This document provides information mainly for selecting suitable models. Please read the document Instruction Sheet carefully for information that the user must understand and accept before purchase, including information on warranty, limitations of liability, and precautions.

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Cat. No. A190-E1-01

NEW

Pushbutton Switches/Indicators
A22R/M22R series

OMRON

Robust and Graceful design

Pushbutton Switches

Push Button Secure and Human-centered

realizing

Responds with *high grade* illumination to *various needs*

1 Shining Metal Ring

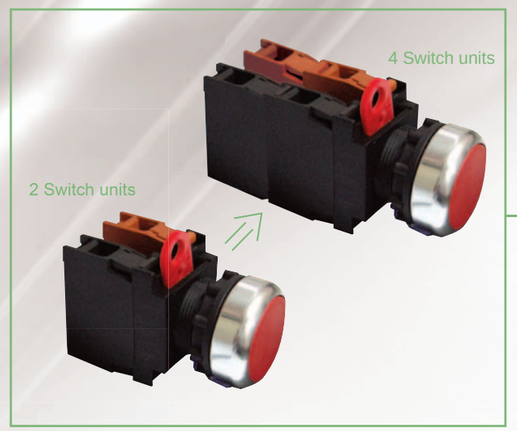
- Provides shining and robust metal ring.

2 Soft to the touch

- Gentle design for human.

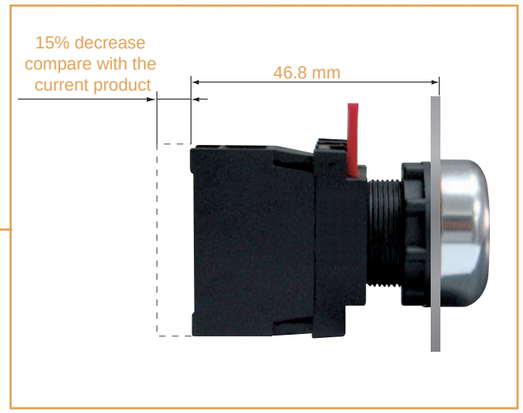
3 Additional unit type

- Switch unit can be added.



4 Compact size

- The body length under a panel decreased by 15% compare with our former products.



Assembled Models

Non-lighted Type

Flat type
A22R-F□-□□

Projection type
A22R-T□-□□

Lighted Type

Projection type
A22RL-T□-□-□□

Selector Non-lighted Type

2 notches
A22RS-2□-□

3 notches
A22RS-3□-□

Selector Lighted Type

2 notches
A22RW-2□□-□-□

3 notches
A22RW-3□□-□-□

Key Selector Type

2 notches
A22RK-2□-□

3 notches
A22RK-3□-□

Indicator

Indicator
M22R-E□-□

Emergency Stop Switch

*Emergency
A22E-□-□-□-□

* Refer to the Safety Components Series Catalog (Cat. No. Y106) for detail.

Operation Units

Non-lighted Type

Flat type
A22R-F□-□

Projection type
A22R-T□-□

Lighted Type

Projection type
A22RL-T□-□

Selector Non-lighted Type

2 notches
A22RS-2□

3 notches
A22RS-3□

Selector Lighted Type

2 notches
A22RW-2□□

3 notches
A22RW-3□□

Key Selector

2 notches
A22RK-2□

3 notches
A22RK-3□

Switch Unit

Switch with Lamp socket
A22RL-□M-□

Socket

Socket
A22R-□M

Switch Block

Switch block
A22R-□

Lamp Socket

Lamp socket
A22R-□

Mounting Plate

Mounting plate
A22R-3200

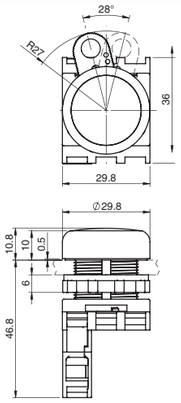
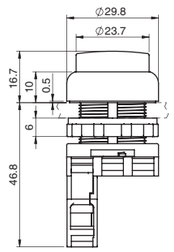
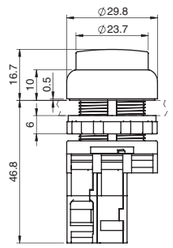
LED

LED
A22R-□□

Assembled Models

Pushbutton Switches

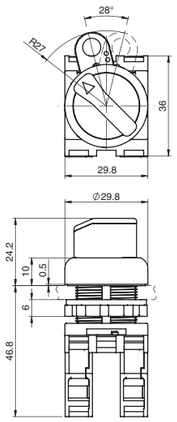
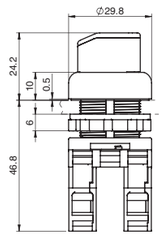
● Non-lighted/Lighted

Appearance	Pushbutton shape	Pushbutton color	Contact form	Part No.	Dimensions
A22R-F□-□□	Round/Flat	○	1a	A22R-FW-10□	
		●	1a	A22R-FB-10□	
		●	1a	A22R-FG-10□	
		●	1a	A22R-FR-10□	
		●	1a	A22R-FY-10□	
		●	1a	A22R-FA-10□	
		●	1b	A22R-FB-01□	
		●	1b	A22R-FR-01□	
		Insert one of the following letters into the box □. M: Momentary A: Alternate			
A22R-T□-□□	Projection	○	1a	A22R-TW-10□	
		●	1a	A22R-TB-10□	
		●	1a	A22R-TG-10□	
		●	1a	A22R-TR-01□	
		●	1a	A22R-TY-10□	
		●	1a	A22R-TA-10□	
		●	1b	A22R-TB-01□	
		●	1b	A22R-TR-01□	
		Insert one of the following letters into the box □. M: Momentary A: Alternate			
A22RL-T□-□-□□	Projection AC, DC 24V	○	1a	A22RL-TW-24A-10□	
		●	1a	A22RL-TG-24A-10□	
		●	1a	A22RL-TR-24A-10□	
		●	1a	A22RL-TY-24A-10□	
		●	1a	A22RL-TA-24A-10□	
	Projection AC 220V	○	1a	A22RL-TW-T2-10□	
		●	1a	A22RL-TG-T2-10□	
		●	1a	A22RL-TR-T2-10□	
		●	1a	A22RL-TY-T2-10□	
		●	1a	A22RL-TA-T2-10□	
		Insert one of the following letters into the box □. M: Momentary A: Alternate			

Assembled Models

Selector Switches

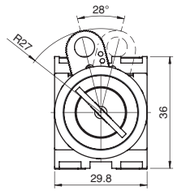
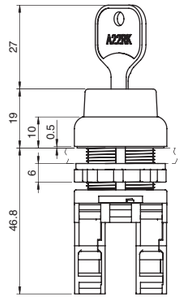
● Non-lighted/Lighted

