

ø22mm XW E-Stops 263

XW Series E-Stops



www.IDEC.com/usa/estop



Revolutionary "Safe Break Action" Design

The IDEC Emergency Stop switches, the XA, XW, and XN series, include revolutionary new technology that will change the way E-Stop switches are designed. This "safe break action" concept provides greater levels of human safety and is the first of its kind in the world!

Innovative Design

Conventional E-Stop switches are designed with spring pressure on the Normally Closed (NC) contacts, keeping them in the closed position and allowing the machine to operate. Improper installation or excessive force to the stop button in an emergency may break or dislodge a vital part, causing the spring loaded contact to stay closed. This situation renders the E-Stop incapable of stopping the machine, and can lead to catastrophic events, personal injury and possible loss of life.

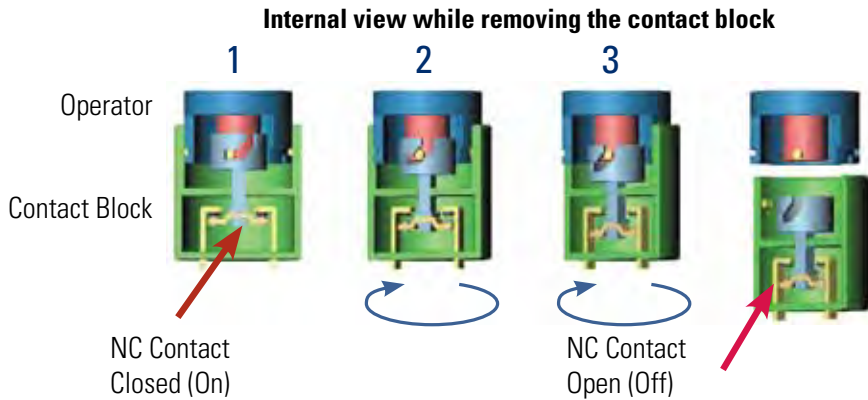
Safe Break Action Design



This one-of-a-kind "safe break action" design, found only in the IDEC XA, XW, and XN series, reverses the energy direction and uses the spring-pressure to assure that the NC contacts will open if the emergency switch is damaged or the contact blocks separate due to excessive force. The NC contacts will reliably open, even if they are welded, and stop the machine. Combined with IDEC quality, this is the E-Stop switch you want in a life threatening situation.

Level 4 Safety

XA, XW & XN Series, The Safe Break Action E-Stops!



The X Series of E-Stop switches include up to four contacts in a very compact package. In today's automated world, more customers are requiring E-Stop switches with at least three contacts. (Two of the contacts trip the power and the third contact is used to alert a safety-monitoring relay.) Both the XA and XW series switches offer up to four "safe-break" contacts with a depth behind the panel that is half the size of conventional E-Stop switches. This means that there is an additional contact available and the **switches can be used in Level 4 safety category applications.**

IDEC's new E-Stop switches are secured from the rear of the control panel so that the E-Stop cannot be removed from the front. Another unique feature of the XA & XW E-Stop switches is that either a push-turn or push-pull reset method can be used to reset the switches. This eliminates any possible confusion for operators when resetting the switch. The durability and quality of these new E-Stop switches make them extremely reliable. They can withstand the increased high stress caused by panic or a reaction to an emergency situation.

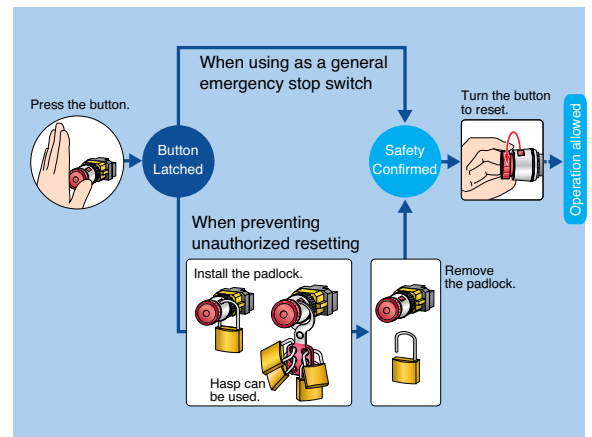
Reach for the "Safe Break Action"

When the contact block is removed from the operator the main contact (NC) is forced to open (OFF). When removing the contact block, the cam provides a direct opening action to open the contact.

Padlock E-Stops

As shown in the diagram, upon latching a traditional E-stop, it is up to the technician to verify and confirm that the machine area is clear and there are no other technicians working before resetting the E-stop and turning on the machine. There is always a chance that the technician might miss someone in the work area before resetting the E-stop, potentially causing injury to that person.

The solution is XN4E series padlock E-Stops, which allow technicians to install their personal padlocks at the spot of actuation of the E-Stop ensuring their own safety. The diagram shows how personal padlocks can be installed. Each one blocks the resetting of the E-stop until all the padlocks are removed. This provides added safety and prevents unauthorized or accidental resetting of the E-stops. A maximum of 20 padlocks can be installed by using lockout hasps.



Important Safety Information

X Series E-Stops have lower internal energy in the “Locked” (Latching) position than in the “Normal” (Reset) position. When the switch is damaged from an excessive shock, the main contact (NC) moves toward the OFF (Safe) position.

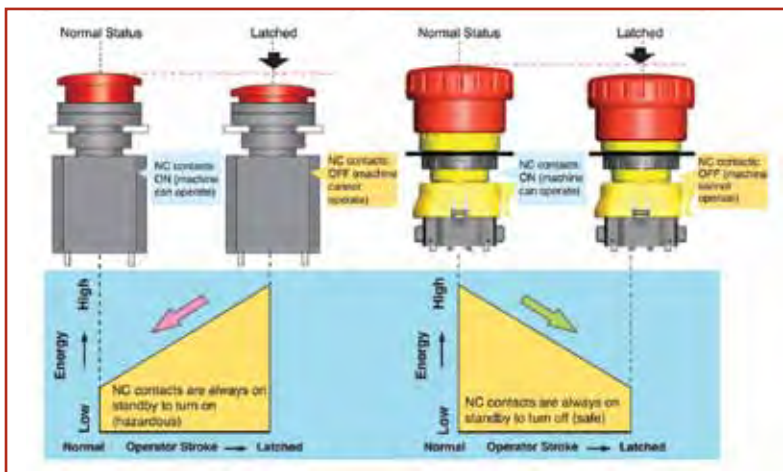
Direct Opening Action

Even if the contacts are welded, the force applied on the button directly opens the contact.

Rated Insulation Voltage: 250V
 Rated Thermal Current: 2.5A

Safety Interlock Mechanism

Contacts are opened when the operator is locked, and remain opened until the operator is unlocked intentionally. (IEC60947-5; 6:2)



Two E-Stops in One

Pushlock Pull or Turn Reset

The X Series E-Stops can be reset either by pulling or turning the button. This ensures that the reset action will always be different from the make action. With traditional E-Stops, you need to choose between Push-Pull or Pushlock Turn Reset. With the IDEC X Series E-Stops you get both in one switch.



XN4E, padlock type is Turn Reset only.

Pull Reset

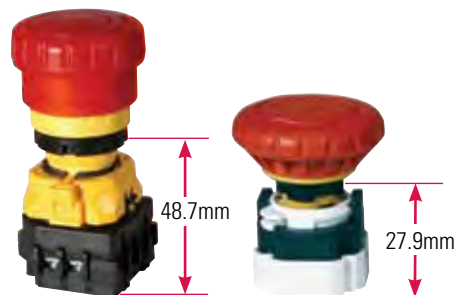


Turn Reset

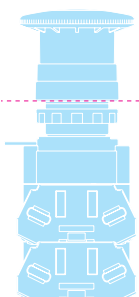


Compact

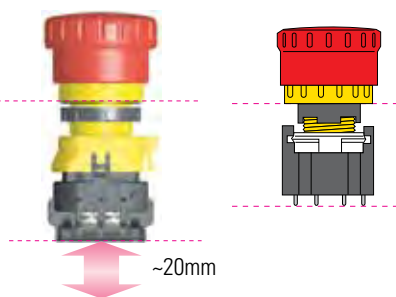
Compact Body with Four Contacts



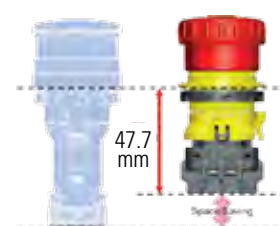
Traditional E-Stop



22mm XW and 16mm XA Series



XN Series



Selection Guide

Overview

XW Series E-Stops





Interlock Switches

Enabling Switches

Safety Control

Light Curtains

AS-Interface Safety at Work

Series	XA	XW	XN
Appearance			
Page	see Switches & Pilot Devices section	263	see Switches & Pilot Devices section
Mounting Hole	16mm	22mm	30mm
Operator Type	Illuminated & Non-Illuminated E-Stops: Pushlock/Turn Reset, Push-Pull		
Reset Action	Pushlock Pull or Turn Reset (both actions available in each switch, except XN4E)		
Contact Configuration	1NO - 1NC, 2NC, 1NO-3NC, 4NC		
Electrical Life	100,000 Minimum		
Mechanical Life	250,000 Minimum		
Termination	PCB & Solder Terminals	Screw Terminals	
Degree of Protection	IP65 (IEC60529)	Operator: IP65 (IEC60529) Terminal: IP20 (when XW9Z-VL2MF is installed)	
Approvals			



XA series UL recognized.

