Honeywell

THE POWER OF **CONNECTED**

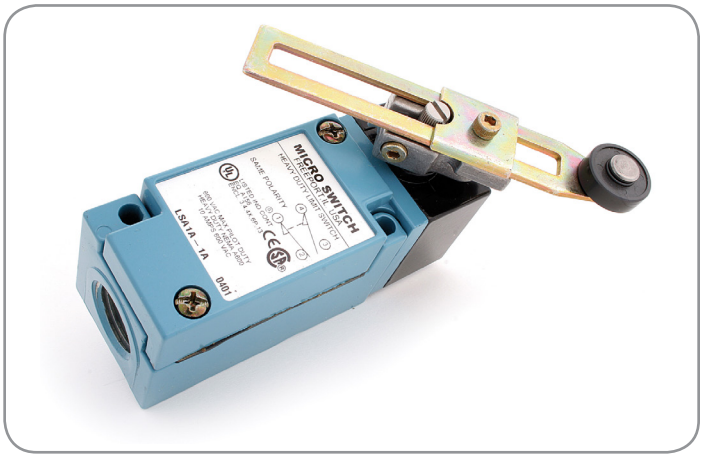
# MICRO SWITCH Heavy-Duty Limit Switch

HDLS Series

***002345***

*Issue 10*

**Datasheet**




## DESCRIPTION

Honeywell's MICRO SWITCH heavy-duty limit switches' modular construction allows for a wide variety of actuator styles, operating heads, and electrical circuitry options. The plug-in versions greatly reduce downtime on production lines with high actuation rates as replacement of the switch is accomplished in seconds. The base receptacle contains all the wiring and conduit connection while the switching component with operating head easily assembles to the base and is attached with two screws.

They are ideal for many applications with demanding indoor and/or outdoor environments, where they may be subjected to shock or vibration from equipment, temperature extremes, dust, splashing water, coolant, and/or hose-directed water.

## DIFFERENTIATION

- Sintered bronze bearing on 303 stainless steel operating shaft for enhanced mechanical life (up to 50 million actuation cycles) and operational reliability
- All-metal drive train for consistent operating characteristics, even at high temperature. Lasts longer (without need for frequent adjustment) than drive trains with plastic parts
- Exclusive teller tab ensures proper torque. When it cannot be moved, the lever is tight enough to prevent slippage

## VALUE TO CUSTOMERS

- NEMA 1, 3, 4, 4X, 6, 6P, 12, 13 and IP65/66/67 environmental sealing for demanding applications
- Industry-leading breadth-of-product offering: HDLS standard, HDLS harsh-duty epoxy sealed, or the HDLS stainless steel
- UL, CSA, CE, and CCC approvals for global use
- Configurable product platform for design versatility
- Large, existing installation base and channel allows for quick delivery worldwide

## FEATURES

- NEMA 1, 3, 4, 4X, 6, 6P, 12, 13 and IP65/66/67 environmental sealing
- NEMA/IP sealing features twin shaft seals for an extra measure of protection
- Rugged, corrosion-resistant zinc head and body are phosphate treated and epoxy coated
- Diaphragm seal between head and body provides an extra measure of protection
- Multiple connectivity options for international applications
- Fluorosilicone seals available for low temperature applications, and fluorocarbon seals available for chemically harsh environments and higher temperature applications
- Secure head-to-body retention with the head in any one of four positions 90° apart
- Self-lifting pressure plate terminals saves wiring time
- Wide variety of actuators, switch options, and head styles
- Rotary actuated heads are field adjustable for CW actuation, CCW actuation, or both
- Silver or gold-plated contacts
- Plug-in and non plug-in bodies have identical operating characteristics and are dimensionally interchangeable

## POTENTIAL APPLICATIONS

- Machine tools
- Automotive machine tools
- Material handling
- Outdoor electromechanical structures
- Balers/compactors
- Conveyors
- Food and beverage
- Power plants
- Off-road equipment
- Agricultural equipment
- Valves
- Transportation hubs

## PORTFOLIO

The heavy-duty HDLS Series limit switch is part of Honeywell's comprehensive and broad limit switch portfolio that includes global, medium-duty, compact, hazardous area, and specialty limit switches. To view the entire product portfolio, click here.

**Figure 1. MICRO SWITCH HDLS Series Features and Options**

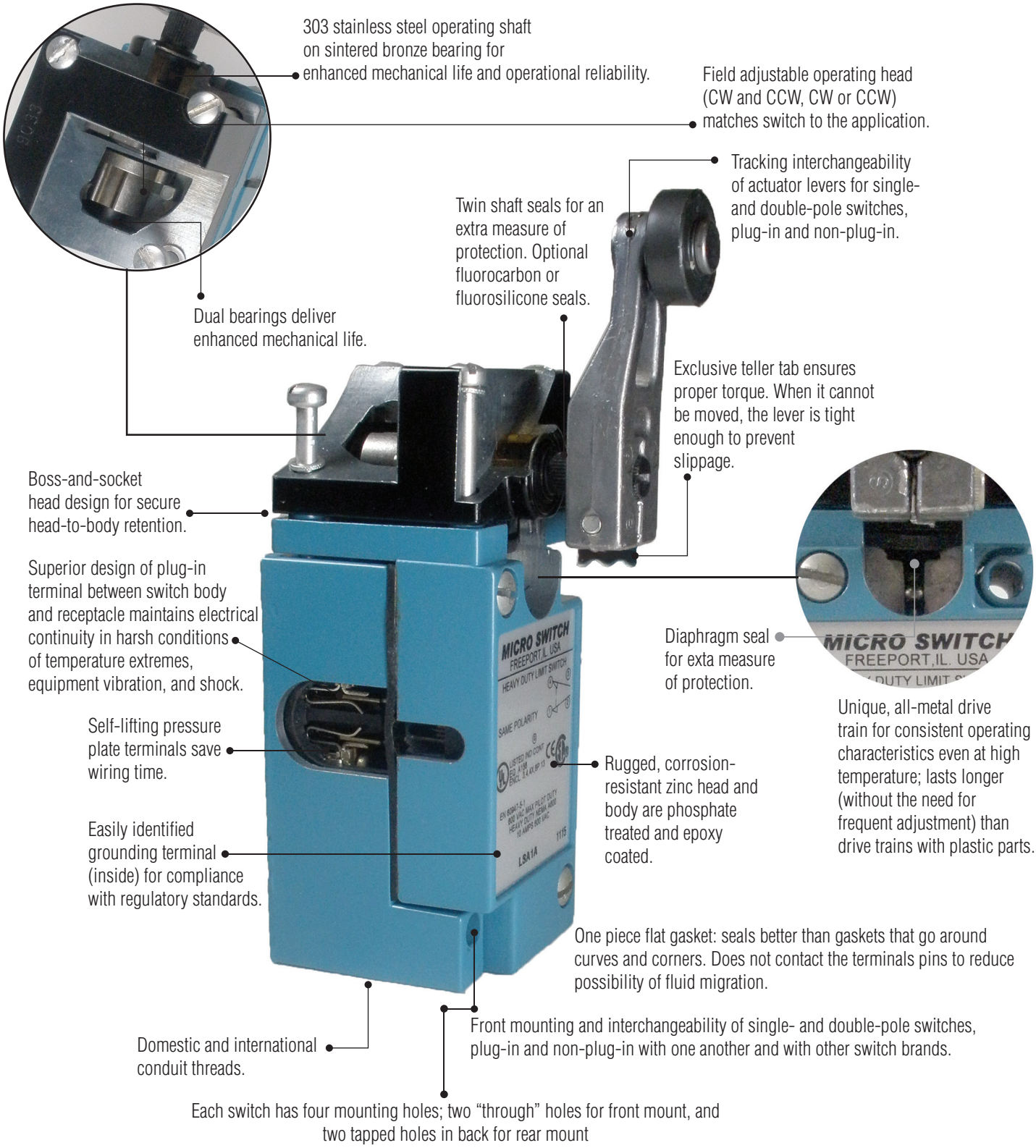


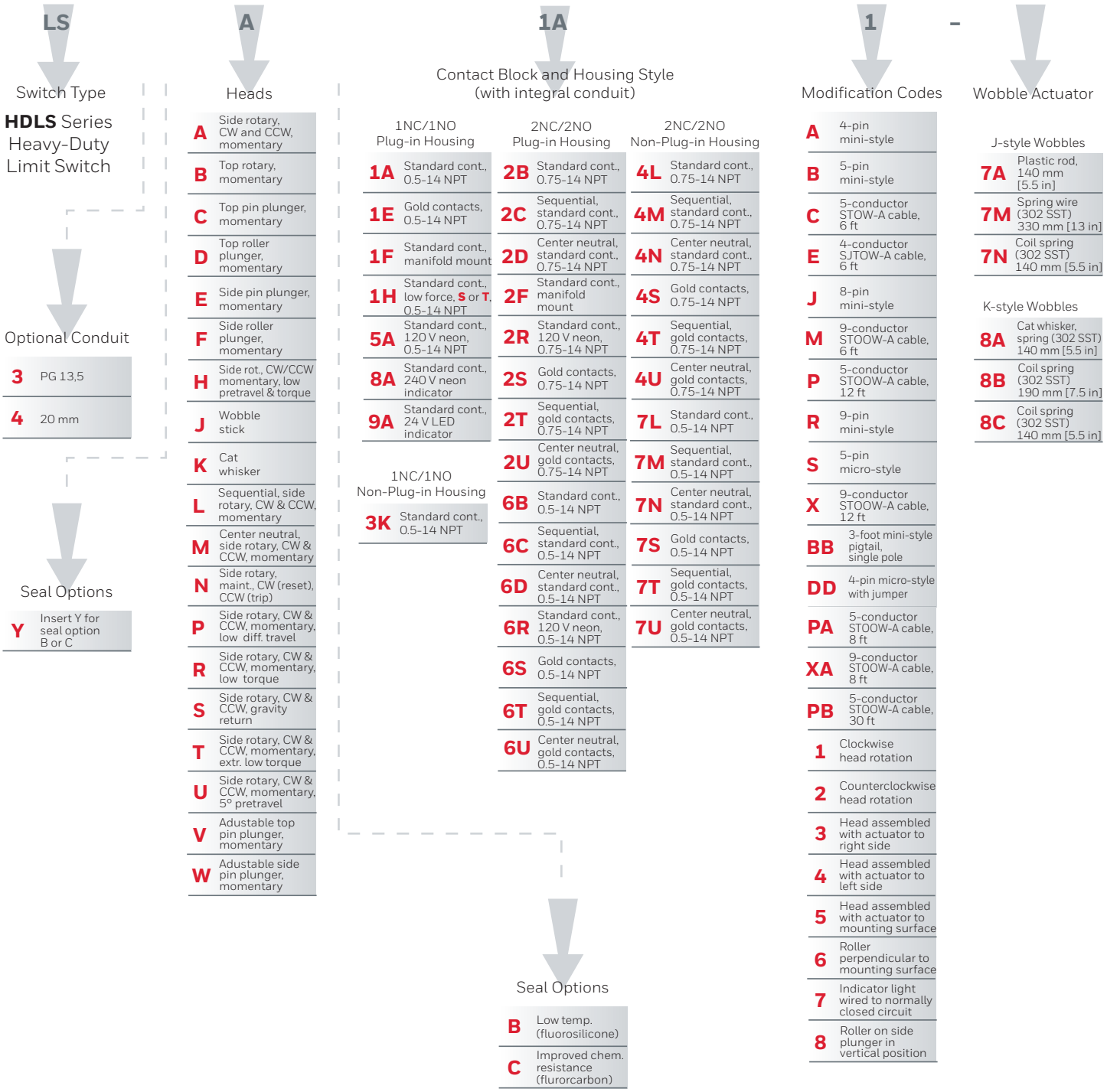
**Table 1. Specifications**

| Characteristic | Parameter | | |
|---|---|---|---|
| Product type | MICRO SWITCH heavy-duty limit switches | | |
| Certifications | UL, CE, CSA, CCC | | |
| Reference standards | UL508, CSA 22.2 #14, EN/IEC60947-5-1, GB 14048.5 | | |
| Housing material | Electrostatic epoxy coated zinc | | |
| Housing type | HDLS Plug-in, HDLS Non-Plug-in | | |
| Acutators/heads | Side plunger - adjustable<br>Side roller plunger<br>Top plunger - adjustable<br>Top rotary<br>Wobble - coil spring | Side plunger - pin<br>Side rotary<br>Top plunger - pin<br>Wobble - cable<br>Wobble - plastic rod | Side plunger maintained - pin<br>Side rotary maintained<br>Top roller plunger<br>Wobble - cat whisker<br>Wobble - spring wire |
| Circuitry | 1NC 1NO SPDT snap action, double break<br>2NC 2NO DPDT center neutral, snap action, double break<br>2NC 2NO DPDT snap action, double break<br>2NC 2NO DPDT sequential, snap action, double break | | |
| Termination types | 0.5 in - 14NPT conduit<br>PG 13,5 conduit<br>4-pin mini-style connector<br>Manifold mounting | 0.75 in - 14NPT conduit<br>20 mm conduit<br>5-pin mini-style connector | 12 ft cable, 6 ft cable<br>4-pin micro-style connector<br>9-pin mini-style connector |
| Contact type | Snap action double break (form Za) same polarity each pole | | |
| Contact material | Silver alloy (standard), optional gold-plated (low energy applications) | | |
| Utilization category | AC-15, A600; DC-13, R300 (electrical ratings on page 5) | | |
| Rated operational voltage (Ue) | 600 Vac, 250 Vdc | | |
| Rated operational current (Ie) | 1.2 A, 0.1 A | | |
| Rated thermal current | 10 A, 2.5 A | | |
| Rated insulation voltage | 600 V | | |
| Rated impulse withstand voltage (Uimp) | 2500 V | | |
| Short circuit protection device (SCPD) type and rating | Class J fuse, rated 10 A, 600 V | | |
| Pollution degree | 3 | | |
| Sealing | IP65/66/67; NEMA 1, 3, 4, 4X, 6, 6P, 12, 13 | | |
| Operating temperature[1] | -12°C to 121°C [10°F to 250°F]; optional: -40°C to 121°C [-40°F to 250 'F] | | |
| Vibration | 10 g conforming to IEC 60068-2-6 | | |
| Shock (actuator not fitted) | 50 g conforming to IEC 60068-2-27 | | |
| UNSPSC code | 302119 | | |
| UNSPSC commodity | 302119 Switches and controls and relays | | |

[1] *Reference page 8 for additional temperature detail.*

# MICRO SWITCH Heavy-Duty Limit Switch, HDLS Series

**Figure 2. Product Nomenclature • Standard**




**NOTE:** Not all combinations of model codes are available. Please contact your local Honeywell provider for assistance.

# MICRO SWITCH Heavy-Duty Limit Switch, HDLS Series

## ASSEMBLY MODIFICATIONS • ROTARY

Momentary action rotary switches can be furnished in other than the normal assembled conditions. To specify modifications, add the numbers shown below to the catalog listings. Modification number suffixes are:

**1** Clockwise actuation only
**2** Counterclockwise actuation only
**3** Shaft to right of switch front
**4** Shaft to left of switch front
**5** Shaft to back of switch
**7** Indicator light wired to NC circuit

**For example,**
Catalog listing LSA1A**23** is an LSA1A switch adjusted for counterclockwise actuation only. The operating shaft is to the right side of the switch when viewing it from the front (label side). No lever.

Catalog listing LSA8A**7** is an LSA8A switch with the 240 volt indicator light wired to the NC circuit. No lever.

## PLUNGER ASSEMBLY MODIFICATIONS

Add the following modification numbers to the catalog listing in the plunger switch:

**3** Side plunger to right of switch front
**4** Side plunger to left of switch front
**5** Side plunger to back of switch
**6** Roller on top plungers perpendicular to mounting surface
**7** Light on indicator versions wired to NC circuit
**8** Roller on side plungers in vertical position

**For example,**
Catalog listing LSF1A**3** is an LSF1A switch with the side roller plunger to the right side.

## HDLS Series Electrical Ratings: 10 A Continuous Carry ac Volts; Pilot Duty: AC-15, A600/B600

| Electrical Rating | Circuitry | Vac | Amps at 0.35 Power Factor Make | Amps at 0.35 Power Factor Break |
|---|---|---|---|---|
| A* AC-15, A600 | SPDT DPDT | 120 | 60 | 6 |
| | | 240 | 30 | 3 |
| | | 480 | 15 | 1.5 |
| | | 600 | 12 | 1.2 |
| B AC-15, B600 | Δ | 120 | 30 | 3 |
| | | 240 | 15 | 1.5 |
| | | 480 | 7.5 | 0.75 |
| | | 600 | 6 | 0.60 |

Δ Gravity return (Model LSS..) and extra-low torque (Model LST..)

## HDLS Series Electrical Ratings: dc Volts; Pilot Duty: DC-13, R300

| Electrical Rating | Circuitry | Vdc | Make & Break Amps Inductive | Make & Break Amps Resistive |
|---|---|---|---|---|
| A, B* | SPDT DPDT | 125 | 0.25 | 0.8 |
| | | 250 | 0.15 | 0.4 |

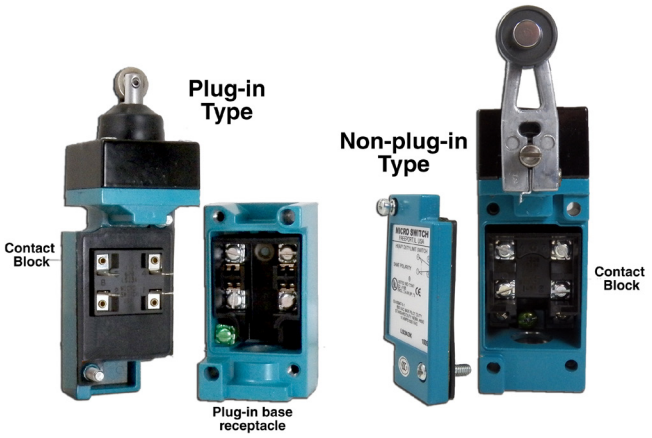
* For switches with an indicator light, use only at voltage stated for indicator light.

MICRO SWITCH HDLS limit switches are capable of the following low voltage dc loads

| Circuitry | Vdc | Amps Inductive | Amps Resistive |
|---|---|---|---|
| SPDT | 24 | 10 | 10 |
| DPDT | 24 | 10 | 10 |

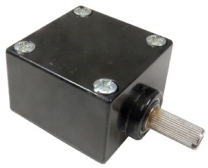
## PLUG-IN VS. NON-PLUG-IN MODELS

Honeywell HDLS limit switches are offered in two styles: non-plug-in design and plug-in design. With plug-in construction, the wiring and conduit connection is made to the base receptacle. This feature reduces downtime as the plug-in unit can be removed and replaced without disconnecting the wiring or conduit connections to the switch.



## MICRO SWITCH HDLS SERIES ACTUATOR HEADS

**SIDE ROTARY:** Available levers provide greater versatility. Heads may be positioned with shaft on any side. All are momentary action except maintained head (LSN Series).



**LSA - Standard:** 15° maximum pretravel, 5° (single pole) and 7° (double pole) maximum differential travel, 60° minimum overtravel. Operating temperature range from -12°C to 121°C [10°F to 250°F].*

**LSR - Low operating torque:** 0.19 Nm [1.7 in lb] maximum operating torque. 60° minimum overtravel, 15° maximum pretravel. Operating temperature range from -1°C to 121°C [250°F to 250°F].*

**LSN - Maintained contact:** Maintained on counterclockwise rotation and reset on clockwise rotation, and vice versa. Operating temperature range from -1°C to 121°C [30°F to 250°F].

**LSP - Low differential:** 3° (single pole) and 4° (double pole) maximum differential travel. 68° minimum overtravel, 7° maximum pretravel. Operating temperature range from -12°C to 121°C [10°F to 250°F].*

**LSH - Low torque, low differential travel:** Features low operating torque and narrow differential travel. 68° minimum overtravel. Operating temperature range from -1°C to 121°C [30°F to 250°F].*

**LSU - Low pretravel:** 5° max. pretravel, 70° min. overtravel. Operating temperature range from -12°C to 121°C [10°F to 250°F].*

**LSL - Sequence action:** Delayed action between operation of two poles. 48° minimum overtravel. Operating temperature range from -12°C to 121°C [10°F to 250°F].*

**LSM - Center neutral:** One set of contacts operates on the clockwise rotation, and another set on the counterclockwise rotation. 53° minimum overtravel. Operating temperature range from -1°C to 121°C [30°F to 250°F].*

**LST - Momentary action with extra low torque:** 12 in oz of operating torque with momentary action. Operating temperature range from -12°C to 121°C [10°F to 250°F].*

**LSS - Gravity return:** Has no return spring mechanism in actuator head so weight of the lever must provide the return force. Extremely light operating torque (5 in oz max.) is useful in conveyor applications and can be operated by small or lightweight objects. Operating temperature range from -1°C to 121°C [30°F to 250°F].*

**TOP ROTARY:** Available levers provide greater versatility. Momentary action.

**LSB:** With 100° minimum overtravel. Various levers that fit side rotary shafts may be used on the top rotary shaft. Switch is ideal when increased overtravel is required. Momentary action. Standard operating temperature range from -1°C to 121°C [30°F to 250°F].*

**TOP PLUNGERS:** Available with 4,83 mm [0.19 in] minimum overtravel. Top pin plungers are offered in pin plunger, an adjustable plunger, and a roller plunger. Standard temperature range of -12°C to 93°C [10°F to 200°F].

**LSC - Top pin plunger:** A corrosion-resistant steel plunger for in-line actuating motion. A boot seal on the plunger and a seal between the actuator head and housing keep out coolant, dust, and chips. Momentary action.

