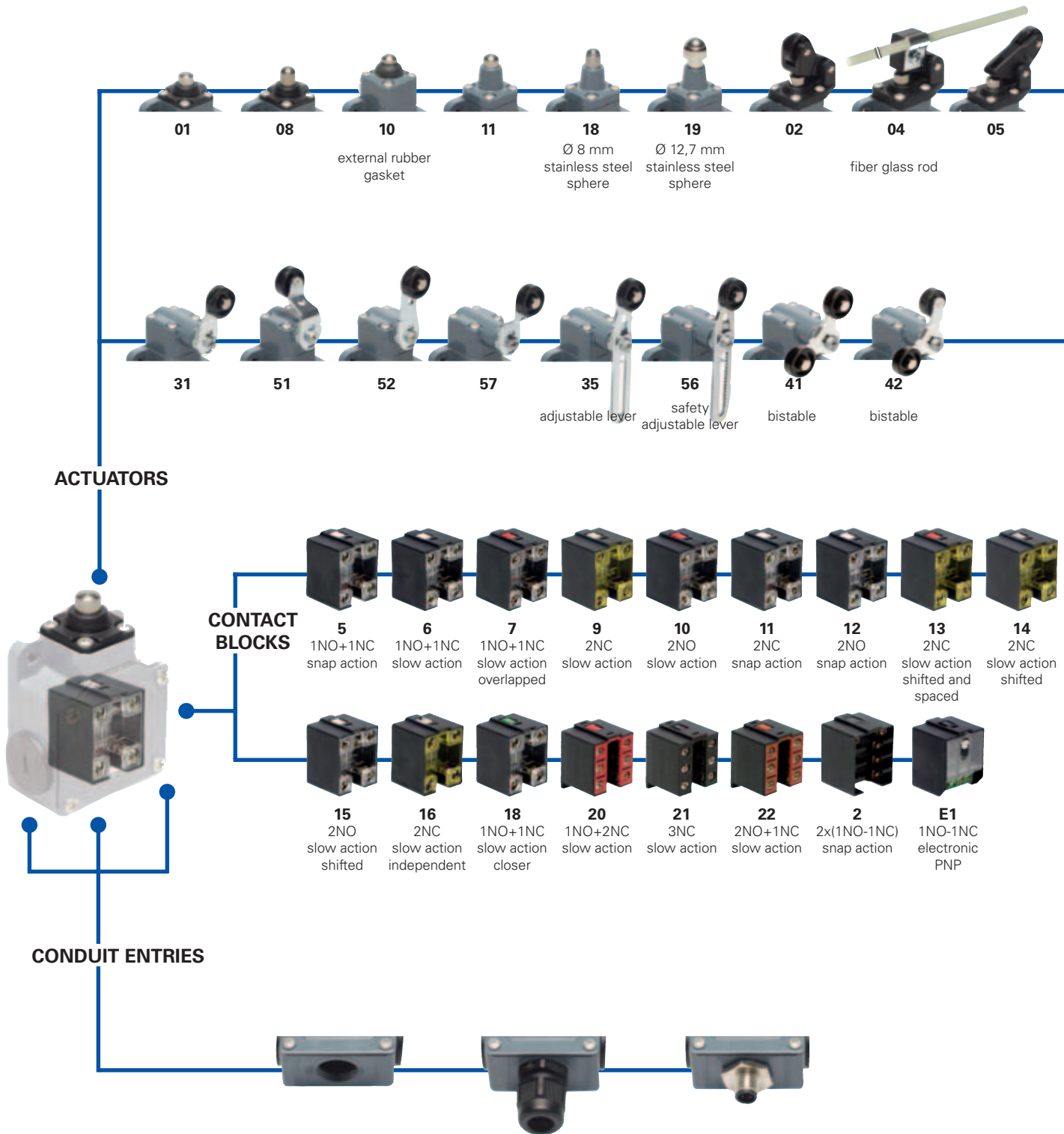


Selection diagram



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

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

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

Threaded conduit entries

