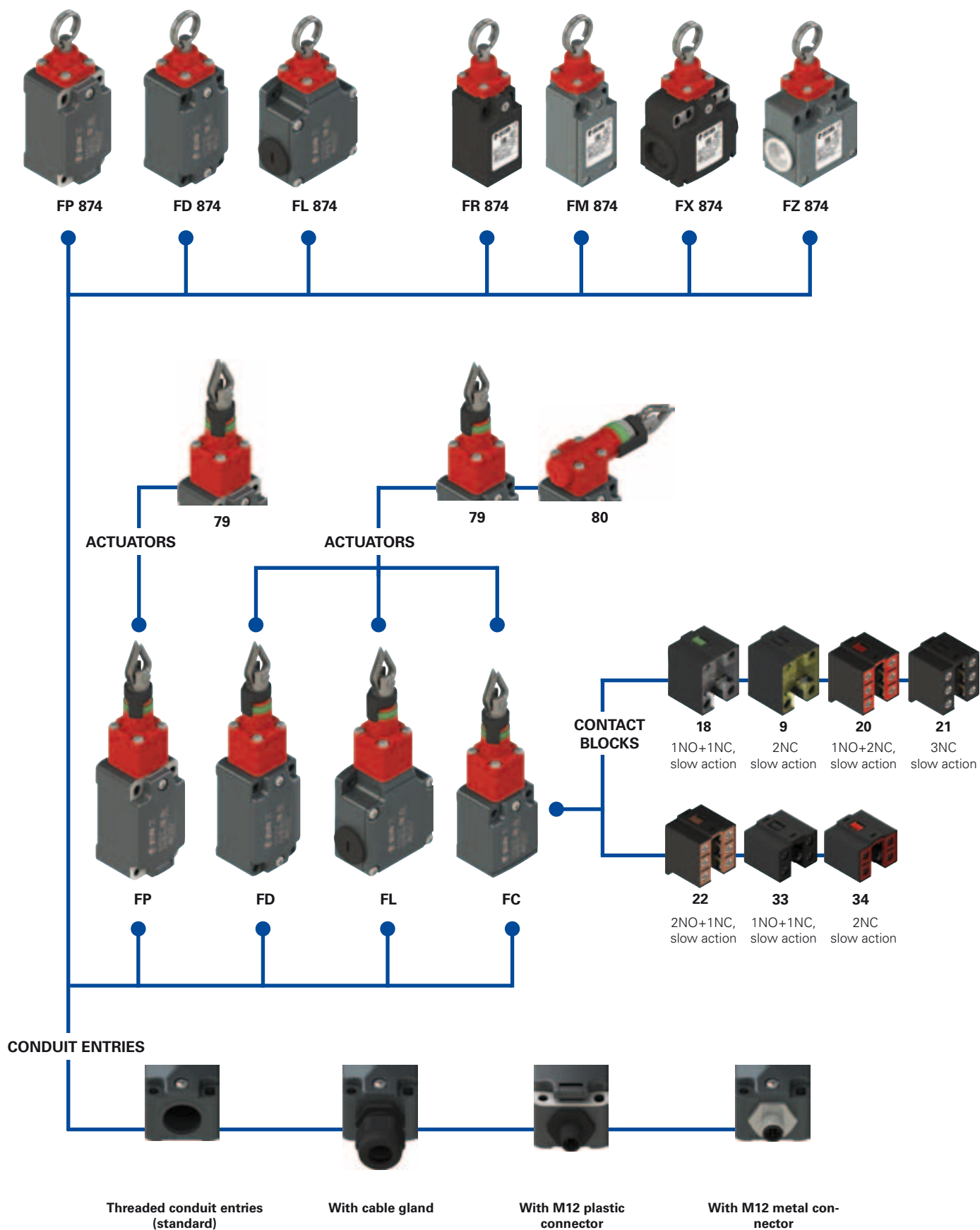


Selection diagram



—●— product option
 —▶— accessory sold separately



Code structure

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

article options options
FD 1879-E7GM2K50T6

Housing

FD	metal, one conduit entry
FL	metal, three conduit entries
FP	technopolymer, one conduit entry

Contact blocks

18	1NO+1NC, slow action
9	2NC, slow action
20	1NO+2NC, slow action
21	3NC, slow action
22	2NO+1NC, slow action
33	1NO+1NC, slow action
34	2NC, slow action

Actuating head

79	longitudinal head
80	transversal head (FD-FL housing only)

Actuating force

	standard
E7	initial 20 N...final 40 N (only head 79)
E9	initial 13 N...final 75 N (only head 80)

Ambient temperature

	-25°C ... +80°C (standard)
T6	-40°C ... +80°C

Pre-installed cable glands or connectors

	without cable gland or connector (standard)
K23	cable gland for cables Ø 6...Ø 12 mm
...
K50	M12 metal connector, 5 poles
...

