MICRO SWITCH™ HDLS Series Heavy-Duty Limit Switches

Honeywell Sensing and Control'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.

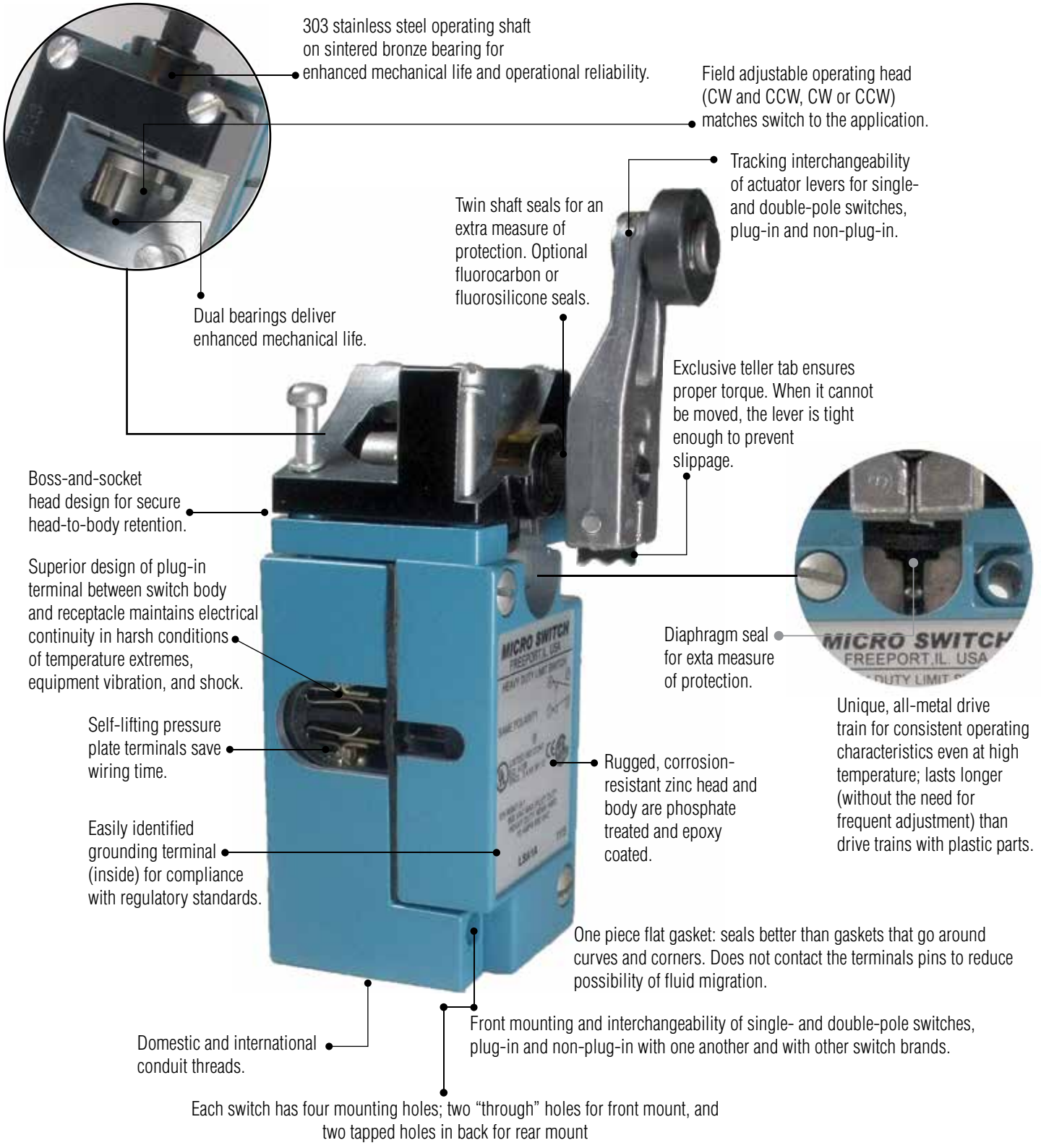
What makes our switches better?

