

# Limit Switches - Limit Type Plastic Body IP65

**CARLO GAVAZZI**



- Double Insulation
- Degree of protection IP65
- Reinforced UL-V0 thermoplastic fiber-glass body
- Positive Opening Operation  $\rightarrow$
- 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-T00**

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

T | Thermoplastic Body and Thermoplastic head

### Options

00 | no option

### Head type

L3 | adj square (3x3) steel rod LEVER  
LA | adj  $\varnothing$ 3 rod LEVER stainless steel rod  
LB | nylon actuator with stainless steel spring  
LF | adj fiberglass rod LEVER  $\varnothing$ 3  
LG | adj fiberglass rod LEVER  $\varnothing$ 6  
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  
P0 | metal plain PLUNGER  
PB | steel ball PLUNGER  
PH | metal PLUNGER +gasket  
PG | steel roller PLUNGER +gasket  
PR | metal roller PLUNGER  
R1 | adj LEVER with nylon roller  
R2 | adj LEVER with stainless steel roller  
R3 | adj LEVER with steel ball bearing  
RH | plastic roller LEVER on metal PLUNGER (left)  
RK | one way LEVER stainless steel roller  
RB | one way LEVER steel ball bearing  
RJ | plastic roller LEVER on metal PLUNGER +gasket (left)  
RY | one way LEVER +gasket with stainless steel roller  
RC | one way LEVER + gasket with steel ball bearing  
RT | nylon roller LEVER  
RS | metal roller LEVER  
RO | roller LEVER steel ball bearing  
W0 |  $\varnothing$ 50 rubber roller LEVER  
W1 | adj LEVER with  $\varnothing$ 50 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 II

IP65

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 mm<sup>2</sup> / AWG

Terminal marking

### Positivity

500V (degree of pollution 3)

A 600, Q 600

6

10

10

10

5.5

3.1

3

1.8

A 600

2.8

0.6

0,27

Q 600

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

3600

0,5

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

0,5mm<sup>2</sup> / AWG 20 to 2,5mm<sup>2</sup> / AWG 14

According to EN 50013

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

Diagram for snap action contact:

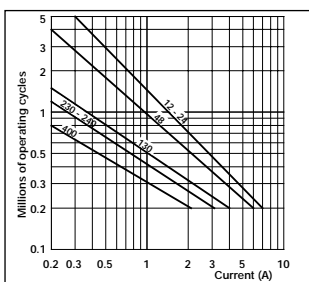
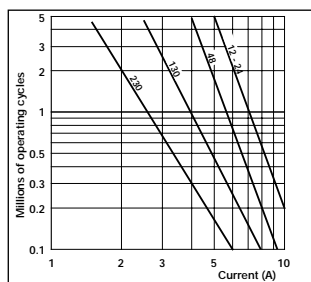


Diagram for slow action contact:



Electrical durability for DC-13 utilization category

Power breaking for a durability of 5 million operating cycles

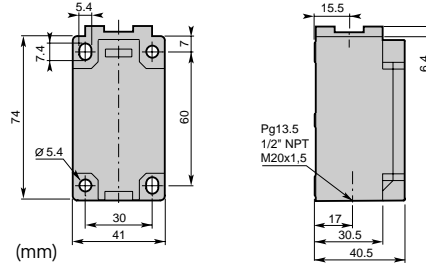
	Snap action	Slow action
Voltage 24V	9,5W	12W
Voltage 48V	6,8W	9W
Voltage 110V	3,6W	6W

# Limit Switches - Limit Type (PS31) Plastic Body IP65

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)

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

		<b>S11</b> 0 1.0 2.2 3.8 5.9 mm	<b>T11</b> 0 1.3 2.9 5.9 mm	<b>O11</b> 0 2.4 5.0 5.9 mm	<b>T02</b> 0 1.1 2.7 5.9 mm
		<b>T20</b> 0 1.0 5.9 mm	<b>S02</b> 0 1.0 2.0 3.6 5.9 mm	<b>T12</b> 0 0.9 2.4 5.9 mm	<b>T21</b> 0 1.0 2.5 5.9 mm
		<b>T03</b> 0 0.9 2.4 5.9 mm	<b>T30</b> 0 1.3 5.9 mm		

Conformity / (NC)	EN 50041 / (NC)	Plain steel plunger	PS31L-
Max. Actuation speed	0.5ms	Code	
Min. force or torque	14N / 40Nm		
Weight	145g		

