

Limit Switches - Limit Type Plastic Body IP65

CARLO GAVAZZI



- Double Insulation \square
- 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)

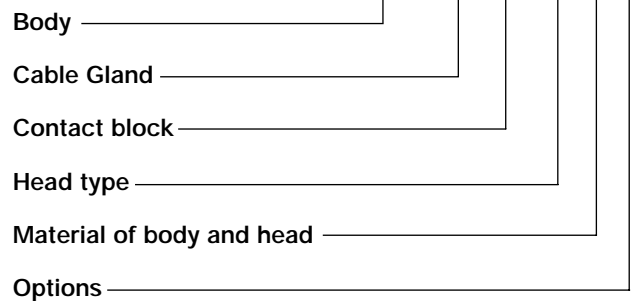
Product Description

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



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 mm² / 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

0,5mm² / 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:

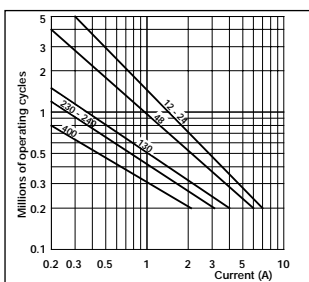
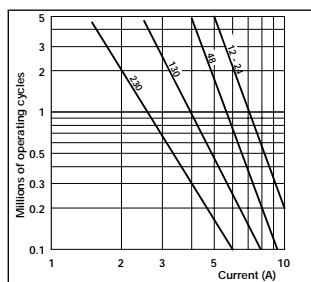


Diagram for slow action contact:



Electrical durability for DC-13 utilization category

Power breaking for a durability of 5 million operating cycles

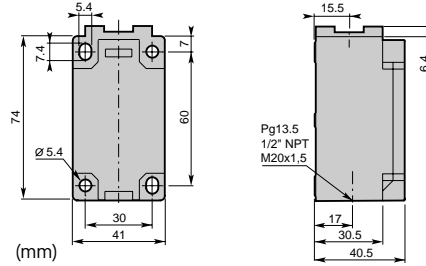
| | Snap action | Slow action |
|--------------|-------------|-------------|
| Voltage 24V | 9,5W | 12W |
| Voltage 48V | 6,8W | 9W |
| Voltage 110V | 3,6W | 6W |

Limit Switches - Limit Type (PS31) Plastic Body IP65



▣ 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 1.0 2.2 3.8 5.9 mm | T11 0 1.3 2.9 5.9 mm | O11 0 2.4 5.0 5.9 mm | T02 0 1.1 2.7 5.9 mm |
| | | T20 0 1.0 5.9 mm | S02 0 1.0 2.0 3.6 5.9 mm | T12 0 0.9 2.4 5.9 mm | T21 0 1.0 2.5 5.9 mm |
| | | T03 0 0.9 2.4 5.9 mm | T30 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 | | |

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


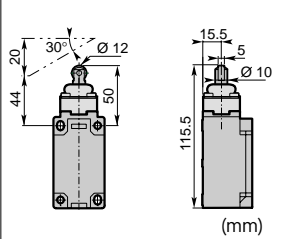
| | | | |
|----------------------|-----------------|--------------------|---------------|
| Conformity / (NC) | EN 50041 / (NC) | Steel ball plunger | PS31L- |
| Max. Actuation speed | 0.5ms | Code | |
| Min. force or torque | 14N / 40Nm | | |
| Weight | 145g | | |

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

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

| | | | |
|---|---|---|--|
| S11 0 2.4 4.6 7.5 10.5 mm 21-22 13-14 21-22 13-14 | T11 0 3.1 6.0 10.5 mm 21-22 13-14 4.4 | O11 0 5.1 8.0 10.5 mm 21-22 13-14 2.8 | T02 0 2.8 5.7 10.5 mm 11-12 21-22 |
| T20 0 2.6 10.5 mm 13-14 23-24 | S02 0 2.4 4.4 7.3 10.5 mm 11-12 21-22 11-12 21-22 | T12 0 2.8 5.3 10.5 mm 21-22 13-14 5.5 | T21 0 2.9 5.4 10.5 mm 21-22 13-14 23-24 5.5 |
| T03 0 2.8 5.3 10.5 mm 11-12 21-22 31-32 | T30 0 3.3 10.5 mm 13-14 23-24 33-34 | | |