	PG 13,5 (standard)
M2	M20x1,5

With assembled cable gland

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

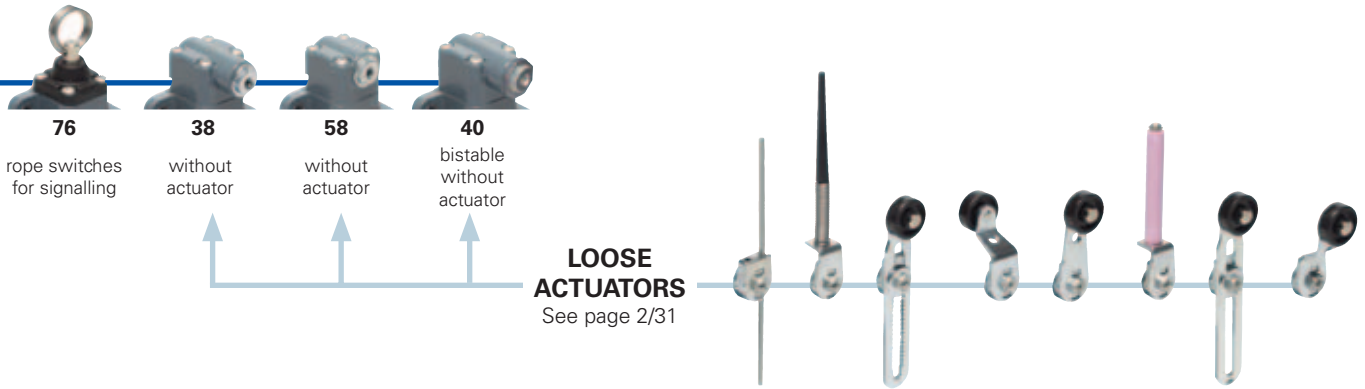
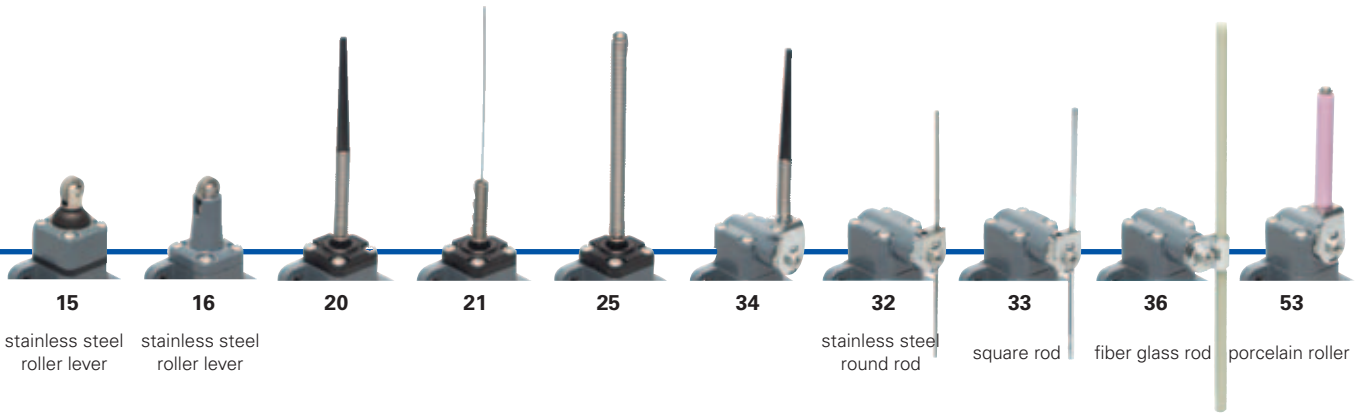
With M12 metal connector assembled and wired

