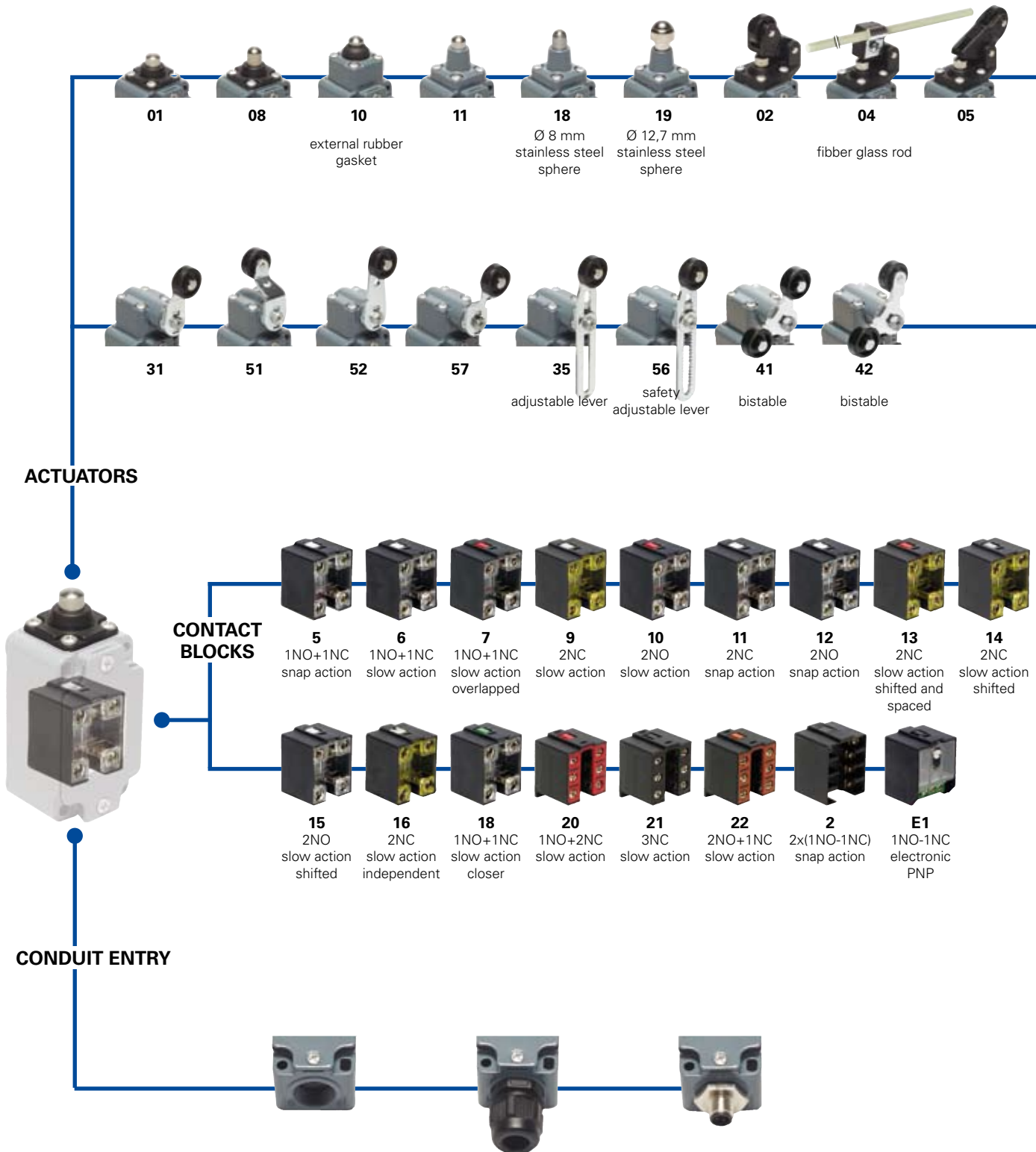


Selection diagram



**Threaded conduit entry**

	PG 13,5 (standard)
<b>M2</b>	M20x1,5

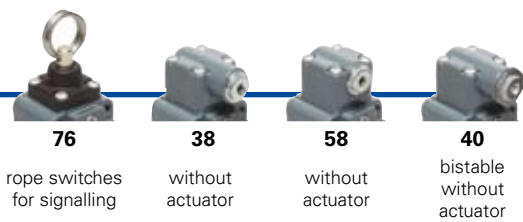
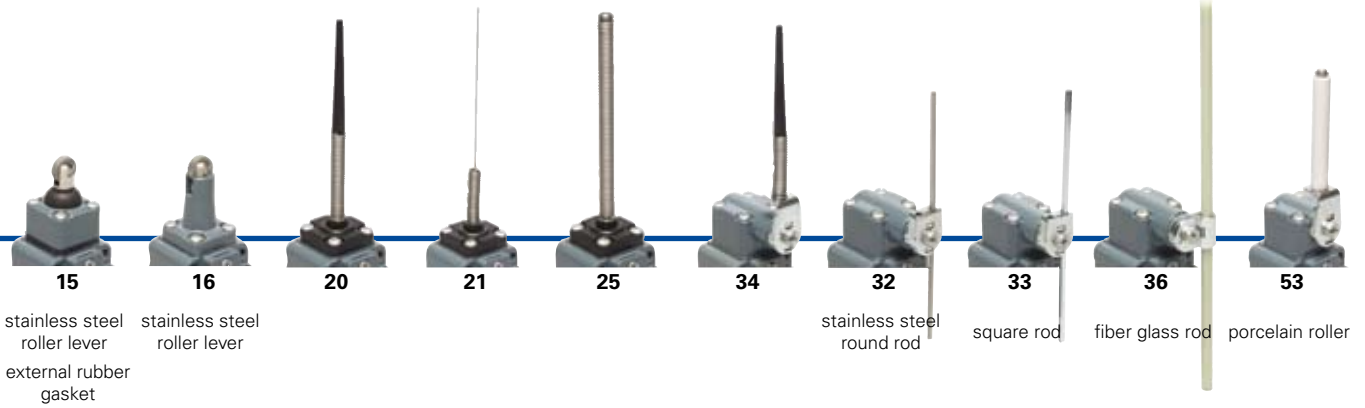
**With assembled cable gland**

<b>PG 13,5</b>	<b>K21</b>	for Ø 6 to Ø 12 mm cables range
	<b>K25</b>	for Ø 3 to Ø 7 mm cables range
<b>M20x1,5</b>	<b>K23</b>	for Ø 6 to Ø 12 mm cables range
	<b>K27</b>	for Ø 3 to Ø 7 mm cables range

**With M12 metal connector assembled and wired**

<b>K40</b>	8 poles from bottom
<b>K50</b>	5 poles from bottom

● product option  
 → accessory sold separately



**LOOSE ACTUATORS**  
See page 2/11



### 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	
<b>FD 502</b>		<b>-1GM2K50</b>	
<b>Housing</b> <b>FD</b> metal housing, one conduit entry		<b>Preinstalled cable gland or connectors</b> no cable gland or connector (standard) <b>K21</b> with assembled cable gland suitable for Ø 6 to Ø 12 mm cables range ... .. <b>K50</b> with 5 poles M12 metal connector ... .. For the complete list of all combinations, please contact our technical office.	
<b>Contact blocks</b> <b>5</b> 1NO+1NC, snap action <b>6</b> 1NO+1NC, slow action <b>7</b> 1NO+1NC, slow action overlapped ... ..		<b>Threaded conduit entry</b> PG 13,5 (standard) <b>M2</b> M20x1,5	
