

Limit Switches - Limit Type Metal Body IP66

CARLO GAVAZZI



- High mechanical resistance
- Degree of protection IP66
- Zinc alloy (Zamack) body
- Positive Opening Operation ➔
- Minimum Actuation Force/Torque
- Minimum Force to achieve Positive Opening Operation
- Precise operating points (consistency)
- Immune to electromagnetic disturbances
- Zb type contact blocks
- Current Ith = 10A
- Rated insulation voltage Ui = 500V
- UL, CSA, CE
- Conform with IEC 947-5-1 (EN 60947-5-1)

Product Description

They are developed in order to be used for following operations:

- Presence/Absence
- Positioning and travel limit
- Objects passing/counting

Ordering Key

PS31L-PS11RT-M00

Body

Cable Gland

Contact block

Head type

Material of body and head

Options

Description of the key codes

Body

PS31L | PS 40mm (fix 30mm) 1 cable inlet for General Purpose

Cable Gland

M | M20
P | PG13.5
N | 1/2 NPT

Contact block

O11 | 1NO+1NC overlap slow(+)
S02 | 2NC snap(+)
S11 | 1NO+1NC snap(+)
T02 | 2NC slow(+)
T03 | 3NC slow(+)
T11 | 1NO+1NC slow(+)
T12 | 1NO+2NC slow(+)
T20 | 2NO slow
T21 | 2NO+1NC slow(+)
T30 | 3NO slow

Material of body and head

M | Metal Body and Metal head

Options

00 | no option

Head type

L3 | adj square (3x3) steel rod LEVER
LA | adj Ø3 rod LEVER stainless steel rod
LB | nylon actuator with stainless steel spring
LF | adj fiberglass rod LEVER Ø3
LG | adj fiberglass rod LEVER Ø6
LN | adj nylon rod LEVER
LP | multidir nylon actuator with stainless steel spring
LS | stainless steel spring multidir actuator
LW | Stainless steel spring multidir actuator (cat Whisker)
LZ | Stainless steel spring actuator
N6 | pull wire for simple stop
P0 | metal plain PLUNGER
PB | steel ball PLUNGER
PR | metal roller PLUNGER
R1 | adj LEVER with nylon roller
R2 | adj LEVER with stainless steel roller
R3 | adj LEVER with steel ball bearing
RB | one way LEVER steel ball bearing
RH | plastic roller LEVER on metal PLUNGER (left)
RK | one way LEVER stainless steel roller
RO | roller LEVER steel ball bearing
RS | metal roller LEVER
RT | nylon roller LEVER
SH | stainless steel lateral PLUNGER with horizontal roller
SP | stainless steel lateral plain PLUNGER
SV | stainless steel lateral PLUNGER with vertical roller
W0 | Ø50 rubber roller LEVER
W1 | adj LEVER with Ø50 rubber roller

Technical Data

Standards

Certifications – Approvals

Air temperature near the device

- during operation °C
- for storage °C

Climatic withstand Mounting positions

Shock withstand (according to IEC 68-2-27 and 60068-2-27) g
(1/2sinusoidal shock for 11 ms) no change in contact position

Resistance to vibrations (acc.to IEC 68-2-6 and EN 60068-2-6) g

Protection against electrical shocks (acc.to IEC 536)

Degree of protection (according to IEC 529 and EN 60529)

Consistency (measured over 1 million operations)

IEC 60947-1, IEC 60947-5-1, EN 60947-1, EN 60947-5-1,
UL508 and CSA C22-2 n°14
UL – CSA

-25 ... +70

-30 ... +80

According to IEC 68-2-3 and salty mist according to IEC 68-2-11
All positions are authorized

50g*

25g (10...500Hz) no change in position of contacts greater
than 100µs

Class I

IP66

0.1 mm (upon closing point)

* except for PS21/PS42 with head type W0, W1: 25g.

