

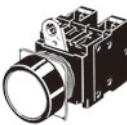
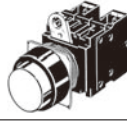
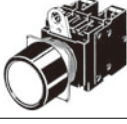
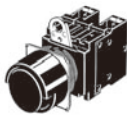
## Install in 22-dia. or 25-dia. Panel Cutout (When Using a Ring)

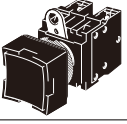
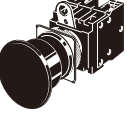
- Lever for easily mounting and removing the Switch Unit.
- Increase wiring efficiency with three-row mounting of Switch Blocks.
- Finger protection mechanism on Switch Unit provided as a standard feature.
- Use 25-dia. ring to install in 25-dia. panel cutouts.
- Mounted using either open-type (fork-type) or closed-type (round-type) crimp terminals.
- IP65 oil resistance (non-lighted models)  
IP65 (lighted models)



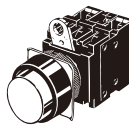
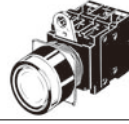
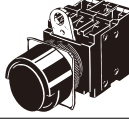
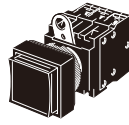
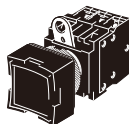
## List of Models

### Non-lighted Pushbutton Switches

| Appearance                                                                                     | Model number |
|------------------------------------------------------------------------------------------------|--------------|
| Flat         | A22-F        |
| Projected   | A22-T        |
| Full guard  | A22-G        |
| Half guard  | A22-H        |

| Appearance                                                                                                    | Model number |
|---------------------------------------------------------------------------------------------------------------|--------------|
| Projected                   | A22-C        |
| Guard                      | A22-D        |
| Mushroom Small (30 dia.)   | A22-S        |
| Mushroom Medium (40 dia.)  | A22-M        |

### Lighted Pushbutton Switches

| Appearance                                                                                       | Model number |
|--------------------------------------------------------------------------------------------------|--------------|
| Projected    | A22L-T       |
| Full guard  | A22L-G       |
| Half guard  | A22L-H       |
| Projected   | A22L-C       |
| Full guard  | A22L-D       |

## Model Number Structure

**Model Number Legend** ..... Shipped as a set which includes the Pushbutton, Lamp (lighted type only), and Switch.  
For information on combinations, refer to *Ordering Information* on pages 3 to 6.

(1) (2) (3) (4) (5) (6)  
A 22 L - T R - 12 A - 10 M

### (1) Type

| Code      | Description |
|-----------|-------------|
| No symbol | Non-lighted |
| L         | Lighted     |

### (2) Flange Shape Non-lighted

| Code | Description               |
|------|---------------------------|
| F    | Flat                      |
| T    | Projected                 |
| G    | Full-guard                |
| H    | Half-guard                |
| C    | Projected                 |
| D    | Full-guard                |
| S    | Mushroom Small (30 dia.)  |
| M    | Mushroom Medium (40 dia.) |

### Lighted

| Code | Description |
|------|-------------|
| T    | Projection  |
| G    | Full-guard  |
| H    | Half-guard  |
| C    | Projection  |
| D    | Full-guard  |

### (3) Illumination Color

| Code | Description |
|------|-------------|
| R    | Red         |
| G    | Green       |
| Y    | Yellow      |
| W    | White       |
| A    | Blue        |
| B    | Black*      |

\* For non-lighted type only

### (4) Light Source Without Voltage Reduction Unit

| Code      | Operating Voltage  |
|-----------|--------------------|
| No symbol | Non-lighted        |
| 6D        | 6 VDC              |
| 6A        | 6 VAC              |
| 12A       | 12 VAC/VDC         |
| 24A       | 24 VAC/VDC         |
| 5         | Incan-descent lamp |
| 12        | 5 VAC/VDC          |
| 24        | 12 VAC/VDC         |
|           | 24 VAC/VDC         |

### With Voltage Reduction Unit

| Code | Operating Voltage |
|------|-------------------|
| T1   | 100 VAC           |
| T2   | 200 VAC           |

Note: LED incorporates the 24-VAC/VDC type.

### (5) Contacts

| Code | Description       |
|------|-------------------|
| 10   | SPST-NO           |
| 01   | SPST-NC           |
| 11   | SPST-NO + SPST-NC |
| 20   | DPST-NO           |
| 02   | DPST-NC           |

Note: 1. The contact ratings are for standard loads. For microloads, select from the accessories on page 10.  
2. Refer to page 13 for contact ratings.

