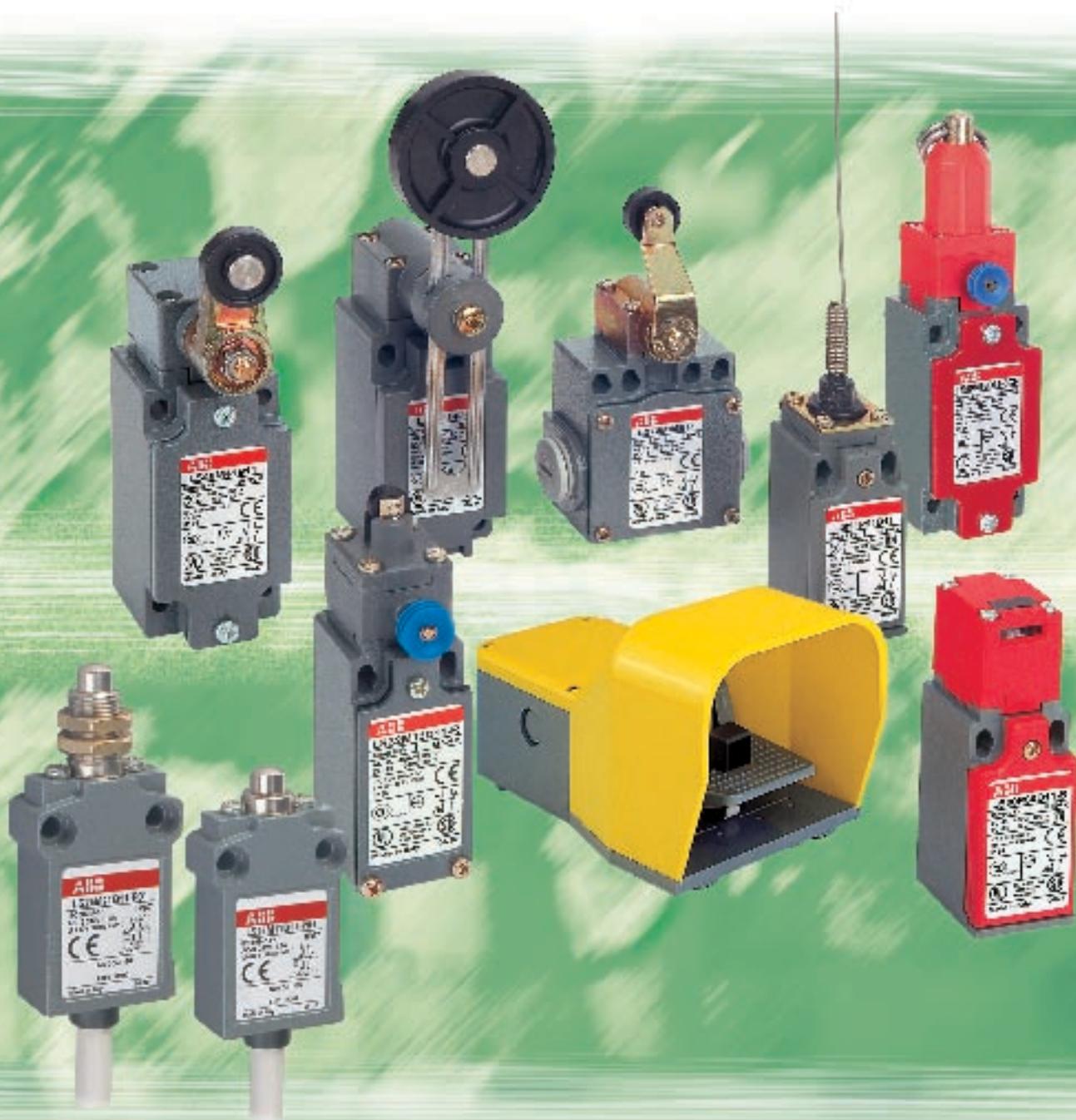


LS Series Limit Switches

AC1300





LS Series Limit Switches Foot Switches

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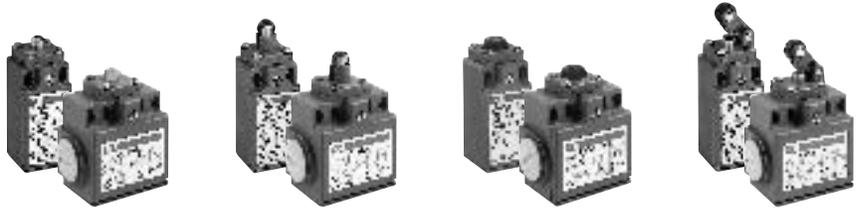
LS Series Limit Switches

Plastic Casing NEMA-1 - Double insulation

30 mm LS35 P..

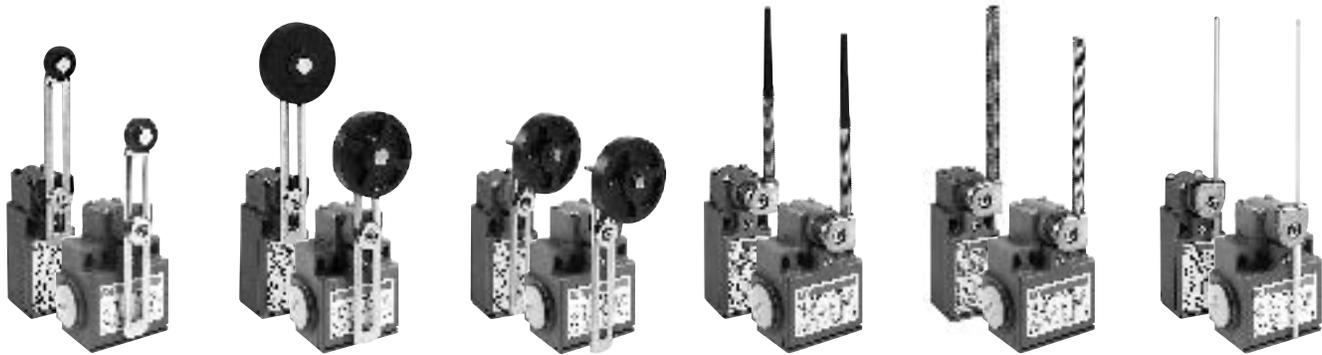
60 mm LS75 P..

Width



| | | | | |
|---|-------------------------|-------------------------|----------------|----------------|
| Type | LS..P10, LS..P11 | LS..P12, LS..P13 | LS..P14 | LS..P31 |
| Actuator | Plain plunger | Roller plunger | Plain plunger | Roller lever |
| Action type | | | | |
| CENELEC conformity / Positive opening operation | EN 50047 | EN 50047 | EN 50047 | EN 50047 |

Nota: For LS75P.. (60 mm width) compatible with EN 50047 (fixing)

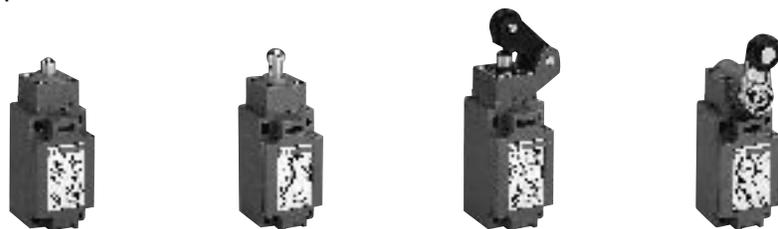


| | | | | | |
|-------------------------|-------------------------|-------------------------|----------------|----------------|-------------------------|
| LS..P51, LS..P53 | LS..P52 | LS..P55 | LS..P61 | LS..P62 | LS..P71, LS..P72 |
| Adjustable roller lever | Adjustable roller lever | Adjustable roller lever | Flexible lever | Flexible lever | Adjustable rod lever |
| | | | | | |
| - | - | - | - | - | - |

Plastic Casing NEMA-1 - Double insulation

40 mm LS45 P..

Width



As the range is very large, the products shown here are the most common. For the complete range, please consult us.

| | | | | |
|---|----------------|----------------|----------------|----------------|
| Type | LS..P11 | LS..P13 | LS..P31 | LS..P41 |
| Actuator | Plain plunger | Roller plunger | Roller lever | Roller lever |
| Action type | | | | |
| CENELEC conformity / Positive opening operation | EN 50041 | EN 50041 | - | EN 50041 |

Plastic Casing NEMA-1 □

| | | | | | |
|---|---|---|---|---|---|
|  |  |  |  |  |  |
| LS..P32 | LS..P35 | LS..P38 | LS..P41, LS..P43 | LS..P42 | LS..P45, LS..P46 |
| Roller lever | Roller lever | Adjustable roller lever | Roller lever | Roller lever | Roller lever |
|  |  |  |  |  |  |
| - | EN 50047 | - | EN 50047 | - | - |
|  |  |  |  |  |  |
| LS..P73 | LS..P74 | LS..P78 | LS..P91 | LS..P92 | LS..P98B11-A |
| Adjustable rod lever | Adjustable rod lever | Adjustable rod lever | Flexible rod | Flexible rod | Pull action |
|  |  |  |  |  |  |
| - | - | - | - | - | - |
|  |  |  |  |  |  |
| LS..P44 | LS..P51 | LS..P54 | LS..P61 | LS..P72 | LS..P91 |
| Roller lever | Adjustable roller levers | | Adjustable flexible and rigid rod levers | | Flexible rod |
|  |  |  |  |  |  |
| - | - | - | - | EN 50041 | - |

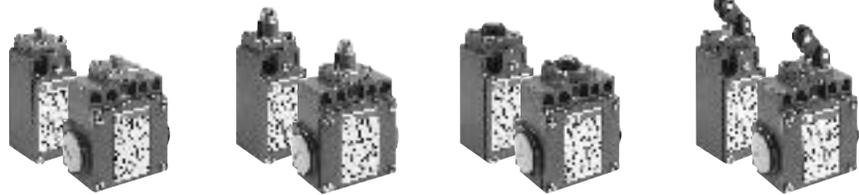
LS Series Limit Switches

Metal Casing NEMA-4X

30 mm LS35 M...

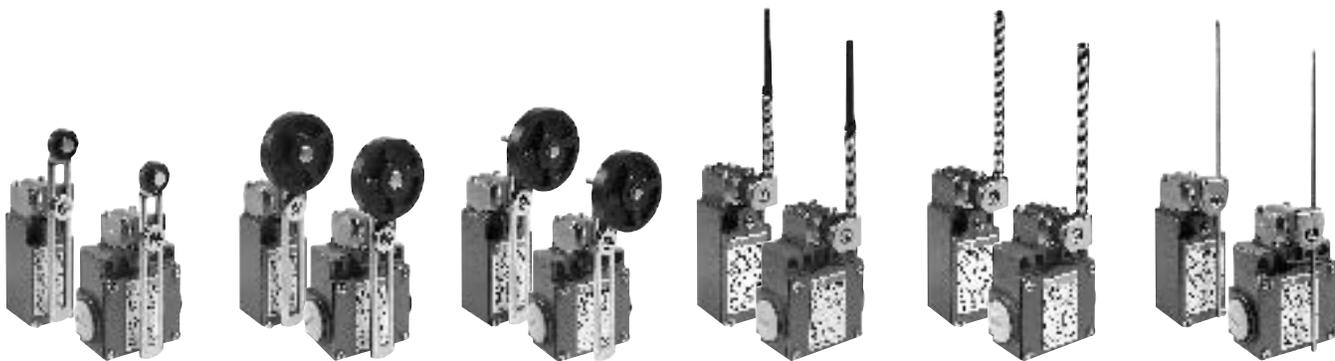
60 mm LS75 M...

Width



| | | | | |
|---|----------------|-------------------------|----------------|----------------|
| Type | LS..M11 | LS..M12, LS..M13 | LS..M14 | LS..M31 |
| Actuator | Plain plunger | Roller plunger | Plain plunger | Roller lever |
| Action type | | | | |
| CENELEC conformity / Positive opening operation | EN 50047 | EN 50047 | EN 50047 | EN 50047 |

Nota: For LS75M... (60 mm width) compatible with EN 50047 (fixing)



| | | | | | |
|-------------------------|-------------------------|-------------------------|----------------|----------------|-------------------------|
| LS..M51, LS..M53 | LS..M52 | LS..M55 | LS..M61 | LS..M62 | LS..M71, LS..M72 |
| Adjustable roller lever | Adjustable roller lever | Adjustable roller lever | Flexible lever | Flexible lever | Adjustable rod lever |
| | | | | | |
| - | - | - | - | - | - |

Metal Casing NEMA-4X

40 mm LS45 M...

Width



As the range is very large, the products shown here are the most common. For the complete range, please consult us.

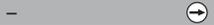
| | | | | | |
|---|----------------|----------------|----------------|----------------|----------------|
| Type | LS..M11 | LS..M13 | LS..M21 | LS..M22 | LS..M31 |
| Actuator | Plain plunger | Roller plunger | Plain plunger | Roller plunger | Roller lever |
| Action type | | | | | |
| CENELEC conformity / Positive opening operation | EN 50041 | EN 50041 | EN 50041 | EN 50041 | - |

Metal Casing NEMA-4X



LS..M32

Roller lever



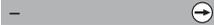
LS..M35

Roller lever



LS..M38

Adjustable roller lever



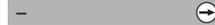
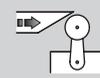
LS..M41, LS..M43

Roller lever



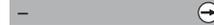
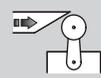
LS..M42

Roller lever



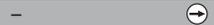
LS..M45, LS..M46

Roller lever



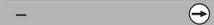
LS..M73

Adjustable rod lever



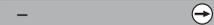
LS..M74

Adjustable rod lever



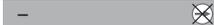
LS..M78

Adjustable rod lever



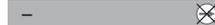
LS..M91

Flexible rod



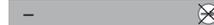
LS..M92

Flexible rod



LS..M98B11-A

Pull action



LS..M41

Roller lever



LS..M51

Adjustable roller levers



LS..M54

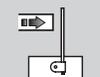
LS..M61

Adjustable flexible and rigid rod levers



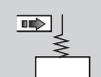
LS..M72

Adjustable flexible and rigid rod levers



LS..M91

Flexible rod



LS Series Limit Switches

Safety Limit Switches

30 mm Width LS 35

| | |
|---|------------------|
| P | = Plastic casing |
| M | = Metal casing |

 ...



40 mm Width LS 45

| | |
|---|------------------|
| P | = Plastic casing |
| M | = Metal casing |

 ...

| | | | |
|---|---------------------------------------|---------------------------------------|---------------------------------------|
| Limit Switches | LS35P80..-S LS35M80..-S | LS35P81..-S LS35M81..-S | LS45P80..-S LS45M80..-S |
| Operating head options: | Adjustable head | Pivoting head | Adjustable head |
| Action type: Translation with small latch (key) | | | |
| Positive opening operation | | | |

Keys

Keys



| | | | | | | | |
|--------------------------------|-----------------|-----------------|-----------------|-----------------|----------------------------------|-------------------------------|----------------------|
| Keys for LS3... limit switches | LSA30P03 | LSA30P04 | LSA30P05 | LSA30P06 | LSA30P07 | LSA30P08 | LSA30P09 |
| Keys for LS4... limit switches | | | LSA40X05 | LSA40X06 | LSA40X07 | LSA40X08 | LSA40X09 |
| Actuator | Right angle key | Straight key | Right angle key | Straight key | Right angle key + shock absorber | Straight key + shock absorber | Adjustable angle key |
| Fixing | 22 mm | 22 mm | 13 mm | 13 mm | 15 mm | 15 mm | 40 mm |

Limit Switches with Latch and Manual Reset

30 mm Width LS 35

| | |
|---|------------------|
| P | = Plastic casing |
| M | = Metal casing |

 ...



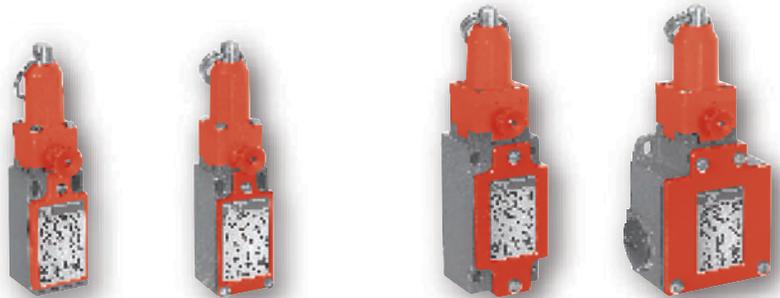
| | | |
|----------------------------|---------------------------------------|---------------------------------------|
| Limit Switches | LS35P11..-R LS35M11..-R | LS35P12..-R LS35M12..-R |
| Actuator: | Galvanized steel plain plunger | Galvanized steel roller plunger |
| Action type | | |
| Positive opening operation | | |

Plastic Casing NEMA-1 and Metal Casing NEMA-4X

Safety Limit Switches with Pulling Cable

30 mm Width **LS 35**  ...
P = Plastic casing
M = Metal casing

40 mm Width **LS 45**  ...
60 mm Width **LS 65**  ...

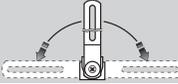


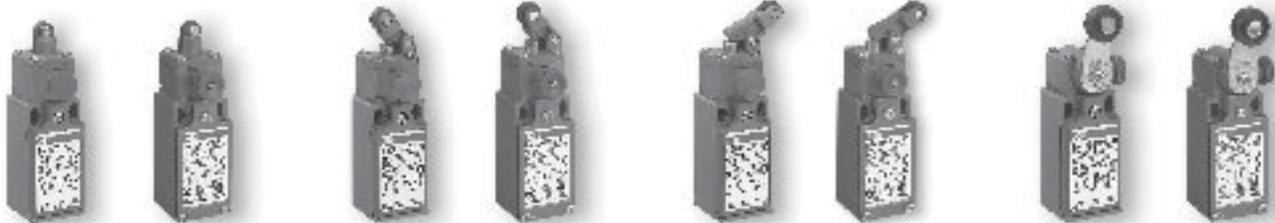
| | | |
|-----------------------------|---|---|
| Limit Switches | LS35P98...-SCR LS35M98...-SCR | LS45M98...-SCR LS65M98...-SCR |
| Actuator: | By red cable | |
| Action type: Pulling |  | |
| Positive opening operation |  | |

Safety Limit Switches with Rotative Axis or with Lever

30 mm Width **LS 35**  ...
P = Plastic casing
M = Metal casing



| | | | |
|----------------------------|---|---|---|
| Limit Switches | LS35P75...-S LS35M75...-S | LS35P76...-S LS35M76...-S | LS35M77...-S LS35P77...-S |
| Actuator: | Galvanized steel rotative axis | Stainless steel rotative axis | Galvanized steel lever |
| Action type |  |  |  |
| Positive opening operation |  | | |



| | | | |
|---|---|---|---|
| LS35P13...-R LS35M13...-R | LS35P31...-R LS35M31...-R | LS35P32...-R LS35M32...-R | LS35P41...-R LS35M41...-R |
| Plastic roller plunger | Plastic roller lever on galvanized steel plunger | | Rotary lever with plastic roller |
|  |  | |  |
|  | | | |

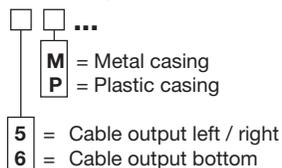
LS Series Prewired

35 mm width

Metal Casing NEMA-4X

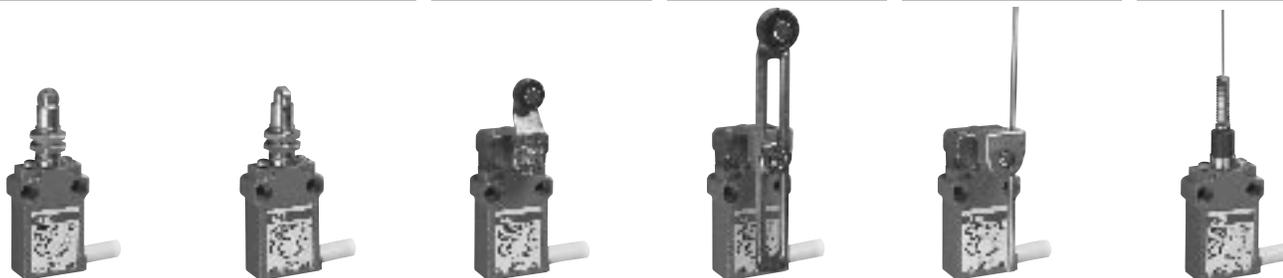
Plastic Casing NEMA-1 – Double insulation

LS 2



As the range is very large, the products shown there are the most common. For the complete range, please consult us.

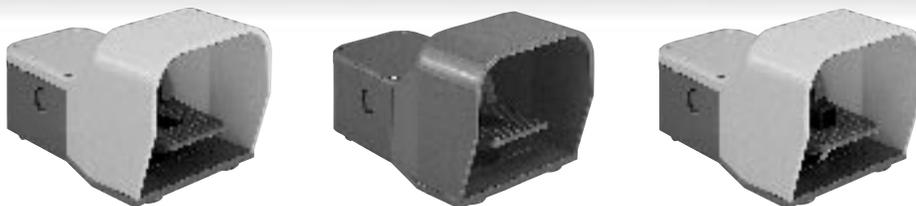
| | | | | |
|---|---------------------|----------------------|----------------------------|--------------------------------------|
| Type | LS2..M11, LS2..P11 | LS2..M12, LS2..P12 | LS2..M14, LS2..P14 | LS2..M21, LS2..P21 |
| Actuator | Brass plain plunger | Steel roller plunger | Cross steel roller plunger | Brass plain plunger with fixing nuts |
| Action type | | | | |
| CENELEC conformity / Positive opening operation | - | - | - | - |



| | | | | | |
|---------------------------------------|---|--------------------------|-------------------------------------|-------------------------------|--------------------|
| LS2..M22, LS2..P22 | LS2..M24, LS2..P24 | LS2..M41, LS2..P41 | LS2..M51, LS2..P51 | LS2..M71, LS2..P71 | LS2..M91, LS2..P91 |
| Steel roller plunger with fixing nuts | Cross steel roller lever with fixing nuts | ø14 Plastic roller lever | Adjustable ø18 plastic roller lever | Adjustable ø3 steel rod lever | Spring rod |
| | | | | | |
| - | - | - | - | - | - |

Foot Switches with Cover

Double insulation
IP65



| | | | |
|---|---------------|----------------------------|-------------------------|
| Foot Switches | IPS..1.. | IPS..2.. | IPS..3.. |
| Actuator: | Free movement | Locked in neutral position | Latched in low position |
| Action type | | | |
| CENELEC conformity / Positive opening operation | - | - | - |



LS Series Limit Switches Foot Switches

Contents

Limit Switches

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Safety Limit Switches

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Limit Switches with latch and manual reset

| | |
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Foot Switches

| | |
|-----------------------|----|
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LS25P ... LS26P.. and LS25M ... LS26M.. Prewired Limit Switches

Double Insulation  - Plastic Casing NEMA-1 or Metal Casing NEMA-4X

Applications

Easy to use, electromechanical limit switches offer specific qualities:

- Visible operation.
- Able to switch strong currents (5 A conventional thermal current).
- Electrically separated contacts (Zb shape).
- Contact blocks with positive opening operation of the "N.C." normally closed contact(s) (symbol \ominus).
- Precise operating points (consistency).
- Immune to electromagnetic disturbances.

They are exceptional detection devices thanks to these characteristics:

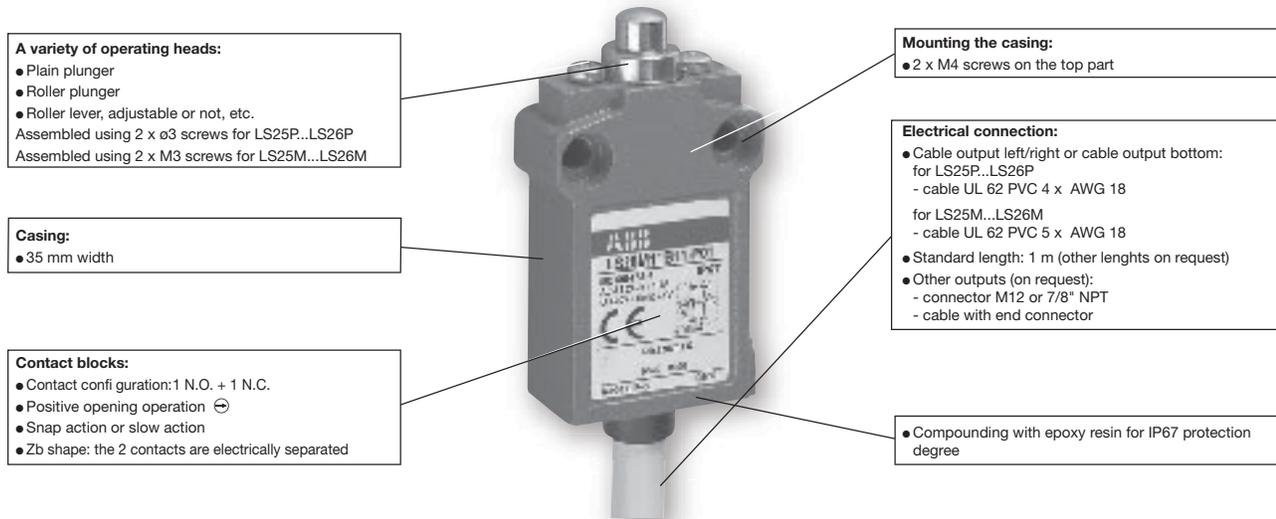
- Presence/absence.
- Positioning and travel limit.
- Objects passing/counting.

Description

LS25P ... LS26P limit switches, made of fibre-glass reinforced UL-V0 thermoplastic material, sealed with epoxy resin at the base on the body, offer double insulation  and a degree of protection NEMA-1.

LS25M ... LS26M limit switches, made of zinc alloy (zamack), sealed with epoxy resin at the base on the body, offer a degree of protection NEMA-4X.

The casings come in 35 mm width.



Type

Example:

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L | S | 2 | 5 | P | 1 | 1 | B | 1 | 1 | - | P | 0 | 1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

Example:

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L | S | 2 | 5 | M | 5 | 1 | D | 1 | 1 | - | P | 0 | 2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | | | |
|---|---|--|--|--|--|--|--|--|--|--|--|--|--|
| L | S | | | | | | | | | | | | |
|---|---|--|--|--|--|--|--|--|--|--|--|--|--|

Limit Switch LS

Cable length:
01 1 m
02 2 m
03 3 m
05 5 m
10 10 m (Max. for UL cable)

U cable UL 62 - PVC

Casing width: 35 mm 2
1 cable output left / right 5
1 cable output bottom 6

Contact types:
11 1 N.O. + 1 N.C. contacts

Plastic casing P
Metal casing M

Snap action:
B Zb Snap
Dependent (slow) action:
D Zb Non-overlapping late make

Operating heads
Codes 10 ... 98

LS35P.., LS45P.. and LS75P.. Limit Switches

Double Insulation  - Plastic Casing NEMA-1

Applications

Easy to use, electromechanical limit switches offer specific qualities:

- Visible operation.
- Able to switch strong currents (10 A conventional thermal current).
- Electrically separated contacts.
- Contact blocks with positive opening operation of the "N.C." normally closed contact(s) (symbol \ominus).
- Precise operating points (consistency).
- Immune to electromagnetic disturbances.

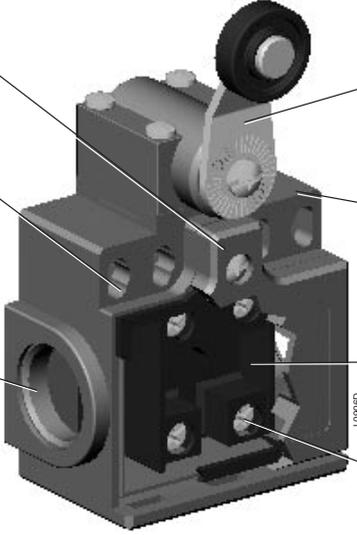
They are exceptional detection devices thanks to these characteristics:

- Presence/absence.
- Positioning and travel limit.
- Objects passing/counting.

Description

LS35P..., LS45P... and LS75P..., limit switches, which are made of fibre-glass reinforced UL-V0 thermoplastic material, offer double insulation  and a degree of protection NEMA-1.

The casings come in 3 dimensions: **LS35P...** 30 mm width, **LS45P...** 40 mm width, **LS75P...** 60 mm width.



Cover:

- Closed using 1 x $\phi 3$ screw for 30 & 60 mm width
- Self clipping closure for 40 mm width
- One piece sealing gasket to ensure tightness

Mounting the casing:

- 2 x M4 screws for 30 mm width
- 2 or 4 x M5 screws for 40 mm width
- 2 or 4 x M4 screws for 60 mm width

Electrical connection:

- 1 (LS35P) cable inlet by 1/2" NPT plastic adaptor
- 1 (LS45P) cable inlet for 1/2" NPT cable gland
- 1 (LS75P) cable inlet by 1/2" NPT plastic adaptor + 1 cable inlet Pg11 for additional 1/2" NPT plastic adaptor (on request)
- Suitable for conduit connection only with use of adaptor sleeve optionally provided by manufacturer. (on request)

A variety of operating heads:

- Plain plunger
- Roller plunger
- Roller lever, adjustable or not, etc.

