

### 30mm XN E-Stops

**Key features:**

- Plastic bezel, metallic padlock and flush bezel available (XN series)
- Install up to 20 padlocks (XN4E)
- ø40, ø44 or ø60mm Mushroom heads available
- IDEC's original "safe break action" ensures that the contacts stay open when the contact block is detached from the operator.
- Safety-lock mechanism (IEC60947-5-5, 6.2)
- 2-in-1: Push-to-lock, Pull/Turn-to-Reset
- Push-ON LED model allows E-Stops to be illuminated only when latched
- Direct Opening Action mechanism (IEC60947-5-5, 5.2, IEC60947-5-1, Annex K)
- Very short panel depth
- Degree of protection IP65 (IEC60529)
- RoHS compliant (EU directive 2002/95/EC).
- XN4E series complies with OSHA and ISO 12100-2:2003 standards
- UL, c-UL listed, EN compliant
- UL NISD category emergency type device (File# E305148)



File No. E68961

**Specifications**

<b>Applicable Standards</b>	IEC60947-5-1, EN60947-5-1, IEC60947-5-5, EN60947-5-5, UL508, UL991, CSA C22.2 No. 14	
<b>Operating Temperature</b>	Non-illuminated: -25 to +60°C (no freezing), Illuminated: -25 to +55°C (no freezing)	
<b>Operating Humidity</b>	45 to 85% RH (no condensation)	
<b>Storage Temperature</b>	-45 to +80°C	
<b>Operating Force</b>	<b>XN1E, XN5E</b> Push-to-lock: 32N Pull-to-reset: 21N Turn-to-reset: 0.27 N·m	<b>XN4E</b> Push-to-lock: 32N Pull-to-reset: N/A Turn-to-reset: 0.4 N·m
<b>Minimum Force Required for Direct Opening Action</b>	80N	
<b>Min Operator Stroke Required for Direct Opening Action</b>	4mm	
<b>Maximum Operator Stroke</b>	4.5mm	
<b>Contact Resistance</b>	50mΩ maximum (initial value)	
<b>Contact Material</b>	Gold plated silver	
<b>Insulation Resistance</b>	100MΩ minimum (500V DC megger)	
<b>Impulse Withstand Voltage</b>	2.5kV	
<b>Pollution Degree</b>	3	
<b>Operation Frequency</b>	900 operations/hour	
<b>Shock Resistance</b>	Operating extremes: 150m/s <sup>2</sup> (15G), Damage limits: 1000m/s <sup>2</sup> (100G)	
<b>Vibration Resistance</b>	Operating extremes: 10 to 500Hz, amplitude 0.35mm acceleration 50m/s <sup>2</sup> Damage limits: 10 to 500Hz, amplitude 0.35mm acceleration 50m/s <sup>2</sup>	
<b>Mechanical Life</b>	250,000 operations minimum	
<b>Electrical Life</b>	100,000 operations minimum, (250,000 operations minimum @ 24V AC/DC, 100mA)	
<b>Degree of Protection</b>	Operator: IP65 (IEC60529) Terminal: IP20 (when XW9Z-VL2MF is installed)	
<b>Terminal Style</b>	M3.0 screw terminal	
<b>Recommended Tightening Torque for Locking Ring</b>	2.5N·m	
<b>Wire Size</b>	16 AWG max	
<b>Weight</b>	XN1E: Plastic bezel: 83g (ø40 mm), 93g (ø60 mm) XN5E: Flush bezel: 89g XN4E: Padlock type: 20g	

