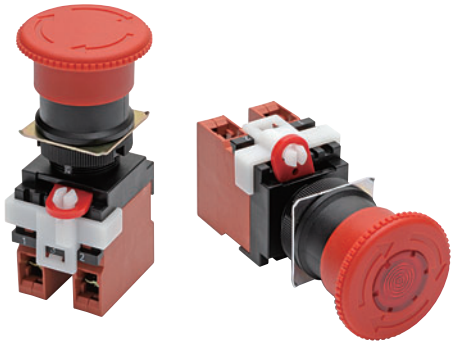
A22E

CSM_A22E_DS_E_11_1

Install in 22-dia. or 25-dia. Panel Cutout

- Direct opening mechanism to open the circuit when the contact welds ⊖.
- Safety lock mechanism prevents operating errors.
- Easy mounting and removal of Switch Blocks using a lever.
- Mount three Switch Units in series to improve wiring efficiency (with non-lighted Switch Units, three Units can be mounted for multiple contacts).
- Finger protection mechanism on Switch Unit provided as a standard feature.
- Install using either round, or forked crimp terminals.
- Oil-resistant to IP65 (non-lighted models)/IP65 (lighted models)
- A lock plate is provided as a standard feature to ensure that the control box and switch are not easily separated.



⚠ Be sure to read the precautions for all pushbutton switches in the *Pushbutton Switches Group Catalog* (Cat. No. X032), as well as the *"Safety Precautions"* on page 16.

Model Number Structure

Model Number Legend (Completely Assembled)

..... Shipped as a set which includes the Operation Unit, Lamp (lighted models only), and Switch.

A22E [1] - [2] - [3] - [4] - [5]

1. Lighted/Non-lighted

Code	Description
None	Non-lighted
L	Lighted ✻

✻ Lighted Emergency Stop Switches are available only for the medium (M). push-lock turn-reset models.

2. Head Size

Code	Size	Description
MP	Medium 40 dia.	Push-pull
LP	Large 60 dia.	
S	Small 30 dia.	Push-lock turn-reset
M	Medium 40 dia.	
L	Large 60 dia.	
SK	Small 30 dia.	Push-lock key reset
MK	Medium 40 dia.	

3. Light Source

Without Voltage Reduction Unit

Code	Description	Operating Voltage
None	Non-lighted	---
6A	LED	6 VAC/VDC
12A		12 VAC/VDC
24A		24 VAC/VDC

With Voltage Reduction Unit

Code	Description	Operating Voltage
T1	LED	100 VAC
T2		200 VAC

Equipped with 24-VAC/DC LED.

4. Contacts

Code	Description
01	SPST-NC
11	SPST-NO + SPST-NC
02	DPST-NC
12	DPST-NC + SPST-NO
03	TPST-NC

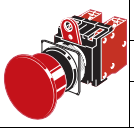
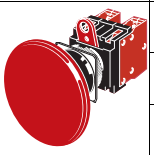
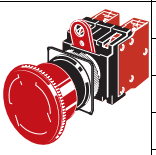
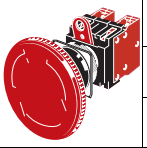
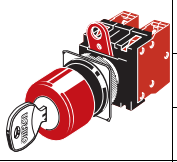
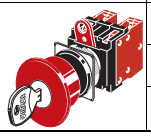
5. Configuration

Code	Configuration
None	Switch only
B	Switch with Integrated Control Box

Ordering Information

List of Models (Completely Assembled)

Non-lighted Models

Operating Appearance	Operating Contact Configuration	Set Model	Color of cap
40-dia. head Medium Push-pull A22E-MP 	SPST-NC	**A22E-MP-01**	Red
	SPST-NO/SPST-NC	**A22E-MP-11**	
	DPST-NC	**A22E-MP-02**	
60-dia. head Large Push-pull A22E-LP 	SPST-NC	**A22E-LP-01**	
	SPST-NO/SPST-NC	**A22E-LP-11**	
	DPST-NC	**A22E-LP-02**	
30-dia. head Small Push-lock Turn-reset A22E-S 	SPST-NC	**A22E-S-01** ✻	
	SPST-NO/SPST-NC	**A22E-S-11** ✻	
	DPST-NC	**A22E-S-02** ✻	
	DPST-NC + SPST-NO	**A22E-S12** ✻	
	TPST-NC	**A22E-S-03** ✻	
40-dia. head Medium Push-lock Turn-reset A22E-M 	SPST-NC	**A22E-M-01** ✻	
	SPST-NO/SPST-NC	**A22E-M-11** ✻	
	DPST-NC	**A22E-M-02** ✻	
	DPST-NC + SPST-NO	**A22E-M-12** ✻	
	TPST-NC	**A22E-M-03** ✻	
60-dia. head Large Push-lock Turn-reset A22E-L 	SPST-NC	**A22E-L-01** ✻	
	SPST-NO/SPST-NC	**A22E-L-11** ✻	
	DPST-NC	**A22E-L-02** ✻	
30-dia. head Small Push-lock Key-reset A22E-SK 	SPST-NC	**A22E-SK-01**	
	SPST-NO/SPST-NC	**A22E-SK-11**	
	DPST-NC	**A22E-SK-02**	
40-dia. head Medium Push-lock Key-reset A22E-MK 	SPST-NC	**A22E-MK-01**	
	SPST-NO/SPST-NC	**A22E-MK-11**	
	DPST-NC	**A22E-MK-02**	

✻ Models with Korean S-mark certification.

Note: 1. Yellow cap models are also available (not for emergency stop use). Contact your OMRON representative.

2. The Operation Unit of A22E exept models with EMO/EMS indication is red. (The engraved mark is not white.)

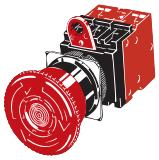
With EMO/EMS Indication (non-lighted)

Operating Appearance	Operating Contact Configuration	Set Model	Color of cap
40-dia. head Medium Push-lock Turn-reset With EMO Indication 	SPST-NC	**A22E-M-01-EMO** ✻	Red
	SPST-NO/SPST-NC	**A22E-M-11-EMO** ✻	
	DPST-NC	**A22E-M-02-EMO** ✻	
	DPST-NC + SPST-NO	**A22E-M-12-EMO** ✻	
	TPST-NC	**A22E-M-03-EMO** ✻	
40-dia. head Medium Push-lock Turn-reset With EMS Indication 	SPST-NC	**A22E-M-01-EMS** ✻	
	SPST-NO/SPST-NC	**A22E-M-11-EMS** ✻	
	DPST-NC	**A22E-M-02-EMS** ✻	
	DPST-NC + SPST-NO	**A22E-M-12-EMS** ✻	
	TPST-NC	**A22E-M-03-EMS** ✻	

✻ Models with Korean S-mark certification.

Note: The colors of switch blocks are the followings:
SPST-NO: black
SPST-NC: red
The above illustration shows the DPST-NC classification.