**LSD - Top roller plunger:** A corrosion-resistant steel roller and plunger that is adjustable to 90° angles to accept cam or slide operation from any of two directions. Boot seal on the plunger and a seal between the actuator head and housing. Momentary action

**LSV - Adjustable top pin plunger:** Provides easy application and saves on installation time. The operating points of the switch can be adjusted from 52,8 mm to 59,3 mm [2.085 in to 2.335 in]. Seals are the same as the pin plunger. Momentary action.

**(Fluorocarbon seals are preferred for temperatures above 93°C [200°F]).*

## MICRO SWITCH HDLS SERIES ACTUATOR HEADS

**SIDE PLUNGERS:** Available with 4,83 mm [0.19 in] minimum overtravel. Side plungers are offered in plain plunger, an adjustable plain plunger, a roller plunger, and a maintained plunger. Standard temperature range of -12°C to 93°C [10°F to 200°F].

| | |
|---|---|
|  | **LSE - Side pin plunger:** For actuating motion inline with the plunger travel. Actuating head may be faced in any of four positions, 90° apart. A boot seal on the plunger and a seal between the head and housing keep out coolant, dust, and chips. Momentary action. |
|  | **LSF - Side roller plunger:** Fits close quarters under cams and slides. The head may be faced in any of four positions, 90° apart. The roller can be turned vertical or horizontal to the switch. Seals are same as side pin plunger. Momentary action. |
|  | **LSW - Adjustable side pin plunger:** Has the same features of the side plain plunger plus the means to adjust the operating points of the switch from 41 mm to 47,4 mm [1.615 in to 1.865 in]. Seals are same as side pin plunger. Momentary action. |
|  | **LSG - Maintained contact side pin plunger:** Offers a maintained contact on actuation of the switch. A reverse motion of the plunger resets the switch. Sealing is the same as other side plunger actuation heads. Operating temperature range is -1°C to 93°C [30°F to 200°F]. |

**WOBBLE LEVER ACTUATING HEADS:** Heads come with either a spring wire, Delrin® plastic rod, or steel cat whisker. Any movement of the lever (except pull) will actuate the switch. Standard temperature range of -12°C to 93°C [10°F to 200°F].

| | | | | |
|---|---|---|---|---|
|  |  |  |  |  |
| **LSJ1A-7M - Spring wire:** 300 Series SST wire may be formed for special applications. | **LSJ1A-7N - Flexible actuator:** Designed with a tin-plated cable. | **LSK1A-8C - Coil spring:** Designed with a 300 Series SST coil spring. | **LSJ1A-7A - Plastic rod:** Recommended where possible scratching or marring by the actuator is to be avoided. | **LSK1A-8A - Cat whisker:** 300 Series SST actuator designed for low operating force applications. |

## SPECIAL OPTIONS

### High temperature/Chemical-resistant Switches

Completely fluorocarbon (FC)-sealed switches have a full FC body gasket coving 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 many applications where the environment includes fire-resistant synthetic fluids. In addition to most all fluids, the FC-sealed switches may be used with such industrial fluids such as Cellulube, Fyrquell, Houghto-Safe, Pydraul, and other special cutting and hydraulic 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 pre-wired with cable, then temperature limits are 105°C [221°F] dry and 60°C [140°F] wet.

To order, insert the additional letters **Y** and **C** in the appropriate places in the standard catalog listing, as shown below:

| | |
|---|---|
| **LSA1A** | standard, side-rotary plug-in switch |
| **LSYAC1A** | completely FC-sealed version of LSA1A |

### Low Temperature Switches

All forms of HDLS limit switches are also available in low-temperature construction. Design features include fluorosilicone diaphragm, shaft seals, and external booth seal (where applicable). If pre-wired with a cable, low temperature limits are -10°C [14°F] flex and -30°C [-22°F] non-flex.

To order, insert the additional letters **Y** and **B** in the appropriate places in the standard catalog listing, as shown below:

| | |
|---|---|
| **LSA1A** | standard, side-rotary plug-in switch |
| **LSYAB1A** | low-temperature version of LSA1A |

### Conduit Openings

For conduit openings other than 1/2-NPT and 3/4-NPT, substitute the following after LS in the catalog listing:

**LS3** PG13,5

**LS4** 20 mm

| | |
|---|---|
| **LSA1A** | side rotary with 1/2-14 NPT conduit |
| **LS4A1A** | side rotary with 20 mm conduit |

**Table 2. Temperature Limits**

| | Standard HDLS | | | | Low Temperature HDLS (Fluorosilicone Sealed): Y_B | | | | High Temperature HDLS (Fluorocarbon Sealed)*: Y_C | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Low Limit | | High Limit | | Low Limit | | High Limit | | Low Limit | | High Limit |
| | -12°C [10°F] | -1°C [30°F] | 93°C [200°F] | 121°C [250°F] | -40°C [-40°F] | -29°C [-20°F] | 93°C [200°F] | 121°C [250°F] | -12°C [10°F] | -1°C [30°F] | 121°C [250°F] |
| 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 PT, 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 - 5° 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 93°C [200°F], much longer switch life can be obtained by using completely fluorocarbon-sealed switches rather than standard HDLS.

## Factory-sealed Pre-wired Limit Switches

### Features

- Pre-wired with 6 ft STOOW-A cable or other 4, 5, or 9-pin connectors (other lengths available)
- Wire entry area completely factory sealed
- (Cable version) NEMA 1, 6, 6P, 12; IP67
- (Connector version) NEMA 1, 6, 6P, 12, 13; IP67

### How to order:

To order factory sealed switches, add the modification codes shown below to the standard HDLS listings (reference product nomenclature on page 4):

| Circuitry | Cable | 1/2 in connector style |
|---|---|---|
| SPDT | **C** | **A** (4-pin mini-style)<br>**B** (5-pin mini-style)<br>**DD** (4-pin micro-style) |
| DPDT | **M** | **R** (9-pin mini-style) |

Examples:

LSA1A**C** = LSA1A with 6-feet of 5-conductor STOW-A cable

LSJ2B**M**-7N = LSJ2B-7N with 6 feet of 9-conductor STOOW-A cable

LSA1A**B** = LSA1A with a 5-pin mini-style connector

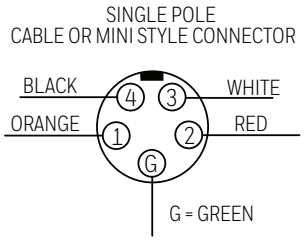
LSA1A**DD** = LSA1A with a 4-pin micro-style connector

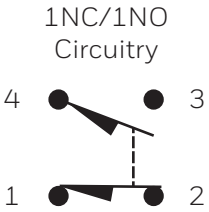
**NOTE:** Connector versions available with 1/2 in conduit only.

## Wiring Diagrams (Styles B&G)

Connectors = Numbers (mini-style)

Cables = Colors



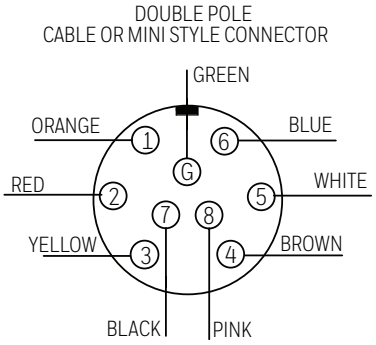




G = Ground
Same Polarity

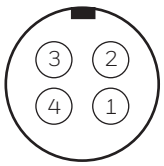
**Electrical Ratings:**
**Connector Versions**

| | |
|---|---|
| Mini | 600 VAC, 7A |
| Micro | 300 VAC, 3A |

## Wiring Diagrams (Styles M&R)

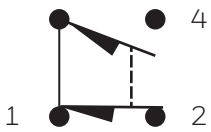


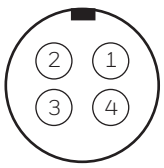

## Wiring Diagram (Style A)


Same Polarity

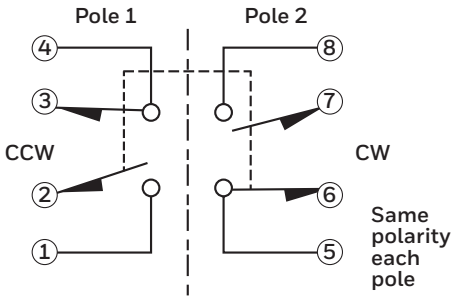
## Wiring Diagram (Style DD)



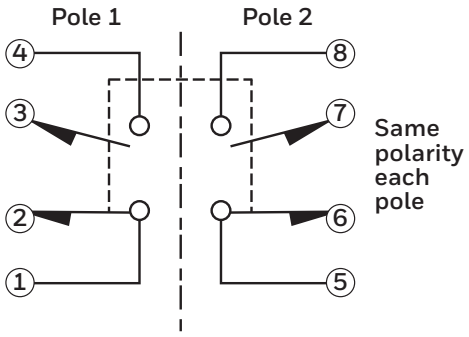




Pin 3 not connected
Same Polarity

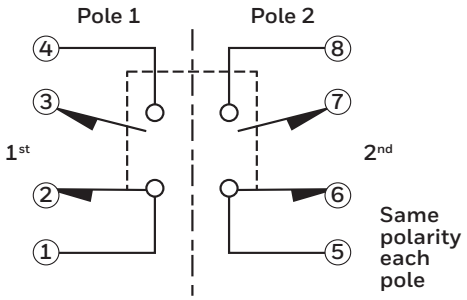
2NC/2NO center neutral




2NC/2NO




2NC/2NO sequential



**ELECTROMECHANICAL SWITCHES**
Definitions below explain the meaning of operating characteristics. Characteristics shown in tables were chosen as most significant. They are taken at normal room temperature and humidity. These may vary as temperature and humidity conditions differ. Sketches show how characteristics are measured for in-line plunger actuation and rotary actuation.

Linear dimensions for in-line actuation are from top of plunger to a reference line, usually the center of the mounting holes. Rotary actuated HDLS limit switches have the characteristics in degrees of angular rotation.

**Differential Travel (D.T.) –** Plunger or actuator travel from point where contacts "snap-over" to point where they "snapback."

**Free Position (F.P.) –** Position of switch plunger or actuator when no external force is applied (other than gravity).

**Full Overtravel Force –** Force required to attain full overtravel of actuator.

**Operating Position (O.P.) –** Position of switch plunger or actuator at which point contacts snap from normal to operated position. Note that in the case of flexible or adjustable actuators, the operating position is measured from the end of the lever or its maximum length. Location of operating position measurement shown on mounting dimension drawings.

**Operating Force (O.F.) –** Amount of force applied to switch plunger or actuator to cause contact "snap-over." Note in the case of adjustable actuators, the force is measured from the maximum length position of the lever.

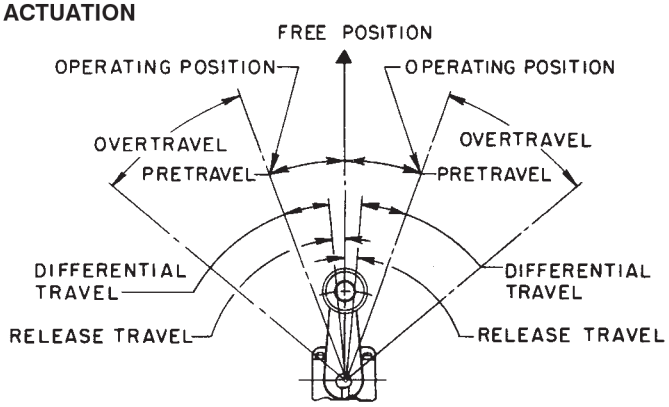
**Overtravel (O.T.) –** Plunger or actuator travel safely available beyond operating position.

**Pretravel (P.T.) –** Distance or angle traveled in moving plunger or actuator from free position to operating position.

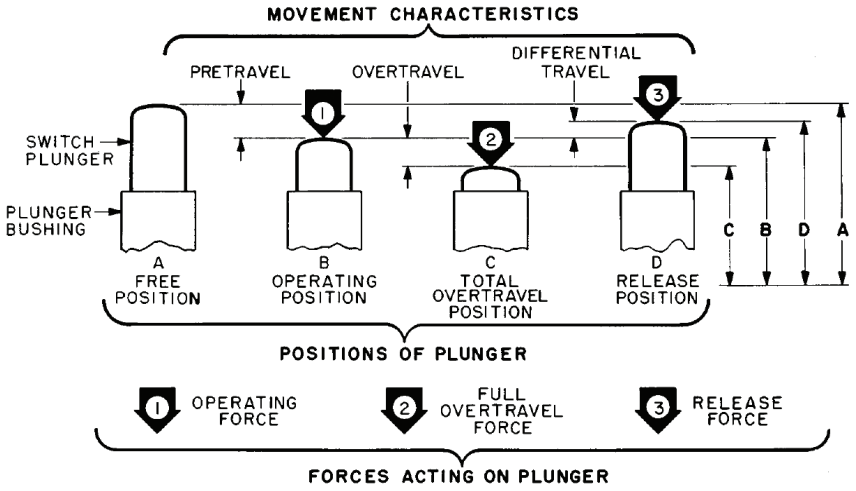
**Release Force (R.F.) –** Amount of force still applied to switch plunger or actuator at moment contacts snap from operated position to unoperated position.

**Total Travel (T.T.) –** Distance from actuator free position to overtravel limit position.

**ROTARY ACTUATION**



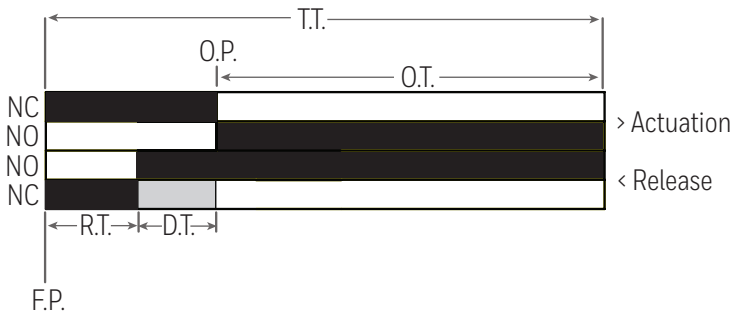

**IN-LINE PLUNGER ACTUATION**




## Bar Chart Description (Inline and Rotary)

NC = Normally closed contact(s)
NO = Normally open contact (s)

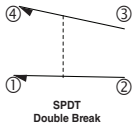
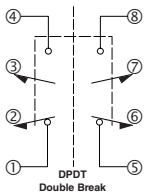
■ contact closed
□ contact open



# MICRO SWITCH Heavy-Duty Limit Switch, HDLS Series

**Table 3. Side Rotary • MICRO SWITCH HDLS Series Order Guide/Recommended Listings**


| | Standard (LSA) | | Low Differential (LSP) | | 5° Pretravel (LSU) | |
|---|---|---|---|---|---|---|
| **Description** | Standard | | Low pretravel & low differential travel | | Low pretravel | |
| | **SPDT** | **DPDT** | **SPDT** | **DPDT** | **SPDT** | **DPDT** |
| **Contact closed ■<br>Contact open □** | Snap Action 1NO/1NC | Snap Action 2NO/2NC | Snap Action 1NO/1NC | Snap Action 2NO/2NC | Snap Action 1NO/1NC | Snap Action 2NO/2NC |
| **Pretravel** | 15° max. | 15° max. | 9° max. | 9° max. | 5° max. | 5° max. |
| **Different. travel** | 5° max. | 7° max. | 3° max. | 4° max. | 3° max. | 4° max. |
| **Overtravel** | 60° min. | 60° min. | 66° min. | 66° min. | 70° min. | 70° min. |
| **Oper. torque** | 0,45 Nm [4 in-lb] max. | | 0,45 Nm [4 in-lb] max. | | 0,45 Nm [4 in-lb] max. | |
| **Action** | CW & CCW (Momentary) | | | | | |
| **Op. temp range[3]** | -12°C to 121°C [10°F to 250°F] (for low temp, high temp, or preleaded versions, see pages 8-9) | | | | | |

| Circuitry | | Contacts | Body Style[2] | Conduit (NPT) | Options | | | |
|---|---|---|---|---|---|---|---|---|
| SPDT |  SPDT Double Break | Silver | Plug-in | 0.5 in | | **LSA1A** | **LSP1A** | **LSU1A** |
| | | Gold[4] | Plug-in | 0.5 in | | **LSA1E** | **LSP1E** | **LSU1E** |
| | | Silver | Plug-in | 0.5 in | 120 V Ind. lite[1] | **LSA5A** | **LSP5A** | **LSU5A** |
| | | Silver | Plug-in | 0.5 in | 240 V Ind. lite[1] | **LSA8A** | **LSP8A** | **LSU8A** |
| | | Silver | Plug-in | 0.5 in | 24 V LED 1.5 mA max. auto polarity[1] | **LSA9A** | **LSP9A** | **LSU9A** |
| | | Silver | Non-plug-in | 0.5 in | | **LSA3K** | **LSP3K** | **LSU3K** |
| DPDT |  DPDT Double Break | Silver | Plug-in | 0.75 in | | **LSA2B** | **LSP2B** | **LSU2B** |
| | | Gold[4] | Plug-in | 0.75 in | | **LSA2S** | **–** | **–** |
| | | Silver | Plug-in | 0.5 in | | **LSA6B** | **LSP6B** | **LSU6B** |
| | | Gold[4] | Plug-in | 0.5 in | | **LSA6S** | **–** | **–** |
| | | Silver | Plug-in | 0.75 in | 120 V Ind. lite[1] | **LSA2R** | **LSP2R** | **LSU2R** |
| | | Silver | Non-plug-in | 0.75 in | | **LSA4L** | **LSP4L** | **LSU4L** |
| | | Silver | Non-plug-in | 0.5 in | | **LSA7L** | **LSP7L** | **LSU7L** |

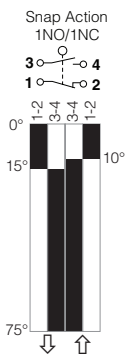
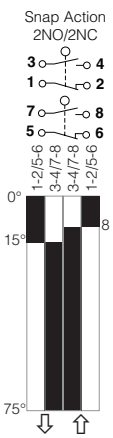
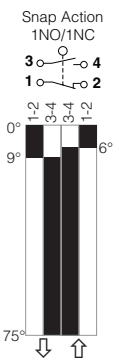
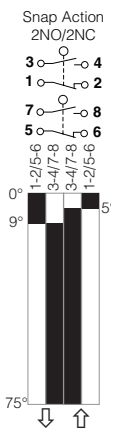
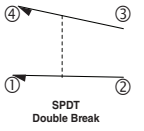
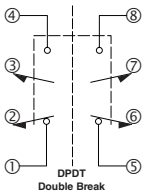
[1] Use at voltage indicated for light. Wired to NO circuit. Upper temperature limit for lighted units is 93°C [200°F]
[2] Plug-in listings include base receptacle
[3] Completely fluorocarbon sealed switches are preferred for use in temperatures above 93°C [200°F]
[4] Gold-plated contacts

NOTE: Same polarity each pole.

To order a fluorocarbon sealed switch, insert the letters **Y** and **C** into the catalog listing as follows. The LSA1A limit switch is changed to a LS**Y**A**C**1A limit switch.
To order a low temperature, fluorosilicone sealed switch, insert the letters **Y** and **B** into the catalog listing as follows. The LSA1A limit switch is changed to a LS**Y**A**B**1A limit switch.

# MICRO SWITCH Heavy-Duty Limit Switch, HDLS Series

**Table 4. Side Rotary • MICRO SWITCH HDLS Series Order Guide/Recommended Listings**

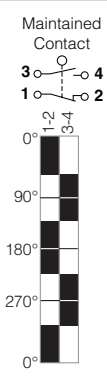
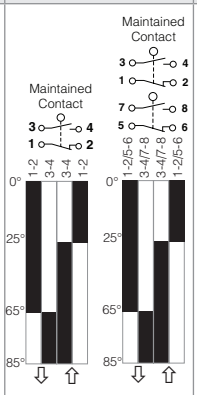
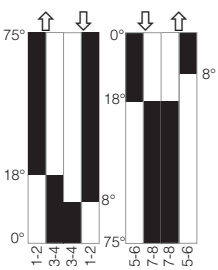
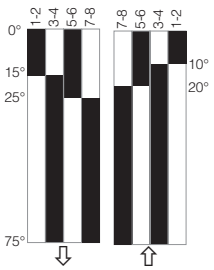

| | | | | | | Low Torque (LSR) | | Low Diff., Low Torque (LSH) | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | **Description** | Low operating torque | | Low pretravel and low torque | |
| | | | | | | **SPDT** | **DPDT** | **SPDT** | **DPDT** |
| | | | | | **Contact closed ■ Contact open □** | Snap Action 1NO/1NC  | Snap Action 2NO/2NC  | Snap Action 1NO/1NC  | Snap Action 2NO/2NC  |
| | | | | | **Pretravel** | 15° max. | 15° max. | 9° max. | 9° max. |
| | | | | | **Different. travel** | 5° max. | 7° max. | 3° max. | 4° max. |
| | | | | | **Overtravel** | 60° min. | 60° min. | 66° min. | 66° min. |
| | | | | | **Oper. torque** | 0,19 Nm [1.7 in-lb] max. | | 0,19 Nm [1.7 in-lb] max. | |
| | | | | | **Action** | CW & CCW (Momentary) | | | |
| | | | | | **Op. temp range[3]** | -1°C to 121°C [30°F to 250°F] (for low temp, high temp, or preleaded versions, see pages 8-9) | | | |
| **Circuitry** | | **Contacts** | **Body Style[2]** | **Conduit (NPT)** | **Options** | | | | |
| SPDT |  SPDT Double Break | Silver | Plug-in | 0.5 in | | **LSR1A** | | **LSH1A** | |
| | | Gold[4] | Plug-in | 0.5 in | | **LSR1E** | | **LSH1E** | |
| | | Silver | Plug-in | 0.5 in | 120 V Ind. lite[1] | **LSR5A** | | **LSH5A** | |
| | | Silver | Plug-in | 0.5 in | 240 V Ind. lite[1] | **LSR8A** | | **LSH8A** | |
| | | Silver | Plug-in | 0.5 in | 24 V LED 1.5 mA max. auto polarity[1] | **LSR9A** | | **LSH9S** | |
| | | Silver | Non-plug-in | 0.5 in | | **LSR3K** | | **LSH3K** | |
| DPDT |  DPDT Double Break | Silver | Plug-in | 0.75 in | | **LSR3B** | | **LSH2B** | |
| | | Silver | Plug-in | 0.5 in | | **LSR6B** | | **LSH6B** | |
| | | Silver | Plug-in | 0.75 in | 120 V Ind. lite[1] | **LSR2R** | | **LSH2R** | |
| | | Silver | Non-plug-in | 0.75 in | | **LSR4L** | | **LSH4L** | |
| | | Silver | Non-plug-in | 0.5 in | | **LSR7L** | | **LSHJ7L** | |

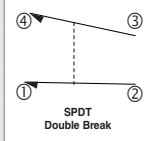
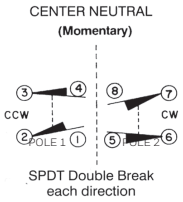
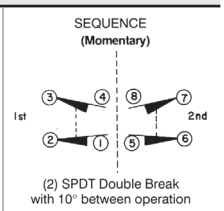
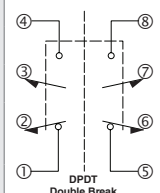
[1] Use at voltage indicated for light. Wired to NO circuit. Upper temperature limit for lighted units is 93°C [200°F]
[2] Plug-in listings include base receptacle
[3] Completely fluorocarbon sealed switches are preferred for use in temperatures above 93°C [200°F]
[4] Gold-plated contacts

NOTE: Same polarity each pole.