Overview

X Series E-Stops




Door Interlock Switches

Enabling Switches



Barriers

AS-Interface Safety at Work



**Part Numbers**
**XN1E Plastic Bezel Type E-Stops**

Overview	Operator Type	Main Contact	Monitor Contact	Part Number	
<b>Non-Illuminated</b> 	40mm Mushroom	1NC	1NO	XN1E-BV411MR	
		2NC	-	XN1E-BV402MR	
		2NC	2NO	XN1E-BV422MR	
		3NC	1NO	XN1E-BV413MR	
		60mm Mushroom	4NC	-	XN1E-BV404MR
			1NC	1NO	XN1E-BV511MR
			2NC	-	XN1E-BV502MR
			2NC	2NO	XN1E-BV522MR
<b>Illuminated</b> 	40mm Mushroom LED (24V AC/DC)	3NC	1NO	XN1E-BV513MR	
		4NC	-	XN1E-BV504MR	
		1NC	1NO	XN1E-LV411Q4MR	
		2NC	-	XN1E-LV402Q4MR	
	40mm Mushroom Push-ON LED (24V AC/DC)	2NC	2NO	XN1E-LV422Q4MR	
		3NC	1NO	XN1E-LV413Q4MR	
		4NC	-	XN1E-LV404Q4MR	
		2NC	1NO	XN1E-TV412Q4MR	

**XN4E Padlock Type E-Stops**

Door Interlock Switches	Operator Type	Main Contact	Monitor Contact	Part Number
<b>Non-Illuminated</b> 	44mm Mushroom	1NC	1NO	XN4E-BL411MR
		2NC	-	XN4E-BL402MR
		2NC	2NO	XN4E-BL422MR
		3NC	1NO	XN4E-BL413MR
		4NC	-	XN4E-BL404MR
<b>Illuminated</b> 	44mm Mushroom LED (24V AC/DC)	1NC	1NO	XN4E-LL411Q4MR
		2NC	-	XN4E-LL402Q4MR
		2NC	2NO	XN4E-LL422Q4MR
		3NC	1NO	XN4E-LL413Q4MR
		4NC	-	XN4E-LL404Q4MR
		44mm Mushroom Push-ON LED (24V AC/DC)	2NC	1NO

**XN5E Flush Bezel Type E-Stops**

Barriers	Operator Type	Main Contact	Monitor Contact	Part Number
<b>Non-Illuminated</b> 	40mm Mushroom	1NC	1NO	XN5E-BV411MR
		2NC	-	XN5E-BV402MR
		2NC	2NO	XN5E-BV422MR
		3NC	1NO	XN5E-BV413MR
		4NC	-	XN5E-BV404MR
<b>Illuminated</b> 	40mm Mushroom LED (24V AC/DC)	1NC	1NO	XN5E-LV411Q4MR
		2NC	-	XN5E-LV402Q4MR
		2NC	2NO	XN5E-LV422Q4MR
		3NC	1NO	XN5E-LV413Q4MR
		4NC	-	XN5E-LV404Q4MR
		40mm Mushroom Push-ON LED (24V AC/DC)	2NC	1NO

**X Series E-Stops**
**Door Interlock Switches**
**Enabling Switches**
**Barriers**
**AS-Interface Safety at Work**

**Contact Ratings**

<b>Rated Insulation Voltage (Ui)</b>		250V				
<b>Current (Ith)</b>		5A				
<b>Rated Operating Voltage (Ue)</b>		30V	125V	250V		
<b>Rated Operating Current</b>	<b>Main Contacts (NC)</b>	AC 50/60Hz	Resistive Load (AC-12)	–	5A	3A
			Inductive Load (AC-15)	–	3A	1.5A
	DC	Resistive Load (DC-12)	2A	0.4A	0.2A	
		Inductive Load (DC-13)	1A	0.22A	0.1A	
<b>Rated Operating Current</b>	<b>Monitor Contacts (NO)</b>	AC 50/60Hz	Resistive Load (AC-12)	–	1.2A	0.6A
			Inductive Load (AC-14)	–	0.6A	0.3A
	DC	Resistive Load (DC-12)	2A	0.4A	0.2A	
		Inductive Load (DC-13)	1A	0.22A	0.1A	

1. Minimum applicable load: 5V AC/DC, 1mA (reference value).
2. The rated operating currents are measured at resistive/inductive load types specified in IEC 60947-5-1.