Electrical Data

Rated insulation voltage U_i

-according to IEC 60947-1 and EN 60947-1

-according to UL 508, CSA C22-2 n°14

Rated impulse withstand voltage U_{imp} kV

(according to IEC 60947-1 and EN 60947-1)

Conventional enclosed thermal current I_{the} A

(according to IEC 60947-5-1 and EN 60947-5-1) ($\theta \leq 40^\circ\text{C}$)

Short-circuit protection - gG type fuses A

Rated operational current

I_e / AC-15 - acc.to IEC 60947-5-1

24Vac (50/60 Hz)	A
130Vac (50/60 Hz)	A
230Vac (50/60 Hz)	A
240Vac (50/60 Hz)	A
400Vac (50/60 Hz)	A

- acc.to UL 508, CSA C22 n°14

I_e / DC-13 - acc.to IEC 60947-5-1

24Vdc	A
110Vdc	A
250Vdc	A

- acc.to UL 508, CSA C22 n°14

Electrical durability (according to IEC 60497-5-1 annex C)

- max. switching frequency Cycles/h
- load factor

Connecting data of contact blocks

Connecting terminals

Connecting capacity 1 or 2 x mm² / AWG

Terminal marking

Positivity

400V (PS21, PS42), 500V (PS31, PS43) (degree of pollution 3)

A 300 Q 300 (PS21, PS42), A 600 Q 600 (PS31, PS43)

6

10

10

10

5.5

3.1

3

1.8

A 300 (PS21, PS42), A 600 (PS31, PS43)

2.8

0.6

0,27

Q 300 (PS21, PS42), Q 600 (PS31, PS43)

Utilization categories AC-15 and DC-13 (see curves and value below)

3600

0,5

M3,5 (+,-) pozidriv 2 screw with cable clamp

0,5mm² / AWG 20 to 2,5mm² / AWG 14

According to EN 50013

Contacts with positive opening operation as per
IEC 60947-5-1 chapter 3

Diagram for snap action contact:

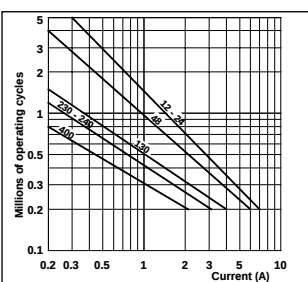
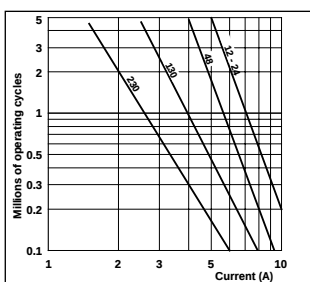


Diagram for slow action contact:



Electrical durability for DC-13 utilization category

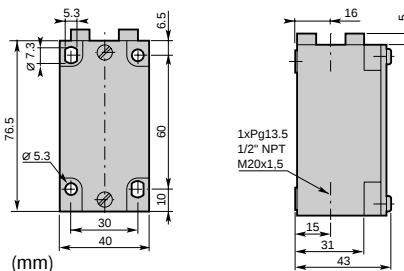
Power breaking for a durability of 5 million operating cycles		
	Snap action	Slow action
Voltage 24V	9,5W	12W
Voltage 48V	6,8W	9W
Voltage 110V	3,6W	6W

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■ Cable Gland

P = one cable inlet PG13.5 cable gland
M = one cable inlet M20x1.5 cable gland
N = one cable inlet 1/2" NPT cable gland



▲ Contact block (Zb type)

S11 (1NO+1NC) Snap action		T11 (1NO+1NC) Non overlapping Slow action		O11 (1NO+1NC) Overlapping Slow action		T02 (2NC) Slow Action		T20 (2NO) Slow action	
S02 (2NC) Snap action		T12 (1NO+2NC) Non overlapping Slow action		T21 (2NO+1NC) Non overlapping Slow action		T03 (3NC) Simultaneous Slow action		T30 (3NO) Simultaneous Slow action	

		S11 0 1.8 3.0 4.6 6.0 mm	T11 0 2.1 3.7 6.0 mm	O11 0 3.4 5.0 6.0 mm	T02 0 2.0 3.6 6.0 mm
		T20 0 1.9 6.0 mm	S02 0 1.8 2.9 4.5 6.0 mm	T12 0 2.0 3.5 6.0 mm	T21 0 2.1 3.6 6.0 mm
		T03 0 2.0 3.5 6.0 mm	T30 0 2.3 6.0 mm		

Conformity / (NC) EN 50041 / (NC)
Max. Actuation speed 0.5ms
Min. force or torque 30N / 45Nm
Weight 240g