22mm XW E-Stops

Key features:

- The depth behind the panel is only 48.7 mm for 1 to 4 contacts (with terminal cover) for illuminated and non-illuminated units.
- IDEC's original "Safe break action" ensures that the NC contacts open when the contact block is detached from the operator.
- 1 to 4NC main contacts and 1 or 2NO monitor contacts
- Push-to-lock, Pull or Turn-to-reset operator
- Safety lock mechanism (IEC60947-5-5, 6.2)
- Degree of protection IP65 (IEC60529)
- Fingersafe (IP20) terminals
- Two button sizes: ø40 and ø60 mm
- Push-ON illumination type available (40mm mushroom head)
- Direct opening action mechanism (IEC60947-5-5, 5.2, IEC60947-5-1, Annex K)
- RoHS compliant (EU directive 2002/95/EC).
- UL c-UL listed. EN compliant
- UL NISD category emergency stop device (File# E305148)



UL File #E68961



CCC No. 2005010305150897



Specifications

Applicable Standards	IEC60947-5-1, EN60947-5-1, IEC60947-5-5, EN60947-5-5, UL508, UL991, CSA C22.2 No. 14
Operating Temperature	Non-illuminated: -25 to +60°C (no freezing), Illuminated: -25 to +55°C (no freezing)
Operating Humidity	45 to 85% RH (no condensation)
Storage Temperature	-45 to +80°C
Operating Force	Push-to-lock: 32N Pull-to-reset: 21N Turn-to-reset: 0.27N·m
Minimum Force Required for Direct Opening Action	80N
Min Operator Stroke Required for Direct Opening Action	4mm
Maximum Operator Stroke	4.5mm
Contact Resistance	50mΩ maximum (initial value)
Contact Material	Gold plated silver
Insulation Resistance	100MΩ minimum (500V DC megger)
Impulse Withstand Voltage	2.5kV
Pollution Degree	3
Operation Frequency	900 operations/hour
Shock Resistance	Operating extremes: 150m/s ² (15G), Damage limits: 1000m/s ² (100G)
Vibration Resistance	Operating extremes: 10 to 500Hz, amplitude 0.35mm acceleration 50m/s ² Damage limits: 10 to 500Hz, amplitude 0.35mm acceleration 50m/s ²
Mechanical Life	250,000 operations minimum
Electrical Life	100,000 operations minimum, (250,000 operations minimum @ 24V AC/DC, 100mA)
Degree of Protection	Operator: IP65 (IEC60529) Terminal: IP20 (when XW9Z-VL2MF is installed)
Terminal Style	M3.0 screw terminal
Recommended Tightening Torque for Locking Ring	2.0N·m
Wire Size	16 AWG max
Weight	ø40mm: 72g ø60mm: 81g

Part Numbers

Overview

XW Series E-Stops




Interlock Switches

Enabling Switches

Safety Control


Light Curtains

AS-Interface Safety at Work




Style	Operator Type	Monitor Contact	Main Contact	Part Number
Non-Illuminated 	40mm Mushroom	1NO	1NC	XW1E-BV411M-R
		-	2NC	XW1E-BV402M-R
		2NO	2NC	XW1E-BV422M-R
		1NO	3NC	XW1E-BV413M-R
		-	4NC	XW1E-BV404M-R
	60mm Mushroom	1NO	1NC	XW1E-BV511M-R
		-	2NC	XW1E-BV502M-R
		2NO	2NC	XW1E-BV522M-R
		1NO	3NC	XW1E-BV513M-R
		-	4NC	XW1E-BV504M-R
Illuminated ¹ 	40mm Mushroom LED with built-in 24V AC/DC LED	1NO	1NC	XW1E-LV411Q4M-R
		-	2NC	XW1E-LV402Q4M-R
		2NO	2NC	XW1E-LV422Q4M-R
		1NO	3NC	XW1E-LV413Q4M-R
	40mm Mushroom Push-ON LED ²	-	4NC	XW1E-LV404Q4M-R
		1NO	2NC	XW1E-TV412Q4M-R

- 1. The light is independent of the position of the switch, except for push-on LED type.
- 2. The light only operates when the switch is pressed as it is internally wired.

XW Series EMO Switches

Style	NC Main Contact	NO Monitor Contact	Part Number
40mm Mushroom 	1NC	-	XW1E-BV401M-RH-EMO
	2NC	-	XW1E-BV402M-RH-EMO
	3NC	-	XW1E-BV403M-RH-EMO
	4NC	-	XW1E-BV404M-RH-EMO
	1NC	1NO	XW1E-BV411M-RH-EMO
	2NC	1NO	XW1E-BV412M-RH-EMO
	3NC	1NO	XW1E-BV413M-RH-EMO
	2NC	2NO	XW1E-BV422M-RH-EMO

FB Enclosures with XW E-Stops

Style	Style	NC Contact	NO Contact	Part Number
	40mm Push-lock Turn/Pull Reset Non-Illuminated	2NC	-	FB1W-XW1E-BV402MR
		1NC	1NO	FB1W-XW1E-BV411MR
		2NC	2NO	FB1W-XW1E-BV422MR
		3NC	1NO	FB1W-XW1E-BV413MR
		4NC	-	FB1W-XW1E-BV404MR
	40mm Push-lock Turn/Pull Reset Illuminated*	2NC	-	FB1W-XW1E-LV402MR
		1NC	1NO	FB1W-XW1E-LV411MR
		2NC	2NO	FB1W-XW1E-LV422MR
		3NC	1NO	FB1W-XW1E-LV413MR
		4NC	-	FB1W-XW1E-LV404MR
	60mm Push-lock Turn/Pull Reset Non-Illuminated	2NC	-	FB1W-XW1E-BV502MR
		1NC	1NO	FB1W-XW1E-BV511MR
		2NC	2NO	FB1W-XW1E-BV522MR
		3NC	1NO	FB1W-XW1E-BV513MR
		4NC	-	FB1W-XW4E-BV504MR




For added safety, Switch Guards and Nameplates can be used with E-Stop Enclosures



*LED illumination voltage: 24V AC/DC

Contact Ratings

Rated Insulation Voltage (Ui)		250V				
Rated Current (Ith)		5A				
Rated Operating Voltage (Ue)		30V	125V	250V		
Rated Operating Current	Main Contacts (NC)	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	
Monitor Contacts (NO)	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	