<b>Actuators</b> <b>01</b> short plunger <b>02</b> roller lever <b>05</b> offset roller lever ... ..		<b>Contacts type</b> silver contacts (standard) <b>G</b> silver contacts gold plated 1 µm (contact block 2 excluded)	
<b>Suffix</b> no suffix (standard) <b>1</b> with Ø 20 mm stainless steel roller for actuators 02, 05, 31, 35, 51, 52, 56, 57, 41, 42 <b>2</b> with Ø 35 mm polymer roller (see special loose actuators on page 2/12) <b>3</b> with Ø 50 mm rubber roller (see special loose actuators on page 2/12) <b>4</b> with Ø 50 mm overhanging rubber roller (see special loose actuators on page 2/12)			



### Main data

- Metal housing, one conduit entry
- 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

One threaded conduit entry

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<sup>1</sup>/hour

Mechanical endurance: 20 million operations cycles<sup>1</sup>

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 mm <sup>2</sup>	(1 x AWG 22)
	max.	2 x 1,5 mm <sup>2</sup>	(2 x AWG 16)
Contact blocks 5, 6, 7, 9, 10, 11, 12, 13, 14, 15, 16, 18:	min.	1 x 0,5 mm <sup>2</sup>	(1 x AWG 20)
	max.	2 x 2,5 mm <sup>2</sup>	(2 x AWG 14)
Contact block 2:	min.	1 x 0,5 mm <sup>2</sup>	(1 x AWG 20)
	max.	2 x 1,5 mm <sup>2</sup>	(2 x AWG 16)