Lighted Models

Appearance	Operating			Push-lock turn-reset system	Color of cap
	Contact configuration	Lighting	Rated voltage	Set Model	
40-dia. head Push-lock Turn-reset without Voltage Reduction Unit A22E 	SPST-NC	LED	6 VAC/VDC	**A22EL-M-6A-01 ✻**	Red
			12 VAC/VDC	**A22EL-M-12A-01 ✻**	
			24 VAC/VDC	**A22EL-M-24A-01 ✻**	
	SPST-NO/SPST-NC		6 VAC/VDC	**A22EL-M-6A-11 ✻**	
			12 VAC/VDC	**A22EL-M-12A-11 ✻**	
			24 VAC/VDC	**A22EL-M-24A-11 ✻**	
	DPST-NC		6 VAC/VDC	**A22EL-M-6A-02 ✻**	
			12 VAC/VDC	**A22EL-M-12A-02 ✻**	
			24 VAC/VDC	**A22EL-M-24A-02 ✻**	
40-dia. head Push-lock Turn-reset with Voltage Reduction Unit A22E 	SPST-NC		100 VAC	**A22EL-M-T1-01**	
			200 VAC	**A22EL-M-T2-01**	
	SPST-NO/SPST-NC		100 VAC	**A22EL-M-T1-11**	
			200 VAC	**A22EL-M-T2-11**	
	DPST-NC		100 VAC	**A22EL-M-T1-02**	
			200 VAC	**A22EL-M-T2-02**	

✻ Models with Korean S-mark certification.

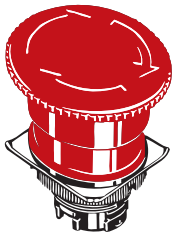
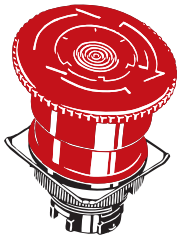
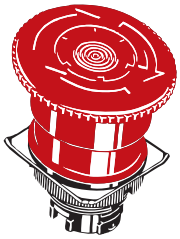
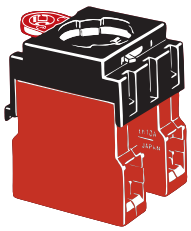
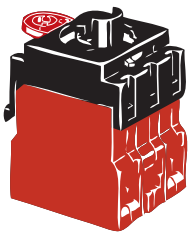
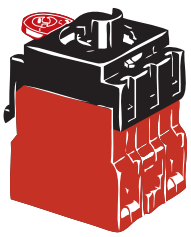
Note: The Operation Unit of A22E exept models with EMO/EMS indication is red. (The engraved mark is not white.)

Switch with Integrated Control Box

Appearance	Contact configuration	Model
	SPST-NC	**A22E-M-01B ✻**
	SPST-NO/SPST-NC	**A22E-M-11B ✻**
	DPST-NC	**A22E-M-02B ✻**

✻ Models with Korean S-mark certification.

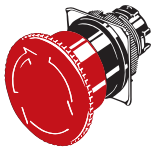
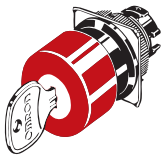
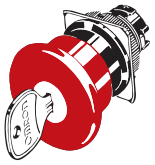
Subassembled.....The Operation Unit, Lamp, or Switch can be ordered separately. Use them in combination for models that are not available as assembled Units. These can also be used as inventory for maintenance parts.

Non-lighted	Lighted (without Voltage Reduction Unit)	Lighted (with Voltage Reduction Unit)
Operation Unit ✻1	**Operation Unit ✻1**	**Operation Unit ✻1**
		
	Lamp	**Lamp**
	Incandescent LED	LED
		
Switch ✻2	**Switch (without Voltage Reduction Unit)**	**Switch (with Voltage Reduction Unit)**
		

✻1. The Operation Unit of A22E exept models with EMO/EMS indication is red. (The engraved mark is not white.)
✻2. Up to three Switch Units can be mounted for multiple contacts.

Operation Units

Non-lighted

Sealing capability / Function / Size	IP65 oil-resistant models		
	Small (30 dia.)	Medium (40 dia.)	Large (60 dia.)
Push-pull	---	A22E-MP 	A22E-LP 
Push-lock, turn-reset	A22E-S 	A22E-M 	A22E-L 
Push-lock, key-reset (push-lock, turn-reset)	A22E-SK 	A22E-MK 	---

Lighted

Sealing capability / Function / Size	IP65
	Medium (40 dia.)
Push-lock, turn-reset	A22EL-M 

Note: The Operation Unit of A22E exept models with EMO/EMS indication is red. (The engraved mark is not white.)

Lamp

LED

Appearance	LED light		Rated voltage	Model
	Red	Standard	6 VAC/VDC	**A22-6AR**
			12 VAC/VDC	**A22-12AR**
			24 VAC/VDC	**A22-24AR**

Note: For voltage-reduction lighting, use the A22-24AR.

Incandescent

Appearance	Rated voltage	Model
	6 VDC	**A22-5**
	14 VAC	**A22-12**
	28 VAC	**A22-24**
	130 VAC	**A22-H1**

Switch (Standard Load)

Without Voltage Reduction Unit

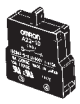
Classification / Appearance		Non-lighted 	Lighted 
Switch Action		Momentary	Momentary
Contacts		Model	Model
For standard loads	SPST-NC	**A22-01M**	**A22L-01M**
	SPST-NO + SPST-NC	**A22-11M**	**A22L-11M**
	DPST-NC	**A22-02M**	**A22L-02M**

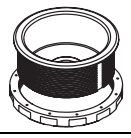
With Voltage Reduction Unit

Classification / Appearance		Lighted (110 VAC) 	Lighted (220 VAC) 
Switch Action		Momentary	Momentary
Contacts		Model	Model
For standard loads	SPST-NC	**A22L-01M-T1**	**A22L-01M-T2**
	SPST-NO + SPST-NC	**A22L-11M-T1**	**A22L-11M-T2**
	DPST-NC	**A22L-02M-T1**	**A22L-02M-T2**

Note: When using with a Voltage Reduction Unit, use the A22-24AR.

Accessories (Order Separately)

Item	Appearance	Classification		Model	Remarks
Switch Blocks		SPST-NO	Standard load	**A22-10**	Provided as standard. Order Switch Blocks only when adding or replacing them.
			Microload	**A22-10S**	
		SPST-NC	Standard load	**A22-01**	
			Microload	**A22-01S**	
		DPST-NO, one-piece	Standard load	**A22-20**	
			Microload	**A22-20S**	
		DPST-NC, one-piece	Standard load	**A22-02**	
			Microload	**A22-02S**	
Lamp Sockets		Direct lighting		**A22-TN**	Used when changing the lighting method.
		Voltage-reduction lighting	100 VAC	**A22-T1**	
			200 VAC	**A22-T2**	
Mounting Latches		---		**A22-3200**	Provided as standard. Order Mounting Latches only when mounting Switch Blocks or Lamp Sockets that are purchased individually.
Legend Plates for Emergency Stop		60-dia. black letters on yellow back-ground		**A22Z-3466-1**	“EMERGENCY STOP” is indicated on the plate. ✻2
		90-dia. black letters on yellow back-ground		**A22Z-3476-1**	
		60-dia. black letters on yellow back-ground		**A22Z-3466-2**	“EMERGENCY OFF” is indicated on the plate.
Hole Plug		Round		**A22Z-3530**	Can be plugged into pre-cut panel holes for future expansion. The color is black.
Connectors		Applicable cable diameter	7 to 9 dia.	**A22Z-3500-1**	Plastic connector used to extend a cable from the Switch Box.
			9 to 11 dia.	**A22Z-3500-2**	
25-dia. Ring		---		**A22Z-R25**	Can be fit into a 25-dia. hole in the panel. Since this is not attached to the main body, order separately. (Refer to page 14.)
30-dia. Resin Attachment		---		**A22Z-A30**	Can be fit into a 30-dia. hole in the panel. (Refer to page 14.)
Lock Plate		---		**A22Z-3380**	Use to fix the lever on the Switch.
Control Boxes (Enclosures)		One hole, yellow box (for emergency stop)		**A22Z-B101Y**	Material: Polycarbonate resin ✻2
Operation Keys		---		**A22K-K**	Two keys are provided.
Lock Ring		Rounded shape		**A22Z-3360**	The body is equipped with a Lock Fitting. This Lock Fitting is used when a more secure lock feature is required. (Refer to page 14.)
Lamp Extractor		---		**A22Z-3901**	Rubber tool used to replace Lamps easily
Tightening Tool		---		**A22Z-3905**	Tool used to tighten rings from the back of the panel and to attach caps to lighted models.

