





Sensing distance	Supply voltage	Output	
4 mm 	12 to 24 VDC 100 to 220 VAC		
8 mm 			
		200 mA max.	100 mA max.

## Proximity Sensor

## E2EZ


**Detects Objects without Being Influenced by Aluminum and Cast Iron Cut Chips**

**Sense the Difference, Make a Difference!**

- A series of two-wire DC models are available.
- Incorporating an operation indicator that tells accurate setting positions.

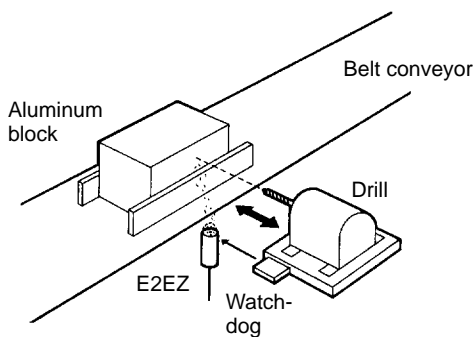


## Ordering Information

Sensing head		Sensing distance	Output configuration		Part Number
M18	Shielded 	4 mm	DC 3-wire	PNP-NO	E2EZ-X4B1
M30		8 mm			NPN-NO
M18		4 mm		E2EZ-X4C1	
M30		8 mm		E2EZ-X8C1	
M18		4 mm	DC 2-wire	NO	E2EZ-X4D1-N
M30		8 mm		NC	E2EZ-X4D2-N
				NO	E2EZ-X8D1-N
				NC	E2EZ-X8D2-N
M18	4 mm	AC 2-wire	NO	E2EZ-X4Y1	
M30	8 mm			E2EZ-X8Y1	

## Application Examples

### Multi-axis Drill Stand



# Specifications

## ■ Ratings/Characteristics

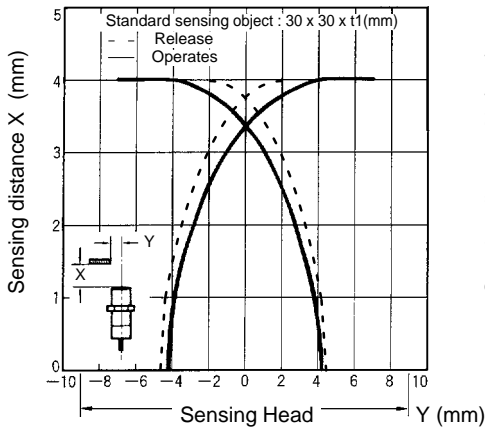
Item	E2EZ-X4□1	E2EZ-X8□1	E2EZ-X4D□-N	E2EZ-X8D□-N
<b>Rated supply voltage (operating voltage)</b>	B, C type: 12 to 24 VDC (10 to 30 VDC) Y type: 100 to 220 VAC (90 to 250 VAC) 50/60 Hz		12 to 24 VDC (10 to 30 VDC)	
<b>Current consumption (leakage current)</b>	B, C type: 15 mA max. Y type: 2 mA max. (at 100 VAC) 3 mA max. (at 200 VAC)		0.8 mA max.	
<b>Detectable object</b>	Ferrous metal (refer to "Engineering Data" for non-ferrous metal)			
<b>Sensing distance</b>	4 mm ±10%	8 mm ±10%	4 mm ±10%	8 mm ±10%
<b>Setting distance (standard object)</b>	0 to 3.2 mm (Iron, 30 x 30 x 1 mm)	0 to 6.4 mm (Iron, 54 x 54 x 1 mm)	0 to 3.2 mm (Iron, 30 x 30 x 1 mm)	0 to 6.4 mm (Iron, 54 x 54 x 1 mm)
<b>Differential travel</b>	20% max. of sensing distance			
<b>Response frequency (see note)</b>	B, C type: 12 Hz Y type: 5 Hz	B, C type: 8 Hz Y type: 5 Hz	100 Hz	30 Hz
<b>Operation (with sensing object approaching)</b>	Load ON		D1 type: Load ON D2 type: Load OFF	
<b>Control output</b>	B type: PNP open collector output C type: NPN open collector output, 100 mA max. at 12 VDC, 200 mA max. at 24 VDC Y type: 10 to 200 mA		3 to 100 mA	
<b>Circuit protection</b>	B, C type: Protection for load short circuit, reverse polarity, surge voltage Y type: Protection for surge voltage		Protection for load short circuit, surge voltage	
<b>Indicator</b>	B, C type: Detection indicator (red LED) Y type: Operation indicator (red LED)		D1 type: Operation indicator (red LED) Operation set indicator (green LED) D2 type: Operation indicator (red LED)	
<b>Ambient temperature</b>	Operating: 0°C to 50°C (with no icing or condensation)			
<b>Ambient humidity</b>	Operating: 35% to 95% (with no condensation)			
<b>Influence of temperature</b>	±20% max. of sensing distance within a temperature range of 0°C to 50°C based on the sensing distance at a temperature of 23°C.			
<b>Influence of voltage</b>	B, C type: ±2.5% max. of sensing distance within a range of 12 to 24 VDC ±10% of rated voltage Y type: ±2.5% max. of sensing distance within a range of 100 to 220 VAC ±10% of rated voltage		±2.5% max. of sensing distance within a range of 12 to 24 VDC ±10% of rated voltage	
<b>Residual voltage</b>	B, C type: 2.0 V max. (under load current of 200 mA with cable length of 2 m) Y type: Refer to "Engineering Data"		3.0 V max. (under load current of 100 mA with cable length of 2 m)	
<b>Insulation resistance</b>	50 MΩ min. (at 500 VDC) between current carry parts and case			
<b>Dielectric strength</b>	B, C type: 1,000 VAC, 50/60 Hz for 1 min. between current carry parts and case Y type: 2,000 VAC, 50/60 Hz for 1 min. between current carry parts and case		1,000 VAC, 50/60 Hz for 1 min between current carry parts and case	
<b>Vibration resistance</b>	Destruction: 10 to 55 Hz, 1.5-mm double amplitude for 2 hrs each in X, Y, and Z directions			
<b>Shock resistance</b>	Destruction: 1,000 m/s <sup>2</sup> for 10 times each in X, Y, and Z directions			
<b>Enclosure rating</b>	IEC 60529 IP67			
<b>Weight (packaged)</b>	Approx. 170 g	Approx. 270 g	Approx. 130 g	Approx. 180 g
<b>Material</b>	Case: Brass Sensing face: Heat-resistive ABS resin			
<b>Accessories</b>	Instruction sheet			

