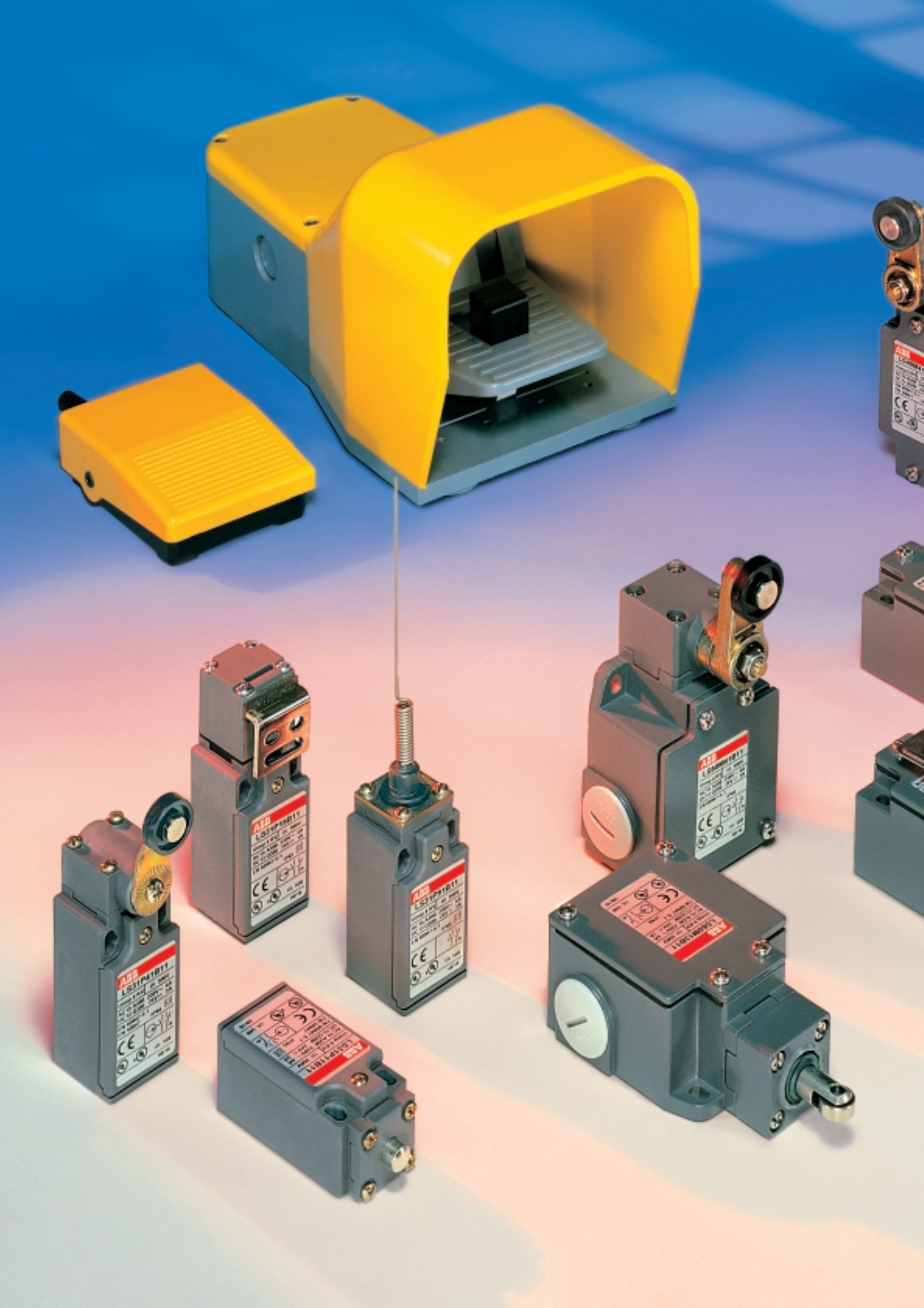
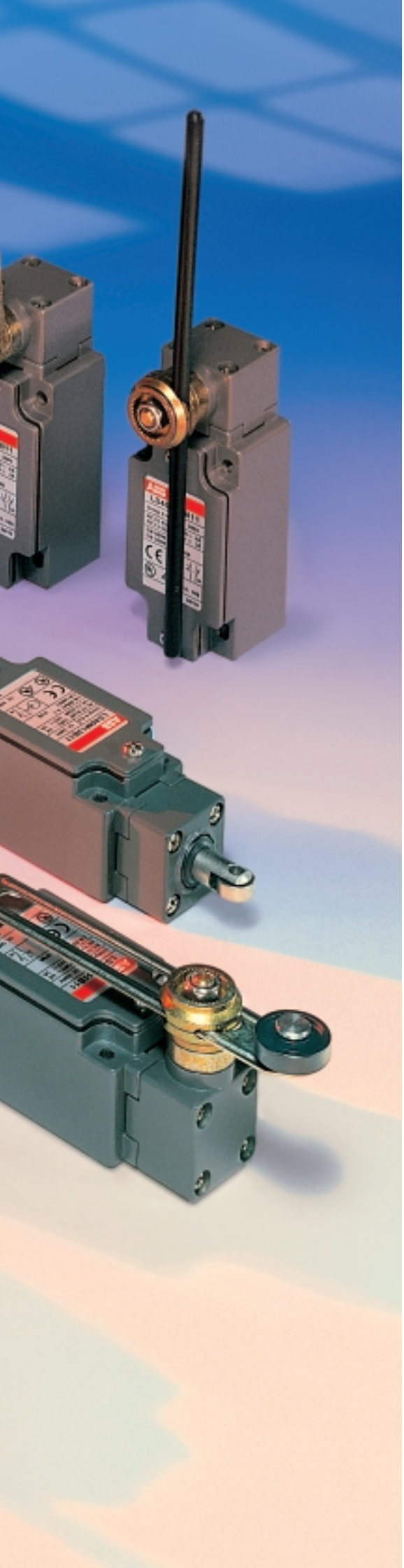




Limit Switches
Foot Switches

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Limit Switches

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Foot Switches

Ordering Details

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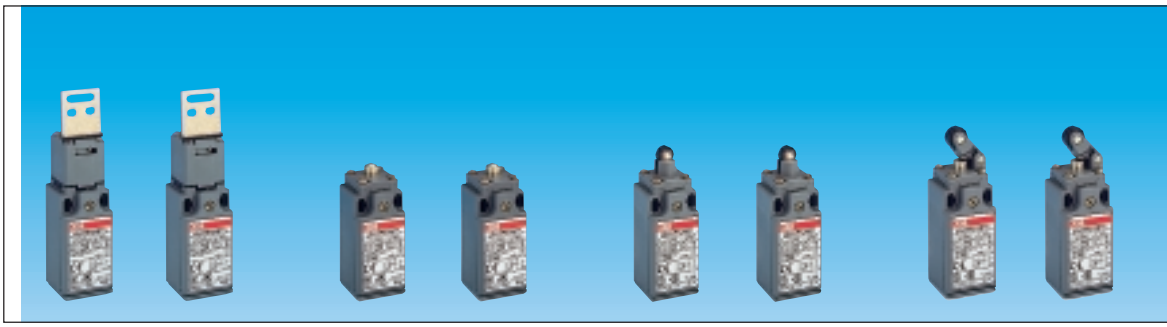
Mini Foot Switch **22**/23

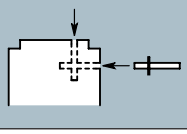
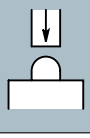
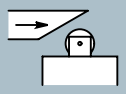
Technical Data **22**/23

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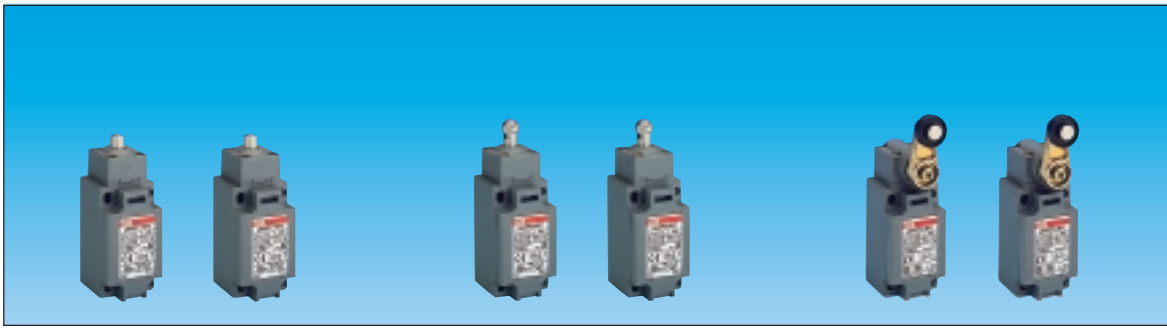
Limit Switches - Plastic Casing

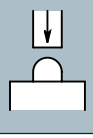
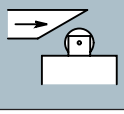
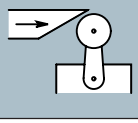
30 mm Width



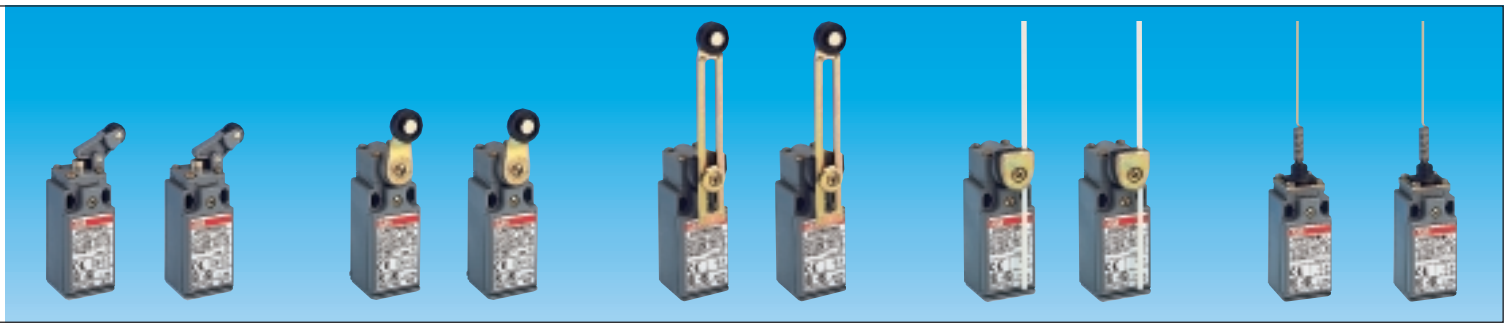
Movement to detect	Key translation	From end	30° cam translation	One way 30°
Actuator	Straight key 	Steel plain plunger 	Plastic roller plunger 	Plastic roller lever with steel plunger 
Types	**LS31P16**	**LS31P11**	**LS31P13**	**LS31P31**
Designation (Snap action N.O.+N.C.)	LS31P16B11	LS31P11B11	LS31P13B11	LS31P31B11
Designation (Break before make slow action N.O.+N.C.)	LS31P16D11	LS31P11D11	LS31P13D11	LS31P31D11
CENELEC conformity	–	EN 50047	EN 50047	EN 50047
Positive opening operation of N.C. Contact	⊖	⊖	⊖	⊖

