Safety Limit Switches with rope - Description

Applications

Easy to use, the limit switches for safety applications with rope for simple and emergency stop offer specific qualities:

- Capability for strong current switching (conventional thermal current 10 A).
- Contact blocks with positive opening operation of the "N.C." normally closed contact(s) (symbol ⊖).
- Electrically separated contacts.
- Precision on operating positions (consistency).
- Immunity to electromagnetic disturbances.

The use of the Comepi pull wire safety switches allows you to create perimeter protections of the machines, thus reducing the need to install sever emergency stop stations in different points of the machine. They comply with the requirements of European Directives (Low Voltage and Machines Directive) and are conform to European and international standards.

Description

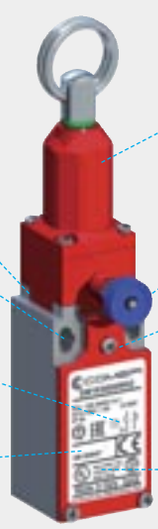
SM/SDM series are made of zinc alloy (zamack). SBM/SCM series are realized in aluminium material, therefore they are mechanically more resistant and three times lighter than the ones in zinc alloy. All metal limit switches have a degree of protection IP66.

Casing
- 30 mm. width with standardized dimensions acc. to EN 50047
- 50 mm. width
- 40 mm. width with standardized dimensions acc. to EN 50041
- 60 mm. width

Mounting the casing
- 2 x M4 screws on top part for 30 mm. width
- 2 or 4 x M4 screws on top part for 50 mm. width
- 2 or 4 x M5 screws on top part for 40 mm. width
- 2 x M5 screws on top part for 60 mm. width

Contact Block:
- Positive opening operation
- Slow action contacts
- Contacts are electrically separated

Connecting terminals:
- Block of 2 contacts: M3.5 (+, –) pozidriv 2 screw
- Block of 3 contacts: M3 (+, –) screw
- Screw head with captive cable clamp
- Markings conform with IEC 60947-1, IEC 60947-5-1 standard



Operating heads:
- Streight
- 90° right
- 90° left

Reset:
- Manual reset button for emergency stop

Cover:
- 3 screws for 30 mm. casing
- 2 screws for 40 mm. casing
- 4 screws for 50 and 60 mm. casing

Electrical connection:
- 1 x cable gland for SM/SBM series
- 3 x cable gland for SBM/SCM series

Symbols

Example:	SD	M	1	K	10	X	1	1
Structure:		M		K				

Casing width:
S = 30 mm width + 1 cable inlet
SB = 40 mm width + 1 cable inlet
SC = 60 mm width + 3 cable inlets
SD = 50 mm width + 3 cable inlets

M: Metal (SM, SDM) / Aluminium (SBM, SCM) casing

Electrical connection
1: cable inlets for PG13.5 cable gland
2: cable inlets for 1/2 NPT cable gland
3: cable inlets for PG11 cable gland (only for SM and SDM series)
4: cable inlets for M16 x 1,5 cable gland (only for SM and SDM series)
5: cable inlets for M20 x 1,5 cable gland
6: M12 4 poles connector
7: M12 5 poles connector
8: M12 8 poles connector

Operating heads:
codes 96, 9000, 9300, 9800, 9200, 97, 9100, 9500, 9900, 9400

Contact block

11: 1 NO + 1 NC contacts
02: 2 NC contacts
12P: 1 NO + 2 NC contacts
21P: 2 NO + 1 NC contacts
03P: 3 NC contacts

Only for SBM, SCM series:
12: 1 NO + 2NC contacts
21: 2 NO + 1 NC contacts
03: 3 NC contacts

W: Slow action (contact dependent)
X: Slow action non-overlapping late make

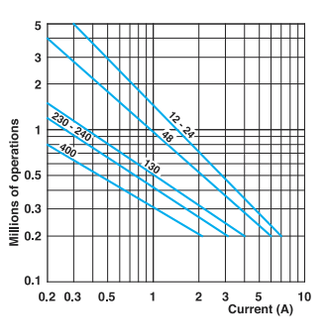
Safety Limit Switches with rope - Technical Data

			SM / SBM / SCM / SDM Series
Standards			IEC 60947-5-1, EN 60947-5-1 EN 60947-5-5 (models with reset)
Certifications - Approvals			UL - CSA - IMQ - EAC - CCC
Air temperature near the device			
– during operation		°C	– 25 ... + 70
– for storage		°C	– 30 ... + 80
Mounting positions			All positions are authorised
Protection against electrical shocks (acc. to IEC 61140)			Class I
Degree of protection (according to IEC 60529 and EN 60529)			IP 66