**Note:** The response frequencies for DC switching are average values measured on condition that the distance between each sensing object is twice as large as the size of the sensing object and the sensing distance set is half of the maximum sensing distance.

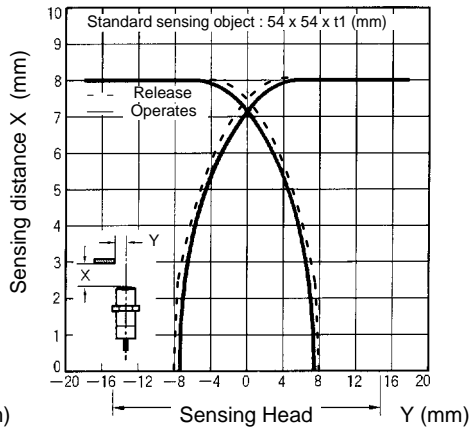
# Engineering Data

## Operating Range (Typical)

E2EZ-X4□1/-X4D□-N

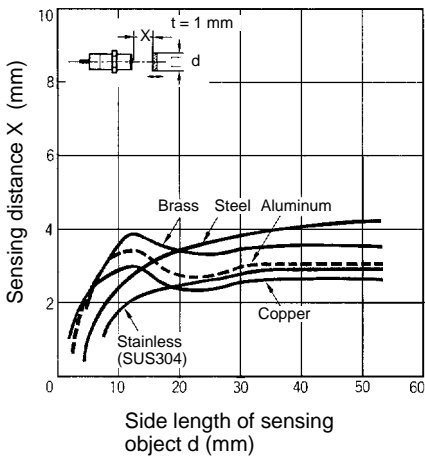


E2EZ-X8□1/-X8D□-N

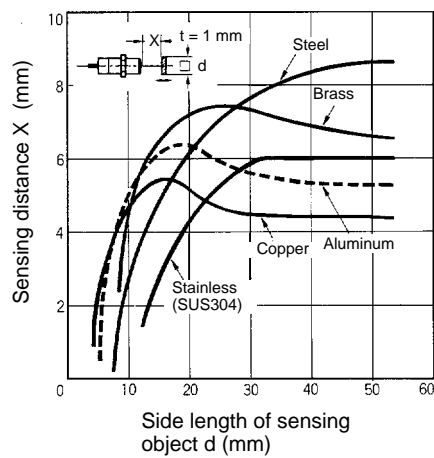


## Sensing Distance vs. Sensing Object (Typical)

E2EZ-X4□1/-X4D□-N

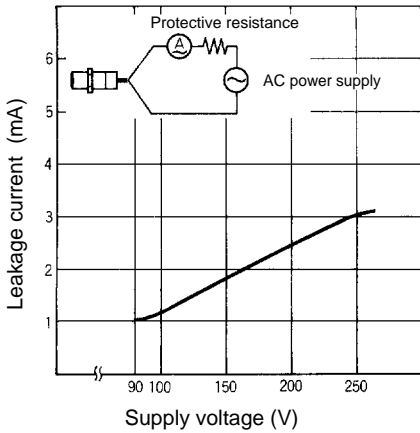