Appearance	Number of notch	Knob position	Knob color	Contact form	Part No.	Dimensions
A22RS-2□-□	2 notches	∨	●	1a	A22RS-2M-10	
			●	1a1b	A22RS-2M-11	
		◡	●	1a	A22RS-2A-10	
			●	1a1b	A22RS-2A-11	
A22RS-3□-□	3 notches	↓	●	2a	A22RS-3M-20	
		◡	●	2a	A22RS-3A-20	
		* These Non-lighted types provide black knobs.				
A22RW-2□□-□-□	2 notches AC, DC 24V	∨	●	1a	A22RW-2MG-24A-10	
			●	1a1b	A22RW-2MR-24A-11	
		◡	●	1a	A22RW-2AY-24A-10	
			●	1a1b	A22RW-2AA-24A-11	
A22RW-3□□-□-□	3 notches AC, DC 24V	↓	●	2a	A22RW-3MG-24A-20	
			●	2a	A22RW-3MR-24A-20	
		◡	●	2a	A22RW-3AY-24A-20	
			●	2a	A22RW-3AA-24A-20	

Assembled Models

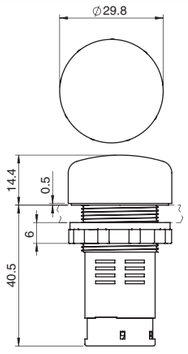
Selector Switches

● Key Selector

Appearance	Number of notch	Key position	Contact form	Part No.	Dimensions
A22RK-2□-□	2 notches		1a	A22RK-2ML-10	
			1a1b	A22RK-2ML-11	
			1a	A22RK-2M-10	
			1a1b	A22RK-2M-11	
			1a	A22RK-2AL-10	
			1a1b	A22RK-2AL-11	
		○: key release position			
A22RK-3□-□	3 notches		2a	A22RK-3ML-20	
			2a	A22RK-3M-20	
			2a	A22RK-3MC-20	
			2a	A22RK-3AC-20	
		○: key release position			

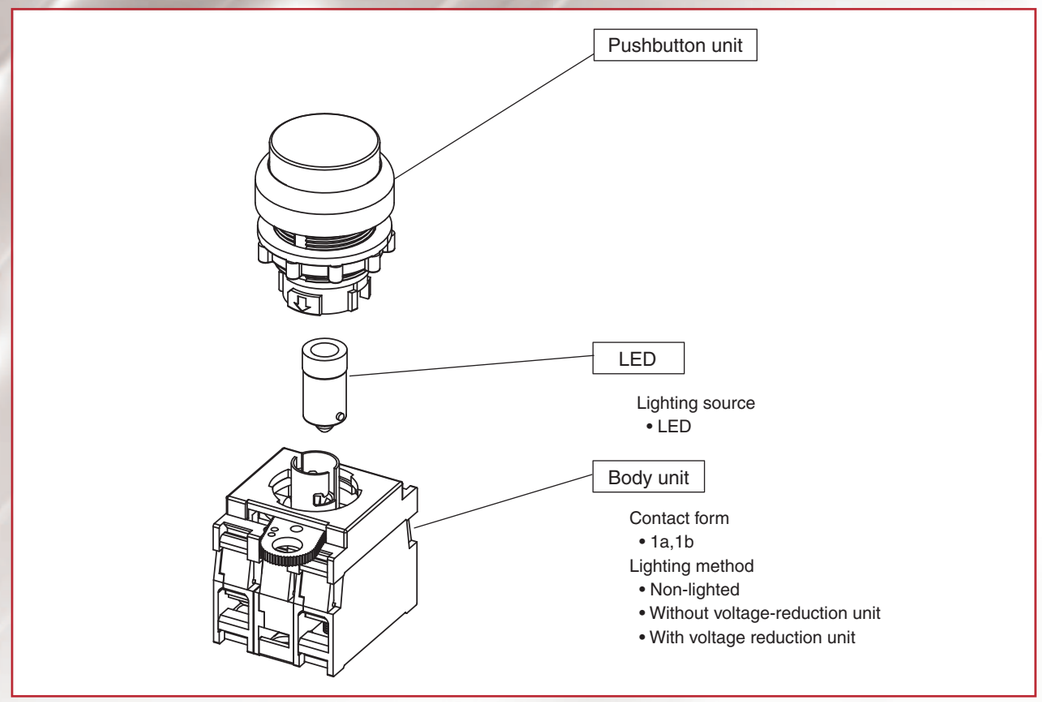
Indicator

● All-in-one type

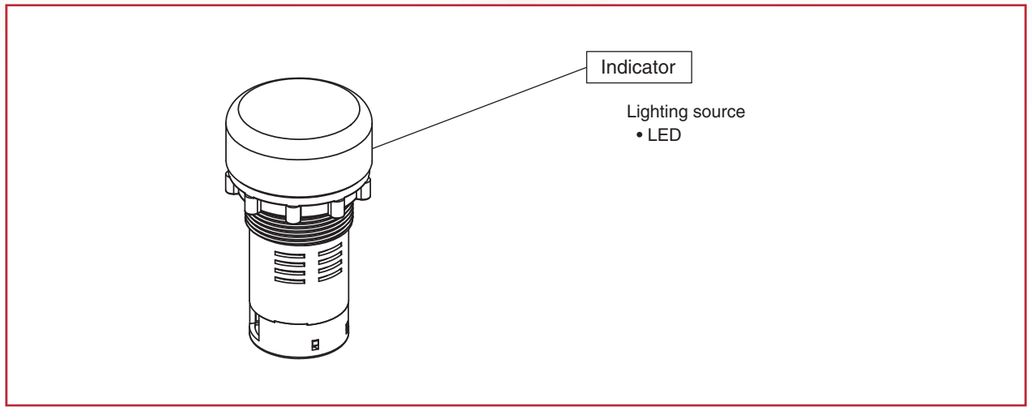
Appearance	LED rating	Indicator color	Part No.	Dimensions
M22R-E□-□	AC, DC 24V	○	M22R-EW-24A	
		●	M22R-EG-24A	
		●	M22R-ER-24A	
		●	M22R-EY-24A	
		●	M22R-EA-24A	
	AC 220V	○	M22R-EW-T2	
		●	M22R-EG-T2	
		●	M22R-ER-T2	
		●	M22R-EY-T2	
		●	M22R-EA-T2	

Structure

A22R series



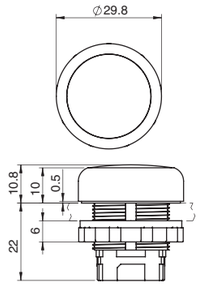
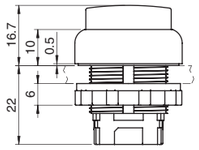
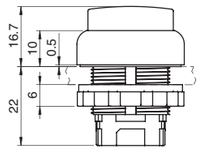
M22R series



Individual Unit

Pushbutton unit

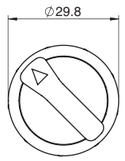
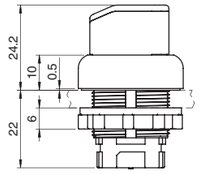
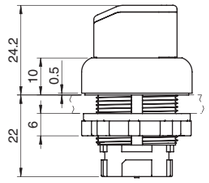
● Non-lighted/Lighted