		<b>S11</b> 0 1.0 2.2 3.8 5.9 mm	<b>T11</b> 0 1.3 2.9 5.9 mm	<b>O11</b> 0 2.4 5.0 5.9 mm	<b>T02</b> 0 1.1 2.7 5.9 mm
		<b>T20</b> 0 1.0 5.9 mm	<b>S02</b> 0 1.0 2.0 3.6 5.9 mm	<b>T12</b> 0 0.9 2.4 5.9 mm	<b>T21</b> 0 1.0 2.5 5.9 mm
		<b>T03</b> 0 0.9 2.4 5.9 mm	<b>T30</b> 0 1.3 5.9 mm		

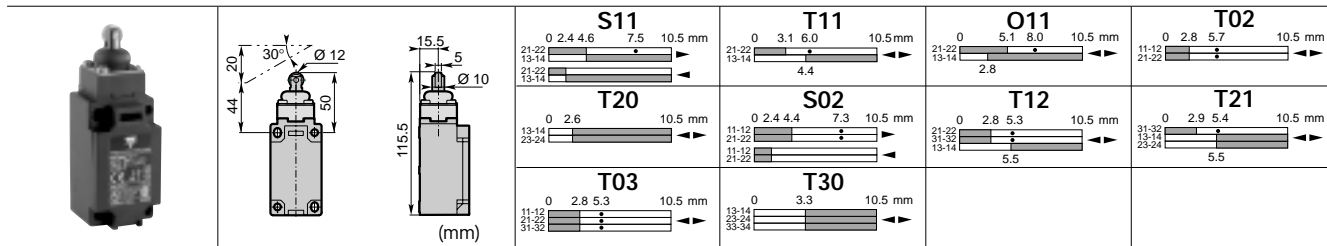
Conformity / (NC)	EN 50041 / (NC)	Steel ball plunger	PS31L-
Max. Actuation speed	0.5ms	Code	
Min. force or torque	14N / 40Nm		
Weight	145g		

		<b>S11</b> 0 2.4 4.6 7.5 10.5 mm	<b>T11</b> 0 3.1 6.0 10.5 mm	<b>O11</b> 0 5.1 8.0 10.5 mm	<b>T02</b> 0 2.8 5.7 10.5 mm
		<b>T20</b> 0 2.6 10.5 mm	<b>S02</b> 0 2.4 4.4 7.3 10.5 mm	<b>T12</b> 0 2.8 5.3 10.5 mm	<b>T21</b> 0 2.9 5.4 10.5 mm
		<b>T03</b> 0 2.8 5.3 10.5 mm	<b>T30</b> 0 3.3 10.5 mm		

Conformity / (NC)	EN 50041 / (NC)	Steel roller plunger	PS31L-
Max. Actuation speed	0.5ms	Code	
Min. force or torque	14N / 40Nm		
Weight	150g		

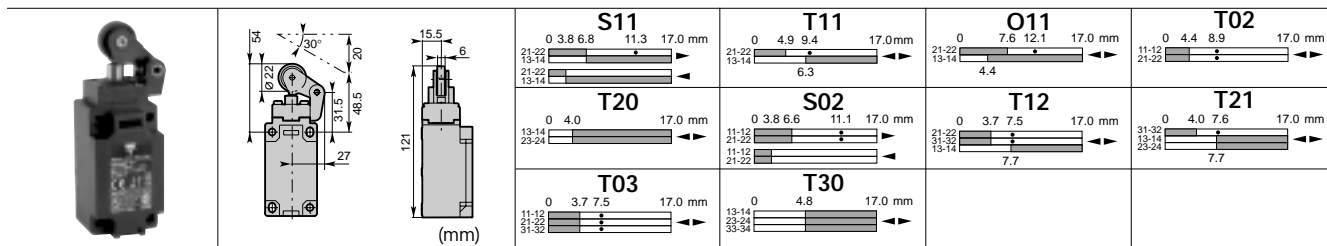
		<b>S11</b> 0 1.0 2.2 3.8 5.9 mm	<b>T11</b> 0 1.3 2.9 5.9 mm	<b>O11</b> 0 2.4 5.0 5.9 mm	<b>T02</b> 0 1.1 2.7 5.9 mm
		<b>T20</b> 0 1.0 5.9 mm	<b>S02</b> 0 1.0 2.0 3.6 5.9 mm	<b>T12</b> 0 0.9 2.4 5.9 mm	<b>T21</b> 0 1.0 2.5 5.9 mm
		<b>T03</b> 0 0.9 2.4 5.9 mm	<b>T30</b> 0 1.3 5.9 mm		