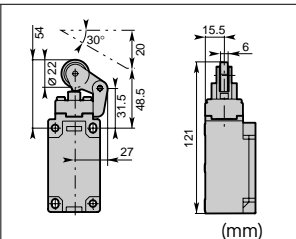
Conformity / (NC) EN 50041 / (NC)

Max. Actuation speed 0.5ms

Min. force or torque 14N / 40Nm

Weight 150g

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

| | | | |
|--|--|--|--|
| S11 0 3.8 6.8 11.3 17.0 mm 21-22 13-14 21-22 13-14 | T11 0 4.9 9.4 17.0 mm 21-22 13-14 6.3 | O11 0 7.6 12.1 17.0 mm 21-22 13-14 4.4 | T02 0 4.4 8.9 17.0 mm 11-12 21-22 |
| T20 0 4.0 17.0 mm 13-14 23-24 | S02 0 3.8 6.6 11.1 17.0 mm 11-12 21-22 11-12 21-22 | T12 0 3.7 7.5 17.0 mm 21-22 13-14 7.7 | T21 0 4.0 7.6 17.0 mm 31-32 13-14 23-24 7.7 |
| T03 0 3.7 7.5 17.0 mm 11-12 21-22 31-32 | T30 0 4.8 17.0 mm 13-14 23-24 33-34 | | |

Conformity / (NC) / (NC)


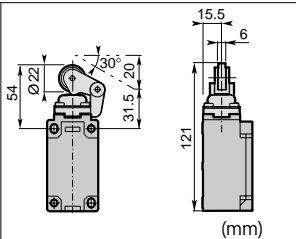
Max. Actuation speed 1.0ms

Min. force or torque 8N / 30Nm

Weight 185g

One way lever
Code $\varnothing 22$ nylon roller
 $\varnothing 22$ stainless steel roller
 $\varnothing 22$ steel ball bearing

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

| | | | |
|--|--|--|--|
| S11 0 3.8 6.8 11.3 17.0 mm 21-22 13-14 21-22 13-14 | T11 0 4.9 9.4 17.0 mm 21-22 13-14 6.3 | O11 0 7.6 12.1 17.0 mm 21-22 13-14 4.4 | T02 0 4.4 8.9 17.0 mm 11-12 21-22 |
| T20 0 4.0 17.0 mm 13-14 23-24 | S02 0 3.8 6.6 11.1 17.0 mm 11-12 21-22 11-12 21-22 | T12 0 3.7 7.5 17.0 mm 21-22 13-14 7.7 | T21 0 4.0 7.6 17.0 mm 31-32 13-14 23-24 7.7 |
| T03 0 3.7 7.5 17.0 mm 11-12 21-22 31-32 | T30 0 4.8 17.0 mm 13-14 23-24 33-34 | | |

Conformity / (NC) / (NC)


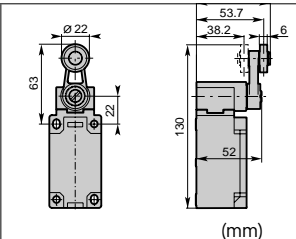
Max. Actuation speed 1.0ms

Min. force or torque 8N / 30Nm

Weight 180g

One way lever with dust protection cup
Code $\varnothing 22$ nylon roller
 $\varnothing 22$ stainless steel roller
 $\varnothing 22$ steel ball bearing