To order a fluorocarbon sealed switch, insert the letters **Y** and **C** into the catalog listing as follows. The LSA1A limit switch is changed to a LS**Y**A**C**1A limit switch.
To order a low temperature, fluorosilicone sealed switch, insert the letters **Y** and **B** into the catalog listing as follows. The LSA1A limit switch is changed to a LS**Y**A**B**1A limit switch.

## Table 5. Side Rotary • MICRO SWITCH HDLS Series Order Guide/Recommended Listings


| | Maint. Contact (LSQ) | Maint. Contact (LSN) | Center Neutral (LSM) | Sequence Action (LSL) |
|---|---|---|---|---|
| **Description** | Maint. 360° Alt. Action | Maintained, 2-pos[1,2]. Std. | Center Neutral (Pole 1 operates CCW; Pole 2 operates CW) | Sequential (Pole 1 operates before Pole 2, either CW, CCW, or both) |
| | **SPDT** | **SPDT DPDT** | **DPDT** | **DPDT** |
| **Contact closed ■ Contact open □** |  |  |  |  |
| **Pretravel** | 65° max. | 65° max. | 18° max. | Pole 1: 15° Pole 2: add'l 10° |
| **Different. travel** | 40° max. | 40° max. | 10° max. | each pole: 5° |
| **Overtravel** | 20° min. | 20° min. | 57° min. | 48° min. |
| **Oper. torque** | 0,45 Nm [4 in-lb] | | 0,45 Nm [4 in-lb] | 0,45 Nm [4 in-lb] |
| **Action** | Maintained | | CW & CCW (Momentary) | |
| **Op. temp range[6]** | -1°C to 121°C [30°F to 250°F] (for low temp, high temp, or preleaded versions, see pages 8-9) | | | -12°C to 121°C [10°F to 250°F] (for low temp, high temp, or pre-leaded versions, see pages 8-9) |

| Circuitry | | Contacts | Body Style[5] | Conduit (NPT) | Options | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SPDT |  SPDT Double Break | Silver | Plug-in | 0.5 in | | LSQ300 | LSN1A |  |  |
| | | Gold[3] | Plug-in | 0.5 in | | – | LSN1E | | |
| | | Silver | Plug-in | 0.5 in | 120 V Ind. lite[4] | – | LSN5A | | |
| | | Silver | Plug-in | 0.5 in | 240 V Ind. lite[4] | – | LSN8A | | |
| | | Silver | Non-plug-in | 0.5 in | | – | LSN3K | | |
| DPDT |  DPDT Double Break | Silver | Plug-in | 0.75 in | | – | LSN2B | LSM2D | LSL2C |
| | | Silver | Plug-in | 0.5 in | | – | LSN6B | LSM6D | LSL6C |
| | | Gold[3] | Plug-in | 0.5 in | | – | – | LSM6U | – |
| | | Silver | Non-plug-in | 0.75 in | | – | LSN4L | LSM4N | LSL4M |
| | | Silver | Non-plug-in | 0.5 in | | – | LSN7L | LSM7N | LSL7M |

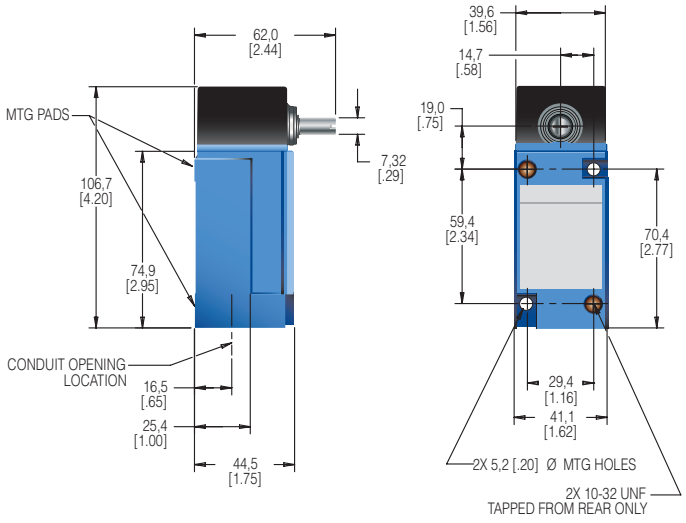
[1] Mechanical trip before electrical trip.
[2] Total travel is approximately 80° max. Maintained contact switch normally used with LSZ53 yoke actuator.
[3] Gold-plated contacts
[4] Use at voltage indicated for light. Wired to NO circuit. Upper temperature limit for lighted units is 93°C [200°F].
[5] Plug-in listings include base receptacle
[6] Completely fluorocarbon-sealed switches are preferred for temperatures above 93°C [200°F].

NOTE: Same polarity each pole.

To order a fluorocarbon sealed switch, insert the letters **Y** and **C** into the catalog listing as follows. The LSA1A limit switch is changed to a LS**Y**A**C**1A limit switch.
To order a low temperature, fluorosilicone sealed switch, insert the letters **Y** and **B** into the catalog listing as follows. The LSA1A limit switch is changed to a LS**Y**A**B**1A limit switch.

**Figure 2. MICRO SWITCH HDLS side rotary (single pole) dimensions**

**SPDT Plug-in (mm[in])**




**SPDT Non-plug-in (mm[in])**

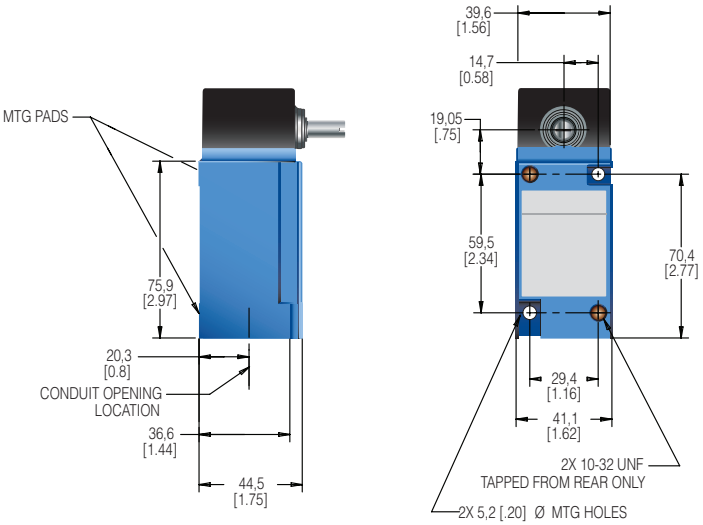
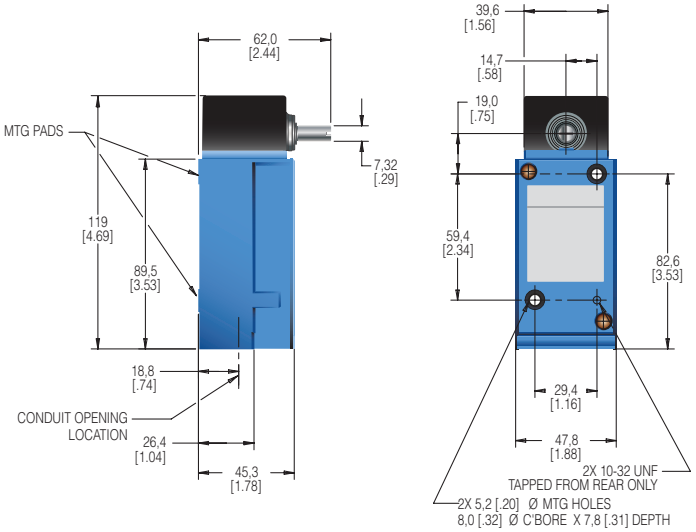
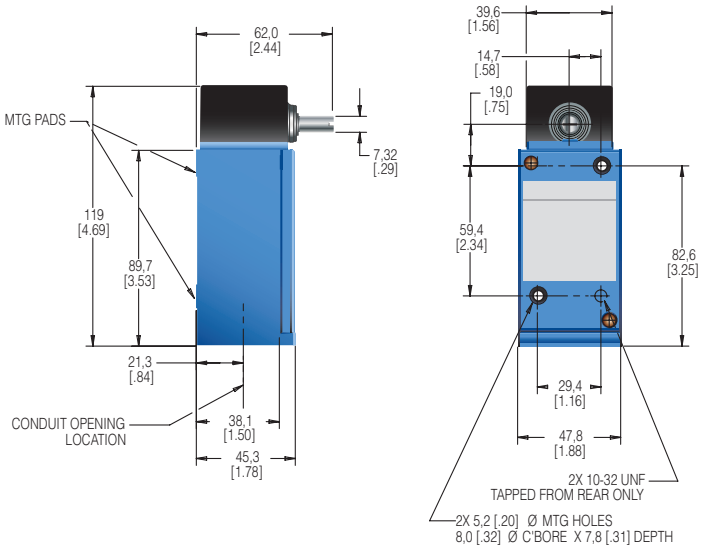



**Figure 3. MICRO SWITCH HDLS side rotary (double pole) dimensions**

**DPDT Plug-in (mm[in])**

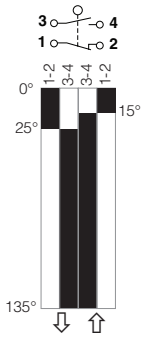
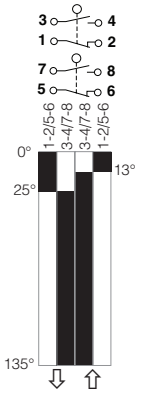
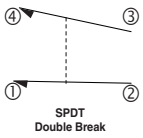
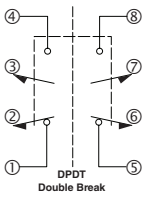



**DPDT Non-plug-in (mm[in])**



# MICRO SWITCH Heavy-Duty Limit Switch, HDLS Series

**Table 6. Top Rotary • MICRO SWITCH HDLS Series Order Guide/Recommended Listings**


| | | | | | Top Rotary (LSB) | |
|---|---|---|---|---|---|---|
| | | | | **Description** | Increased overtravel (100° min.). Uses same levers as side rotary | |
| | | | | | **SPDT** | **DPDT** |
| | | | | **Contact closed ■<br>Contact open □** | Snap Action 1NO/1NC<br>  <br> | Snap Action 2NO/2NC<br>  <br> |
| | | | | **Pretravel** | 25° max. | 25° max. |
| | | | | **Different. travel** | 10° max. | 12° max. |
| | | | | **Overtravel** | 110° min. | 110° min. |
| | | | | **Oper. torque** | 0,28 Nm [2.5 in lb] max. | |
| | | | | **Action** | CW and CCW (Momentary) | |
| | | | | **Op. temp range[3]** | -12°C to 121°C [10°F to 250°F] (for low temp, high temp, or preleaded versions, see pages 8-9) | |
| **Circuitry** | | **Contacts** | **Body Style[2]** | **Conduit (NPT)** | **Options** | |
| SPDT |  <br><br>SPDT Double Break | Silver | Plug-in | 0.5 in | | **LSB1A** – |
| | | Gold[4] | Plug-in | 0.5 in | | **LSB1E** – |
| | | Silver | Plug-in | 0.5 in | 120 V Ind. lite[1] | **LSB5A** – |
| | | Silver | Plug-in | 0.5 in | 240 V Ind. lite[1] | **LSB8A** – |
| | | Silver | Plug-in | 0.5 in | 24 V LED 1.5 mA max. auto polarity[1] | **LSB9A** – |
| | | Silver | Non-plug-in | 0.5 in | | **LSB3K** – |
| DPDT |  <br><br>DPDT Double Break | Silver | Plug-in | 0.75 in | | – **LSB2B** |
| | | Silver | Plug-in | 0.5 in | | – **LSB6B** |
| | | Silver | Plug-in | 0.75 in | 120 V Ind. lite[1] | – **LSB2R** |
| | | Silver | Non-plug-in | 0.75 in | | – **LSB4L** |
| | | Silver | Non-plug-in | 0.5 in | | – **LSB7L** |

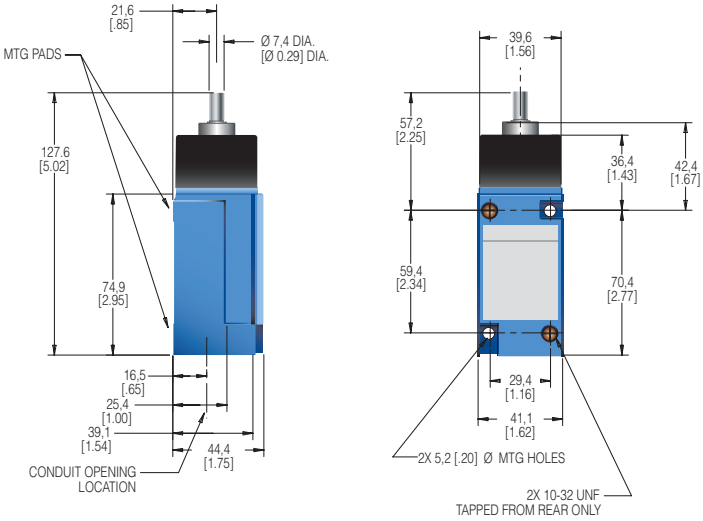
[1] Use at voltage indicated for light. Wired to NO circuit. Upper temperature limit for lighted units is 93°C [200°F]
[2] Plug-in listings include base receptacle
[3] Completely fluorocarbon sealed switches are preferred for use in temperatures above 93°C [200°F]
[4] Gold-plated contacts

NOTE: Same polarity each pole.

To order a fluorocarbon sealed switch, insert the letters **Y** and **C** into the catalog listing as follows. The LSA1A limit switch is changed to a LS**Y**A**C**1A limit switch.
To order a low temperature, fluorosilicone sealed switch, insert the letters **Y** and **B** into the catalog listing as follows. The LSA1A limit switch is changed to a LS**Y**A**B**1A limit switch.

**Figure 4. MICRO SWITCH HDLS top rotary (single pole) dimensions**

**SPDT Plug-in (mm[in])**




**SPDT Non-plug-in (mm[in])**

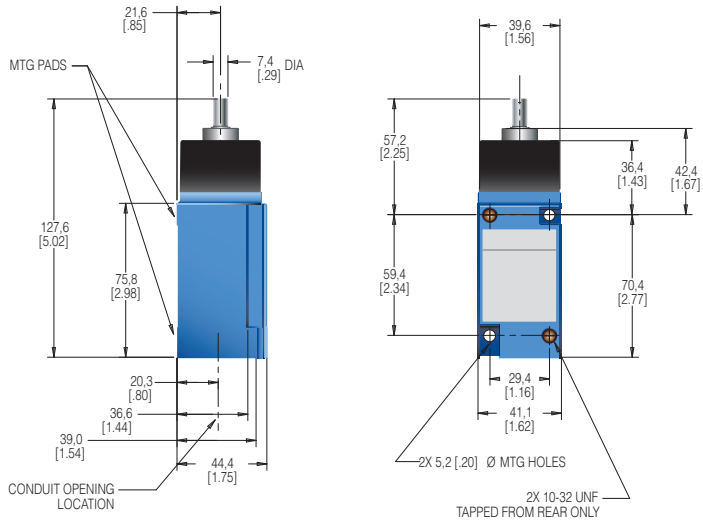
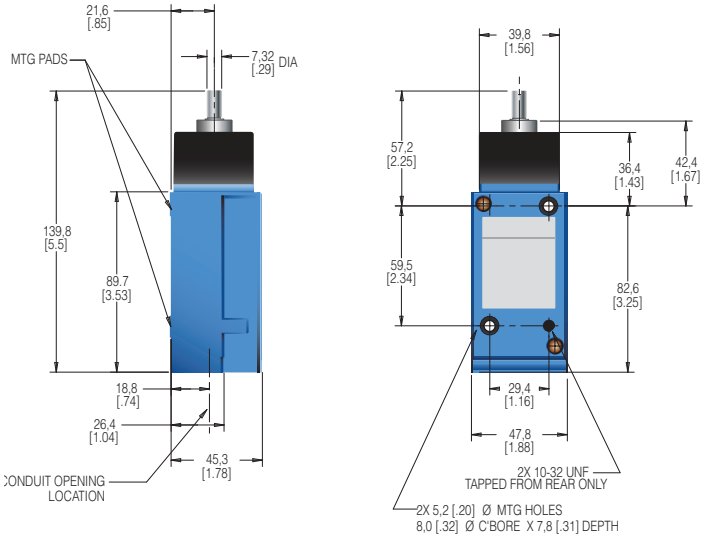
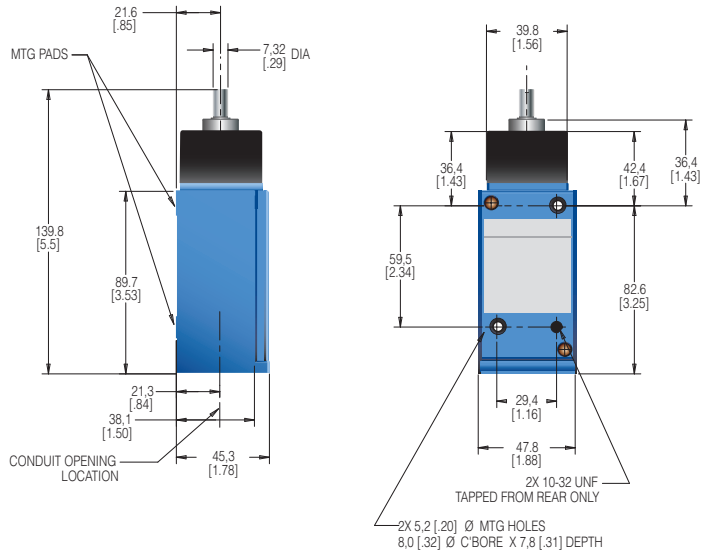



**Figure 5. MICRO SWITCH HDLS top rotary (double pole) dimensions**

**DPDT Plug-in (mm[in])**




**DPDT Non-plug-in (mm[in])**



# MICRO SWITCH Heavy-Duty Limit Switch, HDLS Series

**Table 7. Common levers for use with MICRO SWITCH HDLS Rotary Switches**

Levers for use with side or top rotary actuated switches are available in a wide choice of sizes and materials. The most common listings are shown below. Rollers may be on either side of the lever to best match the external acutating mechanism.

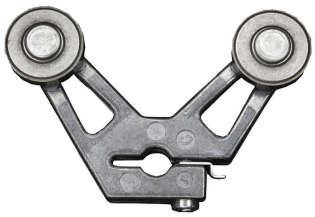
**LSZ51A&C**
fixed rotary lever, nylon roller, front/backl

**LSZ51B&D**
fixed rotary lever, steel roller, front/back

**LSZ59A,LSZ59B, LSZ59C,LSZ59D**
short fixed lever, front/back

**LSZ55A,LSZ55B, LSZ55C,LSZ55D**
offset lever, front/back

**LSZ60**
one-way roller lever



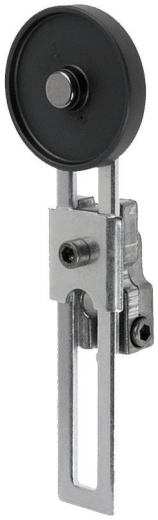
**LSZ53A, LSZ53B, LSZ53D**
yoke lever, nylon and steel rollers, front/back placement

**LSZ54R**
spring wire
305 mm [12 in]

**LSZ69CA**
spoke lever - 152 mm [6 in]

**LSZ52A, LSZ52B, LSZ52C, LSZ52D**
adj. lever, nylon/ steel, front/back

**LSZ52J**
adjustable lever, nylon roller
Ø 25,4 mm [Ø 1 in]



**LSZ52K**
adjustable lever, nylon roller
Ø 38,1 mm [Ø 1.5 in]

**LSZ54M**
aluminum rod
Ø 140 mm [Ø 5.5 in]

**LSZ61**
loop
152 mm [6 in]

**LSZ67AA***
Plastic conveyor roller

**LSZ68**
plastric rod w/ spring
305 mm [12 in]

**LSZ54N**
stainless steel rod 330 mm [13 in]

* May require orientation of switch and lever to enable gravity to help restore free position of switch.