Assembled using 4 x $\phi 3$ screws for 30 & 60 mm width
Assembled using 4 x $\phi 4$ screws for 40 mm width

Casing:

- 30 mm width with standardized dimensions according to EN 50047
- 40 mm width with standardized dimensions according to EN 50041
- 60 mm width compatible with EN 50047 (Fixing)

Block of 2 contacts:

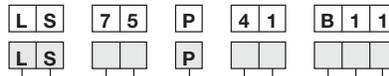
- Contact configuration: 1 N.O. + 1 N.C., 2 N.O., 2 N.C.
- Positive opening operation \ominus
- Snap action or slow action
- The 2 contacts are electrically separated

Connecting terminals:

- M3.5 (+,-) pozidriv 2 screw (Screw head with captive cable clamp)
- Markings conform with IEC 60947-1, IEC 60947-5-1, EN 50005 and EN 50013 standards

Type

Example:



| | |
|---------------------------|---|
| Limit Switch.....LS | |
| Casing width: 30 mm.....3 | 1 cable inlet by 1/2" NPT plastic adaptor delivered not mounted.....5 |
| Casing width: 40 mm.....4 | 1 cable inlet for 1/2" NPT cable gland.....5 |
| Casing width: 60 mm.....7 | 1 cable inlet by 1/2" NPT plastic adaptor + 1 cable inlet Pg 11 for additional 1/2" NPT plastic adaptor (on request)5 |

Contact types:

| | |
|---------|--------------------------|
| 11..... | 1 N.O. + 1 N.C. contacts |
| 20..... | 2 N.O. contacts |
| 02..... | 2 N.C. contacts |

Snap action:

| | |
|--------|--------------------------------------|
| B..... | Zb Snap (except for 2 N.O. contacts) |
|--------|--------------------------------------|

Dependent (slow) action:

| | |
|--------|------------------------------|
| L..... | Slow / Simultaneous |
| D..... | Zb Non-overlapping late make |
| C..... | Zb Overlapping early make |

Operating heads: (see panorama)
10 ... 98.....Codes

P.....Plastic casing

LS35M.., LS45M.. and LS75M.. Limit Switches

Metal Casing NEMA-4X

Applications

Easy to use, electromechanical limit switches offer specific qualities:

- Visible operation.
- Able to switch strong currents (10 A conventional thermal current).
- Electrically separated contacts.
- Contact blocks with positive opening operation of the "N.C." normally closed contact(s) (symbol ⊖).
- Precise operating points (consistency).
- Immune to electromagnetic disturbances.

They are exceptional detection devices thanks to these characteristics:

- Presence/absence.
- Positioning and travel limit.
- Objects passing/counting.

Description

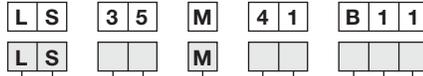
Limit switches, **LS35M..** and **LS75M..**, which are made of zinc alloy (zamack), have a degree of protection NEMA-4X.

Limit switches, **LS45M..**, which are made of aluminium alloy, have a degree of protection NEMA-4X.

The casings come in 3 dimensions: **LS35M...** 30 mm width, **LS45M...** 40 mm width, **LS75M...** 60 mm width.

Type

Example:



| | |
|--|----|
| Limit Switch..... | LS |
| Casing width: 30 mm..... | 3 |
| 1 cable inlet for 1/2" NPT cable gland..... | 5 |
| Casing width: 40 mm..... | 4 |
| 1 cable inlet for 1/2" NPT cable gland..... | 5 |
| Casing width: 60 mm (new casing)..... | 7 |
| 3 cable inlets for 1/2" NPT cable gland..... | 5 |

| | |
|----------------|--------------------------|
| Contact types: | |
| 11 | 1 N.O. + 1 N.C. contacts |
| 20 | 2 N.O. contacts |
| 02 | 2 N.C. contacts |

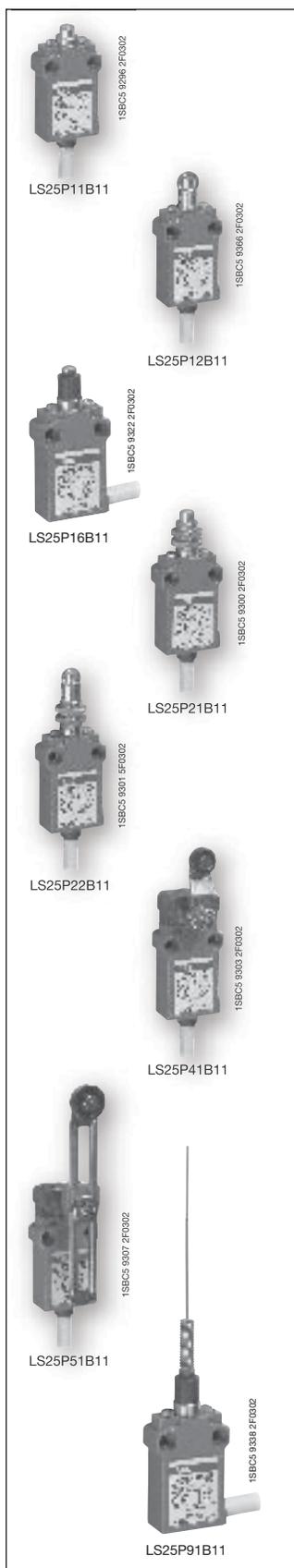
| | |
|--------------------------|--------------------------------------|
| Snap action: | |
| B | Zb Snap (except for 2 N.O. contacts) |
| Dependent (slow) action: | |
| L | Slow / Simultaneous |
| D | Zb Non-overlapping late make |
| C | Zb Overlapping early make |

| | |
|---------------------------------|-------|
| Operating heads: (see panorama) | |
| 10 ... 98 | Codes |

| | |
|---------|--------------|
| M | Metal casing |
|---------|--------------|

LS2..P.. Limit Switches

Double insulation - Plastic Casing NEMA-1
35 mm Width

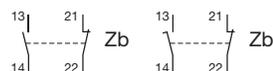


LS25P: 1 cable output left / right
LS26P: 1 cable output bottom

Plastic Casing - NEMA-1
35 mm Width

Ordering Details

Contact blocks



B11

D11

Brass plain plunger (nickel plated)

| | | Catalog number | List price |
|---|---|--|------------|
| 1 | - | LS25P11B11-U <input type="checkbox"/> <input type="checkbox"/> | |
| 1 | - | LS26P11B11-U <input type="checkbox"/> <input type="checkbox"/> | |
| - | 1 | LS25P11D11-U <input type="checkbox"/> <input type="checkbox"/> | |
| - | 1 | LS26P11D11-U <input type="checkbox"/> <input type="checkbox"/> | |

Steel roller plunger (zinc plated)

| | | | |
|---|---|--|--|
| 1 | - | LS25P12B11-U <input type="checkbox"/> <input type="checkbox"/> | |
| 1 | - | LS26P12B11-U <input type="checkbox"/> <input type="checkbox"/> | |
| - | 1 | LS25P12D11-U <input type="checkbox"/> <input type="checkbox"/> | |
| - | 1 | LS26P12D11-U <input type="checkbox"/> <input type="checkbox"/> | |

Brass plain plunger (nickel plated) with dust protection

| | | | |
|---|---|--|--|
| 1 | - | LS25P16B11-U <input type="checkbox"/> <input type="checkbox"/> | |
| 1 | - | LS26P16B11-U <input type="checkbox"/> <input type="checkbox"/> | |
| - | 1 | LS25P16D11-U <input type="checkbox"/> <input type="checkbox"/> | |
| - | 1 | LS26P16D11-U <input type="checkbox"/> <input type="checkbox"/> | |

Brass plain plunger (zinc plated) with fi xing nuts

| | | | |
|---|---|--|--|
| 1 | - | LS25P21B11-U <input type="checkbox"/> <input type="checkbox"/> | |
| 1 | - | LS26P21B11-U <input type="checkbox"/> <input type="checkbox"/> | |
| - | 1 | LS25P21D11-U <input type="checkbox"/> <input type="checkbox"/> | |
| - | 1 | LS26P21D11-U <input type="checkbox"/> <input type="checkbox"/> | |

Steel roller plunger (zinc plated) with fi xing nuts

| | | | |
|---|---|--|--|
| 1 | - | LS25P22B11-U <input type="checkbox"/> <input type="checkbox"/> | |
| 1 | - | LS26P22B11-U <input type="checkbox"/> <input type="checkbox"/> | |
| - | 1 | LS25P22D11-U <input type="checkbox"/> <input type="checkbox"/> | |
| - | 1 | LS26P22D11-U <input type="checkbox"/> <input type="checkbox"/> | |

ø14 plastic (polyacetal) roller lever

| | | | |
|---|---|--|--|
| 1 | - | LS25P41B11-U <input type="checkbox"/> <input type="checkbox"/> | |
| 1 | - | LS26P41B11-U <input type="checkbox"/> <input type="checkbox"/> | |
| - | 1 | LS25P41D11-U <input type="checkbox"/> <input type="checkbox"/> | |
| - | 1 | LS26P41D11-U <input type="checkbox"/> <input type="checkbox"/> | |

Adjustable ø18 plastic (polyacetal) roller lever

| | | | |
|---|---|--|--|
| 1 | - | LS25P51B11-U <input type="checkbox"/> <input type="checkbox"/> | |
| 1 | - | LS26P51B11-U <input type="checkbox"/> <input type="checkbox"/> | |
| - | 1 | LS25P51D11-U <input type="checkbox"/> <input type="checkbox"/> | |
| - | 1 | LS26P51D11-U <input type="checkbox"/> <input type="checkbox"/> | |

Spring rod

| | | | |
|---|---|--|--|
| 1 | - | LS25P91B11-U <input type="checkbox"/> <input type="checkbox"/> | |
| 1 | - | LS26P91B11-U <input type="checkbox"/> <input type="checkbox"/> | |
| - | 1 | LS25P91D11-U <input type="checkbox"/> <input type="checkbox"/> | |
| - | 1 | LS26P91D11-U <input type="checkbox"/> <input type="checkbox"/> | |

Length cable code

| Cable length | Code |
|--------------|---|
| | <input type="checkbox"/> <input type="checkbox"/> |
| 1 m | 0 1 |
| 2 m | 0 2 |
| 5 m | 0 5 |
| 10 m | 1 0 |

Note: -U = cable UL 62 PVC maxi. 10 m

LS35P.. Limit Switches

Double Insulation - Plastic Casing NEMA-1 - 30 mm Width
1 Cable inlet 1/2" NPT

Ordering Details

| Contact blocks | Catalog number | List price |
|--|----------------|------------|
|  B11 | | |
|  D11 | | |

Steel plain plunger (zinc plated)

| | | |
|---|---|------------|
| 1 | - | LS35P11B11 |
| - | 1 | LS35P11D11 |

ø11 plastic (polyacetal) roller plunger

| | | |
|---|---|------------|
| 1 | - | LS35P13B11 |
| - | 1 | LS35P13D11 |

ø12.5 plastic (polyacetal) roller lever on steel plunger (zinc plated) horizontal action

| | | |
|---|---|------------|
| 1 | - | LS35P31B11 |
| - | 1 | LS35P31D11 |

ø12.5 plastic (polyacetal) roller lever on steel plunger (zinc plated) vertical action

| | | |
|---|---|------------|
| 1 | - | LS35P32B11 |
| - | 1 | LS35P32D11 |

ø18 plastic (polyacetal) roller lever

| | | |
|---|---|------------|
| 1 | - | LS35P41B11 |
| - | 1 | LS35P41D11 |

ø50 rubber roller lever

| | | |
|---|---|------------|
| 1 | - | LS35P42B11 |
| - | 1 | LS35P42D11 |

Adjustable ø18 plastic (polyacetal) roller lever

| | | |
|---|---|------------|
| 1 | - | LS35P51B11 |
| - | 1 | LS35P51D11 |

Adjustable ø50 rubber roller lever

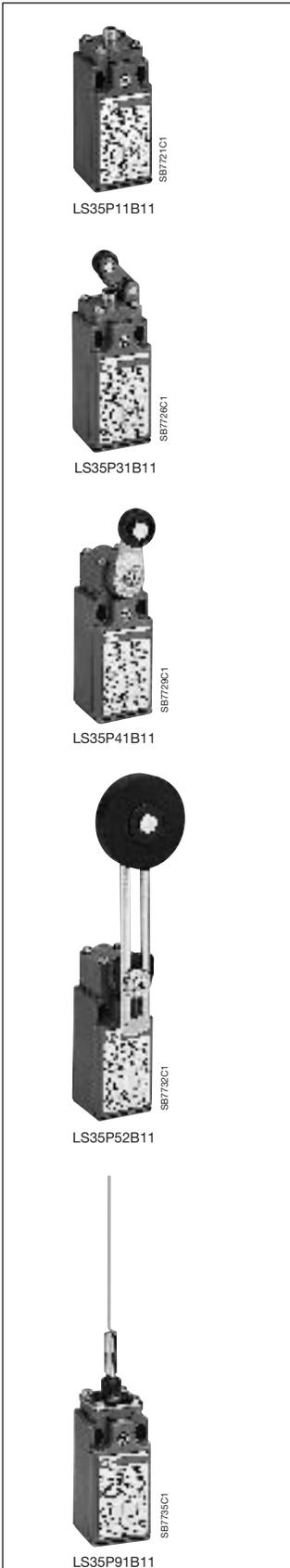
| | | |
|---|---|------------|
| 1 | - | LS35P52B11 |
| - | 1 | LS35P52D11 |

Adjustable ø3 fibre-glass rod lever

| | | |
|---|---|------------|
| 1 | - | LS35P72B11 |
| - | 1 | LS35P72D11 |

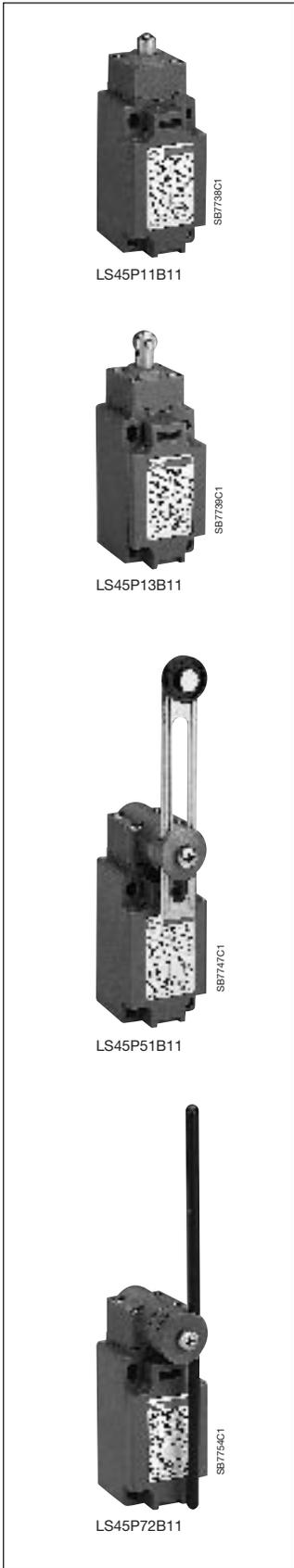
Spring rod

| | | |
|---|---|------------|
| 1 | - | LS35P91B11 |
| - | 1 | LS35P91D11 |



LS45P.. Limit Switches

Double Insulation □ - Plastic Casing NEMA-1 - 40 mm Width
1 Cable inlet 1/2" NPT



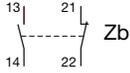
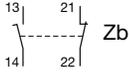
Ordering Details

| Contact blocks | | Catalog number | List price |
|---|------------|----------------|------------|
| | | | |
| B11 | D11 | | |
| Steel plain plunger (zinc plated) | | | |
| 1 | - | LS45P11B11 | |
| - | 1 | LS45P11D11 | |
| ø12 stainless steel roller plunger | | | |
| 1 | - | LS45P13B11 | |
| - | 1 | LS45P13D11 | |
| ø22 plastic (polyacetal) roller lever on steel plunger | | | |
| 1 | - | LS45P31B11 | |
| - | 1 | LS45P31D11 | |
| ø22 plastic (polyacetal) roller lever | | | |
| 1 | - | LS45P41B11 | |
| - | 1 | LS45P41D11 | |
| ø50 rubber roller lever | | | |
| 1 | - | LS45P44B11 | |
| - | 1 | LS45P44D11 | |
| Adjustable ø22 plastic (polyacetal) roller lever | | | |
| 1 | - | LS45P51B11 | |
| - | 1 | LS45P51D11 | |
| Adjustable ø50 rubber roller lever | | | |
| 1 | - | LS45P54B11 | |
| - | 1 | LS45P54D11 | |
| Adjustable ø6 plastic (polyacetal) rod lever | | | |
| 1 | - | LS45P72B11 | |
| - | 1 | LS45P72D11 | |

LS75P.. Limit Switches

Double Insulation - Plastic Casing NEMA-1 - 60 mm Width
2 Cable inlet 1/2" NPT

Ordering Details

| Contact blocks | Catalog number | List price |
|---|----------------|------------|
|  B11 | | |
|  D11 | | |

Steel plain plunger (zinc plated)

| | | | |
|---|---|------------|--|
| 1 | - | LS75P11B11 | |
| - | 1 | LS75P11D11 | |

ø11 plastic (polyacetal) roller plunger

| | | | |
|---|---|------------|--|
| 1 | - | LS75P13B11 | |
| - | 1 | LS75P13D11 | |

ø12.5 plastic (polyacetal) roller lever on steel plunger (zinc plated)

| | | | |
|---|---|------------|--|
| 1 | - | LS75P31B11 | |
| - | 1 | LS75P31D11 | |

ø18 plastic (polyacetal) roller lever

| | | | |
|---|---|------------|--|
| 1 | - | LS75P41B11 | |
| - | 1 | LS75P41D11 | |

ø50 rubber roller lever

| | | | |
|---|---|------------|--|
| 1 | - | LS75P42B11 | |
| - | 1 | LS75P42D11 | |

Adjustable ø18 plastic (polyacetal) roller lever

| | | | |
|---|---|------------|--|
| 1 | - | LS75P51B11 | |
| - | 1 | LS75P51D11 | |

Adjustable ø50 rubber roller lever

| | | | |
|---|---|------------|--|
| 1 | - | LS75P52B11 | |
| - | 1 | LS75P52D11 | |

Adjustable ø3 fibre-glass rod lever

| | | | |
|---|---|------------|--|
| 1 | - | LS75P72B11 | |
| - | 1 | LS75P72D11 | |

Spring rod

| | | | |
|---|---|------------|--|
| 1 | - | LS75P91B11 | |
| - | 1 | LS35P91D11 | |

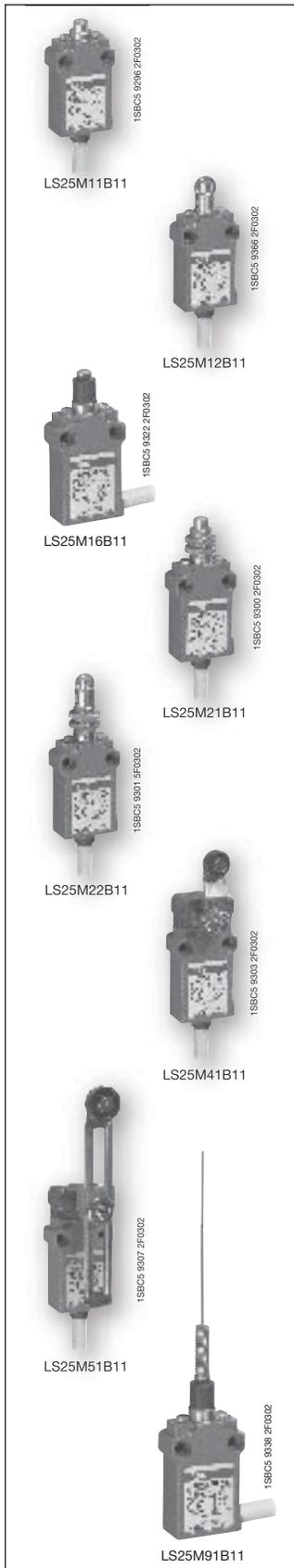
Pull action with ring

| | | | |
|---|---|--------------|--|
| 1 | - | LS75P98B11-A | |
| - | 1 | LS75P98D11-A | |



LS25M.. Limit Switches

Metal Casing NEMA-4X - 35 mm Width



LS25M: 1 cable output left/right
LS26M: 1 cable output bottom

Metal Casing - NEMA-4X
35 mm Width

Ordering Details

| Contact blocks | Catalog number | List price |
|---|------------------|------------|
| | | |
| | | |
| B11 | | |
| D11 | | |
| Brass plain plunger (nickel plated) | | |
| 1 - | LS25M11B11-U □ □ | |
| 1 - | LS26M11B11-U □ □ | |
| - 1 | LS25M11D11-U □ □ | |
| - 1 | LS26M11D11-U □ □ | |
| Steel roller plunger (zinc plated) | | |
| 1 - | LS25M12B11-U □ □ | |
| 1 - | LS26M12B11-U □ □ | |
| - 1 | LS25M12D11-U □ □ | |
| - 1 | LS26M12D11-U □ □ | |
| Brass plain plunger (nickel plated) with dust protection | | |
| 1 - | LS25M16B11-U □ □ | |
| 1 - | LS26M16B11-U □ □ | |
| - 1 | LS25M16D11-U □ □ | |
| - 1 | LS26M16D11-U □ □ | |
| Brass plain plunger (nickel plated) with fi xing nuts | | |
| 1 - | LS25M21B11-U □ □ | |
| 1 - | LS26M21B11-U □ □ | |
| - 1 | LS25M21D11-U □ □ | |
| - 1 | LS26M21D11-U □ □ | |
| Steel roller plunger (zinc plated) with fi xing nuts | | |
| 1 - | LS25M22B11-U □ □ | |
| 1 - | LS26M22B11-U □ □ | |
| - 1 | LS25M22D11-U □ □ | |
| - 1 | LS26M22D11-U □ □ | |
| ø14 plastic (polyacetal) roller lever | | |
| 1 - | LS25M41B11-U □ □ | |
| 1 - | LS26M41B11-U □ □ | |
| - 1 | LS25M41D11-U □ □ | |
| - 1 | LS26M41D11-U □ □ | |
| Adjustable ø18 plastic (polyacetal) roller lever | | |
| 1 - | LS25M51B11-U □ □ | |
| 1 - | LS26M51B11-U □ □ | |
| - 1 | LS25M51D11-U □ □ | |
| - 1 | LS26M51D11-U □ □ | |
| Spring rod | | |
| 1 - | LS25M91B11-U □ □ | |
| 1 - | LS26M91B11-U □ □ | |
| - 1 | LS25M91D11-U □ □ | |
| - 1 | LS26M91D11-U □ □ | |

Length cable code

| Cable length | Code |
|--------------|------|
| | □ □ |
| 1 m | 0 1 |
| 2 m | 0 2 |
| 5 m | 0 5 |
| 10 m | 1 0 |

Note: -U □ □ = cable UL 62 PVC maxi. 10 m

LS35M.. Limit Switches

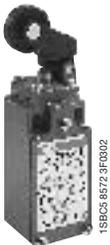
Metal Casing NEMA-4X - 30 mm Width
1 Cable inlet 1/2" NPT



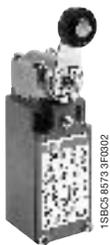
LS35M11B11



LS35M12B11



LS35M38B11



LS35M41B11



LS35M51B11

Ordering Details

| Contact blocks | | Catalog number | List price |
|---|---------|----------------|------------|
| B11 | D11 | | |
| Steel plain plunger (zinc plated) | | | |
| 1 | - | LS35M11B11 | |
| - | 1 | LS35M11D11 | |
| Steel roller plunger (zinc plated) | | | |
| 1 | - | LS35M12B11 | |
| - | 1 | LS35M12D11 | |
| ø12.5 plastic (polyacetal) roller lever on steel plunger (zinc plated) horizontal action | | | |
| 1 | - | LS35M31B11 | |
| - | 1 | LS35M31D11 | |
| ø12.5 plastic (polyacetal) roller lever on steel plunger (zinc plated) vertical action | | | |
| 1 | - | LS35M32B11 | |
| - | 1 | LS35M32D11 | |
| ø22 plastic (polyacetal) roller lever on steel plunger (zinc plated) | | | |
| 1 | - | LS35M38B11 | |
| - | 1 | LS35M38D11 | |
| ø18 plastic (polyacetal) roller lever | | | |
| 1 | - | LS35M41B11 | |
| - | 1 | LS35M41D11 | |
| ø50 rubber roller lever | | | |
| 1 | - | LS35M42B11 | |
| - | 1 | LS35M42D11 | |
| Adjustable ø18 plastic (polyacetal) roller lever | | | |
| 1 | - | LS35M51B11 | |
| - | 1 | LS35M51D11 | |
| Adjustable ø50 rubber roller lever | | | |
| 1 | - | LS35M52B11 | |
| - | 1 | LS35M52D11 | |
| Spring rod | | | |
| 1 | - | LS35M91B11 | |
| - | 1 | LS35M91D11 | |

LS45M.. Limit Switches

Metal Casing NEMA-4X - 40 mm Width
1 Cable inlet 1/2" NPT



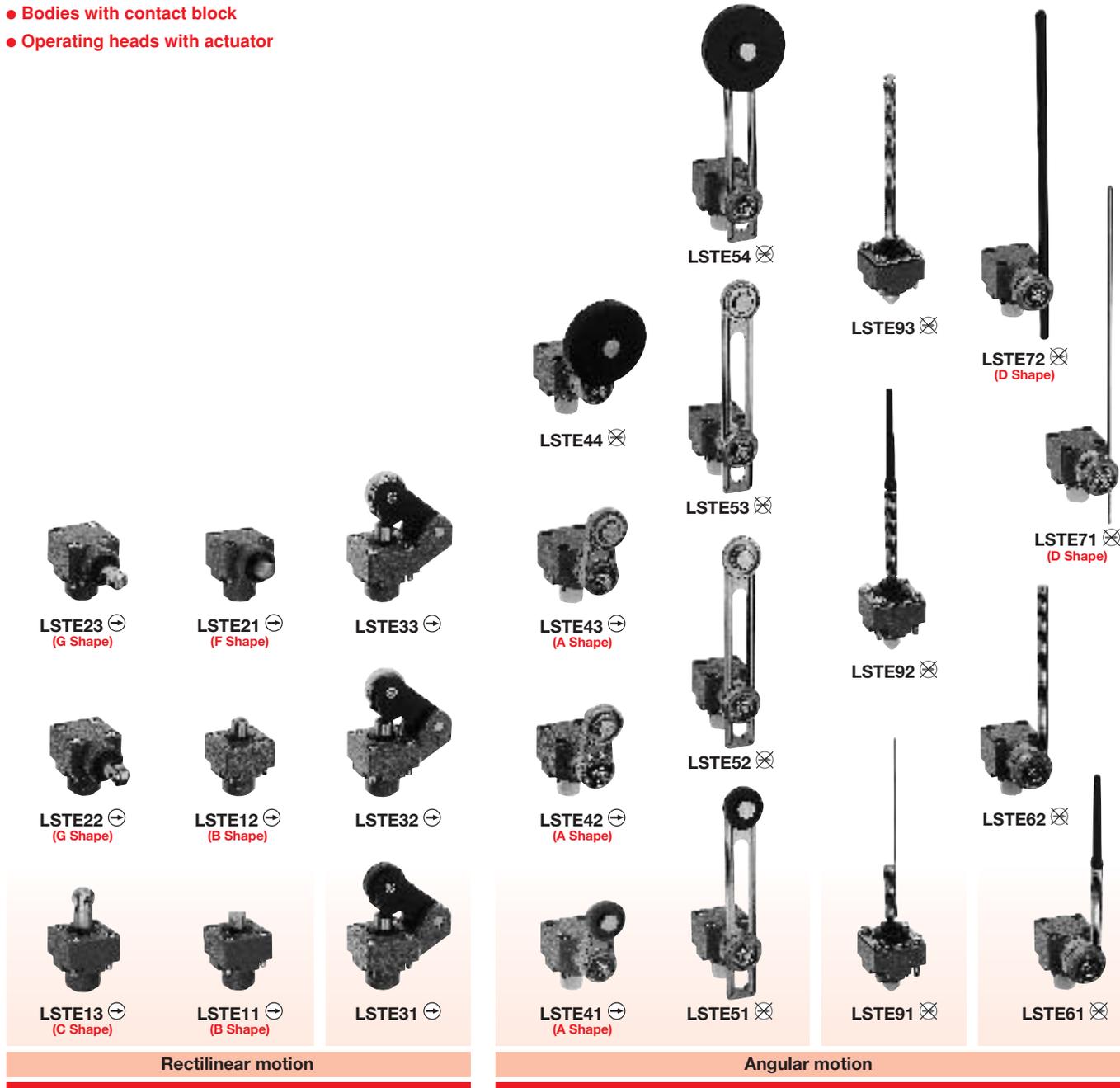
Ordering Details

| Contact blocks | | Catalog number | List price |
|---|---------|----------------|------------|
| B11 | D11 | | |
| Stainless steel plain plunger | | | |
| 1 | - | LS45M11B11 | |
| - | 1 | LS45M11D11 | |
| ø12 stainless steel roller plunger | | | |
| 1 | - | LS45M13B11 | |
| - | 1 | LS45M13D11 | |
| ø22 plastic (polyacetal) roller lever on stainless steel plunger | | | |
| 1 | - | LS45M31B11 | |
| - | 1 | LS45M31D11 | |
| ø22 plastic (polyacetal) roller lever | | | |
| 1 | - | LS45M41B11 | |
| - | 1 | LS45M41D11 | |
| ø22 stainless steel roller lever | | | |
| 1 | - | LS45M42B11 | |
| - | 1 | LS45M42D11 | |
| Adjustable ø22 plastic (polyacetal) roller lever | | | |
| 1 | - | LS45M51B11 | |
| - | 1 | LS45M51D11 | |
| Adjustable ø6 plastic (polyacetal) rod lever | | | |
| 1 | - | LS45M72B11 | |
| - | 1 | LS45M72D11 | |
| Spring rod | | | |
| 1 | - | LS45M91B11 | |
| - | 1 | LS45M91D11 | |

LS45M Limit Switches

Metal Casing NEMA-4X - 40 mm Width
Synoptic of Separate Elements

- Bodies with contact block
- Operating heads with actuator



LSTE... rectilinear motion heads

- To be actuated from end. With plunger (plain, lateral plain or ball): LSTE11, LSTE12 and LSTE21.
- To be actuated by 30° cam translation. With roller plunger: LSTE13, LSTE22 and LSTE23.
- To be actuated unidirectionally by 30° cam translation. With roller lever on stainless steel plunger: LSTE31 ... LSTE33.

