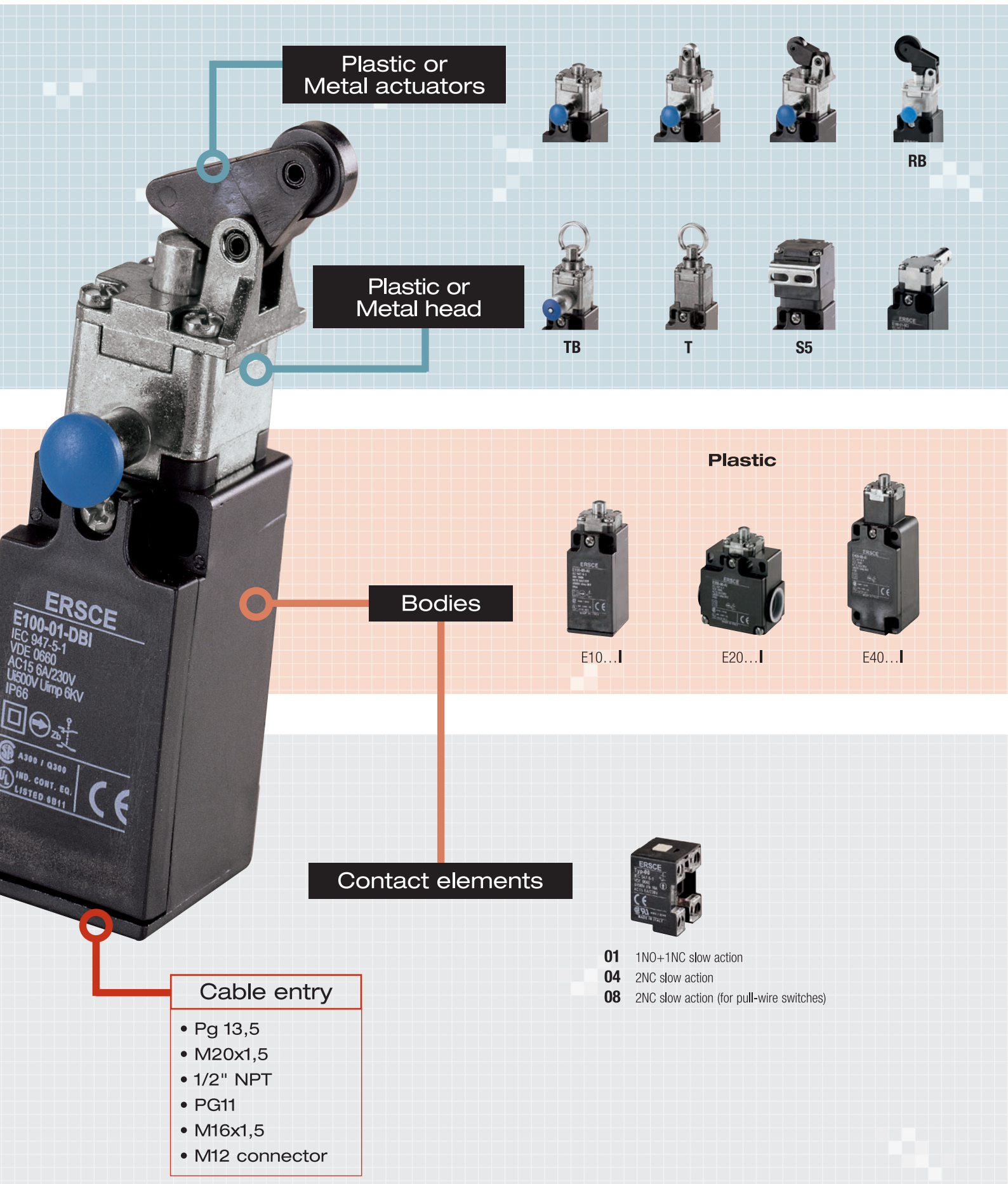




Safety switches

# Selection diagram

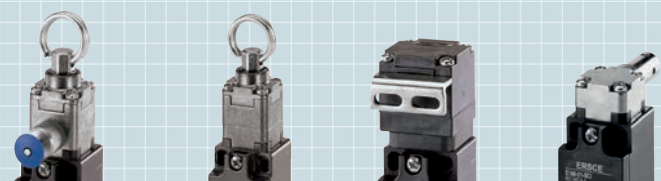


Plastic or Metal actuators



RB

Plastic or Metal head



TB

T

S5

Plastic



E10...I

E20...I

E40...I

Bodies

Contact elements



- 01 1NO+1NC slow action
- 04 2NC slow action
- 08 2NC slow action (for pull-wire switches)