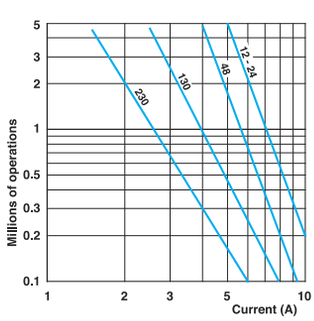
Electrical Data

Rated insulation voltage U_i			
- according to IEC 60947-1 and EN 60947-1			500 V (degree of pollution 3) (400 V for contacts type Z02, X12P, X21P, W03P)
- according to UL 508 and CSA C22-2 n° 14			A 600, Q 600 (A 300, Q 300 for SM/SDM series and contacts type X12P, X21P, W03P)
Rated impulse withstand voltage U_{imp} (according to IEC 60947-1 and EN 60947-1)		kV	6
Conventional free air thermal current I_{th} (according to IEC 60947-5-1) $\theta < 40$ °C		A	10
Short-circuit protection U_e < 500 V a.c. - gG (gl) type fuses		A	10
Rated operational current			
I_e / AC-15 (according to IEC 60947-5-1)	24 V - 50/60 Hz	A	10
	120 V - 50/60 Hz	A	6
	400 V - 50/60 Hz	A	4 (1.8A for contacts type X12, X21, W03)
I_e / DC-13 (according to IEC 60947-5-1)	24 V - d.c.	A	6 (2.8A for contacts type X12, X21, W03)
	125 V - d.c.	A	0.55
	250 V - d.c.	A	0.4 (0.27A for contacts type X12, X21, W03)
Switching frequency		Cycles/h	3600
Load factor			0.5
Resistance between contacts		mΩ	25
Connecting terminals			M3.5 (+, –) pozidriv 2 screw with cable clamp (M3 for 3 poles contacts type)
Terminal for protective conductor			M3.5 (+, –) pozidriv 2 screw with cable clamp
Connecting capacity		1 or 2 x mm²	0.34 ... 2.5 (0.34... 1.5 for 3 poles contacts type)
Terminal marking			According to IEC 60947-5-1
Mechanical durability			500.000 operations
Electrical durability (according to IEC 60947-5-1)			Utilization categories AC-15 and DC-13 (Load factor of 0.5 according to curves below)
B10d			1 million of operations

AC-15 - Snap action



AC-15 - Slow action



DC-13		Snap action	Slow action
		Power breaking for a durability of 5 million operating cycles	
Voltage	24 V	9.5 W	12 W
Voltage	48 V	6.8 W	9 W
Voltage	110 V	3.6 W	6 W

• **Ordering details** ..... page 54 - 58
• **Additional Technical Data** ..... page 72

Safety Limit Switches with rope - Technical Data

Technical data approved by IMQ

Standards		Devices conform with international IEC 60947-5-1 and European EN 60947-5-1 standards
Degree of protection		IP 66
Rated insulation voltage U_i		500 V (degree of pollution 3) (400 V for contacts type Z02, X12P, X21P, W03P)
Rated impulse withstand voltage U_{imp}		6 kV
Conventional free air thermal current I_{th}		10 A
Short-circuit protection - gG (gl) type fuses		10 A
Rated operational current		
I_e / AC-15	24 V - 50/60 Hz	10 A
	400 V - 50/60 Hz	4 A (1.8A for contacts type X12, X21, W03)
I_e / DC-13	24 V - d.c.	6 A (2.8A for contacts type X12, X21, W03)
	125 V - d.c.	0,55 A
	250 V - d.c.	0.4 A (0.27A for contacts type X12, X21, W03)

Technical data approved by UL

Standards	Devices conform with UL 508
Contact blocks type Z11, X11, Y11, W02 and Z02	
Utilization categories	A600, Q600 (A300, Q300 when installed in SM/SDM series)
Contact blocks type X12, X21, W03	
Utilization categories	A600, Q600
Contact blocks type X12P, X21P and W03P	
Utilization categories	A300, Q300