Item	Appearance	Classification	Model	Remarks
E-stop Shroud for EMO, Yellow		---	**A22Z-EG1**	Provides SEMI-S2/SEMATECH Application Guide for SEMI-S2 compatibility. The SEMI-S2-compatible Shroud and legend plate for EMERGENCY OFF come as a set. Use with an A22E Emergency Stop Switch. (for emergency shutoff) ✻1 ✻2
E-stop Shroud for EMO, Yellow		Legend plate for EMERGENCY OFF is not included.	**A22Z-EG10**	Provides SEMI-S2/SEMATECH APPLICATION GUIDE FOR SEMI S2 compatibility. Use with an A22E with EMO indication. (for emergency off) ✻2
E-stop Shroud for EMS, White		---	**A22Z-EG1-W**	Provides SEMI-S2/SEMATECH Application Guide for SEMI-S2 compatibility. The SEMI-S2-compatible Shroud and legend plate for EMERGENCY STOP come as a set. Use with an A22E Emergency Stop Switch. (for emergency stop) ✻1✻2
E-stop Shroud for EMS, White		Legend plate for EMERGENCY STOP is not included.	**A22Z-EG10-W**	Provides SEMI-S2/SEMATECH APPLICATION GUIDE FOR SEMI S2 compatibility. Use with an A22E with EMS indication. (for emergency stop) ✻2
E-stop Shroud, Yellow		---	**A22Z-EG2**	SEMI-S2/SEMATECH Application Guide for SEMI S2-compatible Shroud. (for emergency shutoff) ✻1✻2 Use together with an A22E Emergency Stop Switch.

✻1. These Shrouds are for use with the equipment only that conforms to SEMI standards. Do not use them for any other applications (e.g. emergency stop switches for machines or devices such as Machine tools, Printing presses, Industrial machinery, etc).
✻2. The A22-B101Y cannot be used in combination with the A22Z-3476-1 and the A22Z-EG□.

Note: 1. Accessories for A22Z-EG1: one “EMERGENCY OFF” label, two rubber washers, and one lock ring
2. Accessories for A22Z-EG10: one rubber washer and one lock ring (without label)

Specifications

Certified Standard Ratings

- UL, cUL (File No.E41515)
  6A at 220 VAC, 10 A at 110 VAC
- TÜV (EN60947-5-1) (Low Voltage Directive)
  3 A at 220 VAC
- CCC (GB14048.5)
  3 A at 240 VAC, 1.5 A at 24 VDC

Certified Standards

Certification body	Standards	File No.
UL ✻1	UL508, C22.2 No.14	E41515
TÜV SÜD	EN60947-5-1, EN60947-5-5 (certified direct opening mechanism)	Inquire
CQC (CCC)	GB14048.5	2003010303070635
KOSHA ✻2	EN60947-5-1	2004-220, 2007-27 2009-189 (A22E-□-□-EMS/EMO)

Note: Only models with NC contacts have a direct opening mechanism.
*1. UL-certification for CSA C22.2 No. 14 and bears the c UL us mark. Certification has been obtained for the Switch Unit and the Lamp Socket.
*2. Some models have been certified.

Ratings

Contacts (Standard Load)

Rated carry current (A)	Rated voltage (V)	Rated current (A)			
		AC15 (inductive load)	AC12 (resistive load)	DC13 (inductive load)	DC12 (resistive load)
10	24 VAC	10	10	---	---
	110 VAC	5	10		
	220 VAC	3	6		
	380 VAC	2	3		
	440 VAC	1	2		
	24 VDC	---	---	1.5	10
	110 VDC			0.5	2
	220 VDC			0.2	0.6
	380 VDC			0.1	0.2

Note: 1. Rated current values are determined according to the testing conditions. The above ratings were obtained by conducting tests under the following conditions.
(1) Ambient temperature: 20°±2°C
(2) Ambient humidity: 65±5%
(3) Operating frequency: 20 operations/minute
2. Minimum applicable load: 10 mA at 5 VDC

LED Indicators without Voltage Reduction Unit

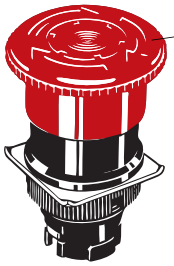
Rated voltage	Rated current	Operating voltage
6 VAC/VDC	8 mA	6 VAC/VDC±5%
12 VAC/VDC		12 VAC/VDC±5%
24 VAC/VDC		24 VAC/VDC±5%

Characteristics

Item	Type	Emergency Stop Switches	
		Non-lighted model: A22E	Lighted model: A22EL
Allowable operating frequency	Mechanical	30 operations/minute ✻3	
	Electrical	30 operations/minute ✻3	
Insulation resistance		100 MΩ min. (at 500 VDC)	
Dielectric strength	Between terminals of same polarity	2,500 VAC, 50/60 Hz for 1 min	
	Between each terminal and ground	2,500 VAC, 50/60 Hz for 1 min	
Vibration resistance ✻2		10 to 55 Hz, 1.5-mm double amplitude (within 1 ms)	
Shock resistance	Destruction	1,000 m/s^2	
	Malfunction ✻2	250 m/s^2 max.	
Durability	Mechanical	300,000 operations min. ✻3	
	Electrical	300,000 operations min. ✻3	
Ambient operating temperature ✻1		–20 to 70°C	–20 to 55°C
Ambient operating humidity		35% to 85%	
Ambient storage temperature		–40 to 70°C	
Degree of protection		IP65 (oil-resistant) ✻4	IP65 ✻4
Electric shock protection class		Class II	
PTI (tracking characteristic)		175	
Degree of contamination		3 (EN60947-5-1)	

✻1. With no icing or condensation.
✻2. Malfunction within 1 ms.
✻3. Setting and resetting once is counted as one operation.
✻4. The degree of protection from the front of the panel.

Structure and Nomenclature



Operation Unit

Color: Red

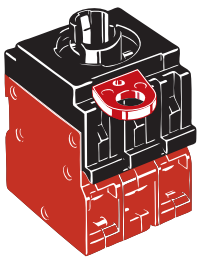
Non-lighted
Lighted

Note: The Operation Unit of A22E exept models with EMO/EMS indication is red. (The engraved mark is not white.)

Lamp

Light source

- LED Lamp
- Incandescent Lamp



Switch

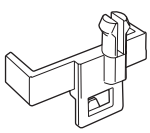
Contact Ratings

10 A at 110 VAC (resistive load)
10 A at 24 VDC (resistive load)

Lighting Method

Non-lighted
Lighted (without Voltage Reduction Unit)
Lighted (with Voltage Reduction Unit)

(The above figures are examples of the lighted model.)



Lock Plate (Attached with the Operation Unit)

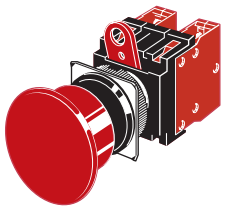
(Refer to the Mounting the Lock Plate on page 16 for use.)