## Table 8. HDLS Series Actuator Code Table (see previous page)

| | Catalog Listing | Material | Rod/Roller Dia. mm [in] | Rod/Roller Width mm [in] | Roller Mounting |
|---|---|---|---|---|---|
| | **Fixed 38,1 mm [1.5 in] radius** | | | | |
|  | – | Rollerless | n/a | n/a | n/a |
| | LSZ51A | Nylon | 19 [0.75] | 6,35 [0.25] | Front |
| | LSZ51B | Steel | 19 [0.75] | 6,35 [0.25] | Front |
| | LSZ51C | Nylon | 19 [0.75] | 6,35 [0.25] | Back |
| | LSZ51D | Steel | 19 [0.75] | 6,35 [0.25] | Back |
| | LSZ51F | Nylon | 25,4 [1.0] | 12,7 [0.50] | Front |
| | LSZ51G | Nylon | 38,1 [1.5] | 6,35 [0.25] | Front |
| | LSZ51J | Nylon | 25,4 [1.0] | 12,7 [0.50] | Back |
| | LSZ51L | Ball bearing | 19 [0.75] | 6,35 [0.25] | Back |
| | LSZ51M | Nylon | 19 [0.75] | 31,7 [1.25] | Back |
| | LSZ51N | Steel | 19 [0.75] | 31,7 [1.25] | Front |
| | LSZ51P | Nylon | 19 [0.75] | 12,7 [0.50] | Front |
| | **Adjustable 38,1 mm to 89,0 mm [1.5 in to 3.5 in] radius** | | | | |
|  | – | Rollerless | n/a | n/a | n/a |
| | LSZ52A | Nylon | 19 [0.75] | 6,35 [0.25] | Back |
| | LSZ52B | Steel | 19 [0.75] | 6,35 [0.25] | Back |
| | LSZ52C | Nylon | 19 [0.75] | 6,35 [0.25] | Front |
| | LSZ52D | Steel | 19 [0.75] | 6,35 [0.25] | Front |
| | LSZ52E | Nylon | 19 [0.75] | 33,0 [1.30] | Front |
| | LSZ52J | Nylon | 25,4 [1.0] | 12,7 [0.50] | Front |
| | LSZ52K | Nylon | 38,1 [1.5] | 6,35 [0.25] | Front |
| | LSZ52L | Ball bearing | 19 [0.75] | 6,35 [0.25] | Front |
| | LSZ52M | Nylon | 50,8 [2.0] | 6,35 [0.25] | Front |
| | LSZ52N | Nylon | 19 [0.75] | 12,7 [0.50] | Front |
| | **Yoke – 38,1 mm [1.5 in] radius** | | | | |
|  | LSZ53A | Nylon | 19 [0.75] | 6,35 [0.25] | Front/Back |
| | LSZ53B | Steel | 19 [0.75] | 6,35 [0.25] | Front/Back |
| | LSZ53D | Steel | 19 [0.75] | 6,35 [0.25] | Front/Front |
| | LSZ53E | Nylon | 19 [0.75] | 6,35 [0.25] | Back/Front |
| | LSZ53M | Nylon | 19 [0.75] | 31,7 [1.25] | Back/Front |
| | LSZ53P | Steel | 19 [0.75] | 6,35 [0.25] | Back/Back |
| | LSZ53S | Nylon | 19 [0.75] | 6,35 [0.25] | Back/Back |
| | **Rod** | | | | |
|  | – | Hub only | n/a | n/a | n/a |
| | LSZ54M | Alum, 140 mm [5.5 in] | Ø 3,2 [Ø 0.125] | n/a | n/a |
| | LSZ54N | Stainless, 330 mm [13 in] | Ø 3,2 [Ø 0.125] | n/a | n/a |
| | LSZ54R | SST spring wire, 305 mm [12 in] | Ø 1,9 [Ø 0.075] | n/a | n/a |
| | LSZ54V | Flex cable (tin plated steel), 122 mm [4.8 in] | Ø 4,8 [Ø 0.19] | n/a | n/a |
| | LSZ54P | Plastic rod, 533,4 mm [21 in] | Ø 6,85 [Ø 0.27] | n/a | n/a |
| | LSZ54W | Plastic rod, 183 mm [7.2 in] | Ø 6,85 [Ø 0.27] | n/a | n/a |
| | LSZ54T | 330 [13] stainless steel | Ø 4,8 [Ø 0.19] | n/a | n/a |
| | **Spoke** | | | | |
|  | LSZ69CA | 152 mm [6.0 in] Stainless | 3,2 [0.125] | n/a | n/a |

| | Catalog Listing | Material | Rod/Roller Dia. mm [in] | Rod/Roller Width mm [in] | Roller Mounting |
|---|---|---|---|---|---|
| | **Fixed 38,1 mm [1.5 in] radius** | | | | |
|  | – | Rollerless | n/a | n/a | n/a |
| | LSZ55A | Nylon | 19 [0.75] | 6,35 [0.25] | Back |
| | LSZ55B | Steel | 19 [0.75] | 6,35 [0.25] | Back |
| | LSZ55C | Nylon | 19 [0.75] | 6,35 [0.25] | Front |
| | LSZ55D | Steel | 19 [0.75] | 6,35 [0.25] | Front |
| | LSZ55E | Nylon | 19 [0.75] | 12,7 [0.50] | Front |
| | LSZ55K | Nylon | 38,1 [1.5] | 6,35 [0.25] | Front |
| | **Short fixed - 33 mm [1.3 in] radius** | | | | |
|  | LSZ59A | Nylon | 19 [0.75] | 6,35 [0.25] | Front |
| | LSZ59B | Steel | 19 [0.75] | 6,35 [0.25] | Front |
| | LSZ59C | Nylon | 19 [0.75] | 6,35 [0.25] | Back |
| | LSZ59D | Steel | 19 [0.75] | 6,35 [0.25] | Back |
| | **38,1 mm [1.5 in] radius one-way roller lever** | | | | |
|  | LSZ60A | Nylon | 19 [0.75] | 6,35 [0.25] | Front |
| | LSZ60B | Steel | 19 [0.75] | 6,35 [0.25] | Front |
| | **Flexible loop** | | | | |
|  | LSZ61 | Ø 4,8 [Ø 0.19] Plastic | 152 mm [6 in] flexible loop | | |
| | LSZ618 | Ø 4,8 [Ø 0.19] Plastic | 241 mm [9.5 in] flexible loop | | |
| | LSZ54 | Hub only | n/a | n/a | n/a |
| | **Spring rod** | | | | |
|  | LSZ68 | Delrin rod, 305 [12 ] | Ø 6,35 [Ø 0.25] | n/a | n/a |
| | LSZ617 | Delrin rod, 406 [16] | Ø 6,35 [Ø 0.25] | n/a | n/a |
| | LSZ686 | Delrin rod, 152 [6] | Ø 6,35 [Ø 0.25] | n/a | n/a |
| | **Rubber roller levers** | | | | |
|  | LSZ51Y 38,1 mm [1.5 in] radius (std.) | Rubber | 50 [2.0] | 12,7 [0.50] | front |
| | LSZ55Y 38,1 mm [1.5 in] radius (offset) | Rubber | 50 [2.0] | 12,7 [0.50] | front |
| | LSZ52Y 38,1 mm to 89,0 mm [1.5 in to 3.5 in] radius (adjustable) | Rubber | 50 [2.0] | 12,7 [0.50] | front |
| | **Plastic roller levers** | | | | |
|  | LSZ67AA* (conveyor) | Plastic | 38,1 [1.5] | 96,5 [3.8] | n/a |

* may require orientation of switch and lever to enable gravity to help restore free position of switch.

## MICRO SWITCH HDLS Side Rotary Levers' Cam Tracking

Levers for side and top rotary switches are normally ordered as separate catalog listings. They also may be ordered by including a suffix to the switch catalog listing (see nomenclature tree in this document) and adding the lever price.

**Figure 6. LSZ51 type levers cam tracking**

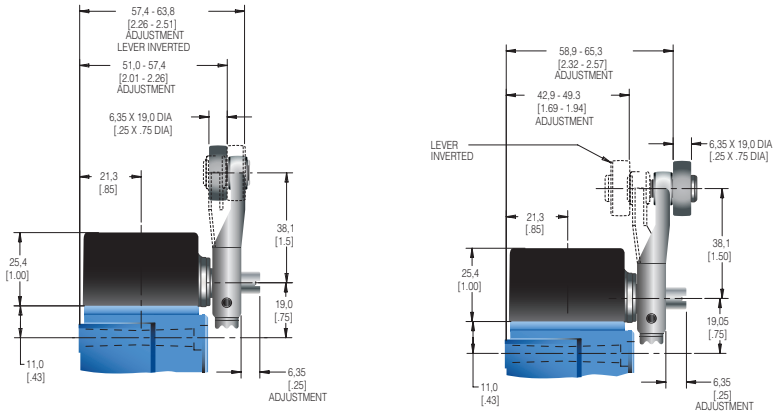



**Figure 7. LSZ52 type levers cam tracking**

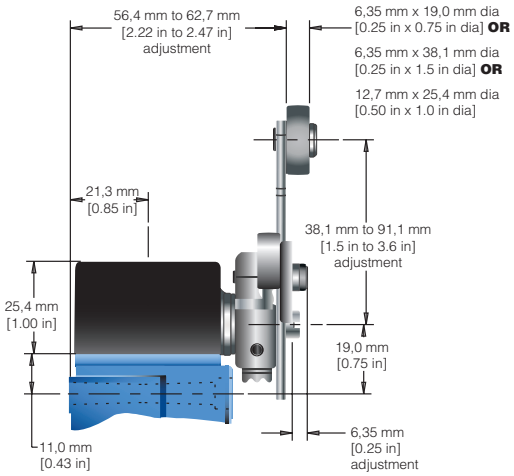



**Figure 8. LSZ54 type levers cam tracking**

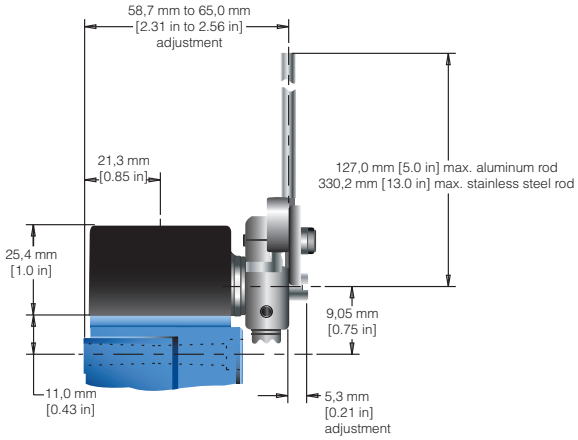
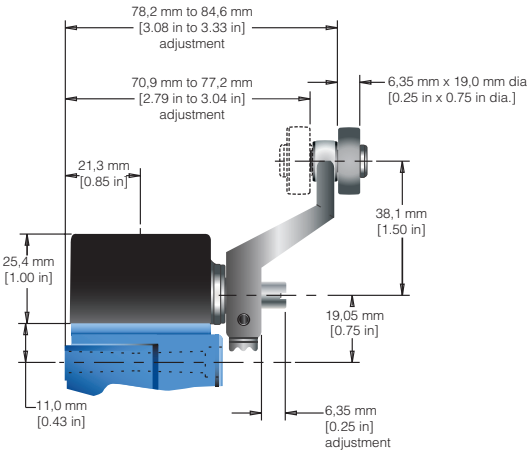


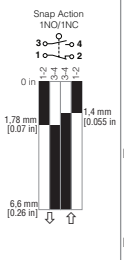
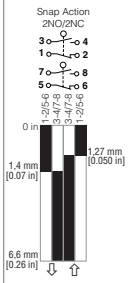
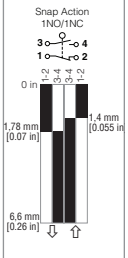
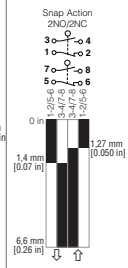
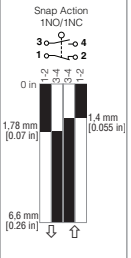
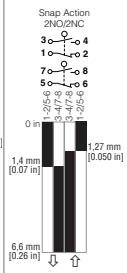

**Figure 9. LSZ55 type levers cam tracking**

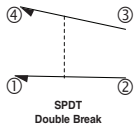
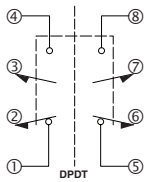


# MICRO SWITCH Heavy-Duty Limit Switch, HDLS Series

**Table 9. Top Plungers • MICRO SWITCH HDLS Series Order Guide/Recommended Listings**

All top plungers are momentary action.


| | Plain (LSC) | | Roller (LSD) | | Adjustable (LSV) | |
|---|---|---|---|---|---|---|
| |  | |  | |  | |
| **Description** | Top plain plunger for in-line operating motion | | Roller plunger can be rotated at 90° increments | | Adjustable top plain plunger | |
| | **SPDT** | **DPDT** | **SPDT** | **DPDT** | **SPDT** | **DPDT** |
| **Contact closed ■ Contact open □** |  |  |  |  |  |  |
| **Pretravel** | 1,78 mm [0.07 in] | | | | | |
| **Different. travel** | 0,38 mm [0.015 in] | 0,51 mm [0.02 in] | 0,38 mm [0.015 in] | 0,51 mm [0.02 in] | 0,38 mm [0.015 in] | 0,51 mm [0.02 in] |
| **Overtravel** | 4,83 mm [0.19 in] | | | | | |
| **Operating point (nom.)** | 45,8 mm [1.805 in] | | 55,9 mm [2.20 in] | | 53 mm to 59 mm [2.08 in to 2.34 in] | |
| **Operating force** | 17,8 N [4 lb] max. | | | | | |
| **Op. temp range[3]** | -12°C to 93°C [10°F to 200°F] (for low temp, high temp, or preleaded versions, see pages 8-9) | | | | | |

| Circuitry | | Contacts | Body Style[2] | Conduit (NPT) | Options | | | |
|---|---|---|---|---|---|---|---|---|
| SPDT |  SPDT Double Break | Silver | Plug-in | 0.5 in | | **LSC1A** | **LSD1A** | **LSV1A** |
| | | Gold[4] | Plug-in | 0.5 in | | **LSC1E** | **LSD1E** | **LSV1E** |
| | | Silver | Plug-in | 0.5 in | 120 V Ind. lite[1] | **LSC5A** | **LSD5A** | **LSV5A** |
| | | Silver | Plug-in | 0.5 in | 240 V Ind. lite[1] | **LSC8A** | **LSD8A** | **LSV8A** |
| | | Silver | Non-plug-in | 0.5 in | | **LSC3K** | **LSD3K** | **LSV3K** |
| DPDT |  DPDT Double Break | Silver | Plug-in | 0.75 in | | **LSC2B** | **LSD2B** | **LSV2B** |
| | | Silver | Plug-in | 0.5 in | | **LSC2R** | **LSD2R** | **LSV2R** |
| | | Silver | Plug-in | 0.75 in | 120 V Ind. lite[1] | **LSC6B** | **LSD6B** | **LSV6B** |
| | | Silver | Non-plug-in | 0.75 in | | **LSC4L** | **LSD4L** | **LSV4L** |
| | | Silver | Non-plug-in | 0.5 in | | **LSC7L** | **LSD7L** | **LSV7L** |

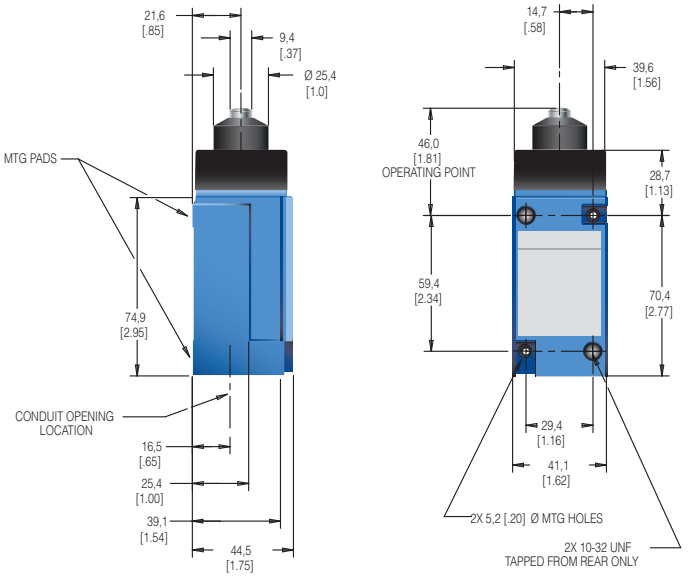
[1] Use at voltage indicated for light. Wired to NO circuit. Upper temperature limit for lighted units is 93°C [200°F]
[2] Plug-in listings include base receptacle
[3] Completely fluorocarbon sealed switches are preferred for use in temperatures above 93°C [200°F]
[4] Gold-plated contacts

NOTE: Same polarity each pole.

To order a fluorocarbon sealed switch, insert the letters **Y** and **C** into the catalog listing as follows. The LSA1A limit switch is changed to a LS**Y**A**C**1A limit switch.
To order a low temperature, fluorosilicone sealed switch, insert the letters **Y** and **B** into the catalog listing as follows. The LSA1A limit switch is changed to a LS**Y**A**B**1A limit switch.

**Figure 10. MICRO SWITCH HDLS LSC Series (single pole plunger dimensions**

**SPDT Plug-in (mm[in])**




**SPDT Non-plug-in (mm[in])**

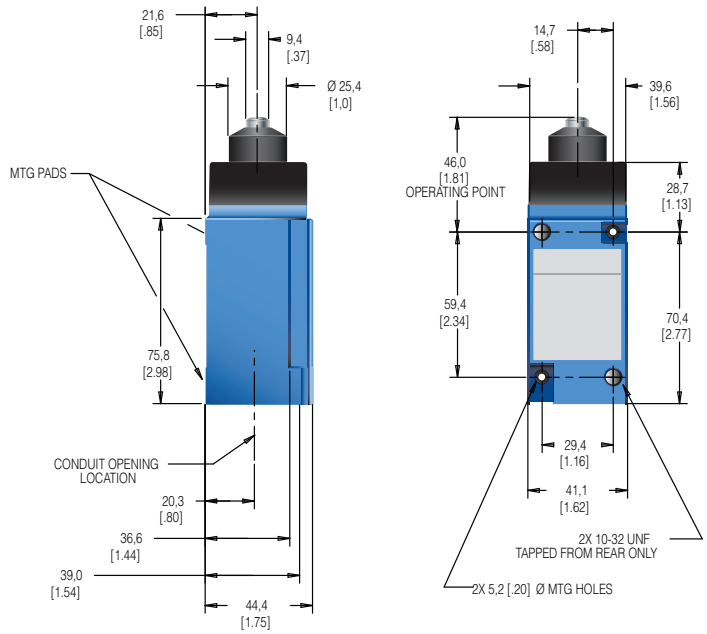
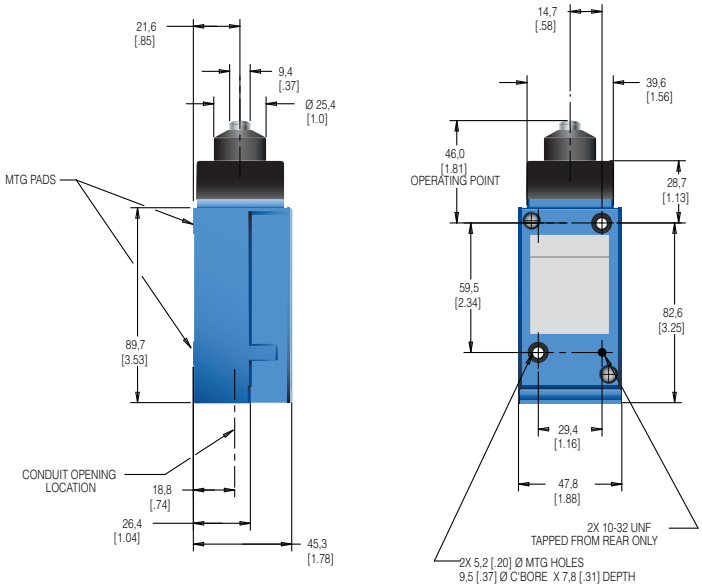