Appearance	Pushbutton shape	Pushbutton color	Part No.	Dimensions
A22R-F□-□	Round/Flat	○	A22R-FW-□	
		●	A22R-FB-□	
		●	A22R-FG-□	
		●	A22R-FR-□	
		●	A22R-FY-□	
		●	A22R-FA-□	
		Insert one of the following letters into the box □. M: Momentary A: Alternate		
A22R-T□-□	Projection	○	A22R-TW-□	
		●	A22R-TB-□	
		●	A22R-TG-□	
		●	A22R-TR-□	
		●	A22R-TY-□	
		●	A22R-TA-□	
		Insert one of the following letters into the box □. M: Momentary A: Alternate		
A22RL-T□-□	Projection Lighted type	○	A22RL-TW-□	
		●	A22RL-TG-□	
		●	A22RL-TR-□	
		●	A22RL-TY-□	
		●	A22RL-TA-□	
		Insert one of the following letters into the box □. M: Momentary A: Alternate		

Individual Unit

Selector unit

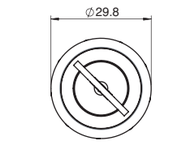
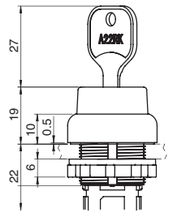
● Non-lighted/Lighted

Appearance	Number of notch	Knob position	Knob color	Part No.	Dimensions
A22RS-2□	2 notches	∨	●	A22RS-2M	
		◁	●	A22RS-2A	
A22RS-3□	3 notches	∨	●	A22RS-3M	
		◁	●	A22RS-3A	
		* These Non-lighted types provide black knobs.			
A22RW-2□	2 notches Lighted Type	∨	●	A22RW-2MG	
			●	A22RW-2MR	
			●	A22RW-2MY	
			●	A22RW-2MA	
		◁	●	A22RW-2AG	
			●	A22RW-2AR	
			●	A22RW-2AY	
			●	A22RW-2AA	
A22RW-3□	3 notches Lighted Type	∨	●	A22RW-3MG	
			●	A22RW-3MR	
			●	A22RW-3MY	
		◁	●	A22RW-3AA	
			●	A22RW-3AG	
			●	A22RW-3AR	

Individual Unit

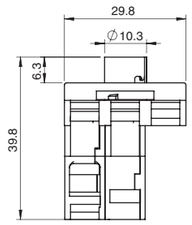
Selector unit

● Key Selector

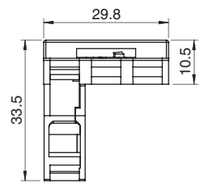
Appearance	Number of notch	Key position	Part No.	Dimensions
A22RK-2□	2 notches		A22RK-2ML	
			A22RK-2M	
			A22RK-2AL	
		○: key release position		
A22RK-3□	3 notches		A22RK-3ML	
			A22RK-3M	
			A22RK-3MC	
			A22RK-3AC	
		○: key release position		

Switch unit

● For Lighted type

Appearance	Type	Contact form	Part No.	Dimensions
A22RL-□M-□	Standard	1a	A22RL-10M	
		1b	A22RL-01M	
		2a	A22RL-20M	
		2b	A22RL-02M	
		1a1b	A22RL-11M	
	AC 220V	1a	A22RL-10M-T2	
		1b	A22RL-01M-T2	
		2a	A22RL-20M-T2	
		2b	A22RL-02M-T2	
		1a1b	A22RL-11M-T2	

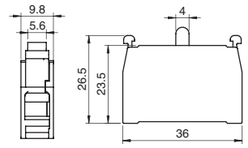
● For Non-lighted type

Appearance	Type	Contact form	Part No.	Dimensions
A22R-□M	Socket	1a	A22R-10M	
		1b	A22R-01M	
		2a	A22R-20M	
		1a1b	A22R-11M	
		2b	A22R-02M	

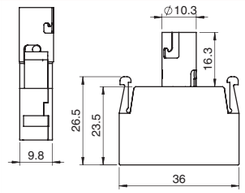
Individual Unit

Switch / Lamp units

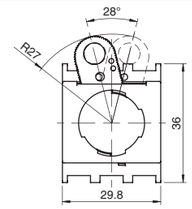
● Switch unit

Appearance	Unit	Contact form	Part No.	Dimensions
A22R-□	Contact block	1a	A22R-10	
		1b	A22R-01	
		* Additional one block can be mountet to make 2a, 2b, or 1a1b.		

● Lamp socket

Appearance	Unit	Rating	Part No.	Dimensions
A22R-□	Lamp socket	Without voltage reduction unit AC/DC6V, AC/DC12V, AC/DC24V	A22R-TN	
		With voltage reduction unit AC220V	A22R-T2	

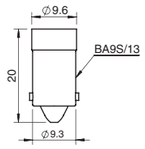
Mounting plate

Appearance	Unit	Part No.	Dimensions
A22R-3200	Mounting plate	A22R-3200	

Individual Unit

Lamp unit

● LED

Appearance	LED operating voltage	Lighting color	Part No.	Dimensions
A22R-□□	LED AC/DC6V	○	A22R-6AW	
		●	A22R-6AG	
		●	A22R-6AR	
		●	A22R-6AY	
		●	A22R-6AA	
	LED AC/DC12V	○	A22R-12AW	
		●	A22R-12AG	
		●	A22R-12AR	
		●	A22R-12AY	
		●	A22R-12AA	
	LED AC/DC24V	○	A22R-24AW	
		●	A22R-24AG	
		●	A22R-24AR	
		●	A22R-24AY	
		●	A22R-24AA	

Nomenclature

Nomenclature

● Completely Assembled A22R□-□□-□-□□ Pushbutton switches

A 2 2 R □ — □ □ — □ — □ □
① ② ③ ④ ⑤ ⑥

① Lighting

Code	Lighting
Blank	Non-lighted
L	Lighted

② Pushbutton Shape

Code	Shape
F	Flat *
T	Projection

* For Non-lighted type only

③ Lighting Color

Code	Color
R	Red
G	Green
Y	Yellow
W	White
A	Blue
B	Black *

* For Non-lighted type only

④ Light Source

Code	Operating Voltage
Blank	No light source
6A	AC/DC6V
12A	AC/DC12V
24A	AC/DC24V

④ Light Source

Code	Operating Voltage
T2	AC220V

● Use AC/DC24V LED

⑤ Contact Form

Code	Contact Form
10	1a
01	1b
11	1a1b
20	2a
02	2b

⑥ Switch Operation

Code	Switch Operation
M	Momentary action
A	Alternate action

● Completely Assembled A22R□-□□-□-□ Selector switches

A 2 2 R □ — □ □ — □ — □
① ② ③ ④ ⑤

① Lighting

Code	Lighting
S	Non-lighted
W	Lighted

② Number of Notches/Reset Method

Code	Specification
2M	2 notches/Manual
2A	2 notches/Automatic
3M	3 notches/Manual
3A	3 notches/Automatic
3MA	3 notches/Manual – left side, Automatic – right side
3AM	3 notches/Automatic – left side, Manual – right side

