

# Limit Switches - Limit Type (PS31L) Metal Body IP66



- High mechanical resistance
- Degree of protection IP66
- Zinc alloy (Zamack) or aluminium body
- Positive Opening Operation  $\ominus$
- 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)

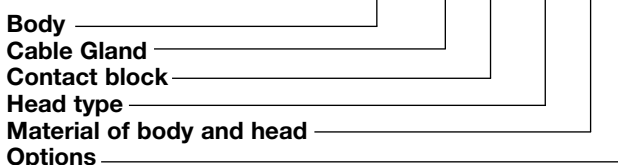
## Product Description

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**



## Description of the key codes

### Cable gland

<b>M</b>	M20
<b>P</b>	PG13.5
<b>N</b>	1/2 NPT

### Contact block

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

### Material of body and head

<b>M</b>	Metal body and Metal head
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### Options

<b>00</b>	no option
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### Head type

<b>L3</b>	Adj. square $\square$ 3 ( $\square$ 0.12") steel rod LEVER
<b>LA</b>	Adj. $\varnothing$ 3 (0.12") rod LEVER stainless steel rod
<b>LB</b>	Nylon actuator with stainless steel spring
<b>LF</b>	Adj. fiberglass rod LEVER $\varnothing$ 3 (0.12")
<b>LG</b>	Adj. fiberglass rod LEVER $\varnothing$ 6 (0.24")
<b>LN</b>	Adj. nylon rod LEVER
<b>LP</b>	Multidir. nylon actuator with stainless steel spring
<b>LW</b>	Stainless steel spring multidir actuator (cat Whisker)
<b>LZ</b>	Stainless steel spring actuator
<b>P0</b>	Metal plain PLUNGER
<b>PB</b>	Steel ball PLUNGER
<b>PR</b>	Metal roller PLUNGER
<b>R1</b>	Adj. LEVER with nylon roller
<b>R2</b>	Adj. LEVER with stainless steel roller
<b>R3</b>	Adj. LEVER with steel ball bearing
<b>RB</b>	One way LEVER steel ball bearing
<b>RH</b>	Plastic roller LEVER on metal PLUNGER (left)
<b>RK</b>	One way LEVER stainless steel roller
<b>RO</b>	Roller LEVER steel ball bearing
<b>RS</b>	Metal roller LEVER
<b>RT</b>	Nylon roller LEVER
<b>SH</b>	Stainless steel lateral PLUNGER with horizontal roller
<b>SP</b>	Stainless steel lateral plain PLUNGER
<b>SV</b>	Stainless steel lateral PLUNGER with vertical roller
<b>W0</b>	$\varnothing$ 50 (1.97") rubber roller LEVER
<b>W1</b>	Adj. LEVER with $\varnothing$ 50 (1.97") rubber roller

## Technical Data

<b>Standards</b>	IEC 60947-1, IEC 60947-5-1, EN 60947-1, EN 60947-5-1, UL508 and CSA C22-2 n°14
<b>Certifications – Approvals</b>	UL – CSA
<b>Air temperature</b> near the device - during operation - for storage	-25°C...+70°C/-13°F...+158°F -30°C...+80°C/-22°F...+176°F
<b>Climatic withstand</b>	According to IEC 68-2-3 and salty mist according to IEC 68-2-11
<b>Mounting positions</b>	All positions are authorized
<b>Shock withstand</b> (according to IEC 68-2-27 and 60068-2-27) (1/2 sinusoidal shock for 11ms) no change in contact position	50g/1.76oz
<b>Resistance to vibrations</b> (according to IEC 68-2-6 and EN 60068-2-6)	25g/0.88oz (10...500Hz) no change in position of contacts greater than 100µs
<b>Protection against electrical shocks</b> (according to IEC 536)	Class I
<b>Degree of protection</b> (according to IEC 529 and EN 60529)	IP66
<b>Consistency</b> (measured over 1 milion operations)	0.1mm/0.004" (upon closing point)

