

Hazardous Location Limit Switches



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Hazardous Location Limit Switches

Product Description

Type LX, CX and CBX limit switches by Eaton’s electrical sector are designed for extreme environmental service in NEMA 7–9 locations where the danger of an internal or external explosion of flammable gases, vapors, metal alloy or grain dust exists. Type CB provides excellent corrosion resistant properties in NEMA 4X applications. Markets served include mining, grain storage, forest products, petrochemical, pharmaceutical and waste and sewage management.

Features

- Sealed and unsealed versions available
- One-way gasket on sealed version keeps liquids out, yet allows a harmless release of gases in the event of an internal explosion
- Silicon bronze housing provides excellent corrosion resistant properties in extreme NEMA 4X applications
- Temperature buildup on limit switch surface is dissipated by housing design and materials used
- Utilizes the operating heads and internal switch mechanisms of the 10316 L non plug-in line

Standards and Certifications

- UL Listed, E170645, E183975
- UL tested to Canadian safety standards



⚠ DANGER

THIS SENSOR IS NOT A SAFETY DEVICE AND IS NOT INTENDED TO BE USED AS A SAFETY DEVICE. This sensor is designed only to detect and read certain data in an electronic manner and perform no use apart from that, specifically no safety-related use. This sensor product does not include self-checking redundant circuitry, and the failure of this sensor product could cause either an energized or de-energized output condition, which could result in death, serious bodily injury, or property damage.

NEMA Ratings Comparison

Switch Type	LX	CX	CBX	CB ①
NEMA 1, 4, 13	—	✓	✓	✓
NEMA 4X	—	—	✓	✓
NEMA 7 Division I, Class I, BCD	✓	✓	✓	—
NEMA 9 Division I, Class II, EFG	✓	✓	✓	—

Note

① Not rated for explosive locations.

For the most current information on this product, visit our Web site: www.eaton.com

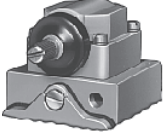
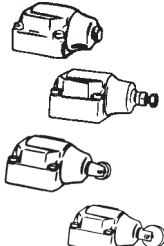
For Customer Service in the U.S. call 1-877-ETN CARE (386-2273), in Canada call 1-800-268-3578. For Application Assistance in the U.S. and Canada call 1-800-426-9184.

Product Selection

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Complete Assembled Switches with Spring Return Heads ^①

Operating Data—Nominal

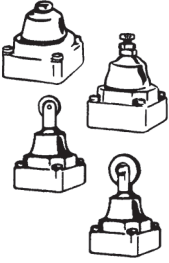
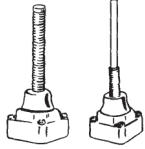
Head Type	Travel to Operate Contacts	Travel to Reset Contacts	Total Travel	Force to Operate Contacts	Minimum Return Force	Body Type	Contacts	Catalog Number	
Side Rotary Operated ^② 	Standard, 10° Pre-Travel ^③								
	10°	4°	50°	3.0 in-lbs	4.5 in-oz	Type LX	1NO-1NC ^④	10316H1002	
							2NO	10316H1039	
							1NO and 1NC ^④	10316H1049	
							2NC	10316H1059	
						Type CX	1NO-1NC ^④	10316H2200	
							1NO and 1NC ^④	10316H2176	
							2NC	10316H2178	
						Type CB	1NO-1NC ^④	10316H2149	
							2NC	10316H2140	
						Type CBX	1NO-1NC ^④	10316H2168	
							2NC	10316H2159	
		Narrow Differential 5° Pre-Travel ^③							
	5°	2°	50°	6.0 in-lbs	4.5 in-oz	Type LX	1NO-1NC ^④	10316H1146	
						Type CX	1NO-1NC ^④	10316H2197	
	Neutral Position, 18° Pre-Travel ^⑤								
18°	6°	50°	1.8 in-lbs	2.5 in-oz	Type LX	2NO	10316H1071		
						2NC	10316H1072		
					Type CX	2NO	10316H2179		
					Type CBX	2NC	10316H2160		
Side Push Operated 	Pushbutton								
	0.07 in (1.8 mm)	0.03 in (0.76 mm)	0.29 in (7.4 mm)	4 lbs	8 oz	Type LX	1NO and 1NC ^④	10316H1213	
	Adjustable Pushbutton								
	0.07 in (1.8 mm)	0.03 in (0.76 mm)	0.29 in (7.4 mm)	4 lbs	8 oz	Type LX	1NO-1NC ^④	10316H1192	
	Vertical Roller, 0.44 in (11.2 mm) Diameter								
	0.07 in (1.8 mm)	0.03 in (0.76 mm)	0.29 in (7.4 mm)	4 lbs	8 oz	Type LX	1NO-1NC ^④	10316H1007	
	Vertical Roller, 0.75 in (19.1 mm) Diameter								
0.07 in (1.8 mm)	0.03 in (0.76 mm)	0.29 in (7.4 mm)	4 lbs	8 oz	Type LX	1NO-1NC ^④	10316H1194		

