ø16 XA Series Emergency Stop Switches (w/Removable Contact Block)

Compact size - only 27.9 mm deep behind the panel. Reliable "Safe break action."

- The depth behind the panel is only 27.9 mm for 1 to 4 contacts, both on illuminated and non-illuminated.
- IDEC's original "Safe break action" ensures that the contacts open when the contact block is detached from the operator.
- 1 to 4NC main contacts and 1NO monitor contact
- Push-to-lock, Pull or Turn-to-reset operator
- Direct opening action mechanism (IEC 60947-5-5, 5.2, IEC60947-5-1, Annex K)
- Safety lock mechanism (IEC 60947-5-5, 6.2)
- Degree of protection IP65 (IEC 60529)
- Silver with gold contacts.
- Two operator sizes: ø29 and ø40 mm
- Dark red (Munsell 5R4/12) or bright red (Munsell 7.5R4.5/14) colors are available for the operator of non-illuminated emergency stop switches.

Standards and Specifications

Contact Ratings

NC main contacts (black) /NO monitor contact (blue)

Rated Insulation Voltage (Ui)				300V (illuminated part: 60V)		
Rated Thermal Current (Ith)				5A		
Rated Operating Voltage (Ue)				30V	125V	250V
Rated Operating Current	Main Contacts	AC 50/60 Hz	Resistive Load (AC-12)	–	3A	3A
			Inductive Load (AC-15)	–	1.5A	1.5A
		DC	Resistive Load (DC-12)	2A	0.4A	0.2A
			Inductive Load (DC-13)	1A	0.22A	0.1A
	Monitor Contacts	AC 50/60 Hz	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, 1 mA (reference value) (Operating area may vary according to the operating conditions and load types.)
- The rated operating currents are measured at resistive/inductive load types specified in IEC 60947-5-1.

Illumination Ratings

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

Specifications

Applicable Standards	IEC60947-5-1, EN60947-5-1 IEC60947-5-5, EN60947-5-5, JIS C8201-5-1, UL991, NFPA79, UL508, CSA C22.2 No.14, GB14048.5
Operating Temperature	–25 to +60°C (no freezing) Illuminated: –25 to +55°C (no freezing)
Storage Temperature	–45 to +80°C
Operating Humidity	45 to 85% RH (no condensation)
Operating Force	Push to lock: 10.5N Pull to reset: 10N Turn to reset: 0.16 N·m
Minimum Force Required for Direct Opening Action	60N
Minimum Operator Stroke Required for Direct Opening Action	4.0 mm
Maximum Operator Stroke	4.5 mm
Contact Resistance	50 mΩ maximum (initial value)
Insulation Resistance	100 MΩ minimum (500V DC megger)
Overvoltage Category	II
Impulse Withstand Voltage	2.5 kV
Pollution Degree	3 (inside LED unit: 2)
Operation Frequency	900 operations/hour
Shock Resistance	Operating extremes: 150 m/s² Damage limits: 1000 m/s²
Vibration Resistance	Operating extremes: 10 to 500 Hz, amplitude 0.35 mm acceleration 50 m/s² Damage limits: 10 to 500 Hz, amplitude 0.35 mm acceleration 50 m/s²
Mechanical Life	250,000 operations minimum
Electrical Life	100,000 operations min 250,000 operations min (24V AC/DC, 100 mA)
Degree of Protection	IP65 (IEC60529)
Short-circuit Protection	250V/10A fuse (Type aM, IEC60269-1/IEC60269-2)
Conditional Short-circuit Current	1000A
Terminal Style	Solder terminal, PC board terminal
Recommended Tightening Torque for Locking Ring	0.88 N·m
Connectable Wire	1.25 mm² maximum (AWG16 maximum)
Soldering Conditions	310 to 350°C, 3 seconds maximum
Weight	ø29 mm: 23g, ø40 mm: 28g

Pushlock Pull/Turn Reset (Solder Terminal/PC Board Terminal)