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

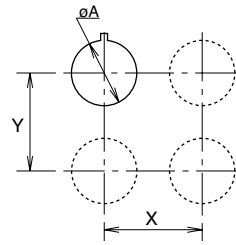
Illuminated Unit LED Ratings

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

Depth Behind the Panel

Depth (mm)	Description
48.7	1 - 4 contacts, both illuminated and non-illuminated

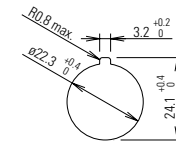
Mounting Hole Layout



Measurements

Size	øA	X & Y
40mm	22.3 ^{+0.4}	70mm min

Panel Cutout

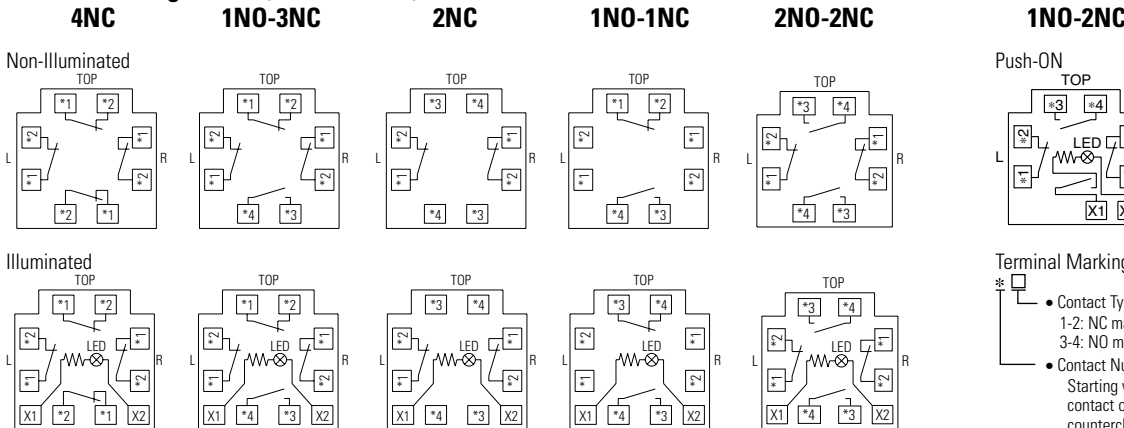


Part Number Key

XW1E - L V 4 11 Q4M - R

- Illumination**
 - B: Non-Illuminated
 - L: Illuminated LED
 - T: Illuminated Push-ON LED
- Mushroom Size**
 - 4: ø40mm
 - 5: ø60mm (non-illuminated only)
- Contact Configuration**
 - 11: 1NO - 1NC
 - 02: 2NC
 - 13: 1NO - 3NC
 - 04: 4NC
 - 22: 2NO-2NC
 - 12: 1NO-2NC (Push-ON LED only)
 - 01: 1NC (EMO switch only)
 - 03: 3NC (EMO switch only)
- Color**
 - R: red
 - RH-EMO: red with EMO engraving
- Voltage Code**
 - Blank: Non-illuminated
 - Q4: Illuminated 24V AC/DC

Terminal Arrangements (Bottom View)

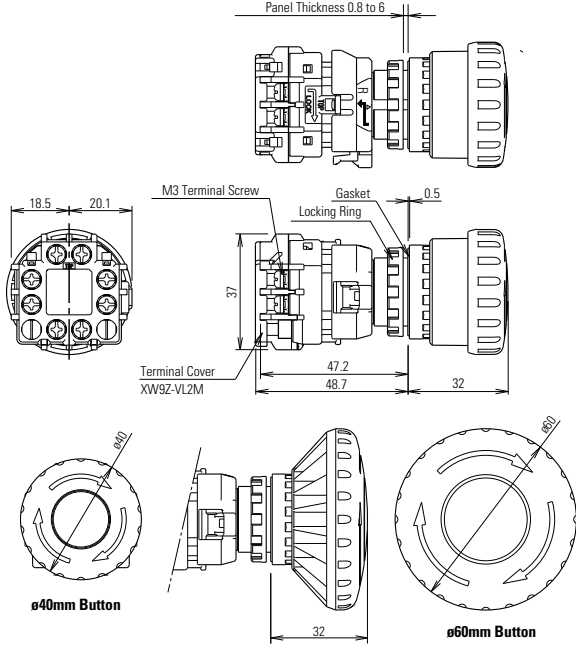


Terminal Marking Description

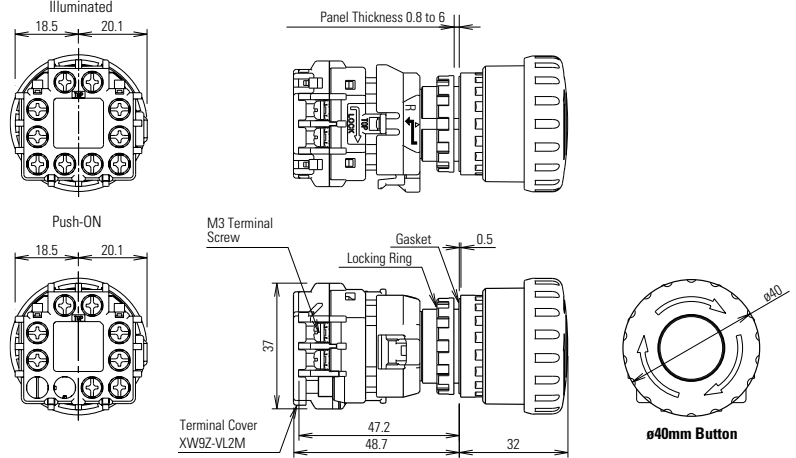
- Contact Type
 - 1-2: NC main contact
 - 3-4: NO monitor contact
 - Contact Number (1-4)
 - Starting with the contact on TOP in a counterclockwise direction.
 - Note:
 - 1: contact on the TOP
 - 2: contact on the Left
 - 3: contact on the Bottom
 - 4: contact on the Right
- (Example: 1NO-3NC contact)

Dimensions (mm)

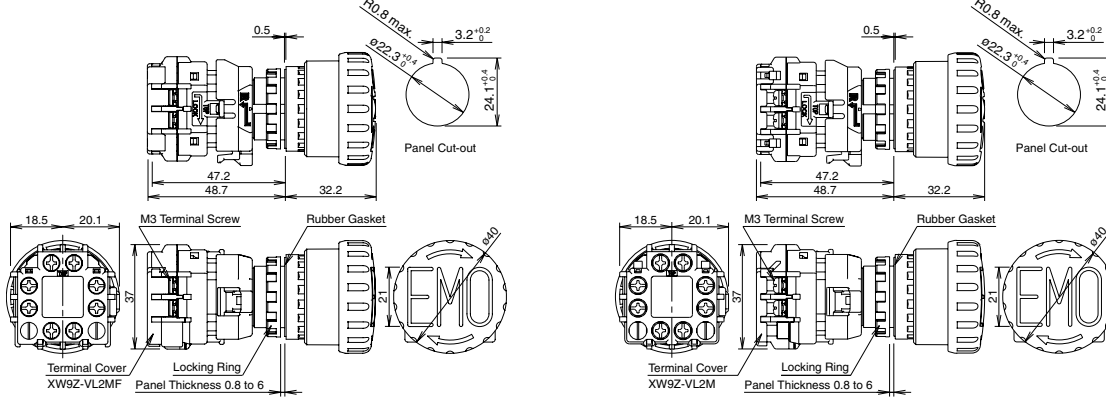
XW Non-Illuminated (with terminal cover)



XW LED Illuminated/ Push-ON (with terminal cover)



EMO



Accessories: Terminal Covers

Appearance	Description	Part Numbers
	Terminal Cover for contact block	XW9Z-VL2M
	IP20 Fingersafe Cover	XW9Z-VL2MF

Accessories: Nameplates

Appearance	Legend	Part Number	Inner Ø	Outer Ø
	(blank)	HWAV-0	22mm	60mm
	"Emergency Stop"	HWAV-27	22mm	60mm
	(blank)	HWAV5-0	22mm	80mm
	"Emergency Stop"	HWAV5-27	22mm	80mm

Use 60mm nameplates for 40mm mushroom buttons and 80mm nameplates for 60mm mushroom buttons.

Accessories: Shrouds

Appearance	Part Numbers	E-Stop Types	Applicable Standards
	HW9Z-KG1	40mm Mushroom Head	SEMI S2-0703, 12.5.1 Compliant
	HW9Z-KG2	40mm, and 60mm Mushroom Head	SEMI S2-0703, 12.5.1 & SEMATECH Compliant
	HW9Z-KG3	40mm Mushroom Head	SEMI S2 Compliant (Approved by TUV)
	HW9Z-KG4	40mm Mushroom Head	SEMI S2 Compliant (Approved by TUV) & SEMATECH

Overview

XW Series E-Stops

Interlock Switches

Enabling Switches

Safety Control

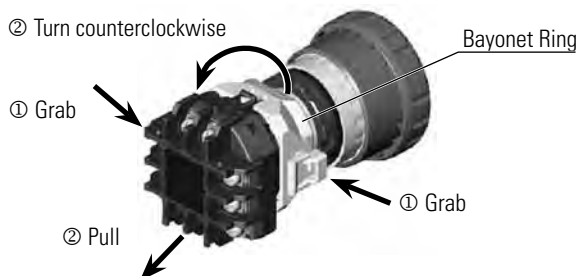
Light Curtains

AS-Interface Safety at Work

Operating Instructions

Removing the Contact Block

First unlock the operator button. Grab the bayonet ring ① and pull back the bayonet ring until the latch pin clicks ②, then turn the contact block counterclockwise and pull out ③.

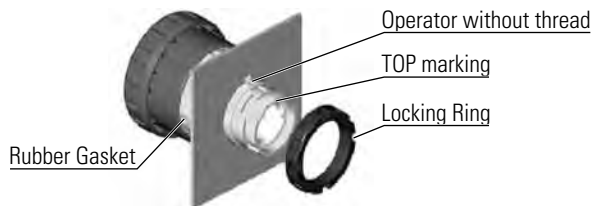


Notes for removing the contact block

1. When the contact block is removed, the monitor contact (NO contact) is closed.
2. While removing the contact block, do not exert excessive force, otherwise the switch may be damaged.
3. 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 exerted, 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 MW9Z-T1 to a torque of 2.0 N·m maximum.