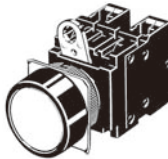
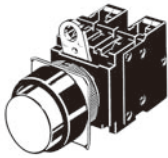
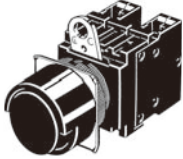
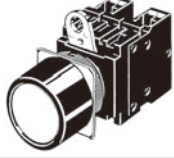
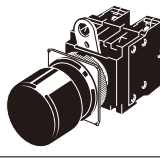
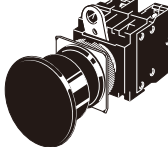
### (6) Switch Action

| Code | Description |
|------|-------------|
| M    | Momentary   |
| A    | Alternate   |

Note: 1. Momentary operation:  
Self-resetting  
2. Alternate operation:  
Self-holding  
The Socket Unit holds and the Operation Unit resets.

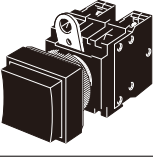
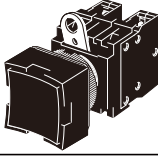
## Ordering Information

**Completely Assembled**..... Shipped as a set which includes the Pushbutton, Lamp (lighted type only), and Switch.  
**Non-lighted (Round Type)**

| Operation                                                    |                                                                                     | Momentary operation<br>(self-resetting) | Alternate operation<br>(self-holding) | Illumination color |
|--------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------------------------------|---------------------------------------|--------------------|
| Appearance                                                   | Output                                                                              | Set                                     | Set                                   |                    |
| Round/Flat type<br>A22-F                                     |    | SPST-NO                                 | A22-F□-10M                            | A22-F□-10A         |
|                                                              |                                                                                     | SPST-NC                                 | A22-F□-01M                            | A22-F□-01A         |
|                                                              |                                                                                     | SPST-NO + SPST-NC                       | A22-F□-11M                            | A22-F□-11A         |
|                                                              |                                                                                     | DPST-NO                                 | A22-F□-20M                            | A22-F□-20A         |
|                                                              |                                                                                     | DPST-NC                                 | A22-F□-02M                            | A22-F□-02A         |
| Round/Projection type<br>A22-T                               |    | SPST-NO                                 | A22-T□-10M                            | A22-T□-10A         |
|                                                              |                                                                                     | SPST-NC                                 | A22-T□-01M                            | A22-T□-01A         |
|                                                              |                                                                                     | SPST-NO + SPST-NC                       | A22-T□-11M                            | A22-T□-11A         |
|                                                              |                                                                                     | SPST-NO + SPST-NO                       | A22-T□-20M                            | A22-T□-20A         |
|                                                              |                                                                                     | SPST-NC + SPST-NC                       | A22-T□-02M                            | A22-T□-02A         |
| Round/Full-guard type<br>A22-G                               |    | SPST-NO                                 | A22-G□-10M                            | A22-G□-10A         |
|                                                              |                                                                                     | SPST-NC                                 | A22-G□-01M                            | A22-G□-01A         |
|                                                              |                                                                                     | SPST-NO + SPST-NC                       | A22-G□-11M                            | A22-G□-11A         |
|                                                              |                                                                                     | SPST-NO + SPST-NO                       | A22-G□-20M                            | A22-G□-20A         |
|                                                              |                                                                                     | SPST-NC + SPST-NC                       | A22-G□-02M                            | A22-G□-02A         |
| Round/Half-guard type<br>A22-H                               |   | SPST-NO                                 | A22-H□-10M                            | A22-H□-10A         |
|                                                              |                                                                                     | SPST-NC                                 | A22-H□-01M                            | A22-H□-01A         |
|                                                              |                                                                                     | SPST-NO + SPST-NC                       | A22-H□-11M                            | A22-H□-11A         |
|                                                              |                                                                                     | SPST-NO + SPST-NO                       | A22-H□-20M                            | A22-H□-20A         |
|                                                              |                                                                                     | SPST-NC + SPST-NC                       | A22-H□-02M                            | A22-H□-02A         |
| Round/Small-size<br>Mushroom type<br>(30-dia. head)<br>A22-S |  | SPST-NO                                 | A22-S□-10M                            | ---                |
|                                                              |                                                                                     | SPST-NC                                 | A22-S□-01M                            |                    |
|                                                              |                                                                                     | SPST-NO + SPST-NC                       | A22-S□-11M                            |                    |
|                                                              |                                                                                     | SPST-NO + SPST-NO                       | A22-S□-20M                            |                    |
|                                                              |                                                                                     | SPST-NC + SPST-NC                       | A22-S□-02M                            |                    |
| Round/Medium-size<br>Mushroom type<br>(40-dia head)<br>A22-M |  | SPST-NO                                 | A22-M□-10M                            |                    |
|                                                              |                                                                                     | SPST-NC                                 | A22-M□-01M                            |                    |
|                                                              |                                                                                     | SPST-NO + SPST-NC                       | A22-M□-11M                            |                    |
|                                                              |                                                                                     | SPST-NO + SPST-NO                       | A22-M□-20M                            |                    |
|                                                              |                                                                                     | SPST-NC + SPST-NC                       | A22-M□-02M                            |                    |