**Figure 11. MICRO SWITCH HDLS LSC Series (double pole plunger dimensions**

**DPDT Plug-in (mm[in])**




**DPDT Non-plug-in (mm[in])**

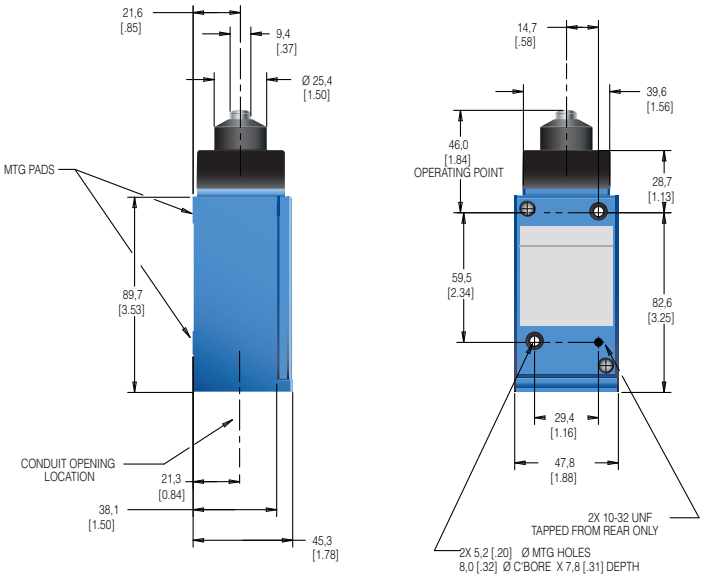
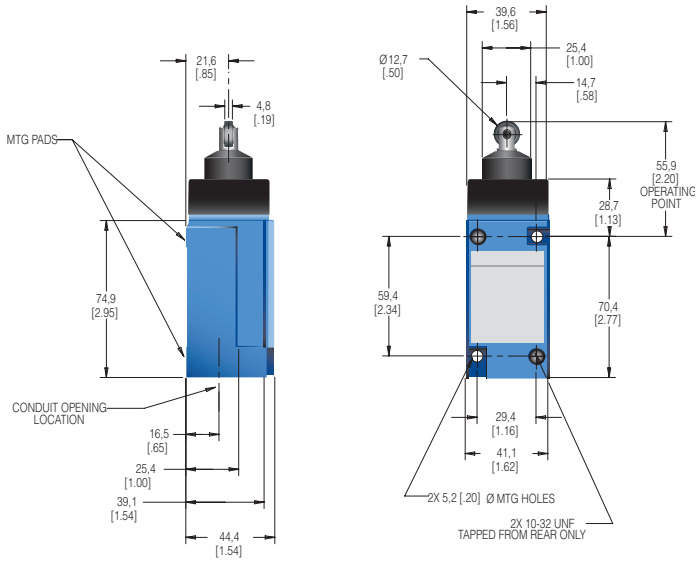


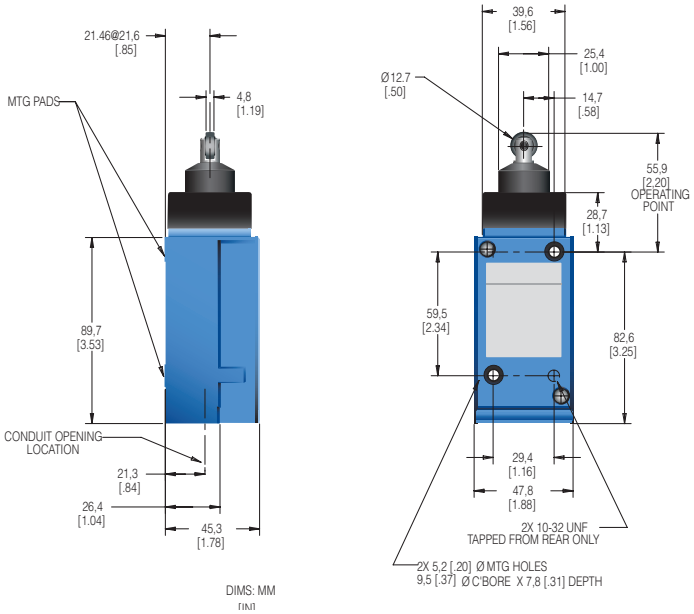
**Figure 12. MICRO SWITCH HDLS LSD Series (single pole) top roller plunger dimensions**

**Figure 13. MICRO SWITCH HDLS LSD Series (double pole) top roller plunger dimensions**

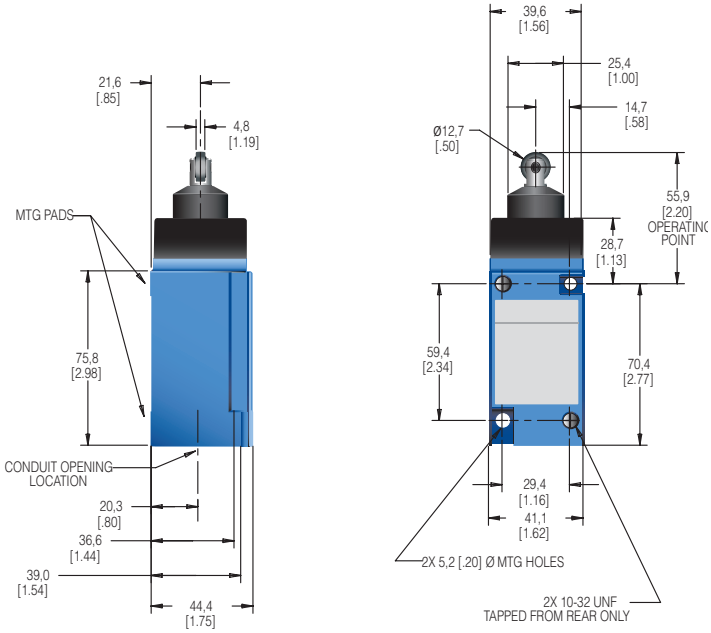
### SPDT Plug-in (mm[in])




### DPDT Plug-in (mm[in])




### SPDT Non-plug-in (mm[in])




### DPDT Non-plug-in (mm[in])

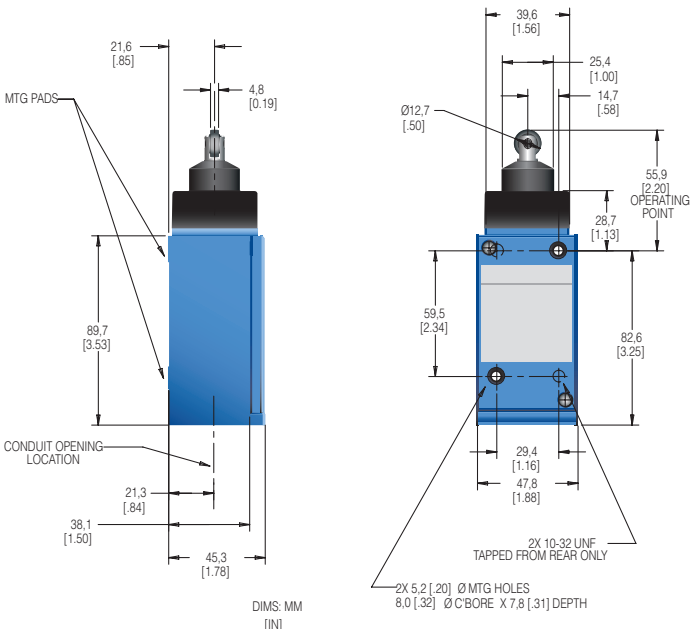
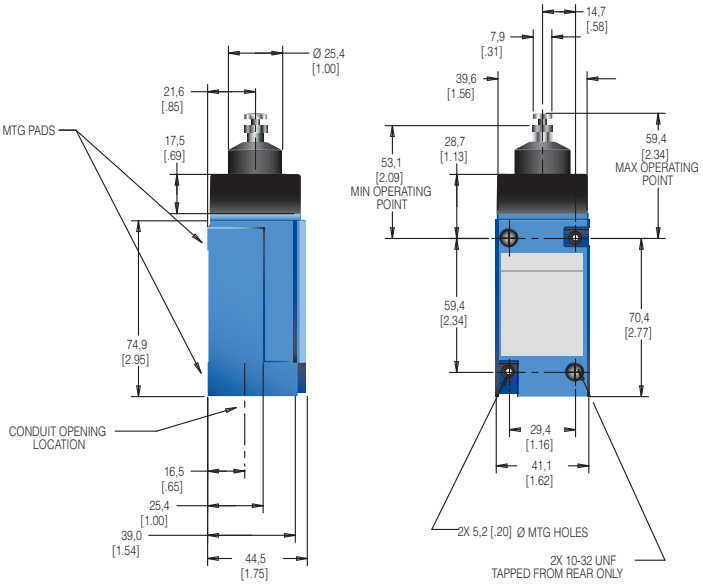
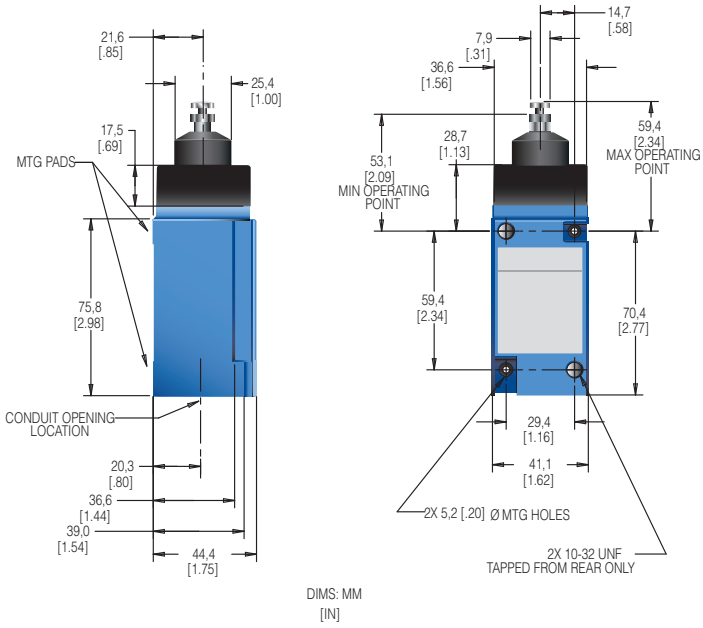


**Figure 14. MICRO SWITCH HDLS LSV Series top adjustable plunger (single pole) dimensions**

**SPDT Plug-in (mm[in])**



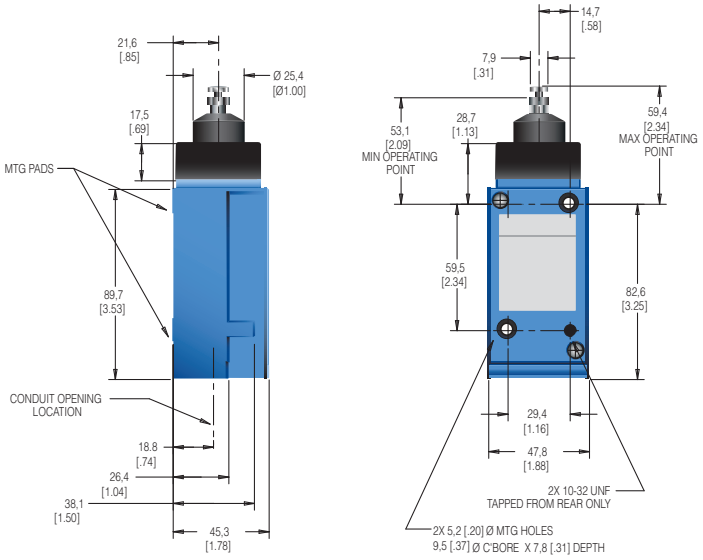

**SPDT Non-plug-in (mm[in])**



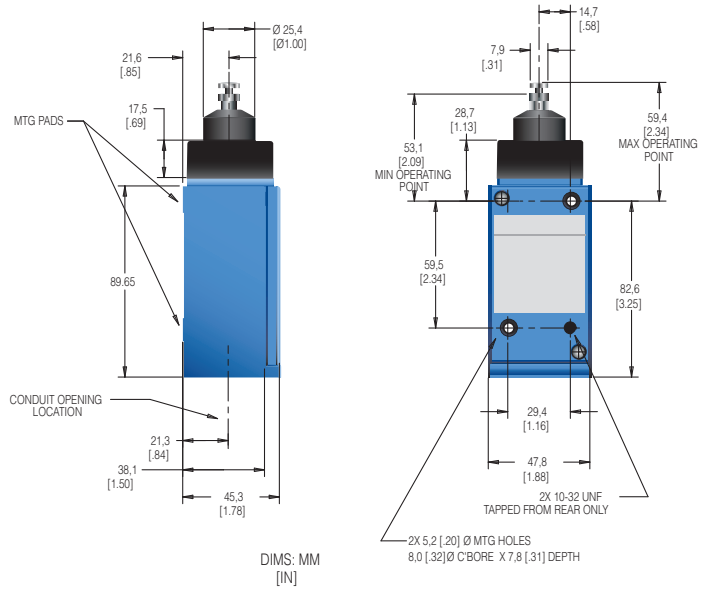

DIMS: MM [IN]

**Figure 15. MICRO SWITCH HDLS LSV Series top adjustable plunger (double pole) dimensions**

**DPDT Plug-in (mm[in])**



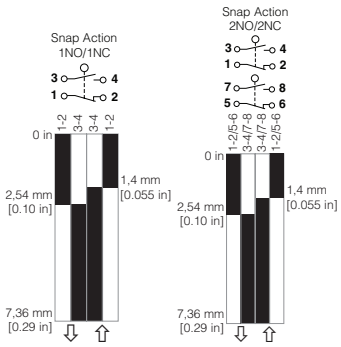
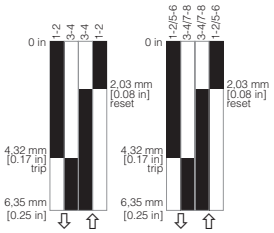

**DPDT Non-plug-in (mm[in])**

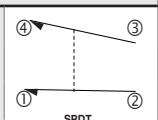
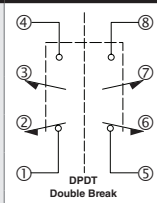



DIMS: MM [IN]

**Table 10. Side Plungers • MICRO SWITCH HDLS Series Order Guide/Recommended Listings**

Heads may be positioned to accept actuation from any of four directions, 90° apart.


| | Plain (LSE) | Roller (LSF) | Adjustable (LSW) | Maintained (LSG) |
|---|---|---|---|---|
| |  |  |  |  |
| **Description** | Side plain plunger (momentary) | Side roller plunger (momentary) | Adjustable side plain plunger (momentary) | Side plain plunger with maintained contact |
| **Contact closed ■ Contact open □** |   | | |   |
| **Pretravel** | 2,54 mm [0.10 in] | | | 4,32 mm [0.17 in] |
| **Different. travel** | Single pole: 0,64 mm [0.025 in] Double pole: 0,89 mm [0.035 in] | | | 2,29 mm [0.09 in] |
| **Overtravel** | 4,83 mm [0.19 in] | | | 2,0 mm [0.08 in] |
| **Operating point (nominal)** | 33,0 mm [1.30 in] | 44,1 mm [1.74 in] | 41,0 mm to 47,4 mm [1.62 in to 1.87 in] | 67,6 mm [1.48 in] |
| **Operating force** | 26,7 N [6 lb] max. | | | 44,5 N [10 lb] max. |
| **Op. temp range[3]** | -12°C to 93°C [10°F to 200°F] (for low temp, high temp, or preleaded versions, see pages 8-9) | | | -1°C to 93°C [30°F to 200°F] (for low temp, high temp, or preleaded versions, see pages 8-9) |

| Circuitry | | Contacts | Body Style[2] | Conduit (NPT) | Options | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SPDT |   | Silver | Plug-in | 0.5 in | | **LSE1A** | **LSF1A** | **LSW1A** | **LSG1A** |
| | | Gold[4] | Plug-in | 0.5 in | | **LSE1E** | **LSF1E** | **LSW1E** | **LSG1E** |
| | | Silver | Plug-in | 0.5 in | 120 V Ind. lite[1] | **LSE5A** | **LSF5A** | **LSW5A** | **LSG5A** |
| | | Silver | Plug-in | 0.5 in | 240 V Ind. lite[1] | **LSE8A** | **LSF8A** | **LSW8A** | **LSG8A** |
| | | Silver | Non-plug-in | 0.5 in | | **LSE3K** | **LSF3K** | **LSW3K** | **LSG3K** |
| DPDT |   | Silver | Plug-in | 0.75 in | | **LSE2B** | **LSF2B** | **LSW2B** | **LSG2B** |
| | | Silver | Plug-in | 0.5 in | | **LSE2R** | **LSF2R** | **LSW2R** | **LSG2R** |
| | | Silver | Plug-in | 0.75 in | 120 V Ind. lite[1] | **LSE6B** | **LSF6B** | **LSW6B** | **LSG6B** |
| | | Gold[4] | Plug-in | 0.5 in | | **LSE6S** | **–** | **–** | **–** |
| | | Silver | Non-plug-in | 0.75 in | | **LSE4L** | **LSF4L** | **LSW4L** | **LSG4L** |
| | | Silver | Non-plug-in | 0.5 in | | **LSE7L** | **LSF7L** | **LSW7L** | **LSG7L** |

[1] Use at voltage indicated for light. Wired to NO circuit. Upper temperature limit for lighted units is 93°C [200°F]
[2] Plug-in listings include base receptacle
[3] Completely fluorocarbon sealed switches are preferred for use in temperatures above 93°C [200°F]
[4] Gold-plated contacts

NOTE: Same polarity each pole.

To order a fluorocarbon sealed switch, insert the letters **Y** and **C** into the catalog listing as follows. The LSA1A limit switch is changed to a LS**Y**A**C**1A limit switch.
To order a low temperature, fluorosilicone sealed switch, insert the letters **Y** and **B** into the catalog listing as follows. The LSA1A limit switch is changed to a LS**Y**A**B**1A limit switch.

**Figure 16. MICRO SWITCH HDLS LSE Series side plain plunger (single pole) dimensions**

**SPDT Plug-in (mm[in])**

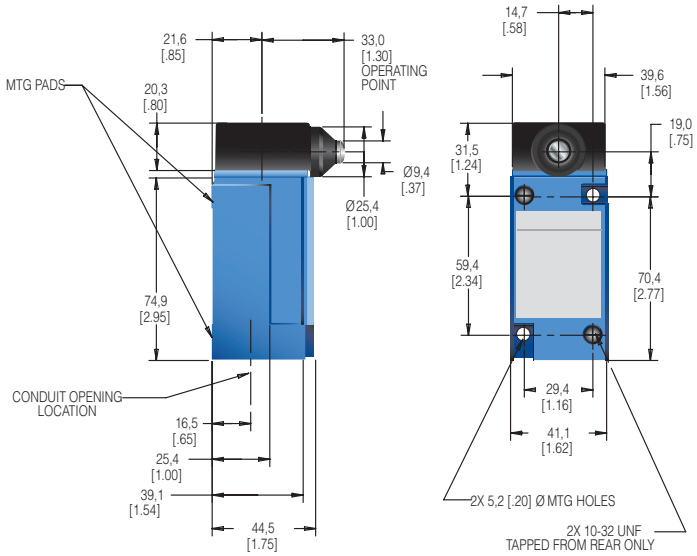
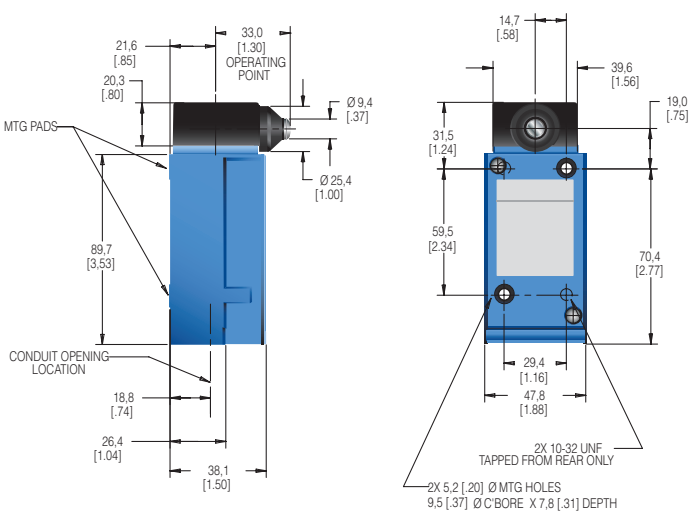
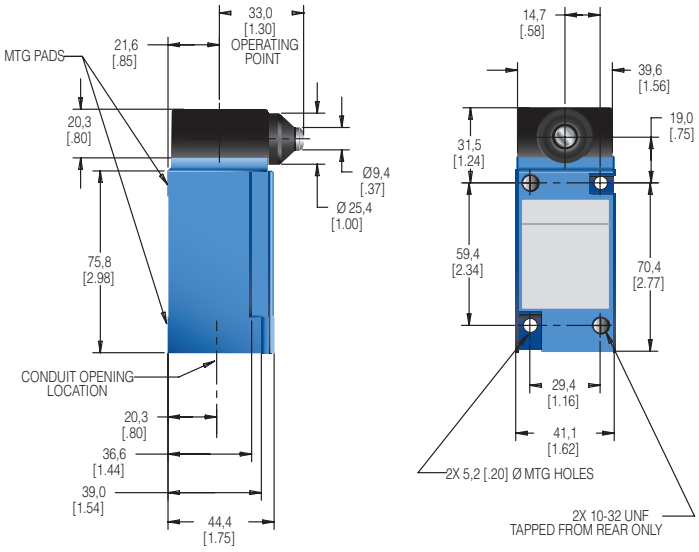



**Figure 17. MICRO SWITCH HDLS LSE Series side plain plunger (double pole) dimensions**

**DPDT Plug-in (mm[in])**




**SPDT Non-plug-in (mm[in])**




**DPDT Non-plug-in (mm[in])**

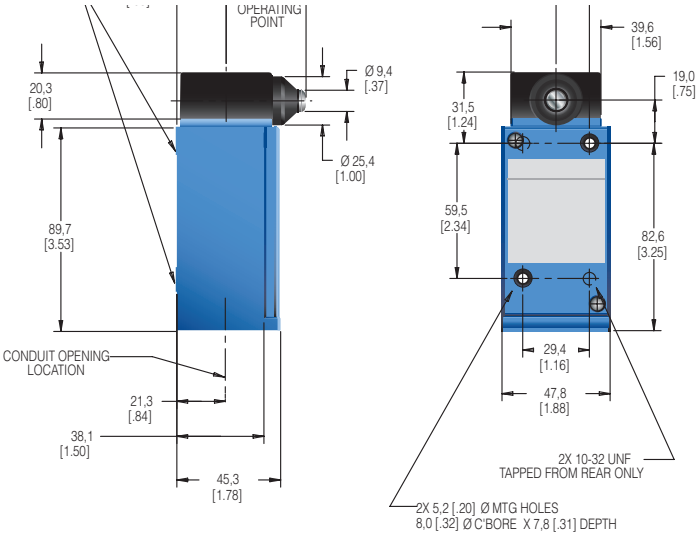
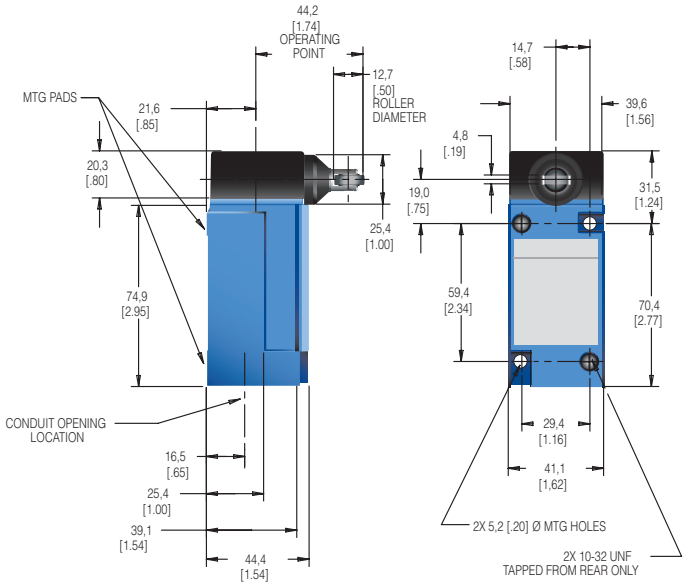


