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## MICRO SWITCH Heavy-Duty Limit Switch

HDLS Series

002345

Issue 6

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
- Rapid customization and design-in time
- 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

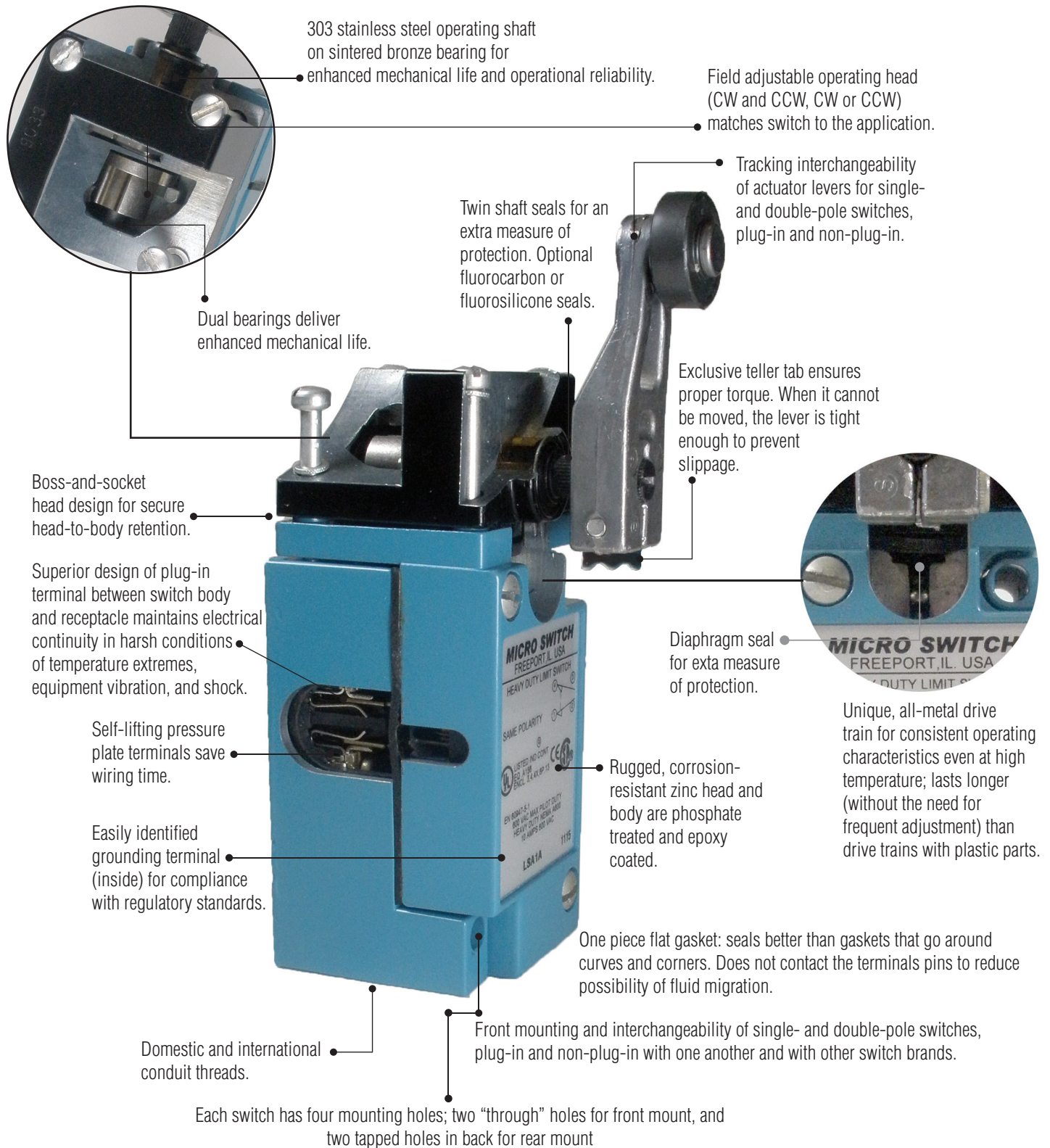
- Machine tools
- Automotive machine tools
- Material handling
- Outdoor electromechanical structures
- Balers/compactors
- Conveyors
- Food and beverage
- Power plants
- Off-road equipment
- Agricultural equipment
- Valves
- Transportation hubs

### 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](#).

# MICRO SWITCH Heavy-Duty Limit Switch, HDLS Series

Figure 1. MICRO SWITCH HDLS Series Features and Options



# MICRO SWITCH Heavy-Duty Limit Switch, HDLS Series

**Table 1. Specifications**

Characteristic	Parameter															
Product type	MICRO SWITCH heavy-duty limit switches															
Actuators/heads	<table border="0"> <tr> <td>Side plunger - adjustable</td> <td>Side plunger - pin</td> <td>Side plunger maintained - pin</td> </tr> <tr> <td>Side roller plunger</td> <td>Side rotary</td> <td>Side rotary maintained</td> </tr> <tr> <td>Top plunger - adjustable</td> <td>Top plunger - pin</td> <td>Top roller plunger</td> </tr> <tr> <td>Top rotary</td> <td>Wobble - cable</td> <td>Wobble - cat whisker</td> </tr> <tr> <td>Wobble - coil spring</td> <td>Wobble - plastic rod</td> <td>Wobble - spring wire</td> </tr> </table>	Side plunger - adjustable	Side plunger - pin	Side plunger maintained - pin	Side roller plunger	Side rotary	Side rotary maintained	Top plunger - adjustable	Top plunger - pin	Top roller plunger	Top rotary	Wobble - cable	Wobble - cat whisker	Wobble - coil spring	Wobble - plastic rod	Wobble - spring wire
Side plunger - adjustable	Side plunger - pin	Side plunger maintained - pin														
Side roller plunger	Side rotary	Side rotary maintained														
Top plunger - adjustable	Top plunger - pin	Top roller plunger														
Top rotary	Wobble - cable	Wobble - cat whisker														
Wobble - coil spring	Wobble - plastic rod	Wobble - spring wire														
Circuitry	1NC 1NO SPDT snap action, double break 2NC 2NO DPDT center neutral, snap action, double break 2NC 2NO DPDT snap action, double break 2NC 2NO DPDT sequential, snap action, double break															
Electrical	10 A thermal Single and double pole: AC15 A600; DC13 R300 (see table on page 5)															
Housing material	Zinc die-cast with an electrostatic epoxy coating															
Termination types	<table border="0"> <tr> <td>0.5 in - 14NPT conduit</td> <td>0.75 in - 14NPT conduit</td> <td>12 ft cable, 6 ft cable</td> </tr> <tr> <td>PG 13,5 conduit</td> <td>20 mm conduit</td> <td>4-pin micro-style connector</td> </tr> <tr> <td>4-pin mini-style connector</td> <td>5-pin mini-style connector</td> <td>9-pin mini-style connector</td> </tr> <tr> <td>Manifold mounting</td> <td></td> <td></td> </tr> </table>	0.5 in - 14NPT conduit	0.75 in - 14NPT conduit	12 ft cable, 6 ft cable	PG 13,5 conduit	20 mm conduit	4-pin micro-style connector	4-pin mini-style connector	5-pin mini-style connector	9-pin mini-style connector	Manifold mounting					
0.5 in - 14NPT conduit	0.75 in - 14NPT conduit	12 ft cable, 6 ft cable														
PG 13,5 conduit	20 mm conduit	4-pin micro-style connector														
4-pin mini-style connector	5-pin mini-style connector	9-pin mini-style connector														
Manifold mounting																
Housing type	HDLS Plug-in, HDLS Non-Plug-in															
Sealing	IP65/66/67; NEMA 1, 3, 4, 4X, 6, 6P, 12, 13															
Operating temperature	-12°C to 121°C [10°F to 250°F]; optional: -40°C to 121°C [-40°F to 250 °F]															
Agency approvals and standards	UL, CE, CSA, CCC															
UNSPSC code	302119															
UNSPSC commodity	302119 Switches and controls and relays															