E2EZ-X8□1/-X8D□-N

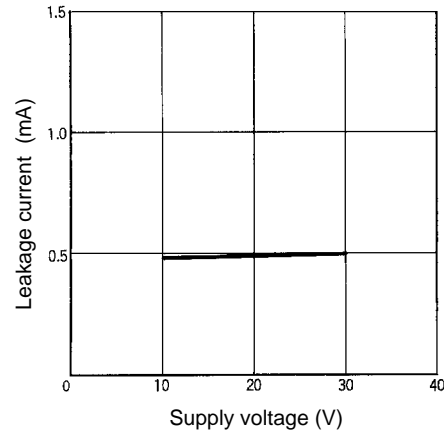


## Leakage Current Characteristics (Typical)

E2EZ-X4Y1/-X8Y1

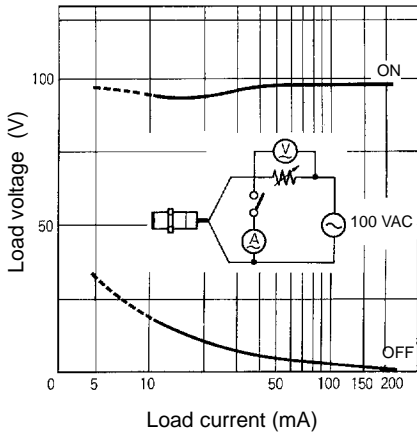


E2EZ-X□D□-N

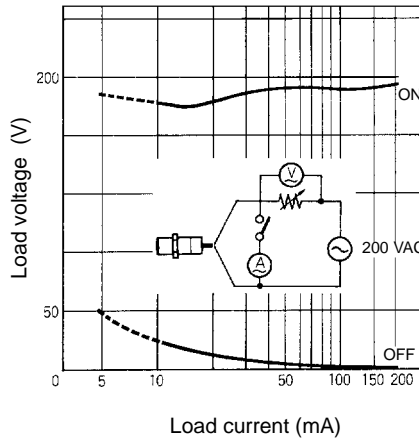


**Residual Load Voltage Characteristics (Typical)**

E2EZ-X4Y1/-X8Y1 (at 100 VAC)

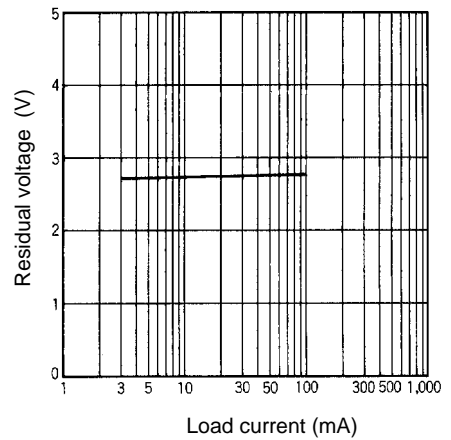


E2EZ-X4Y1/-X8Y1 (at 200 VAC)



**Residual Output Voltage Characteristics (Typical)**

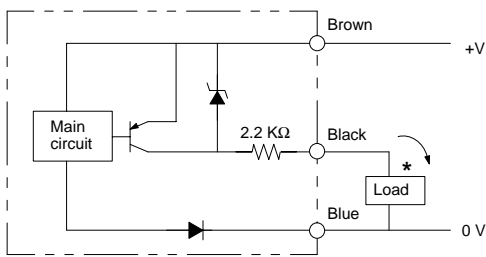
E2EZ-X□D□-N



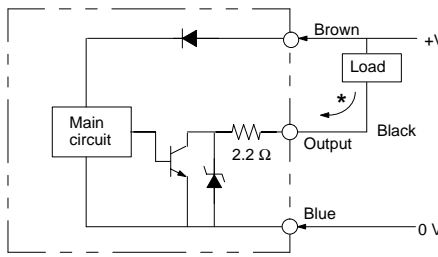
**Operation**

**■ Output Circuit Diagram**

E2EZ-X4B1/-X8B1 (PNP)