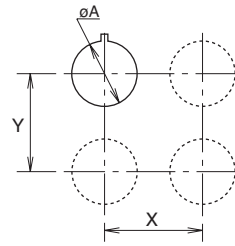
**Illuminated Unit LED Ratings**

Model	Operating Voltage	Current
XN	24V AC/DC ±10%	15mA

**Depth Behind the Panel**

Model	Depth (mm)	Description
XN1E	47.7	1 - 4 contacts, plastic bezel
XN5E	60.4	1 - 4 contacts, flush bezel
XN4E	61.4	1 - 4 contacts, padlock

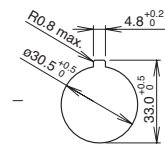
**Mounting Hole Layout**



Measurements

Size	øA	X & Y
XN1E, XN5E	30.5 <sup>+0.5</sup>	70mm min
XN4E	30.5	For XN4E, determine the values according to the size and number of padlocks and hasp.

**Panel Cutout**



**Part Number Key**

**XN1E - L V 4 02 Q4 MR**

**Bezel**

- 1: Plastic Bezel
- 4: Padlock
- 5: Flush Bezel

**Illumination**

- XN1E, XN5E
  - BV: Non-Illuminated
  - LV: Illuminated LED
  - TV: Illuminated Push-ON LED
- XN4E
  - BL: Non-Illuminated
  - LL: Illuminated LED
  - TL: Illuminated Push-ON LED

**Mushroom Size**

- 4: ø40mm: XN1E, XN5E
- ø44mm: XN4E
- 5: ø60mm (XN1E non-illuminated only)

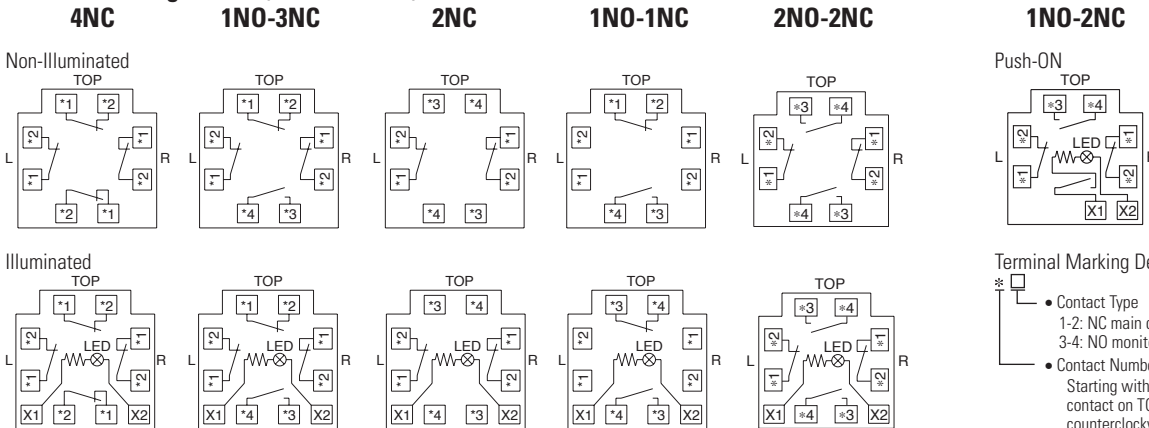
**Contact Configuration**

- 11: 1NO - 1NC
- 02: 2NC
- 13: 1NO - 3NC
- 22: 2NO - 2NC
- 04: 4NC
- 12: 1NO-2NC (Push-ON LED only)

**Voltage Code**

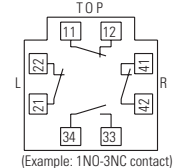
- Blank: Non-Illuminated
- Q4: 24V AC/DC (Illuminated & Push-ON LED type)