# MICRO SWITCH Heavy-Duty Limit Switch, HDLS Series

Figure 2. Product Nomenclature

LS	A		1A			1	-	
Switch Type	Heads		Body/Basic Switch Codes			Modification Codes		Wobble Actuator
<b>HDLS Series Heavy-Duty Limit Switch</b>  * 3 or 4 after the "LS" indicates special metric conduit threads: 3 = PG 13,5 4 = 20 mm	<b>A</b> Side rotary, momentary	<b>L</b> Side rotary, sequential	Plug-in Single Pole	Plug-in Double Pole	Non-plug-in Double Pole	<b>A</b> 4-pin mini-style	<b>PA</b> 5-conductor STOOW-A cable, 8 ft	<b>7A</b> Wobble, plastic
	<b>B</b> Top rotary, momentary	<b>M</b> Side rotary, center neutral	<b>1A</b> Standard switch	<b>2B</b> Standard switch	<b>4L</b> Standard switch	<b>B</b> 5-pin mini-style	<b>XA</b> 9-conductor STOOW-A cable, 8 ft	<b>7M</b> Wobble, wire
	<b>C</b> Top plunger, plain	<b>N</b> Side rotary, maintained	<b>1E</b> Gold contacts	<b>2C</b> Sequential	<b>4M</b> Sequential	<b>C</b> 5-conductor STOW-A cable, 6 ft	<b>PB</b> 5-conductor STOOW-A cable, 30 ft	<b>7N</b> Wobble, cable
	<b>D</b> Top roller plunger	<b>P</b> Side rotary, momentary, low pretravel	<b>1G</b> Gold contacts, manifold mount	<b>2D</b> Center neutral	<b>4N</b> Center neutral	<b>E</b> 4-conductor SJTOW-A cable, 6 ft	<b>1</b> Clockwise head rotation	<b>8A</b> Cat whisker, 5.5 in steel
	<b>E</b> Side plunger plain, momentary	<b>R</b> Side rotary, momentary, low torque	<b>1H</b> Low force	<b>2R</b> 120 V neon indicator	<b>4S</b> Standard switch golf contacts	<b>J</b> 8-pin mini-style	<b>2</b> Counterclockwise head rotation	<b>8B</b> Cat whisker, 7.5 in steel
	<b>F</b> Side plunger roller, momentary	<b>S</b> Side rotary, gravity return extr. low torque	<b>5A</b> 120 V neon indicator	<b>2S</b> Standard switch golf contacts	<b>4T</b> Sequential, gold contacts	<b>M</b> 9-conductor STOOW-A cable, 6 ft	<b>3</b> Head assembled with actuator to right side	<b>8C</b> Coil spring, 5.5 in
	<b>G</b> Side plunger plain, maintained	<b>T</b> Side rotary, momentary, extr. low torque	<b>8A</b> 240 V neon indicator	<b>2T</b> Sequential, gold contacts	<b>4U</b> Center neutral, gold contacts	<b>P</b> 5-conductor STOOW-A cable, 12 ft	<b>4</b> Head assembled with actuator to left side	<b>8D</b> Cat whisker, plastic
	<b>H</b> Side rotary, momentary, low pretravel & torque	<b>U</b> Side rotary, momentary, 5° max. pretravel	<b>9A</b> 24 V LED indicator	<b>2U</b> Center neutral, gold contacts	<b>7L</b> Standard switch, 1/2 in conduit	<b>R</b> 9-pin mini-style	<b>5</b> Head assembled with actuator to mounting surface	
	<b>J</b> Wobble stick	<b>V</b> Top plunger, adjustable	Non-plug-in Single Pole	<b>6B</b> Standard switch, 1/2 in conduit	<b>7M</b> Sequential, 1/2 in conduit	<b>S</b> 5-pin micro-style	<b>6</b> Roller perpendicular to mounting surface	
	<b>K</b> Cat whisker	<b>W</b> Side plunger, momentary, adjustable	<b>3K</b> Standard switch	<b>6C</b> Sequential, 1/2 in conduit	<b>7N</b> Center neutral, 1/2 in conduit	<b>X</b> 9-conductor STOOW-A cable, 12 ft	<b>7</b> Indicator light wired to normally closed circuit	
				<b>6D</b> Center neutral, 1/2 in conduit	<b>7S</b> Stnd. switch, gold contacts, 1/2 in conduit	<b>BB</b> 3-foot mini-style pigtail, single pole	<b>8</b> Roller on side plunger in vertical position	
			<b>6R</b> 120 V neon indicator, 1/2 in conduit	<b>7T</b> Sequential, gold contacts, 1/2 in conduit	<b>DD</b> 4-pin micro-style with jumper			
			<b>6S</b> Stnd. switch, gold contacts, 1/2 in conduit	<b>7U</b> Center neutral, gold contacts, 1/2 in conduit				
			<b>6T</b> Sequential, gold contacts, 1/2 in conduit					
			<b>6U</b> Center neutral, gold contacts, 1/2 in conduit					

**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.

## 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.

## HDLS Series Electrical Ratings: 10 A Continuous Carry ac Volts; Pilot Duty: AC15, A600/B600

Electrical Rating	Circuitry	Vac	Amps at 0.35 Power Factor Make	Amps at 0.35 Power Factor Break
A* AC15, A600	SPDT DPDT	120	60	6
		240	30	3
		480	15	1.5
		600	12	1.2
B AC15, 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..)

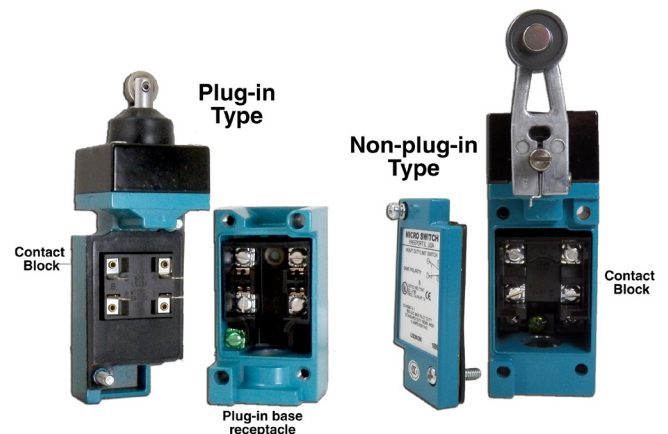
## HDLS Series Electrical Ratings: dc Volts; Pilot Duty: DC13, R300

Electrical Rating	Circuitry	Vdc	Make & Break Amps Inductive	Make & Break Amps Resistive
A, B*	SPDT DPDT	120	0.25	0.8
		240	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



# MICRO SWITCH Heavy-Duty Limit Switch, HDLS Series

## 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 Heavy-Duty Limit Switch, HDLS Series

## 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].

	<p><b>LSE - Side pin plunger:</b> 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.</p>		<p><b>LSW - Adjustable side pin plunger:</b> 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.</p>
	<p><b>LSF - Side roller plunger:</b> Fits close quarters under cams and slides. The head may be faced in any of four positions, 90° apart. <u>The roller can be turned vertical or horizontal to the switch.</u> Seals are same as side pin plunger. Momentary action.</p>		<p><b>LSG - Maintained contact side pin plunger:</b> 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].</p>

**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].

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



# MICRO SWITCH Heavy-Duty Limit Switch, HDLS Series

## 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:

<b>LSA1A</b>	standard, side-rotary plug-in switch
<b>LSYAC1A</b>	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:

<b>LSA1A</b>	standard, side-rotary plug-in switch
<b>LSYAB1A</b>	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

<b>LSA1A</b>	side rotary with 1/2-14 NPT conduit
<b>LS4A1A</b>	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.

# MICRO SWITCH Heavy-Duty Limit Switch, HDLS Series

## 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	<b>C</b>	<b>A</b> (4-pin mini-style) <b>B</b> (5-pin mini-style) <b>DD</b> (4-pin micro-style)
DPDT	<b>M</b>	<b>R</b> (9-pin mini-style)

Examples:

LSA1**A****C** = LSA1A with 6-feet of 5-conductor STOW-A cable

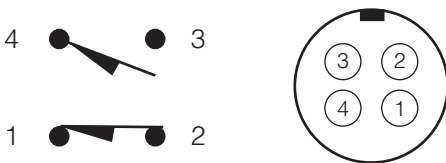
LSJ2**B****M**-7N = LSJ2B-7N with 6 feet of 9-conductor STOOW-A cable

LSA1**A****B** = LSA1A with a 5-pin mini-style connector

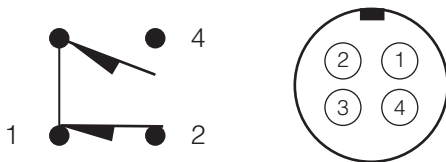
LSA1**A****DD** = LSA1A with a 4-pin micro-style connector

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

### Wiring Diagram (Style A)



### Wiring Diagram (Style DD)

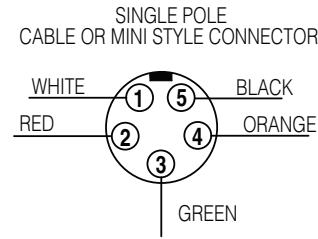


Pin 3 not connected

## Wiring Diagrams (Styles B&G)

Connectors = Numbers (mini-style)

Cables = Colors



Single-Pole Circuitry

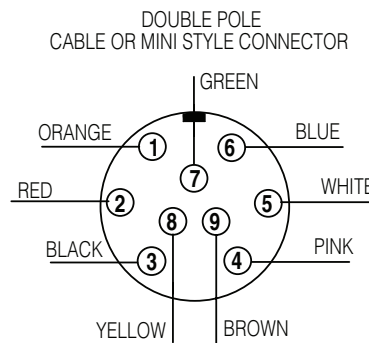


3 = Ground

### Electrical Ratings: Connector Versions

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

## Wiring Diagrams (Styles M&R)



Double-Pole Circuitry



7 = Ground

# MICRO SWITCH Heavy-Duty Limit Switch, HDLS Series

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



Description	Standard (LSA)		Low Differential (LSP)		5° Pretravel (LSU)	
	Standard		Low pretravel & low differential travel		Low pretravel	
	SPDT	DPDT	SPDT	DPDT	SPDT	DPDT
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 <sup>3</sup>	-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 <sup>2</sup>	Conduit (NPT)	Options			
	Silver	Plug-in	0.5 in		<b>LSA1A</b>	<b>LSP1A</b>	<b>LSU1A</b>
	Gold <sup>4</sup>	Plug-in	0.5 in		<b>LSA1E</b>	<b>LSP1E</b>	<b>LSU1E</b>
	Silver	Plug-in	0.5 in	120 V Ind. lite <sup>1</sup>	<b>LSA5A</b>	<b>LSP5A</b>	<b>LSU5A</b>
	Silver	Plug-in	0.5 in	240 V Ind. lite <sup>1</sup>	<b>LSA8A</b>	<b>LSP8A</b>	<b>LSU8A</b>
	Silver	Plug-in	0.5 in	24 V LED 1.5 mA max. auto polarity <sup>1</sup>	<b>LSA9A</b>	<b>LSP9A</b>	<b>LSU9A</b>
	Silver	Non-plug-in	0.5 in		<b>LSA3K</b>	<b>LSP3K</b>	<b>LSU3K</b>
	Silver	Plug-in	0.75 in		<b>LSA2B</b>	<b>LSP2B</b>	<b>LSU2B</b>
	Gold <sup>4</sup>	Plug-in	0.75 in		<b>LSA2S</b>	-	-
	Silver	Plug-in	0.5 in		<b>LSA6B</b>	<b>LSP6B</b>	<b>LSU6B</b>
	Gold <sup>4</sup>	Plug-in	0.5 in		<b>LSA6S</b>	-	-
	Silver	Plug-in	0.75 in	120 V Ind. lite <sup>1</sup>	<b>LSA2R</b>	<b>LSP2R</b>	<b>LSU2R</b>
	Silver	Non-plug-in	0.75 in		<b>LSA4L</b>	<b>LSP4L</b>	<b>LSU4L</b>
	Silver	Non-plug-in	0.5 in		<b>LSA7L</b>	<b>LSP7L</b>	<b>LSU7L</b>

