

Industrial Electromechanical Limit Switches

Honeywell offers an advanced line of heavy duty limit switches and a wide selection of application-proven enclosed switches (precision snap-acting switches sealed in rugged metal housing). Sealed versions keep out moisture and other contaminants. Our products meet or exceed critical standards allowing for global use. Our rugged switches are suitable for use in harsh-duty, wash-down environments. We offer a variety of circuitry, terminations and actuators to ensure that can match your choice of switch to your application.

Limit and enclosed switches are the cost effective switches of choice for detecting objects which can be touched. When an object comes in contact with an actuator, the switch operates. Rugged and dependable, these switches are offered in a variety of sizes, with different seals, enclosures, actuation, circuitries and electrical ratings. Enclosed switches are known for high precision and low cost. Limit Switches are especially rugged and well sealed. Explosion proof switches are designed for use in hazardous locations.

The Honeywell switches featured here are all proven in a broad range of Industrial applications - machine tools, packaging machinery, lifting gear, presses and construction machinery.

More information about our complete product range - and the depth of product available within each product line - can be found on our interactive catalogue at www.honeywell.com/sensing.


MICRO SWITCH Brand products

Honeywell has been at the forefront of switching technology since we were the first to develop the precision snap-action switch more than 60 years ago. Ever since we introduced the Micro Switch Brand Products in 1937, we have been recognized as the performance standard that all other switches are measured against. We continue in that tradition by constantly improving the technology, cost-effectiveness, and delivery of these hardworking, versatile electromechanical switches.



! WARNING

IF USED IN APPLICATIONS CONCERNING HUMAN SAFETY

- Only use NC direct opening (“positive opening”/ “positive break”) contacts, identified by the symbol .
- Do NOT use flexible / adjustable actuators. Only use actuators designed for safety applications.
- Do NOT defeat, tamper, remove, or bypass this switch.
- Hazardous voltage, disconnect power before servicing.
- Strictly adhere to all installation and maintenance instructions.
- Consult with local safety agencies and their requirements when designing a machine-control link, interface and all control elements that affect safety.

Failure to comply with these instructions could result in death or serious injury.

Honeywell

www.honeywell.com/sensing

Selection Guide for Limit Switches

GLOBAL

EVN2000



SZL-VL



GLC

GLD

GLA

GLE

PRECISION



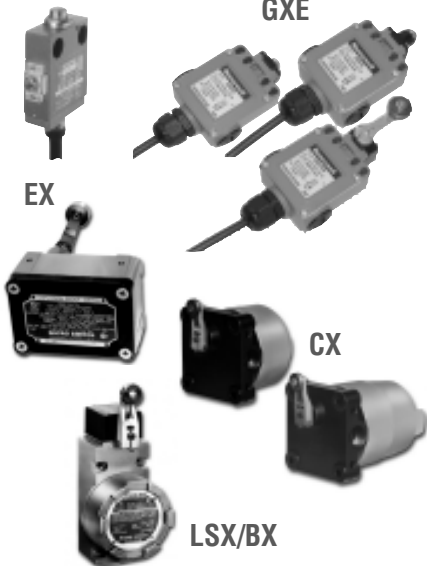
BF

**BAF/
DTF**

**BZE/
DTE
E7**

EXPLOSION PROOF

14CE100



EX

GXE

CX

LSX/BX

| Series | Housing Material | | Approvals | | | | Sealing | | Dimensions | | | Electrical Rating | |
|-----------------|----------------------------|-------------------------|---------------------------------|------|----|----------------------------------|--|--|--|---|--|----------------------------|------------|
| | Plastic | Metal | CE | C-UL | UL | CSA | IEC IP | NEMA (USA) | HeightxWidthxDepth mm (in) | AC | DC | | |
| Global | EVN2000 | | • | | • | • | • | 66, 67 | 1, 12, 13 | | | AC15, A300 | DC13, Q300 |
| | | SZL-VL | Die cast base/ Plastic cover | | • | • | • | 64 | | 96.0 x 28.0 x 39.0 (3.8 x 1.10 x 1.51) | 5 A Resistive - 125, 250 Vac | 0.4 A Resistive 125 Vdc | |
| | GL | EN50041 (GLA) | | • | • | • | • | 67 | 1, 4, 12, 13 | 102.9 x 42.0 x 42.0 (4.05 x 1.65 x 1.65) | AC15 A600 (A300 DPDT) | DC13 | |
| | | EN50047 (GLC/D/E) | • | • | • | • | • | 66 | GLC/E 1, 4, 12, 13 GLD 1, 2, 12 | 77.0 x 30.0 x 30.5 (3.03 x 1.18 x 1.20) | AC15 A600 Plastic, A300 Metal Housing | DC13 | |
| Compact | SL1 | Thermoplastic/ Metal | • | • | • | • | 67 | 3, 4, 13 | 28.4 x 44.2 x 18.0 (1.12 x 1.74 x 0.71) | 5 A - 125, 250 Vac | | | |
| | | 14CE | • | • | • | • | 66, 67, 68 | 1, 2, 3, 3R, 4, 6, 6P, 12 (boot seal), 13 | 44.0 x 40.0 x 16.0 (1.73 x 1.57 x 0.63) | 5 A - 125, 250 Vac | | | |
| | 914CE | • | • | • | • | | | | | | | | |
| | 24CE | • | • | • | • | 66 (standard), 67 (boot seal) | | | 49.0 x 40.0 x 16.0 (1.93 x 1.57 x 0.63) | 10 A - 250 Vac | | | |
| | 924CE | • | • | • | • | | | | | | | | |
| LS | • | • | • | • | • | 67 (20 mm conduit) | 1, 3, 4, 6, 13 (½ in conduit) | 94.0 x 40.6 x 58.42 (3.7 x 1.6 x 2.3) | 10 A - 120, 240, 480 Vac | | | | |
| Precision | BF | • | • | • | • | 67 | 1, 3, 4, 13 | 44.5 x 73.5 x 30.2 (1.75 x 2.9 x 1.19) | 11 A - 125 Vac, 5 A - 125 Vac | | | | |
| | BZE/DTE | • | • | • | • | | 1 (E6) 1, 3 (V6) | 44.4 x 77.2 x 25.4 (1.75 x 3.04 x 1.0) | 1 A - 125 Vac, 15 A - 125 Vac | | | | |
| | E7 | • | • | • | • | 50 (standard), 65 (boot seal) | | 45.2 x 76.4 x 25.4 (1.67 x 3.0 x 1.0) | 1 A - 125 Vac, 15 A - 125 Vac | | | | |
| | BAF/DTF | • | • | • | • | | 1, 3, 4, 13; 1 (-2RQ9) | 54.8 x 101.6 x 33.0 (2.16 x 4.0 x 1.3) | 10 A - 125 Vac, 20 A - 125 Vac | | | | |
| Heavy Duty | HDLS | • | • | • | • | | 1, 3, 4, 4X, 6, 6P, 12, 13 | SDPT: 106.7 x 41.1 x 62.0 (4.2 x 1.6 x 2.4) DPDT: 119.1 x 47.8 x 62.0 (4.7 x 1.9 x 2.4) | 10 A Thermal: SPDT (NEMA A600), DPDT (NEMA B600) | | | | |
| | HDLS Fully potted | • | • | • | • | | 1, 4, 6, 6P, 12, 13 (connector) 1, 4, 6, 6P, 12 (cable) | | | | | | |
| | HDLS Stainless steel | Stainless Steel | • | • | • | • | 1, 3, 3R, 4, 4X, 6, 6P, 12, 13 | 123.0 x 47.7 x 61.9 (4.9 x 1.9 x 2.4) | | | | | |
| Explosion Proof | 14CE100 | • | • | • | • | 65 (standard), 67 (boot seal) | 1, 3 (standard), 1, 3, 4, 12, 13 (boot seal) | 49.0 x 40.0 x 16.0 (1.93 x 1.57 x 0.63) | AC14 D300, DC13 R300 | | | | |
| | GXE | • | • | • | • | 66/67 | | 60.0 x 52.0 x 25.0 (2.36 x 2.05 x 1.0) | AC15, DC13 | | | | |
| | EX | • | • | • | • | | 1, 7, 9 | 65.0 x 93.0 x 52.0 (2.56 x 3.66 x 2.0) | Up to 20 A @ 125, 250 or 480 Vac | | | | |
| | CX | • | • | • | • | | 1, 3, 4, 4X, 6, 6P, 7, 9, 13 | 102.0 x 102.0 x 145.0 (4.0 x 4.0 x 5.71) | Up to 20 A @ 125, 250 or 480 Vac | | | | |
| | LSX | • | • | • | • | | 1, 3, 4, 6, 7, 9, 13 | | | | | | |
| | BX | • | • | • | • | 67 | 1, 3, 4, 6, 7, 9, 13 | 121.0 x 76.0 x 73.0 (4.8 x 3.0 x 3.0) | SPDT (NEMA A600), DPDT (NEMA B600) | | | | |

| | Operating Temperature | | Switching Options* | | | | | | | | | | | | Termination | Special Features | Page Number | | |
|--|---------------------------------|--|--------------------|---------|---------|---------|-------------|-----|---------|---------|---------|---------|---------|-----|-------------|------------------|--------------------------------|---|----|
| | From | To | Snap Action | | | | Slow Action | | | | | | | | | | | Gold Contacts (Low Energy Options) | |
| | °C (°F) | | 1NC/1NO | 2NC/2NO | 1NC/1NO | 2NC/2NO | 1NC | 2NC | 1NC/1NO | 1NC/1NO | 2NC/1NO | 2NC/2NO | 3NC/1NO | 4NC | | | | | |
| | -25 (-13) | 85 (185) | | | • | | | | | | | | | | | | Cable gland/cord grip | Insulation Displacement Termination | 10 |
| | -20 (-4) | 60 (140) | • | | | | | | | | | | | | | | Flexible cable gland/cord grip | Gold plated silver contacts standard | 11 |
| | -25 (-13) | 85 (185) | | | • | • | | • | • | • | • | • | | | | | Conduit | Wide variety of actuator styles and circuitry options | 14 |
| | -25 (-13) | 85 (185) | | | • | • | | • | • | • | • | | | | | | | | 16 |
| | -10 (-14) | 70 (160) | • | | | | | | | | | | | | | | Cord grip | Miniature size | 20 |
| | 0 (32); low temp option to -30° | 70 (221) | • | | | | | | | | | | | | | | Cable, Quick Connect | Low and high temperature options available. Superior Sealing (IP 68) | 22 |
| | 0 (32) | 105 (221) | • | | | | | | | | | | | | | | | | 25 |
| | 0 (32) | 70 (221) | | | | | • | | • | • | | | | | | | Cable, Quick Connect | Low and high temperature options available. Direct acting contacts | 25 |
| | -29 (-20) | 71 (160) | • | | | | | | | | | | | | | | Conduit | | 29 |
| | -32 (-25) | 71 (160) | • | | | | | | | | | | | | | | Conduit | Cost effective solution | 34 |
| | -32 (-25) | 71 (160) | • | • | | | | | | | | | | | | | Conduit | Precise operation. Low temperature versions available | 36 |
| | -30 (-22) | 70 (158) | • | • | | | | | | | | | | | | | Conduit | Precise operation | 41 |
| | -32 (-25) | 71 (160) | • | • | | | | | | | | | | | | | Conduit | Rugged housed precise operation | 42 |
| | -12 (-10); -40 (-40) | 121 (250)** | • | • | | | | | | | | | | | | | Conduit | Low temperature and Fluorocarbon Seal versions available. Wide variety of actuator styles. Cable and connector available. | 46 |
| | -12 (-10) | Connector 121 (250); Cable version 105 (221) | • | • | | | | | | | | | | | | | Cable or Connector | Switch cavity is epoxy filled | 53 |
| | -12 (-10); -40 (-40) | 121 (250)** | • | • | | | | | | | | | | | | | Conduit, Cable | Corrosion resistant stainless steel housing | 55 |
| | 0 (32) | 70 (158) | • | | | | | | | | | | | | | | Prelead cable | Miniature size | 58 |
| | -20 (-4) | 75 (167) | • | | | | | | | | | | | | | | Prelead cable | | 59 |
| | -40 (-40) | 71 (160) | • | • | | | | | | | | | | | | | Conduit | High temperature option (400 °F for 100 Hr) | 60 |
| | See Catalog for details | 85 (185) | • | • | | | | | | | | | | | | | Conduit | Optional 4-20 mA analog output | 64 |
| | See Catalog for details | See Catalog for details | • | • | | | | | | | | | | | | | Conduit | Wide variety of actuators, circuitry and termination options | 66 |
| | -40 (-40) | See Catalog for details | • | • | | | | | | | | | | | | | Conduit | ATEX approvals for European use | 66 |

** Refer to catalog for additional data

* HDLS, LSX and BX Series are available with the following Switching Options
 NC/NO snap-action, Maintained; 2NC/2NO snap-action, Maintained;
 2NC/2NO snap-action, Center Neutral; 2NC/2NO snap-action, Sequential
 CX, LSX, BX also available with 1NC Direct Acting

COMPACT



14/914CE



24/924CE

LS



HEAVY DUTY



HDLS



Stainless Steel HDLS

Proper application of limit switches

The following are guidelines for the correct application of Limit Switches. Never use the Limit Switch as a physical end stop. Mechanical damage or incorrect operation may occur if this is done. Always ensure that the mechanical actuator is protected from excessive mechanical shock. Never release the actuator suddenly - gradual actuation and release will ensure that stress on the mechanics of the switch is kept to a minimum. This has the added benefit that the switch life will be improved. The diagrams illustrate how to actuate your limit switch for optimum performance.

Standards and Electrical rating

IEC/EN 60947-1 explains the general rules relating to **Low Voltage switchgear and controlgear**. The purpose of this standard is to harmonize as much as possible the product performance and test requirements for equipment where the rated voltage does not exceed 1,000 Vac or 1,500 Vdc.

IEC 60947-5-1 is part 5 of the general rules which relates to **Control-circuit devices and switching elements**, where rated voltage does not exceed 1,000 Vac or 600 Vdc. There are special requirements for control switches with positive opening operation. These switches are marked on the outside with this symbol:



The Contact Element form defines the configuration and number of contacts within the switch.

Form Za – both contact elements have the same polarity

Form Zb – the two contact elements are electrically separated.

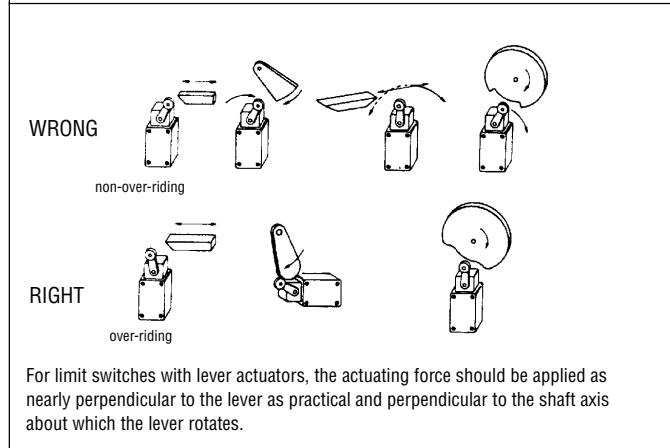
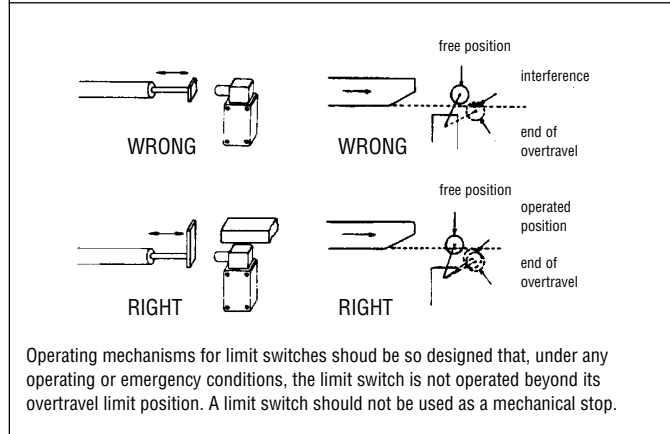
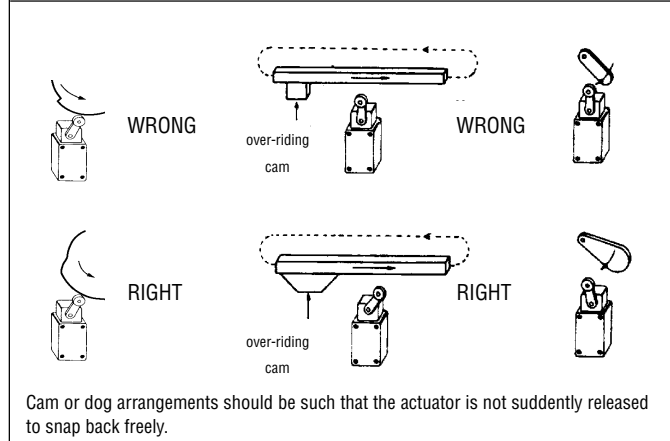
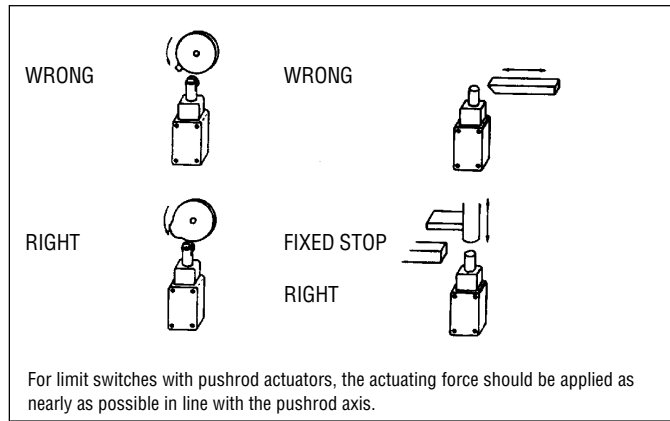
The **Utilization Category** defines the type of current carried – ac or dc – and the typical application where the switch is used.

The contact rating **Designation** relates to the Utilization Categories and defines the conventional thermal current I_{th} (a) rated operational current I_e (A) at rated operational voltages U_e and the VA rating.

Actuators

A range of actuators is available for limit switches. Illustrations of actuator types available from this catalogue are shown at the beginning of each product family. Other actuators may be available - for more information please contact your local Honeywell office.

| | | | | | |
|------------------------|-----------------------------------|---------------------------------------|--|--------------------------------|-----------------|
| Roller lever | Top roller lever | Adjustable roller lever | Top pin plunger | Top pin plunger, boot seal | |
| Top roller plunger | Top roller plunger, boot seal | Top roller plunger, perpendicular | Top roller plunger, perpendicular, boot seal | Ball bearing plunger | |
| Side pin plunger | Side roller plunger | Roller lever | Yoke lever | Rod lever | Wobble head |



A Note on Degrees of Protection

IP Classification

The IEC 529 standard describes a system for classifying the degree of protection provided by the enclosures of electrical equipment. The level of protection given by the enclosure is indicated by the IP code. This code system uses the letters "IP" (International Protection) followed by up to four digits. Normally only the first two digits are used.

IP 1st Digit 2nd Digit 3rd Digit 4th Digit

The first digit is numerical and indicates the level of protection within the enclosure against the ingress of solid foreign objects and access to hazardous parts by persons.

The second digit is also numerical and indicates the level of protection against the ingress of **WATER** into the enclosure.

The third digit is a letter and indicates a higher level of protection for persons against access to hazardous parts.

The fourth digit is also a letter and is used in exceptional cases for supplementary information.

If the first or second digit is not required to be specified, then it is replaced by the letter "X" ("XX" if both digits are not required). While the tables below serve as a guide to the level of protection, Honeywell recommends that customers refer to the full official IEC specification for the exact definitions. If in doubt about the degree of protection required for a particular application, please consult your local Honeywell office.

Note:

The IEC 529 standard does not relate to protection against rust, corrosion, icing or corrosive solvents (e.g. cutting fluids) and that product coded IP 67 may not necessarily meet IP 66 requirements.

First Digit Protection against ingress of solid objects

IP TEST

- 0 no protection
- 1 protected against solid objects with a diameter greater than 50 mm
- 2 protected against solid objects with a diameter greater than 12 mm
- 3 protected against solid objects with a diameter greater than 2.5 mm
- 4 protected against solid objects with a diameter greater than 1 mm
- 5 protected against dust-limited ingress (no harmful deposit)
- 6 totally protected against dust

Second Digit Protection against ingress of water

IP TEST

- 0 no protection
- 1 protected against vertically falling drops of water
- 2 protected against vertically falling drops of water when the enclosure is tilted at an angle up to 15 degrees
- 3 protected against water sprayed at an angle of 60 degrees from the vertical
- 4 protected against splashing water from all directions – limited ingress (no harmful effects)
- 5 protected against low pressure jets of water from all directions – limited ingress permitted
- 6 protected against powerful jets of water from all directions – limited ingress permitted
- 7 protected against the effects of temporary immersion in water
- 8 protected against the effects of continuous immersion in water

NEMA Classification (USA)

NEMA (National Electrical Manufacturer's Association) prepares standards which define a product, process or procedure with reference to one or more of the following: nomenclature, composition, construction, dimensions, tolerances, safety, operating characteristics, performance, quality, electrical rating, testing and the service for which designed. This standard provides degrees of protection for Enclosures for Electrical Equipment (1000 Volts Maximum) similar to that of the IEC 529 standard. The reference standard herein reflects the latest data in the NEMA Standards Publication when this information went to print. Please check for the latest information.

Non-hazardous locations

Type 1 enclosures are intended for indoor use primarily to provide a degree of protection against contact with the enclosed equipment.

Type 3 enclosures are intended for outdoor use primarily to provide a degree of protection against windblown dust, rain, sleet, and external ice formation.

Type 4 enclosures are intended for indoor or outdoor use primarily to provide a degree of protection against windblown dust and rain, splashing water, and hose-directed water.

Type 4X enclosures are intended for indoor or outdoor use primarily to provide a degree of protection against corrosion, windblown dust and rain, splashing water, and hose-directed water.

Type 6 enclosures are intended for indoor or outdoor use primarily to provide a degree of protection against the entry of water during occasional temporary submersion at a limited depth.

Type 6P enclosures are intended for indoor or outdoor use primarily to provide a degree of protection against the entry of water during prolonged submersion at a limited depth.

Type 12 enclosures are intended for indoor use primarily to provide a degree of protection against dust, falling dirt, and dripping noncorrosive liquids.

Type 13 enclosures are intended for indoor use primarily to provide a degree of protection against dust, spraying water, oil and noncorrosive coolant.

Note:

Enclosures are based, in general, on the broad definitions outlined in NEMA Standards. Therefore, it will be necessary to ascertain that a particular enclosure will be adequate when exposed to the specific conditions that might exist in intended applications.

Except as might otherwise be noted, all references to products relative to NEMA enclosure type are based on Honeywell evaluation and Underwriter's Laboratory (UL) tested. This NEMA Standards Publication does test for environmental conditions such as corrosion, rust, icing, oil, and coolants. The IEC 529 does not, and does not specify degree of protection against mechanical damage of equipment. For this reason, and because the tests and evaluations for other characteristics are not identical, the IEC Enclosure Classification Designations cannot be exactly equated with NEMA Enclosure Type Numbers.

EVN2000 Series EN 50047 Global Limit Switches



Actuators



The EVN2000 series limit switch is an innovative product which has been developed to address a need highlighted by Original Equipment Manufacturers (OEM), where "Ease of Wiring" is required. With the new design there is no need for access to the inside of the housing and therefore the housing cover, cover screws and gasket become obsolete. Furthermore, the integrated cable gland eliminates the need for additional conduit or cable gland hardware. All Normally Closed (NC) contacts are Direct Opening.