- Industry-leading breadth-of-product offering: HDLS standard, HDLS harsh-duty epoxy sealed, or the HDLS stainless steel
- NEMA 1, 3, 4, 4X, 6, 6P, 12, 13 and IP65/66/67 environmental sealing for demanding applications
- UL, CSA, CE, and CCC approvals for global use
- Sintered bronze bearing on 303 stainless steel operating shaft for enhanced mechanical life (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

RELIABILITY • DURABILITY
MODULAR • GLOBAL

MICRO SWITCH™ Heavy-Duty Limit Switches

Figure 1. MICRO SWITCH™ HDLS SERIES FEATURES AND OPTIONS



HDLS Series

Table 1. Specifications

Characteristic	Parameter		
Product type	MICRO SWITCH™ heavy-duty limit switches		
Acutators	Side plunger - adjustable Side roller plunger Top plunger - adjustable Top rotary Wobble - coil spring	Side plunger - pin Side rotary Top plunger - pin Wobble - cable Wobble - plastic rod	Side plunger maintained - pin Side rotary maintained Top roller plunger Wobble - cat whisker 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 8)		
Housing material	Zinc die-cast with an electrostatic epoxy coating		
Termination types	0.5 in - 14NPT conduit PG 13,5 conduit 4-pin mini-style connector 6 ft cable	0.75 in - 14NPT conduit 20 mm conduit 5-pin mini-style connector Manifold mounting	12 ft cable 4-pin micro-style connector 9-pin mini-style connector
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		
Sealed	Industrial		

MICRO SWITCH™ Heavy-Duty Limit Switches

MICRO SWITCH™ HDLS SERIES NOMENCLATURE

LS – **A** **1A** **1** – (Wobble Actuator)

Switch Type

HDLS Series Heavy-Duty Limit Switch

* 3 or 4 after the "LS" indicates special metric conduit threads:
3 = PG 13,5
4 = 20 mm

Heads

A Side rotary, momentary	**L** Side rotary, sequential
B Top rotary, momentary	**M** Side rotary, center neutral
C Top plunger, plain	**N** Side rotary, maintained
D Top roller plunger	**P** Side rotary, momentary, low pretravel
E Side plunger plain, momentary	**R** Side rotary, momentary, low torque
F Side plunger roller, momentary	**S** Side rotary, gravity return extr. low torque
G Side plunger plain, maintained	**T** Side rotary, momentary, extr. low torque
H Side rotary, momentary, low pretravel & torque	**U** Side rotary, momentary, 5° max. pretravel
J Wobble stick	**V** Top plunger, adjustable
K Cat whisker	**W** Side plunger, momentary, adjustable

Body/Basic Switch Codes

Plug-in Single Pole

1A Standard switch
1E Gold contacts
1G Gold contacts, manifold mount
1H Low force
5A 120 V neon indicator
8A 240 V neon indicator
9A 24 V LED indicator

Non-plug-in Single Pole

3K Standard switch

Plug-in Double Pole

2B Standard switch
2C Sequential
2D Center neutral
2R 120 V neon indicator
2S Standard switch golf contacts
2T Sequential, gold contacts
2U Center neutral, gold contacts
6B Standard switch, 1/2 in conduit
6C Sequential, 1/2 in conduit
6D Center neutral, 1/2 in conduit
6R 120 V neon indicator, 1/2 in conduit
6S Stnd. switch, gold contacts, 1/2 in conduit
6T Sequential, gold contacts, 1/2 in conduit
6U Center neutral, gold contacts, 1/2 in conduit

Non-plug-in Double Pole

4L Standard switch
4M Sequential
4N Center neutral
4S Standard switch golf contacts
4T Sequential, gold contacts
4U Center neutral, gold contacts
7L Standard switch, 1/2 in conduit
7M Sequential, 1/2 in conduit
7N Center neutral, 1/2 in conduit
7S Stnd. switch, gold contacts, 1/2 in conduit
7T Sequential, gold contacts, 1/2 in conduit
7U Center neutral, gold contacts, 1/2 in conduit

