

ED SERIES SAFETY LIMIT SWITCH

Description

The ED series safety limit switches conform to EN 50047 and have been developed to provide a range of options including plastic cases in various sizes, a choice of snap acting, slow break/make with 2 contact configurations and a choice of actuator heads.



The ED series offers the option of rotating the head in 90° increments before installation to allow ease of mounting.

Highly limit switches can be used in other applications other than guard doors, for example on moving machine beds, crane arms, lifts, elevators, etc.

Operation of these limit switches is achieved by the sliding action of the guard or other moving object deflecting the plunger or lever.

For safety applications it is important that upon actuation, the guard or other moving objects should not pass completely over the switch and allow the plunger or lever to return to its original position.

Features

- Conforms to EN (TUV) standards corresponding to the CE marking
- Positive opening operation of NC (Normally Closed) contacts conforming to IEC /EN 60947-5-1 
- Double insulation makes ground terminal unnecessary (Bears  marking)
- Wide standard operating temperature range: -25° C to 80° C
- Full range of actuator heads and levers suitable for safety applications
- Sealing up to IP 67
- Wide switch variations, (Snap action and slow action basic switches)
- International conduit sizes



- BAUART GEPRÜFT
- TYPE APPROVED



Specifications

| | |
|-----------------------------------|---|
| Standards | EN60947-5-1, UL508, EN50047, EN1088 |
| Approvals | cULus, TUV and CE marked for all applicable directives |
| Positive Opening Operation | NC Contact |
| Utilization Category | AC15 A600 |
| Min Current | 5V, 5mA, DC |
| Thermal Current (Ith) | 10A |
| Rated Insulation Voltage | 600V AC |
| Rated Impulse withstand Volt | 2500V AC |
| Insulation Resistance | 100MΩ min. (DC 500V) |
| Contact Resistance | 25mΩ max. (Initial) |
| Max Switching Speed | 250mm/s |
| Max Switching Frequency | 6000 operation per hour |
| Enclosure Material | UL approved glass-filled polybutylene terephthalate |
| Roller Material | Various polymers |
| Enclosure Protection | IP 67 |
| Operating Temperature | Min -25° C (-18° F) Max 80° C (+176° F) |
| Pollution Degree | 3 |
| Protection Against Electric Shock | Class II (Double Insulation) |
| Mech. Life Expectancy | 1 x 10 ⁷ Cycles min |
| Electrically Life Expectancy | 150,000 Cycles min |
| Vibration | IEC 68-2-6, 10-55Hz±1 Hz, Excursion: 0.35mm,1octave/min |
| Conduit Entry | Various (see Product Selection table) |
| Fixing | 2 x M4 |

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ED SERIES SAFETY LIMIT SWITCH

Structure Description

Metal Lever Setting

Grooves which engage the lever every 18° are cut in the operation indicator disk to prevent the lever from slipping against the rotary shaft.

Cover

The cover, with a hinge on its lower part, can be opened by removing the screw of the cover, which ensures ease of maintenance and wiring.

Hand

With roller lever models, the direction of the switch head can be varied to any of the four directions by loosening the roller lever switch screws at the four corners of the head.

Contact Block

Wide switch variations.
Snap-action: 1NC/1NO
Slow-action: 1NC/1NO, 2NC

Conduit

Wide switch variations.
PG13.5 PG11
M16 M20
1/2-14NPT

Product Selection

ED-□-□-□

1 2 3

1.THREAD DIMENSION

OF LEAD EXIT

1: PG13.5(S)

2: 1/2NPT(C)

4: PG11(O)

5: M16(C)

6: M20(O)

7: Connector(C)

*(s):standard (o):option (c): customization

2.CONTACT TYPES

1: 1NC/1NO SLOW ACTION (BBM)(S)

2: 2NC SLOW ACTION(O)

3: 1NC/1NO SNAP ACTION(C)

4: 2NC/1NO SLOW ACTION

5: 3NC SLOW ACTION

3.HEAD AND ACTUATOR

20: Roller arm type

21: Adjustable roller arm type (standard roller)

22: Adjustable roller arm type (Long arm type)

24: Thermoplastic end flexible rod type

241: Cat whisker type

242: Wobble stick type

25: Rod lever type

27: Adjustable roller arm type (Rubber roller)

271: Two-Way Adjustable Roller Arm Type (Rubber roller)

