# L6 Series — Miniature Switches and Pilot Devices

**Key features of the 5/8" L6 Series include:**

- 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

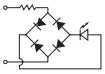
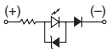
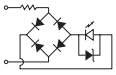
CSA Certified
File No. LR21451

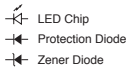
TÜV Rheinland

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 N0.14 |
| | 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/sec$^2$ (approximately 10G)<br>Damage limit: 1000 m/sec$^2$ (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>between terminals of different poles: 2500 volt AC, 1 minute<br>between terminals of same pole: 1000 volt AC, 1 minute<br>Illumination unit: between live part and ground: 2500 volt AC, 1 minute |
| | Insulation Resistance | 100MΩ minimum (using 500V DC megger) |
| | Rated Insulation Voltage | 250V AC/DC |
| | Rated Thermal Current | Gold Contacts (pcb): 3A<br>Silver Contacts (solder): 5A |
| | Contact Resistance | 50Ω maximum initial value |
| | Rated Operating Current | **Silver Contacts** (Solder Terminals): 30V / 125V / 250V — AC resistive: — / 5A / 2A; AC inductive: — / 2A / 1.5A; DC resistive: 3A / 0.4A / —; DC inductive: 1A / 0.2A / —<br>**Gold Clad Contacts** (PCB terminals): 30V / 125V — AC inductive: - / 0.1A; DC resistive: 0.1A / — |
| | Minimum Recommended Load (reference value for silver contacts) | 5V AC/DC, 1mA |
| | Terminal Style | 0.110" Solder Tab /PCB |
| | Contact Form | Snap Action, Double Throw |
| | Contact Material | Solder Tab: Pure Silver /PCB: Gold Plated Silver |
| | Electrical Life (at full load) | Momentary pushbuttons: 100,000 operations minimum (1800 operations / hour)<br>All others: 100,000 operations minimum (1200 operations / hour) |
| Lamp Ratings | Lamp Current Draw | 5V DC LED: 8mA<br>6V AC/DC LED: 7mA<br>12V AC/DC LED: 8mA<br>24V AC/DC LED: 8mA<br>120V AC = 8mA<br>6V AC/DC incandescent: 100 mA<br>12V AC/DC incandescent: 50 mA<br>24V AC/DC incandescent: 25 mA |
| | Lamp Life | Incandescent: 2000 hours./LED 50,000 hours. (on pure DC, half-life intensity) |

## 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 |
| Round | Momentary | SPDT | LA1B-M1C5-① | LA1B-M1C1V-① |
| | | DPDT | LA1B-M1C6-① | LA1B-M1C2V-① |
| | Maintained | SPDT | LA1B-A1C5-① | LA1B-A1C1V-① |
| | | DPDT | LA1B-A1C6-① | LA1B-A1C2V-① |
| Square | Momentary | SPDT | LA2B-M1C5-① | LA2B-M1C1V-① |
| | | DPDT | LA2B-M1C6-① | LA2B-M1C2V-① |
| | Maintained | SPDT | LA2B-A1C5-① | LA2B-A1C1V-① |
| | | DPDT | LA2B-A1C6-① | LA2B-A1C2V-① |
| Rectangular | Momentary | SPDT | LA3B-M1C5-① | LA3B-M1C1V-① |
| | | DPDT | LA3B-M1C6-① | LA3B-M1C2V-① |
| | Maintained | SPDT | LA3B-A1C5-① | LA3B-A1C1V-① |
| | | DPDT | LA3B-A1C6-① | LA3B-A1C2V-① |
| Oversize Round Flush | Momentary | SPDT | HA1B-M1C5-① | HA1B-M1C1V-① |
| | | DPDT | HA1B-M1C6-① | HA1B-M1C2V-① |
| | Maintained | SPDT | HA1B-A1C5-① | HA1B-A1C1V-① |
| | | DPDT | HA1B-A1C6-① | HA1B-A1C2V-① |

| Style | Operation | Contact | Terminal Style | |
|---|---|---|---|---|
| | | | Solder Tab | PCB |
| Oversize Round Extended | 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 |
| Oversize Square Flush | 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 |
| Oversize Square Extended | 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 |
| Mushroom | 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. 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).

## ①Button Color Codes

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

## Non-Illuminated Pushbuttons (Sub-Assembled)

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

### Operators

| Style | Momentary | Maintained |
|---|---|---|
| Round | LA1L-M0 | LA1L-A0 |
| Square | LA2L-M0 | LA2L-A0 |
| Rectangular | LA3L-M0 | LA3L-A0 |
| 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 |
|---|---|---|
| Round | AB6M-BK2-① | AL6M-LK2-② |
| Square | AB6Q-BK2-① | AL6Q-LK2-② |
| Rectangular | AB6H-BK2-① | AL6H-LK2-② |
| 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

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

### Safety Lever Lock

| Appearance | 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 E-Stop

**Miniature Switches and Pilot Devices: 5/8"(16mm)**
**Key features of HA1B/HA1E Push Lock Turn Reset include:**

- 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

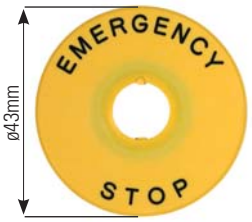
File No. DK95-00138 | CSA File No. LR21451 | UL Recognized File No. E55996 | Direct Opening Action

## 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**




| | Part Number |
|---|---|
| Blank | HAAV-0 |
| Engraved Emergency Stop | HAAV-27 |

## Positive Action E-Stop

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

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

## Buzzers (IP40)

| Appearance | | Operating Voltage | Terminal Style | |
|---|---|---|---|---|
| | | | Solder/ Tab | PCB |
| Buzzer-Rectangular | | 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 |
| Round | LA1P-1C0③-② | LA1P-1C0③V-② |
| Square | LA2P-1C0③-② | LA2P-1C0③V-② |
| Rectangular | LA3P-1C0③-② | LA3P-1C0③V-② |
| 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 | — |

## ②Lens/LED Color Codes

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

## ③Voltage/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 |

1. In place of ② specify Lens/LED Color Code from table.
2. In place of ③ specify Voltage Code from table.
3. Lamps also available in 5VDC, 6V AC/DC, 12V AC/DC or 120V AC, change "4" or "7" using Voltage/Lamp Codes (ie LA1P-1C03-② uses 12V AC/DC LED).
4. Light independent of switch position.

