

Indicators M22N

22-mm dia. Indicators
Control panel miniaturization through a more compact design and modified wiring direction.
Addition of Push-In Plus terminal blocks for easy wiring.



Easy to Use


- Improved wiring visibility through to a modified wiring direction. (Push-In Plus terminal block type)
- Screw terminal structure is compatible with round crimp terminals. (Screw terminal block type)

Miniaturization

- No need for extra lateral space because of the modified wiring direction. (Push-In Plus terminal block type)
- Compact design.

Product Lineup

- Meet global safety standards.
- Can be installed in two types of panel hole dimensions: 22.3 and 25.5 dia.
- The indicators come in a wide variety of colors and shapes.
- Standard-feature degree of protection: IP66, NEMA 4X, and NEMA 13.

 Refer to *Safety Precautions for All Pushbutton Switches/Indicators and Safety Precautions* on page 88.

Indicator Unit Colors

| | Red | Green | Yellow | White | Blue | Orange | White |
|--------------|-----|-------|--------|-------|------|--------|---------------|
| When not lit | | | | | | | |
| When lit | | | | | | | Opaque white* |

* The colors when the Switches are lit are for transparent white Indicator Units (code: TW) and yellow LED Lamps (code: Y).

Pushbutton Switches
A22N

Selector Switches
A22N

Key-type Selector Switches
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Pushbutton Switches
A30N

Selector Switches
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Key-type Selector Switches
A30N





Subassemblies
(Common)

Accessories
and Tools

Safety
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M22N

List of Models

| Screw Terminal Blocks/Push-In Plus Terminal Blocks | |
|---|---------|
| Appearance | Model |
| Plastic flat  | M22N-BN |
| Plastic projected  | M22N-BP |
| Plastic semi-spherical  | M22N-BG |
| Plastic flat etched  | M22N-BC |

Pushbutton Switches
A22N

Selector Switches
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Key-type Selector Switches
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Indicators
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Pushbutton Switches
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Selector Switches
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Model Number Structure

Model Number Legend -- Shipped as a set that includes the Indicator Unit, LED Lamp, and Socket Unit.
For information on combinations, refer to *Ordering Information* on page 50.

Model Numbers for Sets

M 2 2 N - ⁽¹⁾BN - ⁽²⁾TR ⁽³⁾A - ⁽⁴⁾R ⁽⁵⁾A - ⁽⁶⁾

(1) Indicator Unit Shape

| Code | Shape |
|------|------------------------|
| BN | Plastic flat |
| BP | Plastic projected |
| BG | Plastic semi-spherical |
| BC | Plastic flat etched |

(2) Indicator Color and (4) LED Lamp Color

| Code (2) | Code (4) | Indicator color | LED Lamp color |
|----------|----------|-----------------|----------------|
| TR | R | Red | Red |
| TG | G | Green | Green |
| TY | Y | Yellow | Yellow |
| TW | W | White | White |
| TA | A | Blue | Blue |
| TO | O | Orange | Orange |
| TW | Y | White* | Yellow |

* The color is opaque white when the Indicator is lit.

(3) Degree of Protection

| Code | Protection |
|------|-------------------------------------|
| A | Conforming to IP66, NEMA 4X, NEMA13 |

(5) LED Lamp Voltage

| Code | LED Lamp voltage |
|------|---------------------|
| A | 6 VAC/DC |
| B | 12 VAC/DC |
| C | 24 VAC/DC |
| D | 100/110/120 VAC |
| E | 200/220/230/240 VAC |

(6) Terminals Specifications

| Code | Specification |
|---------|-----------------------------|
| No Code | Screw Terminal Block |
| P | Push-In Plus Terminal Block |

■ Specifications: Refer to page 51.
■ Accessories and tools: Refer to pages 84 to 85.

■ Dimensions: Refer to page 52.
■ Precautions for correct use: Refer to pages 88 to 99.





Pushbutton Switches
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A22NIndicators
M22NPushbutton Switches
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Ordering Information

Model Numbers for Sets - - - -Shipped as a set that includes the Indicator Unit, LED Lamp, and Socket Unit.

Indicators

| Appearance | Rated voltage | Model | (2)(2) Indicator color | (4) LED lamp color |
|---|---------------------------|------------------------|---|-----------------------|
| Plastic flat  | 6 VAC/DC | M22N-BN-(2)(2)A-(4)A | TR: Transparent red TG: Transparent green TY: Transparent yellow TW: Transparent white TA: Transparent blue TO: Transparent orange | |
| | | M22N-BN-(2)(2)A-(4)A-P | | |
| | 12 VAC/DC | M22N-BN-(2)(2)A-(4)B | | |
| | | M22N-BN-(2)(2)A-(4)B-P | | |
| | 24 VAC/DC | M22N-BN-(2)(2)A-(4)C | | |
| | | M22N-BN-(2)(2)A-(4)C-P | | |
| | 100, 110, or 120 VAC | M22N-BN-(2)(2)A-(4)D | | |
| | | M22N-BN-(2)(2)A-(4)D-P | | |
| | 200, 220, 230, or 240 VAC | M22N-BN-(2)(2)A-(4)E | | |
| | | M22N-BN-(2)(2)A-(4)E-P | | |
| Plastic projected  | 6 VAC/DC | M22N-BP-(2)(2)A-(4)A | | |
| | | M22N-BP-(2)(2)A-(4)A-P | | |
| | 12 VAC/DC | M22N-BP-(2)(2)A-(4)B | | |
| | | M22N-BP-(2)(2)A-(4)B-P | | |
| | 24 VAC/DC | M22N-BP-(2)(2)A-(4)C | | |
| | | M22N-BP-(2)(2)A-(4)C-P | | |
| | 100, 110, or 120 VAC | M22N-BP-(2)(2)A-(4)D | | |
| | | M22N-BP-(2)(2)A-(4)D-P | | |
| | 200, 220, 230, or 240 VAC | M22N-BP-(2)(2)A-(4)E | | |
| | | M22N-BP-(2)(2)A-(4)E-P | | |
| Plastic semi-spherical  | 6 VAC/DC | M22N-BG-(2)(2)A-(4)A | | |
| | | M22N-BG-(2)(2)A-(4)A-P | | |
| | 12 VAC/DC | M22N-BG-(2)(2)A-(4)B | | |
| | | M22N-BG-(2)(2)A-(4)B-P | | |
| | 24 VAC/DC | M22N-BG-(2)(2)A-(4)C | | |
| | | M22N-BG-(2)(2)A-(4)C-P | | |
| | 100, 110, or 120 VAC | M22N-BG-(2)(2)A-(4)D | | |
| | | M22N-BG-(2)(2)A-(4)D-P | | |
| | 200, 220, 230, or 240 VAC | M22N-BG-(2)(2)A-(4)E | | |
| | | M22N-BG-(2)(2)A-(4)E-P | | |
| Plastic flat etched  | 6 VAC/DC | M22N-BC-(2)(2)A-(4)A | | |
| | | M22N-BC-(2)(2)A-(4)A-P | | |
| | 12 VAC/DC | M22N-BC-(2)(2)A-(4)B | | |
| | | M22N-BC-(2)(2)A-(4)B-P | | |
| | 24 VAC/DC | M22N-BC-(2)(2)A-(4)C | | |
| | | M22N-BC-(2)(2)A-(4)C-P | | |
| | 100, 110, or 120 VAC | M22N-BC-(2)(2)A-(4)D | | |
| | | M22N-BC-(2)(2)A-(4)D-P | | |
| | 200, 220, 230, or 240 VAC | M22N-BC-(2)(2)A-(4)E | | |
| | | M22N-BC-(2)(2)A-(4)E-P | | |

Note: Normally, the Indicator Unit and LED Lamp with the same color are combined.
 However, opaque white is available by combining a white Indicator Unit and yellow LED. M22N-B□-TWA-Y□-□

- Specifications: Refer to page 51.
- Dimensions: Refer to page 52.
- Accessories and tools: Refer to pages 84 to 85.
- Precautions for correct use: Refer to pages 88 to 99.

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 Selector Switches A22N
 Key-Type Selector Switches A22N
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 Subassemblies (Common)
 Accessories and Tools
 Safety Precautions

Ratings and Specifications

Certified Standard Ratings

UL508 (File No.E76675), CSA C22.2 No.14

12 mA 6 VAC/DC
 12 mA 12 VAC/DC
 12 mA 24 VAC/DC
 12 mA 100-120 VAC
 12 mA 200-240 VAC

TÜV (EN60947-5-1)

80 mA 6 VAC/DC
 40 mA 12 VAC/DC
 20 mA 24 VAC/DC
 10 mA 100-120 VAC
 5 mA 200-240 VAC

CCC (GB14048.5)

6, 12, 24 VAC/DC
 100-120, 200-240 VAC

Application Standards

UL1059 and UL486E (Push-In Plus terminal block type)

Ratings

LED Lamps

| Rated voltage | Applied voltage | Current |
|---------------|----------------------|---|
| 6 VAC/DC | 6 VAC/DC $\pm 10\%$ | Approx. 11 mA (red, orange, yellow, or blue) Approx. 5 mA (white or green) |
| 12 VAC/DC | 12 VAC/DC $\pm 10\%$ | Approx. 12 mA (red, orange, yellow, or blue) Approx. 5 mA (white or green) |
| 24 VAC/DC | 24 VAC/DC $\pm 10\%$ | Approx. 12 mA (red, orange, yellow, or blue) Approx. 5 mA (white or green) |
| 100 VAC | 100 VAC $\pm 10\%$ | Approx. 12 mA (red, orange, yellow, or blue) Approx. 5 mA (white or green) |
| 110 VAC | 110 VAC $\pm 10\%$ | |
| 120 VAC | 100-130 VAC | |
| 200 VAC | 200 VAC $\pm 10\%$ | Approx. 12 mA (red, orange, yellow, or blue) Approx. 5 mA (white or green) |
| 220 VAC | 220 VAC $\pm 10\%$ | |
| 230 VAC | 230 VAC $\pm 10\%$ | |
| 240 VAC | 220-250 VAC | |

Characteristics

| Item | Type | Indicator |
|---|------------------------------------|--------------------------------------|
| Allowable operating frequency | Mechanical | --- |
| | Electrical | --- |
| Insulation resistance | | --- |
| Contact resistance | | --- |
| Dielectric strength | Between terminals of same polarity | --- |
| | Between each terminal and ground | 2,500 VAC at 50/60 Hz for 1 min |
| Vibration resistance | Malfunction | 10 to 55 Hz, 1.5-mm double amplitude |
| Shock resistance | Malfunction | 1,000 m/s ² max. |
| Durability | Mechanical | --- |
| | Electrical | --- |
| Ambient operating temperature ^{*1} | | -25 to 55°C |
| Ambient operating humidity | | 35% to 85% RH |
| Ambient storage temperature ^{*1} | | -40 to 80°C |
| Degree of protection ^{*2} | | Conforming to IP66, NEMA 4X, NEMA13 |
| Electric shock protection class | | Class II |
| PTI (tracking characteristic) | | 175 |
| Degree of contamination (application environment) | | 3 (EN 60947-5-1) |
| Weight | | Approx. 30 g |

*1. With no icing or condensation.