## Electrical Data

<b>Rated insulation voltage <math>U_i</math></b> -according to IEC 60947-1 and EN 60947-1 -according to UL 508, CSA C22-2 n°14	500V (degree of pollution 3) A 600 Q 600
<b>Rated impulse withstand voltage <math>U_{imp}</math></b> (according to IEC 60947-1 and EN 60947-1)	6kV
<b>Conventional enclosed thermal current <math>I_{the}</math></b> (according to IEC 60947-1 and EN 60947-5-1) ( $\theta \leq 40^\circ\text{C}/104^\circ\text{F}$ )	10A
<b>Short-circuit protection - gG type fuses</b>	10A
<b>Rated operational current</b>	
<b><math>I_e</math> / AC-15</b> - acc.to IEC 60947-5-1	
24VAC (50/60Hz)	10.0A
130VAC (50/60Hz)	5.5A
230VAC (50/60Hz)	3.1A
240VAC (50/60Hz)	3.0A
400VAC (50/60Hz)	1.8A
- acc.to UL 508, CSA C22 n°14	A 600
<b><math>I_e</math> / DC-13</b> - acc.to IEC 60947-5-1	
24VDC	2.8A
110VDC	0.6A
250VDC	0.27A
- acc.to UL 508, CSA C22 n°14	Q 600
<b>Electrical durability</b> (according to IEC 60947-5-1 annex C) - max. switching frequency Cycles/h - load factor	Utilization categories AC-15 and DC-13 (see curves and value below) 3600 0.5
<b>Connecting data of contact blocks</b> Connecting terminals Connecting capacity 1 or 2 x mm <sup>2</sup> / AWG Terminal marking	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
<b>Positivity</b>	Contacts with positive opening operation as per IEC 60947-5-1 chapter 3

Diagram for snap action contact:

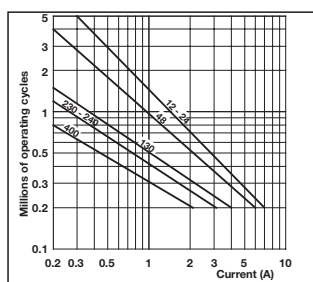
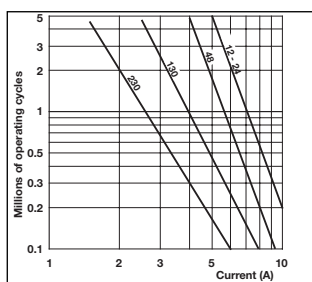


Diagram for slow action contact:



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)

<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

	<p>mm/inches</p> <p>010/0.39"</p> <p>16/0.63"</p> <p>37/1.46"</p> <p>107/4.21"</p>	<table border="1"> <tr> <td><b>S11</b></td> <td><b>T11</b></td> <td><b>O11</b></td> <td><b>T02</b></td> </tr> <tr> <td><b>T20</b></td> <td><b>S02</b></td> <td><b>T12</b></td> <td><b>T21</b></td> </tr> <tr> <td><b>T03</b></td> <td><b>T30</b></td> <td></td> <td></td> </tr> </table>	<b>S11</b>	<b>T11</b>	<b>O11</b>	<b>T02</b>	<b>T20</b>	<b>S02</b>	<b>T12</b>	<b>T21</b>	<b>T03</b>	<b>T30</b>		
<b>S11</b>	<b>T11</b>	<b>O11</b>	<b>T02</b>											
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<b>T03</b>	<b>T30</b>													

<b>Conformity</b> (NC)	EN 50041	<b>Stainless steel plain plunger</b>	<b>Code</b>	PS31L- ● ▲ P0-M00
<b>Max. Actuation speed</b>	0.5m/s / 1.64ft/s			
<b>Min. force or torque</b>	30N / 45Nm			
<b>Weight</b>	240.0g / 8.466oz			

	<p>mm/inches</p> <p>010/0.39"</p> <p>08/0.31"</p> <p>38.5/1.52"</p> <p>16/0.63"</p> <p>108.5/4.27"</p>	<table border="1"> <tr> <td><b>S11</b></td> <td><b>T11</b></td> <td><b>O11</b></td> <td><b>T02</b></td> </tr> <tr> <td><b>T20</b></td> <td><b>S02</b></td> <td><b>T12</b></td> <td><b>T21</b></td> </tr> <tr> <td><b>T03</b></td> <td><b>T30</b></td> <td></td> <td></td> </tr> </table>	<b>S11</b>	<b>T11</b>	<b>O11</b>	<b>T02</b>	<b>T20</b>	<b>S02</b>	<b>T12</b>	<b>T21</b>	<b>T03</b>	<b>T30</b>		
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<b>T03</b>	<b>T30</b>													