LSTE... angular motion heads

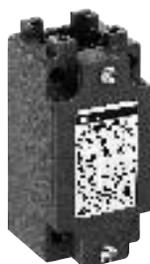
- To be actuated by 30° cam translation. With roller lever: LSTE41 ... LSTE54.
- To be actuated by fully directional translation movement. With rod or spring lever: LSTE61 ... LSTE72.
- To be actuated multidirectionally. With spring rod: LSTE91 ... LSTE93.

Bodies with contact block

⊕ LS45M00B11, LS45M00D11

⊕: Suitable for positive opening operation (IEC 60947-5-1 and EN 50041).

Warning! The positive opening operation of limit switch is only guaranteed if the elements noted with ⊕ are fitted.

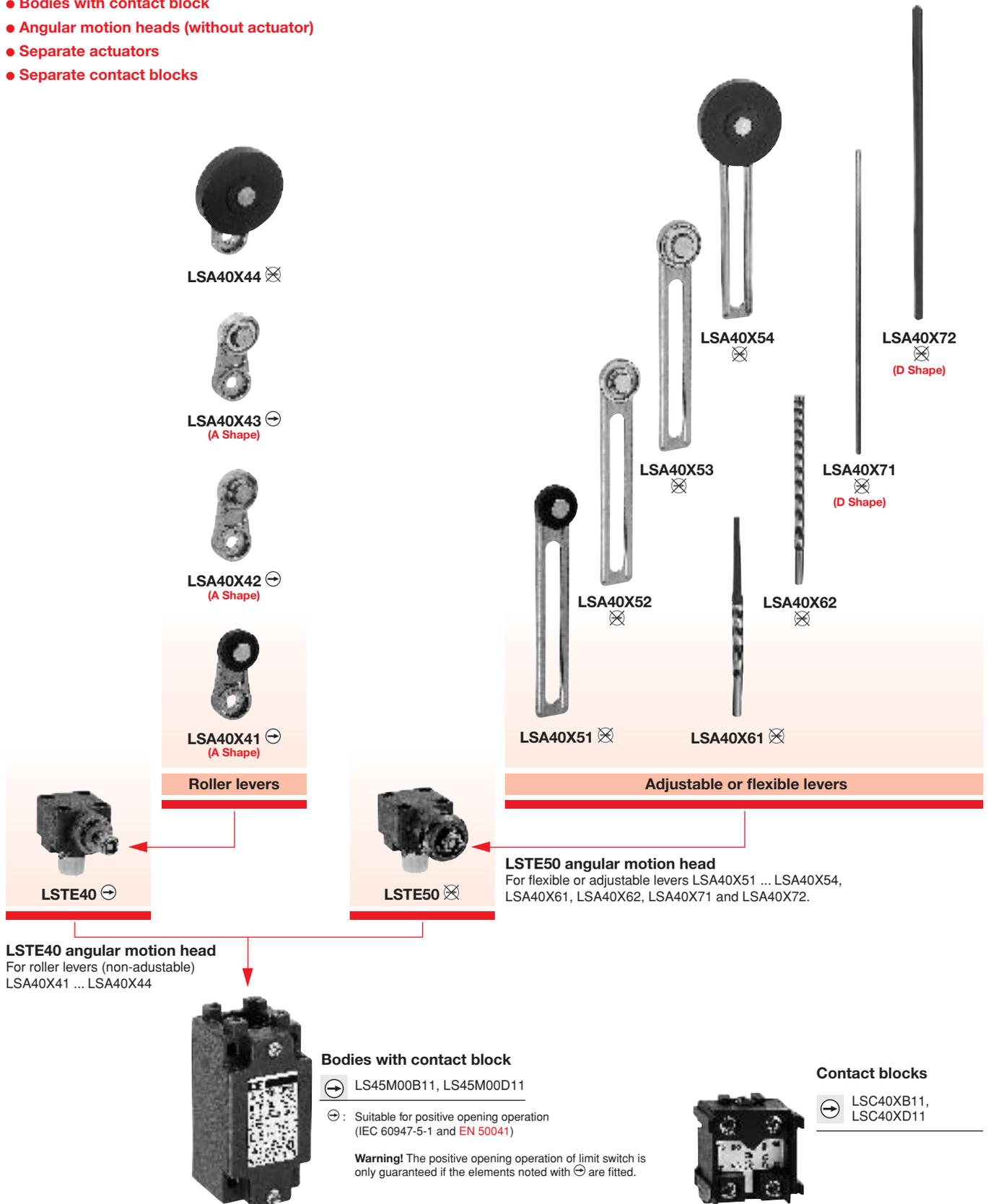


LS45M Limit Switches

Metal Casing NEMA-4X - 40 mm Width

Synoptic of Separate Elements (continued)

- Bodies with contact block
- Angular motion heads (without actuator)
- Separate actuators
- Separate contact blocks



LS45M Limit Switches

Metal Casing NEMA-4X - 40 mm Width, 1/2" NPT
Separate Elements

⊖ "N.C." contact with positive opening operation or element (subassembly, head, lever) suitable for positive opening operation.

Warning! The positive opening operation of limit switch is only guaranteed if the elements noted with ⊖ are fitted.



Ordering Details

| Contact blocks | Positive opening operation | Actuation speed max. m/s | Catalog number | List Price |
|--|----------------------------|--------------------------|----------------|------------|
|  B11 | ⊖ | max. m/s | | |
|  D11 | ⊖ | max. m/s | | |
| 1 | ⊖ | - | LS45M00B11 | |
| 1 | ⊖ | - | LS45M00D11 | |

Rectilinear motion heads with actuator

To be actuated from end

| | | | | |
|---------------------------------------|---|-----|--------|--|
| Stainless steel plain plunger | ⊖ | 0.5 | LSTE11 | |
| Stainless steel ball plunger | ⊖ | 0.5 | LSTE12 | |
| Stainless steel lateral plain plunger | ⊖ | 0.5 | LSTE21 | |

To be actuated by 30° cam

| | | | | |
|--|---|-----|--------|--|
| Stainless steel roller plunger | ⊖ | 0.5 | LSTE13 | |
| Stainless steel lateral plunger with vertical roller | ⊖ | 0.5 | LSTE22 | |
| Stainless steel lateral plunger with horizontal roller | ⊖ | 0.5 | LSTE23 | |

To be actuated unidirectionally by 30° cam

| | | | | |
|--|---|-----|--------|--|
| ∅ 22 mm polyamide roller lever on stainless steel plunger | ⊖ | 1.5 | LSTE31 | |
| ∅ 22 mm stainless steel roller lever on stainless steel plunger | ⊖ | 1.5 | LSTE32 | |
| ∅ 22 mm steel ball-bearing roller lever on stainless steel plunger | ⊖ | 1.5 | LSTE33 | |

Angular motion heads with actuator

To be actuated by 30° cam

| | | | | |
|--|---|-----|--------|--|
| ∅ 22 mm polyamide roller lever (1) | ⊖ | 1.5 | LSTE41 | |
| ∅ 22 mm stainless steel roller lever (1) | ⊖ | 1.5 | LSTE42 | |
| ∅ 22 mm steel ball-bearing roller lever (1) | ⊖ | 1.5 | LSTE43 | |
| ∅ 45 mm rubber roller lever (1) | ⊗ | 1.5 | LSTE44 | |
| Adjustable ∅ 22 mm polyamide roller lever (1) | ⊗ | 1.5 | LSTE51 | |
| Adjustable ∅ 22 mm stainless steel roller lever (1) | ⊗ | 1.5 | LSTE52 | |
| Adjustable ∅ 22 mm steel ball-bearing roller lever (1) | ⊗ | 1.5 | LSTE53 | |
| Adjustable ∅ 45 mm rubber roller lever (1) | ⊗ | 1.5 | LSTE54 | |

To be actuated by fully directional translation movement

| | | | | |
|--|---|---|--------|--|
| Stainless steel flexible lever with insulated end (1) | ⊗ | 1 | LSTE61 | |
| Stainless steel coil spring lever (1) | ⊗ | 1 | LSTE62 | |
| Adjustable ∅ 3 mm stainless steel rod lever, 195 mm length (1) | ⊗ | 1 | LSTE71 | |
| Adjustable ∅ 6 mm polyamide rod lever, 195 mm length (1) | ⊗ | 1 | LSTE72 | |
| Adjustable ∅ 6 mm fibre-glass rod lever, 195 mm length (1) | ⊗ | 1 | LSTE73 | |

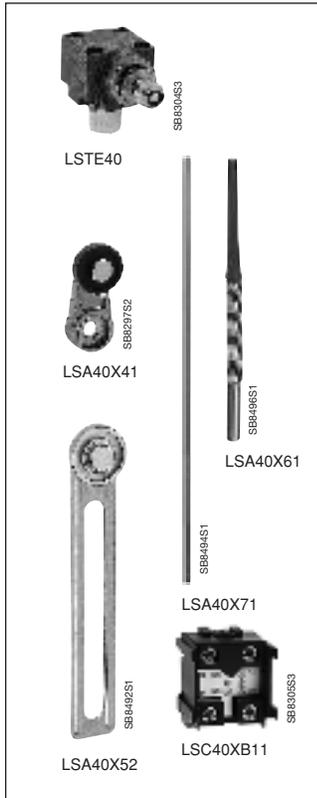
Multidirectional angular motion heads (to be actuated by fully directional translation movement)

| | | | | |
|---|---|---|--------|--|
| Stainless steel spring rod | ⊗ | 1 | LSTE91 | |
| Stainless steel flexible rod with insulated end | ⊗ | 1 | LSTE92 | |
| Stainless steel coil spring rod | ⊗ | 1 | LSTE93 | |

(1) Free position adjustment of lever 9° by 9° over 360°

LS45M Limit Switches

Metal Casing NEMA-4X - 40 mm Width, 1/2" NPT
Separate Elements



Ordering Details

| Contact blocks | Positive opening operation | Actuation speed | Catalog number | List Price |
|----------------|----------------------------|-----------------|----------------|------------|
| B11 | | max. m/s | | |

Angular motion head without actuator, for non-adjustable roller levers (delivered with M5 nylon nut)

| | | | | |
|--|-----|--------|--|--|
| | 1.5 | LSTE40 | | |
|--|-----|--------|--|--|

Actuators for angular motion head LSTE40

| | | | | |
|---|--|---|----------|--|
| ∅ 22 mm polyamide roller lever (1) | | – | LSA40X41 | |
| ∅ 22 mm stainless steel roller lever (1) | | – | LSA40X42 | |
| ∅ 22 mm steel ball-bearing roller lever (1) | | – | LSA40X43 | |
| ∅ 45 mm rubber roller lever (1) | | – | LSA40X44 | |

Angular motion head without actuator, for flexible or adjustable levers (delivered with M5 nylon nut and adaptation parts)

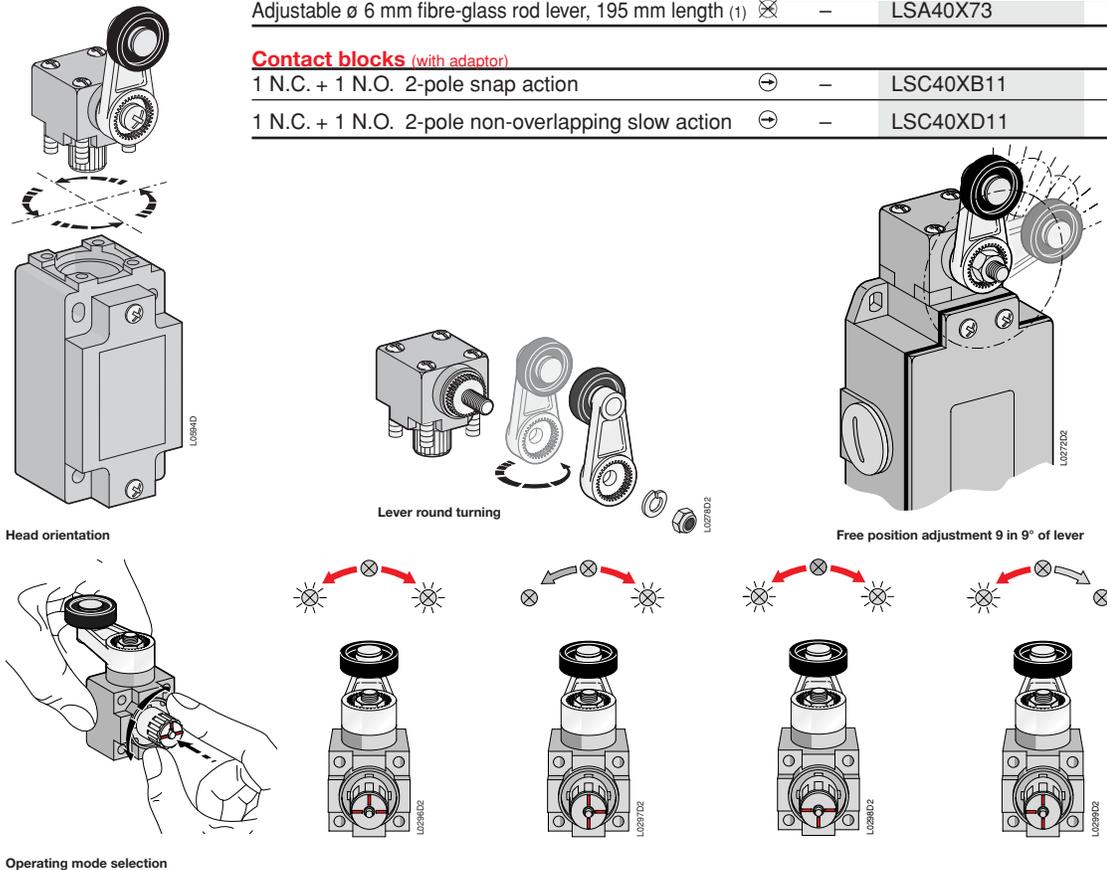
| | | | | |
|--|------------------------|--------|--|--|
| | 1 to 1.5 acc. to lever | LSTE50 | | |
|--|------------------------|--------|--|--|

Actuators for angular motion head LSTE50

| | | | | |
|--|--|---|----------|--|
| Adjustable ∅ 22 mm polyamide roller lever (1) | | – | LSA40X51 | |
| Adjustable ∅ 22 mm stainless steel roller lever (1) | | – | LSA40X52 | |
| Adjustable ∅ 22 mm steel ball-bearing roller lever (1) | | – | LSA40X53 | |
| Adjustable ∅ 45 mm rubber roller lever (1) | | – | LSA40X54 | |
| Stainless steel flexible lever with insulated end (1) | | – | LSA40X61 | |
| Stainless steel coil spring lever (1) | | – | LSA40X62 | |
| Adjustable ∅ 3 mm stainless steel rod lever, 195 mm length (1) | | – | LSA40X71 | |
| Adjustable ∅ 6 mm polyamide rod lever, 195 mm length (1) | | – | LSA40X72 | |
| Adjustable ∅ 6 mm fibre-glass rod lever, 195 mm length (1) | | – | LSA40X73 | |

Contact blocks (with adaptor)

| | | | | |
|--|--|---|-----------|--|
| 1 N.C. + 1 N.O. 2-pole snap action | | – | LSC40XB11 | |
| 1 N.C. + 1 N.O. 2-pole non-overlapping slow action | | – | LSC40XD11 | |

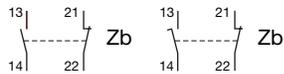


LS75M.. Limit Switches

Metal Casing NEMA-4X - 60 mm Width
3 Cable inlet 1/2" NPT

Ordering Details

Contact blocks



B11

D11

Catalog number

List price

Steel plain plunger (zinc plated)

| | | |
|---|---|------------|
| 1 | - | LS75M11B11 |
| - | 1 | LS75M11D11 |

Steel roller plunger (zinc plated)

| | | |
|---|---|------------|
| 1 | - | LS75M12B11 |
| - | 1 | LS75M12D11 |

ø12.5 plastic (polyacetal) roller lever on steel plunger (zinc plated) horizontal action

| | | |
|---|---|------------|
| 1 | - | LS75M31B11 |
| - | 1 | LS75M31D11 |

ø22 plastic (polyacetal) roller lever on steel plunger (zinc plated)

| | | |
|---|---|------------|
| 1 | - | LS75M38B11 |
| - | 1 | LS75M38D11 |

ø18 plastic (polyacetal) roller with bent lever

| | | |
|---|---|------------|
| 1 | - | LS75M45B11 |
| - | 1 | LS75M45D11 |

Adjustable ø3 stainless steel rod lever

| | | |
|---|---|------------|
| 1 | - | LS75M71B11 |
| - | 1 | LS75M71D11 |

Spring rod

| | | |
|---|---|------------|
| 1 | - | LS75M91B11 |
| - | 1 | LS75M91D11 |

Pull action with ring

| | | |
|---|---|--------------|
| 1 | - | LS75M98B11-A |
| - | 1 | LS75M98D11-A |



LS75M11B11

1SBC5 9603 4F0302



LS75M12B11

1SBC5 9604 4F0302



LS75M38B11

1SBC5 9607 4F0302



LS75M45B11

1SBC5 9610 4F0302

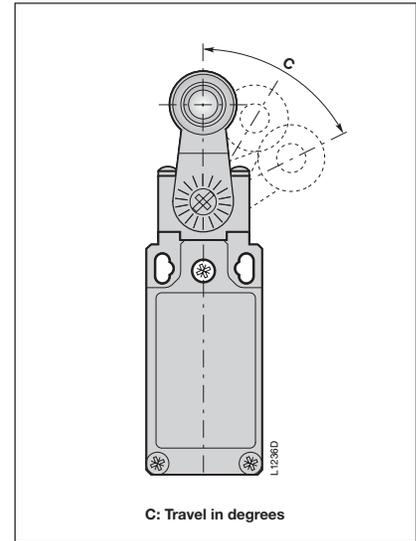
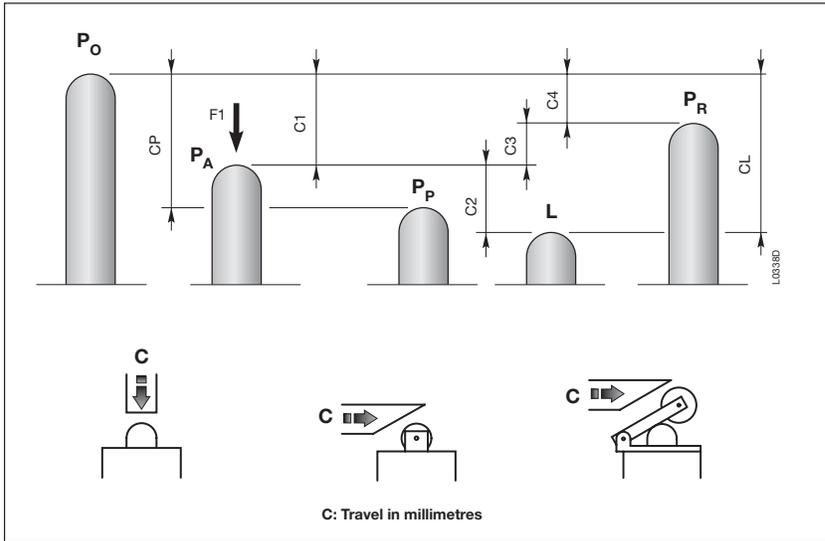


LS75M98B11-A

1SBC5 9620 5F0302

Limit Switches Plastic or Metal Casing

Travel and Operation Diagrams



P₀ Free position:

position of the switch actuator when no external force is exerted on it.

P_A Operating position:

position of the switch actuator, under the effect of force **F₁**, when the contacts leave their initial free position.

P_P Positive opening position:

position of the switch actuator from which positive opening is ensured.

L Max. travel position:

maximum acceptable travel position of the switch actuator under the effect of a force **F₁**.

P_R Release position:

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

C₁ Pre-travel (average travel):

distance between the free position **P₀** and the operating position **P_A**.

C_P Positive opening travel:

minimum travel of the switch actuator, from the free position, to ensure positive opening operation of the normally closed contact (N.C.).

C₂ Over-travel (average travel):

distance between the operating position **P_A** and the max. travel position **L**.

C_L Max. travel (maximum travel):

distance between the free position **P₀** and the max. travel position **L**.

C₃ Differential travel (C₁-C₄) (average travel):

travel difference of the switch actuator between the operating position **P_A** and the release position **P_R**.

C₄ Release travel (average travel):

distance between the release position **P_R** and the free position **P₀**.

Diagram for snap action contacts:

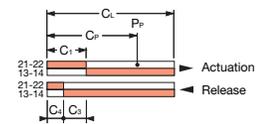
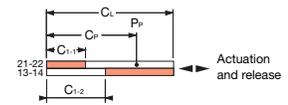


Diagram for non-overlapping slow action contacts:



Contacts position

| | | |
|-------|---|----------------|
| 21-22 | → | Contact closed |
| 21-22 | ← | Contact open |

Contacts identification (example)

Note: for slow action contacts, **C₃ = 0**, **C₁₋₁** = pre-travel of contact 21-22, **C₁₋₂** = pre-travel of contact 13-14.

Examples:

LS35M13B11
(snap action contacts)

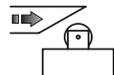
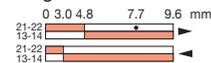


Diagram in millimetres/cam travel



LS35M41B11
(snap action contacts)

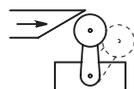
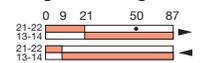


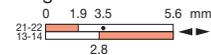
Diagram in degrees/lever rotation



LS35M11D11
(non-overlapping slow action contacts)



Diagram in millimetres/plunger travel



LS25 ... LS26 Prewired Limit Switches

Plastic Casing NEMA-1 and Metal Casing NEMA-4X
 Technical Data

General Technical Data

| | Plastic Casing | Metal Casing |
|---|--|---|
| Standards | IEC 60947-1, IEC 60947-5-1, EN 60947-1, EN 60947-5-1, UL 508 and CSA C22-2 n° 14 | |
| Certifications - Approvals | UL - CSA | |
| Air temperature near the device | | |
| - during operation | °C - 25 ... + 70 | - 25 ... + 70 |
| - for storage | °C - 40 ... + 70 | - 40 ... + 70 |
| Climatic withstand | According to IEC 68-2-3 and salty mist according to IEC 68-2-11 | |
| Mounting positions | All positions are authorized | |
| Shock withstand (according to IEC 68-2-27 and EN 60068-2-27) | 25g* (1/2 sinusoidal shock for 11 ms) no change in contact position | |
| Resistance to vibrations (acc. to IEC 68-2-6 and EN 60068-2-6) | 25g** (10 ... 500 Hz) no change in position of contacts greater than 100 µs | |
| Protection against electrical shocks (acc. to IEC 536) | Class II | Class I |
| Degree of protection (according to IEC 529 and EN 60529) | IP67 | |
| Degree of protection (according to UL 50 and NEMA) | Type 1 Enclosure (indoor use) | Type 4 - 4x - 6 Enclosure (Outdoor use) |
| Consistency (measured over 1 million operations) | 0.1 mm (upon closing point) | |

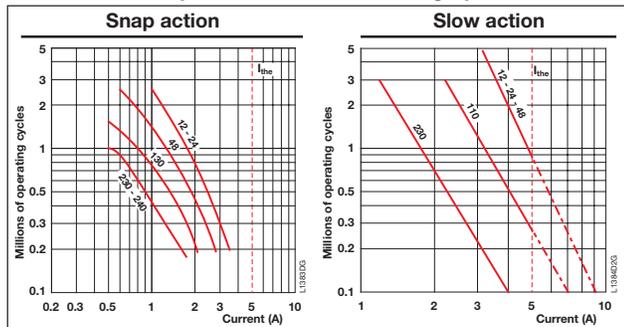
Electrical Data

| | | | |
|--|--|-----------------------|---------------------------------------|
| Rated insulation voltage U_i | | V | 400 (degree of pollution 3) |
| - according to IEC 60947-1 and EN 60947-1 | | V | 300 |
| - according to UL 508, CSA C22-2 n° 14 | | | |
| Rated impulse withstand voltage U_{imp} | | kV | 4 |
| (according to IEC 60947-1 and EN 60947-1) | | | |
| Conventional enclosed thermal current I_{the} | | A | 5 |
| (according to IEC 60947-5-1 and EN 60947-5-1) $\theta \leq 40$ °C | | | |
| Short-circuit protection fuses | | A | 5 |
| Rated operational current | | | |
| I_e / AC-15 - acc. to IEC 60947-5-1 | 24 V - 50/60 Hz | A | 5.0 |
| | 120 V - 50/60 Hz | A | 3.0 |
| | 240 V - 50/60 Hz | A | 1.5 |
| - acc. to UL 508, CSA C22 n° 14 | | | B 300 |
| I_e / DC-13 - acc. to IEC 60947-5-1 | 24 V - d.c. | A | 1.1 |
| | 125 V - d.c. | A | 0.22 |
| | 250 V - d.c. | A | 0.1 |
| - acc. to UL 508, CSA C22 n° 14 | | | R 300 |
| Positivity | Contacts with positive opening operation as per IEC 60947-5-1 chapter 3 and EN 60947-5-1 | | |
| Resistance between contacts | | mΩ | 25 |
| Pre-wired connection | | mm ² / AWG | 4 x 0.75 mm ² / 4 x AWG 18 |
| | | | 5 x 0.75 mm ² / 5 x AWG 18 |
| Type of cable | | | |
| - UL 62-1581 (PVC) | | | Black - Ø ext. 7.20 ± 0.2 |
| | | | Black - Ø ext. 8.20 ± 0.2 |
| Terminal marking | According to EN 50013 | | |
| Mechanical durability | 10 Millions of operations | | |
| Electrical durability (according to IEC 60947-5-1 appendix C) | Utilization categories AC-15 and DC-13 (See curves and values below) | | |
| - max. switching frequency | | Cycles/h | 3600 |
| - load factor | | | 0.5 |

* Shock: 25g for LS25P/M..., ... LS26P/M.. with D11 contact block
 5g for LS25P/M..., ... LS26P/M.. with B11 contact block

** Vibrations: except for LS25P/M93 ... LS26P/M93 : 15 g

Electrical durability for AC-15 utilization category



Electrical durability for DC-13 utilization category

| | Snap action | Slow action |
|---|-------------|-------------|
| Power breaking for a durability of 5 million operating cycles | | |
| Voltage 24 V | 5.7 W | 7.2 W |
| Voltage 48 V | 4.1 W | 5.4 W |
| Voltage 110 V | 2.2 W | 3.6 W |

LS35, LS45 and LS75 Limit Switches

Plastic Casing NEMA-1 and Metal Casing NEMA-4X
 Technical Data

General Technical Data

| | Plastic Casing | Metal Casing |
|--|--|-----------------------------|
| Standards | IEC 60947-1, IEC 60947-5-1, EN 60947-1, EN 60947-5-1, UL 508 and CSA C22-2 n° 14 | |
| Certifications - Approvals | UL - CSA - CCC | |
| Air temperature near the device | | |
| - during operation | °C - 25 ... + 70 | - 25 ... + 70 |
| - for storage | °C - 30 ... + 80 | - 30 ... + 80 |
| Climatic withstand | According to IEC 68-2-3 and salty mist according to IEC 68-2-11 | |
| Mounting positions | All positions are authorized | |
| Shock withstand (according to IEC 68-2-27 and EN 60068-2-27) g | 50g* (1/2 sinusoidal shock for 11 ms) no change in contact position | |
| Resistance to vibrations (acc. to IEC 68-2-6 and EN 60068-2-6) g | 25g (10 ... 500 Hz) no change in position of contacts greater than 100 µs | |
| Protection against electrical shocks (acc. to IEC 536) | Class II | Class I |
| Degree of protection (according to IEC 529 and NEMA) | IP65 , NEMA 1 | IP66 **, NEMA 4, 4X |
| Consistency (measured over 1 million operations) | 0.1 mm (upon closing point) | 0.1 mm (upon closing point) |

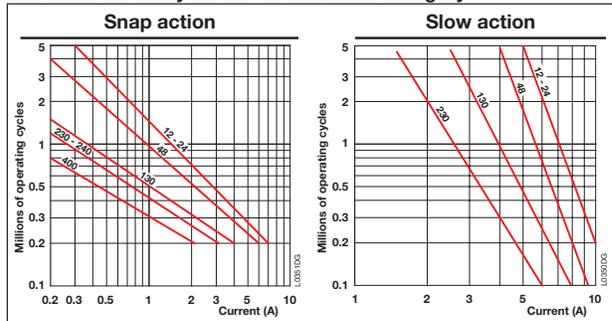
Electrical Data

| | | | |
|--|--------------------------------|---|---|
| Rated insulation voltage U_i | | | |
| - according to IEC 60947-1 and EN 60947-1 | V | 500 (degree of pollution 3) | 400 (LS35M.. & LS75M..), 500 (LS45M..) - (degree of pollution 3) |
| - according to UL 508, CSA C22-2 n° 14 | V | 600 | 300 (LS35M.. & LS75M..), 600 (LS45M..) |
| Rated impulse withstand voltage U_{imp} | kV | 6 | |
| (according to IEC 60947-1 and NEMA) | | | |
| Conventional enclosed thermal current I_{the} | A | 10 | (LS45M..) |
| (according to IEC 60947-5-1 and EN 60947-5-1) $\theta \leq 40$ °C | | | |
| Short-circuit protection fuses | A | 10 | (LS45M..) |
| Rated operational current | | | |
| I_e / AC-15 - acc. to IEC 60947-5-1 | | | |
| 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 | |
| - acc. to UL 508, CSA C22 n° 14 | | A 600 | A 300 (LS35M.. & LS75M..), A 600 (LS45M..) |
| I_e / DC-13 - acc. to IEC 60947-5-1 | | | |
| 24 V - d.c. | A | 2.8 | |
| 110 V - d.c. | A | 0.6 | |
| 250 V - d.c. | A | 0.27 | |
| - acc. to UL 508, CSA C22 n° 14 | | Q 600 | Q 300 (LS35M.. & LS75M..), Q 600 (LS45M..) |
| Positivity | | Contacts with positive opening operation as per IEC 60947-5-1 chapter 3 and EN 60947-5-1 | |
| Resistance between contacts | mΩ | 25 | |
| Mechanical durability | Millions of operations | 15 } LS 35 P { 10...12 ; 30...38 10 } 75 { 13 ; 41...46 ; 51...55 ; 61...78 > 5 } { 14 ; 91...92 ; 98 | 15 } LS 35 M { 11...12 ; 31...38 10 } 75 { 13 ; 41...46 ; 51...55 ; 61...78 > 5 } { 14 ; 91...92 ; 98 |
| | Millions of operations | 15 } LS 45 P { 11 ; 12 ; 31...33 10 } 75 { 13 ; 41...44 ; 51...55 ; 61...74 > 5 } { 14 ; 19 ; 34...36 ; 91...93 | 30 } LS 45 M { 11...13 ; 21...23 ; 31...33 25 } 75 { 41...44 ; 51...55 ; 61...74 10 } { 91...93 |
| Electrical durability (according to IEC 60947-5-1 appendix C) | | Utilization categories AC-15 and DC-13 (see curves and values below) | |
| - max. switching frequency | Cycles/h | 3600 | |
| - load factor | | 0.5 | |
| Connecting data of contact blocks | | M3.5 (+,-) pozidriv 2 screw with cable clamp | |
| Connecting terminals | | 0.5 mm ² / AWG 20 to 2.5 mm ² / AWG 14 | |
| Connecting capacity | 1 or 2 x mm ² / AWG | According to EN 50013 | |
| Terminal marking | | | |

* Except for LS35M42, M52 and M55 - LS35P42, P52 and P55 - LS75M42, M52 and M55 - LS75P42, P52 and P55: 25g

** Except for LS35M52, M55, M73, M74 and M92 - LS75M52, M55, M73, M74 and M92 - LS45M54, M72, M92 and M93 : the degree of protection is IP65.

