

Section

A

New
HW Dual Pushbutton
Switches now available.
See page A3-84.

Section A Overview

- Selection Guide A-2
- General Information A-12

A1: Safe Break E-Stops

- **World's Safest E-Stops**

New

- XA Ø 16mm &
XW Ø 22mm A1-14

A2: ø16mm Switches & Pilot Devices

- **A6 Series** Ø 16mm A2-17
- **L6 Series** Ø 16mm A2-30

A3: ø22mm Switches & Pilot Devices

- **HW Series** Ø 22mm A3-52
- **LW Series** Ø 22mm A3-108
- **TW Series** Ø 22mm A3-126

A4: ø30mm Switches & Pilot Devices

- **TWTD Series** Ø 30mm A4-166
- **Cam - CS Series** A4-195
- **Mono Lever - ARN Series** A4-202

A5: Miniature Switches & Pilot Devices

- **A8 Series** Ø 8mm A5-205
- **AP Series** Miniature Pilot Lights
Ø 8-16mm A5-210

Switches & Pilot Devices

www.idec.com/switches

for more information on this product family visit

www.idec.com/switches





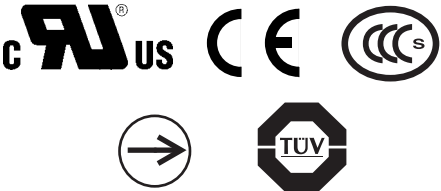
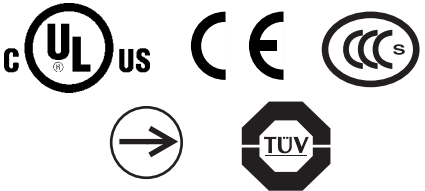
Additional Web Resources


- New and updated product information
- Downloadable software demos & upgrades
- Part configuration tool & cross reference
- Online stock check & ordering
- IDEC field sales & distributor search
- Online literature request
- Downloadable manuals & CAD drawings
- Manufacturer's suggested retail price list
- Product training schedule & locations
- Advertising & trade show schedules
- Press releases & FAQs

Selection Guide












A1: Safe Break E-Stops: 16mm XA & 22mm XW Series

Switches & Pilot Devices

| World's Safest Emergency Switches | | |
|-----------------------------------|--|--|
| Series Model | XA | XW |
| Appearance | <p>NEW</p>  | <p>NEW</p>  |
| See Page | A1-14 | A1-14 |
| Operator Type | Non-illuminated E-Stops: Pushlock/Turn Reset, Push-Pull | Illuminated & Non-Illuminated E-Stops: Pushlock/Turn Reset, Push-Pull |
| Reset Action | Pushlock Pull or Turn Reset (both actions available in each switch) | |
| Contact Configuration | 1NO - 1NC, 2NC, 1NO-3NC, 4NC | 1NO - 1NC, 2NC, 1NO-3NC, 4NC |
| Electrical Life | 100,000 Minimum 250,000 or more (24V AC/DC 100mA) | |
| Mechanical Life | 250,000 Minimum | |
| Termination | PCB & Solder Terminals | Screw Terminals |
| Degree of Protection | IP65 (IEC60529) | |
| Approvals |  |  |


 XA series UL recognized.