Modification Codes

A 4-pin mini-style	**PA** 5-conductor STOOW-A cable, 8 ft	**1** Clockwise head rotation
B 5-pin mini-style	**XA** 9-conductor STOOW-A cable, 8 ft	**2** Counterclockwise head rotation
C 5-conductor STOW-A cable, 6 ft	**PB** 5-conductor STOOW-A cable, 30 ft	**3** Head assembled with actuator to right side
E 4-conductor SJTOW-A cable, 6 ft		**4** Head assembled with actuator to left side
J 8-pin mini-style		**5** Head assembled with actuator to mounting surface
M 9-conductor STOOW-A cable, 6 ft		**6** Roller perpendicular to mounting surface
P 5-conductor STOOW-A cable, 12 ft		**7** Indicator light wired to normally closed circuit
R 9-pin mini-style		**8** Roller on side plunger in vertical position
S 5-pin micro-style		
X 9-conductor STOOW-A cable, 12 ft		
BB 3-foot mini-style pigtail, single pole		
DD 4-pin micro-style with jumper		

Wobble Actuator

7A Wobble, plastic
7M Wobble, wire
7N Wobble, cable
8A Cat whisker, 5.5 in steel
8B Cat whisker, 7.5 in steel
8C Coil spring, 5.5 in
8D Cat whisker, plastic

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

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 counter-clockwise 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.

MICRO 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..)

MICRO SWITCH™ 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 Switches

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

LSR - Low operating torque: 60° minimum overtravel, 15° maximum pretravel, 0.19 Nm [1.7 in lb] maximum operating torque. 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: 68° minimum overtravel, 7° maximum pretravel, 3° (single pole) and 4° (double pole) maximum differential travel. Operating temperature range from -12 °C to 121 °C [10 °F to 250 °F].*

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

LSU - Low pretravel: 5° max. pretravel, 70° min. overtravel, and a second step of 18° max. Operating temperature range from -12 °C to 121 °C [10 °F to 250 °F].*

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

LSM - Center neutral: 53° minimum overtravel. One set of contacts operates on the clockwise rotation, and another set on the counterclockwise rotation. 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 and full travel 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 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. Heads may be positioned with shaft on any side. All are momentary action except maintained head.

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. Oil-tight seals on plunger and between the operating 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. 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 Switches

SPECIAL OPTIONS

HIGH TEMPERATURE/CHEMICAL RESISTANT SWITCHES

Completely fluorocarbon (FC)-sealed switches have a full FC body gasket coving the switch cavity. Rotary types have an extra FC seal on the operating shaft, while plunger versions have FC boot seals. They are for use in many applications where the environment includes fire-resistant synthetic fluids. In addition to most all fluids, the FC-sealed switches may be used with such industrial fluids such as Cellulube, Fyrquell, Houghto-Safe, Pydraul, and other special cutting and hydraulic fluids. The additional FC seals also promote longer operating life for rotary-actuated HDLS switches in applications where the temperatures are normally -12 °C to 121 °C [10 °F to 250 °F]. If pre-wired with cable, then temperature limits are 105 °C [221 °F] dry and 60 °C [140 °F] wet.

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

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

LOW TEMPERATURE SWITCHES

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

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

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

CONDUIT OPENINGS

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

LS3 PG13,5

LS4 20 mm

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

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 - 5º Low Pretravel	X			X	X			X	X		X
LSV - Top Adjustable Plunger	X		X		X		X		X		X
LSW - Side Adjustable Plunger	X		X		X		X		X		X

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

FACTORY SEALED PRE-WIRED LIMIT SWITCHES

Features

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

How to order:

To order factory sealed switches, add the modification codes shown below to the standard HDLS listings:

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

Examples:

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

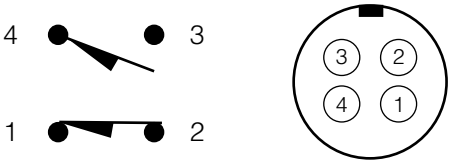
LSJ2B**M**-7N = LSJ2B-7N with 6 feet of 9-conductor STOOW-A cable