*2. Degree of protection from the front of the panel.

Pushbutton Switches
A22NSelector Switches
A22NKey-type Selector Switches
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A30NSelector Switches
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M22N

Dimensions

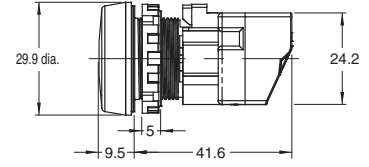
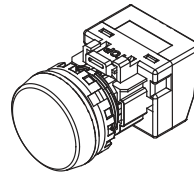
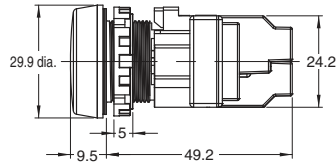
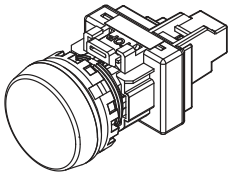
(Unit: mm)

Indicators

Plastic Flat Indicators

M22N-BN-□□A-□□

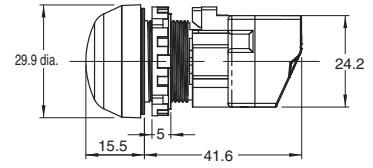
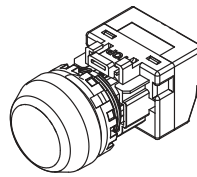
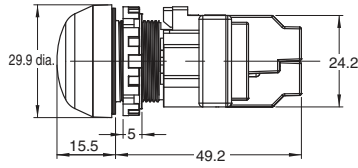
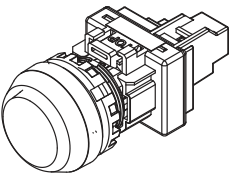
M22N-BN-□□A-□□-P



Plastic Semi-spherical Indicators

M22N-BG-□□A-□□

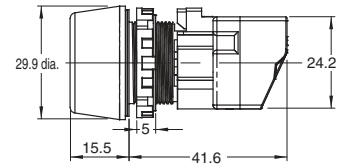
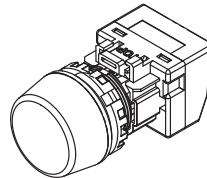
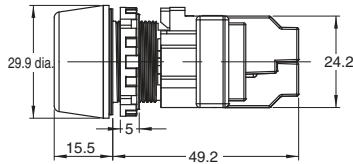
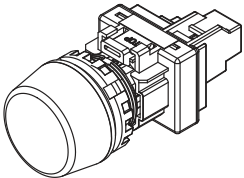
M22N-BG-□□A-□□-P



Plastic Projected Indicators

M22N-BP-□□A-□□

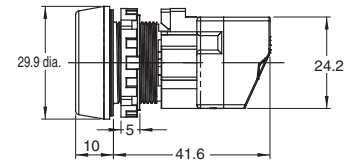
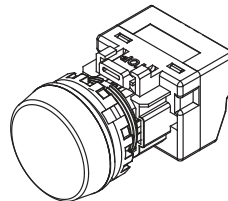
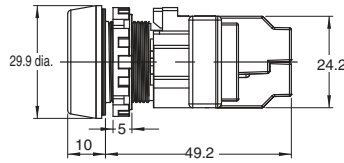
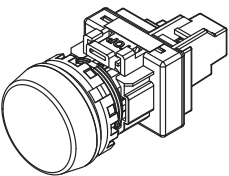
M22N-BP-□□A-□□-P



Plastic Flat Etched Indicators

M22N-BC-□□A-□□

M22N-BC-□□A-□□-P



Pushbutton Switches
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Selector Switches
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Key-Type Selector Switches
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Selector Switches
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Key-Type Selector Switches
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Subassemblies
(Common)

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Subassemblies (Common)

Ordering Information

Subassemblies --- You can order Operation Units, LED Lamps, Mounting Collars, and Contact Blocks individually. Use them in combination for models that are not available as assembled Units. These can also be used as inventory for maintenance parts.


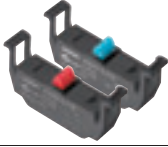
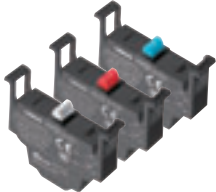
LED Lamps

| Appearance | Rated voltage | Model | | | | |
|---|---------------|------------|------------|------------|-----------------|---------------------|
| | Color | 6 VAC/DC | 12 VAC/DC | 24 VAC/DC | 100/110/120 VAC | 200/220/230/240 VAC |
|  | Red | A22NZ-L-RA | A22NZ-L-RB | A22NZ-L-RC | A22NZ-L-RD | A22NZ-L-RE |
| | Green | A22NZ-L-GA | A22NZ-L-GB | A22NZ-L-GC | A22NZ-L-GD | A22NZ-L-GE |
| | Yellow | A22NZ-L-YA | A22NZ-L-YB | A22NZ-L-YC | A22NZ-L-YD | A22NZ-L-YE |
| | White | A22NZ-L-WA | A22NZ-L-WB | A22NZ-L-WC | A22NZ-L-WD | A22NZ-L-WE |
| | Blue | A22NZ-L-AA | A22NZ-L-AB | A22NZ-L-AC | A22NZ-L-AD | A22NZ-L-AE |
| | Orange | A22NZ-L-OA | A22NZ-L-OB | A22NZ-L-OC | A22NZ-L-OD | A22NZ-L-OE |



Mounting Collar

| Appearance | Model |
|---|------------|
|  | A22NZ-H-01 |

Contact Blocks

| Appearance | Terminals Specifications | Contacts | Model |
|---|-----------------------------|-------------------------|-------------|
|  | Screw terminal block | SPST-NO (blue) | A22NZ-S-G1A |
| | | SPST-NC (orange) | A22NZ-S-G1B |
|  | Push-In Plus terminal block | SPST-NO (blue) | A22NZ-S-P1A |
| | | SPST-NC (red) | A22NZ-S-P1B |
|  | Push-In Plus terminal block | DPST-NO (blue) | A22NZ-S-P2A |
| | | DPST-NC (red) | A22NZ-S-P2B |
| | | SPST-NO/SPST-NC (white) | A22NZ-S-P2C |

Lighting Units

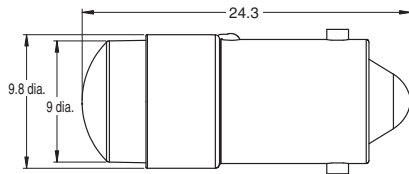
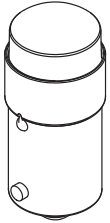
| Appearance | Terminals Specifications | Rated voltage | Model |
|---|-----------------------------|---------------------|------------|
|  | Screw terminal block | 6 VAC/DC | A22NZ-T-A |
| | | 12 VAC/DC | A22NZ-T-B |
| | | 24 VAC/DC | A22NZ-T-C |
| | | 100/110/120 VAC | A22NZ-T-D |
| | | 200/220/230/240 VAC | A22NZ-T-E |
|  | Push-In Plus terminal block | 6 VAC/DC | A22NZ-T-AP |
| | | 12 VAC/DC | A22NZ-T-BP |
| | | 24 VAC/DC | A22NZ-T-CP |
| | | 100/110/120 VAC | A22NZ-T-DP |
| | | 200/220/230/240 VAC | A22NZ-T-EP |

Subassemblies (Common)

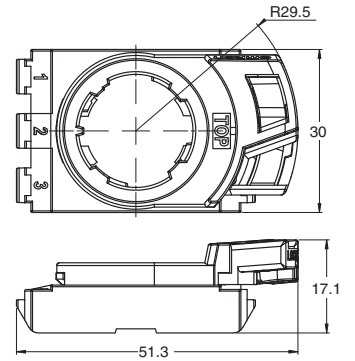
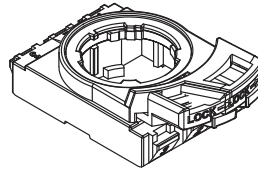
Dimensions

(Unit: mm)

LED Lamps
A22NZ-L-□□

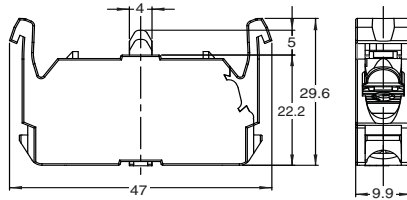
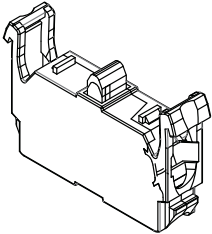


Mounting Collar
A22NZ-H-01

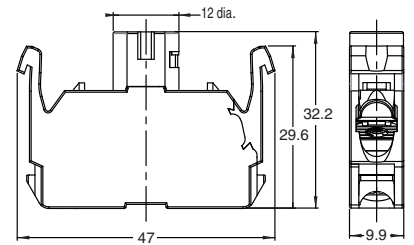
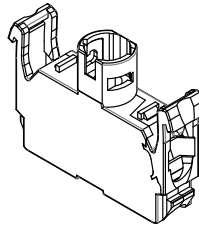


Screw terminal block

Contact Blocks
A22NZ-S-G1□

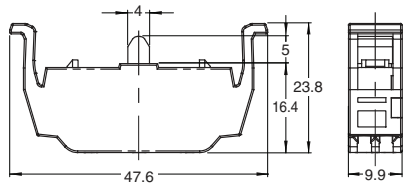
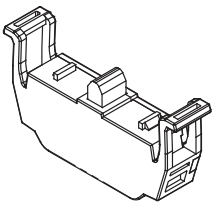


Lighting Units
A22NZ-T-□

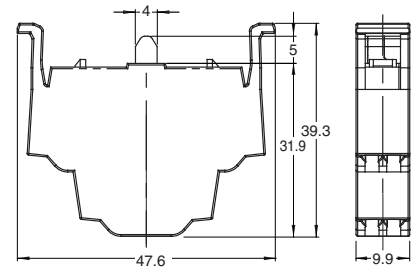
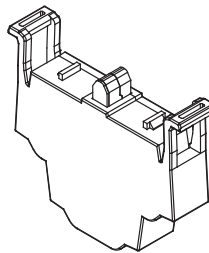


Push-In Plus Terminal Blocks

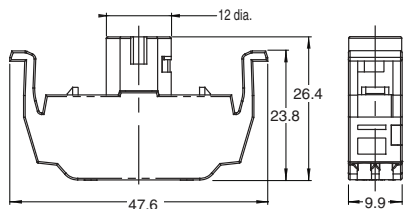
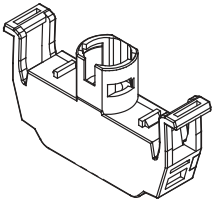
Contact Blocks (Single Contact)
A22NZ-S-P1□



Contact Blocks (Double Contact)
A22NZ-S-P2□



Lighting Units
A22NZ-T-□P



Pushbutton Switches
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Selector Switches
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Key-type Selector Switches
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Pushbutton Switches
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Key-type Selector Switches
A30N

Subassemblies (Common)

Accessories and Tools

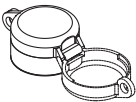






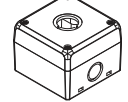

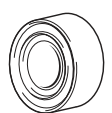

Safety Precautions

A22N/M22N/A30N

Accessories and Tools

Ordering Information

Accessories and Tools (Order Separately)