<sup>1</sup> Use at voltage indicated for light. Wired to NO circuit. Upper temperature limit for lighted units is 93°C [200°F]

<sup>2</sup> Plug-in listings include base receptacle

<sup>3</sup> Completely fluorocarbon sealed switches are preferred for use in temperatures above 93°C [200°F]

<sup>4</sup> 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 LSY**AC**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 LSY**AB**1A limit switch.

# MICRO SWITCH Heavy-Duty Limit Switch, HDLS Series

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



Description	Low Torque (LSR)		Low Diff., Low Torque (LSH)	
	Low operating torque		Low pretravel and low torque	
	SPDT	DPDT	SPDT	DPDT
<p> <b>Contact closed</b> ■  <b>Contact open</b> □                 </p>				
<b>Pretravel</b>	15° max.	15° max.	9° max.	9° max.
<b>Different. travel</b>	5° max.	7° max.	3° max.	4° max.
<b>Overtravel</b>	60° min.	60° min.	66° min.	66° min.
<b>Oper. torque</b>	0,19 Nm [1.7 in-lb] max.		0,19 Nm [1.7 in-lb] max.	
<b>Action</b>	CW & CCW (Momentary)			
<b>Op. temp range</b> <sup>3</sup>	-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 <sup>2</sup>	Conduit (NPT)	Options		
	Silver	Plug-in	0.5 in		<b>LSR1A</b>	<b>LSH1A</b>
	Gold <sup>4</sup>	Plug-in	0.5 in		<b>LSR1E</b>	<b>LSH1E</b>
	Silver	Plug-in	0.5 in	120 V Ind. lite <sup>1</sup>	<b>LSR5A</b>	<b>LSH5A</b>
	Silver	Plug-in	0.5 in	240 V Ind. lite <sup>1</sup>	<b>LSR8A</b>	<b>LSH8A</b>
	Silver	Plug-in	0.5 in	24 V LED 1.5 mA max. auto polarity <sup>1</sup>	<b>LSR9A</b>	<b>LSH9S</b>
	Silver	Non-plug-in	0.5 in		<b>LSR3K</b>	<b>LSH3K</b>
	Silver	Plug-in	0.75 in		<b>LSR3B</b>	<b>LSH2B</b>
	Silver	Plug-in	0.5 in		<b>LSR6B</b>	<b>LSH6B</b>
	Silver	Plug-in	0.75 in	120 V Ind. lite <sup>1</sup>	<b>LSR2R</b>	<b>LSH2R</b>
	Silver	Non-plug-in	0.75 in		<b>LSR4L</b>	<b>LSH4L</b>
	Silver	Non-plug-in	0.5 in		<b>LSR7L</b>	<b>LSHJ7L</b>

<sup>1</sup> Use at voltage indicated for light. Wired to NO circuit. Upper temperature limit for lighted units is 93°C [200°F]

<sup>2</sup> Plug-in listings include base receptacle

<sup>3</sup> Completely fluorocarbon sealed switches are preferred for use in temperatures above 93°C [200°F]

<sup>4</sup> 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 LSY**AC**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 LSY**AB**1A limit switch.

# MICRO SWITCH Heavy-Duty Limit Switch, HDLS Series

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



Description	Maint. Contact (LSQ)	Maint. Contact (LSN)	Center Neutral (LSM)	Sequence Action (LSL)
	Maint. 360° Alt. Action	Maintained, 2-pos <sup>1,2</sup> . Std.	Center Neutral (Pole 1 operates CCW; Pole 2 operates CW)	Sequential (Pole 1 operates before Pole 2, either CW, CCW, or both)
	<b>SPDT</b>	<b>SPDT DPDT</b>	<b>DPDT</b>	<b>DPDT</b>
<b>Pretravel</b>	65° max.	65° max.	18° max.	Pole 1: 15° Pole 2: add'l 10°
<b>Different. travel</b>	40° max.	40° max.	10° max.	each pole: 5°
<b>Overtravel</b>	20° min.	20° min.	57° min.	48° min.
<b>Oper. torque</b>	0,45 Nm [4 in-lb]		0,45 Nm [4 in-lb]	0,45 Nm [4 in-lb]
<b>Action</b>	Maintained		CW & CCW (Momentary)	
<b>Op. temp range<sup>6</sup></b>	-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 <sup>5</sup>	Conduit (NPT)	Options				
<b>SPDT</b> 	Silver	Plug-in	0.5 in		<b>LSQ300</b>	<b>LSN1A</b>	<b>CENTER NEUTRAL (Momentary)</b>  SPDT Double Break each direction	<b>SEQUENCE (Momentary)</b>  (2) SPDT Double Break with 10° between operation
	Gold <sup>3</sup>	Plug-in	0.5 in		-	<b>LSN1E</b>		
	Silver	Plug-in	0.5 in	120 V Ind. lite <sup>4</sup>	-	<b>LSN5A</b>		
	Silver	Plug-in	0.5 in	240 V Ind. lite <sup>4</sup>	-	<b>LSN8A</b>		
	Silver	Non-plug-in	0.5 in		-	<b>LSN3K</b>		
<b>DPDT</b> 	Silver	Plug-in	0.75 in		-	<b>LSN2B</b>	<b>LSM2D</b>	<b>LSL2C</b>
	Silver	Plug-in	0.5 in		-	<b>LSN6B</b>	<b>LSM6D</b>	<b>LSL6C</b>
	Gold <sup>3</sup>	Plug-in	0.5 in		-	-	<b>LSM6U</b>	-
	Silver	Non-plug-in	0.75 in		-	<b>LSN4L</b>	<b>LSM4N</b>	<b>LSL4M</b>
	Silver	Non-plug-in	0.5 in		-	<b>LSN7L</b>	<b>LSM7N</b>	<b>LSL7M</b>

<sup>1</sup> Mechanical trip before electrical trip.

<sup>2</sup> Total travel is approximately 80° max. Maintained contact switch normally used with LSZ53 yoke actuator.

<sup>3</sup> Gold-plated contacts

<sup>4</sup> Use at voltage indicated for light. Wired to NO circuit. Upper temperature limit for lighted units is 93°C [200°F].

<sup>5</sup> Plug-in listings include base receptacle

<sup>6</sup> 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 LSYAC1A 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 LSYAB1A limit switch.

# MICRO SWITCH Heavy-Duty Limit Switch, HDLS Series

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

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

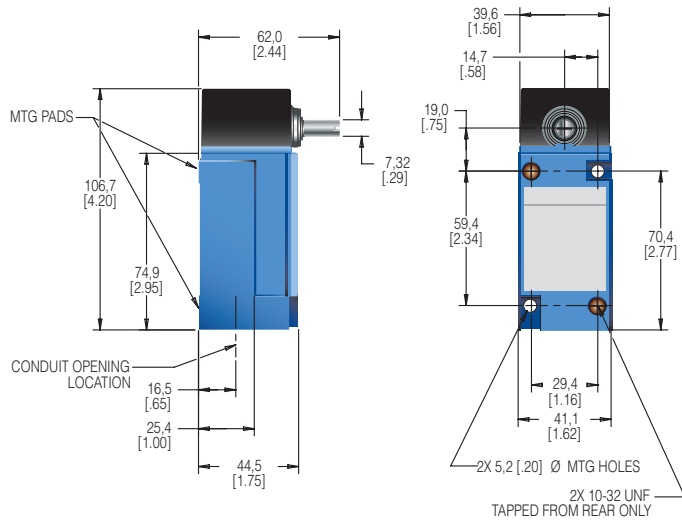
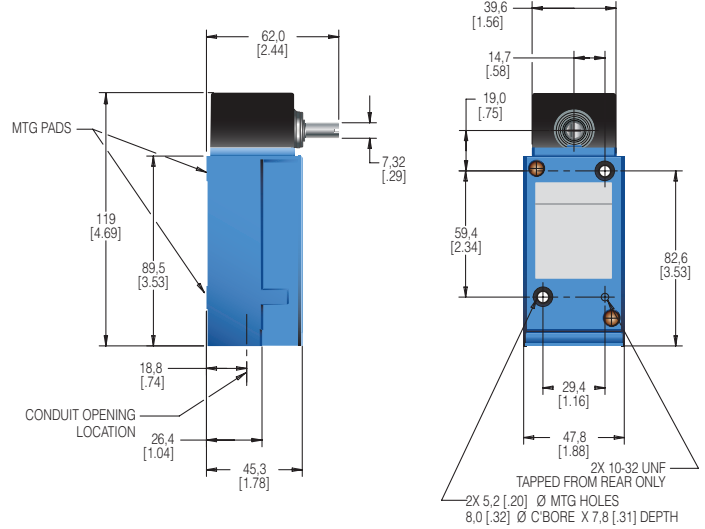
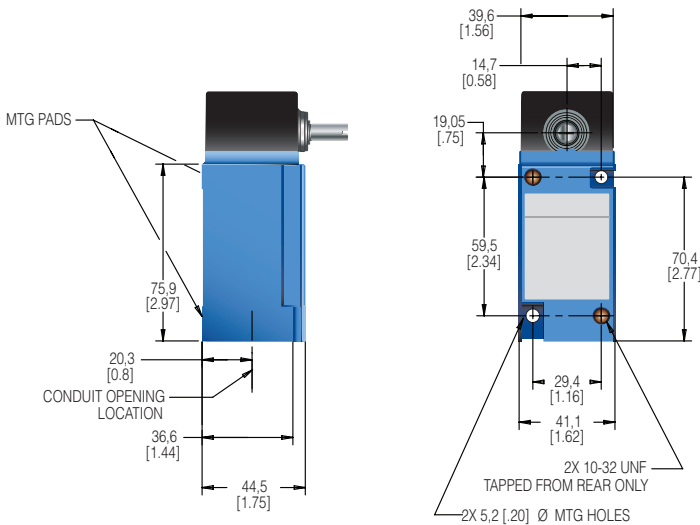


