

Limit and Enclosed Switches

Weather-Sealed Explosion-Proof Switches



LSX switches are for use either indoors or outdoors in hazardous atmospheres as they are a completely sealed explosion-proof device. Mounting hole location and tracking is same as the long established MICRO SWITCH ML-E1 explosion-proof switch.

An optional mounting plate provides the same tracking and mounting as the standard HDLS. The majority of HDLS operating heads and circuitry options are available on the LSX.

Standard HDLS levers are used, but because of explosion-proof requirements, only nylon rollers or other non-sparking material can be selected. Plunger and cat whisker types listed in the LSX order guide are of non-sparking material.

SEALS

Application proven HDLS head seals are retained to seal the top of the LSX. The circular cover on the front is easily unscrewed to expose the switching elements for wiring or replacement. A screwdriver or bar used on the wrenching lugs extending from the front of the cover allows easy removal or tightening. An O-ring seal is located between the housing and cover.

The LSX withstands pressure of an internal explosion and cools the exploding gases below the kindling temperature of the explosive atmosphere. Flame paths are provided by the cover-housing threads and an extended plunger between the switch cavity and head.

FEATURES

- Sealing - applicable portions of NEMA 1, 3, 4, 6, 7, 9, and 13.
- Tracking interchangeability with MICRO SWITCH ML-E1 and HDLS.
- Variety of heads and non-sparking actuators.
- Field adjustability matches switch to application.
- Momentary, maintained, random sequence, or center neutral action.
- 10 amps continuous carry electrical rating.
- Choice of silver or gold contacts.
- ½ or ¾ inch conduit opening.
- UL Listed, file #E61730
- CSA Certified, file #LR57327
- Internal grounding screw.

NEMA standards: 1, 3, 4, 6, 7, 9 and 13. UL listed and CSA certified: Class I, Div. 1, Groups B, C and D. Class II, Div. 1, Groups E, F and G.

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LSX Series

HOW TO ORDER

The order guide shows the option codes which are added to the LSX prefix to specify the operating head, body and circuitry, assembly modifications (if desired) and actuator type.

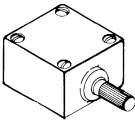
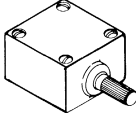
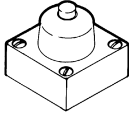
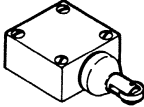

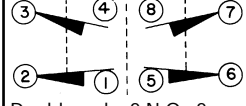
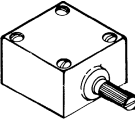
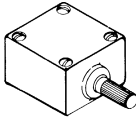
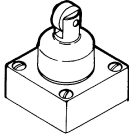
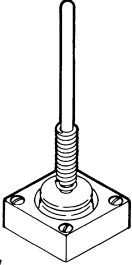
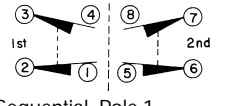
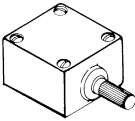
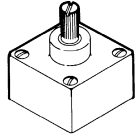
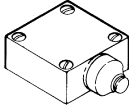
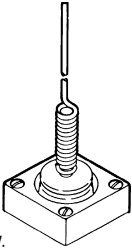
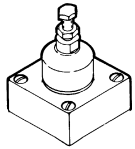
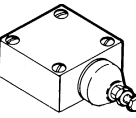
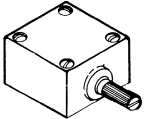
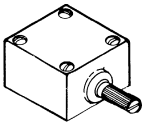
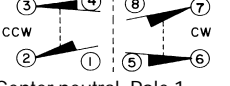
The example given below is LSXA3K-1A. This is an explosion-proof LSX switch with the standard side rotary momentary-action head (A), single-pole circuitry and 1/2 in. conduit opening (3K). Since no modification codes are listed, it is adjusted for both clockwise (CW) and counterclockwise (CCW)

operation, with the actuator shaft facing the front (label side) of the switch. The actuator (-1A) is in a 1.5 in. lever with a .75 in. nylon roller on the open side. There are list price adders for double-pole circuitry and the actuators. (Levers may also be ordered separately by specifying the LSX listings shown in the actuator code description.)

ORDER GUIDE

LSX standard weather-sealed explosion-proof switch.

