# LSX SERIES

**002385**
*Issue 4*

## MICRO SWITCH Hazardous Area Switches




## DESCRIPTION

MICRO SWITCH LSX hazardous area switches are designed for use in adverse environments. They are approved for use in hazardous locations and NEMA classified atmospheres because their rugged housings have integral flame paths. These flame paths force internal expanding gases to cool below external atmosphere ignition temperatures before they leave the housing. The LSX also features tracking interchangeability with MICRO SWITCH BX Series Hazardous Area switches. An optional mounting plate provides the same tracking and mounting as the standard HDLS Series (heavy-duty limit switch).

The majority of HDLS operating heads and circuitry options are available for the LSX Series. The rotary actuated LSX series products are designed for use with levers that have non-sparking actuators due to the potentially hazardous environment. The other styles of LSX Series switches which are the plunger actuated and wobble actuated products incorporate an integral non-sparking actuator.

## FEATURES

- **Design flexibility** — MICRO SWITCH LSX limit switches' field adjustability (CW-CCW operation, rotatable operating head) assists in matching the switch to the application. Available with momentary, maintained, sequential, or center neutral action.
- **Unique design features** — The head design is keyed for more secure head-to-body retention with the head indexable in any one of four positions 90° apart. Captive mounting screws in the heads help prevent the loss of screws during replacement or repositioning of the head. Self-lifting pressure plate terminals save wiring time.
- **Withstands many caustic environments** — A die-cast zinc head and aluminum body make the LSX suitable for indoor and outdoor applications. A diaphragm seal between the head and body is designed to provide an extra measure of protection. Switches remain functional when exposed to many severe environments and caustic chemicals.
- **Optional seals** — Standard seals are suitable for most applications, but optional fluorocarbon or fluorosilicone seals are available for many harsh chemical, high or low temperature environments.
- **Designed to control low-voltage dc applications** — Hazardous area switches are available with a choice of silver or gold-plated contacts to handle a variety of electrical load requirements from low energy to power-duty control.

## APPLICATIONS

- **Grain elevators** — Monitors plugged grain conveyors, slide gate position, diverter valves, and leg positions
- **Control valves and actuators** — Senses the "on" or "off" position of the valve
- **On-shore drilling** — Detects end of travel positions for extend and retract operations of drilling equipment
- **Pipelines** — Monitors pig position and resulting pipeline health
- **Petrochemical and chemical plants** — Monitors the position of control valves, doors, and gates
- **Water treatment plantsabinets** — Detects control valve position
- **Paint booths** — Door interlocks for sliding or hinged gates or doors
- **Hazardous waste handling** — Often used as a valve position monitor

## VALUE TO CUSTOMERS

- Extensive variety of actuation heads and multiple non-sparking actuators
- All-metal drive train that offers consistent operating characteristics through a broad temperature range. Also lasts longer (without need for frequent adjustment) than drive trains with plastic parts

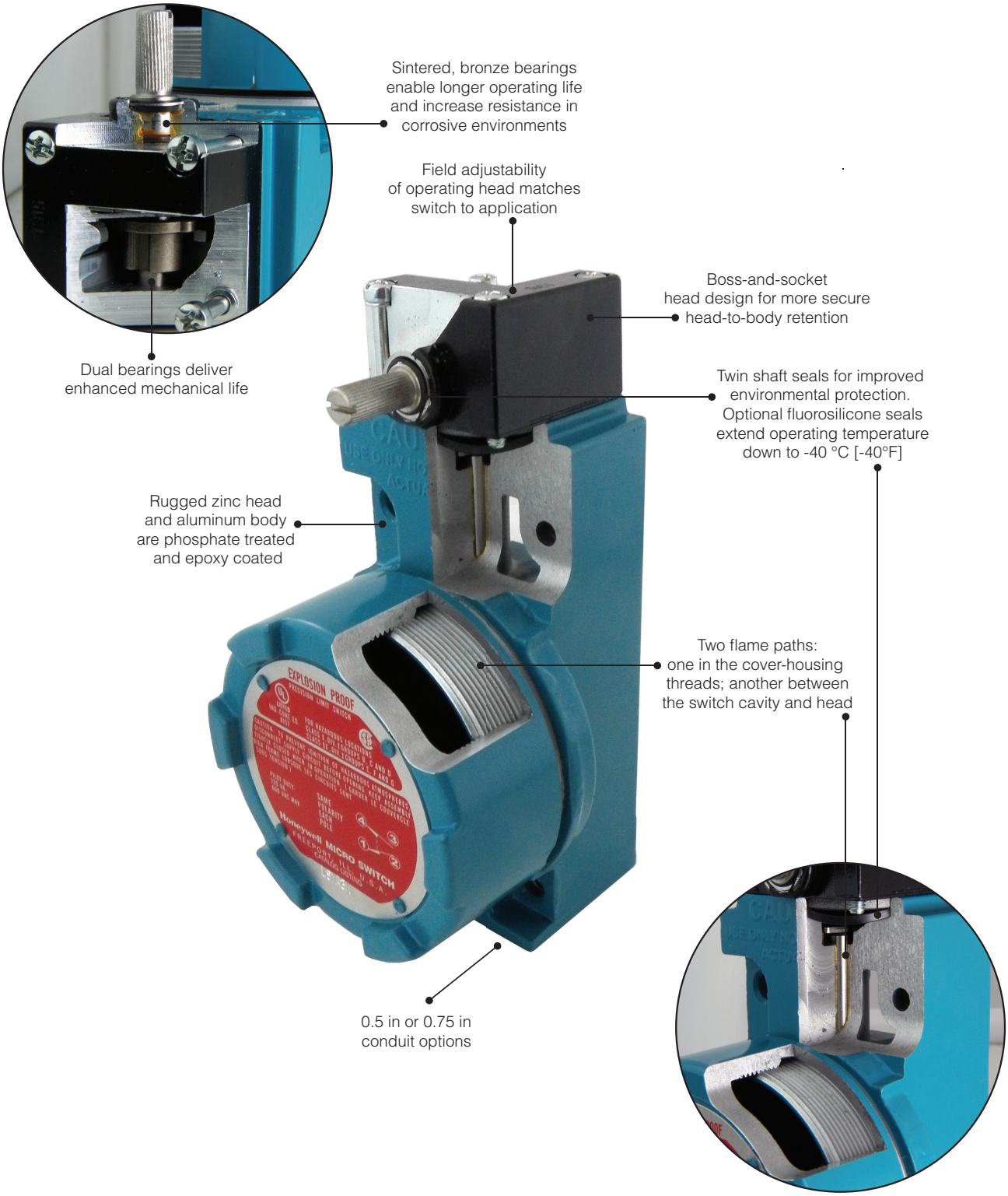
## DIFFERENTIATION

- Industry-leading breadth of product
- Weather sealed to NEMA 1, 3, 4, 6, 13; Explosion proof to NEMA 7 (Class 1, Division 1 & 2, Groups B, C, D); NEMA 9 (Class 2, Division 1 & 2, Groups E, F, G)