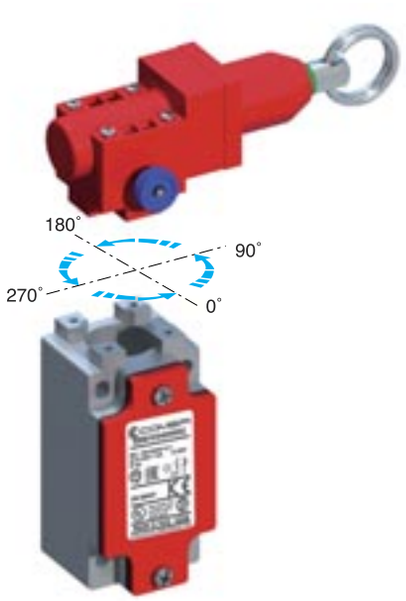
Use 60/75°C copper (Cu) conductor only. Wire rages 14-18 AWG stranded or solid. The terminal tightening torque of 7 lbs-in / 0.78 Nm. Suitable for conduit connection only with use of adapter sleeve optionally provided or recommended by the manufacturer.

For the complete list of approved products, contact our technical department

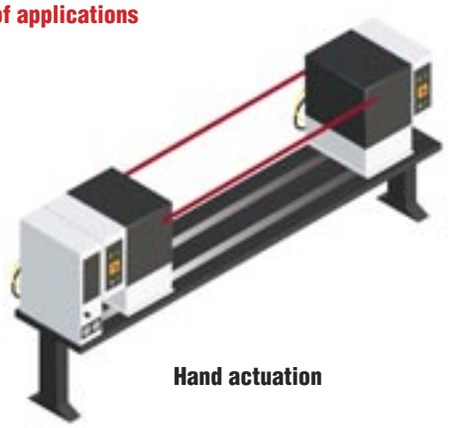
Implementation

Operating head orientation

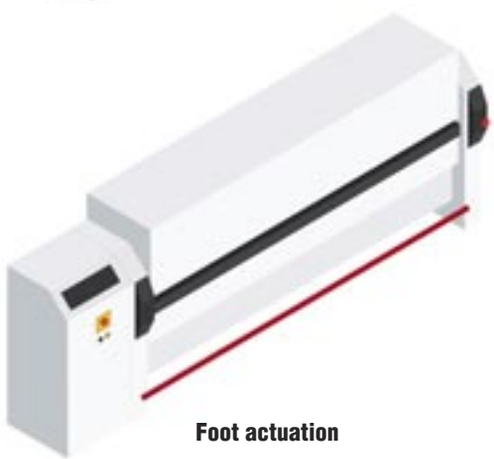
The head can be rotated each 90°.
Recommended tightening torque 0,5 Nm (max 0,8 Nm).



Examples of applications



Hand actuation



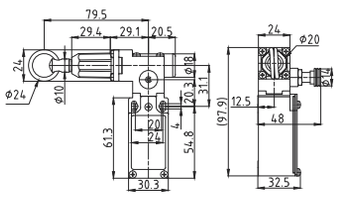
Foot actuation

Download
Instruction sheet – Pull wire safety limit switches
CE declaration

Pull wire with reset for emergency stop - Metal casing - IP66

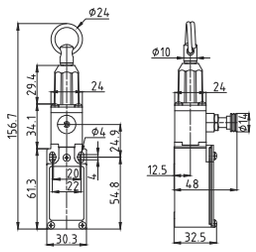
Electrical connection:
Replace the symbol "•" with the number of the thread desired
1: Cable gland PG 13.5
2: Cable gland 1/2" NPT (with adapter)
3: Cable gland PG 11
4: Cable gland M16 x 1,5
5: Cable gland M20 x 1,5
7: M12 5 poles connector
8: M12 8 poles connector

K9300 Pull wire with reset for emergency stop



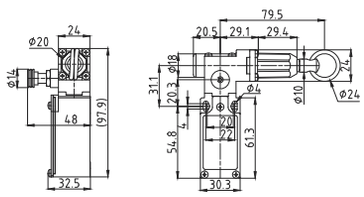
Min. forces	**Initial 65N, Final 85N (95N ⊖)**
Weight	**275 g**
Operating diagram	**Page 72**

K9800 Pull wire with reset for emergency stop



Min. forces	**Initial 60N, Final 80N (90N ⊖)**
Weight	**230 g**
Operating diagram	**Page 72**