Typical Catalog Listing: **LSX**

A				3K				
Head Code				Body and Contacts Circuitry Code				
A*  Side rotary. Momentary.	H  Side rotary. Low differential travel and low torque. Momentary.	C  Top plunger. Momentary.	F*  Side roller plunger. Momentary.	3K Silver 3E Gold plated MOMENTARY  Single-pole, 1 N.O., 1 N.C., 1/2 in. conduit.†	4K 3/4 in. conduit†	4L Silver 4S Gold plated MOMENTARY  Double-pole, 2 N.O., 2 N.C., 3/4 in. conduit.†	7L Silver 1/2 in. conduit† 7S Gold plated	3N SPNC Direct Acting
P  Side rotary. Low differential travel. Momentary.	N*  Side rotary. Maintained contact.	D  Top roller plunger. Momentary.	J  Wobble stick. Momentary.	4M Silver 4T Gold plated SEQUENCE  Sequential. Pole 1 operates before Pole 2 (CW, CCW or both). 3/4 in. conduit.†	7T Gold plated 1/2 in. conduit.			
R*  Side rotary. Low torque. Momentary.	B*  Top rotary. Momentary.	E*  Side plunger. Momentary.	K  Cat whisker. Momentary.					
V  Adjustable top plunger. Momentary.	W*  Adjustable side plunger. Momentary.			L  Side rotary. Sequence operation.			Only	
				M  Side rotary. Center neutral.			Only	
				4N Silver 4U Gold plated CENTER NEUTRAL  Center neutral. Pole 1 operates CCW, Pole 2 operates CW. 3/4 in. conduit.†			7U Gold contacts 1/2 in. conduit	

* Available with a Single Pole N.C. Direct Acting contact. Electrical Rating D. To order, use 3N for body and circuitry code.

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LSX Series

ELECTRICAL RATINGS

Same as HDLS, see page A34.

OPERATING CHARACTERISTICS

See next page.

TEMPERATURE RATINGS

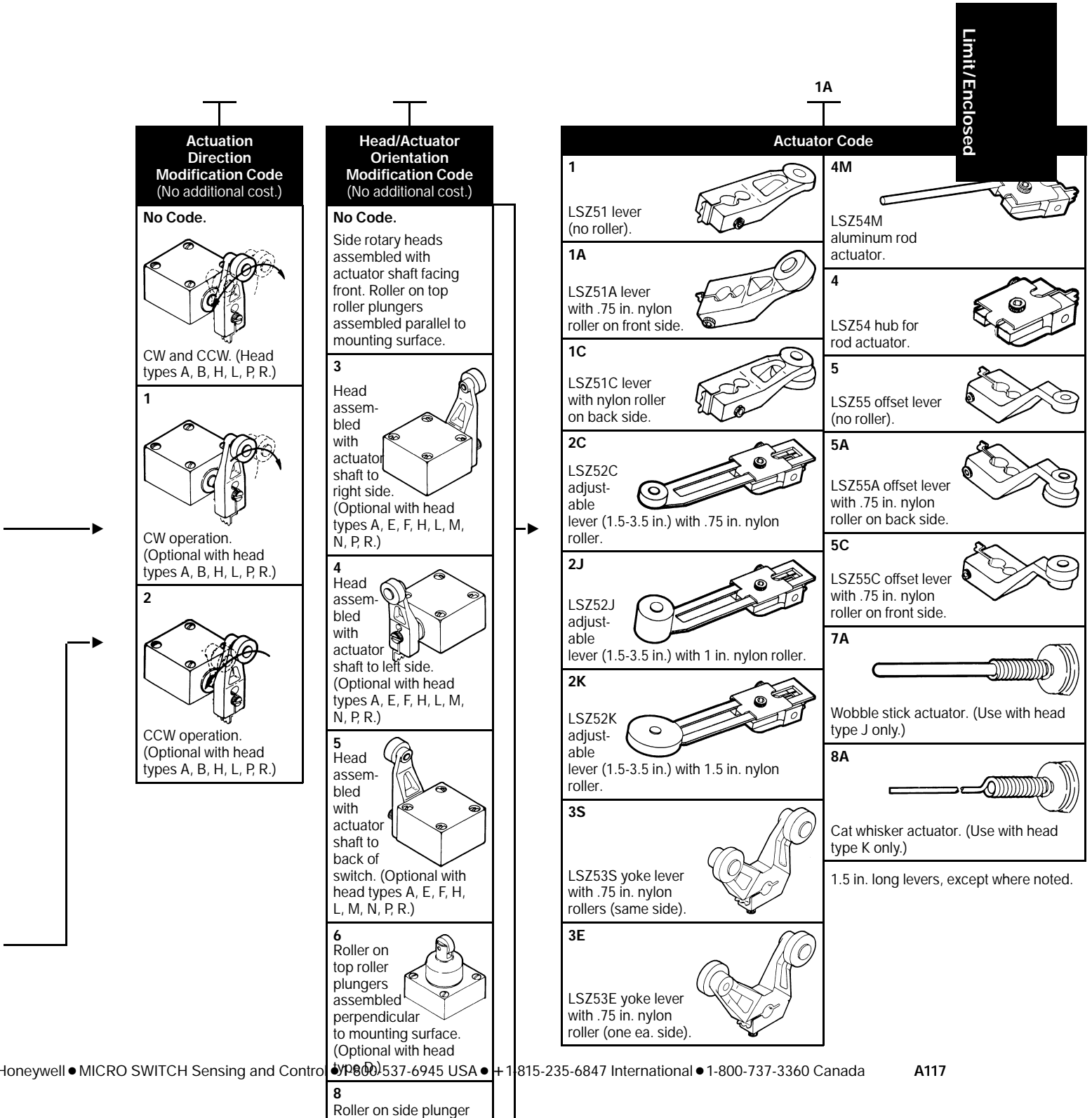
Same as HDLS, see page A56.