31: Push plunger type

32: Roller plunger type

62: Roller lever type

63: One-Way roller arm lever type

Contact Block Form

| TYPE | CONTACT FORM | CONNECTOR PIN ARRANGEMENT | OPERATION DIAGRAMS |
|-----------|--------------------------------------|---------------------------|--------------------|
| ED-□-1-□□ | 1NC/1NO(Slow action) (See Note 1) | | |
| ED-□-2-□□ | 2NC (Slow action) (See Note 2) | | |
| ED-□-3-□□ | 1NC/1NO(Snap action) (See Note 1) | | |
| ED-□-4-□□ | 3NC (Slow action) | | No Connector TYPE |
| ED-□-5-□□ | 2NC/1NO(Slow action) | | |

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ED SERIES SAFETY LIMIT SWITCH

Positive Opening Mechanism

1NC/1NO Contact (Snap action)

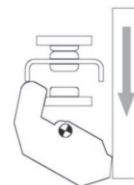
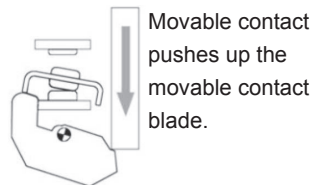
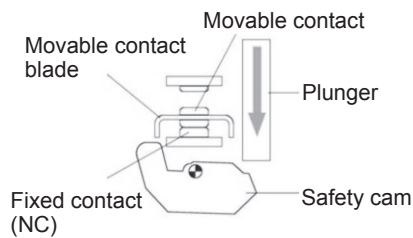
Conforms to EN60947-5-1 Positive Opening

If metal deposition between mating contacts occurs on the NC contact side, they can be pulled apart by the shearing force and tensile force generated when the safety cam or plunger engages the movable contact blade. When the safety cam or plunger is moved in the direction of the black arrow the Limit Switch releases.

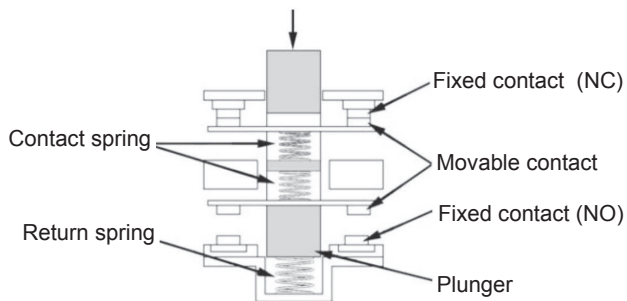
1. When metal deposition occurs.

2. When contacts are being pulled apart.

3. When contacts are completely pulled apart.

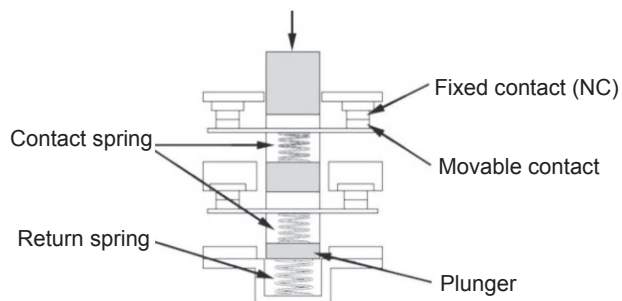


1NC/1NO Contact (Slow action)



Only the NC contacts have a positive opening function. When metal deposition occurs, the contacts are separated from each other by pushing in the plunger.

2NC Contact (Slow action)



Both NC contacts incorporate a positive opening function. When metal deposition occurs, the contacts are separated from each other by pushing in the plunger.

ED SERIES SAFETY LIMIT SWITCH

Operating Characteristics

Unit: mm

Item

Operating Characteristics

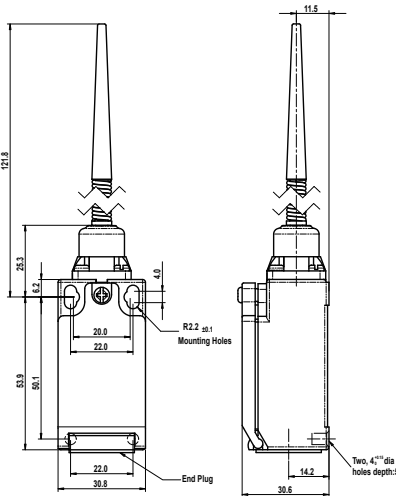
Dimensions

ED-24

Thermoplastic End Flexible Rod



| Type | Contact Block | Operating travel (PT) | PT2nd | Operating Force (OF) |
|-----------|---------------|-----------------------|-------|----------------------|
| ED-x-2-24 | Slow 2NC | 12° | - | 6.5 N |
| ED-x-3-24 | Snap 1NC/1NO | 12° | - | 5.3 N |
| ED-x-5-24 | Slow 3NC | 12° | - | 6.5 N |