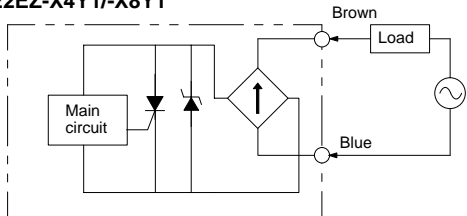
E2EZ-X4C1/-X8C1 (NPN)



<b>Sensing Object</b>	Yes	
	No	
<b>Load</b>	Operate	
	Release	
<b>Operation Indicator (Red)</b>	ON	
	OFF	

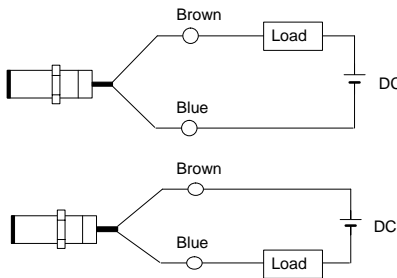
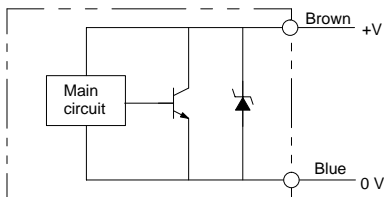
\*Load current: 100 mA max. at 12 V and 200 mA max. at 24 V

E2EZ-X4Y1/-X8Y1



<b>Sensing Object</b>	Yes	
	No	
<b>Load</b>	Operate	
	Release	
<b>Operation Indicator (Red)</b>	ON	
	OFF	

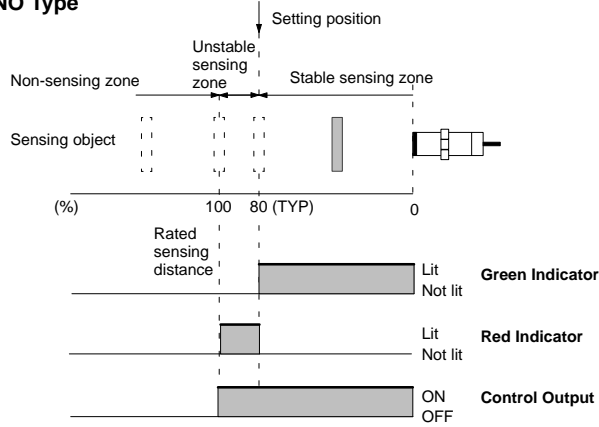
E2EZ-X□D□-N



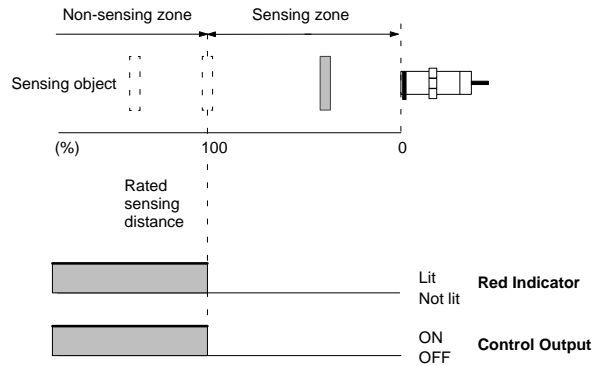
**Note:** It is possible to connect the load in two ways as shown in the above diagrams.

### ■ Operation Chart (E2EZ-X□D□-N)

#### NO Type



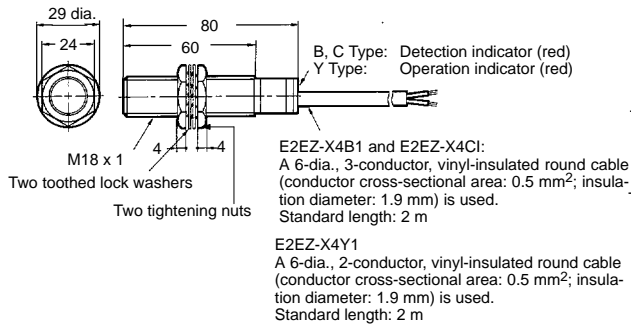
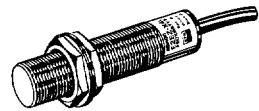
#### NC Type