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

| | | | |
|---|---|---|--|
| S11 0 19° 31° 47° 90° 21-22 13-14 21-22 13-14 | T11 0 21° 37° 90° 21-22 13-14 30° | O11 0 34° 50° 90° 21-22 13-14 19° | T02 0 19° 35° 90° 11-12 21-22 |
| T20 0 18° 90° 13-14 23-24 | S02 0 19° 30° 46° 90° 11-12 21-22 11-12 21-22 | T12 0 16° 33° 90° 21-22 13-14 35° | T21 0 17° 34° 90° 31-32 13-14 23-24 35° |
| T03 0 16° 33° 90° 11-12 21-22 31-32 | T30 0 21° 90° 13-14 23-24 33-34 | | |

Conformity / (NC) EN 50041 / (NC)


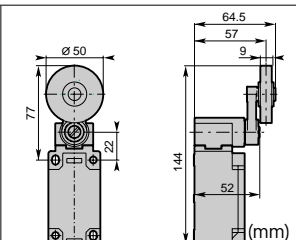
Max. Actuation speed 1.5ms

Min. force or torque 0.15N / 0.30Nm

Weight 200g

$\varnothing 22$ Roller lever
Code nylon roller
stainless steel roller
steel ball bearing

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

| | | | |
|---|---|---|--|
| S11 0 19° 31° 47° 90° 21-22 13-14 21-22 13-14 | T11 0 21° 37° 90° 21-22 13-14 30° | O11 0 34° 50° 90° 21-22 13-14 19° | T02 0 19° 35° 90° 11-12 21-22 |
| T20 0 18° 90° 13-14 23-24 | S02 0 19° 30° 46° 90° 11-12 21-22 11-12 21-22 | T12 0 16° 33° 90° 21-22 13-14 35° | T21 0 17° 34° 90° 31-32 13-14 23-24 35° |
| T03 0 16° 33° 90° 11-12 21-22 31-32 | T30 0 21° 90° 13-14 23-24 33-34 | | |

Conformity / (NC) / (NC)

Max. Actuation speed 1.5ms

Min. force or torque 0.15N / 0.30Nm

Weight 205g

$\varnothing 50$ Rubber roller lever
Code

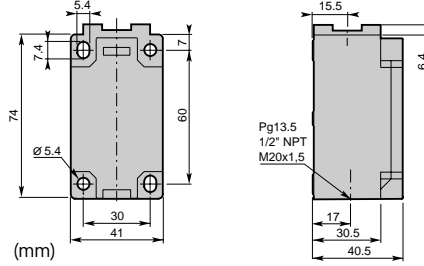
PS31L- [] [] W0-T00

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)

| | | | | | | | | | |
|-------------------------------------|--|--|--|--|--|---|--|---|--|
| 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 19° 31° 47° 90° | T11 0 21° 37° 90° | O11 0 34° 50° 90° | T02 0 19° 35° 90° |
| | | T20 0 18° 90° | S02 0 19° 30° 46° 90° | T12 0 16° 33° 90° | T21 0 17° 34° 90° |
| | | T03 0 16° 33° 90° | T30 0 21° 90° | | |

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

| | | | | | |
|--|--|---------------------------------|---------------------------------|-----------------------------|-----------------------------|
| | | S11 0 19° 31° 47° 90° | T11 0 21° 37° 90° | O11 0 34° 50° 90° | T02 0 19° 35° 90° |
| | | T20 0 18° 90° | S02 0 19° 30° 46° 90° | T12 0 16° 33° 90° | T21 0 17° 34° 90° |
| | | T03 0 16° 33° 90° | T30 0 21° 90° | | |

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

| | | | | | |
|--|--|-----------------------------|-----------------------------|-------------------------|-------------------------|
| | | S11 0 19° 31° 90° | T11 0 21° 90° | O11 0 34° 90° | T02 0 19° 90° |
| | | T20 0 18° 90° | S02 0 19° 30° 90° | T12 0 16° 90° | T21 0 17° 90° |
| | | T03 0 16° 90° | T30 0 21° 90° | | |