Honeywell

# MICRO SWITCH HAZARDOUS AREA SWITCHES
## LSX SERIES

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



# MICRO SWITCH HAZARDOUS AREA SWITCHES
# LSX SERIES

**Figure 2. MICRO SWITCH LSX Series Product Nomenclature**

**LSX** – **J** – **3K** – **7A**

| Switch Type | Head Style | Circuitry and Conduit Connection | Modification Code | Actuator Options |
|---|---|---|---|---|
| **LSX** Series Hazardous Area Switch | **A** Side rotary; momentary | **3E** 1NO/1NC, gold contacts, 1/2-14NPT | **1** CW rotation | **1** Fixed roller, 1.5 in radius |
| | **B** Top rotary; momentary | **3K** 1NO/1NC, 1/2-14NPT | **2** CCW rotation | **1A** Fixed 0.75 in x 0.25 in nylon roller, 1.5 in radius |
| | **C** Top plunger, plain | **3N** SPNC direct acting, 1/2-14NPT | **3** Head assembled with actuator to right side | **1C** Fixed 0.75 in x 0.25 in nylon roller, 1.5 in radius |
| | **D** Top plunger, roller | **4K** 1NO/1NC, 3/4-14NPT | **4** Head assembled with actuator to left side | **2** Adjustable, rollerless |
| | **E** Side plunger plain; momentary | **4L** 2NO/2NC, 3/4-14NPT | **5** Head assembled with actuator toward mounting surface | **2A** Adjustable, 0.75 in x 0.25 in nylon roller |
| | **F** Side plunger roller; momentary | **4M** 2NO/2NC, 3/4-14NPT, sequential operation | **6** Roller perpendicular to mounting surface | **2C** Adjustable, 0.75 in x 0.25 in nylon roller |
| | **H** Side rotary, momentary; low PT, low torque | **4N** 2NO/2NC, 3/4-14NPT, center neutral | **8** Roller on side plunger in vertical position | **2J** Adjustable, 1.0 in x 0.5 in nylon roller |
| | **J** Wobble stick | **4S** 2NO/2NC, gold contacts, 3/4-14NPT | | **2K** Adjustable, 0.5 in x 0.25 in nylon roller |
| | **K** Whisker | **4T** 2NO/2NC, gold contacts, 3/4-14NPT, sequential operation | | **3E** Yoke, 0.75 in x 0.25 in nylon roller |
| | **L** Side rotary; sequential | **4U** 2NO/2NC, gold contacts, 3/4-14NPT, center neutral | | **3M** Yoke, 0.75 in x 0.25 in nylon roller |
| | **M** Side rotary; central neutral | **7L** 2NO/2NC, 1/2-14NPT | | **3S** Yoke, 0.75 in x 0.25 in nylon roller, same side |
| | **N** Side rotary; maintained | **7M** 2NO/2NC, 1/2-14NPT, sequential operation | | **4** Hub only |
| | **P** Side rotary, momentary; low PT and DT | **7N** 2NO/2NC, 1/2-14NPT, center neutral | | **4M** Hub rod, aluminum |
| | **R** Side rotary, momentary; low torque | **7S** 2NO/2NC, gold contacts, 1/2-14NPT | | **5** Offset, rollerless |
| | **U** Side rotary, low pre-travel | **7T** 2NO/2NC, gold contacts,1/2-14NPT, sequential operation | | **5A** Offset, 0.75 in x 0.25 in nylon roller |
| | **V** Top plunger, adjustable | **7U** 2NO/2NC, gold contacts,1/2-14NPT, center neutral | | **5C** Offset, 0.75 in x 0.25 in nylon roller |
| | **W** Side plunger, adjustable | | | **7A** Plastic wobble stick |
| | | | | **8A** Whisker, 5.5 in |
| | | | | **9A** Fixed, 0.75 in x 0.25 in nylon roller, open, 1.33 in radius |
| | | | | **9C** Fixed, 0.75 in x 0.25 in nylon roller, closed, 1.33 in radius |

Not all combinations available. Please contact Honeywell for assistance.

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

| | |
|---|---|
| **LSXA3K** | standard, side-rotary plug-in switch |
| **LSXYAC3K** | completely FC-sealed version of LSXA3K |

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

| | |
|---|---|
| **LSXA3K** | standard, side-rotary plug-in switch |
| **LSXYAB3K** | low-temperature version of LSXA3K |

For more details, please see page 5.

# MICRO SWITCH HAZARDOUS AREA SWITCHES
# LSX SERIES

**TABLE 1. SPECIFICATIONS**

| Characteristic | Parameter |
|---|---|
| **Product type** | MICRO SWITCH hazardous area limit switches |
| **Actuators** | side pin plunger<br>side rotary<br>top pin plunger - adjustable<br>wobble - cat whisker<br>side pin plunger - adjustable<br>side rotary maintained<br>top roller plunger<br>wobble - plastic rod<br>side roller plunger<br>top pin plunger<br>top rotary |
| **Circuitry** | 1NC 1NO SPDT snap action, double break<br>2NC 2NO DPDT snap action, double break<br>2NC 2NO DPDT snap action, double break, sequential<br>2NC 2NO DPDT snap action, double break, center neutral |
| **Electrical** | 10 A thermal<br>single and double pole: AC15 A600, AC15 B600; DC13 R300 (see table on page 5) |
| **Housing material** | zinc head, aluminum body |
| **Termination types** | 0.5 in - 14 NPT conduit<br>0.75 in - 14 NPT conduit |
| **Housing type** | LSX non-plug-in |
| **Agency approvals and standards** | UL, CSA |
| **Sealing** | NEMA 1, 3, 4, 6, 13 |
| **Hazardous area designations** | NEMA 7 (Class 1, Division 1 & 2, Groups B, C, D), NEMA 9 (Class 2, Division 1 & 2, Groups E, F, G) |
| **Operating temperature*** | standard: -12°C to 121°C [10°F to 250°F]<br>optional: -40°C to 121°C [-40°F to 250°F] |
| **UNSPSC code** | 39122213 |
| **UNSPSC commodity** | 39122213 Limit Switch |

* Reference operating head styles on pages 6 and 7 for exceptions.

**TABLE 2. MICRO SWITCH LSX SERIES ELECTRICAL RATINGS 10 A CONTINUOUS CARRY AC VOLTS; PILOT DUTY: AC15, A600**

| Electrical Rating | Circuitry | Vac | Amps at 0.35 Power Factor Make | Amps at 0.35 Power Factor Break |
|---|---|---|---|---|
| AC15, A600 | SPDT<br>DPDT | 120 | 60 | 6 |
| | | 240 | 30 | 3 |
| | | 480 | 15 | 1.5 |
| | | 600 | 12 | 1.2 |

**TABLE 3. MICRO SWITCH LSX SERIES ELECTRICAL RATINGS DC VOLTS; PILOT DUTY: DC13, R300**

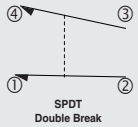
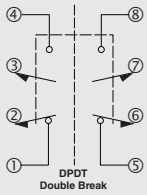
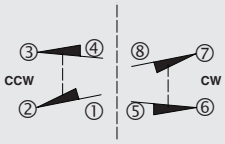
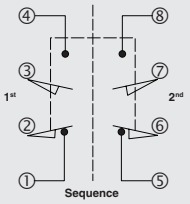
| Electrical Rating | Circuitry | Vdc | Make & Break Amps Inductive | Make & Break Amps Resistive |
|---|---|---|---|---|
| DC13,<br>R300 | SPDT<br>DPDT | 120 | 0.25 | 0.8 |
| | | 240 | 0.15 | 0.4 |

**TABLE 4. MICRO SWITCH LSX LIMIT SWITCHES ARE CAPABLE OF THE FOLLOWING LOW VOLTAGE DC LOADS**

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

# MICRO SWITCH HAZARDOUS AREA SWITCHES
# LSX SERIES

**TABLE 5. SWITCH CONTACT STYLES, DOUBLE BREAK**

| SPDT (1NC/1NO) | DPDT (2NC/2NO) | Center Neutral (SPDT each direction) Pole 1 operates CCW; Pole 2 operates CW | Sequence Action Pole 1 operates before Pole 2, either CW, CCW, or both |
|---|---|---|---|
|  |  |  |  |

