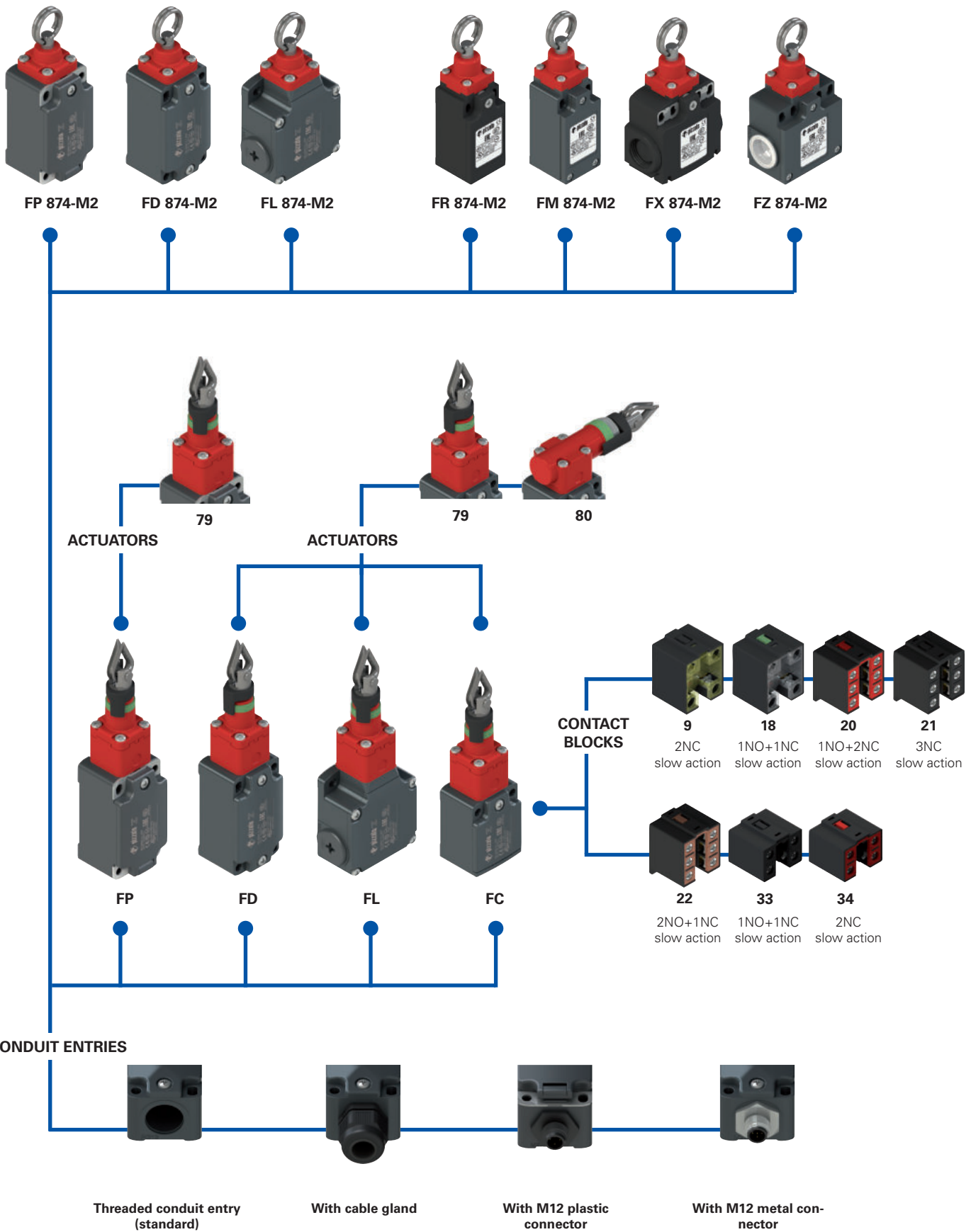


Selection diagram



—●— product options



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

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

Contact blocks	
9	2NC, slow action
18	1NO+1NC, 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

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

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

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

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

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

Contact type	
	silver contacts (standard)
G	silver contacts with 1 µm gold coating
G1	Silver contacts, 2.5 µm gold coating (not for contact blocks 20, 21, 22, 33, 34)

article options options
FC 3379-E7GM2K50T6

Housing	
FC	metal, one conduit entry

Pre-installed cable glands	
	no cable gland (standard)
K23	cable gland for cables Ø 6 ... 12 mm
K50	M12 metal connector, 5-pole