Mechanical life:

Sealing:

Operating temperature:

Approvals:

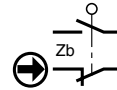
10 million
IP 66/67, NEMA 1, 12, 13
-25 °C to 85 °C (-13 °F to 185 °F)
IEC/EN 60947-5-1
EN 60529
EN81-1
AC15 A300
DC13 Q300
UL, CE
Plastic
Insulation Displacement Terminals (IDT)
Single Pole, Double Throw,
Snap action contacts (1NC/1NO)

Housing material:

Termination:

Switching options:

SPDT

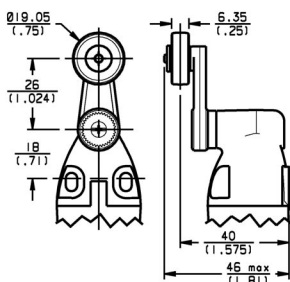


Operating characteristics

| Actuator type | Operating torque/force (OF) | Free position (FP) | Pretravel (PT) | Travel to positive opening (PO) | Overtravel (OT) | Differential travel (DT) | Operating point (OP) |
|---|-----------------------------|----------------------|---------------------|---------------------------------|---------------------|--------------------------|----------------------|
| Side rotary A | 0,120 N m (1.10 lb in) | 0° | 25° | 45° | 45° | 12° | 25° |
| Top pin plunger B | 16,0 N (3.60 lb) | 20,0 mm (0.79 in) | 2,0 mm (0.08 in) | 3,5 mm (0.14 in) | 4,0 mm (0.16 in) | 1,0 mm (0.04 in) | 18,0 mm (0.71 in) |
| Top roller plunger, parallel C | 16,0 N (3.60 lb) | 30,0 mm (1.18 in) | 2,0 mm (0.08 in) | 3,5 mm (0.14 in) | 4,0 mm (0.16 in) | 1,0 mm (0.04 in) | 28,0 mm (1.10 in) |
| Top roller plunger, perpendicular D | 16,0 N (3.60 lb) | 30,0 mm (1.18 in) | 2,0 mm (0.08 in) | 3,5 mm (0.14 in) | 4,0 mm (0.16 in) | 1,0 mm (0.04 in) | 28,0 mm (1.10 in) |

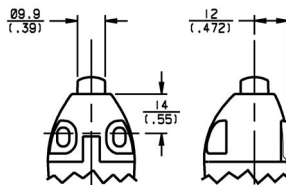
OPTIONS

Side rotary plastic roller



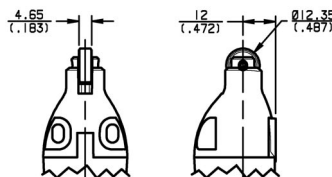
REFERENCE
EVN2000A

Top pin plunger



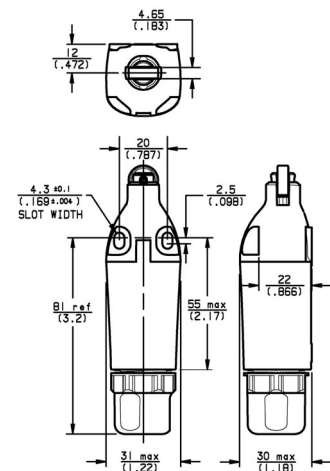
REFERENCE
EVN2000B

Top roller plunger, perpendicular



REFERENCE
EVN2000D

Top roller plunger, parallel

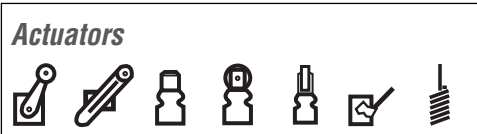


REFERENCE
EVN2000C

Honeywell

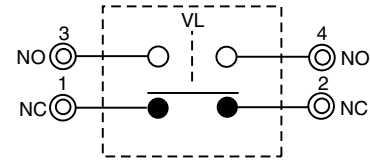
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VL Series General Purpose Compact Limit Switches



The new economical SZL-VL Series miniature type limit switches are specially designed for applications of small mounting space. These miniature switches are ideal for OEM machinery which requires a rugged and reliable limit switch that is capable of being mounted in space restricted applications. A wide range of actuators and optional neon lamp indicators add additional flexibility. A special pre-molded flexible cable gland allows for fast and simple wiring termination.

| | |
|-------------------------------|---|
| Mechanical life: | up to 10 million operations |
| Sealing: | IP 64 |
| Operating temperature: | -20 °C to 60 °C (-4 °F to 140 °F) |
| Approvals: | UL, C-UL, CE |
| Termination: | Cable gland |
| Contacts: | Gold plated silver |
| Electrical ratings: | 250 Vac 125 Vdc max. |
| Ampere rating: | 5 A @ 250 Vac max./0.4 A @ 125 Vdc max. |
| Switching options: | Single Pole, Double Throw, Double break (1NC/1NO) |

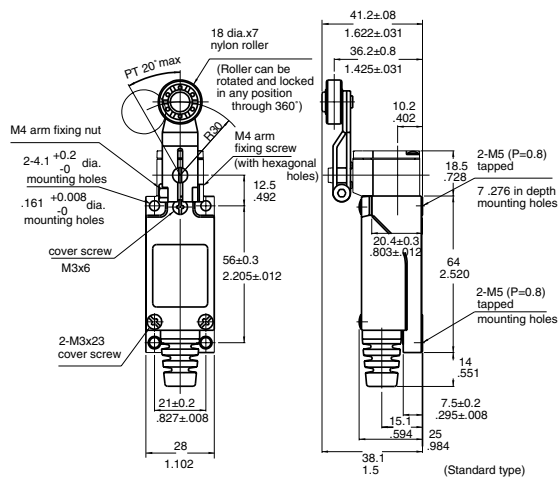


Side rotary actuated switches

| | |
|---------------------------------------|-----|
| Pretravel max. (PT): | 20° |
| Overtravel min. (OT): | 75° |
| Differential travel max. (DT): | 10° |

OPTIONS

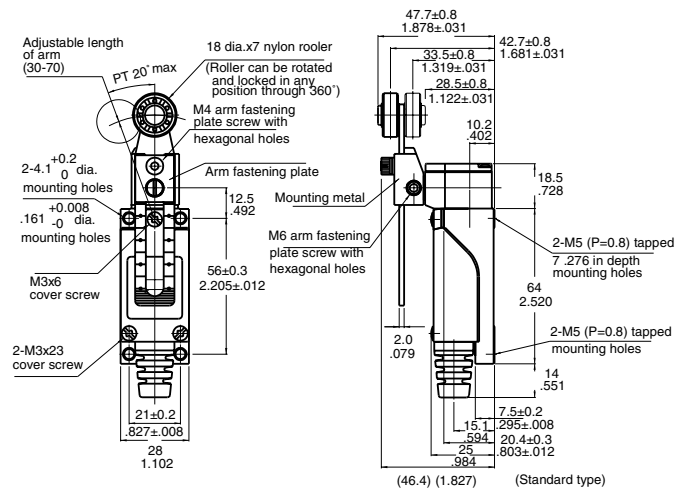
Roller lever



Operating torque max.: 5,88 N (1.32 lb)

REFERENCE
SZL-VL-A

Roller lever, adjustable

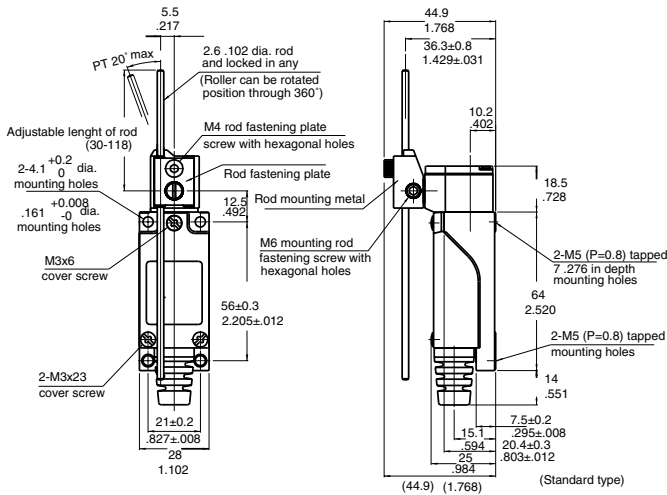


Operating torque max.: 3,35 N to 7,84 N (0.75 lb to 1.76 lb)

REFERENCE
SZL-VL-B

VL Series
Side rotary actuated switches (continued)

Adjustable rod



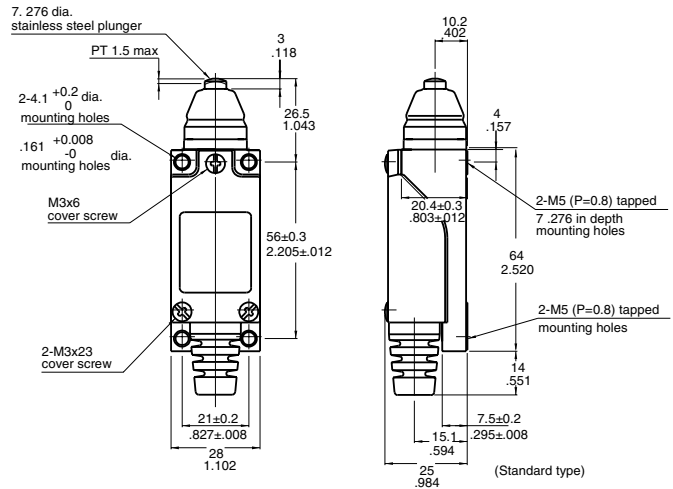
Operating torque max.: 2 N to 7,84 N
 (0.45 lb to 1.76 lb)

REFERENCE
 SZL-VL-C

Plunger actuated switches

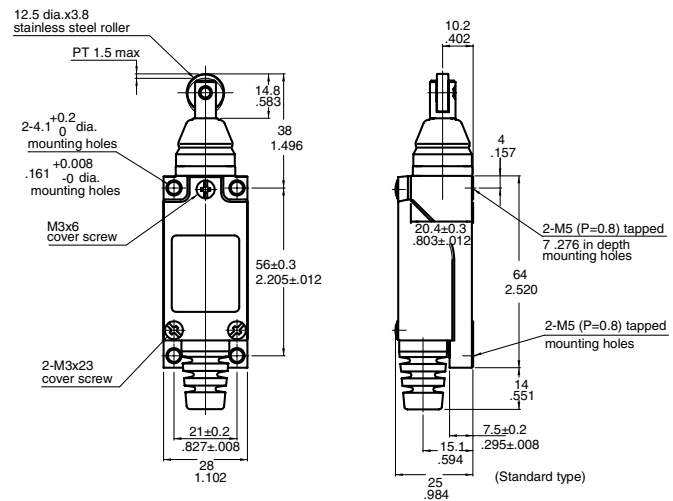
Pretravel max. (PT): 1,5 mm (0.060 in)
Overtravel min. (OT): 4,0 mm (0.158 in)
Differential travel max. (DT): 0,7 mm (0.028 in)
Operating force max. (OF): 8,83 N (2 lb)

Top pin plunger



REFERENCE
 SZL-VL-D

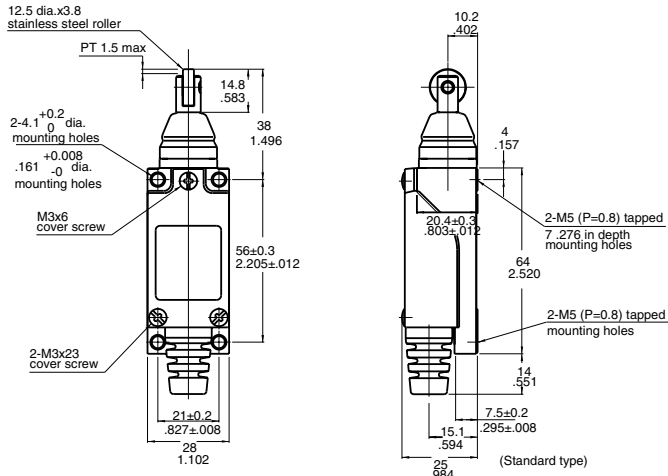
Top roller plunger



REFERENCE
 SZL-VL-H

Plunger actuated switches (continued)

Cross roller plunger



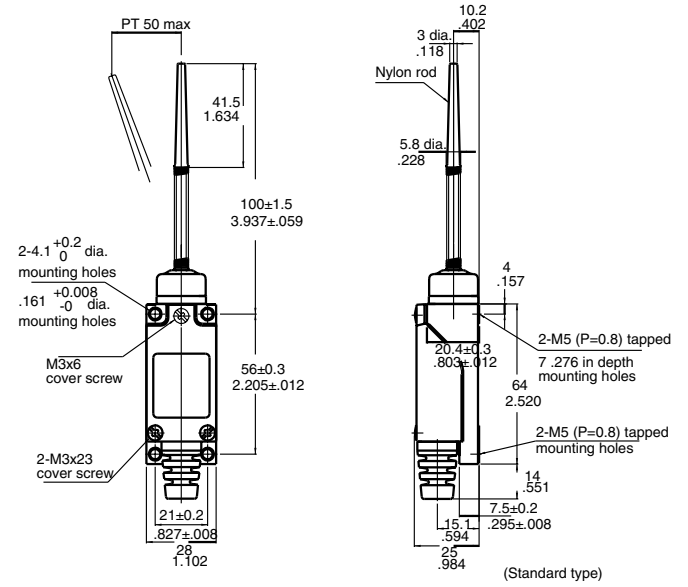
REFERENCE
SZL-VL-E

Wobble actuated switches

Pretravel max. (PT):
Overtravel min. (OT):
Operating force max. (OF):

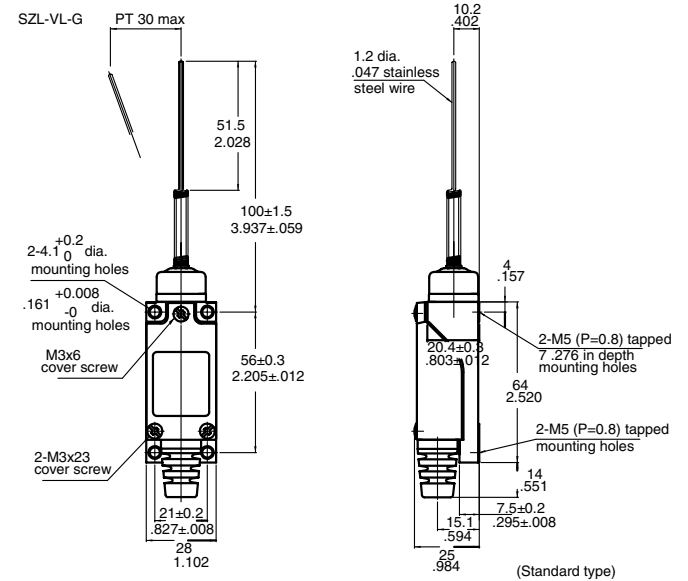
30 mm (1.18 in)
20 mm (0.788 in)
0,88 N (0.2 lb)

Plastic rod, coil spring



REFERENCE
SZL-VL-F

Coil spring



REFERENCE
SZL-VL-G

GLS Series Global Limit Switches



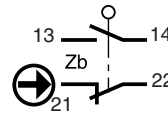
GLS Series switches offer a complete range of CENELEC approved products, and are suitable for most industrial applications.

The standard product EN 50041 norm defines the switch mounting centres as 30 mm x 60 mm and also defines the switching characteristics of the side rotary head with fixed lever, top pin plunger and top roller plunger. This means that the switch can be interchanged in the application with other EN 50041 switches with mounting and switching characteristics maintained. Honeywell offers many more head styles and switching options.

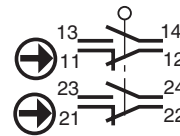
The miniature EN 50047 product range offers the user a choice of plastic, metal and three conduit versions which are all mounting (20 mm x 22 mm) compatible with each other. The EN 50047 standard defines how the switches are mounted and the switching characteristics for fixed side rotary lever, top pin plunger and top roller plunger.

Switching options:

SPDT Single Pole, Double Throw, Snap action contacts (1NC/1NO)



DPDT Double Pole, Double Throw Snap action contacts (2NC/2NO)



Electrical ratings

| IEC947-5-1/EN60947-5-1 | | | | | | | | |
|------------------------------------|--|------|------|------|------|------|-----------|-------|
| Designation & Utilization Category | Rated operational current Ie (A) at rated operational voltage Ue | | | | | | VA rating | |
| | 120V | 240V | 380V | 480V | 500V | 600V | Make | Break |
| AC15 A600 | 6 | 3 | 1.9 | 1.5 | 1.4 | 1.2 | 7200 | 720 |
| AC15 A300 | 6 | 3 | - | - | - | - | 7200 | 720 |
| AC15 B300 | 3 | 1.5 | - | - | - | - | 3600 | 360 |
| AC14 D300 | 0.6 | 0.3 | - | - | - | - | 432 | 72 |
| | 125V | 250V | | | | | | |
| DC13 Q300 | 0.55 | 0.27 | | | | | 69 | 69 |
| DC13 R300 | 0.22 | 0.1 | | | | | 28 | 28 |

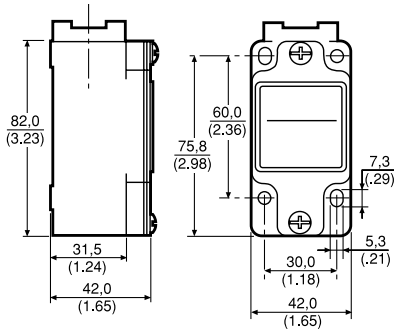
Operating characteristics

| Actuator type | Body size | Operating torque/force (OF) | | Free position (FP) | | Pretravel (PT) | | Travel to positive opening (PO) | | Overtravel (OT) | | Differential travel (DT) | | Operating point (OP) | |
|--------------------------------|-------------------------|-----------------------------|---------------------------------|--------------------|------|-------------------|------|---------------------------------|------|-------------------|------|--------------------------|-------------------|----------------------|------|
| | | SPDT | DPDT | SPDT | DPDT | SPDT | DPDT | SPDT | DPDT | SPDT | DPDT | SPDT | DPDT | SPDT | DPDT |
| Lever types A, A*A, A*B, A4J | EN50041 (GLA) | 0,330 N m (2.90 lb in) | | 0° | | 26° | | 55° | | 59° | | 12° | | 26° | |
| | EN50047 (GLC, GLD, GLE) | 0,120 N m (1.10 lb in) | 0,165 N m (1.50 lb in) GLE only | | | | | | | 49° | | 11.5° | 8° | | |
| Top pin plunger B | EN50041 (GLA) | 16,0 N (3.60 lb) | | 37,5 mm (1.48 in) | | 2,5 mm (0.10 in) | | 4,5 mm (0.18 in) | | 4,5 mm (0.18 in) | | 0,9 mm (0.035 in) | | 35,0 mm (1.38 in) | |
| | EN50047 (GLC, GLD, GLE) | 16,0 N (3.60 lb) | 13,0 N (2.90 lb) GLE only | 21,0 mm (0.83 in) | | 3,0 mm (0.12 in) | | 5,0 mm (0.20 in) | | 3,0 mm (0.12 in) | | 0,9 mm (0.035 in) | 0,6 mm (0.024 in) | 18,0 mm (0.71 in) | |
| Top roller plunger C | EN50041 (GLA) | 16,0 N 3.60 lb | | 50,5 mm (2.00 in) | | 2,5 mm (0.10 in) | | 4,5 mm (0.18 in) | | 4,5 mm (0.18 in) | | 0,9 mm (0.035 in) | | 48,0 mm (1.89 in) | |
| | EN50047 (GLC, GLD, GLE) | 16,0 N (3.60 lb) | 13,0 N (2.90 lb) GLE only | 31,0 mm (1.22 in) | | 3,0 mm (0.12 in) | | 5,0 mm (0.20 in) | | 3,0 mm (0.12 in) | | 0,9 mm (0.035 in) | 0,6 mm (0.024 in) | 28,0 mm (1.10 in) | |
| Top roller lever D | EN50041 (GLA) | 9,5 N (2.10 lb) | | 65,2 mm (2.57 in) | | 4,2 mm (0.165 in) | | 8,3 mm (0.33 in) | | 9,0 mm (0.35 in) | | 1,7 mm (0.067 in) | | 61,0 mm (2.40 in) | |
| | EN50047 (GLC, GLD, GLE) | 11,0 N (2.4 lb) | 9,0 N (1.9 lb) GLE only | 39,25 mm (1.55 in) | | 3,45 mm (0.14 in) | | 6,9 mm (0.27 in) | | 5,2 mm (0.205 in) | | 1,3 mm (0.19 in) | | 35,8 mm (1.41 in) | |
| Wobble head E7B, E7D, K8B, K8C | EN50041 (GLA) | 0,1 N (0.90 in lb) | | 0° | | 18° | | — | | — | | 8° | | — | |
| | EN50047 (GLC, GLD, GLE) | 1,3 N (0.29 lb) | 1,1 N (0.25 lb) GLE only | | | 16° | | — | | — | | 10° | 7° | — | |

Actuators

GLA EN 50041

Standard metal body

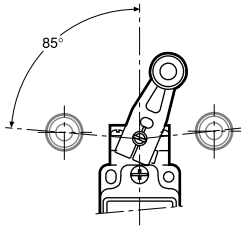


Mechanical life: up to 15 million
Sealing: IP 67, NEMA 1, 4, 12, 13
Operating temperature: -25 °C to 85 °C (-13 °F to 185 °F)
Approvals: IEC/EN 60947-5-1, AC15 A300/A600, DC13 Q300, UL, CSA, CE

Switching options:
 SPDT Single Pole, Double Throw
 DPDT Double Pole, Double Throw
 Snap action contacts (1NC/1NO)
 Snap action contacts (2NC/2NO)

HEAD OPTIONS

Side rotary



No lever

Levers: Levers for side rotary types are ordered separately (see pages 71-73 for details)

| CONTACT | CONDUIT | REFERENCE |
|---------|----------|-----------|
| SPDT | ½ in NPT | GLAA01A |
| DPDT | ½ in NPT | GLAA20A |
| SPDT | PG 13,5 | GLAB01A |

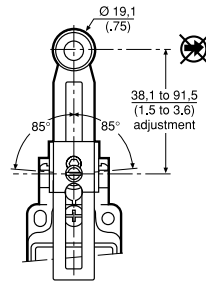
Plastic roller

| CONTACT | CONDUIT | REFERENCE |
|---------|----------|-----------|
| SPDT | ½ in NPT | GLAA01A1A |
| DPDT | ½ in NPT | GLAA20A1A |
| SPDT | PG 13,5 | GLAB01A1A |
| DPDT | PG 13,5 | GLAB20A1A |
| SPDT | 20 mm | GLAC01A1A |
| DPDT | 20 mm | GLAC20A1A |

Metal roller

| CONTACT | CONDUIT | REFERENCE |
|---------|----------|-----------|
| SPDT | ½ in NPT | GLAA01A1B |
| DPDT | ½ in NPT | GLAA20A1B |
| SPDT | PG 13,5 | GLAB01A1B |
| DPDT | PG 13,5 | GLAB20A1B |
| SPDT | 20 mm | GLAC01A1B |
| DPDT | 20 mm | GLAC20A1B |

Side rotary adjustable roller



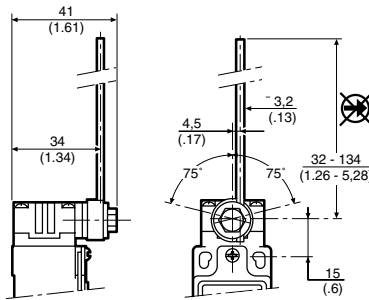
Plastic roller

| CONTACT | CONDUIT | REFERENCE |
|---------|----------|-----------|
| SPDT | ½ in NPT | GLAA01A2A |
| DPDT | ½ in NPT | GLAA20A2A |
| SPDT | PG 13,5 | GLAB01A2A |
| DPDT | PG 13,5 | GLAB20A2A |
| SPDT | 20 mm | GLAC01A2A |

Metal roller

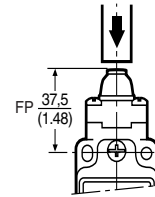
| CONTACT | CONDUIT | REFERENCE |
|---------|----------|-----------|
| SPDT | ½ in NPT | GLAA01A2B |
| DPDT | ½ in NPT | GLAA20A2B |
| SPDT | PG 13,5 | GLAB01A2B |
| DPDT | PG 13,5 | GLAB20A2B |
| SPDT | 20 mm | GLAC01A2B |
| DPDT | 20 mm | GLAC20A2B |

Side rotary adjustable metal rod



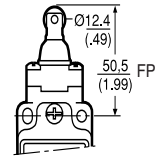
| CONTACT | CONDUIT | REFERENCE |
|---------|----------|-----------|
| SPDT | ½ in NPT | GLAA01A4J |
| DPDT | ½ in NPT | GLAA20A4J |
| SPDT | PG 13,5 | GLAB01A4J |
| DPDT | PG 13,5 | GLAB20A4J |
| SPDT | 20 mm | GLAC01A4J |

Top pin plunger



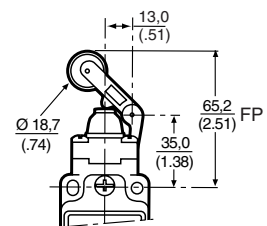
| CONTACT | CONDUIT | REFERENCE |
|---------|----------|-----------|
| SPDT | ½ in NPT | GLAA01B |
| DPDT | ½ in NPT | GLAA20B |
| SPDT | PG 13,5 | GLAB01B |
| DPDT | PG 13,5 | GLAB20B |
| SPDT | 20 mm | GLAC01B |
| DPDT | 20 mm | GLAC20B |

Top roller plunger



| CONTACT | CONDUIT | REFERENCE |
|---------|----------|-----------|
| SPDT | ½ in NPT | GLAA01C |
| DPDT | ½ in NPT | GLAA20C |
| SPDT | PG 13,5 | GLAB01C |
| DPDT | PG 13,5 | GLAB20C |
| SPDT | 20 mm | GLAC01C |
| DPDT | 20 mm | GLAC20C |

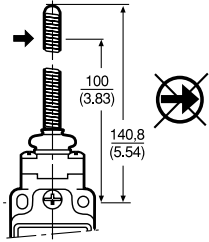
Top roller lever



| CONTACT | CONDUIT | REFERENCE |
|---------|----------|-----------|
| SPDT | ½ in NPT | GLAA01D |
| DPDT | ½ in NPT | GLAA20D |
| SPDT | PG 13,5 | GLAB01D |
| DPDT | PG 13,5 | GLAB20D |
| SPDT | 20 mm | GLAC01D |
| DPDT | 20 mm | GLAC20D |

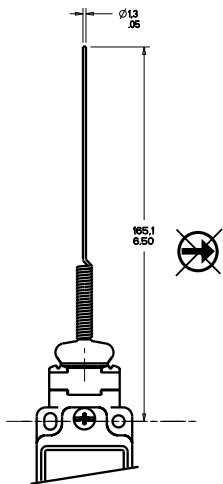
GLA EN 50041
Standard metal body
(continued)

Wobble, coil actuator



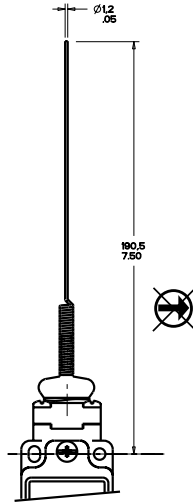
| CONTACT | CONDUIT | REFERENCE |
|---------|----------|-----------|
| SPDT | ½ in NPT | GLAA01E7B |
| SPDT | PG 13,5 | GLAB01E7B |
| DPDT | PG 13,5 | GLAB20E7B |
| SPDT | 20 mm | GLAC01E7B |
| DPDT | 20 mm | GLAC20E7B |

Coil wobble head, stainless steel spring actuator



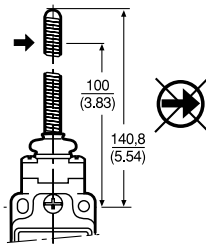
| CONTACT | CONDUIT | REFERENCE |
|---------|----------|-----------|
| SPDT | ½ in NPT | GLAA01E7D |

Wobble, cat whisker



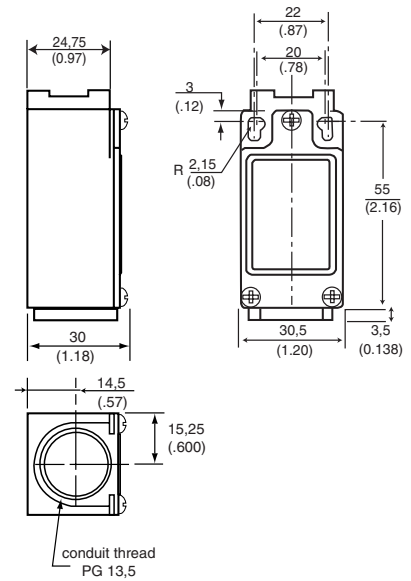
| CONTACT | CONDUIT | REFERENCE |
|---------|----------|-----------|
| SPDT | ½ in NPT | GLAA01K8B |
| SPDT | PG 13,5 | GLAB01K8B |

Wobble, cat whisker, coil actuator



| CONTACT | CONDUIT | REFERENCE |
|---------|----------|-----------|
| SPDT | ½ in NPT | GLAA01K8C |
| DPDT | ½ in NPT | GLAA20K8C |
| SPDT | PG 13,5 | GLAB01K8C |

GLC EN 50047
Standard metal body

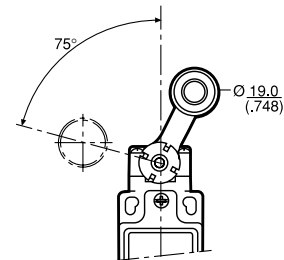


Mechanical life: up to 10 million
Sealing: IP 66, NEMA 1, 4, 12, 13
Operating temperature: -25 °C to 85 °C
 -13 °F to 185 °F
Approvals: IEC/EN 60947-5-1
 AC15 A300
 DC13 Q300
 UL, CSA, CE

Switching options:
 SPDT Single Pole, Double Throw
 Snap action contacts (1NC/1NO)

HEAD OPTIONS

Side rotary



Plastic roller

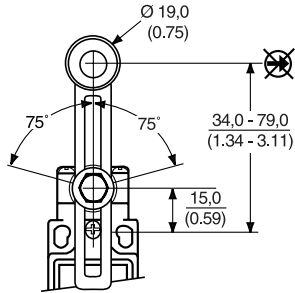
| CONTACT | CONDUIT | REFERENCE |
|---------|----------|-----------|
| SPDT | ½ in NPT | GLCA01A1A |
| SPDT | PG 13,5 | GLCB01A1A |