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



1
1A
1B
2
2A
2B
2C
2D
2E
3
3A
3B
3C
4
4A
4B
4C
4D
4E
4F
4G
4H
5
6



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
FL 502-1GM2K50






Housing		Preinstalled cable gland or connectors	
FL	metal housing, three conduit entries		no cable gland or connector (standard)
Contact blocks		K21	with assembled cable gland suitable for Ø 6 to Ø 12 mm cables range
5	1NO+1NC, snap action
6	1NO+1NC, slow action	K50	with 5 poles M12 metal connector
7	1NO+1NC, slow action overlapped
...	For the complete list of all combinations, please contact our technical office.	
Actuators		Threaded conduit entries	
01	short plunger		PG 13,5 (standard)
02	roller lever	M2	M20x1,5
05	offset roller lever		
...		
Suffix		Contacts type	
	no suffix (standard)		silver contacts (standard)
1	with Ø 20 mm stainless steel roller for actuators 02, 05, 31, 35, 51, 52, 56, 57, 41, 42	G	silver contacts gold plated 1 µm (contact block 2 excluded)
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)		



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

Markings and quality marks:

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

Installation for safety applications:

Use only switches marked with the symbol \ominus . 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 6/4. 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 6/1 to page 6/10.

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 operating frequency: 3600 operations cycles¹/hour
 Mechanical endurance: 20 million operations cycles¹
 Assembling position: any
 Driving torque for installation: see pages 6/1-6/10
 (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 mm ²	(1 x AWG 22)
	max.	2 x 1,5 mm ²	(2 x AWG 16)
Contact blocks 5, 6, 7, 9, 10, 11, 12, 13, 14, 15, 16, 18:	min.	1 x 0,5 mm ²	(1 x AWG 20)
	max.	2 x 2,5 mm ²	(2 x AWG 14)
Contact block 2:	min.	1 x 0,5 mm ²	(1 x AWG 20)
	max.	2 x 1,5 mm ²	(2 x AWG 16)

In conformity with standards:

IEC 60947-5-1, EN 60947-5-1, 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, CENELEC EN 50013.

Approvals:

IEC 60947-5-1, UL 508, GB14048.5-2001

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.

Electrical data

Utilization categories

without connector	Thermal current (I _{th}):	10 A	Alternate current: AC15 (50...60 Hz)			
	Rated insulation voltage (U _i):	500 Vac 600 Vdc	U _e (V)	250	400	500
		400 Vac 500 Vdc	I _e (A)	6	4	1
	for contact blocks 20, 21, 22, 33, 34	1000 A according to EN 60947-5-1	Direct current: DC13			
Conditional short circuit current:	fuse 10 A 500 V type aM	U _e (V)	24	125	250	
Protection against short circuits:	3	I _e (A)	6	1,1	0,4	
Pollution degree:						

with 5 poles M12 connector	Thermal current (I _{th}):	4 A	Alternate current: AC15 (50...60 Hz)			
	Rated insulation voltage (U _i):	250 Vac 300 Vdc	U _e (V)	24	120	250
		fuse 4 A 500 V type gG	I _e (A)	4	4	4
	Protection against short circuits:	3	Direct current: DC13			
Pollution degree:		U _e (V)	24	125	250	
		I _e (A)	4	1,1	0,4	

with 8 poles M12 connector	Thermal current (I _{th}):	2 A	Alternate current: AC15 (50...60 Hz)		
	Rated insulation voltage (U _i):	30 Vac 36 Vdc	U _e (V)	24	
		fuse 2 A 500 V type gG	I _e (A)	2	
	Protection against short circuits:	3	Direct current: DC13		
Pollution degree:		U _e (V)	24		
		I _e (A)	2		



Data type approved by IMQ, CCC and EZU

Rated insulation voltage (Ui): 500 Vac
400 Vac for contact blocks 20, 21, 22, 33, 34

Thermal current (Ith): 10 A

Protection against short circuits: fuse 10 A 500 V type aM

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 and subsequent modifications and completions, fundamental requirements of the Low Voltage Directive 2006/95/CE and subsequent modifications and completions.

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).

