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[www.IDEC.com/switches](http://www.IDEC.com/switches)



# Switches & Pilot Devices

## Selection Guide

| Appearance                                                                          | Product Series | Mounting Hole                | Contact Rating | Contact Mounting      | Function                                                                               | Page |
|-------------------------------------------------------------------------------------|----------------|------------------------------|----------------|-----------------------|----------------------------------------------------------------------------------------|------|
|    | AP             | ø8mm, ø10mm,<br>ø12mm, ø16mm | N/A            | N/A                   | Pilot light                                                                            | 486  |
|    | A8             | ø8mm                         | 1A             | Unibody               | Pushbutton, Pilot Light                                                                | 490  |
|    | X6             | ø16mm                        | 5A             | Unibody               | E-Stop                                                                                 | 495  |
|    | XA             |                              | 5A             | Removable/<br>Unibody | E-Stop                                                                                 | 499  |
|    | A6             |                              | 1A             | Unibody               | Pushbutton, Pilot Light,<br>Selector Switch, Key<br>Switch, Stop Switch                | 541  |
|    | LB             |                              | 3A             | Removable             | Pushbutton, Pilot Light,<br>Selector Switch, Key<br>Switch, Lever Switch,<br>Buzzer    | 506  |
|   | L6             |                              | 5A             | Removable             | Pushbutton, Pilot Light,<br>Selector Switch, Key<br>Switch, Stop Switch,<br>Buzzer     | 524  |
|  | LBW            |                              | 5A             | Removable             | Pushbutton, Illuminated<br>Pushbutton, Pilot Light,<br>Selector Switch, Key<br>Switch. | 578  |
|  | UP             | ø22mm                        | N/A            | LED Removable         | LED Pilot Light                                                                        | 599  |
|  | XW             |                              | 5A             | Removable             | E-Stop                                                                                 | 601  |
|  | AP22M          |                              | N/A            | Unibody               | Pilot Light                                                                            | 607  |
|  | CW             |                              | 10A            | Removable             | Pushbutton, Pilot light,<br>selector switch, key<br>selector                           | 610  |
|  | HW             |                              | 10A            | Removable             | Pushbutton, Pilot<br>Light, Selector Switch,<br>Key Switch, E-Stop,<br>MonoLever       | 632  |



## Selection Guide con't

| Appearance                                                                          | Product Series | Mounting Hole      | Contact Rating | Contact Mounting | Function                                                          | Page                                                             |
|-------------------------------------------------------------------------------------|----------------|--------------------|----------------|------------------|-------------------------------------------------------------------|------------------------------------------------------------------|
|    | TW             | ø22mm              | 10A            | Removable        | Pushbutton, Pilot Light, Selector Switch, Key Switch, Stop Switch | 694                                                              |
|    | FB             |                    | N/A            | N/A              | Enclosures                                                        | 735                                                              |
|    | XN             | ø30mm              | 5A             | Removable        | E-Stop                                                            | 737                                                              |
|    | TWND           |                    | 10A            | Removable        | Pushbutton, Pilot Light, Selector Switch, Key Switch, Stop Switch | 743                                                              |
|   | TWTD           |                    | 10A            | Removable        | Pushbutton, Pilot Light, Selector Switch, Key Switch, Stop Switch | 773                                                              |
|  | CS             |                    | 10A            | Unibody          | Cam Switch                                                        | 826                                                              |
|  | ARN            |                    | 10A            | Removable        | MonoLever                                                         | 833                                                              |
|  | LW Flush       | ø25mm, □ 25 x 25mm | 5A             | Removable        | Pushbutton, Pilot Light, Selector Switch, Key Switch              | <a href="http://www.IDEC.com/switches">www.IDEC.com/switches</a> |

Switches &amp; Pilot Devices

Signaling Lights

Relays &amp; Sockets

Timers

Contactors

Terminal Blocks

Circuit Breakers

AP Series — Miniature Pilot Lights

Key features:

- Long service life, low maintenance
- Space saving miniature style
- Dome or flat lens models
- Built-in current-limiting resistor
- Five illumination colors: red, green, amber, yellow, and white
- Transformer (120V AC and 240V AC) and DC-DC Converter (110V DC) options on 12mm and 16mm units



UL Recognized  
File No. E55996



CSA Certified  
File No. LR21451



\*AP8/AP1 series only.

Specifications

|                        |                                                                                                                                                                                                                                |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Lamp                   | Built-in LED with current limiting resistor                                                                                                                                                                                    |
| Operational Voltage    | 5, 6, 12, 24VDC (full voltage),<br>110/120, 220/240VAC, (with transformer)<br>110VDC (with converter)                                                                                                                          |
| Current Ratings        | AP8: 5V DC/9mA, 12V DC/9mA, 24V DC/9mA, 12V AC/15mA, 24V AC/15mA<br>AP1: 5V DC/9mA, 12V DC/9mA, 24V DC/9mA, 12V AC/15mA, 24V AC/15mA<br>AP2: 6V DC/33mA, 12V DC/22mA, 24V DC/11mA<br>AP6: 6V DC/33mA, 12V DC/22mA, 24V DC/11mA |
| Operating Temp.        | -20°C to +55°C                                                                                                                                                                                                                 |
| Operating Humidity     | 45 to 85% RH                                                                                                                                                                                                                   |
| Insul. Resistance      | 100MΩ min. (500V DC megger)<br>Between live and dead parts                                                                                                                                                                     |
| Rev. Withstand Voltage | AP2/AP6: 100V<br>AP1/AP8: 200V                                                                                                                                                                                                 |
| Solder Terminal        | Soldering 260°C maximum (5 sec.)                                                                                                                                                                                               |
| Degree of Protection   | AP8: IP40 (dustproof)<br>Other Series: IP65 (oiltight)                                                                                                                                                                         |

Optional Adaptors/Converters

| Model                 | Transformer                                                                          | DC-DC Converter                                                                      |
|-----------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| Applicable Units      | AP2 & AP6 (with 6V LED only)                                                         |                                                                                      |
| Operating Voltage     | 110/120VAC 50/60 Hz<br>220/240VAC 50/60 Hz                                           | 110V DC (90 to 140V DC)                                                              |
| Power Consumption     | 1.6 VA maximum                                                                       | 1W maximum                                                                           |
| Insulation Voltage    | 250 V AC                                                                             | 140V DC                                                                              |
| Insulation Resistance | 10MΩ min. (500V DC megger) Between live and dead parts                               |                                                                                      |
| Dielectric Strength   | 2,000V AC, 1 minute Between live/dead parts<br>2,000V AC, 1 minute Between terminals | 2,000V AC, 1 minute Between live/dead parts<br>1,500V AC, 1 minute Between terminals |



Available as one piece only (replacement LEDs are not available).

## Miniature Pilot Lights

## AP Miniature Pilot Lights - ø8 &amp; ø10mm

| Style              | Lens Style | Operating Voltage                                      | Part Numbers                        |
|--------------------|------------|--------------------------------------------------------|-------------------------------------|
| AP8 Series - ø8mm  | Dome       | 5V DC +/- 5%<br>12V AC/DC +/- 10%<br>24V AC/DC +/- 10% | AP8M255-②<br>AP8M211-②<br>AP8M222-② |
|                    | Flat       | 5V DC +/- 5%<br>12V AC/DC +/- 10%<br>24V AC/DC +/- 10% | AP8M155-②<br>AP8M111-②<br>AP8M122-② |
| AP1 Series - ø10mm | Dome       | 5V DC +/- 5%<br>12V AC/DC +/- 10%<br>24V AC/DC +/- 10% | AP1M255-②<br>AP1M211-②<br>AP1M222-② |
|                    | Flat       | 5V DC +/- 5%<br>12V AC/DC +/- 10%<br>24V AC/DC +/- 10% | AP1M155-②<br>AP1M111-②<br>AP1M122-② |

1. In place of ②, specify the color code.  
2. For dimensions, see page 489.  
3. For accessories, see page 488.

## ② Color Codes

| Color      | Code |
|------------|------|
| Amber      | A    |
| Green      | G    |
| Red        | R    |
| Blue       | S*   |
| Warm White | W    |
| Cool White | PW   |
| Yellow     | Y    |

\* Available in only the AP8 and AP1 series.

## AP Miniature Pilot Lights - ø12 &amp; ø16mm

| Style              | Lens Style | Operating Voltage                                | Part Numbers                        |
|--------------------|------------|--------------------------------------------------|-------------------------------------|
| AP2 Series - ø12mm | Dome       | 6V DC +/- 5%<br>12V DC +/- 10%<br>24V DC +/- 10% | AP2M266-②<br>AP2M211-②<br>AP2M222-② |
|                    | Flat       | 6V DC +/- 5%<br>12V DC +/- 10%<br>24V DC +/- 10% | AP2M166-②<br>AP2M111-②<br>AP2M122-② |
| AP6 Series - ø16mm | Dome       | 6V DC +/- 5%<br>12V DC +/- 10%<br>24V DC +/- 10% | AP6M266-②<br>AP6M211-②<br>AP6M222-② |
|                    | Flat       | 6V DC +/- 5%<br>12V DC +/- 10%<br>24V DC +/- 10% | AP6M166-②<br>AP6M111-②<br>AP6M122-② |

1. In place of ②, specify the color code.  
2. For dimensions, see page 489.  
3. For accessories, see page 488.

## ② Color Codes

| Color      | Code |
|------------|------|
| Amber      | A    |
| Green      | G    |
| Red        | R    |
| Warm White | W    |
| Yellow     | Y    |

## Optional Transformers and DC-DC Converters (for AP2 and AP6 only)

| Style                                                                               | Voltage         | Part Numbers               |                        |
|-------------------------------------------------------------------------------------|-----------------|----------------------------|------------------------|
|                                                                                     |                 | Used with AP2 Series       | Used with AP6 Series   |
|  | Transformer     | 110/120V AC<br>220/240V AC | AP2-0126D<br>AP2-0246D |
|                                                                                     | DC-DC Converter | 110V DC<br>(90–140V DC)    | AP2-016DD              |

1. Optional Transformers and DC-DC converters snap onto the back of AP2 or AP6 pilot lights.  
2. Transformers and DC-DC Converters step down to 6V.  
3. For dimensions, see page 489.

Switches & Pilot Devices

Signaling Lights

Relays & Sockets

Timers

Contactors

Terminal Blocks

Circuit Breakers

Accessories — AP Series

| Item                     | Appearance                                                                        | Description                                                                                                              | Used With                                           | Part Number |
|--------------------------|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|-------------|
| Locking Ring Wrench      |  | Made of metal. Used for tightening plastic locking ring during installation. Tightening torque should not exceed 3kgf-cm | Ø 16mm units                                        | MT-001      |
|                          |                                                                                   |                                                                                                                          | Ø 12mm units                                        | MT-002      |
|                          |                                                                                   |                                                                                                                          | Ø 10mm units                                        | MT-003      |
|                          |                                                                                   |                                                                                                                          | Ø 8mm units                                         | MT-004      |
| Mounting Hole Plug       |  | Made of rubber. Fills unused mounting holes to provide IP65 protection                                                   | Unused 8mm panel cutouts                            | AL-B8       |
|                          |                                                                                   |                                                                                                                          | Unused 10mm panel cutouts                           | AL-B1       |
|                          |                                                                                   |                                                                                                                          | Unused 12mm panel cutouts                           | AL-B2       |
|                          |                                                                                   |                                                                                                                          | Unused 16mm panel cutouts                           | AL-B6       |
| Transformer Removal Tool |  | A Series Blank/Lens Removal Tool                                                                                         | AP2 and AP6 snap on transformer and DC-DC converter | MT-100      |
| Replacement Lenses       |  | Lenses (included with all units).                                                                                        | AP1M Flat                                           | AP1M-L1-②   |
|                          |                                                                                   |                                                                                                                          | AP1M Dome                                           | AP1M-L2-②   |
|                          |                                                                                   |                                                                                                                          | AP2M Flat                                           | AP2M-L1-②   |
|                          |                                                                                   |                                                                                                                          | AP2M Dome                                           | AP2M-L2-②   |
|                          |                                                                                   |                                                                                                                          | AP6M Flat                                           | AP6M-L1-②   |
|                          |                                                                                   |                                                                                                                          | AP6M Dome                                           | AP6M-L2-②   |

- 
1. In place of ②, specify the Lens Color Code.

2. Internal LED is fixed and cannot be removed or replaced.

② Lens Color Codes

| Color  | Code |
|--------|------|
| Amber  | A    |
| Green  | G    |
| Red    | R    |
| Blue   | S*   |
| White  | W    |
| Yellow | Y    |



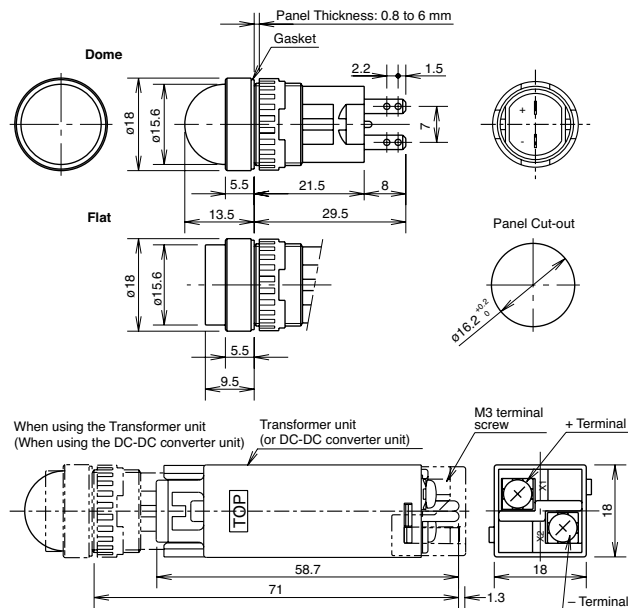
\*Blue available in AP8/AP1 series only.

## Dimensions — AP Series

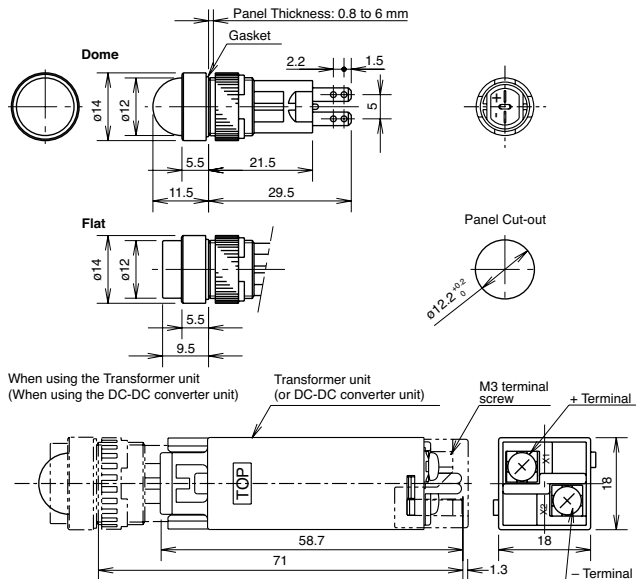
## Pilot Lights (AP Series)

| Style             | AP8                                        |      | AP1                                         |      | AP2                                      |      |                         | AP6                                      |      |                         |
|-------------------|--------------------------------------------|------|---------------------------------------------|------|------------------------------------------|------|-------------------------|------------------------------------------|------|-------------------------|
|                   | Flat                                       | Dome | Flat                                        | Dome | Flat                                     | Dome | w/ Adaptor or Converter | Flat                                     | Dome | w/ Adaptor or Converter |
| Panel Cut-out     | Ø 0.319" (+0.0118, -0)<br>8.1mm (+0.3, -0) |      | Ø 0.398" (+0.0118, -0)<br>10.1mm (+0.3, -0) |      | Ø 0.480" (+0.0118, -0) 12.2mm (+0.3, -0) |      |                         | Ø 0.638" (+0.0118, -0) 16.2mm (+0.3, -0) |      |                         |
| Outside Dimension | Ø 0.386" (9.8mm)                           |      | Ø 0.472" (12mm)                             |      | Ø 0.551" (14mm)                          |      | □ 0.709" (18mm)         | Ø 0.709" (18mm)                          |      | □ 0.709" (18mm)         |

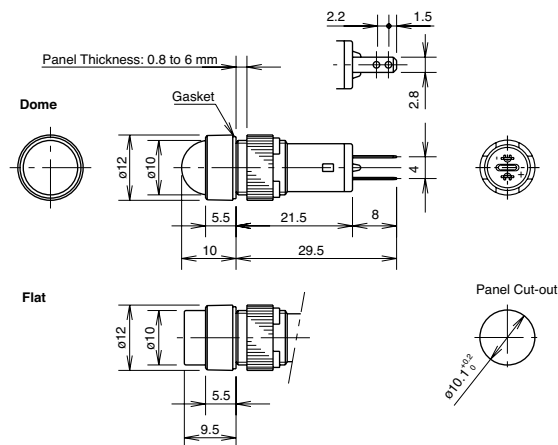
AP6



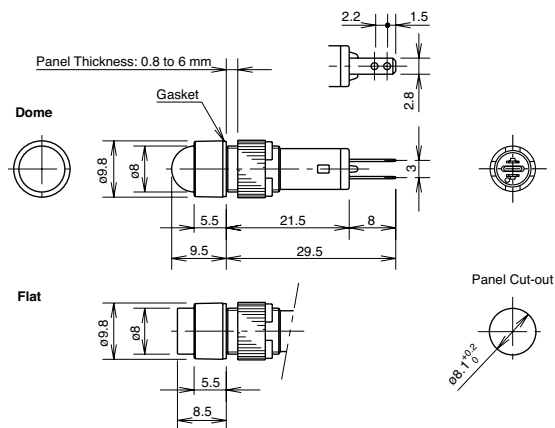
AP2



AP1



AP8



A8 Series — Miniature Switches and Pilot Devices: 8mm

Key features:

- 21/64" (8mm) round mounting hole
- Compact Design Saves Space
- Bright and Vivid Illumination
- Choice of Shapes and Functions
- Gold Clad Silver Contacts for reliable low level switching
- Snap action contacts
- IP40 (Dustproof) Construction



UL Listed  
File No. E55996



CSA Certified  
File No. LR21451

Specifications

|                       |                                                                                                                                                                                                                                                                          |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| LED Lamp Life         | 50,000 hours approximately (reduced to half of original intensity)                                                                                                                                                                                                       |
| Contact Configuration | SPDT                                                                                                                                                                                                                                                                     |
| Maximum Voltage       | 250V AC/DC                                                                                                                                                                                                                                                               |
| Thermal Current       | 3A                                                                                                                                                                                                                                                                       |
| Contact Material      | Gold-clad Silver                                                                                                                                                                                                                                                         |
| Terminal Style        | Solder Tab Terminal                                                                                                                                                                                                                                                      |
| Operating Temperature | −25° to +55°C (no freezing)                                                                                                                                                                                                                                              |
| Operating Humidity    | 45 to 85% RH                                                                                                                                                                                                                                                             |
| Contact Resistance    | 50mΩ maximum (initial value)                                                                                                                                                                                                                                             |
| Insulation Resistance | 100MΩ minimum<br>(500V DC megger)                                                                                                                                                                                                                                        |
| Vibration Resistance  | 5 to 55Hz, 0.75mm amplitude                                                                                                                                                                                                                                              |
| Shock Resistance      | Damage limits: 500m/sec <sup>2</sup> (approx. 50G)<br>Operating extremes: 200m/sec <sup>2</sup> (approx. 20G)                                                                                                                                                            |
| Electrical Life       | 100,000 operations minimum                                                                                                                                                                                                                                               |
| Mechanical Life       | Maintained: 100,000 (1200 operations/hour)<br>Momentary: 200,000 minimum                                                                                                                                                                                                 |
| Degree of Protection  | IP40 Enclosed/Dustproof                                                                                                                                                                                                                                                  |
| Soldering Temperature | 20W/5 seconds or 260°C/3 seconds                                                                                                                                                                                                                                         |
| Dielectric Strength   | Switch Unit: 2,000V AC, 1 min. between live/dead part and terminals of different poles; 1,000V AC, 1 minute between terminals of the same pole; 1,500V AC, 1 minute between contact and lamp terminals.<br>Illumination Unit: 2,000V AC, 1 min. between live part/ground |

Contact Ratings

| Operating Voltage |           | 24V  | 120V | 240V |
|-------------------|-----------|------|------|------|
| AC<br>50/60Hz     | Resistive | —    | 1.0A | 0.5A |
|                   | Inductive | —    | 0.7A | 0.5A |
| DC                | Resistive | 1.0A | 0.2A | —    |
|                   | Inductive | 0.7A | 0.1A | —    |

1. AC Inductive Load, PF = 0.6 – 0.7; DC Inductive Load, L/R = 7.  
2. Minimum applicable load (reference value) is 5V AC/DC 3mA  
(applicable range is subject to the operating conditions and load).

AB8 Non-Illuminated Pushbuttons (Assembled)

Non-Illuminated Pushbuttons

| Style       |                                                                                   | Contact | Part Numbers |            |
|-------------|-----------------------------------------------------------------------------------|---------|--------------|------------|
|             |                                                                                   |         | Momentary    | Maintained |
| Round       |  | SPDT    | AB8M-M1-①    | AB8M-A1-①  |
| Square      |  | SPDT    | AB8Q-M1-①    | AB8Q-A1-①  |
| Rectangular |  | SPDT    | AB8H-M1-①    | AB8H-A1-①  |

① Button Color Codes

| Color  | Code |
|--------|------|
| Black  | B    |
| Green  | G    |
| Red    | R    |
| Blue   | S    |
| White  | W    |
| Yellow | Y    |

- 
1. In place of ①, specify button color code from the table below.

2. For accessories, see page 493.

3. For dimensions, see page 494.



## AL8 Illuminated Pushbuttons &amp; Pilot Lights (Assembled)

## Illuminated Pushbuttons

| Style       |                                                                                   | Contact | Part Numbers |            | Pilot Light<br>Part Number |
|-------------|-----------------------------------------------------------------------------------|---------|--------------|------------|----------------------------|
|             |                                                                                   |         | Momentary    | Maintained |                            |
| Round       |  | SPDT    | AL8M-M11-②   | AL8M-A11-② | AL8M-P1-②                  |
| Square      |  | SPDT    | AL8Q-M11-②   | AL8Q-A11-② | AL8Q-P1-②                  |
| Rectangular |  | SPDT    | AL8H-M11-②   | AL8H-A11-② | AL8H-P1-②                  |

## ② LED/Lens Color Codes

| Color  | Code |
|--------|------|
| Amber  | A    |
| Green  | G    |
| Red    | R    |
| White  | W    |
| Yellow | Y    |

1. In place of ②, specify lens color code from table on the right.  
 2. A replaceable LED lamp is included with the operator.  
 3. Because the LED lamp does not contain an internal current limiting resistor, an external resistor must be added. For recommended values, see table below.  
 4. For accessories, see page 493.  
 5. For dimensions, see page 494.

## Replacement LEDs

| Lens Color | LED Lamp | Part Number |
|------------|----------|-------------|
| Amber      | Amber    | LAD-SA      |
| Green      | Green    | LAD-SG      |
| Red        | Red      | LAD-SR      |
| White      | Yellow*  | LAD-SY      |
| Yellow     | Yellow   | LAD-SY      |

## LED Voltage and Recommended Current Limiting Resistor

| Voltage | External Resistor |
|---------|-------------------|
| 5V DC   | 150Ω, 1/2W        |
| 6V DC   | 200Ω, 1/2W        |
| 12V DC  | 510Ω, 1W          |
| 24V DC  | 1.1kΩ, 1W         |

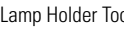
\* White units use a white lens and a yellow LED.

## LED Lamp Ratings: LED Specifications

| LED Lamp | Forward Current<br>$I_f$ | Forward Voltage (Nominal)<br>$V_f$ | Reverse Voltage<br>$V_r$ | Operating Voltage & External Current Limiting Resistor (Recommended Value)      |
|----------|--------------------------|------------------------------------|--------------------------|---------------------------------------------------------------------------------|
| Amber    | 20mA                     | 2.2V                               | 4V                       | 5V DC: 150Ω, 1/2W<br>6V DC: 200Ω, 1/2W<br>12V DC: 510Ω, 1W<br>24V DC: 1.1kΩ, 1W |
| Green    | 20mA                     | 2.1V                               | 4V                       |                                                                                 |
| Red      | 20mA                     | 1.7V                               | 4V                       |                                                                                 |
| Yellow   | 20mA                     | 2.2V                               | 4V                       |                                                                                 |

When LED lamps are used at voltages other than those stated above, external resistor value, R, is determined by the following formula:  $R = (\text{Operating Voltage} - V_f) / I_f$

## Accessories

| Item                                                                                                                                                   | Description                                                                                                                                  | Used With                                |             | Part Number     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|-------------|-----------------|
| <br>Locking Ring Wrench                                               | Made of metal. Used for tightening plastic locking ring during installation. Tightening torque should not exceed 3kgf-cm                     | All units                                |             | MT-004          |
| <br>Lens Removal Tool                                                 | Made of metal. Used for removing lens or button from the housing                                                                             | Illuminated pushbuttons and pilot lights |             | MT-101          |
| <br>Lamp Holder Tool                                                  | Made of rubber. Used for removing and replacing LED lamps in illuminated units                                                               | Illuminated pushbuttons and pilot lights |             | OR-66           |
| <br>Switch Guard                                                      | Used to avoid operating the pushbutton inadvertently. Cover flips open 90°. Provides IP40 protection                                         | Round & square units                     |             | AL-K8           |
|                                                                                                                                                        |                                                                                                                                              | Rectangular units                        |             | AL-KH8          |
| <br>Terminal Cover                                                    | Made of translucent nylon. Fits over and shields the terminals                                                                               | All units                                |             | AL-V8           |
| <br>Adaptor Socket<br><small>AL-C8      AL-C8V shown attached</small> | Plug-on adaptor with solder terminals, allows easy control unit replacement.                                                                 | All units                                |             | AL-C8           |
|                                                                                                                                                        | Plug-on adaptor with PCB terminals, allows easy control unit replacement.                                                                    |                                          |             | AL-C8V          |
| <br>Mounting Hole Plug                                                | Made of rubber. Fills unused mounting holes to provide IP65 protection                                                                       | Extra panel cutouts                      |             | AL-B8           |
| <br>Replacements LEDs                                               | LED lamp is included in every illuminated control unit. Replacement lamp is ordered separately. External current limiting resistor required. | Illuminated units and pilot lights       |             | LAD-SR (red)    |
|                                                                                                                                                        |                                                                                                                                              |                                          |             | LAD-SG (green)  |
|                                                                                                                                                        |                                                                                                                                              |                                          |             | LAD-SA (amber)  |
|                                                                                                                                                        |                                                                                                                                              |                                          |             | LAD-SY (yellow) |
| <br>Replacement Lenses                                              |                                                                                                                                              | Illuminated pushbuttons and pilot lights | Round       | AL8M-LK1-②      |
|                                                                                                                                                        |                                                                                                                                              |                                          | Square      | AL8Q-LK1-②      |
|                                                                                                                                                        |                                                                                                                                              |                                          | Rectangular | AL8H-LK1-②      |
| <br>Replacement Buttons                                             |                                                                                                                                              | Non-Illuminated buttons                  | Round       | AB8M-BK1-①      |
|                                                                                                                                                        |                                                                                                                                              |                                          | Square      | AB8Q-BK1-①      |
|                                                                                                                                                        |                                                                                                                                              |                                          | Rectangular | AB8H-BK1-①      |



1. In place of ①, specify Button Color Code from the table.
2. In place of ②, specify Lens Color Code from table.

## ① Button Color Codes

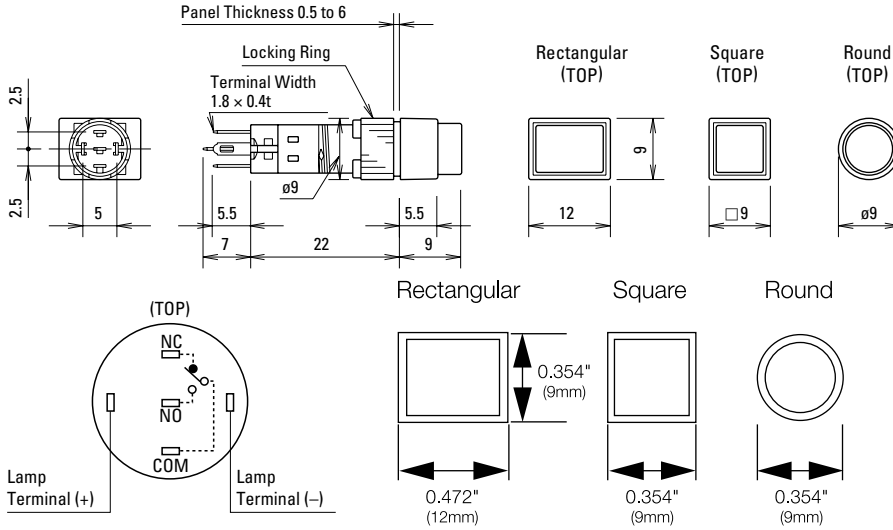
| Color  | Code |
|--------|------|
| Black  | B    |
| Green  | G    |
| Red    | R    |
| Blue   | S    |
| White  | W    |
| Yellow | Y    |

## ② LED/Lens Color Codes

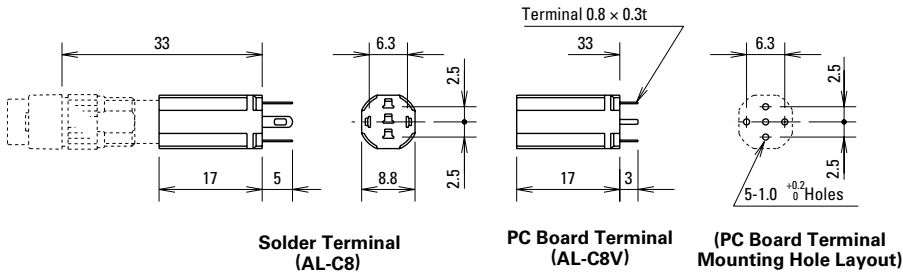
| Color  | Code |
|--------|------|
| Amber  | A    |
| Green  | G    |
| Red    | R    |
| White  | W    |
| Yellow | Y    |

## Dimensions

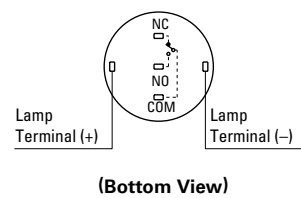
## AΔ8



## Terminal Sockets

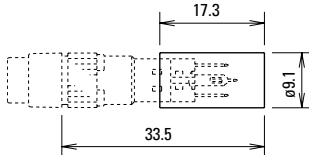
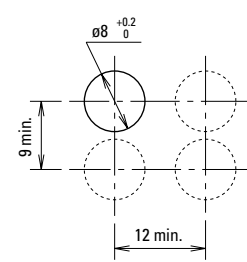


## Terminal Arrangement (TOP)

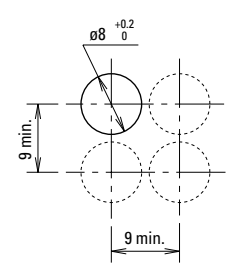


## Terminal Cover

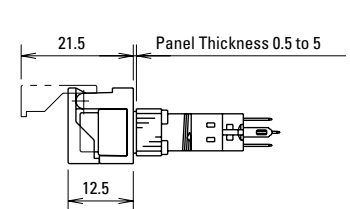
AL-V8, Ø 21/64" (8mm)

Panel Cut-Out (not drawn to scale)  
Rectangular

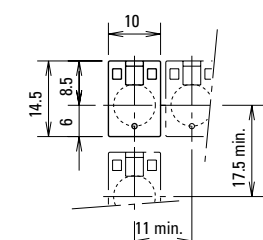
## Round/Square



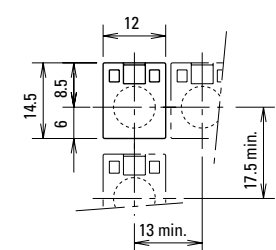
## Switch Guard, Ø 21/64" (8mm)



## For Round/Square Units (AL-K8)



## For Rectangular Units (AL-KH8)



## 16mm X6 E-Stops

## Key features:

- Two button sizes—ø30mm and ø40mm
- Two button colors—red for emergency stop and yellow for stop switch
- Two ways of resetting —pulling and turning
- Solder/tab terminal #110 makes for easy connections
- UL, c-UL recognized, EN compliant
- Safety lock mechanism (IEC 60947-5-5; 6.2)
- Direct opening action (IEC 60947-5-5; 5.2, IEC 60947-5-1, Annex K)



UL File No. E68961



CCC No. 2010010305411586



## Specifications

|                                                            |                                                                                                                                                                                |
|------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Applicable Standards                                       | IEC 60947-5-1, EN 60947-5-1<br>IEC 60947-5-5 (Note), EN 60947-5-5 (Note)<br>JIS C8201-5-1, JIS C8201-5-5, UL508<br>CSA C22.2 No.14, GB14048.5                                  |
| Operating Temperature                                      | –25 to +60°C (no freezing)                                                                                                                                                     |
| Operating Humidity                                         | 45 to 85% RH (no condensation)                                                                                                                                                 |
| Storage Temperature                                        | –45 to +80°C (no freezing)                                                                                                                                                     |
| Operating Force                                            | Push to lock: 10.5N, Pull to reset: 8.8N, Turn to reset: 0.17 N·m                                                                                                              |
| Minimum Force Required for Direct Opening Action           | 40N                                                                                                                                                                            |
| Minimum Operator Stroke Required for Direct Opening Action | 4.5mm                                                                                                                                                                          |
| Maximum Operator Stroke                                    | 4.5mm                                                                                                                                                                          |
| Contact Resistance                                         | 50mΩ maximum (initial value)                                                                                                                                                   |
| Insulation Resistance                                      | 100MΩ minimum (500V DC megger)                                                                                                                                                 |
| Overvoltage Category                                       | II                                                                                                                                                                             |
| Impulse Withstand Voltage                                  | 2.5kV                                                                                                                                                                          |
| Pollution Degree                                           | 3                                                                                                                                                                              |
| Operation Frequency                                        | 900 operations/hour                                                                                                                                                            |
| Shock Resistance                                           | Operation extremes: 150 m/s <sup>2</sup> , Damage limits: 1000 m/s <sup>2</sup>                                                                                                |
| Vibration Resistance                                       | Operation extremes: 10 to 500 Hz<br>amplitude 0.35 mm, acceleration 50 m/s <sup>2</sup><br>Damage limits: 10 to 500 Hz,<br>amplitude 0.35 mm, acceleration 50 m/s <sup>2</sup> |
| Mechanical Life                                            | 100,000 operations minimum                                                                                                                                                     |
| Electrical Life                                            | 100,000 operations minimum                                                                                                                                                     |
| Degree of Protection                                       | IP65 (IEC 60529)                                                                                                                                                               |
| Short-circuit Protection                                   | 250V/10A fuse (Type aM IEC 60269-1/IEC 60269-2)                                                                                                                                |
| Conditional Short-circuit Current                          | 1000A                                                                                                                                                                          |
| Terminal Style                                             | Solder/tab terminal #110                                                                                                                                                       |
| Recommended Tightening Torque for Locking Ring             | 0.88N·m                                                                                                                                                                        |
| Applicable Wire Size                                       | 1.25mm <sup>2</sup> maximum (AWG16 maximum)                                                                                                                                    |
| Terminal Soldering Condition                               | 310 to 350°C, within 3 seconds                                                                                                                                                 |
| Weight (approx.)                                           | ø30mm button: 13g, ø40mm button: 16g                                                                                                                                           |

## Contact Ratings

|                                   |               |                |                           |      |       |       |
|-----------------------------------|---------------|----------------|---------------------------|------|-------|-------|
| Rated Insulation Voltage (Ui)     |               |                |                           | 250V |       |       |
| Rated Thermal Current (Ith)       |               |                |                           | 5A   |       |       |
| Rated Operating Voltage (Ue)      |               |                |                           | 30V  | 125V  | 250V  |
| Rated Operating Current<br>(Note) | Main Contacts | AC<br>50/60 Hz | Resistive Load<br>(AC-12) | –    | 5A    | 3A    |
|                                   |               |                | Inductive Load<br>(AC-15) | –    | 1.5A  | 0.75A |
|                                   |               | DC             | Resistive Load<br>(DC-12) | 2A   | 0.4A  | 0.2A  |
|                                   |               |                | Inductive Load<br>(DC-13) | 1A   | 0.22A | 0.1A  |
|                                   |               |                |                           |      |       |       |



- Minimum applicable load: 5V AC/DC, 1mA (reference value) (May vary depending on the operating conditions and load)
- Operational current represents the classification by making and breaking currents (IEC 60947-5-1)
- TÜV rating: AC-15 0.75A/250V, DC-13 1A/30V  
UL rating: Standard Duty AC 0.75A/250V  
Standard Duty DC 1A/30V



Except for stop switch (yellow button)

## Part Numbers

### Pushlock Pull/Turn Reset Switch (Unmarked)

| Shape                                                                             | Main Contact (NC) | Part Number<br>Solder/tab Terminal #110 |
|-----------------------------------------------------------------------------------|-------------------|-----------------------------------------|
|  | 1NC               | AB6E-3BV01PTRH                          |
|                                                                                   | 2NC               | AB6E-3BV02PTRH                          |
|  | 1NC               | AB6E-4BV01PTRH                          |
|                                                                                   | 2NC               | AB6E-4BV02PTRH                          |

### Pushlock Pull/Turn Reset Switch (Marked with Arrow)

| Shape                                                                              | Main Contact (NC) | Part Number<br>Solder/tab Terminal #110 |
|------------------------------------------------------------------------------------|-------------------|-----------------------------------------|
|  | 1NC               | AB6E-3BV01PTRM                          |
|                                                                                    | 2NC               | AB6E-3BV02PTRM                          |
|  | 1NC               | AB6E-4BV01PTRM                          |
|                                                                                    | 2NC               | AB6E-4BV02PTRM                          |

### Yellow Button, Pushlock Pull/Turn Reset Switch (Unmarked)

| Shape                                                                              | Operator     | Main Contact (NC) | Part Number<br>Solder/tab Terminal #110 |
|------------------------------------------------------------------------------------|--------------|-------------------|-----------------------------------------|
|  | ø30mm button | 1NC               | AB6E-3BV01PTY                           |
|                                                                                    |              | 2NC               | AB6E-3BV02PTY                           |
|                                                                                    | ø40mm button | 1NC               | AB6E-4BV01PTY                           |
|                                                                                    |              | 2NC               | AB6E-4BV02PTY                           |

-  1. Pushlock pull/turn reset switches are locked when pressed, and reset when pulled or turned clockwise.  
2. Do not use the stop switch as an emergency stop switch.

### Part Number Key

**AB6E - 3 BV 01 PT RH**

Mushroom Size  
3: ø29mm  
4: ø40mm

Contact Configuration  
01: 1NC  
02: 2NC

Color/Marking  
RH: Red (unmarked)  
RM: Red (marked with arrow)  
Y: Yellow (unmarked)

### Accessories

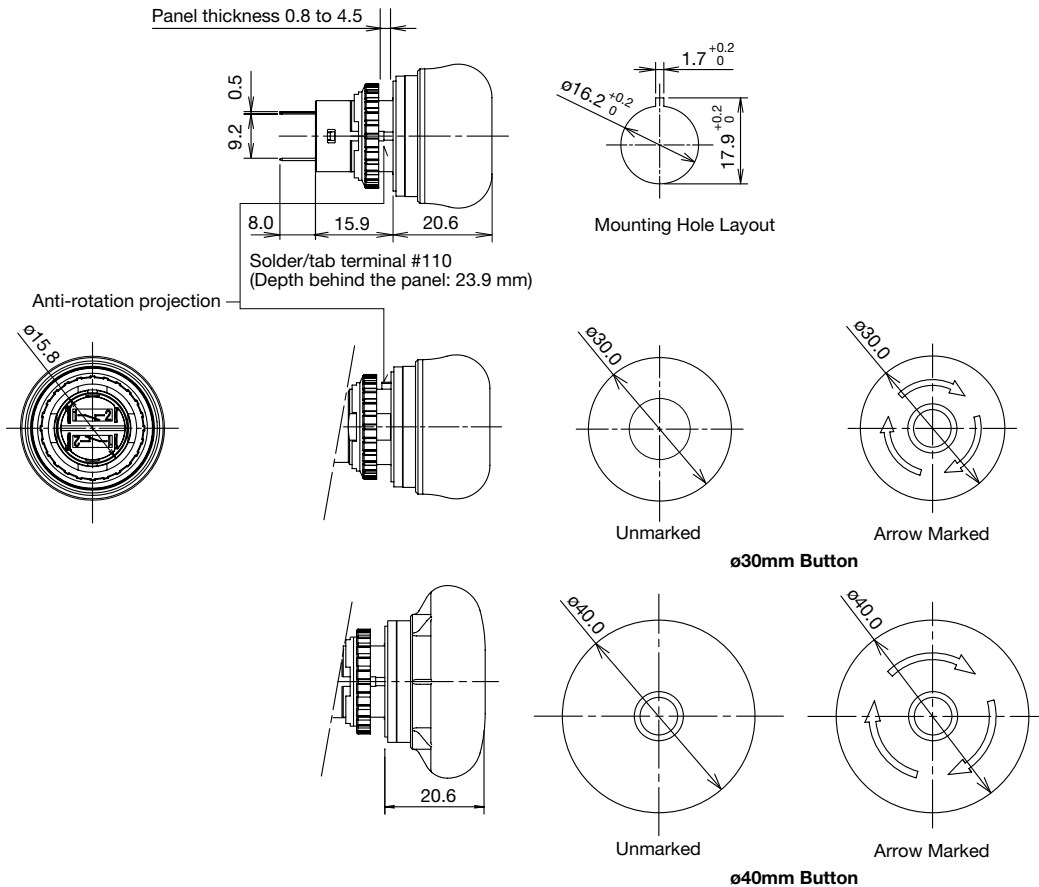
| Shape                                                                               | Material                    | Part Number | Remarks                                                                                                                      |
|-------------------------------------------------------------------------------------|-----------------------------|-------------|------------------------------------------------------------------------------------------------------------------------------|
|    | Metal (nickel-plated brass) | MT-001      | Used to tighten the locking ring when installing the X6 switch onto a panel. Recommended tightening torque: 0.88 N·m maximum |
|  | Plastic                     | XA9Z-LNPN10 | Black                                                                                                                        |
|  | Polyamide (PA6)             | XA9Z-KG1    | IP65 degree of protection<br>Color: yellow (Munsell 2.5Y8/10 or equivalent)<br>Cannot be used with nameplate.                |

### Nameplates

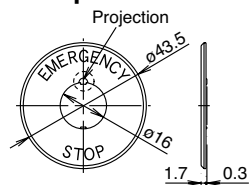
| Use With    | Description      | Legend         | Part Number | Material  | Background Color     | Legend Color |
|-------------|------------------|----------------|-------------|-----------|----------------------|--------------|
| E-Stops     | For ø30mm Button | Blank          | HAAV-0      | Polyamide | Yellow               | Black        |
|             |                  | EMERGENCY STOP | HAAV-27     |           |                      |              |
|             | For ø40mm Button | Blank          | HAAV4-0     |           |                      |              |
|             |                  | EMERGENCY STOP | HAAV4-27    |           |                      |              |
| Stop Switch | For ø30mm Button | Blank          | HAAV-0-W    |           | White (Munsell N9.5) |              |
|             | For ø40mm Button |                | HAAV4-0-W   |           |                      |              |

-  Cannot be used with switch guard.

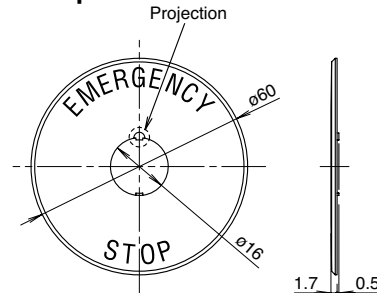
## Dimensions (mm)



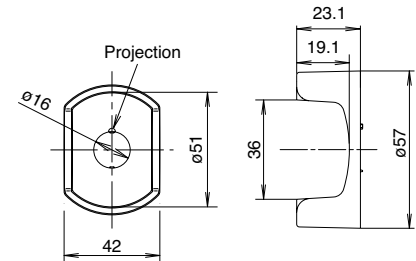
## Nameplate for ø30mm Button HAAV-\*



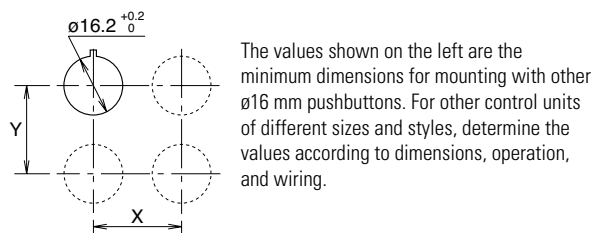
## Nameplate for ø40mm Button HAAV4-\*



## Switch Guard XA9Z-KG1

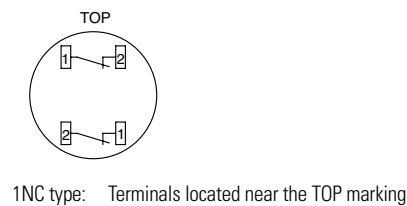


## Mounting Hole Layout



|               | X          | Y         |
|---------------|------------|-----------|
| ø30 mm Button | 40 mm min. | 40mm min. |
| ø40 mm Button | 50 mm min. | 50mm min. |

## Terminal Arrangement (Bottom View)



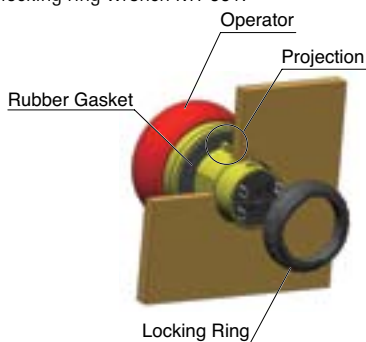
## Safety Precautions

- Turn off power to the X6 series units before installation, removal, wiring, maintenance, and inspection. Failure to turn power off may cause electrical shocks or fire hazard.
- For wiring, use wires of proper size to meet the voltage and current requirements and solder properly. Improper soldering may cause overheating and create fire hazards.

## Instructions

### Panel Mounting

Remove the locking ring from the operator and check that the rubber gasket is in place. Insert the operator from panel front into the panel hole. Face the side with the projection upward, and tighten the locking ring using the locking ring wrench MT-001.



### Notes for Panel Mounting

Using the locking ring wrench MT-001, tighten the locking ring to a torque of 0.88 N·m. Do not use pliers. Do not apply excessive force, otherwise the locking ring will become damaged.

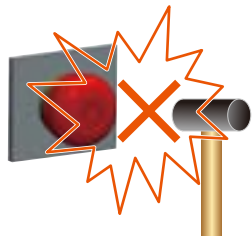
### Contact Bounce

When the button is reset by pulling or turning, the NC contacts will bounce. When designing a control circuit, take the contact bounce time into consideration (reference value: 20ms).

Do not apply any external shock to the emergency stop switches, otherwise the contact will bounce.

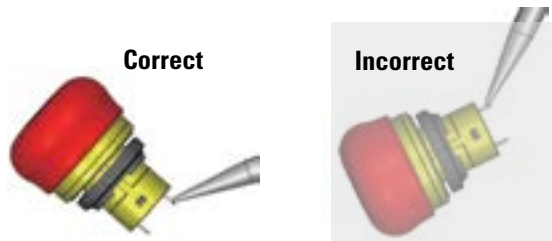
### Handling

Do not expose the switch to excessive shock and vibrations, otherwise the switch may be deformed or damaged, causing malfunction or operation failure.



### Wiring

1. Applicable wire size is 1.25mm<sup>2</sup> (16 AWG) maximum.
2. Solder the terminals using a soldering iron at 310 to 350°C for 3 seconds maximum. Do not use flow or dip soldering. SnAgCu type lead-free solder is recommended. Make sure that the soldering iron touches the terminals only, not any plastic parts. Do not apply external force (bending the terminals or applying tensile force on the wires).
3. Use a non-corrosive rosin flux. To prevent the flux from entering the switch while soldering, angle the terminals downward.



4. Because the terminal spacing is narrow, use protective tubes or heat shrinkable tubes to avoid burning the wire sheath or causing a short circuit.
5. Apply force on the terminals in the vertical direction to the panel only, otherwise the terminals will be damaged.
6. When using tab connectors, specify quick connect #110 and 0.5mm tab thickness.



## 16mm XA E-Stops

## Key features:

- Two button sizes: ø29 and ø40mm
- Lead-free, RoHS compliant, (EU directive 2002/95/EC)
- Depth behind the panel:  
Standard - only 27.9mm for 1 to 4 contacts  
Unibody - only 23.9mm for 1NC or 2NC
- IDEC's original "Safe break action" ensures that the NC contacts open when the contact block is detached from the operator.
- Push-to-lock, Pull or Turn-to-reset operator
- Direct opening action mechanism (IEC60947-5-5, 5.2, IEC60947-5-1, Annex K)
- Safety lock mechanism (IEC60947-5-5, 6.2)
- Degree of protection:  
Standard - IP65 (IEC60529)  
Unibody - IP65 and IP40 (IEC 60529)
- UL, c-UL recognized. EN compliant
- UL NISD2 category emergency stop button (File# E305148)



CCC No. 2005010305150899

## Specifications

| Model                                                  | Standard                                                                                                                                                         | Unibody                                                                                                                           |
|--------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| Applicable Standards                                   | IEC60947-5-1, EN60947-5-1, IEC60947-5-5, EN60947-5-5, UL508, UL991, CSA C22.2 No. 14                                                                             | UL508, CSA C22.2 No.14, IEC 60947-5-1, EN 60947-5-1, IEC 60947-5-5 <sup>Note</sup> , EN 60947-5-5 <sup>Note</sup> , JIS C8201-5-1 |
| Operating Temperature                                  | Non-illuminated: -25 to +60°C (no freezing),<br>Illuminated: -25 to +55°C (no freezing)                                                                          | -25 to +60°C (no freezing)                                                                                                        |
| Operating Humidity                                     | 45 to 85% RH (no condensation)                                                                                                                                   |                                                                                                                                   |
| Storage Temperature                                    | -45 to +80°C                                                                                                                                                     |                                                                                                                                   |
| Operating Force                                        | Push-to-lock: 10.5N Pull-to-reset: 10N Turn-to-reset: 0.16N·m                                                                                                    |                                                                                                                                   |
| Minimum Force Required for Direct Opening Action       | 60N                                                                                                                                                              | 40N                                                                                                                               |
| Min Operator Stroke Required for Direct Opening Action | 4mm                                                                                                                                                              |                                                                                                                                   |
| Maximum Operator Stroke                                | 4.5mm                                                                                                                                                            |                                                                                                                                   |
| Contact Resistance                                     | 50mΩ maximum (initial value)                                                                                                                                     |                                                                                                                                   |
| Contact Material                                       | Gold plated silver                                                                                                                                               |                                                                                                                                   |
| Insulation Resistance                                  | 100MΩ minimum (500V DC megger)                                                                                                                                   |                                                                                                                                   |
| Impulse Withstand Voltage                              | 2.5kV                                                                                                                                                            |                                                                                                                                   |
| Pollution Degree                                       | 3 (inside LED unit: 2)                                                                                                                                           | 3                                                                                                                                 |
| Operation Frequency                                    | 900 operations/hour                                                                                                                                              |                                                                                                                                   |
| Shock Resistance                                       | Operating extremes: 150 m/s <sup>2</sup> , Damage limits: 1000 m/s <sup>2</sup>                                                                                  |                                                                                                                                   |
| Vibration Resistance                                   | Operating extremes: 10 to 500Hz, amplitude 0.35mm acceleration 50m/s <sup>2</sup> , Damage limits: 10 to 500Hz, amplitude 0.35mm acceleration 50m/s <sup>2</sup> |                                                                                                                                   |
| Mechanical Life                                        | 250,000 operations minimum                                                                                                                                       |                                                                                                                                   |
| Electrical Life                                        | 100,000 operations minimum, (250,000 operations minimum @ 24V AC/DC, 100mA)                                                                                      |                                                                                                                                   |
| Degree of Protection                                   | IP65 (IEC60529)                                                                                                                                                  | IP65, IP40 (IEC 60529)                                                                                                            |
| Terminal Style                                         | Solder terminal, PC board terminal                                                                                                                               | Solder/tab #110 terminal                                                                                                          |
| Recommended Tightening Torque for Locking Ring         | 0.88N·m                                                                                                                                                          |                                                                                                                                   |
| Wire Size                                              | 16 AWG max                                                                                                                                                       |                                                                                                                                   |
| Soldering Conditions                                   | 310 to 350°C, 3 seconds maximum                                                                                                                                  |                                                                                                                                   |
| Weight                                                 | ø29mm: 23g<br>ø40mm: 28g                                                                                                                                         | ø29mm mushroom: 14g<br>ø40mm mushroom: 17g                                                                                        |



Note: Except for stop switches (operator color: yellow and gray)



Part Numbers

Non-Illuminated XA E-Stop

| Style                                                                                                 | Termination     | Monitor Contacts | Main Contacts | Part Number   |
|-------------------------------------------------------------------------------------------------------|-----------------|------------------|---------------|---------------|
| <br>29mm<br>Mushroom | PCB Terminal    | 1NO              | 1NC           | XA1E-BV311V-R |
|                                                                                                       |                 | —                | 2NC           | XA1E-BV302V-R |
|                                                                                                       |                 | 1NO              | 3NC           | XA1E-BV313V-R |
|                                                                                                       |                 | —                | 4NC           | XA1E-BV304V-R |
|                                                                                                       | Solder Terminal | 1NO              | 1NC           | XA1E-BV311-R  |
|                                                                                                       |                 | —                | 2NC           | XA1E-BV302-R  |
|                                                                                                       |                 | 1NO              | 3NC           | XA1E-BV313-R  |
|                                                                                                       |                 | —                | 4NC           | XA1E-BV304-R  |
| <br>40mm<br>Mushroom | PCB Terminal    | 1NO              | 1NC           | XA1E-BV411V-R |
|                                                                                                       |                 | —                | 2NC           | XA1E-BV402V-R |
|                                                                                                       |                 | 1NO              | 3NC           | XA1E-BV413V-R |
|                                                                                                       |                 | —                | 4NC           | XA1E-BV404V-R |
|                                                                                                       | Solder Terminal | 1NO              | 1NC           | XA1E-BV411-R  |
|                                                                                                       |                 | —                | 2NC           | XA1E-BV402-R  |
|                                                                                                       |                 | 1NO              | 3NC           | XA1E-BV413-R  |
|                                                                                                       |                 | —                | 4NC           | XA1E-BV404-R  |

Illuminated XA E-Stop

| Style                                                                                                   | Termination     | Monitor Contacts | Main Contacts | Part Number     |
|---------------------------------------------------------------------------------------------------------|-----------------|------------------|---------------|-----------------|
| <br>29mm<br>Mushroom | PCB Terminal    | 1NO              | 1NC           | XA1E-LV311Q4V-R |
|                                                                                                         |                 | —                | 2NC           | XA1E-LV302Q4V-R |
|                                                                                                         |                 | 1NO              | 3NC           | XA1E-LV313Q4V-R |
|                                                                                                         |                 | —                | 4NC           | XA1E-LV304Q4V-R |
|                                                                                                         | Solder Terminal | 1NO              | 1NC           | XA1E-LV311Q4-R  |
|                                                                                                         |                 | —                | 2NC           | XA1E-LV302Q4-R  |
|                                                                                                         |                 | 1NO              | 3NC           | XA1E-LV313Q4-R  |
|                                                                                                         |                 | —                | 4NC           | XA1E-LV304Q4-R  |
| <br>40mm<br>Mushroom | PCB Terminal    | 1NO              | 1NC           | XA1E-LV411Q4V-R |
|                                                                                                         |                 | —                | 2NC           | XA1E-LV402Q4V-R |
|                                                                                                         |                 | 1NO              | 3NC           | XA1E-LV413Q4V-R |
|                                                                                                         |                 | —                | 4NC           | XA1E-LV404Q4V-R |
|                                                                                                         | Solder Terminal | 1NO              | 1NC           | XA1E-LV411Q4-R  |
|                                                                                                         |                 | —                | 2NC           | XA1E-LV402Q4-R  |
|                                                                                                         |                 | 1NO              | 3NC           | XA1E-LV413Q4-R  |
|                                                                                                         |                 | —                | 4NC           | XA1E-LV404Q4-R  |



All illuminated XA E-Stops come with a replaceable 24V AC/DC LED.

Part Number Key

XA1E - L V 3 11 Q4 V - R

Illumination  
B: Non-Illuminated  
L: Illuminated

Mushroom Size  
3: ø29mm  
4: ø40mm

Contact Configuration  
11: 1NO - 1NC  
02: 2NC  
13: 1NO - 3NC  
04: 4NC

Terminal  
Blank: solder tab  
V: PCB  
  
Voltage Code  
Blank: Non-illuminated  
Q4: Illuminated 24V AC/DC

## Unibody XA E-Stop

| Style                                                                                              | Contact | Part Number          |                       |
|----------------------------------------------------------------------------------------------------|---------|----------------------|-----------------------|
|                                                                                                    |         | IP40 (black housing) | IP65 (yellow housing) |
| 29mm Mushroom<br> | 1NC     | XA1E-BV3U01KT-R      | XA1E-BV3U01T-R        |
|                                                                                                    | 2NC     | XA1E-BV3U02KT-R      | XA1E-BV3U02T-R        |
| 40mm Mushroom<br> | 1NC     | XA1E-BV4U01KT-R      | XA1E-BV4U01T-R        |
|                                                                                                    | 2NC     | XA1E-BV4U02KT-R      | XA1E-BV4U02T-R        |

## Unibody XA Stop Switch

| Style                                                                             | Operator Type | Contact | ① Color Code         | Part Number          |                       |
|-----------------------------------------------------------------------------------|---------------|---------|----------------------|----------------------|-----------------------|
|                                                                                   |               |         |                      | IP40 (black housing) | IP65 (yellow housing) |
|  | 29mm Mushroom | 1NC     | Y: yellow<br>N: gray | XA1E-BV3U01KT-①      | XA1E-BV3U01T-①        |
|                                                                                   |               | 2NC     |                      | XA1E-BV3U02KT-①      | XA1E-BV3U02T-①        |
|                                                                                   | 40mm Mushroom | 1NC     |                      | XA1E-BV4U01KT-①      | XA1E-BV4U01T-①        |
|                                                                                   |               | 2NC     |                      | XA1E-BV4U02KT-①      | XA1E-BV4U02T-①        |

## EMO XA E-Stop

| Style                                                                                                | NC Main Contact | NO Monitor Contact | Part Number       |
|------------------------------------------------------------------------------------------------------|-----------------|--------------------|-------------------|
| 40mm Mushroom<br> | 1NC             | -                  | XA1E-BV401-RH-EMO |
|                                                                                                      | 2NC             | -                  | XA1E-BV402-RH-EMO |
|                                                                                                      | 3NC             | -                  | XA1E-BV403-RH-EMO |
|                                                                                                      | 4NC             | -                  | XA1E-BV404-RH-EMO |
|                                                                                                      | 1NC             | 1NO                | XA1E-BV411-RH-EMO |
|                                                                                                      | 2NC             | 1NO                | XA1E-BV412-RH-EMO |
|                                                                                                      | 3NC             | 1NO                | XA1E-BV413-RH-EMO |

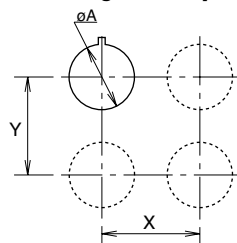
## Contact Ratings

| Standard                      |                       |                        |                        |                              |       |      |
|-------------------------------|-----------------------|------------------------|------------------------|------------------------------|-------|------|
| Rated Insulation Voltage (Ui) |                       |                        |                        | 300V (illuminated part: 60V) |       |      |
| Rated Current (Ith)           |                       |                        |                        | 5A                           |       |      |
| Rated Operating Voltage (Ue)  |                       |                        |                        | 30V                          | 125V  | 250V |
| Rated Operating Current       | Main Contacts (NC)    | AC 50/60Hz             | Resistive Load (AC-12) | —                            | 3A    | 3A   |
|                               |                       |                        | Inductive Load (AC-15) | —                            | 1.5A  | 1.5A |
|                               |                       | DC                     | Resistive Load (DC-12) | 2A                           | 0.4A  | 0.2A |
|                               |                       |                        | Inductive Load (DC-13) | 1A                           | 0.22A | 0.1A |
|                               | Monitor Contacts (NO) | AC 50/60Hz             | Resistive Load (AC-12) | —                            | 1.2A  | 0.6A |
|                               |                       |                        | Inductive Load (AC-14) | —                            | 0.6A  | 0.3A |
|                               |                       | DC                     | Resistive Load (DC-12) | 2A                           | 0.4A  | 0.2A |
|                               |                       |                        | Inductive Load (DC-13) | 1A                           | 0.22A | 0.1A |
| Unibody                       |                       |                        |                        |                              |       |      |
| Rated Insulation Voltage (Ui) |                       |                        |                        | 250V                         |       |      |
| Thermal Current (Ith)         |                       |                        |                        | 5A                           |       |      |
| Rated Operating Voltage (Ue)  |                       |                        |                        | 30V                          | 125V  | 250V |
| Rated Operating Current       | AC 50/60Hz            | Resistive Load (AC-12) |                        | —                            | 5A    | 3A   |
|                               |                       | Inductive Load (AC-15) |                        | —                            | 3A    | 1.5A |
|                               | DC                    | Resistive Load (DC-12) |                        | 2A                           | 0.4A  | 0.2A |
|                               |                       | Inductive Load (DC-13) |                        | 1A                           | 0.22A | 0.1A |



Minimum applicable load: 5V AC/DC, 1mA (reference value).  
The rated operating currents are measured at resistive/inductive load types specified in IEC 60947-5-1.

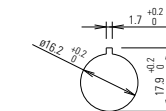
## Mounting Hole Layout



### Measurements

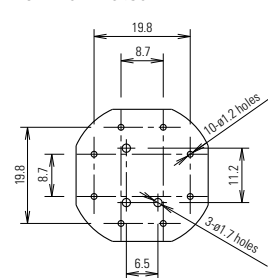
| Model | øA                   | X & Y    |
|-------|----------------------|----------|
| ø29mm | 16.2 <sup>+0.2</sup> | 40mm min |
| ø40mm |                      | 50mm min |

## Panel Cutout

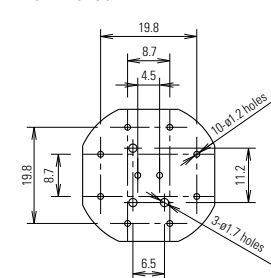


## PC Board Layout - Bottom View

Non-Illuminated



Illuminated



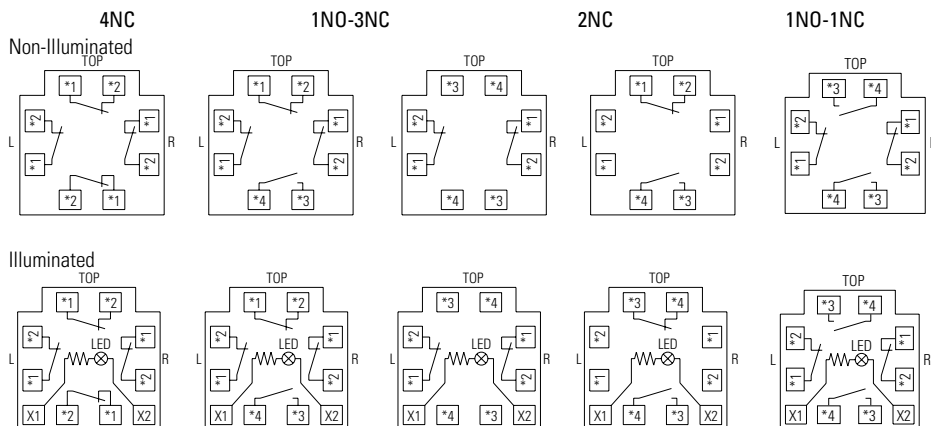
## Illuminated Unit LED Ratings

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

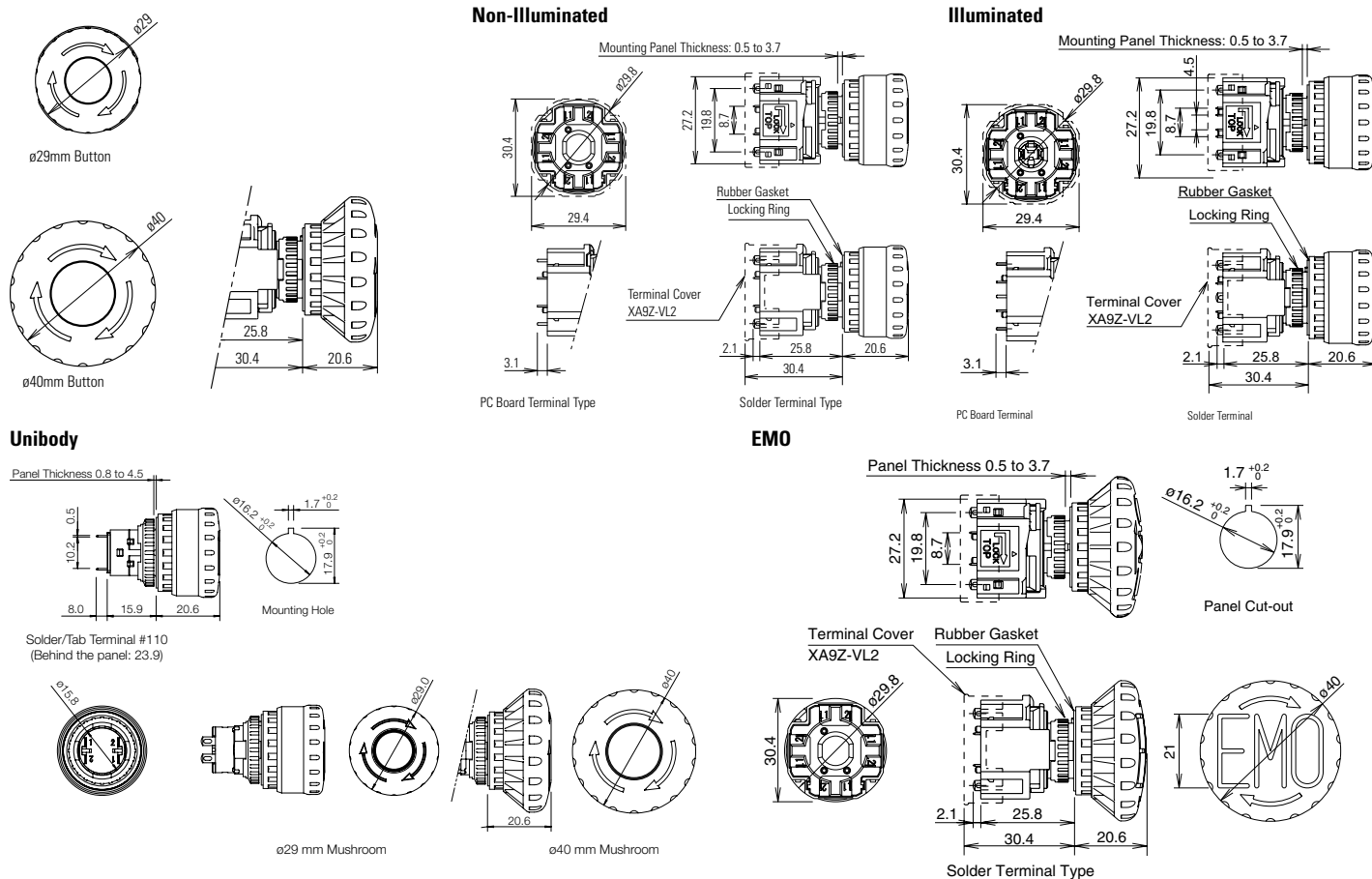
## Depth Behind the Panel

| Depth (mm)      | Description                                          |
|-----------------|------------------------------------------------------|
| 27.9 (Standard) | 1 - 4 contacts, both illuminated and non-illuminated |
| 23.9 (Unibody)  | 1NC or 2NC                                           |

## Terminal Arrangements (Bottom View)



## Dimensions (mm)



## Accessories

| Description                                             | Part Numbers |
|---------------------------------------------------------|--------------|
| Replacement LED Unit: Solder Terminal                   | XA9Z-LED2R   |
| Replacement LED Unit: PCB Terminal                      | XA9Z-LED2VR  |
| Terminal Cover for contact block (solder terminal only) | XA9Z-VL2     |

## Accessories: Shroud

| Appearance                                                                          | Part Number | Applicable Standards                   |
|-------------------------------------------------------------------------------------|-------------|----------------------------------------|
|  | XA9Z-KG1    | SEMI S2 Compliant<br>(Approved by TUV) |

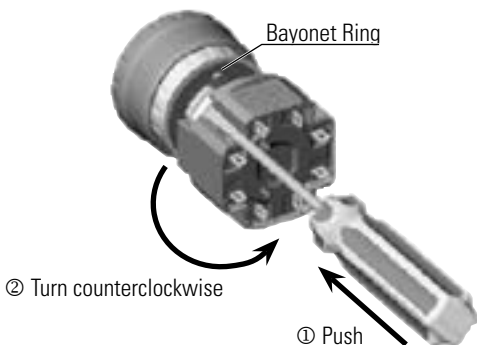
## Accessories: Nameplates

| Appearance                                                                          | Legend           | Part Number | Inner Ø | Outer Ø | Applicable Mushroom Size |
|-------------------------------------------------------------------------------------|------------------|-------------|---------|---------|--------------------------|
|  | (blank)          | HAAV-0      | 16mm    | 43mm    | 29mm                     |
|                                                                                     | "Emergency Stop" | HAAV-27     | 16mm    | 43mm    |                          |
|                                                                                     | (blank)          | HAAV4-0     | 16mm    | 60mm    | 40mm                     |
|                                                                                     | "Emergency Stop" | HAAV4-27    | 16mm    | 60mm    |                          |

## Operating Instructions

### Removing the Contact Block

First unlock the operator button. While pushing up the white bayonet ring, using a small screwdriver (width: 2.5 to 3 mm) if necessary, turn the contact block counterclockwise and pull out. **Do not exert excessive force when using a screwdriver, otherwise the bayonet ring may be damaged.**

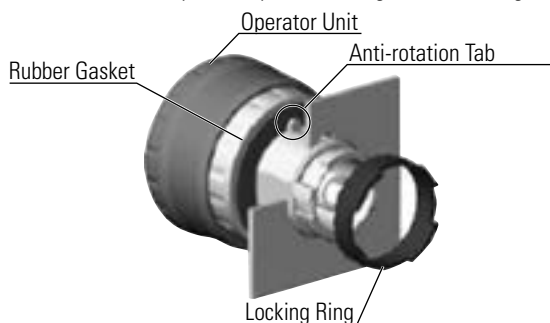


### Notes for Removing the Contact Block

1. When the contact block is removed, the monitor contact (NO contact) is closed.
2. While removing the contact block, do not exert excessive force, otherwise the switch may be damaged.

### Panel Mounting

Remove the locking ring from the operator and check that the rubber gasket is in place. Insert the operator from panel front into the panel hole. Face the side with the anti-rotation tab on the operator upward, and tighten the locking ring.

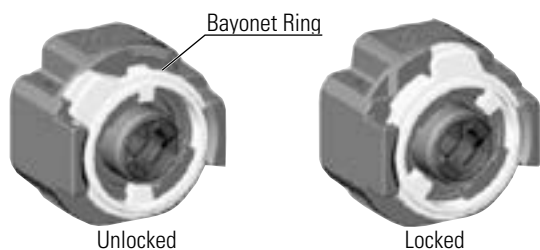


### Notes for Panel Mounting

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

### Installing the Contact Block

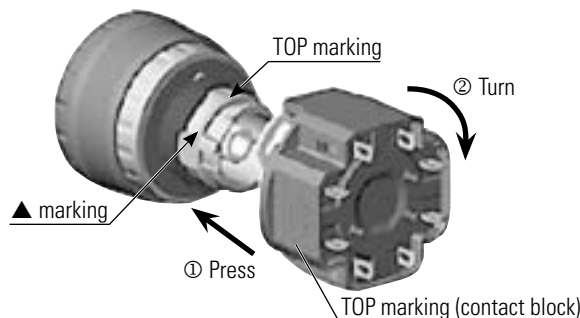
First turn the bayonet ring to the unlocked position.



Align the small ▲ marking on the edge of the operator base with the TOP marking on the contact block. Press the contact block onto the operator and turn the contact block clockwise until the bayonet ring clicks.

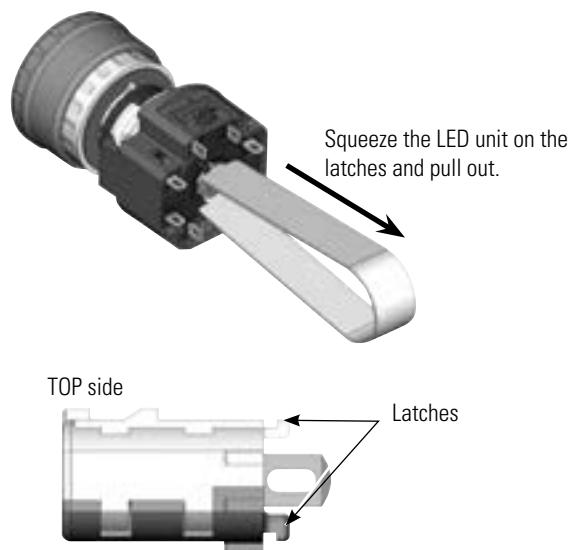
### Notes for Installing the Contact Block

Check that the contact block is securely installed on the operator. When the emergency stop switch is properly assembled, the bayonet ring is in place as shown below.



### Removing the LED Unit

Pull out the LED unit while squeezing the latches on the LED unit using the LED unit removal tool (MT-101).



### Installing the LED Unit

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



## Operating Instructions, continued

## Wiring

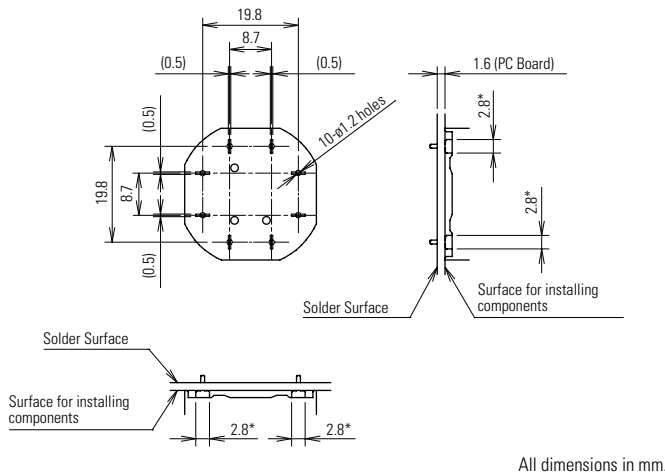
1. The applicable wire size is 16 AWG maximum.
2. Solder the terminal at a temperature of 310 to 350°C within 3 seconds using a soldering iron. Sn-Ag-Cu solder is recommended. When soldering, do not touch the switch with the soldering iron. Also ensure that no tensile force is applied to the terminals. Do not bend the terminals or apply excessive force to the terminals.
3. Use a non-corrosive rosin flux.
4. Because the terminal spacing is narrow, use protective tubes or heat shrinkable tubes to avoid burning of wire coating or short circuit.

## PC Board Terminal Type

1. When mounting a contact block on a PC board, provide sufficient rotating space for the PC board when installing and removing the contact block.
2. When mounting an XA emergency stop switch on a PC board, make sure that the operator is securely installed.

## About PC Board and Circuit Design

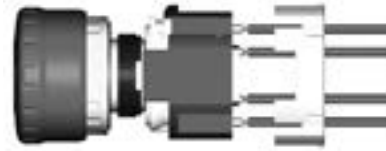
1. Use PC boards made of glass epoxy copper-clad laminated sheets of 1.6 mm in thickness, with double-sided through holes.
2. PC boards and circuits must withstand rated voltage and current, including instantaneous current and voltage at switching.
3. The minimum applicable load is 5V AC/DC, 1 mA.
4. Within the 2.8\* mm areas shown in the figure below, terminals touch the PC board, resulting in possible short circuit on the printed circuit. When designing a PC board pattern, take this possibility into consideration.



## Installing Insulation Terminal Cover

To install the terminal cover (XA9Z-VL2), align the TOP marking on the terminal cover with TOP marking on the contact block, and press the terminal cover toward the contact block.

Note: For wiring, insert the wires into the holes in the terminal cover before soldering.



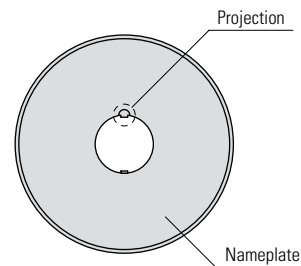
## Contact Bounce

When the button is reset by pulling or turning, the NC main contacts will bounce. When pressing the button, the NO monitor contacts will bounce.

When designing a control circuit, take the contact bounce time into consideration (reference value: 20 ms).

## Nameplate

When anti-rotation is not required, remove the projection from the nameplate using pliers.



## Handling

Do not expose the switch to excessive shock and vibration, otherwise the switch may be deformed or damaged, causing malfunction or operation failure.



## Safety Precautions

- Turn off power to the XA series emergency stop switch before starting installation, removal, wiring, maintenance, and inspection of the relays. Failure to turn power off may cause electrical shock or fire hazard.
- Use the LED unit removal tool when replacing the LED unit to avoid burning your hands.
- Use wires of the proper size to meet the voltage and current requirements, and solder the wires correctly. If soldering is incomplete, the wire may heat during operation, causing a fire hazard.



## LB Flush Mount & 16mm Miniature Switches & Pilot Lights

**Flush bezel projects only 2mm from front of panel. Standard bezel has a depth of only 27.9mm! Removable contact blocks are ideal for single board mounting.**

### Key Features

- Pushbuttons, lever switches, selector switches, and key selector switches with up to 3PDT contacts.
- Key selectors with keys that are difficult to duplicate. Seven different key numbers to choose from.
- Pilot lights with flat or dome lenses.
- Buzzers with 80dB steady sound.
- Black or metallic flush bezels available.
- Bright and clear LED illuminated face.
- Choice of either gold-clad or silver contacts.
- Degree of protection: IP65 (from the front of the panel).



| Applicable Standards | Mark | File No. or Organization |
|----------------------|------|--------------------------|
| UL508                |      | UL Recognition No.E55996 |
| CSA 22.2 No.14       |      | CSA File No. LR 21451    |
| EN60947-5-1          |      | TÜV Rheinland            |
|                      |      | EU Low Voltage Directive |
| GB14048.5            |      |                          |

### Specifications

|                                      |                                                                                                                                                                                                             |
|--------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operating Temperature                | −25 to +60°C (no freezing), Illuminated units: −25 to +55°C                                                                                                                                                 |
| Storage Temperature                  | −30 to +80°C (no freezing)                                                                                                                                                                                  |
| Operating Humidity                   | 45 to 85% RH (no condensation)                                                                                                                                                                              |
| Contact Resistance                   | 50 mW maximum (initial value)                                                                                                                                                                               |
| Insulation Resistance                | 100 MW minimum (500V DC megger)                                                                                                                                                                             |
| Dielectric Strength                  | Switch Between live part and ground: 2,000V AC, 1 min.<br>Between terminals of different poles: 2,000V AC, 1 min.<br>Between terminals of the same poles: 1,000V AC, 1 min.                                 |
|                                      | Illumination Between live part and ground: 2,000V AC, 1 min.                                                                                                                                                |
| Vibration Resistance                 | Operating extremes/Damage limits:<br>5 to 55 Hz, amplitude 0.5mm                                                                                                                                            |
| Shock Resistance                     | Operating extremes: 100 m/s <sup>2</sup><br>Damage limits: 1,000 m/s <sup>2</sup>                                                                                                                           |
| Mechanical Life (minimum operations) | Momentary: 2,000,000<br>Maintained: 250,000<br>Selector switches: 250,000<br>Key selector switches: 250,000                                                                                                 |
| Electrical Life (minimum operations) | Momentary: 50,000 / 100,000 <sup>1</sup><br>Maintained: 50,000 / 100,000 <sup>2</sup><br>Selector switches: 50,000 / 100,000 <sup>2</sup><br>Key selector switches: 50,000 / 100,000 <sup>2</sup>           |
| Degree of Protection                 | IP65 (IEC 60529)                                                                                                                                                                                            |
| Terminal Style                       | Solder/tab terminal #110, PC board terminal                                                                                                                                                                 |
| Bezel                                | Black plastic or metallic                                                                                                                                                                                   |
| Weight (approx.)                     | 11g (lever switch)<br>13g (pilot light, pushbutton)<br>14g (illuminated pushbutton, pushbutton with guard, buzzer)<br>15g (selector switch, illuminated pushbutton with guard)<br>27g (key selector switch) |

1. Switching frequency 1,800 operations/h.
2. Switching frequency 1,200 operations/h.

### Contact Ratings

| Gold Contact (switch base color: blue)   |                  |         |
|------------------------------------------|------------------|---------|
| Rated Insulation Voltage                 | 250V             |         |
| Rated Thermal Current                    | 3A               |         |
| Rated Operating Voltage                  | 30V DC           | 125V AC |
| Rated Operating Current (resistive load) | 0.1A             | 0.1A    |
| Contact Material                         | Gold-clad silver |         |

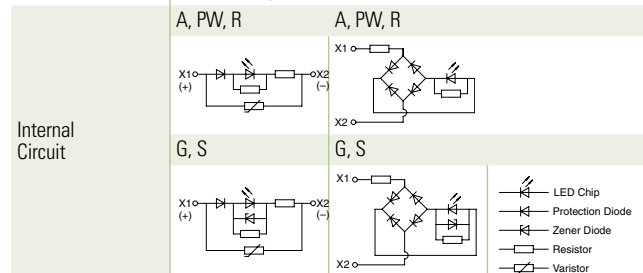
Minimum applicable load (reference value): 5V AC/DC, 1 mA

| Silver Contact (switch base color: gray) |            |                |        |       |      |
|------------------------------------------|------------|----------------|--------|-------|------|
| Rated Insulation Voltage                 |            |                | 250V   |       |      |
| Rated Operating Voltage                  |            |                | 30V    | 125V  | 250V |
| Rated Operating Current                  | AC 50/60Hz | Resistive load | —      | 5A    | 5A   |
|                                          |            | Inductive load | —      | 3A    | 1.5A |
|                                          | DC         | Resistive load | 5A     | 1.1A  | —    |
|                                          |            | Inductive load | 2.5A   | 0.55A | —    |
|                                          | AC 50/60Hz | Resistive load | —      | 5A    | 3A   |
|                                          |            | Inductive load | —      | 3A    | 1.5A |
|                                          | DC         | Resistive load | 3A     | 0.6A  | —    |
|                                          |            | Inductive load | 1A     | 0.22A | —    |
| Rated Thermal Current                    |            |                | 5A     |       |      |
| Contact Material                         |            |                | Silver |       |      |

AC inductive load: PF=0.6 to 0.7 DC inductive load: L/R=7 ms max.

### LED Ratings

|                            |                                                                                    |               |                |
|----------------------------|------------------------------------------------------------------------------------|---------------|----------------|
| Rated Voltage              | 5V DC                                                                              | 12V AC/DC     | 24V AC/DC      |
| Voltage Range              | 5V DC±5%                                                                           | 12V AC/DC±10% | 24V AC/DC ±10% |
| LED Part No.               | LB9Z-LED5②                                                                         | LB9Z-LED1②    | LB9Z-LED2②     |
| Rated Current              | A, R: 22 mA G, PW, S: 16 mA                                                        |               |                |
| Voltage Rating             | Marked on the side of the LED unit                                                 |               |                |
| LED Life (reference value) | Approx. 30,000 hours<br>(until the brightness reduces to 50% of the initial value) |               |                |



1. For ② (color code): A (amber), G (green), PW (white), R (red), S (blue)
2. Use the white LED for yellow illumination.
3. LED lamp contains a current-limiting resistor.

## Illuminated Pushbuttons (Assembled)

| Style                                                                                                                                                                                                                                                                                                                                | Operation  | Operating Voltage | Contact | Standard Bezel                        |                                   | Flush Bezel                           |                                   | ② Color Code                                                                                                                                            |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-------------------|---------|---------------------------------------|-----------------------------------|---------------------------------------|-----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                                                                                                                                                                                                                      |            |                   |         | Solder/Tab Terminal (silver contacts) | PC Board Terminal (gold contacts) | Solder/Tab Terminal (silver contacts) | PC Board Terminal (gold contacts) |                                                                                                                                                         |
| <div>Standard Bezel (black)</div> <div></div> <div></div> <div></div>             | Momentary  | 5V DC             | SPDT    | LB①L-M1T51②                           | LB①L-M1T11V②                      | LB③④L-M1T51②                          | LB③④L-M1T11V②                     | <div>Specify the color code in place of ② in the Part Number:</div> <div>A: amber<br/>G: green<br/>R: red<br/>S: blue<br/>PW: white<br/>Y: yellow</div> |
|                                                                                                                                                                                                                                                                                                                                      |            |                   | DPDT    | LB①L-M1T61②                           | LB①L-M1T21V②                      | LB③④L-M1T61②                          | LB③④L-M1T21V②                     |                                                                                                                                                         |
|                                                                                                                                                                                                                                                                                                                                      |            | 12V AC/DC         | SPDT    | LB①L-M1T53②                           | LB①L-M1T13V②                      | LB③④L-M1T53②                          | LB③④L-M1T13V②                     |                                                                                                                                                         |
|                                                                                                                                                                                                                                                                                                                                      |            |                   | DPDT    | LB①L-M1T63②                           | LB①L-M1T23V②                      | LB③④L-M1T63②                          | LB③④L-M1T23V②                     |                                                                                                                                                         |
|                                                                                                                                                                                                                                                                                                                                      |            | 24V AC/DC         | SPDT    | LB①L-M1T54②                           | LB①L-M1T14V②                      | LB③④L-M1T54②                          | LB③④L-M1T14V②                     |                                                                                                                                                         |
|                                                                                                                                                                                                                                                                                                                                      |            |                   | DPDT    | LB①L-M1T64②                           | LB①L-M1T24V②                      | LB③④L-M1T64②                          | LB③④L-M1T24V②                     |                                                                                                                                                         |
| <div>Flush Bezel (metallic or black)</div> <div></div> <div></div> <div></div> | Maintained | 5V DC             | SPDT    | LB①L-A1T51②                           | LB①L-A1T11V②                      | LB③④L-A1T51②                          | LB③④L-A1T11V②                     |                                                                                                                                                         |
|                                                                                                                                                                                                                                                                                                                                      |            |                   | DPDT    | LB①L-A1T61②                           | LB①L-A1T21V②                      | LB③④L-A1T61②                          | LB③④L-A1T21V②                     |                                                                                                                                                         |
|                                                                                                                                                                                                                                                                                                                                      |            | 12V AC/DC         | SPDT    | LB①L-A1T53②                           | LB①L-A1T13V②                      | LB③④L-A1T53②                          | LB③④L-A1T13V②                     |                                                                                                                                                         |
|                                                                                                                                                                                                                                                                                                                                      |            |                   | DPDT    | LB①L-A1T63②                           | LB①L-A1T23V②                      | LB③④L-A1T63②                          | LB③④L-A1T23V②                     |                                                                                                                                                         |
|                                                                                                                                                                                                                                                                                                                                      |            | 24V AC/DC         | SPDT    | LB①L-A1T54②                           | LB①L-A1T14V②                      | LB③④L-A1T54②                          | LB③④L-A1T14V②                     |                                                                                                                                                         |
|                                                                                                                                                                                                                                                                                                                                      |            |                   | DPDT    | LB①L-A1T64②                           | LB①L-A1T24V②                      | LB③④L-A1T64②                          | LB③④L-A1T24V②                     |                                                                                                                                                         |
| <div>Black Bezel with Guard</div> <div></div>                                                                                                                                                                                                     |            |                   |         |                                       |                                   |                                       |                                   |                                                                                                                                                         |

- For Standard Bezel part numbers specify:
  - Bezel shape in place of ①. 1 (round), 2 (square), 3 (rectangular)
  - Lens/LED color in place of ②. A (amber), G (green), PW (white), R (red), S (blue), Y (yellow)
- For Flush Bezel part numbers specify:
  - Lens/LED in place of ②. A (amber), G (green), PW (white), R (red), S (blue), Y (yellow)
  - Bezel shape in place of ③. 6 (round), 7 (square), 8 (rectangular)
  - Bezel material in place of ④. M (metallic), Blank (black), G (black with guard)
- Solder/Tab terminals have silver contacts and PC Board Terminals have gold contacts.
- Illuminated pushbuttons contain an LED unit.
- See page 524 for dimensions.
- See page 539 for replacement LED units.
- Illuminated pushbuttons can be used with legend markings. Engraving can be done on a marking plate which is placed in the lens, or a clear film can be printed and placed in the lens. See page 539 for details on the marking plate and film.



## Illuminated Pushbuttons (Sub-assembled)

| Contact Block | Operator | LED Module | Lens | Completed Unit |
|---------------|----------|------------|------|----------------|
|---------------|----------|------------|------|----------------|



### Contact Block

| Terminal Style | Material | Contact | Part Number |
|----------------|----------|---------|-------------|
|                | Silver   | SPDT    | LB-T50      |
|                |          | DPDT    | LB-T60      |
|                | Gold     | SPDT    | LB-T10V     |
|                |          | DPDT    | LB-T20V     |

### LED Module

| Style | Color  | Voltage | Part Number |
|-------|--------|---------|-------------|
|       | Amber  | 5V      | LB9Z-LED5A  |
|       |        | 12V     | LB9Z-LED1A  |
|       |        | 24V     | LB9Z-LED2A  |
|       | Green  | 5V      | LB9Z-LED5G  |
|       |        | 12V     | LB9Z-LED1G  |
|       |        | 24V     | LB9Z-LED2G  |
|       | Red    | 5V      | LB9Z-LED5R  |
|       |        | 12V     | LB9Z-LED1R  |
|       |        | 24V     | LB9Z-LED2R  |
|       | Blue   | 5V      | LB9Z-LED5S  |
|       |        | 12V     | LB9Z-LED1S  |
|       |        | 24V     | LB9Z-LED2S  |
|       | White  | 5V      | LB9Z-LED5PW |
|       |        | 12V     | LB9Z-LED1PW |
|       |        | 24V     | LB9Z-LED2PW |
|       | Yellow | 5V      | LB9Z-LED5PW |
|       |        | 12V     | LB9Z-LED1PW |
|       |        | 24V     | LB9Z-LED2PW |

### Operator

| Style | Mounting Style                      | Shape       | Monmontary | Maintained |
|-------|-------------------------------------|-------------|------------|------------|
|       | Standard (Plastic)                  | Round       | LB1L-M0    | LB1L-A0    |
|       |                                     | Square      | LB2L-M0    | LB2L-A0    |
|       |                                     | Rectangular | LB3L-M0    | LB3L-A0    |
|       | Flush Mount (Plastic)               | Round       | LB6L-M0    | LB6L-A0    |
|       |                                     | Square      | LB7L-M0    | LB7L-A0    |
|       |                                     | Rectangular | LB8L-M0    | LB8L-A0    |
|       | Flush Mount (Metallic)              | Round       | LB6ML-M0   | LB6ML-A0   |
|       |                                     | Square      | LB7ML-M0   | LB7ML-A0   |
|       |                                     | Rectangular | LB8ML-M0   | LB8ML-A0   |
|       | Flush Mount (Built-in switch guard) | Round       | LB6GL-M0   | LB6GL-A0   |
|       |                                     | Square      | LB7GL-M0   | LB7GL-A0   |
|       |                                     | Rectangular | LB8GL-M0   | LB8GL-A0   |

### Lens

| Shape | Color  | Part Number |
|-------|--------|-------------|
|       | Amber  | LB1A-L1A    |
|       | Green  | LB1A-L1G    |
|       | Red    | LB1A-L1R    |
|       | Blue   | LB1A-L1S    |
|       | White  | LB1A-L1W    |
|       | Yellow | LB1A-L1Y    |
|       | Amber  | LB2A-L1A    |
|       | Green  | LB2A-L1G    |
|       | Red    | LB2A-L1R    |
|       | Blue   | LB2A-L1S    |
|       | White  | LB2A-L1W    |
|       | Yellow | LB2A-L1Y    |
|       | Amber  | LB3A-L1A    |
|       | Green  | LB3A-L1G    |
|       | Red    | LB3A-L1R    |
|       | Blue   | LB3A-L1S    |
|       | White  | LB3A-L1W    |
|       | Yellow | LB3A-L1Y    |

## Pilot Lights (Assembled)

| Style                                                                                                                 | Operating Voltage | Standard Bezel                        |                                   | Flush Bezel                           |                                   | ② Color Code                                                                                                                        |
|-----------------------------------------------------------------------------------------------------------------------|-------------------|---------------------------------------|-----------------------------------|---------------------------------------|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                       |                   | Solder/Tab Terminal (silver contacts) | PC Board Terminal (gold contacts) | Solder/Tab Terminal (silver contacts) | PC Board Terminal (gold contacts) |                                                                                                                                     |
| Standard Bezel (black)<br>           | 5V DC             | LB①P-⑤T01②                            | LB①P-⑤T01V②                       | LB③④P-⑤T01②                           | LB③④P-⑤T01V②                      |                                                                                                                                     |
|                                                                                                                       |                   |                                       |                                   |                                       |                                   |                                                                                                                                     |
|                                                                                                                       |                   |                                       |                                   |                                       |                                   |                                                                                                                                     |
|                                                                                                                       |                   |                                       |                                   |                                       |                                   |                                                                                                                                     |
| Flush Bezel (metallic or black)<br> | 12V AC/DC         | LB①P-⑤T03②                            | LB①P-⑤T03V②                       | LB③④P-⑤T03②                           | LB③④P-⑤T03V②                      | Specify the color code in place of ② in the Part Number:<br><br>A: amber<br>G: green<br>PW: white<br>R: red<br>S: blue<br>Y: yellow |
|                                                                                                                       |                   |                                       |                                   |                                       |                                   |                                                                                                                                     |
|                                                                                                                       |                   |                                       |                                   |                                       |                                   |                                                                                                                                     |
|                                                                                                                       |                   |                                       |                                   |                                       |                                   |                                                                                                                                     |
|                                                                                                                       | 24V AC/DC         | LB①P-⑤T04②                            | LB①P-⑤T04V②                       | LB③④P-⑤T04②                           | LB③④P-⑤T04V②                      |                                                                                                                                     |
|                                                                                                                       |                   |                                       |                                   |                                       |                                   |                                                                                                                                     |

- For Standard Bezel part numbers specify:
  - bezel shape in place of ①. 1 (round), 2 (square), 3 (rectangular)
  - lens/LED color in place of ②. A (amber), G (green), PW (white), R (red), S (blue), Y (yellow)
  - lens type code in place of ⑤. 1 (flat), 2 (dome with round lens)
- For Flush Bezel part numbers specify:
  - lens/LED in place of ②. A (amber), G (green), PW (white), R (red), S (blue), Y (yellow)
  - bezel shape in place of ③. 6 (round), 7 (square), 8 (rectangular)
  - bezel material in place of ④. M (metallic), Blank (black)
  - lens type code in place of ⑤. 1 (flat), 2 (dome with round lens)
- Pilot lights contain an LED unit.
- See page 524 for dimensions.
- See page 539 for replacement LED unit.

## Pilot Lights (Sub-assembled)



### Contact Block

| Terminal Style                                                                    | Part Number          |
|-----------------------------------------------------------------------------------|----------------------|
|  | Solder Tab<br>LB-T00 |
|  | PCB<br>LB-T00V       |

### LED Module

| Style                                                                               | Color  | Voltage | Part Number |
|-------------------------------------------------------------------------------------|--------|---------|-------------|
|  | Amber  | 5V      | LB9Z-LED5A  |
|                                                                                     |        | 12V     | LB9Z-LED1A  |
|                                                                                     |        | 24V     | LB9Z-LED2A  |
|                                                                                     | Green  | 5V      | LB9Z-LED5G  |
|                                                                                     |        | 12V     | LB9Z-LED1G  |
|                                                                                     |        | 24V     | LB9Z-LED2G  |
|                                                                                     | Red    | 5V      | LB9Z-LED5R  |
|                                                                                     |        | 12V     | LB9Z-LED1R  |
|                                                                                     |        | 24V     | LB9Z-LED2R  |
|                                                                                     | Blue   | 5V      | LB9Z-LED5S  |
|                                                                                     |        | 12V     | LB9Z-LED1S  |
|                                                                                     |        | 24V     | LB9Z-LED2S  |
|                                                                                     | White  | 5V      | LB9Z-LED5PW |
|                                                                                     |        | 12V     | LB9Z-LED1PW |
|                                                                                     |        | 24V     | LB9Z-LED2PW |
|                                                                                     | Yellow | 5V      | LB9Z-LED5PW |
|                                                                                     |        | 12V     | LB9Z-LED1PW |
|                                                                                     |        | 24V     | LB9Z-LED2PW |

### Operator

| Style                                                                             | Mounting Style         | Shape       | Part Number |
|-----------------------------------------------------------------------------------|------------------------|-------------|-------------|
|  | Standard (Plastic)     | Round       | LB1P-0      |
|                                                                                   |                        | Square      | LB2P-0      |
|                                                                                   |                        | Rectangular | LB3P-0      |
|  | Flush Mount (Plastic)  | Round       | LB6P-0      |
|                                                                                   |                        | Square      | LB7P-0      |
|                                                                                   |                        | Rectangular | LB8P-0      |
|  | Flush Mount (Metallic) | Round       | LB6MP-0     |
|                                                                                   |                        | Square      | LB7MP-0     |
|                                                                                   |                        | Rectangular | LB8MP-0     |

### Lens

| Shape                                                                               | Color  | Part Number |
|-------------------------------------------------------------------------------------|--------|-------------|
|  | Amber  | LB1A-P1A    |
|                                                                                     | Green  | LB1A-P1G    |
|                                                                                     | Red    | LB1A-P1R    |
|                                                                                     | Blue   | LB1A-P1S    |
|                                                                                     | White  | LB1A-P1W    |
|                                                                                     | Yellow | LB1A-P1Y    |
|  | Amber  | LB1A-P2A    |
|                                                                                     | Green  | LB1A-P2G    |
|                                                                                     | Red    | LB1A-P2R    |
|                                                                                     | Blue   | LB1A-P2S    |
|                                                                                     | White  | LB1A-P2W    |
|                                                                                     | Yellow | LB1A-P2Y    |
|  | Amber  | LB2A-P1A    |
|                                                                                     | Green  | LB2A-P1G    |
|                                                                                     | Red    | LB2A-P1R    |
|                                                                                     | Blue   | LB2A-P1S    |
|                                                                                     | White  | LB2A-P1W    |
|                                                                                     | Yellow | LB2A-P1Y    |
|  | Amber  | LB3A-P1A    |
|                                                                                     | Green  | LB3A-P1G    |
|                                                                                     | Red    | LB3A-P1R    |
|                                                                                     | Blue   | LB3A-P1S    |
|                                                                                     | White  | LB3A-P1W    |
|                                                                                     | Yellow | LB3A-P1Y    |

## Non-Illuminated Pushbuttons (Assembled)

| Style                                                                                                                                                                                                                                                                                             | Operation  | Contact | Standard Bezel                           |                                      | Flush Bezel                              |                                      | ②<br>Color Code                                                                                                                    |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|---------|------------------------------------------|--------------------------------------|------------------------------------------|--------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                                                                                                                                                                                   |            |         | Solder/Tab Terminal<br>(silver contacts) | PC Board Terminal<br>(gold contacts) | Solder/Tab Terminal<br>(silver contacts) | PC Board Terminal<br>(gold contacts) |                                                                                                                                    |
| Standard Bezel (black)<br><br><br>             | Momentary  | SPDT    | LB①B-M1T5②                               | LB①B-M1T1V②                          | LB③④B-M1T5②                              | LB③④B-M1T1V②                         |                                                                                                                                    |
|                                                                                                                                                                                                                                                                                                   |            | DPDT    | LB①B-M1T6②                               | LB①B-M1T2V②                          | LB③④B-M1T6②                              | LB③④B-M1T2V②                         |                                                                                                                                    |
|                                                                                                                                                                                                                                                                                                   |            | 3PDT    | LB①B-M1T7②                               | LB①B-M1T3V②                          | LB③④B-M1T7②                              | LB③④B-M1T3V②                         |                                                                                                                                    |
| Flush Bezel (metallic or black)<br><br><br> | Maintained | SPDT    | LB①B-A1T5②                               | LB①B-A1T1V②                          | LB③④B-A1T5②                              | LB③④B-A1T1V②                         | Specify the color code in place of ② in the Part Number:<br><br>B: black<br>G: green<br>R: red<br>S: blue<br>W: white<br>Y: yellow |
|                                                                                                                                                                                                                                                                                                   |            | DPDT    | LB①B-A1T6②                               | LB①B-A1T2V②                          | LB③④B-A1T6②                              | LB③④B-A1T2V②                         |                                                                                                                                    |
|                                                                                                                                                                                                                                                                                                   |            | 3PDT    | LB①B-A1T7②                               | LB①B-A1T3V②                          | LB③④B-A1T7②                              | LB③④B-A1T3V②                         |                                                                                                                                    |
| Black Bezel with Guard<br>                                                                                                                                                                                     |            |         |                                          |                                      |                                          |                                      |                                                                                                                                    |

1. For Standard Bezel part numbers specify:

- bezel shape in place of ①. 1 (round), 2 (square), 3 (rectangular)
- lens/LED in place of ②. B (black), G (green), R (red), S (blue), W (white), Y (yellow)

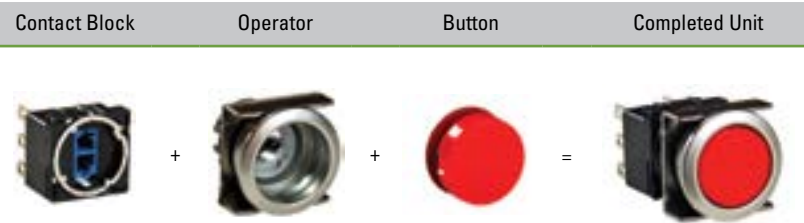
2. For Flush Bezel part numbers specify:

- lens/LED in place of ②. B (black), G (green), R (red), S (blue), W (white), Y (yellow)
- bezel shape in place of ③. 6 (round), 7 (square), 8 (rectangular)
- bezel material in place of ④. M (metallic), Blank (black)

3. See page 526 for dimensions.

4. Lens can be used with legend markings. Engraving can be done on a marking plate which is placed into the lens, or a clear film can be printed and placed under the lens. For details on the marking plate and film, see page 539.

Non-Illuminated Pushbuttons (Sub-assembled)



Contact Block

| Terminal Style                                                                    |            | Material | Contact | Part Number |
|-----------------------------------------------------------------------------------|------------|----------|---------|-------------|
|  | Solder/Tab | Silver   | SPDT    | LB-T5       |
|                                                                                   |            |          | DPDT    | LB-T6       |
|                                                                                   |            |          | 3PDT    | LB-T7       |
|  | PCB        | Gold     | SPDT    | LB-T1V      |
|                                                                                   |            |          | DPDT    | LB-T2V      |
|                                                                                   |            |          | 3PDT    | LB-T3V      |

Button

| Style                                                                               |             | Color  | Part Number |
|-------------------------------------------------------------------------------------|-------------|--------|-------------|
|   | Round       | Black  | LB1A-B1B    |
|                                                                                     |             | Green  | LB1A-B1G    |
|                                                                                     |             | Red    | LB1A-B1R    |
|                                                                                     |             | Blue   | LB1A-B1S    |
|                                                                                     |             | White  | LB1A-B1W    |
|                                                                                     |             | Yellow | LB1A-B1Y    |
|  | Square      | Black  | LB2A-B1B    |
|                                                                                     |             | Green  | LB2A-B1G    |
|                                                                                     |             | Red    | LB2A-B1R    |
|                                                                                     |             | Blue   | LB2A-B1S    |
|                                                                                     |             | White  | LB2A-B1W    |
|                                                                                     |             | Yellow | LB2A-B1Y    |
|  | Rectangular | Black  | LB3A-B1B    |
|                                                                                     |             | Green  | LB3A-B1G    |
|                                                                                     |             | Red    | LB3A-B1R    |
|                                                                                     |             | Blue   | LB3A-B1S    |
|                                                                                     |             | White  | LB3A-B1W    |
|                                                                                     |             | Yellow | LB3A-B1Y    |

Operator

| Style                                                                               | Mounting style                      | Shape       | Momentary | Maintained |
|-------------------------------------------------------------------------------------|-------------------------------------|-------------|-----------|------------|
|    | Standard (Plastic)                  | Round       | LB1L-M0   | LB1L-A0    |
|                                                                                     |                                     | Square      | LB2L-M0   | LB2L-A0    |
|                                                                                     |                                     | Rectangular | LB3L-M0   | LB3L-A0    |
|    | Flush Mount (Plastic)               | Round       | LB6L-M0   | LB6L-A0    |
|                                                                                     |                                     | Square      | LB7L-M0   | LB7L-A0    |
|                                                                                     |                                     | Rectangular | LB8L-M0   | LB8L-A0    |
|    | Flush Mount (Metallic)              | Round       | LB6ML-M0  | LB6ML-A0   |
|                                                                                     |                                     | Square      | LB7ML-M0  | LB7ML-A0   |
|                                                                                     |                                     | Rectangular | LB8ML-M0  | LB8ML-A0   |
|  | Flush Mount (Built-in switch guard) | Round       | LB6GL-M0  | LB6GL-A0   |
|                                                                                     |                                     | Square      | LB7GL-M0  | LB7GL-A0   |
|                                                                                     |                                     | Rectangular | LB8GL-M0  | LB8GL-A0   |

## Selector Switches (Assembled)

| Style                                                                                                                        | Operator Position | Contact                                                                                                        | Standard Bezel                           |                                      | Flush Bezel                              |                                      |
|------------------------------------------------------------------------------------------------------------------------------|-------------------|----------------------------------------------------------------------------------------------------------------|------------------------------------------|--------------------------------------|------------------------------------------|--------------------------------------|
|                                                                                                                              |                   |                                                                                                                | Solder/Tab Terminal<br>(silver contacts) | PC Board Terminal<br>(gold contacts) | Solder/Tab Terminal<br>(silver contacts) | PC Board Terminal<br>(gold contacts) |
| <b>Standard Bezel (black)</b><br>           | 90°<br>2-position | Maintained<br>                | SPDT                                     | LB①S-2⑤T5                            | LB①S-2⑤T1V                               | LB③④S-2⑤T5                           |
|                                                                                                                              |                   |                                                                                                                | DPDT                                     | LB①S-2⑤T6                            | LB①S-2⑤T2V                               | LB③④S-2⑤T6                           |
|                                                                                                                              |                   |                                                                                                                | 3PDT                                     | LB①S-2⑤T7                            | LB①S-2⑤T3V                               | LB③④S-2⑤T7                           |
|                                                                                                                              |                   | Spring return from right<br>  | SPDT                                     | LB①S-21⑤T5                           | LB①S-21⑤T1V                              | LB③④S-21⑤T5                          |
|                                                                                                                              |                   |                                                                                                                | DPDT                                     | LB①S-21⑤T6                           | LB①S-21⑤T2V                              | LB③④S-21⑤T6                          |
|                                                                                                                              |                   |                                                                                                                | 3PDT                                     | LB①S-21⑤T7                           | LB①S-21⑤T3V                              | LB③④S-21⑤T7                          |
| <b>Flush Bezel (metallic or black)</b><br> | 45°<br>3-position | Maintained<br>                | DPDT                                     | LB①S-3⑤T6                            | LB①S-3⑤T2V                               | LB③④S-3⑤T6                           |
|                                                                                                                              |                   |                                                                                                                | 3PDT                                     | LB①S-3⑤T7                            | LB①S-3⑤T3V                               | LB③④S-3⑤T7                           |
|                                                                                                                              |                   | Spring return from right<br>  | DPDT                                     | LB①S-31⑤T6                           | LB①S-31⑤T2V                              | LB③④S-31⑤T6                          |
|                                                                                                                              |                   |                                                                                                                | 3PDT                                     | LB①S-31⑤T7                           | LB①S-31⑤T3V                              | LB③④S-31⑤T7                          |
|                                                                                                                              |                   | Spring return from left<br> | DPDT                                     | LB①S-32⑤T6                           | LB①S-32⑤T2V                              | LB③④S-32⑤T6                          |
|                                                                                                                              |                   |                                                                                                                | 3PDT                                     | LB①S-32⑤T7                           | LB①S-32⑤T3V                              | LB③④S-32⑤T7                          |
|                                                                                                                              |                   | Spring return two-way<br>   | DPDT                                     | LB①S-33⑤T6                           | LB①S-33⑤T2V                              | LB③④S-33⑤T6                          |
|                                                                                                                              |                   |                                                                                                                | 3PDT                                     | LB①S-33⑤T7                           | LB①S-33⑤T3V                              | LB③④S-33⑤T7                          |
|                                                                                                                              |                   |                                                                                                                |                                          |                                      |                                          |                                      |
|                                                                                                                              |                   |                                                                                                                |                                          |                                      |                                          |                                      |

Knob models shown above unless otherwise indicated.

5. For Standard Bezel part numbers specify:

- bezel shape in place of ①. 1 (round), 2 (square), 3 (rectangular)
- operator shape in place of ⑤. blank (knob), L (lever).

6. For Flush Bezel part numbers specify:

- bezel shape in place of ③. 6 (round), 7 (square), 8 (rectangular)
- bezel material in place of ④. M (metallic), Blank (black)
- operator shape in place of ⑤. blank (knob), L (lever).

7. See page 522 for contact operation.

8. See page 528 for dimensions.

## Selector Switches (Sub-assembled)



### Contact Block

| Terminal Style                                                                    | Material   | Contact | Part Number |
|-----------------------------------------------------------------------------------|------------|---------|-------------|
|  | Solder/Tab | Silver  | SPDT LB-T5  |
|                                                                                   |            |         | DPDT LB-T6  |
|                                                                                   |            |         | 3PDT LB-T7  |
|  | PCB        | Gold    | SPDT LB-T1V |
|                                                                                   |            |         | DPDT LB-T2V |
|                                                                                   |            |         | 3PDT LB-T3V |

SPDT contacts applicable for 2-position switches only.

### Operator

| Style                                                                                                             | Shape                                                                                              | Position | Function          | Part Number |           |
|-------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|----------|-------------------|-------------|-----------|
|                                                                                                                   |                                                                                                    |          |                   | Knob        | Lever     |
| Standard (Plastic)<br><br>Round | Round                                                                                              | 2        | Maintained        | LB1S-2Y     | LB1S-2L   |
|                                                                                                                   |                                                                                                    |          | Spring from right | LB1S-21Y    | LB1S-21L  |
|                                                                                                                   |                                                                                                    | 3        | Maintained        | LB1S-3Y     | LB1S-3L   |
|                                                                                                                   |                                                                                                    |          | Spring from right | LB1S-31Y    | LB1S-31L  |
|                                                                                                                   |                                                                                                    |          | Spring from left  | LB1S-32Y    | LB1S-32L  |
|                                                                                                                   | Rectangular<br> | 2        | Maintained        | LB2S-2Y     | LB2S-2L   |
|                                                                                                                   |                                                                                                    |          | Spring from right | LB2S-21Y    | LB2S-21L  |
|                                                                                                                   |                                                                                                    | 3        | Maintained        | LB2S-3Y     | LB2S-3L   |
|                                                                                                                   |                                                                                                    |          | Spring from right | LB2S-31Y    | LB2S-31L  |
|                                                                                                                   |                                                                                                    |          | Spring from left  | LB2S-32Y    | LB2S-32L  |
|                                                                                                                   | Rectangular                                                                                        | 2        | Maintained        | LB3S-2Y     | LB3S-2L   |
|                                                                                                                   |                                                                                                    |          | Spring from right | LB3S-21Y    | LB3S-21L  |
|                                                                                                                   |                                                                                                    | 3        | Maintained        | LB3S-3Y     | LB3S-3L   |
|                                                                                                                   |                                                                                                    |          | Spring from right | LB3S-31Y    | LB3S-31L  |
|                                                                                                                   |                                                                                                    |          | Spring from left  | LB3S-32Y    | LB3S-32L  |
|                                                                                                                   |                                                                                                    | 2        | Maintained        | LB8MS-2Y    | LB8MS-2L  |
|                                                                                                                   |                                                                                                    |          | Spring from right | LB8MS-21Y   | LB8MS-21L |
|                                                                                                                   |                                                                                                    | 3        | Maintained        | LB8MS-3Y    | LB8MS-3L  |
|                                                                                                                   |                                                                                                    |          | Spring from right | LB8MS-31Y   | LB8MS-31L |
|                                                                                                                   |                                                                                                    |          | Spring from left  | LB8MS-32Y   | LB8MS-32L |

| Style                                                                                                                  | Shape                                                                                         | Position | Function          | Part Number |           |
|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|----------|-------------------|-------------|-----------|
|                                                                                                                        |                                                                                               |          |                   | Knob        | Lever     |
| Flush Mount (Plastic)<br><br>Round    | Round                                                                                         | 2        | Maintained        | LB6S-2Y     | LB6S-2L   |
|                                                                                                                        |                                                                                               |          | Spring from right | LB6S-21Y    | LB6S-21L  |
|                                                                                                                        |                                                                                               | 3        | Maintained        | LB6S-3Y     | LB6S-3L   |
|                                                                                                                        |                                                                                               |          | Spring from right | LB6S-31Y    | LB6S-31L  |
|                                                                                                                        |                                                                                               |          | Spring from left  | LB6S-32Y    | LB6S-32L  |
|                                                                                                                        | Square<br>   | 2        | Maintained        | LB7S-2Y     | LB7S-2L   |
|                                                                                                                        |                                                                                               |          | Spring from right | LB7S-21Y    | LB7S-21L  |
|                                                                                                                        |                                                                                               | 3        | Maintained        | LB7S-3Y     | LB7S-3L   |
|                                                                                                                        |                                                                                               |          | Spring from right | LB7S-31Y    | LB7S-31L  |
|                                                                                                                        |                                                                                               |          | Spring from left  | LB7S-32Y    | LB7S-32L  |
|                                                                                                                        | Rectangular                                                                                   | 2        | Maintained        | LB8S-2Y     | LB8S-2L   |
|                                                                                                                        |                                                                                               |          | Spring from right | LB8S-21Y    | LB8S-21L  |
|                                                                                                                        |                                                                                               | 3        | Maintained        | LB8S-3Y     | LB8S-3L   |
|                                                                                                                        |                                                                                               |          | Spring from right | LB8S-31Y    | LB8S-31L  |
|                                                                                                                        |                                                                                               |          | Spring from left  | LB8S-32Y    | LB8S-32L  |
| Flush Mount (Metallic)<br><br>Round | Round                                                                                         | 2        | Maintained        | LB6MS-2Y    | LB6MS-2L  |
|                                                                                                                        |                                                                                               |          | Spring from right | LB6MS-21Y   | LB6MS-21L |
|                                                                                                                        |                                                                                               | 3        | Maintained        | LB6MS-3Y    | LB6MS-3L  |
|                                                                                                                        |                                                                                               |          | Spring from right | LB6MS-31Y   | LB6MS-31L |
|                                                                                                                        |                                                                                               |          | Spring from left  | LB6MS-32Y   | LB6MS-32L |
|                                                                                                                        | Square<br> | 2        | Maintained        | LB7MS-2Y    | LB7MS-2L  |
|                                                                                                                        |                                                                                               |          | Spring from right | LB7MS-21Y   | LB7MS-21L |
|                                                                                                                        |                                                                                               | 3        | Maintained        | LB7MS-3Y    | LB7MS-3L  |
|                                                                                                                        |                                                                                               |          | Spring from right | LB7MS-31Y   | LB7MS-31L |
|                                                                                                                        |                                                                                               |          | Spring from left  | LB7MS-32Y   | LB7MS-32L |
|                                                                                                                        | Rectangular                                                                                   | 2        | Maintained        | LB8MS-2Y    | LB8MS-2L  |
|                                                                                                                        |                                                                                               |          | Spring from right | LB8MS-21Y   | LB8MS-21L |
|                                                                                                                        |                                                                                               | 3        | Maintained        | LB8MS-3Y    | LB8MS-3L  |
|                                                                                                                        |                                                                                               |          | Spring from right | LB8MS-31Y   | LB8MS-31L |
|                                                                                                                        |                                                                                               |          | Spring from left  | LB8MS-32Y   | LB8MS-32L |



## Illuminated Selector Switches (Assembled)

| Style                                                                                                                                                                                                                                                                                                                    | Operating Voltage                                                                                                                                                                                                                     | Operator Position | Contact                                                                                           | Standard Bezel                                                                                  |                                                                                                  | Flush Bezel                              |                                      |              |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|---------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|------------------------------------------|--------------------------------------|--------------|
|                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                       |                   |                                                                                                   | Solder/Tab Terminal<br>(silver contacts)                                                        | PC Board Terminal<br>(gold contacts)                                                             | Solder/Tab Terminal<br>(silver contacts) | PC Board Terminal<br>(gold contacts) |              |
| <div>Standard Bezel (black)</div> <div></div> <div></div> <div></div> | 5V DC                                                                                                                                                                                                                                 | 90°<br>2-position | Maintained<br>   | SPDT                                                                                            | LB①F-2T51②                                                                                       | LB①F-2T11V②                              | LB6③F-2T51②                          | LB6③F-2T11V② |
|                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                       |                   | DPDT                                                                                              | LB①F-2T61②                                                                                      | LB①F-2T21V②                                                                                      | LB6③F-2T61②                              | LB6③F-2T21V②                         |              |
|                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                       | 45°<br>3-position | Maintained<br>   | DPDT                                                                                            | LB①F-3T61②                                                                                       | LB①F-3T21V②                              | LB6③F-3T61②                          | LB6③F-3T21V② |
|                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                       |                   | 12V AC/DC                                                                                         | 90°<br>2-position                                                                               | Maintained<br>  | SPDT                                     | LB①F-2T53②                           | LB①F-2T13V②  |
|                                                                                                                                                                                                                                                                                                                          | DPDT                                                                                                                                                                                                                                  | LB①F-2T63②        |                                                                                                   |                                                                                                 | LB①F-2T23V②                                                                                      | LB6③F-2T63②                              | LB6③F-2T23V②                         |              |
|                                                                                                                                                                                                                                                                                                                          | <div>Flush Bezel (metallic or black)</div> <div></div> <div></div> | 45°<br>3-position |                                                                                                   | Maintained<br> | DPDT                                                                                             | LB①F-3T63②                               | LB①F-3T23V②                          | LB6③F-3T63②  |
| 24V AC/DC                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                       |                   |                                                                                                   | 90°<br>2-position                                                                               | Maintained<br> | SPDT                                     | LB①F-2T54②                           | LB①F-2T14V②  |
|                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                       | DPDT              | LB①F-2T64②                                                                                        |                                                                                                 | LB①F-2T24V②                                                                                      | LB6③F-2T64②                              | LB6③F-2T24V②                         |              |
|                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                       | 45°<br>3-position | Maintained<br> | DPDT                                                                                            | LB①F-3T64②                                                                                       | LB①F-3T24V②                              | LB6③F-3T64②                          | LB6③F-3T24V② |

Flush bezel only available with round operator.

9. For Standard Bezel part numbers specify:

- bezel shape in place of ①. 1 (round), 2 (square), 3 (rectangular)
- color code in place of ②. A (amber), G (green), R (red), S (blue), PW (white), Y (yellow)

10. For Flush Bezel part numbers specify:

- color code in place of ②. A (amber), G (green), R (red), S (blue), PW (white), Y (yellow)
- bezel material in place of ③. M (metallic), Blank (black)

11. See page page 522 for contact operation.

12. See page page 530 for dimensions.

Illuminated Selector Switches (Sub-assembled)



Contact Block

| Terminal Style                                                                    | Material   | Contact | Part Number  |
|-----------------------------------------------------------------------------------|------------|---------|--------------|
|  | Solder/Tab | Silver  | SPDT LB-T50  |
|                                                                                   |            |         | DPDT LB-T60  |
|                                                                                   |            | Gold    | SPDT LB-T10  |
|                                                                                   |            |         | DPDT LB-T20  |
|  | PCB        | Gold    | SPDT LB-T10V |
|                                                                                   |            | Gold    | DPDT LB-T20V |

SPDT contacts applicable for 2-position switches only.

Operator

| Style                                                                               | Shape       | Position | Function   | Part Number |
|-------------------------------------------------------------------------------------|-------------|----------|------------|-------------|
|  | Round       | 2        | Maintained | LB1F-2      |
|                                                                                     |             | 3        | Maintained | LB1F-3      |
|                                                                                     | Square      | 2        | Maintained | LB2F-2      |
|                                                                                     |             | 3        | Maintained | LB2F-3      |
|                                                                                     | Rectangular | 2        | Maintained | LB3F-2      |
|                                                                                     |             | 3        | Maintained | LB3F-3      |
|  | Round       | 2        | Maintained | LB6F-2      |
|                                                                                     |             | 3        | Maintained | LB6F-3      |
|  | Round       | 2        | Maintained | LB6MF-2     |
|                                                                                     |             | 3        | Maintained | LB6MF-3     |

LED Module

| Style                                                                             | Color  | Voltage | Part Number |
|-----------------------------------------------------------------------------------|--------|---------|-------------|
|  | Amber  | 5V      | LB9Z-LED5A  |
|                                                                                   |        | 12V     | LB9Z-LED1A  |
|                                                                                   |        | 24V     | LB9Z-LED2A  |
|                                                                                   | Green  | 5V      | LB9Z-LED5G  |
|                                                                                   |        | 12V     | LB9Z-LED1G  |
|                                                                                   |        | 24V     | LB9Z-LED2G  |
|                                                                                   | Red    | 5V      | LB9Z-LED5R  |
|                                                                                   |        | 12V     | LB9Z-LED1R  |
|                                                                                   |        | 24V     | LB9Z-LED2R  |
|                                                                                   | Blue   | 5V      | LB9Z-LED5S  |
|                                                                                   |        | 12V     | LB9Z-LED1S  |
|                                                                                   |        | 24V     | LB9Z-LED2S  |
|                                                                                   | White  | 5V      | LB9Z-LED5PW |
|                                                                                   |        | 12V     | LB9Z-LED1PW |
|                                                                                   |        | 24V     | LB9Z-LED2PW |
|                                                                                   | Yellow | 5V      | LB9Z-LED5PW |
|                                                                                   |        | 12V     | LB9Z-LED1PW |
|                                                                                   |        | 24V     | LB9Z-LED2PW |

Lens Handle

| Style                                                                               | Color  | Part Number |
|-------------------------------------------------------------------------------------|--------|-------------|
|  | Amber  | LA1A-FA     |
|                                                                                     | Green  | LA1A-FG     |
|                                                                                     | Red    | LA1A-FR     |
|                                                                                     | Blue   | LA1A-FS     |
|                                                                                     | White  | LA1A-FW     |
|                                                                                     | Yellow | LA1A-FY     |

## Key Selector Switches (Assembled)

| Style                                                                                                                          | Operator Position        | Key retained at  | Contact                                                                             | Standard Bezel                        |                                   | Flush Bezel                           |                                   |              |
|--------------------------------------------------------------------------------------------------------------------------------|--------------------------|---------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------|-----------------------------------|---------------------------------------|-----------------------------------|--------------|
|                                                                                                                                |                          |                                                                                                   |                                                                                     | Solder/Tab Terminal (silver contacts) | PC Board Terminal (gold contacts) | Solder/Tab Terminal (silver contacts) | PC Board Terminal (gold contacts) |              |
| <div>Standard Bezel (black)</div>             | 90° 2-position           | Maintained                                                                                        |    | SPDT                                  | LB⓪K-2T5A                         | LB⓪K-2T1VA                            | LB⓪⓪K-2T5A                        | LB⓪⓪K-2T1VA  |
|                                                                                                                                |                          |                                                                                                   |                                                                                     | DPDT                                  | LB⓪K-2T6A                         | LB⓪K-2T2VA                            | LB⓪⓪K-2T6A                        | LB⓪⓪K-2T2VA  |
|                                                                                                                                |                          |                                                                                                   |                                                                                     | 3PDT                                  | LB⓪K-2T7A                         | LB⓪K-2T3VA                            | LB⓪⓪K-2T7A                        | LB⓪⓪K-2T3VA  |
|                                                                                                                                |                          |                                                                                                   |    | SPDT                                  | LB⓪K-2T5B                         | LB⓪K-2T1VB                            | LB⓪⓪K-2T5B                        | LB⓪⓪K-2T1VB  |
|                                                                                                                                |                          |                                                                                                   |                                                                                     | DPDT                                  | LB⓪K-2T6B                         | LB⓪K-2T2VB                            | LB⓪⓪K-2T6B                        | LB⓪⓪K-2T2VB  |
|                                                                                                                                |                          |                                                                                                   |                                                                                     | 3PDT                                  | LB⓪K-2T7B                         | LB⓪K-2T3VB                            | LB⓪⓪K-2T7B                        | LB⓪⓪K-2T3VB  |
|                                                                                                                                |                          | C                                                                                                 |    | SPDT                                  | LB⓪K-2T5C                         | LB⓪K-2T1VC                            | LB⓪⓪K-2T5C                        | LB⓪⓪K-2T1VC  |
|                                                                                                                                |                          |                                                                                                   |                                                                                     | DPDT                                  | LB⓪K-2T6C                         | LB⓪K-2T2VC                            | LB⓪⓪K-2T6C                        | LB⓪⓪K-2T2VC  |
|                                                                                                                                |                          |                                                                                                   |                                                                                     | 3PDT                                  | LB⓪K-2T7C                         | LB⓪K-2T3VC                            | LB⓪⓪K-2T7C                        | LB⓪⓪K-2T3VC  |
|                                                                                                                                | Spring return from right | B                                                                                                 |    | SPDT                                  | LB⓪K-21T5B                        | LB⓪K-21T1VB                           | LB⓪⓪K-21T5B                       | LB⓪⓪K-21T1VB |
|                                                                                                                                |                          |                                                                                                   |                                                                                     | DPDT                                  | LB⓪K-21T6B                        | LB⓪K-21T2VB                           | LB⓪⓪K-21T6B                       | LB⓪⓪K-21T2VB |
|                                                                                                                                |                          |                                                                                                   |                                                                                     | 3PDT                                  | LB⓪K-21T7B                        | LB⓪K-21T3VB                           | LB⓪⓪K-21T7B                       | LB⓪⓪K-21T3VB |
| <div>Flush Bezel (metallic or black)</div>  | 45° 3-position           | Maintained                                                                                        |    | DPDT                                  | LB⓪K-3T6A                         | LB⓪K-3T2VA                            | LB⓪⓪K-3T6A                        | LB⓪⓪K-3T2VA  |
|                                                                                                                                |                          |                                                                                                   |                                                                                     | 3PDT                                  | LB⓪K-3T7A                         | LB⓪K-3T3VA                            | LB⓪⓪K-3T7A                        | LB⓪⓪K-3T3VA  |
|                                                                                                                                |                          |                                                                                                   |  | DPDT                                  | LB⓪K-3T6B                         | LB⓪K-3T2VB                            | LB⓪⓪K-3T6B                        | LB⓪⓪K-3T2VB  |
|                                                                                                                                |                          |                                                                                                   |                                                                                     | 3PDT                                  | LB⓪K-3T7B                         | LB⓪K-3T3VB                            | LB⓪⓪K-3T7B                        | LB⓪⓪K-3T3VB  |
|                                                                                                                                |                          |                                                                                                   |  | DPDT                                  | LB⓪K-3T6C                         | LB⓪K-3T2VC                            | LB⓪⓪K-3T6C                        | LB⓪⓪K-3T2VC  |
|                                                                                                                                |                          |                                                                                                   |                                                                                     | 3PDT                                  | LB⓪K-3T7C                         | LB⓪K-3T3VC                            | LB⓪⓪K-3T7C                        | LB⓪⓪K-3T3VC  |
|                                                                                                                                |                          |                                                                                                   |  | DPDT                                  | LB⓪K-3T6D                         | LB⓪K-3T2VD                            | LB⓪⓪K-3T6D                        | LB⓪⓪K-3T2VD  |
|                                                                                                                                |                          |                                                                                                   |                                                                                     | 3PDT                                  | LB⓪K-3T7D                         | LB⓪K-3T3VD                            | LB⓪⓪K-3T7D                        | LB⓪⓪K-3T3VD  |
|                                                                                                                                |                          |                                                                                                   |  | DPDT                                  | LB⓪K-3T6E                         | LB⓪K-3T2VE                            | LB⓪⓪K-3T6E                        | LB⓪⓪K-3T2VE  |
|                                                                                                                                |                          |                                                                                                   |                                                                                     | 3PDT                                  | LB⓪K-3T7E                         | LB⓪K-3T3VE                            | LB⓪⓪K-3T7E                        | LB⓪⓪K-3T3VE  |
|                                                                                                                                |                          |                                                                                                   |  | DPDT                                  | LB⓪K-3T6G                         | LB⓪K-3T2VG                            | LB⓪⓪K-3T6G                        | LB⓪⓪K-3T2VG  |
|                                                                                                                                |                          |                                                                                                   |                                                                                     | 3PDT                                  | LB⓪K-3T7G                         | LB⓪K-3T3VG                            | LB⓪⓪K-3T7G                        | LB⓪⓪K-3T3VG  |
|                                                                                                                                |                          |                                                                                                   |  | DPDT                                  | LB⓪K-3T6H                         | LB⓪K-3T2VH                            | LB⓪⓪K-3T6H                        | LB⓪⓪K-3T2VH  |
|                                                                                                                                |                          |                                                                                                   |                                                                                     | 3PDT                                  | LB⓪K-3T7H                         | LB⓪K-3T3VH                            | LB⓪⓪K-3T7H                        | LB⓪⓪K-3T3VH  |

Assembled Key Selector Switches can't on next page.

Assembled Key Selector Switches con't on next page.

| Style                                                                                                                                                                                                                                                                                                                                                                                   | Operator Position | Key retained at  | Contact | Standard Bezel                                                                      |                                   | Flush Bezel                           |                                   |              |              |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|---------------------------------------------------------------------------------------------------|---------|-------------------------------------------------------------------------------------|-----------------------------------|---------------------------------------|-----------------------------------|--------------|--------------|
|                                                                                                                                                                                                                                                                                                                                                                                         |                   |                                                                                                   |         | Solder/Tab Terminal (silver contacts)                                               | PC Board Terminal (gold contacts) | Solder/Tab Terminal (silver contacts) | PC Board Terminal (gold contacts) |              |              |
| <div>Standard Bezel (black)</div>                                                                                                    | 45° 3-position    | Spring return from right                                                                          | B       |    | DPDT                              | LB①K-31T6B                            | LB①K-31T2VB                       | LB③④K-31T6B  | LB③④K-31T2VB |
|                                                                                                                                                                                                                                                                                                                                                                                         |                   |                                                                                                   |         | 3PDT                                                                                | LB①K-31T7B                        | LB①K-31T3VB                           | LB③④K-31T7B                       | LB③④K-31T3VB |              |
|                                                                                                                                                                                                                                                                                                                                                                                         |                   |                                                                                                   | D       |    | DPDT                              | LB①K-31T6D                            | LB①K-31T2VD                       | LB③④K-31T6D  | LB③④K-31T2VD |
|                                                                                                                                                                                                                                                                                                                                                                                         |                   |                                                                                                   |         | 3PDT                                                                                | LB①K-31T7D                        | LB①K-31T3VD                           | LB③④K-31T7D                       | LB③④K-31T3VD |              |
|                                                                                                                                                                                                                                                                                                                                                                                         |                   |                                                                                                   | G       |    | DPDT                              | LB①K-31T6G                            | LB①K-31T2VG                       | LB③④K-31T6G  | LB③④K-31T2VG |
|                                                                                                                                                                                                                                                                                                                                                                                         |                   |                                                                                                   |         | 3PDT                                                                                | LB①K-31T7G                        | LB①K-31T3VG                           | LB③④K-31T7G                       | LB③④K-31T3VG |              |
| <div>Flush Bezel (metallic or black)</div>     | 45° 3-position    | Spring return from left                                                                           | C       |    | DPDT                              | LB①K-32T6C                            | LB①K-32T2VC                       | LB③④K-32T6C  | LB③④K-32T2VC |
|                                                                                                                                                                                                                                                                                                                                                                                         |                   |                                                                                                   |         | 3PDT                                                                                | LB①K-32T7C                        | LB①K-32T3VC                           | LB③④K-32T7C                       | LB③④K-32T3VC |              |
|                                                                                                                                                                                                                                                                                                                                                                                         |                   |                                                                                                   | D       |    | DPDT                              | LB①K-32T6D                            | LB①K-32T2VD                       | LB③④K-32T6D  | LB③④K-32T2VD |
|                                                                                                                                                                                                                                                                                                                                                                                         |                   |                                                                                                   |         | 3PDT                                                                                | LB①K-32T7D                        | LB①K-32T3VD                           | LB③④K-32T7D                       | LB③④K-32T3VD |              |
|                                                                                                                                                                                                                                                                                                                                                                                         |                   |                                                                                                   | H       |  | DPDT                              | LB①K-32T6H                            | LB①K-32T2VH                       | LB③④K-32T6H  | LB③④K-32T2VH |
|                                                                                                                                                                                                                                                                                                                                                                                         |                   |                                                                                                   |         | 3PDT                                                                                | LB①K-32T7H                        | LB①K-32T3VH                           | LB③④K-32T7H                       | LB③④K-32T3VH |              |
|                                                                                                                                                                                                                                                                                                                                                                                         |                   | Spring return two-way                                                                             | D       |  | DPDT                              | LB①K-33T6D                            | LB①K-33T2VD                       | LB③④K-33T6D  | LB③④K-33T2VD |
|                                                                                                                                                                                                                                                                                                                                                                                         |                   |                                                                                                   |         |                                                                                     | 3PDT                              | LB①K-33T7D                            | LB①K-33T3VD                       | LB③④K-33T7D  | LB③④K-33T3VD |

13. Key is retained at ● and removable at ○ positions.

14. Two keys are supplied.

15. For Standard Bezel part numbers specify bezel shape in place of ①. 1 (round), 2 (square), 3 (rectangular)

16. For Flush Bezel part numbers specify:

- bezel shape in place of ③. 6 (round), 7 (square), 8 (rectangular)

- bezel material in place of ④. M (metallic), Blank (black)

17. See page 522 for contact operation.

18. See page 531 for dimensions.

19. For additional security, wave keys also available.

Add the letter "S" before the "T" in the part no. Example: LB1K-31ST1A

Besides the standard wave key (key number 0H), six other keys are available.

To order other keys, specify the key number as shown below:

Example: LB1K-31ST2B-1H (Key number is indicated on the key cylinder. Standard keys do not have a key number indication.)

(blank): Standard wave key (0H)

1H to 2H: Reversible wave key

3H to 6H: Non-reversible wave key

20. If ordering standard wave key (0H), subcomponents are available, see next page.

21. If ordering other than standard wave key (for example, key number 6H), only completed switches are available.

## Key Selector Switches (Sub-assembled)

| Contact Block | Operator | Completed Unit |
|---------------|----------|----------------|
|---------------|----------|----------------|



## Contact Block

| Terminal Style                                                                    | Material   | Contact | Part Number |
|-----------------------------------------------------------------------------------|------------|---------|-------------|
|  | Solder/Tab | Silver  | SPDT LB-T5  |
|                                                                                   |            |         | DPDT LB-T6  |
|                                                                                   |            |         | 3PDT LB-T7  |
|  | PCB        | Gold    | SPDT LB-T1V |
|                                                                                   |            |         | DPDT LB-T2V |
|                                                                                   |            |         | 3PDT LB-T3V |

## Operator

| Style                                                                               | Shape       | Position | Function          | Part number |
|-------------------------------------------------------------------------------------|-------------|----------|-------------------|-------------|
|  | Round       | 2        | Maintained        | LB1K-2Ⓢ     |
|                                                                                     |             |          | Spring from right | LB1K-21B    |
|                                                                                     |             | 3        | Maintained        | LB1K-3Ⓢ     |
|                                                                                     |             |          | Spring from right | LB1K-31Ⓢ    |
|                                                                                     |             |          | Spring from left  | LB1K-32Ⓢ    |
|                                                                                     |             |          | Spring from both  | LB1K-33D    |
|                                                                                     | Square      | 2        | Maintained        | LB2K-2Ⓢ     |
|                                                                                     |             |          | Spring from right | LB2K-21B    |
|                                                                                     |             | 3        | Maintained        | LB2K-3Ⓢ     |
|                                                                                     |             |          | Spring from right | LB2K-31Ⓢ    |
|                                                                                     |             |          | Spring from left  | LB2K-32Ⓢ    |
|                                                                                     |             |          | Spring from both  | LB2K-33D    |
|                                                                                     | Rectangular | 2        | Maintained        | LB3K-2Ⓢ     |
|                                                                                     |             |          | Spring from right | LB3K-21B    |
|                                                                                     |             | 3        | Maintained        | LB3K-3Ⓢ     |
|                                                                                     |             |          | Spring from right | LB3K-31Ⓢ    |
|                                                                                     |             |          | Spring from left  | LB3K-32Ⓢ    |
|                                                                                     |             |          | Spring from both  | LB3K-33D    |

| Style                                                                               | Shape       | Position | Function          | Part number |
|-------------------------------------------------------------------------------------|-------------|----------|-------------------|-------------|
|    | Round       | 2        | Maintained        | LB6K-2Ⓢ     |
|                                                                                     |             |          | Spring from right | LB6K-21B    |
|                                                                                     |             | 3        | Maintained        | LB6K-3Ⓢ     |
|                                                                                     |             |          | Spring from right | LB6K-31Ⓢ    |
|                                                                                     |             |          | Spring from left  | LB6K-32Ⓢ    |
|                                                                                     |             |          | Spring from both  | LB6K-33D    |
|                                                                                     | Square      | 2        | Maintained        | LB7K-2Ⓢ     |
|                                                                                     |             |          | Spring from right | LB7K-21B    |
|                                                                                     |             | 3        | Maintained        | LB7K-3Ⓢ     |
|                                                                                     |             |          | Spring from right | LB7K-31Ⓢ    |
|                                                                                     |             |          | Spring from left  | LB7K-32Ⓢ    |
|                                                                                     |             |          | Spring from both  | LB7K-33D    |
|  | Rectangular | 2        | Maintained        | LB8K-2Ⓢ     |
|                                                                                     |             |          | Spring from right | LB8K-21B    |
|                                                                                     |             | 3        | Maintained        | LB8K-3Ⓢ     |
|                                                                                     |             |          | Spring from right | LB8K-31Ⓢ    |
|                                                                                     |             |          | Spring from left  | LB8K-32Ⓢ    |
|                                                                                     |             |          | Spring from both  | LB8K-33D    |
|                                                                                     | Round       | 2        | Maintained        | LB6MK-2Ⓢ    |
|                                                                                     |             |          | Spring from right | LB6MK-21B   |
|                                                                                     |             | 3        | Maintained        | LB6MK-3Ⓢ    |
|                                                                                     |             |          | Spring from right | LB6MK-31Ⓢ   |
|                                                                                     |             |          | Spring from left  | LB6MK-32Ⓢ   |
|                                                                                     |             |          | Spring from both  | LB6MK-33D   |
|                                                                                     | Square      | 2        | Maintained        | LB7MK-2Ⓢ    |
|                                                                                     |             |          | Spring from right | LB7MK-21B   |
|                                                                                     |             | 3        | Maintained        | LB7MK-3Ⓢ    |
|                                                                                     |             |          | Spring from right | LB7MK-31Ⓢ   |
|                                                                                     |             |          | Spring from left  | LB7MK-32Ⓢ   |
|                                                                                     |             |          | Spring from both  | LB7MK-33D   |
|                                                                                     | Rectangular | 2        | Maintained        | LB8MK-2Ⓢ    |
|                                                                                     |             |          | Spring from right | LB8MK-21B   |
|                                                                                     |             | 3        | Maintained        | LB8MK-3Ⓢ    |
|                                                                                     |             |          | Spring from right | LB8MK-31Ⓢ   |
|                                                                                     |             |          | Spring from left  | LB8MK-32Ⓢ   |
|                                                                                     |             |          | Spring from both  | LB8MK-33D   |

22. In place of Ⓢ specify retention option code from table below.

23. For standard wave key operators, add "S" to part number before the key retention code from table below. (For example, LB6K-2B with wave key would be LB6K-2SB.)

## Ⓢ Retention Option Code

| Code | Description                                                   |
|------|---------------------------------------------------------------|
| A    | Key not retained in any position (removable in all positions) |
| B    | Key retained in right position only                           |
| C    | Key retained in left position only                            |
| D    | Key retained in left and right (3-position only)              |

| Code | Description                                        |
|------|----------------------------------------------------|
| E    | Key retained in center only (3-position only)      |
| G    | Key retained in right and center (3-position only) |
| H    | Key retained in left and center (3-position only)  |

Lever Switches (Assembled)

| Style                                                                             | Operator Position             |                                                                                   | Contact | Solder/Tab Terminal<br>(silver contacts) | PC Board Terminal<br>(gold contacts) |
|-----------------------------------------------------------------------------------|-------------------------------|-----------------------------------------------------------------------------------|---------|------------------------------------------|--------------------------------------|
|  | 2-position                    |  | SPDT    | LB⓪T-2T5                                 | LB⓪T-2T1V                            |
|                                                                                   |                               |                                                                                   | DPDT    | LB⓪T-2T6                                 | LB⓪T-2T2V                            |
|                                                                                   |                               |                                                                                   | 3PDT    | LB⓪T-2T7                                 | LB⓪T-2T3V                            |
|  | 3-position                    |  | DPDT    | LB⓪T-3T2                                 | LB⓪T-3T6V                            |
|                                                                                   |                               |                                                                                   | 3PDT    | LB⓪T-3T3                                 | LB⓪T-3T7V                            |
|                                                                                   | Spring return from top/bottom |  | DPDT    | LB⓪T-33T2                                | LB⓪T-33T6V                           |
|                                                                                   |                               |                                                                                   | 3PDT    | LB⓪T-33T3                                | LB⓪T-33T7V                           |
|                                                                                   |                               |                                                                                   |         |                                          |                                      |
|                                                                                   |                               |                                                                                   |         |                                          |                                      |

24. For all part numbers, specify bezel in place of ⓪. 1 (standard bezel), 6 (flush bezel).  
25. See page page 522 for contact operation.,  
26. See page page 533 for dimensions.

Lever Switches (Sub-assembled)

| Contact Block                                                                       | Operator | Completed Unit                                                                      |   |                                                                                      |
|-------------------------------------------------------------------------------------|----------|-------------------------------------------------------------------------------------|---|--------------------------------------------------------------------------------------|
|  | +        |  | = |  |

Contact Block

| Terminal Style                                                                      | Material | Contact | Part Number |
|-------------------------------------------------------------------------------------|----------|---------|-------------|
|  | Silver   | SPDT    | LB-T5       |
|                                                                                     |          | DPDT    | LB-T6       |
|                                                                                     |          | 3PDT    | LB-T7       |
|                                                                                     | Gold     | SPDT    | LB-T1       |
|                                                                                     |          | DPDT    | LB-T2       |
|                                                                                     |          | 3PDT    | LB-T3       |
|  | Gold     | SPDT    | LB-T1V      |
|                                                                                     |          | DPDT    | LB-T2V      |
|                                                                                     |          | 3PDT    | LB-T3V      |

Operator

| Style                                                                               | Position | Function                | Part Number |
|-------------------------------------------------------------------------------------|----------|-------------------------|-------------|
|  | 2        | Maintained              | LB1T-2      |
|                                                                                     | 3        | Maintained              | LB1T-3      |
|                                                                                     |          | Spring return from both | LB1T-33     |
|  | 2        | Maintained              | LB6T-2      |
|                                                                                     | 3        | Maintained              | LB6T-3      |
|                                                                                     |          | Spring return from both | LB6T-33     |

## B buzzers (Assembled)

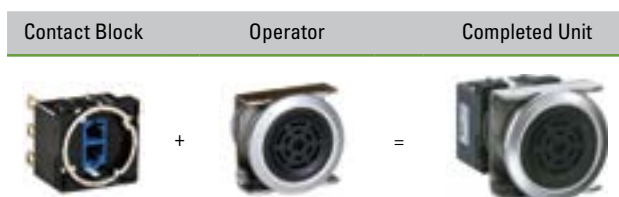
| Style                                                                                                                                                                                                                                                                      | Shape       | Voltage | Standard Bezel      |                   | Flush Bezel         |                   |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|---------|---------------------|-------------------|---------------------|-------------------|
|                                                                                                                                                                                                                                                                            |             |         | Solder/Tab Terminal | PC Board Terminal | Solder/Tab Terminal | PC Board Terminal |
| Black Bezel<br><br><br> | Round       | 12V DC  | —                   | —                 | LB6Z-1T03           | LB6Z-1T03V        |
|                                                                                                                                                                                                                                                                            |             | 24V DC  | —                   | —                 | LB6Z-1T04           | LB6Z-1T04V        |
|                                                                                                                                                                                                                                                                            | Rectangular | 12V DC  | LB3Z-1T03           | LB3Z-1T03V        | LB8Z-1T03           | LB8Z-1T03V        |
|                                                                                                                                                                                                                                                                            |             | 24V DC  | LB3Z-1T04           | LB3Z-1T04V        | LB8Z-1T04           | LB8Z-1T04V        |
| Metallic Bezel<br><br>                                                                                  | Round       | 12V DC  | —                   | —                 | LB6MZ-1T03          | LB6MZ-1T03V       |
|                                                                                                                                                                                                                                                                            |             | 24V DC  | —                   | —                 | LB6MZ-1T04          | LB6MZ-1T04V       |
|                                                                                                                                                                                                                                                                            | Rectangular | 12V DC  | —                   | —                 | LB8MZ-1T03          | LB8MZ-1T03V       |
|                                                                                                                                                                                                                                                                            |             | 24V DC  | —                   | —                 | LB8MZ-1T04          | LB8MZ-1T04V       |

27. IP54 Rated.

28. For IP40 rating, use part number LB3Z-104K.

29. See page 534 for dimensions.

## B buzzers (Sub-assembled)



## Contact Block

| Terminal Style                                                                      | Part Number |         |
|-------------------------------------------------------------------------------------|-------------|---------|
|  | Solder/Tab  | LB-T00  |
|  | PCB         | LB-T00V |

## Operator

| Style                                                                               | Mounting Style         | Shape       | Voltage   |           |
|-------------------------------------------------------------------------------------|------------------------|-------------|-----------|-----------|
|                                                                                     |                        |             | 12V DC    | 24V DC    |
|  | Standard (Plastic)     | Rectangular | LB3Z-103  | LB3Z-104  |
|  |                        | Round       | LB6Z-103  | LB6Z-104  |
|  | Flush Mount (Metallic) | Rectangular | LB8Z-103  | LB8Z-104  |
|                                                                                     |                        | Round       | LB6MZ-103 | LB6MZ-104 |
|                                                                                     |                        | Rectangular | LB8MZ-103 | LB8MZ-104 |



Switches & Pilot Devices

Signaling Lights

Relays & Sockets

Timers

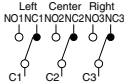
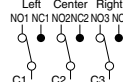
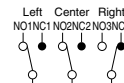
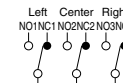
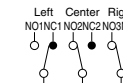
Contactors

Terminal Blocks

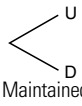
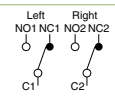
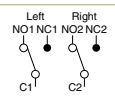
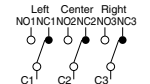
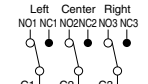
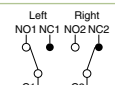
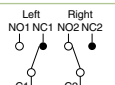
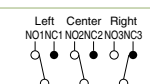
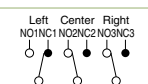
Circuit Breakers

Contact Operation

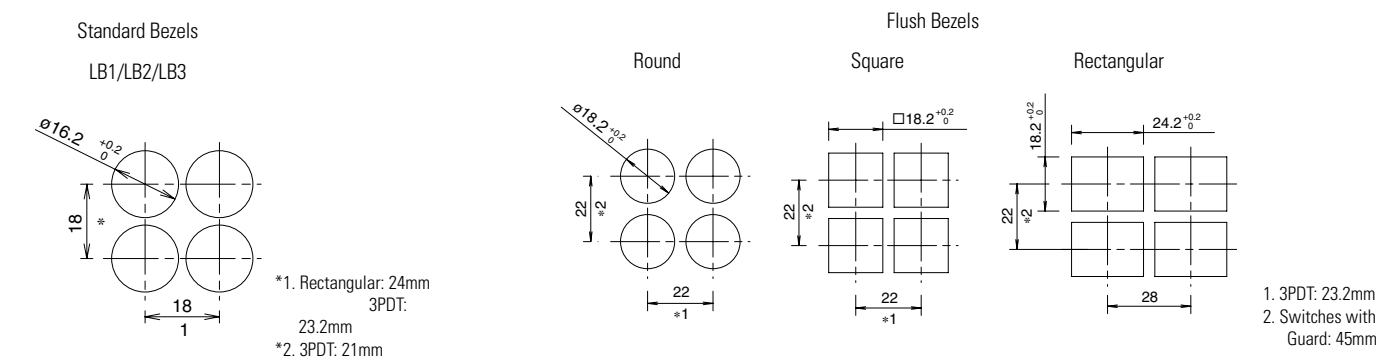
Selector Switch, Illuminated Selector Switch, Key Selector Switch

| Operator Position & Contact Operation (Top View) |                                                                                                 |                                                                                                               |                                                                                                               |                                                                                                            | Contact | ↙ Left                                                                             | ↑ Center                                                                            | ↘ Right                                                                             |
|--------------------------------------------------|-------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|---------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 90°<br>2-position                                | <br>Maintained |                                                                                                               | <br>Spring return from right |                                                                                                            | SPDT    |   |  |  |
|                                                  |                                                                                                 |                                                                                                               |                                                                                                               |                                                                                                            | DPDT    |  |  |  |
|                                                  |                                                                                                 |                                                                                                               |                                                                                                               |                                                                                                            | 3PDT    |  |  |  |
| 45°<br>3-position                                | <br>Maintained | <br>Spring return from right | <br>Spring return from left  | <br>Spring return two-way | DPDT    |  |  |  |
|                                                  |                                                                                                 |                                                                                                               |                                                                                                               |                                                                                                            | 3PDT    |  |  |  |

Lever Switch

| Lever Position & Contact Operation (Top View) |                                                                                                   |                                                                                                                 |                                                                                      |                                                                                      |                                                                                       |
|-----------------------------------------------|---------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Position                                      |                                                                                                   | Contact                                                                                                         | Down                                                                                 | Center                                                                               | Up                                                                                    |
| 90°<br>2-position                             | <br>Maintained | SPDT                                                                                                            |    |  |   |
|                                               |                                                                                                   | DPDT                                                                                                            |  |                                                                                      |  |
|                                               |                                                                                                   | 3PDT                                                                                                            |  |                                                                                      |  |
| 45°<br>3-position                             | <br>Maintained | <br>Spring return<br>two-way | DPDT                                                                                 |  |  |
|                                               |                                                                                                   |                                                                                                                 | 3PDT                                                                                 |  |  |

Mounting Hole Layout (mm)



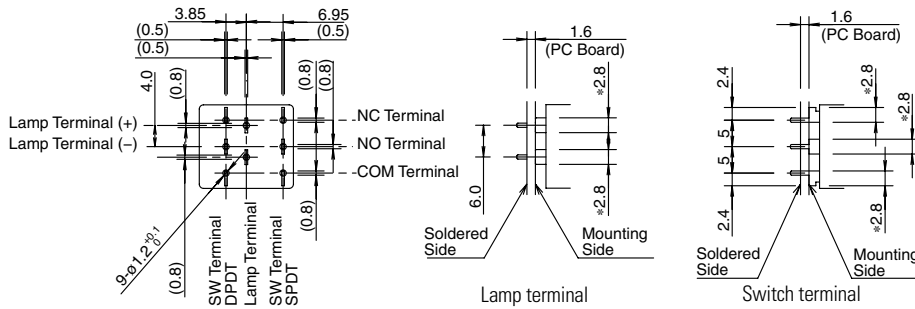
When using the LB series with a rubber boot or terminal cover, make sure to note the dimensions on pages page 537 and page 538.

## PC Board Drilling Layout (mm)

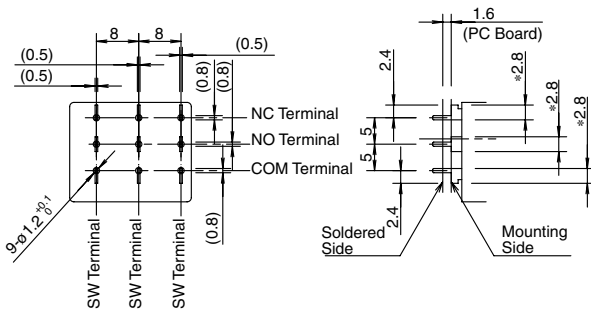
## Notes for Designing PC Board and Circuit

1. Use 1.6mm-thick glass epoxy PC board with drilled holes.
2. Design a circuit so that the LB series can operate within the rated voltage and current range. Make sure that inrush current and voltage do not exceed the rating.
3. Minimum applicable load is 5V AC/DC, 1mA on gold contacts.
4. Since the \*2.8mm-wide terminal touches the PC board as shown below, short circuit may occur with pattern lines. Design a circuit that prevents short circuits.

## SPDT/DPDT Contacts

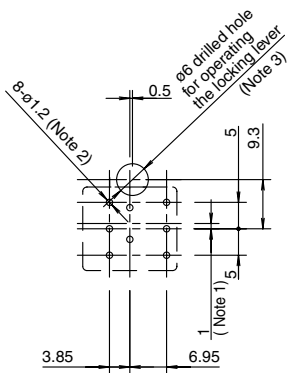


## 3PDT Contacts

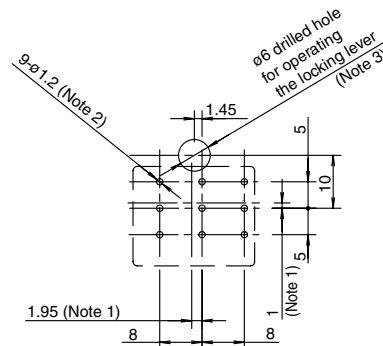


## PC Board Drilling Layout (Bottom View)

## SPDT/DPDT Contacts



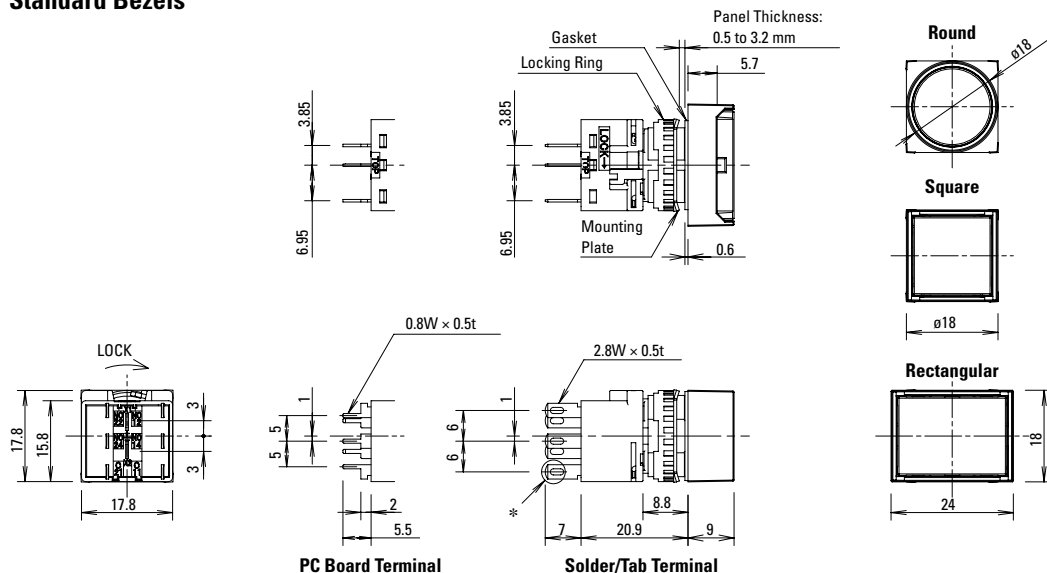
## 3PDT Contacts



5. When designing, note the alignment of the center lines of the contact blocks and operators.
6. The diameter of the terminal hole is ø1.2.
7. Hole diameter may vary to meet installation requirements. Determine the location and the size of the hole so that the locking lever can be operated.