NOTE: Same polarity each pole

**Temperature Limits**

| | Standard LSX | | | | Low Temperature LSX (Fluorosilicone Sealed): Y_B | | | | High Temperature LSX (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] |
| LSXA - Side Rotary Momentary | • | | | • | • | | | • | • | | • |
| LSXB - Top Rotary | | • | | • | | • | | • | | • | • |
| LSXC - Top Plain Plunger | • | | • | | • | | • | | • | | • |
| LSXD - Top Roller Plunger | • | | • | | • | | • | | • | | • |
| LSXE - Side Plain Plunger | • | | • | | • | | • | | • | | • |
| LSXF - Side Roller Plunger | • | | • | | • | | • | | • | | • |
| LSXH - Side Rotary, Low Diff, Low Torque | | • | | • | | • | | • | | • | • |
| LSXJ - Wobble Stick | • | | • | | • | | | • | • | | • |
| LSXK - Cat Whisker | • | | • | | | • | | • | • | | • |
| LSXL - Side Rotary, Sequence | • | | | • | • | | | • | • | | • |
| LSXM - Side Rotary, Center Neutral | | • | | • | • | | | • | | • | • |
| LSXN - Side Rotary, Maintained | | • | | • | | • | | • | | • | • |
| LSXP - Side Rotary, Low Diff | • | | | • | • | | | • | • | | • |
| LSXR - Side Rotary, Low Torque | | • | | • | | • | | • | | • | • |
| LSXU - Side Rotary, 5° Low Pretravel | • | | | • | | | | | | | • |
| LSXV - Top Adjustable Plunger | • | | • | | • | | • | | • | | • |
| LSXW - Side Adjustable Plunger | • | | • | | • | | • | | • | | • |

* For LSX application wherein the upper temperature limit is normally above 93°C [200°F], extended switch life can be obtained by using completely fluorocarbon-sealed switches rather than standard LSX.

# MICRO SWITCH HAZARDOUS AREA SWITCHES
# LSX SERIES

## Special Options

### High Temperature/Chemical Resistant Switches

Completely fluorocarbon (FC)-sealed 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 designed for use in applications where the environment includes fire-resistant synthetic fluids. In addition, the FC-sealed switches may be used with such industrial fluids as Cellulube, Fyrquell, Houghto-Safe, Pydraul, and other special cutting and hydraulic fluids. The additional FC seals also promote extended operating life for rotary-actuated LSX switches in applications where the temperatures are normally -12°C to 121°C [10°F to 250°F].

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

| | |
|---|---|
| **LSXA3K** | standard, side-rotary plug-in switch |
| **LSXY-AC3K** | completely FC-sealed version of LSXA3K |

### Low Temperature Switches

All forms of LSX limit switches are also available in low-temperature construction. Design features include fluorosilicone diaphragm, shaft seals, and external boot seal (where applicable).

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

| | |
|---|---|
| **LSXA3K** | standard, side-rotary plug-in switch |
| **LSXY-AB3K** | low-temperature version of LSXA3K |

### MICRO SWITCH LSX Series Operating Heads

**SIDE ROTARY:** Heads may be positioned in any one of four positions, 90° increments. All are momentary action except maintained head (LSXN Series).



**LSXA - Standard:** 60° minimum overtravel, 15° maximum pretravel, 5° (single pole) and 7° (double pole) maximum differential travel.

**LSXR - Low operating torque:** 60° minimum overtravel, 15° maximum pretravel, 0.19 Nm [1.7 in-lb] maximum operating torque.

**LSXN - Maintained contact:** Maintained on counterclockwise rotation and reset on clockwise rotation, and vice versa.

**LSXP - Low differential:** 68° minimum overtravel, 9° maximum pretravel, 3° (single pole) and 4° (double pole) maximum differential travel.

**LSXH - Low torque, low differential travel:** 68° minimum overtravel. Features low operating torque and narrow differential travel.

**LSXL - Sequence action:** 48° minimum overtravel. Delayed action between operation of two poles.

**LSXM - Center neutral:** 57° minimum overtravel. One pole operates on the clockwise rotation, and the other pole on the counterclockwise rotation.

**LSXU - Low pretravel:** 5° max. pretravel, 70° min. overtravel.

**TOP ROTARY:** Available levers provide greater versatility. Heads may be positioned in any one of four positions, 90° increments. All are momentary action.



**LSXB:** With 100° minimum overtravel. Various levers that fit side rotary shafts may be used on the top rotary shaft. Switch is suitable for use when increased overtravel is required.

# MICRO SWITCH HAZARDOUS AREA SWITCHES
# LSX SERIES

### MICRO SWITCH LSX Series Operating Heads

**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.

| | |
|---|---|
|  | **LSXC – Top pin plunger:** A copper alloy plunger for in-line actuating motion. Oil-tight seals on plunger and between the operating head and housing are designed to keep out coolant, dust, and chips. Momentary action. |
|  | **LSXD – Top roller plunger:** A copper alloy roller plunger is adjustable to 90° angles to accept cam or slide operation from any of two directions. Boot seal on the plunger. Momentary action. |
|  | **LSXV – Adjustable top pin plunger:** A copper alloy adjustable plunger is designed to simplify the application and decreases installation time. The operating points of the switch can be adjusted from 65,66 mm to 72,0 mm [2.585 in to 2.535 in]. Seals are the same as the pin plunger. Momentary action. |

**WOBBLE LEVER ACTUATING HEADS:** Heads come with either a Delrin® plastic rod or a copper alloy cat whisker. Any movement of the lever (except pull) will actuate the switch.

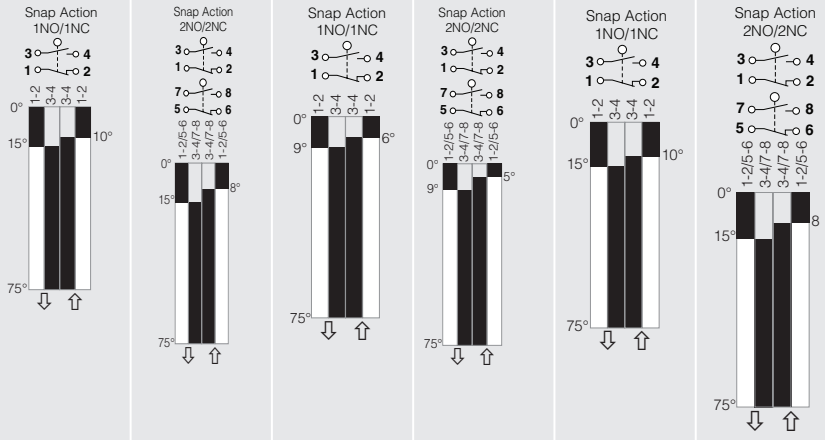
| | |
|---|---|
|  |  |
| **LSXJ – Plastic rod:** Recommended where possible scratching or marring by the actuator is to be avoided. | **LSXK – Cat whisker:** Copper alloy actuator designed for low operating force applications. |

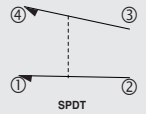
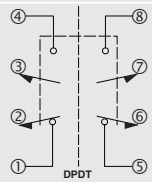
**SIDE PLUNGERS:** Made of non-sparking copper alloy. Available with 4,83 mm [0.19 in] minimum overtravel. Side plungers are offered in plain plunger, an adjustable pin plunger, and a roller plunger.

| | |
|---|---|
|  | **LSXE – Side pin plunger:** A copper alloy plunger for actuating motion inline with the plunger travel. Actuating head may be rotated in any of four positions, 90° apart. A boot seal on the plunger and a gasket seal between the head and housing is designed to keep out coolant, dust, and chips. Momentary action. |
|  | **LSXF – Side roller plunger:** A copper alloy roller plunger fits close quarters under cams and slides. The head may be rotated in any of four positions, 90° apart. The roller can be turned vertical or horizontal to the switch. Boot seal on plunger. Momentary action. |
|  | **LSXW – 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]. Momentary action. |