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

| | | | | | |
|--|--|-----------------------------|-----------------------------|-------------------------|-------------------------|
| | | S11 0 19° 31° 90° | T11 0 21° 90° | O11 0 34° 90° | T02 0 19° 90° |
| | | T20 0 18° 90° | S02 0 19° 30° 90° | T12 0 16° 90° | T21 0 17° 90° |
| | | T03 0 16° 90° | T30 0 21° 90° | | |

Conformity / \rightarrow (NC) /

Max. Actuation speed 1.5ms

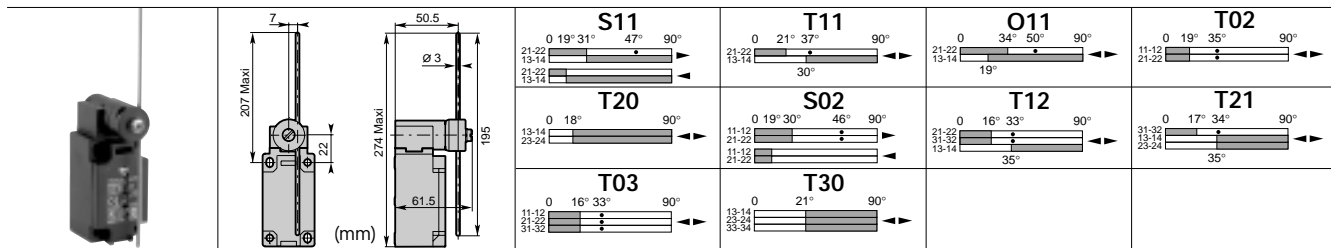
Min. force or torque 0.15N / -

Weight 195g

Stainless steel spring actuator

Code

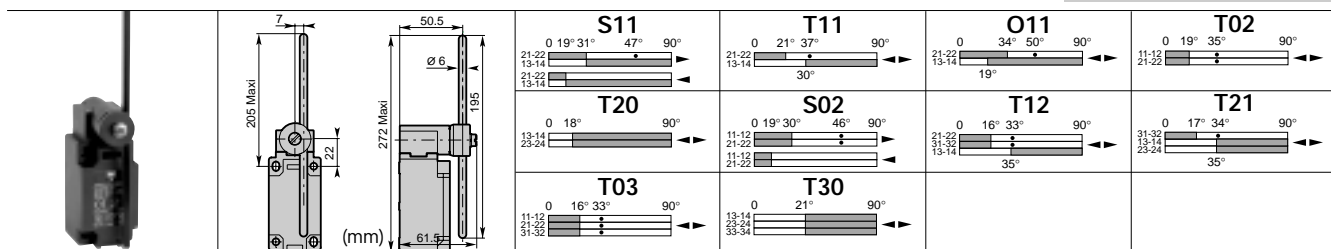
PS31L-▲LZ-T00



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

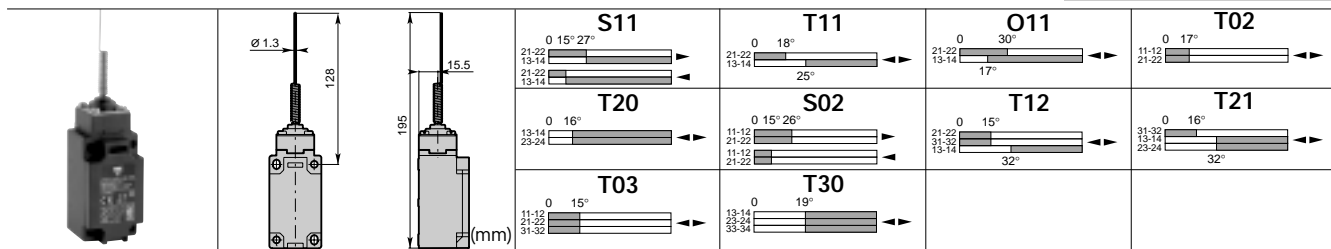
PS31L- LA-T00
 PS31L- LF-T00
 PS31L- L3-T00