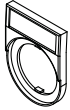
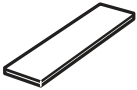

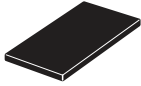
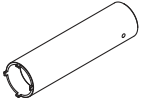
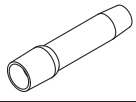

| Item | Appearance | Classification | | Model | Remarks |
|--------------------------------|---|------------------------------|--------------|---------------|--|
| Protective Cover |  | --- | | A22NZ-A-303 | A protector designed to prevent incorrect operation. Cannot be used together with other accessories. (Rubber seal included.) For exclusive use with panel cutouts of 22.3 and 25.5 mm dia. Key-type selector switches cannot be used. |
| Plastic Hole Plug * |  | Round | | A22NZ-A-401 | Can be plugged into precut panel holes for future expansion. Applicable panel thickness: 0.8 to 3.0 mm |
| Metal Hole Plug * |  | Round | | A22NZ-A-402 | Can be plugged into precut panel holes for future expansion. Applicable panel thickness: 0.8 to 6.0 mm (Rubber seal included.) |
| Lock Ring * |  | Round | | A22NZ-A-403 | Used when a more secure lock is required to prevent rotation inside the Operation Unit. (Rubber seal included.) |
| Lock Ring |  | --- | | A22NZ-A-50501 | Used when a more secure lock is required to prevent rotation of the Operation Unit. |
| Reinforcement Plate |  | --- | | A22NZ-A-C01 | Used to reinforce Contact Blocks and Lighting Units, Refer to page 95 for mounting instructions. |
| Key |  | --- | | A22NZ-K-01 | Used with a key-type selector switch. |
| Control Box * |  | 1 hole | | A22NZ-A-B01Y | |
| Connector |  | Suitable Cable Diameter (mm) | 7 to 9 dia. | A22Z-3500-1 | Plastic connector used to extend a cable from the switch box. Refer to page 98 for details. |
| | | | 9 to 11 dia. | A22Z-3500-2 | |
| Sealing Caps |  | For flat models | | A22Z-3600F | Used to prevent dust or water from entering the Operation Unit. Color: opaque Material: silicon For exclusive use with panel cutouts of 22.3 and 25.5 mm dia. Knob-type and key-type selector switches cannot be used. |
| | | For projection models | | A22Z-3600T | |
| | | For full-guard models | | A22Z-3600G | |
| Resin Attachment for 30 dia. * |  | Round | | A22Z-A30 | Use when mounting to a panel with a 30-dia. hole. Refer to page 99 for details. Purchase and mount a separate Lock Ring when using an indicator. |

* For 22.3-mm panel hole diameter.

Pushbutton Switches A22N
 Selector Switches A22N
 Key-Type Selector Switches A22N
 Indicators M22N
 Pushbutton Switches A30N
 Selector Switches A30N
 Key-Type Selector Switches A30N
 Subassemblies (Common)
 Accessories and Tools
 Safety Precautions

Accessories and Tools

Ordering Information

| Item | Appearance | Classification | Model | Remarks |
|---------------------------------------|---|----------------|---------------|--|
| Small Legend Plate Frame * |  | Black | A22NZ-A-50103 | Legend Plate with no text on black background included. |
| Small Legend Plates (Standard Size) * |  | Without text | A22Z-3443B | Black |
| | | | A22Z-3443R | Red |
| | | | A22Z-3443W | White |
| | | | A22Z-3443C | Transparent |
| | | ○ | A22Z-3443R-2 | White text on red background |
| | | STOP | A22Z-3443R-4 | |
| | | | A22Z-3443B-1 | White text on black background |
| | | 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 Legend Plate Frame * |  | Black | A22NZ-A-51103 | Legend Plate with no text on black background included. |
| Large Legend Plates * |  | Without text | A22Z-3453B | Black |
| | | | A22Z-3453R | Red |
| | | | A22Z-3453W | White |
| | | | A22Z-3453C | Transparent |
| Tightening Wrench |  | --- | A22NZ-A-301 | Used to tighten Mounting Nuts from the back of the panel. |
| LED Lamp Extractor |  | --- | A22NZ-A-302 | Made of rubber and used to easily remove and attach LED Lamps. |
| Cap Tightening Wrench |  | --- | A22Z-3908 | Used to replace the Caps on Flat, Projected, and Full-guard Pushbutton Switches. |

* For 22.3-mm panel hole diameter.

Pushbutton Switches
A22N

Selector Switches
A22N

Key-type Selector Switches
A22N

Indicators
M22N

Pushbutton Switches
A30N

Selector Switches
A30N

Key-type Selector Switches
A30N

Subassemblies
(Common)

Accessories
and Tools

Safety
Precautions

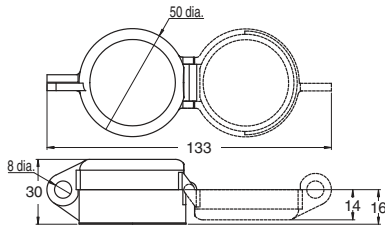
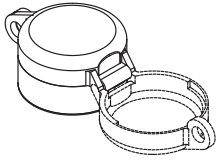
A22N/M22N/A30N

Accessories and Tools

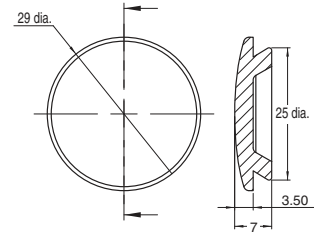
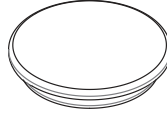
Dimensions

(Unit: mm)

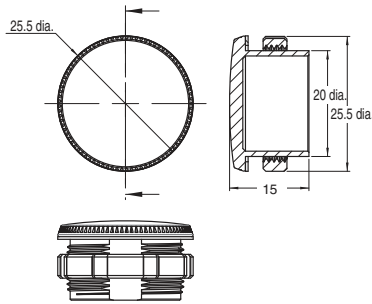
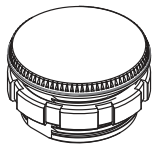
Protective Cover A22NZ-A303



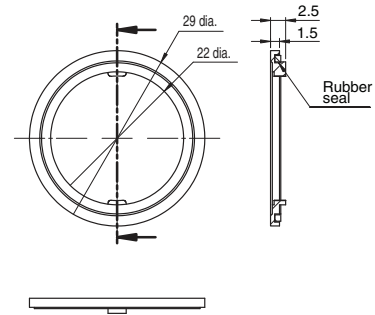
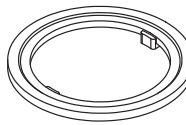
Plastic Hole Plug A22NZ-A-401



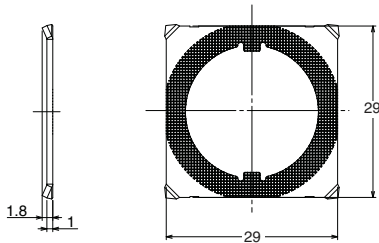
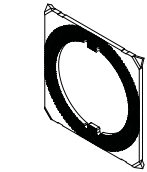
Metal Hole Plug A22NZ-A-402



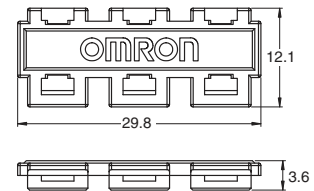
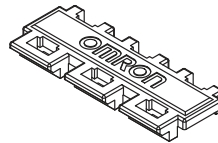
Lock Ring A22NZ-A-403



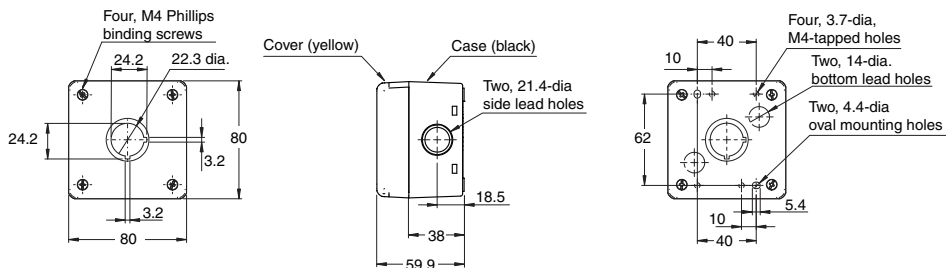
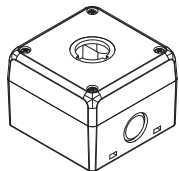
Lock Ring A22NZ-A-50501



Reinforcement Plate A22NZ-A-C01



Control Box A22NZ-A-B01Y

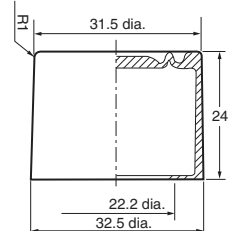
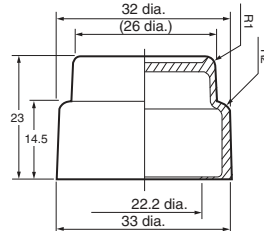
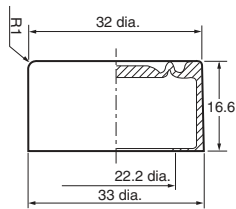
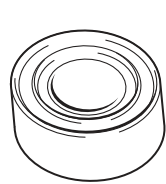


Sealing cap

For Flat Models A22Z-3600F

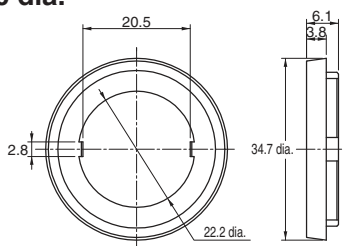
For projection models A22Z-3600T

For full-guard models A22Z-3600G



Resin Attachment for 30 dia.