**Terminal Arrangements (Bottom View)**

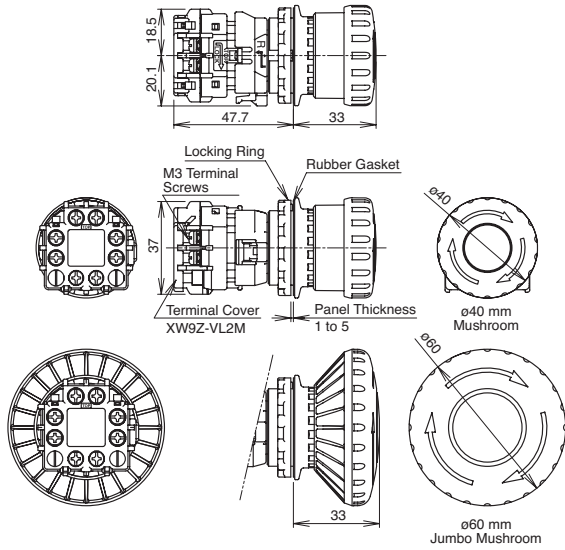


**Terminal Marking Description**

- Contact Type
  - 1-2: NC main contact
  - 3-4: NO monitor contact
- Contact Number (1-4)
  - Starting with the contact on TOP in a counterclockwise direction.
  - Note:
    - 1: contact on the TOP
    - 2: contact on the Left
    - 3: contact on the Bottom
    - 4: contact on the Right

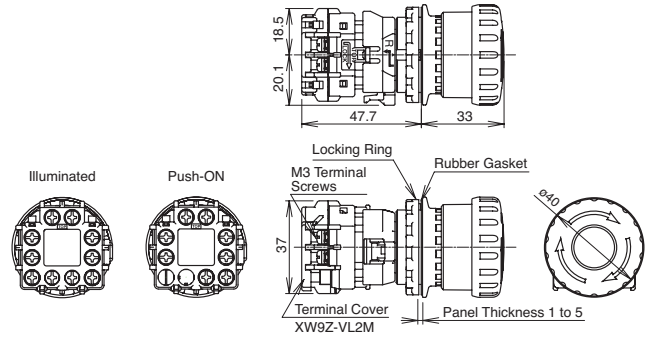


**XN1E Non-Illuminated (with terminal cover)**

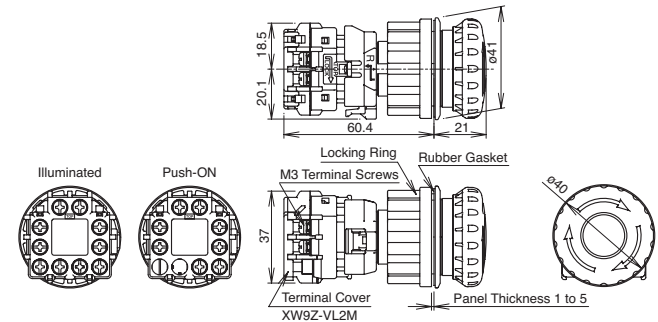


**Dimensions**

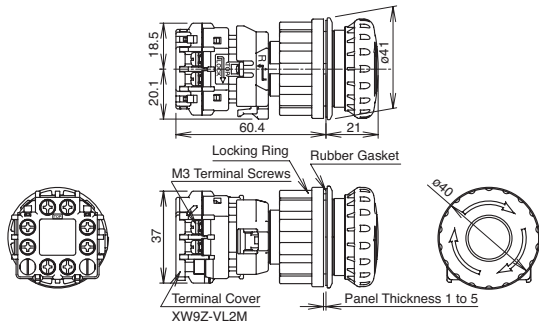
**XN1E Illuminated/Push-ON (with terminal cover)**