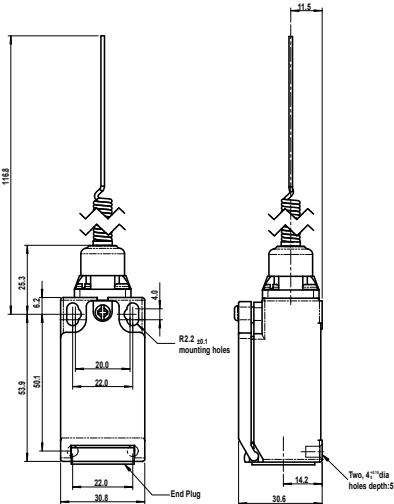


ED-241

Cat Whisker Type



| Type | Contact Block | Operating travel (PT) | PT2nd | Operating Force (OF) |
|------------|---------------|-----------------------|-------|----------------------|
| ED-x-2-241 | Slow 2NC | 12° | - | 6.5 N |
| ED-x-3-241 | Snap 1NC/1NO | 12° | - | 5.3 N |
| ED-x-5-241 | Slow 3NC | 12° | - | 6.5 N |

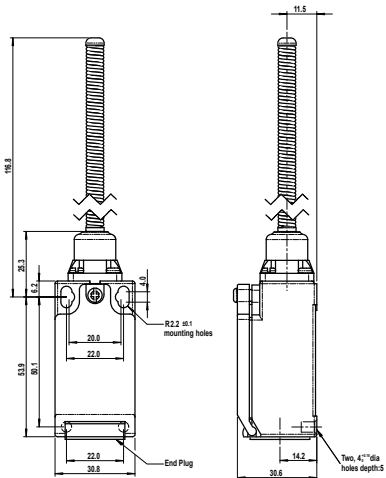


ED-242

Wobble Stick Type



| Type | Contact Block | Operating travel (PT) | PT2nd | Operating Force (OF) |
|------------|---------------|-----------------------|-------|----------------------|
| ED-x-2-242 | Slow 2NC | 12° | - | 5.2 N |
| ED-x-3-242 | Snap 1NC/1NO | 12° | - | 4.5 N |
| ED-x-5-242 | Slow 3NC | 12° | - | 5.2 N |



ED SERIES SAFETY LIMIT SWITCH

Operating Characteristics

Unit: mm

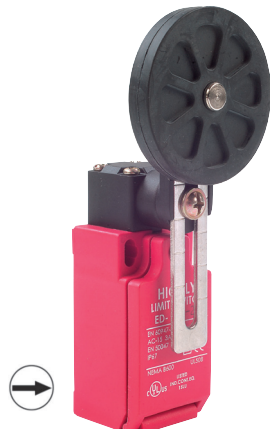
Item

Operating Characteristics

Dimensions

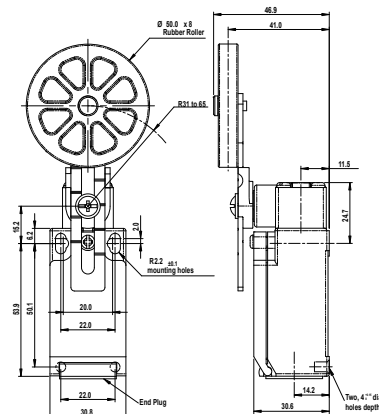
ED-27

Adjustable Roller Arm Type (Rubber roller)



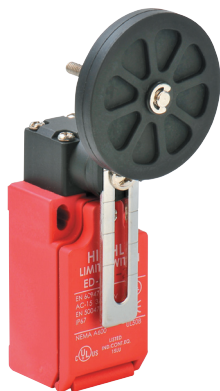
(Only for slow action models.)