Cable entry

- Pg 13,5
- M20x1,5
- 1/2" NPT
- PG11
- M16x1,5
- M12 connector

limit and safety switches



DB



EB



IB



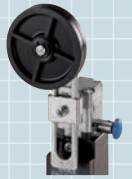
IB•50



FB



FB•50



FBR•50

### Metal



E10...M



E30...M



E40...M

### Product code structure

**E10 0 01 FB I 50**

#### Series

- E10** 1 cable entry
- E20** 2 cable entry
- E30** 3 cable entry
- E40** 4 cable entry

#### Ingresso cavi

- 0** PG 13,5
- 1** M20x1,5
- 2** 1/2" NPT
- 3** PG 11
- 4** M16x1,5

#### Contact element

- 01** 1NO+1NC slow action
- 04** 2NC slow action
- ...

#### Opzioni

- 50** With Ø50 mm roller
- P** With cable gland Pg13,5
- Q** With cable gland Pg11
- M12** With M12 connector
- R** With membrane M20x1,5

#### Construction material

- I** Plastic body / Metal head
- M** Metal body / Metal head

#### Actuator type

- AB** Steel plunger with reset
- BB** Steel roller plunger with reset
- ...

Note: Please verify the effective availability of a product before ordering.



# Safety switches - Overview



## Technical data

		TYPE	E100 / E200 / E300 / E400
Maximum operating frequency		operat./hour <sup>1</sup>	3600
Insulation resistance		500 V DC MΩ	100
Dielectric strenght		50/60 Hz for 1 <sup>1</sup> V AC	2500 <sup>2</sup>
Rated insulation voltage	Ui	IEC947-5-1 V AC	500
Rated thermal current	Ithe	IEC947-5-1 A	10
Rated operating current	Category AC15 A300	le IEC947-5-1/EN60947-5-1 24V A	10
		125V A	6
		230 V A	6
		400 V A	3
Contact resistance	IEC255-7 cat.3	initial value mΩ	25
Short circuit protective devices	IEC269 (IEC947-5-1) fuse type gL or gG	A	10
Rated conditionals short circuit current	IEC947-5-1	A	1000
Pollution degree	IEC947-5-1	A	3
Protection degree	EN 60529		IP66
Protection against electric shock		plastic class	II
		metal class	I
Vibration resistance	IEC68-2-6	mm	0,35 ± 15% (10 ÷ 55 Hz ± 1 Hz)
Shock resistance	IEC68-2-27	11ms	g
Mechanical life			cycles
Electric life	at 250V AC 6A with resistance load cosφ=1		cycles
	at 250V AC 6A with inductive load cosφ=0,4		cycles
Distance between contacts	Snap action type	mm	2x1,25
	Low action type	mm	2x2
Terminals	Type		Screw with combined notch and retractable plate (notch Ph. Size 1)
	Screw		3,5
	Protection degree		IP20
	Material		Steel class 8,8 / Galvanized
	Max screw tightening torque		120 (12,24)
	Max connecting capacity	rigid cable	mm <sup>2</sup>
flexible cable		mm <sup>2</sup>	2x1,5
Terminal numbering			In accordance with EN50013
Air ambient temperature		operational °C	-35 ÷ +85 (without formation of ice)
Relative umidity		operational	95% max

<sup>1</sup> One operation cycle means two movements, one to close and one to open as required by EN 60947-5.

<sup>2</sup> Between terminals of the same polarity; between terminals with different polarity; between live mechanical parts and ground; between live mechanical parts and non-current-carrying metal parts.


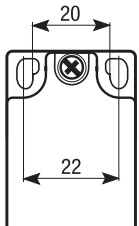

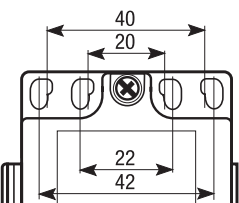

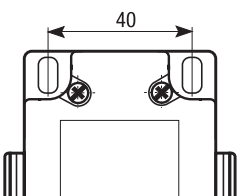

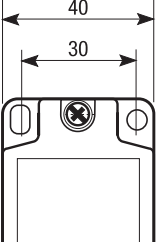
## Certifications and Approvals

			IEC EN 60947
E100	•	•	+
E200	•	•	+
E300	•	•	+
E400	•	•	+

- UL approval file E72861
- CSA approval file 026716-0-000
- Approved
- + Conforms to requirements