## Pilot Lights (Sub-Assembled)

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

### Operators

| Style | Part Number |
|---|---|
| Round | LA1P-0 |
| Square | LA2P-0 |
| Rectangular | LA3P-0 |
| Oversize Round | HA1P-0 |
| Oversize Square | HA2P-0 |
| Oversize Round Unibody | HA1P-00 |
| Oversize Square Unibody | HA2P-00 |

### Lenses

| Style | Part Number |
|---|---|
| Round | AL6M-LK3-② |
| Square | AL6Q-LK3-② |
| Rectangular | AL6H-LK3-② |
| 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<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 |
| Incandescent | 6V AC/DC<br>12V AC/DC<br>24V AC/DC | LH-06<br>LH-14<br>LH-28 |

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

### Terminals

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

Not required for unibody operators.

### Lamp Holder

| Appearance | Part Number |
|---|---|
| | HA9Z-AH |

### Safety Lever Lock

| Appearance | 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 |
| Round | Momentary | SPDT<br>DPDT | LA1L-M1C5③-②<br>LA1L-M1C6③-② | LA1L-M1C1③V-②<br>LA1L-M1C2③V-② |
| | Maintained | SPDT<br>DPDT | LA1L-A1C5③-②<br>LA1L-A1C6③-② | LA1L-A1C1③V-②<br>LA1L-A1C2③V-② |
| Square | Momentary | SPDT<br>DPDT | LA2L-M1C5③-②<br>LA2L-M1C6③-② | LA2L-M1C1③V-②<br>LA2L-M1C2③V-② |
| | Maintained | SPDT<br>DPDT | LA2L-A1C5③-②<br>LA2L-A1C6③-② | LA2L-A1C1③V-②<br>LA2L-A1C2③V-② |
| Rectangular | Momentary | SPDT<br>DPDT | LA3L-M1C5③-②<br>LA3L-M1C6③-② | LA3L-M1C1③V-②<br>LA3L-M1C2③V-② |
| | Maintained | SPDT<br>DPDT | LA3L-A1C5③-②<br>LA3L-A1C6③-② | LA3L-A1C1③V-②<br>LA3L-A1C2③V-② |
| Oversize Round | 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 | 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 | 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 |

## ②Lens Color Codes

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

## ③Voltage/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 |

1. In place of ② specify Lens Color Code from table.
2. In place of ③ specify Voltage Code from table.
3. Lamps also available in 5V DC, 6V AC/DC, 12V AC/DC or 120V AC, change "4" or "7" using voltage/lamp codes (ie LA1P-1C03-② uses 12V AC/DC LED).
4. 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).
5. Light independent of switch position.

## Illuminated Pushbuttons (Sub-Assembled)

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

### Operators

| Style | Momentary | Maintained |
|---|---|---|
| Round | LA1L-M0 | LA1L-A0 |
| Square | LA2L-M0 | LA2L-A0 |
| Rectangular | LA3L-M0 | LA3L-A0 |
| Oversize Round | HA1L-M0 | HA1L-A0 |
| Oversize Square | HA2L-M0 | HA2L-A0 |
| Mushroom | HA1B-M0L | HA1B-A0L |

### Lenses

| Style | Part Number |
|---|---|
| Round | AL6M-LK2-② |
| Square | AL6Q-LK2-② |
| Rectangular | AL6H-LK2-② |
| Oversize Round | HA1A-L1-② |
| Oversize Square | HA2A-L1-② |
| Mushroom | HA1A-L3-② |

In place of ② specify lens color code.

### Lamps

| Style | Voltage | Part Number |
|---|---|---|
| LED | 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 |
| Incandescent | 6V AC/DC<br>12V AC/DC<br>24V AC/DC | LH-06<br>LH-14<br>LH-28 |

### Contacts

| Appearance | | Contacts | Terminal Style: Solder Tab | Terminal Style: 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 |

### Lamp Holder

| Appearance | Part Number |
|---|---|
| | HA9Z-AH |

### Safety Lever Lock

| Appearance | Part Number |
|---|---|
| | HA9Z-LS |

### ② Lens/LED Color Codes

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

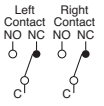
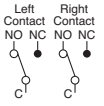
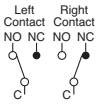
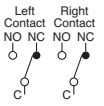
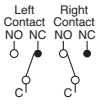
# Selector Switches (Assembled)

## Selector Switches

| Style | | Position | | Contact | Terminal Style | |
|---|---|---|---|---|---|---|
| | | | | | Solder Tab | PCB |
| Round | 90° 2 -Position | Maintained | L R | DPDT | LA1S-2C6 | LA1S-2C2V |
| | | Spring return from right | L R | DPDT | LA1S-21C6 | LA1S-21C2V |
| | 45° 3-Position | Maintained | C L R | DPDT | LA1S-3C6 | LA1S-3C2V |
| | | Spring return from right | L R | DPDT | LA1S-31C6 | LA1S-31C2V |
| | | Spring return from left | C L R | DPDT | LA1S-32C6 | LA1S-32C2V |
| | | 2-Way spring return | C L R | DPDT | LA1S-33C6 | LA1S-33C2V |
| Square | 90° 2 -Position | Maintained | L R | DPDT | LA2S-2C6 | LA2S-2C2V |
| | | Spring return from right | L R | DPDT | LA2S-21C6 | LA2S-21C2V |
| | 45° 3-Position | Maintained | C L R | DPDT | LA2S-3C6 | LA2S-3C2V |
| | | Spring return from right | L R | DPDT | LA2S-31C6 | LA2S-31C2V |
| | | Spring return from left | C L R | DPDT | LA2S-32C6 | LA2S-32C2V |
| | | 2-Way spring return | C L R | DPDT | LA2S-33C6 | LA2S-33C2V |
| Rectangular | 90° 2 -Position | Maintained | L R | DPDT | LA3S-2C6 | LA3S-2C2V |
| | | Spring return from right | L R | DPDT | LA3S-21C6 | LA3S-21C2V |
| | 45° 3-Position | Maintained | C L R | DPDT | LA3S-3C6 | LA3S-3C2V |
| | | Spring return from right | L R | DPDT | LA3S-31C6 | LA3S-31C2V |
| | | Spring return from left | C L R | DPDT | LA3S-32C6 | LA3S-32C2V |
| | | 2-Way spring return | C L R | DPDT | LA3S-33C6 | LA3S-33C2V |
| Oversize Round | 90° 2 -Position | Maintained | L R | DPDT | HA1S-2C6 | HA1S-2C2V |
| | | Spring return from right | L R | DPDT | HA1S-21C6 | HA1S-21C2V |
| | 45° 3-Position | Maintained | C L R | DPDT | HA1S-3C6 | HA1S-3C2V |
| | | Spring return from right | L R | DPDT | HA1S-31C6 | HA1S-31C2V |
| | | Spring return from left | C L R | DPDT | HA1S-32C6 | HA1S-32C2V |
| | | 2-Way spring return | C L R | DPDT | HA1S-33C6 | HA1S-33C2V |