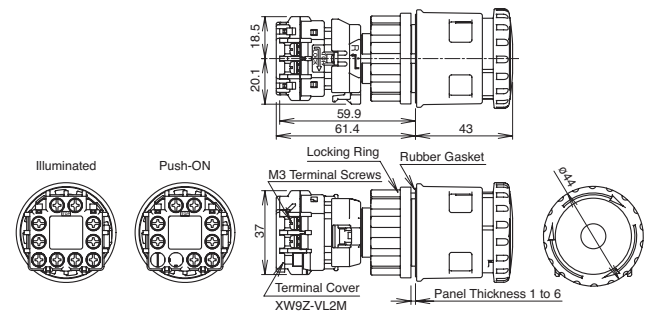
**XN5E Illuminated (with terminal cover)**



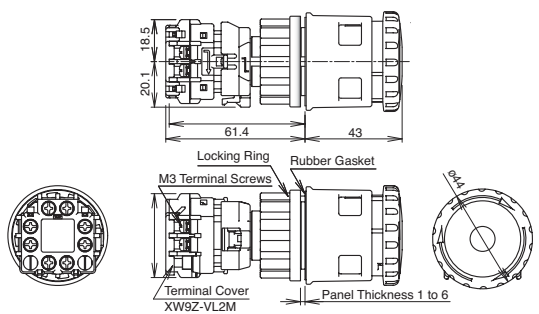
**XN5E Non-Illuminated (with terminal cover)**



**XN4E Illuminated (with terminal cover)**



**XN4E Non-Illuminated (with terminal cover)**



**Nameplates**

Description	Part No.	Legend	Mounting Panel Thickness
	HNAV-0	(blank)	XN4E: 1.0 to 4.5 mm
	HNAV-27	EMERGENCY STOP	XN1E, XN5E: 1.0 to 3.5 mm

**Terminal Covers**

Model	Description	Part Number
	Terminal Cover for Contact Block	XW9Z-VL2M
	IP20 Fingersafe Cover	XW9Z-VL2MF

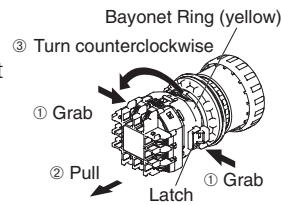
**Accessories**

Model	Description	Part Number
	Locking Ring Wrench	XN9Z-T1
	Locking Ring Twist Wrench	TWST-T1
	Lockout Hasp	XN9Z-HASP421

## Operating Instructions

### Removing the Contact Block

First unlock the operator button. Grab the yellow bayonet ring ① and pull back the bayonet ring ②. Turn counterclockwise ③. Grab the latch ④ and pull the contact block out.

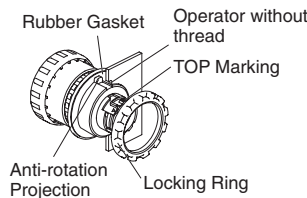


### Notes for removing the contact block

1. Do not attempt to remove the contact block while the operator is latched, otherwise the switch may be damaged.
2. When the contact block is removed, the monitor contact (NO contact) is closed.
3. While removing the contact block, do not use excessive force, otherwise the switch may be damaged.
4. An LED lamp is built into the contact block for illuminated pushbuttons. When removing the contact block, pull the contact block straight to prevent damage to the LED lamp. If excessive force is used, the LED lamp may be damaged and fail to light.

### Panel Mounting

Remove the locking ring from the operator and check that the rubber gasket is in place. Insert the operator from panel front into the panel hole. Face the side without thread on the operator with TOP marking upward, and tighten the locking ring using ring wrench XN9Z-T1 or TWST-T1 to a torque of 2.5 N·m maximum.



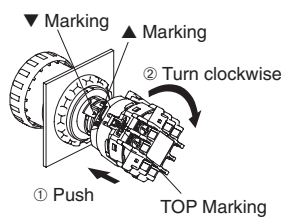
### When using a nameplate

When using a nameplate HNAV-□, break the projection from the nameplate using pliers.



### Installing the Contact Block

First unlock the operator button. Align the small ▼ marking on the edge of the operator with the small ▲ marking on the yellow bayonet ring. Hold the contact block, not the bayonet ring. Press the contact block onto the operator and turn the contact block clockwise until the bayonet ring clicks.