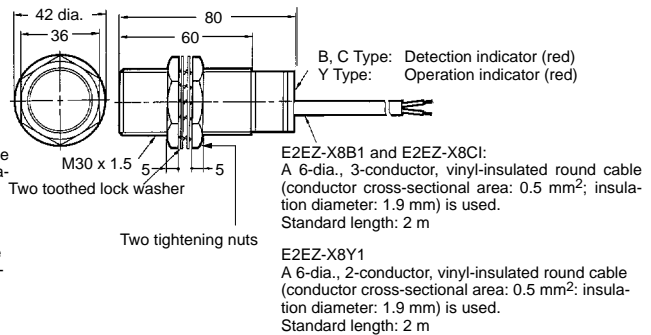
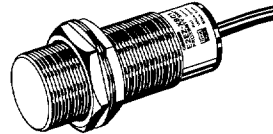
## Dimensions

Note: All units are in millimeters unless otherwise indicated.

#### E2EZ-X4□1

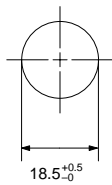


#### E2EZ-X8□1

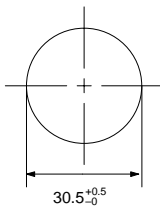


#### Mounting Hole

##### E2EZ-X4□1

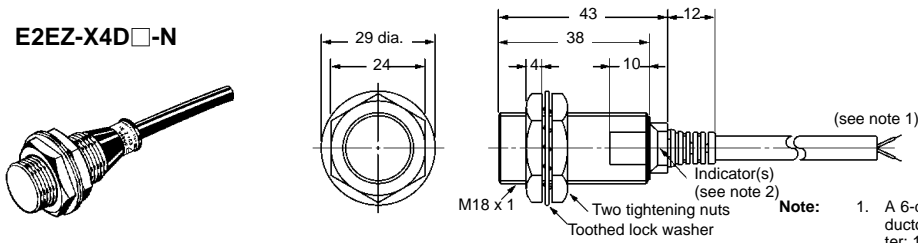


##### E2EZ-X8□1



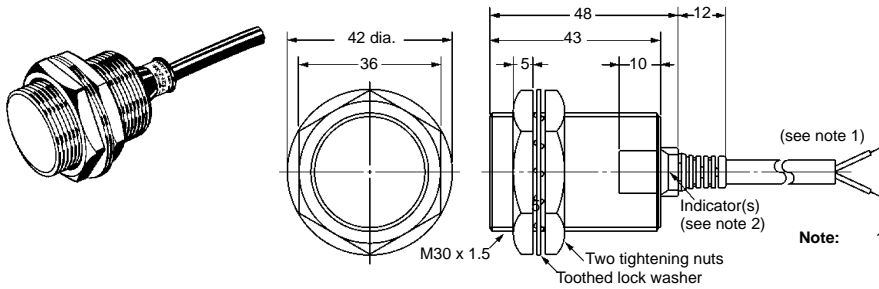
Note: Each model is provided with two toothed lock washers.

**E2EZ-X4D□-N**



- Note:**
1. A 6-dia., 2-conductor, vinyl-insulated round cable (conductor cross-sectional area: 0.5 mm<sup>2</sup>; insulation diameter: 1.9 mm) is used. Standard length: 2 m. Cable extension (through a single metal conduit): 200 m max.
  2. D1 type: Operation indicator (red);  
Operation set indicator (green)  
D2 type: Operation indicator (red)

**E2EZ-X8D□-N**



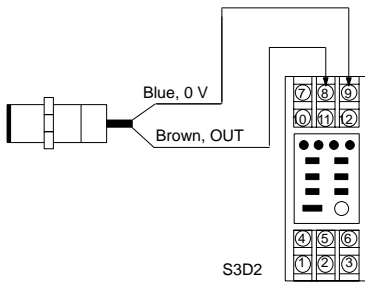
- Note:**
1. A 6-dia., 2-conductor, vinyl-insulated round cable (conductor cross-sectional area: 0.5 mm<sup>2</sup>; insulation diameter: 1.9 mm) is used. Standard length: 2 m. Cable extension (through a single metal conduit): 200 m max.
  2. D1 type: Operation indicator (red);  
Operation set indicator (green)  
D2 type: Operation indicator (red)

# Installation

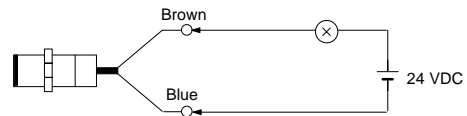
**Connection of Proximity Sensor as Power Supply**

**Connection to an S3D2 Power Supply**

Operation can be reversed with the S3D2's signal input switch.