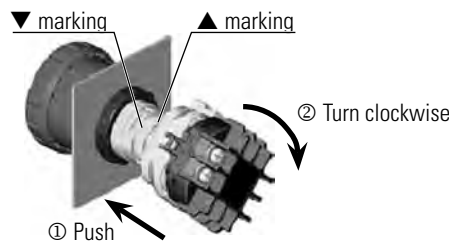


Notes for Panel Mounting

To prevent the XW emergency stop switch from rotating when resetting from the latched position, use of an anti-rotation ring (HW9Z-RL) or a nameplate is recommended.

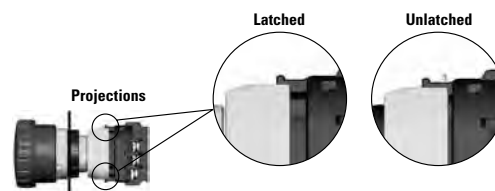
Installing the Contact Block

First unlock the operator button. Align the small t marking on the edge of the operator with the small s 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

Make sure that the bayonet ring is in the locked position. Check that the two projections on the bayonet ring are securely in place.



Wiring

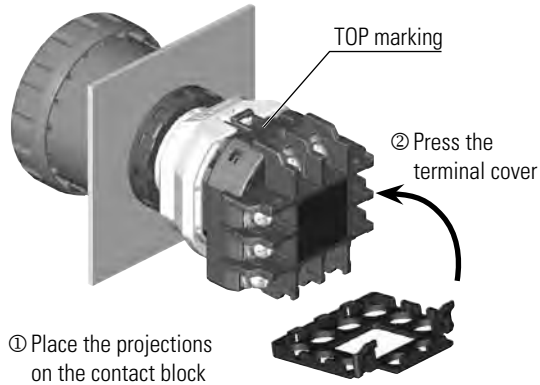
The applicable wire size is 16 AWG maximum.

Screw Terminal

1. Wire thickness: AWG18 to 16
2. Tighten the M3 terminal screw to a tightening torque of 0.6 to 1.0 N-m.

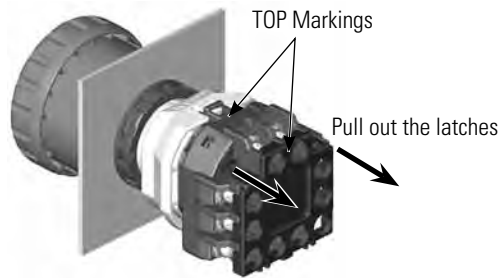
Installing and Removing Terminal Covers**XW9Z-VL2M**

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.

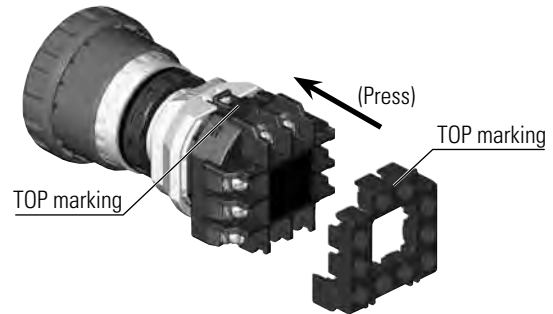


- ① Place the projections on the contact block

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.
4. Make sure that the XW9Z-VL2MF is securely installed. IP20 protection 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.

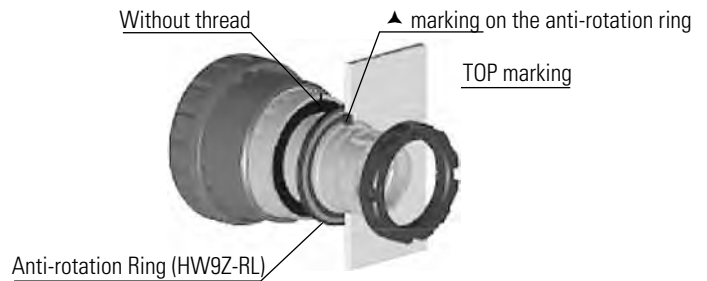
When designing a control circuit, take the contact bounce time into consideration (reference value: 20 ms).

LED Illuminated Switches

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.



16mm XA E-Stops

Key features:

- Two button sizes: ø29 and ø40mm
- Lead-free, RoHS compliant, (EU directive 2002/95/EC)
- Depth behind the panel:
Standard - only 27.9mm for 1 to 4 contacts
Unibody - only 23.9mm for 1NC or 2NC
- IDEC's original "Safe break action" ensures that the NC contacts open when the contact block is detached from the operator.
- Push-to-lock, Pull or Turn-to-reset operator
- Direct opening action mechanism (IEC60947-5-5, 5.2, IEC60947-5-1, Annex K)
- Safety lock mechanism (IEC60947-5-5, 6.2)
- Degree of protection:
Standard - IP65 (IEC60529)
Unibody - IP65 and IP40 (IEC 60529)
- UL, c-UL recognized. EN compliant
- UL NISD2 category emergency stop button (File# E305148)



UL File No. E68691

CCC No. 2005010305150899

Specifications



Model	Standard	Unibody
Applicable Standards	IEC60947-5-1, EN60947-5-1, IEC60947-5-5, EN60947-5-5, UL508, UL991, CSA C22.2 No. 14	UL508, CSA C22.2 No.14, IEC 60947-5-1, EN 60947-5-1 IEC 60947-5-5 ^{Note} , EN 60947-5-5 ^{Note} , JIS C8201-5-1
Operating Temperature	Non-illuminated: -25 to +60°C (no freezing), Illuminated: -25 to +55°C (no freezing)	-25 to +60°C (no freezing)
Operating Humidity	45 to 85% RH (no condensation)	
Storage Temperature	-45 to +80°C	
Operating Force	Push-to-lock: 10.5N Pull-to-reset: 10N Turn-to-reset: 0.16N·m	
Minimum Force Required for Direct Opening Action	60N	40N
Min Operator Stroke Required for Direct Opening Action	4mm	
Maximum Operator Stroke	4.5mm	
Contact Resistance	50mΩ maximum (initial value)	
Contact Material	Gold plated silver	
Insulation Resistance	100MΩ minimum (500V DC megger)	
Impulse Withstand Voltage	2.5kV	
Pollution Degree	3 (inside LED unit: 2)	3
Operation Frequency	900 operations/hour	
Shock Resistance	Operating extremes: 150 m/s ² , Damage limits: 1000 m/s ²	
Vibration Resistance	Operating extremes: 10 to 500Hz, amplitude 0.35mm acceleration 50m/s ² , Damage limits: 10 to 500Hz, amplitude 0.35mm acceleration 50m/s ²	
Mechanical Life	250,000 operations minimum	
Electrical Life	100,000 operations minimum, (250,000 operations minimum @ 24V AC/DC, 100mA)	
Degree of Protection	IP65 (IEC60529)	IP65, IP40 (IEC 60529)
Terminal Style	Solder terminal, PC board terminal	Solder/tab #110 terminal
Recommended Tightening Torque for Locking Ring	0.88N·m	
Wire Size	16 AWG max	
Soldering Conditions	310 to 350°C, 3 seconds maximum	
Weight	ø29mm: 23g ø40mm: 28g	ø29mm mushroom: 14g ø40mm mushroom: 17g





Note: Except for stop switches (operator color: yellow and gray)

Part Numbers

Non-Illuminated XA E-Stop

Style	Termination	Monitor Contacts	Main Contacts	Part Number
 29mm Mushroom	PCB Terminal	1NO	1NC	XA1E-BV311V-R
		-	2NC	XA1E-BV302V-R
		1NO	3NC	XA1E-BV313V-R
		-	4NC	XA1E-BV304V-R
	Solder Terminal	1NO	1NC	XA1E-BV311-R
		-	2NC	XA1E-BV302-R
		1NO	3NC	XA1E-BV313-R
		-	4NC	XA1E-BV304-R
 40mm Mushroom	PCB Terminal	1NO	1NC	XA1E-BV411V-R
		-	2NC	XA1E-BV402V-R
		1NO	3NC	XA1E-BV413V-R
		-	4NC	XA1E-BV404V-R
	Solder Terminal	1NO	1NC	XA1E-BV411-R
		-	2NC	XA1E-BV402-R
		1NO	3NC	XA1E-BV413-R
		-	4NC	XA1E-BV404-R

Illuminated XA E-Stop

Style	Termination	Monitor Contacts	Main Contacts	Part Number
 29mm Mushroom	PCB Terminal	1NO	1NC	XA1E-LV311Q4V-R
		-	2NC	XA1E-LV302Q4V-R
		1NO	3NC	XA1E-LV313Q4V-R
		-	4NC	XA1E-LV304Q4V-R
	Solder Terminal	1NO	1NC	XA1E-LV311Q4-R
		-	2NC	XA1E-LV302Q4-R
		1NO	3NC	XA1E-LV313Q4-R
		-	4NC	XA1E-LV304Q4-R
 40mm Mushroom	PCB Terminal	1NO	1NC	XA1E-LV411Q4V-R
		-	2NC	XA1E-LV402Q4V-R
		1NO	3NC	XA1E-LV413Q4V-R
		-	4NC	XA1E-LV404Q4V-R
	Solder Terminal	1NO	1NC	XA1E-LV411Q4-R
		-	2NC	XA1E-LV402Q4-R
		1NO	3NC	XA1E-LV413Q4-R
		-	4NC	XA1E-LV404Q4-R



All illuminated XA E-Stops come with a replaceable 24V AC/DC LED.