#### In conformity with standards:

IEC 60947-5-1, EN 60947-5-1, EN 60947-1, EN 50041, 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  $\ominus$ . 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 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 (I <sub>th</sub> ):	Alternate current: AC15 (50...60 Hz) U <sub>e</sub> (V) 250 400 500 I <sub>e</sub> (A) 6 4 1 Direct current: DC13 U <sub>e</sub> (V) 24 125 250 I <sub>e</sub> (A) 6 1,1 0,4
	Rated insulation voltage (U <sub>i</sub> ):	
	Rated impulse withstand voltage (U <sub>imp</sub> ):	
	Conditional short circuit current:	
with 5 poles M12 connector	Thermal current (I <sub>th</sub> ):	Alternate current: AC15 (50...60 Hz) U <sub>e</sub> (V) 24 120 250 I <sub>e</sub> (A) 4 4 4 Direct current: DC13 U <sub>e</sub> (V) 24 125 250 I <sub>e</sub> (A) 4 1,1 0,4
	Rated insulation voltage (U <sub>i</sub> ):	
	Protection against short circuits:	
	Pollution degree:	
with 8 poles M12 connector	Thermal current (I <sub>th</sub> ):	Alternate current: AC15 (50...60 Hz) U <sub>e</sub> (V) 24 I <sub>e</sub> (A) 2 Direct current: DC13 U <sub>e</sub> (V) 24 I <sub>e</sub> (A) 2
	Rated insulation voltage (U <sub>i</sub> ):	
	Protection against short circuits:	
	Pollution degree:	



### 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<sub>imp</sub>): 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

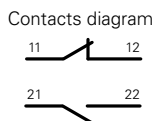
In all switches, it is possible to rotate the head in 90° steps.



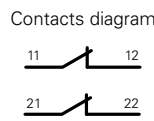
### Working operation of contact block 16 with independent contacts

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

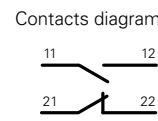
Lever turned to left



Lever not turned

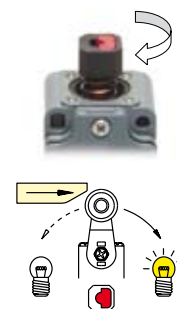
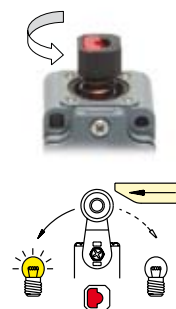
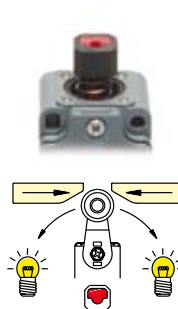


Lever turned to right



### 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).



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

5	<b>R</b> FD 501	<b>R</b> FD 502	<b>R</b> FD 504	<b>R</b> FD 505
6	<b>L</b> FD 601	<b>L</b> FD 602	<b>L</b> FD 604	<b>L</b> FD 605
7	<b>LO</b> FD 701	<b>LO</b> FD 702	<b>LO</b> FD 704	<b>LO</b> FD 705
9	<b>L</b> FD 901	<b>L</b> FD 902	<b>L</b> FD 904	<b>L</b> FD 905
10	<b>L</b> FD 1001	<b>L</b> FD 1002	<b>L</b> FD 1004	<b>L</b> FD 1005
11	<b>R</b> FD 1101	<b>R</b> FD 1102	<b>R</b> FD 1104	<b>R</b> FD 1105
12	<b>R</b> FD 1201	<b>R</b> FD 1202	<b>R</b> FD 1204	<b>R</b> FD 1205
13	<b>LV</b> FD 1301	<b>LV</b> FD 1302	<b>LV</b> FD 1304	<b>LV</b> FD 1305
14	<b>LS</b> FD 1401	<b>LS</b> FD 1402	<b>LS</b> FD 1404	<b>LS</b> FD 1405
15	<b>LS</b> FD 1501	<b>LS</b> FD 1502	<b>LS</b> FD 1504	<b>LS</b> FD 1505
18	<b>LA</b> FD 1801	<b>LA</b> FD 1802	<b>LA</b> FD 1804	<b>LA</b> FD 1805
20	<b>L</b> FD 2001	<b>L</b> FD 2002	<b>L</b> FD 2004	<b>L</b> FD 2005
21	<b>L</b> FD 2101	<b>L</b> FD 2102	<b>L</b> FD 2104	<b>L</b> FD 2105
22	<b>L</b> FD 2201	<b>L</b> FD 2202	<b>L</b> FD 2204	<b>L</b> FD 2205
2	<b>R</b> FD 201	<b>R</b> FD 202	<b>R</b> FD 204	<b>R</b> FD 205
E1	<b>⏏</b> FD E101	<b>⏏</b> FD E102	<b>⏏</b> FD E104	<b>⏏</b> FD E105
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