**Figure 18. MICRO SWITCH HDLS LSF Series side roller plunger (single pole) dimensions**

**SPDT Plug-in (mm[in])**




**SPDT Non-plug-in (mm[in])**

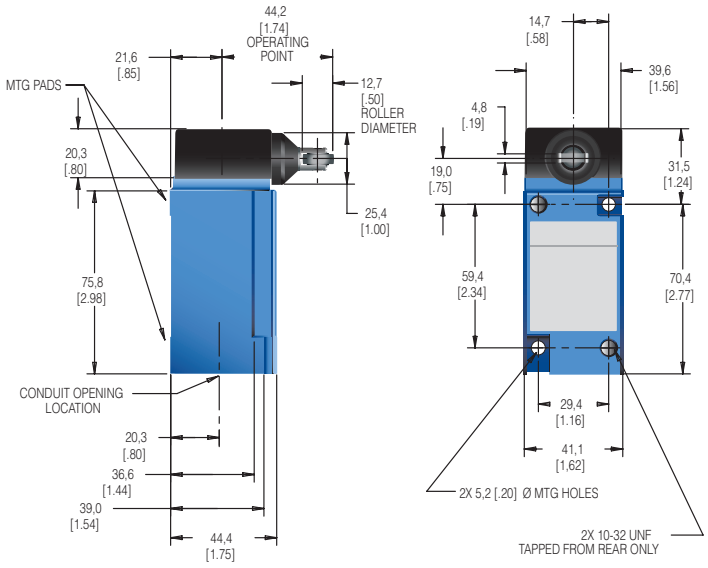
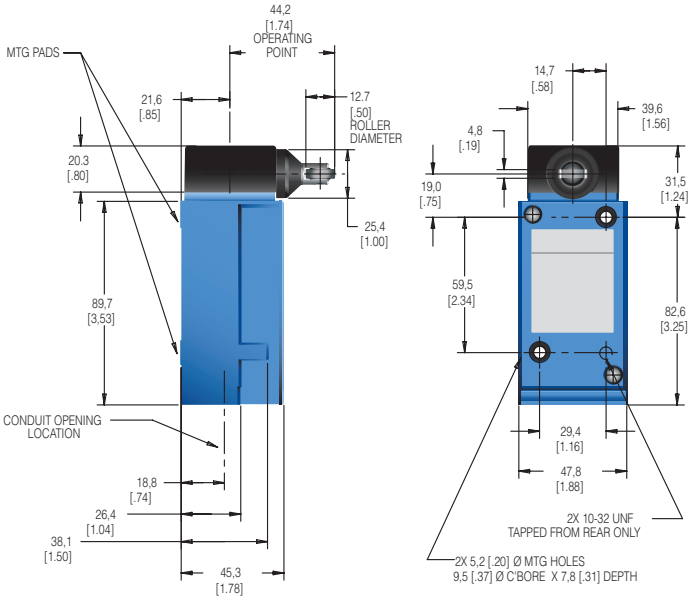



**Figure 19. MICRO SWITCH HDLS LSF Series side roller plunger (double pole) dimensions**

**DPDT Plug-in (mm[in])**




**DPDT Non-plug-in (mm[in])**

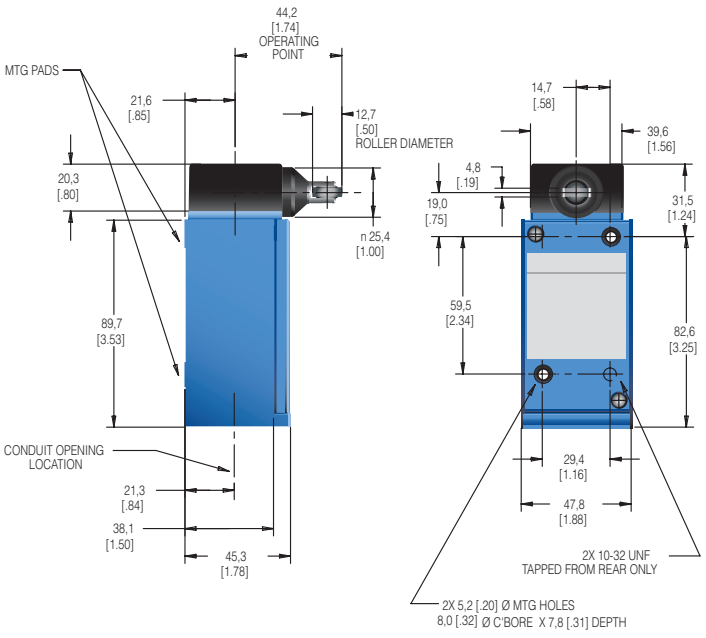
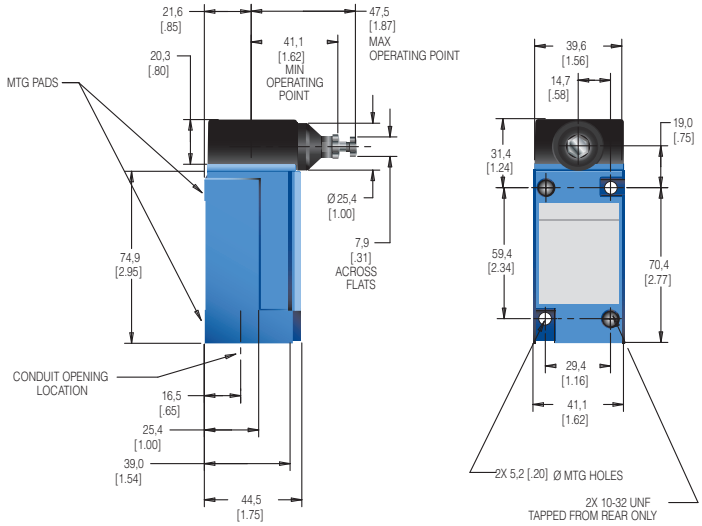


**Figure 20. MICRO SWITCH HDLS LSW Series side adjustable plunger (single pole) dimensions**

**SPDT Plug-in (mm[in])**




**SPDT Non-plug-in (mm[in])**

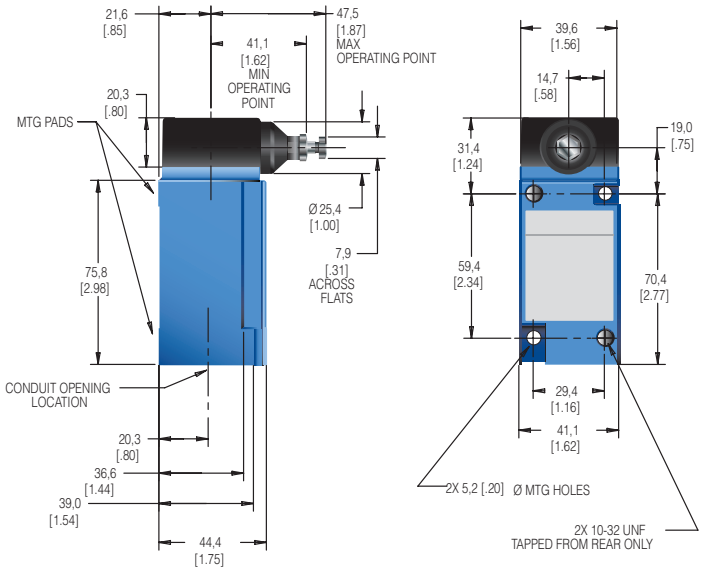
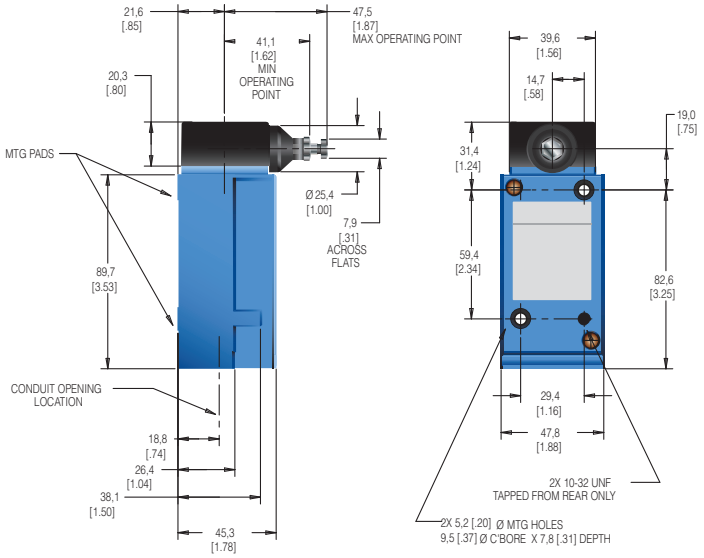



**Figure 21. MICRO SWITCH HDLS LSW Series side adjustable plunger (double pole) dimensions**

**DPDT Plug-in (mm[in])**




**DPDT Non-plug-in (mm[in])**

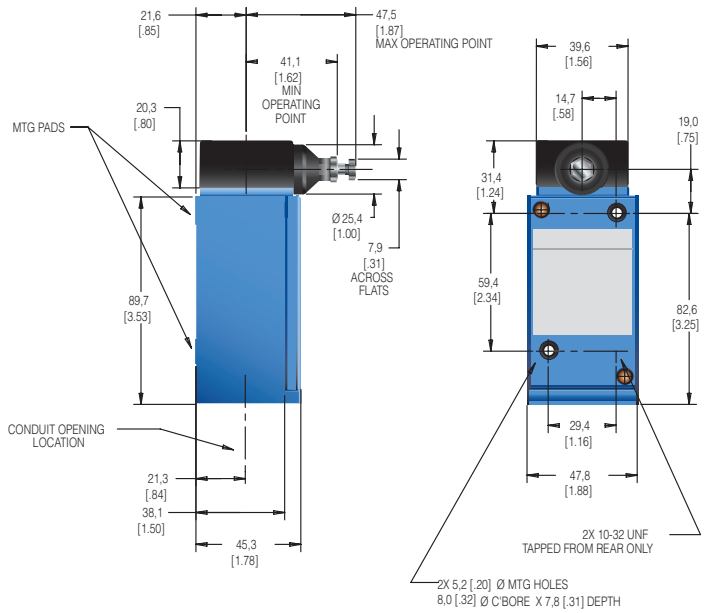
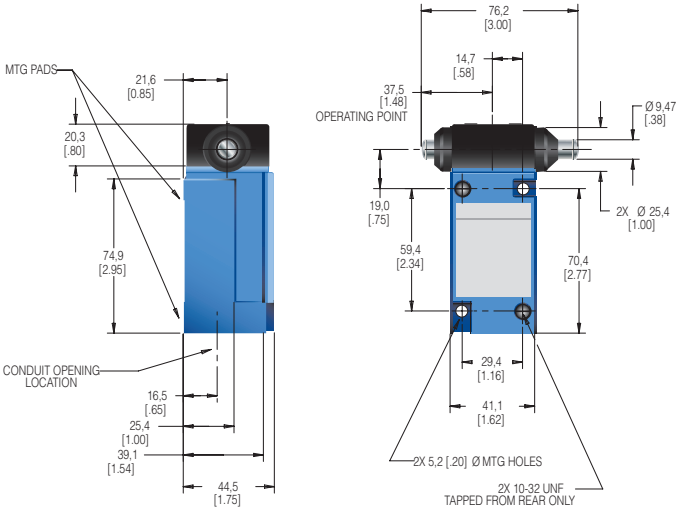


**Figure 22. MICRO SWITCH HDLS LSG Series maintained contact side plunger (single pole) dimensions**

**SPDT Plug-in (mm[in])**




**SPDT Non-plug-in (mm[in])**

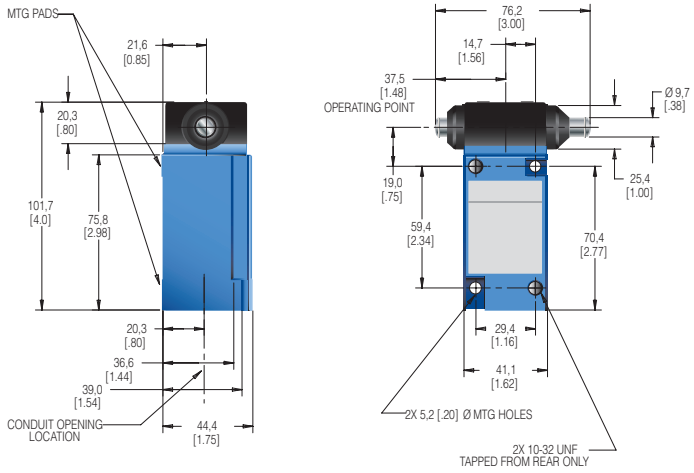
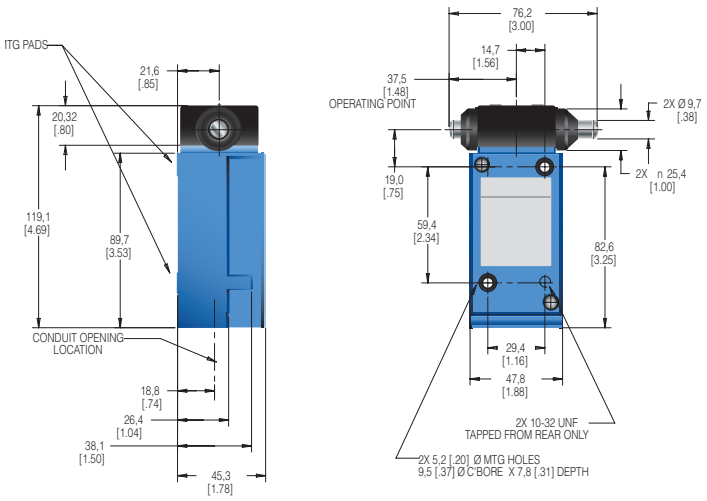



**Figure 23. MICRO SWITCH HDLS LSG Series maintained contact side plunger (double pole) dimensions**

**DPDT Plug-in (mm[in])**




**DPDT Non-plug-in (mm[in])**

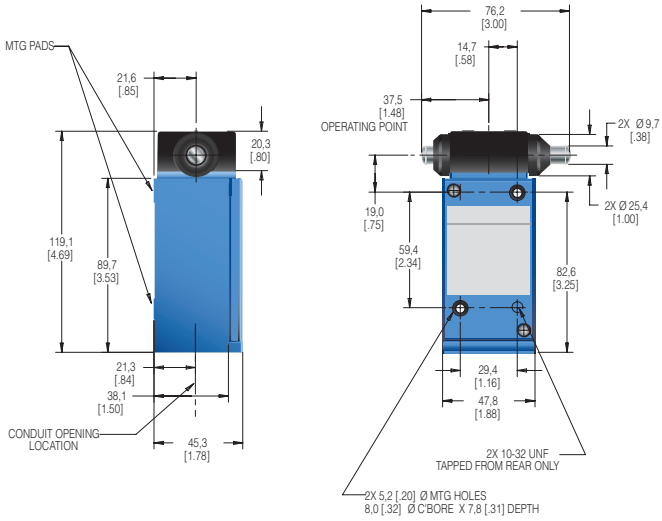
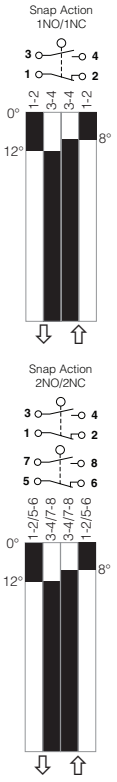
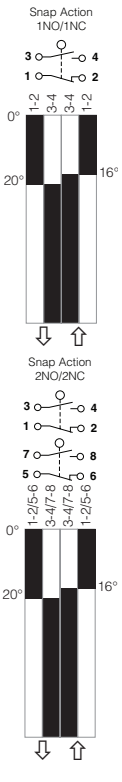
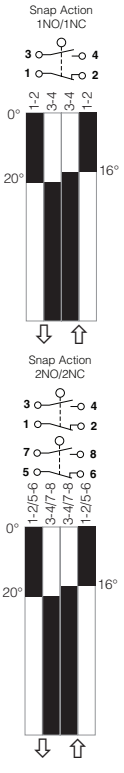
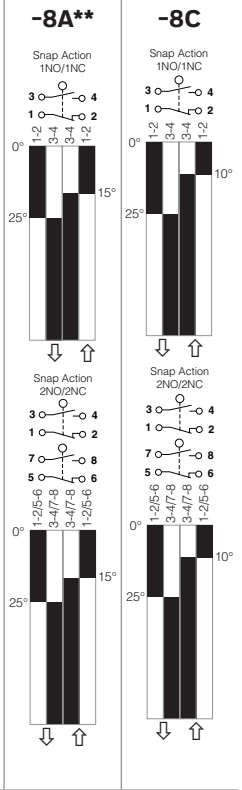
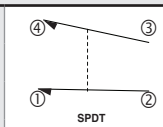
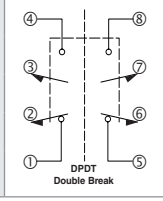


**Table 11. Wobbles • MICRO SWITCH HDLS Series Order Guide/Recommended Listings**

LSJ1A-7A - Plastic rod | LSJ1A-7M - Spring wire | LSJ1A-7N - Flexible actuator | LSK1A-8A - Cat whisker | LSK1A-8C - Coil spring

| | LSJ Series 7A Actuator | LSJ Series 7N Actuator | LSJ Series 7M Actuator | LSK Series 8A-8C Actuator | |
|---|---|---|---|---|---|
| **Description** | Plastic rod lever (wobble stick) | Flexible cable lever | Spring wire lever - may be formed for special needs | Cat whisker actuator for low operating force applications | |
| **Contact closed ■ Contact open □** |   |   |   |   | |
| **Lever length from top mounting hole** | Actuator: 140 mm [5.5 in] | Actuator: 140 mm [5.5 in] | Actuator: 330 mm [13 in] | 8A act.: 140 mm [5.5 in] SST 8C act.: 140 mm [5.5 in] steel plated | |
| **Pretravel** | 25,4 mm [1.0 in] | 38,0 mm [1.5 in] | 102 mm [4.0 in] | 51,0 mm [2.0 in] | |
| **Oper. force** | 2,78 Nm [10 oz] | 1,95 Nm [7 oz] | 1,39 Nm [5 oz] | 8A: 1,39 Nm [5 oz]; 8C: 1,95 Nm [7 oz] | |
| **Op. temp range[3]** | -12°C to 93°C [10°F to 200°F] (for low temp, high temp, or preleaded versions, see pages 8-9) | | | | |

| Circuitry | | Contacts | Body Style[2] | Conduit (NPT) | Options | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| SPDT |   | Silver | Plug-in | 0.5 in | | **LSJ1A-7A** | **LSJ1A-7N** | **LSJ1A-7M** | **LSK1A-8A** | **LSK1A-8C** |
| | | Gold[4] | Plug-in | 0.5 in | | **LSJ1E-7A** | **-** | **LSJ1E-7M** | **LSK1E-8A** | **LSK1E-8C** |
| | | Silver | Plug-in | 0.5 in | 120 V Ind. lite[1] | **LSJ5A-7A** | **LSJ5A-7N** | **LSJ5A-7M** | **LSK5A-8A** | **LSK5A-8C** |
| | | Silver | Plug-in | 0.5 in | 240 V Ind. lite[1] | **LSJ8A-7A** | **LSJ8A-7N** | **LSJ8A-7M** | **LSK8A-8A** | **LSK8A-8C** |
| | | Silver | Non-plug-in | 0.5 in | | **LSJ3K-7A** | **LSJ3K-7N** | **LSJ3K-7M** | **LSK3K-8A** | **LSK3K-8C** |
| DPDT |   | Silver | Plug-in | 0.75 in | | **LSJ2B-7A** | **LSJ2B-7N** | **LSJ2B-7M** | **LSK2B-8A** | **LSK2B-8C** |
| | | Silver | Plug-in | 0.5 in | | **LSJ6B-7A** | **LSJ6B-7N** | **LSJ6B-7M** | **LSK6B-8A** | **LSK6B-8C** |
| | | Silver | Plug-in | 0.75 in | 120 V Ind. lite[1] | **LSJ2R-7A** | **LSJ2R-7N** | **LSJ2R-7M** | **LSK2R-8A** | **LSK2R-8C** |
| | | Silver | Non-plug-in | 0.75 in | | **LSJ4L-7A** | **LSJ4L-7N** | **LSJ4L-7M** | **LSK4L-8A** | **LSK4L-8C** |
| | | Silver | Non-plug-in | 0.5 in | | **LSJ7L-7A** | **LSJ7L-7N** | **LSJ7L-7M** | **LSK7L-8A** | **LSK7L-8C** |

[1] Use at voltage indicated for light. Wired to NO circuit. Upper temperature limit for lighted units is 93°C [200°F]; [2] Plug-in listings include base receptacle
[3] Completely fluorocarbon sealed switches are preferred for use in temperatures above 93°C [200°F]; [4] Gold-plated contacts
** These cat whiskers have a 140 mm [5.5 in] long actuator. To specify a 190 mm [7.5 in] length actuator, substitute -**8B** for -**8A**.