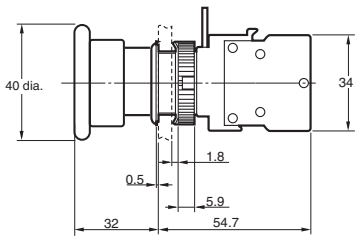
Dimensions

(Unit: mm)

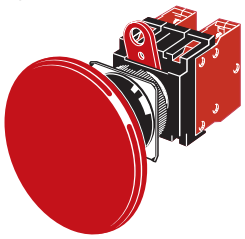
Non-lighted Models

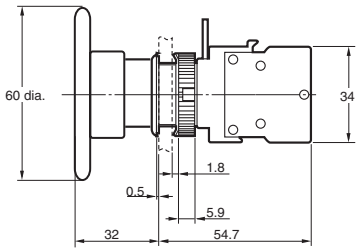
A22E-MP
Medium Push-pull (40-dia.)



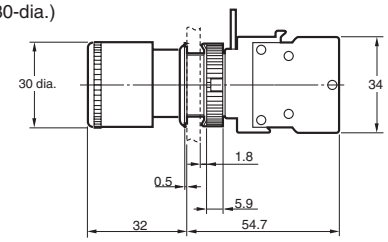


A22E-LP
Large Push-pull (60-dia.)

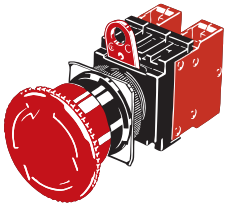


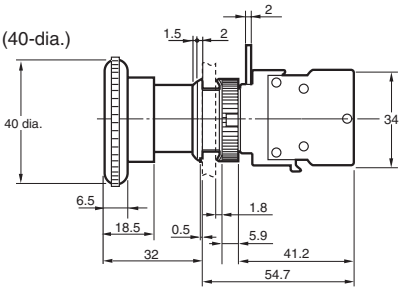


A22E-S
Small Push-lock, Turn-reset (30-dia.)



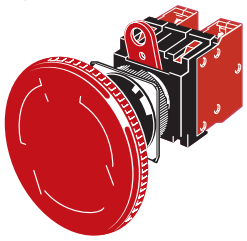
A22E-M
Medium Push-lock, Turn-reset (40-dia.)

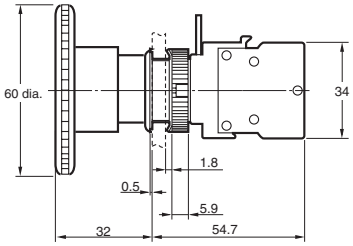




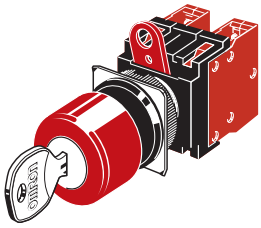
Note: The dimensions are the same as for EMO/EMS indication models.

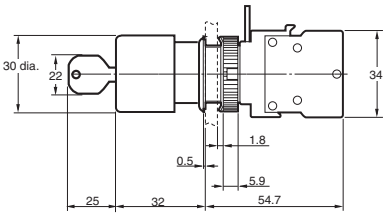
A22E-L
Large Push-lock, Turn-reset (60-dia.)



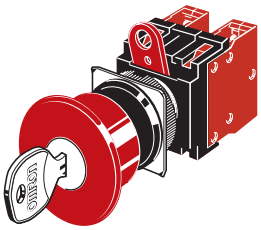


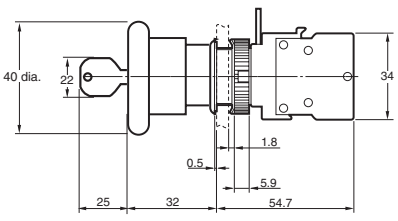
A22E-SK
Small Push-lock, Key-reset (30-dia.)





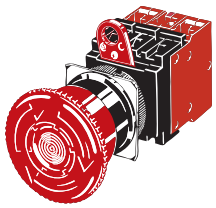
A22E-MK
Medium Push-lock, Key-reset (40-dia.)

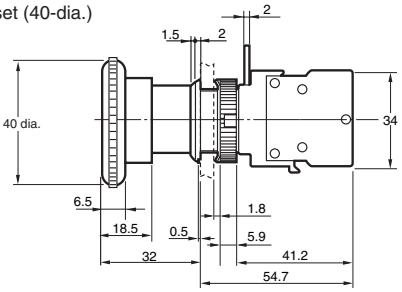




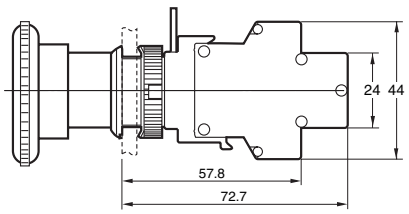
Lighted Models

A22EL-M
Medium Push-lock, Turn-reset (40-dia.)





Switch dimensions when mounted to a DPST-NO (or DPST-NC) one-piece Switch Block

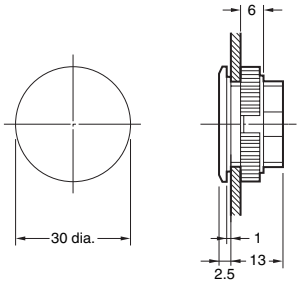


Note: The operation unit is an example for the A22E-M.

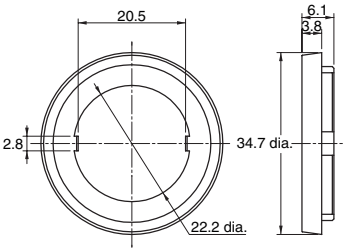
Note: The Operation Unit of A22E exept models with EMO/EMS indication is red. (The engraved mark is not white.)

Dimensions for Accessories

Hole Plug
Round A22Z-3530

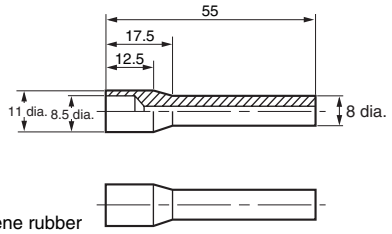


30-dia. Resin Attachment
A22Z-A30

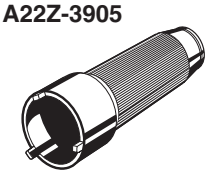


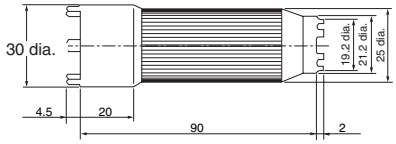
Lamp Extractor
A22Z-3901

Material: Chloroprene rubber



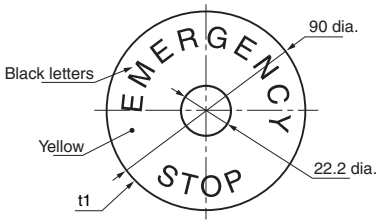
Tightening Tool
A22Z-3905



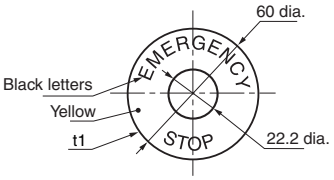


Legend Plates for Emergency Stop

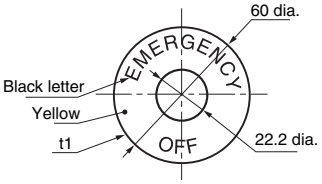
A22Z-3476-1 (90 dia.)



