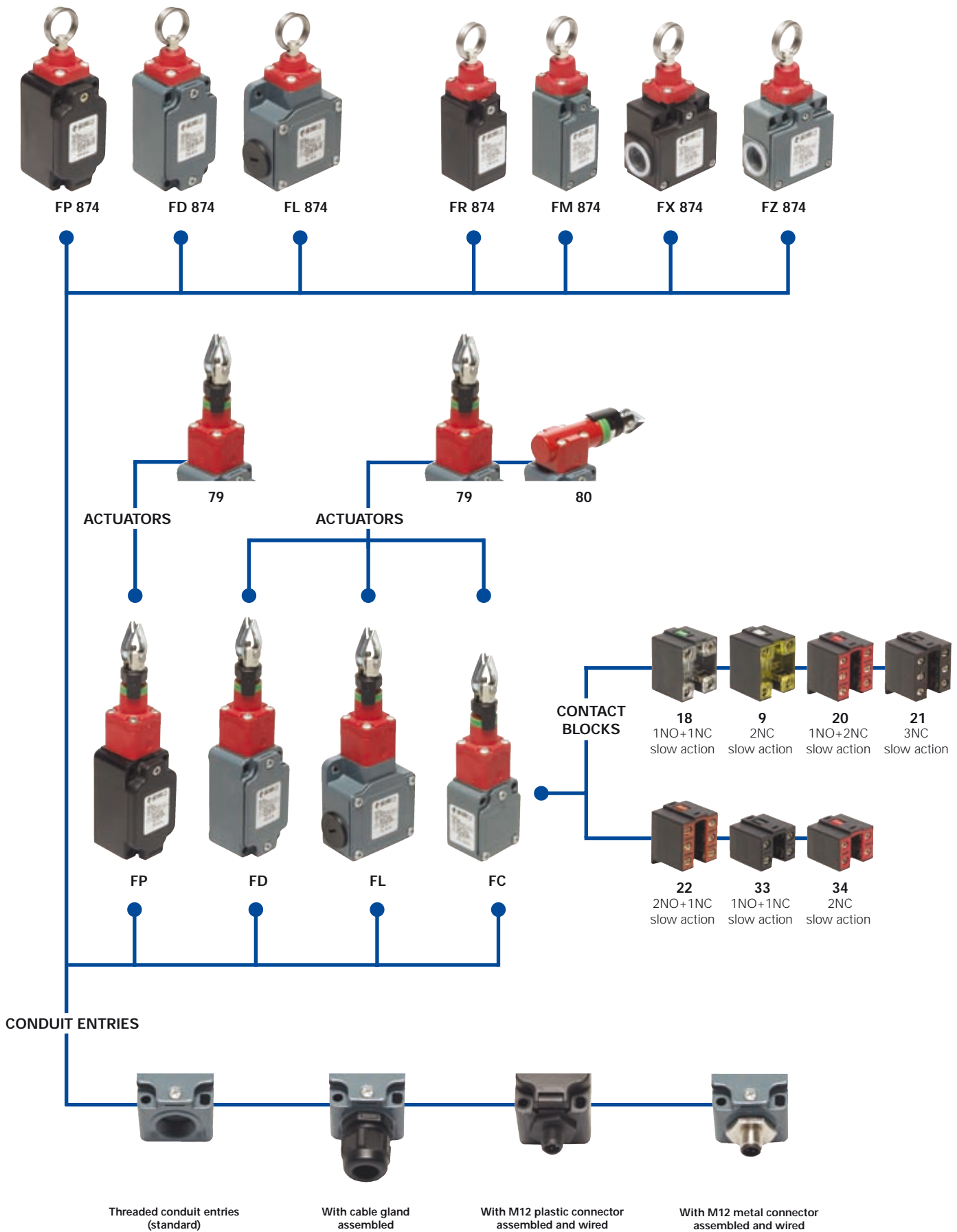


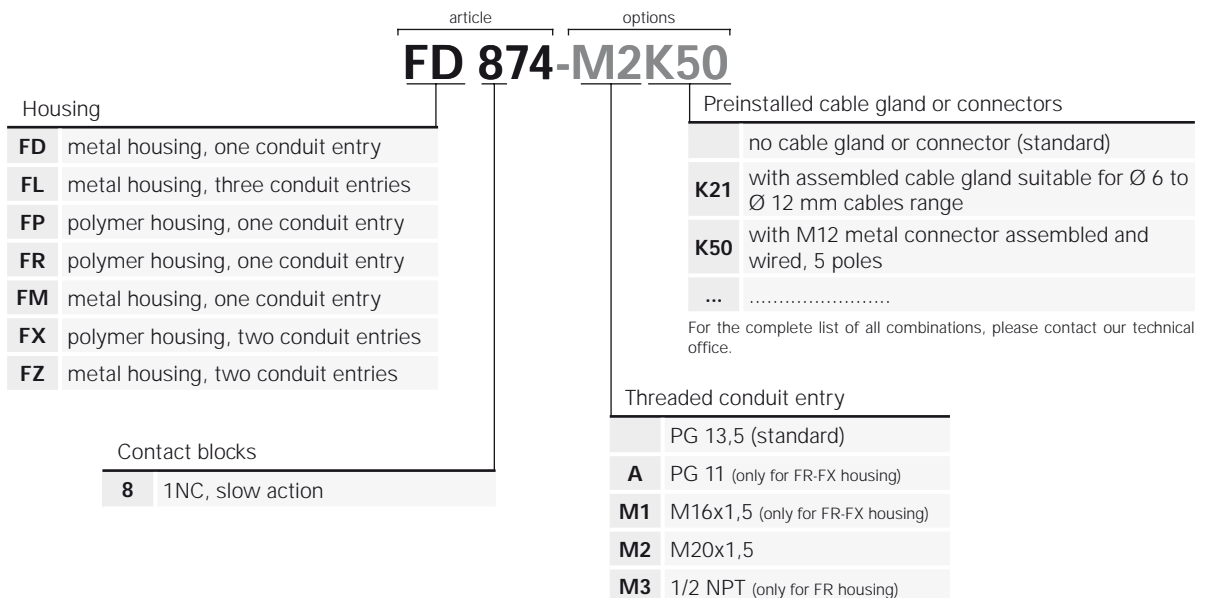
