

EMERGENCY STOP SWITCHES

Components for Pull Rope Installation



APPLICATION

Long distances can be monitored with an emergency pull-rope switch and the associated pull-rope system. Pull-rope systems are used as actuators for the operation of pull-rope emergency stop switches along conveyor belt systems and together form the emergency stop system.

The pull-rope **1** and the accessories required for installation are functionally matched to the Kiepe pull-rope emergency stop switches, taking normative requirements into account. In the European Union, the requirements are essentially based on DIN EN ISO 13850; EN/IEC 60 947-5-5 and EN 620.

After commissioning, compliance with the requirements is a prerequisite for establishing CE conformity. Depending on the design and temperature of the components of the emergency stop system, the length of the pull rope **1** can be up to 250 m and the distance between the rope supports **6** can be up to 4 m. Depending on the selection of the pull-rope emergency stop switch, the pull-rope is mounted either on one side or symmetrically on both sides of the switch.

Note: Use as load-bearing components, e.g. in cranes, elevators or other applications is prohibited.

FUNCTION



The emergency stop is safety-relevant

The connection between the pull rope and the emergency stop switch must be checked at regular intervals. Loosening the connection means that the pull rope emergency switch no longer triggers via the pull rope.



Rope break detection is safety-relevant

When installing a double-sided pull rope, the spring force of the external springs must be so big that it always triggers the emergency stop switch in the event of a rope break.

The pull rope installation must fulfil the following functions in combination with an emergency pull rope switch:

- Emergency stop triggering of the pull rope emergency stop switch by pulling the pull rope in any direction
- Detection of a pull rope breakage by the connected pull-rope emergency stop switch

If the pull rope **1** is pulled in any direction or the pull rope breaks, the pull rope emergency stop switch is actuated to switch off the conveyor belt. As the anchor hooks **3** absorb the tensile forces of the tension springs **2** and the actuating force in the pull rope, a stable substructure must be ensured.

The tension force of the tension springs **2** is matched to the respective pull rope emergency stop switches and the pull rope system and can be set or readjusted using turnbuckles **4**. They are used for temperature-length compensation of the pull rope and generate the force required for rope breakage detection in the double-sided system. The systems are designed for an **installation temperature of +10°C to +35°C** with an expected **operating temperature of -25°C to +75°C**.

The rope support elements **6** support the pull rope **1** over the course of the tensioning length and must be mounted in a straight line at specified intervals in order to meet the normative specifications.

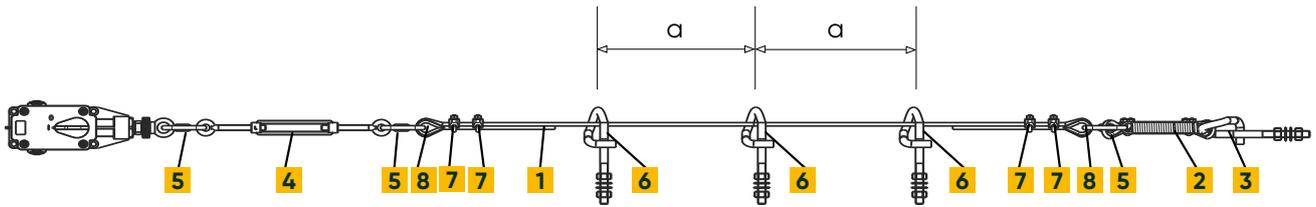
Clamps **7** and thimbles **8** are used to fasten the pull rope **1**. Quick links **5** simplify the installation and removal of components.

SELECTION TABLE FOR SINGLE-SIDE OR DOUBLE-SIDE PULL-ROPE INSTALLATION

Pull-Rope System		Max.**	Advantage	Usual installation application
Single-Side	PAS, LRS	1x 75 m	<ul style="list-style-type: none"> • Compact • Integrated Slack-Line Detection • Long installation lengths at constant ambient temperatures • Reduced assembly effort 	<ul style="list-style-type: none"> • Air-conditioned halls and rooms • Protection of short machine sections depending on temperature fluctuations • compact systems with a narrow installation space
Double-side, symmetrical	HEN, NTS, SEG, PRS	2x 125 m	<ul style="list-style-type: none"> • Insensitive to temperature fluctuations • Low maintenance for long pull-rope installations • Slack-Line is detected by adjusting the pretension of the external springs 	<ul style="list-style-type: none"> • Long, straight conveyor and production lines, especially in outdoor applications • Protection of two conveyor belt sides possible at the same time (front-head installation) • Can also be used in regions with strong temperature fluctuations

**Dependent on temperature fluctuations; certain conditions must be met for long installation distances. Please contact us.