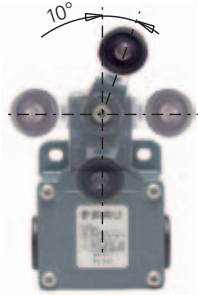
For contact blocks 2 and 3 use 60 or 75 °C copper (Cu) conductor and wire size No. 14 AWG. Terminal tightening torque of 12 lb in (1,4 Nm).

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

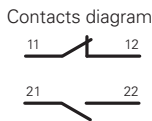
In all switches, it is possible to rotate the head in 90° steps.



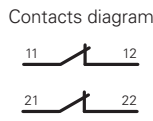
Working operation of contact block 16 with independent contacts

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

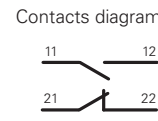
Lever turned to left



Lever not turned

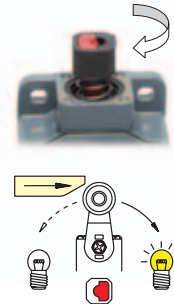
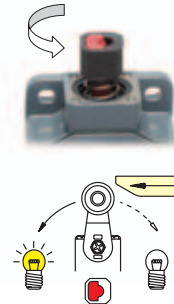
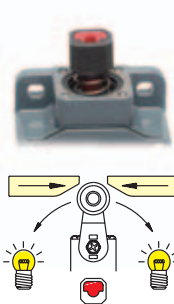
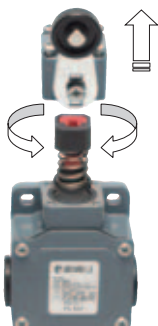


Lever turned to right



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).



- 1
- 1A
- 1B
- 2
- 2A
- 2B
- 2C
- 2D
- 2E
- 3
- 3A
- 3B
- 3C
- 4
- 4A
- 4B
- 4C
- 4D
- 4E
- 4F
- 4G
- 4H
- 5
- 6

2A 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	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	⊕ 1NO+1NC
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 6/3 - type 4		page 6/3 - type 3		0,5 m/s		page 6/3 - type 3	
Min. force	8 N (25 N ⊕)		6 N (25 N ⊕)		0,17 Nm		6 N (25 N ⊕)	
Travel diagrams	page 6/4 - group 1		page 6/4 - group 2		page 6/4 - group 1		page 6/4 - group 2	

		With external rubber gasket	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	⊕ 1NO+1NC
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 6/3 - type 4		page 6/3 - type 4		page 6/3 - type 4		page 6/3 - type 2	
Min. force	8 N (25 N ⊕)		11 N (25 N ⊕)		8 N (25 N ⊕)		11 N (25 N ⊕)	
Travel diagrams	page 6/4 - group 1		page 6/4 - group 1		page 6/4 - group 1		page 6/4 - group 1	

Accessories See page 5/1

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	➔ 1NO+1NC	FL 1818	➔ 1NO+1NC	FL 1819	➔ 1NO+1NC	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 6/3 - type 2		page 6/3 - type 4		page 6/3 - 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 6/4 - group 1		page 6/4 - group 1		page 6/4 - group 1		page 6/4 - group 3	

	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 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 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 1831	➔ 1NO+1NC	FL 1832	1NO+1NC
20	L FL 2021	1NO+2NC	FL 2031	➔ 1NO+2NC	FL 2032	1NO+2NC
21	L FL 2121	3NC	FL 2131	➔ 3NC	FL 2132	3NC
22	L FL 2221	2NO+1NC	FL 2231	➔ 2NO+1NC	FL 2232	2NO+1NC
2	R FL 221	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
Max speed	1 m/s		page 6/3 - type 1		1,5 m/s	
Min. force	0,08 Nm		0,1 Nm (0,25 Nm ➔)		0,1 Nm	
Travel diagrams	page 6/4 - group 3		page 6/4 - group 4		page 6/4 - group 4	

Items with code on the green background are available in stock

2A 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	
18	LA FL 1833 1NO+1NC	FL 1834 1NO+1NC	FL 1835 ⊕ ⁽¹⁾ 1NO+1NC	FL 1836 1NO+1NC
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 6/3 - 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 6/4 - group 4	page 6/4 - group 4	page 6/4 - group 4	page 6/4 - group 4