Electrical durability for AC-15 utilization category



Electrical durability for DC-13 utilization category

| | Snap action | Slow action |
|---|-------------|-------------|
| Power breaking for a durability of 5 million operating cycles | | |
| Voltage 24 V | 9.5 W | 12 W |
| Voltage 48 V | 6.8 W | 9 W |
| Voltage 110 V | 3.6 W | 6 W |

LS2..P.. and LS2..M.. Limit Switches

Plastic Casing NEMA-1 and Metal Casing - NEMA-4X - 35 mm Width
Prewired

Movement to be detected:

For Plastic Casing:

Cable: 4 x AWG 18
Length: 1 m
(Other lengths see ordering details)

For Metal Casing:

Cable: 5 x AWG 18
Length: 1 m
(Other lengths see ordering details)



Actuator

| | Metal plunger | Metal Roller plunger | Metal plunger (with dust protection cup) | Metal plunger with fixing nuts |
|--|---------------|----------------------|---|-----------------------------------|
| ⊖ (N.C. contact with positive opening operation) | ⊕ | ⊖ | ⊕ | ⊕ |
| Maximum actuation speed | 0.5 m/s | 0.1 m/s | 0.5 m/s | 0.5 m/s |
| Min. force / torque: - actuation | 15 N | 10 N | 15 N | 15 N |
| - positive opening operation | 30 N | 30 N | 30 N | 30 N |

Additional Technical Data

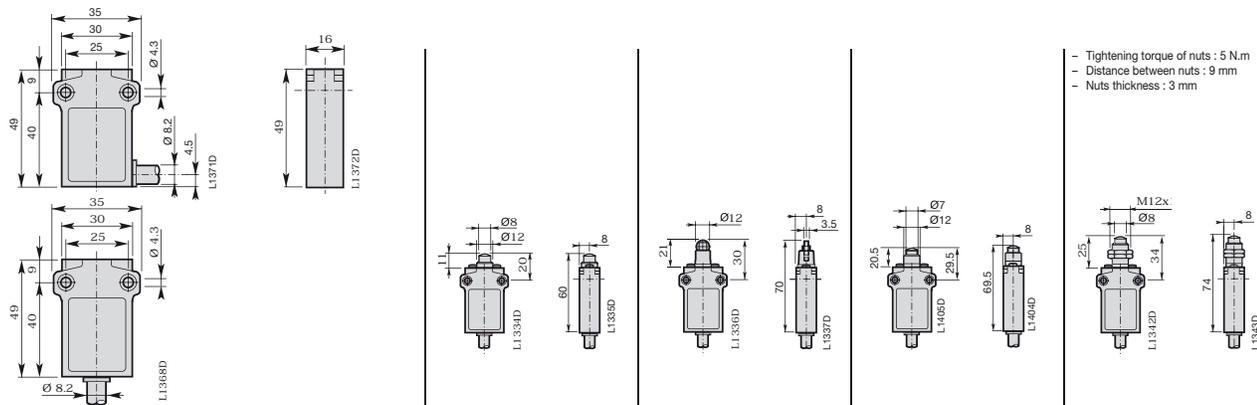
| | |
|-------------------------------------|---|
| Cable output left / right code..... | 5 |
| Cable output bottom code..... | 6 |
| Plastic casing..... | P |
| Metal casing..... | M |

| Type to be completed with the above codes <input type="checkbox"/> | | | | | |
|--|-------------------|-----------------|-----------------|-----------------|-----------------|
| Snap action contacts | Type | LS2□□11B11- U01 | LS2□□12B11- U01 | LS2□□16B11- U01 | LS2□□21B11- U01 |
| | Operation diagram | | | | |
| Non-overlapping Slow action contacts | Type | LS2□□11D11- U01 | LS2□□12D11- U01 | LS2□□16D11- U01 | LS2□□21D11- U01 |
| | Operation diagram | | | | |
| Weight (1) (packing per unit) | kg | 0.125 | 0.130 | 0.125 | 0.140 |

(1) add 0.050 kg with metal casing.

Closed contact / Open contact

Dimensions (mm)



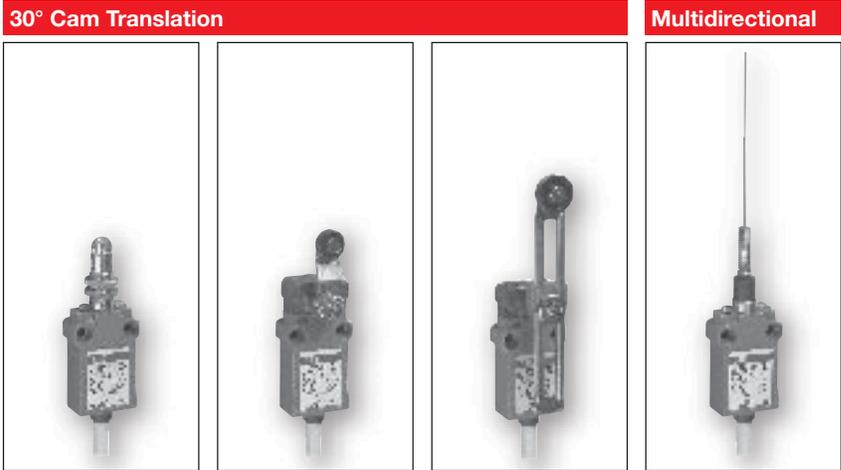
LS2..P.. and LS2..M.. Limit Switches

Plastic Casing NEMA-1 and Metal Casing - NEMA-4X - 35 mm Width Prewired

Movement to be detected:

For Plastic Casing:
Cable: 4 x AWG 18
Length: 1 m
(Other lengths see ordering details)

For Metal Casing:
Cable: 5 x AWG 18
Length: 1 m
(Other lengths see ordering details)



| Actuator | Metal Roller plunger with fixing nuts | ø14 plastic roller lever | Adjustable ø18 plastic roller lever | Spring rod |
|---|---------------------------------------|--------------------------------------|--------------------------------------|-------------------------------|
| ⊕ (N.C. contact with positive opening operation) Maximum actuation speed Min. force / torque: - actuation - positive opening operation | ⊕ 0.1 m/s 10 N 30 N | ⊕ 1.5 m/s 0.08 N.m 0.28 N.m | ⊕ 1.5 m/s 0.08 N.m 0.28 N.m | - 1.0 m/s 0.10 N.m - |

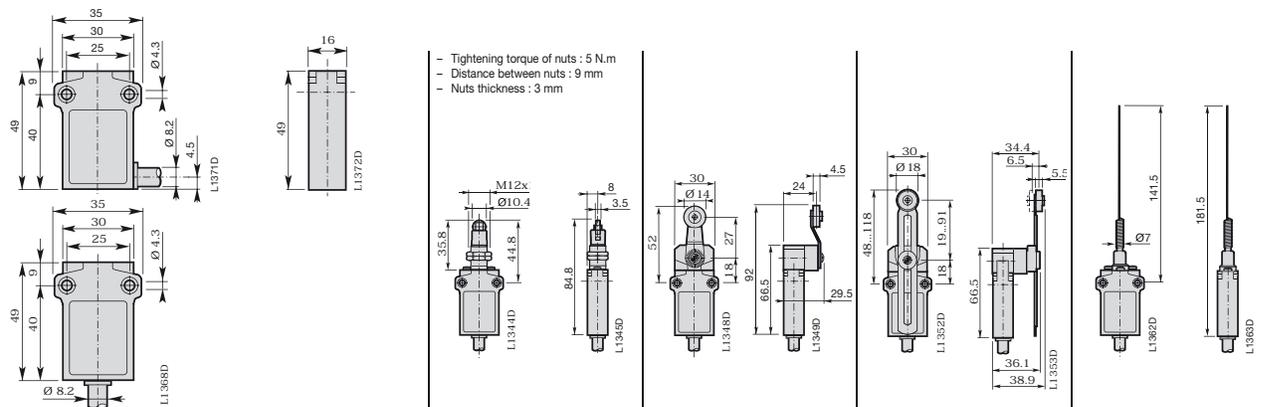
Additional Technical Data

| | | | | | |
|--|---|---|---|---|-------|
| Cable output left / right code..... | <input type="checkbox"/> 5 | | | | |
| Cable output bottom code..... | <input type="checkbox"/> 6 | | | | |
| Plastic casing..... | <input type="checkbox"/> P | | | | |
| Metal casing..... | <input type="checkbox"/> M | | | | |
| Type to be completed with the above codes <input type="checkbox"/> | | | | | |
| Snap action contacts | LS2 <input type="checkbox"/> <input type="checkbox"/> 22B11- U01 | LS2 <input type="checkbox"/> <input type="checkbox"/> 41B11- U01 | LS2 <input type="checkbox"/> <input type="checkbox"/> 51B11- U01 | LS2 <input type="checkbox"/> <input type="checkbox"/> 91B11- U01 | |
| 13 BN 21 BK 14 BU 22 BK Zb | Operation diagram | Operation diagram | Operation diagram | Operation diagram | |
| Non-overlapping Slow action contacts | LS2 <input type="checkbox"/> <input type="checkbox"/> 22D11- U01 | LS2 <input type="checkbox"/> <input type="checkbox"/> 41D11- U01 | LS2 <input type="checkbox"/> <input type="checkbox"/> 51D11- U01 | - | |
| 13 BN 21 BK 14 BU 22 BK Zb | Operation diagram | Operation diagram | Operation diagram | - | |
| Weight (1) (packing per unit) | kg | 0.200 | 0.200 | 0.230 | 0.235 |

(1) add 0.050 kg with metal casing.

Closed contact / Open contact

Dimensions (mm)



LS35P.. Limit Switches

Double Insulation □ - Plastic Casing NEMA-1 - 30 mm Width
1 Cable Inlet for Cable Gland, 1/2" NPT

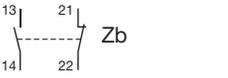
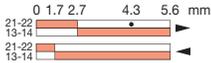
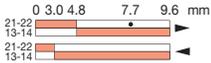
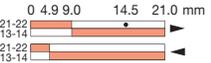
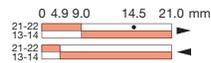
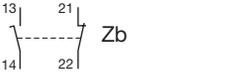
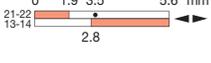
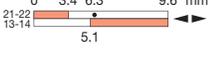
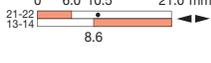
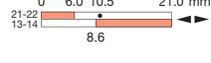
Movement to be detected:



Actuator

| | Metal plunger | ø11 plastic roller plunger | ø12.5 plastic roller lever on steel plunger | ø12.5 plastic roller lever on steel plunger |
|---|--------------------|----------------------------|---|---|
| Conformity / (N.C. contact with positive opening operation) | EN 50047 (B shape) | EN 50047 (C shape) | EN 50047 (E shape) | - |
| Maximum actuation speed | 0.5 m/s | 0.3 m/s | 1 m/s | 1 m/s |
| Min. force / torque: - actuation | 15 N | 12 N | 7 N | 7 N |
| - positive opening operation | 45 N | 41 N | 24 N | 24 N |

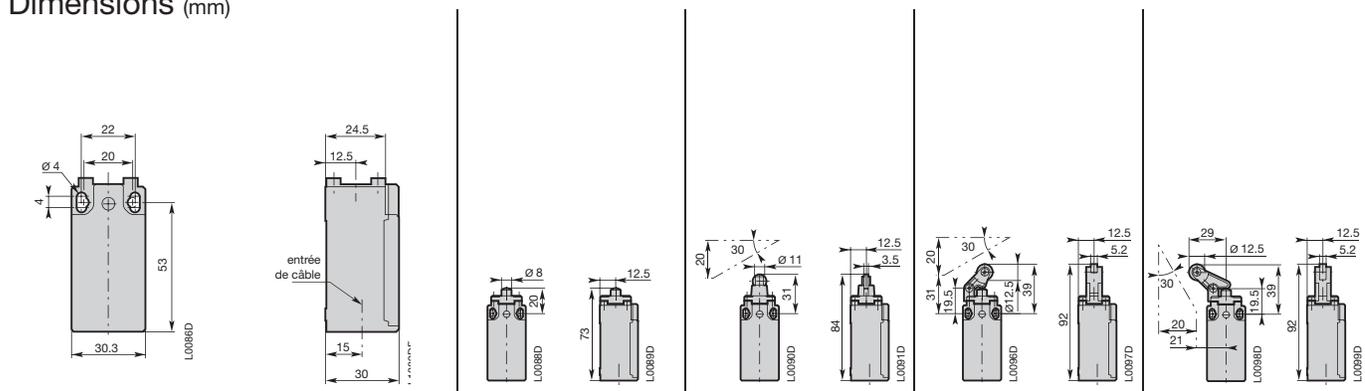
Additional Technical Data

| Snap action contacts | Type | LS35P11B11 | LS35P13B11 | LS35P31B11 | LS35P32B11 |
|--|-------------------|---|---|--|---|
|  | Operation diagram |  |  |  |  |
| Non-overlapping Slow action contacts | Type | LS35P11D11 | LS35P13D11 | LS35P31D11 | LS35P32D11 |
|  | Operation diagram |  |  |  |  |
| Weight (packing per unit) | kg | 0.070 | 0.070 | 0.070 | 0.075 |

Special heads, accessories and special contact arrangement or particular function: please consult us.

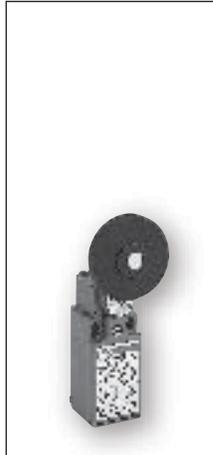
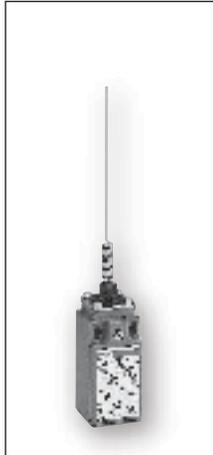
 Closed contact /  Open contact

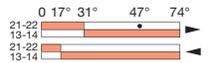
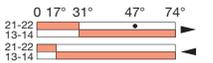
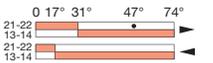
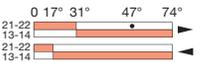
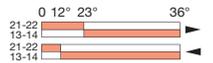
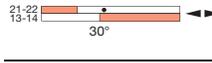
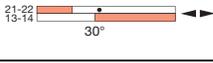
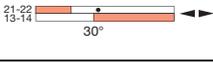
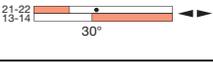
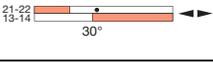
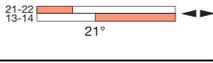
Dimensions (mm)



LS35P.. Limit Switches

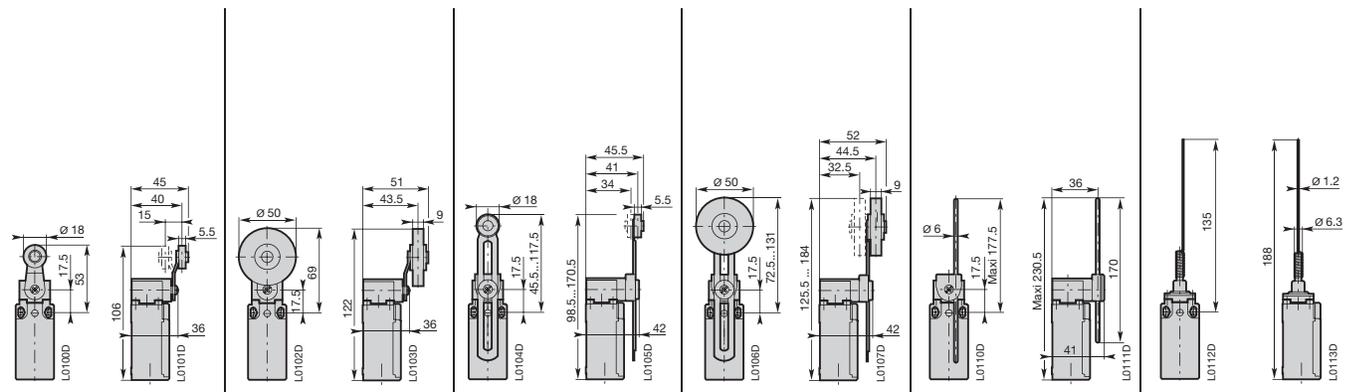
Double Insulation □ - Plastic Casing NEMA-1 - 30 mm Width
1 Cable Inlet for Cable Gland, 1/2" NPT

| 30° Cam Translation Movement | | | | Fully Direction Trans. | Multidirectional |
|--|---|---|---|---|---|
|  |  |  |  |  |  |
| ø18 plastic roller lever | ø50 rubber roller lever | Adjustable ø18 plastic roller lever | Adjustable ø50 rubber roller lever | Adjustable ø3 fibre-glass rod lever | Spring rod lever |
| EN 50047 (A shape)  | -  | -  | -  | -  | - |
| 1.5 m/s 0.1 N.m 0.32 N.m | 1.5 m/s 0.1 N.m 0.32 N.m | 1.5 m/s 0.1 N.m 0.32 N.m | 1.5 m/s 0.1 N.m 0.32 N.m | 1.5 m/s 0.1 N.m 0.32 N.m | 1 m/s 0.12 N.m - |

| LS35P41B11 | LS35P42B11 | LS35P51B11 | LS35P52B11 | LS35P72B11 | LS35P91B11 |
|---|---|---|--|---|---|
|  |  |  |  |  |  |
| 0 17° 31° 47° 74° | 0 17° 31° 47° 74° | 0 17° 31° 47° 74° | 0 17° 31° 47° 74° | 0 17° 31° 47° 74° | 0 12° 23° 36° |
| 21-22 13-14 21-22 13-14 | 21-22 13-14 21-22 13-14 | 21-22 13-14 21-22 13-14 | 21-22 13-14 21-22 13-14 | 21-22 13-14 21-22 13-14 | 21-22 13-14 21-22 13-14 |
| LS35P41D11 | LS35P42D11 | LS35P51D11 | LS35P52D11 | LS35P72D11 | LS35P91D11 |
|  |  |  |  |  |  |
| 0 21° 37° 74° | 0 21° 37° 74° | 0 21° 37° 74° | 0 21° 37° 74° | 0 21° 37° 74° | 0 14° 36° |
| 21-22 13-14 | 21-22 13-14 | 21-22 13-14 | 21-22 13-14 | 21-22 13-14 | 21-22 13-14 |
| 30° | 30° | 30° | 30° | 30° | 21° |
| 0.090 | 0.120 | 0.100 | 0.130 | 0.100 | 0.080 |

Special heads, accessories and special contact arrangement or particular function: please consult us.

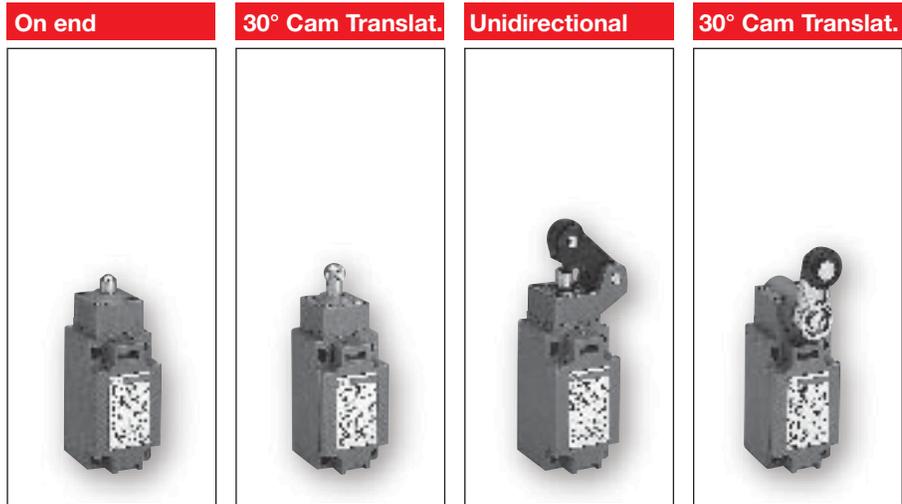
 Closed contact /  Open contact



LS45P.. Limit Switches

Double Insulation □ - Plastic Casing NEMA-1 - 40 mm Width
1 Cable Inlet for Cable Gland, 1/2" NPT

Movement to be detected:



Actuator

| | Metal plunger | ø12 stainless steel roller plunger | Polyamide roller lever on steel plunger | ø22 plastic roller lever |
|---|--------------------|------------------------------------|---|--------------------------|
| Conformity / (N.C. contact with positive opening operation) | EN 50041 (B shape) | EN 50041 (C shape) | - | EN 50041 (A shape) |
| Maximum actuation speed | 0.5 m/s | 0.5 m/s | 1 m/s | 1.5 m/s |
| Min. force / torque: - actuation | 14 N | 14 N | 8 N | 0.15 N.m |
| - positive opening operation | 45 N | 40 N | 40 N | 0.30 N.m |

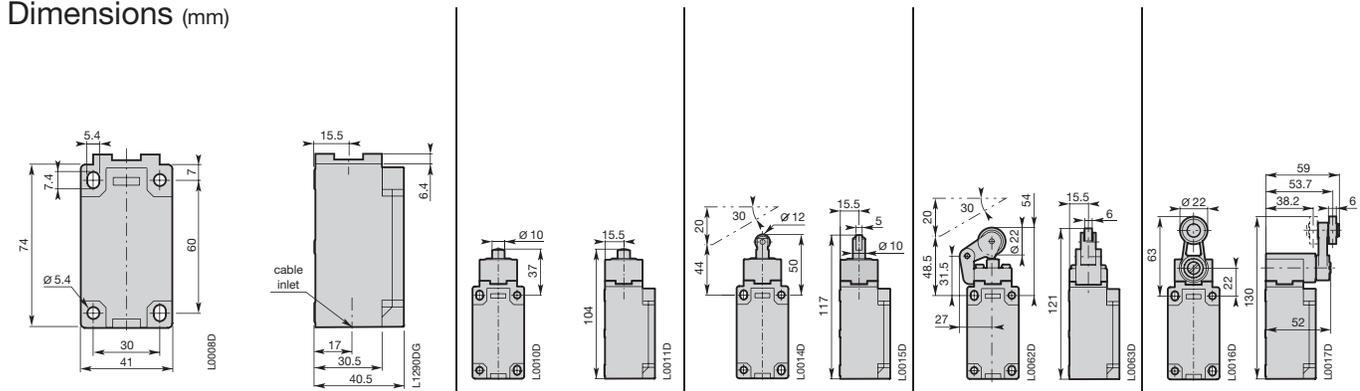
Additional Technical Data

| Snap action contacts | Type | LS45P11B11 | LS45P13B11 | LS45P31B11 | LS45P41B11 |
|--------------------------------------|-------------------|------------|------------|------------|------------|
| | Operation diagram | | | | |
| Non-overlapping Slow action contacts | Type | LS45P11D11 | LS45P13D11 | LS45P31D11 | LS45P41D11 |
| | Operation diagram | | | | |
| Weight (packing per unit) | kg | 0.140 | 0.145 | 0.175 | 0.185 |

Special heads, accessories and special contact arrangement or particular function: please consult us.

Closed contact / Open contact

Dimensions (mm)



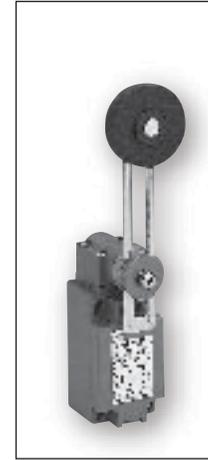
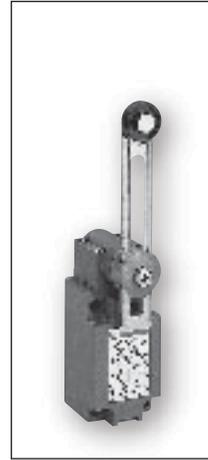
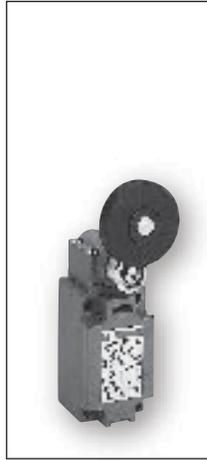
LS45P.. Limit Switches

Double Insulation □ - Plastic Casing NEMA-1 - 40 mm Width
1 Cable Inlet for Cable Gland, 1/2" NPT

Movement to be detected:

30° Cam Translation Movement

Fully Direction Trans.