A2: Ø16mm Switches & Pilot Devices - A6 Series

| Series Model | AL6 | AB6 | AL6 | AB6 | AB6-V | AS6 | AS6-K |
|------------------------------------|--|---|---|---|---|---|--|
| Appearance |  |  |  |  |  |  |  |
| See Page | A2-20 | A2-18 | A2-20 | A2-18 | A2-18 | A2-24 | A2-24 |
| Operator Type | Illuminated Pushbuttons: • Momentary • Maintained • Pilot Lights | Non-Illuminated Pushbuttons: • Momentary • Maintained | Oversize Lens Illuminated Pushbuttons: • Momentary • Maintained | Oversize Button Non-illuminated Pushbuttons: • Momentary • Maintained | Emergency Stop: • Pushlock / Turn Reset | Selector Switches: • 2 or 3-Position • Maintained or Spring Return | Keylock Switches: • 2 or 3-Position • Maintained or Spring Return • Key removable options |
| Bezel/Lens Shape & Size | Round: 18mm Square: 18mm Rectangular: 18 x 24mm | | Round: 23.5mm Square: 23.5mm Rectangular: 17.5 x 23.5mm | | Round: 23.5mm | Round: 18mm Square: 18mm Rectangular: 18 x 24mm | |
| Light Source | LED | — | LED | — | — | — | — |
| Lens/Button Colors | Amber, Green, Red, White, Yellow, Blue | Black, Blue, Green, Red, White, Yellow | Amber, Green, Red, White, Yellow, Blue | Black, Blue, Green, Red, White, Yellow | Red | Black | — |
| Contact Configuration | SPDT or DPDT (Gold-Clad Silver Contact) | | | | | | |
| Contact Ratings | 120V AC/1A, 24V DC/1A (Resistive) (Minimum applicable load reference value: 5V AC/DC, 1mA) | | | | | | |
| Electrical Life | Momentary: 100,000 operations minimum Maintained: 50,000 operations minimum | | | | 100,000 operations | 100,000 operations minimum (at 1,200 operations/hour) | |
| Mechanical Life | Momentary: 1,000,000 operations minimum Maintained: 100,000 operations minimum | | | | 100,000 operations | 250,000 operations minimum | |
| Degree of Protection | Enclosed/Dustproof: IP40 Waterproof/Oiltight/Corrosion Resistant: IP65 | | | | | | |
| Termination | .110" Solder/Quick Connect | | | | | | |
| Approvals |  UL Recognized File No. E55996 | |  CSA Certified File No. LR48366 | |  |  | Certificate No. 2030010305027380 |

A

Switches & Pilot Devices









































 1. LED lamps contain a built-in current-limiting resistor and reverse polarity protection diode.
2. Available as assembled or sub-assembled components.

A2: Ø16mm Switches & Pilot Devices - L6 Series

Switches & Pilot Devices

| Series Model | LAΔB/HAΔB | LAΔP/HAΔP | LAΔL/HAΔL | HA1B-V/ HA1E-V | LAΔS/HAΔS | LAΔK/HAΔK | LAΔF/HAΔF | LA3Z/LA1T/ HA1R |
|-----------------------|---|---|---|--|--|--|---|--|
| Appearance | | | | Direct Opening Action | | | | |
| See Page | A2-30 | A2-34 | A2-36 | A2-33 | A2-38 | A2-40 | A2-42 | A2-33, A2-44 |
| Operator Types | Non-illuminated: • Momentary • Maintained | Pilot Light • LED/Incan. | Illuminated: • Momentary • Maintained • LED/Incan. | E-Stop • Pushlock/ Turn Reset | Selector Switch • 2 pos/ 3pos • Spring/Maint | Key Switch • 2pos/3pos • Spring/Maint • Key Remove Option | Illuminated Selector • 2 pos/ 3pos • Spring/Maint • LED/Incan. | Piezo Buzzer Lever Switch • 2 pos/ 3pos • Spring/Maint PB/ Selector • 2 pos/ 3pos |
| Bezel Shape and Size | Rnd: 18mm Sq: 18mm Rect: 18 x 24mm Ovrsize Rnd: 24mm Ovrsize Sq: 24mm | Rnd: 18mm Sq: 18mm Rect: 18 x 24mm Ovrsize Rnd: 24mm Ovrsize Sq: 24mm | Rnd: 18mm Sq: 18mm Rect: 18 x 24mm Ovrsize Rnd: 24mm Ovrsize Sq: 24mm | Rnd: 25mm | | Rnd: 18mm Sq: 18mm Rect: 18 x 24mm Ovrsize Rnd: 24mm | | BZR: 18 x 24mm Lvr: 18mm PB/Selector: 25mm |
| Light Source | - | LED: 5VDC/6V, 12V, 24V AC/DC Incan: 5V/6V, 12V, 24V AC/DC | LED: 5VDC/6V, 12V, 24V AC/DC Incan: 5V/6V, 12V, 24V AC/DC | - | - | - | LED: 5VDC/6V, 12V, 24V AC/DC Incan: 5V/6V, 12V, 24V AC/DC | - |
| Lens/Button Colors | Amber, Green, Red, Blue, White, Yellow | Amber, Green, Red, Blue, White, Yellow | Amber, Green, Red, Blue, White, Yellow | Red | Black/White | Black/Silver | Amber, Green, Red, Blue, White, Yellow | - |
| Contact Configuration | SPDT, DPDT | - | SPDT, DPDT | DPST-NC (positive action) | | DPDT | | DPDT |
| Electrical Life | 100,000 operations min (at full rated load) | Incan: 2000 hrs LED: 50,000 hrs | | | 100,000 operations min (at full rated load) | | | - |
| Mechanical Life | Momentary: 2,000,000 Maintained: 250,000 | - | Momentary: 2,000,000 Maintained: 250,000 | 250,000 operations | | Momentary: 2,000,000 Maintained: 250,000 | | - |
| Degree of Protection | IP65 | | | | | | | |
| Termination | 0.110" solder/quick connect, PCB pins | | | | | | | |
| Approvals | UL Recognized File No. E55996 | CSA Certified File No. LR21451 | TÜV Rheinland | Reg.No. R9551089 Reg. No. J9551458 Reg. No. J9650511 | | | HA1B-V, HA1E only | |