Stainless steel plain plunger
Code

PS31L-P0-M00

		S11 0 1.8 3.0 4.6 6.0 mm	T11 0 2.1 3.7 6.0 mm	O11 0 3.4 5.0 6.0 mm	T02 0 2.0 3.6 6.0 mm
		T20 0 1.9 6.0 mm	S02 0 1.8 2.9 4.5 6.0 mm	T12 0 2.0 3.5 6.0 mm	T21 0 2.1 3.6 6.0 mm
		T03 0 2.0 3.5 6.0 mm	T30 0 2.3 6.0 mm		

Conformity / (NC) EN 50041 / (NC)
Max. Actuation speed 0.5ms
Min. force or torque 30N / 45Nm
Weight 240g

Stainless steel ball plunger
Code

PS31L-PB-M00

		S11 0 3.1 5.3 8.2 10.5 mm	T11 0 4.0 6.9 10.5 mm	O11 0 6.0 8.9 10.5 mm	T02 0 3.7 6.6 10.5 mm
		T20 0 3.5 10.5 mm	S02 0 3.1 5.1 8.0 10.5 mm	T12 0 3.8 6.3 10.5 mm	T21 0 3.9 6.4 10.5 mm
		T03 0 3.8 6.3 10.5 mm	T30 0 4.3 10.5 mm		

Conformity / (NC) EN 50041 / (NC)
Max. Actuation speed 0.5ms
Min. force or torque 22N / 40Nm
Weight 245g

Stainless steel Ø22 roller plunger
Code

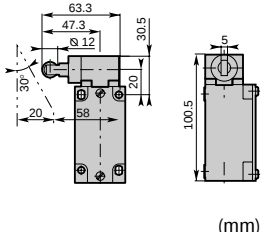
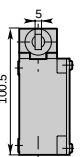
PS31L-PR-M00

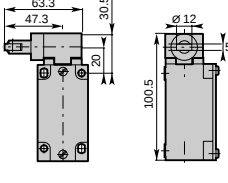
		S11 0 2.0 3.2 4.8 6.0 mm	T11 0 2.3 3.9 6.0 mm	O11 0 3.6 5.2 6.0 mm	T02 0 2.2 3.8 6.0 mm
		T20 0 2.1 6.0 mm	S02 0 2.0 3.1 4.7 6.0 mm	T12 0 1.4 2.9 6.0 mm	T21 0 1.5 3.0 6.0 mm
		T03 0 1.4 2.9 6.0 mm	T30 0 1.9 6.0 mm		

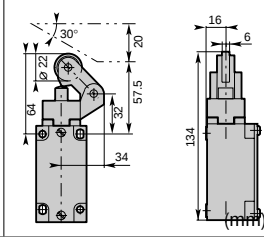
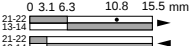
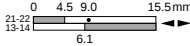
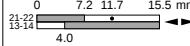
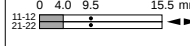
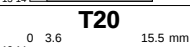
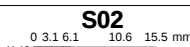
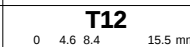
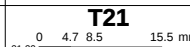
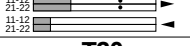
Conformity / (NC) EN 50041 / (NC)
Max. Actuation speed 0.5ms
Min. force or torque 30N / 50Nm
Weight 260g

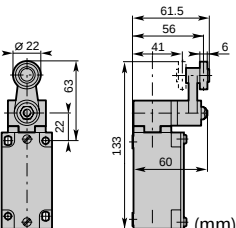
Stainless steel lateral plain plunger
Code

PS31L-SP-M00

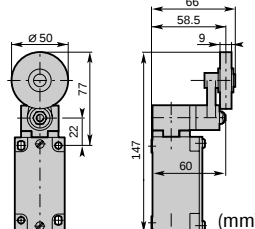
					
		(mm)			
Conformity /  (NC)		EN 50041 / 		Stainless steel lateral plunger with Ø12 vertical roller Code PS31L-    SV-M00	
Max. Actuation speed		0.5ms			
Min. force or torque		30N / 50Nm			
Weight		265g			