Please contact our technical service for the complete list of possible combinations.

Threaded conduit entry

M2	M20x1.5 (standard)
	PG 13.5

Contact type

	silver contacts (standard)
G	silver contacts with 1 µm gold coating

article options options
FC 3379-E7GM2K50T6

Housing

FC	metal, one conduit entry
-----------	--------------------------

Contact blocks

33	1NO+1NC, slow action
34	2NC, slow action

Actuating head

79	longitudinal head
80	transversal head

Actuating force

	standard
E7	initial 20 N...final 40 N (only head 79)
E9	initial 13 N...final 75 N (only head 80)

Pre-installed cable glands

	without cable gland (standard)
K23	cable gland for cables Ø 6...Ø 12 mm
K50	M12 metal connector, 5 poles

Threaded conduit entry

M2	M20x1.5 (standard)
	PG 11

Ambient temperature

	-25°C ... +80°C (standard)
T6	-40°C ... +80°C

Contact type

	silver contacts (standard)
G	silver contacts with 1 µm gold coating

article options options
FD 874-E7GM2K50T6

Housing

FD	metal, one conduit entry
FL	metal, three conduit entries
FP	technopolymer, one conduit entry
FR	technopolymer, one conduit entry
FM	metal, one conduit entry
FX	technopolymer, two conduit entries
FZ	metal, two conduit entries

Actuating force

	standard
E7	initial 20 N...final 40 N

Contact type

	silver contacts (standard)
G	silver contacts with 1 µm gold coating

Pre-installed cable glands or connectors

	without cable gland or connector (standard)
K23	cable gland for cables Ø 6...Ø 12 mm
...
K50	M12 metal connector, 5 poles
...

Please contact our technical service for the complete list of possible combinations.

Threaded conduit entry

M2	M20x1.5 (standard)
M1	M16x1.5 (FR-FX housing only)
	PG 13.5
A	PG 11 (FR-FX housing only)

Ambient temperature

	-25°C ... +80°C (standard)
T6	-40°C ... +80°C



Main features

- Metal or plastic housing, from one to three conduit entries
- Protection degree IP67
- 7 contact blocks available
- Versions with vertical or horizontal actuation
- Versions with assembled M12 connector
- Versions with gold-plated silver contacts


Markings and quality marks:



IMQ approval:	EG605 (FD-FLFP-FC series) EG610 (FR-FX series) EG609 (FM-FZ series)
UL approval:	E131787
CCC approval:	2007010305230000 (FD-FL-FC series) 2007010305230014 (FP series) 2007010305230013 (FR-FX series) 2007010305229998 (FM-FZ series)
EAC approval:	RU C-IT ДМ94.В.01024

Technical data

Housing

FP, FR, FX series housing made of glass fiber reinforced technopolymer, self-extinguishing, shock-proof and with double insulation: 
 FD, FL, FC, FM, FZ series: metal housing, baked powder coating.
 FD, FP, FC, FR, FM series - one threaded conduit entry: M20x1.5 (standard)
 FX series - two knock-out threaded conduit entries: M20x1.5 (standard)
 FZ series - two threaded conduit entries: M20x1.5 (standard)
 FL series - three threaded conduit entries: M20x1.5 (standard)
 Protection degree: IP67 acc. to EN 60529 with cable gland having equal or higher protection degree

General data

For safety applications up to:	SIL 3 acc. to EN 62061 PL e acc. to EN ISO 13849-1
Safety parameters:	
B _{10d} :	2,000,000 for NC contacts
Service life:	20 years
Ambient temperature:	-25°C ... +80°C
Max. actuation frequency:	1 cycle / 6 s
Mechanical endurance:	1 million operating cycles ¹
Max. actuation speed:	0.5 m/s
Min. actuation speed:	1 mm/s
Tightening torques for installation:	see pages 297-308

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

Cable cross section (flexible copper strands)

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 18, 8, 9:	min.	1 x 0.5 mm ²	(1 x AWG 20)
	max.	2 x 2.5 mm ²	(2 x AWG 14)

In conformity with standards:

IEC 60947-5-1, EN 60947-5-1, EN 60947-1, IEC 60204-1, EN 60204-1, EN ISO 14119, EN ISO 12100, IEC 60529, EN 60529, UL 508, CSA 22.2 No.14.

Approvals:

IEC 60947-5-1, UL 508, CSA 22.2 No.14, GB14048.5-2001.

In conformity with the requirements of:

Low Voltage Directive 2006/95/EC, Machinery Directive 2006/42/EC and EMC Directive 2004/108/EC.

Positive contact opening in conformity with standards:

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

⚠ If not expressly indicated in this chapter, for correct installation and utilization of all articles see chapter utilization requirements from page 297 to page 308.