5	<b>R</b> FD 508	<b>R</b> FD 510	<b>R</b> FD 511	<b>R</b> FD 515
6	<b>L</b> FD 608	<b>L</b> FD 610	<b>L</b> FD 611	<b>L</b> FD 615
7	<b>LO</b> FD 708	<b>LO</b> FD 710	<b>LO</b> FD 711	<b>LO</b> FD 715
9	<b>L</b> FD 908	<b>L</b> FD 910	<b>L</b> FD 911	<b>L</b> FD 915
10	<b>L</b> FD 1008	<b>L</b> FD 1010	<b>L</b> FD 1011	<b>L</b> FD 1015
11	<b>R</b> FD 1108	<b>R</b> FD 1110	<b>R</b> FD 1111	<b>R</b> FD 1115
12	<b>R</b> FD 1208	<b>R</b> FD 1210	<b>R</b> FD 1211	<b>R</b> FD 1215
13	<b>LV</b> FD 1308	<b>LV</b> FD 1310	<b>LV</b> FD 1311	<b>LV</b> FD 1315
14	<b>LS</b> FD 1408	<b>LS</b> FD 1410	<b>LS</b> FD 1411	<b>LS</b> FD 1415
15	<b>LS</b> FD 1508	<b>LS</b> FD 1510	<b>LS</b> FD 1511	<b>LS</b> FD 1515
18	<b>LA</b> FD 1808	<b>LA</b> FD 1810	<b>LA</b> FD 1811	<b>LA</b> FD 1815
20	<b>L</b> FD 2008	<b>L</b> FD 2010	<b>L</b> FD 2011	<b>L</b> FD 2015
21	<b>L</b> FD 2108	<b>L</b> FD 2110	<b>L</b> FD 2111	<b>L</b> FD 2115
22	<b>L</b> FD 2208	<b>L</b> FD 2210	<b>L</b> FD 2211	<b>L</b> FD 2215
2	<b>R</b> FD 208	<b>R</b> FD 210	<b>R</b> FD 211	<b>R</b> FD 215
E1	<b>⏏</b> FD E101	<b>⏏</b> FD E110	<b>⏏</b> FD E111	<b>⏏</b> FD E115
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 <b>R</b>	FD 516 → 1NO+1NC	FD 518 → 1NO+1NC	FD 519 → 1NO+1NC	FD 520 1NO+1NC
6 <b>L</b>	FD 616 → 1NO+1NC	FD 618 → 1NO+1NC	FD 619 → 1NO+1NC	
7 <b>LO</b>	FD 716 → 1NO+1NC	FD 718 → 1NO+1NC	FD 719 → 1NO+1NC	
9 <b>L</b>	FD 916 → 2NC	FD 918 → 2NC	FD 919 → 2NC	
10 <b>L</b>	FD 1016 2NO	FD 1018 2NO	FD 1019 2NO	FD 1020 2NO
11 <b>R</b>	FD 1116 → 2NC	FD 1118 → 2NC	FD 1119 → 2NC	
12 <b>R</b>	FD 1216 2NO	FD 1218 2NO	FD 1219 2NO	
13 <b>LV</b>	FD 1316 → 2NC	FD 1318 → 2NC	FD 1319 → 2NC	
14 <b>LS</b>	FD 1416 → 2NC	FD 1418 → 2NC	FD 1419 → 2NC	
15 <b>LS</b>	FD 1516 2NO	FD 1518 2NO	FD 1519 2NO	
18 <b>LA</b>	FD 1816 → 1S+1Ö	FD 1818 → 1S+1Ö	FD 1819 → 1S+1Ö	FD 1820 1NO+1NC
20 <b>L</b>	FD 2016 → 1NO+2NC	FD 2018 → 1NO+2NC	FD 2019 → 1NO+2NC	FD 2020 1NO+2NC
21 <b>L</b>	FD 2116 → 3NC	FD 2118 → 3NC	FD 2119 → 3NC	FD 2120 3NC
22 <b>L</b>	FD 2216 → 2NO+1NC	FD 2218 → 2NO+1NC	FD 2219 → 2NO+1NC	FD 2220 2NO+1NC
2 <b>R</b>	FD 216 2x(1NO-1NC)	FD 218 2x(1NO-1NC)	FD 219 2x(1NO-1NC)	FD 220 2x(1NO-1NC)
E1 <b>⏏</b>	FD E116 1NO-1NC	FD E118 1NO-1NC	FD E119 1NO-1NC	FD 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