**Connection to a Relay Load**

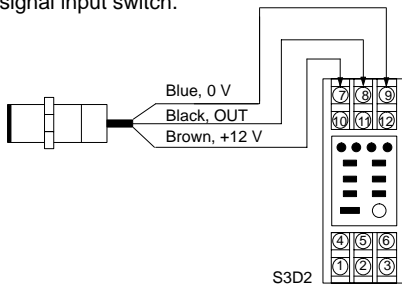


**Three-wire DC Switching Model**

**E2EZ-X4□1/-X8□1**

**Connection to an S3D2 Power Supply**

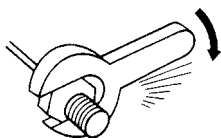
Operation can be reversed with the S3D2's signal input switch.



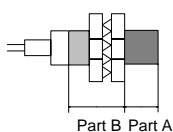
# Precautions

## Installation

Do not tighten the nut with excessive force. A washer must be used with the nut.



Shielded Model

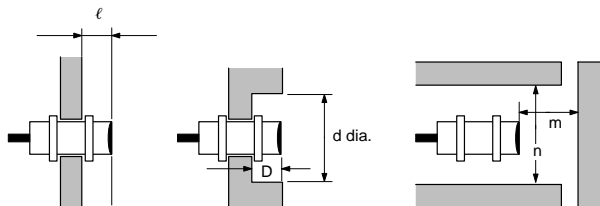


**Note:** The table below shows the tightening torques for part A and part B nuts. In the above example, the nut is on the sensor tail side (part B) and hence the tightening torque for part B applies. If this nut is in part A, the tightening torque for part A applies instead.

Model	Part A		Part B
	Length	Torque	Torque
E2EZ-X4B1 E2EZ-X4C1 E2EZ-X4Y1	20 mm	15 N • m	29 N • m
E2EZ-X8B1 E2EZ-X8C1 E2EZ-X8Y1	22 mm	29 N • m	39 N • m
E2EZ-X4D□-N	29 mm	15 N • m	---
E2EZ-X8D□-N	26 mm	39 N • m	78 N • m

## Effects of Surrounding Metal

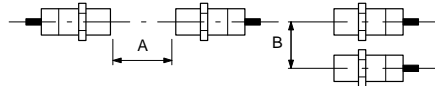
When mounting the E2EZ within a metal panel, ensure that the clearances given in the following table are maintained. Failure to maintain these distances may cause deterioration in the performance of the sensor.



Model	E2EZ-X4□1/-X4D□-N		E2EZ-X8□1/-X8D□-N	
	Steel	Aluminum	Steel	Aluminum
ℓ	0 mm	5 mm	0 mm	10 mm
d	18 mm	40 mm	30 mm	70 mm
D	0 mm	5 mm	0 mm	10 mm
m	16 mm	16 mm	32 mm	32 mm
n	27 mm	54 mm	45 mm	90 mm

## Mutual Interference

When installing two or more E2EZ face to face or side by side, ensure that the minimum distances given in the following table maintained.

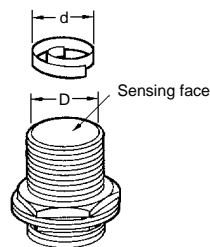


Model	A	B
E2EZ-X4□1 E2EZ-X4D□-N	40 mm	50 mm
E2EZ-X8□1 E2EZ-X8D□-N	60 mm	100 mm

## Aluminum and Cast Iron Cut Chips

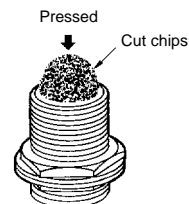
A detection signal will not be output if aluminum or cast iron cut chips are stuck to the sensing face. Under the following conditions, however, the proximity sensor may output detection signals, in which case remove the cut chips from the sensing face.

If the external diameter (d) of a cut chip is two-thirds the diameter (D) of the sensing face as shown in the illustration.



Model	D
E2EZ-X4□1 E2EZ-X4D□-N	16 mm
E2EZ-X8□1 E2EZ-X8D□-N	28 mm

If cut chips are pressed onto the sensing face as shown in the illustration.



**ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.**

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

Cat. No. D028-E1-4 **In the interest of product improvement, specifications are subject to change without notice.**

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