## 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.

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).

## Selector Switches (Sub-Assembled)

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

### Operators

| Style | Position | Function | Part Number |
|---|---|---|---|
| Round | 2 | Maintained<br>Spring from right | LA1S-2Y |
| | | | LA1S-21Y |
| | 3 | Maintained<br>Spring from right<br>Spring from left<br>Spring from both | LA1S-3Y<br>LA1S-31Y<br>LA1S-32Y<br>LA1S-33Y |
| Square | 2 | Maintained<br>Spring from right | LA2S-2Y<br>LA2S-21Y |
| | 3 | Maintained<br>Spring from right<br>Spring from left<br>Spring from both | LA2S-3Y<br>LA2S-31Y<br>LA2S-32Y<br>LA2S-33Y |
| Rectangular | 2 | Maintained<br>Spring from right | LA3S-2Y<br>LA3S-21Y |
| | 3 | Maintained<br>Spring from right<br>Spring from left<br>Spring from both | LA3S-3Y<br>LA3S-31Y<br>LA3S-32Y<br>LA3S-33Y |
| 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 |

### Contacts

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

| Appearance | Part Number |
|---|---|
| | HA9Z-LS |

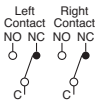
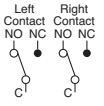
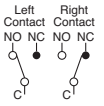
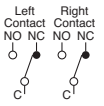
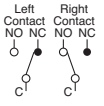
# Key Switches (Assembled)

## Key Switches

| Style | | Position | | Contact | Terminal Style | |
|---|---|---|---|---|---|---|
| | | | | | Solder Tab | PCB |
| Round | 90° 2 -Position | Maintained | L R | DPDT | LA1K-2C6③ | LA1K-2C2V③ |
| | | Spring return from right | L R | DPDT | LA1K-21C6B | LA1K-21C2VB |
| | 45° 3-Position | Maintained | C L R | DPDT | LA1K-3C6③ | LA1K-3C2V③ |
| | | Spring return from right | C L R | DPDT | LA1K-31C6③ | LA1K-31C2V③ |
| | | Spring return from left | C L R | DPDT | LA1K-32C6③ | LA1K-32C2V③ |
| | | 2-Way spring return | C L R | DPDT | LA1K-33C6D | LA1K-33C2VD |
| Square | 90° 2 -Position | Maintained | L R | DPDT | LA2K-2C6③ | LA2K-2C2V③ |
| | | Spring return from right | L R | DPDT | LA2K-21C6B | LA2K-21C2VB |
| | 45° 3-Position | Maintained | C L R | DPDT | LA2K-3C6③ | LA2K-3C2V③ |
| | | Spring return from right | C L R | DPDT | LA2K-31C6③ | LA2K-31C2V③ |
| | | Spring return from left | C L R | DPDT | LA2K-32C6③ | LA2K-32C2V③ |
| | | 2-Way spring return | C L R | DPDT | LA2K-33C6D | LA2K-33C2VD |
| Rectangular | 90° 2 -Position | Maintained | L R | DPDT | LA3K-2C6③ | LA3K-2C2V③ |
| | | Spring return from right | L R | DPDT | LA3K-21C6B | LA3K-21C2VB |
| | 45° 3-Position | Maintained | C L R | DPDT | LA3K-3C6③ | LA3K-3C2V③ |
| | | Spring return from right | C L R | DPDT | LA3K-31C6③ | LA3K-31C2V③ |
| | | Spring return from left | C L R | DPDT | LA3K-32C6③ | LA3K-32C2V③ |
| | | 2-Way spring return | C L R | DPDT | LA3K-33C6D | LA3K-33C2VD |
| Oversize Round | 90° 2 -Position | Maintained | L R | DPDT | HA1K-2C6③ | HA1K-2C2V③ |
| | | Spring return from right | L R | DPDT | HA1K-21C6B | HA1K-21C2VB |
| | 45° 3-Position | Maintained | C L R | DPDT | HA1K-3C6③ | HA1K-3C2V③ |
| | | Spring return from right | C L R | DPDT | HA1K-31C6③ | HA1K-31C2V③ |
| | | Spring return from left | C L R | DPDT | HA1K-32C6③ | HA1K-32C2V③ |
| | | 2-Way spring return | C L R | DPDT | HA1K-33C6D | HA1K-33C2VD |

## 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.

## 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.

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).

## Selector Switches (Sub-Assembled)

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

### Operators

| Style | Position | Function | Part Number |
|---|---|---|---|
| Round | 2 | Maintained<br>Spring from right | LA1K-2③<br>LA1K-21B |
| | 3 | Maintained<br>Spring from right<br>Spring from left<br>Spring from both | LA1K-3③<br>LA1K-31③<br>LA1K-32③<br>LA1K-33D |
| Square | 2 | Maintained<br>Spring from right | LA2K-2③<br>LA2K-21B |
| | 3 | Maintained<br>Spring from right<br>Spring from left<br>Spring from both | LA2K-3③<br>LA2K-31③<br>LA2K-32③<br>LA2K-33D |
| Rectangular | 2 | Maintained<br>Spring from right | LA3K-2③<br>LA3K-21B |
| | 3 | Maintained<br>Spring from right<br>Spring from left<br>Spring from both | LA3K-3③<br>LA3K-31③<br>LA3K-32③<br>LA3K-33D |
| 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

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

| Appearance | 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.