K9200 Pull wire with reset for emergency stop



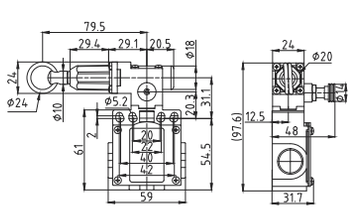
Min. forces	**Initial 65N, Final 85N (95N ⊖)**
Weight	**275 g**
Operating diagram	**Page 72**

Contact Blocks

X11 (1NO+1NC)	SM•K9300X11	SM•K9800X11	SM•K9200X11
W02 (2NC)	SM•K9300W02	SM•K9800W02	SM•K9200W02
X12P (1NO+2NC)	SM•K9300X12P	SM•K9800X12P	SM•K9200X12P
X21P (2NO+1NC)	SM•K9300X21P	SM•K9800X21P	SM•K9200X21P
W03P (3NC)	SM•K9300W03P	SM•K9800W03P	SM•K9200W03P

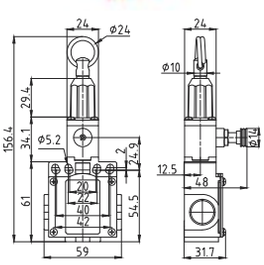
Electrical connection:
Replace the symbol "•" with the number of the thread desired
1: Cable gland PG 13.5
2: Cable gland 1/2" NPT (with adapter)
3: Cable gland PG 11
4: Cable gland M16 x 1,5
5: Cable gland M20 x 1,5

K9300 Pull wire with reset for emergency stop



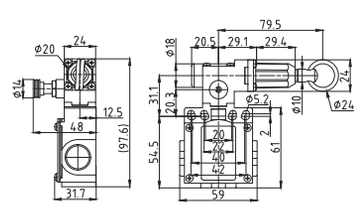
Min. forces	**Initial 65N, Final 85N (95N ⊖)**
Weight	**365 g**
Operating diagram	**Page 72**

K9800 Pull wire with reset for emergency stop



Min. forces	**Initial 60N, Final 80N (90N ⊖)**
Weight	**320 g**
Operating diagram	**Page 72**

K9200 Pull wire with reset for emergency stop



Min. forces	**Initial 65N, Final 85N (95N ⊖)**
Weight	**365 g**
Operating diagram	**Page 72**

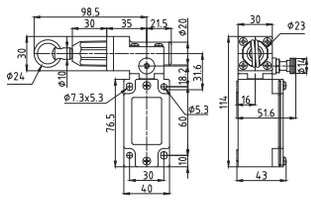
Contact Blocks

X11 (1NO+1NC)	SDM•K9300X11	SDM•K9800X11	SDM•K9200X11
W02 (2NC)	SDM•K9300W02	SDM•K9800W02	SDM•K9200W02
X12P (1NO+2NC)	SDM•K9300X12P	SDM•K9800X12P	SDM•K9200X12P
X21P (2NO+1NC)	SDM•K9300X21P	SDM•K9800X21P	SDM•K9200X21P
W03P (3NC)	SDM•K9300W03P	SDM•K9800W03P	SDM•K9200W03P

Pull wire with reset for emergency stop - Metal casing - IP66

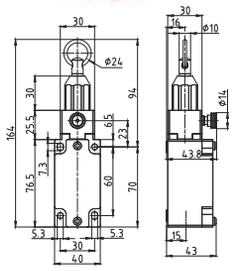
Electrical connection:
Replace the symbol "•" with the number of the thread desired
1: Cable gland PG 13.5
2: Cable gland 1/2" NPT
5: Cable gland M20 x 1,5

K9500 Pull wire with reset for emergency stop



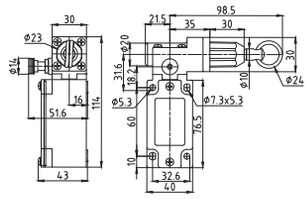
Min. forces	Initial 150N, Final 215N (230N ⊖)
Weight	320 g
Operating diagram	Page 72

K9900 Pull wire with reset for emergency stop



Min. forces	Initial 120N, Final 160N (170N ⊖)
Weight	250 g
Operating diagram	Page 72

K9400 Pull wire with reset for emergency stop



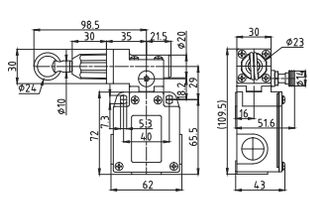
Min. forces	Initial 150N, Final 215N (230N ⊖)
Weight	320 g
Operating diagram	Page 72