Actuator

| | ø50 rubber roller lever | Adjustable ø22 plastic roller lever | Adjustable ø50 rubber roller lever | Adjustable ø6 plastic rod lever |
|---|-------------------------|-------------------------------------|------------------------------------|---------------------------------|
| Conformity / (N.C. contact with positive opening operation) | - | - | - | EN 50041 (D shape) |
| Maximum actuation speed | 1.5 m/s | 1.5 m/s | 1.5 m/s | 1.5 m/s |
| Min. force / torque: - actuation | 0.15 N.m | 0.15 N.m | 0.15 N.m | 0.15 N.m |
| - positive opening operation | 0.30 N.m | 0.30 N.m | 0.30 N.m | 0.30 N.m |

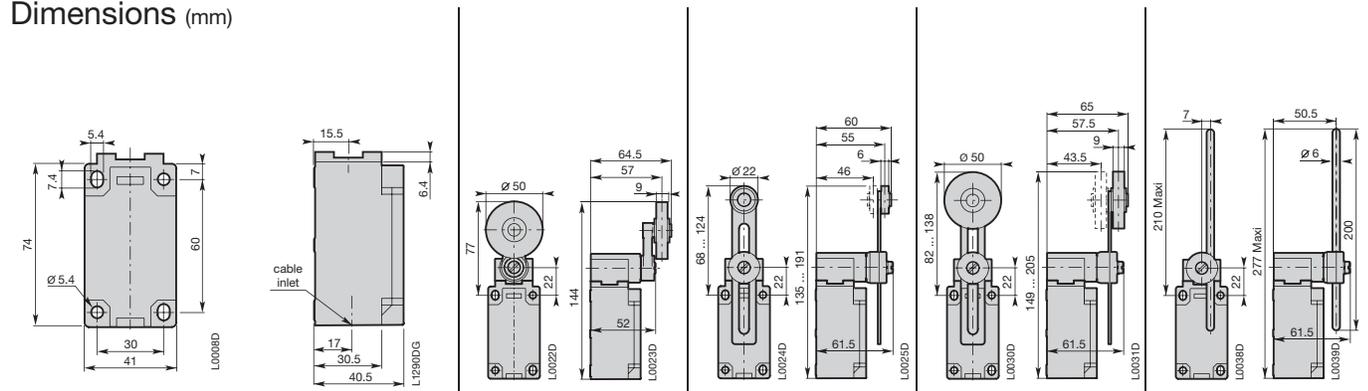
Additional Technical Data

| Snap action contacts | Type | LS45P44B11 | LS45P51B11 | LS45P54B11 | LS45P72B11 |
|--------------------------------------|-------------------|------------|------------|------------|------------|
| | Operation diagram | | | | |
| Non-overlapping Slow action contacts | Type | LS45P44D11 | LS45P51D11 | LS45P54D11 | LS45P72D11 |
| | Operation diagram | | | | |
| Weight (packing per unit) | kg | 0.205 | 0.190 | 0.200 | 0.185 |

Special heads, accessories and special contact arrangement or particular function: please consult us.

■ Closed contact / □ Open contact

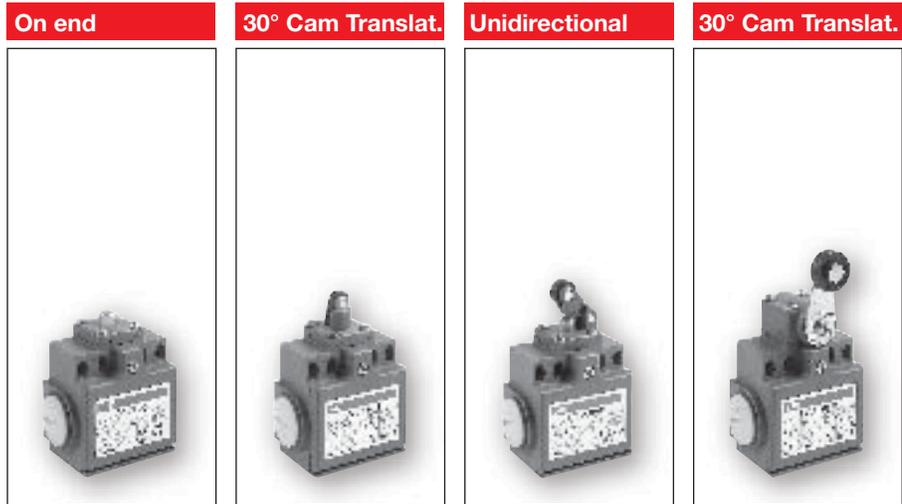
Dimensions (mm)



LS75P.. Limit Switches

Double Insulation □ - Plastic Casing NEMA-1 - 60 mm Width
2 Cable Inlets for Cable Gland, 1/2" NPT

Movement to be detected:



Actuator

| | Metal plunger | ø11 plastic roller plunger | ø12.5 plastic roller lever on steel plunger | ø18 plastic roller lever |
|---|---------------|----------------------------|---|--------------------------|
| Conformity / (N.C. contact with positive opening operation) | - | ↔ | ↔ | ↔ |
| Maximum actuation speed | 0.5 m/s | 0.3 m/s | 1 m/s | 1.5 m/s |
| Min. force / torque: - actuation | 15 N | 12 N | 7 N | 0.1 N.m |
| - positive opening operation | 45 N | 41 N | 24 N | 0.32 N.m |

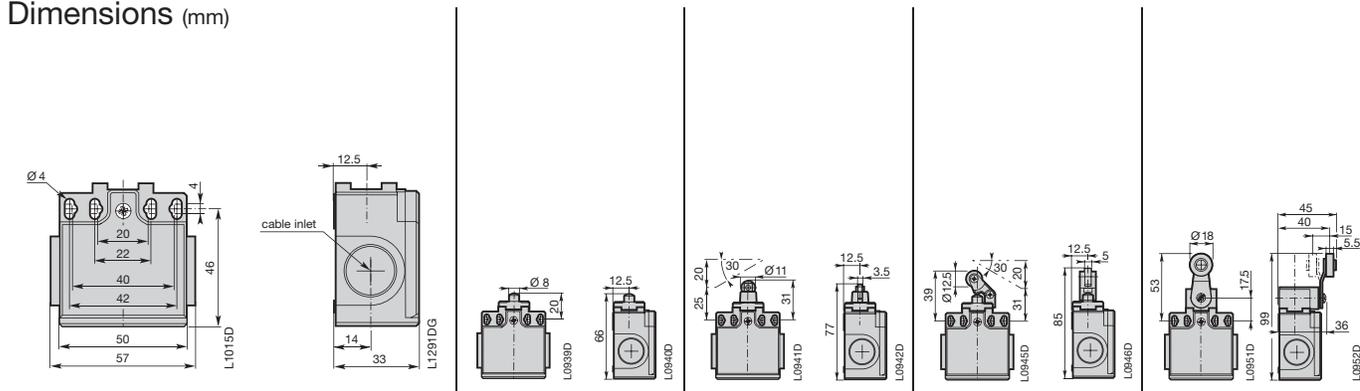
Additional Technical Data

| | | | | | |
|--|------|------------|------------|------------|------------|
| Snap action contacts | Type | LS75P11B11 | LS75P13B11 | LS75P31B11 | LS75P41B11 |
| Operation diagram | | | | | |
| Non-overlapping Slow action contacts | Type | LS75P11D11 | LS75P13D11 | LS75P31D11 | LS75P41D11 |
| Operation diagram | | | | | |
| Weight (packing per unit) | kg | 0.100 | 0.100 | 0.105 | 0.125 |

Special heads, accessories and special contact arrangement or particular function: please consult us.

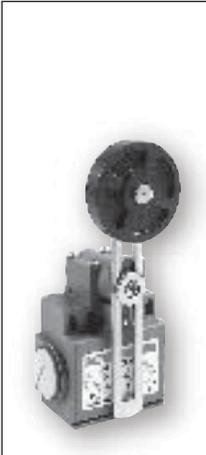
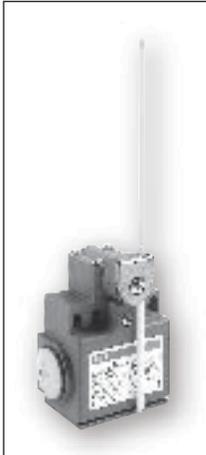
Closed contact / Open contact

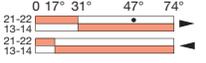
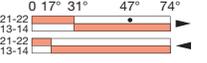
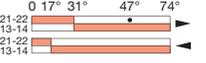
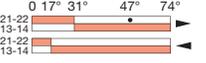
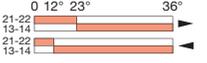
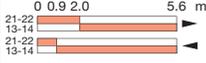
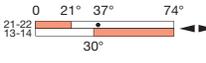
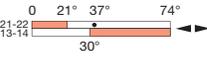
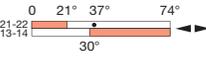
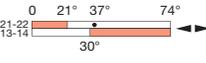
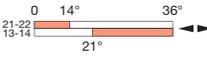
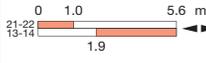
Dimensions (mm)



LS75P.. Limit Switches

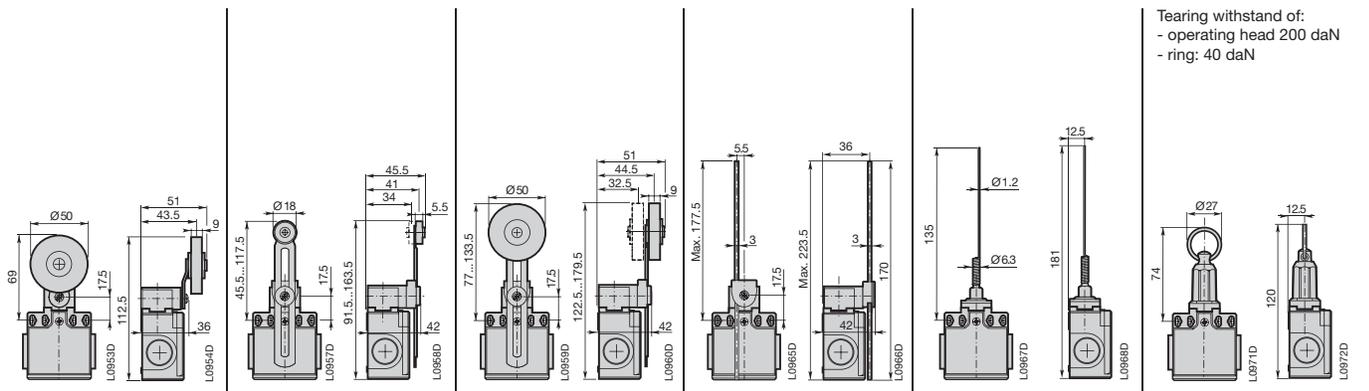
Double Insulation  - Plastic Casing NEMA-1 - 60 mm Width
2 Cable Inlets for Cable Gland, 1/2" NPT

| 30° Cam Translation Movement | | | Fully Direction Trans. | Multidirectional | Pull action |
|---|---|---|--|---|---|
|  |  |  |  |  |  |
| ø50 rubber roller lever | Adjustable ø18 plastic roller lever | Adjustable ø50 rubber roller lever | Adjustable ø3 fibre-glass rod lever | Spring rod lever | Pull action with ring |
| 1.5 m/s 0.1 N.m 0.32 N.m | 1 m/s 0.12 N.m - | 0.5 m/s 30 N - |

| | | | | | |
|--|--|--|---|--|---|
| LS75P42B11  | LS75P51B11  | LS75P52B11  | LS75P72B11  | LS75P91B11  | LS75P98B11-A  |
| LS75P42D11  | LS75P51D11  | LS75P52D11  | LS75P72D11  | LS75P91D11  | LS735P98D11-A  |
| 0.145 | 0.135 | 0.155 | 0.120 | 0.110 | 0.145 |

Special heads, accessories and special contact arrangement or particular function: please consult us.

 Closed contact /  Open contact



LS35M.. Limit Switches

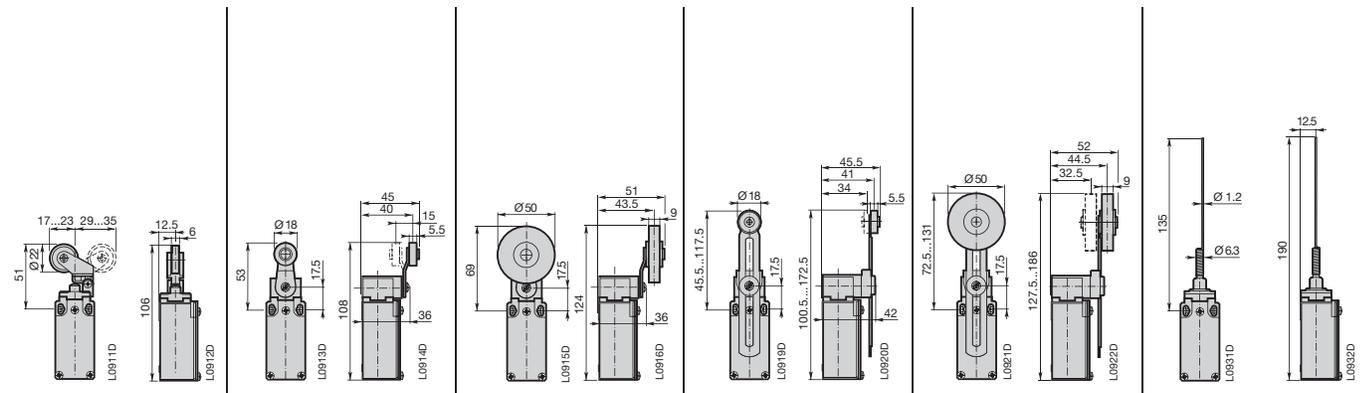
Metal Casing NEMA-4X - 30 mm Width
1 Cable Inlet for Cable Gland, 1/2" NPT

| Unidirectional | 30° Cam Translation Movement | | | | Multidirectional |
|---|--|--------------------------------|-------------------------------------|------------------------------------|------------------------|
| | | | | | |
| ø22 plastic roller lever on steel plunger | ø18 plastic roller lever | ø50 rubber roller lever | Adjustable ø18 plastic roller lever | Adjustable ø50 rubber roller lever | Spring rod lever |
| 1 m/s 7 N 24 N | EN 50047 (A shape) 1.5 m/s 0.1 N.m 0.32 N.m | 1.5 m/s 0.1 N.m 0.32 N.m | 1.5 m/s 0.1 N.m 0.32 N.m | 1.5 m/s 0.1 N.m 0.32 N.m | 1 m/s 0.12 N.m - |

| LS35M38B11 | LS35M41B11 | LS35M42B11 | LS35M51B11 | LS35M52B11 | LS35M91B11 |
|---|---|---|---|---|---|
| 0 8.8 15.0 23.2 32.0 mm 21-22 13-14 21-22 13-14 | 0 17° 31° 47° 74° 21-22 13-14 21-22 13-14 | 0 12° 23° 36° 21-22 13-14 21-22 13-14 |
| LS35M38D11 | LS35M41D11 | LS35M42D11 | LS35M51D11 | LS35M52D11 | LS35M91D11 |
| 0 10.6 18.5 32.0 mm 21-22 13-14 15.1 | 0 21° 37° 74° 21-22 13-14 30° | 0 14° 36° 21-22 13-14 21° |
| 0.180 | 0.230 | 0.255 | 0.240 | 0.265 | 0.180 |

Special heads, accessories and special contact arrangement or particular function: please consult us.

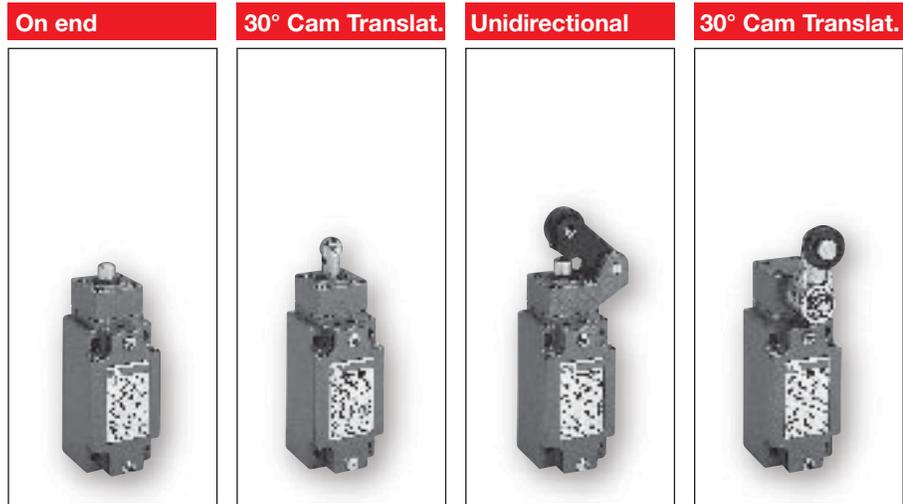
■ Closed contact / □ Open contact



LS45M.. Limit Switches

Metal Casing NEMA-4X - 40 mm Width
1 Cable Inlet for Cable Gland, 1/2" NPT

Movement to be detected:



Actuator

| | Stainless steel plunger | ø12 stainless steel roller plunger | ø22 plastic roller lever on stainless steel plunger | ø22 plastic roller lever |
|---|-------------------------|------------------------------------|---|--------------------------|
| Conformity / (N.C. contact with positive opening operation) | EN 50041 (B shape) | EN 50041 (C shape) | - | EN 50041 (A shape) |
| Maximum actuation speed | 0.5 m/s | 0.5 m/s | 1.5 m/s | 1.5 m/s |
| Min. force / torque: - actuation | 30 N | 22 N | 12 N | 0.15 N.m |
| - positive opening operation | 45 N | 40 N | 40 N | 0.30 N.m |

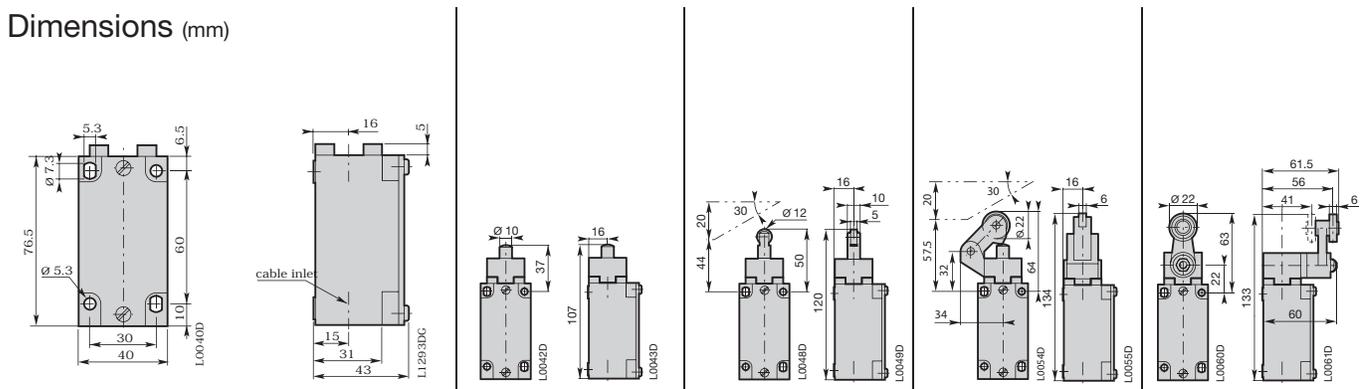
Additional Technical Data

| Snap action contacts | Type | LS45M11B11 | LS45M13B11 | LS45M31B11 | LS45M41B11 |
|--------------------------------------|-------------------|------------|------------|------------|------------|
| | Operation diagram | | | | |
| Non-overlapping Slow action contacts | Type | LS45M11D11 | LS45M13D11 | LS45M31D11 | LS45M41D11 |
| | Operation diagram | | | | |
| Weight (packing per unit) | kg | 0.240 | 0.240 | 0.275 | 0.280 |

Special heads, accessories and special contact arrangement or particular function: please consult us.

Closed contact / Open contact

Dimensions (mm)



LS45M.. Limit Switches

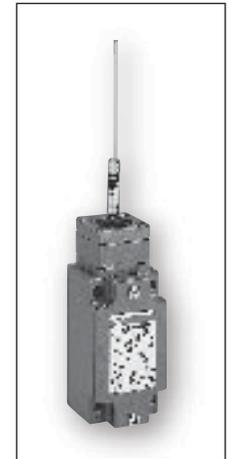
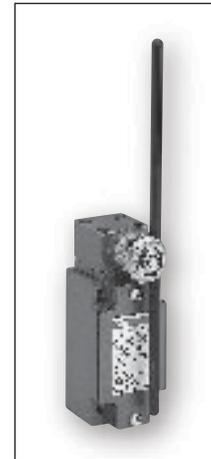
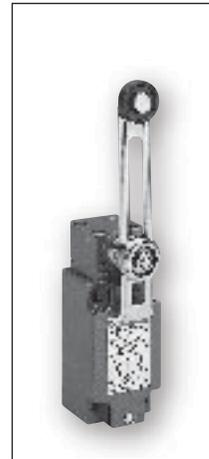
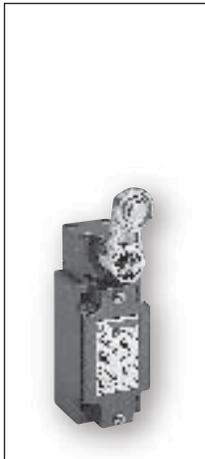
Metal Casing NEMA-4X - 40 mm Width
1 Cable Inlet for Cable Gland, 1/2" NPT

Movement to be detected:

30° Cam Translation Movement

Fully Direction Trans.

Multidirectional



Actuator

| | ø22 stainless steel roller lever | Adjustable ø22 plastic roller lever | Adjustable ø6 plastic rod lever | Spring rod |
|---|----------------------------------|-------------------------------------|---------------------------------|------------|
| Conformity / (N.C. contact with positive opening operation) | EN 50041 (A shape) | - | EN 50041 (D shape) | - |
| Maximum actuation speed | 1.5 m/s | 1.5 m/s | 1.5 m/s | 1 m/s |
| Min. force / torque: - actuation | 0.15 N.m | 0.15 N.m | 0.15 N.m | 0.18 N.m |
| - positive opening operation | 0.30 N.m | 0.30 N.m | 0.30 N.m | - |

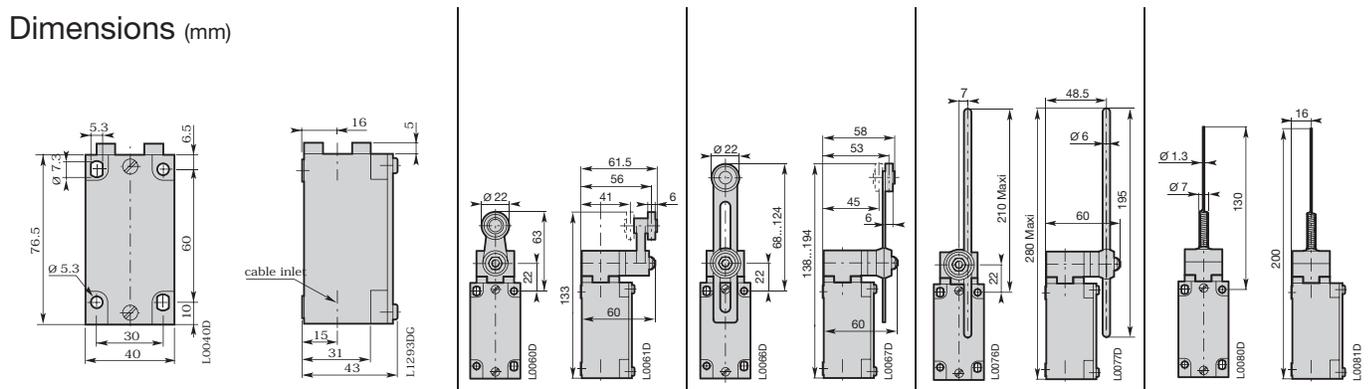
Additional Technical Data

| Snap action contacts | Type | LS45M42B11 | LS45M51B11 | LS45M72B11 | LS45M91B11 |
|--------------------------------------|-------------------|------------|------------|------------|------------|
| | Operation diagram | | | | |
| Non-overlapping Slow action contacts | Type | LS45M42D11 | LS45M51D11 | LS45M72D11 | LS45M91D11 |
| | Operation diagram | | | | |
| Weight (packing per unit) | kg | 0.280 | 0.290 | 0.285 | 0.235 |

Special heads, accessories and special contact arrangement or particular function: please consult us.

Closed contact / Open contact

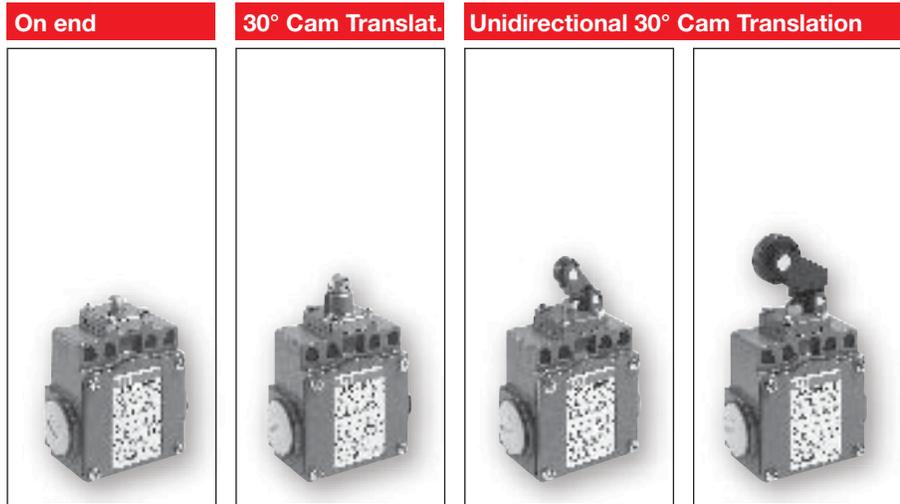
Dimensions (mm)



LS75M.. Limit Switches

Metal Casing NEMA-4X - 60 mm Width
3 Cable Inlets for Cable Gland, 1/2" NPT

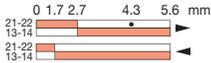
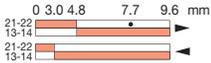
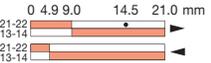
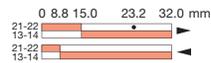
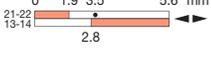
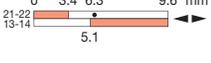
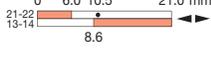
Movement to be detected:



Actuator

| | Metal plunger | ø11 metal roller plunger | ø12.5 plastic roller lever on steel plunger | ø22 plastic roller lever on steel plunger |
|---|---------------|--------------------------|---|---|
| Conformity / (N.C. contact with positive opening operation) | - | - | - | - |
| Maximum actuation speed | 0.5 m/s | 0.3 m/s | 1 m/s | 1 m/s |
| Min. force / torque: - actuation | 15 N | 12 N | 7 N | 7 N |
| - positive opening operation | 45 N | 41 N | 24 N | 24 N |

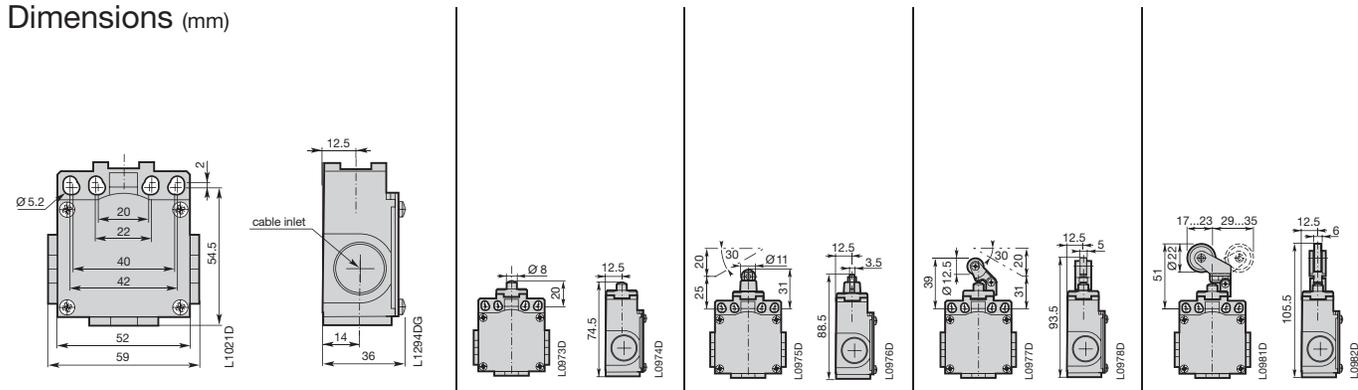
Additional Technical Data

| | | | | | |
|--|------|---|---|--|---|
| Snap action contacts  | Type | LS75M11B11 | LS75M12B11 | LS75M31B11 | LS75M38B11 |
| Operation diagram | |  |  |  |  |
| Non-overlapping Slow action contacts  | Type | LS75M11D11 | LS75M12D11 | LS75M31D11 | LS75M38D11 |
| Operation diagram | |  |  |  |  |
| Weight (packing per unit) | kg | 0.270 | 0.280 | 0.265 | 0.270 |

Special heads, accessories and special contact arrangement or particular function: please consult us.