		S11 0 3.7 5.9 8.8 10.2 mm 21-22 13-14 13-14				T11 0 4.6 7.5 10.2 mm 21-22 13-14 6.0				O11 0 6.6 9.5 10.2 mm 21-22 13-14 4.3				T02 0 4.3 7.2 10.2 mm 11-12 21-22			
		T20 0 4.1 10.2 mm 13-14 23-24				S02 0 3.5 5.7 8.6 10.2 mm 11-12 21-22 11-12 21-22				T12 0 3.5 6.1 10.2 mm 21-22 13-14 6.2				T21 0 3.6 6.2 10.2 mm 31-32 13-14 23-24 6.2			
		T03 0 3.5 6.1 10.2 mm 11-12 21-22 31-32				T30 0 4.0 10.2 mm 13-14 23-24 33-34											
Conformity /  (NC)		EN 50041 / 		Stainless steel lateral plunger with Ø12 horizontal roller													
Max. Actuation speed		0.5ms		Code													
Min. force or torque		30N / 50Nm		PS31L-    SH-M00													
Weight		265g															

		S11 	T11 	O11 	T02 
		T20 	S02 	T12 	T21 
		T03 	T30 		
Conformity / 		One way lever			
Max. Actuation speed		Code Ø22 nylon roller		PS31L-   RH-M00	
Min. force or torque		Ø22 stainless steel roller		PS31L-   RK-M00	
Weight		Ø22 steel ball bearing		PS31L-   RB-M00	
1.5ms					
12N / 40Nm					
280g					

		S11 0 20° 33° 49° 78° 21-22 13-14 13-14	T11 0 22° 38° 78° 21-22 13-14 33°	O11 0 37° 53° 78° 21-22 13-14 21°	T02 0 21° 37° 78° 11-12 21-22
		T20 0 20° 78° 13-14 23-24	S02 0 20° 32° 48° 78° 11-12 21-22 11-12 21-22	T12 0 18° 35° 78° 21-22 13-14 37°	T21 0 19° 36° 78° 31-32 13-14 23-24 37°
		T03 0 18° 35° 78° 11-12 21-22 31-32	T30 0 23° 78° 13-14 23-24 33-34		
		Conformity /  (NC)		Ø22 Roller lever	
Max. Actuation speed		Code			
Min. force or torque		nylon roller			
Weight		stainless steel roller			
		steel ball bearing			

PS31L-RT-M00
PS31L-RS-M00
PS31L-RO-M00

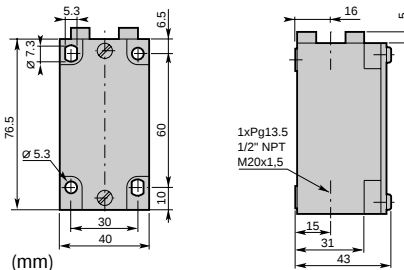
		S11 0 20° 33° 49° 78° 21-22 13-14 13-14		T11 0 22° 38° 78° 21-22 13-14 33°		O11 0 37° 53° 78° 21-22 13-14 21°		T02 0 21° 37° 78° 11-12 21-22					
		T20 0 20° 78° 13-14 23-24		S02 0 20° 32° 48° 78° 21-22 11-12 21-22		T12 0 18° 35° 78° 21-22 13-14 37°		T21 0 19° 36° 78° 31-32 13-14 23-24 37°					
		T03 0 18° 35° 78° 11-12 21-22 31-32		T30 0 23° 78° 13-14 23-24 33-34									
Conformity /  (NC) / 										Ø50 Rubber roller lever		PS31L-   W0-M00	
Max. Actuation speed		1.5ms		Code									
Min. force or torque		0.15N / 0.30Nm											
Weight		315g											

Limit Switches - Limit Type (PS31) Metal Body IP66

CARLO GAVAZZI

■ Cable Gland

P = one cable inlet PG13.5 cable gland
M = one cable inlet M20x1.5 cable gland
N = one cable inlet 1/2" NPT cable gland



▲ Contact block (Zb type)

S11 (1NO+1NC) Snap action	T11 (1NO+1NC) Non overlapping Slow action	O11 (1NO+1NC) Overlapping Slow action	T02 (2NC) Slow Action	T20 (2NO) Slow action
S02 (2NC) Snap action	T12 (1NO+2NC) Non overlapping Slow action	T21 (2NO+1NC) Non overlapping Slow action	T03 (3NC) Simultaneous Slow action	T30 (3NO) Simultaneous Slow action