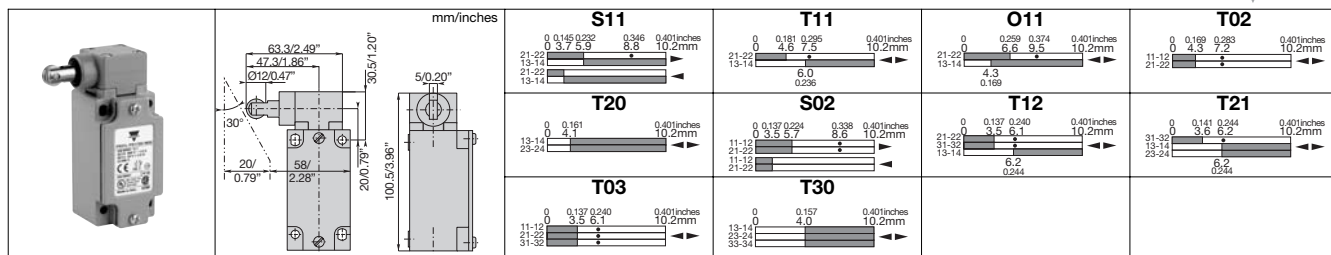
<b>Conformity</b> (NC)	EN 50041	<b>Stainless steel ball plunger</b>	<b>Code</b>	PS31L- ● ▲ PB-M00
<b>Max. Actuation speed</b>	0.5m/s / 1.64ft/s			
<b>Min. force or torque</b>	30N / 45Nm			
<b>Weight</b>	240.0g / 8.466oz			

	<p>mm/inches</p> <p>20/0.79"</p> <p>30°</p> <p>012/0.47"</p> <p>44/1.73"</p> <p>50/1.97"</p> <p>16/0.63"</p> <p>10/0.39"</p> <p>5/0.20"</p> <p>120/4.72"</p>	<table border="1"> <tr> <td><b>S11</b></td> <td><b>T11</b></td> <td><b>O11</b></td> <td><b>T02</b></td> </tr> <tr> <td><b>T20</b></td> <td><b>S02</b></td> <td><b>T12</b></td> <td><b>T21</b></td> </tr> <tr> <td><b>T03</b></td> <td><b>T30</b></td> <td></td> <td></td> </tr> </table>	<b>S11</b>	<b>T11</b>	<b>O11</b>	<b>T02</b>	<b>T20</b>	<b>S02</b>	<b>T12</b>	<b>T21</b>	<b>T03</b>	<b>T30</b>		
<b>S11</b>	<b>T11</b>	<b>O11</b>	<b>T02</b>											
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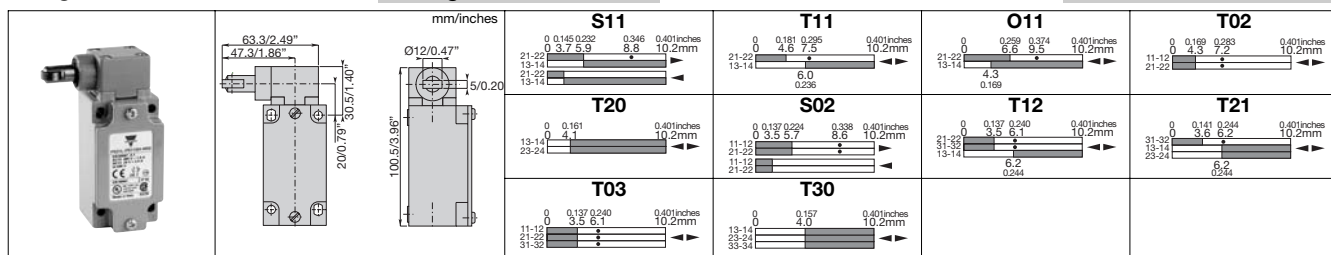
<b>Conformity</b> (NC)	EN 50041	<b>Stainless steel Ø22 (0.87") roller plunger</b>	<b>Code</b>	PS31L- ● ▲ PR-M00
<b>Max. Actuation speed</b>	0.5m/s / 1.64ft/s			
<b>Min. force or torque</b>	22N / 40Nm			
<b>Weight</b>	245.0g / 8.642oz			