③ Lighting Color

Code	Color
Blank	Black*
R	Red
G	Green
Y	Yellow
A	Blue

* Non-lighted type only

④ Light Source

Code	Operating Voltage
Blank	No-lighted type
6A	AC/DC6V
12A	AC/DC12V
24A	AC/DC24V

④ Light Source

Code	Operating Voltage
T2	AC220V

● Use AC/DC24V LED

⑤ Contact Form

Code	Contact Form
10	1a**
01	1b**
11	1a1b
20	2a
02	2b

** For models with 2 notches

● Completely Assembled A22RK-□-□
Key selector switches

A 2 2 R K — □ — □
① ②

① Number of Notches/Reset method

Code	Number of notches, Reset method, Key release position
2ML	2 notches, Manual, Left
2M	2 notches, Manual, Left and Right
2AL	2 notches, Automatic, Left
3ML	3 notches, Manual, Left
3M	3 notches, Manual, Left and Right
3MC	3 notches, Manual, Center
3AC	3 notches, Automatic, Center
3MAL	3 notches, Manual – left, Automatic - right, Left
3AMR	3 notches, Automatic – left, Manual – right, Right

② Contact Form

Code	Contact Form
10	1a**
01	1b**
11	1a1b
20	2a
02	2b

** For models with 2 notches

● Completely Assembled M22R-□□-□
Indicator

M 2 2 R — □ □ — □
① ② ③

① Structure

Code	Type
E	All-in-one type

② Lighting Color

Code	Lighting Color
R	Red
G	Green
Y	Yellow
W	White
A	Blue

③ Light Source

Code	Operating Voltage
12A	AC/DC12V
24A	AC/DC24V

③ Voltage Reduction Unit

Code	Operating Voltage
T2	AC220V

Individual Unit

Nomenclature

Nomenclature

● Individual unit (Pushbutton unit) A22R□-□□-□ Pushbutton switches

A 2 2 R □ — □ □ — □
① ② ③ ④

① Lighting

Code	Lighting
Blank	Non-lighted
L	Lighted

② Pushbutton Shape

Code	Pushbutton Shape
F	Flat*
T	Projection

*For Non-lighted type only

③ Pushbutton Color

Code	Pushbutton Color
R	Red
G	Green
Y	Yellow
W	White
A	Blue
B	Black*

*For Non-lighted type only

④ Switch Operation

Code	Switch Operation
M	Momentary action
A	Alternate action

● Individual unit (Selector unit) A22R□-□□ Selector switches

A 2 2 R □ — □ □
① ② ③

① Lighting

Code	Lighting
S	Non-lighted
W	Lighted

② Number of notches, Reset Method

Code	Number of notches, Reset Method
2M	2 notches, Manual
2A	2 notches, Automatic
3M	3 notches, Manual
3A	3 notches, Automatic
3MA	3 notches, Manual – left, Automatic – right
3AM	3 notches, Automatic – left, Manual - right

③ Knob Color

Code	Color
Blank	Black*
R	Red
G	Green
Y	Yellow
A	Blue

*Non-lighted type

● Individual unit (Key selector unit) A22RK-□ Key selector switches

A 2 2 R K — □
①

① Number of notches, Reset Method, Key Release Position

Code	Number of notches, Reset Method, Key Release Position
2ML	2 notches, Manual, Left
2M	2 notches, Manual, Left and Right
2AL	2 notches, Automatic, Left
3ML	3 notches, Manual, Left
3M	3 notches, Manual, Left and Right
3MC	3 notches, Manual, Center
3AC	3 notches, Automatic, Center
3MAL	3 notches, Manual – left, Automatic – right, Left
3AMR	3 notches, Automatic – left, Manual – right, Right

Nomenclature

● Individual unit (Switch unit) A22R□-□M-□

A 2 2 R □ — □ M — □
① ② ③ ④

① Lighting

Code	Lighting
Blank	Non-lighted
L	Lighted

② Contact Form

Code	Contact Form
10	1a
01	1b
11	1a1b
20	2a
02	2b

③ Switch Operation

Code	Switch Operation
M	Momentary action

④ Voltage Reduction Unit

Code	Operation Voltage
Blank	Non-lighted type
T2	AC220V*

*Use with an A22R-24□LED

● Individual unit (Switch block) A22R-□

A 2 2 R — □
①

① Contact Form

Code	Contact Form
10	1a
01	1b

● Individual unit (Voltage-reduction unit) A22R-□

A 2 2 R — □
①

① Body unit

Code	Operating Voltage
TN	AC/DC6V, AC/DC12V, AC/DC24V
T2	AC220V*

*Use with an A22R-24□LED

● Individual unit (LED) A22R-□□ LED

A 2 2 R — □ □
① ②

① Operating Voltage

Code	Operating Voltage
6A	AC/DC6V
12A	AC/DC12V
24A	AC/DC24V

② Lighting color

Code	Lighting color
R	Red
G	Green
Y	Yellow
W	White
A	Blue

Accessories / Tools

Items

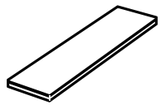
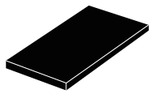
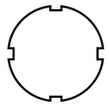
● Accessories

Item		Appearance	Classification		Part No.	Remarks
Legend Plate Frames	Standard size		With Snap-in Legend Plate (without text)	White	A22Z-3321	Snap-in Legend Plate is acrylic.
				Red	A22Z-3322	
				Black	A22Z-3323	
			Without Snap-in Legend Plate		A22Z-3320	
	Large size		With Snap-in Legend Plate (without text)	White	A22Z-3331	Snap-in Legend plate is acrylic.
				Red	A22Z-3332	
				Black	A22Z-3333	
			Without Snap-in Legend Plate		A22Z-3330	
Lock Ring			Round		A22Z-3360	The Lock Ring is used when more secure lock feature is required.
Sealing Caps			For flat models		A22Z-3600F	Used to prevent dust or water from entering the Operation Unit (Pushbutton, etc.). Color: opaque Material: silicon
			For projection models		A22Z-3600T	
Hole plug			Round		A22Z-3530	Can be plugged into pre-cut panel holes for future expansion. The color is black.
Control Boxes			One hole		A22Z-B101	Material: Polycarbonate resin.
			Two holes		A22Z-B102	
			Three holes		A22Z-B103	
Connectors			Applicable diameter (mm)	ø7~9	A22Z-3500-1	Plastic connector used to extend a cable from the Switch Box. (See page 30)
				ø9~11	A22Z-3500-2	