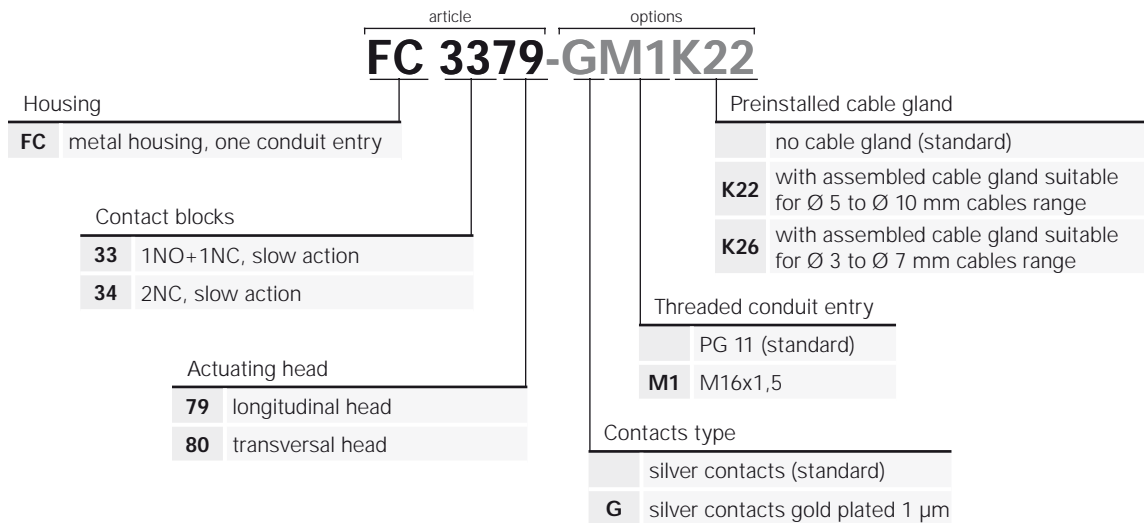
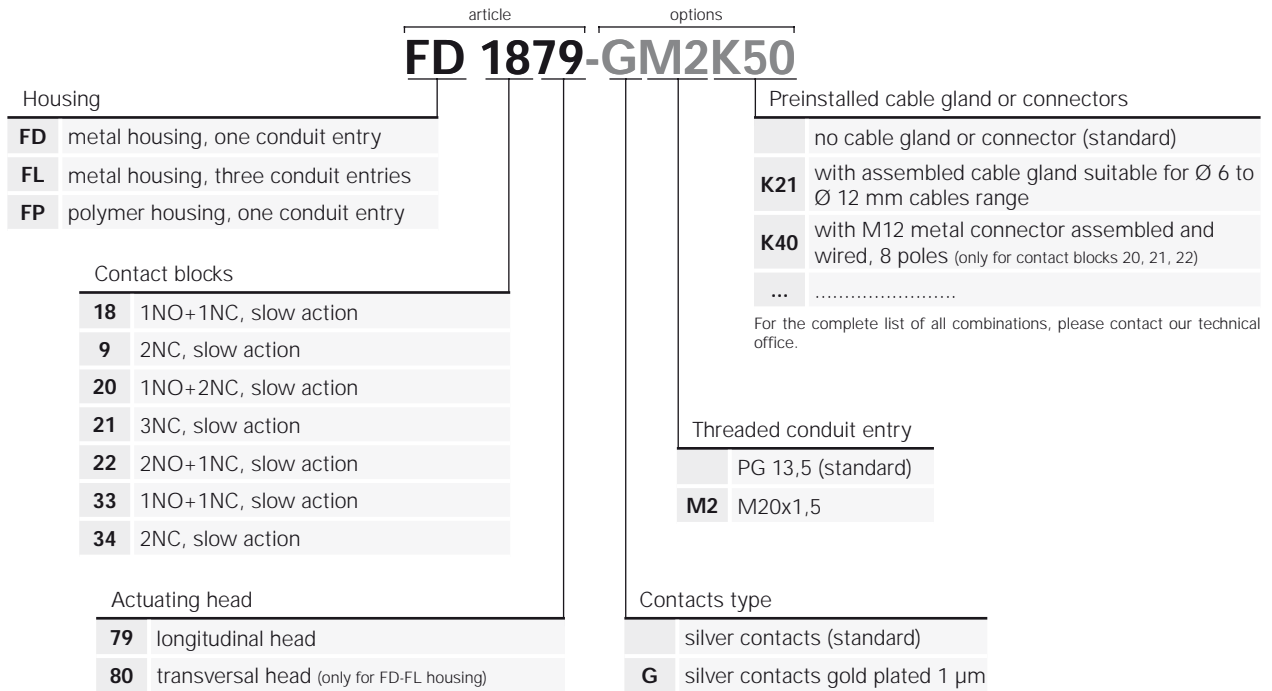
Selection diagram