A22Z-A30

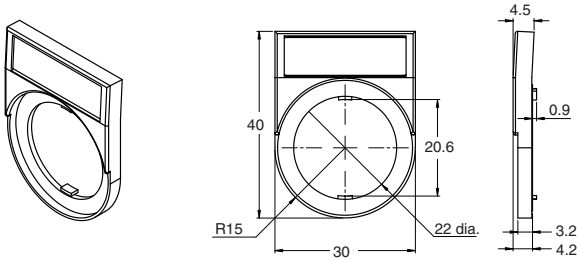


Accessories and Tools

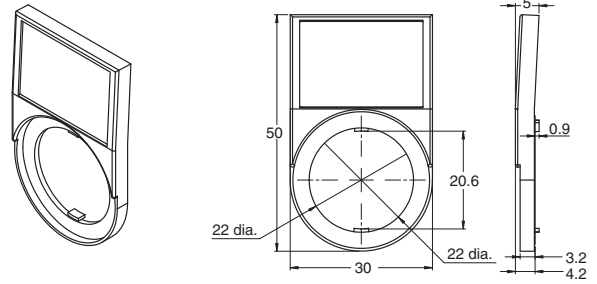
Dimensions

(Unit: mm)

Legend Plate Frames
General A22NZ-A-50103

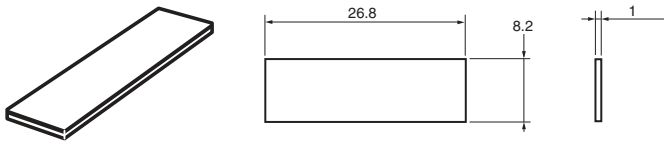


Large A22NZ-A-51103

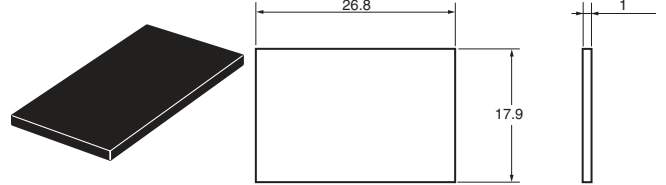


Legend Plates

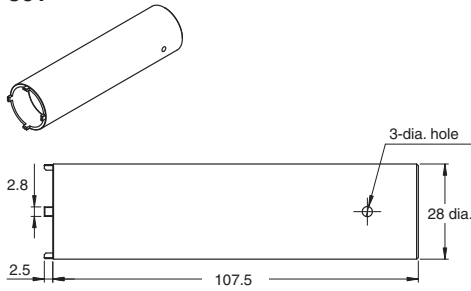
General A22Z-3443□-□



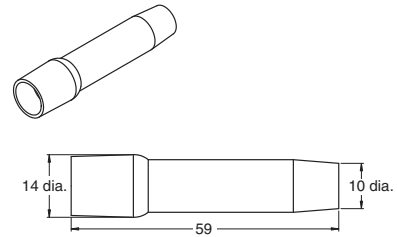
Large A22Z-3453□



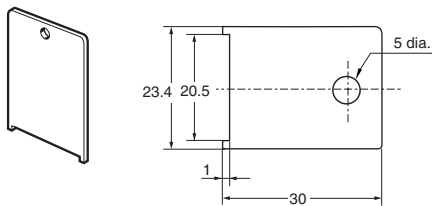
Tightening Wrench
A22NZ-A-301



LED Lamp Extractor
A22NZ-A-302



Cap Tightening Wrench
A22Z-3908



Pushbutton Switches
A22N

Selector Switches
A22N

Key-type Selector Switches
A22N

Indicators
M22N

Pushbutton Switches
A30N

Selector Switches
A30N

Key-type Selector Switches
A30N

Subassemblies
(Common)

Accessories
and Tools

Safety
Precautions

A22N/M22N/A30N

Safety Precautions

Refer to Safety Precautions for All Pushbutton Switches/Indicators.

Signal Word Definitions

| | |
|------------------------------------|---|
| Precautions for Safe Use | Supplementary comments on what to do or avoid doing, to use the product safely. |
| Precautions for Correct Use | Supplementary comments on what to do or avoid doing, to prevent failure to operate, malfunction, or undesirable effects on product performance. |

Precautions for Safe Use

For both the Screw terminal block type and the Push-In Plus terminal block type

- Do not perform wiring with power supplied to the Switch/Indicator. Do not touch the terminals or other charged parts while power is being supplied. Doing so may result in electric shock.
- Do not disassemble or modify the Switch/Indicator under any circumstances.
- Doing so may prevent the Switch/Indicator from functioning to its full capability. Do not drop the Switch/Indicator. Do not apply pressure that may deform or alter the Switch/Indicator.
- The durability of the Switch varies considerably depending on the switching conditions. Always test the Switch/Indicator under actual working conditions before application and use the Switch/Indicator only for the number of switching operations allowed.
- Do not allow the load voltage and current to exceed the rated value. This may damage or burn out the Switch/Indicator.
- Do not use the Switch/Indicator in locations where explosive or flammable gases or liquid may be present or scattered. The electric arc or the heat caused by switching contacts may cause a fire or explosion.
- Do not use the Switch/Indicator in locations where toxic gases, such as H₂S, SO₂, NH₃, HNO₃, and Cl₂, may be present, or in locations subject to high temperature or humidity. Doing so may damage the Switch/Indicator due to contact failure or corrosion.
- Do not use the Switch/Indicator submerged in oil or water, or in locations continuously subject to splashes of oil or water. Doing so may result in oil or water entering and damaging the Switch/Indicator.
- Do not use or keep the Switch/Indicator under the following conditions:
 - Subject to severe temperature changes.
 - Subject to high humidity or condensation.
 - Subject to severe vibration or shock.
 - Where direct rays of the sun strike.
 - Where sea breeze may be present.
- Make sure that a rubber washer is present between the Operation Unit and the panel. Otherwise, the specifications of the protective structure may not be satisfied.
- Do not apply excessive force to the Switch or wiring. A damaged or deformed contact block may cause contact failure.
- Use an appropriate wire and ferrule.
- Exercise caution to avoid wiring errors when connecting the terminals.

- To prevent wire from smoking or igniting, use the wire indicated in the following table.

| Model | Wire Type | Wire | Recommended Wires | Stripped length |
|--|------------------------------|--------|--|---|
| A22N, M22N (Screw terminal block) | Solid wire/ stranded wire | Copper | 1.25 to 2.5 mm ² / AWG 16 to 14 Solid wire: 1.6 mm max. | 8 mm |
| A22N-P, M22N-P (Push-In Plus terminal block) | | | 0.25 to 1.5 mm ² / AWG 24 to 16 | Ferrules used : 10 mm Ferrules not used : 8 mm |

Use wiring crimp terminals and ferrule terminals of the specified size.

- For Push-In Plus terminal blocks, use only one wire per terminal. For screw terminal blocks, use no more than two wires of the same size and type with no more than two crimp terminals per terminal.
- After storing the product for a long time exceeding 1 year, perform, at a minimum, inspections of the operating characteristics, contact resistance, insulation resistance, and dielectric strength as well as evaluate the product under the working conditions.
- This Switch/Indicator is intended for indoor use only. Using the Switch/Indicator outdoors may result in failure.

Push-In Plus Terminal Blocks

- Do not wire anything to the release holes.
- Do not tilt or twist a flat-blade screwdriver while it is inserted into a release hole on the terminal block. The terminal block may be damaged.
- Insert a flat-blade screwdriver into the release holes at an angle. The terminal block may be damaged if you insert the screwdriver straight in.
- Do not allow the flat-blade screwdriver to fall out while it is inserted into a release hole.
- Do not bend a wire past its natural bending radius or pull on it with excessive force. Doing so may cause the wire disconnection.
- Do not insert more than one wire into each terminal insertion hole.
- Do not mount A22N-P Push-In Plus terminal contact blocks on A22N screw terminal blocks. Doing so may result in unsatisfactory performance.

Precautions for Correct Use

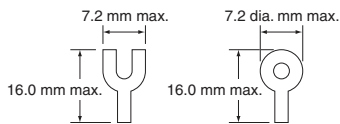
Mounting

- Do not tighten the Mounting Nut more than necessary using tools such as pointed-nose pliers. Doing so will damage the Mounting Nut. (The tightening torque of the Mounting Nut is 1.0 to 2.0 N·m.)

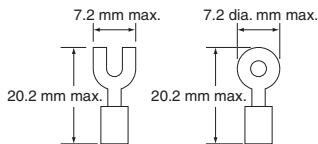
Wiring (Screw terminal block)

- Terminal screws must be M3.5 Phillips or slotted screws with a square washer.
- The terminal screw tightening torque is 1.0 to 1.3 N·m.
- Solid wires, stranded wires, and crimp terminals can be connected to the Switch/Indicator.

Bare Crimp Terminals



Crimp Terminals with Insulating Sheathes

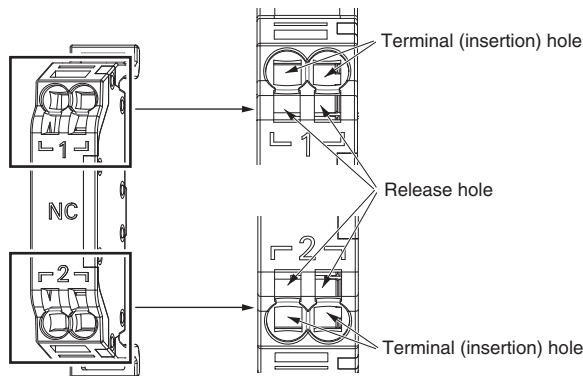


Wiring (Push-in Plus terminal block)

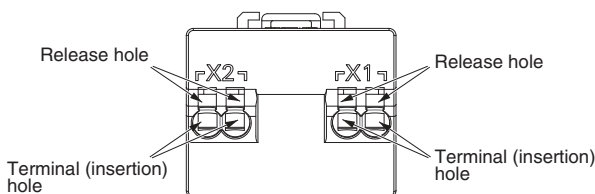
1. Connecting Wires to the Push-In Plus Terminal Block

Part Names of the Terminal Block

<A22N>



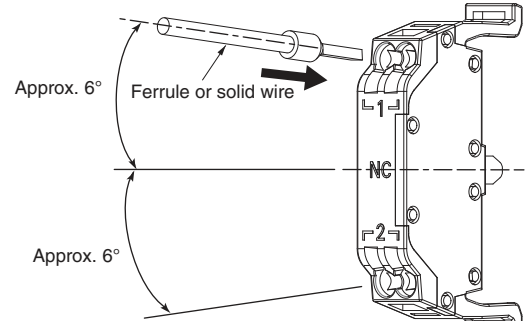
<M22N>



Connecting Wires with Ferrules and Solid Wires

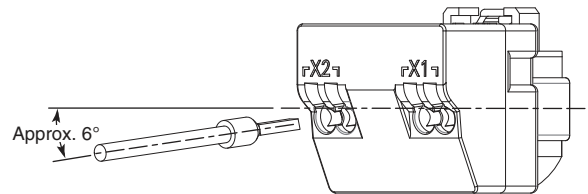
- Insert the solid wire or ferrule straight into the terminal block until the end strikes the terminal block. The angle should be approximately 6°.
- If a wire is difficult to connect because it is too thin, use a flat-blade screwdriver in the same way as when connecting stranded wires.

<A22N>



The wiring for the Lighting Unit and Contact Block (2 contacts) are the same as for the Contact Block (1 contact) shown in the above illustration.

<M22N>



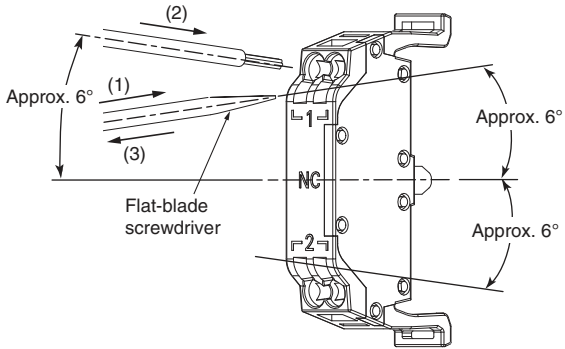
A22N/M22N/A30N

Connecting Stranded Wires

Use the following procedure to connect the wires to the terminal block.