Metal roller

| CONTACT | CONDUIT | REFERENCE |
|---------|----------|-----------|
| SPDT | ½ in NPT | GLCA01A1B |
| SPDT | PG 13,5 | GLCB01A1B |
| SPDT | 20 mm | GLCC01A1B |

GLC EN 50047
Standard metal body
(continued)

Side rotary adjustable



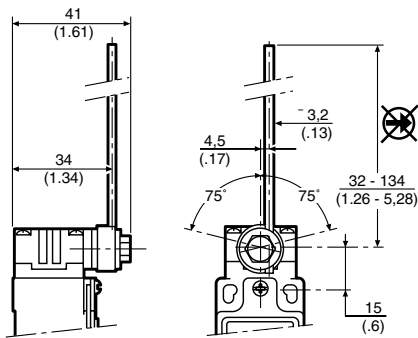
Plastic roller

| CONTACT | CONDUIT | REFERENCE |
|---------|----------|-----------|
| SPDT | ½ in NPT | GLCA01A2A |
| SPDT | PG 13,5 | GLCB01A2A |

Metal roller

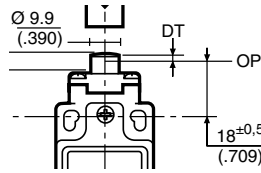
| CONTACT | CONDUIT | REFERENCE |
|---------|----------|-----------|
| SPDT | ½ in NPT | GLCA01A2B |
| SPDT | PG 13,5 | GLCB01A2B |
| SPDT | 20 mm | GLCC01A2B |

Side rotary adjustable, metal rod



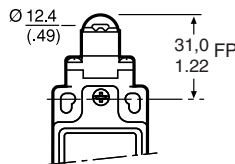
| CONTACT | CONDUIT | REFERENCE |
|---------|----------|-----------|
| SPDT | ½ in NPT | GLCA01A4J |
| SPDT | PG 13,5 | GLCB01A4J |

Top pin plunger



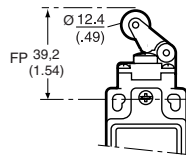
| CONTACT | CONDUIT | REFERENCE |
|---------|----------|-----------|
| SPDT | ½ in NPT | GLCA01B |
| SPDT | PG 13,5 | GLCB01B |
| SPDT | 20 mm | GLCC01B |

Top roller plunger



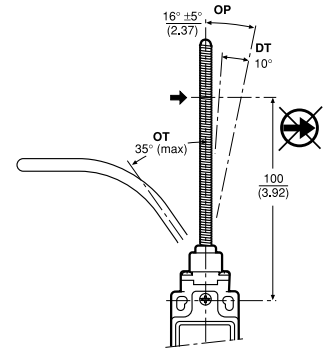
| CONTACT | CONDUIT | REFERENCE |
|---------|----------|-----------|
| SPDT | ½ in NPT | GLCA01C |
| SPDT | PG 13,5 | GLCB01C |
| SPDT | 20 mm | GLCC01C |

Top roller lever



| CONTACT | CONDUIT | REFERENCE |
|---------|----------|-----------|
| SPDT | ½ in NPT | GLCA01D |
| SPDT | PG 13,5 | GLCB01D |
| SPDT | 20 mm | GLCC01D |

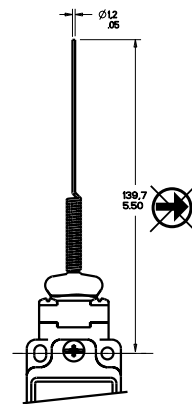
Wobble, coil actuator



Mechanical life: up to 5 million

| CONTACT | CONDUIT | REFERENCE |
|---------|----------|-----------|
| SPDT | ½ in NPT | GLCA01E7B |
| SPDT | PG 13,5 | GLCB01E7B |
| SPDT | 20 mm | GLCC01E7B |

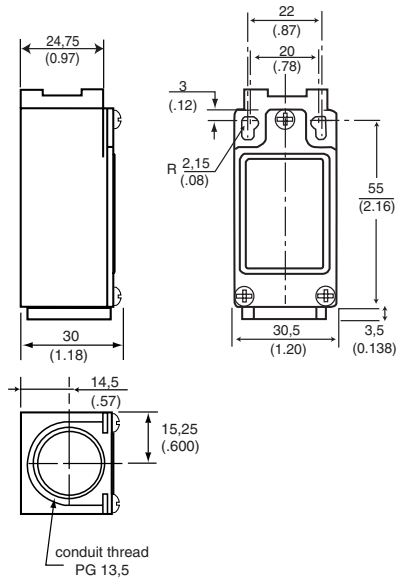
Wobble, cat whisker



Mechanical life: 5 million

| CONTACT | CONDUIT | REFERENCE |
|---------|----------|-----------|
| SPDT | ½ in NPT | GLCA01K8A |
| SPDT | PG 13,5 | GLCB01K8A |

GLD EN 50047
Double insulated
standard body



Mechanical life: See GLC section
Sealing: IP 66, NEMA 1, 2, 13
Operating temperature: -25 °C to 85 °C
 -13 °F to 185 °F
Approvals: IEC/EN 60947-5-1
 AC15 A600
 DC13 Q300
 UL, CSA, CE
Switching options:
 SPDT Single Pole, Double Throw
 Snap action contacts (1NC/1NO)

HEAD OPTIONS

See GLC section for dimension illustrations

Side rotary

Plastic roller/lever

| CONTACT | CONDUIT | REFERENCE |
|---------|----------|-----------|
| SPDT | ½ in NPT | GLDA01A1A |
| SPDT | PG 13,5 | GLDB01A1A |

Metal roller/lever

| CONTACT | CONDUIT | REFERENCE |
|---------|----------|-----------|
| SPDT | ½ in NPT | GLDA01A1B |
| SPDT | PG 13,5 | GLDB01A1B |
| SPDT | 20 mm | GLDC01A1B |

Side rotary adjustable

Plastic roller/metal lever

| CONTACT | CONDUIT | REFERENCE |
|---------|----------|-----------|
| SPDT | ½ in NPT | GLDA01A2A |
| SPDT | PG 13,5 | GLDB01A2A |

Metal roller/metal lever

| CONTACT | CONDUIT | REFERENCE |
|---------|----------|-----------|
| SPDT | ½ in NPT | GLDA01A2B |
| SPDT | PG 13,5 | GLDB01A2B |
| SPDT | 20 mm | GLDC01A2B |

Side rotary adjustable metal rod

| CONTACT | CONDUIT | REFERENCE |
|---------|----------|-----------|
| SPDT | ½ in NPT | GLDA01A4J |
| SPDT | PG 13,5 | GLDB01A4J |

Top pin plunger

| CONTACT | CONDUIT | REFERENCE |
|---------|----------|-----------|
| SPDT | ½ in NPT | GLDA01B |
| SPDT | PG 13,5 | GLDB01B |
| SPDT | 20 mm | GLDC01B |

Top roller plunger

| CONTACT | CONDUIT | REFERENCE |
|---------|----------|-----------|
| SPDT | ½ in NPT | GLDA01C |
| SPDT | PG 13,5 | GLDB01C |
| SPDT | 20 mm | GLDC01C |

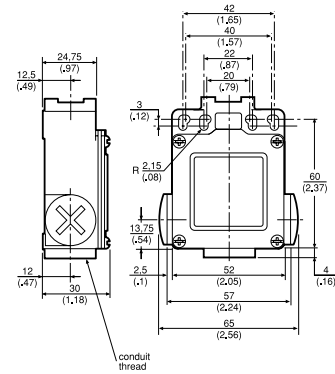
Top roller lever

| CONTACT | CONDUIT | REFERENCE |
|---------|----------|-----------|
| SPDT | ½ in NPT | GLDA01D |
| SPDT | PG 13,5 | GLDB01D |
| SPDT | 20 mm | GLDC01D |

Wobble, coil actuator

| CONTACT | CONDUIT | REFERENCE |
|---------|----------|-----------|
| SPDT | ½ in NPT | GLDA01E7B |
| SPDT | PG 13,5 | GLDB01E7B |
| SPDT | 20 mm | GLDC01E7B |

GLE EN 50047 Compatible
3 conduit
metal standard body

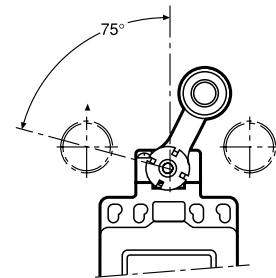


Mechanical life: up to 10 million
Sealing: IP 66, NEMA 1, 4, 12, 13
Operating temperature: -25 °C to 85 °C
 -13 °F to 185 °F
Approvals: IEC/EN 60947-5-1
 AC15 A300
 DC13 Q300
 UL, CSA, CE

Switching options:
 SPDT Single Pole, Double Throw
 Snap action contacts (1NC/1NO)
 DPDT Double Pole, Double Throw
 Snap action contacts (2NC/2NO)

HEAD OPTIONS

Side rotary



Plastic roller

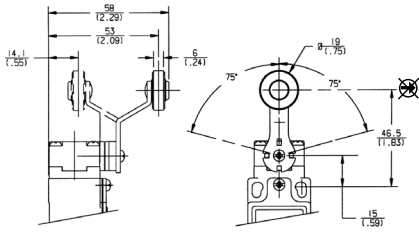
| CONTACT | CONDUIT | REFERENCE |
|---------|----------|-----------|
| SPDT | ½ in NPT | GLEA01A1A |
| SPDT | PG 13,5 | GLEB01A1A |
| DPDT | PG 13,5 | GLEB24A1A |

Metal roller

| CONTACT | CONDUIT | REFERENCE |
|---------|----------|-----------|
| SPDT | ½ in NPT | GLEA01A1B |
| DPDT | ½ in NPT | GLEA24A1B |
| SPDT | PG 13,5 | GLEB01A1B |
| DPDT | PG 13,5 | GLEB24A1B |
| SPDT | 20 mm | GLEC01A1B |

GLE EN 50047 Compatible
3 conduit
metal standard body
(continued)

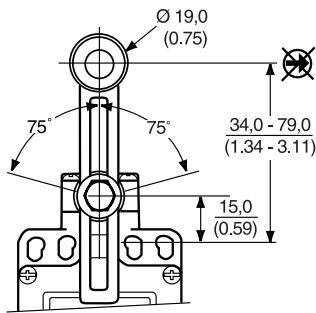
Offset side rotary roller



Plastic roller

| CONTACT | CONDUIT | REFERENCE |
|---------|----------|-----------|
| SPDT | ½ in NPT | GLEA01A5A |
| SPDT | PG 13.5 | GLEB01A5A |

Side rotary adjustable



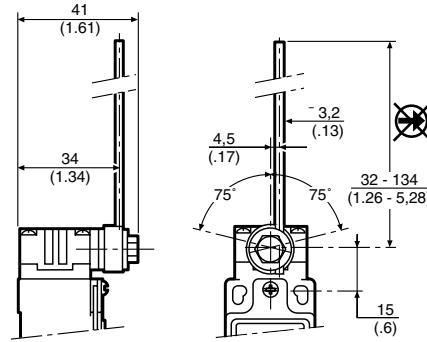
Plastic roller

| CONTACT | CONDUIT | REFERENCE |
|---------|----------|-----------|
| SPDT | ½ in NPT | GLEA01A2A |
| DPDT | ½ in NPT | GLEA24A2A |
| SPDT | PG 13.5 | GLEB01A2A |

Metal roller

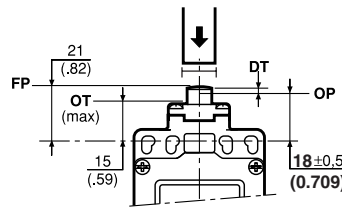
| CONTACT | CONDUIT | REFERENCE |
|---------|----------|-----------|
| SPDT | ½ in NPT | GLEA01A2B |
| SPDT | PG 13.5 | GLEB01A2B |
| DPDT | PG 13.5 | GLEB24A2B |

Side rotary adjustable metal rod



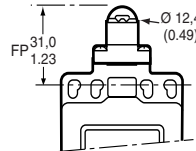
| CONTACT | CONDUIT | REFERENCE |
|---------|---------|-----------|
| SPDT | PG 13.5 | GLEB01A4J |
| DPDT | PG 13.5 | GLEB24A4J |

Top pin plunger



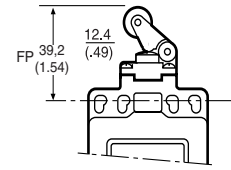
| CONTACT | CONDUIT | REFERENCE |
|---------|----------|-----------|
| SPDT | ½ in NPT | GLEA01B |
| DPDT | ½ in NPT | GLEA24B |
| SPDT | PG 13.5 | GLEB01B |
| DPDT | PG 13.5 | GLEB24B |

Top roller plunger



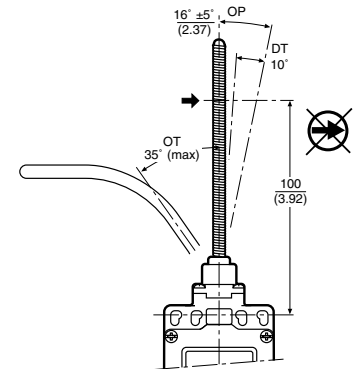
| CONTACT | CONDUIT | REFERENCE |
|---------|----------|-----------|
| SPDT | ½ in NPT | GLEA01C |
| DPDT | ½ in NPT | GLEA24C |
| SPDT | PG 13.5 | GLEB01C |
| DPDT | PG 13.5 | GLEB24C |
| DPDT | 20 mm | GLEC24C |

Top roller lever



| CONTACT | CONDUIT | REFERENCE |
|---------|----------|-----------|
| SPDT | ½ in NPT | GLEA01D |
| DPDT | ½ in NPT | GLEA24D |
| SPDT | PG 13.5 | GLEB01D |
| DPDT | 13,5 | GLEB24D |
| SPDT | 20 mm | GLEC01D |
| DPDT | 20 mm | GLEC24D |

Wobble, coil actuator



Mechanical life: up to 5 million

| CONTACT | CONDUIT | REFERENCE |
|---------|----------|-----------|
| SPDT | ½ in NPT | GLEA01E7B |
| DPDT | ½ in NPT | GLEA24E7B |
| SPDT | PG 13.5 | GLEB01E7B |
| DPDT | PG 13.5 | GLEB24E7B |

SL1 Series Compact Limit Switches

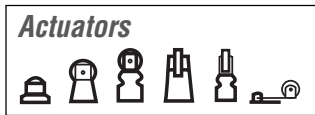
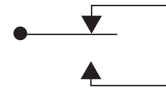


The SL1 Series compact limit switches are sealed, sensitive and have a long life. The compact size makes them suitable for the total miniaturization of machinery or equipment.

| | |
|---------------------------------------|--|
| Mechanical life: | 10 million |
| Sealing: | IP 67, NEMA 3, 4, 13 |
| Operating temperature: | -10 °C to 70 °C (14 °F to 160 °F) |
| Approvals: | UL, CSA, CE |
| Termination: | Cable gland |
| Operating force max. (OF): | 11,76 N (2.64 lb) |
| Pretravel max. (PT): | 1,5 mm (0.060 in) |
| Overtravel min. (OT): | 3,0 mm (0.118 in) |
| Differential travel max. (DT): | 0,10 mm (0.004 in) |
| Electrical rating/contact: | 5A - 125, 250 Vac 0.1 A - 125 Vac; 0.1 A - 30 Vdc |
| | Silver Gold clad cross point |

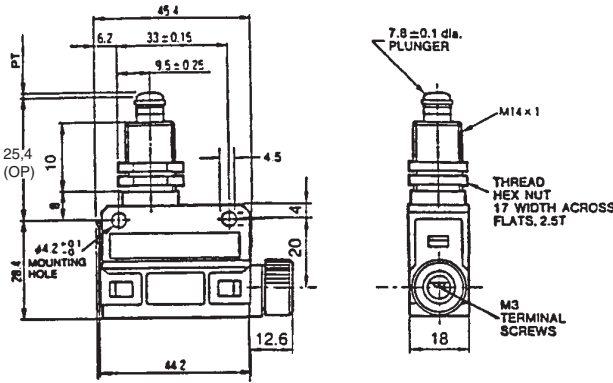
Switching options:
SPDT

Single Pole, Double Throw,
Snap action contacts (1NC/1NO)



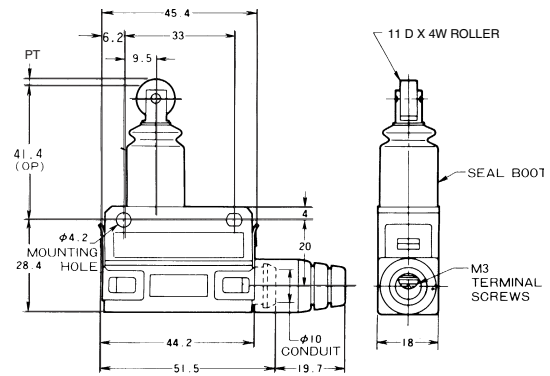
OPTIONS

Top pin plunger



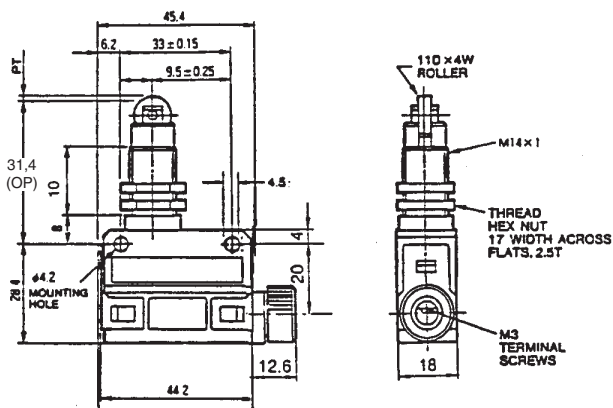
| | |
|-----------------------|------------------|
| CONTACT | REFERENCE |
| Silver | SL1-H |
| Gold clad cross point | SL1-HK |

Top roller plunger, parallel, boot seal



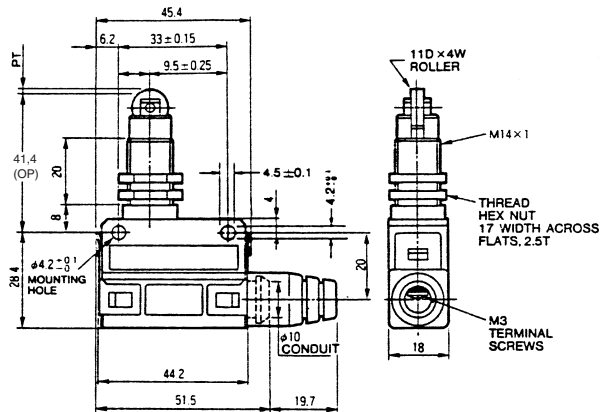
| | |
|-----------------------|------------------|
| CONTACT | REFERENCE |
| Silver | SL1-B |
| Gold clad cross point | SL1-BK |

Top roller plunger, parallel



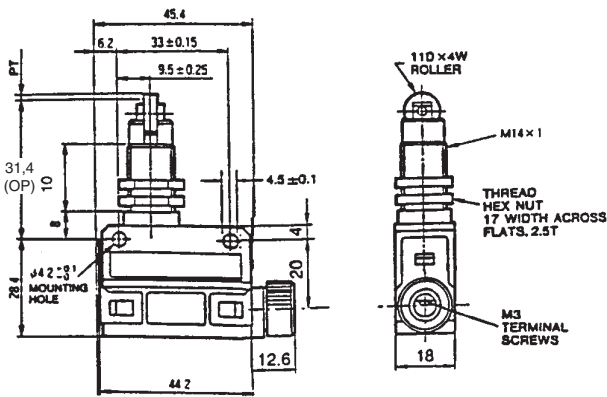
| | |
|-----------------------|------------------|
| CONTACT | REFERENCE |
| Silver | SL1-A |
| Gold clad cross point | SL1-AK |

Top roller plunger, long, parallel



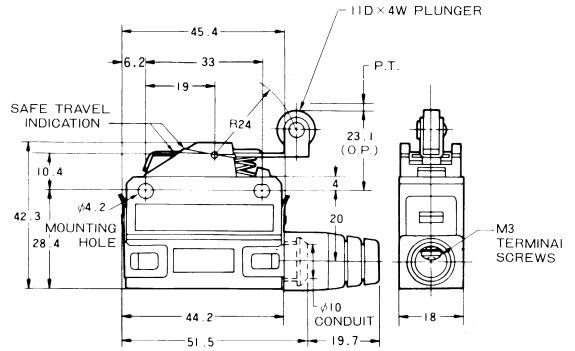
| | |
|-----------------------|------------------|
| CONTACT | REFERENCE |
| Silver | SL1-E |
| Gold clad cross point | SL1-EK |

Top roller plunger, perpendicular



| CONTACT | REFERENCE |
|-----------------------|-----------|
| Silver | SL1-D |
| Gold clad cross point | SL1-DK |

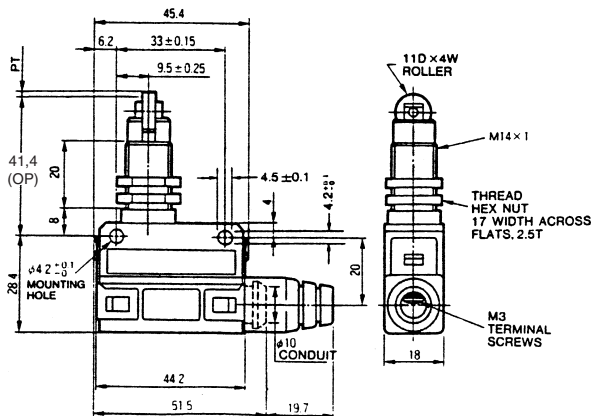
Top roller lever



| | |
|---------------------------------------|-------------------|
| Operating force max. (OF): | 3,92 N (0.88 lb) |
| Pretravel max. (PT): | 2,0 mm (0.079 in) |
| Overtravel min. (OT): | 4,0 mm (0.158 in) |
| Differential travel max. (DT): | 0,3 mm (0.012 in) |

| CONTACT | REFERENCE |
|-----------------------|-----------|
| Silver | SL1-P |
| Gold clad cross point | SL1-PK |

Top roller plunger, long, perpendicular



| CONTACT | REFERENCE |
|-----------------------|-----------|
| Silver | SL1-K |
| Gold clad cross point | SL1-KK |

14CE/914CE Series Miniature Enclosed Switches



Actuators



The 14CE/914CE Series offers a miniature, rugged, compact, pre-wired switch which has proved itself successful and gained wide market acceptance. The entire range of 14CE and 914CE switches has been approved to meet the requirements of the Low Voltage directive and is therefore CE marked.

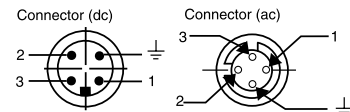
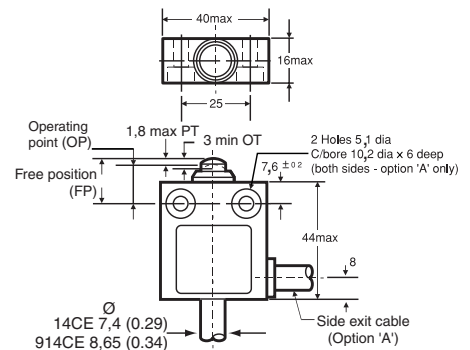
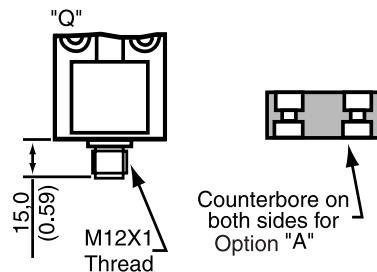
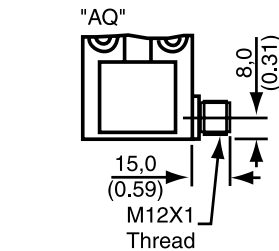
CE switches have different degrees of protection from IP66 to IP68 for the fully booted head styles. The cable entry is fully potted using a special compound to ensure that ingress is virtually impossible.

| | | |
|----------------------------------|------------------------|--|
| Mechanical life: | | 10 million |
| Sealing: | | IP66, IP67, IP68 |
| Operating temperature: | 14CE | NEMA 1, 2, 3, 3R, 4, 6, 6P, 12 (boot seal), 13 |
| | 914CE | 0 °C to 70 °C (32 °F to 158 °F) |
| Approvals: | 14CE | 0 °C to 105 °C (32 °F to 221 °F) |
| | 914CE | CE |
| | | CSA, UL, CE |
| | | AC14 D300 |
| | | DC13 R300 |
| Operating force (OF): | | 11,8 N (2,65 lb) max. |
| Pretravel (PT): | | 1,8 mm (0,71 in) max. |
| Overtravel (OT): | | 3,0 mm (0,118 in) min. |
| Differential travel (DT): | | 0,1mm (0,004 in) max. |
| Contact/Rating: | (9)14CE* -* | Silver A |
| | (9)14CE* -*G | Gold B |
| | (9)14CE* -Q, -AQ, -AQ1 | Silver C |

| | | |
|---------------------------|--|--|
| Connection: | | Harmonised CENELEC 4 x 0,75 mm ² cable (14CE) |
| | | SJTO 4 x 0,75 mm ² (18 AWG) cable (914CE) |
| | | Connector (dc), 4 pin male, M12 thread (-Q) |
| | | Connector (ac), 4 pin male, ½ in x 20 thread (-Q1) |
| | | Single Pole, Double Throw |
| | | Snap action contacts (1NC/1NO) |
| Switching options: | | SPDT |



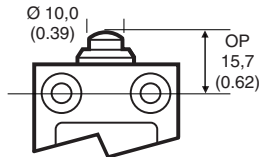
| Electrical ratings: | | Amps | |
|---------------------|------------------------------|------------------------------|-------|
| | | Make | Break |
| A | 240 Vac, ind. | 1,2 | 0,2 |
| | 240 Vac, res. | 5 | 5 |
| | 28 Vdc, res. | 3 | 3 |
| | 28 Vdc, ind. | 3 | 3 |
| UL/CSA: | 5 A, 1/10 Hp, 125 or 250 Vac | | |
| B | UL: | 1 A res., 0,5 A ind., 30 Vdc | |
| | | 1 A, 125 Vac | |
| C | UL/CSA: | 3 A, 125 or 250 Vac | |



Plunger actuated switches

OPTIONS

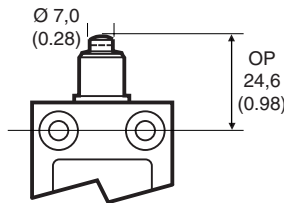
Top pin plunger



| NORTH AMERICA/GLOBAL | REFERENCE |
|--|-----------|
| 3 ft cable, bottom exit | 914CE1-3 |
| 3 ft cable, side exit | 914CE1-3A |
| 3 ft cable, bottom exit, gold contacts | 914CE1-3G |
| 6 ft cable, bottom exit | 914CE1-6 |
| 6 ft cable, bottom exit, gold contacts | 914CE1-6G |
| 9 ft cable, bottom exit | 914CE1-9 |
| Connector (dc), bottom exit | 914CE1-Q |
| Connector (ac), bottom exit | 914CE1-Q1 |

| EUROPE | REFERENCE |
|---|-----------|
| 1 metre cable, bottom exit | 14CE1-1 |
| 1 metre cable, side exit | 14CE1-1A |
| 1 metre cable, bottom exit, gold contacts | 14CE1-1G |
| 2 metre cable, bottom exit | 14CE1-2 |
| 3 metre cable, bottom exit | 14CE1-3 |
| 3 metre cable, side exit | 14CE1-3A |
| 3 metre cable, bottom exit, gold contacts | 14CE1-3G |
| Connector (dc), side exit | 14CE1-AQ |
| Connector (dc), bottom exit | 14CE1-Q |