# MICRO SWITCH HAZARDOUS AREA SWITCHES
## LSX SERIES

### SIDE ROTARY • MICRO SWITCH LSX SERIES ORDER GUIDE/RECOMMENDED LISTINGS

| | Standard (LSXA) | | Low Differential (LSXP) | | Low Torque (LSXR) | |
|---|---|---|---|---|---|---|
| | Standard | | Low differential travel | | Low operating torque | |
| | SPDT | DPDT | SPDT | DPDT | SPDT | DPDT |
| |  |  | | | | |
| **Pretravel** | 15° max. | | 9° max. | | 15° max. | |
| **Differential travel** | 5° max. | 7° max. | 3° max. | 4° max. | 5° max. | 7° max. |
| **Overtravel** | 60° min. | | 66° min. | | 60° min. | |
| **Operating torque** | 0,45 Nm [4 in-lb] max. | | 0,45 Nm [4 in-lb] max. | | 0,19 Nm [1.7 in-lb] max. | |
| **Action** | Momentary, CW, & CCW (Spring return) | | | | | |
| **Operating temperature range[2]** | -12°C to 121°C [10°F to 250°F] | | | | -1°C to 121°C [30°F to 250°F] | |

| | | Contacts | Conduit (NPT) | Listing | | |
|---|---|---|---|---|---|---|
| SPDT |  SPDT Double Break | Silver | 0.5 in | **LSXA3K** | **LSXP3K** | **LSXR3K** |
| | | Silver | 0.75 in | **LSXA4K** | **LSXP4K** | **LSXR4K** |
| | | Gold[1] | 0.5 in | **LSXA3E** | **LSXP3E** | **LSXR3E** |
| DPDT |  DPDT Double Break | Silver | 0.5 in | **LSXA7L** | **LSXP7L** | **LSXR7L** |
| | | Silver | 0.75 in | **LSXA4L** | **LSXP4L** | **LSXR4L** |
| | | Gold[1] | 0.75 in | **LSXA4S** | **LSXP4S** | **LSXR4S** |

Contact closed ■; Contact open □

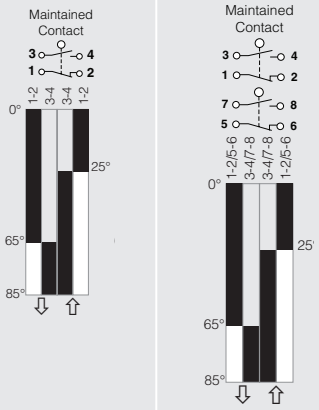
[1] Gold-plated contacts

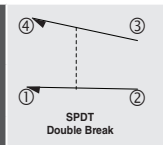
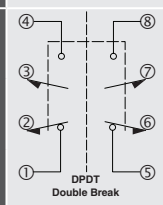
[2] Completely fluorocarbon sealed switches are preferred for use in temperatures above 93°C [200°F]

For low temperature or high temperature versions, see page 6.

# MICRO SWITCH HAZARDOUS AREA SWITCHES
## LSX SERIES

### SIDE ROTARY • MICRO SWITCH LSX SERIES ORDER GUIDE/RECOMMENDED LISTINGS

| | Maintained Contact (LSXN) | | Low Torque (LSXH) | |
|---|---|---|---|---|
| | Maintained, 2-position Std. | | Momentary, low torque | |
| | SPDT | DPDT | SPDT | DPDT |
| |  |   |   |   |   |
| **Pretravel** | 65° max. | | 9° max. | |
| **Differential travel** | 40° max. | | 3° max. | 4° max. |
| **Overtravel** | 20° min. | | 66° min. | |
| **Operating torque** | 0,45 Nm [4 in-lb] max. | | 0,19 Nm [1.7 in-lb] max. | |
| **Action** | Maintained | | Momentary, CW, & CCW (Spring return) | |
| **Operating temp. range[2]** | -1°C to 121°C [30°F to 250°F] (for low temp or high temp versions, see page 6) | | | |

| | | Contacts | Conduit (NPT) | Listing | |
|---|---|---|---|---|---|
| SPDT |   | Silver | 0.5 in | **LSXN3K** | **LSXH3K** |
| | | Silver | 0.75 in | **LSXN4K** | **LSXH4K** |
| | | Gold[1] | 0.5 in | **LSXN3E** | **LSXH3E** |
| DPDT |   | Silver | 0.5 in | **LSXN7L** | **LSXH7L** |
| | | Silver | 0.75 in | **LSXN4L** | **LSXH4L** |
| | | Gold[1] | 0.75 in | **LSXN4S** | **LSXH4S** |

Contact closed ■; Contact open □

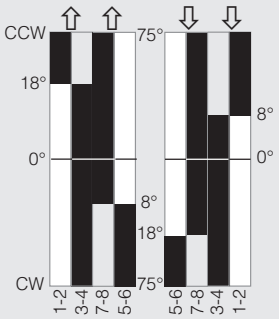
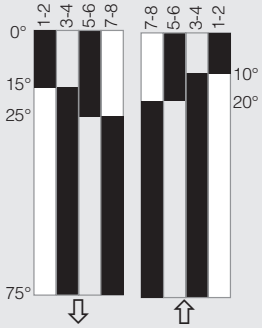
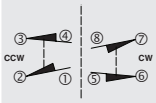
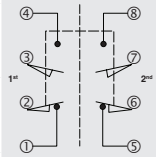
[1] Gold-plated contacts

[2] Completely fluorocarbon sealed switches are preferred for use in temperatures above 93°C [200°F]

For low temperature or high temperature versions, see page 6.

# MICRO SWITCH HAZARDOUS AREA SWITCHES
## LSX SERIES

### SIDE ROTARY • MICRO SWITCH LSX SERIES ORDER GUIDE/RECOMMENDED LISTINGS

| | | | Center Neutral (LSXM) | Sequence Action (LSXL) |
|---|---|---|---|---|
| | | | Center Neutral (Pole 1 operates CCW; Pole 2 operates CW) | Sequential (Pole 1 operates before Pole 2, either CW, CCW, or both) |
| | | | DPDT | DPDT |
| | | |  |   |   |
| **Pretravel** | | | 18° max. | 1st: 15°; 2nd: additional 10° |
| **Differential travel** | | | 10° max. | each pole: 5° |
| **Overtravel** | | | 57° min. | 48° min. |
| **Operating torque** | | | 0,45 Nm [4 in-lb] max. | 0,45 Nm [4 in-lb] max. |
| **Action** | | | CW & CCW (Spring return) | |
| **Operating temp. range[2]** | | | -1°C to 121°C [30°F to 250°F] | -12°C to 121°C [10°F to 250°F] |
| | | **Contacts** | **Conduit (NPT)** | **Listing** |
| DPDT |   | Silver | 0.5 in | **LSXM7N** | – |
| | | Silver | 0.75 in | **LSXM4N** | – |
| | | Gold[1] | 0.5 in | **LSXM7U** | – |
| | | Gold[1] | 0.75 in | **LSXM4U** | – |
| |   | Silver | 0.5 in | – | **LSXL7M** |
| | | Silver | 0.75 in | – | **LSXL4M** |
| | | Gold[1] | 0.5 in | – | **LSXL7T** |
| | | Gold[1] | 0.75 in | – | **LSXL4T** |

Contact closed ■; Contact open □

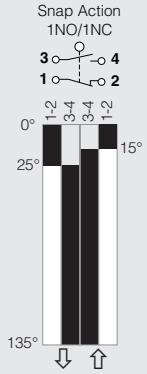
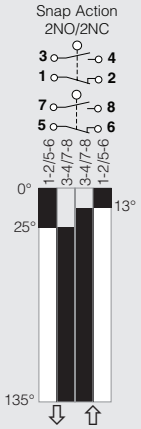
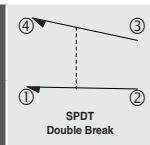
[1] Gold-plated contacts

[2] Completely fluorocarbon sealed switches are preferred for use in temperatures above 93°C [200°F]

For low temperature or high temperature versions, see page 6.