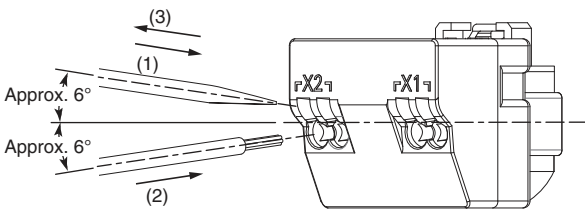
1. Hold a flat-blade screwdriver at an angle and insert it into the release hole.
2. The angle should be approximately 6°. If the flat-blade screwdriver is inserted correctly, you will feel the spring in the release hole.
3. With the flat-blade screwdriver still inserted into the release hole, insert the wire into the terminal hole until the end strikes the terminal block.
4. Remove the flat-blade screwdriver from the release hole.

<A22N>



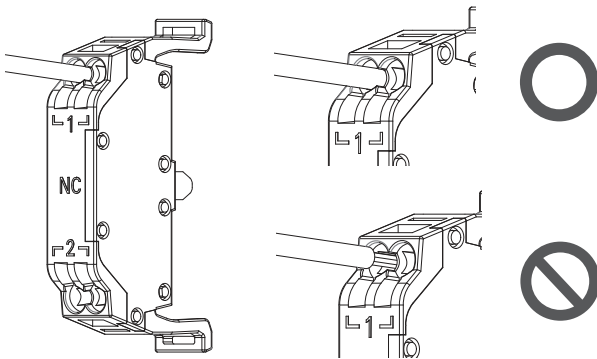
The wiring and screwdriver angles for the Lighting Unit and Contact Block (2 contacts) are the same as for the Contact Block (1 contact) shown in the above illustration.

<M22N>



Checking Connections

- After the insertion, pull gently on the wire to make sure that it will not come off and it is securely fastened to the terminal block.
- To prevent short circuits, insert the stripped part of a stranded or solid wire, or the conductor part of a ferrule until it is hidden inside the terminal insertion hole. (See the following diagram.)

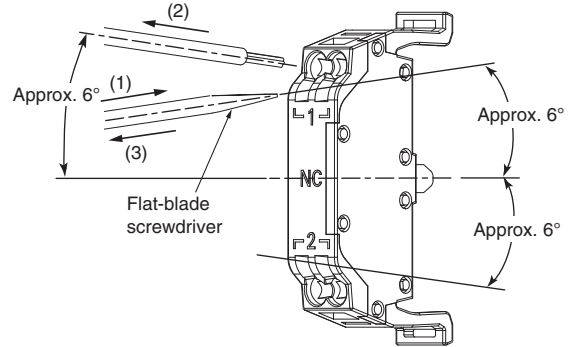


2. Removing Wires from the Push-In Plus Terminal Block

Use the following procedure to remove wires from the terminal block. The same method is used to remove stranded wires, solid wires, and ferrules.

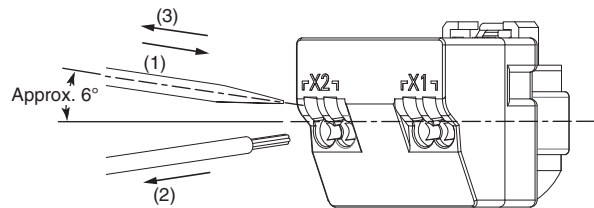
1. Hold a flat-blade screwdriver at an angle and insert it into the release hole. The angle should be approximately 6°.
2. With the flat-blade screwdriver still inserted into the release hole, remove the wire from the terminal insertion hole.
3. Remove the flat-blade screwdriver from the release hole.

<A22N>



The wiring and screwdriver angles for the Lighting Unit and Contact Block (2 contacts) are the same as for the Contact Block (1 contact) shown in the above illustration.

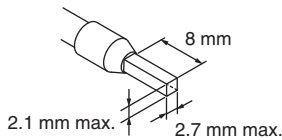
<M22N>



3. Recommended Ferrules and Crimp Tools
Recommended ferrules

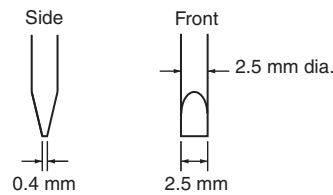
| Applicable wire | | Ferrule Conductor Length (mm) | Recommended ferrules | | |
|-------------------------|-------|-------------------------------|--|--------------------|---------------|
| (mm ²) | (AWG) | | Phoenix Contact product | Weidmuller product | Wago product |
| 0.25 | 24 | 8 | AI0.25-8 | H0.25/12 | FE-0.25-8N-YE |
| 0.34 | 22 | 8 | AI0.34-8 | H0.34/12 | FE-0.34-8N-TQ |
| 0.5 | 20 | 8 | AI0.5-8 | H0.5/14 | FE-0.5-8N-WH |
| 0.75 | 18 | 8 | AI0.75-8 | H0.75/14 | FE-0.75-8N-GY |
| 1 | 18 | 8 | AI1-8 | H1.0/14 | FE-1.0-8N-RD |
| 1.5 | 16 | 8 | AI1.5-8 | H1.5/14 | FE-1.5-8N-BK |
| Recommended Crimp Tools | | | CRIMPFOX6 CRIMPFOX6T-F CRIMPFOX10S | PZ6 roto | Variocrimp4 |

- Note:** 1. Make sure that the outer diameter of the wire coating is smaller than the inner diameter of the insulation sleeve of the recommended ferrule.
 2. Make sure that the ferrule processing dimensions conform to the following figures.



Recommended Flat-Blade Screwdrivers

Use a flat-blade screwdriver to connect and remove wires. Use one of the following flat-blade screwdrivers. The following table shows manufacturers and models as of 2015/Dec.



| Model | Manufacturer |
|------------------------------------|-----------------|
| ESD0.40 x 2.5 | Wera |
| SZS 0.4 x 2.5 SZF 0-0.4 x 2.5 * | Phoenix Contact |
| 0.4 x 2.5 x 75 302 | Wiha |
| AEF.2.5 x 75 | Facom |
| 210-719 | Wago |
| SDI 0.4 x 2.5 x 75 | Weidmuller |

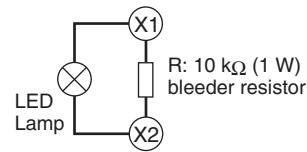
- * OMRON's exclusive purchase model XW4Z-00B is available to order as SZF 0-0.4 x 2.5 (manufactured by Phoenix Contact).
 • After wiring the Switch/Indicator, provide a sufficient insulation distance.

The following information applies to both screw terminal blocks and Push-In Plus terminal blocks.

LED Lamps

- A current-limiting resistor is built in the LED lamp, so the installation of an external resistance is not required.
- Lighting malfunction of the LED lamp
 A micro-current of approximately 0.1 mA or less is sufficient to turn on the LED lamps. Take a countermeasure like adding a resistor to prevent mis-lighting in parallel to the LED lamp. 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.

(Example of lighting malfunction prevention circuit)
 When using a 24-VAC/VDC lighted unit



Key-Type Selector Switches

- Make sure to insert the key to the bottom of the cylinder before turning it.

Pushbutton Switches
A22N

Selector Switches
A22N

Key-type Selector Switches
A22N

Indicators
M22N

Pushbutton Switches
A30N

Selector Switches
A30N

Key-type Selector Switches
A30N

Subassemblies (Common)

Accessories and Tools

Safety Precautions

Application

Mounting to the Panel

Panel Hole Dimensions

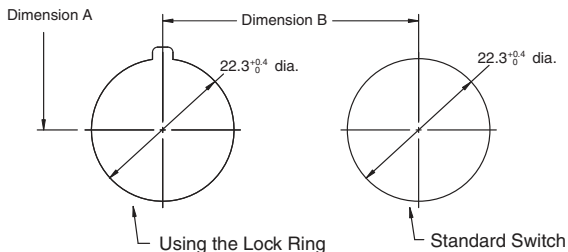
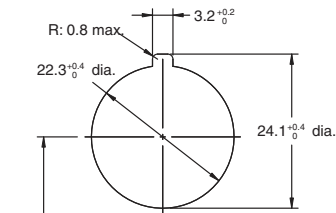
<A22N>

- Panel hole dimensions are given below.
- The recommended panel thicknesses are given below.

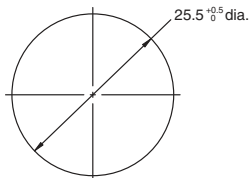
| Panel hole dimension | Panel thickness |
|----------------------|-----------------|
| 22.3 dia. | 0.8 to 5 mm |
| 25.5 dia. | 0.8 to 6 mm |

- If outer surface treatment such as coating is performed for the panel, the panel dimensions after outer surface treatment must meet the specified panel dimensions.
- The following figure gives pitch dimension A and pitch dimension B between the centers of the mounting holes.

Panel Hole Dimensions for 22.3 Diameter



Panel Hole Dimensions for 25.5 Diameter



Dimension A

| Wire type | Number of linked Contact Blocks | Number of wires per terminal | Minimum allowable pitch Dimension A (mm) or larger |
|---|---------------------------------|------------------------------|--|
| Leads (stranded wire / solid wire) | 1 | 1 | 50 |
| Bare crimp terminals | 1 | 1 | 50 |
| Crimp terminals with insulating sheaths | 1 | 1 | 60 |

Note: The minimum mounting pitch is based on three Contact Blocks in stage 1 with one wire attached to each terminal.

If the Mounting Collar lock levers all face the same direction at the minimum mounting pitch, be sure to note the order the mounting collars are attached to the Operation Unit.

If you attach two wires or link Units, determine the mounting pitch based on the dimensions diagrams and ease of operation and wiring.

Dimension A When Using Accessory

- Dimension A is 50 mm minimum when a Standard Legend Plate Frame is attached.
- Dimension A is 51 mm minimum when a Large Legend Plate Frame is attached.
- Dimension A is 75 mm minimum when a Protective Cover is attached.

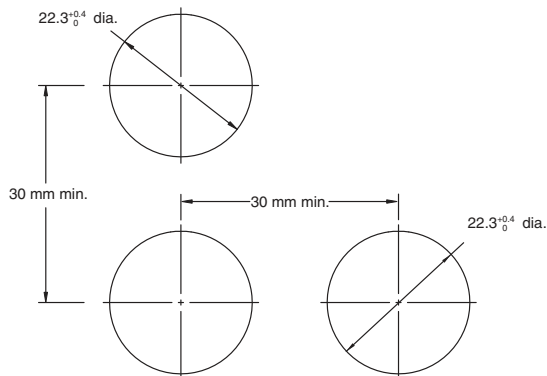
Dimension B

| Operation Unit shape | Dimension B |
|----------------------|-------------|
| Mushroom | 40 mm min. |
| Other than the above | 30 mm min. |

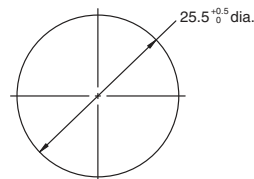
<M22N>

- Panel hole dimensions are given below.
- Acceptable panel thickness is between 0.8 and 6 mm.
- If outer surface treatment such as coating is performed for the panel, the panel dimensions after outer surface treatment must meet the specified panel dimensions.