	<p>mm/inches</p> <p>52/2.05"</p> <p>36/1.42"</p> <p>20/0.79"</p> <p>30.5/1.20"</p> <p>010/0.39"</p> <p>100.5/3.96"</p>	<table border="1"> <tr> <td><b>S11</b></td> <td><b>T11</b></td> <td><b>O11</b></td> <td><b>T02</b></td> </tr> <tr> <td><b>T20</b></td> <td><b>S02</b></td> <td><b>T12</b></td> <td><b>T21</b></td> </tr> <tr> <td><b>T03</b></td> <td><b>T30</b></td> <td></td> <td></td> </tr> </table>	<b>S11</b>	<b>T11</b>	<b>O11</b>	<b>T02</b>	<b>T20</b>	<b>S02</b>	<b>T12</b>	<b>T21</b>	<b>T03</b>	<b>T30</b>		
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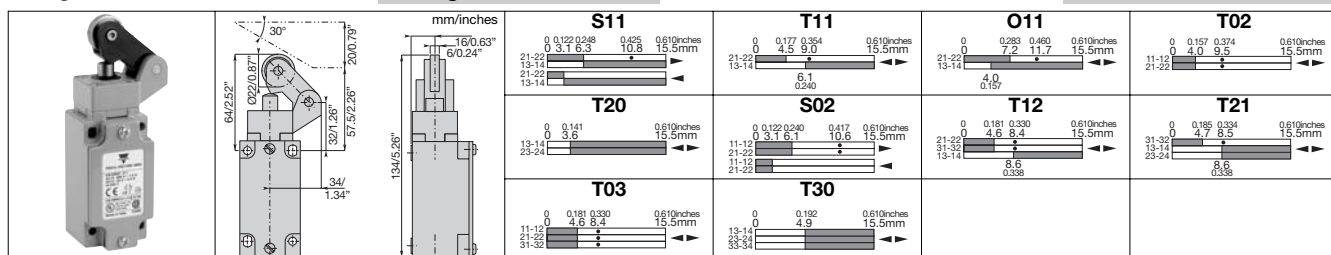
<b>Conformity</b> (NC)	EN 50041	<b>Stainless steel lateral plain plunger</b>	<b>Code</b>	PS31L- ● ▲ SP-M00
<b>Max. Actuation speed</b>	0.5m/s / 1.64ft/s			
<b>Min. force or torque</b>	30N / 45Nm			
<b>Weight</b>	260.0g / 9.171oz			



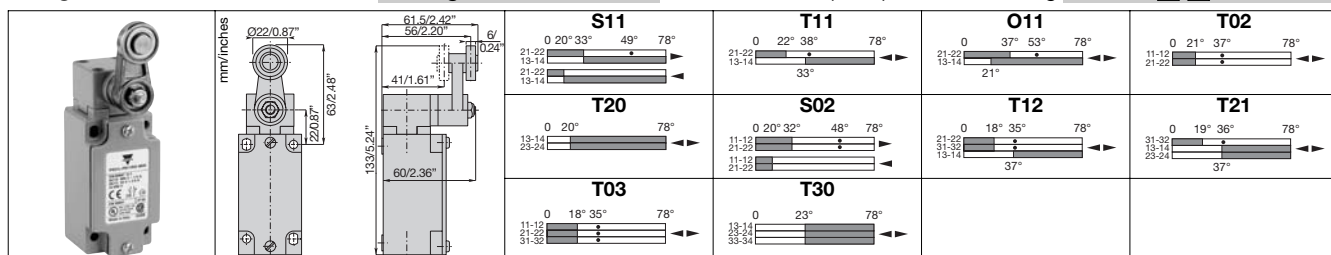
**Conformity / (NC)** EN 50041 / Stainless steel lateral plunger with Ø12 (0.47") vertical roller  
**Max. Actuation speed** 0.5m/s / 1.64ft/s  
**Min. force or torque** 30N / 45Nm  
**Weight** 265.0g / 9.348oz  
**Code** PS31L- [ ] [ ] SV-M00



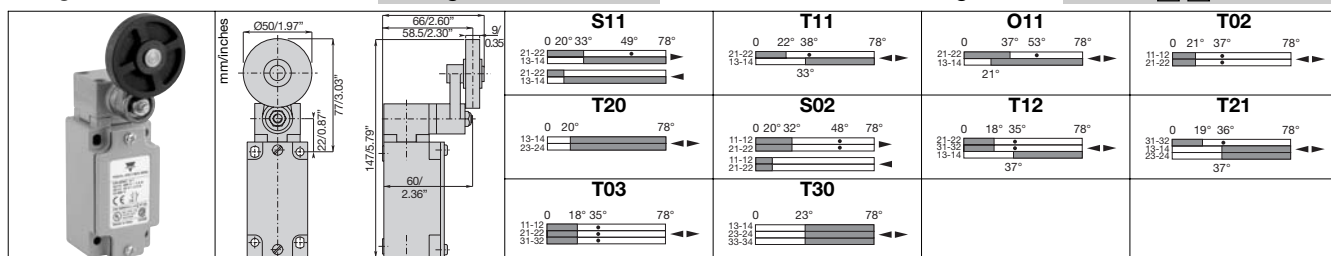
**Conformity / (NC)** EN 50041 / Stainless steel lateral plunger with Ø12 (0.47") horizontal roller  
**Max. Actuation speed** 0.5m/s / 1.64ft/s  
**Min. force or torque** 30N / 45Nm  
**Weight** 265.0g / 9.348oz  
**Code** PS31L- [ ] [ ] SH-M00