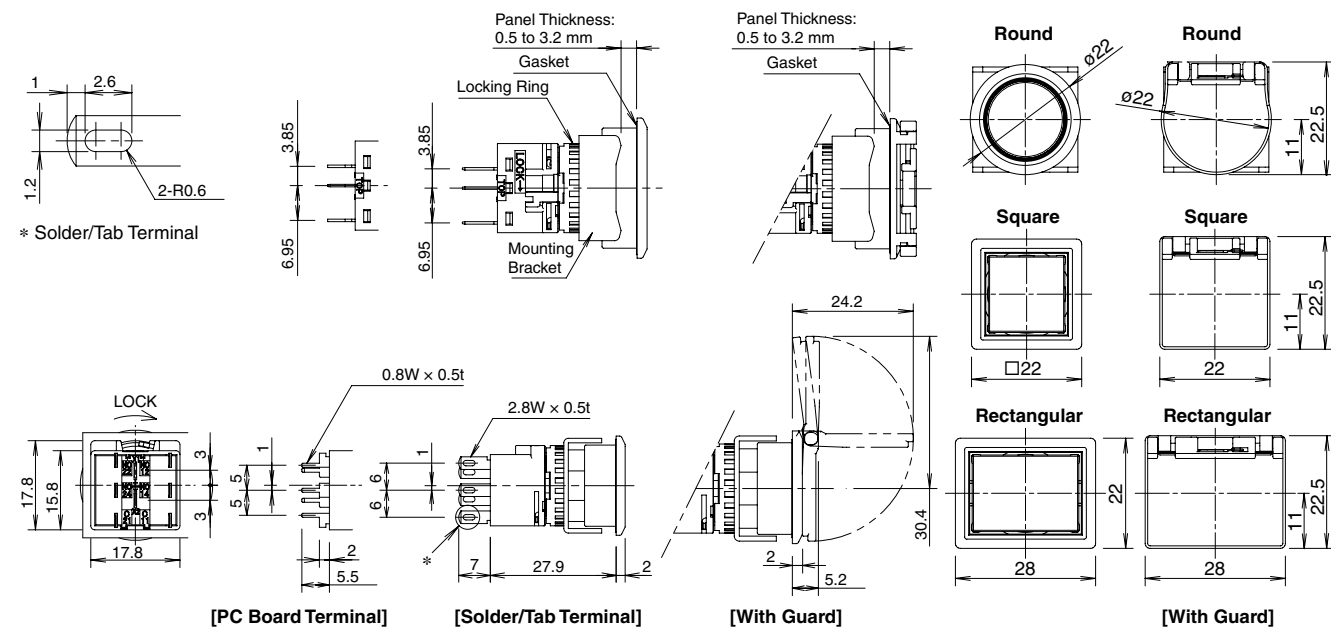
## Dimensions (mm) Illuminated Pushbuttons

### Standard Bezels



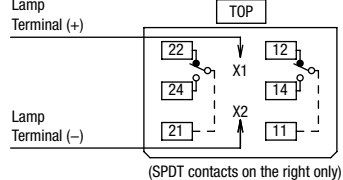
### Flush Bezels

#### SPDT/DPDT Contacts

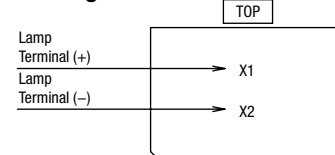


## Terminal Arrangement (Bottom View)

### Illuminated Pushbuttons

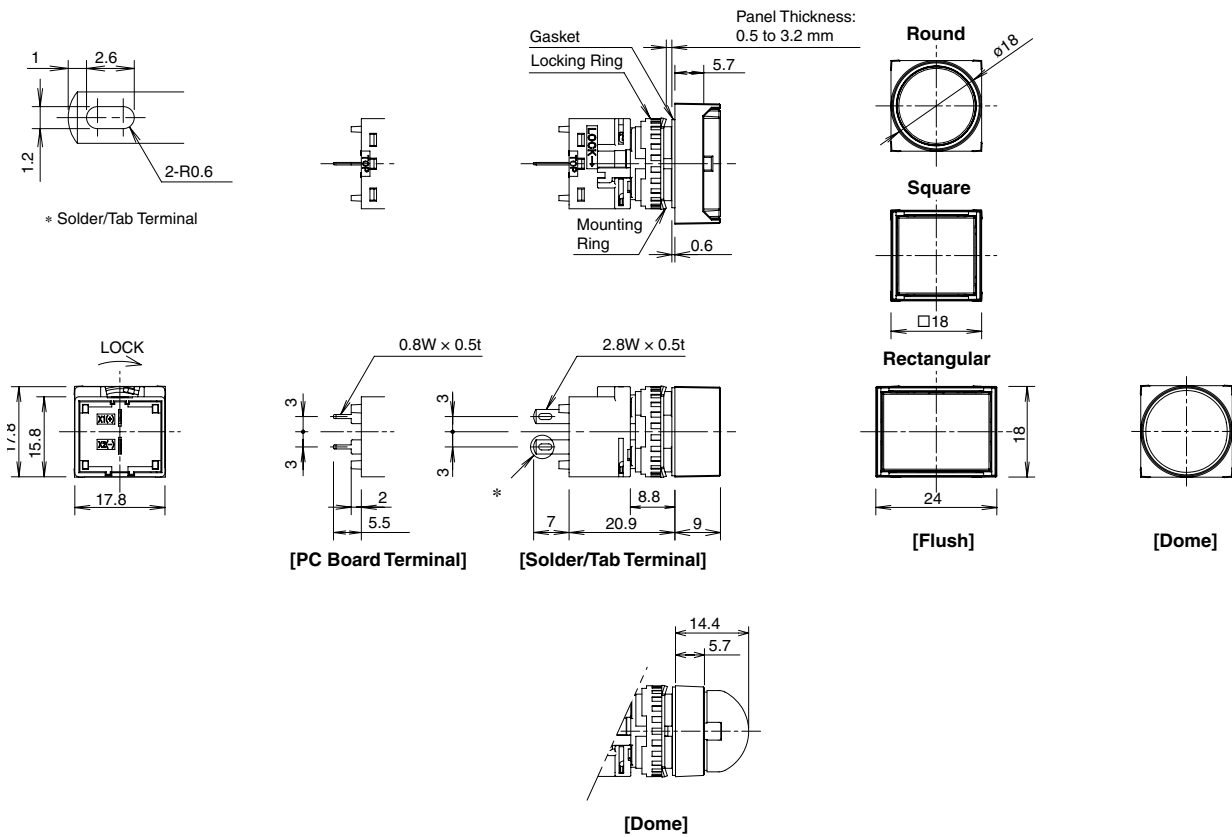


### Pilot Lights

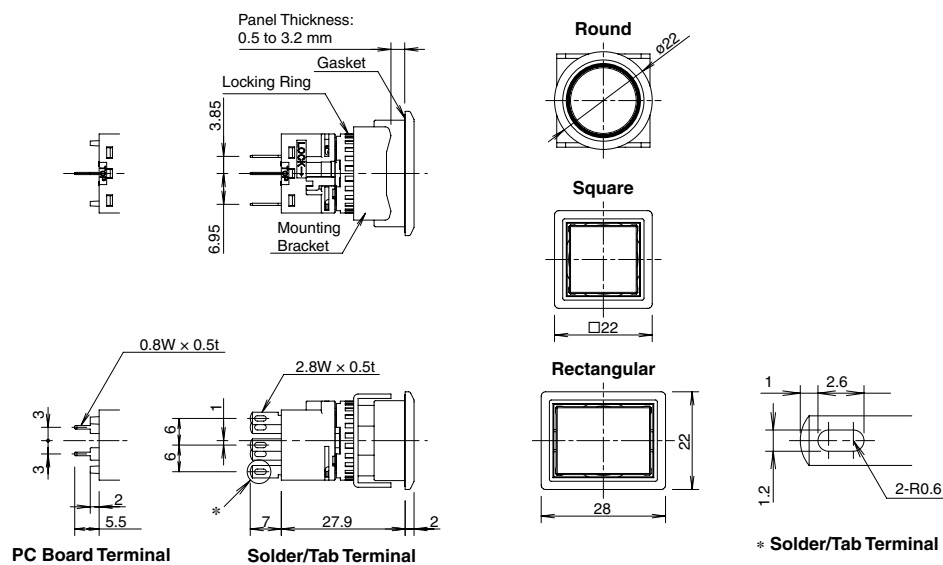


## Pilot Lights

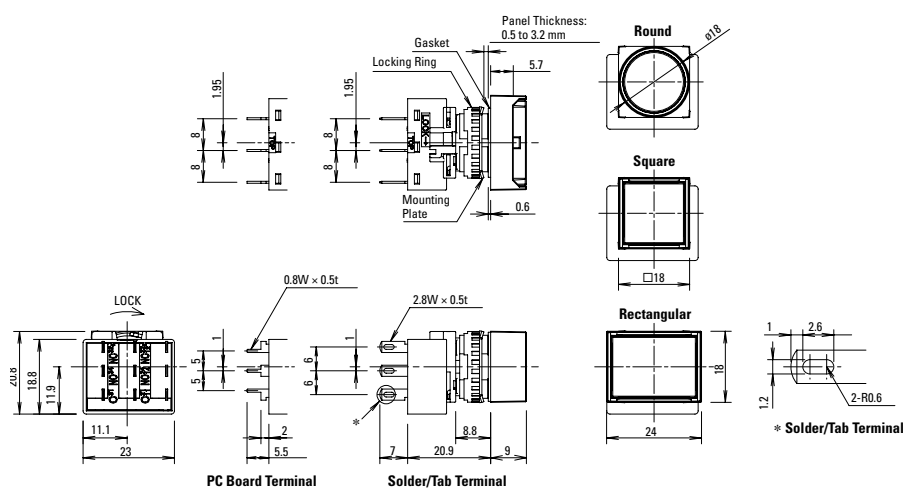
## Standard Bezels



## Flush Bezels

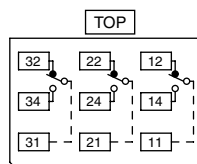
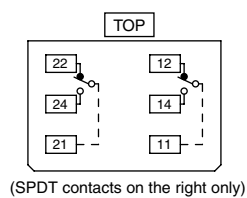


## Standard Bezels



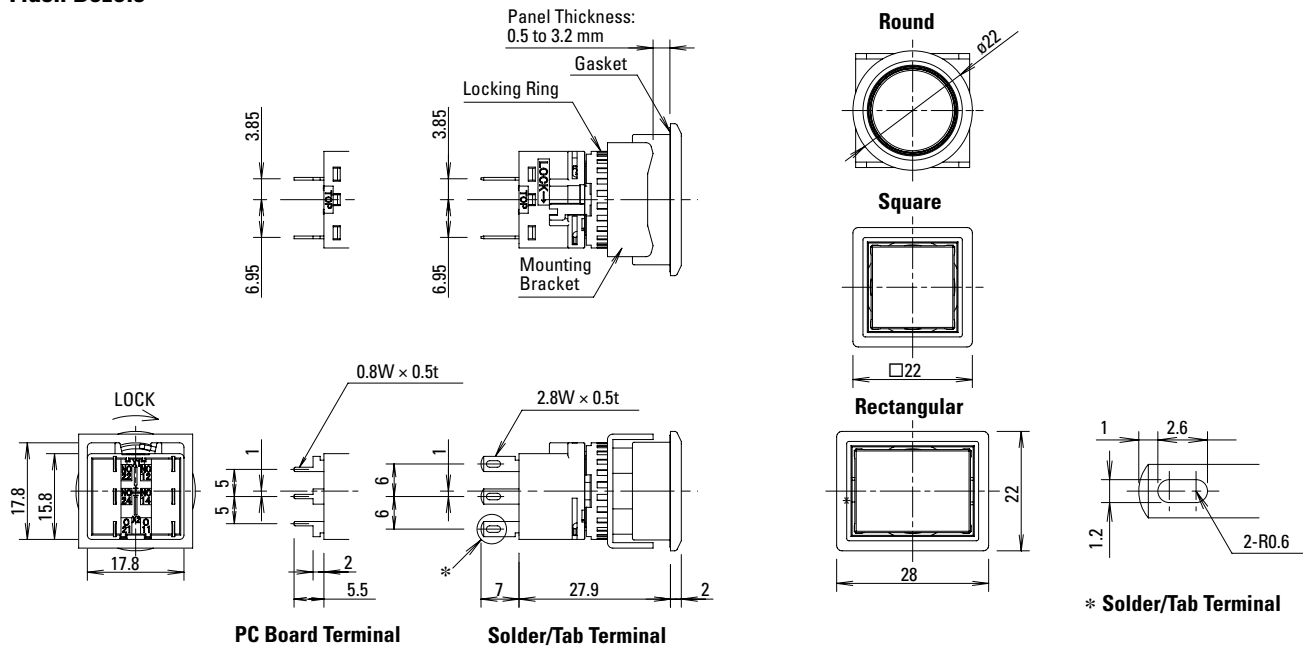
### Terminal Arrangement (Bottom View)

### 3PDT Contacts



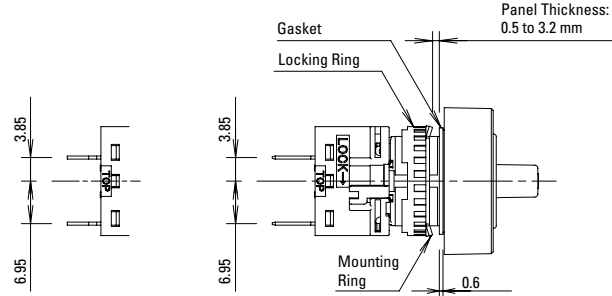
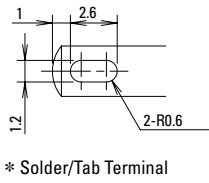
## Non-Illuminated Pushbuttons

## Flush Bezels

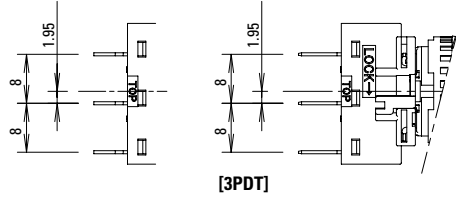


## Selector Switches

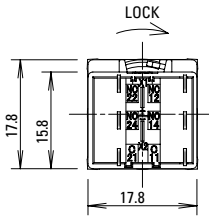
### Standard Bezels



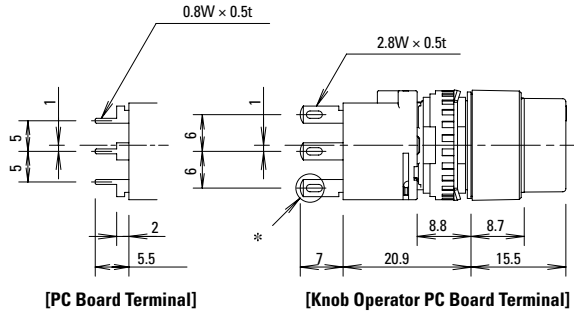
[SPDT/DPDT]



[3PDT]

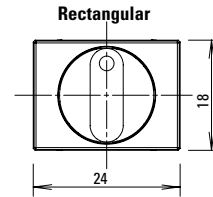
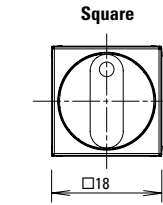
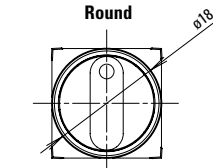


[SPDT/DPDT]

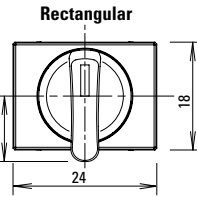
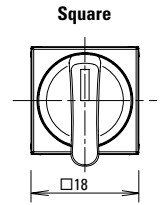
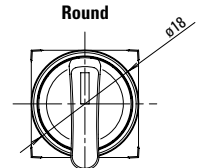


[PC Board Terminal]

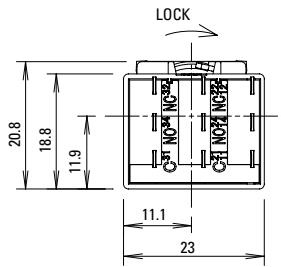
[Knob Operator PC Board Terminal]



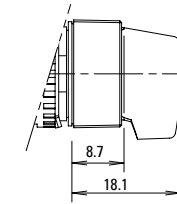
[Knob Operator]



[Lever Operator]



[3PDT]

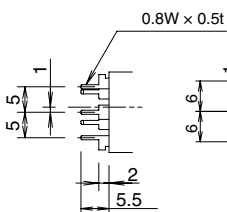
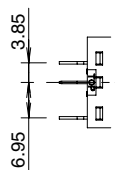
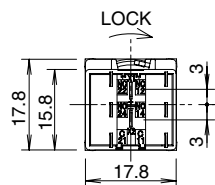


[Lever Operator]

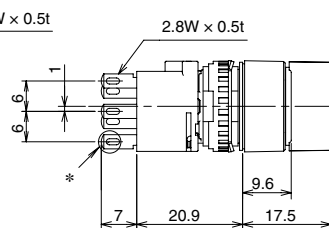
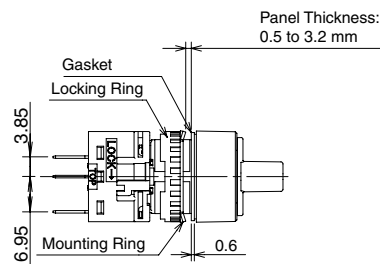




## Standard Bezels

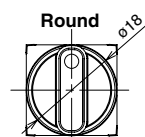


[PC Board Terminal]

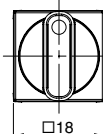


**[Solder/Tab Terminal]**

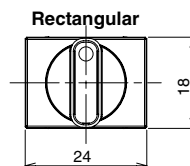
Panel Thickness:  
0.5 to 3.2 mm



## Round



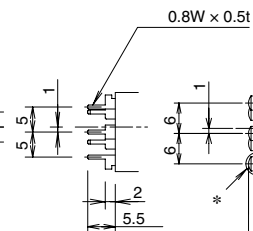
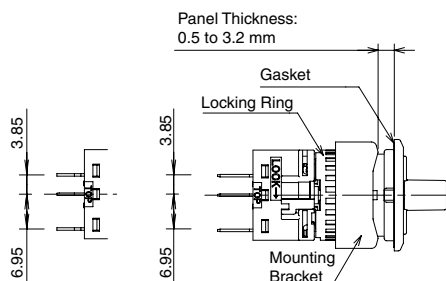
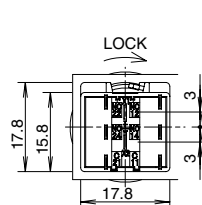
## Square



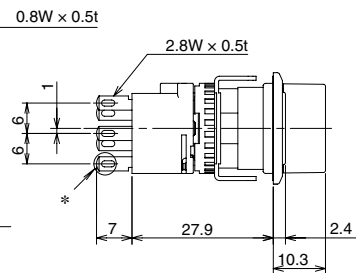
### Rectangular

Technical drawing of a mechanical part with dimensions: 1, 2.6, 1.2, and 2-R0.6.

\* Solder/Tab Terminal

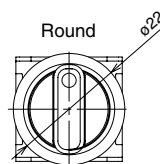


[PC Board Terminal]



**[Solder/Tab Terminal]**

Panel Thickness:  
0.5 to 3.2 mm



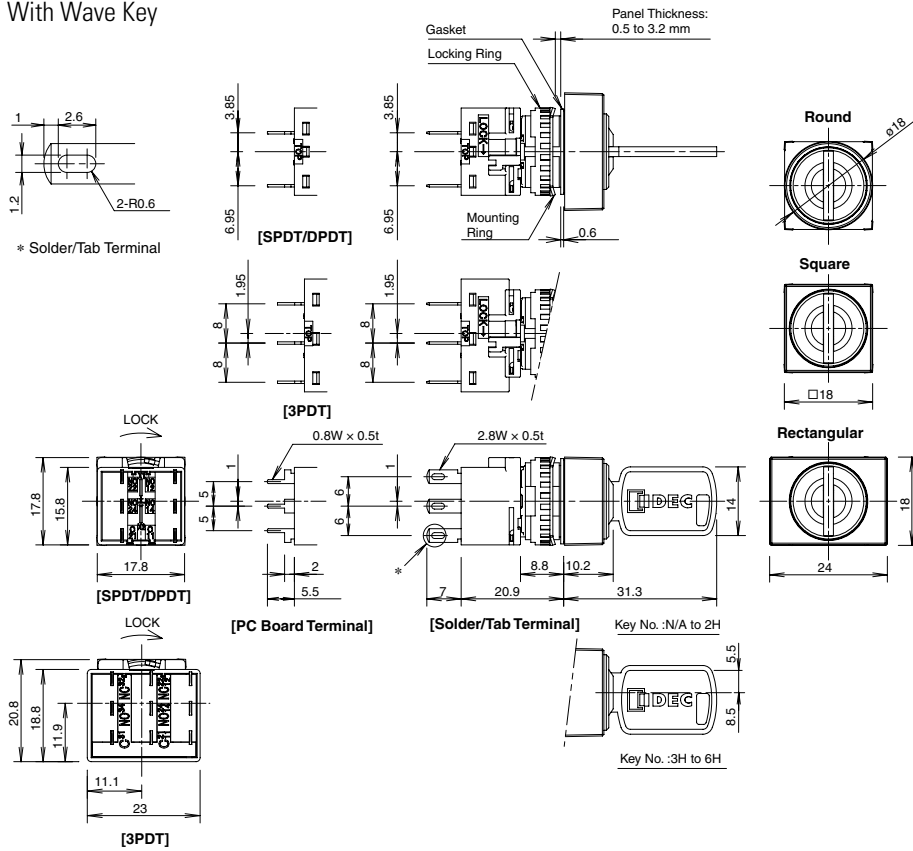
Round

Diagram illustrating the wiring for a 4-pin SPDT connector. The connector is labeled "TOP". The wiring shows connections for "Lamp Terminal (+)" and "Lamp Terminal (-)". The SPDT contacts are labeled X1 and X2. The diagram indicates that the SPDT contacts are on the right only.

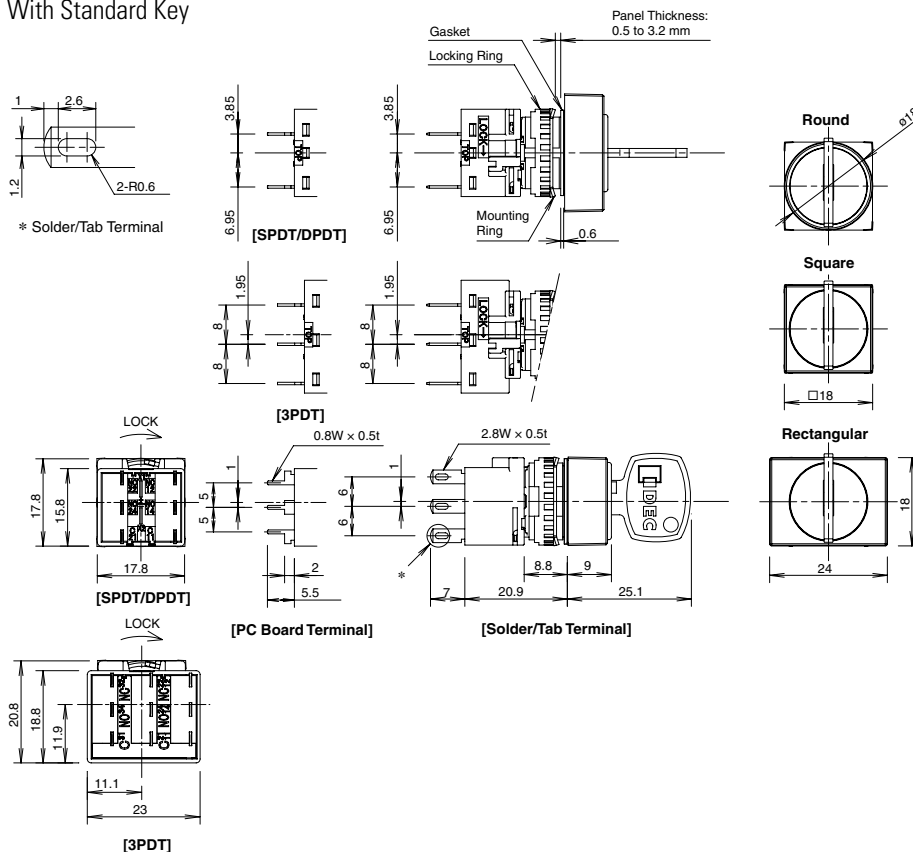
## Key Selector Switches

## Standard Bezels

With Wave Key



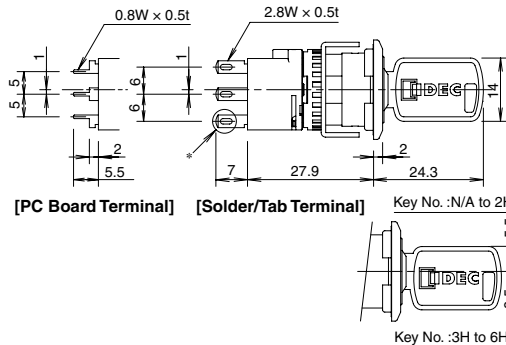
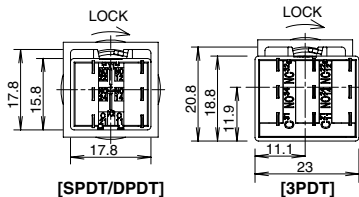
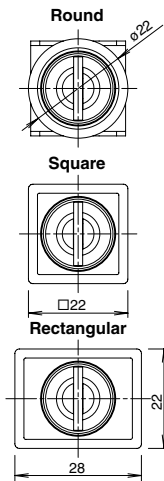
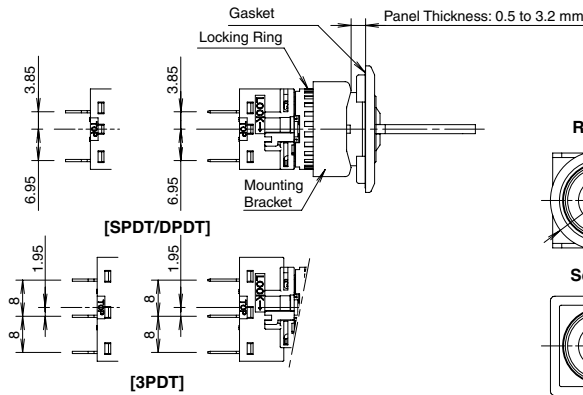
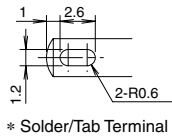
## With Standard Key



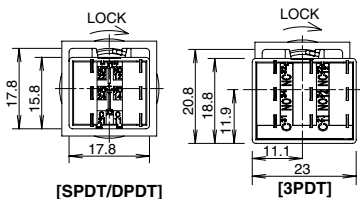
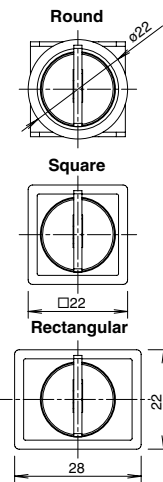
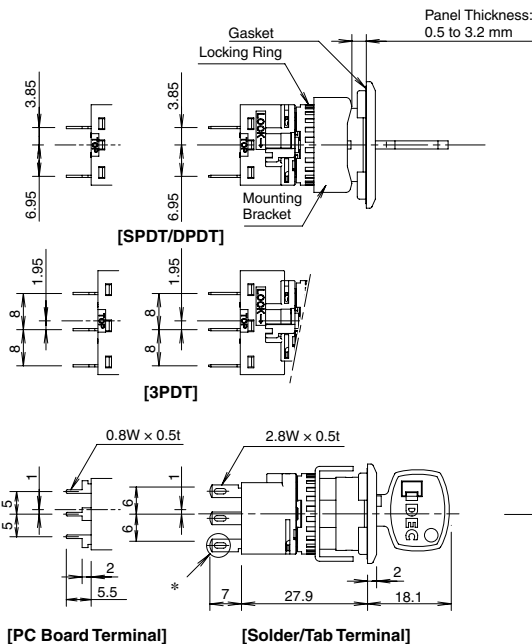
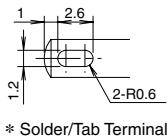
## Key Selector Switches

800-262-IDEC (4332) • USA &amp; Canada

## Flush Bezels With Wave Key

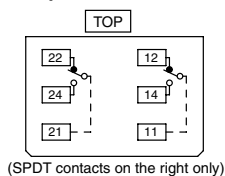


## With Standard Key

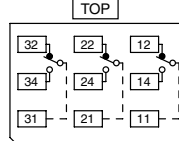


## Terminal Arrangement (Bottom View)

### SPDT/DPDT Contacts



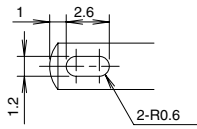
### 3PDT Contacts



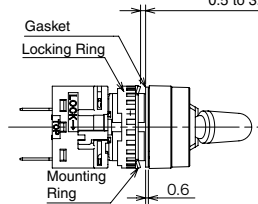
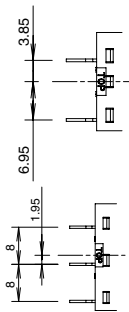
## Lever Switches

Panel Thickness:  
0.5 to 3.2 mm

## Standard Bezels

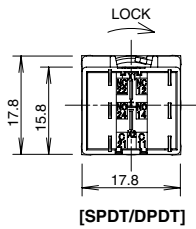


\* Solder/Tab Terminal

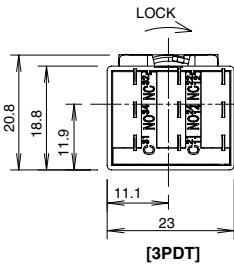


[SPDT/DPDT]

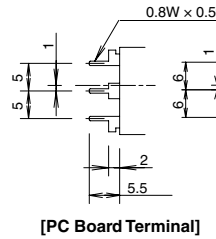
[3PDT]



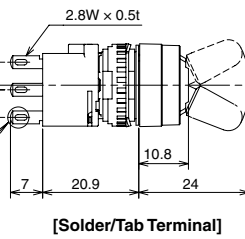
[SPDT/DPDT]



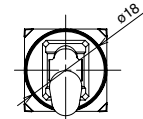
[3PDT]



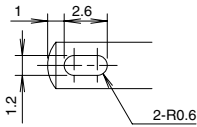
[PC Board Terminal]



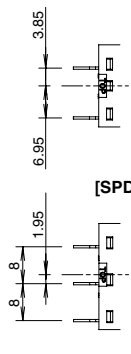
[Solder/Tab Terminal]



## Flush Bezels

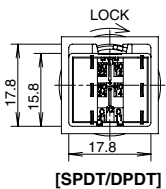
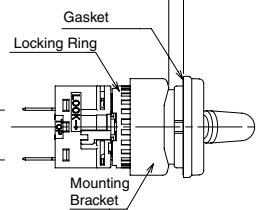


\* Solder/Tab Terminal

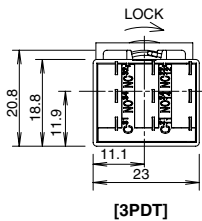


[SPDT/DPDT]

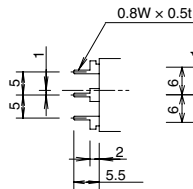
[3PDT]

Panel Thickness:  
0.5 to 3.2 mm

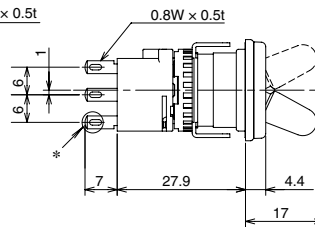
[SPDT/DPDT]



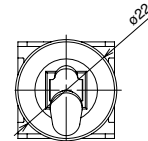
[3PDT]



[PC Board Terminal]

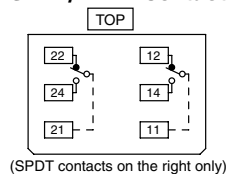


[Solder/Tab Terminal]



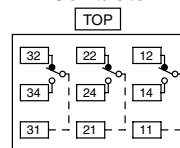
## Terminal Arrangement (Bottom View)

## SPDT/DPDT Contacts



(SPDT contacts on the right only)

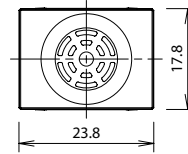
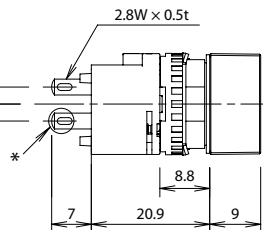
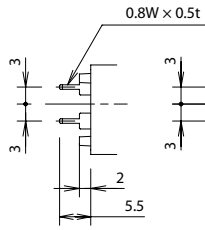
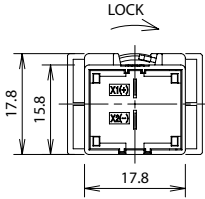
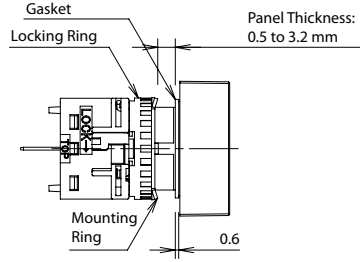
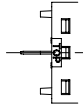
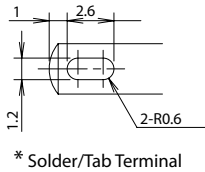
## 3PDT Contacts



## Buzzers

### Standard Bezels

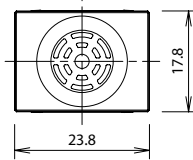
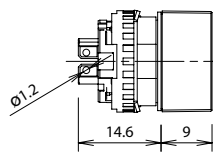
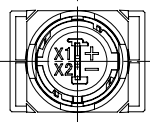
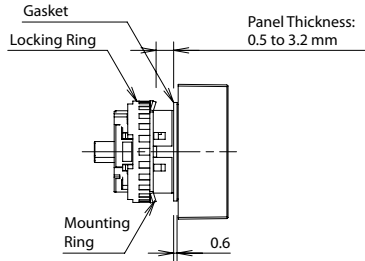
IP54



[PC Board Terminal]

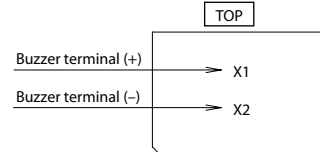
[Solder/Tab Terminal]

IP40

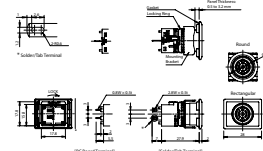


### Terminal Arrangement (Bottom View)

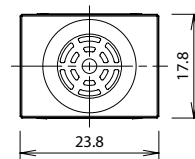
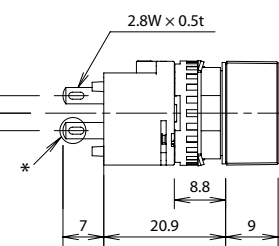
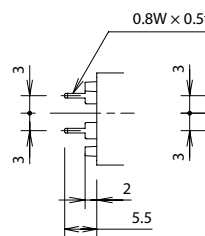
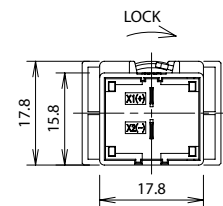
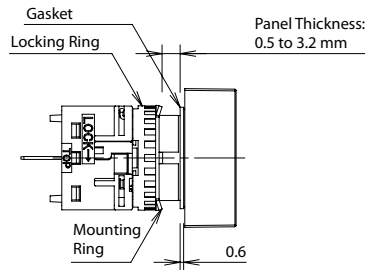
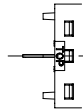
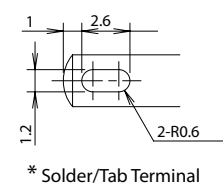
#### Flush & Standard IP54



IP40



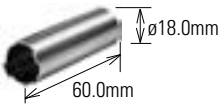
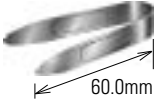
### Flush Bezels



[PC Board Terminal]

[Solder/Tab Terminal]

## Accessories

| Item                                                                                                     | Material                                                                                                                    | Part Number                                                                              | Remarks                                                                                                                                                                                                                                                                                                                                                        |
|----------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Locking Ring Wrench<br> | Metal: Nickel-plated brass                                                                                                  | MT-001                                                                                   | Used to tighten the locking ring when installing the units on to the panel.                                                                                                                                                                                                                                                                                    |
| Lens Removal Tool<br>   | Stainless Steel                                                                                                             | MT-101                                                                                   | Used to remove the lens or button.                                                                                                                                                                                                                                                                                                                             |
| For Standard Bezels                                                                                      | Switch Guard (180° Spring return)<br>      | For round / square standard units<br>Guard: Polyacetal<br>Base: Polyarylate              | AL-K6SP<br>Degree of protection: IP65<br>Used to protect standard pushbuttons and illuminated pushbuttons from inadvertent operation. See page page 538 for dimensions.<br>With the gasket mounted on the switch, attach the switch guard and mount on the panel.<br>Note: not applicable for flush mounted units. Select operator with built-in switch guard. |
|                                                                                                          | Switch Guard for Single Board Mounting<br> | For rectangular units<br>Guard: Polyacetal<br>Base: Polyarylate                          | LA9Z-K3<br>Degree of protection: IP65<br>With the gasket mounted on the switch, attach the switch guard and mount on the panel. See page page 538 for dimensions.                                                                                                                                                                                              |
|                                                                                                          | Rubber Boot for Standard Bezels<br>1<br> | 1. For round units<br>Silicon Rubber                                                     | LB9Z-D1                                                                                                                                                                                                                                                                                                                                                        |
|                                                                                                          | 2<br>                                    | 2. For square units<br>Silicon Rubber                                                    | LB9Z-D2<br>Degree of protection: IP65<br>See page page 537 for dimensions.<br>See page page 540 for mounting.                                                                                                                                                                                                                                                  |
|                                                                                                          | 3<br>                                    | 3. For rectangular units<br>Silicon Rubber                                               | LB9Z-D3                                                                                                                                                                                                                                                                                                                                                        |
|                                                                                                          | Mounting Hole Plug<br>                   | Metal<br>Plug: Metal (Zinc diecast)<br>Locking nut: Polyacetal<br>Gasket: Nitrile rubber | AL-BM6<br>Degree of protection: IP65<br>Tightening torque: 0.1 to 0.29 N•m<br>See page page 537 for dimensions.                                                                                                                                                                                                                                                |
|                                                                                                          | Mounting Hole Plug<br>                   | Rubber<br>Nitrile rubber (black)                                                         | AL-B6<br>Degree of protection: IP65<br>See page page 537 for dimensions.                                                                                                                                                                                                                                                                                       |

Accessories con't

| Item             |                                                                                                                                                                             | Material                  | Part Number | Remarks                                                                                            |
|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|-------------|----------------------------------------------------------------------------------------------------|
| For Flush Bezels | Rubber Boot for Flush Bezels                                                                                                                                                |                           |             |                                                                                                    |
|                  | 1                                                                                          | 1. For round units        | LB9Z-D6     | Degree of protection: IP65<br>See page page 537 for dimensions.<br>See page page 540 for mounting. |
|                  | 2                                                                                          | 2. For square units       | LB9Z-D7     |                                                                                                    |
|                  | 3                                                                                          | 3. For rectangular units  | LB9Z-D8     |                                                                                                    |
|                  | Mounting Hole Plug                                                                                                                                                          |                           |             |                                                                                                    |
|                  | 1                                                                                          | 1. For round units        | LB9Z-BS6    | Degree of protection: IP65<br>Panel thickness: 0.5 to 3.2mm<br>See page page 537 for dimensions.   |
|                  | 2                                                                                         | 2. For square units       | LB9Z-BS7    |                                                                                                    |
|                  | 3                                                                                        | 3. For rectangular units  | LB9Z-BS8    |                                                                                                    |
| Terminal Cover   | 1  2  | 1. For SPDT/DPDT contacts | LB9Z-VL2    | See page page 538 for dimensions.                                                                  |
|                  |                                                                                                                                                                             | 2. For 3PDT contacts      | LB9Z-VL3    |                                                                                                    |

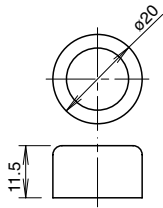


## Accessory Dimensions (mm)

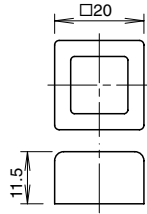
## Rubber Boot

## Standard Bezel

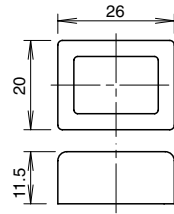
For round units (LB9Z-D1)



For square units (LB9Z-D2)

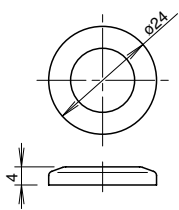


For rectangular units (LB9Z-D3)

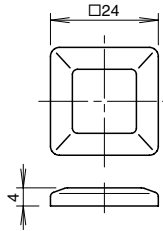


## Flush Bezel

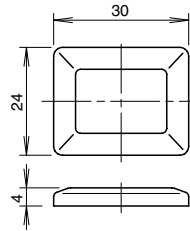
For round units (LB9Z-D6)



For square units (LB9Z-D7)



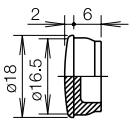
For rectangular units (LB9Z-D8)



## Mounting Hole Plug

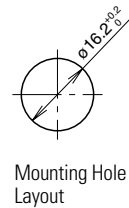
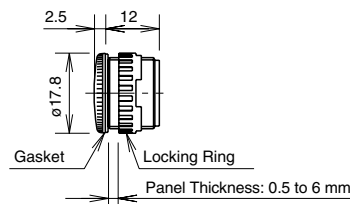
## Standard Bezels

AL-B6



Mounting Hole Layout

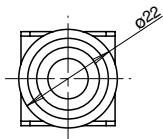
AL-BM6



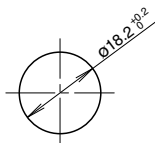
Mounting Hole Layout

## Flush Bezels

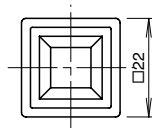
For round units (LB9Z-BS6)



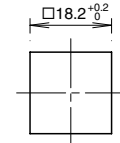
Mounting Hole Layout



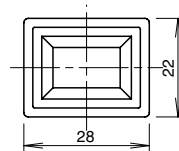
For square units (LB9Z-BS7)



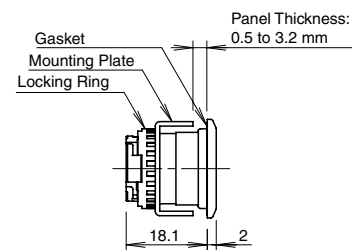
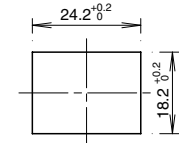
Mounting Hole Layout



For rectangular units (LB9Z-BS8)



Mounting Hole Layout



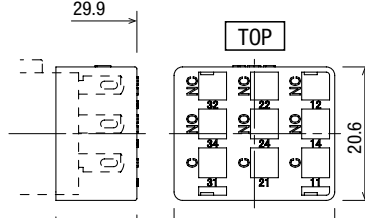
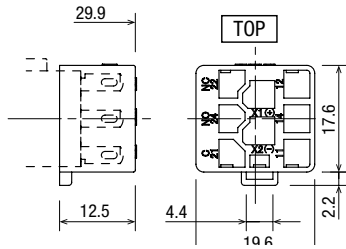
## Accessory Dimensions (mm) con't

### Terminal Cover

#### Standard Bezel

For SPDT/DPDT contacts (LB9Z-VL2)

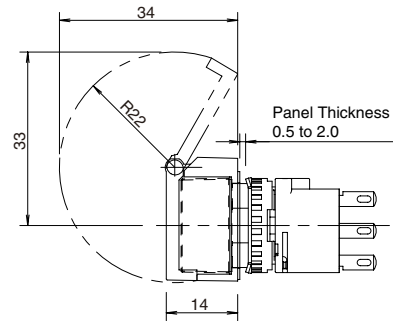
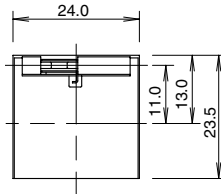
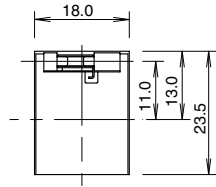
For 3PDT contacts (LB9Z-VL3)



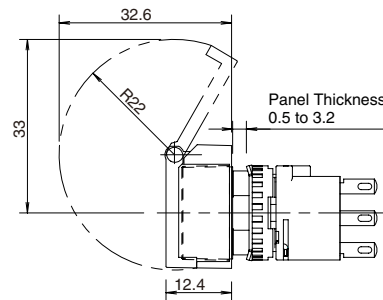
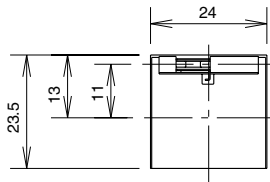
### Switch Guard for Standard Bezel Models

For round / square units (AL-K6SP)

For rectangular units (AL-KH6SP)

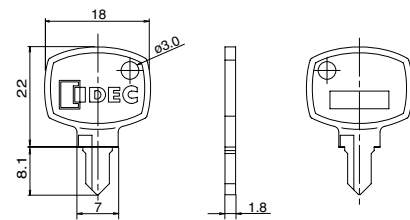


For Single Board Mounting (LA9Z-K3)



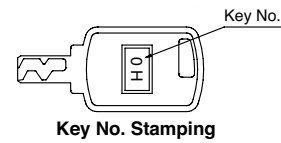
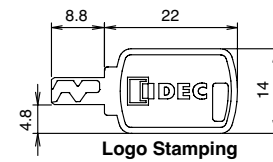
Note: The panel depth is the same for switches with or without switch guards. Both models can be installed on the same PC board.

### Standard Key

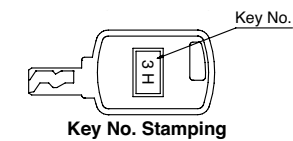
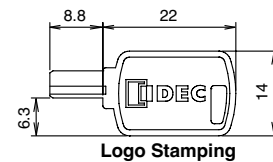


### Wave Key

Reversible Wave Key



Non-reversible Wave Key



## Replacement Parts

| Item                                                                                                                                                                                                                                           |                                | Material                                                   | Part Number | Remarks                                                                                                                                                                                                    |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|------------------------------------------------------------|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Lens<br>                                                                                                                                                      | For round units                | Polyarylate<br>ø15.4 H4mm                                  | AL6M-L②     | Specify the color code in place of ② in the part number.<br>A: Amber, C: Clear, G: Green, R: Red, S: Blue, Y: Yellow<br><br>Note: Use a clear lens for or white (PW) illumination.                         |
|                                                                                                                                                                                                                                                | For square units               | Polyarylate<br>□15.4, H4mm                                 | AL6Q-L②     |                                                                                                                                                                                                            |
|                                                                                                                                                                                                                                                | For rectangular units          | Polyarylate<br>W21.4 x H4 x D15.4mm                        | AL6H-L②     |                                                                                                                                                                                                            |
| Button<br>                                                                                                                                                    | For round units                | Polyarylate<br>□15.4, H4mm                                 | AB6M-B②     | Specify the color code in place of ② in the part number.<br>B: Black, G: Green, R: Red, S: Blue W: White, Y: Yellow                                                                                        |
|                                                                                                                                                                                                                                                | For square units               | Polyarylate<br>□15.4, H4mm                                 | AB6Q-B②     |                                                                                                                                                                                                            |
|                                                                                                                                                                                                                                                | For rectangular units          | Polyarylate<br>W21.4 x H4 x D15.4                          | AB6H-B②     |                                                                                                                                                                                                            |
| Marking Plate<br>                                                                                                                                             | For round units                | Acrylic<br>ø13.7 H0.8                                      | AL6M-②      | Specify the color code in place of ② in the part number.<br>B: Black, W: White                                                                                                                             |
|                                                                                                                                                                                                                                                | For square units               | Acrylic<br>□13.7, H0.8mm                                   | AL6Q-②      |                                                                                                                                                                                                            |
|                                                                                                                                                                                                                                                | For rectangular units          | Acrylic<br>W19.7 x H0.8 (0.4) x D13.7mm                    | AL6H-②      |                                                                                                                                                                                                            |
| Locking Ring<br>                                                                                                                                              | For all units                  | Polyamide<br>ø17.9, H3.9mm                                 | LB9Z-LNP    |                                                                                                                                                                                                            |
| Anti-rotation Ring<br>                                                                                                                                       | For standard bezel             | Metal<br>(Stainless steel)<br>□17.9, t0.6mm                | LB9Z-LP1    |                                                                                                                                                                                                            |
| Anti-rotation Ring<br>                                                                                                                                      | For flush bezel                | Metal<br>(Stainless steel)<br>W21 x H8.2 x D20.6<br>t0.8mm | LB9Z-LP6    |                                                                                                                                                                                                            |
| Spare Standard Key<br>                                                                                                                                      | For key selector switches      | Nickel-plated Brass                                        | AS6-SK      | See page page 538 for dimensions.                                                                                                                                                                          |
| Spare Wave key<br>Non-reversible Wave Key<br><br>Reversible Wave Key<br> | For Wave key selector switches | Diecast zinc alloy (nickel plated)<br>W14 x H2 x D30.8mm   | LA9Z-SK-⑤   | Specify Wave key number in place of ⑤ in the part number.<br>0H: Standard wave key (reversible)<br>1H to 2H: Reversible wave key<br>3H to 6H: Non-reversible wave key<br>See page page 538 for dimensions. |

## LB Series Replacement LED Unit

| Item                                                                                            | Rated Operating Voltage | Part Number | ②Color Code            |                                                                                                                                                                                                                               |
|-------------------------------------------------------------------------------------------------|-------------------------|-------------|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| LED Unit<br> | DC5V                    | LB9Z-LED5②  | A<br>G<br>PW<br>R<br>S | 8. Specify color code in place of the ② in the part number. R: Red, G: Green, A: Amber, S: Blue, PW: White<br>9. All illuminated LB series contain an LED unit.<br>10. Use a white (PW) LED unit for yellow (Y) illumination. |
|                                                                                                 | AC/DC12V                | LB9Z-LED1②  |                        |                                                                                                                                                                                                                               |
|                                                                                                 | AC/DC24V                | LB9Z-LED2②  |                        |                                                                                                                                                                                                                               |

## Precautions & Instructions Safety Precautions

- Turn off the power to the LB series control units before installation, removal, wiring, maintenance, and inspection. Failure to turn power off may cause electrical shocks or fire hazard.
- To avoid burning your hand, use the lamp holder tool when replacing the lamps.

- For wiring, use wires of a proper size to meet voltage and current requirements. Solder correctly according to the instructions in "Wiring" and "Notes on Terminal Cover." Improper soldering may cause overheating and create a fire hazard. Also, when using tab terminals, use receptacles of appropriate size.

## Instructions

### Wiring

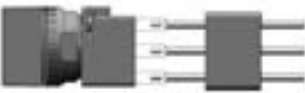
1. Solder the terminals at 350°C within 3 seconds using a 60W soldering iron. Sn-Ag-Cu type is recommended. When soldering, do not touch the LB series with the soldering iron. Also ensure that no tensile force is applied to the terminals. Do not bend the terminal or apply excessive force to the terminal.
2. Use non-corrosive liquid flux.

### Terminal Cover

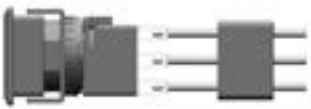
Solder/tab terminal  
Insert the terminal cover into the contact block with the TOP markings on the contact block and the terminal cover in the same direction.

Note: When wiring, insert the lead wires into the terminal cover holes before soldering. After wiring, terminal covers cannot be installed.

### Standard Bezel



### Flush Bezel



### Operating Environment

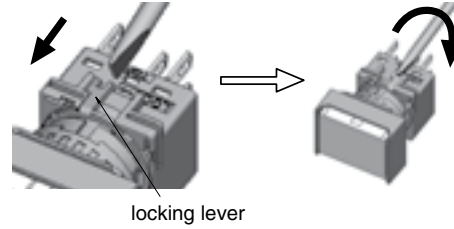
- Do not use the LB series where corrosive gases exist or under an environment exceeding the operating temperature and humidity ranges. Otherwise, damage such as contact failure or change of the surface color may occur.
- Major parts of the switch are plastic. Scratches or damage may occur when scraped with a sharp object or if excessive load or shock is applied. Note that this may cause operation and appearance failure of the operator and bezel.
- Application of detergent, cutting oil, or special chemicals to the switch may result in operation and/or appearance failure such as a change in surface color.

### Handling

Contacts (micro switch)  
When using NC (normally closed) and NO (normally open) contacts of the same microswitch, avoid connections of different voltages, or connections of different types of power supplies. Failure to observe this instruction may cause a short-circuit.

### Removing and Installing the Contact Block

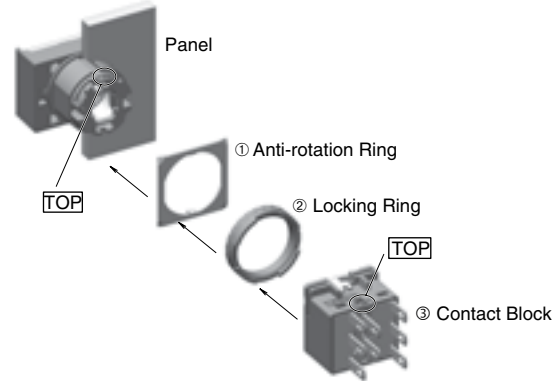
3. Turn the locking lever on the contact block in the direction opposite to the arrow on the housing. Then the contact block can be removed.
4. Insert the contact block with the TOP markings on the contact block and the operator placed in the same direction. Then lock the units, turning the locking lever in the direction of the arrow.



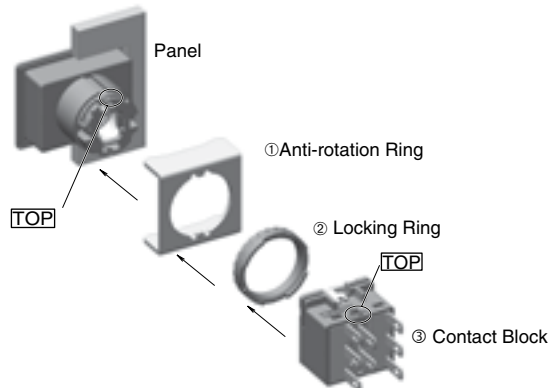
### Panel Mounting

Remove the contact block from the operator. Insert the operator into the panel cut-out from the front, then install the contact block to the operator.

### Standard Bezel



### Flush Bezel



### Notes on Mounting

Use the optional ring wrench (MT-001) to mount the operator onto the panel. Tightening torque should not exceed 0.7 N·m. Do not use pliers. Excessive tightening will damage the locking ring.

## A6 Series — Miniature Switches and Pilot Devices: 16mm

## Key features:

- 16mm (5/8") mounting hole
- LED illumination
- Compact design saves space
- Momentary, Maintained, Selectors, and E-Stops
- Gold-clad Silver contacts for reliable low level switching
- Snap action contacts
- IP40 (dustproof) or IP65 (oiltight) versions



UL Recognized  
File No. E55996



CSA Certified  
File No. LR21451



|                  |                         |           |                                                                                                                                                                                                                                                                                |                                                                      |                    |                    |
|------------------|-------------------------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|--------------------|--------------------|
| Specifications   | Degree of Protection    |           | IP40: Dustproof<br>IP65 Watertight/Oiltight                                                                                                                                                                                                                                    |                                                                      |                    |                    |
|                  | Contact Configuration   |           | SPDT, DPDT                                                                                                                                                                                                                                                                     |                                                                      |                    |                    |
|                  | Maximum Voltage         |           | 250V AC/DC                                                                                                                                                                                                                                                                     |                                                                      |                    |                    |
|                  | Thermal Current         |           | 3A                                                                                                                                                                                                                                                                             |                                                                      |                    |                    |
|                  | Minimum Applicable Load |           | 5V AC/DC, 1mA                                                                                                                                                                                                                                                                  |                                                                      |                    |                    |
|                  | Contact Material        |           | Gold-clad silver                                                                                                                                                                                                                                                               |                                                                      |                    |                    |
|                  | Terminal Style          |           | .110" Solder/ Quick Connect                                                                                                                                                                                                                                                    |                                                                      |                    |                    |
|                  | Operating Temperature   |           | -25° to +55°C (no freezing)                                                                                                                                                                                                                                                    |                                                                      |                    |                    |
|                  | Operating Humidity      |           | 45 to 85% RH                                                                                                                                                                                                                                                                   |                                                                      |                    |                    |
|                  | Contact Resistance      |           | 50mΩ maximum (initial value)                                                                                                                                                                                                                                                   |                                                                      |                    |                    |
|                  | Insulation Resistance   |           | 100MΩ minimum (500V DC megger)                                                                                                                                                                                                                                                 |                                                                      |                    |                    |
|                  | Vibration Resistance    |           | 10 to 55Hz, amplitude 1.5mm p-p                                                                                                                                                                                                                                                |                                                                      |                    |                    |
|                  | Shock Resistance        |           | Damage limits: 500m/sec <sup>2</sup> (approx. 50G) Operating extremes: 200m/sec <sup>2</sup> (approx. 20G)                                                                                                                                                                     |                                                                      |                    |                    |
|                  | Electrical Life         |           | 100,000 operations minimum (at full rated load)                                                                                                                                                                                                                                |                                                                      |                    |                    |
| Contact Ratings  | Mechanical Life         |           | Maintained: 100,000 operations minimum<br>Momentary: 1,000,000 operations minimum<br>Selector/Keylock: 250,000 operations minimum                                                                                                                                              |                                                                      |                    |                    |
|                  | Dielectric Strength     |           | Switch Unit: 2,000V AC, 1 min. between live/dead part and terminals of different poles;<br>1,000V AC, 1 minute between terminals of the same pole;<br>1,500V AC, 1 minute between contact and lamp terminals.<br>Illumination Unit: 2,000V AC, 1 min. between live part/ground |                                                                      |                    |                    |
|                  | Soldering Temperature   |           | 20W/5 seconds or 260°C/3 seconds                                                                                                                                                                                                                                               |                                                                      |                    |                    |
|                  | Operating Voltage       |           | 24V                                                                                                                                                                                                                                                                            | 120V                                                                 | 240V               |                    |
| LED Lamp Ratings | AC (50/60Hz)            | Resistive | —                                                                                                                                                                                                                                                                              | 1.0A                                                                 | 0.5A               |                    |
|                  |                         | Inductive | —                                                                                                                                                                                                                                                                              | 0.7A                                                                 | 0.5A               |                    |
|                  | DC                      | Resistive | 1.0A                                                                                                                                                                                                                                                                           | 0.2A                                                                 | —                  |                    |
|                  |                         | Inductive | 0.7A                                                                                                                                                                                                                                                                           | 0.1A                                                                 | —                  |                    |
| LED Lamp Ratings | Rated Voltage/Current   |           | 5V DC ±5%                                                                                                                                                                                                                                                                      | 6V AC/DC (±10%)                                                      | 12V AC/DC (±10%)   | 24V AC/DC (±10%)   |
|                  |                         |           | 8mA                                                                                                                                                                                                                                                                            | AC: A, R, W, Y: 8mA<br>G, S: 7mA<br>DC: A, R, W, Y: 6mA<br>G, S: 5mA | AC: 9mA<br>DC: 8mA | AC: 9mA<br>DC: 8mA |



1. AC Inductive Load, PF = 0.6 – 0.7; DC Inductive Load, L/R = 7ms.
2. LED lamp contains a built-in current limiting resistor and a protection diode.
3. LED's don't "burn out." Luminance is reduced to 50% of initial intensity after being lit for 50,000 hours continuously.

AB6 Non-Illuminated Pushbuttons (Assembled)

Non-Illuminated Pushbuttons

| Style                                                                                                            | Contact      | Part Number            |                            |                        |                            |
|------------------------------------------------------------------------------------------------------------------|--------------|------------------------|----------------------------|------------------------|----------------------------|
|                                                                                                                  |              | Momentary              |                            | Maintained (Latching)  |                            |
|                                                                                                                  |              | Dustproof (IP40)       | Oiltight (IP65)            | Dustproof (IP40)       | Oiltight (IP65)            |
| Round 18mm<br>                  | SPDT<br>DPDT | AB6M-M1-①<br>AB6M-M2-① | AB6M-M1P-①<br>AB6M-M2P-①   | AB6M-A1-①<br>AB6M-A2-① | AB6M-A1P-①<br>AB6M-A2P-①   |
| Square 18mm<br>                 | SPDT<br>DPDT | AB6Q-M1-①<br>AB6Q-M2-① | AB6Q-M1P-①<br>AB6Q-M2P-①   | AB6Q-A1-①<br>AB6Q-A2-① | AB6Q-A1P-①<br>AB6Q-A2P-①   |
| Rectangular 18mm x 24mm<br>     | SPDT<br>DPDT | AB6H-M1-①<br>AB6H-M2-① | AB6H-M1P-①<br>AB6H-M2P-①   | AB6H-A1-j<br>AB6H-A2-j | AB6H-A1P-①<br>AB6H-A2P-①   |
| Round 23.5mm<br>                | SPDT<br>DPDT | —                      | AB6M-M1P-M②<br>AB6M-M2P-M② | —                      | AB6M-A1P-M①<br>AB6M-A2P-M① |
| Square 23.5mm<br>             | SPDT<br>DPDT | —                      | AB6Q-M1P-Q①<br>AB6Q-M2P-Q① | —                      | AB6Q-A1P-Q①<br>AB6Q-A2P-Q① |
| Rectangular 17.5 X 23.5mm<br> | SPDT<br>DPDT | —                      | AB6Q-M1P-H①<br>AB6Q-M2P-H① | —                      | AB6Q-A1P-H①<br>AB6Q-A2P-H① |

① Button Color Code

| Color  | Code |
|--------|------|
| Black  | B    |
| Green  | G    |
| Red    | R    |
| Blue   | S    |
| White  | W    |
| Yellow | Y    |



- 1. In place of ① specify Button Color Code from the table at right.
- 2. To order as sub-assembled, see page 459.
- 3. For accessories, see page 466.
- 4. For dimensions, see page 468.

## AB6 Non-Illuminated Pushbuttons (Sub-Assembled)



## Operators

| Style                                                                                                            | Contact | Operator   | Part Number |           |             |
|------------------------------------------------------------------------------------------------------------------|---------|------------|-------------|-----------|-------------|
|                                                                                                                  |         |            | Round       | Square    | Rectangular |
| Non-Illuminated Pushbuttons<br> | SPDT    | Momentary  | AB6M-M100   | AB6Q-M100 | AB6H-M100   |
|                                                                                                                  |         | Maintained | AB6M-A100   | AB6Q-A100 | AB6H-A100   |
|                                                                                                                  | DPDT    | Momentary  | AB6M-M200   | AB6Q-M200 | AB6H-M200   |
|                                                                                                                  |         | Maintained | AB6M-A200   | AB6Q-A200 | AB6H-A200   |



Oversize rectangular button uses square operator.

## Buttons

| Description                                                                                                 | Part Number      |                 |
|-------------------------------------------------------------------------------------------------------------|------------------|-----------------|
|                                                                                                             | Button           |                 |
|                                                                                                             | Dustproof (IP40) | Oiltight (IP65) |
| Round<br>                | AB6M-BK1-j       | AB6M-BK2-j      |
| Square<br>               | AB6Q-BK1-j       | AB6Q-BK2-j      |
| Rectangular<br>          | AB6H-BK1-j       | AB6H-BK2-j      |
| Round Oversize<br>       | —                | AB6M-BK2-Mj     |
| Square Oversize<br>      | —                | AB6Q-BK2-Qj     |
| Rectangular Oversize<br> | —                | AB6Q-BK2-Hj     |

## ① Button Color Code

| Color  | Code |
|--------|------|
| Black  | B    |
| Green  | G    |
| Red    | R    |
| Blue   | S    |
| White  | W    |
| Yellow | Y    |



1. In place of j, specify Button Color Code from table.
2. Buttons which are rated IP65 include a waterproof rubber gasket.
3. For accessories, see page 466.

## AL6 Illuminated Pushbuttons (Assembled)

### LED Illuminated Pushbuttons

| Description   | Style                                                                                                                 | Contact      | Part Numbers             |                              |                          |                              |
|---------------|-----------------------------------------------------------------------------------------------------------------------|--------------|--------------------------|------------------------------|--------------------------|------------------------------|
|               |                                                                                                                       |              | Momentary                |                              | Maintained (Latching)    |                              |
|               |                                                                                                                       |              | Dustproof (IP40)         | Oiltight (IP65)              | Dustproof (IP40)         | Oiltight (IP65)              |
| Standard Lens | Round (18mm lens)<br>                | SPDT<br>DPDT | AL6M-M1③-②<br>AL6M-M2③-② | AL6M-M1③P-②<br>AL6M-M2③P-②   | AL6M-A1③-②<br>AL6M-A2③-② | AL6M-A1③P-②<br>AL6M-A2③P-②   |
|               | Square (18mm lens)<br>               | SPDT<br>DPDT | AL6Q-M1③-②<br>AL6Q-M2③-② | AL6Q-M1③P-②<br>AL6Q-M2③P-②   | AL6Q-A1③-②<br>AL6Q-A2③-② | AL6Q-A1③P-②<br>AL6Q-A2③P-②   |
|               | Rectangular (18mm x 24mm lens)<br>   | SPDT<br>DPDT | AL6H-M1I-②<br>AL6H-M2I-② | AL6H-M1IP-②<br>AL6H-M2IP-②   | AL6H-A1I-②<br>AL6H-A2I-② | AL6H-A1IP-②<br>AL6H-A2IP-②   |
| Oversize Lens | Round (24mm lens)<br>               | SPDT<br>DPDT | —                        | AL6M-M1③P-M②<br>AL6M-M2③P-M② | —                        | AL6M-A1③P-M②<br>AL6M-A2③P-M② |
|               | Square (24mm lens)<br>             | SPDT<br>DPDT | —                        | AL6Q-M1③P-Q②<br>AL6Q-M2③P-Q② | —                        | AL6Q-A1③P-Q②<br>AL6Q-A2③P-Q② |
|               | Rectangular (18mm x 24mm lens)<br> | SPDT<br>DPDT | —                        | AL6Q-M1③P-H②<br>AL6Q-M2③P-H② | —                        | AL6Q-A1③P-H②<br>AL6Q-A2③P-H② |



1. In place of ②, specify Lens/LED Color Code from table below.
2. In place of ③, specify Voltage Code from table below.
3. Lamps also available in 5V DC, 6V AC/DC or 12 V AC/DC, change "4" using voltage/lamp codes (ie AL6M-M13-k uses 12V AC/DC LED).
4. LED lamp is included in unit and contains a current-limiting resistor and a protection diode. (External resistor not required.)
5. To order as sub-assembled, see page.
6. For accessories, see page.
7. For dimensions, see page.
8. Light independent of switch position.

#### ② Lens/LED Color Code

| Color      | Code |
|------------|------|
| Amber      | A    |
| Green      | G    |
| Red        | R    |
| Blue       | S    |
| Warm White | W    |
| Cool White | JW   |
| Yellow     | Y    |

#### ③ Voltage Code

| Voltage   | Code |
|-----------|------|
| 5V DC     | 1    |
| 6V AC/DC  | 2    |
| 12V AC/DC | 3    |
| 24V AC/DC | 4    |



## AL6 Illuminated Pushbuttons (Sub-Assembled)

|                                                                                   |   |                                                                                   |   |                                                                                   |   |                                                                                     |
|-----------------------------------------------------------------------------------|---|-----------------------------------------------------------------------------------|---|-----------------------------------------------------------------------------------|---|-------------------------------------------------------------------------------------|
| Operator                                                                          | + | LED Lamp                                                                          | + | Lens                                                                              | = | Completed Unit                                                                      |
|  |   |  |   |  |   |  |

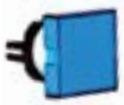
## Operators

| Style                                                                             | Contact | Operator   | Part Number |           |             |
|-----------------------------------------------------------------------------------|---------|------------|-------------|-----------|-------------|
|                                                                                   |         |            | Round       | Square    | Rectangular |
|  | SPDT    | Momentary  | AL6M-M100   | AL6Q-M100 | AL6H-M100   |
|                                                                                   |         | Maintained | AL6M-A100   | AL6Q-A100 | AL6H-A100   |
|                                                                                   | DPDT    | Momentary  | AL6M-M200   | AL6Q-M200 | AL6H-M200   |
|                                                                                   |         | Maintained | AL6M-A200   | AL6Q-A200 | AL6H-A200   |



Oversize rectangular button uses square operator.

## Lenses

| Unit<br>Degree of Protection | Dustproof (IP40)                                                                                  | Part Number                                                                                       |                                                                                                     |
|------------------------------|---------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|
|                              |                                                                                                   | Oiltight (IP65)                                                                                   |                                                                                                     |
| Size                         | Standard                                                                                          | Standard                                                                                          | Oversize                                                                                            |
| Round                        | AL6M-LK1-k<br>  | AL6M-LK2-Ⓢ<br>  | AL6M-LK2-M k<br>  |
|                              | AL6Q-LK1-k<br> | AL6Q-LK2-k<br> | AL6Q-LK2-Q k<br> |
| Rectangular                  | AL6H-LK1-k<br> | AL6H-LK2-k<br> | AL6Q-LK2-H k<br> |



1. In place of Ⓢ, specify Lens Color Code from table below.
2. Lenses which are rated IP65 include a waterproof rubber gasket.
3. For accessories, see page.

## ② Lens/LED Color Code

| Color      | Code |
|------------|------|
| Amber      | A    |
| Green      | G    |
| Red        | R    |
| Blue       | S    |
| Warm White | W    |
| Cool White | JW   |
| Yellow     | Y    |

## LED Lamps

| Appearance                                                                          | Rated Voltage | Part Number |
|-------------------------------------------------------------------------------------|---------------|-------------|
|  | 5V DC         | LATD-5 Ⓢ    |
|                                                                                     | 6V AC/DC      | LATD-6 Ⓢ    |
|                                                                                     | 12V AC/DC     | LATD-1 Ⓢ    |
|                                                                                     | 24V AC/DC     | LATD-2 Ⓢ    |



1. In place of Ⓢ, specify LED Color Code from table at left.

Switches & Pilot Devices

Signaling Lights

Relays & Sockets

Timers

Contactors

Terminal Blocks

Circuit Breakers

AL6 Pilot Lights (Assembled)

LED Pilot Lights

| Description                                                                                                         | Part Number      |                 |
|---------------------------------------------------------------------------------------------------------------------|------------------|-----------------|
|                                                                                                                     | Dustproof (IP40) | Oiltight (IP65) |
| Round (18mm Lens)<br>              | AL6M-P③-②        | AL6M-P③P-②      |
| Square (18mm Lens)<br>             | AL6Q-P③-②        | AL6Q-P③P-②      |
| Rectangular (18mm x 24mm Lens)<br> | AL6H-P③-②        | AL6H-P③P-②      |

- 
1. In place of ②, specify Lens Color Code from table below.

2. In place of ③, specify Voltage Code from table below.

3. LEDs also available in 5V DC, 6V AC/DC or 12 V AC/DC, change “4” using voltage codes (ie AL6M-P3-② uses 12V AC/DC LED).

4. LED is included and contains built-in current limiting resistor and reverse polarity protection diode. (no external resistor required)

5. To order sub-assembled, see page.

6. For accessories, see page.

7. For dimensions, see page.

8. For one piece pilot lights and/or dome lens pilot lights, see AP series miniature pilot lights.

②Lens/LED Color Code

| Color      | Code |
|------------|------|
| Amber      | A    |
| Green      | G    |
| Red        | R    |
| Blue       | S    |
| Warm White | W    |
| Cool White | JW   |
| Yellow     | Y    |

③Voltage Code

| Voltage   | Code |
|-----------|------|
| 5V DC     | 1    |
| 6V AC/DC  | 2    |
| 12V AC/DC | 3    |
| 24V AC/DC | 4    |

## AL6 Pilot Lights (Sub-Assembled)

|          |   |          |   |      |   |                |
|----------|---|----------|---|------|---|----------------|
| Operator | + | LED Lamp | + | Lens | = | Completed Unit |
|----------|---|----------|---|------|---|----------------|



## Operators

| Style                                                                             | Part Number |          |             |
|-----------------------------------------------------------------------------------|-------------|----------|-------------|
|                                                                                   | Round       | Square   | Rectangular |
| AL6 Pilot Lights                                                                  |             |          |             |
|  | AL6M-P00    | AL6Q-P00 | AL6H-P00    |

## Lenses

| Degree of Protection | Part Number                                                                                       |                                                                                                   |
|----------------------|---------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|
|                      | Dustproof IP40                                                                                    | Oiltight IP65                                                                                     |
| Round                | AL6M-LK1-②<br>   | AL6M-LK3-②<br>   |
| Square               | AL6Q-LK1-②<br> | AL6Q-LK3-②<br> |
| Rectangular          | AL6H-LK1-②<br> | AL6H-LK3-②<br> |



1. In place of ②, specify Lens Color Code from table below.
2. Lenses which are rated IP65 include a waterproof rubber gasket.
3. For accessories, see page.

## kLens/LED Color Code

| Color      | Code |
|------------|------|
| Amber      | A    |
| Green      | G    |
| Red        | R    |
| Blue       | S    |
| Warm White | W    |
| Cool White | JW   |
| Yellow     | Y    |

## LED Lamps

| Appearance                                                                          | Rated Voltage | Part Number |
|-------------------------------------------------------------------------------------|---------------|-------------|
|  | 5V DC         | LATD-5 ②    |
|                                                                                     | 6V AC/DC      | LATD-6 ②    |
|                                                                                     | 12V AC/DC     | LATD-1 ②    |
|                                                                                     | 24V AC/DC     | LATD-2 ②    |



1. In place of ②, specify LED Color Code from table at left.

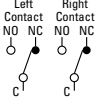
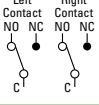
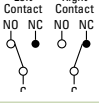
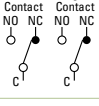
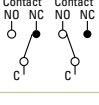
## AS6 Selector and Keylock Switches

### AS6 Selector Switches and Keylock Switches (2 & 3 Position)

| Style                                                                                                       |                | Function                     |                                                                                     | Knob       | Key          |
|-------------------------------------------------------------------------------------------------------------|----------------|------------------------------|-------------------------------------------------------------------------------------|------------|--------------|
| Round Selector<br>         | 2-Position 90° | Maintained                   |    | AS6M-2Y2P  | AS6M-2KT2P①  |
|                                                                                                             |                | Spring Return Right          |    | AS6M-21Y2P | AS6M-21KT2PB |
| Round Keylock<br>          | 3-Position 45° | Maintained                   |    | AS6M-3Y2P  | AS6M-3KT2P①  |
|                                                                                                             |                | Spring Return Right → Center |    | AS6M-31Y2P | AS6M-31KT2P① |
|                                                                                                             |                | Spring Return Left → Center  |    | AS6M-32Y2P | AS6M-32KT2P① |
|                                                                                                             |                | 2-Way Return → Center        |    | AS6M-33Y2P | AS6M-33KT2PD |
| Square Selector<br>        | 2-Position 90° | Maintained                   |    | AS6Q-2Y2P  | AS6Q-2KT2P①  |
|                                                                                                             |                | Spring Return to Right       |    | AS6Q-21Y2P | AS6Q-21KT2PB |
| Square Keylock<br>        | 3-Position 45° | Maintained                   |    | AS6Q-3Y2P  | AS6Q-3KT2P①  |
|                                                                                                             |                | Spring Return Right → Center |    | AS6Q-31Y2P | AS6Q-31KT2P① |
|                                                                                                             |                | Spring Return Left → Center  |    | AS6Q-32Y2P | AS6Q-32KT2P① |
|                                                                                                             |                | 2-Way Return → Center        |  | AS6Q-33Y2P | AS6Q-33KT2PD |
| Rectangular Selector<br> | 2-Position 90° | Maintained                   |  | AS6H-2Y2P  | AS6H-2KT2P①  |
|                                                                                                             |                | Spring Return Right          |  | AS6H-21Y2P | AS6H-21KT2PB |
| Rectangular Keylock<br>  | 3-Position 45° | Maintained                   |  | AS6H-3Y2P  | AS6H-3KT2P①  |
|                                                                                                             |                | Spring Return Right → Center |  | AS6H-31Y2P | AS6H-31KT2P① |
|                                                                                                             |                | Spring Return Left → Center  |  | AS6H-32Y2P | AS6H-32KT2P① |
|                                                                                                             |                | 2-Way Return → Center        |  | AS6H-33Y2P | AS6H-33KT2PD |

### Contact Operations

(for all selectors)

| Contents      | Operator Position & Contact Operation |                                                                                     |
|---------------|---------------------------------------|-------------------------------------------------------------------------------------|
| 2-pos. (DPDT) | Left                                  |  |
|               | Right                                 |  |
| 3-pos. (DPDT) | Left                                  |  |
|               | Center                                |  |
|               | Right                                 |  |

### Key Retention Codes

| Code | Description                                                   |
|------|---------------------------------------------------------------|
| A    | Key not retained in any position (removable in all positions) |
| B    | Key retained in right position only                           |
| C    | Key retained in left position only                            |
| D    | Key retained in left and right (3 position only)              |
| E    | Key retained in center only (3 position only)                 |
| G    | Key retained right and center (3 position only)               |
| H    | Key retained left and center (3 position only)                |



Key cannot be removed in a spring return position.



1. All models are IP65 and DPDT.
2. In place of ①, specify Key Retention Code. See table on right.
3. Available as assembled units only.
4. For accessories, see page 466.
5. For dimensions, see page 468.

## Switch Engraving Order Form – A6 Series

Copy this order form and use it to specify Letter Height, Maximum Number of Lines and Text to be engraved.

To insure engraving accuracy, fax it to your IDEC representative or Distributor.

|               |       |                             |       |
|---------------|-------|-----------------------------|-------|
| Your Company: | _____ | Telephone:                  | _____ |
| Name:         | _____ | Fax:                        | _____ |
| Address:      | _____ | Email:                      | _____ |
| PO:           | _____ | Part Number to be Engraved: | _____ |

Please check one of the boxes below to indicate your choice of engraving options:

Rectangular  
Switch

|                          | # of Lines | Letter Height | Max. Characters Per Line |
|--------------------------|------------|---------------|--------------------------|
| <input type="checkbox"/> | 1          | 5/32          | 6                        |
| <input type="checkbox"/> | 2          | 5/32          | 6                        |
| <input type="checkbox"/> |            | 1/8           | 6                        |
| <input type="checkbox"/> | 3          | 1/8           | 6                        |
| <input type="checkbox"/> | 4          | N/A           |                          |

Square  
Switch

|                          | # of Lines | Letter Height | Max. Characters Per Line |
|--------------------------|------------|---------------|--------------------------|
| <input type="checkbox"/> | 1          | 5/32          | 5                        |
| <input type="checkbox"/> | 2          | 5/32          | 5                        |
| <input type="checkbox"/> |            | 1/8           | 6                        |
| <input type="checkbox"/> | 3          | 1/8           | 6                        |
| <input type="checkbox"/> | 4          | N/A           |                          |

Round  
Switch

|                          | # of Lines | Letter Height | Max. Characters Per Line |
|--------------------------|------------|---------------|--------------------------|
| <input type="checkbox"/> | 1          | 5/32          | 3                        |
| <input type="checkbox"/> |            | 1/8           | 3                        |
| <input type="checkbox"/> | 2          | 5/32          | Custom*                  |
| <input type="checkbox"/> | 3          | 1/8           | Custom*                  |
| <input type="checkbox"/> | 4          | 3/32          | Custom*                  |

\*Engraving is possible, but character size will be smaller than standard sizes.



1. Engraving is done on the button itself for non-illuminated pushbuttons and on marking plate for illuminated pushbuttons and pilot lights.
2. Please enter text exactly how you want it engraved, take care to emphasize capital or small letters.

Enter text to be engraved

:

Line 1: \_\_\_\_\_

Line 2: \_\_\_\_\_

Line 3: \_\_\_\_\_

Line 4: \_\_\_\_\_

### Sample Letter Sizes

1/8 Letters: **OPEN**

5/32 Letters: **OPEN**

For IDEC Internal Use Only:

Work Order #: \_\_\_\_\_

## Accessories

| Appearance                    |                                                                                     | Description                                                                                                              | Used With                                          | Part Number |
|-------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|-------------|
| Locking Ring Wrench           |    | Made of metal. Used for tightening plastic locking ring during installation. Tightening torque should not exceed 3kgf-cm | Ø 5/8" (16mm) units                                | MT-001      |
|                               |                                                                                     |                                                                                                                          | Ø 31/64" (12mm) AP2M units                         | MT-002      |
|                               |                                                                                     |                                                                                                                          | Ø 13/32" (10mm) AP1M units                         | MT-003      |
| Lens Removal Tool             |    | Made of metal. Used for removing lens or button from the housing                                                         | All pushbuttons and pilot lights                   | MT-101      |
| Lamp Holder Tool              |    | Made of rubber. Used for removing and replacing LED lamps in illuminated units                                           | All illuminated pushbuttons and pilot lights       | OR-77       |
| Switch Guard                  |    | Prevents inadvertent switch operation. IP40 dust-tight. 90 degrees opening maintained                                    | Round/Square                                       | AL-K6       |
|                               |                                                                                     |                                                                                                                          | Rectangular                                        | AL-KH6      |
|                               |                                                                                     | Prevents inadvertent switch operation. IP65 oiltight 180 degrees opening, spring return                                  | Round/Square                                       | AL-K6SP     |
|                               |                                                                                     |                                                                                                                          | Rectangular                                        | AL-KH6SP    |
| Terminal Cover                |    | Made of translucent nylon. Fits over and shields the terminals                                                           | All 5/8" (16mm) units                              | AL-V6       |
| Dust Cover                    |    | Fits over the lens or button to provide extra protection from dust (not applicable for oversize lenses or buttons).      | All round units                                    | AL-D6       |
|                               |                                                                                     |                                                                                                                          | All square units                                   | AL-DQ6      |
|                               |                                                                                     |                                                                                                                          | All rectangular units                              | AL-DH6      |
| Adaptor Socket                |    | Plug-on terminal adaptor with solder terminals                                                                           | All 5/8" (16mm) units                              | AL-C6       |
|                               |                                                                                     | Plug-on terminal adaptor with PCB terminals                                                                              |                                                    | AL-C6V      |
| Mounting Hole Plug            |   | Fills unused panel cutouts. Made of nitrile rubber. Push-in installation from front of panel. IP65 (oiltight).           | Rubber                                             | AL-B6       |
|                               |                                                                                     | Fills unused panel cutouts. Made of aluminum. Screw-on locking ring from inside of panel. IP65 (oiltight).               | Aluminum                                           | AL-BM6      |
|                               |                                                                                     | Round Mounting Hole Plug                                                                                                 | Plastic (Applicable for flush mount switches only) | LA9Z-BS6    |
|                               |                                                                                     | Square Mounting Hole Plug                                                                                                |                                                    | LA9Z-BS7    |
|                               |                                                                                     | Rectangular Mounting Hole Plug                                                                                           |                                                    | LA9Z-BS8    |
| Replacement LED Lamps         |  | LED with built in current limiting resistor (with all illuminated assemblies).                                           | 5V DC                                              | LATD-5 ②    |
|                               |                                                                                     |                                                                                                                          | 6V AC/DC                                           | LATD-6 ②    |
|                               |                                                                                     |                                                                                                                          | 12V AC/DC                                          | LATD-1 ②    |
|                               |                                                                                     |                                                                                                                          | 24V AC/DC                                          | LATD-2 ②    |
| Replacement Locking Ring      |  | Fastens operators to panel (included with all operators).                                                                | All switches & pilot lights                        | HA9Z-LN     |
| Anti-Rotation Ring            |  | Prevents rotation of switches in panel (included with all operators).                                                    | All switches & pilot lights                        | AL6-LP      |
| Replacement Engraving Inserts |  | Engraving plates to allow legends underneath translucent lenses (included with all lenses).                              | Round standard                                     | AL6M-W      |
|                               |                                                                                     |                                                                                                                          | Square standard                                    | AL6Q-W      |
|                               |                                                                                     |                                                                                                                          | Rectangular standard                               | AL6H-W      |
|                               |                                                                                     |                                                                                                                          | Round oversize                                     | AL6M-MW     |
|                               |                                                                                     |                                                                                                                          | Square/rectangular oversize                        | AL6Q-QW     |
| Replacement Keys              |  | Pair of keys (#132).<br>All key switches use same standard key.                                                          | All key selectors                                  | AS6-SK      |



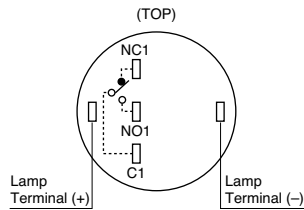
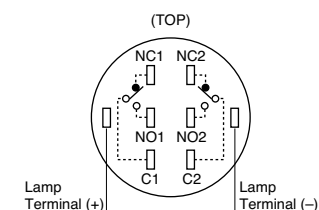
- In place of ② specify color code. A=Amber, G=Green, Y=Yellow, R=Red, S=Blue, W=Warm White, JW=Cool White.
- LEDs include built-in current limiting resistor and reverse polarity protection diode.

| Appearance                                  |                                                                                   | Description                                                                      | Used With                                                                                                                      | Part Number |
|---------------------------------------------|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|-------------|
| Flush Bezel                                 |  | ø24mm round, metal (aluminum color), panel cut-out ø20.2mm                       | Pushbuttons, pilot lights, illuminated pushbutton, selector switches, key selector switches and illuminated selector switches. | LA9Z-SM61   |
|                                             |  | ø24mm round, plastic (black), square panel cut-out ø20.2mm                       |                                              | LA9Z-S61B   |
|                                             |  | 24mm square, plastic (black), panel cut-out 20.2 x 20.2mm                        | A6 Switch<br>+                                                                                                                 | LA9Z-S71B   |
|                                             |  | 24 x 30mm rectangular, plastic (black), rectangular panel cut-out ø20.2 x 26.2mm | Flush Bezel<br>=                                                                                                               | LA9Z-S81B   |
| Switch Guard w/ Flush Bezel (spring return) |  | Rectangular, plastic (black)                                                     | <br>Flush Switch                             | LA9Z-KS8    |

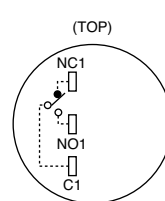
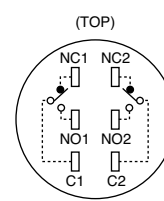
## Schematics — A Series: 5/8" (16mm)

## Terminal Arrangement (Top View)

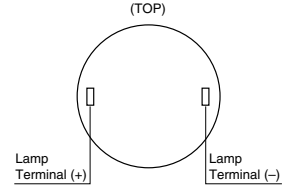
## Illuminated Pushbuttons

SPDT Contact  
(Single-pole/Double Throw)DPDT Contact  
(Double-pole/Double Throw)

## Non-illuminated Pushbuttons and Selector Switches

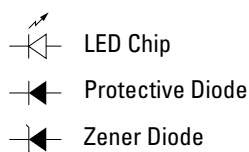
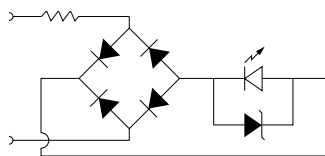
SPDT Contact  
(Single-pole/Double Throw)DPDT Contact  
(Double-pole/Double Throw)

## Pilot Lights



## IDEC's Superbright LED Internal Circuits

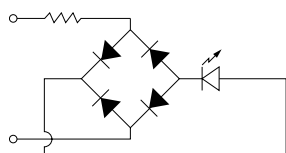
LATD-1,-2,-6 (GS)



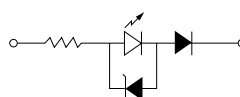
LATD-5 (ARWY)



LATD-1,-2,-6 (ARWY)

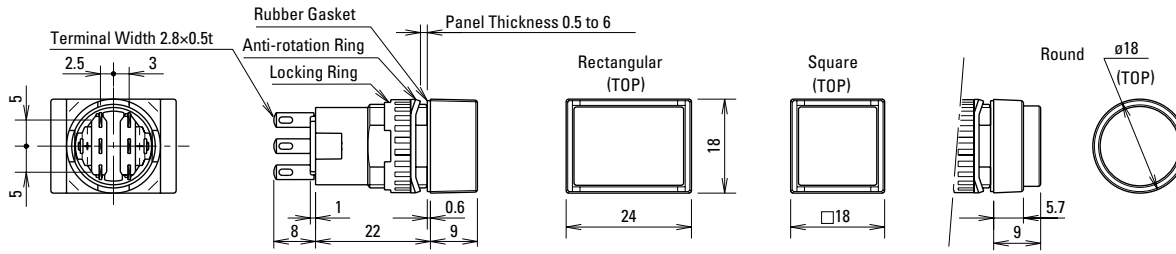


LATD-5 (GS)

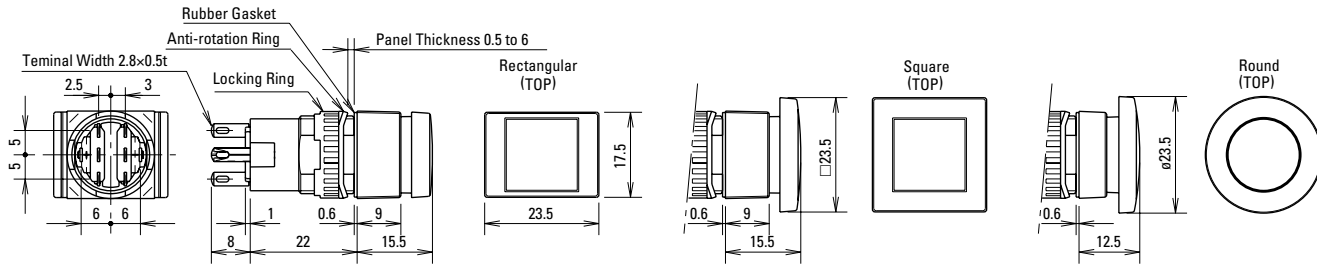


## Dimensions (mm)

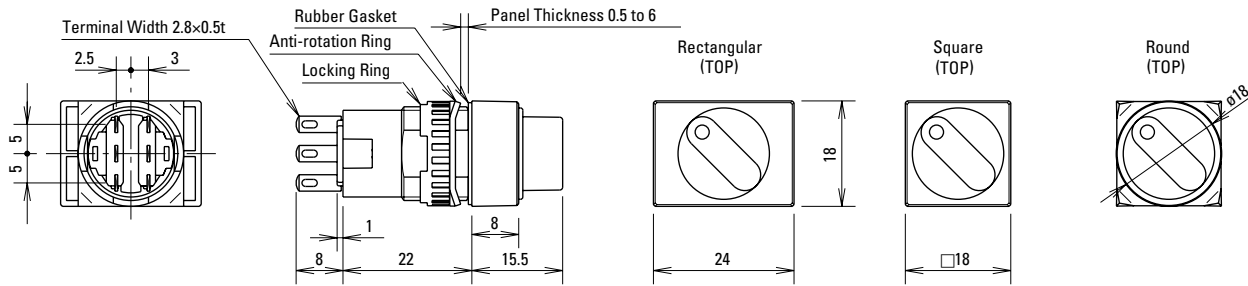
### Pushbuttons, Ø 5/8" (16mm)



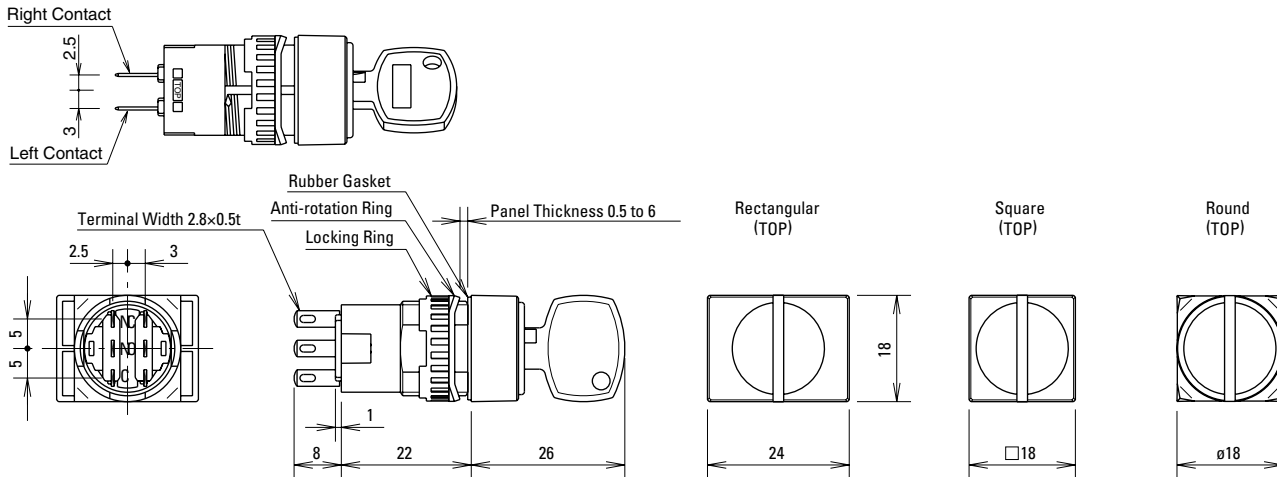
### Overize Lens



### Selector Switches, Ø 5/8" (16mm)



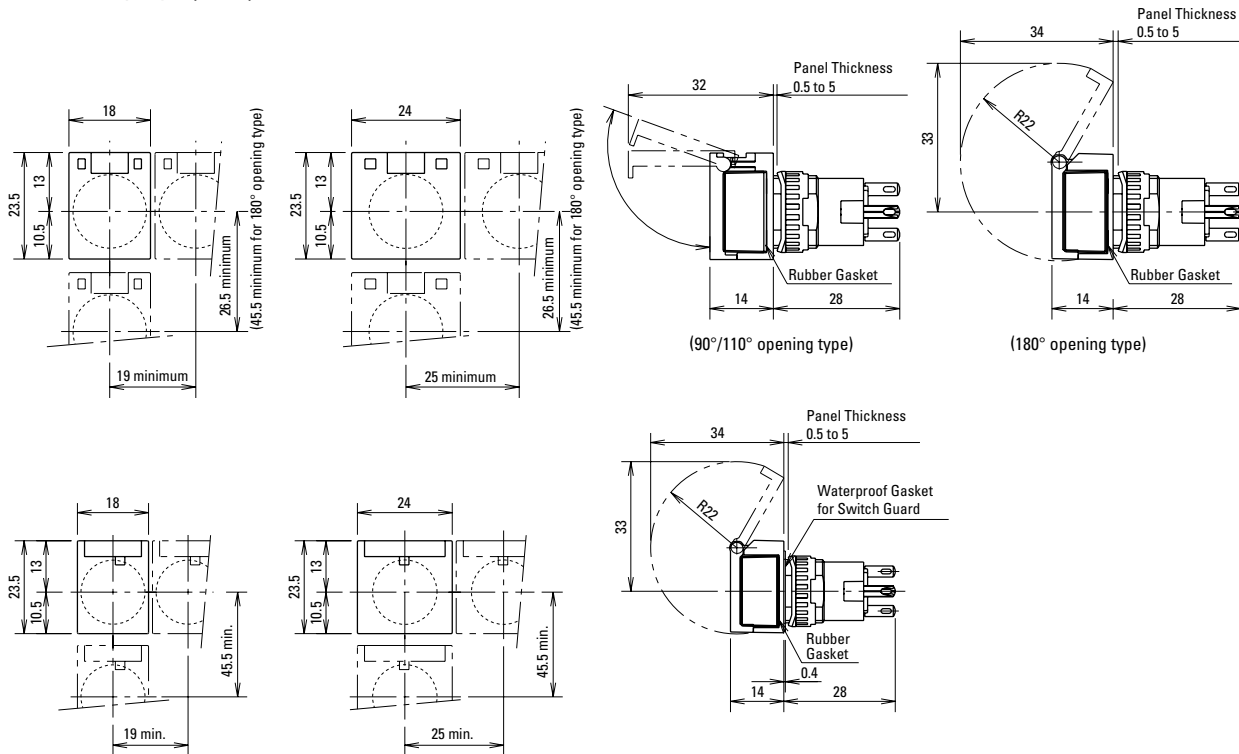
### Key Selector Switches, Ø 5/8" (16mm)



All dimensions are in mm.

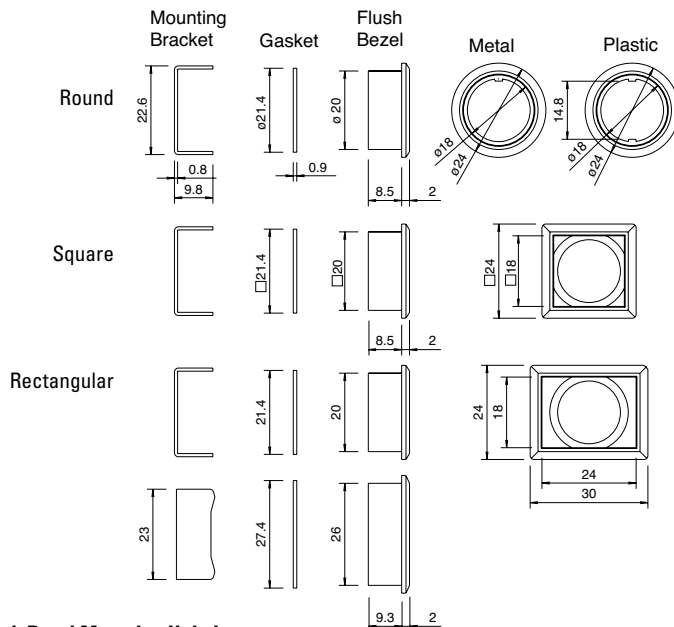


## Switch Guard, Ø 5/8" (16mm)

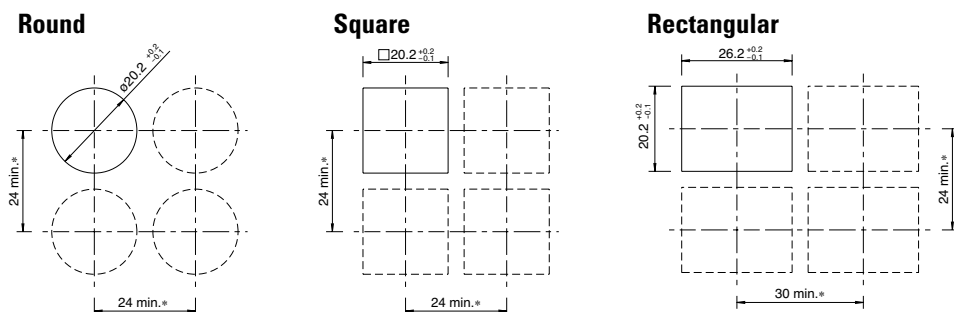
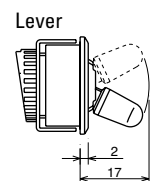
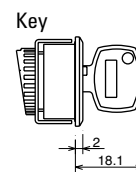
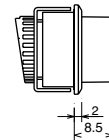


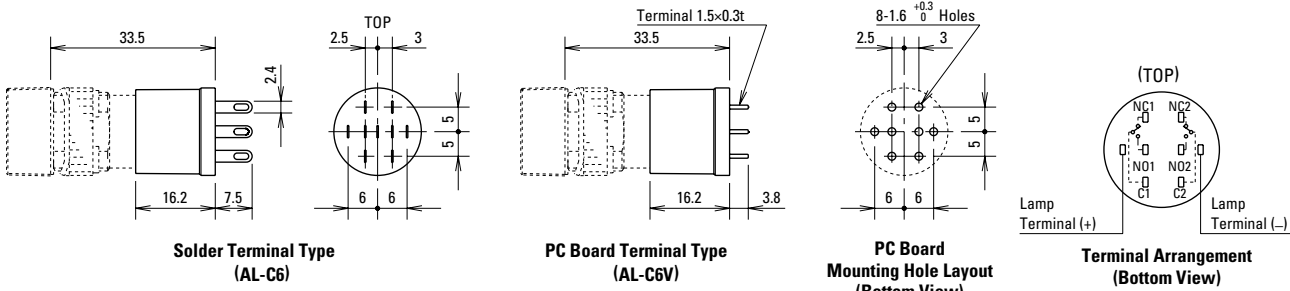
## Flush Bezel

## Flush Bezel with Switch



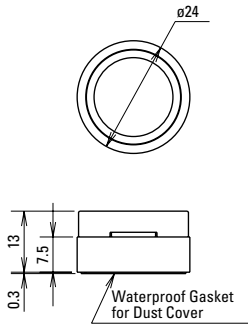
## Flush Bezel Mounting Hole Layout

Selector Switches  
Illuminated &  
Non-illuminated

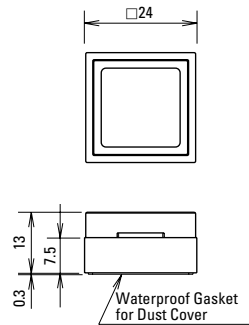


## Terminal Sockets Dust Covers

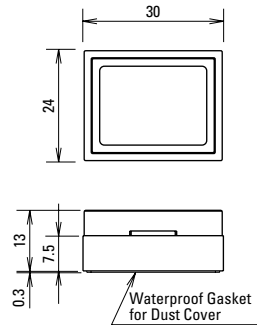
AL-D6, Round



AL-DQ6, Square

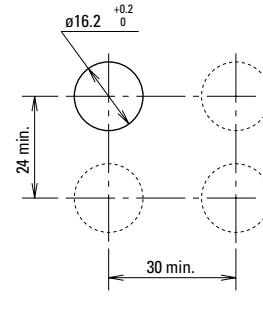


AL-DH6, Rectangular

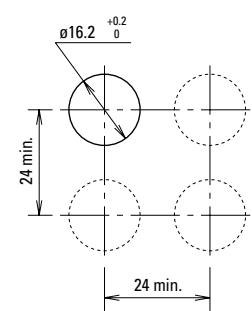


## Panel Cut-Outs For Units w/Dust Cover

Round/Square



Rectangular



## Marking Plates

### Pushbuttons with Standard Size Lens

| Style            | Round—AL6M-W  | Square—AL6Q-W | Rectangular—AL6H-W        |
|------------------|---------------|---------------|---------------------------|
| Dimensions       |               |               |                           |
|                  | Ø 5/8" (16mm) |               |                           |
| Outside (OD)     | (13.8mm)      | (13.8mm)      | (OD¹ x OD²) 13.8 x 19.8mm |
| Marking Area (a) | (12mm)        | (12mm)        | (a¹xa²) 12 x 18mm         |

Engraving must be made on the engraving area within 0.02" (0.5mm) deep.

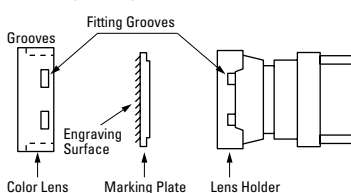
### Pushbuttons with Oversize Lens

| Style            | Round—AL6M-MW     | Square/Rectangular—AL6Q-QW |
|------------------|-------------------|----------------------------|
| Dimensions       |                   |                            |
| Outside (OD)     | Ø 0.491" (12.6mm) | 0.491" (12.6mm)            |
| Marking Area (a) | Ø 0.429" (11mm)   | 0.429" (11mm)              |

## Replacing and Marking Plate

### Removal

Remove the lens holder assembly (lens, marking plate and holder) from the operator by holding the color lens recesses with the lens removal tool (Part No.MT-101) and pulling out. Remove marking plate by pushing the color lens from the rear to disengage the latches. Marking plate must be engraved on the side as shown in the figure on the right. Ø 5/8" (16mm)



### Installation

For illuminated pushbuttons:

1. Insert marking plate inside lens in correct direction
2. Press color lens on to lens holder to engage latches.
3. Insert lens holder into housing in correct direction.

Do not loosen spring on illuminated pushbutton units (except on pilot light units). The marking plate must be engraved on the front side as shown above.

## L6 (Oversize) Series — Miniature Switches and Pilot Devices

## Key features:

- 5/8" (16mm) mounting holes
- Locking lever removable contact blocks
- Solder terminal or PCB terminal options
- Available assembled or as sub-components
- Worldwide approvals
- Incandescent or LED illumination
- Snap action contacts



UL Recognized  
File No. E55996



CSA Certified  
File No. LR21451



Registration No. R9551089 (E-stops)  
Registration No. J9551458 (all other switches)  
Registration No. R95650511 (Pilot Lights)



|                 |                         |                                                                                                      |  |  |  |  |  |  |  |
|-----------------|-------------------------|------------------------------------------------------------------------------------------------------|--|--|--|--|--|--|--|
| Contact Ratings | Conforming to Standards | EN60947-1, EN60947-5-1, VDE0660-200, UL508, CSA C22-2 NO.14                                          |  |  |  |  |  |  |  |
|                 | Operating Temperature   | Operation: −25 to +55°C (without freezing), 45 to 85% RH<br>Storage: -30 to +80°C (without freezing) |  |  |  |  |  |  |  |
|                 | Vibration Resistance    | 5 to 55Hz, 1.0 peak-peak amplitude max                                                               |  |  |  |  |  |  |  |
|                 | Shock Resistance        | Operating limit: 100 m/sec² (approximately 10G)<br>Damage limit: 1000 m/sec² (approximately 100G)    |  |  |  |  |  |  |  |
|                 | Mechanical Life         | Momentary pushbuttons 2,000,000 operations minimum<br>All others: 250,000 operations minimum         |  |  |  |  |  |  |  |
|                 | Degree of Protection    | IP65 (conforming to IEC 60529)                                                                       |  |  |  |  |  |  |  |
|                 | Dielectric Strength     | Switch unit: between live and ground: 2500 volt AC, 1 minute<br>                                     |  |  |  |  |  |  |  |

Switches & Pilot Devices

Signaling Lights

Relays & Sockets

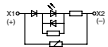
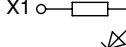
Timers

Contactors

Terminal Blocks

Circuit Breakers

Built-in LED Lamp Ratings

| Model                  |                                                                                   | LFTD-5②                                                                                                           | LFTD-1②                                                                           | LFTD-2②        | LFTD-H2②                                                                            |
|------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------------|-------------------------------------------------------------------------------------|
| Lamp Base              |                                                                                   | SX6S/8x5.4                                                                                                        |                                                                                   |                |                                                                                     |
| Rated Voltage          |                                                                                   | 5V DC                                                                                                             | 12V AC/DC                                                                         | 24V AC/DC      | 120V AC                                                                             |
| Operating Voltage      |                                                                                   | 5V DC ±5%                                                                                                         | 12V AC/DC ±10%                                                                    | 24V AC/DC ±10% | 120V AC ±5%                                                                         |
| Current Draw           | AC                                                                                | —                                                                                                                 | 9mA                                                                               | 9mA            | 8mA                                                                                 |
|                        | DC                                                                                | 8mA                                                                                                               | 8mA                                                                               | 8mA            | —                                                                                   |
| Color Code ②           |                                                                                   | Specify a color code in place of ② in the Part No: A (amber), G (green), R (red), S (blue), W (white), Y (yellow) |                                                                                   |                |                                                                                     |
| Lamp Base Color        |                                                                                   | Same as illumination color                                                                                        |                                                                                   |                |                                                                                     |
| Voltage Marking        |                                                                                   | Stamped on the lamp base                                                                                          |                                                                                   |                |                                                                                     |
| Life (reference value) |                                                                                   | Approx. 50,000 hours                                                                                              |                                                                                   |                |                                                                                     |
| Internal Circuit       | A, R, W, Y                                                                        |                                                                                                                   | A, R, W, Y                                                                        |                |  |
|                        |  |                                                                                                                   |  |                |                                                                                     |
|                        | G, S                                                                              |                                                                                                                   | G, S                                                                              |                |                                                                                     |
|                        |  |                                                                                                                   |  |                |                                                                                     |

Non-Illuminated Pushbuttons (Assembled)

Non-Illuminated Pushbuttons

| Style                                                                               | Operation  | Contact | Terminal Style |              |
|-------------------------------------------------------------------------------------|------------|---------|----------------|--------------|
|                                                                                     |            |         | Solder Tab     | PCB          |
|  | Momentary  | SPDT    | HA1B-M2C5-①    | HA1B-M2C1V-① |
|                                                                                     |            | DPDT    | HA1B-M2C6-①    | HA1B-M2C2V-① |
|                                                                                     | Maintained | SPDT    | HA1B-A2C5-①    | HA1B-A2C1V-① |
|                                                                                     |            | DPDT    | HA1B-A2C6-①    | HA1B-A2C2V-① |
|  | Momentary  | SPDT    | HA2B-M1C5-①    | HA2B-M1C1V-① |
|                                                                                     |            | DPDT    | HA2B-M1C6-①    | HA2B-M1C2V-① |
|                                                                                     | Maintained | SPDT    | HA2B-A1C5-①    | HA2B-A1C1V-① |
|                                                                                     |            | DPDT    | HA2B-A1C6-①    | HA2B-A1C2V-① |
|  | Momentary  | SPDT    | HA2B-M2C5-①    | HA2B-M2C1V-① |
|                                                                                     |            | DPDT    | HA2B-M2C6-①    | HA2B-M2C2V-① |
|                                                                                     | Maintained | SPDT    | HA2B-A2C5-①    | HA2B-A2C1V-① |
|                                                                                     |            | DPDT    | HA2B-A2C6-①    | HA2B-A2C2V-① |
|  | Momentary  | SPDT    | HA1B-M3C5-①    | HA1B-M3C1V-① |
|                                                                                     |            | DPDT    | HA1B-M3C6-①    | HA1B-M3C2V-① |
|                                                                                     | Maintained | SPDT    | HA1B-A3C5-①    | HA1B-A3C1V-① |
|                                                                                     |            | DPDT    | HA1B-A3C6-①    | HA1B-A3C2V-① |

① Button Color Codes

| Color | Code | Color  | Code |
|-------|------|--------|------|
| Black | B    | Blue   | S    |
| Green | G    | White  | W    |
| Red   | R    | Yellow | Y    |

-  1. In place of ① specify Button Color Code from table.
2. Illuminated (translucent) style lenses also available, specify as such: instead of LA1B-M1C5-① use LA1B-M1C5L-② in place of ② (specify Lens Color Code from next page.)
3. PCB terminal models also available with silver contacts (change “1” or “2” to “5” or “6” respectively, ie LA1B-M1C1V-① becomes LA1B-M1C5V-①).

## Non-Illuminated Pushbuttons (Sub-Assembled)

Contact

+

Safety Lever Lock

+

Operator

+

Button

=

Complete Part



## Operators

| Style           | Momentary | Maintained |
|-----------------|-----------|------------|
| Oversize Round  | HA1B-M0   | HA1B-A0    |
| Oversize Square | HA2B-M0   | HA2B-A0    |
| Mushroom        | HA1B-M0L  | HA1B-A0L   |



1. In place of ① specify Button Color Code from table on right.
2. In place of ② specify Lens Color Code from table on right.
3. \*requires HA1L-M0 or HA1L-A0 operator instead of HA1B-M0 or HA1B-A0.
4. \*\*requires HA2L-M0 or HA2L-A0 instead of HA2B-M0 or HA2B-A0.

## Buttons/Lenses

| Style                    | Button    | Lens        |
|--------------------------|-----------|-------------|
| Oversize Round Flush     | HA1A-B1-① | HA1A-L1-②*  |
| Oversize Round Extended  | HA1A-B2-① | —           |
| Oversize Square Flush    | HA2A-B1-① | HA2A-L1-②** |
| Oversize Square Extended | HA2A-B2-① | —           |
| Mushroom                 | HA1A-B3-① | HA1A-L3-②   |

## Contacts

| Style                                                                               | Contacts               | Terminal Style |                  |
|-------------------------------------------------------------------------------------|------------------------|----------------|------------------|
|                                                                                     |                        | Solder Tab     | PCB              |
|  | Gold<br>SPDT<br>DPDT   | HA-C1<br>HA-C2 | HA-C1V<br>HA-C2V |
|  | Silver<br>SPDT<br>DPDT | HA-C5<br>HA-C6 | HA-C5V<br>HA-C6V |

## Safety Lever Lock

| Style                                                                                | Part Number |
|--------------------------------------------------------------------------------------|-------------|
|  | HA9Z-LS     |

## ① Button Color Code

| Color  | Code |
|--------|------|
| Black  | B    |
| Green  | G    |
| Red    | R    |
| Blue   | S    |
| White  | W    |
| Yellow | Y    |

## ② Lens Color Code

| Color  | Code |
|--------|------|
| Amber  | A    |
| Green  | G    |
| Red    | R    |
| Blue   | S    |
| Yellow | Y    |
| White  | W    |

## HA1B/HA1E Stop Switch

### Key features:

- PCB or Solder Terminals
- Locking Lever Removable Contact Blocks
- Positive Action Contacts
- 1 or 2 form B (SPST-NC) Contacts
- IP65 Protection
- 16mm Mounting Hole
- Tamper Proof Construction



File No. DK95-00138



CSA  
File No. LR21451



UL Recognized  
File No. E55996



Direct  
Opening  
Action

### Specifications

|                                                                       |                                                                                     |                                                                                    |
|-----------------------------------------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| Contact Form                                                          |                                                                                     | 1 or 2 form B (SPST-NC)                                                            |
| Termination                                                           |                                                                                     | PCB or Solder Terminal                                                             |
| Contact Material                                                      |                                                                                     | Silver                                                                             |
| Applicable Standards                                                  |                                                                                     | EN60947-5-1, UL508, CSA 22.2. No. 14                                               |
| Rated Insulation Voltage                                              |                                                                                     | 250V AC/DC                                                                         |
| Degree of Protection                                                  |                                                                                     | IP65                                                                               |
| Conditional Short-Circuit Current and Short-Circuit Protective Device |                                                                                     | 50 A (at 250V) 10A 250V Fuse, operation class M according to IEC269-1 and IEC269-2 |
| Positive Opening Operation                                            | Positive opening travel                                                             | 3.4mm                                                                              |
|                                                                       | Minimum force required to achieve positive opening operation of all break contacts. | 10.3 N (2 form B contacts)                                                         |
|                                                                       | Maximum travel including travel beyond the minimum travel position                  | 5.5mm                                                                              |
|                                                                       | Maximum frequency of actuation                                                      | 1,200 operations/hour                                                              |
| Pollution Degree                                                      |                                                                                     | 3                                                                                  |

### Nameplates

| HAAV–Yellow Plastic |             |
|---------------------|-------------|
|                     |             |
| Marking             | Part Number |
| Blank               | HAAV-0      |

### Positive Action Stop Switch

| Style | Operation               | Contact                                                | Terminal Style           |             |
|-------|-------------------------|--------------------------------------------------------|--------------------------|-------------|
|       |                         |                                                        | Solder Tab               | PCB         |
|       | Pushlock/<br>Turn Reset | DPST(NC) (2 form B)                                    | HA1B-V2E2R               | HA1B-V2E2VR |
|       |                         | Short Body<br>SPST-NC (1 form B)<br>DPST-NC (2 form B) | HA1E-V2S1R<br>HA1E-V2S2R | —           |

### Accessories: Shroud

| Style | Part Number | Applicable Standards                   |
|-------|-------------|----------------------------------------|
|       | XA9Z-KG1    | SEMI S2 Compliant<br>(Approved by TUV) |

1. Button is non-removable, available in red and as complete assembled unit only.
2. Stop Switch does not come with safety lever lock.

### Buzzers (IP40)

| Style | Operating Voltage     | Terminal Style |           |
|-------|-----------------------|----------------|-----------|
|       |                       | Solder/Tab     | PCB       |
|       | 6V AC/DC ± 10%        | LA3Z-1X2       | LA3Z-1X2V |
|       | 12V to 24 AC/DC ± 10% | LA3Z-1X4       | LA3Z-1X4V |

### Buzzer Ratings

|                       |                                         |
|-----------------------|-----------------------------------------|
| Frequency             | 2 khz ± 500 HZ                          |
| Amplitude             | 80db @ 0.1m (at rated voltage)          |
| Operating Voltage     | 6V AC/DC or 12 - 24V AC/DC ± 10%        |
| Adjustable Cycle      | 55 to 600 cycles per minute             |
| Current Draw          | DC: 7mA<br>AC: 20mA                     |
| Life                  | 1000 hrs. minimum                       |
| Insulation Voltage    | 60V AC/DC                               |
| Operating Temperature | -20 to 55°C (no freezing), 45 to 85% RH |
| Degree of Protection  | IP40                                    |

Pilot Lights (Assembled)

Pilot Lights

| Style                   | Terminal Style |              |
|-------------------------|----------------|--------------|
|                         | Solder Tab     | PCB          |
| Oversize Round          | HA1P-1C0③-②    | HA1P-1C0③V-② |
| Oversize Square         | HA2P-1C0③-②    | HA2P-1C0③V-② |
| Oversize Round Unibody  | HA1P-1③-②      | —            |
| Oversize Square Unibody | HA2P-1③-②      | —            |

- 
1. In place of ② specify Lens/LED Color Code from table.

2. In place of ③ specify Voltage Code from table.

② Lens/LED Color Codes

| Color  | Code |
|--------|------|
| Amber  | A    |
| Green  | G    |
| Red    | R    |
| Blue   | S    |
| White  | W    |
| Yellow | Y    |

③ Voltage/Lamp Code

| Voltage                | Code |
|------------------------|------|
| 5V DC LED              | 1    |
| 6V AC/DC LED           | 2    |
| 12V AC/DC LED          | 3    |
| 24V AC/DC LED          | 4    |
| 120V AC LED            | 8    |
| 6V AC/DC Incandescent  | 5    |
| 12V AC/DC Incandescent | 6    |
| 24V AC/DC Incandescent | 7    |



## Pilot Lights (Sub-Assembled)



### Operators

| Style                   | Part Number |
|-------------------------|-------------|
| Oversize Round          | HA1P-0      |
| Oversize Square         | HA2P-0      |
| Oversize Round Unibody  | HA1P-00     |
| Oversize Square Unibody | HA2P-00     |

### Lenses

| Style           | Part Number |
|-----------------|-------------|
| Oversize Round  | HA1A-P1-②   |
| Oversize Square | HA2A-P1-②   |



In place of ② specify lens color code.

### Lamps

| Style        | Voltage   | Part Number |
|--------------|-----------|-------------|
| LED          | 5V DC     | LFTD-5②     |
|              | 6V AC/DC  | LFTD-6②     |
|              | 12V AC/DC | LFTD-1②     |
|              | 24V AC/DC | LFTD-2②     |
|              | 120 V AC  | LFTD-H2②    |
| Incandescent | 6V AC/DC  | LH-06       |
|              | 12V AC/DC | LH-14       |
|              | 24V AC/DC | LH-28       |



In place of ② specify LED color code from table below.

### Terminals

| Style | Solder Tab | PCB     |
|-------|------------|---------|
|       | HA-C00     | HA-C00V |



Not required for unibody operators.

### Lamp Holder

| Style | Part Number |
|-------|-------------|
|       | HA9Z-AH     |

### Safety Lever Lock

| Style | Part Number |
|-------|-------------|
|       | HA9Z-LS     |

### ② Lens/LED Color Codes

| Color  | Code |
|--------|------|
| Amber  | A    |
| Green  | G    |
| Red    | R    |
| Blue   | S    |
| Yellow | Y    |
| White  | W    |



## Illuminated Pushbuttons (Assembled)

## Illuminated Pushbuttons

| Style                                                                                                | Operation  | Contact      | Terminal Style               |                                |
|------------------------------------------------------------------------------------------------------|------------|--------------|------------------------------|--------------------------------|
|                                                                                                      |            |              | Solder Tab                   | PCB                            |
| Oversize Round<br>  | Momentary  | SPDT<br>DPDT | HA1L-M1C5③-②<br>HA1L-M1C6③-② | HA1L-M1C1③V-②<br>HA1L-M1C2③V-② |
|                                                                                                      | Maintained | SPDT<br>DPDT | HA1L-A1C5③-②<br>HA1L-A1C6③-② | HA1L-A1C1③V-②<br>HA1L-A1C2③V-② |
| Oversize Square<br> | Momentary  | SPDT<br>DPDT | HA2L-M1C5③-②<br>HA2L-M1C6③-② | HA2L-M1C1③V-②<br>HA2L-M1C2③V-② |
|                                                                                                      | Maintained | SPDT<br>DPDT | HA2L-A1C5③-②<br>HA2L-A1C6③-② | HA2L-A1C1③V-②<br>HA2L-A1C2③V-② |
| Mushroom<br>        | Momentary  | SPDT<br>DPDT | HA1L-M3C5③-②<br>HA1L-M3C6③-② | HA1L-M3C1③V-②<br>HA1L-M3C2③V-② |
|                                                                                                      | Maintained | SPDT<br>DPDT | HA1L-A3C5③-②<br>HA1L-A3C6③-② | HA1L-A3C1③V-②<br>HA1L-A3C2③V-② |



1. In place of ② specify Lens Color Code from table.
2. In place of ③ specify Voltage Code from table.
3. PCB terminal models also available with silver contacts change "1" or "2" to "5" or "6" respectively, (ie LA1L-M1C14V-① becomes LA1L-M1C54V-①).
4. Light independent of switch position.

## ② Lens Color Codes

| Color  | Code |
|--------|------|
| Amber  | A    |
| Green  | G    |
| Red    | R    |
| Blue   | S    |
| Yellow | Y    |
| White  | W    |

## ③ Voltage/Lamp Code

| Voltage                | Code |
|------------------------|------|
| 5V DC LED              | 1    |
| 6V AC/DC LED           | 2    |
| 12V AC/DC LED          | 3    |
| 24V AC/DC LED          | 4    |
| 120 V AC LED           | 8    |
| 6V AC/DC Incandescent  | 5    |
| 12V AC/DC Incandescent | 6    |
| 24V AC/DC Incandescent | 7    |

## Illuminated Pushbuttons (Sub-Assembled)

|           |   |                   |   |             |   |      |   |          |   |      |   |                |
|-----------|---|-------------------|---|-------------|---|------|---|----------|---|------|---|----------------|
| Terminals | + | Safety Lever Lock | + | Lamp Holder | + | Lamp | + | Operator | + | Lens | = | Completed Unit |
|-----------|---|-------------------|---|-------------|---|------|---|----------|---|------|---|----------------|



### Operators

| Style                                                                                                       | Momentary | Maintained |
|-------------------------------------------------------------------------------------------------------------|-----------|------------|
| <b>Override Round</b><br>  | HA1L-MO   | HA1L-AO    |
| <b>Override Square</b><br> | HA2L-MO   | HA2L-AO    |
| <b>Mushroom</b><br>       | HA1B-MOL  | HA1B-AOL   |

### Lenses

| Style                                                                                                       | Part Number |
|-------------------------------------------------------------------------------------------------------------|-------------|
| <b>Override Round</b><br>  | HA1A-L1-②   |
| <b>Override Square</b><br> | HA2A-L1-②   |
| <b>Mushroom</b><br>       | HA1A-L3-②   |



In place of ② specify lens color code.

### ② Lens/LED Color Codes

| Color  | Code |
|--------|------|
| Amber  | A    |
| Green  | G    |
| Red    | R    |
| Blue   | S    |
| Yellow | Y    |
| White  | W    |

### Lamps

| Style                                                                                                      | Voltage                                                 | Part Number                                          |
|------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|------------------------------------------------------|
| <b>LED</b><br>          | 5V DC<br>6V AC/DC<br>12V AC/DC<br>24V AC/DC<br>120 V AC | LFTD-5②<br>LFTD-6②<br>LFTD-1②<br>LFTD-2②<br>LFTD-H2② |
| <b>Incandescent</b><br> | 6V AC/DC<br>12V AC/DC<br>24V AC/DC                      | LH-06<br>LH-14<br>LH-28                              |

### Contacts

| Style                                                                                 | Contacts               | Terminal Style   |                    |
|---------------------------------------------------------------------------------------|------------------------|------------------|--------------------|
|                                                                                       |                        | Solder Tab       | PCB                |
|   | Gold<br>SPDT<br>DPDT   | HA-C10<br>HA-C20 | HA-C10V<br>HA-C20V |
|  | Silver<br>SPDT<br>DPDT | HA-C50<br>HA-C60 | HA-C50V<br>HA-C60V |

### Lamp Holder

| Style                                                                                 | Part Number |
|---------------------------------------------------------------------------------------|-------------|
|  | HA9Z-AH     |

### Safety Lever Lock

| Style                                                                                 | Part Number |
|---------------------------------------------------------------------------------------|-------------|
|  | HA9Z-LS     |

## Selector Switches (Assembled)

## Selector Switches

| Style                                                                                               |                | Position                 |                                                                                   | Contact | Terminal Style |            |
|-----------------------------------------------------------------------------------------------------|----------------|--------------------------|-----------------------------------------------------------------------------------|---------|----------------|------------|
|                                                                                                     |                |                          |                                                                                   |         | Solder Tab     | PCB        |
| <br>Oversize Round | 90° 2-Position | Maintained               |  | DPDT    | HA1S-2C6       | HA1S-2C2V  |
|                                                                                                     |                | Spring return from right |  | DPDT    | HA1S-21C6      | HA1S-21C2V |
|                                                                                                     | 45° 3-Position | Maintained               |  | DPDT    | HA1S-3C6       | HA1S-3C2V  |
|                                                                                                     |                | Spring return from right |  | DPDT    | HA1S-31C6      | HA1S-31C2V |
|                                                                                                     |                | Spring return from left  |  | DPDT    | HA1S-32C6      | HA1S-32C2V |
|                                                                                                     |                | 2-Way spring return      |  | DPDT    | HA1S-33C6      | HA1S-33C2V |



1. All assembled selector switches use DPDT contacts.
2. For SPDT contacts see sub-components on next page.
3. PCB terminal models also available with silver contacts change "1" or "2" to "5" or "6" respectively, (ie LA1S-21C2V becomes LA1S-21C6V).

## Contact Operations

(for all selectors)

| Contacts      | Operator Position and Contact Operation |  |
|---------------|-----------------------------------------|--|
| 2-pos. (DPDT) | Left                                    |  |
|               | Right                                   |  |
| 3-pos. (DPDT) | Left                                    |  |
|               | Center                                  |  |
|               | Right                                   |  |



As viewed from front of switch.

Selector Switches (Sub-Assembled)

|         |   |                   |   |          |   |               |
|---------|---|-------------------|---|----------|---|---------------|
| Contact | + | Safety Lever Lock | + | Operator | = | Complete Part |
|---------|---|-------------------|---|----------|---|---------------|



Operators

| Style                                                                                               | Position | Function                                                                | Part Number                                 |
|-----------------------------------------------------------------------------------------------------|----------|-------------------------------------------------------------------------|---------------------------------------------|
| <br>Oversize Round | 2        | Maintained<br>Spring from right                                         | HA1S-2Y<br>HA1S-21Y                         |
|                                                                                                     | 3        | Maintained<br>Spring from right<br>Spring from left<br>Spring from both | HA1S-3Y<br>HA1S-31Y<br>HA1S-32Y<br>HA1S-33Y |

Safety Lever Lock

| Style                                                                             | Part Number |
|-----------------------------------------------------------------------------------|-------------|
|  | HA9Z-LS     |

Contacts

| Style                                                                               | Contacts | Terminal Style |                 |
|-------------------------------------------------------------------------------------|----------|----------------|-----------------|
|                                                                                     |          | Solder<br>Tab  | PCB             |
|  | Gold     | SPDT<br>DPDT   | HA-C1<br>HA-C2V |
|                                                                                     | Silver   | SPDT<br>DPDT   | HA-C5<br>HA-C6V |

- 
1. All assembled switches listed on previous page use DPDT contacts.

2. SPDT Contacts for use on 2 position selector switch only

## Key Switches (Assembled)

## Key Switches

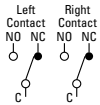
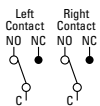
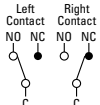
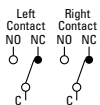
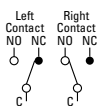
| Style          |                | Position                 |                                                                                   | Contact | Terminal Style |             |
|----------------|----------------|--------------------------|-----------------------------------------------------------------------------------|---------|----------------|-------------|
|                |                |                          |                                                                                   |         | Solder Tab     | PCB         |
| Oversize Round | 90° 2-Position | Maintained               |  | DPDT    | HA1K-2C6③      | HA1K-2C2V③  |
|                |                | Spring return from right |  | DPDT    | HA1K-21C6B     | HA1K-21C2VB |
|                | 45° 3-Position | Maintained               |  | DPDT    | HA1K-3C6③      | HA1K-3C2V③  |
|                |                | Spring return from right |  | DPDT    | HA1K-31C6③     | HA1K-31C2V③ |
|                |                | Spring return from left  |  | DPDT    | HA1K-32C6③     | HA1K-32C2V③ |
|                |                | 2-Way spring return      |  | DPDT    | HA1K-33C6D     | HA1K-33C2VD |



1. In place of ③ specify Key Retention Code from next page.
2. All assembled key switches have DPDT contacts. For SPDT see sub-assembled on next page.
3. PCB terminal models also available with silver contacts change "1" or "2" to "5" or "6" respectively, (ie LA1K-2C2V③ becomes LA1K-2C6V③).

## Contact Operations

(for all selectors)

| Contacts         | Operator Position and Contact Operation |                                                                                     |
|------------------|-----------------------------------------|-------------------------------------------------------------------------------------|
| 2-pos.<br>(DPDT) | Left                                    |   |
|                  | Right                                   |  |
| 3-pos.<br>(DPDT) | Left                                    |  |
|                  | Center                                  |  |
|                  | Right                                   |  |



As viewed from front of switch.

## ③ Key Retention Option Codes

| Code | Description                                                   |
|------|---------------------------------------------------------------|
| A    | Key not retained in any position (removable in all positions) |
| B    | Key retained in right position only                           |
| C    | Key retained in left position only                            |
| D    | Key retained in left and right (3 position only)              |
| E    | Key retained in center only (3 position only)                 |
| G    | Key retained right and center (3 position only)               |
| H    | Key retained left and center (3 position only)                |



Key cannot be removed from a spring-return position.

Selector Switches (Sub-Assembled)

|         |   |                   |   |          |   |               |
|---------|---|-------------------|---|----------|---|---------------|
| Contact | + | Safety Lever Lock | + | Operator | = | Complete Part |
|---------|---|-------------------|---|----------|---|---------------|



Operators

| Style          | Position | Function                                                                | Part Number                                 |
|----------------|----------|-------------------------------------------------------------------------|---------------------------------------------|
| Oversize Round | 2        | Maintained<br>Spring from right                                         | HA1K-2③<br>HA1K-21B                         |
|                | 3        | Maintained<br>Spring from right<br>Spring from left<br>Spring from both | HA1K-3③<br>HA1K-31③<br>HA1K-32③<br>HA1K-33D |



1. In place of ③ specify key removable code from table on right.  
2. Operator includes two keys.

Contacts

| Style                                                                               | Contacts             | Terminal Style |                  |
|-------------------------------------------------------------------------------------|----------------------|----------------|------------------|
|                                                                                     |                      | Solder Tab     | PCB              |
|  | Gold<br>SPDT<br>DPDT | HA-C1<br>HA-C2 | HA-C1V<br>HA-C2V |
|                                                                                     |                      | HA-C5<br>HA-C6 | HA-C5V<br>HA-C6V |



1. All assembled switches listed on previous page use DPDT contacts.  
2. SPDT Contacts for use on 2 position selector switch only

Safety Lever Lock

| Style                                                                                 | Part Number |
|---------------------------------------------------------------------------------------|-------------|
|  | HA9Z-LS     |

③ Key Retention Option Codes

| Code | Description                                                   |
|------|---------------------------------------------------------------|
| A    | Key not retained in any position (removable in all positions) |
| B    | Key retained in right position only                           |
| C    | Key retained in left position only                            |
| D    | Key retained in left and right (3 position only)              |
| E    | Key retained in center only (3 position only)                 |
| G    | Key retained right and center (3 position only)               |
| H    | Key retained left and center (3 position only)                |

- Key cannot be removed from a spring-return position.

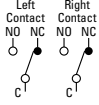
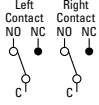
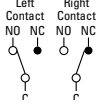
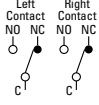
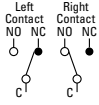
## Illuminated Selector Switches (Assembled)

## Illuminated Selector Switches

| Style                                                                                                 | Position       | Contact                                                                                                      | Terminal Style |                            |
|-------------------------------------------------------------------------------------------------------|----------------|--------------------------------------------------------------------------------------------------------------|----------------|----------------------------|
|                                                                                                       |                |                                                                                                              | Solder Tab     | PCB                        |
| Round<br>            | 90° 2-Position | Maintained                  | DPDT           | LA1F-2C6③-② LA1F-2C2③V-②   |
|                                                                                                       |                | Spring return from right    | DPDT           | LA1F-21C6③-② LA1F-21C2③V-② |
|                                                                                                       | 45° 3-Position | Maintained                  | DPDT           | LA1F-3C6③-② LA1F-3C2③V-②   |
|                                                                                                       |                | Spring return from right    | DPDT           | LA1F-31C6③-② LA1F-31C2③V-② |
|                                                                                                       |                | Spring return from left     | DPDT           | LA1F-32C6③-② LA1F-32C2③V-② |
|                                                                                                       |                | 2-Way spring return         | DPDT           | LA1F-33C6③-② LA1F-33C2③V-② |
| Square<br>           | 90° 2-Position | Maintained                  | DPDT           | LA2F-2C6③-② LA2F-2C2③V-②   |
|                                                                                                       |                | Spring return from right    | DPDT           | LA2F-21C6③-② LA2F-21C2③V-② |
|                                                                                                       | 45° 3-Position | Maintained                  | DPDT           | LA2F-3C6③-② LA2F-3C2③V-②   |
|                                                                                                       |                | Spring return from right    | DPDT           | LA2F-31C6③-② LA2F-31C2③V-② |
|                                                                                                       |                | Spring return from left     | DPDT           | LA2F-32C6③-② LA2F-32C2③V-② |
|                                                                                                       |                | 2-Way spring return       | DPDT           | LA2F-33C6③-② LA2F-33C2③V-② |
| Rectangular<br>    | 90° 2-Position | Maintained                | DPDT           | LA3F-2C6③-② LA3F-2C2③V-②   |
|                                                                                                       |                | Spring return from right  | DPDT           | LA3F-21C6③-② LA3F-21C2③V-② |
|                                                                                                       | 45° 3-Position | Maintained                | DPDT           | LA3F-3C6③-② LA3F-3C2③V-②   |
|                                                                                                       |                | Spring return from right  | DPDT           | LA3F-31C6③-② LA3F-31C2③V-② |
|                                                                                                       |                | Spring return from left   | DPDT           | LA3F-32C6③-② LA3F-32C2③V-② |
|                                                                                                       |                | 2-Way spring return       | DPDT           | LA3F-33C6③-② LA3F-33C2③V-② |
| Oversize Round<br> | 90° 2-Position | Maintained                | DPDT           | HA1F-2C6③-② HA1F-2C2③V-②   |
|                                                                                                       |                | Spring return from right  | DPDT           | HA1F-21C6③-② HA1F-21C2③V-② |
|                                                                                                       | 45° 3-Position | Maintained                | DPDT           | HA1F-3C6③-② HA1F-3C2③V-②   |
|                                                                                                       |                | Spring return from right  | DPDT           | HA1F-31C6③-② HA1F-31C2③V-② |
|                                                                                                       |                | Spring return from left   | DPDT           | HA1F-32C6③-② HA1F-32C2③V-② |
|                                                                                                       |                | 2-Way spring return       | DPDT           | HA1F-33C6③-② HA1F-33C2③V-② |

## Contact Operations

(for all selectors)

| Contacts      | Operator Position and Contact Operation |                                                                                     |
|---------------|-----------------------------------------|-------------------------------------------------------------------------------------|
| 2-pos. (DPDT) | Left                                    |  |
|               | Right                                   |  |
| 3-pos. (DPDT) | Left                                    |  |
|               | Center                                  |  |
| 3-pos. (DPDT) | Right                                   |  |



As viewed from front of switch.

## ② Lens/LED Color Codes

| Color | Code | Color  | Code |
|-------|------|--------|------|
| Amber | A    | Blue   | S    |
| Green | G    | Yellow | Y    |
| Red   | R    | White  | W    |

## ③ Voltage/Lamp Code

| Voltage                | Code |
|------------------------|------|
| 5V DC LED              | 1    |
| 6V AC/DC LED           | 2    |
| 12V AC/DC LED          | 3    |
| 24V AC/DC LED          | 4    |
| 120V AC LED            | 8    |
| 6V AC/DC Incandescent  | 5    |
| 12V AC/DC Incandescent | 6    |
| 24V AC/DC Incandescent | 7    |



- In place of ② specify Lens/LED Color Code from table above.
- In place of ③ specify Voltage Code from table above.
- All switches listed have DPDT contacts. For SPDT see sub-assembled on next page.
- PCB terminal models also available with silver contacts change "1" or "2" to "5" or "6" respectively, (ie LA1F-2C24V-② becomes LA1F-2C64V-②).
- Light independent of switch position.

## Illuminated Selector Switches (Sub-Assembled)

|          |   |                   |   |             |   |      |   |          |   |             |   |                |
|----------|---|-------------------|---|-------------|---|------|---|----------|---|-------------|---|----------------|
| Contacts | + | Safety Lever Lock | + | Lamp Holder | + | Lamp | + | Operator | + | Lens/Handle | = | Completed Unit |
|----------|---|-------------------|---|-------------|---|------|---|----------|---|-------------|---|----------------|



### Operators

| Style          | Position | Function                                                                | Part Number                                 |
|----------------|----------|-------------------------------------------------------------------------|---------------------------------------------|
| Round          | 2        | Maintained<br>Spring from right                                         | LA1F-20<br>LA1F-210                         |
|                | 3        | Maintained<br>Spring from right<br>Spring from left<br>Spring from both | LA1F-30<br>LA1F-310<br>LA1F-320<br>LA1F-330 |
|                |          |                                                                         |                                             |
| Square         | 2        | Maintained<br>Spring from right                                         | LA2F-20<br>LA2F-210                         |
|                | 3        | Maintained<br>Spring from right<br>Spring from left<br>Spring from both | LA2F-30<br>LA2F-310<br>LA2F-320<br>LA2F-330 |
|                |          |                                                                         |                                             |
| Rectangular    | 2        | Maintained<br>Spring from right                                         | LA3F-20<br>LA3F-210                         |
|                | 3        | Maintained<br>Spring from right<br>Spring from left<br>Spring from both | LA3F-30<br>LA3F-310<br>LA3F-320<br>LA3F-330 |
|                |          |                                                                         |                                             |
| Oversize Round | 2        | Maintained<br>Spring from right                                         | HA1F-20<br>HA1F-210                         |
|                | 3        | Maintained<br>Spring from right<br>Spring from left<br>Spring from both | HA1F-30<br>HA1F-310<br>HA1F-320<br>HA1F-330 |
|                |          |                                                                         |                                             |

### Safety Lever Lock

| Style | Part Number |
|-------|-------------|
|       | HA9Z-LS     |

### Lamp Holder

| Style | Part Number |
|-------|-------------|
|       | HA9Z-AH     |

### Lamps

| Style        | Voltage   | Part Number |
|--------------|-----------|-------------|
| LED          | 5V DC     | LFTD-5②     |
|              | 6V AC/DC  | LFTD-6②     |
|              | 12V AC/DC | LFTD-1②     |
|              | 24V AC/DC | LFTD-2②     |
|              | 120V AC   | LFTD-H2②    |
| Incandescent | 6V AC/DC  | LH-06       |
|              | 12V AC/DC | LH-14       |
|              | 24V AC/DC | LH-28       |



In place of ② specify LED color code from table below.

### Contacts

| Style | Contacts | Terminal Style |                    |
|-------|----------|----------------|--------------------|
|       |          | Solder Tab     | PCB                |
|       | Gold     | SPDT<br>DPDT   | HA-C10<br>HA-C20   |
|       |          |                | HA-C10V<br>HA-C20V |
|       | Silver   | SPDT<br>DPDT   | HA-C50<br>HA-C60   |
|       |          |                | HA-C50V<br>HA-C60V |



All assembled selectors on previous pages use DPDT contacts. SPDT contacts are for use only on two position selectors.

### Lenses/Handles

| Style    | Part Number |
|----------|-------------|
| Standard | LA1A-F-②    |
|          |             |
| Oversize | HA1A-F-②    |
|          |             |



In place of ② specify lens color code from table.

### ② Lens/LED Color Codes

| Color  | Code |
|--------|------|
| Amber  | A    |
| Green  | G    |
| Red    | R    |
| Blue   | S    |
| Yellow | Y    |
| White  | W    |



## Pushbutton Selectors (Assembled)

## Pushbutton Selectors

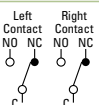
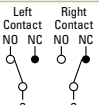
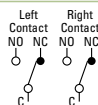
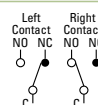
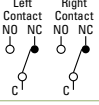
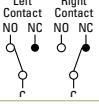
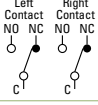
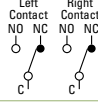
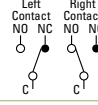
| Style                                                                             |            | Terminal Style |             |
|-----------------------------------------------------------------------------------|------------|----------------|-------------|
|                                                                                   |            | Solder Tab     | PCB         |
|  | 2 Position | HA1R-2C6-①     | HA1R-2C2V-① |
|                                                                                   | 3 Position | HA1R-3C6-①     | HA1R-3C2V-① |

## ① Button Color Codes

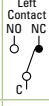
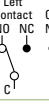
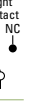
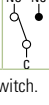
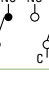
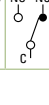
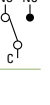
| Color | Code | Color  | Code |
|-------|------|--------|------|
| Amber | A    | Blue   | S    |
| Green | G    | Yellow | Y    |
| Red   | R    | White  | W    |

-  1. In place of ① specify Button Color Code.  
 2. PCB terminal models also available with silver contacts (change "1" or "2" to "5" or "6" respectively, ie HA1R-2C2V-① becomes HA1R-2C6V-①).  
 3. Pushed position, momentary only.

## Contact Operation

| Style      | Operator Position                                                                 |                                                                                   |                                                                                   |         |                                                                                   |                                                                                   |
|------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|            | Left                                                                              |                                                                                   | Center                                                                            |         | Right                                                                             |                                                                                   |
|            | Normal                                                                            | Pushed                                                                            | Normal                                                                            | Pushed  | Normal                                                                            | Pushed                                                                            |
| 2 Position |  |  | —                                                                                 | —       |  |  |
| 3 Position |  |  |  | Blocked |  |  |

## Contact Operation

| Contacts      | Operator Position and Contact Information | Down                                                                                |                                                                                     |    | Center                                                                              |                                                                                     |    | Up                                                                                  |                                                                                     |    |
|---------------|-------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----|
|               |                                           | Left Contact                                                                        | Right Contact                                                                       | NC | Left Contact                                                                        | Right Contact                                                                       | NC | Left Contact                                                                        | Right Contact                                                                       | NC |
| 2-pos. (DPDT) | Maintained Spring from Top                |  |  | NC |                                                                                     |                                                                                     | NC |  |  | NC |
| 2-pos. (DPDT) | Spring Return from Bottom                 |  |  | NC |                                                                                     |                                                                                     | NC |  |  | NC |
| 3-pos. (DPDT) | All models                                |  |  | NC |  |  | NC |  |  | NC |

 As viewed from front of switch.

## Lever Switches

| Style                                                                               | Operation   |                           | Contacts                                                                            | Terminal Type |           |            |
|-------------------------------------------------------------------------------------|-------------|---------------------------|-------------------------------------------------------------------------------------|---------------|-----------|------------|
|                                                                                     |             |                           |                                                                                     | Solder Tab    | PCB       |            |
|  | 2 -Position | Maintained                |  | DPDT          | LA1T-2C6  | LA1T-2C2V  |
|                                                                                     |             | Spring return from top    |  | DPDT          | LA1T-21C6 | LA1T-21C2V |
|                                                                                     |             | Spring return from bottom |  | DPDT          | LA1T-22C6 | LA1T-22C2V |
|                                                                                     | 3-Position  | Maintained                |  | DPDT          | LA1T-3C6  | LA1T-3C2V  |
|                                                                                     |             | Spring return from top    |  | DPDT          | LA1T-31C6 | LA1T-31C2V |
|                                                                                     |             | Spring return from bottom |  | DPDT          | LA1T-32C6 | LA1T-32C2V |
|                                                                                     |             | Spring return from both   |  | DPDT          | LA1T-33C6 | LA1T-33C2V |

-  1. PCB terminal models also available with silver contacts (change "1" or "2" to "5" or "6" respectively, ie LA1T-2C2V becomes LA1T-2C6V).  
 2. Terminology: U = up, D = down, C = center.

Switch Engraving Order Form – L6 Series

Copy this order form and use it to specify Letter Height, Maximum Number of Lines and Text to be engraved.  
To insure engraving accuracy, fax it to your IDEC representative or Distributor.

Your Company: \_\_\_\_\_  
Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
PO: \_\_\_\_\_

Telephone: \_\_\_\_\_  
Fax: \_\_\_\_\_  
Email: \_\_\_\_\_  
Part Number to be Engraved: \_\_\_\_\_

Please check one of the boxes below to indicate your choice of engraving options:

Rectangular  
Switch

Square  
Switch

Round  
Switch

|                          | # of Lines | Letter Height | Max. Characters Per Line |
|--------------------------|------------|---------------|--------------------------|
| <input type="checkbox"/> | 1          | 5/32          | 6                        |
| <input type="checkbox"/> | 2          | 5/32          | 6                        |
| <input type="checkbox"/> |            | 1/8           | 6                        |
| <input type="checkbox"/> | 3          | 1/8           | 6                        |
| <input type="checkbox"/> | 4          | N/A           |                          |

|                          | # of Lines | Letter Height | Max. Characters Per Line |
|--------------------------|------------|---------------|--------------------------|
| <input type="checkbox"/> | 1          | 5/32          | 5                        |
| <input type="checkbox"/> | 2          | 5/32          | 5                        |
| <input type="checkbox"/> |            | 1/8           | 6                        |
| <input type="checkbox"/> | 3          | 1/8           | 6                        |
| <input type="checkbox"/> | 4          | N/A           |                          |

|                          | # of Lines | Letter Height | Max. Characters Per Line |
|--------------------------|------------|---------------|--------------------------|
| <input type="checkbox"/> | 1          | 5/32          | 3                        |
| <input type="checkbox"/> |            | 1/8           | 3                        |
| <input type="checkbox"/> | 2          | Custom*       |                          |
| <input type="checkbox"/> | 3          | Custom*       |                          |
| <input type="checkbox"/> | 4          | N/A           |                          |

\*Engraving is possible, but character size will be smaller than standard sizes.



- 1. Above mentioned specifications hold true for standard size pushbuttons (round, square and rectangular).
- 2. Oversize pushbuttons and pilot lights allow you to engrave 1 additional character.
- 3. Engraving is done on the button itself for non-illuminated push buttons and on marking plate for illuminated pushbuttons and pilot lights.
- 4. Please enter text exactly how you want it engraved, take care to emphasize capital or small letters.

Enter text to be engraved:

Line 1: \_\_\_\_\_  
Line 2: \_\_\_\_\_  
Line 3: \_\_\_\_\_  
Line 4: \_\_\_\_\_

Sample Letter Sizes

1/8 Letters: OPEN  
5/32 Letters: OPEN

For IDEC Internal Use Only:

Work Order #: \_\_\_\_\_

## Accessories

| Item                              | Appearance                                                                          | Specifications                                                                                   |                                               | Part Number                                          | Notes                                                                                                                                                                     |
|-----------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|-----------------------------------------------|------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ring Wrench                       |    | Made of metal                                                                                    |                                               | MT-001                                               | Used for tightening the plastic locking ring when installing the L6 series unit on a panel. Tightening torque should not exceed 9kgf cm when tightening the locking ring. |
| Lamp Holder Tool (Made of Rubber) |    | Made of rubber. Used for removing and replacing LED and incandescent lamps in illuminated units. |                                               | OR-44                                                | Rubber tool used for replacing LED and incandescent lamps.                                                                                                                |
| Lens Removal Tool                 |    | For illuminated pushbuttons and pilot lights.                                                    |                                               | MT-101                                               | Used for removing the lens or button from the housing.                                                                                                                    |
| LED Lamp                          |    | 5V DC<br>6V AC/DC<br>12V AC/DC<br>24V AC/DC<br>120V AC                                           |                                               | LFTD-5Ⓢ<br>LFTD-6Ⓢ<br>LFTD-1Ⓢ<br>LFTD-2Ⓢ<br>LFTD-H2Ⓢ | T 1-3/4 miniature flange base. In place of Ⓢ specify LED Color Code (A, G, R, S, W, Y).                                                                                   |
| Incandescent Lamp                 |    | 6V AC/DC<br>12V AC/DC<br>24V AC/DC                                                               |                                               | LH-06<br>LH-14<br>LH-28                              | 0.5W, T 1-3/4 miniature flange base                                                                                                                                       |
| Switch Guard                      |    | 180 degrees opening, spring return                                                               | Oversize Round/Sq                             | HA9Z-K1                                              | Prevents inadvertent switch operation. IP65 oiltight rated.                                                                                                               |
| Terminal Cover                    |   | Made of white nylon                                                                              | All removable contacts                        | H6-VL2                                               | Covers terminals to prevent possible electric shock.                                                                                                                      |
|                                   |                                                                                     |                                                                                                  | Unibody Pilot Lights                          | H6-PVL                                               |                                                                                                                                                                           |
| Mounting Hole Plug                |  | Rubber                                                                                           |                                               | AL-B6                                                | Fills unused panel cutouts. Made of nitrile rubber. Push-in installation from front of panel. IP65 (oiltight) rated.                                                      |
|                                   |                                                                                     | Aluminum                                                                                         |                                               | AL-BM6                                               | Fills unused panel cutouts. Made of aluminum. Screw-on locking ring from inside of panel. IP65 (oiltight) rated.                                                          |
| Replacement Keys                  |  | for HA1K (#231) – oversize                                                                       |                                               | KG9Z-SK                                              | Pair of keys.                                                                                                                                                             |
| Replacement Engraving Inserts     |  |                                                                                                  | Oversize Round<br>Oversize Square<br>Mushroom | HA9Z-P1-W<br>HA9Z-P2-W<br>HA9Z-P13-W                 |                                                                                                                                                                           |
| Replacement Locking Ring          |  | All models                                                                                       |                                               | HA9Z-LN                                              |                                                                                                                                                                           |
| Replacement Anti-Rotation Ring    |  |                                                                                                  | L6 oversize                                   | HA9Z-LP                                              | Prevents rotation of switches in panel. (included with all assembled switches)                                                                                            |
| Replacement Selector Inserts      |  |                                                                                                  |                                               | HA9Z-HC1-Ⓢ                                           | Applicable to round oversize selectors only<br>Ⓢ = (G, R, S, W, Y)                                                                                                        |
| Replacement Safety Lever Lock     |  |                                                                                                  |                                               | HA9Z-LS                                              |                                                                                                                                                                           |

Switches & Pilot Devices

Signaling Lights

Relays & Sockets

Timers

Contactors

Terminal Blocks

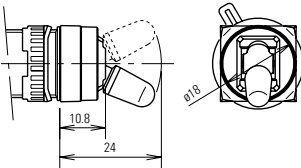
Circuit Breakers

| Item                                        | Appearance                                                                        | Description                                                          | Used With                                                                                                                                                                                                                                                                                                                                                                                                                                            | Part Number |
|---------------------------------------------|-----------------------------------------------------------------------------------|----------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| Flush Bezel                                 |  | ø24mm round, metal (aluminum color), panel cut-out ø20.2mm           | <br>Illuminated selector switches.<br><br><br>L6 Switch<br>+<br><br>Flush Bezel<br>=<br><br>Flush Switch | LA9Z-SM61   |
|                                             |  | ø24mm round, plastic (black), panel cut-out ø20.2mm                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                      | LA9Z-S61B   |
|                                             |  | □24mm square, plastic (black), panel cut-out □20.2mm                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                      | LA9Z-S71B   |
|                                             |  | 24 x 30mm rectangular, plastic (black), panel cut-out ø20.2 x 26.2mm |                                                                                                                                                                                                                                                                                                                                                                                                                                                      | LA9Z-S81B   |
| Switch Guard w/ Flush Bezel (spring return) |  | Rectangular, plastic (black)                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                      | LA9Z-KS8    |

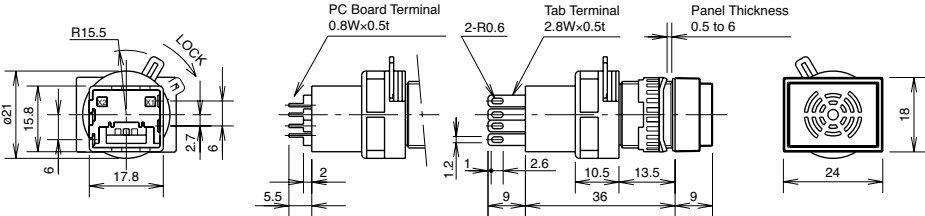
 Flush bezels not applicable for oversize units.

Dimensions (mm)

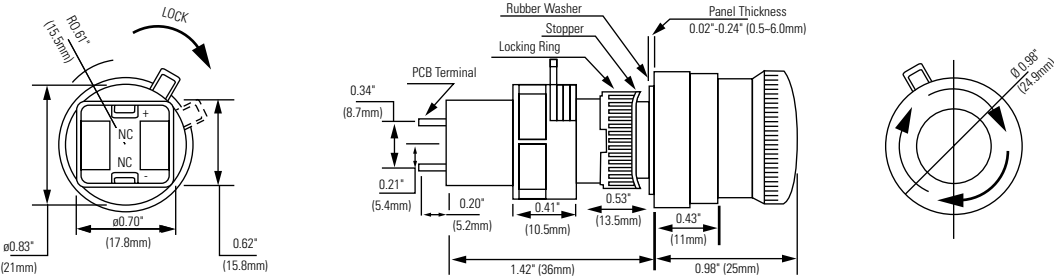
Lever Switches (LA1T)



Buzzer (LA3Z)



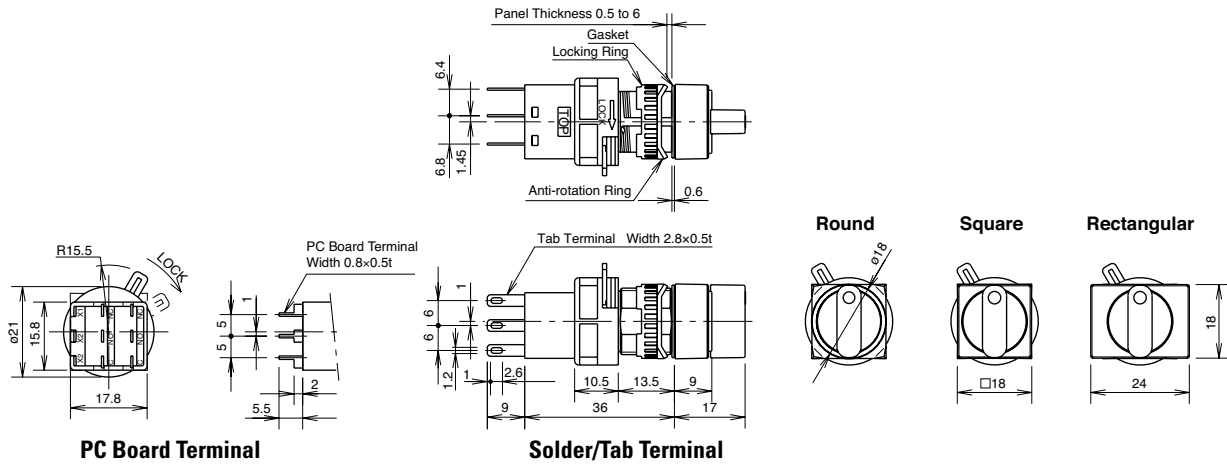
Emergency Stop Switch (HA1B)



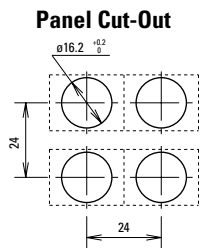
Emergency Stop Switch (HA1E) - Short Body Style



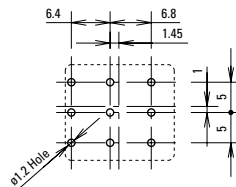
## Illuminated Selector Switches (LA\*F)



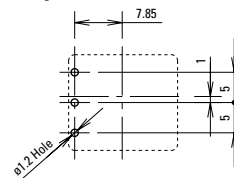
## PC Board Drilling Layout (Bottom View)



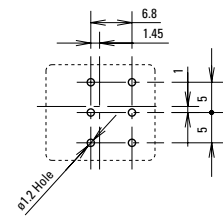
## Illuminated Pushbuttons, Illuminated Selector Switches



## Pilot Lights, Selector Switches, Key Selector Switches

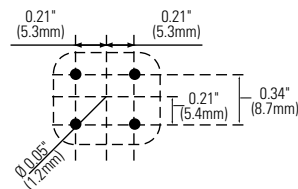


## Pushbutton Lever Switches

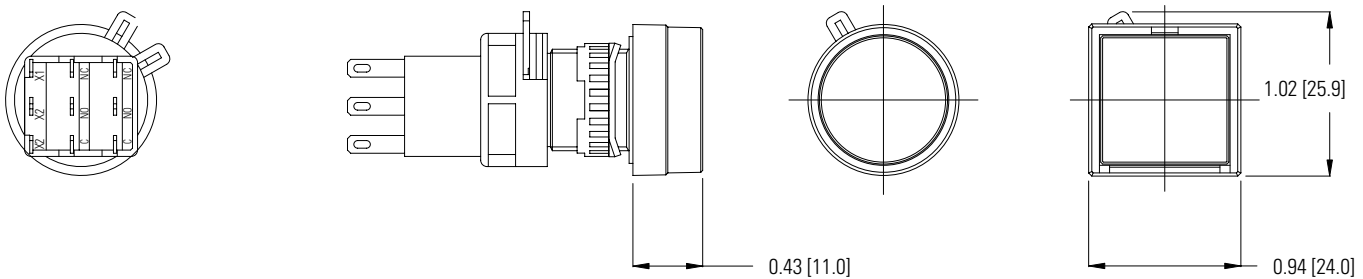


## HA1B E-Stop

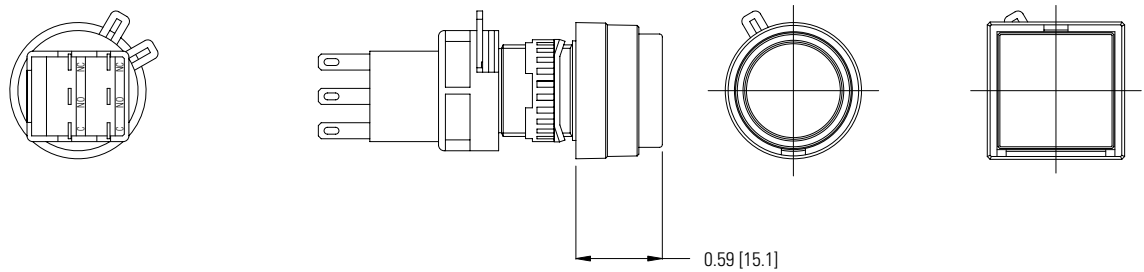
## PCB Mounting Pattern



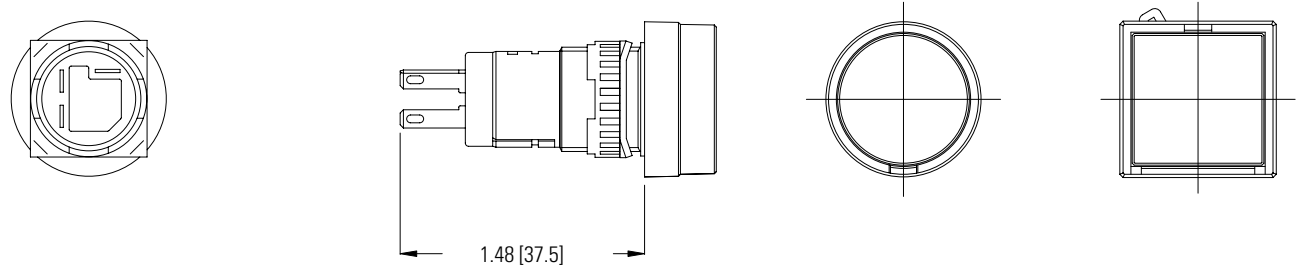
## Oversize Flush Pushbutton and Pilot Lights



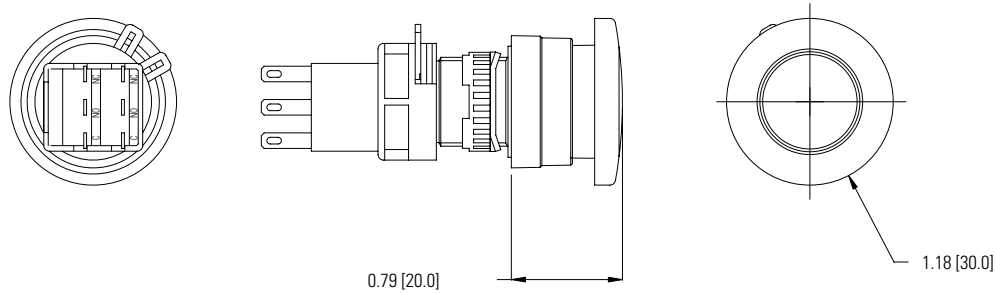
Enlarge Extended Non-Illuminated Pushbutton



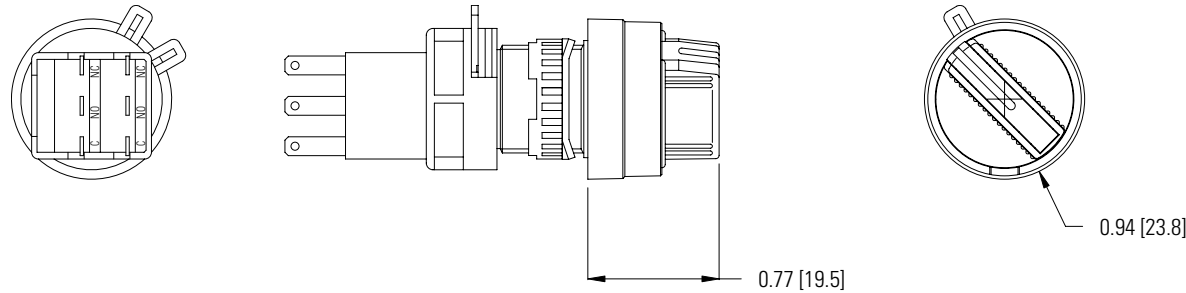
Enlarge Unibody Pilot Lights



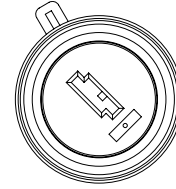
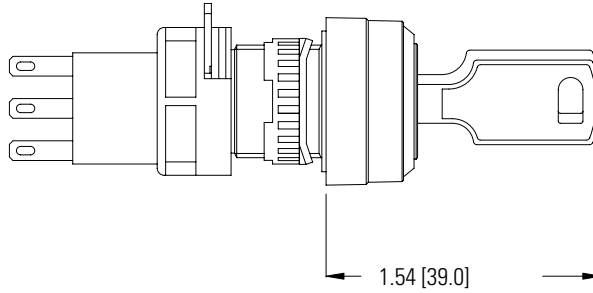
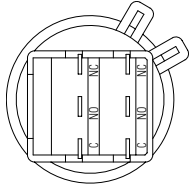
Mushroom Pushbuttons



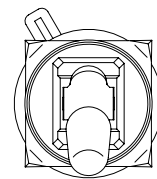
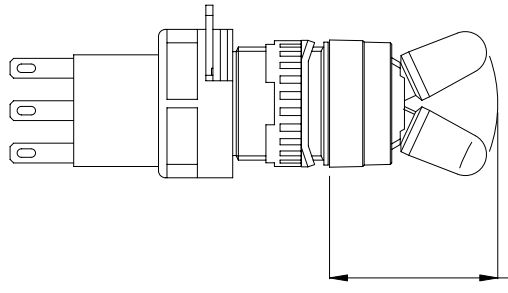
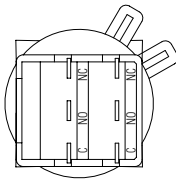
Enlarge Selector Switch



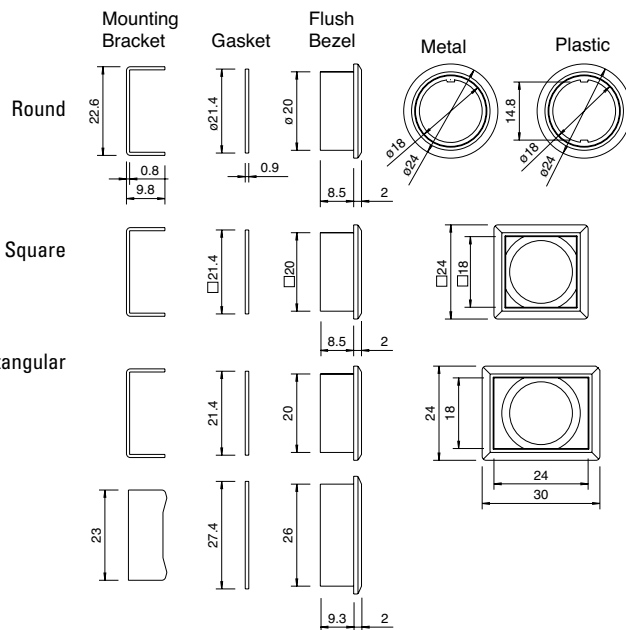
## Oversize Key Switch



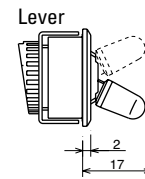
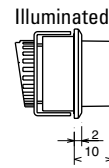
## Lever Switch



## Flush Bezel

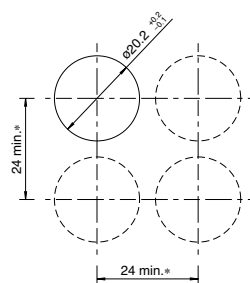


## Selector Switches

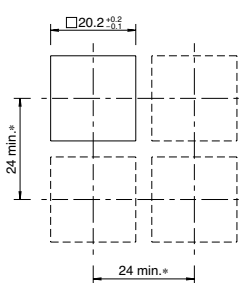


## Flush Bezel Mounting Hole Layout

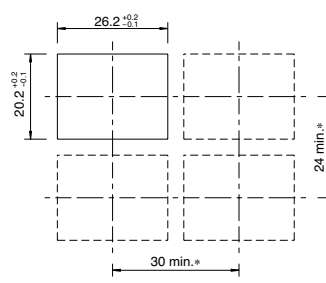
### Round



### Square



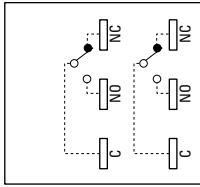
### Rectangular



## Terminal Configurations

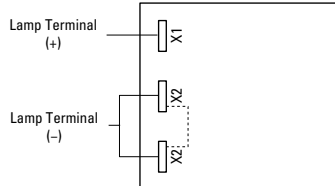
### Non Illuminated Pushbutton

TOP



### Pilot Lights

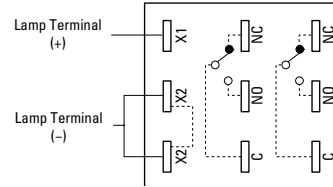
TOP



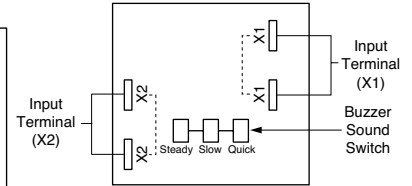
## AL-K6SP

### Illuminated Pushbuttons

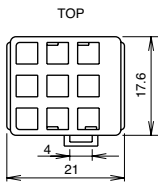
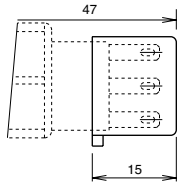
TOP



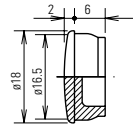
### Buzzer



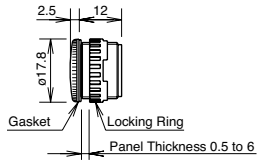
## H6-VL2



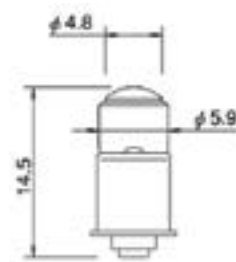
## AL-B6



## AL-BM6

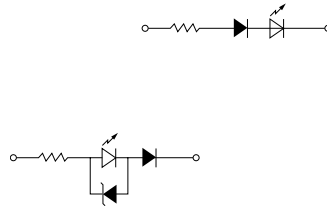
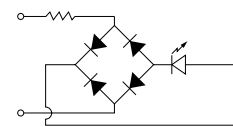


## LFTD



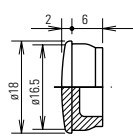
## LED Lamp

### Internal Circuit



- LED Chip
- Protective Diode
- Zener Diode

## AL-B6





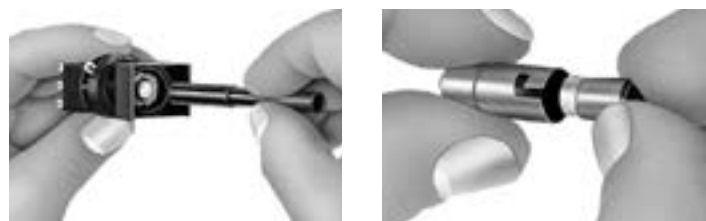
## General Instructions

### Pushbutton Assembly

#### Lamp Installation

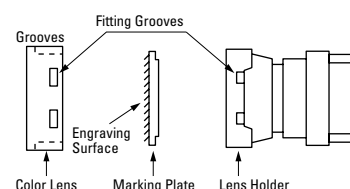
Lamps can be replaced in two ways:

1. If contacts are accessible (or pushbutton not installed in a panel) then it is easiest to first remove the contacts from the operator. This will allow easy access to the lamp/lamp-holder assembly. Grab lamp, depress slightly, and turn counter clockwise. Lamp can then be removed by pushing it back through the lamp holder.
2. If contacts are not accessible, then the lamp can be replaced by first removing the lens from the operator. Just pull lens straight out either with a fingernail or optional lens removal tool (MT-101). Lamp/lamp-holder assembly can then be removed with lamp removal tool (OR-44). Insert lamp removal tool through operator, depress slightly, turn counter clockwise, then pull lamp/lamp-holder assembly out. Lamp can then be removed by pushing it back through the lamp holder.



#### Engraving Lenses

All buttons and lenses can be engraved directly on the outside surface. Illuminated lenses also allow for engraving on a plate that is underneath the colored section of the lens. Remove the colored section of the lens by pulling on the edge while simultaneously unhooking it from the latches on the lens holder. The marking plate will then be accessible. It can then be engraved or a thin marked insert (such as mylar or paper) can be sandwiched between the marking plate and colored section of the lens.

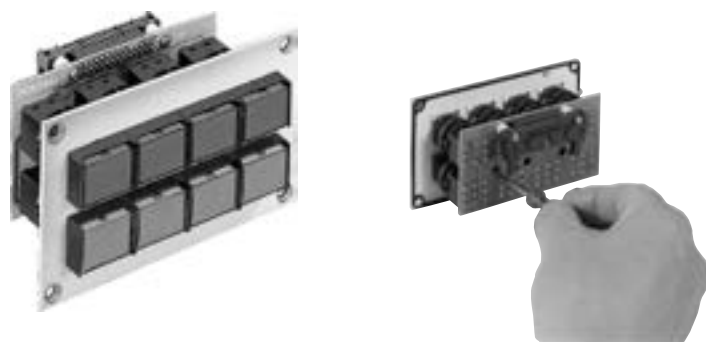


#### Panel Mounting

Before any unit can be mounted into a panel, the contact block must be removed. Slide metal locking lever and pull contact off. Loosen and remove the locking ring and square anti-rotation ring from the operator and insert operator through panel cutout from the front of the panel. Slide on anti-rotation ring and tighten locking ring, using locking ring wrench (MT-001). Slide contact block onto operator, observing TOP marking on both parts. Slide metal locking lever in direction indicated by LOCK. The yellow plastic safety lever lock can then be snapped onto the locking lever; this will prevent vibration or maintenance actions from releasing the contact from the operator.

#### PCB Mounting

Being able to separate the contacts from the operator allows for assembly of the front panel components (operator and lens) to be performed in tandem with the PC board assembly and soldering. For applications where multiple rows of push-buttons are mounted closely together, or where other components may obstruct access to the contact locking lever, be sure to include access holes in the PC board (refer to PC board layout dimensions for location). Also be sure to allow for space above and to the side of contact to ensure that no components block the contact block locking lever. PC board pins are designed to rest on the PCB, take this into consideration to ensure that pins do not short closely spaced traces.



## LBW Flush Mount 22mm Switches & Pilot Lights

Flush bezel projects only 2mm from front of panel. Removable contact blocks are ideal for single board mounting.