| Type | Contact Block | Operating travel (PT) | PT2nd | Operating Force (OF) | Positive Opening | | Total Travel |
|-----------|---------------|-----------------------|-------|----------------------|------------------|-------------|--------------|
| | | | | | Travel (min) | Force (min) | |
| ED-x-1-27 | Slow 1NC/1NO | 30° | 41° | 5.2 N | 45° | 19.0 N | 80° |
| ED-x-2-27 | Slow 2NC | 30° | - | 5.2 N | | | |
| ED-x-3-27 | Snap 1NC/1NO | 28° | - | 4.5 N | | | |
| ED-x-4-27 | Slow 2NC/1NO | 30° | 41° | 5.2 N | | | |
| ED-x-5-27 | Slow 3NC | 30° | - | 5.2 N | | | |



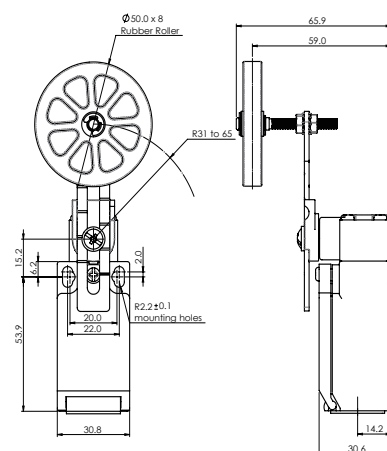
ED-271

Two-Way Adjustable Roller Arm Type (Rubber roller)



(Only for slow action models.)

| Type | Contact Block | Operating travel (PT) | PT2nd | Operating Force (OF) | Positive Opening | | Total Travel |
|------------|---------------|-----------------------|-------|----------------------|------------------|-------------|--------------|
| | | | | | Travel (min) | Force (min) | |
| ED-x-1-271 | Slow 1NC/1NO | 30° | 41° | 5.2 N | 45° | 19.0 N | 80° |
| ED-x-2-271 | Slow 2NC | 30° | - | 5.2 N | | | |
| ED-x-3-271 | Snap 1NC/1NO | 28° | - | 4.5 N | | | |
| ED-x-4-271 | Slow 2NC/1NO | 30° | 41° | 5.2 N | | | |
| ED-x-5-271 | Slow 3NC | 30° | - | 5.2 N | | | |



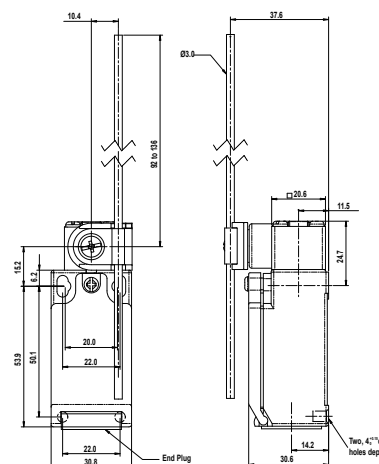
ED-25

Rod Lever Type



(Only for slow action models.)

| Type | Contact Block | Operating travel (PT) | PT2nd | Operating Force (OF) | Positive Opening | | Total Travel |
|-----------|---------------|-----------------------|-------|----------------------|------------------|-------------|--------------|
| | | | | | Travel (min) | Force (min) | |
| ED-x-1-25 | Slow 1NC/1NO | 30° | 41° | 1.8 N | 45° | 19.0 N | 80° |
| ED-x-2-25 | Slow 2NC | 30° | - | 1.8 N | | | |
| ED-x-3-25 | Snap 1NC/1NO | 28° | - | 1.9 N | | | |
| ED-x-4-25 | Slow 2NC/1NO | 30° | 41° | 1.8 N | | | |
| ED-x-5-25 | Slow 3NC | 30° | - | 1.8 N | | | |



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ED SERIES SAFETY LIMIT SWITCH

Operating Characteristics

Unit: mm

Item

Operating Characteristics

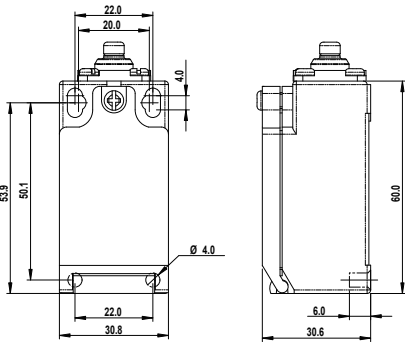
Dimensions

ED-31

Push Plunger Type



| Type | Contact Block | Operating travel (PT) | PT2nd | Operating Force (OF) | Positive Opening | | Total Travel |
|-----------|---------------|-----------------------|-------|----------------------|------------------|-------------|--------------|
| | | | | | Travel (min) | Force (min) | |
| ED-x-1-31 | Slow 1NC/1NO | 2.2 mm | 3.0 | 7.26 N | 3.2 mm | 19.0 N | 6.0 mm |
| ED-x-2-31 | Slow 2NC | 2.2 mm | - | 7.42 N | | | |
| ED-x-3-31 | Snap 1NC/1NO | 1.9 mm | - | 6.71 N | | | |
| ED-x-4-31 | Slow 2NC/1NO | 2.2 mm | 3.0 | 7.26 N | | | |
| ED-x-5-31 | Slow 3NC | 2.2 mm | - | 7.42 N | | | |