Figure 3. MICRO SWITCH HDLS side rotary (double pole) dimensions

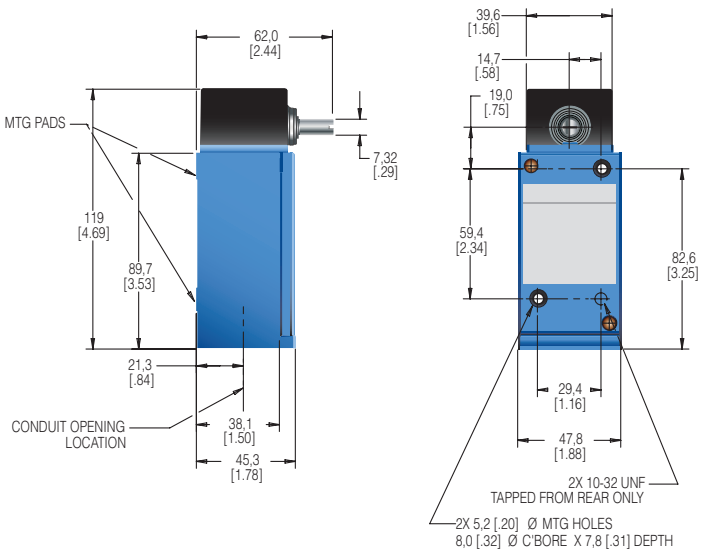
## DPDT Plug-in (mm[in])



## SPDT Non-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



Description	Top Rotary (LSB)	
	SPDT	DPDT
	Snap Action 1NO/1NC 	Snap Action 2NO/2NC 
	Contact closed ■ Contact open □	
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 <sup>3</sup>	-12°C to 121°C [10°F to 250°F] (for low temp, high temp, or preloaded versions, see pages 8-9)	

Circuitry	Contacts	Body Style <sup>2</sup>	Conduit (NPT)	Options		
	Silver	Plug-in	0.5 in		<b>LSB1A</b>	-
	Gold <sup>4</sup>	Plug-in	0.5 in		<b>LSB1E</b>	-
	Silver	Plug-in	0.5 in	120 V Ind. lite <sup>1</sup>	<b>LSB5A</b>	-
	Silver	Plug-in	0.5 in	240 V Ind. lite <sup>1</sup>	<b>LSB8A</b>	-
	Silver	Plug-in	0.5 in	24 V LED 1.5 mA max. auto polarity <sup>1</sup>	<b>LSB9A</b>	-
	Silver	Non-plug-in	0.5 in		<b>LSB3K</b>	-
	Silver	Plug-in	0.75 in		-	<b>LSB2B</b>
	Silver	Plug-in	0.5 in		-	<b>LSB6B</b>
	Silver	Plug-in	0.75 in	120 V Ind. lite <sup>1</sup>	-	<b>LSB2R</b>
	Silver	Non-plug-in	0.75 in		-	<b>LSB4L</b>
	Silver	Non-plug-in	0.5 in		-	<b>LSB7L</b>

<sup>1</sup> Use at voltage indicated for light. Wired to NO circuit. Upper temperature limit for lighted units is 93°C [200°F]

<sup>2</sup> Plug-in listings include base receptacle

<sup>3</sup> Completely fluorocarbon sealed switches are preferred for use in temperatures above 93°C [200°F]

<sup>4</sup> Gold-plated contacts

NOTE: Same polarity each pole.

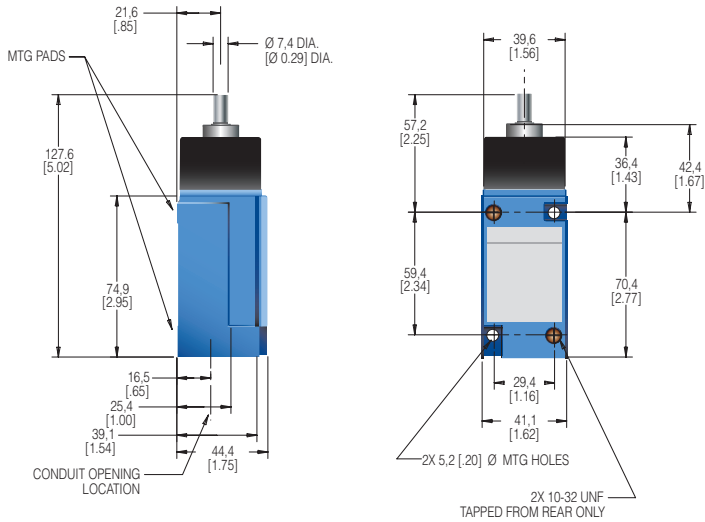
To order a fluorocarbon sealed switch, insert the letters **Y** and **C** into the catalog listing as follows. The LSA1A limit switch is changed to a **LSYAC1A** limit switch.

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 **LSYAB1A** limit switch.

# MICRO SWITCH Heavy-Duty Limit Switch, HDLS Series

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

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



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

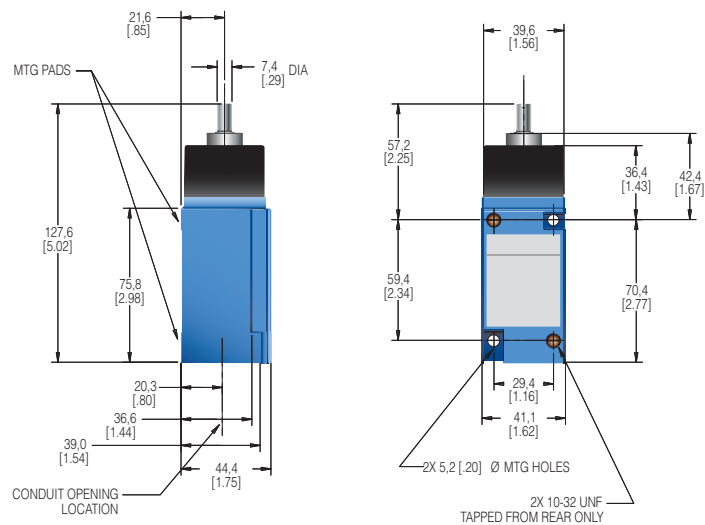
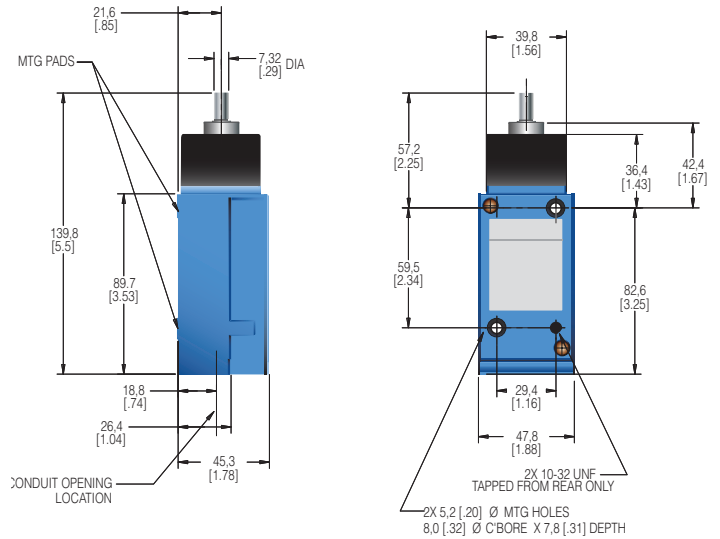
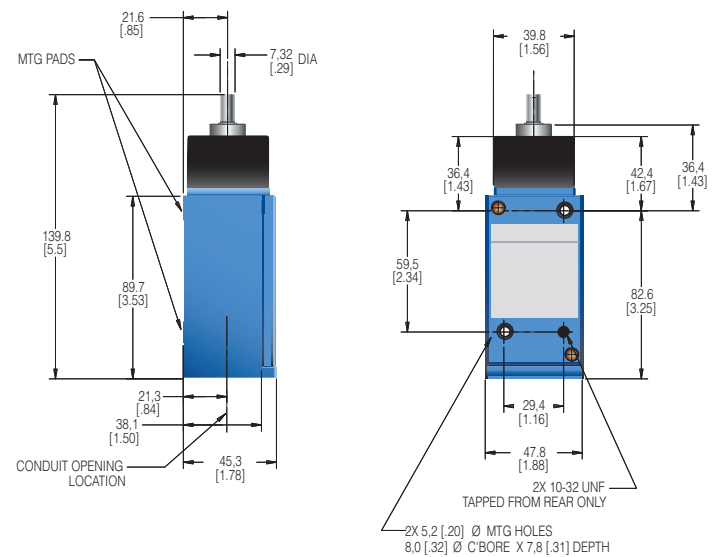