Panel Hole Dimensions for 22.3 Diameter



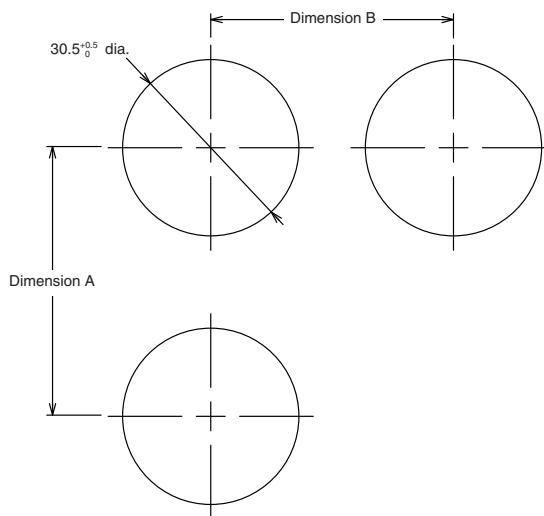
Panel Hole Dimensions for 25.5 Diameter



<A30N>

- Panel hole dimensions are given below.
- Acceptable panel thickness is between 0.8 and 7 mm.
- If outer surface treatment such as coating is performed for the panel, the panel dimensions after outer surface treatment must meet the specified panel dimensions.
- The following figure gives pitch dimension A and pitch dimension B between the centers of the mounting holes.

Panel Hole Dimensions



Dimension A

| Wire type | Number of linked Contact Blocks | Number of wires per terminal | Minimum allowable pitch Dimension A (mm) or larger |
|---|---------------------------------|------------------------------|--|
| Leads (stranded wire / solid wire) | 1 | 1 | 50 |
| Bare crimp terminals | 1 | 1 | 50 |
| Crimp terminals with insulating sheaths | 1 | 1 | 60 |

Note: The minimum mounting pitch is based on three Contact Blocks in stage 1 with one wire attached to each terminal. If the Mounting Collar lock levers all face the same direction at the minimum mounting pitch, be sure to note the order the mounting collars are attached to the Operation Unit. If you attach two wires or link Units, determine the mounting pitch based on the dimensions diagrams and ease of operation and wiring.

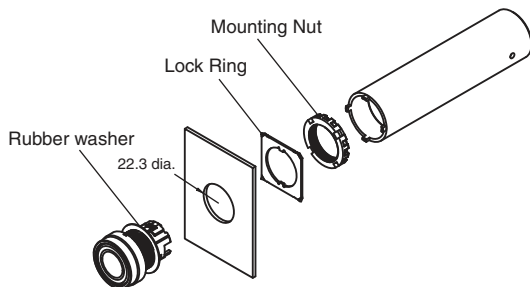
Dimension B

| Operation Unit shape | Dimension B |
|----------------------|-------------|
| Mushroom | 40 mm min. |
| Other than the above | 30 mm min. |

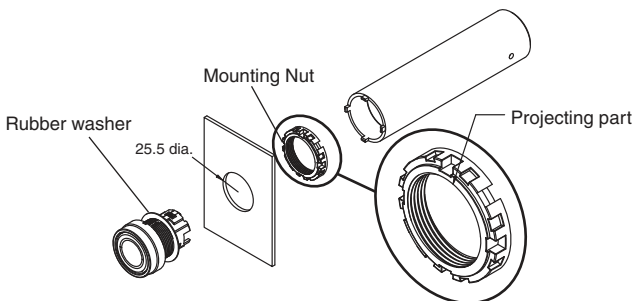
Mounting the Operation Unit

<A22N>

- Panel Hole of 22.3-mm Diameter
Insert the Operation Unit from the front of the panel, insert the Lock Ring and Mounting Nut from the back of the panel, and tighten the Mounting Nut. Before tightening, check that the rubber washer is present between the Operation Unit and the panel.



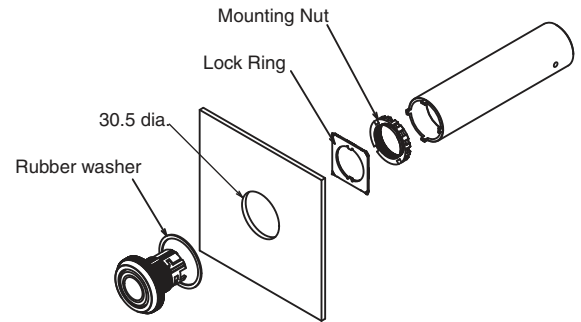
- Panel Hole of 25.5-mm Diameter
Do not use the Lock Ring, and tighten the Mounting Nut while confirming that the projecting part (see following figure) on the Mounting Nut is aligned with mounting hole. Before tightening, check that the rubber washer is present between the Operation Unit and the panel.



- Align the Lock Ring with the slot on the case and insert it so that the edge is flush with the panel.

<A30N>

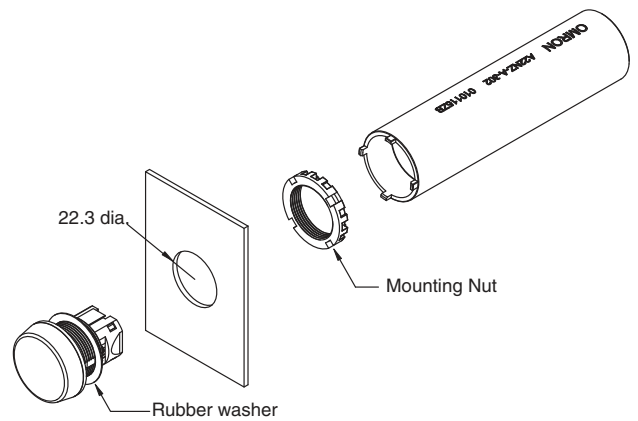
- Insert the Operation Unit from the front of the panel, insert the Lock Ring and Mounting Nut from the back of the panel, and tighten the Mounting Nut. Before tightening, check that the rubber washer is present between the Operation Unit and the panel.



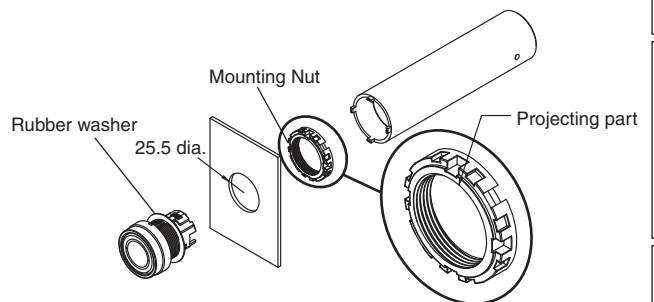
Attaching the Switch Unit to the Indicator Unit

<M22N>

- Panel Hole of 22.3-mm Diameter
Insert the Indicator Unit from the front of the panel, insert the Mounting Nut from the back of the panel, and tighten the Mounting Nut. Before tightening, check that the rubber washer is present between the Indicator Unit and the panel.



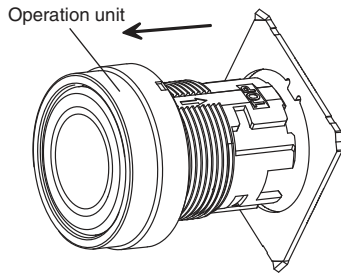
- Panel Hole of 25.5-mm Diameter
Tighten the Mounting Nut while confirming that the projecting part (see following figure) on the Mounting Nut is aligned with mounting hole. Before tightening, verify that the rubber washer is present between the Operation Unit and the panel.



Mounting the Lock Ring

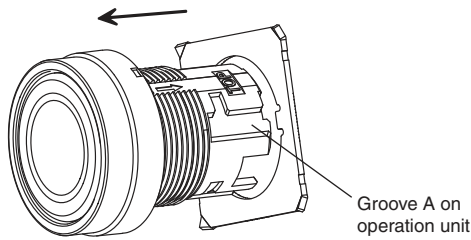
<A22N/A30N>

- Align the grooves on the Operation Unit with the protruding parts of the Lock Ring and mount.

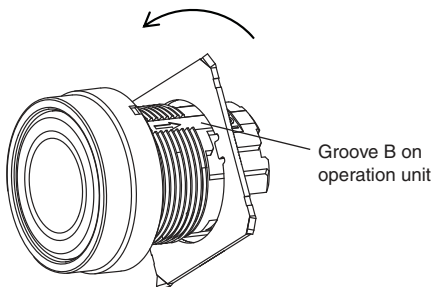


- When experiencing difficulties when mounting a Lock Ring, use the following procedure.

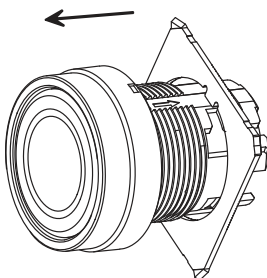
1. Insert the Lock Ring into groove A on the Operation Unit.



2. When the Lock Ring is in the position shown in the figure below, rotate it to insert the protruding part of the Lock Ring into groove B on the Operation Unit.



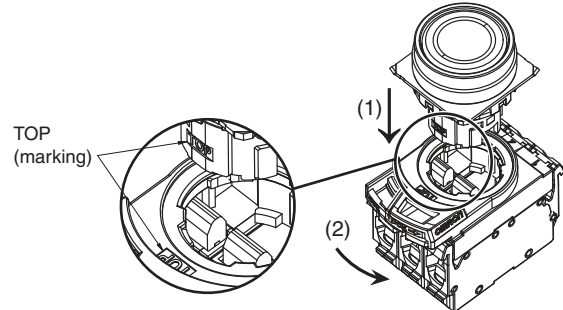
3. When the Lock Ring is in the position shown in the figure below, move it in the direction indicated by the arrow.



Mounting the Contact Block to the Operation Unit

<A22N/A30N>

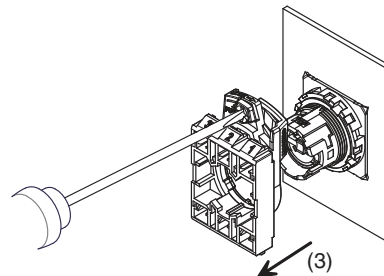
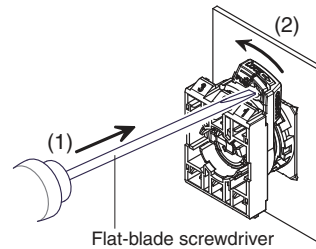
- Insert the Operation Unit into the Mounting Collar, aligning the TOP mark inscribed on the Operation Unit with the lever on the Mounting Collar, and then turn the lever in the direction indicated by the arrow in the following figure all of the way until it clicks into place.



Removing the Mounting Collar

<A22N/A30N>

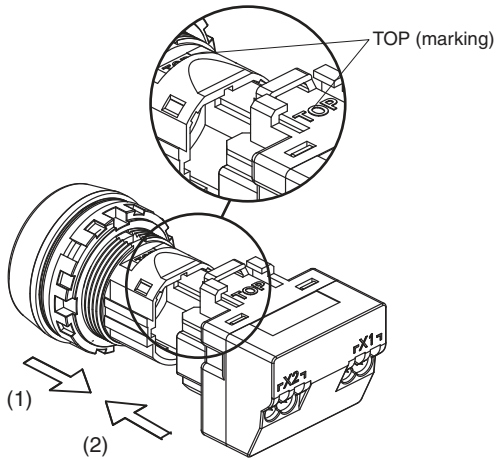
- Press the lock lever in from the back side to release the lock, and then hook the Mounting Collar with a screwdriver, move it in the direction indicated at (2), and remove it. Turn the lever all of the way until it clicks into place.