 Closed contact /  Open contact

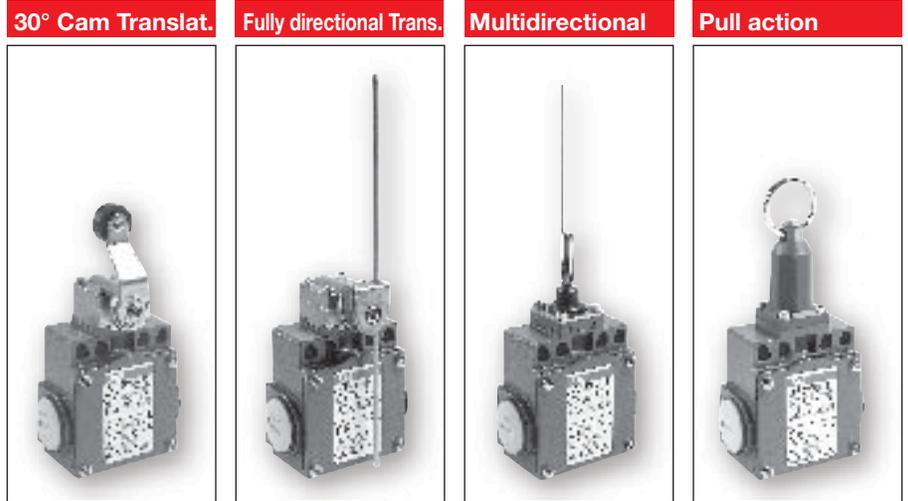
Dimensions (mm)



LS75M.. Limit Switches

Metal Casing NEMA-4X - 60 mm Width
3 Cable Inlets for Cable Gland, 1/2" NPT

Movement to be detected:



| Actuator | ø18 plastic roller with bent lever | Adjustable ø3 stainless steel rod lever | Spring rod | Pull action with ring |
|--|-------------------------------------|---|-----------------------------|---------------------------|
| Conformity / \ominus (N.C. contact with positive opening operation) Maximum actuation speed Min. force / torque: - actuation - positive opening operation | - 1.5 m/s 0.1 N.m 0.32 N.m | - 1.5 m/s 0.1 N.m 0.32 N.m | - 1 m/s 0.12 N.m - | - 0.5 m/s 30 N - |

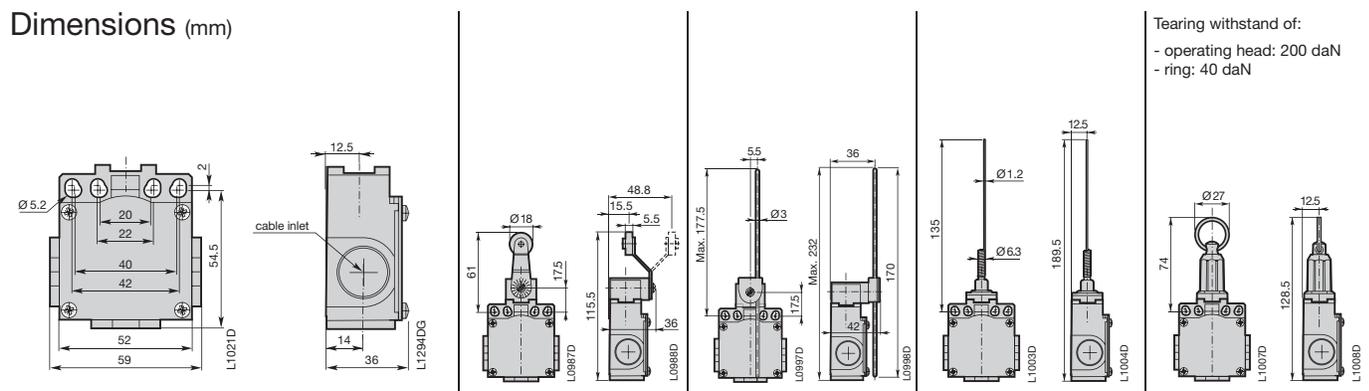
Additional Technical Data

| Snap action contacts | Type | LS75M45B11 | LS75M71B11 | LS75M91B11 | LS75M98B11-A |
|--------------------------------------|-------------------|------------|------------|------------|--------------|
| | Operation diagram | | | | |
| Non-overlapping Slow action contacts | Type | LS75M45D11 | LS75M71D11 | LS75M91D11 | LS75M98D11-A |
| | Operation diagram | | | | |
| Weight (packing per unit) | kg | 0.335 | 0.380 | 0.315 | 0.350 |

Special heads, accessories and special contact arrangement or particular function: please consult us.

Closed contact / Open contact

Dimensions (mm)



Safety Limit Switches with Axis or Lever

Double Insulation - Plastic Casing NEMA-1 - 30 mm Width
Metal Casing NEMA-4X - 30 mm Width

Applications

Easy to use, the limit switches with rotative axis or lever offer specific qualities:

- Visible operation.
- Capability for strong current switching (conventional thermal current 10 A).
- Opening of the "N.C." contact(s) for a very small rotation angle: 7°.
- Contact blocks with dependent action and positive opening operation of the "N.C." normally closed contact(s) (symbol ⊖).
- Electrically separated contacts.
- Precision on operating positions (consistency).
- Immunity to electromagnetic disturbances.

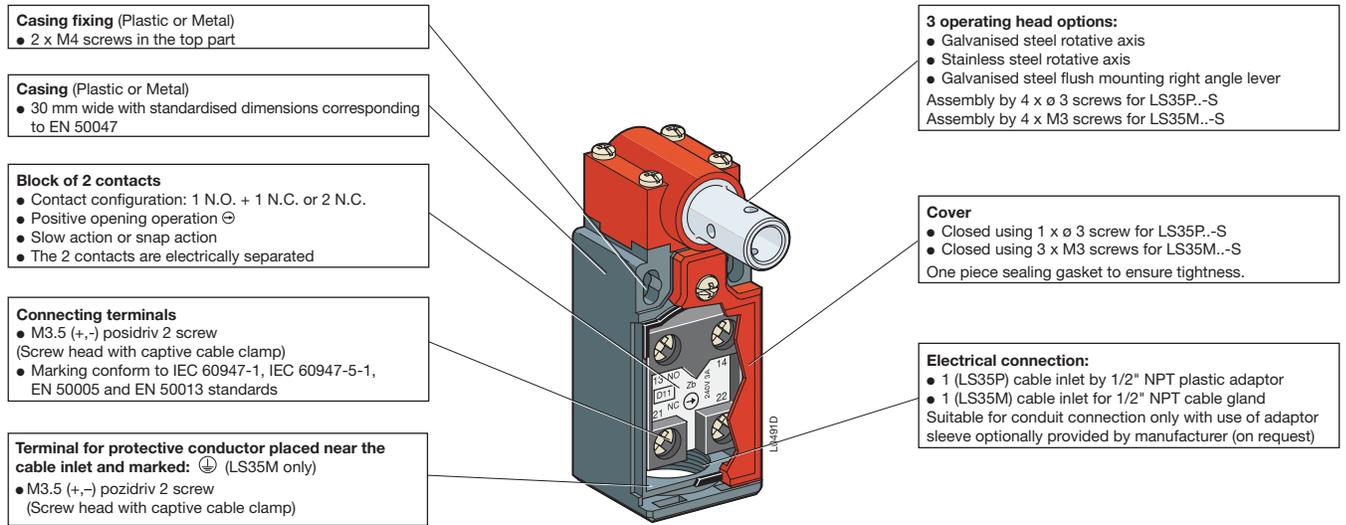
These specific features make the limit switches ideal for monitoring and protection of light industrial machines without inertia equipped with angular movement protectors (doors, hinged grids, rotative covers or cases, etc.). Detection by the rotative axis or by means of a lever.

- Opening of the mobile protector guarantees operator protection by immediately stopping the machine drive.
- These switches are suitable for conformity of the existing installed machine base, as they can be mounted on protection devices already installed.
- Associated with other standard limit switches and safety switching devices, they produce automatic control circuits meeting standard EN 954-1.
- They comply with the requirements of European Directives (Low Voltage, Machines and Electromagnetic Compatibility) and are conform to European and international standards.

Description

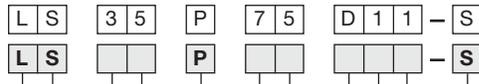
LS35P75..-S to LS35P77..-S safety limit switches, which made of fibre-glass reinforced UL-V0 thermoplastic material, offer double insulation ☐ and a degree of protection NEMA-1.

LS35M75..-S to LS35M77..-S safety limit switches, which made of zinc alloy (zamack), have a degree of protection NEMA-4X.



Type

Example :



| | | | |
|---|------------------------------|---------|---|
| Limit Switch..... | LS | S | Safety device |
| Casing width: 30 mm..... | 3 | 5 | 1 cable inlet by 1/2" NPT plastic adaptor (LS35P) or 1/2" NPT for cable gland (LS35M) |
| Plastic casing..... | P | | |
| Metal casing..... | M | | |
| Operating heads: (see panorama) | | | |
| Galvanised steel rotative axis | 75 | | |
| Stainless steel rotative axis | 76 | | |
| Galvanised steel flush mounting right angle lever | 77 | | |
| Contact types: | | | |
| 11 | 1 N.O. + 1 N.C. contacts | | |
| 02 | 2 N.C. contacts | | |
| Snap action: | | | |
| B | Zb Snap | | |
| Dependent (slow) action: | | | |
| L | Slow / Simultaneous | | |
| D | Zb Non-overlapping late make | | |
| C | Zb Overlapping early make | | |

Safety Limit Switches with Pulling Cable

Double Insulation - Plastic Casing NEMA-1 - 30 mm Width
Metal Casing NEMA-4X - 30, 40 and 60 mm Width

Applications

Easy to use, the safety limit switches with pulling cable for emergency stop with latching and manual rest offer specific qualities:

- Visible operation.
- Capability for strong current switching (conventional thermal current 10 A)
- Contact blocks with dependent action and positive opening operation of the "N.C." normally closed contact(s) (symbol ⊖)
- Electrically separated contacts.
- Precision on operation positions (consistency).
- Immunity to electromagnetic disturbances.

These specific features make the limit switches ideal for monitoring and protection in the technical premises (testing-station, painting lines,...) and on the industrial machines (presses, conveyor belts, transfer machines,...) being able to present risks or dangerous phenomena under operation.

In any point of his working area, the operator must be able to easily actuate (to pull) the cable to order the stop of the machine or the work in progress.

- Associated with safety switching devices, they produce automatic control circuits meeting standard EN 954-1.
- They comply with the requirements of European Directives (Low Voltage, Machines and Electromagnetic Compatibility) and are conform to European and international standards.

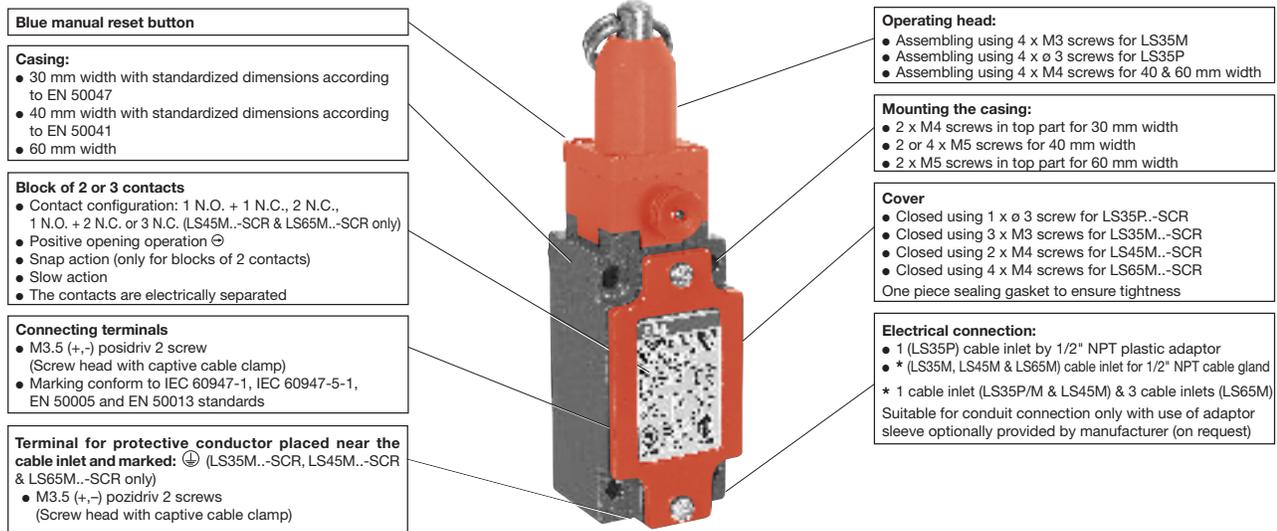
Description

Safety limit switches with pulling cable for emergency stop with Latching and manual reset :

LS35P..-SCR (30 mm width), which are made of fibre-glass reinforced UL-V0 thermoplastic material, offer double insulation □ and a degree of protection NEMA-1.

LS35M..-SCR (30 mm width), which are made of zinc alloy (zamak), have a degree of protection NEMA-4X.

LS45M..-SCR (40 mm width) and **LS65M..-SCR** (60 mm width), which are made of aluminium alloy, have a degree of protection NEMA-4X.



Type

Example :

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|-----|
| L | S | 3 | 5 | P | 9 | 8 | D | 1 | 1 | - | SCR |
| L | S | | | P | | | | | | - | SCR |

| | | | |
|--|----|--------------------------|---|
| Limit Switch | LS | SCR | Safety device with ring |
| Casing width: 30 mm..... | 3 | Contact types: | |
| 1 cable inlet by 1/2" NPT plastic adaptor (LS35P) or 1/2" NPT for cable gland (LS35M)..... | 5 | 11 | 1 N.O. + 1 N.C. contacts |
| | | 12 | 1 N.O. + 2 N.C. contacts (LS45M.. or LS65M.. only) |
| | | 02 | 2 N.C. contacts |
| | | 03 | 3 N.C. contacts (LS45M.. or LS65M.. only) |
| Casing width: 40 mm..... | 4 | Snap action: | |
| Casing width: 60 mm..... | 6 | B | Zb Snap (for 1 N.O. + 1 N.C. and 2 N.C. contacts only) |
| 1 cable inlet (LS45M) or 3 x cable inlets (LS65M) for 1/2" NPT cable gland..... | 5 | Dependent (slow) action: | |
| | | L | Slow / Simultaneous |
| | | D | Zb Non-overlapping late make |
| | | C | Zb Overlapping early make (for 1 N.O. + 1 N.C. contacts only) |
| Plastic casing..... | P | Operating heads: | |
| Metal casing | M | 98 | with ring and blue manual reset |

Safety Limit Switches with Small Latch (Key)

Metal Casing NEMA-4X - 30 and 40 mm Width
Plastic Casing NEMA-1 - 30 and 40 mm Width



LS35P80D11-S



LS35M80D11-S



LS45P80D12-S



LS45M80D12-S



LSA30P08

LS35P: 1 cable inlet by 1/2" NPT plastic adaptor
LS35M: 1 cable inlet for 1/2" NPT cable gland

Plastic Casing - NEMA-1 - 30 mm Width
Metal Casing - NEMA-4X - 30 mm Width

Ordering Details - Product without Small Latch (Key)

| Contact blocks | Catalog number | List price |
|----------------|----------------|------------|
| D11 | | |
| L02 | | |

Plastic Limit Switches with Adjustable Head Every 90°

| | | |
|---|---|--------------|
| 1 | - | LS35P80D11-S |
| - | 1 | LS35P80L02-S |

Metal Limit Switches with Adjustable Head Every 90°

| | | |
|---|---|--------------|
| 1 | - | LS35M80D11-S |
| - | 1 | LS35M80L02-S |

LS45M: 1 cable inlet for 1/2" NPT cable gland

Ordering Details - Product without Small Latch (Key)

| Contact blocks | Catalog number | List price |
|----------------|----------------|------------|
| D12 | | |
| L03 | | |

Plastic Limit Switches with Adjustable Head Every 90°

| | | |
|---|---|--------------|
| 1 | - | LS45P80D12-S |
| - | 1 | LS45P80L03-S |

Metal Limit Switches with Adjustable Head Every 90°

| | | |
|---|---|--------------|
| 1 | - | LS45M80D12-S |
| - | 1 | LS45M80L03-S |

Ordering Details - Small Latch (Key)

| Description of key | Fixing mm | Catalog number | List price |
|---|-----------|----------------|------------|
| Small Latch (Keys) for LS3..P. or LS3..M.. | | | |
| Right angle key | 13 | LSA30P05 | |
| Straight key | 13 | LSA30P06 | |
| Right angle key with shock absorber | 15 | LSA30P07 | |
| Straight key with shock absorber | 15 | LSA30P08 | |
| Adjustable angle key | 40 | LSA30P09 | |
| Small Latch (Keys) for LS4..P. or LS4..M.. | | | |
| Right angle key | 13 | LSA40X05 | |
| Straight key | 13 | LSA40X06 | |
| Right angle key with shock absorber | 15 | LSA40X07 | |
| Straight key with shock absorber | 15 | LSA40X08 | |
| Adjustable angle key | 40 | LSA40X09 | |

Safety Limit Switches with Axis or Lever

Double Insulation - Plastic Casing NEMA-1 - 30 mm Width
Metal Casing NEMA-4X - 30 mm Width

LS35P: 1 cable inlet by 1/2" NPT plastic adaptor
LS35M: 1 cable inlet for 1/2" NPT cable gland

Plastic Casing - NEMA-1 - 30 mm Width
Metal Casing - NEMA-4X - 30 mm Width

Ordering Details

| Contact blocks | Catalog number | List price |
|---|----------------|------------|
|  13 21 14 22 | D11 | |
|  11 21 12 22 | | |
| Zb | L02 | |

Plastic Limit Switches with Rotative Axis (zinc plated)

| | | |
|---|---|--------------|
| 1 | - | LS35P75D11-S |
| - | 1 | LS35P75L02-S |

Plastic Limit Switches with Stainless Steel Rotative Axis

| | | |
|---|---|--------------|
| 1 | - | LS35P76D11-S |
| - | 1 | LS35P76L02-S |

Metal Limit Switches with Rotative Axis (zinc plated)

| | | |
|---|---|--------------|
| 1 | - | LS35M75D11-S |
| - | 1 | LS35M75L02-S |

Metal Limit Switches with Stainless Steel Rotative Axis

| | | |
|---|---|--------------|
| 1 | - | LS35M76D11-S |
| - | 1 | LS35M76L02-S |

Plastic Limit Switches with Lever (zinc plated)

| | | |
|---|---|--------------|
| 1 | - | LS35P77D11-S |
| - | 1 | LS35P77L02-S |

Metal Limit Switches with Lever (zinc plated)

| | | |
|---|---|--------------|
| 1 | - | LS35M77D11-S |
| - | 1 | LS35M77L02-S |



LS35P75D11-S



LS35M76D11-S



LS35P77D11-S

Safety Limit Switches with Pulling Cable

Double Insulation - Plastic Casing NEMA-1 - 30 mm Width
Metal Casing NEMA-4X - 30, 40 and 60 mm Width



LS35M98D11-SCR



LS45M98D11-SCR



LS65M98D12-SCR



LSR5242



LSR5343



LSR5444



LSR5551

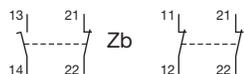
LS35P: 1 cable inlet by 1/2" NPT plastic adaptor

Plastic Casing - NEMA-1 - 30 mm Width

LS35M: 1 cable inlet for 1/2" NPT cable gland

Metal Casing - NEMA-4X - 30 mm Width

Contact blocks



D11

L02

Catalog number

List price

Plastic Safety Limit Switches with Pulling Cable for Emergency Stop with Latching and Manual Reset

| | | Catalog number | List price |
|---|---|----------------|------------|
| 1 | - | LS35P98D11-SCR | |
| - | 1 | LS35P98L02-SCR | |

Metal Safety Limit Switches with Pulling Cable for Emergency Stop with Latching and Manual Reset

| | | Catalog number | List price |
|---|---|----------------|------------|
| 1 | - | LS35M98D11-SCR | |
| - | 1 | LS35M98L02-SCR | |

LS45M: 1 cable inlet for 1/2" NPT cable gland

Metal Casing - NEMA-4X - 40 mm Width

LS65M: 3 cable inlet for 1/2" NPT cable gland

Metal Casing - NEMA-4X - 60 mm Width

Contact blocks



D12

L03

Catalog number

List price

Metal Safety Limit Switches with Pulling Cable for Emergency Stop with Latching and Manual Reset

| | | Catalog number | List price |
|---|---|----------------|------------|
| 1 | - | LS45M98D12-SCR | |
| - | 1 | LS45M98L03-SCR | |

Metal Safety Limit Switches with Pulling Cable for Emergency Stop with Latching and Manual Reset

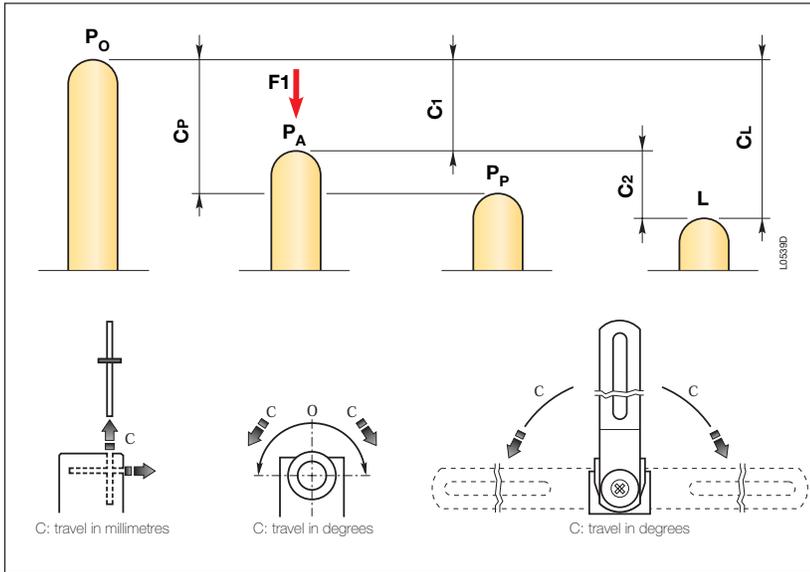
| | | Catalog number | List price |
|---|---|----------------|------------|
| 1 | - | LS65M98D12-SCR | |
| - | 1 | LS65M98L03-SCR | |

Accessories

| Description of accessories | Catalog number | List price |
|-----------------------------------|----------------|------------|
| Cable grip D5 | LSR5242 | |
| Cable end protector D5 | LSR5343 | |
| Cable support M8 x 59 | LSR5444 | |
| Turnbuckle M6 | LSR5141 | |
| End spring (LS3...P, LS3...M) | LSR5845 | |
| End spring (LS4...M, LS6...M) | LSR5846 | |
| D5 red cable: length 10.50 meters | LSR5547 | |
| 15.50 meters | LSR5548 | |
| 25.50 meters | LSR5549 | |
| 51.00 meters | LSR5550 | |
| 102.00 meters | LSR5551 | |

Safety Limit Switches

Travel and Operating diagrams



P₀ Free position:
position of the switch actuator when no external force is exerted on it.

P_A Operating position:
position of the switch actuator, under the effect of force **F1**, when the contacts leave their initial free position.

P_P Positive opening position:
position of the switch actuator from which positive opening is ensured.

L Max. travel position:
maximum acceptable travel position of the switch actuator under the effect of a force **F1**.

C₁ Pre-travel (average travel):
distance between the free position **P₀** and the operating position **P_A**.

C_p Positive opening travel:
minimum travel of the switch actuator, from the free position, to ensure positive opening operation of the normally closed contact (N.C.).

C₂ Over-travel (average travel):
distance between the operating position **P_A** and the max. travel position **L**.

C_L Max. travel (maximum travel):
distance between the free position **P₀** and the max. travel position **L**.

Note: C_{1,1} = pre-travel of contact 21-22,
C_{1,2} = pre-travel of contact 13-14.

Examples:

LS35P80L02-S
Simultaneous slow action contacts

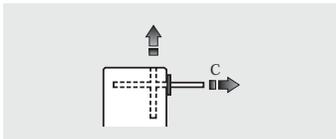
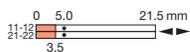


Diagram
in millimetres / key travel



LS35P76D11-S
non-overlapping slow action contacts

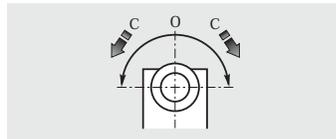
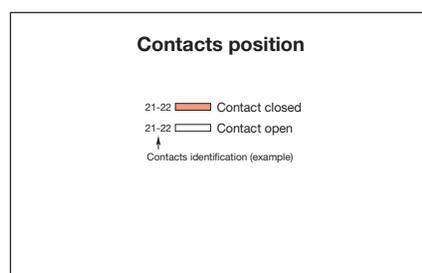
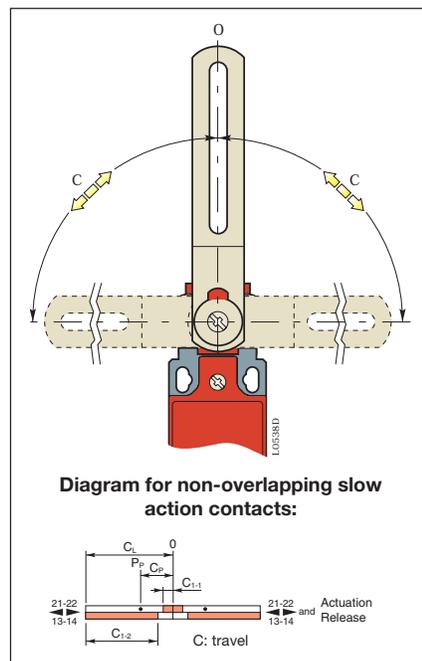
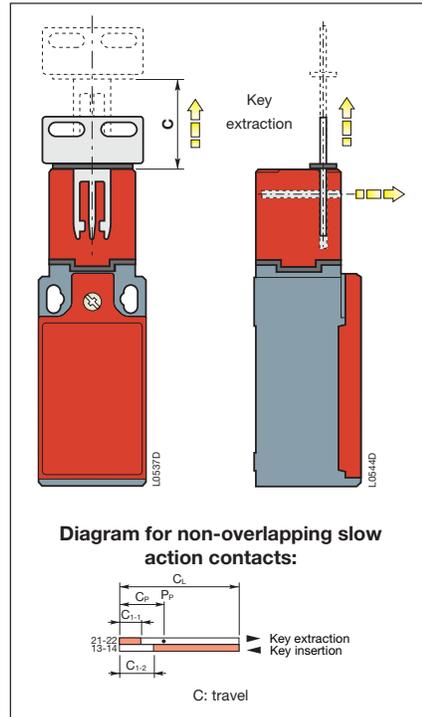
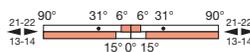
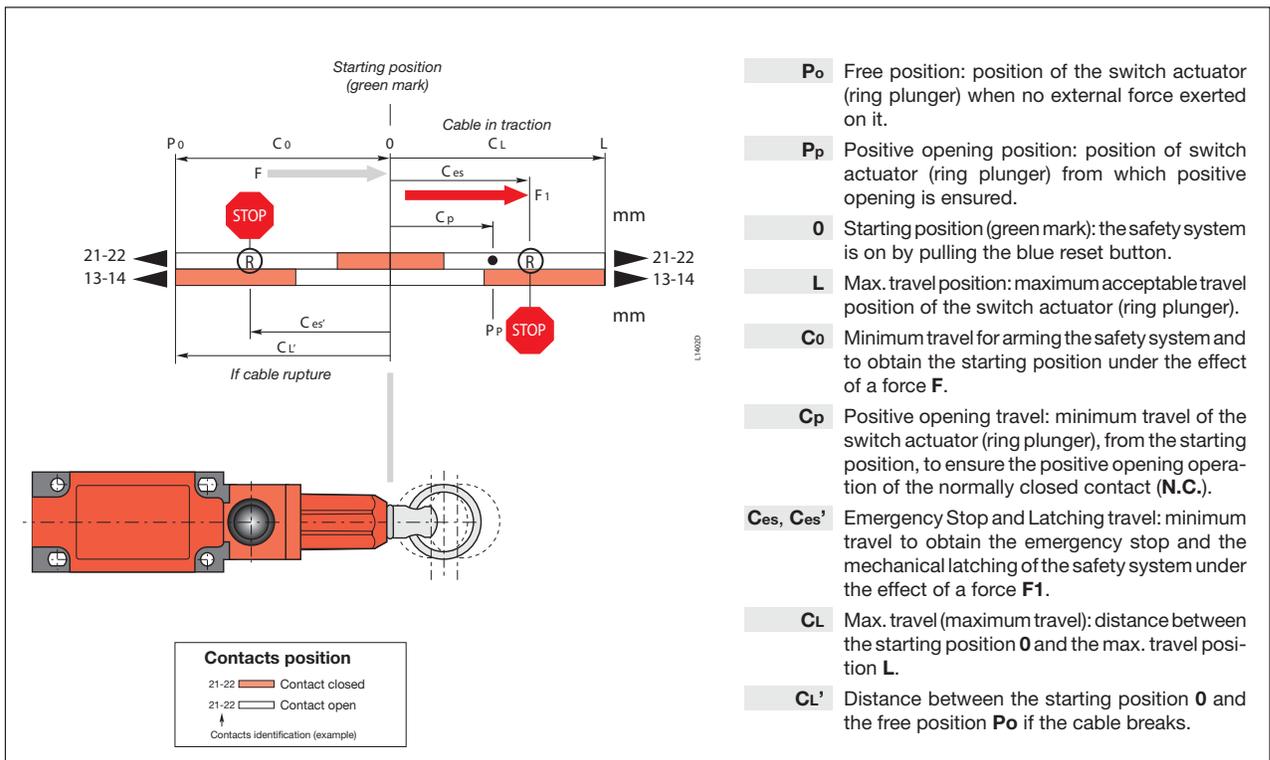