Part Number Key

XA1E - L V 3 11 Q4 V - R

Illumination
 B: Non-Illuminated
 L: Illuminated



Contact Configuration
 11: 1NO - 1NC
 02: 2NC
 13: 1NO - 3NC
 04: 4NC

Terminal
 Blank: solder tab
 V: PCB


Mushroom Size
 3: ø29mm
 4: ø40mm

Voltage Code
 Blank: Non-illuminated
 Q4: Illuminated 24V AC/DC


Unibody XA E-Stop

Style	Contact	Part Number	
		IP40 (black housing)	IP65 (yellow housing)
29mm Mushroom 	1NC	XA1E-BV3U01KT-R	XA1E-BV3U01T-R
	2NC	XA1E-BV3U02KT-R	XA1E-BV3U02T-R
40mm Mushroom 	1NC	XA1E-BV4U01KT-R	XA1E-BV4U01T-R
	2NC	XA1E-BV4U02KT-R	XA1E-BV4U02T-R

Unibody XA Stop Switch

Style	Operator Type	Contact	Ⓞ Color Code	Part Number	
				IP40 (black housing)	IP65 (yellow housing)
	29mm Mushroom	1NC	Y: yellow N: gray	XA1E-BV3U01KT-Ⓞ	XA1E-BV3U01T-Ⓞ
		2NC		XA1E-BV3U02KT-Ⓞ	XA1E-BV3U02T-Ⓞ
	40mm Mushroom	1NC		XA1E-BV4U01KT-Ⓞ	XA1E-BV4U01T-Ⓞ
		2NC		XA1E-BV4U02KT-Ⓞ	XA1E-BV4U02T-Ⓞ

EMO XA E-Stop

Style	NC Main Contact	NO Monitor Contact	Part Number
40mm Mushroom 	1NC	-	XA1E-BV401-RH-EMO
	2NC	-	XA1E-BV402-RH-EMO
	3NC	-	XA1E-BV403-RH-EMO
	4NC	-	XA1E-BV404-RH-EMO
	1NC	1NO	XA1E-BV411-RH-EMO
	2NC	1NO	XA1E-BV412-RH-EMO
	3NC	1NO	XA1E-BV413-RH-EMO

Switches & Pilot Devices

Signaling Lights

Relays & Sockets

Timers

Contactors


Terminal Blocks

Circuit Breakers

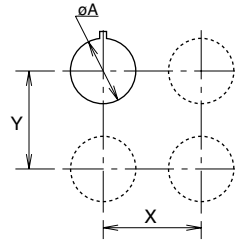
Contact Ratings

Standard						
Rated Insulation Voltage (Ui)		300V (illuminated part: 60V)				
Rated Current (Ith)		5A				
Rated Operating Voltage (Ue)		30V	125V	250V		
Rated Operating Current	Main Contacts (NC)	AC 50/60Hz	Resistive Load (AC-12)	–	3A	3A
			Inductive Load (AC-15)	–	1.5A	1.5A
	Monitor Contacts (NO)	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	

Unibody						
Rated Insulation Voltage (Ui)		250V				
Thermal Current (Ith)		5A				
Rated Operating Voltage (Ue)		30V	125V	250V		
Rated Operating Current	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	

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

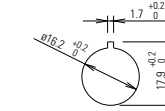
Mounting Hole Layout



Measurements

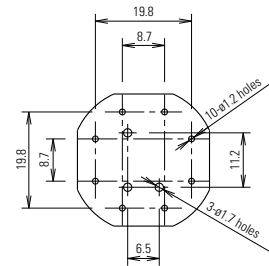
Model	øA	X & Y
ø29mm	16.2 ^{+0.2}	40mm min
ø40mm	16.2 ^{+0.2}	50mm min

Panel Cutout

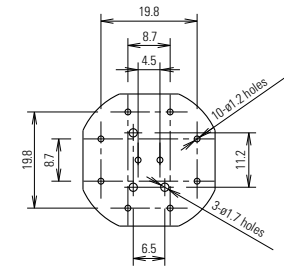


PC Board Layout - Bottom View

Non-Illuminated



Illuminated



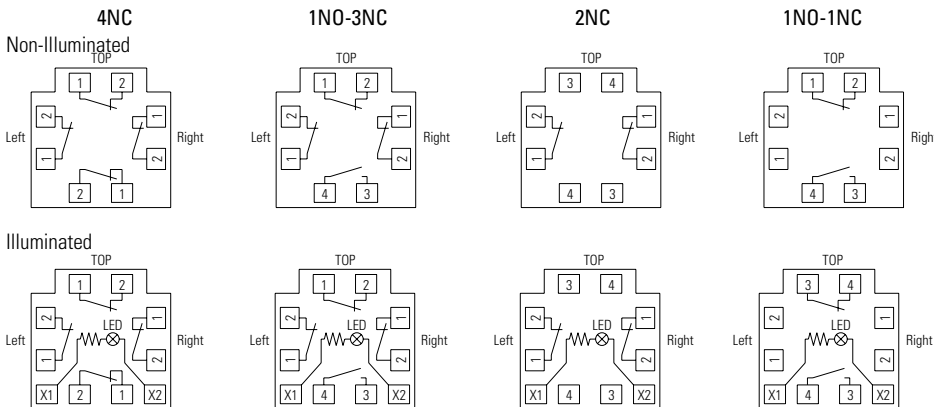
Illuminated Unit LED Ratings

Operating Voltage	Current
24V AC/DC ±10%	11mA

Depth Behind the Panel

Depth (mm)	Description
27.9 (Standard)	1 - 4 contacts, both illuminated and non-illuminated
23.9 (Unibody)	1NC or 2NC

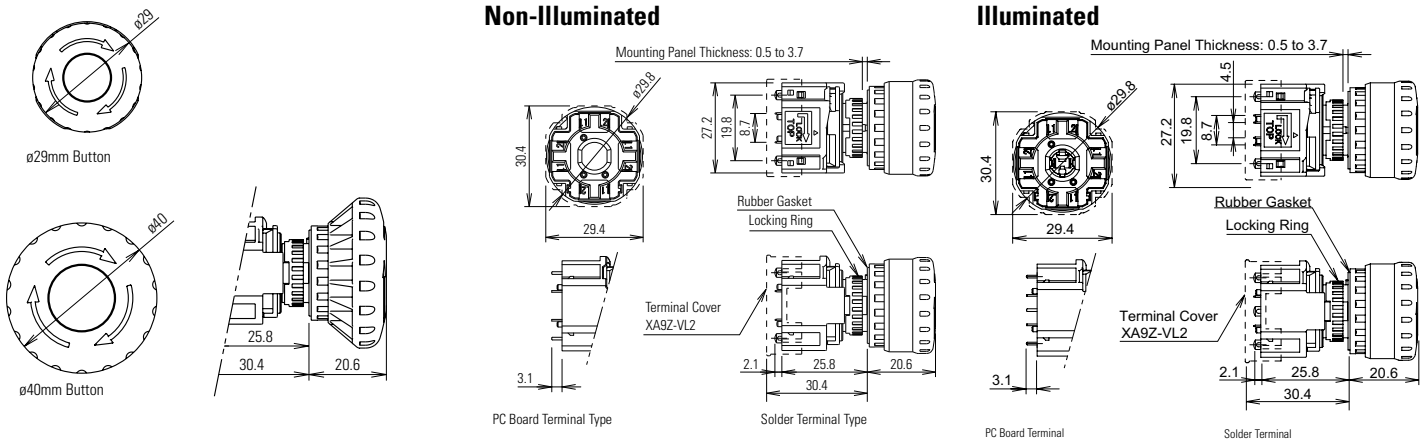
Terminal Arrangements (Bottom View)