A22Z-3466-1 (60 dia.)

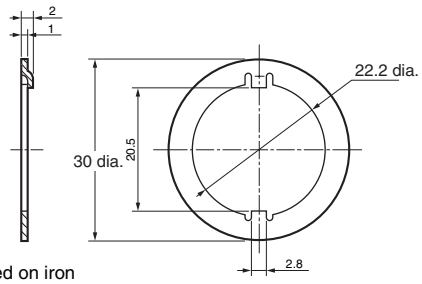


A22Z-3466-2 (60 dia.)



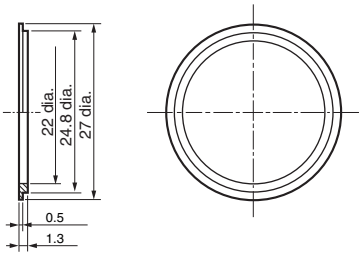
Lock Ring
A22Z-3360

Material: Nickel plated on iron

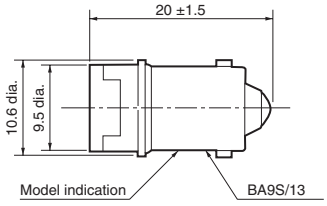


25-dia. Ring
A22Z-R25

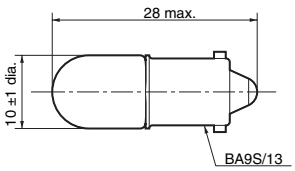
Material: NBR (black)



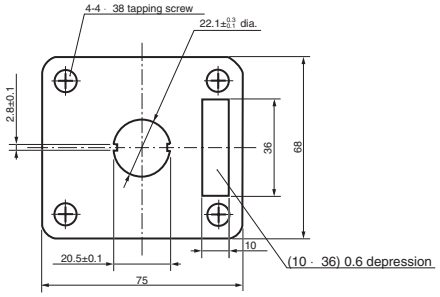
Lamp
LED A22-6□, 12□, 24□

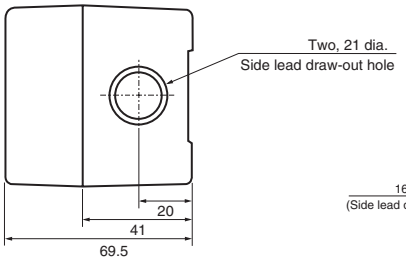


Incandescent Lamp A22-5, 12, 24, H1

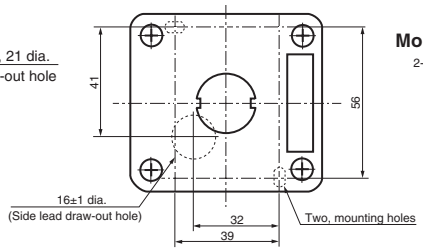


Control Box
A22Z-B101Y (1 hole)

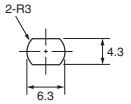




Cable Draw-out Hole (Top View)

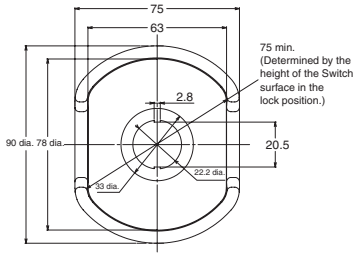


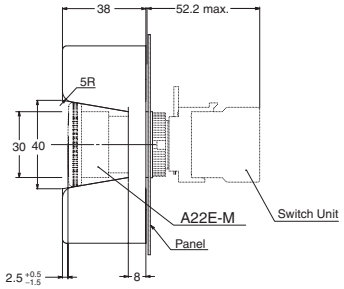
Mounting Hole



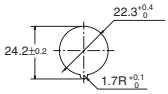
E-stop Shroud

A22Z-EG1, A22Z-EG1-W,A22Z-EG10,A22Z-EG10-W



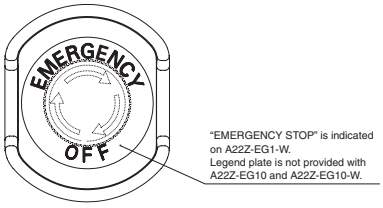


Panel Cutout Dimensions

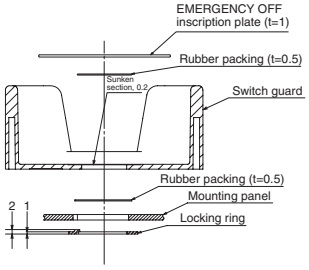


Allowable panel thickness: 1 to 3 mm

Note: 1. The dimensions of the Shroud conform to the specifications of the SEMATECH Application Guide for SEMI S2-93.
2. The Shroud is not provided with the Switch.

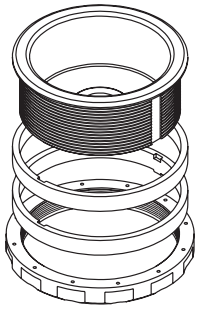


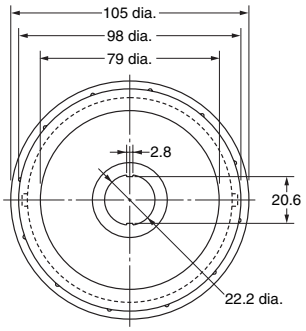
"EMERGENCY STOP" is indicated on A22Z-EG1-W. Legend plate is not provided with A22Z-EG10 and A22Z-EG10-W.

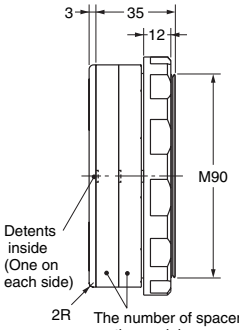


E-stop Shroud

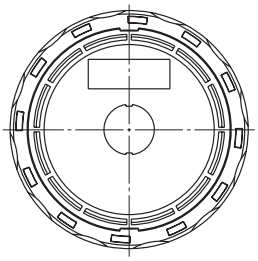
A22Z-EG2, A22Z-EG21, A22Z-EG22





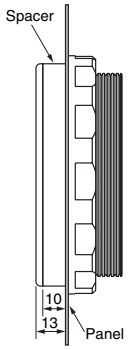


The number of spacers depends on the model
A22Z-EG2 : No Spacer
A22Z-EG21 : 1 Spacer
A22Z-EG22 : 2 Spacers