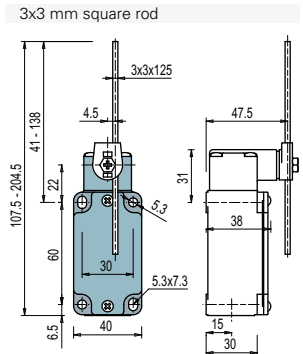
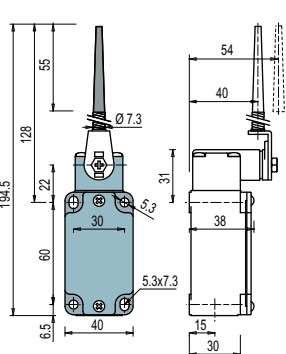
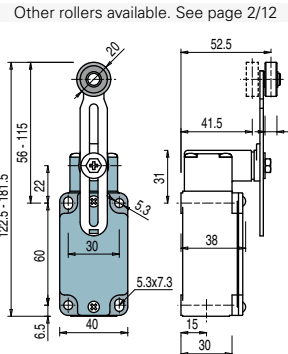
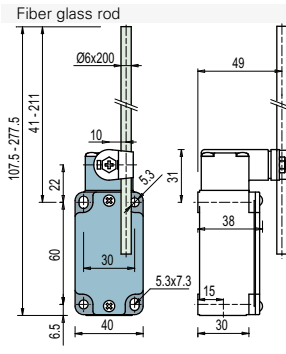
	With external rubber gasket 	With external rubber gasket 	Other rollers available. See page 2/12 	Ø 3 mm stainless steel round rod 
5 <b>R</b>	FD 521 1NO+1NC	FD 525 1NO+1NC	FD 531 → 1NO+1NC	FD 532 1NO+1NC
6 <b>L</b>			FD 631 → 1NO+1NC	FD 632 1NO+1NC
7 <b>LO</b>			FD 731 → 1NO+1NC	FD 732 1NO+1NC
9 <b>L</b>			FD 931 → 2NC	FD 932 2NC
10 <b>L</b>	FD 1021 2NO	FD 1025 2NO	FD 1031 2NO	FD 1032 2NO
11 <b>R</b>			FD 1131 → 2NC	FD 1132 2NC
12 <b>R</b>			FD 1231 2NO	FD 1232 2NO
13 <b>LV</b>			FD 1331 → 2NC	FD 1332 2NC
14 <b>LS</b>			FD 1431 → 2NC	FD 1432 2NC
15 <b>LS</b>			FD 1531 2NO	FD 1532 2NO
16 <b>LI</b>			FD 1631 → 2NC	FD 1632 2NC
18 <b>LA</b>	FD 1821 1NO+1NC	FD 1825 1NO+1NC	FD 1831 → 1NO+1NC	FD 1832 1S+1Ö
20 <b>L</b>	FD 2021 1NO+2NC	FD 2025 1NO+2NC	FD 2031 → 1NO+2NC	FD 2032 1NO+2NC
21 <b>L</b>	FD 2121 3NC	FD 2125 3NC	FD 2131 → 3NC	FD 2132 3NC
22 <b>L</b>	FD 2221 2NO+1NC	FD 2225 2NO+1NC	FD 2231 → 2NO+1NC	FD 2232 2NO+1NC
2 <b>R</b>	FD 221 2x(1NO-1NC)	FD 225 2x(1NO-1NC)	FD 231 2x(1NO-1NC)	FD 232 2x(1NO-1NC)
E1 <b>⏏</b>	FD E121 1NO-1NC	FD E125 1NO-1NC	FD E131 1NO-1NC	FD 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