Diagram
in degrees / lever rotation



Safety Limit Switches with Pulling Cable for Emergency Stop with Latching and Manual Reset

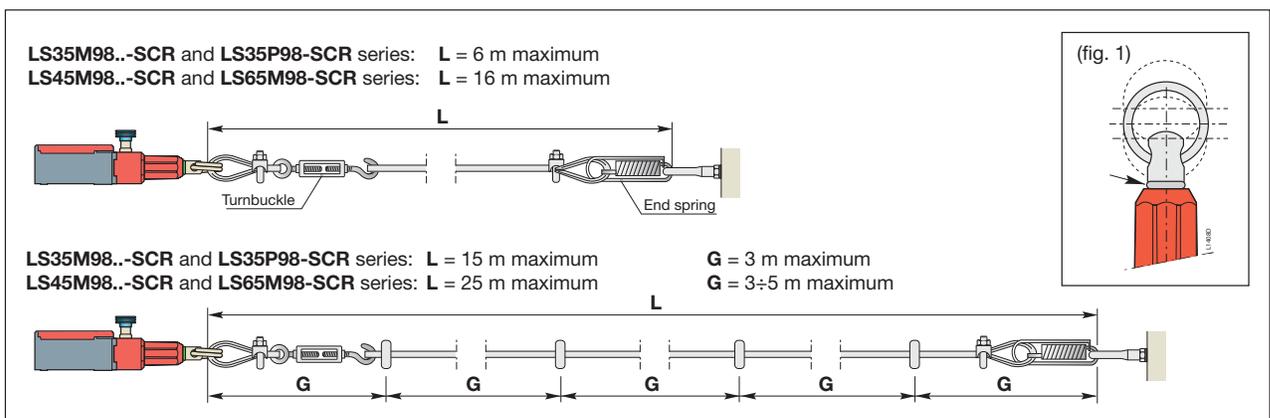
Travel and Operating diagrams and Installation



Installation

To obtain the right operation of the apparatus, please follow carefully below instructions:

1. If necessary, according to the Limit Switch position turn the head by unscrewing the 4 fixing screws in order that the blue reset button become accessible. When the head is well place, re-screw the 4 screws with a tightening torque of 0.8 Nm.
2. In order to have the cable correctly guided, fix tightly the apparatus and the cable support on rigid elements. Insert on the side of the Limit Switch a turnbuckle, and in the other side of the cable an extremity spring. Put the cable in tension by using the turnbuckle till the green mark appear on the metal plunger at the extremity of the red head (fig. 1).
3. Pull the blue reset button to arm the safety system and close the safety contacts.
4. The inside contacts of the Limit Switch will always change of position each time the cable will be operated (by pulling) as shown on the above diagram.
5. Check that the apparatus operate correctly before to switch on the machine by following the below test procedure :
 - a) pull slowly the cable, the blue reset button doesn't change of position but the **N.C.** contact open and operate the "normal" stop of the machine.
 - b) Pull the cable with an **F₁** force, the blue reset button change of position and operate the emergency stop of the machine with latching of the safety system.
 - c) In order to switch on again the device, please come back to point n° 2 and repeat the operation (if necessary).
6. The use of those apparatus involve the respect of following standard: EN 1088, EN 292, EN 954-1



Safety Limit Switches

Plastic Casing NEMA-1 and Metal Casing NEMA-4X Technical Data

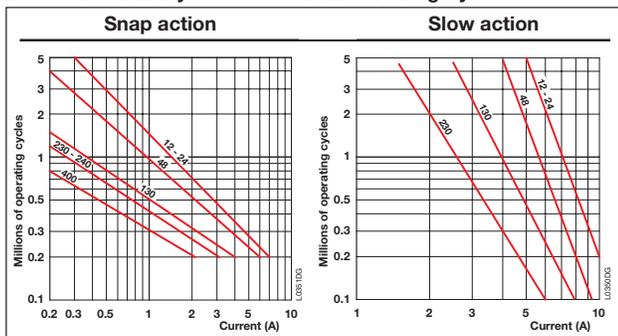
General Technical Data

| | Plastic Casing | Metal Casing |
|---|--|-----------------|
| Standards | IEC 60947-1, IEC 60947-5-1, EN 60947-1, EN 60947-5-1, UL 508, and CSA C22-2 No. 14 | |
| Certifications - Approvals | UL - CSA - CCC | |
| Air temperature near the device | | |
| - during operation | °C -25 ... +70 | |
| - for storage | °C -30 ... +80 | |
| Climatic withstand | According to IEC 68-2-3 and salty mist according to IEC 68-2-11 | |
| Mounting positions | All positions are authorised | |
| Shock withstand (according to IEC 68-2-27 and EN 60068-2-27) (1/2 sinusoidal shock for 11 ms) no change in contact position | Limit switch with small latch (key): 10 g Limit switch with rotative axis or lever and Limit switch with pulling cable : 40 g | |
| Resistance to vibrations (acc. to IEC 68-2-6 and EN 60068-2-6) | 5 g (10 ... 500 Hz) no change in position of contacts > 100 μs | |
| Protection against electrical shocks (acc. to IEC 536) | Class II | Class I |
| Degree of protection (according to IEC 529 and NEMA) | IP65, NEMA 1 | IP66, NEMA 4-4X |

Electrical Data

| | | | |
|---|--------------------------------|---|--|
| Rated insulation voltage U_i - according to IEC 60947-1 and EN 60947-1 - according to UL 508, CSA C22-2 No. 14 | V | 500 (degree of pollution 3) 600 | 500 (LS45M.), (LS65M.), 400 (LS35M.) - (degree of pollution 3) 600 (LS45M.), (LS65M.), 300 (LS35M.) |
| Rated impulse withstand voltage U_{imp} (according to IEC 60947-1 and EN 60947-1) | kV | 6 | |
| Conventional enclosed thermal current I_{the} (according to IEC 60947-5-1 and EN 60947-5-1) ($\theta \leq 40$ °C) | A | 10 | |
| Short-circuit protection - fuses | A | 10 | |
| Rated operational current | | | |
| I_o / AC-15 - acc. to IEC 60947-5-1 | 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 | |
| - according to UL 508, CSA C22 No.14 | | A 600 | A 600 (LS45M), (LS65M) - A 300 (LS35M) |
| I_o / DC-13 - acc. to IEC 60947-5-1 | 24 V - d.c. | A 2.8 | |
| | 110 V - d.c. | A 0.6 | |
| | 250 V - d.c. | A 0.27 | |
| - according to UL 508, CSA C22 No.14 | | Q 600 | Q 600 (LS45M), (LS65M) - Q 300 (LS35M) |
| Positivity | | | Contacts with positive opening operation as per IEC 60947-5-1 chapter 3 and EN 60947-5-1 |
| Resistance between contacts | mΩ | 25 | |
| Mechanical durability | Millions of operations | > 1 million | |
| Max. switching frequency | Cycles/h | 600 | |
| Electrical durability (according to IEC 60947-5-1 appendix C) - Max. switching frequency - Load factor | Cycles/h | Utilization categories AC-15 and DC-13 (see curves and values below) 3600 0.5 | |
| Connecting data of contact blocks | | | |
| Connecting terminals | | M3.5 (+,-) pozidriv 2 screw with cable clamp | |
| Connecting capacity | 1 or 2 x mm ² / AWG | 0.5 mm ² / AWG 20 to 2.5 mm ² / AWG 14 | |
| Terminal marking | | According to EN 50013 | |

Electrical durability for AC-15 utilization category



Electrical durability for DC-13 utilization category

| | Snap action | Slow action |
|---|-------------|-------------|
| Power breaking for a durability of 5 million operating cycles | | |
| Voltage 24 V | 9.5 W | 12 W |
| Voltage 48 V | 6.8 W | 9 W |
| Voltage 110 V | 3.6 W | 6 W |

LS45P80..-S and LS45M80..-S Limit Switches with Small Latch (Key) and Adjustable Head

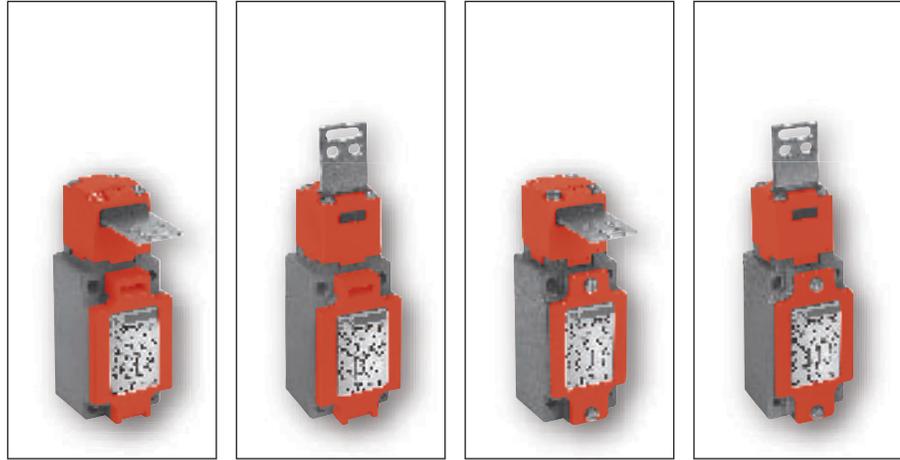
1 Cable Inlet for Cable Gland, 1/2" NPT

Movement to be detected:

Small Latch (Key), Front or Vertical Translation

Casing 40 mm width

- Plastic: Degree of protection NEMA-1
- Metal: Degree of protection NEMA-4X



Actuator

Conformity / \ominus (N.C. contact with positive opening operation)
 Actuation speed: maximal / minimal
 Min. force / torque: - for insertion of the key
 - for extraction of the key
 - positive opening operation

Key

\ominus
 0.5 / 0.01 m/s
 30 N
 30 N
 45 N

Key

\ominus
 0.5 / 0.01 m/s
 30 N
 30 N
 45 N

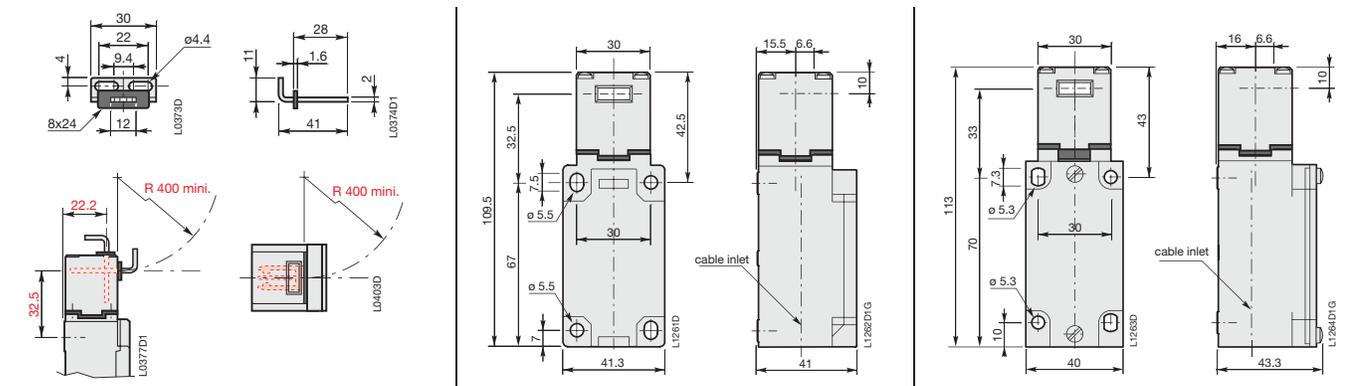
Additional Technical Data (Operating diagrams with keys inserted)

| | Type | LS45P80D12-S | | LS45M80D12-S | |
|--------------------------------------|-------------------|--------------|--|--------------|--|
| Non-overlapping slow action contacts | Operation diagram | | | | |
| Simultaneous Slow action contacts | Operation diagram | LS45P80L03-S | | LS45M80L03-S | |
| | | | | | |
| Weight (packing per unit) | kg | 0.155 | | 0.210 | |

Special heads, accessories and special contact arrangement or particular function: please consult us.

Closed contact / Open contact

Dimensions (mm)



LS35P7..-S and LS35M7..-S Limit Switches with Rotative Axis and Adjustable Head

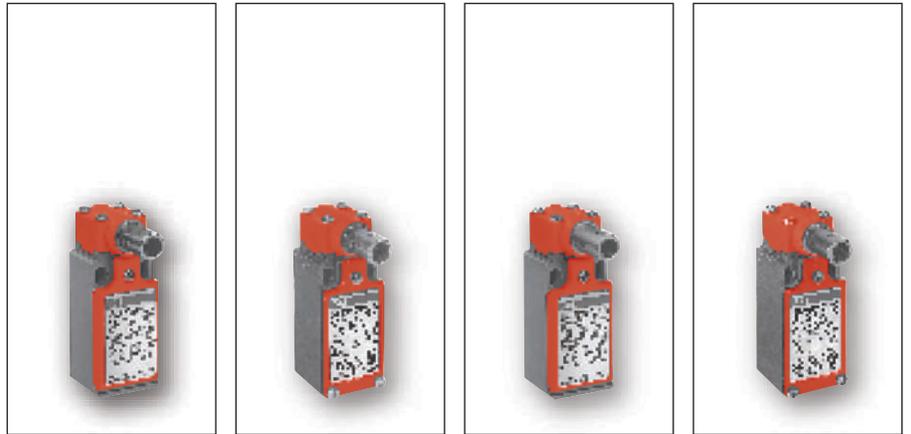
1 Cable Inlet for Cable Gland, 1/2" NPT

Movement to be detected:

Angular Around Rotative Axis

Casing 30 mm width

- Plastic: Degree of protection NEMA-1
- Metal: Degree of protection NEMA-4X



Actuator

Rotative Axis (zinc plated)

Stainless Steel Rotative Axis

Conformity / \oplus (N.C. contact with positive opening operation)
Actuation speed: maximal / minimal
Min. force / torque: - actuation
- positive opening operation

0.5 / 0.01 m/s
0.12 N.m
0.60 N.m

0.5 / 0.01 m/s
0.12 N.m
0.60 N.m

Additional Technical Data

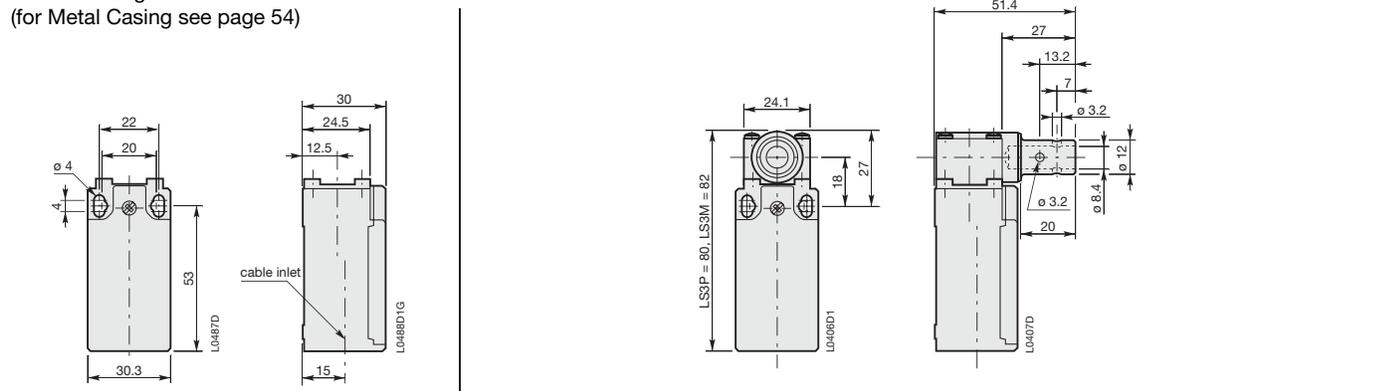
| Non-overlapping slow action contacts | Type | LS35P75D11-S | LS35M75D11-S | LS35P76D11-S | LS35M76D11-S |
|--------------------------------------|-------------------|--------------|--------------|--------------|--------------|
| | Operation diagram | | | | |
| Simultaneous Slow action contacts | Type | LS35P75L02-S | LS35M75L02-S | LS35P76L02-S | LS35M76L02-S |
| | Operation diagram | | | | |
| Weight (packing per unit) | kg | 0.090 | 0.190 | 0.090 | 0.190 |

Special heads, accessories and special contact arrangement or particular function: please consult us.

Closed contact / Open contact

Dimensions (mm)

Plastic Casing
(for Metal Casing see page 54)



LS35P7..-S and LS35M7..-S Limit Switches with Right Angle Lever and Adjustable Head

1 Cable Inlet for Cable Gland, 1/2" NPT

Movement to be detected:

Angular with Lever

Casing 30 mm width

- Plastic: Degree of protection NEMA-1
- Metal: Degree of protection NEMA-4X



Lever adjusted to the left
(by user)

Lever in central position
(factory assembled)

Lever adjusted to the right
(by user)

Galvanized steel flush mounting right angle lever

Actuator

Conformity / \ominus (N.C. contact with positive opening operation)
Actuation speed: maximal/minimal
Min. force / torque: - actuation
- positive opening operation

\ominus
0.5 / 0.01 m/s
0.12 N.m
0.60 N.m

Additional Technical Data

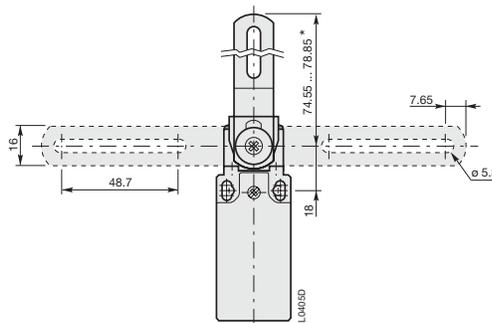
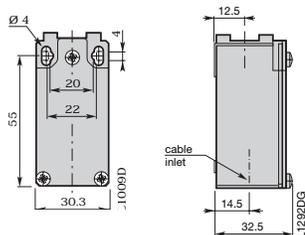
| Non-overlapping slow action contacts | Type | LS35P77D11-S / LS35M77D11-S |
|--------------------------------------|-------------------|---|
| | Operation diagram | |
| Simultaneous Slow action contacts | Type | LS35P77L02-S / LS35M77L02-S |
| | Operation diagram | |
| Weight (packing per unit) | kg | LS35P77..-S = 0.110 kg / LS35M77..-S = 0.210 kg |

Special heads, accessories and special contact arrangement or particular function: please consult us.

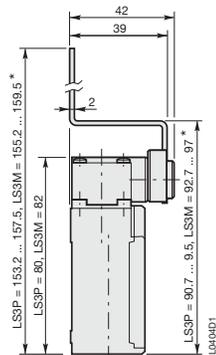
Closed contact / Open contact

Dimensions (mm)

Metal Casing
(for Plastic Casing see page 53)



* Adjusted to maximum by factory



LS35P98..-SCR, LS35M98..-SCR, LS45M98..-SCR and LS65M98..-SCR Safety Limit Switches

With Pulling Cable for Emergency Stop and Manual Reset

Movement to be detected:

Stop by Pulling the cable

Casing 30 mm width

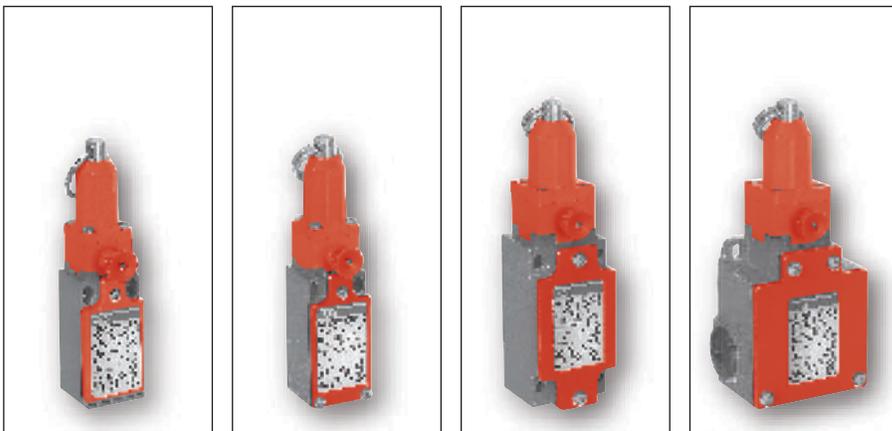
- Plastic: Degree of protection NEMA-1
- Metal: Degree of protection NEMA-4X
- 1 cable inlet for cable gland

Casing 40 mm width

- Metal: Degree of protection NEMA-4X
- 1 cable inlet for cable gland

Casing 60 mm width

- Metal: Degree of protection NEMA-4X
- 3 cable inlets for cable gland



Actuator

| | Red cable | Red cable |
|---|-----------|-----------|
| Conformity / \ominus (N.C. contact with positive opening operation) | \ominus | \ominus |
| Min. force : - for arming the safety system (F) | 70 N | 100 N |
| - for actuation | 95 N | 170 N |
| - for activating the reset and stop (F1) | 120 N | 250 N |
| - positive opening operation | 115 N | 240 N |

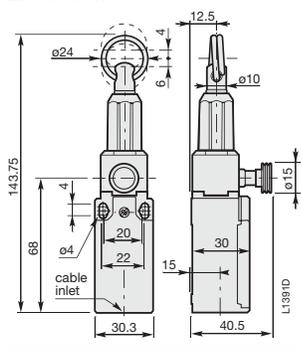
Additional Technical Data

| Non-overlapping slow action contacts | Type | LS35P98D11-SCR | LS35M98D11-SCR | LS45M98D11-SCR | LS65M98D11-SCR |
|--------------------------------------|------|----------------|----------------|----------------|----------------|
| | Zb | | | | |
| Simultaneous slow action contacts | Type | LS35P98L02-SCR | LS35M98L02-SCR | LS45M98L02-SCR | LS65M98L02-SCR |
| | | | | | |
| Non-overlapping slow action contacts | Type | | | LS45M98D12-SCR | LS65M98D12-SCR |
| | | | | | |
| Simultaneous slow action contacts | Type | | | LS45M98L03-SCR | LS65M98L03-SCR |
| | | | | | |
| Weight (packing per unit) | kg | 0.115 | 0.270 | 0.270 | 0.300 |

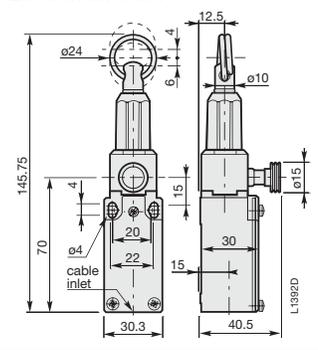
Closed contact / Open contact

Dimensions (mm)

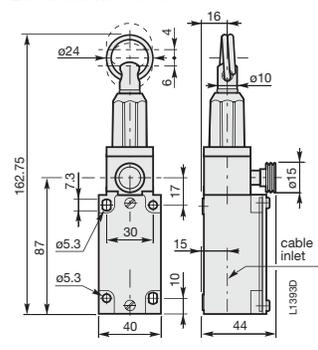
LS35P98..-SCR



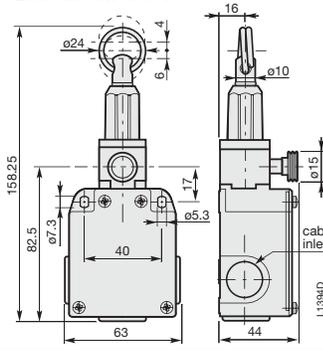
LS35M98..-SCR



LS45M98..-SCR



LS65M98..-SCR



Limit Switches with Latch and Manual Reset

Plastic Casing NEMA-1  and Metal Casing NEMA-4X - 30 mm Width

Applications

Easy to use, the limit switches for safety applications with latch and manual reset offer specific qualities:

- Visible operation (fault memorisation).
- Capability for strong current switching (conventional thermal current 10 A).
- Contact blocks with positive opening operation of the "N.C." normally closed contact(s) (symbol \ominus).
- Electrically separated contacts.
- Precision on operating positions (consistency).
- Immunity to electromagnetic disturbances.

These specific features make the limit switches ideal for detection and monitoring of faults in hoisting machines, electric lifts, freight elevators, escalators, conveyor belts, etc.

Limit switches with latch and manual reset comply with the requirements of standard EN 81-1: safety rules for the construction and installations of electric lifts. In this application they detect or monitor: cabin overtravel, cabin speed by means of a speed limiting device, energisation of the parachute block on detection of excessive speed with respect to the set-point value, etc.

They comply with the requirements of European Directives (Low Voltage, Machines and Electromagnetic Compatibility) and are conform to European and international standards.

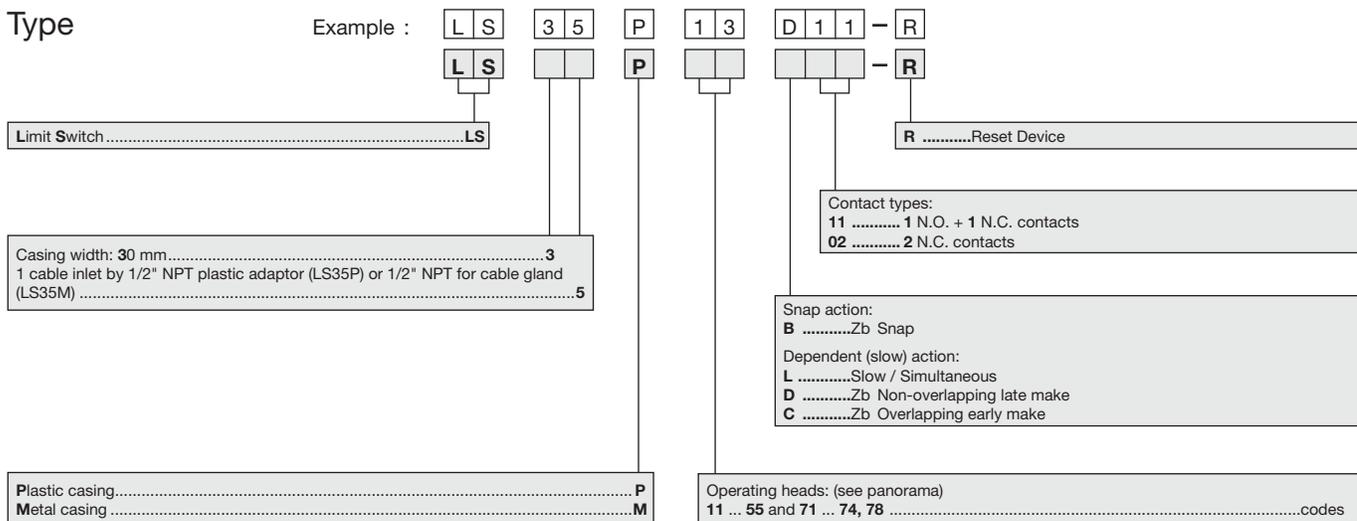
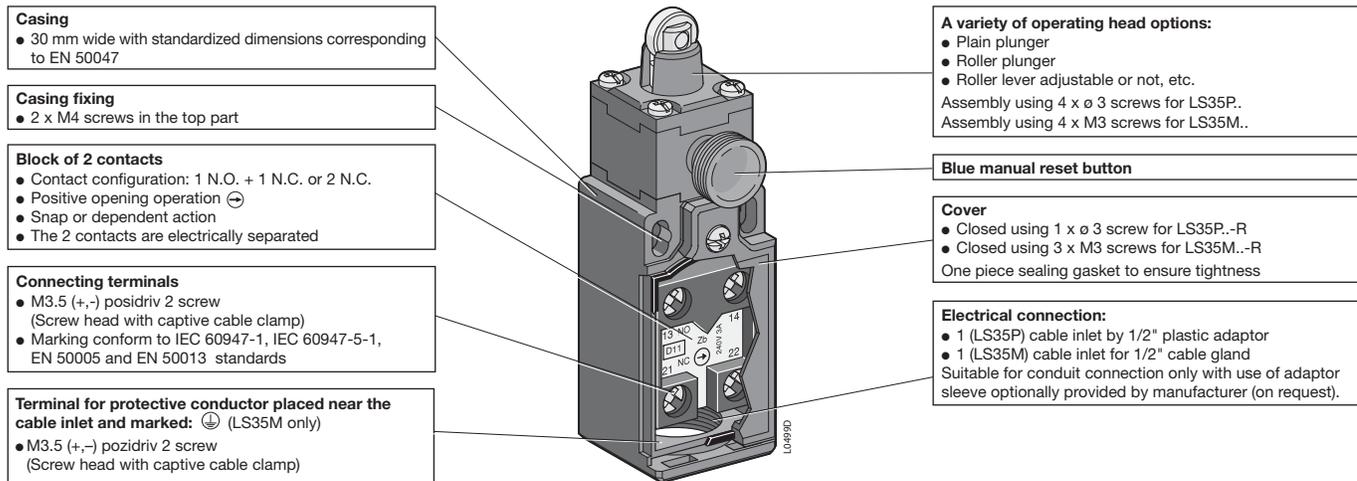
Description

LS35P..-R (plastic casing, 30 mm width) limit switches with latch and manual reset, which are made of fibreglass reinforced UL-V0 thermoplastic material, offer double insulation  and a degree of protection NEMA-1.