ONE-SIDED PULL-ROPE INSTALLATION PAS, LRS



Description	Material	Installation length	Support distance a	Ordering Code	Weight kg/unit
Mounting kit	steel	1 x 10 m	2.5 m	95.302 953.101	1.6
Mounting kit	steel	1 x 20 m	2.5 m	95.302 953.103	2.7
Mounting kit	steel	1 x 30 m	2.5 m	95.302 953.104	3.8

Scope of Supply

Mounting kit for PAS, LRS

	Ordering Code	Mounting Kit	Mounting Kit	Mounting Kit
		95.302 953.101	95.302 953.103	95.302 953.104
		Quantity	Quantity	Quantity
1 Pull rope (5mm)	94.045 731.052	10 m	/	/
	94.045 731.072	/	20 m	/
	94.045 731.082	/	/	30 m
2 Tension spring	580.00.50.01.01	1 pcs	1 pcs	1 pcs
3 Anchor hook	93.099 659.120	1 pcs	1 pcs	1 pcs
4 Turnbuckle	93.098 411.111	1 pcs	1 pcs	1 pcs
5 Quick link	93.098 415.001	1 pcs	3 pcs	3 pcs
6 Rope support	93.099 659.120	4 pcs	8 pcs	12 pcs
7 Clamp	93.098 414.001	4 pcs	4 pcs	4 pcs
8 Thimble	93.097 510.005	2 pcs	2 pcs	2 pcs

MOUNTING

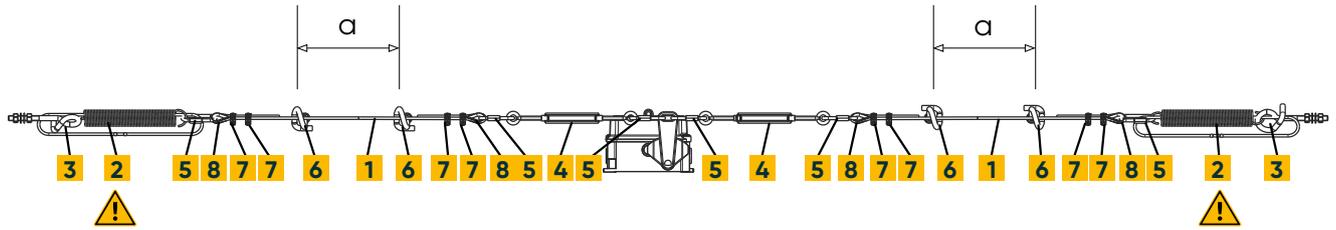
Anchor hooks **3** and rope supports **6** are attached in a straight line to the substructure of the conveyor system in accordance with the installation diagram. The substructure must be stable on site and the rope supports **6** must be fitted at the distances *a* designed for the installation.

Pull rope emergency stop switches for single-sided pull rope systems have integrated rope breakage detection. You only need one tension spring **2**. The tension spring is hooked into the anchor hook **3**. The turnbuckle **4** is attached to the pull-rope emergency stop switch. The pull rope **1** is then attached and routed through the rope supports **6** to the pull rope emergency stop switch. The pull rope is tensioned until the setting indicator (PAS) is slightly removed or the adjustment display is in the working range (LRS). The pull rope is fastened with 2 clamps **7** each. The working points are finely adjusted using the turnbuckle **4**.

After completing the installation, check the function:

- It must be possible to operate the pull rope freely in all directions.
- The standard specifications for actuating force and travel on the pull rope must be observed.
- If a slack-line is simulated, the connected pull-rope emergency stop switch must be triggered.
- The operator must have a clear view along the entire actuation length along the pull rope of the switch.