S11	T11	O11	T02	
T20	S02	T12	T21	
T03	T30			

Conformity / (NC)

Max. Actuation speed 1.5ms

Min. force or torque 0.15N / 0.30Nm

Weight 320g

Adjustable Ø22 roller lever

Code nylon lever
stainless steel roller
steel ball bearing

PS31L- R1-M00
PS31L- R2-M00
PS31L- R3-M00

S11	T11	O11	T02	
T20	S02	T12	T21	
T03	T30			

Conformity / (NC)

Max. Actuation speed 1.5ms

Min. force or torque 0.15N / 0.30Nm

Weight 325g

Adjustable Ø50 rubber roller lever

Code

PS31L- W1-M00

S11	T11	O11	T02	
T20	S02	T12	T21	
T03	T30			

Conformity / (NC)

Max. Actuation speed 1.5ms

Min. force or torque 0.15N / -

Weight 305g

Nylon actuator with stainless steel spring

Code

PS31L- LB-M00

S11	T11	O11	T02	
T20	S02	T12	T21	
T03	T30			

Conformity / (NC)

Max. Actuation speed 1.5ms

Min. force or torque 0.15N / -

Weight 310g

Stainless steel spring actuator

Code

PS31L- LZ-M00

		S11 0 20° 33° 49° 78° 21-22 13-14 21-22 13-14	T11 0 22° 38° 78° 21-22 13-14 33°	O11 0 37° 53° 78° 21-22 13-14 21°	T02 0 21° 37° 78° 11-12 21-22
		T20 0 20° 78° 13-14 23-24	S02 0 20° 32° 48° 78° 11-12 21-22 13-14 21-22	T12 0 18° 35° 78° 21-22 13-14 37°	T21 0 19° 36° 78° 11-12 21-22 13-14 23-24 37°
		T03 0 18° 35° 78° 11-12 21-22 13-14 31-32	T30 0 23° 78° 13-14 23-24 33-34		

Conformity / (NC) EN50041 / (NC)
Max. Actuation speed 1.5ms
Min. force or torque 0.15N / 0.30
Weight 305g

Adjustable rod lever
Code stainless steel rod Ø3
fiberglass rod Ø3

PS31L-LA-M00
PS31L-LF-M00

		S11 0 20° 33° 49° 78° 21-22 13-14 21-22 13-14	T11 0 22° 38° 78° 21-22 13-14 33°	O11 0 37° 53° 78° 21-22 13-14 21°	T02 0 21° 37° 78° 11-12 21-22
		T20 0 20° 78° 13-14 23-24	S02 0 20° 32° 48° 78° 11-12 21-22 13-14 21-22	T12 0 18° 35° 78° 21-22 13-14 37°	T21 0 19° 36° 78° 11-12 21-22 13-14 23-24 37°
		T03 0 18° 35° 78° 11-12 21-22 13-14 31-32	T30 0 23° 78° 13-14 23-24 33-34		

Conformity / (NC) EN50041 / (NC)
Max. Actuation speed 1.5ms
Min. force or torque 0.15N / 0.30
Weight 305g

Adjustable rod lever
Code square steel rod 3x3

PS31L-L3-M00

		S11 0 20° 33° 49° 78° 21-22 13-14 21-22 13-14	T11 0 22° 38° 78° 21-22 13-14 33°	O11 0 37° 53° 78° 21-22 13-14 21°	T02 0 21° 37° 78° 11-12 21-22
		T20 0 20° 78° 13-14 23-24	S02 0 20° 32° 48° 78° 11-12 21-22 13-14 21-22	T12 0 18° 35° 78° 21-22 13-14 37°	T21 0 19° 36° 78° 11-12 21-22 13-14 23-24 37°
		T03 0 18° 35° 78° 11-12 21-22 13-14 31-32	T30 0 23° 78° 13-14 23-24 33-34		

Conformity / (NC) EN50041 / (NC)
Max. Actuation speed 1.5ms
Min. force or torque 0.15N / 0.30Nm
Weight 300g