Attaching the Switch Unit to the Indicator Unit

<M22N>

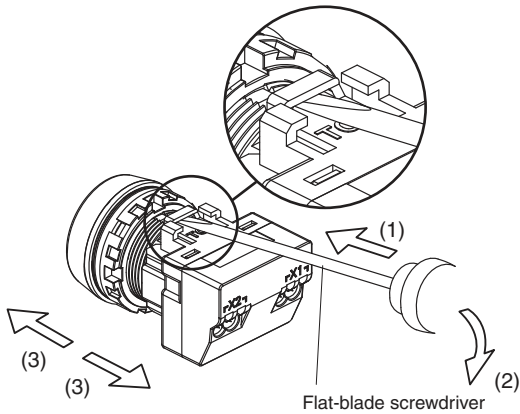
- Align the "TOP" marks on the Indicator Unit and Switch Unit and insert the Indicator Unit into the Switch Unit. Insert it all the way until it clicks into place.



Removing the Switch Unit

<M22N>

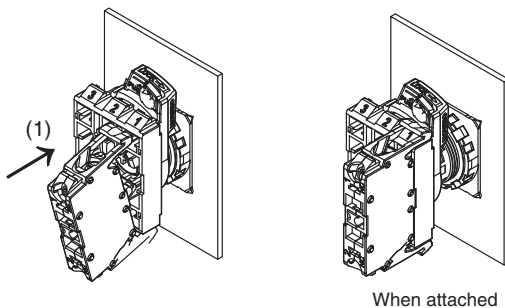
- Insert a screwdriver into the tab on the Switch Unit. Move the screwdriver in direction (2) to remove the Switch Unit.



Contact Block and Lighting Unit

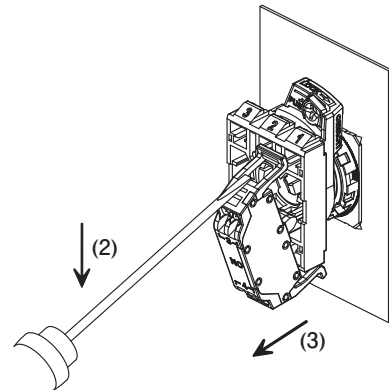
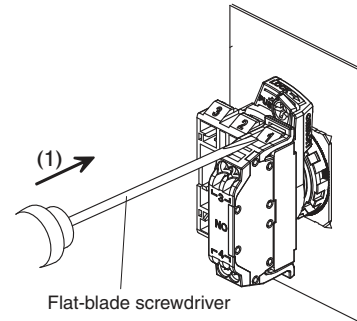
Attaching the Contact Block and Lighting Unit

- Catch the projection on the opposite side of the Mounting Collar from the lever side and press the Contact Block in the direction indicated at (1).



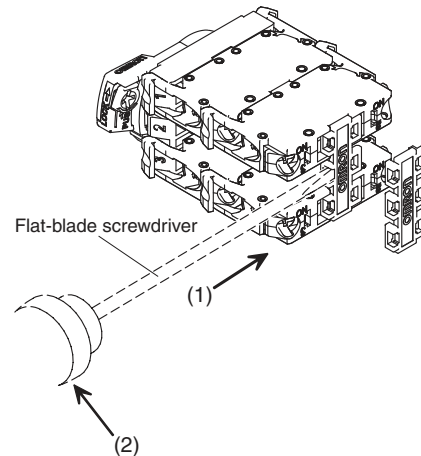
Removing the Contact Block

- Insert a screwdriver into the gap between the Mounting Collar and Contact Block and press it inward in the direction shown at (2).



Attaching the Reinforcement Plate (Screw terminal block type)

- To link Contact Blocks together, attach a Reinforcement Plate in the direction shown in the following figure. To remove the Plate, insert a screwdriver in the direction indicated at (1) and rotate it in the direction indicated at (2).



Pushbutton Switches
A22N

Selector Switches
A22N

Key-type Selector Switches
A22N

Indicators
M22N

Pushbutton Switches
A30N

Selector Switches
A30N

Key-type Selector Switches
A30N

Subassemblies
(Common)

Accessories
and Tools

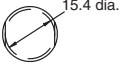

Safety
Precautions

A22N/M22N/A30N

Engraving (Except for Non-Lighted / Opaque Types)

- Engrave legends on the Legend Plates.
Do so with the straight part of the Legend Plate positioned on the right and left.
- The characters must be engraved no deeper than 0.5 mm. Use an alcohol-based paint, such as a melamine, phthalic acid, or acrylic resin based paint.

<A22N>

| Projected, Full-guard, or Mushroom Switches | Flat Switches |
|---|---|
|  |  |

<M22N>

Flat Resin Legend Plate Type Switches



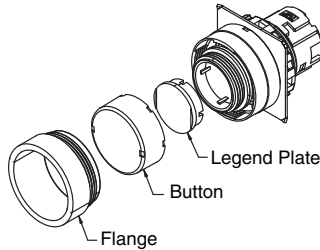
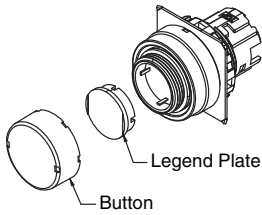
Attaching Character Films (Except for Non-Lighted / Opaque Types)

<A22N>

- To attach a character film, remove the Button and attach the film, aligning it with the straight portions of the Legend Plate.

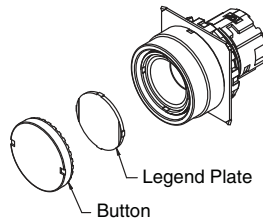
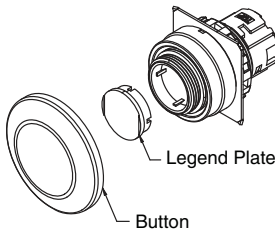
Projected Switches

Full-guard Switches

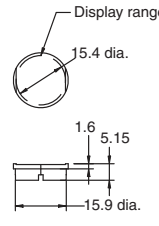
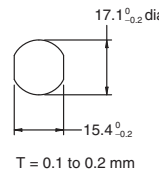
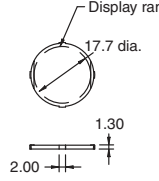
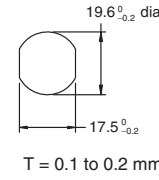


Mushroom Switches

Flat Switches



- Prepare films of the following sizes depending on the type of Legend Plate.

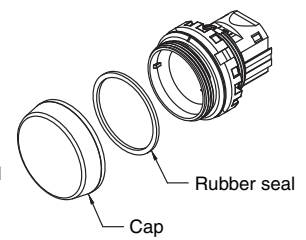
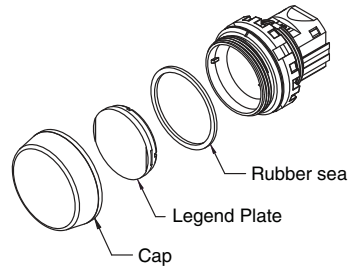
| | | |
|---|-------------------------|--|
| Projected, Full-guard, or Mushroom Switches | Legend Plate dimensions |  |
| | Film dimensions |  |
| Flat Switches | Legend Plate dimensions |  |
| | Film dimensions |  |

<M22N>

- To attach a character film, remove the Button and attach the film, aligning it with the straight portions of the Legend Plate.

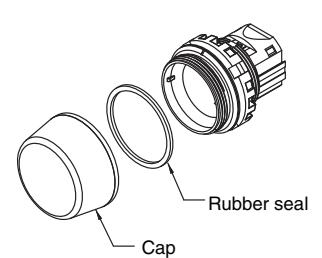
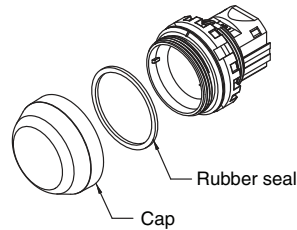
Flat Etched Switches

Flat Switches

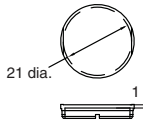
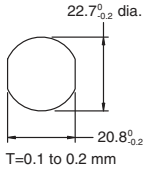


Semi-spherical Switches

Projected Switches

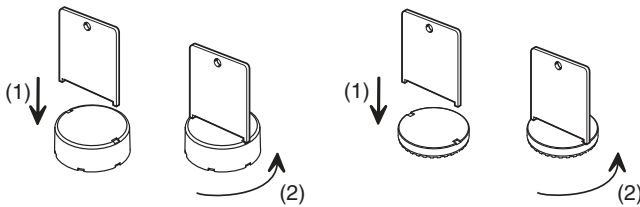


- Film processing dimensions should be as per the indications below.

| | |
|--------------------------------|---|
| Legend Plate dimensions |  |
| Film dimensions |  |

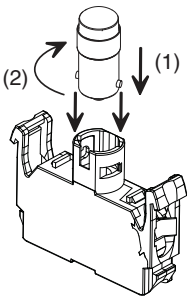
Removing and Tightening the Cap

For all Switches except for Mushroom Switches, use the A22Z-3908 Cap Tightening Tool to loosen the cap. When you tighten the cap, make sure that the Legend Plate is in the correct position and then turn the cap in the direction opposite of the direction shown in the following figure. Tighten it to a torque of 0.5 to 1.0 N·m so that it will not become loose.



Attaching the LED Lamp to the Lighting Unit

- Insert the protrusions on the LED Lamp into the guides on the Lighting Unit and then turn the LED Lamp in direction (2) to lock it in place.

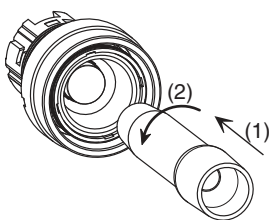


Attaching and Replacing LED Lamps

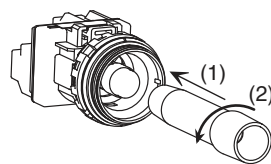
Removing the LED Lamp from the Panel Surface

- Insert the LED Lamp Extractor as shown in the following figure and then rotate the Extractor in the direction shown at (2) while pressing it inward.

<A22N>



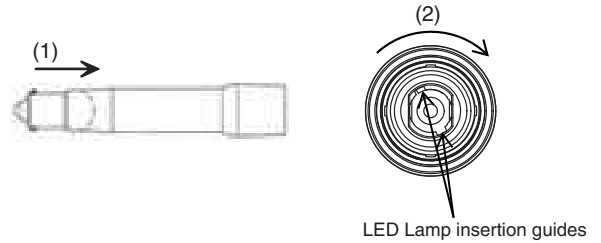
<M22N>



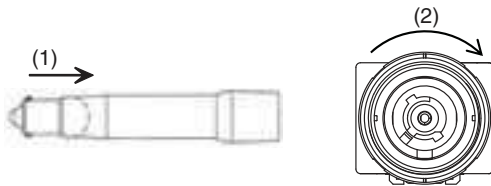
Attaching the LED Lamp from the Panel Surface

- Insert the LED Lamp into the LED Lamp Extractor as shown in the following figure. Align the projections on the LED Lamp with the LED Lamp insertion guides, insert the LED Lamp, and turn it in the direction indicated at (2).