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

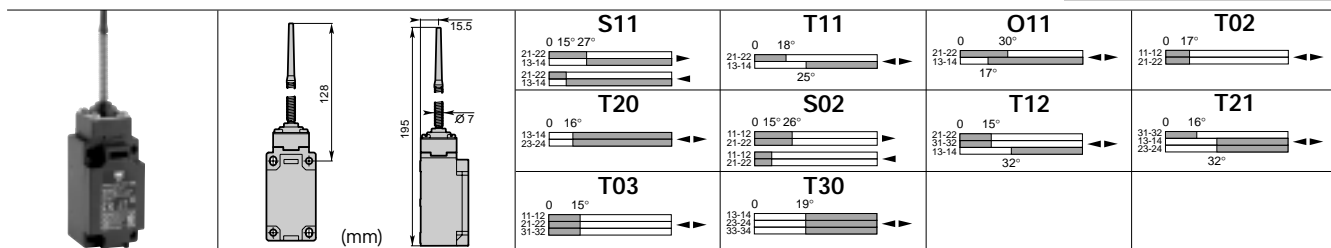
PS31L- LN-T00
 PS31L- LG-T00



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

Stainless steel spring multidirectional actuator
 Code

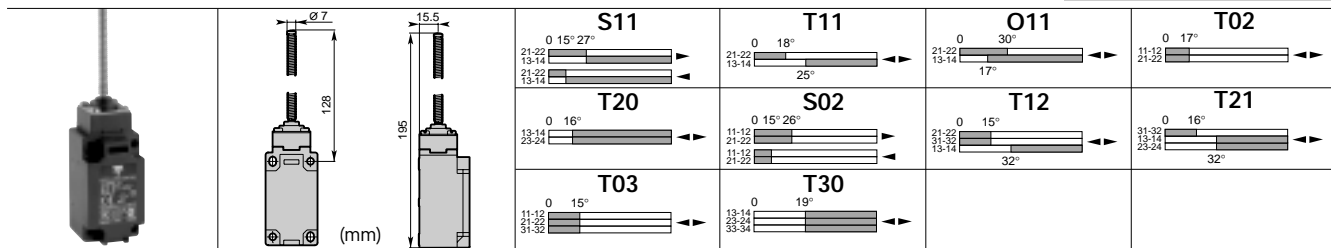
PS31L- LW-T00



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



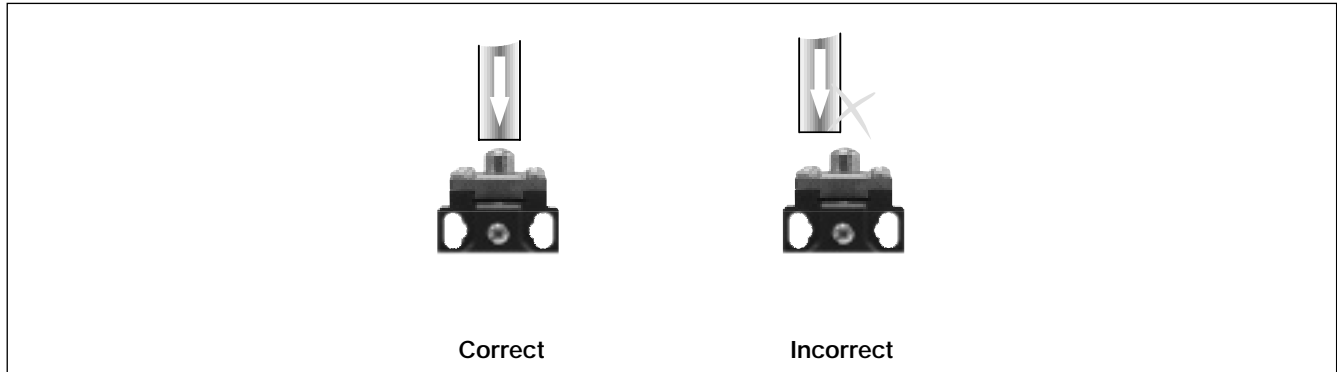
Conformity / \rightarrow (NC) / \rightarrow
 Max. Actuation speed 1.0ms
 Min. force or torque 0.18N / -
 Weight 160g