Conformity / (NC)	EN 50041 / (NC)	Plain steel plunger with dust protection cup	PS31L-
Max. Actuation speed	0.5ms	Code	
Min. force or torque	14N / 40Nm		
Weight	145g		



Conformity / (NC) EN 50041 / (NC)  
 Max. Actuation speed 0.5ms  
 Min. force or torque 14N / 40Nm  
 Weight 150g

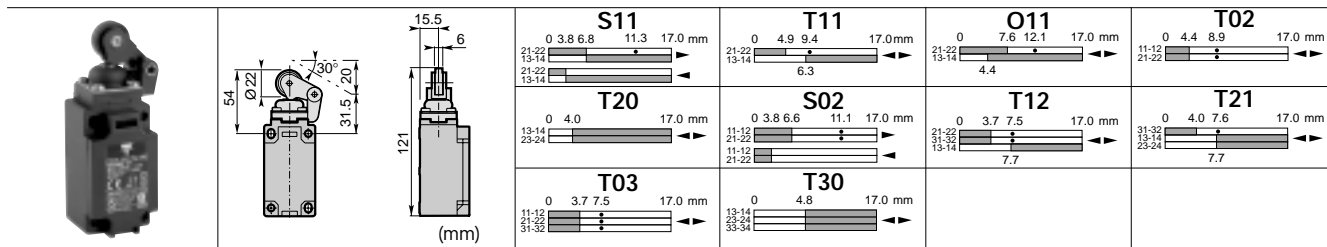
**Steel roller plunger with dust protection cup**  
 Code PS31L- [ ] [ ] PG-T00



Conformity / (NC) / (NC)  
 Max. Actuation speed 1.0ms  
 Min. force or torque 8N / 30Nm  
 Weight 185g

**One way lever**  
 Code Ø22 nylon roller  
 Ø22 stainless steel roller  
 Ø22 steel ball bearing

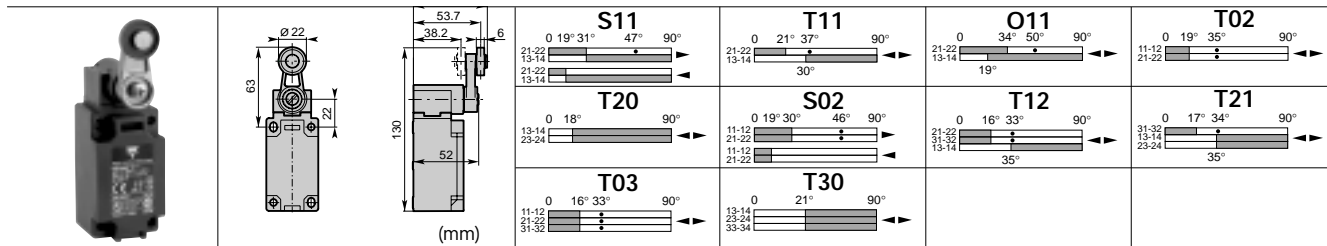
PS31L- [ ] [ ] RH-T00  
 PS31L- [ ] [ ] RK-T00  
 PS31L- [ ] [ ] RB-T00



Conformity / (NC) / (NC)  
 Max. Actuation speed 1.0ms  
 Min. force or torque 8N / 30Nm  
 Weight 180g

**One way lever with dust protection cup**  
 Code Ø22 nylon roller  
 Ø22 stainless steel roller  
 Ø22 steel ball bearing

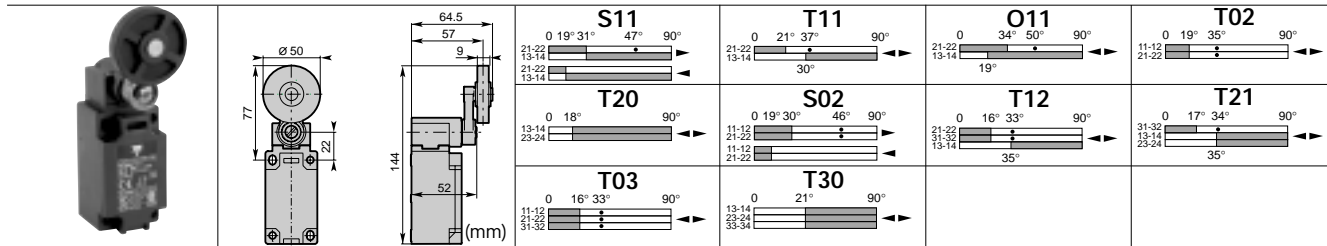
PS31L- [ ] [ ] RJ-T00  
 PS31L- [ ] [ ] RY-T00  
 PS31L- [ ] [ ] RC-T00