Note: The contact ratings are for standard loads.

### Non-lighted (Square Type)

| Appearance                                                                                                             | Operation<br>Output | Momentary operation<br>(self-resetting) | Alternate operation<br>(self-holding) | Illumination color                                                       |
|------------------------------------------------------------------------------------------------------------------------|---------------------|-----------------------------------------|---------------------------------------|--------------------------------------------------------------------------|
|                                                                                                                        |                     | Set                                     | Set                                   |                                                                          |
| Square/Projection type<br>A22-C<br> | SPST-NO             | A22-C□-10M                              | A22-C□-10A                            | R (red)<br>Y (yellow)<br>G (green)<br>W (white)<br>A (blue)<br>B (black) |
|                                                                                                                        | SPST-NC             | A22-C□-01M                              | A22-C□-01A                            |                                                                          |
|                                                                                                                        | SPST-NO + SPST-NC   | A22-C□-11M                              | A22-C□-11A                            |                                                                          |
|                                                                                                                        | SPST-NO + SPST-NO   | A22-C□-20M                              | A22-C□-20A                            |                                                                          |
|                                                                                                                        | SPST-NC + SPST-NC   | A22-C□-02M                              | A22-C□-02A                            |                                                                          |
| Square/Guard type<br>A22-D<br>      | SPST-NO             | A22-D□-10M                              | A22-D□-10A                            |                                                                          |
|                                                                                                                        | SPST-NC             | A22-D□-01M                              | A22-D□-01A                            |                                                                          |
|                                                                                                                        | SPST-NO + SPST-NC   | A22-D□-11M                              | A22-D□-11A                            |                                                                          |
|                                                                                                                        | SPST-NO + SPST-NO   | A22-D□-20M                              | A22-D□-20A                            |                                                                          |
|                                                                                                                        | SPST-NC + SPST-NC   | A22-D□-02M                              | A22-D□-02A                            |                                                                          |

Note: The contact ratings are for standard loads.

## Specifications

### Approved Standard Ratings

UL, cUL (File No. E41515)

6 A at 220 VAC, 10 A at 110 VAC

EN60947-5-1 (Low Voltage Directive)

3 A at 220 VAC

CCC (GB14048.5)

3 A at 240 VAC, 1.5 A at 24 VDC

### Ratings

#### Contacts (Standard Load)

| Contacts<br>(Standard<br>Load) | Rated<br>voltage | Rated current (A)   |                     |                     |                     |
|--------------------------------|------------------|---------------------|---------------------|---------------------|---------------------|
|                                |                  | Induc-<br>tive load | Resis-<br>tive load | Induc-<br>tive load | Resis-<br>tive load |
| 10A                            | 24 VAC           | 10                  | 10                  | ---                 | ---                 |
|                                | 110 VAC          | 5                   | 10                  |                     |                     |
|                                | 220 VAC          | 3                   | 6                   |                     |                     |
|                                | 380 VAC          | 2                   | 3                   |                     |                     |
|                                | 440 VAC          | 1                   | 2                   | ---                 | ---                 |
|                                | 24 VDC           | ---                 | ---                 | 1.5                 | 10                  |
|                                | 110 VDC          |                     |                     | 0.5                 | 2                   |
|                                | 220 VDC          |                     |                     | 0.2                 | 0.6                 |
|                                | 380 VDC          |                     |                     | 0.1                 | 0.2                 |

Note: 1. The above ratings were obtained by conducting tests under the following conditions.