Stainless steel spring multidirectional actuator
 Code

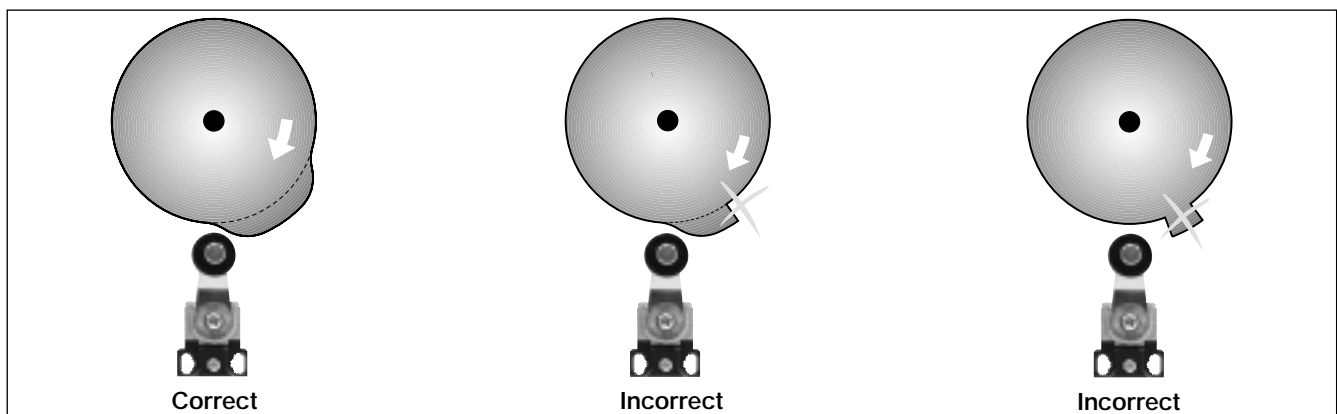
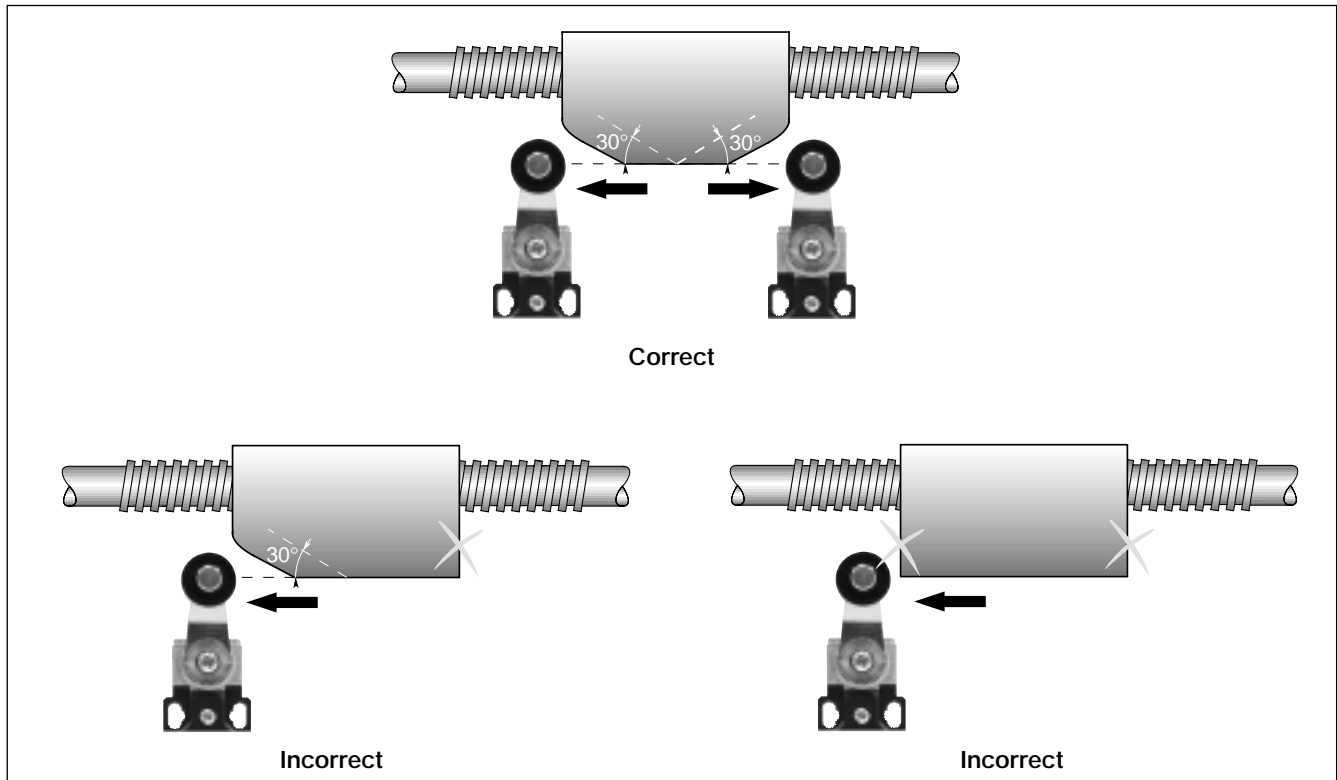
PS31L- LS-T00

