# Honeywell

## **MICRO SWITCH Hazardous Area Switches**

BX | BX2 Series

### **002306** Issue 9

Datasheet



### DESCRIPTION

The MICRO SWITCH BX/BX2 Series are designed for applications in hazardous or explosive environments requiring a rugged, durable switch virtually anywhere in the world. To comply with explosion-proof switching requirements, the flame path within the switch housing is designed to contain and cool escaping hot gases and fumes that could cause an explosion outside of the switch. Regardless of where the equipment or machinery is designed, built, or installed, BX and BX2 Series products carry global agency coverage.

Honeywell offers two versions of the BX series switch: the standard BX Series features an aluminum housing, while the BX2 series features a 316L stainless steel housing. The stainless steel housing adds additional resistance against corrosion in applications exposed to aggressive, caustic agents, as well as those often present in chemical processing plants, off-shore/near-shore sites, and other hazardous areas. Both products are weather sealed for outdoor use and designed for explosive gas/dust environments. All operating heads of the BX/BX2 Series are field adjustable at 90° increments.

### DIFFERENTIATION

- Top-of-the-line environmental sealing combined with Honeywell expertise for hazardous location package design provides the right product for the right application
- Exclusive teller tab on levers ensures proper torque. When the tab cannot be moved, the lever is tight enough to prevent slippage

### FEATURES

- Approvals: UL, CSA, ATEX (CE), IEC Ex, INMETRO (Brazil), NEPSI Ex (China), and KOSHA/KTL (select listings - Korea)
- Sealed to IP67, NEMA 1, 3, 4, 6, 13
- Industry-leading breadth of products
- Two rugged designs are available: aluminum or corrosion-resistant stainless steel head and body
- A diaphragm seal between head and body provides an extra measure of protection
- Optional fluorocarbon seals are available for harsh chemical or higher temperature environments
- Secure head-to-body retention with the head in any one of four positions  $90^{\circ}\,\text{apart}$
- Self-lifting pressure plate terminals saves wiring time.
- Wide variety of non-sparking actuators, switch options, and head styles for design flexibility
- Rotary actuated heads are field adjustable for CW actuation, CCW actuation, or both to reduce inventory
- Choice of silver or gold-plated contacts

### APPLICATIONS

- Grain elevators
- Control valves and actuators
- Off-shore and on-shore drilling
- Pipelines
- Petrochemical and chemical plants
- Water treatment plants
- Paint booths
- Conveyors (above-ground)
- Pulp and paper
- Hazardous waste handling

### **VALUE TO CUSTOMERS**

- Around-the-world use in hazardous areas with international approvals: UL, CSA, ATEX (CE), IEC Ex, INMETRO, KOSHA/ KTL, and NEPSI Ex (China)
- Industry-leading breadth of product offering that includes: BX (aluminum housing) and BX2 (stainless steel housing) limit switches for hazardous locations
- 303 stainless steel operating shaft on sintered bronze bearing for enhanced mechanical life and operational reliability

### PORTFOLIO

Honeywell offers a wide range of limit switches in different size packages and hazardous environments. These limit switches include the BX/BX2 Series, CX Series, EX Series, LSX Series, GXS Series, and 14CE100 Series. To view the entire product portfolio, click here.

#### Figure 1. MICRO SWITCH BX Series Features and Options

The MICRO SWITCH BX2 limit switch has similar features, except a 316L stainless steel head and body without epoxy coating.



#### Figure 2. MICRO SWITCH BX Series Product Nomenclature

<b>BX</b> Switch Type	Conduit Threads	<b>F</b> Head Style*	<b>3K</b> Body/Basic Switch Code	Actuator Modification	Actuator Options
<b>BX</b> Series Aluminum	1/2 or 3/4 NPT**	A * Side rotary; momentary	<b>1A</b> 3NC/1NO, slow acting, 3/4 -14 NPT	1 CW rotation	<b>1A</b> * Fixed Ø 0.75 in x 0.25 in W nylon roller, 1.5 in radius, front mount
Hazardous Area	<b>4</b> 20 mm	B Top rotary; momentary	3NC/1NO, slow acting, 3/4 -14 NPT gold-plated contacts	2 CCW rotation	<b>1C</b> * Fixed Ø 0.75 in x 0.25 in W nylon roller, 1.5 in radius, back mount
Limit Switch	** see Body/Basic Switch Code column	C * Top pin plunger, momentary	<b>3E</b> 1NC/1NO, snap action, 1/2 -14 NPT gold-plated contacts	<b>3</b> Right-oriented actuator head assembly	2A * Adjustable, Ø 0.75 in x 0.25 in W nylon roller. front mount
<b>BX2</b> Series Stainless	NOTE: if 1/2 NPT or 3/4 NPT conduit is desired, no code is	D* Top roller plunger, momentary	<b>3K</b> 1NC/1NO, snap action, 1/2 - 14 NPT	4 Left-oriented actuator head assembly	<b>2C</b> * Adjustable, Ø 0.75 in x 0.25 in W nylon roller. back mount
Steel Hazardous	necessary. Leave- blank.	E * Side pin plunger; momentary	<sup>4</sup> <b>4K</b> 1NC/1NO, snap action, 3/4 - 14 NPT	5 Head assembled with actuator to mounting surface	Adjustable, Ø 1.0 in x 0.5 in W nylon roller, front mount
Area Limit Switch	If conduit code "4" in this column is selected, conduit in	Side roller plunger; momentary	<b>4L</b> 2NC/2NO, snap action, 3/4 - 14 NPT	6 Roller perpendicular to mounting surface	Adjustable, Ø 1.0 in x 0.5 in W nylon roller, back mount
2	Body/Basic Switch column does not	Side rotary, momentary low PT, low torque	<b>4M</b> 2NC/2NO, snap action, sequential, 3/4 - 14 NPT	8 Roller parallel to mounting surface	<b>3S</b> Yoke, Ø 0.75 in x 0.25 in W nylon rollers, same side, back mount
	apply.	J Wobble stick	4N 2NC/2NO, snap action, center neutral, 3/4 - 14 NPT		4M Hub rod, aluminum
		K Cat whisker	4S 2NC/2NO, snap action, 3/4 -14 NPT gold-plated contacts		<b>5A</b> Offset, Ø 0.75 in x 0.25 in W nylon roller, back mount
		<ul> <li>Side rotary; sequential, momentary</li> </ul>	4T 2NC/2NO, snap action, sequential, 3/4 - 14 NPT, gold-plated contacts		5C Offset, Ø 0.75 in x 0.25 in W nylon roller, front mount
		Side rotary; central neutral, momentary	4U 2NC/2NO, snap action, center neutral, 3/4 -14 NPT, gold-plated contacts		<b>7A</b> Plastic wobble stick
		N* Side rotary; maintained	<sup>A</sup> <b>7L</b> 2NC/2NO, snap action, 1/2 - 14 NPT		<b>8A</b> Cat whisker, 5.5 in
		Side rotary, momentary low PT and DT	1/2 - 14 NPT		
		<b>R</b> * Side rotary, momentary low torque	gold-plated contacts		
		V Top pin plunger, adjustable, momentary	gota plated contacts		
		Side pin plunger, adjustable, momentary	Δ 2NC/2NO, snap action, center neutral, 1/2 -14 NPT, gold-plated contacts		

 $\Delta$  Not available with conduit code 4.