Electrical data

Utilization category

without connector	Thermal current (I _{th}):	10 A	Alternating current: AC15 (50÷60 Hz)			
	Rated insulation voltage (U _i):	500 Vac 600 Vdc	U _e (V)	250	400	500
	Rated impulse withstand voltage (U _{imp}):	400 Vac 500 Vdc (contact blocks 20, 21, 22, 33, 34)	I _e (A)	6	4	1
		6 kV	Direct current: DC13			
Conditional short circuit current: Protection against short circuits: Pollution degree:	4 kV (contact blocks 20, 21, 22, 33, 34)	U _e (V)	24	125	250	
	1000 A acc. to EN 60947-5-1	I _e (A)	6	1.1	0.4	
	type aM fuse 10 A 500 V					

with M12 connector for 4 and 5 poles	Thermal current (I _{th}):	4 A	Alternating current: AC15 (50÷60 Hz)			
	Rated insulation voltage (U _i):	250 Vac 300 Vdc	U _e (V)	24	120	250
	Protection against short circuits: Pollution degree:	type gG fuse 4 A 500 V	I _e (A)	4	4	4
		3	Direct current: DC13			
Conditional short circuit current: Protection against short circuits: Pollution degree:	4 kV (contact blocks 20, 21, 22, 33, 34)	U _e (V)	24	125	250	
	1000 A acc. to EN 60947-5-1	I _e (A)	4	1.1	0.4	
	type aM fuse 10 A 500 V					

with M12 connector 8 poles	Thermal current (I _{th}):	2 A	Alternating current: AC15 (50÷60 Hz)			
	Rated insulation voltage (U _i):	30 Vac 36 Vdc	U _e (V)	24		
	Protection against short circuits: Pollution degree:	type gG fuse 2 A 500 V	I _e (A)	2		
		3	Direct current: DC13			
Conditional short circuit current: Protection against short circuits: Pollution degree:	4 kV (contact blocks 20, 21, 22, 33, 34)	U _e (V)	24			
	1000 A acc. to EN 60947-5-1	I _e (A)	2			
	type aM fuse 10 A 500 V					

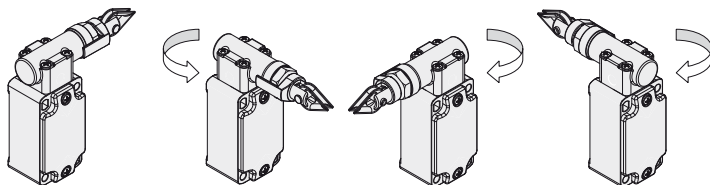
Description



These rope operated safety switches are installed on machines or conveyor belts, to activate the simple stop of the machine on every hand intervention on the rope, from any point.

Provided with **self-control function**, they constantly check their correct operation, signalling with the opening of the contacts an eventual loosening or breaking of the rope.

Orientable heads



Removing the four fastening screws, in all switches, it is possible to rotate the head in 90° steps.

Protection degree IP67

IP67

These devices are designed to be used in the toughest environmental conditions and they pass the IP67 immersion test acc. to IEC 60529.

They can therefore be used in all environments where the maximum protection of the housing is required.

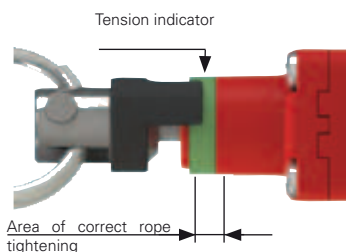
Extended temperature range

-40°C

This range of switches is also available in a special version with an ambient operating temperature range of -40°C to +80°C.

They can be used for applications in cold stores, sterilisers and other devices with low temperature environments. Special materials that have been used to realize these versions, maintain unchanged their features also in these conditions, widening the installation possibilities.

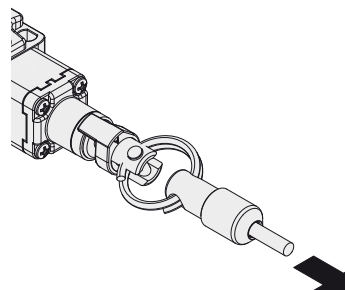
Adjustment point indicator of the rope



The switches (head 79 and 80) are provided with a green ring that shows the area of the correct tightening of the rope. The installer has only to tighten the rope until the black indicator will be in the middle of the green area. If a traction (or loosening) of the rope it is high enough to permit the black indicator to go outside

the correct tension area, the safety contacts will open.

Actuating forces



These switches can be supplied with reduced hardness internal springs on request. This makes it possible to reduce the physical effort required to actuate the switch, whilst maintaining the actuating stroke of the electrical contacts unchanged. Particularly suitable for spans of reduced dimensions, they must always be matched to the suspension of the rope pulley.