LS35M..-R (metal casing, 30 mm width) limit switches, which are made of zinc alloy (zamack), have a degree of protection NEMA-4X.

Limit switches with latch and manual reset are equipped with 1 N.C. + 1 N.O. or 2 N.C. contact blocks with positive opening operation of the "N.C." contact(s). After actuating the control device and overshooting the latching point, the N.C. safety contact(s) remain in the open position.

Return to the initial operating state takes place by voluntary action on the reset button.



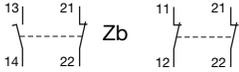
LS35P.-R and LS35M.-R Limit Switches with Latch and Manual Reset

Plastic Casing NEMA-1  and Metal Casing NEMA-4X - 30 mm Width

LS35P: 1 cable inlet by 1/2" NPT plastic adaptor
 LS35M: 1 cable inlet by 1/2" NPT plastic adaptor

Plastic Casing - NEMA-1 - 30 mm Width
 Metal Casing - NEMA-4X - 30 mm Width

Ordering Details

| Contact blocks | Catalog number | List price |
|---|----------------|------------|
|  D11 | | |
|  B02 | | |

Plastic Limit Switches with steel plain plunger (zinc plated)

| | | |
|---|---|--------------|
| 1 | - | LS35P11D11-R |
| - | 1 | LS35P11B02-R |

Plastic Limit Switches with plastic (polyacetal) roller plunger

| | | |
|---|---|--------------|
| 1 | - | LS35P13D11-R |
| - | 1 | LS35P13B02-R |

Plastic Limit Switches with plastic roller (polyacetal) lever

| | | |
|---|---|--------------|
| 1 | - | LS35P41D11-R |
| - | 1 | LS35P41B02-R |

Metal Limit Switches with steel plain plunger (zinc plated)

| | | |
|---|---|--------------|
| 1 | - | LS35M11D11-R |
| - | 1 | LS35M11B02-R |

Metal Limit Switches with plastic (polyacetal) roller lever on steel plunger (zinc plated)

| | | |
|---|---|--------------|
| 1 | - | LS35M31D11-R |
| - | 1 | LS35M31B02-R |

Metal Limit Switches with plastic roller (polyacetal) lever

| | | |
|---|---|--------------|
| 1 | - | LS35M41D11-R |
| - | 1 | LS35M41B02-R |



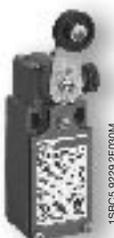
LS35P11D11-R



LS35P13D11-R



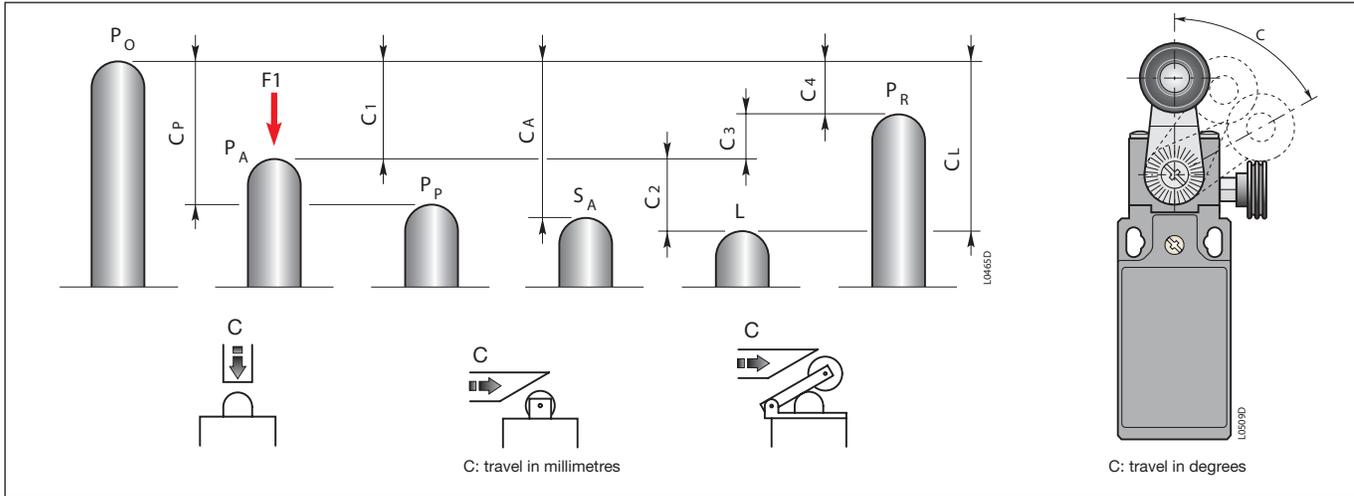
LS35M31D11-R



LS35M41D11-R

Limit Switches with Latch and Manual Reset

Travel and Operation diagrams



P_O Free position:
position of the switch actuator when no external force is exerted on it.

P_A Operating position:
position of the switch actuator, under the effect of force **F1**, when the contacts leave their initial free position.

P_P Positive opening position:
position of the switch actuator from which positive opening is ensured.

S_A Latching point:
point of no return of the switch actuator beyond which the opened status of the (N.C.) contact(s) is maintained. Unlocking will only occur after deliberate action on the reset button.

L Max. travel position:
maximum acceptable travel position of the switch actuator under the effect of a force **F1**.

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

C₁ Pre-travel (average travel):
distance between the free position **P_O** and the operating position **P_A**.

C_P Positive opening travel:
minimum travel of the switch actuator, from the free position, to ensure positive opening operation of the normally closed contact (N.C.).

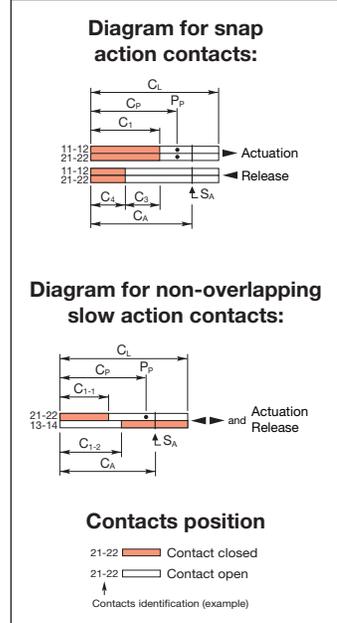
C_A Latching travel (average travel):
distance between the free position **P_O** and the latching point **S_A**.

C₂ Over-travel (average travel):
distance between the operating position **P_A** and the max. travel position **L**.

C_L Max. travel (maximum travel):
distance between the free position **P_O** and the max. travel position **L**.

C₃ Differential travel (C₁-C₄) (average travel):
travel difference of the switch actuator between the operating position **P_A** and the release position **P_R**.

C₄ Release travel (average travel):
distance between the release position **P_R** and the free position **P_O**.



Note: for slow action contacts, **C₃ = 0**, **C₁₋₁ = pre-travel of contact 21-22**, **C₁₋₂ = pre-travel of contact 13-14**.

Examples:

LS35P13D11-R
non-overlapping slow action contacts

Diagram in millimetres / cam travel

LS35P41L02-R
simultaneous slow action contacts

Diagram in degrees / lever rotation

LS35P11B02-R
snap action contacts

Diagram in millimetres / plunger travel

Limit Switches with Latch and Manual Reset

Technical Data

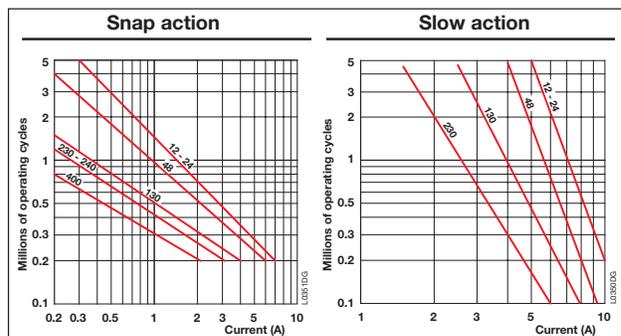
General Technical Data

| | Plastic Casing | Metal Casing |
|---|---|------------------|
| Standards | IEC 60947-1, IEC 60947-5-1, EN 60947-1, EN 60947-5-1, UL 508, CSA C22-2 No.14 | |
| Certifications - Approvals | UL - CSA - CCC | |
| Air temperature near the device | | |
| – during operation | °C -25 ... +70 | |
| – for storage | °C -30 ... +80 | |
| Climatic withstand | According to IEC 68-2-3 and salty mist according to IEC 68-2-11 | |
| Mounting positions | All positions are authorised | |
| Shock withstand (according to IEC 68-2-27 and EN 60068-2-27) | g 50 g (1/2 sinusoidal shock for 11 ms) no change in contact position | |
| Resistance to vibrations (acc. to IEC 68-2-6 and EN 60068-2-6) | g 25 g (10 ... 500 Hz) no change in position of contacts > 100 µs | |
| Protection against electrical shocks (acc. to IEC 536) | Class II | Class I |
| Degree of protection (according to IEC 529 and NEMA) | IP65, NEMA 1 | IP66, NEMA 4- 4X |
| Consistency | 0.1 mm upon closing points | |

Electrical Data

| | | | |
|---|--------------------------------|--|-----------------------------|
| Rated insulation voltage U_i | | | |
| – according to IEC 60947-1 and EN 60947-1 | V | 500 (degree of pollution 3) | 400 (degree of pollution 3) |
| – according to UL 508, CSA C22-2 No.14 | V | 600 | 300 |
| Rated impulse withstand voltage U_{imp} (according to IEC 60947-1 and EN 60947-1) | kV | 6 | |
| Conventional enclosed thermal current I_{the} (according to IEC 60947-5-1 and EN 60947-5-1) ($\theta \leq 40$ °C) | A | 10 | |
| Short-circuit protection fuses | A | 10 | |
| Rated operational current | | | |
| I_0 / AC-15 – acc. to IEC 60947-5-1 | | | |
| 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 | |
| – according to UL 508, CSA C22 No.14 | | A 600 | A 300 |
| I_0 / DC-13 – according to IEC 60947-5-1 | | | |
| 24 V - d.c. | A | 2.8 | |
| 110 V - d.c. | A | 0.6 | |
| 250 V - d.c. | A | 0.27 | |
| – according to UL 508, CSA C22 No.14 | | Q 600 | Q 300 |
| Positivity | | Contacts with positive opening operation as per IEC 60947-5-1 chapter 3 and EN 60947-5-1 | |
| Resistance between contacts | mΩ | 25 | |
| Mechanical durability | Millions of operations | > 1 million | |
| Max. switching frequency | Cycles/h | 600 | |
| Electrical durability (according to IEC 60947-5-1 appendix C) | | Utilization categories AC-15 and DC-13 (see curves and values below) | |
| – Max. switching frequency | Cycles/h | 3600 | |
| – Load factor | | 0.5 | |
| Connecting data of contact blocks | | | |
| Connecting terminals | | M3.5 (+,-) pozidriv 2 screw with cable clamp | |
| Connecting capacity | 1 or 2 x mm ² / AWG | 0.5 mm ² / AWG 20 to 2.5 mm ² / AWG 14 | |
| Terminal marking | | According to EN 50013 | |

Electrical durability for AC-15 utilization category



Electrical durability for DC-13 utilization category

| | Snap action | Slow action |
|---|-------------|-------------|
| Power breaking for a durability of 5 million operating cycles | | |
| Voltage 24 V | 9.5 W | 12 W |
| Voltage 48 V | 6.8 W | 9 W |
| Voltage 110 V | 3.6 W | 6 W |

LS35P.-R Limit Switches with Latch and Manual Reset

1 Cable Inlet for Cable Gland, 1/2" NPT

Movement to be detected:



Casing

- Plastic
- 30 mm width
- Degree of protection NEMA-1

Actuator

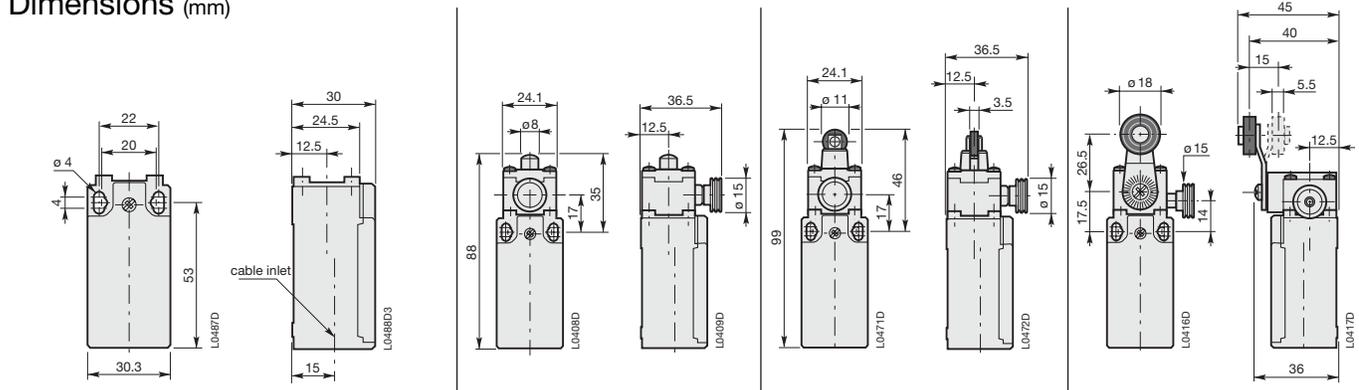
| | Steel plain plunger | ø11 Plastic roller plunger | ø18 Rotary lever with plastic roller |
|--|---------------------|----------------------------|--------------------------------------|
| Conformity / (N.C. contact with positive opening operation) | | | |
| Maximum actuation speed | 0.5 m/s | 0.3 m/s | 1.5 m/s |
| Min. force / torque: - actuation | 9 N | 12 N | 0.10 N.m |
| - positive opening operation | 44 N | 41 N | 0.32 N.m |

Additional Technical Data

| | | | | |
|--|------|--------------|--------------|--------------|
| Non-overlapping slow action contacts | Type | LS35P11D11-R | LS35P13D11-R | LS35P41D11-R |
| Operation diagram | | | | |
| Snap action contacts | Type | LS35P11B02-R | LS35P13B02-R | LS35P41B02-R |
| Operation diagram | | | | |
| Weight (packing per unit) | kg | 0.090 | 0.090 | 0.95 |

Closed contact / Open contact

Dimensions (mm)



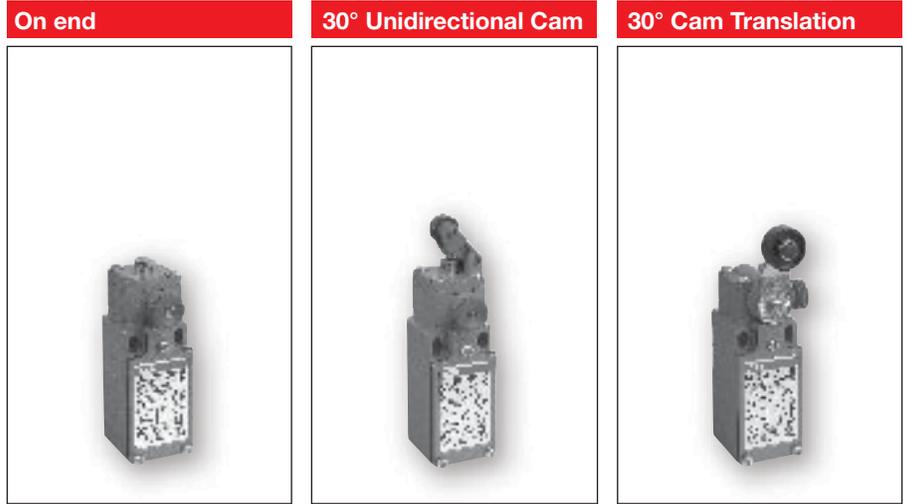
LS35M..-R Limit Switches with Latch and Manual Reset

1 Cable Inlet for Cable Gland, 1/2" NPT

Movement to be detected:

Casing

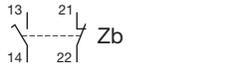
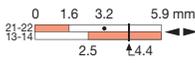
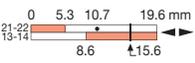
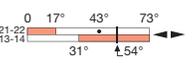
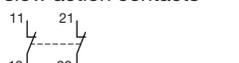
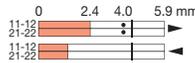
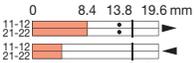
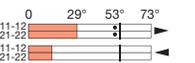
- Metal
- 30 mm width
- Degree of protection NEMA-4X



Actuator

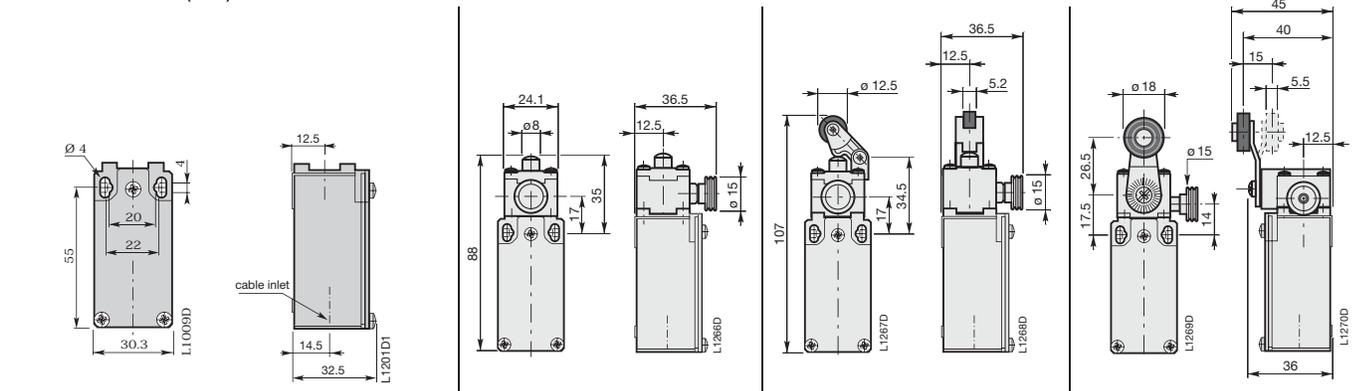
| | Steel plain plunger | ø12.5 Plastic roller plunger on galvanized steel plunger | ø18 Rotary lever with plastic roller |
|---|---------------------|--|--------------------------------------|
| Conformity / \ominus (N.C. contact with positive opening operation) | \ominus | \ominus | \ominus |
| Maximum actuation speed | 0.5 m/s | 1 m/s | 1.5 m/s |
| Min. force / torque: - actuation | 9 N | 7 N | 0.10 N.m |
| - positive opening operation | 44 N | 24 N | 0.32 N.m |

Additional Technical Data

| Non-overlapping slow action contacts | Type | LS35M11D11-R | LS35M31D11-R | LS35M41D11-R |
|---|-------------------|---|--|---|
|  | Operation diagram |  |  |  |
| Simultaneous slow action contacts | Type | LS35M11B02-R | LS35M31B02-R | LS35M41B02-R |
|  | Operation diagram |  |  |  |
| Weight (packing per unit) | kg | 0.190 | 0.195 | 0.195 |

 Closed contact /  Open contact

Dimensions (mm)



Foot Switches

IPS Foot Switches with Covers Description

Application

Foot switch operated machines such as: shearing machines, folding machines, spinning lathes, machine tools, wrapping machines, riveting presses, etc.

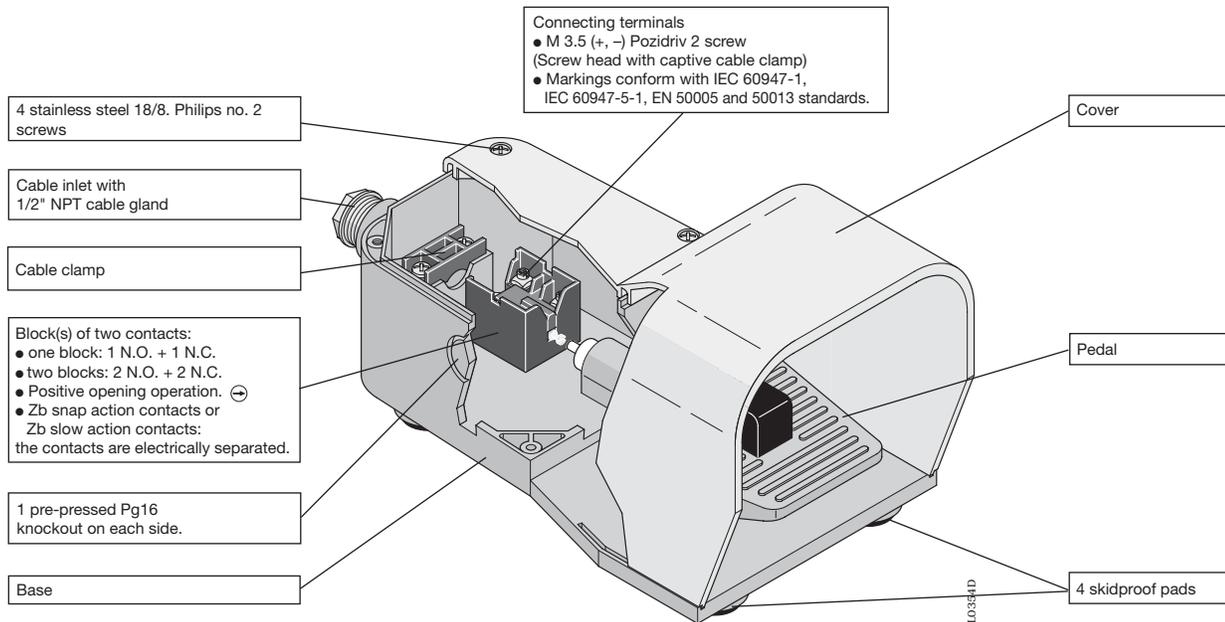
Foot switches with covers come in three operation formats:

- **Free movement:** contact position follows pedal movement: actuated when the pedal is pushed down, released when pedal is in a state of rest.
- **Foot switch locked in neutral position:** same operation as above, after unlocking the pedal with the end of the foot.
- **Foot switch latched in low position:** same operation as free movement, except that a state of rest is obtained only after having unlatched the pedal with the end of the foot.

Description of IPS Foot Switches with Covers

- **Dimensions:** 285 x 140 x 145.
- **Materials:** base, cover and pedal made of shock resistant Bayblend® FR 90 material (alloyed polycarbonate and ABS).
- **Colour choice:** grey base; grey, yellow or red cover.
- **Variations:** grey base, half-red cover. Especially used for emergency stop function.

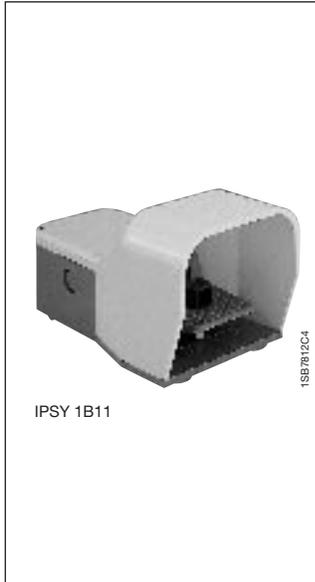
Note: this emergency stop function must never contain the «locked in neutral position» device.



On request: Foot switches with covers can be assembled on a plate and equipped with a transportation handle. Instead of the handle an emergency stop button can be installed above a tube that allows for connection cable passage. (see the catalogue of separate elements)

Foot Switches

IPS Foot Switches with Covers

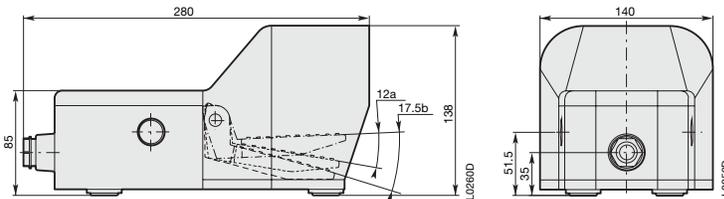


Ordering Details

| Contact blocks | Non-overlapping | Cover color | Catalog number | List price |
|-----------------------------------|-----------------|-------------|----------------|------------|
| Snap action | Slow action | | | |
| | | | | |
| B11 | D11 | | | |
| Free Movement | | | | |
| 1 | - | Yellow | IPSY1B11 | |
| - | 1 | Yellow | IPSY1D11 | |
| Locked in Neutral Position | | | | |
| 1 | - | Yellow | IPSY2B11 | |
| - | 1 | Yellow | IPSY2D11 | |
| Latched in Low Position | | | | |
| 1 | - | Yellow | IPSY3B11 | |
| - | 1 | Yellow | IPSY3D11 | |

Dimensions (mm)

Foot Switches with cover



Plain foot switch - a = pre-travel, b = total travel

Foot Switches

Technical Data

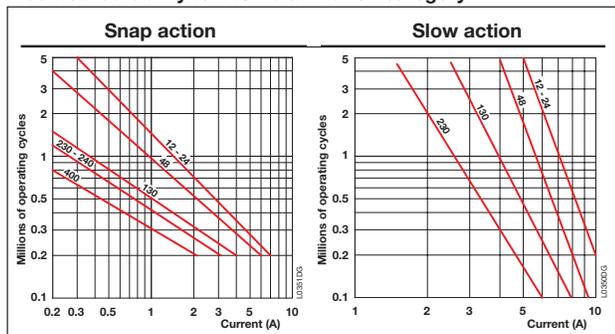
General Technical Data

| | | | |
|---|---------------|---|--|
| Standards | | Foot Switch with cover | |
| Certifications - Approvals | | IEC 60947-1, IEC 60947-5-1, EN 60947-1, EN 60947-5-1, UL 508, CSA C22-2 No.14 | |
| Air temperature near the device | | UL - CSA - BG - CCC | |
| - during operation | °C | -10 ... +70 | |
| - for storage | °C | -30 ... +80 | |
| Climatic withstand | | According to IEC 68-2-3 and salty mist according to IEC 68-2-11 | |
| Shock withstand (according to IEC 68-2-27 and EN 60068-2-27) | g | 50 g (1/2 sinusoidal shock for 11 ms) no change in contact position | |
| Resistance to vibrations (acc. to IEC 68-2-6 and EN 60068-2-6) | g | 25 g (10 ... 500 Hz) no change in position of contacts > 100 µs | |
| Protection against electrical shocks (acc. to IEC 536) | | Class II | |
| Degree of protection (according to IEC 529 and NEMA) | | IP65, NEMA 1 | |
| Operating angle | Degree | 15 | |
| Actuation torque | N.m. | 0.25 | |

Electrical Data

| | | | |
|--|--------------------------------|--|--|
| Rated insulation voltage U_i | V | - | |
| - according to IEC 60947-1 and EN 60947-1 | V | 500 (degree of pollution 3) | |
| - according to UL 508, CSA C22-2 No.14 | V | 600 | |
| Rated impulse withstand voltage U_{imp} | kV | 6 (according to IEC 60947-1 and EN 60947-1) | |
| Conventional free air thermal current I_{th} | A | 10 (according to IEC 60947-5-1 and EN 60947-5-1) ($\theta \leq 40$ °C) | |
| Short-circuit protection fuses | A | 10 | |
| Rated operational current | | - | |
| 250 V - a.c. | A | - | |
| 230 V - d.c. | A | - | |
| I_o / AC-15 - acc. to IEC 60947-5-1 | | | |
| 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 | |
| - according to UL 508, CSA C22 No.14 | | A 600 | |
| I_o / DC-13 - according to IEC 60947-5-1 | | | |
| 24 V - d.c. | A | 2.8 | |
| 110 V - d.c. | A | 0.6 | |
| 250 V - d.c. | A | 0.27 | |
| - according to UL 508, CSA C22 No.14 | | Q 600 | |
| Positivity chapter 3 and EN 60947-5-1 | | Contacts with positive opening operation as per IEC 60947-5-1 | |
| Resistance between contacts | mΩ | 25 | |
| Mechanical durability | Millions of operations | 30 | |
| Max. switching frequency | Cycles/h | 600 | |
| Electrical durability | Operations | (according to IEC 60947-5-1 appendice C) Utilization categories AC-15 and DC-13 (see curves and values below) | |
| - Max. switching frequency | Cycles/h | 3600 | |
| - Load factor | | 0.5 | |
| Connecting data of contact blocks | | | |
| Connecting terminals | | M3.5 (+,-) pozidriv 2 screw with cable clamp | |
| Connecting capacity | 1 or 2 x mm ² / AWG | 0.5 mm ² / AWG 20 to 2.5 mm ² / AWG 14 | |
| Terminal marking | | According to EN 50013 | |

Electrical durability for AC-15 utilization category



Electrical durability for DC-13 utilization category

| | Snap action | Slow action |
|---|-------------|-------------|
| Power breaking for a durability of 5 million operating cycles | | |
| Voltage 24 V | 9.5 W | 12 W |
| Voltage 48 V | 6.8 W | 9 W |
| Voltage 110 V | 3.6 W | 6 W |



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