Notes

- ① Contact Eaton's Sensor Applications Engineering at 1-800-426-9184 for replacement contact blocks.
- ② For operating levers, see **Page V8-T2-78**. Only levers with Nylatron rods or rollers should be used with explosion-proof limit switches.
- ③ Field convertible to clockwise only or counterclockwise only operation.
- ④ 1NO-1NC contacts must be same polarity when both circuits are used—1NO and 1NC contacts have isolated poles and may be used on opposite polarity.
- ⑤ Neutral position switches operate one circuit in each direction.

Complete Assembled Switches with Spring Return Heads, continued ^①

Operating Data—Nominal

Head Type	Travel to Operate Contacts	Travel to Reset Contacts	Total Travel	Force to Operate Contacts	Minimum Return Force	Body Type	Contacts	Catalog Number
Top Push Operated 	Pushbutton							
	0.04 in (1 mm)	0.02 in (0.5 mm)	0.28 in (7.1 mm)	4 lbs	8 oz	Type LX	1NO-1NC ^②	10316H1004
						Type CX	1NO and 1NC ^②	10316H2188
	Adjustable Pushbutton							
	0.04 in (1 mm)	0.02 in (0.5 mm)	0.28 in (7.1 mm)	4 lbs	8 oz	Type LX	1NO-1NC ^②	10316H1191
							1NO and 1NC ^②	10316H1212
	Roller, 0.44 in (11.2 mm) Diameter							
	0.04 in (1 mm)	0.02 in (0.5 mm)	0.28 in (7.1 mm)	4 lbs	8 oz	Type LX	1NO-1NC ^②	10316H1006
						Type CBX	1NO-1NC ^②	10316H2170
	Roller, 0.75 in (19.1 mm) Diameter							
0.04 in (1 mm)	0.02 in (0.5 mm)	0.28 in (7.1 mm)	4 lbs	8 oz	Type LX	1NO-1NC ^②	10316H1193	
Wobble Operated 	Spring							
	10° ^③	6°	15°	1 in-lb	2.4 in-oz	Type LX	1NO-1NC ^②	10316H1237
	Nylon Rod							
	10° ^③	6°	15°	2 in-lbs	5.6 in-oz	Type LX	1NO-1NC ^②	10316H1009

Technical Data and Specifications

Hazardous Location Limit Switches

Description	Specification
Material of construction	
LX, CX	Cast aluminum die cast
CB, CBX	Silicon bronze
Conduit entrance	
LX	1/2 in pipe tap
CB, CBX, CX	3/4 in pipe tap
Mounting	Surface mount
Enclosure rating	
LX, CX, CBX	NEMA 7 Div. 1, Class I BCD; NEMA 9 Div. 1, Class II, EFG ^④
CB, CBX	NEMA 1, 4, 4X, 13 ^④
CX	NEMA 1, 4, 13 ^④
Ambient operating temperature	-20° to 200°F (-29° to 93°C) ^⑤
Approximate shipping weight	
LX	2 lbs
CX	2.5 lbs
CB, CBX	6 lbs

Notes

- ^① Contact Eaton's Sensor Applications Engineering at 1-800-426-9184 for replacement contact blocks.
- ^② 1NO-1NC contacts must be same polarity when both circuits are used—1NO and 1NC contacts have isolated poles and may be used on opposite polarity.
- ^③ Travel with force applied at one-in (25.4 mm) radius. Applied at end of operator, travel is approximately 14.
- ^④ A conduit seal-off kit is required for these switches
- ^⑤ Ranges below 32°F (0°C) are based on absence of freezing moisture or water.