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)

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

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

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

Actuating force	
	standard
E7	initial 20 N...final 40 N

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

Contact type	
	silver contacts (standard)
G	silver contacts with 1 µm gold coating
G1	silver contacts with 2.5 µm gold coating



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


Quality marks:



IMQ approval:	EG605 (FD-FL-FP-FC series) EG610 (FR-FX-FM-FZ series)
UL approval:	E131787
CCC approval:	2007010305230000 (FD-FP-FL-FC series) 2007010305230013 (FR-FX-FM-FZ series)
EAC approval:	RU C-IT.AQ35.B.00454

Technical data

Housing

FP, FR, FX series housing made of glass fibre 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 of equal or higher protection degree

General data

SIL (SIL CL) up to:	SIL 3 acc. to EN 62061
Performance Level (PL) up to:	PL e acc. to EN ISO 13849-1
Safety parameters:	
B_{10D} :	2,000,000 for NC contacts
Mission time:	20 years
Ambient temperature:	-25°C ... +80°C (standard) -40°C ... +80°C (T6 option)
Max. actuation frequency:	1 cycle / 6 s
Mechanical endurance:	1 million operating cycles
Max. actuation speed:	0.5 m/s
Min. actuation speed:	1 mm/s
Tightening torques for installation:	see pages 339 and 341
Wire cross-sections and wire stripping lengths:	see page 357

In compliance with standards:

IEC 60947-5-1, IEC 60947-1, IEC 60204-1, EN ISO 14119, EN ISO 12100, IEC 60529, EN 50581, UL 508, CSA 22.2 No.14 .

Approvals:

EN 60947-5-1, UL 508, CSA 22.2 No.14, GB/T14048.5-2017.

Compliance with the requirements of:

Low Voltage Directive 2014/35/EU, EMC Directive 2014/30/EU, RoHS Directive 2011/65/EU.

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 the instructions given on pages 337 to 350.

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)	3	0.55	0.3	
	type aM fuse 10 A 500 V					
	3					

with M12 connector, 4 and 5-pole	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			
		U_e (V)	24	125	250	
		I_e (A)	3	0.55	0.3	

with M12 connector, 8-pole	Thermal current (I_{th}):	2 A	Alternating current: AC15 (50±60 Hz)			
	Rated insulation voltage (U_i):	30 Vac 36 Vdc	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			
		U_e (V)	24			
		I_e (A)	2			



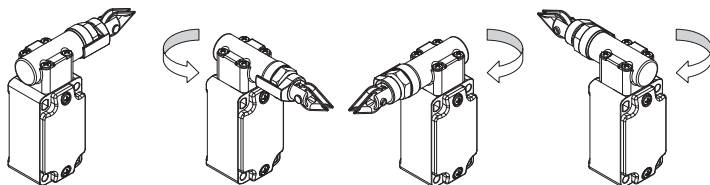
Description



These rope-operated safety switches are installed on machines or conveyor belts and facilitate the simple shut-down of the machine from any point and with any pull on the rope.

Provided with self-control function, they allow the constant monitoring of correct functioning, signalling with the opening of the contacts an eventual loosening or breaking of the rope.

Head with variable orientation



For all switches, the head can be adjusted in 90° steps after removing the four fastening screws.

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 EN 60529. They can therefore be used in all environments where maximum protection degree of the housing is required.

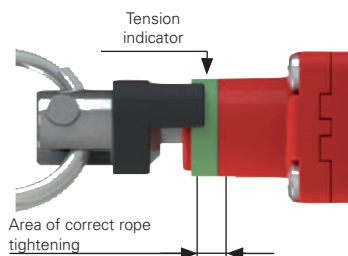
Extended temperature range

-40°C

These devices are also available in a special version suitable for an ambient operating temperature range from -40°C up to +80°C.

They can therefore be used for applications in cold stores, sterilisers and other equipment with low temperature environments. The special materials used to produce these versions retain their characteristics even under these conditions, thereby expanding the installation possibilities.

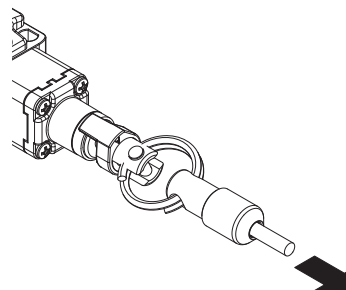
Indicator for rope adjustment



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 the tension (or loosening) on the rope is so high that the black indicator exits the green area, the

electrical safety contacts will open.