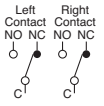
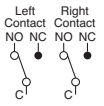
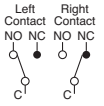
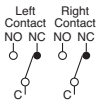
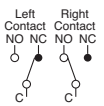
# Illuminated Selector Switches (Assembled)

## Illuminated Selector Switches

| Style | | Position | Contact | Terminal Style | |
|---|---|---|---|---|---|
| | | | | Solder Tab | PCB |
| Round | 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 | 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 | 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 | 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 |  |
| | 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 |

1. In place of ② specify Lens/LED Color Code from table above.
2. In place of ③ specify Voltage Code from table above.
3. Lamps also available in 5V DC, 6V AC/DC, 12 V AC/DC or 120V AC, change "4" or "7" using voltage/lamp codes (ie LA1F-2C63-② uses 12V AC/DC LED).
4. All switches listed have DPDT contacts. For SPDT see sub-assembled on next page.
5. 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).
6. 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

| Appearance | Part Number |
|---|---|
| | HA9Z-LS |

## Lamp Holder

| Appearance | Part Number |
|---|---|
| | HA9Z-AH |

## Lamps

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

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

## Contacts

| Appearance | | Con-tacts | 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

| Appearance | 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 |

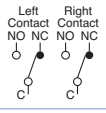
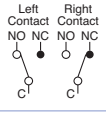
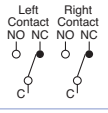
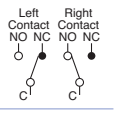
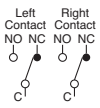
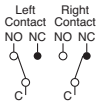
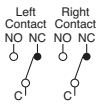
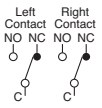
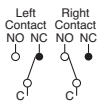
# Pushbutton Selectors (Assembled)

## 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. 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.

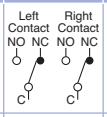
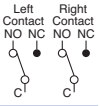
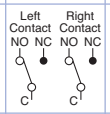
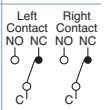
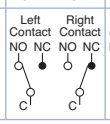
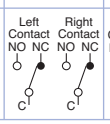
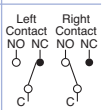
## Contact Operation

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

## ① Button Color Codes

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

## Contact Operation

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

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: _____ 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 |
|---|---|---|---|
| ☐ | 1 | 5/32 | 6 |
| ☐ | 2 | 5/32 | 6 |
| ☐ | | 1/8 | 6 |
| ☐ | 3 | 1/8 | 6 |
| ☐ | 4 | N/A | |

**Square Switch**

| | # of Lines | Letter Height | Max. Characters Per Line |
|---|---|---|---|
| ☐ | 1 | 5/32 | 5 |
| ☐ | 2 | 5/32 | 5 |
| ☐ | | 1/8 | 6 |
| ☐ | 3 | 1/8 | 6 |
| ☐ | 4 | N/A | |

**Round Switch**

| | # of Lines | Letter Height | Max. Characters Per Line |
|---|---|---|---|
| ☐ | 1 | 5/32 | 3 |
| ☐ | | 1/8 | 3 |
| ☐ | 2 | Custom* | |
| ☐ | 3 | Custom* | |
| ☐ | 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-illluminated 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

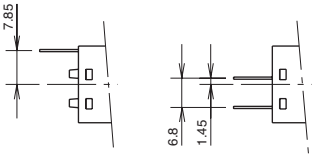
| Part | | Specifications | | Part Number | Notes |
|---|---|---|---|---|---|
| Ring Wrench | | Made of metal | | MT-001 | Used for tightening the plastic locking ring when installing the L6 series unit on a panel. Tightening torque should not exceed 9kgf cm when tightening the locking ring. |
| Lamp 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-5②<br>LFTD-6②<br>LFTD-1②<br>LFTD-2②<br>LFTD-H2② | T 1-3/4 miniature flange base. In place of ① 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 | | 90 degrees opening maintained | Round/Square | AL-K6 | Prevents inadvertent switch operation. IP40 dust-tight rated. |
| | | | Rectangular | AL-KH6 | |
| | | 180 degrees opening, spring return | Round/Square | AL-K6SP | Prevents inadvertent switch operation. IP65 oiltight rated. |
| | | | Rectangular | AL-KH6SP | |
| | | | Oversize Round/Sq | HA9Z-K1 | |
| Dust-proof Cover | | For round units | | AL-D6 | Provides extra level of sealing for "front-panel" portion of switches. (Not applicable for units with oversize lenses or buttons). |
| | | For square units | | AL-DQ6 | |
| | | For rectangular units | | AL-DH6 | |
| 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 LA1K, LA2K, LA3K (#132) | | AS6-SK | Pair of keys. |
| | | for HA1K (#231) – oversize | | KG9Z-SK | |
| Replacement Engraving Inserts |  | | Round<br>Square<br>Rectangle<br>Oversize Round<br>Oversize Square<br>Mushroom | AL6M-W<br>AL6Q-W<br>AL6H-W<br>HA9Z-P1-W<br>HA9Z-P2-W<br>HA9Z-P13-W | |
| Replacement Locking Ring | | All models | | HA9Z-LN | |
| Replacement Anti-Rotation Ring | | | L6 standard | AL6-LP | Prevents rotation of switches in panel. (included with all assembled switches) |
| | | | L6 oversize | HA9Z-LP | |
| Replacement Selector Inserts | | | | HA9Z-HC1-① | Applicable to round oversize selectors only<br>① = (G, R, S, W, Y) |
| Replacement Safety Lever Lock | | | | HA9Z-LS | |

| 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. L6 Switch + Flush Bezel = 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 |

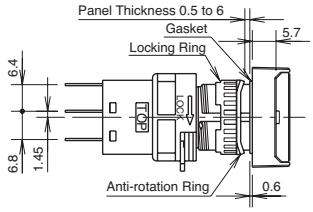
Flush bezels not applicable for oversize units.