**E100-E200  
E300-E400  
series**





- Plastic or Metal body
- Plastic\* or Metal head and actuators
- IP66 protection degree
- Contact elements with positive opening of the NC contact in accordance to IEC EN 60947-5-1 and VDE 0660-200




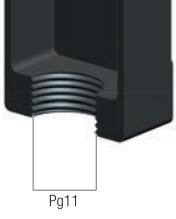
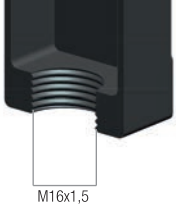

Series	Product	Fixing holes
E100		
E200		
E300		
E400		

\* On key actuated switches

# Safety switches - Overview












## Cable inputs/outputs

Series	Nr.
E100	1 on the bottom 
E200	2 on the sides 
E300	2 on the sides + 1 on the bottom 
E400	1 on the bottom 

Type	Series
Pg 13,5 	Ex00..
M20x1,5 	Ex01..
1/2 NPT 	Ex02..
Pg 11 	Ex03..
M16x1,5 	Ex04..
M12 connector 	Ex00.. <b>M12</b>

Actuation heads

## Safety switches with reset



Group AB-BB		Group CB-RB		Group DB	
					
<b>AB</b> Plunger	<b>BB</b> Roller plunger	<b>CB</b> Plastic roller lever, side actuation	<b>RB</b> Reversible and adjustable lever with plastic roller	<b>DB</b> Plastic roller lever, vertical actuation	
Group EB-IB-FB-FRB					
					
<b>EB</b> Straight lever with plastic roller	<b>IB</b> Bent lever with plastic roller	<b>IB•50</b> Bent lever with Ø50mm rubber roller	<b>FB</b> Variable length lever with plastic roller	<b>FB•50</b> Variable length lever with Ø50mm rubber roller	<b>FRB•50</b> Adjustable lever with Ø50mm rubber roller

## Key actuation safety switches

Group S5

<b>S5</b> 5 ways keys actuation

## Pull wire safety switches

Group T	
	
<b>TB</b> Pull wire with reset	<b>T</b> Pull wire without reset

## Hinges operating safety switches

Group SC

<b>SC</b> Metal pin

# Safety switches - Overview

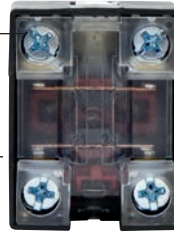
## Contact elements

### Protective screen

Protective natural polycarbonate screen to prevent the entry of materials and access to the test finger (IP20 – EN60529)

### Mobile and fixed contacts

Ag/Ni mobile and fixed contacts galvanically separated (acc. IEC 947-5-1, EN 60204, VDE 0660, VDE 0113)



Contact unit	Actuator	Group AB-BB	Group CB-RB	Group DB	Group EB-IB-FB-FRB	Group S5	Group T	Group SC
<b>01</b> 1NO+1NC slow action	1NO+1NC slow action Zb							
<b>04</b> 2NC slow action	2NC slow action Y+Y							
<b>08</b> 2NC slow action	2NC slow action 							

Opened contact

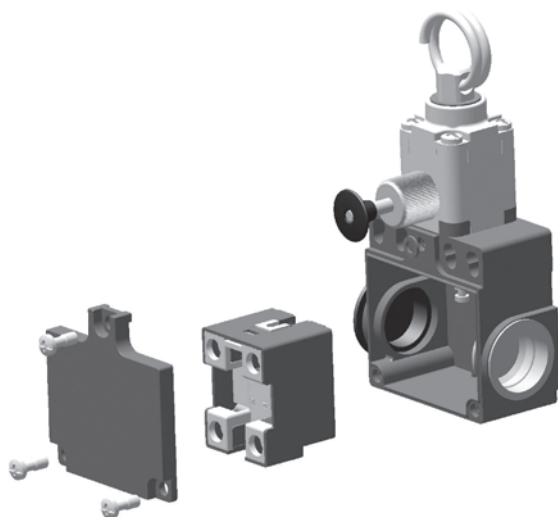
Closed contact

Pressure of the switch / Release of the switch



## General characteristics

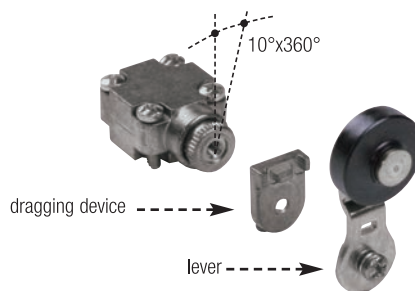
Safety switches are conceived for applications related to the protection of automated installations and are available in 4 different product families: with reset, pull-wire, 5 way key and for hinge actuation.