Non-illuminated

Shape	NC Main Contact	NO Monitor Contact	Part No.		Operator Color Code
			Solder Terminal	PC Board Terminal	
ø29mm Mushroom 	1NC	—	XA1E-BV301①	XA1E-BV301V①	R: Dark red RH: Bright red
	2NC	—	XA1E-BV302①	XA1E-BV302V①	
	3NC	—	XA1E-BV303①	XA1E-BV303V①	
	4NC	—	XA1E-BV304①	XA1E-BV304V①	
	1NC	1NO	XA1E-BV311①	XA1E-BV311V①	
	2NC	1NO	XA1E-BV312①	XA1E-BV312V①	
	3NC	1NO	XA1E-BV313①	XA1E-BV313V①	
ø40mm Mushroom 	1NC	—	XA1E-BV401①	XA1E-BV401V①	
	2NC	—	XA1E-BV402①	XA1E-BV402V①	
	3NC	—	XA1E-BV403①	XA1E-BV403V①	
	4NC	—	XA1E-BV404①	XA1E-BV404V①	
	1NC	1NO	XA1E-BV411①	XA1E-BV411V①	
	2NC	1NO	XA1E-BV412①	XA1E-BV412V①	
	3NC	1NO	XA1E-BV413①	XA1E-BV413V①	

- Specify a color code in place of ① in the Part No.
- Pushlock pull/turn reset switches are locked when pressed, and reset when pulled or turned clockwise.
- Terminal cover (XA9Z-VL2) is ordered separately.
- For EMO Switches, see D-052.

Illuminated

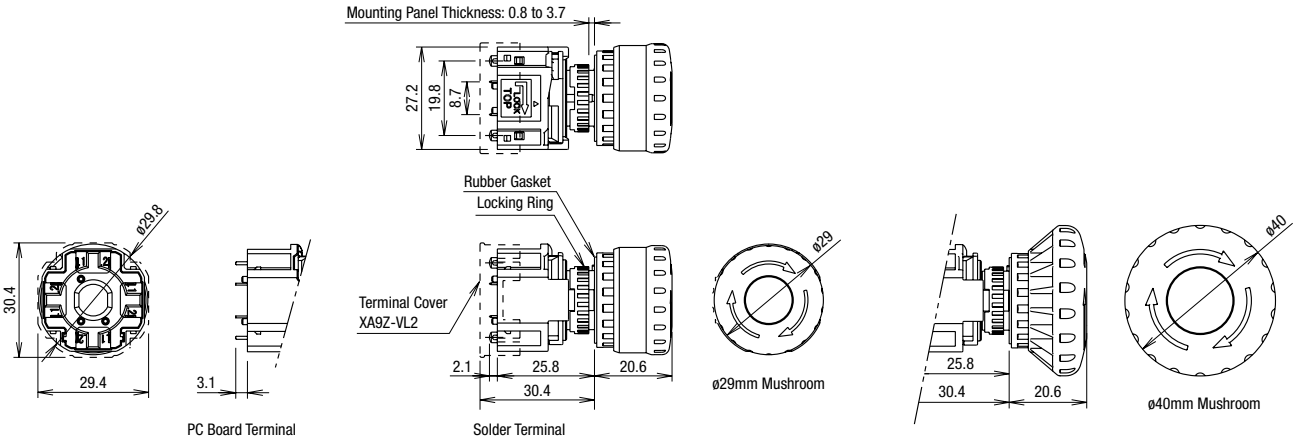
Shape	NC Main Contact	NO Monitor Contact	Part No.		Operator Color
			Solder Terminal	PC Board Terminal	
ø29mm Mushroom 	1NC	—	XA1E-LV301Q4R	XA1E-LV301Q4VR	Dark red only
	2NC	—	XA1E-LV302Q4R	XA1E-LV302Q4VR	
	3NC	—	XA1E-LV303Q4R	XA1E-LV303Q4VR	
	4NC	—	XA1E-LV304Q4R	XA1E-LV304Q4VR	
	1NC	1NO	XA1E-LV311Q4R	XA1E-LV311Q4VR	
	2NC	1NO	XA1E-LV312Q4R	XA1E-LV312Q4VR	
	3NC	1NO	XA1E-LV313Q4R	XA1E-LV313Q4VR	
ø40mm Mushroom 	1NC	—	XA1E-LV401Q4R	XA1E-LV401Q4VR	
	2NC	—	XA1E-LV402Q4R	XA1E-LV402Q4VR	
	3NC	—	XA1E-LV403Q4R	XA1E-LV403Q4VR	
	4NC	—	XA1E-LV404Q4R	XA1E-LV404Q4VR	
	1NC	1NO	XA1E-LV411Q4R	XA1E-LV411Q4VR	
	2NC	1NO	XA1E-LV412Q4R	XA1E-LV412Q4VR	
	3NC	1NO	XA1E-LV413Q4R	XA1E-LV413Q4VR	

- Pushlock pull/turn reset switches are locked when pressed, and reset when pulled or turned clockwise.
- Terminal cover (XA9Z-VL2) is ordered separately.