(1) Ambient temperature: 20±2°C

(2) Ambient humidity: 65±5% RH

(3) Operating frequency: 20 operations/minute

2. Minimum applicable load: 10 mA at 5 VDC

#### Contacts (Microload)

|                         |                                  |
|-------------------------|----------------------------------|
| Rated applicable load   | 50 mA at 24 VDC (Resistive load) |
| Minimum applicable load | 1 mA at 5 VDC                    |

#### LED Indicators

| Rated voltage | Rated current | Operating voltage |
|---------------|---------------|-------------------|
| 6 VDC         | 60 mA (20 mA) | 6 VDC±5%          |
| 6 VAC         | 60 mA (20 mA) | 6 VAC±5%          |
| 12 VAC/VDC    | 30 mA (10 mA) | 12 VAC/VDC±5%     |
| 24 VAC/VDC    | 30 mA (10 mA) | 24 VAC/VDC±5%     |

Note: Values in parentheses are for blue Pushbuttons.

#### Super-bright LED Indicator

| Rated voltage | Rated current | Operating voltage |
|---------------|---------------|-------------------|
| 24 VAC/VDC    | 15 mA         | 24 VAC/VDC±5%     |

#### Incandescent Lamp

| Rated voltage | Rated current | Operating voltage |
|---------------|---------------|-------------------|
| 6 VAC/VDC     | 200 mA        | 5 V               |
| 14 VAC/VDC    | 80 mA         | 12 V              |
| 28 VAC/VDC    | 40 mA         | 24 V              |

#### Voltage-reduction Lighting

| Rated voltage | Operating voltage      | Applicable lamp<br>(BA9S/Base: 13) |
|---------------|------------------------|------------------------------------|
| 110 VAC       | 100 VAC (95 to 115 V)  | LED Lamp (A22-24A□)                |
| 220 VAC       | 200 VAC (190 to 230 V) |                                    |

## Specifications

### Characteristics

| Type                              |                                    | Pushbutton Switches                                                             |                                                             | Emergency Stop Switches    |                         | Knob-type Selector Switches                                                           |                           | Key-type Selector Switch   | Indicator                 |
|-----------------------------------|------------------------------------|---------------------------------------------------------------------------------|-------------------------------------------------------------|----------------------------|-------------------------|---------------------------------------------------------------------------------------|---------------------------|----------------------------|---------------------------|
|                                   |                                    | Non-lighted models:<br>A22-F A22-T<br>A22-G A22-H<br>A22-S A22-M<br>A22-C A22-D | Lighted models:<br>A22L-T A22L-G<br>A22L-H A22L-C<br>A22L-D | Non-lighted model:<br>A22E | Lighted model:<br>A22EL | Non-lighted model:<br>A22S                                                            | Lighted model:<br>A22W    | Non-lighted model:<br>A22K | M22                       |
| Item                              | Mechanical                         | Momentary operation:<br>60 operations/minute max.                               |                                                             | 30 operations/minute max.  |                         | Manual reset: 30 operations/minute max.<br>Automatic reset: 30 operations/minute max. |                           | ---                        |                           |
|                                   | Electrical                         | 30 operations/minute max.                                                       |                                                             |                            |                         |                                                                                       |                           |                            | ---                       |
| Insulation resistance             |                                    | 100 MΩ min. (at 500 VDC)                                                        |                                                             |                            |                         |                                                                                       |                           |                            |                           |
| Dielectric strength               | Between terminals of same polarity | 2,500VAC, 50/60Hz for 1min                                                      |                                                             |                            |                         |                                                                                       |                           |                            |                           |
|                                   | Between each terminal and ground   | 2,500VAC, 50/60Hz for 1min                                                      |                                                             |                            |                         |                                                                                       |                           |                            |                           |
| Vibration resistance              | Malfunction *1                     | Malfunction *2: 10 to 55 Hz, 1.5-mm double amplitude                            |                                                             |                            |                         |                                                                                       |                           |                            |                           |
| Shock resistance                  | Destruction                        | 1,000 m/s <sup>2</sup>                                                          | 1,000 m/s <sup>2</sup>                                      | 1,000 m/s <sup>2</sup>     |                         | 1,000 m/s <sup>2</sup>                                                                | 1,000 m/s <sup>2</sup>    | 1,000 m/s <sup>2</sup>     | 1,000 m/s <sup>2</sup>    |
|                                   | Malfunction *1                     | 1,000 m/s <sup>2</sup> max.                                                     | 600 m/s <sup>2</sup> max.                                   | 250 m/s <sup>2</sup> max.  |                         | 1,000 m/s <sup>2</sup> max.                                                           | 600 m/s <sup>2</sup> max. | 1000 m/s <sup>2</sup> max. | 600 m/s <sup>2</sup> max. |
| Durability                        | Mechanical                         | Momentary operation:<br>5,000,000 operations min.                               |                                                             | 300,000 operations min.    |                         | 500,000 operations min.                                                               | 100,000 operations min.   | 500,000 operations min.    | ---                       |
|                                   | Electrical                         | 500,000 operations min.                                                         |                                                             | 300,000 operations min.    |                         | 500,000 operations min.                                                               | 100,000 operations min.   | 500,000 operations min.    | ---                       |
| Ambient operating temperature * 2 |                                    | -20°C to 70°C                                                                   | -20°C to 55°C                                               | -20°C to 70°C              | -20°C to 55°C           | -20°C to 70°C                                                                         | -20°C to 55°C             | -20°C to 70°C              | -20°C to 55°C             |
| Ambient operating humidity        |                                    | 35% to 85% RH                                                                   |                                                             |                            |                         |                                                                                       |                           |                            |                           |
| Ambient storage temperature *2    |                                    | -40°C to 70°C                                                                   |                                                             |                            |                         |                                                                                       |                           |                            |                           |
| Degree of protection *3           |                                    | IP65 (oil-resistant)                                                            | IP65                                                        | IP65 (oil-resistant)       | IP65                    | IP65 (oil-resistant)                                                                  | IP65                      | IP65 (oil-resistant)       | IP65                      |
| Electric shock protection class   |                                    | Class II                                                                        |                                                             |                            |                         |                                                                                       |                           |                            |                           |
| PTI (tracking characteristic)     |                                    | 175                                                                             |                                                             |                            |                         |                                                                                       |                           |                            |                           |
| Degree of contamination           |                                    | 3 (IEC947-5-1)                                                                  |                                                             |                            |                         |                                                                                       |                           |                            |                           |