Splitted installation of pull rope, separated at the E-stop



Description	Material	Installation length	Support distance a	Ordering Code	Weight kg/unit
Mounting kit	steel	2 x 50 m	2.5 m	95.064 096.101	1.4
Mounting kit	AISI 304	2 x 50 m	2.5 m	95.064 096.501	1.2

Scope of Supply

Mounting kit for HEN, NTS, SEG, PRS

Ordering Code

Mounting Kit - Steel
95.064 096.101

Mounting Kit - Stainless Steel
95.064 096.501

	Ordering Code	Quantity	Quantity
1 Pull rope (5mm)	94.045 731.xx2	Order separately	
2 Tension spring	93.059 126.001	2 pcs	2 pcs
3 Anchor hook	93.099 659.120	2 pcs	/
	93.099 659.320	/	2 pcs
4 Turnbuckle	93.098 411.111	2 pcs	/
	93.098 411.311	/	2 pcs
5 Quick link	93.098 415.001	6 pcs	/
	93.098 415.202	/	6 pcs
6 Rope support	93.099 659.x20	Order separately	
7 Clamp	93.098 414.001	8 pcs	/
	93.098 414.205	/	8 pcs
8 Thimble	93.097 510.005	4 pcs	/
	93.097 510.205	/	4 pcs



Note: Tension spring M **2**

For correct pre-tensioning, the tension springs M must be pre-tensioned to the tension length over the windings at 300mm. (see table p.6)

MOUNTING

Anchor hooks **3** and rope supports **6** are attached in a straight line to the substructure of the conveyor system according to the assembly diagram. On site, the substructure must be stable and the rope supports **6** must be installed at the distances a (see tables) designed for installation.

In the double-sided symmetrical pull cord system, the associated pull rope emergency switch is positioned in the middle, so that two pull rope sections of equal length are created. In the standard system the pull rope **1** is disconnected at the switch. Each pull rope section must be tensioned separately. If installed correctly, the red release lever of the triggered pull-rope emergency switch (setting 0) is vertical.

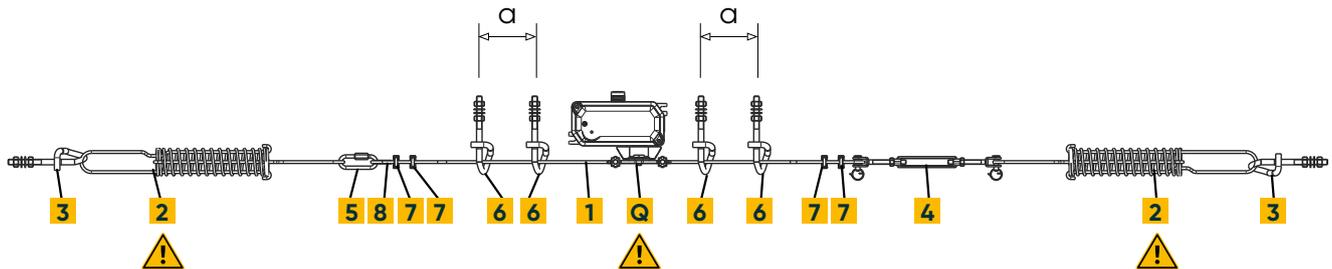
The tension springs **2** must be tensioned as specified. We recommend attaching the pull rope with two clamps **7** each. The installation is fine-tuned using the clamping elements **4**.

After completing the installation, check the function:

- It must be possible to operate the pull rope freely in all directions.
- The standard specifications for actuating force and travel on the pull rope must be observed.
- If a slack-line is simulated, the connected pull-rope emergency stop switch must be triggered.
- The operator must have a clear view along the entire actuation length along the pull rope of the switch.

Quick Clamp System
Fast installation!