 $^{\star}$  BX2 stainless steel "head styles" and "actuators" available

To order fluorocarbon versions, insert the additional letter **C** in the appropriate places in the standard catalog listing, as shown below:

ВХАЗК	standard, side-rotary switch
BXA <u>C</u> 3K	completely FC-sealed version of BXA3K

Characteristic	Parameter						
Product type	MICRO SWITCH hazardous area limit switches						
Actuators	Side pin plunger Side rotary Top pin plunger - adjustable Wobble - cat whisker	Side rotarySide rotary maintainedTop pin pluTop pin plunger - adjustableTop roller plungerTop rotary					
Circuitry	1NC 1NO SPDT snap action, double break 2NC 2NO DPDT snap action, double break 2NC 2NO DPDT snap action, double break, sequential 2NC 2NO DPDT snap action, double break, center neutral 3NC 1NO slow action, double break						
Electrical	10 A thermal Single and double pole: AC15 A600; DC13 R300 (see table on page 5)						
Housing material	Aluminum (BX) or Stainless Stee	el (BX2)					
Termination types	0.5 in - 14 NPT conduit 0.75 in - 14 NPT conduit 20 mm conduit						
Housing type	BX/BX2 non-plug-in						
Sealing	NEMA 1, 3, 4, 6, 13; IP67						
Operating temperature*		ls: -40 °C to 70 °C [-40 °F to 158 °F s: -12 °C to 70 °C [10 °F to 158 °F]	]				
ATEX/IEC Ex protection class	II 2 GD, Ex d IIC T6 Gb, Ex tb IIIC	T85°C Db					
UNSPSC code	302119						
UNSPSC commodity	302119 Switches and controls a	ind relays					

**Table 1. Specifications** 

\* Reference operating head styles on page 6 for exceptions.

#### Table 2. Agency Certifications

		ATEX (CE) <sup>2</sup> Europe	CSA , UL, or cULus <sup>3</sup> Canada, USA	IEC Ex <sup>1</sup> International	KOSHA/KTL Korea	NEPSI EX <sup>2</sup> China	INMETRO <sup>2</sup> Brazil
		C C (Ex)		<b>IECEx</b>	<b>€</b> s	Ex NEPSI	INMETRO
	Conduit						
<b>BX</b> Series	M20	•		•	•	•	•
(aluminum)	NPT	•	•	•	•	•	•
BX2 Series	M20	•	•	•	•	•	•
(stainless steel)	NPT	•	•	•	•	•	•

<sup>1</sup> ATEX & IEC Ex: II 2 GD; Ex d IIC T6 Gb; Ex tb IIIC T85°C Db; Ta -40 °C to 70 °C or -12 °C to 70 °C (dependent on seal material) <sup>2</sup> NEPSI Ex: GYJ111016

<sup>3</sup> CSA, cUL, UL: NEMA 7 (Gas) Div 1&2, Class I, Groups B, C, & D; NEMA 9 (Dust) Div 1&2, Class II, Groups E, F, & G

MICRO SWITCH BX and BX2 Series Electrical Ratings 10 A continuous carry; ac Volts; Pilot Duty: AC15, A600

Electri- cal Rating	Cir- cuitry	Vac	Amps at 0.35 Power Factor Make	Amps at 0.35 Power Factor Break
AC15, A600	SPDT DPDT	120	60	6
		240	30	3
		480	15	1.5
		600	12	1.2

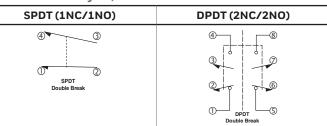
MICRO SWITCH BX and BX2 Series Electrical Ratings dc Volts; Pilot Duty: DC13, R300

Electri- cal Rating	cal cuitry		Make & Break Amps Inductive	Make & Break Amps Resistive	
DC13,	SPDT	120	0.25	0.8	
R300	DPDT	240	0.15	0.4	

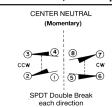
MICRO SWITCH BX and BX2 limit switches are capable of the following low voltage dc loads

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

#### Switch Contact Styles, Double Break



#### Center Neutral (SPDT each direction) Pole 1 operates CCW; Pole 2 operates CW



NOTE: Same polarity each pole

#### Low Temperature Limits

For all MICRO SWITCH BX/BX2 styles, the upper temperature limit is 70 °C [158 °F], while the lower temperature limit is per the table below.

	MICRO SWITCH BX/BX2				
	Standard (Fl	uorosilicone)	Optional (Flurocarbon Sealed)		
Operating Head Styles	-40 °C [-40°F]	-29 °C [-20 °F]	-12 °C [10°F]	-1 °C [30 °F]	
BXA, BX2A - Side Rotary Momentary	•		•		
BXB - Top Rotary		•		•	
BXC, BX2C - Top Pin Plunger	•		•		
BXD, BX2D - Top Roller Plunger	•		•		
BXE, BX2E - Side Pin Plunger	•		•		
BXF, BX2F - Side Roller Plunger	•		•		
BXH, BX2H - Side Rotary, Low Pretravel and Torque		•		•	
BXJ - Wobble Stick		•		•	
BXK - Cat Whisker		•		•	
BXL, BX2L - Side Rotary, Sequential Operation	•		•		
BXM, BX2M - Side Rotary, Center Neutral	•		•		
BXN, BX2N - Side Rotary, Maintained		•		•	
BXP, BX2P - Side Rotary, Low Pretravel	•		•		
BXR, BX2R - Side Rotary, Low Torque		•		•	
BXV - Top Adjustable Plunger	•		•		
BXW - Side Adjustable Plunger	•		•		

#### Fluorocarbon Sealed Switches (optional)

Fluorocarbon (FC)-sealed switches have an FC o-ring between the threaded cover and body. Rotary types have an extra FC seal on the operating shaft, while plunger versions have FC boot seals. They are for use in applications where the environment includes fire-resistant synthetic fluids, synthetic fluids, water-based fluids, and petroleum-based fluids. The additional FC seals also promote longer operating life for rotary-actuated BX/BX2 switches in applications where the temperatures are normally elevated.