<A22N>

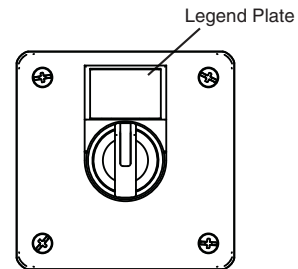


<M22N>



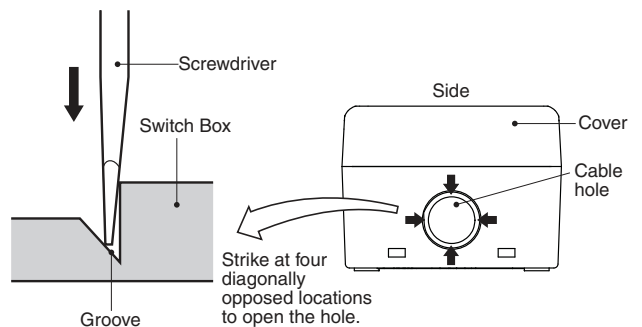
Control Box

You can attach a Legend Plate Frame. Attach it in the direction shown in the following figure. Mount the Switch in the same way as for a standard panel. The tightening torque of the Box screws is 1.4 to 2.0 N·m.



Creating a Cable Hole

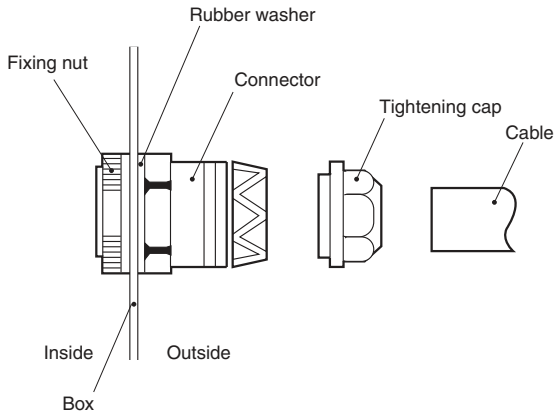
To open a cable hole, leave the cover attached, place the tip of a screwdriver in the grooves at four locations around the cable hole, and strike the screwdriver with a hammer to open the hole.



Securing the Connector Cable

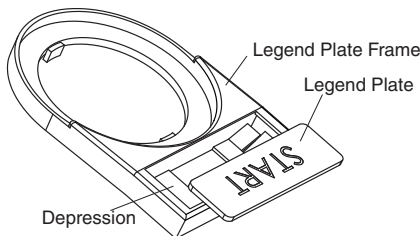
1. Insert the connector into the cable port hole in the Box and secure with the fixing nut inside the box.
2. Open a hole in the thin rubber section of the rubber ring.
3. Pass the tightening cap through the cable, insert the cable into the connector, and tighten the hexagonal nut to secure the cable.

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

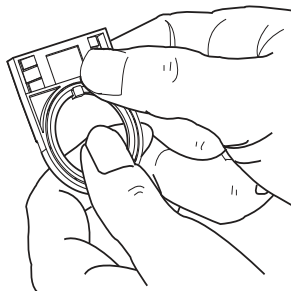


Attaching and Removing Legend Plates

- Press the Legend Plate into the depression in the Legend Plate Frame. The Legend Plate Frame can be separate or it can be mounted on the panel when you attach the Legend Plate.
- The direction of the characters will depend on the mounting direction of the Operation Unit if the Switch is a Selector Switch or Key Selector Switch.

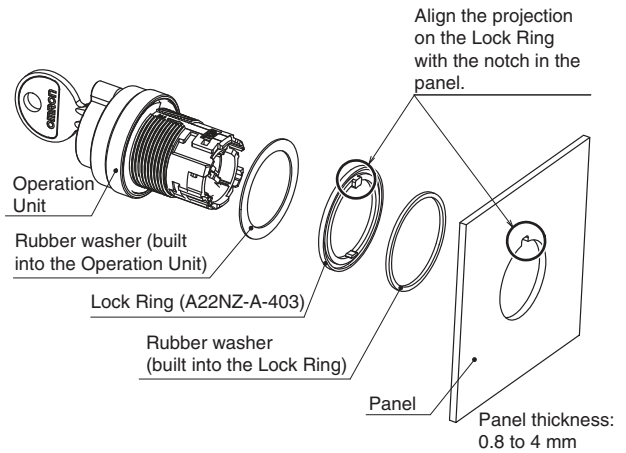


- You can easily remove the Legend Plate by pressing it forwards from the back of the Legend Plate Frame.
- The acrylic plastic Legend Plate is easily damaged by shock. Handle it with care.

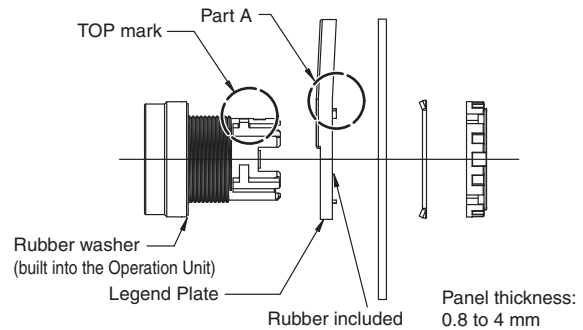


Attaching the Lock Ring

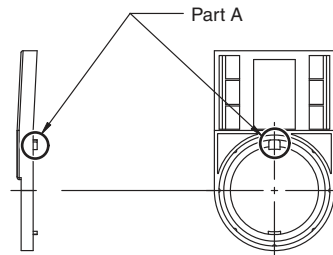
Attach the Lock Ring as shown in the following figure. To ensure water resistance, attach the rubber washer in the specified location.



- Align the TOP mark on the Operation Unit, part A on the Legend Plate, and the notch in the panel, and insert the Operation Unit.

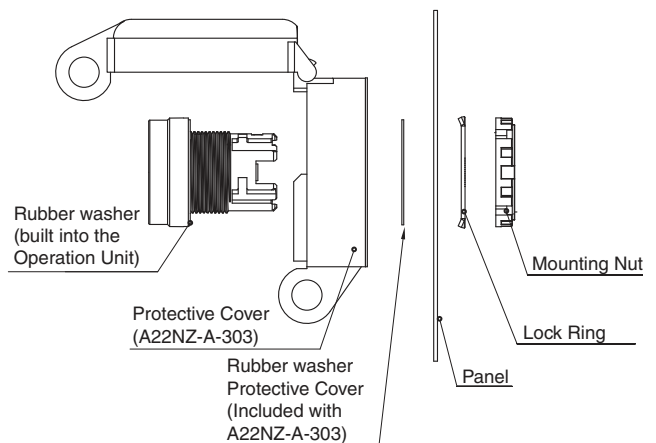


- If there is no notch in the panel, remove part A from the Legend Plate with pliers.



Attaching the Protective Cover

Attach the Protective Cover (A22NZ-A-303) to a panel that is 0.8 to 1.0 mm thick. To ensure water resistance, attach the rubber washer in the specified location.



Attaching the Sealing Cap

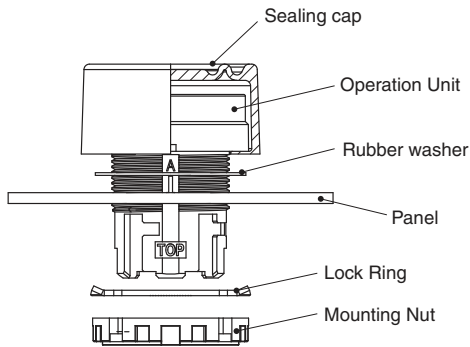
<A22N/M22N>

- Panel acceptable thickness is given below.

| Panel hole dimension | Panel thickness |
|----------------------|-----------------|
| 22.3 dia. | 0.8 to 4.2 mm |
| 25.5 dia. | 0.8 to 5.2 mm |

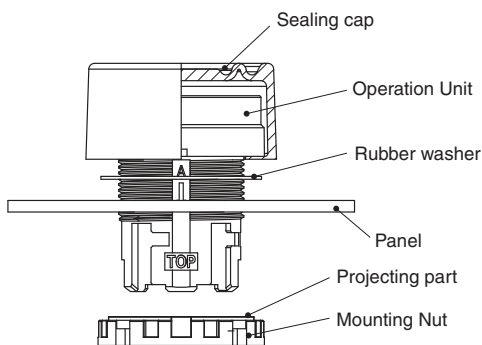
Panel Hole of 22.3-mm Diameter

Attach the Sealing cap as shown in the following figure. To ensure water resistance, attach the rubber washer in the specified location.



Panel Hole of 25.5-mm Diameter

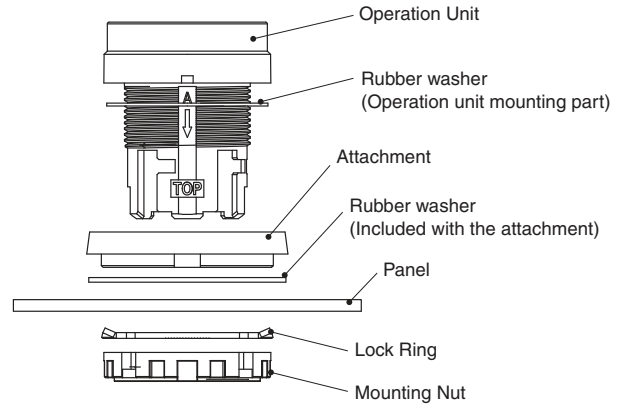
Attach the Sealing cap as shown in the following figure. Do not use the Lock Ring, and tighten the Mounting Nut while confirming that the projecting part on the Mounting Nut is aligned with mounting hole. To ensure water resistance, attach the rubber washer in the specified location.



Mounting the 30-dia. Resin Attachments

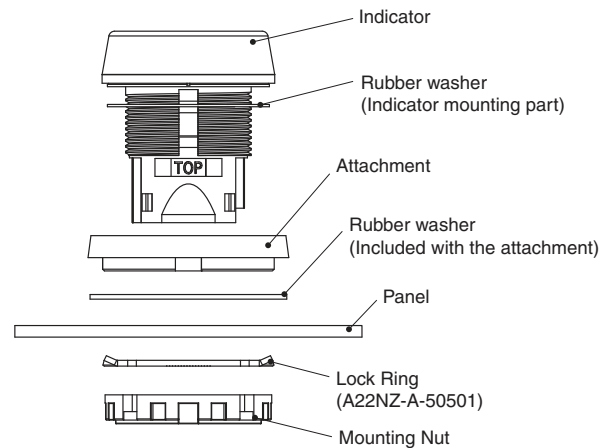
<A22N>

- Acceptable panel thickness is between 1.8 and 2.2 mm.
- Mount the attachment as shown in the following figure.
- To ensure water resistance, attach the rubber washer in the specified location.



<M22N>

- Acceptable panel thickness is between 1.8 and 2.2 mm.
- Mount the attachment as shown in the following figure.
- Purchase and mount a separate lock ring (A22NZ-A-50501).
- To ensure water resistance, attach the rubber washer in the specified location.



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