- thermoplastic or metal body
- IP66
- contact blocks with positive opening of the NC contact according to IEC EN 60947-5-1 e VD 0660-200

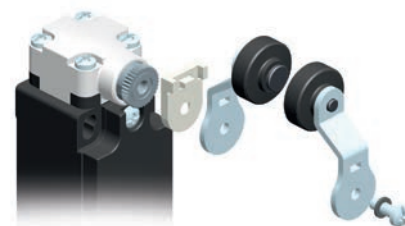
### Adjustable levers

Possibility to adjust the lever in  $10^\circ$  steps for  $360^\circ$  by moving the lever and the dragging device.



### Overturning levers

all the levers can be fastened on switches on straight or reverse side, to obtain two different work plans of the lever.



# Pull wire safety switches

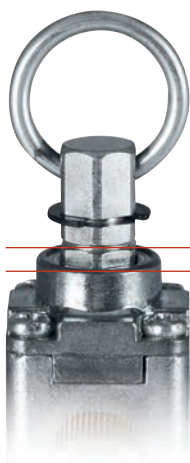


## Pull wire safety switches

**Pull wire safety switches** are essential for the continuous control of a long line of machines or parts extending over a considerable length. They guarantee the safety of the operator, who is able to control the immediate stop of the machinery from any point in the operating zone when no or few automatic systems to cut off the power supply are present. This kind of actuator is available on the series **E100-E200-E400** with thermoplastic or metal body and metal head, with **IP66** protection degree.

### Wire tension indicator

For the exact cable tension, check that the notch on the drive shaft is in line with the head.



### Reset button

Block reset that guarantees the locking of the NC head in the open position after a single operation.



### In conformity with standards:

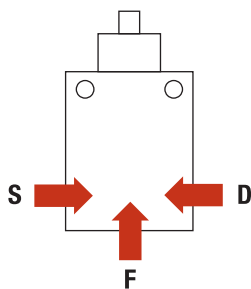
IEC EN 60947-5-1 • EN 60947-1 • UNI EN 1088  
EN ISO 12100-1 • EN ISO 12100-2 • IEC 529  
EN 60529 • VDE 0660-200 • VDE 0113 • UNI EN 13850

### Cable entry

	F	S	D
E100	•		
E200		•	•
E300	•	•	•
E400	•		

### Thread

	Series part no.			
Pg 13,5	E100	E200	E300	E400...
M20x1,5	E101	E201	E301	E401...
1/2" NPT (on request)	E102	E202	E302	E402...
Pg 11 (on request)	E103			
M16x1,5 (on request)	E104			
M12 connector (on request)	E100/M12	E200/M12	E300/M12	E400/M12



### Fixing

E100	20/22 mm
E200	20/22 and 40/42 mm
E300	40 mm
E400	30 mm

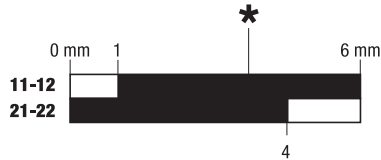
### Applications:



Long lines of machines: conveyor belts, textile machines, printing machines, etc...

### Dedicated contact block

Dedicated contact block 08 with longer travel for pull-wire switches: cable vibrations will have no influence on the correct operation of the limit switch.



■ closed contacts  
□ opened contacts

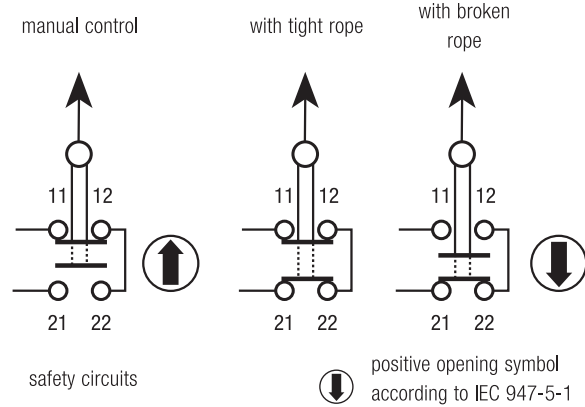
\*tight rope  
Tension force: 50N / final 60 N

\* Installation travel: any cable vibrations will have no influence on the correct operation of the limit switch.