#### MICRO SWITCH BX/BX2 Series Operating Heads\*

**SIDE ROTARY:** Heads may be positioned in any one of four positions, 90° increments. All are momentary action except maintained head (BXN/BX2N Series).



**BXA/BX2A – Standard:** 60° minimum overtravel, 15° maximum pretravel, 5° (single pole) and 7° (double pole) maximum differential travel.

**BXR/BX2R - Low operating torque:** 60° minimum overtravel, 15° maximum pretravel, 0.19 Nm [1.7 in lb] maximum operating torque.

**BXN/BX2N - Maintained contact:** Maintained on counterclockwise rotation and reset on clockwise rotation, and vice versa.

**BXP/BX2P - Low differential:** 68° minimum overtravel, 9° maximum pretravel, 3° (single pole) and 4° (double pole) maximum differential travel.

**BXH/BX2H - Low torque, low differential travel:** 68° minimum overtravel. Features low operating torque and narrow differential travel.

**BXL/BX2L - Sequential operation:** 48° minimum overtravel. Delayed action between operation of two poles.

**BXM/BX2M - Center neutral:** 57° minimum overtravel. One pole operates on the clockwise rotation, and the other pole on the counterclockwise rotation.

\***BX Series** epoxy-coated zinc heads are shown for illustration. **BX2 Series** heads are 316L stainless steel. To order, insert the additional letter **C** in the appropriate places in the standard catalog listing, as shown below:

ВХАЗК	standard, side-rotary switch
BXA <u>C</u> 3K	FC-sealed version of BXA3K
BX2A3K	standard, stainless steel side-rotary switch
BX2A <u>C</u> 3K	Fluorocarbon-sealed version of BX2A3K

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



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

**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. All are momentary action.



**BXC/BX2C - Top pin plunger:** A copper alloy plunger for in-line actuating motion. Oil-tight seals on plunger and between the operating head and housing keep out coolant, dust, and chips.



**BXD/BX2D - Top roller plunger:** A copper alloy roller plunger is adjustable to 90° angles to accept cam or slide operation from any of two directions. Boot seal on the plunger.



**BXV - Adjustable top pin plunger:** A copper alloy adjustable 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.

### MICRO SWITCH BX/BX2 Series Operating Heads

**SIDE PLUNGERS:** Available with 4,83 mm [0.19 in] minimum overtravel. Side plungers are offered in pin plunger, adjustable pin plunger, and a roller plunger. All are momentary action.



**BXE/BX2E - Side pin plunger:** A copper alloy plunger for actuating motion inline with the plunger travel. Actuating head may be rotated in any of four positions, 90° apart. A boot seal on the plunger and a gasket seal between the head and housing keep out coolant, dust, and chips.

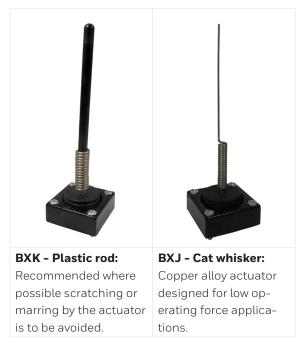
**WOBBLE LEVER ACTUATING HEADS:** Heads come with either a Delrin<sup>®</sup> plastic rod or copper alloy cat whisker. Any movement of the lever (except pull) will actuate the switch.





**BXF/BX2F - Side roller plunger:** A copper alloy roller plunger fits close quarters under cams and slides. The head may be rotated in any of four positions, 90° apart. <u>The roller can be turned vertical or horizontal to the switch</u>. Boot seal on plunger.

### **BXW - Adjustable side pin plunger:** Has the same features of the side plain plunger plus the means to adjust the operating points of the switch from 41 mm to 47,4 mm [1.615 in to 1.865 in].



SIDE ROTARY • MICRO SWITCH BX/BX2 SERIES ORDER GUIDE/RECOMMENDED LISTINGS

BX <u>A</u> /BX2 <u>A</u> • CW/CCW Mo		Housing Material	Contacts (snap-action)	Contact Material	Conduit	Listing
		Aluminum	1NC-1NO	Silver	0.5-14 NPT	ВХАЗК
	15°	Aluminum	1NC-1NO	Gold plate	0.5-14 NPT	<b>BXA3E</b>
	1-2 3-4 3-4	Aluminum	1NC-1NO	Silver	0.75-14 NPT	BXA4K
	0° 10° 75°	Aluminum	1NC-1NO	Silver	20 mm	BX4A3K
	Pretravel • 15° max.	Aluminum	1NC-1NO	Gold plate	20 mm	BX4A3E
	Diff. travel (SPDT) • 5° max. Diff travel (DPDT) • 7° max.	Stainless Steel	1NC-1NO	Silver	0.5-14 NPT	BX2A3K
	Overtravel • 60° min. Oper. torgue • 0,45 Nm [4 in-lb] max.	Stainless Steel	1NC-1NO	Silver	20 mm	BX24A3I
	*Oper. temp • -40 °C to 70 °C [-40 °F to 158 °F]	Aluminum	2NC-2NO	Silver	0.75-14 NPT	BXA4L
	15° 1-2/5-6	Aluminum	2NC-2NO	Silver	20 mm	BX4A4L
	3-4/7-8	Aluminum	2NC-2NO	Gold plate	0.5-14 NPT	BXA7S
	1-2/5-6 0° 8° 75°	Aluminum	2NC-2NO	Gold plate	0.75-14 NPT	BXA4S
		Stainless Steel	2NC-2NO	Silver	0.75-14 NPT	BX2A4L
BX <u>P</u> /BX2 <u>P</u> • CW/CCW Mo	Low Differential mentary	Housing Material	Contacts (snap-action)	Contact Material	Conduit	Listing
	9° 1-2 3-4 3-4 1-2 ↓ ↓	Aluminum	1NC-1NO	Silver	0.5-14 NPT	ВХРЗК
	0° 6° 75° Pretravel • 9° max. Diff. travel (SPDT) • 3° max. Diff. travel (DPDT) • 4° max. Overtravel • 66° min.	Aluminum	2NC-2NO	Silver	0.75-14 NPT	BXP4L
	Oper. torque • 0,45 Nm [4 in-lb] max. *Oper. temp • -40 °C to 70 °C [-40 °F to 158 °F]	Stainless Steel	2NC-2NO	Silver	0.75-14 NPT	BX2P4L
	9° 1-2/5-6 3-4/7-8 3-4/7-8 1-2/5-6 0° 5° 75°	Stainless Steel	2NC-2NO	Silver	20 mm	BX24P4

Contact closed ∎; Contact open □

Actuating head is factory set for CW and CCW actuation. Easily field adjusted for CW or CCW per instructions included with switch.