A3: Ø22mm Oiltight Switches and Pilot Devices - HW Series

| Series Model | HWΔB- | HWΔP- | HWΔL- | HW1B, HW1E | HW1S, HW1K, HW1F- | HW7D, HW1M, HW1R - |
|-------------------------------|---|--|--|--|---|--|
| Appearance | Flush  | | Flush  | Push-Pull  | | |
| | Extended  | | Flush (metal bezel)  | Pushlock Turn Reset  | Knob Operator  | NEW Dual Pushbutton  |
| | Extended (metal bezel)  | Dome Lens  | Flush (metal bezel)  | Pushlock Turn Reset (metal bezel)  | Knob Operator (metal bezel)  | Mono-Lever  |
| | 40mm Mushroom  | Dome Lens (metal bezel)  | Extended  | Pushlock Turn Reset (metal bezel)  | Key Operator  | |
| | Square Flush  | Flush Lens  | Extended/Shroud  | Pushlock Key Reset  | Key Operator (metal bezel)  | Pushbutton Selector  |
| | Square Extended  | Square Flush  | 40mm Mushroom  | Jumbo Pushlock Turn Reset  | | |
| | Jumbo Mushroom  | | Square Extended  | Unibody E-Stop  | Illuminated  | |
| | | | | Illuminated Unibody E-Stop  | | |
| See Page | A3-54 | A3-61 | A3-64 | A3-52 | A3-68, A3-71, A3-74 | A3-84, A3-89, A3-91 |
| Operator Types | Non-illuminated Pushbuttons: • Momentary • Maintained | Pilot Lights • LED/Incandescent | Illuminated Pushbuttons: • Momentary • Maintained • LED/Incandescent | E-Stops: • Modular or Unibody • Non-Illuminated • Illuminated (unibody only) • key reset (all units meet EN418) | Selector Switches • Non-Illuminated • Illuminated • LED/Incandescent • 2, 3, 4, 5- position (key & illum. 2 or 3-position only) | HW7D Dual Pushbutton HW1M Monolever • 2 or 4 position HW1R Selector Pushbutton |
| Contact Configuration | Modular: NO, NC, NO-EM, NC-LB (maximum 6 contacts) | — | Modular: NO, NC, NO-EM, NC-LB (maximum 6 contacts) | 2NC, 1NO/1NC (Unibody) | Modular: NO, NC, NO-EM, NC-LB (maximum 6 contacts) | Modular: NO, NC, NO-EM, NC-LB (maximum 6 contacts) |
| Electrical Reliability | MTBF < 1 fault in 10 million operation cycles (3V DC, 5mA) | | | | | |
| Mechanical Life | Momentary Pushbuttons: 5,000,000 operations minimum (900 operations per hour) All other switches: 500,000 | | | | | |
| Degree of Protection | IP65 (from front of the panel), IP20 (type HW-F contact blocks) (conforming to IEC60529) NEMA Type 1, 2, 3, 3R, 3S, 4, 4X, 5, 12, 13 (conforming to NEMA ICS-110) | | | | | HW1R: IP65, IP20 NEMA 1, 2, 3, 3R, 3S, 4, 4x, 5, 12, 13 HW1M: IP40, IP20 |
| Termination | M3.5 screw terminals (fingersafe/spring-up/exposed screw) with captive sems plate | | | | | |
| Approvals |  UL Listed File No. E68961 |  CSA Certified File No. LR92374 |  |  TÜV Rheinland Reg No. R9551089 (E-stops) Reg No. J9551458 (all other switches) Reg No. J9650511 (Pilot Lights) |  Direct Opening Action (NC contacts only) |  Certificate No. 2005010305145656 |

