Figure 5. MICRO SWITCH HDLS top rotary (double pole) dimensions

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



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








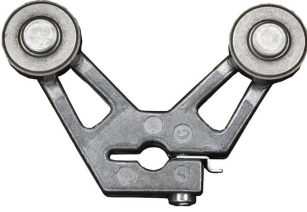






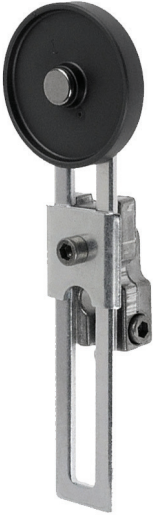









# MICRO SWITCH Heavy-Duty Limit Switch, HDLS Series

**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 actuating mechanism.

							
<b>LSZ51A&amp;C</b> fixed rotary lever, nylon roller, front/ backl	<b>LSZ51B&amp;D</b> fixed rotary lever, steel roller, front/ back	<b>LSZ59A,LSZ59B, LSZ59C,LSZ59D</b> short fixed lever, front/back			<b>LSZ69CA</b> spoke lever - 152 mm [6 in]		
							
<b>LSZ55A,LSZ55B, LSZ55C,LSZ55D</b> offset lever, front/back	<b>LSZ60</b> one-way roller lever	<b>LSZ53A, LSZ53B, LSZ53D</b> yoke lever, nylon and steel rollers, front/back placement		<b>LSZ54R</b> spring wire 305 mm [12 in]	<b>LSZ67AA*</b> Plastic conveyor roller	<b>LSZ68</b> plastic rod w/ spring 305 mm [12 in]	<b>LSZ54N</b> stainless steel rod 330 mm [13 in]
							
<b>LSZ52A, LSZ52B, LSZ52C, LSZ52D</b> adj. lever, nylon/ steel, front/back	<b>LSZ52J</b> adjustable lever, nylon roller Ø 25,4 mm [Ø 1 in]	<b>LSZ52K</b> adjustable lever, nylon roller Ø 38,1 mm [Ø 1.5 in]	<b>LSZ54M</b> aluminum rod Ø 140 mm [Ø 5.5 in]	<b>LSZ61</b> loop 152 mm [6 in]	<b>LSZ67AA*</b> Plastic conveyor roller	<b>LSZ68</b> plastic rod w/ spring 305 mm [12 in]	<b>LSZ54N</b> stainless steel rod 330 mm [13 in]








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

# MICRO SWITCH Heavy-Duty Limit Switch, HDLS Series

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	
<b>Fixed 38,1 mm [1.5 in] radius</b>					
	-	Rollerless	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	
<b>Adjustable 38,1 mm to 89,0 mm [1.5 in to 3.5 in] radius</b>					
	-	Rollerless	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	
<b>Yoke – 38,1 mm [1.5 in] radius</b>					
	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
<b>Rod</b>					
	-	Hub only	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, 305 mm [12 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
	LSZ59T	330 [13] stainless steel	Ø 4,8 [Ø 0.19]	n/a	n/a
<b>Spoke</b>					
	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	
<b>Fixed 38,1 mm [1.5 in] radius</b>					
	-	Rollerless	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	
<b>Short fixed – 33 mm [1.3 in] radius</b>					
	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
<b>38,1 mm [1.5 in] radius one-way roller lever</b>					
	LSZ60A	Nylon	19 [0.75]	6,35 [0.25]	Front
	LSZ60B	Steel	19 [0.75]	6,35 [0.25]	Front
<b>Flexible loop</b>					
	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
<b>Spring rod</b>					
	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
<b>Rubber roller levers</b>					
	LSZ51Y	38,1 mm [1.5 in] radius (std.)	50 [2.0]	12,7 [0.50]	front
	LSZ55Y	38,1 mm [1.5 in] radius (offset)	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)	50 [2.0]	12,7 [0.50]	front
<b>Plastic roller levers</b>					
	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 Heavy-Duty Limit Switch, HDLS Series

## 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

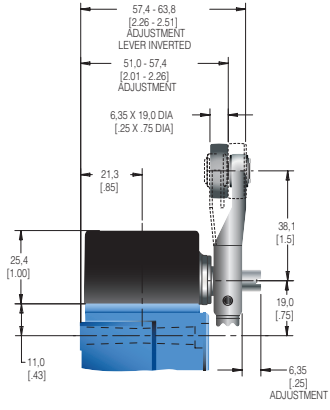


Figure 7. LSZ52 type levers cam tracking

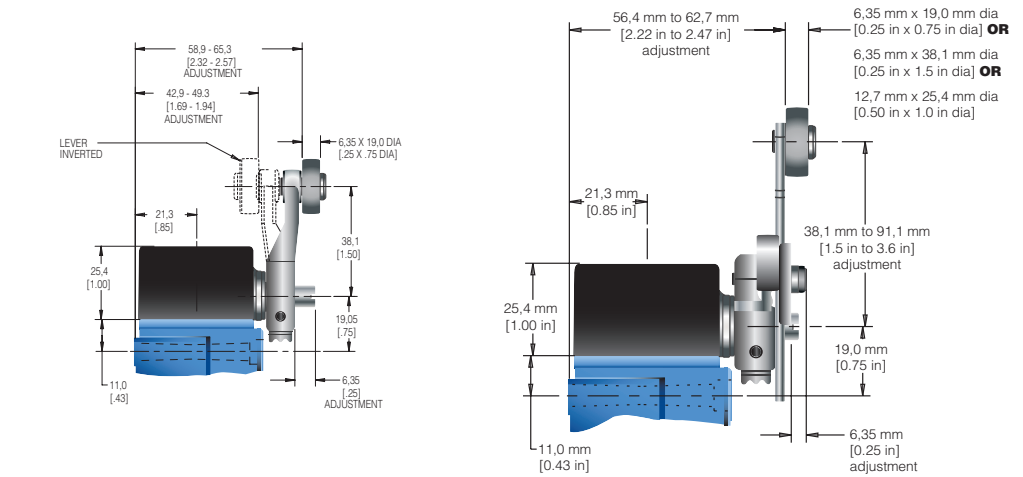


Figure 8. LSZ54 type levers cam tracking

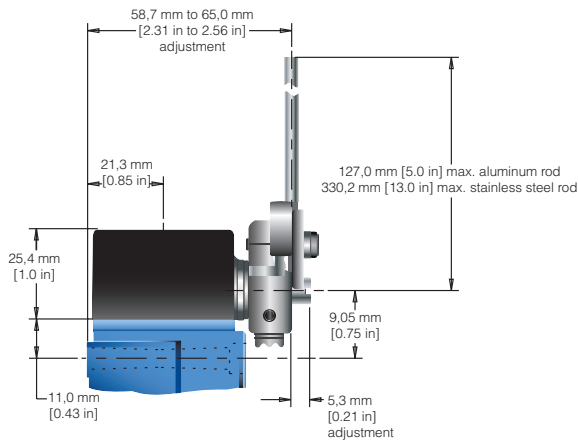
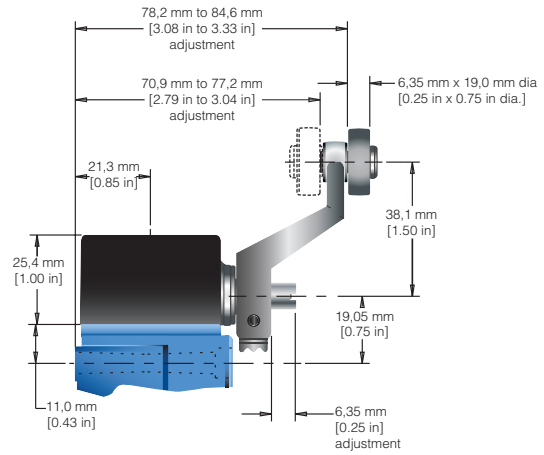


Figure 9. LSZ55 type levers cam tracking



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

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

<sup>1</sup> Use at voltage indicated for light. Wired to NO circuit. Upper temperature limit for lighted units is 93°C [200°F]

<sup>2</sup> Plug-in listings include base receptacle

<sup>3</sup> Completely fluorocarbon sealed switches are preferred for use in temperatures above 93°C [200°F]

<sup>4</sup> Gold-plated contacts

NOTE: Same polarity each pole.