Contact Blocks

X11	(1NO+1NC)	SBM•K9500X11	SBM•K9900X11	SBM•K9400X11
W02	(2NC)	SBM•K9500W02	SBM•K9900W02	SBM•K9400W02
X12	(1NO+2NC)	SBM•K9500X12	SBM•K9900X12	SBM•K9400X12
X21	(2NO+1NC)	SBM•K9500X21	SBM•K9900X21	SBM•K9400X21
W03	(3NC)	SBM•K9500W03	SBM•K9900W03	SBM•K9400W03

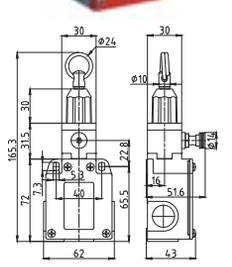
Electrical connection:
Replace the symbol "•" with the number of the thread desired
1: Cable gland PG 13.5
2: Cable gland 1/2" NPT
5: Cable gland M20 x 1,5

K9500 Pull wire with reset for emergency stop



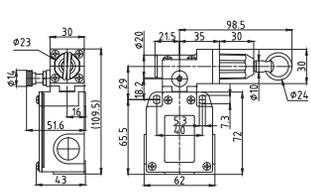
Min. forces	Initial 150N, Final 215N (230N ⊖)
Weight	345 g
Operating diagram	Page 72

K9900 Pull wire with reset for emergency stop



Min. forces	Initial 120N, Final 160N (170N ⊖)
Weight	275 g
Operating diagram	Page 72

K9400 Pull wire with reset for emergency stop



Min. forces	Initial 150N, Final 215N (230N ⊖)
Weight	345 g
Operating diagram	Page 72

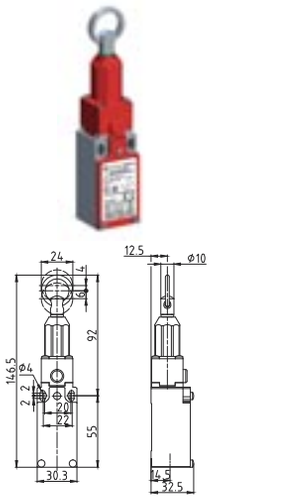
Contact Blocks

X11	(1NO+1NC)	SCM•K9500X11	SCM•K9900X11	SCM•K9400X11
W02	(2NC)	SCM•K9500W02	SCM•K9900W02	SCM•K9400W02
X12	(1NO+2NC)	SCM•K9500X12	SCM•K9900X12	SCM•K9400X12
X21	(2NO+1NC)	SCM•K9500X21	SCM•K9900X21	SCM•K9400X21
W03	(3NC)	SCM•K9500W03	SCM•K9900W03	SCM•K9400W03

Pull wire without reset for simple stop - Metal casing - IP66

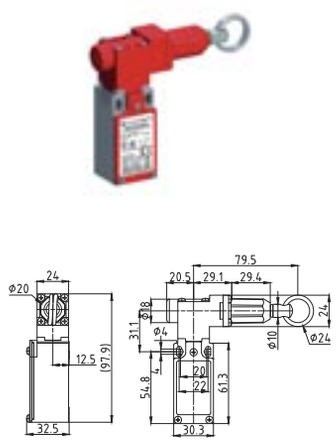
Electrical connection:
Replace the symbol "•" with the number of the thread desired
1: Cable gland PG 13.5
2: Cable gland 1/2" NPT (with adapter)
3: Cable gland PG 11
4: Cable gland M16 x 1,5
5: Cable gland M20 x 1,5
7: M12 5 poles connector
8: M12 8 poles connector

K96 Pull wire without reset for simple stop



Min. forces	**Initial 60N, Final 80N (90N ⊖)**
Weight	**220 g**
Operating diagram	**Page 72**

K9000 Pull wire without reset for simple stop

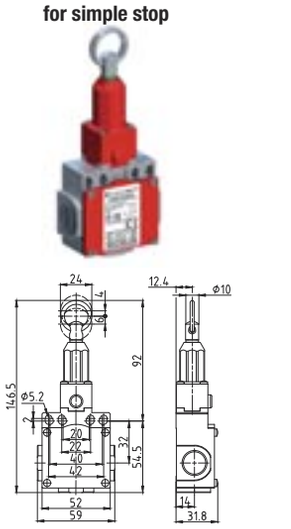


Min. forces	**Initial 65N, Final 85N (95N ⊖)**
Weight	**265 g**
Operating diagram	**Page 72**