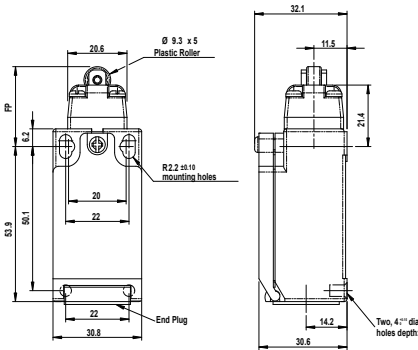


ED-32

Roller Plunger Type



| Type | Contact Block | Operating travel (PT) | PT2nd | Operating Force (OF) | Positive Opening | | Total Travel |
|-----------|---------------|-----------------------|-------|----------------------|------------------|-------------|--------------|
| | | | | | Travel (min) | Force (min) | |
| ED-x-1-32 | Slow 1NC/1NO | 2.2 mm | 3.0 | 7.26 N | 3.2 mm | 19.0 N | 6.0 mm |
| ED-x-2-32 | Slow 2NC | 2.2 mm | - | 7.42 N | | | |
| ED-x-3-32 | Snap 1NC/1NO | 1.9 mm | - | 6.71 N | | | |
| ED-x-4-32 | Slow 2NC/1NO | 2.2 mm | 3.0 | 7.26 N | | | |
| ED-x-5-32 | Slow 3NC | 2.2 mm | - | 7.42 N | | | |

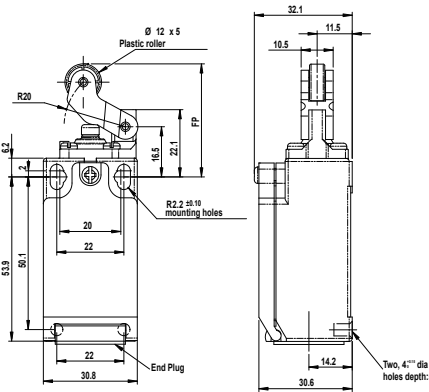


ED-62

Roller Lever Type



| Type | Contact Block | Operating travel (PT) | PT2nd | Operating Force (OF) | Positive Opening | | Total Travel |
|-----------|---------------|-----------------------|--------|----------------------|------------------|-------------|--------------|
| | | | | | Travel (min) | Force (min) | |
| ED-x-1-62 | Slow 1NC/1NO | 3.0 mm | 4.5 mm | 5.21 N | 5.7mm | 19.0 N | 5.2 mm |
| ED-x-2-62 | Slow 2NC | 3.0 mm | - | 5.26 N | | | |
| ED-x-3-62 | Snap 1NC/1NO | 2.9 mm | - | 4.74 N | | | |
| ED-x-4-62 | Slow 2NC/1NO | 3.0 mm | 4.5 mm | 5.21 N | | | |
| ED-x-5-62 | Slow 3NC | 3.0 mm | - | 5.26 N | | | |