Conformity / (NC) EN 50041 / (NC)  
 Max. Actuation speed 1.5ms  
 Min. force or torque 0.15N / 0.30Nm  
 Weight 200g

**Ø22 Roller lever**  
 Code nylon roller  
 stainless steel roller  
 steel ball bearing

PS31L- [ ] [ ] RT-T00  
 PS31L- [ ] [ ] RS-T00  
 PS31L- [ ] [ ] RO-T00



Conformity / (NC) / (NC)  
 Max. Actuation speed 1.5ms  
 Min. force or torque 0.15N / 0.30Nm  
 Weight 205g

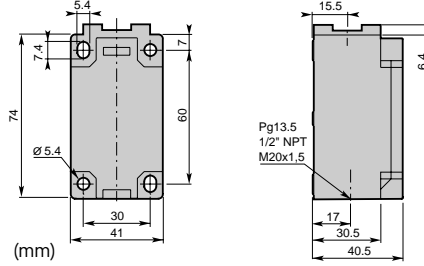
**Ø50 Rubber roller lever**  
 Code PS31L- [ ] [ ] W0-T00

# Limit Switches - Limit Type (PS31) Plastic Body IP65



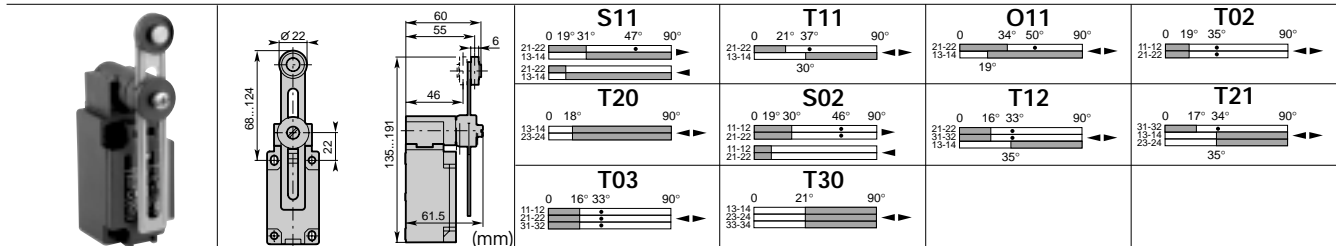
## ■ Cable Gland

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## ▲ Contact block (Zb type)