Characteristics approved by IMQ

Rated insulation voltage (Ui): 500 Vac
400 Vac (for contact blocks 20, 21, 22, 33, 34)
Conventional free air thermal current (Ith): 10 A
Protection against short circuits: type aM fuse 10 A 500 V
Rated impulse withstand voltage (U_{imp}): 6 kV
4 kV (for contact blocks 20, 21, 22, 33, 34)
Protection degree of the housing: IP67
MV terminals (screw terminals)
Pollution degree 3
Utilization category: AC15
Operating voltage (Ue): 400 Vac (50 Hz)
Operating current (Ie): 3 A
Forms of the contact element: Zb, Y+Y, Y+Y+X, Y+Y+Y, Y+X+X
Positive opening of contacts on contact blocks 18, 8, 9, 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/EC.

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

Characteristics approved by UL

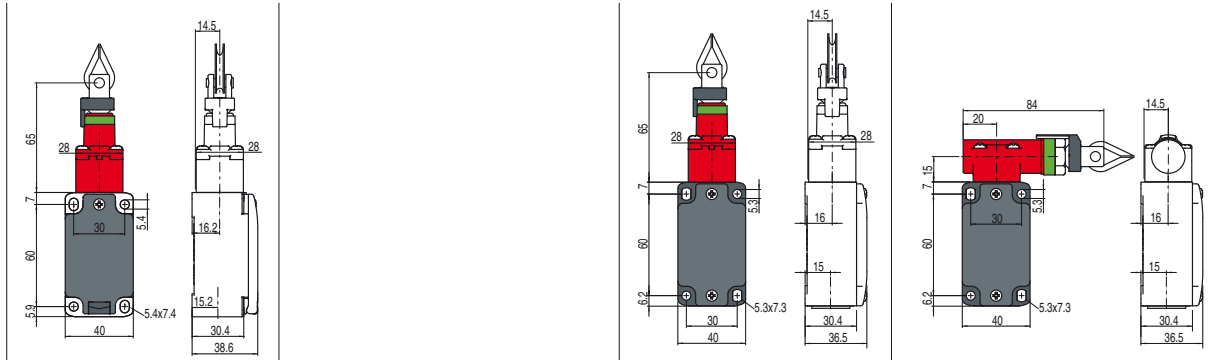
Utilization categories Q300 (69 VA, 125 ... 250 Vdc)
A600 (720 VA, 120 ... 600 Vac)
Data of housing type 1, 4X "indoor use only", 12, 13
For all contact blocks use 60 or 75 °C copper (Cu) conductor, rigid or flexible, wire size AWG 12-14. Terminal tightening torque of 7.1 lb in (0.8 Nm).
In conformity with standard: UL 508, CSA 22.2 No.14

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

Dimensional drawings

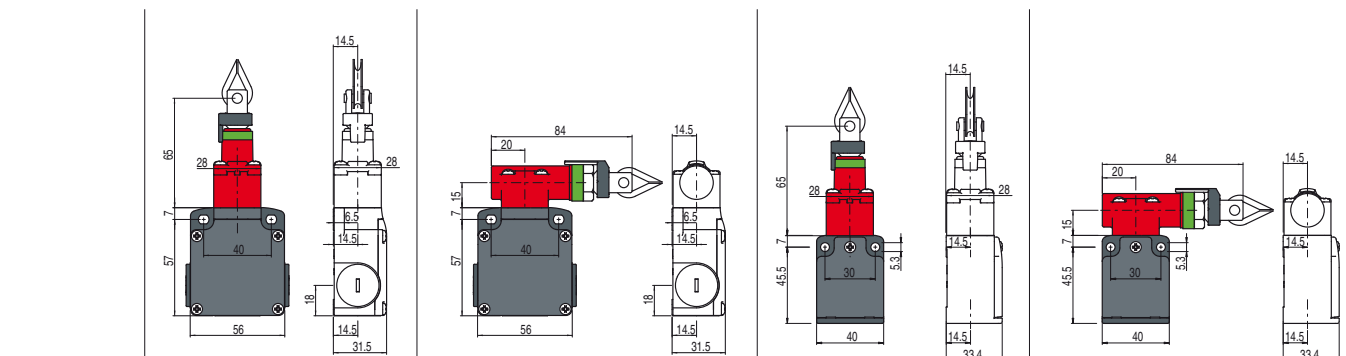
All measures in the drawings are in mm

Contact type:
 = slow action



Contact blocks

18		FP 1879-M2		1NO+1NC	FD 1879-M2		1NO+1NC	FD 1880-M2		1NO+1NC
9		FP 979-M2		2NC	FD 979-M2		2NC	FD 980-M2		2NC
20		FP 2079-M2		1NO+2NC	FD 2079-M2		1NO+2NC	FD 2080-M2		1NO+2NC
21		FP 2179-M2		3NC	FD 2179-M2		3NC	FD 2180-M2		3NC
22		FP 2279-M2		2NO+1NC	FD 2279-M2		2NO+1NC	FD 2280-M2		2NO+1NC
33		FP 3379-M2		1NO+1NC	FD 3379-M2		1NO+1NC	FD 3380-M2		1NO+1NC
34		FP 3479-M2		2NC	FD 3479-M2		2NC	FD 3480-M2		2NC
Min. force		Initial 63 N...final 83 N (90 N)			Initial 63 N...final 83 N (90 N)			Initial 147 N...final 235 N (250 N)		
Travel diagrams		page 172 - group 1			page 172 - group 1			page 172 - group 2		