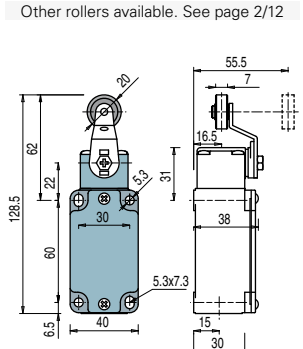
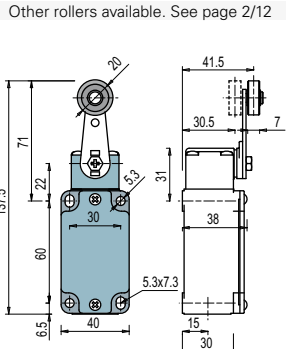
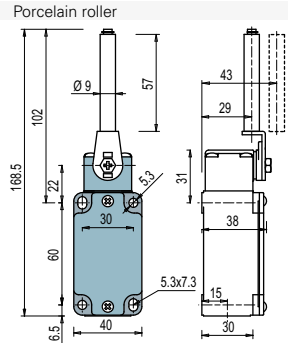
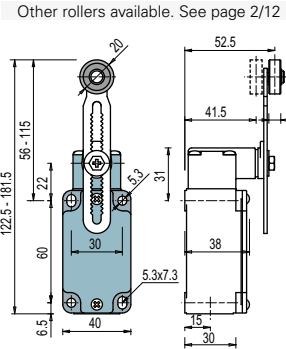
Items with code on the green background are available in stock

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
- PNP** = electronic PNP

Contact blocks

				
5	<b>R</b> FD 533 1NO+1NC	FD 534 1NO+1NC	FD 535 <b>⊕</b> <sup>(1)</sup> 1NO+1NC	FD 536 1NO+1NC
6	<b>L</b> FD 633 1NO+1NC	FD 634 1NO+1NC	FD 635 <b>⊕</b> <sup>(1)</sup> 1NO+1NC	FD 636 1NO+1NC
7	<b>LO</b> FD 733 1NO+1NC	FD 734 1NO+1NC	FD 735 <b>⊕</b> <sup>(1)</sup> 1NO+1NC	FD 736 1NO+1NC
9	<b>L</b> FD 933 2NC	FD 934 2NC	FD 935 <b>⊕</b> <sup>(1)</sup> 2NC	FD 936 2NC
10	<b>L</b> FD 1033 2NO	FD 1034 2NO	FD 1035 2NO	FD 1036 2NO
11	<b>R</b> FD 1133 2NC	FD 1134 2NC	FD 1135 <b>⊕</b> <sup>(1)</sup> 2NC	FD 1136 2NC
12	<b>R</b> FD 1233 2NO	FD 1234 2NO	FD 1235 2NO	FD 1236 2NO
13	<b>LV</b> FD 1333 2NC	FD 1334 2NC	FD 1335 <b>⊕</b> <sup>(1)</sup> 2NC	FD 1336 2NC
14	<b>LS</b> FD 1433 2NC	FD 1434 2NC	FD 1435 <b>⊕</b> <sup>(1)</sup> 2NC	FD 1436 2NC
15	<b>LS</b> FD 1533 2NO	FD 1534 2NO	FD 1535 2NO	FD 1536 2NO
16	<b>LI</b> FD 1633 2NC	FD 1634 2NC	FD 1635 <b>⊕</b> <sup>(1)</sup> 2NC	FD 1636 2NC
18	<b>LA</b> FD 1833 1S+1Ö	FD 1834 1S+1Ö	FD 1835 <b>⊕</b> <sup>(1)</sup> 1S+1Ö	FD 1836 1S+1Ö
20	<b>L</b> FD 2033 1NO+2NC	FD 2034 1NO+2NC	FD 2035 <b>⊕</b> <sup>(1)</sup> 1NO+2NC	FD 2036 1NO+2NC
21	<b>L</b> FD 2133 3NC	FD 2134 3NC	FD 2135 <b>⊕</b> <sup>(1)</sup> 3NC	FD 2136 3NC
22	<b>L</b> FD 2233 2NO+1NC	FD 2234 2NO+1NC	FD 2235 <b>⊕</b> <sup>(1)</sup> 2NO+1NC	FD 2236 2NO+1NC
2	<b>R</b> FD 233 2x(1NO-1NC)	FD 234 2x(1NO-1NC)	FD 235 2x(1NO-1NC)	FD 236 2x(1NO-1NC)
E1	<b>PNP</b> FD E133 1NO-1NC	FD E134 1NO-1NC	FD E135 1NO-1NC	FD 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 <b>⊕</b> )	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