Top pin plunger, boot seal

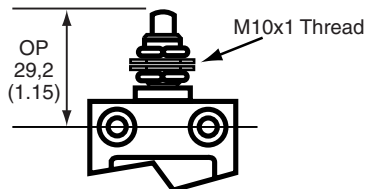


Operating force (OF): 22,5 N (5.06 lb)

| NORTH AMERICA/GLOBAL | REFERENCE |
|-----------------------------|-------------|
| 3 ft cable, bottom exit | 914CE18-3 |
| 3 ft cable, side exit | 914CE18-3A |
| 6 ft cable, bottom exit | 914CE18-6 |
| 9 ft cable, bottom exit | 914CE18-9 |
| 9 ft cable, side exit | 914CE18-9A |
| Connector (ac), side exit | 914CE18-AQ1 |
| Connector (dc), bottom exit | 914CE18-Q |
| Connector (ac), bottom exit | 914CE18-Q1 |

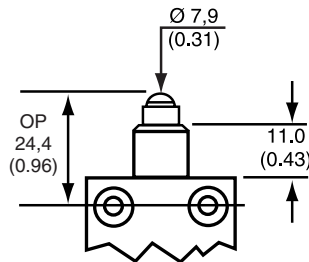
| EUROPE | REFERENCE |
|-----------------------------|-----------|
| 1 metre cable, bottom exit | 14CE18-1 |
| 3 metre cable, bottom exit | 14CE18-3 |
| Connector (dc), bottom exit | 14CE18-Q |

Top pin plunger, panel mounted



| NORTH AMERICA/GLOBAL | REFERENCE |
|-----------------------------|-----------|
| Connector (dc), bottom exit | 914CE27-Q |

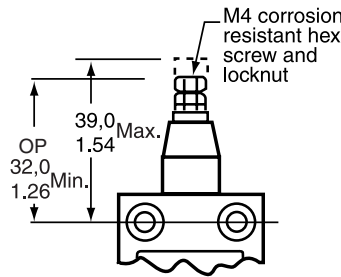
Ball bearing plunger



| NORTH AMERICA/GLOBAL | REFERENCE |
|-------------------------|-----------|
| 3 ft cable, bottom exit | 914CE66-3 |
| 6 ft cable, bottom exit | 914CE66-6 |

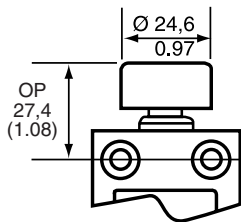
| EUROPE/ | REFERENCE |
|----------------------------|-----------|
| 1 metre cable, bottom exit | 14CE66-1 |
| 2 metre cable, bottom exit | 14CE66-2 |

Adjustable plunger



| NORTH AMERICA/GLOBAL | REFERENCE |
|-------------------------|-----------|
| 3 ft cable, bottom exit | 914CE19-3 |
| 9 ft cable, bottom exit | 914CE19-9 |

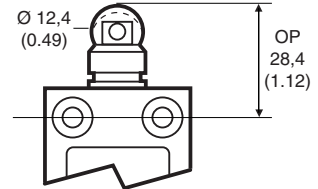
Manually operated



Operating force (OF): 9,0 N (2.02 lb)

| NORTH AMERICA/GLOBAL | REFERENCE |
|-------------------------|-----------|
| 6 ft cable, bottom exit | 914CE22-6 |

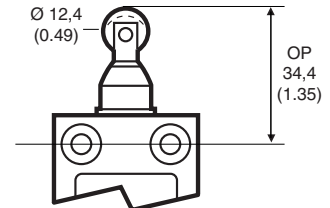
Top roller plunger, parallel



| NORTH AMERICA/GLOBAL | REFERENCE |
|--|-----------|
| 3 ft cable, bottom exit | 914CE2-3 |
| 3 ft cable, side exit | 914CE2-3A |
| 3 ft cable, bottom exit, gold contacts | 914CE2-3G |
| 6 ft cable, bottom exit | 914CE2-6 |
| 6 ft cable, side exit | 914CE2-6A |
| 9 ft cable, bottom exit | 914CE2-9 |
| Connector (dc), side exit | 914CE2-AQ |
| Connector (dc), bottom exit | 914CE2-Q |
| Connector (ac), bottom exit | 914CE2-Q1 |

| EUROPE | REFERENCE |
|---|-----------|
| 1 metre cable, bottom exit | 14CE2-1 |
| 1 metre cable, side exit | 14CE2-1A |
| 1 metre cable, bottom exit, gold contacts | 14CE2-1G |
| 2 metre cable, bottom exit | 14CE2-2 |
| 2 metre cable, side exit | 14CE2-2A |
| 3 metre cable, bottom exit | 14CE2-3 |
| 3 metre cable, side exit | 14CE2-3A |
| 3 metre cable, bottom exit, gold contacts | 14CE2-3G |
| Connector (dc), side exit | 14CE2-AQ |
| Connector (dc), bottom exit | 14CE2-Q |

Top roller plunger, parallel, boot seal

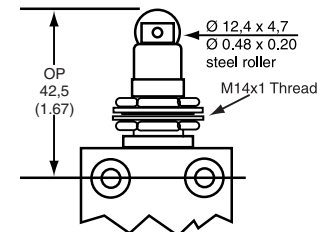


Operating force (OF): 17,5 N (3.82 lb)

| NORTH AMERICA/GLOBAL | REFERENCE |
|-------------------------|-----------|
| 3 ft cable, bottom exit | 914CE31-3 |
| 6 ft cable, bottom exit | 914CE31-6 |

| EUROPE | REFERENCE |
|----------------------------|-----------|
| 1 metre cable, bottom exit | 14CE31-1 |
| 3 metre cable, bottom exit | 14CE31-3 |

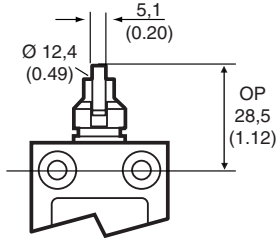
Top roller plunger, parallel, panel mounted



| NORTH AMERICA/GLOBAL | REFERENCE |
|-----------------------------|-----------|
| 3 ft cable, bottom exit | 914CE28-3 |
| 6 ft cable, bottom exit | 914CE28-6 |
| Connector (dc), bottom exit | 914CE28-Q |

**14CE/914CE Series
Plunger actuated switches
(continued)**

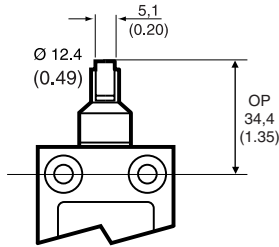
Top roller plunger, perpendicular



| NORTH AMERICA/GLOBAL | REFERENCE |
|-----------------------------|-----------|
| 3 ft cable, bottom exit | 914CE3-3 |
| 6 ft cable, bottom exit | 914CE3-6 |
| 6 ft cable, side exit | 914CE3-6A |
| 9 ft cable, bottom exit | 914CE3-9 |
| Connector (dc), bottom exit | 914CE3-Q |
| Connector (ac), bottom exit | 914CE3-Q1 |

| EUROPE | REFERENCE |
|----------------------------|-----------|
| 1 metre cable, bottom exit | 14CE3-1 |
| 2 metre cable, bottom exit | 14CE3-2 |
| 3 metre cable, bottom exit | 14CE3-3 |

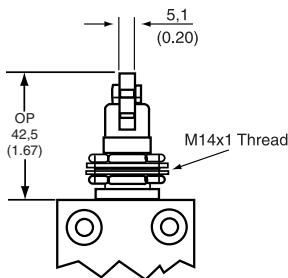
*Top roller plunger, perpendicular,
boot seal*



Operating force (OF): 17,5 N (3.82 lb)

| NORTH AMERICA/GLOBAL | REFERENCE |
|-------------------------|------------|
| 3 ft cable, bottom exit | 914CE55-3 |
| 3 ft cable, side exit | 914CE55-3A |

*Top roller plunger, perpendicular,
panel mounted*



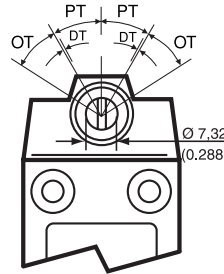
| NORTH AMERICA/GLOBAL | REFERENCE |
|-------------------------|-----------|
| 3 ft cable, bottom exit | 914CE29-3 |
| 6 ft cable, bottom exit | 914CE29-6 |

**Side rotary and wobble
actuated switches**

OPTIONS

Rotary motion

(actuating lever not included - use any LSZ51*, LSZ52*, LSZ54*, LSZ55* or LSZ61* Series shown on pages 71-73).

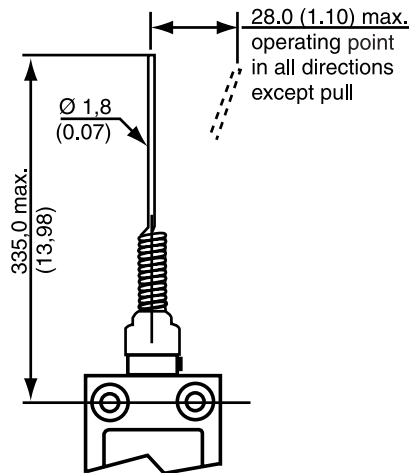


Operating torque: 0,3 Nm (2.66 in lb)
Pretravel (PT): 30° max.
Overtravel (OT) mm: 40° min.
Differential travel: 3°

| NORTH AMERICA/GLOBAL | REFERENCE |
|-----------------------------|------------|
| 3 ft cable, bottom exit | 914CE16-3 |
| 3 ft cable, side exit | 914CE16-3A |
| 6 ft cable, bottom exit | 914CE16-6 |
| 9 ft cable, bottom exit | 914CE16-9 |
| Connector (dc), bottom exit | 914CE16-Q |

| EUROPE | REFERENCE |
|----------------------------|-----------|
| 1 metre cable, bottom exit | 14CE16-1 |
| 2 metre cable, bottom exit | 14CE16-2 |
| 3 metre cable, bottom exit | 14CE16-3 |

Wobble Spring wire



Operating Force (OF): 0,55 N (0.12 lb)

| NORTH AMERICA/GLOBAL | REFERENCE |
|-----------------------------|-----------|
| 3 ft cable, bottom exit | 914CE20-3 |
| 6 ft cable, bottom exit | 914CE20-6 |
| 9 ft cable, bottom exit | 914CE20-9 |
| Connector (dc), bottom exit | 914CE20-Q |

| EUROPE | REFERENCE |
|----------------------------|-----------|
| 1 metre cable, bottom exit | 14CE20-1 |
| 3 metre cable, bottom exit | 14CE20-3 |

24CE/924CE Series Miniature Safety Electromechanical Switches



Actuators



For position sensing and switching applications requiring direct acting, positive opening contacts the 24CE and 924CE ranges are ideal. They have been tested and approved to meet the requirements of the Low Voltage directive and positive opening safety contacts per IEC/EN 60947-5-1-3. The devices are CE marked. The red colour clearly differentiates this safety component in the application. The 924CE range also has UL and CSA approval.

It is possible for the end user to enhance the safety level of these switches from Category 1 on their own to Categories 2, 3 or 4 when the switches are used in conjunction with our wide range of FF-SR safety relays to form a safety system.

Typical applications for these switches would use the roller plunger 24CE2- or 24CE3- style in conjunction with cams on doors with hinges; or our fixed side rotary 24CE16- style for detection of sliding doors. Also available are a range of panel mounting or top mounting versions to ensure that small space or difficult mounting can be simply achieved.

Several contact arrangements are available.

Mechanical life:

Sealing:

Operating temperature:

Approvals:

Connection:

Contacts:

Switching options:

10 million

standard type: IP66; with boot seal type: IP67

0 °C to 70 °C (32 °F to 158 °F)

Low temperature: -40 °C (-40 °F)

0 °C to 105 °C (32 °F to 221 °F)

CE

AC15 B300

DC13 R300

CSA, CE

per UL file #E41859, 10 A 250 Vac; 1/3 Hp 125-250 Vac

AC15 B300

DC13 R300

Harmonised CENELEC 3 or 5 x 0,75 mm² cable (24CE)

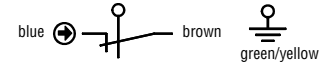
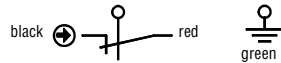
SJTO 3 or 5 x 18 AWG cable (924CE)

Silver

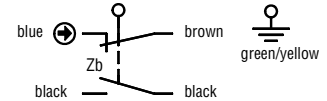
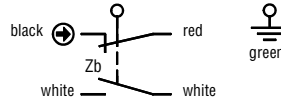
924CE

24CE

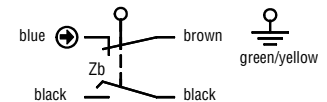
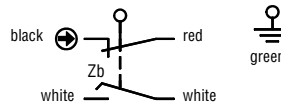
Slow action contacts (1NC)



Slow action contacts (1NC/1NO), Break Before Make (BBM)

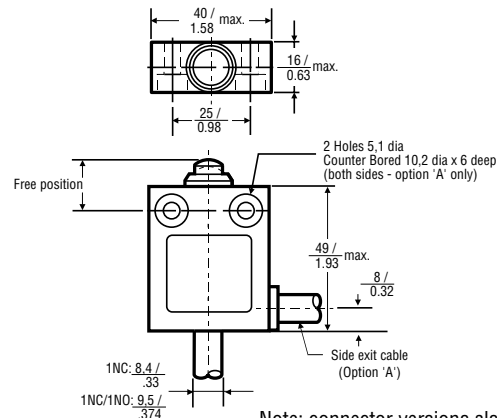


Slow action contacts (1NC/1NO), Make Before Break (MBB)



Electrical ratings:

| | | IEC 60947-5-1/EN 60947-5-1 | | | | | | | |
|------------------------------------|------|--|-------|-------|-------|-------|-------|-----------|-------|
| Designation & Utilization Category | | Rated operational current I _e (A) at rated operational voltage U _e | | | | | | VA rating | |
| | | 120 V | 240 V | 380 V | 480 V | 500 V | 600 V | Make | Break |
| AC15 | B300 | 3 | 1.5 | - | - | - | - | 3600 | 360 |
| | | 125 V | 250 V | | | | | | |
| DC13 | R300 | 0,22 | 0,1 | | | | | 28 | 28 |



Note: connector versions also available

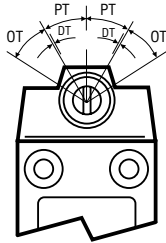
Honeywell

www.honeywell.com/sensing

24CE/924CE Series

OPTIONS

Side rotary



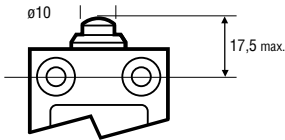
North America/Global

| CABLE LENGTH | CONTACT | REFERENCE |
|--------------|----------|------------|
| 3 ft | 1NC, BBM | 924CE16-S3 |
| 9 ft | 1NC, BBM | 924CE16-S9 |
| 3 ft | 1NC, MBB | 924CE16-T3 |
| 3 ft | 1NC | 924CE16-Y3 |
| 9 ft | 1NC | 924CE16-Y9 |

Europe

| CABLE LENGTH | CONTACT | REFERENCE |
|--------------|--------------|-----------|
| 1 m | 1NC/1NO, BBM | 24CE16-S1 |
| 1 m | 1NC | 24CE16-Y1 |
| 6 m | 1NC | 24CE16-Y6 |

Top pin plunger



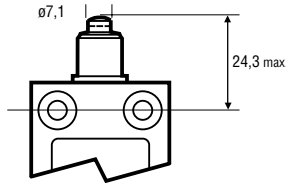
North America/Global

| CABLE LENGTH | CONTACT | OPTION | REFERENCE |
|--------------|----------|-----------|-------------|
| 3 ft | 1NC, BBM | | 924CE1-S3 |
| 6 ft | 1NC, BBM | | 924CE1-S6 |
| 9 ft | 1NC, BBM | | 924CE1-S9 |
| 25 ft | 1NC, MBB | side exit | 924CE1-T25A |
| 3 ft | 1NC, MBB | | 924CE1-T3 |
| 3 ft | 1NC, MBB | side exit | 924CE1-T3A |
| 6 ft | 1NC, MBB | side exit | 924CE1-T6A |
| 9 ft | 1NC, MBB | | 924CE1-T9 |
| 9 ft | 1NC, MBB | side exit | 924CE1-T9A |
| 3 ft | 1NC | | 924CE1-Y3 |
| 9 ft | 1NC | | 924CE1-Y9 |

Europe

| CABLE LENGTH | CONTACT | OPTION | REFERENCE |
|--------------|--------------|-----------------|------------|
| 12 m | 1NC/1NO, BBM | low temperature | 24CE1-S12B |
| 2 m | 1NC/1NO, BBM | | 24CE1-S2 |
| 2 m | 1NC/1NO, BBM | side exit | 24CE1-S2A |
| 2 m | 1NC/1NO, BBM | low temperature | 24CE1-S2B |
| 3 m | 1NC/1NO, BBM | | 24CE1-S3 |
| 6 m | 1NC/1NO, BBM | | 24CE1-S6 |
| 1 m | 1NC | side exit | 24CE1-Y1A |
| 2 m | 1NC | | 24CE1-Y2 |
| 3 m | 1NC | | 24CE1-Y3 |

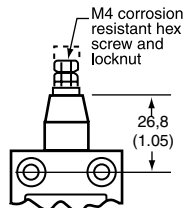
Top pin plunger, boot sealed



North America/Global

| CABLE LENGTH | CONTACT | REFERENCE |
|--------------|--------------|------------|
| 6 ft | 1NC/1NO, BBM | 924CE18-S6 |

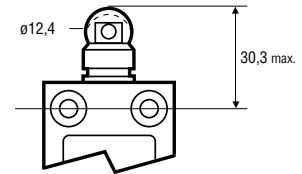
Adjustable plunger



North America/Global

| CABLE LENGTH | CONTACT | OPTION | REFERENCE |
|--------------|--------------|-----------------|--------------|
| 3 ft | 1NC/1NO, BBM | low temperature | 924CE19-S3L1 |

Top roller plunger, parallel



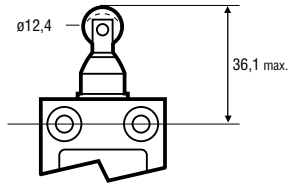
North America/Global

| CABLE LENGTH | CONTACT | OPTION | REFERENCE |
|--------------|----------|-----------|-------------|
| 15 ft | 1NC, BBM | | 924CE2-S15 |
| 21 ft | 1NC, BBM | | 924CE2-S21 |
| 3 ft | 1NC, BBM | | 924CE2-S3 |
| 6 ft | 1NC, BBM | | 924CE2-S6 |
| 6 ft | 1NC, BBM | side exit | 924CE2-S6A |
| 9 ft | 1NC, BBM | | 924CE2-S9 |
| 25 ft | 1NC, MBB | | 924CE2-T25 |
| 25 ft | 1NC, MBB | side exit | 924CE2-T25A |
| 3 ft | 1NC, MBB | | 924CE2-T3 |
| 6 ft | 1NC, MBB | | 924CE2-T6 |
| 9 ft | 1NC, MBB | | 924CE2-T9 |
| 3 ft | 1NC | | 924CE2-Y3 |
| 9 ft | 1NC | | 924CE2-Y9 |

Europe

| CABLE LENGTH | CONTACT | OPTION | REFERENCE |
|--------------|--------------|-----------------|-----------|
| 1 m | 1NC/1NO, BBM | | 24CE2-S1 |
| 2 m | 1NC/1NO, BBM | | 24CE2-S2 |
| 2 m | 1NC/1NO, BBM | side exit | 24CE2-S2A |
| 2 m | 1NC/1NO, BBM | low temperature | 24CE2-S2B |
| 3 m | 1NC/1NO, BBM | | 24CE2-S3 |
| 6 m | 1NC/1NO, BBM | | 24CE2-S6 |
| 2 m | 1NC/1NO, MBB | | 24CE2-T2 |
| 1 m | 1NC | | 24CE2-Y1 |
| 2 m | 1NC | | 24CE2-Y2 |
| 2 m | 1NC | side exit | 24CE2-Y2A |
| 4 m | 1NC | | 24CE2-Y4 |
| 6 m | 1NC | side exit | 24CE2-Y6A |

Top roller plunger, parallel, boot sealed



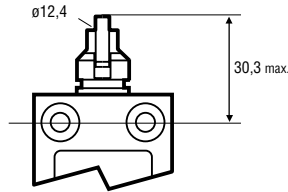
North America/Global

| CABLE LENGTH | CONTACT | OPTION | REFERENCE |
|--------------|----------|-----------------|--------------|
| 6 ft | 1NC, BBM | | 924CE31-S6 |
| 20 ft | 1NC | | 924CE31-Y20 |
| 3 ft | 1NC | low temperature | 924CE31-Y3L1 |

Europe

| CABLE LENGTH | CONTACT | OPTION | REFERENCE |
|--------------|--------------|-----------------|------------|
| 1 m | 1NC/1NO, BBM | | 24CE31-S1 |
| 2 m | 1NC/1NO, BBM | | 24CE31-S2 |
| 2 m | 1NC/1NO, BBM | low temperature | 24CE31-S2B |
| 5 m | 1NC/1NO, BBM | | 24CE31-S5 |
| 1 m | 1NC | | 24CE31-Y1 |
| 2 m | 1NC | | 24CE31-Y2 |
| 3 m | 1NC | | 24CE31-Y3 |

Top roller plunger, perpendicular



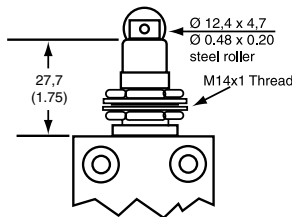
North America/Global

| CABLE LENGTH | CONTACT | REFERENCE |
|--------------|----------|-----------|
| 3 ft | 1NC, BBM | 924CE3-S3 |
| 6 ft | 1NC, BBM | 924CE3-S6 |
| 9 ft | 1NC, BBM | 924CE3-S9 |
| 9 ft | 1NC, MBB | 924CE3-T9 |

Europe

| CABLE LENGTH | CONTACT | REFERENCE |
|--------------|--------------|-----------|
| 2 m | 1NC/1NO, BBM | 24CE3-S2 |
| 1 m | 1NC | 24CE3-Y1 |
| 2 m | 1NC | 24CE3-Y2 |

Top roller plunger, parallel, panel mounted



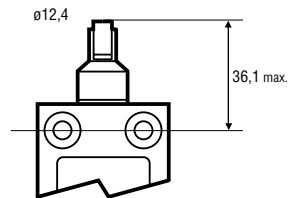
North America/Global

| CABLE LENGTH | CONTACT | REFERENCE |
|--------------|----------|-------------|
| 15 ft | 1NC, BBM | 924CE28-S15 |

Europe

| CABLE LENGTH | CONTACT | REFERENCE |
|--------------|--------------|-----------|
| 2 m | 1NC/1NO, BBM | 24CE28-S2 |

Top roller plunger, perpendicular, boot sealed



Europe

| CABLE LENGTH | CONTACT | REFERENCE |
|--------------|--------------|-----------|
| 1 m | 1NC/1NO, BBM | 24CE55-S1 |
| 2 m | 1NC/1NO, BBM | 24CE55-S2 |
| 1 m | 1NC | 24CE55-Y1 |

LS Series Compact Limit Switches

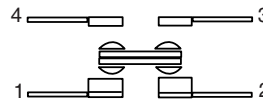
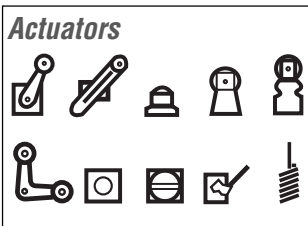


LS Series compact limit switches are carefully designed for accurate repeatability under the most stringent conditions. Compact size and field adjustable features greatly extend the flexibility of these switches. Heads may be positioned at 90° increments. Side rotary models can be adjusted for clockwise and/or counter-clockwise operation. Actuators can be set and locked in any position through 360°.

The rugged housings and actuator heads are constructed from cast aluminium, capable of withstanding physical abuse. Protection against oil, water and dust is achieved by O-ring seals on the actuator shaft; a ring seal between head and body; and a seated compression seal between cover and case.

The LS fits in many places too small for any other fully adjustable limit switch.

| | | |
|-------------------------------|---|---|
| Conduit: | | ½ in - 14 NPT 20 mm |
| Sealing: | ½ in - 14 NPT conduit 20 mm conduit | NEMA 1, 3, 4, 6, 13 IP67 |
| Operating temperature: | Standard High | -29 °C to 71 °C (-20 °F to 160 °F) -29 °C to 121 °C (-20 °F to 250 °F) |
| Approvals: | LS-L | UL, CSA |
| Contacts: | Electrical ratings A, B, C, D, E Electrical ratings F, G | Silver Cadmium Oxide ⁽¹⁾ Fine Silver |
| Switching options: | SPDT | Single Pole, Double Throw Snap action contacts (1NC/1NO) |



| | | |
|----------------------------|----------|---|
| Electrical ratings: | A | 10 A, 120, 240 or 480 Vac; 1/3 hp, 120 Vac; 3/4 hp, 240 Vac; 0.8 A, 115 Vdc**; 0.4 A, 230 Vdc**; 0.1 A, 550 Vdc**; Pilot Duty, 600 Vac max. |
| | B | 10 A, 120, 240 or 480 Vac; 1/4 hp, 120 Vac; 1/2 hp, 240 Vac. Pilot Duty, 600 Vac max. |
| | C | 10 A, 120 Vac; 1/3 hp, 120 Vac. |
| | D | 10 A, 120, 240, 480 Vac; 1/4 hp, 120 Vac; 1/2 hp, 240 Vac; 0.8 A, 115 Vdc**; 0.4 A, 230 Vdc**; 0.1 A, 550 Vdc**; Pilot Duty, 600 Vac max. |
| | E | 10 A, 120, 240 or 480 Vac; 1/3 hp, 120 Vac; 3/4 hp, 240 Vac. Pilot Duty, 600 Vac max. |
| | F | UL Rating: 10 A, 125, 250, or 480 Vac; 1/3 hp, 125 Vac; 3/4 hp, 250 Vac; 0.8 A, 125 Vdc**; 0.4 A, 250 Vdc** |
| | G | UL Rating: 10 A, 125, 250 or 480 Vac; 1/4 hp, 125 Vac; 1/2 hp, 250 Vac; 0.8 A, 125 Vdc**; 0.4 A, 250 Vdc** |

** Resistive rating

⁽¹⁾ Designed for use with inductive loads such as relays, contactors, motors and solenoids. Honeywell does *not* recommend the use of silver cadmium oxide switch contacts in non-arcing loads. Non-arcing loads are generally loads less than 12 volts and/or 0.5 amp.