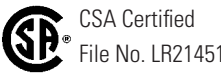




Switches & Pilot Devices

A3: Ø22mm Oiltight Switches and Pilot Devices - LW Series



























A

Switches & Pilot Devices

| Series Model | LWΔB- | LWΔL- | LW1S- | LW1F | LW1K | LWΔP- |
|--|--|---|---|--|---|--|
| Appearance | Flush  | | | | | Round  |
| | Extended  | Round  | | | | Square  |
| | Square Flush  | Square  |  |  |  | Round Unibody  |
| | Square Extended  | Mushroom  | | | | Square Unibody  |
| | Mushroom  | | | | | |
| | | | | | | |
| | | | | | | |
| See Page | A3-110 | A3-112 | A3-116 | A3-116 | A3-116 | A3-114 |
| Operator Type | Non-Illuminated Pushbuttons • Momentary • Maintained | Illuminated Pushbuttons: • Momentary • Maintained • LED/Incan. | Selector Switch: • 2 or 3- position | Illuminated Selector: • 2 or 3- position • LED/Incan. | Key Selector: • 2 or 3- position • Key removable options | Pilot Light • LED/Incan. • Standard/Unibody |
| Contact Configuration | SPDT, DPDT, 3PDT | | | | | — |
| Contact Ratings | Gold-clad crossbar contacts 30VDC/1A, 125VAC/1A resistive | | | | | — |
| | Silver Contacts 30VDC/2A, 125VAC/3A, 250VAC/2A resistive 30VDC/1A, 125VAC/2A, 250VAC/1.5A inductive | | | | | |
| Mechanical Life | Momentary: 1,000,000 operations minimum, Maintained: 500,000 operations, Selectors: 250,000 operations minimum | | | | | |
| Electrical Life (at rated load) | Momentary: 100,000 (1800 operations/hour) Maintained: 100,000 (900 operations/hour) | | | | | — |
| Degree of Protection (conforming to IEC529) | Oiltight/watertight: IP65 | | | | | IP65 |
| Termination | • .110" solder/quick connect • PCB (gold contacts only) • M3 screw (2 pole only) | | | | | |
| Approvals |  UL Recognized File No. E55996 |  CSA Certified File No. LR21451 |  TÜV Rheinland | Reg. No. J9551801 |  | |

- 1. Lamps not included in assembled units.
- 2. Available as assembled or sub-assembled components.

A3: Ø22mm Oiltight Switches and Pilot Devices - TW Series
























| Series Model | AΔW... | AΔLW... | ASW... | ASLW... | APW... | |
|------------------------------|---|--|---|--|--|--|
| Appearance | Flush  | Extended  | | | | |
| | Extended  | Extended/Shroud  | Knob Operator  | | Dome Lens  | |
| | Mushroom  | Mushroom  | Lever Operator  | Knob Operator (w/transformer)  | Flush Lens  | |
| | Square Flush  | Square Extended  | Key Operator  | | Square Flush  | |
| | Square Extended  | Push-Pull  | | | Square Flush (w/transformer)  | |
| | Pushlock Turn Reset  | Pushlock Turn Reset  | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| See Page | A3-128 | A3-138 | A3-142 | A3-146 | A3-135 | |
| Operator Types | Non-illuminated Pushbuttons: • Momentary • Maintained • E-Stop | Illuminated Pushbuttons: • Momentary • Maintained • E-Stop • LED/Incandescent | Selector Switches: • 2, 3, 4, 5-position • Maintained • Spring Return • Colored knobs/ inserts | Illuminated Selectors: • Full Voltage/ Transformer • LED/Incandescent | Pilot Lights: • Full Voltage/ Transformer • LED/Incandescent | |
| Contact Configuration | Modular: NO, NC, NO-EM, NC-LB (maximum 6 contacts) | | See Contact Arrangement Charts page A3-150. | | — | |
| Contact Ratings | 10A thermal current/600V maximum | | | | | |
| Electrical Life | 500,000 operations/min | | | | | |
| Mechanical Life | Momentary Pushbuttons: 5,000,000 operations minimum; Others: 500,000 operations minimum Selector Switches: 500,000 operations minimum | | | | | |
| Degree of Protection | NEMA Type 1, 2, 3, 3R, 4, 4X, 5, 12, 13; Waterproof/Oiltight/Corrosion Resistant: IP65 | | | | | |
| Termination | M3.5 Screw Terminals with captive sems plate | | | | | |
| Approvals |  UL Listed File No. E70646 |  CSA Certified File No. LR48366 |  TUV Rheinland File No. 9561116E01 |  |  Direct Opening Action (NC contacts only) |  Certificate No. 2030010305027380 |