Adjustable rod lever
Code nylon rod
fiberglass rod

PS31L-LN-M00
PS31L-LG-M00

		S11 0 9° 21° 21-22 13-14 21-22 13-14	T11 0 12° 21-22 13-14 19°	O11 0 23° 21-22 13-14 11°	T02 0 11° 11-12 21-22
		T20 0 10° 13-14 23-24	S02 0 9° 20° 11-12 21-22 13-14 21-22	T12 0 12° 21-22 13-14 27°	T21 0 13° 11-12 21-22 13-14 23-24 27°
		T03 0 12° 11-12 21-22 13-14 31-32	T30 0 16° 13-14 23-24 33-34		

Conformity / (NC) /
Max. Actuation speed 1.0ms
Min. force or torque 0.18N / -
Weight 230g

Stainless steel spring multidirectional actuator
Code

PS31L-LW-M00

		S11 0 9° 21° 21-22 13-14 21-22 13-14	T11 0 12° 21-22 13-14 19°	O11 0 23° 21-22 13-14 11°	T02 0 11° 11-12 21-22
		T20 0 10° 13-14 23-24	S02 0 9° 20° 11-12 21-22 13-14 21-22	T12 0 12° 21-22 13-14 27°	T21 0 13° 11-12 21-22 13-14 23-24 27°
		T03 0 12° 11-12 21-22 13-14 31-32	T30 0 16° 13-14 23-24 33-34		

Conformity / (NC) /
Max. Actuation speed 1.0ms
Min. force or torque 0.18N / -
Weight 230g

Multidirectional nylon actuator with stainless steel spring
Code

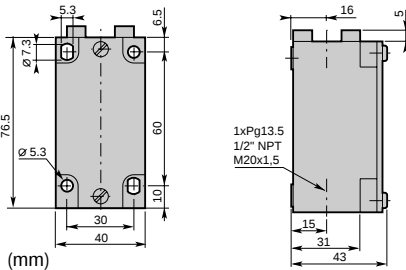
PS31L-LP-M00

Limit Switches - Limit Type (PS31) Metal Body IP66



■ Cable Gland

- P** = one cable inlet PG13.5 cable gland
M = one cable inlet M20x1.5 cable gland
N = one cable inlet 1/2" NPT cable gland



▲ Contact block (Zb type)

S11 (1NO+1NC) Snap action		T11 (1NO+1NC) Non overlapping Slow action		O11 (1NO+1NC) Overlapping Slow action		T02 (2NC) Slow Action		T20 (2NO) Slow action	
S02 (2NC) Snap action		T12 (1NO+2NC) Non overlapping Slow action		T21 (2NO+1NC) Non overlapping Slow action		T03 (3NC) Simultaneous Slow action		T30 (3NO) Simultaneous Slow action	

		S11 	T11 	O11 	T02
		T20 	S02 	T12 	T21
		T03 	T30 		

Conformity / (NC)	/
Max. Actuation speed	1.0ms
Min. force or torque	0.18N / -
Weight	235g

Stainless steel spring multidirectional actuator	
Code	PS31L-LS-M00

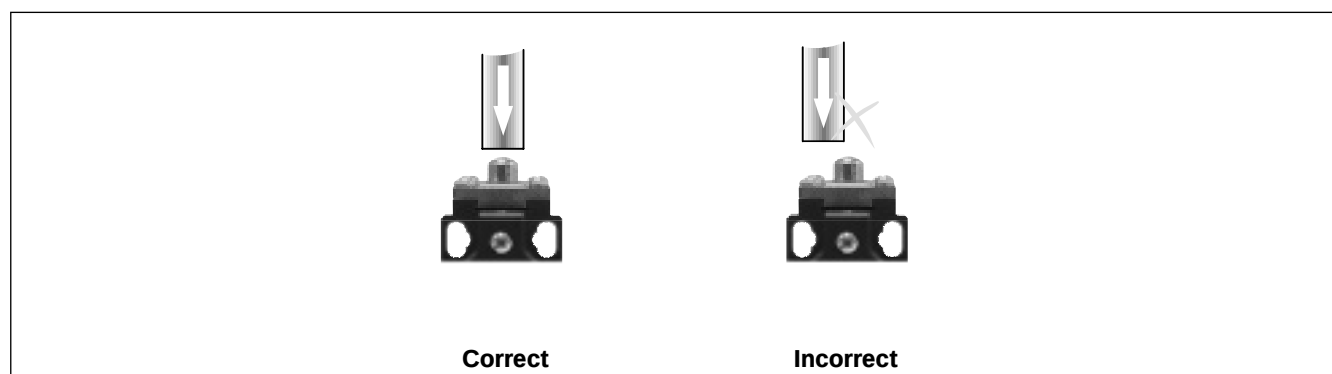
		S11 	T11 	O11 	T02
		T20 		T12 	T21
		T03 	T30 		