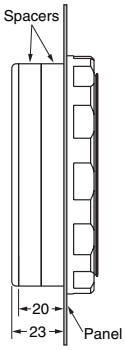


Mounting with Spacers

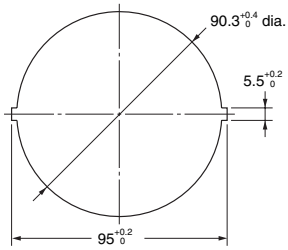
With 1 Spacer



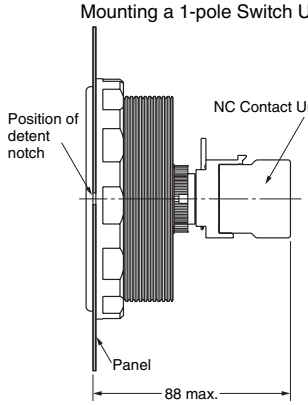
With 2 Spacers



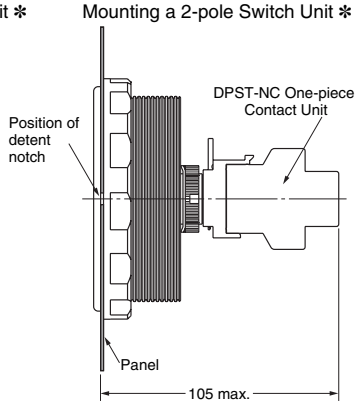
Panel Cutout Dimensions



Mounting a 1-pole Switch Unit ✻



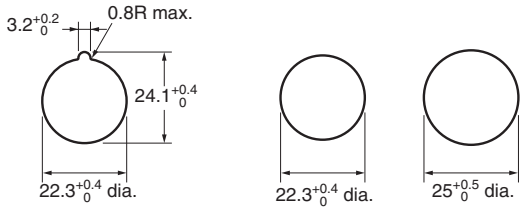
Mounting a 2-pole Switch Unit ✻



Note: 1. The dimensions of the Shroud conform to the specifications of the *SEMATECH Application Guide for SEMI S2-93*.
2. The Shroud is not provided with the Switch.
3. Tighten to a torque of 1.96 to 2.94 N·m.
4. The allowable panel thicknesses are as follows:
Without Spacers: t=1.3 to 22.5 mm
With 1 Spacer: t=1.3 to 12.5 mm
With 2 Spacers: t=1.3 to 2.5 mm

✻ These are the dimension from the front of the panel when the Switch Unit is attached.

Panel Cutouts

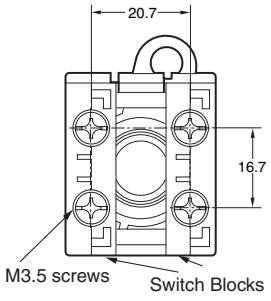
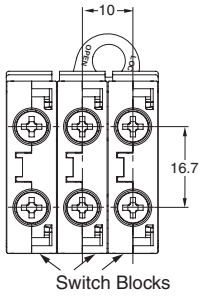
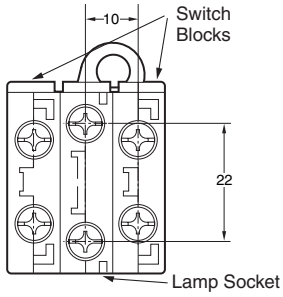


With Lock Fitting **Without Lock Fitting**

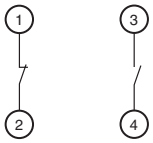
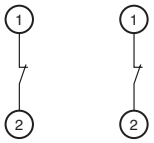
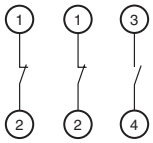
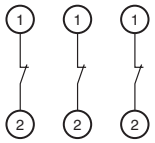
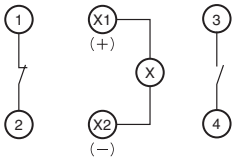
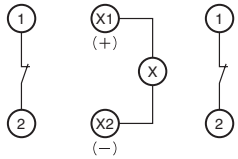
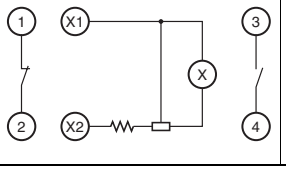
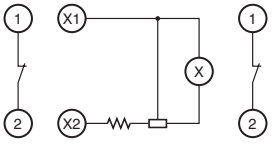
A Lock Ring is provided as a standard feature.

- When painting or coating the panel, make sure that the specified panel dimensions apply to the panel after painting or coating.
- Use an A22Z-R25 Ring when mounting to a panel with a 25-mm diameter hole.

Terminal Arrangement (Bottom View)

Non-lighted (two contacts)	Non-lilghted (three contacts)	Lighted
		

Terminal Connection

Type	Terminal connection (BOTTOM VIEW)			
	SPST-NO + SPST-NC	DPST-NC	DPST-NC + SPST-NO	TPST-NC
Non-lighted				
Lighted without Voltage Reduction Unit				
Lighted with Voltage Reduction Unit				

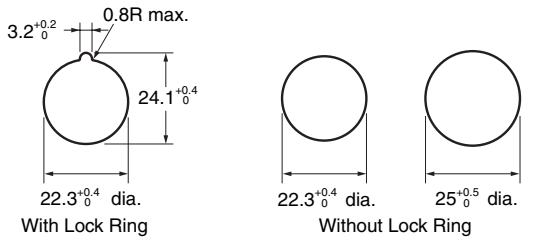
Note: The above terminal connection diagrams are examples for SPST-NO + SPST-NC and DPST-NC.

Installation

Mounting to the Panel

(1) Preparing the Panel

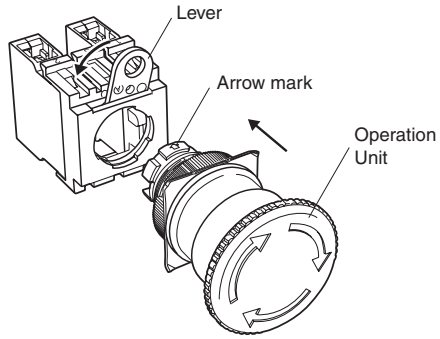
- The panel dimensions are shown below.
- The panel thickness must be 1 to 5 mm.



- Always use a 25-mm-dia. Lock Ring for a 25-mm-dia. hole. IP65 degree of protection will be lost if the 25-mm-dia. Lock Ring is not used because of the larger size of a 25-mm-dia. hole.
- When painting or coating the panel, make sure that the specified panel dimensions apply to the panel after painting or coating.

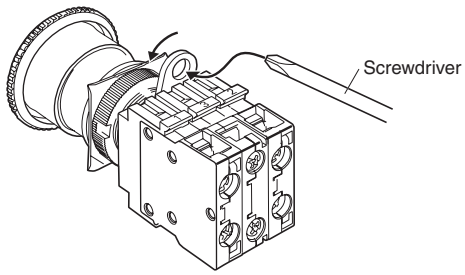
(3) Mounting the Switch on the Operation Unit

- Insert the Operation Unit into the Switch Unit, aligning the arrow mark inscribed on the Case with the lever on the Switch Blocks, then move the lever in the direction indicated by the arrow in the following figure.



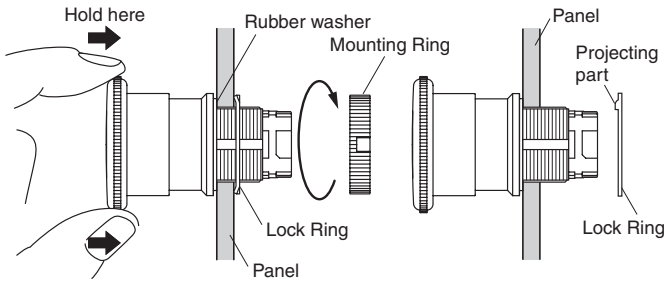
(4) Removing the Switch

- Move the lever in the direction indicated by the arrow in the following figure, then pull the Operation Unit or the Switch Blocks.
  Since the lever has a hole with an inside diameter of 6.5 mm, the lever can be moved in the specified direction by inserting a screwdriver into the hole and then moving the screwdriver.