Utilization precautions

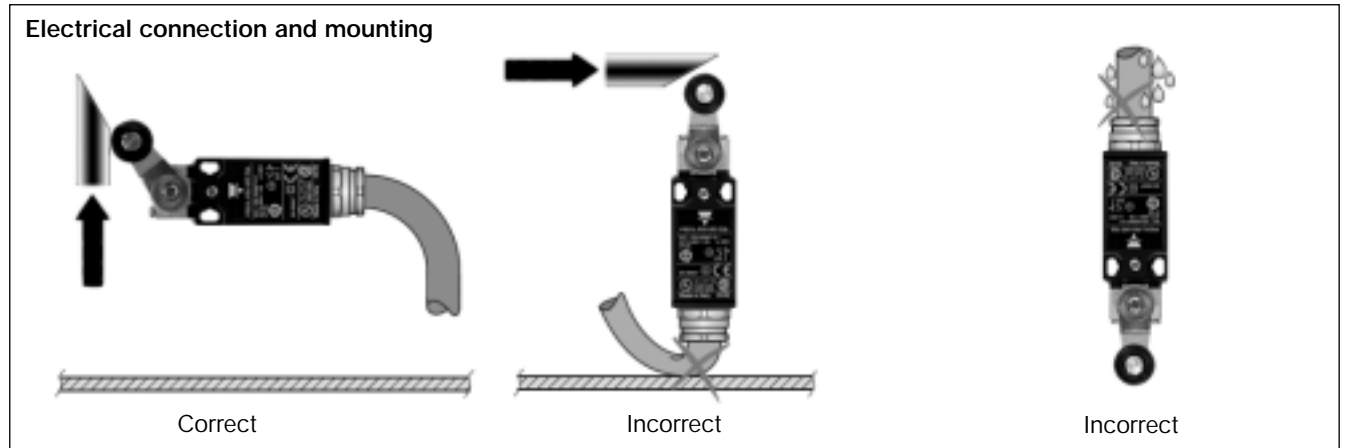
Plain plunger



Roller plunger or Roller lever



Utilization precautions



Adjustement