Conformity / (NC)	/
Max. Actuation speed	0.5ms
Min. force or torque	25N / -
Weight	245g

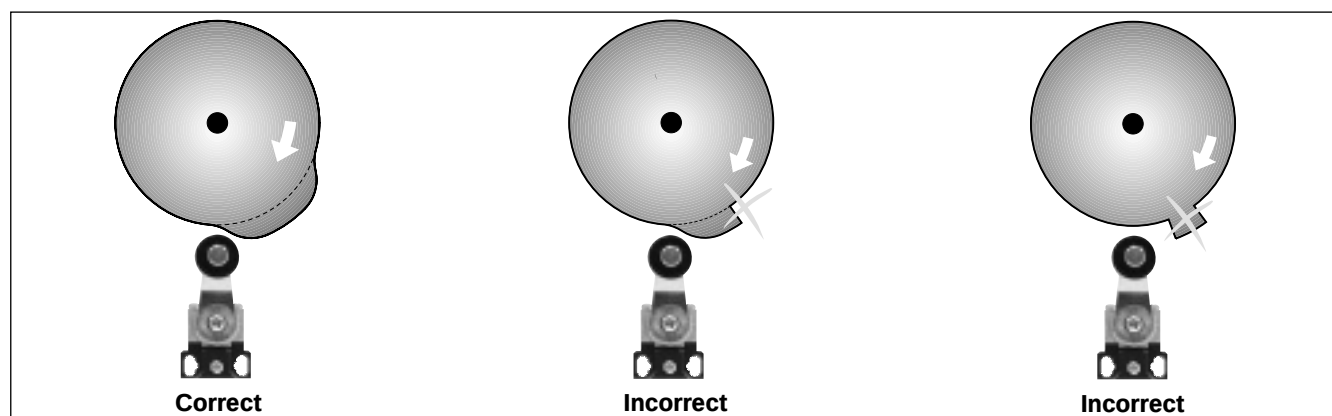
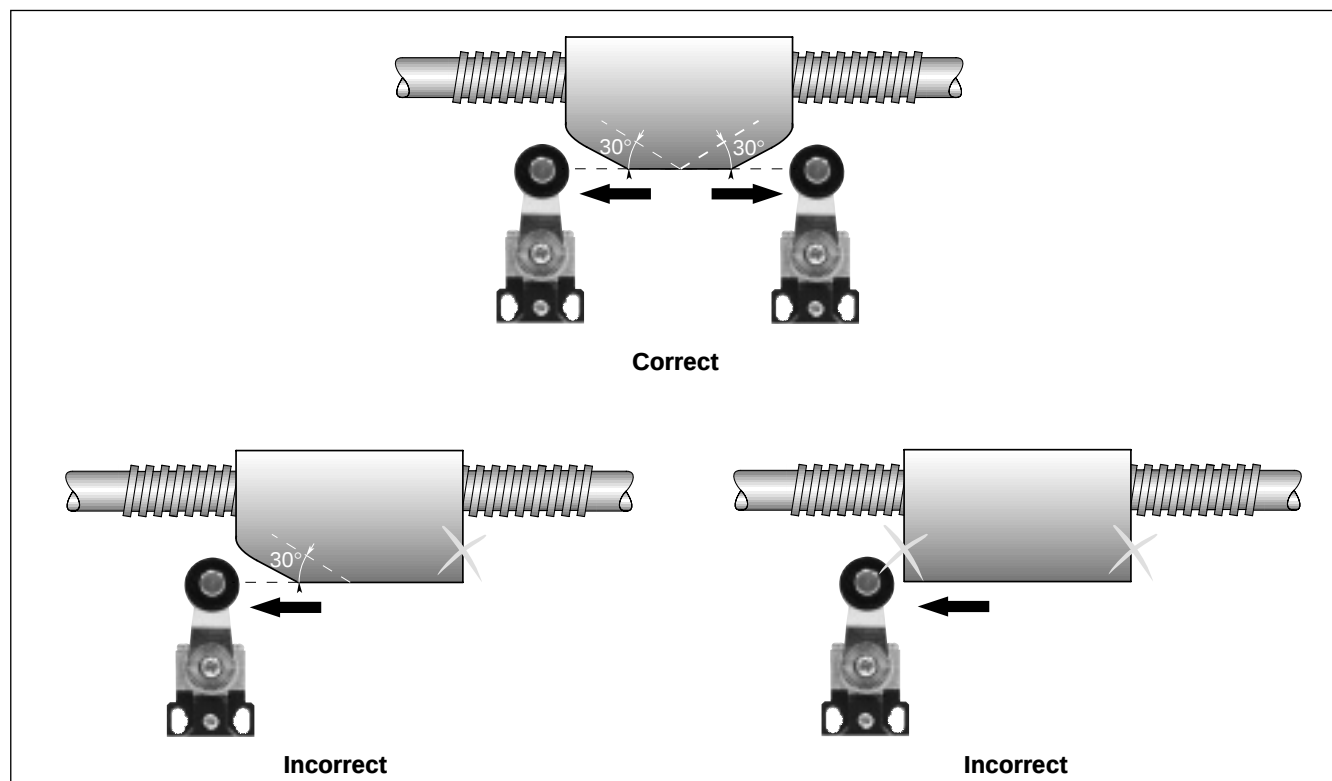
Pull action with ring	
Code	PS31L-N6-M00