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

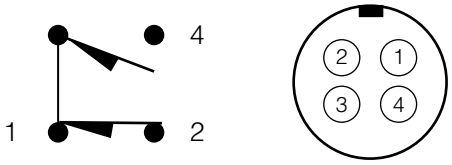
LSA1A**DD** = LSA1A with a 4-pin micro-style connector

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

WIRING DIAGRAM (STYLE A)



WIRING DIAGRAM (STYLE DD)

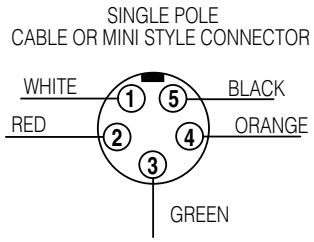


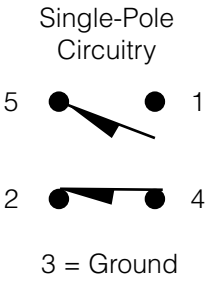
Pin 3 not connected

WIRING DIAGRAMS (STYLES B&G)

Connectors = Numbers (mini-style)

Cables = Colors



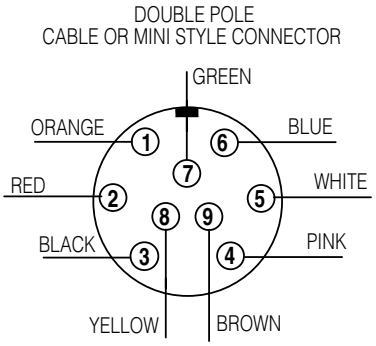


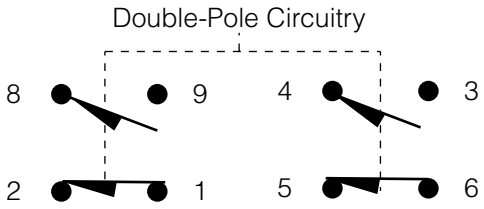
3 = Ground

Electrical Ratings:
Connector Versions

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

WIRING DIAGRAMS (STYLES M&R)

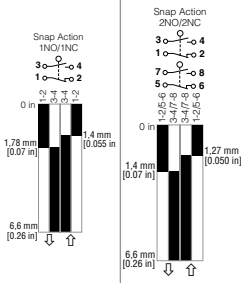
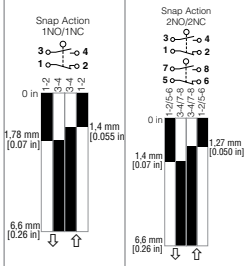
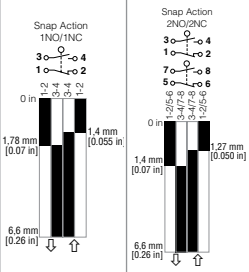


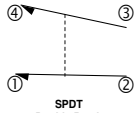
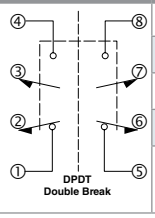


7 = Ground

TOP PLUNGERS • MICRO SWITCH™ HDLS SERIES ORDER GUIDE/RECOMMENDED LISTINGS

All top plungers are momentary action.

	Plain (LSC)		Roller (LSD)		Adjustable (LSV)	
						
Description	Top plain plunger for in-line operating motion		Roller plunger can be rotated at 90° increments		Adjustable top plain plunger	
	SPDT	**DPDT**	**SPDT**	**DPDT**	**SPDT**	**DPDT**
Contact closed ■ Contact open □						
Pretravel	1,78 mm [0.07 in]					
Different. travel	0,38 mm [0.015 in]	0,51 mm [0.02 in]	0,38 mm [0.015 in]	0,51 mm [0.02 in]	0,38 mm [0.015 in]	0,51 mm [0.02 in]
Overtravel	4,83 mm [0.19 in]					
Operating point (nom.)	45,8 mm [1.805 in]		55,9 mm [2.20 in]		53 mm to 59 mm [2.08 in to 2.34 in]	
Operating force	17,8 N [4 lb] max.					
Op. temp range[3]	-12 °C to 93 °C [10 °F to 200 °F] (for low temp, high temp, or preleaded versions, see page 11-12)					

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

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

NOTE: Same polarity each pole.

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