\*1. Malfunction within 1 ms.

\*2. With no icing or condensation.

\*3. Degree of protection from the front of the panel.

### Operating Characteristics (for SPST-NO/SPST-NC)

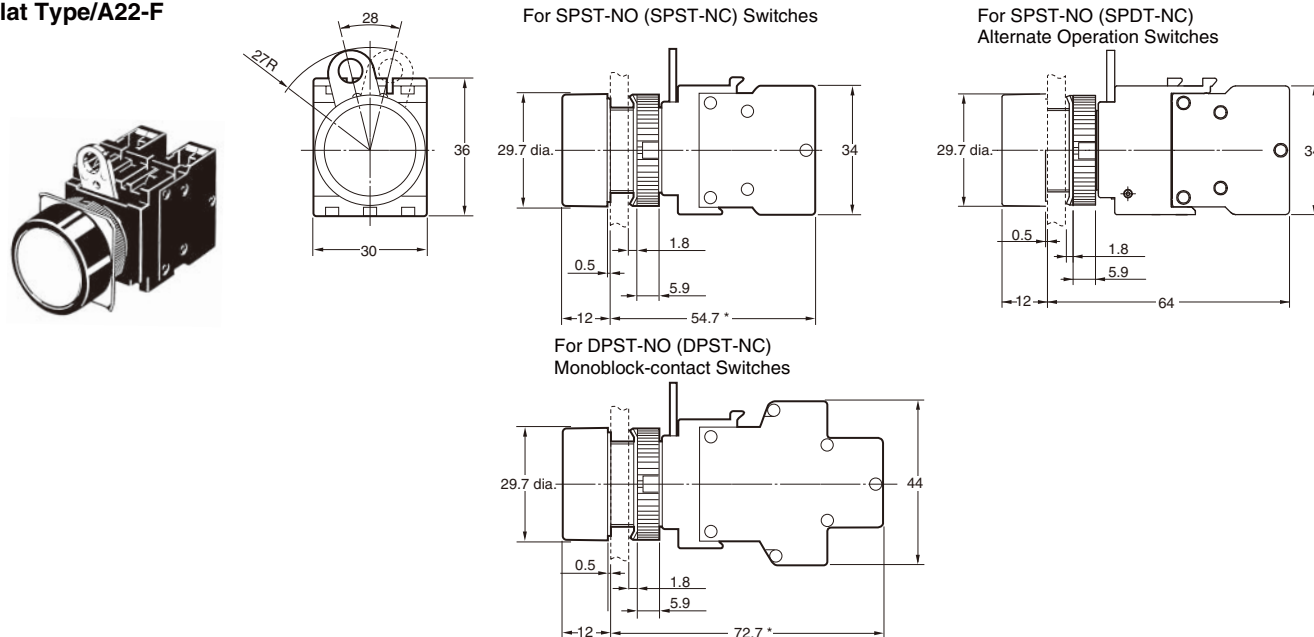
| Item                          | Type | Pushbutton Switches                                                                                  | Emergency Stop Switches                           |            | Knob-type Selector                                             |                                                            | Key-type Selector Switch                                       |                                                            |
|-------------------------------|------|------------------------------------------------------------------------------------------------------|---------------------------------------------------|------------|----------------------------------------------------------------|------------------------------------------------------------|----------------------------------------------------------------|------------------------------------------------------------|
|                               |      | Lighted Nonlighted Pushbutton Switches                                                               | Push-lock turn reset system/ Push-lock, key reset | Push-pull  | Manual reset                                                   | Automatic reset                                            | Manual reset                                                   | Automatic reset                                            |
|                               |      | A22-F A22-T<br>A22-G A22-H<br>A22-C A22-D<br>A22-S A22-M<br>A22L-T A22L-G<br>A22L-H A22L-C<br>A22L-D | A22E<br>A22EL<br><br>A22E-□K                      | A22E-□P    | A22S<br>A22W                                                   |                                                            | A22K                                                           |                                                            |