### Key Features

- Pushbuttons, illuminated pushbuttons, selector switches, and key selector switches with up to 3PDT contacts.
- Key selectors with keys that are difficult to duplicate. Seven different key numbers to choose from.
- Pilot lights with round or square flat lenses.
- Solder / Tab or PC Board terminal.
- Black or metallic flush bezels available.
- Guard pushbuttons, illuminated or non-illuminated are available.
- Illuminated pushbuttons with bright, clear, ring, flush or extended lens.
- Choice of either gold-clad or silver contacts.
- Degree of protection: IP65 (from the front of the panel).



| Applicable Standards | Mark | File No. or Organization |
|----------------------|------|--------------------------|
| UL508                |      | UL Recognition No.E55996 |
| CSA 22.2 No.14       |      | CSA File No. LR 21451    |
| EN60947-5-1          |      | TÜV Rheinland            |
|                      |      | EU Low Voltage Directive |
| GB14048.5            |      |                          |

### Specifications

|                                      |                                                                                                                                                                                                   |
|--------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operating Temperature                | –25 to +60°C (no freezing), Illuminated units: –25 to +55°C                                                                                                                                       |
| Storage Temperature                  | –30 to +80°C (no freezing)                                                                                                                                                                        |
| Operating Humidity                   | 45 to 85% RH (no condensation)                                                                                                                                                                    |
| Contact Resistance                   | 50 mW maximum (initial value)                                                                                                                                                                     |
| Insulation Resistance                | 100 MW minimum (500V DC megger)                                                                                                                                                                   |
| Dielectric Strength                  | Switch Between live part and ground: 2,000V AC, 1 min.<br>Between terminals of different poles: 2,000V AC, 1 min.<br>Between terminals of the same poles: 1,000V AC, 1 min.                       |
|                                      | Illumination Between live part and ground: 2,000V AC, 1 min.                                                                                                                                      |
| Vibration Resistance                 | Operating extremes/Damage limits:<br>5 to 55 Hz, amplitude 0.5mm                                                                                                                                  |
| Shock Resistance                     | Operating extremes: 100 m/s <sup>2</sup><br>Damage limits: 1,000 m/s <sup>2</sup>                                                                                                                 |
| Mechanical Life (minimum operations) | Momentary: 2,000,000<br>Maintained: 250,000<br>Selector switches: 250,000<br>Key selector switches: 250,000                                                                                       |
| Electrical Life (minimum operations) | Momentary: 50,000 / 100,000 <sup>1</sup><br>Maintained: 50,000 / 100,000 <sup>2</sup><br>Selector switches: 50,000 / 100,000 <sup>2</sup><br>Key selector switches: 50,000 / 100,000 <sup>2</sup> |
| Degree of Protection                 | IP65 (IEC 60529)                                                                                                                                                                                  |
| Terminal Style                       | Solder/tab terminal #110, PC board terminal                                                                                                                                                       |
| Bezel                                | Black plastic or metallic                                                                                                                                                                         |
| Weight (approx.)                     | 16g (illuminated pushbutton)<br>14g (pilot light)<br>15g (pushbutton)<br>17g (selector switch)<br>29g (key switch)<br>17g (illuminated pushbutton with guard)<br>18g (push button with guard)     |

1. Switching frequency 1,800 operations/h.
2. Switching frequency 1,200 operations/h.

### Contact Ratings

| Gold Contact (switch base color: blue)   |                  |         |
|------------------------------------------|------------------|---------|
| Rated Insulation Voltage                 | 250V             |         |
| Rated Thermal Current                    | 3A               |         |
| Rated Operating Voltage                  | 30V DC           | 125V AC |
| Rated Operating Current (resistive load) | 0.1A             | 0.1A    |
| Contact Material                         | Gold-clad silver |         |

Minimum applicable load (reference value): 5V AC/DC, 1 mA

| Silver Contact (switch base color: gray) |            |                |              |
|------------------------------------------|------------|----------------|--------------|
| Rated Insulation Voltage                 | 250V       |                |              |
| Rated Operating Voltage                  | 30V        | 125V           | 250V         |
| Rated Operating Current                  | AC 50/60Hz | Resistive load | — 5A 5A      |
|                                          |            | Inductive load | — 3A 1.5A    |
|                                          | DC         | Resistive load | 5A 1.1A —    |
|                                          |            | Inductive load | 2.5A 0.55A — |
|                                          | AC 50/60Hz | Resistive load | — 5A 3A      |
|                                          |            | Inductive load | — 3A 1.5A    |
| Rated Thermal Current                    | DC         | Resistive load | 3A 0.6A —    |
|                                          |            | Inductive load | 1A 0.22A —   |
| Rated Thermal Current                    | 5A         |                |              |
| Contact Material                         | Silver     |                |              |

AC inductive load: PF=0.6 to 0.7 DC inductive load: L/R=7 ms max.

### LED Ratings

|               |            |               |                |
|---------------|------------|---------------|----------------|
| Rated Voltage | 5V DC      | 12V AC/DC     | 24V AC/DC      |
| Voltage Range | 5V DC±5%   | 12V AC/DC±10% | 24V AC/DC ±10% |
| LED Part No.  | LB9Z-LED5② | LB9Z-LED1②    | LB9Z-LED2②     |

|                            |                                                                                 |  |  |
|----------------------------|---------------------------------------------------------------------------------|--|--|
| Rated Current              | A, R: 22 mA G, PW, S: 16 mA                                                     |  |  |
| Voltage Rating             | Marked on the side of the LED unit                                              |  |  |
| LED Life (reference value) | Approx. 30,000 hours (until the brightness reduces to 50% of the initial value) |  |  |

|                  |          |          |
|------------------|----------|----------|
| Internal Circuit | A, PW, R | A, PW, R |
|                  |          |          |
| Internal Circuit | G, S     | G, S     |
|                  |          |          |

- LED Chip
- Protection Diode
- Zener Diode
- Resistor
- Varistor

1. For ② (color code): A (amber), G (green), PW (white), R (red), S (blue)
2. Use the white LED for yellow illumination.
3. LED lamp contains a current-limiting resistor.



Illuminated Pushbuttons (Sub-assembled)



Contact Block

| Terminal Style                                                                    |            | Material | Contact | Part Number |
|-----------------------------------------------------------------------------------|------------|----------|---------|-------------|
|  | Solder/Tab | Silver   | SPDT    | LB-T50      |
|                                                                                   |            |          | DPDT    | LB-T60      |
|  | PCB        | Gold     | SPDT    | LB-T10V     |
|                                                                                   |            |          | DPDT    | LB-T20V     |

LED Module

| Style                                                                               | Color      | Voltage | Part Number |
|-------------------------------------------------------------------------------------|------------|---------|-------------|
|  | Amber      | 5V      | LB9Z-LED5A  |
|                                                                                     |            | 12V     | LB9Z-LED1A  |
|                                                                                     |            | 24V     | LB9Z-LED2A  |
|                                                                                     | Green      | 5V      | LB9Z-LED5G  |
|                                                                                     |            | 12V     | LB9Z-LED1G  |
|                                                                                     |            | 24V     | LB9Z-LED2G  |
|                                                                                     | Red        | 5V      | LB9Z-LED5R  |
|                                                                                     |            | 12V     | LB9Z-LED1R  |
|                                                                                     |            | 24V     | LB9Z-LED2R  |
|                                                                                     | Blue       | 5V      | LB9Z-LED5S  |
|                                                                                     |            | 12V     | LB9Z-LED1S  |
|                                                                                     |            | 24V     | LB9Z-LED2S  |
|                                                                                     | Pure White | 5V      | LB9Z-LED5PW |
|                                                                                     |            | 12V     | LB9Z-LED1PW |
|                                                                                     |            | 24V     | LB9Z-LED2PW |

Operator

| Style                                                                              | Mounting Style                      | Shape                     | Momentary  | Maintained |
|------------------------------------------------------------------------------------|-------------------------------------|---------------------------|------------|------------|
|   | Flush Mount (Plastic)               | Round                     | LBW6L-M0   | LBW6L-A0   |
|                                                                                    |                                     | Square                    | LBW7L-M0   | LBW7L-A0   |
|   | Flush Mount (Metallic)              | Round                     | LBW6ML-M0  | LBW6ML-A0  |
|                                                                                    |                                     | Square                    | LBW7ML-M0  | LBW7ML-A0  |
|   | Flush Mount (Built-in switch guard) | Round                     | LBW6GL-M0  | LBW6GL-A0  |
|                                                                                    |                                     | Square                    | LBW7GL-M0  | LBW7GL-A0  |
|  | Flush Mount (Plastic)               | Round (for extended lens) | LBW6L-M20  | LBW6L-A20  |
|                                                                                    | Flush Mount (Metallic)              |                           | LBW6ML-M20 | LBW6ML-A20 |

Lens

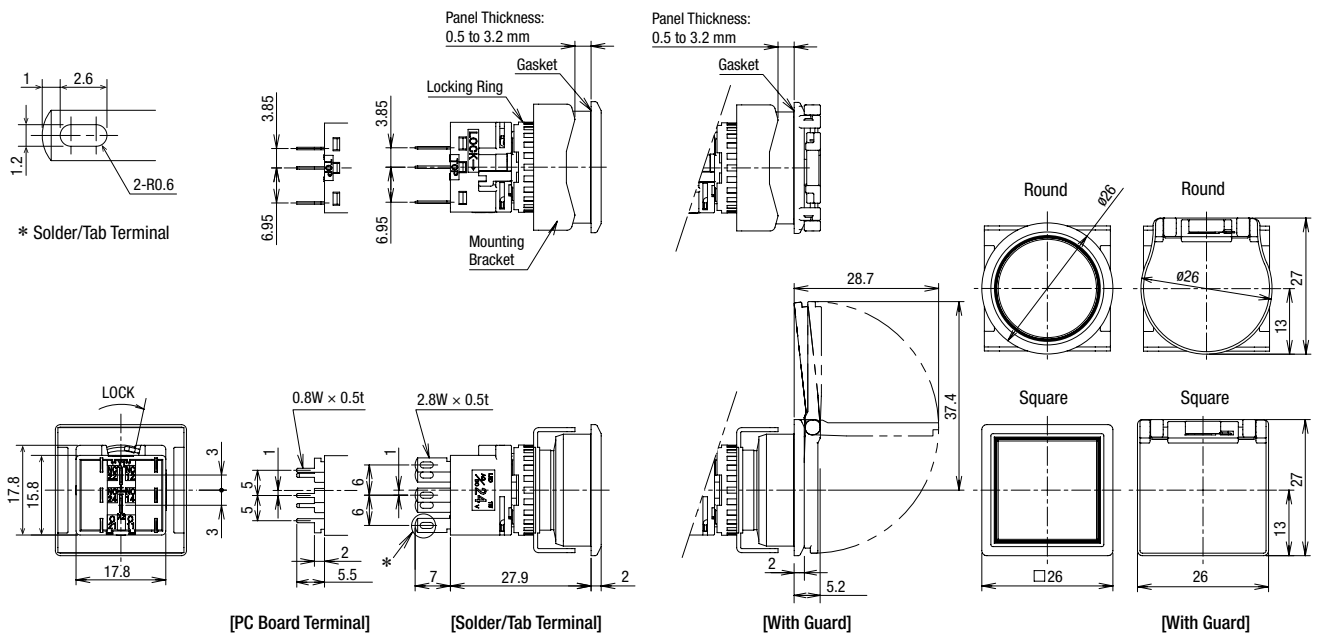
| Shape                                                                               | Color  | Part Number |
|-------------------------------------------------------------------------------------|--------|-------------|
|  | Amber  | LBW6A-L1A   |
|                                                                                     | Green  | LBW6A-L1G   |
|                                                                                     | Red    | LBW6A-L1R   |
|                                                                                     | Blue   | LBW6A-L1S   |
|                                                                                     | White  | LBW6A-L1W   |
|                                                                                     | Yellow | LBW6A-L1Y   |
|  | Amber  | LBW6A-L2A   |
|                                                                                     | Green  | LBW6A-L2G   |
|                                                                                     | Red    | LBW6A-L2R   |
|                                                                                     | Blue   | LBW6A-L2S   |
|                                                                                     | White  | LBW6A-L2W   |
|                                                                                     | Yellow | LBW6A-L2Y   |
|  | Amber  | LBW7A-L1A   |
|                                                                                     | Green  | LBW7A-L1G   |
|                                                                                     | Red    | LBW7A-L1R   |
|                                                                                     | Blue   | LBW7A-L1S   |
|                                                                                     | White  | LBW7A-L1W   |
|                                                                                     | Yellow | LBW7A-L1Y   |
| Round Ring Flush                                                                    | White  | LBW6A-L1R-W |
| Square Ring Flush                                                                   | White  | LBW7A-L1R-W |

Note: No marking plate used in ring illuminated pushbuttons.

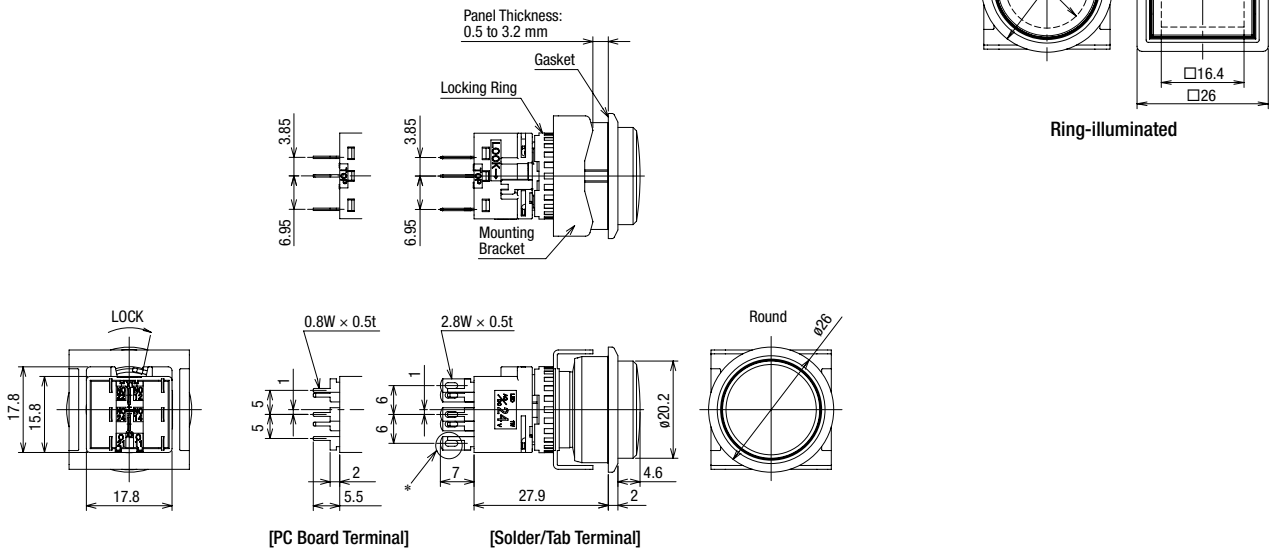
## Dimensions

All dimensions in mm.

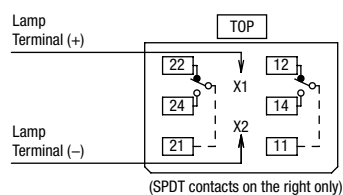
## Flush/Ring-illuminated



## Extended



## Terminal Arrangement (Bottom View)



- For details on pc board and circuit design, see **594**.
- For details on single board mounting, see **593**.

Switches &amp; Pilot Devices

Signaling Lights

Relays &amp; Sockets

Timers

Contactors

Terminal Blocks

Circuit Breakers

## Pilot Lights

| <div> <div>Part No.</div> <div>LBW①P-1T0②③*</div> <div>  <div>Round / Black Bezel</div> </div> <div>  <div>Square / Black Bezel</div> </div> <div>  <div>Round / Metallic Bezel</div> </div> <div>  <div>Square / Metallic Bezel</div> </div> </div> |                         |             |                                                                                                                                      |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|-------------|--------------------------------------------------------------------------------------------------------------------------------------|
| ① Style                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | ③ LED Operating Voltage | Part No.    | * Illumination Color Code                                                                                                            |
| Black Bezel                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 24V AC/DC               | LBW①P-1T04* | Specify the color code in place of * in the Part No.<br><br>A: amber<br>G: green<br>PW: pure white<br>R: red<br>S: blue<br>Y: yellow |
| Metallic Bezel                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 24V AC/DC               | LBW①P-1T04* |                                                                                                                                      |

- Pilot lights contain an LED unit. For maintenance LED units see **583**.
- Legends and symbols can be engraved on a marking plate or film to be inserted under the lens by users for labelling purposes. See **596** for details.
- White lens type (when light is off) are available. Clear lens is used instead of colored lens for amber, green, red, and blue pilot lights. Amber, green, red, or blue LED units are used. To specify, see Part Number Interpretation below.
- PC board terminals available. To specify, see Part Number Interpretation below.
- 5V DC and 12V AC/DC LED operating voltages also available.

### Part Number Interpretation

LBW①P-1T0②③\*



To be used for interpreting part numbers only, not for part number development.

#### ① Style

| Code | Shape                   |
|------|-------------------------|
| 6    | Round / Black Bezel     |
| 7    | Square / Black Bezel    |
| 6M   | Round / Metallic Bezel  |
| 7M   | Square / Metallic Bezel |

#### ② LED Operating Voltage

| Code | Rated Operating Voltage |
|------|-------------------------|
| 1    | 5V DC                   |
| 3    | 12V AC/DC               |
| 4    | 24V AC/DC               |

#### ③ Others

| Code  | Specification       | Part No. Example |
|-------|---------------------|------------------|
| Blank | Solder/Tab Terminal | —                |
| V     | PC Board Terminal   | LBW6P-1T04V*     |

- Specify the color code in place of \* in the table above.

## Pilot Lights (Sub-assembled)



## Contact Block

| Terminal Style                                                                    | Part Number          |
|-----------------------------------------------------------------------------------|----------------------|
|  | Solder Tab<br>LB-T00 |
|  | PCB<br>LB-T00V       |

## LED Module

| Style                                                                              | Color      | Voltage | Part Number |
|------------------------------------------------------------------------------------|------------|---------|-------------|
|  | Amber      | 5V      | LB9Z-LED5A  |
|                                                                                    |            | 12V     | LB9Z-LED1A  |
|                                                                                    |            | 24V     | LB9Z-LED2A  |
|                                                                                    | Green      | 5V      | LB9Z-LED5G  |
|                                                                                    |            | 12V     | LB9Z-LED1G  |
|                                                                                    |            | 24V     | LB9Z-LED2G  |
|                                                                                    | Red        | 5V      | LB9Z-LED5R  |
|                                                                                    |            | 12V     | LB9Z-LED1R  |
|                                                                                    |            | 24V     | LB9Z-LED2R  |
|                                                                                    | Blue       | 5V      | LB9Z-LED5S  |
|                                                                                    |            | 12V     | LB9Z-LED1S  |
|                                                                                    |            | 24V     | LB9Z-LED2S  |
|                                                                                    | Pure White | 5V      | LB9Z-LED5PW |
|                                                                                    |            | 12V     | LB9Z-LED1PW |
|                                                                                    |            | 24V     | LB9Z-LED2PW |

## Operator

| Style                                                                             | Mounting Style         | Shape  | Part Number |
|-----------------------------------------------------------------------------------|------------------------|--------|-------------|
|  | Flush Mount (Plastic)  | Round  | LBW6P-0     |
|                                                                                   |                        | Square | LBW7P-0     |
|  | Flush Mount (Metallic) | Round  | LBW6MP-0    |
|                                                                                   |                        | Square | LBW7MP-0    |

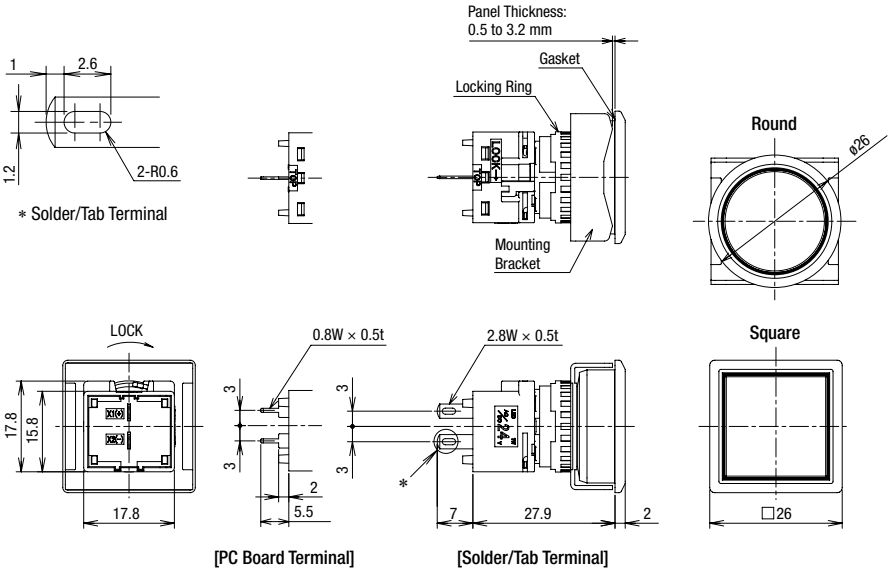
## Lens

| Shape                                                                                         | Color  | Part Number |
|-----------------------------------------------------------------------------------------------|--------|-------------|
| Round<br>   | Amber  | LBW6A-P1A   |
|                                                                                               | Green  | LBW6A-P1G   |
|                                                                                               | Red    | LBW6A-P1R   |
|                                                                                               | Blue   | LBW6A-P1S   |
|                                                                                               | White  | LBW6A-P1W   |
|                                                                                               | Yellow | LBW6A-P1Y   |
| Square<br> | Amber  | LBW7A-P1A   |
|                                                                                               | Green  | LBW7A-P1G   |
|                                                                                               | Red    | LBW7A-P1R   |
|                                                                                               | Blue   | LBW7A-P1S   |
|                                                                                               | White  | LBW7A-P1W   |
|                                                                                               | Yellow | LBW7A-P1Y   |

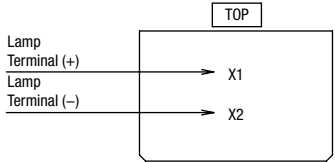


Dimensions

All dimensions in mm.



Terminal Arrangement (Bottom View)





## Pushbuttons

LBW①B-②③T④⑤\*

Flush



Round / Black Bezel



Square / Black Bezel



Round / Metallic Bezel



Square / Metallic Bezel



Round with Guard



Square with Guard

Extended

Round only  
(metallic bezel  
available)

| ① Style        | ② Operation | ③ Button Shape | Part No.      | * Illumination Color Code                                                                                                      |
|----------------|-------------|----------------|---------------|--------------------------------------------------------------------------------------------------------------------------------|
| Black bezel    | Momentary   | Flush Round    | LBW6B-M1T1④⑤  | Specify the color code in place of * in the Part No.<br><br>B: black<br>G: green<br>R: red<br>S: blue<br>W: white<br>Y: yellow |
|                |             | Flush Square   | LBW7B-M1T1④⑤  |                                                                                                                                |
|                |             | Extended Round | LBW6B-M1T2④⑤  |                                                                                                                                |
|                | Maintained  | Flush Round    | LBW6B-A1T1④⑤  |                                                                                                                                |
|                |             | Flush Square   | LBW7B-A1T1④⑤  |                                                                                                                                |
|                |             | Extended Round | LBW6B-A1T2④⑤  |                                                                                                                                |
| Metallic bezel | Momentary   | Flush Round    | LBW6MB-M1T1④⑤ |                                                                                                                                |
|                |             | Flush Square   | LBW7MB-M1T1④⑤ |                                                                                                                                |
|                |             | Extended Round | LBW6MB-M1T2④⑤ |                                                                                                                                |
|                | Maintained  | Flush Round    | LBW6MB-A1T1④⑤ |                                                                                                                                |
|                |             | Flush Square   | LBW7MB-A1T1④⑤ |                                                                                                                                |
|                |             | Extended Round | LBW6MB-A1T2④⑤ |                                                                                                                                |
| Guard Type     | Momentary   | Flush Round    | LBW6GB-M1T1④⑤ |                                                                                                                                |
|                |             | Flush Square   | LBW7GB-M1T1④⑤ |                                                                                                                                |
|                | Maintained  | Flush Round    | LBW6GB-A1T1④⑤ |                                                                                                                                |
|                |             | Flush Square   | LBW7GB-A1T1④⑤ |                                                                                                                                |

- The guard opens 180 degrees spring-return.
- PC board terminals available for gold contacts. To specify, see Part Number Interpretation below.
- Pushbuttons can be used with legend markings engraved on marking plates and lens buttons with clear film inserted in the lens is available. To specify, see Part Number Interpretation below. See for details on the marking plate and film.
- Extended pushbuttons available. To specify, see Part Number Interpretation below. Pushbuttons with guard is not available. Extended pushbuttons is available with momentary operation only.

## Part Number Interpretation

LBW①B-②③T④⑤\*

To be used for interpreting part numbers only,  
not for part number development.

## ① Style

| Code | Shape                   |
|------|-------------------------|
| 6    | Round / Black Bezel     |
| 7    | Square / Black Bezel    |
| 6M   | Round / Metallic Bezel  |
| 7M   | Square / Metallic Bezel |
| 6G   | Round with Guard        |
| 7G   | Square with Guard       |

## ② Operation

| Code | Operation  |
|------|------------|
| A    | Maintained |
| M    | Momentary  |

## ③ Operator Style

| Code | Operation  |
|------|------------|
| 1    | Flush      |
| 2    | Extended * |

\* Extended style is available only  
for round (black/metallic  
bezel) and in momentary  
operation. Guard model is  
not available.

## ④ Contacts

| Code | Contact   | Code | Contact     |
|------|-----------|------|-------------|
| 1    | Gold/SPDT | 5    | Silver/SPDT |
| 2    | Gold/DPDT | 6    | Silver/DPDT |
| 3    | Gold/3PDT | 7    | Silver/3PDT |

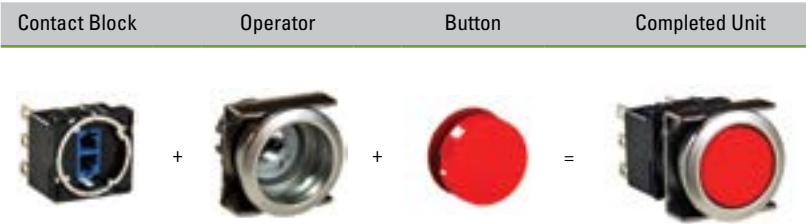
## ⑤ Others

| Code        | Specification                                   | Part No. Example |
|-------------|-------------------------------------------------|------------------|
| Blank       | Solder/Tab Terminal                             | —                |
| L (Note 1)  | Lens                                            | LBW6B-M1T1L*     |
| V           | PC Board Terminal (Gold Contact Only)           | LBW6B-M1T1V*     |
| VL (Note 1) | PC Board Terminal with Lens (Gold Contact Only) | LBW6B-M1T1VL*    |

Note 1: Codes L and VL are available with flush operator only.

- Color code (\*) for lens:  
A (amber), B (translucent lens with black nameplate), G (green), R (red), S (blue), W (white), Y (yellow)

Pushbuttons (Sub-assembled)



Contact Block

| Terminal Style                                                                    |            | Material | Contact | Part Number |
|-----------------------------------------------------------------------------------|------------|----------|---------|-------------|
|  | Solder/Tab | Silver   | SPDT    | LB-T5       |
|                                                                                   |            |          | DPDT    | LB-T6       |
|                                                                                   |            |          | 3PDT    | LB-T7       |
|  | PCB        | Gold     | SPDT    | LB-T1V      |
|                                                                                   |            |          | DPDT    | LB-T2V      |
|                                                                                   |            |          | 3PDT    | LB-T3V      |

Button

| Style                                                                               |                  | Color  | Part Number |
|-------------------------------------------------------------------------------------|------------------|--------|-------------|
|   | Round Flush      | Black  | LBW6A-B1B   |
|                                                                                     |                  | Green  | LBW6A-B1G   |
|                                                                                     |                  | Red    | LBW6A-B1R   |
|                                                                                     |                  | Blue   | LBW6A-B1S   |
|                                                                                     |                  | White  | LBW6A-B1W   |
|                                                                                     |                  | Yellow | LBW6A-B1Y   |
|  | Round (Extended) | Black  | LBW6A-B2B   |
|                                                                                     |                  | Green  | LBW6A-B2G   |
|                                                                                     |                  | Red    | LBW6A-B2R   |
|                                                                                     |                  | Blue   | LBW6A-B2S   |
|                                                                                     |                  | White  | LBW6A-B2W   |
|                                                                                     |                  | Yellow | LBW6A-B2Y   |
|  | Square Flush     | Black  | LBW7A-B1B   |
|                                                                                     |                  | Green  | LBW7A-B1G   |
|                                                                                     |                  | Red    | LBW7A-B1R   |
|                                                                                     |                  | Blue   | LBW7A-B1S   |
|                                                                                     |                  | White  | LBW7A-B1W   |
|                                                                                     |                  | Yellow | LBW7A-B1Y   |

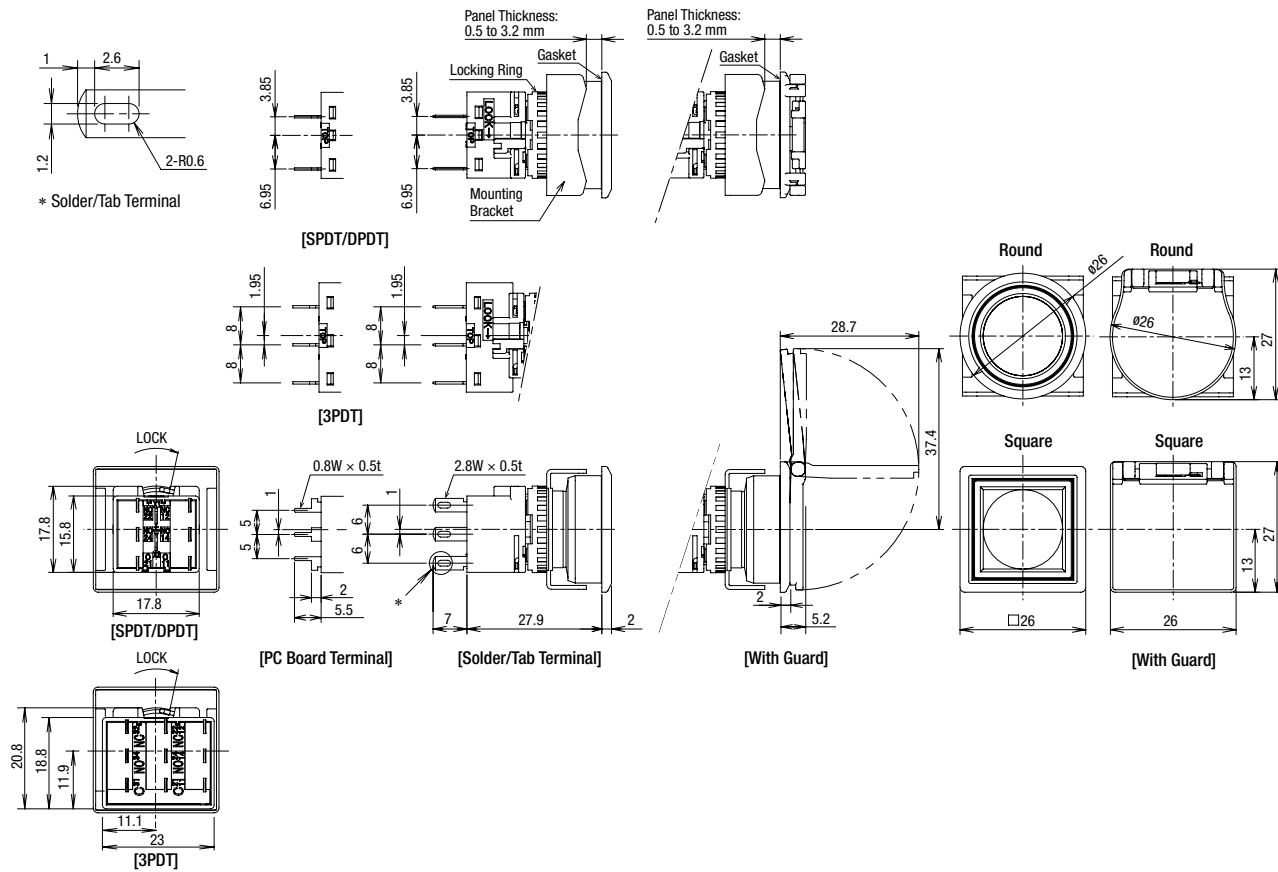
Operator

| Style                                                                               | Bezel Style                              | Shape                     | Momentary  | Maintained |
|-------------------------------------------------------------------------------------|------------------------------------------|---------------------------|------------|------------|
|    | Black plastic bezel                      | Round                     | LBW6L-M0   | LBW6L-A0   |
|                                                                                     |                                          | Square                    | LBW7L-M0   | LBW7L-A0   |
|    | Metallic bezel                           | Round                     | LBW6ML-M0  | LBW6ML-A0  |
|                                                                                     |                                          | Square                    | LBW7ML-M0  | LBW7ML-A0  |
|    | Plastic bezel with built-in switch guard | Round                     | LBW6GL-M0  | LBW6GL-A0  |
|                                                                                     |                                          | Square                    | LBW7GL-M0  | LBW7GL-A0  |
|  | Flush Mount (Plastic)                    | Round (for extended lens) | LBW6L-M20  | LBW6L-A20  |
|                                                                                     | Flush Mount (Metallic)                   |                           | LBW6ML-M20 | LBW6ML-A20 |

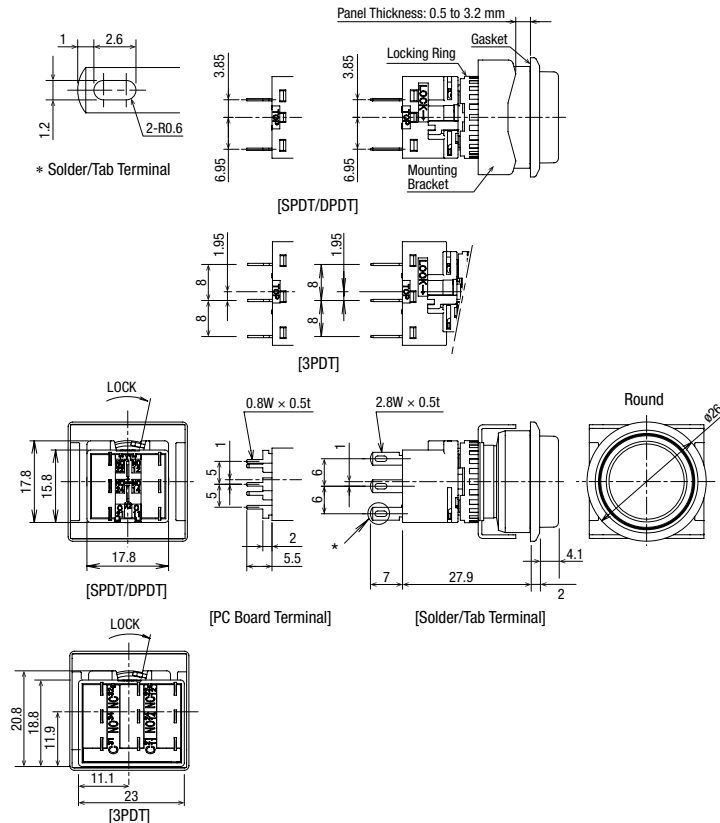
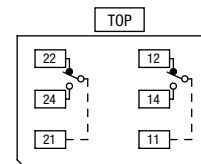
## Dimensions

All dimensions in mm.

## Flush Pushbutton

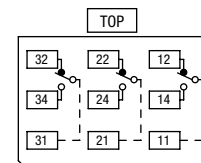


## Extended Pushbutton

Terminal Arrangement (Bottom View)  
SPDT/DPDT Contacts

(SPDT contacts on the right only)

## 3PDT Contacts



- For details on mounting hole layout, see [593](#).
- For details on pc board and circuit design, see [594](#).
- For details on single board mounting, see [593](#).

## Selector Switches

| Part No.       | LBW①S-②T③④                                                                        |                       |                                                                                     |           |                                                                                   |            |                                                                                     |  |
|----------------|-----------------------------------------------------------------------------------|-----------------------|-------------------------------------------------------------------------------------|-----------|-----------------------------------------------------------------------------------|------------|-------------------------------------------------------------------------------------|--|
|                |  |                       |    |           |  |            |  |  |
|                | Round / Black Bezel                                                               |                       | Square / Black Bezel                                                                |           | Round / Metallic Bezel                                                            |            | Square / Metallic Bezel                                                             |  |
| ① Style        | ② Operator Position                                                               |                       |                                                                                     | ③ Contact | Part No.                                                                          |            |                                                                                     |  |
|                |                                                                                   |                       |                                                                                     |           | Gold Contact                                                                      |            | Silver Contact                                                                      |  |
| Black bezel    | 90°<br>2-position                                                                 | Maintained            |    | SPDT      | LBW①S-2T1                                                                         | LBW①S-2T5  |                                                                                     |  |
|                |                                                                                   |                       |                                                                                     | DPDT      | LBW①S-2T2                                                                         | LBW①S-2T6  |                                                                                     |  |
|                |                                                                                   |                       |                                                                                     | 3PDT      | LBW①S-2T3                                                                         | LBW①S-2T7  |                                                                                     |  |
|                | 45°<br>3-position                                                                 | Maintained            |    | DPDT      | LBW①S-3T2                                                                         | LBW①S-3T6  |                                                                                     |  |
|                |                                                                                   |                       |                                                                                     | 3PDT      | LBW①S-3T3                                                                         | LBW①S-3T7  |                                                                                     |  |
|                |                                                                                   | Spring return two-way |    | DPDT      | LBW①S-33T2                                                                        | LBW①S-33T6 |                                                                                     |  |
|                |                                                                                   |                       |                                                                                     | 3PDT      | LBW①S-33T3                                                                        | LBW①S-33T7 |                                                                                     |  |
|                |                                                                                   |                       |                                                                                     |           |                                                                                   |            |                                                                                     |  |
| Metallic bezel | 90°<br>2-position                                                                 | Maintained            |    | SPDT      | LBW①S-2T1                                                                         | LBW①S-2T5  |                                                                                     |  |
|                |                                                                                   |                       |                                                                                     | DPDT      | LBW①S-2T2                                                                         | LBW①S-2T6  |                                                                                     |  |
|                |                                                                                   |                       |                                                                                     | 3PDT      | LBW①S-2T3                                                                         | LBW①S-2T7  |                                                                                     |  |
|                | 45°<br>3-position                                                                 | Maintained            |   | DPDT      | LBW①S-3T2                                                                         | LBW①S-3T6  |                                                                                     |  |
|                |                                                                                   |                       |                                                                                     | 3PDT      | LBW①S-3T3                                                                         | LBW①S-3T7  |                                                                                     |  |
|                |                                                                                   | Spring return two-way |  | DPDT      | LBW①S-33T2                                                                        | LBW①S-33T6 |                                                                                     |  |
|                |                                                                                   |                       |                                                                                     |           |                                                                                   |            |                                                                                     |  |
|                |                                                                                   |                       |                                                                                     | DPDT      | LBW①S-33T3                                                                        | LBW①S-33T7 |                                                                                     |  |

- PC board terminals available for gold contacts. To specify, see Part Number Interpretation below.
- For contact operation, see 556.

### Part Number Interpretation

LBW①S-②T③④



To be used for interpreting part numbers only, not for part number development.

#### ① Style

| Code | Shape                   |
|------|-------------------------|
| 6    | Round / Black Bezel     |
| 7    | Square / Black Bezel    |
| 6M   | Round / Metallic Bezel  |
| 7M   | Square / Metallic Bezel |

#### ② Operator Position

2-position

Operator Position

2 Maintained



3-position

Operator Position

3 Maintained



33 Spring return two-way



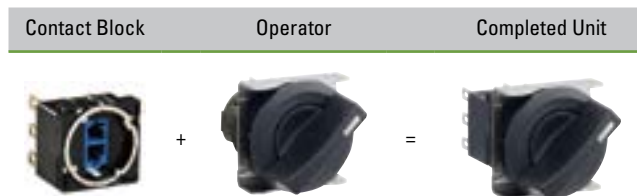
#### ③ Contacts

| Code | Contact                           |
|------|-----------------------------------|
| 1    | Gold/SPDT (90° 2-position only)   |
| 2    | Gold/DPDT                         |
| 3    | Gold/3PDT                         |
| 5    | Silver/SPDT (90° 2-position only) |
| 6    | Silver/DPDT                       |
| 7    | Silver/3PDT                       |

#### ④ Others

| Code  | Specification                         | Part No. Example |
|-------|---------------------------------------|------------------|
| Blank | Solder/Tab Terminal                   | —                |
| V     | PC Board Terminal (Gold Contact Only) | LBW6S-2T1V       |

## Selector Switches (Sub-assembled)



## Contact Block

| Terminal Style                                                                    | Material   | Contact | Part Number |
|-----------------------------------------------------------------------------------|------------|---------|-------------|
|  | Solder/Tab | Silver  | SPDT LB-T5  |
|                                                                                   |            |         | DPDT LB-T6  |
|                                                                                   |            |         | 3PDT LB-T7  |
|  | PCB        | Gold    | SPDT LB-T1V |
|                                                                                   |            |         | DPDT LB-T2V |
|                                                                                   |            |         | 3PDT LB-T3V |

SPDT contacts applicable for 2-position switches only.

## Operator

| Style                                                                                         | Shape  | Position | Function         | Part Number |
|-----------------------------------------------------------------------------------------------|--------|----------|------------------|-------------|
| <br>Round   | Round  | 2        | Maintained       | LBW6S-2Y    |
|                                                                                               |        | 3        | Maintained       | LBW6S-3Y    |
|                                                                                               |        |          | Spring from both | LBW6S-33Y   |
| <br>Square | Square | 2        | Maintained       | LBW7S-2Y    |
|                                                                                               |        | 3        | Maintained       | LBW7S-3Y    |
|                                                                                               |        |          | Spring from both | LBW7S-33Y   |
| <br>Round  | Round  | 2        | Maintained       | LBW6MS-2Y   |
|                                                                                               |        | 3        | Maintained       | LBW6MS-3Y   |
|                                                                                               |        |          | Spring from both | LBW6MS-33Y  |
| <br>Square | Square | 2        | Maintained       | LBW7MS-2Y   |
|                                                                                               |        | 3        | Maintained       | LBW7MS-3Y   |
|                                                                                               |        |          | Spring from both | LBW7MS-33Y  |

## Key Selector Switches

| Part No.       | LBW①K-②③T④⑤-⑥                                                                     |                                                                                   |                                                                                   |                                                                                    | Disc Tumbler Key                                                                    |                                                                                     |
|----------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                | Wave Key                                                                          |                                                                                   |                                                                                   |                                                                                    | Disc Tumbler Key                                                                    |                                                                                     |
|                |  |  |  |  |  |  |
|                | Round / Black Bezel                                                               | Square / Black Bezel                                                              | Round / Metallic Bezel                                                            | Square / Metallic Bezel                                                            | Round / Metallic Bezel                                                              | Square / Metallic Bezel                                                             |
| ① Style        | ② Operator Position                                                               |                                                                                   | ⑤ Key Removable Position                                                          | ⑤ Contact                                                                          | Part No.                                                                            |                                                                                     |
|                |                                                                                   |                                                                                   |                                                                                   |                                                                                    | Gold Contact                                                                        | Silver Contact                                                                      |
| Black bezel    | 90° 2-position                                                                    | Maintained                                                                        | A: Key removable in all positions                                                 | SPDT                                                                               | LBW①K-2ST1A                                                                         | LBW①K-2ST5A                                                                         |
|                |                                                                                   |                                                                                   |                                                                                   | DPDT                                                                               | LBW①K-2ST2A                                                                         | LBW①K-2ST6A                                                                         |
|                |                                                                                   |                                                                                   |                                                                                   | 3PDT                                                                               | LBW①K-2ST3A                                                                         | LBW①K-2ST7A                                                                         |
|                | 45° 3-position                                                                    | Maintained                                                                        | A: Key removable in all positions                                                 | DPDT                                                                               | LBW①K-3ST2A                                                                         | LBW①K-3ST6A                                                                         |
| Metallic bezel | 90° 2-position                                                                    | Maintained                                                                        | A: Key removable in all positions                                                 | SPDT                                                                               | LBW①K-2ST1A                                                                         | LBW①K-2ST5A                                                                         |
|                |                                                                                   |                                                                                   |                                                                                   | DPDT                                                                               | LBW①K-2ST2A                                                                         | LBW①K-2ST6A                                                                         |
|                |                                                                                   |                                                                                   |                                                                                   | 3PDT                                                                               | LBW①K-2ST3A                                                                         | LBW①K-2ST7A                                                                         |
|                | 45° 3-position                                                                    | Maintained                                                                        | A: Key removable in all positions                                                 | DPDT                                                                               | LBW①K-3ST2A                                                                         | LBW①K-3ST6A                                                                         |
|                |                                                                                   |                                                                                   |                                                                                   | 3PDT                                                                               | LBW①K-3ST3A                                                                         | LBW①K-3ST7A                                                                         |

- For operator position, see Part Number Interpretation below.
- For key removable position, see Part Number Interpretation below. The key cannot be removed in a spring returned position.
- Two keys are supplied.
- Besides the standard key (key number 0H), six other keys are available.
- Disc tumbler keys also available. Only the standard key is available. To specify, see Part Number Interpretation below.
- PC board terminals available for gold contacts. To specify, see Part Number Interpretation below.
- For contact operation, see 593.

### Part Number Interpretation

LBW①K-②③T④⑤-⑥



To be used for interpreting part numbers only, not for part number development.

#### ① Style

| Code | Shape                   |
|------|-------------------------|
| 6    | Round / Black Bezel     |
| 7    | Square / Black Bezel    |
| 6M   | Round / Metallic Bezel  |
| 7M   | Square / Metallic Bezel |

#### ② Operator Position

| Code | Operator Position                    |
|------|--------------------------------------|
| 2    | 90° 2-position maintained            |
| 3    | 45° 3-position maintained            |
| 33   | 45°-3-position spring return two-way |

#### ③ Key Style

| Code  | Key Style        |
|-------|------------------|
| S     | Wave key         |
| Blank | Disc tumbler key |

#### ④ Contacts

| Code | Contact                           |
|------|-----------------------------------|
| 1    | Gold/SPDT (90° 2-position only)   |
| 2    | Gold/DPDT                         |
| 3    | Gold/3PDT                         |
| 5    | Silver/SPDT (90° 2-position only) |
| 6    | Silver/DPDT                       |
| 7    | Silver/3PDT                       |

#### ⑤ Key Removal Position

2-position

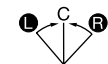
| Key Removable Position                                                              |                                                                                     |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| A: Key removable in all positions                                                   | B: Key removable at left position only                                              |
|  |  |

3-position

| Key Removable Position                                                                |                                                                                       |
|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| A: Key removable in all positions                                                     | D: Key removable at center only                                                       |
|  |  |

3-position

Spring return two-way



- Key removable at L, C, R.
- Key retained at L, R.

#### ⑥ Key Number (for wave keys only)

| Code        |                    |
|-------------|--------------------|
| 0H or Blank | Standard key       |
| 1H to 2H    | Reversible key     |
| 3H to 6H    | Non-reversible key |

#### Others

| Code  | Specification                         | Part No. Example |
|-------|---------------------------------------|------------------|
| Blank | Solder/Tab Terminal                   | —                |
| V     | PC Board Terminal (Gold Contact Only) | LBW6K-2T1VA      |

## Key Selector Switches (Sub-assembled)

| Contact Block | Operator | Completed Unit |
|---------------|----------|----------------|
|---------------|----------|----------------|



## Contact Block

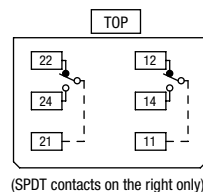
| Terminal Style                                                                    | Material   | Contact | Part Number |
|-----------------------------------------------------------------------------------|------------|---------|-------------|
|  | Solder/Tab | Silver  | SPDT LB-T5  |
|                                                                                   |            |         | DPDT LB-T6  |
|                                                                                   |            |         | 3PDT LB-T7  |
|  | PCB        | Gold    | SPDT LB-T1V |
|                                                                                   |            |         | DPDT LB-T2V |
|                                                                                   |            |         | 3PDT LB-T3V |

## Operator

| Style                                                                                                     | Shape  | Position | Function                             | Key Style        | Key Remove Position | Part number |
|-----------------------------------------------------------------------------------------------------------|--------|----------|--------------------------------------|------------------|---------------------|-------------|
| Black Plastic bezel<br> | Round  | 2        | 90° 2-position maintained            | Disc tumbler key | All positions       | LBW6K-2A    |
|                                                                                                           |        |          |                                      |                  | Left                | LBW6K-2B    |
|                                                                                                           |        |          |                                      | Wave key         | All positions       | LBW6K-2SA   |
|                                                                                                           |        |          |                                      |                  | Left                | LBW6K-2SB   |
|                                                                                                           |        | 3        | 45° 3-position maintained            | Disc tumbler key | All positions       | LBW6K-3A    |
|                                                                                                           |        |          |                                      |                  | Center              | LBW6K-3D    |
|                                                                                                           |        |          |                                      | Wave key         | All positions       | LBW6K-3SA   |
|                                                                                                           |        |          |                                      |                  | Center              | LBW6K-3SD   |
|                                                                                                           |        |          | 45°-3-position spring return two-way | Disc tumbler key | All positions       | LBW6K-33D   |
|                                                                                                           |        |          |                                      | Wave key         | Center              | LBW6K-33SD  |
|                                                                                                           | Square | 2        | 90° 2-position maintained            | Disc tumbler key | All positions       | LBW7K-2A    |
|                                                                                                           |        |          |                                      |                  | Left                | LBW7K-2B    |
|                                                                                                           |        |          |                                      | Wave key         | All positions       | LBW7K-2SA   |
|                                                                                                           |        |          |                                      |                  | Left                | LBW7K-2SB   |
|                                                                                                           |        | 3        | 45° 3-position maintained            | Disc tumbler key | All positions       | LBW7K-3A    |
|                                                                                                           |        |          |                                      |                  | Center              | LBW7K-3D    |
|                                                                                                           |        |          |                                      | Wave key         | All positions       | LBW7K-3SA   |
|                                                                                                           |        |          |                                      |                  | Center              | LBW7K-3SD   |
|                                                                                                           |        |          | 45°-3-position spring return two-way | Disc tumbler key | Center              | LBW7K-33D   |
|                                                                                                           |        |          |                                      | Wave key         |                     | LBW7K-33SD  |

| Style                                                                                               | Shape  | Position | Function                             | Key Style        | Key Remove Position | Part number |
|-----------------------------------------------------------------------------------------------------|--------|----------|--------------------------------------|------------------|---------------------|-------------|
| Metallic Bezel<br> | Round  | 2        | 90° 2-position maintained            | Disc tumbler key | All positions       | LBW6MK-2A   |
|                                                                                                     |        |          |                                      |                  | Left                | LBW6MK-2B   |
|                                                                                                     |        |          |                                      | Wave key         | All positions       | LBW6MK-2SA  |
|                                                                                                     |        |          |                                      |                  | Left                | LBW6MK-2SB  |
|                                                                                                     |        | 3        | 45° 3-position maintained            | Disc tumbler key | All positions       | LBW6MK-3A   |
|                                                                                                     |        |          |                                      |                  | Center              | LBW6MK-3D   |
|                                                                                                     |        |          |                                      | Wave key         | All positions       | LBW6MK-3SA  |
|                                                                                                     |        |          |                                      |                  | Center              | LBW6MK-3SD  |
|                                                                                                     |        |          | 45°-3-position spring return two-way | Disc tumbler key | Center              | LBW6MK-33D  |
|                                                                                                     |        |          |                                      | Wave key         |                     | LBW6MK-33SD |
|                                                                                                     | Square | 2        | 90° 2-position maintained            | Disc tumbler key | All positions       | LBW7MK-2A   |
|                                                                                                     |        |          |                                      |                  | Left                | LBW7MK-2B   |
|                                                                                                     |        |          |                                      | Wave key         | All positions       | LBW7MK-2SA  |
|                                                                                                     |        |          |                                      |                  | Left                | LBW7MK-2SB  |
|                                                                                                     |        | 3        | 45° 3-position maintained            | Disc tumbler key | All positions       | LBW7MK-3A   |
|                                                                                                     |        |          |                                      |                  | Center              | LBW7MK-3D   |
|                                                                                                     |        |          |                                      | Wave key         | All positions       | LBW7MK-3SA  |
|                                                                                                     |        |          |                                      |                  | Center              | LBW7MK-3SD  |
|                                                                                                     |        |          | 45°-3-position spring return two-way | Disc tumbler key | Center              | LBW7MK-33D  |
|                                                                                                     |        |          |                                      | Wave key         |                     | LBW7MK-33SD |

### Key Selector Switches with Wave Key

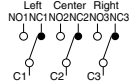
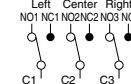
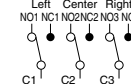
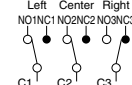
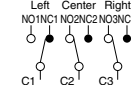
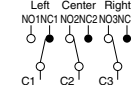


- For details on mounting hole layout, see **593**.
- For details on pc board and circuit design, see **594**.
- For details on single board mounting, see **593**.

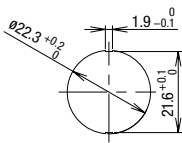
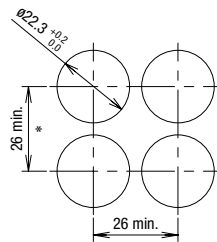


## Contact Operation

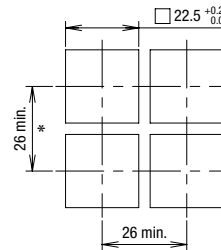
## Selector Switch, Illuminated Selector Switch, Key Selector Switch

| Operator Position & Contact Operation (Top View) |                                                                                                 |                                                                                                               |                                                                                                               |                                                                                                            |        |                                                                                    |                                                                                     |                                                                                     |
|--------------------------------------------------|-------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|--------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Position                                         |                                                                                                 |                                                                                                               |                                                                                                               | Contact                                                                                                    | ↙ Left | ↑ Center                                                                           | ↘ Right                                                                             |                                                                                     |
| 90°<br>2-position                                | <br>Maintained |                                                                                                               | <br>Spring return from right |                                                                                                            | SPDT   |   |  |  |
|                                                  |                                                                                                 |                                                                                                               |                                                                                                               |                                                                                                            | DPDT   |  |  |  |
|                                                  |                                                                                                 |                                                                                                               |                                                                                                               |                                                                                                            | 3PDT   |  |  |  |
| 45°<br>3-position                                | <br>Maintained | <br>Spring return from right | <br>Spring return from left  | <br>Spring return two-way | DPDT   |  |  |  |
|                                                  |                                                                                                 |                                                                                                               |                                                                                                               |                                                                                                            | 3PDT   |  |  |  |
|                                                  |                                                                                                 |                                                                                                               |                                                                                                               |                                                                                                            |        |                                                                                    |                                                                                     |                                                                                     |

## Mounting Hole Layout (mm)

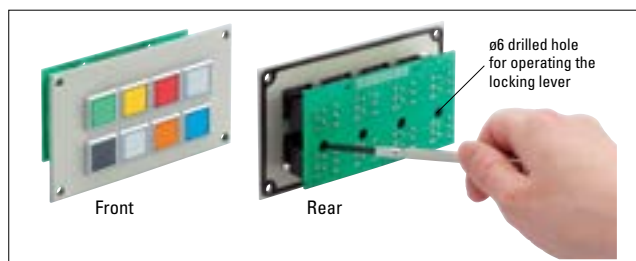
LBW Series Flush Bezel  
(LBW6/LBW6M/LBW6G)LBW Series Flush Bezel  
LBW6/LBW6M/LBW6G

\* 53 mm minimum for switches with guard

LBW Series Flush Bezel  
LBW7/LBW7M/LBW7G

## Single Board Mounting

IDEC's LBW Series is available for single board mounting.



## Assembly Procedure

1. Install the operator to the panel.
  2. Mount the contact block to the operator from the rear.
  3. Turn the locking lever to lock the contact block.
  4. Insert the PC board to terminals and solder.
- Note 1: Make sure that each terminal is inserted into the PC board correctly.
- Note 2: Do not apply tensile force to the connector cable for an extended period of time.
- Note 3: Do not expose the contact block to water.
- Note 4: Ensure to lock contact blocks when the contact blocks are installed on the operators. UP series can be installed on the same board. For details, see 599.

## Installing and Removing Contact Blocks

Turn the locking lever to install and remove contact blocks on the PC using a screwdriver from a hole in the PC board. See "Notes for Designing PC Board and Circuit" on 594. Determine the location of the switches so that the locking lever can be operated. See "Removing and Installing the Contact Block" on 598.

## Mounting Holes and Assembly Procedure

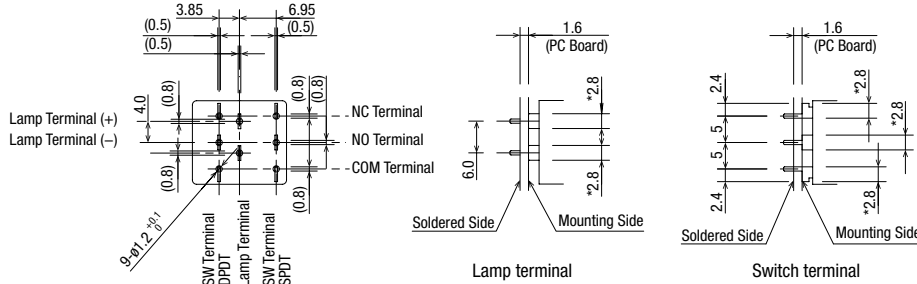
Drill mounting holes in the panel as shown below. When the units are mounted collectively, provide adequate clearance.

## Notes for Designing PC Board and Circuit

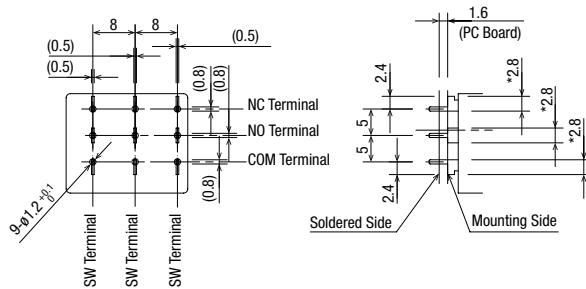
All dimensions in mm.

- Use 1.6-mm-thick glass epoxy PC board with drilled holes.
- Design a circuit so that the LBW series can operate within the rated voltage and current range. Make sure that inrush current and voltage do not exceed the rating.
- Minimum applicable load is 5V AC/DC, 1 mA on gold contacts. Applicable range is subject to the operating condition and load.
- Since the ø2.8-mm-wide terminal touches the PC board as shown on the right, short circuit may occur with pattern lines. Design a circuit that prevents short circuits.

### SPDT/DPDT Contacts

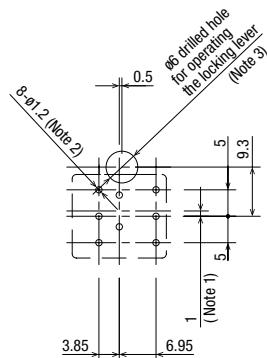


### 3PDT Contacts

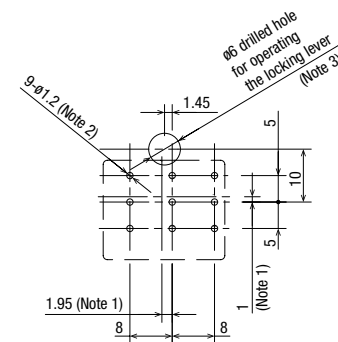


### PC Board Drilling Layout (Bottom View)

#### SPDT/DPDT Contacts



#### 3PDT Contacts

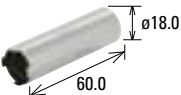


Note 1: When designing, note the alignment of center lines of the contact blocks and center lines of the operators.

Note 2: The diameter of the terminal hole is ø1.2.

Note 3: Hole diameter may vary to meet installation requirements. Determine the location and the size of the hole so that the locking lever can be operated.

## Accessories

| Shape                                                                                                                                                                                                                                                                                                                                                                                                                                              | Specification                                                                                            | Part No.          | Remarks                                                                                                                                                                                    |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Locking Ring Wrench<br>                                                                                                                                                                                                                                                                                                                                           | Metal<br>(Nickel-plated brass)                                                                           | <b>MT-001</b>     | Used to tighten the locking ring when installing the units on to the panel.                                                                                                                |
| For Standard Bezels<br>Lens Removal Tool<br>                                                                                                                                                                                                                                                                                                                      | Stainless Steel                                                                                          | <b>MT-101</b>     | Used to remove the lens or button.<br>(for standard bezels)                                                                                                                                |
| For LBW Series Flush Bezels<br>Mounting Hole Plug<br><br><br>Mounting Hole Plug<br><br>Mounting Hole Plug<br> | 1. For round units<br>(LBW6/LBW6M)<br>[Plug]<br>Polyamide (Black)<br>[Gasket]<br>Nitrile rubber          | <b>LBW9Z-BS6*</b> | * Color code: blank (black), W (white)<br>Degree of protection: IP65<br>Panel thickness: 0.5 to 3.2 mm<br>See <b>596</b> for dimensions.                                                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2. For square units<br>(LBW7/LBW7M)<br>[Mounting Plate]<br>Stainless Steel                               | <b>LBW9Z-BS7*</b> |                                                                                                                                                                                            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Metal<br>[Plug]<br>Zinc diecast<br>[Locking Ring]<br>Polyamide<br>[Gasket]<br>Nitrile rubber             | <b>LW9Z-BM</b>    | Degree of protection: IP66<br>Tightening torque: 1.2 N·m<br>See <b>596</b> for dimensions.                                                                                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Rubber<br>Nitrile rubber                                                                                 | <b>LW9Z-BP1</b>   | Degree of protection: IP65<br>Tightening torque: 2.0 N·m<br>See <b>596</b> for dimensions.                                                                                                 |
| Terminal Cover<br><br>                                                                                                                                                                                                                                                       | 1. For SPDT/DPDT<br>contacts<br>PBT<br>(White)                                                           | <b>LB9Z-VL2</b>   | See <b>596</b> for dimensions.<br>See <b>598</b> for mounting.                                                                                                                             |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2. For 3PDT<br>contacts                                                                                  | <b>LB9Z-VL3</b>   |                                                                                                                                                                                            |
| Key<br><br>Reversible key<br><br>Non-reversible key<br>                                                                                                                                   | For key selector<br>switches<br>(wave key)<br>Metal<br>(zinc nickel-plated)                              | <b>LA9Z-SK-*</b>  | Specify a key number in place of * in the<br>Part No.<br>Blank: Standard key 0H (reversible)<br>1H to 2H: Reversible key<br>3H to 6H: Non-reversible key<br>See <b>596</b> for dimensions. |
| Keys<br>                                                                                                                                                                                                                                                                                                                                                        | For key selector<br>switches<br>(disc tumbler key)<br>Metal (brass<br>nickel-plated)<br>18×1.8×25.1 t1.8 | <b>AS6-SK-132</b> |                                                                                                                                                                                            |

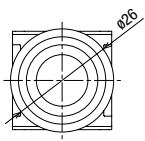
## Accessories

| Shape                                                                                                          |                             | Material / Dimensions (W×H×D)                  | Part No.          | Remarks                                                                                                                                                                         |
|----------------------------------------------------------------------------------------------------------------|-----------------------------|------------------------------------------------|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Lens</b><br>               | 1. For round flush units    | Polyarylate<br>ø20 H4                          | <b>HA9Z-L11*</b>  | Specify the color code in place of * in the part no.<br>A: Amber, C: Clear, G: Green, R: Red,<br>S: Blue, Y: Yellow<br>Note: Use a clear lens for pure white (PW) illumination. |
|                                                                                                                | 2. For square flush units   | Polyarylate<br>ø20 H4                          | <b>HA9Z-L21*</b>  |                                                                                                                                                                                 |
|                                                                                                                | 3. For round extended units | Polyarylate<br>ø20.2 H7.8                      | <b>LBW9Z-L12*</b> | Specify the color code in place of * in the part no.<br>A: Amber, G: Green, R: Red, S: Blue,<br>W: clear, Y: Yellow<br>Note: Use a clear lens for pure white (PW) illumination. |
| <b>Buttons</b><br>            | 1. For round flush units    | Polyacetal<br>ø20 H3.2 (L5)                    | <b>HA9Z-B11*</b>  | Specify the color code in place of * in the part no.<br>B: Black, G: Green, R: Red, S: Blue<br>W: White, Y: Yellow                                                              |
|                                                                                                                | 2. For square flush units   | Polyacetal<br>ø20 H3.9 (L5)                    | <b>HA9Z-B21*</b>  |                                                                                                                                                                                 |
|                                                                                                                | 3. For round extended units | Polyacetal<br>ø19.8 H7.3 (L9.1)                | <b>HA9Z-B12*</b>  |                                                                                                                                                                                 |
| <b>Marking plate</b><br>      | 1. For round flush units    | Acrylic<br>ø17 t0.85 (L1.1)                    | <b>HA9Z-P1*</b>   | Specify the color code in place of * in the part no.<br>B: Black, W: White                                                                                                      |
|                                                                                                                | 2. For square units         | Acrylic<br>□18.4 t0.85                         | <b>HA9Z-P2*</b>   |                                                                                                                                                                                 |
|                                                                                                                | 3. For extended units       | Acrylic<br>ø15 t3.0                            | <b>LBW9Z-P12W</b> |                                                                                                                                                                                 |
| <b>Anti-rotation Ring</b><br> | LBW series                  | Metal<br>(Stainless steel)<br>25×8.2×24.8 t0.8 | <b>LBW9Z-LP6</b>  |                                                                                                                                                                                 |
| <b>Locking ring</b><br>      | All models                  | Polyamide<br>ø17.9 H3.9                        | <b>LB9Z-LN</b>    |                                                                                                                                                                                 |

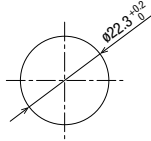
## Dimensions for Accessories

All dimensions in mm.

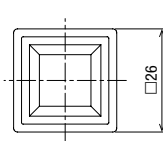
### For round units (LBW9Z-BS6\*)



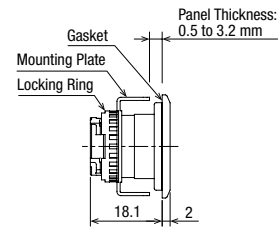
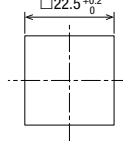
### Mounting Hole Layout



### For round units (LBW9Z-BS6\*)

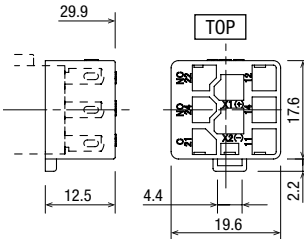


### Mounting Hole Layout

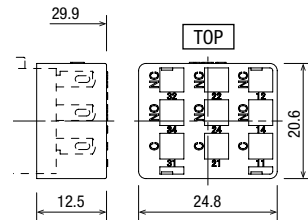


## Terminal Cover

### For SPDT/DPDT contacts (LB9Z-VL2)

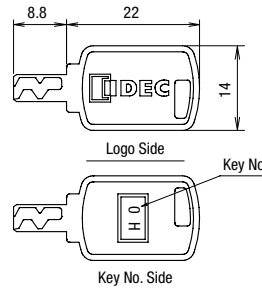


### For 3PDT contacts (LB9Z-VL3)

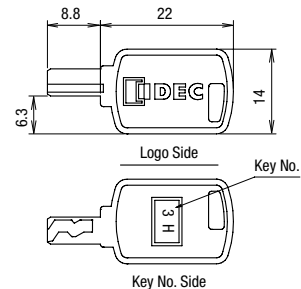


## Key (Wave Key)

### Reversible key



### Non-reversible key



## Maintenance Parts

## Maintenance LED Unit

Package Quantity: 1

| Shape                                                                             | Rated Operating Voltage | Part No.<br>(Ordering No.) | * Color Code                                    |
|-----------------------------------------------------------------------------------|-------------------------|----------------------------|-------------------------------------------------|
|  | 5V DC                   | <b>LB9Z-LED5*</b>          | A: Amber                                        |
|                                                                                   | 12V AC/DC               | <b>LB9Z-LED1*</b>          | G: Green                                        |
|                                                                                   | 24V AC/DC               | <b>LB9Z-LED2*</b>          | PW: Pure White<br>R: Red<br>S: Blue<br>W: White |

- Use a pure white (PW) LED unit for yellow (Y) illumination.

## Transformer

Package Quantity: 1

| Transformer                                                                       | Primary Voltage | Secondary Voltage      | Part No.<br>(Ordering No.) | Applicable Load                    |
|-----------------------------------------------------------------------------------|-----------------|------------------------|----------------------------|------------------------------------|
|  | 100/110V AC     | 100/110V AC $\pm 10\%$ | <b>TWR512</b>              | LB9Z-LED2*<br>(24V AC/DC LED unit) |
|                                                                                   | 200/220V AC     | 200/220V AC $\pm 10\%$ | <b>TWR522</b>              |                                    |
|                                                                                   | 400/440V AC     | 400/440V AC $\pm 10\%$ | <b>TWR542</b>              |                                    |

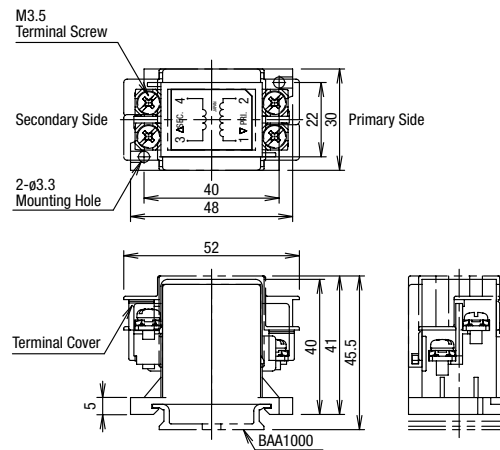
- Terminal cover (TWR-VL3) is supplied as standard.
- Connect one LB9Z-LED2\* to a transformer.

## Specifications

| Part No.                 | TWR5□2                                                                                     |
|--------------------------|--------------------------------------------------------------------------------------------|
| Operating Voltage        | 100/110V AC, 200/220V AC, 400/440V AC (50/60Hz)                                            |
| Current Draw             | 2.4VA                                                                                      |
| Rated Insulation Voltage | 600V                                                                                       |
| Insulation Resistance    | 100 M $\Omega$ minimum (500V DC megger)                                                    |
| Operating Temperature    | -30 to +60°C (no freezing)                                                                 |
| Storage Temperature      | -40 to +80°C (no freezing)                                                                 |
| Operating Humidity       | 35 to 85% RH (no condensation)                                                             |
| Vibration Resistance     | Damage Limits: 30 Hz, amplitude 1.5 mm<br>Operating extremes: 5 to 55 Hz, amplitude 0.5 mm |
| Shock Resistance         | Damage limits: 1,000 m/s <sup>2</sup><br>Operating Extremes: 100 m/s <sup>2</sup>          |
| Dielectric Strength      | 2,500V AC, 1 minute                                                                        |
| Terminal Screw           | M3.5                                                                                       |
| Applicable Wire          | 2 mm <sup>2</sup> maximum, 2 wires maximum                                                 |
| Weight (approx.)         | 87g                                                                                        |

## Dimensions

All dimensions in mm.



- Use end clip BC9Z-E/N35NPN10 when using 400/440V AC primary voltage transformers.

## Precautions & Instructions Safety Precautions

- Turn off the power to the LBW series control units before installation, removal, wiring, maintenance, and inspection. Failure to turn power off may cause electrical shocks or fire hazard.
- To avoid burning your hand, use the lamp holder tool when replacing the lamps.
- For wiring, use wires of a proper size to meet voltage and current requirements. Solder correctly according to the instructions in "Wiring" and "Notes on Terminal Cover." Improper soldering may cause overheating and create a fire hazard. Also, when using tab terminals, use receptacles of appropriate size.

## Instructions

### Wiring

1. Solder the terminals at 350°C within 3 seconds using a 60W soldering iron. Sn-Ag-Cu type is recommended. When soldering, do not touch the LB series with the soldering iron. Also ensure that no tensile force is applied to the terminals. Do not bend the terminal or apply excessive force to the terminal.
2. Use non-corrosive liquid flux.

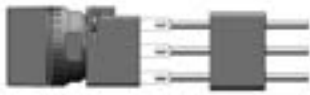
### Terminal Cover

#### Solder/tab terminal

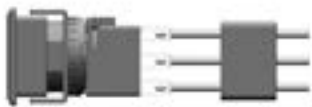
Insert the terminal cover into the contact block with the TOP markings on the contact block and the terminal cover in the same direction.

Note: When wiring, insert the lead wires into the terminal cover holes before soldering. After wiring, terminal covers cannot be installed.

#### Standard Bezel



#### Flush Bezel



### Operating Environment

- Do not use the LB series where corrosive gases exist or under an environment exceeding the operating temperature and humidity ranges. Otherwise, damage such as contact failure or change of the surface color may occur.
- Major parts of the switch are plastic. Scratches or damage may occur when scraped with a sharp object or if excessive load or shock is applied. Note that this may cause operation and appearance failure of the operator and bezel.
- Application of detergent, cutting oil, or special chemicals to the switch may result in operation and/or appearance failure such as a change in surface color.

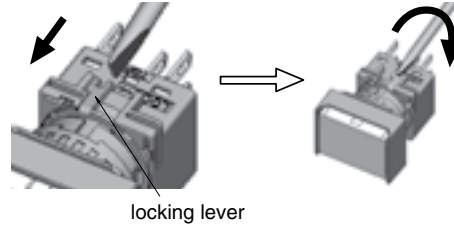
### Handling

#### Contacts (micro switch)

When using NC (normally closed) and NO (normally open) contacts of the same microswitch, avoid connections of different voltages, or connections of different types of power supplies. Failure to observe this instruction may cause a short-circuit.

### Removing and Installing the Contact Block

3. Turn the locking lever on the contact block in the direction opposite to the arrow on the housing. Then the contact block can be removed.
4. Insert the contact block with the TOP markings on the contact block and the operator placed in the same direction. Then lock the units, turning the locking lever in the direction of the arrow.

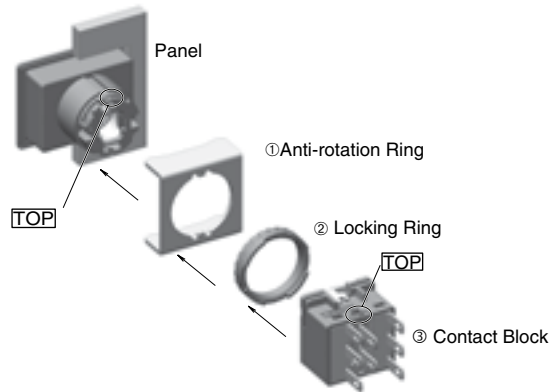


locking lever

### Panel Mounting

Remove the contact block from the operator. Insert the operator into the panel cut-out from the front, then install the contact block to the operator.

### Flush Bezel



### Notes on Mounting

Use the optional ring wrench (MT-001) to mount the operator onto the panel. Tightening torque should not exceed 0.7 N·m. Do not use pliers. Excessive tightening will damage the locking ring.

### Mounts on the same panel as LB/LBW series

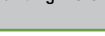
- Three illumination colors: Green (G), red (R), and white (W)

## Specifications

|                                   |                                           |                                                   |                                   |
|-----------------------------------|-------------------------------------------|---------------------------------------------------|-----------------------------------|
| Color Code                        |                                           | Red (R), White (W)                                | G (Green)                         |
| Rated Current (I)                 |                                           | 7mA                                               | 2mA                               |
| Maximum Current (Ta: 25°C)        | Reverse Voltage (V <sub>R</sub> )         | 9V                                                | 5V                                |
|                                   | Operating Temperature (T <sub>opr</sub> ) | -25 to +55°C (no freezing)                        |                                   |
|                                   | Storage Temperature (T <sub>stg</sub> )   | -30 to +80°C (no freezing)                        |                                   |
| Forward Voltage (V <sub>f</sub> ) |                                           | Standard value:<br>2V (If=7mA)                    | Standard value:<br>2.7V (If=2 mA) |
| Dielectric Voltage                |                                           | Between live and dead parts: 500V AC,<br>1 minute |                                   |
| Weight (approx.)                  |                                           | 4.3g (UP8-89V1), 5.1g (UP8-89V2)                  |                                   |



## UP Series

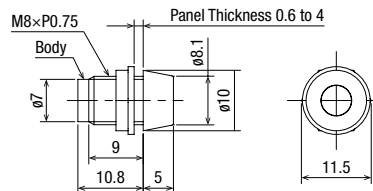
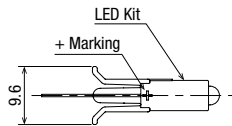
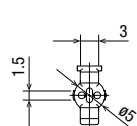
| Mounting Hole Size                                                                                                                                                                                                             | Shape  | Degree of Protection (IEC 60529) | Matching LB/ LBW Mounting Style | Part No.          | Illumination Color Code                                                                    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|---------------------------------|-------------------|--------------------------------------------------------------------------------------------|
| ø8<br>UP8<br><br>With standard bezel<br><br>With flush bezel | Shroud | IP40                             | Standard Bezel                  | <b>UP8-89V1*</b>  | Specify the color code in place of * in the Part No.<br><br>G: green<br>R: red<br>W: white |
|                                                                                                                                                                                                                                |        |                                  | Flush Bezel                     | <b>UP8-89V2*</b>  |                                                                                            |
| ø9<br>UP9P<br><br>                                           | Shroud | IP65                             | Standard bezel<br>Flush bezel   | <b>UP9P-99V1*</b> |                                                                                            |

- LED cannot be replaced.

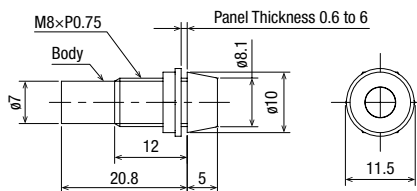
**Note:** Connect an external current limiting resistor in series. Otherwise, the LED may be damaged.

## Dimensions

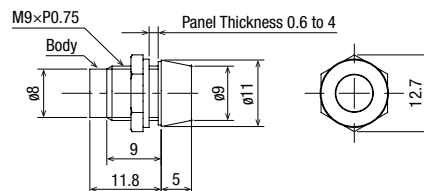
All dimensions in mm.



UP8-89V1

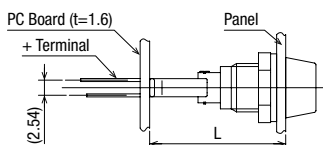


UP8-89V2



UP9P-99V1

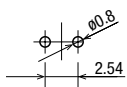
**[Assembly Drawing]**



### Dimensions (L )

|                |        |
|----------------|--------|
| Standard Bezel | 22.5mm |
| Flush Bezel    | 29.9mm |

### PC Board Mounting Hole



## Panel Cut-out

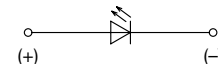
### UP8



## UP9P



### Internal Circuit



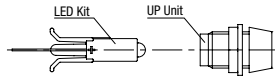
The longer pin is the positive terminal

### Safety Precautions

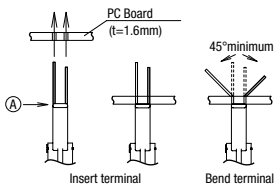
- Turn off power to the unit before installation, removal, wiring, maintenance, and inspection.  
Failure to turn off may cause electrical shocks or fire hazard.
- For wiring, use wires of a proper size to meet the voltage and current requirements.
- Improper soldering or failure to tighten the terminal screw may cause overheating and fire.

### Single Board Mounting

UP series miniature pilot light single board mounting types can be mounted with LB/ LBW series on the same panel. Follow the instructions below on single board mounting.



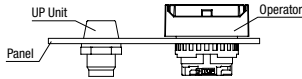
1. Mount the LED kit to the PC board.



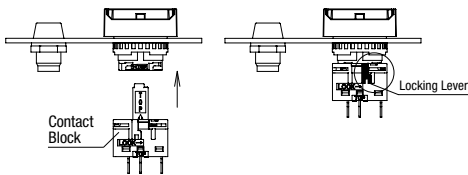
#### Temporary mounting

1. Note the polarity of the terminals and insert the terminals to the PC board.
2. Make sure that part A of the LED kit is pressed tightly to the PC board. Bend the terminals sideways as shown on the left.

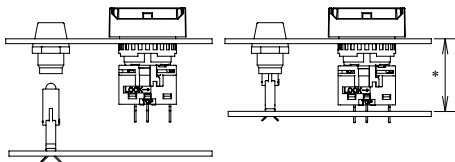
2. Mount the operator and the UP series pilot lights on to the control panel.



3. Mount the contact block to the operator of the miniature control unit and lock the unit by turning the locking lever.



4. Install the PC board in 1. to the panel in 3.



Note: Make sure that the LED kit is inserted into the UP series unit.

\* When mounting LB/LBW and UP series on a single board, make sure that the distance between the front of the panel and the mounting side of the PC board (gasket distortion is taken into consideration) is as shown in the table below.

| Part No.   | Mountable Unit | Distance (*) |
|------------|----------------|--------------|
| UP8-89V1*  | Standard bezel | 22.5mm       |
| UP8-89V2*  | Flush bezel    | 29.9mm       |
| UP9P-99V1* | Standard bezel | 22.5mm       |
|            | Flush bezel    | 29.9mm       |

5. Solder the terminals.  
Before soldering, make sure that each terminal of the contact block is securely inserted into the PC board holes.

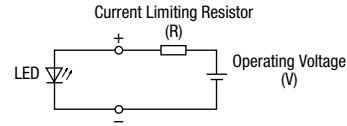
### Instructions

#### Polarity

Pay attention to the polarity of the power supply as UP series units do not contain a diode for protection against reverse polarity. The long terminal is positive and the short terminal is negative.

#### Current Limiting Resistor

When using a UP series unit without a built-in current limiting resistor, connect an external current limiting resistor. Calculate the resistance using the following formula.



$$\text{Resistance } (\Omega) = \frac{\text{Operating Voltage (V)} - \text{Forward Voltage (Vf)}}{\text{Rated Current (I) *}}$$

- \* Rated Current (I) = R (red), W (white) : 0.007A  
G (green) : 0.002A
- Forward Voltage (Vf) = R (red), W (white) : 2V  
G (green) : 2.7V

Note: Use a resistor of higher resistance than the calculated value (Ω)

$$\text{Rated Wattage of Resistor (W)} = \text{Rated Current (I)} \times \text{Operating Voltage (V)} \times 2 \text{ to } 3 *$$

\* 2 to 3 is a safety factor

#### <Current Limiting Resistor Reference Value>

| Color             | Red (R), White (W) | Green (G)     |
|-------------------|--------------------|---------------|
| Operating Voltage |                    |               |
| 5V DC             | 430Ω (1/4W)        | 1200Ω (1/4W)  |
| 6V DC             | 560Ω (1/4W)        | 1600Ω (1/4W)  |
| 12V DC            | 1500Ω (1/4W)       | 4700Ω (1/4W)  |
| 24V DC            | 3000Ω (1/2W)       | 11000Ω (1/4W) |

#### Wiring

Solder the terminal at 350°C within 3 seconds using a 60W soldering iron. SnAgCu type lead-free solder is recommended.

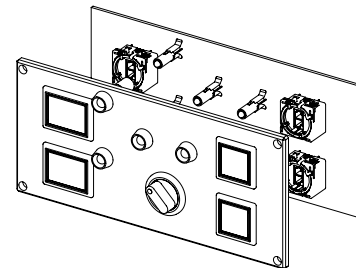
When soldering, do not touch the pilot light housing with the terminal. Do not bend the terminal or apply excessive force to the terminal.

#### Notes on Panel Mounting

Tightening torque should not exceed 0.49 N·m. Do not use pliers. Do not tighten with excessive force, otherwise the locking ring will be damaged.

#### PC Board and Circuit Design

Use glass epoxy copper clad laminate, double-sided through-hole PC boards with a thickness of 1.6 mm.



Example of single board mounting



## 22mm XW E-Stops

## Key features:

- The depth behind the panel can be as little as 46.4 mm for 1 to 4 contacts (with terminal cover) for illuminated and non-illuminated units.
- IDEC's original "Safe break action" ensures that the NC contacts open when the contact block is detached from the operator.
- 1 to 4NC main contacts and 1 or 2NO monitor contacts
- Push-to-lock, Pull or Turn-to-reset operator
- Models with mechanical indicator on the operator body show the normal/latched status (green: normal).
- Safety lock mechanism (IEC60947-5-5, 6.2)
- Degree of protection IP65 (IEC60529)
- Fingersafe (IP20) terminals
- Three button sizes: ø38, ø40 and ø60 mm
- Push-ON illumination type available (40mm mushroom head)
- Direct opening action mechanism (IEC60947-5-5, 5.2, IEC60947-5-1, Annex K)
- RoHS compliant (EU directive 2002/95/EC).
- UL c-UL listed. EN compliant
- UL NISD category emergency stop device (File# E305148)



UL File #E68961



CCC No. 2005010305150897



## Specifications

|                                                        |                                                                                                                                                                   |
|--------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Applicable Standards                                   | IEC60947-5-5, EN60947-5-5, JIS C8201-5-1, UL508, UL991, NFPA79, CSA C22.2 No. 14, GB14048.5                                                                       |
| Operating Temperature                                  | Non-illuminated: -25 to +60°C (no freezing), Illuminated: -25 to +55°C (no freezing)                                                                              |
| Operating Humidity                                     | 45 to 85% RH (no condensation)                                                                                                                                    |
| Storage Temperature                                    | -45 to +80°C                                                                                                                                                      |
| Operating Force                                        | Push-to-lock: 32N<br>Pull-to-reset: 21N<br>Turn-to-reset: 0.27N·m                                                                                                 |
| Minimum Force Required for Direct Opening Action       | 80N                                                                                                                                                               |
| Min Operator Stroke Required for Direct Opening Action | 4mm                                                                                                                                                               |
| Maximum Operator Stroke                                | 4.5mm                                                                                                                                                             |
| Contact Resistance                                     | 50mΩ maximum (initial value)                                                                                                                                      |
| Contact Material                                       | Gold plated silver                                                                                                                                                |
| Insulation Resistance                                  | 100MΩ minimum (500V DC megger)                                                                                                                                    |
| Impulse Withstand Voltage                              | 2.5kV                                                                                                                                                             |
| Pollution Degree                                       | 3                                                                                                                                                                 |
| Operation Frequency                                    | 900 operations/hour                                                                                                                                               |
| Shock Resistance                                       | Operating extremes: 150m/s <sup>2</sup> (15G), Damage limits: 1000m/s <sup>2</sup> (100G)                                                                         |
| Vibration Resistance                                   | Operating extremes: 10 to 500Hz, amplitude 0.35mm acceleration 50m/s <sup>2</sup><br>Damage limits: 10 to 500Hz, amplitude 0.35mm acceleration 50m/s <sup>2</sup> |
| Mechanical Life                                        | 250,000 operations minimum                                                                                                                                        |
| Electrical Life                                        | 100,000 operations minimum, (250,000 operations minimum @ 24V AC/DC, 100mA)                                                                                       |
| Degree of Protection                                   | Operator: IP65 (IEC60529)<br>Terminal: IP20 (when XW9Z-VL2MF is installed)                                                                                        |
| Terminal Style                                         | M3.0 screw terminal                                                                                                                                               |
| Recommended Tightening Torque for Locking Ring         | 2.0N·m                                                                                                                                                            |
| Wire Size                                              | 16 AWG max                                                                                                                                                        |
| Weight                                                 | ø40mm: 72g<br>ø60mm: 81g                                                                                                                                          |

## Part Numbers

### Standard Button Without Mechanical Indicator

| Style                    | Operator Type                             | Monitor Contact | Main Contact | Part Number     |
|--------------------------|-------------------------------------------|-----------------|--------------|-----------------|
| Non-Illuminated          | 40mm Mushroom                             | 1NO             | 1NC          | XW1E-BV411M-R   |
|                          |                                           | –               | 2NC          | XW1E-BV402M-R   |
|                          |                                           | 2NO             | 2NC          | XW1E-BV422M-R   |
|                          |                                           | 1NO             | 3NC          | XW1E-BV413M-R   |
|                          |                                           | –               | 4NC          | XW1E-BV404M-R   |
|                          | 60mm Mushroom                             | 1NO             | 1NC          | XW1E-BV511M-R   |
|                          |                                           | –               | 2NC          | XW1E-BV502M-R   |
|                          |                                           | 2NO             | 2NC          | XW1E-BV522M-R   |
|                          |                                           | 1NO             | 3NC          | XW1E-BV513M-R   |
|                          |                                           | –               | 4NC          | XW1E-BV504M-R   |
| Illuminated <sup>1</sup> | 40mm Mushroom with built-in 24V AC/DC LED | 1NO             | 1NC          | XW1E-LV411Q4M-R |
|                          |                                           | –               | 2NC          | XW1E-LV402Q4M-R |
|                          |                                           | 2NO             | 2NC          | XW1E-LV422Q4M-R |
|                          |                                           | 1NO             | 3NC          | XW1E-LV413Q4M-R |
|                          |                                           | –               | 4NC          | XW1E-LV404Q4M-R |
|                          | 40mm Mushroom Push-ON LED <sup>2</sup>    | 1NO             | 2NC          | XW1E-TV412Q4M-R |

### Smooth Button With Mechanical Indicator

| Style           | Operator Type                                          | Monitor Contact | Main Contact | Part Number      |
|-----------------|--------------------------------------------------------|-----------------|--------------|------------------|
| Non-Illuminated | 38mm Mushroom                                          | –               | 1NC          | XW1E-BV4TG01MR   |
|                 |                                                        | –               | 2NC          | XW1E-BV4TG02MR   |
|                 |                                                        | –               | 3NC          | XW1E-BV4TG03MR   |
|                 |                                                        | –               | 4NC          | XW1E-BV4TG04MR   |
|                 |                                                        | 1NO             | 1NC          | XW1E-BV4TG11MR   |
| Illuminated     | 38mm Mushroom                                          | 1NO             | 2NC          | XW1E-BV4TG12MR   |
|                 |                                                        | 1NO             | 3NC          | XW1E-BV4TG13MR   |
|                 |                                                        | 2NO             | 4NC          | XW1E-BV4TG22MR   |
|                 | 38mm Mushroom with built-in 24V AC/DC LED <sup>1</sup> | –               | 1NC          | XW1E-LV4TG01Q4MR |
|                 |                                                        | –               | 2NC          | XW1E-LV4TG02Q4MR |
|                 |                                                        | –               | 3NC          | XW1E-LV4TG03Q4MR |
|                 |                                                        | –               | 4NC          | XW1E-LV4TG04Q4MR |
|                 |                                                        | 1NO             | 1NC          | XW1E-LV4TG11Q4MR |
|                 |                                                        | 1NO             | 2NC          | XW1E-LV4TG12Q4MR |
|                 |                                                        | 1NO             | 3NC          | XW1E-LV4TG13Q4MR |
|                 |                                                        | 2NO             | 2NC          | XW1E-LV4TG22Q4MR |

-  1. The light is independent of the position of the switch, except for push-on LED type.  
2. The light only operates when the switch is pressed as it is internally wired.

-  Note: Pushlock pull/turn reset switches are locked when pressed, and reset when pulled or turned clockwise.  
1. LED lamp is not removable.

### XW Series EMO Switches

| Style         | NC Main Contact | NO Monitor Contact | Part Number        |
|---------------|-----------------|--------------------|--------------------|
| 40mm Mushroom | 1NC             | -                  | XW1E-BV401M-RH-EMO |
|               | 2NC             | -                  | XW1E-BV402M-RH-EMO |
|               | 3NC             | -                  | XW1E-BV403M-RH-EMO |
|               | 4NC             | -                  | XW1E-BV404M-RH-EMO |
|               | 1NC             | 1NO                | XW1E-BV411M-RH-EMO |
|               | 2NC             | 1NO                | XW1E-BV412M-RH-EMO |
|               | 3NC             | 1NO                | XW1E-BV413M-RH-EMO |
|               | 2NC             | 2NO                | XW1E-BV422M-RH-EMO |

### FB Enclosures with XW E-Stops

|                                                                                     |                                                |     |     |                   |
|-------------------------------------------------------------------------------------|------------------------------------------------|-----|-----|-------------------|
|  | 40mm Push-lock Turn/Pull Reset Non-Illuminated | 2NC | –   | FB1W-XW1E-BV402MR |
|                                                                                     |                                                | 1NC | 1NO | FB1W-XW1E-BV411MR |
|                                                                                     |                                                | 2NC | 2NO | FB1W-XW1E-BV422MR |
|                                                                                     |                                                | 3NC | 1NO | FB1W-XW1E-BV413MR |
|                                                                                     |                                                | 4NC | –   | FB1W-XW1E-BV404MR |
|  | 40mm Push-lock Turn/Pull Reset Illuminated*    | 2NC | –   | FB1W-XW1E-LV402MR |
|                                                                                     |                                                | 1NC | 1NO | FB1W-XW1E-LV411MR |
|                                                                                     |                                                | 2NC | 2NO | FB1W-XW1E-LV422MR |
|                                                                                     |                                                | 3NC | 1NO | FB1W-XW1E-LV413MR |
|                                                                                     |                                                | 4NC | –   | FB1W-XW1E-LV404MR |
|  | 60mm Push-lock Turn/Pull Reset Non-Illuminated | 2NC | –   | FB1W-XW1E-BV502MR |
|                                                                                     |                                                | 1NC | 1NO | FB1W-XW1E-BV511MR |
|                                                                                     |                                                | 2NC | 2NO | FB1W-XW1E-BV522MR |
|                                                                                     |                                                | 3NC | 1NO | FB1W-XW1E-BV513MR |
|                                                                                     |                                                | 4NC | –   | FB1W-XW1E-BV504MR |



For added safety, Switch Guards and Nameplates can be used with E-Stop Enclosures



\*LED illumination voltage: 24V AC/DC

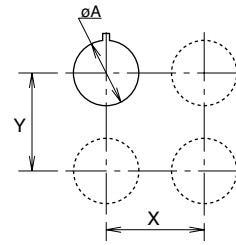
## Contact Ratings

|                               |                       |            |                        |      |       |      |
|-------------------------------|-----------------------|------------|------------------------|------|-------|------|
| Rated Insulation Voltage (Ui) |                       | 250V       |                        |      |       |      |
| Rated Current (Ith)           |                       | 5A         |                        |      |       |      |
| Rated Operating Voltage (Ue)  |                       | 30V        | 125V                   | 250V |       |      |
| Rated Operating Current       | Main Contacts (NC)    | AC 50/60Hz | Resistive Load (AC-12) | —    | 5A    | 3A   |
|                               |                       |            | Inductive Load (AC-15) | —    | 3A    | 1.5A |
|                               | DC                    | DC         | Resistive Load (DC-12) | 2A   | 0.4A  | 0.2A |
|                               |                       |            | Inductive Load (DC-13) | 1A   | 0.22A | 0.1A |
|                               | Monitor Contacts (NO) | AC 50/60Hz | Resistive Load (AC-12) | —    | 1.2A  | 0.6A |
|                               |                       |            | Inductive Load (AC-14) | —    | 0.6A  | 0.3A |
|                               | DC                    | DC         | Resistive Load (DC-12) | 2A   | 0.4A  | 0.2A |
|                               |                       |            | Inductive Load (DC-13) | 1A   | 0.22A | 0.1A |



Minimum applicable load: 5V AC/DC, 1mA (reference value).  
The rated operating currents are measured at resistive/inductive load types specified in IEC 60947-5-1.

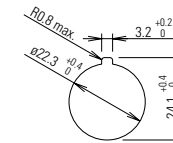
## Mounting Hole Layout



Measurements

| Size | øA                   | X & Y    |
|------|----------------------|----------|
| 40mm | 22.3 <sup>+0.4</sup> | 70mm min |

## Panel Cutout



## Illuminated Unit LED Ratings

| Operating Voltage | Current |
|-------------------|---------|
| 24V AC/DC ±10%    | 15mA    |

## Depth Behind the Panel

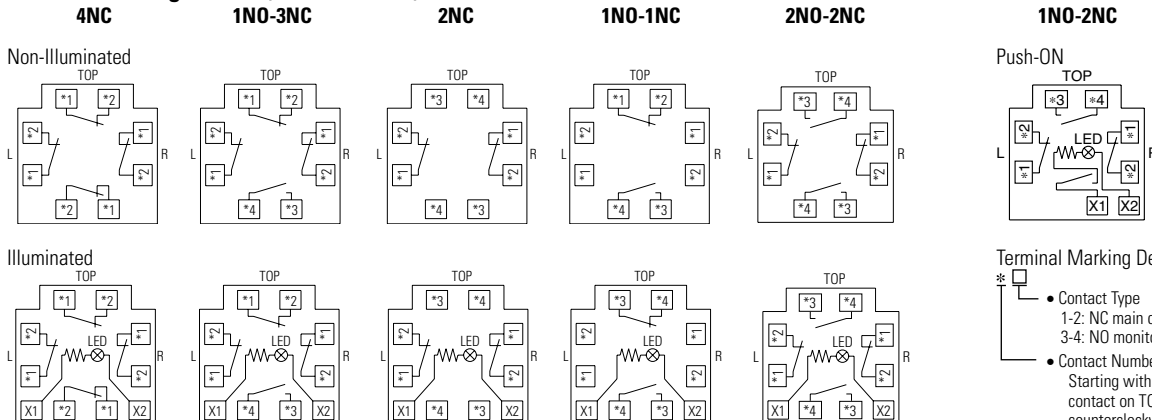
| Depth (mm) | Description                                                          |
|------------|----------------------------------------------------------------------|
| 46.4       | with indicator, 1 - 4 contacts, both illuminated and non-illuminated |
| 48.7       | w/o indicator, 1 - 4 contacts, both illuminated and non-illuminated  |

## Part Number Key

## XW1E - L V 4 TG 11 Q4MR

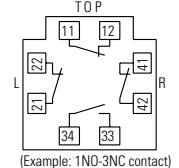
| Illumination               | Indicator                        | Contact Configuration          | Color                                         | Voltage Code              |
|----------------------------|----------------------------------|--------------------------------|-----------------------------------------------|---------------------------|
| B: Non-Illuminated         | TG: w/green mechanical indicator | 11: 1NO - 1NC                  | R: red with indicator                         | Blank: Non-illuminated    |
| L: Illuminated LED         | blank: w/o indicator             | 02: 2NC                        | -R: red w/o indicator                         | Q4: Illuminated 24V AC/DC |
| T: Illuminated Push-ON LED |                                  | 13: 1NO - 3NC                  | -RH-EMO: red w/o indicator with EMO engraving |                           |
|                            |                                  | 04: 4NC                        |                                               |                           |
|                            |                                  | 22: 2NO-2NC                    |                                               |                           |
|                            |                                  | 12: 1NO-2NC (Push-ON LED only) |                                               |                           |
|                            |                                  | 01: 1NC (EMO switch only)      |                                               |                           |
|                            |                                  | 03: 3NC (EMO switch only)      |                                               |                           |

## Terminal Arrangements (Bottom View)



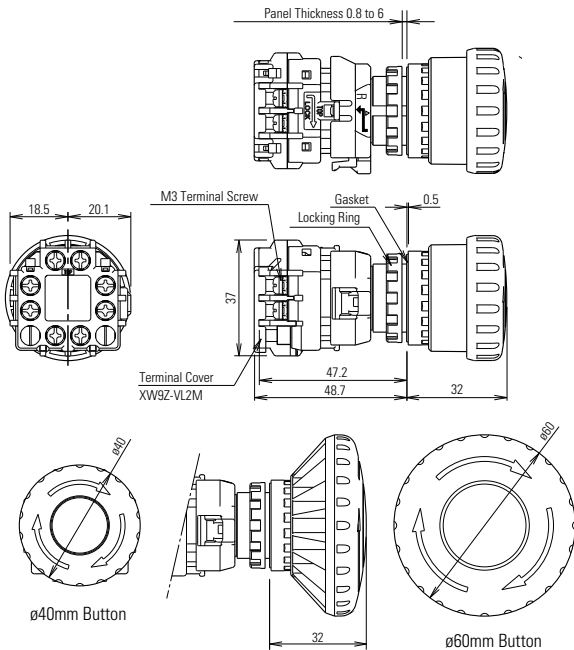
## Terminal Marking Description

- Contact Type
    - 1-2: NC main contact
    - 3-4: NO monitor contact
  - Contact Number (1-4)
    - Starting with the contact on TOP in a counterclockwise direction.
- Note:
- 1: contact on the TOP
  - 2: contact on the Left
  - 3: contact on the Bottom
  - 4: contact on the Right

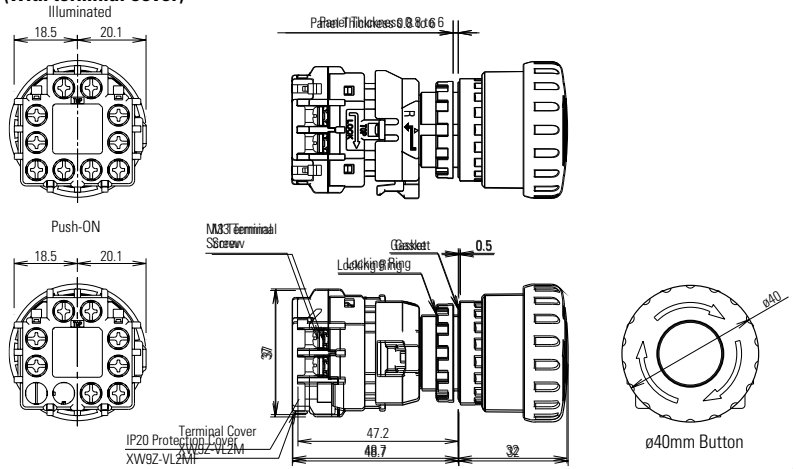


## Dimensions (mm)

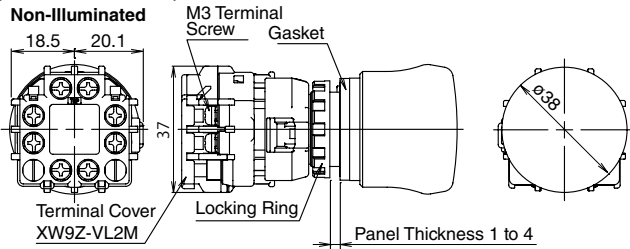
### XW Standard Button Non-Illuminated Without Indicator (with terminal cover)



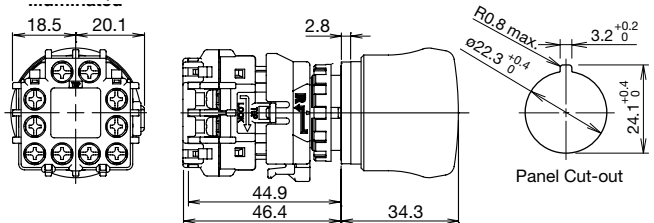
### XW Standard Button LED Illuminated/Push-ON Without Indicator (with terminal cover)



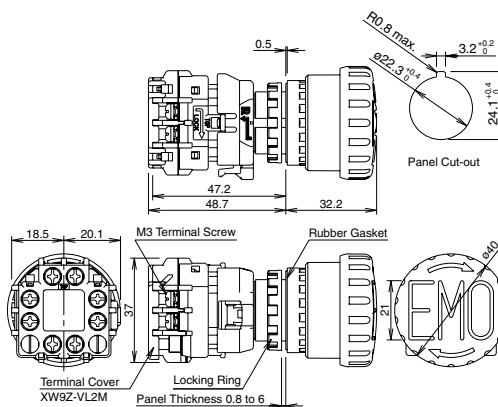
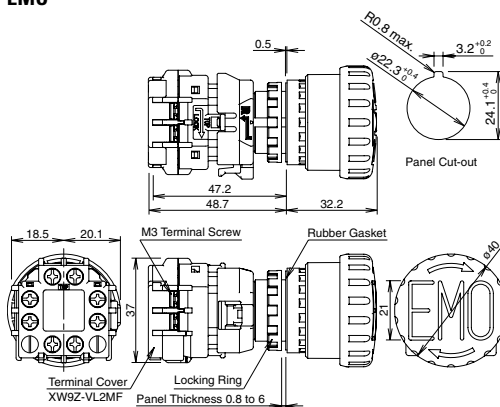
### XW Smooth Button Non-Illuminated With Indicator (with terminal cover)



### XW Smooth Button LED Illuminated/Push-ON With Indicator (with terminal cover)



### EMO



## Accessories: Terminal Covers

| Appearance                                                                        | Description                      | Part Numbers |
|-----------------------------------------------------------------------------------|----------------------------------|--------------|
|  | Terminal Cover for contact block | XW9Z-VL2M    |
|  | IP20 Fingersafe Cover            | XW9Z-VL2MF   |

## Accessories: Nameplates

| Appearance                                                                        | Legend           | Part Number | Inner Ø | Outer Ø |
|-----------------------------------------------------------------------------------|------------------|-------------|---------|---------|
|  | (blank)          | HWAV-0      | 22mm    | 60mm    |
|                                                                                   | "Emergency Stop" | HWAV-27     | 22mm    | 60mm    |
|                                                                                   | (blank)          | HWAV5-0     | 22mm    | 80mm    |
|                                                                                   | "Emergency Stop" | HWAV5-27    | 22mm    | 80mm    |



Use 60mm nameplates for 38mm and 40mm mushroom buttons and 80mm nameplates for 60mm mushroom buttons.

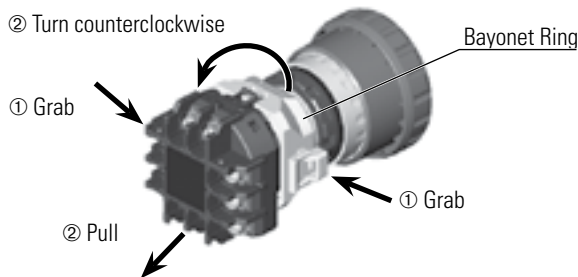
## Accessories: Shrouds

| Appearance                                                                        | Part Numbers | E-Stop Types                             | Applicable Standards                                 |
|-----------------------------------------------------------------------------------|--------------|------------------------------------------|------------------------------------------------------|
|  | HW9Z-KG1     | 38mm, 40mm<br>Mushroom Head              | SEMI S2-0703, 12.5.1<br>Compliant                    |
|  | HW9Z-KG2     | 38mm, 40mm,<br>and 60mm<br>Mushroom Head | SEMI S2-0703, 12.5.1 &<br>SEMATECH Compliant         |
|  | HW9Z-KG3     | 38mm, 40mm<br>Mushroom Head              | SEMI S2 Compliant<br>(Approved by TUV)               |
|  | HW9Z-KG4     | 38mm, 40mm<br>Mushroom Head              | SEMI S2 Compliant<br>(Approved by TUV)<br>& SEMATECH |

## Operating Instructions

## Removing the Contact Block

First unlock the operator button. Grab the bayonet ring ① and pull back the bayonet ring until the latch pin clicks ②, then turn the contact block counterclockwise and pull out ③.

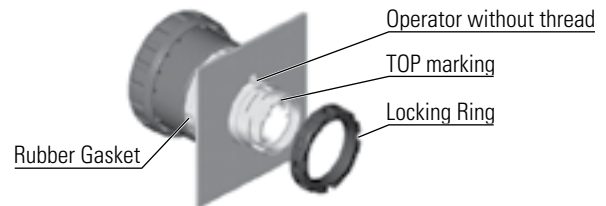


## Notes for removing the contact block

- When the contact block is removed, the monitor contact (NO contact) is closed.
- While removing the contact block, do not exert excessive force, otherwise the switch may be damaged.
- An LED lamp is built into the contact block for illuminated pushbuttons. When removing the contact block, pull the contact block straight to prevent damage to the LED lamp. If excessive force is exerted, the LED lamp may be damaged and fail to light.

## Panel Mounting

Remove the locking ring from the operator and check that the rubber gasket is in place. Insert the operator from panel front into the panel hole. Face the side without thread on the operator with TOP marking upward, and tighten the locking ring using ring wrench HW9Z-T1 to a torque of 2.0 N·m maximum.

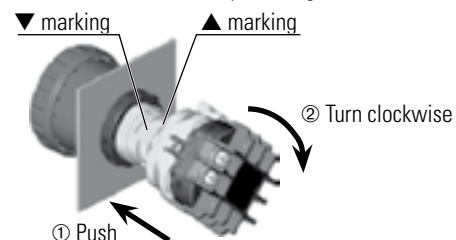


## Notes for Panel Mounting

To prevent the XW emergency stop switch from rotating when resetting from the latched position, use of an anti-rotation ring (HW9Z-RL) or a nameplate is recommended.

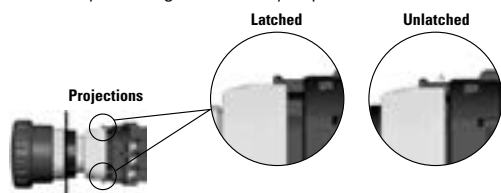
## Installing the Contact Block

First unlock the operator button. Align the small ▲ marking on the edge of the operator with the small ▼ marking on the yellow bayonet ring. Hold the contact block, not the bayonet ring. Press the contact block onto the operator and turn the contact block clockwise until the bayonet ring clicks.



## Notes for installing the contact block

Make sure that the bayonet ring is in the locked position. Check that the two projections on the bayonet ring are securely in place.



## Wiring

The applicable wire size is 16 AWG maximum.

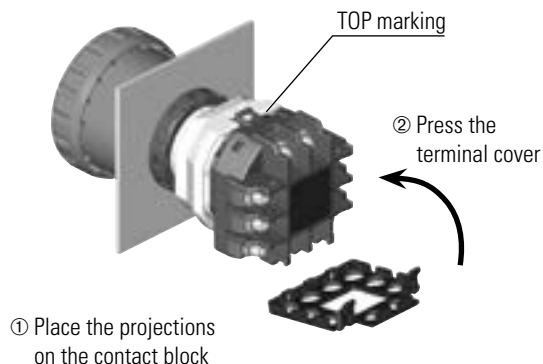
### Screw Terminal

1. Wire thickness: AWG18 to 16
2. Tighten the M3 terminal screw to a tightening torque of 0.6 to 1.0 N·m.

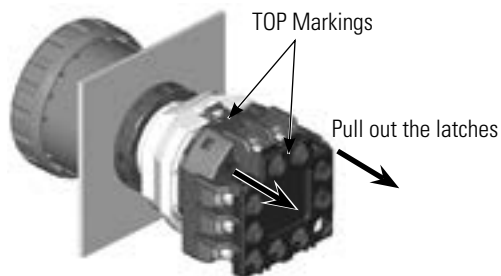
## Installing and Removing Terminal Covers

### XW9Z-VL2M

To install the terminal cover, align the TOP marking on the terminal cover with the TOP marking on the contact block. Place the two projections on the bottom side of the contact block into the slots in the terminal cover. Press the terminal cover toward the contact block.

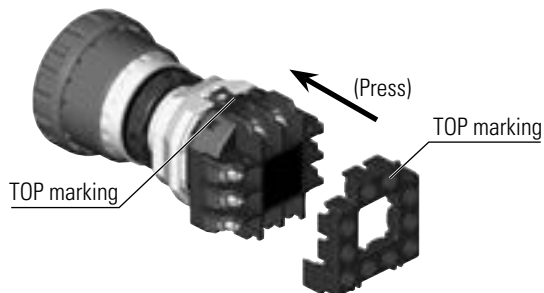


To remove the terminal cover, pull out the two latches on the top side of the terminal cover. Do not exert excessive force to the latches, otherwise the latches may break.



## IP20 Protection Terminal Cover XW9Z-VL2MF

To install the IP20 protection cover, align the TOP marking on the cover with the TOP marking on the contact block, and press the cover toward the contact block.



1. Once installed, the XW9Z-VL2MF cannot be removed.
2. The XW9Z-VL2MF cannot be installed after wiring.
3. With the XW9Z-VL2MF installed, crimping terminals cannot be used.
4. Make sure that the XW9Z-VL2MF is securely installed. IP20 protection cannot be achieved when installed loosely, and electric shocks may occur.

## Contact Bounce

When the button is reset by pulling or turning, the NC main contacts will bounce. When pressing the button, the NO monitor contacts will bounce.

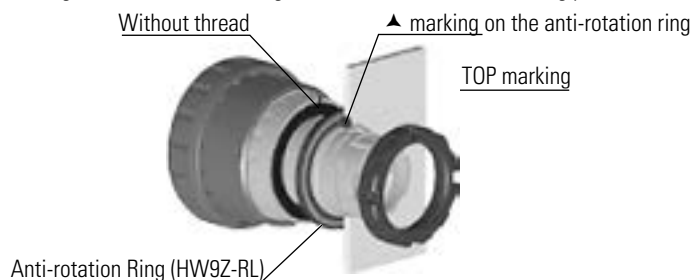
When designing a control circuit, take the contact bounce time into consideration (reference value: 20 ms).

## LED Illuminated Switches

LED lamp is built into the contact block and cannot be replaced.

## Installing the Anti-rotation Ring HW9Z-RL

Align the side without thread on the operator with TOP marking, the small s marking on the anti-rotation ring, and the recess on the mounting panel.





## AP22M Series

## Key Features

- Viewable in direct sunlight.
- Visible from all directions.
- The use of an ultra-bright LED that is not susceptible to external scattered light ensures high visibility and provides for more accurate recognition.
- Integrated terminal cover is IP20 protected (finger protection), preventing electrical shocks.
- UL and c-UL listed, EN standard compliant.
- Colored and clear lenses are offered. Clear lens (except for PW) provides for higher contrast.
- UL Type 4X



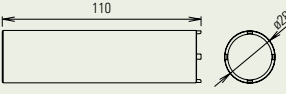
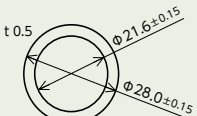
## Part Numbers

## Pilot Lights

| Appearance                                                                          | Lens  | Rated Voltage                  | Part Number | Lamp Color                  |
|-------------------------------------------------------------------------------------|-------|--------------------------------|-------------|-----------------------------|
|   | Color | 12V DC<br>24V AC/DC<br>120V AC | AP22M-2Q②①  | R<br>G<br>Y<br>A<br>S<br>PW |
|  | Clear |                                | AP22M-2Q②C① | R<br>G<br>Y<br>A<br>S       |

1. In place of ① insert LED color. Red (R), Green (G), Yellow (Y), Amber (A), Blue (S), and White (PW).
2. Clear lenses are standard (except for white). White (PW) only available as colored lens.
3. In place of ② insert voltage code. For 12V DC use (3), for 24V AC/DC use (4), for 120V AC use (H).
4. LED cannot be removed or replaced.

## Accessories

| Appearance                                                                          | Material       | Part Number | Notes                                                                                                                       |
|-------------------------------------------------------------------------------------|----------------|-------------|-----------------------------------------------------------------------------------------------------------------------------|
|  | Metal (brass)  | MW9Z-T1     | Used for mounting unit into a panel.<br> |
|  | Resin          | YW9Z-PL12①  | Dimension: ø29.8 H14.5<br>In place of ① insert color: R (Red), G (green), Y (Yellow), A (Amber), S (Blue), C (Clear*)       |
|  | Nitrile rubber | HW9Z-WM     |                                          |

1. Nameplates: HWAM, HWAS-0, and CWAM. Go to [www.IDEC.com](http://www.IDEC.com) and review HW Series and CW Series catalogs for detailed information.
2. \*Use a clear lens (C) for a PW (White) lamp.

Specifications

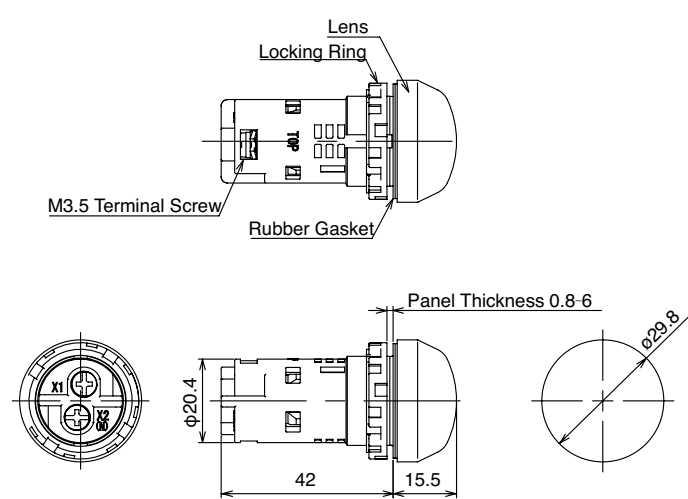
|                                      |                 |                                                                                                                                                        |
|--------------------------------------|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| Environment                          |                 | Operating Temperature: -25 to +55°C (no freezing)<br>Storage Temperature: -45 to +80°C (no freezing)<br>Operating Humidity: 45-85%RH (no condensation) |
| Insulation Resistance                |                 | 100MΩ (DC500V megger)                                                                                                                                  |
| Over Voltage Category                |                 | II (IEC60664-1)                                                                                                                                        |
| Impulse Dielectric Strength          |                 | 2.5kV (IEC60664-1, IEC60947-5-1)                                                                                                                       |
| Degree of pollution                  |                 | 3 (IEC60947-5-1)                                                                                                                                       |
| Dielectric Strength                  |                 | between terminals of different poles: 2,000V AC, 1 min<br>between live and non-live parts: 2,000V AC, 1 min                                            |
| Vibration Resistance                 | Operation limit | 5-55Hz half amp: 0.5mm                                                                                                                                 |
|                                      | Damage limit    | 30Hz half amp: 1.5mm                                                                                                                                   |
| Shock Resistance                     | Operation limit | 100m/s <sup>2</sup> (10G)                                                                                                                              |
|                                      | Damage limit    | 1000m/s <sup>2</sup> (100G)                                                                                                                            |
| Degree of Protection                 |                 | Panel front: IP66 (IEC 60529), UL Type 4X<br>Terminals: IP20                                                                                           |
| Terminal Size                        |                 | M3.5 screw                                                                                                                                             |
| Tightening torque for terminal screw |                 | 1.0N•m                                                                                                                                                 |
| Tighten'g torque for Locking Ring    |                 | 2.0N•m                                                                                                                                                 |
| Wire Size                            |                 | AWG16 ~ AWG14, 2 wires max.                                                                                                                            |
| Weight (approx.)                     |                 | 18g                                                                                                                                                    |

Lamp Ratings

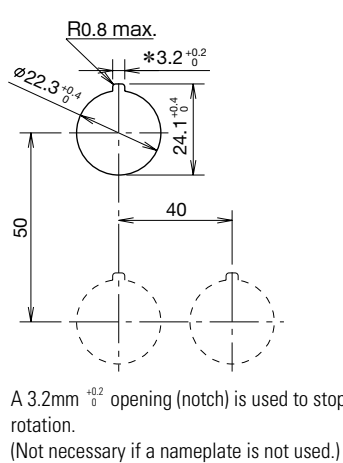
|                        |                                                                                                                                         |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| Rated Voltage          | 12V DC, 24V AC/DC, 120V AC                                                                                                              |
| Voltage Range          | 12V DC ±5%, 24V AC/DC ±10%, 120V AC ±10%                                                                                                |
| LED Illumination Color | Red (R), Green (G), Yellow (Y), Amber (A), Blue (S), and White (PW)                                                                     |
| Rated Current          | 12V DC: R, A, Y - 21mA; G, S, PW - 22mA<br>24V AC/DC, 120V AC: 24mA (all colors)                                                        |
| LED Life (Ref.)        | Approx. 30,000 Hrs. at rated DC voltage at 25°C in specified environmental conditions (The brightness reduces to 50% of initial value.) |

|                    |                    |                   |                                                                                |
|--------------------|--------------------|-------------------|--------------------------------------------------------------------------------|
| Equivalent Circuit | Colors R, A, and Y | Colors G, S, & PW | Drawing Key<br>— LED Chip<br>— Rectifier Diode<br>— Zenner Diode<br>— Resistor |
|                    |                    |                   |                                                                                |

Dimensions (mm)



Panel cut-out (mm)





## Safety Instructions

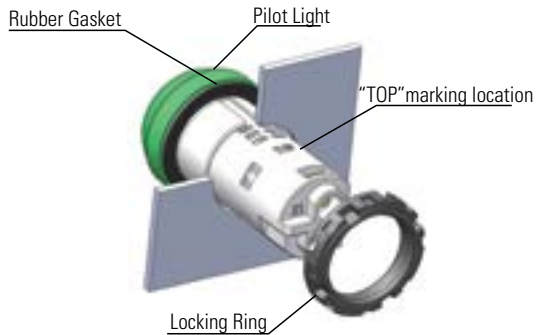
Turn off the power before installation, removal, wiring, maintenance and inspection. Failure to turn off power may cause electrical shocks or fire hazard.

When wiring, use proper size (AWG16 - AWG14) wires to meet voltage and current requirements. Tighten the terminal screws to a recommended tightening torque (1.0N•m). Operating with loose terminal screws may cause overheating and fire.

## Installation Instructions

### Panel Mounting

Remove the locking ring and check if the rubber gasket is properly aligned. Then insert the AP22M unit, aligning the "TOP" marking with the recess into the panel cut-out, and tighten the locking ring.



When installing the pilot light into a panel cut-out, use locking ring wrench (part number MW9Z-T1) to tighten the locking ring to a recommended torque of 2.0N•m. Do not use pliers and do not tighten excessively, otherwise the unit may become damaged.

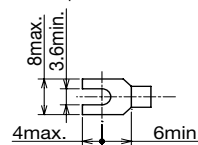
### Mounting Notes

#### Applicable Wires

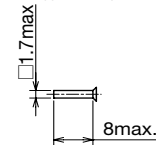
The applicable wire sizes are from AWG14 to AWG16 with 2 wires max. A ring-tongue crimp style terminal cannot be used.

#### Applicable Terminal

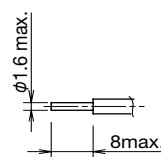
##### Fork Crimp Terminal



##### Bar Type Crimp Terminal

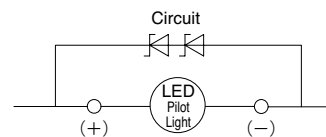


#### Single Wire

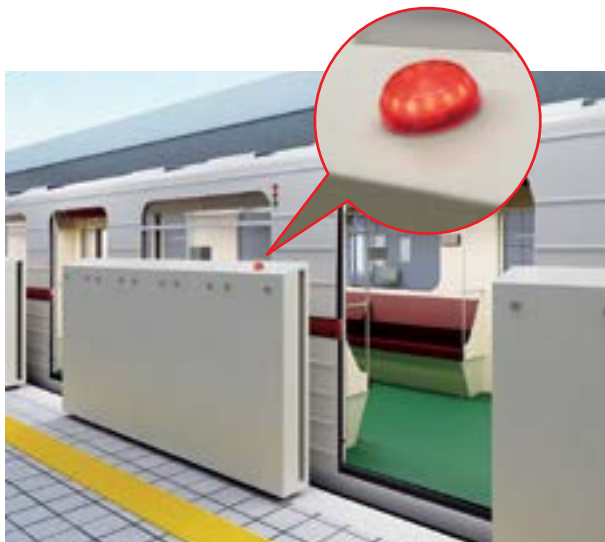


### Noise

External noise may cause LED chips to deteriorate, leading to a reduction in brightness, a change in color, or malfunction. We recommend the following solution if this problem exists. However, please note that this solution will vary depending on the operating environment and the application.



Zener Diode Reference Value  
Zener Voltage: 15V (1W)



**Great Visibility** - even from inside a train (automatic safety fence on a train station platform)



**Compact Size** - Perfect for mounting on small or narrow surfaces.

## ø22 Flush Mount CW Switches & Pilot Devices

**Flush bezel projects only 2.5mm from front of panel and as little as 39.9mm behind the panel!**

### Key features:

- ø22.3mm mounting hole compliant with IEC 60947-5-1
- 3.5-mm operator travel for pushbuttons ensures comfortable and reliable operation
- Up to 6 contacts per switch are possible with use of dual contact blocks
- Black and metallic bezels available
- Illuminated pushbuttons, pushbuttons, pilot lights, selector switches and key selector switches are available
- Direct opening NC contact
- Seven different keys can be chosen for key selector switches
- 10A contact rating; up to three contact blocks for non-illuminated and two contact blocks for illuminated models can be connected
- Contact blocks can be removed by locking lever
- IP20 finger-safe screw terminals
- UL Type 4X rating

| Applicable Standards     | Mark                                                                              | File No. or Organization |
|--------------------------|-----------------------------------------------------------------------------------|--------------------------|
| UL508<br>CSA C22.2 No.14 |  | UL/c-UL File No. E68961  |
| EN60947-5-1              |  | TÜV SÜD                  |
|                          |  | EC Low Voltage Directive |



### Specifications

|                                      |                                                                                                                |         |
|--------------------------------------|----------------------------------------------------------------------------------------------------------------|---------|
| Operating Temperature                | Non-illuminated: -25 to +60°C (no freezing)<br>LED illuminated: -25 to +55°C (no freezing)                     |         |
| Operating Humidity                   | 45 to 85% RH (no condensation)                                                                                 |         |
| Storage Temperature                  | -40 to +80°C                                                                                                   |         |
| Contact Resistance                   | 50 mΩ maximum (initial value)                                                                                  |         |
| Insulation Resistance                | 100 MΩ minimum (500V DC megger)                                                                                |         |
| Overvoltage Category                 | II (IEC 60664-1)                                                                                               |         |
| Impulse Withstand Voltage            | 2.5 kV (IEC60664-1/60947-5-1)                                                                                  |         |
| Pollution Degree                     | 3 (IEC60947-5-1)                                                                                               |         |
| Vibration Resistance                 | Operating extremes: 5 to 55Hz, amplitude 0.5mm                                                                 |         |
| Shock Resistance                     | Operating extremes: 100m/s <sup>2</sup><br>Damage limits: 1000m/s <sup>2</sup>                                 |         |
| Mechanical Life (minimum operations) | Pushbutton, illuminated pushbutton: 2,000,000<br>Selector switch: 250,000<br>Key selector switch: 250,000      |         |
| Electrical Life (minimum operations) | 50,000 (see Contact Ratings)<br>100,000 (see Contact Ratings)<br>(switching frequency 1800 operations/h)       |         |
| Degree of Protection (IEC60529)      | Panel front: IP65<br>Terminals: IP20                                                                           | Type 4X |
| Short-circuit Protection             | 250V/10A fuse, (Type aM IEC60269-1, IEC602069-2)                                                               |         |
| Electrical Shock Protection          | Class II (IEC61140)                                                                                            |         |
| Terminal Style                       | Screw terminal (M3.5 slotted Phillips screw)                                                                   |         |
| Bezel Material                       | Polyamide                                                                                                      |         |
| Applicable Wire Size                 | Up to 2 wires of 2mm <sup>2</sup> (solid wire ø1.6)<br>maximum (AWG14 to 16)<br>(Ring terminal cannot be used) |         |
| Recommended Tightening Torque        | Terminal: 1.0 to 1.3N·m<br>Locking ring: 1.2N·m                                                                |         |

### Contact Ratings

|                               |                                    |            |                        |        |       |       |
|-------------------------------|------------------------------------|------------|------------------------|--------|-------|-------|
| Rated Insulation Voltage (Ui) |                                    |            |                        | 300V   |       |       |
| Rated Thermal Current (Ith)   |                                    |            |                        | 10A    |       |       |
| Rated Operating Voltage (Ue)  |                                    |            |                        | 24V    | 120V  | 240V  |
| Rated Operating Current (Ie)  | Electrical Life 50,000 operations  | AC 50/60Hz | Resistive Load (AC-12) | 10A    | 10A   | 6A    |
|                               |                                    |            | Inductive Load (AC-15) | 10A    | 6A    | 3A    |
|                               |                                    | DC         | Resistive Load (DC-12) | 8A     | 2.2A  | 1.1A  |
|                               |                                    |            | Inductive Load (DC-13) | 4A     | 1.1A  | 0.55A |
|                               | Electrical Life 100,000 operations | AC 50/60Hz | Resistive Load (AC-12) | 5A     | 5A    | 3A    |
|                               |                                    |            | Inductive Load (AC-15) | 5A     | 3A    | 1.5A  |
|                               |                                    | DC         | Resistive Load (DC-12) | 4A     | 1.1A  | 0.55A |
|                               |                                    |            | Inductive Load (DC-13) | 2A     | 0.55A | 0.27A |
| Contact Material              |                                    |            |                        | Silver |       |       |



1. Minimum applicable load (reference value): 3V AC/DC, 5mA (Applicable range is subject to the operating conditions and load.)
2. The operational current represents the classification by making and breaking currents (IEC 60947-5-1).
3. UL, c-UL rating: A300

### Direct Opening of Key Selector Switch

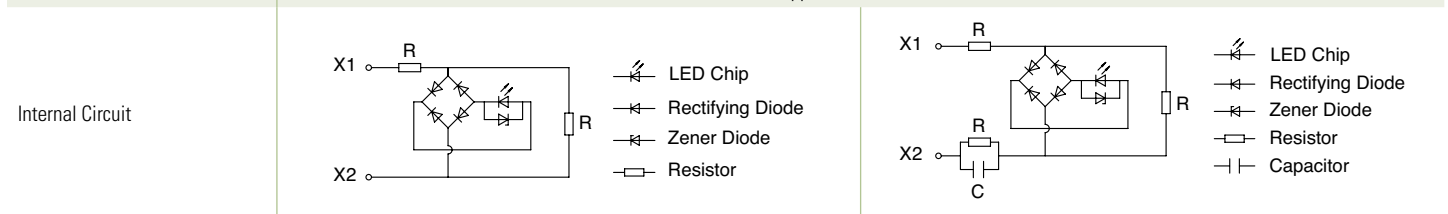
|                                                   | 2-position (3NC) | 3-position (2NC) |
|---------------------------------------------------|------------------|------------------|
| Operator Angle for Direct Opening Action          | 90°              | 45°              |
| Minimum Operator Torque for Direct Opening Action | 0.2N·m           | 0.3N·m           |
| Maximum Operator Angle                            | 90°              | 45°              |

## Weights

|                        |                                                                  |
|------------------------|------------------------------------------------------------------|
| Illuminated Pushbutton | 46g (CW1L-M1E02QH, 2 contacts)<br>62g (CW1L-M1E22QH, 4 contacts) |
| Pushbutton             | 45g (CW1B-M1E03, 3 contacts)<br>52g (CW1B-M1E22, 4 contacts)     |
| Pilot Light            | 27g (CW1P-1EQH)                                                  |
| Selector Switch        | 48g (CW1S-2E03, 3 contacts)<br>55g (CW1S-2E22, 4 contacts)       |
| Key Selector Switch    | 61g (CW1K-2AE03, 3 contacts)<br>68g (CW1K-2AE22, 4 contacts)     |

## LED Module

|                               |                                                     |               |               |                 |                 |
|-------------------------------|-----------------------------------------------------|---------------|---------------|-----------------|-----------------|
| Rated Insulation Voltage (Ui) | 250V                                                |               |               |                 |                 |
| Rated Operating Voltage (Ue)  | 6V AC/DC                                            | 12V AC/DC     | 24V AC/DC     | 100/120V AC     | 230/240V AC     |
| Operating Voltage Range       | 6V AC/DC±10%                                        | 12V AC/DC±10% | 24V AC/DC±10% | 100/120V AC±10% | 230/240V AC±10% |
| Illumination Color Code ②     | A (amber), G (green), PW (white), R (red), S (blue) |               |               |                 |                 |
| LED Module Part Number        | CW-EAQ2②                                            | CW-EAQ3②      | CW-EAQ4②      | CW-EAQH②        | CW-EAQM4②       |
| Current Draw                  | 15mA                                                | 15mA          | 16.5mA        | 18mA            | 18mA            |
| Life (reference value)        | Approx. 30,000 hours                                |               |               |                 |                 |



1. Specify an illumination color code in place of ② in the part number.
2. Use the white (PW) LED module for yellow illumination.

## Contact Blocks

| Contact Block    | Single Contact Block                                                                |                                                                                     | Double Contact Block                                                                |                                                                                      |                                                                                       |
|------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Contact          | 1NO                                                                                 | 1NC                                                                                 | 2NO                                                                                 | 2NC                                                                                  | 1NO-1NC                                                                               |
| Part No.         | YW-E10R                                                                             | YW-E01                                                                              | YW-EW2R0                                                                            | YW-EW02                                                                              | YW-EW1R1                                                                              |
| Shape            |  |  |  |  |  |
| Housing Color    | Blue/Black                                                                          | Reddish Purple                                                                      | Blue/Black                                                                          | Reddish Purple                                                                       | Reddish Purple/Blue                                                                   |
| Push Rod Color   | Black                                                                               | Red                                                                                 | Black                                                                               | Red                                                                                  | Gray                                                                                  |
| Terminal No.     | 3-4                                                                                 | 1-2                                                                                 | 1st tier: 13-14<br>2nd tier: 23-24                                                  | 1st tier: 11-12<br>2nd tier: 21-22                                                   | 1st tier: (NO) 13-14<br>2nd tier: (NC) 21-22                                          |
| Weight (approx.) | 11g                                                                                 |                                                                                     | 19g                                                                                 |                                                                                      |                                                                                       |

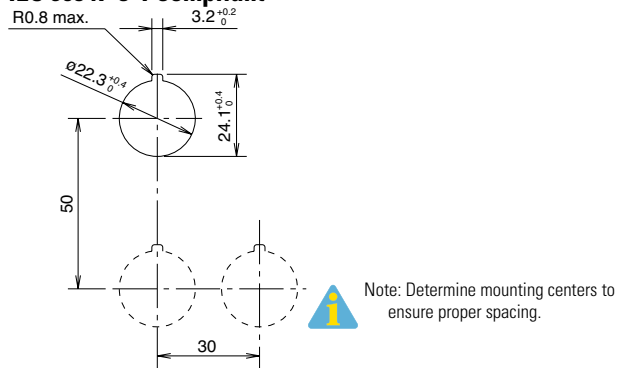
### Degree of Protection

| Rating                 | IP65 | IP66  | IP67  | UL Type 4X |
|------------------------|------|-------|-------|------------|
| Illuminated Pushbutton | Yes  | Yes * | Yes * | Yes *      |
| Pilot Light            | Yes  | Yes   | No    | Yes        |
| Pushbutton             | Yes  | Yes * | Yes * | Yes *      |
| Selector Switch        | Yes  | Yes   | Yes   | Yes        |
| Key Selector Switch    | Yes  | Yes   | No    | Yes        |



\*When used with rubber boot (CW9Z-D11, -D12)

### Mounting Hole Layout IEC 60947-5-1 compliant



### Illuminated Pushbuttons (Assembled)

| Style                                                                                                                                                                                                                                                | Operating Voltage | Contact Configuration                          | Black Bezel                                                                                              | Metallic Bezel                                                                                           | Illumination Color Code ②                                           |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------------------------------------------|----------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|--|
| Round Flush<br>CW□L-□1<br><br><br>(black bezel)<br><br><br>(metallic bezel)        | 6V AC/DC          | 1NO<br>1NC<br>1NO-1NC<br>2NO<br>2NC<br>2NO-2NC | CW1L-③1E10Q2②<br>CW1L-③1E01Q2②<br>CW1L-③1E11Q2②<br>CW1L-③1E20Q2②<br>CW1L-③1E02Q2②<br>CW1L-③1E22Q2②       | CW4L-③1E10Q2②<br>CW4L-③1E01Q2②<br>CW4L-③1E11Q2②<br>CW4L-③1E20Q2②<br>CW4L-③1E02Q3②<br>CW4L-③1E22Q2②       | A: amber<br>G: green<br>PW: white<br>R: red<br>S: blue<br>Y: yellow |  |
|                                                                                                                                                                                                                                                      | 12V AC/DC         | 1NO<br>1NC<br>1NO-1NC<br>2NO<br>2NC<br>2NO-2NC | CW1L-③1E10Q3②<br>CW1L-③1E01Q3②<br>CW1L-③1E11Q3②<br>CW1L-③1E20Q3②<br>CW1L-③1E02Q3②<br>CW1L-③1E22Q3②       | CW4L-③1E10Q3②<br>CW4L-③1E01Q3②<br>CW4L-③1E11Q3②<br>CW4L-③1E20Q3②<br>CW4L-③1E02Q3②<br>CW4L-③1E22Q3②       |                                                                     |  |
|                                                                                                                                                                                                                                                      | 24V AC/DC         | 1NO<br>1NC<br>1NO-1NC<br>2NO<br>2NC<br>2NO-2NC | CW1L-③1E10Q4②<br>CW1L-③1E01Q4②<br>CW1L-③1E11Q4②<br>CW1L-③1E20Q4②<br>CW1L-③1E02Q4②<br>CW1L-③1E22Q4②       | CW4L-③1E10Q4②<br>CW4L-③1E01Q4②<br>CW4L-③1E11Q4②<br>CW4L-③1E20Q4②<br>CW4L-③1E02Q4②<br>CW4L-③1E22Q4②       |                                                                     |  |
|                                                                                                                                                                                                                                                      | 100/120V AC       | 1NO<br>1NC<br>1NO-1NC<br>2NO<br>2NC<br>2NO-2NC | CW1L-③1E10QH②<br>CW1L-③1E01QH②<br>CW1L-③1E11QH②<br>CW1L-③1E20QH②<br>CW1L-③1E02QH②<br>CW1L-③1E22QH②       | CW4L-③1E10QH②<br>CW4L-③1E01QH②<br>CW4L-③1E11QH②<br>CW4L-③1E20QH②<br>CW4L-③1E02QH②<br>CW4L-③1E22QH②       |                                                                     |  |
|                                                                                                                                                                                                                                                      | 230/240V AC       | 1NO<br>1NC<br>1NO-1NC<br>2NO<br>2NC<br>2NO-2NC | CW1L-③1E10QM4②<br>CW1L-③1E01QM4②<br>CW1L-③1E11QM4②<br>CW1L-③1E20QM4②<br>CW1L-③1E02QM4②<br>CW4L-③1E22QM4② | CW4L-③1E10QM4②<br>CW4L-③1E01QM4②<br>CW4L-③1E11QM4②<br>CW4L-③1E20QM4②<br>CW4L-③1E02QM4②<br>CW4L-③1E22QM4② |                                                                     |  |
| Round Extended<br>CW□L-□2<br><br><br>(black bezel)<br><br><br>(metallic bezel) | 6V AC/DC          | 1NO<br>1NC<br>1NO-1NC<br>2NO<br>2NC<br>2NO-2NC | CW1L-③2E10Q2②<br>CW1L-③2E01Q2②<br>CW1L-③2E11Q2②<br>CW1L-③2E20Q2②<br>CW1L-③2E02Q2②<br>CW1L-③2E22Q2②       | CW4L-③2E10Q2②<br>CW4L-③2E01Q2②<br>CW4L-③2E11Q2②<br>CW4L-③2E20Q2②<br>CW4L-③2E02Q2②<br>CW4L-③2E22Q2②       | A: amber<br>G: green<br>PW: white<br>R: red<br>S: blue<br>Y: yellow |  |
|                                                                                                                                                                                                                                                      | 12V AC/DC         | 1NO<br>1NC<br>1NO-1NC<br>2NO<br>2NC<br>2NO-2NC | CW1L-③2E10Q3②<br>CW1L-③2E01Q3②<br>CW1L-③2E11Q3②<br>CW1L-③2E20Q3②<br>CW1L-③2E02Q3②<br>CW1L-③2E22Q3②       | CW4L-③2E10Q3②<br>CW4L-③2E01Q3②<br>CW4L-③2E11Q3②<br>CW4L-③2E20Q3②<br>CW4L-③2E02Q3②<br>CW4L-③2E22Q3②       |                                                                     |  |
|                                                                                                                                                                                                                                                      | 24V AC/DC         | 1NO<br>1NC<br>1NO-1NC<br>2NO<br>2NC<br>2NO-2NC | CW1L-③2E10Q4②<br>CW1L-③2E01Q4②<br>CW1L-③2E11Q4②<br>CW1L-③2E20Q4②<br>CW1L-③2E02Q4②<br>CW1L-③2E22Q4②       | CW4L-③2E10Q4②<br>CW4L-③2E01Q4②<br>CW4L-③2E11Q4②<br>CW4L-③2E20Q4②<br>CW4L-③2E02Q4②<br>CW4L-③2E22Q4②       |                                                                     |  |
|                                                                                                                                                                                                                                                      | 100/120V AC       | 1NO<br>1NC<br>1NO-1NC<br>2NO<br>2NC<br>2NO-2NC | CW1L-③2E10QH②<br>CW1L-③2E01QH②<br>CW1L-③2E11QH②<br>CW1L-③2E20QH②<br>CW1L-③2E02QH②<br>CW1L-③2E22QH②       | CW4L-③2E10QH②<br>CW4L-③2E01QH②<br>CW4L-③2E11QH②<br>CW4L-③2E20QH②<br>CW4L-③2E02QH②<br>CW4L-③2E22QH②       |                                                                     |  |
|                                                                                                                                                                                                                                                      | 230/240V AC       | 1NO<br>1NC<br>1NO-1NC<br>2NO<br>2NC<br>2NO-2NC | CW1L-③2E10QM4②<br>CW1L-③2E01QM4②<br>CW1L-③2E11QM4②<br>CW1L-③2E20QM4②<br>CW1L-③2E02QM4②<br>CW1L-③2E22QM4② | CW4L-③2E10QM4②<br>CW4L-③2E01QM4②<br>CW4L-③2E11QM4②<br>CW4L-③2E20QM4②<br>CW4L-③2E02QM4②<br>CW4L-③2E22QM4② |                                                                     |  |



- Specify an illumination color code in place of ② in the Part Number.
- Specify function code in place of ③ in the Part Number. M: momentary, A: maintained
- See page 626 for dimensions.
- See next page for replacement LED modules.
- A dummy block is installed when one contact block is used.
- Additional contact configurations available, contact IDEC for more details

## Illuminated Pushbuttons (Sub-assembled)

Contact Blocks + LED Module + Mounting Adapter + Operator + Lens = Completed Unit



## Contact Blocks

| Style                                                                             | Contacts                   | Contact Block | Contact Configuration | Part Number |
|-----------------------------------------------------------------------------------|----------------------------|---------------|-----------------------|-------------|
|  | Finger-safe screw terminal | Single        | 1NO                   | YW-E10R     |
|                                                                                   |                            |               | 1NC                   | YW-E01      |
|  |                            | Double        | 2NO                   | YW-EW2R0    |
|                                                                                   |                            |               | 2NC                   | YW-EW02     |
|                                                                                   | 1NO-1NC                    |               | YW-EW1R1              |             |
|  | Dummy block                |               |                       | CW-DB       |

## LED Module

| Style | Part Number |
|-------|-------------|
|       | CW-EAQ ②①   |



1. In place of ①, specify the Lens/LED Color Code from table.
2. In place of ②, specify the Voltage Code from table.
3. Use PW LED for yellow lens.

## Operators

| Style |            |                | Black Bezel | Metallic Bezel |
|-------|------------|----------------|-------------|----------------|
|       | Momentary  | Round Flush    | CW1L-M10    | CW4L-M10       |
|       |            | Round Extended | CW1L-M20    | CW4L-M20       |
|       | Maintained | Round Flush    | CW1L-A10    | CW4L-A10       |
|       |            | Round Extended | CW1L-A20    | CW4L-A20       |

## Lens

| Style |                | Part Number |
|-------|----------------|-------------|
|       | Round Flush    | CW9Z-L11①   |
|       | Round Extended | CW9Z-L12①   |



1. In place of ①, specify the Lens/LED Color Code from table.

## ① Lens/LED Color Code

| Color  | Code    |
|--------|---------|
| Amber  | A       |
| Green  | G       |
| Red    | R       |
| Blue   | S       |
| White* | PW or C |
| Yellow | Y       |

\*Use PW for LED module, use C for lens.

## ② Voltage Code

| Voltage     | Code |
|-------------|------|
| 6V AC/DC    | 2    |
| 12V AC/DC   | 3    |
| 24V AC/DC   | 4    |
| 100/120V AC | H    |
| 230/240V AC | M4   |

## Contact Block Mounting Adaptor

| Style | Part Number |
|-------|-------------|
|       | CW-CN       |



### Non-Illuminated Pushbuttons (Assembled)

| Style                                                                                                                                  | Contact Configuration | Black Bezel | Metallic Bezel | Button Color Code ①                                                |
|----------------------------------------------------------------------------------------------------------------------------------------|-----------------------|-------------|----------------|--------------------------------------------------------------------|
| <br>Round Flush<br>CW□B-□1<br><br>(black bezel)       | 1NO                   | CW1B-③1E10① | CW4B-③1E10①    | B: black<br>G: green<br>R: red<br>S: blue<br>W: white<br>Y: yellow |
|                                                                                                                                        | 1NC                   | CW1B-③1E01① | CW4B-③1E01①    |                                                                    |
|                                                                                                                                        | 1NO-1NC               | CW1B-③1E11① | CW4B-③1E11①    |                                                                    |
|                                                                                                                                        | 2NO                   | CW1B-③1E20① | CW4B-③1E20①    |                                                                    |
|                                                                                                                                        | 2NC                   | CW1B-③1E02① | CW4B-③1E02①    |                                                                    |
|                                                                                                                                        | 2NO-1NC*              | CW1B-M1E21① | CW4B-M1E21①    |                                                                    |
|                                                                                                                                        | 1NO-2NC*              | CW1B-M1E12① | CW4B-M1E12①    |                                                                    |
|                                                                                                                                        | 3NO*                  | CW1B-M1E30① | CW4B-M1E30①    |                                                                    |
|                                                                                                                                        | 3NC*                  | CW1B-M1E03① | CW4B-M1E03①    |                                                                    |
|                                                                                                                                        | 2NO-2NC               | CW1B-③1E22j | CW4B-③1E22j    |                                                                    |
| <br>Round Extended<br>CW□B-□2<br><br>(metallic bezel) | 1NO                   | CW1B-③2E10① | CW4B-③2E10①    |                                                                    |
|                                                                                                                                        | 1NC                   | CW1B-③2E01① | CW4B-③2E01①    |                                                                    |
|                                                                                                                                        | 1NO-1NC               | CW1B-③2E11① | CW4B-③2E11①    |                                                                    |
|                                                                                                                                        | 2NO                   | CW1B-③2E20① | CW4B-③2E20①    |                                                                    |
|                                                                                                                                        | 2NC                   | CW1B-③2E02① | CW4B-③2E02①    |                                                                    |
|                                                                                                                                        | 2NO-1NC*              | CW1B-M2E21① | CW4B-M2E21①    |                                                                    |
|                                                                                                                                        | 1NO-2NC*              | CW1B-M2E12① | CW4B-M2E12①    |                                                                    |
|                                                                                                                                        | 3NO*                  | CW1B-M2E30① | CW4B-M2E30①    |                                                                    |
|                                                                                                                                        | 3NC*                  | CW1B-M2E03① | CW4B-M2E03①    |                                                                    |
|                                                                                                                                        | 2NO-2NC               | CW1B-M2E22① | CW4B-③2E22①    |                                                                    |



- Specify a button color code in place of ① in the part number.
- Specify function code in place of ③ in the Part Number. M: momentary, A: maintained
- See page 627 for dimensions.
- Two dummy blocks are installed when one contact is used and one dummy block is installed when two contact blocks are used.
- \*These contact configurations are not available in maintained action
- Additional contact configurations available; contact IDEC for more details.

### Non-Illuminated Pushbuttons (Sub-assembled)

Contact Blocks + Mounting Adaptor + Operator = Completed Unit



#### Contact Blocks

| Style                                                                               | Contacts                   | Contact Block | Contact Configuration | Part Number |
|-------------------------------------------------------------------------------------|----------------------------|---------------|-----------------------|-------------|
|  | Finger-safe screw terminal | Single        | 1NO                   | YW-E10R     |
|                                                                                     |                            |               | 1NC                   | YW-E01      |
|                                                                                     |                            | Double        | 2NO                   | YW-EW2R0    |
|                                                                                     |                            |               | 2NC                   | YW-EW02     |
|  | Dummy block                |               | 1NO-1NC               | YW-EW1R1    |
|                                                                                     |                            |               |                       | CW-DB       |

#### Operators\*

| Style                                                                               |            |                | Black Bezel | Metallic Bezel |
|-------------------------------------------------------------------------------------|------------|----------------|-------------|----------------|
|  | Momentary  | Round Flush    | CW1B-M1①    | CW4B-M1①       |
|                                                                                     |            | Round Extended | CW1B-M2①    | CW4B-M2①       |
|  | Maintained | Round Flush    | CW1B-A1①    | CW4B-A1①       |
|                                                                                     |            | Round Extended | CW1B-A2①    | CW4B-A2①       |

#### ① Button Color Code

| Color  | Code |
|--------|------|
| Black  | B    |
| Green  | G    |
| Red    | R    |
| Blue   | S    |
| White  | W    |
| Yellow | Y    |



- Specify a button color code in place of ①.
- \*Operator button is not removable from operator.

#### Contact Block Mounting Adaptor

| Style                                                                                 | Part Number |
|---------------------------------------------------------------------------------------|-------------|
|  | CW-CN       |

## Pilot Lights (Assembled)

| Style                                                                                                                              | Operating Voltage | Black Bezel | Metallic Bezel | Illumination Color Code ②                                           |
|------------------------------------------------------------------------------------------------------------------------------------|-------------------|-------------|----------------|---------------------------------------------------------------------|
| Round Flush Lens<br>CW□P-1<br><br>(black bezel)   | 6V AC/DC          | CW1P-1EQ2②  | CW4P-1EQ2②     | A: amber<br>G: green<br>R: red<br>S: blue<br>PW: white<br>Y: yellow |
|                                                                                                                                    | 12V AC/DC         | CW1P-1EQ3②  | CW4P-1EQ3②     |                                                                     |
|                                                                                                                                    | 24V AC/DC         | CW1P-1EQ4②  | CW4P-1EQ4②     |                                                                     |
|                                                                                                                                    | 100/120V AC       | CW1P-1EQH②  | CW4P-1EQH②     |                                                                     |
|                                                                                                                                    | 230/240V AC       | CW1P-1EQM4② | CW4P-1EQM4②    |                                                                     |
| Round Dome Lens<br>CW□P-2<br><br>(metallic bezel) | 6V AC/DC          | CW1P-2EQ2②  | CW4P-2EQ2②     |                                                                     |
|                                                                                                                                    | 12V AC/DC         | CW1P-2EQ3②  | CW4P-2EQ3②     |                                                                     |
|                                                                                                                                    | 24V AC/DC         | CW1P-2EQ4②  | CW4P-2EQ4②     |                                                                     |
|                                                                                                                                    | 100/120V AC       | CW1P-2EQH②  | CW4P-2EQH②     |                                                                     |
|                                                                                                                                    | 230/240V AC       | CW1P-2EQM4② | CW4P-2EQM4②    |                                                                     |



1. Specify an illumination color code in place of ② in the Part Number
2. See page 627 for dimensions.
3. See page 625 for replacement LED modules.
4. Two dummy blocks are installed.

## Pilot Lights (Sub-assembled)

| Contact Blocks*                                                                    | + | LED Module                                                                         | + | Mounting Adaptor                                                                   | + | Operator                                                                           | + | Lens                                                                                 | = | Completed Unit                                                                       |
|------------------------------------------------------------------------------------|---|------------------------------------------------------------------------------------|---|------------------------------------------------------------------------------------|---|------------------------------------------------------------------------------------|---|--------------------------------------------------------------------------------------|---|--------------------------------------------------------------------------------------|
|  |   |  |   |  |   |  |   |  |   |  |



\* 2 dummy blocks are required for each completed pilot light.

## Contact Block

| Style                                                                               | Contacts    | Part Number |
|-------------------------------------------------------------------------------------|-------------|-------------|
|  | Dummy Block | CW-DB       |

## LED Module

| Style                                                                               | Part Number |
|-------------------------------------------------------------------------------------|-------------|
|  | CW-EAQ ②①   |

1. In place of ①, specify the Lens/LED Color Code from table.
2. In place of ②, specify the Voltage Code from table.
3. Use PW LED for yellow lens.

## Contact Block Mounting Adaptor

| Style                                                                               | Part Number |
|-------------------------------------------------------------------------------------|-------------|
|  | CW-CN       |

## Operators

| Style                                                                               | Black Bezel | Metallic Bezel |
|-------------------------------------------------------------------------------------|-------------|----------------|
|  | CW1P-00     | CW4P-00        |
|  |             |                |

## Lens

| Style                                                                                            | Part Number |
|--------------------------------------------------------------------------------------------------|-------------|
|  Round Flush | CW9Z-L11①   |
|  Round Dome  | CW9Z-L15①   |



1. In place of ①, specify the Lens/LED Color Code from table.

## ① Lens/LED Color Code

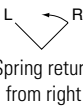
| Color  | Code    |
|--------|---------|
| Amber  | A       |
| Green  | G       |
| Red    | R       |
| Blue   | S       |
| White* | PW or C |
| Yellow | Y       |

\*Use PW for LED module, use C for lens.

## ② Voltage Code

| Voltage     | Code |
|-------------|------|
| 6V AC/DC    | 2    |
| 12V AC/DC   | 3    |
| 24V AC/DC   | 4    |
| 100/120V AC | H    |
| 230/240V AC | M4   |

### Selector Switches (Assembled)

| Shape            | CW□S<br>(Knob Operator) |                   |           |                   | <br>(black bezel) |                                                                                                  |                                                                                                                 |            | <br>(metallic bezel) |  |  |  |
|------------------|-------------------------|-------------------|-----------|-------------------|----------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|------------|--------------------------------------------------------------------------------------------------------|--|--|--|
| No. of Positions | Contact Configuration   | Contact Block     |           | Operator Position |                                                                                                    | <br>Maintained | <br>Spring return from right |            |                                                                                                        |  |  |  |
|                  |                         | Mounting Position | Type      | L                 | R                                                                                                  |                                                                                                  |                                                                                                                 |            |                                                                                                        |  |  |  |
| 90° 2-position   | 1NO<br>(10)             | 1                 | NO        |                   | ●                                                                                                  | CW□S-2E10                                                                                        | CW□S-21E10                                                                                                      |            |                                                                                                        |  |  |  |
|                  |                         | 2                 | —         | Dummy             |                                                                                                    |                                                                                                  |                                                                                                                 |            |                                                                                                        |  |  |  |
|                  |                         | 3                 | —         | Dummy             |                                                                                                    |                                                                                                  |                                                                                                                 |            |                                                                                                        |  |  |  |
|                  | 1NC<br>(01)             | 1                 | —         | Dummy             |                                                                                                    | CW□S-2E01                                                                                        | CW□S-21E01                                                                                                      |            |                                                                                                        |  |  |  |
|                  |                         | 2                 | —         | Dummy             |                                                                                                    |                                                                                                  |                                                                                                                 |            |                                                                                                        |  |  |  |
|                  |                         | 3                 | NC        | ●                 |                                                                                                    |                                                                                                  |                                                                                                                 |            |                                                                                                        |  |  |  |
|                  | 1NO-1NC<br>(11)         | 1                 | NO        |                   | ●                                                                                                  | CW□S-2E11                                                                                        | CW□S-21E11                                                                                                      |            |                                                                                                        |  |  |  |
|                  |                         | 2                 | —         | Dummy             |                                                                                                    |                                                                                                  |                                                                                                                 |            |                                                                                                        |  |  |  |
|                  |                         | 3                 | NC        | ●                 |                                                                                                    |                                                                                                  |                                                                                                                 |            |                                                                                                        |  |  |  |
|                  | 2NO<br>(20)             | 1                 | NO        |                   | ●                                                                                                  | CW□S-2E20                                                                                        | CW□S-21E20                                                                                                      |            |                                                                                                        |  |  |  |
|                  |                         | 2                 | —         | Dummy             |                                                                                                    |                                                                                                  |                                                                                                                 |            |                                                                                                        |  |  |  |
|                  |                         | 3                 | NO        |                   | ●                                                                                                  |                                                                                                  |                                                                                                                 |            |                                                                                                        |  |  |  |
|                  | 2NC<br>(02)             | 1                 | NC        | ●                 |                                                                                                    | CW□S-2E02                                                                                        | CW□S-21E02                                                                                                      |            |                                                                                                        |  |  |  |
|                  |                         | 2                 | —         | Dummy             |                                                                                                    |                                                                                                  |                                                                                                                 |            |                                                                                                        |  |  |  |
|                  |                         | 3                 | NC        | ●                 |                                                                                                    |                                                                                                  |                                                                                                                 |            |                                                                                                        |  |  |  |
|                  | 2NO-1NC<br>(21)         | 1                 | NO        |                   | ●                                                                                                  | CW□S-2E21                                                                                        | CW□S-21E21                                                                                                      |            |                                                                                                        |  |  |  |
|                  |                         | 2                 | NO        |                   | ●                                                                                                  |                                                                                                  |                                                                                                                 |            |                                                                                                        |  |  |  |
|                  |                         | 3                 | NC        | ●                 |                                                                                                    |                                                                                                  |                                                                                                                 |            |                                                                                                        |  |  |  |
|                  | 1NO-2NC<br>(12)         | 1                 | NO        |                   | ●                                                                                                  | CW□S-2E12                                                                                        | CW□S-21E12                                                                                                      |            |                                                                                                        |  |  |  |
|                  |                         | 2                 | NC        | ●                 |                                                                                                    |                                                                                                  |                                                                                                                 |            |                                                                                                        |  |  |  |
|                  |                         | 3                 | NC        | ●                 |                                                                                                    |                                                                                                  |                                                                                                                 |            |                                                                                                        |  |  |  |
|                  | 3NO<br>(30)             | 1                 | NO        |                   | ●                                                                                                  | CW□S-2E30                                                                                        | CW□S-21E30                                                                                                      |            |                                                                                                        |  |  |  |
|                  |                         | 2                 | NO        |                   | ●                                                                                                  |                                                                                                  |                                                                                                                 |            |                                                                                                        |  |  |  |
|                  |                         | 3                 | NO        |                   | ●                                                                                                  |                                                                                                  |                                                                                                                 |            |                                                                                                        |  |  |  |
|                  | 3NC<br>(03)             | 1                 | NC        | ●                 |                                                                                                    | CW□S-2E03                                                                                        | CW□S-21E03                                                                                                      |            |                                                                                                        |  |  |  |
|                  |                         | 2                 | NC        | ●                 |                                                                                                    |                                                                                                  |                                                                                                                 |            |                                                                                                        |  |  |  |
|                  |                         | 3                 | NC        | ●                 |                                                                                                    |                                                                                                  |                                                                                                                 |            |                                                                                                        |  |  |  |
|                  | 2NO-2NC<br>(22)         | 1                 | NO/<br>NC | NC                |                                                                                                    | ●                                                                                                | CW□S-2E22                                                                                                       | CW□S-21E22 |                                                                                                        |  |  |  |
|                  |                         |                   |           | NC                | ●                                                                                                  |                                                                                                  |                                                                                                                 |            |                                                                                                        |  |  |  |
|                  |                         | 2                 | —         |                   | Dummy                                                                                              |                                                                                                  |                                                                                                                 |            |                                                                                                        |  |  |  |
|                  |                         |                   | NO/<br>NC | NO                |                                                                                                    | ●                                                                                                |                                                                                                                 |            |                                                                                                        |  |  |  |
|                  | 3                       | NC                |           | ●                 |                                                                                                    |                                                                                                  |                                                                                                                 |            |                                                                                                        |  |  |  |
|                  | 4NO<br>(40)             | 1                 | 2NO       | NO                |                                                                                                    | ●                                                                                                | CW□S-2E40                                                                                                       | CW□S-21E40 |                                                                                                        |  |  |  |
|                  |                         |                   |           | NO                |                                                                                                    | ●                                                                                                |                                                                                                                 |            |                                                                                                        |  |  |  |
|                  |                         | 2                 | —         |                   | Dummy                                                                                              |                                                                                                  |                                                                                                                 |            |                                                                                                        |  |  |  |
|                  |                         | 3                 | 2NO       | NO                |                                                                                                    | ●                                                                                                |                                                                                                                 |            |                                                                                                        |  |  |  |
|                  | NO                      |                   |           |                   | ●                                                                                                  |                                                                                                  |                                                                                                                 |            |                                                                                                        |  |  |  |



## Selector Switches (Assembled) con't

| No. of Positions  | Contact Configuration | Contact Block     |      | Operator Position |       |   | <br>Maintained | <br>Spring return from right | <br>Spring return from left | <br>Spring return two-way |
|-------------------|-----------------------|-------------------|------|-------------------|-------|---|-------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
|                   |                       | Mounting Position | Type | L                 | C     | R |                                                                                                 |                                                                                                               |                                                                                                                |                                                                                                              |
| 45°<br>3-position | 1NO-1NC (11)          | 1                 | NO   | ●                 |       |   | CW□S-3E11                                                                                       | CW□S-31E11                                                                                                    | CW□S-32E11                                                                                                     | CW□S-33E11                                                                                                   |
|                   |                       | 2                 | —    |                   | Dummy |   |                                                                                                 |                                                                                                               |                                                                                                                |                                                                                                              |
|                   |                       | 3                 | NC   | ■                 |       |   |                                                                                                 |                                                                                                               |                                                                                                                |                                                                                                              |
|                   | 1NO-1NC (11N1)        | 1                 | NC   |                   |       | ■ | CW□S-3E11N1                                                                                     | CW□S-31E11N1                                                                                                  | CW□S-32E11N1                                                                                                   | CW□S-33E11N1                                                                                                 |
|                   |                       | 2                 | —    |                   | Dummy |   |                                                                                                 |                                                                                                               |                                                                                                                |                                                                                                              |
|                   |                       | 3                 | NO   |                   |       | ● |                                                                                                 |                                                                                                               |                                                                                                                |                                                                                                              |
|                   | 1NO-1NC (11N2)        | 1                 | NO   | ●                 |       |   | CW□S-3E11N2                                                                                     | CW□S-31E11N2                                                                                                  | CW□S-32E11N2                                                                                                   | CW□S-33E11N2                                                                                                 |
|                   |                       | 2                 | NC   |                   | ●     |   |                                                                                                 |                                                                                                               |                                                                                                                |                                                                                                              |
|                   |                       | 3                 | —    |                   | Dummy |   |                                                                                                 |                                                                                                               |                                                                                                                |                                                                                                              |
|                   | 1NO-1NC (11N3)        | 1                 | —    |                   | Dummy |   | CW□S-3E11N3                                                                                     | CW□S-31E11N3                                                                                                  | CW□S-32E11N3                                                                                                   | CW□S-33E11N3                                                                                                 |
|                   |                       | 2                 | NC   |                   | ●     |   |                                                                                                 |                                                                                                               |                                                                                                                |                                                                                                              |
|                   |                       | 3                 | NO   |                   |       | ● |                                                                                                 |                                                                                                               |                                                                                                                |                                                                                                              |
|                   | 1NO-1NC (11N4)        | 1                 | —    |                   | Dummy |   | CW□S-3E11N4                                                                                     | CW□S-31E11N4                                                                                                  | CW□S-32E11N4                                                                                                   | CW□S-33E11N4                                                                                                 |
|                   |                       | 2                 | NO   | ●                 |       | ● |                                                                                                 |                                                                                                               |                                                                                                                |                                                                                                              |
|                   |                       | 3                 | NC   | ■                 |       |   |                                                                                                 |                                                                                                               |                                                                                                                |                                                                                                              |
|                   | 2NO (20)              | 1                 | NO   | ●                 |       |   | CW□S-3E20                                                                                       | CW□S-31E20                                                                                                    | CW□S-32E20                                                                                                     | CW□S-33E20                                                                                                   |
|                   |                       | 2                 | —    |                   | Dummy |   |                                                                                                 |                                                                                                               |                                                                                                                |                                                                                                              |
|                   |                       | 3                 | NO   |                   |       | ● |                                                                                                 |                                                                                                               |                                                                                                                |                                                                                                              |
|                   | 2NO (20N1)            | 1                 | —    |                   | Dummy |   | CW□S-3E20N1                                                                                     | CW□S-31E20N1                                                                                                  | CW□S-32E20N1                                                                                                   | CW□S-33E20N1                                                                                                 |
|                   |                       | 2                 | NO   | ●                 |       | ● |                                                                                                 |                                                                                                               |                                                                                                                |                                                                                                              |
|                   |                       | 3                 | NO   |                   |       | ● |                                                                                                 |                                                                                                               |                                                                                                                |                                                                                                              |
|                   | 2NC (02)              | 1                 | NC   |                   |       | ■ | CW□S-3E02                                                                                       | CW□S-31E02                                                                                                    | CW□S-32E02                                                                                                     | CW□S-33E02                                                                                                   |
|                   |                       | 2                 | —    |                   | Dummy |   |                                                                                                 |                                                                                                               |                                                                                                                |                                                                                                              |
|                   |                       | 3                 | NC   | ■                 |       |   |                                                                                                 |                                                                                                               |                                                                                                                |                                                                                                              |
|                   | 2NC (02N1)            | 1                 | —    |                   | Dummy |   | CW□S-3E02N1                                                                                     | CW□S-31E02N1                                                                                                  | CW□S-32E02N1                                                                                                   | CW□S-33E02N1                                                                                                 |
|                   |                       | 2                 | NC   |                   | ●     |   |                                                                                                 |                                                                                                               |                                                                                                                |                                                                                                              |
|                   |                       | 3                 | NC   | ■                 |       |   |                                                                                                 |                                                                                                               |                                                                                                                |                                                                                                              |
|                   | 2NO-1NC (21)          | 1                 | NO   | ●                 |       |   | CW□S-3E21                                                                                       | CW□S-31E21                                                                                                    | CW□S-32E21                                                                                                     | CW□S-33E21                                                                                                   |
|                   |                       | 2                 | NO   | ●                 |       | ● |                                                                                                 |                                                                                                               |                                                                                                                |                                                                                                              |
|                   |                       | 3                 | NC   | ■                 |       |   |                                                                                                 |                                                                                                               |                                                                                                                |                                                                                                              |
|                   | 2NO-1NC (21N1)        | 1                 | NO   | ●                 |       |   | CW□S-3E21N1                                                                                     | CW□S-31E21N1                                                                                                  | CW□S-32E21N1                                                                                                   | CW□S-33E21N1                                                                                                 |
|                   |                       | 2                 | NC   |                   | ●     |   |                                                                                                 |                                                                                                               |                                                                                                                |                                                                                                              |
|                   |                       | 3                 | NO   |                   |       | ● |                                                                                                 |                                                                                                               |                                                                                                                |                                                                                                              |
|                   | 1NO-2NC (12)          | 1                 | NO   | ●                 |       |   | CW□S-3E12                                                                                       | CW□S-31E12                                                                                                    | CW□S-32E12                                                                                                     | CW□S-33E12                                                                                                   |
|                   |                       | 2                 | NC   |                   | ●     |   |                                                                                                 |                                                                                                               |                                                                                                                |                                                                                                              |
|                   |                       | 3                 | NC   | ■                 |       |   |                                                                                                 |                                                                                                               |                                                                                                                |                                                                                                              |
|                   | 1NO-2NC (12N1)        | 1                 | NC   |                   |       | ■ | CW□S-3E12N1                                                                                     | CW□S-31E12N1                                                                                                  | CW□S-32E12N1                                                                                                   | CW□S-33E12N1                                                                                                 |
|                   |                       | 2                 | NO   | ●                 |       | ● |                                                                                                 |                                                                                                               |                                                                                                                |                                                                                                              |
|                   |                       | 3                 | NC   | ■                 |       |   |                                                                                                 |                                                                                                               |                                                                                                                |                                                                                                              |
|                   | 3NO (30)              | 1                 | NO   | ●                 |       |   | CW□S-3E30                                                                                       | CW□S-31E30                                                                                                    | CW□S-32E30                                                                                                     | CW□S-33E30                                                                                                   |
|                   |                       | 2                 | NO   | ●                 |       | ● |                                                                                                 |                                                                                                               |                                                                                                                |                                                                                                              |
|                   |                       | 3                 | NO   |                   |       | ● |                                                                                                 |                                                                                                               |                                                                                                                |                                                                                                              |
|                   | 3NC (03)              | 1                 | NC   |                   |       | ■ | CW□S-3E03                                                                                       | CW□S-31E03                                                                                                    | CW□S-32E03                                                                                                     | CW□S-33E03                                                                                                   |
|                   |                       | 2                 | NC   |                   | ●     |   |                                                                                                 |                                                                                                               |                                                                                                                |                                                                                                              |
|                   |                       | 3                 | NC   | ■                 |       |   |                                                                                                 |                                                                                                               |                                                                                                                |                                                                                                              |

Switches &amp; Pilot Devices

Signaling Lights

Relays &amp; Sockets

Timers

Contactors

Terminal Blocks

Circuit Breakers

Selector Switches (Assembled) con't

| No. of Positions  | Contact Configuration | Contact Block     |       | Operator Position |     |       | <br>Maintained | <br>Spring return from right | <br>Spring return from left | <br>Spring return two-way |
|-------------------|-----------------------|-------------------|-------|-------------------|-----|-------|-------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
|                   |                       | Mounting Position | Type  | L                 | C   | R     |                                                                                                 |                                                                                                                |                                                                                                                |                                                                                                              |
| 45°<br>3-position | 2NO-2NC<br>(22)       | 1                 | NO/NC | NO NC             | ●   | ■     | CW□S-3E22                                                                                       | CW□S-31E22                                                                                                     | CW□S-32E22                                                                                                     | CW□S-33E22                                                                                                   |
|                   |                       | 2                 | —     |                   |     | Dummy |                                                                                                 |                                                                                                                |                                                                                                                |                                                                                                              |
|                   |                       | 3                 | NO/NC | NO NC             | ■   | ●     |                                                                                                 |                                                                                                                |                                                                                                                |                                                                                                              |
|                   | 4NO<br>(40)           | 1                 | 2NO   | NO NO             | ● ● |       | CW□S-3E40                                                                                       | CW□S-31E40                                                                                                     | CW□S-32E40                                                                                                     | CW□S-33E40                                                                                                   |
|                   |                       | 2                 | —     |                   |     | Dummy |                                                                                                 |                                                                                                                |                                                                                                                |                                                                                                              |
|                   |                       | 3                 | 2NO   | NO NO             |     | ● ●   |                                                                                                 |                                                                                                                |                                                                                                                |                                                                                                              |
|                   | 2NO-2NC<br>(22N2)     | 1                 | 2NC   | NC NC             | ■ ■ | ■     | CW□S-3E22N2                                                                                     | CW□S-31E22N2                                                                                                   | CW□S-32E22N2                                                                                                   | CW□S-33E22N2                                                                                                 |
|                   |                       | 2                 | —     |                   |     | Dummy |                                                                                                 |                                                                                                                |                                                                                                                |                                                                                                              |
|                   |                       | 3                 | 2NO   | NC NC             |     | ● ●   |                                                                                                 |                                                                                                                |                                                                                                                |                                                                                                              |

- 
1. Specify a bezel color code in place of □ in the Part Number, 1 (black bezel), 4 (metallic bezel)

2. For the contact block mounting position, see below.

3. Lever operator is also available. For dimensions, see page 628.

4. To order a lever operator selector switch, insert L before E in the knob operator part number.  
Example: Knob Operator part number CW1S-3E11 becomes CW1S-3LE11 for Lever Operator.