1. Illuminated units include lamp.
2. Available as assembled or sub-assembled components.










A4: Ø30mm Oiltight Switches and Pilot Devices - TWTD Series

Switches & Pilot Devices

| Series Model | AΔD... | AΔLD... | ASD... | AΔLD... | APD... |
|------------------------------|--|--|---|---|--|
| Appearance | Flush  | Extended  | | | |
| | Extended/ Neoprene Boot  | Extended/Shroud  | Knob Operator  | Knob Operator (full voltage)  | Dome Lens  |
| | Mushroom  | Mushroom  | Lever Operator  | Knob Operator (with transformer)  | Dome Lens (w/transformer)  |
| | Jumbo Mushroom  | Pushlock Turn Reset  | Key Operator  | | |
| | Pushlock Turn Reset  | Push-Pull  | | | |
| | Push-Pull  | | | | |
| | | | | | |
| | | | | | |
| See Page | A4-168 | A4-174 | A4-179 | A4-182 | A4-174 |
| Operator Type | Non-illuminated Pushbuttons: • Momentary • Maintained • E-Stop | Illuminated Pushbuttons: • Momentary • Maintained • Special (E-Stop) • LED/Incandescent | Selector Switches: • 2, 3-position • Maintained • Spring return • Key removable options | Illuminated Selectors • LED/Incandescent • 2, 3-position • Maintained • Spring return | Pilot Lights • Full Voltage/Transformer • LED/Incandescent |
| Contact Configuration | Modular: NO, NC, NO-EM, NC-LB (maximum 6 contacts) | | See Contact Arrangement Charts on page A4-185. | | — |
| Contact Ratings | 10A thermal current 600V maximum | | | | — |
| Electrical Life | 500,000 operations minimum (pushbuttons and selector switches) Operating Frequency: 30 operations/minute, Duty Rate 40% | | | | — |
| Mechanical Life | Momentary Pushbuttons: 5,000,000 operations minimum; Others: 500,000 operations minimum | | | | |
| Degree of Protection | NEMA Type 1, 2, 3, 3R, 4, 4X, 5, 12, 13 Waterproof/Oiltight/Corrosion Resistant: IP65 | | | | |
| Termination | M3.5 Screw Terminals with captive sems plate | | | | |
| Approvals |  UL Listed File No. E70646 |  CSA Certified File No. LR48366 |  File No. DK95-00717 |  |  Certificate No. 2005010305145656 |

 1. Illuminated units include lamp.
2. Available as assembled or sub-assembled components.

A4: Ø30mm Switches - Cam and Mono-Lever

| Series Model | ACSNO | ACSNK | UCSQO | UCSQM | ARN |
|-----------------------------|--|---|---|---|---|
| Mounting Hole Diameter | Ø 1-13/64" (30mm) | | 5 hole panel cutout | | Ø 1 13/64" (30mm) |
| Appearance |  |  |  |  | Standard Knob (ARNO)  Short Knob (ARNSO)  Interlock knob (ARNLO)  |
| See Page | A4-195 | | | | A4-202 |
| Operator Types | Cam Switch w/knob selector | Cam Switch w/key selector | Cam Switch w/knob & mechanical indicator. | Cam Switch 3-pos, spring-return | Mono-lever Switch |
| Cam Angles and/or Positions | 30° Up to 12 positions 45° Up to 8 positions 60° Up to 6 positions 90° Up to 4 positions | | | Spring-return 45° 3 position only | <ul style="list-style-type: none"> Center + 2, 3, or 4 position Maintained Spring return |
| Contact Ratings | 10A thermal current 600V insulation voltage | | | | |
| Electrical Life: | 500,000 operations minimum (at full rated load) | | | | |
| Mechanical Life | 500,00 operations minimum | | | | |
| Degree of Protection | IP65, NEMA 4, 13 | IP40 | IP65, NEMA 4, 13 | | IP40 |
| Termination | M3.5 Screw Terminals with captive sems plate | | | | |
| Approvals |  UL Listed File No. E68961 | |  CSA Certified File No. LR48366 | | |







1. Cam switches available only as assembled units.
2. Mono-lever switches available as assembled or sub-assembled components.