**Conformity / (NC)** / One way lever  
**Max. Actuation speed** 1.5m/s / 4.92ft/s  
**Min. force or torque** 12N / 40Nm  
**Weight** 280.0g / 9.877oz  
**Code** Ø22 (0.12") Nylon roller PS31L- [ ] [ ] RH-M00  
 Ø22 (0.12") Stainless steel roller PS31L- [ ] [ ] RK-M00  
 Ø22 (0.12") Steel ball bearing PS31L- [ ] [ ] RB-M00



**Conformity / (NC)** EN 50041 / Ø22 (0.12") Roller lever  
**Max. Actuation speed** 1.5m/s / 4.92ft/s  
**Min. force or torque** 0.15N / 0.30Nm  
**Weight** 300.0g / 10.582oz  
**Code** Nylon roller PS31L- [ ] [ ] RT-M00  
 Stainless steel roller PS31L- [ ] [ ] RS-M00  
 Steel ball bearing PS31L- [ ] [ ] RO-M00



**Conformity / (NC)** / Ø50 (1.97") Rubber roller lever  
**Max. Actuation speed** 1.5m/s / 4.92ft/s  
**Min. force or torque** 0.15N / 0.30Nm  
**Weight** 315.0g / 11.111oz  
**Code** PS31L- [ ] [ ] W0-M00

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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)

<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>	<b>T11</b>	<b>O11</b>	<b>T02</b>
		<b>T20</b>	<b>S02</b>	<b>T12</b>	<b>T21</b>
		<b>T03</b>	<b>T30</b>		

<b>Conformity</b> / (NC)	/	<b>Adjustable Ø22 (0.87") roller lever</b>
<b>Max. Actuation speed</b>	1.5m/s / 4.92ft/s	<b>Code</b> Nylon lever
<b>Min. force or torque</b>	0.15N / 0.30Nm	Stainless steel roller
<b>Weight</b>	320.0g / 11.288oz	Steel ball bearing

		<b>S11</b>	<b>T11</b>	<b>O11</b>	<b>T02</b>
		<b>T20</b>	<b>S02</b>	<b>T12</b>	<b>T21</b>
		<b>T03</b>	<b>T30</b>		

<b>Conformity</b> / (NC)	/	<b>Adjustable Ø50 (1.97") rubber roller lever</b>
<b>Max. Actuation speed</b>	1.5m/s / 4.92ft/s	<b>Code</b>
<b>Min. force or torque</b>	0.15N / 0.30Nm	PS31L- ● ▲ W1-M00
<b>Weight</b>	325.0g / 11.464oz	

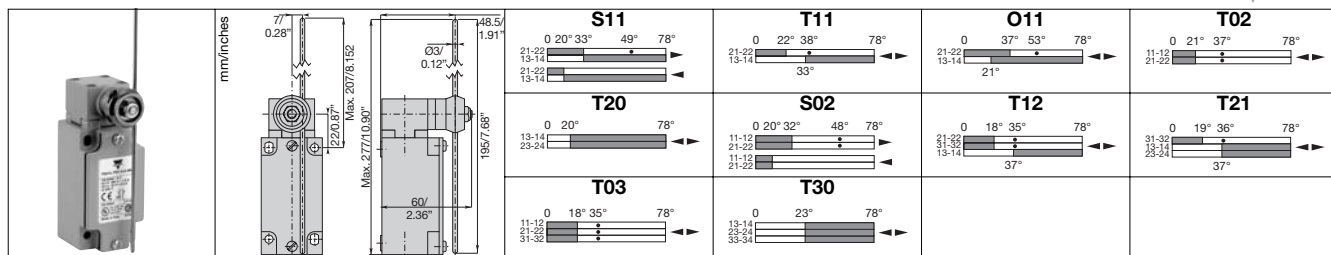
		<b>S11</b>	<b>T11</b>	<b>O11</b>	<b>T02</b>
		<b>T20</b>	<b>S02</b>	<b>T12</b>	<b>T21</b>
		<b>T03</b>	<b>T30</b>		