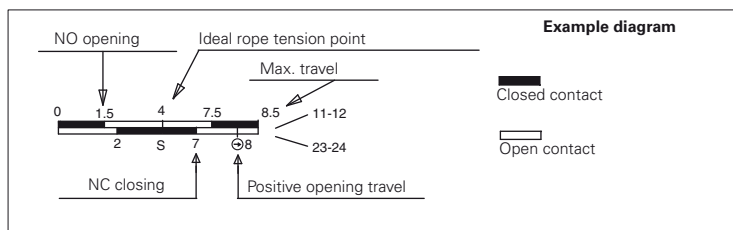


Contact blocks

18		FL 1879-M2		1NO+1NC	FL 1880-M2		1NO+1NC	FC 3379-M2		1NO+1NC
9		FL 979-M2		2NC	FL 980-M2		2NC	FC 3479-M2		2NC
20		FL 2079-M2		1NO+2NC	FL 2080-M2		1NO+2NC	FC 3380-M2		1NO+1NC
21		FL 2179-M2		3NC	FL 2180-M2		3NC	FC 3480-M2		2NC
22		FL 2279-M2		2NO+1NC	FL 2280-M2		2NO+1NC			
33		FL 3379-M2		1NO+1NC	FL 3380-M2		1NO+1NC			
34		FL 3479-M2		2NC	FL 3480-M2		2NC			
Min. force		Initial 63 N...final 83 N (90 N)			Initial 147 N...final 235 N (250 N)			Initial 63 N...final 83 N (90 N)		
Travel diagrams		page 172 - group 1			page 172 - group 2			page 172 - group 1		

How to read travel diagrams

All measures in the diagrams are in mm



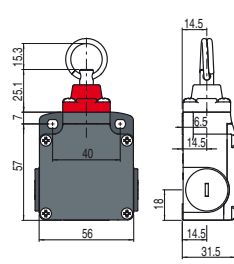
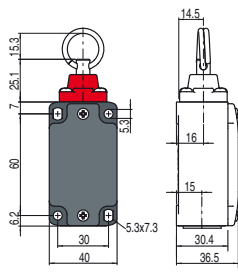
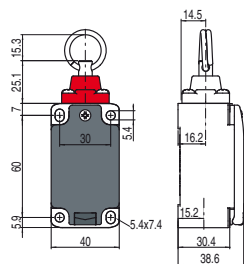
IMPORTANT:

In **safety applications**, actuate the switch **at least up to the positive opening travel** shown in the travel diagrams with symbol . Operate the switch **at least with the positive opening force**, indicated between brackets below each article, aside the minimum force value.



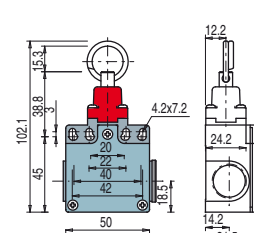
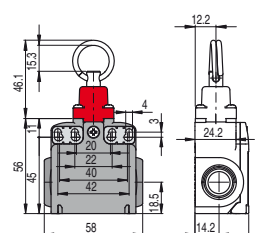
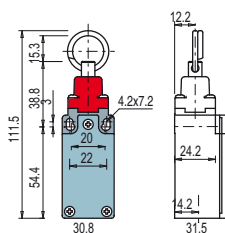
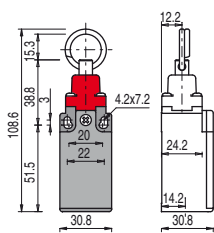
Contact type:

L = slow action



Contact blocks

8 L	FP 874-M2 1NC	FD 874-M2 1NC	FL 874-M2 1NC
Min. force	Initial 63 N...final 83 N (90 N)	Initial 63 N...final 83 N (90 N)	Initial 63 N...final 83 N (90 N)
Travel diagrams	page 172 - group 3	page 172 - group 3	page 172 - group 3



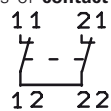
Contact blocks

8 L	FR 874-M2 1NC	FM 874-M2 1NC	FX 874-M2 1NC	FZ 874-M2 1NC
Min. force	Initial 63 N...final 83 N (90 N)	Initial 63 N...final 83 N (90 N)	Initial 63 N...final 83 N (90 N)	Initial 63 N...final 83 N (90 N)
Travel diagrams	page 172 - group 3	page 172 - group 3	page 172 - group 3	page 172 - group 3