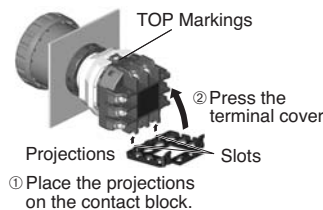
### Notes for installing the contact block

1. Do not attempt to install the contact block when the operator is latched, otherwise the switch may be damaged.
2. Make sure that the bayonet ring is in the locked position.

### Installing & Removing Terminal Covers

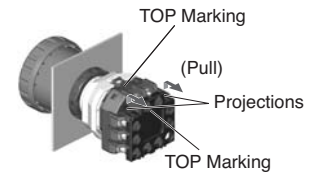
#### XW9Z-VL2M

To install the terminal cover, align the TOP marking on the terminal cover with the TOP marking on the contact block. Place the two projections on the bottom side of the contact block into the slots in the terminal cover. Press the terminal cover.



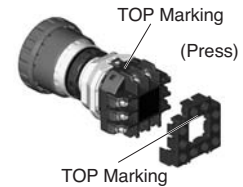
toward the contact block.

To remove the terminal cover, pull out the two latches on the top side of the terminal cover. Do not exert excessive force to the latches, otherwise the latches may break.



#### IP20 Fingersafe Terminal Cover XW9Z-VL2MF

To install the IP20 fingersafe terminal cover, align the TOP marking on the cover with the TOP marking on the contact block, and press the cover toward the contact block.



1. Once installed, the XW9Z-VL2MF cannot be removed.
2. With the XW9Z-VL2MF installed, crimping terminals cannot be used.
3. The XW9Z-VL2MF cannot be installed after wiring.
4. Make sure that the XW9Z-VL2MF is securely installed. IP20 cannot be achieved when installed loosely, and electric shock may occur.

### Notes for Operation

When using the XN emergency stop switches in safety-related part of a control system, observe safety standards and regulations of the relevant country or region. Also be sure to perform a risk assessment before operation.

### Wiring

Tighten the M3 terminal screws to a torque of 0.6 to 1.0 N·m.

### Contact Bounce

When the button is reset by pulling or turning, the NC main contacts will bounce. When pressing the button, the NO monitor contacts will bounce.

When designing a control circuit, take the contact bounce time into consideration (reference value: 20 ms).

### LED Illuminated Switches

LED lamp is built into the contact block and cannot be replaced.

### Handling

Do not expose the switch to excessive shocks and vibrations, for example by operating the switch with tools. Otherwise the switch may be deformed or damaged, causing malfunction or operation failure.

### Screw Terminal Type

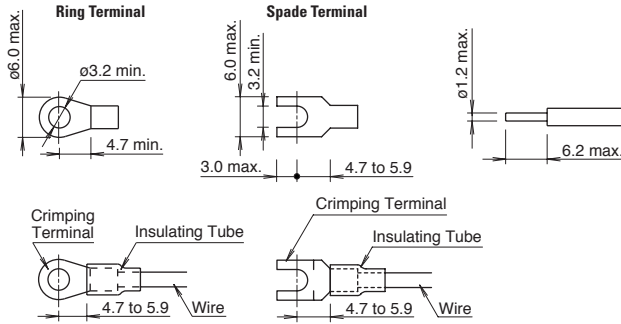
1. AWG18 to 16
2. Tighten the M3 terminal screw to a tightening torque of 0.6 to 1.0 N·m.