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



Conformity /  $\rightarrow$  (NC) /  $\rightarrow$

Max. Actuation speed 1.5ms

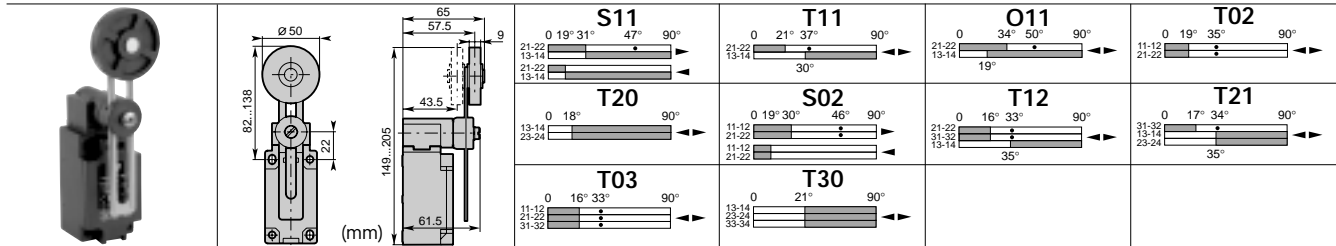
Min. force or torque 0.15N / 0.30Nm

Weight 195g

Adjustable Ø22 roller lever

Code nylon lever  
stainless steel roller  
steel ball bearing

PS31L-▲R1-T00  
PS31L-▲R2-T00  
PS31L-▲R3-T00



Conformity /  $\rightarrow$  (NC) /  $\rightarrow$

Max. Actuation speed 1.5ms

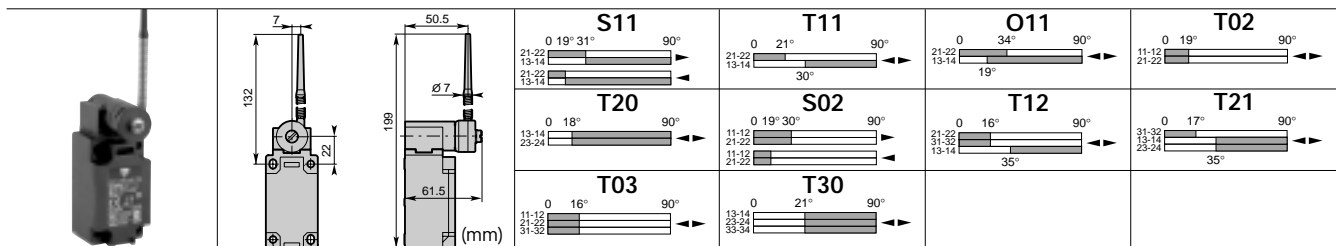
Min. force or torque 0.15N / 0.30Nm

Weight 205g

Adjustable Ø50 rubber roller lever

Code

PS31L-▲W1-T00



Conformity /  $\rightarrow$  (NC) /

Max. Actuation speed 1.5ms

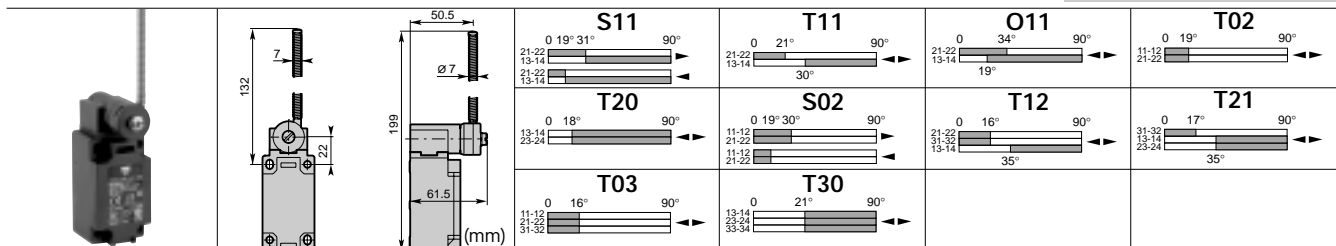
Min. force or torque 0.15N / -

Weight 190g

Nylon actuator with stainless steel spring

Code

PS31L-▲LB-T00



Conformity /  $\rightarrow$  (NC) /

Max. Actuation speed 1.5ms

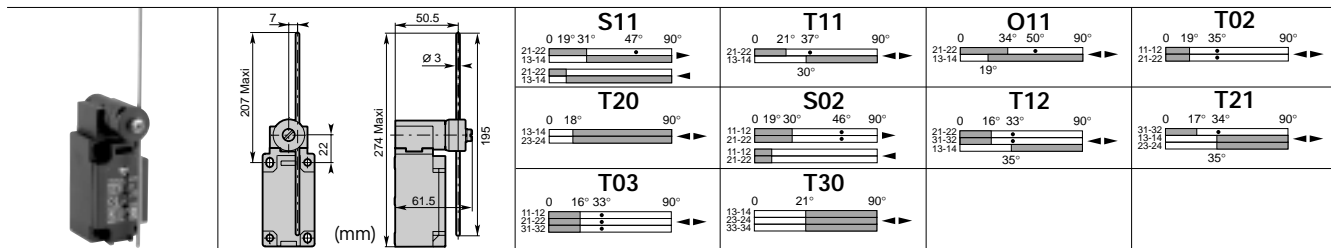
Min. force or torque 0.15N / -

Weight 195g

Stainless steel spring actuator

Code

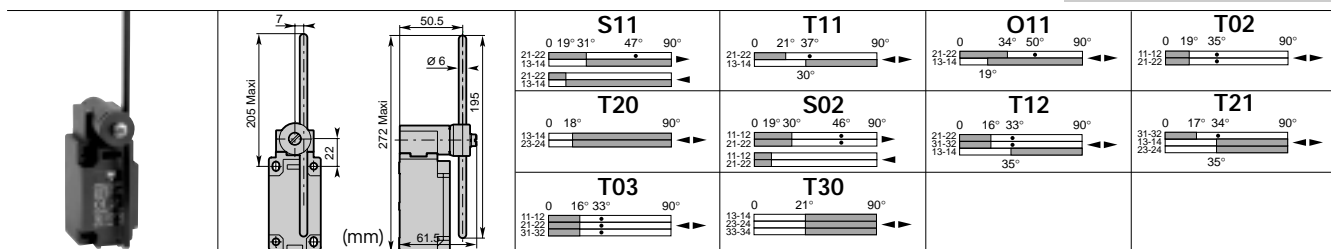
PS31L-▲LZ-T00



Conformity /  $\rightarrow$  (NC) /  $\rightarrow$   
 Max. Actuation speed 1.5ms  
 Min. force or torque 0.15N / 0.30  
 Weight 185g