NOTE: Same polarity each pole.

To order a fluorocarbon sealed switch, insert the letters **Y** and **C** into the catalog listing as follows. The LSA1A limit switch is changed to a LS**Y**A**C**1A limit switch.
To order a low temperature, fluorosilicone sealed switch, insert the letters **Y** and **B** into the catalog listing as follows. The LSA1A limit switch is changed to a LS**Y**A**B**1A limit switch.

**Figure 24. MICRO SWITCH HDLS LSJ_ _-7A Series wobble (single pole) dimensions**

**SPDT Plug-in (mm[in])**

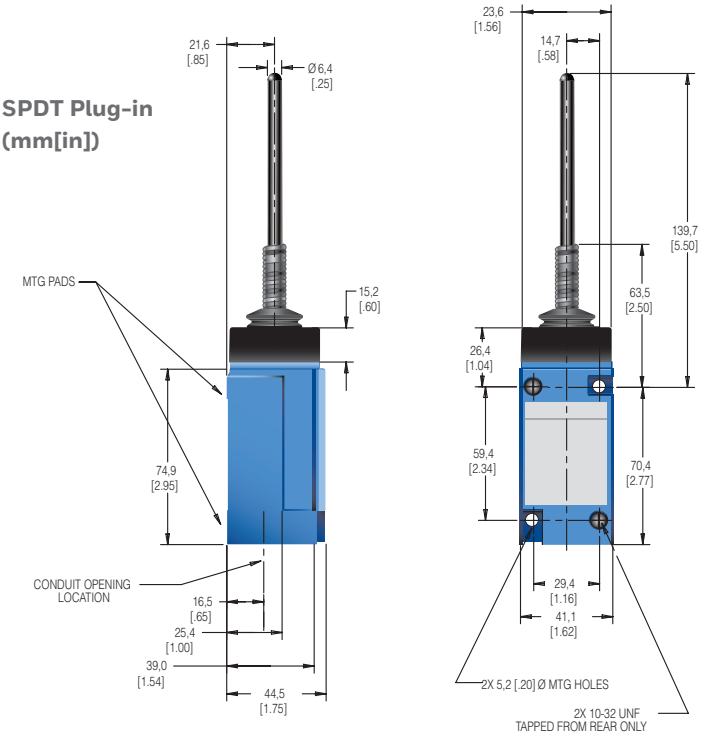
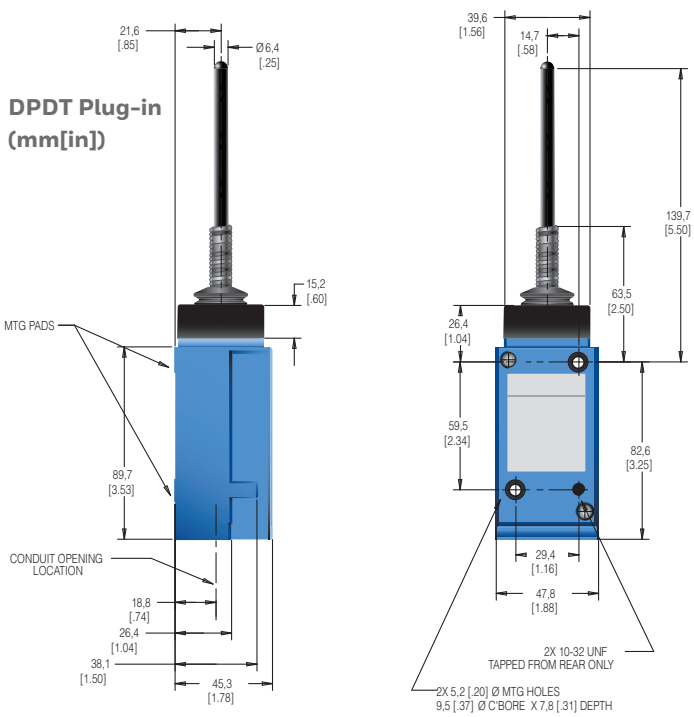
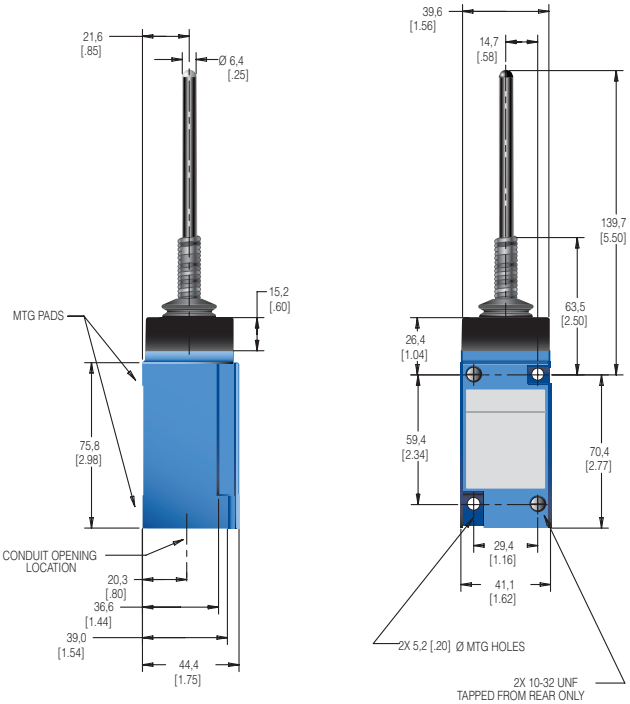



**Figure 25. MICRO SWITCH HDLS LSJ_ _-7A Series wobble (double pole) dimensions**

**DPDT Plug-in (mm[in])**




**SPDT Non-plug-in (mm[in])**




**DPDT Non-plug-in (mm[in])**

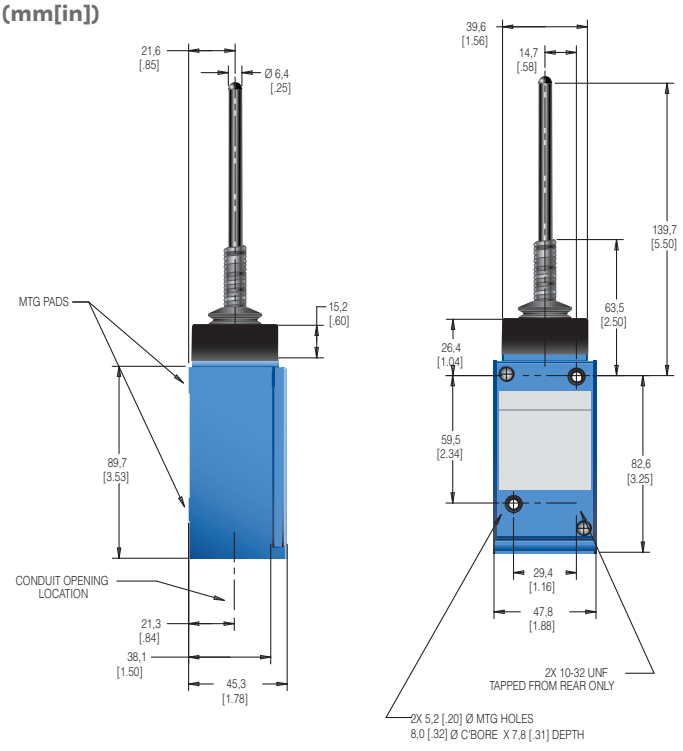


**Figure 26. MICRO SWITCH HDLS LSJ_ _-7N Series wobble (single pole) dimensions**

**SPDT Plug-in (mm[in])**

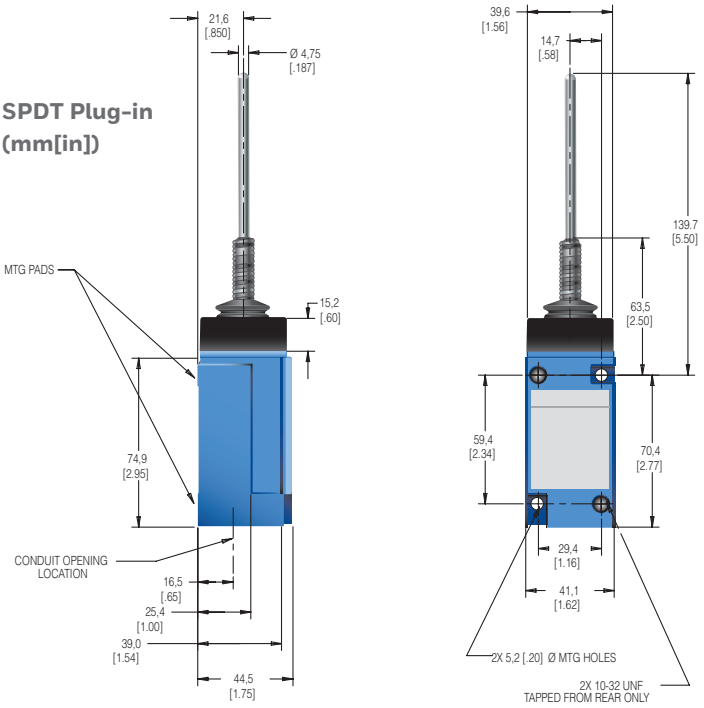
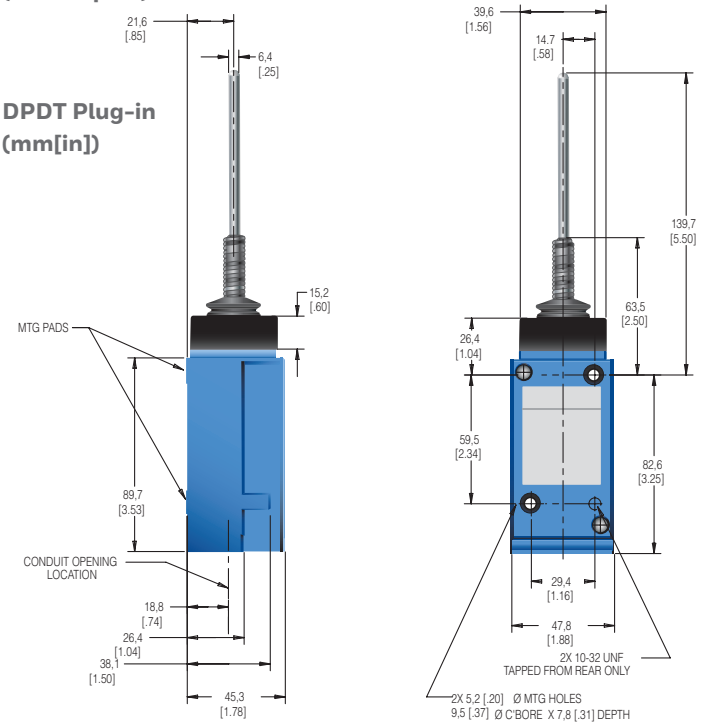
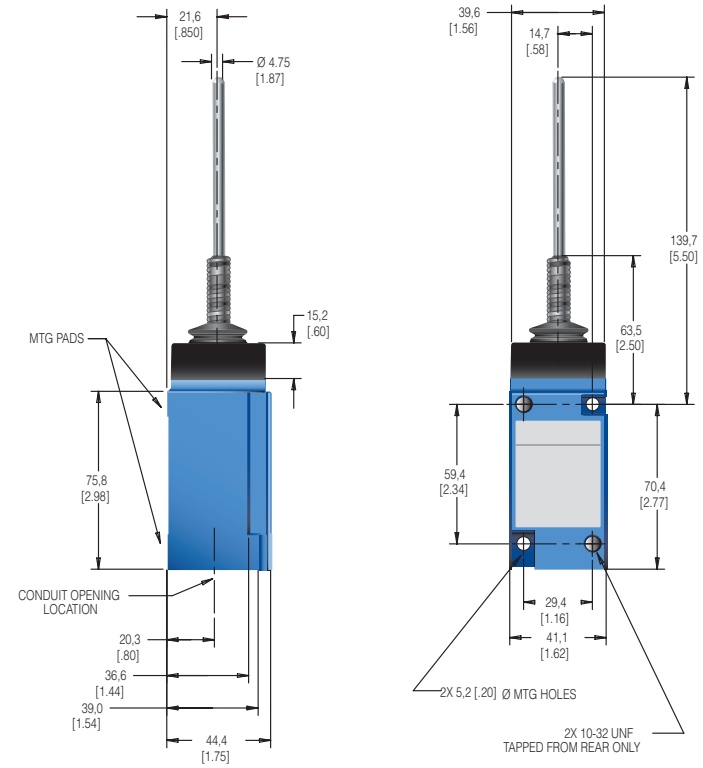



**Figure 27. MICRO SWITCH HDLS LSJ_ _-7N Series wobble (double pole) dimensions**

**DPDT Plug-in (mm[in])**




**SPDT Non-plug-in (mm[in])**




**DPDT Non-plug-in (mm[in])**

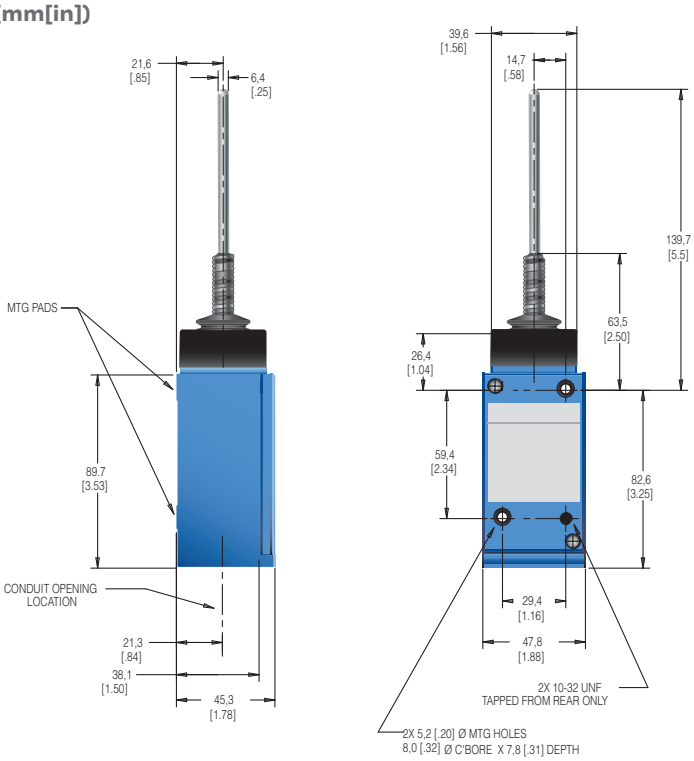


**Figure 28. MICRO SWITCH HDLS LSJ_ _-7M Series wobble (single pole) dimensions**

**SPDT Plug-in (mm[in])**

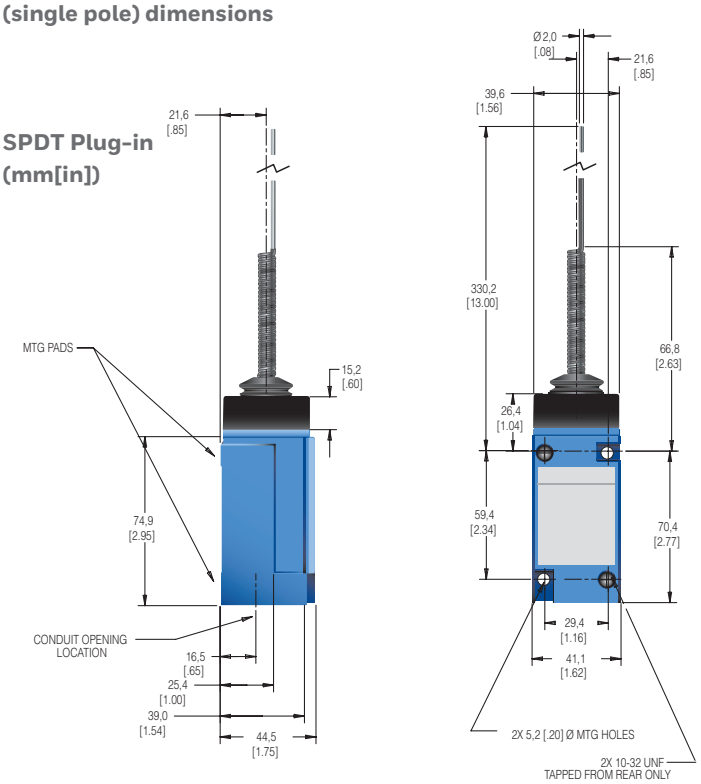
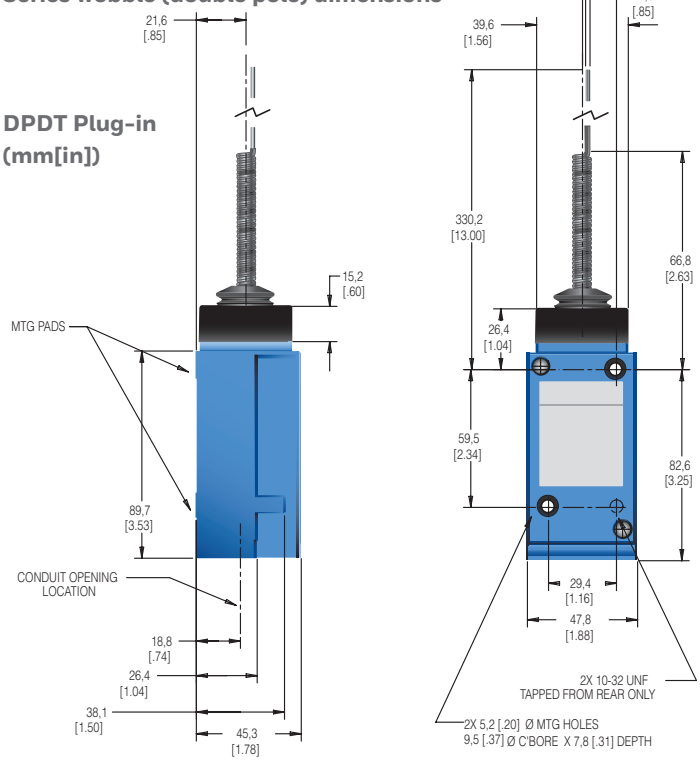
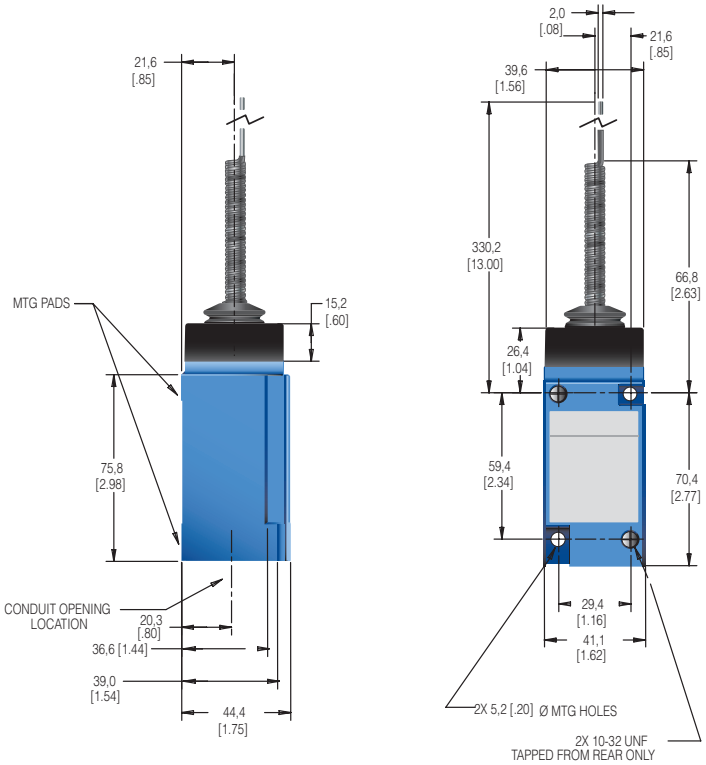