NOTE: Same polarity each pole.

SIDE ROTARY • MICRO SWITCH BX/BX2 SERIES ORDER GUIDE/RECOMMENDED LISTINGS

BX <u>R</u> • Low To CW and CCW		Housing Material	Contacts (snap-action)	Contact Material	Conduit	Listing
	$ \begin{array}{c c} 15^{\circ} \\ 1-2 \\ 3-4 \\ 3-4 \\ 1-2 \\ \hline \end{array} \qquad \qquad$	Aluminum	1NC-1NO	Silver	0.5-14 NPT	BXR3k
	0° 10° 75° Pretravel • 15° max. Diff. travel (SPDT) • 5° max. Diff. travel (DPDT) • 7° max.	Aluminum	1NC-1NO	Gold plate	0.5-14 NPT	BXR3E
	Overtravel • 60° min. Oper. torque • 0,19 Nm [1.7 in-lb] max. *Oper. temp • -29 °C to 70 °C [-20 °F to 158 °F] 15°	Aluminum	2NC-2NO	Silver	0.75-14 NPT	BXR4L
	1-2/5-6 3-4/7-8 3-4/7-8 1-2/5-6 0° 8° 75°	Aluminum	2NC-2NO	Gold plate	0.75-14 NPT	BXR4S
BX <u>H</u> • Low Di CW and CCW	fferential, Low Torque, Momentary	Housing Material	Contacts (snap-action)	Contact Material	Conduit	Listing
	$9^{\circ}$ 1-2 3-4 1-2 $0^{\circ}$ $6^{\circ}$ $75^{\circ}$ Pretravel $(9^{\circ})$ max. Diff. travel $(9^{\circ})$ The max. Diff. travel $(9^{\circ})$ The max. $0^{\circ}$ $1-2/5^{\circ}$ $0^{\circ}$ $1-2/5^{\circ}$ $0^{\circ}$ $1-2/5^{\circ}$ $0^{\circ}$ $1-2/5^{\circ}$ $0^{\circ}$ $1-2/5^{\circ}$ $0^{\circ}$ $5^{\circ}$ $75^{\circ}$	Aluminum	2NC-2NO	Silver	0.75-14 NPT	BXH4L
BX <u>B</u> • Top Ro CW and CCW		Housing Material	Contacts (snap-action)	Contact Material	Conduit	Listing
	35° 1-2 3-4 3-4 1-2 0° 27° 135° Pretravel • 35° max. Diff. travel (SPDT) • 8° max. Diff. travel (SPDT) • 12° max. Overtravel • 100° min. Oper. torque • 0.28 Nm [2.5 in-lb] max. *Oper. to	Aluminum	1NC-1NO	Silver	0.5-14 NPT	BXB3k

Contact closed ∎; Contact open □

Actuating head is factory set for CW and CCW actuation. Easily field adjusted for CW or CCW per instructions included with switch.

NOTE: Same polarity each pole.

#### SIDE ROTARY • MICRO SWITCH BX/BX2 SERIES ORDER GUIDE/RECOMMENDED LISTINGS

BX <u>N</u> • Maintain CCW (trip), CW	ed, Two Position (Reset)	Housing Material	Contacts (snap-action)	Contact Material	Conduit	Listing
	65° 1-2 3-4 3-4 3-4	Aluminum	1NC-1NO	Silver	0.5-14 NPT	BXN3K
	1-2 0° 25° 85° Pretravel • 65° max. Diff. travel • 40° max.	Aluminum	1NC-1NO	Silver	20 mm	BX4N3K
	Overtravel • 20° min. Oper. torque • 0,45 Nm [4 in-lb] max. *Oper. temp • -29 °C to 70 °C [-20 °F to 158 °F] 65°	Aluminum	2NC-2NO	Silver	0.75-14 NPT	BXN4L
	1-2/5-6     →       3-4/7-8     →       1-2/5-6     →       0°     25°       85°	Aluminum	2NC-2NO	Silver	20 mm	BX4N4L
BX <u>M</u> • Center N CW and CCW M	leutral, lomentary	Housing Material	Contacts (snap-action)	Contact Material	Conduit	Listing
	Pretravel • 18° max. Diff. travel • 10° max. Overtravel • 57° min. Oper. torque • 0,45 Nm [4 in-lb] max. *Oper. temp • -40 °C to 70 °C [-40 °F to 158 °F] 75° 18° 0° 75° 1-2 3-4	Aluminum	2NC-2NO	Silver	0.75-14 NPT	BXM4N
	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	Aluminum	2NC-2NO	Silver	20 mm	BX4M4N

Contact closed ■; Contact open □

NOTE: Same polarity each pole.

#### Table 3. Common levers for use with MICRO SWITCH BX Rotary Switches\*

Levers for use with side-rotary-actuated switches are available in a wide choice of sizes and materials. The most common listings are shown below. Rollers may be on either side of the lever to best match the external actuating mechanism.



\* Non-sparking rollers and actuators must be used in hazardous areas.