	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 ⊕ ⁽¹⁾ 1NO+1NC	FL 552 ⊕ ⁽¹⁾ 1NO+1NC	FL 553-E11V9 ⊕ ⁽¹⁾ 1NO+1NC	FL 556 ⊕ ⁽¹⁾ 1NO+1NC
6	L FL 651 ⊕ ⁽¹⁾ 1NO+1NC	FL 652 ⊕ ⁽¹⁾ 1NO+1NC	FL 653-E11V9 ⊕ ⁽¹⁾ 1NO+1NC	FL 656 ⊕ ⁽¹⁾ 1NO+1NC
7	LO FL 751 ⊕ ⁽¹⁾ 1NO+1NC	FL 752 ⊕ ⁽¹⁾ 1NO+1NC	FL 753-E11V9 ⊕ ⁽¹⁾ 1NO+1NC	FL 756 ⊕ ⁽¹⁾ 1NO+1NC
9	L FL 951 ⊕ ⁽¹⁾ 2NC	FL 952 ⊕ ⁽¹⁾ 2NC	FL 953-E11V9 ⊕ ⁽¹⁾ 2NC	FL 956 ⊕ ⁽¹⁾ 2NC
10	L FL 1051 2NO	FL 1052 2NO	FL 1053-E11V9 2NO	FL 1056 2NO
11	R FL 1151 ⊕ ⁽¹⁾ 2NC	FL 1152 ⊕ ⁽¹⁾ 2NC	FL 1253-E11V9 2NO	FL 1156 ⊕ ⁽¹⁾ 2NC
12	R FL 1251 2NO	FL 1252 2NO	FL 1353-E11V9 ⊕ ⁽¹⁾ 2NC	FL 1256 2NO
13	LV FL 1351 ⊕ ⁽¹⁾ 2NC	FL 1352 ⊕ ⁽¹⁾ 2NC	FL 1453-E11V9 ⊕ ⁽¹⁾ 2NC	FL 1356 ⊕ ⁽¹⁾ 2NC
14	LS FL 1451 ⊕ ⁽¹⁾ 2NC	FL 1452 ⊕ ⁽¹⁾ 2NC	FL 1553-E11V9 2NO	FL 1456 ⊕ ⁽¹⁾ 2NC
15	LS FL 1551 2NO	FL 1552 2NO		FL 1556 2NO
16	LI FL 1651 ⊕ ⁽¹⁾ 2NC			FL 1656 ⊕ ⁽¹⁾ 2NC
18	LA FL 1851 ⊕ ⁽¹⁾ 1NO+1NC	FL 1852 ⊕ ⁽¹⁾ 1NO+1NC	FL 1853-E11V9 ⊕ ⁽¹⁾ 1NO+1NC	FL 1856 ⊕ ⁽¹⁾ 1NO+1NC
20	L FL 2051 ⊕ ⁽¹⁾ 1NO+2NC	FL 2052 ⊕ ⁽¹⁾ 1NO+2NC	FL 2053-E11V9 ⊕ ⁽¹⁾ 1NO+2NC	FL 2056 ⊕ ⁽¹⁾ 1NO+2NC
21	L FL 2151 ⊕ ⁽¹⁾ 3NC	FL 2152 ⊕ ⁽¹⁾ 3NC	FL 2153-E11V9 ⊕ ⁽¹⁾ 3NC	FL 2156 ⊕ ⁽¹⁾ 3NC
22	L FL 2251 ⊕ ⁽¹⁾ 2NO+1NC	FL 2252 ⊕ ⁽¹⁾ 2NO+1NC	FL 2253-E11V9 ⊕ ⁽¹⁾ 2NO+1NC	FL 2256 ⊕ ⁽¹⁾ 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 6/3 - type 1	page 6/3 - type 1	0,5 m/s	page 6/3 - 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 6/4 - group 4	page 6/4 - group 4	page 6/4 - group 5	page 6/4 - group 4