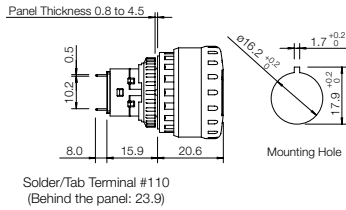
Dimensions (mm)

Non-Illuminated

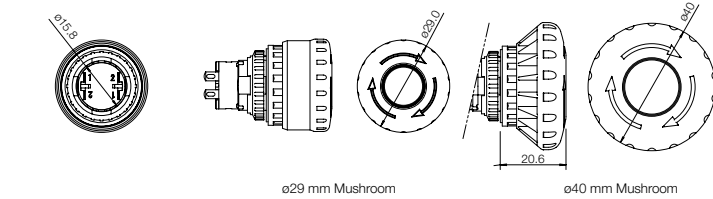
Illuminated



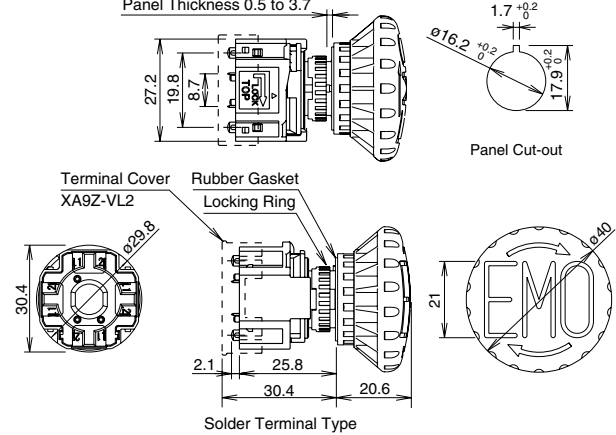
Unibody



Solder/Tab Terminal #110 (Behind the panel: 23.9)




EMO




Accessories

Description	Part Numbers
Replacement LED Unit: Solder Terminal	XA9Z-LED2R
Replacement LED Unit: PCB Terminal	XA9Z-LED2VR
Terminal Cover for contact block (solder terminal only)	XA9Z-VL2

Accessories: Shroud

Appearance	Part Number	Applicable Standards
	XA9Z-KG1	SEMI S2 Compliant (Approved by TUV)

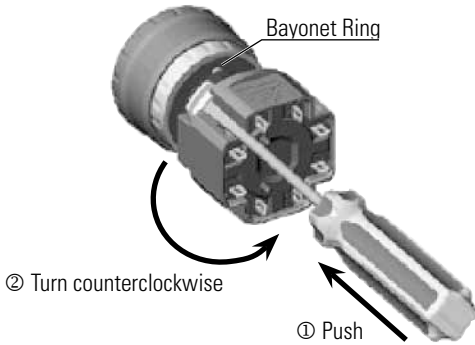
Accessories: Nameplates

Appearance	Legend	Part Number	Inner Ø	Outer Ø	Applicable Mushroom Size
	(blank)	HAAV-0	16mm	43mm	29mm
	"Emergency Stop"	HAAV-27	16mm	43mm	
	(blank)	HAAV4-0	16mm	60mm	40mm
	"Emergency Stop"	HAAV4-27	16mm	60mm	

Operating Instructions

Removing the Contact Block

First unlock the operator button. While pushing up the white bayonet ring, using a small screwdriver (width: 2.5 to 3 mm) if necessary, turn the contact block counterclockwise and pull out. **Do not exert excessive force when using a screwdriver, otherwise the bayonet ring may be damaged.**

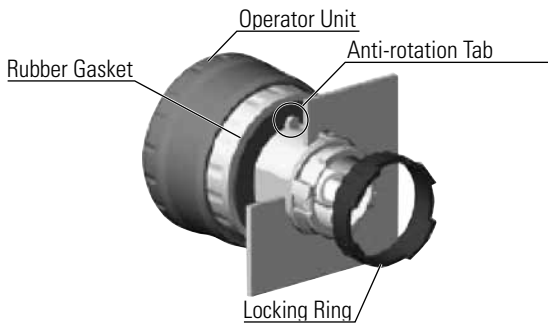


Notes for Removing the Contact Block

1. When the contact block is removed, the monitor contact (NO contact) is closed.
2. While removing the contact block, do not exert excessive force, otherwise the switch may be damaged.

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 with the anti-rotation tab on the operator upward, and tighten the locking ring.

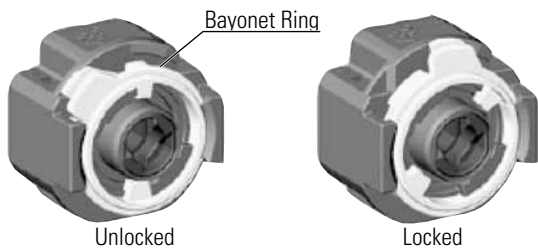


Notes for Panel Mounting

To mount XA emergency stop switches onto a panel, tighten the locking ring to a tightening torque of 0.88 N·m maximum using ring wrench MT-001. Do not use pliers. Do not exert excessive force, otherwise the locking ring may be damaged.

Installing the Contact Block

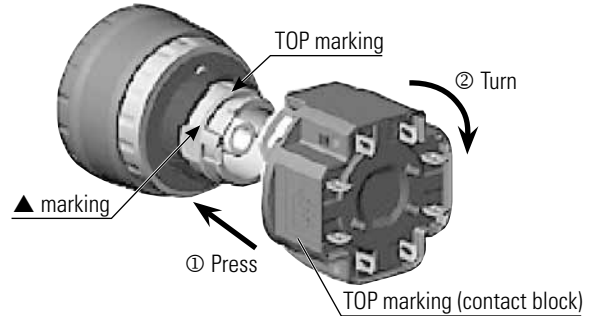
First turn the bayonet ring to the unlocked position.



Align the small ▲ marking on the edge of the operator base with the TOP marking on the contact block. Press the contact block onto the operator and turn the contact block clockwise until the bayonet ring clicks.

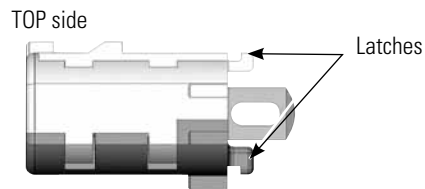
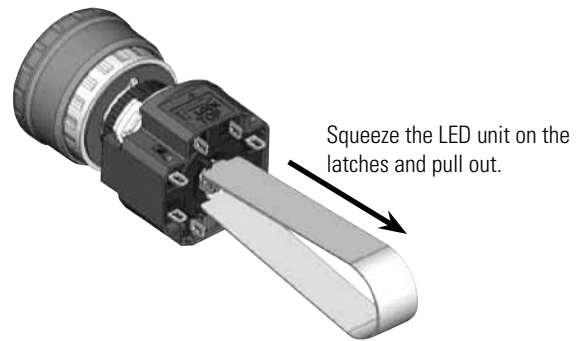
Notes for Installing the Contact Block

Check that the contact block is securely installed on the operator. When the emergency stop switch is properly assembled, the bayonet ring is in place as shown below.



Removing the LED Unit

Pull out the LED unit while squeezing the latches on the LED unit using the LED unit removal tool (MT-101).



Installing the LED Unit

Align the top of the LED unit with the TOP marking on the contact block. Push the LED unit into the contact block.



Operating Instructions, continued

Wiring

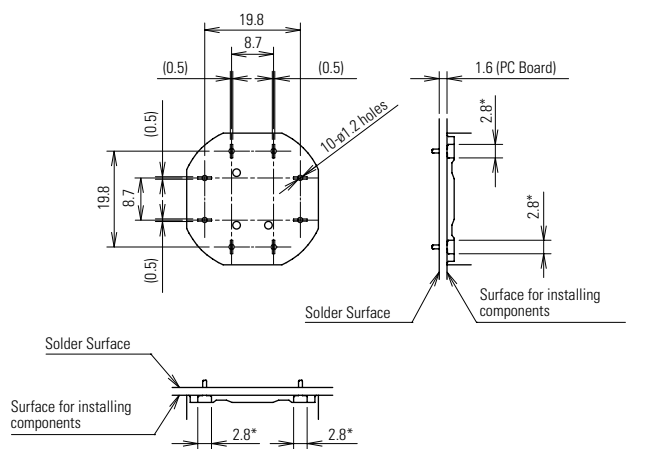
1. The applicable wire size is 16 AWG maximum.
2. Solder the terminal at a temperature of 310 to 350°C within 3 seconds using a soldering iron. Sn-Ag-Cu solder is recommended. When soldering, do not touch the switch with the soldering iron. Also ensure that no tensile force is applied to the terminals. Do not bend the terminals or apply excessive force to the terminals.
3. Use a non-corrosive rosin flux.
4. Because the terminal spacing is narrow, use protective tubes or heat shrinkable tubes to avoid burning of wire coating or short circuit.