# MICRO SWITCH HAZARDOUS AREA SWITCHES
## LSX SERIES

### TOP ROTARY • MICRO SWITCH LSX SERIES ORDER GUIDE/RECOMMENDED LISTINGS

| | | | Standard (LSXB) | |
|---|---|---|---|---|
| | | | Standard | |
| | | | SPDT | DPDT |
|  | | |   |   |
| **Pretravel** | | | 25° max. | |
| **Differential travel** | | | 10° max. | 12° max. |
| **Overtravel** | | | 110° min. | |
| **Operating torque** | | | 0,25 Nm [2.5 in-lb] | |
| **Action** | | | Momentary, CW, & CCW (Spring return) | |
| **Operating temp. range**[1] | | | -1°C to 121°C [30°F to 250°F] (for low temp or high temp versions, see page 6) | |
| | **Contacts** | **Conduit (NPT)** | **Listing** | |
| **SPDT**   | Silver | 0.5 in | **LSXB3K** | – |
| | Silver | 0.75 in | – | **LSXB4L** |

Contact closed ■; Contact open □

[1] Gold-plated contacts

[2] Completely fluorocarbon sealed switches are preferred for use in temperatures above 93°C [200°F]

For low temperature or high temperature versions, see page 6.

# MICRO SWITCH HAZARDOUS AREA SWITCHES
## LSX SERIES

**TABLE 6. COMMON LEVERS FOR USE WITH MICRO SWITCH LSX ROTARY SWITCHES***

Levers for use with side-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 actuating mechanism.



**Fixed lever, nylon roller**
**LSZ51A –** front mount roller
**LSZ51C –** back mount roller



**Short fixed lever, nylon roller**
**LSZ59A –** front mount roller
**LSZ59C –** back mount roller



**Offset lever, nylon roller**
**LSZ55A –** back mount roller
**LSZ55C –** front mount roller



**One-way lever, nylon roller**
**LSZ60A –** front mount roller



**Yoke lever, nylon rollers**
**LSZ53A –** front/back mount rollers



**Adjustable lever, nylon roller**
**LSZ52A –** back mount roller
**LSZ52C –** front mount roller



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



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



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



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



**LSZ67AA****
Plastic conveyor roller



**LSZ68**
rod with spring
305 mm [12 in]

* Non-sparking rollers and actuators must be used in hazardous areas.
** May require orientation of switch and lever to enable gravity to help restore switch's free position.

# MICRO SWITCH HAZARDOUS AREA SWITCHES
## LSX SERIES

### TABLE 7. LSX SERIES LEVER ORDER GUIDE

| | Catalog Listing | Material | Roller Dia. mm [in] | Roller Width mm [in] | Roller Mounting |
|---|---|---|---|---|---|
| | **Fixed 38,1 [1.5] inch radius** | | | | |
|  | LSZ51 | Rollerless | n/a | n/a | n/a |
| | LSZ51A | Nylon | 19 [0.75] | 6,35 [0.25] | Front |
| | LSZ51C | Nylon | 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 |
| | LSZ51M | Nylon | 19 [0.75] | 31,7 [1.25] | Back |
| | LSZ51P | Nylon | 19 [0.75] | 12,7 [0.50] | Front |
| | LS2Z51A (sst) | Nylon | 19 [0.75] | 6,35 [0.25] | Front |
| | LS2Z51C (sst) | Nylon | 19 [0.75] | 6,35 [0.25] | Back |
| | LS2Z51E (sst) | Copper alloy | 19 [0.75] | 6,35 [0.25] | Front |
| | LS2Z51F (sst) | Copper alloy | 19 [0.75] | 6,35 [0.25] | Back |
| | **Adjustable 38,1 [1.5] in to 3.5 in radius** | | | | |
|  | LSZ52 | Rollerless | n/a | n/a | n/a |
| | LSZ52A | Nylon | 19 [0.75] | 6,35 [0.25] | Back |
| | LSZ52C | Nylon | 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 |
| | LSZ52M | Nylon | 50,8 [2.0] | 6,35 [0.25] | Front |
| | LSZ52N | Nylon | 19 [0.75] | 12,7 [0.50] | Front |
| | LS2Z52A (sst) | Nylon | 19 [0.75] | 6,35 [0.25] | Front |
| | LS2Z52C (sst) | Nylon | 19 [0.75] | 6,35 [0.25] | Back |
| | LS2Z52E (sst) | Copper alloy | 19 [0.75] | 6,35 [0.25] | Front |
| | LS2Z52F (sst) | Copper alloy | 19 [0.75] | 6,35 [0.25] | Back |
| | **Yoke – 38,1 [1.5] in radius** | | | | |
|  | LSZ53A | Nylon | 19 [0.75] | 6,35 [0.25] | Front/Back |
| | LSZ53E | Nylon | 19 [0.75] | 6,35 [0.25] | Back/Front |
| | LSZ53M | Nylon | 19 [0.75] | 31,7 [1.25] | Back/Front |
| | LSZ53S | Nylon | 19 [0.75] | 6,35 [0.25] | Back/Back |
| | **Rod** | | | | |
|  | LSZ54 | 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 |
| | LSZ54P | Plastic rod, 305 mm [12 in] | Ø6,85 [Ø 0.27] | n/a | n/a |
| | LSZ54W | Plastic rod, 183 mm [7.2 in] | Ø6,85 [Ø 0.27] | n/a | n/a |
| | **Offset – 38,1 [1.5] in radius** | | | | |
|  | LSZ55 | Rollerless | n/a | n/a | n/a |
| | LSZ55A | Nylon | 19 [0.75] | 6,35 [0.25] | Back |
| | LSZ55C | Nylon | 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 |

### TABLE 7. LSX SERIES LEVER ORDER GUIDE

| | Catalog Listing | Material | Roller Dia. mm [in] | Roller Width mm [in] | Roller Mounting |
|---|---|---|---|---|---|
| | **Short fixed – 1.3 in radius** | | | | |
|  | LSZ59A | Nylon | 19 [0.75] | 6,35 [0.25] | Front |
| | LSZ59C | Nylon | 19 [0.75] | 6,35 [0.25] | Back |
| | **One-way roller lever** | | | | |
|  | LSZ60A | Nylon | 19 [0.75] | 6,35 [0.25] | Front |
| | **Flexible loop** | | | | |
|  | LSZ61 | Ø 4,8 [Ø 0.19 ] Nylatron | 152 mm [6 in] flexible loop | | |
| | LSZ618 | Ø 4,8 [Ø 0.19 ] Nylatron | 241 mm [9.5 in] flexible loop | | |
| | LSZ54 | Hub only | n/a | n/a | n/a |
| | **Spring rod** | | | | |
|  | LSZ68 | Delrin rod, 305 mm [12 in] | Ø 6,35 [0.25] | n/a | n/a |
| | LSZ617 | Delrin rod, 406 mm [16 in] | Ø 6,35 [0.25] | n/a | n/a |
| | LSZ686 | Delrin rod, 152 mm [6 in] | Ø 6,35 [0.25] | n/a | n/a |
| | **Rubber roller levers** | | | | |
|  | LSZ51Y 38,1 [1.5] radius (standard) | Rubber | 50 [2.0] | 12,7 [0.5] | front |
| | LSZ55Y 38,1 [1.5] radius (offset) | Rubber | 50 [2.0] | 12,7 [0.5] | front |
| | LSZ52Y 38,1 to 89 [1.5 to 3.5] radius (adjustable) | Rubber | 50 [2.0] | 12,7 [0.5] | front |
| | **Plastic roller levers** | | | | |
|  | LSZ67AA (conveyor)* | Plastic | 38,1 [1.5] | 96,5 [3.8] | n/a |

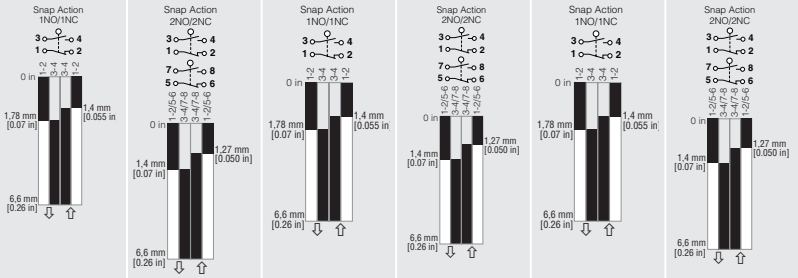
* May require orientation of switch and lever to enable gravity to help restore switch to free position.