● 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.





Main data

- Metal or polymer housing, from one to three conduit entries
- Protection degree IP67
- 7 contact blocks available
- Transversal head or longitudinal head versions
- M12 assembled connector versions
- Silver contacts gold plated versions
- Several accessories available

Markings and quality marks:



Approval IMQ:	EG605 (FD-FLFC series) EG606 (FP series) EG610 (FR-FX-FK series) EG609 (FM-FZ series)
Approval UL:	E131787
Approval CCC:	2007010305230000 (FD-FLFC series) 2007010305230014 (FP series) 2007010305230013 (FR-FX-FK series) 2007010305229998 (FM-FZ series)
Approval ECU:	1010151

Technical data

Housing

Housing type FP, FR and FX made of glass-reinforced polymer, self-extinguishing, shock-proof thermoplastic \square

Housing type FD, FL, FC, FM and FZ made of metal, coated with baked epoxy powder.

FD, FP, FC, FR and FM series one conduit entry

FX and FZ series two conduit entries

FL series three conduit entries

Protection degree: IP67

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: 1 operation cycles / 6 s

Mechanical endurance: 1 million of operations cycles¹

Max actuating speed: 0,5 m/s

Min. actuating speed: 1 mm/s

(1) One operation cycle means two movements, one to close and one to open contacts, as foreseen by IEC 947-5-1 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 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, IEC 60204-1, EN 60204-1, EN 1088, EN ISO 12100-1, EN ISO 12100-2, IEC 529, 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.

⚠ 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 6/8.

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
	Protection against short circuits:	400 VAC for contact blocks 20, 21, 22, 33, 34	I _e (A)	6	4	1
	Pollution degrees:	3	Direct current: DC13			
			U _e (V)	24	125	250
			I _e (A)	6	1,1	0,4