Continuous installation of pull rope, subsequent E-stop connection



Quick Clamp System
Mounting kit

	Material	Installation length**	Support distance a	Ordering Code	Weight kg/unit
for Typ HEN, SEG	steel, galv.	2 x 125 m	3.5 - 4 m	95.303 191.101	1.7
for Typ PRS, NTS	steel, galv.	2 x 50 m	2.5 m	95.304 375.101	1.8
for Typ PRS, NTS	AISI 304	2 x 125 m	3.5 - 4 m	95.303 191.502	1.7

Scope of Supply

Quick Clamp Mounting Kit	Ordering Code	Mounting Kit - steel	Mounting Kit - steel	Mounting Kit - stainless steel
		95.303 191.101	95.304 375.101	95.303 191.502
		Quantity	Quantity	Quantity
Q Quick Clamp* (HEN, SEG)	95.302 888.001	1 pcs	/	/
Quick Clamp* (NTS, PRS)	95.302 888.002	/	1 pcs	1 pcs
1 Pull rope (5mm)	94.045 731.xx2	Order separately		
2 Tension spring M incl. travel limiter	93.059 126.001	/	2 pcs	/
Tension spring ZD-L	92.099 658.310	2 pcs	/	2 pcs
3 Anchor hook	93.099 659.120	2 pcs	2 pcs	/
	93.099 659.320	/	/	2 pcs
4 Turnbuckle	93.098 411.513	1 pcs	1 pcs	1 pcs
5 Quick link	93.098 415.001	1 pcs	1 pcs	/
	93.098 415.202	/	/	1 pcs
6 Rope support	93.099 659.120	Order separately		
7 Clamp	93.098 414.001	4 pcs	4 pcs	/
	93.098 414.205	/	/	4 pcs
8 Thimble	93.097 510.005	1 pcs	1 pcs	/
	93.097 510.205	/	/	1 pcs

*Stainless Steel AISI 304

**Dependent on temperature fluctuations; certain conditions must be met for long installation distances. Please contact us.



Note: Tension spring 2

Tension spring ZD-L are provided with an adjustment indicator for the correct pretension for rope break detection.

Tension spring M incl. travel limiter must be pre-tensioned to 300 mm above the windings.



Note: Quick Clamp Q

Security measures used:

- The screws of the quick clamp are secured with a sturdy thread lock to prevent loosening
- The pull rope is additionally held in place with two clamps
- The components are made of stainless steel

MOUNTING

Anchor hooks **3** and rope supports **6** are attached to the substructure of the conveyor system in a straight line in accordance with the installation diagram. The substructure must be stable on site and the rope supports **6** must be fitted at the distances a designed for the installation (see tables).

In the double-sided symmetrical pull-rope system, the corresponding pull-rope emergency stop switch is positioned in the middle so that two pull-rope sections of equal length are created. In the quick-clamp system, the pull rope **1** is tensioned from spring **2** to spring **2** over its entire length. The tension springs **2** must be pre-tensioned according to the specifications. We recommend fastening the pull rope with two clamps **7** each. In the quick-clamp system, only one high-quality turnbuckle **4** is required to finely adjust the spring pretension. Correct installation is complete when the red release lever is clamped to the tensioned pull rope with the quick clamp when the pull rope switch is activated (setting 1).

After completing the installation, check the function:

- It must be possible to operate the pull rope freely in all directions.
- The standard specifications for actuating force and travel on the pull rope must be observed.
- If a slack-line is simulated, the connected pull-rope emergency stop switch must be triggered.
- The operator must have a clear view along the entire actuation length along the pull rope of the switch.

1 Pull Rope

PVC Covered (Red)

UV Stabilized, Breaking force: >2000 N

Ø 5 mm	Material	Length		Ordering Code
Steel / galvanized		10 m	bundle	94.045 731.052
		15 m	bundle	94.045 731.062
		20 m	bundle	94.045 731.072
		30 m	bundle	94.045 731.082
		50 m	bundle	94.045 731.012
		100 m	bundle	94.045 731.022
		500 m	on spindle	94.045 731.032
		Stainless steel / AISI 316		50 m
100 m	bundle			94.045 731.222
500 m	on spindle			94.045 731.232

2 Tension spring

Spring Steel / AISI 301	für Switches	Installation length	Distance of supports a	Tension length over windings	Dimensions		Ordering Code
					A	B	
L	HEN, NTS, SEG, PRS	2x100m	3.5m	400	282	29	251.05.01.02 .18
M	HEN, NTS, SEG, PRS	2x50m	2.5m	300	177	26	94.000 026.683
M with travel limiter	HEN, NTS, SEG, PRS	2x50m	2.5m	300	177	32	93.059 126.001
XL	LRS, PAS	1x30m	2.5m	-	85.5	18	580.00.50.01.01