PC Board Terminal Type

1. When mounting a contact block on a PC board, provide sufficient rotating space for the PC board when installing and removing the contact block.
2. When mounting an XA emergency stop switch on a PC board, make sure that the operator is securely installed.

About PC Board and Circuit Design

1. Use PC boards made of glass epoxy copper-clad laminated sheets of 1.6 mm in thickness, with double-sided through holes.
2. PC boards and circuits must withstand rated voltage and current, including instantaneous current and voltage at switching.
3. The minimum applicable load is 5V AC/DC, 1 mA.
4. Within the 2.8* mm areas shown in the figure below, terminals touch the PC board, resulting in possible short circuit on the printed circuit. When designing a PC board pattern, take this possibility into consideration.



All dimensions in mm.

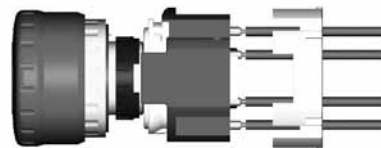
Safety Precautions

- Turn off power to the XA series emergency stop switch before starting installation, removal, wiring, maintenance, and inspection of the relays. Failure to turn power off may cause electrical shock or fire hazard.
- Use the LED unit removal tool when replacing the LED unit to avoid burning your hands.
- Use wires of the proper size to meet the voltage and current requirements, and solder the wires correctly. If soldering is incomplete, the wire may heat during operation, causing a fire hazard.

Installing Insulation Terminal Cover

To install the terminal cover (XA9Z-VL2), align the TOP marking on the terminal cover with TOP marking on the contact block, and press the terminal cover toward the contact block.

Note: For wiring, insert the wires into the holes in the terminal cover before soldering.



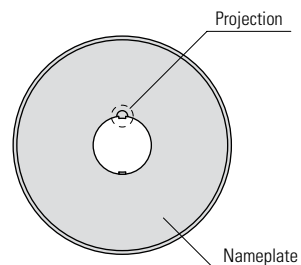
Contact Bounce

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).

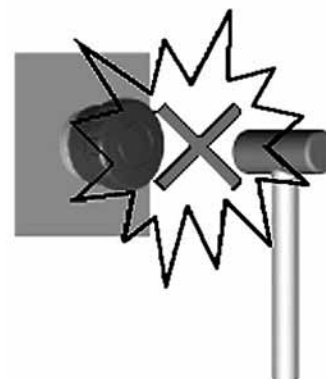
Nameplate

When anti-rotation is not required, remove the projection from the nameplate using pliers.



Handling

Do not expose the switch to excessive shock and vibration, otherwise the switch may be deformed or damaged, causing malfunction or operation failure.



30mm XN E-Stops

Key features:

- Plastic bezel, metallic padlock and flush bezel available
- 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



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

Part Numbers



XN1E Plastic Bezel Type E-Stops (push-pull/twist reset)

Style	Operator Type	Main Contact	Monitor Contact	Part Number
Non-Illuminated 	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
Illuminated 	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 (push twist reset only)

Style	Operator Type	Main Contact	Monitor Contact	Part Number
Non-Illuminated 	44mm Mushroom	1NC	1NO	XN4E-BL411MR
		2NC	-	XN4E-BL402MR
		2NC	2NO	XN4E-BL422MR
		3NC	1NO	XN4E-BL413MR
		4NC	-	XN4E-BL404MR
Illuminated 	44mm Mushroom LED (24V AC/DC)	1NC	1NO	XN4E-LL411Q4MR
		2NC	-	XN4E-LL402Q4MR
		2NC	2NO	XN4E-LL422Q4MR
		3NC	1NO	XN4E-LL413Q4MR
	44mm Mushroom Push-ON LED (24V AC/DC)	4NC	-	XN4E-LL404Q4MR
		2NC	1NO	XN4E-TL412Q4MR

XN5E Flush Bezel Type E-Stops (push-pull/twist reset)

Style	Operator Type	Main Contact	Monitor Contact	Part Number
Non-Illuminated 	40mm Mushroom	1NC	1NO	XN5E-BV411MR
		2NC	-	XN5E-BV402MR
		2NC	2NO	XN5E-BV422MR
		3NC	1NO	XN5E-BV413MR
		4NC	-	XN5E-BV404MR
Illuminated 	40mm Mushroom LED (24V AC/DC)	1NC	1NO	XN5E-LV411Q4MR
		2NC	-	XN5E-LV402Q4MR
		2NC	2NO	XN5E-LV422Q4MR
		3NC	1NO	XN5E-LV413Q4MR
	40mm Mushroom Push-ON LED (24V AC/DC)	4NC	-	XN5E-LV404Q4MR
		2NC	1NO	XN5E-TV412Q4MR

Contact Ratings

Rated Insulation Voltage (Ui)		250V				
Rated Current (Ith)		5A				
Rated Operating Voltage (Ue)		30V	125V	250V		
Rated Operating Current	Main Contacts (NC)	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	
Rated Operating Current	Monitor Contacts (NO)	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.

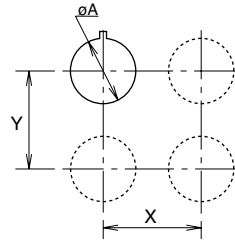
Illuminated Unit LED Ratings

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

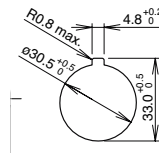
Mounting Hole Layout



Measurements

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

Panel Cutout



Part Numbers

XN1E - LV 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

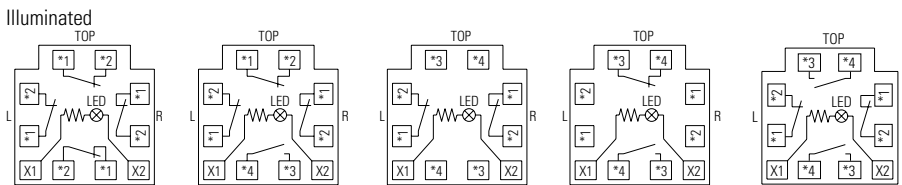
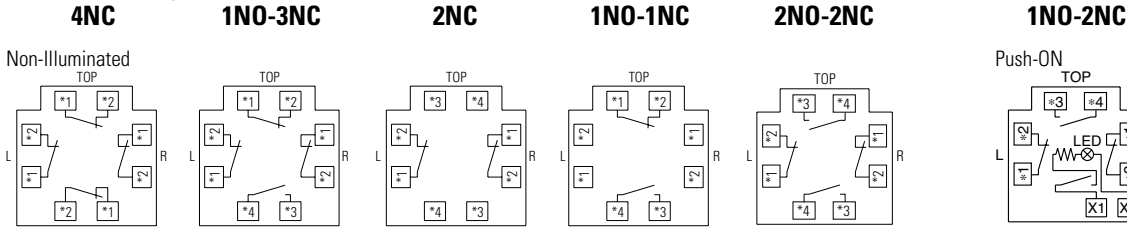
Mushroom Size
 4: ø40mm: XN1E, XN5E
 ø44mm: XN4E
 5: ø60mm
 (XN1E non-illuminated only)

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)

*Contact IDEC for additional configurations.