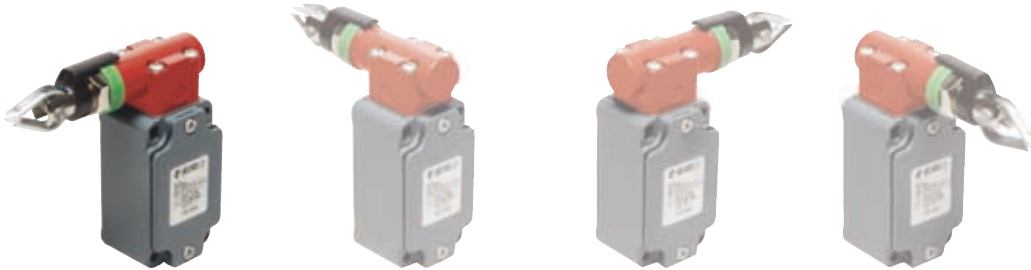
with 4 or 5 poles M12 connector	Thermal current (I _{th}):	4 A	Alternate current: AC15 (50...60 Hz)			
	Rated insulation voltage (U _i):	250 VAC 300 VDC	U _e (V)	24	120	250
	Protection against short circuits:	fuse 4 A 500 V type gG	I _e (A)	4	4	4
	Pollution degrees:	3	Direct current: DC13			
			U _e (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	
	Protection against short circuits:	fuse 2 A 500 V type gG	I _e (A)	2	
	Pollution degrees:	3	Direct current: DC13		
			U _e (V)	24	
			I _e (A)	2	

Description

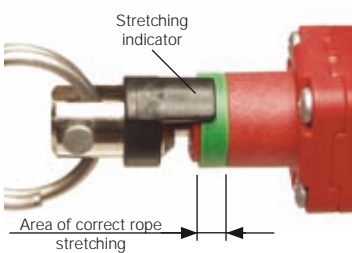
These rope operated safety switches are installed on machines or conveyor belts, to activate the simple stop of the machine on every hand intervention on the rope, from any point. Provided with **self-control function**, they constantly check their correct working operation, signalling with the opening of the contacts an eventual loosening or breaking of the rope.

Rotating heads



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

Rope regulation point indicator



The switches (head 79 and 80) are provided with a green ring that shows the area of the correct stretching of the rope. The installer has only to stretch 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 stretching area, there will be the opening of the safety contacts.

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 degrees 3

Utilization category: AC15

Operation voltage (Ue): 400 VAC (50 Hz)

Operation 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 block 18, 8, 9, 20, 21, 22, 33, 34

In conformity with standards: EN60947-1, EN 60947-5-1 and subsequent modifications and completions, fundamental requirements of the Low Voltage Directive 73/23 EEC and subsequent modifications and completions.

Please contact our technical service for the list of type 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

In conformity with standard: UL 508

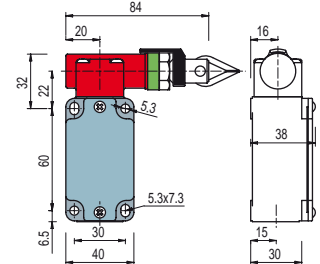
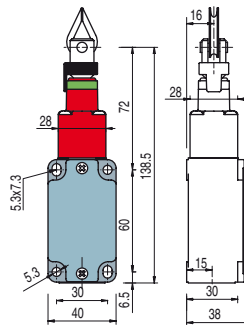
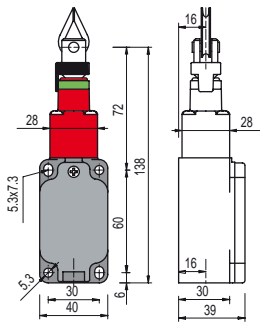
For all contact blocks use 60 or 75 °C copper (Cu) conductor and wire size No. 12-14 AWG. Terminal tightening torque of 7,1 Lb-In.

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

Dimensional drawings

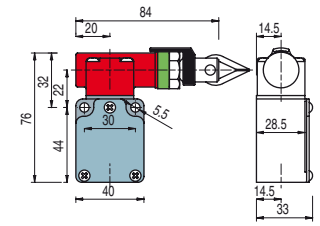
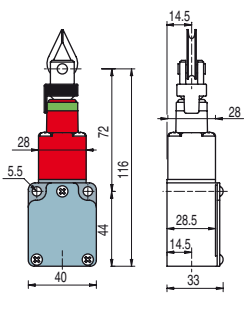
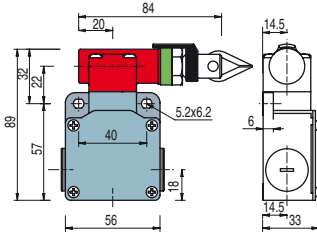
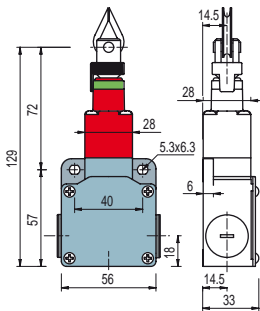
Contacts type:

L = slow action



Contact blocks

18	L	FP 1879	➔	1NO+1NC	FD 1879	➔	1NO+1NC	FD 1880	➔	1NO+1NC
9	L	FP 979	➔	2NC	FD 979	➔	2NC	FD 980	➔	2NC
20	L	FP 2079	➔	1NO+2NC	FD 2079	➔	1NO+2NC	FD 2080	➔	1NO+2NC
21	L	FP 2179	➔	3NC	FD 2179	➔	3NC	FD 2180	➔	3NC
22	L	FP 2279	➔	2NO+1NC	FD 2279	➔	2NO+1NC	FD 2280	➔	2NO+1NC
33	L	FP 3379	➔	1NO+1NC	FD 3379	➔	1NO+1NC	FD 3380	➔	1NO+1NC
34	L	FP 3479	➔	2NC	FD 3479	➔	2NC	FD 3480	➔	2NC
Min. force		Initial 63 N...Final 79 N (90 N ➔)			Initial 63 N...Final 79 N (90 N ➔)			Initial 147 N...Final 235 N (250 N ➔)		
Travel diagrams		page 4/92 - group 1			page 4/92 - group 1			page 4/92 - group 2		

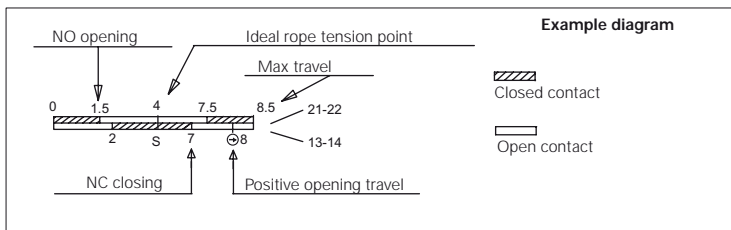


Contact blocks

18	L	FL 1879	➔	1NO+1NC	FL 1880	➔	1NO+1NC			
9	L	FL 979	➔	2NC	FL 980	➔	2NC			
20	L	FL 2079	➔	1NO+2NC	FL 2080	➔	1NO+2NC			
21	L	FL 2179	➔	3NC	FL 2180	➔	3NC			
22	L	FL 2279	➔	2NO+1NC	FL 2280	➔	2NO+1NC			
33	L	FL 3379	➔	1NO+1NC	FL 3380	➔	1NO+1NC	FC 3379	➔	1NO+1NC
34	L	FL 3479	➔	2NC	FL 3480	➔	2NC	FC 3479	➔	2NC
Min. force		Initial 63 N...Final 79 N (90 N ➔)			Initial 147 N...Final 235 N (250 N ➔)			Initial 63 N...Final 79 N (90 N ➔)		
Travel diagrams		page 4/92 - group 1			page 4/92 - group 2			page 4/92 - group 1		
					page 4/92 - group 2			page 4/92 - group 2		

How to read travel diagrams

All measures in the diagrams are in mm



IMPORTANT:

In safety applications it is necessary to activate the switch at least up to the positive opening point indicated in the diagrams with the symbol ➔. Operate the switch at least with the positive opening force, indicated between brackets, below each article, next the value of minimum force.

Accessories See page 5/1

All measures in the drawings are in mm

Items with code on the green background are available in stock

Contacts type:
L = slow action

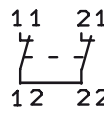
Contact blocks	8 L FP 874 1NC	FD 874 1NC	FL 874 1NC	
Min. force	Initial 63 N...Final 79 N (90 N)	Initial 63 N...Final 79 N (90 N)	Initial 63 N...Final 79 N (90 N)	
Travel diagrams	page 4/92 - group 3	page 4/92 - group 3	page 4/92 - group 3	

Contact blocks	8 L FR 874 1NC	FM 874 1NC	FX 874 1NC	FZ 874 1NC
Min. force	Initial 63 N...Final 79 N (90 N)	Initial 63 N...Final 79 N (90 N)	Initial 63 N...Final 79 N (90 N)	Initial 63 N...Final 79 N (90 N)
Travel diagrams	page 4/92 - group 3	page 4/92 - group 3	page 4/92 - group 3	page 4/92 - group 3