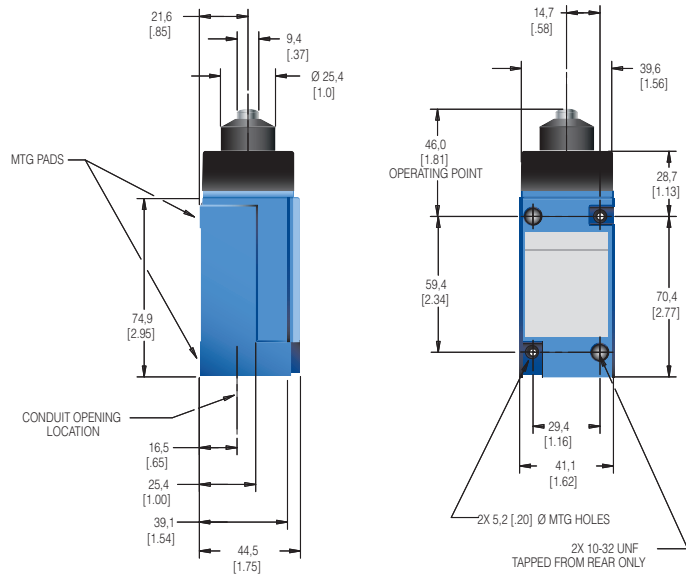
To order a fluorocarbon sealed switch, insert the letters **Y** and **C** into the catalog listing as follows. The LSA1A limit switch is changed to a LSY**AC**1A limit switch.

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 LSY**AB**1A limit switch.

# MICRO SWITCH Heavy-Duty Limit Switch, HDLS Series

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

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



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

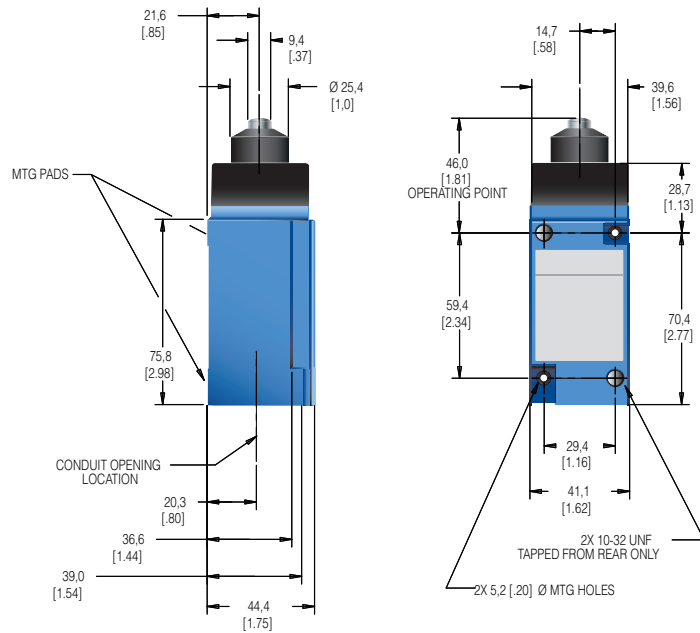
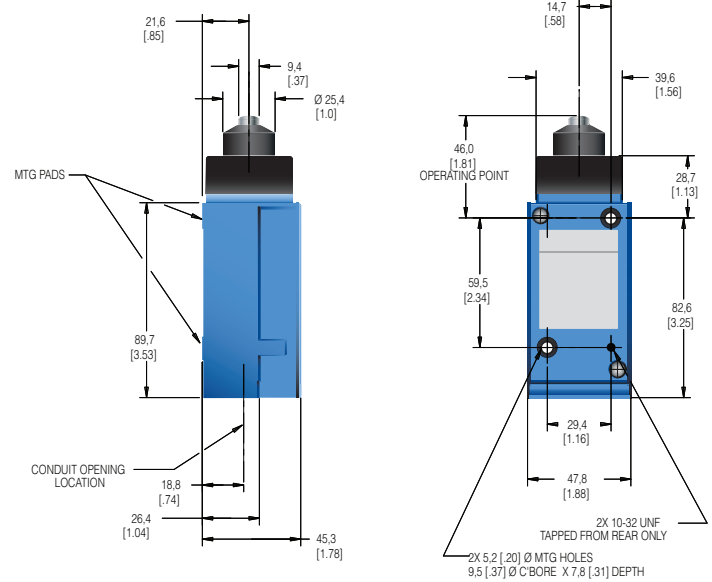
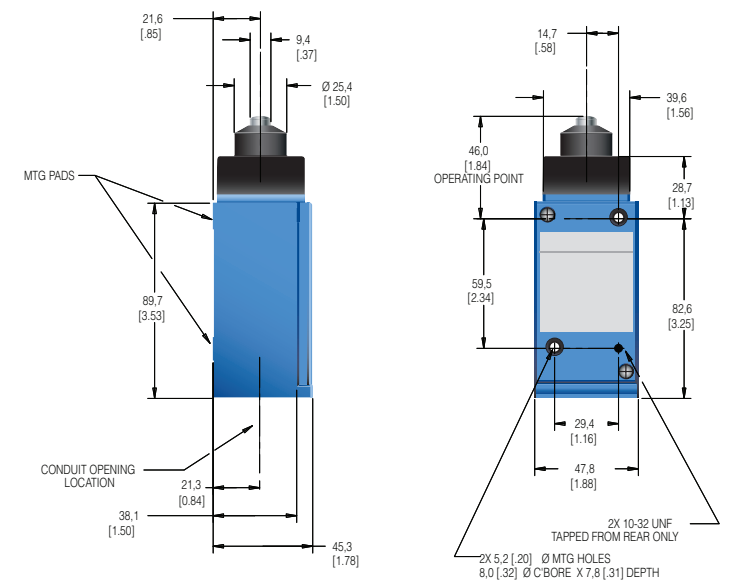


Figure 11. MICRO SWITCH HDLS LSC Series (double pole plunger dimensions)

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



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



# MICRO SWITCH Heavy-Duty Limit Switch, HDLS Series

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

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

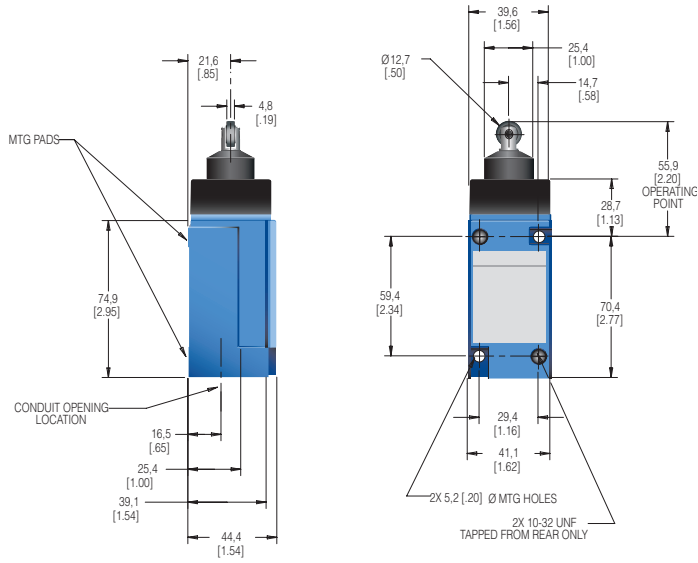
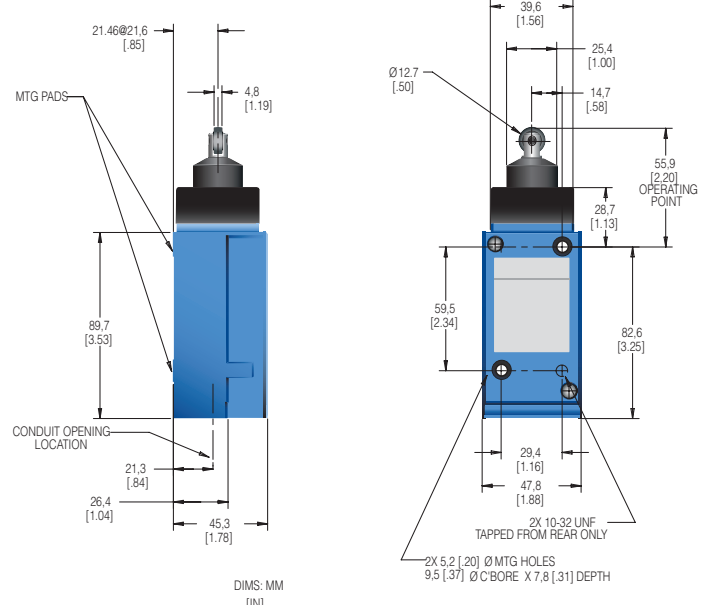


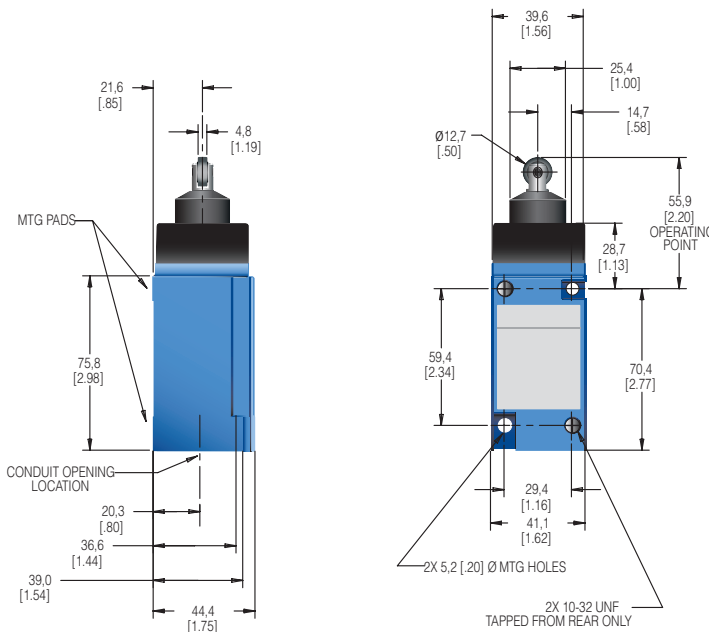
Figure 13. MICRO SWITCH HDLS LSD Series (double pole) top roller plunger dimensions