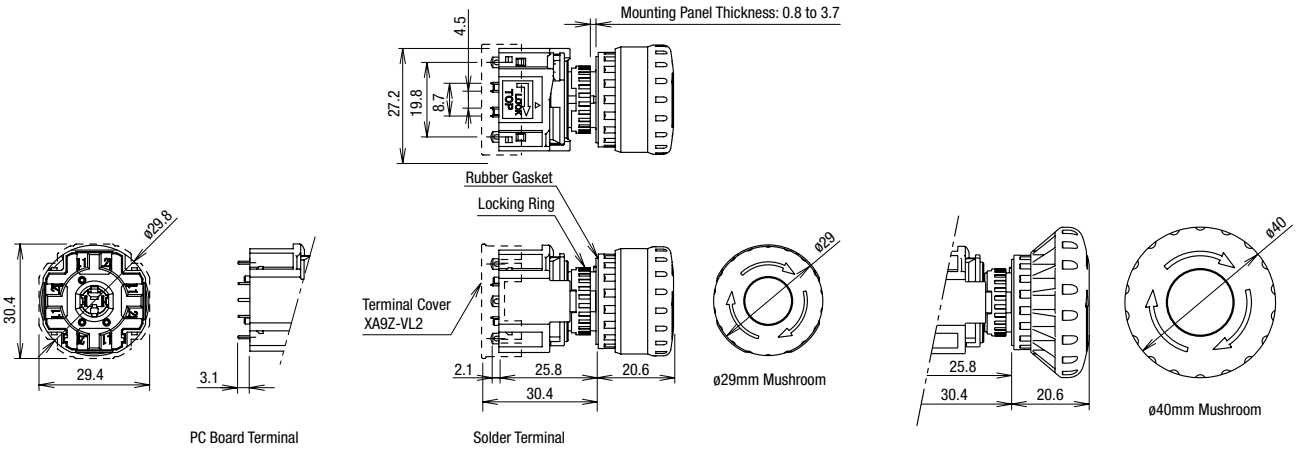
ø16 XA Series Emergency Stop Switches (w/Removable Contact Block)

Dimensions

Non-illuminated

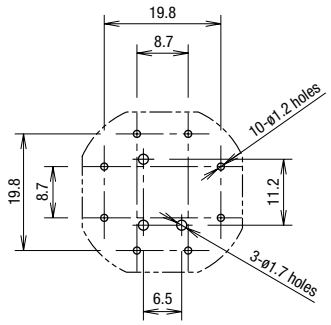


Illuminated

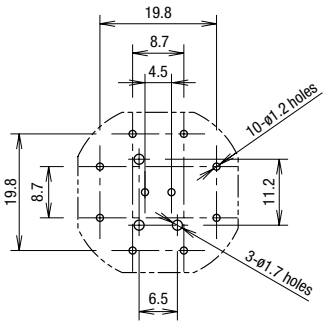


PC Board Layout (Bottom View)

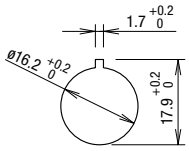
Non-Illuminated



Illuminated

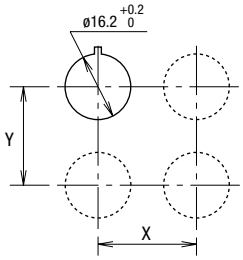


Panel Cut-out



All dimensions in mm.

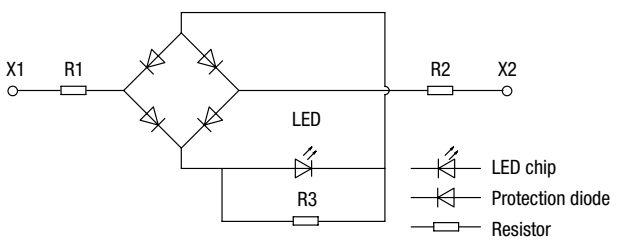
Mounting Hole Layout



	X	Y
ø29mm Mushroom	40 mm minimum	
ø40mm Mushroom	50 mm minimum	

- The values shown above are the minimum dimensions for mounting with other ø16 mm pushbuttons. For other control units of different sizes and styles, determine the values according to the dimensions, operation, and wiring convenience.