<b>Conformity</b> / (NC)	/	<b>Nylon actuator with stainless steel spring</b>
<b>Max. Actuation speed</b>	1.5m/s / 4.92ft/s	<b>Code</b>
<b>Min. force or torque</b>	0.15N / -	PS31L- ● ▲ LB-M00
<b>Weight</b>	305.0g / 10.758oz	

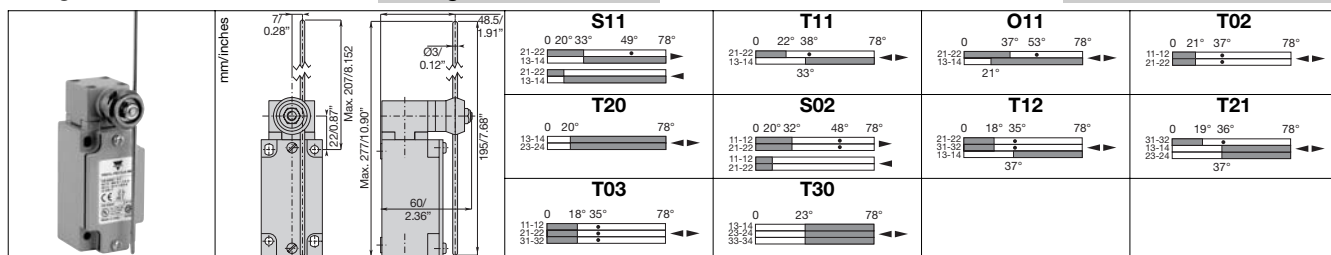
		<b>S11</b>	<b>T11</b>	<b>O11</b>	<b>T02</b>
		<b>T20</b>	<b>S02</b>	<b>T12</b>	<b>T21</b>
		<b>T03</b>	<b>T30</b>		

<b>Conformity</b> / (NC)	/	<b>Stainless steel spring actuator</b>
<b>Max. Actuation speed</b>	1.5m/s / 4.92ft/s	<b>Code</b>
<b>Min. force or torque</b>	0.15N / -	PS31L- ● ▲ LZ-M00
<b>Weight</b>	310.0g / 10.935oz	

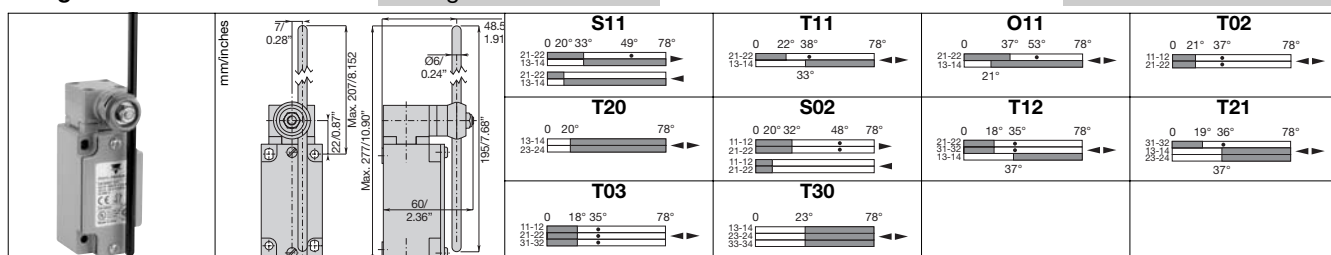




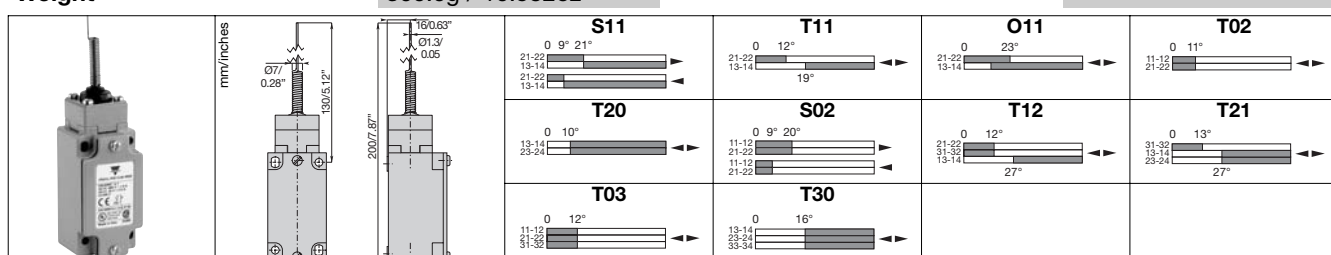
<b>Conformity / (NC)</b>	EN50041 / ( )	<b>Adjustable rod lever</b>
<b>Max. Actuation speed</b>	1.5m/s / 4.92ft/s	<b>Code</b> Stainless steel rod Ø3 (0.12") PS31L- ( ) ( ) LA-M00
<b>Min. force or torque</b>	0.15N / 0.30Nm	Fiberglass rod Ø3 (0.12") PS31L- ( ) ( ) LF-M00
<b>Weight</b>	305.0g / 10.758oz	