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

#### Table 4. BX/BX2 Series Lever Order Guide

	Catalog Listing	Material	Roller Dia. mm [in]	Roller Width mm [in]	Roller Mounting
	Fixed 38,1 [	1.5] inch rad	ius		
R	LSZ51	Rollerless	n/a	n/a	n/a
	LSZ51A	Nylon	19[0.75]	6,35 [0.25]	Front
	LSZ51C	Nylon	19[0.75]	6,35 [0.25]	Back
	LSZ51F	Nylon	25,4 [1.0]	12,7 [0.50]	Front
3	LSZ51G	Nylon	38,1 [1.5]	6,35 [0.25]	Front
	LSZ51J	Nylon	25,4 [1.0]	12,7 [0.50]	Back
	LSZ51M	Nylon	19[0.75]	31,7 [1.25]	Back
	LSZ51P	Nylon	19[0.75]	12,7 [0.50]	Front
	LS2Z51A (sst)	Nylon	19[0.75]	6,35 [0.25]	Front
	LS2Z51C(sst)	Nylon	19[0.75]	6,35 [0.25]	Back
	LS2Z51E (sst)	Copper alloy	19[0.75]	6,35 [0.25]	Front
	LS2Z51F(sst)	Copper alloy	19[0.75]	6,35 [0.25]	Back
		38,1 [1.5] in t			
6	LSZ52	Rollerless	n/a	n/a 6,35	n/a
R	LSZ52A	Nylon	19[0.75]	[0.25] 6,35	Back
	LSZ52C	Nylon	19[0.75]	[0.25] 33,0	Front
	LSZ52E	Nylon	19[0.75]	[1.30] 12,7	Front
	LSZ52J	Nylon	25,4 [1.0]	[0.50] 6,35	Front
	LSZ52K	Nylon	38,1 [1.5]	[0.25] 6,35	Front
	LSZ52M	Nylon	50,8 [2.0]	[0.25]	Front
	LSZ52N	Nylon	19[0.75]	[0.50] 6,35	Front
	LS2Z52A (sst)	Nylon	19[0.75]	[0.25] 6,35	Front
	LS2Z52C (sst)	Nylon	19[0.75]	[0.25]	Back
	LS2Z52E (sst)	Copper alloy	19[0.75]	6,35 [0.25]	Front
	LS2Z52F(sst)	Copper alloy	19[0.75]	6,35 [0.25]	Back
	Yoke - 38,1	[1.5] in radiu	IS	0.05	
Q. Q	LSZ53A	Nylon	19[0.75]	6,35 [0.25]	Front/Back
	LSZ53E	Nylon	19[0.75]	6,35 [0.25]	Back/Front
	LSZ53M	Nylon	19[0.75]	31,7 [1.25]	Back/Front
	LSZ53S	Nylon	19[0.75]	6,35 [0.25]	Back/Back
	Rod				
	LSZ54	Hub only	n/a	n/a	n/a
	LSZ54M	Alum, 140 mm [5.5 in]	Ø 3,2 [Ø 0.125]	n/a	n/a
	LSZ54N	Stainless, 330 mm [13 in]	Ø 3,2 [Ø 0.125]	n/a	n/a
	LSZ54P	Plastic rod, 305 mm [12 in]	Ø6,85 [Ø 0.27]	n/a	n/a
frie	LSZ54W	Plastic rod, 183 mm [7.2 in]	Ø6,85 [Ø 0.27]	n/a	n/a

	Catalog Listing	Material	Roller Dia. mm [in]	Roller Width mm [in]	Roller Mounting	
Offset – 38,1 [1.5] in radius						
	LSZ55	Rollerless	n/a	n/a	n/a	
55	LSZ55A	Nylon	19[0.75]	6,35 [0.25]	Back	
9	LSZ55C	Nylon	19[0.75]	6,35 [0.25]	Front	
70	LSZ55E	Nylon	19[0.75]	12,7 [0.50]	Front	
	LSZ55K	Nylon	38,1 [1.5]	6,35 [0.25]	Front	
	Short fixed	- 1.3 in radiu	s			
	LSZ59A	Nylon	19[0.75]	6,35 [0.25]	Front	
a	LSZ59C	Nylon	19 [0.75]	6,35 [0.25]	Back	
	One-way ro	ller lever				
	LSZ60A	Nylon	19[0.75]	6,35 [0.25]	Front	
	Flexible loo	р				
$\cap$	LSZ61	Ø 4,8 [Ø 0.19 ] Nylatron	152 mm [6 i	[6 in] flexible loop		
	LSZ618	Ø 4,8 [Ø 0.19 ] Nylatron	241 mm [9.	5 in] flexible loop		
V	LSZ54	Hub only	n/a	n/a	n/a	
	Spring rod					
	LSZ68	Delrin rod, 305 mm [12 in]	Ø 6,35 [0.25]	n/a	n/a	
	LSZ617	Delrin rod, 406 mm [16 in]	Ø 6,35 [0.25]	n/a	n/a	
	LSZ686	Delrin rod, 152 mm [6 in]	Ø 6,35 [0.25]	n/a	n/a	
	Rubber roll	er levers				
	LSZ51Y 38,1 [1.5] radius (standard)	Rubber	50 [2.0]	12,7 [0.5]	front	
	LSZ55Y 38,1 [1.5] radius (offset)	Rubber	50 [2.0]	12,7 [0.5]	front	
ψ <b>υ</b>	LSZ52Y 38,1 to 89 [1.5 to 3.5] radius (adjustable)	Rubber	50 [2.0]	12,7 [0.5]	front	
	Plastic rolle	er levers				
	LSZ67AA (conveyor)*	Plastic	38,1 [1.5]	96,5 [3.8]	n/a	

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

### TOP PLUNGER • MICRO SWITCH BX/BX2 SERIES ORDER GUIDE/RECOMMENDED LISTINGS

All top plungers are momentary action.