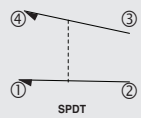
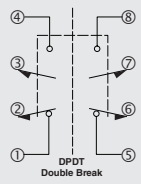
# MICRO SWITCH HAZARDOUS AREA SWITCHES
# LSX SERIES

## TOP PLUNGER • MICRO SWITCH LSX SERIES ORDER GUIDE/RECOMMENDED LISTINGS

All top plungers are momentary action.

| | Plain (LSXC) | Roller (LSXD) | Adjustable (LSXV) |
|---|---|---|---|
| |  |  |  |
| | Top plain plunger for in-line operating motion | Top roller plunger – can be set at 90° increments to accept cam or slide actuation | Adjustable top plain plunger simplifies installation since operating point can be adjusted from 65,66 mm min.; 72,0 mm max. [2.585 in min; 2.835 in max.] |

| | SPDT | DPDT | SPDT | DPDT | SPDT | DPDT |
|---|---|---|---|---|---|---|
| |  |  | | | | |
| **Pretravel** | 1,78 mm [0.07 in] | | | | | |
| **Differential 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] | | | | | |
| **Operting force** | 17,8 N [4 lb] max. | | | | | |
| **Operating point** | 58,55 mm ±0,76 mm [2.305 in ±0.030 in] | | 68,58 mm ±1,02 mm [2.70 in ±0.040 in] | | 65,66 mm min.; 72,0 mm max. [2.585 in min; 2.835 in max.] | |
| **Operating temp. range[2]** | -12°C to 93°C [10°F to 200°F] (for low temp or high temp versions, see page 6) | | | | | |

| | | Contacts | Conduit (NPT) | Listing | | |
|---|---|---|---|---|---|---|
| SPDT |  SPDT Double Break | Silver | 0.5 in | **LSXC3K** | **LSXD3K** | **LSXV3K** |
| | | Silver | 0.75 in | **LSXC4K** | **LSXD4K** | **LSXV4K** |
| | | Gold[1] | 0.5 in | **LSXC3E** | **LSXD3E** | **LSXV3E** |
| DPDT |  DPDT Double Break | Silver | 0.5 in | **LSXC7L** | **LSXD7L** | **LSXV7L** |
| | | Silver | 0.75 in | **LSXC4L** | **LSXD4L** | **LSXV4L** |
| | | Gold[1] | 0.75 in | **LSXC4S** | **LSXD4S** | **LSXV4S** |

Contact closed ■; Contact open □

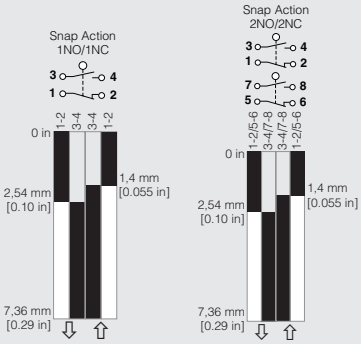
[1] Gold-plated contacts

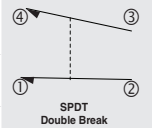
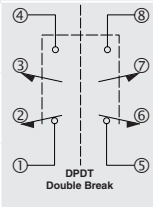
[2] Completely fluorocarbon sealed switches are preferred for use in temperatures above 93°C [200°F]

For low temperature or high temperature versions, see page 6.

# MICRO SWITCH HAZARDOUS AREA SWITCHES
## LSX SERIES

**SIDE PLUNGER • MICRO SWITCH LSX SERIES ORDER GUIDE/RECOMMENDED LISTINGS**
**All side plungers are momentary action. Heads may be positioned to accept actuation from any of four directions, 90° apart.**

| | Plain (LSXE) | | Roller (LSXF) | | Adjustable (LSXW) | |
|---|---|---|---|---|---|---|
| |  | |  | |  | |
| | Side plain plunger for in-line operating motion | | Side roller plunger – can be set at 90° increments to accept cam or slide actuation | | Adjustable side plain plunger simplifies installation since operating point can be adjusted from 41 mm min.; 47,37 mm max. [1.615 in min.; 1.865 in max.] | |
| | SPDT | DPDT | SPDT | DPDT | SPDT | DPDT |
| |  | |   | | | |
| **Pretravel** | 2,54 mm [0.10 in] | | | | | |
| **Differential travel** | 1,14 mm [0.045 in] | | | | | |
| **Overtravel** | 4,83 mm [0.19 in] | | | | | |
| **Operting force** | 26,7 N [6 lb] max. | | | | | |
| **Operating point** | 33,02 mm ±0,76 mm [1.300 in ±0.030 in] | | 44,07 mm ±1,02 mm [1.735 in ±0.04 in] | | 41 mm min.; 47,37 mm max. [1.615 in min.; 1.865 in max.] | |
| **Operating temp. range[2]** | -12°C to 93°C [10°F to 200°F] (for low temp or high temp versions, see page 6) | | | | | |

| | | Contacts | Conduit (NPT) | Listing | | |
|---|---|---|---|---|---|---|
| SPDT |   | Silver | 0.5 in | LSXE3K | LSXF3K | LSXW3K |
| | | Silver | 0.75 in | LSXE4K | LSXF4K | LSXW4K |
| | | Gold[1] | 0.5 in | LSXE3E | LSXF3E | LSXW3E |
| DPDT |   | Silver | 0.5 in | LSXE7L | LSXF7L | LSXW7L |
| | | Silver | 0.75 in | LSXE4L | LSXF4L | LSXW4L |
| | | Gold[1] | 0.75 in | LSXE4S | LSXF4S | LSXW4S |

Contact closed ■; Contact open □

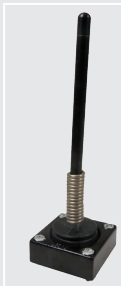
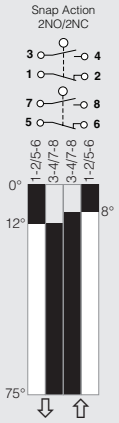
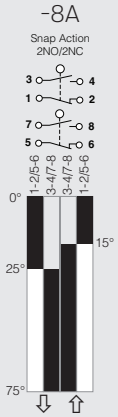
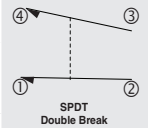
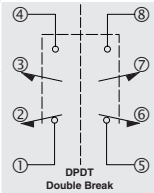
[1] Gold-plated contacts

[2] Completely fluorocarbon sealed switches are preferred for use in temperatures above 93°C [200°F]

For low temperature or high temperature versions, see page 6.

# MICRO SWITCH HAZARDOUS AREA SWITCHES
## LSX SERIES

### WOBBLE • MICRO SWITCH LSX SERIES ORDER GUIDE/RECOMMENDED LISTINGS

| | | | LSXJ Series 7A Actuator | | LSXK Series 8A Actuator | |
|---|---|---|---|---|---|---|
| | | | Delrin® plastic rod lever (wobble stick) | | Cat whisker actuator for low operating force applications | |
| | | | SPDT | DPDT | SPDT | DPDT |
|  |  LSJ1A-7A Plastic rod |  LSK1A-8A Cat whisker |   | |   | |
| **Actuator length** | | | 152,4 mm [6 in] | | 139,7 mm [5.5 in] copper alloy | |
| **Pretravel** | | | 25,4 mm [1.0 in] | | 51,0 mm [2.0 in] | |
| **Operating force** | | | 2,78 Nm [10 oz] | | 1,39 Nm [5 oz] | |
| **Operating temp. range[2]** | | | -12°C to 93°C [10°F to 200°F] (for low temp or high temp versions, see page 6) | | | |
| | **Contacts** | **Conduit (NPT)** | **Listing** | | | |
| SPDT   | Silver | 0.5 in | **LSXJ3K-7A** | | **LSXK3K-8A** | |
| | Silver | 0.75 in | **LSXJ4K-7A** | | **LSXK4K-8A** | |
| | Gold[1] | 0.5 in | **LSXJ3E-7A** | | **LSXK3E-8A** | |
| DPDT   | Silver | 0.5 in | **LSXJ7L-7A** | | **LSXK7L-8A** | |
| | Silver | 0.75 in | **LSXJ4L-7A** | | **LSXK4L-8A** | |
| | Gold[1] | 0.75 in | **LSXJ4S-7A** | | **LSXK4S-8A** | |

Contact closed ■; Contact open □

[1] Gold-plated contacts

[2] Completely fluorocarbon sealed switches are preferred for use in temperatures above 93°C [200°F]

For low temperature or high temperature versions, see page 6.