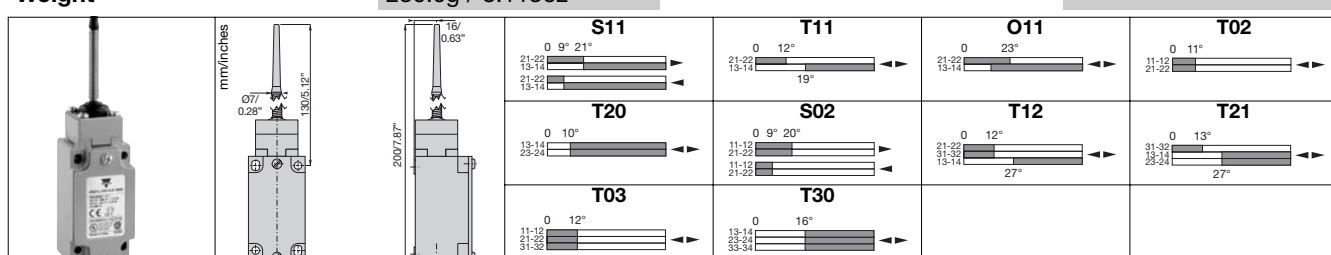
<b>Conformity / (NC)</b>	EN50041 / ( )	<b>Adjustable rod lever</b>
<b>Max. Actuation speed</b>	1.5m/s / 4.92ft/s	<b>Code</b> Square steel rod □3 (□0.12") PS31L- ( ) ( ) L3-M00
<b>Min. force or torque</b>	0.15N / 0.30Nm	
<b>Weight</b>	305.0g / 10.758oz	



<b>Conformity / (NC)</b>	EN50041 / ( )	<b>Adjustable rod lever</b>
<b>Max. Actuation speed</b>	1.5m/s / 4.92ft/s	<b>Code</b> PS31L- ( ) ( ) LN-M00
<b>Min. force or torque</b>	0.15N / 0.30Nm	PS31L- ( ) ( ) LG-M00
<b>Weight</b>	300.0g / 10.582oz	



<b>Conformity / (NC)</b>	/	<b>Stainless steel spring multidirectional actuator</b>
<b>Max. Actuation speed</b>	1.0m/s / 3.28ft/s	<b>Code</b> PS31L- ( ) ( ) LW-M00
<b>Min. force or torque</b>	0.18N / -	
<b>Weight</b>	230.0g / 8.113oz	



<b>Conformity / (NC)</b>	/	<b>Multidirectional nylon actuator with stainless steel spring</b>
<b>Max. Actuation speed</b>	1.0m/s / 3.28ft/s	<b>Code</b> PS31L- ( ) ( ) LP-M00
<b>Min. force or torque</b>	0.18N / -	
<b>Weight</b>	230.0g / 8.113oz	