## Dimensions (mm)

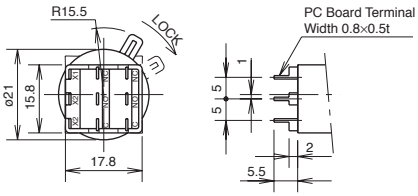
### Pilot Lights (LA*P,) Pushbuttons (LA*B)



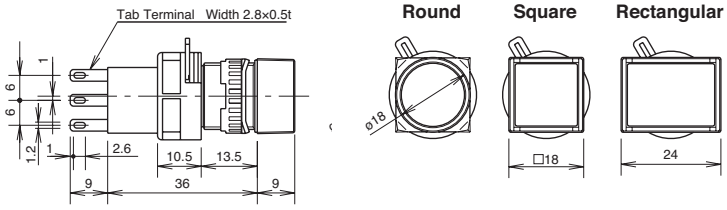

### Illuminated Pushbuttons (LA*L)




Note:
1. Pushbuttons do not have lamp terminals.
2. Pilot lights have only lamp terminals.

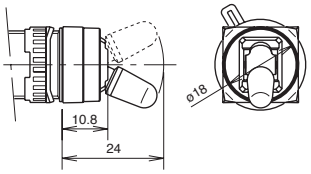



**PC Board Terminal**

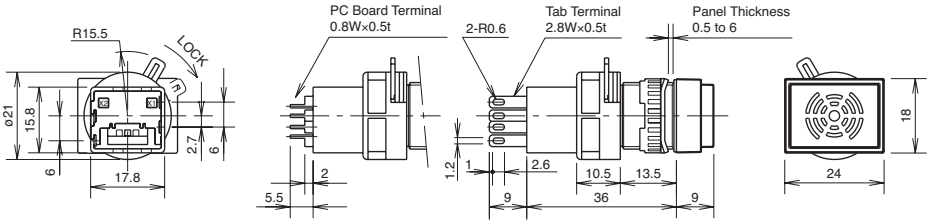



**Solder/Tab Terminal**

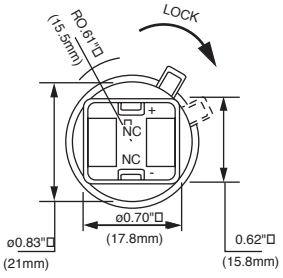
### Lever Switches (LA1T)