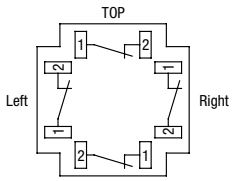
LED Unit Internal Circuit



Terminal Arrangement (Bottom View)

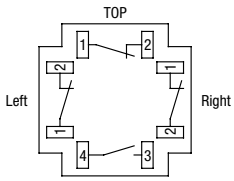
Non-illuminated

NC main contacts (black) only
NC main contacts (black): Terminals 1-2



1NC: Terminals on right
2NC: Terminals on right and left
3NC: Terminals on right, left, and top

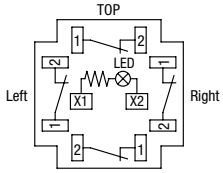
With NO monitor contacts (blue)
NC main contacts (black): Terminals 1-2
NO monitor contacts (blue): Terminals 3-4



1NC: Terminals on top
2NC: Terminals on right and left

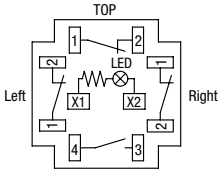
Illuminated

NC main contacts only (black)
NC main contacts(black): Terminals 1-2



1NC: Terminals on right
2NC: Terminals on right and left
3NC: Terminals on right, left, and top

With NO monitor contacts (blue)
NC main contacts (black): Terminals 1-2
NO monitor contacts (blue): Terminals 3-4

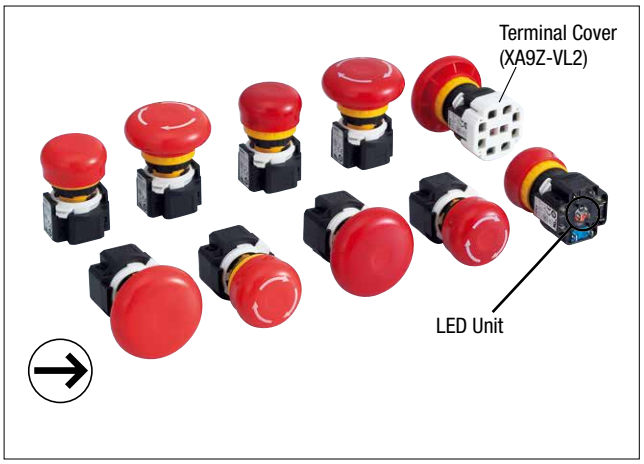


1NC: Terminals on top
2NC: Terminals on right and left

ø16 XA Series Emergency Stop Switches Round Form (w/Removable Contact Blocks)

Smooth Round Form Buttons

- IDEC's unique Reverse Energy Structure
- Depth behind the panel: 27.9mm
- Arrow marked and unmarked buttons.
- The smooth button is ideal for applications that require utmost cleanliness.Prevents dust built-up, and is also easy to clean.
- Two reset operations - pushlock pull or turn reset.
- Silver with gold contacts.
- Direct opening action (IEC60947-5-5:5.2, IEC60947-5-1, Annex K)
- Safety lock mechanism (IEC60947-5-5:6.2)
- Degree of protection IP65 (IEC60529)



Standards and Specifications

Contact Ratings

NC main contacts (black) /NO monitor contact (blue)

Rated Insulation Voltage (Ui)				300V (illuminated part: 60V)		
Rated Thermal Current (Ith)				5A		
Rated Operating Voltage (Ue)				30V	125V	250V
Rated Operating Current	Main Contacts	AC 50/60 Hz	Resistive Load (AC-12)	–	3A	3A
			Inductive Load (AC-15)	–	1.5A	1.5A
		DC	Resistive Load (DC-12)	2A	0.4A	0.2A
			Inductive Load (DC-13)	1A	0.22A	0.1A
	Monitor Contacts	AC 50/60 Hz	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, 1 mA (reference value) (Operating area may vary according to the operating conditions and load types.)
- The rated operating currents are measured at resistive/inductive load types specified in IEC 60947-5-1.

Illumination Ratings

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

Specifications

Applicable Standards	IEC60947-5-1, EN60947-5-1 IEC60947-5-5, EN60947-5-5, JIS C8201-5-1, UL991, NFPA79, UL508, CSA C22.2 No.14, GB14048.5
Operating Temperature	–25 to +60°C (no freezing) Illuminated: –25 to +55°C (no freezing)
Storage Temperature	–45 to +80°C
Operating Humidity	45 to 85% RH (no condensation)
Operating Force	Push to lock: 10.5N Pull to reset: 10N Turn to reset: 0.16 N·m
Minimum Force Required for Direct Opening Action	60N
Minimum Operator Stroke Required for Direct Opening Action	4.0 mm
Maximum Operator Stroke	4.5 mm
Contact Resistance	50 mΩ maximum (initial value)
Insulation Resistance	100 MΩ minimum (500V DC megger)
Overvoltage Category	II
Impulse Withstand Voltage	2.5 kV
Pollution Degree	3 (inside LED unit: 2)
Operation Frequency	900 operations/hour
Shock Resistance	Operating extremes: 150 m/s² Damage limits: 1000 m/s²
Vibration Resistance	Operating extremes: 10 to 500 Hz, amplitude 0.35 mm, acceleration 50 m/s² Damage limits: 10 to 500 Hz, amplitude 0.35 mm, acceleration 50 m/s²
Mechanical Life	250,000 operations minimum
Electrical Life	100,000 operations min 250,000 operations min (24V AC/DC, 100 mA)
Degree of Protection	IP65 (IEC60529)
Short-circuit Protection	250V/10A fuse (Type aM, IEC60269-1/IEC60269-2)
Conditional Short-circuit Current	1000A
Terminal Style	Solder terminal, PC board terminal
Recommended Tightening Torque for Locking Ring	0.88 N·m
Connectable Wire	1.25 mm² maximum (AWG16 maximum)
Soldering Conditions	310 to 350°C, 3 seconds maximum
Weight	ø30 mm: 23g, ø40 mm: 28g