## Utilization precautions

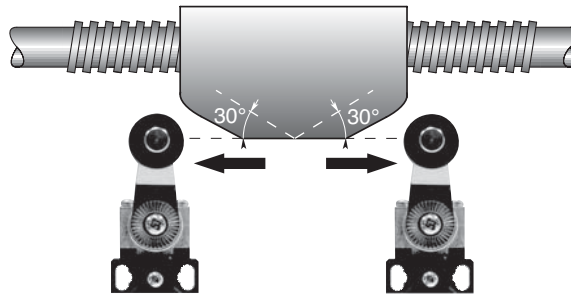
### Plain plunger



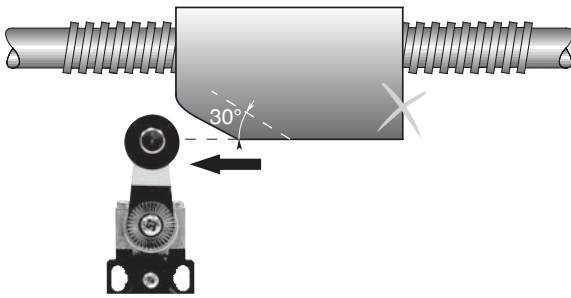
Correct

Incorrect

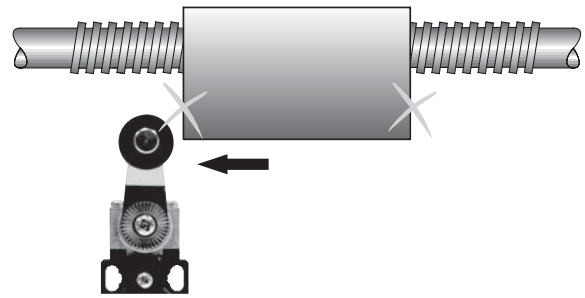
### Roller plunger or Roller lever



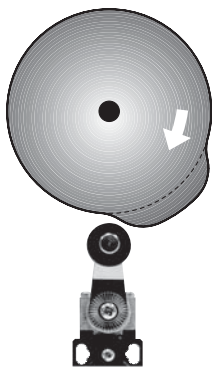
Correct



Incorrect



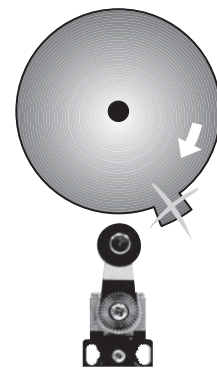
Incorrect



Correct

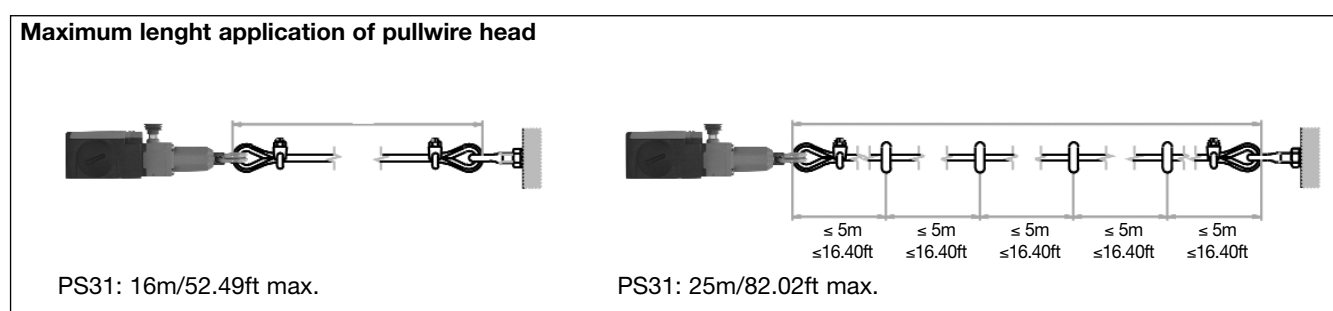
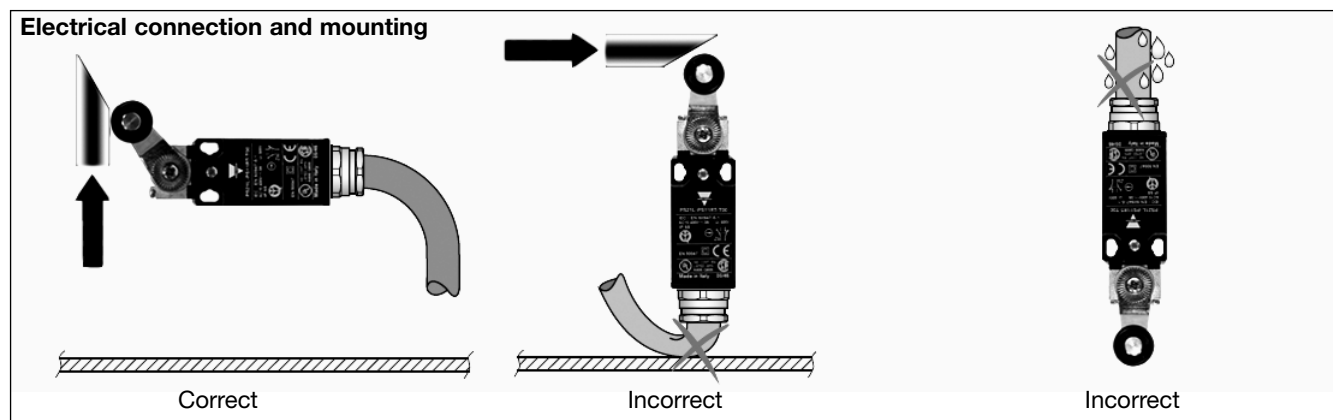


Incorrect



Incorrect

## Utilization precautions



## Adjustment