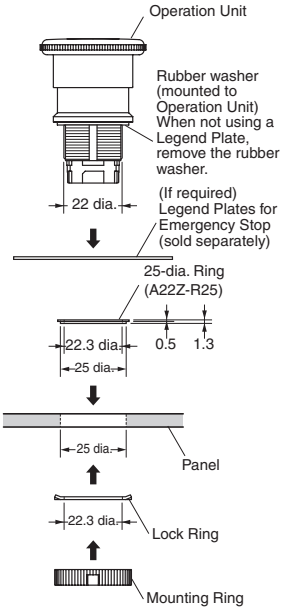


(2) Mounting the Operation Unit on the Panel

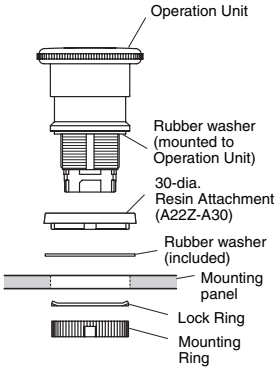
- Insert the Operation Unit from the front surface of the panel, insert the Lock Ring and the mounting Ring from the terminal side, then tighten the Ring. Before tightening, check that the rubber washer is present between the Operation Unit and the panel.
- Align the Lock Ring with the groove in the casing, then insert the Lock Ring so that its edge is located on the panel side.
- Tighten the mounting nut at a torque of 0.98 to 1.96 N·m.
- When using a Lock Ring, replace with the supplied Lock Ring, insert the projecting part into the lock slot, and then tighten the mounting Ring.



1. When the panel cutout dimension is 25 dia., remove the supplied rubber washer and mount the 25-dia. Ring as shown below. (Since the A22Z-R25 is not attached to the main body, order separately.) When using a Legend Plate (sold separately), do not remove the rubber washer.

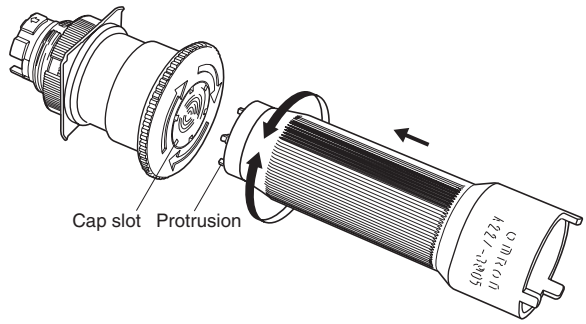


2. When the panel cutout dimension is 30 dia., use resin attachment A22Z-A30. Since it is not attached to the main body, order separately.



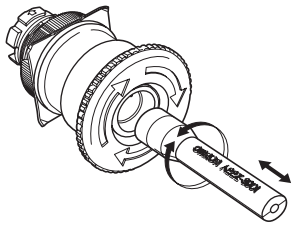
Assembling the Cap

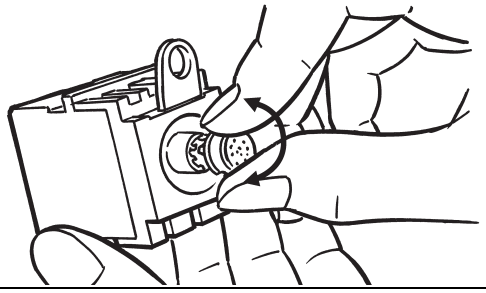
Emergency Stop Switch
• Insert the protrusion of the Tightening Wrench (A22Z-3905) into the Cap slot and then turn to remove the Cap.



Installing/Replacing the Lamp

(1) Installing/Replacing from the Panel Surface	(2) Installing/Replacing on the Switch
• Insert the Lamp Extractor (A22Z-3901) into the lamp, then rotate the Extractor while pressing it.	• Grip the indicator with your fingers, then rotate the indicator while pressing it against the Switch.

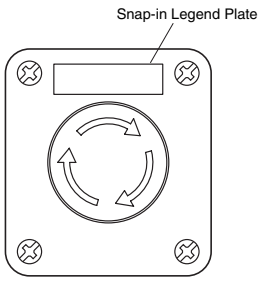




Control Box (Enclosure)

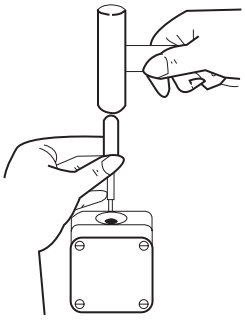
(1) Mounting the Switch

The Standard-size Legend Plate Frame can be mounted.
Mount the Frame as shown in the following diagram. Mount the Switch in the same way as for an ordinary panel.



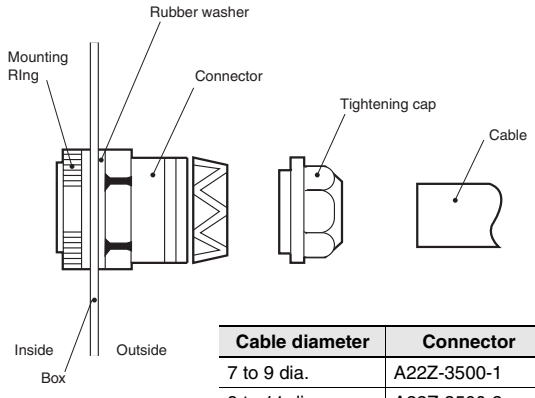
(2) Creating a Cable Port Hole

Place the tip of a screwdriver on the surface where the cable port hole is to be created with the cover attached and strike the screwdriver to punch a hole.
Attempts to punch a hole on the other side of the case will damage the Box.



(3) Securing the Connector Cable

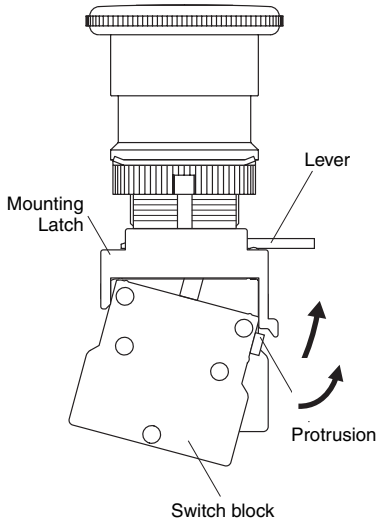
1. Insert the connector into the cable port hole in the Box and secure with the Mounting Ring inside the box.
2. Pass the tightening cap through the cable, insert the cable into the connector, and tighten the tightening cap to secure the cable.

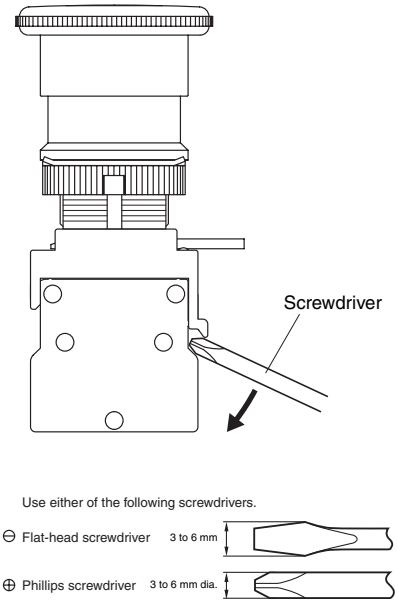


Cable diameter	Connector
7 to 9 dia.	A22Z-3500-1
9 to 11 dia.	A22Z-3500-2

Installing/Removing the Switch Blocks

(1) Installing the Switch Blocks	(2) Removing the Switch Blocks
• Hook the small protrusion on the Mounting Latch into the groove on the other side of the lever, then push up the Switch Block in the direction indicated by the arrow in the figure below.	• Insert a screwdriver between the Mounting Latch and the Switch Block, then push down the screwdriver in the direction indicated by the arrow in the following figure.