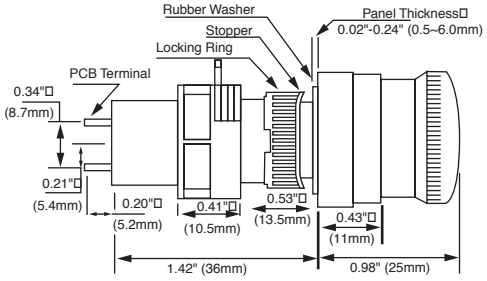


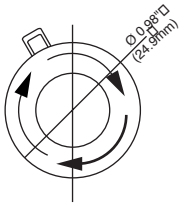

### Buzzer (LA3Z)



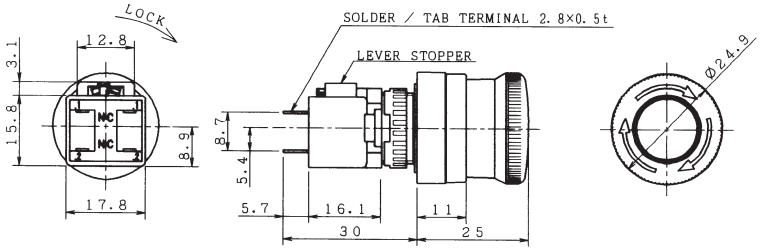

### Emergency Stop Switch (HA1B)



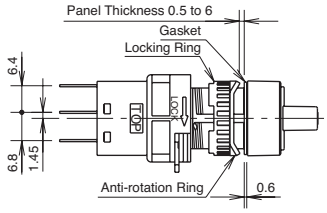



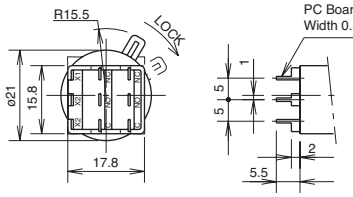



## Emergency Stop Switch (HA1E) - Short Body Style

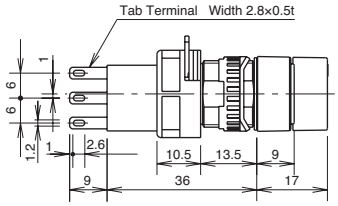



## Selector Switches (LA*S,) Illuminated Selector Switches (LA*F,) Key Selector Switches (LA*K)

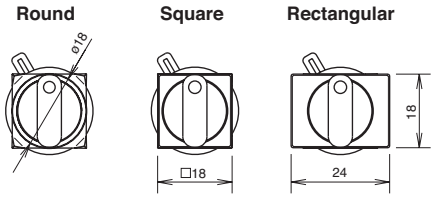


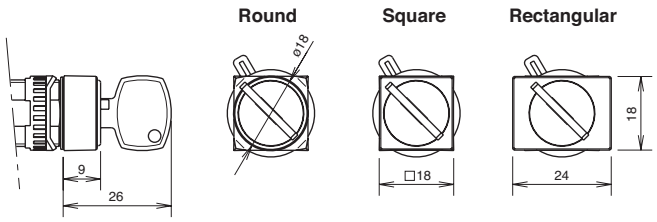




**PC Board Terminal**



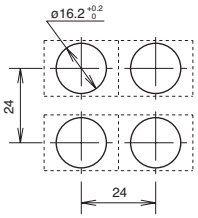

**Solder/Tab Terminal**



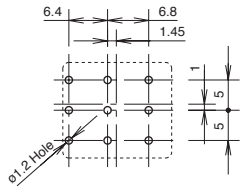




## PC Board Drilling Layout (Bottom View)

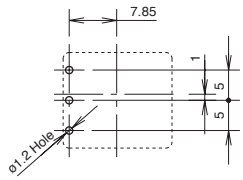
**Panel Cut-Out**



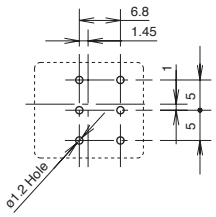

**Illuminated Pushbuttons, Illuminated Selector Switches**




**Pilot Lights, Selector Switches, Key Selector Switches**

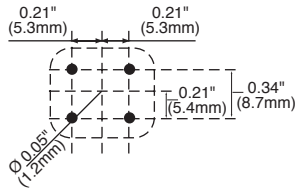



**Pushbutton Lever Switches**

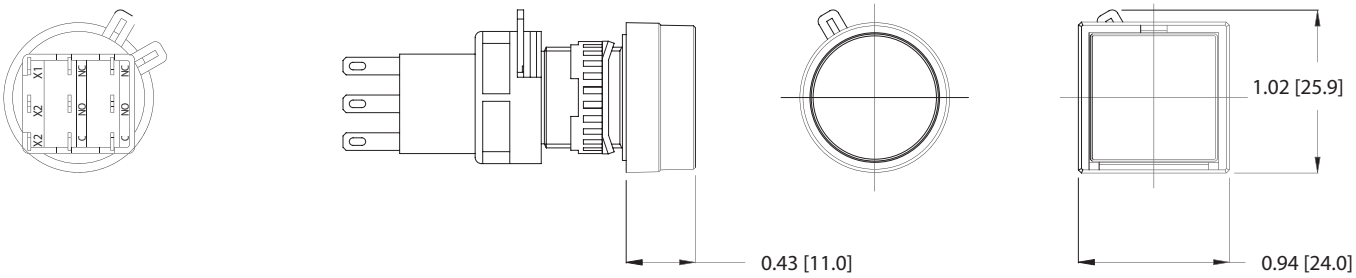



**HA1B E-Stop**

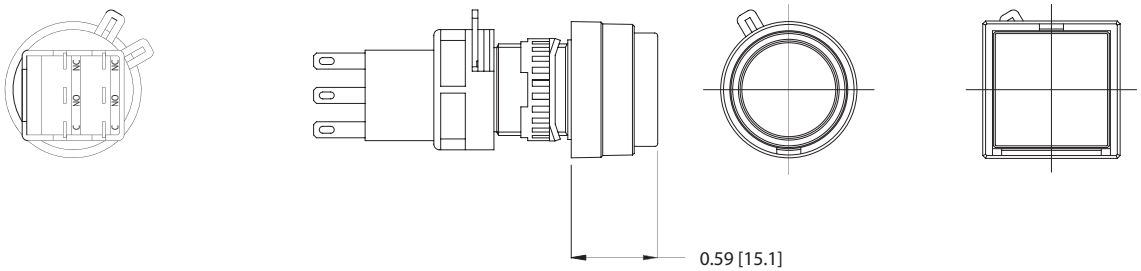
**PCB Mounting Pattern**



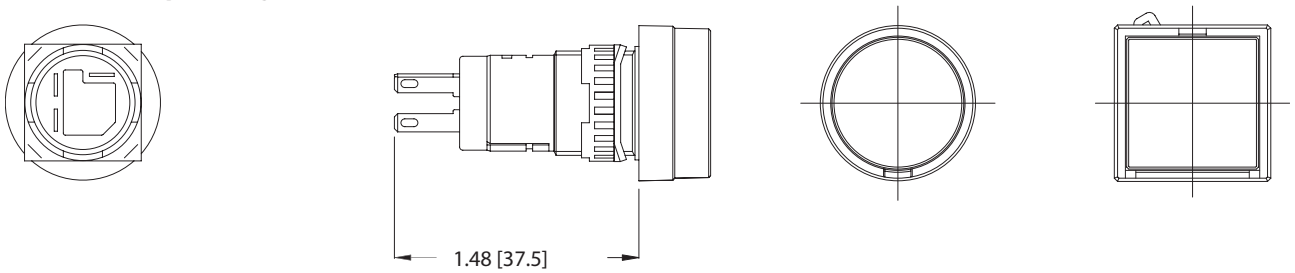
## Oversize Flush Pushbutton and Pilot Lights