A5: Miniature Switches and Pilot Devices - Ø8mm A8 Series











A

Switches & Pilot Devices

| Series Model | AL8 | AB8 |
|--|--|---|
| Appearance |  |  |
| See Page | A5-205 | A5-205 |
| Operator Type | Illuminated Pushbuttons: • Momentary • Maintained • Pilot Lights | Non-Illuminated Pushbuttons: • Momentary • Maintained |
| Lens Shape and Size | Round: Ø 0.351 (9mm) Square: □ 0.351 (9mm) Rectangular: 0.351 x 0.468 (9 x 12mm) | |
| Light Source | LED | — |
| Lens/Button Colors | Amber, Green, Red, White, Yellow | Black, Blue, Green, Red, White, Yellow |
| Contact Configuration | SPDT (Gold-Clad Silver Contact) | |
| Contact Ratings | 120V AC/1A, 24V DC/1A, (Resistive), Minimum applicable load reference value: 5V AC/DC, 1mA | |
| Electrical Life (at full rated load) | Momentary: 100,000 operations minimum Maintained: 50,000 operations minimum | |
| Mechanical Life | Momentary: 200,000 operations minimum Maintained: 100,000 operations minimum | |
| Degree of Protection | Enclosed/Dustproof: IP40 | |
| Termination | Solder Tab Terminal | |
| Approvals |  UL Recognized File No. E55996  CSA Certified File No. LR21451 | |

-  1. LED lamps require an external current limiting resistor.
- 2. Available as assembled units only (replacement LED lamps available).

A5: Miniature Pilot Lights - Ø8 to 16mm AP Series

| Series Model | AP8M | AP1M | AP2M | AP6M |
|------------------------|--|---|--|---|
| Mounting Hole Diameter | 8mm | 10mm | 12mm | 16mm |
| Appearance | Dome  | Dome  | Dome  | Dome  |
| | Flat  | Flat  | Flat  | Flat  |
| See Page | A5-211 | | | |
| Operator Type | Pilot Lights | | | |
| Lens Shape and Size | Flat & Dome Ø 9.8mm | Flat & Dome Ø 12mm | Flat & Dome Ø 14mm | Flat & Dome Ø 18mm |
| Light Source | LED (with built-in current limiting resistor) | | | |
| Lens Colors | Amber, Green, Red, White, Yellow | | | |
| Voltages | 6, 12, 24V DC (Full Voltage) | | 6, 12, 24V DC (Full Voltage); 120, 240V AC (with transformer); 110V DC (with DC-DC converter). | |
| Rated Current | 6V DC/18mA 12V DC/11mA 24V DC/12mA | 6V DC/18mA 12V DC/11mA 24V DC/12mA | 6V DC/33mA 12V DC/22mA 24V DC/11mA | 6V DC/33mA 12V DC/11mA 24V DC/11mA |
| Degree of Protection | Enclosed/ Dustproof: IP40 | Waterproof/Oiltight/Corrosion Resistant: IP65 | | |
| Termination | Solder Tab | | | .110" Solder/Quick Connect |
| Approvals |  UL Recognized File No. E68961 | |  CSA Certified File No. LR48366 | |



1. Only AP6 accepts .110" quick-connect.
2. AP2 and AP6 compatible with snap-on transformers.
3. All units are one-piece pilot lights with non-replaceable LED lamp.
4. All units include built-in current limiting resistor and reverse polarity protection diode.

General Information

Information About LED Lamps

Light-emitting diodes (LEDs) are P–N junction semiconductors with mechanisms called “junction electro-luminescence.” Application of direct current results in radiation or emission of a monochromatic light.