Contact Blocks	K96 Pull wire without reset for simple stop	K9000 Pull wire without reset for simple stop
X11 (1NO+1NC)	SM•K96X11	SM•K9000X11
W02 (2NC)	SM•K96W02	SM•K9000W02
X12P (1NO+2NC)	SM•K96X12P	SM•K9000X12P
X21P (2NO+1NC)	SM•K96X21P	SM•K9000X21P
W03P (3NC)	SM•K96W03P	SM•K9000W03P

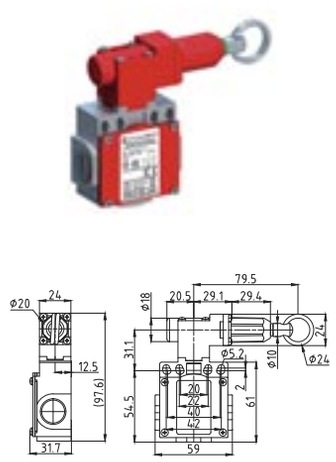
Electrical connection:
Replace the symbol "•" with the number of the thread desired
1: Cable gland PG 13.5
2: Cable gland 1/2" NPT (with adapter)
3: Cable gland PG 11
4: Cable gland M16 x 1,5
5: Cable gland M20 x 1,5

K96 Pull wire without reset for simple stop



Min. forces	**Initial 60N, Final 80N (90N ⊖)**
Weight	**310 g**
Operating diagram	**Page 72**

K9000 Pull wire without reset for simple stop



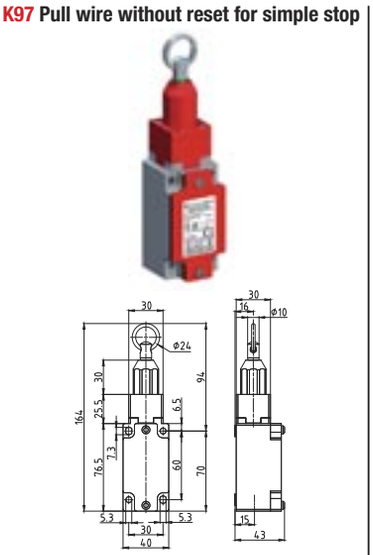
Min. forces	**Initial 65N, Final 85N (95N ⊖)**
Weight	**355 g**
Operating diagram	**Page 72**

Contact Blocks	K96 Pull wire without reset for simple stop	K9000 Pull wire without reset for simple stop
X11 (1NO+1NC)	SDM•K96X11	SDM•K9000X11
W02 (2NC)	SDM•K96W02	SDM•K9000W02
X12P (1NO+2NC)	SDM•K96X12P	SDM•K9000X12P
X21P (2NO+1NC)	SDM•K96X21P	SDM•K9000X21P
W03P (3NC)	SDM•K96W03P	SDM•K9000W03P

Pull wire without reset for simple stop - Metal casing - IP66

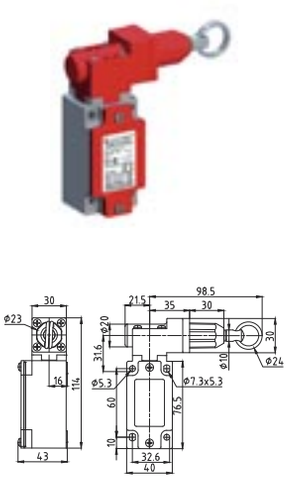
Electrical connection:
Replace the symbol "•" with the number of the thread desired
1: Cable gland PG 13.5
2: Cable gland 1/2" NPT
5: Cable gland M20 x 1,5

K97 Pull wire without reset for simple stop



Min. forces	**Initial 120N, Final 160N (170N ⊖)**
Weight	**240 g**
Operating diagram	**Page 72**

K9100 Pull wire without reset for simple stop



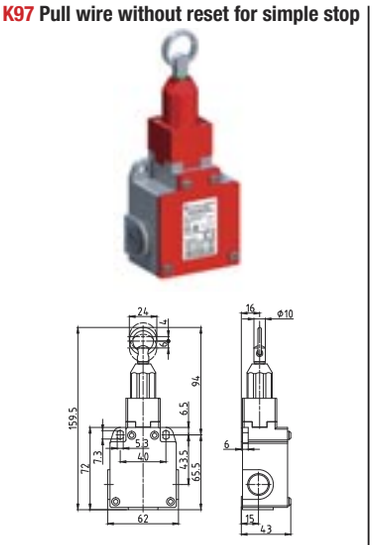
Min. forces	**Initial 150N, Final 215N (230N ⊖)**
Weight	**310 g**
Operating diagram	**Page 72**