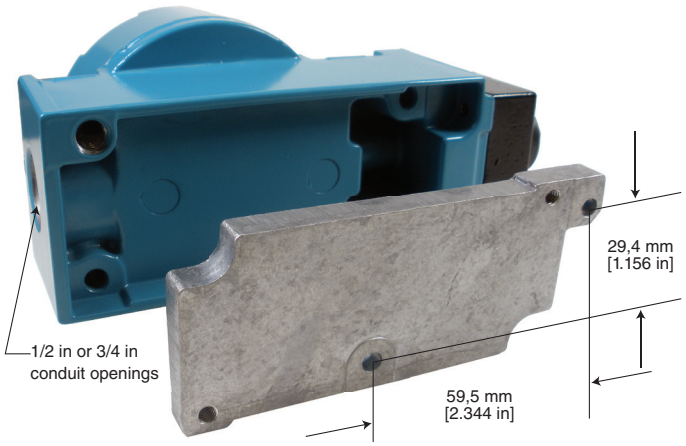
# MICRO SWITCH HAZARDOUS AREA SWITCHES
## LSX SERIES

| REPLACEMENT CONTACT BLOCKS | |
|---|---|
| **Circuitry** | **Replacement Contact Block** |
| Single pole | LSXZ3K |
| Double pole | LSXZ3L |
| Sequence or central neutral | LSXZ3M |

| REPLACEMENT HEADS FOR STANDARD LSX SWITCHES | |
|---|---|
| **Switch Type** | **Catalog Listing/Operating Head Only** |
| LSXA | LSZ1A |
| LSXB | LSZ1B |
| LSXC | LSXZ1C |
| LSXD | LSXZ1D |
| LSXE | LSXZ1E |
| LSXF | LSXZ1F |
| LSXH | LSZ1H |
| LSXJ | LSZ1JGA |
| LSXK | LSXZ1KHA |
| LSXL | LSZ1L |
| LSXM | LSZ1M |
| LSXN | LSZ1N |
| LSXP | LSX1P |
| LSXR | LSZ1R |
| LSXU | LSZ1U |
| LSXV | LSXZ1V |
| LSXW | LSXZ1W |

### ADAPTER PLATE

Catalog listing LSXZ4022 adapter plate enables the NEMA-rated, explosion-proof LSX Series to be mounted on existing HDLS mounting holes. The LSX has a recessed back into which the adapter plate fits and mounts, using two screws (furnished)




### ASSEMBLY MODIFICATIONS

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

**For example,**
Catalog listing LSXA3K**23** is a LSXA3K 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.

### 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
**8** Roller on side plungers in vertical position

**For example,**
Catalog listing LSXF3K**3** is a LSXF3K switch with the side roller plunger to the right side.

**Figure 3. MICRO SWITCH LSX Series Side Rotary Product Dimensions • mm [in]**
**Side Rotary – Head Codes: A, H, L, M, N, P, Q, R, AND U**