Lever Operator

Contact Block Mounting Position



CW1S-□L  
(black bezel)



CW4S-□L  
(metallic bezel)



|   |    | Left | Center | Right |                   |
|---|----|------|--------|-------|-------------------|
|   |    | L    | C      | R     | Operator Position |
| 1 | NO | ●    |        |       |                   |
| 2 | NC |      | ●      |       |                   |
| 3 | NC | ■    |        |       |                   |

## Selector Switches (Sub-assembled)

|               |   |                  |   |          |   |                |
|---------------|---|------------------|---|----------|---|----------------|
| Contact Block | + | Mounting Adaptor | + | Operator | = | Completed Unit |
|---------------|---|------------------|---|----------|---|----------------|



## Contact Blocks

| Style                                                                             | Contacts                   | Contact Block | Contact Configuration | Part Number |
|-----------------------------------------------------------------------------------|----------------------------|---------------|-----------------------|-------------|
|  | Finger-safe screw terminal | Single        | 1NO                   | YW-E10R     |
|                                                                                   |                            |               | 1NC                   | YW-E01      |
|  |                            | Double        | 2NO                   | YW-EW2R0    |
|                                                                                   |                            |               | 2NC                   | YW-EW02     |
|                                                                                   | 1NO-1NC                    |               | YW-EW1R1              |             |
|  | Dummy block                |               |                       | CW-DB       |

## Contact Block Mounting Adaptor

| Style | Part Number |
|-------|-------------|
|       | CW-CN       |

## Operators

| Style                     | Position   | Handle | Description              | Black Bezel | Metallic Bezel |
|---------------------------|------------|--------|--------------------------|-------------|----------------|
|                           | 2-position | Knob   | Maintained               | CW1S-2      | CW4S-2         |
|                           |            |        | Spring return from right | CW1S-21     | CW4S-21        |
|                           |            | Lever  | Maintained               | CW1S-2L     | CW4S-2L        |
|                           |            |        | Spring return from right | CW1S-21L    | CW4S-21L       |
| <br>(knob operator shown) | 3-position | Knob   | Maintained               | CW1S-3      | CW4S-3         |
|                           |            |        | Spring return from right | CW1S-31     | CW4S-31        |
|                           |            |        | Spring return from left  | CW1S-32     | CW4S-32        |
|                           |            |        | Spring return two-way    | CW1S-33     | CW4S-33        |
|                           |            | Lever  | Maintained               | CW1S-3L     | CW4S-3L        |
|                           |            |        | Spring return from right | CW1S-31L    | CW4S-31L       |
|                           |            |        | Spring return from left  | CW1S-32L    | CW4S-32L       |
|                           |            |        | Spring return two-way    | CW1S-33L    | CW4S-33L       |



Lever or knob is supplied with operator.

## Key Selector Switches (Assembled)

| Shape            | CW□K                  |               |  | (black bezel)     |  | (metallic bezel)                                                                                  |                                                                                                                 |
|------------------|-----------------------|---------------|-----------------------------------------------------------------------------------|-------------------|------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|
| No. of Positions | Contact Configuration | Contact Block |                                                                                   | Operator Position |                                                                                    | <br>Maintained | <br>Spring return from right |
| 90° 2-position   | 1NO<br>(10)           | 1             | NO                                                                                |                   | ●                                                                                  | CW□K-2AE10                                                                                        | CW□K-21BE10                                                                                                     |
|                  |                       | 2             | —                                                                                 | Dummy             |                                                                                    |                                                                                                   |                                                                                                                 |
|                  |                       | 3             | —                                                                                 | Dummy             |                                                                                    |                                                                                                   |                                                                                                                 |
|                  | 1NC<br>(01)           | 1             | —                                                                                 | Dummy             |                                                                                    | CW□K-2AE01                                                                                        | CW□K-21BE01                                                                                                     |
|                  |                       | 2             | —                                                                                 | Dummy             |                                                                                    |                                                                                                   |                                                                                                                 |
|                  |                       | 3             | NC                                                                                | ●                 |                                                                                    |                                                                                                   |                                                                                                                 |
|                  | 1NO-1NC<br>(11)       | 1             | NO                                                                                |                   | ●                                                                                  | CW□K-2AE11                                                                                        | CW□K-21BE11                                                                                                     |
|                  |                       | 2             | —                                                                                 | Dummy             |                                                                                    |                                                                                                   |                                                                                                                 |
|                  |                       | 3             | NC                                                                                | ●                 |                                                                                    |                                                                                                   |                                                                                                                 |
|                  | 2NO<br>(20)           | 1             | NO                                                                                |                   | ●                                                                                  | CW□K-2AE20                                                                                        | CW□K-21BE20                                                                                                     |
|                  |                       | 2             | —                                                                                 | Dummy             |                                                                                    |                                                                                                   |                                                                                                                 |
|                  |                       | 3             | NO                                                                                |                   | ●                                                                                  |                                                                                                   |                                                                                                                 |
|                  | 2NC<br>(02)           | 1             | NC                                                                                | ●                 |                                                                                    | CW□K-2AE02                                                                                        | CW□K-21BE02                                                                                                     |
|                  |                       | 2             | —                                                                                 | Dummy             |                                                                                    |                                                                                                   |                                                                                                                 |
|                  |                       | 3             | NC                                                                                | ●                 |                                                                                    |                                                                                                   |                                                                                                                 |
|                  | 2NO-1NC<br>(21)       | 1             | NO                                                                                |                   | ●                                                                                  | CW□K-2AE21                                                                                        | CW□K-21BE21                                                                                                     |
|                  |                       | 2             | NO                                                                                |                   | ●                                                                                  |                                                                                                   |                                                                                                                 |
|                  |                       | 3             | NC                                                                                | ●                 |                                                                                    |                                                                                                   |                                                                                                                 |
|                  | 1NO-2NC<br>(12)       | 1             | NO                                                                                |                   | ●                                                                                  | CW□K-2AE12                                                                                        | CW□K-21BE12                                                                                                     |
|                  |                       | 2             | NC                                                                                | ●                 |                                                                                    |                                                                                                   |                                                                                                                 |
|                  |                       | 3             | NC                                                                                | ●                 |                                                                                    |                                                                                                   |                                                                                                                 |
|                  | 3NO<br>(30)           | 1             | NO                                                                                |                   | ●                                                                                  | CW□K-2AE30                                                                                        | CW□K-21BE30                                                                                                     |
|                  |                       | 2             | NO                                                                                |                   | ●                                                                                  |                                                                                                   |                                                                                                                 |
|                  |                       | 3             | NO                                                                                |                   | ●                                                                                  |                                                                                                   |                                                                                                                 |
|                  | 3NC<br>(03)           | 1             | NC                                                                                | ●                 |                                                                                    | CW□K-2AE03                                                                                        | CW□K-21BE03                                                                                                     |
|                  |                       | 2             | NC                                                                                | ●                 |                                                                                    |                                                                                                   |                                                                                                                 |
|                  |                       | 3             | NC                                                                                | ●                 |                                                                                    |                                                                                                   |                                                                                                                 |
|                  | 2NO-2NC<br>(22)       | 1             | NO/NC                                                                             | NO                |                                                                                    | CW□K-2AE22                                                                                        | CW□K-21BE22                                                                                                     |
|                  |                       | NC            |                                                                                   | ●                 |                                                                                    |                                                                                                   |                                                                                                                 |
|                  |                       | 2             | —                                                                                 |                   | Dummy                                                                              |                                                                                                   |                                                                                                                 |
|                  |                       | 3             | NO/NC                                                                             | NO                |                                                                                    |                                                                                                   |                                                                                                                 |
|                  | NC                    | ●             |                                                                                   |                   |                                                                                    |                                                                                                   |                                                                                                                 |
|                  | 4NO<br>(40)           | 1             | 2NO                                                                               | NO                |                                                                                    | CW□K-2AE40                                                                                        | CW□K-21BE40                                                                                                     |
|                  |                       |               |                                                                                   | NO                |                                                                                    |                                                                                                   |                                                                                                                 |
|                  |                       | 2             | —                                                                                 |                   | Dummy                                                                              |                                                                                                   |                                                                                                                 |
|                  |                       |               | 3                                                                                 | 2NO               | NO                                                                                 |                                                                                                   |                                                                                                                 |
| NO               |                       | ●             |                                                                                   |                   |                                                                                    |                                                                                                   |                                                                                                                 |

## Key Selector Switches (Assembled) con't

| No. of Positions  | Contact Configuration | Contact Block     |      | Operator Position |       |   |  |  |  |  |
|-------------------|-----------------------|-------------------|------|-------------------|-------|---|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                   |                       | Mounting Position | Type | L                 | C     | R | Maintained                                                                        | Spring return from right                                                          | Spring return from left                                                             | Spring return two-way                                                               |
| 45°<br>3-position | 1NO-1NC (11)          | 1                 | NO   | ●                 |       |   | CW□K-3AE11                                                                        | CW□K-31BE11                                                                       | CW□K-32CE11                                                                         | CW□K-33DE11                                                                         |
|                   |                       | 2                 | —    |                   | Dummy |   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|                   |                       | 3                 | NC   | ■                 |       |   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|                   | 1NO-1NC (11N1)        | 1                 | NC   |                   |       | ■ | CW□K-3AE11N1                                                                      | CW□K-31BE11N1                                                                     | CW□K-32CE11N1                                                                       | CW□K-33DE11N1                                                                       |
|                   |                       | 2                 | —    |                   | Dummy |   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|                   |                       | 3                 | NO   |                   |       | ● |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|                   | 1NO-1NC (11N2)        | 1                 | NO   | ●                 |       |   | CW□K-3AE11N2                                                                      | CW□K-31BE11N2                                                                     | CW□K-32CE11N2                                                                       | CW□K-33DE11N2                                                                       |
|                   |                       | 2                 | NC   |                   | ●     |   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|                   |                       | 3                 | —    |                   | Dummy |   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|                   | 1NO-1NC (11N3)        | 1                 | —    |                   | Dummy |   | CW□K-3AE11N3                                                                      | CW□K-31BE11N3                                                                     | CW□K-32CE11N3                                                                       | CW□K-33DE11N3                                                                       |
|                   |                       | 2                 | NC   |                   | ●     |   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|                   |                       | 3                 | NO   |                   |       | ● |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|                   | 1NO-1NC (11N4)        | 1                 | —    |                   | Dummy |   | CW□K-3AE11N4                                                                      | CW□K-31BE11N4                                                                     | CW□K-32CE11N4                                                                       | CW□K-33DE11N4                                                                       |
|                   |                       | 2                 | NO   | ●                 |       | ● |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|                   |                       | 3                 | NC   | ■                 |       |   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|                   | 2NO (20)              | 1                 | NO   | ●                 |       |   | CW□K-3AE20                                                                        | CW□K-31BE20                                                                       | CW□K-32CE20                                                                         | CW□K-33DE20                                                                         |
|                   |                       | 2                 | —    |                   | Dummy |   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|                   |                       | 3                 | NO   |                   |       | ● |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|                   | 2NO (20N1)            | 1                 | —    |                   | Dummy |   | CW□K-3AE20N1                                                                      | CW□K-31BE20N1                                                                     | CW□K-32CE20N1                                                                       | CW□K-33DE20N1                                                                       |
|                   |                       | 2                 | NO   | ●                 |       | ● |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|                   |                       | 3                 | NO   |                   |       | ● |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|                   | 2NC (02)              | 1                 | NC   |                   |       | ■ | CW□K-3AE02                                                                        | CW□K-31BE02                                                                       | CW□K-32CE02                                                                         | CW□K-33DE02                                                                         |
|                   |                       | 2                 | —    |                   | Dummy |   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|                   |                       | 3                 | NC   | ■                 |       |   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|                   | 2NC (02N1)            | 1                 | —    |                   | Dummy |   | CW□K-3AE02N1                                                                      | CW□K-31BE02N1                                                                     | CW□K-32CE02N1                                                                       | CW□K-33DE02N1                                                                       |
|                   |                       | 2                 | NC   |                   | ●     |   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|                   |                       | 3                 | NC   | ■                 |       |   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|                   | 2NO-1NC (21)          | 1                 | NO   | ●                 |       |   | CW□K-3AE21                                                                        | CW□K-31BE21                                                                       | CW□K-32CE21                                                                         | CW□K-33DE21                                                                         |
|                   |                       | 2                 | NO   | ●                 |       | ● |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|                   |                       | 3                 | NC   | ■                 |       |   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|                   | 2NO-1NC (21N1)        | 1                 | NO   | ●                 |       |   | CW□K-3AE21N1                                                                      | CW□K-31BE21N1                                                                     | CW□K-32CE21N1                                                                       | CW□K-33DE21N1                                                                       |
|                   |                       | 2                 | NC   |                   | ●     |   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|                   |                       | 3                 | NO   |                   |       | ● |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|                   | 1NO-2NC (12)          | 1                 | NO   | ●                 |       |   | CW□K-3AE12                                                                        | CW□K-31BE12                                                                       | CW□K-32CE12                                                                         | CW□K-33DE12                                                                         |
|                   |                       | 2                 | NC   |                   | ●     |   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|                   |                       | 3                 | NC   | ■                 |       |   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|                   | 1NO-2NC (12N1)        | 1                 | NC   |                   |       | ■ | CW□K-3AE12N1                                                                      | CW□K-31BE12N1                                                                     | CW□K-32CE12N1                                                                       | CW□K-33DE12N1                                                                       |
|                   |                       | 2                 | NO   | ●                 |       | ● |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|                   |                       | 3                 | NC   | ■                 |       |   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|                   | 3NO (30)              | 1                 | NO   | ●                 |       |   | CW□K-3AE30                                                                        | CW□K-31BE30                                                                       | CW□K-32CE30                                                                         | CW□K-33DE30                                                                         |
|                   |                       | 2                 | NO   | ●                 |       | ● |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|                   |                       | 3                 | NO   |                   |       | ● |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|                   | 3NC (03)              | 1                 | NC   |                   |       | ■ | CW□K-3AE03                                                                        | CW□K-31BE03                                                                       | CW□K-32CE03                                                                         | CW□K-33DE03                                                                         |
|                   |                       | 2                 | NC   |                   | ●     |   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|                   |                       | 3                 | NC   | ■                 |       |   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |

Switches &amp; Pilot Devices

Signaling Lights

Relays &amp; Sockets

Timers

Contactors

Terminal Blocks

Circuit Breakers

Switches & Pilot Devices

Signaling Lights

Relays & Sockets

Timers

Contactors

Terminal Blocks

Circuit Breakers

Key Selector Switches (Assembled) con't

| No. of Positions | Contact Configuration | Contact Block     |       | Operator Position |       |   |  Maintained |  Spring return from right |  Spring return from left |  Spring return two-way |
|------------------|-----------------------|-------------------|-------|-------------------|-------|---|----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|
|                  |                       | Mounting Position | Type  | L                 | C     | R |                                                                                              |                                                                                                             |                                                                                                             |                                                                                                           |
| 90° 2-position   | 2NO-2NC (22)          | 1                 | NO/NC | NO NC             | ●     |   | CW□K-3AE22                                                                                   | CW□K-31BE22                                                                                                 | CW□K-32CE22                                                                                                 | CW□K-33DE22                                                                                               |
|                  |                       | 2                 | —     |                   | Dummy |   |                                                                                              |                                                                                                             |                                                                                                             |                                                                                                           |
|                  |                       | 3                 | NO/NC | NO NC             |       | ● |                                                                                              |                                                                                                             |                                                                                                             |                                                                                                           |
|                  | 4NO (40)              | 1                 | 2NO   | NO NO             | ●     |   | CW□K-3AE40                                                                                   | CW□K-31BE40                                                                                                 | CW□K-32CE40                                                                                                 | CW□K-33DE40                                                                                               |
|                  |                       | 2                 | —     |                   | Dummy |   |                                                                                              |                                                                                                             |                                                                                                             |                                                                                                           |
|                  |                       | 3                 | 2NO   | NO NO             |       | ● |                                                                                              |                                                                                                             |                                                                                                             |                                                                                                           |
|                  | 2NO-2NC (22N2)        | 1                 | 2NC   | NC NC             |       | ● | CW□K-3AE22N2                                                                                 | CW□K-31BE22N2                                                                                               | CW□K-32CE22N2                                                                                               | CW□K-33DE22N2                                                                                             |
|                  |                       | 2                 | —     |                   | Dummy |   |                                                                                              |                                                                                                             |                                                                                                             |                                                                                                           |
|                  |                       | 3                 | 2NC   | NC NC             |       | ● |                                                                                              |                                                                                                             |                                                                                                             |                                                                                                           |



- Specify a bezel color code in place of □ in the Part Number: 1 (black bezel), 4 (metallic bezel).
- On the spring-returned models, the key can be released only from the maintained position. On the maintained models, the key can be released from any position. Key retained positions are also available. See below.
- Two keys are supplied.
- Key cylinder material: Metal
- Besides the standard key (key number 0H), six other keys are also available. See below.
- For the contact block mounting position, see right.
- For dimensions, see page 629.
- When ordering an optional key or optional key-retained positions, specify designation codes as shown below:  
Example: CW1K-2AE10-1H

blank: Standard key (0H, reversible)  
1H to 2H: Reversible key  
3H to 6H: Non-reversible key

Key removal position code  
2-position  
A: Removable in all positions  
B: Removable in left only  
C: Removable in right only

Contact Block Mounting Position



|   |    | Left | Center | Right |                   |
|---|----|------|--------|-------|-------------------|
|   |    | L    | C      | R     | Operator Position |
| 1 | NO | ●    |        |       |                   |
| 2 | NC |      | ●      |       |                   |
| 3 | NC |      | ●      |       |                   |

Note:  
Key number is indicated on the key cylinder.  
Standard keys do not have a key number indication.

3-position  
A: Removable in all positions  
B: Removable in left and center  
C: Removable in right and center  
D: Removable in center only  
E: Removable in right and left  
G: Removable in left only  
H: Removable in right only

Note: Key is retained in all spring-returned positions.

## Key Selector Switches (Sub-assembled)



## Contact Blocks

| Style                                                                             | Contacts                   | Contact Block | Contact Configuration | Part Number |
|-----------------------------------------------------------------------------------|----------------------------|---------------|-----------------------|-------------|
|  | Finger-safe screw terminal | Single        | 1NO                   | YW-E10R     |
|                                                                                   |                            |               | 1NC                   | YW-E01      |
|  |                            | Double        | 2NO                   | YW-EW2R0    |
|                                                                                   |                            |               | 2NC                   | YW-EW02     |
|                                                                                   |                            |               | 1NO-1NC               | YW-EW1R1    |
|  | Dummy block                |               |                       | CW-DB       |

## Contact Block Mounting Adaptor

| Style                                                                             | Part Number |
|-----------------------------------------------------------------------------------|-------------|
|  | CW-CN       |

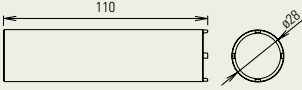
## Operator

| Style                                                                                                                                                                      | Position   | Description                                                            | Black Bezel | Metallic Bezel |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|------------------------------------------------------------------------|-------------|----------------|
| <br> | 2-position | Maintained, key removable all positions                                | CW1K-2A     | CW4K-2A        |
|                                                                                                                                                                            |            | Maintained, key removable left position only                           | CW1K-2B     | CW4K-2B        |
|                                                                                                                                                                            |            | Maintained, key removable right position only                          | CW1K-2C     | CW4K-2C        |
|                                                                                                                                                                            |            | Spring return from right                                               | CW1K-21B    | CW4K-21B       |
|                                                                                                                                                                            | 3-position | Maintained, key removable all positions                                | CW1K-3A     | CW1K-3A        |
|                                                                                                                                                                            |            | Maintained, key removable left and center positions only               | CW1K-3B     | CW4K-3B        |
|                                                                                                                                                                            |            | Maintained, key removable right and center positions only              | CW1K-3C     | CW4K-3C        |
|                                                                                                                                                                            |            | Maintained, key removable center position only                         | CW1K-3D     | CW4K-3D        |
|                                                                                                                                                                            |            | Maintained, key removable left and right positions only                | CW1K-3E     | CW4K-3E        |
|                                                                                                                                                                            |            | Maintained, key removable left position only                           | CW1K-3G     | CW4K-3G        |
|                                                                                                                                                                            |            | Maintained, key removable right position only                          | CW1K-3H     | CW4K-3H        |
|                                                                                                                                                                            |            | Spring return from right, key removable left and center positions only | CW1K-31B    | CW4K-31B       |
|                                                                                                                                                                            |            | Spring return from right, key removable center position only           | CW1K-31D    | CW4K-31D       |
|                                                                                                                                                                            |            | Spring return from right, key removable left position only             | CW1K-31G    | CW4K-31G       |
|                                                                                                                                                                            |            | Spring return from left, key removable right and center positions only | CW1K-32C    | CW4K-32C       |
|                                                                                                                                                                            |            | Spring return from left, key removable center position only            | CW1K-32D    | CW4K-32D       |
|                                                                                                                                                                            |            | Spring return from left, key removable right position only             | CW1K-32H    | CW4K-32H       |
|                                                                                                                                                                            |            | Spring return two-way, key removable center position only              | CW1K-33D    | CW4K-33D       |

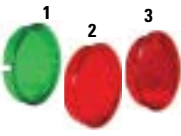
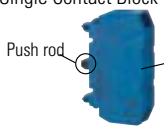
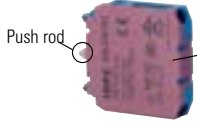
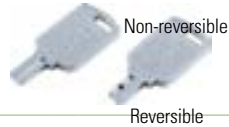


Two keys supplied with operator.

## Accessories

| Item                | Appearance                                                                        | Material          | Part Number | Remarks                                                                                                                                                                                                                                                           |
|---------------------|-----------------------------------------------------------------------------------|-------------------|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Locking Ring Wrench |  | Brass             | MW9Z-T1     | <ul style="list-style-type: none"> <li>Used to tighten the locking ring when installing the CW series control unit in a panel cut-out</li> <li>Weight: Approx 150g</li> </ul>  |
| Mounting Hole Plug  |  | Polyamide (black) | LW9Z-BP1    | <ul style="list-style-type: none"> <li>Used to plug an unnecessary ø22.3mm hole in the panel</li> <li>Degree of protection: IP65</li> <li>Panel thickness: 0.8 to 6.0mm</li> </ul>                                                                                |

## Replacement Parts

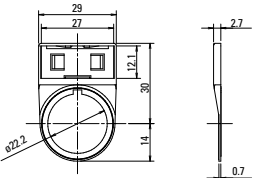
| Shape                                                                                                             | Material             | Part Number          | Remarks                                                                                                     |
|-------------------------------------------------------------------------------------------------------------------|----------------------|----------------------|-------------------------------------------------------------------------------------------------------------|
| <b>Lens</b><br>                  | 1 Round Flush        | Polyallylate         | CW9Z-L11②                                                                                                   |
|                                                                                                                   | 2 Round Extended     | Polyallylate         | CW9Z-L12②                                                                                                   |
|                                                                                                                   | 3 Round Dome         | Polyallylate         | CW9Z-L15②                                                                                                   |
| <b>Single Contact Block</b><br>  | 1NO                  | YW-E10R              | Push rod color: Black<br>Housing color: Blue/black<br>Terminal No.: 3-4                                     |
|                                                                                                                   | 1NC                  | YW-E01               | Push rod color: Red<br>Housing color: Reddish purple<br>Terminal No.: 1-2                                   |
|                                                                                                                   | Double Contact Block | 2NO                  | YW-EW2R0                                                                                                    |
|                                 | 2NC                  | YW-EW02              | Push rod color: black<br>Housing color: blue and black<br>Terminal No. 1st tier: 13-14, 2nd tier: 23-24     |
|                                                                                                                   | 2NC                  | YW-EW02              | Push rod color: red<br>Housing color: reddish purple<br>Terminal No. 1st tier: 11-12, 2nd tier: 21-22       |
|                                                                                                                   | 1NO, 1NC             | YW-EW1R1             | Push rod color: gray<br>Housing color: reddish purple/blue<br>Terminal No. 1st tier: 13-14, 2nd tier: 21-22 |
| <b>Rubber Boot (clear)</b><br> | Round Flush          |                      | CW9Z-D11                                                                                                    |
|                                                                                                                   | Round Extended       |                      | CW9Z-D12                                                                                                    |
| <b>Dummy Block</b><br>         | Polyamide (black)    | CW-DB                |                                                                                                             |
| <b>Locking Ring</b><br>        | Polyamide (black)    | CW9Z-LN              |                                                                                                             |
| <b>Gasket</b><br>              | Nitrile rubber       | CW9Z-WM              | Waterproof gasket between CW control unit bezel and the mounting panel.                                     |
| <b>Nameplate</b><br>           | Plastic              | CWAM-OB              |                                                                                                             |
| <b>Spare Key</b><br>           | Non-reversible       | Zinc (nickel-plated) | LA9Z-SK-□                                                                                                   |
|                                                                                                                   | Reversible           |                      |                                                                                                             |



## LED Modules

| Shape                                                                             | Operating Voltage Range | Current Draw | Part Number | Illumination Color Code ②                                                                                                     |
|-----------------------------------------------------------------------------------|-------------------------|--------------|-------------|-------------------------------------------------------------------------------------------------------------------------------|
|  | 6V AC/DC±10%            | 15mA         | CW-EAQ2②    | Specify an illumination color code in place of ② in the Part Number<br>A: amber<br>G: green<br>PW: white<br>R: red<br>S: blue |
|                                                                                   | 12V AC/DC±10%           | 15mA         | CW-EAQ3②    |                                                                                                                               |
|                                                                                   | 24V AC/DC±10%           | 16.5mA       | CW-EAQ4②    |                                                                                                                               |
|                                                                                   | 100/120V AC±10%         | 18mA         | CW-EAQH②    |                                                                                                                               |
|                                                                                   | 230/240V AC±10%         | 18mA         | CW-EAQM4②   |                                                                                                                               |

## Nameplate

| CWAM—Black Plastic                                                                |         |                                                                                                        |
|-----------------------------------------------------------------------------------|---------|--------------------------------------------------------------------------------------------------------|
|  |         |                                                                                                        |
| Nameplate (blank engraving plate included)                                        | CWAM-OB |                                                                                                        |
| Nameplate (engraved)                                                              | CWAM-①  |                                                                                                        |
| Additional Insert (blank)                                                         | HWNP-O  | HWNP Dimensions<br> |
| Additional Insert (engraved)                                                      | HWNP-①  |                                                                                                        |

-  1. In place of ①, insert either the standard legend code from table below or custom engraving delimited by " ".
2. Standard engravings are available at no charge.

## Standard Legend Codes

| Pushbuttons |      |               |      | Pushbuttons/Selector Switches |      |                   |      | Selector Switches |      |
|-------------|------|---------------|------|-------------------------------|------|-------------------|------|-------------------|------|
| Legend      | Code | Legend        | Code | Legend                        | Code | Legend            | Code | Legend            | Code |
| AUTO        | 101  | OPEN          | 116  | AUTO-MAN                      | 201  | REV-FOR           | 216  | AUTO-MAN-OFF      | 301  |
| CLOSE       | 102  | OUT           | 117  | CLOSE-OPEN                    | 202  | RUN-JOG           | 217  | AUTO-OFF-MAN      | 302  |
| DOWN        | 103  | RAISE         | 118  | DOWN-UP                       | 203  | RUN-SAFE          | 218  | CLOSE-OFF-OPEN    | 303  |
| EMERG.      | 104  | RESET         | 119  | FAST-SLOW                     | 204  | SAFE-RUN          | 219  | DOWN-OFF-SLOW     | 304  |
| STOP        | 105  | REVERSE       | 120  | FOR-REV                       | 205  | SLOW-FAST         | 220  | FAST-OFF-SLOW     | 305  |
| FAST        | 106  | RUN           | 121  | HAND-AUTO                     | 206  | START-STOP        | 221  | FOR-OFF-REV       | 306  |
| FORWARD     | 107  | SLOW          | 122  | HIGH-LOW                      | 207  | STOP-START        | 222  | LEFT-OFF-RIGHT    | 307  |
| HAND        | 108  | START         | 123  | JOG-RUN                       | 208  | UP-DOWN           | 223  | LOWER-OFF-RAISE   | 308  |
| HIGH        | 109  | STOP          | 125  | LEFT-RIGHT                    | 209  | OI (Int'l OFF ON) | 250  | OFF-MAN-AUTO      | 309  |
| IN          | 110  | TEST          | 126  | LOWER-                        | 210  |                   |      | OFF-SLOW-FAST     | 310  |
| INCH        | 111  | UP            | 127  | RAISE                         | 211  |                   |      | OFF-1-2           | 311  |
| JOG         | 112  | I (Int'l On)  | 150  | MAN-AUTO                      | 212  |                   |      | OPEN-OFF-CLOSE    | 312  |
| LOW         | 113  | O (Int'l Off) | 151  | OFF-ON                        | 213  |                   |      | SLOW-OFF-FAST     | 313  |
| LOWER       | 114  | Off           | 152  | ON-OFF                        | 214  |                   |      | SUMMER-OFF-WINTER | 314  |
| OFF         | 115  | EMO           |      | OPEN-CLOSE                    | 215  |                   |      | UP-OFF-DOWN       | 315  |
| ON          |      |               |      | RAISE-LOWER                   |      |                   |      | 1-OFF-2           | 316  |
|             |      |               |      |                               |      |                   |      | HAND-OFF-AUTO     | 317  |



1. To order engraved nameplates, add legend code to nameplate part number.
2. Character height based on the number of characters and size of nameplate. Standard character size is 3/16".
3. Nameplates with standard legends are the same list price as blank nameplates.

## Nameplates Order Form — CW Series

Copy this order form and use it to specify Letter Height, Custom Engravings, Location of Engraving on Nameplate, and Quantity Desired.

To ensure engraving accuracy, fax it to your IDEC representative or Distributor.

Your Company: \_\_\_\_\_

Name: \_\_\_\_\_

Telephone: \_\_\_\_\_

Fax & Email: \_\_\_\_\_

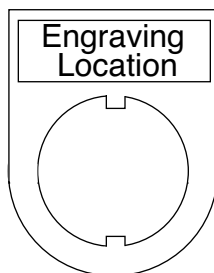
IDEC Rep/Distributor Contact: \_\_\_\_\_

PO number (if known): \_\_\_\_\_

IDEC Rep/Distributor Phone: \_\_\_\_\_

IDEC Rep/Distributor Fax & Email: \_\_\_\_\_

## CWAM Nameplate



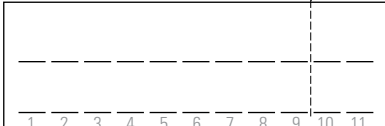
**Step 1.**  
**Choose Letter Size - 7/64" or 1/8".**  
Check the box for the letter size you want. Then write your lettering in box below the check boxes. Note: 1/8" size letters cannot exceed 9 characters.

**Step 2.**  
**Specify Quantity.**  
Enter the number of nameplates desired in the box on the right.

Qty

7/64" Letter Size ☐ 11 characters maximum (for 7/64" size letters)

1/8" Letter Size ☐ 9 characters maximum (for 7/8" size letters)



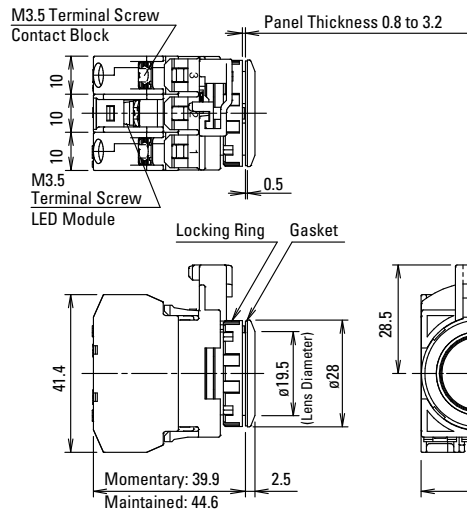
Sample Letter Sizes  
7/64" Letters: A B C D  
1/8" Letters: A B C D

## Dimensions (mm)

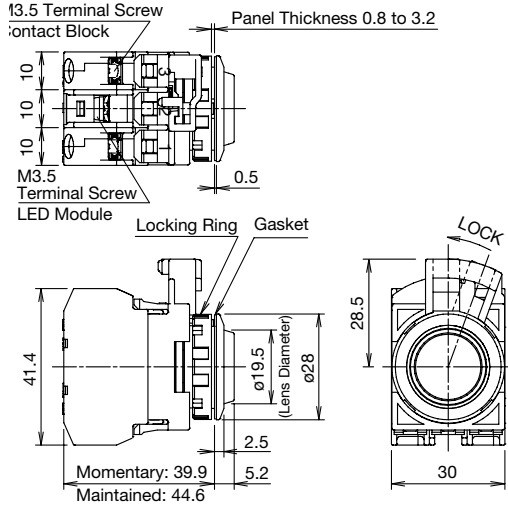
### Illuminated Pushbuttons

#### 1 to 3 Contacts

##### Round Flush

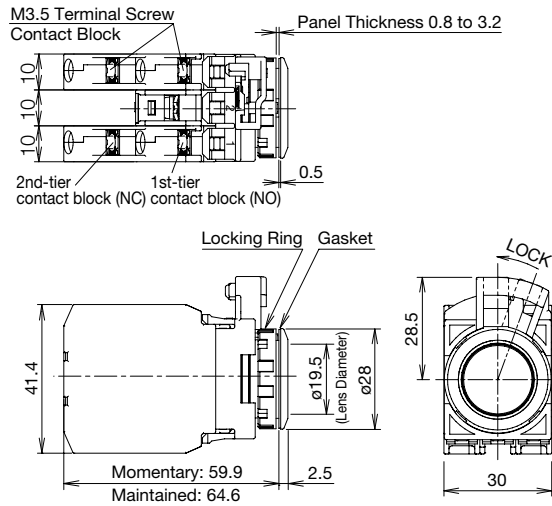


##### Round Extended

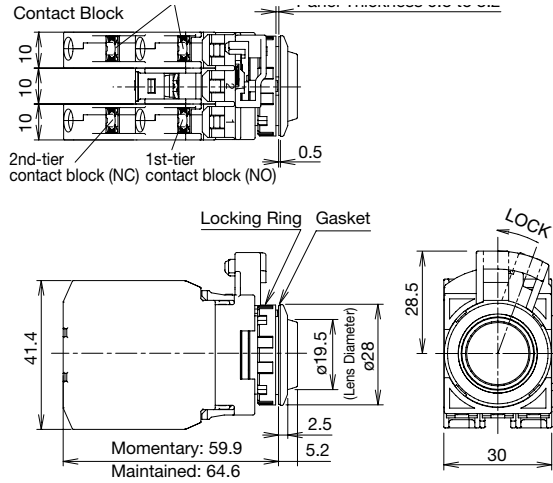


#### 4 to 6 Contacts

##### Round Flush



##### Round Extended



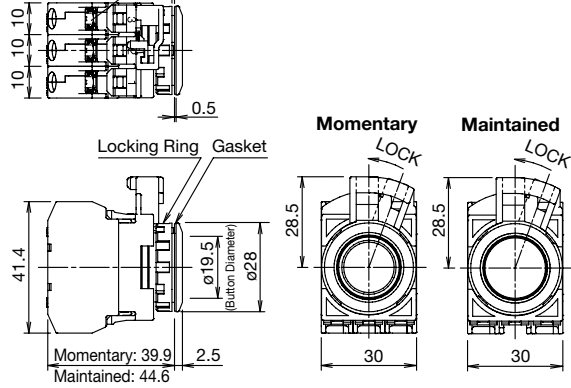
## Pushbuttons

## 1 to 3 Contacts

## Round Flush

M3.5 Terminal Screw  
Contact Block

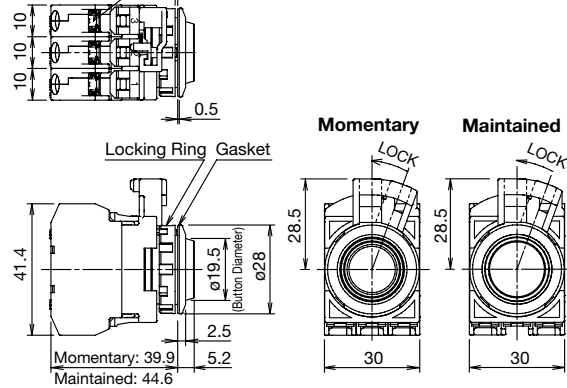
Panel Thickness 0.8 to 3.2



## Round Extended

M3.5 Terminal Screw  
Contact Block

Panel Thickness 0.8 to 3.2

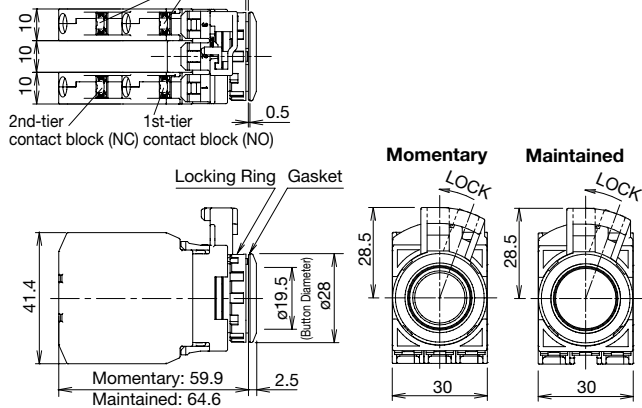


## 4 to 6 Contacts

## Round Flush

M3.5 Terminal Screw  
Contact Block

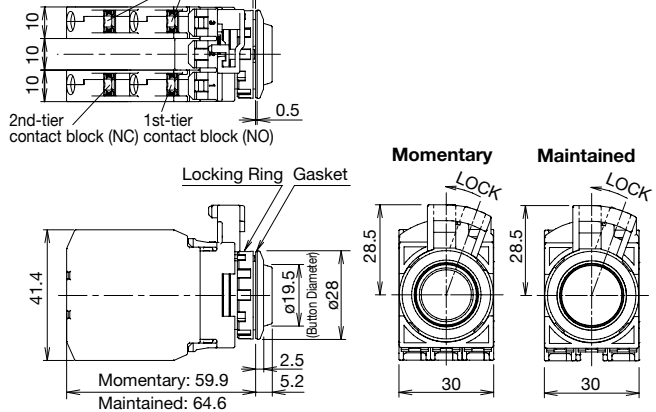
Panel Thickness 0.8 to 3.2



## Round Extended

M3.5 Terminal Screw  
Contact Block

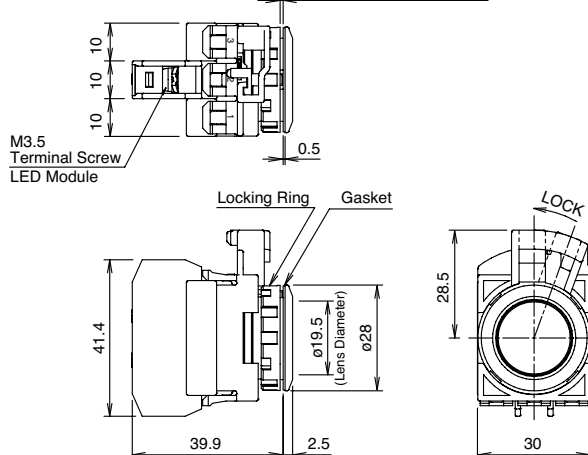
Panel Thickness 0.8 to 3.2



## Pilot Lights

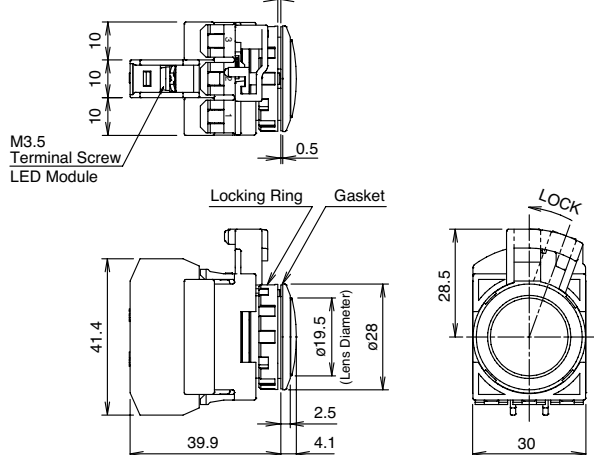
## Round Flush

Panel Thickness 0.8 to 3.2



## Round Dome

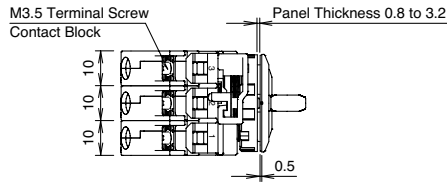
Panel Thickness 0.8 to 3.2



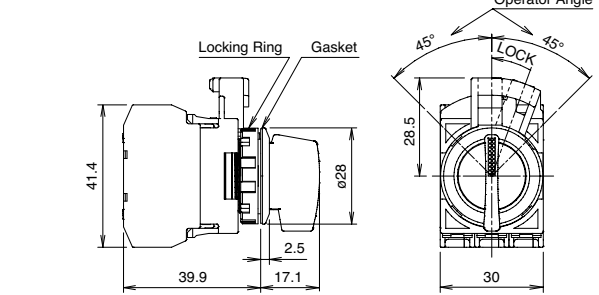
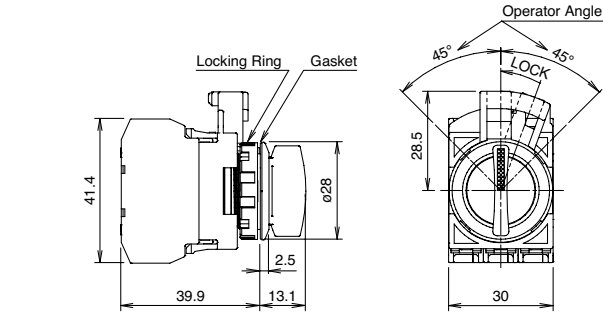
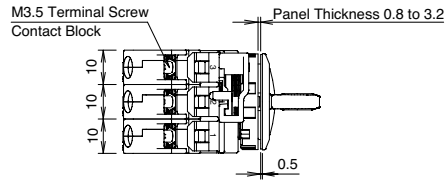
## Selector Switches

### 1 to 3 Contacts

#### Knob Operator

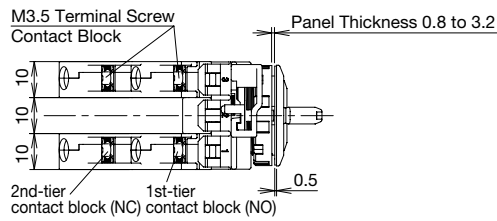


#### Lever Operator

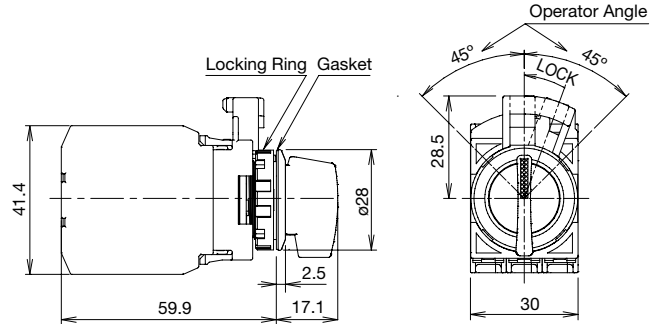
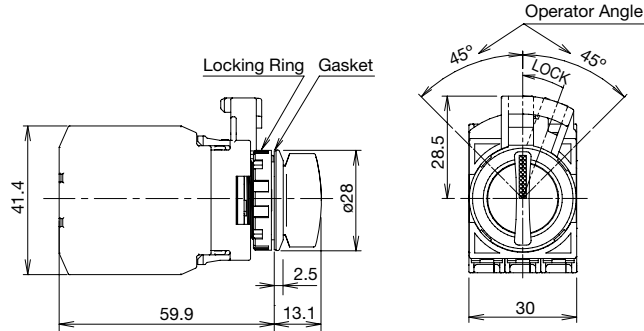
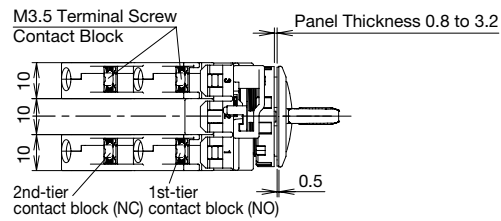


### 4 to 6 Contacts

#### Knob Operator

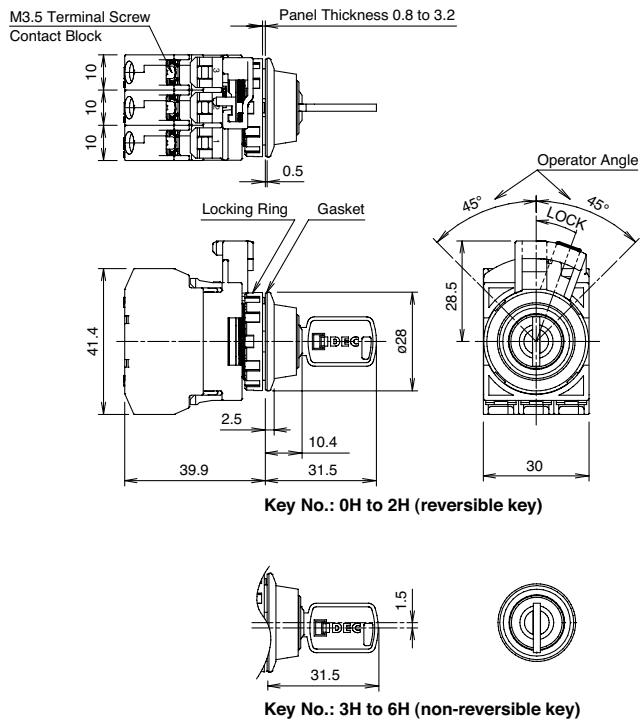


#### Lever Operator



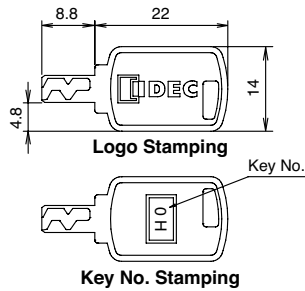
## Key Selector Switches

## 1 to 3 Contacts

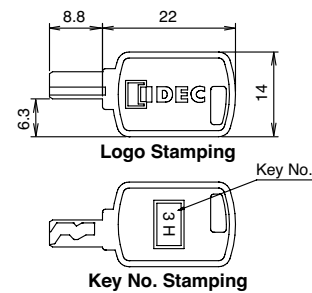


## Keys

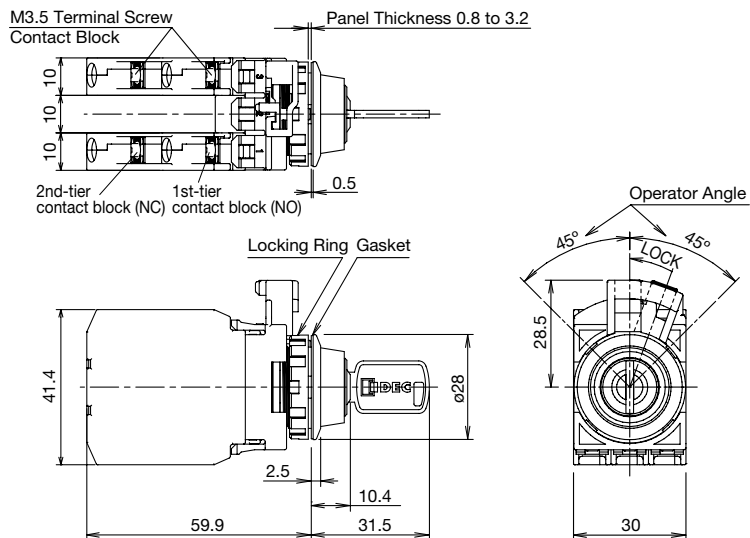
## Reversible Key



## Non-reversible Key



## 4 to 6 Contacts



## Safety Precautions

Turn off the power to CW series switches before installation, removal, wiring and maintenance. Failure to turn power off may cause electrical shocks or fire hazard.

When wiring, use wires of a proper size to meet the voltage and current requirements. Tighten the M3.5 terminal screws to a tightening torque of 1.0 to 1.3 N·m. Failure to tighten the terminal screws may cause overheating and fire.

## Operating Instructions

### Notes for Operation

When using the CW series switches in a safety-related circuit of a control system, observe safety rules and regulations of each country concerning particular applications of the actual machines and facilities. Perform risk assessment before operation to ensure safety.

### Operating Conditions

In corrosive gas or high-temperature, high-humidity environments, contact failure due to corrosion or color change or breakage of the housing may occur.

Main parts of the CW series switches are made of plastic. Do not scratch the surface with a sharp object or apply excessive electric shock or load, otherwise the switches may be damaged. In particular, keep the button, lens and bezel from such damage, otherwise appearance and function may be impaired.

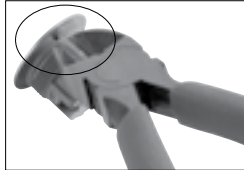
Do not apply detergents, cutting oils, or chemicals which may impair the function and appearance of the CW series switches.

### Panel Mounting

First remove the contact block and then the locking ring from the operator. Insert the operator into the panel cut-out from the front, tighten the locking ring from the back, then install the contact block to the operator.

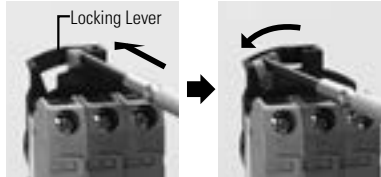
### Mounting Hole

1. Mounting hole dimensions are in compliance with IEC60947-5-1.
2. If the anti-rotation projection is removed from the bezel, CW series switches can be mounted in ø22.3mm mounting holes. To remove the anti-rotation projection, remove the gasket and use cutting pliers to break the projection.



### Removing and Installing the Contact Unit

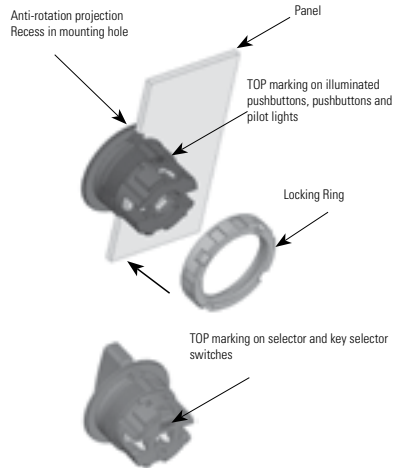
1. To remove the contact block from the operator, push the yellow locking lever and turn it to the left.



2. To install, align the TOP marking on the operator with the TOP marking on the contact block mounting adaptor, and turn the locking lever to the right.

### Installation in Panel Cut-out

Remove the locking ring from the operator. With the anti-rotation projection on the operator aligned with the recess in the mounting hole, insert the operator into the mounting hole. Tighten the locking ring from the rear of the panel.



### Note for Panel Mounting

When installing the operator in a panel cut-out, use the optional locking ring wrench (MW9Z-T1) to tighten the locking ring to a recommended tightening torque of 1.2 N·m. Do not use pliers and do not tighten excessively, otherwise the operator may be damaged.

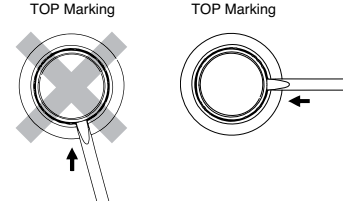
### Illuminated Pushbuttons and Pilot Lights

#### Removing the Lens

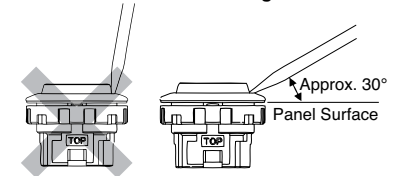
To remove the lens from an illuminated pushbutton or pilot light, insert a flat screwdriver under the flange of the lens at 90° from the TOP marking and twist the screwdriver.

Do not insert the screwdriver too far and do not apply excessive force to the lens, otherwise the bezel surface may be damaged.

#### Screwdriver Insertion Direction

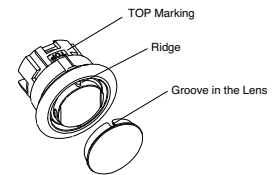


#### Screwdriver Insertion Angle



#### Installing the Lens

Turn the groove in the lens to the TOP marking on the operator housing. With the groove aligned with the ridge, press the lens in.



### Marking

Marking film can be applied for inscriptions or identification.

#### Applicable Marking Film Size

| Illuminated Pushbutton (Round Flush)<br>Pilot Light (Round Flush, Round Extended) | Illuminated Pushbutton (Round Extended) |
|-----------------------------------------------------------------------------------|-----------------------------------------|
|                                                                                   |                                         |

Thickness: 0.2mm maximum

Film material: Polyester (recommended)

Note: Film is not supplied and must be provided by the user.

## Operating Instructions, con't

### Pushbuttons

Pushbutton caps cannot be removed. Do not tamper with the cap using a screwdriver or pliers, otherwise it may be damaged.

### Selector Switches

Turn the selector operator or key to the detent positions.

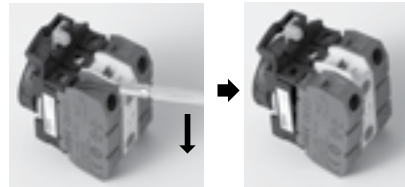
### Key Selector Switches

To prevent malfunction and damage, take the following precautions.

- Completely insert the key before turning.
- Do not remove the key while turning.
- Besides the standard key (0H), six other keys are available. Use only a key with a number that matches the number on the switches' key cylinder. (The standard key does not have a key number.)
- Keys are available in two shapes.
  - 0H (standard), 1H, 2H: reversible keys
  - 3H, 4H, 5H, 6H: non-reversible keys
 Make sure of correct insertion direction.

### Contact Blocks and LED Modules

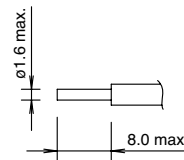
To remove the contact block from the operator, insert a flat screwdriver under the latch and push the screwdriver down as shown below. Before removing the LED module, first remove all contact blocks, and then remove the LED module in the same manner.



### Wiring

#### Applicable Wires

Stranded wire: 2.0 mm<sup>2</sup> maximum (14AWG)  
Solid wire: ø1.6 mm maximum

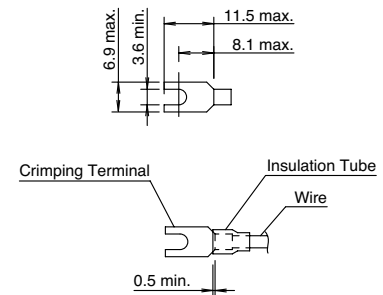


One or two wires can be connected to the terminal.

### Applicable Crimping Terminals

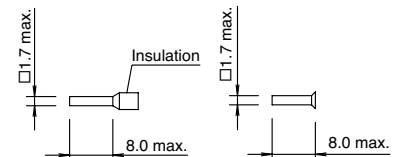
#### Spade terminal

When using crimping terminals, be sure to use insulating tubes or insulated crimping terminals.



#### Ferrule

When connecting two ferrules to one terminal, use ferrules without insulation.



When using spade terminals or ferrules, ensure that they are inserted completely. Ring terminals cannot be used.

### Screw Tightening Torque

Tighten the M3.5 terminal screws to a recommended torque of 1.0 to 1.3N·m.



## HW Series — 22mm IEC Style Global Pushbuttons

### Key features:

- Locking lever removable contact blocks
- Finger-safe IP20 contacts
- Tamperproof construction
- All E-stops meet EN60947-5-5, and are compliant with SEMI S2 standards
- Worldwide approvals
- Easy to assemble
- Choice of black plastic or metallic front bezels
- LED illumination
- Transformer or full voltage
- Slow make double break contacts



### HW: The Best Engineered Switch in the World

IDEC's HW switches are "The best engineered switch in the world" for a reason. Carrying the CE mark, UL, CSA, CCC (Chinese), and TUV approvals, these switches are designed for use in almost any part of the world.

Complete with finger-safe contact blocks offering IP20 protection, these 7/8" (22mm) switches

include illuminated and non-illuminated pushbuttons, pilot lights, selector switches, and emergency stop switches.

All switches also incorporate mechanically keyed safety locking levers, ensuring correct installation and maintaining safety in high-vibration applications.



File No. E68961



File No. LR21451



Certificate No.  
R50086203\_HW\_e-stop  
R50391189\_HW



Certificate No.  
2017010305987846

### Specifications

|                       |                                                                                         |                                                                                                                                                                                                  |                              |                              |                 |                                    |                             |
|-----------------------|-----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|------------------------------|-----------------|------------------------------------|-----------------------------|
| Electrical            | Rated Operational Characteristics                                                       | AC-15: A600 or Ue = 250V, Ie = 3A (NO, NC, NO-EM, NC-LB)<br>DC-13: P600 or Ue = 125V, Ie = 1.1A (NO, NC)<br>DC-13: Q600 or Ue = 125V, Ie = 0.9A (NO-EM, NC-LB)                                   |                              |                              |                 |                                    |                             |
|                       | Rated Insulation Voltage                                                                | 600V                                                                                                                                                                                             |                              |                              |                 |                                    |                             |
|                       | Rated Switching Over-Voltage                                                            | Less than 4kV, conforming to IEC60947-1                                                                                                                                                          |                              |                              |                 |                                    |                             |
|                       | Rated Impulse Withstanding Voltage                                                      | 4kV for contact circuit, 2.5kV for lamp circuit                                                                                                                                                  |                              |                              |                 |                                    |                             |
|                       | Rated Thermal Current                                                                   | 10 Amp                                                                                                                                                                                           |                              |                              |                 |                                    |                             |
|                       | Minimum Switching Capacity                                                              | 5 mA at 3V AC/DC                                                                                                                                                                                 |                              |                              |                 |                                    |                             |
|                       | Electrical Reliability                                                                  | MTBF < 1 fault for 10 million operation cycles (3V DC, 5mA)                                                                                                                                      |                              |                              |                 |                                    |                             |
|                       | Lamp Ratings                                                                            | LEDs: 6V/17mA max, 12V & 24V/11mA max, 120 & 240V/10mA max                                                                                                                                       |                              |                              |                 |                                    |                             |
| Mechanical            | Contact Operation                                                                       | Slow break NC or NO                                                                                                                                                                              |                              |                              |                 |                                    |                             |
|                       | Positive Action Operation<br>(Emergency Stops with NC contacts)                         | 5.5mm to 10mm travel to latch, 45N minimum force to latch<br>10mm maximum travel, 1,800 operations per hour maximum for a Pushlock Turn Reset<br>900 operations per hour maximum for a Push-Pull |                              |                              |                 |                                    |                             |
|                       | Operating Force                                                                         | Flush and extended pushbuttons—with 1NO or 1NC contact: 6.2±2N (momentary), 7.0±2N (maintained)<br>Additional contacts—1NO or 1NC: +3.2N (momentary), + 3.3N (maintained)                        |                              |                              |                 |                                    |                             |
|                       | Recommended Terminal Torque                                                             | Unit                                                                                                                                                                                             | Wire                         |                              | Number of Wires | Recommended Tightening Torque (Nm) | Terminal Screw              |
|                       |                                                                                         |                                                                                                                                                                                                  | Crimping Terminal            |                              |                 |                                    |                             |
|                       |                                                                                         | HW-U Contact Block                                                                                                                                                                               | Solid Wire                   | ø0.5 to 1.6 mm (AWG14 to 22) | 2               | 1.0 to 1.3                         | M3.5                        |
|                       |                                                                                         |                                                                                                                                                                                                  |                              | ø1.7 to 2.0 mm (AWG12)       | 1               | 1.2 to 1.3                         |                             |
|                       |                                                                                         |                                                                                                                                                                                                  | Stranded Wire                | 0.3 to 2.0 mm² (AWG14 to 22) | 2               | 1.0 to 1.3                         |                             |
|                       |                                                                                         |                                                                                                                                                                                                  |                              | 2.1 to 3.5 mm² (AWG12)       | 1               | 1.2 to 1.3                         |                             |
|                       | Illuminated Unit (*1)                                                                   | Solid Wire                                                                                                                                                                                       | ø0.5 to 1.6 mm (AWG14 to 22) | 2                            | 1.0 to 1.3      | M3.5                               |                             |
|                       |                                                                                         |                                                                                                                                                                                                  | Stranded Wire                |                              |                 |                                    | 0.3 to 2.0 mm (AWG14 to 22) |
|                       | Applicable Wire Size                                                                    | Pilot Light                                                                                                                                                                                      | Crimping Terminal            |                              | 2               | 0.6 to 1.0 (M3.0)                  |                             |
|                       |                                                                                         |                                                                                                                                                                                                  | Solid Wire                   | ø0.5 to 1.6 mm (AWG14 to 22) |                 | 1.0 to 1.3 (M3.5)                  |                             |
|                       |                                                                                         |                                                                                                                                                                                                  | Stranded Wire                | ø0.3 to 2.0 mm (AWG14 to 22) |                 |                                    |                             |
|                       |                                                                                         |  1. * refers to the lamp terminals of the illuminated push buttons and selector switches.                     |                              |                              |                 |                                    |                             |
| Applicable Wire Size  | Minimum 1 x 22 AWG, max. 2 x 14 AWG or 1 x 12 AWG                                       |                                                                                                                                                                                                  |                              |                              |                 |                                    |                             |
| Contact Resistance    | Initial contact resistance of 50mΩ or less                                              |                                                                                                                                                                                                  |                              |                              |                 |                                    |                             |
| Contact Gap           | 4mm (NO and NC), 2mm (NO-EM and NC-LB)                                                  |                                                                                                                                                                                                  |                              |                              |                 |                                    |                             |
| Horsepower Rating     | Reference Value: 1/4 HP @ 120V (1ø non-reversing), 1HP @ 240V (3ø non-reversing)        |                                                                                                                                                                                                  |                              |                              |                 |                                    |                             |
| Contact Material      | Silver (gold plated contacts available - contact IDEC)                                  |                                                                                                                                                                                                  |                              |                              |                 |                                    |                             |
| Operating Temperature | Operation: -25 to +60°C (illuminated -25 to +50°C dome -25 to +55°C)                    |                                                                                                                                                                                                  |                              |                              |                 |                                    |                             |
| Vibration Resistance  | 10 to 55Hz, 98m/sec² (10G) conforming to IEC6068-2-6                                    |                                                                                                                                                                                                  |                              |                              |                 |                                    |                             |
| Shock Resistance      | 980m/sec² (100G) conforming to IEC6068-2-7                                              |                                                                                                                                                                                                  |                              |                              |                 |                                    |                             |
| Mechanical Life       | Momentary pushbuttons: 5,000,000 (900 operations per hour), All other switches: 500,000 |                                                                                                                                                                                                  |                              |                              |                 |                                    |                             |

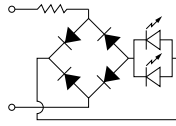
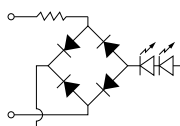
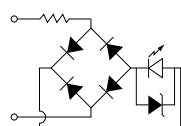


|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |             |                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |     |     |                              |      |      |  |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-----|------------------------------|------|------|--|
| Standards & Approvals | Conforming to Standards                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |             |                                                      | EN60947-1, EN60947-5-1, VDE0660-200, UL508, CSA C22-2 No.14                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |     |     |                              |      |      |  |
|                       | <div><div><br/>File No. E68961</div><div><br/>File No. LR92374</div><div></div><div>Approvals</div><div></div><div><br/>TÜV Rheinland<br/>Certificate No. 2005010305145656</div><div>Registration No. R9551089 (E-stops)<br/>Registration No. R50054316 (Dual Pushbuttons)<br/>Registration No. J9650511 (Pilot Lights)<br/>Registration No. J9551458 (all other switches)</div></div> |             |                                                      | <div>CSA: pushbuttons and selector switches: A600<br/>pilot lights and illuminated pushbuttons, direct supply pilot lights and illuminated pushbuttons with integral transformer (100/110, 115, 120, 200/220, 230, 240, 380, 400/440, 480V)<br/>UL: pushbuttons and selector switches: A600<br/>pilot lights and illuminated pushbuttons, direct supply pilot lights and illuminated pushbuttons with integral transformer (100/110, 115, 120, 200/220, 230, 240, 380, 400/440, 480V)<br/>TUV: pushbuttons and selector switches: A600=P600 (NO, NC)/Q600 (NO-EM, NC-LB)<br/>pilot lights and illuminated pushbuttons, direct supply pilot lights and illuminated pushbuttons with integral transformer (100/110, 115, 120, 200/220, 230, 240, 380, 400/440, 480V)</div> |     |     |                              |      |      |  |
|                       | Electric Shock Protection                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |             |                                                      | Class 2 conforming to IEC60664-7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |     |     |                              |      |      |  |
|                       | Degree of Protection<br>(conforming to IEC60529 and UL50)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |             |                                                      | UL Type 1, 4X, 12, 13 <sup>1</sup><br>IP65 (from front of the panel) IP20 (Type HW-U contact block)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |     |     |                              |      |      |  |
|                       | Pollution Degree (conforming to IEC60947-1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |             |                                                      | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |     |     |                              |      |      |  |
| Contact Ratings       | External Short-Circuit Protection                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |             |                                                      | 10A 250V fuse conforming to IEC60269-1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |     |     |                              |      |      |  |
|                       | Pushbuttons<br>Illuminated Pushbuttons<br>Selector Switches<br>Illuminated Selector Switches<br>Pushbutton Selectors                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |             |                                                      | Contact Block                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |     |     | Type HW-U                    |      |      |  |
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |             |                                                      | Rated Insulation Voltage                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |     |     | 600V                         |      |      |  |
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |             |                                                      | Rated Continuous Current                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |     |     | 10A                          |      |      |  |
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |             |                                                      | Contact Ratings by Utilization Category<br>IEC 60947-5-1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |     |     | AC-15 (A600)<br>DC-13 (P600) |      |      |  |
| Operational Voltage   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |             |                                                      | 24V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 48V | 50V | 110V                         | 220V | 440V |  |
| Characteristics       | Operational Current                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | AC 50/60 Hz | AC-12 Control of resistive loads & solid state loads | 10A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | —   | 10A | 10A                          | 6A   | 2A   |  |
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |             | AC-15 Control of electromagnetic loads (> 72VA)      | 10A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | —   | 7A  | 5A                           | 3A   | 1A   |  |
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | DC          | DC-12 Control of resistive loads & solid state loads | 10A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 5A  | —   | 2.2A                         | 1.1A | —    |  |
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |             | DC-13 Control of electromagnets                      | 5A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 2A  | —   | 1.1A                         | 0.6A | —    |  |



For dimensions, see page 683.  
Note 1. Except HW2B

## LED Lamp Ratings (LSTD Type)

| Model                  |                                                                                     |                   | LSTD-6②                                                                                                                                                                                                                                                                                                 | LSTD-1②        | LSTD-2②        | LSTD-H2②    | LSTD-M4②    |
|------------------------|-------------------------------------------------------------------------------------|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------|-------------|-------------|
| Lamp Base              |                                                                                     |                   | BA9S/13                                                                                                                                                                                                                                                                                                 |                |                |             |             |
| Rated Voltage          |                                                                                     |                   | 6V AC/DC                                                                                                                                                                                                                                                                                                | 12V AC/DC      | 24V AC/DC      | 120V AC     | 240V AC     |
| Voltage Range          |                                                                                     |                   | 6V AC/DC ±10%                                                                                                                                                                                                                                                                                           | 12V AC/DC ±10% | 24V AC/DC ±10% | 120V AC ±5% | 240V AC ±5% |
| Current Draw           | AC                                                                                  | A, R, W:<br>G, S: | 17mA<br>8mA                                                                                                                                                                                                                                                                                             | 11mA           | 11mA           | 10mA        | 10mA        |
|                        | DC                                                                                  | A, R, W:<br>G, S: | 14mA<br>5.5mA                                                                                                                                                                                                                                                                                           | 10mA           | 10mA           | —           | —           |
| Color Code             |                                                                                     |                   | A (amber), G (green), R (red), S (blue), W (white)                                                                                                                                                                                                                                                      |                |                |             |             |
| Lamp Base Color        |                                                                                     |                   | Same as illumination color                                                                                                                                                                                                                                                                              |                |                |             |             |
| Voltage Marking        |                                                                                     |                   | Die stamped on the base                                                                                                                                                                                                                                                                                 |                |                |             |             |
| Life (reference value) |                                                                                     |                   | Approx. 50,000 hours (The luminance reduces to 50% the initial intensity when used on complete DC.)                                                                                                                                                                                                     |                |                |             |             |
| Internal Circuit       | A, R, W                                                                             |                   | A, R, W                                                                                                                                                                                                                                                                                                 |                |                |             |             |
|                        |  |                   |                                                                                                                                                                                                                      |                |                |             |             |
|                        |  |                   | G, S                                                                                                                                                                                                                                                                                                    |                |                |             |             |
|                        |                                                                                     |                   |                                                                                                                                                                                                                                                                                                         |                |                |             |             |
|                        |                                                                                     |                   |  LED Chip<br> Protection Diode<br> Zener Diode |                |                |             |             |



In place of ②, specify the Lens/LED Color Code.

Non-Illuminated Round Pushbuttons (Assembled)



|            |               | Round Flush   |              | Round Extended |              |
|------------|---------------|---------------|--------------|----------------|--------------|
| Function   | Contacts      | Plastic Bezel | Metal Bezel  | Plastic Bezel  | Metal Bezel  |
| Momentary  | Operator Only | HW1B-M1-①     | HW4B-M1-①    | HW1B-M2-①      | HW4B-M2-①    |
|            | 1NO           | HW1B-M1F10-①  | HW4B-M1F10-① | HW1B-M2F10-①   | HW4B-M2F10-① |
|            | 1NC           | HW1B-M1F01-①  | HW4B-M1F01-① | HW1B-M2F01-①   | HW4B-M2F01-① |
|            | 1NO-1NC       | HW1B-M1F11-①  | HW4B-M1F11-① | HW1B-M2F11-①   | HW4B-M2F11-① |
|            | 2NO           | HW1B-M1F20-①  | HW4B-M1F20-① | HW1B-M2F20-①   | HW4B-M2F20-① |
|            | 2NC           | HW1B-M1F02-①  | HW4B-M1F02-① | HW1B-M2F02-①   | HW4B-M2F02-① |
|            | 2NO-2NC       | HW1B-M1F22-①  | HW4B-M1F22-① | HW1B-M2F22-①   | HW4B-M2F22-① |
| Maintained | Operator Only | HW1B-A1-①     | HW4B-A1-①    | HW1B-A2-①      | HW4B-A2-①    |
|            | 1NO           | HW1B-A1F10-①  | HW4B-A1F10-① | HW1B-A2F10-①   | HW4B-A2F10-① |
|            | 1NC           | HW1B-A1F01-①  | HW4B-A1F01-① | HW1B-A2F01-①   | HW4B-A2F01-① |
|            | 1NO-1NC       | HW1B-A1F11-①  | HW4B-A1F11-① | HW1B-A2F11-①   | HW4B-A2F11-① |
|            | 2NO           | HW1B-A1F20-①  | HW4B-A1F20-① | HW1B-A2F20-①   | HW4B-A2F20-① |
|            | 2NC           | HW1B-A1F02-①  | HW4B-A1F02-① | HW1B-A2F02-①   | HW4B-A2F02-① |
|            | 2NO-2NC       | HW1B-A1F22-①  | HW4B-A1F22-① | HW1B-A2F22-①   | HW4B-A2F22-① |

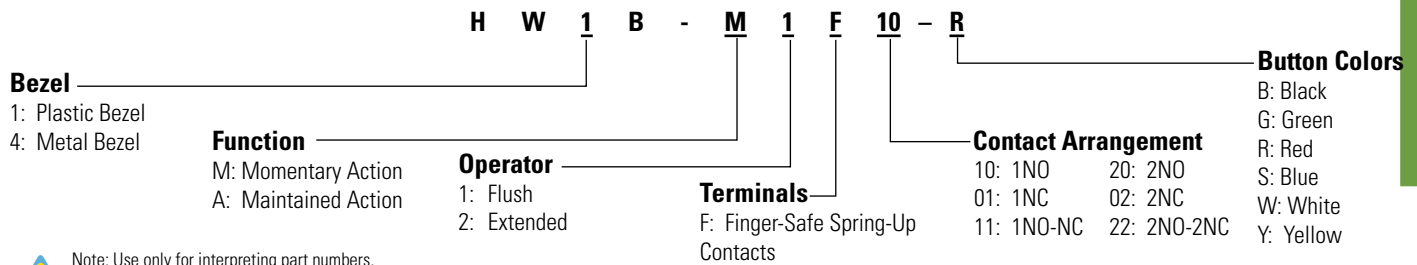
① Button Color Code

| Color  | Code |
|--------|------|
| Black  | B    |
| Green  | G    |
| Red    | R    |
| Blue   | S    |
| White  | W    |
| Yellow | Y    |



1. In place of ①, specify the Button Color Code from table below.
2. For nameplates and accessories, see page 678 and 681.
3. For dimensions, see page 683.
4. For contact assembly part numbers, see page 683.
5. All assembled part numbers in catalog include standard, Finger-Safe (HW-U...) contacts.
6. Operator only models include operator plus button.
7. Additional contact configurations available (up to 6 total contacts).

## Part Number Structure



## Non-Illuminated Round Pushbuttons (Replacement Parts)

|                |   |                  |   |                   |   |                    |   |          |   |        |   |                |
|----------------|---|------------------|---|-------------------|---|--------------------|---|----------|---|--------|---|----------------|
| Contact Blocks | + | Mounting Adaptor | + | Safety Lever Lock | + | Anti-Rotation Ring | + | Operator | + | Button | = | Completed Unit |
|----------------|---|------------------|---|-------------------|---|--------------------|---|----------|---|--------|---|----------------|



## Contact Blocks

| Style | Contacts                       | 1NO                    | 1NC                    |
|-------|--------------------------------|------------------------|------------------------|
|       | Finger-Safe Spring-Up Terminal | HW-U10-F               | HW-U01-F               |
|       |                                | HW-U10R-F (early make) | HW-U01R-F (late break) |
|       | Dummy Block                    | HW-DB                  |                        |

## Contact Block Mounting Adaptor

| Style | Part Number |
|-------|-------------|
|       | HW-CB2C     |

- Used to mount contact blocks to operator.
- IEEC strongly recommends using the safety lever lock to prevent heavy vibration or maintenance personnel from inadvertently unlocking contacts.

## Anti-Rotation Ring

| Style | Part Number |
|-------|-------------|
|       | HW9Z-RL     |



Use with notched panel cutout to prevent unit rotation.

## Operators

| Style                    |            | Plastic Bezel | Metal Bezel |
|--------------------------|------------|---------------|-------------|
| Round Flush/<br>Extended | Momentary  | HW1B-M0       | HW4B-M0     |
|                          | Maintained | HW1B-A0       | HW4B-A0     |

## Safety Lever Lock

| Style | Part Number |
|-------|-------------|
|       | HW9Z-LS     |

## Buttons

| Style          | Part Number |
|----------------|-------------|
| Round Flush    | HW1A-B1-①   |
|                |             |
| Round Extended | HW1A-B2-①   |
|                |             |



1. In place of ①, specify the Button Color Code from table.

## ① Button Color Code

| Color  | Code |
|--------|------|
| Black  | B    |
| Green  | G    |
| Red    | R    |
| Blue   | S    |
| White  | W    |
| Yellow | Y    |

Non-Illuminated Mushroom Head Pushbuttons (Assembled)



|            |               | ø29mm Mushroom Head |              | ø40mm Mushroom Head |              |
|------------|---------------|---------------------|--------------|---------------------|--------------|
| Function   | Contacts      | Plastic Bezel       | Metal Bezel  | Plastic Bezel       | Metal Bezel  |
| Momentary  | Operator Only | HW1B-M3-①           | HW4B-M3-①    | HW1B-M4-①           | HW4B-M4-①    |
|            | 1NO           | HW1B-M3F10-①        | HW4B-M3F10-① | HW1B-M4F10-①        | HW4B-M4F10-① |
|            | 1NC           | HW1B-M3F01-①        | HW4B-M3F01-① | HW1B-M4F01-①        | HW4B-M4F01-① |
|            | 1NO-1NC       | HW1B-M3F11-①        | HW4B-M3F11-① | HW1B-M4F11-①        | HW4B-M4F11-① |
|            | 2NO           | HW1B-M3F20-①        | HW4B-M3F20-① | HW1B-M4F20-①        | HW4B-M4F20-① |
|            | 2NC           | HW1B-M3F02-①        | HW4B-M3F02-① | HW1B-M4F02-①        | HW4B-M4F02-① |
| Maintained | 2NO-2NC       | HW1B-M3F22-①        | HW4B-M3F22-① | HW1B-M4F22-①        | HW4B-M4F22-① |
|            | Operator Only | HW1B-A3-①           | HW4B-A3-①    | HW1B-A4-①           | HW4B-A4-①    |
|            | 1NO           | HW1B-A3F10-①        | HW4B-A3F10-① | HW1B-A4F10-①        | HW4B-A4F10-① |
|            | 1NC           | HW1B-A3F01-①        | HW4B-A3F01-① | HW1B-A4F01-①        | HW4B-A4F01-① |
|            | 1NO-1NC       | HW1B-A3F11-①        | HW4B-A3F11-① | HW1B-A4F11-①        | HW4B-A4F11-① |
|            | 2NO           | HW1B-A3F20-①        | HW4B-A3F20-① | HW1B-A4F20-①        | HW4B-A4F20-① |
|            | 2NC           | HW1B-A3F02-①        | HW4B-A3F02-① | HW1B-A4F02-①        | HW4B-A4F02-① |
|            | 2NO-2NC       | HW1B-A3F22-①        | HW4B-A3F22-① | HW1B-A4F22-①        | HW4B-A4F22-① |



① Button Color Code

| Color  | Code |
|--------|------|
| Black  | B    |
| Green  | G    |
| Red    | R    |
| Blue   | S    |
| White  | W    |
| Yellow | Y    |



- 1. In place of ①, specify the Button Color Code from table.
- 2. \*60mm mushroom available only in red, green, black, and yellow.
- 3. For nameplates and accessories, see page 678 and 681.
- 4. For dimensions, see page 683.
- 5. For contact assembly part numbers, see page 683.
- 6. All assembled part numbers in catalog include standard spring-up Finger-Safe (HW-U...) contacts.
- 7. Operator only models include operator plus button.
- 8. Additional contact configurations available (up to 6 total contacts).

|           |               | ø60mm Mushroom Head |
|-----------|---------------|---------------------|
| Function  | Contacts      | Plastic Bezel       |
| Momentary | Operator Only | HW1B-M5-①*          |
|           | 1NO           | HW1B-M5F10-①*       |
|           | 1NC           | HW1B-M5F01-①*       |
|           | 1NO-1NC       | HW1B-M5F11-①*       |
|           | 2NO           | HW1B-M5F20-①*       |
|           | 2NC           | HW1B-M5F02-①*       |
|           | 2NO-2NC       | HW1B-M5F22-①*       |

## Part Number Structure

## Bezel

1: Plastic Bezel  
4: Metal Bezel  
(Not available for 60mm mushroom)

## Function

M: Momentary Action  
A: Maintained Action  
(Not available for 60mm jumbo mushroom pushbutton.)

## Operator

3: ø29mm Mushroom  
4: ø40mm Mushroom  
5: ø60mm Mushroom

## Terminals

F: Finger-Safe Spring-Up  
Contacts

## Contact Arrangement

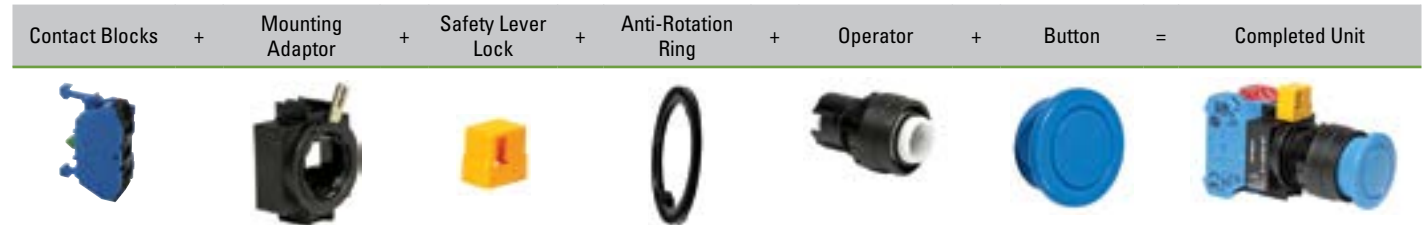
10: 1NO 20: 2NO  
01: 1NC 02: 2NC  
11: 1NO-NC 22: 2NO-2NC

## Button Colors

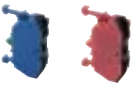
B: Black  
G: Green  
R: Red  
S: Blue  
W: White  
Y: Yellow

 Note: Use only for interpreting part numbers.  
Do not use for developing part numbers.

## Non-Illuminated Mushroom Head Pushbuttons (Replacement Parts)



## Contact Blocks

| Style                                                                               | Contacts                       | 1NO                    | 1NC                    |
|-------------------------------------------------------------------------------------|--------------------------------|------------------------|------------------------|
|   | Finger-Safe Spring-Up Terminal | HW-U10-F               | HW-U01-F               |
|                                                                                     |                                | HW-U10R-F (early make) | HW-U01R-F (late break) |
|  | Dummy Block                    | HW-DB                  |                        |

## Contact Block Mounting Adaptor

| Style                                                                               | Part Number |
|-------------------------------------------------------------------------------------|-------------|
|  | HW-CB2C     |

-  1. Used to mount contact blocks to operator.  
2. IDEC strongly recommends using the safety lever lock to prevent heavy vibration or maintenance personnel from inadvertently unlocking contacts.

## Safety Lever Lock

| Style                                                                             | Part Number |
|-----------------------------------------------------------------------------------|-------------|
|  | HW9Z-LS     |

## Anti-Rotation Ring

| Appearance                                                                          | Part Number |
|-------------------------------------------------------------------------------------|-------------|
|  | HW9Z-RL     |

## Operators

| Style                            |            | Plastic Bezel | Metal Bezel |
|----------------------------------|------------|---------------|-------------|
| ø29mm Mushroom<br>ø40mm Mushroom | Momentary  | HW1B-M0L      | HW4B-M0L    |
|                                  | Maintained | HW1B-A0L      | HW4B-A0L    |
| Ø60mm Jumbo Mushroom             | Momentary  | HW1B-M5-①*    | —           |

-  1. \*60mm mushroom operator includes non-removable button (available in red, black, green and yellow only).  
2. For nameplates and accessories, see page 678 and 681.  
3. For dimensions, see page 683.

## Buttons

| Style                                                                                 | Part Number |
|---------------------------------------------------------------------------------------|-------------|
| ø29mm Mushroom Cap                                                                    | HW1A-B3-①   |
|   |             |
| ø40mm Mushroom Cap                                                                    | HW1A-B4-①   |
|  |             |

-  1. In place of ①, specify the Button Color Code from table.

## ① Button Color Code

| Color | Code | Color  | Code |
|-------|------|--------|------|
| Black | B    | Blue   | S    |
| Green | G    | White  | W    |
| Red   | R    | Yellow | Y    |

-  HW1B-M5 available only in black, red, green and yellow.

Non-Illuminated Square Pushbuttons (Assembled)



| Function   | Contacts      | Square Flush  | Square Extended |
|------------|---------------|---------------|-----------------|
|            |               | Plastic Bezel | Plastic Bezel   |
| Momentary  | Operator Only | HW2B-M1-①     | HW2B-M2-①       |
|            | 1NO           | HW2B-M1F10-①  | HW2B-M2F10-①    |
|            | 1NC           | HW2B-M1F01-①  | HW2B-M2F01-①    |
|            | 1NO-1NC       | HW2B-M1F11-①  | HW2B-M2F11-①    |
|            | 2NO           | HW2B-M1F20-①  | HW2B-M2F20-①    |
|            | 2NC           | HW2B-M1F02-①  | HW2B-M2F02-①    |
|            | 2NO-2NC       | HW2B-M1F22-①  | HW2B-M2F22-①    |
| Maintained | Operator Only | HW2B-A1-①     | HW2B-A2-①       |
|            | 1NO           | HW2B-A1F10-①  | HW2B-A2F10-①    |
|            | 1NC           | HW2B-A1F01-①  | HW2B-A2F01-①    |
|            | 1NO-1NC       | HW2B-A1F11-①  | HW2B-A2F11-①    |
|            | 2NO           | HW2B-A1F20-①  | HW2B-A2F20-①    |
|            | 2NC           | HW2B-A1F02-①  | HW2B-A2F02-①    |
|            | 2NO-2NC       | HW2B-A1F22-①  | HW2B-A2F22-①    |

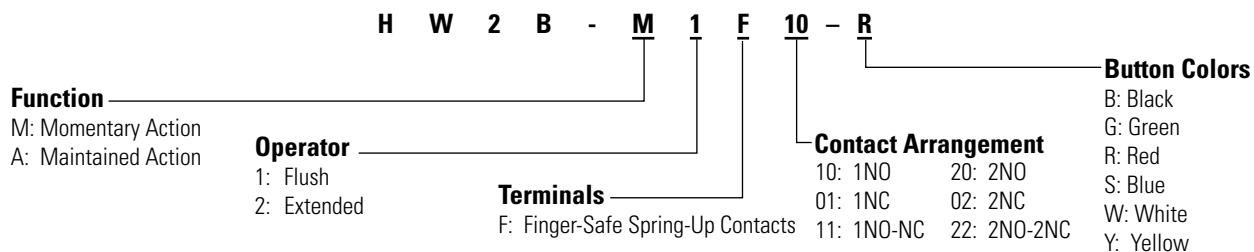
① Button Color Code

| Color  | Code |
|--------|------|
| Black  | B    |
| Green  | G    |
| Red    | R    |
| Blue   | S    |
| White  | W    |
| Yellow | Y    |



- 1. In place of ①, specify the Button Color Code from table.
- 2. For nameplates and accessories, see page 678 and 681.
- 3. For dimensions, see page 683.
- 4. For contact assembly part numbers, see page 683.
- 5. Square pushbuttons available in plastic bezel only.
- 6. All assembled part numbers in catalog include finger-safe spring-up (HW-U...) contacts.
- 7. Operator only model includes operator and button.
- 8. Additional contact configurations available (up to 6 total contacts).

## Part Number Structure



Note: Use only for interpreting part numbers.  
Do not use for developing part numbers.

## Non-Illuminated Square Pushbuttons (Replacement Parts)

|                |   |                  |   |                   |   |                    |   |          |   |        |   |                |
|----------------|---|------------------|---|-------------------|---|--------------------|---|----------|---|--------|---|----------------|
| Contact Blocks | + | Mounting Adaptor | + | Safety Lever Lock | + | Anti-Rotation Ring | + | Operator | + | Button | = | Completed Unit |
|----------------|---|------------------|---|-------------------|---|--------------------|---|----------|---|--------|---|----------------|



## Contact Blocks

| Style | Contacts                       | 1NO                    | 1NC                    |
|-------|--------------------------------|------------------------|------------------------|
|       | Finger-Safe Spring-Up Terminal | HW-U10-F               | HW-U01-F               |
|       |                                | HW-U10R-F (early make) | HW-U01R-F (late break) |
|       | Dummy Block                    | HW-DB                  |                        |

## Contact Block Mounting Adaptor

| Style | Part Number |
|-------|-------------|
|       | HW-CB2C     |



- Used to mount contact blocks to operator.
- IDEC strongly recommends using the safety lever lock to prevent heavy vibration or maintenance personnel from inadvertently unlocking contacts.

## Safety Lever Lock

| Style | Part Number |
|-------|-------------|
|       | HW9Z-LS     |

## Anti-Rotation Ring

| Appearance | Part Number |
|------------|-------------|
|            | HW9Z-RL     |



Use with notched panel cutout to prevent unit rotation.

## Operators

| Style |            | Plastic Bezel |
|-------|------------|---------------|
|       | Momentary  | HW2B-M0       |
|       | Maintained | HW2B-A0       |



- For nameplates and accessories, see pages 678 and 681.
- For dimensions, see page 683.

## Buttons

| Style               | Part Number |
|---------------------|-------------|
| Square Flush<br>    | HW2A-B1-①   |
| Square Extended<br> | HW2A-B2-①   |



- In place of ①, specify the Button Color Code from table.

## ① Button Color Code

| Color | Code | Color  | Code |
|-------|------|--------|------|
| Black | B    | Blue   | S    |
| Green | G    | White  | W    |
| Red   | R    | Yellow | Y    |



## Non-Illuminated E-Stop Pushbuttons (Assembled)



| Contacts      | Ø29mm Head Pushlock Turn Reset |               | Ø40mm Head Pushlock Turn Reset |               |
|---------------|--------------------------------|---------------|--------------------------------|---------------|
|               | Plastic Bezel                  | Metal Bezel   | Plastic Bezel                  | Metal Bezel   |
| Operator Only | HW1B-V3Ⓢ†                      | HW4B-V3Ⓢ†     | HW1B-V4Ⓢ†                      | HW4B-V4Ⓢ†     |
| 1NO           | HW1B-V3F10-Ⓢ†                  | HW4B-V3F10-Ⓢ† | HW1B-V4F10-Ⓢ†                  | HW4B-V4F10-Ⓢ† |
| 1NC           | HW1B-V3F01-Ⓢ†                  | HW4B-V3F01-Ⓢ† | HW1B-V4F01-Ⓢ†                  | HW4B-V4F01-Ⓢ† |
| 1NO-1NC       | HW1B-V3F11-Ⓢ†                  | HW4B-V3F11-Ⓢ† | HW1B-V4F11-Ⓢ†                  | HW4B-V4F11-Ⓢ† |
| 2NO           | HW1B-V3F20-Ⓢ†                  | HW4B-V3F20-Ⓢ† | HW1B-V4F20-Ⓢ†                  | HW4B-V4F20-Ⓢ† |
| 2NC           | HW1B-V3F02-Ⓢ†                  | HW4B-V3F02-Ⓢ† | HW1B-V4F02-Ⓢ†                  | HW4B-V4F02-Ⓢ† |



| Contacts      | Ø40mm Head EMO Pushlock Turn Reset |                     | Ø40mm Head Pushlock Key Reset |               |
|---------------|------------------------------------|---------------------|-------------------------------|---------------|
|               | Plastic Bezel                      | Metal Bezel         | Plastic Bezel                 | Metal Bezel   |
| Operator Only | HW1B-V4R-EMO-2*                    | HW4B-V4R-EMO-2*     | HW1B-X4R*                     | HW4B-X4R*     |
| 1NO           | HW1B-V4F10-R-EMO-2*                | HW4B-V4F10-R-EMO-2* | HW1B-X4F10-R*                 | HW4B-X4F10-R* |
| 1NC           | HW1B-V4F01-R-EMO-2*                | HW4B-V4F01-R-EMO-2* | HW1B-X4F01-R*                 | HW4B-X4F01-R* |
| 1NO-1NC       | HW1B-V4F11-R-EMO-2*                | HW4B-V4F11-R-EMO-2* | HW1B-X4F11-R*                 | HW4B-X4F11-R* |
| 2NO           | HW1B-V4F20-R-EMO-2*                | HW4B-V4F20-R-EMO-2* | HW1B-X4F20-R*                 | HW4B-X4F20-R* |
| 2NC           | HW1B-V4F02-R-EMO-2*                | HW4B-V4F02-R-EMO-2* | HW1B-X4F02-R*                 | HW4B-X4F02-R* |

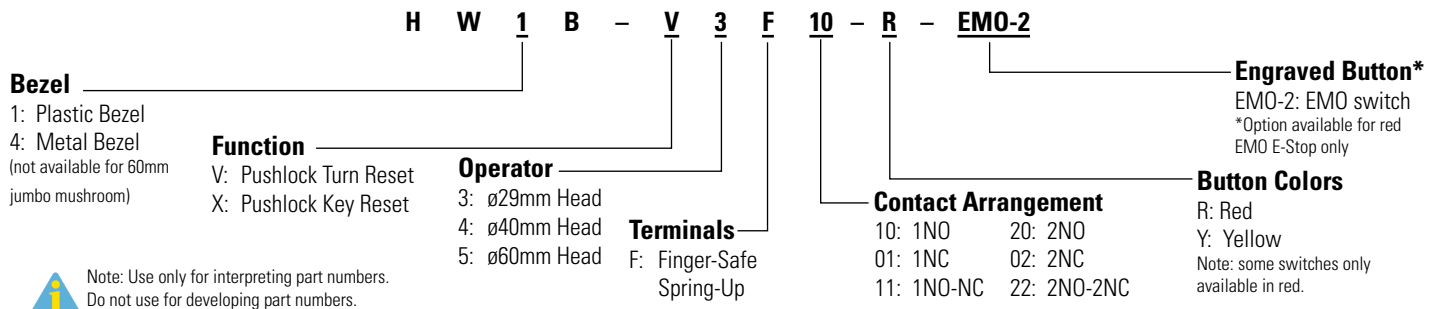


- \* Available in Red only.
- † Available in red or yellow. Insert color code in place of Ⓢ (R: Red, Y: Yellow).
- For accessories, see page 681.
- For dimensions, see page 683.
- For nameplates and shrouds, see page 683.
- For contact assembly part numbers, see page 683.
- All HW series E-stops comply with EN60947-5-5, the IEC "E-Stop Addendum to the Low Voltage Directive," this includes "tamper proof" operation whereby a change of contact state is not possible by "teasing" or "floating" the operator.
- All assembled part numbers in catalog include standard finger-safe spring-up (HW-U...) contacts.
- Operator only models include operator and button.
- Additional contact configurations available (up to 6 total contacts).

| Contacts      | ø60mm Head Pushlock Turn Reset |
|---------------|--------------------------------|
|               | Plastic Bezel                  |
| Operator Only | HW1B-V5R*                      |
| 1NO           | HW1B-V5F10-R*                  |
| 1NC           | HW1B-V5F01-R*                  |
| 1NO-1NC       | HW1B-V5F11-R*                  |
| 2NO           | HW1B-V5F20-R*                  |
| 2NC           | HW1B-V5F02-R*                  |



## Part Number Structure



## Non-Illuminated E-Stop Pushbuttons (Replacement Parts)

| Contact Blocks | + | Mounting Adaptor | + | Safety Lever Lock | + | Anti-Rotation Ring | + | Operator | = | Completed Unit |
|----------------|---|------------------|---|-------------------|---|--------------------|---|----------|---|----------------|
|----------------|---|------------------|---|-------------------|---|--------------------|---|----------|---|----------------|



## Contact Blocks

| Style | Contacts                       | 1NO                    | 1NC                    |
|-------|--------------------------------|------------------------|------------------------|
|       | Finger-Safe Spring-Up Terminal | HW-U10-F               | HW-U01-F               |
|       |                                | HW-U10R-F (early make) | HW-U01R-F (late break) |
|       | Dummy Block                    | HW-DB                  |                        |

## Safety Lever Lock

| Style | Part Number |
|-------|-------------|
|       | HW9Z-LS     |

## Anti-Rotation Ring

| Appearance | Part Number |
|------------|-------------|
|            | HW9Z-RL     |



Use with notched panel cutout to prevent unit rotation.

## Operators

| Style                                   | Plastic |                | Metal          |
|-----------------------------------------|---------|----------------|----------------|
| ø29mm Head Pushlock Turn Reset<br>      | red     | HW1B-V3R       | HW4B-V3R       |
|                                         | yellow  | HW1B-V3Y       | HW4B-V3Y       |
| ø40mm Head Pushlock Turn Reset<br>      | red     | HW1B-V4R       | HW4B-V4R       |
|                                         | yellow  | HW1B-V4Y       | HW4B-V4Y       |
| ø40mm Head EMO Pushlock Turn Reset*<br> |         | HW1B-V4R-EMO-2 | HW4B-V4R-EMO-2 |
| ø40mm Head Pushlock Key Reset*<br>      |         | HW1B-X4R       | HW4B-X4R       |
| ø60mm Head Pushlock Turn Reset*<br>     |         | HW1B-V5R       | —              |



1. \*Available in red only.  
 2. All E-Stop buttons are not removable from the operator.



Note: Determine mounting centers to ensure proper spacing.

## Contact Block Mounting Adaptor

| Style | Part Number |
|-------|-------------|
|       | HW-CB2C     |



1. Used to mount contact blocks to operator.  
 2. IDEC strongly recommends using the safety lever lock to prevent heavy vibration or maintenance personnel from inadvertently unlocking contacts.

## Push Pull & Unibody E-Stop Pushbuttons (Assembled)



| Contacts               | ø40mm Head Push-Pull |               |
|------------------------|----------------------|---------------|
|                        | Plastic Bezel        | Metal Bezel   |
| Operator Only (Red)    | HW1B-Y2R             | HW4B-Y2R      |
| Operator Only (Yellow) | HW1B-Y2Y             | HW4B-Y2Y      |
| 1NO                    | HW1B-Y2F10-①†        | HW4B-Y2F10-①† |
| 1NC                    | HW1B-Y2F01-①†        | HW4B-Y2F01-①† |
| 1NO-1NC                | HW1B-Y2F11-①†        | HW4B-Y2F11-①† |
| 2NC                    | HW1B-Y2F02-①†        | HW4B-Y2F02-①† |
| 2NO                    | HW1B-Y2F20-①†        | HW4B-Y2F20-①† |

| Contacts | ø40mm Unibody Pushlock Turn Reset* |  |
|----------|------------------------------------|--|
|          | Plastic Bezel                      |  |
| 1NO-1NC  | HW1E-BV4F11-R                      |  |
| 2NC      | HW1E-BV4F02-R                      |  |
| 1NO-2NC* | HW1E-BV412R-TK2093-1               |  |



\* NO contact is used as a monitoring contact



| Contacts                            | Unibody Illuminated E-Stops* |  |
|-------------------------------------|------------------------------|--|
|                                     | LED                          |  |
| 1NO-1NC                             | HW1E-LV4F11QD-R-③            |  |
| 2NC                                 | HW1E-LV4F02QD-R-③            |  |
| 2NC (with push-on illumination)     | HW1E-TV4F02QD-R-③            |  |
| 1NO-1NC (with push-on illumination) | HW1E-TV4F11QD-R-③            |  |

### ③ Full Voltage LED Code

| Voltage  | Code |
|----------|------|
| 6VAC/DC  | 6V   |
| 12VAC/DC | 12V  |
| 24VAC/DC | 24V  |
| 120V AC  | 120V |
| 240V AC  | 240V |

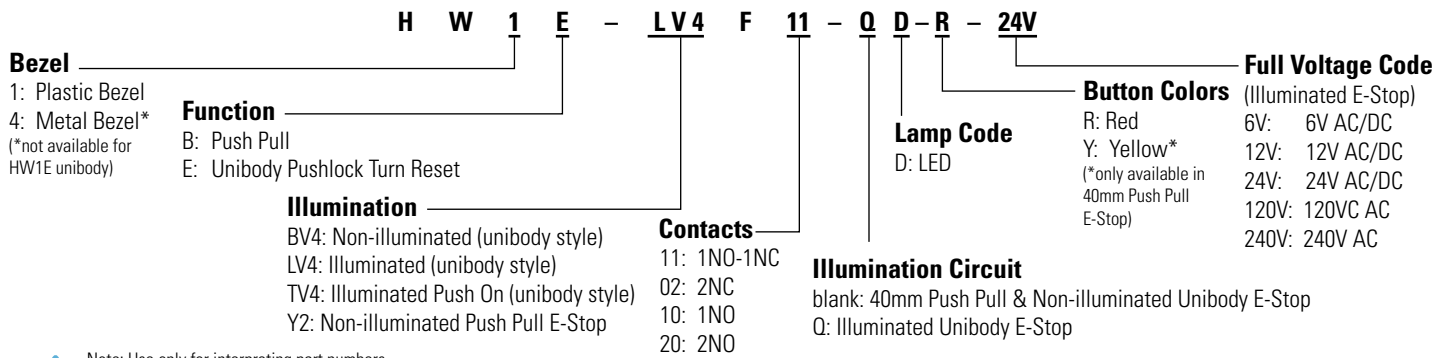
### Terminal Numbering (Unibody only)

| Models           | Terminal Number        |
|------------------|------------------------|
| 1NO-1NC          | NO = 13/14, NC = 11/12 |
| 2NC              | NC = 11/12, NC = 21/22 |
| HW1E-L<br>HW1E-T | LED + = X2, LED - = X1 |



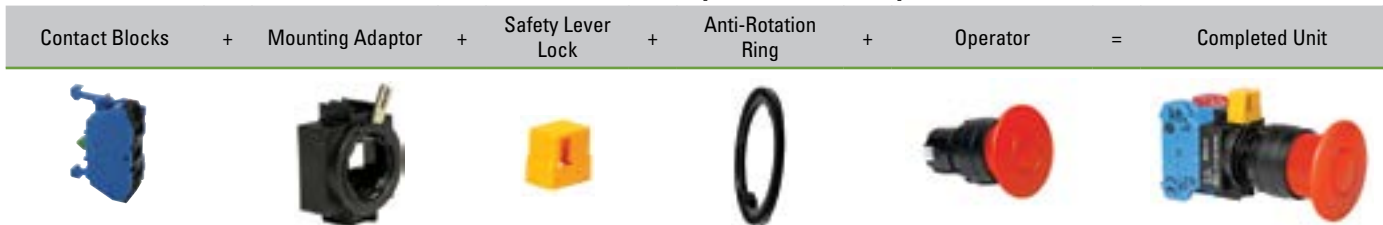
- \* Available in Red only.
- † Available in red or yellow. Insert color code in place of ① (R: Red, Y: Yellow).
- In place of ③, specify Full Voltage LED Code.
- With single unit construction, the positive action contacts are integrated in the body of the switch. This provides an extra degree of safety and reliability for critical emergency stop functions.
- In the illuminated version, the light is independent of the switch action (except push-on LED model).
- For accessories, see page 681.
- For dimensions, see page 683.
- For nameplates and shrouds, see page 681.
- For contact assembly part numbers, see page 681.
- All HW Series E-Stop operators include non-removable color caps.
- All HW series E-Stops comply with EN60947-5-5, the IEC "E-Stop Addendum to the Low Voltage Directive," this includes "tamper proof" operation whereby a change of contact state is not possible by "teasing" or "floating" the operator.
- All HW series E-Stop switches comply with SEMI S2 standards.
- All assembled part numbers in catalog include standard finger-safe spring-up (HW-U...) contacts.
- Additional contact configurations available (up to 6 total contacts).

## Part Number Structure



Note: Use only for interpreting part numbers.  
Do not use for developing part numbers.

## Illuminated &amp; Non-Illuminated E-Stop Pushbuttons (Replacement Parts)



## Contact Blocks

| Style | Contacts                       | 1NO                    | 1NC                    |
|-------|--------------------------------|------------------------|------------------------|
|       | Finger-Safe Spring-Up Terminal | HW-U10-F               | HW-U01-F               |
|       |                                | HW-U10R-F (early make) | HW-U01R-F (late break) |
|       | Dummy Block                    | HW-DB                  |                        |



- There are no replacement parts for the HW1E unibody E-Stop.
- For illuminated unibody E-Stop, see page 683 for replacement lens.

## Contact Block Mounting Adaptor

| Style | Part Number |
|-------|-------------|
|       | HW-CB2C     |



- Used to mount contact blocks to operator.
- IEDEC strongly recommends using the safety lever lock to prevent heavy vibration or maintenance personnel from inadvertently unlocking contacts.

## Safety Lever Lock

| Style | Part Number |
|-------|-------------|
|       | HW9Z-LS     |

## Anti-Rotation Ring

| Appearance | Part Number |
|------------|-------------|
|            | HW9Z-RL     |



Use with notched panel cutout to prevent unit rotation.

## Operators

| Style |         | Part Number |
|-------|---------|-------------|
|       | Plastic | HW1B-Y2R    |
|       |         | HW4B-Y2R    |
|       | Metal   | HW1B-Y2Y    |
|       |         | HW4B-Y2Y    |



All E-Stop Buttons are not removable from the operator.

E-Stop Stations



|          | 29mm Pushlock Turn Reset |                 | 40mm Pushlock Turn Reset |                 |
|----------|--------------------------|-----------------|--------------------------|-----------------|
| Contacts | Plastic Bezel            | Metal Bezel     | Plastic Bezel            | Metal Bezel     |
| 1NO-1NC  | FB1W-HW1B-V311R          | FB1W-HW4B-V311R | FB1W-HW1B-V411R          | FB1W-HW4B-V411R |
| 2NC      | FB1W-HW1B-V302R          | FB1W-HW4B-V302R | FB1W-HW1B-V402R          | FB1W-HW4B-V402R |



|          | 40mm Push-Pull Reset |                 | 40mm Pushlock Key Reset |                 |
|----------|----------------------|-----------------|-------------------------|-----------------|
| Contacts | Plastic Bezel        | Metal Bezel     | Plastic Bezel           | Metal Bezel     |
| 1NO-1NC  | FB1W-HW1B-Y211R      | FB1W-HW4B-Y211R | FB1W-HW1B-X411R         | FB1W-HW4B-X411R |
| 2NC      | FB1W-HW1B-Y202R      | FB1W-HW4B-Y202R | FB1W-HW1B-X402R         | FB1W-HW4B-X402R |



|          | 40mm EMO Pushlock Turn Reset |                       |
|----------|------------------------------|-----------------------|
| Contacts | Plastic Bezel                | Metal Bezel           |
| 1NO-1NC  | FB1W-HW1B-V411R-EMO-2        | FB1W-HW4B-V411R-EMO-2 |
| 2NC      | FB1W-HW1B-V402R-EMO-2        | FB1W-HW4B-V402R-EMO-2 |

- 
1. Maximum of two contact blocks.

2. Box is supplied with yellow top and black bottom only.

## Jumbo Dome Pilot Lights



Plastic Bezel

Actual Size



Jumbo Dome

LED

Operator Only

HW1P-5Q0

Full Voltage  
24V AC/DC

HW1P-5Q4-②



1. In place of ②, specify the Lens/LED Color Code.
2. Spring-Up terminals with 24V LED.
3. For nameplates and accessories, see page 678 and 681.
4. For dimensions, see page 683.

## ② Lens/LED Color Code

| Color  | Code |
|--------|------|
| Amber  | A    |
| Green  | G    |
| Red    | R    |
| Blue   | S    |
| White  | W    |
| Yellow | Y    |



## Jumbo Dome Replacement Parts

| Item               | Appearance | Description        | Part Number |
|--------------------|------------|--------------------|-------------|
| Lens               |            | Polycarbonate Lens | HW1A-P5②    |
| LED Diffusing Lens |            |                    | HW9Z-PP5C   |
| LED Lamps          |            | LED Lamp           | LSTDB-2②    |



1. In place of ②, specify the Lens/LED Color Code.
2. Use white LED for yellow lens.

## Lamp Ratings

|     | Part Number | Operating Voltage | Rated Current | Power Consumption |
|-----|-------------|-------------------|---------------|-------------------|
| LED | LSTDB-2     | 24V AC/DC ±10%    | 15mA          | 0.36W             |



Pilot Lights (Assembled)



|                  |         | Round Flush   |               | Dome          |               |
|------------------|---------|---------------|---------------|---------------|---------------|
|                  |         | Plastic Bezel | Metal Bezel   | Plastic Bezel | Metal Bezel   |
| Operator Only    |         | HW1P-1FQ0-②   | HW4P-1FQ0-②   | HW1P-2FQ0-②   | HW4P-2FQ0-②   |
| Full Voltage     |         | HW1P-1FQD-②-③ | HW4P-1FQD-②-③ | HW1P-2FQD-②-③ | HW4P-2FQD-②-③ |
| Transformer      | 120V AC | HW1P-1FH2D-②  | HW4P-1FH2D-②  | HW1P-2FH2D-②  | HW4P-2FH2D-②  |
|                  | 240V AC | HW1P-1FM4D-②  | HW4P-1FM4D-②  | HW1P-2FM4D-②  | HW4P-2FM4D-②  |
|                  | 480V AC | HW1P-1FT8D-②  | HW4P-1FT8D-②  | HW1P-2FT8D-②  | HW4P-2FT8D-②  |
| DC-DC Converter* | 110V DC | HW1P-1D2D-②   | —             | HW1P-2D2D-②   | —             |



|                  |         | Square Flush  |
|------------------|---------|---------------|
|                  |         | Plastic Bezel |
| Operator Only    |         | HW2P-1FQ0-②   |
| Full Voltage     |         | HW2P-1FQD-②-③ |
| Transformer      | 120V AC | HW2P-1FH2D-②  |
|                  | 240V AC | HW2P-1FM4D-②  |
|                  | 480V AC | HW2P-1FT8D-②  |
| DC-DC Converter* | 110V DC | HW2P-1D2D-②   |

 \* DC-DC converter voltage input from 90-140V DC.

② Lens/LED Color Code

| Color  | Code |
|--------|------|
| Amber  | A    |
| Green  | G    |
| Red    | R    |
| Blue   | S    |
| White  | W    |
| Yellow | Y    |

③ LED Full Voltage Code

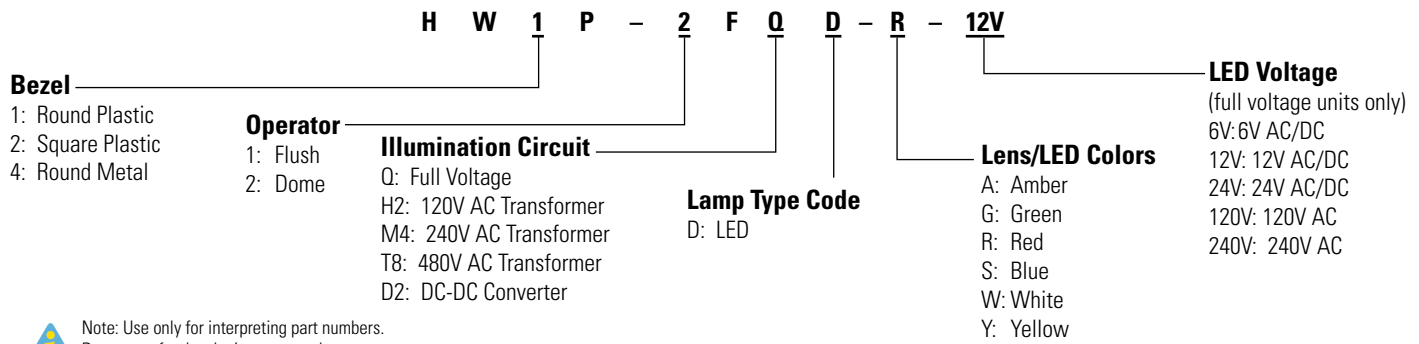
| Voltage  | Code |
|----------|------|
| 6VAC/DC  | 6V   |
| 12VAC/DC | 12V  |
| 24VAC/DC | 24V  |
| 120V AC  | 120V |
| 240V AC  | 240V |



- 1. In place of ②, specify the Lens/LED Color Code from table below.
- 2. In place of ③ specify the Full Voltage Code from table below.
- 3. For nameplates and accessories, see page 678 and 681.
- 4. For dimensions, see page 683.
- 5. **Pilot lights do not come with anti-rotation ring.**
- 6. Operator models come with operator and lens.
- 7. **Yellow pilot light comes with white LED.**



## Part Number Structure



## Pilot Lights (Replacement Parts)

| Transformer* | + | LED | + | Operator | + | Lens | = | Completed Unit |
|--------------|---|-----|---|----------|---|------|---|----------------|
|--------------|---|-----|---|----------|---|------|---|----------------|



(not applicable for full voltage units)

## Transformer Units

| Style | Voltage  | Part Number |
|-------|----------|-------------|
| LED   | 120V AC  | HW-FH20     |
|       | 240V AC  | HW-FM40     |
|       | 480V AC  | HW-FT80     |
|       | 110V DC† | HW-RD0*     |



(6V secondary voltage)

1. \*DC-DC converter can only be used with HW1P-100 and HW2P-100 operators
2. † DC-DC converter voltage input from 90-140V DC.

## LED Lamps

| Style | Voltage   | Part Number |
|-------|-----------|-------------|
| LED   | 6V AC/DC  | LSTD-6Ⓢ     |
|       | 12V AC/DC | LSTD-1Ⓢ     |
|       | 24V AC/DC | LSTD-2Ⓢ     |
|       | 120V AC   | LSTD-H2Ⓢ    |
|       | 240V AC   | LSTD-M4Ⓢ    |



1. In place of Ⓢ, specify the LED Color Code.
2. The LED contains a current-limiting resistor and reverse polarity protection diodes.

## ② LED Color Code

| Color | Code | Color | Code |
|-------|------|-------|------|
| Amber | A    | Blue  | S    |
| Green | G    | White | W    |
| Red   | R    |       |      |



For yellow lens use white LED.

## Operators

| Style        | Type         | Type                          | Plastic Bezel | Metal Bezel |
|--------------|--------------|-------------------------------|---------------|-------------|
| Round Flush  | Full Voltage | Finger-Safe                   | HW1P-1FQ0     | HW4P-1FQ0   |
|              | Transformer  | Finger-Safe                   | HW1P-10       | HW4P-10     |
|              |              | Used for DC-DC convertor only | HW1P-100      | -           |
| Dome         | Full Voltage | Finger-Safe                   | HW1P-2FQ0     | HW4P-2FQ0   |
|              | Transformer  | Finger-Safe                   | HW1P-20       | HW4P-20     |
|              |              | Used for DC-DC convertor only | HW2P-100      | -           |
| Square Flush | Full Voltage | Finger-Safe                   | HW2P-1FQ0     | -           |
|              | Transformer  | Finger-Safe                   | HW2P-10       | -           |
|              |              | Used for DC-DC convertor only | HW2P-100      | -           |



1. Transformer type requires separate transformer & LED. Must select correct transformer bases. Use 6V LEDs.
2. Full voltage type only requires LED.

## Lenses

| Style        | Part Number |
|--------------|-------------|
| Round/Flush  | HW1A-P1-③   |
| Dome         | HW1A-P2-③   |
| Square/Flush | HW2A-P1-③   |



In place of ③, specify the Lens Color Code.

## ③ Lens Color Code

| Color  | Code |
|--------|------|
| Amber  | A    |
| Green  | G    |
| Red    | R    |
| Blue   | S    |
| White  | W    |
| Yellow | Y    |



For yellow lens use white LED.

## Illuminated Round Pushbuttons (Assembled)



### Illuminated Full Voltage Pushbuttons



|            | Contacts      | Flush            |                  | Extended         |                  | Extended w/ Full Shroud |                   |
|------------|---------------|------------------|------------------|------------------|------------------|-------------------------|-------------------|
|            |               | Plastic Bezel    | Metal Bezel      | Plastic Bezel    | Metal Bezel      | Plastic Bezel           | Metal Bezel       |
| Momentary  | Operator Only | HW1L-M1-②        | HW4L-M1-②        | HW1L-M2-②        | HW4L-M2-②        | HW1L-MF2-②              | HW4L-MF2-②        |
|            | 1NO           | HW1L-M1F10QD-②-③ | HW4L-M1F10QD-②-③ | HW1L-M2F10QD-②-③ | HW4L-M2F10QD-②-③ | HW1L-MF2F10QD-②-③       | HW4L-MF2F10QD-②-③ |
|            | 1NC           | HW1L-M1F01QD-②-③ | HW4L-M1F01QD-②-③ | HW1L-M2F01QD-②-③ | HW4L-M2F01QD-②-③ | HW1L-MF2F01QD-②-③       | HW4L-MF2F01QD-②-③ |
|            | 1NO-1NC       | HW1L-M1F11QD-②-③ | HW4L-M1F11QD-②-③ | HW1L-M2F11QD-②-③ | HW4L-M2F11QD-②-③ | HW1L-MF2F11QD-②-③       | HW4L-MF2F11QD-②-③ |
|            | 2NO           | HW1L-M1F20QD-②-③ | HW4L-M1F20QD-②-③ | HW1L-M2F20QD-②-③ | HW4L-M2F20QD-②-③ | HW1L-MF2F20QD-②-③       | HW4L-MF2F20QD-②-③ |
| Maintained | Operator Only | HW1L-A1-②        | HW4L-A1-②        | HW1L-A2-②        | HW4L-A2-②        | HW1L-AF2-②              | HW4L-AF2-②        |
|            | 1NO           | HW1L-A1F10QD-②-③ | HW4L-A1F10QD-②-③ | HW1L-A2F10QD-②-③ | HW4L-A2F10QD-②-③ | HW1L-AF2F10QD-②-③       | HW4L-AF2F10QD-②-③ |
|            | 1NC           | HW1L-A1F01QD-②-③ | HW4L-A1F01QD-②-③ | HW1L-A2F01QD-②-③ | HW4L-A2F01QD-②-③ | HW1L-AF2F01QD-②-③       | HW4L-AF2F01QD-②-③ |
|            | 1NO-1NC       | HW1L-A1F11QD-②-③ | HW4L-A1F11QD-②-③ | HW1L-A2F11QD-②-③ | HW4L-A2F11QD-②-③ | HW1L-AF2F11QD-②-③       | HW4L-AF2F11QD-②-③ |
|            | 2NO           | HW1L-A1F20QD-②-③ | HW4L-A1F20QD-②-③ | HW1L-A2F20QD-②-③ | HW4L-A2F20QD-②-③ | HW1L-AF2F20QD-②-③       | HW4L-AF2F20QD-②-③ |

### Illuminated Transformer Pushbuttons



|            | Contacts      | Flush           |                 | Extended        |                 | Extended w/ Full Shroud |                  |
|------------|---------------|-----------------|-----------------|-----------------|-----------------|-------------------------|------------------|
|            |               | Plastic Bezel   | Metal Bezel     | Plastic Bezel   | Metal Bezel     | Plastic Bezel           | Metal Bezel      |
| Momentary  | Operator Only | HW1L-M1-②       | HW4L-M1-②       | HW1L-M2-②       | HW4L-M2-②       | HW1L-MF2-②              | HW4L-MF2-②       |
|            | 1NO-1NC       | HW1L-M1F11-③D-② | HW4L-M1F11-③D-② | HW1L-M2F11-③D-② | HW4L-M2F11-③D-② | HW1L-MF2F11-③D-②        | HW4L-MF2F11-③D-② |
|            | 2NO           | HW1L-M1F20-③D-② | HW4L-M1F20-③D-② | HW1L-M2F20-③D-② | HW4L-M2F20-③D-② | HW1L-MF2F20-③D-②        | HW4L-MF2F20-③D-② |
| Maintained | Operator Only | HW1L-A1-②       | HW4L-A1-②       | HW1L-A2-②       | HW4L-A2-②       | HW1L-AF2-②              | HW4L-AF2-②       |
|            | 1NO-1NC       | HW1L-A1F11-③D-② | HW4L-A1F11-③D-② | HW1L-A2F11-③D-② | HW4L-A2F11-③D-② | HW1L-AF2F11-③D-②        | HW4L-AF2F11-③D-② |
|            | 2NO           | HW1L-A1F20-③D-② | HW4L-A1F20-③D-② | HW1L-A2F20-③D-② | HW4L-A2F20-③D-② | HW1L-AF2F20-③D-②        | HW4L-AF2F20-③D-② |



1. In place of ②, specify Lens/LED Color Code from table.
2. In place of ③ specify Voltage Code from table.
3. Light independent of switch position.
4. For replacement part numbers, see page 649.
5. For nameplates and accessories, see page 678 and 681.
6. For dimensions, see page 683.
7. For contact assembly part numbers, see page 683.
8. Full voltage and transformer models use the same operator.
9. Additional contact configurations available (up to 6 total contacts).
10. Yellow pushbutton comes with white LED.

#### ② Lens/LED Color Code

| Color  | Code |
|--------|------|
| Amber  | A    |
| Green  | G    |
| Red    | R    |
| Blue   | S    |
| White  | W    |
| Yellow | Y    |



Yellow LED not available. Use white LED for yellow lens.

#### ③ Voltage Code

| Full Voltage Models |      | Transformer Models |      |
|---------------------|------|--------------------|------|
| Voltage             | Code | Voltage            | Code |
| 6V AC/DC            | 6V   | 120V AC            | H2   |
| 12V AC/DC           | 12V  | 240V AC            | M4   |
| 24V AC/DC           | 24V  | 480V AC            | T8   |
| 120V AC             | 120V |                    |      |
| 240V AC             | 240V |                    |      |



**Part Number Structure**

**Bezel**  
1: Plastic  
4: Metal

**Function**  
M: Momentary  
A: Maintained

**Operator**  
1F: Flush  
2F: Extended  
F2F: Extended w/ shroud

**Contact Arrangement**  
10: 1NO  
01: 1NC  
11: 1NO-1NC  
20: 2NO

**Illumination Circuit**  
Q: Full Voltage  
H2: Transformer 120V AC  
M4: Transformer 240V AC  
T8: Transformer 480V AC

**Lens Color**  
A: Amber  
G: Green  
R: Red  
S: Blue  
W: White  
Y: Yellow

**LED Lamp Voltage**  
(full voltage units only)  
6V: 6V AC/DC  
12V: 12V AC/DC  
24V: 24V AC/DC  
120V: 120V AC  
240V: 240V AC

Note: Use only for interpreting part numbers. Do not use for developing part numbers.

## Illuminated Round Pushbuttons (Replacement Parts)

| Transformer* | Contact Blocks | Lead Holder | Mounting Adaptor | Safety Lever Lock | Lamp | Anti-Rotation Ring | Operator | Lens | Completed Unit |
|--------------|----------------|-------------|------------------|-------------------|------|--------------------|----------|------|----------------|
|              |                |             |                  |                   |      |                    |          |      |                |

\*Transformer not needed with full voltage models.

## Lamp Circuit Components

| Style                                       | Description                                                                                             | Terminals   | Part Number                      |
|---------------------------------------------|---------------------------------------------------------------------------------------------------------|-------------|----------------------------------|
| Lead Holder<br>                             | For use with HW-CBL on all illuminated pushbutton units. One required for each deck (pair) of contacts. |             | HW-LH3                           |
| Dummy Block with Full Voltage Adaptor<br>   | For use with odd number of contacts.                                                                    | Finger-Safe | HW-DA1FBN                        |
| Full Voltage Adaptor<br>                    | For use with even number of contacts.                                                                   | Finger-Safe | TW-DA1FB                         |
| Transformer Unit (6V secondary voltage)<br> | 120VAC<br>240VAC<br>480VAC                                                                              | Finger-Safe | TW-F126B<br>TW-F246B<br>TW-F486B |
| DC-DC Converter                             | 110VDC                                                                                                  |             | HW-L16D                          |

1. \*With spring-up terminals - to use spring-up terminal type, must use transformer type operator designed for spring-up transformer.  
2. \*\* DC-DC converter voltage input from 90-140V DC.

## Operators

| Style                         |            | Plastic Bezel | Metal Bezel |
|-------------------------------|------------|---------------|-------------|
| Round Flush/Extended<br>      | Momentary  | HW1L-M0       | HW4L-M0     |
|                               | Maintained | HW1L-A0       | HW4L-A0     |
| Extended with Full Shroud<br> | Momentary  | HW1L-MF0      | HW4L-MF0    |
|                               | Maintained | HW1L-AF0      | HW4L-AF0    |

## Contact Blocks

| Style | Contacts                       | 1NO                                | 1NC                                |
|-------|--------------------------------|------------------------------------|------------------------------------|
|       | Finger-Safe Spring-Up Terminal | HW-U10-F<br>HW-U10R-F (early make) | HW-U01-F<br>HW-U01R-F (late break) |

1. All assembled part numbers in catalog include standard finger-safe spring-up (HW-U...) contacts.

## Contact Block Mounting Adaptor

| Style | Part Number |
|-------|-------------|
|       | HW-CBL      |

1. Used to mount contact blocks to operator (first pair only).  
2. IDEC strongly recommends using the safety lever lock to prevent heavy vibration or maintenance personnel from inadvertently unlocking contacts.

## Safety Lever Lock

| Style | Part Number |
|-------|-------------|
|       | HW9Z-LS     |

## Lenses

| Style              | Part Number |
|--------------------|-------------|
| Round Flush<br>    | HW1A-L1-Ⓢ   |
| Round Extended<br> | HW1A-L2-Ⓢ   |

- In place of Ⓢ, specify the Lens Color Code from previous page.

## Anti-Rotation Ring

| Appearance | Part Number |
|------------|-------------|
|            | HW9Z-RL     |

- Use with notched panel cutout to prevent unit rotation.

## LED Lamps

| Style   | Voltage   | Part Number |
|---------|-----------|-------------|
|         | 6V AC/DC  | LSTD-6Ⓢ     |
| LED<br> | 12V AC/DC | LSTD-1Ⓢ     |
|         | 24V AC/DC | LSTD-2Ⓢ     |
|         | 120V AC   | LSTD-H2Ⓢ    |
|         | 240V AC   | LSTD-M4Ⓢ    |

1. In place of Ⓢ, specify the LED Color Code.  
2. The LED contains a current-limiting resistor and reverse polarity protection diodes.  
3. Yellow LED not available, use white LED when using yellow lens.

## Illuminated Mushroom & Square Pushbuttons (Assembled)



|              |            |                                  | 40mm Mushroom Head |                  | Square Flush     |
|--------------|------------|----------------------------------|--------------------|------------------|------------------|
|              |            |                                  | Plastic Bezel      | Metal Bezel      | Plastic Bezel    |
| Full Voltage | Momentary  | <i>Operator Only<sup>†</sup></i> | HW1L-M4-②          | HW4L-M4-②        | HW2L-M1-②        |
|              |            | 1NO                              | HW1L-M4F10QD-②-③   | HW4L-M4F10QD-②-③ | HW2L-M1F10QD-②-③ |
|              |            | 1NC                              | HW1L-M4F01QD-②-③   | HW4L-M4F01QD-②-③ | HW2L-M1F01QD-②-③ |
|              |            | 1NO-1NC                          | HW1L-M4F11QD-②-③   | HW4L-M4F11QD-②-③ | HW2L-M1F11QD-②-③ |
|              |            | 2NO                              | HW1L-M4F20QD-②-③   | HW4L-M4F20QD-②-③ | HW2L-M1F20QD-②-③ |
|              | Maintained | <i>Operator Only<sup>†</sup></i> | HW1L-A4-②          | HW4L-A4-②        | HW2L-A1-②        |
|              |            | 1NO                              | HW1L-A4F10QD-②-③   | HW4L-A4F10QD-②-③ | HW2L-A1F10QD-②-③ |
|              |            | 1NC                              | HW1L-A4F01QD-②-③   | HW4L-A4F01QD-②-③ | HW2L-A1F01QD-②-③ |
|              |            | 1NO-1NC                          | HW1L-A4F11QD-②-③   | HW4L-A4F11QD-②-③ | HW2L-A1F11QD-②-③ |
|              |            | 2NO                              | HW1L-A4F20QD-②-③   | HW4L-A4F20QD-②-③ | HW2L-A1F20QD-②-③ |
| Transformer  | Momentary  | 1NO-1NC                          | HW1L-M4F11③D-②     | HW4L-M4F11③D-②   | HW2L-M1F11③D-②   |
|              |            | 2NO                              | HW1L-M4F20③D-②     | HW4L-M4F20③D-②   | HW2L-M1F20③D-②   |
|              | Maintained | 1NO-1NC                          | HW1L-A4F11③D-②     | HW4L-A4F11③D-②   | HW2L-A1F11③D-②   |
|              |            | 2NO                              | HW1L-A4F20③D-②     | HW4L-A4F20③D-②   | HW2L-A1F20③D-②   |



- <sup>†</sup> Full voltage and transformer units use the same operator.
- In place of ②, specify the Lens/LED Color Code from table.
- In place of ③ specify the Voltage Code from table.
- Light independent of switch position
- For nameplates and accessories, see page 678. and 681.
- For dimensions, see page 683.
- For contact assembly part numbers, see page 683.
- Additional contact configurations available (up to 6 total contacts).
- Yellow pushbutton comes with white LED.**

### ② Lens/LED Color Code

| Color  | Code |
|--------|------|
| Amber  | A    |
| Green  | G    |
| Red    | R    |
| Blue   | S    |
| White  | W    |
| Yellow | Y*   |

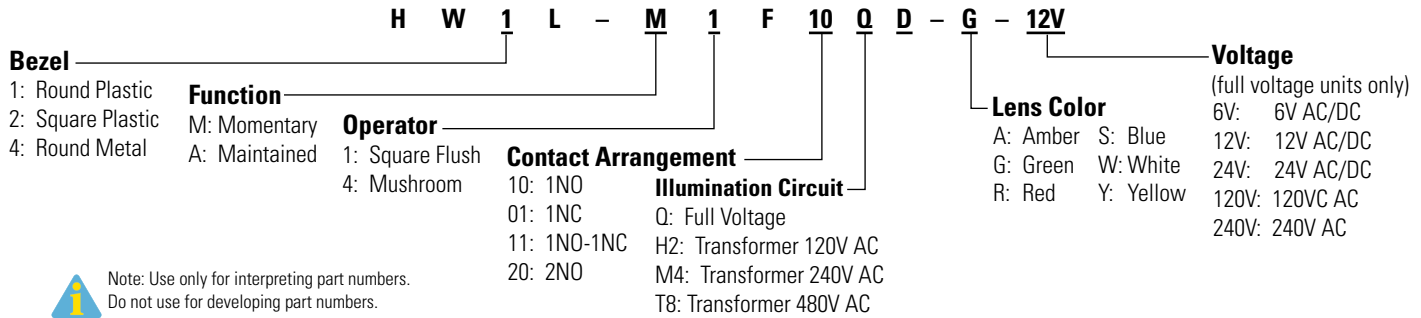


- \*40mm mushroom lenses not available in yellow.
- Yellow LED not available. Use white LED for yellow lens.

### ③ Voltage Code

| Full Voltage Models |      | Transformer Models |      |
|---------------------|------|--------------------|------|
| Voltage             | Code | Voltage            | Code |
| 6V AC/DC            | 6V   | 120V AC            | H2   |
| 12V AC/DC           | 12V  | 240V AC            | M4   |
| 24V AC/DC           | 24V  | 480V AC            | T8   |
| 120V AC             | 120V |                    |      |
| 240V AC             | 240V |                    |      |

## Part Number Structure

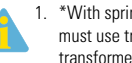


## Illuminated Mushroom &amp; Square Pushbuttons (Replacement Parts)



\*Transformer not needed with full voltage models.

## Lamp Circuit Components

| Style                                                                                                                          | Description                                                                                             | Terminals   | Part Number                      |
|--------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|-------------|----------------------------------|
| Lead Holder<br>                               | For use with HW-CBL on all illuminated pushbutton units. One required for each deck (pair) of contacts. |             | HW-LH3                           |
| Dummy Block with Full Voltage Adaptor<br>   | For use with odd number of contacts.                                                                    | Finger-Safe | HW-DA1FBN                        |
| Full Voltage Adaptor<br>                    | For use with even number of contacts.                                                                   | Finger-Safe | TW-DA1FB                         |
| Transformer Unit (6V secondary voltage)<br> | 120VAC<br>240VAC<br>480VAC                                                                              | Finger-Safe | TW-F126B<br>TW-F246B<br>TW-F486B |
| DC-DC Converter<br>                         | 110VDC                                                                                                  |             | HW-L16D                          |



- \*With spring-up terminals - to use spring-up terminal type, must use transformer type operator designed for spring-up transformer.
- \*\* DC-DC converter voltage input from 90-140V DC.

## Operators

| Style                                                                                                 |            |  | Plastic Bezel | Metal Bezel |
|-------------------------------------------------------------------------------------------------------|------------|--|---------------|-------------|
| ø40mm Mushroom<br> | Momentary  |  | HW1L-M0L      | HW4L-M0L    |
|                                                                                                       | Maintained |  | HW1L-A0L      | HW4L-A0L    |
| Square<br>         | Momentary  |  | HW2L-M0       | —           |
|                                                                                                       | Maintained |  | HW2L-A0       | —           |

## Contact Blocks

| Style                                                                              | Contacts                       | 1NO                                | 1NC                                |
|------------------------------------------------------------------------------------|--------------------------------|------------------------------------|------------------------------------|
|  | Finger-Safe Spring-Up Terminal | HW-U10-F<br>HW-U10R-F (early make) | HW-U01-F<br>HW-U01R-F (late break) |



- All assembled part numbers in catalog include standard finger-safe spring-up contacts (HW-U...).

## Contact Block Mounting Adaptor

| Style                                                                               | Part Number |
|-------------------------------------------------------------------------------------|-------------|
|  | HW-CBL      |



- Used to mount contact blocks to operator (first pair only).
- IEEC strongly recommends using the safety lever lock to prevent heavy vibration or maintenance personnel from inadvertently unlocking contacts.

## Anti-Rotation Ring

| Appearance                                                                            | Part Number |
|---------------------------------------------------------------------------------------|-------------|
|  | HW9Z-RL     |



Use with notched panel cutout to prevent unit rotation.

## Safety Lever Lock

| Style                                                                               | Part Number |
|-------------------------------------------------------------------------------------|-------------|
|  | HW9Z-LS     |

## Lenses

| Style                                                                                                      | Part Number |
|------------------------------------------------------------------------------------------------------------|-------------|
| ø40mm Mushroom Lens<br> | ALW4BLU-⊙*  |
| Square Flush<br>        | HW2A-L1-⊙   |



- In place of ⊙, specify the Lens Color Code.
- \*Mushroom lens not available in yellow.

## LED Lamps

| Style                                                                                        | Voltage   | Part Number |
|----------------------------------------------------------------------------------------------|-----------|-------------|
| LED<br> | 6V AC/DC  | LSTD-6⊙     |
|                                                                                              | 12V AC/DC | LSTD-1⊙     |
|                                                                                              | 24V AC/DC | LSTD-2⊙     |
|                                                                                              | 120V AC   | LSTD-H2⊙    |
|                                                                                              | 240V AC   | LSTD-M4⊙    |



- In place of ⊙, specify the LED Color Code.
- The LED contains a current-limiting resistor and reverse polarity protection diodes.
- Yellow LED not available, use white LED when using yellow lens.

Selector Switches 2-Position (Assembled)



2-Position Selector Switches

| Contact       | Mounting | Operator Position                                                                 |                                                                                   | Handle        | Maintained               | Spring Return from Right   |
|---------------|----------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---------------|--------------------------|----------------------------|
|               |          |  |  |               |                          |                            |
| Operator Only |          |                                                                                   |                                                                                   | Knob<br>Lever | HWⓈS-2T<br>HWⓈS-2L       | HWⓈS-21T<br>HWⓈS-21L       |
| 1NO           | 1        | 0                                                                                 | X                                                                                 | Knob<br>Lever | HWⓈS-2TF10<br>HWⓈS-2LF10 | HWⓈS-21TF10<br>HWⓈS-21LF10 |
| 1NO-1NC       | 1        | 0                                                                                 | X                                                                                 | Knob<br>Lever | HWⓈS-2TF11<br>HWⓈS-2LF11 | HWⓈS-21TF11                |
|               | 2        | X                                                                                 | 0                                                                                 |               |                          | HWⓈS-21LF11                |
| 2NO           | 1        | 0                                                                                 | X                                                                                 | Knob<br>Lever | HWⓈS-2TF20<br>HWⓈS-2LF20 | HWⓈS-21TF20                |
|               | 2        | 0                                                                                 | X                                                                                 |               |                          | HWⓈS-21LF20                |
| 2NO-2NC       | 1        | X                                                                                 | 0                                                                                 | Knob<br>Lever | HWⓈS-2TF22<br>HWⓈS-2LF22 | HWⓈS-21TF22<br>HWⓈS-21LF22 |
|               | 2        | 0                                                                                 | X                                                                                 |               |                          |                            |
|               | 3        | X                                                                                 | 0                                                                                 |               |                          |                            |
|               | 4        | 0                                                                                 | X                                                                                 |               |                          |                            |

- 
1. In place of Ⓢ enter 1 for plastic bezel or 4 for metal bezel.

2. For nameplates, see page 678.

3. All assembled part numbers in catalog include standard finger-safe spring-up (HW-U...) contacts.

4. Standard color for knob and lever is black.

5. Optional colors available for lever type. Must order in components. See next page for part numbers.

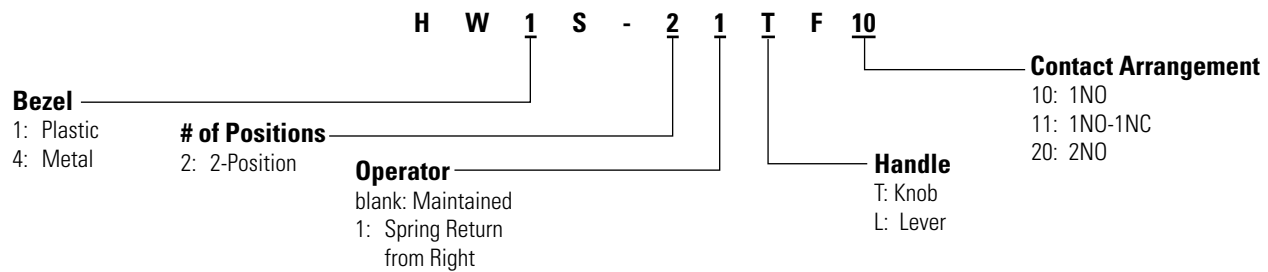
6. Additional contact configurations available (up to 6 total contacts).

7. For Truth Tables see page 691.

Ⓢ Bezel Type

| Type    | Code |
|---------|------|
| Plastic | 1    |
| Metal   | 4    |

## Part Number Structure



Note: Use only for interpreting part numbers.  
Do not use for developing part numbers.

## Selector Switches 2-Position (Replacement Parts)

|                |   |                  |   |                   |   |                    |   |          |   |                |
|----------------|---|------------------|---|-------------------|---|--------------------|---|----------|---|----------------|
| Contact Blocks | + | Mounting Adaptor | + | Safety Lever Lock | + | Anti-Rotation Ring | + | Operator | = | Completed Unit |
|----------------|---|------------------|---|-------------------|---|--------------------|---|----------|---|----------------|



## Contact Blocks

| Style | Contacts                       | 1NO                    | 1NC                    |
|-------|--------------------------------|------------------------|------------------------|
|       | Finger-Safe Spring-Up Terminal | HW-U10-F               | HW-U01-F               |
|       |                                | HW-U10R-F (early make) | HW-U01R-F (late break) |
|       | Dummy Block                    | HW-DB                  |                        |

## Anti-Rotation Ring

| Style | Part Number |
|-------|-------------|
|       | HW9Z-RL     |



Use with notched panel cutout to prevent unit rotation.

## Operators

| Style | Description              | Handle | Plastic Bezel | Metal Bezel |
|-------|--------------------------|--------|---------------|-------------|
|       | Maintained               | Knob   | HW1S-2T       | HW4S-2T     |
|       |                          | Lever  | HW1S-2        | HW4S-2      |
|       | Spring Return from Right | Knob   | HW1S-21T      | HW4S-21T    |
|       |                          | Lever  | HW1S-21       | HW4S-21     |



- Knob operator comes with black handle.
- To order lever type, lever and inserts must be ordered separately, along with lever operator. See part numbers below.

## Contact Block Mounting Adaptor

| Style | Part Number |
|-------|-------------|
|       | HW-CB2C     |



- Used to mount contact blocks to operator (first pair only).
- IEDEC strongly recommends using the safety lever lock to prevent heavy vibration or maintenance personnel from inadvertently unlocking contacts.

## Safety Lever Lock

| Style | Part Number |
|-------|-------------|
|       | HW9Z-LS     |

## Levers &amp; Inserts

| Style | Part Number |
|-------|-------------|
|       | ASWHHL-①    |
|       | TW-HC1-①    |



Standard lever color is black. Standard insert color is white.

## ① Handle/Insert Color Code

| Color  | Code |
|--------|------|
| Black* | B    |
| Blue   | S    |
| Green  | G    |
| Red    | R    |
| Yellow | Y    |
| White† | W    |



- \* Lever color inserts not available in black.
- † Lever not available in white.

## Selector Switches 3-Position (Assembled)



### 3-Position Selector Switches

| Contact       | Mounting | Operator Position                                                                 |                                                                                   |                                                                                   | Handle        | Maintained                                                                                               | Spring Return<br>from Right                                                                               | Spring Return<br>from Left                                                                                  | Spring Return<br>Two-Way                                                                                    |
|---------------|----------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---------------|----------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|
|               |          |  |  |  |               |                                                                                                          |                                                                                                           |                                                                                                             |                                                                                                             |
| Operator Only |          |                                                                                   |                                                                                   |                                                                                   | Knob<br>Lever | <br>HWⓈS-3T*<br>HWⓈS-3L | <br>HWⓈS-31T<br>HWⓈS-31L | <br>HWⓈS-32T<br>HWⓈS-32L | <br>HWⓈS-33T<br>HWⓈS-33L |
| 1NO-1NC       | 1        | 0                                                                                 | X                                                                                 | X                                                                                 | Knob<br>Lever | HWⓈS-3TF11<br>HWⓈS-3LF11                                                                                 | HWⓈS-31TF11<br>HWⓈS-31LF11                                                                                | HWⓈS-32TF11<br>HWⓈS-32LF11                                                                                  | HWⓈS-33TF11<br>HWⓈS-33LF11                                                                                  |
|               | 2        | 0                                                                                 | 0                                                                                 | X                                                                                 |               |                                                                                                          |                                                                                                           |                                                                                                             |                                                                                                             |
| 2NO           | 1        | X                                                                                 | 0                                                                                 | 0                                                                                 | Knob<br>Lever | HWⓈS-3TF20<br>HWⓈS-3LF20                                                                                 | HWⓈS-31TF20<br>HWⓈS-31LF20                                                                                | HWⓈS-32TF20<br>HWⓈS-32LF20                                                                                  | HWⓈS-33TF20<br>HWⓈS-33LF20                                                                                  |
|               | 2        | 0                                                                                 | 0                                                                                 | X                                                                                 |               |                                                                                                          |                                                                                                           |                                                                                                             |                                                                                                             |
| 2NC           | 1        | 0                                                                                 | X                                                                                 | X                                                                                 | Knob<br>Lever | HWⓈS-3TF02<br>HWⓈS-3LF02                                                                                 | HWⓈS-31TF02<br>HWⓈS-31LF02                                                                                | HWⓈS-32TF02<br>HWⓈS-32LF02                                                                                  | HWⓈS-33TF02<br>HWⓈS-33LF02                                                                                  |
|               | 2        | X                                                                                 | X                                                                                 | 0                                                                                 |               |                                                                                                          |                                                                                                           |                                                                                                             |                                                                                                             |
| 2NO-1NC       | 1        | X                                                                                 | 0                                                                                 | 0                                                                                 | Knob          | HWⓈS-3JTF21N1                                                                                            | —                                                                                                         | —                                                                                                           | —                                                                                                           |
|               | 2        | 0                                                                                 | 0                                                                                 | X                                                                                 |               |                                                                                                          |                                                                                                           |                                                                                                             |                                                                                                             |
|               | 3        | 0                                                                                 | X                                                                                 | 0                                                                                 |               |                                                                                                          |                                                                                                           |                                                                                                             |                                                                                                             |
| 2NO-2NC       | 1        | X                                                                                 | 0                                                                                 | 0                                                                                 | Knob          | HWⓈS-3TF22                                                                                               | HWⓈS-31TF22                                                                                               | HWⓈS-32TF22                                                                                                 | HWⓈS-33TF22                                                                                                 |
|               | 2        | 0                                                                                 | 0                                                                                 | X                                                                                 |               |                                                                                                          |                                                                                                           |                                                                                                             |                                                                                                             |
|               | 3        | 0                                                                                 | X                                                                                 | X                                                                                 |               |                                                                                                          |                                                                                                           |                                                                                                             |                                                                                                             |
|               | 4        | X                                                                                 | X                                                                                 | 0                                                                                 |               |                                                                                                          |                                                                                                           |                                                                                                             |                                                                                                             |
| 2NO-2NC       | 1        | 0                                                                                 | 0                                                                                 | X                                                                                 | Knob          | HWⓈS-3STF22N9                                                                                            | —                                                                                                         | —                                                                                                           | —                                                                                                           |
|               | 2        | X                                                                                 | 0                                                                                 | 0                                                                                 |               |                                                                                                          |                                                                                                           |                                                                                                             |                                                                                                             |
|               | 3        | X                                                                                 | X                                                                                 | 0                                                                                 |               |                                                                                                          |                                                                                                           |                                                                                                             |                                                                                                             |
|               | 4        | 0                                                                                 | 0                                                                                 | X                                                                                 |               |                                                                                                          |                                                                                                           |                                                                                                             |                                                                                                             |
| 4NO           | 1        | X                                                                                 | 0                                                                                 | 0                                                                                 | Knob          | HWⓈS-3TF40                                                                                               | HWⓈS-31TF40                                                                                               | HWⓈS-32TF40                                                                                                 | HWⓈS-33TF40                                                                                                 |
|               | 2        | 0                                                                                 | 0                                                                                 | X                                                                                 |               |                                                                                                          |                                                                                                           |                                                                                                             |                                                                                                             |
|               | 3        | X                                                                                 | 0                                                                                 | 0                                                                                 |               |                                                                                                          |                                                                                                           |                                                                                                             |                                                                                                             |
|               | 4        | 0                                                                                 | 0                                                                                 | X                                                                                 |               |                                                                                                          |                                                                                                           |                                                                                                             |                                                                                                             |
| 4NO           | 1        | X                                                                                 | 0                                                                                 | 0                                                                                 | Knob          | HWⓈS-3STF40N2                                                                                            | —                                                                                                         | —                                                                                                           | —                                                                                                           |
|               | 2        | 0                                                                                 | X                                                                                 | X                                                                                 |               |                                                                                                          |                                                                                                           |                                                                                                             |                                                                                                             |
|               | 3        | X                                                                                 | 0                                                                                 | 0                                                                                 |               |                                                                                                          |                                                                                                           |                                                                                                             |                                                                                                             |
|               | 4        | 0                                                                                 | 0                                                                                 | X                                                                                 |               |                                                                                                          |                                                                                                           |                                                                                                             |                                                                                                             |
| 4NC           | 1        | 0                                                                                 | X                                                                                 | X                                                                                 | Knob          | HWⓈS-3TF04                                                                                               | HWⓈS-31TF04                                                                                               | HWⓈS-32TF04                                                                                                 | HWⓈS-33TF04                                                                                                 |
|               | 2        | X                                                                                 | X                                                                                 | 0                                                                                 |               |                                                                                                          |                                                                                                           |                                                                                                             |                                                                                                             |
|               | 3        | 0                                                                                 | X                                                                                 | X                                                                                 |               |                                                                                                          |                                                                                                           |                                                                                                             |                                                                                                             |
|               | 4        | X                                                                                 | X                                                                                 | 0                                                                                 |               |                                                                                                          |                                                                                                           |                                                                                                             |                                                                                                             |

#### ⑤ Bezel Type

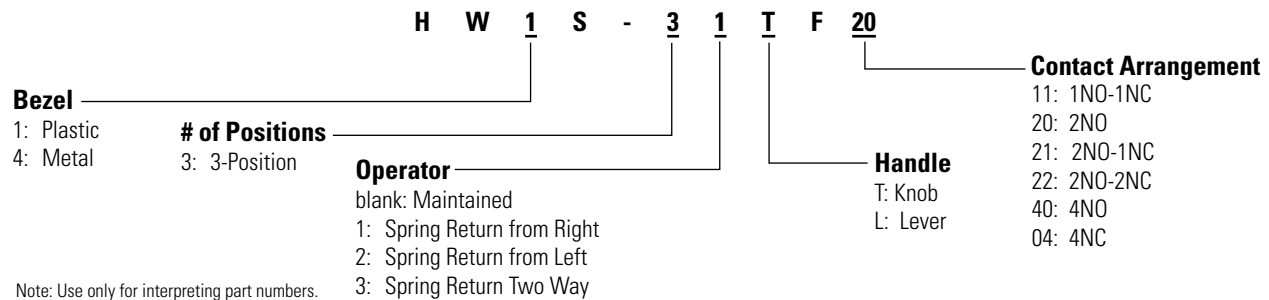
| Type    | Code |
|---------|------|
| Plastic | 1    |
| Metal   | 4    |

1. In place of ⊙ enter 1 for plastic bezel or 4 for metal bezel.
2. Knob operator includes black knob/lever operator includes black lever.
3. \* Three position operator is available with three different cams.  
HW⊙S-3T: Maintained (standard cam)  
HW⊙S-3ST: Maintained (S cam)  
HW⊙S-3JT: Maintained (J cam)
4. Operator cams are color coded (white=standard cam, red=S cam, black=J cam).
5. For nameplates, see page 678.
6. For contact assembly part numbers, see page 683.

7. All assembled part numbers in catalog include standard finger-safe spring-up (HW-U...) contacts.
8. Standard color for knob and lever is black.
9. Optional colors available for lever type. Must order in components. See next page for part numbers.
10. Additional contact configurations available (up to 6 total contacts).
11. For Truth Tables see page 691.



## Part Number Structure



## Selector Switches 3-Position (Replacement Parts)

|                |   |                  |   |                   |   |                    |   |          |   |                |
|----------------|---|------------------|---|-------------------|---|--------------------|---|----------|---|----------------|
| Contact Blocks | + | Mounting Adaptor | + | Safety Lever Lock | + | Anti-Rotation Ring | + | Operator | = | Completed Unit |
|----------------|---|------------------|---|-------------------|---|--------------------|---|----------|---|----------------|



## Contact Blocks

| Style | Contacts                       | 1NO                    | 1NC                    |
|-------|--------------------------------|------------------------|------------------------|
|       | Finger-Safe Spring-Up Terminal | HW-U10-F               | HW-U01-F               |
|       |                                | HW-U10R-F (early make) | HW-U01R-F (late break) |
|       | Dummy Block                    | HW-DB                  |                        |

## Contact Block Mounting Adaptor

| Style | Part Number |
|-------|-------------|
|       | HW-CB2C     |

1. Used to mount contact blocks to operator (first pair only).  
2. IDEC strongly recommends using the safety lever lock to prevent heavy vibration or maintenance personnel from inadvertently unlocking contacts.

## Safety Lever Lock

| Style | Part Number |
|-------|-------------|
|       | HW9Z-LS     |

## Anti-Rotation Ring

| Style | Part Number |
|-------|-------------|
|       | HW9Z-RL     |



Use with notched panel cutout to prevent unit rotation.

## Operators

| Style | Description                             | Handle | Plastic Bezel | Metal Bezel |
|-------|-----------------------------------------|--------|---------------|-------------|
|       | Maintained (standard cam)               | Knob   | HW1S-3T       | HW4S-3T     |
|       |                                         | Lever  | HW1S-3        | HW4S-3      |
|       | Maintained (S cam)                      | Knob   | HW1S-3ST      | HW4S-3ST    |
|       |                                         | Knob   | HW1S-3JT      | HW4S-3JT    |
|       | Spring Return from Right (standard cam) | Knob   | HW1S-31T      | HW4S-31T    |
|       |                                         | Lever  | HW1S-31       | HW4S-31     |
|       | Spring Return from Left (standard cam)  | Knob   | HW1S-32T      | HW4S-32T    |
|       |                                         | Lever  | HW1S-32       | HW4S-32     |
|       | 2-Way Spring Return (standard cam)      | Knob   | HW1S-33T      | HW4S-33T    |
|       |                                         | Lever  | HW1S-33       | HW4S-33     |



1. Knob operator comes with black handle.  
2. Three position knob operator is available with three different cams.  
3. Operator cams are color coded (white=standard cam, red=S cam, black=J cam).  
4. To order lever type, lever and inserts must be ordered separately, along with lever operator. See part numbers below.

## Levers &amp; Inserts

| Style | Part Number |
|-------|-------------|
|       | ASWHHL-⓪    |
|       | TW-HC1-⓪    |



Standard lever color is black. Standard insert color is white.

## ① Handle/Insert Color Code

| Color              | Code |
|--------------------|------|
| Black*             | B    |
| Blue               | S    |
| Green              | G    |
| Red                | R    |
| Yellow             | Y    |
| White <sup>†</sup> | W    |



1. \* Lever color inserts not available in black.  
2. <sup>†</sup>Lever not available in white.



Selector Switches 4- & 5-Position (Assembled)



4-Position Selector Switches

| Contact       | Mounting | Operator Position |   |   |   | Handle        | Maintained                   |
|---------------|----------|-------------------|---|---|---|---------------|------------------------------|
|               |          | 1                 | 2 | 3 | 4 |               |                              |
|               |          |                   |   |   |   |               |                              |
| Operator Only |          |                   |   |   |   | Knob<br>Lever | HWⓈS-4T<br>HWⓈS-4L           |
| 1NO-<br>2NC   | 1        | X                 | 0 | 0 | 0 | Knob<br>Lever | HWⓈS-4TF12<br>HWⓈS-4LF12     |
|               | 2        | 0                 | X | 0 | 0 |               |                              |
|               | 3        | 0                 | 0 | X | 0 |               |                              |
|               | 4        | 0                 | 0 | 0 | 0 |               |                              |
| 1NO-<br>3NC   | 1        | 0                 | X | X | X | Knob<br>Lever | HWⓈS-4TF13N6<br>HWⓈS-4LF13N6 |
|               | 2        | 0                 | X | 0 | 0 |               |                              |
|               | 3        | 0                 | 0 | X | 0 |               |                              |
|               | 4        | 0                 | 0 | 0 | X |               |                              |
| 2NO-<br>2NC   | 1        | X                 | 0 | 0 | 0 | Knob<br>Lever | HWⓈS-4TF22N3<br>HWⓈS-4LF22N3 |
|               | 2        | 0                 | X | 0 | 0 |               |                              |
|               | 3        | 0                 | 0 | X | 0 |               |                              |
|               | 4        | 0                 | 0 | 0 | X |               |                              |

5-Position Selector Switch

| Contact       | Mounting | Operator Position |   |   |   |   | Handle        | Maintained                   |
|---------------|----------|-------------------|---|---|---|---|---------------|------------------------------|
|               |          | 1                 | 2 | 3 | 4 | 5 |               |                              |
|               |          |                   |   |   |   |   |               |                              |
| Operator Only |          |                   |   |   |   |   | Knob<br>Lever | HWⓈS-5T<br>HWⓈS-5L           |
| 2NO-<br>2NC   | 1        | X                 | 0 | 0 | 0 | 0 | Knob<br>Lever | HWⓈS-5TF22N3<br>HWⓈS-5LF22N3 |
|               | 2        | 0                 | X | 0 | 0 | 0 |               |                              |
|               | 3        | 0                 | 0 | 0 | X | 0 |               |                              |
|               | 4        | 0                 | 0 | 0 | 0 | X |               |                              |

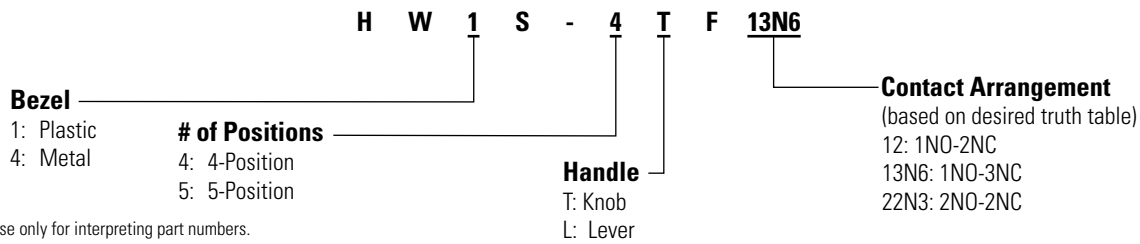


- 1. In place of Ⓢ enter 1 for plastic bezel or 4 for metal bezel.
- 2. Knob operator includes black knob/lever operator includes black lever.
- 3. For nameplates, see page 678.
- 4. For contact assembly part numbers, see page 683.
- 5. Five position circuit cannot be made to make five independent contact closures.
- 6. All assembled part numbers in catalog include standard finger-safe spring-up (HW-U...) contacts.
- 7. Standard color for knob and lever is black.
- 8. Optional colors available for lever type. Must order in components. See next page for part numbers.
- 9. Additional contact configurations available (up to 6 total contacts).
- 10. For Truth Tables see page 691.

Ⓢ Bezel Type

| Type    | Code |
|---------|------|
| Plastic | 1    |
| Metal   | 4    |

## Part Number Structure



Note: Use only for interpreting part numbers.  
Do not use for developing part numbers.

## Selector Switches 4- &amp; 5-Position (Replacement Parts)

Contact Blocks + Mounting Adaptor + Safety Lever Lock + Anti-Rotation Ring + Operator = Completed Unit



## Contact Blocks

| Style | Contacts           | 1NO                    | 1NC                    |
|-------|--------------------|------------------------|------------------------|
|       | Finger-Safe        | HW-U10-F               | HW-U01-F               |
|       | Spring-Up Terminal | HW-U10R-F (early make) | HW-U01R-F (late break) |
|       | Dummy Block        | HW-DB                  |                        |

## Anti-Rotation Ring

| Style | Part Number |
|-------|-------------|
|       | HW9Z-RL     |



Use with notched panel cutout to prevent unit rotation.

## Operators

| Style | Position | Description | Handle | Plastic Bezel | Metal Bezel |
|-------|----------|-------------|--------|---------------|-------------|
|       | 4        | Maintained  | Knob   | HW1S-4T       | HW4S-4T     |
|       |          |             | Lever  | HW1S-4        | HW4S-4      |
|       | 5        | Maintained  | Knob   | HW1S-5T       | HW4S-5T     |
|       |          |             | Lever  | HW1S-5        | HW4S-5      |

## Contact Block Mounting Adaptor

| Style | Part Number |
|-------|-------------|
|       | HW-CB2C     |



- Used to mount contact blocks to operator (first pair only).
- IDEC strongly recommends using the safety lever lock to prevent heavy vibration or maintenance personnel from inadvertently unlocking contacts.

## Safety Lever Lock

| Style | Part Number |
|-------|-------------|
|       | HW9Z-LS     |

## Levers &amp; Inserts

| Style | Part Number |
|-------|-------------|
|       | ASWHHL-①    |
|       | TW-HC1-①    |



Standard lever color is black. Standard insert color is white.

## ① Handle/Insert Color Code

| Color  | Code |
|--------|------|
| Black* | B    |
| Blue   | S    |
| Green  | G    |
| Red    | R    |
| Yellow | Y    |
| White† | W    |



- \* Lever color inserts not available in black.
- † Lever not available in white.

Key Switches 2-Position (Assembled)



2-Position Key Switches

| Contact       | Mounting | Operator Position                                                                 |                                                                                   | Maintained                                                                        | Spring Return from Right                                                          |
|---------------|----------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|               |          |  |  |  |  |
| Operator Only |          |                                                                                   |                                                                                   | HW⊙K-2A                                                                           | HW⊙K-21B                                                                          |
| 1NO           | 1        | 0                                                                                 | X                                                                                 | HW⊙K-2AF10                                                                        | HW⊙K-21BF10                                                                       |
| 1NO-1NC       | 1        | 0                                                                                 | X                                                                                 | HW⊙K-2AF11                                                                        | HW⊙K-21BF11                                                                       |
|               | 2        | X                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |
| 2NO           | 1        | 0                                                                                 | X                                                                                 | HW⊙K-2AF20                                                                        | HW⊙K-21BF20                                                                       |
|               | 2        | 0                                                                                 | X                                                                                 |                                                                                   |                                                                                   |
| 2NO-2NC       | 1        | 0                                                                                 | X                                                                                 | HW⊙K-2AF22                                                                        | HW⊙K-21BF22                                                                       |
|               | 2        | X                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |
|               | 3        | 0                                                                                 | X                                                                                 |                                                                                   |                                                                                   |
|               | 4        | X                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |

- 
1. In place of ⊙ enter 1 for plastic bezel or 4 for metal bezel.

2. Key is removable in all maintained positions. Other key removable options available.

3. Two keys are supplied with all switches.

4. All standard operators are keyed alike.

5. Other key removable options available. See table below

6. For nameplates, see page 678.

7. For contact assembly part numbers, see page 683.

8. Key is retained in "Spring Return" position.

9. All assembled part numbers in catalog include finger-safe spring-up (HW-U...) contacts.

10. Additional contact configurations available (up to 6 total contacts).

11. For Truth Tables see page 683.

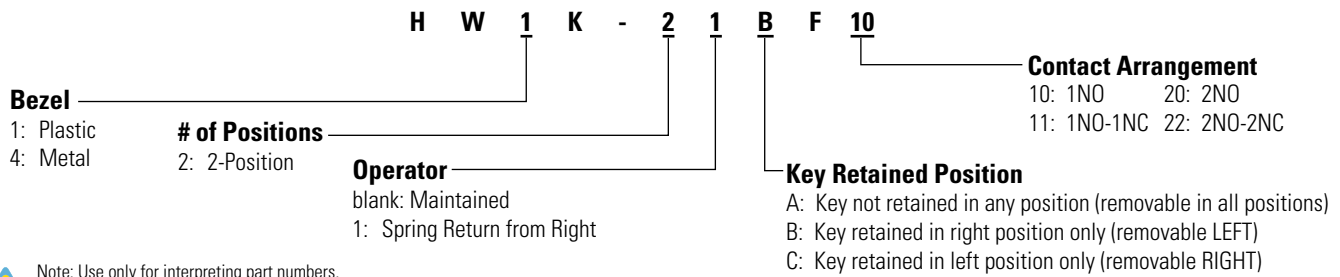
⊙ Bezel Type

| Type    | Code |
|---------|------|
| Plastic | 1    |
| Metal   | 4    |

Key Removable Option Codes

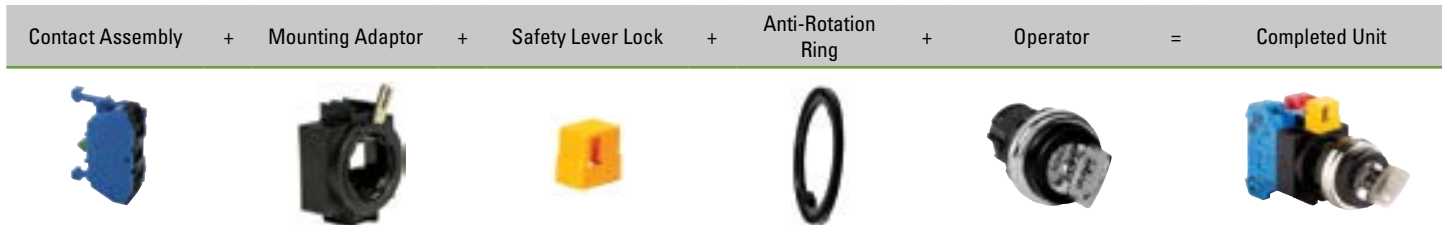
| Code | Description                                                   |
|------|---------------------------------------------------------------|
| A    | Key not retained in any position (removable in all positions) |
| B    | Key retained in right position only (removable LEFT)          |
| C    | Key retained in left position only (removable RIGHT)          |

## Part Number Structure



Note: Use only for interpreting part numbers.  
Do not use for developing part numbers.