Drawbar spring

Spring Steel / AISI 316

ZD-L with indicator	HEN, NTS, SEG, PRS	2x125m	3.5 - 4 m	Indicator	300	50	92.099 658.310
----------------------------	--------------------	--------	-----------	-----------	-----	----	----------------

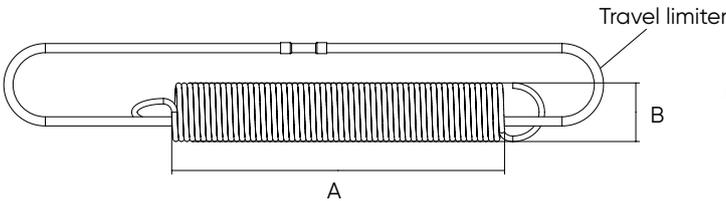


Fig.: Tension spring M incl. travel limiter (93.059 126.001)

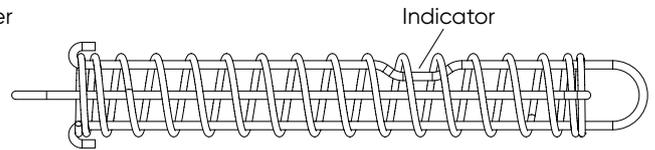


Fig.: Tension spring ZD-L with indicator (92.099 658.310)

**Dependent on temperature fluctuations; certain conditions must be met for long installation distances. Please contact us.

3 Anchor hook

including 2 nuts and 2 lock washers

	Material		Dimensions				Ordering Code	
			A	B	C	D		
Anchor hook	Steel / galvanized		M10	60	120	142	93.098 412.120	
			M12	50	135	160	93.098 412.130	
Safety hook	Stainless steel AISI 316		M10	70	120	142	93.098 412.320	
		Steel / galvanized	90° angle	M10	60	120	142	93.099 659.120
		Stainless steel AISI 316	90° angle	M10	60	120	142	93.099 659.320

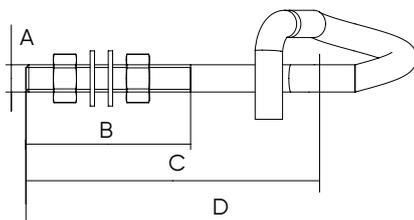


Fig.: Safety hook (93.099 659.120)

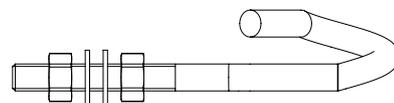


Fig.: Anchor hook (93.098 412.120)

4 Turnbuckles

Turnbuckle	Material	Ends	Dimensions		Ordering Code
			A	B	
Turnbuckle	Steel / galvanized	eyelet + eyelet	M6	110	93.098 411.101
		eyelet + eyelet	M8	110	93.098 411.111
		hook+eyelet	M8	110	93.098 411.112
	Stainless steel AISI 316	hook+eyelet	M6	90	93.098 411.302
		eyelet + eyelet	M8	120	93.098 411.311
Quick Clamp	Stainless steel AISI 316	Jaw + Jaw	M8	120	93.098 411.513

Quick Installation!

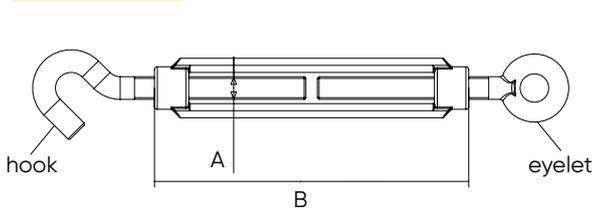


Fig.: Turnbuckles hook + eyelet (93.098 411.112)