Pushlock Pull/Turn Reset (Solder Terminal)

Non-illuminated

Shape	NC Main Contact	NO Monitor Contact	Part No. (Ordering Part No.)	
			Unmarked	Arrow Marked
ø30 Mushroom 	3NC	–	XA1E-BV3T03RH	XA1E-BV3T03RM
	4NC	–	XA1E-BV3T04RH	XA1E-BV3T04RM
	1NC	1NO	XA1E-BV3T11RH	XA1E-BV3T11RM
	2NC	1NO	XA1E-BV3T12RH	XA1E-BV3T12RM
	3NC	1NO	XA1E-BV3T13RH	XA1E-BV3T13RM
ø40 Mushroom 	3NC	–	XA1E-BV4T03RH	XA1E-BV4T03RM
	4NC	–	XA1E-BV4T04RH	XA1E-BV4T04RM
	1NC	1NO	XA1E-BV4T11RH	XA1E-BV4T11RM
	2NC	1NO	XA1E-BV4T12RH	XA1E-BV4T12RM
	3NC	1NO	XA1E-BV4T13RH	XA1E-BV4T13RM

- Pushlock pull/turn reset switches are locked when pressed, and reset when pulled or turned clockwise.
- 1NC and 2NC contacts also available.
- Terminal cover (XA9Z-VL2) is ordered separately.
- For PC board terminals, add "V" in front of "R" in the part number.
  Example: **XA1E-BV3T03RH** => **XA1E-BV3T03VRH**

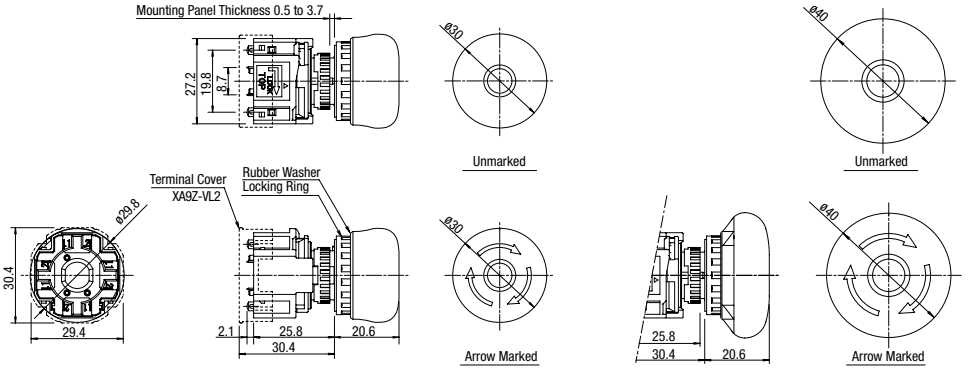
Illuminated

Shape	NC Main Contact	NO Monitor Contact	Part No. (Ordering Part No.)	
			Unmarked	Arrow Marked
ø30 Mushroom 	1NC	–	XA1E-LV3T01Q4R	XA1E-LV3T01Q4RM
	2NC	–	XA1E-LV3T02Q4R	XA1E-LV3T02Q4RM
	3NC	–	XA1E-LV3T03Q4R	XA1E-LV3T03Q4RM
	4NC	–	XA1E-LV3T04Q4R	XA1E-LV3T04Q4RM
	1NC	1NO	XA1E-LV3T11Q4R	XA1E-LV3T11Q4RM
	2NC	1NO	XA1E-LV3T12Q4R	XA1E-LV3T12Q4RM
	3NC	1NO	XA1E-LV3T13Q4R	XA1E-LV3T13Q4RM
ø40 Mushroom 	1NC	–	XA1E-LV4T01Q4R	XA1E-LV4T01Q4RM
	2NC	–	XA1E-LV4T02Q4R	XA1E-LV4T02Q4RM
	3NC	–	XA1E-LV4T03Q4R	XA1E-LV4T03Q4RM
	4NC	–	XA1E-LV4T04Q4R	XA1E-LV4T04Q4RM
	1NC	1NO	XA1E-LV4T11Q4R	XA1E-LV4T11Q4RM
	2NC	1NO	XA1E-LV4T12Q4R	XA1E-LV4T12Q4RM
	3NC	1NO	XA1E-LV4T13Q4R	XA1E-LV4T13Q4RM