Accessories / Tools

Items

● Accessories

Item		Appearance	Classification			Part No.	Remarks
Legend Plates	Standard size		Without text	Black		A22Z-3443B	Attached to the Standard Plate Frame. Material: Acrylic.
				Red		A22Z-3443R	
				White		A22Z-3443W	
				Transparent		A22Z-3443C	
			With text	White text on red background	○	A22Z-3443R-2	
					STOP	A22Z-3443R-4	
				White text on black background	|	A22Z-3443B-1	
					START	A22Z-3443B-3	
					ON	A22Z-3443B-5	
					OFF	A22Z-3443B-6	
					UP	A22Z-3443B-7	
					DOWN	A22Z-3443B-8	
					POWER ON	A22Z-3443B-9	
					OFF-ON	A22Z-3443B-10	
	Large size		Without text	Black		A22Z-3453B	Attached to the Large-size Legend Plate Frame. Material: Acrylic.
				Red		A22Z-3453R	
				White		A22Z-3453W	
				Transparent		A22Z-3453C	
Character Films			No print (Round)			A22Z-3460	After printing on a film, affix to the indicator Plate of the Lighted Pushbotton Switch. (The back is coated with adhesive.)
			Character Print (Round)	|		A22Z-3460-1	
				○		A22Z-3460-2	
				START		A22Z-3460-3	
				STOP		A22Z-3460-4	

● Tools

Item	Appearance	Part No.	Remarks
Lamp Extractor		A22Z-3901	Rubber tool used to easily replace Lamps.
Tightening wrench		A22Z-3905	Tool used to tighten nuts from the back of the panel.

Specifications

Approved standards

● Switch unit

UL, cUL	UL 508/CSA C22.2 No.14 File No. E76675 6A 240VAC/10A 120VAC
EN	EN60947-5-1 (low voltage directive) 3A 240VAC (AC-15)
CCC	GB/14048.5-2001 3A 240VAC/1.5A 24VDC

● Lamp unit

UL, cUL	UL 508/CSA C22.2 No.14 File No. E76675 24VAC/DC MAX

● Voltage-reduction unit

UL, cUL	UL 508/CSA C22.2 No.14 File No. E76675 220VAC
CCC	GB/14048.5-2001 220VAC

● Indicator

UL, cUL	UL 508/CSA C22.2 No.14 File No. E76675 12A: 12VAC/DC 24A: 24VAC/DC T2 : 220VAC
CCC	GB/14048.5-2001 T2 : 220VAC

Ratings

● Contacts

Rated current (A)	Rated voltage (V)	Inductive load	
		Rated current (A)	Power facfor
10	240	3	0.4

Rated current values are determined according to the testing conditions. The above ratings were obtained by conducting tests under the following conditions:
Ambient temperature: 20+/- 2°C
Ambient humidity: 65+/-5%RH
Operating frequency: 30 operations/minute

● LED (For pushbutton unit)

Operating voltage	Current consumption
AC/DC 6V±5%	20mA
AC/DC 12V±5%	20mA
AC/DC 24V±5%	20mA

● LED (For indicator unit)

Operating voltage	Current consumption
AC/DC 12V±5%	20mA
AC/DC 24V±5%	20mA

● Voltage reduction unit (For pushbutton and indicator units)

Operating voltage	Current consumption
AC 200V(190 to 230V)	20mA

Characteristics

Characteristics

● Environment

Ambient temperature*1	Non-lighted type: -20 to +60°C Lighted type: -20 to +50°C
Ambient humidity	-35 to 85%RH
Storage temperature*1	-40 to +70°C
Protective code*2	IP65
Vibration resistance	10 to 55Hz, Double amplitude 1.5mm
Shock resistance	Non-lighted type: 1,000m/s^2 Lighted type: 600m/s^2

*1: With no icing or condensation
*2: Protection against dust or water from the front of a mounting panel side

● Operation

Operation		Slow action
Operating frequency	**Mechanical**	Momentary operation: 60 operations/minute max.
	Electrical	Knob-type and Key-type selector: 30 operations/minute max.
Mechanical durability		Momentary switch :3,000,000 operations Alternate, Key/Knob Selector switches: 300,000 operations

● Electrical Characteristics (Switch block)

Insulation resistance	100MΩ Minimum (At 500VDC)
Dielectric strength	Between terminals of same polarity: AC2,500V 50/60Hz for 1 minute Between terminals of different polarity: AC2,500V 50/60Hz for 1 minute
Rating	AC-15, A600, Ue=240V, Ie=3A
Rated insulation voltage	Ui=600V, Pollution degree: 3
Conditional short-circuit current	10A, IEC60209-1
Electrical durability	500,000 operations Minimum (at AC 240V, 3A, cosø=0.4)

Characteristics

Operating characteristics

● Pushbutton switch (1a1b)

Total Travel Force (TTF)	29.4N Maximum
Total Travel (TT)	5.5mm Maximum

● Knob-type selector switch (1a1b)

Total Travel Force (TTF)	Manual reset: 0.34N·m Maximum * Auto-reset 2-notch: 0.25N·m * 3-notch: 0.34N·m *
Total Travel (TT)	2-notch: approx. 90 degree (3-notch: approx.45 degree)
Releasing Force (RF)	Manual reset: 0.34N·m Maximum *

* Rotation torque for knob type/key type selector switches.

● Key-type selector switch (1a1b)

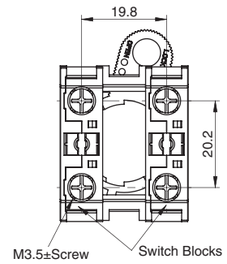
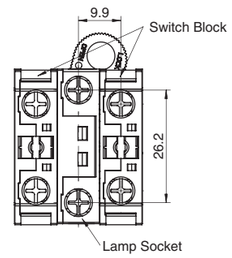
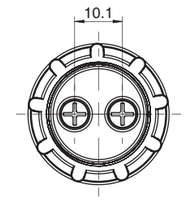
Total Travel Force (TTF)	Manual reset: 0.34N·m Maximum * Auto-reset 2-notch: 0.25N·m * 3-notch: 0.34N·m *
Total Travel (TT)	2-notch: approx. 90 degree (3-notch: approx.45 degree)
Releasing Force (RF)	Manual reset: 0.34N·m Maximum *

* Rotation torque for knob type/key type selector switches.

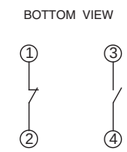
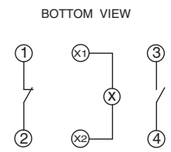
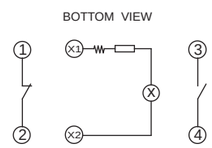
Terminal

Terminal Arrangement

● Bottom view (unit: mm)

No-lighted (1a1b)	Lighted	Indicator
		

Terminal connection

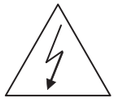
Type	Terminal connection
Non-lighted (1a1b)	
Lighted without voltage reduction unit (1a1b)	 * LED: For AC/DC
Lighted with voltage reduction unit (1a1b)	

Precautions

Precautions

⚠Warning

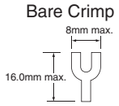
Do not wire and/or touch the switch terminal while power is supplied to the switch to avoid electric shock.



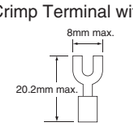
Correct Use

● Mounting
- Always make sure that the power is turned OFF before mounting, removing, or wiring the Switch, or performing maintenance.
- 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 1.96N·m.
- Recommended panel thickness: 1 to 5 mm.