| Total travel force (TTF) max. |      | 29.4 N                                                                                               | 44.1 N                                            | 58.8 N     | 0.34 N·m*                                                      | 0.25 N·m for two notches *<br>0.34 N·m for three notches * | 0.34 N·m*                                                      | 0.25 N·m for two notches *<br>0.34 N·m for three notches * |
| Total travel (TT)             |      | 5.5 mm max.                                                                                          | 10±1 mm                                           | 5.5±1 mm   | Approx. 90° for two notches<br>(Approx. 45° for three notches) |                                                            | Approx. 90° for two notches<br>(Approx. 45° for three notches) |                                                            |
| Resetting force (RF) min.     |      | ---                                                                                                  | 0.25 N·m max.*                                    | 58.8N max. | 0.34 N·m max.*                                                 | ---                                                        | 0.34 N·m max.*                                                 | ---                                                        |

\* Rotation torque for Emergency Stop Pushbutton, Knob-type Selector, and Key-type Selector Switches.

## Dimensions

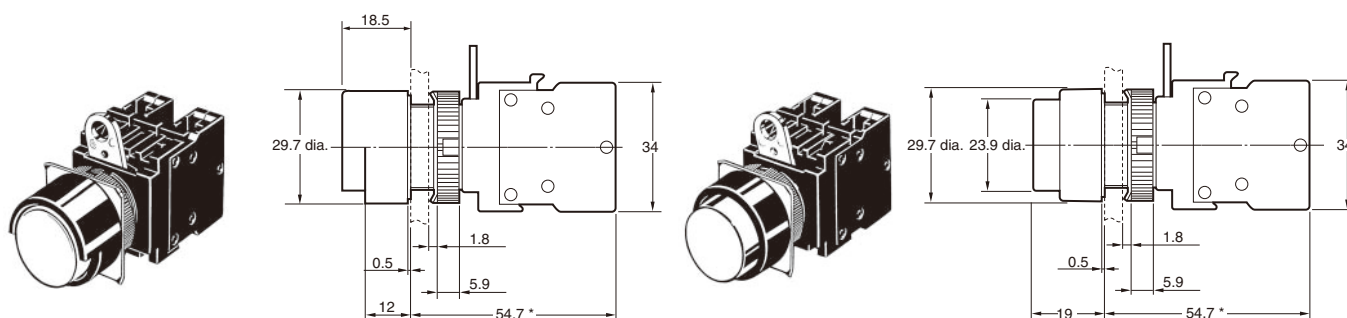
**Lighted/Non-lighted Pushbutton Switches** (The following illustrations are for momentary operation.)