**Figure 29. MICRO SWITCH HDLS LSJ_ _-7M Series wobble (double pole) dimensions**

**DPDT Plug-in (mm[in])**




**SPDT Non-plug-in (mm[in])**




**DPDT Non-plug-in (mm[in])**

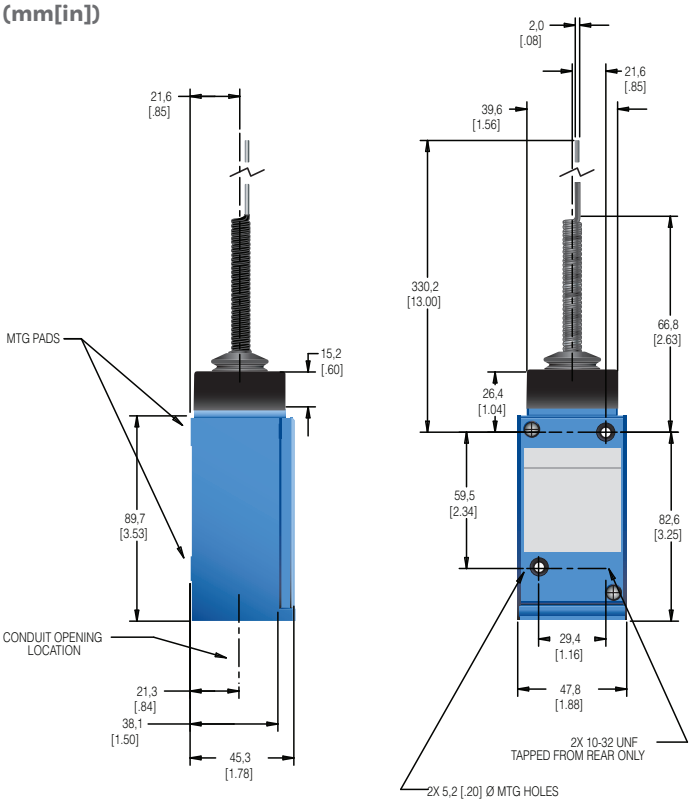


**Figure 30. MICRO SWITCH HDLS LSK_ _-8A Series wobble (single pole) dimensions**

**SPDT Plug-in (mm[in])**

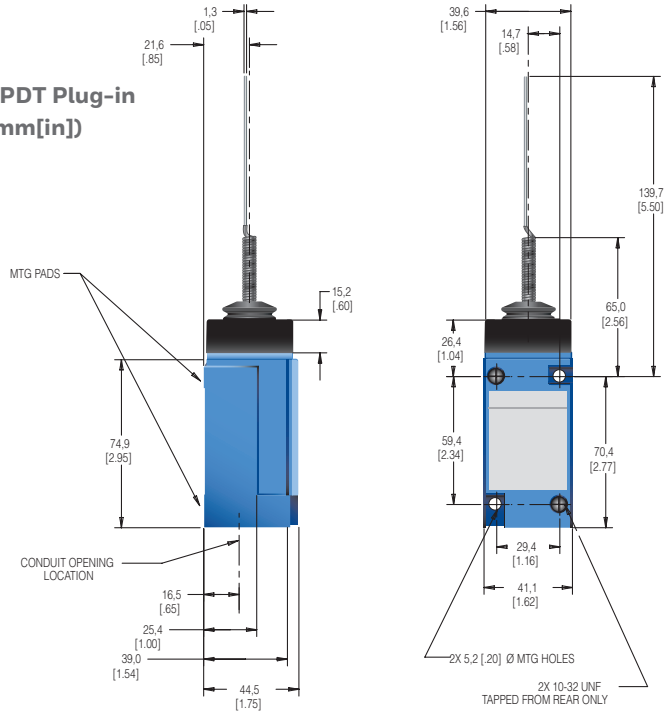
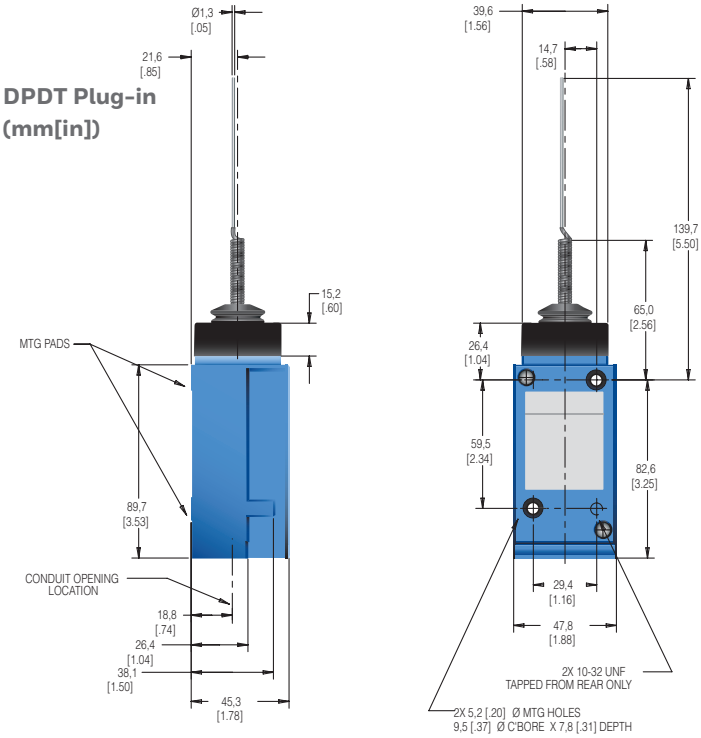
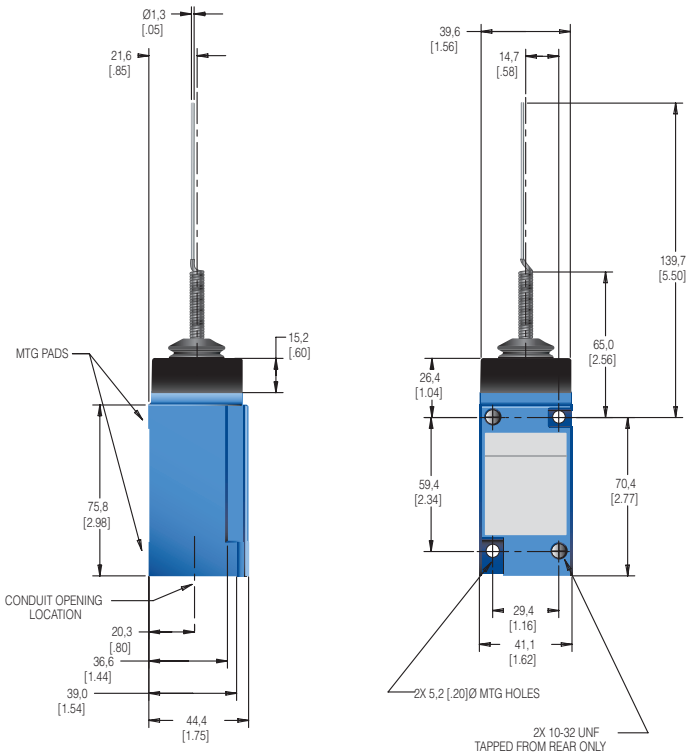



**Figure 31. MICRO SWITCH HDLS LSK_ _-8A Series wobble (double pole) dimensions**

**DPDT Plug-in (mm[in])**




**SPDT Non-plug-in (mm[in])**




**DPDT Non-plug-in (mm[in])**

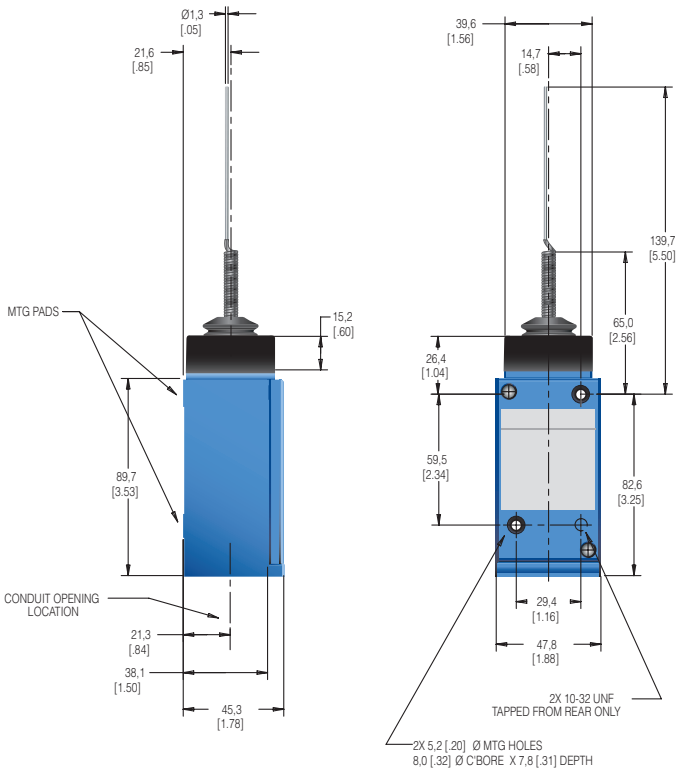


**Figure 32. MICRO SWITCH HDLS LSK_ _-8C Series wobble (single pole) dimensions**

**SPDT Plug-in (mm[in])**

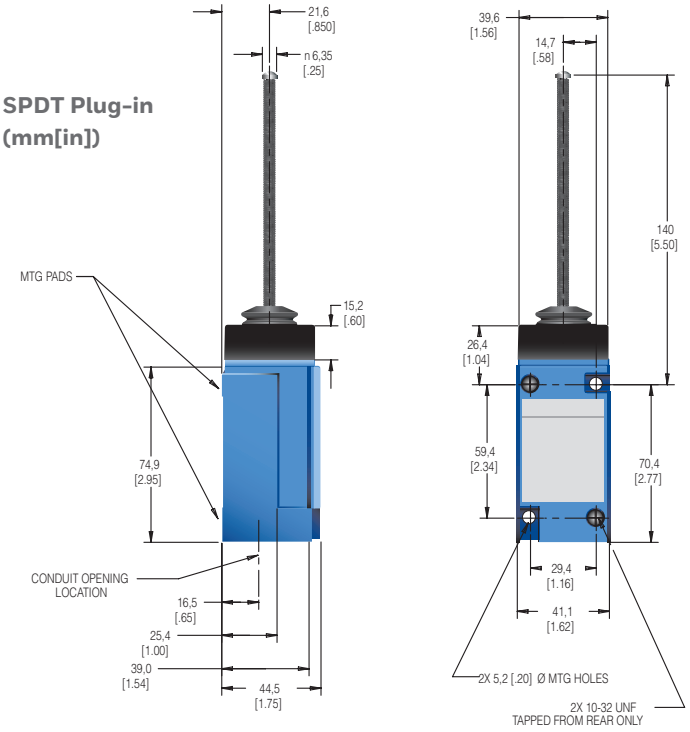
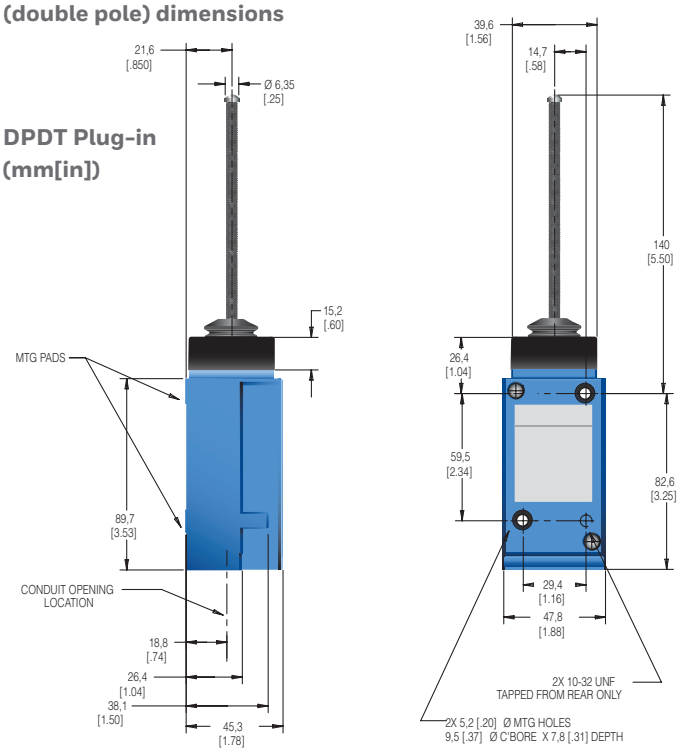
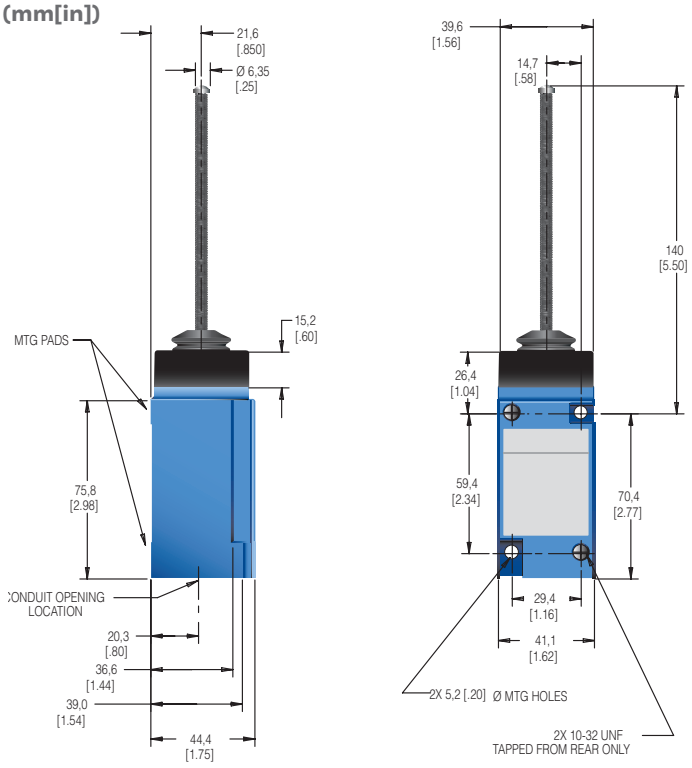



**Figure 33. MICRO SWITCH HDLS LSK_ _-8C Series wobble (double pole) dimensions**

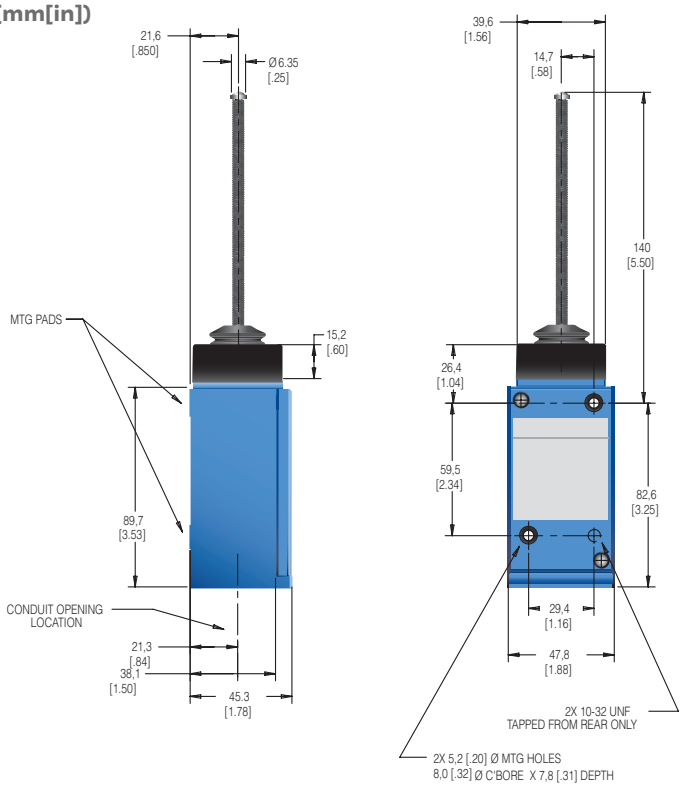
**DPDT Plug-in (mm[in])**




**SPDT Non-plug-in (mm[in])**




**DPDT Non-plug-in (mm[in])**



## SPECIAL APPLICATIONS


### High Capacity Limit Switch

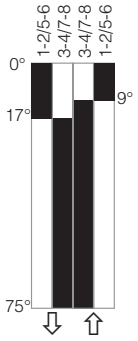
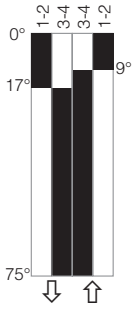
**Features**

- High dc current ratings
- 20 A rating at 120 Vac (single pole)
- Plug-in or non-plug in
- Positive retention lever arm
- High resistance to seismic shock

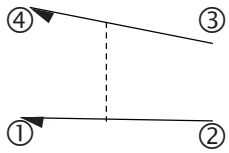
This series has a wide gap contact block that handles a higher make/break dc load. In addition, a special lever arm has a serrated shaft hole and a cap screw with locking nut for attaching the lever to the rotary shaft. This assures a firm grip on the operating shaft and positive retention of the lever adjustment.

The need for precise operation, coupled with challenging environmental conditions places rigid demands on any control. Honeywell's products are intended to satisfy these demands with its high capacity HDLS, designed to perform reliably under these conditions.

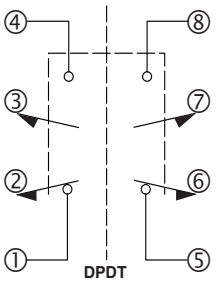
**Listings**

| | | |
|---|---|---|
| **LSQ051** | Double pole, non-plug-in, 0.75 in conduit |  |
| **LSQ052** | Double pole, plug-in, 0.75 in conduit | |
| **LSQ053** | Single pole, non-plug-in, 0.5 in conduit |  |
| **LSQ054** | Single pole, plug-in, 0.5 in conduit | |
| **LSZ616** | Replacement lever for above listings | |
| **Pretravel** | 17° max. | |
| **Diff. travel** | 8° max. | |
| **Overtravel** | 58° min. | |
| **Oper. torque** | 0,45 Nm [4 in-lb] max. | |
| **Action** | CW and CCW (spring return) | |






SPDT
Double Break




DPDT
Double Break

| | Single Pole | | Double Pole | |
|---|---|---|---|---|
| **Voltage** | **Resistive Load** | **Inductive Load** | **Resistive Load** | **Inductive Load** |
| 125 Vdc | 2.0 A | 1.0 A | 1.0 A | 0.4 A |
| 250 Vdc | 0.7 A | 0.4 A | 0.4 A | 0.2 A |
| 120 Vac | 20 A | 20 A | 10 A | 10 A |
| 240 Vac | 15 A | 15 A | 7.5 A | 7.5 A |
| 480 Vac | 10 A | 10 A | 5 A | 5 A |
| 600 Vac | 5 A | 5 A | 2.5 A | 2.5 A |

Maximum operating rate - 15 operations per minute.

NOTE: Same polarity each pole.

## SPECIAL APPLICATIONS

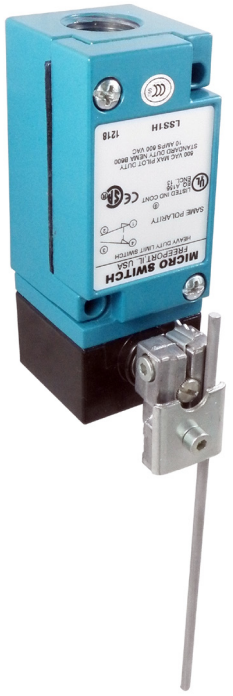
### Gravity Return Side Rotary Switches (LSS)

LSS1H gravity-return, side-rotary switches have no return spring mechanism. The weight of the actuating lever must provide the force to restore it to the free position. The 5 in-oz. max. operating torque is useful in conveyor applications since it enables operation by small or lightweight objects. Because the head is unsealed, the **LSS1H** is classified as NEMA 1. However, the switch cavity is sealed to protect the switch contacts.

| | LSS1H |
|---|---|
| **Description** | Gravity-return side rotary |
| **Circuitry** | SPDT, double break |
| **Contacts** | Silver |
| **Sealing** | NEMA 1 |
| **Electrical rating** | (B) NEMA B600 |
| **Body style** | Plug-in |
| **Conduit (NPT)** | 0.5 in |
| **Differential travel** | 12° max. |
| **Total travel (no stop)*** | 360° |
| **Operating torque** | 0,035 Nm [5 in-oz] max. |

* Switch has approximately 180° dwell of the normally closed and normally open switch contacts

NOTE: Same polarity each pole.

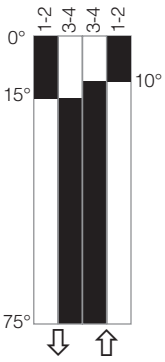



### Extra Low Torque Side Rotary Switches (LST)

LST1H extra-low torque, side-rotary switches have a low force return spring and a maximim operation torque of 12 in-oz. It is rated as NEMA 1 due to an unsealed head. The switch cavity is sealed to protect the switch contacts.

| | LST1H |
|---|---|
| **Description** | Extra-low torque side rotary |
| **Circuitry** | SPDT, double break |
| **Contacts** | Silver |
| **Sealing** | NEMA 1 |
| **Electrical rating** | (B) NEMA B600 |
| **Body style** | Plug-in |
| **Conduit (NPT)** | 0.5 in |
| **Pretravel** | 15° max. |
| **Differential travel** | 5° max. |
| **Overtravel** | 60’ min. |
| **Total travel** | 75° nom. |
| **Operating torque** | 0,085 Nm [12 in-oz] max. |

NOTE: Same polarity each pole.



## ALSO AVAILABLE


**Fully potted MICRO SWITCH HDLS heavy-duty limit switches** provide an extra degree of protection in harsh environments by sealing the basic switch cavity with epoxy. These switches are the same as the non-plug-in HDLS except that the entire switch cavity is filled with epoxy in addition to the conduit entrance. The fully potted HDLS switches are pre-leaded, with either cable or connectors.

- Excellent sealing capability for harsh-duty food and beverage wash downs and severe machine tool environments
- Diaphragm sealing
- 12 inch STOOW-A cable (other lengths available) or connector version
- Cable versions: NEMA 1, 6, 6P, 12
- Connector versions: NEMA 1, 6, 6P, 12, 13
- All fluorocarbon seals (low temperature fluorosilicone seals available)
- UL, CSA, CE, CCC


**MICRO SWITCH HDLS switches are also available in all stainless-steel versions.** Designed for use in highly corrosive environments, such as petrochemical plants, food processing plants, shipboard, and dock-side locations. The type 316 cast stainless steel body is designed to minimize crevices where food particles could become trapped in water. 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 pressurized steam cleaning. Pre-leaded and epoxy-filled versions also available.

- Corrosion-resistant stainless steel non-plug in body, head, and rotary shaft
- Stainless steel levers
- Fluorocarbon seals (low temperature fluorosilicone seals available)
- NEMA 1, 3, 3R, 4, 4X, 6, 6P, and 13
- UL, CSA, CE, CCC