40 mm Width

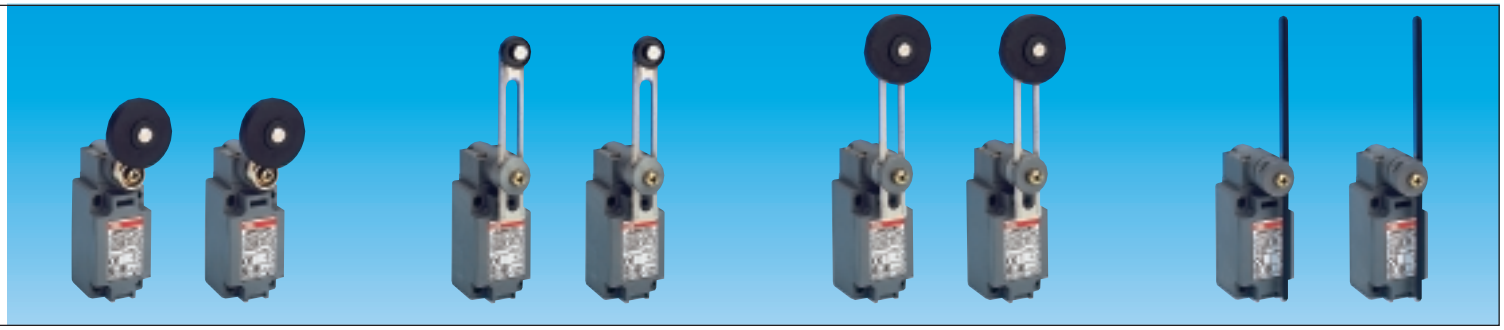


Movement to detect	From end		
Actuator	Steel plain plunger 	Steel roller plunger 	ø22 Polyamide roller with lever 
Types	**LS40P11**	**LS40P13**	**LS40P41**
Designation (Snap action N.O.+N.C.)	LS40P11B11	LS40P13B11	LS40P41B11
Designation (Break before make slow action N.O.+N.C.)	LS40P11D11	LS40P13D11	LS40P41D11
CENELEC conformity	EN 50041	EN 50041	EN 50041
Positive opening operation of N.C. contact	⊖	⊖	⊖

- Double Insulation - IP65

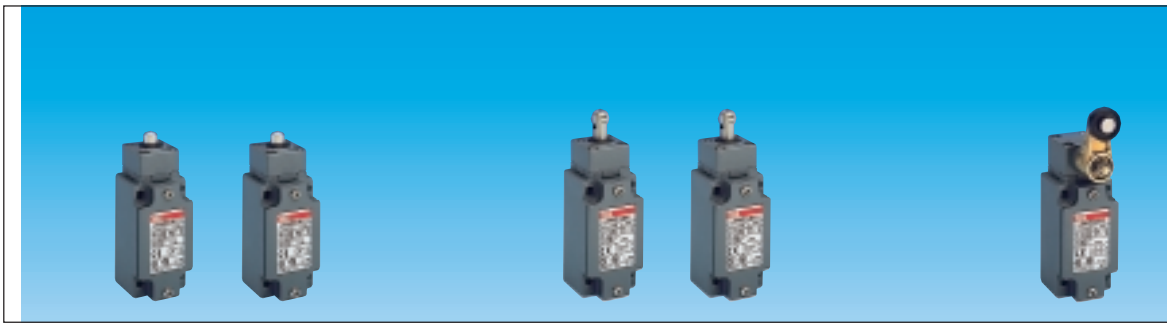


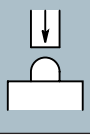
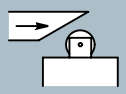
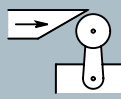
cam translation	30° cam translation		All mobile translation	Multidirectional
Plastic roller lever with steel plunger	ø18 Polyamide roller lever	ø18 Polyamide roller with adjustable lever	Adjustable lever with ø3 fibre-glass rod	Spring rod
LS31P32	**LS31P41**	**LS31P51**	**LS31P72**	**LS31P91**
LS31P32B11	LS31P41B11	LS31P51B11	LS31P72B11	LS31P91B11
LS31P32D11	LS31P41D11	LS31P51D11	LS31P72D11	LS31P91D11
–	EN 50047	–	–	–
⊖	⊖	–	–	–



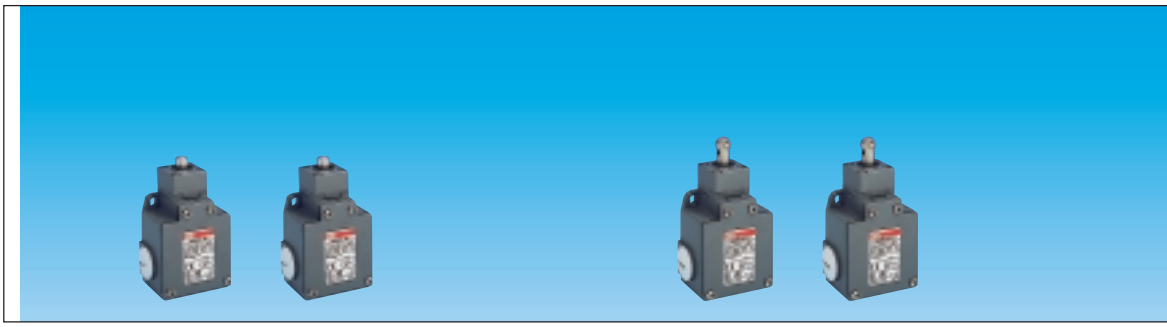
30° cam translation			All mobile translation
ø45 Rubber roller with lever	ø22 Polyamide roller with adjustable lever	ø45 Rubber roller with adjustable lever	ø6 Polyamide adjustable rod
LS40P44	**LS40P51**	**LS40P54**	**LS40P72**
LS40P44B11	LS40P51B11	LS40P54B11	LS40P72B11
LS40P44D11	LS40P51D11	LS40P54D11	LS40P72D11
–	–	–	EN 50041
–	–	–	–

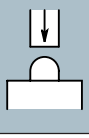
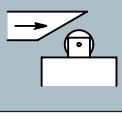
40 mm Width



Movement to detect	From end		
Actuator	Stainless steel plain plunger 	Stainless steel roller with plunger 	ø22 Polyamide roller 
Types	**LS40M11**	**LS40M13**	**LS40M**
Designation (Snap action N.O.+N.C.)	LS40M11B11	LS40M13B11	LS40M41
Designation (Break before make slow action N.O.+N.C.)	LS40M11D11	LS40M13D11	LS40M41
CENELEC conformity	EN 50041	EN 50041	EN 50
Positive opening operation of N.C. contact	⊖	⊖	⊖

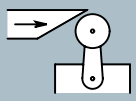
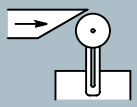
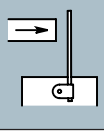
60 mm Width

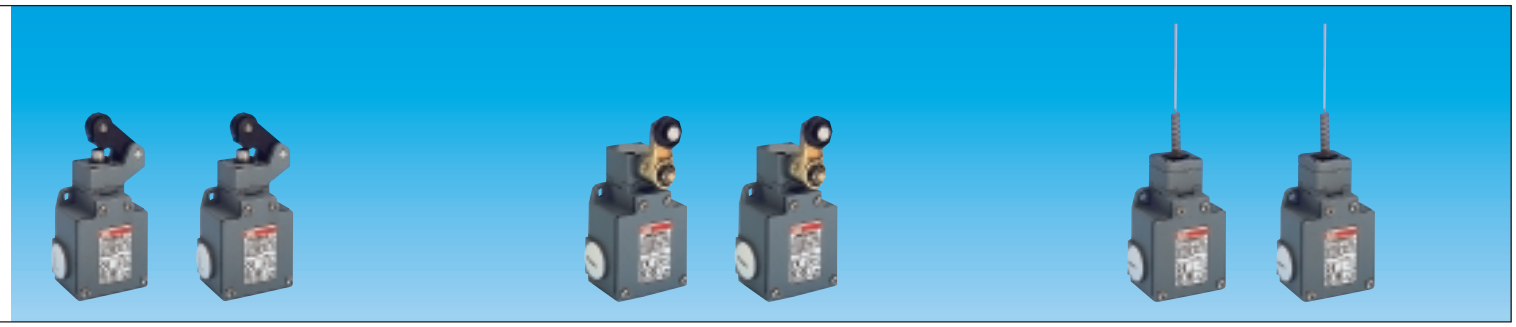


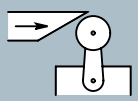
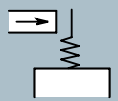
Movement to detect	From end	30° cam translation	
Actuator	Stainless steel plain plunger 	Stainless steel roller plunger 	
Types	**LS60M11**	**LS60M13**	
Designation (Snap action N.O.+N.C.)	LS60M11B11	LS60M13B11	
Designation (Break before make slow action N.O.+N.C.)	LS60M11D11	LS60M13D11	
CENELEC conformity	–	–	
Positive contact opening of N.C. contact	⊖	⊖	

Metal Casing - IP66



30° cam translation			All mobile translation
with lever	ø22 Stainless steel roller with lever 	ø22 Polyamide roller with adjustable lever 	ø6 Polyamide adjustable rod 
41	**LS40M42**	**LS40M51**	**LS40M72**
B11	LS40M42B11	LS40M51B11	LS40M72B11
D11	LS40M42D11	LS40M51D11	LS40M72D11
041	EN 50041	–	EN 50041
	⊖	–	–



One way 30° cam translation	30° cam translation	Multidirectional
ø22 Polyamide roller with lever 	ø22 Polyamide roller with lever 	Spring rod 
LS60M31	**LS60M41**	**LS60M91**
LS60M31B11	LS60M41B11	LS60M91B11
LS60M31D11	LS60M41D11	LS60M91D11
–	–	–
⊖	⊖	–