Actuating forces



These switches can be supplied with reduced hardness internal springs on request. The force required to actuate the switch can thereby be reduced without changing the actuating path of the electrical contacts. This is particularly advantageous for smaller spans, but must, however, always make use of rope pulleys.

Features approved by IMQ

Rated insulation voltage (U _i):	500 Vac 400 Vac (for contact blocks 20, 21, 22, 33, 34)
Conventional free air thermal current (I _{th}):	10 A
Protection against short circuits:	type aM fuse 10 A 500 V
Rated impulse withstand voltage (U _{imp}):	6 kV 4 kV (for contact blocks 20, 21, 22, 33, 34)
Protection degree of the housing:	IP67
MV terminals (screw terminals)	
Pollution degree:	3
Utilization category:	AC15
Operating voltage (U _e):	400 Vac (50 Hz)
Operating current (I _a):	3 A

Forms of the contact element: Zb, Y+Y, Y+Y+X, Y+Y+Y, Y+X+X
Positive opening contacts on contact blocks 8, 9, 18, 20, 21, 22, 33, 34
In compliance with standards: EN 60947-1, EN 60947-5-1, fundamental requirements of the Low Voltage Directive 2014/35/EU.

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

Features approved by UL

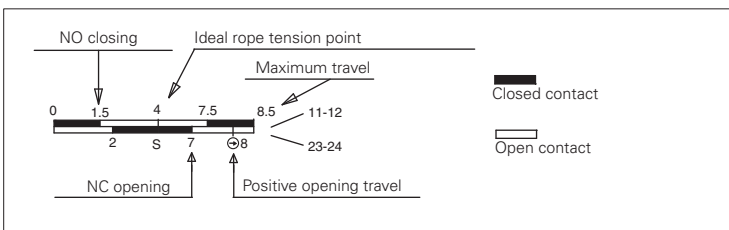
Electrical Ratings:	Q300 pilot duty (69 VA, 125-250 V dc) A600 pilot duty (720 VA, 120-600 V ac)
Environmental Ratings:	Types 1, 4X, 12, 13
Use 60 or 75°C copper (Cu) conductor and wire size range 12, 14 AWG, stranded or solid.	
The terminal tightening torque of 7.1 lb in (0.8 Nm).	
For FR, FP, FX series: the hub is to be connected to the conduit before the hub is connected to the enclosure.	

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



Contact type: L = slow action	Technopolymer housing	Metal housing	Technopolymer housing	Metal housing
Contact blocks	8 L FR 874-M2 1NC	FM 874-M2 1NC	FX 874-M2 1NC	FZ 874-M2 1NC
Actuating 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 204 - group 3	Page 204 - group 3	Page 204 - group 3	Page 204 - group 3

How to read travel diagrams

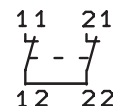


IMPORTANT:

In **safety applications**, actuate the switch **at least up to the positive opening travel** shown in the travel diagrams with symbol ⊕. Actuate the switch **at least with the positive opening force**, reported in brackets below each article, next to the actuating force value.