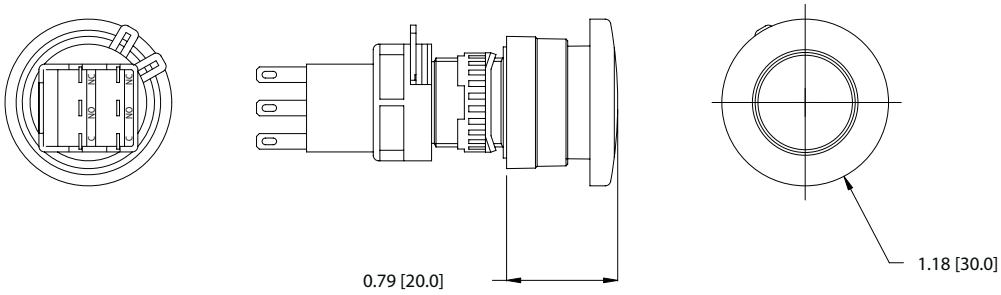

## Oversize Extended Non-Illuminated Pushbutton



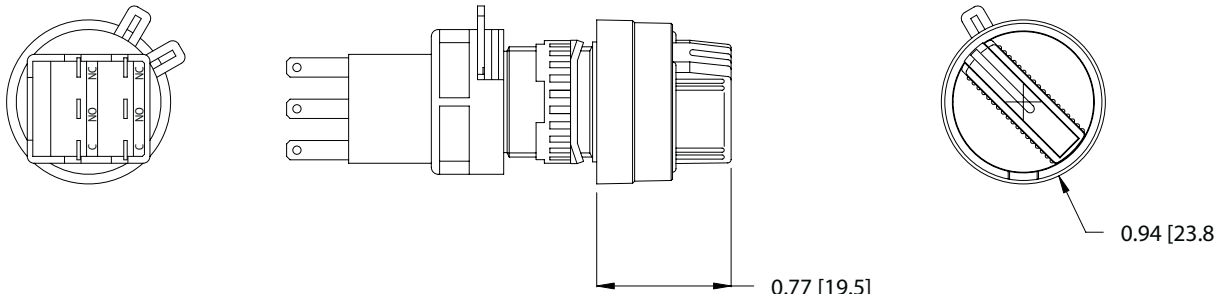

## Oversize Unibody Pilot Lights



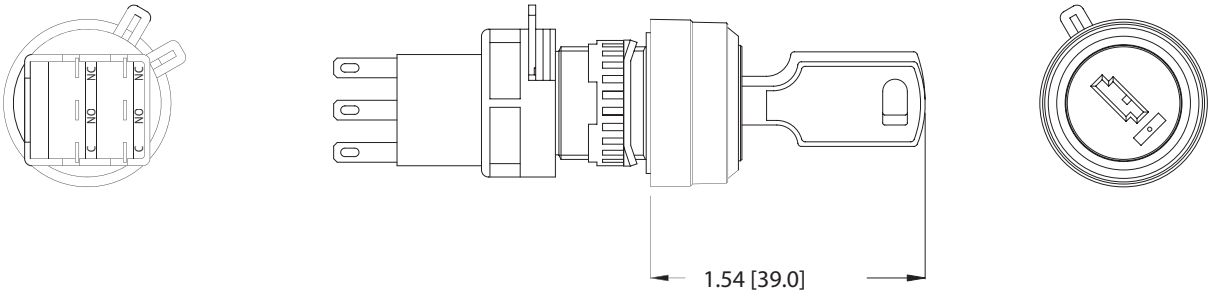

## Mushroom Pushbuttons



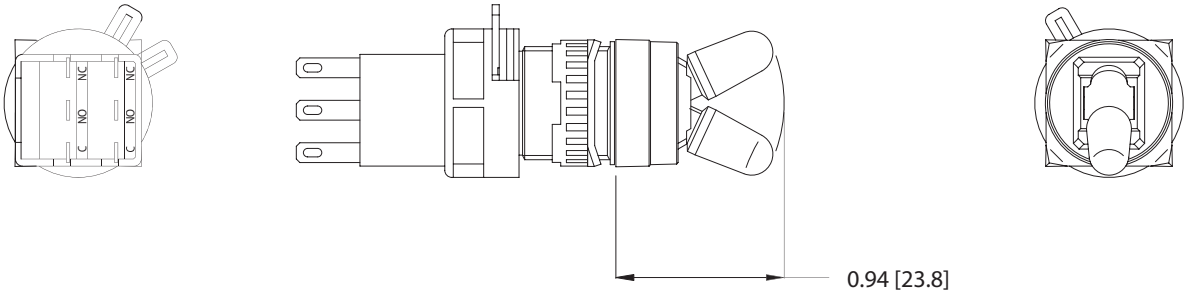

## Oversize Selector Switch



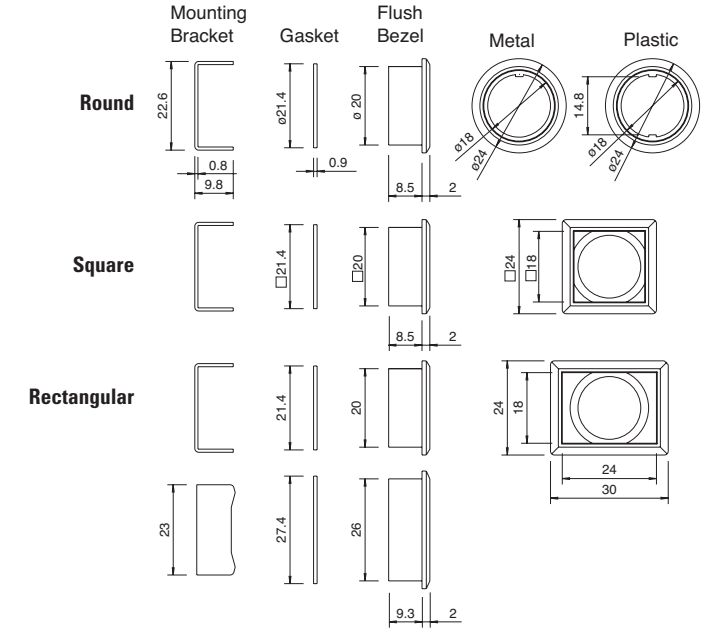
## Oversize Key Switch



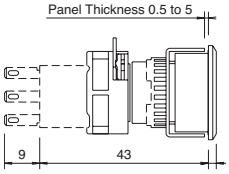

## Lever Switch



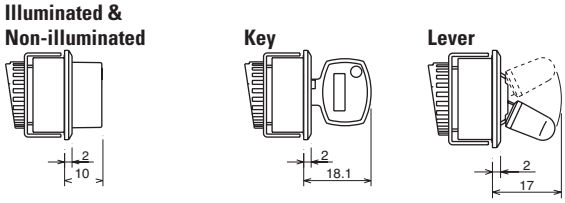

## Flush Bezel




## Flush Bezel with Switch

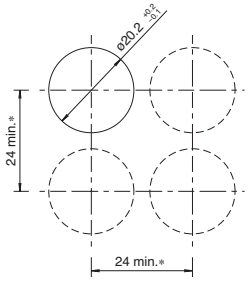



## Selector Switches

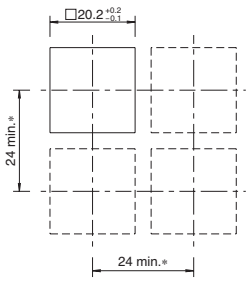



## Flush Bezel Mounting Hole Layout

### Round




### Square

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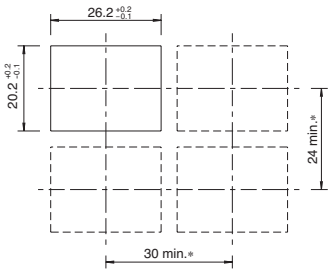
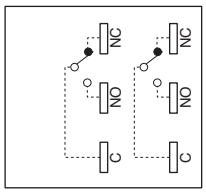
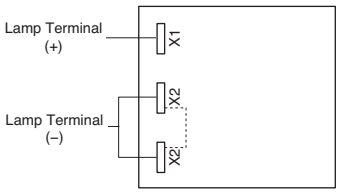