LS31P Limit Switches - 30 mm Width

Plastic Casing IP65



LS31P16B11



LS31P11B11



LS31P41B11



LS31P72B11



LS31P91B11

Ordering Details

Snap Action Contacts 13 21 Zb 14 22	Non-overlapping Slow action Contacts 13 21 Zb 14 22	Type	Order code		Unit Weight in kg Packing 1 piece
Straight key					
1	–	**LS31P16B11**	**1SBV 01 0116 R1211**		0.085
–	1	**LS31P16D11**	**1SBV 01 0116 R1411**		0.085
Steel plain plunger					
1	–	**LS31P11B11**	**1SBV 01 0111 R1211**		0.070
–	1	**LS31P11D11**	**1SBV 01 0111 R1411**		0.070
Plastic roller plunger					
1	–	**LS31P13B11**	**1SBV 01 0113 R1211**		0.070
–	1	**LS31P13D11**	**1SBV 01 0113 R1411**		0.070
Ø 12.5 plastic roller lever with steel plunger					
1	–	**LS31P31B11**	**1SBV 01 0131 R1211**		0.070
–	1	**LS31P31D11**	**1SBV 01 0131 R1411**		0.070
Ø 12.5 plastic roller lever with steel plunger					
1	–	**LS31P32B11**	**1SBV 01 0132 R1211**		0.075
–	1	**LS31P32D11**	**1SBV 01 0132 R1411**		0.075
Ø 18 polyamide roller lever					
1	–	**LS31P41B11**	**1SBV 01 0141 R1211**		0.090
–	1	**LS31P41D11**	**1SBV 01 0141 R1411**		0.090
Ø 18 polyamide roller with adjustable lever					
1	–	**LS31P51B11**	**1SBV 01 0151 R1211**		0.100
–	1	**LS31P51D11**	**1SBV 01 0151 R1411**		0.100
Adjustable lever with Ø 3 fibre-glass rod					
1	–	**LS31P72B11**	**1SBV 01 0172 R1211**		0.100
–	1	**LS31P72D11**	**1SBV 01 0172 R1411**		0.100
Spring rod					
1	–	**LS31P91B11**	**1SBV 01 0191 R1211**		0.080
–	1	**LS31P91D11**	**1SBV 01 0191 R1411**		0.080

● **Technical data** ..... page **22**/12 ● **Dimensions** ..... page **22**/24

LS40P Limit Switches - 40 mm Width

Plastic Casing IP65



LS40P11B11



LS40P13B11



LS40P44B11



LS40P51B11



LS40P72B11

Ordering Details

Snap Action Contacts	Non-overlapping Slow action Contacts	Type	Order code	Unit Weight in kg Packing 1 piece
13 21 Zb 14 22	13 21 Zb 14 22			
Steel plain plunger				
1	–	**LS40P11B11**	**1SBV 01 0511 R1211**	0.140
–	1	**LS40P11D11**	**1SBV 01 0511 R1411**	0.140
Steel roller plunger				
1	–	**LS40P13B11**	**1SBV 01 0513 R1211**	0.145
–	1	**LS40P13D11**	**1SBV 01 0513 R1411**	0.145
Ø 22 polyamide roller with lever				
1	–	**LS40P41B11**	**1SBV 01 0541 R1211**	0.185
–	1	**LS40P41D11**	**1SBV 01 0541 R1411**	0.185
Ø 45 rubber roller with lever				
1	–	**LS40P44B11**	**1SBV 01 0544 R1211**	0.205
–	1	**LS40P44D11**	**1SBV 01 0544 R1411**	0.205
Ø 22 polyamide roller with adjustable lever				
1	–	**LS40P51B11**	**1SBV 01 0551 R1211**	0.190
–	1	**LS40P51D11**	**1SBV 01 0551 R1411**	0.190
Ø 45 rubber roller with adjustable lever				
1	–	**LS40P54B11**	**1SBV 01 0554 R1211**	0.200
–	1	**LS40P54D11**	**1SBV 01 0554 R1411**	0.200
Ø 6 polyamide adjustable rod				
1	–	**LS40P72B11**	**1SBV 01 0572 R1211**	0.185
–	1	**LS40P72D11**	**1SBV 01 0572 R1411**	0.185

• **Technical data** ..... page **22**/14 • **Dimensions** ..... page **22**/24

LS40M Limit Switches - 40 mm Width

Metal Casing IP66



LS40M11B11



LS40M13B11



LS40M41B11

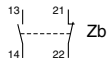
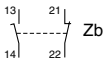


LS40M51B11



LS40M72B11

Ordering Details

Snap Action Contacts	Non-overlapping Slow action Contacts	Type	Order code		Unit Weight in kg Packing 1 piece
 Zb	 Zb				
Stainless steel plain plunger					
1	–	**LS40M11B11**	**1SBV 01 1111 R1211**		0.240
–	1	**LS40M11D11**	**1SBV 01 1111 R1411**		0.240
Stainless steel roller with plunger					
1	–	**LS40M13B11**	**1SBV 01 1113 R1211**		0.240
–	1	**LS40M13D11**	**1SBV 01 1113 R1411**		0.240
Ø 22 polyamide roller with lever					
1	–	**LS40M41B11**	**1SBV 01 1141 R1211**		0.280
–	1	**LS40M41D11**	**1SBV 01 1141 R1411**		0.280
Ø 22 stainless steel roller with lever					
1	–	**LS40M42B11**	**1SBV 01 1142 R1211**		0.280
–	1	**LS40M42D11**	**1SBV 01 1142 R1411**		0.280
Ø 22 polyamide roller with adjustable lever					
1	–	**LS40M51B11**	**1SBV 01 1151 R1211**		0.290
–	1	**LS40M51D11**	**1SBV 01 1151 R1411**		0.290
Ø 6 adjustable polyamide rod					
1	–	**LS40M72B11**	**1SBV 01 1172 R1211**		0.285
–	1	**LS40M72D11**	**1SBV 01 1172 R1411**		0.285

● **Technical data** ..... page **22**/16 ● **Dimensions** ..... page **22**/24

LS60M Limit Switches - 60 mm Width

Metal Casing IP66



LS60M11B11



LS60M13B11



LS60M31B11



LS60M41B11



LS60M91B11

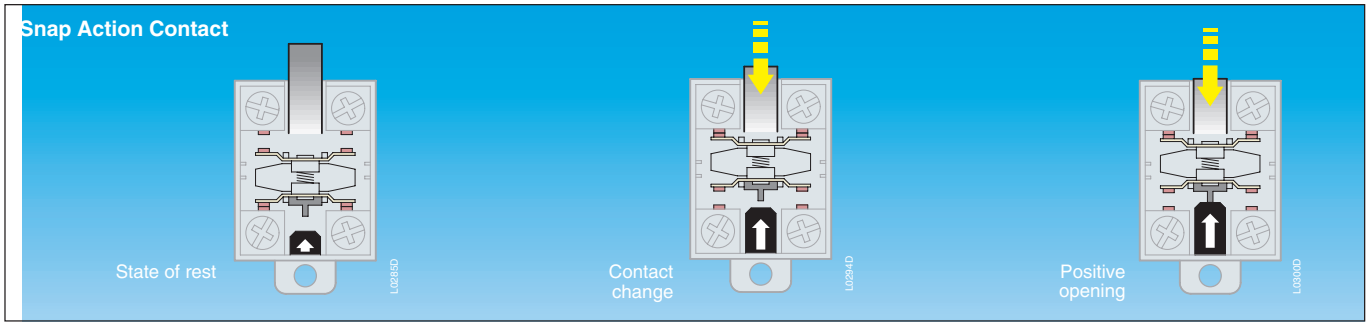
Ordering Details

Snap Action Contacts	Non-overlapping Slow action Contacts	Type	Order code		Unit Weight in kg Packing 1 piece
13 21 Zb 14 22	13 21 Zb 14 22				
Stainless steel plain plunger					
1	–	**LS60M11B11**	**1SBV 01 1311 R1211**		0.265
–	1	**LS60M11D11**	**1SBV 01 1311 R1411**		0.265
Stainless steel roller plunger					
1	–	**LS60M13B11**	**1SBV 01 1313 R1211**		0.270
–	1	**LS60M13D11**	**1SBV 01 1313 R1411**		0.270
Ø 22 polyamide roller with lever					
1	–	**LS60M31B11**	**1SBV 01 1331 R1211**		0.290
–	1	**LS60M31D11**	**1SBV 01 1331 R1411**		0.290
Ø 22 polyamide roller with lever					
1	–	**LS60M41B11**	**1SBV 01 1341 R1211**		0.300
–	1	**LS60M41D11**	**1SBV 01 1341 R1411**		0.300
Spring rod					
1	–	**LS60M91B11**	**1SBV 01 1391 R1211**		0.255
–	1	**LS60M91D11**	**1SBV 01 1391 R1411**		0.255

• **Technical data** ..... page **22**/18 • **Dimensions** ..... page **22**/24

Technical Terms and Definitions

Snap Action Limit Switches



Snap Action

Snap action contacts are characterised by a release position that is distinct from the operating position (differential travel). Snap breaking of moving contacts is independent of the switch actuator's speed and contributes to regular electric performance even for slow switch actuator speeds.

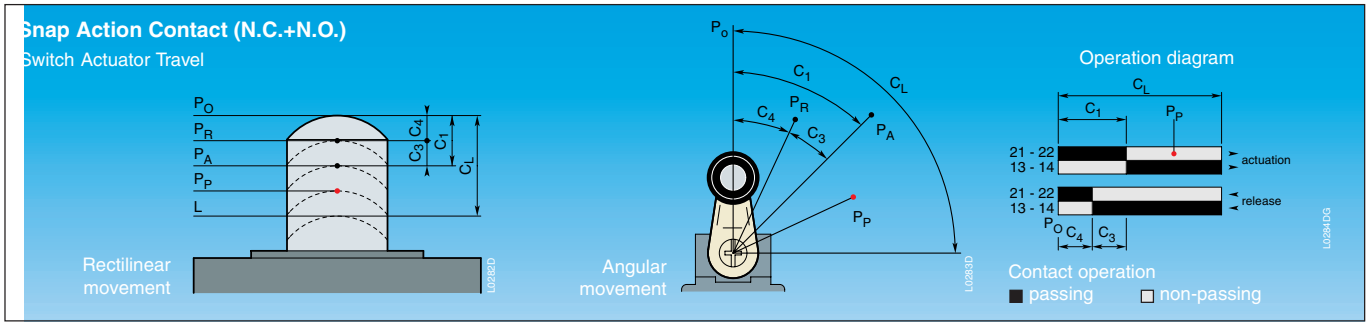
Positive Opening Operation ⊖

A control switch, with one or more **break**-contact elements**,** is said to be positively opened when the switch actuator ensures **full** contact **opening** of the break-contact. For the part of travel that separates the contacts, there must be a positive drive, with no resilient member (e.g. springs), between the moving contacts and the point of the actuator to which the actuating force is applied.

The positive opening operation does not deal with N.O. contacts.

Control switches with positive opening operation may be provided with either snap action or slow action contact elements. To use several contacts on the same control switch with positive opening, they must be electrically separated from each other.

Every control switch with positive opening operation must be indelibly marked on the outside with the symbol: ⊖.



C_1 Pre-travel: distance between P_O and P_A

C_L Maximum travel: distance between P_O and L

C_3 Differential travel ($C_1 - C_4$): difference between P_A and P_R

C_4 Release travel: distance between P_R and P_O

P_O Free position

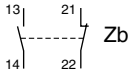
P_A Operating position: position of the switch actuator, when the contacts leave their free position

P_P Positive opening position

L Maximum travel position

P_R Release position: position of the switch actuator when the contacts return to their initial free position.

Contact shape according to IEC 60 947-5-1



The two moving contacts are electrically separated.

Change-over contact elements with 4 terminals must be indelibly marked with the **Zb** symbol as shown in the diagram on the left.

Utilization Category

AC-15: switching of electromagnetic loads of electromagnets using an alternating current (> 72VA).
DC-13: switching of electromagnets using a direct current.

Insulated Casing

Limit switches, made of UL-V0 reinforced thermoplastic fibreglass, have double insulation ⧈ and a degree of protection of IP 65. No conductive part should be connected to a protective conductor.