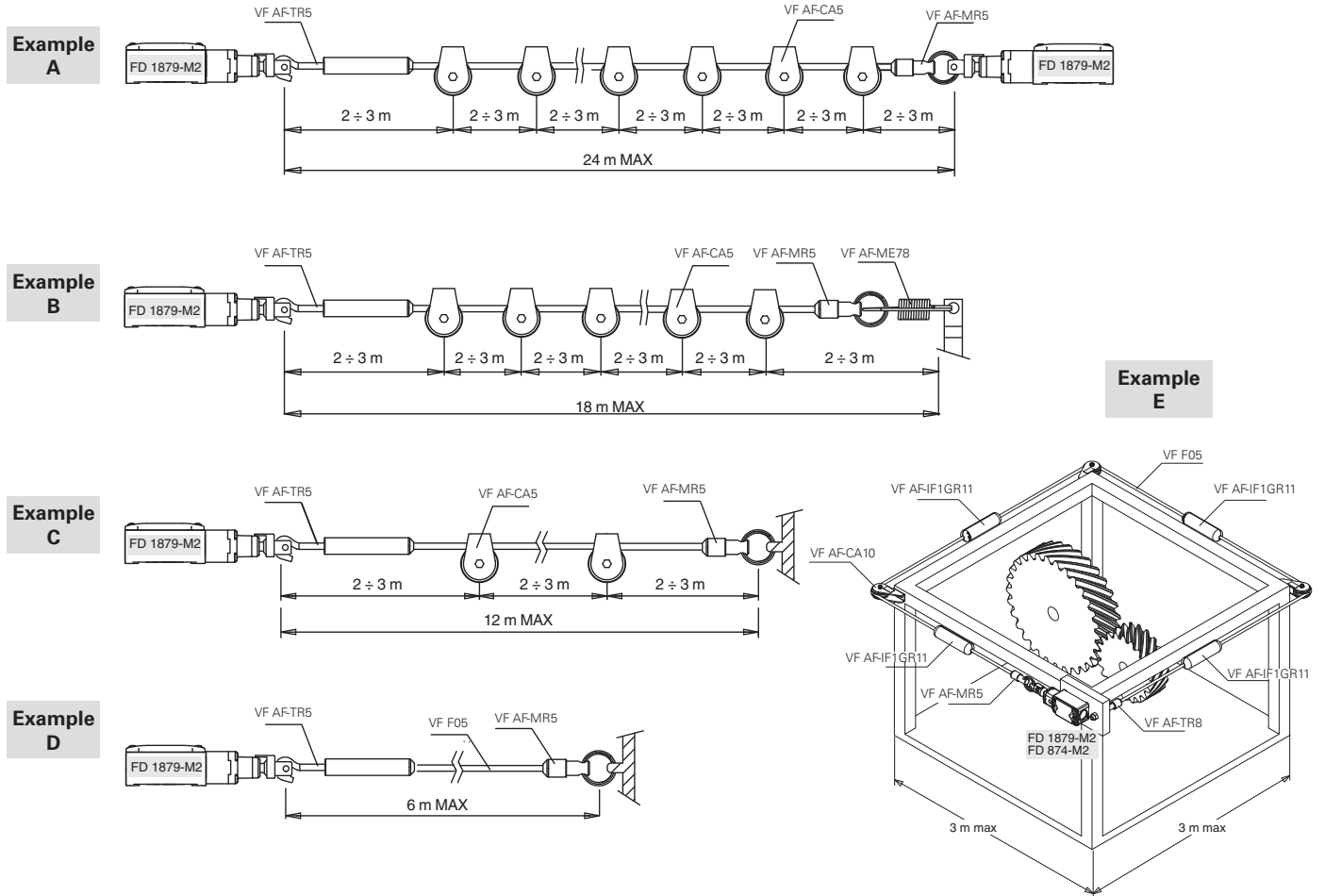
Travel diagrams table

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

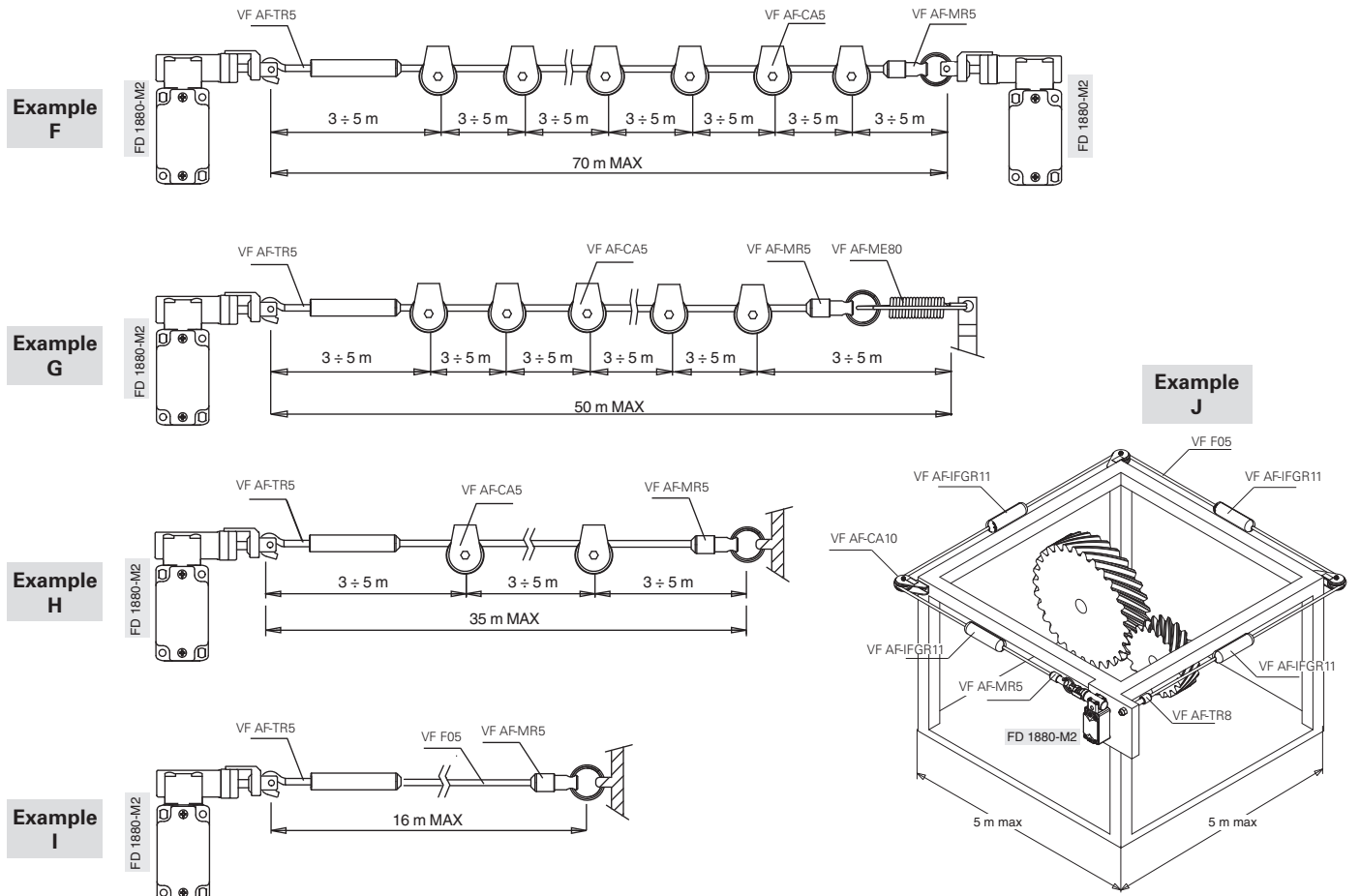


In the rest position (with rope correctly tightened) the two contacts of **contact block 8** are both closed and are activated respectively by tightening or loosening the rope. In order to use this contact block for safety applications it is necessary to connect the two contacts in series. For this reason,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