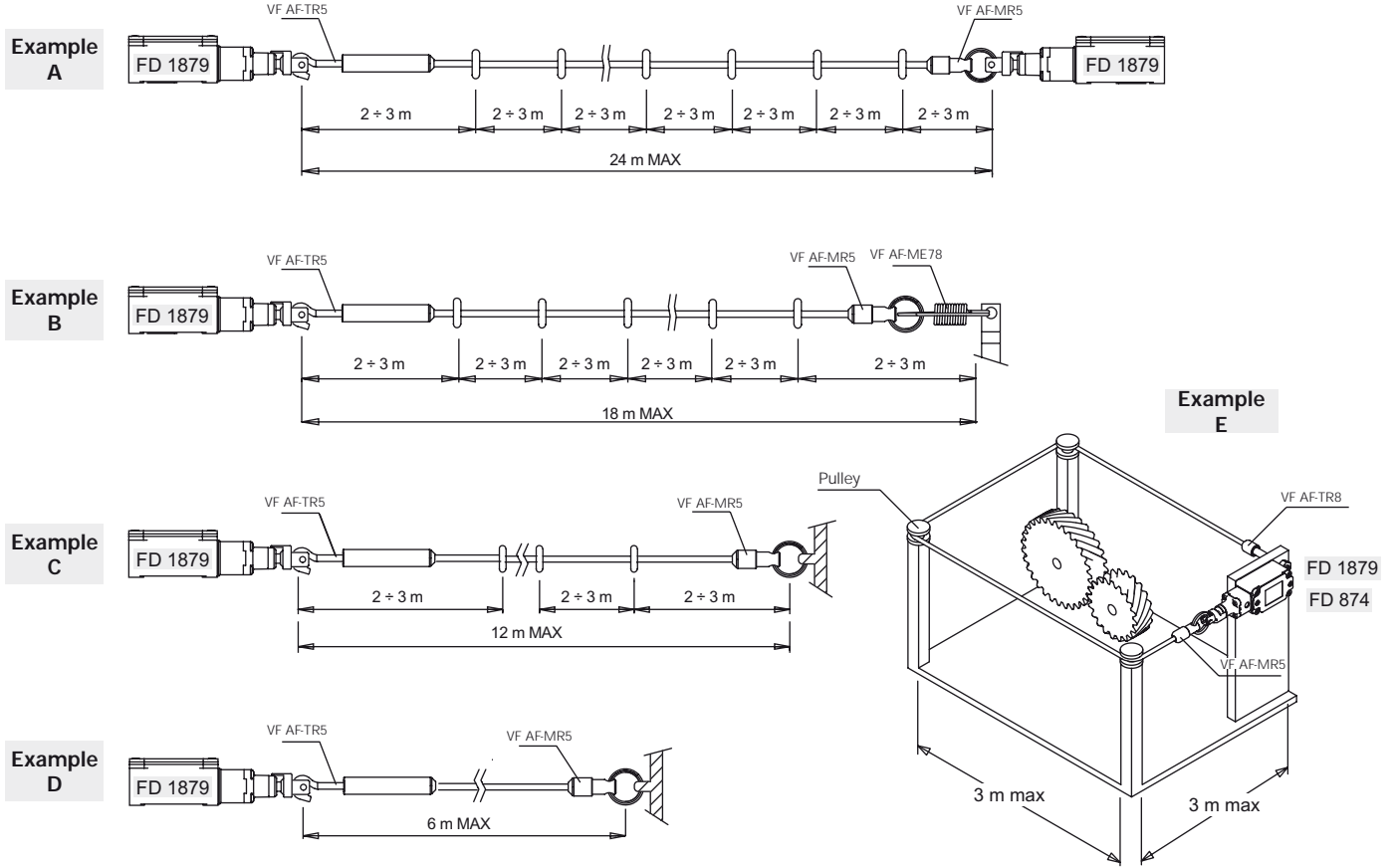
Travel diagrams table

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			

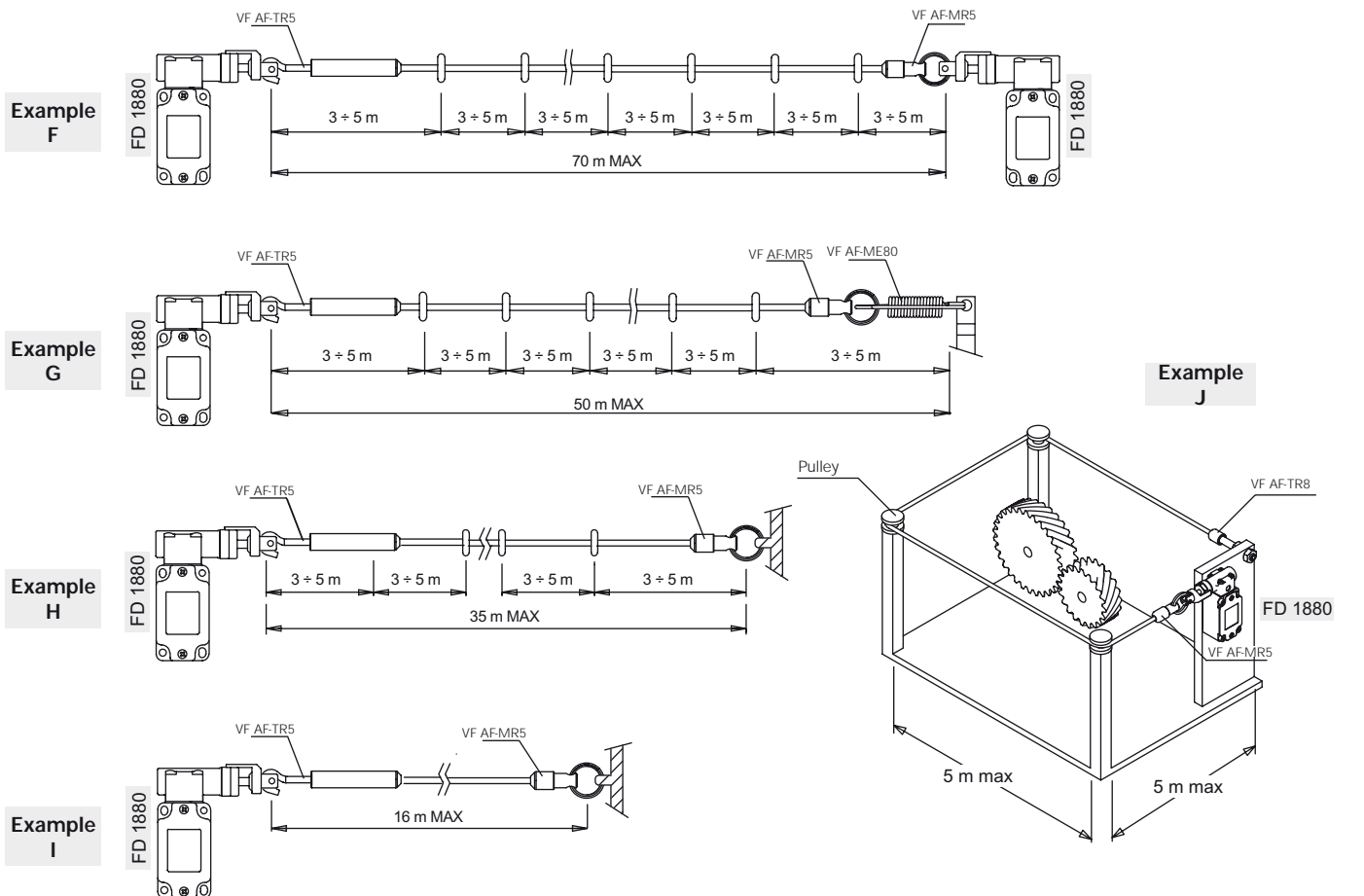
In the rest position (with rope correctly tightened) the two contacts of contact block 8 are both closed and are activated respectively by actuating or loosening the rope. In order to use this contact block for safety applications is necessary to connect the two contacts in series. For this reason in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