BX <u>C</u> /BX2 <u>C</u> • Top Pin Plunger		Housing Material	Contacts (snap-action)	Contact Material	Conduit	Listing
	1,78 mm [0.07 in]	Aluminum	1NC-1NO	Silver	0.5-14 NPT	вхсзк
	1-2 3-4 3-4 4 ↓	Aluminum	1NC-1NO	Silver	0.75-14 NPT	BXC4K
	1-2 0 in 1,4 mm 6,6 mm [0.055 in] [0.26 in]	Aluminum	1NC-1NO	Silver	20 mm	BX4C3I
CAUTION CAUTION CAUTION	Pretravel • 1,78 mm [0.07 in] max. Diff. travel (SPDT) • 0,38 mm [0.015 in] max.	Aluminum	1NC-1NO	Gold plate	20mm	BX4C3
0	Diff travel (DPDT) • 0,51 mm [0.020 in] max. Overtravel • 4,83 mm [0.190 in] min.	Aluminum	2NC-2NO	Silver	0.75-14 NPT	BXC4L
	Oper. point • 58,5 ±0,76 mm [2.305 ±0.030 in] Oper. force • 17,8 N [4 lb] max.	Aluminum	2NC-2NO	Silver	20 mm	BX4C4
	*Oper. temp • -40 °C to 70 °C [-40 °F to 158 °F] 1,78 mm [0.07 in]	Aluminum	2NC-2NO	Gold plate	20 mm	BX4C4
	1-2/5-6 3-4/7-8 3-4/7-8 3-4/7-8 4-9/5-6 ↓ ↓	Stainless steel	2NC-2NO	Silver	0.75-14 NPT	BX2C4
	1-2/5-6 0 in 1,27 mm 6,6 mm [0.05 in] [0.26 in]	Stainless steel	2NC-2NO	Silver	20 mm	BX24C4
	Fop Roller Plunger d at 90° increments)	Housing Material	Contacts (snap-action)	Contact Material	Conduit	Listing
	1,78 mm [0.07 in]	Aluminum	1NC-1NO	Silver	0.5-14 NPT	BXD3
Diff. travel (SPDT) • 0,38 mm [0. Diff travel (DPDT) • 0,51 mm [0. Diff travel (DPDT) • 0,51 mm [0. Overtravel • 4,83 mm [0.190 in] Oper. point • 68,6 ±1,02 mm [2. Oper. force • 17,8 N [4 lb] max. *Oper. temp • -40 °C to 70 °C [-4	3-4	Aluminum	1NC-1NO	Silver	20 mm	BX4D3
	0 in         1.4 mm [0.055 in]         6.6 mm [0.26 in]           Pretravel • 1,78 mm [0.07 in] max.           Diff. travel (SPDT) • 0,38 mm [0.015 in] max.           Diff travel (DPDT) • 0,51 mm [0.020 in] max.           Overtravel • 4,83 mm [0.190 in] min.           Oper. point • 68,6 ±1,02 mm [2.70 ±0.040 in]	Aluminum	1NC-1NO	Gold plate	20 mm	BX4D3
		Aluminum	2NC-2NO	Silver	0.75-14 NPT	BXD4
		Aluminum	2NC-2NO	Silver	20 mm	BX4D4
	*Oper. temp • -40 °C to 70 °C [-40 °F to 158 °F] 1,78 mm [0.07 in]	Aluminum	2NC-2NO	Gold plate	20 mm	BX4D4
	1-2/5-6 3-4/7-8 2-4/7-8	Stainless steel	2NC-2NO	Silver	0.75-14 NPT	BX2D4
	0 in 1,27 mm 6,6 mm [0.05 in] [0.26 in]	Stainless steel	2NC-2NO	Silver	20 mm	BX24D4
3X <u>V</u> • Top Adjı	ustable Plunger	Housing Material	Contacts (snap-action)	Contact Material	Conduit	Listing
	Pretravel • 1,78 mm [0.07 in] max. Diff. travel (SPDT) • 0,38 mm [0.015 in] max. Diff travel (DPDT) • 0,51 mm [0.020 in] max. Overtravel • 4,83 mm [0.190 in] min. Oper. point • 65,66 [2.585] min; 72,01 [2.835] max. Oper. force • 17,8 N [4 lb] max. *Oper. temp • -40 °C to 70 °C [-40 °F to 158 °F] 1-2/5-6 3-4/7-8 1-2/5-6 0 in 1,27 mm [0.05 in] (0.26 in]	Aluminum	2NC-2NO	Silver	0.75-14 NPT	BXV4I

Contact closed  $\blacksquare$ ; Contact open  $\square$ 

NOTE: Same polarity each pole.

#### SIDE PLUNGER • MICRO SWITCH BX/BX2 SERIES ORDER GUIDE/RECOMMENDED LISTINGS

All side plungers are momentary action.

BX <u>E</u> /BX2 <u>E</u> • Side Pin Plunger		Housing Material	Contacts (snap-action)	Contact Material	Conduit	Listing
	2,54 mm [0.10 in] 1-2 3-4	Aluminum	1NC-1NO	Silver	0.5-14 NPT	ВХЕЗК
	3-4 1-2 0 in 1,4 mm 7,36 mm [0.055 in] [0.29 in]	Aluminum	1NC-1NO	Gold plate	0.5-14 NPT	BXE3E
	Pretravel • 2,54 mm [0.10 in] max. Diff. travel • 1,14 mm [0.045 in] max. Overtravel • 4,83 mm [0.190 in] min.	Stainless steel	1NC-1NO	Silver	0.5-14 NPT	BX2E3K
	Oper. point • 33,02 ±0,76 mm [1.30 ±0.030 in] Oper. force • 26,79 N [6 lb] max. *Oper. temp • -40 °C to 70 °C [-40 °F to 158 °F]	Stainless steel	1NC-1NO	Gold plate	0.5-14 NPT	BX2E3E
	2,54 mm [0.10 in] 1-2/5-6 3-4/7-8	Aluminum	2NC-2NO	Silver	0.75-14 NPT	BXE4L
	3-4/7-8 1-2/5-6 0 in 1,4 mm 7.36 mm [0.055 in] [0.29 in]	Aluminum	2NC-2NO	Gold plate	0.75-14 NPT	BXE4S
BX <u>F</u> /BX2 <u>F</u> • S	ide Roller Plunger	Housing Material	Contacts (snap-action)	Contact Material	Conduit	Listing
	2,54 mm [0.10 in] 1-2 3-4 □ □ □ □ □	Aluminum	1NC-1NO	Silver	0.5-14 NPT	ВХГЗК
	3-4 1-2 0 in 1,4 mm 7,36 mm [0.055 in] [0.29 in]	Aluminum	1NC-1NO	Gold plate	0.5-14 NPT	BXF3E
	Pretravel • 2,54 mm [0.10 in] max. Diff. travel • 1,14 mm [0.045 in] max. Overtravel • 4,83 mm [0.190 in] min.	Stainless steel	1NC-1NO	Silver	0.5-14 NPT	BX2F3K
	Oper. point • 44,07 ±1,02 mm [1.735 in ±0.040] Oper. force • 26,79 N [6 lb] max. *Oper. temp • -40 °C to 70 °C [-40 °F to 158 °F]	Stainless steel	1NC-1NO	Gold plate	0.5-14 NPT	BX2F3E
	2,54 mm [0.10 in] 1-2/5-6 3-4/7-8	Aluminum	2NC-2NO	Silver	0.75-14 NPT	BXF4L
	3-4/7-8 1-2/5-6 0 in 1,4 mm 7.36 mm [0.255 in] [0.29 in]	Aluminum	2NC-2NO	Gold plate	0.75-14 NPT	BXF4S

Contact closed ■; Contact open □

NOTE: Same polarity each pole.