ENVIRONMENTAL SEAL PERFORMANCE

Same as HDLS, see page A56.

LOW TEMPERATURE and HIGH TEMPERATURE SEALED

See next page.



Limit/Enclosed

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OPERATING CHARACTERISTICS

Rotary actuated switches

	Side Rotary												Top Rotary Momentary
	Momentary								Maintained		Sequence	Center Neutral	
	LSXA Standard		LSXP Low Diff. Travel		LSXR Low Torque		LSXH Low Diff. Low Torque		LSXN		LSXL (Double Pole Only)	LSXM (Double Pole Only)	
Pretravel max.	15°		9°		15°		9°		65°		1st step 15° 2nd step 10° additional	18°	25°
Overtravel min.	60°		66°		60°		66°		20°		48°	57°	100°
Differential Travel max.	SPDT 5°	DPDT 7°	SPDT 3°	DPDT 4°	SPDT 5°	DPDT 7°	SPDT 3°	DPDT 4°	SPDT 30°	DPDT 35°	5°	10°	SPDT 10° DPDT 12°
Operating Torque max.	0,45 Nm 4 in. lbs.		0,45 Nm 4 in. lbs.		0,19 1.7 in. lbs.		0,19 Nm 1.7 in. lbs.		0,45 Nm 4 in. lbs.		0,45 Nm 4 in. lbs.	0,45 Nm 4 in. lbs.	0,28 Nm 2.5 in. lbs.
Operating Temp. Range	10 to 250°F -12 to 121°C				30 to 250°F -1 to 121°C				10 to 250°F -12 to 121°C		30 to 250°F -1 to 121°C		

Nm = Newton meters

Plunger actuated switches

	Momentary							
	LSXC Top Plunger		LSXD Top Roller Plunger		LSXE Side Plunger		LSXF Side Roller Plunger	
Pretravel max.	1,78mm .070 in.		1,78mm .070 in.		2,54mm .100 in.		2,54mm .100 in.	
Differential Travel max.	SPDT 0,38mm .015 in.	DPDT 0,51mm .020 in.	SPDT 0,38mm .015 in.	DPDT 0,51mm .020 in.	1,14mm .045 in.		1,14mm .045 in.	
Overtravel min.	4,83mm .190 in.		4,83mm .190 in.		4,83mm .190 in.		4,83mm .190 in.	
Operating Force max.	17,8 N 4 lbs.		17,8 N 4 lbs.		26,7 N 6 lbs.		26,7 N 6 lbs.	
Operating Point	58,5 ± 0,76mm 2.305 ± .030 in.		68,6 ± 1mm 2.700 ± .040 in.		33,0 ± 0,76mm 1.300 ± .030 in.		44,1 ± 1mm 1.735 ± .040 in.	
Operating Temperature Range	-12 to 93°C 10 to 200°F							