Contact Blocks

X11	(1NO+1NC)	SBM•K97X11	SBM•K9100X11
W02	(2NC)	SBM•K97W02	SBM•K9100W02
X12	(1NO+2NC)	SBM•K97X12	SBM•K9100X12
X21	(2NO+1NC)	SBM•K97X21	SBM•K9100X21
W03	(3NC)	SBM•K97W03	SBM•K9100W03

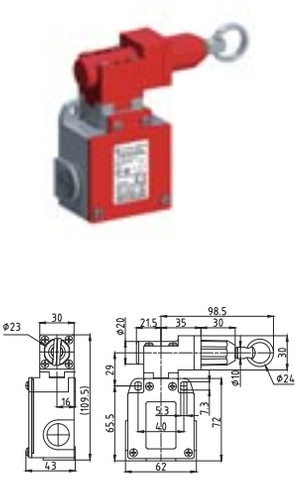
Electrical connection:
Replace the symbol "•" with the number of the thread desired
1: Cable gland PG 13.5
2: Cable gland 1/2" NPT
5: Cable gland M20 x 1,5

K97 Pull wire without reset for simple stop



Min. forces	**Initial 120N, Final 160N (170N ⊖)**
Weight	**265 g**
Operating diagram	**Page 72**

K9100 Pull wire without reset for simple stop



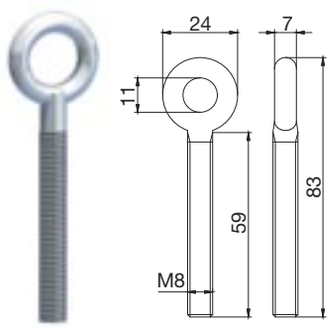
Min. forces	**Initial 150N, Final 215N (230N ⊖)**
Weight	**335 g**
Operating diagram	**Page 72**

Contact Blocks

X11	(1NO+1NC)	SCM•K97X11	SCM•K9100X11
W02	(2NC)	SCM•K97W02	SCM•K9100W02
X12	(1NO+2NC)	SCM•K97X12	SCM•K9100X12
X21	(2NO+1NC)	SCM•K97X21	SCM•K9100X21
W03	(3NC)	SCM•K97W03	SCM•K9100W03

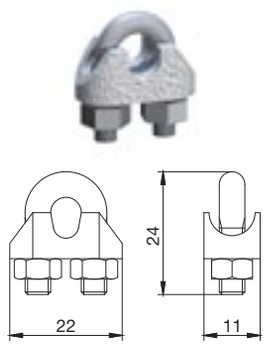
Safety Limit Switches with rope - Accessories