Metal Casing

Limit switches with metal casings are made of an aluminium alloy and have a degree of protection of IP 66. They have a terminal, for a protective conductor, that is located inside the casing very close to the cable inlet and must be indelibly marked.

Minimum Actuation Force

The minimum amount of force that is to be applied to the switch actuator to produce a change in contact position.

Minimum Positive Contact Opening Force

The minimum amount of force that is to be applied to the switch actuator to ensure positive opening of the N.C. contact.

Technical Terms and Definitions

Slow Action Limit Switches



Slow Action

Slow action contacts are characterised by a release position that is the same as the operating position. The switch actuator's speed directly conditions the travel speed of contacts. N.C.+N.O. slow action contacts are either non-overlapping or overlapping. N.O.+N.O. and N.C.+N.C. slow action contacts are simultaneous.

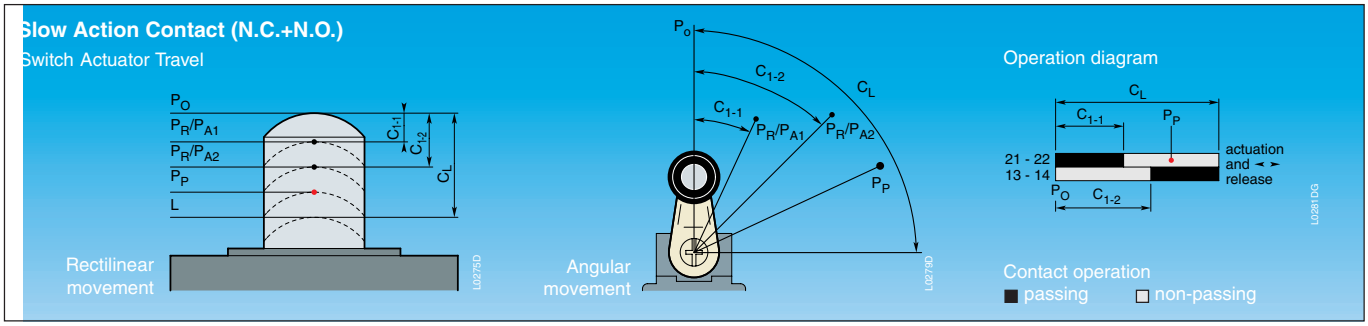
Positive Opening Operation ⊖

A control switch, with one or more **break**-contact elements**,** is said to be positively opened when the switch actuator ensures **full** contact **opening** of the break-contact. For the part of travel that separates the contacts, there must be a positive drive, with no resilient member (e.g. springs), between the moving contacts and the point of the actuator to which the actuating force is applied.

The positive opening operation does not deal with N.O. contacts.

Control switches with positive opening operation may be provided with either snap action or slow action contact elements. To use several contacts on the same control switch with positive opening, they must be electrically separated from each other.

Every control switch with positive opening operation must be indelibly marked on the outside with the symbol: ⊖.



C_L Maximum travel: distance between P_O and L

C_{1-1} Pre-travel and release travel of the 21-22 contact

C_{1-2} Pre-travel and release travel of the 13-14 contact

P_O Free position

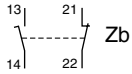
P_R/P_{A1} Release and operating position of the 21-22 contact

P_R/P_{A2} Release and operating position of the 13-14 contact

P_P Positive opening position

L Maximum travel position

Contact shape according to IEC 60 947-5-1



The two moving contacts are electrically separated.

Change-over contact elements with 4 terminals must be indelibly marked with the **Zb** symbol as shown in the diagram on the left.

Utilization Category

AC-15: switching of electromagnetic loads of electromagnets using an alternating current (> 72VA).
DC-13: switching of electromagnets using a direct current.

Insulated Casing

Limit switches, made of UL-V0 reinforced thermoplastic fibreglass, have double insulation ⧈ and a degree of protection of IP 65. No conductive part should be connected to a protective conductor.

Metal Casing

Limit switches with metal casings are made of an aluminium alloy and have a degree of protection of IP 66. They have a terminal, for a protective conductor, that is located inside the casing very close to the cable inlet and must be indelibly marked.

Minimum Actuation Force

The minimum amount of force that is to be applied to the switch actuator to produce a change in contact position.

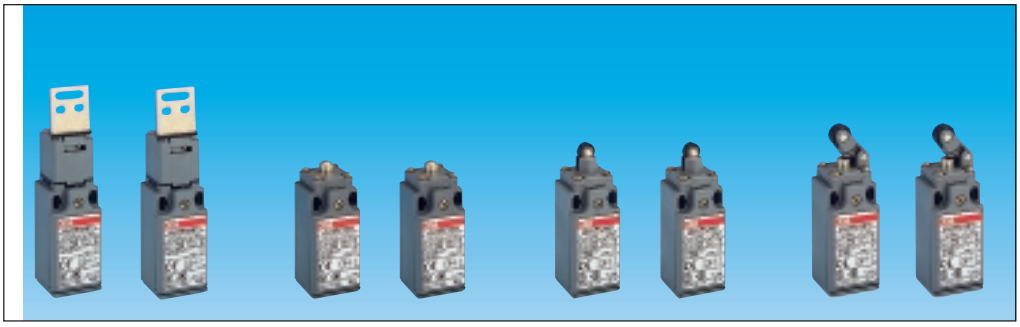
Minimum Positive Contact Opening Force

The minimum amount of force that is to be applied to the switch actuator to ensure positive opening of the N.C. contact.

Technical Data

LS31P Limit Switches - 30 mm Width

Plastic Casing IP65



Types	LS31P16	LS31P11	LS31P13	LS31P31
Movement to detect	Key translation	From end	30° cam translation	One way 30° cam translation
Operating head type	Straight key	Steel plain plunger	Plastic roller plunger	Plastic roller lever with steel plunger
Conformity	–	EN 50047	EN 50047	EN 50047
N.C. contact with positive opening operation	⊖	⊖	⊖	⊖
Max. actuation speed m/s	0.5	0.5	0.3	1
Min. force / torque:				
– actuation	18 **N**	9 **N**	12 **N**	7 **N**
– positive opening operation	60 **N**	44 **N**	41 **N**	24 **N**
Designation	**LS31P16B11**	**LS31P11B11**	**LS31P13B11**	**LS31P31B11**
Snap action contacts 13 21 14 22 Zb	0 1.2 2.8 6.7 9.6 mm	0 0.8 1.9 4.5 6.5 mm	0 1.4 3.3 7.8 11.2 mm	0 3.0 7.1 16.9 24.4 mm
	21-22 13-14	21-22 13-14	21-22 13-14	21-22 13-14
Designation	**LS31P16D11**	**LS31P11D11**	**LS31P13D11**	**LS31P31D11**
Non-overlapping Slow action contacts 13 21 14 22 Zb	0 2.1 4.1 9.2 mm	0 1.5 2.9 6.5 mm	0 2.6 5.1 11.4 mm	0 5.6 10.9 24.4 mm
	21-22 13-14 3.8	21-22 13-14 2.7	21-22 13-14 4.7	21-22 13-14 10.1

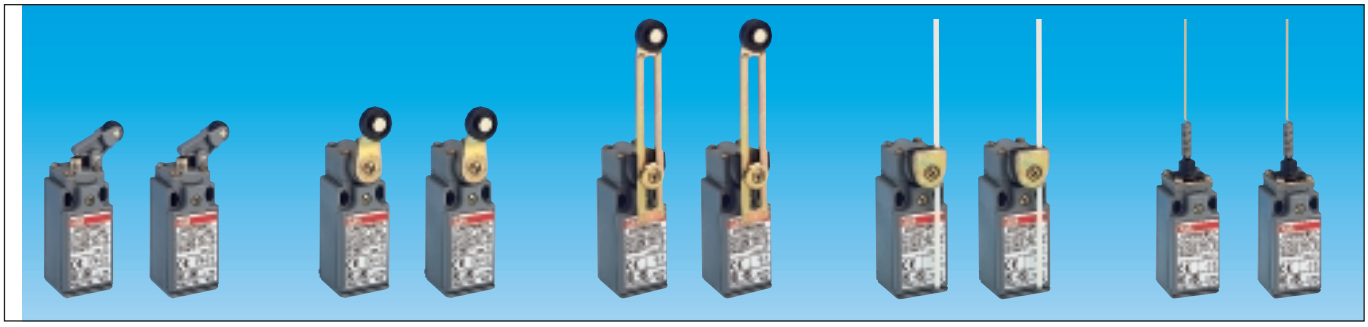
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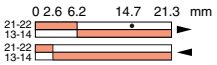
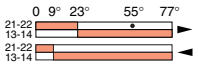
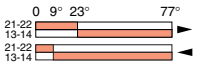
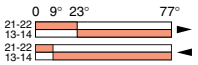
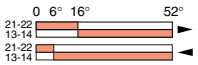
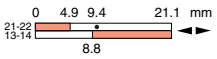
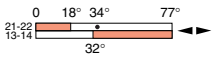
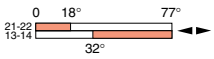
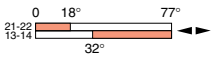
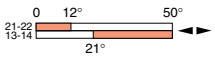
Rated insulation voltage U_i				
acc. to IEC 60 947-1 and EN 60 947-1	660 V (degree of pollution 3)			
acc. to UL - 508 and CSA C22-2 n°14	A600, Q600			
Short-circuit protection				
$U_e \leq 500$ V a.c. - gG (gl) type fuses **A**	10			
Rated operational current I_e / AC-15				
(according to IEC 60 947-5-1)				
24 V - 50/60 Hz **A**	10			
130 V - 50/60 Hz **A**	5.5			
230 V - 50/60 Hz **A**	3.1			
240 V - 50/60 Hz **A**	3			
400 V - 50/60 Hz **A**	1.8			
Rated operational current I_e / DC-13				
(according to IEC 60 947-5-1)				
24 V - d.c. **A**	2.8			
110 V - d.c. **A**	0.6			
250 V - d.c. **A**	0.27			
Cable inlet	for Pg 11 cable gland			
Connecting terminals	M 3.5 (+,-) pozidriv 2 screw with cable clamp			
Connecting capacity **1 or 2 x mm²**	0.5 ... 2.5			
Mechanical durability in millions of operations	>1	15	10	15

• **Dimensions** ..... page **22**/24

Technical Data

LS31P Limit Switches - 30 mm Width



LS31P32	LS31P41	LS31P51	LS31P72	LS31P91
One way 30° cam translation	30° cam translation	30° cam translation	All mobile translation	Multidirectional
Plastic roller lever with steel plunger	ø18 polyamide roller lever	ø18 polyamide roller with adjustable lever	Adjustable lever with ø3 fibre-glass rod	Spring rod
–	EN 50047	–	–	–
⊕	⊕	–	–	–
1	1.5	1.5	1.5	1
3 **N** 24 **N**	0.10 **Nm** 0.32 **Nm**	0.10 **Nm** –	0.10 **Nm** –	0.12 **Nm** –
LS31P32B11 	**LS31P41B11** 	**LS31P51B11** 	**LS31P72B11** 	**LS31P91B11** 
LS31P32D11 	**LS31P41D11** 	**LS31P51D11** 	**LS31P72D11** 	**LS31P91D11** 