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

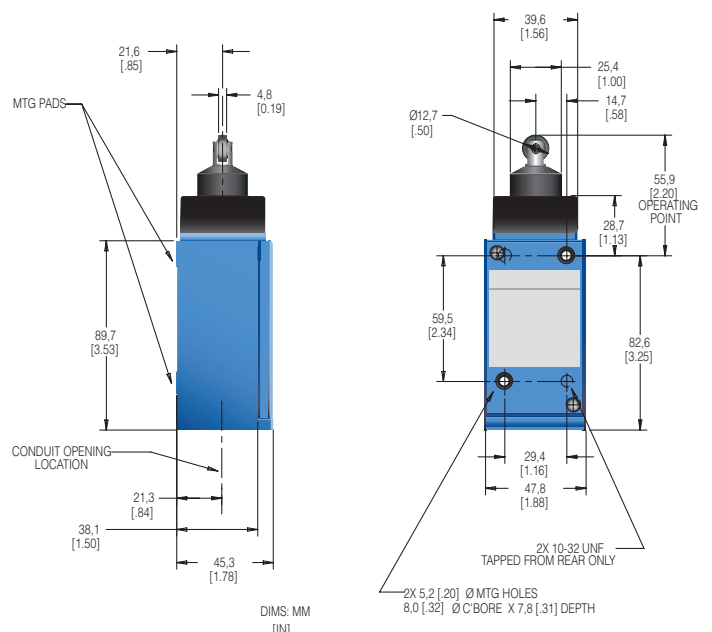


DIMS: MM  
[IN]

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



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

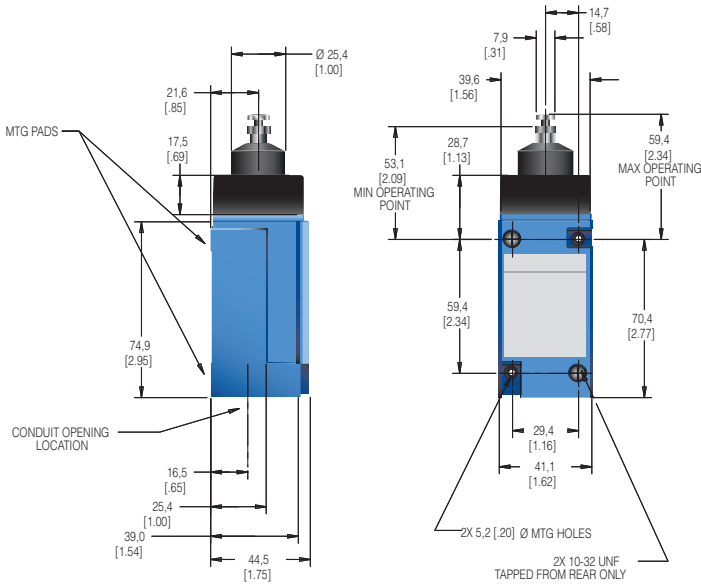


DIMS: MM  
[IN]

# MICRO SWITCH Heavy-Duty Limit Switch, HDLS Series

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

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



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

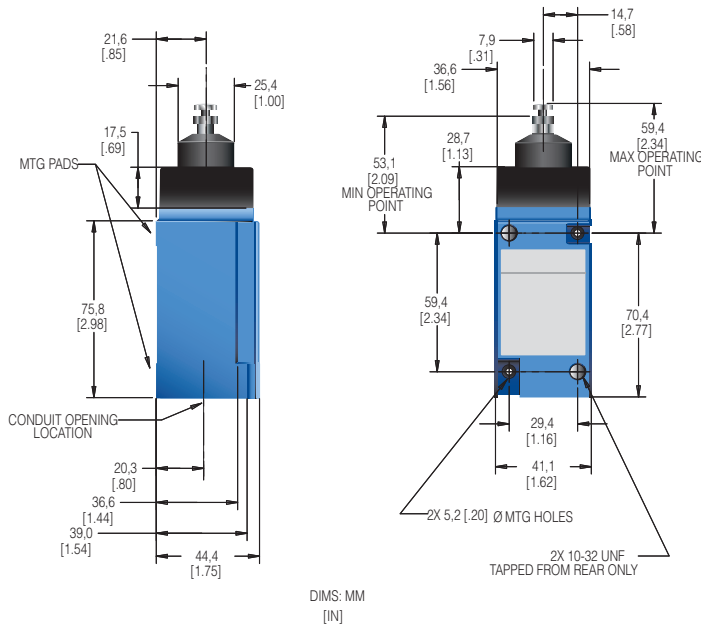
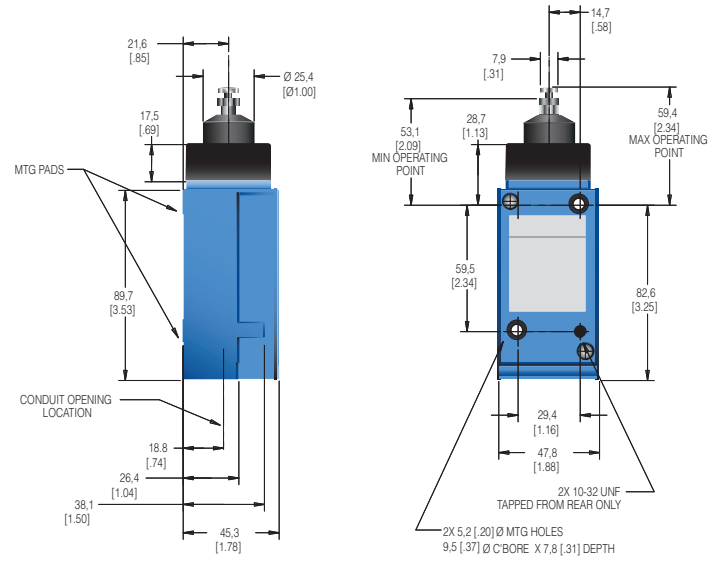
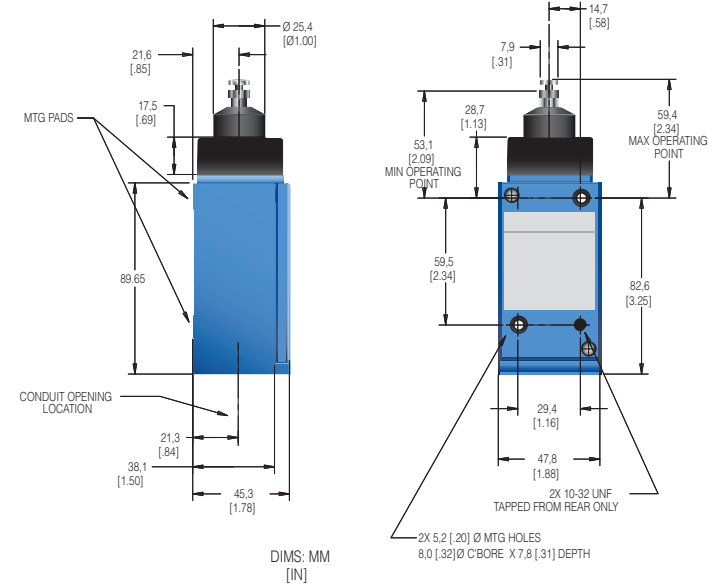


Figure 15. MICRO SWITCH HDLS LSV Series top adjustable plunger (double pole) dimensions

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



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



# MICRO SWITCH Heavy-Duty Limit Switch, HDLS Series

**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)
<b>Description</b>	Side plain plunger (momentary)	Side roller plunger (momentary)	Adjustable side plain plunger (momentary)	Side plain plunger with maintained contact
	<b>Contact closed</b> ■ <b>Contact open</b> □			
<b>Pretravel</b>	2,54 mm [0.10 in]			4,32 mm [0.17 in]
<b>Different. travel</b>	Single pole: 0,64 mm [0.025 in] Double pole: 0,89 mm [0.035 in]			2,29 mm [0.09 in]
<b>Overtravel</b>	4,83 mm [0.19 in]			2,0 mm [0.08 in]
<b>Operating point (nominal)</b>	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]
<b>Operating force</b>	26,7 N [6 lb] max.			44,5 N [10 lb] max.
<b>Op. temp range<sup>3</sup></b>	-12°C to 93°C [10°F to 200°F] (for low temp, high temp, or preloaded versions, see pages 8-9)			-1°C to 93°C [30°F to 200°F] (for low temp, high temp, or preloaded versions, see pages 8-9)

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

<sup>1</sup> Use at voltage indicated for light. Wired to NO circuit. Upper temperature limit for lighted units is 93°C [200°F]

<sup>2</sup> Plug-in listings include base receptacle

<sup>3</sup> Completely fluorocarbon sealed switches are preferred for use in temperatures above 93°C [200°F]

<sup>4</sup> 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 LSYAC1A 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 LSYAB1A limit switch.