Stay Bolt



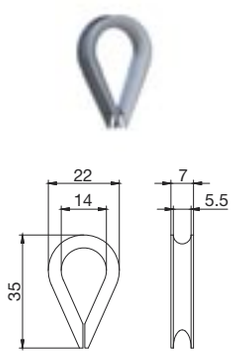
Code
OCC 08

Rope Clamp



Code
MOR 05

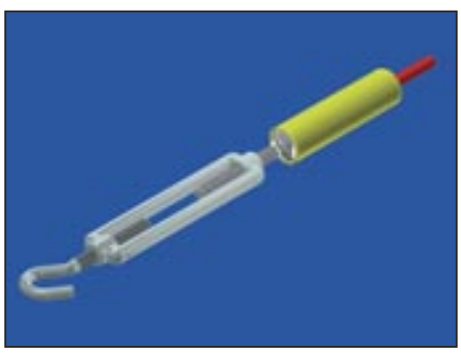
Rope eye

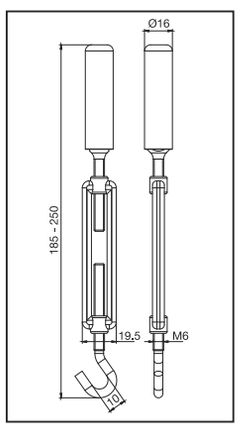


Code
RED 05

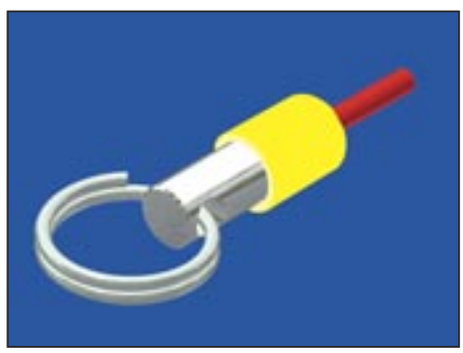
Rope ø 5mm

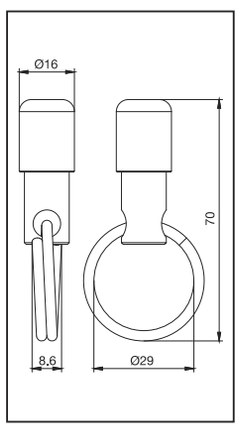
Code	Length
FUN05M010	10m
FUN05M015	15m
FUN05M020	20m
FUN05M025	25m
FUN05M102	102m



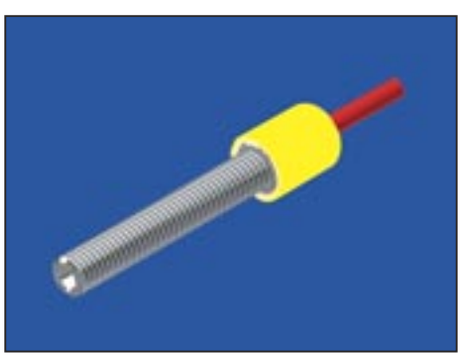


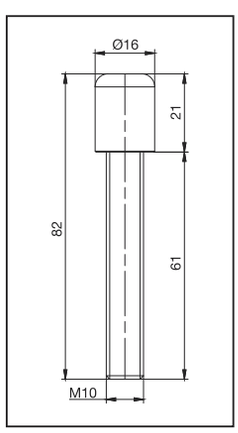
Code	Description
SLS-FX1	Hook stay bolt



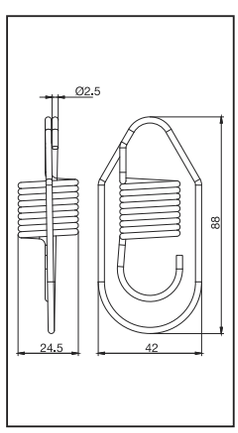


Code	Description
SLS-FX2	Fixing clamp

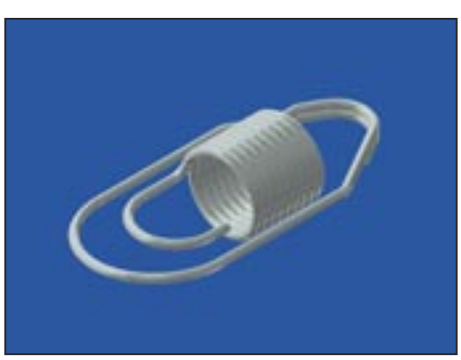


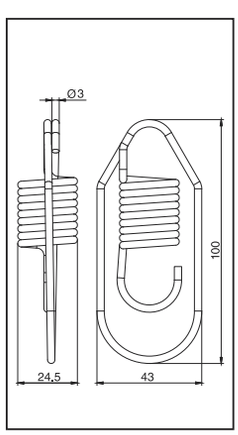


Code	Description
SLS-FX3	Stay bolt



Code	Description
SLS-M1	Spring for SM, SDM series



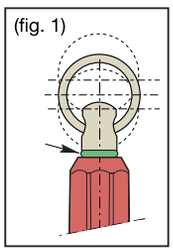


Code	Description
SLS-M2	Spring for SBM, SCM series

Safety Limit Switches with rope

Installation instructions

(fig. 1)



In order to obtain the correct operation of the device, please follow the following instructions.

1. Install the switch and secure the fixed end of the rope. Apply tension to the extent the green O-ring is visible and the bottom is flush with the end of the red housing. (Fig. 1).
2. Pull the reset pommel in order to close the safety contacts of the limit switch.
3. The contacts inside the limit switch will change their position whenever the rope is pulled or loose its tension.
4. Check the correct operation of the rope switch before you start the machine and periodically.

Performing the role of worker protection, improper installation or tampering with safety devices can cause serious injury to persons.

The installation must therefore be performed in accordance with local legislation and only by authorized personnel.

For any question about CE declaration of conformity or for any information and assistance, please contact our technical department