				
5	<b>R</b> FD 551 <b>⊕</b> 1NO+1NC	FD 552 <b>⊕</b> 1NO+1NC	FD 553-E11V9 <b>⊕</b> 1NO+1NC	FD 556 <b>⊕</b> 1NO+1NC
6	<b>L</b> FD 651 <b>⊕</b> 1NO+1NC	FD 652 <b>⊕</b> 1NO+1NC	FD 653-E11V9 <b>⊕</b> 1NO+1NC	FD 656 <b>⊕</b> 1NO+1NC
7	<b>LO</b> FD 751 <b>⊕</b> 1NO+1NC	FD 752 <b>⊕</b> 1NO+1NC	FD 753-E11V9 <b>⊕</b> 1NO+1NC	FD 756 <b>⊕</b> 1NO+1NC
9	<b>L</b> FD 951 <b>⊕</b> 2NC	FD 952 <b>⊕</b> 2NC	FD 953-E11V9 <b>⊕</b> 2NC	FD 956 <b>⊕</b> 2NC
10	<b>L</b> FD 1051 2NO	FD 1052 2NO	FD 1053-E11V9 2NO	FD 1056 2NO
11	<b>R</b> FD 1151 <b>⊕</b> 2NC	FD 1152 <b>⊕</b> 2NC	FD 1253-E11V9 2NO	FD 1156 <b>⊕</b> 2NC
12	<b>R</b> FD 1251 2NO	FD 1252 2NO	FD 1353-E11V9 <b>⊕</b> 2NC	FD 1256 2NO
13	<b>LV</b> FD 1351 <b>⊕</b> 2NC	FD 1352 <b>⊕</b> 2NC	FD 1453-E11V9 <b>⊕</b> 2NC	FD 1356 <b>⊕</b> 2NC
14	<b>LS</b> FD 1451 <b>⊕</b> 2NC	FD 1452 <b>⊕</b> 2NC	FD 1553-E11V9 2NO	FD 1456 <b>⊕</b> 2NC
15	<b>LS</b> FD 1551 2NO	FD 1552 2NO	FD 1656 <b>⊕</b> 2NC	FD 1556 2NO
16	<b>LI</b>			
18	<b>LA</b> FD 1851 <b>⊕</b> 1NO+1NC	FD 1852 <b>⊕</b> 1S+1Ö	FD 1853-E11V9 <b>⊕</b> 1S+1Ö	FD 1856 <b>⊕</b> 1S+1Ö
20	<b>L</b> FD 2051 <b>⊕</b> 1NO+2NC	FD 2052 <b>⊕</b> 1NO+2NC	FD 2053-E11V9 <b>⊕</b> 1NO+2NC	FD 2056 <b>⊕</b> 1NO+2NC
21	<b>L</b> FD 2151 <b>⊕</b> 3NC	FD 2152 <b>⊕</b> 3NC	FD 2153-E11V9 <b>⊕</b> 3NC	FD 2156 <b>⊕</b> 3NC
22	<b>L</b> FD 2251 <b>⊕</b> 2NO+1NC	FD 2252 <b>⊕</b> 2NO+1NC	FD 2253-E11V9 <b>⊕</b> 2NO+1NC	FD 2256 <b>⊕</b> 2NO+1NC
2	<b>R</b> FD 251 2x(1NO-1NC)	FD 252 2x(1NO-1NC)	FD 253-E11 2x(1NO-1NC)	FD 256 2x(1NO-1NC)
E1	<b>PNP</b> FD E151 1NO-1NC	FD E152 1NO-1NC	FD E153-E11V9 1NO-1NC	FD 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 <b>⊕</b> )	0,06 Nm (0,25 Nm <b>⊕</b> )	0,03 Nm (0,25 Nm <b>⊕</b> )	0,1 Nm (0,25 Nm <b>⊕</b> )
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

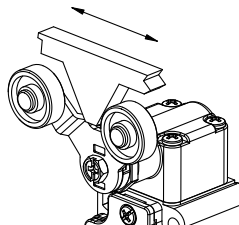
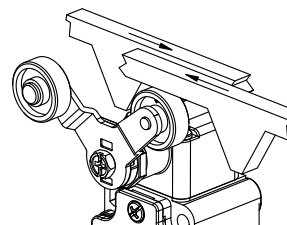
<sup>(1)</sup> Positive opening only with lever adjusted on the max. See page 2/11.