660 V (degree of pollution 3) A600, Q600
10
10 5.5 3.1 3 1.8
2.8 0.6 0.27
for Pg 11 cable gland
M 3.5 (+,-) pozidriv 2 screw with cable clamp
0.5 ... 2.5

15	10	5

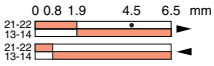
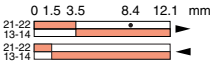
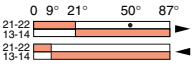
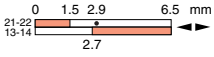
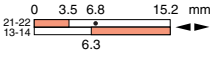
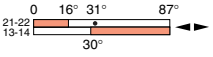
• **Dimensions** ..... page **22**/24

Technical Data

LS40P Limit Switches - 40 mm Width

Plastic Casing IP65



Types	LS40P11	LS40P13	LS40P41
Movement to detect	From end	30° cam translation	30° cam translation
Operating head type	Steel plain plunger	Steel roller plunger	ø22 polyamide roller with lever
Conformity	EN 50041	EN 50041	EN 50041
N.C. contact with positive opening operation	⊖	⊖	⊖
Max. actuation speed m/s	0.5	0.5	1.5
Min. force / torque:			
– actuation	22 **N**	16 **N**	0.15 **Nm**
– positive opening operation	66 **N**	48 **N**	0.44 **Nm**
Designation Snap action contacts 13 21 14 22 Zb	**LS40P11B11** 	**LS40P13B11** 	**LS40P41B11** 
Designation Non-overlapping Slow action contacts 13 21 14 22 Zb	**LS40P11D11** 	**LS40P13D11** 	**LS40P41D11** 

Electrical Data

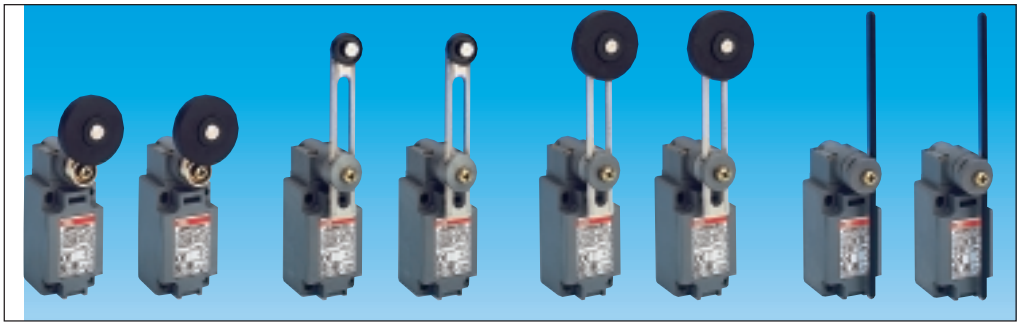
Rated insulation voltage U_i acc. to IEC 60 947-1 and EN 60 947-1		660 V (degree of pollution 3)	
acc. to UL - 508 and CSA C22-2 n°14		A600, Q600	
Short-circuit protection $U_e \leq 500$ V a.c. - gG (gl) type fuses	**A**	10	
Rated operational current I_e / AC-15 (according to IEC 60 947-5-1)			
24 V - 50/60 Hz	**A**	10	
130 V - 50/60 Hz	**A**	5.5	
230 V - 50/60 Hz	**A**	3.1	
240 V - 50/60 Hz	**A**	3	
400 V - 50/60 Hz	**A**	1.8	
Rated operational current I_e / DC-13 (according to IEC 60 947-5-1)			
24 V - d.c.	**A**	2.8	
110 V - d.c.	**A**	0.6	
250 V - d.c.	**A**	0.27	
Cable inlet		for Pg 13.5 cable gland	
Connecting terminals		M 3.5 (+,-) pozidriv 2 screw with cable clamp	
Connecting capacity	**1 or 2 x mm²**	0.5 ... 2.5	
Mechanical durability in millions of operations		15	10

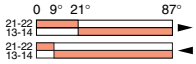
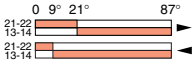
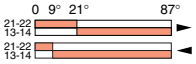
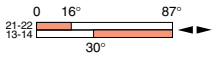
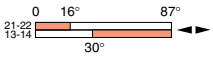
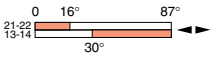
• **Dimensions** ..... page **22**/24

Technical Data

LS40P Limit Switches - 40 mm Width

Plastic Casing IP65



Types	LS40P44	LS40P51	LS40P54	LS40P72
Movement to detect	30° cam translation	30° cam translation	30° cam translation	All mobile translation
Operating head type	ø45 rubber roller with lever	ø22 polyamide roller with adjustable lever	ø45 rubber roller with adjustable lever	ø6 polyamide adjustable rod
Conformity	–	–	–	EN 50041
N.C. contact with positive opening operation	–	–	–	–
Max. actuation speed m/s	1.5	1.5	1.5	1.5
Min. torque:				
– actuation Nm	0.15	0.15	0.15	0.15
– positive opening operation Nm	–	–	–	–
Designation	LS40P44B11	LS40P51B11	LS40P54B11	LS40P72B11
Snap action contacts Zb				
Designation	LS40P44D11	LS40P51D11	LS31P54D11	LS40P72D11
Non-overlapping Slow action contacts Zb				

Electrical Data

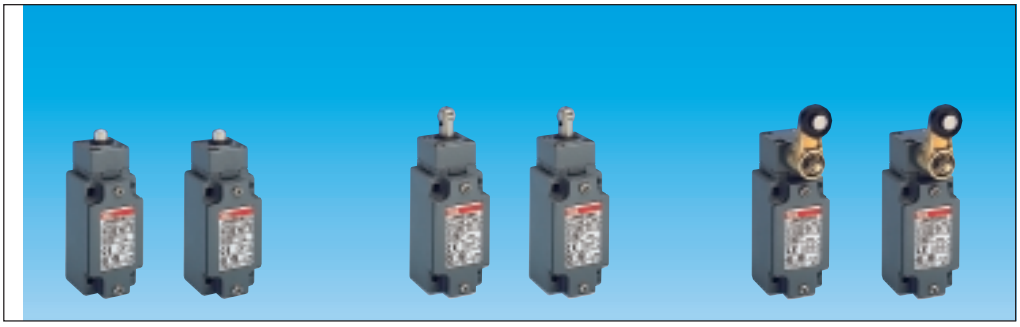
Rated insulation voltage U_i acc. to IEC 60 947-1 and EN 60 947-1 acc. to UL - 508 and CSA C22-2 n°14	660 V (degree of pollution 3) A600, Q600
Short-circuit protection $U_e \leq 500$ V a.c. - gG (gl) type fuses **A**	10
Rated operational current I_e / AC-15 (according to IEC 60 947-5-1)	
24 V - 50/60 Hz **A**	10
130 V - 50/60 Hz **A**	5.5
230 V - 50/60 Hz **A**	3.1
240 V - 50/60 Hz **A**	3
400 V - 50/60 Hz **A**	1.8
Rated operational current I_e / DC-13 (according to IEC 60 947-5-1)	
24 V - d.c. **A**	2.8
110 V - d.c. **A**	0.6
250 V - d.c. **A**	0.27
Cable inlet	for Pg 13.5 cable gland
Connecting terminals	M 3.5 (+,-) pozidriv 2 screw with cable clamp
Connecting capacity 1 or 2 x mm²	0.5 ... 2.5
Mechanical durability in millions of operations	10

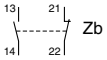
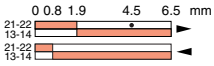
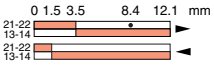
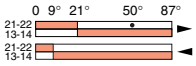
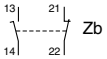
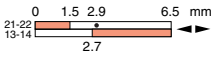
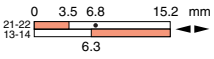
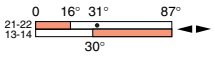
• **Dimensions** ..... page **22**/24

Technical Data

LS40M Limit Switches - 40 mm Width

Metal Casing IP66



Types	LS40M11	LS40M13	LS40M41
Movement to detect	From end	30° cam translation	30° cam translation
Operating head type	Stainless steel plain plunger	Stainless steel roller with plunger	ø22 polyamide roller with lever
Conformity	EN 50041	EN 50041	EN 50041
N.C. contact with positive opening operation	⊖	⊖	⊖
Max. actuation speed m/s	0.5	0.5	1.5
Min. force / torque:			
– actuation	22 **N**	16 **N**	0.15 **Nm**
– positive opening operation	66 **N**	48 **N**	0.44 **Nm**
Designation	**LS40M11B11**	**LS40M13B11**	**LS40M41B11**
Snap action contacts  Zb			
Designation	**LS40M11D11**	**LS40M13D11**	**LS40M41D11**
Non-overlapping Slow action contacts  Zb			

Electrical Data

Rated insulation voltage U_i			
acc. to IEC 60 947-1 and EN 60 947-1		660 V (degree of pollution 3)	
acc. to UL - 508 and CSA C22-2 n°14		A600, Q600	
Short-circuit protection			
$U_e \leq$ 500 V a.c. - gG (gl) type fuses	**A**	10	
Rated operational current I_e / AC-15			
(according to IEC 60 947-5-1)			
24 V - 50/60 Hz	**A**	10	
130 V - 50/60 Hz	**A**	5.5	
230 V - 50/60 Hz	**A**	3.1	
240 V - 50/60 Hz	**A**	3	
400 V - 50/60 Hz	**A**	1.8	
Rated operational current I_e / DC-13			
(according to IEC 60 947-5-1)			
24 V - d.c.	**A**	2.8	
110 V - d.c.	**A**	0.6	
250 V - d.c.	**A**	0.27	
Cable inlet		for Pg 13.5 cable gland	
Connecting terminals		M 3.5 (+,-) pozidriv 2 screw with cable clamp	
Connecting capacity	**1 or 2 x mm²**	0.5 ... 2.5	
Mechanical durability in millions of operations		30	25

• **Dimensions** ..... page **22**/24

Technical Data

LS40M Limit Switches - 40 mm Width

Metal Casing IP66



Types	LS40M42	LS40M51	LS40M72
Movement to detect	30° cam translation	30° cam translation	All mobile translation
Operating head type	ø22 stainless steel roller with lever	ø22 polyamide roller with adjustable lever	ø6 polyamide adjustable rod
Conformity	EN 50041	–	EN 50041
N.C. contact with positive opening operation	⊖	–	–
Max. actuation speed m/s	1.5	1.5	1.5
Min. torque:			
– actuation Nm	0.15	0.15	0.15
– positive opening operation Nm	0.44	–	–
Designation	**LS40M42B11**	**LS40M51B11**	**LS40M72B11**
Snap action contacts 13 21 14 22 Zb	0 9° 21° 50° 87° 21-22 13-14 21-22 13-14	0 9° 21° 87° 21-22 13-14 21-22 13-14	0 9° 21° 87° 21-22 13-14 21-22 13-14
Designation	**LS40M42D11**	**LS40M51D11**	**LS40M72D11**
Non-overlapping Slow action contacts 13 21 14 22 Zb	0 16° 31° 87° 21-22 13-14 30°	0 16° 87° 21-22 13-14 30°	0 16° 87° 21-22 13-14 30°