LS Series
Side rotary actuated switches

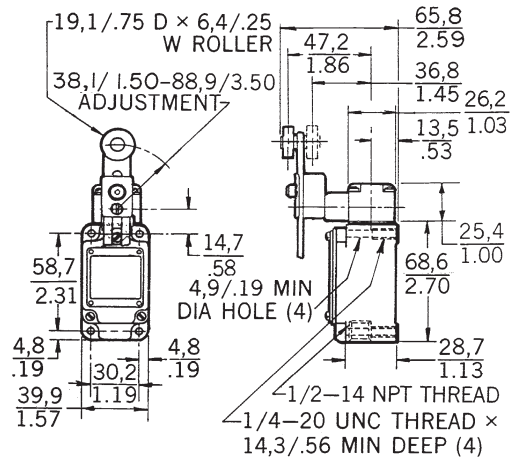
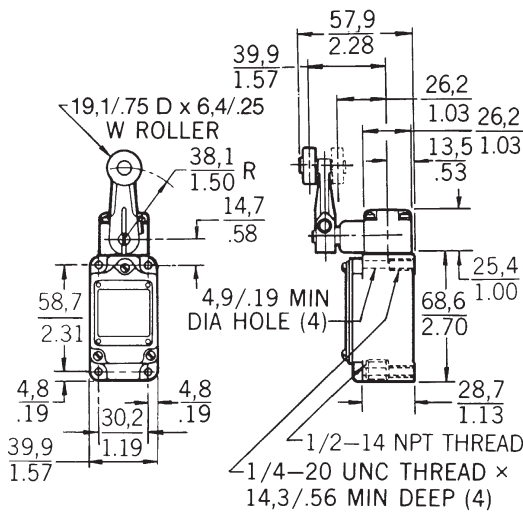
OPTIONS

Fixed length lever

| | | |
|---------------------------------------|----------|-------------------------|
| Operating force max. (OF): | Standard | 13,3 N (3.0 lb) |
| | Low | 5,0 N (18 oz) |
| Pretravel max. (PT): | Standard | 20° |
| | Low | 5° |
| Overtravel min. (OT) | | 30° |
| Differential travel max. (DT): | Standard | 12° |
| | Low | 4° |
| Switching options: | | SPDT |
| Lever: | | Aluminium, steel roller |

Adjustable roller lever

| | | |
|---------------------------------------|----------|-------------------------|
| Operating force max. (OF): | Standard | 13,3 N (3.0 lb) |
| | Low | 5,0 N (18 oz) |
| Pretravel max. (PT): | Standard | 20° |
| | Low | 5° |
| Overtravel min. (OT) | | 30° |
| Differential travel max. (DT): | Standard | 12° |
| | Low | 4° |
| Switching options: | | SPDT |
| Lever: | | Aluminium, nylon roller |



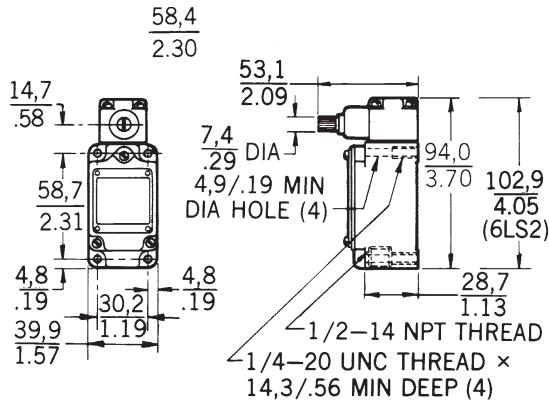
| CONDUIT | ELECTRICAL RATING | REFERENCE |
|------------------|-------------------|-----------|
| | A | 1LS1 |
| | F | 1LS1-L |
| | A | 1LS1-4C |
| Low PT/OF | B | 1LS131 |
| Low PT | B | 1LS19 |
| Low PT | B | 1LS19-4C |
| High temperature | A | 1LS243 |
| High temperature | A | 1LS243-4C |
| Indicator light | C | 1LS501 |
| Low OF | A | 1LS6 |

| CONDUIT | ELECTRICAL RATING | REFERENCE |
|--------------|-------------------|-----------|
| | A | 1LS3 |
| | F | 1LS3-L |
| 20 mm | A | 1LS3-4C |
| Low PT | B | 1LS58 |
| Low OF/PT/DT | B | 1LS59 |

No lever

Note: Levers for are ordered separately (see pages 71-73 for details)

| | | |
|---------------------------------------|----------------------|----------------------|
| Operating force max. (OF): | Standard | 0,51 N m (4.5 in lb) |
| | Low with standard PT | 0,21 N m (30 in oz) |
| Pretravel max. (PT): | Standard | 20° |
| | Low | 5° |
| Overtravel min. (OT) | Maintained contact | 55° |
| | Standard | 30° |
| Differential travel max. (DT): | Maintained contact | 35° |
| | Standard | 12° |
| Switching options: | Low PT | 4° |
| | Maintained contact | 20° |
| | | SPDT |
| | | Aluminium rod |



SPDT contact

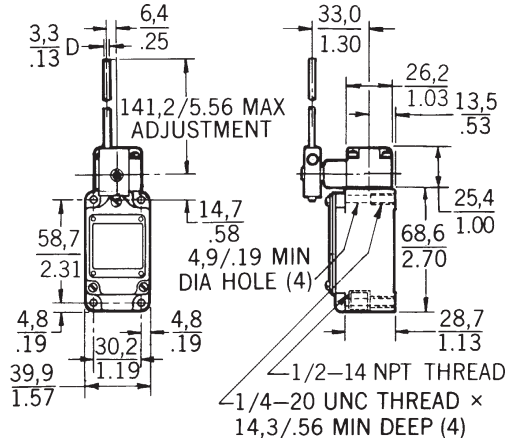
| CONDUIT | ELECTRICAL RATING | REFERENCE |
|-----------|-------------------|-----------|
| | A | 1LS2 |
| | F | 1LS2-L |
| 20 mm | A | 1LS2-4C |
| Low OF | A | 1LS23 |
| Low OF/PT | B | 1LS56 |
| Low PT | B | 1LS9 |

Maintained contact

| CONDUIT | ELECTRICAL RATING | REFERENCE |
|---------|-------------------|-----------|
| | A | 6LS2 |
| | F | 6LS2-L |

Adjustable rod

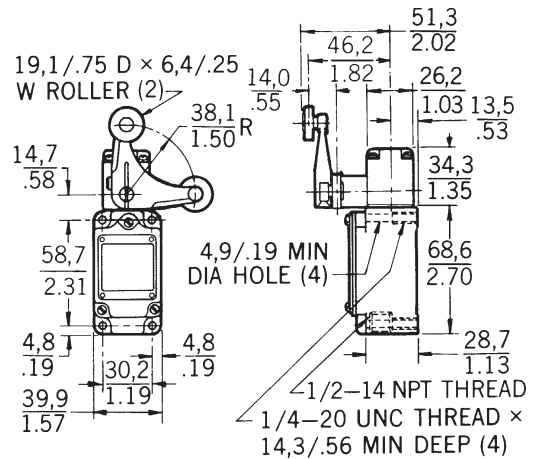
| | | |
|---------------------------------------|----------|----------------|
| Operating force max. (OF): | Standard | 1,39 N (5 oz) |
| | Low | 0,83 Nm (3 oz) |
| Pretravel max. (PT): | Standard | 20° |
| | Low | 5° |
| Overtravel min. (OT) | | 30° |
| Differential travel max. (DT): | Standard | 12° |
| | Low | 4° |
| Switching options: | | SPDT |
| Lever: | | Aluminium rod |



| CONDUIT | ELECTRICAL RATING | REFERENCE |
|--------------|-------------------|-----------|
| | A | 1LS10 |
| | F | 1LS10-L |
| 20 mm | A | 1LS10-4C |
| Low PT | B | 1LS47 |
| Low PT/OF/DT | B | 1LS53 |

Side rotary, yoke lever, maintained contact

| | |
|-----------------------------------|---|
| Operating force max. (OF): | 8,9 N (2.0 lb) |
| Pretravel max. (PT): | 55° |
| Switching options: | Maintained |
| Lever: | 6LS1 Steel rollers on opposite sides of arm |
| | 6LS3 Nylon rollers on same side of arm |



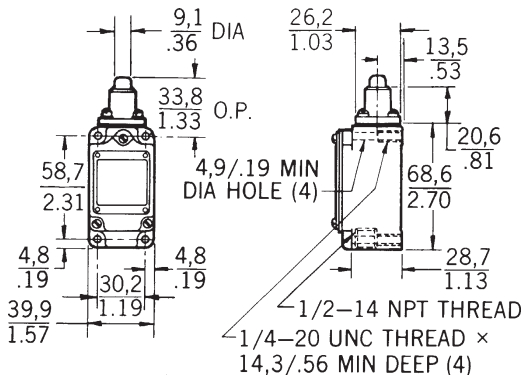
| CONDUIT | ELECTRICAL RATING | REFERENCE |
|---------|-------------------|-----------|
| 20 mm | A | 6LS1 |
| | A | 6LS1-4C |
| | A | 6LS3 |

**LS Series
Plunger actuated switches**

OPTIONS

Top pin plunger

| | | |
|---------------------------------------|----------|--------------------|
| Operating force max. (OF): | Standard | 31,14 N (7 lb) |
| | Low | 10 N (36 oz) |
| Pretravel max. (PT): | Standard | 1,65 mm (0.065 in) |
| | Low | 6,35 mm (0.25 in) |
| Overtravel min. (OT) | Standard | 6,35 mm (0.25 in) |
| | Low | 5,56 mm (0.219 in) |
| Differential travel max. (DT): | Standard | 0,51 mm (0.020 in) |
| | Low | 0,23 mm (0.009 in) |
| Switching options: | | SPDT |

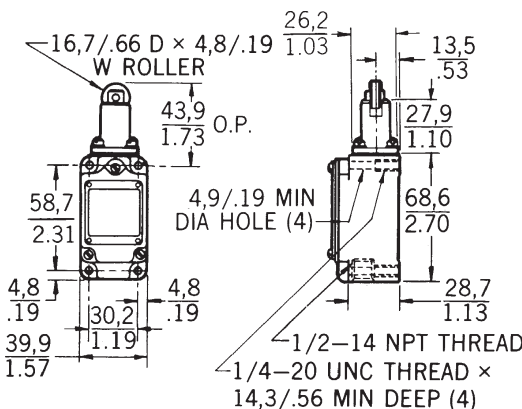


| CONDUIT | ELECTRICAL RATING | REFERENCE |
|---------|-------------------|-----------|
| 20 mm | A | 2LS1 |
| | F | 2LS1-L |
| | A | 2LS1-4C |
| | E | 2LS111 |
| | | |

Low OF/OT/DT

Top roller plunger

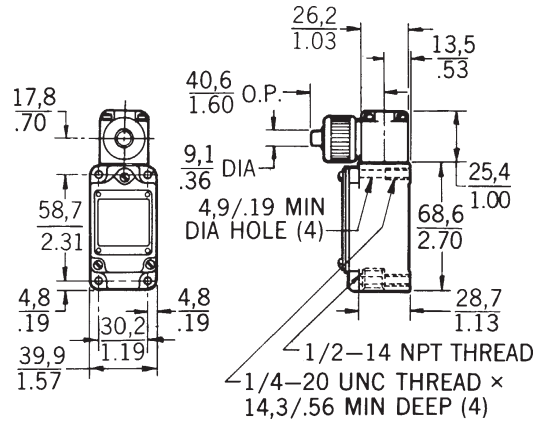
| | | |
|---------------------------------------|----------|--------------------|
| Operating force max. (OF): | Standard | 31,14 N (7 lb) |
| | Low | 10 N (36 oz) |
| Pretravel max. (PT): | Standard | 1,65 mm (0.065 in) |
| | Low | 5,56 mm (0.219 in) |
| Overtravel min. (OT) | Standard | 5,56 mm (0.219 in) |
| | Low | 5,56 mm (0.219 in) |
| Differential travel max. (DT): | Standard | 0,51 mm (0.020 in) |
| | Low | 0,51 mm (0.020 in) |
| Switching options: | | SPDT |



| CONDUIT | ELECTRICAL RATING | REFERENCE |
|---------|-------------------|-----------|
| 20 mm | A | 5LS1 |
| | F | 5LS1-L |
| | A | 5LS1-4C |
| | | |

Side pin plunger

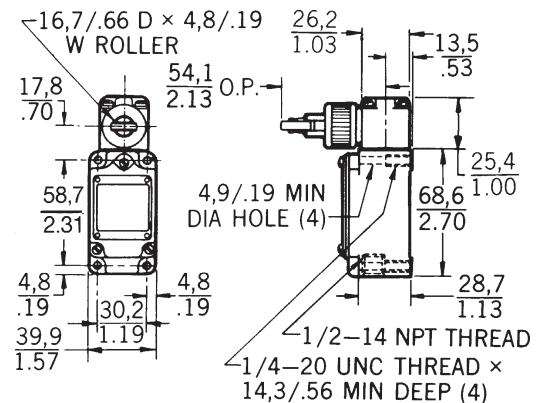
| | | |
|---------------------------------------|----------|--------------------|
| Operating force max. (OF): | Standard | 40,03 N (9 lb) |
| | Low | 10 N (36 oz) |
| Pretravel max. (PT): | Standard | 2,8 mm (0.110 in) |
| | Low | 6,35 mm (0.25 in) |
| Overtravel min. (OT) | Standard | 6,35 mm (0.25 in) |
| | Low | 5,56 mm (0.219 in) |
| Differential travel max. (DT): | Standard | 1,02 mm (0.040 in) |
| | Low | 1,02 mm (0.040 in) |
| Switching options: | | SPDT |



| CONDUIT | ELECTRICAL RATING | REFERENCE |
|---------|-------------------|-----------|
| 20 mm | A | 4LS1 |
| | A | 4LS1-4C |

Side roller plunger

| | | |
|---------------------------------------|----------|--------------------|
| Operating force max. (OF): | Standard | 40,03 N (9 lb) |
| | Low | 10 N (36 oz) |
| Pretravel max. (PT): | Standard | 2,8 mm (0.110 in) |
| | Low | 6,35 mm (0.25 in) |
| Overtravel min. (OT) | Standard | 5,56 mm (0.219 in) |
| | Low | 5,56 mm (0.219 in) |
| Differential travel max. (DT): | Standard | 1,02 mm (0.040 in) |
| | Low | 1,02 mm (0.040 in) |
| Switching options: | | SPDT |



| CONDUIT | ELECTRICAL RATING | REFERENCE |
|---------|-------------------|-----------|
| 20 mm | A | 3LS1 |
| | A | 3LS1-4C |

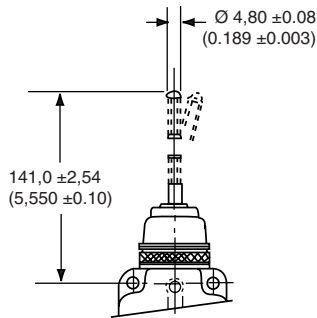
Wobble actuated switches

These switches will operate by moving actuator in any direction except direct pull.

Operating force max. (OF): 1,39 N (5 oz)
 Pretravel max. (PT): 28,6 mm (1,125 in)
 Switching options: SPDT

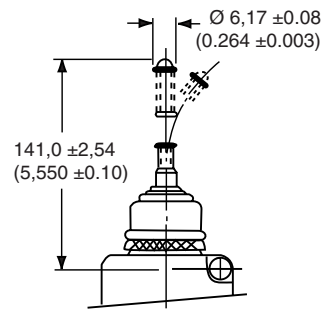
OPTIONS

Flexible cable



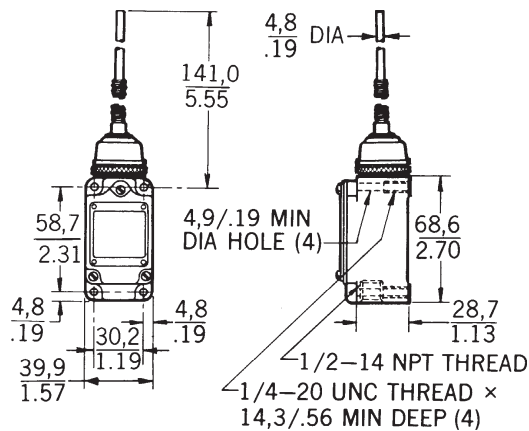
| CONDUIT | ELECTRICAL RATING | REFERENCE |
|---------|-------------------|-----------|
| | D | 8LS1 |
| | G | 8LS1-L |
| 20 mm | D | 8LS1-4C |

Coil spring



| CONDUIT | ELECTRICAL RATING | REFERENCE |
|---------|-------------------|-----------|
| | D | 8LS152 |
| 20 mm | D | 8LS152-4C |

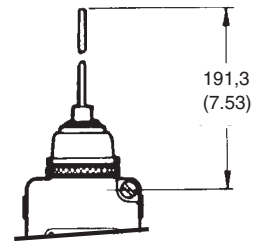
Spring rod



| CONDUIT | ELECTRICAL RATING | REFERENCE |
|---------|-------------------|-----------|
| | D | 8LS3 |
| 20 mm | D | 8LS3-4C |

Steel wire

Operating force max. (OF): 0,28 N (1 oz)
 Pretravel max. (PT): 63,5 mm (2.5 in)



| CONDUIT | ELECTRICAL RATING | REFERENCE |
|---------|-------------------|-----------|
| | D | 8LS125 |
| 20 mm | D | 8LS125-4C |

BF Series Plastic Enclosed Basic Switches



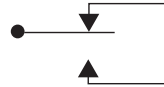
BF Series Plastic Enclosed Basic Switches are available with a wide variety of actuators, and are designed for easy mounting and wiring. BF switches are designed to allow mounting with the cover either towards or away from the mounting surface.

Switches with lever type actuators are adjustable in two directions. The entire actuator can be rotated around its mounting bushing, and the angle of the lever can also be changed.

Sealing:
Operating temperature:
Approvals:
Termination:
Contacts:
Electrical ratings:
Switching options:
 SPDT

NEMA 1, 3, 4, 13
 -32 °C to 71 °C (-25 °F to 160 °F)
 UL
 ½ in - 14NPT
 Silver
 11 A - 125 Vac, 250 Vac or 277 Vac
 5 A - 125 Vac, 250 Vac or 277 Vac

Single Pole, Double Throw,
 Snap action contacts (1NC/1NO)



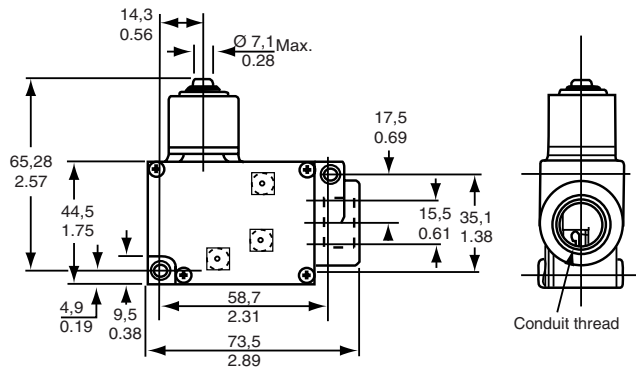
Actuators



Plunger actuated switches

OPTIONS

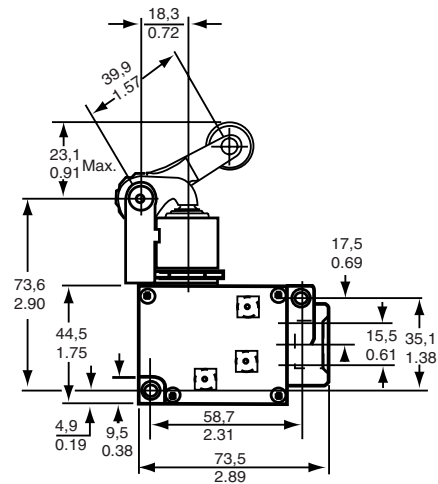
Top pin plunger



Operating force max. (OF): 12,23 N (44 oz)
Differential travel max. (DT): 0,64 mm (0.025 in)

| ACTUATOR POSITION | ELECTRICAL RATING | REFERENCE |
|-------------------|-------------------|-----------|
| Left | B | BFL1-BP1 |
| Right | B | BFR1-BP1 |

Top roller arm, adjustable

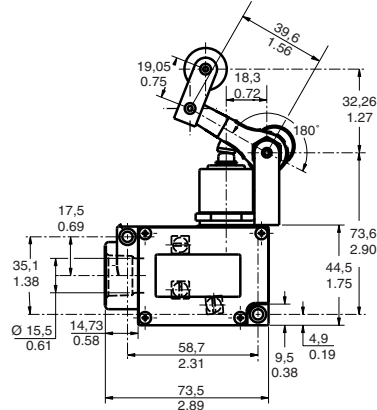


Operating force max. (OF): 10,56 N (38 oz)
Differential travel max. (DT): 1,65 mm (0.065 in)

| ACTUATOR POSITION | ELECTRICAL RATING | REFERENCE |
|-------------------|-------------------|-----------|
| Left | B | BFL1-BL1 |
| Right | B | BFR1-BL1 |

**Plunger actuated switches
(continued)**

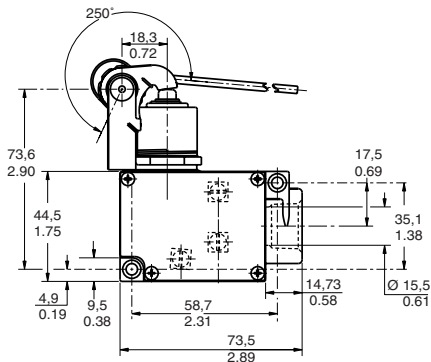
Top roller arm, adjustable, one way



Operating force max. (OF):
 Left 3,61 N (13 oz)
 Right 10,56 N (38 oz)

| ACTUATOR POSITION | ELECTRICAL RATING | REFERENCE |
|-------------------|-------------------|-----------|
| Left | B | BFL1-BL3 |
| Right | B | BFR1-BL3 |

Low force rod



Operating force max. (OF):
 Left 10,56 N (38 oz)
 Right 3,61 N (13 oz)

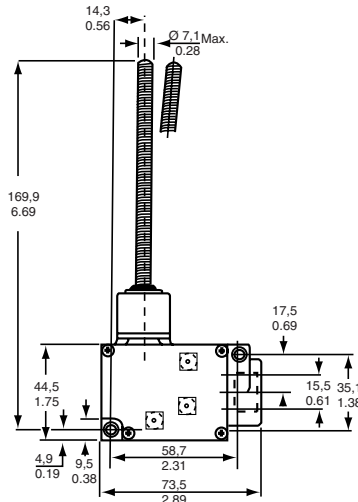
| ACTUATOR POSITION | ELECTRICAL RATING | REFERENCE |
|-------------------|-------------------|-----------|
| Left | B | BFL1-BL2 |
| Right | B | BFR1-BL2 |

Wobble actuated switches

Operating force max. (OF): 1,95 N (7 oz)

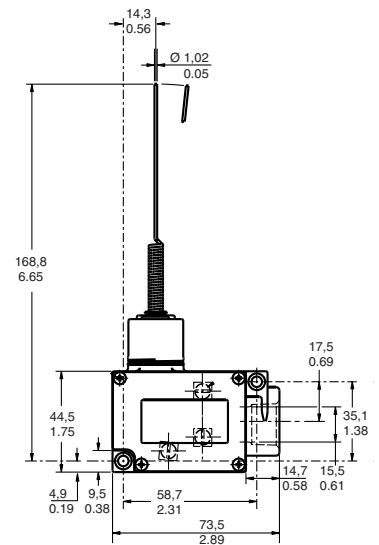
OPTIONS

Coil spring



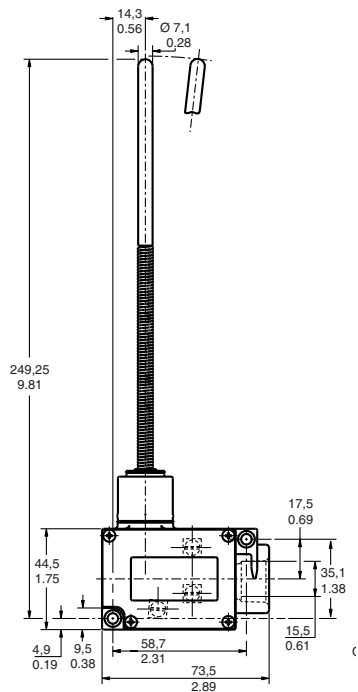
| ACTUATOR POSITION | ELECTRICAL RATING | REFERENCE |
|-------------------|-------------------|-----------|
| Left | A | BFL1-AW1 |
| Left | B | BFL1-BW1 |
| Right | B | BFR1-BW1 |

Spring wire



| ACTUATOR POSITION | ELECTRICAL RATING | REFERENCE |
|-------------------|-------------------|-----------|
| Left | B | BFL1-BW4 |
| Right | B | BFR1-BW4 |

Plastic



Type -BW3

| ACTUATOR POSITION | ELECTRICAL RATING | REFERENCE |
|-------------------------------------|-------------------|-----------|
| Left, 179,3 mm (7.06 in) length rod | A | BFL1-AW2 |
| Left, 249,25 mm (9.8 in) length rod | B | BFL1-BW3 |

Honeywell

www.honeywell.com/sensing

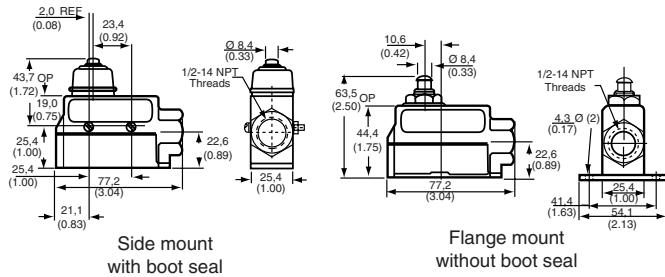
E6/V6

E6 (side mount) and V6 (flange mount) switches are offered with or without actuator seal boots. Both have a combination insulator/ seal cemented inside the bottom enclosure. Lead washers are used to seal the mounting holes on side mount switches. All side mount switches are installed with #6 screws, except the BZE6-2RN7 (#8 screws). Removal of the bottom enclosure exposes the terminals for easy wiring.