Application examples and max rope length for switches with longitudinal heads

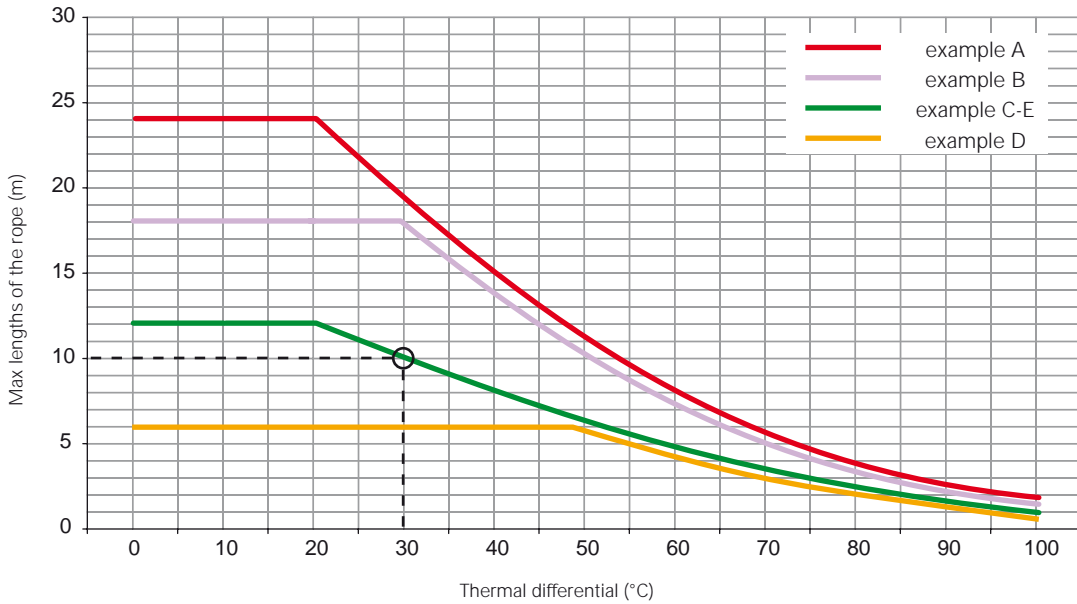


Application examples and max rope length for switches with transversal heads



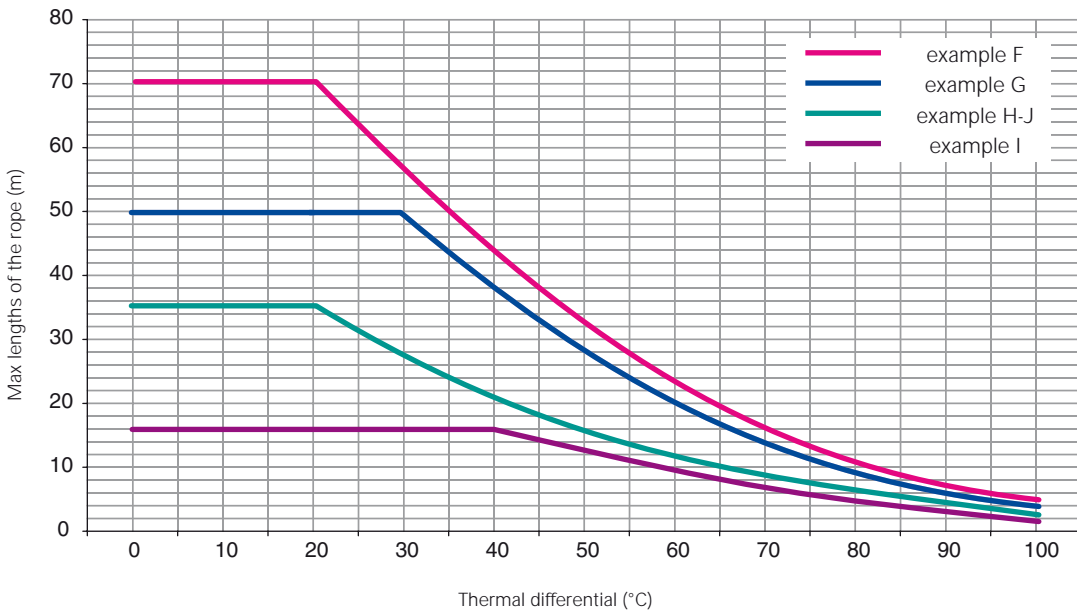
Max rope length

Max rope length for switches with longitudinal heads



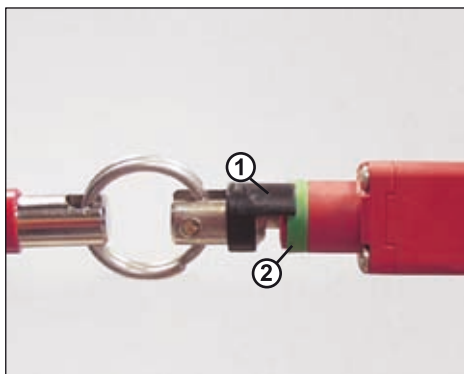
In the diagram, the suggested max. rope lengths with regard to changes of temperature (thermal differential) to which the switch is expected to be exposed in the working area are indicated. For instance, for an example C installation which expects a thermal differential of 30°C, a max rope length of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

Max rope length for switches with transversal heads



Important: The above data are guaranteed only using original rope and accessories. See page 4/83.

Regulation of intervention point



For switches with head 79 and 80: Stretch 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: stretch the rope connected to the switch till the thimble will be at about 4 mm from the head.