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

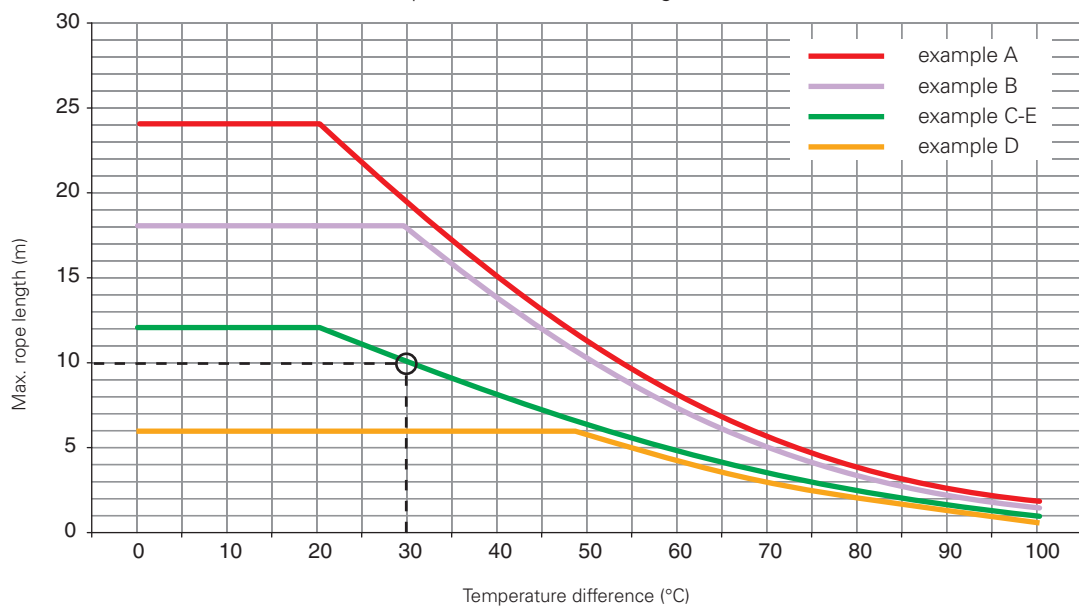


Application examples and max. rope length for switches with transversal head



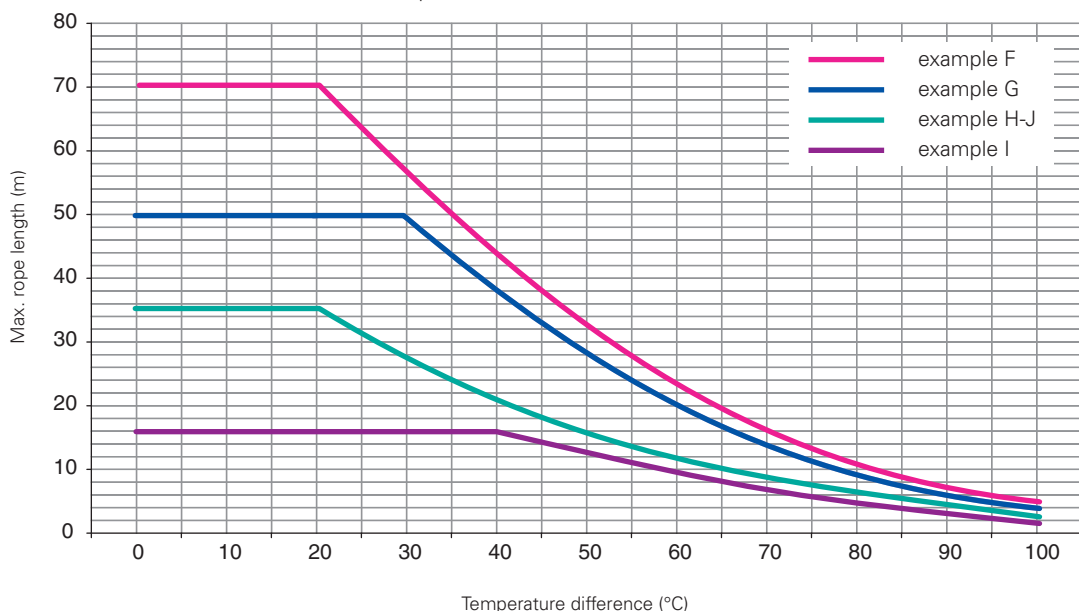
Maximum spans

Maximum spans for switches with longitudinal head



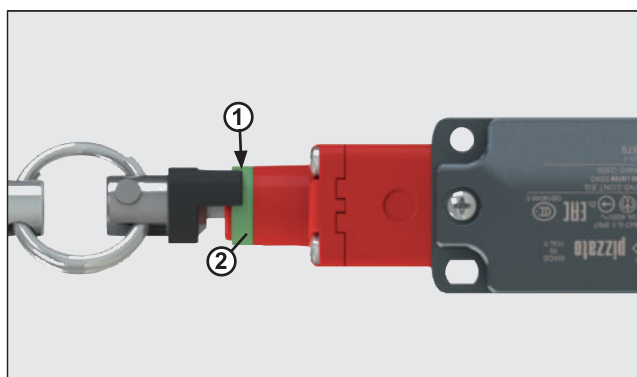
The max. recommended spans are indicated in the diagram as a function of the temperature fluctuations (temperature differences) to which the switch may be exposed at the point of use. For instance, with installation of type C and a temperature difference of 30°C, the max. recommended rope length is 10 metres.

Maximum spans for switches with transversal head

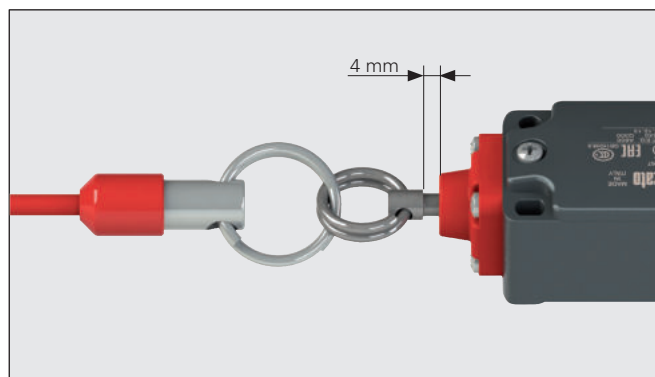


Important: The above data are guaranteed only using original rope and accessories. See page 207.

Adjustment of the switching 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.

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