Terminal Arrangements (Bottom View)



Terminal Marking Description

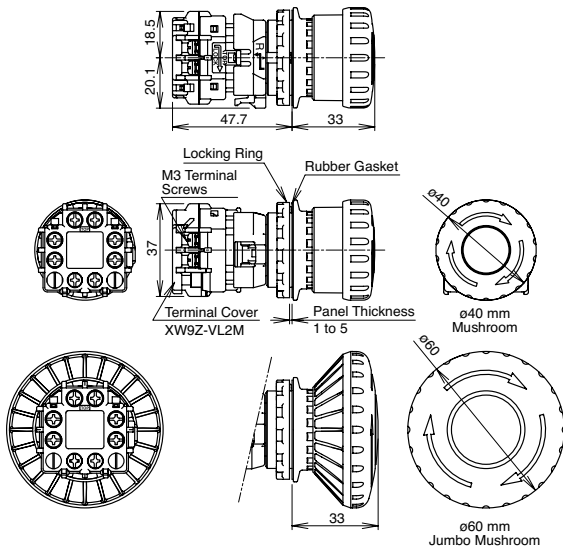
• Contact Type
 1-2: NC main contact
 3-4: NO monitor contact

• 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

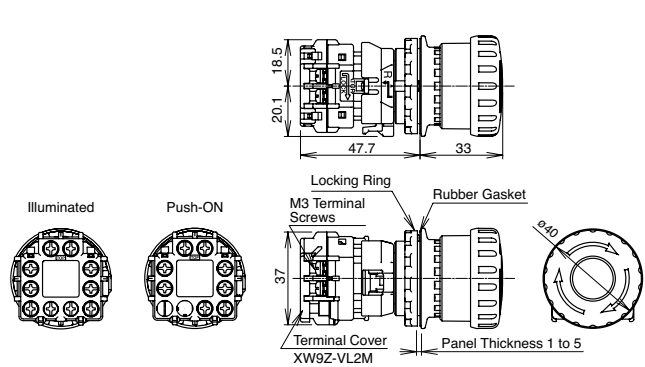
(Example: 1NO-3NC contact)

Dimensions (mm)

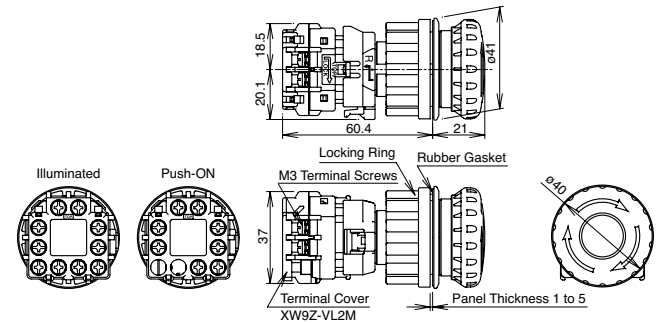
XN1E Non-Illuminated (with terminal cover)



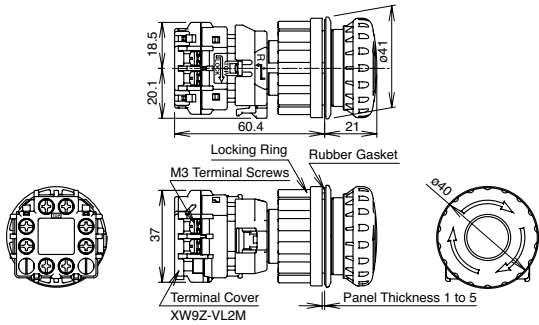
XN1E Illuminated/Push-ON (with terminal cover)



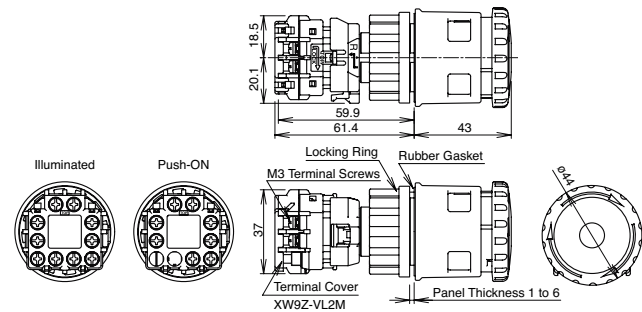
XN5E Illuminated (with terminal cover)



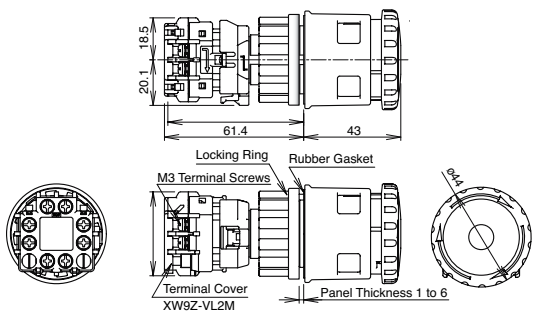
XN5E Non-Illuminated (with terminal cover)



XN4E Illuminated (with terminal cover)



XN4E Non-Illuminated (with terminal cover)



Nameplates

Item	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

Accessories

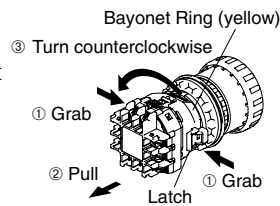
Item	Description	Part Number
	Locking Ring Wrench	XN9Z-T1
	Locking Ring Twist Wrench	TWST-T1
	Lockout Hasp	XN9Z-HASP421

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

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 the contact block counterclockwise ③ until the latch pin clicks ②, then turn the contact block counterclockwise and pull out ③.

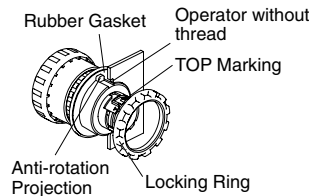


Notes for removing the contact block

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.



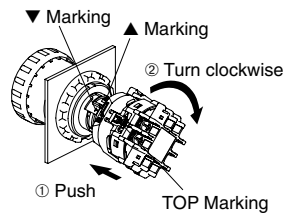
When using a nameplate

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.



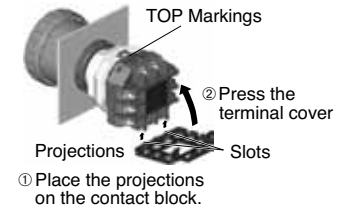
Notes for installing the contact block

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.

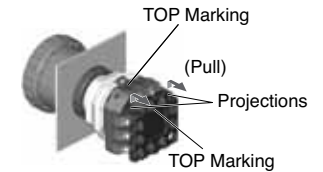
Installing & Removing Terminal Covers

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.

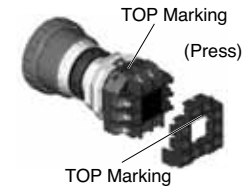


To remove the terminal cover, pull out the two latches on the top side of the terminal cover. Do not exert excessive force to the latches, otherwise the latches may break.



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

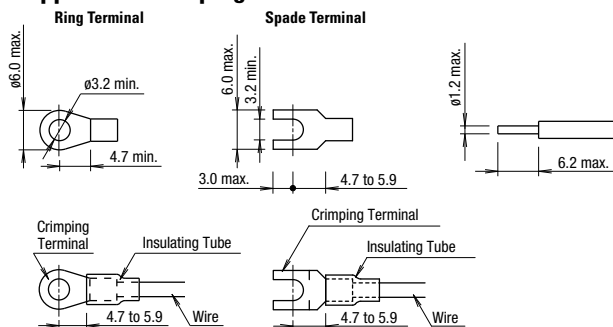
1. AWG18 to 16
2. Tighten the M3 terminal screw to a tightening torque of 0.6 to 1.0 N·m.

Operating Instructions, continued

Screw Terminal Type

1. Wire thickness: 0.75 to 1.25 mm² (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.

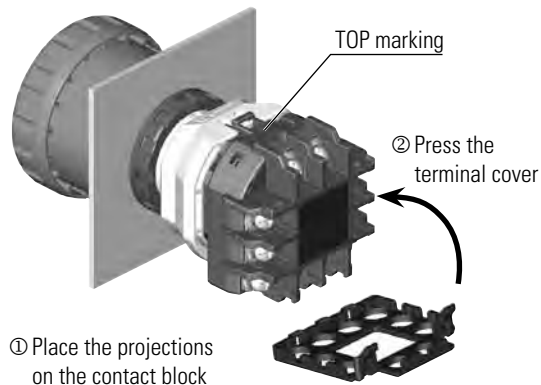
Connector Type

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.

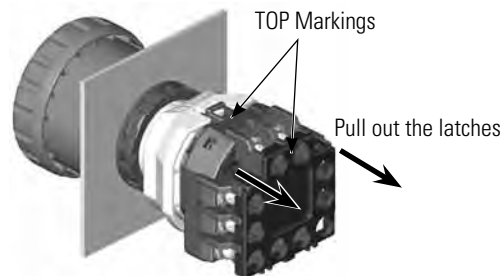
Installing and Removing Terminal Covers

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.

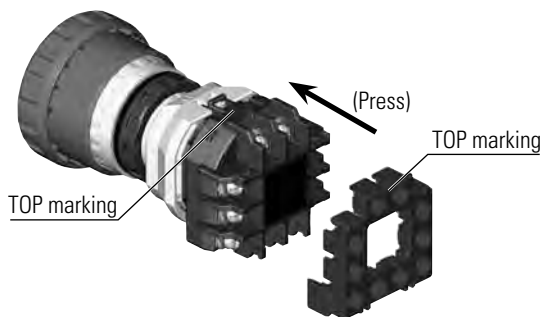


To remove the terminal cover, pull out the two latches on the top side of the terminal cover. Do not exert excessive force to the latches, otherwise the latches may break.



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 s marking on the anti-rotation ring, and the recess on the mounting panel.