BX <u>J</u> • Wobble, Plastic Rod (7A Actuator)		Housing Material	Contacts (snap-action)	Contact Material	Conduit	Listing
	1-2 3-4 ➡	Aluminum	1NC-1NO	Silver	0.5-14 NPT	BXJ3K-7A
	3-4 1-2 0° 8° 40°	Aluminum	1NC-1NO	Silver	20 mm	BX4J3K-7A
	Actuator length • 152 mm [6 in] Pretravel • 25,4 mm [1.0 in] max. Oper. force • 2,8 N [10 oz] max. *Oper. temp • -29 °C to 70 °C [-20 °F to 158 °F]	Aluminum	1NC-1NO	Gold plate	0.5-14 NPT	BXJ3E-7A
	1-2/5-6 3-4/7-8	Aluminum	2NC-2NO	Silver	0.75-14 NPT	BXJ4L-7A
	3-4/7-8 1-2/5-6 0° 8° 40°	Aluminum	2NC-2NO	Silver	20 mm	BX4J4L-7A
3X <u>K</u> • Wobble	e, Cat Whisker (8A Actuator)	Housing Material	Contacts (snap-action)	Contact Material	Conduit	Listing
	25° 1-2 3-4 3-4 1-2 ↓ ↓	Aluminum	1NC-1NO	Silver	0.5-14 NPT	BXK3K-8A
	0° 15° 50° Actuator length • 152 mm [6 in] Pretravel • 50,8 mm [2.0 in] max.	Aluminum	1NC-1NO	Gold plate	0.5-14 NPT	BXK3E-8A
	Oper. force • 1,4 N [5 oz] max. *Oper. temp • -29 °C to 70 °C [-20 °F to 158 °F] 25° 1-2/5-6 2.4/7 ₽	Aluminum	2NC-2NO	Silver	0.75-14 NPT	BXK4L-8A
	3-4/7-8 3-4/7-8 1-2/5-6 0° 15° 50°	Aluminum	2NC-2NO	Silver	20 mm	BX4K4L-8A

WOBBLE • MICRO SWITCH BX/BX2 SERIES ORDER GUIDE/RECOMMENDED LISTINGS

Contact closed ■; Contact open □

NOTE: Same polarity each pole.

#### **REPLACEMENT CONTACT BLOCKS**

Circuitry	Replacement Contact Block
Single pole	LSXZ3K
Double pole	LSXZ3L
Sequence or central neutral	LSXZ3M

#### REPLACEMENT HEADS for STANDARD BX Switches

Switch Type	Catalog Listing/Operating Head Only
BXA	LSZ1AB
BXB	LSZ1BB
BXC	LSXZ1CB
BXD	LSXZ1DB
BXE	LSXZ1EB
BXF	LSXZ1FB
BXH	LSZ1HB
BXJ	LSZ1JBGA
BXK	LSXZ1KBHA
BXL	LSZ1LB
BXM	LSZ1MB
BXP	LSZ1PB
BXR	LSZ1RB
BXV	LSXZ1VB
BXW	LSXZ1WB

#### **ASSEMBLY MODIFICATIONS**

Momentary action rotary switches can be furnished in other than the normal assembled conditions. To specify modifications, add the numbers shown below to the catalog listings. Modification number suffixes are:

- **1** Clockwise actuation only
- 2 Counterclockwise actuation only
- **3** Shaft to right of switch front
- 4 Shaft to left of switch front
- 5 Shaft to back of switch

#### For example,

Catalog listing BXA3K**23** is a BXA3K switch adjusted for counterclockwise actuation only. The operating shaft is to the right side of the switch when viewing it from the front (label side). No lever.

#### PLUNGER ASSEMBLY MODIFICATIONS

Add the following modification numbers to the catalog listing in the plunger switch:

- **3** Side plunger to right of switch front
- 4 Side plunger to left of switch front
- **5** Side plunger to back of switch

**6** Roller on top plungers perpendicular to mounting surface

8 Roller on side plungers in vertical position

#### For example,

Catalog listing BXF3K**3** is a BXF3K switch with the side roller plunger to the right side.

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

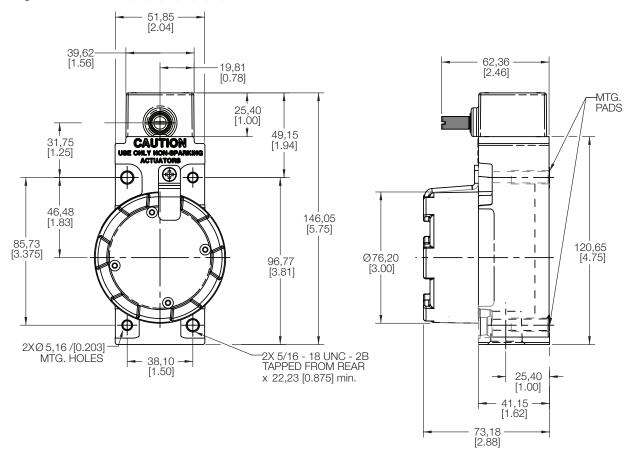


Figure 4. MICRO SWITCH BX Series Wobble Stick, Head Code J • mm [in]

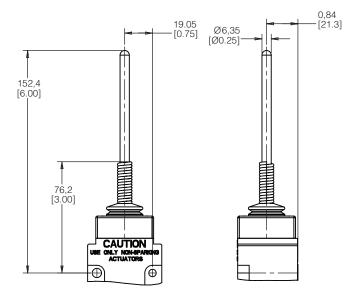


Figure 5. MICRO SWITCH BX SERIES Cat Whisker Wobble, Head Code K • mm [in]

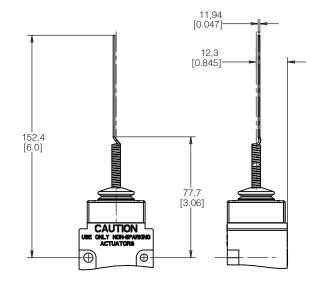
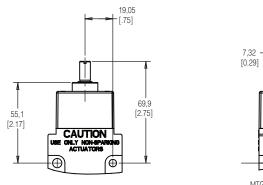


Figure 6. MICRO SWITCH BX Series Top Rotary, Head Code B • mm [in]