# MICRO SWITCH Heavy-Duty Limit Switch, HDLS Series

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

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

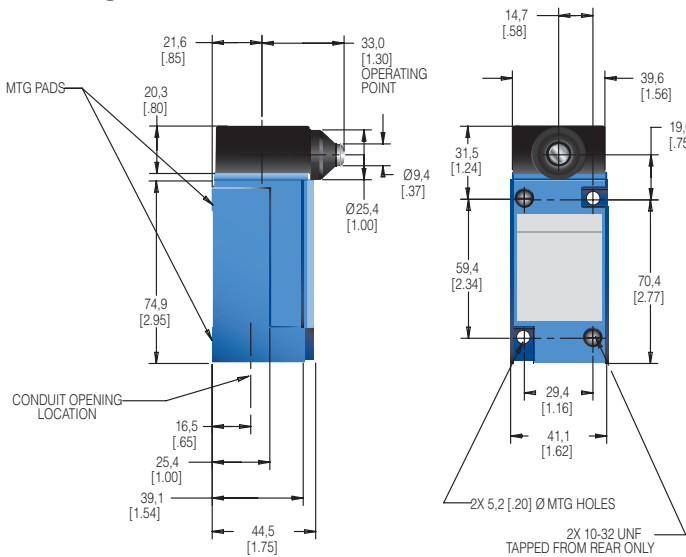
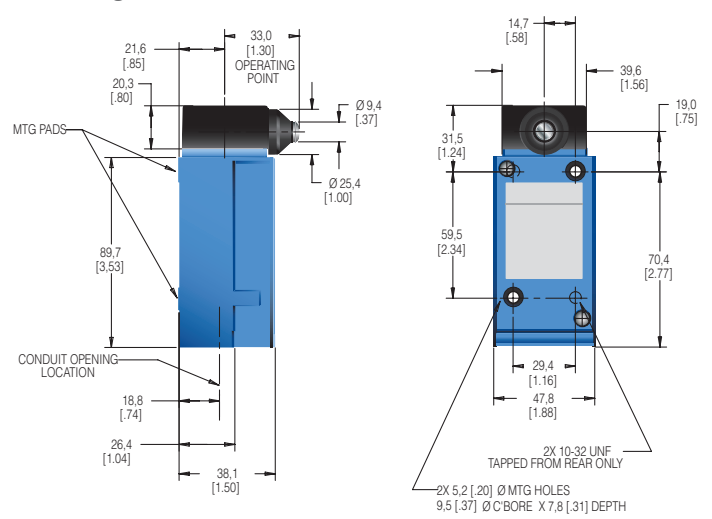
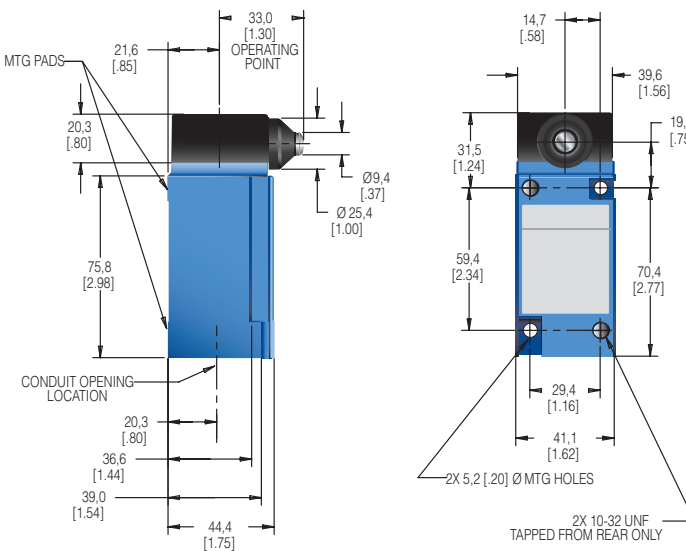


Figure 17. MICRO SWITCH HDLS LSE Series side plain plunger (double pole) dimensions

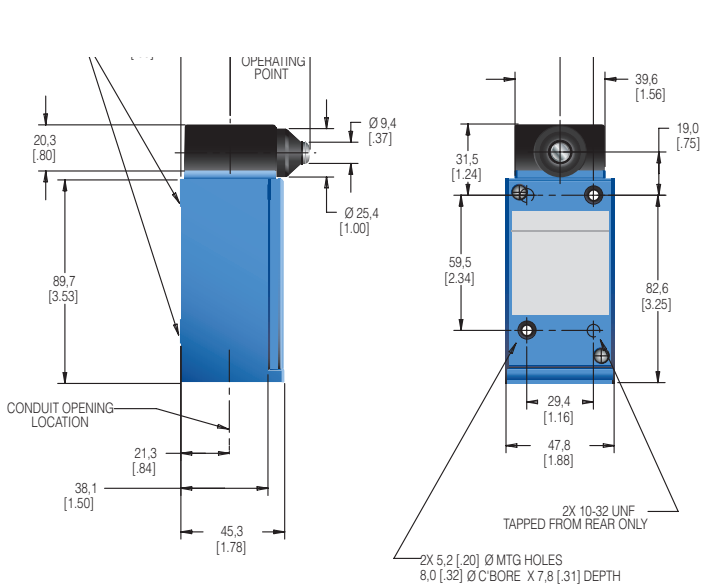
## DPDT Plug-in (mm[in])



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



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



# MICRO SWITCH Heavy-Duty Limit Switch, HDLS Series

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

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

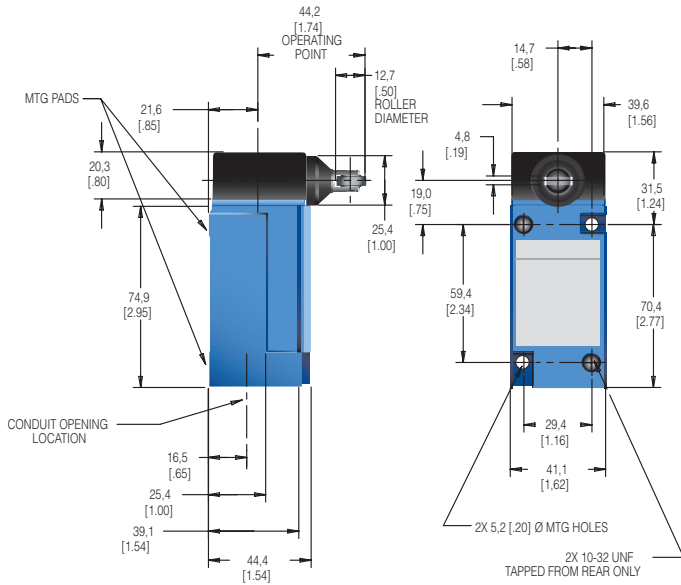
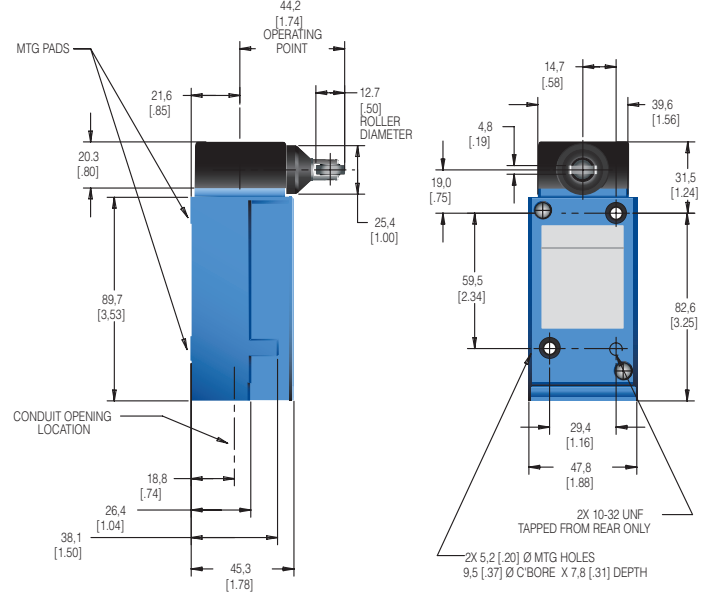
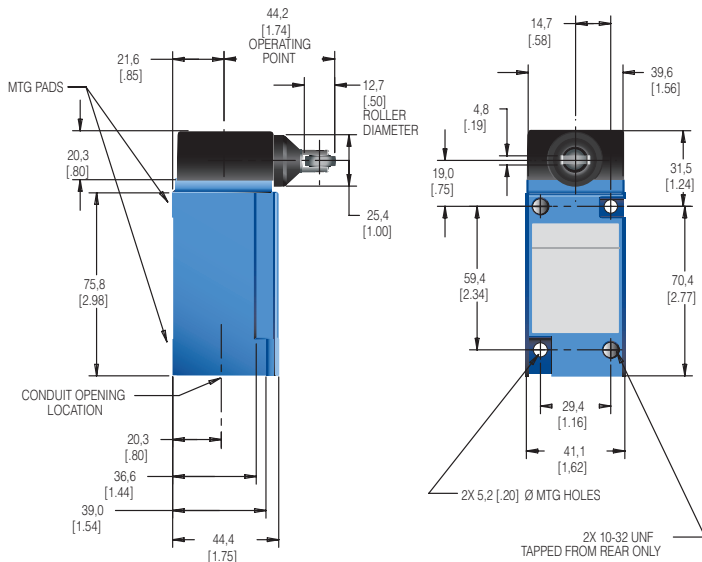


Figure 19. MICRO SWITCH HDLS LSF Series side roller plunger (double pole) dimensions

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



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



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