Operating Characteristics

Unit: mm

Item

Operating Characteristics

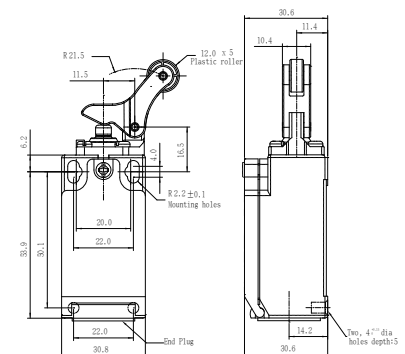
Dimensions

ED-63

One-Way Roller Arm Lever Type

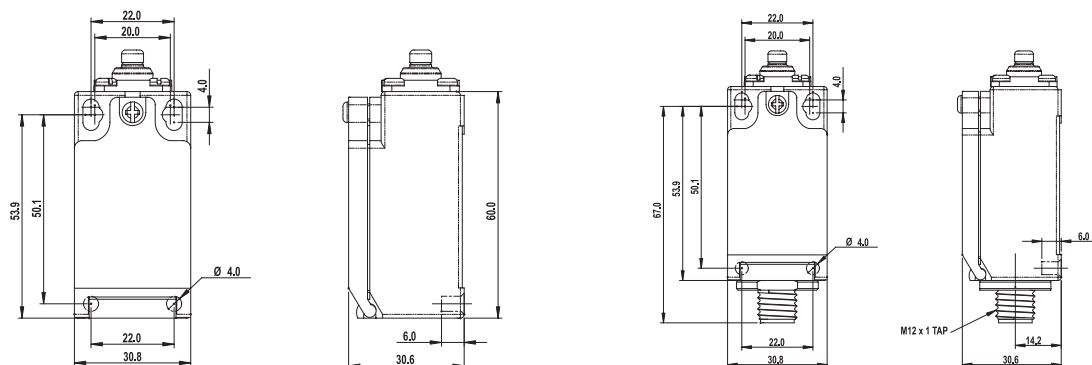


| Type | Contact Block | Operating travel (PT) | PT2nd | Operating Force (OF) | Positive Opening | | Total Travel |
|-----------|---------------|-----------------------|--------|----------------------|------------------|-------------|--------------|
| | | | | | Travel (min) | Force (min) | |
| ED-x-1-63 | Slow 1NC/1NO | 4.0 mm | 6.0 mm | 6.37 N | 4.6 mm | 19.0 N | 9.8 mm |
| ED-x-2-63 | Slow 2NC | 4.0 mm | - | 6.98 N | | | |
| ED-x-3-63 | Snap 1NC/1NO | 3.6 mm | - | 5.76 N | | | |
| ED-x-4-63 | Slow 2NC/1NO | 4.0 mm | 6.0 mm | 6.37 N | | | |
| ED-x-5-63 | Slow 3NC | 4.0 mm | - | 6.98 N | | | |

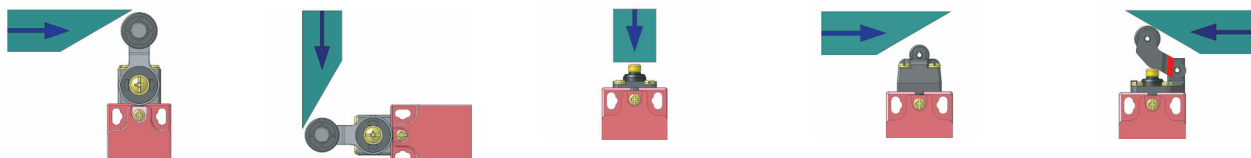


Dimensions

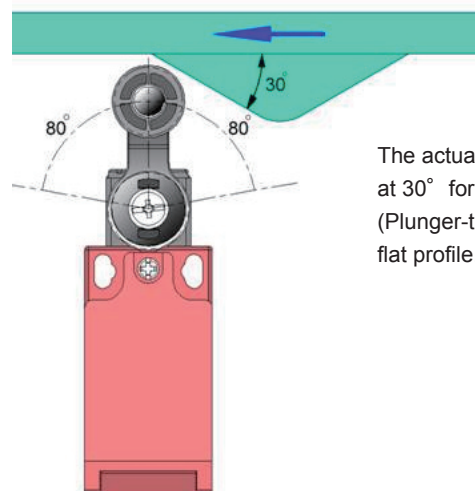
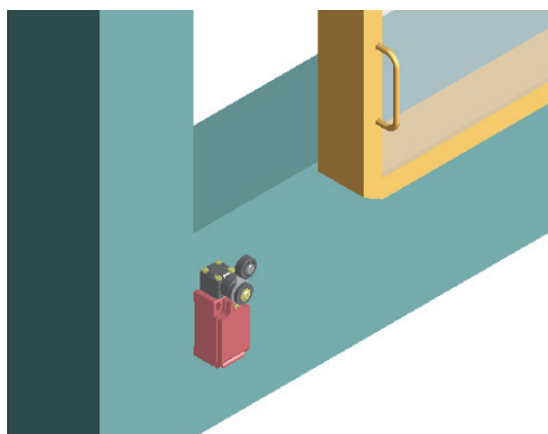
Unit: mm



Operating examples



Typical Applications



The actuating cam should be profiled at 30° for optimum operation.
(Plunger-type switches operate from a flat profile.)

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