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 2/12	With stainless steel rollers on request	With stainless steel rollers on request	Rope switches for signalling
5	<b>R</b> FD 557 1NO+1NC	FD 541 1NO+1NC	FD 542 1NO+1NC	FD 576 1NO+1NC
6	<b>L</b> FD 657 1NO+1NC	Bistable switch with single track lyra lever	Bistable switch with double track lyra lever	FD 676 1NO+1NC
7	<b>LO</b> FD 757 1NO+1NC			FD 776 1NO+1NC
9	<b>L</b> FD 957 2NC	 <p>0 45° 65° 80° 90° 25° S</p> <p>S = mechanical snap point positive opening with 21-22 contact only</p>	 <p>0 45° 65° 80° 90° 25° S</p> <p>S = mechanical snap point positive opening with 21-22 contact only</p>	FD 976 2NO
10	<b>L</b> FD 1057 2NO			FD 1076 2NC
11	<b>R</b> FD 1157 2NC			FD 1176 2NO
12	<b>R</b> FD 1257 2NO			FD 1276 2NC
13	<b>LV</b> FD 1357 2NC			FD 1376 2NO
14	<b>LS</b> FD 1457 2NC			FD 1476 2NO
15	<b>LS</b> FD 1557 2NO			FD 1576 2NC
16	<b>LI</b> FD 1657 2NC			FD 1876 1NO+1NC
18	<b>LA</b> FD 1857 1S+1Ö			FD 2076 2NO+1NC
20	<b>L</b> FD 2057 1NO+2NC			FD 2176 3NC
21	<b>L</b> FD 2157 3NC	FD 2276 1NO+2NC		
22	<b>L</b> FD 2257 2NO+1NC	FD 276 2x(1NO-1NC)		
2	<b>R</b> FD 257 2x(1NO-1NC)			
E1	<b>⏏</b> FD E157 1NO-1NC			
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 <b>⊕</b> )	0,21 Nm	0,21 Nm	initial 20 N - final 40 N
Travel diagrams	page 7/4 - group 4			page 7/4 - group 6

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

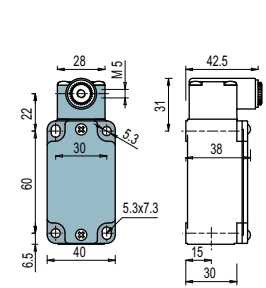


Position switches with revolving lever without actuator

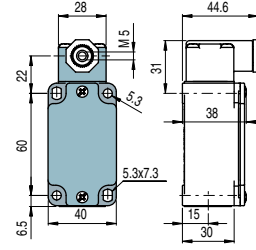
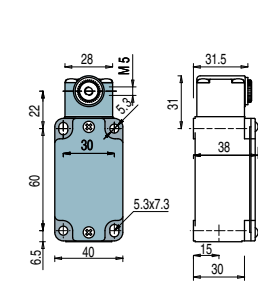
Contacts type:

- 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

Regular head



Compact head



**IMPORTANT**

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

Contact blocks

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

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	
<b>VF L31</b>	<b>VF L32</b> <sup>(3)</sup>	<b>VF L33</b> <sup>(3)</sup>	<b>VF L34</b>	<b>VF L35</b> <sup>(1) (3)</sup>	<b>VF L36</b> <sup>(3)</sup>	
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
<b>VF L41</b>	<b>VF L42</b>	<b>VF L51</b>	<b>VF L52</b>	<b>VF L53</b> <sup>(2)</sup>	<b>VF L56</b> <sup>(3)</sup>	<b>VF L57</b>

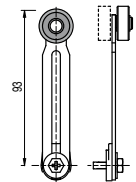
- Only orders for multiple quantities of the packs are accepted.

<sup>(1)</sup> 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.

<sup>(2)</sup> The position switch obtained by assembling the switch FD •58 (e.g. FD 558, FD 658) with the actuator VF L53 will not present the same travel diagrams and actuating forces as the position switch FD •53-E11V9 (e.g. FD 553-E11V9, FD 653-E11V9...).

<sup>(3)</sup> If it is installed with switch FD •58 (e.g. FD 558, FD 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.

<sup>(4)</sup> 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 (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)

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