Accessories See page 5/1

⁽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
- A** = 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	R FL 541 1NO+1NC	R FL 542 1NO+1NC	FL 576 1NO+1NC
6	L FL 657 1NO+1NC	Bistable switch with single track lyra lever	Bistable switch with double track lyra lever	FL 676 1NO+1NC
7	LO FL 757 1NO+1NC			FL 776 1NO+1NC
9	L FL 957 2NC	<p>S = mechanical snap point positive opening with 21-22 contact only</p>	<p>S = mechanical snap point positive opening with 21-22 contact only</p>	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			FL 1876 1NO+1NC
18	LA FL 1857 1NO+1NC			FL 2076 2NO+1NC
20	L FL 2057 1NO+2NC			FL 2176 3NO
21	L FL 2157 3NC	FL 2276 1NO+2NC		
22	L FL 2257 2NO+1NC	FL 276 2x(1NO-1NC)		
2	R FL 257 2x(1NO-1NC)			
E1	A FL E157 1NO-1NC			
Max speed	page 6/3 - 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 \ominus)	0,21 Nm	0,21 Nm	initial 20 N - final 40 N
Travel diagrams	page 6/4 - group 4			page 6/4 - group 6

- 1
- 1A
- 1B
- 2
- 2A
- 2B
- 2C
- 2D
- 2E
- 3
- 3A
- 3B
- 3C
- 4
- 4A
- 4B
- 4C
- 4D
- 4E
- 4F
- 4G
- 4H
- 5
- 6

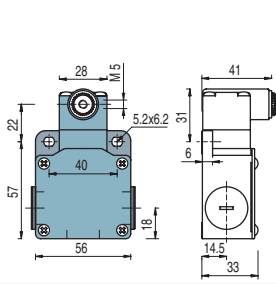
Position switches with revolving lever without actuator

Contacts type:

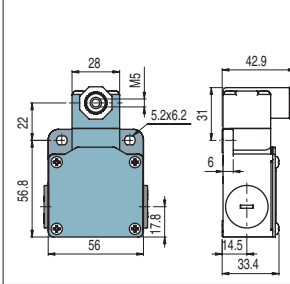
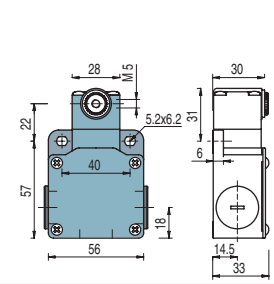
- R** = snap action
- L** = slow action
- LO** = slow action overlapped
- LS** = slow action shifted
- LV** = slow action shifted and spaced
- LI** = slow action independent
- LA** = slow action closer
- ⚡** = electronic PNP

Contact blocks

Regular head



Compact head



IMPORTANT

For safety applications: join only switches and actuators marked with symbol

For more information about safety applications see page 6/1.

5	R	FL 538		1NO+1NC	FL 558		1NO+1NC	FL 540 1NO+1NC Bistable switch S = mechanical snap point positive opening with 21-22 contact only	
6	L	FL 638		1NO+1NC	FL 658		1NO+1NC		
7	LO	FL 738		1NO+1NC	FL 758		1NO+1NC		
9	L	FL 938		2NC	FL 958		2NC		
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 6/4 - group 4			page 6/4 - group 4				0,21 Nm

Loose actuators

10 pcs pack

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 actua- tor with polymer roller	Polymer roller Ø 20 mm
VF L41	VF L42	VF L51	VF L52	VF L53 ⁽²⁾	VF L56 ⁽³⁾	VF L57

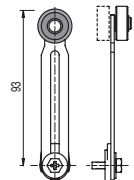
- Only orders for multiple quantities of the packs are accepted.

(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 5/1

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



Special loose actuators

10 pcs pack

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

Ø 35 mm polymer rollers

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

Ø 40 mm rubber rollers

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)

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)

1
1A
1B
2
2A
2B
2C
2D
2E
3
3A
3B
3C
4
4A
4B
4C
4D
4E
4F
4G
4H
5
6