- Pushlock pull/turn reset switches are locked when pressed, and reset when pulled or turned clockwise.
- Terminal cover (XA9Z-VL2) is ordered separately.
- For PC board terminals, add "V" in front of "R" in the part number.
  Example: **XA1E-LV3T01Q4R** => **XA1E-LV3T01Q4VR**

ø16 XA Series Emergency Stop Switches Round Form (w/Removable Contact Blocks)

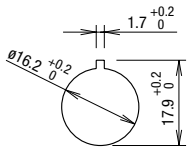
Dimensions

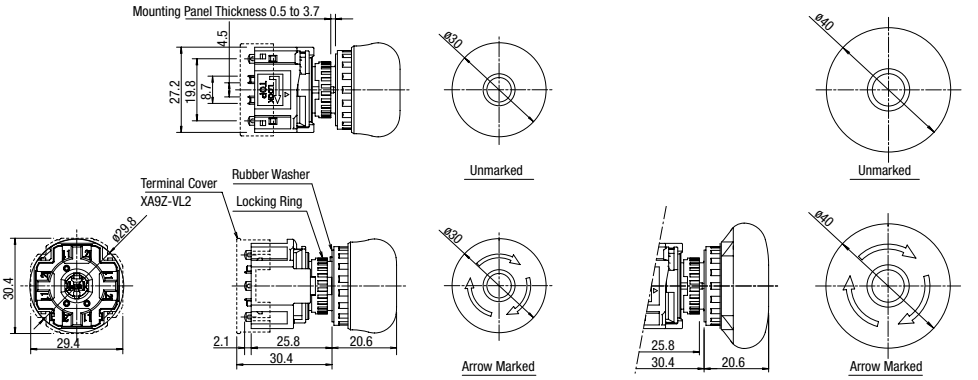


ø30 Mushroom

ø40 Mushroom

Panel Cut-out





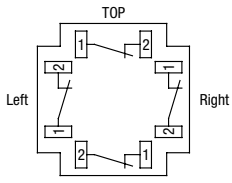
ø30 Mushroom

ø40 Mushroom

Terminal Arrangement (Bottom View)

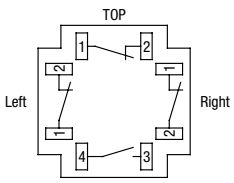
Non-illuminated

NC main contacts (black) only
NC main contacts (black): Terminals 1-2



1NC: Terminals on right
2NC: Terminals on right and left
3NC: Terminals on right, left, and top

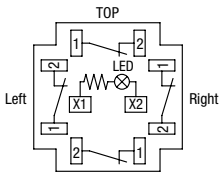
With NO monitor contacts (blue)
NC main contacts (black): Terminals 1-2
NO monitor contacts (blue): Terminals 3-4



1NC: Terminals on top
2NC: Terminals on right and left

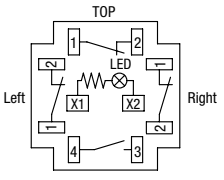
Illuminated

NC main contacts only (black)
NC main contacts(black): Terminals 1-2



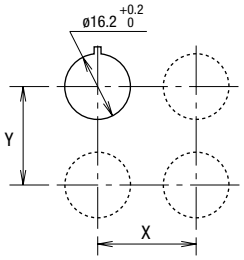
1NC: Terminals on right
2NC: Terminals on right and left
3NC: Terminals on right, left, and top

With NO monitor contacts (blue)
NC main contacts (black): Terminals 1-2
NO monitor contacts (blue):Terminals 3-4



1NC: Terminals on top
2NC: Terminals on right and left

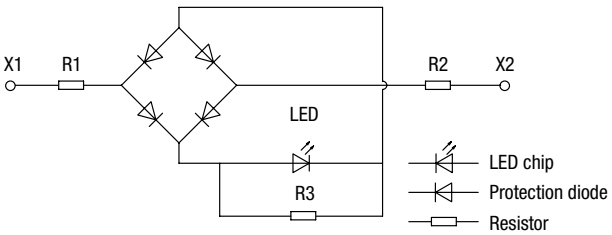
Mounting Hole Layout



	X	Y
ø29mm Mushroom	40 mm minimum	
ø40mm Mushroom	50 mm minimum	

- The values shown above are the minimum dimensions for mounting with other ø16 mm pushbuttons. For other control units of different sizes and styles, determine the values according to the dimensions, operation, and wiring convenience.