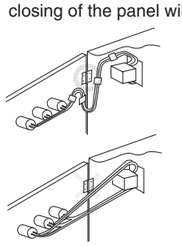
● Wiring
- Terminal screws must be Phillips with a square washer.
- The tightening torque is 1.08 to 1.27N·m.
- Single wires, stranded wires and crimp terminals except round type can be connected to the Switch.
- Applicable Wire Size
  Strand wire: 2mm^2 Maximum
  Solid wire: 1.6mm diameter Maximum
  Bare Crimp Terminals



Crimp Terminal with Insulating Sheath

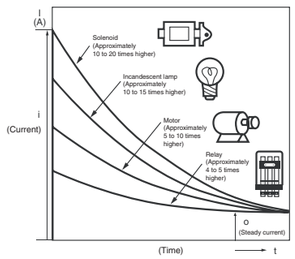


- Secure appropriate insulation distance after wiring of the Switch.
- Perform wiring so that the lead wires will not be caught on other objects as this will cause stress on the Switch terminals. Wire the Switch so that there is slack in the lead wires and fix lead wires at intermediate points. If the panel to which the Switch is mounted needs to be opened and closed for maintenance purpose, perform wiring so that the opening and closing of the panel will not interfere with the wiring.

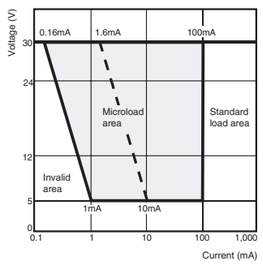


● Operational Environment
- The IP65 model is designed with a degree of protection so that it will not sustain damage if it is subject to water from any direction to front of the panel.
- This Switch is indoor use only. Outdoor use of the Switch will cause operation failure of the Switch.
- Do not use the Switch in the water, oil, or in locations where water, oils, detergent, chemicals, or solvent is applied to the Switch always. Otherwise, switching failure will be happened.
- Do not use the Switch under the environmental condition where corrosive gas (ammonia, chlorine, dioxide sulfur…etc.) is generated. Otherwise, the Switch will corrode.
- Do not use the Switch in locations where dust, metal or plastic dust exists. Dust will accumulate o the Switch, and then the Switch wouldn't operate normally.
- Do not use the Switch under the environmental condition where excessive vibration or shock exists. Otherwise, incorrect switching would occur.

● Electrical Conditions
- The switching load capacity of the Switch greatly varies between AC and DC. Always be sure to apply the rated load. The control capacity will drastically drop if it is a DC load. This is because a DC load has no current zero-cross point, unlike an AC load. Therefore, if an arc is generated, it may continue for a comparatively long time. Furthermore, the current direction is always the same, which results in a contact relocation phenomena whereby the contacts easily stick to each other and do not separate when the surfaces of the contacts are uneven.
- Some types of load have a great difference between normal current and inrush current. Make sure that the inrush current is within the permissible value. The greater the inrush current in the closed circuit is, the greater the contact abrasion or shift will be. Consequently, contact weld, contact separation failures, or insulation failures may result. Furthermore, the Switch may be broken or damaged.
- If the load is inductive, counter-electromotive voltage will be generated. The higher the voltage is, the higher the generated energy will be, which increase the abrasion of the contacts and contact relocation phenomena. Be sure to use the Switch within the rated conditions.



- Before using the Switch, be sure to test the Switch under actual conditions.
- This product is a standard load type Switch. Using the Switch for opening and closing a microload circuit may cause contact failure. Use the Switch within the operating range as shown in below chart.



- When use the Switch for opening and closing a microload or large-load, use the Switch with an appropriate relay.

Precautions

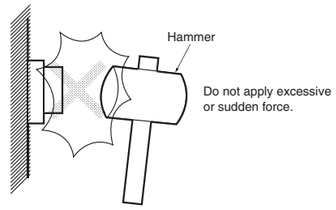
Precautions

● Switching
- Do not use the Switch for loads that exceed the rated switching capacity or other contact ratings. Doing so may result in contact weld, separation failure, or insulation failures. Furthermore, the Switch may be broken or damaged.
- Do not touch the charged switch terminals while power is supplied, otherwise an electric shock may be received.
- The life of the Switch varies greatly with switching conditions. Before using the Switch, be sure to test the Switch under actual conditions. Make sure that the number of switching operations is within the permissible range.
  If a deteriorated Switch is used continuously, insulation failures, contact weld, contact failures, switch damage, or switch burnout may result.
- Do not apply excessive or incorrect voltages to the Switch or incorrectly wire the terminals. Otherwise, the Switch may not function properly and have an adverse effect on external circuitry.
  Furthermore, the Switch itself may become damaged or burnt.
- Do not use the Switch in locations where flammable or explosive gasses are present. Otherwise switching arcs or heat radiation may cause a fire or explosion.
- Do not drop or disassemble the Switch, otherwise it may not be capable of full performance. Furthermore, it may be broken or burnt.

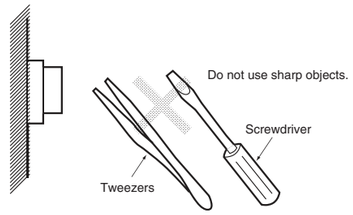
● LED
- The LED current-limiting resistor is built-in, so internal resistance is not required.
- If commercially available LEDs are used, select the ones that meet the following conditions:
  Base: BA9S/13□
  Overall length: 26mm Maximum
  Power consumption: 2.6 W Maximum

● Storage
- When the Switch is left unused or stored for long periods, the ambient conditions can have a great effect on the condition of the Switch. In certain environments, leaving the Switch exposed may result I deterioration (i.e., oxidation, or the creation of an oxide film) of the contacts and terminals, causing the contact resistance to increase, and making it difficult to solder the lead wires. Therefore, store in a well-ventilated room, inside, for example, a non-hygroscopic case, in a location where no corrosive gasses are present.
- If the Switch is stored in a location where it will be exposed to direct light, colored resin in the colored plate may fade. Therefore, do not store the Switch I locations where it will be exposed to direct light.

● Mechanical Conditions
- Operating the Switch using a hard object (e.g., metal), or with a large or sudden force, may deform or damage the Switch, resulting in faulty or rough operation, or shortening of the Switch life.



- The pushbutton surface is composed of resin. Therefore, do not attempt to operate the pushbutton using a sharp object, such as a screwdriver or a pair of tweezers. Also, do not drop, throw, or knock the Switch. Doing so may damage or deform the pushbutton surface and result in faulty operation.

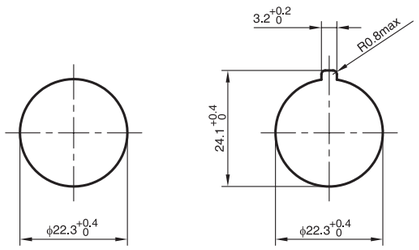


- Periodic maintenance is required to use the Switch stably.