Utilization precautions

Plain plunger

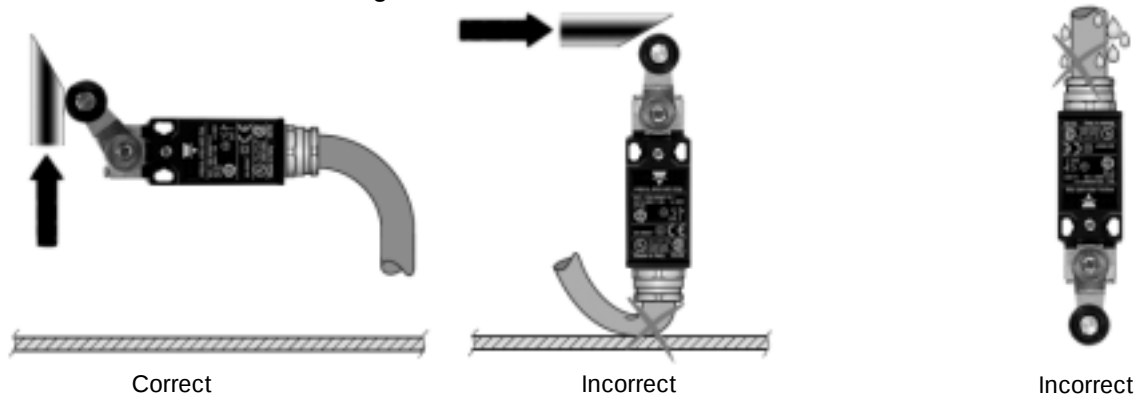


Roller plunger or Roller lever



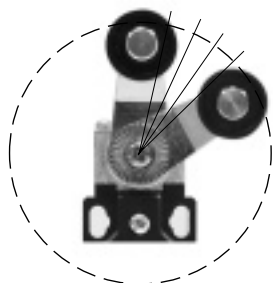
Utilization precautions

Electrical connection and mounting



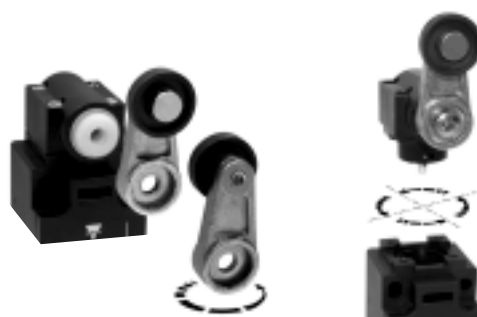
Adjustement

Position adjustement of lever



Free position adjustement 10 in 10° of lever

Position adjustement of lever and head



Different operating of head