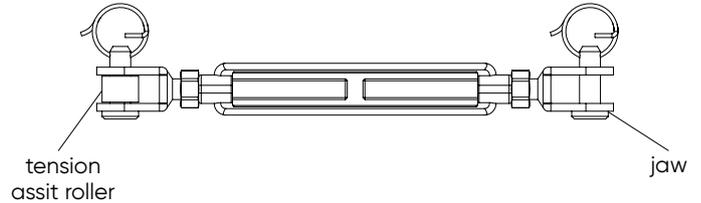


Fig.: Turnbuckle jaw + jaw (93.098 411.513)

5 Quick Link

Connecting element	Material	Bolt	Dimensions			Ordering Code
			A	B	C	
Quick Link	Steel / galvanized	M6	M6	45	14	93.098 415.001
	Stainless steel AISI 316	long	M6	58,5	14	93.098 415.202

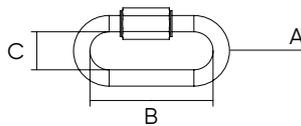


Fig.: Quick Link (93.098 415.001)

6 Rope support elements

to guide the pull rope
incl. 2 nuts
lock washer

Element	Material	Bolt	Dimensions				Ordering Code	
			A	B	C	D		
Eyebolt	Steel / galvanized	M12	60				93.098 413.130	
		M12	200				93.098 413.131	
	Stainless steel AISI 304	M12	60				93.098 413.330	
Safety hook	Steel / galvanized	M10	120	60	142		93.099 659.120	
	Stainless steel AISI 316	M10	120	60	142		93.099 659.320	
Return pulley	Steel / galvanized		no lock washers	M10	65	132	142	93.069 106.001

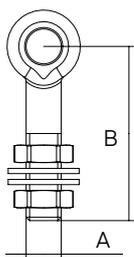


Fig.: Eyebolt (93.098 413.130)

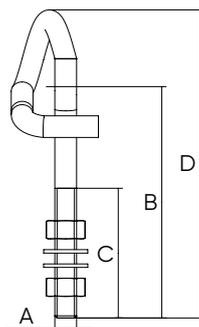


Fig.: Safety hook (93.099 659.120)

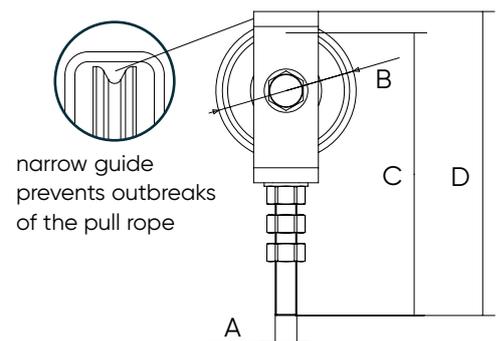


Fig.: Return pulley (93.069 106.001)

7 Clamp

Fixation of pull rope

2 pieces each rope end recommended

A for Pull rope diameter

Ordering Code

U-form	Steel / galvanized	3-5 mm	93.098 414.001
	Stainless steel AISI 316	5 mm	93.098 414.205
Egg form	Steel / galvanized	5 mm	94.047 869.002

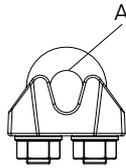


Fig.: U-form clamp (93.098 414.001)

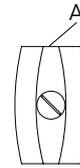


Fig.: Egg form clamp (94.047 869.002)

8 Thimbles

Kink protection

Material

A for Pull rope diameter

Ordering Code

Thimble	Steel / galvanized	5 mm	93.097 510.005
	Stainless steel AISI 316	5 mm	93.097 510.205

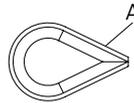


Fig.: Thimbles (93.097 510.005)

9 Marks

Marking for pull-rope (optional)

Symbol

Ordering Code

Emergency Stop Sticker	IEC 60417-5638, adhesive	50 pcs / roll	93.066 950.002
------------------------	--------------------------	---------------	----------------



10 Tools

	Description	Ordering Code
Nutdriver	8 / L 250 for U-form Clamp & Quick Clamp	730.47.00.01.18
Square section key	with reset by square section key	250.50.12.01.08

Q Quick Clamp - Spare Part

Schnelle Installation!

	Description	Ordering Code
Quick Clamp Kit V2	Spare Part complete for Quick Clamp System for HEN, NTS, PRS, SEG with Ø 5 mm Pull Rope 94.045 731.xxx	95.302 888.012