Installation

Mounting to the Panel

① Panel Hole Dimensions
- The cutout dimensions are as shown in below:



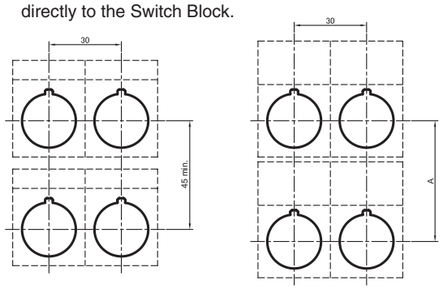
When Lock Ring is not used. When Lock Ring is used.

- Recommended panel thickness is 1 to 5mm.
- In outer surface treatment such as coating is performed for the panel, the panel dimensions after outer surface treatment must meet the specified panel dimensions.

② Matrix Installation

(1) The following panel hole dimensions apply when Switch Unit and the Standard-size Legend Plate Frame and Lock Ring are mounted, and lead wires are connected directly to the Switch Block.

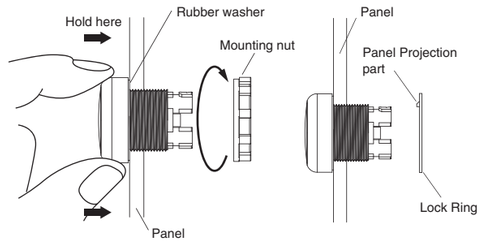
(2) The following panel hole dimensions apply when the Large-size Legend Plate Frame is mounted, and when crimp terminals are connected to the Switch Block terminals.



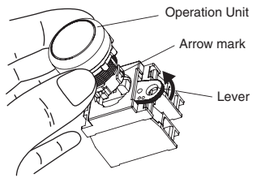
Type of crimp terminal	Dimension A
Bare crimp terminals	51 mm Minimum
Crimp terminals with insulating sheath	60 mm Minimum

Note: The above dimensions are the minimum dimensions for when the wires described under "Applicable Wire Size". If a different wires are used, the wiring dimensions may be different so determine an appropriate pitch before setup.

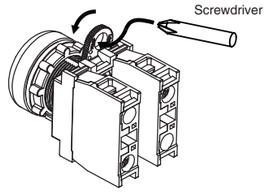
③ Mounting the Operation Unit on the Panel
- Insert the Operation Unit (Pushbutton, etc.) from the front surface of the panel, insert the Lock Ring and the mounting nut from the terminal side, then tighten the nut. Before tightening, check that the rubber washer is present between the Pushbutton Unit and the panel.
- When using a Legend Plate Frame, put one rubber washer each between the Legend Plate Frame and the panel and between the Operation Unit and the Legend Plate Frame. (One rubber washer will be provided when one Legend Plate Frame is ordered.)
- 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 1.96N·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 nut.



④ Mounting the Switch on the Pushbutton Unit
- Insert the Pushbutton 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.



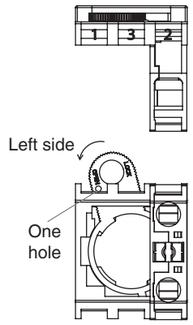
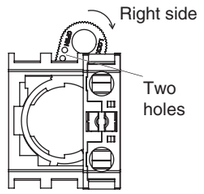
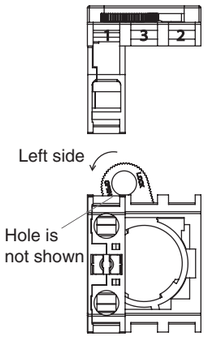
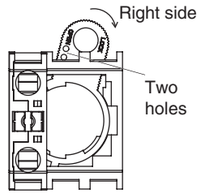
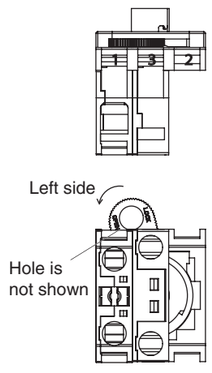
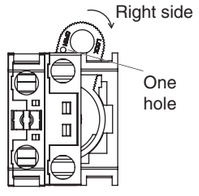
⑤ Removing the Switch
- Move the lever in the direction indicated by the arrow in the following figure, then pull the Pushbutton Unit or the Switch Blocks.
- Since the lever has a hole with an inside diameter of 6.5mm, the lever can be moved in the specified direction by inserting a screwdriver into the hole and then moving the screwdriver.



Installation

How to confirm the Lever Position, OPEN or LOCK

● The Lever Position, OPEN (Operation unit is not fixed)/LOCK (Operation unit is fixed), can be confirmed from the Switch terminal side.

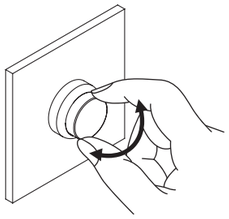
In case that no switch block is mounted on the mounting plate No.1.	 (OPEN condition)	 (LOCK condition)
In case that a switch block is mounted on the mounting plate No.1.	 (OPEN condition)	 (LOCK condition)
In case that a switch block is mounted on the mounting plate No.1 and an indicator unit is mounted on the mounting plate No.2.	 (OPEN condition)	 (LOCK condition)

Installation

Mounting/Replacing the Color Cap

Projection type

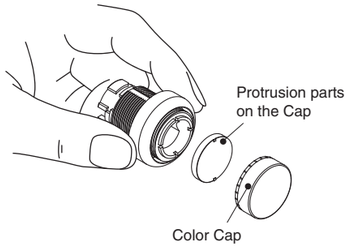
- Grip and rotate the Color Cap with your fingers.



Assembling the Cap

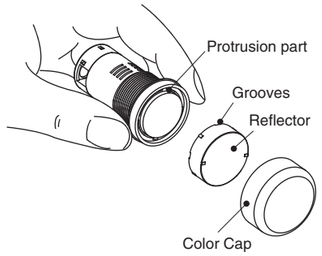
① Projection type Lighted Pushbutton Switch

- Mount the Color Cap so that the protrusions inside the cap fit into the grooves in the Pushbutton Unit.



② Indicator

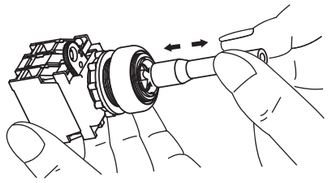
- Mount the Color Cap so that the protrusions inside the Pushbutton Unit fit into the grooves in the cap.



Installing/Replacing the LED

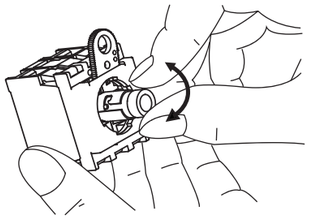
① Installing/Replacing from the Panel Surface

- Insert the Lamp Extractor(A22Z-3901) into the lamp, then rotate the Extractor while pressing it.



② Installing/Replacing on the Switch

- Grip the lamp with your fingers, then rotate the lamp while pressing it against the Switch.