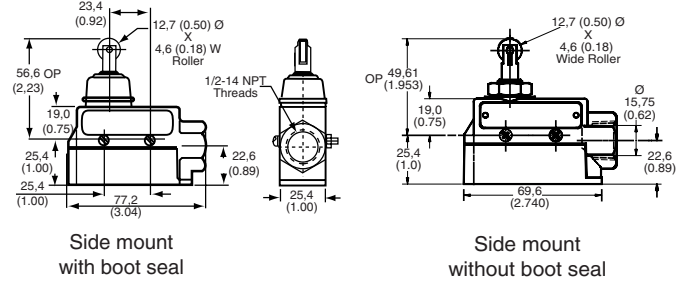
Momentary contact

OPTIONS

Top pin plunger



Top roller plunger, parallel



With boot seal

| | | |
|---------------------------------------|----------------------|------------------------------------|
| Operating force max. (OF): | SPDT Standard | 2,50 N to 6,67 N (9 oz to 24 oz) |
| | SPDT Low temperature | 4,17 N to 10,84 N (15 oz to 39 oz) |
| | DPDT | 6,95 N to 16,4 N (25 oz to 59 oz) |
| Pretravel max. (PT): | SPDT | 1,98 mm (0.078 in) |
| | DPDT | 2,8 mm (0.110 in) |
| Overtravel min. (OT): | SPDT | 5,56 mm (0.219 in) |
| | DPDT | 3,18 mm (0.125 in) |
| Differential travel max. (DT): | SPDT | 0,05 mm (0.002 in) |
| | DPDT | 1,52 mm (0.060 in) |

With boot seal

| | | |
|---------------------------------------|------|--|
| Operating force max. (OF): | SPDT | 2,50 N to 6,67 N (9 oz to 24 oz) |
| | DPDT | 5,56 N to 13,34 N (20 oz to 48 oz) |
| Pretravel max. (PT): | SPDT | 1,98 mm (0.078 in) |
| | DPDT | 2,8 mm (0.110 in) |
| Overtravel min. (OT): | SPDT | 5,56 mm (0.219 in) |
| | DPDT | 3,18 mm (0.125 in) |
| Differential travel max. (DT): | SPDT | 0,01 mm to 0,05 mm (0.0004 in to 0.0020 in) |
| | DPDT | 1,52 mm (0.060 in) |

Side mount

| | CONTACT | ELECTRICAL RATING | REFERENCE |
|-------------------------|---------|-------------------|------------|
| | SPDT | A | BZE6-2RN |
| | DPDT | B | DTE6-2RN |
| Low temperature/High OF | SPDT | A | BZE6-2RN34 |
| #8 screws | SPDT | A | BZE6-2RN7 |
| Gold contacts | SPDT | D | BZE6-2RN72 |

Side mount

| | CONTACT | ELECTRICAL RATING | REFERENCE |
|--|---------|-------------------|------------|
| | SPDT | A | BZE6-2RN80 |
| | DPDT | B | DTE6-2RN80 |

Flange mount

| | CONTACT | ELECTRICAL RATING | REFERENCE |
|--|---------|-------------------|-----------|
| | SPDT | A | BZV6-2RN |
| | DPDT | B | DTV6-2RN |

Flange mount

| | CONTACT | CONDUIT | ELECTRICAL RATING | REFERENCE |
|--|---------|---------|-------------------|------------|
| | SPDT | | A | BZV6-2RN80 |

Without boot seal

| | | |
|---------------------------------------|------|------------------------------------|
| Operating force max. (OF): | SPDT | 2,50 N to 3,61 N (9 oz to 13 oz) |
| | DPDT | 5,56 N to 11,12 N (20 oz to 40 oz) |
| Pretravel max. (PT): | SPDT | 0,38 mm (0.015 in) |
| | DPDT | 3,81 mm (0.150 in) |
| Overtravel min. (OT): | SPDT | 5,56 mm (0.219 in) |
| | DPDT | 2,24 mm (0.088 in) |
| Differential travel max. (DT): | SPDT | 0,05 mm (0.002 in) |
| | DPDT | 1,52 mm (0.060 in) |

Without boot seal

| | | |
|---------------------------------------|------|-----------------------------------|
| Operating force max. (OF): | SPDT | 2,50 N to 3,61 N (9 oz to 13 oz) |
| | DPDT | 6,67 N to 13,34 N (24oz to 48 oz) |
| Pretravel max. (PT): | SPDT | 0,38 mm (0.015 in) |
| | DPDT | 3,58 mm (0.141 in) |
| Overtravel min. (OT): | SPDT | 3,55 mm (0.140 in) |
| | DPDT | 3,18 mm (0.125 in) |
| Differential travel max. (DT): | SPDT | 0,05 mm (0.002 in) |
| | DPDT | 1,52 mm (0.060 in) |

Side mount

| | CONTACT | ELECTRICAL RATING | REFERENCE |
|--|---------|-------------------|-----------|
| | SPDT | A | BZE6-2RQ |
| | DPDT | B | DTE6-2RQ |

Side mount

| | CONTACT | CONDUIT | ELECTRICAL RATING | REFERENCE |
|-------------------------|---------|---------|-------------------|-----------|
| Field adjustable roller | SPDT | | A | BZE6-2RQ8 |
| Field adjustable roller | SPDT | | A | BZE6-2RQ9 |
| Field adjustable roller | DPDT | | B | DTE6-2RQ9 |

Flange mount

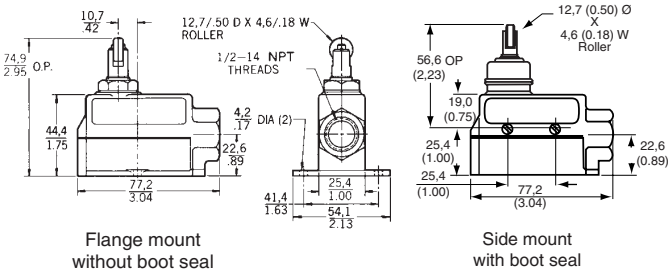
| | CONTACT | ELECTRICAL RATING | REFERENCE |
|--|---------|-------------------|-----------|
| | SPDT | A | BZV6-2RQ |

Flange mount

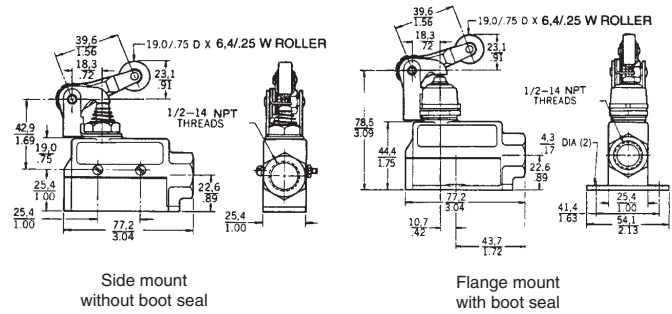
| | CONTACT | CONDUIT | ELECTRICAL RATING | REFERENCE |
|--|---------|---------|-------------------|-----------|
| | SPDT | | A | BZV6-2RQ8 |

**BZE/DTE Series
E6/V6 Momentary contact (continued)**

Top roller plunger, perpendicular



Roller arm, adjustable



With boot seal

| | |
|---------------------------------------|--|
| Operating Force max. (OF): | 2,60 N to 6,67 N (9 oz to 24 oz) |
| Pretravel max. (PT): | 1,98 mm (0.078 in) |
| Overtravel min. (OT): | 5,56 mm (0.219 in) |
| Differential travel max. (DT): | 0,01 mm to 0,05 mm (0.0004 in to 0.0020 in) |

Side mount

| CONTACT | ELECTRICAL RATING | REFERENCE |
|---------|-------------------|------------|
| SPDT | A | BZE6-2RN81 |

Without boot seal

| | | |
|---------------------------------------|---------------------------------------|---|
| Operating Force max. (OF): | SPDT 2,50 N to 3,61 N (9 oz to 13 oz) | DPDT 6,67 N to 13,34 N (24 oz to 48 oz) |
| Pretravel max. (PT): | SPDT 0,38 mm (0.015 in) | DPDT 3,58 mm (0.141 in) |
| Overtravel min. (OT): | SPDT 3,55 mm (0.140 in) | DPDT 3,18 mm (0.125 in) |
| Differential travel max. (DT): | SPDT 0,05 mm (0.002 in) | DPDT 1,52 mm (0.060 in) |

Side mount

| CONTACT | ELECTRICAL RATING | REFERENCE |
|---------|-------------------|------------|
| SPDT | A | BZE6-2RQ81 |
| DPDT | B | DTE6-2RQ81 |

Flange mount

| CONTACT | ELECTRICAL RATING | REFERENCE |
|---------|-------------------|------------|
| SPDT | A | BZV6-2RQ81 |

| | | |
|-------------------------------|---|--|
| Operating temperature: | Standard -32 °C to 71 °C (-25 °F to 160 °F) | Low -40 °C to 71 °C (-40 °F to 160 °F) |
| Roller: | Steel | |

With boot seal

| | | |
|---------------------------------------|-----------------------------------|-------------------------|
| Operating Force max. (OF): | 2,78 N to 5,56 N (10 oz to 20 oz) | |
| Pretravel max. (PT): | 4,78 mm (0.188 in) | |
| Overtravel min. (OT): | 5,56 mm (0.219 in) | |
| Differential travel max. (DT): | SPDT 0,15 mm (0.006 in) | DPDT 4,19 mm (0.165 in) |

Side mount

| | |
|-----------------------------------|-------------------------|
| Operating Force max. (OF): | DPDT 13,34 N (48 oz) |
| Pretravel max. (PT): | DPDT 7,92 mm (0.312 in) |

| CONTACT | ELECTRICAL RATING | REFERENCE |
|----------------------|-------------------|-------------|
| SPDT | A | BZE6-2RN2 |
| DPDT | B | DTE6-2RN2 |
| Low temperature SPDT | A | BZE6-2RN234 |

Flange mount

| | |
|-----------------------------------|--|
| Operating Force max. (OF): | DPDT 2,78 N to 8,34 N (10 oz to 30 oz) |
| Pretravel max. (PT): | DPDT 6,76 mm (0.266 in) |

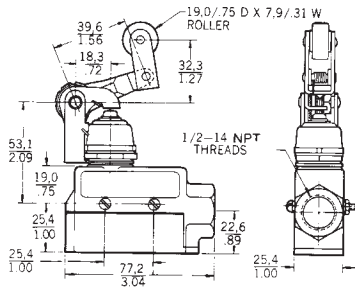
| CONTACT | ELECTRICAL RATING | REFERENCE |
|---------|-------------------|-----------|
| SPDT | A | BZV6-2RN2 |
| DPDT | B | DTV6-2RN2 |

Without boot seal

| | |
|---------------------------------------|-----------------------------------|
| Operating Force max. (OF): | 2,78 N to 5,00 N (10 oz to 20 oz) |
| Pretravel max. (PT): | 4,78 mm (0.188 in) |
| Overtravel min. (OT): | 5,56 mm (0.219 in) |
| Differential travel max. (DT): | 0,15 mm (0.006 in) |

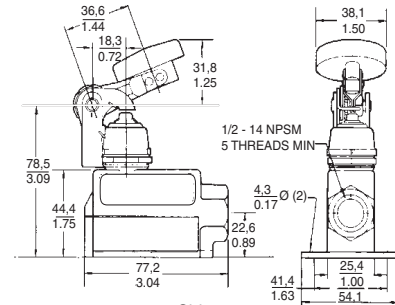
| | CONTACT | ELECTRICAL RATING | REFERENCE |
|--------------|---------|-------------------|-----------|
| Side mount | SPDT | A | BZE6-2RQ2 |
| Flange mount | SPDT | A | BZV6-2RQ2 |

One way roller lever



Side mount with boot seal

Manual palm button



Side mount with boot seal

With boot seal

Operating force max. (OF): 2,22 N to 5,56 N (8 oz to 20 oz)
Pretravel max. (PT): 5,94 mm (0.234 in)
Overtravel min. (OT): 5,56 mm (0.219 in)
Differential travel max. (DT): 0,15 mm (0.006 in)

| | CONTACT | ELECTRICAL RATING | REFERENCE |
|------------|---------|-------------------|------------|
| Side mount | SPDT | A | BZE6-2RN28 |

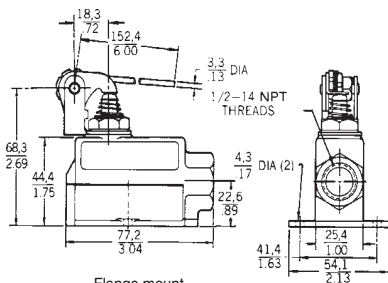
With boot seal

Operating force max. (OF): 2,78 N to 5,56 N (10 oz to 20 oz)
Pretravel max. (PT): 4,78 mm (0.188 in)
Overtravel min. (OT): 5,56 mm (0.219 in)
Differential travel max. (DT): 0,15 mm (0.006 in)

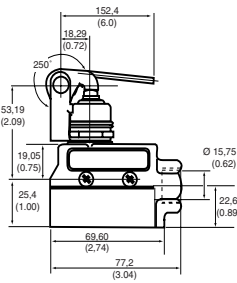
| | CONTACT | ELECTRICAL RATING | REFERENCE |
|--------------|---------|-------------------|-----------|
| Flange mount | SPDT | A | BZV6-2RN4 |

Rod lever

Pretravel max. (PT): 18,24 mm (0.718 in)
Overtravel min. (OT): 21,29 mm (0.838 in)
Differential travel max. (DT): 5,82 mm (0.229 in)



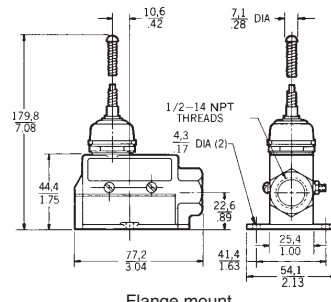
Flange mount without boot seal



Side mount with boot seal

Wobble, coil spring

These switches will operate by moving actuator in any direction except direct pull.



Flange mount with boot seal

With boot seal

Operating force max. (OF): 0,83 N to 1,95 N (3 oz to 7 oz)

| | CONTACT | ELECTRICAL RATING | REFERENCE |
|--------------|---------|-------------------|------------|
| Side mount | SPDT | A | BZE6-2RN62 |
| Flange mount | SPDT | A | BZV6-2RN62 |

With boot seal

Operating force max. (OF): 1,95 N (7 oz)
Pretravel max. (PT): 15°

| | CONTACT | ELECTRICAL RATING | REFERENCE |
|--------------|---------|-------------------|------------|
| Side mount | SPDT | A | BZE6-2RN18 |
| Flange mount | SPDT | A | BZV6-2RN18 |

Without boot seal

Operating force max. (OF): 0,56 N to 1,39 N (2 oz to 5 oz)

| | CONTACT | ELECTRICAL RATING | REFERENCE |
|--------------|---------|-------------------|------------|
| Side mount | SPDT | A | BZE6-2RQ62 |
| Flange mount | SPDT | A | BZV6-2RQ62 |

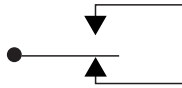
BZE/DTE Series E6/V6 Maintained contact (reset) switches

The switches shown below provide maintained contact after the operating force on either top or bottom plunger is released.

Note: The top plungers on these switches provide more accurate and uniform operation than the "reset" plungers and should be used when closely held operating characteristics are required.

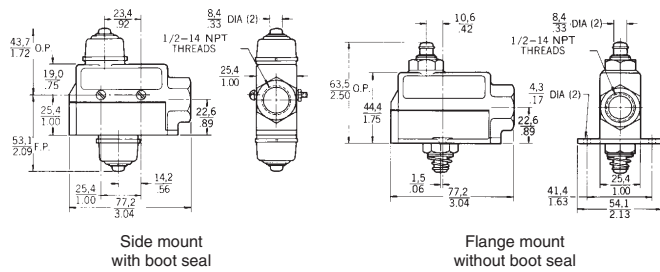
Switching:
SPDT

Single Pole, Double Throw
(1NC/1NO) Maintained

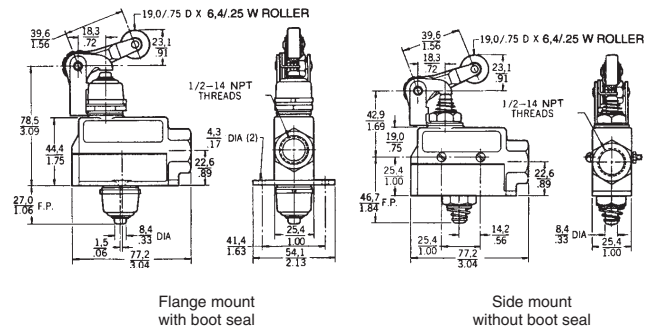


OPTIONS

Top pin plunger



Roller arm, adjustable



Side mount

| | | |
|-----------------------------------|-------------------|-----------------------------------|
| Operating force max. (OF): | With boot seal | 1,67 N to 5,56 N (6 oz to 20 oz) |
| | Without boot seal | 1,67 N to 2,64 N (6 oz to 9.5 oz) |
| Pretravel max. (PT): | With boot seal | 1,98 mm (0.078 in) |
| | Without boot seal | 0,30 mm (0.012 in) |
| Overtravel min. (OT): | | 4,75 mm (0.187 in) |

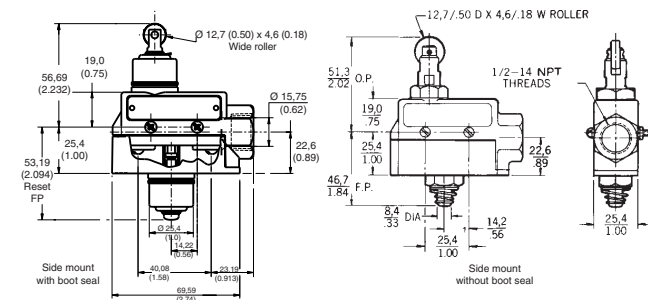
Side mount

| | | |
|-----------------------------------|-------------------|--------------------|
| Operating Force max. (OF): | With boot seal | 4,45 N (16 oz) |
| | Without boot seal | 3,34 N (12 oz) |
| Pretravel max. (PT): | | 4,78 mm (0.188 in) |
| Overtravel min. (OT): | | 5,56 mm (0.219 in) |

| | CONTACT | ELECTRICAL RATING | REFERENCE |
|-------------------|-----------------|-------------------|-----------|
| With boot seal | SPDT Maintained | C | BZE6-RNX1 |
| Without boot seal | SPDT Maintained | C | BZE6-RQX2 |

| | CONTACT | CONDUIT | ELECTRICAL RATING | REFERENCE |
|-------------------|------------|---------|-------------------|------------|
| With boot seal | Maintained | C | | BZE6-RN2X1 |
| Without boot seal | Maintained | C | | BZE6-RQ2X2 |

Top roller plunger



Side mount

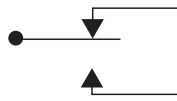
| | | |
|-----------------------------------|-------------------|------------------------------------|
| Operating force max. (OF): | With boot seal | 3,34 N to 15,57 N (12 oz to 56 oz) |
| | Without boot seal | 1,67 N to 2,64 N (6 oz to 9.5 oz) |
| Pretravel max. (PT): | With boot seal | 1,98 mm (0.078 in) |
| | Without boot seal | 0,30 mm (0.012 in) |
| Overtravel min. (OT): | With boot seal | 4,75 mm (0.187 in) |
| | Without boot seal | 3,55 mm (0.140 in) |

| | CONTACT | CONDUIT | ELECTRICAL RATING | REFERENCE |
|-------------------|---------|---------|-------------------|-------------|
| With boot seal | SPDT | C | | BZE6-RN80X2 |
| Without boot seal | SPDT | C | | BZE6-RQ8X2 |

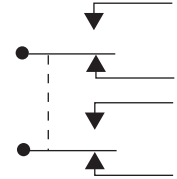
E7 Metal standard enclosed switch

Mechanical life: 10 million
Sealing: Without boot seal IP50 Standard
 With boot seal IP65 Sealed
Operating temperature: -30 °C to 70 °C (-22 °F to 158 °F)
Approvals: IEC 60947-5-1
 EN 60947-5-1

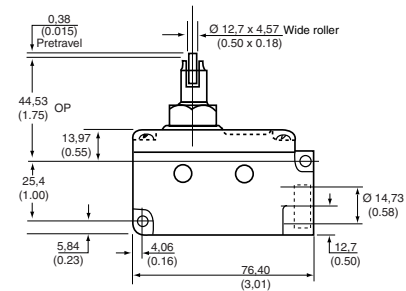
Switching options:
 SPDT Single Pole, Double Throw
 Snap action contacts (1NC/1NO)



DPDT Double Pole, Double Throw
 Snap action contacts (2NC/2NO)



Top roller plunger, perpendicular, without boot seal

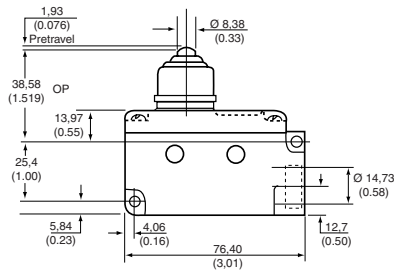


| CONTACT | CONDUIT | ELECTRICAL RATING | REFERENCE |
|---------|---------|-------------------|---------------|
| SPDT | PG 13.5 | | BZE7-2RQ81-PG |

OPTIONS

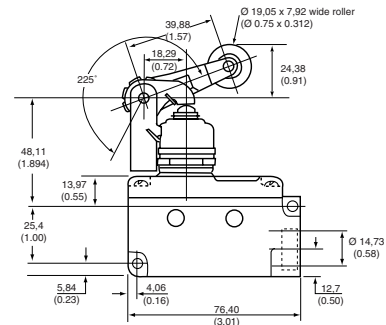
Top pin plunger

With boot seal



| CONTACT | CONDUIT | ELECTRICAL RATING | REFERENCE |
|---------|---------|-------------------|-------------|
| SPDT | PG 13.5 | | BZE7-2RN-PG |
| SPDT | 20 mm | | BZE7-2RN-C |
| DPDT | PG 13.5 | | DTE7-2RN-PG |

Top roller lever, boot seal

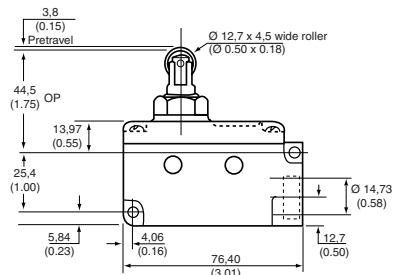


| CONTACT | CONDUIT | ELECTRICAL RATING | REFERENCE |
|---------|---------|-------------------|--------------|
| SPDT | PG 13.5 | | BZE7-2RN2-PG |
| SPDT | 20 mm | | BZE7-2RN2-C |

Without boot seal

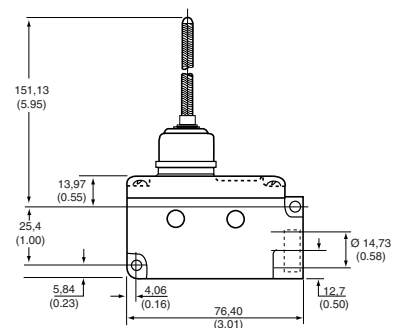
| CONTACT | CONDUIT | ELECTRICAL RATING | REFERENCE |
|---------|---------|-------------------|-------------|
| SPDT | PG 13.5 | | BZE7-2RQ-PG |

Top roller plunger, parallel, without boot seal



| CONTACT | CONDUIT | ELECTRICAL RATING | REFERENCE |
|---------|---------|-------------------|--------------|
| SPDT | PG 13.5 | | BZE7-2RQ8-PG |

Wobble, coil spring, boot seal



| CONTACT | CONDUIT | ELECTRICAL RATING | REFERENCE |
|---------|---------|-------------------|---------------|
| SPDT | PG 13.5 | | BZE7-2RN18-PG |

BAF/DTF Series High Capacity Enclosed Switches

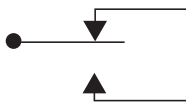


Actuators

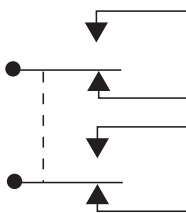


Approvals: UL, CSA
Sealing: -2RQ9 NEMA 1, 3, 4, 13 NEMA 1
Operating temperature: -32 °C to 71 °C (-25 °F to 160 °F)
Conduit: ½ in - 14 NPT
Contacts: Silver
Electrical ratings: B UL/CSA Rating: 10 A, 125 or 250 Vac; 0.3 A, 125 Vdc; 0.15 A, 250 Vdc.
 D UL/CSA Rating: 20 A, 125, 250 or 480 Vac; 1 Hp, 125 Vac; 2 Hp, 250 Vac; ½ A, 125 Vdc; ¼ A, 250 Vdc; Lamp Load - 10 A, 125 Vac.

Switching options:
 D SPDT Single Pole, Double Throw Snap action contacts (1NC/1NO)



B DPDT Double Pole, Double Throw Snap action contacts (2NC/2NO)



The BAF/DTF Series is available with or without boot seals. The elastomer boot on sealed actuator versions protects the actuating mechanism and the internal basic switch from contamination. They are therefore suitable for wash-down applications. Both sealed and unsealed versions are available with the actuators on the right or left hand side.

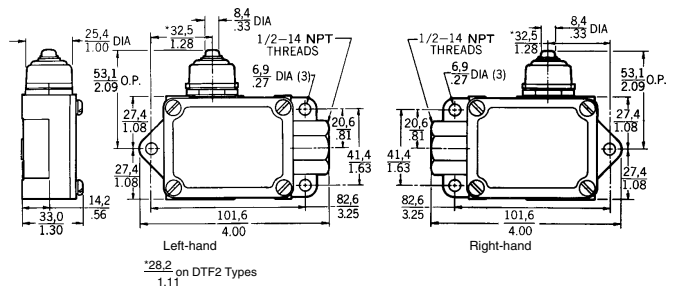
The cover plate is removable to allow ease of wiring and switch replacement without having to dismount the housing.

The BAF/DTF Series is suitable for use in packaging equipment, farm machinery, conveyors, overhead cranes and hoists.