## Key Switches 2-Position (Replacement Parts)



## Contact Blocks

| Style | Contacts           | 1NO                    | 1NC                    |
|-------|--------------------|------------------------|------------------------|
|       | Finger-Safe        | HW-U10-F               | HW-U01-F               |
|       | Spring-Up Terminal | HW-U10R-F (early make) | HW-U01R-F (late break) |
|       | Dummy Block        | HW-DB                  |                        |

## Safety Lever Lock

| Style | Part Number |
|-------|-------------|
|       | HW9Z-LS     |

## Anti-Rotation Ring

| Style | Part Number |
|-------|-------------|
|       | HW9Z-RL     |



Use with notched panel cutout to prevent unit rotation.

## Contact Block Mounting Adaptor

| Style | Part Number |
|-------|-------------|
|       | HW-CB2C     |



- Used to mount contact blocks to operator (first pair only).
- IDEC strongly recommends using the safety lever lock to prevent heavy vibration or maintenance personnel from inadvertently unlocking contacts.

## Operators

| Style | Description                        | Plastic Bezel | Metal Bezel |
|-------|------------------------------------|---------------|-------------|
|       | Maintained                         | HW1K-2A       | HW4K-2A     |
|       | Maintained, key removed left only  | HW1K-2B       | HW4K-2B     |
|       | Spring Return from Right           | HW1K-21B      | HW4K-21B    |
|       | Maintained, key removed right only | HW1K-2C       | HW4K-2C     |



- Operator includes two keys.
- All standard operators are keyed alike.

## Key Switches 3-Position (Assembled)



3-Position Key Switches

| Contact       | Mounting | Operator Position                                                                 |                                                                                   |                                                                                   | Maintained                                                                        | Spring Return from Right                                                          | Spring Return from Left                                                           | Spring Return Two Way                                                             |
|---------------|----------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|               |          |  |  |  |  |  |  |  |
| Operator Only |          |                                                                                   |                                                                                   |                                                                                   | HW⊙K-3A*                                                                          | HW⊙K-31B                                                                          | HW⊙K-32C                                                                          | HW⊙K-33D                                                                          |
| 1NO-1NC       | 1        | 0                                                                                 | X                                                                                 | X                                                                                 | HW⊙K-3AF11                                                                        | HW⊙K-31BF11                                                                       | HW⊙K-32CF11                                                                       | HW⊙K-33DF11                                                                       |
|               | 2        | 0                                                                                 | 0                                                                                 | X                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| 2NO           | 1        | X                                                                                 | 0                                                                                 | 0                                                                                 | HW⊙K-3AF20                                                                        | HW⊙K-31BF20                                                                       | HW⊙K-32CF20                                                                       | HW⊙K-33DF20                                                                       |
|               | 2        | 0                                                                                 | 0                                                                                 | X                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| 2NC           | 1        | 0                                                                                 | X                                                                                 | X                                                                                 | HW⊙K-3AF02                                                                        | HW⊙K-31BF02                                                                       | HW⊙K-32CF02                                                                       | HW⊙K-33DF02                                                                       |
|               | 2        | X                                                                                 | X                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| 2NO-1NC       | 1        | X                                                                                 | 0                                                                                 | 0                                                                                 | HW⊙K-3JAF21N1                                                                     | —                                                                                 | —                                                                                 | —                                                                                 |
|               | 2        | 0                                                                                 | 0                                                                                 | X                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|               | 3        | 0                                                                                 | X                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| 2NO-2NC       | 1        | X                                                                                 | 0                                                                                 | 0                                                                                 | HW⊙K-3AF22                                                                        | HW⊙K-31BF22                                                                       | HW⊙K-32CF22                                                                       | HW⊙K-33DF22                                                                       |
|               | 2        | 0                                                                                 | 0                                                                                 | X                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|               | 3        | 0                                                                                 | X                                                                                 | X                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|               | 4        | X                                                                                 | X                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| 2NO-2NC       | 1        | 0                                                                                 | 0                                                                                 | X                                                                                 | HW⊙K-3SAF22N9                                                                     | —                                                                                 | —                                                                                 | —                                                                                 |
|               | 2        | X                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|               | 3        | X                                                                                 | X                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|               | 4        | 0                                                                                 | 0                                                                                 | X                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| 4NO           | 1        | X                                                                                 | 0                                                                                 | 0                                                                                 | HW⊙K-3AF40                                                                        | HW⊙K-31BF40                                                                       | HW⊙K-32CF40                                                                       | HW⊙K-33DF40                                                                       |
|               | 2        | 0                                                                                 | 0                                                                                 | X                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|               | 3        | X                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|               | 4        | 0                                                                                 | 0                                                                                 | X                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| 4NO           | 1        | X                                                                                 | 0                                                                                 | 0                                                                                 | HW⊙K-3SAF40N2                                                                     | —                                                                                 | —                                                                                 | —                                                                                 |
|               | 2        | 0                                                                                 | X                                                                                 | X                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|               | 3        | X                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|               | 4        | 0                                                                                 | 0                                                                                 | X                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| 4NC           | 1        | 0                                                                                 | X                                                                                 | X                                                                                 | HW⊙K-3AF04                                                                        | HW⊙K-31BF04                                                                       | HW⊙K-32CF04                                                                       | HW⊙K-33DF04                                                                       |
|               | 2        | X                                                                                 | X                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|               | 3        | 0                                                                                 | X                                                                                 | X                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|               | 4        | X                                                                                 | X                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |

### ⑤ Bezel Type

| Type    | Code |
|---------|------|
| Plastic | 1    |
| Metal   | 4    |

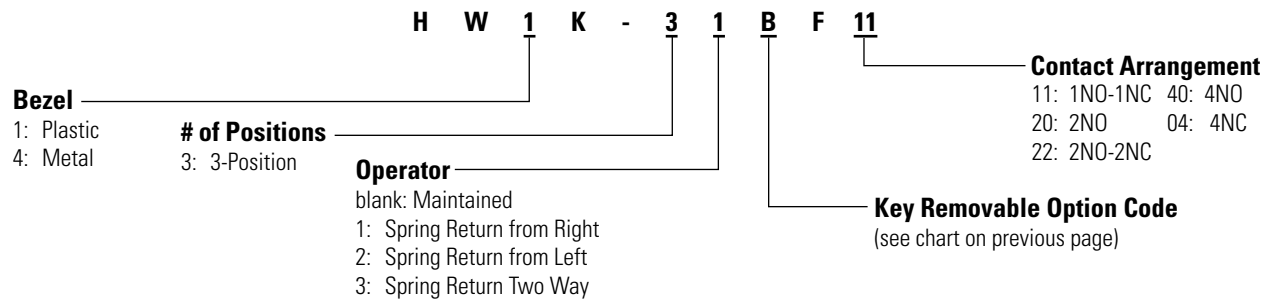


- In place of ⑤ enter 1 for plastic bezel or 4 for metal bezel.
- Key is removable in all maintained positions. Other key removable options available.
- Two keys are supplied with all switches.
- All standard operators are keyed alike.
- Other key removable options available. See table to the right.
- \* Operator is available with three different cams.  
HW⊙K-3A: Maintained (standard cam)  
HW⊙K-3SA: Maintained (Cam S)  
HW⊙K-3JA: Maintained (Cam J)
- For nameplates, see page 678.
- For contact assembly part numbers, see page 683.
- All assembled part numbers in catalog include standard Finger-Safe spring-up (HW-U...) contacts.
- Additional contact configurations available (up to 6 total contacts).
- For Truth Tables see page 691.

### Key Removable Option Codes

| Code | Description                                                   |
|------|---------------------------------------------------------------|
| A    | Key not retained in any position (removable in all positions) |
| B    | Key retained in right position only                           |
| C    | Key retained in left position only                            |
| D    | Key retained in left and right (3 position only)              |
| E    | Key retained in center only (3 position only)                 |
| G    | Key retained right and center (3 position only)               |
| H    | Key retained left and center (3 position only)                |

## Part Number Structure



Note: Use only for interpreting part numbers.  
Do not use for developing part numbers.

## Key Switches 3-Position (Replacement Parts)

|                  |   |                  |   |                   |   |                    |   |          |   |                |
|------------------|---|------------------|---|-------------------|---|--------------------|---|----------|---|----------------|
| Contact Assembly | + | Mounting Adaptor | + | Safety Lever Lock | + | Anti-Rotation Ring | + | Operator | = | Completed Unit |
|------------------|---|------------------|---|-------------------|---|--------------------|---|----------|---|----------------|



## Contact Blocks

| Style | Contacts                       | 1NO                    | 1NC                    |
|-------|--------------------------------|------------------------|------------------------|
|       | Finger-Safe Spring-Up Terminal | HW-U10-F               | HW-U01-F               |
|       |                                | HW-U10R-F (early make) | HW-U01R-F (late break) |
|       | Dummy Block                    | HW-DB                  |                        |

## Safety Lever Lock

| Style | Part Number |
|-------|-------------|
|       | HW9Z-LS     |

## Anti-Rotation Ring

| Style | Part Number |
|-------|-------------|
|       | HW9Z-RL     |



Use with notched panel cutout to prevent unit rotation.

## Contact Block Mounting Adaptor

| Style | Part Number |
|-------|-------------|
|       | HW-CB2C     |



- Used to mount contact blocks to operator (first pair only).
- IEDEC strongly recommends using the safety lever lock to prevent heavy vibration or maintenance personnel from inadvertently unlocking contacts.

## Operators

| Style | Description                             | Plastic Bezel | Metal Bezel |
|-------|-----------------------------------------|---------------|-------------|
|       | Maintained (standard cam)               | HW1K-3A       | HW4K-3A     |
|       | Maintained (S cam)                      | HW1K-3SA      | HW4K-3SA    |
|       | Maintained (J cam)                      | HW1K-3JA      | HW4K-3JA    |
|       | Spring Return from Right (standard cam) | HW1K-31B      | HW4K-31B    |
|       | Spring Return from Left (standard cam)  | HW1K-32C      | HW4K-32C    |
|       | 2-Way Spring Return (standard cam)      | HW1K-33D      | HW4K-33D    |



- Operator includes two keys.
- All standard operators are keyed alike.
- Other key removable options available. See table on previous page.
- Key not removable from spring-returned position

Illuminated Selector Switches 2-Position (Assembled)



2-Position Illuminated Selector Switches

| Contact       |   | Style             |   | Part Number  |                          |
|---------------|---|-------------------|---|--------------|--------------------------|
|               |   | Operator Position |   | Maintained   | Spring Return from Right |
|               |   | L                 | R |              |                          |
| Operator Only |   |                   |   | HWⓈF-2②      | HWⓈF-21②                 |
| 1NO-1NC       | 1 | O                 | X | Full Voltage | HWⓈF-2F11QD-②-③          |
|               | 2 | X                 | O | Transformer  | HWⓈF-21F11QD-②-③         |
|               |   |                   |   | 120V         | HWⓈF-2F11H2D-②           |
|               |   |                   |   | 240V         | HWⓈF-2F11M4D-②           |
|               |   |                   |   | 480V         | HWⓈF-2F11T8D-②           |
| 2NO           | 1 | X                 | O | Full Voltage | HWⓈF-2F20QD-②-③          |
|               | 2 | O                 | X | Transformer  | HWⓈF-21F20QD-②-③         |
|               |   |                   |   | 120V         | HWⓈF-2F20H2D-②           |
|               |   |                   |   | 240V         | HWⓈF-2F20M4D-②           |
|               |   |                   |   | 480V         | HWⓈF-2F20T8D-②           |
| 2NO-2NC       | 1 | O                 | X | Full Voltage | HWⓈF-2F22QD-②-③          |
|               | 2 | X                 | O | Transformer  | HWⓈF-21F22QD-②-③         |
|               | 3 | O                 | X | 120V         | HWⓈF-2F22H2D-②           |
|               | 4 | X                 | O | 240V         | HWⓈF-21F22M4D-②          |
|               |   |                   |   | 480V         | HWⓈF-21F22T8D-②          |

1. In place of ② specify Lens/LED color code.  
2. In place of ③ specify Full Voltage code.  
3. In place of ⑤ enter 1 for plastic bezel or 4 for metal bezel.  
4. For nameplates, see page 678.  
5. For contact assembly part numbers, see page 683.  
6. Light is independent of switch position.  
7. All assembled part numbers in catalog include standard Finger-Safe spring-up (HW-U...) contacts.  
8. **Yellow selector switch comes with white LED.**  
9. Additional contact configurations available (up to 6 total contacts).  
10. For Truth Tables see page 691.

② Lens/LED Color Code

| Color  | Code |
|--------|------|
| Amber  | A    |
| Green  | G    |
| Red    | R    |
| Blue   | S    |
| White  | W    |
| Yellow | Y    |

③ Full Voltage Code

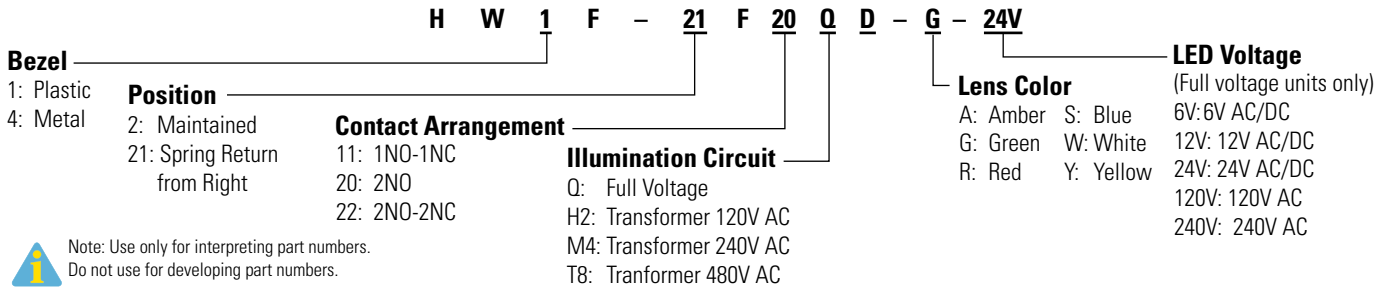
| Full Voltage Models |      |
|---------------------|------|
| Voltage             | Code |
| 6VAC/DC             | 6V   |
| 12VAC/DC            | 12V  |
| 24VAC/DC            | 24V  |
| 120V AC             | 120V |
| 240V AC             | 240V |

⑤ Bezel Code

| Type    | Code |
|---------|------|
| Plastic | 1    |
| Metal   | 4    |



## Part Number Structure



## Illuminated Selector Switches 2-Position (Replacement Parts)



\*Transformer not needed with full voltage models.

## Lamp Circuit Components

| Style                                   | Description                                                                                             | Terminals   | Part Number                      |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------|-------------|----------------------------------|
| Lead Holder                             | For use with HW-CBL on all illuminated pushbutton units. One required for each deck (pair) of contacts. |             | HW-LH3                           |
| Dummy Block with Full Voltage Adaptor   | For use with odd number of contacts.                                                                    | Finger-Safe | HW-DA1FBN                        |
| Full Voltage Adaptor                    | For use with even number of contacts.                                                                   | Finger-Safe | TW-DA1FB                         |
| Transformer Unit (6V secondary voltage) | 120VAC<br>240VAC<br>480VAC                                                                              | Finger-Safe | TW-F126B<br>TW-F246B<br>TW-F486B |
| DC-DC Converter                         | 110VDC                                                                                                  |             | HW-L16D                          |

1. DC-DC convertor features spring-up terminals.  
2. DC-DC convertor applicable voltage range 90-140V DC.

## Operators

| Style | Description              | Plastic Bezel | Metal Bezel |
|-------|--------------------------|---------------|-------------|
|       | Maintained               | HW1F-2        | HW4F-2      |
|       | Spring return from right | HW1F-21       | HW4F-21     |

Illuminated knobs must be ordered separately.

## Contact Blocks

| Style | Contacts                       | 1NO                                | 1NC                                |
|-------|--------------------------------|------------------------------------|------------------------------------|
|       | Finger-Safe Spring-Up Terminal | HW-U10-F<br>HW-U10R-F (early make) | HW-U01-F<br>HW-U01R-F (late break) |

## Contact Block Mounting Adaptor

| Style | Part Number |
|-------|-------------|
|       | HW-CBL      |

1. Used to mount contact blocks to operator (first pair only).  
2. IDEC strongly recommends using the safety lever lock to prevent heavy vibration or maintenance personnel from inadvertently unlocking contacts.

## Safety Lever Lock

| Style | Part Number |
|-------|-------------|
|       | HW9Z-LS     |

## Illuminated Knob

| Appearance | Part Number |
|------------|-------------|
|            | HW9Z-FDY-Ⓢ  |

In place of Ⓢ, specify the Color Code.

## ② Lens/LED Color Code

| Color | Code | Color  | Code |
|-------|------|--------|------|
| Amber | A    | Blue   | S    |
| Green | G    | White  | W    |
| Red   | R    | Yellow | Y    |

## Anti-Rotation Ring

| Style | Part Number |
|-------|-------------|
|       | HW9Z-RL     |

Use with notched panel cutout to prevent unit rotation.

## Lamps

| Style | Voltage   | Part Number |
|-------|-----------|-------------|
|       | 6V AC/DC  | LSTD-6Ⓢ     |
|       | 12V AC/DC | LSTD-1Ⓢ     |
|       | 24V AC/DC | LSTD-2Ⓢ     |
|       | 120V AC   | LSTD-H2Ⓢ    |
|       | 240V AC   | LSTD-M4Ⓢ    |

1. In place of Ⓢ, specify the LED Color Code.  
2. The LED contains a current-limiting resistor and reverse polarity protection diodes.  
3. Use white LED for yellow lens. Yellow LED not available.

### Illuminated Selector Switches 3-Position (Assembled)



#### 3-Position Illuminated Selector Switches

| Style         |          | Part Number       |      |            |                          |
|---------------|----------|-------------------|------|------------|--------------------------|
|               |          | Operator Position | Type | Maintained | Spring Return from Right |
| Contact       | Mounting | L C R             |      |            |                          |
| Operator Only |          |                   |      |            |                          |
| 1NO-1NC       | 1        | 0                 | X    | X          |                          |
|               | 2        | 0                 | 0    | X          |                          |
|               |          |                   |      |            |                          |
| 2NO           | 1        | X                 | 0    | 0          |                          |
|               | 2        | 0                 | 0    | X          |                          |
|               |          |                   |      |            |                          |
| 2NC           | 1        | 0                 | X    | X          |                          |
|               | 2        | X                 | X    | 0          |                          |
|               |          |                   |      |            |                          |
| 2NO-2NC       | 1        | X                 | 0    | 0          |                          |
|               | 2        | 0                 | 0    | X          |                          |
|               |          |                   |      |            |                          |
| 4NO           | 1        | X                 | 0    | 0          |                          |
|               | 2        | 0                 | 0    | X          |                          |
|               |          |                   |      |            |                          |
| 4NC           | 1        | 0                 | X    | X          |                          |
|               | 2        | X                 | X    | 0          |                          |
|               |          |                   |      |            |                          |



- In place of ② specify Lens/LED color code.
- In place of ③ specify Full Voltage code.
- In place of ⑤ enter 1 for plastic bezel or 4 for metal bezel.
- For nameplates, see page 678.
- For contact assembly part numbers, see page 683.
- Light is independent of switch position.
- All assembled part numbers in catalog include standard Finger-Safe spring-up (HW-U...) contacts.
- Yellow selector switch comes with white LED.
- Additional contact configurations available (up to 6 total contacts).
- For Truth Tables see page 691.

#### ② Lens/LED Color

| Color  | Code |
|--------|------|
| Amber  | A    |
| Green  | G    |
| Red    | R    |
| Blue   | S    |
| White  | W    |
| Yellow | Y    |

#### ③ Full Voltage Code

| Full Voltage Models |      |
|---------------------|------|
| Voltage             | Code |
| 6VAC/DC             | 6V   |
| 12VAC/DC            | 12V  |
| 24VAC/DC            | 24V  |
| 120V AC             | 120V |
| 240V AC             | 240V |

#### ⑤ Bezel Code

| Type    | Code |
|---------|------|
| Plastic | 1    |
| Metal   | 4    |

## Part Number Structure

H W 1 F - 31 F 20 Q D - G - 24V

## Bezel

1: Plastic  
4: Metal

## Position

3: Maintained  
31: Spring Return  
from Right  
32: Spring Return  
from Left  
33: Spring Return 2-Way

## Contact Arrangement

11: 1NO-1NC 22: 2NO-2NC  
20: 2NO 40: 4NO  
02: 2NC 04: 4NC

## Illumination Circuit

Q: Full Voltage  
H2: Transformer 120V AC  
M4: Transformer 240V AC  
T8: Transformer 480V AC

## Lens Color

A: Amber S: Blue  
G: Green W: White  
R: Red Y: Yellow

## Full Voltage Code

6V: 6V AC/DC  
12V: 12V AC/DC  
24V: 24V AC/DC  
120V: 120V AC  
240V: 240V ACNote: Use only for interpreting part numbers.  
Do not use for developing part numbers.

## Illuminated Selector Switches 3-Position (Replacement Parts)

Transformer\* + Contact Blocks + Lead Holder + Mounting Adaptor + Safety Lever Lock + LED + Anti-Rotation Ring + Operator + Lens = Completed Unit



\*Transformer not needed with full voltage models.

## Lamp Circuit Components

| Style                                                                                                                          | Description                                                                                             | Terminals   | Part Number                      |
|--------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|-------------|----------------------------------|
| Lead Holder<br>                               | For use with HW-CBL on all illuminated pushbutton units. One required for each deck (pair) of contacts. |             | HW-LH3                           |
| Dummy Block with Full Voltage Adaptor<br>   | For use with odd number of contacts.                                                                    | Finger-Safe | HW-DA1FBN                        |
| Full Voltage Adaptor<br>                    | For use with even number of contacts.                                                                   | Finger-Safe | TW-DA1FB                         |
| Transformer Unit (6V secondary voltage)<br> | 120VAC<br>240VAC<br>480VAC                                                                              | Finger-Safe | TW-F126B<br>TW-F246B<br>TW-F486B |
| DC-DC Converter<br>                         | 110VDC                                                                                                  |             | HW-L16D                          |



1. DC-DC converter features spring-up terminals.
2. DC-DC converter applicable voltage range 90-140V DC.

## Operators

| Style                                                                               | Description              | Plastic Bezel | Metal Bezel |
|-------------------------------------------------------------------------------------|--------------------------|---------------|-------------|
|  | Maintained               | HW1F-3        | HW4F-3      |
|                                                                                     | Spring return from right | HW1F-31       | HW4F-31     |
|                                                                                     | Spring return from left  | HW1F-32       | HW4F-32     |
|                                                                                     | 2-Way spring return      | HW1F-33       | HW4F-33     |



Illuminated knobs must be ordered separately.

## Contact Blocks

| Style                                                                             | Contacts                       | 1NO                                | 1NC                                |
|-----------------------------------------------------------------------------------|--------------------------------|------------------------------------|------------------------------------|
|  | Finger-Safe Spring-Up Terminal | HW-U10-F<br>HW-U10R-F (early make) | HW-U01-F<br>HW-U01R-F (late break) |

## Contact Block Mounting Adaptor

| Style                                                                               | Part Number |
|-------------------------------------------------------------------------------------|-------------|
|  | HW-CBL      |



1. Used to mount contact blocks to operator (first pair only).
2. IDEC strongly recommends using the safety lever lock to prevent heavy vibration or maintenance personnel from inadvertently unlocking contacts.

## Safety Lever Lock

| Style                                                                               | Part Number |
|-------------------------------------------------------------------------------------|-------------|
|  | HW9Z-LS     |

## Illuminated Knob

| Appearance                                                                          | Part Number |
|-------------------------------------------------------------------------------------|-------------|
|  | HW9Z-FDY-②  |



In place of ②, specify the Color Code.

## ② Lens/LED Color Code

| Color | Code | Color  | Code |
|-------|------|--------|------|
| Amber | A    | Blue   | S    |
| Green | G    | White  | W    |
| Red   | R    | Yellow | Y    |

## Anti-Rotation Ring

| Style                                                                                 | Part Number |
|---------------------------------------------------------------------------------------|-------------|
|  | HW9Z-RL     |



Use with notched panel cutout to prevent unit rotation.

## Lamps

| Style                                                                                 | Voltage   | Part Number |
|---------------------------------------------------------------------------------------|-----------|-------------|
|  | 6V AC/DC  | LSTD-6②     |
|                                                                                       | 12V AC/DC | LSTD-1②     |
|                                                                                       | 24V AC/DC | LSTD-2②     |
|                                                                                       | 120V AC   | LSTD-H2②    |
|                                                                                       | 240V AC   | LSTD-M4②    |



1. In place of ②, specify the LED Color Code.
2. The LED contains a current-limiting resistor and reverse polarity protection diodes.
3. Use white LED for yellow lens. Yellow LED not available.

Mono Lever Switches 2-Position (Assembled)



2-Position Mono Lever Switches

| Style                        | Part Number    | Description                  |
|------------------------------|----------------|------------------------------|
| HW1M<br>Standard Lever       | HW1M-F1010-20  | Maintained up and down       |
|                              | HW1M-F2020-20  | Spring return up and down    |
|                              | HW1M-F1010-40  | Maintained up and down       |
|                              | HW1M-F2020-40  | Spring return up and down    |
|                              | HW1M-F0101-20  | Maintained right and left    |
|                              | HW1M-F0202-20  | Spring return right and left |
|                              | HW1M-F0101-40  | Maintained right and left    |
|                              | HW1M-F0202-40  | Spring return right and left |
| HW1M-L<br>Interlocking Lever | HW1M-LF1010-20 | Maintained up and down       |
|                              | HW1M-LF2020-20 | Spring return up and down    |
|                              | HW1M-LF1010-40 | Maintained up and down       |
|                              | HW1M-LF2020-40 | Spring return up and down    |
|                              | HW1M-LF0101-20 | Maintained right and left    |
|                              | HW1M-LF0202-20 | Spring return right and left |
|                              | HW1M-LF0101-40 | Maintained right and left    |
|                              | HW1M-LF0202-40 | Spring return right and left |

 All Assembled units with Finger-Safe spring-up (HW-U...) contacts

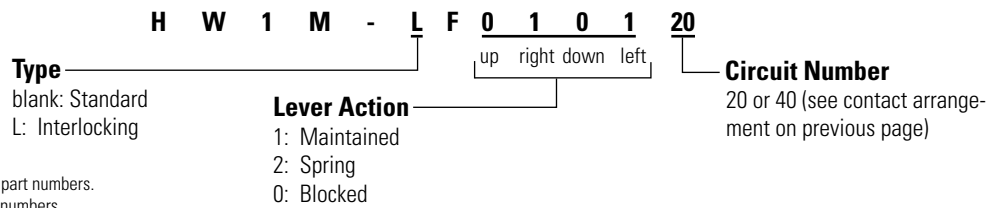
Circuit Diagrams  
2 Position Left/Right

| Circuit Number | Contact Mounting |          | Position |        |       |
|----------------|------------------|----------|----------|--------|-------|
|                | No.              |          | Left     | Center | Right |
| 20             | 1                | HW-U10-F | X        | 0      | 0     |
|                | 2                | HW-U10-F | 0        | 0      | X     |
| 40             | 1                | HW-U10-F | X        | 0      | 0     |
|                | 2                | HW-U10-F | 0        | 0      | X     |
|                | 3                | HW-U10-F | X        | 0      | 0     |
|                | 4                | HW-U10-F | 0        | 0      | X     |

2 Position Up/Down

| Circuit Number | Contact Mounting |          | Position |        |    |
|----------------|------------------|----------|----------|--------|----|
|                | No.              |          | Down     | Center | Up |
| 20             | 1                | HW-U10-F | X        | 0      | 0  |
|                | 2                | HW-U10-F | 0        | 0      | X  |
| 40             | 1                | HW-U10-F | X        | 0      | 0  |
|                | 2                | HW-U10-F | 0        | 0      | X  |
|                | 3                | HW-U10-F | X        | 0      | 0  |
|                | 4                | HW-U10-F | 0        | 0      | X  |

## Part Number Structure



Note: Use only for interpreting part numbers.  
Do not use for developing part numbers.

## Mono Lever Switches 2-Position (Sub-assembled) Part Numbers

|                  |   |                  |   |                   |   |                    |   |          |   |                |
|------------------|---|------------------|---|-------------------|---|--------------------|---|----------|---|----------------|
| Contact Assembly | + | Mounting Adaptor | + | Safety Lever Lock | + | Anti-Rotation Ring | + | Operator | = | Completed Unit |
|------------------|---|------------------|---|-------------------|---|--------------------|---|----------|---|----------------|



## Contact Blocks

| Style | Contacts                       | 1NO                    | 1NC                    |
|-------|--------------------------------|------------------------|------------------------|
|       | Finger-Safe Spring-Up Terminal | HW-U10-F               | HW-U01-F               |
|       |                                | HW-U10R-F (early make) | HW-U01R-F (late break) |
|       | Dummy Block                    | HW-DB                  |                        |

## Anti-Rotation Ring

| Style | Part Number |
|-------|-------------|
|       | HW9Z-RL     |



Use with notched panel cutout to prevent unit rotation.

## Operators

| Style | Description              | Part Number |
|-------|--------------------------|-------------|
|       | Maintained Up/Down       | HW1M-1010   |
|       | Spring return Up/Down    | HW1M-2020   |
|       | Maintained Left/Right    | HW1M-0101   |
|       | Spring return Left/Right | HW1M-0202   |
|       | Maintained Up/Down       | HW1M-L1010  |
|       | Spring return Up/Down    | HW1M-L2020  |
|       | Maintained Left/Right    | HW1M-L0101  |
|       | Spring return Left/Right | HW1M-L0202  |

## Contact Block Mounting Adaptor

| Style | Part Number |
|-------|-------------|
|       | HW-CB2C     |



- Used to mount contact blocks to operator (first pair only).
- IDEC strongly recommends using the safety lever lock (included) to prevent heavy vibration or maintenance personnel from inadvertently unlocking contacts.

## Safety Lever Lock

| Style | Part Number |
|-------|-------------|
|       | HW9Z-LS     |

## Replacement Parts

| Item      | Part Number                            |
|-----------|----------------------------------------|
| Black Cap | HW9Z-CPM                               |
| Boot      |                                        |
|           | HW9Z-BLM (fits standard operator only) |

Mono Lever Switches 3- & 4-Position (Assembled)



3-Position

| Style                        | Part Number      | Description                                      |
|------------------------------|------------------|--------------------------------------------------|
| HW1M<br>Standard Lever       | HW1M-F0121-12N3  | Maintained right and left,<br>spring return down |
|                              | HW1M-F0222-12N3  | Spring return right, down, left                  |
| HW1M-L<br>Interlocking Lever | HW1M-LF0121-12N3 | Maintained right and left,<br>spring return down |
|                              | HW1M-LF0222-12N3 | Spring return right, down, left                  |

Circuit Diagram

| Circuit<br>Number | Contact Mounting |          | Position |      |        |    |       |
|-------------------|------------------|----------|----------|------|--------|----|-------|
|                   | No.              |          | Down     | Left | Center | Up | Right |
| 12N3              | 1                | HW-U01-F | 0        | 0    | 0      | 0  | X     |
|                   | 2                | HW-U01-F | X        | 0    | 0      | 0  | 0     |
|                   | 3                | HW-U10-F | 0        | X    | 0      | 0  | 0     |

4-Position

| Style                        | Part Number      | Description                                      |
|------------------------------|------------------|--------------------------------------------------|
| HW1M<br>Standard Lever       | HW1M-F1111-22N9  | Maintained all positions                         |
|                              | HW1M-F1212-22N9  | Maintained up and down,<br>spring left and right |
|                              | HW1M-2121-22N9   | Spring up and down,<br>maintained left and right |
|                              | HW1M-2222-22N9   | Spring return all positions                      |
| HW1M-L<br>Interlocking Lever | HW1M-LF1111-22N9 | Maintained all positions                         |
|                              | HW1M-LF1212-22N9 | Maintained up and down,<br>spring left and right |
|                              | HW1M-LF2121-22N9 | Spring up and down,<br>maintained left and right |
|                              | HW1M-LF2222-22N9 | Spring return all positions                      |

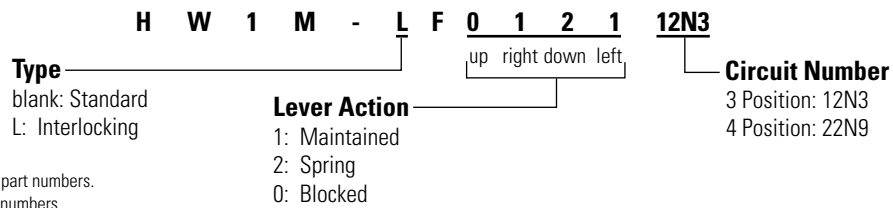
Circuit Diagram

| Circuit<br>Number | Contact Mounting |          | Position |      |        |    |       |
|-------------------|------------------|----------|----------|------|--------|----|-------|
|                   | No.              |          | Down     | Left | Center | Up | Right |
| 22N9              | 1                | HW-U01-F | 0        | 0    | 0      | 0  | X     |
|                   | 2                | HW-U01-F | X        | 0    | 0      | 0  | 0     |
|                   | 3                | HW-U10-F | 0        | X    | 0      | 0  | 0     |
|                   | 4                | HW-U10-F | 0        | 0    | 0      | X  | 0     |



All assembled part numbers in catalog include Finger-Safe spring-up (HW-U...) contacts.

## Part Number Structure



Note: Use only for interpreting part numbers.  
Do not use for developing part numbers.

## Mono Lever Switches 3 &amp; 4-Position (Sub-assembled) Part Numbers

|                  |   |                  |   |                   |   |                    |   |          |   |                |
|------------------|---|------------------|---|-------------------|---|--------------------|---|----------|---|----------------|
| Contact Assembly | + | Mounting Adaptor | + | Safety Lever Lock | + | Anti-Rotation Ring | + | Operator | = | Completed Unit |
|------------------|---|------------------|---|-------------------|---|--------------------|---|----------|---|----------------|



## Contact Blocks

| Style | Contacts                       | 1NO                    | 1NC                    |
|-------|--------------------------------|------------------------|------------------------|
|       | Finger-Safe Spring-Up Terminal | HW-U10-F               | HW-U01-F               |
|       |                                | HW-U10R-F (early make) | HW-U01R-F (late break) |
|       | Dummy Block                    | HW-DB                  |                        |

## Anti-Rotation Ring

| Style | Part Number |
|-------|-------------|
|       | HW9Z-RL     |



Use with notched panel cutout to prevent unit rotation.

## Operators

| Style | Description               | Part Number |
|-------|---------------------------|-------------|
|       | Combination, 3 position   | HW1M-0121   |
|       | Spring return, 3 position | HW1M-0222   |
|       | Maintained, 4 position    | HW1M-1111   |
|       | Combination, 4 position   | HW1M-1212   |
|       | Combination, 4 position   | HW1M-2121   |
|       | Spring return, 4 position | HW1M-2222   |
|       | Combination, 3 position   | HW1M-L0121  |
|       | Spring return, 3 position | HW1M-L0222  |
|       | Maintained, 4 position    | HW1M-L1111  |
|       | Combination, 4 position   | HW1M-L1212  |
|       | Combination, 4 position   | HW1M-L2121  |
|       | Spring return, 4 position | HW1M-L2222  |

## Contact Block Mounting Adaptor

| Style | Part Number |
|-------|-------------|
|       | HW-CB2C     |



- Used to mount contact blocks to operator (first pair only).
- IDEC strongly recommends using the safety lever lock (included) to prevent heavy vibration or maintenance personnel from inadvertently unlocking contacts.

## Safety Lever Lock

| Style | Part Number |
|-------|-------------|
|       | HW9Z-LS     |

## Replacement Parts

| Item      | Part Number                            |
|-----------|----------------------------------------|
| Black Cap | HW9Z-CPM                               |
|           |                                        |
| Boot      | HW9Z-BLM (fits standard operator only) |
|           |                                        |



Pushbutton Selectors (Assembled)



2-Position Pushbutton Selectors

|     |               |          |                      | Operator Position |        |        |         |                |
|-----|---------------|----------|----------------------|-------------------|--------|--------|---------|----------------|
|     |               |          |                      | Left              |        | Right  |         |                |
| Cam | Contacts      | Mounting |                      | Normal            | Push   | Normal | Push    | Part Number    |
| A   | Operator Only |          |                      |                   |        |        |         | HW1R-2A-①      |
|     | 1NO-1NC       | 1<br>2   | HW-U10-F<br>HW-U01-F | 0<br>X            | X<br>0 | 0<br>0 | X<br>0  | HW1R-2AF11-①   |
|     | 2NO           | 1<br>2   | HW-U10-F<br>HW-U10-F | 0<br>0            | X<br>X | 0<br>X | X<br>X  | HW1R-2AF20-①   |
|     | 2NO-2NC       | 1        | HW-U10-F             | 0                 | X      | 0      | X       | HW1R-2AF22-①   |
|     |               | 2        | HW-U01-F             | X                 | 0      | 0      | 0       |                |
| 3   |               | HW-U10-F | 0                    | X                 | 0      | X      |         |                |
| 4   | HW-U01-F      | X        | 0                    | 0                 | 0      |        |         |                |
| D   | Operator Only |          |                      |                   |        |        |         | HW1R-2D-①      |
|     | 2NO           | 1<br>2   | HW-U10-F<br>HW-U10-F | 0<br>0            | X<br>0 | 0<br>0 | 0<br>X  | HW1R-2DF20-①   |
|     | 2NO-2NC       | 1        | HW-U10-F             | 0                 | X      | 0      | 0       | HW1R-2DF22N1-① |
|     |               | 2        | HW-U10-F             | 0                 | 0      | 0      | X       |                |
|     |               | 3        | HW-U01-F             | X                 | 0      | X      | X       |                |
| 4   |               | HW-U01-F | X                    | X                 | X      | 0      |         |                |
| E   | Operator Only |          |                      |                   |        |        |         | HW1R-2E-①      |
|     | 2NO-2NC       | 1        | HW-U10-F             | 0                 | X      | 0      | 0       | HW1R-2EF22N1-① |
|     |               | 2        | HW-U10-F             | 0                 | 0      | 0      | X       |                |
|     |               | 3        | HW-U01-F             | 0                 | 0      | X      | X       |                |
|     |               | 4        | HW-U01-F             | X                 | X      | 0      | 0       |                |
| F   | Operator Only |          |                      |                   |        |        |         | HW1R-2F-①      |
|     | 2NO-2NC       | 1        | HW-U10-F             | 0                 | 0      | 0      | X       | HW1R-2FF22N1-① |
|     |               | 2        | HW-U10-F             | 0                 | X      | 0      | 0       |                |
|     |               | 3        | HW-U01-F             | 0                 | 0      | X      | 0       |                |
|     |               | 4        | HW-U01-F             | X                 | 0      | 0      | 0       |                |
| N   | Operator Only |          |                      |                   |        |        |         | HW1R-2N-①      |
|     | 2NO-2NC       | 1        | HW-U01-F             | 0                 | 0      | X      | 0       | HW1R-2NF22N2-① |
|     |               | 2        | HW-U10-F             | 0                 | X      | 0      | X       |                |
|     |               | 3        | HW-U01-F             | 0                 | 0      | X      | 0       |                |
|     |               | 4        | HW-U10-F             | 0                 | X      | 0      | X       |                |
| T   | Operator Only |          |                      |                   |        |        |         | HW1R-2T-①      |
|     | 2NO-2NC       | 1        | HW-U10-F             | 0                 | X      | X      | Blocked | HW1R-2TF22N1-① |
|     |               | 2        | HW-U10-F             | 0                 | X      | X      |         |                |
|     |               | 3        | HW-U01-F             | X                 | 0      | 0      |         |                |
|     |               | 4        | HW-U01-F             | X                 | 0      | 0      |         |                |

① Button Color Code

| Color | Code | Color  | Code |
|-------|------|--------|------|
| Black | B    | White  | W    |
| Green | G    | Yellow | Y    |
| Red   | R    |        |      |
| Blue  | S    |        |      |



1. All assembled part numbers in catalog include Finger-Safe spring-up (HW-U...) contacts.
2. Operator only models come with operator and button.

## Part Number Structure

H W 1 R - 2 D F 22N1 - R

## Operator

A: Cam A  
D: Cam D  
E: Cam E  
F: Cam F  
N: Cam N  
T: Cam T

## Contact Arrangement Code

11: 1NO-1NC  
20: 2NO  
(For additional contact codes see previous page)

## Button Colors

B: Black  
G: Green  
R: Red  
S: Blue  
W: White  
Y: Yellow



Note: Use only for interpreting part numbers.  
Do not use for developing part numbers.

## Pushbutton Selectors (Sub-assembled)

Contact Blocks + Mounting Adaptor + Safety Lever Lock + Anti-Rotation Ring + Operator + Button = Completed Unit



## Contact Blocks

| Style | Contacts                       | 1NO                    | 1NC                    |
|-------|--------------------------------|------------------------|------------------------|
|       | Finger-Safe Spring-Up Terminal | HW-U10-F               | HW-U01-F               |
|       |                                | HW-U10R-F (early make) | HW-U01R-F (late break) |
|       | Dummy Block                    | HW-DB                  |                        |

## Contact Block Mounting Adaptor

(safety lever lock included)

| Style | Part Number |
|-------|-------------|
|       | HW-CB2C     |



- Used to mount contact blocks to operator (first pair only).
- IEEC strongly recommends using the safety lever lock (included) to prevent heavy vibration or maintenance personnel from inadvertently unlocking contacts.

## Safety Lever Lock

| Style | Part Number |
|-------|-------------|
|       | HW9Z-LS     |

## Anti-Rotation Ring

| Style | Part Number |
|-------|-------------|
|       | HW9Z-RL     |



Use with notched panel cutout to prevent unit rotation.

## Operators

| Style | Description | Part Number |
|-------|-------------|-------------|
|       | Cam A       | HW1R-2A     |
|       | Cam D       | HW1R-2D     |
|       | Cam E       | HW1R-2E     |
|       | Cam F       | HW1R-2F     |
|       | Cam N       | HW1R-2N     |
|       | Cam T       | HW1R-2T     |

## Buttons

| Style       | Part Number |
|-------------|-------------|
| Round Flush | HW1A-B1-①   |
|             |             |



In place of ①, specify the Button Color Code from table below.

## ① Button Color Code

| Color | Code | Color  | Code |
|-------|------|--------|------|
| Black | B    | White  | W    |
| Green | G    | Yellow | Y    |
| Red   | R    |        |      |
| Blue  | S    |        |      |

Dual Pushbutton Switches

Key features:

- Two pushbuttons and a pilot light are integrated into one space-saving ø22 mm control unit.
- Momentary and interlock types are available for pushbuttons. Interlock type prevents both buttons from being pressed at the same time.
- Pilot lights are available in full voltage and transformer with LED.
- IP40 protection, IP65 when using silicon boot.



Applications:

- Ideal for use as power switches and start/stop switches (available with I/ON and O/OFF markings on the buttons and a pilot light in the center).
- Interlock type prevents two pushbuttons from being pressed at the same time.

Dual Pushbutton Switches (Assembled) Part Numbers

Without Center Pilot Light

| Operation Type | Button Style                     |  | Contact Arrangement |               | Part Number      | ④Button Color Code                   | ⑤Legend Code                       |
|----------------|----------------------------------|--|---------------------|---------------|------------------|--------------------------------------|------------------------------------|
|                |                                  |  | Top Button          | Bottom Button |                  |                                      |                                    |
| Momentary      | Flush (top)<br>Flush (bottom)    |  | 1NO                 | 1NC           | HW7D-B11F1001-④⑤ | GR:<br>Green (top)<br>Red (bottom)   | Blank:<br>Without legend           |
|                |                                  |  | 1NO                 | 1NO           | HW7D-B11F1010-④⑤ |                                      |                                    |
|                |                                  |  | 1NO-1NC             | 1NO-1NC       | HW7D-B11F1111-④⑤ |                                      |                                    |
|                |                                  |  | 2NO                 | 2NC           | HW7D-B11F2002-④⑤ |                                      |                                    |
|                |                                  |  | 2NO                 | 2NO           | HW7D-B11F2020-④⑤ |                                      |                                    |
|                | Flush (top)<br>Extended (bottom) |  | 1NO                 | 1NC           | HW7D-B12F1001-④⑤ |                                      |                                    |
|                |                                  |  | 1NO                 | 1NO           | HW7D-B12F1010-④⑤ |                                      |                                    |
|                |                                  |  | 1NO-1NC             | 1NO-1NC       | HW7D-B12F1111-④⑤ |                                      |                                    |
|                |                                  |  | 2NO                 | 2NC           | HW7D-B12F2002-④⑤ |                                      |                                    |
|                |                                  |  | 2NO                 | 2NO           | HW7D-B12F2020-④⑤ |                                      |                                    |
| Interlock*     | Flush (top)<br>Flush (bottom)    |  | 1NO                 | 1NC           | HW7D-B21F1001-④⑤ | WB:<br>White (top)<br>Black (bottom) | 1:<br>I/ON (top)<br>O/OFF (bottom) |
|                |                                  |  | 1NO                 | 1NO           | HW7D-B21F1010-④⑤ |                                      |                                    |
|                |                                  |  | 1NO-1NC             | 1NO-1NC       | HW7D-B21F1111-④⑤ |                                      |                                    |
|                |                                  |  | 2NO                 | 2NC           | HW7D-B21F2002-④⑤ |                                      |                                    |
|                |                                  |  | 2NO                 | 2NO           | HW7D-B21F2020-④⑤ |                                      |                                    |
|                | Flush (top)<br>Extended (bottom) |  | 1NO                 | 1NC           | HW7D-B22F1001-④⑤ |                                      |                                    |
|                |                                  |  | 1NO                 | 1NO           | HW7D-B22F1010-④⑤ |                                      |                                    |
|                |                                  |  | 1NO-1NC             | 1NO-1NC       | HW7D-B22F1111-④⑤ |                                      |                                    |
|                |                                  |  | 2NO                 | 2NC           | HW7D-B22F2002-④⑤ |                                      |                                    |
|                |                                  |  | 2NO                 | 2NO           | HW7D-B22F2020-④⑤ |                                      |                                    |
|                |                                  |  |                     |               |                  |                                      |                                    |
|                |                                  |  |                     |               |                  |                                      |                                    |

 1. \*Interlock type prevents both top and bottom buttons from being pressed simultaneously.  
2. Clear silicon rubber cover part number HW9Z-D7D.  
3. Additional contact configurations available (up to 6 total contacts).

## With Center Pilot Light

| Operation Type | Button Style                     |                                                                                   | Top Button | Bottom Button | Part Number        |
|----------------|----------------------------------|-----------------------------------------------------------------------------------|------------|---------------|--------------------|
| Momentary      | Flush (Top)<br>Flush (Bottom)    | Flush (top)<br>Flush (bottom)                                                     | 1NO        | 1NC           | HW7D-L11F1001②③-④⑤ |
|                |                                  |                                                                                   | 1NO        | 1NO           | HW7D-L11F1010②③-④⑤ |
|                |                                  |                                                                                   | 1NO-1NC    | 1NO-1NC       | HW7D-L11F1111②③-④⑤ |
|                |                                  |                                                                                   | 2NO        | 2NC           | HW7D-L11F2002②③-④⑤ |
|                |                                  |                                                                                   | 2NO        | 2NO           | HW7D-L11F2020②③-④⑤ |
|                | Flush (Top)<br>Extended (Bottom) |  | 1NO        | 1NC           | HW7D-L12F1001②③-④⑤ |
|                |                                  |                                                                                   | 1NO        | 1NO           | HW7D-L12F1010②③-④⑤ |
|                |                                  |                                                                                   | 1NO-1NC    | 1NO-1NC       | HW7D-L12F1111②③-④⑤ |
|                |                                  |                                                                                   | 2NO        | 2NC           | HW7D-L12F2002②③-④⑤ |
|                |                                  |                                                                                   | 2NO        | 2NO           | HW7D-L12F2020②③-④⑤ |
| Interlock*     | Flush (Top)<br>Flush (Bottom)    | Flush (top)<br>Extended (bottom)                                                  | 1NO        | 1NC           | HW7D-L21F1001②③-④⑤ |
|                |                                  |                                                                                   | 1NO        | 1NO           | HW7D-L21F1010②③-④⑤ |
|                |                                  |                                                                                   | 1NO-1NC    | 1NO-1NC       | HW7D-L21F1111②③-④⑤ |
|                |                                  |                                                                                   | 2NO        | 2NC           | HW7D-L21F2002②③-④⑤ |
|                |                                  |                                                                                   | 2NO        | 2NO           | HW7D-L21F2020②③-④⑤ |
|                | Flush (Top)<br>Extended (Bottom) |  | 1NO        | 1NC           | HW7D-L22F1001②③-④⑤ |
|                |                                  |                                                                                   | 1NO        | 1NO           | HW7D-L22F1010②③-④⑤ |
|                |                                  |                                                                                   | 1NO-1NC    | 1NO-1NC       | HW7D-L22F1111②③-④⑤ |
|                |                                  |                                                                                   | 2NO        | 2NC           | HW7D-L22F2002②③-④⑤ |
|                |                                  |                                                                                   | 2NO        | 2NO           | HW7D-L22F2020②③-④⑤ |



- \*Interlock type prevents both top and bottom buttons from being pressed simultaneously.
- Clear silicon rubber cover part number HW9Z-D7D.
- All assembled part numbers in catalog include Finger-Safe spring-up (HW-U...) contacts.

## ② Pilot Light Illumination &amp; Voltage Code

| Full Voltage                                        |      |
|-----------------------------------------------------|------|
| Voltage                                             | Code |
| 6V AC/DC, LED                                       | Q2   |
| 12V AC/DC, LED                                      | Q3   |
| 24V AC/DC, LED                                      | Q4   |
| 120V AC, LED                                        | Q8   |
| Step-Down Transformer<br>(6V Secondary LED Voltage) |      |
| Voltage                                             | Code |
| 120V AC, LED                                        | H22  |
| 240V AC, LED                                        | M42  |
| 480V AC, LED                                        | T82  |

## ③ Pilot Lamp Color Code

| Color | Code |
|-------|------|
| Amber | A    |
| Green | G    |
| Red   | R    |
| Blue  | S    |
| White | W    |

## ④ Pushbutton Color Code

| Color  | Code  |
|--------|-------|
| Top    | Green |
| Bottom | Red   |
| Top    | White |
| Bottom | Black |
|        | GR    |
|        | WB    |

## ⑤ Engraving Codes

| Engraving    | Code   |
|--------------|--------|
| No Engraving | Blank  |
| I/ON         | Top    |
| O/OFF        | Bottom |
|              | 1      |

## Pilot Light

- Without Center Pilot Light
- With Center Pilot Light

## Button Arrangement

- 1: Momentary (Flush/Flush)
- 12: Momentary (Flush/Extended)
- 21: Interlock (Flush/Flush)
- 22: Interlock (Flush/Extended)

## Contact Arrangement

- Top Button**
- 01: 1NC
  - 02: 2NC
  - 10: 1NO
  - 20: 2NO
- Bottom Button**
- 01: 1NC
  - 02: 2NC
  - 10: 1NO
  - 20: 2NO

## Part Number Structure

H W 7 D - L 21 F 20 20 H22 R - GR 1

**Voltage Code**  
blank: without center pilot light

**Full Voltage\***  
02: 6V LED

**Transformer\***  
H22: 120V AC LED

**Pilot Lamp Color**  
A: Amber  
G: Green  
R: Red  
S: Blue  
W: White

**Engraving Code**  
blank: No Engraving  
1: Top: I/ON  
Bottom: O/OFF

**Pushbutton Color**  
GR: Top: Green  
Bottom: Red  
WB: Top: White  
Bottom: Black

Note: Use only for interpreting part numbers.  
Do not use for developing part numbers.

## Dual Pushbutton Switches (Sub-assembled) Part Numbers

Contact Blocks + Mounting Adaptor + Safety Lever Lock + Operator + Lens = Completed Unit



## Lamp Circuit Components with Finger-Safe Terminals

| Style                                   | Description                                                                                             | Part Number                      |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------|----------------------------------|
| Lead Holder                             | For use with HW-CBL on all illuminated pushbutton units. One required for each deck (pair) of contacts. | HW-LH3                           |
| Dummy Block with Full Voltage Adaptor   | For use with odd number of contacts.                                                                    | HW-DA1FBN                        |
| Full Voltage Adaptor                    | For use with even number of contacts.                                                                   | TW-DA1FB                         |
| Transformer Unit (6V secondary voltage) | 120VAC<br>240VAC<br>480VAC                                                                              | TW-F126B<br>TW-F246B<br>TW-F486B |

## Contact Blocks

| Style                          | Contacts | 1NO                    | 1NC                    |
|--------------------------------|----------|------------------------|------------------------|
| Finger-Safe Spring-Up Terminal |          | HW-U10-F               | HW-U01-F               |
|                                |          | HW-U10R-F (early make) | HW-U01R-F (late break) |
| Dummy Block                    |          | HW-DB                  |                        |

## Contact Block Mounting Adaptor

| Style                          | Part Number |
|--------------------------------|-------------|
| Non-illuminated                | HW-CB2C     |
| Illuminated (with Pilot Light) | HW-CBL      |

- Used to mount contact blocks to operator (first pair only).
- IEC strongly recommends using the safety lever lock (included) to prevent heavy vibration or maintenance personnel from inadvertently unlocking contacts.

## Safety Lever Lock

| Style | Part Number |
|-------|-------------|
|       | HW9Z-LS     |

## Anti-Rotation Ring

| Appearance | Part Number |
|------------|-------------|
|            | HW9Z-RL     |

Use with notched panel cutout to prevent unit rotation.

## Engraving Codes

| Engraving    | Code   |
|--------------|--------|
| No Engraving | Blank  |
| I/ON         | Top    |
| O/OFF        | Bottom |

## Lamps/Lens

| Style           | Voltage   | Part Number |
|-----------------|-----------|-------------|
|                 | 6V AC/DC  | LSTD-6②     |
|                 | 12V AC/DC | LSTD-1②     |
|                 | 24V AC/DC | LSTD-2②     |
|                 | 120V AC   | LSTD-H2②    |
|                 | 240V AC   | LSTD-M4②    |
| Non-illuminated |           | HW9Z-B7B    |
| Illuminated     |           | HW9Z-L7W    |

- In place of ②, specify the LED Color Code.
- The LED contains a current-limiting resistor and reverse polarity protection diodes.

## LED Color Code

| Color | Code | Color | Code |
|-------|------|-------|------|
| Amber | A    | Blue  | S    |
| Green | G    | White | W    |
| Red   | R    |       |      |

## Operators

| Style     | Button            | Part Number |
|-----------|-------------------|-------------|
| Momentary | Flush (top)       | HW7D-*11④-⑤ |
|           | Flush (bottom)    |             |
|           | Flush (top)       | HW7D-*12④-⑤ |
|           | Extended (bottom) |             |
| Interlock | Flush (top)       | HW7D-*21④-⑤ |
|           | Flush (bottom)    |             |
|           | Flush (top)       | HW7D-*22④-⑤ |
|           | Extended (bottom) |             |

Instead of \* insert:  
B: Non-illuminated  
L: Illuminated

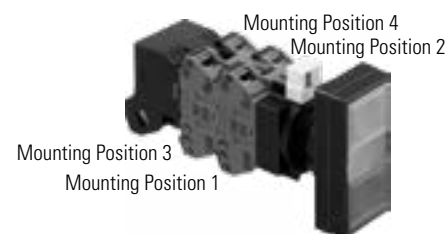
## Pushbutton Color Code

| Color  | Code  | Color  | Code  |
|--------|-------|--------|-------|
| Top    | Green | Top    | White |
| Bottom | Red   | Bottom | Black |

## Contact Arrangement Chart

## Contact Block Mounting Position Example

| Contact Arrangement |               |              | Contact Block     |       | Top Button |      | Bottom Button |      |
|---------------------|---------------|--------------|-------------------|-------|------------|------|---------------|------|
| Top Button          | Bottom Button | Contact Code | Mounting Position | Type  | Normal     | Push | Normal        | Push |
| 1NO                 | 1NO           | 1010         | 1                 | NO    |            | X    |               |      |
|                     |               |              | 2                 | NO    |            |      |               | X    |
| 1NO                 | 1NC           | 1001         | 1                 | NO    |            | X    |               |      |
|                     |               |              | 2                 | NC    |            |      | X             |      |
| 1NC                 | 1NO           | 0110         | 1                 | NC    | X          |      |               |      |
|                     |               |              | 2                 | NO    |            |      |               | X    |
| 1NC                 | 1NC           | 0101         | 1                 | NC    | X          |      |               |      |
|                     |               |              | 2                 | NC    |            |      | X             |      |
| 1NO                 | 2NO           | 1020         | 1                 | NO    |            | X    |               |      |
|                     |               |              | 2                 | NO    |            |      |               | X    |
|                     |               |              | 3                 | Dummy |            |      |               |      |
|                     |               |              | 4                 | NO    |            |      |               | X    |
| 1NO                 | 1NO-1NC       | 1011         | 1                 | NO    |            | X    |               |      |
|                     |               |              | 2                 | NO    |            |      |               | X    |
|                     |               |              | 3                 | Dummy |            |      |               |      |
|                     |               |              | 4                 | NC    |            |      | X             |      |
| 1NO                 | 2NC           | 1002         | 1                 | NO    |            | X    |               |      |
|                     |               |              | 2                 | NC    |            |      | X             |      |
|                     |               |              | 3                 | Dummy |            |      |               |      |
|                     |               |              | 4                 | NC    |            |      | X             |      |
| 1NC                 | 2NO           | 0120         | 1                 | NC    | X          |      |               |      |
|                     |               |              | 2                 | NO    |            |      |               | X    |
|                     |               |              | 3                 | Dummy |            |      |               |      |
|                     |               |              | 4                 | NO    |            |      |               | X    |
| 1NC                 | 1NO-1NC       | 0111         | 1                 | NC    | X          |      |               |      |
|                     |               |              | 2                 | NO    |            |      |               | X    |
|                     |               |              | 3                 | Dummy |            |      |               |      |
|                     |               |              | 4                 | NC    |            |      | X             |      |
| 1NC                 | 2NC           | 0102         | 1                 | NC    | X          |      |               |      |
|                     |               |              | 2                 | NC    |            |      | X             |      |
|                     |               |              | 3                 | Dummy |            |      |               |      |
|                     |               |              | 4                 | NC    |            |      | X             |      |
| 2NO                 | 1NO           | 2010         | 1                 | NO    |            | X    |               |      |
|                     |               |              | 2                 | NO    |            |      |               | X    |
|                     |               |              | 3                 | NO    |            | X    |               |      |
|                     |               |              | 4                 | Dummy |            |      |               |      |
| 2NO                 | 1NC           | 2001         | 1                 | NO    |            | X    |               |      |
|                     |               |              | 2                 | NC    |            |      | X             |      |
|                     |               |              | 3                 | NO    |            | X    |               |      |
|                     |               |              | 4                 | Dummy |            |      |               |      |
| 1NO-1NC             | 1NO           | 1110         | 1                 | NO    |            | X    |               |      |
|                     |               |              | 2                 | NO    |            |      |               | X    |
|                     |               |              | 3                 | NC    | X          |      |               |      |
|                     |               |              | 4                 | Dummy |            |      |               |      |
| 1NO-1NC             | 1NC           | 1101         | 1                 | NO    |            | X    |               |      |
|                     |               |              | 2                 | NC    |            |      | X             |      |
|                     |               |              | 3                 | NC    | X          |      |               |      |
|                     |               |              | 4                 | Dummy |            |      |               |      |

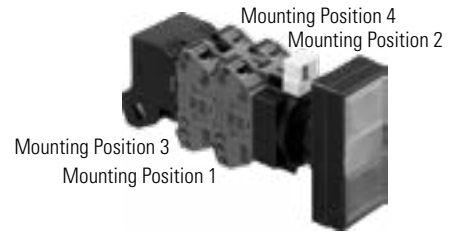


1. Transformers can have two or four contact blocks only.
2. Contact blocks 1 and 3 are actuated by the top button. Contact blocks 2 and 4 are actuated by the bottom button.

### Contact Arrangement Chart (con't)

| Contact Arrangement |               |              | Contact Block     |       | Top Button |      | Bottom Button |      |
|---------------------|---------------|--------------|-------------------|-------|------------|------|---------------|------|
| Top Button          | Bottom Button | Contact Code | Mounting Position | Type  | Normal     | Push | Normal        | Push |
| 2NC                 | 1NO           | 0210         | 1                 | NC    | X          |      |               |      |
|                     |               |              | 2                 | NO    |            |      |               | X    |
|                     |               |              | 3                 | NC    | X          |      |               |      |
|                     |               |              | 4                 | Dummy |            |      |               |      |
| 2NC                 | 1NC           | 0201         | 1                 | NC    | X          |      |               |      |
|                     |               |              | 2                 | NC    |            |      | X             |      |
|                     |               |              | 3                 | NC    | X          |      |               |      |
|                     |               |              | 4                 | Dummy |            |      |               |      |
| 2NO                 | 2NO           | 2020         | 1                 | NO    |            | X    |               |      |
|                     |               |              | 2                 | NO    |            |      |               | X    |
|                     |               |              | 3                 | NO    |            | X    |               |      |
|                     |               |              | 4                 | NO    |            |      |               | X    |
| 2NO                 | 1NO-1NC       | 2011         | 1                 | NO    |            | X    |               |      |
|                     |               |              | 2                 | NO    |            |      |               | X    |
|                     |               |              | 3                 | NO    |            | X    |               |      |
|                     |               |              | 4                 | NC    |            |      | X             |      |
| 2NO                 | 2NC           | 2002         | 1                 | NO    |            | X    |               |      |
|                     |               |              | 2                 | NC    |            |      | X             |      |
|                     |               |              | 3                 | NO    |            | X    |               |      |
|                     |               |              | 4                 | NC    |            |      | X             |      |
| 1NO-1NC             | 2NO           | 1120         | 1                 | NO    |            | X    |               |      |
|                     |               |              | 2                 | NO    |            |      |               | X    |
|                     |               |              | 3                 | NC    | X          |      |               |      |
|                     |               |              | 4                 | NO    |            |      |               | X    |
| 1NO-1NC             | 1NO-1NC       | 1111         | 1                 | NO    |            | X    |               |      |
|                     |               |              | 2                 | NO    |            |      |               | X    |
|                     |               |              | 3                 | NC    | X          |      |               |      |
|                     |               |              | 4                 | NC    |            |      | X             |      |
| 1NO-1NC             | 2NC           | 1102         | 1                 | NO    |            | X    |               |      |
|                     |               |              | 2                 | NC    |            |      | X             |      |
|                     |               |              | 3                 | NC    | X          |      |               |      |
|                     |               |              | 4                 | NC    |            |      | X             |      |
| 2NC                 | 2NO           | 0220         | 1                 | NC    | X          |      |               |      |
|                     |               |              | 2                 | NO    |            |      |               | X    |
|                     |               |              | 3                 | NC    | X          |      |               |      |
|                     |               |              | 4                 | NO    |            |      |               | X    |
| 2NC                 | 1NO-1NC       | 0211         | 1                 | NC    | X          |      |               |      |
|                     |               |              | 2                 | NO    |            |      |               | X    |
|                     |               |              | 3                 | NC    | X          |      |               |      |
|                     |               |              | 4                 | NC    |            |      | X             |      |
| 2NC                 | 2NC           | 0202         | 1                 | NC    | X          |      |               |      |
|                     |               |              | 2                 | NC    |            |      | X             |      |
|                     |               |              | 3                 | NC    | X          |      |               |      |
|                     |               |              | 4                 | NC    |            |      | X             |      |

### Contact Block Mounting Position Example





## Contactor Reset Button



### Reset Buttons (Assembled)

|              | Plastic Bezel      | Metal Bezel        |
|--------------|--------------------|--------------------|
| (Blank)      | HW1B-M1RS-①T       | HW4B-M1RS-①T       |
| Engraved "R" | HW1B-M1RS-①T-ENG-R | HW4B-M1RS-①T-ENG-R |



1. In place of ① specify Button Color Code.
2. 130mm (5.1") overall length.
3. 16mm flat base for easy alignment

### ① Button Color Code

| Color | Code | Color  | Code |
|-------|------|--------|------|
| Black | B    | White  | W    |
| Green | G    | Yellow | Y    |
| Red   | R    |        |      |
| Blue  | S    |        |      |

### Contactor Reset Button (Sub-assembled)



### Rod

| Style                                                                               | Part Number    |
|-------------------------------------------------------------------------------------|----------------|
|  | HW9Z-RS-TK2141 |

### Operator

| Style                                                                               | Plastic | Metal   |
|-------------------------------------------------------------------------------------|---------|---------|
|  | HW1B-M0 | HW4B-M0 |
|  |         |         |

### Button

| Style                                                                               | Part Number |
|-------------------------------------------------------------------------------------|-------------|
|  | HW1A-B1-①   |

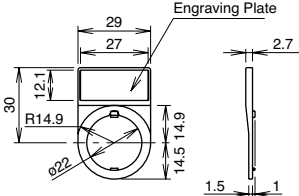
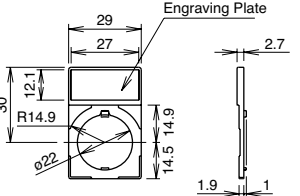
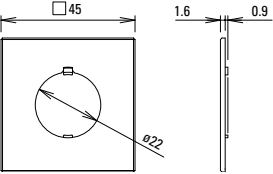
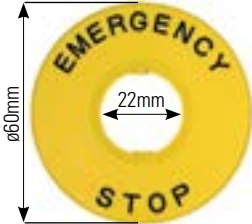
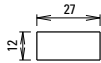


In place of ①, specify the Button Color Code from table.

### ① Button Color Code

| Color | Code | Color  | Code |
|-------|------|--------|------|
| Black | B    | White  | W    |
| Green | G    | Yellow | Y    |
| Red   | R    |        |      |
| Blue  | S    |        |      |

## Nameplates - HW Series

|                                            | HWAM—Black Plastic                                                                | HWAQ—Black Plastic                                                                | HWAS—Black Plastic                                                                                    | HWAV—Yellow Plastic                                                                 |
|--------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                                            |  |  |                     |  |
| Nameplate (blank engraving plate included) | HWAM-OB                                                                           | HWAQ-OB                                                                           | HWAS-OB                                                                                               | HWAV-0<br>HWAV5-0†                                                                  |
| Nameplate (engraved)                       | HWAM-①                                                                            | HWAQ-①                                                                            | HWAS-①                                                                                                | HWAV-27*<br>HWAV5-27†                                                               |
| Additional Insert (blank)                  | HWNP-0                                                                            | HWNP-0                                                                            | HWNP Dimensions<br> |                                                                                     |
| Additional Insert (engraved)               | HWNP-①                                                                            | HWNP-①                                                                            |                                                                                                       |                                                                                     |



1. In place of ①, insert either the standard legend code from table below or custom engraving delimited by " ".
2. Standard engravings are available at no charge.
3. \* HWAV-27 comes engraved "Emergency Stop" as shown in drawing.
4. † HWAV5-27 and HWAV5-0 for 60mm diameter E-Stops (80mm diameter nameplate).

### Standard Legend Codes

| Pushbuttons |      |               |      | Pushbuttons/Selector Switches |      |                   |      | Selector Switches |      |
|-------------|------|---------------|------|-------------------------------|------|-------------------|------|-------------------|------|
| Legend      | Code | Legend        | Code | Legend                        | Code | Legend            | Code | Legend            | Code |
| AUTO        | 101  | OPEN          | 116  | AUTO-MAN                      | 201  | REV-FOR           | 216  | AUTO-MAN-OFF      | 301  |
| CLOSE       | 102  | OUT           | 117  | CLOSE-OPEN                    | 202  | RUN-JOG           | 217  | AUTO-OFF-MAN      | 302  |
| DOWN        | 103  | RAISE         | 118  | DOWN-UP                       | 203  | RUN-SAFE          | 218  | CLOSE-OFF-OPEN    | 303  |
| EMERG.STOP  | 104  | RESET         | 119  | FAST-SLOW                     | 204  | SAFE-RUN          | 219  | DOWN-OFF-SLOW     | 304  |
| FAST        | 105  | REVERSE       | 120  | FOR-REV                       | 205  | SLOW-FAST         | 220  | FAST-OFF-SLOW     | 305  |
| FORWARD     | 106  | RUN           | 121  | HAND-AUTO                     | 206  | START-STOP        | 221  | FOR-OFF-REV       | 306  |
| HAND        | 107  | SLOW          | 122  | HIGH-LOW                      | 207  | STOP-START        | 222  | LEFT-OFF-RIGHT    | 307  |
| HIGH        | 108  | START         | 123  | JOG-RUN                       | 208  | UP-DOWN           | 223  | LOWER-OFF-RAISE   | 308  |
| IN          | 109  | STOP          | 125  | LEFT-RIGHT                    | 209  | Ol (Int'l OFF ON) | 250  | OFF-MAN-AUTO      | 309  |
| INCH        | 110  | TEST          | 126  | LOWER-RAISE                   | 210  |                   |      | OFF-SLOW-FAST     | 310  |
| JOG         | 111  | UP            | 127  | MAN-AUTO                      | 211  |                   |      | OFF-1-2           | 311  |
| LOW         | 112  | I (Int'l On)  | 150  | OFF-ON                        | 212  |                   |      | OPEN-OFF-CLOSE    | 312  |
| LOWER       | 113  | O (Int'l Off) | 151  | ON-OFF                        | 213  |                   |      | SLOW-OFF-FAST     | 313  |
| OFF         | 114  | EMO           | 152  | OPEN-CLOSE                    | 214  |                   |      | SUMMER-OFF-WINTER | 314  |
| ON          | 115  |               |      | RAISE-LOWER                   | 215  |                   |      | UP-OFF-DOWN       | 315  |
|             |      |               |      |                               |      |                   |      | 1-OFF-2           | 316  |
|             |      |               |      |                               |      |                   |      | HAND-OFF-AUTO     | 317  |



1. To order engraved nameplates, add legend code to nameplate part number.
2. Character height based on the number of characters and size of nameplate. Standard character size is 3/16".
3. Nameplates with standard legends are the same list price as blank nameplates.
4. Nameplates have built-in anti-rotation feature for use with notched panel cut-outs. Additional anti-rotation ring (HW9Z-RL) is not necessary.

## Nameplates Order Form — HW Series

Copy this order form and use it to specify Letter Height, Custom Engravings, Location of Engraving on Nameplate, and Quantity Desired.

To ensure engraving accuracy, fax it to your IDEC representative or Distributor.

Your Company:

Name:

Telephone:

Fax & Email:

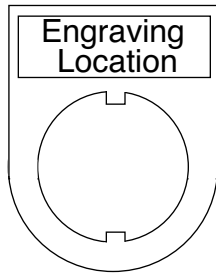
IDEC Rep/Distributor Contact:

PO number (if known):

IDEC Rep/Distributor Phone:

IDEC Rep/Distributor Fax & Email:

## HWAM Nameplate



## Step 1.

**Choose Letter Size - 7/64" or 1/8".**

Check the box for the letter size you want. Then write your lettering in box below the check boxes. Note: 1/8" size letters cannot exceed 9 characters.

7/64"  
Letter  
Size

☐

11 characters maximum  
(for 7/64" size letters)

1/8"  
Letter  
Size

☐

9 characters maximum  
(for 7/8" size letters)

## Step 2.

**Specify Quantity.**

Enter the number of nameplates desired in the box on the right.

Qty

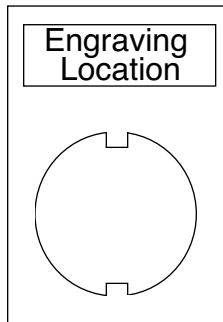
|   |   |   |   |   |   |   |   |   |    |    |
|---|---|---|---|---|---|---|---|---|----|----|
|   |   |   |   |   |   |   |   |   |    |    |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |

Sample Letter Sizes

7/64" Letters: A B C D

1/8" Letters: A B C D

## HWAQ Nameplate



## Step 1.

**Choose Letter Size - 7/64" or 1/8".**

Check the box for the letter size you want. Then write your lettering in box below the check boxes. Note: 1/8" size letters cannot exceed 9 characters.

7/64"  
Letter  
Size

☐

11 characters maximum  
(for 7/64" size letters)

1/8"  
Letter  
Size

☐

9 characters maximum  
(for 1/8" size letters)

## Step 2.

**Specify Quantity.**

Enter the number of nameplates desired in the box on the right.

Qty

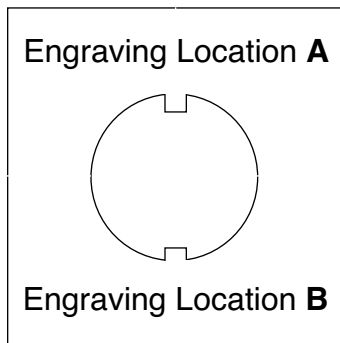
|   |   |   |   |   |   |   |   |   |    |    |
|---|---|---|---|---|---|---|---|---|----|----|
|   |   |   |   |   |   |   |   |   |    |    |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |

Sample Letter Sizes

7/64" Letters: A B C D

1/8" Letters: A B C D

## HWAS Nameplate



## Step 1.

**Choose Letter Size - 3/32" or 1/8".**

Check the box for the letter size you want. Then write your lettering in box below the check boxes. Note: 1/8" size letters cannot exceed 14 characters.

3/32"  
Letter  
Size

☐

20 characters maximum  
(for 3/32" size letters)

1/8"  
Letter  
Size

☐

14 characters maximum  
(for 1/8" size letters)

## Step 2.

**Specify Quantity.**

Enter the number of nameplates desired in the box on the right.

Qty

## Step 3.

**Specify Location.**

Enter the location of engraving (A or B or Both), in box on the right.

Location

|   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |
|---|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|
|   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |
| A | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| B | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |

Sample Letter Sizes

3/32" Letters: A B C D

1/8" Letters: A B C D

Switch Engraving Order Form – HW Series

Copy this order form and use it to specify Letter Height, Maximum Number of Lines and Text to be engraved.  
To ensure engraving accuracy, fax it to your IDEC representative or Distributor.

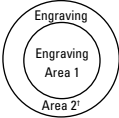
Your Company: \_\_\_\_\_  
Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
PO: \_\_\_\_\_

Telephone: \_\_\_\_\_  
Fax: \_\_\_\_\_  
Email: \_\_\_\_\_  
Part Number to be Engraved: \_\_\_\_\_

Please check one of the boxes below to indicate your choice of engraving options:



ø29mm, ø40mm Mushroom Head



|                          | # of Lines | Letter Height | Max. Characters Per Line |
|--------------------------|------------|---------------|--------------------------|
| <input type="checkbox"/> | 1          | 5/32          | 5                        |
| <input type="checkbox"/> |            | 1/8           | 6                        |
| <input type="checkbox"/> | 2          | 5/32          | 5                        |
| <input type="checkbox"/> |            | 1/8           | 6                        |
| <input type="checkbox"/> | 3          | 1/8           | 6                        |
| <input type="checkbox"/> | 4          | 3/32          | 5                        |

|                          | # of Lines | Letter Height | Max. Characters Per Line |
|--------------------------|------------|---------------|--------------------------|
| <input type="checkbox"/> | 1          | 5/32          | 5                        |
| <input type="checkbox"/> |            | 1/8           | 5                        |
| <input type="checkbox"/> | 2          | 5/32          | 5                        |
| <input type="checkbox"/> |            | 1/8           | 6                        |
| <input type="checkbox"/> | 3          | 1/8           | 5                        |
| <input type="checkbox"/> | 4          | 3/32          | 5                        |

|                          |                  | # of Lines | Letter Height | Max. Characters Per Line |
|--------------------------|------------------|------------|---------------|--------------------------|
| <input type="checkbox"/> | Engraving Area 1 | 1          | 5/32          | 5                        |
| <input type="checkbox"/> |                  |            | 1/8           | 5                        |
| <input type="checkbox"/> | Engraving Area 2 | 1          | 5/32          | 7                        |
| <input type="checkbox"/> |                  |            | 1/8           | 7                        |



- 1. Above mentioned specifications hold true for standard size pushbuttons (round and square).
- 2. \*Engraving Area 2 can be engraved for 40mm mushroom Head non-Illuminated push button only.
- 3. Engraving is done on the button itself for non-Illuminated push buttons and on marking plate for illuminated push buttons and pilot lights.
- 4. Please enter text exactly how you want it engraved, take care to emphasize capital or small letters.

Enter text to be engraved:

Line 1: \_\_\_\_\_  
Line 2: \_\_\_\_\_  
Line 3: \_\_\_\_\_  
Line 4: \_\_\_\_\_

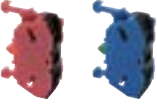
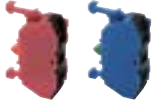
Sample Letter Sizes

1/8 Letters: **OPEN**  
5/32 Letters: **OPEN**

For IDEC Internal Use Only:  
Work Order #: \_\_\_\_\_

## Accessories

| Item                              | Appearance                                                                          | Description/Usage                                                                                                                                      | Part Number                                            |          |
|-----------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|----------|
| Locking Ring Wrench               |    | Metallic tool used to tighten the plastic locking ring when installing the HW series in a panel                                                        | MW9Z-T1                                                |          |
| Lamp/LED Removal Tool             |    | Rubber tool makes lamp/LED removal easier.                                                                                                             | OR-55                                                  |          |
| Anti-Rotation Ring                |    | Prevents rotation of switches in panel. (included with all assembled switches except pilot lights)                                                     | for notched panel cutout (standard)                    | HW9Z-RL  |
|                                   |                                                                                     |                                                                                                                                                        | for round panel cutout                                 | LW9Z-L   |
| Rubber Mounting Hole Plug         |    | Black rubber plug fills unused 7/8" mounting holes in panel.                                                                                           | OB-31                                                  |          |
| Metallic Mounting Hole Plug       |    | For plugging unused 7/8" mounting holes in the panel. Tighten the attached locking ring to a torque of 12 kfg-cm maximum<br>Degree of protection: IP66 | LW9Z-BM                                                |          |
| Pushbutton Clear Boot             |    | Used to cover and protect pushbuttons<br><br>Operating temperature: -50 to +60°C                                                                       | Flush Pushbuttons                                      | OC-31    |
|                                   |                                                                                     |                                                                                                                                                        | Extended Pushbuttons                                   | OC-32    |
| Padlock Cover                     |    | Plastic hinged padlockable cover to protect pushbuttons or selector switches. (Not intended for E-Stops)<br><br>Degree of protection: IP65             | HW9Z-KL1                                               |          |
| Tab Terminal Adapter              |   | Tab #250 (6.35 x 0.8mm): Single tab                                                                                                                    | TW-FA4                                                 |          |
| Mounting Adaptor                  |  | Used to mount round HW series (except Jumbo Mushroom, unibody, and square units) into a larger panel cut-out. (includes both pieces)                   | 22 to 30mm                                             | HW9Z-A30 |
|                                   |                                                                                     |                                                                                                                                                        | 22 to 25mm                                             | HW9Z-A25 |
| Replacement Safety Lever Lock     |  | Used to prevent contact mounting lever from moving due to heavy vibration or panel maintenance.                                                        | HW9Z-LS                                                |          |
| Reset Rod for Contactors Overload |  | 5" rod used with HW1B-M0.                                                                                                                              | HW9Z-RS-TK2141                                         |          |
| Replacement Operator Washer       |  | Provided with operator. Insert between bezel and locking ring.                                                                                         | HWM-WASHER                                             |          |
| Replacement Locking Ring          |  | Plastic locking nut comes with all HW operators & assemblies.                                                                                          | Standard (plastic)                                     | HW9Z-LN  |
|                                   |                                                                                     |                                                                                                                                                        | Optional (metal)                                       | HW9Z-LNM |
| Switch Cover (Square)             |  | Used only with round or square flush pushbuttons.                                                                                                      | HW9Z-K1 (spring return)<br>HW9Z-K11 (maintained cover) |          |
| Replacement Keys                  |  | Pair of Keys (#231)                                                                                                                                    | HW9Z-SKP                                               |          |
| Replacement Lens                  |  | HW Illuminated Unibody Replacement Lens                                                                                                                | HWLV-LENSR                                             |          |

| Item                                    | Appearance                                                                         | Description/Usage                                                                                                                               | Part Number                                                               |                                                                           |
|-----------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|---------------------------------------------------------------------------|
| Replacement Jumbo Dome Lens             |   | Polycarbonate Replacement Lens<br>(If using yellow lens, use white LED.)                                                                        | HW1A-P5Ⓢ<br>Ⓢ = (A, G, R, S, W, Y)                                        |                                                                           |
| Replacement Jumbo LED Diffusing Lens    |   |                                                                                                                                                 | HW9Z-PP5C                                                                 |                                                                           |
| Replacement LED Lamps for HW Jumbo Dome |   | Replacement LED Lamp - applicable for jumbo pilot lights only                                                                                   | LSTD8-2Ⓢ<br>Ⓢ = (A, G, R, S, W)                                           |                                                                           |
| Rubber Cover for Dual Pushbuttons       |   | Clear Silicon rubber cover                                                                                                                      | HW9Z-D7D                                                                  |                                                                           |
| Barrier for Dual Pushbuttons            |   | Plastic barrier. Used when mounting the HW7 units on 30mm horizontal centers, to prevent possible interconnections between adjoining terminals. | HW-VU1                                                                    |                                                                           |
| EMO Sticker                             |   | Emergency stop nameplate sticker                                                                                                                | HW9Z-EMO-NP-TK2120                                                        |                                                                           |
| Contact Blocks<br>(with side entry)     |   | These contacts are applicable for wires terminated by ring, fork, terminals, <b>not recommended for bare wire connections.</b>                  | 1NC                                                                       | 1NO                                                                       |
|                                         |                                                                                    |                                                                                                                                                 | HW-U01<br>HW-U01-MAU<br>HW-U01R<br>HW-U01R-MAU<br>(with side entry)       | HW-U10<br>HW-U10-MAU<br>HW-U10R<br>HW-U10R-MAU<br>(with side entry)       |
| Contact Blocks<br>(without side entry)  |  | These contacts are applicable for wires terminated by ring, fork, or ferule terminals, and <b>also bare wire connections.</b>                   | HW-U01-F<br>HW-U01-MAU-F<br>HW-U01R-F<br>HW-U01R-MAU-F<br>(no side entry) | HW-U10-F<br>HW-U10-MAU-F<br>HW-U10R-F<br>HW-U10R-MAU-F<br>(no side entry) |

### E-Stop Shrouds

| Style                                                                               | Part Numbers | E-Stop Types          | Applicable Standards                         |
|-------------------------------------------------------------------------------------|--------------|-----------------------|----------------------------------------------|
|  | HW9Z-KG1     | 40mm<br>Mushroom Head | SEMI S2-0703,<br>12.5.1 Compliant            |
|  | HW9Z-KG2     | 40mm<br>Mushroom Head | SEMI S2-0703, 12.5.1 &<br>SEMATECH Compliant |

| Style                                                                               | Part Numbers | E-Stop Types          | Applicable Standards                                              |
|-------------------------------------------------------------------------------------|--------------|-----------------------|-------------------------------------------------------------------|
|  | HW9Z-KG3     | 40mm<br>Mushroom Head | SEMI S2 Compliant<br>(Approved by TUV)<br>ISO 13850               |
|  | HW9Z-KG4     | 40mm<br>Mushroom Head | SEMI S2 Compliant<br>(Approved by TUV)<br>& SEMATECH<br>ISO 13850 |

## Contact Assemblies

## Standard Contact Assemblies

For use with Non-Illuminated Pushbuttons &amp; E-Stops

| Style                                                                             | Contacts | Part Number |
|-----------------------------------------------------------------------------------|----------|-------------|
|  | 1NO      | HW-CBF10    |
|                                                                                   | 1NC      | HW-CBF01    |
|                                                                                   | 1NO/1NC  | HW-CBF11    |
|                                                                                   | 2NO      | HW-CBF20    |
|                                                                                   | 2NC      | HW-CBF02    |
|                                                                                   | 2NO/2NC  | HW-CBF22    |



Gold contact option is available. Add suffix "MAU" to end of part number. For example, HW-CBF20 becomes HW-CBF20-MAU.

## Full Voltage Contact Assemblies

For use with Illuminated Pushbuttons.

| Style                                                                              | Contacts | Part Number |
|------------------------------------------------------------------------------------|----------|-------------|
|  | 1NO      | HW-FL10Q0   |
|                                                                                    | 2NO      | HW-FL20Q0   |
|                                                                                    | 1NO/1NC  | HW-FL11Q0   |
|                                                                                    | 1NC      | HW-FL01Q0   |
|                                                                                    | 2NC      | HW-FL02Q0   |



Order LED separately.

## Transformer Contact Assemblies

For use with Illuminated Pushbuttons.

| Style                                                                             | Contacts         | Part Number                                                                                                                                                                      |
|-----------------------------------------------------------------------------------|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | 120V AC with LED | 1NO<br>2NO<br>1NC<br>1NO/1NC                                                                                                                                                     |
|                                                                                   | 240V AC with LED | 1NO<br>2NO<br>1NC<br>1NO/1NC                                                                                                                                                     |
|                                                                                   | 480V AC with LED | 1NO<br>2NO<br>1NC<br>1NO/1NC                                                                                                                                                     |
|                                                                                   |                  | HW-FL10H2-②<br>HW-FL20H2-②<br>HW-FL01H2-②<br>HW-FL11H2-②<br>HW-FL10M4-②<br>HW-FL20M4-②<br>HW-FL01M4-②<br>HW-FL11M4-②<br>HW-FL10T8-②<br>HW-FL20T8-②<br>HW-FL01T8-②<br>HW-FL11T8-② |

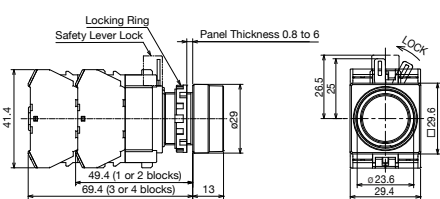


1. In place of ②, specify the LED Color Code.  
② = A, G, R, S, or W
2. 6V LED included.

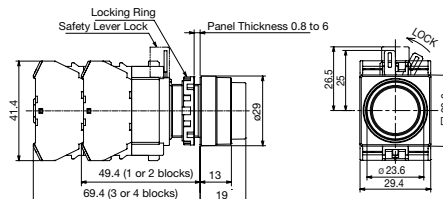
## Dimensions (mm)

## Non-Illuminated Pushbuttons

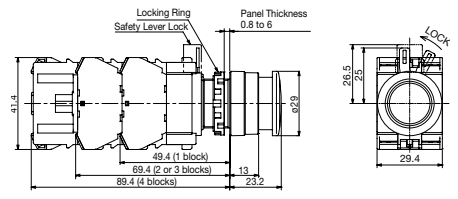
Flush (HW1B-M1, -A1)



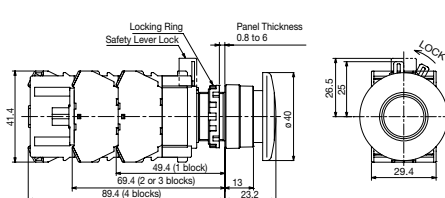
Extended (HW1B-M2, -A2)



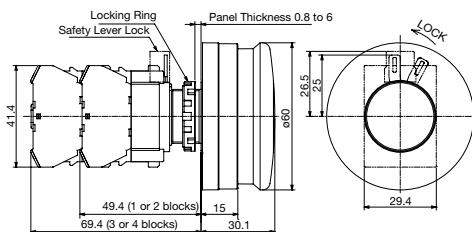
ø29mm Mushroom (HW1B-M3 -A3)



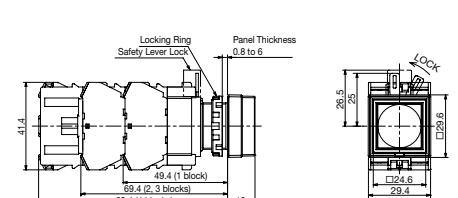
ø40mm Mushroom (HW1B-M4, -A4)



ø60mm Mushroom (HW1B-M5)

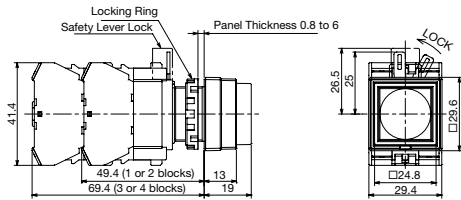


Square Flush (HW2B-M1, -A1)

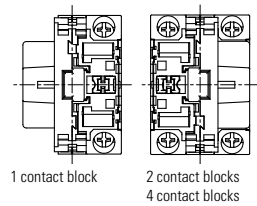




## Square Extended (HW2B-M2, -A2)

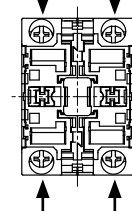


## Contact Block (Bottom View)



## Terminal Wiring

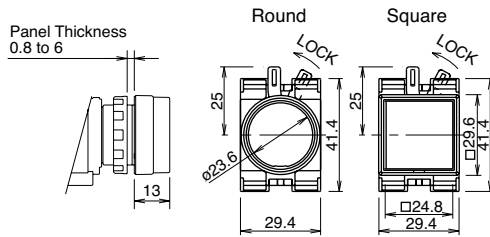
Arrows indicate access directions for wiring



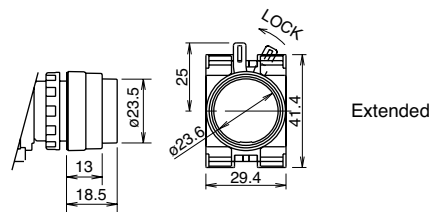
Dimensions (mm)

## Operators

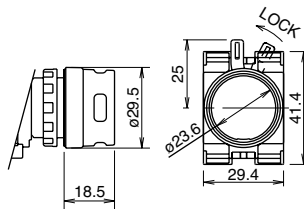
### Flush (Round & Square)



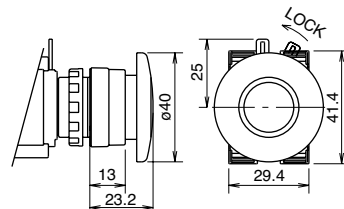
### Extended



### Extended with Full Shroud

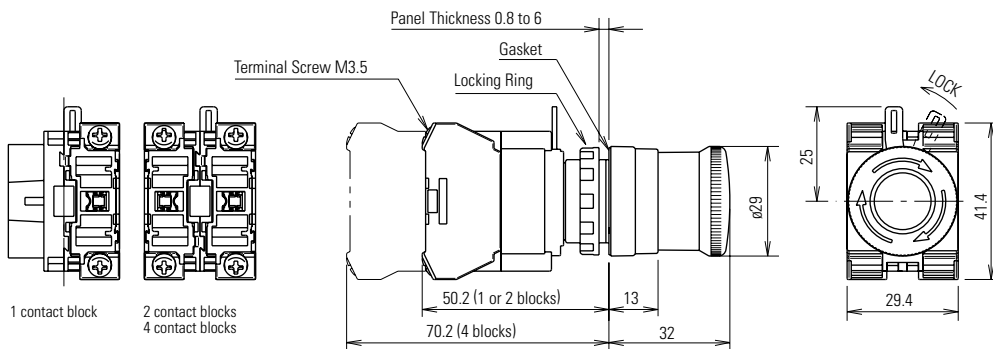


### ø40mm Mushroom

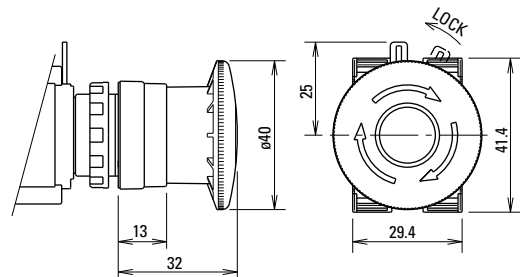


## Emergency Stop Pushbuttons

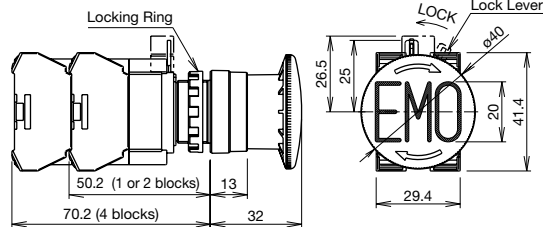
### ø29mm Head Pushlock Turn Reset (HW1B-V3)



### ø40mm Head Pushlock Turn Reset (HW1B-V4)

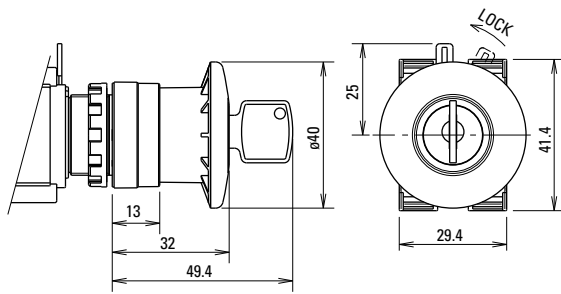


### ø40mm Head EMO Pushlock Turn Reset (HW1B-V4)

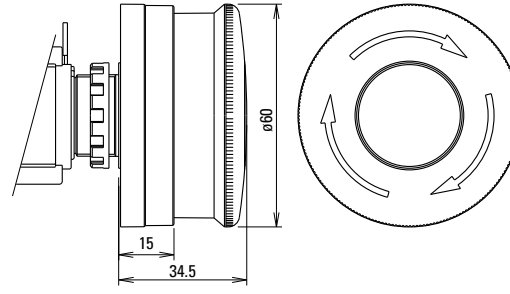


Dimensions (mm)

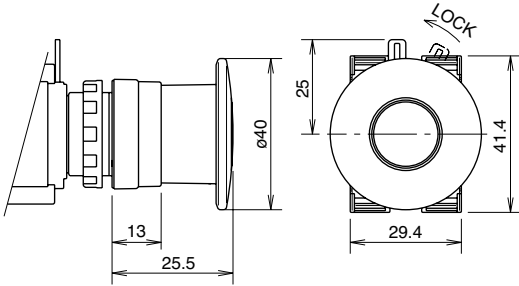
ø40mm Head Pushlock Key Reset (HW1B-X4)



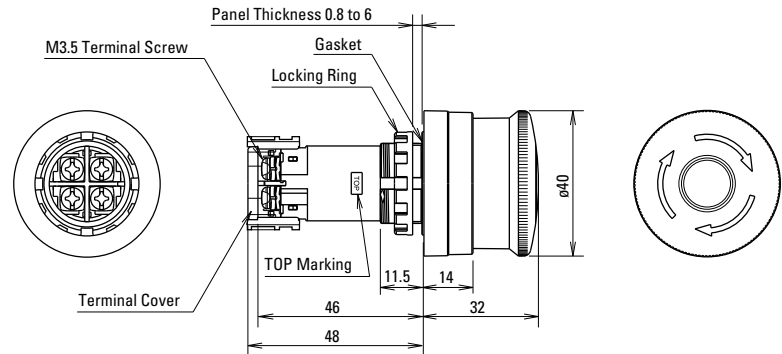
ø60mm Head Pushlock Turn Reset (HW1B-V5)



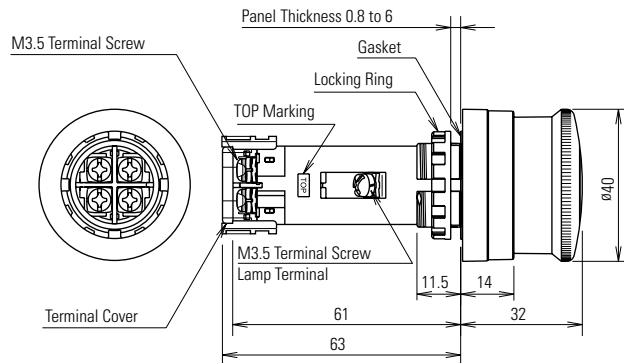
ø40mm Head Push-Pull (HW1B-Y2)



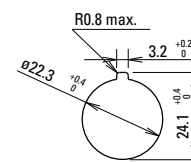
ø40mm Head Unibody Pushlock Turn Reset (HW1B-BV4)



Illuminated E-Stop Pushbuttons (HW1E-LV4)



Mounting Hole

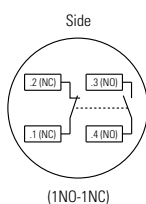


The minimum mounting centers shown below are applicable to E-Stop switches with one layer of contact blocks (two contact blocks). When two layers of contact blocks are mounted, determine the minimum mounting centers for ease of wiring.

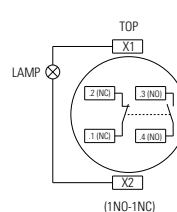
| Unit                                     | Vertical Spacing | Horizontal Spacing |
|------------------------------------------|------------------|--------------------|
| HW1B-V3<br>HW1B-V4<br>HW1B-X4<br>HW1B-Y2 | 50 mm            | 50 mm              |
| HW1B-V5                                  | 60 mm            | 60 mm              |

Terminal Arrangement (Bottom View)

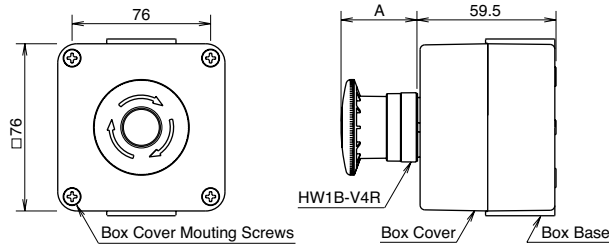
HW1E-BV4



HW1E-LV4

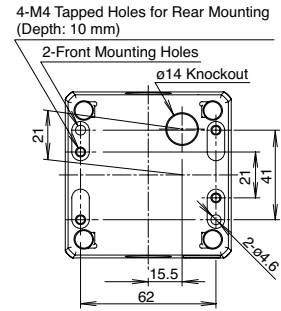


## Emergency Stop Stations



| Operator            | Dimension A (mm)        |
|---------------------|-------------------------|
| Pushlock Turn Reset | 32                      |
| Pushlock Key Reset  | 32 (Key inserted: 49.4) |
| Push Pull           | 25.5                    |

## Mounting Hole Layout



Dimensions (mm)

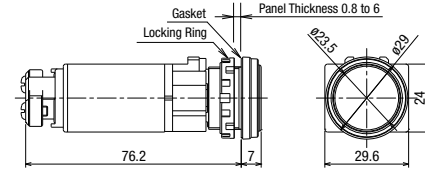
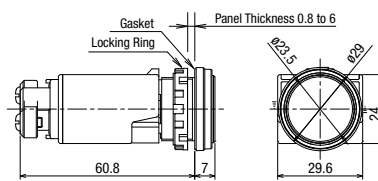
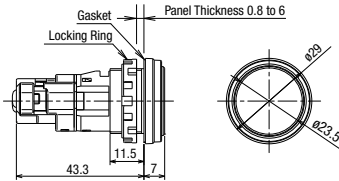
## Pilot Lights

### Round Flush Terminal screws: M3.5, integrated terminal cover

6, 12, 24V AC/DC, Without LED lamp

100/110V AC, 200/220V AC (240V AC maximum)

110V DC, 380V AC minimum



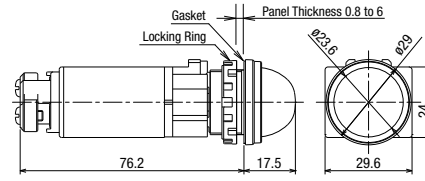
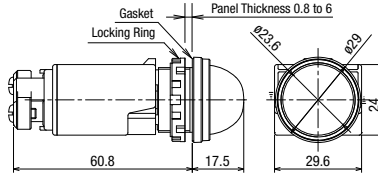
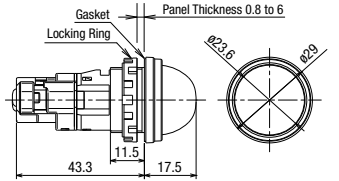
Dimensions (mm)

### Extended Terminal screws: M3.5, integrated terminal cover

6, 12, 24V AC/DC, Without LED lamp

100/110V AC, 200/220V AC (240V AC maximum)

110V DC, 380V AC minimum

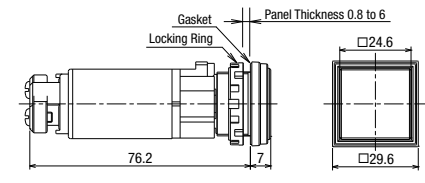
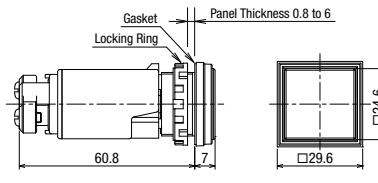
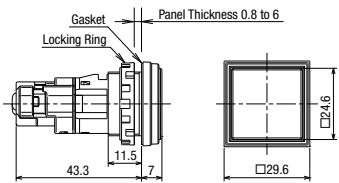


### Square Flush Terminal screws: M3.5, integrated terminal cover

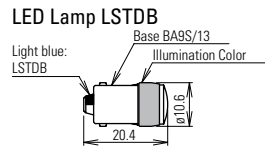
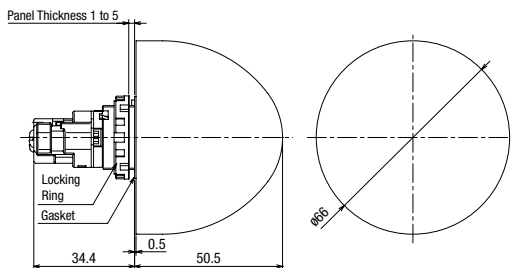
6, 12, 24V AC/DC, Without LED lamp

100/110V AC, 200/220V AC (240V AC maximum)

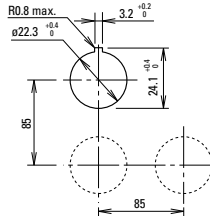
110V DC, 380V AC minimum



## Jumbo Dome Pilot Light Terminal screws: M3.5, integrated terminal cover

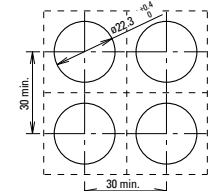


## Mounting Hole Layout



## Mounting Hole Layout

Close mounting on 30mm centers  
Degree of protection: IP65

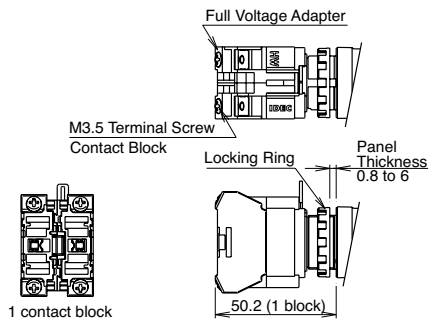


When mounting transformer or DC-DC converter type units on 30mm centers vertically and horizontally, keep the ambient temperature below 40°C.

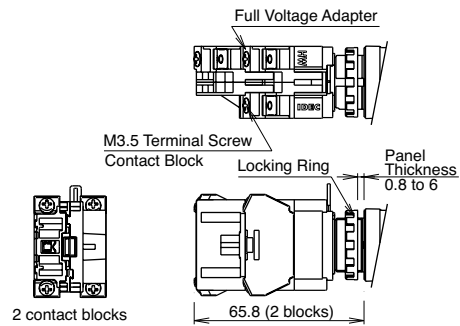
### Illuminated Pushbuttons

#### Full Voltage Models

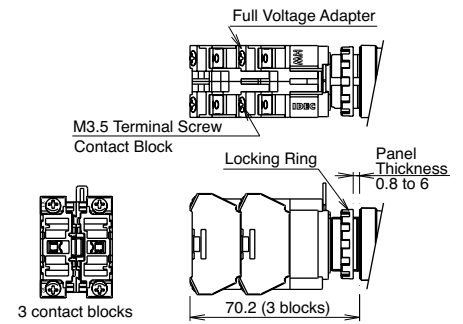
##### 1 Contact Block



##### 2 Contact Blocks

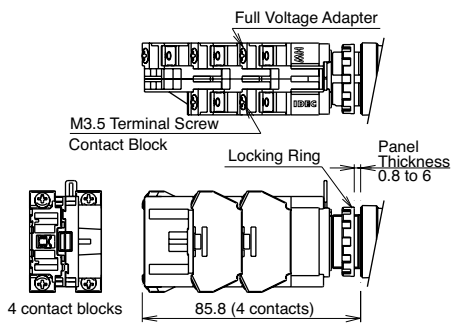


##### 3 Contact Blocks



### Illuminated Pushbuttons con't

##### 4 Contact Blocks

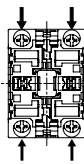


#### Terminal Wiring

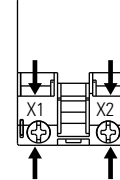
Arrows indicate access directions for wiring.

#### Contact Block

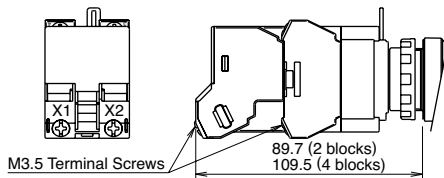
##### Full Voltage Adaptor



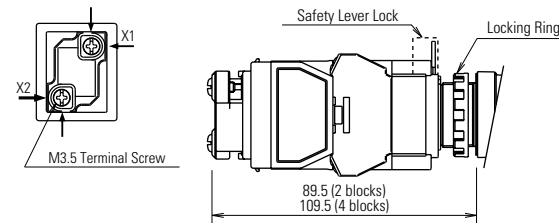
##### Transformer



#### Transformer Models



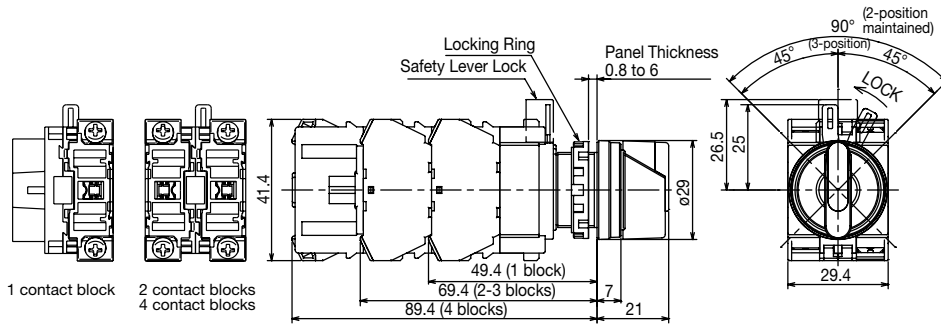
#### DC-DC Converter Models



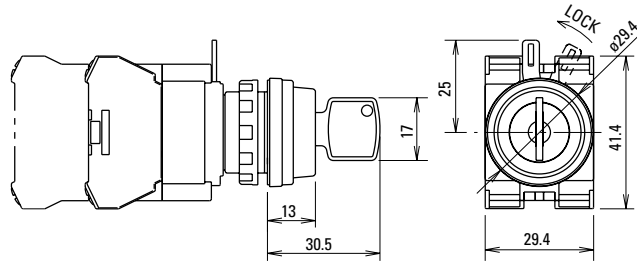
Dimensions (mm)

## Non-Illuminated Selector & Key Switches

### Knob Operator

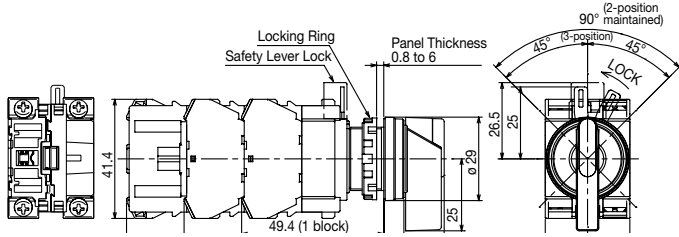


### Key Operator

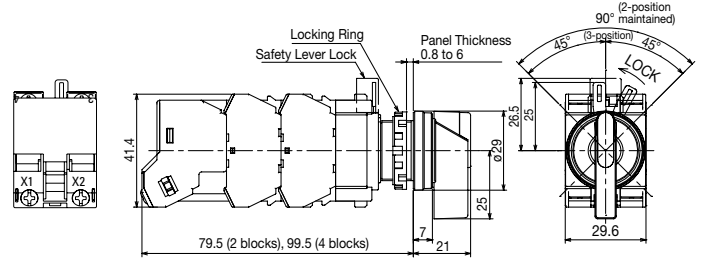


## Illuminated Selector Switches

### Full Voltage Model



### Transformer Model

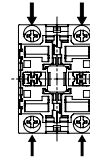


Dimensions (mm)

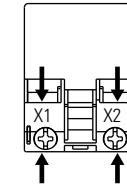
### Terminal Wiring

Arrows indicate access directions for wiring.

### Contact Block Full Voltage Adaptor



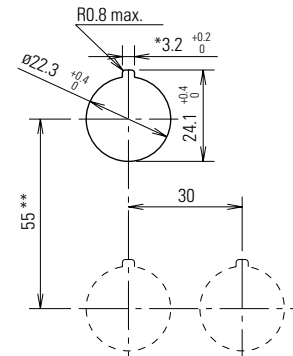
### Transformer



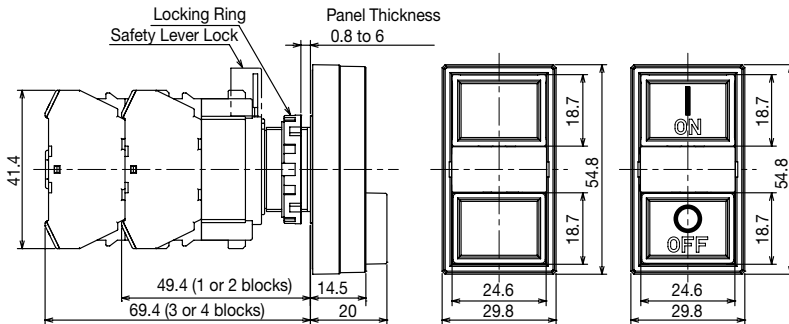
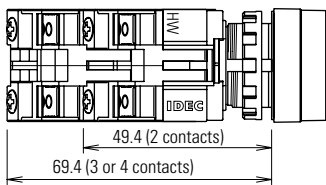
**Dual Pushbutton**

Without Pilot Light

Dimensions (mm)

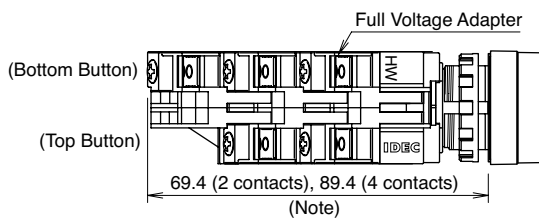
**Mounting Hole Layout**

- The 3.2 mm recess is for preventing rotation and is not necessary when a nameplate or anti-rotation ring is not used.
- When using the safety lever lock, determine the vertical spacing in consideration of convenience for installing and removing the safety lever lock.
- Recommended vertical spacing: 100 mm
- The minimum mounting centers are applicable to switches with one layer of contact blocks (two contact blocks). When two layers of contact blocks are mounted, determine the minimum mounting centers for ease of wiring.



With Pilot Light

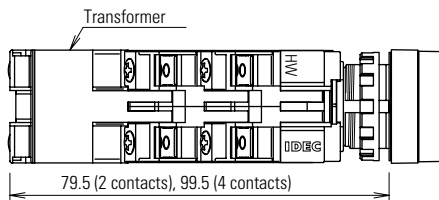
Full Voltage



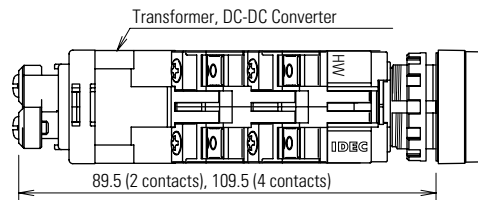
The depth of a 3-contact model depends on the combination of contact blocks at top and bottom pushbuttons.

|               |                  |                  |
|---------------|------------------|------------------|
| Top Button    | 1 contact block  | 2 contact blocks |
| Bottom Button | 2 contact blocks | 1 contact block  |
| Depth         | 89.4 mm          | 69.4 mm          |

Transformer (240V minimum)

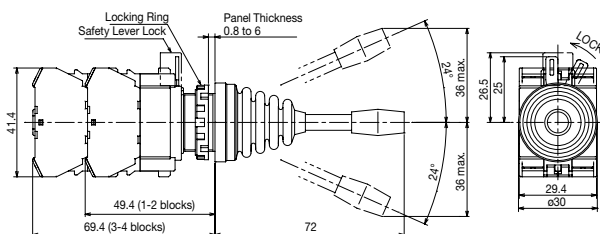


Transformer (480V)

**Monolever**

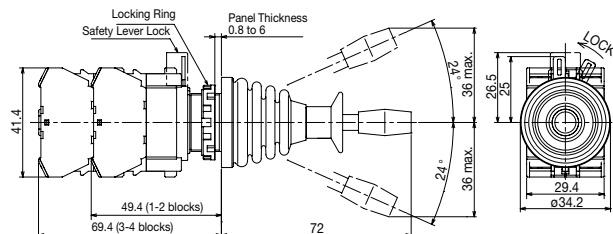
Dimensions

Standard Lever



Interlocking Lever

All dimensions in mm.

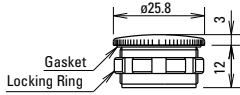


Terminal Screws M3.5

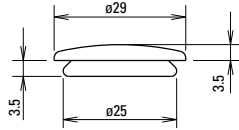
Integrated Terminal Cover

## Accessory Dimensions

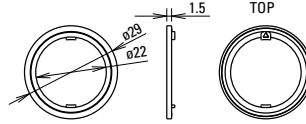
**LW9Z-BM**  
Metallic Mounting Hole Plug



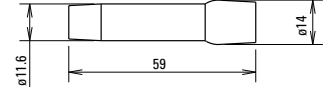
**OB-31**  
Rubber Mounting Hole Plug



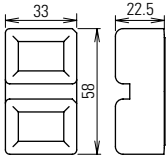
**HW9Z-RL**  
Anti-Rotation Ring



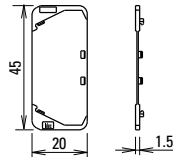
**OR-55**  
Lamp/LED Removal Tool



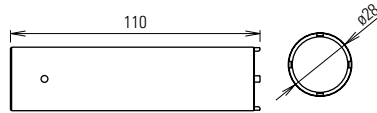
**HW9Z-D7D**  
Dual Pushbutton Rubber Cover



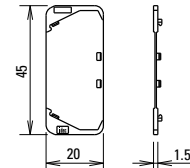
**HW-VU1**  
Dual Pushbutton Barrier



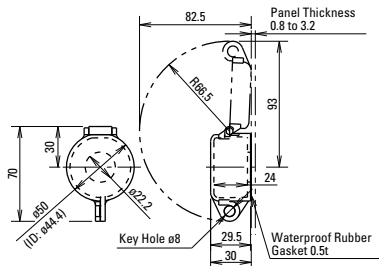
**MW9Z-T1**  
Locking Ring Wrench



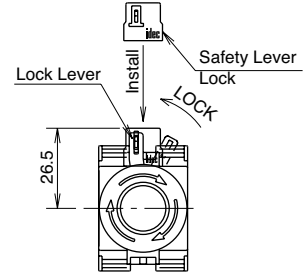
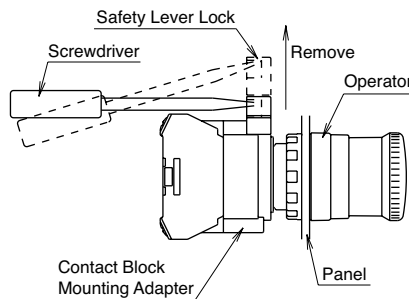
**HW-VL1**  
Barrier



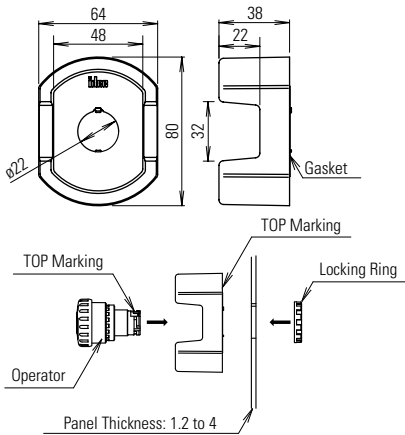
**HW9Z-KL1**  
Padlock Cover



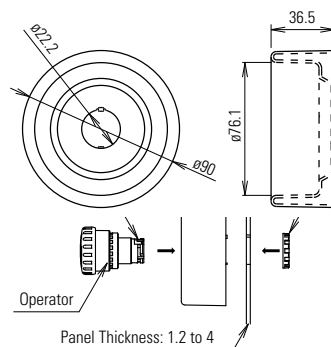
**HWLS-TK1971**  
Safety Lever Lock



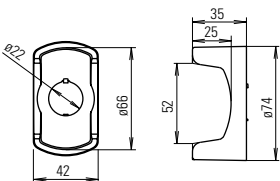
**HW9Z-KG1**



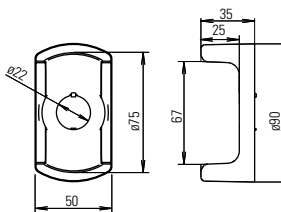
**HW9Z-KG2**



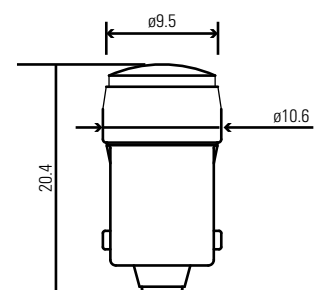
**HW9Z-KG3**



**HW9Z-KG4**



**LSTD**





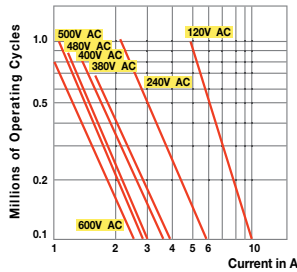
## Specification Charts

## INDUCTIVE

DC Voltages

| Voltage V | 24 | 48 | 110 |
|-----------|----|----|-----|
| Current A | 4  | 2  | 1.1 |

AC Voltages

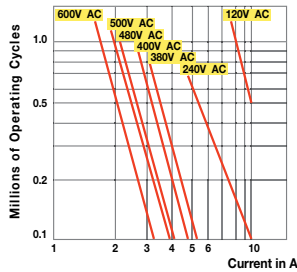


## RESISTIVE

DC Voltages

| Voltage V | 24 | 48 | 110 |
|-----------|----|----|-----|
| Current A | 8  | 4  | 2.2 |

AC Voltages



Conforming to IEC 947-5-1 Appendix C.  
Utilization categories AC-15 and DC-13.

Operation rate: 1,800 op. hour

Load factor:

Inductive  $0.4 \pm 0.05$

Resistive  $0.9 \pm 0.05$

## 2 Position Selector Switches

|                              | Contact           | Mounting Position | Operator Position |       |
|------------------------------|-------------------|-------------------|-------------------|-------|
|                              |                   |                   | Left              | Right |
| HW1S-2T<br>HW1K-2*<br>HW1F-2 | HW-U10-F (NO)     | L                 | 0                 | X     |
|                              |                   | R                 | 0                 | X     |
|                              | HW-U01-F (NC)     | L                 | X                 | 0     |
|                              |                   | R                 | X                 | 0     |
|                              | HW-U10R-F (NO-EM) | L                 | 0                 | X     |
|                              |                   | R                 | 0                 | X     |
|                              | HW-U01R-F (NC-LB) | L                 | X                 | 0     |
|                              |                   | R                 | X                 | 0     |

## Operator Truth Tables

## 3 Position Selector Switches con't

|                      | Contact           | Mounting Position | Operator Position |        |       |
|----------------------|-------------------|-------------------|-------------------|--------|-------|
|                      |                   |                   | Left              | Center | Right |
| HW1S-3JT<br>HW1K-3J* | HW-U10-F (NO)     | L                 | X                 | 0      | 0     |
|                      |                   | R                 | 0                 | 0      | X     |
|                      | HW-U01-F (NC)     | L                 | 0                 | X      | 0     |
|                      |                   | R                 | 0                 | X      | 0     |
|                      | HW-U10R-F (NO-EM) | L                 | X                 | 0      | X     |
|                      |                   | R                 | X                 | 0      | X     |
|                      | HW-U01R-F (NC-LB) | L                 | 0                 | X      | X     |
|                      |                   | R                 | X                 | X      | 0     |

## 3 Position Selector Switches

|                              | Contact           | Mounting Position | Operator Position |        |       |
|------------------------------|-------------------|-------------------|-------------------|--------|-------|
|                              |                   |                   | Left              | Center | Right |
| HW1S-3T<br>HW1K-3*<br>HW1F-3 | HW-U10-F (NO)     | L                 | X                 | 0      | 0     |
|                              |                   | R                 | 0                 | 0      | X     |
|                              | HW-U01-F (NC)     | L                 | 0                 | X      | X     |
|                              |                   | R                 | X                 | X      | 0     |
|                              | HW-U10R-F (NO-EM) | L                 | X                 | 0      | 0     |
|                              |                   | R                 | 0                 | 0      | X     |
|                              | HW-U01R-F (NC-LB) | L                 | 0                 | X      | X     |
|                              |                   | R                 | X                 | X      | 0     |

## 4 Position Selector Switches

|         | Contact           | Mounting Position | Operator Position |   |   |   |
|---------|-------------------|-------------------|-------------------|---|---|---|
|         |                   |                   | 1                 | 2 | 3 | 4 |
| HW1S-4T | HW-U10-F (NO)     | L                 | X                 | 0 | 0 | 0 |
|         |                   | R                 | 0                 | 0 | 0 | X |
|         | HW-U01-F (NC)     | L                 | 0                 | 0 | X | 0 |
|         |                   | R                 | 0                 | X | 0 | 0 |
|         | HW-U10R-F (NO-EM) | L                 | X                 | X | 0 | X |
|         |                   | R                 | X                 | 0 | X | X |
|         | HW-U01R-F (NC-LB) | L                 | 0                 | X | X | X |
|         |                   | R                 | X                 | X | X | 0 |

## 5 Position Selector Switches

|         | Contact           | Mounting Position | Operator Position |   |   |   |   |
|---------|-------------------|-------------------|-------------------|---|---|---|---|
|         |                   |                   | 1                 | 2 | 3 | 4 | 5 |
| HW1S-5T | HW-U10-F (NO)     | L                 | X                 | 0 | 0 | 0 | 0 |
|         |                   | R                 | 0                 | 0 | 0 | 0 | X |
|         | HW-U01-F (NC)     | L                 | 0                 | 0 | 0 | X | 0 |
|         |                   | R                 | 0                 | X | 0 | 0 | 0 |
|         | HW-U10R-F (NO-EM) | L                 | X                 | X | X | 0 | X |
|         |                   | R                 | X                 | 0 | X | X | X |
|         | HW-U01R-F (NC-LB) | L                 | 0                 | X | X | X | X |
|         |                   | R                 | X                 | X | X | X | 0 |



1. Mounting position indicates which side of operator each contact should be mounted (as viewed from the front of the panel).
2. \*For key removable code see page 661.

3. HW1S-3T is identified by white plungers on the operator.
4. HW1S-3ST is identified by red plungers on the operator.
5. HW1S-3JT is identified by black plungers on the operator.

## HW Safety Precautions

Turn off power to HW series control units before starting installation, removal, wiring, maintenance, and inspection of the products. Failure to turn power off may cause electrical shocks or fire hazard.

To avoid the possibility of burning yourself, use the lamp holder tool when replacing lamps.

For wiring, use wires of a proper size to meet voltage and current requirements.

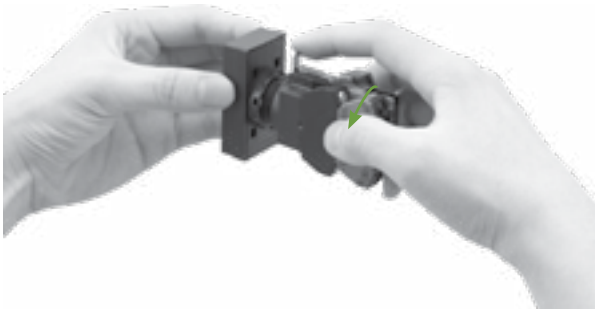
## HW General Instructions

### Panel Mounting

Remove the contact block assembly from the operator (for transformer type pilot lights, remove the transformer from the illumination unit). Remove the locking ring from the operator. Insert the operator into the panel cut-out from the front, tighten the locking ring from the back, then install the contact block assembly to the operator.

### Removing and Installing the Contact Block Assembly

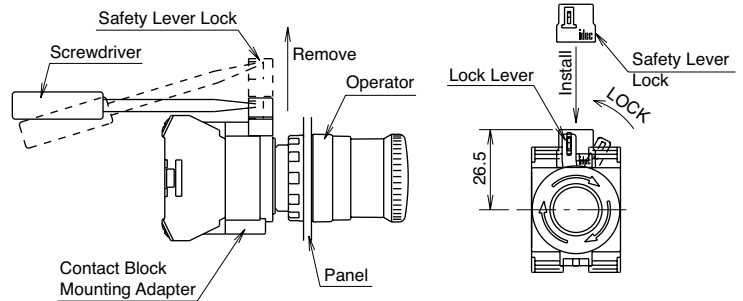
1. To remove the operator from the contact block, turn the locking lever in the direction of the arrow shown below. The operator can now be removed.
2. To reinstall, place the TOP markings on the operator and the contact block mounting adapter in the same direction, and insert the operator into the contact block mounting adapter. Then turn the locking lever in the opposite direction.



### Safety Lever Lock

IEEC strongly recommends using the safety lever lock (HW9Z-LS, yellow) to prevent heavy vibration or maintenance personnel from unlocking the contact assembly.

1. HW series can be mounted vertically with a minimum spacing of 55 mm but spacing should be determined to ensure easy operation (recommended minimum spacing: 100 mm).
2. Mount the control unit onto the panel, lock the lever, and push in the safety lever lock to install.
3. When the spacing is narrower than the recommended value, with the lever unlocked, mount the safety lever lock and insert the contact unit to the operator. Then, lock the lever and strongly push in the safety lever lock to install.
4. To remove the safety lever lock, insert a flat screwdriver into the safety lever and push upwards.



### Notes for Panel Mounting

1. When mounting the operator onto a panel, use the optional locking ring wrench (MW9Z-T1) to tighten the locking ring. Tightening torque must not exceed 2.0 N·m. Do not use pliers. Excessive tightening will damage the locking ring.
2. For the contact blocks and transformers housing LED lamps, make sure not to press the lamps too hard, otherwise the lamp socket may be damaged.

## Dual Pushbutton Instructions

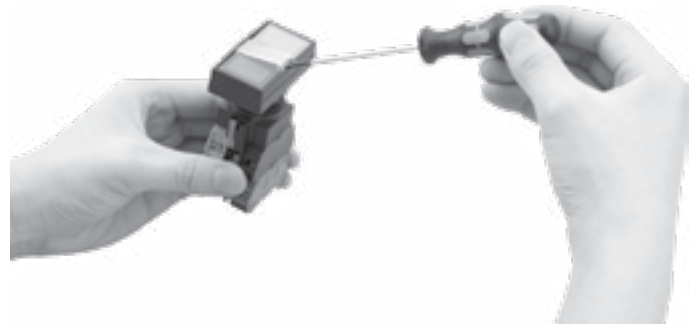
### Replacement of Lens

#### Removing

Remove the lens by inserting a screwdriver into the recess of the lens through the bezel.

#### Installing

Install the lens in the recess between the buttons by pressing against the bezel.



## Dual Pushbuttons Instructions continued

## Replacement of Lamps

LED lamps can be replaced by using the lamp holder tool (OR-55) from the front of the panel, or by removing the contact block assembly from the operator unit.

## Removing the Lamps from the Front of the Panel

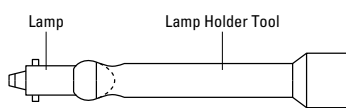
## Removal

1. To remove, slip the lamp holder tool onto the lamp head lightly. Then push slightly, and turn the lamp holder tool counterclockwise.

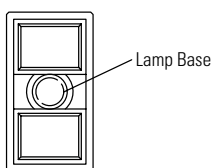


## Installation

1. To install, insert the lamp head into the lamp holder tool, and hold the lamp as shown in the figure below.



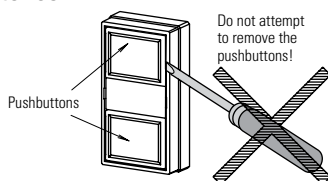
2. Place the pins on the lamp base to the grooves in the lamp socket. Insert the lamp and turn it clockwise.



## About Dual Pushbutton Switches

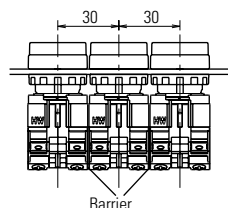
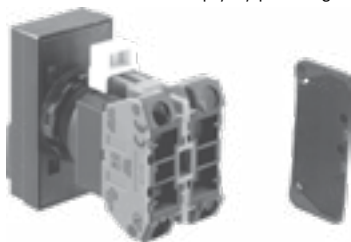
The dual pushbuttons cannot be removed or replaced!

Do not attempt to remove using a flat screwdriver or pincers, otherwise the dual pushbuttons may be damaged.

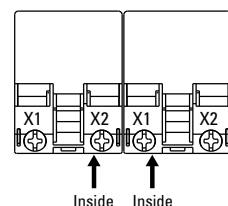


## Narrow Mounting

When mounting the units closely in a horizontal row on 30mm centers, use optional barriers to prevent interconnection between adjoining terminals. The barriers can be attached simply by pressing them onto the sides of contact blocks.



When mounting transformer type illuminated units closely in a horizontal row on 30-mm centers, insert solid wires or stranded wires into inside of the terminal screw on the transformer (see figure on the right) to prevent short circuit between adjoining terminals.



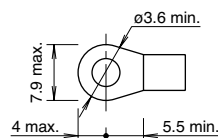
## Installation of LED Illuminated Units

When using full voltage type LED illuminated units, provide protection against electrical noise, if necessary.

## Applicable Wiring

The applicable wire size is 2 mm<sup>2</sup> maximum. (solid wire ø1.6mm<sup>2</sup> maximum) One or two wires can be connected.

## Applicable Crimping Terminal

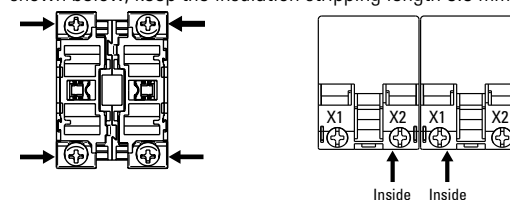


Be sure to use an insulation tube or cover on the crimping part of the crimping terminal to prevent electrical shocks.

## Solid Wire



Note: When connecting wires to contact blocks or transformers in the direction shown below, keep the insulation stripping length 6.6 mm at the maximum.



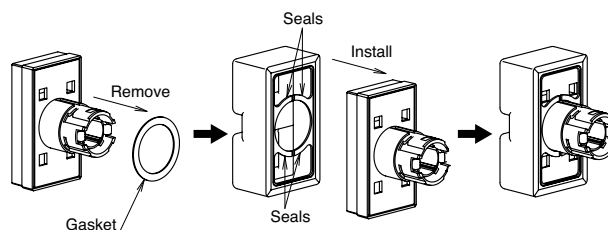
## Installing the Rubber Boot

When using the HW7D pushbuttons in places where the pushbuttons are subjected to water splash or an excessive amount of dust, make sure to use the HW9Z-D7D rubber boot (IP65) which is ordered separately.

## Notes for Installing the Rubber Boot

Remove the gasket from the operator, and install the rubber boot on the operator. Pull out the seals of the rubber boot and place them around the operator sleeve as shown. Make sure that the seals are not twisted or tucked inside and that the gasket does not remain, otherwise the normal waterproof and dustproof characteristics are not ensured.

1. Remove the gasket.
2. Install the rubber boot on the pushbuttons.
3. Rubber boot is installed.



## TW Series — 22mm NEMA Style Pushbuttons



### Key features:

- TW NEMA Style Switches with snap-on contacts
- Corrosion resistant octagonal chrome plated locking bezel
- Snap-on 10A contact blocks
- LED illumination
- Slow make, double break, contacts
- Modular construction for maximum flexibility
- Type 4X and IP65 watertight/oiltight panel
- Available assembled or as sub-components
- Finger-Safe - Spring-Up
- Large M3.5 screw terminals with captive sems plate

IDEC has your 22mm switching needs covered.

Button styles include flush, extended, mushroom, or square and all bodies are crafted from fracture-resistant nylon.

All illuminated units feature two lens styles, one that maximizes light dispersion, the other accommodates direct lens engraving.

Contact mechanism allow for a wide current rating, 5mA to 10A, which reduces the need for various contact materials.

When looking for a 22mm switch that is durable, easy to use, and versatile, then IDEC's TW series is your solution.



UL Listed  
File No. E68961



TUV Rheinland



CSA Approved  
File No. LR21451



File No. DK95-01696

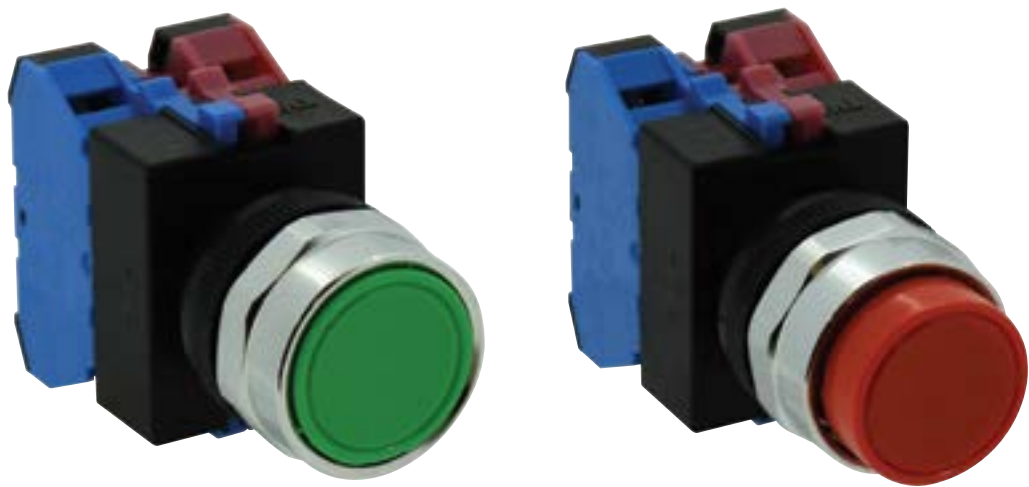


Certificate No.  
2030010305027380



|                 |                                                                                                                      |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                   |                              |                              |                              |                                    |      |                |
|-----------------|----------------------------------------------------------------------------------------------------------------------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------------------------|------------------------------|------------------------------|------------------------------------|------|----------------|
| Specifications  | Conforming to Standards                                                                                              |           | EN60947-1, EN60947-5-1, VDE0660-200, UL508, CSA C22-2 No.14                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                   |                              |                              |                              |                                    |      |                |
|                 | Approvals                                                                                                            |           | <div><div><br/>File No. E68961</div><div><br/>File No. LR21451</div><div><br/>Certificate No.<br/>2030010305027380</div></div> <div><div><br/>TÜV Rheinland</div><div></div></div> <div>Registration No: J9551802 (E-Stops)<br/>Registration No: J9551803 (All other switches)<br/>Registration No: J9551804 (Pilot Lights)</div> |                   |                              |                              |                              |                                    |      |                |
|                 | Operating Temperature                                                                                                |           | Operation: −25 to +50°C (without freezing), Storage: −40 to +80°C (without freezing)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                   |                              |                              |                              |                                    |      |                |
|                 | Vibration Resistance                                                                                                 |           | 5 to 55Hz, 100m/sec² (10g) conforming to IEC6068-2-6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                   |                              |                              |                              |                                    |      |                |
|                 | Shock Resistance                                                                                                     |           | 1000m/sec² (100g) conforming to IEC6068-2-7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                   |                              |                              |                              |                                    |      |                |
|                 | Electric Shock Protection                                                                                            |           | Class 2 conforming to IEC60664-7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                   |                              |                              |                              |                                    |      |                |
|                 | Degree of Protection<br>(conforming to IEC60529)<br>(conforming to NEMA ICS6-110)                                    |           | IP65 from front of the panel; (IP54 for key switches)<br>IP20 (Type HW-U contact block)<br>Type 1, 2, 3, 3R, 3S, 4, 4X, 5, 12, 13 (Type 1, 2, 3R, 5, 12, 13 for key switches)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                   |                              |                              |                              |                                    |      |                |
|                 | Mechanical Life                                                                                                      |           | Momentary pushbuttons: 5,000,000 (1800 operations per hour)<br>All other switches: 500,000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                   |                              |                              |                              |                                    |      |                |
|                 | Pollution Degree (conforming to IEC60947-1)                                                                          |           | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                   |                              |                              |                              |                                    |      |                |
|                 | Rated Operational Characteristics                                                                                    |           | AC-15: A600 or Ue = 250V, Ie = 3A (NO, NC, NO-EM, NC-LB)<br>DC-13: P600 or Ue = 125V, Ie = 1.1A (NO, NC)<br>DC-13: Q600 or Ue = 125V, Ie = 0.9A (NO-EM, NC-LB)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                   |                              |                              |                              |                                    |      |                |
|                 | Rated Insulation Voltage                                                                                             |           | 600V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                   |                              |                              |                              |                                    |      |                |
|                 | Rated Switching Over-Voltage                                                                                         |           | Less than 4kV, conforming to IEC60947-1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                   |                              |                              |                              |                                    |      |                |
|                 | Rated Impulse Withstanding Voltage                                                                                   |           | 4kV for contact circuit, 2.5kV for lamp circuit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                   |                              |                              |                              |                                    |      |                |
|                 | Rated Thermal Current                                                                                                |           | 10 Amp                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                   |                              |                              |                              |                                    |      |                |
|                 | Minimum Switching Capacity                                                                                           |           | 5 mA at 3V AC/DC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                   |                              |                              |                              |                                    |      |                |
|                 | Contact Operation                                                                                                    |           | Slow break NC or slow make NO, self-cleaning                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                   |                              |                              |                              |                                    |      |                |
|                 | Recommended Terminal Torque                                                                                          |           | Unit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                   | Wire                         |                              | Number of Wires              | Recommended Tightening Torque (Nm) |      | Terminal Screw |
|                 |                                                                                                                      |           | HW-U Contact Block                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Crimping Terminal |                              |                              | 2                            | 1.0 to 1.3                         |      | M3.5           |
|                 |                                                                                                                      |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                   | Solid Wire                   | ø0.5 to 1.6 mm (AWG14 to 22) | 2                            | 1.0 to 1.3                         |      |                |
|                 |                                                                                                                      |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Stranded Wire     |                              | ø1.7 to 2.0 mm (AWG12)       | 1                            | 1.2 to 1.3                         |      |                |
|                 |                                                                                                                      |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                   | 0.3 to 2.0 mm² (AWG14 to 22) | 2                            | 1.0 to 1.3                   |                                    |      |                |
|                 |                                                                                                                      |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                   | 2.1 to 3.5 mm² (AWG12)       | 1                            | 1.2 to 1.3                   |                                    |      |                |
|                 |                                                                                                                      |           | Illuminated Unit (*1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Crimping Terminal |                              |                              | 2                            | 1.0 to 1.3                         |      | M3.5           |
|                 |                                                                                                                      |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                   | Solid Wire                   | ø0.5 to 1.6 mm (AWG14 to 22) |                              |                                    |      |                |
|                 |                                                                                                                      |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Stranded Wire     |                              | 0.3 to 2.0 mm (AWG14 to 22)  |                              |                                    |      |                |
|                 | Applicable Wire Size                                                                                                 |           | Pilot Light                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Crimping Terminal |                              |                              | 2                            | 0.6 to 1.0 (M3.0)                  |      |                |
|                 |                                                                                                                      |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                   | Solid Wire                   | ø0.5 to 1.6 mm (AWG14 to 22) |                              | 1.0 to 1.3 (M3.5)                  |      |                |
|                 |                                                                                                                      |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                   |                              | Stranded Wire                | ø0.3 to 2.0 mm (AWG14 to 22) |                                    |      |                |
|                 |                                                                                                                      |           |  1. * refers to the lamp terminals of the illuminated push buttons and selector switches.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                   |                              |                              |                              |                                    |      |                |
|                 | External Short-Circuit Protection                                                                                    |           | 10A 250V fuse conforming to IEC60269-1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                   |                              |                              |                              |                                    |      |                |
|                 | Applicable Wire Size                                                                                                 |           | Minimum 1 x 22 AWG, max. 2 x 14 AWG or 1 x 12 AWG                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                   |                              |                              |                              |                                    |      |                |
|                 | Contact Resistance                                                                                                   |           | Initial contact resistance of 50mΩ or less                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                   |                              |                              |                              |                                    |      |                |
|                 | Contact Gap                                                                                                          |           | 4mm (NO and NC), 2mm (NO-EM and NC-LB)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                   |                              |                              |                              |                                    |      |                |
|                 | Electrical Reliability                                                                                               |           | MTBF < 1 fault for 10 million operation cycles (3V DC, 5mA)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                   |                              |                              |                              |                                    |      |                |
|                 | Lamp Ratings                                                                                                         |           | LEDs: 6V: 17mA max, 12/24V: 11mA max, 120/240V: 10mA max                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                   |                              |                              |                              |                                    |      |                |
|                 | Horsepower Rating                                                                                                    |           | 1/4 HP @ 120V (single-phase, non-reversing motor); 1 HP @ 240V (3 phase, non-reversing motor)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                   |                              |                              |                              |                                    |      |                |
|                 | Contact Material                                                                                                     |           | Silver                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                   |                              |                              |                              |                                    |      |                |
| Contact Ratings | Pushbuttons<br>Illuminated Pushbuttons<br>Selector Switches<br>Illuminated Selector Switches<br>Pushbutton Selectors |           | Contact Block                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                   |                              | Type HW-U                    |                              |                                    |      |                |
|                 |                                                                                                                      |           | Rated Insulation Voltage                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                   |                              | 600V                         |                              |                                    |      |                |
|                 |                                                                                                                      |           | Rated Continuous Current                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                   |                              | 10A                          |                              |                                    |      |                |
|                 |                                                                                                                      |           | Contact Ratings by Utilization Category<br>IEC 60947-5-1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                   |                              | AC-15 (A600)<br>DC-13 (P600) |                              |                                    |      |                |
|                 |                                                                                                                      |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                   |                              |                              |                              |                                    |      |                |
| Characteristics | Contact Ratings by Utilization Category                                                                              |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                   |                              |                              |                              |                                    |      |                |
|                 | Operational Voltage                                                                                                  |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                   | 24V                          | 48V                          | 50V                          | 110V                               | 220V | 440V           |
|                 | Operational Current                                                                                                  | AC50/60Hz | AC-12 Control of resistive loads and solid state loads                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                   | 10A                          | —                            | 10A                          | 10A                                | 6A   | 2A             |
|                 |                                                                                                                      |           | AC-15 Control of electromagnetic loads (> 72VA)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                   | 10A                          | —                            | 7A                           | 5A                                 | 3A   | 1A             |
|                 |                                                                                                                      | DC        | DC-12 Control of resistive loads and solid state loads                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                   | 10A                          | 5A                           | —                            | 2.2A                               | 1.1A | —              |
|                 |                                                                                                                      |           | DC-13 Control of electromagnets                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                   | 5A                           | 2A                           | —                            | 1.1A                               | 0.6A | —              |

Non-Illuminated Pushbuttons (Assembled)



Assembled Pushbuttons

**Function**

B: Momentary  
O: Maintained  
K: Key On/Off Lock

**Bezel Shape**

Blank: Octagonal  
F: Full Shroud  
G: Mushroom Shroud  
Q: Square

**Button Color**

B: Black    G: Green    W: White  
R: Red    S: Blue    Y: Yellow

**Contact Arrangement**

10: 1NO    01: 1NC  
20: 2NO    02: 2NC  
11: 1NO-1NC    22: 2NO-2NC

**Button Shape**

1: Flush  
2: Extended  
3: Mushroom Head Ø 29mm  
4: Mushroom Head Ø 40mm

**Series Designation**

W: TW Series



To be used for interpreting part numbers only, not for part number development.



## Non-Illuminated Pushbuttons (Assembled) continued

## Non-Illuminated Pushbuttons

| Style                                       | Contacts                            | Momentary Action                               | Maintained Action |
|---------------------------------------------|-------------------------------------|------------------------------------------------|-------------------|
| Flush                                       | 1NO                                 | ABW110-①                                       | AOW110-①          |
|                                             | 1NC                                 | ABW101-①                                       | AOW101-①          |
|                                             | 1NO-1NC                             | ABW111-①                                       | AOW111-①          |
|                                             | 2NO                                 | ABW120-①                                       | AOW120-①          |
|                                             | 2NC                                 | ABW102-①                                       | AOW102-①          |
| Extended                                    | 1NO                                 | ABW210-①                                       | AOW210-①          |
|                                             | 1NC                                 | ABW201-①                                       | AOW201-①          |
|                                             | 1NO-1NC                             | ABW211-①                                       | AOW211-①          |
|                                             | 2NO                                 | ABW220-①                                       | AOW220-①          |
|                                             | 2NC                                 | ABW202-①                                       | AOW202-①          |
| Recessed                                    | 1NO                                 | ABFW110-①                                      | AOFW110-①         |
|                                             | 1NC                                 | ABFW101-①                                      | AOFW101-①         |
|                                             | 1NO-1NC                             | ABFW111-①                                      | AOFW111-①         |
|                                             | 2NO                                 | ABFW120-①                                      | AOFW120-①         |
|                                             | 2NC                                 | ABFW102-①                                      | AOFW102-①         |
| Extended with Full Shroud                   | 1NO                                 | ABFW210-①                                      | AOFW210-①         |
|                                             | 1NC                                 | ABFW201-①                                      | AOFW201-①         |
|                                             | 1NO-1NC                             | ABFW211-①                                      | AOFW211-①         |
|                                             | 2NO                                 | ABFW220-①                                      | AOFW220-①         |
|                                             | 2NC                                 | ABFW202-①                                      | AOFW202-①         |
| Ø 29mm<br>Mushroom Head                     | 1NO                                 | ABW310-①                                       | AOW310-①          |
|                                             | 1NC                                 | ABW301-①                                       | AOW301-①          |
|                                             | 1NO-1NC                             | ABW311-①                                       | AOW311-①          |
|                                             | 2NO                                 | ABW320-①                                       | AOW320-①          |
|                                             | 2NC                                 | ABW302-①                                       | AOW302-①          |
| Ø 40mm<br>Mushroom Head                     | 1NO                                 | ABW410-①                                       | AOW410-①          |
|                                             | 1NC                                 | ABW401-①                                       | AOW401-①          |
|                                             | 1NO-1NC                             | ABW411-①                                       | AOW411-①          |
|                                             | 2NO                                 | ABW420-①                                       | AOW420-①          |
|                                             | 2NC                                 | ABW402-①                                       | AOW402-①          |
| Ø 40mm<br>Mushroom Head<br>with Full Shroud | 1NO                                 | ABGW410-①                                      | AOGW410-①         |
|                                             | 1NC                                 | ABGW401-①                                      | AOGW401-①         |
|                                             | 1NO-1NC                             | ABGW411-①                                      | AOGW411-①         |
|                                             | 2NO                                 | ABGW420-①                                      | AOGW420-①         |
|                                             | 2NC                                 | ABGW402-①                                      | AOGW402-①         |
| Square Flush                                | 1NO                                 | ABQW110-①                                      | AQOW110-①         |
|                                             | 1NC                                 | ABQW101-①                                      | AQOW101-①         |
|                                             | 1NO-1NC                             | ABQW111-①                                      | AQOW111-①         |
|                                             | 2NO                                 | ABQW120-①                                      | AQOW120-①         |
|                                             | 2NC                                 | ABQW102-①                                      | AQOW102-①         |
| Square Extended                             | 1NO                                 | ABQW210-①                                      | AQOW210-①         |
|                                             | 1NC                                 | ABQW201-①                                      | AQOW201-①         |
|                                             | 1NO-1NC                             | ABQW211-①                                      | AQOW211-①         |
|                                             | 2NO                                 | ABQW220-①                                      | AQOW220-①         |
|                                             | 2NC                                 | ABQW202-①                                      | AQOW202-①         |
| Keylock Push On/<br>Off                     | 1NO<br>1NC<br>1NO-1NC<br>2NO<br>2NC | AKW210<br>AKW201<br>AKW211<br>AKW220<br>AKW202 | —                 |

## ① Button Color Codes

| Color  | Code |
|--------|------|
| Black  | B    |
| Green  | G    |
| Red    | R    |
| Blue   | S    |
| Yellow | Y    |
| White  | W    |



1. In place of ①, specify the Button Color Code from table.
2. For sub-assembled part numbers, see next page.
3. For accessories, see page 726.
4. For dimensions, see page 728.
5. Keyed switches are supplied with two keys. All units are keyed alike.

## Non-Illuminated Pushbuttons (Sub-Assembled)



### Operators

| Style                                 | Part Number |            |
|---------------------------------------|-------------|------------|
|                                       | Momentary   | Maintained |
| Round Flush/Extended                  | ABW-100     | AOW-100    |
| Round with Full Shroud/Recessed       | ABFW-200    | AOFW-200   |
| Ø 40mm, Ø 29mm Mushroom Head          | ABW-300     | AOW-300    |
| Ø 40mm Mushroom Head with Full Shroud | ABGW-400    | AOGW-400   |
| Square Flush/Extended                 | ABQW-100    | AQW-100    |
| Keylock Push On/Off                   | —           | AKW-200    |

### Buttons

| Style           | Part Number |
|-----------------|-------------|
| Round Flush     | ABW1B-①     |
| Round Extended  | ABW2B-①     |
| Ø 29mm Mushroom | ABW3B-①     |
| Ø 40mm Mushroom | ABW4B-①     |
| Square Flush    | ABQW1B-①    |
| Square Extended | ABQW2B-①    |



In place of ① specify the button color code from table

### Contact Blocks

| Style | Contacts                       | 1NO                    | 1NC                    |
|-------|--------------------------------|------------------------|------------------------|
|       | Finger-Safe Spring-Up Terminal | HW-U10-F               | HW-U01-F               |
|       |                                | HW-U10R-F (early make) | HW-U01R-F (late break) |
|       | Dummy Block                    | HW-DB                  |                        |



1. Dummy blocks (no contacts) are used with an odd number of contact blocks.
2. Use of early and late break contacts creates a make before break function

### ① Button Color Codes

| Color  | Code |
|--------|------|
| Black  | B    |
| Green  | G    |
| Red    | R    |
| Blue   | S    |
| Yellow | Y    |
| White  | W    |



## Stop Switches (Assembled)



To be used for interpreting part numbers only, not for part number development.

## Assembled Stop Switches

**A V (L) W 4 (B) (99) 11 (D) - R - (24V)**

**Function**

V: Pushlock Turn Reset  
Y: Push-Pull  
X: Pushlock Key Reset

**Illumination**

Blank: None  
L: Illuminated

**Series Designation**

W: TW Series

**Button/Lens Size**

3: 29mm Mushroom  
4: 40mm Mushroom

**Lens Type**

(illuminated units only)  
Blank: Standard (ribbed)  
B: Engravable (smooth with insert)

**Illuminated Circuit**

(illuminated unit only)  
99: Full Voltage (LED determines voltage)  
126: 120V AC Step Down Transformer  
246: 240V AC Step Down Transformer  
486: 480V AC Step Down Transformer

**Lamp Voltage**

(full voltage illuminated units only)

6V: 6V AC/DC  
12V: 12V AC/DC  
24V: 24V AC/DC  
120V: 120V AC  
240V: 240V AC

**Button/Lens Color**

A: Amber R: Red W: White  
G: Green S: Blue Y: Yellow  
B: Black

**Lamp Type**

(illuminated units only)

D: LED

**Contact Arrangement**

10: 1NO 01: 1NC  
20: 2NO 02: 2NC  
11: 1NO/1NC 22: 2NO/2NC

## Stop Switches (Assembled), continued

### Non-Illuminated Stop Switches

| Style                                                                                                               | Contacts | Part Number |
|---------------------------------------------------------------------------------------------------------------------|----------|-------------|
| <br>Ø 40mm Pushlock<br>Turn Reset* | 1NO      | AVW410-R*   |
|                                                                                                                     | 1NC      | AVW401-R*   |
|                                                                                                                     | 1NO-1NC  | AVW411-R*   |
|                                                                                                                     | 2NO      | AVW420-R*   |
|                                                                                                                     | 2NC      | AVW402-R*   |
| <br>Ø 29mm Pushlock<br>Turn Reset* | 1NO      | AVW310-R*   |
|                                                                                                                     | 1NC      | AVW301-R*   |
|                                                                                                                     | 1NO-1NC  | AVW311-R*   |
|                                                                                                                     | 2NO      | AVW320-R*   |
|                                                                                                                     | 2NC      | AVW302-R*   |
| <br>Ø 40mm Push-Pull               | 1NO      | AYW410-①    |
|                                                                                                                     | 1NC      | AYW401-①    |
|                                                                                                                     | 1NO-1NC  | AYW411-①    |
|                                                                                                                     | 2NO      | AYW420-①    |
|                                                                                                                     | 2NC      | AYW402-①    |
| <br>Ø 40mm Pushlock<br>Key Reset*  | 1NO      | AXW410- R*  |
|                                                                                                                     | 1NC      | AXW401- R*  |
|                                                                                                                     | 1NO-1NC  | AXW411- R*  |
|                                                                                                                     | 2NO      | AXW420- R*  |
|                                                                                                                     | 2NC      | AXW402- R*  |

1. \*Available in Red only.  
 2. In place of ①, specify the Button Color Code from table.  
 3. For sub-assembled part numbers, see next page.  
 4. For accessories, see page 726.  
 5. For dimensions, see page 728.

### Illuminated Stop Switches

| Style                                                                                                                     | Type         | Contacts | Part Number     |
|---------------------------------------------------------------------------------------------------------------------------|--------------|----------|-----------------|
| <br>Ø 40mm Pushlock<br>Turn Reset Type | Transformer  | 1NO-1NC  | AVLW4 ④ 11D-R*  |
|                                                                                                                           |              | 2NO      | AVLW4 ④ 20D-R*  |
|                                                                                                                           |              | 2NC      | AVLW4 ④ 02D-R*  |
|                                                                                                                           | Full Voltage | 1NO-1NC  | AVLW49911D-R*-③ |
|                                                                                                                           |              | 2NO      | AVLW49920D-R*-③ |
|                                                                                                                           |              | 2NC      | AVLW49902D-R*-③ |
| <br>Ø 29mm Pushlock<br>Turn Reset      | Transformer  | 1NO-1NC  | AVLW3④11D-R*    |
|                                                                                                                           |              | 2NO      | AVLW3④20D-R*    |
|                                                                                                                           |              | 2NC      | AVLW3④02D-R*    |
|                                                                                                                           | Full Voltage | 1NO-1NC  | AVLW39911D-R*-③ |
|                                                                                                                           |              | 2NO      | AVLW39920D-R*-③ |
|                                                                                                                           |              | 2NC      | AVLW39902D-R*-③ |
| <br>Ø 40mm Push-Pull                   | Transformer  | 1NO-1NC  | AYLW4 ④ 11D-②   |
|                                                                                                                           |              | 2NO      | AYLW4 ④ 20D-②   |
|                                                                                                                           |              | 2NC      | AYLW4 ④ 02D-②   |
|                                                                                                                           | Full Voltage | 1NO-1NC  | AYLW49911D-②-③  |
|                                                                                                                           |              | 2NO      | AYLW49920D-②-③  |
|                                                                                                                           |              | 2NC      | AYLW49902D-②-③  |

1. \*Available in red only.  
 2. In place of ②, specify the Lens Color Code (see table above).  
 3. In place of ③, specify the Full Voltage Code (lamp voltage) (see table above).  
 4. In place of ④, specify the Transformer Voltage Code (see table above).  
 5. For sub-assembly part numbers, see next page.  
 6. For accessories, see page 726.  
 7. For dimensions, see page 728.

### ① Button Color Codes

| Color  | Code |
|--------|------|
| Black  | B    |
| Green  | G    |
| Red    | R    |
| Blue   | S    |
| White  | W    |
| Yellow | Y    |

### ② LED/Lens Color Codes

| Color | Code |
|-------|------|
| Amber | A    |
| Green | G    |
| Red   | R    |
| Blue  | S    |
| White | W    |

### ③ Full Voltage Codes

| Voltage   | Code |
|-----------|------|
| 6V AC/DC  | 6V   |
| 12V AC/DC | 12V  |
| 24V AC/DC | 24V  |
| 120V AC   | 120V |
| 240V AC   | 240V |

### ④ Transformer Voltage Codes

| Voltage | Code |
|---------|------|
| 120VAC  | 126  |
| 240VAC  | 246  |
| 480VAC  | 486  |

 Transformers step down to 6V.

## Stop Switches (Sub-Assembled)

|                          |   |          |   |             |   |          |   |      |   |                |   |               |
|--------------------------|---|----------|---|-------------|---|----------|---|------|---|----------------|---|---------------|
| Transformer/<br>Adaptor* | + | Contacts | + | Lamp Holder | + | Operator | + | Lamp | + | Button or Lens | = | Complete Part |
|--------------------------|---|----------|---|-------------|---|----------|---|------|---|----------------|---|---------------|



\*Not applicable for full voltage units

## Operators

| Style                                                                                                                   | Part Number     |             |
|-------------------------------------------------------------------------------------------------------------------------|-----------------|-------------|
|                                                                                                                         | Non-Illuminated | Illuminated |
| Ø 29/Ø 40mm<br>Pushlock Turn Reset<br> | AVW-300         | AVLW3-0600  |
| Ø 40mm Push-Pull<br>                   | AYW-400         | AYLW4-0600  |
| Ø 40mm Pushlock<br>Key Reset<br>     | AXW-300         | —           |

## Buttons

| Style                                                                                                            | Part Number |
|------------------------------------------------------------------------------------------------------------------|-------------|
| Ø 40mm Pushlock Turn Reset<br>  | AVW4B-R*    |
| Ø 29mm Pushlock Turn Reset<br>  | AVW3B-R*    |
| Ø 40mm Push-Pull<br>           | AYW4B-①     |
| Ø 40mm Pushlock Key Reset<br> | AXW4B-R*    |



- \*Available in Red only
- In place of ①, specify the button color code from table.

## Lamps

| Style                                                                                      | Voltage   | Part Number |
|--------------------------------------------------------------------------------------------|-----------|-------------|
| LED<br> | 6V AC/DC  | LSTD-6②     |
|                                                                                            | 12V AC/DC | LSTD-1②     |
|                                                                                            | 24V AC/DC | LSTD-2②     |
|                                                                                            | 120V AC   | LSTD-H2②    |
|                                                                                            | 240V AC   | LSTD-M4②    |



- In place of ②, specify the LED color code.
- The LED contains a current-limiting resistor and a protection diode.

## ① Button Color Codes

| Color  | Code |
|--------|------|
| Black  | B    |
| Green  | G    |
| Red    | R    |
| Blue   | S    |
| White  | W    |
| Yellow | Y    |

## ② LED/Lens Color Codes

| Color | Code |
|-------|------|
| Amber | A    |
| Green | G    |
| Red   | R    |
| Blue  | S    |
| White | W    |

## Illuminated Stop Switches (Sub-Assembled) continued

### Lenses

| Style                                                                                                                | Part Number |             |
|----------------------------------------------------------------------------------------------------------------------|-------------|-------------|
|                                                                                                                      | Standard    | Engravable  |
| Ø 29mm Head Pushlock Turn Reset<br> | AVLW3LU-R*  | AVLW3BLU-R* |
| Ø 40mm Head Pushlock Turn Reset<br> | AVLW4LU-R*  | AVLW4BLU-R* |
| Ø 40mm Head Push Pull<br>           | AYLW4LU-②   | AYLW4BLU-②  |

-  1. In place of ②, specify the lens color code from table on previous page.  
 2. \*Available only in red  
 3. Standard lenses have ribbed pattern, Engravable lenses are smooth and include an engravable insert.

### Lamp Circuit Components

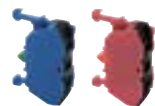
| Style                                                                                                   | Application                                                                   | Part Number |
|---------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|-------------|
| Long Lamp Holder<br> | <b>Used with</b> Full-size Transformer and two contact blocks                 | TW-LH2      |
| Lead Holder<br>      | <b>Used with</b> TW-LH2 holder when using four contact blocks and transformer | HW-LH3      |

### Transformers/Full Voltage Modules

| Style                                                                                                                       | Description                                          | Part Number |
|-----------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|-------------|
| Full Size Transformer<br>                 | 120V AC                                              | TW-F126B    |
|                                                                                                                             | 240V AC                                              | TW-F246B    |
|                                                                                                                             | 480V AC                                              | TW-F486B    |
| Dummy Block with Full Voltage Adaptor<br> | For use with odd number of contacts.<br>Finger-Safe  | HW-DA1FBN   |
| Full Voltage Adaptor<br>                  | For use with even number of contacts.<br>Finger-Safe | TW-DA1FB    |

-  All Transformers step down to 6V (use 6V LED).

### Contact Blocks

| Style                                                                             | Contacts                       | 1NO                      | 1NC                      |
|-----------------------------------------------------------------------------------|--------------------------------|--------------------------|--------------------------|
|  | Finger-Safe Spring-Up Terminal | HW-U10-F<br>(early make) | HW-U01-F<br>(late break) |
|                                                                                   | Dummy Block                    | HW-DB                    |                          |

-  1. Dummy blocks (no contacts) are used with an odd number of contact blocks.  
 2. Use of early and late break contacts creates a make before break function

## Pilot Lights (Assembled)



## Assembled Pilot Lights

**A P (Q) W 1 (B) (99) (D) - R - (24V)**

**Function**

P: Pilot Light

**Bezel Shape**

Blank: Octagonal (round lenses)  
Q: Square

**Series Designation**

W: TW Series

**Lens Shape**

1: Flat  
2: Dome

**Lens Type**

Blank: Standard (ribbed)  
B: Engravable (smooth with insert included)

**Illumination Circuit**

99: Full Voltage (lamp determines voltage)  
126: 120V AC Step Down Transformer  
246: 240V AC Step Down Transformer  
486: 480V AC Step Down Transformer

**Lamp Voltage**

(Full Voltage Units Only)

6V: 6V AC/DC  
12V: 12V AC/DC  
24V: 24V AC/DC  
120V: 120V AC  
240V: 240V AC

**Lens Color Code**

A: Amber  
G: Green  
R: Red  
S: Blue  
W: White  
Y: Yellow

**Lamp**

D: LED



1. Use only when interpreting part numbers. Do not use for developing part numbers.
2. All transformers step down to 6V.

Switches & Pilot Devices

Signaling Lights

Relays & Sockets

Timers

Contactors

Terminal Blocks

Circuit Breakers

Pilot Lights (Assembled) continued

Assembled Pilot Lights

| Style                                                                                            | Type         | Voltage                    | Part Number                                  |
|--------------------------------------------------------------------------------------------------|--------------|----------------------------|----------------------------------------------|
| <br>Round Flat  | Transformer  | 120VAC<br>240VAC<br>480VAC | APW1126D-②<br>APW1246D-②<br>APW1486D-②       |
|                                                                                                  | Full Voltage | —                          | APW199D-②-③                                  |
| <br>Dome        | Transformer  | 120VAC<br>240VAC<br>480VAC | APW2126D-②<br>APW2246D-②<br>APW2486D-②       |
|                                                                                                  | Full Voltage | —                          | APW299D-②-③                                  |
| <br>Square Flat | Transformer  | 120VAC<br>240VAC<br>480VAC | APQW1B126D-②<br>APQW1B246D-②<br>APQW1B486D-② |
|                                                                                                  | Full Voltage | —                          | APQW1B99D-②-③                                |



- 1. In place of ②, specify the Lens Color Code from table below.
- 2. In place of ③, specify the Full Voltage Code from table below.
- 3. For accessories, see page 726.
- 4. For dimensions, see page 728.
- 5. For sub-assembly part numbers, see next page.
- 6. Yellow pilot light comes with white LED.

② Lens Color Codes

| Color  | Code |
|--------|------|
| Amber  | A    |
| Green  | G    |
| Red    | R    |
| Blue   | S    |
| White  | W    |
| Yellow | Y    |

③ Full Voltage Codes

| Voltage   | Code |
|-----------|------|
| 6V AC/DC  | 6V   |
| 12V AC/DC | 12V  |
| 24V AC/DC | 24V  |
| 120V AC   | 120V |
| 240V AC   | 240V |

## Pilot Lights (Sub-Assembled)

|             |   |          |   |      |   |      |   |               |
|-------------|---|----------|---|------|---|------|---|---------------|
| Transformer | + | Operator | + | Lamp | + | Lens | = | Complete Part |
|-------------|---|----------|---|------|---|------|---|---------------|



\* Transformer not required for full voltage units.