Travel diagrams table

Contact blocks	Group 1	Group 2	Group 3
18 1NO+1NC			
8 1NC			
9 2NC			
20 1NO+2NC			
21 3NC			
22 2NO+1NC			
33 1NC+1NO			
34 2NC			

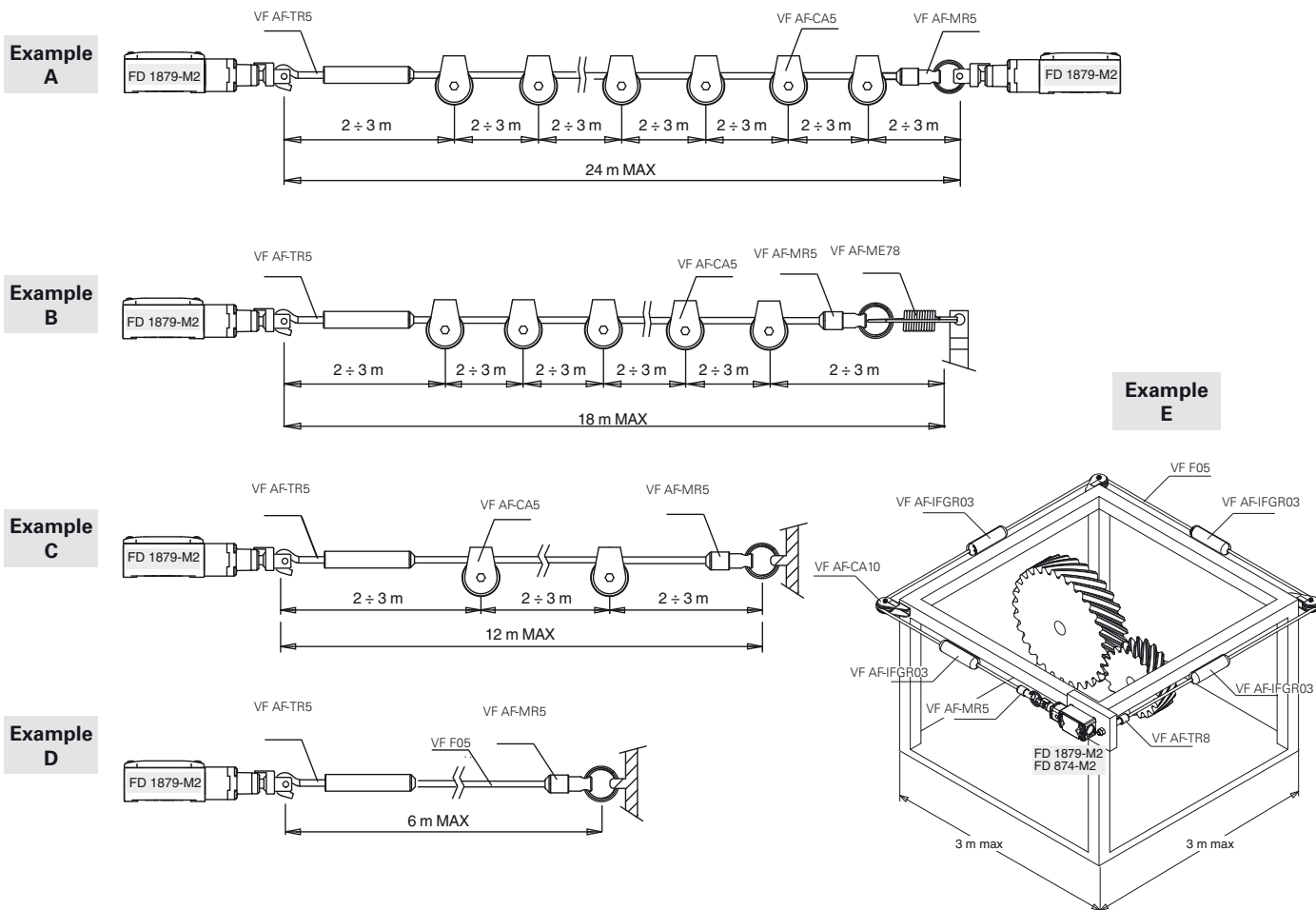
In the rest position (with rope correctly tightened) the two contacts of **contact block 8** are both closed and are activated respectively by tightening or loosening the rope. In order to use this contact block for safety applications it is necessary to connect the two contacts in series. For this reason, in the wiring diagrams the **contact block 8** is indicated as 1NC, whereas in travel diagrams both contacts are indicated.