LED Unit Internal Circuit



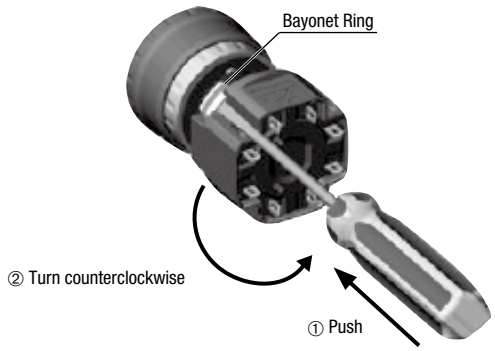
⚠ Safety Precautions

- 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 burn on 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 fire hazard.

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.**

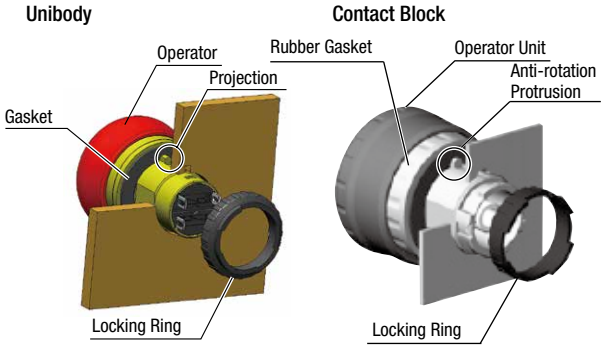


Notes for Removing the Contact Block

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 protrusion on the operator upward, and tighten the locking ring.

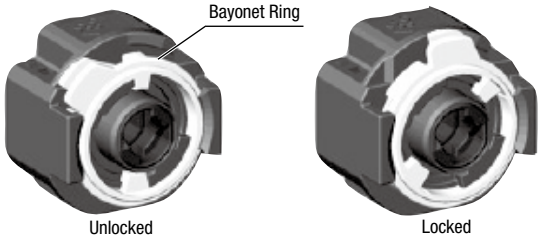


Notes for Panel Mounting

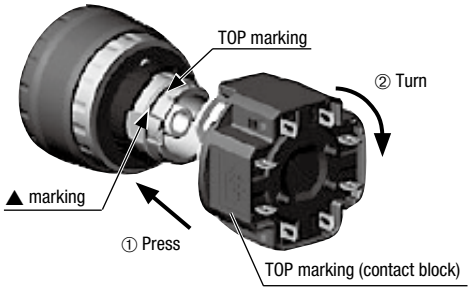
To mount the XA emergency stop switches onto a panel, tighten the locking ring to a tightening torque of 0.88 N·m maximum using ring wrench MT-001. Do not use pliers. Do not exert excessive force, otherwise the locking ring may be damaged.

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.

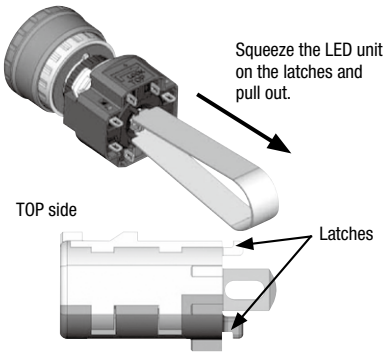


Notes for Installing the Contact Block

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.

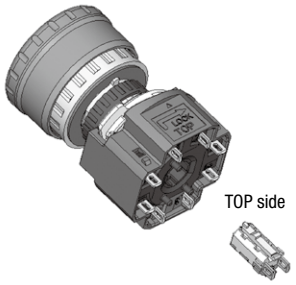
Removing the LED Unit (Contact Block)

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 (with Removable Contact Block)

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



Wiring

1. The applicable wire size is 1.25 mm^2 maximum.
2. Solder the terminal at a temperature of 310 to 350°C within 3 seconds using a soldering iron. Sn-Ag-Cu type is recommended when using lead-free solder. When soldering, do not touch the enabling switch with the soldering iron. Also ensure that no tensile force is applied to the terminal. Do not bend the terminal or apply excessive force to the terminal.
3. Use a non-corrosive rosin flux. To prevent the flux from entering the switch while soldering, face the terminals downward.
4. Because the terminal spacing is narrow, use protective tubes or heat shrinkable tubes to avoid burning of wire coating or short circuit.