## Flat Type/A22-F



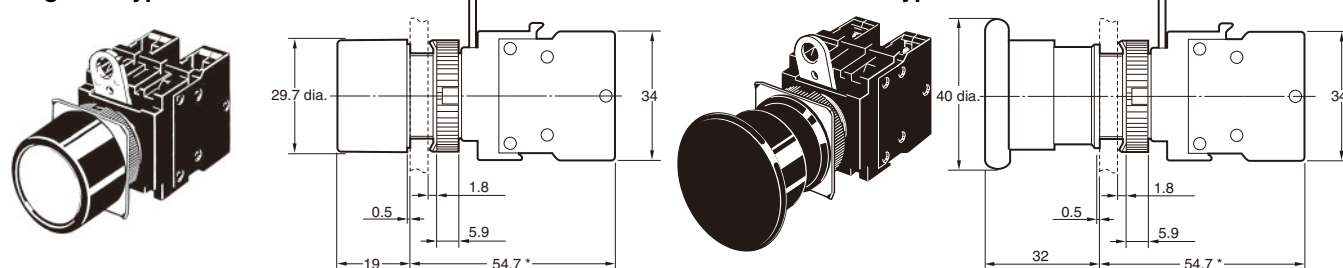
## Half-guard Type/A22-H/A22L-H

## Projection Type/A22-T/A22L-T



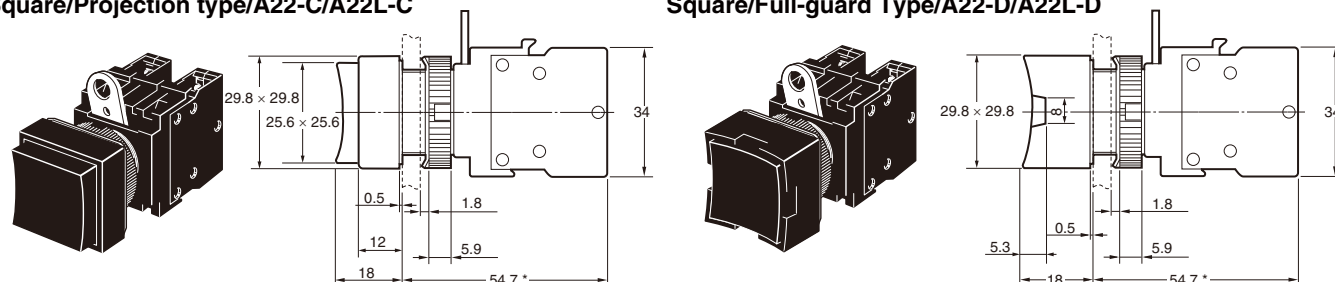
## Full-guard Type/A22-G/A22L-G

## 40-dia. Mushroom Type/A22-M



## Square/Projection type/A22-C/A22L-C

## Square/Full-guard Type/A22-D/A22L-D



Note: Lighted models have the same dimensions as shown above, whether they are with or without Voltage Reduction Units.

\* Alternate operation models are 9.3 mm longer.

# Dimensions

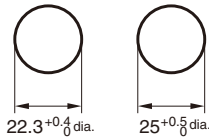
## Terminal Arrangement (Bottom View)

| Non-lighted<br>(SPST-NO + SPST-NC) | Lighted<br>(SPST-NO + SPST-NC) | Non-lighted<br>(DPST-NO + DPST-NC) |
|------------------------------------|--------------------------------|------------------------------------|
|                                    |                                |                                    |

## Terminal Connection

| Item                                                       | Terminal connection |
|------------------------------------------------------------|---------------------|
| Non-lighted (SPST-NO + SPST-NC)                            | <p>BOTTOM VIEW</p>  |
| Non-lighted (DPST-NO + DPST-NC)                            | <p>BOTTOM VIEW</p>  |
| Lighted without Voltage Reduction Unit (SPST-NO + SPST-NC) | <p>BOTTOM VIEW</p>  |
| Lighted with Voltage Reduction Unit (SPST-NO + SPST-NC)    | <p>BOTTOM VIEW</p>  |

## Panel Cutouts



### Lock ring is provided as a standard item.

- When applying coating such as paint to the panel, the dimensions should be those after the application of coating.
- Recommended panel thickness: 1 to 5 mm.
- Use an A22Z-R25 Ring when mounting to a panel with 25-mm holes.