Operating Instructions, continued

**Screw Terminal Type**

1. Wire thickness: 0.75 to 1.25 mm<sup>2</sup> (AWG18 to 16)

**Applicable Crimping Terminals**



**Be sure to install an insulating tube on the crimping terminal.**

2. Tighten the M3 terminal screw to a tightening torque of 0.6 to 1.0 N·m.

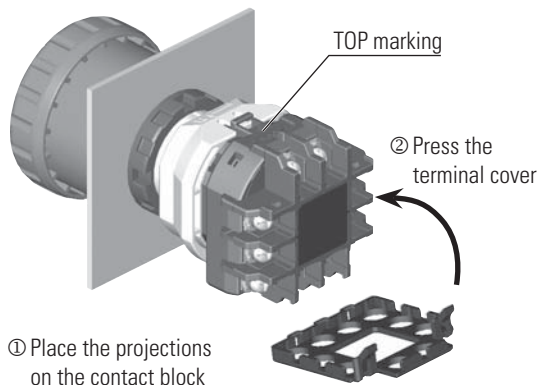
**Connector Type**

1. Connector shape  
Tyco Electronics, D-2000 series  
Part No. 1376009-1 (tab header, board mount)
2. Applicable connectors (to be supplied by user)  
Tyco Electronics, D-2000 series  
Part No. 1-1318119-4 (receptacle housing)  
Tyco Electronics, D-2000 series  
Part No. 1318107-1 (receptacle contact)
3. To prepare correct receptacles for the connector type, read the instruction sheet and catalog of Tyco Electronics and understand the installation and wiring method.
4. Fasten the cable so that the connector is not pulled.  
Otherwise the switch may be deformed and damaged, causing malfunction or operation failure.

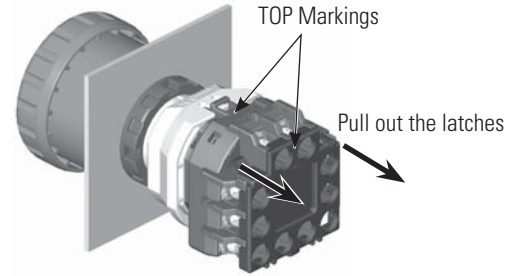
**Installing and Removing Terminal Covers**

**XW9Z-VL2M**

To install the terminal cover, align the TOP marking on the terminal cover with the TOP marking on the contact block. Place the two projections on the bottom side of the contact block into the slots in the terminal cover. Press the terminal cover toward the contact block.

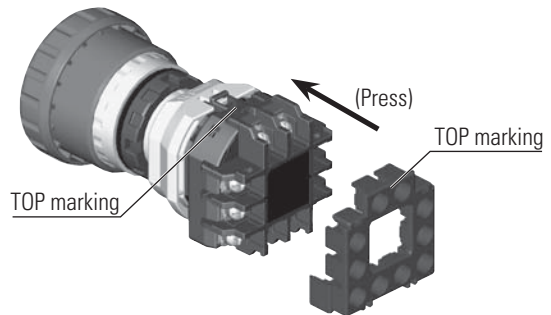


To remove the terminal cover, pull out the two latches on the top side of the terminal cover. Do not exert excessive force to the latches, otherwise the latches may break.



**IP20 Protection Terminal Cover XW9Z-VL2MF**

To install the IP20 protection cover, align the TOP marking on the cover with the TOP marking on the contact block, and press the cover toward the contact block.



- 1. Once installed, the XW9Z-VL2MF cannot be removed.
- 2. The XW9Z-VL2MF cannot be installed after wiring.
- 3. With the XW9Z-VL2MF installed, crimping terminals cannot be used. Use solid wires.
- 4. Make sure that the XW9Z-VL2MF is securely installed. IP20 cannot be achieved when installed loosely, and electric shocks may occur.

**Contact Bounce**

When the button is reset by pulling or turning, the NC main contacts will bounce. When pressing the button, the NO monitor contacts will bounce.

When designing a control circuit, take the contact bounce time into consideration (reference value: 20 ms).

**LED Illuminated Switches**

An LED lamp is built into the contact block and cannot be replaced.

**Installing the Anti-rotation Ring HW9Z-RL**

Align the side without thread on the operator with TOP marking, the small marking on the anti-rotation ring, and the recess on the mounting panel.