Momentary contact

OPTIONS

Top pin plunger



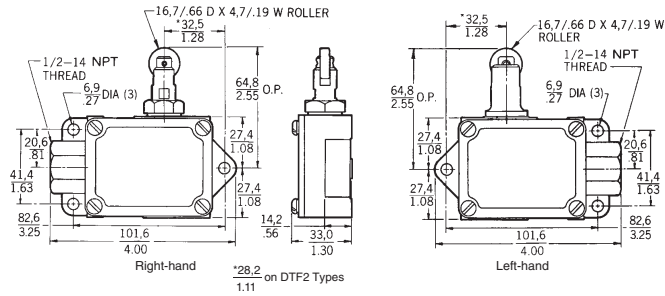
With boot seal

| | | |
|---------------------------------------|---------|---------------------|
| Operating force max. (OF): | BAF/DTF | 11,2 N (2.5 lb) |
| Pretravel max. (PT): | BAF | 2,39 mm (0.094 in) |
| | DTF | 3,59 mm (0.141 in) |
| Overtravel min. (OT): | BAF | 5,56 mm (0.219 in) |
| | DTF | 3,96 mm (0.156 in) |
| Differential travel max. (DT): | BAF | 0,26 mm (0.010 in) |
| | DTF | 1,53 mm (0.060 in) |
| Operating position (OP): | BAF | 53,19 mm (2.094 in) |
| | DTF | 52,07 mm (2.050 in) |

| ACTUATOR POSITION | CONTACT | ELECTRICAL RATING | REFERENCE |
|-------------------|---------|-------------------|-------------|
| Right | SPDT | D | BAF1-2RN-RH |
| Left | SPDT | D | BAF1-2RN-LH |
| Right | DPDT | B | DTF2-2RN-RH |
| Left | DPDT | B | DTF2-2RN-LH |

Momentary contact (continued)

Top roller plunger, parallel



O-ring actuator seal

| | | |
|---------------------------------------|---------|---------------------|
| Operating force max. (OF): | BAF/DTF | 35,6 N (8.0 lb) |
| Pretravel max. (PT): | BAF/DTF | 3,18 mm (0.125 in) |
| Overtravel min. (OT): | BAF | 4,75 mm (0.187 in) |
| | DTF | 3,18 mm (0.125 in) |
| Differential travel max. (DT): | BAF | 0,19 mm (0.0075 in) |
| | DTF | 1,53 mm (0.060 in) |
| Operating position (OP): | BAF | 64,69 mm (2.547 in) |
| | DTF | 63,88 mm (2.515 in) |

| ACTUATOR POSITION | CONTACT | ELECTRICAL RATING | REFERENCE |
|-------------------|---------|-------------------|---------------|
| Right | SPDT | D | BAF1-2RQN8-RH |
| Left | SPDT | D | BAF1-2RQN8-LH |
| Right | DPDT | B | DTF2-2RQN8-RH |
| Left | DPDT | B | DTF2-2RQN8-LH |

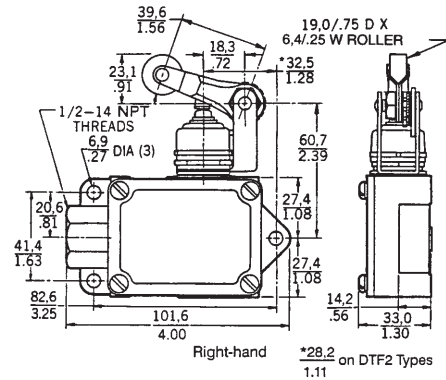
Field adjustable roller plunger

Adjustable 360° horizontally

| | | |
|---------------------------------------|---------|---------------------|
| Operating force max. (OF): | BAF/DTF | 11,2 N (2.5 lb) |
| Pretravel max. (PT): | BAF | 2,39 mm (0.094 in) |
| | DTF | 3,18 mm (0.125 in) |
| Overtravel min. (OT): | BAF | 3,96 mm (0.156 in) |
| | DTF | 3,18 mm (0.125 in) |
| Differential travel max. (DT): | BAF | 0,26 mm (0.010 in) |
| | DTF | 1,53 mm (0.060 in) |
| Operating position (OP): | BAF | 64,69 mm (2.547 in) |
| | DTF | 63,88 mm (2.515 in) |

| ACTUATOR POSITION | CONTACT | ELECTRICAL RATING | REFERENCE |
|-------------------|---------|-------------------|--------------|
| Right | SPDT | D | BAF1-2RQ9-RH |
| Left | SPDT | D | BAF1-2RQ9-LH |
| Right | DPDT | B | DTF2-2RQ9-RH |
| Left | DPDT | B | DTF2-2RQ9-LH |

Roller arm, adjustable

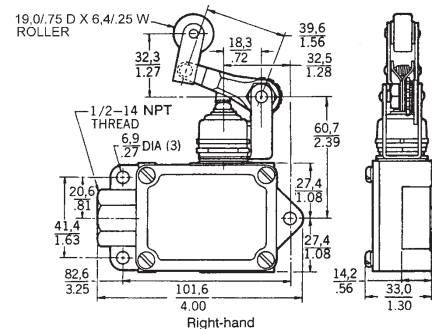


With boot seal

| | | |
|---------------------------------------|-----|--------------------|
| Operating force max. (OF): | BAF | 8,90 N (2.0 lb) |
| | DTF | 11,1 N (2.5 lb) |
| Pretravel max. (PT): | BAF | 5,56 mm (0.219 in) |
| | DTF | 7,93 mm (0.312 in) |
| Overtravel min. (OT): | BAF | 6,35 mm (0.25 in) |
| | DTF | 5,56 mm (0.219 in) |
| Differential travel max. (DT): | BAF | 0,51 mm (0.020 in) |
| | DTF | 3,05 mm (0.120 in) |

| ACTUATOR POSITION | CONTACT | ELECTRICAL RATING | REFERENCE |
|-------------------|---------|-------------------|--------------|
| Right | SPDT | D | BAF1-2RN2-RH |
| Left | SPDT | D | BAF1-2RN2-LH |
| Right | DPDT | B | DTF2-2RN2-RH |
| Left | DPDT | B | DTF2-2RN2-LH |

One way roller lever



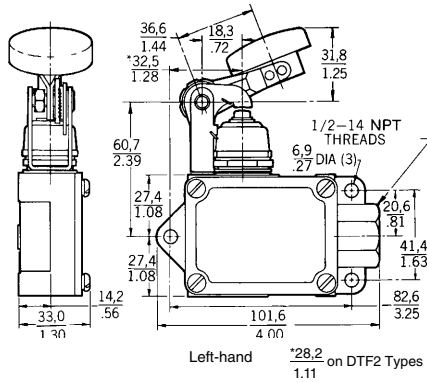
With boot seal

| | | |
|---------------------------------------|--|--------------------|
| Operating force max. (OF): | | 8,90 N (2.0 lb) |
| Pretravel max. (PT): | | 5,56 mm (0.219 in) |
| Overtravel min. (OT): | | 6,35 mm (0.25 in) |
| Differential travel max. (DT): | | 0,51 mm (0.020 in) |

| ACTUATOR POSITION | CONTACT | ELECTRICAL RATING | REFERENCE |
|-------------------|---------|-------------------|---------------|
| Right | SPDT | D | BAF1-2RN28-RH |
| Left | SPDT | D | BAF1-2RN28-LH |

BAF/DTF Series
Momentary contact (continued)

Manual palm button



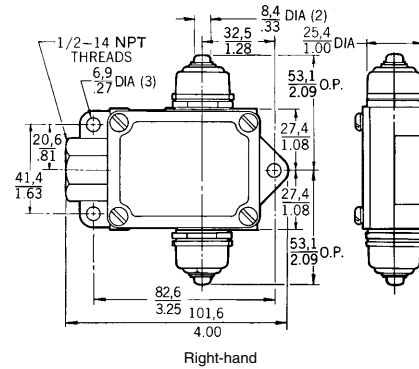
With boot seal

Operating force max. (OF): 8,90 N (2.0 lb)

| ACTUATOR POSITION | CONTACT | ELECTRICAL RATING | REFERENCE |
|-------------------|---------|-------------------|--------------|
| Right | SPDT | D | BAF1-2RN4-RH |
| Left | SPDT | D | BAF1-2RN4-LH |

Maintained contact (reset) switches

Top pin plunger

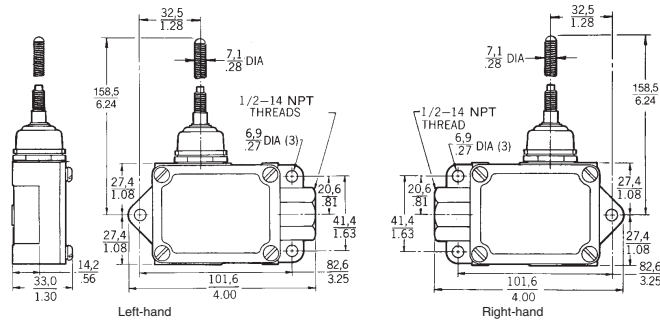


With boot seal

Operating force max. (OF): 7,79 N (1.75 lb)
Pretravel max. (PT): 2,39 mm (0.094 in)
Overtravel min. (OT): 5,56 mm (0.219 in)

| ACTUATOR POSITION | CONTACT | ELECTRICAL RATING | REFERENCE |
|-------------------|-----------------|-------------------|------------|
| Right | Maintained SPDT | D | BAF1-3RNX1 |

Wobble, coil spring

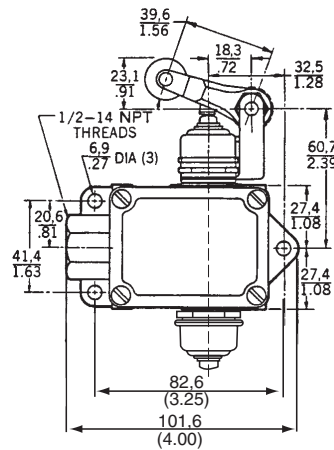


With boot seal

Pretravel max. (PT): 15°

| ACTUATOR POSITION | CONTACT | ELECTRICAL RATING | REFERENCE |
|-------------------|---------|-------------------|---------------|
| Right | SPDT | D | BAF1-2RN18-RH |
| Left | SPDT | D | BAF1-2RN18-LH |

Roller arm, adjustable

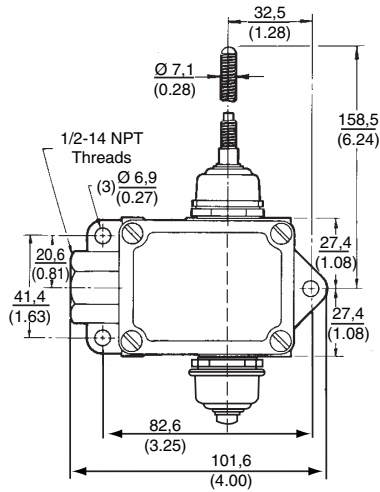


With boot seals on roller arm and plunger

Operating force max. (OF): 6,67 N (1.5 lb)
Pretravel max. (PT): 5,56 mm (0.219 in)
Overtravel min. (OT): 6,35 mm (0.25 in)
Operating position (OP): 60,71 mm (2.390 in)

| ACTUATOR POSITION | CONTACT | ELECTRICAL RATING | REFERENCE |
|-------------------|-----------------|-------------------|---------------|
| Right | Maintained SPDT | D | BAF1-3RN2X-RH |
| Left | Maintained SPDT | D | BAF1-3RN2X-LH |

Wobble, coil spring

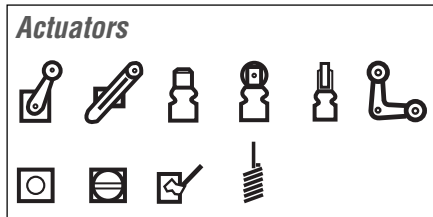


With boot seals on wobble stick and plunger

Pretravel max. (PT): 15°

| ACTUATOR POSITION | CONTACT | ELECTRICAL RATING | REFERENCE |
|-------------------|-----------------|-------------------|--------------|
| Right | Maintained SPDT | D | BAF1-3CN18X1 |

HDLS Series Heavy Duty Limit Switches



Levers: Levers for side rotary types are ordered separately (see pages 71-73 for details)

The HDLS Series Heavy Duty Limit Switches offer a wide choice of mounting and actuator options. Housed in a rugged, die-cast zinc body which is epoxy coated for protection, they are perfectly suited to special applications in harsh duty environments where conventional limit switches may not be used. Versatile and full featured, they are designed for long life.

Listings referenced in this section are mainly standard. Low temperature and fluorocarbon (FC, high temperature) construction is available in all forms of HDLS limit switches. For temperature ranges see table opposite. Also available are factory sealed, pre-wired switches.

Low temperature switches have fluorosilicone diaphragm, shaft seals and external boot seal (where applicable) plus a low temperature lubricant. If prewired with cable, temperature limits are -10 °C (14 °F) flex and -30 °C (22 °F) no flex.

To order a low temperature version insert the additional letters **Y** and **B** as in the following example:
LSA1A - standard side rotary plug-in switch
LSYAB1A - low temperature version.

Completely fluorocarbon (FC) sealed, high temperature, chemical resistance switches have a full FC body gasket covering the switch cavity. Rotary types have an extra FC seal on the operating shaft, while plunger versions have FC boot seals. They are for use in applications where the environment includes fire-resistant synthetic fluids. The additional FC seals also promote longer operating life for rotary actuated HDLS switches in applications where the temperatures are normally -12 °C to 121 °C (10 °F to 250 °F). If prewired with cable, temperature limits are 105 °C (221 °F) dry and 60 °C (140 °F) wet.

To order a fluorocarbon (FC) sealed switch insert the additional letters **Y** and **C** as in the following example:
LSA1A - standard side rotary plug-in switch
LSYAC1A - completely FC sealed version.

Factory sealed, pre-wired limit switches have the entry area completely sealed and are available with 6 ft (1.83 m), ST00W-A cable or 4, 5 or 9-pin connectors. NEMA ratings are, for cable version 1, 4, 6, 6P, 12, for connector version 1, 4, 6, 6P, 12, 13.

To order a factory sealed switch add the appropriate letter:

| Circuitry | Cable | ½ in Connector (available with ½ in conduit tap only) |
|-----------|----------------------|---|
| SPDT | C | A (4 pin mini) B (5 pin mini) DD (4 pin micro) |
| DPDT | M (¾ in only) | R (9 pin) |

Example:

- LSA1AC - LSA1A with 6 ft of 5 conductor ST00W-A cable
- LSJ2BM-7N - LSJ2B-7N with 6 ft of 9 conductor ST00W-A cable
- LSA1AB - LSA1A with 5 pin receptacle
- LSA1ADD - 4 pin micro-change connector

Electrical ratings

10 amps continuous carry. Circuits on any one pole must be the same polarity.

ac Volts

Pilot duty: 600 Vac, 720 VA

| | Vac | Amps at 0.35 Power Factor | |
|-----------|-----------------------------------|---------------------------|-------|
| | | Make | Break |
| A | 120 | 60 | 6 |
| SPDT | 240 | 30 | 3 |
| NEMA | 480 | 15 | 1.5 |
| A600 | 600 | 12 | 1.2 |
| B | 120 | 30 | 3 |
| DPDT | 240 | 15 | 1.5 |
| NEMA | 480 | 7.5 | 0.75 |
| B600 | 600 | 6 | 0.60 |
| C | 250 Vac or 60 Vdc, 0.050 amp max. | | |
| SPDT/DPDT | | | |

dc Volts

Pilot duty: 240 Vdc, 30 watts

| | Vdc | Make and Break Amps | |
|-----------|-----------------------------------|---------------------|-----------|
| | | Inductive | Resistive |
| A | 120 | 0.25 | 0.8 |
| SPDT | 240 | 0.15 | 0.4 |
| B | 120 | 0.25 | 0.8 |
| DPDT | 240 | 0.15 | 0.4 |
| C | 250 Vac or 60 Vdc, 0.050 amp max. | | |
| SPDT/DPDT | | | |

Operating temperatures

| | Standard HDLS | | | | Low Temperature HDLS | | | | High Temperature HDLS (Fluorocarbon Sealed*) | | |
|---|-----------------|----------------|-----------------|------------------|----------------------|------------------|-----------------|------------------|--|----------------|------------------|
| | Low Limit | | High Limit | | Low Limit | | High Limit | | Low Limit | | High Limit |
| | 10 °F -12 °C | 30 °F -1 °C | 200 °F 93 °C | 250 °F 121 °C | -40 °F -40 °C | -20 °F -29 °C | 200 °F 93 °C | 250 °F 121 °C | 10 °F -12 °C | 30 °F -1 °C | 250 °F 121 °C |
| LSA - Side Rotary Momentary | X | | | X | X | | | X | X | | X |
| LSB - Top Rotary | | X | | X | | X | | X | | X | X |
| LSC - Top Plain Plunger | X | | X | | X | | X | | X | | X |
| LSD - Top Roller Plunger | X | | X | | X | | X | | X | | X |
| LSE - Side Plain Plunger | X | | X | | | X | X | | X | | X |
| LSF - Side Roller Plunger | X | | X | | | X | X | | X | | X |
| LSG - Side Plunger Maintained | | X | X | | | X | X | | | X | X |
| LSH - Side Rotary, Low P.T., Low Torque | | X | | X | | X | | X | | X | X |
| LSJ - Wobble Stick | X | | X | | X | | | X | X | | X |
| LSK - Cat Whisker | X | | X | | | X | | X | X | | X |
| LSL - Side Rotary Sequence | X | | | X | X | | | X | X | | X |
| LSM - Side Rotary Center Neutral | | X | | X | X | | | X | | X | X |
| LSN - Side Rotary Maintained | | X | | X | | X | | X | | X | X |
| LSP - Side Rotary, Low Pretravel | X | | | X | X | | | X | X | | X |
| LSR - Side Rotary, Low Torque | | X | | X | | X | | X | | X | X |
| LSU - Side Rotary, Low Pretravel | X | | | X | X | | | X | X | | X |
| LSV - Top Adjustable Plunger | X | | X | | X | | X | | X | | X |
| LSW - Side Adjustable Plunger | X | | X | | | X | X | | X | | X |

*For HDLS application wherein the upper temperature limit is normally above 200 °F (93 °C), much longer switch life can be obtained by using

completely fluorocarbon-sealed switches rather than the standard HDLS.

Environmental seal performance

| Std. Seals | Cellulube | Detergent | 5 Star | ASTM #1 | ASTM #2 | ASTM #3 | ASTM #4 | Houghto Safe 260, 271 | Houghto Safe 1010, 1055, 1120 | Mineral Oil | Petr. Oil Crude | Silicon Gr. & Oil | Sunsafe | Beer | Stoddard Solv. | Chlorinated Solvents | Citric Acids | Di-ester Syn. Lubricant | Ozone | Pydraul | Pyroguard | Petr. Base Hydraulic Oil | Lard Oil | Silicate Esters |
|------------|-----------|-----------|--------|---------|---------|---------|---------|-----------------------|-------------------------------|-------------|-----------------|-------------------|---------|------|----------------|----------------------|--------------|-------------------------|-------|---------|-----------|--------------------------|----------|-----------------|
| LSA | 4 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 4 | 1 | 1 | 1 | 1 | 1 | 1 | 4 | 1 | 2 | 4 | 4 | 4 | 1 | 1 | 2 |
| LSB | 4 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 4 | 1 | 1 | 1 | 1 | 1 | 1 | 4 | 1 | 2 | 4 | 4 | 4 | 1 | 1 | 2 |
| LSC | 4 | 2 | 2 | 1 | 2 | 4 | 4 | 2 | 4 | 2 | 2 | 1 | 2 | 1 | 2 | 4 | 1 | 4 | 3 | 4 | 4 | 2 | 2 | 2 |
| LSD | 4 | 2 | 2 | 1 | 2 | 4 | 4 | 2 | 4 | 2 | 2 | 1 | 2 | 1 | 2 | 4 | 1 | 4 | 3 | 4 | 4 | 2 | 2 | 2 |
| LSE | 4 | 2 | 2 | 1 | 2 | 4 | 4 | 2 | 4 | 2 | 2 | 1 | 2 | 1 | 2 | 4 | 1 | 4 | 3 | 4 | 4 | 2 | 2 | 2 |
| LSF | 4 | 2 | 2 | 1 | 2 | 4 | 4 | 2 | 4 | 2 | 2 | 1 | 2 | 1 | 2 | 4 | 1 | 4 | 3 | 4 | 4 | 2 | 2 | 2 |
| LSG | 4 | 2 | 2 | 1 | 2 | 4 | 4 | 2 | 4 | 2 | 2 | 1 | 2 | 1 | 2 | 4 | 1 | 4 | 3 | 4 | 4 | 2 | 2 | 2 |
| LSH | 4 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 4 | 1 | 1 | 1 | 1 | 1 | 1 | 4 | 1 | 2 | 4 | 4 | 4 | 1 | 1 | 2 |
| LSJ | 4 | 2 | 2 | 1 | 2 | 4 | 4 | 2 | 4 | 2 | 2 | 1 | 2 | 1 | 2 | 4 | 1 | 4 | 3 | 4 | 4 | 2 | 2 | 2 |
| LSK | 4 | 2 | 2 | 1 | 2 | 4 | 4 | 2 | 4 | 2 | 2 | 1 | 2 | 1 | 2 | 4 | 1 | 4 | 3 | 4 | 4 | 2 | 2 | 2 |
| LSL | 4 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 4 | 1 | 1 | 1 | 1 | 1 | 1 | 4 | 1 | 2 | 4 | 4 | 4 | 1 | 1 | 2 |
| LSM | 4 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 4 | 1 | 1 | 1 | 1 | 1 | 1 | 4 | 1 | 2 | 4 | 4 | 4 | 1 | 1 | 2 |
| LSN | 4 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 4 | 1 | 1 | 1 | 1 | 1 | 1 | 4 | 1 | 2 | 4 | 4 | 4 | 1 | 1 | 2 |
| LSP | 4 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 4 | 1 | 1 | 1 | 1 | 1 | 1 | 4 | 1 | 2 | 4 | 4 | 4 | 1 | 1 | 2 |
| LSR | 4 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 4 | 1 | 1 | 1 | 1 | 1 | 1 | 4 | 1 | 2 | 4 | 4 | 4 | 1 | 1 | 2 |
| LSV | 4 | 2 | 2 | 1 | 2 | 4 | 4 | 2 | 4 | 2 | 2 | 1 | 2 | 1 | 2 | 4 | 1 | 4 | 3 | 4 | 4 | 2 | 2 | 2 |
| LSW | 4 | 2 | 2 | 1 | 2 | 4 | 4 | 2 | 4 | 2 | 2 | 1 | 2 | 1 | 2 | 4 | 1 | 4 | 3 | 4 | 4 | 2 | 2 | 2 |

All HDLS with seals of:

| | | | | | | | | | | | | | | | | | | | | | | | | |
|---------------------------------|----|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fluorosilicone (Low Temp. HDLS) | 4 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 4 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 4 | 4 | 1 | 1 | 1 |
| Fluorocarbon (High Temp. HDLS) | 1* | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

*Fluorocarbon seals good for all Cellulubes Except A60 CODE:

- 1 J Satisfactory
- 2 J Fair
- 3 J Doubtful
- 4 J Unsatisfactory



OPTIONS

Standard

| | | |
|-----------------------------|------|----------|
| Pretravel: | | 15° max. |
| Differential travel: | SPDT | 5° max. |
| | DPDT | 7° max. |
| Overtravel: | | 60° min. |

Plug in

| CONTACT CONDUIT | ELECTRICAL RATING | REFERENCE |
|-----------------|-------------------|-----------|
| SPDT | A | LSA1A |
| SPDT | C | LSA1E |
| DPDT ¼ in | B | LSA2B |
| DPDT | B | LSA6B |
| DPDT | C | LSA6S |
| SPDT 20 mm | A | LS4A1A |
| DPDT 20 mm | B | LS4A2B |

Non plug in

| CONTACT CONDUIT | ELECTRICAL RATING | REFERENCE |
|-----------------|-------------------|-----------|
| SPDT | A | LSA3K |
| DPDT ¼ in | B | LSA4L |
| SPDT 20 mm | A | LS4A3K |

Low differential travel

| | | |
|-----------------------------|------|----------|
| Pretravel: | | 9° max. |
| Differential travel: | SPDT | 3° max. |
| | DPDT | 4° max. |
| Overtravel: | | 66° min. |

Plug in

| CONTACT | ELECTRICAL RATING | REFERENCE |
|---------|-------------------|-----------|
| SPDT | A | LSP1A |
| SPDT | C | LSP1E |
| DPDT | B | LSP2B |
| DPDT | B | LSP6B |
| DPDT | C | LSP6S |

Non plug in

| CONTACT CONDUIT | ELECTRICAL RATING | REFERENCE |
|-----------------|-------------------|-----------|
| SPDT | A | LSP3K |
| DPDT ¼ in | B | LSP4L |

Low torque

| | | |
|-----------------------------|------|----------|
| Pretravel: | | 15° max. |
| Differential travel: | SPDT | 5° max. |
| | DPDT | 7° max. |
| Overtravel: | | 60° min. |

Plug in

| CONTACT CONDUIT | ELECTRICAL RATING | REFERENCE |
|-----------------|-------------------|-----------|
| SPDT | A | LSR1A |
| SPDT | C | LSR1E |
| DPDT ¼ in | B | LSR2B |
| DPDT | B | LSR6B |
| DPDT | C | LSR6S |

Non plug in

| CONTACT CONDUIT | ELECTRICAL RATING | REFERENCE |
|-----------------|-------------------|-----------|
| SPDT | A | LSR3K |
| DPDT ¼ in | B | LSR4L |

Low differential, low torque

| | | |
|-----------------------------|------|----------|
| Pretravel: | | 9° max. |
| Differential travel: | SPDT | 3° max. |
| | DPDT | 4° max. |
| Overtravel: | | 66° min. |

Plug in

| CONTACT CONDUIT | ELECTRICAL RATING | REFERENCE |
|-----------------|-------------------|-----------|
| SPDT | A | LSH1A |
| SPDT | C | LSH1E |
| DPDT ¼ in | B | LSH2B |
| DPDT | B | LSH6B |
| DPDT | C | LSH6S |

Non plug in

| CONTACT CONDUIT | ELECTRICAL RATING | REFERENCE |
|-----------------|-------------------|-----------|
| SPDT | A | LSH3K |
| DPDT ¼ in | B | LSH4L |

5° Pretravel

| | | |
|-----------------------------|------|----------|
| Pretravel: | | 5° max. |
| Differential travel: | SPDT | 3° max. |
| | DPDT | 4° max. |
| Overtravel: | | 70° min. |

Plug in

| CONTACT CONDUIT | ELECTRICAL RATING | REFERENCE |
|-----------------|-------------------|-----------|
| SPDT | A | LSU1A |
| SPDT | C | LSU1E |
| DPDT ¼ in | B | LSU2B |
| DPDT | B | LSU6B |
| DPDT | C | LSU6S |

Non plug in

| CONTACT CONDUIT | ELECTRICAL RATING | REFERENCE |
|-----------------|-------------------|-----------|
| SPDT | A | LSU3K |
| DPDT ¼ in | B | LSU4L |

Side rotary, additional circuitry/ action

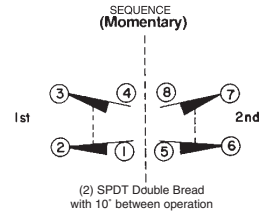
The following listings, sequential, centre neutral and maintained switches, are assembled with the operating shaft facing front. The user can position and lock the head with the shaft to rear or either side. They can also be factory assembled with the shaft to rear or either side. Contact Honeywell for more information.

OPTIONS

Sequential

One pole operates before the other in each direction, with 10° lever travel between operations.

| | |
|-----------------------------|------------------------------|
| Pretravel: | 1st pole 15° max. |
| | 2nd pole additional 10° max. |
| Differential travel: | Each pole 5° max. |
| Overtravel: | 48° min. |
| Switching options: | |



Plug in

| CONTACT CONDUIT | ELECTRICAL RATING | REFERENCE |
|-----------------|-------------------|-----------|
| DPDT ¼ in | B | LSL2C |
| DPDT | B | LSL6C |

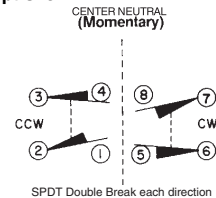
Non plug in

| CONTACT CONDUIT | ELECTRICAL RATING | REFERENCE |
|-----------------|-------------------|-----------|
| DPDT ¼ in | B | LSL4M |
| DPDT | B | LSL7M |

Centre neutral

One pole operates on clockwise rotation, the other on counterclockwise rotation.

| | |
|-----------------------------|----------|
| Pretravel: | 18° max. |
| Differential travel: | 10° max. |
| Overtravel: | 57° min. |
| Switching options: | |



Plug in

| CONTACT CONDUIT | ELECTRICAL RATING | REFERENCE |
|-----------------|-------------------|-----------|
| DPDT ¼ in | B | LSM2D |
| SPDT 20 mm | B | LS4M2D |
| DPDT | B | LSM6D |

Non plug in

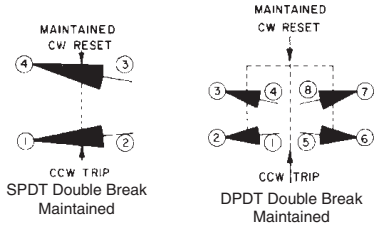
| CONTACT CONDUIT | ELECTRICAL RATING | REFERENCE |
|-----------------|-------------------|-----------|
| DPDT ¼ in | B | LSM4N |
| DPDT | B | LSM7N |

**HDLS Series
Side rotary actuated
switches (continued)**

Maintained contact, 2 position

Operation is maintained on counterclockwise rotation, reset on clockwise rotation and vice versa.