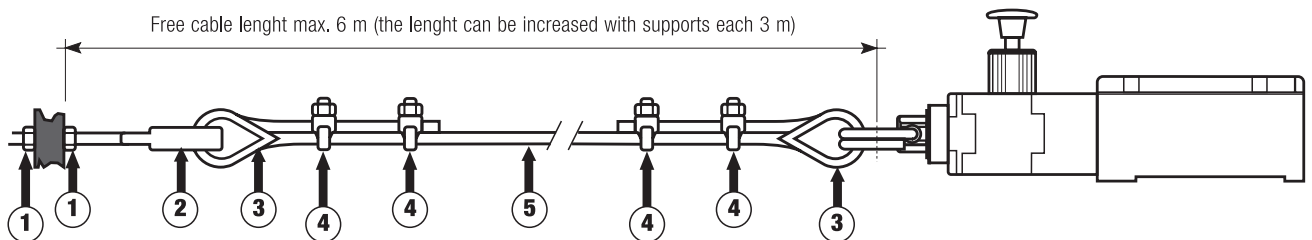
### Indications for correct operation

The switch has to be fitted in such a way that the cable is sufficiently taut and closes both contacts. For the exact cable tension, check that the notch on the drive shaft is in line with the head.

### Contacts position during operation for contact block 08



**NOTE:** the contacts 11-12 and 21-22 have to be connected in series



### Examples of connection

Free cable length max. 6 m (increase the length with supports each 3 m).

#### Notes

- ① BM 10 DIN 439 hexagonal nut
- ② part no. 005 - BM 10 DIN 439 ring with thread
- ③ part no. R05 - B - 5 mm DIN 6899 noose
- ④ part no. M05 - 5 mm DIN 1480 clamp
- ⑤ part no. F05 - PVC steel cable, Ø 5 mm

# Pull wire safety switches

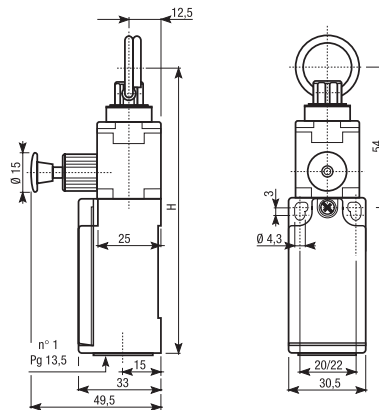


E100

Contact element	
2NC slow action  <b>08</b>	
Weight	kg
Pack	pcs
H	mm

standard article

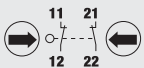
Cable entry				Contact travel
PG 13,5		M20 x 1,5		
Metal head Plastic body	Metal head Metal body	Metal head Plastic body	Metal head Metal body	
E10008TBI	E10008TBM	E10108TBI	E10108TBM	 mm 6 * 4 1 mm 0 <b>11-12 21-22</b>
0,195	0,29	0,195	0,29	
1	1	1	1	
111,5	109	111,5	109	



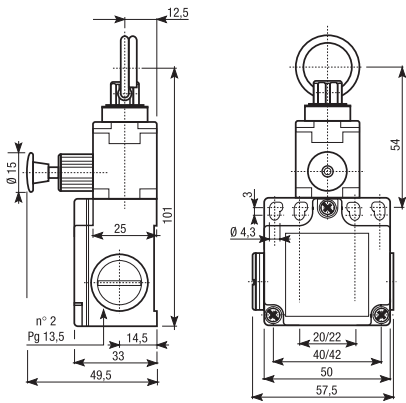


E200

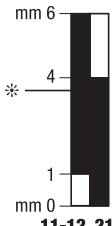
Cable entry	
PG 13,5	M20 x 1,5
Metal head Plastic body	Metal head Plastic body
E20008TBI	E20108TBI
0,22	
1	

Contact element	
2NC slow action 	<b>08</b>
Weight	kg
Pack	pcs

 standard article



E400

Cable entry				Contact travel
PG 13,5		M20 x 1,5		
Metal head Plastic body	Metal head Metal body	Metal head Plastic body	Metal head Metal body	
E40008TBI	E40008TBM	E40108TBI	E40108TBM	
0,24	0,465	0,24	0,465	
1		1		