2.10

Limit Switches

Hazardous Location Limit Switches

2

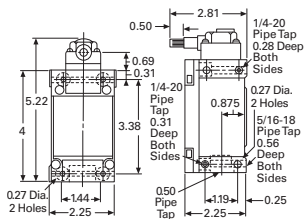
Electrical Data—Maximum Contact Ratings, per Pole

AC Volts	Current, Amperes		Cont. ①	Volt Amperes		DC Volts	DC Current, Ampere
	Make	Break		Make	Break		
1NO-1NC Switches							
NEMA A600, R300 rating							
120	60	6	10	7200	720	125	0.2
240	30	3	10	7200	720	250	0.1
480	15	1.5	10	7200	720	250	0.1
600	12	1.2	10	7200	720	250	0.1
All Other Switches, B600							
120	30	3	5	3600	360	120	0.1
240	15	1.5	5	3600	360	240	0.05
480	7.5	0.75	5	3600	360	240	0.05
600	6	0.60	5	3600	360	240	0.05

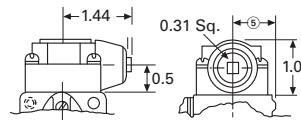
Dimensions

Approximate Dimensions in Inches or Inches (mm)

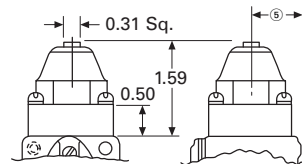
Type LX Switch with Side Rotary Head



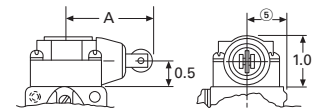
Side Pushbutton Head



Top Pushbutton Head



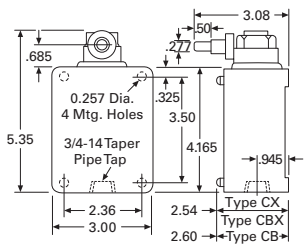
Side Push, Vertical Roller Head



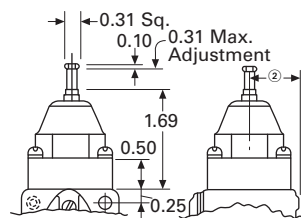
Dimension "A"

With 0.44 (11.2) dia. roller	1.78 (45.2)
With 0.75 (19.1) dia. roller	2.09 (53.1)

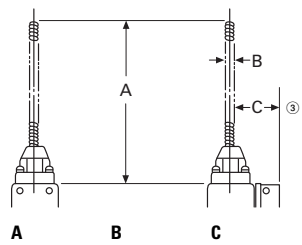
Type CX, CB and CBX Switches with Side Rotary Head



Adjustable Top Pushbutton Head



Wobble Operators



Wobble Spring

5.44 (138.2)	0.31 (7.9)	0.94 (23.9)
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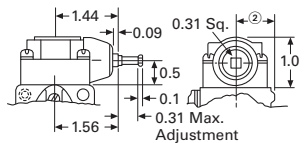
Nylon Red

4.5 (114.3)	0.25 (6.4)	0.94 (23.9)
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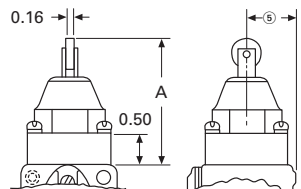
Notes

- 1NO-1NC contacts must be same polarity when both circuits are used—1NO and 1NC contacts have isolated poles and may be used on opposite polarities.
- Dimension from centerline of head to mounting surface is 0.78 in (20 mm).
- Center to mounting surface.

Adjustable Side Pushbutton Head



Top Push Roller Head



Dimension "A"

With 0.44 (11.2) dia. roller	2.03 (51.6)
With 0.75 (19.1) dia. roller	2.34 (59.4)