Adjustable rod lever  
 Code stainless steel rod Ø3  
 fiberglass rod Ø3  
 square steel rod 3x3

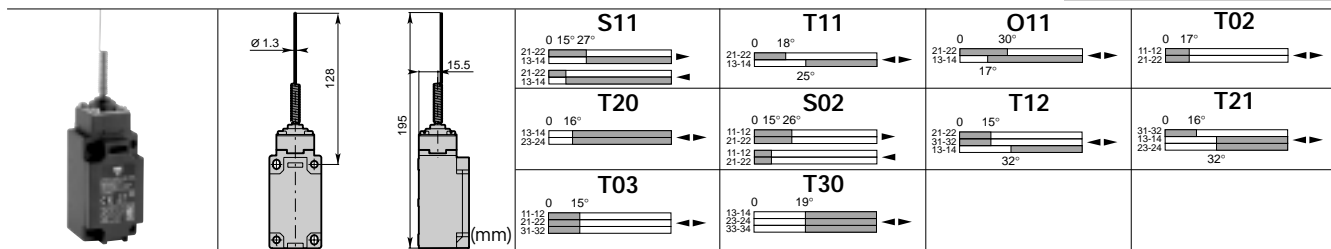
PS31L-  LA-T00  
 PS31L-  LF-T00  
 PS31L-  L3-T00



Conformity /  $\rightarrow$  (NC) /  $\rightarrow$   
 Max. Actuation speed 1.5ms  
 Min. force or torque 0.15N / 0.30Nm  
 Weight 185g

Adjustable Ø6 rod lever  
 Code nylon rod  
 fiberglass rod

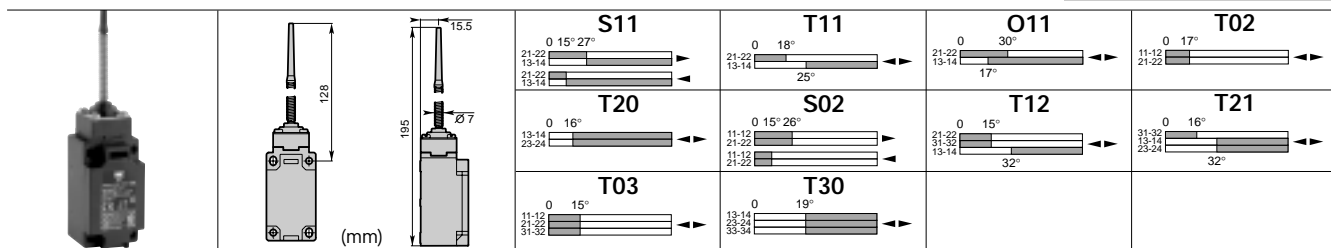
PS31L-  LN-T00  
 PS31L-  LG-T00



Conformity /  $\rightarrow$  /  $\rightarrow$   
 Max. Actuation speed 1.0ms  
 Min. force or torque 0.18N / -  
 Weight 150g

Stainless steel spring multidirectional actuator  
 Code

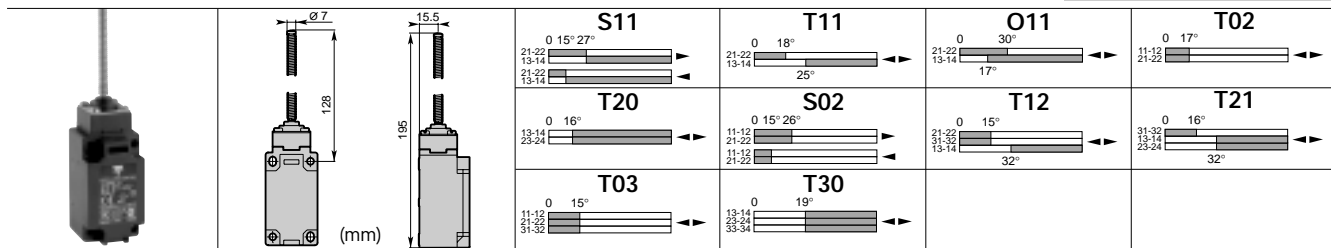
PS31L-  LW-T00



Conformity /  $\rightarrow$  (NC) /  $\rightarrow$   
 Max. Actuation speed 1.0ms  
 Min. force or torque 0.18N / -  
 Weight 155g