Electrical Data

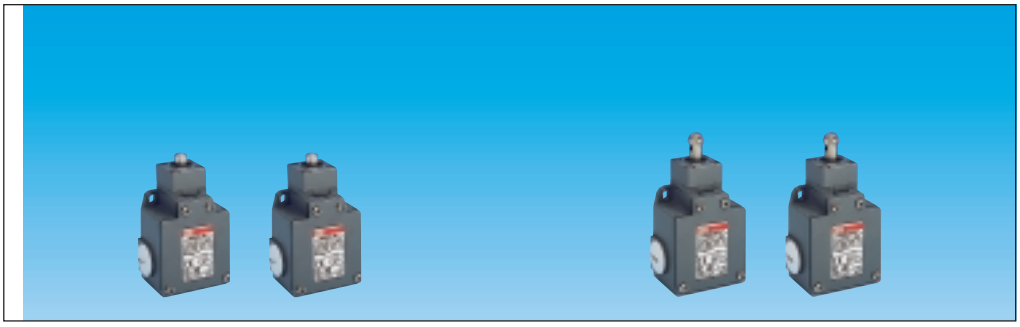
Rated insulation voltage U_i acc. to IEC 60 947-1 and EN 60 947-1 acc. to UL - 508 and CSA C22-2 n°14	660 V (degree of pollution 3) A600, Q600
Short-circuit protection $U_e \leq$ 500 V a.c. - gG (gl) type fuses **A**	10
Rated operational current I_e / AC-15 (according to IEC 60 947-5-1)	
24 V - 50/60 Hz **A**	10
130 V - 50/60 Hz **A**	5.5
230 V - 50/60 Hz **A**	3.1
240 V - 50/60 Hz **A**	3
400 V - 50/60 Hz **A**	1.8
Rated operational current I_e / DC-13 (according to IEC 60 947-5-1)	
24 V - d.c. **A**	2.8
110 V - d.c. **A**	0.6
250 V - d.c. **A**	0.27
Cable inlet	for Pg 13.5 cable gland
Connecting terminals	M 3.5 (+,-) pozidriv 2 screw with cable clamp
Connecting capacity 1 or 2 x mm²	0.5 ... 2.5
Mechanical durability in millions of operations	25

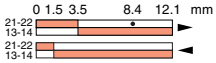
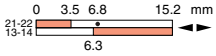
• **Dimensions** ..... page **22**/24

Technical Data

LS60M Limit Switches - 60 mm Width

Metal Casing IP66



Types	LS60M11	LS60M13
Movement to detect	From end	30° cam translation
Operating head type	Stainless steel plain plunger	Stainless steel roller plunger
Conformity	–	–
N.C. contact with positive opening operation	⊖	⊖
Max. actuation speed m/s	0.5	0.5
Min. force:		
– actuation N	22	16
– positive opening operation N	66	48
Designation	**LS60M11B11**	**LS60M13B11**
Snap action contacts Zb		
Designation	**LS60M11D11**	**LS60M13D11**
Non-overlapping Slow action contacts Zb		

Electrical Data

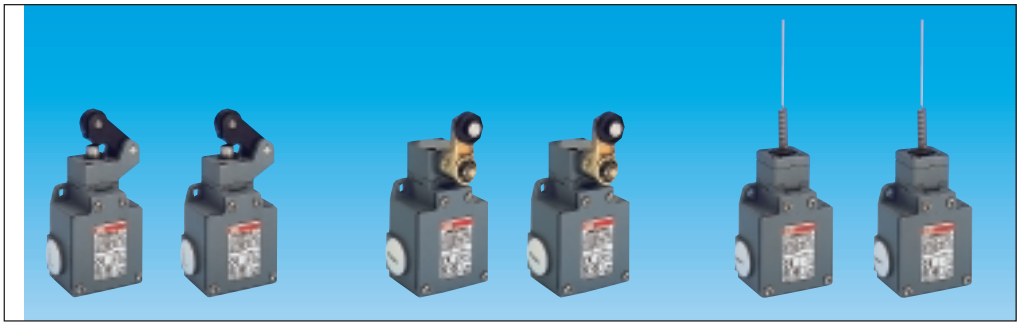
Rated insulation voltage U_i acc. to IEC 60 947-1 and EN 60 947-1 acc. to UL - 508 and CSA C22-2 n°14	660 V (degree of pollution 3) A600, Q600
Short-circuit protection $U_e \leq 500$ V a.c. - gG (gl) type fuses **A**	10
Rated operational current I_e / AC-15 (according to IEC 60 947-5-1)	
24 V - 50/60 Hz **A**	10
130 V - 50/60 Hz **A**	5.5
230 V - 50/60 Hz **A**	3.1
240 V - 50/60 Hz **A**	3
400 V - 50/60 Hz **A**	1.8
Rated operational current I_e / DC-13 (according to IEC 60 947-5-1)	
24 V - d.c. **A**	2.8
110 V - d.c. **A**	0.6
250 V - d.c. **A**	0.27
Cable inlets (3 inlets)	for Pg 13.5 cable gland
Connecting terminals	M 3.5 (+,-) pozidriv 2 screw with cable clamp
Connecting capacity **1 or 2 x mm²**	0.5 ... 2.5
Mechanical durability in millions of operations	30

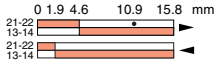
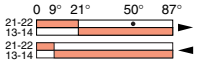
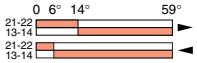
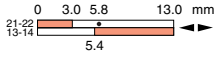
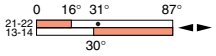
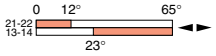
• **Dimensions** ..... page 12/24

Technical Data

LS60M Limit Switches - 60 mm Width

Metal Casing IP66



Types	LS60M31	LS60M41	LS60M91
Movement to detect	One way 30° cam translation	30° cam translation	Multidirectional
Operating head type	ø22 polyamide roller with lever	ø22 polyamide roller with lever	Spring rod
Conformity	–	–	–
N.C. contact with positive opening operation	⊖	⊖	–
Max. actuation speed m/s	1.5	1.5	1
Min. force / torque:			
– actuation	12 **N**	0.15 **Nm**	0.18 **Nm**
– positive opening operation	40 **N**	0.44 **Nm**	–
Designation	**LS60M31B11**	**LS60M41B11**	**LS60M91B11**
Snap action contacts 13 21 14 22 Zb			
Designation	**LS60M31D11**	**LS60M41D11**	**LS60M91D11**
Non-overlapping Slow action contacts 13 21 14 22 Zb			

Electrical Data

Rated insulation voltage U_i acc. to IEC 60 947-1 and EN 60 947-1 acc. to UL - 508 and CSA C22-2 n°14	660 V (degree of pollution 3) A600, Q600		
Short-circuit protection $U_e \leq 500$ V a.c. - gG (gl) type fuses **A**	10		
Rated operational current I_e / AC-15 (according to IEC 60 947-5-1)			
24 V - 50/60 Hz **A**	10		
130 V - 50/60 Hz **A**	5.5		
230 V - 50/60 Hz **A**	3.1		
240 V - 50/60 Hz **A**	3		
400 V - 50/60 Hz **A**	1.8		
Rated operational current I_e / DC-13 (according to IEC 60 947-5-1)			
24 V - d.c. **A**	2.8		
110 V - d.c. **A**	0.6		
250 V - d.c. **A**	0.27		
Cable inlets (3 inlets)	for Pg 13.5 cable gland		
Connecting terminals	M 3.5 (+,-) pozidriv 2 screw with cable clamp		
Connecting capacity **1 or 2 x mm²**	0.5 ... 2.5		
Mechanical durability in millions of operations	30	25	10

• **Dimensions** ..... page 12/24

Limit Switches

Utilization Precautions

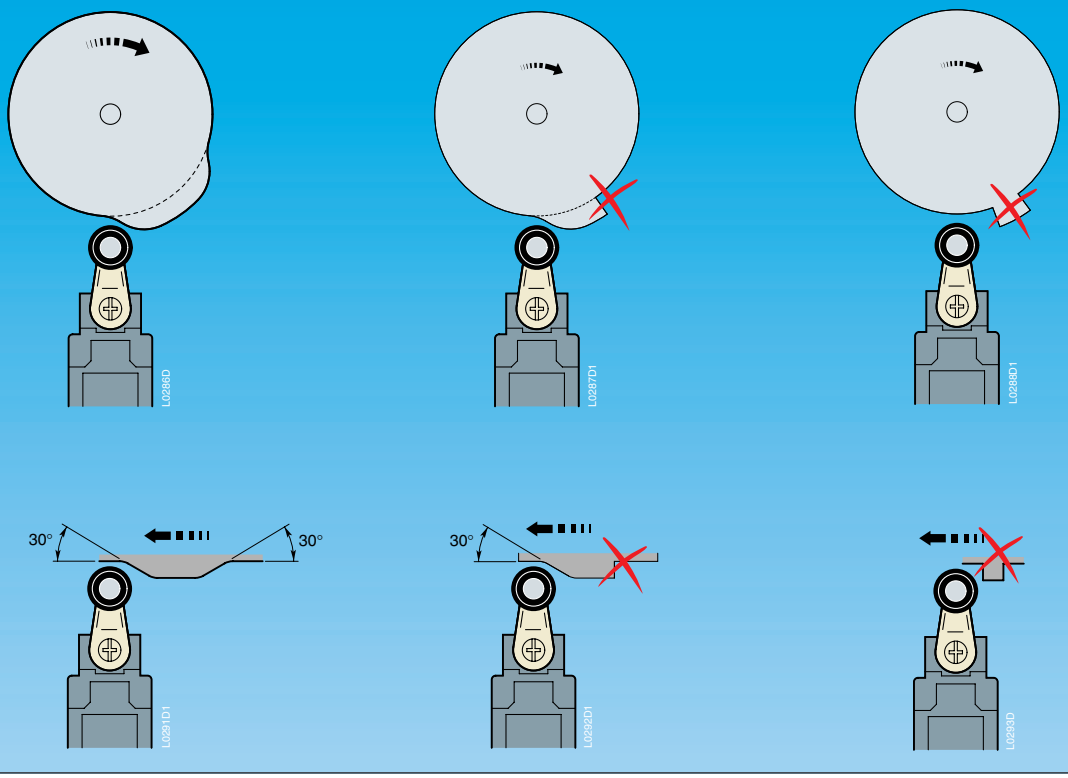
Plain Plunger

Actuation force should be applied on the operating head axis.