## Operators

| Style                                                                             | Part Number |
|-----------------------------------------------------------------------------------|-------------|
| Round Dome/Flat                                                                   | APW-199     |
|  |             |
| Square                                                                            | UPQW-199    |
|  |             |



Same operator is used for full voltage as for transformer completed units.

## Lamps

| Style | Voltage   | Part Number |
|-------|-----------|-------------|
| LED   | 6V AC/DC  | LSTD-6②     |
|       | 12V AC/DC | LSTD-1②     |
|       | 24V AC/DC | LSTD-2②     |
|       | 120V AC   | LSTD-H2②    |
|       | 240V AC   | LSTD-M4②    |



1. In place of ②, specify the LED color code.
2. The LED contains a current-limiting resistor and a protection diode.
3. Yellow LED not available. Use white LED.

## ② LED/Lens Color Codes

| Color  | Code |
|--------|------|
| Amber  | A    |
| Green  | G    |
| Red    | R    |
| Blue   | S    |
| White  | W    |
| Yellow | Y    |



If clear lens is desired, use white marking lens and remove engraving insert.

## Transformers

| Style                                                                               | Description | Part Number |
|-------------------------------------------------------------------------------------|-------------|-------------|
|  | 120V AC     | TW-F126B    |
|                                                                                     | 240V AC     | TW-F246B    |
|                                                                                     | 480V AC     | TW-F486B    |



All Transformers step down to 6V (use 6V LED).

## Lenses

| Style                                                                               | Part Number |            |
|-------------------------------------------------------------------------------------|-------------|------------|
|                                                                                     | Standard    | Engravable |
| Dome                                                                                | APW2LU-②    | —          |
|  |             |            |
| Round Flat                                                                          | APW1LU-②    | APW1BLU-②  |
|  |             |            |
| Square Flat                                                                         | —           | APQW1BLU-② |
|  |             |            |



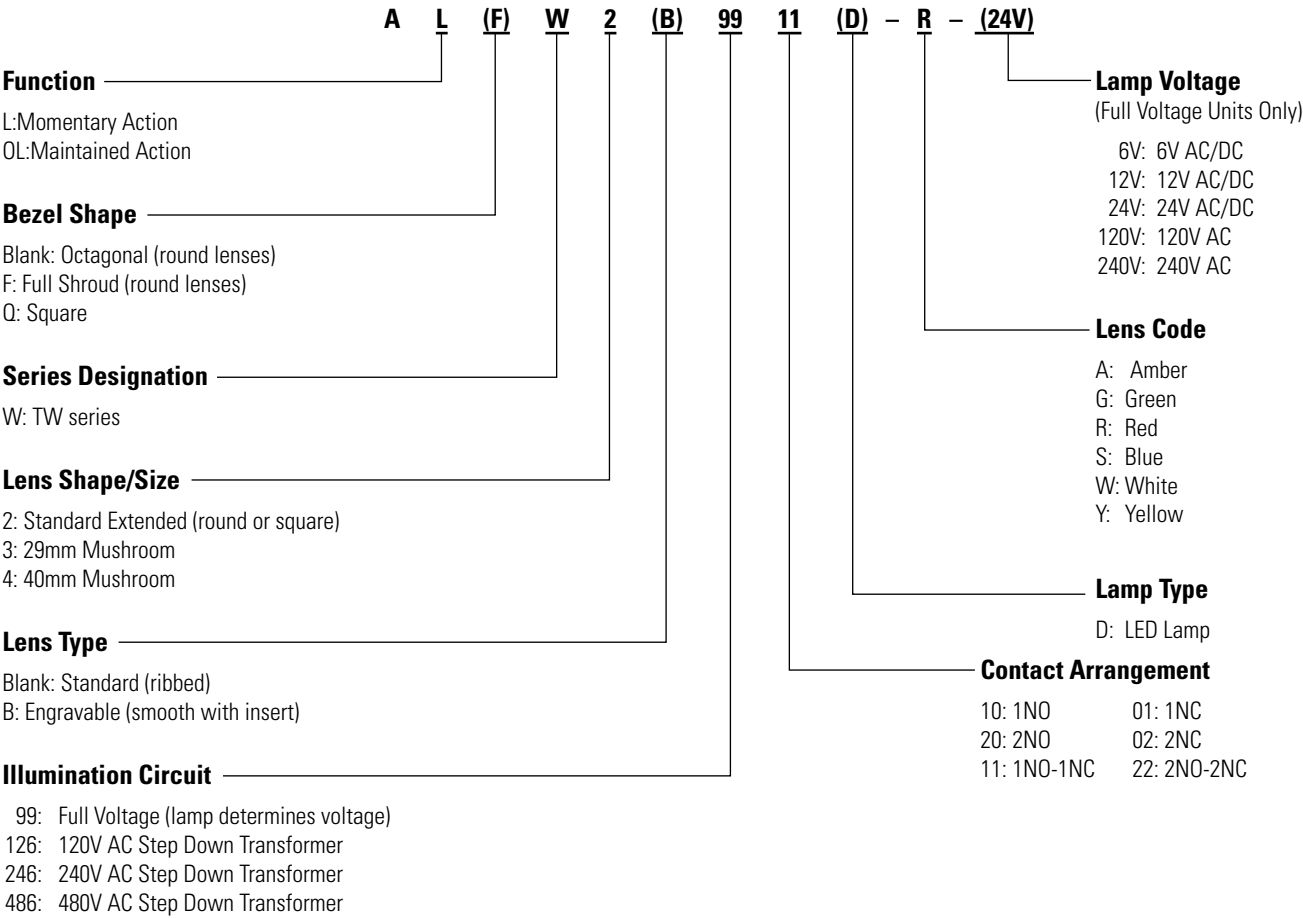
1. In place of ②, specify the Lens Color Code from table.
2. Standard lenses have a ribbed lens to enhance light dispersion. Marking lenses are smooth and include an engraving insert.



Illuminated Pushbuttons (Assembled)



Assembled Illuminated Pushbuttons



1. Use only when interpreting part numbers. Do not use for developing part numbers.  
2. Transformers step down to 6V.

## Illuminated Pushbuttons (Assembled)

## Illuminated Pushbuttons

| Style                                                                                                                       |              | Contacts              | Part Number                                           |                                                          |
|-----------------------------------------------------------------------------------------------------------------------------|--------------|-----------------------|-------------------------------------------------------|----------------------------------------------------------|
|                                                                                                                             |              |                       | Momentary                                             | Maintained                                               |
| <div>Extended Lens</div>                   | Transformer  | 1NO-1NC<br>2NO<br>2NC | ALW2 ④ 11D-②<br>ALW2 ④ 20D-②<br>ALW2 ④ 02D-②          | AOLW2 ④ 11D-②<br>AOLW2 ④ 20D-②<br>AOLW2 ④ 02D-②          |
|                                                                                                                             | Full Voltage | 1NO-1NC<br>2NO<br>2NC | ALW29911D-②-③<br>ALW29920D-②-③<br>ALW29902D-②-③       | AOLW29911D-②-③<br>AOLW29920D-②-③<br>AOLW29902D-②-③       |
| <div>Extended Lens with Full Shroud</div>  | Transformer  | 1NO-1NC<br>2NO<br>2NC | ALFW2 ④ 11D-②<br>ALFW2 ④ 20D-②<br>ALFW2 ④ 02D-②       | AOLFW2 ④ 11D-②<br>AOLFW2 ④ 20D-②<br>AOLFW2 ④ 02D-②       |
|                                                                                                                             | Full Voltage | 1NO-1NC<br>2NO<br>2NC | ALFW29911D-②-③<br>ALFW29920D-②-③<br>ALFW29902D-②-③    | AOLFW29911D-②-③<br>AOLFW29920D-②-③<br>AOLFW29902D-②-③    |
| <div>ø29mm Mushroom Button</div>          | Transformer  | 1NO-1NC<br>2NO<br>2NC | ALW3 ④ 11D-②<br>ALW3 ④ 20D-②<br>ALW3 ④ 02D-②          | AOLW3 ④ 11D-②<br>AOLW3 ④ 20D-②<br>AOLW3 ④ 02D-②          |
|                                                                                                                             | Full Voltage | 1NO-1NC<br>2NO<br>2NC | ALW39911D-②-③<br>ALW39920D-②-③<br>ALW39902D-②-③       | AOLW39911D-②-③<br>AOLW39920D-②-③<br>AOLW39902D-②-③       |
| <div>ø40mm Mushroom Button</div>         | Transformer  | 1NO-1NC<br>2NO<br>2NC | ALW4 ④ 11D-②<br>ALW4 ④ 20D-②<br>ALW4 ④ 02D-②          | AOLW4 ④ 11D-②<br>AOLW4 ④ 20D-②<br>AOLW4 ④ 02D-②          |
|                                                                                                                             | Full Voltage | 1NO-1NC<br>2NO<br>2NC | ALW49911D-②-③<br>ALW49920D-②-③<br>ALW49902D-②-③       | AOLW49911D-②-③<br>AOLW49920D-②-③<br>AOLW49902D-②-③       |
| <div>Square Extended</div>               | Transformer  | 1NO-1NC<br>2NO<br>2NC | ALQW2B ④ 11D-②<br>ALQW2B ④ 20D-②<br>ALQW2B ④ 02D-②    | AOLQW2B ④ 11D-②<br>AOLQW2B ④ 20D-②<br>AOLQW2B ④ 02D-②    |
|                                                                                                                             | Full Voltage | 1NO-1NC<br>2NO<br>2NC | ALQW2B9911D-②-③<br>ALQW2B9920D-②-③<br>ALQW2B9902D-②-③ | AOLQW2B9911D-②-③<br>AOLQW2B9920D-②-③<br>AOLQW2B9902D-②-③ |

## ② LED/Lens Color Codes

| Color  | Code |
|--------|------|
| Amber  | A    |
| Green  | G    |
| Red    | R    |
| Blue   | S    |
| White  | W    |
| Yellow | Y    |



1. Mushroom lenses not available in yellow.
2. Yellow pushbutton comes with white LED.

## ③ Full Voltage Codes

| Voltage   | Code |
|-----------|------|
| 6V AC/DC  | 6V   |
| 12V AC/DC | 12V  |
| 24V AC/DC | 24V  |
| 120V AC   | 120V |
| 240V AC   | 240V |

## ④ Transformer Voltage Codes

| Voltage | Code |
|---------|------|
| 120VAC  | 126  |
| 240VAC  | 246  |
| 480VAC  | 486  |



Transformers step down to 6V (use 6V LED).



1. In place of ②, specify the Lens Color Code (see table). Mushroom lenses not available in yellow.
2. In place of ③, specify the Full Voltage Code (lamp voltage) (see table).
3. In place of ④, specify the Transformer Voltage Code (see table).
4. For sub-assembly part numbers, see next page.
5. For accessories, see page 726.
6. For dimensions, see page 728.
7. Light is independent of switch position.
8. Yellow pushbutton comes with white LED.

## Illuminated Pushbuttons (Sub-Assembled)

|                          |   |          |   |             |   |          |   |      |   |      |   |               |
|--------------------------|---|----------|---|-------------|---|----------|---|------|---|------|---|---------------|
| Transformer/<br>Adaptor* | + | Contacts | + | Lamp Holder | + | Operator | + | Lamp | + | Lens | = | Complete Part |
|--------------------------|---|----------|---|-------------|---|----------|---|------|---|------|---|---------------|



\*Not applicable for full voltage units

### Operators

| Style                     |  | Part Number |              |
|---------------------------|--|-------------|--------------|
|                           |  | Momentary   | Maintained   |
| Extended                  |  | ALW-0600    | AOLW-0600    |
| Extended with Full Shroud |  | ALFW-0600   | AOLFW-0600   |
| ø29mm/ø40mm Mushroom      |  | ALW3-0600   | AOLW3-0600   |
| Square/Extended           |  | ALQW-2B0600 | AOLQW-2B0600 |

### Lenses

| Style                 |  | Part Number |            |
|-----------------------|--|-------------|------------|
|                       |  | Standard    | Engravable |
| Round Extended        |  | ALW2LU-②    | ALW2BLU-②  |
| ø 29mm Mushroom Head* |  | ALW3LU-②    | ALW3BLU-②  |
| ø 40mm Mushroom Head* |  | ALW4LU-②    | ALW4BLU-②  |
| Square Extended       |  | —           | ALQW2BLU-② |

1. In place of ②, specify the lens color code from table on the bottom right.
2. \*Mushroom lens not available in yellow.
3. Standard lenses have ribbed pattern, Engravable lenses are smooth and include an engravable insert.

### Lamps

| Style | Voltage   | Part Number |
|-------|-----------|-------------|
| LED   | 6V AC/DC  | LSTD-6②     |
|       | 12V AC/DC | LSTD-1②     |
|       | 24V AC/DC | LSTD-2②     |
|       | 120V AC   | LSTD-H2②    |
|       | 240V AC   | LSTD-M4②    |

1. In place of ②, specify the LED color code.
2. The LED contains a current-limiting resistor and a protection diode.

### Lamp Circuit Components

| Style            | Application                                                                   | Part Number |
|------------------|-------------------------------------------------------------------------------|-------------|
| Long Lamp Holder | <b>Used with</b> Full-size Transformer and two contact blocks                 | TW-LH2      |
| Lead Holder      | <b>Used with</b> TW-LH2 holder when using four contact blocks and transformer | HW-LH3      |

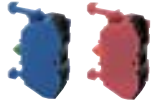
### ② LED/Lens Color Codes

| Color | Code | Color  | Code |
|-------|------|--------|------|
| Amber | A    | Blue   | S    |
| Green | G    | White  | PW   |
| Red   | R    | Yellow | Y    |

- Yellow LED not available. Use white LED.

## Illuminated Pushbuttons (Sub-Assembled) continued

## Contact Blocks

| Style                                                                             | Contacts                       | 1NO                    | 1NC                    |
|-----------------------------------------------------------------------------------|--------------------------------|------------------------|------------------------|
|  | Finger-Safe Spring-Up Terminal | HW-U10-F               | HW-U01-F               |
|                                                                                   |                                | HW-U10R-F (early make) | HW-U01R-F (late break) |
|  | Dummy Block                    | HW-DB                  |                        |



1. Dummy blocks (no contacts) are used with an odd number of contact blocks.
2. Use of early and late break contacts creates a make before break function

## Transformers/Full Voltage Modules

| Style                                                                                                                       | Description | Part Number |
|-----------------------------------------------------------------------------------------------------------------------------|-------------|-------------|
| Full Size Transformer<br>                 | 120V AC     | TW-F126B    |
|                                                                                                                             | 240V AC     | TW-F246B    |
|                                                                                                                             | 480V AC     | TW-F486B    |
| Dummy Block with Full Voltage Adaptor<br> | Finger-Safe | HW-DA1FBN   |
| Full Voltage Adaptor<br>                  | Finger-Safe | TW-DA1FB    |



All Transformers step down to 6V (use 6V LED).

Non-Illuminated Selector Switches (Assembled)



Assembled Selector Switches

A S W 3 (1) (L) 20 - 304

Function

S: Selector Switch

Series Designation

W: TW Series

Number of Positions

- 2: 2-Position
- 3: 3-Position
- 4: 4-Position
- 5: 5-Position

Spring Return Action

- Blank: Maintained
- 1: Spring return from Right (2 or 3 position)
- 2: Spring return from Left (2 or 3 position)
- 3: 2-Way spring return from Left and Right (3 position only)

Circuit Number

(Standard circuits shown on following pages and 718.)

Contact Arrangement Code

- 10: 1NO      01: 1NC
- 20: 2NO      02: 2NC
- 40: 4NO      04: 4NC
- 11: 1NO-1NC 22: 2NO-2NC

Operator Style Code

- Blank:      Knob Operator
- L:      Lever Operator
- K:      Key Operator



- 1. Use only when interpreting part numbers. Do not use for developing part numbers.
- 2. Custom contact configurations available.
- 3. Custom key removable codes available.
- 4. Portions of part number inside ( ) are optional.

## Non-Illuminated Selector Switches (Assembled) continued

## 2-Position Selector Switches

| Style      |          |                   |   |                      | Part Number                                                                           |                                                                                       |                                                                                       |
|------------|----------|-------------------|---|----------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Contact    | Mounting | Operator Position |   |                      | Maintained                                                                            | Spring Return from Right                                                              | Spring Return from Left                                                               |
|            |          | L                 | R |                      | L  R | L  R | L  R |
| 1NO        | 1        | 0                 | X | Knob<br>Lever<br>Key | ASW210                                                                                | ASW2110                                                                               | ASW2210                                                                               |
|            | 2        | 0                 | 0 |                      | ASW2L10                                                                               | ASW21L10                                                                              | ASW22L10                                                                              |
|            |          |                   |   |                      | ASW2K10                                                                               | ASW21K10                                                                              | ASW22K10                                                                              |
| 1NC        | 1        | X                 | 0 | Knob<br>Lever<br>Key | ASW201-116                                                                            | ASW2101-116                                                                           | ASW2201-116                                                                           |
|            | 2        | 0                 | 0 |                      | ASW2L01-116                                                                           | ASW21L01-116                                                                          | ASW22L01-116                                                                          |
|            |          |                   |   |                      | ASW2K01-116                                                                           | ASW21K01-116                                                                          | ASW22K01-116                                                                          |
| 1NO<br>1NC | 1        | X                 | 0 | Knob<br>Lever<br>Key | ASW211                                                                                | ASW2111                                                                               | ASW2211                                                                               |
|            | 2        | 0                 | X |                      | ASW2L11                                                                               | ASW21L11                                                                              | ASW22L11                                                                              |
|            |          |                   |   |                      | ASW2K11                                                                               | ASW21K11                                                                              | ASW22K11                                                                              |
| 2NO        | 1        | 0                 | X | Knob<br>Lever<br>Key | ASW220                                                                                | ASW2120                                                                               | ASW2220                                                                               |
|            | 2        | 0                 | X |                      | ASW2L20                                                                               | ASW21L20                                                                              | ASW22L20                                                                              |
|            |          |                   |   |                      | ASW2K20                                                                               | ASW21K20                                                                              | ASW22K20                                                                              |
| 2NC        | 1        | X                 | 0 | Knob<br>Lever<br>Key | ASW202-104                                                                            | ASW2102-104                                                                           | ASW2202-104                                                                           |
|            | 2        | X                 | 0 |                      | ASW2L02-104                                                                           | ASW21L02-104                                                                          | ASW22L02-104                                                                          |
|            |          |                   |   |                      | ASW2K02-104                                                                           | ASW21K02-104                                                                          | ASW22K02-104                                                                          |
| 2NO<br>2NC | 1        | 0                 | X | Knob<br>Lever<br>Key | ASW222                                                                                | ASW2122                                                                               | ASW2222                                                                               |
|            | 2        | X                 | 0 |                      | ASW2L22                                                                               | ASW21L22                                                                              | ASW22L22                                                                              |
|            | 3        | 0                 | X |                      | ASW2K22                                                                               | ASW21K22                                                                              | ASW22K22                                                                              |
| 2NO<br>2NC | 1        | 0                 | X | Knob<br>Lever<br>Key | ASW222-111                                                                            | ASW2122-111                                                                           | ASW2222-111                                                                           |
|            | 2        | 0                 | X |                      | ASW2L22-111                                                                           | ASW21L22-111                                                                          | ASW22L22-111                                                                          |
|            | 3        | X                 | 0 |                      | ASW2K22-111                                                                           | ASW21K22-111                                                                          | ASW22K22-111                                                                          |



### Non-Illuminated Selector Switches (Assembled) continued

#### 3-Position Selector Switches

| Style      |          | Operator Position |   |   |      | Part Number |                          |                         |                       |
|------------|----------|-------------------|---|---|------|-------------|--------------------------|-------------------------|-----------------------|
|            |          |                   |   |   |      | Maintained  | Spring Return from Right | Spring Return from Left | Spring Return Two-Way |
| Contact    | Mounting | L                 | C | R |      |             |                          |                         |                       |
| 2NO        | 1        | X                 | 0 | 0 | Knob | ASW320      | ASW3120                  | ASW3220                 | ASW3320               |
|            | 2        | 0                 | 0 | X |      | ASW3L20     | ASW31L20                 | ASW32L20                | ASW33L20              |
|            |          |                   |   |   |      | ASW3K20     | ASW31K20                 | ASW32K20                | ASW33K20              |
| 2NC        | 1        | 0                 | X | X | Knob | ASW302      | ASW3102                  | ASW3202                 | ASW3302               |
|            | 2        | X                 | X | 0 |      | ASW3L02     | ASW31L02                 | ASW32L02                | ASW33L02              |
|            |          |                   |   |   |      | ASW3K02     | ASW31K02                 | ASW32K02                | ASW33K02              |
| 2NO<br>2NC | 1        | X                 | 0 | 0 | Knob | ASW322      | ASW3122                  | ASW3222                 | ASW3322               |
|            | 2        | 0                 | 0 | X |      | ASW3L22     | ASW31L22                 | ASW32L22                | ASW33L22              |
|            | 3        | 0                 | X | X |      | ASW3K22     | ASW31K22                 | ASW32K22                | ASW33K22              |
|            | 4        | X                 | X | 0 |      |             |                          |                         |                       |
| 2NO<br>2NC | 1        | X                 | 0 | X | Knob | ASW322-309  | ASW3122-309              | ASW3222-309             | ASW3322-309           |
|            | 2        | X                 | X | 0 |      | ASW3L22-309 | ASW31L22-309             | ASW32L22-309            | ASW33L22-309          |
|            | 3        | 0                 | X | 0 |      | ASW3K22-309 | ASW31K22-309             | ASW32K22-309            | ASW33K22-309          |
|            | 4        | 0                 | 0 | X |      |             |                          |                         |                       |
| 2NO<br>2NC | 1        | 0                 | X | 0 | Knob | ASW322-310  | ASW3122-310              | ASW3222-310             | ASW3322-310           |
|            | 2        | 0                 | 0 | X |      | ASW3L22-310 | ASW31L22-310             | ASW32L22-310            | ASW33L22-310          |
|            | 3        | 0                 | X | 0 |      | ASW3K22-310 | ASW31K22-310             | ASW32K22-310            | ASW33K22-310          |
|            | 4        | 0                 | 0 | X |      |             |                          |                         |                       |
| 4NO        | 1        | X                 | 0 | 0 | Knob | ASW340      | ASW3140                  | ASW3240                 | ASW3340               |
|            | 2        | 0                 | 0 | X |      | ASW3L40     | ASW31L40                 | ASW32L40                | ASW33L40              |
|            | 3        | X                 | 0 | 0 |      | ASW3K40     | ASW31K40                 | ASW32K40                | ASW33K40              |
|            | 4        | 0                 | 0 | X |      |             |                          |                         |                       |
| 4NC        | 1        | 0                 | X | X | Knob | ASW304      | ASW3104                  | ASW3204                 | ASW3304               |
|            | 2        | X                 | X | 0 |      | ASW3L04     | ASW31L04                 | ASW32L04                | ASW33L04              |
|            | 3        | 0                 | X | X |      | ASW3K04     | ASW31K04                 | ASW32K04                | ASW33K04              |
|            | 4        | X                 | X | 0 |      |             |                          |                         |                       |



- The truth table indicates the operating position of contact block when the operator is switched to that position.  
X = On (closed contacts)  
0 = Off (open contacts)  
X—X = Overlapping Contacts: Remain on (closed contacts) when switch is moved between these two positions.
- All knob and lever selector switches come in black. Other colors are available by ordering the knob or lever separately.
- Every key selector switch uses an identical key. The key is removable in any maintained position.
- Custom contact configurations are available, see page 718.

#### 4-Position Selector Switch

| Style   |          | Operator Position |   |   |   | Maintained | Part Number |
|---------|----------|-------------------|---|---|---|------------|-------------|
| Contact | Mounting | 1                 | 2 | 3 | 4 |            |             |
|         |          |                   |   |   |   |            |             |
| 2NO     | 1        | X                 | 0 | 0 | 0 | Knob       | ASW422-411  |
| 2NC     | 2        | 0                 | X | 0 | 0 |            | ASW4L22-411 |
|         | 3        | 0                 | 0 | X | 0 |            |             |
|         | 4        | 0                 | 0 | 0 | X |            |             |

#### 5-Position Selector Switch

| Style   |          | Operator Position |   |   |   |   | Maintained | Part Number |
|---------|----------|-------------------|---|---|---|---|------------|-------------|
| Contact | Mounting | 1                 | 2 | 3 | 4 | 5 |            |             |
|         |          |                   |   |   |   |   |            |             |
| 2NO     | 1        | X                 | 0 | 0 | 0 | 0 | Knob       | ASW522-501  |
| 2NC     | 2        | 0                 | X | 0 | 0 | 0 |            | ASW5L22-501 |
|         | 3        | 0                 | 0 | 0 | X | 0 |            |             |
|         | 4        | 0                 | 0 | 0 | 0 | X |            |             |



## Non-Illuminated Selector Switches (Sub-Assembled)

|                |   |          |   |                |   |               |   |                |
|----------------|---|----------|---|----------------|---|---------------|---|----------------|
| Contact Blocks | + | Operator | + | Knob or Lever* | + | Color Insert* | = | Complete Part† |
|----------------|---|----------|---|----------------|---|---------------|---|----------------|



- \*Not needed with key type switches.
- †Knob type shown.

## Operators

| Style                                                                                           | Positions | Description                          | Part Number |
|-------------------------------------------------------------------------------------------------|-----------|--------------------------------------|-------------|
| <br>Knob/Lever | 2         | Maintained                           | ASW200      |
|                                                                                                 |           | Spring return from right             | ASW2100     |
|                                                                                                 |           | Spring return from left              | ASW2200     |
|                                                                                                 | 3         | Maintained, Cam 1                    | ASW300-1    |
|                                                                                                 |           | Maintained, Cam 2                    | ASW300-2    |
|                                                                                                 |           | Maintained, Cam 3                    | ASW300-3    |
|                                                                                                 |           | Spring return from right, Cam 1      | ASW3100-1   |
|                                                                                                 |           | Spring return from right, Cam 2      | ASW3100-2   |
|                                                                                                 |           | Spring return from left, Cam 1       | ASW3200-1   |
|                                                                                                 |           | Spring return from left, Cam 2       | ASW3200-2   |
|                                                                                                 | 4         | Spring return from left/right, Cam 1 | ASW3300-1   |
|                                                                                                 |           | Spring return from left/right, Cam 2 | ASW3300-2   |
| <br>Key      | 2         | Maintained                           | ASW2K00     |
|                                                                                                 |           | Spring return from right             | ASW21K00    |
|                                                                                                 |           | Spring return from left              | ASW22K00    |
|                                                                                                 | 3         | Maintained, Cam 1                    | ASW3K00-1   |
|                                                                                                 |           | Maintained, Cam 2                    | ASW3K00-2   |
|                                                                                                 |           | Maintained, Cam 3                    | ASW3K00-3   |
|                                                                                                 |           | Spring return from right, Cam 1      | ASW31K00-1  |
|                                                                                                 |           | Spring return from right, Cam 2      | ASW31K00-2  |
|                                                                                                 |           | Spring return from left, Cam 1       | ASW32K00-1  |
|                                                                                                 |           | Spring return from left, Cam 2       | ASW32K00-2  |
|                                                                                                 | 3         | Spring return from left/right, Cam 1 | ASW33K00-1  |
|                                                                                                 |           | Spring return from left/right, Cam 2 | ASW33K00-2  |

## Handles and Inserts

| Style                                                                                                | Part Number |
|------------------------------------------------------------------------------------------------------|-------------|
| <br>Knob          | ASWHHY-①    |
| <br>Lever         | ASWHHL-①    |
| <br>Color Insert | TW-HC1-②    |

## Contact Blocks

| Style                                                                                                                   | Contacts | 1NO                    | 1NC                    |
|-------------------------------------------------------------------------------------------------------------------------|----------|------------------------|------------------------|
| <br>Finger-Safe Spring-Up Terminal |          | HW-U10-F               | HW-U01-F               |
|                                                                                                                         |          | HW-U10R-F (early make) | HW-U01R-F (late break) |
| <br>Dummy Block                    |          | HW-DB                  |                        |



- Push rod color code:  
Green = NO contact block  
Red = NC contact block.
- Dummy blocks (no contacts) are used with an odd number of contact blocks.



- Two keys are supplied with every key switch, all are keyed alike, and removable from any maintained position.
- Locking rings are included with all operators. Order knobs, levers, and color inserts separately.
- Different cams produce different contact actions. For details, see page 718.
- Key switch operator supplied with black sleeve.

## ① Handle/Insert Color Codes

| Color  | Code |
|--------|------|
| Black* | B    |
| Blue   | S    |
| Green  | G    |
| Red    | R    |
| Yellow | Y    |
| White† | W    |



- \*Color inserts not available in black.  
†Knob and lever not available in white.

## Replacement Parts

|                         |         |
|-------------------------|---------|
| Key Switch Black Sleeve | AKW2B-B |
|-------------------------|---------|

## Illuminated Selector Switches (Assembled)



### Assembled Illuminated Selector Switches

**A SL W 2 (2) 99 11 (D) - (103) - R - (24V)**

#### Function

SL: Illuminated Selector Switch

#### Series Designation

W: TW series

#### Number of Positions

2: 2-Position

3: 3-Position

#### Spring Return Action

Blank: Maintained

1: Spring return from Right

2: Spring return from Left

3: Two-Way spring return from Left and Right

#### Illumination Circuit

99: Full Voltage (lamp determines voltage)

126: 120V AC Step Down Transformer

246: 240V AC Step Down Transformer

486: 480V AC Step Down Transformer

#### Lamp Voltage

(Full Voltage Units Only)

6V: 6V AC/DC

12V: 12V AC/DC

24V: 24V AC/DC

120V: 120V AC

240V: 240V AC

#### Lens Color Code

A: Amber

G: Green

R: Red

S: Blue

W: White

Y: Yellow

#### Contact Circuit Number

Standard circuits are listed on the following pages and 718.

#### Lamp Type

D: LED Lamp

#### Contact Arrangement

10: 1NO

01: 1NC

20: 2NO

02: 2NC

40: 4NO

04: 4NC

11: 1NO-1NC

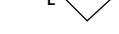
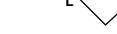
22: 2NO-2NC



1. Use only when interpreting part numbers. Do not use for developing part numbers.
2. All transformers step down to 6V (use 6V lamp).

## Illuminated Selector Switches(Assembled) continued

## Illuminated 2-Position Selector Switches

| Style      |                  |                                                                                        |                                                                                        | Lamp<br>Circuit Type        | Part Number                                                                       |                                                                                   |                                                                                    |
|------------|------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|-----------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| Contact    | Mounting         | Operator Position                                                                      |                                                                                        |                             | Maintained                                                                        | Spring Return from Right                                                          | Spring Return from Left                                                            |
|            |                  | L<br> | R<br> |                             |  |  |  |
| 1NO<br>1NC | 1<br>2           | O<br>X                                                                                 | X<br>O                                                                                 | Transformer<br>Full Voltage | ASLW2 ① 11D-②<br>ASLW29911D-②-③                                                   | ASLW21 ① 11D-②<br>ASLW219911D-②-③                                                 | ASLW22 ① 11D-②<br>ASLW229911D-②-③                                                  |
| 2NO        | 1<br>2           | O<br>O                                                                                 | X<br>X                                                                                 | Transformer<br>Full Voltage | ASLW2 ① 20D-②<br>ASLW29920D-②-③                                                   | ASLW21 ① 20D-②<br>ASLW219920D-②-③                                                 | ASLW22 ① 20D-②<br>ASLW229920D-②-③                                                  |
| 2NC        | 1<br>2           | X<br>X                                                                                 | O<br>O                                                                                 | Transformer<br>Full Voltage | ASLW2 ① 02D-104-②<br>ASLW29902D-104-②-③                                           | ASLW21 ① 02D-104-②<br>ASLW219902D-104-②-③                                         | ASLW22 ① 02D-104-②<br>ASLW229902D-104-②-③                                          |
| 2NO<br>2NC | 1<br>2<br>3<br>4 | O<br>X<br>O<br>X                                                                       | X<br>O<br>X<br>O                                                                       | Transformer<br>Full Voltage | ASLW2 ① 22D-②<br>ASLW29922D-②-③                                                   | ASLW21 ① 22D-②<br>ASLW219922D-②-③                                                 | ASLW22 ① 22D-②<br>ASLW229922D-②-③                                                  |

## ① Transformer Voltage Codes

| Voltage | Code |
|---------|------|
| 120VAC  | 126  |
| 240VAC  | 246  |
| 480VAC  | 486  |



Transformers step down to 6V (use 6V LED).

## ② LED/Lens Color Codes

| Color  | Code |
|--------|------|
| Amber  | A    |
| Green  | G    |
| Red    | R    |
| Blue   | S    |
| White  | W    |
| Yellow | Y    |

## Illuminated 3-Position Selector Switches, Maintained and Spring Return from Right

| Style      |          |                                                                                        |                                                                                        |                                                                                        |                             | Part Number                                                                       |                                                                                   |                                                                                     |                                                                                     |
|------------|----------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|-----------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Contact    | Mounting | Operator Position                                                                      |                                                                                        |                                                                                        | Lamp<br>Circuit Type        | Maintained                                                                        | Spring Return From Right                                                          | Spring Return from Left                                                             | Spring Return Two-Way                                                               |
|            |          | L<br> | C<br> | R<br> |                             |  |  |  |  |
| 2NO        | 1        | X                                                                                      | 0                                                                                      | 0                                                                                      | Transformer<br>Full Voltage | ASLW3 ① 20D-②                                                                     | ASLW31 ① 20D-②                                                                    | ASLW32 ① 20D-②                                                                      | ASLW33 ① 20D-②                                                                      |
|            | 2        | 0                                                                                      | 0                                                                                      | X                                                                                      |                             | ASLW39920D-②-③                                                                    | ASLW319920D-②-③                                                                   | ASLW329920D-②-③                                                                     | ASLW339920D-②-③                                                                     |
| 2NC        | 1        | 0                                                                                      | X                                                                                      | X                                                                                      | Transformer<br>Full Voltage | ASLW3 ① 02D-②                                                                     | ASLW31 ① 02D-②                                                                    | ASLW32 ① 02D-②                                                                      | ASLW33 ① 02D-②                                                                      |
|            | 2        | X                                                                                      | X                                                                                      | 0                                                                                      |                             | ASLW39902D-②-③                                                                    | ASLW319902D-②-③                                                                   | ASLW329902D-②-③                                                                     | ASLW339902D-②-③                                                                     |
| 2NO<br>2NC | 1        | X                                                                                      | 0                                                                                      | 0                                                                                      | Transformer<br>Full Voltage | ASLW3 ① 22D-②                                                                     | ASLW31 ① 22D-②                                                                    | ASLW32 ① 22D-②                                                                      | ASLW33 ① 22D-②                                                                      |
|            | 2        | 0                                                                                      | 0                                                                                      | X                                                                                      |                             | ASLW39922D-②-③                                                                    | ASLW319922D-②-③                                                                   | ASLW329922D-②-③                                                                     | ASLW339922D-②-③                                                                     |
|            | 3        | 0                                                                                      | X                                                                                      | X                                                                                      |                             |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|            | 4        | X                                                                                      | X                                                                                      | 0                                                                                      |                             |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| 2NO<br>2NC | 1        | X                                                                                      | 0                                                                                      | X                                                                                      | Transformer<br>Full Voltage | ASLW3 ① 22D-309-②                                                                 | ASLW31 ① 22D-309-②                                                                | ASLW32 ① 22D-309-②                                                                  | ASLW33 ① 22D-309-②                                                                  |
|            | 2        | X                                                                                      | X                                                                                      | 0                                                                                      |                             | ASLW39922D-309-②-③                                                                | ASLW319922D-309-②-③                                                               | ASLW329922D-309-②-③                                                                 | ASLW339922D-309-②-③                                                                 |
|            | 3        | 0                                                                                      | X                                                                                      | 0                                                                                      |                             |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|            | 4        | 0                                                                                      | 0                                                                                      | X                                                                                      |                             |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| 2NO<br>2NC | 1        | 0                                                                                      | X                                                                                      | 0                                                                                      | Transformer<br>Full Voltage | ASLW3 ① 22D-310-②                                                                 | ASLW31 ① 22D-310-②                                                                | ASLW32 ① 22D-310- ②                                                                 | ASLW33 ① 22D-310-②                                                                  |
|            | 2        | 0                                                                                      | 0                                                                                      | X                                                                                      |                             | ASLW39922D-310-②-③                                                                | ASLW319922D-310-②-③                                                               | ASLW329922D-310- ② -③                                                               | ASLW339922D-310-②-③                                                                 |
|            | 3        | 0                                                                                      | X                                                                                      | 0                                                                                      |                             |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|            | 4        | 0                                                                                      | 0                                                                                      | X                                                                                      |                             |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| 4NO        | 1        | X                                                                                      | 0                                                                                      | 0                                                                                      | Transformer<br>Full Voltage | ASLW3 ① 40D-②                                                                     | ASLW31 ① 40D-②                                                                    | ASLW32 ① 40D-②                                                                      | ASLW33 ① 40D-②                                                                      |
|            | 2        | 0                                                                                      | 0                                                                                      | X                                                                                      |                             | ASLW39940D-②-③                                                                    | ASLW319940D-②-③                                                                   | ASLW329940D-②-③                                                                     | ASLW339940D-②-③                                                                     |
|            | 3        | X                                                                                      | 0                                                                                      | 0                                                                                      |                             |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|            | 4        | 0                                                                                      | 0                                                                                      | X                                                                                      |                             |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| 4NC        | 1        | 0                                                                                      | X                                                                                      | X                                                                                      | Transformer<br>Full Voltage | ASLW3 ① 04D-②                                                                     | ASLW31 ① 04D-②                                                                    | ASLW32 ① 04D-②                                                                      | ASLW33 ① 04D-②                                                                      |
|            | 2        | X                                                                                      | X                                                                                      | 0                                                                                      |                             | ASLW39904D-②-③                                                                    | ASLW319904D-②-③                                                                   | ASLW329904D-②-③                                                                     | ASLW339904D-②-③                                                                     |
|            | 3        | 0                                                                                      | X                                                                                      | X                                                                                      |                             |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|            | 4        | X                                                                                      | X                                                                                      | 0                                                                                      |                             |                                                                                   |                                                                                   |                                                                                     |                                                                                     |



1. In place of ①, specify the Transformer Voltage Code.
2. In place of ②, specify the Lens/LED Color Code.
3. In place of ③, specify the Full Voltage Code.
4. For custom contact configurations, see page 718.
5. Light is independent of switch position.
6. Yellow selector switch comes with white LED.

## ③ Full Voltage Codes

| Voltage   | Code |
|-----------|------|
| 6V AC/DC  | 6V   |
| 12V AC/DC | 12V  |
| 24V AC/DC | 24V  |
| 120V AC   | 120V |
| 240V AC   | 240V |

## Illuminated Selector Switches (Sub-Assembled)



 \*Full voltage units use a full voltage adaptor TW-DA1FB (even number of blocks) OR HW-DA1FBN (odd number of blocks) instead of a transformer.  
¹Lamp holder is not included with operators, order separately.

### Operators

| Style                                                                              | Positions | Description                          | Part Number |
|------------------------------------------------------------------------------------|-----------|--------------------------------------|-------------|
|   | 2         | Maintained                           | ASLW200     |
|                                                                                    |           | Spring return from right             | ASLW2100    |
|                                                                                    |           | Spring return from left              | ASLW2200    |
|  | 3         | Maintained, cam 1                    | ASLW300-1   |
|                                                                                    |           | Maintained, cam 2                    | ASLW300-2   |
|                                                                                    |           | Maintained, cam 3                    | ASLW300-3   |
|                                                                                    | 3         | Spring return from right, cam 1      | ASLW3100-1  |
|                                                                                    |           | Spring return from right, cam 2      | ASLW3100-2  |
|                                                                                    | 3         | Spring return from left, cam 1       | ASLW3200-1  |
|                                                                                    |           | Spring return from left, cam 2       | ASLW3200-2  |
|                                                                                    | 3         | Spring return from left/right, cam 1 | ASLW3300-1  |
|                                                                                    |           | Spring return from left/right, cam 2 | ASLW3300-2  |

 Different cams produce different contact action. For details, see Contact Arrangements on page 718.

### Lenses (Knobs)

| Style                                                                                                                                                                        | Part Number |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| Knob   | ASLWLU-②    |

 In place of ②, specify the lens color code from table.

### Lamps

| Style                                                                               | Voltage   | Part Number |
|-------------------------------------------------------------------------------------|-----------|-------------|
|  | 6V AC/DC  | LSTD-6②     |
|                                                                                     | 12V AC/DC | LSTD-1②     |
|                                                                                     | 24V AC/DC | LSTD-2②     |
|                                                                                     | 120V AC   | LSTD-H2②    |
|                                                                                     | 240V AC   | LSTD-M4②    |

 1. In place of ②, specify the LED color code.  
2. The LED contains a current-limiting resistor and a protection diode.

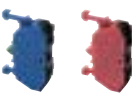
### ② LED/Lens Color Codes

| Color  | Code |
|--------|------|
| Amber  | A    |
| Green  | G    |
| Red    | R    |
| Blue   | S    |
| White  | W    |
| Yellow | Y    |

 Yellow LED not available. Use white LED

## Illuminated Selector Switches (Sub-Assembled) continued

## Contact Blocks

| Style                                                                             | Contacts                       | 1NO                    | 1NC                    |
|-----------------------------------------------------------------------------------|--------------------------------|------------------------|------------------------|
|  | Finger-Safe Spring-Up Terminal | HW-U10-F               | HW-U01-F               |
|                                                                                   |                                | HW-U10R-F (early make) | HW-U01R-F (late break) |
|  | Dummy Block                    | HW-DB                  |                        |



1. Dummy blocks (no contacts) are used with an odd number of contact blocks.
2. Use of early and late break contacts creates a make before break function

## Lamp Circuit Components

| Style                                                                                                  | Application                                                                             | Part Number |
|--------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-------------|
| Short Lamp Holder<br> | <b>Used with</b> full voltage adaptor and one contact block                             | TW-LH1      |
| Long Lamp Holder<br> | <b>Used with</b> Full-size Transformer and two contact blocks                           | TW-LH2      |
| Lead Holder<br>     | <b>Used with</b> TW-LH2 holder when using four contact blocks and full size transformer | HW-LH3      |

## Transformers/Full Voltage Modules

| Style                                                                                                                       | Description                                          | Part Number |
|-----------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|-------------|
| Full Size Transformer<br>                 | 120V AC                                              | TW-F126B    |
|                                                                                                                             | 240V AC                                              | TW-F246B    |
|                                                                                                                             | 480V AC                                              | TW-F486B    |
| Dummy Block with Full Voltage Adaptor<br> | Finger-Safe<br>For use with odd number of contacts.  | HW-DA1FBN   |
| Full Voltage Adaptor<br>                  | Finger-Safe<br>For use with even number of contacts. | TW-DA1FB    |

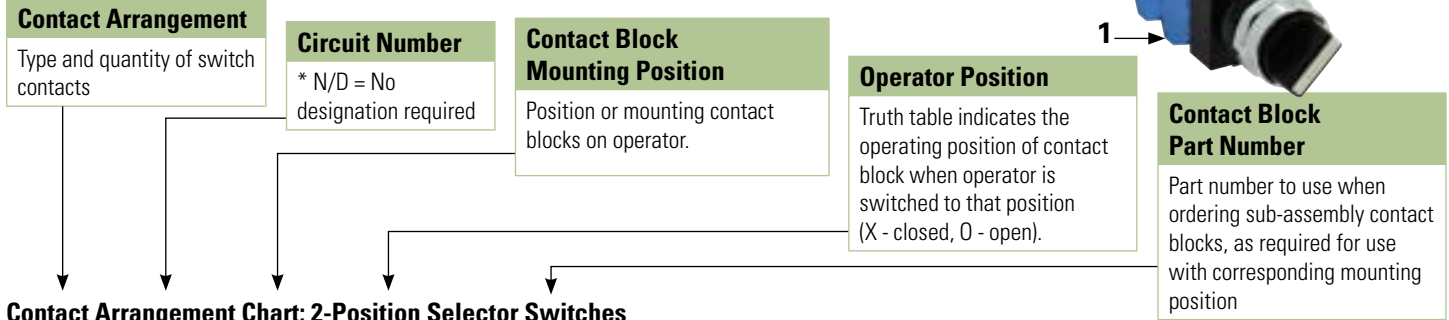


All Transformers step down to 6V (use 6V lamp).

## Contact Arrangement Charts

### How to Read Contact Arrangement Charts

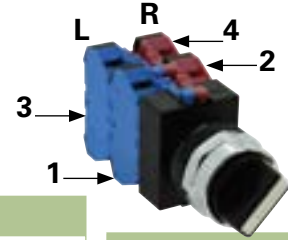
To determine contact block mounting position, first make sure the selector switch is oriented as shown on the right



### Contact Arrangement Chart: 2-Position Selector Switches

| Style            |                | Mounting Position | Operator Position                                                                      |                                                                                        | Contact Block Part Number | Description                        | Operator Part Number                                                                                                                                                |                                                                                                                                                                     |                                                                                                                                                                     |
|------------------|----------------|-------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|---------------------------|------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Contact          | Circuit Number |                   | L<br> | R<br> |                           |                                    | Maintained                                                                                                                                                          | Spring Ret. from Rt.                                                                                                                                                | Spring Ret. from Lt.                                                                                                                                                |
|                  |                |                   |                                                                                        |                                                                                        |                           |                                    |   |   |   |
| 1NO              | N/D            | 1                 | O                                                                                      | X                                                                                      | HW-U10-F                  | Knob/Lever Key<br>Illuminated Knob | ASW200<br>ASW2K00<br>ASLW200                                                                                                                                        | ASW2100<br>ASW21K00<br>ASLW2100                                                                                                                                     | ASW2200<br>ASW22K00<br>ASLW2200                                                                                                                                     |
|                  |                | 2                 | O                                                                                      | O                                                                                      | HW-DB                     |                                    |                                                                                                                                                                     |                                                                                                                                                                     |                                                                                                                                                                     |
| 1NC              | 116            | 1                 | X                                                                                      | O                                                                                      | HW-U01-F                  | Knob/Lever Key<br>Illuminated Knob | ASW200<br>ASW2K00<br>ASLW200                                                                                                                                        | ASW2100<br>ASW21K00<br>ASLW2100                                                                                                                                     | ASW2200<br>ASW22K00<br>ASLW2200                                                                                                                                     |
|                  |                | 2                 | O                                                                                      | O                                                                                      | HW-DB                     |                                    |                                                                                                                                                                     |                                                                                                                                                                     |                                                                                                                                                                     |
| 1NO<br>1NC       | N/D            | 1                 | O                                                                                      | X                                                                                      | HW-U10-F                  | Knob/Lever Key<br>Illuminated Knob | ASW200<br>ASW2K00<br>ASLW200                                                                                                                                        | ASW2100<br>ASW21K00<br>ASLW2100                                                                                                                                     | ASW2200<br>ASW22K00<br>ASLW2200                                                                                                                                     |
|                  |                | 2                 | X                                                                                      | O                                                                                      | HW-U01-F                  |                                    |                                                                                                                                                                     |                                                                                                                                                                     |                                                                                                                                                                     |
|                  | 103            | 1                 | X                                                                                      | O                                                                                      | HW-U01-F                  | Knob/Lever Key<br>Illuminated Knob | ASW200<br>ASW2K00<br>ASLW200                                                                                                                                        | ASW2100<br>ASW21K00<br>ASLW2100                                                                                                                                     | ASW2200<br>ASW22K00<br>ASLW2200                                                                                                                                     |
|                  |                | 2                 | O                                                                                      | X                                                                                      | HW-U10-F                  |                                    |                                                                                                                                                                     |                                                                                                                                                                     |                                                                                                                                                                     |
| 1NO-EM<br>1NC-LB | 600            | 1                 | O                                                                                      | X                                                                                      | HW-U10R-F                 | Knob/Lever Key<br>Illuminated Knob | ASW200<br>ASW2K00<br>ASLW200                                                                                                                                        | ASW2100<br>ASW21K00<br>ASLW2100                                                                                                                                     | ASW2200<br>ASW22K00<br>ASLW2200                                                                                                                                     |
|                  |                | 2                 | X                                                                                      | O                                                                                      | HW-U01R-F                 |                                    |                                                                                                                                                                     |                                                                                                                                                                     |                                                                                                                                                                     |
|                  | 601            | 1                 | X                                                                                      | O                                                                                      | HW-U01R-F                 | Knob/Lever Key<br>Illuminated Knob | ASW200<br>ASW2K00<br>ASLW200                                                                                                                                        | ASW2100<br>ASW21K00<br>ASLW2100                                                                                                                                     | ASW2200<br>ASW22K00<br>ASLW2200                                                                                                                                     |
|                  |                | 2                 | O                                                                                      | X                                                                                      | HW-U10R-F                 |                                    |                                                                                                                                                                     |                                                                                                                                                                     |                                                                                                                                                                     |
| 2NO              | N/D            | 1                 | O                                                                                      | X                                                                                      | HW-U10-F                  | Knob/Lever Key<br>Illuminated Knob | ASW200<br>ASW2K00<br>ASLW200                                                                                                                                        | ASW2100<br>ASW21K00<br>ASLW2100                                                                                                                                     | ASW2200<br>ASW22K00<br>ASLW2200                                                                                                                                     |
|                  |                | 2                 | O                                                                                      | X                                                                                      | HW-U10-F                  |                                    |                                                                                                                                                                     |                                                                                                                                                                     |                                                                                                                                                                     |
| 2NC              | 104            | 1                 | X                                                                                      | O                                                                                      | HW-U01-F                  | Knob/Lever Key<br>Illuminated Knob | ASW200<br>ASW2K00<br>ASLW200                                                                                                                                        | ASW2100<br>ASW21K00<br>ASLW2100                                                                                                                                     | ASW2200<br>ASW22K00<br>ASLW2200                                                                                                                                     |
|                  |                | 2                 | X                                                                                      | O                                                                                      | HW-U01-F                  |                                    |                                                                                                                                                                     |                                                                                                                                                                     |                                                                                                                                                                     |
| 2NO<br>2NC       | N/D            | 1                 | O                                                                                      | X                                                                                      | HW-U10-F                  | Knob/Lever Key<br>Illuminated Knob | ASW200<br>ASW2K00<br>ASLW200                                                                                                                                        | ASW2100<br>ASW21K00<br>ASLW2100                                                                                                                                     | ASW2200<br>ASW22K00<br>ASLW2200                                                                                                                                     |
|                  |                | 2                 | X                                                                                      | O                                                                                      | HW-U01-F                  |                                    |                                                                                                                                                                     |                                                                                                                                                                     |                                                                                                                                                                     |
|                  |                | 3                 | O                                                                                      | X                                                                                      | HW-U10-F                  |                                    |                                                                                                                                                                     |                                                                                                                                                                     |                                                                                                                                                                     |
|                  |                | 4                 | X                                                                                      | O                                                                                      | HW-U01-F                  |                                    |                                                                                                                                                                     |                                                                                                                                                                     |                                                                                                                                                                     |
|                  | 111            | 1                 | O                                                                                      | X                                                                                      | HW-U10-F                  | Knob/Lever Key<br>Illuminated Knob | ASW200<br>ASW2K00<br>ASLW200                                                                                                                                        | ASW2100<br>ASW21K00<br>ASLW2100                                                                                                                                     | ASW2200<br>ASW22K00<br>ASLW2200                                                                                                                                     |
|                  |                | 2                 | O                                                                                      | X                                                                                      | HW-U10-F                  |                                    |                                                                                                                                                                     |                                                                                                                                                                     |                                                                                                                                                                     |
|                  |                | 3                 | X                                                                                      | O                                                                                      | HW-U01-F                  |                                    |                                                                                                                                                                     |                                                                                                                                                                     |                                                                                                                                                                     |
|                  |                | 4                 | X                                                                                      | O                                                                                      | HW-U01-F                  |                                    |                                                                                                                                                                     |                                                                                                                                                                     |                                                                                                                                                                     |

1. NO-EM, NC-LB = Early Make, Late Break.  
N/D = No circuit number designation required in assembled selector switch part number.  
2. X = On (closed contacts) O = Off (Open contacts)



**Contact Block Part Number**  
Part number to use when ordering sub-assembly contact blocks, as required for use with corresponding mounting position

Contact Arrangement Chart: 3-Position Selector Switches

| Style      |                | Mounting Position | Operator Position                                                                 |                                                                                   |                                                                                   | Contact Block Part Number | Description                        | Operator Part Number                                                              |                                                                                   |                                                                                   |                                                                                   |
|------------|----------------|-------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---------------------------|------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Contact    | Circuit Number |                   |  |  |  |                           |                                    | Maintained                                                                        | Spring Return from Right                                                          | Spring Return from Left                                                           | Two-Way                                                                           |
|            |                |                   |                                                                                   |                                                                                   |                                                                                   |                           |                                    |  |  |  |  |
| 1NO<br>1NC | 202            | 1                 | X                                                                                 | 0                                                                                 | 0                                                                                 | HW-U10-F                  | Knob/Lever Key                     | ASW300-1<br>ASW3K00-1<br>ASLW300-1                                                | ASW3100-1<br>ASW31K00-1<br>ASLW3100-1                                             | ASW3200-1<br>ASW32K00-1<br>ASLW3200-1                                             | ASW3300-1<br>ASW33K00-1<br>ASLW3300-1                                             |
|            |                | 2                 | X                                                                                 | X                                                                                 | 0                                                                                 | HW-U01-F                  | Illuminated Knob                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|            | 203            | 1                 | 0                                                                                 | X                                                                                 | X                                                                                 | HW-U01-F                  | Knob/Lever Key                     | ASW300-1<br>ASW3K00-1<br>ASLW300-1                                                | ASW3100-1<br>ASW31K00-1<br>ASLW3100-1                                             | ASW3200-1<br>ASW32K00-1<br>ASLW3200-1                                             | ASW3300-1<br>ASW33K00-1<br>ASLW3300-1                                             |
|            |                | 2                 | 0                                                                                 | 0                                                                                 | X                                                                                 | HW-U10-F                  | Illuminated Knob                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|            | 302            | 1                 | X                                                                                 | 0                                                                                 | X                                                                                 | HW-U10-F                  | Knob/Lever Key                     | ASW300-2<br>ASW3K00-2<br>ASLW300-2                                                | ASW3100-2<br>ASW31K00-2<br>ASLW3100-2                                             | ASW3200-2<br>ASW32K00-2<br>ASLW3200-2                                             | ASW3300-2<br>ASW33K00-2<br>ASLW3300-2                                             |
|            |                | 2                 | X                                                                                 | X                                                                                 | 0                                                                                 | HW-U01-F                  | Illuminated Knob                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|            | 303            | 1                 | 0                                                                                 | X                                                                                 | 0                                                                                 | HW-U01-F                  | Knob/Lever Key                     | ASW300-2<br>ASW3K00-2<br>ASLW300-2                                                | ASW3100-2<br>ASW31K00-2<br>ASLW3100-2                                             | ASW3200-2<br>ASW32K00-2<br>ASLW3200-2                                             | ASW3300-2<br>ASW33K00-2<br>ASLW3300-2                                             |
|            |                | 2                 | 0                                                                                 | 0                                                                                 | X                                                                                 | HW-U10-F                  | Illuminated Knob                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| 2NO        | N/D            | 1                 | X                                                                                 | 0                                                                                 | 0                                                                                 | HW-U10-F                  | Knob/Lever Key                     | ASW300-1<br>ASW3K00-1<br>ASLW300-1                                                | ASW3100-1<br>ASW31K00-1<br>ASLW3100-1                                             | ASW3200-1<br>ASW32K00-1<br>ASLW3200-1                                             | ASW3300-1<br>ASW33K00-1<br>ASLW3300-1                                             |
|            |                | 2                 | 0                                                                                 | 0                                                                                 | X                                                                                 | HW-U10-F                  | Illuminated Knob                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|            | 301            | 1                 | X                                                                                 | 0                                                                                 | X                                                                                 | HW-U10-F                  | Knob/Lever Key                     | ASW300-2<br>ASW3K00-2<br>ASLW300-2                                                | ASW3100-2<br>ASW31K00-2<br>ASLW3100-2                                             | ASW3200-2<br>ASW32K00-2<br>ASLW3200-2                                             | ASW3300-2<br>ASW33K00-2<br>ASLW3300-2                                             |
|            |                | 2                 | 0                                                                                 | 0                                                                                 | X                                                                                 | HW-U10-F                  | Illuminated Knob                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| 2NC        | 304            | 1                 | 0                                                                                 | X                                                                                 | 0                                                                                 | HW-U01-F                  | Knob/Lever Key                     | ASW300-2<br>ASW3K00-2<br>ASLW300-2                                                | ASW3100-2<br>ASW31K00-2<br>ASLW3100-2                                             | ASW3200-2<br>ASW32K00-2<br>ASLW3200-2                                             | ASW3300-2<br>ASW33K00-2<br>ASLW3300-2                                             |
|            |                | 2                 | X                                                                                 | X                                                                                 | 0                                                                                 | HW-U01-F                  | Illuminated Knob                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|            | N/D            | 1                 | 0                                                                                 | X                                                                                 | X                                                                                 | HW-U01-F                  | Knob/Lever Key                     | ASW300-1<br>ASW3K00-1<br>ASLW300-1                                                | ASW3100-1<br>ASW31K00-1<br>ASLW3100-1                                             | ASW3200-1<br>ASW32K00-1<br>ASLW3200-1                                             | ASW3300-1<br>ASW33K00-1<br>ASLW3300-1                                             |
|            |                | 2                 | X                                                                                 | X                                                                                 | 0                                                                                 | HW-U01-F                  | Illuminated Knob                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| 2NO<br>2NC | N/D            | 1                 | X                                                                                 | 0                                                                                 | 0                                                                                 | HW-U10-F                  | Knob/Lever Key<br>Illuminated Knob | ASW300-1<br>ASW3K00-1<br>ASLW300-1                                                | ASW3100-1<br>ASW31K00-1<br>ASLW3100-1                                             | ASW3200-1<br>ASW32K00-1<br>ASLW3200-1                                             | ASW3300-1<br>ASW33K00-1<br>ASLW3300-1                                             |
|            |                | 2                 | 0                                                                                 | 0                                                                                 | X                                                                                 | HW-U10-F                  |                                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|            |                | 3                 | 0                                                                                 | X                                                                                 | X                                                                                 | HW-U01-F                  |                                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|            |                | 4                 | X                                                                                 | X                                                                                 | 0                                                                                 | HW-U01-F                  |                                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|            | 210            | 1                 | 0                                                                                 | X                                                                                 | X                                                                                 | HW-U01-F                  | Knob/Lever Key<br>Illuminated Knob | ASW300-1<br>ASW3K00-1<br>ASLW300-1                                                | ASW3100-1<br>ASW31K00-1<br>ASLW3100-1                                             | ASW3200-1<br>ASW32K00-1<br>ASLW3200-1                                             | ASW3300-1<br>ASW33K00-1<br>ASLW3300-1                                             |
|            |                | 2                 | 0                                                                                 | 0                                                                                 | X                                                                                 | HW-U10-F                  |                                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|            |                | 3                 | 0                                                                                 | X                                                                                 | X                                                                                 | HW-U01-F                  |                                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|            |                | 4                 | 0                                                                                 | 0                                                                                 | X                                                                                 | HW-U10-F                  |                                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|            | 308            | 1                 | X                                                                                 | 0                                                                                 | X                                                                                 | HW-U10-F                  | Knob/Lever Key<br>Illuminated Knob | ASW300-2<br>ASW3K00-2<br>ASLW300-2                                                | ASW3100-2<br>ASW31K00-2<br>ASLW3100-2                                             | ASW3200-2<br>ASW32K00-2<br>ASLW3200-2                                             | ASW3300-2<br>ASW33K00-2<br>ASLW3300-2                                             |
|            |                | 2                 | X                                                                                 | X                                                                                 | 0                                                                                 | HW-U01-F                  |                                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|            |                | 3                 | X                                                                                 | 0                                                                                 | X                                                                                 | HW-U10-F                  |                                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|            |                | 4                 | X                                                                                 | X                                                                                 | 0                                                                                 | HW-U01-F                  |                                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|            | 309            | 1                 | X                                                                                 | 0                                                                                 | X                                                                                 | HW-U10-F                  | Knob/Lever Key<br>Illuminated Knob | ASW300-2<br>ASW3K00-2<br>ASLW300-2                                                | ASW3100-2<br>ASW31K00-2<br>ASLW3100-2                                             | ASW3200-2<br>ASW32K00-2<br>ASLW3200-2                                             | ASW3300-2<br>ASW33K00-2<br>ASLW3300-2                                             |
|            |                | 2                 | X                                                                                 | X                                                                                 | 0                                                                                 | HW-U01-F                  |                                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|            |                | 3                 | 0                                                                                 | X                                                                                 | 0                                                                                 | HW-U01-F                  |                                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|            |                | 4                 | 0                                                                                 | 0                                                                                 | X                                                                                 | HW-U10-F                  |                                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|            | 310            | 1                 | 0                                                                                 | X                                                                                 | 0                                                                                 | HW-U01-F                  | Knob/Lever Key<br>Illuminated Knob | ASW300-2<br>ASW3K00-2<br>ASLW300-2                                                | ASW3100-2<br>ASW31K00-2<br>ASLW3100-2                                             | ASW3200-2<br>ASW32K00-2<br>ASLW3200-2                                             | ASW3300-2<br>ASW33K00-2<br>ASLW3300-2                                             |
|            |                | 2                 | 0                                                                                 | 0                                                                                 | X                                                                                 | HW-U10-F                  |                                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|            |                | 3                 | 0                                                                                 | X                                                                                 | 0                                                                                 | HW-U01-F                  |                                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|            |                | 4                 | 0                                                                                 | 0                                                                                 | X                                                                                 | HW-U10-F                  |                                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |

1. Each operator sub-assembly is available as a "-1" and a "-2" for 3-position selector switches. The internal cam of a "-1" is different from that of a "-2". This results in designated combinations of open and closed contacts in the various operator positions.
2. N/D = No circuit number designation required in assembled part number.
3. X = On (closed contacts) 0 = Off (open contacts). X-X Overlapping contacts remain on (closed) when switch is moved between these two positions.



### Contact Arrangement Chart: 3-Position Selector Switches

| Style   |                | Mounting Position | Operator Position                                                                      |                                                                                        |                                                                                        | Contact Block Part Number | Description                        | Operator Part Number                                                               |                                                                                     |                                                                                     |                                                                                     |
|---------|----------------|-------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|---------------------------|------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Contact | Circuit Number |                   | L<br> | C<br> | R<br> |                           |                                    | Maintained                                                                         | Spring Return from Right                                                            | Spring Return from Left                                                             | Two-Way                                                                             |
|         |                |                   |                                                                                        |                                                                                        |                                                                                        |                           |                                    |  |  |  |  |
| 4NO     | N/D            | 1                 | X                                                                                      | 0                                                                                      | 0                                                                                      | HW-U10-F                  | Knob/Lever Key<br>Illuminated Knob | ASW300-1<br>ASW3K00-1<br>ASLW300-1                                                 | ASW3100-1<br>ASW31K00-1<br>ASLW3100-1                                               | ASW3200-1<br>ASW32K00-1<br>ASLW3200-1                                               | ASW3300-1<br>ASW33K00-1<br>ASLW3300-1                                               |
|         |                | 2                 | 0                                                                                      | 0                                                                                      | X                                                                                      | HW-U10-F                  |                                    |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
|         |                | 3                 | X                                                                                      | 0                                                                                      | 0                                                                                      | HW-U10-F                  |                                    |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
|         |                | 4                 | 0                                                                                      | 0                                                                                      | X                                                                                      | HW-U10-F                  |                                    |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
|         | 305            | 1                 | X                                                                                      | 0                                                                                      | X                                                                                      | HW-U10-F                  | Knob/Lever Key<br>Illuminated Knob | ASW300-2<br>ASW3K00-2<br>ASLW300-2                                                 | ASW3100-2<br>ASW31K00-2<br>ASLW3100-2                                               | ASW3200-2<br>ASW32K00-2<br>ASLW3200-2                                               | ASW3300-2<br>ASW33K00-2<br>ASLW3300-2                                               |
|         |                | 2                 | 0                                                                                      | 0                                                                                      | X                                                                                      | HW-U10-F                  |                                    |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
|         |                | 3                 | X                                                                                      | 0                                                                                      | X                                                                                      | HW-U10-F                  |                                    |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
|         |                | 4                 | 0                                                                                      | 0                                                                                      | X                                                                                      | HW-U10-F                  |                                    |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| 4NC     | N/D            | 1                 | 0                                                                                      | X                                                                                      | X                                                                                      | HW-U01-F                  | Knob/Lever Key<br>Illuminated Knob | ASW300-1<br>ASW3K00-1<br>ASLW300-1                                                 | ASW3100-1<br>ASW31K00-1<br>ASLW3100-1                                               | ASW3200-1<br>ASW32K00-1<br>ASLW3200-1                                               | ASW3300-1<br>ASW33K00-1<br>ASLW3300-1                                               |
|         |                | 2                 | X                                                                                      | X                                                                                      | 0                                                                                      | HW-U01-F                  |                                    |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
|         |                | 3                 | 0                                                                                      | X                                                                                      | X                                                                                      | HW-U01-F                  |                                    |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
|         |                | 4                 | X                                                                                      | X                                                                                      | 0                                                                                      | HW-U01-F                  |                                    |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
|         | 314            | 1                 | 0                                                                                      | X                                                                                      | 0                                                                                      | HW-U01-F                  | Knob/Lever Key<br>Illuminated Knob | ASW300-2<br>ASW3K00-2<br>ASLW300-2                                                 | ASW3100-2<br>ASW31K00-2<br>ASLW3100-2                                               | ASW3200-2<br>ASW32K00-2<br>ASLW3200-2                                               | ASW3300-2<br>ASW33K00-2<br>ASLW3300-2                                               |
|         |                | 2                 | X                                                                                      | X                                                                                      | 0                                                                                      | HW-U01-F                  |                                    |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
|         |                | 3                 | 0                                                                                      | X                                                                                      | 0                                                                                      | HW-U01-F                  |                                    |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
|         |                | 4                 | X                                                                                      | X                                                                                      | 0                                                                                      | HW-U01-F                  |                                    |                                                                                    |                                                                                     |                                                                                     |                                                                                     |

-  1. Each operator sub-assembly is available as a "-1" and a "-2" for 3-position selector switches. The internal cam of a "-1" is different from that of a "-2". This results in designated combinations of open and closed contacts in the various operator positions.
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Custom Selector Switch Building Guide

To build a custom selector switch, follow these steps.

Step 1

How many positions of the switch are needed?

# of positions  
(2, 3, 4, 5)

Step 2

How many contacts should there be?

# of isolated contacts  
(maximum 6)

Step 3

Fill in the Truth Table

(X = closed, 0 = open)

|          |   | Knob Position |   |   |   |   |
|----------|---|---------------|---|---|---|---|
|          |   | 1             | 2 | 3 | 4 | 5 |
| Contacts | 1 |               |   |   |   |   |
|          | 2 |               |   |   |   |   |
|          | 3 |               |   |   |   |   |
|          | 4 |               |   |   |   |   |
|          | 5 |               |   |   |   |   |
|          | 6 |               |   |   |   |   |

Step 4

If building a 2 position selector, skip this step. (2 position selectors have only one cam)

If building a 3, 4, or 5 position selector, determine appropriate cam as follows:

- Look at Row 1 from above table and locate an identical row in the operator truth tables (See next page).
- Repeat for all rows. The user must find one operator that contains all rows from above table.
- Record the operator cam version.

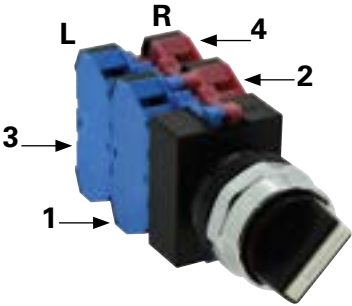
Step 5

Build by placing appropriate contact in appropriate mounting position for each desired row on operator cam truth table. "L" and "R" refer to mounting on left or right side of operator as viewed from the front of the panel.

Step 6

Develop an assembly part number (if necessary) as follows: follow standard numbering nomenclature for selector switches (see pages 710 or 714. In place of the "Circuit Number" indicate the cam number and contact arrangement as such ASW322-3-OELCXX, where "3" is the cam number, and contact arrangement "OELCXX" calls out individual contact mounting locations in order (see diagram above). O=NO, C=NC, E=NO-EM, L=NC-LB, X= no contact. Part number must designate all 6 possible mounting locations.

Mounting Positions



 Caution: Before putting any custom selector switch into use, the user should use an ohmmeter to test for desired performance.  
1. For Operator Truth Tables, see next page.

## Operator Truth Tables

Use the following tables to build custom selector switches.

### 2 Position Selector Switches

|                              | Contact           | Mounting Position | Operator Position |       |
|------------------------------|-------------------|-------------------|-------------------|-------|
|                              |                   |                   | Left              | Right |
| ASW200<br>ASLW200<br>ASW2K00 | HW-U10-F (NO)     | L                 | 0                 | X     |
|                              |                   | R                 | 0                 | X     |
|                              | HW-U01-F (NC)     | L                 | X                 | 0     |
|                              |                   | R                 | X                 | 0     |
|                              | HW-U10R-F (NO-EM) | L                 | 0                 | X     |
|                              |                   | R                 | 0                 | X     |
|                              | HW-U01R-F (NC-LB) | L                 | X                 | 0     |
|                              |                   | R                 | X                 | 0     |

### 3 Position Selector Switches

|                                    | Contact           | Mounting Position | Operator Position |        |       |
|------------------------------------|-------------------|-------------------|-------------------|--------|-------|
|                                    |                   |                   | Left              | Center | Right |
| ASW300-1<br>ASW3K00-1<br>ASLW300-1 | HW-U10-F (NO)     | L                 | X                 | 0      | 0     |
|                                    |                   | R                 | 0                 | 0      | X     |
|                                    | HW-U01-F (NC)     | L                 | 0                 | X      | X     |
|                                    |                   | R                 | X                 | X      | 0     |
|                                    | HW-U10R-F (NO-EM) | L                 | X                 | 0      | 0     |
|                                    |                   | R                 | 0                 | 0      | X     |
|                                    | HW-U01R-F (NC-LB) | L                 | 0                 | X      | X     |
|                                    |                   | R                 | X                 | X      | 0     |

|                                    | Contact           | Mounting Position | Operator Position |        |       |
|------------------------------------|-------------------|-------------------|-------------------|--------|-------|
|                                    |                   |                   | Left              | Center | Right |
| ASW300-2<br>ASW3K00-2<br>ASLW300-2 | HW-U10-F (NO)     | L                 | X                 | 0      | X     |
|                                    |                   | R                 | 0                 | 0      | X     |
|                                    | HW-U01-F (NC)     | L                 | 0                 | X      | 0     |
|                                    |                   | R                 | X                 | X      | 0     |
|                                    | HW-U10R-F (NO-EM) | L                 | X                 | 0      | X     |
|                                    |                   | R                 | 0                 | 0      | X     |
|                                    | HW-U01R-F (NC-LB) | L                 | 0                 | X      | 0     |
|                                    |                   | R                 | X                 | X      | 0     |

|                                    | Contact           | Mounting Position | Operator Position |        |       |
|------------------------------------|-------------------|-------------------|-------------------|--------|-------|
|                                    |                   |                   | Left              | Center | Right |
| ASW300-3<br>ASW3K00-3<br>ASLW300-3 | HW-U10-F (NO)     | L                 | X                 | 0      | 0     |
|                                    |                   | R                 | 0                 | 0      | X     |
|                                    | HW-U01-F (NC)     | L                 | 0                 | X      | 0     |
|                                    |                   | R                 | 0                 | X      | 0     |
|                                    | HW-U10R-F (NO-EM) | L                 | X                 | 0      | X     |
|                                    |                   | R                 | X                 | 0      | X     |
|                                    | HW-U01R-F (NC-LB) | L                 | 0                 | X      | X     |
|                                    |                   | R                 | X                 | X      | 0     |

### 4 Position Selector Switches

|        | Contact           | Mounting Position | Operator Position |   |   |   |
|--------|-------------------|-------------------|-------------------|---|---|---|
|        |                   |                   | 1                 | 2 | 3 | 4 |
| ASW400 | HW-U10-F (NO)     | L                 | X                 | 0 | 0 | 0 |
|        |                   | R                 | 0                 | X | 0 | 0 |
|        | HW-U01-F (NC)     | L                 | 0                 | X | X | X |
|        |                   | R                 | X                 | 0 | X | X |
|        | HW-U10R-F (NO-EM) | L                 | X                 | 0 | 0 | 0 |
|        |                   | R                 | 0                 | X | 0 | 0 |
|        | HW-U01R-F (NC-LB) | L                 | 0                 | X | X | X |
|        |                   | R                 | X                 | 0 | X | X |

|          | Contact           | Mounting Position | Operator Position |   |   |   |
|----------|-------------------|-------------------|-------------------|---|---|---|
|          |                   |                   | 1                 | 2 | 3 | 4 |
| ASW400-1 | HW-U10-F (NO)     | L                 | X                 | 0 | 0 | 0 |
|          |                   | R                 | 0                 | 0 | 0 | X |
|          | HW-U01-F (NC)     | L                 | 0                 | 0 | X | 0 |
|          |                   | R                 | 0                 | X | 0 | 0 |
|          | HW-U10R-F (NO-EM) | L                 | X                 | X | 0 | X |
|          |                   | R                 | X                 | 0 | X | X |
|          | HW-U01R-F (NC-LB) | L                 | 0                 | X | X | X |
|          |                   | R                 | X                 | X | X | 0 |

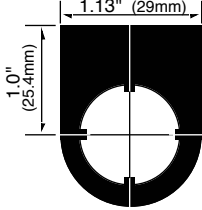
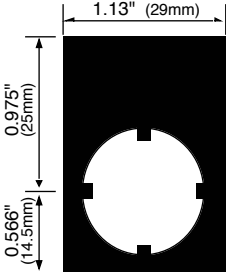
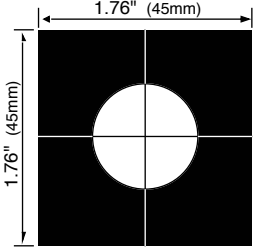
### 5 Position Selector Switches

|        | Contact           | Mounting Position | Operator Position |   |   |   |   |
|--------|-------------------|-------------------|-------------------|---|---|---|---|
|        |                   |                   | 1                 | 2 | 3 | 4 | 5 |
| ASW500 | HW-U10-F (NO)     | L                 | X                 | 0 | 0 | 0 | 0 |
|        |                   | R                 | 0                 | X | 0 | 0 | 0 |
|        | HW-U01-F (NC)     | L                 | 0                 | 0 | X | X | X |
|        |                   | R                 | 0                 | 0 | 0 | X | X |
|        | HW-U10R-F (NO-EM) | L                 | X                 | 0 | 0 | 0 | 0 |
|        |                   | R                 | 0                 | X | 0 | 0 | 0 |
|        | HW-U01R-F (NC-LB) | L                 | 0                 | X | X | X | X |
|        |                   | R                 | X                 | 0 | X | X | X |

|          | Contact           | Mounting Position | Operator Position |   |   |   |   |
|----------|-------------------|-------------------|-------------------|---|---|---|---|
|          |                   |                   | 1                 | 2 | 3 | 4 | 5 |
| ASW500-1 | HW-U10-F (NO)     | L                 | X                 | 0 | 0 | 0 | 0 |
|          |                   | R                 | 0                 | 0 | 0 | 0 | X |
|          | HW-U01-F (NC)     | L                 | 0                 | 0 | 0 | X | 0 |
|          |                   | R                 | 0                 | X | 0 | 0 | 0 |
|          | HW-U10R-F (NO-EM) | L                 | X                 | X | X | 0 | X |
|          |                   | R                 | X                 | 0 | X | X | X |
|          | HW-U01R-F (NC-LB) | L                 | 0                 | X | X | X | X |
|          |                   | R                 | X                 | X | X | X | 0 |

## Nameplates — TW Series

## Faceplates

|                      | NWAL                                                                              | NWAQL                                                                             | NWAS                                                                               | EMERGENCY STOP                                                                      |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                      |  |  |  |  |
|                      | Part Number                                                                       |                                                                                   |                                                                                    |                                                                                     |
| Nameplate (blank)    | NWAL-OB (black)<br>NWAL-OR (red)                                                  | NWAQL-OB (black)<br>NWAQL-OR (red)                                                | NWAS-OB                                                                            | NWAR-0                                                                              |
| Nameplate (engraved) | NWAL-Ⓢ                                                                            | NWAQL-Ⓢ                                                                           | NWAS-Ⓢ                                                                             | NWAR-27†                                                                            |



1. In place of Ⓢ, insert either the Standard Legend Code from table below or custom engraving delimited by " ".
2. Standard engravings are available at no charge.
3. NWAR-27 comes marked "Emergency Stop" as shown in drawing.

## Standard Legend Codes

| Pushbuttons |      |               |      | Pushbuttons/Selector Switches |      |            |      | Selector Switches |      |
|-------------|------|---------------|------|-------------------------------|------|------------|------|-------------------|------|
| Legend      | Code | Legend        | Code | Legend                        | Code | Legend     | Code | Legend            | Code |
| AUTO        | 101  | OPEN          | 116  | AUTO-MAN                      | 201  |            |      | AUTO-MAN-OFF      | 301  |
| CLOSE       | 102  | OUT           | 117  | CLOSE-OPEN                    | 202  |            |      | AUTO-OFF-MAN      | 302  |
| DOWN        | 103  | RAISE         | 118  | DOWN-UP                       | 203  |            |      | CLOSE-OFF-OPEN    | 303  |
| EMERG.STOP  | 104  | RESET         | 119  | FAST-SLOW                     | 204  |            |      | DOWN-OFF-SLOW     | 304  |
| FAST        | 105  | REVERSE       | 120  | FOR-REV                       | 205  | REV-FOR    | 216  | FAST-OFF-SLOW     | 305  |
| FORWARD     | 106  | RUN           | 121  | HAND-AUTO                     | 206  | RUN-JOG    | 217  | FOR-OFF-REV       | 306  |
| HAND        | 107  | SLOW          | 122  | HIGH-LOW                      | 207  | RUN-SAFE   | 218  | LEFT-OFF-RIGHT    | 307  |
| HIGH        | 108  | START         | 123  | JOG-RUN                       | 208  | SAFE-RUN   | 219  | LOWER-OFF-RAISE   | 308  |
| IN          | 109  | STOP          | 124  | LEFT-RIGHT                    | 209  | SLOW-FAST  | 220  | OFF-MAN-AUTO      | 309  |
| INCH        | 110  | STOP          | 125  | LOWER-RAISE                   | 210  | START-STOP | 221  | OFF-SLOW-FAST     | 310  |
| JOG         | 111  | TEST          | 126  | MAN-AUTO                      | 211  | STOP-START | 222  | OFF-1-2           | 311  |
| LOW         | 112  | UP            | 127  | OFF-ON                        | 212  | UP-DOWN    | 223  | OPEN-OFF-CLOSE    | 312  |
| LOWER       | 113  | I (Int'l On)  | 150  | ON-OFF                        | 213  |            |      | SLOW-OFF-FAST     | 313  |
| OFF         | 114  | O (Int'l Off) | 151  | OPEN-CLOSE                    | 214  |            |      | SUMMER-OFF-WINTER | 314  |
| ON          | 115  | EMO           | 152  | RAISE-LOWER                   | 215  |            |      | UP-OFF-DOWN       | 315  |
|             |      |               |      |                               |      |            |      | 1-OFF-2           | 316  |
|             |      |               |      |                               |      |            |      | HAND-OFF-AUTO     | 317  |



1. To order engraved nameplates, add legend code to nameplate part number.  
Character height based on the number of characters and size of nameplate. Standard character size is 3/16".
2. Nameplates with standard legends are the same list price as blank nameplates.

Nameplate Order Form on next page.

## Custom Engraved Nameplates Order Form — TW Series

Copy this order form and use it to specify Letter Height, Custom Engravings, Location of Engraving on Nameplate, and Quantity Desired. To ensure engraving accuracy, fax it to your IDEC representative. or Distributor.

Your Company Name: \_\_\_\_\_

IDEC Rep/Distributor Contact: \_\_\_\_\_

Your Name: \_\_\_\_\_

PO number (if known): \_\_\_\_\_

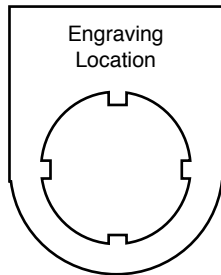
Telephone: \_\_\_\_\_

IDEC Rep/Distributor Phone: \_\_\_\_\_

Fax & Email: \_\_\_\_\_

IDEC Rep/Distributor Fax & Email: \_\_\_\_\_

### NWAL



#### Step 1.

Choose Letter Size - 7/64" or 1/8".

Check the box for the letter size you want. Then write your lettering in box below checkboxes. Note: 1/8" size letters cannot exceed 9 characters.

7/64" Letter Size ☐

11 characters max  
(for 7/64" size letters)

1/8" Letter Size ☐

9 characters max  
(for 1/8" size letters)

#### Step 2.

Specify Quantity.

Enter the number of nameplates desired in the box on the right.

**Qty**

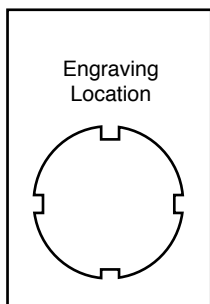
|   |   |   |   |   |   |   |   |   |    |    |
|---|---|---|---|---|---|---|---|---|----|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|----|----|

#### Sample Letter Sizes

7/64" Letters: A B C D

1/8" Letters: A B C D

### NWAQL



#### Step 1.

Choose Letter Size - 7/64" or 1/8".

Check the box for the letter size you want. Then write your lettering in box below checkboxes. Note: 1/8" size letters cannot exceed 9 characters.

7/64" Letter Size ☐

11 characters max  
(for 7/64" size letters)

1/8" Letter Size ☐

9 characters max  
(for 1/8" size letters)

#### Step 2.

Specify Quantity.

Enter the number of nameplates desired in the box on the right.

**Qty**

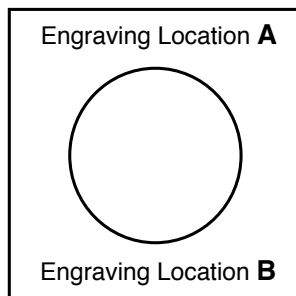
|   |   |   |   |   |   |   |   |   |    |    |
|---|---|---|---|---|---|---|---|---|----|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|----|----|

#### Sample Letter Sizes

7/64" Letters: A B C D

1/8" Letters: A B C D

### NWAS



#### Step 1.

Choose Letter Size - 1/8" or 3/32".

Check the box for the letter size you want. Then write your lettering in box below checkboxes. Note: 1/8" size letters cannot exceed 14 characters.

3/32" Letter Size ☐

20 characters max  
(for 3/32" size letters)

1/8" Letter Size ☐

14 characters max  
(for 1/8" size letters)

#### Step 2.

Specify Quantity.

Enter the number of nameplates desired in the box on the right.

**Qty**

#### Step 3.

Specify Location.

Enter the location of engraving (A or B), in the box on the right.

**Location**

#### Sample Letter Sizes

3/32" Letters: A B C D

1/8" Letters: A B C D

|   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |
|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|

## Switch Engraving Order Form – TW Series

Copy this order form and use it to specify Letter Height, Maximum Number of Lines and Text to be engraved.

To ensure engraving accuracy, fax it to your IDEC representative or Distributor.

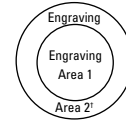
Your Company: \_\_\_\_\_  
 Name: \_\_\_\_\_  
 Address: \_\_\_\_\_  
 PO: \_\_\_\_\_

Telephone: \_\_\_\_\_  
 Fax: \_\_\_\_\_  
 Email: \_\_\_\_\_  
 Part Number to be Engraved: \_\_\_\_\_

Please check one of the boxes below to indicate your choice of engraving options:



ø29mm, ø40mm Mushroom Head



|                          | # of Lines | Letter Height | Max. Characters Per Line |
|--------------------------|------------|---------------|--------------------------|
| <input type="checkbox"/> | 1          | 5/32          | 6                        |
| <input type="checkbox"/> |            | 1/8           | 6                        |
| <input type="checkbox"/> | 2          | 5/32          | 6                        |
| <input type="checkbox"/> |            | 1/8           | 5                        |
| <input type="checkbox"/> | 3          | 1/8           | 6                        |
| <input type="checkbox"/> | 4          | 3/32          | 5                        |

|                          | # of Lines | Letter Height | Max. Characters Per Line |
|--------------------------|------------|---------------|--------------------------|
| <input type="checkbox"/> | 1          | 5/32          | 5                        |
| <input type="checkbox"/> |            | 1/8           | 6                        |
| <input type="checkbox"/> | 2          | 5/32          | 5                        |
| <input type="checkbox"/> |            | 1/8           | 6                        |
| <input type="checkbox"/> | 3          | 1/8           | 5                        |
| <input type="checkbox"/> | 4          | 3/32          | 5                        |

|                          |                  | # of Lines | Letter Height | Max. Characters Per Line |
|--------------------------|------------------|------------|---------------|--------------------------|
| <input type="checkbox"/> | Engraving Area 1 | 1          | 5/32          | 5                        |
| <input type="checkbox"/> |                  |            | 1/8           | 5                        |
| <input type="checkbox"/> | Engraving Area 2 | 1          | 5/32          | 7                        |
| <input type="checkbox"/> |                  |            | 1/8           | 7                        |



- Above mentioned specifications hold true for standard size pushbuttons (round and square).
- \*Engraving Area 2 can be engraved for 40mm mushroom Head non-Illuminated push button only.
- Engraving is done on the button itself for non-Illuminated push buttons and on marking plate for illuminated push buttons and pilot lights.
- Please enter text exactly how you want it engraved, take care to emphasize capital or small letters.

Enter text to be engraved:

### Sample Letter Sizes

1/8 Letters: **OPEN**

5/32 Letters: **OPEN**

Line 1: \_\_\_\_\_  
 Line 2: \_\_\_\_\_  
 Line 3: \_\_\_\_\_  
 Line 4: \_\_\_\_\_

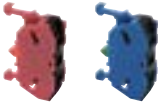
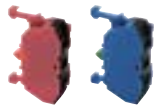
For IDEC Internal Use Only:

Work Order #: \_\_\_\_\_

## Accessories

### TW Series Accessories

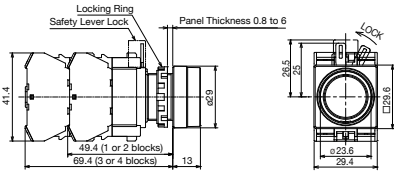
| Item                                   | Appearance                                                                          | Description/Usage                                                                                                                                 |                                                                                                                                                  | Part Number |
|----------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| Lamp Removal Tool                      |    | Rubber tool used to install or remove LED's                                                                                                       |                                                                                                                                                  | OR-55       |
| Contact Block Remover                  |    | Used to remove contact blocks, transformers, lenses, and adaptors. Can also be used to determine panel thickness adjustment.                      |                                                                                                                                                  | TW-KC1      |
| Nut Locking Wrench                     |    | Used in OR-14 locking wrench to tighten locking nuts inside square bezel                                                                          |                                                                                                                                                  | TW-KQ2      |
| Metal Bezel                            |    | Chrome plated bezels tighten onto operator (replacement for damaged bezels)                                                                       | Standard octagonal units (chrome-pl.)                                                                                                            | AW-R8       |
|                                        |                                                                                     |                                                                                                                                                   | Full shroud octagonal units (chrome-pl.)                                                                                                         | AW-RF8      |
|                                        |                                                                                     |                                                                                                                                                   | Full shroud mushroom head units Ø 40mm                                                                                                           | AW-G4       |
| Plastic Bezel                          |    | Black plastic bezels for square buttons (replacement for damaged bezels)                                                                          | Round flush units (black plastic)                                                                                                                | AW-RP1B     |
|                                        |                                                                                     |                                                                                                                                                   | Round extended units (black plastic)                                                                                                             | AW-FP1B     |
|                                        |                                                                                     |                                                                                                                                                   | Square units (black plastic)                                                                                                                     | AW-Q1B      |
|                                        |                                                                                     |                                                                                                                                                   | Square units with full shroud (black plastic)                                                                                                    | AW-QF1B     |
| Boot/Cover                             |   | Used to cover and protect pushbuttons                                                                                                             | Waterproof lens cover for square pilot lights                                                                                                    | APW00LN     |
|                                        |                                                                                     |                                                                                                                                                   | Waterproof lens cover for square illuminated buttons                                                                                             | APW00L      |
|                                        |                                                                                     |                                                                                                                                                   | Clear boot for round flush units                                                                                                                 | OC-31       |
|                                        |                                                                                     |                                                                                                                                                   | Clear boot for round extended units                                                                                                              | OC-32       |
|                                        |                                                                                     |                                                                                                                                                   | *In place of asterisk, specify <b>Rubber Boot</b> color: <b>B</b> (black), <b>G</b> (green), <b>R</b> (red), <b>Y</b> (yellow) - (nitril rubber) | OCW-11*     |
| Anti-Rotation Ring                     |  | Ring to prevent operator base from rotating in the mounting hole. Used when nameplate is not used                                                 |                                                                                                                                                  | OGL-31      |
| Mounting Hole Plug                     |  | Black rubber plug fills unused mounting holes in panel.                                                                                           |                                                                                                                                                  | OB-31       |
| Metallic Mounting Hole Plug            |  | For plugging unused mounting holes in the panel. Tighten the attached locking ring to a torque of 12 kfg-cm maximum<br>Degree of protection: IP66 |                                                                                                                                                  | LW9Z-BM     |
| Replacement Keys                       |  | Replacement keys (#0)                                                                                                                             |                                                                                                                                                  | TW-SK       |
| Replacement Black Sleeve for Keyswitch |  |                                                                                                                                                   |                                                                                                                                                  | AKW2B-B     |

| Item                                   | Appearance                                                                         | Description/Usage                                                                                                                                                              |                                  | Part Number                                                               |                                                                           |
|----------------------------------------|------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|---------------------------------------------------------------------------|---------------------------------------------------------------------------|
| Metal Button Guard                     |   | Used on flush buttons to prevent inadvertent actuation                                                                                                                         |                                  | OLW-C                                                                     |                                                                           |
| Terminal Tab Adaptor                   |   | Quick- connect terminals                                                                                                                                                       | #250 (17/64" x 3/64") single tab | TW-FA4                                                                    |                                                                           |
| Lock-out Adaptor                       |   | Used to provide lock-out protection for pushbuttons and knob selector switches:<br>• Up to Ø 40mm mushroom head size<br>(Padlock not included.)<br>Not applicable for e-stops. |                                  | HW9Z-KL1                                                                  |                                                                           |
| 22mm to 30mm Adaptor                   |   | Used to mount TW series control unit (except square units) Ø 7/8" (22mm) into a Ø 1-13/64" (30mm) panel cut-out.                                                               |                                  | TWN-A1R8                                                                  |                                                                           |
| Contact Blocks<br>(with side entry)    |   | These contacts are applicable for wires terminated by ring, fork,<br><b>not recommended for bare wire connections.</b>                                                         |                                  | 1NC                                                                       | 1NO                                                                       |
|                                        |                                                                                    |                                                                                                                                                                                |                                  | HW-U01<br>HW-U01-MAU<br>HW-U01R<br>HW-U01R-MAU<br>(with side entry)       | HW-U10<br>HW-U10-MAU<br>HW-U10R<br>HW-U10R-MAU<br>(with side entry)       |
| Contact Blocks<br>(without side entry) |  | These contacts are applicable for wires terminated by ring, fork, or ferule terminals,<br>and <b>also bare wire connections.</b>                                               |                                  | HW-U01-F<br>HW-U01-MAU-F<br>HW-U01R-F<br>HW-U01R-MAU-F<br>(no side entry) | HW-U10-F<br>HW-U10-MAU-F<br>HW-U10R-F<br>HW-U10R-MAU-F<br>(no side entry) |

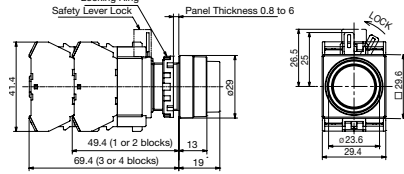
## Dimensions

### Pushbuttons

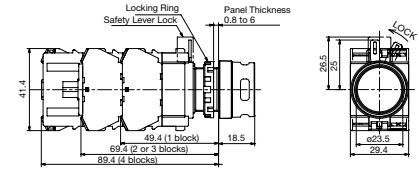
#### Flush



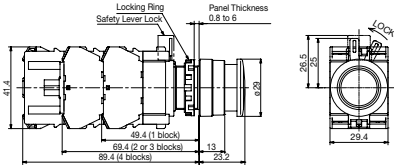
#### Extended



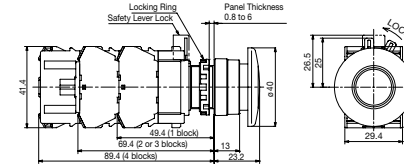
#### Extended with Full Shroud



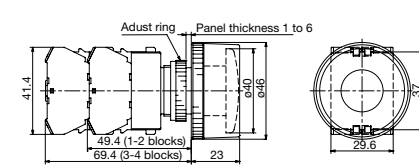
#### 29mm Mushroom



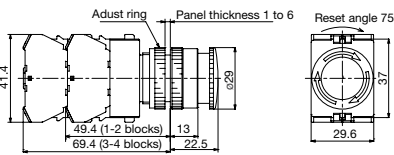
#### 40mm Mushroom



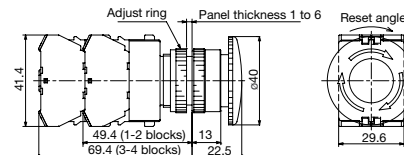
#### Mushroom with Full Shroud



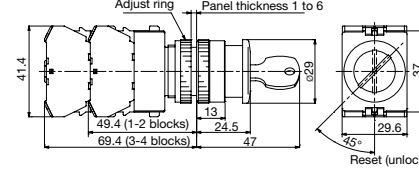
#### 29mm Push-Lock-Turn-Reset



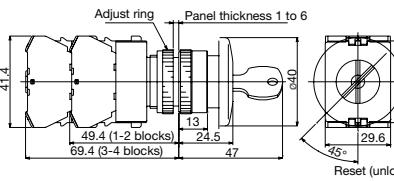
#### 40mm Push-Lock-Turn-Reset



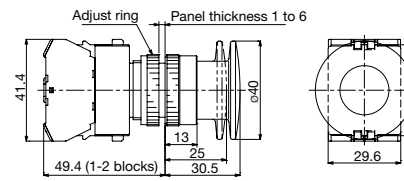
#### Keylock Push On/Off



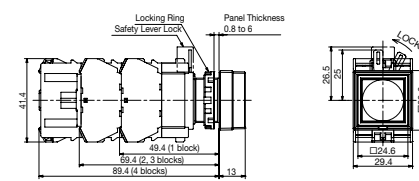
#### 40mm Pushlock Key reset



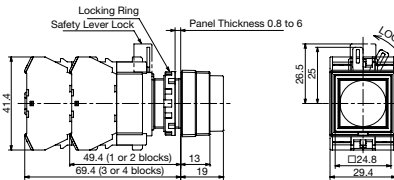
#### 40mm Push-Pull



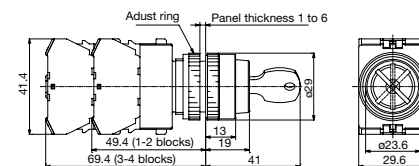
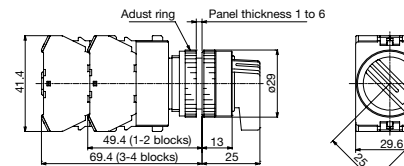
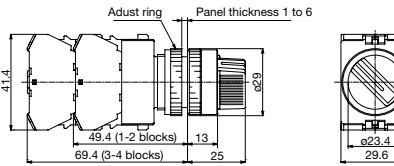
#### Square Flush



#### Square Extended



### Selector Switches

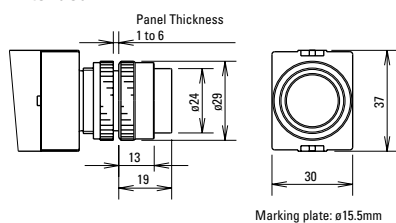




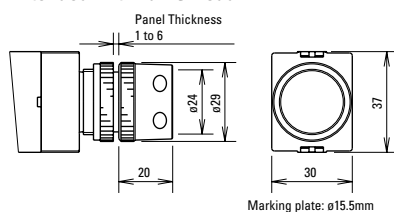
## Dimensions continued

## Illuminated Pushbuttons

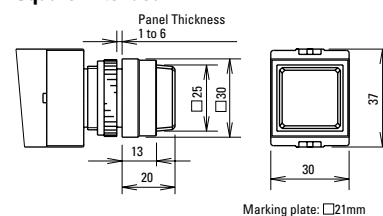
## Extended



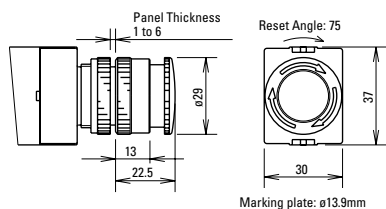
## Extended with Full Shroud



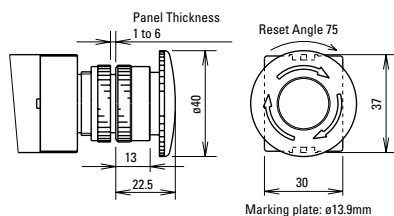
## Square Extended



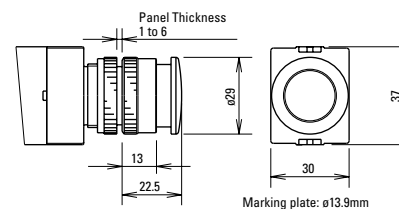
## 29mm Push-Turn-Reset



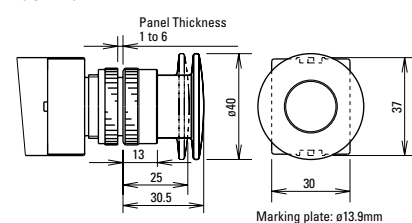
## 40mm Push-Turn-Reset



## Mushroom

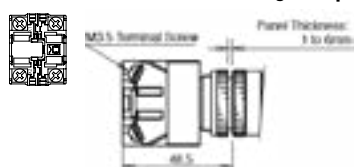


## Push-Pull

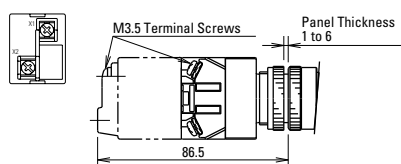


## Illuminated Selector Switches

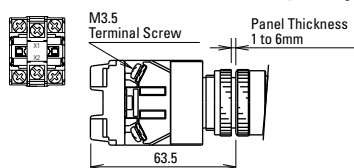
## 1 Contact Block with Full Voltage Adaptor



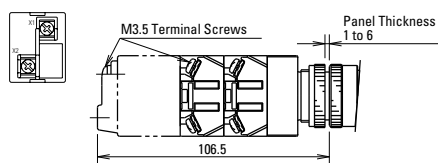
## Transformer (2 blocks)



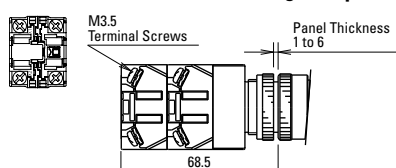
## 2 Contact Blocks with Full Voltage Adaptor



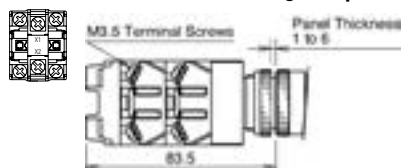
## Transformer (4 blocks)



## 3 Contact Blocks with Full Voltage Adaptor



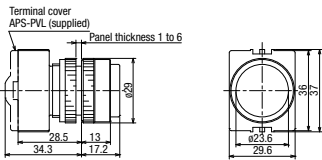
## 4 Contact Blocks with Full Voltage Adaptor



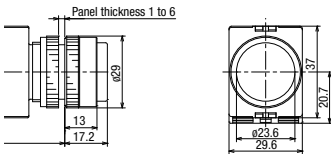
## Dimensions continued

### Pilot Lights

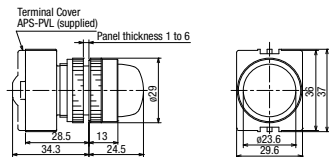
#### Round Flush APW1 Full Voltage



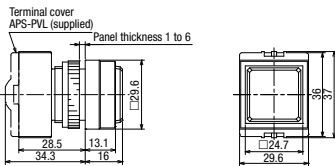
#### Round Flush Marking Type APW1B Full Voltage



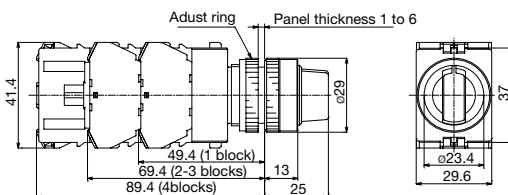
#### Dome APW2 Full Voltage



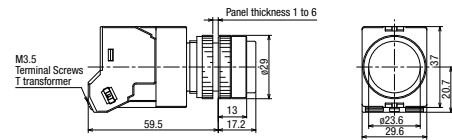
#### Square Flush Marking Type APQW1B Full Voltage



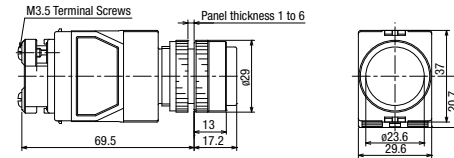
### Illuminated Selector Switches



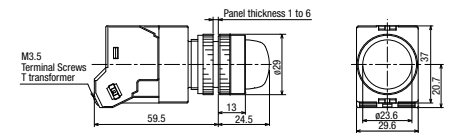
#### Round Flush APW1 Transformer



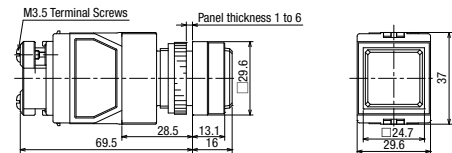
#### Round Flush Marking Type APW1B Transformer



#### Dome APW2 Transformer



#### Square Flush Marking Type APQW1B Transformer



## Dimensions continued

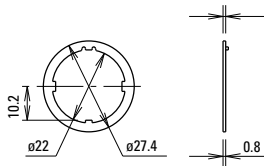
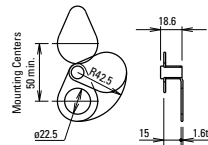
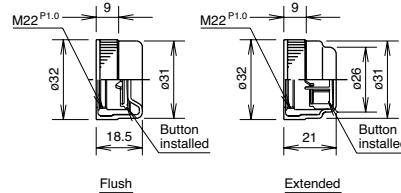
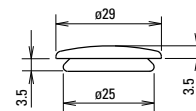
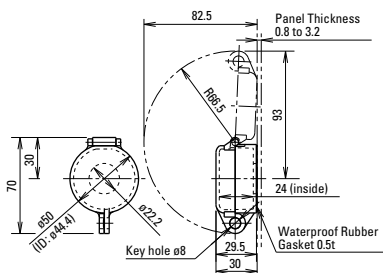
## Panel Cut-Out

| Diagram | Part                          | Dimension                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|---------|-------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|         | Pushbuttons                   | <ul style="list-style-type: none"> <li>The minimum mounting centers are applicable to switches with one layer of contact blocks (one to two contact blocks). When two layers of contact blocks are mounted, determine the minimum mounting centers in consideration of convenience for wiring.</li> <li>1*) ø40 mm mushroom button type: 40 mm minimum</li> <li>1*) 2-position, 3-position lever selector switch: 39 mm minimum</li> <li>1*) 4-position, 5-position lever selector switch: 50 mm minimum</li> <li>When high temperature is expected, take necessary measures such as securing sufficient mounting centers or using a cooling fan.</li> <li>The ☆3.2 <math>\begin{smallmatrix} +0.2 \\ 0 \end{smallmatrix}</math> mm recess is for preventing rotation and is not necessary when the nameplate or anti-rotation ring is not used.</li> </ul> |
|         | Pilot Light                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|         | Illuminated Pushbuttons       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|         | Selector Switches             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|         | Illuminated Selector Switches |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|         |                               | All dimensions in mm.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |



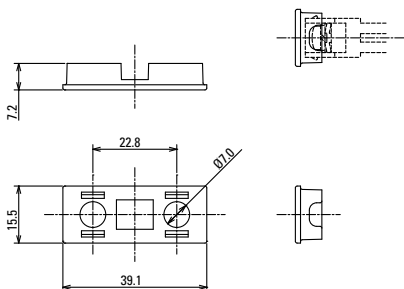
1. The  $\varnothing 0.137"$  ( $\varnothing 3.5$ mm) recess is necessary when either the nameplate or anti-rotation ring is used.
2. \*1)  $>1.404"$  (36mm) for 2- or 3-position.  
 $>1.95"$  (50mm) for 4- or 5-position.

## Accessory Dimensions

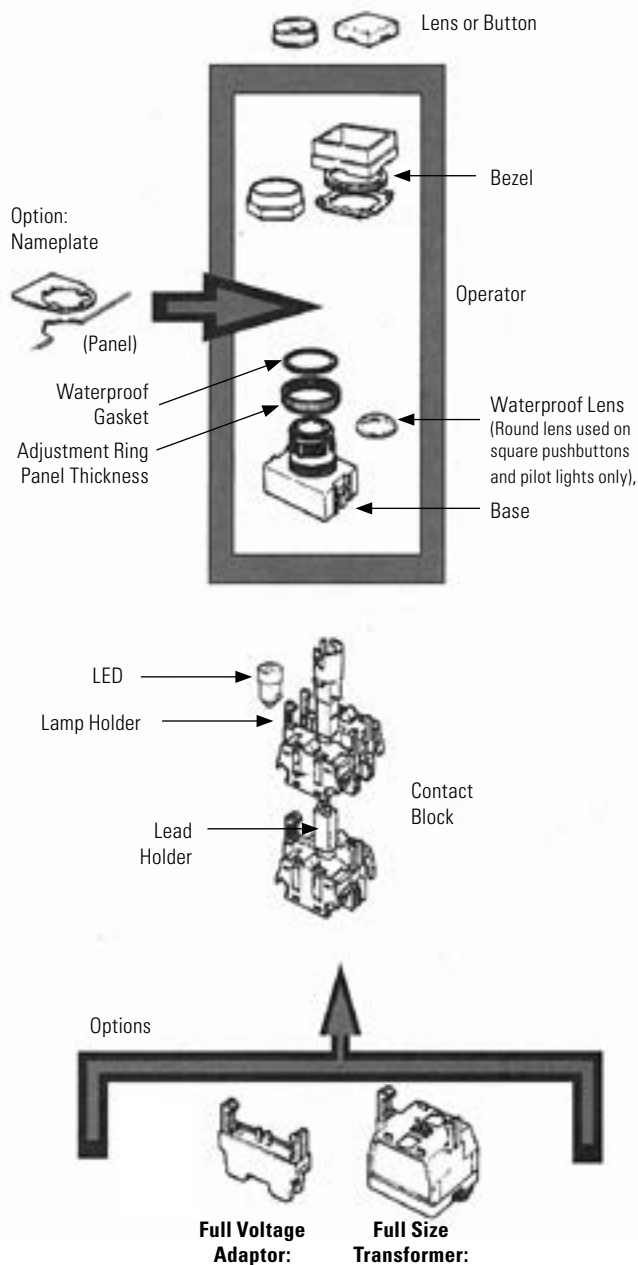
OGL-31  
Anti-Rotation RingOLW-C  
Metal Button GuardOCW-11  
Pushbutton Rubber BootOB-31  
Mounting Hole Rubber PlugHW9Z-KL1  
Lock-out AdaptorAW-RP1B  
Round Plastic BezelAW-QF1B  
Square Full ShroudAW-FP1B  
Round Plastic w/Full Shroud

## Finger-Safe Cover Dimensions

## APS-PVL



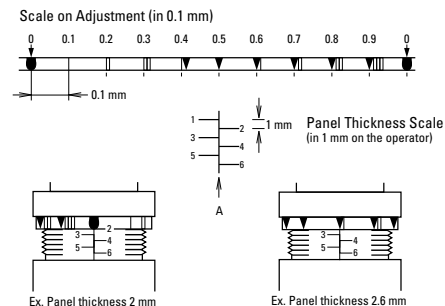
## Component Construction and General Instructions – TW Series



### Instructions for Switches and Pilot Devices

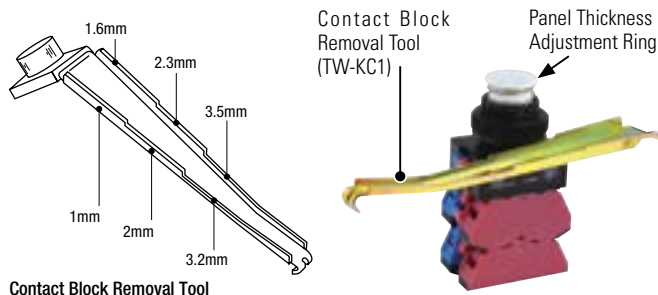
#### TW Series: Adjustment for Panel Thickness

The panel thickness ring provides adjustment from 0.04" to 0.24" (1 to 6mm) in 0.004" (0.1mm) increments. Rotate the ring until the markings around the periphery are aligned for the desired thickness, as shown below.



**Note:** When a nameplate or an anti-rotation ring is used, add 0.03" (0.8mm) to the panel thickness dimension.

An adjustment for panel thicknesses shown below can be made quickly by using the contact block remover tool.



## Instructions continued

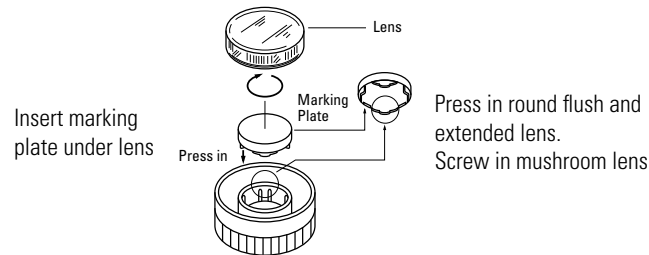
## Pilot Lights and Pushbuttons

IMPORTANT: Install the body of the TW control unit with the panel thickness scale facing up.

## Octagonal and Round Bezels

Octagonal and round bezels screw into the operator. Use a locking ring wrench (optional) for secure tightening and easy removal. Round flush and extended buttons snap onto the operator base. Mushroom buttons screw onto the operator base.

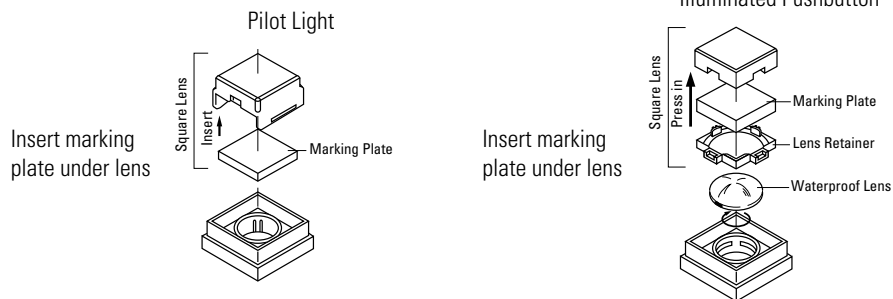
Every round lens can be used with or without legend markings. Engraving can be done on a white translucent plate which is placed in the lens, or clear mylar can be printed and placed in the lens.

Round  
Marking  
Unit

## Square Bezels

Square bezels are installed in a 3-step procedure. First install the base plate from the front. Then install the lock nut using the nut locking wrench (optional). Finally, install the square bezel, which snap-fits onto the base plate. Square buttons also snap onto the operator base.

Every square lens can be used with or without legend markings. Engraving can be done on a white translucent plate which is placed in the lens, or clear mylar can be printed and placed in the lens. Square units include a round waterproof lens which screws into the operator. The square outer lens snaps on.

Square  
Marking  
Units

To remove square lens from operator, place a screwdriver under the indentation on the side of the lens. To remove the marking plate, place a screwdriver under the indentation and lift out the plate. The lens retainer can be removed by pressing a 3/16" screwdriver into one of the recesses.



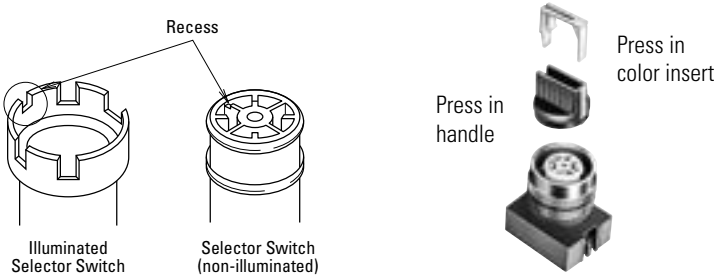
## Marking Plate Engraving Area

| Shape    | Engraving Area | Used With                      | Part Number |
|----------|----------------|--------------------------------|-------------|
| Round    | Ø 0.55" (14mm) | Illuminated pushbuttons        | ALW2B       |
|          | Ø 0.55" (14mm) | Pilot lights                   | APW2B       |
| Mushroom | Ø 0.55" (14mm) | Illuminated mushroom           | ALW3B       |
| Square   | □ 0.83" (21mm) | Square pilot lights            | APQW1B      |
| Square   | □ 0.83" (21mm) | Square illuminated pushbuttons | ALQW2B      |

Instructions, continued

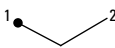
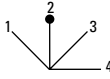
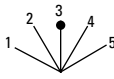
Selector Switches

The operator shaft of each unit has a recess to identify in which direction to install the handle. Align the handle with the recess. Press color insert (TW-HC1) into the handle and then press handle into the operator, as shown below.

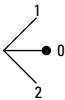


 Remove color insert before pulling out the handle.

Standard Operating Positions

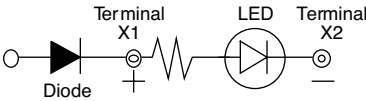
| 2-Postion, 90°                                                                    | 3-Postion, 45°                                                                    | 4-Postion, 45°                                                                    | 5-Postion, 30°                                                                      |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  |  |  |  |

Positions: Non-Illuminated 3-Position Operators

|                                                                                    |                                                                                    |                                                                                      |
|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
|  |  |  |
|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|

Installation of LED Illuminated Units

Transformers are recommended for use in areas subjected to inductive noise. When using full voltage types, install a protection diode as shown below. (Diode with DC power supply to protect against surges and noise.)



## Enclosures for XW, HW &amp; TW 22mm Switches and Pilot Devices

## Key features:

- Three compact sizes (mm): 76 x 76, 140 x 76 and 200 x 76
- Available in 1, 2, 3, 4 or 5 mounting hole configurations
- Easy installation: panel, wall or frame mountable
- Polycarbonate enclosure cover and base, stainless steel screws
- UL Listed, RoHS Compliant
- IP65 and Type 4X rated (when installed with IP65 or Type 4X unit)
- Class II electric shock protection (when installed with applicable unit)
- Ideal for high temperatures (-25 to +60°C) and corrosive environments



## Specifications

|                                       |                                                                                                                              |                               |
|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------|-------------------------------|
| Operating Conditions                  | Ambient temperature                                                                                                          | -25 to +60°C (no freezing)    |
|                                       | Relative humidity                                                                                                            | 45 to 85%RH (no condensation) |
|                                       | Storage temperature                                                                                                          | -40 to +80°C (no freezing)    |
|                                       | Degree of pollution                                                                                                          | 3                             |
| Degree of Protection                  | IP65 (when IP65 switches and pilot devices are installed)<br>Type 4X (when Type 4X switches and pilot devices are installed) |                               |
| Electric Shock Protection             | Class II (when class II switches and pilot devices are installed)                                                            |                               |
| Material                              | Cover and base                                                                                                               | Polycarbonate                 |
|                                       | Cover mounting screws                                                                                                        | Stainless steel               |
| Applicable Switches and Pilot Devices | HW, TW and XW series switches, pilot devices and accessories (see note below)                                                |                               |
| Weight (approx.)                      | 76mm type: 125g (FB1W-111Z)                                                                                                  |                               |
|                                       | 140mm type: 184g (FB2W-211Z)                                                                                                 |                               |
|                                       | 200mm type: 243g (FB3W-311Z)                                                                                                 |                               |



Choose switches, pilot devices and accessories that match the mounting hole centers, effective depth behind the cover, and the thickness of the cover where switches and pilot devices are installed (3 mm). Enclosures with 30 or 36mm mounting hole centers may limit the knob orientation of selector switches because the contact blocks can be mounted in one direction only on these mounting centers.

## Enclosure Part Numbers

| Size (mm)       | Description              | Part Number | Distance Between Hole Centers (mm) |
|-----------------|--------------------------|-------------|------------------------------------|
| 76 x 76 x 59.5  | Enclosure 1 hole, Yellow | FB1W-111Y   | —                                  |
|                 | Enclosure 1 hole, Beige  | FB1W-111Z   | —                                  |
| 140 x 76 x 59.5 | Enclosure 2 hole, Beige  | FB2W-211Z   | 50                                 |
|                 | Enclosure 3 hole, Beige  | FB2W-312Z   | 30                                 |
| 200 x 76 x 59.5 | Enclosure 3 hole, Beige  | FB3W-311Z   | 50                                 |
|                 | Enclosure 4 hole, Beige  | FB3W-413Z   | 36                                 |
|                 | Enclosure 5 hole, Beige  | FB3W-512Z   | 30                                 |



## Accessories

| Description         | Part Number |
|---------------------|-------------|
| Plug Adaptor 13.5mm | HW9Z-PG135  |
| Mounting Bracket    | FB9Z-PK1    |

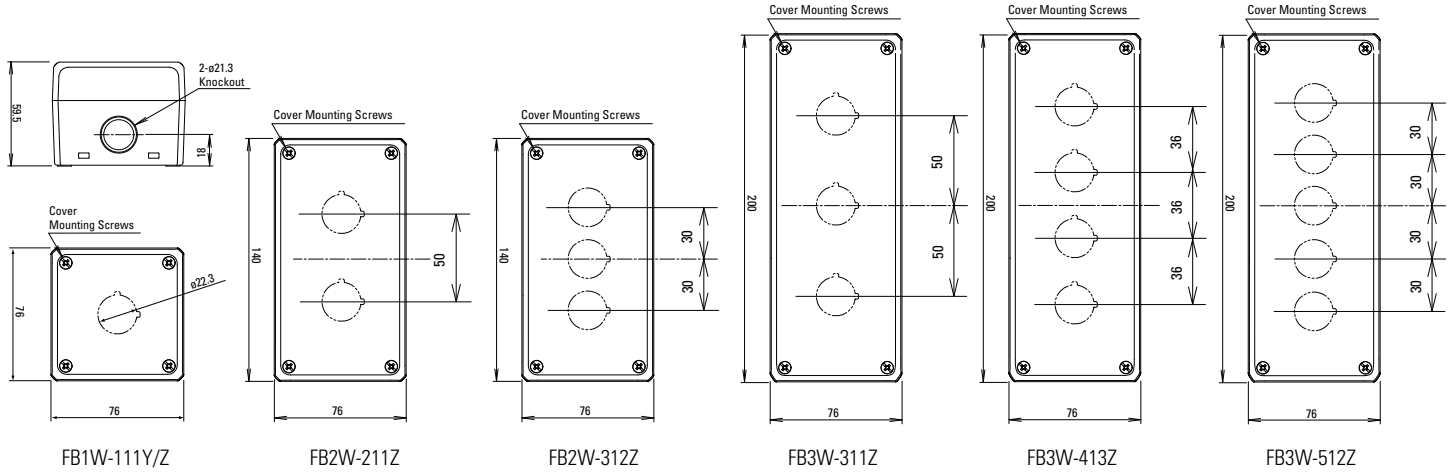


Connectors and nuts are not supplied with accessories.

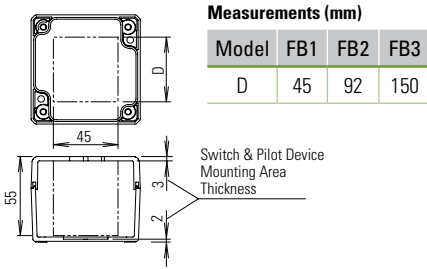
## Switch and Pilot Device Accessories

| Series            | Description                 | Part Number                               |
|-------------------|-----------------------------|-------------------------------------------|
| HW Series         | Nameplate                   | HWAM, HWAQ, HWAS, HWAV                    |
|                   | Marking plate for nameplate | HWNP                                      |
|                   | Anti-rotation ring          | HW9Z-RL                                   |
|                   | EMO switch guard            | HW9Z-KG1, HW9Z-KG2, HW9Z-KG3, HW9Z-KG4    |
|                   | Switch cover                | HW9Z-K1, HW9Z-K11                         |
|                   | Pushbutton clear boot       | OC-31, OC-32                              |
|                   | Padlock cover               | HW9Z-KL1                                  |
|                   | Nameplate                   | HWAV                                      |
| XW Series E-Stops | EMO switch guard            | HW9Z-KG1, HW9Z-KG2, HW9Z-KG3, HW9Z-KG4    |
|                   | Anti-rotation ring          | HW9Z-RL                                   |
| TW Series         | Nameplate                   | NWA, NWAQ, NWA-S-0, NWAL-0, NWAQL-0, NWAV |
|                   | Anti-rotation ring          | OGL-31                                    |
|                   | Metal button guard          | OLW-C                                     |
|                   | Pushbutton clear boot       | OC-31, OC-32                              |
|                   | Button cover                | OCW-11                                    |
|                   | Padlock cover               | HW9Z-KL1                                  |

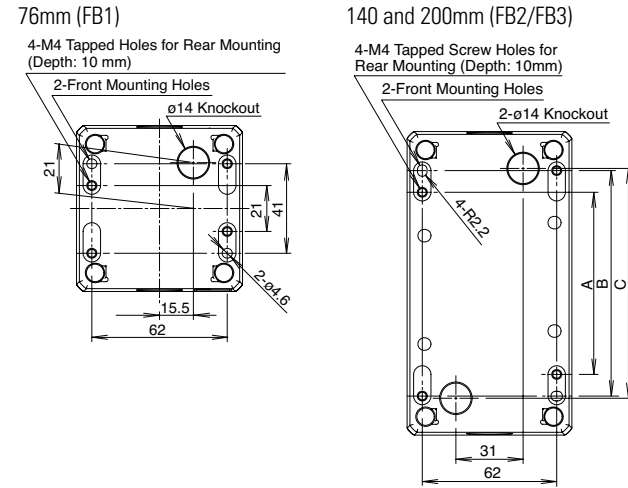
## External Dimensions (mm)



## Internal Dimensions (mm)



## External Back Dimensions (mm)

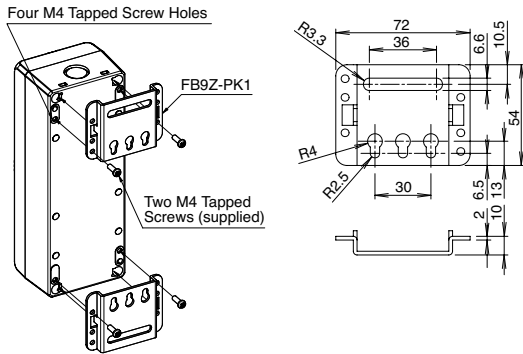


Measurements (mm)

| Model | FB2 | FB3 |
|-------|-----|-----|
| A     | 84  | 144 |
| B     | 104 | 164 |
| C     | 106 | 166 |

## Mounting

### FB9Z-PK1 Frame Mounting Adapter



## Mounting Hole Dimensions

| Model | FB1 | FB2                   | FB3                      | FB2/FB3               |
|-------|-----|-----------------------|--------------------------|-----------------------|
|       |     | 50mm Mounting Centers | 36/50mm Mounting Centers | 30mm Mounting Centers |
| Shape |     |                       |                          |                       |



## 30mm XN E-Stops

## Key features:

- Plastic bezel, metallic padlock and flush bezel available
- Install up to 20 padlocks (XN4E)
- ø40, ø44 or ø60mm Mushroom heads available
- IDEC's original "safe break action" ensures that the contacts stay open when the contact block is detached from the operator.
- Safety-lock mechanism (IEC60947-5-5, 6.2)
- 2-in-1: Push-to-lock, Pull/Turn-to-Reset
- Push-ON LED model allows E-Stops to be illuminated only when latched
- Direct Opening Action mechanism (IEC60947-5-5, 5.2, IEC60947-5-1, Annex K)
- Very short panel depth
- Degree of protection IP65 (IEC60529)
- RoHS compliant (EU directive 2002/95/EC).
- XN4E series complies with OSHA and ISO 12100-2:2003 standards
- UL, c-UL listed, EN compliant
- UL NISD category emergency type device (File# E305148)



## Specifications

|                                                        |                                                                                                                                                                   |                                                                                  |
|--------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| Applicable Standards                                   | IEC60947-5-1, EN60947-5-1, IEC60947-5-5, EN60947-5-5, UL508, UL991, CSA C22.2 No. 14                                                                              |                                                                                  |
| Operating Temperature                                  | Non-illuminated: -25 to +60°C (no freezing), Illuminated: -25 to +55°C (no freezing)                                                                              |                                                                                  |
| Operating Humidity                                     | 45 to 85% RH (no condensation)                                                                                                                                    |                                                                                  |
| Storage Temperature                                    | -45 to +80°C no freezing                                                                                                                                          |                                                                                  |
| Operating Force                                        | <b>XN1E, XN5E</b><br>Push-to-lock: 32N<br>Pull-to-reset: 21N<br>Turn-to-reset: 0.27 N·m                                                                           | <b>XN4E</b><br>Push-to-lock: 32N<br>Pull-to-reset: N/A<br>Turn-to-reset: 0.4 N·m |
| Minimum Force Required for Direct Opening Action       | 80N                                                                                                                                                               |                                                                                  |
| Min Operator Stroke Required for Direct Opening Action | 4mm                                                                                                                                                               |                                                                                  |
| Maximum Operator Stroke                                | 4.5mm                                                                                                                                                             |                                                                                  |
| Contact Resistance                                     | 50mΩ maximum (initial value)                                                                                                                                      |                                                                                  |
| Contact Material                                       | Gold plated silver                                                                                                                                                |                                                                                  |
| Insulation Resistance                                  | 100MΩ minimum (500V DC megger)                                                                                                                                    |                                                                                  |
| Impulse Withstand Voltage                              | 2.5kV                                                                                                                                                             |                                                                                  |
| Pollution Degree                                       | 3                                                                                                                                                                 |                                                                                  |
| Operation Frequency                                    | 900 operations/hour                                                                                                                                               |                                                                                  |
| Shock Resistance                                       | Operating extremes: 150m/s <sup>2</sup> (15G), Damage limits: 1000m/s <sup>2</sup> (100G)                                                                         |                                                                                  |
| Vibration Resistance                                   | Operating extremes: 10 to 500Hz, amplitude 0.35mm acceleration 50m/s <sup>2</sup><br>Damage limits: 10 to 500Hz, amplitude 0.35mm acceleration 50m/s <sup>2</sup> |                                                                                  |
| Mechanical Life                                        | 250,000 operations minimum                                                                                                                                        |                                                                                  |
| Electrical Life                                        | 100,000 operations minimum, (250,000 operations minimum @ 24V AC/DC, 100mA)                                                                                       |                                                                                  |
| Degree of Protection                                   | Operator: IP65 (IEC60529)<br>Terminal: IP20 (when XW9Z-VL2MF is installed)                                                                                        |                                                                                  |
| Terminal Style                                         | M3.0 screw terminal                                                                                                                                               |                                                                                  |
| Recommended Tightening Torque for Locking Ring         | 2.5N·m                                                                                                                                                            |                                                                                  |
| Wire Size                                              | 16 AWG max                                                                                                                                                        |                                                                                  |
| Weight                                                 | XN1E: Plastic bezel: 83g (ø40 mm), 93g (ø60 mm) 0.75 to 1.25 mm <sup>2</sup><br>XN5E: Flush bezel: 89g<br>XN4E: Padlock type: 120g                                |                                                                                  |

## Part Numbers

### XN1E Plastic Bezel Type E-Stops (push-pull/twist reset)

| Style                                                                                                | Operator Type                         | Main Contact | Monitor Contact | Part Number    |
|------------------------------------------------------------------------------------------------------|---------------------------------------|--------------|-----------------|----------------|
| <br>Non-Illuminated | 40mm Mushroom                         | 1NC          | 1NO             | XN1E-BV411MR   |
|                                                                                                      |                                       | 2NC          | –               | XN1E-BV402MR   |
|                                                                                                      |                                       | 2NC          | 2NO             | XN1E-BV422MR   |
|                                                                                                      |                                       | 3NC          | 1NO             | XN1E-BV413MR   |
|                                                                                                      | 60mm Mushroom                         | 4NC          | –               | XN1E-BV404MR   |
|                                                                                                      |                                       | 1NC          | 1NO             | XN1E-BV511MR   |
|                                                                                                      |                                       | 2NC          | –               | XN1E-BV502MR   |
|                                                                                                      |                                       | 2NC          | 2NO             | XN1E-BV522MR   |
| <br>Illuminated     | 40mm Mushroom LED (24V AC/DC)         | 3NC          | 1NO             | XN1E-BV513MR   |
|                                                                                                      |                                       | 4NC          | –               | XN1E-BV504MR   |
|                                                                                                      | 40mm Mushroom Push-ON LED (24V AC/DC) | 1NC          | 1NO             | XN1E-LV411Q4MR |
|                                                                                                      |                                       | 2NC          | –               | XN1E-LV402Q4MR |
|                                                                                                      |                                       | 2NC          | 2NO             | XN1E-LV422Q4MR |
|                                                                                                      |                                       | 3NC          | 1NO             | XN1E-LV413Q4MR |
|                                                                                                      |                                       | 4NC          | –               | XN1E-LV404Q4MR |
|                                                                                                      |                                       | 2NC          | 1NO             | XN1E-TV412Q4MR |

### XN4E Padlock Type E-Stops (push twist reset only)

| Style                                                                                                  | Operator Type                         | Main Contact | Monitor Contact | Part Number    |
|--------------------------------------------------------------------------------------------------------|---------------------------------------|--------------|-----------------|----------------|
| <br>Non-Illuminated | 44mm Mushroom                         | 1NC          | 1NO             | XN4E-BL411MR   |
|                                                                                                        |                                       | 2NC          | -               | XN4E-BL402MR   |
|                                                                                                        |                                       | 2NC          | 2NO             | XN4E-BL422MR   |
|                                                                                                        |                                       | 3NC          | 1NO             | XN4E-BL413MR   |
|                                                                                                        |                                       | 4NC          | -               | XN4E-BL404MR   |
| <br>Illuminated     | 44mm Mushroom LED (24V AC/DC)         | 1NC          | 1NO             | XN4E-LL411Q4MR |
|                                                                                                        |                                       | 2NC          | -               | XN4E-LL402Q4MR |
|                                                                                                        |                                       | 2NC          | 2NO             | XN4E-LL422Q4MR |
|                                                                                                        |                                       | 3NC          | 1NO             | XN4E-LL413Q4MR |
|                                                                                                        |                                       | 4NC          | -               | XN4E-LL404Q4MR |
|                                                                                                        | 44mm Mushroom Push-ON LED (24V AC/DC) | 2NC          | 1NO             | XN4E-TL412Q4MR |

### XN5E Flush Bezel Type E-Stops (push-pull/twist reset)

| Style                                                                                                  | Operator Type                         | Main Contact | Monitor Contact | Part Number    |
|--------------------------------------------------------------------------------------------------------|---------------------------------------|--------------|-----------------|----------------|
| <br>Non-Illuminated | 40mm Mushroom                         | 1NC          | 1NO             | XN5E-BV411MR   |
|                                                                                                        |                                       | 2NC          | -               | XN5E-BV402MR   |
|                                                                                                        |                                       | 2NC          | 2NO             | XN5E-BV422MR   |
|                                                                                                        |                                       | 3NC          | 1NO             | XN5E-BV413MR   |
|                                                                                                        |                                       | 4NC          | -               | XN5E-BV404MR   |
| <br>Illuminated     | 40mm Mushroom LED (24V AC/DC)         | 1NC          | 1NO             | XN5E-LV411Q4MR |
|                                                                                                        |                                       | 2NC          | -               | XN5E-LV402Q4MR |
|                                                                                                        |                                       | 2NC          | 2NO             | XN5E-LV422Q4MR |
|                                                                                                        |                                       | 3NC          | 1NO             | XN5E-LV413Q4MR |
|                                                                                                        |                                       | 4NC          | -               | XN5E-LV404Q4MR |
|                                                                                                        | 40mm Mushroom Push-ON LED (24V AC/DC) | 2NC          | 1NO             | XN5E-TV412Q4MR |

## Contact Ratings

| Rated Insulation Voltage (Ui) |                       |            |                        | 250V |       |      |
|-------------------------------|-----------------------|------------|------------------------|------|-------|------|
| Rated Current (Ith)           |                       |            |                        | 5A   |       |      |
| Rated Operating Voltage (Ue)  |                       |            |                        | 30V  | 125V  | 250V |
| Rated Operating Current       | Main Contacts (NC)    | AC 50/60Hz | Resistive Load (AC-12) | —    | 5A    | 3A   |
|                               |                       |            | Inductive Load (AC-15) | —    | 3A    | 1.5A |
|                               |                       | DC         | Resistive Load (DC-12) | 2A   | 0.4A  | 0.2A |
|                               |                       |            | Inductive Load (DC-13) | 1A   | 0.22A | 0.1A |
|                               | Monitor Contacts (NO) | AC 50/60Hz | Resistive Load (AC-12) | —    | 1.2A  | 0.6A |
|                               |                       |            | Inductive Load (AC-14) | —    | 0.6A  | 0.3A |
|                               |                       | DC         | Resistive Load (DC-12) | 2A   | 0.4A  | 0.2A |
|                               |                       |            | Inductive Load (DC-13) | 1A   | 0.22A | 0.1A |



1. Minimum applicable load: 5V AC/DC, 1mA (reference value).
2. The rated operating currents are measured at resistive/inductive load types specified in IEC 60947-5-1.

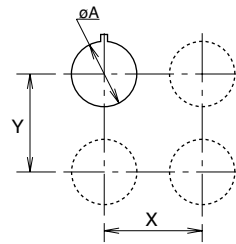
## Illuminated Unit LED Ratings

| Model | Operating Voltage | Current |
|-------|-------------------|---------|
| XN    | 24V AC/DC ±10%    | 15mA    |

## Depth Behind the Panel

| Model | Depth (mm) | Description                   |
|-------|------------|-------------------------------|
| XN1E  | 47.7       | 1 - 4 contacts, plastic bezel |
| XN5E  | 60.4       | 1 - 4 contacts, flush bezel   |
| XN4E  | 61.4       | 1 - 4 contacts, padlock       |

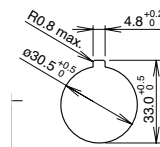
## Mounting Hole Layout



## Measurements

| Size       | øA                   | X & Y                                                                                 |
|------------|----------------------|---------------------------------------------------------------------------------------|
| XN1E, XN5E | 30.5 <sup>+0.5</sup> | 70mm min                                                                              |
| XN4E       | 30.5 <sup>+0.5</sup> | For XN4E, determine the values according to the size and number of padlocks and hasp. |

## Panel Cutout



## Part Numbers

# XN1E - L V 4 02 Q4 MR

## Bezel

- 1: Plastic Bezel
- 4: Padlock
- 5: Flush Bezel

## Illumination

XN1E, XN5E

BV: Non-Illuminated

LV: Illuminated LED

TV: Illuminated

Push-ON LED

XN4E

BL: Non-Illuminated

LL: Illuminated LED

TL: Illuminated

Push-ON LED

## Mushroom Size

4: ø40mm: XN1E, XN5E

ø44mm: XN4E

5: ø60mm

(XN1E non-illuminated only)

## Contact Configuration\*

11: 1NO - 1NC

02: 2NC

13: 1NO - 3NC

22: 2NO - 2NC

04: 4NC

12: 1NO-2NC (Push-ON LED only)

## Voltage Code

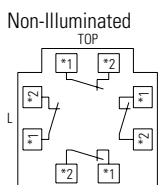
Blank: Non-Illuminated

Q4: 24V AC/DC (Illuminated & Push-ON LED type)

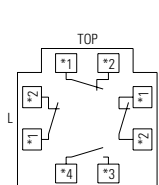
\*Contact IDEC for additional configurations.

## Terminal Arrangements (Bottom View)

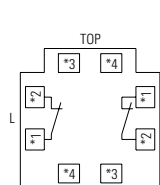
## 4NC



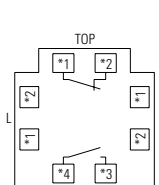
## 1NO-3NC



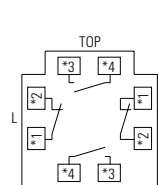
## 2NC



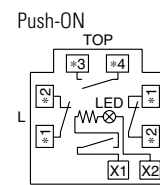
## 1NO-1NC



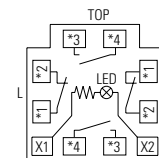
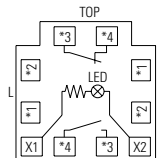
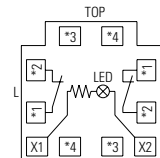
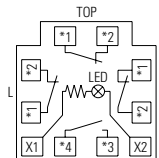
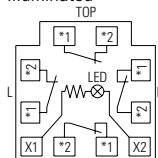
## 2NO-2NC



## 1NO-2NC

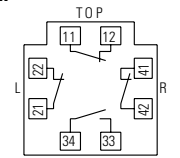


## Illuminated



## Terminal Marking Description

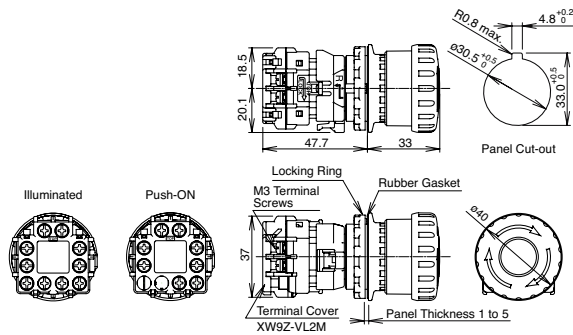
- Contact Type
  - 1-2: NC main contact
  - 3-4: NO monitor contact
- Contact Number (1-4)
  - Starting with the contact on TOP in a counterclockwise direction.
  - Note:
    - 1: contact on the TOP
    - 2: contact on the Left
    - 3: contact on the Bottom
    - 4: contact on the Right



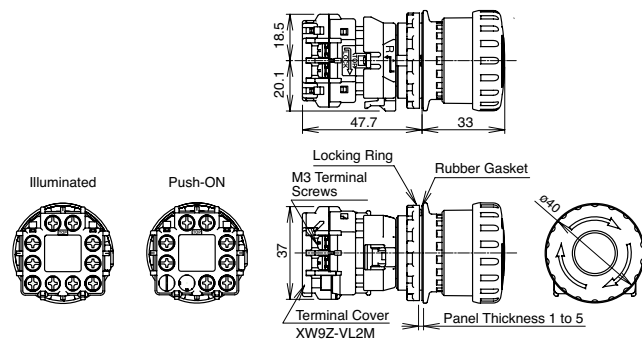
(Example: 1NO-3NC contact)

## Dimensions (mm)

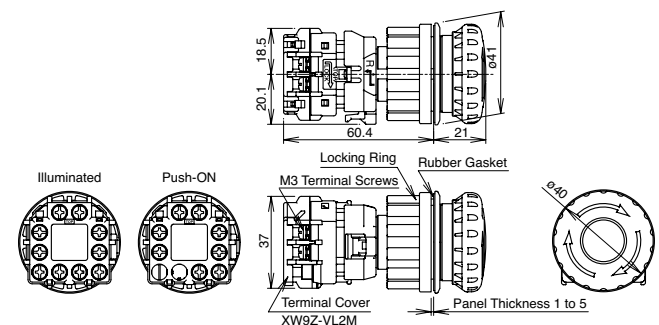
### XN1E Non-Illuminated (with terminal cover)



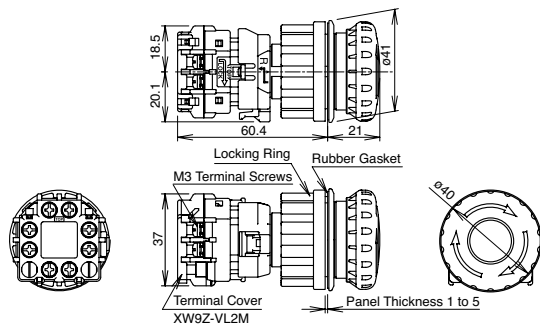
### XN1E Illuminated/Push-ON (with terminal cover)



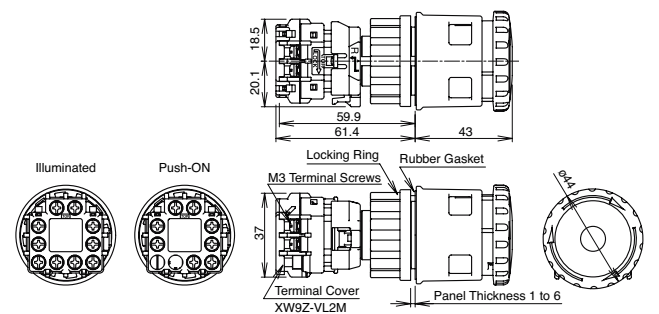
### XN5E Illuminated (with terminal cover)



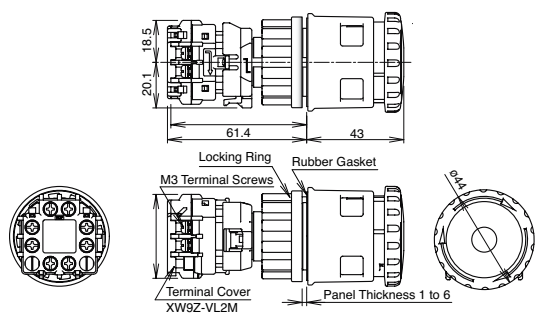
### XN5E Non-Illuminated (with terminal cover)



### XN4E Illuminated (with terminal cover)



### XN4E Non-Illuminated (with terminal cover)



## Nameplates

| Item | Part No. | Legend         | Mounting Panel Thickness     |
|------|----------|----------------|------------------------------|
|      | HNAV-0   | (blank)        | XN4E:<br>1.0 to 4.5 mm       |
|      | HNAV-27  | EMERGENCY STOP | XN1E, XN5E:<br>1.0 to 3.5 mm |

## Accessories

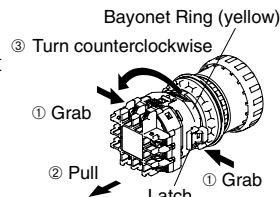
| Item | Description               | Part Number  |
|------|---------------------------|--------------|
|      | Locking Ring Wrench       | XN9Z-T1      |
|      | Locking Ring Twist Wrench | TWST-T1      |
|      | Lockout Hasp              | XN9Z-HASP421 |

| Item | Description                      | Part Number |
|------|----------------------------------|-------------|
|      | Terminal Cover for Contact Block | XW9Z-VL2M   |
|      | IP20 Fingersafe Cover            | XW9Z-VL2MF  |

## Operating Instructions

## Removing the Contact Block

First unlock the operator button. Grab the yellow bayonet ring ① and pull back the bayonet ring until the latch pin clicks ②, then turn the contact block counterclockwise and pull out ③.

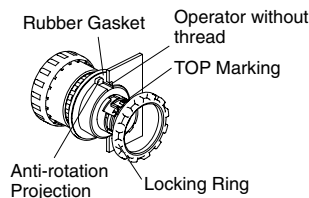


## Notes for removing the contact block

1. Do not attempt to remove the contact block while the operator is latched, otherwise the switch may be damaged.
2. When the contact block is removed, the monitor contact (NO contact) is closed.
3. While removing the contact block, do not use excessive force, otherwise the switch may be damaged.
4. An LED lamp is built into the contact block for illuminated pushbuttons. When removing the contact block, pull the contact block straight to prevent damage to the LED lamp. If excessive force is used, the LED lamp may be damaged and fail to light.

## Panel Mounting

Remove the locking ring from the operator and check that the rubber gasket is in place. Insert the operator from panel front into the panel hole. Face the side without thread on the operator with TOP marking upward, and tighten the locking ring using ring wrench XN9Z-T1 or TWST-T1 to a torque of 2.5 N·m maximum.



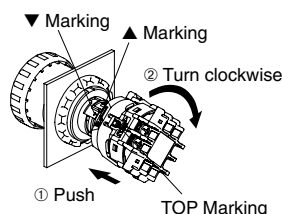
## When using a nameplate

When using a nameplate HNAV-□, break the projection from the nameplate using pliers.



## Installing the Contact Block

First unlock the operator button. Align the small ▼ marking on the edge of the operator with the small ▲ marking on the yellow bayonet ring. Hold the contact block, not the bayonet ring. Press the contact block onto the operator and turn the contact block clockwise until the bayonet ring clicks.



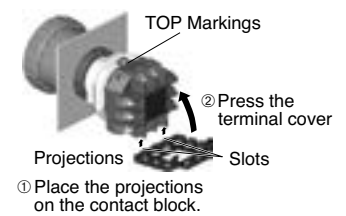
## Notes for installing the contact block

1. Do not attempt to install the contact block when the operator is latched, otherwise the switch may be damaged.
2. Make sure that the bayonet ring is in the locked position.

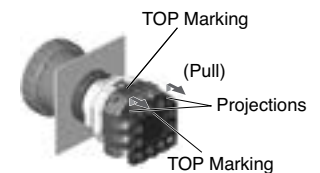
## Installing &amp; Removing Terminal Covers

## XW9Z-VL2M

To install the terminal cover, align the TOP marking on the terminal cover with the TOP marking on the contact block. Place the two projections on the bottom side of the contact block into the slots in the terminal cover. Press the terminal cover toward the contact block.

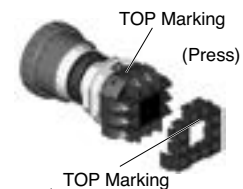


To remove the terminal cover, pull out the two latches on the top side of the terminal cover. Do not exert excessive force to the latches, otherwise the latches may break.



## IP20 Fingersafe Terminal Cover XW9Z-VL2MF

To install the IP20 fingersafe terminal cover, align the TOP marking on the cover with the TOP marking on the contact block, and press the cover toward the contact block.



1. Once installed, the XW9Z-VL2MF cannot be removed.
2. With the XW9Z-VL2MF installed, crimping terminals cannot be used.
3. The XW9Z-VL2MF cannot be installed after wiring.
4. Make sure that the XW9Z-VL2MF is securely installed. IP20 cannot be achieved when installed loosely, and electric shock may occur.

## Notes for Operation

When using the XN emergency stop switches in safety-related part of a control system, observe safety standards and regulations of the relevant country or region. Also be sure to perform a risk assessment before operation.

## Wiring

Tighten the M3 terminal screws to a torque of 0.6 to 1.0 N·m.

## Contact Bounce

When the button is reset by pulling or turning, the NC main contacts will bounce. When pressing the button, the NO monitor contacts will bounce.

When designing a control circuit, take the contact bounce time into consideration (reference value: 20 ms).

## LED Illuminated Switches

LED lamp is built into the contact block and cannot be replaced.

## Handling

Do not expose the switch to excessive shocks and vibrations, for example by operating the switch with tools. Otherwise the switch may be deformed or damaged, causing malfunction or operation failure.

## Screw Terminal Type

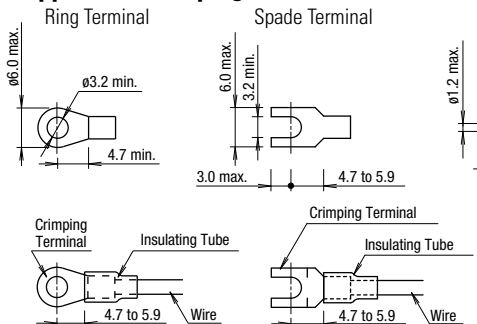
1. AWG18 to 16
2. Tighten the M3 terminal screw to a tightening torque of 0.6 to 1.0 N·m.

## Operating Instructions, continued

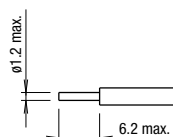
### Screw Terminal Type

1. Wire thickness: 0.75 to 1.25 mm<sup>2</sup> (AWG18 to 16)

#### Applicable Crimping Terminals



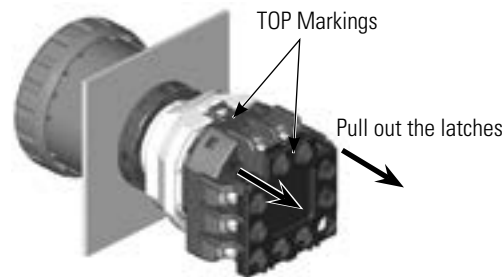
#### Solid Wire



**Be sure to install an insulating tube on the crimping terminal.**

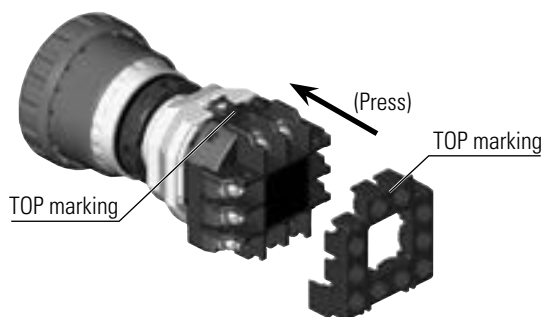
2. Tighten the M3 terminal screw to a tightening torque of 0.6 to 1.0 N·m.

To remove the terminal cover, pull out the two latches on the top side of the terminal cover. Do not exert excessive force to the latches, otherwise the latches may break.



### IP20 Protection Terminal Cover XW9Z-VL2MF

To install the IP20 protection cover, align the TOP marking on the cover with the TOP marking on the contact block, and press the cover toward the contact block.



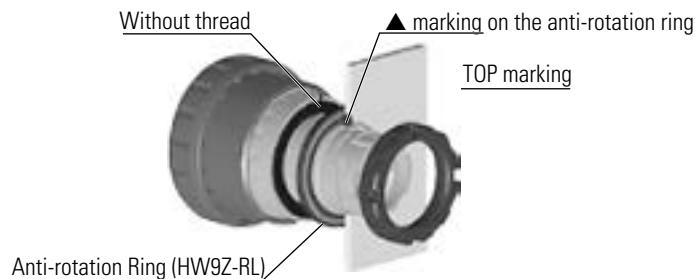
1. Once installed, the XW9Z-VL2MF cannot be removed.
2. The XW9Z-VL2MF cannot be installed after wiring. Use solid wires.
3. With the XW9Z-VL2MF installed, crimping terminals cannot be used. Use solid wires.
4. Make sure that the XW9Z-VL2MF is securely installed. IP20 cannot be achieved when installed loosely, and electric shocks may occur.

### LED Illuminated Switches

An LED lamp is built into the contact block and cannot be replaced.

#### Installing the Anti-rotation Ring HW9Z-RL

Align the side without thread on the operator with TOP marking, the small s mark marking on the anti-rotation ring, and the recess on the mounting panel.





## New TWND Series — Full Size NEMA Pushbuttons



### New! TWND Series: Heavy duty switches built to last

#### Key features:

- Variety of button sizes up to 2 9/16" (65mm)
- Rugged construction includes chrome plated zinc locking ring die cast zinc mounting thread
- LED illumination
- Transformer or full voltage
- Slow make, double break wiping contacts
- Modular construction for maximum flexibility
- Available assembled or as sub-components
- UL Type 4X, 13 and IP65 watertight/oiltight panel

The rugged series of TWND switches offers both variety and durability in an attractive design.

With button sizes up to 2 9/16" (65mm), chrome plated zinc locking rings, die cast zinc mounting threads, steel anti-rotation rings, and self cleaning contacts, the TWNDs are here to stay.

The TWND series also offers LED illumination in full voltage and transformer models.

Regardless of your switching needs, the NEW TWND series provides the kind of long lasting, industrial strength quality you've come to expect from IDEC.



UL Listed  
File No. E68961



File No. LR21451



R 50363567



Certificate No.  
2016010305902410

## Specifications

|                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|---------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Conforming to Standards                     | EN60947-5-1, UL508, CSA C22-2 No.14                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Approvals                                   | <b>CSA:</b> pushbuttons and selector switches: A600 pilot lights and illuminated pushbuttons, direct supply pilot lights and illuminated pushbuttons with integral transformer (100/110, 115, 120, 200/220, 230, 240, 380, 400/440, 480V)<br><b>UL:</b> pushbuttons and selector switches: A600 pilot lights and illuminated pushbuttons, direct supply pilot lights and illuminated pushbuttons with integral transformer (100/110, 115, 120, 200/220, 230, 240, 380, 400/440, 480V)<br><b>TÜV:</b> pushbuttons and selector switches: A600 pilot lights and illuminated pushbuttons, direct supply pilot lights and illuminated pushbuttons with integral transformer (100/110, 115, 120, 200/220, 230, 240, 380, 400/440, 480V) |
| Operating Temperature                       | Operation: -25 to +50°C (illuminated versions) -25 ~ +70°C non-illuminated<br>Storage: -40 to +80°C (without freezing) C-> °C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Vibration Resistance                        | 5 to 55Hz, 98m/sec <sup>2</sup> (10g) conforming to IEC60068-2-6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Shock Resistance                            | 980m/sec <sup>2</sup> (100g) conforming to IEC60068-2-27                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Electric Shock Protection                   | Class 2 conforming to IEC60664-1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Degree of Protection                        | IP65 (from front of the panel) (conforming to IEC60529)<br>UL Type 1, 2, 3, 3R, 3S, 4, 4X, 5, 12, 13 (conforming to NEMA ICS6-110)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Mechanical Life                             | Momentary pushbuttons: 5,000,000 (1800 operations per hour)<br>All other switches: 500,000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Pollution Degree (conforming to IEC60947-1) | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

## Mechanical-Electrical Specifications

|                                                            |                                                                                                                                                                              |                   |                              |                                    |                |            |
|------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------------------------|------------------------------------|----------------|------------|
| Rated Operational Characteristics                          | AC-15: A600                                                                                                                                                                  |                   |                              |                                    |                |            |
| Rated Insulation Voltage                                   | 600V                                                                                                                                                                         |                   |                              |                                    |                |            |
| Rated Impulse Withstanding Voltage<br>øDielectric Strength | Between live and dead metal parts<br>2.5kV AC, 1 minute                                                                                                                      |                   |                              |                                    |                |            |
| Rated Thermal Current                                      | 10 Amp                                                                                                                                                                       |                   |                              |                                    |                |            |
| Minimum Switching Capacity                                 | 5 mA at 3V AC/DC (applicable range may vary with operating conditions and load types)                                                                                        |                   |                              |                                    |                |            |
| Contact Operation                                          | Slow break NC or NO                                                                                                                                                          |                   |                              |                                    |                |            |
| Operating Force                                            | Flush and extended pushbuttons—with 1NO or 1NC contact: 6.2±2N (momentary), 9.0±1.5N<br>Additional contacts—1NO or 1NC: +3.0N                                                |                   |                              |                                    |                |            |
| Recommended Terminal Torque                                | Unit                                                                                                                                                                         | Wire              | Number of Wires              | Recommended Tightening Torque (Nm) | Terminal Screw |            |
|                                                            | HW-U Contact Block                                                                                                                                                           | Crimping Terminal | 2                            | 1.0 to 1.3                         | M3.5           |            |
|                                                            |                                                                                                                                                                              | Solid Wire        | ø0.5 to 1.6 mm (AWG14 to 22) | 2                                  |                | 1.0 to 1.3 |
|                                                            |                                                                                                                                                                              |                   | ø1.7 to 2.0 mm (AWG12)       | 1                                  |                | 1.2 to 1.3 |
|                                                            |                                                                                                                                                                              | Stranded Wire     | 0.3 to 2.0 mm² (AWG14 to 22) | 2                                  |                | 1.0 to 1.3 |
|                                                            |                                                                                                                                                                              |                   | 2.1 to 3.5 mm² (AWG12)       | 1                                  |                | 1.2 to 1.3 |
|                                                            | Illuminated Unit (*1)                                                                                                                                                        | Crimping Terminal | 2                            | 1.0 to 1.3                         | M3.5           |            |
|                                                            |                                                                                                                                                                              | Solid Wire        | ø0.5 to 1.6 mm (AWG14 to 22) |                                    |                |            |
|                                                            |                                                                                                                                                                              | Stranded Wire     | 0.3 to 2.0 mm (AWG14 to 22)  |                                    |                |            |
| Applicable Wire Size                                       | Pilot Light                                                                                                                                                                  | Crimping Terminal |                              | 0.6 to 1.0 (M3.0)                  |                |            |
|                                                            |                                                                                                                                                                              | Solid Wire        | ø0.5 to 1.6 mm (AWG14 to 22) |                                    |                |            |
|                                                            |                                                                                                                                                                              | Stranded Wire     | ø0.3 to 2.0 mm (AWG14 to 22) | 1.0 to 1.3 (M3.5)                  |                |            |
|                                                            |  1. * refers to the lamp terminals of the illuminated push buttons and selector switches. |                   |                              |                                    |                |            |
| Contact Resistance                                         | Initial contact resistance of 50mΩ or less                                                                                                                                   |                   |                              |                                    |                |            |
| Contact Gap                                                | 4mm (NO and NC)<br>2mm (NO-EM and NC-LB)                                                                                                                                     |                   |                              |                                    |                |            |
| LED Ratings                                                | LEDs: 6V: 8mA, 12V: 11mA, 24V: 11mA, 120V: 8.8mA, 240V: 8.6mA                                                                                                                |                   |                              |                                    |                |            |
| Contact Material                                           | Silver                                                                                                                                                                       |                   |                              |                                    |                |            |

## Contact Ratings

|                                                       |             |                                                      |              |     |     |      |      |      |
|-------------------------------------------------------|-------------|------------------------------------------------------|--------------|-----|-----|------|------|------|
| Contact Ratings by Utilization Category IEC 60947-5-1 |             |                                                      | AC-15 (A600) |     |     |      |      |      |
|                                                       |             |                                                      | DC-13 (P600) |     |     |      |      |      |
| Contact Ratings by Utilization Category               |             |                                                      |              |     |     |      |      |      |
| Operational Voltage                                   |             |                                                      | 24V          | 48V | 50V | 110V | 220V | 440V |
| Operation Current                                     | AC 50/60 Hz | AC-12 Control of resistive loads & solid state loads | 10A          | —   | 10A | 10A  | 6A   | 2A   |
|                                                       |             | AC-15 Control of electromagnetic loads (> 72VA)      | 10A          | —   | 7A  | 5A   | 3A   | 1A   |
|                                                       | DC          | DC-12 Control of resistive loads & solid state loads | 10A          | 5A  | —   | 2.2A | 1.1A | —    |
|                                                       |             | DC-13 Control of electromagnets                      | 5A           | 2A  | —   | 1.1A | 0.6A | —    |



Non-Illuminated Pushbuttons (Assembled)



**Assembled Pushbuttons**

A B ( ) D 1 10 NU R

**Function**

B: Momentary  
O: Maintained  
V: Pushlock Turn Reset  
Y: Push-Pull

**Bezel Shape**

Blank: Octagonal  
F: Full Shroud  
G: Mushroom Shroud  
P: Neoprene Boot

**Series Designation**

D: TWND Series

**Button Color**

B: Black    G: Green    W: White  
R: Red    S: Blue    Y: Yellow

**Contact Arrangement**

10: 1NO    01: 1NC  
20: 2NO    02: 2NC  
11: 1NO-1NC    22: 2NO-2NC

**Button Shape**

1: Flush  
2: Extended  
3: Mushroom ø 40mm  
4: Jumbo Mushroom ø 65mm

1. Use only when interpreting part numbers. Do not use for developing part numbers.  
2. Custom contact configurations available, contact IDEC for details.

## Non-Illuminated Pushbuttons (Assembled)

### Non-Illuminated Pushbuttons

| Style                                          | Contacts                            | Momentary                                                          | Maintained                                                         |
|------------------------------------------------|-------------------------------------|--------------------------------------------------------------------|--------------------------------------------------------------------|
| Flush                                          | 1NO<br>1NC<br>1NO-1NC<br>2NO<br>2NC | ABD110NU①<br>ABD101NU①<br>ABD111NU①<br>ABD120NU①<br>ABD102NU①      | AOD110NU①<br>AOD101NU①<br>AOD111NU①<br>AOD120NU①<br>AOD102NU①      |
| Extended                                       | 1NO<br>1NC<br>1NO-1NC<br>2NO<br>2NC | ABD210NU①<br>ABD201NU①<br>ABD211NU①<br>ABD220NU①<br>ABD202NU①      | AOD210NU①<br>AOD201NU①<br>AOD211NU①<br>AOD220NU①<br>AOD202NU①      |
| Extended with Neoprene Boot*                   | 1NO<br>1NC<br>1NO-1NC<br>2NO<br>2NC | ABPD210NU①<br>ABPD201NU①<br>ABPD211NU①<br>ABPD220NU①<br>ABPD202NU① | AOPD210NU①<br>AOPD201NU①<br>AOPD211NU①<br>AOPD220NU①<br>AOPD202NU① |
| Recessed                                       | 1NO<br>1NC<br>1NO-1NC<br>2NO<br>2NC | ABFD110NU①<br>ABFD101NU①<br>ABFD111NU①<br>ABFD120NU①<br>ABFD102NU① | AOFD110NU①<br>AOFD101NU①<br>AOFD111NU①<br>AOFD120NU①<br>AOFD102NU① |
| Extended with Full Shroud                      | 1NO<br>1NC<br>1NO-1NC<br>2NO<br>2NC | ABFD210NU①<br>ABFD201NU①<br>ABFD211NU①<br>ABFD220NU①<br>ABFD202NU① | AOFD210NU①<br>AOFD201NU①<br>AOFD211NU①<br>AOFD220NU①<br>AOFD202NU① |
| ø 40mm Mushroom Head                           | 1NO<br>1NC<br>1NO-1NC<br>2NO<br>2NC | ABD310NU①<br>ABD301NU①<br>ABD311NU①<br>ABD320NU①<br>ABD302NU①      | AOD310NU①<br>AOD301NU①<br>AOD311NU①<br>AOD320NU①<br>AOD302NU①      |
| ø 40mm Mushroom Head with Full Shroud          | 1NO<br>1NC<br>1NO-1NC<br>2NO<br>2NC | ABGD310NU①<br>ABGD301NU①<br>ABGD311NU①<br>ABGD320NU①<br>ABGD302NU① | AOGD310NU①<br>AOGD301NU①<br>AOGD311NU①<br>AOGD320NU①<br>AOGD302NU① |
| ø 65mm Jumbo Mushroom Head                     | 1NO<br>1NC<br>1NO-1NC<br>2NO<br>2NC | ABD410NU①<br>ABD401NU①<br>ABD411NU①<br>ABD420NU①<br>ABD402NU①      | AOD410NU①<br>AOD401NU①<br>AOD411NU①<br>AOD420NU①<br>AOD402NU①      |
| ø 65mm Jumbo Mushroom Head with Shallow Shroud | 1NO<br>1NC<br>1NO-1NC<br>2NO<br>2NC | ABGD410NU①<br>ABGD401NU①<br>ABGD411NU①<br>ABGD420NU①<br>ABGD402NU① | AOGD410NU①<br>AOGD401NU①<br>AOGD411NU①<br>AOGD420NU①<br>AOGD402NU① |
| ø 65mm Jumbo Mushroom Head With Deep Shroud    | 1NO<br>1NC<br>1NO-1NC<br>2NO<br>2NC | ABFD410NU①<br>ABFD401NU①<br>ABFD411NU①<br>ABFD420NU①<br>ABFD402NU① | AOFD410NU①<br>AOFD401NU①<br>AOFD411NU①<br>AOFD420NU①<br>AOFD402NU① |

### ① Button Color Codes

| Color  | Code |
|--------|------|
| Black  | B    |
| Green  | G    |
| Red    | R    |
| Blue   | S    |
| Yellow | Y    |
| White  | W    |



- 65mm Jumbo mushroom not available in white.
- Neoprene boot is not available in blue or white.



- In place of ①, specify the Button Color Code.
- For sub-assembly part numbers, see next page.
- \*Neoprene boot available only in Black (B), Green (G), Red (R) and Yellow (Y).

## Non-Illuminated Pushbuttons (Sub-Assembled)



## Operators

| Style                                     |  | Part Number |             |
|-------------------------------------------|--|-------------|-------------|
|                                           |  | Momentary   | Maintained  |
| Flush/Extended                            |  | ABD1200T8   | AOD1200T8   |
| Extended with Full Shroud                 |  | ALFD2300T8  | AOLFD2300T8 |
| ø 40mm Mushroom/ø 65mm Jumbo Mushroom     |  | ABD3400T8   | AOD3400T8   |
| ø 40mm Mushroom with Full Shroud          |  | ABGD-300T   | AOGD-300T   |
| ø 65mm Jumbo Mushroom with Shallow Shroud |  | ABGD-400T   | AOGD-400T   |
| ø 65mm Jumbo Mushroom with Deep Shroud    |  | ABFD-400T   | AOFD-400T   |

## Buttons and Lenses

| Style                 | Part Number |
|-----------------------|-------------|
| Flush                 | ABD1BN-①    |
| Extended              | ABD2BN-①    |
| ø 40mm Mushroom       | ABD3BN-①    |
| ø 65mm Jumbo Mushroom | ABD4BN-①    |



In place of ①, specify the Button Color Code. (See table previous page)

## Contact Blocks

| Style             |  | Part Number                        |                                    |
|-------------------|--|------------------------------------|------------------------------------|
|                   |  | 1NO                                | 1NC                                |
| All Control Units |  | HW-U10-F<br>HW-U10R-F (early make) | HW-U01-F<br>HW-U01R-F (late break) |
| Dummy Block       |  | HW-DB                              |                                    |



- Dummy blocks (no contacts) are used with an odd number of contact blocks.
- Combining HW-U10R-F and HW-U01R-F result in overlapping contacts (remain on, or closed, when switch is moved between two positions).