Multidirectional nylon actuator with stainless steel spring  
 Code

PS31L-  LP-T00



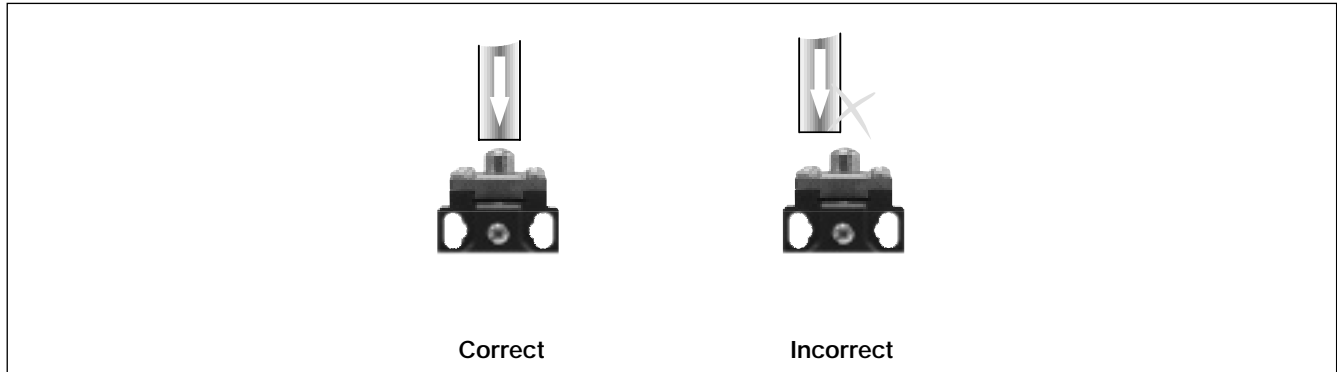
Conformity /  $\rightarrow$  (NC) /  $\rightarrow$   
 Max. Actuation speed 1.0ms  
 Min. force or torque 0.18N / -  
 Weight 160g

Stainless steel spring multidirectional actuator  
 Code

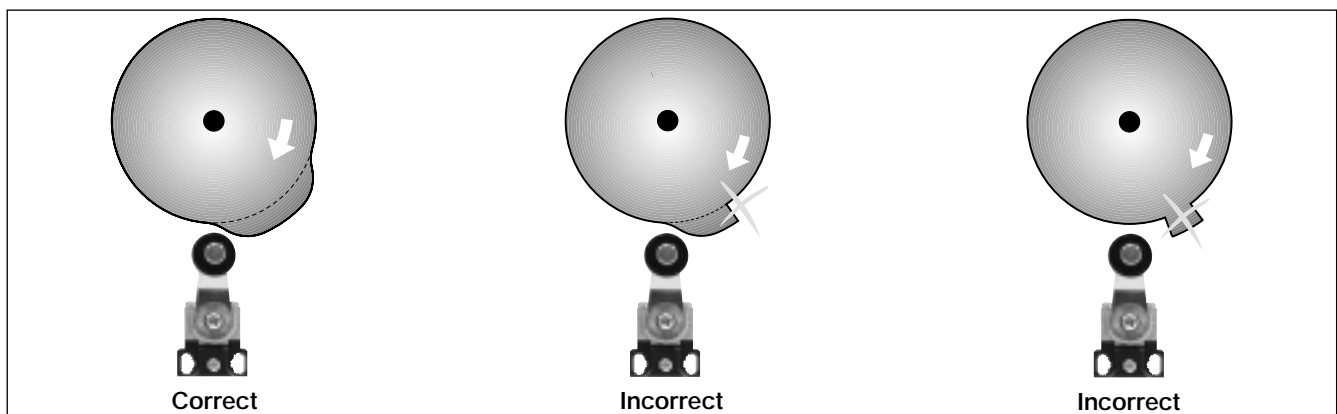
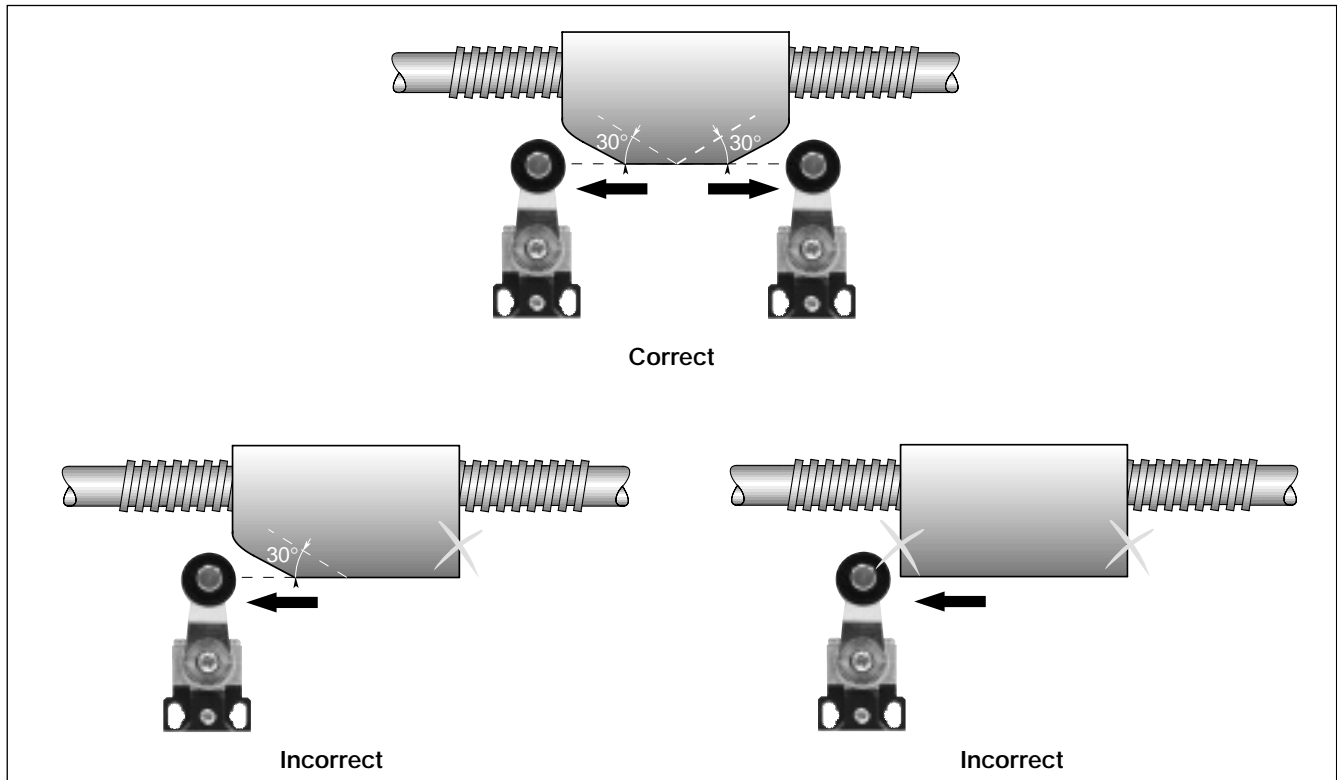
PS31L-  LS-T00