Pretravel: 65° max.
Differential travel: 40° max.
Overtravel: 20° min.
Switching options: SPDT DPDT



Plug in

| CONTACT | ELECTRICAL RATING | REFERENCE |
|---------|-------------------|-----------|
| SPDT | A | LSN1A |
| DPDT | B | LSN6B |

Non plug in

| CONTACT | ELECTRICAL RATING | REFERENCE |
|---------|-------------------|-----------|
| SPDT | A | LSN3K |
| DPDT | B | LSN7L |

Plunger actuated switches

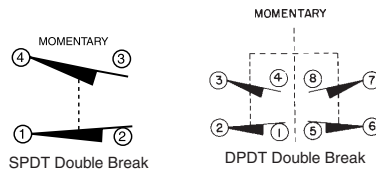
HDLS plunger actuated switches are available with either top or side facing plungers for application flexibility. Switches with adjustable plungers simplify installation. They have a hex setscrew and locknut on the plunger, providing an adjustment range of 0.25 in (6.35 mm).

Assembled conditions

The listing shown are factory assembled with side plungers facing front (label side of switch); rollers on side plungers are in horizontal position. Rollers on top plunger switches are parallel to mounting surface. Other options are available. Contact Honeywell for more information.

Approvals: NEMA 1, 3, 4, 4X, 6, 6P, 12, 13
UL, CSA, CE
Conduit: ½ in - 14 NPT

Contacts: Electrical ratings A, B Silver
Electrical rating C Gold
Switching options: Snap action contacts
SPDT DPDT

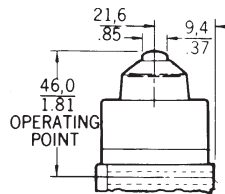


Top plungers, momentary action

Pretravel: 1,78 mm (0.07 in) max.
Differential travel: SPDT 0,38 mm (0.015 in) max.
DPDT 0,51 mm (0.02 in) max.
Overtravel: 4,83 mm (0.19 in) max.
Operating force: 17,8 N m (4 lb) max.

OPTIONS

Top pin plunger



Operating point: 45,8 mm ± 0,76
1.805 in ± 0.030

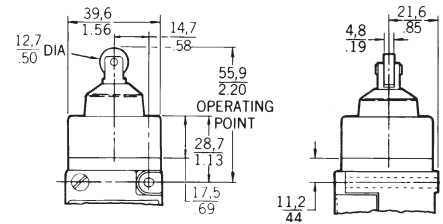
Plug in

| CONTACT | ELECTRICAL RATING | REFERENCE |
|---------|-------------------|-----------|
| SPDT | A | LSC1A |
| SPDT | C | LSC1E |
| DPDT | B | LSC6B |
| DPDT | C | LSC6S |

Non plug in

| CONTACT | ELECTRICAL RATING | REFERENCE |
|---------|-------------------|-----------|
| SPDT | A | LSC3K |
| DPDT | B | LSC7L |

Top roller plunger



Operating point: 55,9 mm ± 1,02
2,20 in ± 0.040

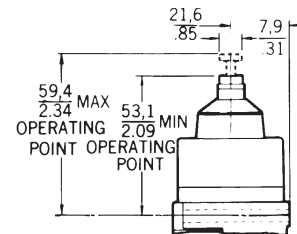
Plug in

| CONTACT | ELECTRICAL RATING | REFERENCE |
|---------|-------------------|-----------|
| SPDT | A | LSD1A |
| SPDT | C | LSD1E |
| DPDT | B | LSD6B |
| DPDT | C | LSD6S |

Non plug in

| CONTACT | ELECTRICAL RATING | REFERENCE |
|---------|-------------------|-----------|
| SPDT | A | LSD3K |
| DPDT | B | LSD7L |

Adjustable plunger



Operating point: 53,0 mm to 59,3 mm
2.085 in to 2.335 in

Plug in

| CONTACT | ELECTRICAL RATING | REFERENCE |
|---------|-------------------|-----------|
| SPDT | A | LSV1A |
| SPDT | C | LSV1E |
| DPDT | B | LSV6B |
| DPDT | C | LSV6S |

Non plug in

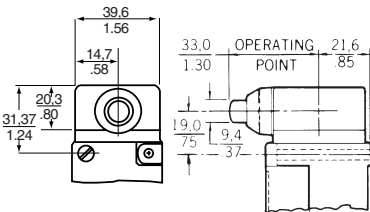
| CONTACT | ELECTRICAL RATING | REFERENCE |
|---------|-------------------|-----------|
| SPDT | A | LSV3K |
| DPDT | B | LSV7L |

Side plungers, momentary action

Pretravel: 2,54 mm (0.100 in) max.
Differential travel:
 SPDT 0,64 mm (0.025 in) max.
 DPDT 0,89 mm (0.035 in) max.
Overtravel: 4,83 mm (0.19 in) min.
Operating force: 26,7 N m (6 lb) max.

OPTIONS

Side pin plunger



Operating point: 33 mm ± 0,76
 1.300 in ± 0.030

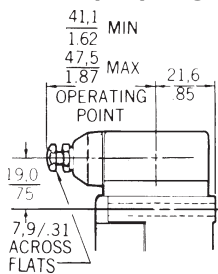
Plug in

| CONTACT | ELECTRICAL RATING | REFERENCE |
|---------|-------------------|-----------|
| SPDT | A | LSE1A |
| SPDT | C | LSE1E |
| DPDT | B | LSE6B |
| DPDT | C | LSE6S |

Non plug in

| CONTACT | ELECTRICAL RATING | REFERENCE |
|---------|-------------------|-----------|
| SPDT | A | LSE3K |
| DPDT | B | LSE7L |

Adjustable side pin plunger



Operating point: 41,0 mm to 47,4 mm
 1.615 in to 1.865 in

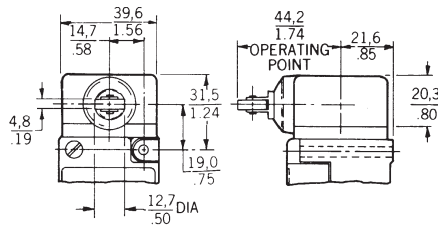
Plug in

| CONTACT | ELECTRICAL RATING | REFERENCE |
|---------|-------------------|-----------|
| SPDT | A | LSW1A |
| SPDT | C | LSW1E |
| DPDT | B | LSW6B |
| DPDT | C | LSW6S |

Non plug in

| CONTACT | ELECTRICAL RATING | REFERENCE |
|---------|-------------------|-----------|
| SPDT | A | LSW3K |
| DPDT | B | LSW7L |

Side roller plunger



Operating point: 44,1 mm ± 1,02
 1.735 in ± 0.040

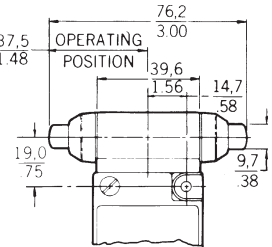
Plug in

| CONTACT | ELECTRICAL RATING | REFERENCE |
|---------|-------------------|-----------|
| SPDT | A | LSF1A |
| SPDT | C | LSF1E |
| DPDT | B | LSF6B |
| DPDT | C | LSF6S |

Non plug in

| CONTACT | ELECTRICAL RATING | REFERENCE |
|---------|-------------------|-----------|
| SPDT | A | LSF3K |
| DPDT | B | LSF7L |

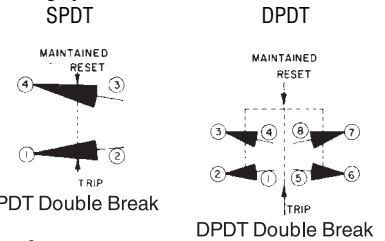
Side plunger, maintained circuitry



LSG contact transfer is maintained after either plunger is operated. Operation of other plunger resets switch.

Pretravel: 4,32 mm (0.170 in) max.
Differential travel:
 SPDT 2,29 mm (0.090 in) max.
 DPDT 2,29 mm (0.090 in) max.
Overtravel: 2,00 mm (0.0.80 in) max.
Operating force: 44,5 N m (10 lb) min.
Operating point: 37,6 ± 0,76 mm
 1.48 ± 0.030 in

Switching options:



Plug in

| CONTACT | ELECTRICAL RATING | REFERENCE |
|---------|-------------------|-----------|
| SPDT | A | LSG1A |
| SPDT | C | LSG1E |
| DPDT | B | LSG6B |
| DPDT | C | LSG6S |

Non plug in

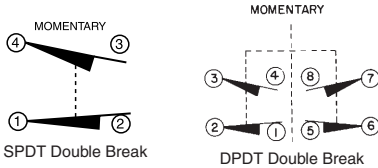
| CONTACT | ELECTRICAL RATING | REFERENCE |
|---------|-------------------|-----------|
| SPDT | A | LSG3K |
| DPDT | B | LSG7L |

HDLS Series Wobble actuated switches

Momentary action wobble actuated switches have flexible levers which may be operated with any movement, except direct pull.

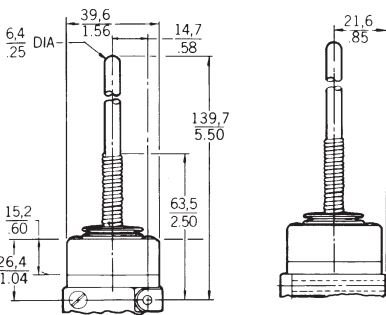
Approvals: NEMA 1, 3, 4, 4X, 6, 6P, 12, 13
UL, CSA, CE

Conduit: ½ in - 14 NPT
Contacts: Silver
Electrical ratings A, B
Switching options: Snap action contacts
SPDT DPDT



OPTIONS

Plastic rod



Pretravel (approx) (Radius): 25,4 mm (1.0 in)
Operating force: 2,78 g (10 oz) max.

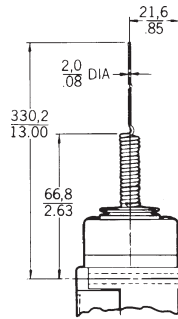
Plug in

| CONTACT | ELECTRICAL RATING | REFERENCE |
|---------|-------------------|-----------|
| SPDT | A | LSJ1A-7A |
| DPDT | B | LSJ6B-7A |

Non plug in

| CONTACT | ELECTRICAL RATING | REFERENCE |
|---------|-------------------|-----------|
| SPDT | A | LSJ3K-7A |
| DPDT | B | LSJ7L-7A |

Spring wire



Pretravel (approx) (Radius): 102,0 mm (4.0 in)
Operating force: 1,39 g (5 oz) max.

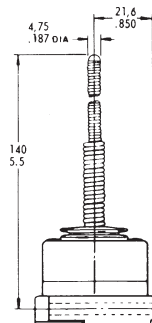
Plug in

| CONTACT | ELECTRICAL RATING | REFERENCE |
|---------|-------------------|-----------|
| SPDT | A | LSJ1A-7M |
| DPDT | B | LSJ6B-7M |

Non plug in

| CONTACT | ELECTRICAL RATING | REFERENCE |
|---------|-------------------|-----------|
| SPDT | A | LSJ3K-7M |
| DPDT | B | LSJ7L-7M |

Cable



Pretravel (approx) (Radius): 38,0 mm (1.5 in)
Operating force: 1,95 N (7.0 oz) max.

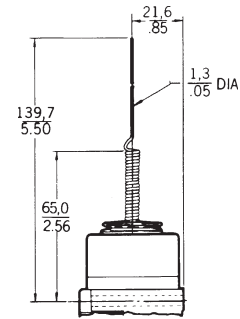
Plug in

| CONTACT | ELECTRICAL RATING | REFERENCE |
|---------|-------------------|-----------|
| SPDT | A | LSJ1A-7N |
| DPDT | B | LSJ6B-7N |

Non plug in

| CONTACT | ELECTRICAL RATING | REFERENCE |
|---------|-------------------|-----------|
| SPDT | A | LSJ3K-7N |
| DPDT | B | LSJ7L-7N |

Cat whisker



Pretravel (approx) (Radius): 51,0 mm (2.0 in)
Operating force: 1,39 N (5.0 oz) max.

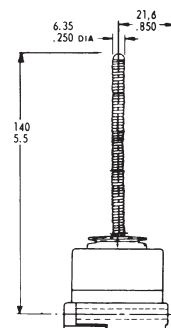
Plug in

| CONTACT | ELECTRICAL RATING | REFERENCE |
|---------|-------------------|-----------|
| SPDT | A | LSK1A-8A |
| DPDT | B | LSK6B-8A |

Non plug in

| CONTACT | ELECTRICAL RATING | REFERENCE |
|---------|-------------------|-----------|
| SPDT | A | LSK3K-8A |
| DPDT | B | LSK7L-8A |

Coil spring



Pretravel (approx) (Radius): 51,0 mm (2.0 in)
Operating force: 1,95 N (7.0 oz) max.

Plug in

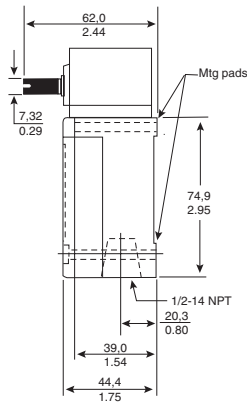
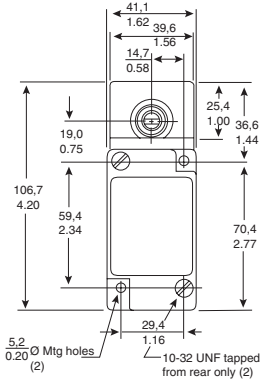
| CONTACT | ELECTRICAL RATING | REFERENCE |
|---------|-------------------|-----------|
| SPDT | A | LSK1A-8C |
| DPDT | B | LSK6B-8C |

Non plug in

| CONTACT | ELECTRICAL RATING | REFERENCE |
|---------|-------------------|-----------|
| SPDT | A | LSK3K-8C |
| DPDT | B | LSK7L-8C |

Fully potted HDLS

Fully potted HDLS are designed to meet the demanding requirements of NEMA 1, 3, 4, 6, 6P and 13 for wet applications where the integrity of the conduit seal must be assured. These switches are the same as the standard HDLS non plug in limit switch except that the conduit entrance is factory sealed to simplify installation and ensure integrity of the conduit seal. They are epoxy filled and supplied with six feet of 5 or 9 conductor 16 gauge STO cable. Fully potted HDLS are built with all Fluorocarbon seals. Sealing exceeds Nema 6P. Low temperature versions are available, see page 46 for temperature range and how to order.



Approvals:

Connector NEMA 1, 4, 6, 6P, 12, 13
 Cable NEMA 1, 4, 6, 6P, 12
 UL, CSA, CE

Operating temperature:

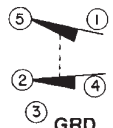
Cable versions -12 °C to 105 °C
 10 °F to 221 °F
 Connector versions -12 °C to 121 °C
 10 °F to 250 °F

Cable length:

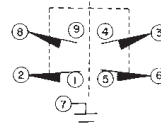
3,658 m (12 ft)

Contacts: Electrical ratings A, B Silver

Switching options: Snap action contacts



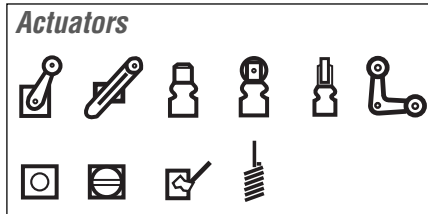
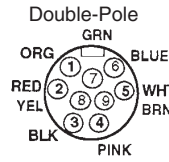
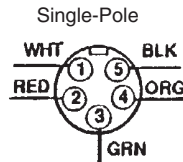
SPDT Double-Break Elect.
 Rating: A



DPDT Double-Break Elect.
 Rating: B

Wiring diagrams:

Numbers = Connectors
 Colours = Cables



Side rotary actuated switches

Levers: Levers for side rotary types are ordered separately (see pages 71-73 for details)

OPTIONS

Standard

Pretravel: 15° max.
Differential travel: SPDT 5° max.
 DPDT 7° max.
Overtravel: 60° min.
Operating force: 0,45 N m (4 in lb) max.

| CONTACT TERMINATION | ELECTRICAL RATING | REFERENCE |
|----------------------|-------------------|-------------|
| SPDT Cable | A | LSYAC3KP-FP |
| DPDT Cable | B | LSYAC4LX-FP |
| SPDT 5-pin Connector | A | LSYAC3KQ-FP |
| DPDT 9-pin Connector | B | LSYAC7LR-FP |

Low differential travel

Pretravel: 9° max.
Differential travel: SPDT 3° max.
 DPDT 4° max.
Overtravel: 66° min.
Operating force: 0,45 N m (4 in lb) max.

| CONTACT TERMINATION | ELECTRICAL RATING | REFERENCE |
|----------------------|-------------------|-------------|
| SPDT Cable | A | LSYPC3KP-FP |
| DPDT Cable | B | LSYPC4LX-FP |
| SPDT 5-pin Connector | A | LSYPC3KQ-FP |
| DPDT 9-pin Connector | B | LSYPC7LR-FP |

5° Pretravel

Pretravel: 5° max.
Differential travel: SPDT 3° max.
Overtravel: 70° min.
Operating force: 0,45 N m (4 in lb) max.

| CONTACT TERMINATION | ELECTRICAL RATING | REFERENCE |
|----------------------|-------------------|-------------|
| SPDT Cable | A | LSYUC3KP-FP |
| SPDT 5-pin Connector | A | LSYUC3KQ-FP |

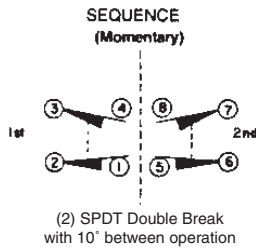
For low temperature versions substitute "Y_B" for "Y_C"

Fully potted HDLS (continued)

Side rotary actuated switches

Sequential

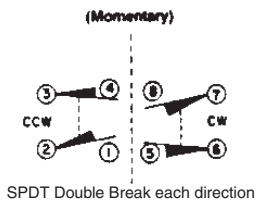
Pretravel: 1st pole 15° max.
2nd pole additional 10° max.
Differential travel: Each pole 5° max.
Overtravel: 48° max.
Operating force: 0,45 N m (4 in lb) max.
Switching options: DPDT



| CONTACT | TERMINATION | ELECTRICAL RATING | REFERENCE |
|---------|-----------------|-------------------|-------------|
| DPDT | Cable | B | LSYLC4MX-FP |
| DPDT | 9-pin Connector | B | LSYLC7MR-FP |

Centre neutral

Pretravel: 18° max.
Differential travel: 10° max.
Overtravel: 57° min.
Operating force: 0,45 N m (4 in lb) max.
Switching options: DPDT



| CONTACT | TERMINATION | ELECTRICAL RATING | REFERENCE |
|---------|-----------------|-------------------|-------------|
| DPDT | Cable | B | LSYMC4NX-FP |
| DPDT | 9-pin Connector | B | LSYMC7NR-FP |

Plunger actuated switches

OPTIONS

Top plungers

Pretravel: 1,78 mm (0.07 in) max.
Differential travel: SPDT 0,38 mm (0.015 in) max.
DPDT 0,51 mm (0.02 in) max.
Overtravel: 4,83 mm (0.19 in) min.
Operating force: 17,8 N m (4 lb) max.

Top pin plunger

| CONTACT | TERMINATION | ELECTRICAL RATING | REFERENCE |
|---------|-----------------|-------------------|-------------|
| SPDT | Cable | A | LSYCC3KP-FP |
| DPDT | Cable | B | LSYCC4LX-FP |
| SPDT | 5-pin Connector | A | LSYCC3KQ-FP |
| DPDT | 9-pin Connector | B | LSYCC7LR-FP |

Top roller plunger

| CONTACT | TERMINATION | ELECTRICAL RATING | REFERENCE |
|---------|-----------------|-------------------|-------------|
| SPDT | Cable | A | LSYDC3KP-FP |
| DPDT | Cable | B | LSYDC4LX-FP |
| SPDT | 5-pin Connector | A | LSYDC3KQ-FP |
| DPDT | 9-pin Connector | B | LSYDC7LR-FP |

Side plungers

Pretravel: 2,54 mm (0.100 in) max.
Differential travel: SPDT 0,38 mm (0.015 in) max.
DPDT 0,51 mm (0.02 in) max.
Overtravel: 4,83 mm (0.19 in) min.
Operating force: 26,7 N m (6 lb) max.

Side pin plunger

| CONTACT | TERMINATION | ELECTRICAL RATING | REFERENCE |
|---------|-----------------|-------------------|-------------|
| SPDT | Cable | A | LSYEC3KP-FP |
| DPDT | Cable | B | LSYEC4LX-FP |
| SPDT | 5-pin Connector | A | LSYEC3KQ-FP |
| DPDT | 9-pin Connector | B | LSYEC7LR-FP |

Wobble actuated switches

| Actuator codes **: | Head style* |
|--------------------|---------------|
| 7A | Delrin rod J |
| 7M | Spring wire J |
| 8A | Cat whisker K |
| 7N | Cable J |
| 8C | Coil spring K |

| CONTACT | TERMINATION | ELECTRICAL RATING | REFERENCE |
|---------|-----------------|-------------------|---------------|
| SPDT | Cable | A | LSY*C3KP-**FP |
| DPDT | Cable | B | LSY*C4LX-**FP |
| SPDT | 5-pin Connector | A | LSY*C3KQ-**FP |
| DPDT | 9-pin Connector | B | LSY*C7LR-**FP |

For low temperature versions substitute "Y_B" for "Y_C"

Stainless steel HDLS



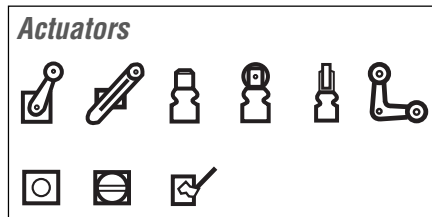
HDLS stainless steel switches are designed for use in highly corrosive environments such as petro-chemical plants, food processing plants, shipboard and dockside locations. The type 316 cast stainless steel body is designed to minimise crevices where food particles could become trapped. The actuator, operating head and screws are also stainless steel. All seals are Fluorocarbon to provide excellent chemical resistance and to withstand operating temperatures up to 121 °C (250 °F) and pressurised steam cleaning.

Approvals: NEMA 1, 3, 3R, 4, 4X, 6, 6P, 12, 13 UL, CSA, CE

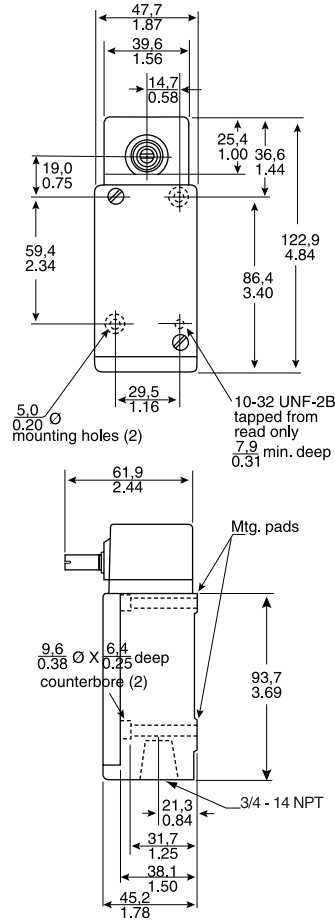
Operating temperature: -12 °C to 121 °C
10 °F to 250 °F

Contacts: Electrical ratings A, B Silver

Levers: Levers for side rotary types are ordered separately (see pages 71-73 for details)



Side rotary actuated switches



OPTIONS

Standard

Pretravel: 15° max.
Differential travel: SPDT 5° max.
DPDT 7° max.
Overtravel: 60° min

| CONTACT | ELECTRICAL RATING | REFERENCE |
|---------|-------------------|-----------|
| SPDT | A | LS2A4K |
| DPDT | B | LS2A4L |

Low Torque

Pretravel: 9° max.
Differential travel: SPDT 3° max.
DPDT 4° max.
Overtravel: 60° min.

| CONTACT | ELECTRICAL RATING | REFERENCE |
|---------|-------------------|-----------|
| SPDT | A | LS2H4K |
| DPDT | B | LS2H4L |

Centre neutral

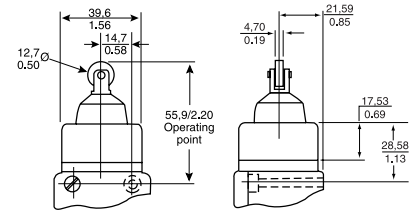
Pretravel: 18° max.
Differential travel: DPDT 10° max.
Overtravel: 57° min.

| CONTACT | ELECTRICAL RATING | REFERENCE |
|---------|-------------------|-----------|
| DPDT | B | LS2M4N |

Plunger actuated switches

OPTIONS

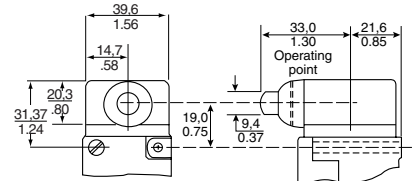
Top roller plunger



Pretravel: 1.78 mm (0.07 in) max.
Differential travel: 0.38 mm (0.015 in) max.
Overtravel: 4.83 mm (0.19 in) min.
Operating point: 55.9 mm ± 1.02
2.20 in ± 0.04

| CONTACT | ELECTRICAL RATING | REFERENCE |
|---------|-------------------|-----------|
| SPDT | A | LS2D4K |
| DPDT | B | LS2D4L |

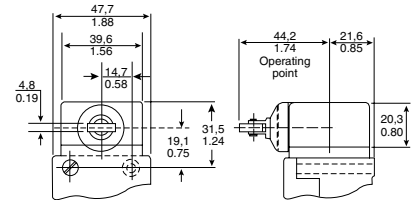
Side pin plunger



Pretravel: 2.54 mm (1.00 in) max.
Differential travel: 0.64 mm (0.025 in) max.
Overtravel: 4.83 mm (0.19 in) min.
Operating point: 33 mm ± 0.76
1.3 in ± 0.03

| CONTACT | ELECTRICAL RATING | REFERENCE |
|---------|-------------------|-----------|
| SPDT | A | LS2E4K |
| DPDT | B | LS2E4L |

Side roller plunger



Pretravel: 2.54 mm (1.00 in) max.
Differential travel: 0.64 mm (0.025 in) max.
Overtravel: 4.83 mm (0.19 in) min.
Operating point: 44.1 mm ± 1.02
1.73 in ± 0.04

| CONTACT | ELECTRICAL RATING | REFERENCE |
|---------|-------------------|-----------|
| SPDT | A | LS2F4K |
| DPDT | B | LS2F4L |

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