Solder/Tab Terminal #110

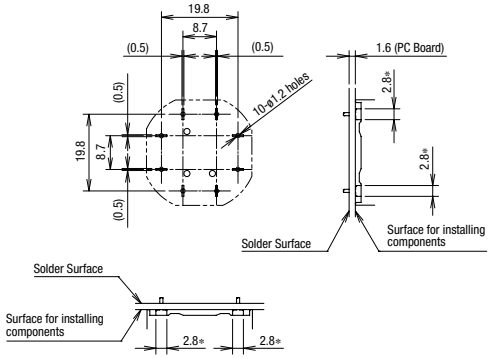
1. Use #110 receptacles for 0.5mm-thick tabs.
2. Because the terminal spacing is narrow, use protective tubes or heat shrinkable tubes of 0.5mm minimum in thickness.
3. Do not apply force on the terminals in the direction other than vertical to the mounting panel, otherwise the terminals will be damaged.

PC Board Terminal

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

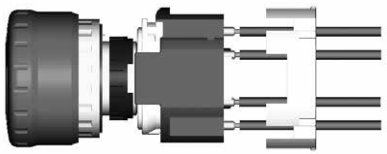
1. Use PC boards made of glass epoxy copper-clad laminated sheets of 1.6 mm in thickness, with double-sided through hole.
2. PC boards and circuits must withstand rated voltage and current, including the instantaneous current and voltage at switching.
3. The minimum applicable load is 5V AC/DC, 1 mA. This value may vary according to the operating environment and load.
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.



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.

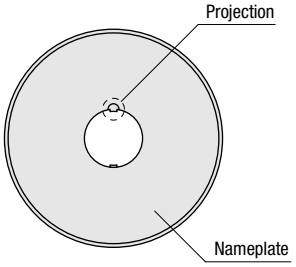


Contact Bounce

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).

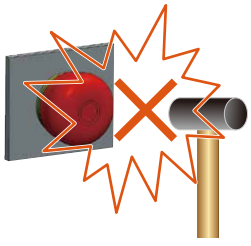
Nameplate

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.



ø16 X6/XA Series Emergency Stop Switches Accessories

Accessories and Replacement Parts (ø16 X6/XA Series Emergency Stop Switches)

Description & Shape	Material	Part No.	Package Quantity	Remarks
Ring Wrench 	Metal (nickel-plated brass)	MT-001	1	• Used to tighten the locking ring when installing the XA emergency stop switch onto a panel.
Locking Ring 	Polyamide	XA9Z-LN	10	• Black
Terminal Cover 	PBT	XA9Z-VL2	2	• White • Used for solder terminals. • Also applicable to the XW series.
LED Unit 	For Solder Terminal	XA9Z-LED2R	1	• Replacement LED unit for illuminated (for XA series only).
	For PC Board Terminal	XA9Z-LED2VR		
LED Unit Removal Tool 	Stainless Steel	MT-101		• Used for removing the LED unit.

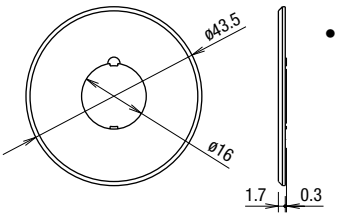
Nameplates (for ø16 X6/XA Emergency Stop Switches)

Package quantity: 1

Description	Legend	Part No.	Material	Plate Color	Legend Color
For ø30mm Operator	(blank)	HAAV-0	Polyamide	Yellow	Black
	EMERGENCY STOP	HAAV-27			
For ø40mm Operator	(blank)	HAAV4-0			
	EMERGENCY STOP	HAAV4-27			

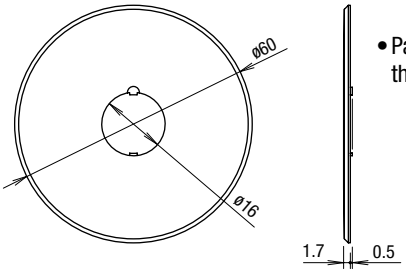
• Cannot be used with a switchguard.

For ø30mm Operator



• Panel thickness when using the nameplate: 0.5 to 2 mm

For ø40mm Operator



• Panel thickness when using the nameplate: 0.5 to 2 mm

All dimensions in mm.