## Utilization precautions

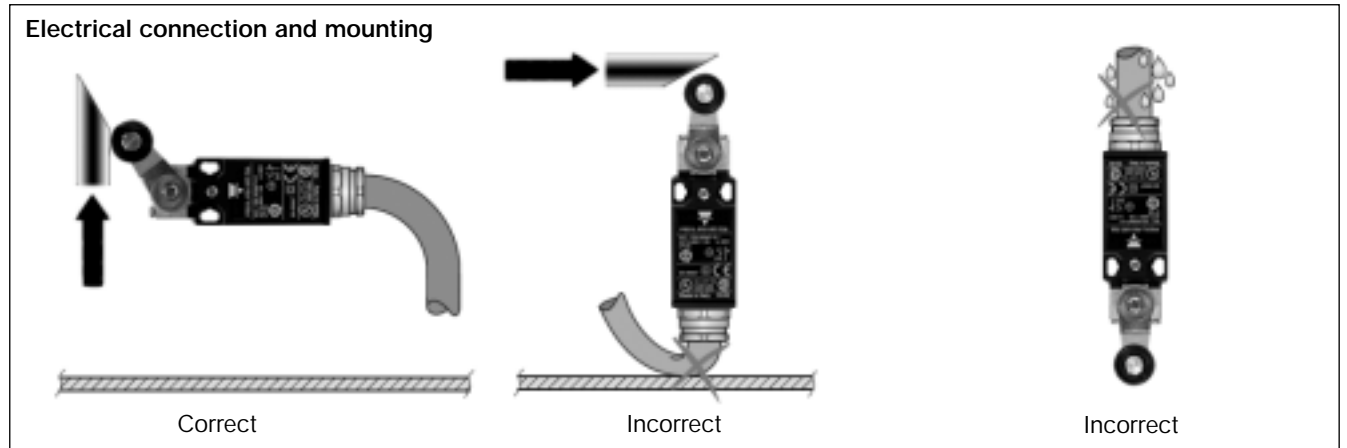
### Plain plunger



### Roller plunger or Roller lever



## Utilization precautions



## Adjustement