Stop Switches (Assembled)



Assembled Stop Switches

|                             | A | V                                      | (L)                           | D              | 3                | 22 | 11 | D | NU | R |                                                                            |
|-----------------------------|---|----------------------------------------|-------------------------------|----------------|------------------|----|----|---|----|---|----------------------------------------------------------------------------|
| <b>Function</b>             |   | V: Pushlock Turn Reset<br>Y: Push-Pull |                               |                |                  |    |    |   |    |   | <b>Button/Lens Color Code</b>                                              |
| <b>Illumination</b>         |   |                                        | Blank: None<br>L: Illuminated |                |                  |    |    |   |    |   | A: Amber<br>G: Green<br>R: Red<br>S: Blue<br>W: White<br>Y: Yellow         |
| <b>Series Designation</b>   |   |                                        |                               | D: TWND Series |                  |    |    |   |    |   | (illuminated units only)<br>D: LED                                         |
| <b>Button/Lens Size</b>     |   |                                        |                               |                | 3: 40mm Mushroom |    |    |   |    |   | <b>Contact Arrangement</b>                                                 |
| <b>Illumination Circuit</b> |   |                                        |                               |                |                  |    |    |   |    |   | 10: 1NO      01: 1NC<br>20: 2NO      02: 2NC<br>11: 1NO-1NC    22: 2NO-2NC |

1. Use only when interpreting part numbers. Do not use for developing part numbers.  
2. Custom contact configurations available, contact IDEC for details.

## Stop Switches (Assembled)

## Stop Switches

| Style                                                                                                                       | Contacts                            | Part Number                                                        |
|-----------------------------------------------------------------------------------------------------------------------------|-------------------------------------|--------------------------------------------------------------------|
| ø 40mm Pushlock Turn Reset<br>             | 1NO<br>1NC<br>1NO-1NC<br>2NO<br>2NC | AVD310NUR*<br>AVD301NUR*<br>AVD311NUR*<br>AVD320NUR*<br>AVD302NUR* |
| ø 40mm Illuminated Pushlock Turn Reset<br> | 1NO-1NC<br>2NO<br>2NC               | AVLD3③11DNUR*<br>AVLD3③20DNUR*<br>AVLD3③02DNUR*                    |
| ø 40mm Push-Pull<br>                       | 1NO<br>1NC<br>1NO-1NC<br>2NO<br>2NC | AYD310NU①<br>AYD301NU①<br>AYD311NU①<br>AYD320NU①<br>AYD302NU①      |
| ø 40mm Illuminated Push-Pull<br>          | 1NO-1NC<br>2NO<br>2NC               | AYLD3③11DNU② **<br>AYLD3③20DNU② **<br>AYLD3③02DNU② **              |
|                                                                                                                             | 1NO-1NC<br>2NO<br>2NC               | AYLD3④11DNU② **<br>AYLD3④20DNU② **<br>AYLD3④02DNU② **              |

## ① Button Color Codes

| Color  | Code |
|--------|------|
| Black  | B    |
| Green  | G    |
| Red    | R    |
| Blue   | S    |
| Yellow | Y    |

## ② Lens Color Codes

| Color  | Code |
|--------|------|
| Amber  | A    |
| Green  | G    |
| Red    | R    |
| Blue   | S    |
| White  | W    |
| Yellow | Y    |

## ③ Full Voltage Codes

| Voltage   | Code |
|-----------|------|
| 6V AC/DC  | 66   |
| 12V AC/DC | 11   |
| 24V AC/DC | 22   |
| 120V AC   | QH2  |
| 240V AC   | QM4  |

## ④ Transformer Voltage Codes

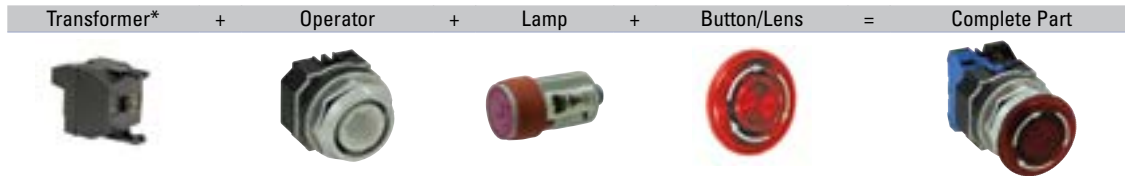
| Voltage | Code |
|---------|------|
| 120VAC  | 126  |
| 240VAC  | 246  |
| 480VAC  | 486  |



Transformers step down to 6V.

1. In place of ①, specify the button color code.
2. In place of ②, specify the lens color code.
3. In place of ③, specify the Full Voltage (lamp voltage) Code.
4. \* Only available in red.
5. In place of ④, specify the transformer voltage code.
6. \*\*Not available in blue.
7. For sub-assembly part numbers, see next page.
8. For nameplates and accessories, see page 767 and page 765.
9. For dimensions, see page 770.

## Stop Switches (Sub-Assembled)



\* Not required for full voltage units.

### Operators

| Style                                                     |  | Part Number |
|-----------------------------------------------------------|--|-------------|
| ø40mm Illuminated and Non-illuminated Pushlock Turn Reset |  | AVD000T8    |
| ø 40mm Illuminated and Non-illuminated Push-Pull          |  | AYD000T8    |

### Buttons and Lenses

| Style                                                                    |        | Part Number |
|--------------------------------------------------------------------------|--------|-------------|
| Button for Pushlock Turn Reset Stop Switches (ø40mm, red only)           |        | AVN3B-R     |
| Lens for Illuminated Pushlock Turn Reset Stop Switches (ø40mm, red only) |        | AVLN3LU-R   |
| Button for Push-Pull Stop Switches (ø40mm)                               |        | AYD3BN-①    |
| Lens for Illuminated Push-Pull Stop Switches (ø40mm)                     | 2 pos* | AYLD3L-②    |

1. In place of ①, specify the Button Color Code. (See table below)
2. In place of ②, specify the LED Color Code.
3. \*Not available in blue.

### Lamp Circuit Components

| Style                | Application                                                   | Part Number |
|----------------------|---------------------------------------------------------------|-------------|
| Long Lamp Holder<br> | <b>Used with</b> Full-size Transformer and two contact blocks | TW-LH2      |
|                      | <b>Used with</b> Full Voltage Adaptor and two contact blocks  |             |
| Lead Holder<br>      | <b>Used with</b> TW-LH2 holder when using four contact blocks | HW-LH3      |

### Lamps

| Style   | Voltage   | Part Number |
|---------|-----------|-------------|
| LED<br> | 6V AC/DC  | LSTD-6③     |
|         | 12V AC/DC | LSTD-1③     |
|         | 24V AC/DC | LSTD-2③     |
|         | 120V AC   | LSTD-H2③    |
|         | 240V AC   | LSTD-M4③    |



1. In place of ③, specify the LED color code.
2. The LED contains a current-limiting resistor and a protection diode.

### ① Button Color Codes

| Color  | Code |
|--------|------|
| Black  | B    |
| Green  | G    |
| Red    | R    |
| Blue   | S    |
| Yellow | Y    |

### ② Lens Color Codes

| Color | Code |
|-------|------|
| Amber | A    |
| Green | G    |
| Red   | R    |
| Blue  | S    |
| White | W    |

### ③ LED Color Codes

| Color | Code |
|-------|------|
| Amber | A    |
| Green | G    |
| Red   | R    |
| Blue  | S    |
| White | W    |

### Contact Blocks

| Style                 |  | Part Number            |                        |
|-----------------------|--|------------------------|------------------------|
|                       |  | 1NO                    | 1NC                    |
| All Control Units<br> |  | HW-U10-F               | HW-U01-F               |
|                       |  | HW-U10R-F (early make) | HW-U01R-F (late break) |
| Dummy Block<br>       |  | HW-DB                  |                        |



1. Dummy blocks (no contacts) are used with an odd number of contact blocks.
2. Combining HW-U10R-F and HW-U01R-F result in overlapping contacts.

### Transformers

| Style | Primary Voltage (50/60Hz) | Part Number |
|-------|---------------------------|-------------|
|       | 120V AC                   | TW-F126B    |
|       | 240V AC                   | TW-F246B    |
|       | 480V AC                   | HW-L486     |



6V secondary voltage (uses 6V LED).

### Full Voltage Modules

| Style                                     |                                       | Description | Part Number |
|-------------------------------------------|---------------------------------------|-------------|-------------|
| Dummy Block with Full Voltage Adaptor<br> | For use with odd number of contacts.  | Finger-Safe | HW-DA1FBN   |
| Full Voltage Adaptor<br>                  | For use with even number of contacts. | Finger-Safe | TW-DA1FB    |



All Transformers step down to 6V (use 6V lamp).

## Pilot Lights (Assembled)



## Assembled Pilot Lights

|                                            |          |          |          |          |            |          |           |          |                        |
|--------------------------------------------|----------|----------|----------|----------|------------|----------|-----------|----------|------------------------|
| <b>Function</b>                            | <b>A</b> | <b>P</b> | <b>D</b> | <b>1</b> | <b>126</b> | <b>D</b> | <b>NU</b> | <b>R</b> | <b>Lens Color Code</b> |
| P: Pilot Light                             |          |          |          |          |            |          |           |          | A: Amber               |
| <b>Series Designation</b>                  |          |          |          |          |            |          |           |          | G: Green               |
| D: TWND Series                             |          |          |          |          |            |          |           |          | R: Red                 |
| <b>Lens Shape</b>                          |          |          |          |          |            |          |           |          | S: Blue                |
| 1: Dome                                    |          |          |          |          |            |          |           |          | W: White               |
| <b>Rated Operational Voltage (Primary)</b> |          |          |          |          |            |          |           |          | Y: Yellow              |
| Transformer Type                           |          |          |          |          |            |          |           |          | D: LED                 |
| 126: 120V AC                               |          |          |          |          |            |          |           |          |                        |
| 246: 240V AC                               |          |          |          |          |            |          |           |          |                        |
| 486: 480V AC                               |          |          |          |          |            |          |           |          |                        |
| Full Voltage Type                          |          |          |          |          |            |          |           |          |                        |
| 66: 6VAC/DC                                |          |          |          |          |            |          |           |          |                        |
| 11: 12VAC/DC                               |          |          |          |          |            |          |           |          |                        |
| 22: 24VAC/DC                               |          |          |          |          |            |          |           |          |                        |
| QH2: 120VAC                                |          |          |          |          |            |          |           |          |                        |
| QM4: 240VAC                                |          |          |          |          |            |          |           |          |                        |



Use only when interpreting part numbers. Do not use for developing part numbers.

## LED Pilot Lights

| Style             | Operating Voltage             | Part Number                               |
|-------------------|-------------------------------|-------------------------------------------|
|                   |                               | LED                                       |
| Transformer Dome  | 120V AC<br>240V AC<br>480V AC | APD1126DNU②<br>APD1246DNU②<br>APD1486DNU② |
| Full Voltage Dome | —                             | APD1③DNU②                                 |



1. In place of ②, specify the Lens/LED Color Code.
2. In place of ③, specify the Full Voltage Code (LED voltage).
3. Yellow pilot light comes with white LED.

## ② Lens Color Codes

| Color  | Code |
|--------|------|
| Amber  | A    |
| Green  | G    |
| Red    | R    |
| Blue   | S    |
| White  | W    |
| Yellow | Y    |

## ③ Full Voltage Codes

| Voltage   | Code |
|-----------|------|
| 6V AC/DC  | 66   |
| 12V AC/DC | 11   |
| 24V AC/DC | 22   |
| 120V AC   | QH2  |
| 240V AC   | QM4  |



## Pilot Lights (Sub-Assembled)

Transformer\* + Operator + Lamp + Lens = Complete Part



\* Not required for full voltage units.

One Each from Left Column **plus** One Selection from Right Column

### Operators

| Style                       | Part Number |
|-----------------------------|-------------|
| Transformer or FULL Voltage | APD09ST8    |

### Full Voltage Clips

| Primary Voltage (50/60Hz)                                                           | Part Number |
|-------------------------------------------------------------------------------------|-------------|
|  | APD-F       |



Required for all full voltage models. Two pieces each.  
2 clips required for full voltage pilot lights

### Lenses

| Style     | Part Number |
|-----------|-------------|
| Dome Lens | APN106LN-②  |



1. In place of ②, specify the Lens Color Code.

### Lamps

| Style | Voltage   | Part Number |
|-------|-----------|-------------|
| LED   | 6V AC/DC  | LSTD-6③     |
|       | 12V AC/DC | LSTD-1③     |
|       | 24V AC/DC | LSTD-2③     |
|       | 120V AC   | LSTD-H2③    |
|       | 240V AC   | LSTD-M4③    |



1. In place of ②, specify the LED color code.  
2. The LED contains a current-limiting resistor and a protection diode.

### Transformers (only for Pilot Lights)

| Style | Primary Voltage (50/60Hz) | Part Number |
|-------|---------------------------|-------------|
| LED   | 120V AC                   | TWD-0126    |
|       | 240V AC                   | TWD-0246    |
|       | 480V AC                   | TWD-0486    |



6V secondary voltage (use 6V lamp).

### ② Lens Color Codes

| Color  | Code |
|--------|------|
| Amber  | A    |
| Green  | G    |
| Red    | R    |
| Blue   | S    |
| White  | W    |
| Yellow | Y    |

### ③ LED Color Codes

| Color | Code |
|-------|------|
| Amber | A    |
| Green | G    |
| Red   | R    |
| Blue  | S    |
| White | W    |



Yellow LED not available, use white LED with Yellow lens.



Illuminated Pushbuttons (Assembled)



Assembled Illuminated Pushbuttons

A L ( ) D 2 126 11 D NU R

Function

L: Momentary Action  
OL: Maintained Action

Bezel Shape

Blank: Octagonal  
F: Full Shroud

Series Designation

D: TWND Series

Lens Shape

2: Extended  
3: Mushroom ø 40mm

Rated Operational Voltage (Primary)

| Transformer Type | Full Voltage Type |
|------------------|-------------------|
| 126: 120V AC     | 66: 6VAC/DC       |
| 246: 240V AC     | 11: 12VAC/DC      |
| 486: 480V AC     | 22: 24VAC/DC      |
|                  | QH2: 120VAC       |
|                  | QM4: 240VAC       |

Lens Color Code

A: Amber  
G: Green  
R: Red  
S: Blue  
W: White  
Y: Yellow

D: LED

Contact Arrangement

20: 2NO      02: 2NC  
11: 1NO-1NC



1. Use only when interpreting part numbers. Do not use for developing part numbers.
2. All transformers step down to 6V.

## Illuminated Pushbuttons (Assembled)

### Illuminated Pushbuttons

| Style                                                                                                                       |              | Contacts              | Part Number                                        |                                                       |
|-----------------------------------------------------------------------------------------------------------------------------|--------------|-----------------------|----------------------------------------------------|-------------------------------------------------------|
|                                                                                                                             |              |                       | Momentary                                          | Maintained                                            |
| <div>Extended Lens</div>                   | Full Voltage | 1NO-1NC<br>2NO<br>2NC | ALD2③11DNU②<br>ALD2③20DNU②<br>ALD2③02DNU②          | AOLD2③11DNU②<br>AOLD2③20DNU②<br>AOLD2③02DNU②          |
|                                                                                                                             | Transformer  | 1NO-1NC<br>2NO<br>2NC | ALD2 ④ 11DNU②<br>ALD2 ④ 20DNU②<br>ALD2 ④ 02DNU②    | AOLD2 ④ 11DNU②<br>AOLD2 ④ 20DNU②<br>AOLD2 ④ 02DNU②    |
| <div>Extended Lens with Full Shroud</div>  | Full Voltage | 1NO-1NC<br>2NO<br>2NC | ALFD2③11DNU②<br>ALFD2③20DNU②<br>ALFD2③02DNU②       | AOLFD2③11DNU②<br>AOLFD2③20DNU②<br>AOLFD2③02DNU②       |
|                                                                                                                             | Transformer  | 1NO-1NC<br>2NO<br>2NC | ALFD2 ④ 11DNU②<br>ALFD2 ④ 20DNU②<br>ALFD2 ④ 02DNU② | AOLFD2 ④ 11DNU②<br>AOLFD2 ④ 20DNU②<br>AOLFD2 ④ 02DNU② |
| <div>ø 40mm Mushroom Lens</div>           | Full Voltage | 1NO-1NC<br>2NO<br>2NC | ALD3③11DNU②<br>ALD3③20DNU②<br>ALD3③02DNU②          | AOLD3③11DNU②<br>AOLD3③20DNU②<br>AOLD3③02DNU②          |
|                                                                                                                             | Transformer  | 1NO-1NC<br>2NO<br>2NC | ALD3 ④ 11DNU②<br>ALD3 ④ 20DNU②<br>ALD3 ④ 02DNU②    | AOLD3 ④ 11DNU②<br>AOLD3 ④ 20DNU②<br>AOLD3 ④ 02DNU②    |

### ② Lens Color Codes

| Color  | Code |
|--------|------|
| Amber  | A    |
| Green  | G    |
| Red    | R    |
| Blue   | S    |
| White  | W    |
| Yellow | Y    |

### ③ Full Voltage Codes

| Voltage   | Code |
|-----------|------|
| 6V AC/DC  | 66   |
| 12V AC/DC | 11   |
| 24V AC/DC | 22   |
| 120V AC   | QH2  |
| 240V AC   | QM4  |

### ④ Transformer Voltage Codes

| Voltage | Code |
|---------|------|
| 120VAC  | 126  |
| 240VAC  | 246  |
| 480VAC  | 486  |

 6V secondary voltage (uses 6V LED).

-  1. In place of ②, specify the Lens Color Code.  
 2. In place of ③, specify the Full Voltage Code (LED voltage).  
 3. In place of ④, specify the Transformer Voltage Code.  
 4. Light is independent of switch position.  
 5. Yellow pushbutton comes with white LED only.

## Illuminated Pushbuttons (Sub-Assembled)

Transformer\* + Contact Block + Operator + LED + Lens = Complete Part



\*Not required for full voltage types.

## Operators

| Style                     |  | Part Number |             |
|---------------------------|--|-------------|-------------|
|                           |  | Momentary   | Maintained  |
| Extended                  |  | ALD2300T8   | AOLD2300T8  |
| Extended with Full Shroud |  | ALFD2300T8  | AOLFD2300T8 |
| 40mm Mushroom             |  | ALD2300T8   | AOLD2300T8  |

## Lenses

| Style           |  | Part Number |
|-----------------|--|-------------|
| Extended        |  | ALN06LU-②   |
| ø 40mm Mushroom |  | ALN3LU-②    |



In place of ②, specify the Lens Color Code.

## Lamp Circuit Components

| Style                | Application                                                                                                                   | Part Number |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------|-------------|
| Long Lamp Holder<br> | <b>Used with</b> Full-size Transformer and two contact blocks<br><b>Used with</b> Full Voltage Adaptor and two contact blocks | TW-LH2      |
| Lead Holder<br>      | <b>Used with</b> TW-LH2 holder when using four contact blocks                                                                 | HW-LH3      |

## Lamps

| Style | Voltage   | Part Number |
|-------|-----------|-------------|
|       | 6V AC/DC  | LSTD-6③     |
|       | 12V AC/DC | LSTD-1③     |
|       | 24V AC/DC | LSTD-2③     |
|       | 120V AC   | LSTD-H2③    |
|       | 240V AC   | LSTD-M4③    |



- In place of ②, specify the LED color code.
- The LED contains a current-limiting resistor and a protection diode.

## ② Lens Color Codes

| Color  | Code |
|--------|------|
| Amber  | A    |
| Green  | G    |
| Red    | R    |
| Blue   | S    |
| White  | W    |
| Yellow | Y    |

## ③ LED Color Codes

| Color | Code |
|-------|------|
| Amber | A    |
| Green | G    |
| Red   | R    |
| Blue  | S    |
| White | W    |



Yellow lens only. Yellow LED not available, use white LED.

## Contact Blocks

| Style                 |  | Part Number            |                        |
|-----------------------|--|------------------------|------------------------|
|                       |  | 1NO                    | 1NC                    |
| All Control Units<br> |  | HW-U10-F               | HW-U01-F               |
|                       |  | HW-U10R-F (early make) | HW-U01R-F (late break) |
| Dummy Block<br>       |  | HW-DB                  |                        |



- Dummy blocks (no contacts) are used with an odd number of contact blocks.
- Combining HW-U10R-F and HW-U01R-F result in overlapping contacts (remain on, or closed, when switch is moved between two positions).

## Transformers

| Style | Primary Voltage (50/60Hz) | Part Number |
|-------|---------------------------|-------------|
|       | 120V AC                   | TW-F126B    |
|       | 240V AC                   | TW-F246B    |
|       | 480V AC                   | HW-L486     |



6V secondary voltage (use 6V LED).

## Full Voltage Modules

| Style                                     | Description                           | Part Number              |
|-------------------------------------------|---------------------------------------|--------------------------|
| Dummy Block with Full Voltage Adaptor<br> | For use with odd number of contacts.  | Finger-Safe<br>HW-DA1FBN |
| Full Voltage Adaptor<br>                  | For use with even number of contacts. | Finger-Safe<br>TW-DA1FB  |



All Transformers step down to 6V (use 6V lamp).

Non-Illuminated Selector Switches (Assembled)



Assembled Selector Switches

A S D 2 ( ) ( ) 11 NU - ( )

Function

S: Selector Switch

Series Designation

D: TWND Series

Number of Positions

- 2: 2-Position
- 3: 3-Position

Spring Return Action

- Blank: Maintained
- 1: Spring return from Right
- 2: Spring return from Left
- 3: 2-Way spring return from Left and Right

Circuit Number

(See Circuit # column of Selector Switch Contact Arrangement Chart on beginning on page 762.)

Contact Arrangement Code

- 10: 1NO 01: 1NC
- 20: 2NO 02: 2NC
- 40: 4NO 04: 4NC
- 11: 1NO-1NC 22: 2NO-2NC

Operator Style Code

- Blank: Knob Operator
- L: Lever Operator
- K: Key Operator



- 1. Use only when interpreting part numbers. Do not use for developing part numbers.
- 2. Custom key removal codes available. Please contact IDEC for details.

## Non-Illuminated Selector Switches (Assembled)

## Non-Illuminated 2-Position Selector Switches

| Style      |          |                                                                                        |                                                                                        |                      | Part Number   |                          |                         |
|------------|----------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|----------------------|---------------|--------------------------|-------------------------|
| Contact    | Mounting | Operator Position                                                                      |                                                                                        |                      | Maintained    | Spring Return from Right | Spring Return from Left |
|            |          | L<br> | R<br> |                      |               |                          |                         |
| 1NO        | 1        | 0                                                                                      | X                                                                                      | Knob<br>Lever<br>Key | ASD210NU      | ASD2110NU                | ASD2210NU               |
|            | 2        | 0                                                                                      | 0                                                                                      |                      | ASD2L10NU     | ASD21L10NU               | ASD22L10NU              |
|            |          |                                                                                        |                                                                                        |                      | ASD2K10NU     | ASD21K10NU               | ASD22K10NU              |
| 1NC        | 1        | X                                                                                      | 0                                                                                      | Knob<br>Lever<br>Key | ASD201NU      | ASD2101NU                | ASD2201NU               |
|            | 2        | 0                                                                                      | 0                                                                                      |                      | ASD2L01NU     | ASD21L01NU               | ASD22L01NU              |
|            |          |                                                                                        |                                                                                        |                      | ASD2K01NU     | ASD21K01NU               | ASD22K01NU              |
| 1NO<br>1NC | 1        | 0                                                                                      | X                                                                                      | Knob<br>Lever<br>Key | ASD211NU      | ASD2111NU                | ASD2211NU               |
|            | 2        | X                                                                                      | 0                                                                                      |                      | ASD2L11NU     | ASD21L11NU               | ASD22L11NU              |
|            |          |                                                                                        |                                                                                        |                      | ASD2K11NU     | ASD21K11NU               | ASD22K11NU              |
| 2NO        | 1        | 0                                                                                      | X                                                                                      | Knob<br>Lever<br>Key | ASD220NU      | ASD2120NU                | ASD2220NU               |
|            | 2        | 0                                                                                      | X                                                                                      |                      | ASD2L20NU     | ASD21L20NU               | ASD22L20NU              |
|            |          |                                                                                        |                                                                                        |                      | ASD2K20NU     | ASD21K20NU               | ASD22K20NU              |
| 2NC        | 1        | X                                                                                      | 0                                                                                      | Knob<br>Lever<br>Key | ASD202NU      | ASD2102NU                | ASD2202NU               |
|            | 2        | X                                                                                      | 0                                                                                      |                      | ASD2L02NU     | ASD21L02NU               | ASD22L02NU              |
|            |          |                                                                                        |                                                                                        |                      | ASD2K02NU     | ASD21K02NU               | ASD22K02NU              |
| 2NO<br>2NC | 1        | 0                                                                                      | X                                                                                      | Knob<br>Lever<br>Key | ASD222NU      | ASD2122NU                | ASD2222NU               |
|            | 2        | X                                                                                      | 0                                                                                      |                      | ASD2L22NU     | ASD21L22NU               | ASD22L22NU              |
|            | 3        | 0                                                                                      | X                                                                                      |                      | ASD2K22NU     | ASD21K22NU               | ASD22K22NU              |
| 2NO<br>2NC | 1        | 0                                                                                      | X                                                                                      | Knob<br>Lever<br>Key | ASD222NU-111  | ASD2122NU-111            | ASD2222NU-111           |
|            | 2        | 0                                                                                      | X                                                                                      |                      | ASD2L22NU-111 | ASD21L22NU-111           | ASD22L22NU-111          |
|            | 3        | X                                                                                      | 0                                                                                      |                      | ASD2K22NU-111 | ASD21K22NU-111           | ASD22K22NU-111          |
|            | 4        | X                                                                                      | 0                                                                                      |                      |               |                          |                         |



- The truth table indicates the operating position of contact block when the operator is switched to that position.  
X = On (closed contacts) 0 = Off (open contacts)  
X-X = Overlapping Contacts: Remain on (closed contacts) when switch is moved between these two positions.
- All knob and lever selector switches come in black. Other colors are available by ordering the knob or lever separately.
- Custom contact arrangements available, see page 762.

## Non-Illuminated 3-Position Selector Switches

| Contact    |   | Style             |   |   |                      | Part Number   |                          |                         |                       |
|------------|---|-------------------|---|---|----------------------|---------------|--------------------------|-------------------------|-----------------------|
|            |   | Operator Position |   |   |                      | Maintained    | Spring Return from Right | Spring Return from Left | Spring Return Two-Way |
|            |   |                   |   |   |                      |               |                          |                         |                       |
| Mounting   | L | C                 | R |   |                      |               |                          |                         |                       |
| 2NO        | 1 | X                 | 0 | 0 | Knob<br>Lever<br>Key | ASD320NU      | ASD3120NU                | ASD3220NU               | ASD3320NU             |
|            | 2 | 0                 | 0 | X |                      | ASD3L20NU     | ASD31L20NU               | ASD32L20NU              | ASD33L20NU            |
| 2NC        | 1 | 0                 | X | X | Knob<br>Lever<br>Key | ASD302NU      | ASD3102NU                | ASD3202NU               | ASD3302NU             |
|            | 2 | X                 | X | 0 |                      | ASD3L02NU     | ASD31L02NU               | ASD32L02NU              | ASD33L02NU            |
| 2NO<br>2NC | 1 | X                 | 0 | 0 | Knob<br>Lever<br>Key | ASD322NU      | ASD3122NU                | ASD3222NU               | ASD3322NU             |
|            | 2 | 0                 | 0 | X |                      | ASD3L22NU     | ASD31L22NU               | ASD32L22NU              | ASD33L22NU            |
|            | 3 | 0                 | X | X |                      | ASD3K22NU     | ASD31K22NU               | ASD32K22NU              | ASD33K22NU            |
|            | 4 | X                 | X | 0 |                      |               |                          |                         |                       |
| 2NO<br>2NC | 1 | X                 | 0 | X | Knob<br>Lever<br>Key | ASD322NU-309  | ASD3122NU-309            | ASD3222NU-309           | ASD3322NU-309         |
|            | 2 | X                 | X | 0 |                      | ASD3L22NU-309 | ASD31L22NU-309           | ASD32L22NU-309          | ASD33L22NU-309        |
|            | 3 | 0                 | X | 0 |                      | ASD3K22NU-309 | ASD31K22NU-309           | ASD32K22NU-309          | ASD33K22NU-309        |
|            | 4 | 0                 | 0 | X |                      |               |                          |                         |                       |
| 2NO<br>2NC | 1 | 0                 | X | 0 | Knob<br>Lever<br>Key | ASD322NU-310  | ASD3122NU-310            | ASD3222NU-310           | ASD3322NU-310         |
|            | 2 | 0                 | 0 | X |                      | ASD3L22NU-310 | ASD31L22NU-310           | ASD32L22NU-310          | ASD33L22NU-310        |
|            | 3 | 0                 | X | 0 |                      | ASD3K22NU-310 | ASD31K22NU-310           | ASD32K22NU-310          | ASD33K22NU-310        |
|            | 4 | 0                 | 0 | X |                      |               |                          |                         |                       |
| 4NO        | 1 | X                 | 0 | 0 | Knob<br>Lever<br>Key | ASD340NU      | ASD3140NU                | ASD3240NU               | ASD3340NU             |
|            | 2 | 0                 | 0 | X |                      | ASD3L40NU     | ASD31L40NU               | ASD32L40NU              | ASD33L40NU            |
|            | 3 | X                 | 0 | 0 |                      | ASD3K40NU     | ASD31K40NU               | ASD32K40NU              | ASD33K40NU            |
|            | 4 | 0                 | 0 | X |                      |               |                          |                         |                       |
| 4NC        | 1 | 0                 | X | X | Knob<br>Lever<br>Key | ASD304NU      | ASD3104NU                | ASD3204NU               | ASD3304NU             |
|            | 2 | X                 | X | 0 |                      | ASD3L04NU     | ASD31L04NU               | ASD32L04NU              | ASD33L04NU            |
|            | 3 | 0                 | X | X |                      | ASD3K04NU     | ASD31K04NU               | ASD32K04NU              | ASD33K04NU            |
|            | 4 | X                 | X | 0 |                      |               |                          |                         |                       |

## Non-Illuminated Selector Switches (Sub-Assembled)

Contact Blocks + Operator + Knob or Lever\* + Color Insert\* = Complete Part†



- \*Not needed with key type switches.
- †Knob type shown.

### Operators

| Style      | Position | Description                          | Part Number |
|------------|----------|--------------------------------------|-------------|
| Knob/Lever | 2        | Maintained                           | ASD0201T8   |
|            |          | Spring return from right             | ASD0213T8   |
|            |          | Spring return from left              | ASD0224T8   |
|            | 3        | Maintained, Cam 1                    | ASD0302T8   |
|            |          | Maintained, Cam 2                    | ASD0306T8   |
|            |          | Spring return from right, Cam 1      | ASD0314T8   |
|            |          | Spring return from right, Cam 2      | ASD0310T8   |
|            |          | Spring return from left, Cam 1       | ASD0323T8   |
|            |          | Spring return from left, Cam 2       | ASD0328T8   |
|            |          | Spring return from left/right, Cam 1 | ASD0335T8   |
|            |          | Spring return from left/right, Cam 2 | ASD0339T8   |
| Key        | 2        | Maintained                           | ASD0201KT8  |
|            |          | Spring return from right             | ASD0213KT8  |
|            |          | Spring return from left              | ASD0224KT8  |
|            | 3        | Maintained, Cam 1                    | ASD0302KT8  |
|            |          | Maintained, Cam 2                    | ASD0306KT8  |
|            |          | Spring return from right, Cam 1      | ASD0302KT8B |
|            |          | Spring return from right, Cam 2      | ASD0310KT8B |
|            |          | Spring return from left, Cam 1       | ASD0323KT8  |
|            |          | Spring return from left, Cam 2       | ASD0310KT8B |
|            |          | Spring return from left/right, Cam 1 | ASD0335KT8  |
|            |          | Spring return from left/right, Cam 2 | ASD3K339KT8 |



- Order knobs, levers, color inserts separately (see below).
- For key switches, keys are removable in all maintained positions. Other options available, contact IDEC for details.
- See page 764 "Operator Truth Tables" for details of difference between cams.

### ① Color Codes

| Knob/Lever Color | Code |
|------------------|------|
| Black            | B    |
| Blue             | S    |
| Green            | G    |
| Red              | R    |
| Yellow           | Y    |
| White            | W    |



- Knob/Lever not available in white.
- Color inserts not available in Black.
- Lever not available in yellow.

### Handles and Inserts

| Style        | Part Number |
|--------------|-------------|
| Knob         | ASDHHY-①    |
| Lever        | ASDHHL-①*   |
| Color Insert | TW-HC1-①    |



- In place of ①, specify the Color Code.  
\*Not available in yellow.

### Contact Blocks

| Style             |  | Part Number                        |                                    |
|-------------------|--|------------------------------------|------------------------------------|
|                   |  | 1NO                                | 1NC                                |
| All Control Units |  | HW-U10-F<br>HW-U10R-F (early make) | HW-U01-F<br>HW-U01R-F (late break) |
| Dummy Block       |  | HW-DB                              |                                    |



- Dummy blocks (no contacts) are used with an odd number of contact blocks.
- Combining HW-U10R-F and HW-U01R-F result in overlapping contacts (remain on, or closed, when switch is moved between two positions).

The diagram illustrates the structure of a selector switch part number, breaking it down into its constituent codes. The part number is shown at the top, with lines connecting each segment to its corresponding label and description below.

**Part Number:** A SL D 2 (2) 22 11 DN U - 111 - R

**Function:** SL: Illuminated Selector Switch

**Series Designation:** D: TWND series

**Number of Positions:** 2: 2-Position  
3: 3-Position

**Spring Return Action:** Blank: Maintained  
1: Spring return from Right  
2: Spring return from Left  
3: Two-Way spring return from Left and Right

**Rated Operational Voltage (Primary):**

| Transformer Type | Full Voltage Type |
|------------------|-------------------|
| 136: 120V AC     | 66: 6VAC/DC       |
| 256: 240V AC     | 11: 12VAC/DC      |
| 486: 480V AC     | 22: 24VAC/DC      |
|                  | QH2: 120VAC       |
|                  | QM4: 240VAC       |

**Contact Arrangement Code:**

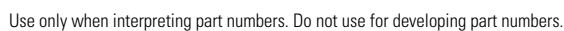
|             |             |
|-------------|-------------|
| 20: 2NO     | 02: 2NC     |
| 40: 4NO     | 04: 4NC     |
| 11: 1NO-1NC | 22: 2NO-2NC |

**Lens Color Code:**

- A: Amber
- G: Green
- R: Red
- S: Blue
- W: White
- Y: Yellow

**Circuit Code Number:** See Circuit # column of Selector Switch Contact Arrangement Charts on page 762.

**Additional Code:** D: LED Lamp





## Illuminated Selector Switches (Assembled)

### Illuminated 2-Position Selector Switches

| Style   |          |                   |   |                          | Part Number        |                          |                         |
|---------|----------|-------------------|---|--------------------------|--------------------|--------------------------|-------------------------|
| Contact | Mounting | Operator Position |   | Lamp Circuit Type        | Maintained         | Spring Return from Right | Spring Return from Left |
|         |          | L                 | R |                          |                    |                          |                         |
| 1NO     | 1        | O                 | X | Transformer Full Voltage | ASLD2 ④11DNU②      | ASLD21 ④11DNU②           | ASLD22 ④11DNU②          |
| 1NC     | 2        | X                 | O |                          | ASLD2③11DNU②       | ASLD21③11DNU②            | ASLD22③11DNU②           |
| 2NO     | 1        | O                 | X | Transformer Full Voltage | ASLD2 ④20DNU②      | ASLD21 ④20DNU②           | ASLD22 ④20DNU②          |
|         | 2        | O                 | X |                          | ASLD2③20DNU②       | ASLD21③20DNU②            | ASLD22③20DNU②           |
| 2NC     | 1        | X                 | O | Transformer Full Voltage | ASLD2 ④02DNU-②     | ASLD21 ④02DNU-②          | ASLD22 ④02DNU-②         |
|         | 2        | X                 | O |                          | ASLD2③02DNU-104-②  | ASLD21③02DNU-②           | ASLD22③02DNU-②          |
| 2NO     | 1        | O                 | X | Transformer Full Voltage | ASLD2 ④22DNU②      | ASLD21 ④22DNU②           | ASLD22 ④22DNU②          |
| 2NC     | 2        | X                 | O |                          |                    |                          |                         |
|         | 3        | O                 | X |                          |                    |                          |                         |
| 2NC     | 4        | X                 | O | Transformer Full Voltage | ASLD2③22DNU②       | ASLD21③22DNU②            | ASLD22③22DNU②           |
|         |          |                   |   |                          |                    |                          |                         |
|         |          |                   |   |                          |                    |                          |                         |
| 2NO     | 1        | O                 | X | Transformer Full Voltage | ASLD2 ④22DNU-111-② | ASLD21 ④22DNU-111-②      | ASLD22 ④22DNU-111-②     |
| 2NC     | 2        | O                 | X |                          |                    |                          |                         |
|         | 3        | X                 | O |                          |                    |                          |                         |
|         | 4        | X                 | O |                          |                    |                          |                         |

### ② Lens Color Codes

| Color  | Code |
|--------|------|
| Amber  | A    |
| Green  | G    |
| Red    | R    |
| Blue   | S    |
| White  | W    |
| Yellow | Y    |

### ③ Full Voltage Codes

| Voltage   | Code |
|-----------|------|
| 6V AC/DC  | 66   |
| 12V AC/DC | 11   |
| 24V AC/DC | 22   |
| 120V AC   | QH2  |
| 240V AC   | QM4  |

### Illuminated 3-Position Selector Switches, Maintained and Spring Return

| Style   |          |                   |   |   | Part Number              |                     |                          |                         |
|---------|----------|-------------------|---|---|--------------------------|---------------------|--------------------------|-------------------------|
| Contact | Mounting | Operator Position |   |   | Lamp Circuit Type        | Maintained          | Spring Return From Right | Spring Return from Left |
|         |          | L                 | C | R |                          |                     |                          |                         |
| 2NO     | 1        | X                 | O | O | Transformer Full Voltage | ASLD3 ④ 20DNU②      | ASLD31 ④ 20DNU②          | ASLD32 ④ 20DNU②         |
|         | 2        | O                 | O | X |                          | ASLD3③20DNU②        | ASLD31③20DNU②            | ASLD32③20DNU②           |
| 2NC     | 1        | O                 | X | X | Transformer Full Voltage | ASLD3 ④ 02DNU②      | ASLD31 ④ 02DNU②          | ASLD32 ④ 02DNU②         |
|         | 2        | X                 | X | O |                          | ASLD3③02DNU②        | ASLD31③02DNU②            | ASLD32③02DNU②           |
| 2NO     | 1        | X                 | O | O | Transformer Full Voltage | ASLD3 ④ 22DNU②      | ASLD31 ④ 22DNU②          | ASLD32 ④ 22DNU②         |
| 2NC     | 2        | O                 | O | X |                          |                     |                          |                         |
|         | 3        | O                 | X | X |                          |                     |                          |                         |
|         | 4        | X                 | X | O |                          |                     |                          |                         |
| 2NO     | 1        | X                 | O | X | Transformer Full Voltage | ASLD3 ④ 22DNU-309-② | ASLD31 ④ 22DNU-309-②     | ASLD32 ④ 22DNU-309-②    |
| 2NC     | 2        | X                 | X | O |                          |                     |                          |                         |
|         | 3        | O                 | X | O |                          |                     |                          |                         |
| 2NC     | 4        | O                 | O | X | Transformer Full Voltage | ASLD3③22DNU-309-②   | ASLD31③22DNU-309-②       | ASLD32③22DNU-309-②      |
|         |          |                   |   |   |                          |                     |                          |                         |
|         |          |                   |   |   |                          |                     |                          |                         |
| 2NO     | 1        | O                 | X | O | Transformer Full Voltage | ASLD3 ④ 22DNU-310-② | ASLD31 ④ 22DNU-310-②     | ASLD32 ④ 22DNU-310-②    |
| 2NC     | 2        | O                 | O | X |                          |                     |                          |                         |
|         | 3        | O                 | X | O |                          |                     |                          |                         |
|         | 4        | O                 | O | X |                          |                     |                          |                         |
| 4NO     | 1        | X                 | O | O | Transformer Full Voltage | ASLD3 ④ 40DNU②      | ASLD31 ④ 40DNU②          | ASLD32 ④ 40DNU②         |
|         | 2        | O                 | O | X |                          |                     |                          |                         |
|         | 3        | X                 | O | O |                          |                     |                          |                         |
|         | 4        | O                 | O | X |                          |                     |                          |                         |
| 4NC     | 1        | O                 | X | X | Transformer Full Voltage | ASLD3 ④ 04DNU②      | ASLD31 ④ 04DNU②          | ASLD32 ④ 04DNU②         |
|         | 2        | X                 | X | O |                          |                     |                          |                         |
|         | 3        | O                 | X | X |                          |                     |                          |                         |
|         | 4        | X                 | X | O |                          |                     |                          |                         |

- In place of ②, specify the Lens/LED Color Code, in place of ③, specify the Full Voltage (LED voltage) Code, in place of ④, specify the Transformer Voltage Code.
- The truth table indicates the operating position of contact block when the operator is switched to that position.  
X = On (Closed Contacts) O = Off (Open Contacts)  
X—X = Overlapping Contacts: Remain on (closed contacts) when switch is moved between these positions
- Yellow selector switch comes with white LED.

### ④ Transformer Voltage Codes

| Voltage | Code |
|---------|------|
| 120VAC  | 136  |
| 240VAC  | 256  |
| 480VAC  | 486  |



Transformers step down to 6V (use 6V LED).



## Illuminated Selector Switches (Sub-Assembled)

|              |   |               |   |          |   |      |   |      |   |               |
|--------------|---|---------------|---|----------|---|------|---|------|---|---------------|
| Transformer* | + | Contact Block | + | Operator | + | Lamp | + | Lens | = | Complete Part |
|--------------|---|---------------|---|----------|---|------|---|------|---|---------------|



\*Not required for full voltage units.

## Operators

| Style                                                                             | Position | Description                          | Part Number |
|-----------------------------------------------------------------------------------|----------|--------------------------------------|-------------|
|  | 2        | Maintained                           | ASLD0201T8  |
|                                                                                   | 3        | Maintained, Cam 1                    | ASLD0302T8  |
|                                                                                   |          | Maintained, Cam 2                    | ASLD0306T8  |
|                                                                                   | 2        | Spring return from right             | ASLD0213T8  |
|                                                                                   |          | Spring return from left              | ASLD0224T8  |
|                                                                                   | 3        | Spring return from right, Cam 1      | ASLD0314T8  |
|                                                                                   |          | Spring return from right, Cam 2      | ASLD0310T8  |
|                                                                                   |          | Spring return from left, Cam 1       | ASLD0323T8  |
|                                                                                   |          | Spring return from left, Cam 2       | ASLD0328T8  |
|                                                                                   |          | Spring return from left/right, Cam 1 | ASLD0335T8  |
|                                                                                   |          | Spring return from left/right, Cam 2 | ASLD0339T8  |

## Lenses

| Style | Part Number |
|-------|-------------|
| Knob  | ASLNHU-③ ②  |

## Lamps

| Style                                                                               | Voltage   | Part Number |
|-------------------------------------------------------------------------------------|-----------|-------------|
|  | 6V AC/DC  | LSTD-6③     |
|                                                                                     | 12V AC/DC | LSTD-1③     |
|                                                                                     | 24V AC/DC | LSTD-2③     |
|                                                                                     | 120V AC   | LSTD-H2③    |
|                                                                                     | 240V AC   | LSTD-M4③    |



- In place of ②, specify the LED color code.
- The LED contains a current-limiting resistor and a protection diode.

## Contact Blocks

| Style             |                                                                                     | Part Number            |                        |
|-------------------|-------------------------------------------------------------------------------------|------------------------|------------------------|
|                   |                                                                                     | 1NO                    | 1NC                    |
| All Control Units |  | HW-U10-F               | HW-U10-F               |
|                   |                                                                                     | HW-U10R-F (early make) | HW-U10R-F (late break) |
| Dummy Block       |  | HW-DB                  |                        |



- Dummy blocks (no contacts) are used with an odd number of contact blocks.
- Combining HW-U10R-F and HW-U01R-F result in overlapping contacts (remain on, or closed, when switch is moved between two positions).

## Lamp Circuit Components

| Style            | Application                                                   | Part Number |
|------------------|---------------------------------------------------------------|-------------|
| Long Lamp Holder | <b>Used with</b> Full-size Transformer and two contact blocks | TW-LH2      |
| Lead Holder      | <b>Used with</b> Full Voltage Adaptor and two contact blocks  |             |
|                  | <b>Used with</b> TW-LH2 holder when using four contact blocks | HW-LH3      |

## Full Voltage Modules

| Style                                 | Description                           | Part Number              |
|---------------------------------------|---------------------------------------|--------------------------|
| Dummy Block with Full Voltage Adaptor | For use with odd number of contacts.  | Finger-Safe<br>HW-DA1FBN |
| Full Voltage Adaptor                  | For use with even number of contacts. | Finger-Safe<br>TW-DA1FB  |



All Transformers step down to 6V (use 6V lamp).

## Transformers

| Style                                                                                | Primary Voltage (50/60Hz) | Part Number |
|--------------------------------------------------------------------------------------|---------------------------|-------------|
|  | 120V AC                   | TW-F126B    |
|                                                                                      | 240V AC                   | TW-F126B    |
|                                                                                      | 480V AC                   | HW-L486     |



6V secondary voltage.

## ② Lens Color Codes

| Color  | Code |
|--------|------|
| Amber  | A    |
| Green  | G    |
| Red    | R    |
| Blue   | S    |
| White  | W    |
| Yellow | Y    |

## ③ LED Color Codes

| Color | Code |
|-------|------|
| Amber | A    |
| Green | G    |
| Red   | R    |
| Blue  | S    |
| White | W    |

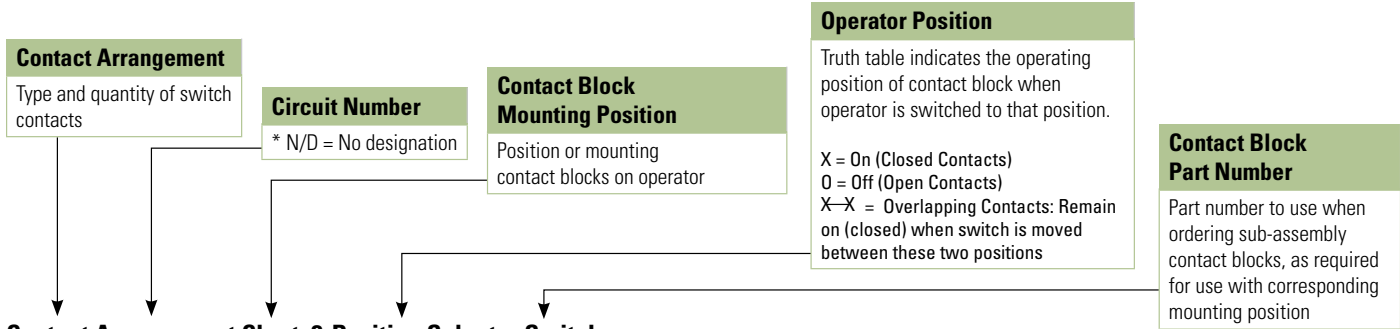


Yellow lens only. Yellow LED not available, use white LED.

## Contact Arrangement Charts

### How to Read Contact Arrangement Charts

To determine contact block mounting position, first make sure the selector switch is oriented as shown on the right



### Contact Arrangement Chart: 2-Position Selector Switches

| Style            |                | Mounting Position | Operator Position                                                                 |                                                                                   | Contact Block Part Number | Description      | Operator Part Number                                                              |                                                                                   |                                                                                   |
|------------------|----------------|-------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---------------------------|------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Contact          | Circuit Number |                   |  |  |                           |                  | Maintained                                                                        | Spring Return from Right                                                          | Spring Return from Left                                                           |
|                  |                |                   |                                                                                   |                                                                                   |                           |                  |  |  |  |
| 1NO              | N/D            | 1                 | O                                                                                 | X                                                                                 | HW-U10-F                  | Knob/Lever Key   | ASD0201T8<br>ASD0201KT8<br>ASLD0201T8                                             | ASD0213T8<br>ASD0213KT8<br>ASLD0213T8                                             | ASD0224T8<br>ASD0224KT8<br>ASLD0224T8                                             |
|                  |                | 2                 | O                                                                                 | O                                                                                 | HW-DB                     | Illuminated Knob |                                                                                   |                                                                                   |                                                                                   |
| 1NC              | N/D            | 1                 | X                                                                                 | O                                                                                 | HW-U01-F                  | Knob/Lever Key   | ASD0201T8<br>ASD0201KT8<br>ASLD0201T8                                             | ASD0213T8<br>ASD0213KT8<br>ASLD0213T8                                             | ASD0224T8<br>ASD0224KT8<br>ASLD0224T8                                             |
|                  |                | 2                 | O                                                                                 | O                                                                                 | HW-DB                     | Illuminated Knob |                                                                                   |                                                                                   |                                                                                   |
| 1NO<br>1NC       | N/D            | 1                 | O                                                                                 | X                                                                                 | HW-U10-F                  | Knob/Lever Key   | ASD0201T8<br>ASD0201KT8<br>ASLD0201T8                                             | ASD0213T8<br>ASD0213KT8<br>ASLD0213T8                                             | ASD0224T8<br>ASD0224KT8<br>ASLD0224T8                                             |
|                  |                | 2                 | X                                                                                 | O                                                                                 | HW-U01-F                  | Illuminated Knob |                                                                                   |                                                                                   |                                                                                   |
|                  | 103            | 1                 | X                                                                                 | O                                                                                 | HW-U01-F                  | Knob/Lever Key   | ASD0201T8<br>ASD0201KT8<br>ASLD0201T8                                             | ASD0213T8<br>ASD0213KT8<br>ASLD0213T8                                             | ASD0224T8<br>ASD0224KT8<br>ASLD0224T8                                             |
|                  |                | 2                 | O                                                                                 | X                                                                                 | HW-U10-F                  | Illuminated Knob |                                                                                   |                                                                                   |                                                                                   |
| 1NO-EM<br>1NC-LB | 600            | 1                 | O                                                                                 | X                                                                                 | HW-U10R-F                 | Knob/Lever Key   | ASD0201T8<br>ASD0201KT8<br>ASLD0201T8                                             | ASD0213T8<br>ASD0213KT8<br>ASLD0213T8                                             | ASD0224T8<br>ASD0224KT8<br>ASLD0224T8                                             |
|                  |                | 2                 | X                                                                                 | O                                                                                 | HW-U01R-F                 | Illuminated Knob |                                                                                   |                                                                                   |                                                                                   |
|                  | 601            | 1                 | X                                                                                 | O                                                                                 | HW-U01R-F                 | Knob/Lever Key   | ASD0201T8<br>ASD0201KT8<br>ASLD0201T8                                             | ASD0213T8<br>ASD0213KT8<br>ASLD0213T8                                             | ASD0224T8<br>ASD0224KT8<br>ASLD0224T8                                             |
|                  |                | 2                 | O                                                                                 | X                                                                                 | HW-U10R-F                 | Illuminated Knob |                                                                                   |                                                                                   |                                                                                   |
| 2NO              | N/D            | 1                 | O                                                                                 | X                                                                                 | HW-U10-F                  | Knob/Lever Key   | ASD0201T8<br>ASD0201KT8<br>ASLD0201T8                                             | ASD0213T8<br>ASD0213KT8<br>ASLD0213T8                                             | ASD0224T8<br>ASD0224KT8<br>ASLD0224T8                                             |
|                  |                | 2                 | O                                                                                 | X                                                                                 | HW-U10-F                  | Illuminated Knob |                                                                                   |                                                                                   |                                                                                   |
| 2NC              | N/D            | 1                 | X                                                                                 | O                                                                                 | HW-U01-F                  | Knob/Lever Key   | ASD0201T8<br>ASD0201KT8<br>ASLD0201T8                                             | ASD0213T8<br>ASD0213KT8<br>ASLD0213T8                                             | ASD0224T8<br>ASD0224KT8<br>ASLD0224T8                                             |
|                  |                | 2                 | X                                                                                 | O                                                                                 | HW-U01-F                  | Illuminated Knob |                                                                                   |                                                                                   |                                                                                   |
| 2NO<br>2NC       | N/D            | 1                 | O                                                                                 | X                                                                                 | HW-U10-F                  | Knob/Lever Key   | ASD0201T8<br>ASD0201KT8<br>ASLD0201T8                                             | ASD0213T8<br>ASD0213KT8<br>ASLD0213T8                                             | ASD0224T8<br>ASD0224KT8<br>ASLD0224T8                                             |
|                  |                | 2                 | X                                                                                 | O                                                                                 | HW-U01-F                  | Illuminated Knob |                                                                                   |                                                                                   |                                                                                   |
|                  |                | 3                 | O                                                                                 | X                                                                                 | HW-U10-F                  | Knob/Lever Key   | ASD0201T8<br>ASD0201KT8<br>ASLD0201T8                                             | ASD0213T8<br>ASD0213KT8<br>ASLD0213T8                                             | ASD0224T8<br>ASD0224KT8<br>ASLD0224T8                                             |
|                  |                | 4                 | X                                                                                 | O                                                                                 | HW-U01-F                  | Illuminated Knob |                                                                                   |                                                                                   |                                                                                   |
|                  | 110            | 1                 | X                                                                                 | O                                                                                 | HW-U01-F                  | Knob/Lever Key   | ASD0201T8<br>ASD0201KT8<br>ASLD0201T8                                             | ASD0213T8<br>ASD0213KT8<br>ASLD0213T8                                             | ASD0224T8<br>ASD0224KT8<br>ASLD0224T8                                             |
|                  |                | 2                 | O                                                                                 | X                                                                                 | HW-U10-F                  | Knob/Lever Key   | ASD0201T8<br>ASD0201KT8<br>ASLD0201T8                                             | ASD0213T8<br>ASD0213KT8<br>ASLD0213T8                                             | ASD0224T8<br>ASD0224KT8<br>ASLD0224T8                                             |
|                  |                | 3                 | X                                                                                 | O                                                                                 | HW-U01-F                  | Illuminated Knob |                                                                                   |                                                                                   |                                                                                   |
|                  |                | 4                 | O                                                                                 | X                                                                                 | HW-U10-F                  | Illuminated Knob |                                                                                   |                                                                                   |                                                                                   |
|                  | 111            | 1                 | O                                                                                 | X                                                                                 | HW-U10-F                  | Knob/Lever Key   | ASD0201T8<br>ASD0201KT8<br>ASLD0201T8                                             | ASD0213T8<br>ASD0213KT8<br>ASLD0213T8                                             | ASD0224T8<br>ASD0224KT8<br>ASLD0224T8                                             |
|                  |                | 2                 | O                                                                                 | X                                                                                 | HW-U10-F                  | Knob/Lever Key   | ASD0201T8<br>ASD0201KT8<br>ASLD0201T8                                             | ASD0213T8<br>ASD0213KT8<br>ASLD0213T8                                             | ASD0224T8<br>ASD0224KT8<br>ASLD0224T8                                             |
|                  |                | 3                 | X                                                                                 | O                                                                                 | HW-U01-F                  | Illuminated Knob |                                                                                   |                                                                                   |                                                                                   |
|                  |                | 4                 | X                                                                                 | O                                                                                 | HW-U01-F                  | Illuminated Knob |                                                                                   |                                                                                   |                                                                                   |
| 4NO              | N/D            | 1                 | O                                                                                 | X                                                                                 | HW-U10-F                  | Knob/Lever Key   | ASD0201T8<br>ASD0201KT8<br>ASLD0201T8                                             | ASD0213T8<br>ASD0213KT8<br>ASLD0213T8                                             | ASD0224T8<br>ASD0224KT8<br>ASLD0224T8                                             |
|                  |                | 2                 | O                                                                                 | X                                                                                 | HW-U10-F                  | Knob/Lever Key   | ASD0201T8<br>ASD0201KT8<br>ASLD0201T8                                             | ASD0213T8<br>ASD0213KT8<br>ASLD0213T8                                             | ASD0224T8<br>ASD0224KT8<br>ASLD0224T8                                             |
|                  |                | 3                 | O                                                                                 | X                                                                                 | HW-U10-F                  | Knob/Lever Key   | ASD0201T8<br>ASD0201KT8<br>ASLD0201T8                                             | ASD0213T8<br>ASD0213KT8<br>ASLD0213T8                                             | ASD0224T8<br>ASD0224KT8<br>ASLD0224T8                                             |
|                  |                | 4                 | O                                                                                 | X                                                                                 | HW-U10-F                  | Illuminated Knob |                                                                                   |                                                                                   |                                                                                   |

## Contact Arrangement Chart: 3-Position Selector Switches

| Style      |                | Mounting Position | Operator Position                                                                      |                                                                                        |                                                                                        | Contact Block Part Number          | Description                           | Operator Part Number                                                              |                                                                                   |                                                                                   |                                                                                   |
|------------|----------------|-------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------|---------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Contact    | Circuit Number |                   | L<br> | C<br> | R<br> |                                    |                                       | Maintained                                                                        | Spring Return from Right                                                          | Spring Return from Left                                                           | Two-Way                                                                           |
|            |                |                   |                                                                                        |                                                                                        |                                                                                        |                                    |                                       |  |  |  |  |
| 1NO<br>1NC | 202            | 1                 | X                                                                                      | O                                                                                      | O                                                                                      | HW-U10-F                           | Knob/Lever Key                        | ASD0302T8<br>ASD0302KT8<br>ASLD0302T8                                             | ASD0314T8<br>ASD0314KT8<br>ASLD0314T8                                             | ASD0323T8<br>ASD0323KT8<br>ASLD0323T8                                             | ASD0335T8<br>ASD0335KT8<br>ASLD0335T8                                             |
|            |                | 2                 | X                                                                                      | X                                                                                      | O                                                                                      | HW-U01-F                           | Illuminated Knob                      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|            | 203            | 1                 | O                                                                                      | X                                                                                      | X                                                                                      | HW-U01-F                           | Knob/Lever Key                        | ASD0302T8<br>ASD0302KT8<br>ASLD0302T8                                             | ASD0314T8<br>ASD0314KT8<br>ASLD0314T8                                             | ASD0323T8<br>ASD0323KT8<br>ASLD0323T8                                             | ASD0335T8<br>ASD0335KT8<br>ASLD0335T8                                             |
|            |                | 2                 | O                                                                                      | O                                                                                      | X                                                                                      | HW-U10-F                           | Illuminated Knob                      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|            | 302            | 1                 | X                                                                                      | O                                                                                      | X                                                                                      | HW-U10-F                           | Knob/Lever Key                        | ASD0306T8<br>ASD0306KT8<br>ASLD0306T8                                             | ASD0310T8<br>ASD0301KT8<br>ASLD0310T8                                             | ASD0328T8<br>ASD0328KT8<br>ASLD0328T8                                             | ASD0339T8<br>ASD0339KT8<br>ASLD0339T8                                             |
|            |                | 2                 | X                                                                                      | X                                                                                      | O                                                                                      | HW-U10-F                           | Illuminated Knob                      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|            | 303            | 1                 | O                                                                                      | X                                                                                      | O                                                                                      | HW-U01-F                           | Knob/Lever Key                        | ASD0306T8<br>ASD0306KT8<br>ASLD0306T8                                             | ASD0310T8<br>ASD0301KT8<br>ASLD0310T8                                             | ASD0328T8<br>ASD0328KT8<br>ASLD0328T8                                             | ASD0339T8<br>ASD0339KT8<br>ASLD0339T8                                             |
|            |                | 2                 | O                                                                                      | O                                                                                      | X                                                                                      | HW-U10-F                           | Illuminated Knob                      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| 2NO        | N/D            | 1                 | X                                                                                      | O                                                                                      | O                                                                                      | HW-U10-F                           | Knob/Lever Key                        | ASD0302T8<br>ASD0302KT8<br>ASLD0302T8                                             | ASD0314T8<br>ASD0314KT8<br>ASLD0314T8                                             | ASD0323T8<br>ASD0323KT8<br>ASLD0323T8                                             | ASD0335T8<br>ASD0335KT8<br>ASLD0335T8                                             |
|            |                | 2                 | O                                                                                      | O                                                                                      | X                                                                                      | HW-U10-F                           | Illuminated Knob                      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|            | 301            | 1                 | X                                                                                      | O                                                                                      | X                                                                                      | HW-U10-F                           | Knob/Lever Key                        | ASD0306T8<br>ASD0306KT8<br>ASLD0306T8                                             | ASD0310T8<br>ASD0301KT8<br>ASLD0310T8                                             | ASD0328T8<br>ASD0328KT8<br>ASLD0328T8                                             | ASD0339T8<br>ASD0339KT8<br>ASLD0339T8                                             |
|            |                | 2                 | O                                                                                      | O                                                                                      | X                                                                                      | HW-U10-F                           | Illuminated Knob                      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| 2NC        | 304            | 1                 | O                                                                                      | X                                                                                      | O                                                                                      | HW-U01-F                           | Knob/Lever Key                        | ASD0306T8<br>ASD0306KT8<br>ASLD0306T8                                             | ASD0310T8<br>ASD0301KT8<br>ASLD0310T8                                             | ASD0328T8<br>ASD0328KT8<br>ASLD0328T8                                             | ASD0339T8<br>ASD0339KT8<br>ASLD0339T8                                             |
|            |                | 2                 | X                                                                                      | X                                                                                      | O                                                                                      | HW-U01-F                           | Illuminated Knob                      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|            | N/D            | 1                 | O                                                                                      | X                                                                                      | X                                                                                      | HW-U01-F                           | Knob/Lever Key                        | ASD0302T8<br>ASD0302KT8<br>ASLD0302T8                                             | ASD0314T8<br>ASD0314KT8<br>ASLD0314T8                                             | ASD0323T8<br>ASD0323KT8<br>ASLD0323T8                                             | ASD0335T8<br>ASD0335KT8<br>ASLD0335T8                                             |
|            |                | 2                 | X                                                                                      | X                                                                                      | O                                                                                      | HW-U01-F                           | Illuminated Knob                      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| 2NO<br>2NC | N/D            | 1                 | X                                                                                      | O                                                                                      | O                                                                                      | HW-U10-F                           | Knob/Lever Key<br>Illuminated Knob    | ASD0302T8<br>ASD0302KT8<br>ASLD0302T8                                             | ASD0314T8<br>ASD0314KT8<br>ASLD0314T8                                             | ASD0323T8<br>ASD0323KT8<br>ASLD0323T8                                             | ASD0335T8<br>ASD0335KT8<br>ASLD0335T8                                             |
|            |                | 2                 | O                                                                                      | O                                                                                      | X                                                                                      | HW-U10-F                           |                                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|            |                | 3                 | O                                                                                      | X                                                                                      | X                                                                                      | HW-U01-F                           |                                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|            |                | 4                 | X                                                                                      | X                                                                                      | O                                                                                      | HW-U01-F                           |                                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|            | 210            | 1                 | O                                                                                      | X                                                                                      | X                                                                                      | HW-U01-F                           | Knob/Lever Key<br>Illuminated Knob    | ASD0302T8<br>ASD0302KT8<br>ASLD0302T8                                             | ASD0314T8<br>ASD0314KT8<br>ASLD0314T8                                             | ASD0323T8<br>ASD0323KT8<br>ASLD0323T8                                             | ASD0335T8<br>ASD0335KT8<br>ASLD0335T8                                             |
|            |                | 2                 | O                                                                                      | O                                                                                      | X                                                                                      | HW-U10-F                           |                                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|            |                | 3                 | O                                                                                      | X                                                                                      | X                                                                                      | HW-U01-F                           |                                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|            |                | 4                 | O                                                                                      | O                                                                                      | X                                                                                      | HW-U10-F                           |                                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|            | 308            | 1                 | X                                                                                      | O                                                                                      | X                                                                                      | HW-U10-F                           | Knob/Lever Key<br>Illuminated Knob    | ASD0306T8<br>ASD0306KT8<br>ASLD0306T8                                             | ASD0310T8<br>ASD0301KT8<br>ASLD0310T8                                             | ASD0328T8<br>ASD0328KT8<br>ASLD0328T8                                             | ASD0339T8<br>ASD0339KT8<br>ASLD0339T8                                             |
|            |                | 2                 | X                                                                                      | X                                                                                      | O                                                                                      | HW-U01-F                           |                                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|            |                | 3                 | X                                                                                      | O                                                                                      | X                                                                                      | HW-U10-F                           |                                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|            |                | 4                 | X                                                                                      | X                                                                                      | O                                                                                      | HW-U01-F                           |                                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|            | 309            | 1                 | X                                                                                      | O                                                                                      | X                                                                                      | HW-U10-F                           | Knob/Lever Key<br>Illuminated Knob    | ASD0306T8<br>ASD0306KT8<br>ASLD0306T8                                             | ASD0310T8<br>ASD0301KT8<br>ASLD0310T8                                             | ASD0328T8<br>ASD0328KT8<br>ASLD0328T8                                             | ASD0339T8<br>ASD0339KT8<br>ASLD0339T8                                             |
|            |                | 2                 | X                                                                                      | X                                                                                      | O                                                                                      | HW-U01-F                           |                                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|            |                | 3                 | O                                                                                      | X                                                                                      | O                                                                                      | HW-U01-F                           |                                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|            |                | 4                 | O                                                                                      | O                                                                                      | X                                                                                      | HW-U10-F                           |                                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| 310        | 1              | O                 | X                                                                                      | O                                                                                      | HW-U01-F                                                                               | Knob/Lever Key<br>Illuminated Knob | ASD0306T8<br>ASD0306KT8<br>ASLD0306T8 | ASD0310T8<br>ASD0301KT8<br>ASLD0310T8                                             | ASD0328T8<br>ASD0328KT8<br>ASLD0328T8                                             | ASD0339T8<br>ASD0339KT8<br>ASLD0339T8                                             |                                                                                   |
|            | 2              | O                 | O                                                                                      | X                                                                                      | HW-U10-F                                                                               |                                    |                                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|            | 3              | O                 | X                                                                                      | O                                                                                      | HW-U01-F                                                                               |                                    |                                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|            | 4              | O                 | O                                                                                      | X                                                                                      | HW-U10-F                                                                               |                                    |                                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |

1. Each operator sub-assembly is available as an "02" and an "06" for 3-position selector switches. The internal cam of an "02" is different from that of an "06". This results in designated combinations of open and closed contacts in the various operator positions.
2. N/D = No circuit number designation required in assembled part number.
3. X = On (closed contacts) O = Off (open contacts). X-X Overlapping contacts remain on (closed) when switch is moved between these two positions.

Contact Arrangement Chart: 3-Position Selector Switches

| Style   |                | Mounting Position | Operator Position                                                                      |                                                                                        |                                                                                        | Contact Block Part Number | Description                        | Operator Part Number                                                              |                                                                                   |                                                                                   |                                                                                   |
|---------|----------------|-------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|---------------------------|------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Contact | Circuit Number |                   | L<br> | C<br> | R<br> |                           |                                    | Maintained                                                                        | Spring Return from Right                                                          | Spring Return from Left                                                           | Two-Way                                                                           |
|         |                |                   |                                                                                        |                                                                                        |                                                                                        |                           |                                    |  |  |  |  |
| 4NO     | N/D            | 1                 | X                                                                                      | O                                                                                      | O                                                                                      | HW-U10-F                  | Knob/Lever Key<br>Illuminated Knob | ASD0302T8                                                                         | ASD0314T8                                                                         | ASD0323T8                                                                         | ASD0335T8                                                                         |
|         |                | 2                 | O                                                                                      | O                                                                                      | X                                                                                      | HW-U10-F                  |                                    | ASD0302KT8                                                                        | ASD0314KT8                                                                        | ASD0323KT8                                                                        | ASD0335KT8                                                                        |
|         |                | 3                 | X                                                                                      | O                                                                                      | O                                                                                      | HW-U10-F                  |                                    | ASLD0302T8                                                                        | ASLD0314T8                                                                        | ASLD0323T8                                                                        | ASD0335T8                                                                         |
|         |                | 4                 | O                                                                                      | O                                                                                      | X                                                                                      | HW-U10-F                  |                                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|         | 305            | 1                 | X                                                                                      | O                                                                                      | X                                                                                      | HW-U10-F                  | Knob/Lever Key<br>Illuminated Knob | ASD0306T8                                                                         | ASD0310T8                                                                         | ASD0328T8                                                                         | ASD0339T8                                                                         |
|         |                | 2                 | O                                                                                      | O                                                                                      | X                                                                                      | HW-U10-F                  |                                    | ASD0306KT8                                                                        | ASD0301KT8                                                                        | ASD0328KT8                                                                        | ASD0339KT8                                                                        |
|         |                | 3                 | X                                                                                      | O                                                                                      | X                                                                                      | HW-U10-F                  |                                    | ASLD0306T8                                                                        | ASLD0310T8                                                                        | ASLD0328T8                                                                        | ASLD0339T8                                                                        |
|         |                | 4                 | O                                                                                      | O                                                                                      | X                                                                                      | HW-U10-F                  |                                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| 4NC     | N/D            | 1                 | O                                                                                      | X                                                                                      | X                                                                                      | HW-U01-F                  | Knob/Lever Key<br>Illuminated Knob | ASD0302T8                                                                         | ASD0314T8                                                                         | ASD0323T8                                                                         | ASD0335T8                                                                         |
|         |                | 2                 | X                                                                                      | X                                                                                      | O                                                                                      | HW-U01-F                  |                                    | ASD0302KT8                                                                        | ASD0314KT8                                                                        | ASD0323KT8                                                                        | ASD0335T8                                                                         |
|         |                | 3                 | O                                                                                      | X                                                                                      | X                                                                                      | HW-U01-F                  |                                    | ASLD0302T8                                                                        | ASLD0314T8                                                                        | ASLD0323T8                                                                        | ASD0335T8                                                                         |
|         |                | 4                 | X                                                                                      | X                                                                                      | O                                                                                      | HW-U01-F                  |                                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|         | 314            | 1                 | O                                                                                      | X                                                                                      | O                                                                                      | HW-U01-F                  | Knob/Lever Key<br>Illuminated Knob | ASD0306T8                                                                         | ASD0310T8                                                                         | ASD0328T8                                                                         | ASLD0339T8                                                                        |
|         |                | 2                 | X                                                                                      | X                                                                                      | O                                                                                      | HW-U01-F                  |                                    | ASD0306KT8                                                                        | ASD0301KT8                                                                        | ASD0328KT8                                                                        | ASD0339KT8                                                                        |
|         |                | 3                 | O                                                                                      | X                                                                                      | O                                                                                      | HW-U01-F                  |                                    | ASLD0306T8                                                                        | ASLD0301T8                                                                        | ASLD0328T8                                                                        | ASLD0339T8                                                                        |
|         |                | 4                 | X                                                                                      | X                                                                                      | O                                                                                      | HW-U01-F                  |                                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |

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Operator Truth Tables

Use the following tables to build custom selector switches.

2 Position Selector Switches

|            | Contact           | Mounting Position | Operator Position |       |
|------------|-------------------|-------------------|-------------------|-------|
|            |                   |                   | Left              | Right |
| ASLD0201T8 | HW-U10-F (NO)     | L                 | O                 | X     |
|            |                   | R                 | O                 | X     |
|            | HW-U01-F (NC)     | L                 | X                 | O     |
|            |                   | R                 | X                 | O     |
|            | HW-U10R-F (NO-EM) | L                 | O                 | X—    |
|            |                   | R                 | O                 | X—    |
|            | HW-U01R-F (NC-LB) | L                 | X—                | O     |
|            |                   | R                 | X—                | O     |

3 Position Selector Switches

|                                       | Contact           | Mounting Position | Operator Position |        |       |
|---------------------------------------|-------------------|-------------------|-------------------|--------|-------|
|                                       |                   |                   | Left              | Center | Right |
| ASD0302T8<br>ASLD0302T8<br>ASD0302KT8 | HW-U10-F (NO)     | L                 | X                 | O      | O     |
|                                       |                   | R                 | O                 | O      | X     |
|                                       | HW-U01-F (NC)     | L                 | O                 | X—X    |       |
|                                       |                   | R                 | X—X               |        | O     |
|                                       | HW-U10R-F (NO-EM) | L                 | X—                | O      | O     |
|                                       |                   | R                 | O                 | O      | X     |
|                                       | HW-U10R-F (NC-LB) | L                 | O                 | X—X    |       |
|                                       |                   | R                 | X—X               |        | O     |

|                                       | Contact           | Mounting Position | Operator Position |        |       |
|---------------------------------------|-------------------|-------------------|-------------------|--------|-------|
|                                       |                   |                   | Left              | Center | Right |
| ASD0306T8<br>ASLD0306T8<br>ASD0306KT8 | HW-U10-F (NO)     | L                 | X                 | O      | X     |
|                                       |                   | R                 | O                 | O      | X     |
|                                       | HW-U01-F (NC)     | L                 | O                 | X      | O     |
|                                       |                   | R                 | X—X               |        | O     |
|                                       | HW-U10R-F (NO-EM) | L                 | X—                | O      | X—    |
|                                       |                   | R                 | O                 | O      | X     |
|                                       | HW-U01R-F (NC-LB) | L                 | O                 | X—     | O     |
|                                       |                   | R                 | X—X               |        | O     |

## Accessories — TWND Series

| Item                 | Appearance                                                                          | Description/Usage                                                                                                                      |                                                                                                                                    | Part Number |
|----------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|-------------|
| Lamp Removal Tool    |    | Rubber tool used to install or remove LED's                                                                                            |                                                                                                                                    | OR-55       |
| Metal Bezel          |    | Replacement locking ring/bezel                                                                                                         | Standard octagonal units (chrome-pl.).                                                                                             | OG-81       |
|                      |                                                                                     |                                                                                                                                        | Extended, non-illuminated (chrome-pl.).                                                                                            | OG-82       |
|                      |                                                                                     |                                                                                                                                        | Extended, illuminated (chrome-pl.).                                                                                                | OG-83L      |
|                      |                                                                                     |                                                                                                                                        | Jumbo Mushroom Shallow Shroud                                                                                                      | ABN4G       |
|                      |                                                                                     |                                                                                                                                        | Jumbo Mushroom Deep Shroud                                                                                                         | ABN4F       |
| Plastic Bezel        |    | Black plastic locking ring/bezel                                                                                                       |                                                                                                                                    | OGP11B      |
| Boot/Cover           |    | Used to cover and protect pushbuttons                                                                                                  | In place of ①, specify <b>Neoprene Rubber Boot</b> color:<br><b>B</b> (black), <b>G</b> (green), <b>R</b> (red), <b>Y</b> (yellow) | OC-11 ①     |
|                      |                                                                                     |                                                                                                                                        | Flush units (clear plastic -40° to +60°C).                                                                                         | OC-121      |
|                      |                                                                                     |                                                                                                                                        | Extended units (clear plastic -40° to +60°C).                                                                                      | OC-122      |
| Anti-Rotation Ring   |   | Plastic washer<br>For nameplates or panels that should not be scratched.                                                               |                                                                                                                                    | OGL-D1T     |
|                      |                                                                                     | Thrust washer/Anti-rotation ring for use with notched panel cutout.                                                                    |                                                                                                                                    | OGL-D1S     |
| Mounting Hole Plug   |  | Plugs used to fill unused 30mm panel cutouts.                                                                                          | Plastic with locking nut attached.                                                                                                 | OBP-11      |
|                      |                                                                                     |                                                                                                                                        | Metal with locking nut attached                                                                                                    | OB-11       |
|                      |                                                                                     |                                                                                                                                        | Grey rubber (-5° to +60°C)                                                                                                         | OB-13       |
| Terminal Tab Adaptor |  | Tab #250 17/64" x 3/64" (6.35mm x 0.8mm): Single tab                                                                                   |                                                                                                                                    | TW-FA4      |
| Long Lamp Holder     |  | <b>Used with</b> Transformer and two contact blocks<br><b>Used with</b> Full Voltage Adaptor and two contact blocks                    |                                                                                                                                    | TW-LH2      |
| Lead Holder          |  | <b>Used with</b> TW-LH2 holder when using four contact blocks                                                                          |                                                                                                                                    | HW-LH3      |
| Lock Out Adaptor     |  | Used to provide lockout protection for TWTD pushbuttons and knob selectors.<br>ø 1-13/64" (30mm)                                       |                                                                                                                                    | OL-KL1      |
| Full Voltage Clips   |  | Primary Voltage (50/60Hz) Required for all full voltage pilot lights. Two pieces each. 2 clips required for full voltage pilot lights. |                                                                                                                                    | APD-F       |
| Replacement Keys     |  | Pair of keys (#0)                                                                                                                      |                                                                                                                                    | TW-SK       |

Switches &amp; Pilot Devices

Signaling Lights

Relays &amp; Sockets

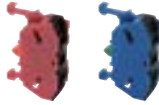
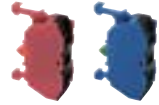
Timers

Contactors

Terminal Blocks

Circuit Breakers

### Accessories TWND Series continued

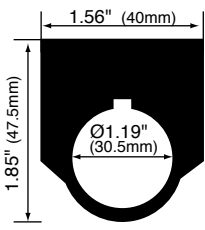
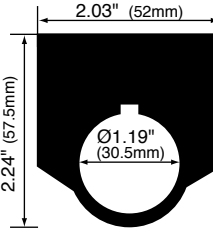
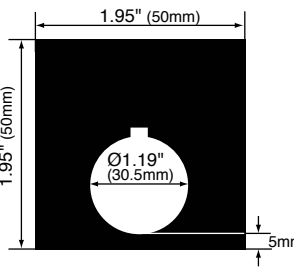
| Item                                   | Appearance                                                                        | Description/Usage                                                                                                              | Part Number                                                               |                                                                           |
|----------------------------------------|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|---------------------------------------------------------------------------|
|                                        |                                                                                   |                                                                                                                                | 1NC                                                                       | 1NO                                                                       |
| Contact Blocks<br>(with side entry)    |  | These contacts are applicable for wires terminated by ring, fork, terminals, <b>not recommended for bare wire connections.</b> | HW-U01<br>HW-U01-MAU<br>HW-U01R<br>HW-U01R-MAU<br>(with side entry)       | HW-U10<br>HW-U10-MAU<br>HW-U10R<br>HW-U10R-MAU<br>(with side entry)       |
| Contact Blocks<br>(without side entry) |  | These contacts are applicable for wires terminated by ring, fork, or ferule terminals, and <b>also bare wire connections.</b>  | HW-U01-F<br>HW-U01-MAU-F<br>HW-U01R-F<br>HW-U01R-MAU-F<br>(no side entry) | HW-U10-F<br>HW-U10-MAU-F<br>HW-U10R-F<br>HW-U10R-MAU-F<br>(no side entry) |

### Fingersafe Covers for TWND Series

| Item                                                                               | Description                                                                         | Used with                 | Part Number |
|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------|-------------|
|   | Fingersafe terminal cover, for full voltage pilot lights, adds 3mm to overall depth | Full voltage pilot lights | APD-PVL     |
|  | Fingersafe terminal cover, adds 1.5mm to overall depth                              | Transformer pilot lights  | N-VL3       |

## Nameplates — TWND Series

## Faceplates

|                      | NALD                                                                              | NAKD                                                                              | NAQD                                                                               |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| Dimensions           |  |  |  |
| Description          | Part Number                                                                       |                                                                                   |                                                                                    |
| Nameplate (blank)    | NALD-B (black)<br>NALD-R (red)                                                    | NAKD-B (black)<br>NAKD-R (red)                                                    | NAQD-B (black)<br>NAQD-R (red)                                                     |
| Nameplate (engraved) | NALD-①                                                                            | NAKD-①                                                                            | NAQD-①                                                                             |



1. Nameplates are made of 0.031" aluminum. Lettering is white letters engraved on black background.
2. In place of ①, insert either the standard legend code from table below or custom engraving delimited by " ".

## Standard Legend Codes

| Pushbuttons |      |               |      | Pushbuttons/Selector Switches |      |            |      | Selector Switches |      |
|-------------|------|---------------|------|-------------------------------|------|------------|------|-------------------|------|
| Legend      | Code | Legend        | Code | Legend                        | Code | Legend     | Code | Legend            | Code |
| AUTO        | 101  | OPEN          | 116  | AUTO-MAN                      | 201  |            |      | AUTO-MAN-OFF      | 301  |
| CLOSE       | 102  | OUT           | 117  | CLOSE-OPEN                    | 202  |            |      | AUTO-OFF-MAN      | 302  |
| DOWN        | 103  | RAISE         | 118  | DOWN-UP                       | 203  |            |      | CLOSE-OFF-OPEN    | 303  |
| EMERG.STOP* | 104  | RESET         | 119  | FAST-SLOW                     | 204  |            |      | DOWN-OFF-SLOW     | 304  |
| FAST        | 105  | REVERSE       | 120  | FOR-REV                       | 205  | REV-FOR    | 216  | FAST-OFF-SLOW     | 305  |
| FORWARD     | 106  | RUN           | 121  | HAND-AUTO                     | 206  | RUN-JOG    | 217  | FOR-OFF-REV       | 306  |
| HAND        | 107  | SLOW          | 122  | HIGH-LOW                      | 207  | RUN-SAFE   | 218  | LEFT-OFF-RIGHT    | 307  |
| HIGH        | 108  | START         | 123  | JOG-RUN                       | 208  | SAFE-RUN   | 219  | LOWER-OFF-RAISE   | 308  |
| IN          | 109  | STOP*         | 124  | LEFT-RIGHT                    | 209  | SLOW-FAST  | 220  | OFF-MAN-AUTO      | 309  |
| INCH        | 110  | STOP          | 125  | LOWER-RAISE                   | 210  | START-STOP | 221  | OFF-SLOW-FAST     | 310  |
| JOG         | 111  | TEST          | 126  | MAN-AUTO                      | 211  | STOP-START | 222  | OFF-1-2           | 311  |
| LOW         | 112  | UP            | 127  | OFF-ON                        | 212  | UP-DOWN    | 223  | OPEN-OFF-CLOSE    | 312  |
| LOWER       | 113  | I (Int'l On)  | 150  | ON-OFF                        | 213  |            |      | SLOW-OFF-FAST     | 313  |
| OFF         | 114  | O (Int'l Off) | 151  | OPEN-CLOSE                    | 214  |            |      | SUMMER-OFF-WINTER | 314  |
| ON          | 115  | EMO           | 152  | RAISE-LOWER                   | 215  |            |      | UP-OFF-DOWN       | 315  |
|             |      |               |      |                               |      |            |      | 1-OFF-2           | 316  |
|             |      |               |      |                               |      |            |      | HAND-OFF-AUTO     | 317  |



1. \*Available in Red as standard legend code 104 and 124. To order engraved nameplate and codes, add legend code to nameplate part number. Character height based on the number of characters, space and size of nameplate. Standard character size is 3/16".
2. Nameplates with standard legends are the same list price as blank nameplates. Special engravings, additional cost.

To specify engraving instructions, use the Nameplate order form on next page.



## Custom engraved Nameplates Order Form — TWND Series

Copy this order form and use it to specify Letter Height, Custom Engravings, Location of Engraving on Nameplate, and Quantity Desired.

To ensure engraving accuracy, fax it to your IDEC representative. or Distributor.

Your Company Name: \_\_\_\_\_

IDEC Rep/Distributor Contact: \_\_\_\_\_

Your Name: \_\_\_\_\_

PO number (if known): \_\_\_\_\_

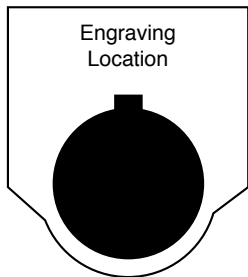
Telephone: \_\_\_\_\_

IDEC Rep/Distributor Phone: \_\_\_\_\_

Fax & Email: \_\_\_\_\_

IDEC Rep/Distributor Fax & Email: \_\_\_\_\_

### NALD Nameplate



#### Step 1.

Choose Letter Size - 7/64" or 1/8".

Check the box for the letter size you want. Then write your lettering in box below checkboxes. Note: 1/8" size letters cannot exceed 13 characters.

#### Sample Letter Sizes

7/64" Letters: A B C D

1/8" Letters: A B C D

7/64"

Letter Size



16 characters max  
(for 7/64" size letters)

1/8"

Letter Size



13 characters max  
(for 1/8" size letters)

#### Step 2.

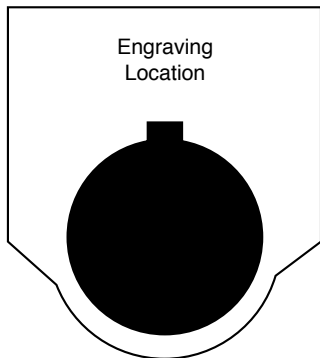
Specify Quantity.

Enter the number of nameplates desired in the box on the right.

Qty

|   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |
|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|

### NAKD Nameplate



#### Step 1.

Choose Letter Size - 7/64" or 1/8".

Check the box for the letter size you want. Then write your lettering in box below checkboxes. Note: 1/8" size letters cannot exceed 9 characters.

#### Step 2.

Specify Quantity.

Enter the number of nameplates desired in the box on the right.

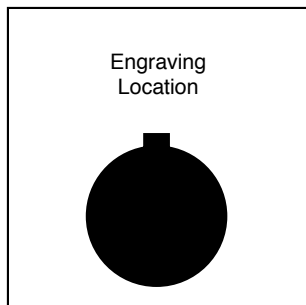
Qty

|   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |
|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|

#### Sample Letter Sizes

1/8" Letters: A B C D

### NAQD Nameplate



#### Step 1.

Choose Letter Size - 7/64" or 1/8".

Check the box for the letter size you want. Then write your lettering in box below checkboxes.

Note: 1/8" size letters cannot exceed 16 characters.

7/64"

Letter Size



20 characters max  
(for 7/64" size letters)

1/8"

Letter Size



16 characters max  
(for 1/8" size letters)

|   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |
|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|

#### Step 2.

Specify Quantity.

Enter the number of nameplates desired in the box on the right.

Qty

#### Sample Letter Sizes

3/32" Letters: A B C D

1/8" Letters: A B C D

## Switch Engraving Order Form – TWND Series

Copy this order form and use it to specify Letter Height, Maximum Number of Lines and Text to be engraved.

To insure engraving accuracy, fax it to your IDEC representative or Distributor.

Your Company: \_\_\_\_\_  
 Name: \_\_\_\_\_  
 Address: \_\_\_\_\_  
 PO: \_\_\_\_\_

Telephone: \_\_\_\_\_  
 Fax: \_\_\_\_\_  
 Email: \_\_\_\_\_  
 Part Number to be Engraved: \_\_\_\_\_

Please check one of the boxes below to indicate your choice of engraving options:



|                          | # of Lines | Letter Height | Max. Characters Per Line |
|--------------------------|------------|---------------|--------------------------|
| <input type="checkbox"/> | 1          | 5/32          | 7                        |
| <input type="checkbox"/> |            | 1/8           | 8                        |
| <input type="checkbox"/> | 2          | 5/32          | 7                        |
| <input type="checkbox"/> |            | 1/8           | 8                        |
| <input type="checkbox"/> | 3          | 1/8           | 8                        |
| <input type="checkbox"/> | 4          | Custom*       |                          |

\*Engraving is possible, but character size will be smaller than standard sizes.



|                          | # of Lines | Letter Height | Max. Characters Per Line |
|--------------------------|------------|---------------|--------------------------|
| <input type="checkbox"/> | 1          | 5/32          | 7                        |
| <input type="checkbox"/> |            | 1/8           | 8                        |
| <input type="checkbox"/> | 2          | 5/32          | 7                        |
| <input type="checkbox"/> |            | 1/8           | 8                        |
| <input type="checkbox"/> | 3          | 1/8           | 8                        |
| <input type="checkbox"/> | 4          | Custom*       |                          |

\*Engraving is possible, but character size will be smaller than standard sizes.

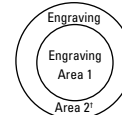


|                          | # of Lines | Letter Height | Max. Characters Per Line |
|--------------------------|------------|---------------|--------------------------|
| <input type="checkbox"/> | 1          | 3/4           | 4                        |
| <input type="checkbox"/> |            | 5/16          | 5                        |
| <input type="checkbox"/> | 2          | 5/16          | 5                        |
| <input type="checkbox"/> |            | 1/4           | 6                        |
| <input type="checkbox"/> |            | 5/32          | 8                        |
| <input type="checkbox"/> | 3          | 5/32          | 8                        |
| <input type="checkbox"/> |            | 1/8           | 9                        |
| <input type="checkbox"/> | 4          | 1/8           | 9                        |

Enter text to be engraved:

Line 1: \_\_\_\_\_  
 Line 2: \_\_\_\_\_  
 Line 3: \_\_\_\_\_  
 Line 4: \_\_\_\_\_

ø29mm, ø40mm Mushroom Head



|                          | # of Lines       | Letter Height | Max. Characters Per Line |
|--------------------------|------------------|---------------|--------------------------|
| <input type="checkbox"/> | Engraving Area 1 | 5/32          | 5                        |
| <input type="checkbox"/> |                  | 1/8           | 5                        |
| <input type="checkbox"/> | Engraving Area 2 | 5/32          | 7                        |
| <input type="checkbox"/> |                  | 1/8           | 7                        |



- Above mentioned specifications hold true for standard size push-buttons (round and square).
- \*Engraving Area 2 can be engraved for 40mm mushroom head non-illuminated pushbutton only.
- Engraving is done on the button itself for non-illuminated push buttons and on marking plate for illuminated push buttons and pilot lights.
- Please enter text exactly how you want it engraved, take care to emphasize capital or small letters.

## Sample Letter Sizes

1/8 Letters: **OPEN**

5/32 Letters: **OPEN**



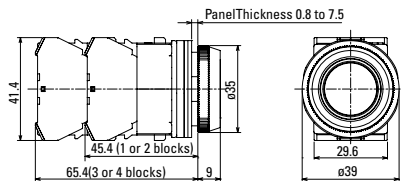
All engraving is 5/8mm wide.

For IDEC Internal Use Only:

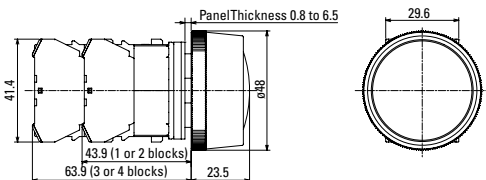
Work Order #: \_\_\_\_\_

## Dimensions (mm)

### Pushbutton



### Mushroom Pushbutton w/Full Shroud



| Pushbuttons                                 | Dimension A                       | Dimension B                      |
|---------------------------------------------|-----------------------------------|----------------------------------|
| Flush                                       | 0.351" (9mm)                      | ø 0.975" (25mm)                  |
| Extended                                    | 0.566" (14.5mm)                   | ø 0.975" (25mm)                  |
| Extended w/Full Shroud                      | 0.663" (17mm)                     | ø 1.11" (28.5mm)                 |
| Mushroom                                    | 0.858" (22mm)                     | ø 1.56" (40mm)                   |
| Mushroom w/Full Shroud                      | 0.936" (24mm)                     | ø 1.87" (48mm)                   |
| Jumbo Mushroom                              | 1.13" (29mm)                      | ø 2.54" (65mm)                   |
| Mushroom, Pushlock Turn Reset and Push-Pull | *0.975" (25mm)<br>**0.975" (25mm) | ø 1.56" (40mm)<br>ø 1.56" (40mm) |

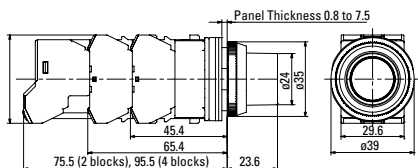


\*Dimension when operator is in reset position.

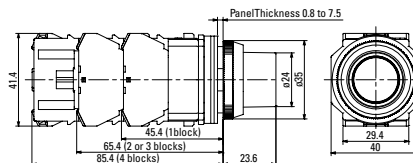
\*\*Dimension when operator is in pull position.

### Illuminated Pushbuttons

w/Transformer

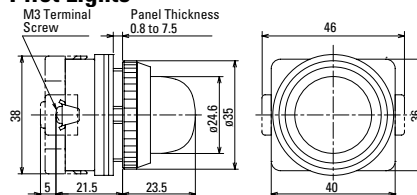


Full Voltage



| Illuminated Pushbuttons                                | Dimension A                       | Dimension B                        |
|--------------------------------------------------------|-----------------------------------|------------------------------------|
| Flush w/Full Shroud                                    | 0.975" (25mm)<br>0.995" (25.5mm)  | ø 0.936" (24mm)<br>ø 0.936" (24mm) |
| Extended w/Full Shroud                                 | 0.741" (19mm)<br>0.761" (19.5mm)  | ø 0.936" (24mm)<br>ø 0.936" (24mm) |
| ø 1.56" (40mm) Mushroom Pushlock Turn Reset, Push-Pull | *0.975" (25mm)<br>**0.975" (25mm) | ø 1.56" (40mm)<br>ø 1.56" (40mm)   |

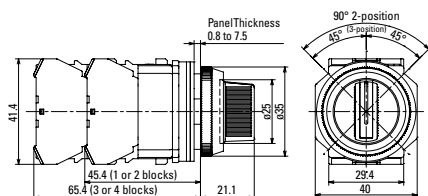
### Pilot Lights



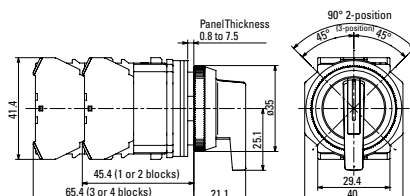
\*Dimension when operator is in reset position.  
\*\*Dimension when operator is in pull position.

### Selector Switches

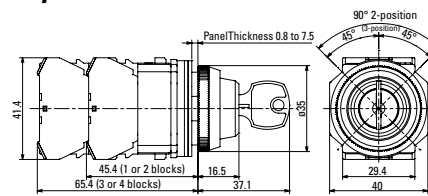
#### Knob



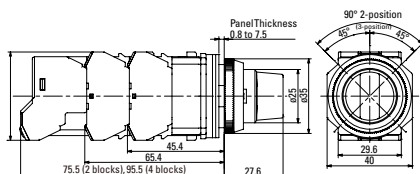
#### Lever



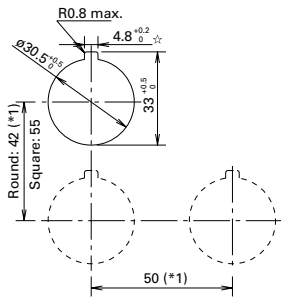
#### Key



### Illuminated Knob



## Selector Switches Panel Cut-Out

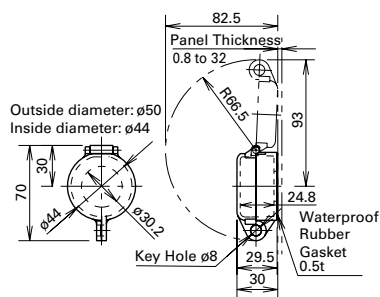


1. \*Jumbo Mushroom < 2.61" (66mm)
2. Minimum mounting centers are applicable to switches with one stack of contact blocks. When mounting two stacks of contact blocks, minimum centers should allow for access to wiring.
3. The  $\phi 0.195$ " ( $\phi 5$ mm) recess is necessary when either the nameplate or anti-rotation ring is used.

## Illuminated Selector Switches

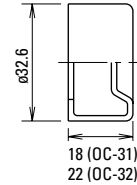
## OL-KL1

Lock-Out Adaptor



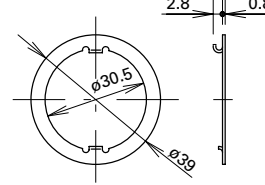
## OC-31

Pushbutton Clear Boot



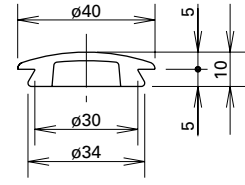
## OGL-31

Anti-Rotation Ring



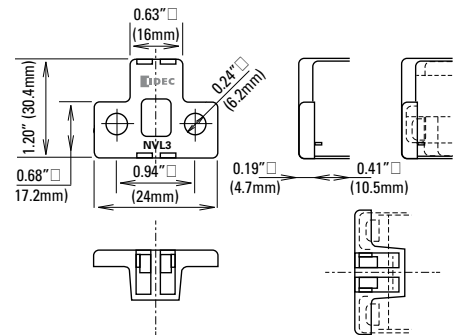
## OB-31

Mounting Hole Rubber Plug

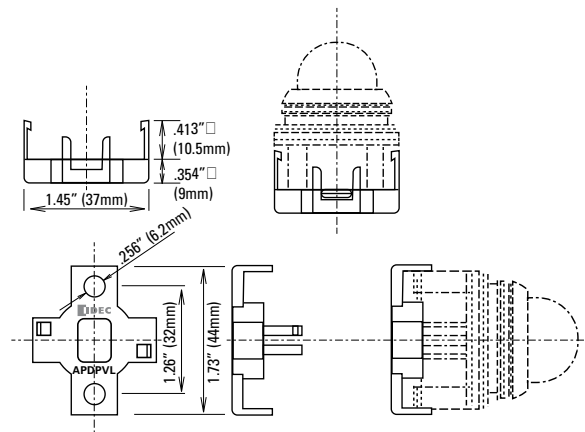


## Finger-Safe Cover

## N-VL3



## APD-PVL



Switches & Pilot Devices

Signaling Lights

Relays & Sockets

Timers

Contactors

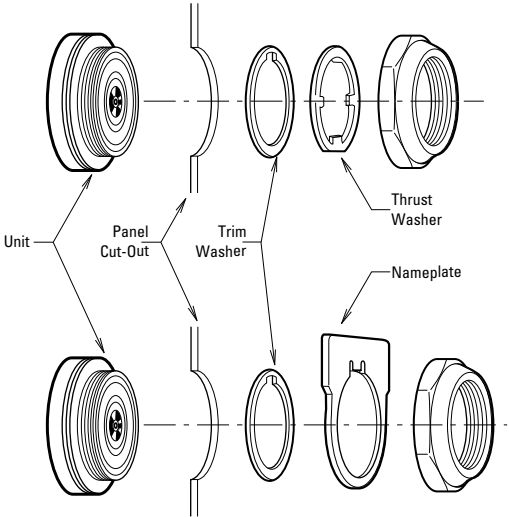
Terminal Blocks

Circuit Breakers

Operating Instructions

Adjustment for Panel Thickness

Each unit is shipped with several waterproof gaskets which are 0.06" (1.5mm) and 0.12" (3mm) thick. Combine the gaskets for a dimension approximately equal to panel thickness and install between the bezel and the body of the unit.

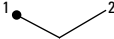
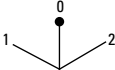


A trim washer must be used with a thrust washer or a nameplate to prevent the control unit from rotating in the mounting hole. When using anti-rotation rings (trim washer with thrust washer or nameplate), install as shown below.

Selector Switches

The operator shaft of each unit has a recess to identify in which direction to install the handle. Align the handle with the recess. Press color insert (TW-HC1) into the Standard Operating Positions.

Standard Operation Positions

| 2-Position, 90°                                                                     | 3-Position, 45°                                                                     |                                                                                     |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  |  |                                                                                     |
| Non-Illuminated 3-Position Operators                                                |                                                                                     |                                                                                     |
|  |  |  |

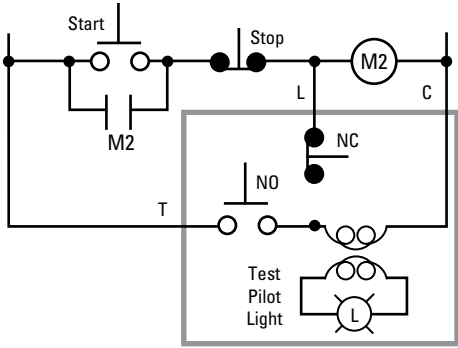
Insallation of LED Illuminated Units

Transformer units are recommended for use in areas subjected to inductive noise.

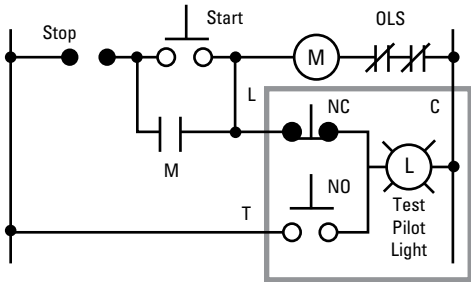
Application Example For Push-To-Test Pilot Light

A typical application of illuminated pushbuttons is a push-to-test pilot light which can be used to check the lamp/LED circuit.

Transformer/AC-Adapter Circuit



Full Voltage Circuit



## TWTD Series — Full Size NEMA Pushbuttons



### TWTD Series: Heavy duty switches built to last

#### Key features:

- Variety of button sizes up to 2 9/16" (65mm)
- Rugged construction includes chrome plated zinc locking ring die cast zinc mounting threads, screw mounted contact blocks
- LED or incandescent illumination
- Transformer or full voltage
- Transparent contact windows
- Slow make, double break self-clearing contacts
- Modular construction for maximum flexibility
- Double nickel plated terminal screws
- Available assembled or as sub-components
- Type 4x and IP65 watertight/oiltight panel
- Large M3.5 screw terminals with captive sems plate

The rugged series of TWTD switches offers both variety and durability in an attractive design.

With button sizes up to 2 9/16" (65mm), chrome plated zinc locking rings, die cast zinc mounting threads, steel anti-rotation rings, and self cleaning contacts, the TWTDs are here to stay.

The TWTD series also offers either LED or incandescent illumination in full voltage and transformer models.

Transparent contact windows allow the viewing of IDEC's self cleaning slow-make/slow-break contacts.

Regardless of your switching needs, the TWTD series provides the kind of long lasting, industrial strength quality you've come to expect from IDEC.



UL Listed  
File No. E68961



File No. LR21451



Ref No. 117617MC



Certificate No.  
2005010305145658

## Specifications

|                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Conforming to Standards                        | EN60947-1, EN60947-5-1, VDE0660-200, UL508, CSA C22-2 No.14                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Approvals                                      | <b>CSA:</b> pushbuttons and selector switches: A600 pilot lights and illuminated pushbuttons, direct supply pilot lights and illuminated pushbuttons with integral transformer (100/110, 115, 120, 200/220, 230, 240, 380, 400/440, 480V)<br><b>UL:</b> pushbuttons and selector switches: A600 pilot lights and illuminated pushbuttons, direct supply pilot lights and illuminated pushbuttons with integral transformer (100/110, 115, 120, 200/220, 230, 240, 380, 400/440, 480V)<br><b>TÜV:</b> pushbuttons and selector switches: A600-P600 (NO, NC)/Q600 (NO-EM, NC-LB) pilot lights and illuminated pushbuttons, direct supply pilot lights and illuminated pushbuttons with integral transformer (100/110, 115, 120, 200/220, 230, 240, 380, 400/440, 480V) |
| Operating Temperature                          | Operation: -25 to +50°C (without freezing)<br>Storage: -40 to +70°C (without freezing)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Vibration Resistance                           | 10 to 55Hz, 98m/sec <sup>2</sup> (10g) conforming to IEC6068-2-6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Shock Resistance                               | 980m/sec <sup>2</sup> (100g) conforming to IEC6068-2-7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Electric Shock Protection                      | Class 0 conforming to IEC60536                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Degree of Protection                           | IP65 (from front of the panel) (conforming to IEC60529)<br>IP54 (key switches)<br>Type 1, 2, 3, 3R, 3S, 4, 4X, 5, 12, 13 (conforming to NEMA ICS6-110)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Mechanical Life                                | Momentary pushbuttons: 5,000,000 (900 operations per hour)<br>All other switches: 500,000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Pollution Degree<br>(conforming to IEC60947-1) | 3 for switches not using a transformer<br>2 for switches using a transformer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

## Mechanical-Electrical Specifications

|                                    |                                                                                                                                                                              |
|------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Rated Operational Characteristics  | AC-15: A600 or Ue = 250V, Ie = 3A (NO, NC, NO-EM, NC-LB)<br>DC-13: P600 or Ue = 125V, Ie = 1.1A (NO, NC)<br>DC-13: Q600 or Ue = 125V, Ie = 0.9A (NO-EM, NC-LB)               |
| Rated Insulation Voltage           | 600V                                                                                                                                                                         |
| Rated Switching Overvoltage        | Less than 4kV, conforming to IEC60947-1                                                                                                                                      |
| Rated Impulse Withstanding Voltage | 4kV for contact circuit<br>2.5kV for lamp circuit                                                                                                                            |
| Rated Thermal Current              | 10 Amp                                                                                                                                                                       |
| Minimum Switching Capacity         | 5 mA at 3V AC/DC                                                                                                                                                             |
| Contact Operation                  | Slow break NC or NO, self-cleaning                                                                                                                                           |
| Operating Force                    | Flush and extended pushbuttons—with 1NO or 1NC contact: 6.2±2N (momentary),<br>7.0±2N (maintained)<br>Additional contacts—1NO or 1NC: +3.2N (momentary), + 3.3N (maintained) |
| Terminal Referencing               | Conforming to CENELEC EN50005                                                                                                                                                |
| Recommended Terminal Torque        | 0.8 N m (7.1 in lb.)                                                                                                                                                         |
| External Short-Circuit Protection  | 10A 250V fuse conforming to IEC60269-1                                                                                                                                       |
| Applicable Wire Size               | Minimum 1 x 22 AWG, max. 2 x 14 AWG or 1 x 12 AWG                                                                                                                            |
| Contact Resistance                 | Initial contact resistance of 50mΩ or less                                                                                                                                   |
| Contact Gap                        | 4mm (NO and NC)<br>2mm (NO-EM and NC-LB)                                                                                                                                     |
| Lamp Ratings                       | Incandescent: 1 W<br>LEDs: 6V: 17mA, 12V: 11mA, 24V: 11mA, / 120, 240V: 10mA                                                                                                 |
| Maximum Inrush Current             | 40 A (40 msec)                                                                                                                                                               |
| Contact Material                   | Silver                                                                                                                                                                       |

## Contact Ratings

| Contact Ratings by Utilization Category IEC 60947-5-1 |             |                                                      | AC-15 (A600) |     |     |      |      |      |
|-------------------------------------------------------|-------------|------------------------------------------------------|--------------|-----|-----|------|------|------|
|                                                       |             |                                                      | DC-13 (P600) |     |     |      |      |      |
| Contact Ratings by Utilization Category               |             |                                                      |              |     |     |      |      |      |
| Operational Voltage                                   |             |                                                      | 24V          | 48V | 50V | 110V | 220V | 440V |
| Operation Current                                     | AC 50/60 Hz | AC-12 Control of resistive loads & solid state loads | 10A          | —   | 10A | 10A  | 6A   | 2A   |
|                                                       |             | AC-15 Control of electromagnetic loads (> 72VA)      | 10A          | —   | 7A  | 5A   | 3A   | 1A   |
|                                                       | DC          | DC-12 Control of resistive loads & solid state loads | 8A           | 5A  | —   | 2.2A | 1.1A | —    |
|                                                       |             | DC-13 Control of electromagnets                      | 5A           | 2A  | —   | 1.1A | 0.6A | —    |



## Non-Illuminated Pushbuttons (Assembled)



## Assembled Pushbuttons

**A** **B** **( )** **D** **1** **10** **N - R**

**Function**

B: Momentary  
O: Maintained  
V: Pushlock Turn Reset  
Y: Push-Pull

**Bezel Shape**

Blank: Octagonal  
F: Full Shroud  
G: Mushroom Shroud  
P: Neoprene Boot

**Series Designation**

D: TWTD Series

**Button Color**

B: Black G: Green W: White  
R: Red S: Blue Y: Yellow

**Contact Arrangement**

10: 1NO 01: 1NC  
20: 2NO 02: 2NC  
11: 1NO-1NC 22: 2NO-2NC

**Button Shape**

1: Flush  
2: Extended  
3: Mushroom ø 40mm  
4: Jumbo Mushroom ø 65mm



1. Use only when interpreting part numbers. Do not use for developing part numbers.
2. Custom contact configurations available, contact IDEC for details.

## Non-Illuminated Pushbuttons (Assembled)

### Non-Illuminated Pushbuttons

| Style                                          | Contacts                            | Momentary                                                          | Maintained                                                         |
|------------------------------------------------|-------------------------------------|--------------------------------------------------------------------|--------------------------------------------------------------------|
| Flush                                          | 1NO<br>1NC<br>1NO-1NC<br>2NO<br>2NC | ABD110N-①<br>ABD101N-①<br>ABD111N-①<br>ABD120N-①<br>ABD102N-①      | AOD110N-①<br>AOD101N-①<br>AOD111N-①<br>AOD120N-①<br>AOD102N-①      |
| Extended                                       | 1NO<br>1NC<br>1NO-1NC<br>2NO<br>2NC | ABD210N-①<br>ABD201N-①<br>ABD211N-①<br>ABD220N-①<br>ABD202N-①      | AOD210N-①<br>AOD201N-①<br>AOD211N-①<br>AOD220N-①<br>AOD202N-①      |
| Extended with Neoprene Boot*                   | 1NO<br>1NC<br>1NO-1NC<br>2NO<br>2NC | ABPD210N-①<br>ABPD201N-①<br>ABPD211N-①<br>ABPD220N-①<br>ABPD202N-① | AOPD210N-①<br>AOPD201N-①<br>AOPD211N-①<br>AOPD220N-①<br>AOPD202N-① |
| Recessed                                       | 1NO<br>1NC<br>1NO-1NC<br>2NO<br>2NC | ABFD110N-①<br>ABFD101N-①<br>ABFD111N-①<br>ABFD120N-①<br>ABFD102N-① | AOFD110N-①<br>AOFD101N-①<br>AOFD111N-①<br>AOFD120N-①<br>AOFD102N-① |
| Extended with Full Shroud                      | 1NO<br>1NC<br>1NO-1NC<br>2NO<br>2NC | ABFD210N-①<br>ABFD201N-①<br>ABFD211N-①<br>ABFD220N-①<br>ABFD202N-① | AOFD210N-①<br>AOFD201N-①<br>AOFD211N-①<br>AOFD220N-①<br>AOFD202N-① |
| ø 40mm Mushroom Head                           | 1NO<br>1NC<br>1NO-1NC<br>2NO<br>2NC | ABD310N-①<br>ABD301N-①<br>ABD311N-①<br>ABD320N-①<br>ABD302N-①      | AOD310N-①<br>AOD301N-①<br>AOD311N-①<br>AOD320N-①<br>AOD302N-①      |
| ø 40mm Mushroom Head with Full Shroud          | 1NO<br>1NC<br>1NO-1NC<br>2NO<br>2NC | ABGD310N-①<br>ABGD301N-①<br>ABGD311N-①<br>ABGD320N-①<br>ABGD302N-① | AOGD310N-①<br>AOGD301N-①<br>AOGD311N-①<br>AOGD320N-①<br>AOGD302N-① |
| ø 65mm Jumbo Mushroom Head                     | 1NO<br>1NC<br>1NO-1NC<br>2NO<br>2NC | ABD410N-①<br>ABD401N-①<br>ABD411N-①<br>ABD420N-①<br>ABD402N-①      | AOD410N-①<br>AOD401N-①<br>AOD411N-①<br>AOD420N-①<br>AOD402N-①      |
| ø 65mm Jumbo Mushroom Head with Shallow Shroud | 1NO<br>1NC<br>1NO-1NC<br>2NO<br>2NC | ABGD410N-①<br>ABGD401N-①<br>ABGD411N-①<br>ABGD420N-①<br>ABGD402N-① | AOGD410N-①<br>AOGD401N-①<br>AOGD411N-①<br>AOGD420N-①<br>AOGD402N-① |
| ø 65mm Jumbo Mushroom Head With Deep Shroud    | 1NO<br>1NC<br>1NO-1NC<br>2NO<br>2NC | ABFD410N-①<br>ABFD401N-①<br>ABFD411N-①<br>ABFD420N-①<br>ABFD402N-① | AOFD410N-①<br>AOFD401N-①<br>AOFD411N-①<br>AOFD420N-①<br>AOFD402N-① |

### ① Button Color Codes

| Color  | Code |
|--------|------|
| Black  | B    |
| Green  | G    |
| Red    | R    |
| Blue   | S    |
| Yellow | Y    |
| White  | W    |



1. 65mm Jumbo mushroom not available in white.
2. Neoprene boot is not available in blue or white.



1. In place of ①, specify the Button Color Code.
2. For sub-assembly part numbers, see next page.
4. \*Neoprene boot available only in Black (B), Green (G), Red (R) and Yellow (Y).

## Non-Illuminated Pushbuttons (Sub-Assembled)



## Operators

| Style                                     |                                                                                     | Part Number |            |
|-------------------------------------------|-------------------------------------------------------------------------------------|-------------|------------|
|                                           |                                                                                     | Momentary   | Maintained |
| Flush/Extended                            |    | ABD-100     | AOD-100    |
| Extended with Full Shroud                 |    | ABFD-200    | AOFD-200   |
| ø 40mm Mushroom/ø 65mm Jumbo Mushroom     |   | ABD-300     | AOD-300    |
| ø 40mm Mushroom with Full Shroud          |  | ABGD-300    | AOGD-300   |
| ø 65mm Jumbo Mushroom with Shallow Shroud |  | ABGD-400    | AOGD-400   |
| ø 65mm Jumbo Mushroom with Deep Shroud    |  | ABFD-400    | AOFD-400   |

## Buttons and Lenses

| Style                 | Part Number |
|-----------------------|-------------|
| Flush                 | ABD1BN-①    |
| Extended              | ABD2BN-①    |
| ø 40mm Mushroom       | ABD3BN-①    |
| ø 65mm Jumbo Mushroom | ABD4BN-①    |



In place of ①, specify the Button Color Code. (See table previous page)

## Contact Blocks

| Style             |                                                                                       | Part Number                      |                                  |
|-------------------|---------------------------------------------------------------------------------------|----------------------------------|----------------------------------|
|                   |                                                                                       | 1NO                              | 1NC                              |
| All Control Units |  | BST-010<br>BST-010S (early make) | BST-001<br>BST-001S (late break) |
| Dummy Block       |                                                                                       | BST-D                            |                                  |



1. Dummy blocks (no contacts) are used with an odd number of contact blocks.
2. Combining BST-010S and BST-001S result in overlapping contacts (remain on, or closed, when switch is moved between two positions).

Stop Switches (Assembled)



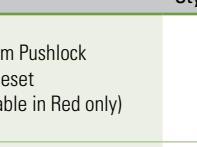
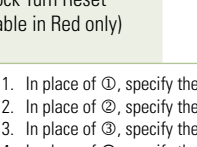
Assembled Stop Switches

|                             |                                                                                                                                                                          |          |            |          |          |             |           |            |          |          |          |          |              |
|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|------------|----------|----------|-------------|-----------|------------|----------|----------|----------|----------|--------------|
|                             | <b>A</b>                                                                                                                                                                 | <b>V</b> | <b>(L)</b> | <b>D</b> | <b>3</b> | <b>(99)</b> | <b>11</b> | <b>(D)</b> | <b>N</b> | <b>-</b> | <b>R</b> | <b>-</b> | <b>(24V)</b> |
| <b>Function</b>             | V: Pushlock Turn Reset<br>Y: Push-Pull                                                                                                                                   |          |            |          |          |             |           |            |          |          |          |          |              |
| <b>Illumination</b>         | Blank: None<br>L: Illuminated                                                                                                                                            |          |            |          |          |             |           |            |          |          |          |          |              |
| <b>Series Designation</b>   | D: TWTD Series                                                                                                                                                           |          |            |          |          |             |           |            |          |          |          |          |              |
| <b>Button/Lens Size</b>     | 3: 40mm Mushroom                                                                                                                                                         |          |            |          |          |             |           |            |          |          |          |          |              |
| <b>Illumination Circuit</b> | 99: Full Voltage (lamp determines voltage)<br>126: 120V AC Step Down Transformer<br>246: 240V AC Step Down Transformer<br>486: 480V AC Step Down Transformer             |          |            |          |          |             |           |            |          |          |          |          |              |
|                             | <b>Lamp Voltage</b><br>(full voltage illuminated units only)<br>6V: 6V AC/DC<br>12V: 12V AC/DC<br>24V: 24V AC/DC<br>120V: 120V AC (LED only)<br>240V: 240V AC (LED only) |          |            |          |          |             |           |            |          |          |          |          |              |
|                             | <b>Button/Lens Color Code</b><br>A: Amber<br>G: Green<br>R: Red<br>S: Blue<br>W: White<br>Y: Yellow                                                                      |          |            |          |          |             |           |            |          |          |          |          |              |
|                             | <b>Lamp Type</b><br>(illuminated units only)<br>Blank: Incandescent<br>D: LED                                                                                            |          |            |          |          |             |           |            |          |          |          |          |              |
|                             | <b>Contact Arrangement</b><br>10: 1NO      01: 1NC<br>20: 2NO      02: 2NC<br>11: 1NO-1NC    22: 2NO-2NC                                                                 |          |            |          |          |             |           |            |          |          |          |          |              |

1. Use only when interpreting part numbers. Do not use for developing part numbers.  
2. Custom contact configurations available, contact IDEC for details.

## Stop Switches (Assembled)

### Stop Switches

| Style                                                                                                                                                          | Contacts                            | Part Number                                                        |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|--------------------------------------------------------------------|
| <div>ø 40mm Pushlock Turn Reset</div>  <div>Non-Illuminated</div>             | 1NO<br>1NC<br>1NO-1NC<br>2NO<br>2NC | AVD310N-R*<br>AVD301N-R*<br>AVD311N-R*<br>AVD320N-R*<br>AVD302N-R* |
| <div>ø 40mm Illuminated Pushlock Turn Reset</div>  <div>Full Voltage</div>    | 1NO-1NC<br>2NO<br>2NC               | AVLD39911ⓈN-R-③*<br>AVLD39920ⓈN-R-③*<br>AVLD39902ⓈN-R-③*           |
| <div>ø 40mm Push-Pull</div>  <div>Non-Illuminated</div>                       | 1NO<br>1NC<br>1NO-1NC<br>2NO<br>2NC | AYD310N-①<br>AYD301N-①<br>AYD311N-①<br>AYD320N-①<br>AYD302N-①      |
| <div>ø 40mm Push-Pull</div>  <div>Full Voltage</div>                         | 1NO-1NC<br>2NO<br>2NC               | AYLD39911ⓈN-②-③**<br>AYLD39920ⓈN-②-③**<br>AYLD39902ⓈN-②-③**        |
| <div>ø 40mm Push-Pull</div>  <div>Transformer</div>                         | 1NO-1NC<br>2NO<br>2NC               | AYLD3 ④ 11ⓈN-②**<br>AYLD3 ④ 20ⓈN-②**<br>AYLD3 ④ 02ⓈN-②**           |
| <div>ø 40mm Momentary Push-Pull (3-position)</div>  <div>Full Voltage</div> | 1NO-1NC<br>1NC-1LB†                 | AYLD229911ⓈN-②-③-TK962<br>AYLD229902ⓈN-②-③-TK962                   |
| <div>ø 40mm Momentary Push-Pull (3-position)</div>  <div>Transformer</div>  | 1NO-1NC<br>1NC-1LB†                 | AYLD22 ④ 11ⓈN-②-TK962<br>AYLD22 ④ 02ⓈN-②-TK962                     |

### Unibody E-Stops

| Style                                                                                                                                                         | Contacts       | Part Number                            |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------------------------------|
| <div>ø 40mm Pushlock Turn Reset (available in Red only)</div>              | 1NO-1NC<br>2NC | HN1E-BV4F11-R*<br>HN1E-BV4F02-R*       |
| <div>Illuminated ø 40mm Pushlock Turn Reset (available in Red only)</div>  | 1NO-1NC<br>2NC | HN1E-LV4F11QⓈ-R-③<br>HN1E-LV4F02QⓈ-R-③ |



- In place of ①, specify the button color code
- In place of ②, specify the lens color code.
- In place of ③, specify the Full Voltage (lamp voltage) Code.
- In place of ④, specify the transformer voltage code.
- In place of ⑤, specify the Lamp Type code.
- With single unit construction, the positive action contacts are integrated in the body of the switch. This provides an extra degree of safety and reliability for critical emergency stop functions.
- HN1E series E-stops comply with the IEC "E-Stop Addendum to the Low Voltage Directive," this includes "tamper proof" operation whereby a change of contact state is not possible by "teasing" or "floating" the operator.
- 3 position push-pull available in spring return to center only.
- \*Available in red only.
- \*\*Not available in blue.
- †The most common configuration for motor starting applications.
- For sub-assembly part numbers, see next page.
- For nameplates and accessories, see page 797 and page 795.
- For dimensions, see page 800.

### 3 Position Push-Pull†

| Contact          | Push | Center | Pull |
|------------------|------|--------|------|
| NC (BST-001)     | 0    | 0      | X    |
| NC-LB (BST-001S) | 0    | X      | X    |
| NO (BST-010)     | X    | 0      | 0    |
| NO-EM (BST-010S) | X    | X      | 0    |

### ① Button Color Codes

| Color  | Code |
|--------|------|
| Black  | B    |
| Green  | G    |
| Red    | R    |
| Blue   | S    |
| Yellow | Y    |

### ② LED/Lens Color Codes

| Color | Code |
|-------|------|
| Amber | A    |
| Green | G    |
| Red   | R    |
| Blue  | S    |
| White | W    |

### ③ Full Voltage Codes

| Voltage   | Code            |
|-----------|-----------------|
| 6V AC/DC  | 6V              |
| 12V AC/DC | 12V             |
| 24V AC/DC | 24V             |
| 120V AC   | 120V            |
| 240V AC   | 240V (LED only) |

### ④ Transformer Voltage Codes

| Voltage | Code |
|---------|------|
| 120VAC  | 126  |
| 240VAC  | 246  |
| 480VAC  | 486  |



Transformers step down to 6V.

### ⑤ Lamp Type Codes

| Lamp         | Code  |
|--------------|-------|
| Incandescent | Blank |
| LED          | D     |



## Stop Switches (Sub-Assembled)



\* Not required for full voltage units (full voltage clips used instead).

### Operators

| Style                                 | Part Number                               |
|---------------------------------------|-------------------------------------------|
| ø40mm Pushlock Turn Reset             | AVD-300                                   |
| Illuminated ø40mm Pushlock Turn Reset | AVLD3-0600N                               |
| ø40mm Push-Pull                       | AYD-3100                                  |
| Illuminated ø 40mm Push-Pull          | 2 pos AYLD-0600<br>3 pos AYLD22TK9C2-0B01 |

### Buttons and Lenses

| Style                                                                    | Part Number                       |
|--------------------------------------------------------------------------|-----------------------------------|
| Button for Pushlock Turn Reset Stop Switches (ø40mm, red only)           | AVN3B-R                           |
| Lens for Illuminated Pushlock Turn Reset Stop Switches (ø40mm, red only) | AVLN3LU-R                         |
| Button for Push-Pull Stop Switches (ø40mm)                               | AYD3BN-①                          |
| Lens for Illuminated Push-Pull Stop Switches (ø40mm)                     | 2 pos* AYLD3L-②<br>3 pos AYLD2L-② |

1. In place of ①, specify the Button Color Code. (See table below)
2. In place of ②, specify the LED Color Code.
3. \*Not available in blue.

### Lamps

| Style        | Voltage   | Part Number |
|--------------|-----------|-------------|
| LED          | 6V AC/DC  | LSTD-6②     |
|              | 12V AC/DC | LSTD-1②     |
|              | 24V AC/DC | LSTD-2②     |
|              | 120V AC   | LSTD-H2②    |
|              | 240V AC   | LSTD-M4②    |
| Incandescent | 6V AC/DC  | IS-6        |
|              | 12V AC/DC | IS-12       |
|              | 24V AC/DC | IS-24       |
|              | 120V AC   | L-120L      |

1. In place of ②, specify the LED color code.
2. The LED contains a current-limiting resistor and a protection diode.

### ① Button Color Codes

| Color  | Code |
|--------|------|
| Black  | B    |
| Green  | G    |
| Red    | R    |
| Blue   | S    |
| Yellow | Y    |

### ② LED Color Codes

| Color | Code |
|-------|------|
| Amber | A    |
| Green | G    |
| Red   | R    |
| Blue  | S    |
| White | W    |

### Contact Blocks

| Style             | Part Number           |                       |
|-------------------|-----------------------|-----------------------|
|                   | 1NO                   | 1NC                   |
| All Control Units | BST-010               | BST-001               |
|                   | BST-010S (early make) | BST-001S (late break) |
| Dummy Block       | BST-D                 |                       |

1. Dummy blocks (no contacts) are used with an odd number of contact blocks.
2. Combining BST-010S and BST-001S result in overlapping contacts.

### Full Voltage Clips

| Primary Voltage (50/60Hz)                     | Part Number |
|-----------------------------------------------|-------------|
| Full Voltage Clips (2 required for each unit) | APD-F       |

### Transformers

| Style | Primary Voltage (50/60Hz) | Part Number |
|-------|---------------------------|-------------|
|       | 120V AC                   | TWD-0126    |
|       | 240V AC                   | TWD-0246    |
|       | 480V AC                   | TWD-0486    |

6V secondary voltage (uses 6V lamp).

## Pilot Lights (Assembled)



## Assembled Pilot Lights

|                                   |                                             |                              |                                                                                                                |                                                                                                                                                                          |                                                                                              |                                                   |
|-----------------------------------|---------------------------------------------|------------------------------|----------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|---------------------------------------------------|
| <b>Function</b><br>P: Pilot Light | <b>Series Designation</b><br>D: TWTD Series | <b>Lens Shape</b><br>1: Dome | <b>Rated Operational Voltage (Primary)</b><br>Transformer Type<br>126: 120V AC<br>246: 240V AC<br>486: 480V AC | <b>Lamp Voltage</b><br>(full voltage illuminated units only)<br>6V: 6V AC/DC<br>12V: 12V AC/DC<br>24V: 24V AC/DC<br>120V: 120V AC (LED only)<br>240V: 240V AC (LED only) | <b>Lens Color Code</b><br>A: Amber<br>G: Green<br>R: Red<br>S: Blue<br>W: White<br>Y: Yellow | <b>Lamp Type</b><br>Blank: Incandescent<br>D: LED |
|-----------------------------------|---------------------------------------------|------------------------------|----------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|---------------------------------------------------|



Use only when interpreting part numbers. Do not use for developing part numbers.

## LED and Incandescent Pilot Lights

| Style                                                                                                    | Operating Voltage             | Part Number                               |                                        |
|----------------------------------------------------------------------------------------------------------|-------------------------------|-------------------------------------------|----------------------------------------|
|                                                                                                          |                               | LED                                       | Incandescent                           |
| Transformer Dome<br>  | 120V AC<br>240V AC<br>480V AC | APD1126DN-②<br>APD1246DN-②<br>APD1486DN-② | APD1126N-②<br>APD1246N-②<br>APD1486N-② |
| Full Voltage Dome<br> | —                             | APD199DN-②-③                              | APD199N-②-③                            |

## ② Lens Color Codes

| Color  | Code |
|--------|------|
| Amber  | A    |
| Green  | G    |
| Red    | R    |
| Blue   | S    |
| White  | W    |
| Yellow | Y    |

## ③ Full Voltage Codes

| Voltage   | Code            |
|-----------|-----------------|
| 6V AC/DC  | 6V              |
| 12V AC/DC | 12V             |
| 24V AC/DC | 24V             |
| 120V AC   | 120V            |
| 240V AC   | 240V (LED only) |



1. In place of ②, specify the Lens/LED Color Code.
2. In place of ③, specify the Full Voltage Code (lamp voltage).
3. Yellow pilot light comes with white LED.



## Pilot Lights (Sub-Assembled)

|                                                                                   |   |                                                                                   |   |                                                                                   |   |                                                                                    |   |                                                                                     |
|-----------------------------------------------------------------------------------|---|-----------------------------------------------------------------------------------|---|-----------------------------------------------------------------------------------|---|------------------------------------------------------------------------------------|---|-------------------------------------------------------------------------------------|
| Transformer*                                                                      | + | Operator                                                                          | + | Lamp                                                                              | + | Lens                                                                               | = | Complete Part                                                                       |
|  |   |  |   |  |   |  |   |  |



\* Not required for full voltage units (full voltage clips used instead).

| One Each from Left Column | plus | One Selection from Right Column |
|---------------------------|------|---------------------------------|
|---------------------------|------|---------------------------------|

### Operators

| Style        | Part Number |
|--------------|-------------|
| Transformer  | APD-006     |
| Full Voltage | APD-199     |



Full voltage operator comes with full voltage clips.

### Lenses

| Style     | Part Number |
|-----------|-------------|
| Dome Lens | APN106LN-②  |



1. In place of ②, specify the Lens Color Code.
2. LED and incandescent lenses differ in shade only. Some colors have only one shade.

### Lamps

| Style        | Voltage   | Part Number |
|--------------|-----------|-------------|
| LED          | 6V AC/DC  | LSTD-6②     |
|              | 12V AC/DC | LSTD-1②     |
|              | 24V AC/DC | LSTD-2②     |
|              | 120V AC   | LSTD-H2②    |
|              | 240V AC   | LSTD-M4②    |
| Incandescent | 6V AC/DC  | IS-6        |
|              | 12V AC/DC | IS-12       |
|              | 24V AC/DC | IS-24       |
|              | 120V AC   | L-120L      |



1. In place of ②, specify the LED color code.
2. The LED contains a current-limiting resistor and a protection diode.

### Full Voltage Clips

| Primary Voltage (50/60Hz)                                                           | Part Number |
|-------------------------------------------------------------------------------------|-------------|
|  | APD-F       |



Required for all full voltage models. Two pieces each.

### Transformers

| Style | Primary Voltage (50/60Hz) | Part Number |
|-------|---------------------------|-------------|
| LED   | 120V AC                   | TWD-0126    |
|       | 240V AC                   | TWD-0246    |
|       | 480V AC                   | TWD-0486    |



6V secondary voltage (use 6V lamp).

### ② LED/Lens Color Codes

| Color  | Code |
|--------|------|
| Amber  | A    |
| Green  | G    |
| Red    | R    |
| Blue   | S    |
| White  | W    |
| Yellow | Y    |



Yellow lens only. Yellow LED not available, use white LED.

## Illuminated Pushbuttons (Assembled)



### Assembled Illuminated Pushbuttons

**A** **L** **( )** **D** **2** **126** **11** **(D)** **N** **-** **R** **-** **( )**

#### Function

L: Momentary Action  
OL: Maintained Action

#### Bezel Shape

Blank: Octagonal  
F: Full Shroud

#### Series Designation

D: TWTD Series

#### Lens Shape

2: Extended  
3: Mushroom ø 40mm

#### Rated Operational Voltage (Primary)

|                  |                   |
|------------------|-------------------|
| Transformer Type | Full Voltage Type |
| 126: 120V AC     | 99: Full Voltage  |
| 246: 240V AC     |                   |
| 486: 480V AC     |                   |

#### Lamp Voltage

(full voltage only)

6V: 6V AC/DC  
12V: 12V AC/DC  
24V: 24V AC/DC  
120V: 120V AC  
240V: 240V AC (LED only)

#### Lens Color Code

A: Amber  
G: Green  
R: Red  
S: Blue  
W: White  
Y: Yellow

#### Lamp Type

Blank: Incandescent  
D: LED

#### Contact Arrangement

20: 2NO      02: 2NC  
11: 1NO-1NC



1. Use only when interpreting part numbers. Do not use for developing part numbers.
2. All transformers step down to 6V.

## Illuminated Pushbuttons (Assembled)

### Illuminated Pushbuttons

| Style                                                                                                       |              | Contacts              | Part Number                                           |                                                          |
|-------------------------------------------------------------------------------------------------------------|--------------|-----------------------|-------------------------------------------------------|----------------------------------------------------------|
|                                                                                                             |              |                       | Momentary                                             | Maintained                                               |
|                            | Full Voltage | 1NO-1NC<br>2NO<br>2NC | ALD29911ⓈN-②-③<br>ALD29920ⓈN-②-③<br>ALD29902ⓈN-②-③    | AOLD29911ⓈN-②-③<br>AOLD29920ⓈN-②-③<br>AOLD29902ⓈN-②-③    |
|                                                                                                             | Transformer  | 1NO-1NC<br>2NO<br>2NC | ALD2 ④ 11ⓈN-②<br>ALD2 ④ 20ⓈN-②<br>ALD2 ④ 02ⓈN-②       | AOLD2 ④ 11ⓈN-②<br>AOLD2 ④ 20ⓈN-②<br>AOLD2 ④ 02ⓈN-②       |
|                            | Full Voltage | 1NO-1NC<br>2NO<br>2NC | ALFD29911ⓈN-②-③<br>ALFD29920ⓈN-②-③<br>ALFD29902ⓈN-②-③ | AOLFD29911ⓈN-②-③<br>AOLFD29920ⓈN-②-③<br>AOLFD29902ⓈN-②-③ |
|                                                                                                             | Transformer  | 1NO-1NC<br>2NO<br>2NC | ALFD2 ④ 11ⓈN-②<br>ALFD2 ④ 20ⓈN-②<br>ALFD2 ④ 02ⓈN-②    | AOLFD2 ④ 11ⓈN-②<br>AOLFD2 ④ 20ⓈN-②<br>AOLFD2 ④ 02ⓈN-②    |
| ø 40mm Mushroom Lens<br> | Full Voltage | 1NO-1NC<br>2NO<br>2NC | ALD39911ⓈN-②-③<br>ALD39920ⓈN-②-③<br>ALD39902ⓈN-②-③    | AOLD39911ⓈN-②-③<br>AOLD39920ⓈN-②-③<br>AOLD39902ⓈN-②-③    |
|                                                                                                             | Transformer  | 1NO-1NC<br>2NO<br>2NC | ALD3 ④ 11ⓈN-②<br>ALD3 ④ 20ⓈN-②<br>ALD3 ④ 02ⓈN-②       | AOLD3 ④ 11ⓈN-②<br>AOLD3 ④ 20ⓈN-②<br>AOLD3 ④ 02ⓈN-②       |

### ② Lens Color Codes

| Color  | Code |
|--------|------|
| Amber  | A    |
| Green  | G    |
| Red    | R    |
| Blue   | S    |
| White  | W    |
| Yellow | Y    |

### ③ Full Voltage Codes

| Voltage   | Code            |
|-----------|-----------------|
| 6V AC/DC  | 6V              |
| 12V AC/DC | 12V             |
| 24V AC/DC | 24V             |
| 120V AC   | 120V            |
| 240V AC   | 240V (LED only) |

### ④ Transformer Voltage Codes

| Voltage | Code |
|---------|------|
| 120VAC  | 126  |
| 240VAC  | 246  |
| 480VAC  | 486  |

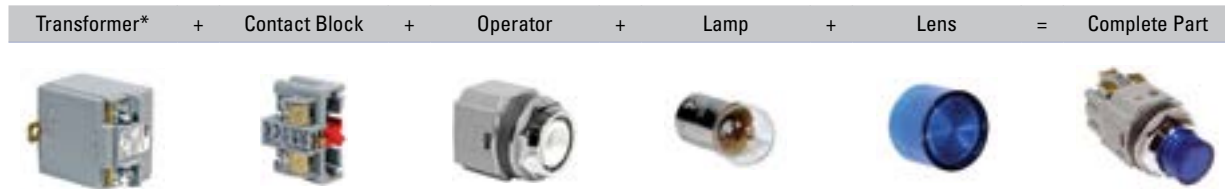
 6V secondary voltage (uses 6V lamp).

### ⑤ Lamp Type Codes

| Lamp         | Code  |
|--------------|-------|
| Incandescent | Blank |
| LED          | D     |

-  1. In place of ②, specify the Lens Color Code.  
 2. In place of ③, specify the Full Voltage Code (lamp voltage).  
 3. In place of ④, specify the Transformer Voltage Code.  
 4. In place of ⑤, specify the Lamp Type Code.  
 5. Light is independent of switch position.  
 6. Yellow pushbutton comes with white LED only.

## Illuminated Pushbuttons (Sub-Assembled)



\*Not required for full voltage types (full voltage types use APD-F full voltage clips).

### Operators

| Style                     |  | Part Number |            |
|---------------------------|--|-------------|------------|
|                           |  | Momentary   | Maintained |
| Extended                  |  | ALD-0600    | AOLD-0600  |
| Extended with Full Shroud |  | ALFD-0600   | AOLFD-0600 |
| 40mm Mushroom             |  | ALD-0600    | AOLD-0600  |

### Lenses

| Style           | Part Number |
|-----------------|-------------|
| Extended        | ALN06LU-②   |
| ø 40mm Mushroom | ALN3LU-②    |

In place of ②, specify the Lens Color Code.

### Full Voltage Clips

| Style                                            | Part Number |
|--------------------------------------------------|-------------|
| Full Voltage Clips<br>(2 required for each unit) | APD-F       |

Required for all full voltage models.

### Lamps

| Style | Voltage   | Part Number | Color  | Code |
|-------|-----------|-------------|--------|------|
|       | 6V AC/DC  | LSTD-6②     | Amber  | A    |
|       | 12V AC/DC | LSTD-1②     | Green  | G    |
|       | 24V AC/DC | LSTD-2②     | Red    | R    |
|       | 120V AC   | LSTD-H2②    | Blue   | S    |
|       | 240V AC   | LSTD-M4②    | White  | W    |
|       | 6V AC/DC  | IS-6        | Yellow | Y    |
|       | 12V AC/DC | IS-12       |        |      |
|       | 24V AC/DC | IS-24       |        |      |
|       | 120V AC   | L-120L      |        |      |

### ② LED/Lens Color Codes

- In place of ②, specify the LED color code.
- The LED contains a current-limiting resistor and a protection diode.

### Contact Blocks

| Style             |  | Part Number                      |                                  |
|-------------------|--|----------------------------------|----------------------------------|
|                   |  | 1NO                              | 1NC                              |
| All Control Units |  | BST-010<br>BST-010S (early make) | BST-001<br>BST-001S (late break) |
| Dummy Block       |  | BST-D                            |                                  |

- Dummy blocks (no contacts) are used with an odd number of contact blocks.
- Combining BST-010S and BST-001S result in overlapping contacts (remain on, or closed, when switch is moved between two positions).

### Transformers

| Style | Primary Voltage (50/60Hz) | Part Number |
|-------|---------------------------|-------------|
|       | 120V AC                   | TWD-0126    |
|       | 240V AC                   | TWD-0246    |
|       | 480V AC                   | TWD-0486    |

6V secondary voltage (use 6V lamp).

Non-Illuminated Selector Switches (Assembled)



Assembled Selector Switches

A S D 2 ( ) ( ) 11 N - ( )

Function

S: Selector Switch

Series Designation

D: TWTD Series

Number of Positions

- 2: 2-Position
- 3: 3-Position

Spring Return Action

- Blank: Maintained
- 1: Spring return from Right
- 2: Spring return from Left
- 3: 2-Way spring return from Left and Right

Circuit Number

(See Circuit # column of Selector Switch Contact Arrangement Chart on beginning on page 792.)

Contact Arrangement Code

- 10: 1NO 01: 1NC
- 20: 2NO 02: 2NC
- 40: 4NO 04: 4NC
- 11: 1NO-1NC 22: 2NO-2NC

Operator Style Code

- Blank: Knob Operator
- L: Lever Operator
- K: Key Operator

1. Use only when interpreting part numbers. Do not use for developing part numbers.  
2. Custom key removal codes available. Please contact IDEC for details.



## Non-Illuminated Selector Switches (Assembled)

### Non-Illuminated 2-Position Selector Switches

| Style      |          |                                                                                   |                                                                                   |           | Part Number                  |                                |                                |
|------------|----------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------|------------------------------|--------------------------------|--------------------------------|
| Contact    | Mounting | Operator Position                                                                 |                                                                                   |           | Maintained                   | Spring Return from Right       | Spring Return from Left        |
|            |          |  |  |           |                              |                                |                                |
| 1NO        | 1        | 0                                                                                 | X                                                                                 | Knob      | ASD210N                      | ASD2110N                       | ASD2210N                       |
|            | 2        | 0                                                                                 | 0                                                                                 | Lever Key | ASD2L10N<br>ASD2K10N         | ASD21L10N<br>ASD21K10N         | ASD22L10N<br>ASD22K10N         |
|            |          |                                                                                   |                                                                                   |           |                              |                                |                                |
| 1NC        | 1        | X                                                                                 | 0                                                                                 | Knob      | ASD201N-116                  | ASD2101N-116                   | ASD2201N-116                   |
|            | 2        | 0                                                                                 | 0                                                                                 | Lever Key | ASD2L01N-116<br>ASD2K01N-116 | ASD21L01N-116<br>ASD21K01N-116 | ASD22L01N-116<br>ASD22K01N-116 |
|            |          |                                                                                   |                                                                                   |           |                              |                                |                                |
| 1NO<br>1NC | 1        | 0                                                                                 | X                                                                                 | Knob      | ASD211N                      | ASD2111N                       | ASD2211N                       |
|            | 2        | X                                                                                 | 0                                                                                 | Lever Key | ASD2L11N<br>ASD2K11N         | ASD21L11N<br>ASD21K11N         | ASD22L11N<br>ASD22K11N         |
|            |          |                                                                                   |                                                                                   |           |                              |                                |                                |
| 2NO        | 1        | 0                                                                                 | X                                                                                 | Knob      | ASD220N                      | ASD2120N                       | ASD2220N                       |
|            | 2        | 0                                                                                 | X                                                                                 | Lever Key | ASD2L20N<br>ASD2K20N         | ASD21L20N<br>ASD21K20N         | ASD22L20N<br>ASD22K20N         |
|            |          |                                                                                   |                                                                                   |           |                              |                                |                                |
| 2NC        | 1        | X                                                                                 | 0                                                                                 | Knob      | ASD202N-104                  | ASD2102N-104                   | ASD2202N-104                   |
|            | 2        | X                                                                                 | 0                                                                                 | Lever Key | ASD2L02N-104<br>ASD2K02N-104 | ASD21L02N-104<br>ASD21K02N-104 | ASD22L02N-104<br>ASD22K02N-104 |
|            |          |                                                                                   |                                                                                   |           |                              |                                |                                |
| 2NO<br>2NC | 1        | 0                                                                                 | X                                                                                 | Knob      | ASD222N                      | ASD2122N                       | ASD2222N                       |
|            | 2        | X                                                                                 | 0                                                                                 | Lever     | ASD2L22N                     | ASD21L22N                      | ASD22L22N                      |
|            | 3        | 0                                                                                 | X                                                                                 | Key       | ASD2K22N                     | ASD21K22N                      | ASD22K22N                      |
| 2NO<br>2NC | 1        | 0                                                                                 | X                                                                                 | Knob      | ASD222N-111                  | ASD2122N-111                   | ASD2222N-111                   |
|            | 2        | 0                                                                                 | X                                                                                 | Lever     | ASD2L22N-111                 | ASD21L22N-111                  | ASD22L22N-111                  |
|            | 3        | X                                                                                 | 0                                                                                 | Key       | ASD2K22N-111                 | ASD21K22N-111                  | ASD22K22N-111                  |



- The truth table indicates the operating position of contact block when the operator is switched to that position.  
X = On (closed contacts) 0 = Off (open contacts)  
X-X = Overlapping Contacts: remain on (closed contacts) when switch is moved between these two positions.
- All knob and lever selector switches come in black. Other colors are available by ordering the knob or lever separately.
- Custom contact arrangements available, see page 762.

### Non-Illuminated 3-Position Selector Switches

| Style   |          |                   |   |   |                      | Part Number  |                          |                         |                       |
|---------|----------|-------------------|---|---|----------------------|--------------|--------------------------|-------------------------|-----------------------|
| Contact | Mounting | Operator Position |   |   |                      | Maintained   | Spring Return from Right | Spring Return from Left | Spring Return Two-Way |
|         |          | L                 | C | R |                      |              |                          |                         |                       |
|         |          |                   |   |   |                      |              |                          |                         |                       |
| 2NO     | 1        | X                 | 0 | 0 | Knob<br>Lever<br>Key | ASD320N      | ASD3120N                 | ASD3220N                | ASD3320N              |
|         | 2        | 0                 | 0 | X |                      | ASD3L20N     | ASD31L20N                | ASD32L20N               | ASD33L20N             |
|         |          |                   |   |   |                      | ASD3K20N     | ASD31K20N                | ASD32K20N               | ASD33K20N             |
| 2NC     | 1        | 0                 | X | X | Knob<br>Lever<br>Key | ASD302N      | ASD3102N                 | ASD3202N                | ASD3302N              |
|         | 2        | X                 | X | 0 |                      | ASD3L02N     | ASD31L02N                | ASD32L02N               | ASD33L02N             |
|         |          |                   |   |   |                      | ASD3K02N     | ASD31K02N                | ASD32K02N               | ASD33K02N             |
| 2NO     | 1        | X                 | 0 | 0 | Knob<br>Lever<br>Key | ASD322N      | ASD3122N                 | ASD3222N                | ASD3322N              |
|         | 2        | 0                 | 0 | X |                      | ASD3L22N     | ASD31L22N                | ASD32L22N               | ASD33L22N             |
| 2NC     | 3        | 0                 | X | X | Knob<br>Lever<br>Key | ASD3K22N     | ASD31K22N                | ASD32K22N               | ASD33K22N             |
|         | 4        | X                 | X | 0 |                      |              |                          |                         |                       |
| 2NO     | 1        | X                 | 0 | X | Knob<br>Lever<br>Key | ASD322N-309  | ASD3122N-309             | ASD3222N-309            | ASD3322N-309          |
|         | 2        | X                 | X | 0 |                      | ASD3L22N-309 | ASD31L22N-309            | ASD32L22N-309           | ASD33L22N-309         |
| 2NC     | 3        | 0                 | X | 0 | Knob<br>Lever<br>Key | ASD3K22N-309 | ASD31K22N-309            | ASD32K22N-309           | ASD33K22N-309         |
|         | 4        | 0                 | 0 | X |                      |              |                          |                         |                       |
| 2NO     | 1        | 0                 | X | 0 | Knob<br>Lever<br>Key | ASD322N-310  | ASD3122N-310             | ASD3222N-310            | ASD3322N-310          |
|         | 2        | 0                 | 0 | X |                      | ASD3L22N-310 | ASD31L22N-310            | ASD32L22N-310           | ASD33L22N-310         |
| 2NC     | 3        | 0                 | X | 0 | Knob<br>Lever<br>Key | ASD3K22N-310 | ASD31K22N-310            | ASD32K22N-310           | ASD33K22N-310         |
|         | 4        | 0                 | 0 | X |                      |              |                          |                         |                       |
| 4NO     | 1        | X                 | 0 | 0 | Knob<br>Lever<br>Key | ASD340N      | ASD3140N                 | ASD3240N                | ASD3340N              |
|         | 2        | 0                 | 0 | X |                      | ASD3L40N     | ASD31L40N                | ASD32L40N               | ASD33L40N             |
|         | 3        | X                 | 0 | 0 | Knob<br>Lever<br>Key | ASD3K40N     | ASD31K40N                | ASD32K40N               | ASD33K40N             |
|         | 4        | 0                 | 0 | X |                      |              |                          |                         |                       |
| 4NC     | 1        | 0                 | X | X | Knob<br>Lever<br>Key | ASD304N      | ASD3104N                 | ASD3204N                | ASD3304N              |
|         | 2        | X                 | X | 0 |                      | ASD3L04N     | ASD31L04N                | ASD32L04N               | ASD33L04N             |
|         | 3        | 0                 | X | X | Knob<br>Lever<br>Key | ASD3K04N     | ASD31K04N                | ASD32K04N               | ASD33K04N             |
|         | 4        | X                 | X | 0 |                      |              |                          |                         |                       |



## Non-Illuminated Selector Switches (Sub-Assembled)

Contact Blocks + Operator + Knob or Lever\* + Color Insert\* = Complete Part†



- \*Not needed with key type switches.
- \*Knob type shown.

### Operators

| Style      | Position | Description                          | Part Number   |
|------------|----------|--------------------------------------|---------------|
| Knob/Lever | 2        | Maintained                           | ASD200        |
|            |          | Spring return from right             | ASD2100       |
|            |          | Spring return from left              | ASD2200       |
|            | 3        | Maintained, Cam 1                    | ASD300-1      |
|            |          | Maintained, Cam 2                    | ASD300-2      |
|            |          | Spring return from right, Cam 1      | ASD3100-1     |
|            |          | Spring return from right, Cam 2      | ASD3100-2     |
|            |          | Spring return from left, Cam 1       | ASD3200-1     |
|            |          | Spring return from left, Cam 2       | ASD3200-2     |
| Key        | 2        | Maintained                           | ASD200-RA     |
|            |          | Spring return from right             | ASD2100-RL    |
|            |          | Spring return from left              | ASD2200       |
|            | 3        | Maintained, Cam 1                    | ASD300-1      |
|            |          | Maintained, Cam 2                    | ASD300-2      |
|            |          | Spring return from right, Cam 1      | ASD3100-1-RLC |
|            |          | Spring return from right, Cam 2      | ASD3100-2-RLC |
|            |          | Spring return from left, Cam 1       | ASD3200-1-RLC |
|            |          | Spring return from left, Cam 2       | ASD3200-2-RLC |
|            | 3        | Spring return from left/right, Cam 1 | ASD3300-1-RC  |
|            |          | Spring return from left/right, Cam 2 | ASD3300-2-RC  |
|            |          | Spring return from left/right, Cam 1 | ASD3300-1-RC  |
|            |          | Spring return from left/right, Cam 2 | ASD3300-2-RC  |

- Order knobs, levers, color inserts separately (see below).
- For key switches, keys are removable in all maintained positions. Other options available, contact IDEC for details.
- See page 794 "Operator Truth Tables" for details of difference between cams.

### ① Color Codes

| Knob/Lever Color | Code |
|------------------|------|
| Black            | B    |
| Blue             | S    |
| Green            | G    |
| Red              | R    |
| Yellow           | Y    |
| White            | W    |

- Knob/Lever not available in white.
- Color inserts not available in Black.
- Lever not available in yellow.

### Handles and Inserts

| Style        | Part Number |
|--------------|-------------|
| Knob         | ASDHHY-①    |
| Lever        | ASDHHL-①*   |
| Color Insert | TW-HC1-①    |



- In place of ①, specify the Color Code.  
\*Not available in yellow.

### Contact Blocks

| Style             | Part Number           |                       |
|-------------------|-----------------------|-----------------------|
|                   | 1NO                   | 1NC                   |
| All Control Units | BST-010               | BST-001               |
|                   | BST-010S (early make) | BST-001S (late break) |
| Dummy Block       | BST-D                 |                       |



- Dummy blocks (no contacts) are used with an odd number of contact blocks.
- Combining BST-010S and BST-001S result in overlapping contacts (remain on, or closed, when switch is moved between two positions).



## Illuminated Selector Switches (Assembled)



## Assembled Illuminated Selector Switches

**A** **SL** **D** **2** **(2)** **99** **11** **D** **N** - **111** - **R** - **24**

**Function**

SL: Illuminated Selector Switch

**Series Designation**

D: TWTD series

**Number of Positions**

2: 2-Position

3: 3-Position

**Spring Return Action**

Blank: Maintained

1: Spring return from Right

2: Spring return from Left

3: Two-Way spring return from Left and Right

**Rated Operational Voltage (Primary)**

Transformer Type Full Voltage Type

126: 120V AC

99: Full Voltage

246: 240V AC

486: 480V AC

**Contact Arrangement Code**

20: 2NO 02: 2NC

40: 4NO 04: 4NC

11: 1NO-1NC 22: 2NO-2NC

**Lamp Voltage**

(Full Voltage Units Only)

6V: 6V AC/DC

12V: 12V AC/DC

24V: 24V AC/DC

120V: 120V AC

240V: 240V AC (LED only)

**Lens Color Code**

A: Amber

G: Green

R: Red

S: Blue

W: White

Y: Yellow

**Circuit Code Number**

See Circuit # column of Selector Switch Contact Arrangement Charts on page 792.

**Lamp Type**

Blank: Incandescent Lamp

D: LED Lamp



Use only when interpreting part numbers. Do not use for developing part numbers.

## Illuminated Selector Switches (Assembled)

### Illuminated 2-Position Selector Switches

| Style   |          |                   |   |                   | Part Number         |                          |                         |
|---------|----------|-------------------|---|-------------------|---------------------|--------------------------|-------------------------|
| Contact | Mounting | Operator Position |   | Lamp Circuit Type | Maintained          | Spring Return from Right | Spring Return from Left |
|         |          | L                 | R |                   |                     |                          |                         |
| 1NO     | 1        | O                 | X | Transformer       | ASLD2 ④11⑤N-②       | ASLD21 ④11⑤N-②           | ASLD22 ④11⑤N-②          |
| 1NC     | 2        | X                 | O | Full Voltage      | ASLD29911⑤N-②-③     | ASLD219911⑤N-②-③         | ASLD229911⑤N-②-③        |
| 2NO     | 1        | O                 | X | Transformer       | ASLD2 ④20⑤N-②       | ASLD21 ④20⑤N-②           | ASLD22 ④20⑤N-②          |
|         | 2        | O                 | X | Full Voltage      | ASLD29920⑤N-②-③     | ASLD219920⑤N-②-③         | ASLD229920⑤N-②-③        |
| 2NC     | 1        | X                 | O | Transformer       | ASLD2 ④02⑤N-104-②   | ASLD21 ④02⑤N-104-②       | ASLD22 ④02⑤N-104-②      |
|         | 2        | X                 | O | Full Voltage      | ASLD29902⑤N-104-②-③ | ASLD219902⑤N-104-②-③     | ASLD229902⑤N-104-②-③    |
| 2NO     | 1        | O                 | X | Transformer       | ASLD2 ④22⑤N-②       | ASLD21 ④22⑤N-②           | ASLD22 ④22⑤N-②          |
| 2NC     | 2        | X                 | O | Full Voltage      | ASLD29922⑤N-②-③     | ASLD219922⑤N-②-③         | ASLD229922⑤N-②-③        |
|         | 3        | O                 | X |                   |                     |                          |                         |
|         | 4        | X                 | O |                   |                     |                          |                         |
| 2NO     | 1        | O                 | X | Transformer       | ASLD2 ④22⑤N-111-②   | ASLD21 ④22⑤N-111-②       | ASLD22 ④22⑤N-111-②      |
| 2NC     | 2        | O                 | X | Full Voltage      | ASLD29922⑤N-111-②-③ | ASLD219922⑤N-111-②-③     | ASLD229922⑤N-111-②-③    |
|         | 3        | X                 | O |                   |                     |                          |                         |
|         | 4        | X                 | O |                   |                     |                          |                         |

### ② LED/Lens Color Codes

| Color  | Code |
|--------|------|
| Amber  | A    |
| Green  | G    |
| Red    | R    |
| Blue   | S    |
| White  | W    |
| Yellow | Y    |

### ③ Full Voltage Codes

| Voltage   | Code            |
|-----------|-----------------|
| 6V AC/DC  | 6V              |
| 12V AC/DC | 12V             |
| 24V AC/DC | 24V             |
| 120V AC   | 120V            |
| 240V AC   | 240V (LED only) |

### Illuminated 3-Position Selector Switches, Maintained and Spring Return

| Style   |          |                   |   |   | Part Number       |                     |                          |                         |
|---------|----------|-------------------|---|---|-------------------|---------------------|--------------------------|-------------------------|
| Contact | Mounting | Operator Position |   |   | Lamp Circuit Type | Maintained          | Spring Return From Right | Spring Return from Left |
|         |          | L                 | C | R |                   |                     |                          |                         |
| 2NO     | 1        | X                 | O | O | Transformer       | ASLD3 ④ 20⑤N-②      | ASLD31 ④ 20⑤N-②          | ASLD32 ④ 20⑤N-②         |
|         | 2        | O                 | O | X | Full Voltage      | ASLD39920⑤N-②-③     | ASLD319920⑤N-②-③         | ASLD329920⑤N-②-③        |
| 2NC     | 1        | O                 | X | X | Transformer       | ASLD3 ④ 02⑤N-②      | ASLD31 ④ 02⑤N-②          | ASLD32 ④ 02⑤N-②         |
|         | 2        | X                 | X | O | Full Voltage      | ASLD39902⑤N-②-③     | ASLD319902⑤N-②-③         | ASLD329902⑤N-②-③        |
| 2NO     | 1        | X                 | O | O | Transformer       | ASLD3 ④ 22⑤N-②      | ASLD31 ④ 22⑤N-②          | ASLD32 ④ 22⑤N-②         |
| 2NC     | 2        | O                 | O | X | Full Voltage      | ASLD39922⑤N-②-③     | ASLD319922⑤N-②-③         | ASLD329922⑤N-②-③        |
|         | 3        | O                 | X | X |                   |                     |                          |                         |
|         | 4        | X                 | X | O |                   |                     |                          |                         |
| 2NO     | 1        | X                 | O | O | Transformer       | ASLD3 ④ 22⑤N-309-②  | ASLD31 ④ 22⑤N-309-②      | ASLD32 ④ 22⑤N-309-②     |
| 2NC     | 2        | X                 | X | O | Full Voltage      | ASLD39922⑤N-309-②-③ | ASLD319922⑤N-309-②-③     | ASLD329922⑤N-309-②-③    |
|         | 3        | O                 | X | O |                   |                     |                          |                         |
|         | 4        | O                 | O | X |                   |                     |                          |                         |
| 2NO     | 1        | O                 | X | O | Transformer       | ASLD3 ④ 22⑤N-310-②  | ASLD31 ④ 22⑤N-310-②      | ASLD32 ④ 22⑤N-310-②     |
| 2NC     | 2        | O                 | O | X | Full Voltage      | ASLD39922⑤N-310-②-③ | ASLD319922⑤N-310-②-③     | ASLD329922⑤N-310-②-③    |
|         | 3        | O                 | X | O |                   |                     |                          |                         |
|         | 4        | O                 | O | X |                   |                     |                          |                         |
| 4NO     | 1        | X                 | O | O | Transformer       | ASLD3 ④ 40⑤N-②      | ASLD31 ④ 40⑤N-②          | ASLD32 ④ 40⑤N-②         |
|         | 2        | O                 | O | X | Full Voltage      | ASLD39940⑤N-②-③     | ASLD319940⑤N-②-③         | ASLD329940⑤N-②-③        |
|         | 3        | X                 | O | O |                   |                     |                          |                         |
|         | 4        | O                 | O | X |                   |                     |                          |                         |
| 4NC     | 1        | O                 | X | X | Transformer       | ASLD3 ④ 04⑤N-②      | ASLD31 ④ 04⑤N-②          | ASLD32 ④ 04⑤N-②         |
|         | 2        | X                 | X | O | Full Voltage      | ASLD39904⑤N-②-③     | ASLD319904⑤N-②-③         | ASLD329904⑤N-②-③        |
|         | 3        | O                 | X | X |                   |                     |                          |                         |
|         | 4        | X                 | X | O |                   |                     |                          |                         |

1. In place of ②, specify the Lens/LED Color Code, in place of ③, specify the Full Voltage (lamp voltage) Code, in place of ④, specify the Transformer Voltage Code and in place of ⑤ specify the Lamp Type Code.
2. The truth table indicates the operating position of contact block when the operator is switched to that position.  
X = On (Closed Contacts) O = Off (Open Contacts)  
X-X = Overlapping Contacts: Remain on (closed contacts) when switch is moved between these positions
3. Yellow selector switch comes with white LED.

### ④ Transformer Voltage Codes

| Voltage | Code |
|---------|------|
| 120VAC  | 126  |
| 240VAC  | 246  |
| 480VAC  | 486  |



Transformers step down to 6V (use 6V lamp).

### ⑤ Lamp Type Codes

| Lamp         | Code  |
|--------------|-------|
| Incandescent | Blank |
| LED          | D     |

Light is independent of switch position.

## Illuminated Selector Switches (Sub-Assembled)

|              |   |               |   |          |   |      |   |      |   |               |
|--------------|---|---------------|---|----------|---|------|---|------|---|---------------|
| Transformer* | + | Contact Block | + | Operator | + | Lamp | + | Lens | = | Complete Part |
|--------------|---|---------------|---|----------|---|------|---|------|---|---------------|



\*Not required for full voltage units (use APD-F full voltage clips instead).

## Operators

| Style                                                                                         | Position | Description                            | Part Number            |
|-----------------------------------------------------------------------------------------------|----------|----------------------------------------|------------------------|
| Operator<br> | 2        | Maintained                             | ASLD200                |
|                                                                                               | 3        | Maintained, Cam 1<br>Maintained, Cam 2 | ASLD300-1<br>ASLD300-2 |
|                                                                                               | 2        | Spring return from right               | ASLD2100               |
|                                                                                               |          | Spring return from left                | ASLD2200               |
|                                                                                               | 3        | Spring return from right, Cam 1        | ASLD3100-1             |
|                                                                                               |          | Spring return from right, Cam 2        | ASLD3100-2             |
|                                                                                               |          | Spring return from left, Cam 1         | ASLD3200-1             |
|                                                                                               |          | Spring return from left, Cam 2         | ASLD3200-2             |
|                                                                                               |          | Spring return from left/right, Cam 1   | ASLD3300-1             |
|                                                                                               |          | Spring return from left/right, Cam 2   | ASLD3300-2             |

## Contact Blocks

| Style             |                                                                                     | Part Number                      |                                  |
|-------------------|-------------------------------------------------------------------------------------|----------------------------------|----------------------------------|
|                   |                                                                                     | 1NO                              | 1NC                              |
| All Control Units |  | BST-010<br>BST-010S (early make) | BST-001<br>BST-001S (late break) |
| Dummy Block       |                                                                                     | BST-D                            |                                  |



1. Dummy blocks (no contacts) are used with an odd number of contact blocks.
2. Combining BST-010S and BST-001S result in overlapping contacts (remain on, or closed, when switch is moved between two positions).

## Full Voltage Clips

| Style                                            | Part Number |
|--------------------------------------------------|-------------|
| Full Voltage Clips<br>(2 required for each unit) | APD-F       |



Required for all full voltage models.

## Transformers

| Style                                                                                                | Primary Voltage<br>(50/60Hz) | Part Number |
|------------------------------------------------------------------------------------------------------|------------------------------|-------------|
| Transformers<br> | 120V AC                      | TWD-0126    |
|                                                                                                      | 240V AC                      | TWD-0246    |
|                                                                                                      | 480V AC                      | TWD-0486    |



6V secondary voltage.

## ② LED/Lens Color Codes

| Color | Code | Color  | Code |
|-------|------|--------|------|
| Amber | A    | Blue   | S    |
| Green | G    | White  | W    |
| Red   | R    | Yellow | Y    |



Yellow lens only. Yellow LED not available, use white LED.