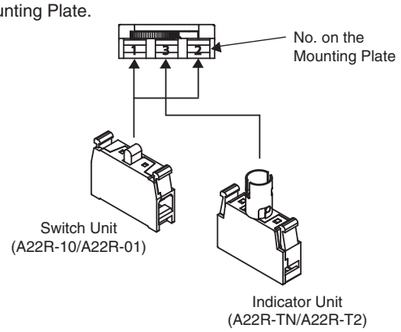


Installation

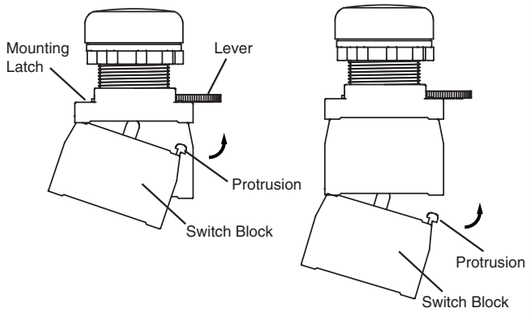
Mounting/Replacing the Switch Unit and Indicator Unit

① Installing the Switch Blocks

- Mount the Unit according to the indicate numbers on the Mounting Plate.



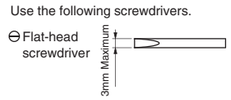
- Hook the small protrusion on the Switch Block into the groove on the Mounting Latch on the other side of the lever, then push up the Switch Block in the direction indicated by the arrow in the figure below:
- One more Switch Block can be mounted.

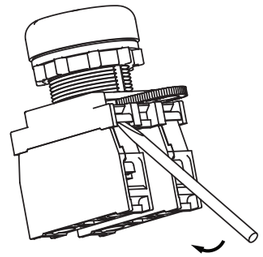


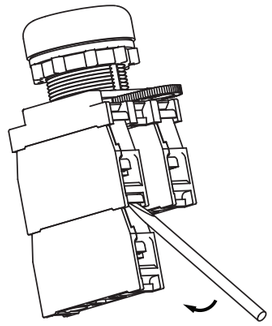
Note: In case that two Switch Block are mounted, a Control Box cannot be used.

② Removing the Switch Base

- 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.





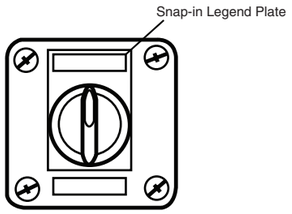


Installation

Control Box

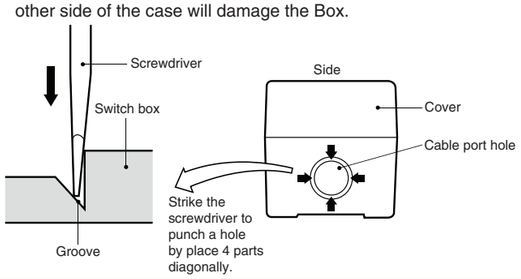
① Mounting the Switch

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



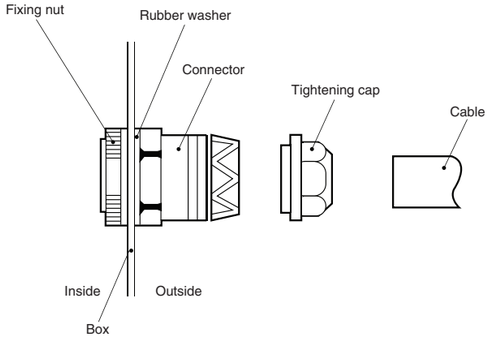
② Creating a Cable Port Hole

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 in the Box and secure with the fixing nut inside the box.
② Open a hole in the thin rubber section of the rubber ring.
③ Pass the tightening cap through the cable, insert the cable into the connector, and tighten the hexagonal nut to secure the cable.

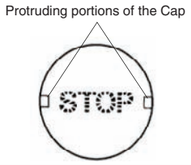


Cable diameter (mm)	Connector
7 to 9 mm dia.	A22Z-3500-1
9 to 11 mm dia.	A22Z-3500-2

Installation

Engraving

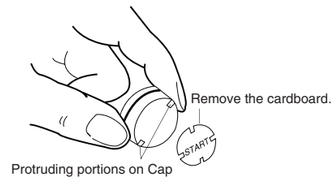
- Engrave the characters on the surface on the Cap. Make sure that the characters are aligned parallel to the imaginary lie connecting the two protruding portions to the left and right of the Cap.
- The characters must not be engraved deeper than 0.5mm. Apply an alcohol-based paint coating, such as melamine, alkyd, or acrylic resin paint coating, to the engraved characters.



Material: Acrylic
- Engrave the characters directly on the matted side of the Snap-in Legend Plate.
- The characters must be engraved no deeper than 0.5mm.
- Apply alcohol-based paint coating to the engraved characters.
- If the Snap-in Legend Plate is transparent, engrave the mirror-written characters on the back of the Snap-in Legend Plate and apply paint coating of a different color to the remaining part of the Snap-in Legend Plate.

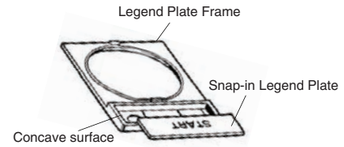
Affixing Character Film

- Hold the Cap, remove the cardboard o the Film, and attach the Film to the Cap. Make sure that the protruding portions of the Cap engage the cutout portions of the Film and that the characters are aligned parallel to the imaginary line connecting the two protruding portions to the left and right of the Cap.



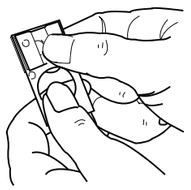
Mounting and Dismounting Snap-in Legend

- Press and secure the Snap-in Legend Plate onto the Legend Plate Frame.
- The direction of the characters will vary with the mounting direction of the control panel if the Switch is a knob or key selector model.



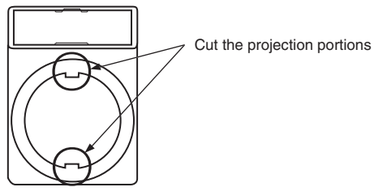
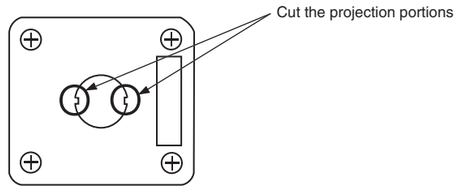
- To easily remove the Snap-in Legend Plate from the Legend Plate Frame mounted to the panel. Insert a Tool with a thin tip into the space between the Snap-in Legend Plate and the Legend Plate Frame.

- The Snap-in Legend Plate is easily removed by pressing the Snap-I Legend Plate from the back of the Legend Plate Frame.
- The Legend Plate Frame is made of acrylic resin, which is easily damaged by shock. Be sure to handle the Legend Plate Frame with care.



Precautions when use the Indicators

- Lock Ring (A22Z-3360) cannot be used.
- When use the Legend Plate Frames (A22Z-332□, A22Z-333□) cut the projection portions shown in the below fig.



- When use the Control Box (A22Z-B10□), cut the projection portions shown in the below fig.