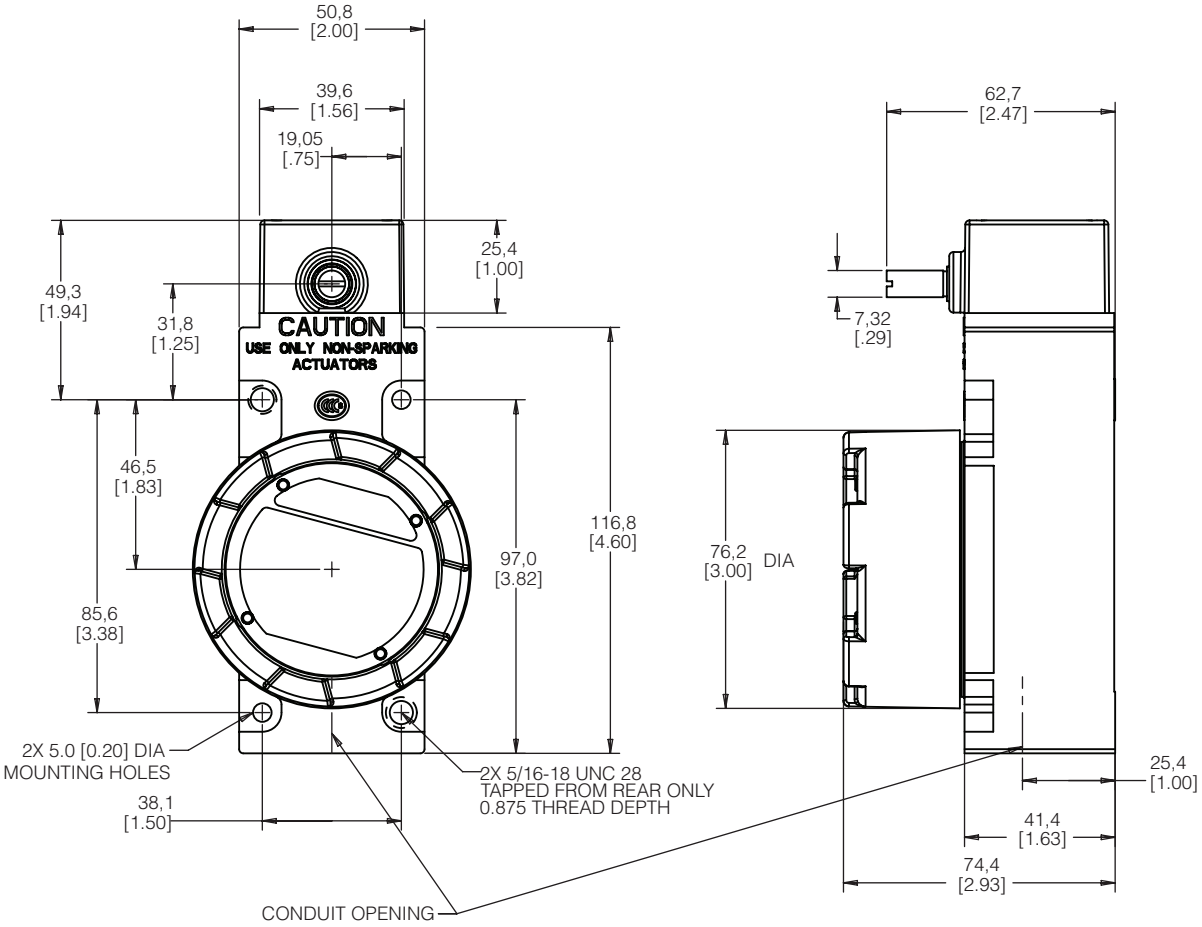



**Figure 4. MICRO SWITCH LSX Series Wobble Stick, Head Code J • mm [in]**

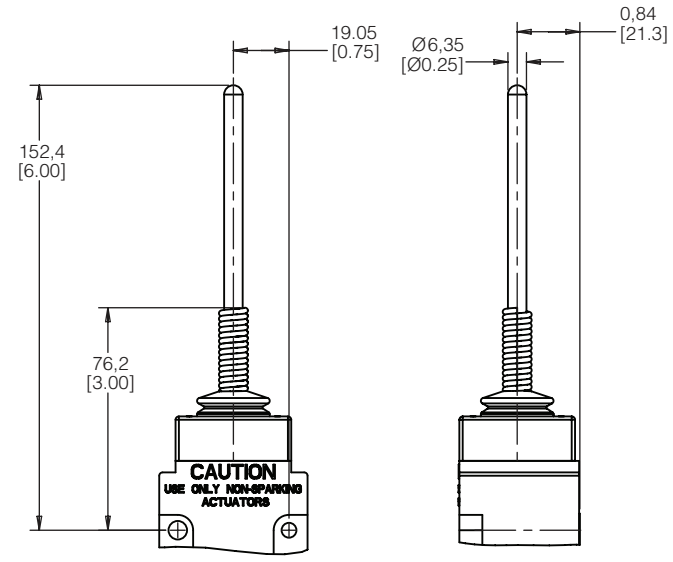
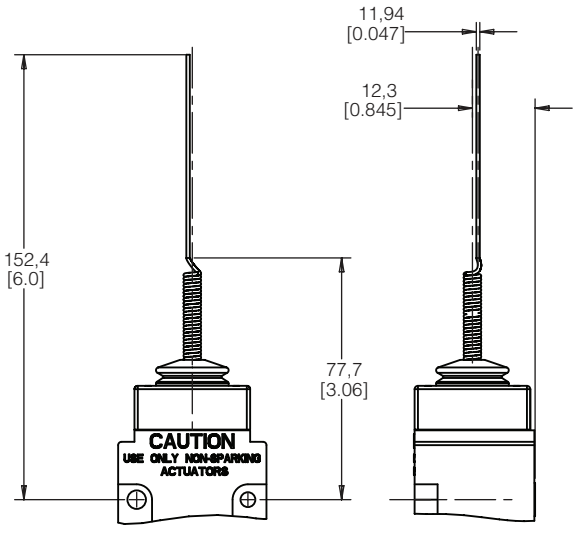



**Figure 5. MICRO SWITCH LSX SERIES Cat Whisker Wobble, Head Code K • mm [in]**



# MICRO SWITCH HAZARDOUS AREA SWITCHES
## LSX SERIES

**Figure 6. MICRO SWITCH LSX Series Top Rotary, Head Code B • mm [in]**

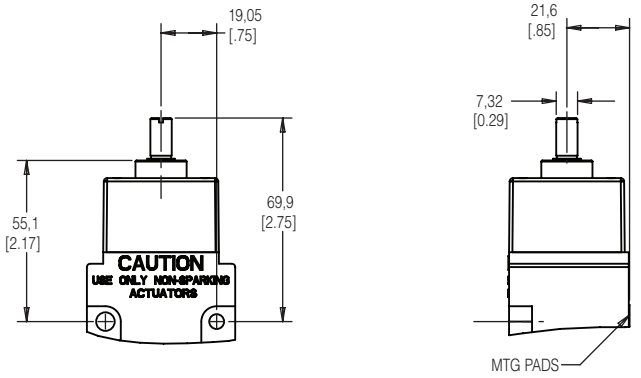



**Figure 7. MICRO SWITCH LSX Series Top Pin Plunger, Head Code C • mm [in]**

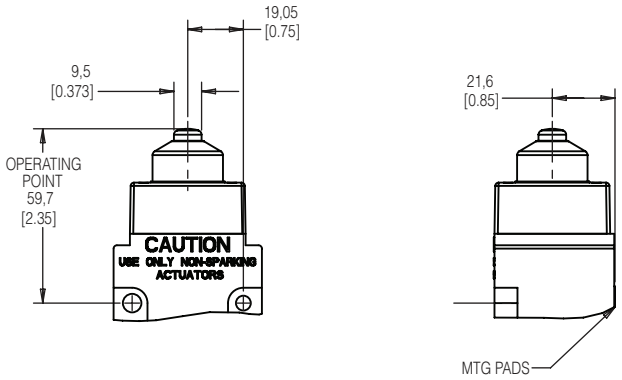



**Figure 8. MICRO SWITCH LSX Series Top Roller Plunger, Head Code D • mm [in]**

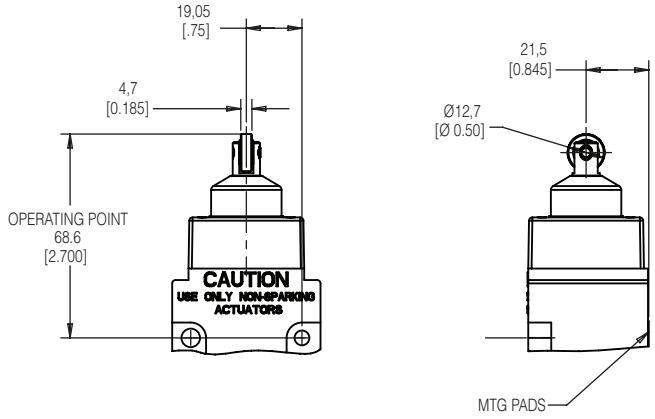



**Figure 9. MICRO SWITCH LSX Series Side Plunger, Head Code E • mm [in]**

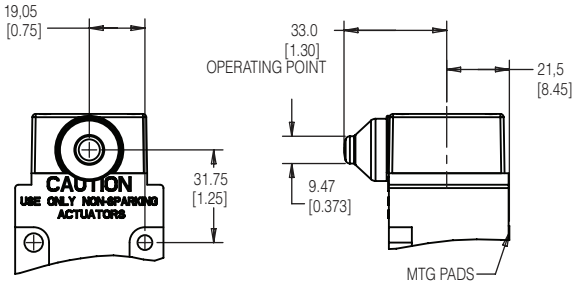



**Figure 10. MICRO SWITCH LSX Series Adjustable Top Pin Plunger, Head Code V • mm [in]**

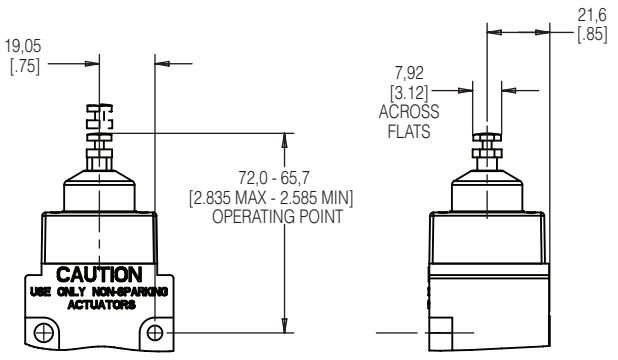



**Figure 11. MICRO SWITCH LSX Series Side Roller Plunger, Head Code F • mm [in]**

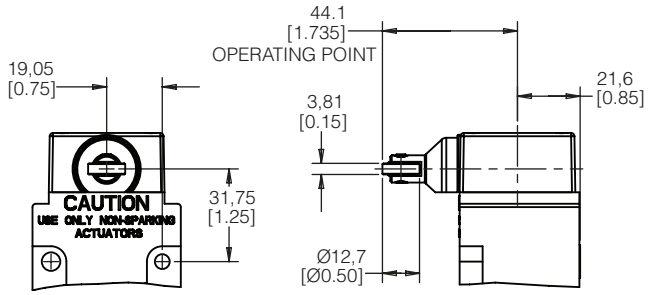
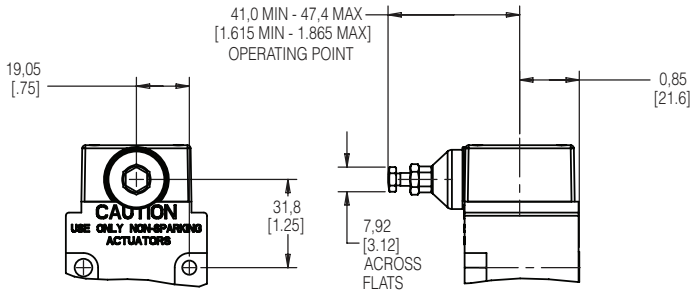



**Figure 12. MICRO SWITCH LSX Series Adjustable Side Pin Plunger, Head Code W • mm [in]**



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

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- The information presented in this product sheet is for reference only. Do not use this document as a product installation guide.
- Complete installation, operation, and maintenance information is provided in the instructions supplied with each product.

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

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