## Terminal Configurations

### Non Illuminated Pushbutton

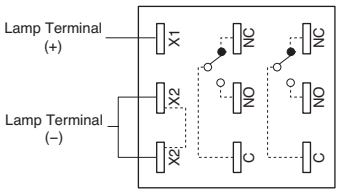



### Pilot Lights

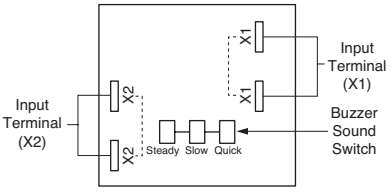



### AL-K6SP

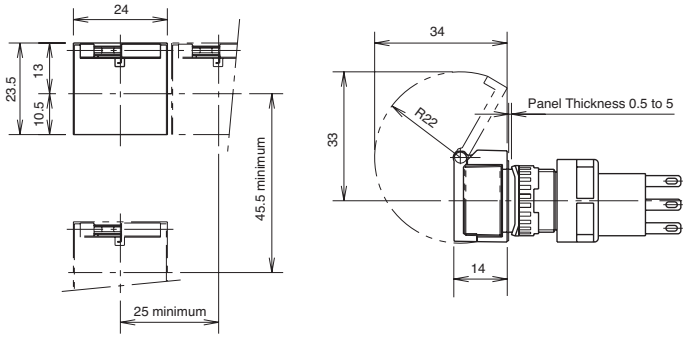
### Illuminated Pushbuttons

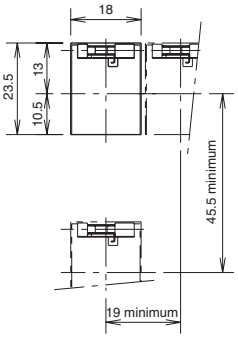



### Buzzer

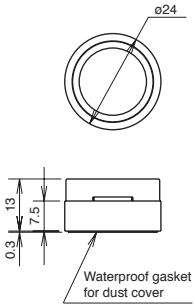



## AL-KH6SP

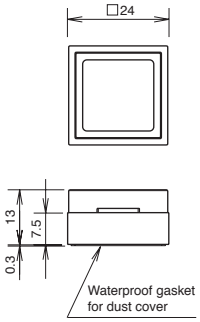


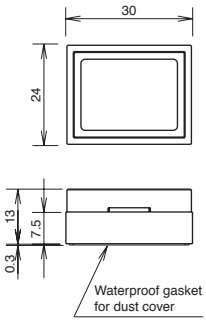

## AL-D6



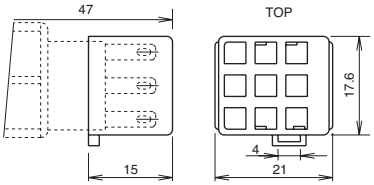

## AL-DQ6



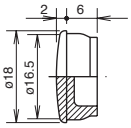

## AL-DH6



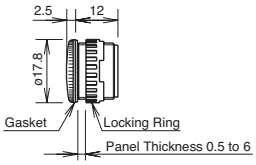

## H6-VL2



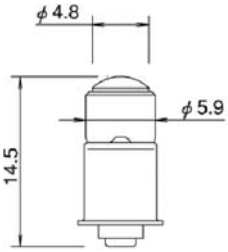

## AL-B6

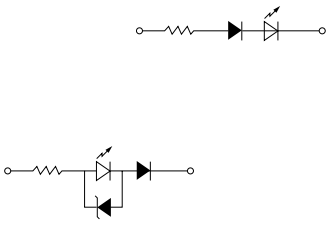



## AL-BM6

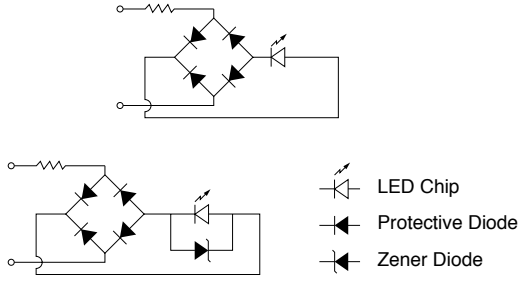



## LFTD

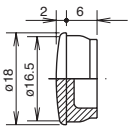


## LED Lamp Internal Circuit




## AL-B6



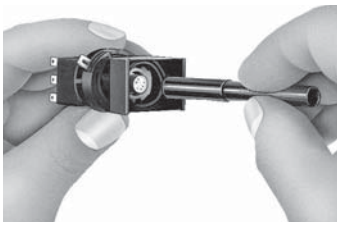
## General Instructions

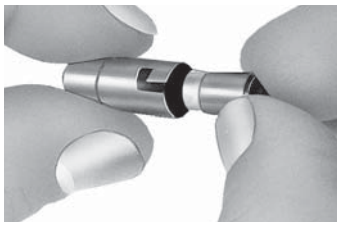
### Pushbutton Assembly

### Lamp Installation

Lamps can be replaced in two ways:

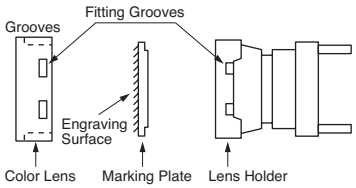
1. If contacts are accessible (or pushbutton not installed in a panel) then it is easiest to first remove the contacts from the operator. This will allow easy access to the lamp/lamp-holder assembly. Grab lamp, depress slightly, and turn counter clockwise. Lamp can then be removed by pushing it back 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.





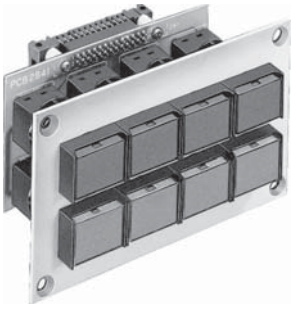
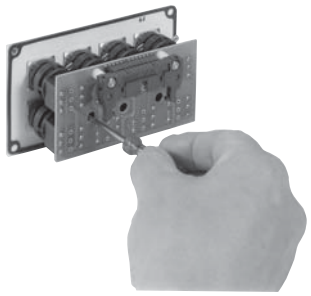
### Engraving Lenses

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.