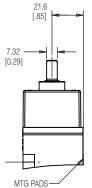


Figure 8. MICRO SWITCH BX Series Top Roller Plunger, Head Code D • mm [in]

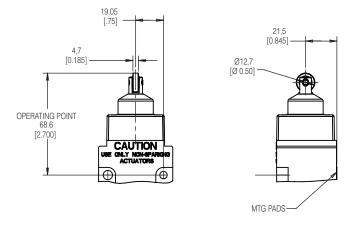


Figure 11. MICRO SWITCH BX Series Adjustable Top Pin Plunger, Head Code V • mm [in]

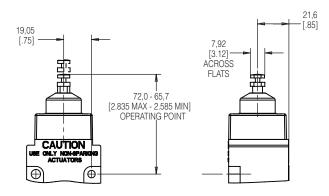


Figure 7. MICRO SWITCH BX Series Top Pin Plunger, Head Code C • mm [in]

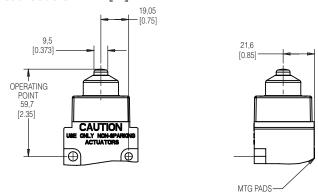


Figure 9. MICRO SWITCH BX Series Side Plunger, Head Code E • mm [in]

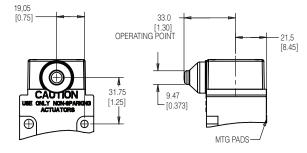
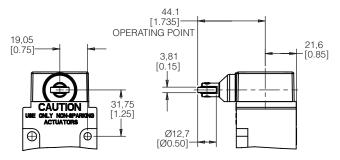


Figure 10. MICRO SWITCH BX Series Side Roller Plunger, Head Code F • mm [in]



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

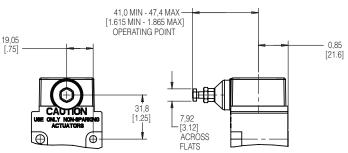


Figure 13. MICRO SWITCH BX2 Series Side Rotary Product Dimensions • mm [in] Side Rotary - Head Codes: A, P, AND R

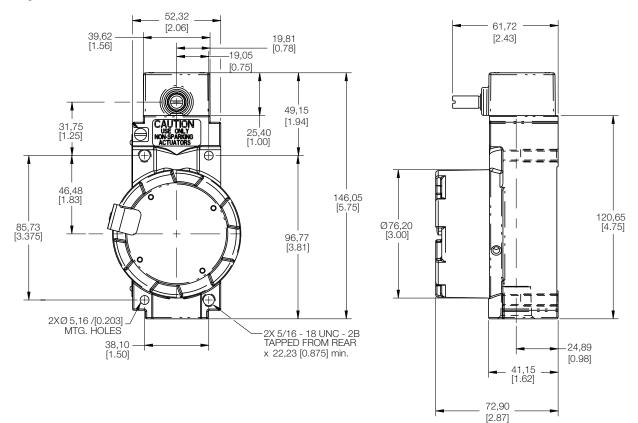


Figure 14. MICRO SWITCH BX2 Series Top Plunger Product Dimensions • mm [in] Top Plunger - Head Codes: C and D

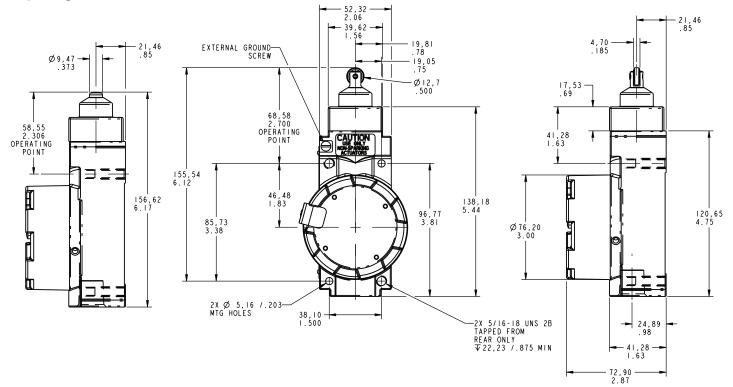
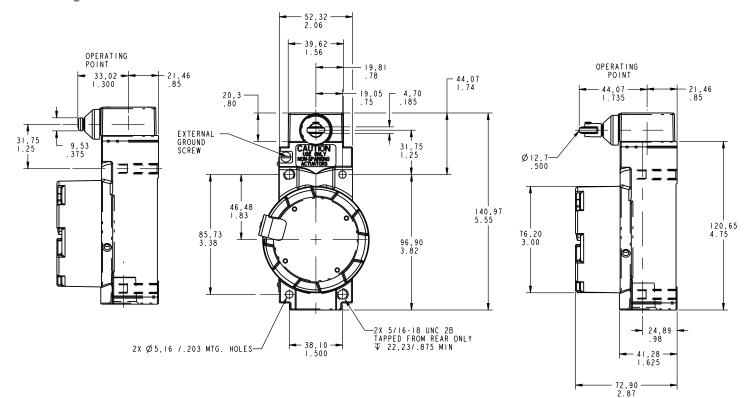


Figure 15. MICRO SWITCH BX2 Series Side Plunger Product Dimensions • mm [in] Side Plunger – Head Codes: E and F



### **ADDITIONAL INFORMATION**

The following associated literature is available on the Honeywell web site at sensing.honeywell.com:

- Product installation instructions
- Product range guide
- Hazardous area product brochure
- Product application-specific information
  - Application Note: Gas Recovery Unit and Other O&G Drilling Applications
  - Application Note: Pipeline Pig Passage Detection/Indicator Applications
  - Application Note: Electronic Sensors and Electromechanical Switches in Valves and Flow Meters
  - Application Note: Sensors and Switches Used in Valve Actuators and Valve Positioners
  - Application Note: Sensors and Switches for Industrial Manual Process Valves
  - Sensors and Switches in Oil Rig Applications

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DO NOT USE these products as safety or emergency stop devices or in any other application where failure of the product could result in personal injury.

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

### ▲ WARNING MISUSE OF DOCUMENTATION

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

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

### Warranty/Remedy

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 83830001
 83840701
 83841001
 83881140
 8AS42
 8LS10
 8LS125-4PG
 8LS152-4PGN20
 914CE16 

 3A
 914CE3-3L1
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 924CE1-S6
 924CE1-T3
 924CE1-T9A
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 924CE31-Y3L1
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 GLDC05C
 GLZ324
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 14CE18-N15
 151ML3-E1
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