## Lenses

| Style                                                                                       | Part Number |
|---------------------------------------------------------------------------------------------|-------------|
| Knob<br> | ASLNHU-①    |

## Lamps

| Style                                                                                               | Voltage   | Part Number |
|-----------------------------------------------------------------------------------------------------|-----------|-------------|
| LED<br>          | 6V AC/DC  | LSTD-6②     |
|                                                                                                     | 12V AC/DC | LSTD-1②     |
|                                                                                                     | 24V AC/DC | LSTD-2②     |
|                                                                                                     | 120V AC   | LSTD-H2②    |
|                                                                                                     | 240V AC   | LSTD-M4②    |
| Incandescent<br> | 6V AC/DC  | IS-6        |
|                                                                                                     | 12V AC/DC | IS-12       |
|                                                                                                     | 24V AC/DC | IS-24       |
|                                                                                                     | 120V AC   | L-120L      |

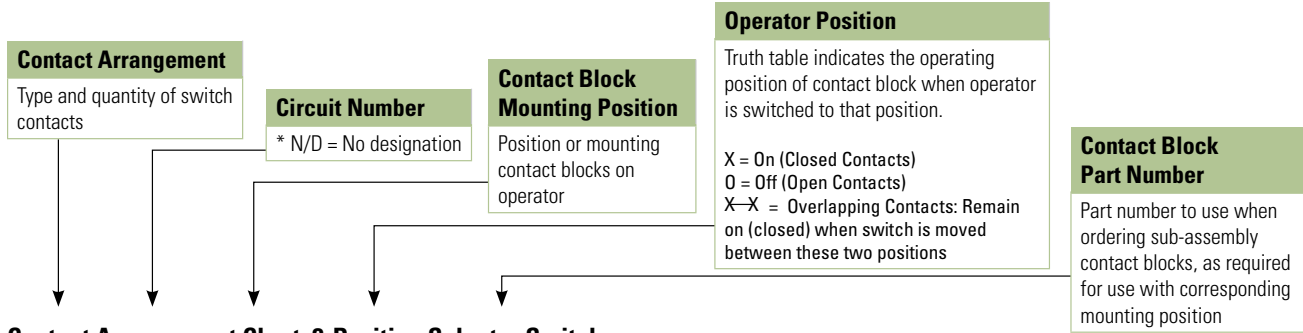


1. In place of ②, specify the LED color code.
2. The LED contains a current-limiting resistor and a protection diode.

## Contact Arrangement Charts

### How to Read Contact Arrangement Charts

To determine contact block mounting position, first make sure the selector switch is oriented as shown on the right



### Contact Arrangement Chart: 2-Position Selector Switches

| Style            |                | Mounting Position | Operator Position                                                                      |                                                                                        | Contact Block Part Number | Description      | Operator Part Number                                                              |                                                                                    |                                                                                     |
|------------------|----------------|-------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|---------------------------|------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Contact          | Circuit Number |                   | L<br> | R<br> |                           |                  | Maintained                                                                        | Spring Return from Right                                                           | Spring Return from Left                                                             |
|                  |                |                   |                                                                                        |                                                                                        |                           |                  |  |  |  |
| 1NO              | N/D            | 1                 | O                                                                                      | X                                                                                      | BST-010                   | Knob/Lever Key   | ASD200<br>ASD2K00<br>ASLD200                                                      | ASD2100<br>ASD21K00<br>ASLD2100                                                    | ASD2200<br>ASD22K00<br>ASLD2200                                                     |
|                  |                | 2                 | O                                                                                      | O                                                                                      | BST-D                     | Illuminated Knob |                                                                                   |                                                                                    |                                                                                     |
| 1NC              | 116            | 1                 | X                                                                                      | O                                                                                      | BST-001                   | Knob/Lever Key   | ASD200<br>ASD2K00<br>ASLD200                                                      | ASD2100<br>ASD21K00<br>ASLD2100                                                    | ASD2200<br>ASD22K00<br>ASLD2200                                                     |
|                  |                | 2                 | O                                                                                      | O                                                                                      | BST-D                     | Illuminated Knob |                                                                                   |                                                                                    |                                                                                     |
| 1NO<br>1NC       | N/D            | 1                 | O                                                                                      | X                                                                                      | BST-010                   | Knob/Lever Key   | ASD200<br>ASD2K00<br>ASLD200                                                      | ASD2100<br>ASD21K00<br>ASLD2100                                                    | ASD2200<br>ASD22K00<br>ASLD2200                                                     |
|                  |                | 2                 | X                                                                                      | O                                                                                      | BST-001                   | Illuminated Knob |                                                                                   |                                                                                    |                                                                                     |
|                  | 103            | 1                 | X                                                                                      | O                                                                                      | BST-001                   | Knob/Lever Key   | ASD200<br>ASD2K00<br>ASLD200                                                      | ASD2100<br>ASD21K00<br>ASLD2100                                                    | ASD2200<br>ASD22K00<br>ASLD2200                                                     |
|                  |                | 2                 | O                                                                                      | X                                                                                      | BST-010                   | Illuminated Knob |                                                                                   |                                                                                    |                                                                                     |
| 1NO-EM<br>1NC-LB | 600            | 1                 | O                                                                                      | X                                                                                      | BST-010S                  | Knob/Lever Key   | ASD200<br>ASD2K00<br>ASLD200                                                      | ASD2100<br>ASD21K00<br>ASLD2100                                                    | ASD2200<br>ASD22K00<br>ASLD2200                                                     |
|                  |                | 2                 | X                                                                                      | O                                                                                      | BST-001S                  | Illuminated Knob |                                                                                   |                                                                                    |                                                                                     |
|                  | 601            | 1                 | X                                                                                      | O                                                                                      | BST-001S                  | Knob/Lever Key   | ASD200<br>ASD2K00<br>ASLD200                                                      | ASD2100<br>ASD21K00<br>ASLD2100                                                    | ASD2200<br>ASD22K00<br>ASLD2200                                                     |
|                  |                | 2                 | O                                                                                      | X                                                                                      | BST-010S                  | Illuminated Knob |                                                                                   |                                                                                    |                                                                                     |
| 2NO              | N/D            | 1                 | O                                                                                      | X                                                                                      | BST-010                   | Knob/Lever Key   | ASD200<br>ASD2K00<br>ASLD200                                                      | ASD2100<br>ASD21K00<br>ASLD2100                                                    | ASD2200<br>ASD22K00<br>ASLD2200                                                     |
|                  |                | 2                 | O                                                                                      | X                                                                                      | BST-010                   | Illuminated Knob |                                                                                   |                                                                                    |                                                                                     |
| 2NC              | 104            | 1                 | X                                                                                      | O                                                                                      | BST-001                   | Knob/Lever Key   | ASD200<br>ASD2K00<br>ASLD200                                                      | ASD2100<br>ASD21K00<br>ASLD2100                                                    | ASD2200<br>ASD22K00<br>ASLD2200                                                     |
|                  |                | 2                 | X                                                                                      | O                                                                                      | BST-001                   | Illuminated Knob |                                                                                   |                                                                                    |                                                                                     |
| 2NO<br>2NC       | N/D            | 1                 | O                                                                                      | X                                                                                      | BST-010                   | Knob/Lever Key   | ASD200<br>ASD2K00<br>ASLD200                                                      | ASD2100<br>ASD21K00<br>ASLD2100                                                    | ASD2200<br>ASD22K00<br>ASLD2200                                                     |
|                  |                | 2                 | X                                                                                      | O                                                                                      | BST-001                   | Key              |                                                                                   |                                                                                    |                                                                                     |
|                  |                | 3                 | O                                                                                      | X                                                                                      | BST-010                   | Illuminated Knob |                                                                                   |                                                                                    |                                                                                     |
|                  |                | 4                 | X                                                                                      | O                                                                                      | BST-001                   |                  |                                                                                   |                                                                                    |                                                                                     |
|                  | 110            | 1                 | X                                                                                      | O                                                                                      | BST-001                   | Knob/Lever Key   | ASD200<br>ASD2K00<br>ASLD200                                                      | ASD2100<br>ASD21K00<br>ASLD2100                                                    | ASD2200<br>ASD22K00<br>ASLD2200                                                     |
|                  |                | 2                 | O                                                                                      | X                                                                                      | BST-010                   |                  |                                                                                   |                                                                                    |                                                                                     |
|                  |                | 3                 | X                                                                                      | O                                                                                      | BST-001                   | Illuminated Knob |                                                                                   |                                                                                    |                                                                                     |
|                  |                | 4                 | O                                                                                      | X                                                                                      | BST-010                   |                  |                                                                                   |                                                                                    |                                                                                     |
|                  | 111            | 1                 | O                                                                                      | X                                                                                      | BST-010                   | Knob/Lever Key   | ASD200<br>ASD2K00<br>ASLD200                                                      | ASD2100<br>ASD21K00<br>ASLD2100                                                    | ASD2200<br>ASD22K00<br>ASLD2200                                                     |
|                  |                | 2                 | O                                                                                      | X                                                                                      | BST-010                   |                  |                                                                                   |                                                                                    |                                                                                     |
|                  |                | 3                 | X                                                                                      | O                                                                                      | BST-001                   | Illuminated Knob |                                                                                   |                                                                                    |                                                                                     |
|                  |                | 4                 | X                                                                                      | O                                                                                      | BST-001                   |                  |                                                                                   |                                                                                    |                                                                                     |
| 4NO              | N/D            | 1                 | O                                                                                      | X                                                                                      | BST-010                   | Knob/Lever Key   | ASD200<br>ASD2K00<br>ASLD200                                                      | ASD2100<br>ASD21K00<br>ASLD2100                                                    | ASD2200<br>ASD22K00<br>ASLD2200                                                     |
|                  |                | 2                 | O                                                                                      | X                                                                                      | BST-010                   |                  |                                                                                   |                                                                                    |                                                                                     |
|                  |                | 3                 | O                                                                                      | X                                                                                      | BST-010                   |                  |                                                                                   |                                                                                    |                                                                                     |
|                  |                | 4                 | O                                                                                      | X                                                                                      | BST-010                   | Illuminated Knob |                                                                                   |                                                                                    |                                                                                     |

**Contact Arrangement Chart: 3-Position Selector Switches**

| Style      |                | Mounting Position | Operator Position                                                                 |                                                                                   |                                                                                   | Contact Block Part Number          | Description                        | Operator Part Number                                                               |                                                                                     |                                                                                     |                                                                                     |
|------------|----------------|-------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------|------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Contact    | Circuit Number |                   |  |  |  |                                    |                                    | Maintained                                                                         | Spring Return from Right                                                            | Spring Return from Left                                                             | Two-Way                                                                             |
|            |                |                   |                                                                                   |                                                                                   |                                                                                   |                                    |                                    |  |  |  |  |
| 1NO<br>1NC | 202            | 1                 | X                                                                                 | O                                                                                 | O                                                                                 | BST-010                            | Knob/Lever Key                     | ASD300-1<br>ASD3K00-1<br>ASLD300-1                                                 | ASD3100-1<br>ASD31K00-1<br>ASLD3100-1                                               | ASD3200-1<br>ASD32K00-1<br>ASLD3200-1                                               | ASD3300-1<br>ASD33K00-1<br>ASLD3300-1                                               |
|            |                | 2                 | X                                                                                 | X                                                                                 | O                                                                                 | BST-001                            | Illuminated Knob                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
|            | 203            | 1                 | O                                                                                 | X                                                                                 | X                                                                                 | BST-001                            | Knob/Lever Key                     | ASD300-1<br>ASD3K00-1<br>ASLD300-1                                                 | ASD3100-1<br>ASD31K00-1<br>ASLD3100-1                                               | ASD3200-1<br>ASD32K00-1<br>ASLD3200-1                                               | ASD3300-1<br>ASD33K00-1<br>ASLD3300-1                                               |
|            |                | 2                 | O                                                                                 | O                                                                                 | X                                                                                 | BST-010                            | Illuminated Knob                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
|            | 302            | 1                 | X                                                                                 | O                                                                                 | X                                                                                 | BST-010                            | Knob/Lever Key                     | ASD300-2<br>ASD3K00-2<br>ASLD300-2                                                 | ASD3100-2<br>ASD31K00-2<br>ASLD3100-2                                               | ASD3200-2<br>ASD32K00-2<br>ASLD3200-2                                               | ASD3300-2<br>ASD33K00-2<br>ASLD3300-2                                               |
|            |                | 2                 | X                                                                                 | X                                                                                 | O                                                                                 | BST-001                            | Illuminated Knob                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
|            | 303            | 1                 | O                                                                                 | X                                                                                 | O                                                                                 | BST-001                            | Knob/Lever Key                     | ASD300-2<br>ASD3K00-2<br>ASLD300-2                                                 | ASD3100-2<br>ASD31K00-2<br>ASLD3100-2                                               | ASD3200-2<br>ASD32K00-2<br>ASLD3200-2                                               | ASD3300-2<br>ASD33K00-2<br>ASLD3300-2                                               |
|            |                | 2                 | O                                                                                 | O                                                                                 | X                                                                                 | BST-010                            | Illuminated Knob                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| 2NO        | N/D            | 1                 | X                                                                                 | O                                                                                 | O                                                                                 | BST-010                            | Knob/Lever Key                     | ASD300-1<br>ASD3K00-1<br>ASLD300-1                                                 | ASD3100-1<br>ASD31K00-1<br>ASLD3100-1                                               | ASD3200-1<br>ASD32K00-1<br>ASLD3200-1                                               | ASD3300-1<br>ASD33K00-1<br>ASLD3300-1                                               |
|            |                | 2                 | O                                                                                 | O                                                                                 | X                                                                                 | BST-010                            | Illuminated Knob                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
|            | 301            | 1                 | X                                                                                 | O                                                                                 | X                                                                                 | BST-010                            | Knob/Lever Key                     | ASD300-2<br>ASD3K00-2<br>ASLD300-2                                                 | ASD3100-2<br>ASD31K00-2<br>ASLD3100-2                                               | ASD3200-2<br>ASD32K00-2<br>ASLD3200-2                                               | ASD3300-2<br>ASD33K00-2<br>ASLD3300-2                                               |
|            |                | 2                 | O                                                                                 | O                                                                                 | X                                                                                 | BST-010                            | Illuminated Knob                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| 2NC        | 304            | 1                 | O                                                                                 | X                                                                                 | O                                                                                 | BST-001                            | Knob/Lever Key                     | ASD300-2<br>ASD3K00-2<br>ASLD300-2                                                 | ASD3100-2<br>ASD31K00-2<br>ASLD3100-2                                               | ASD3200-2<br>ASD32K00-2<br>ASLD3200-2                                               | ASD3300-2<br>ASD33K00-2<br>ASLD3300-2                                               |
|            |                | 2                 | X                                                                                 | X                                                                                 | O                                                                                 | BST-001                            | Illuminated Knob                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
|            | N/D            | 1                 | O                                                                                 | X                                                                                 | X                                                                                 | BST-001                            | Knob/Lever Key                     | ASD300-1<br>ASD3K00-1<br>ASLD300-1                                                 | ASD3100-1<br>ASD31K00-1<br>ASLD3100-1                                               | ASD3200-1<br>ASD32K00-1<br>ASLD3200-1                                               | ASD3300-1<br>ASD33K00-1<br>ASLD3300-1                                               |
|            |                | 2                 | X                                                                                 | X                                                                                 | O                                                                                 | BST-001                            | Illuminated Knob                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| 2NO<br>2NC | N/D            | 1                 | X                                                                                 | O                                                                                 | O                                                                                 | BST-010                            | Knob/Lever Key<br>Illuminated Knob | ASD300-1<br>ASD3K00-1<br>ASLD300-1                                                 | ASD3100-1<br>ASD31K00-1<br>ASLD3100-1                                               | ASD3200-1<br>ASD32K00-1<br>ASLD3200-1                                               | ASD3300-1<br>ASD33K00-1<br>ASLD3300-1                                               |
|            |                | 2                 | O                                                                                 | O                                                                                 | X                                                                                 | BST-010                            |                                    |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
|            |                | 3                 | O                                                                                 | X                                                                                 | X                                                                                 | BST-001                            |                                    |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
|            |                | 4                 | X                                                                                 | X                                                                                 | O                                                                                 | BST-001                            |                                    |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
|            | 210            | 1                 | O                                                                                 | X                                                                                 | X                                                                                 | BST-001                            | Knob/Lever Key<br>Illuminated Knob | ASD300-1<br>ASD3K00-1<br>ASLD300-1                                                 | ASD3100-1<br>ASD31K00-1<br>ASLD3100-1                                               | ASD3200-1<br>ASD32K00-1<br>ASLD3200-1                                               | ASD3300-1<br>ASD33K00-1<br>ASLD3300-1                                               |
|            |                | 2                 | O                                                                                 | O                                                                                 | X                                                                                 | BST-010                            |                                    |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
|            |                | 3                 | O                                                                                 | X                                                                                 | X                                                                                 | BST-001                            |                                    |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
|            |                | 4                 | O                                                                                 | O                                                                                 | X                                                                                 | BST-010                            |                                    |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
|            | 308            | 1                 | X                                                                                 | O                                                                                 | X                                                                                 | BST-010                            | Knob/Lever Key<br>Illuminated Knob | ASD300-2<br>ASD3K00-2<br>ASLD300-2                                                 | ASD3100-2<br>ASD31K00-2<br>ASLD3100-2                                               | ASD3200-2<br>ASD32K00-2<br>ASLD3200-2                                               | ASD3300-2<br>ASD33K00-2<br>ASLD3300-2                                               |
|            |                | 2                 | X                                                                                 | X                                                                                 | O                                                                                 | BST-001                            |                                    |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
|            |                | 3                 | X                                                                                 | O                                                                                 | X                                                                                 | BST-010                            |                                    |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
|            |                | 4                 | X                                                                                 | X                                                                                 | O                                                                                 | BST-001                            |                                    |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
|            | 309            | 1                 | X                                                                                 | O                                                                                 | X                                                                                 | BST-010                            | Knob/Lever Key<br>Illuminated Knob | ASD300-2<br>ASD3K00-2<br>ASLD300-2                                                 | ASD3100-2<br>ASD31K00-2<br>ASLD3100-2                                               | ASD3200-2<br>ASD32K00-2<br>ASLD3200-2                                               | ASD3300-2<br>ASD33K00-2<br>ASLD3300-2                                               |
|            |                | 2                 | X                                                                                 | X                                                                                 | O                                                                                 | BST-001                            |                                    |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
|            |                | 3                 | O                                                                                 | X                                                                                 | O                                                                                 | BST-001                            |                                    |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
|            |                | 4                 | O                                                                                 | O                                                                                 | X                                                                                 | BST-010                            |                                    |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| 310        | 1              | O                 | X                                                                                 | O                                                                                 | BST-001                                                                           | Knob/Lever Key<br>Illuminated Knob | ASD300-2<br>ASD3K00-2<br>ASLD300-2 | ASD3100-2<br>ASD31K00-2<br>ASLD3100-2                                              | ASD3200-2<br>ASD32K00-2<br>ASLD3200-2                                               | ASD3300-2<br>ASD33K00-2<br>ASLD3300-2                                               |                                                                                     |
|            | 2              | O                 | O                                                                                 | X                                                                                 | BST-010                                                                           |                                    |                                    |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
|            | 3              | O                 | X                                                                                 | O                                                                                 | BST-001                                                                           |                                    |                                    |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
|            | 4              | O                 | O                                                                                 | X                                                                                 | BST-010                                                                           |                                    |                                    |                                                                                    |                                                                                     |                                                                                     |                                                                                     |

1. Each operator sub-assembly is available as a "-1" and a "-2" for 3-position selector switches. The internal cam of a "-1" is different from that of a "-2". This results in designated combinations of open and closed contacts in the various operator positions.
2. N/D = No circuit number designation required in assembled part number.
3. X = On (closed contacts) O = Off (open contacts) X—X Overlapping contacts remain on (closed) when switch is moved between these two positions.

Switches & Pilot Devices

Signaling Lights

Relays & Sockets

Timers

Contactors

Terminal Blocks

Circuit Breakers

## Contact Arrangement Chart: 3-Position Selector Switches

| Style   |                | Mounting Position | Operator Position                                                                 |                                                                                   |                                                                                   | Contact Block Part Number | Description                     | Operator Part Number                                                               |                                                                                     |                                                                                     |                                                                                     |
|---------|----------------|-------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---------------------------|---------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Contact | Circuit Number |                   |  |  |  |                           |                                 | Maintained                                                                         | Spring Return from Right                                                            | Spring Return from Left                                                             | Two-Way                                                                             |
|         |                |                   |                                                                                   |                                                                                   |                                                                                   |                           |                                 |  |  |  |  |
| 4NO     | N/D            | 1                 | X                                                                                 | O                                                                                 | O                                                                                 | BST-010                   | Knob/Lever Key Illuminated Knob | ASD300-1<br>ASD3K00-1<br>ASLD300-1                                                 | ASD3100-1<br>ASD31K00-1<br>ASLD3100-1                                               | ASD3200-1<br>ASD32K00-1<br>ASLD3200-1                                               | ASD3300-1<br>ASD33K00-1<br>ASLD3300-1                                               |
|         |                | 2                 | O                                                                                 | O                                                                                 | X                                                                                 | BST-010                   |                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
|         |                | 3                 | X                                                                                 | O                                                                                 | O                                                                                 | BST-010                   |                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
|         |                | 4                 | O                                                                                 | O                                                                                 | X                                                                                 | BST-010                   |                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
|         | 305            | 1                 | X                                                                                 | O                                                                                 | X                                                                                 | BST-010                   | Knob/Lever Key Illuminated Knob | ASD300-2<br>ASD3K00-2<br>ASLD300-2                                                 | ASD3100-2<br>ASD31K00-2<br>ASLD3100-2                                               | ASD3200-2<br>ASD32K00-2<br>ASLD3200-2                                               | ASD3300-2<br>ASD33K00-2<br>ASLD3300-2                                               |
|         |                | 2                 | O                                                                                 | O                                                                                 | X                                                                                 | BST-010                   |                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
|         |                | 3                 | X                                                                                 | O                                                                                 | X                                                                                 | BST-010                   |                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
|         |                | 4                 | O                                                                                 | O                                                                                 | X                                                                                 | BST-010                   |                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| 4NC     | N/D            | 1                 | O                                                                                 | X                                                                                 | X                                                                                 | BST-001                   | Knob/Lever Key Illuminated Knob | ASD300-1<br>ASD3K00-1<br>ASLD300-1                                                 | ASD3100-1<br>ASD31K00-1<br>ASLD3100-1                                               | ASD3200-1<br>ASD32K00-1<br>ASLD3200-1                                               | ASD3300-1<br>ASD33K00-1<br>ASLD3300-1                                               |
|         |                | 2                 | X                                                                                 | X                                                                                 | O                                                                                 | BST-001                   |                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
|         |                | 3                 | O                                                                                 | X                                                                                 | X                                                                                 | BST-001                   |                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
|         |                | 4                 | X                                                                                 | X                                                                                 | O                                                                                 | BST-001                   |                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
|         | 314            | 1                 | O                                                                                 | X                                                                                 | O                                                                                 | BST-001                   | Knob/Lever Key Illuminated Knob | ASD300-2<br>ASD3K00-2<br>ASLD300-2                                                 | ASD3100-2<br>ASD31K00-2<br>ASLD3100-2                                               | ASD3200-2<br>ASD32K00-2<br>ASLD3200-2                                               | ASD3300-2<br>ASD33K00-2<br>ASLD3300-2                                               |
|         |                | 2                 | X                                                                                 | X                                                                                 | O                                                                                 | BST-001                   |                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
|         |                | 3                 | O                                                                                 | X                                                                                 | O                                                                                 | BST-001                   |                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
|         |                | 4                 | X                                                                                 | X                                                                                 | O                                                                                 | BST-001                   |                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |

1. Each operator sub-assembly is available as a "-1" and a "-2" for 3-position selector switches. The internal cam of a "-1" is different from that of a "-2". This results in designated combinations of open and closed contacts in the various operator positions.
2. N/D = No circuit number designation required in assembled part number.
3. X = On (closed contacts) O = Off (open contacts). X—X Overlapping contacts remain on (closed) when switch is moved between these two positions.

## Operator Truth Tables

Use the following tables to build custom selector switches.

### 2 Position Selector Switches

| Contact | Mounting Position | Operator Position |       |
|---------|-------------------|-------------------|-------|
|         |                   | Left              | Right |
| ASD200  | BST-010 (NO)      | L                 | O     |
|         |                   | R                 | X     |
|         | BST-001 (NC)      | L                 | X     |
|         |                   | R                 | O     |
|         | BST-010S (NO-EM)  | L                 | X—    |
|         |                   | R                 | O—    |
|         | BST-001S (NC-LB)  | L                 | X—    |
|         |                   | R                 | X—    |

### 3 Position Push/Pull Switches

| Contact | Operator Position |        |      |
|---------|-------------------|--------|------|
|         | Pull              | Normal | Push |
| AYLD22  | BST-010 (NO)      | O      | X    |
|         | BST-001 (NC)      | X      | O    |
|         | BST-010S (NO-EM)  | O      | X    |
|         | BST-001S (NC-LB)  | X      | O    |

### 3 Position Selector Switches

| Contact                            | Mounting Position | Operator Position |        |       |
|------------------------------------|-------------------|-------------------|--------|-------|
|                                    |                   | Left              | Center | Right |
| ASD300-1<br>ASLD300-1<br>ASD3K00-1 | BST-010 (NO)      | L                 | X      | O     |
|                                    |                   | R                 | O      | X     |
|                                    | BST-001 (NC)      | L                 | O      | X—X   |
|                                    |                   | R                 | X—X    | O     |
|                                    | BST-010S (NO-EM)  | L                 | X—     | O     |
|                                    |                   | R                 | O—     | X     |
|                                    | BST-001S (NC-LB)  | L                 | O—X—X  |       |
|                                    |                   | R                 | X—X—   | O     |

| Contact                            | Mounting Position | Operator Position |        |       |
|------------------------------------|-------------------|-------------------|--------|-------|
|                                    |                   | Left              | Center | Right |
| ASD300-2<br>ASLD300-2<br>ASD3K00-2 | BST-010 (NO)      | L                 | X      | O     |
|                                    |                   | R                 | O      | X     |
|                                    | BST-001 (NC)      | L                 | O      | X     |
|                                    |                   | R                 | X—X    | O     |
|                                    | BST-010S (NO-EM)  | L                 | X—     | O—X   |
|                                    |                   | R                 | O—     | X     |
|                                    | BST-001S (NC-LB)  | L                 | O—X—   | O     |
|                                    |                   | R                 | X—X—   | O     |



## Accessories — TWTD Series

## TWTD Series Accessories

| Item                 | Appearance                                                                                                                                   | Description/Usage                                                                                |                                                                                                                                    | Part Number |
|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|-------------|
| Lamp Removal Tool    |                                                             | Rubber tool used to install or remove LED's and incandescent lamps                               |                                                                                                                                    | OR-55       |
| Metal Bezel          |                                                             | Replacement locking ring/bezel                                                                   | Standard octagonal units (chrome-pl.).                                                                                             | OG-81       |
|                      |                                                                                                                                              |                                                                                                  | Extended, non-illuminated (chrome-pl.).                                                                                            | OG-82       |
|                      |                                                                                                                                              |                                                                                                  | Extended, illuminated (chrome-pl.).                                                                                                | OG-83L      |
|                      |                                                                                                                                              |                                                                                                  | Jumbo Mushroom Shallow Shroud                                                                                                      | ABN4G       |
|                      |                                                                                                                                              |                                                                                                  | Jumbo Mushroom Deep Shroud                                                                                                         | ABN4F       |
| Plastic Bezel        |                                                             | Black plastic locking ring/bezel                                                                 |                                                                                                                                    | OGP11B      |
| Boot/Cover           |                                                             | Used to cover and protect pushbuttons                                                            | In place of ☉, specify <b>Neoprene Rubber Boot</b> color:<br><b>B</b> (black), <b>G</b> (green), <b>R</b> (red), <b>Y</b> (yellow) | OC-11 ☉     |
|                      |                                                                                                                                              |                                                                                                  | Flush units (clear plastic -40° to +60°C).                                                                                         | OC-121      |
|                      |                                                                                                                                              |                                                                                                  | Extended units (clear plastic -40° to +60°C).                                                                                      | OC-122      |
| Anti-Rotation Ring   |                                                            | Plastic washer<br>For nameplates or panels that should not be scratched.                         |                                                                                                                                    | OGL-D1T     |
|                      |                                                                                                                                              | Thrust washer/Anti-rotation ring for use with notched panel cutout.                              |                                                                                                                                    | OGL-D1S     |
| Mounting Hole Plug   |                                                           | Plugs used to fill unused 30mm panel cutouts.                                                    | Plastic with locking nut attached.                                                                                                 | OBP-11      |
|                      |                                                                                                                                              |                                                                                                  | Metal with locking nut attached                                                                                                    | OB-11       |
|                      |                                                                                                                                              |                                                                                                  | Grey rubber (-5° to +60°C)                                                                                                         | OB-13       |
| Terminal Tab Adaptor |  | Tab #250 17/64" x 3/64" (6.35mm x 0.8mm): Single tab                                             |                                                                                                                                    | TW-FA1      |
| Full Voltage Adaptor |                                                           | Used on all full voltage illuminated units.<br>Two required per unit. (M3.5 screw and saddle)    |                                                                                                                                    | APD-F       |
| Lock Out Adaptor     |                                                | Used to provide lockout protection for TWTD pushbuttons and knob selectors.<br>ø 1-13/64" (30mm) |                                                                                                                                    | OL-KL1      |
| Replacement Keys     |                                                           | Pair of keys (#0)                                                                                |                                                                                                                                    | TW-SK       |



Switches & Pilot Devices

Signaling Lights

Relays & Sockets

Timers

Contactors

Terminal Blocks

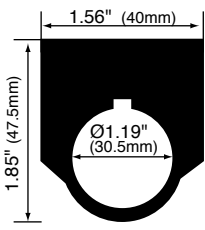
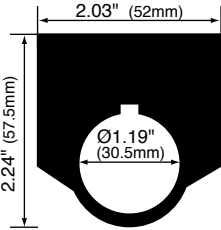
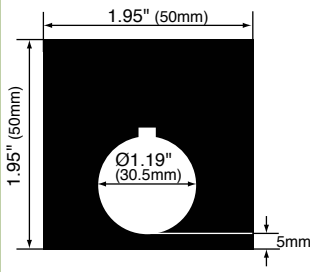
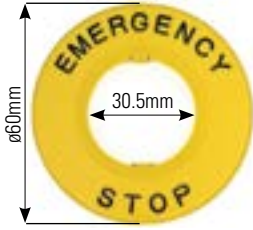
Circuit Breakers

Fingersafe Covers for TWTD Series

| Item                                                                               | Description                                                                         | Used with                                      | Part Number |
|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------------|-------------|
|   | Fingersafe terminal cover, for full voltage pilot lights, adds 3mm to overall depth | APD199... full voltage pilot lights            | APD-PVL     |
|   | Fingersafe terminal cover, for contact blocks, adds 3mm to overall depth            | Non-Illuminated pushbuttons ABD..., and AOD... | N-VL2       |
|   | Fingersafe terminal cover, adds 1.5mm to overall depth                              | Transformer pilot lights and illuminated units | N-VL3       |
|  | Fingersafe terminal cover, adds 4 mm to depth                                       | Full voltage illuminated pushbuttons           | N-VL4       |

## Nameplates — TWTD Series

## Faceplates

|                      | NALD                                                                              | NAKD                                                                              | NAQD                                                                               | HNAV                                                                                |
|----------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Dimensions           |  |  |  |  |
| Description          | Part Number                                                                       |                                                                                   |                                                                                    |                                                                                     |
| Nameplate (blank)    | NALD-B (black)<br>NALD-R (red)                                                    | NAKD-B (black)<br>NAKD-R (red)                                                    | NAQD-B (black)<br>NAQD-R (red)                                                     | HNAV-0                                                                              |
| Nameplate (engraved) | NALD-①                                                                            | NAKD-①                                                                            | NAQD-①                                                                             | HNAV-27 "Emergency Stop"                                                            |



1. Nameplates are made of 0.031" aluminum. Lettering is white letters engraved on black background.
2. In place of ①, insert either the standard legend code from table below or custom engraving delimited by " ".
3. HNAV available in yellow only.

## Standard Legend Codes

| Pushbuttons  |      |               |      | Pushbuttons/Selector Switches |      |            |      | Selector Switches |      |
|--------------|------|---------------|------|-------------------------------|------|------------|------|-------------------|------|
| Legend       | Code | Legend        | Code | Legend                        | Code | Legend     | Code | Legend            | Code |
| AUTO         | 101  | OPEN          | 116  | AUTO-MAN                      | 201  |            |      | AUTO-MAN-OFF      | 301  |
| CLOSE        | 102  | CUT           | 117  | CLOSE-OPEN                    | 202  |            |      | AUTO-OFF-MAN      | 302  |
| DOWN         | 103  | RAISE         | 118  | DOWN-UP                       | 203  |            |      | CLOSE-OFF-OPEN    | 303  |
| EMERG. STOP* | 104  | RESET         | 119  | FAST-SLOW                     | 204  |            |      | DOWN-OFF-SLOW     | 304  |
| FAST         | 105  | REVERSE       | 120  | FOR-REV                       | 205  | REV-FOR    | 216  | FAST-OFF-SLOW     | 305  |
| FORWARD      | 106  | RUN           | 121  | HAND-AUTO                     | 206  | RUN-JOG    | 217  | FOR-OFF-REV       | 306  |
| HAND         | 107  | SLOW          | 122  | HIGH-LOW                      | 207  | RUN-SAFE   | 218  | LEFT-OFF-RIGHT    | 307  |
| HIGH         | 108  | START         | 123  | JOG-RUN                       | 208  | SAFE-RUN   | 219  | LOWER-OFF-RAISE   | 308  |
| IN           | 109  | STOP*         | 124  | LEFT-RIGHT                    | 209  | SLOW-FAST  | 220  | OFF-MAN-AUTO      | 309  |
| INCH         | 110  | STOP          | 125  | LOWER-RAISE                   | 210  | START-STOP | 221  | OFF-SLOW-FAST     | 310  |
| JOG          | 111  | TEST          | 126  | MAN-AUTO                      | 211  | STOP-START | 222  | OFF-1-2           | 311  |
| LOW          | 112  | UP            | 127  | OFF-ON                        | 212  | UP-DOWN    | 223  | OPEN-OFF-CLOSE    | 312  |
| LOWER        | 113  | I (Int'l On)  | 150  | ON-OFF                        | 213  |            |      | SLOW-OFF-FAST     | 313  |
| OFF          | 114  | O (Int'l Off) | 151  | OPEN-CLOSE                    | 214  |            |      | SUMMER-OFF-WINTER | 314  |
| ON           | 115  | EMO           | 152  | RAISE-LOWER                   | 215  |            |      | UP-OFF-DOWN       | 315  |
|              |      |               |      |                               |      |            |      | 1-OFF-2           | 316  |
|              |      |               |      |                               |      |            |      | HAND-OFF-AUTO     | 317  |



1. \*Available in Red as standard legend code 104 and 124. To order engraved nameplate and codes, add legend code to nameplate part number. Character height based on the number of characters, space and size of nameplate. Standard character size is 3/16".
2. Nameplates with standard legends are the same list price as blank nameplates. Special engravings, additional cost.

To specify engraving instructions, use the Nameplate order form on next page.



## Switch Engraving Order Form – TWTD Series

Copy this order form and use it to specify Letter Height, Maximum Number of Lines and Text to be engraved.

To insure engraving accuracy, fax it to your IDEC representative or Distributor.

Your Company: \_\_\_\_\_  
 Name: \_\_\_\_\_  
 Address: \_\_\_\_\_  
 PO: \_\_\_\_\_

Telephone: \_\_\_\_\_  
 Fax: \_\_\_\_\_  
 Email: \_\_\_\_\_  
 Part Number to be Engraved: \_\_\_\_\_

Please check one of the boxes below to indicate your choice of engraving options:



ø29mm, ø40mm Mushroom Head



|                          | # of Lines | Letter Height | Max. Characters Per Line |
|--------------------------|------------|---------------|--------------------------|
| <input type="checkbox"/> | 1          | 5/32          | 7                        |
| <input type="checkbox"/> |            | 1/8           | 8                        |
| <input type="checkbox"/> | 2          | 5/32          | 7                        |
| <input type="checkbox"/> |            | 1/8           | 8                        |
| <input type="checkbox"/> | 3          | 1/8           | 8                        |
| <input type="checkbox"/> | 4          | Custom*       |                          |

\*Engraving is possible, but character size will be smaller than standard sizes.



|                          | # of Lines | Letter Height | Max. Characters Per Line |
|--------------------------|------------|---------------|--------------------------|
| <input type="checkbox"/> | 1          | 5/32          | 7                        |
| <input type="checkbox"/> |            | 1/8           | 8                        |
| <input type="checkbox"/> | 2          | 5/32          | 7                        |
| <input type="checkbox"/> |            | 1/8           | 8                        |
| <input type="checkbox"/> | 3          | 1/8           | 8                        |
| <input type="checkbox"/> | 4          | Custom*       |                          |

\*Engraving is possible, but character size will be smaller than standard sizes.

|                          | # of Lines | Letter Height | Max. Characters Per Line |
|--------------------------|------------|---------------|--------------------------|
| <input type="checkbox"/> | 1          | 3/4           | 4                        |
| <input type="checkbox"/> |            | 5/16          | 5                        |
| <input type="checkbox"/> | 2          | 5/16          | 5                        |
| <input type="checkbox"/> |            | 1/4           | 6                        |
| <input type="checkbox"/> | 3          | 5/32          | 8                        |
| <input type="checkbox"/> |            | 5/32          | 8                        |
| <input type="checkbox"/> | 4          | 1/8           | 9                        |
| <input type="checkbox"/> |            | 1/8           | 9                        |

|                                           | # of Lines | Letter Height | Max. Characters Per Line |
|-------------------------------------------|------------|---------------|--------------------------|
| <input type="checkbox"/> Engraving Area 1 | 1          | 5/32          | 5                        |
| <input type="checkbox"/>                  |            | 1/8           | 5                        |
| <input type="checkbox"/> Engraving Area 2 | 1          | 5/32          | 7                        |
| <input type="checkbox"/>                  |            | 1/8           | 7                        |



- Above mentioned specifications hold true for standard size push-buttons (round and square).
- \*Engraving Area 2 can be engraved for 40mm mushroom head non-illuminated pushbutton only.
- Engraving is done on the button itself for non-illuminated push buttons and on marking plate for illuminated push buttons and pilot lights.
- Please enter text exactly how you want it engraved, take care to emphasize capital or small letters.

Enter text to be engraved:

Line 1: \_\_\_\_\_  
 Line 2: \_\_\_\_\_  
 Line 3: \_\_\_\_\_  
 Line 4: \_\_\_\_\_

### Sample Letter Sizes

1/8 Letters: **OPEN**

5/32 Letters: **OPEN**



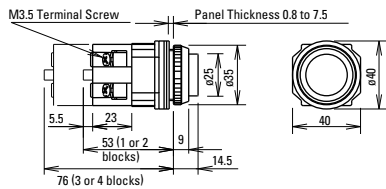
All engraving is 5/8mm wide.

For IDEC Internal Use Only:

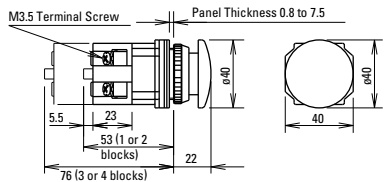
Work Order #: \_\_\_\_\_

## Dimensions (mm)

### Pushbutton



### Mushroom Pushbutton w/Full Shroud



| Pushbuttons                                 | Dimension A                       | Dimension B                      |
|---------------------------------------------|-----------------------------------|----------------------------------|
| Flush                                       | 0.351" (9mm)                      | ø 0.975" (25mm)                  |
| Extended                                    | 0.566" (14.5mm)                   | ø 0.975" (25mm)                  |
| Extended w/Full Shroud                      | 0.663" (17mm)                     | ø 1.11" (28.5mm)                 |
| Mushroom                                    | 0.858" (22mm)                     | ø 1.56" (40mm)                   |
| Mushroom w/Full Shroud                      | 0.936" (24mm)                     | ø 1.87" (48mm)                   |
| Jumbo Mushroom                              | 1.13" (29mm)                      | ø 2.54" (65mm)                   |
| Mushroom, Pushlock Turn Reset and Push-Pull | *0.975" (25mm)<br>**0.975" (25mm) | ø 1.56" (40mm)<br>ø 1.56" (40mm) |

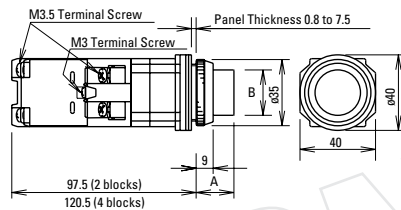


\*Dimension when operator is in reset position.

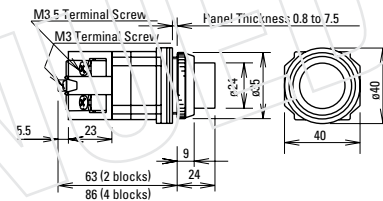
\*\*Dimension when operator is in pull position.

### Illuminated Pushbuttons

#### w/Transformer



#### Full Voltage



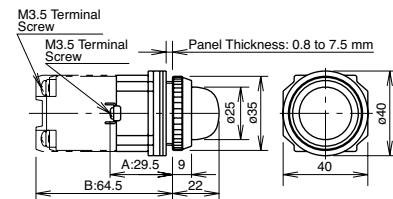
| Illuminated Pushbuttons                                | Dimension A                       | Dimension B                        |
|--------------------------------------------------------|-----------------------------------|------------------------------------|
| Flush w/Full Shroud                                    | 0.375" (25mm)<br>0.935" (25.5mm)  | ø 0.936" (24mm)<br>ø 0.936" (24mm) |
| Extended w/Full Shroud                                 | 0.741" (19mm)<br>0.761" (19.5mm)  | ø 0.936" (24mm)<br>ø 0.936" (24mm) |
| ø 1.56" (40mm) Mushroom Pushlock Turn Reset, Push-Pull | *0.975" (25mm)<br>**0.975" (25mm) | ø 1.56" (40mm)<br>ø 1.56" (40mm)   |



\*Dimension when operator is in reset position.

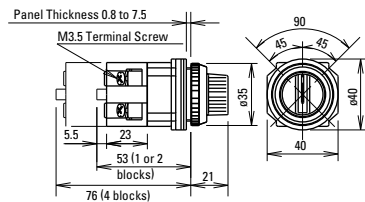
\*\*Dimension when operator is in pull position.

### Pilot Lights

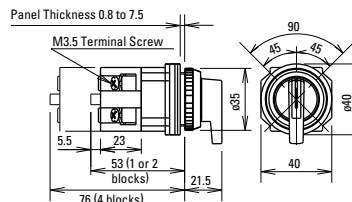


### Selector Switches

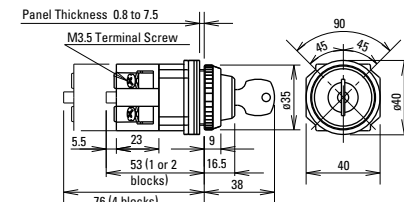
#### Knob



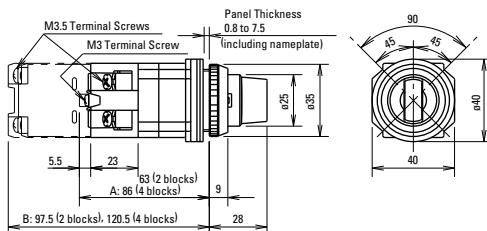
#### Lever



#### Key



### Illuminated Knob

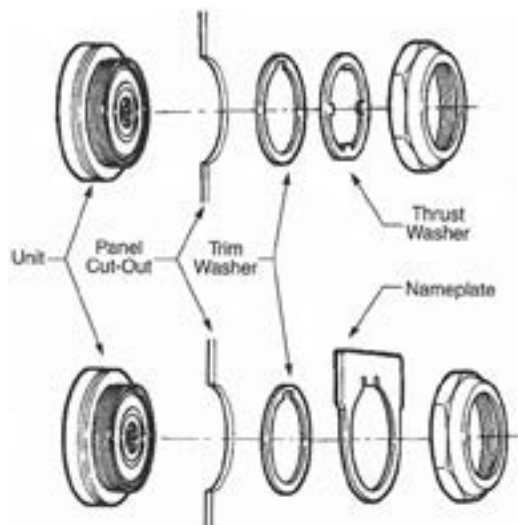


## 801

## Operating Instructions

### Adjustment for Panel Thickness

Each unit is shipped with several waterproof gaskets which are 0.06" (1.5mm) and 0.12" (3mm) thick. Combine the gaskets for a dimension approximately equal to panel thickness and install between the bezel and the body of the unit.



A trim washer must be used with a thrust washer or a nameplate to prevent the control unit from rotating in the mounting hole. When using anti-rotation rings (trim washer with thrust washer or nameplate), install as shown below.

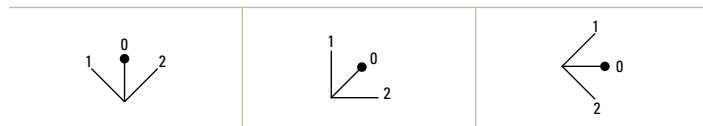
### Selector Switches

The operator shaft of each unit has a recess to identify in which direction to install the handle. Align the handle with the recess. Press color insert (TW-HC1) into the Standard Operating Positions.

### Standard Operation Positions



### Non-Illuminated 3-Position Operators



### Installation of TWTD Series Units

#### TWTD Pilot Lights

TWTD Illuminated Pushbuttons  
TWTD Selector Switches  
(Transformer or Full Voltage)

Terminal X1 = Positive  
Terminal X2 = Negative

#### Installation of LED Illuminated Units

Transformer units are recommended for use in areas subjected to inductive noise. When using full voltage types, install a protection diode as shown below. Use diode with DC power supply to protect against surges and noise.

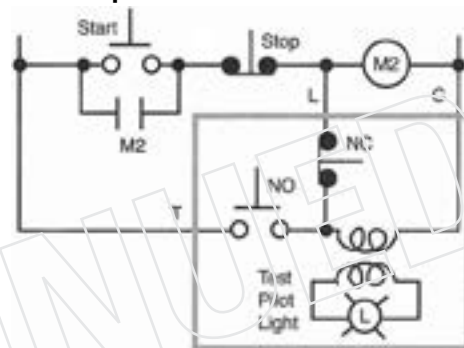


Make sure that LED illuminated units are installed with correct polarity, as indicated at the terminals.

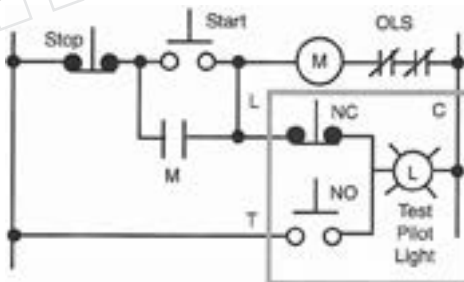
### Application Example For Push-To-Test Pilot Light

A typical application of illuminated pushbuttons is a push-to-test pilot light which can be used to check the lamp/LED circuit.

#### Transformer/AC-Adapter Circuit



#### Full Voltage Circuit





## 30mm Hazardous Location Switches EU2B Series: 30mm Hazardous Location Switches EC2B Series: Hazardous Location Control Stations

### Key features:

- Pre-configured stations
- Custom-configured stations
- Open control boxes
- Mounting holes for up to 18 control units
- Class I, Zone 1/Division 2
- Applicable in explosive gas atmospheres (AEx de IIC T6 Gb)
- UL Type 4X rated
- Up to 3 contact blocks
- Selector switches available with lever or key
- Selector switches available with overlapping contacts
- Exposed and finger-safe (IP20) screw terminals available
- Corrosion resistant stainless steel enclosure (SUS304)
- Melamine coating
- NPT and Metric reducer options



### Specifications

#### Standards Compliance

|       | Switches                                                                 | Pilot Lights                                                       | Meters                                                                   | Control Boxes                                  |
|-------|--------------------------------------------------------------------------|--------------------------------------------------------------------|--------------------------------------------------------------------------|------------------------------------------------|
| UL    | Class I, Zone 1 AEx d e IIC T6 Gb<br>Class I Div 2, Groups A, B, C and D |                                                                    |                                                                          |                                                |
| c-UL  | Class I, Zone 1, Ex de IIC T6 Gb<br>Class I, Div 2, Groups A, B, C and D | Class I, Zone 1, Ex de IIB T6 Gb<br>Class I, Div 2, Groups C and D | Class I, Zone 1, Ex de IIC T6 Gb<br>Class I, Div 2, Groups A, B, C and D |                                                |
| ATEX  | <br>                                                                     |                                                                    |                                                                          | Ex d e IIC T6 Gb<br>Ex tb IIIC T80°C Db (dust) |
| IECEx | Ex de IIC Gb<br>Ex tb IIIC Db IP65                                       |                                                                    |                                                                          | Ex de IIC T6 Gb<br>Ex tb IIIC T80°C Db (dust)  |

#### Certificate Numbers

| UL/c-UL | ATEX                                                         | IECEx                                                         |
|---------|--------------------------------------------------------------|---------------------------------------------------------------|
| E347230 | PTB 08 ATEX 1053 U<br>PTB 08 ATEX 1003 U<br>PTB 08 ATEX 1048 | IECEx PTB 15.0006U<br>IECEx PTB 15.0007U<br>IECEx PTB 15.0032 |

#### Applicable Standards

| Control Units                                                                             | Standards                                                                           | Mark      |
|-------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------|
| Pushbuttons<br>Selector<br>Switches<br>Key Selector<br>Switches<br>Pilot Lights<br>Meters | EN60947-5-1                                                                         | CE        |
|                                                                                           | UL60079-0<br>UL60079-1<br>UL60079-7                                                 | UL LISTED |
|                                                                                           | CAN/CSA C22.2 No. 60079-0<br>CAN/CSA C22.2 No. 60079-1<br>CAN/CSA C22.2 No. 60079-7 |           |
|                                                                                           | EN60079-0 EN60079-1<br>EN60079-7 EN60079-31                                         | Ex        |
|                                                                                           | IEC60079-0 IEC60079-1<br>IEC60079-7 IEC60079-31                                     | IECEx     |
| Emergency<br>Stop Switches                                                                | EN60947-5-5                                                                         | TUV       |

## General Specifications

|                       |                                 |                                                                                                                                      |
|-----------------------|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| Degree of Protection  | IP65 (IEC60529), Type 4X        |                                                                                                                                      |
| Insulation Resistance | 100 MΩ minimum (500V DC megger) |                                                                                                                                      |
| Operating Temperature | -20 to +50°C (no freezing)      |                                                                                                                                      |
| Operating Humidity    | 45 to 85% (no condensation)     |                                                                                                                                      |
| Altitude              | 2,000m Maximum                  |                                                                                                                                      |
| Pollution Degree      | 3                               |                                                                                                                                      |
| Shock Resistance      | Operating Extremes              | 100-m/s <sup>2</sup> Emergency Stop Switch: 150-m/s <sup>2</sup> (without Meter)                                                     |
|                       | Damage Limits                   | 1000-m/s <sup>2</sup>                                                                                                                |
| Vibration Resistance  | Operating Extremes              | 5 to 55-Hz, amplitude 0.5 mm Emergency Stop Switch: 5 to 500-Hz, amplitude 0.35-mm, acceleration 50-m/s <sup>2</sup> (without Meter) |
|                       | Damage Limits                   | 30Hz, amplitude 1.5-mm Emergency Stop Switch: 5 to 500-Hz, amplitude 0.35-mm, acceleration 50-m/s <sup>2</sup>                       |

## Switches

|                                                            |                       |                                                  |
|------------------------------------------------------------|-----------------------|--------------------------------------------------|
| Rated Insulation Voltage                                   |                       | 600V                                             |
| Contact Resistance                                         |                       | 50mΩ maximum (initial value)                     |
| Impulse Withstand Voltage (Uimp)                           |                       | 6kV                                              |
| Insulation Resistance                                      |                       | 100MΩ minimum (500V DC megger)                   |
| Short-Circuit Protection                                   |                       | 250V/10A fuse (Type aM IEC60269-1/IEC60269-2)    |
| Conditional Short-Circuit Current                          |                       | 1,000A                                           |
| Mechanical Life                                            | Pushbutton            | 1,000,000 operations minimum                     |
|                                                            | Selector Switch       | 500,000 operations minimum                       |
|                                                            | Key Selector Switch   | 500,000 operations minimum                       |
|                                                            | Emergency Stop Switch | 50,000 operations minimum                        |
| Electrical Life                                            | Pushbutton            | 250,000 (switching frequency 1800 operations/hr) |
|                                                            | Selector Switch       | 250,000 (switching frequency 900 operations/hr)  |
|                                                            | Key Selector Switch   | 250,000 (switching frequency 900 operations/hr)  |
|                                                            | Emergency Stop Switch | 50,000 (switching frequency 900 operations/hr)   |
| Minimum Operator Stroke Required for Direct Opening Action |                       | Emergency Stop Switch 7.0mm                      |
| Maximum Operator Stroke                                    |                       | Emergency Stop Switch 9.0mm                      |

Note: Contacts will bounce during operation of pushbuttons and selector switches (reference value: 20-ms). Be sure to take contact bounce time into consideration when designing a control circuit.

## Contact Rating (Switches)

|                               |            |                       |      |      |       |      |
|-------------------------------|------------|-----------------------|------|------|-------|------|
| Rated Insulation Voltage (Ui) |            |                       | 600V |      |       |      |
| Rated Thermal Current (Ith)   |            |                       | 10A* |      |       |      |
| Rated Operating Voltage (Ue)  |            |                       | 24V  | 120V | 240V  | 500V |
| Rated Operating Current (Ie)  | AC 50/60Hz | Resistive Load (AC12) | 10A* | 10A* | 6A    | 2.8A |
|                               |            | Inductive Load (AC15) | 10A* | 6A   | 3A    | 1.4A |
|                               | DC         | Resistive Load (DC12) | 8A   | 2.2A | 1.1A  | —    |
|                               |            | Inductive Load (DC13) | 4A   | 1.1A | 0.55A | —    |

Note: Up to 2 contacts (per control unit); 10A 3 contacts (per control unit); 9A Minimum applicable load: 3V AC/DC, 5mA Applicable operating locations may vary according to operating conditions and load types.

| Contact Rating Code Designation | Thermal Continuous Test Current Amperes | Maximum current, Amperes |       |          |       |          |       |          |       | Maximum Volt-Amperes |       |
|---------------------------------|-----------------------------------------|--------------------------|-------|----------|-------|----------|-------|----------|-------|----------------------|-------|
|                                 |                                         | 120 Volt                 |       | 240 Volt |       | 480 Volt |       | 600 Volt |       | 600 Volt             |       |
|                                 |                                         | Make                     | Break | Make     | Break | Make     | Break | Make     | Break | Make                 | Break |
| A600                            | 10                                      | 60                       | 6.00  | 30       | 3.00  | 15       | 1.5   | 12       | 1.2   | 7200                 | 720   |

**Pilot Lights**

|                                  |              |                                 |
|----------------------------------|--------------|---------------------------------|
| Rated Insulation Voltage (Ui)    |              | 500V                            |
| Rated Operating Voltage (Ue)     | Voltage      | 6V, 12V, 24V AC/DC              |
|                                  | Transformer  | 120V, 230V, 240V, 380V, 480V AC |
| Impulse Withstand Voltage (Uimp) |              | 4kV                             |
| Insulation Resistance            |              | 100 MΩ minimum (500V DC)        |
| Frequency                        |              | 50/60Hz                         |
| Power Consumption (approx.)      | Full Voltage | 0.3W                            |
|                                  | Transformer  | 1.5W                            |
| Life (reference value)           |              | Approx. 40,000 hours            |

Note: Because the built-in LED lamp is a high-brightness version, the lamp may light dimly due to induction even when power is off.

**Meters**

|                       |                                    |                                 |
|-----------------------|------------------------------------|---------------------------------|
| Accuracy Class        |                                    | 2.5                             |
| Insulation Resistance |                                    | 100 MΩ minimum (500V DC megger) |
| AC ammeter            | Rated Insulation Voltage (Ui)      | 300V                            |
|                       | Operation                          | Moving core                     |
|                       | Impulse Withstand Voltage (Uimp)   | 4kV                             |
|                       | Power Consumption                  | 1VA                             |
|                       | Measurement                        | 5A, 10A, 30A, 50A, etc          |
|                       | Input (CT Ratio)                   | 1A, 5A                          |
|                       | Extended Memory                    | 3 times, etc                    |
| DC input meter        | Rated Insulation Voltage (Ui)      | 150V                            |
|                       | Operation                          | Moving coil                     |
|                       | Impulse Withstand Voltage (Uimp)   | 2.5kV                           |
|                       | Input                              | 0 to 10V DC, 4 to 20mA, etc.    |
|                       | Power Consumption (DC ammeter)     | 0.01W                           |
|                       | Consumption Current (DC voltmeter) | 1mA                             |

Note: Use a commercially available CT (current transformer) for all AC ammeters, and install the CT in a non-hazardous location.

**Control Boxes**

|                          |                                                                                                                |                                   |                           |                                                      |     |
|--------------------------|----------------------------------------------------------------------------------------------------------------|-----------------------------------|---------------------------|------------------------------------------------------|-----|
| Degree of protection     | IP65 (IEC60529), Type 4X                                                                                       | Agency Approvals                  |                           | UL/c-UL, IECEx/ATEX certified                        |     |
| Housing Material         | Stainless steel (SUS304)                                                                                       | Applicable Enclosure              |                           | All enclosures except for 6 Control Units x 3 Column |     |
| Standard Coating         | Melamine                                                                                                       | Mounting Style                    |                           | Wall Mount                                           |     |
|                          | 1-column: Outside coating<br>2-, 3-column: Inside and outside coating                                          | Control Unit                      | Pilot Light               | Yes <sup>1</sup>                                     |     |
| Rated Insulation Voltage | 600V (with pilot light or ET2A-8PE screw terminal block: 500V)<br>Meter AC input: 300V<br>Meter DC input: 150V |                                   | Pushbutton                | Yes                                                  |     |
|                          |                                                                                                                |                                   | Emergency Pushbutton      | Yes                                                  |     |
|                          |                                                                                                                |                                   | Selector Switch           | Yes                                                  |     |
|                          |                                                                                                                |                                   | Key Selector Switch       | Yes                                                  |     |
| Insulation Resistance    | 100 MΩ minimum (500V DC megger)                                                                                |                                   |                           | Meter                                                | Yes |
| Operating Temperature    | −20 to +50°C (no freezing)                                                                                     | Reducer Screw                     |                           | NPT Thread (standard)                                |     |
| Operating Humidity       | 45 to 85% (no condensation)                                                                                    |                                   |                           | Metric Thread                                        |     |
| Altitude                 | 2000m maximum                                                                                                  | Degree of Protection              |                           | IP65, TYPE4X (UL)                                    |     |
|                          |                                                                                                                | Grounding Terminal Screw Material |                           | Stainless Steel                                      |     |
|                          |                                                                                                                | Applicable Wire                   | Stranded Wire (mm2)       | 1.5 to 2.5                                           |     |
|                          |                                                                                                                |                                   | Solid Wire (mm2)          | 1.2 to 1.6                                           |     |
|                          |                                                                                                                |                                   | Solid/Stranded Wire (AWG) | 16-14                                                |     |

1: c-UL explosion protection is different when pilot light is installed.

## Switches (Control Units)



Pushbuttons



Emergency Stop Switches



Pilot Lights



Selector Switches



Key Selector Switches



Meters

### Pushbuttons

| EU2B - YB1 11 F S - D                |                     |                                              |                                 |
|--------------------------------------|---------------------|----------------------------------------------|---------------------------------|
| Operator (style / function)          | Contact arrangement | Button color                                 | Terminals                       |
| B1 : Flush pushbutton / Momentary    | 10 : 1NO            | Blank: Red, Green, Black, and White included | F : Finger-safe terminal (IP20) |
| B2 : Extended pushbutton / Momentary | 01 : 1NC            | Y : Yellow S : Blue                          | C : Exposed screw terminal      |
| B3 : Mushroom pushbutton / Momentary | 20 : 2NO            |                                              |                                 |
|                                      | 02 : 2NC            |                                              |                                 |
|                                      | 30 : 3NO            |                                              |                                 |
|                                      | 03 : 3NC            |                                              |                                 |
|                                      | 11 : 1NO-1NC        |                                              |                                 |
|                                      | 12 : 1NO-2NC        |                                              |                                 |
|                                      | 21 : 2NO-1NC        |                                              |                                 |

### Pilot Lights

| EU2B - YL1 22 F D R         |                                                               |                                                               |                                                                                                                                              |
|-----------------------------|---------------------------------------------------------------|---------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| Operator (style / function) | Lens/LED Colors                                               | Terminals                                                     | Operating voltage                                                                                                                            |
| L1 : Pilot Light / dome     | R : Red G : Green A : Amber<br>Y : Yellow PW : White S : Blue | F : Finger-safe terminal (IP20)<br>C : Exposed screw terminal | 126 : AC 120V (Transformer type)<br>246 : AC 240V (Transformer type)<br>386 : AC 380V (Transformer type)<br>486 : AC 480V (Transformer type) |
|                             |                                                               |                                                               | 66 : AC/DC 6V (Full voltage type)<br>11 : AC/DC 12V (Full voltage type)<br>22 : AC/DC 24V (Full voltage type)                                |

| Part Number    | Style and Function | Contact Arrangement | Weight (Approx.) | ① Button Color                                               |
|----------------|--------------------|---------------------|------------------|--------------------------------------------------------------|
| EU2B-YB110④①-D | Flush Momentary    | 1NO                 | 68g              | ① Blank - supplied with red, green, black, and white buttons |
| EU2B-YB101④①-D |                    | 1NC                 |                  |                                                              |
| EU2B-YB111④①-D |                    | 1NO-1NC             | 92g              |                                                              |
| EU2B-YB120④①-D |                    | 2NO                 |                  |                                                              |
| EU2B-YB102④①-D |                    | 2NC                 | 116g             |                                                              |
| EU2B-YB121④①-D |                    | 2NO-1NC             |                  |                                                              |
| EU2B-YB112④①-D |                    | 1NO-2NC             |                  |                                                              |
| EU2B-YB130④①-D |                    | 3NO                 |                  |                                                              |
| EU2B-YB103④①-D |                    | 3NC                 |                  |                                                              |
| EU2B-YB210④①-D |                    | Extended Momentary  | 1NO              | 70g                                                          |
| EU2B-YB201④①-D | 1NC                |                     |                  |                                                              |
| EU2B-YB211④①-D | 1NO-1NC            |                     | 94g              |                                                              |
| EU2B-YB220④①-D | 2NO                |                     |                  |                                                              |
| EU2B-YB202④①-D | 2NC                |                     | 118g             |                                                              |
| EU2B-YB221④①-D | 2NO-1NC            |                     |                  |                                                              |
| EU2B-YB212④①-D | 1NO-2NC            |                     |                  |                                                              |
| EU2B-YB230④①-D | 3NO                |                     |                  |                                                              |
| EU2B-YB203④①-D | 3NC                |                     |                  |                                                              |
| EU2B-YB310④①-D | Mushroom Momentary |                     | 1NO              | 76g                                                          |
| EU2B-YB301④①-D |                    | 1NC                 |                  |                                                              |
| EU2B-YB311④①-D |                    | 1NO-1NC             | 101g             |                                                              |
| EU2B-YB320④①-D |                    | 2NO                 |                  |                                                              |
| EU2B-YB302④①-D |                    | 2NC                 | 125g             |                                                              |
| EU2B-YB321④①-D |                    | 2NO-1NC             |                  |                                                              |
| EU2B-YB312④①-D |                    | 1NO-2NC             |                  |                                                              |
| EU2B-YB330④①-D |                    | 3NO                 |                  |                                                              |
| EU2B-YB303④①-D | 3NC                |                     |                  |                                                              |

Note: ① Button Color. Specify a contact terminal style in place of ④ in the part number: F (Finger-safe terminal), C (Exposed screw terminal)

Note: ① Illumination Color. Specify a contact terminal style in place of ④ in the part number: F (Finger-safe terminal), C (Exposed screw terminal)

## Emergency Stop Switches

## EU2B - YBV3 11 F R

## Operator (style / function)

BV3 : 40mm mushroom/push, pull or twist release

## Contact arrangement

01 : 1NC  
11 : 1NO-1NC  
02 : 2NC  
03 : 3NC  
12 : 1NO-2NC

## Button color

R : Red

## Terminals

F : Finger-safe terminal (IP20)  
C : Exposed screw terminal

| Part Number   | Operator     | Contact Arrangement | Weight (Approx.) | Button Color |
|---------------|--------------|---------------------|------------------|--------------|
| EU2B-YBV301④R | ø40 Mushroom | 1NC                 | 96g              | R : Red      |
| EU2B-YBV311④R |              | 1NO-1NC             | 120g             |              |
| EU2B-YBV302④R |              | 2NC                 |                  |              |
| EU2B-YBV312④R |              | 1NO-2NC             | 144g             |              |
| EU2B-YBV303④R |              | 3NC                 |                  |              |

Specify a terminal style in place of ④ in the part number: F (Finger-safe terminal), C (Exposed screw terminal)

## Meters

## EU2B - YM 53 A 10 F R

## Function

M : Meter

## Input current

1 : 1A 5 : 5A

## Specification of overload scale

3 : 3 times 2 : 2 times 5 : 5 times N : Non

## Type of meter

A : AC ammeter

## Measuring range

Direct measuring

For current transformers:

1 : 1A

5 : 5A

10 : 10A

15 : 15A

20 : 20A

30 : 30A

50 : 50A

60 : 60A

75 : 75A

100 : 100A

150 : 150A

## Set pointer

blank : non -R : with set pointer

## Terminals

F : Finger-safe terminal (IP20)  
C : Exposed screw terminal

## EU2B - YM 010 VD F-PER-R

## Function

M : Meter

## Input voltage or current

010 : 0-10V

001 : 0-1mA

420 : 4-20mA etc.

## Type of meter

VD : DC voltmeter

MD : DC ammeter

## Terminals

F : Finger-safe terminal (IP20)

C : Exposed screw terminal

## Set pointer

blank : non -R : with set pointer

## Specification of scale

-PER : 0-100%

-60HZ : 0-60Hz

-80HZ : 0-80Hz

| Input                    | Part Number        | Description                          | Weight (approx.) |
|--------------------------|--------------------|--------------------------------------|------------------|
| AC input meter (ammeter) | EU2B-YM53A5④       | Capacity: 5A Expansion scale: x3     | 270g             |
|                          | EU2B-YM53A10④      | Capacity: 10/5A Expansion scale: x3  |                  |
|                          | EU2B-YM13A10④      | Capacity: 10/1A Expansion scale: x3  |                  |
|                          | EU2B-YM53A15④      | Capacity: 15/5A Expansion scale: x3  |                  |
|                          | EU2B-YM13A15④      | Capacity: 15/1A Expansion scale: x3  |                  |
|                          | EU2B-YM13A20④      | Capacity: 20/1A Expansion scale: x3  |                  |
|                          | EU2B-YM53A30④      | Capacity: 30/5A Expansion scale: x3  |                  |
|                          | EU2B-YM13A30④      | Capacity: 30/1A Expansion scale: x3  |                  |
|                          | EU2B-YM53A50④      | Capacity: 50/5A Expansion scale: x3  |                  |
|                          | EU2B-YM53A60④      | Capacity: 60/5A Expansion scale: x3  |                  |
|                          | EU2B-YM53A75④      | Capacity: 75/5A Expansion scale: x3  |                  |
|                          | EU2B-YM53A100④     | Capacity: 100/5A Expansion scale: x3 |                  |
| DC input meter           | EU2B-YM010VD④-PER  | 0-10V DC Input Scale: 0 to 100%      | 270g             |
|                          | EU2B-YM010VD④-60HZ | 0-10V DC Input Scale: 0 to 60Hz      |                  |
|                          | EU2B-YM001MD④-PER  | 0-1mA DC Input Scale: 0 to 100%      |                  |
|                          | EU2B-YM001MD④-60HZ | 0-1mA DC Input Scale: 0 to 60Hz      |                  |
|                          | EU2B-YM001MD④-80HZ | 0-1mA DC Input Scale: 0 to 80Hz      |                  |
|                          | EU2B-YM420MD④-PER  | 4-20mA DC Input Scale: 0 to 100%     |                  |
|                          | EU2B-YM420MD④-60HZ | 4-20mA DC Input Scale: 0 to 60Hz     |                  |

Specify a terminal style in place of ④ in the part number: F (Finger-safe terminal), C (Exposed screw terminal)

## 2 Position Selector Switches

### EU2B - YSK 3 11 N1 F A

#### Operator (style / function)

S : Selector (Knob operator)  
SK : Key selector (Key operator)

#### Number of Positions / Spring Return Action

2 : 2-position / Maintained  
2R : 2-position / Maintained (Overlap)  
2J : 2-position / Maintained (Special function)  
21 : 2-position / Spring return from right  
3 : 3-position / Maintained  
31 : 3-position / Spring return from right  
32 : 3-position / Spring return from left  
33 : 3-position / Spring return two-way

#### Contact arrangement

10 : 1NO 03 : 3NC  
11 : 1NO-1NC 02 : 2NC  
01 : 1NC 21 : 2NO-1NC  
30 : 3NO 12 : 1NO-2NC  
20 : 2NO

#### Key Removable Position

See option codes below

#### Terminals

F : Finger-safe terminal (IP20)  
C : Exposed screw terminal

#### Circuit Number

Blank : No Designation  
N\* : See charts

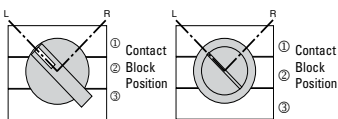
| Selector Switches |          |                   |   | Key Selector Switches |                          |                |                          |
|-------------------|----------|-------------------|---|-----------------------|--------------------------|----------------|--------------------------|
| Contact           | Mounting | Operator Position |   | Maintained            | Spring Return from Right | Maintained     | Spring Return from Right |
|                   |          | L                 | R | L R                   | L R                      | L R            | L R                      |
| NO                | 1        |                   | ● | EU2B-YS210④           | EU2B-YS2110④             | EU2B-YSK210④③  | EU2B-YSK2110④③           |
|                   |          |                   |   |                       |                          |                |                          |
|                   |          |                   |   | EU2B-YS201④           | EU2B-YS2101④             | EU2B-YSK201④③  | EU2B-YSK2101④③           |
| NC                | 3        | ●                 |   |                       |                          |                |                          |
| NO                | 1        |                   | ● | EU2B-YS220④           | EU2B-YS2120④             | EU2B-YSK220④③  | EU2B-YSK2120④③           |
|                   |          |                   |   |                       |                          |                |                          |
| NO                | 3        |                   | ● |                       |                          |                |                          |
| NC                | 1        | ●                 |   | EU2B-YS202④           | EU2B-YS2102④             | EU2B-YSK202④③  | EU2B-YSK2102④③           |
|                   |          |                   |   |                       |                          |                |                          |
| NC                | 3        | ●                 |   |                       |                          |                |                          |
| NO                | 1        |                   | ● | EU2B-YS211④           | EU2B-YS2111④             | EU2B-YSK211④③  | EU2B-YSK2111④③           |
|                   |          |                   |   |                       |                          |                |                          |
| NC                | 3        | ●                 |   |                       |                          |                |                          |
| NO                | 1        |                   | ● | EU2B-YS230④           | EU2B-YS2130④             | EU2B-YSK230④③  | EU2B-YSK2130④③           |
|                   |          |                   |   |                       |                          |                |                          |
| NO                | 2        |                   | ● |                       |                          |                |                          |
| NO                | 3        |                   | ● |                       |                          |                |                          |
| NC                | 1        | ●                 |   | EU2B-YS203④           | EU2B-YS2103④             | EU2B-YSK203④③  | EU2B-YSK2103④③           |
|                   |          |                   |   |                       |                          |                |                          |
| NC                | 2        | ●                 |   |                       |                          |                |                          |
| NC                | 3        | ●                 |   |                       |                          |                |                          |
| NO                | 1        |                   | ● | EU2B-YS221④           | EU2B-YS2121④             | EU2B-YSK221④③  | EU2B-YSK2121④③           |
|                   |          |                   |   |                       |                          |                |                          |
| NO                | 2        |                   | ● |                       |                          |                |                          |
| NC                | 3        | ●                 |   |                       |                          |                |                          |
| NO                | 1        |                   | ● | EU2B-YS212④           | EU2B-YS2112④             | EU2B-YSK212④③  | EU2B-YSK2112④③           |
|                   |          |                   |   |                       |                          |                |                          |
| NC                | 2        | ●                 |   |                       |                          |                |                          |
| NC                | 3        | ●                 |   |                       |                          |                |                          |
| NO                | 1        |                   | ● | EU2B-YS2R11④          | N/A                      | EU2B-YSK2R11④③ | N/A                      |
|                   |          |                   |   |                       |                          |                |                          |
| NC                | 2        |                   | ● |                       |                          |                |                          |

Key is removable in all maintained positions. Specify key removal position in place of ③ in the part number. See table.  
Specify a terminal style in place of ④ in the part number: F (Finger-safe terminal), C (Exposed screw terminal).

2-position, 2-position/inverse cam

Selector Switch

Key Selector Switch



|         |          |                   |   | Selector Switches | Key Selector Switches |
|---------|----------|-------------------|---|-------------------|-----------------------|
| Contact | Mounting | Operator Position |   | Maintained        | Maintained            |
|         |          | L                 | R | L R               | L R                   |
| NO      | 1        |                   | ● | EU2B-YS2J10④      | EU2B-YSK2J10④③        |
|         |          |                   |   |                   |                       |
|         |          |                   |   | EU2B-YS2J01④      | EU2B-YSK2J01④③        |
|         |          |                   |   |                   |                       |
| NC      | 3        | ●                 |   |                   |                       |
| NO      | 1        |                   | ● | EU2B-YS2J20④      | EU2B-YSK2J20④③        |
|         |          |                   |   |                   |                       |
| NO      | 3        |                   | ● |                   |                       |
| NC      | 1        | ●                 |   | EU2B-YS2J02④      | EU2B-YSK2J02④③        |
|         |          |                   |   |                   |                       |
| NC      | 3        | ●                 |   |                   |                       |
| NO      | 1        |                   | ● | EU2B-YS2J11④      | EU2B-YSK2J11④③        |
|         |          |                   |   |                   |                       |
| NC      | 3        | ●                 |   |                   |                       |
| NO      | 1        |                   | ● | EU2B-YS2J30④      | EU2B-YSK2J30④③        |
|         |          |                   |   |                   |                       |
| NO      | 2        |                   | ● |                   |                       |
| NO      | 3        |                   | ● |                   |                       |
| NC      | 1        | ●                 |   | EU2B-YS2J03④      | EU2B-YSK2J03④③        |
|         |          |                   |   |                   |                       |
| NC      | 2        | ●                 |   |                   |                       |
| NC      | 3        | ●                 |   |                   |                       |
| NO      | 1        |                   | ● | EU2B-YS2J21④      | EU2B-YSK2J21④③        |
|         |          |                   |   |                   |                       |
| NO      | 2        |                   | ● |                   |                       |
| NC      | 3        | ●                 |   |                   |                       |
| NO      | 1        |                   | ● | EU2B-YS2J12④      | EU2B-YSK2J12④③        |
|         |          |                   |   |                   |                       |
| NC      | 2        | ●                 |   |                   |                       |
| NC      | 3        | ●                 |   |                   |                       |

### ③ Key Removable Option Codes (2-position)

|   |                                 |
|---|---------------------------------|
| A | Key removable in any position   |
| B | Key removable in left position  |
| C | Key removable in right position |

## 3 Position Selector Switches

| Contact | Mounting | Selector Switches |   |   |               |                          |                         |                       | Key Selector Switches |                          |                         |                       |
|---------|----------|-------------------|---|---|---------------|--------------------------|-------------------------|-----------------------|-----------------------|--------------------------|-------------------------|-----------------------|
|         |          | Operator Position |   |   | Maintained    | Spring Return from Right | Spring Return from Left | Spring Return Two Way | Maintained            | Spring Return from Right | Spring Return from Left | Spring Return Two Way |
|         |          | L                 | C | R | L C R         | L C R                    | L C R                   | L C R                 | L C R                 | L C R                    | L C R                   | L C R                 |
| NO      | 1        | ●                 |   |   | EU2B-YS320④   | EU2B-YS3120④             | EU2B-YS3220④            | EU2B-YS3320④          | EU2B-YSK320④③         | EU2B-YSK3120④③           | EU2B-YSK3220④③          | EU2B-YSK3320④③        |
| NO      | 3        |                   |   | ● |               |                          |                         |                       |                       |                          |                         |                       |
| NO      | 2        | ●                 |   | ● | EU2B-YS320N1④ | EU2B-YS3120N1④           | EU2B-YS3220N1④          | EU2B-YS3320N1④        | EU2B-YSK320N1④③       | EU2B-YSK3120N1④③         | EU2B-YSK3220N1④③        | EU2B-YSK3320N1④③      |
| NO      | 3        |                   |   | ● |               |                          |                         |                       |                       |                          |                         |                       |
| NC      | 1        |                   |   | ■ | EU2B-YS302④   | EU2B-YS302④              | EU2B-YS3202④            | EU2B-YS3302④          | EU2B-YSK302④③         | EU2B-YSK302④③            | EU2B-YSK3202④③          | EU2B-YSK3302④③        |
| NC      | 3        |                   |   | ■ |               |                          |                         |                       |                       |                          |                         |                       |
| NC      | 2        |                   | ● |   | EU2B-YS302N1④ | EU2B-YS3102N1④③          | EU2B-YS3202N1④③         | EU2B-YS3302N1④        | EU2B-YSK302N1④③       | EU2B-YSK3102N1④③         | EU2B-YSK3202N1④③        | EU2B-YSK3302N1④③      |
| NC      | 3        |                   |   | ■ |               |                          |                         |                       |                       |                          |                         |                       |
| NO      | 1        | ●                 |   |   | EU2B-YS311④   | EU2B-YS311④              | EU2B-YS3211④            | EU2B-YS3311④          | EU2B-YSK311④③         | EU2B-YSK311④③            | EU2B-YSK3211④③          | EU2B-YSK3311④③        |
| NC      | 3        |                   |   | ■ |               |                          |                         |                       |                       |                          |                         |                       |
| NC      | 1        |                   |   | ■ | EU2B-YS311N1④ | EU2B-YS311N1④            | EU2B-YS3211N1④          | EU2B-YS3311N1④        | EU2B-YSK311N1④③       | EU2B-YSK311N1④③          | EU2B-YSK3211N1④③        | EU2B-YSK3311N1④③      |
| NO      | 3        |                   |   | ● |               |                          |                         |                       |                       |                          |                         |                       |
| NO      | 1        | ●                 |   |   | EU2B-YS311N2④ | EU2B-YS311N2④            | EU2B-YS3211N2④          | EU2B-YS3311N2④        | EU2B-YSK311N2④③       | EU2B-YSK311N2④③          | EU2B-YSK3211N2④③        | EU2B-YSK3311N2④③      |
| NC      | 2        |                   | ● |   |               |                          |                         |                       |                       |                          |                         |                       |
| NC      | 3        |                   |   | ● | EU2B-YS311N3④ | EU2B-YS311N3①            | EU2B-YS3211N3①          | EU2B-YS3311N3①        | EU2B-YSK311N3④③       | EU2B-YSK311N3④③          | EU2B-YSK3211N3④③        | EU2B-YSK3311N3④③      |
| NO      | 2        | ●                 |   | ● | EU2B-YS311N4④ | EU2B-YS311N4④            | EU2B-YS3211N4④          | EU2B-YS3311N4④        | EU2B-YSK311N4④③       | EU2B-YSK311N4④③          | EU2B-YSK3211N4④③        | EU2B-YSK3311N4④③      |
| NC      | 3        |                   |   | ■ |               |                          |                         |                       |                       |                          |                         |                       |
| NO      | 1        | ●                 |   |   |               |                          |                         |                       |                       |                          |                         |                       |
| NO      | 2        | ●                 |   | ● | EU2B-YS330④   | EU2B-YS3130④             | EU2B-YS3230④            | EU2B-YS3330④          | EU2B-YSK330④③         | EU2B-YSK3130④③           | EU2B-YSK3230④③          | EU2B-YSK3330④③        |
| NO      | 3        |                   |   | ● |               |                          |                         |                       |                       |                          |                         |                       |
| NC      | 1        |                   |   | ■ |               |                          |                         |                       |                       |                          |                         |                       |
| NC      | 2        |                   | ● |   | EU2B-YS303④   | EU2B-YS3103④             | EU2B-YS3203④            | EU2B-YS3303④          | EU2B-YSK303④③         | EU2B-YSK3103④③           | EU2B-YSK3203④③          | EU2B-YSK3303④③        |
| NC      | 3        |                   |   | ■ |               |                          |                         |                       |                       |                          |                         |                       |
| NO      | 1        | ●                 |   |   | EU2B-YS321N1④ | EU2B-YS3121N1④           | EU2B-YS3221N1④          | EU2B-YS3321N1④        | EU2B-YSK321N1④③       | EU2B-YSK3121N1④③         | EU2B-YSK3221N1④③        | EU2B-YSK3321N1④③      |
| NC      | 2        |                   | ● |   |               |                          |                         |                       |                       |                          |                         |                       |
| NO      | 3        |                   |   | ● |               |                          |                         |                       |                       |                          |                         |                       |
| NC      | 1        |                   |   | ■ | EU2B-YS312N1④ | EU2B-YS3112N1④           | EU2B-YS3212N1④          | EU2B-YS3312N1④        | EU2B-YSK312N1④③       | EU2B-YSK3112N1④③         | EU2B-YSK3212N1④③        | EU2B-YSK3312N1④③      |
| NO      | 2        | ●                 |   | ● |               |                          |                         |                       |                       |                          |                         |                       |
| NC      | 3        |                   |   | ■ |               |                          |                         |                       |                       |                          |                         |                       |

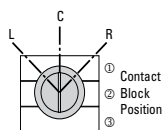
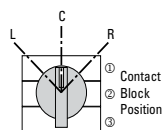
Specify a terminal style in place of ④ in the part number: F (Finger-safe terminal), C (Exposed screw terminal).

Key is removable in all maintained positions. Specify key removal position in place of ③ in the part number. See table.

3-position, 3-position/inverse cam

Selector Switch

Key Selector Switch



## ③ Key Removable Option Codes (3-Position)

|   |                                             |
|---|---------------------------------------------|
| A | Key removable in any position               |
| B | Key removable in left and center positions  |
| C | Key removable in center and right positions |
| D | Key removable in center position            |
| E | Key removable in left and right positions   |
| G | Key removable in left position              |
| H | Key removable in right position             |



Control Boxes

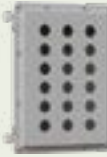
1Column

| 1 control unit                                                                    | 2 control units                                                                   | 3 control units                                                                   | 4 control units                                                                     | 5 control units                                                                     |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| EC2B-B21B011N2①-U                                                                 | EC2B-B21B021N2①-U                                                                 | EC2B-B31B031N2①-U                                                                 | EC2B-B51B041N3①-U                                                                   | EC2B-B51B051N3①-U                                                                   |
|  |  |  |  |  |

2 Columns

| 4 control units                                                                   | 6 control units                                                                   | 8 control units                                                                    | 10 control units                                                                    |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| EC2B-B32B042N2①-U                                                                 | EC2B-B32B062N2①-U                                                                 | EC2B-B52B082N3①-U                                                                  | EC2B-B52B102N3①-U                                                                   |
|  |  |  |  |

3 Columns

| 6 control units                                                                     | 9 control units                                                                     | 12 control units                                                                    | 15 control units                                                                      | 18 control units                                                                     |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| EC2B-B33B063N2①-U                                                                   | EC2B-B33B093N2①-U                                                                   | EC2B-B53B123N3①-U                                                                   | EC2B-B53B153N3①-U                                                                     | EC2B-B63B183N3①-U                                                                    |
|  |  |  |  |  |

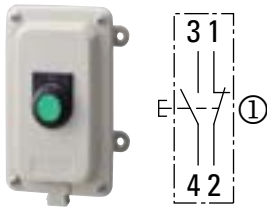
| Thread Size |             | ① Terminal Block Style |                         |
|-------------|-------------|------------------------|-------------------------|
| Code        | Description | Code                   | Description             |
| M1          | M16         | blank                  | no terminal block       |
| M2          | M20         | C                      | Exposed screw terminals |
| M3          | M25         | F                      | Finger-safe terminals   |
| M4          | M32         |                        |                         |
| M5          | M40         |                        |                         |
| N1          | NPT1/2      |                        |                         |
| N2          | NPT3/4      |                        |                         |
| N3          | NPT1        |                        |                         |
| N4          | NPT1 1/4    |                        |                         |

Other thread size options available. To specify different thread sizes, use table at left to select a code to use in place of N2 or N3 in the part number.  
Specify terminal block style in place of ① in part number (standard versions do not contain a terminal block).

## Standard Control Stations

## 1 Control Unit × 1 Column

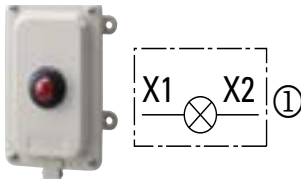
## 1 Flash Pushbutton



|   | EC2B-1102BN2N□1-U                                                                                               | EC2B-1102BN2N□2-U                                                                             |
|---|-----------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| ① | Flush momentary<br>1NO contact<br>Nameplate ON<br>Button color: black, green, red, and white<br>1NO-1NC contact | Flush momentary<br>1NC contact<br>Nameplate OFF<br>Button color: black, green, red, and white |

|   | EC2B-1102BN2N□3-U                                                                                | EC2B-1102BN2N□4-U                                                                                 |
|---|--------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|
| ① | Flush momentary<br>1NO-1NC contact<br>Nameplate ON<br>Button color: black, green, red, and white | Flush momentary<br>1NO-1NC contact<br>Nameplate OFF<br>Button color: black, green, red, and white |

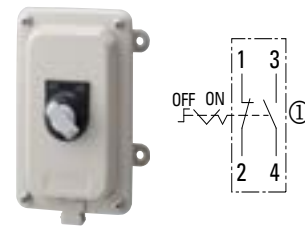
## 1 pilot light



|   | EC2B-1101BN2□11-U                  | EC2B-1101BN2□12-U                  | EC2B-1101BN2□3-U                     |
|---|------------------------------------|------------------------------------|--------------------------------------|
| ① | 120V AC<br>Illumination color: red | 240V AC<br>Illumination color: red | 24V AC/DC<br>Illumination color: red |

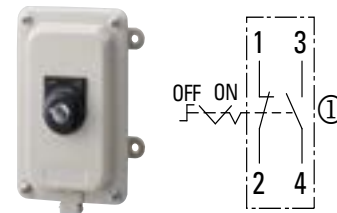
|   | EC2B-1101BN2□13-U                    | EC2B-1101BN2□14-U                    | EC2B-1101BN2□6-U                       |
|---|--------------------------------------|--------------------------------------|----------------------------------------|
| ① | 120V AC<br>Illumination color: green | 240V AC<br>Illumination color: green | 24V AC/DC<br>Illumination color: green |

## 1 selector switch



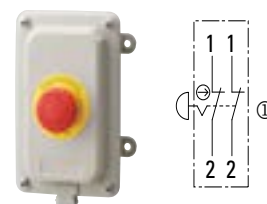
|   | EC2B-1106BN2N□1-U                                                              |
|---|--------------------------------------------------------------------------------|
| ① | Knob selector<br>2-position maintained<br>1NO-1NC contact<br>Name plate OFF-ON |

## 1 key selector switch



|   | EC2B-1106BN2N□4-U                                                                                            |
|---|--------------------------------------------------------------------------------------------------------------|
| ① | Key selector<br>2-position maintained<br>(removable at all positions)<br>1NO-1NC contact<br>Nameplate OFF-ON |

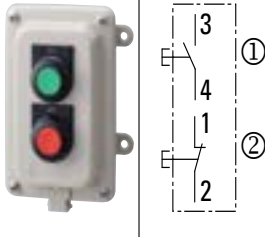
## 1 e-stop switch



|   | EC2B-1102BN2N□7-U                                                                      |
|---|----------------------------------------------------------------------------------------|
| ① | Emergency stop switch<br>2NC contact<br>Nameplate EMERGENCY STOP<br>Button color (red) |

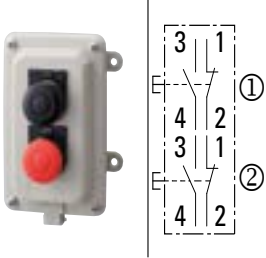
2 Control Units × 1 Column

2 flush pushbuttons



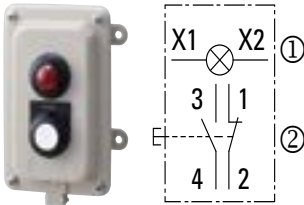
|   | EC2B-2102BN2N□1-U                                                                        |
|---|------------------------------------------------------------------------------------------|
| ① | Flush momentary<br>1NO contact, Nameplate ON<br>Button color (black, green, red, white)  |
| ② | Flush momentary<br>1NC contact, Nameplate OFF<br>Button color (black, green, red, white) |

2 Mushroom Pushbuttons



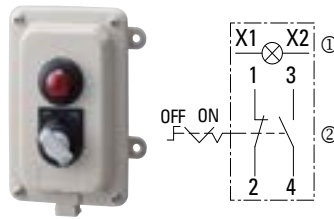
|   | EC2B-2102BN2N□4-U                                                           |
|---|-----------------------------------------------------------------------------|
| ① | Mushroom momentary<br>1NO-1NC contact, Nameplate ON<br>Button color (black) |
| ② | Mushroom momentary<br>1NO-1NC contact, Nameplate OFF<br>Button color (red)  |

1 pilot light/1 pushbutton

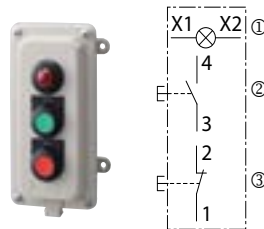


|   | EC2B-2110BN2N□5-U                                                                                | EC2B-2110BN2N□6-U                                                                                | EC2B-2110BN2N□3-U                                                                                |
|---|--------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| ① | 120V AC<br>Illumination color: red                                                               | 240V AC<br>Illumination color: red                                                               | 24V AC/DC<br>Illumination color: red                                                             |
| ② | Flush momentary<br>1NO-1NC contact<br>Name plate STOP<br>Button color (black, green, red, white) | Flush momentary<br>1NO-1NC contact<br>Name plate STOP<br>Button color (black, green, red, white) | Flush momentary<br>1NO-1NC contact<br>Name plate STOP<br>Button color (black, green, red, white) |

Specify terminal style code in place of □ in part no. C (standard screw terminal), F (finger-safe screw terminal)

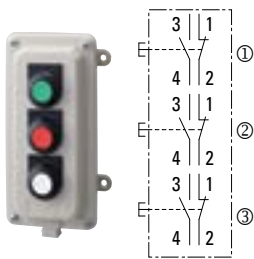
**2 Control Units × 1 Column****1 pilot light / 1 selector switch**

|   | EC2B-2117BN2N□3-U                                                     |  | EC2B-2117BN2N□4-U                  |
|---|-----------------------------------------------------------------------|--|------------------------------------|
| ① | 120V AC<br>Illumination color: red                                    |  | 240V AC<br>Illumination color: red |
| ② | Knob, 2-position,<br>1NO-1NC contact<br>Maintained, Name plate OFF-ON |  |                                    |

**3 Control Units × 1 Column****1 pilot light / 2 pushbuttons**

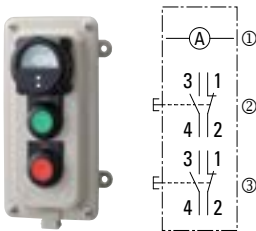
|   | EC2B-3110BN2N□5-U                                                                        | EC2B-3110BN2N□6-U                                                                        | EC2B-3110BN2N□3-U                                                                        |
|---|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
| ① | 120V AC<br>Illumination color: red                                                       | 240V AC<br>Illumination color: red                                                       | 24V AC/DC<br>Illumination color: red                                                     |
| ② | Flush momentary<br>1NO contact, Nameplate ON<br>Button color (black, green, red, white)  | Flush momentary<br>1NO contact, Nameplate ON<br>Button color (black, green, red, white)  | Flush momentary<br>1NO contact, Nameplate ON<br>Button color (black, green, red, white)  |
| ③ | Flush momentary<br>1NC contact, Nameplate OFF<br>Button color (black, green, red, white) | Flush momentary<br>1NC contact, Nameplate OFF<br>Button color (black, green, red, white) | Flush momentary<br>1NC contact, Nameplate OFF<br>Button color (black, green, red, white) |

3 pushbuttons



| EC2B-3102BN2N□1-U |                                                                                                   |
|-------------------|---------------------------------------------------------------------------------------------------|
| ①                 | Flush momentary<br>1NO-1NC contact,<br>Blank nameplate<br>Button color (black, green, red, white) |
| ②                 |                                                                                                   |
| ③                 |                                                                                                   |

1 meter / 2 pushbuttons

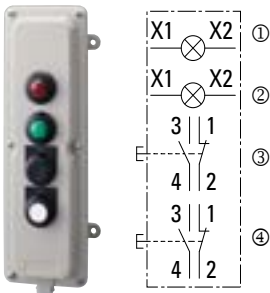


| EC2B-3152BN2N□1△-U |                                                                                              |
|--------------------|----------------------------------------------------------------------------------------------|
| ①                  | Specify input, capacity, and scale                                                           |
| ②                  | Flush momentary<br>1NO-1NC contact, Nameplate ON<br>Button color (black, green, red, white)  |
| ③                  | Flush momentary<br>1NO-1NC contact, Nameplate OFF<br>Button color (black, green, red, white) |

Specify the meter's capacity and scale in place of △ in the part number

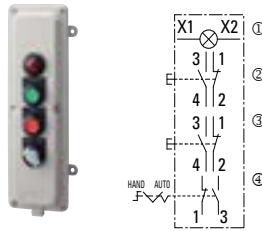
4 Control Units × 1 Column

2 pilot lights / 2 pushbuttons



|   | EC2B-4110BN3N□5-U                                                                            | EC2B-4110BN3N□6-U                                                                            | EC2B-4110BN3N□3-U                                                                            |
|---|----------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| ① | 120V AC, Illumination color: red                                                             | 240V AC, Illumination color: red                                                             | 24V AC/DC, Illumination color: red                                                           |
| ② | 120V AC, Illumination color: green                                                           | 240V AC, Illumination color: green                                                           | 24V AC/DC, Illumination color: green                                                         |
| ③ | Flush momentary<br>1NO-1NC contact, Nameplate ON<br>Button color (black, green, red, white)  | Flush momentary<br>1NO-1NC contact, Nameplate ON<br>Button color (black, green, red, white)  | Flush momentary<br>1NO-1NC contact, Nameplate ON<br>Button color (black, green, red, white)  |
| ④ | Flush momentary<br>1NO-1NC contact, Nameplate OFF<br>Button color (black, green, red, white) | Flush momentary<br>1NO-1NC contact, Nameplate OFF<br>Button color (black, green, red, white) | Flush momentary<br>1NO-1NC contact, Nameplate OFF<br>Button color (black, green, red, white) |

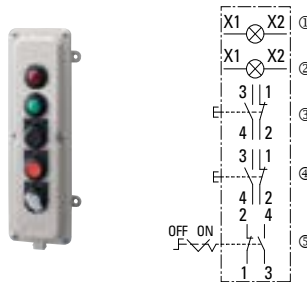
## 1 pilot light / 2 pushbuttons / 1 selector switch



|   | EC2B-4113BN3N□5-U                                                                                                                                           | EC2B-4113BN3N□6-U                                                                                                                                            | EC2B-4113BN3N□3-U                                                                                                                                             |
|---|-------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ① | 120V AC, Illumination color: red                                                                                                                            | 240V AC, Illumination color: red                                                                                                                             | 24V AC/DC, Illumination color: red                                                                                                                            |
| ② | Flush momentary<br>1NO-1NC contact, Nameplate ON<br>Button color (black, green, red, white)                                                                 | Flush momentary<br>1NO-1NC contact, Nameplate ON<br>Button color (black, green, red, white)                                                                  | Flush momentary<br>1NO-1NC contact, Nameplate ON<br>Button color (black, green, red, white)                                                                   |
| ③ | Flush momentary<br>1NO-1NC contact, Nameplate OFF<br>Button color (black, green, red, white)                                                                | Flush momentary<br>1NO-1NC contact, Nameplate OFF<br>Button color (black, green, red, white)                                                                 | Flush momentary<br>1NO-1NC contact, Nameplate OFF<br>Button color (black, green, red, white)                                                                  |
| ④ | Knob, 2-position, maintained<br>1NO-1NC contact<br>Nameplate HAND-AUTO<br> | Knob, 2-position, maintained<br>1NO-1NC contact<br>Nameplate HAND-AUTO<br> | Knob, 2-position, maintained<br>1NO-1NC contact<br>Nameplate HAND-AUTO<br> |

## 5 Control Units × 1 Column

## 2 pilot lights / 2 pushbuttons / 1 selector switch



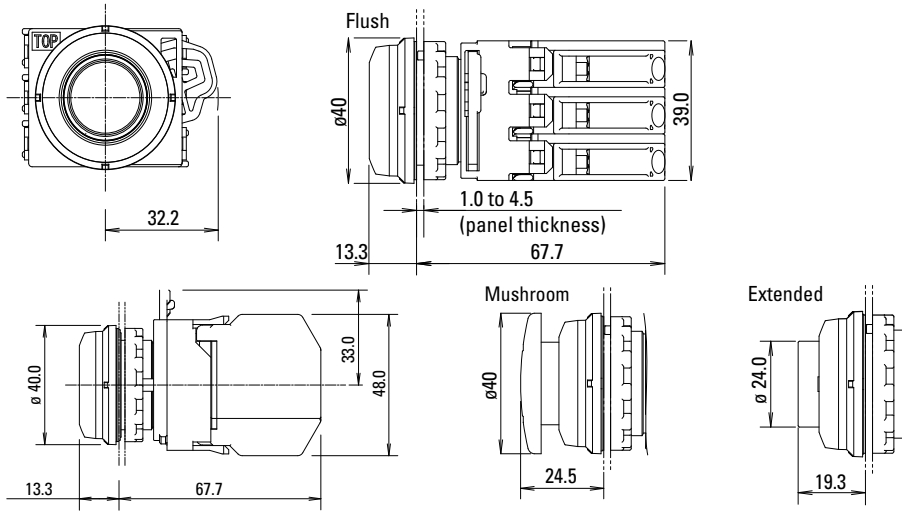
|   | EC2B-5113BN3N□5-U                                                                                                                                                  | EC2B-5113BN3N□6-U                                                                                                                                                 | EC2B-5113BN3N□3-U                                                                                                                                                   |
|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ① | 120V AC, Illumination color: red                                                                                                                                   | 240V AC, Illumination color: red                                                                                                                                  | 24V AC/DC, Illumination color: red                                                                                                                                  |
| ② | 120V AC, Illumination color: green                                                                                                                                 | 240V AC, Illumination color: green                                                                                                                                | 24V AC/DC, Illumination color: green                                                                                                                                |
| ③ | Flush momentary<br>1NO-1NC contact, Nameplate ON<br>Button color (black, green, red, white)                                                                        | Flush momentary<br>1NO-1NC contact, Nameplate ON<br>Button color (black, green, red, white)                                                                       | Flush momentary<br>1NO-1NC contact, Nameplate ON<br>Button color (black, green, red, white)                                                                         |
| ④ | Flush momentary<br>1NO-1NC contact, Nameplate OFF<br>Button color (black, green, red, white)                                                                       | Flush momentary<br>1NO-1NC contact, Nameplate OFF<br>Button color (black, green, red, white)                                                                      | Flush momentary<br>1NO-1NC contact, Nameplate OFF<br>Button color black, green, red, white)                                                                         |
| ⑤ | Knob, 2-position, Main-<br>tained, 1NO-1NC contact,<br>Name plate HAND-AUTO<br> | Knob, 2-position, Main-<br>tained, 1NO-1NC contact<br>Name plate HAND-AUTO<br> | Knob, 2-position, Main-<br>tained, 1NO-1NC contact<br>Name plate HAND-AUTO<br> |

Specify terminal style code in place of □ in part no. C (standard screw terminal), F (finger-safe screw terminal)

## Dimensions

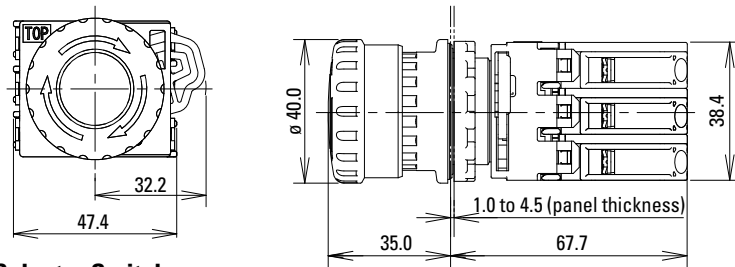
### Pushbuttons

Shown with finger-safe contacts



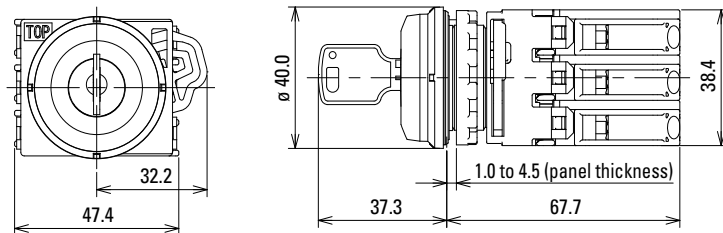
### Emergency Stop Switches

Shown with finger-safe contacts



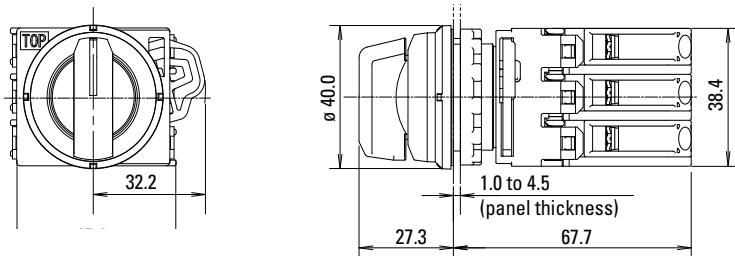
### Selector Switches

Shown with finger-safe contacts



### Key Selector Switches

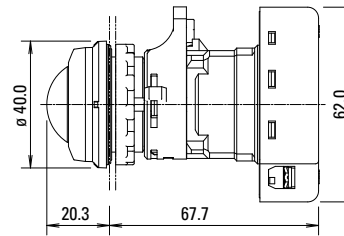
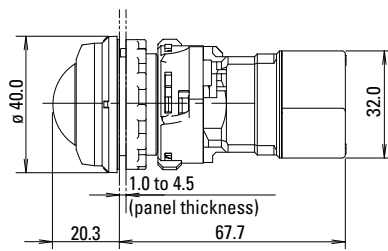
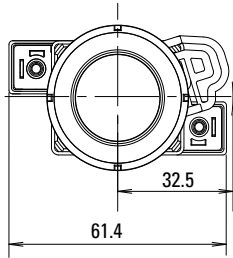
Shown with finger-safe contacts



### Pilot Lights

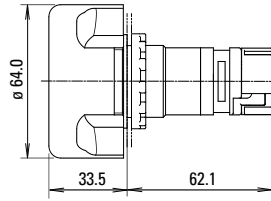
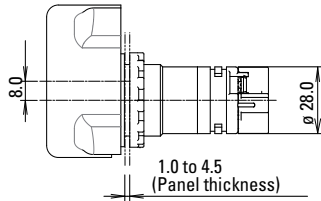
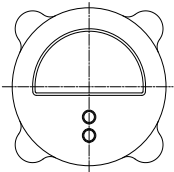
Shown with finger-safe contacts



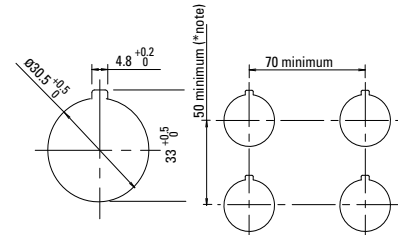


## Meters

Shown with finger-safe contacts



## Mounting Hole Dimensions

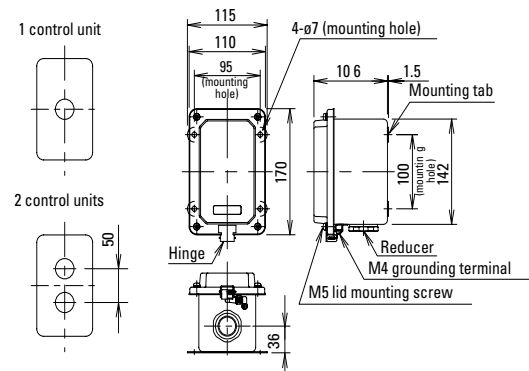


Panel thickness: 1.0 to 4.5 mm.

\*Note: The meter can be mounted on the top mounting holes of a standard 50mm mounting centers. The meter can be mounted on any mounting hole with a 70mm or larger mounting center.

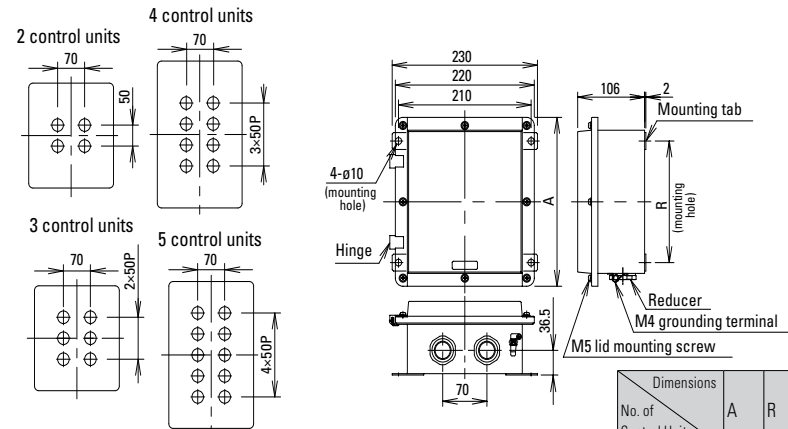
## 1, 2 control units x 1 column

weight: 1.2kg/1.4kg



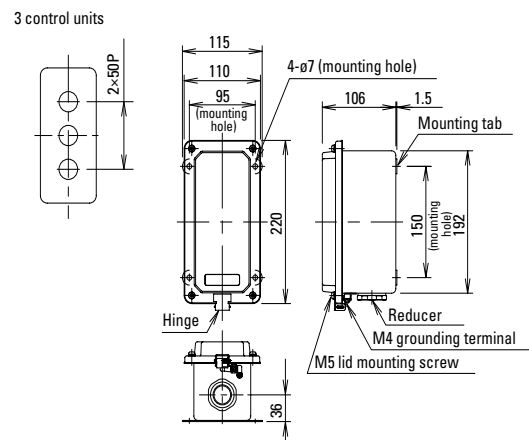
## 2, 3, 4, 5 control units x 2 columns

weight: 3.8/4.2/4.6/5.0 kg



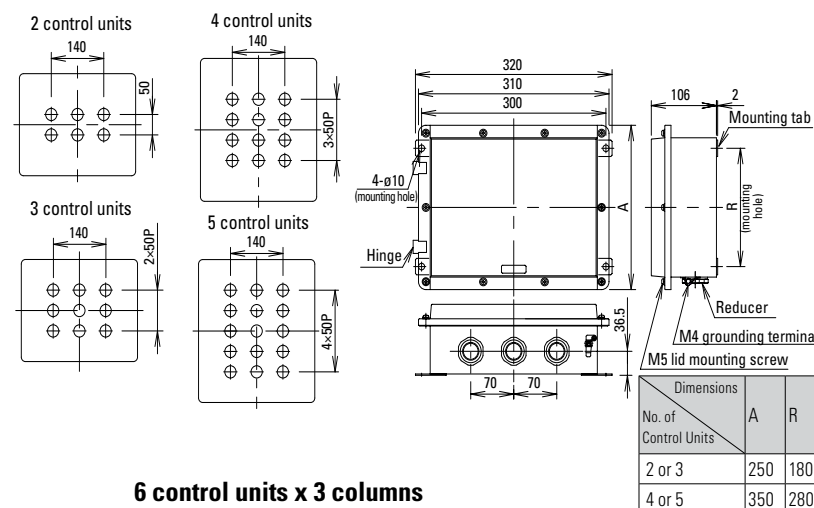
## 3 control units x 1 column

weight: 1.8kg



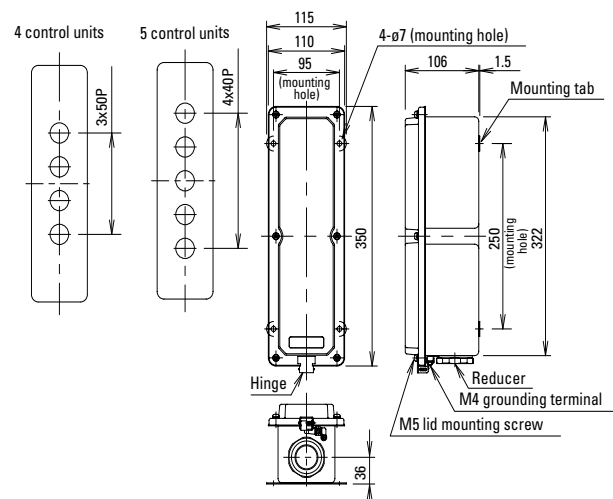
## 2, 3, 4, 5 control units x 3 columns

weight: 4.8/5.2/6.5/7.1 kg



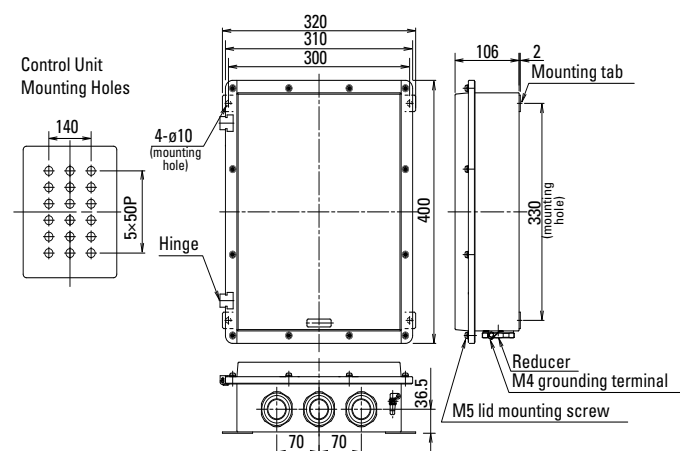
## 4, 5 control units x 1 column

weight: 2.4kg



## 6 control units x 3 columns

weight: 8.1kg



| Dimensions           | A   | R   |
|----------------------|-----|-----|
| No. of Control Units |     |     |
| 2 or 3               | 250 | 180 |
| 4 or 5               | 350 | 280 |

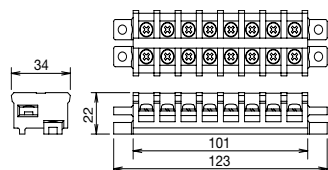
| Dimensions           | A   | R   |
|----------------------|-----|-----|
| No. of Control Units |     |     |
| 2 or 3               | 250 | 180 |
| 4 or 5               | 350 | 280 |

## Terminal Blocks

Terminal blocks are not supplied with the standard control boxes (without wiring). When wiring inside the control box is required, specify the wiring circuit. The terminal block type used on the control boxes with wiring depends on the terminal style of the control unit.

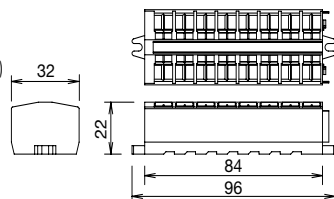
### C terminal style

exposed screw terminal  
ET2A-8PE  
polyamide  
IECEx TUR 15.0043U,  
TÜV 15 ATEX 7799U

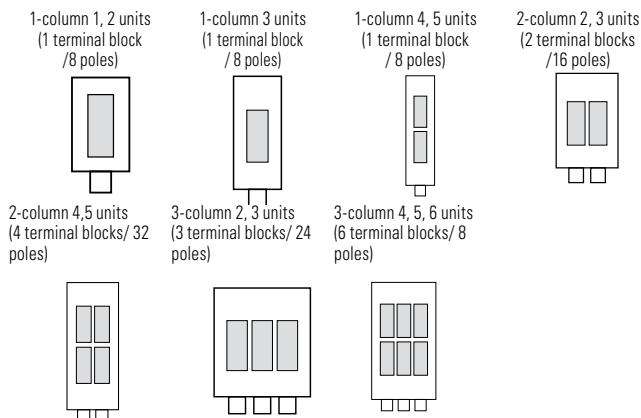


### F terminal style

finger-safe spring clamp terminal  
IP20 clamp terminal: 264-238 (WAGO)  
polyamide  
IECEx PTB 04.0003U, PTB 98 ATEX  
3129U



The number of terminal blocks, poles, and the installation direction that can be installed on the control box are as follows:



## Fittings and Reducers

Reducers installed at the bottom of the control box are as follows: 1 column: 1 reducer, 2 columns: 2 reducers, 3 columns: 3 reducers. Material is nickel-plated brass. Use cable lead-in fittings that are commercially available. See the following table for optional reducers.

| Control Box Style                                                          | Part No.        | Thread Size | Symbol | UL c-UL |
|----------------------------------------------------------------------------|-----------------|-------------|--------|---------|
| 1 column<br>(1 to 3 control units)<br>2, 3 columns<br>(2, 3 control units) | EC9E-H3M16E-UL  | M16         | M1     | ○       |
|                                                                            | EC9E-H3M20E-UL  | M20         | M2     | ○       |
|                                                                            | EC9E-H3M25E-UL  | M25         | M3     | ○       |
|                                                                            | EC9E-H3M32E-UL  | M32         | M4     | ○       |
|                                                                            | EC9E-H3NPT1E-UL | NPT 1/2     | N1     | ○       |
|                                                                            | EC9E-H3NPT2E-UL | NPT 3/4     | N2     | ●       |
| 1, 2, 3 columns<br>(4, 5 control units)<br>3 columns<br>(6 control units)  | EC9E-H3NPT3E-UL | NPT 1       | N3     | ○       |
|                                                                            | EC9E-H4M25E-UL  | M25         | M3     | ○       |
|                                                                            | EC9E-H4M32E-UL  | M32         | M4     | ○       |
|                                                                            | EC9E-H4M40E-UL  | M40         | M5     | ○       |
|                                                                            | EC9E-H4NPT2E-UL | NPT 3/4     | N2     | ○       |
|                                                                            | EC9E-H4NPT3E-UL | NPT 1       | N3     | ●       |
|                                                                            | EC9E-H4NPT4E-UL | NPT 1 1/4   | N4     | ○       |

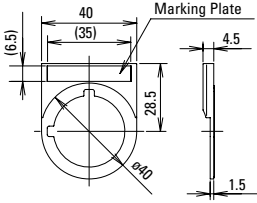
●: Standard reducer ○: non-standard reducer

The reducers in the table above are for replacement use only. All EC2B boxes are supplied with a reducer that has been secured to the housing per UL regulations. If it is necessary to replace a reducer, the user should follow appropriate UL standards for securing to EC2B housing.

## Accessories

### Nameplates

Used for pilot light, pushbutton, selector switch, and key selector switch.

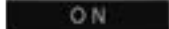
| Appearance                                                                        | Part Number | Dimensions                                                                        |
|-----------------------------------------------------------------------------------|-------------|-----------------------------------------------------------------------------------|
|  | EU9Z-NM     |  |

All dimensions in mm

### Rubber Boots

| Appearance                                                                          | Description/Usage                                       | Part Number |
|-------------------------------------------------------------------------------------|---------------------------------------------------------|-------------|
|    | For Flush Pushbuttons<br>Not for use with name plate    | EU9Z-DB1    |
|    | For Flush Pushbuttons<br>For use with name plate        | EU9Z-DB1N   |
|  | For Extended Pushbuttons<br>Not for use with name plate | EU9Z-DB2    |
|  | For Extended Pushbuttons<br>For use with name plate     | EU9Z-DB2N   |

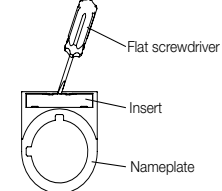
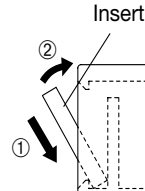
### Nameplate Inserts

| Appearance                                                                        | Legend        | Part Number |
|-----------------------------------------------------------------------------------|---------------|-------------|
|  | Blank         | EU9Z-NP0    |
|  | ON            | EU9Z-NP1    |
|  | OFF           | EU9Z-NP2    |
|                                                                                   | START         | EU9Z-NP3    |
|                                                                                   | STOP          | EU9Z-NP4    |
|                                                                                   | OFF-ON        | EU9Z-NP31   |
|                                                                                   | HAND-AUTO     | EU9Z-NP35   |
|                                                                                   | HAND-OFF-AUTO | EU9Z-NP53   |

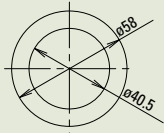
Material: Aluminum

Installing the insert to the nameplate

Removing the insert from the nameplate



### Emergency Stop Switch Nameplate Stickers

| Appearance                                                                          | Legend         | Part Number | Dimensions                                                                            |
|-------------------------------------------------------------------------------------|----------------|-------------|---------------------------------------------------------------------------------------|
|  | Blank          | EU9Z-NVS0   |   |
|  | Emergency Stop | EU9Z-NVS27  |  |

Material: yellow synthetic paper Legend: black

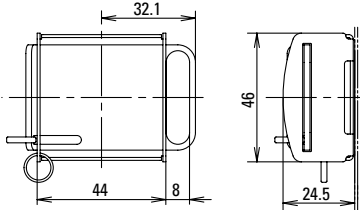
### Emergency Stop Switch Padlock Cover

Used with EU2B-YBV emergency stop switch to maintain the switch in the latched status.

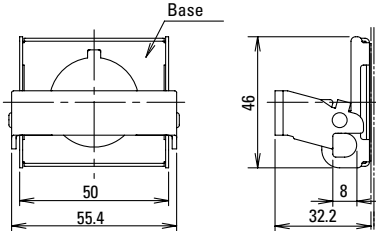
### Padlock Cover

EU2B-YB2 extended pushbutton: to maintain latched status

EU2B-YB1 flush pushbutton/EU2B-YSK key selector switch: to prevent operation

| Appearance                                                                          | Part Number | Dimensions                                                                          |
|-------------------------------------------------------------------------------------|-------------|-------------------------------------------------------------------------------------|
|  | EU9Z-PC     |  |

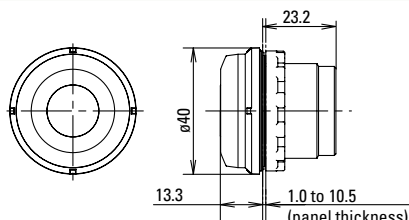
Note: mounted to outside of enclosure with screws, not provided by IDEC  
Material: Stainless Steel

| Appearance                                                                           | Part Number | Dimensions                                                                            |
|--------------------------------------------------------------------------------------|-------------|---------------------------------------------------------------------------------------|
|  | EU9Z-PCE    |  |

Coating: yellow Material: Stainless Steel

## Mounting Hole Plug

Used to plug unused mounting holes (ø30.5) on the mounting panel.

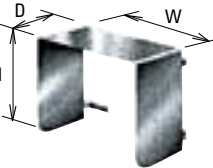
| Appearance                                                                        | Part Number | Dimensions / Usage                                                                |
|-----------------------------------------------------------------------------------|-------------|-----------------------------------------------------------------------------------|
|  | EU9Z-BP     |  |

## Lenses

| Appearance                                                                        | Lens Color | Part Number |
|-----------------------------------------------------------------------------------|------------|-------------|
|  | Red        | EU9Z-LR     |
|                                                                                   | Green      | EU9Z-LG     |
|                                                                                   | Amber      | EU9Z-LA     |
|                                                                                   | Yellow     | EU9Z-LY     |
|                                                                                   | White      | EU9Z-LW     |
|                                                                                   | Blue       | EU9Z-LS     |

Material: AS resin (gasket supplied)

## Control Box Shade

| Shape                                                                                                                                                            | Part No.    | Applicable Control Box | Dimensions (mm) |     |     |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|------------------------|-----------------|-----|-----|
|                                                                                                                                                                  |             |                        | H               | W   | D   |
| <br>Material: stainless steel<br>Thickness: 1mm<br>Photo: Part No. EC9Z-F2A52 | EC9Z-F2A21M | EC2B-11*B              | 180             | 160 | 160 |
|                                                                                                                                                                  |             | EC2B-21*B              |                 |     |     |
|                                                                                                                                                                  | EC9Z-F2A31M | EC2B-31*B              | 230             | 160 | 160 |
|                                                                                                                                                                  | EC9Z-F2A51  | EC2B-41*B              | 360             | 160 | 160 |
|                                                                                                                                                                  |             | EC2B-51*B              |                 |     |     |
|                                                                                                                                                                  | EC9Z-F2A32  | EC2B-22*B              | 260             | 420 | 160 |
|                                                                                                                                                                  |             | EC2B-32*B              |                 |     |     |
|                                                                                                                                                                  | EC9Z-F2A52  | EC2B-42*B              | 360             | 420 | 160 |
|                                                                                                                                                                  |             | EC2B-52*B              |                 |     |     |
|                                                                                                                                                                  | EC9Z-F2A33  | EC2B-23*B              | 260             | 510 | 160 |
|                                                                                                                                                                  |             | EC2B-33*B              |                 |     |     |
|                                                                                                                                                                  | EC9Z-F2A53  | EC2B-43*B              | 360             | 510 | 160 |
|                                                                                                                                                                  |             | EC2B-53*B              |                 |     |     |
|                                                                                                                                                                  | EC9Z-F2A63  | EC2B-63*B              | 410             | 510 | 160 |

Protects control units from direct sunlight and rain. The surface of the control box shade is uncoated.  
Can be installed by tightening to the mounting tabs on the control box.

## Buttons

| Appearance                                                                        | Style        | Part Number | Button Color Code                                                                                                                      |
|-----------------------------------------------------------------------------------|--------------|-------------|----------------------------------------------------------------------------------------------------------------------------------------|
|  | Flush        | HW1A-B1①    | Specify a color code in place of ① in the Ordering Number.<br>R : red<br>G : green<br>B : black<br>Y : yellow<br>W : white<br>S : blue |
|  | Extended     | HW1A-B2①    |                                                                                                                                        |
|  | ø40 Mushroom | HW1A-B4①    |                                                                                                                                        |

Material: Polyacetal

## Operating Instructions

### Installation Area

Do not install the EC2B control box in an environment where more than IP65 protection degree (more than Type 4X in North America) is required.

Use the EC2B control box under ambient temperature of -20 to +50°C. If the control box is exposed to direct sunlight and the surface temperature may rise above 50°C, provide a shade to keep the surface temperature below 50°C.

### Installation

Use four M6 bolts for 1-column, four M8 bolts for 2- and 3-column, or other methods with equivalent strength to install the control box. Mounting tab thickness is 1.5mm for 1 column and 2mm for 2 and 3 columns.

If bolts become may loose due to vibration, use spring washers.

If bolt corrosion is anticipated, use anti-corrosion bolts or other countermeasures.

### Notes on Emergency Stop Switches

When using the emergency stop switches on safety-related parts of the control system, observe safety standards and regulations of the relevant country or region. Also be sure to perform a risk assessment before operation.

### Opening/Closing the Lid

Use a Philips screwdriver to loosen lid mounting screws. While holding the unhinged side, open the lid slowly without exerting excessive force on the hinge.

Before closing the lid, make sure of the following:

No foreign substances are on the packing or joint surfaces.

No displacement of the waterproof packing.

Wires are not caught between the joint surfaces.

Next, close the lid slowly and tighten the screws to a proper torque of 1.6 to 2.4 N·m.

### Limitation of the Operating Current

Major heat sources comes from the wiring which is connected to the control box. Therefore, not only the operating current but wiring conditions (size, no. of wires, no. of wire bundles) may cause temperature rise. When wiring, observe the following conditions.

Stranded wire: 1.5 to 2.5 mm<sup>2</sup> (UL-c-UL certified) / Solid wire: ø1.2 to ø1.6 mm (16 to 14 AWG)

Maximum no. of wires per bundle: 16

Maximum operating current: 10A

When using the control box under an operating environment of 40°C minimum, use a heat resistant cable of 70°C minimum.

Determine the operating current so that the total heat value of 1 wire bundle is below 300 [A<sup>2</sup>×wires]. Also, when calculating the heat value, take the current fluctuation (10%) into consideration. [calculation example: EC2B-41\*\*B (8 circuit)]

① Apply 10A to 1 circuit, 1A to the remaining 7 circuits:

$\{(10A \times 1.1)^2 \times 2 \text{ wires}\} + \{(1A \times 1.1)^2 \times 14 \text{ wires}\} \approx 259$  (can be used because < 300)

② Apply 10A to 1 circuit, 2A to the remaining 7 circuits:

$\{(10A \times 1.1)^2 \times 2 \text{ wires}\} + \{(2A \times 1.1)^2 \times 14 \text{ wires}\} \approx 310$  (cannot be used because > 300)

See the table below for the allowable operating current when applying current evenly to each control box.

### Allowable Operating Current

| Control Box Part No. | Max. No. of Circuits | Max No. of Wires per Bundle (*1)<br>[wires] ([wires]×[bundle]) |                      | Allowable Operating Current (reference) (*2) |
|----------------------|----------------------|----------------------------------------------------------------|----------------------|----------------------------------------------|
|                      |                      | Without terminal-blocks                                        | With terminal blocks |                                              |
| EC2B-11              | 3                    | 16 (16×1)                                                      | 8 (8×1)              | 7A                                           |
| EC2B-21              | 6                    | 16 (16×1)                                                      | 8 (8×1)              | 5A                                           |
| EC2B-31              | 9                    | 16 (16×1)                                                      | 8 (8×1)              | 4A                                           |
| EC2B-41              | 12                   | 16 (16×1)                                                      | 16 (16×1)            | 3A                                           |
| EC2B-51              | 15                   | 16 (16×1)                                                      | 16 (16×1)            | 3A                                           |
| EC2B-22              | 12                   | 32 (16×2)                                                      | 16 (8×2)             | 5A                                           |
| EC2B-32              | 18                   | 32 (16×2)                                                      | 16 (8×2)             | 4A                                           |
| EC2B-42              | 24                   | 32 (16×2)                                                      | 32 (16×2)            | 3A                                           |
| EC2B-52              | 30                   | 32 (16×2)                                                      | 32 (16×2)            | 3A                                           |
| EC2B-23              | 18                   | 48 (16×3)                                                      | 24 (8×3)             | 5A                                           |
| EC2B-33              | 27                   | 48 (16×3)                                                      | 24 (8×3)             | 4A                                           |
| EC2B-43              | 36                   | 48 (16×3)                                                      | 48 (16×3)            | 3A                                           |
| EC2B-53              | 45                   | 48 (16×3)                                                      | 48 (16×3)            | 3A                                           |
| EC2B-63              | 54                   | 48 (16×3)                                                      | 48 (16×3)            | 3A                                           |

\*1: Make sure that the number of wires per bundle is a maximum of 16 by reducing the wiring or by jumper wiring. The maximum number of wires per bundle may need to be further reduced depending on the wire size, lead-in fitting, or conduit size.

\*2: The allowable current value (reference) when applying current evenly to all circuits of the maximum number of circuits.

## Wiring

### Wiring Construction

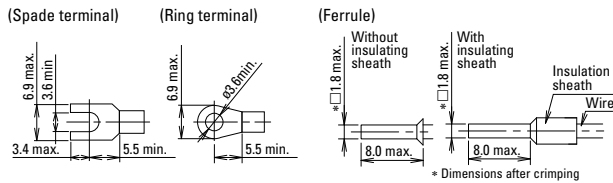
Observe the laws and regulations in each country concerning wiring construction. Use cable wiring or metal conduit wiring for installation in hazardous locations. If foreign objects or water may enter the box, install a sealing fitting near the cable entry of the box and seal the control box using a compound. Standard type control boxes do not contain a terminal block. Wire the control units directly.

### Applicable Wires

Stranded wire: 1.25 to 2.5 mm<sup>2</sup>, solid wire: ø1.2 to ø1.6 mm (AWG16 to 14). Do not connect more than 2 wires to the same terminal.

### Applicable crimping terminal

Ring and spade terminals cannot be used for EU2B control units with IP20 finger-safe terminals. Ring and spade terminals cannot be used for IP20 clamp type terminal blocks. When connecting two ferrules to an EU2B control unit, use ferrules without insulating sheath.



For screw terminal ET2A-8PE

For IP20 clamp terminal  
(WAGO: 264-238)



Recommended crimping terminal (WAGO) Ferrule with insulating sheath: 216-204  
Ferrule without insulating sheath: 216-104 Crimping plier: 206-204

### Recommended Tightening Torque

EU2B control units (M3.5) and ET2A-8PE terminal block (M4): 1.0 to 1.3 N·m

### Warning

Incorrect wiring may cause fire hazard. Observe the following conditions.

Be sure to install an insulating sheath on the crimping terminal or the crimping terminal with insulation.

When connecting solid wires or stranded wires directly, strip the insulation as mentioned below, and insert the wire all the way in.

EU2B Control units: 8.6 mm maximum

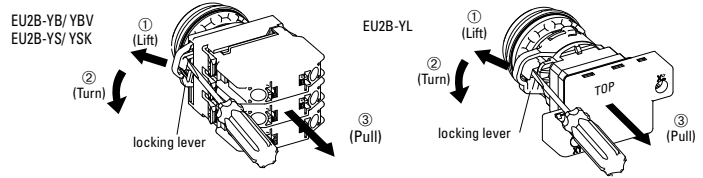
IP20 crimping terminal: 8 to 9 mm

When using stranded wires, make sure that there are no wire whiskers. Make sure that the spade crimping terminals and ferrules are inserted all the way in.

Use insulated ring terminals for the ET2A-8PE terminal block. Use only applicable crimping terminals and do not directly connect stranded wires or solid wires.

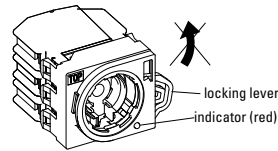
### Removing and Installing the Contact Unit / Lamp Unit

To remove the contact unit or the lamp unit from the operator, pull the protruding yellow part of the locking lever outwards as shown in the figure below using a screwdriver, and turn it to the left. The contact unit or lamp unit can be removed.



When the contact unit is removed from the emergency stop switch operator, the NO contact closes and the NC contact opens.

Do not turn the locking lever when the contact unit is removed from the operator (the red indicator protruding out, see the figure below) or the switch can be damaged.



### Panel mounting for the operator, lens unit and meter

Remove the locking ring from the operator and check that the rubber gasket is in place. Insert the operator from the panel front into the panel hole. Place the projection on the operator with TOP marking upward and the recess on the mounting panel in the same direction. Meters have no projection.

Tighten the locking ring using ring wrench XN9Z-T1 to a torque of 2.5 Nm. When using a nameplate or padlocking cover, install it between the operator and panel. Make sure that the groove of the nameplate or padlocking cover and the projection on the TOP marking of the operator are in the same direction.

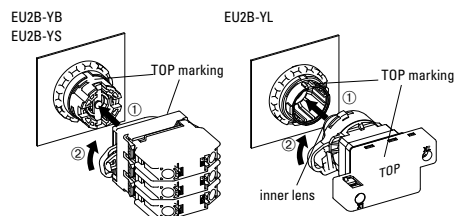
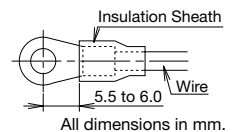
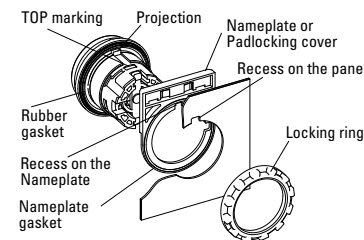
Note: The locking ring for emergency stop switches and meter is metallic. The meter can't mount the nameplate or padlocking cover.

### Installing the contact unit and lamp unit

To install the contact unit, place the TOP marking on the operator and the TOP marking on the contact block adapter in the same direction, and then attach the contact unit to the operator. Then turn the locking lever to the right. Follow the same procedure when installing the lamp unit.

When installing the lamp unit, check that the inner lens is not loose.

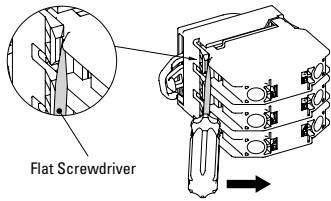
The contact block adapters for emergency stop switches cannot be used for pushbuttons, selector, or key selector switches.





## Removing the Contact Block

To remove the contact block, insert a flat screwdriver under the latch of the contact block adaptor and disengage the latch as shown in the figure below.



## Installing the Contact block

When installing the contact block after maintenance or wiring, make sure that the contact configuration is correct. Installing the contact block in the incorrect position or incomplete installation may cause malfunction of the switch.

Remove the contact block from the operator before installing the contact block to the contact block adaptor. Also make sure that the contact block is correctly installed to the contact block adaptor before attaching the operator. Do not install the contact block adaptor with the operator attached. Otherwise, malfunction may result.

## Protective Grounding

Protective grounding must be performed according to the installation environment and rating requirements. Observe laws and regulations set by each country.

Connect the M4 grounding terminal of the EC2B control box to a proper ground (grounding resistance 10Ω maximum). When operating the EC2B control box by connecting to circuits of 300V or below, the grounding resistance must be 100Ω maximum.

When using cables, connect one of the cable cores to the grounding terminal in the enclosure.

If the grounding terminal in the enclosure cannot be used, use the M4 grounding terminal on the outside of the enclosure.

Recommended tightening torque: M4: 1.0 to 1.3 Nm, M6: 3.9 to 5.4 Nm  
For grounding, use appropriate wires (size, material, insulation) that can tolerate the expected maximum grounding current. Be sure to protect the grounding wire with protection, such as metal conduit, from external damage.

## Accessories

### Padlock Cover

The following padlocks and hasps can be used.

| (Padlock Size)                                | a              | b          | c          |
|-----------------------------------------------|----------------|------------|------------|
| Flush/extended pushbutton/key selector switch | ø3.5 to 7.0 mm | 15 mm min. | 70 mm max. |
| Emergency Stop Switch                         | ø5.5 to 7.0 mm | —          | —          |

### Recommended Hasp

| Manufacturer | Part No.                                  |
|--------------|-------------------------------------------|
| Panduit      | PSL-1, PSL-1A, PSL-1.5, PSL-1.5A, PSL-HD1 |
| Master Lock  | 420, 421                                  |

Padlock and hasp are available in various shapes and sizes. Make sure that they do not interfere with the control units. Note: Not supplied by IDEC. Keep the total weight of padlock and hasp under 1500g max, otherwise the switch may malfunction or result in failure. No vibration should be applied when padlock or hasp are installed. When padlock or hasp are disfigured, stop usage immediately.

Ensure that no shock or electric sparks are generated.

When using the plate lock padlock cover with the extended pushbutton, the switch contact may turn on/off when the cover is being installed. Ensure to

provide functional safety measure to prevent unexpected startup.

When using the padlock cover on the safety-related part of the control system, observe safety standards and regulations of the relevant country or region. Also be sure to perform risk assessment before operation.

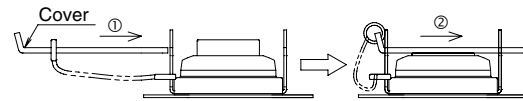
## Installing EU9Z-PC Padlock Cover

(Flush/extended pushbutton/key selector switch)

EU9Z-PC can be installed in the following two ways.

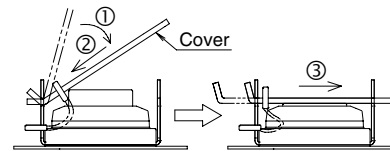
Remove the cover in the reverse step of installing the cover. Do not install or remove the cover forcefully, or it will cause failure.

[Installation A]



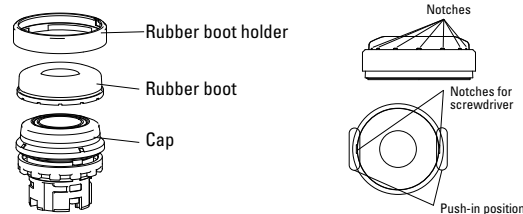
[Installation B]

This method is effective when the neighboring control unit interferes when installing in method A.



## Installing EU9Z-DB Rubber Boots

To install the rubber boot on flush and extended pushbuttons, place the rubber boot on the cap and push the rubber boot holder straight. The notches around the rubber boot must show evenly.

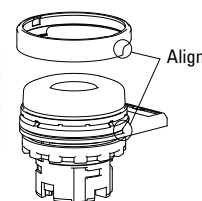


Push the rubber boot holder further around on the two notches on the holder so that the holder fits the button completely.

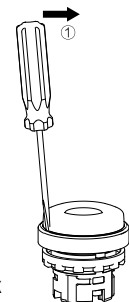
Make sure that the rubber boot and rubber boot holder are installed straight.

On Nameplate Types, the EU2B and the rubber boot holder must be aligned so that when installed, the anti-rotation projection on the EU2B comes to the center of the groove on the holder.

Make sure that the rubber boot is installed completely, otherwise water droplets might enter the rubber boot, but no water will enter the control box.



To remove the rubber boot from the flush and extended pushbuttons, gently insert the slotted screwdriver (0.5t x 4w or below) inside a notch on the rubber boot holder and tilt to the direction shown by the arrow ①. To prevent damage, do not apply excessive force to the EU2B when removing the rubber boot.



## Maintenance and Inspection

EU2B switches should be installed in an appropriate control box.

## Maintenance and Inspection Method

Perform daily or periodical maintenance and inspection for items such as damage and temperature rise of the EU2B switches listed in the Maintenance and Inspection table below.

Observe laws and regulations set by each country. Do not open the lid when inspecting the EC2B while it is energized. Never disassemble the control box. Do not use tools that cause sparks during maintenance and inspection. When using measuring devices, use explosion-protected types. When the EC2B needs to be disassembled or assembled for maintenance or repair, contact IDEC.

## Maintenance and Inspection

| Inspection Items        | Inspection Method    | Inspections                                               | Measures                             |
|-------------------------|----------------------|-----------------------------------------------------------|--------------------------------------|
| Enclosure base          | Visual               | No rusting<br>No damages                                  | Cleaning<br>Rust-resistant treatment |
| Tightening bolt, screws | Visual, tactile      | No loosening<br>No rusting                                | Tightening<br>Cleaning               |
| Packings                | Visual               | No cracks<br>No apparent deformation                      | Replacement                          |
| Connecting parts        | Visual, tactile      | No loosening of screws<br>No dirt on insulation materials | Tightening<br>Cleaning               |
| Temperature rise        | Thermometer, tactile | Surface temperature 80°C max.                             | Investigate the cause                |

## Disposal

Observe laws and regulations set by each country concerning refuse disposal.

## Safety Precautions

### EU2B Control Units

Use EU2B switches that are applicable for use in hazardous areas (potentially explosive atmosphere where explosive gas or vapor may exist), otherwise explosion or fire hazard may result.

EU2B switches can be installed only in zones 1 and 2. Do not use in zone 0.

Turn power off to the EU2B switches before installation, removal, wiring, or maintenance, otherwise explosion, fire hazard, or electric shock may result.

Do not disassemble, repair, or modify, otherwise damage or accident may result.

Do not use damaged EU2B switches, otherwise damage or accident may result.

When connecting external devices, make sure that each cable is connected to the correct terminal, otherwise electric shock, fire hazard, or explosion may result.

Use wires of a proper size to meet voltage and current requirements. Incorrect wiring may cause abnormal temperature rise and lead to fire hazard and explosion.

Connect the grounding terminal to a proper ground, otherwise electric shock, fire hazard, or explosion may result.

Operate the EU2B switches at the rated current and voltage specified in this catalog, otherwise short-circuiting, fire hazard, or explosion may result.

Stop operation immediately if abnormal operation occurs. Otherwise, a secondary accident may occur.

Use explosion-proof electrical equipment that are applicable for use in hazardous areas (potentially explosive atmosphere where explosive gas or vapor may exist), otherwise explosion or fire hazard may result.

## EC2B Control Boxes

EC2B control boxes can be installed only in zones 1 and 2. Do not use in zone 0. In North America, the EC2B can be installed in Division 2 areas, but cannot be installed in Division 1 areas.

Turn power off to the EC2B control box before installation, removal, wiring, or maintenance, otherwise explosion, fire hazard, or electric shock may result.

Special skills and knowledge of explosion protection, electric system installation, and relevant laws/regulations are required to transport, install, wire, operate, repair, and inspect the EC2B control box. People without such expertise must not use the EC2B control box, otherwise damage or accident may result.

Do not modify the EC2B, otherwise damage or accident may result.

Do not use a damaged EC2B control box, otherwise damage or accident may result.

When connecting external devices, make sure that each cable is connected to the correct terminal, otherwise electric shock, fire hazard, or explosion may result.

Use wires of a proper size to meet voltage and current requirements. Incorrect wiring may cause abnormal temperature rise and lead to fire hazard and explosion.

Connect the grounding terminal to a proper ground, otherwise electric shock, fire hazard, or explosion may result.

Do not sit on or hang from the EC2B control box, otherwise damage, personal injury, or accident may result.

Do not open the lid of the EC2B control box when it is energized, otherwise electric shock, fire hazard, or explosion may result.

Operate the EC2B control box at the rated current and voltage specified in this catalog, otherwise short-circuiting, fire hazard, or explosion may result.

When measuring the insulation resistance of the EC2B control box, make sure that potentially explosive atmosphere of explosive gas or vapor does not exist in the vicinity, otherwise explosion may result. Also, do not touch the terminals without paying attention, otherwise electric shock will result.

Do not place any obstacles in front of the nameplate.

Do not remove the nameplate.

When opening the lid for wiring, maintenance or inspection, make sure that substances such as dust, concrete powder, or metal powder do not enter inside the box, otherwise contact failure or insulation failure may result.

Do not drop the EC2B control box during transportation.

Be sure to open the carton the right way up, otherwise damage or personal injury may result.

Check that the product is what you have ordered. Using an incorrect model might result in malfunction or accident.

Stop operation immediately if abnormal operation occurs. Otherwise, a secondary accident may occur.

The surface temperature of the EC2B control box may become extremely hot during operation. Before maintenance or inspection of the EC2B, be sure to wear gloves to prevent burning your hand.

CS Series — Heavy Duty Cam Switches

Key features:

- Wide variety of heavy-duty oiltight cam switches
- Operators available up to 12 positions
- Switches made with a double circuit contact block
- Contact blocks rated 600V, 10A
- Ideal for ammeter/voltmeter applications
- Built to order — not available in subcomponents
- UL listed and CSA certified
- Type 12, 13



UL Listed  
File No. E68961



CSA Certified  
File No. LR48366

Contact Ratings

| Rated Thermal Current |               |                  | 10A                                             |           |            |            |
|-----------------------|---------------|------------------|-------------------------------------------------|-----------|------------|------------|
| AC                    | Break Current |                  | 120V/5A                                         | 240V/3A   | 480V/2A    | 600V/1A    |
| DC                    | Resistive     | Break Current    | 24V/8A                                          | 110V/3A   | 220V/1A    | 440V/0.45A |
|                       | Inductive     | Break Current    | 24V/5A                                          | 110V/1.2A | 220V/0.45A | 440V/0.20A |
|                       |               | Make Current (A) | Rated amperage x 1.1                            |           |            |            |
| Electrical Life       |               |                  | 500,000 operations minimum (at full rated load) |           |            |            |
| Mechanical Life       |               |                  | 5,000,000 (at no load)                          |           |            |            |

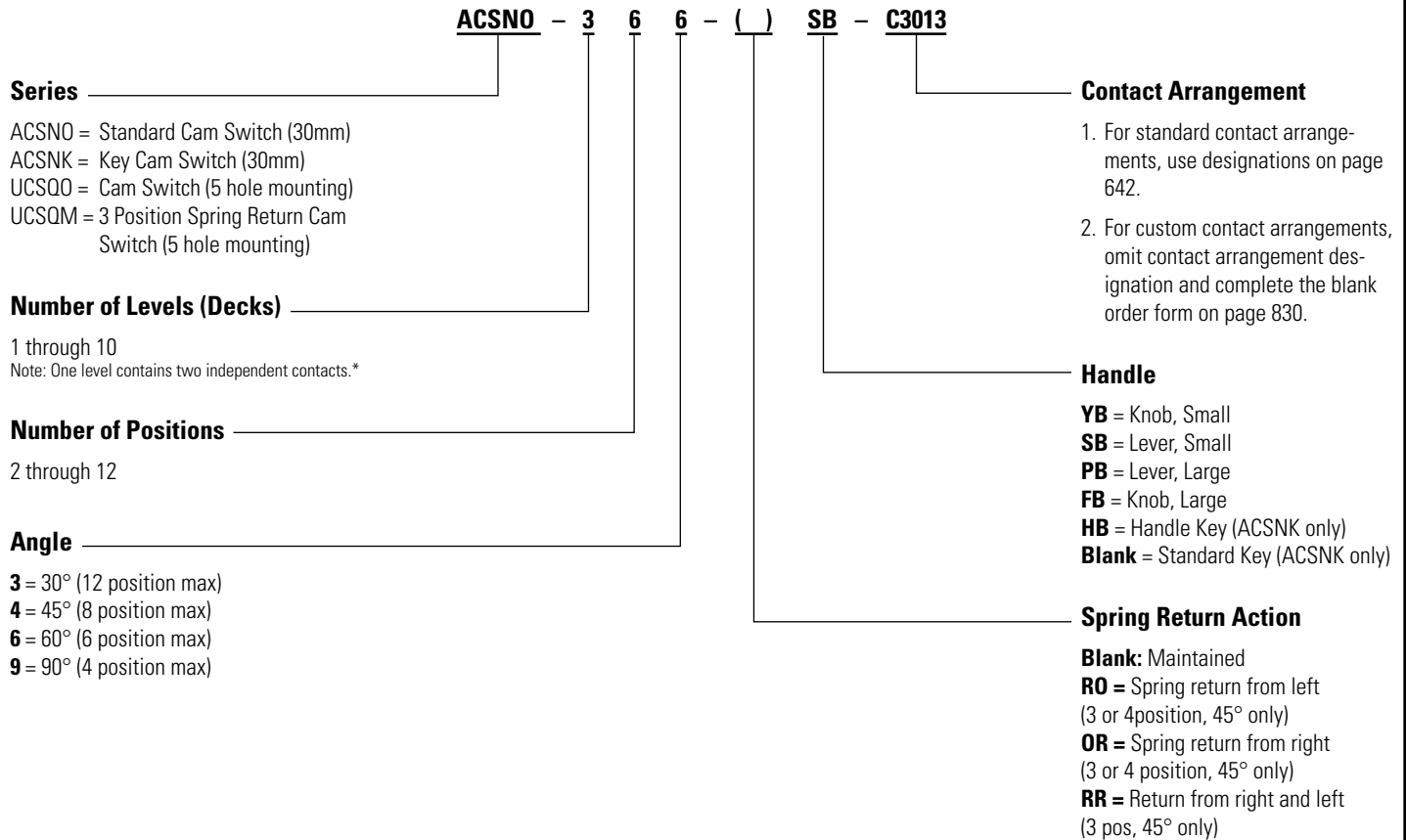
CS Series

| Operator |       |                         |          |                                     |                       |
|----------|-------|-------------------------|----------|-------------------------------------|-----------------------|
| Series   | Style | Cam Angle               | Position | Maximum Contacts To Be Mounted      | Handle Styles         |
| ACSNO    |       | 30°                     | Up to 12 | 1 to 10 decks;<br>Up to 20 contacts | YB, SB, PB, FB        |
|          |       | 45°                     | Up to 8  |                                     |                       |
|          |       | 60°                     | Up to 6  |                                     |                       |
|          |       | 90°                     | Up to 4  |                                     |                       |
| ACSNK    |       | 30°                     | Up to 12 | 1 to 10 decks;<br>Up to 20 contacts | HB or<br>standard key |
|          |       | 45°                     | Up to 8  |                                     |                       |
|          |       | 60°                     | Up to 6  |                                     |                       |
|          |       | 90°                     | Up to 4  |                                     |                       |
| UCSQO    |       | 30°                     | Up to 12 | 1 to 10 decks;<br>Up to 20 contacts | YB, SB, PB, FB        |
|          |       | 45°                     | Up to 8  |                                     |                       |
|          |       | 60°                     | Up to 6  |                                     |                       |
|          |       | 90°                     | Up to 4  |                                     |                       |
| UCSQM    |       | 45°<br>Spring<br>return | Only 3   | 1 to 3 decks;<br>Up to 6 contacts   | YB, SB, PB, FB        |

1. Do not use spring return (SR) for more than six contacts.  
2. Two identical keys come with ACSNK unit. Specify "H" for handle key option.

## Selector Switches (Assembled)

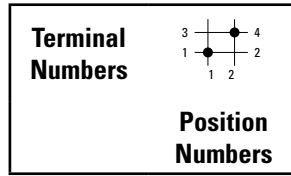
## Assembled Selector Switches



1. \*Contact blocks may contain two independent contacts, (a four position switch with four independent contacts only requires two contact blocks).
2. \*Caution: switches with 180° or more of rotation may require separate blocks for each contact due to cam overlapping.
3. Key retainable in every 45° position (45, 90, 180, 225, 270, 315, 360).

## Contact Arrangements

### Standard Arrangements



**C-1001**



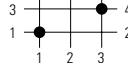
**C-1002**



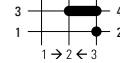
**C-1014**



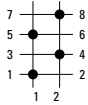
**C-1005**



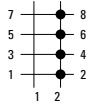
**C-1008**



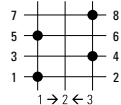
**C-2001**



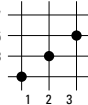
**C-2002**



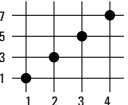
**C-2006**



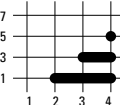
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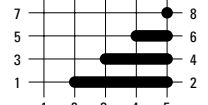
**C-2008**



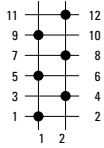
**C-2009**



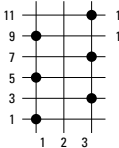
**C-2027**



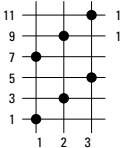
**C-3001**



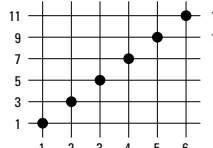
**C-3002**



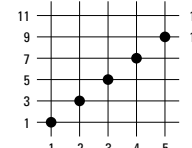
**C-3005**



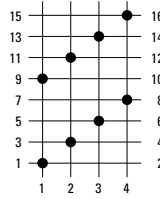
**C-3013**



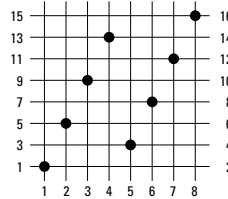
**C-3016**



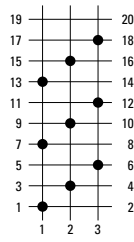
**C-4001**



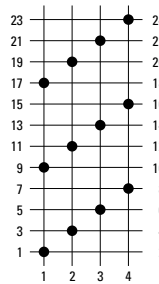
**C-4002**



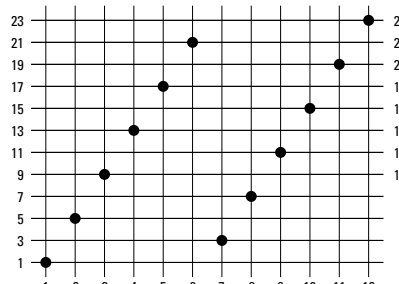
**C-5001**



**C-6001**



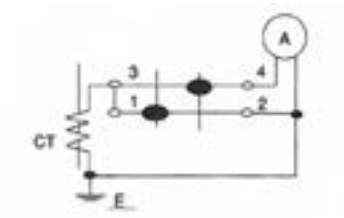
**C-6002**



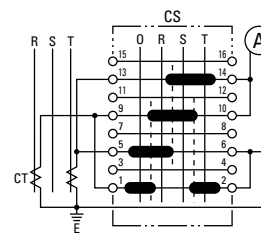
## Contact Arrangements continued

## Ammeter Switching

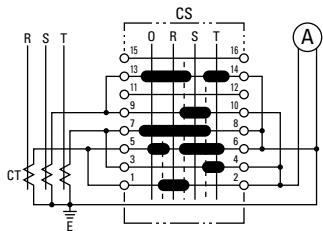
C-1012



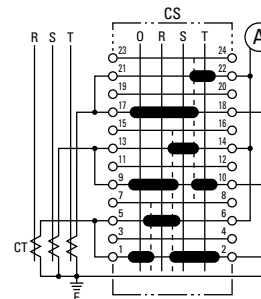
C-4007



C-4003

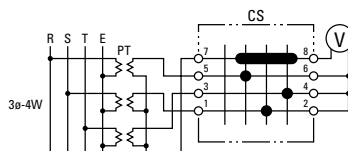


C-6003

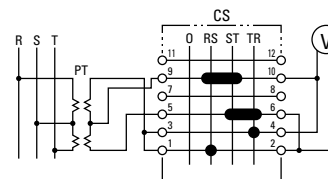


## Voltmeter Switching

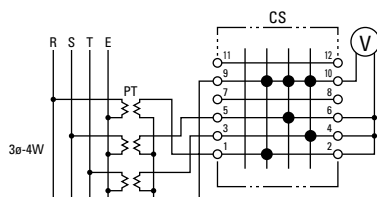
C-2022



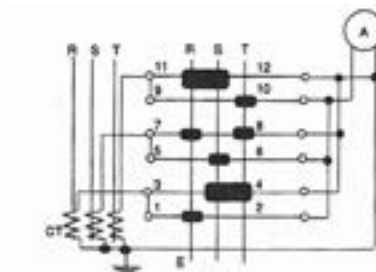
C-3008



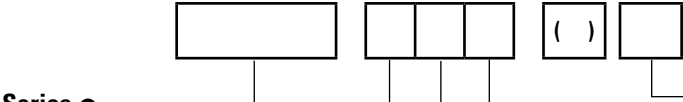
C-3009



C-3007



Order Form (Custom Contact Arrangement)



**Series**  
ACSNO  
ACS NK  
UCSQO  
UCSQM

**\*Number of Decks**  
Specify Qty = 1, 2, 3, 4,  
5, 6, 7, 8, 9, or 10

\*Note: One Deck can drive two independent contacts.

**Number of Positions**

| Unit                      | Angle              | Positions     |
|---------------------------|--------------------|---------------|
| ACSNO<br>ACS NK*<br>UCSQO | 30° only           | 9, 10, 11, 12 |
|                           | 30° or 45° only    | 7 or 8        |
|                           | 30°, 45° or 60°    | 5 or 6        |
|                           | 30°, 45°, 60°, 90° | 2, 3, or 4    |
| UCSQM                     | 45° only           | 3 only        |

\* ACSNK keys only remove at 45°.



**Angle**  
3 = 30°  
4 = 45°  
6 = 60°  
9 = 90°

**Spring Return**

Blank = Maintained  
**RO** = Spring return from left  
(3 or 4 position, 45°)  
**OR** = Spring return from right  
(3 or 4 position, 45°)  
**RR** = Return from right and left  
(3 position, 45°)

**UCSQM is available in spring-return  
version only.**

**ACSNO, UCSQO, UCSQM:**

**YB** = Knob, Small  
**SB** = Lever, Small  
**PB** = Lever, Large  
**FB** = Knob, Large

**ACS NK:**

**HB** = Handle Key (option)  
**Blank** = Standard Key



For handle styles, see page 831.

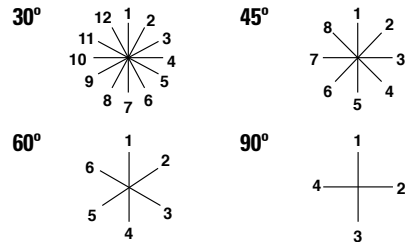
**Contact Arrangement Table**

| Cams    | Terminal<br>Numbers | Position |   |   |   |   |   |   |   |   |    |    |    |
|---------|---------------------|----------|---|---|---|---|---|---|---|---|----|----|----|
|         |                     | 1        | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Deck 1  | 1 and 2             |          |   |   |   |   |   |   |   |   |    |    |    |
|         | 3 and 4             |          |   |   |   |   |   |   |   |   |    |    |    |
| Deck 2  | 5 and 6             |          |   |   |   |   |   |   |   |   |    |    |    |
|         | 7 and 8             |          |   |   |   |   |   |   |   |   |    |    |    |
| Deck 3  | 9 and 10            |          |   |   |   |   |   |   |   |   |    |    |    |
|         | 11 and 12           |          |   |   |   |   |   |   |   |   |    |    |    |
| Deck 4  | 13 and 14           |          |   |   |   |   |   |   |   |   |    |    |    |
|         | 15 and 16           |          |   |   |   |   |   |   |   |   |    |    |    |
| Deck 5  | 17 and 18           |          |   |   |   |   |   |   |   |   |    |    |    |
|         | 19 and 20           |          |   |   |   |   |   |   |   |   |    |    |    |
| Deck 6  | 21 and 22           |          |   |   |   |   |   |   |   |   |    |    |    |
|         | 23 and 24           |          |   |   |   |   |   |   |   |   |    |    |    |
| Deck 7  | 25 and 26           |          |   |   |   |   |   |   |   |   |    |    |    |
|         | 27 and 28           |          |   |   |   |   |   |   |   |   |    |    |    |
| Deck 8  | 29 and 30           |          |   |   |   |   |   |   |   |   |    |    |    |
|         | 31 and 32           |          |   |   |   |   |   |   |   |   |    |    |    |
| Deck 9  | 33 and 34           |          |   |   |   |   |   |   |   |   |    |    |    |
|         | 35 and 36           |          |   |   |   |   |   |   |   |   |    |    |    |
| Deck 10 | 37 and 38           |          |   |   |   |   |   |   |   |   |    |    |    |
|         | 39 and 40           |          |   |   |   |   |   |   |   |   |    |    |    |



To specify non-standard arrangements (designation not on preceding pages), fill in this table using the following symbols.  
**X** = Closed contact (break before make) **O** = Open contact **X-X** = Overlapping contact (remain on when switch is moved between two positions)

**Specifying Nameplate (Optional)**



**Specifying Legends**

Position

1 \_\_\_\_\_  
2 \_\_\_\_\_  
3 \_\_\_\_\_  
4 \_\_\_\_\_  
5 \_\_\_\_\_  
6 \_\_\_\_\_



If no engraving information is provided,  
a blank nameplate will be supplied.

1 \_\_\_\_\_  
2 \_\_\_\_\_  
3 \_\_\_\_\_  
4 \_\_\_\_\_  
5 \_\_\_\_\_  
6 \_\_\_\_\_



## Accessories — CS Series

## Replacement Handles

|                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |
|-------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                   |  |  |  |  |  |
| Part Number       | CSH-YB                                                                            | CSH-SB                                                                            | CSH-PB                                                                            | CSH-FB                                                                             | CSH-H2B                                                                             |
| Dimensions        | 0.79"D x 1.61"H                                                                   | 0.79"D x 1.97"H                                                                   | 1.58"D x 1.97"H                                                                   | 1.58"D x Ø 1.97"                                                                   | 0.95"D x 2.28"H                                                                     |
| Applicable Models | ACSNO, UCSQO, UCSQM                                                               |                                                                                   |                                                                                   |                                                                                    | ACSNK                                                                               |

## Replacement Nameplates

|                                                  |                                                                                   |                                                                                   |                                                                                   |
|--------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Size & Shape<br>□ 2.52" (64mm)<br>Black Aluminum |  |  |  |
| Part Number                                      | CQ                                                                                | CQM                                                                               | CQN                                                                               |
| Applicable Models                                | UCSQO                                                                             | UCSQM                                                                             | ACSNO, ACSNK                                                                      |



1. Extra cost for engraving, 3/16" min. letter height, Legends maximum ten characters.
2. Blank nameplates are supplied with all cam switches (they need not be ordered separately).

## Wiring Clips

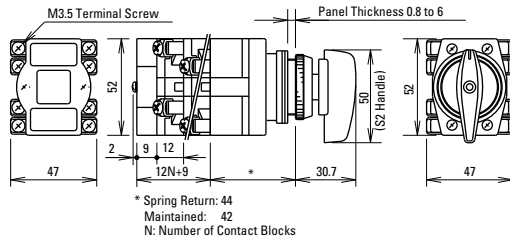
| Part Number                                                                                 | Contact Block Jumpers |
|---------------------------------------------------------------------------------------------|-----------------------|
| CJ-1<br> | Between decks         |
| CJ-2<br> | Same deck             |

## Replacement Keys

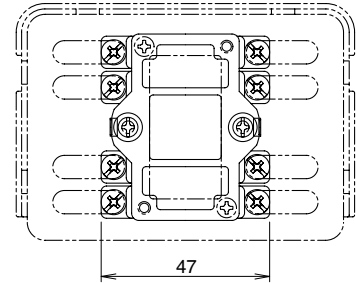
| Part Number                                                                                 | Description         |
|---------------------------------------------------------------------------------------------|---------------------|
| K301<br> | Pair of keys (#301) |

# Dimensions/Terminal Arrangements/Mounting Holes

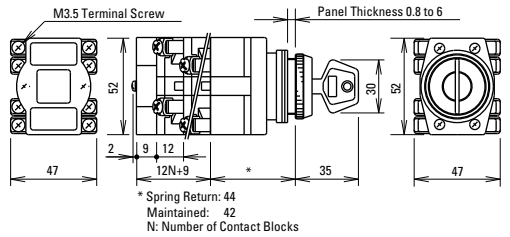
## ACSNO



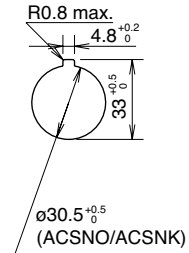
## Terminal Arrangement



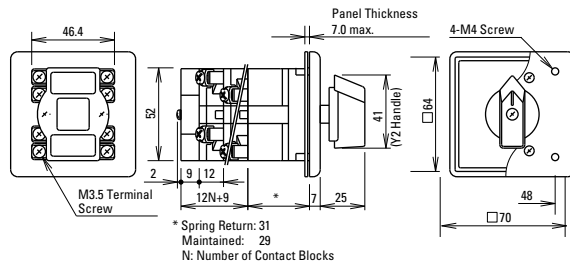
## ACSNK



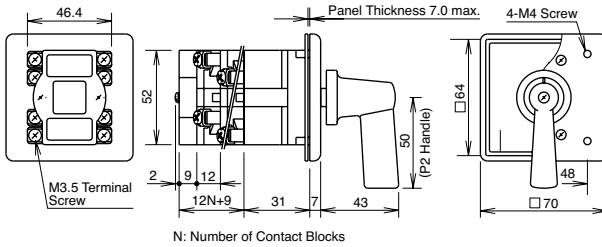
## Mounting Holes



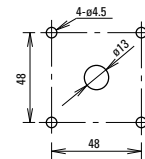
## UCSQO



## UCSQM



## UCSQO UCSQM



## ARN Series — Mono-Lever Switches

## Key features:

- Mono-Lever Switches Ø 1-13/64" (30mm)
- Contact Blocks Rated for 600V, 10A
- Available in 2-, 3-, and 4-positions.
- Maintained and spring-return modes available.
- Models available with interlock mechanism to prevent inadvertent actuation.



UL Listed  
File No. E68961



CSA Certified  
File No. LR48366

## Specifications

|                       |                        |                                 |
|-----------------------|------------------------|---------------------------------|
| Operating Temperature |                        | -25° to 50°C (without freezing) |
| Insulation Resistance |                        | 100MΩ                           |
| Contact Rating        | Rated Voltage: Current | 110VDC: 3A                      |
|                       |                        | 24V AC/DC: 10A                  |
|                       |                        | 120VAC: 10A                     |
|                       |                        | 240VAC: 6A                      |
|                       |                        | 480VAC: 2A                      |
|                       | Insulation Voltage     | 600V AC/DC                      |
|                       | Rated Thermal Current  | 10A                             |
|                       | Electrical Life        | Over 500,000 operations         |

## Part Numbering Guide (Assembled)

|            |                            |   |                |   |                       |
|------------|----------------------------|---|----------------|---|-----------------------|
| <b>ARN</b> | <b>4</b>                   | — | <b>1012</b>    | — | <b>10.00.02.11</b>    |
| ① Style    | ② Number of Contact Blocks |   | ③ Lever Action |   | ④ Contact Arrangement |

|                         | Description           | Code | Remarks                                                                                                                                           |
|-------------------------|-----------------------|------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| ① Style                 | Standard Lever        | ARN  | Interlocking lever prevents inadvertent operation.                                                                                                |
|                         | Short Lever           | ARNS |                                                                                                                                                   |
|                         | Interlocking Lever    | ARNL |                                                                                                                                                   |
| ② No. of Contact Blocks | —                     | 1    | Each contact block contains two independent contacts.                                                                                             |
|                         |                       | 2    |                                                                                                                                                   |
|                         |                       | 3    |                                                                                                                                                   |
|                         |                       | 4    |                                                                                                                                                   |
| ③ Lever Action          | Blocked               | 0    | Specify in this order:<br>Up.Right.Down.Left                                                                                                      |
|                         | Maintained            | 1    |                                                                                                                                                   |
|                         | Spring Return         | 2    |                                                                                                                                                   |
| ④ Contact Arrangement   | No contacts           | 00   | Specify the number of contacts to be activated in all active (non-blocked) positions:<br>Up.Right.Down.Left<br>For blocked positions use code: 00 |
|                         | 1 NO contact          | 10   |                                                                                                                                                   |
|                         | 1 NC contact          | 01   |                                                                                                                                                   |
|                         | 1 NO and 1 NC contact | 11   |                                                                                                                                                   |
|                         | 2 NO contacts         | 20   |                                                                                                                                                   |
|                         | 2 NC contacts         | 02   |                                                                                                                                                   |

Mono-Lever Switches (Sub-Assembled)



Standard Mono-Lever Operators

| Style              | Lever Operation Mode                                                             | Part Number                                  |
|--------------------|----------------------------------------------------------------------------------|----------------------------------------------|
| Standard Lever     | 2-Position manual return<br>3-Position manual return<br>4-Position manual return | ARN0-1010-B<br>ARN0-1110-B<br>ARN0-1111-B    |
|                    | 2-Position spring return<br>3-Position spring return<br>4-Position spring return | ARN0-2020-B<br>ARN0-2220-B<br>ARN0-2222-B    |
| Short Lever        | 2-Position manual return<br>3-Position manual return<br>4-Position manual return | ARNS0-1010-B<br>ARNS0-1110-B<br>ARNS0-1111-B |
|                    | 2-Position spring return<br>3-Position spring return<br>4-Position spring return | ARNS0-2020-B<br>ARNS0-2220-B<br>ARNS0-2222-B |
| Interlocking Lever | 2-Position manual return<br>3-Position manual return<br>4-Position manual return | ARNL0-1010-B<br>ARNL0-1110-B<br>ARNL0-1111-B |
|                    | 2-Position spring return<br>3-Position spring return<br>4-Position spring return | ARNL0-2020-B<br>ARNL0-2220-B<br>ARNL0-2222-B |

Contact Blocks

| Style | Contact Arrangement                                                         | Part Number                       |
|-------|-----------------------------------------------------------------------------|-----------------------------------|
|       | 2NO contacts<br>1NO & 1NC contact<br>2NC contacts<br>1NO early make contact | BR-1E<br>BR-2E<br>BR-3E<br>BR-1EM |

To calculate the number of contact blocks required, add the number of NO and NC contacts on each pair of adjoining positions (up + right, right + down, down + left, and left + up). The largest of the four sums is the number of contact blocks required. Up to four contact blocks can be mounted.

Replacement Parts

| Style       |                                                                                      |                                         | Part Number                    |
|-------------|--------------------------------------------------------------------------------------|-----------------------------------------|--------------------------------|
| Bellows     |  | ARN0, ARNS0<br>(standard & short lever) | ARN-BL                         |
|             |                                                                                      | ARNL0<br>(Interlocking)                 | ARNL-BL<br>(comes in 2 pieces) |
| Knob (ball) |  | All Models Knob (ball)                  | ARNB-B                         |

Dimensions — ARN Series