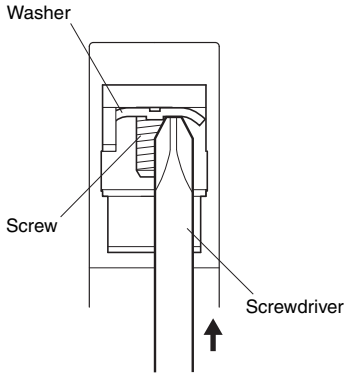


Use either of the following screwdrivers.

⊖ Flat-head screwdriver 3 to 6 mm

⊕ Phillips screwdriver 3 to 6 mm dia.

Wiring
• Loosen the terminal screw from the Switch Unit until it completely comes off the groove, insert a screwdriver as shown in the following figure, then push up the washer in the direction indicated by the arrow to temporarily secure it. Now, a round crimp terminal can be connected. After inserting the terminal, tighten the screws to complete wiring.



Safety Precautions

Be sure to read the precautions for all pushbutton switches in the *Pushbutton Switches Group Catalog* (Cat. No. X032).

⚠ CAUTION

Do not apply a voltage exceeding the rated voltage across the incandescent lamp terminals.
The lamp may be destroyed and the operation unit may fly out.

If the Operation Unit is separated from the Socket Unit, the equipment will not stop, creating a hazardous condition. Secure the lever on the Socket Unit by using the A22Z-3380 Lock Plate so that the Operation Unit cannot be easily separated from the Socket Unit.
(Refer to "*Mounting the Lock Plate*" at the right.)

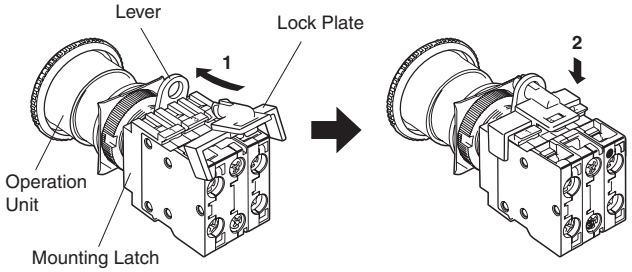
Precautions for Correct Use

Mounting

- Always make sure that the power is turned OFF before wiring the Switch. Also, do not touch the terminals or other current-carrying ports while power is being supplied. Electric shock may occur.
- Do not tighten the mounting ring more than necessary using tools such as pointed-nose pliers. Doing so will damage the mounting ring. The tightening torque is 0.98 to 1.96 N·m.
- Recommended panel thickness: 1 to 5 mm.
- When mounting the caps after changing the LED or the caps, tighten the caps at a tightening torque of 0.49 tp 0.78 N·m.

Mounting the Lock Plate

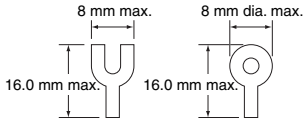
1. Confirm that the lever on the Mounting Latch is on the side where the Operation Unit is secured and then insert the protrusion on the Lock Plate into the hole in the lever on the Mounting Latch.
2. Press the hole on the Lock Plate onto the protrusion on the Mounting Latch until it clicks into place.



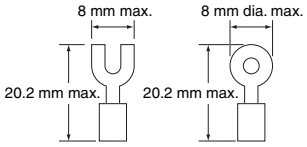
Wiring

- Terminal screws must be Phillips or slotted M3.5 screws with a square washer.
- The tightening torque is 1.08 to 1.27 N·m.
- Single wires, stranded wires, and crimp terminals can be connected to the Switch.
- Applicable Wiring Materials:
  Twisted strands: 2 mm^2 max.
  Solid wire: 1.6 mm dia. max.

Naked Crimp Terminals



Crimp Terminals with Insulating Sheaths



- After wiring the Switch, maintain an appropriate clearance and creepage distance.

Operating Environment

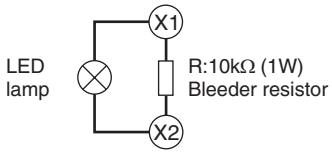
- The IP65 model is designed with a protective structure so that it will not sustain damage if it is subjected to water from any direction to the front of the panel.
- The Switch is intended for indoor use only. Using the Switch outdoor may cause it to fail.

LEDs

- The LED current-limiting resistor is built-in, so internal resistance is not required.
- If commercially available LEDs are used, select the ones that meet the following conditions:
  Base: BA9S/13
  Overall length: 26 mm max.
  Power consumption: 2.6 W max.
  When DC-specific LEDs are used, wire the Switch so that the X1 terminal is positive.
- Mis-lighting of the LED
  The LED lights with approx. 0.1 mA or less of micro-current. Take a countermeasure like adding a resistor to prevent mis-lighting in parallel to the LED.
  The micro-current varies with the machine (leak current or stray capacity between cables, etc.). Select resistance value and allowable power consumption that meet the actual current.

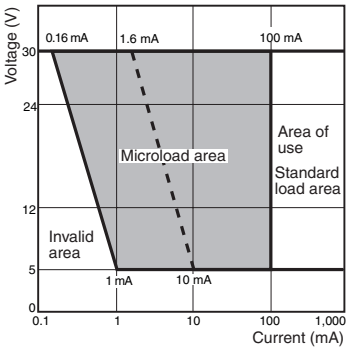
(Circuit example)

In case of using 24 VAC/VDC, Direct lighting



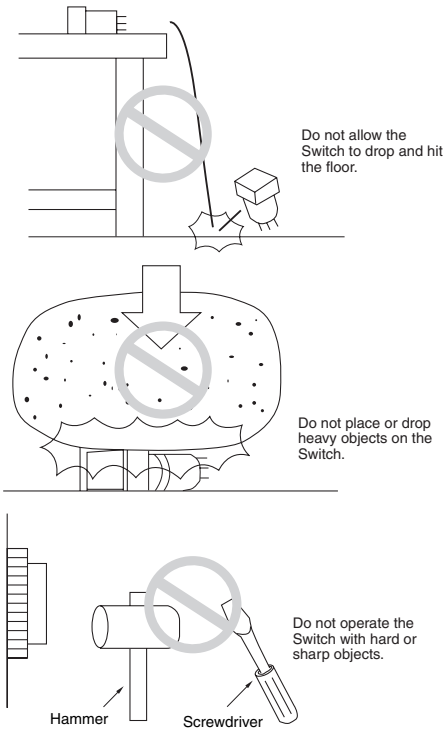
Using the Microload

Contact failure may occur if a Switch designed for a standard load is used to switch a microload. Use Switches within the application ranges shown in the following graph. Even within the application range, insert a contact protection circuit, if necessary, to prevent the reduction of life expectancy due to extreme wear on the contacts caused by loads where inrush current occurs when the contact is opened and closed.
The minimum applicable load is the N-level reference value. This value indicates the malfunction reference level for the reliability level of 60% (λ_{60}) (conforming to JIS C5003).
The equation, $\lambda_{60} = 0.5 \times 10^{-6}$/time indicates that the estimated malfunction rate is less than 1/2,000,000 with a reliability level of 60%.



Others

- If the panel is to be coated, make sure that the panel meets the specified dimensions after coating.
- Due to the structure of the Switch, severe shock or vibration may cause malfunctions or damage to the Switch.
  Also, most Switches are made from resin and will be damaged if they come into contact with sharp objects. Particularly scratches on the Operation Unit may create visual and operational obtrusions.
  Handle the Switches with care, and do not throw or drop them.



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Warranty and Limitations of Liability

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- Systems, machines, and equipment that could present a risk to life or property.

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2011.12

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