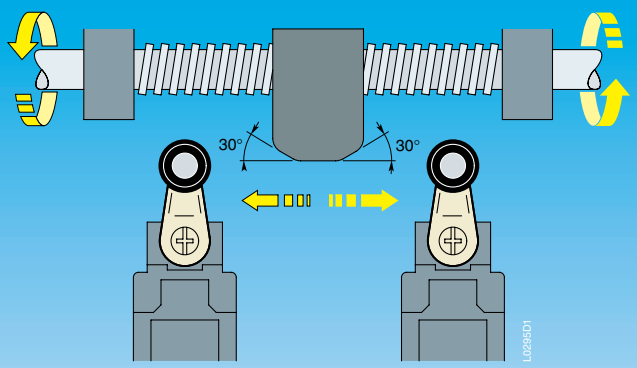
Roller Plunger or Roller Lever

An angle of 30° max. is recommended for cams, avoid shocks which may dammage the switch actuator.
This concerns activiation as well as deactivation of the actuating device.
For a relatively slow motion of the switch actuator, a limit switch with a snap aciton contact block should be chosen.



Roller Plunger or Roller Lever

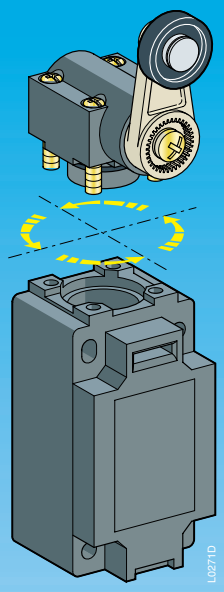
For a relatively slow motion of the switch actuator, a limit switch with a snap action contact bloc should be chosen.



Limit Switches

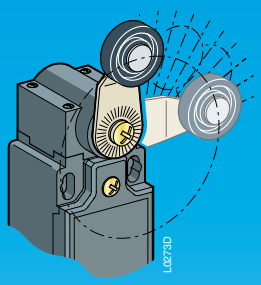
Implementation

Operating Head on 4 x 90°

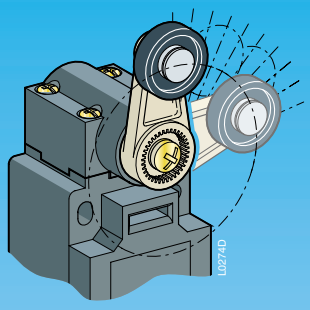


LS . . .

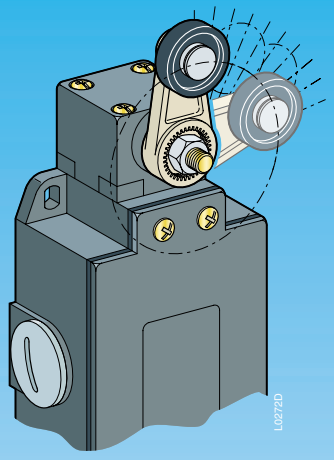
Angular adjustment of roller levers on 360°



LS31P . .

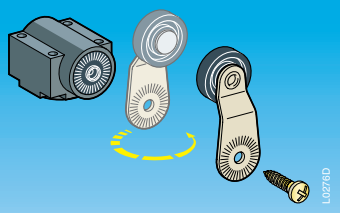


LS40P . .

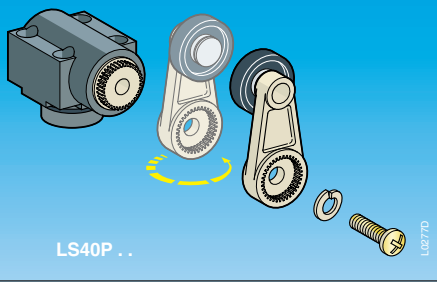


LS60M . .

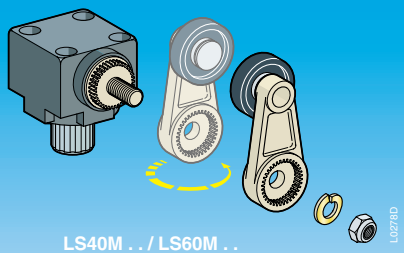
Reversal of the roller lever



LS31P . .

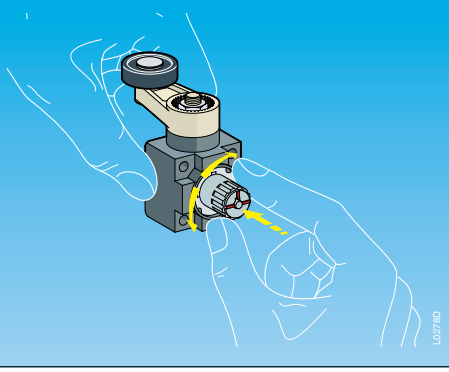


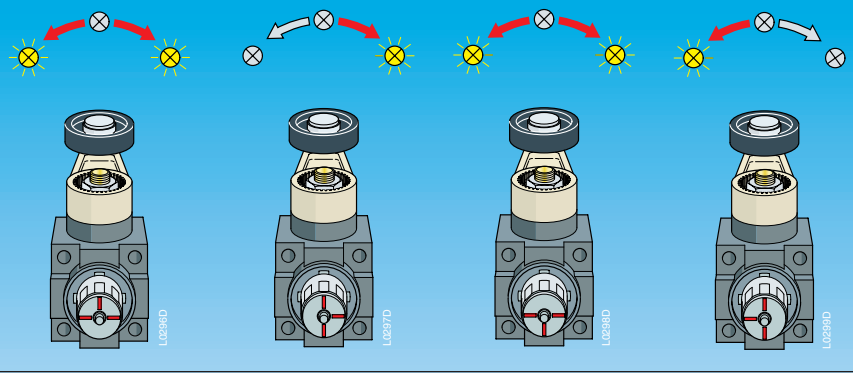
LS40P . .



LS40M . . / LS60M . .

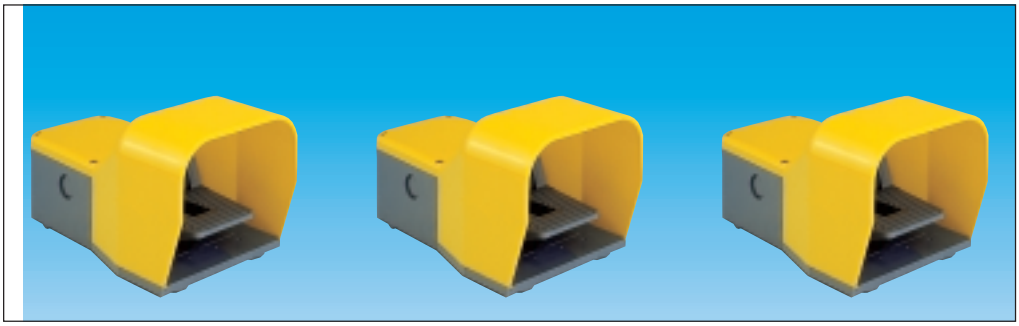
Selecting the Actuation Mode – LS40P – LS40M – LS60M

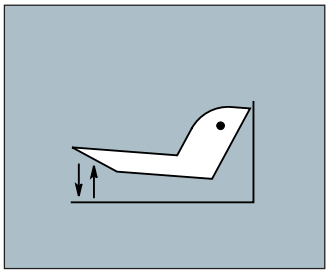
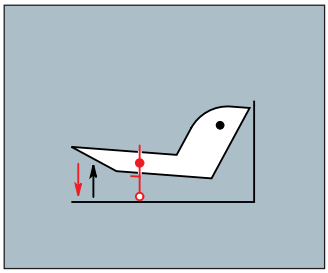
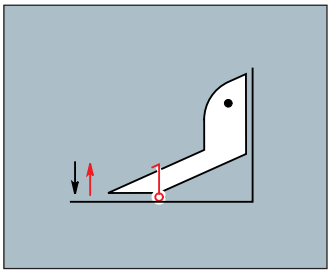




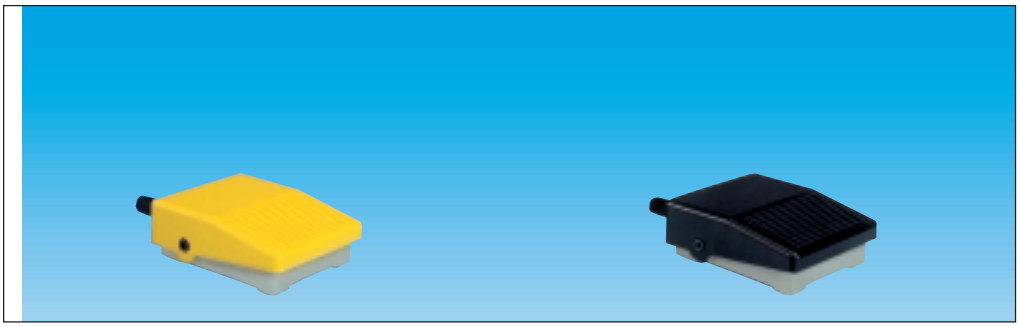
Foot Switches

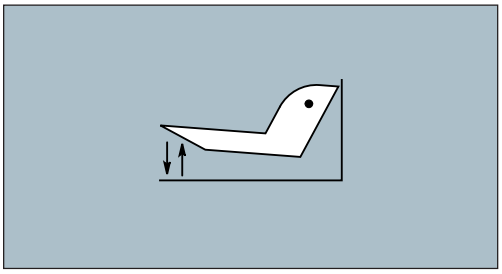
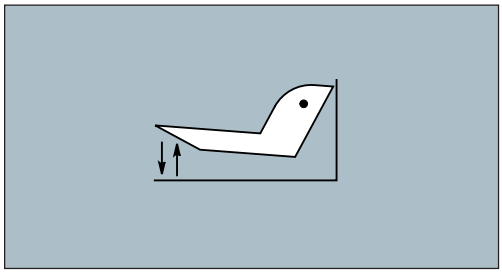
Foot Switches with Cover



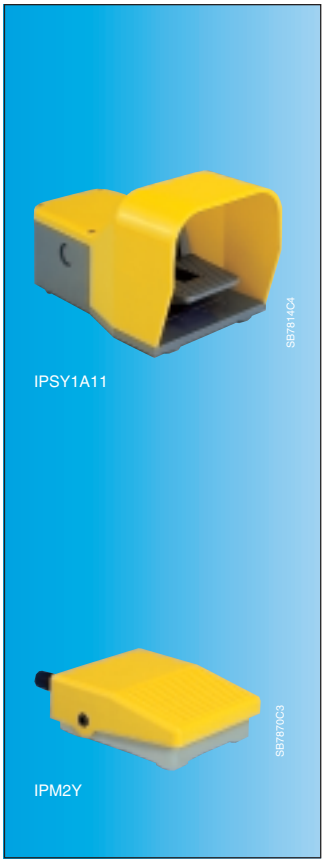
Actuation	Free movement	Locked in neutral position	Latched in low position
			
Types	**IPSY1**	**IPSY2**	**IPSY3**
Designation (Snap action N.O.+N.C.)	IPSY1A11	IPSY2A11	IPSY3A11
Designation (Slow action N.O.+N.C.)	IPSY1D11	IPSY2D11	IPSY3D11
Cover colour	Yellow	Yellow	Yellow

Mini Foot Switches



Actuation	Free Movement	
		
Types	**IPM**	**IPM**
Designation (snap action N.O./N.C.)	IPM2Y	IPM2B
Cover colour	Yellow	Black