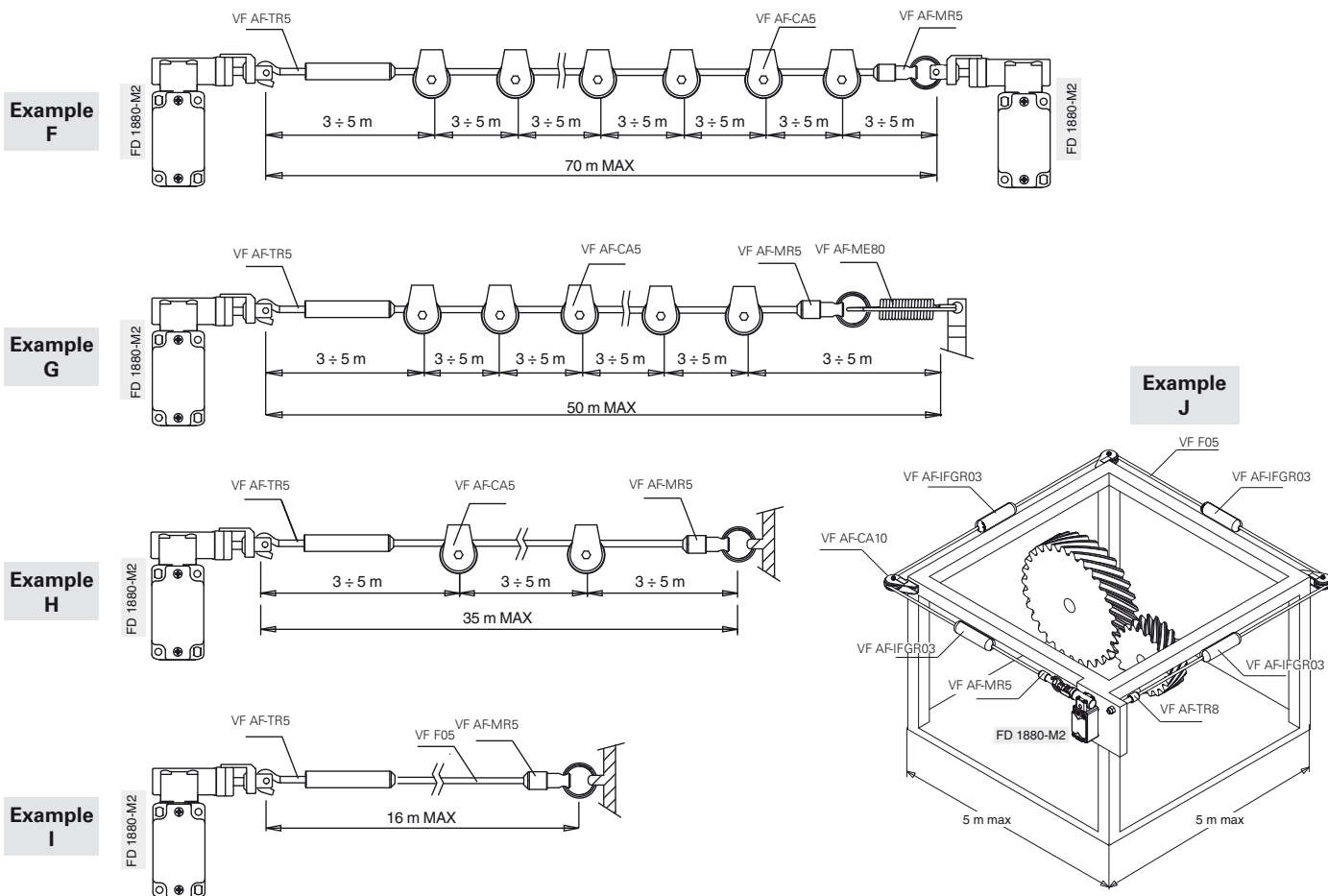
Accessories See page 287

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

Application examples and max. rope length for switches with longitudinal head

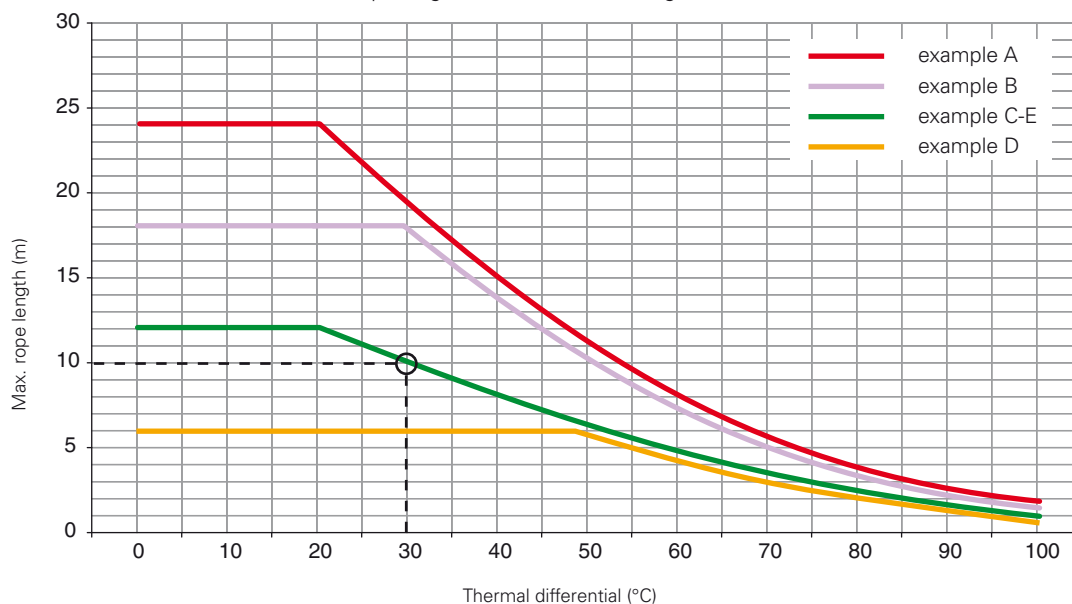


Application examples and max. rope length for switches with transversal head



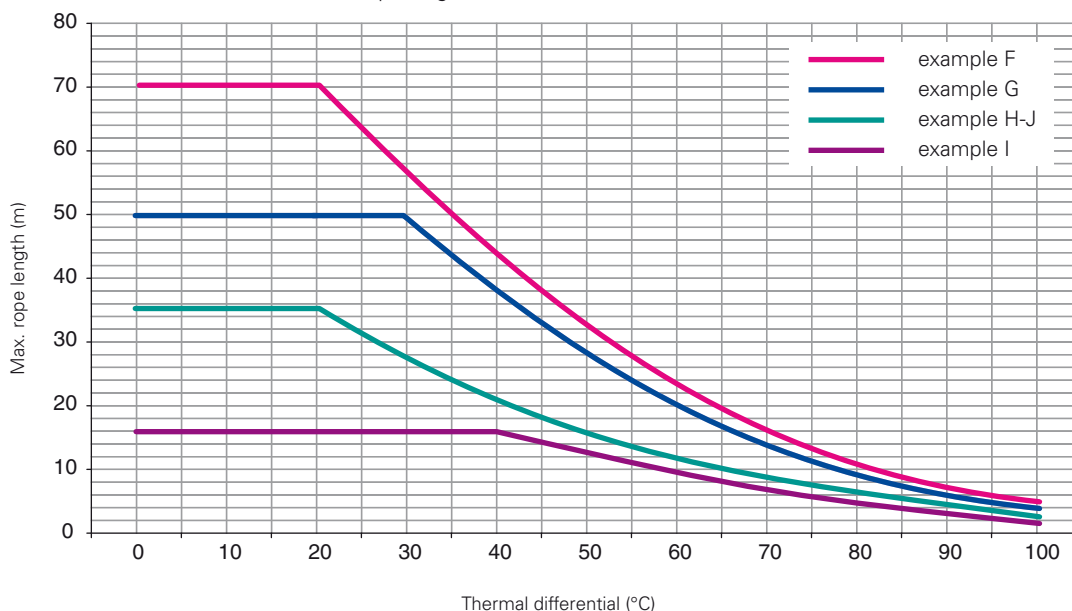
Max. rope length

Max. rope length for switches with longitudinal head



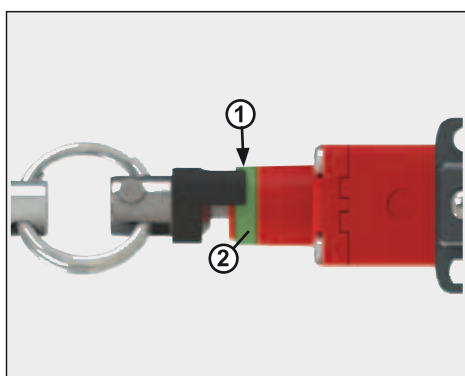
In the diagram, the suggested max. rope lengths with regard to changes of temperature (thermal differential) to which the switch is expected to be exposed in the working area are indicated. For instance, for an installation acc. to example C which expects a thermal differential of 30°C, a max. rope length of 10 meters is suggested.

Max. rope length for switches with transversal head

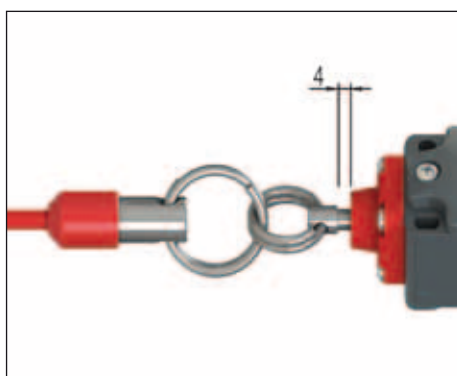


Important: The above data are guaranteed only using original rope and accessories. See page 175.

Adjustment of the operating point



For switches with head 79 and 80: Tighten the rope connected to the switch, until the end of the indicator (1) reaches about the middle of the green ring (2).



For switches with head 74: Tighten the rope connected to the switch until the thimble will be at about 4 mm from the head.