Wobble Actuated Switches

	Momentary	
	LSXJ Delrin Rod	LSXK Cat Whisker (Wire)
Pretravel max.	Radius approx. 25,4mm 1.0 in.	
Operating Force max.	2,78 N 10 oz.	1,39 N 5.0 oz.
Operating Temperature Range	-12 to 93°C 10 to 200°F	

N = Newtons

COMPLETELY FLUOROCARBON-SEALED AND LOW TEMPERATURE SWITCHES

Completely fluorocarbon-sealed and low temperature construction LSX switches are available. See page A42 for a full description of both of these options.

How to order

For **fluorocarbon-sealed** switches, insert the additional letters Y and C in the appropriate places in the standard catalog listing; for **low temperature** versions insert the additional letters Y and B. Examples follow:

- LSXA3K—standard side rotary switch
- LSXYAC3K—completely fluorocarbon-sealed version of the LSXA3K
- LSXA3K—standard side rotary switch
- LSXYAB3K—low temperature version of the LSXA3K

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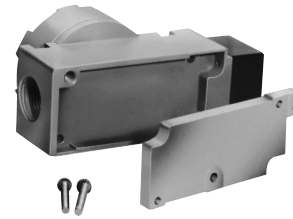
Weather-Sealed Explosion-Proof Switches

REPLACEMENT PARTS

Operating Heads

Switch Type	Catalog Listing Operating Head Only
LSXA/BXA	LSZ1A
LSXB/BXB	LSZ1B
LSXC/BXC	LSXZ1C
LSXD/BXD	LSXZ1D
LSXE/BXE	LSXZ1E
LSXF/BXF	LSXZ1F
LSXH/BXH	LSZ1H
LSXJ/BXJ	LSZ1JGA
LSXK/BXK	LSXZ1KHA
LSXL/BXL	LSZ1L
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LSXN/BXN	LSZ1N
LSXP/BXP	LSZ1P
LSXR/BXR	LSZ1R

ADAPTER PLATE



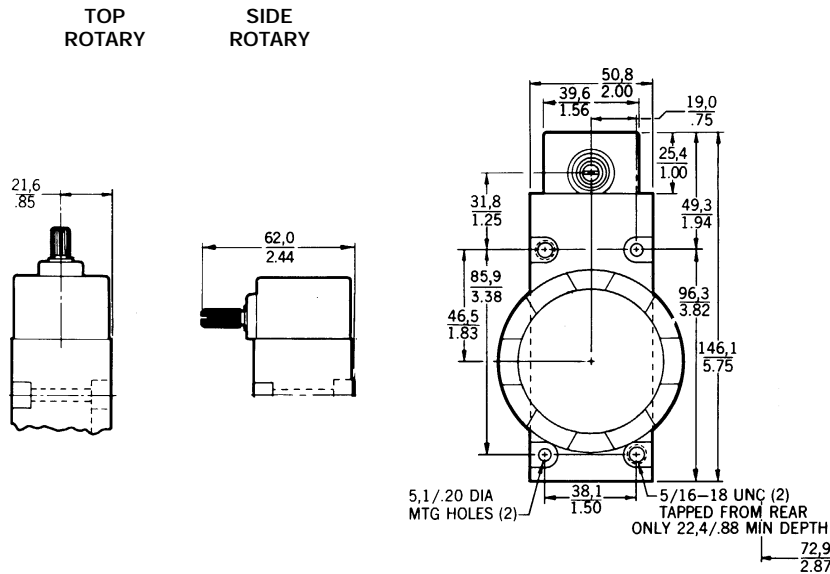
Catalog Listing **LSXZ4022** adapter plate enables the explosion-proof LSX to be mounted on existing HDLS mounting holes. The LSX has a recessed back into which the adapter plate fits and mounts, using two screws (furnished).

Limit/Enclosed

Contact Blocks

Circuitry	Contact Block
Single Pole	LSXZ3K
Double Pole	LSXZ3L
Sequence or Center Neutral	LSXZ3M

MOUNTING DIMENSIONS (for reference only)



Conduit Openings

(LSXA3, LSXB3, LSXH3, LSXN3, LSXP3 and LSXR3 have 1/2-14 NPT.
 LSXA4, LSXB4, LSXH4, LSXLR, LSXM4, LSXN4, LSXP4, and LSXR4 have 3/4-14 NPT.