IPS Foot Switches with Covers
IPM Mini Foot Switches



Ordering Details

Snap Action Contacts (13, 21 / 14, 22) Za	Non-overlapping Slow action Contacts (13, 21 / 14, 22) Zb	Type	Order code	Unit Weight in kg / Packing 1 piece
Free movement foot switch with cover				
1	–	**IPSY1A11**	**1SBV 00 2105 R1111**	1.10
–	1	**IPSY1D11**	**1SBV 00 2105 R1411**	1.10
Foot switch with cover locked in neutral position				
1	–	**IPSY2A11**	**1SBV 00 2205 R1111**	1.10
–	1	**IPSY2D11**	**1SBV 00 2205 R1411**	1.10
Foot switch with cover latched in low position				
1	–	**IPSY3A11**	**1SBV 00 2305 R1111**	1.10
–	1	**IPSY3D11**	**1SBV 00 2305 R1411**	1.10

Free movement mini foot switch

N.C./N.O. Contacts (NC, NO, C)	Cover Colour	Type	Order code	Unit Weight in kg / Packing 1 piece
1	yellow	**IPM2Y**	**1SBV 00 1105 R1823**	0.130
1	black	**IPM2B**	**1SBV 00 1107 R1823**	0.130

Technical Data

		Foot Switch with Cover	Mini Foot Switch
Degree of protection according to IEC 529 and EN 60 529		**IP65**	**IP40**
Actuation torque	**Nm**	0.25	1.2
Operating angle	**degree**	15	2 to 4
Cable inlet		Pg 16	Cable guide - min.ø = 6 mm, max.ø = 8.5 mm

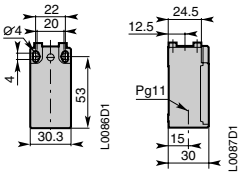
Electrical Data

Rated insulation voltage U_i	**V**	660 acc. to IEC 60 947-1 and EN 60 947-1 (degree of pollution 3)	250
Short-circuit protection $U_e \leq 500$ V a.c. - gG (gl) type fuses	**A**	10	10
Rated operational current		AC-15: U_e = 240 V, I_e = 3 A (acc. to IEC 60 947-5-1) DC-13: U_e = 250 V, I_e = 0.27 A (acc. to IEC 60 947-5-1) A600 (acc. to UL-508 and CSA C22-2 n° 14) Q600 (acc. to UL-508 and CSA C22-2 n° 14)	AC: 3A (250 V) DC: 0.06A (230 V)
Connecting terminals		M 3.5 (+,-) philips screw with cable clamp	M 3 x 0.5 screw with Philips head no.1 and washer
Positive opening operation according to IEC 60 947-5-1		⊖	–
Connecting capacity	**1 or 2 x mm²**	0.5 ... 2.5	–
Mechanical durability in millions of operations		30	10

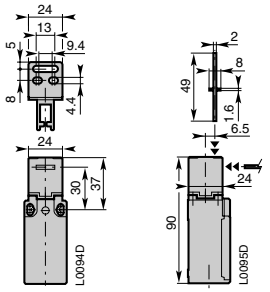
• **Dimensions** ..... page **22**/28

LS31P Limit Switches
Plastic Casing IP65

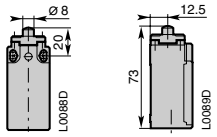
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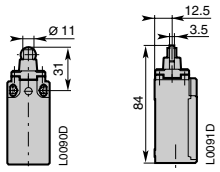
LS 31 P



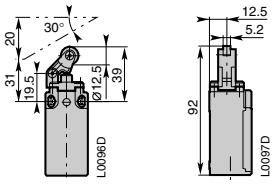
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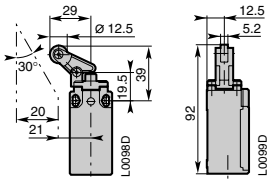
LS 31 P 11



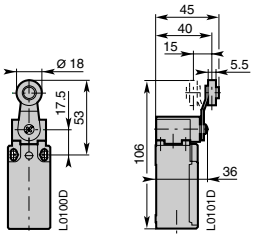
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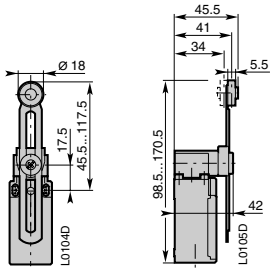
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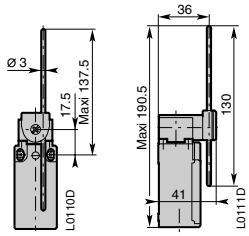
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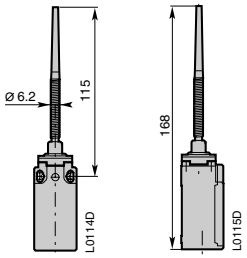
LS 31 P 41



LS 31 P 51



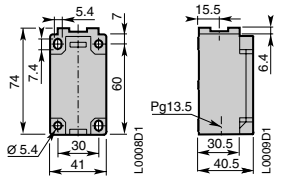
LS 31 P 72



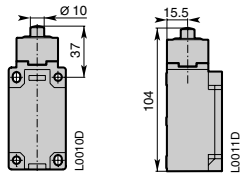
LS 31 P 92

LS40P Limit Switches
Plastic Casing IP65

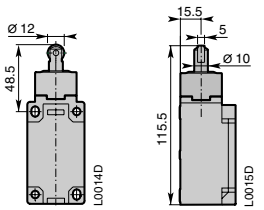
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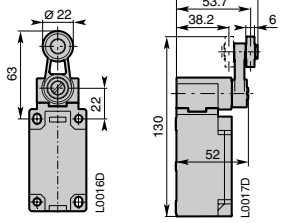
LS 40 P



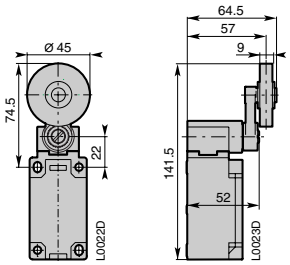
LS 40 P 11



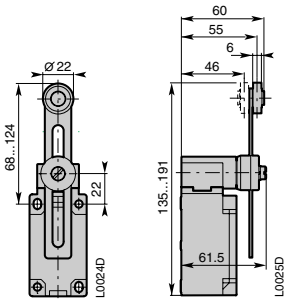
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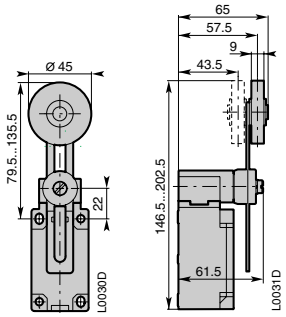
LS 40 P 41



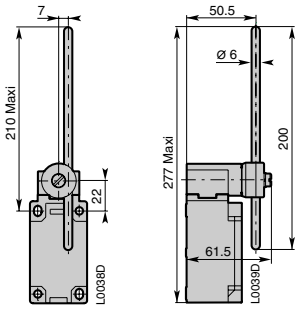
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LS 40 P 51



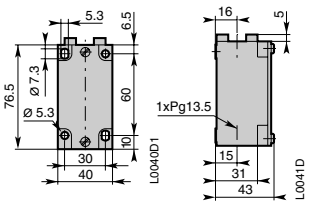
LS 40 P 54



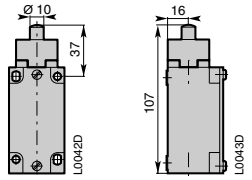
LS 40 P 72

LS40M Limit Switches
Metal Casing IP66

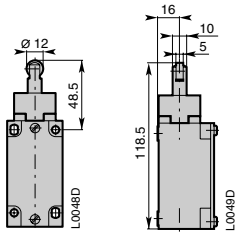
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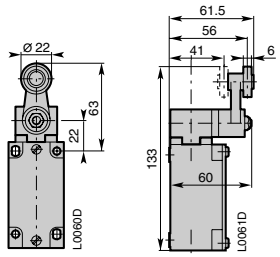
LS 40 M



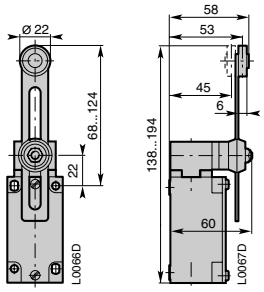
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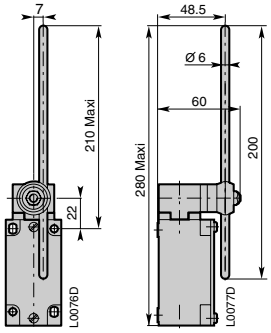
LS 40 M 13



LS 40 M 41/42



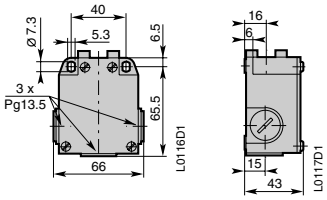
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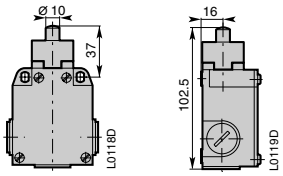
LS 40 M 72

LS60M Limit Switches
Metal Casing IP66

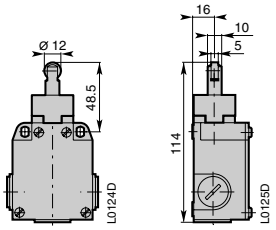
Dimensions (in mm)



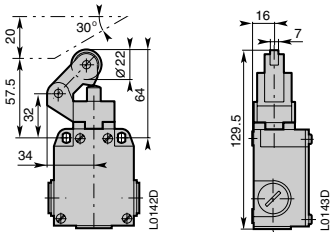
LS 60 M



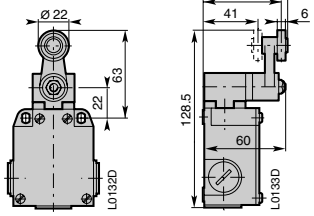
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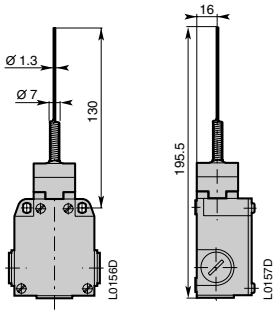
LS 60 M 13



LS 60 M 31



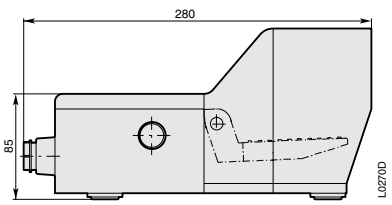
LS 60 M 41

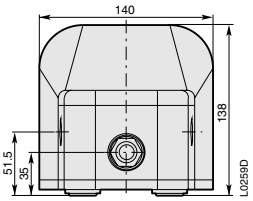


LS 60 M 91

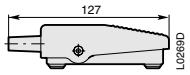
IPS Foot Switches with Covers and IPM Mini Foot Switches

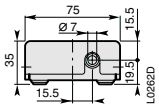
Dimensions (in mm)





IPS foot switch with cover





IPM mini foot switch with cover

Notes