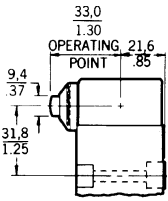
Limit and Enclosed Switches

Weather-Sealed Explosion-Proof Switches

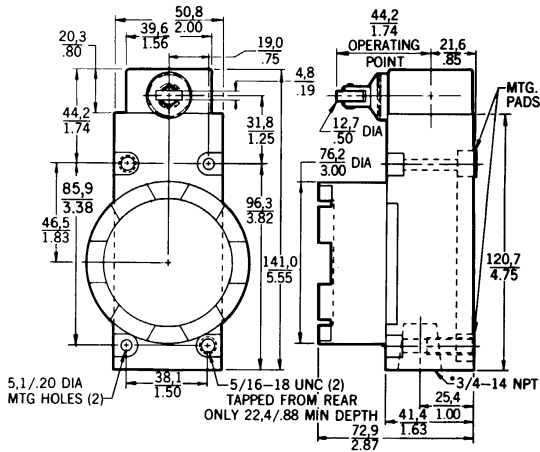
LSX Series

MOUNTING DIMENSIONS (for reference only)

TOP PLUNGER

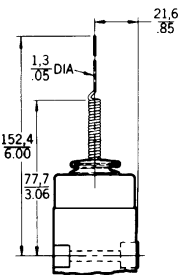


TOP ROLLER PLUNGER

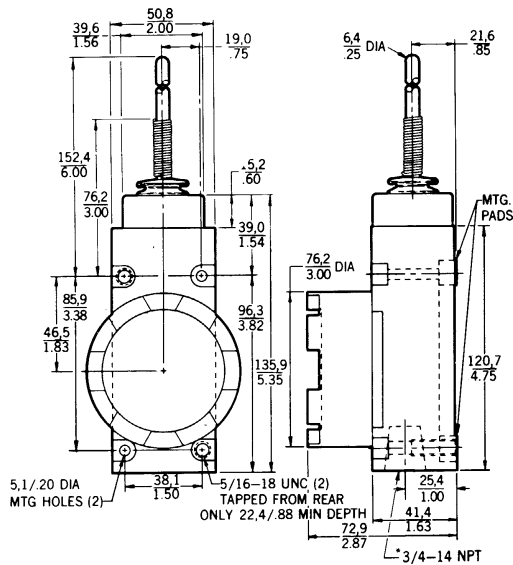


Conduit Openings
(LSXJ3, and LSXK3 have 1/2-14 NPT.)
(LSXJ4 and LSXK4 have 3/4-14 NPT.)

CAT WHISKER

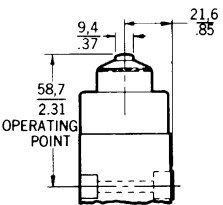


WOBBLE STICK

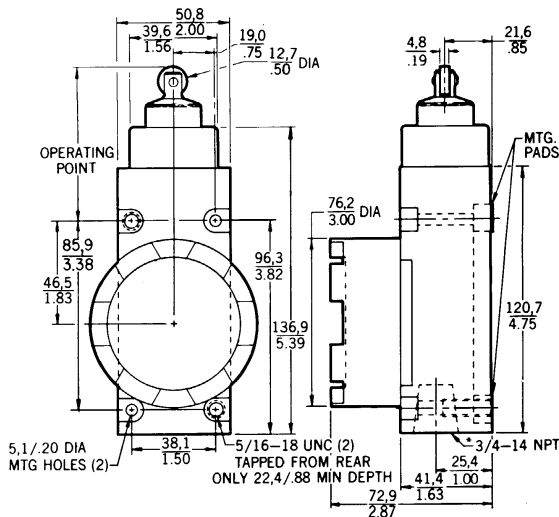


Conduit Openings
(LSXE3 and LSXF3 have 1/2-14 NPT.)
(LSXE4 and LSXF4 have 3/4-14 NPT.)

TOP PLUNGER



TOP ROLLER PLUNGER



Conduit Openings
(LSXC3 and LSXD3 have 1/2-14 NPT.)
(LSXC4 and LSXD4 have 3/4-14 NPT.)

Key: 0,0 = mm
0.00 = inches