Different semiconductor materials produce different wavelengths of light as shown below:

| | | | |
|----------------|----------|------------------------------------|--------|
| Specifications | Green | Gallium Phosphide (GaP) | 5600 Å |
| | Yellow | Gallium Arsenide Phosphide (GaAsP) | 5800 Å |
| | Amber | Gallium Arsenide Phosphide (GaAsP) | 6300 Å |
| | Red | Gallium Arsenide Phosphide (GaAsP) | 6600Å |
| | Infrared | Gallium Arsenide (GaAs) | 9000 Å |

Advantages of Using LEDs

- LEDs are used when heat generated by incandescent lamps would damage nearby equipment or interfere with a precision process. This is particularly advantageous when multiple lights are grouped.
- LEDs can operate at low temperatures which would cause incandescent lamps to fail, since glass cracks during rapid cooling.
- LEDs consume 50 times less power than incandescent lamps, thereby reducing energy consumption.
- LEDs last 500 times longer than incandescent lamps. LEDs average a million hours (114 years) while incandescent lamps average 2000 hours.
- LEDs do not generally “blow out” unless subjected to a severe overvoltage. They exhibit a half-life type dimishment in brightness over time. After 50,000 hours (6 years) of use, IDEC LEDs will retain approximately half of their original intensity.
- IDEC’s SUPERBRIGHT LEDs have high visibility.
- LEDs require little or no maintenance because of long life and high reliability.

IDEC Recommendations

For optimum results, especially when using switches and pilot lights in operating environments which are conducive to overheating, use IDEC LED illuminated units. Transformers are available for use with incandescent illuminated units, which operate at lower voltages to avoid overheating.

When IDEC’s L-120L lamp is used, make sure ambient temperatures do not exceed 30°C (86°F). If a lamp from another supplier is used, it should be rated for less than 1.8 watts (15mA at 120V AC), with ambient temperatures as stated above.

Information About Incandescent Lamps

Filament-type incandescent lamps operate within the following parameters.

Light output and life expectancy depend on operating voltage. Light output varies to the 3rd or 4th power of the voltage. Life expectancy varies inversely to the 12th power of voltage. In other words, over-voltage of 5% reduces life expectancy by 50%. Under-voltage of 5% doubles life expectancy at the price of light output efficiency.

Inrush current (initial current through the filament) has an adverse effect on life expectancy. Cold resistance (room temperature) will have a more detrimental effect than hot resistance to inrush current. Life expectancy of incandescent lamps can be maximized by reducing occurrences of cold resistance to inrush current.

Continued intermittent flashing will significantly reduce life expectancy. When using an incandescent lamp with a tungsten filament, flashing will not reduce life expectancy as long as light output does not exceed that of steady burning.

When an incandescent lamp must withstand shock and vibration, use low voltage/high amperage (5–6V/60–120mA) lamps. These lamps have a short, thick filament with a high resonant frequency.

Provide cooling by using a heat sink, particularly when multiple incandescent lamps are grouped or when air circulation is limited. Make sure ambient temperatures do not exceed 100°C (212°F) for maximum life of incandescent lamps.

Comparison: LED vs. Incandescent Lamps

| | | Superbright LEDs | Incandescent |
|------------------------|--------------------------------|------------------|--------------------------------|
| Characteristics | Heat Dissipation | Very Low | High |
| | Life Expectancy | Very Long | Short |
| | Reliability | Very High | Low |
| | Mechanical Strength | Not Susceptible | Susceptible to Shock/Vibration |
| | Maintenance Required | Negligible | Frequent |
| | Operation at Low Temps. | Possible | Not Possible |
| | Inrush Current | Negligible | Very Large |
| | Voltage Effects on Life | Insignificant | Significant |
| | Brightness | Slightly Less | Slightly More |



Ordering Information

1. IDEC offers assembled and sub-assembled switches and pilot lights for your convenience. In some cases there is a cost difference, with sub-assembled units costing slightly less. Since assembled units are custom made to your order, a couple of days for assembly is added to delivery. To minimize delivery or inventory requirements, it is suggested that switches and pilot lights be ordered as sub-components.
2. When ordering pilot lights or illuminated pushbuttons, make sure to specify the color code in place of the asterisk in the part number, (LED or incandescent lamp included). Spare lamps can be ordered and are listed with sub-assembly components.
3. Accessories, such as locking ring wrench, lens removal tool, and lamp holder, are available to make installation and assembly easier. IDEC recommends using these accessories and is not responsible for damage as a result of using the wrong tool.
4. Marking plates are available for switches and pilot lights which feature a flat lens. Printed mylar (not included) can also be inserted under lens for labeling purposes.
5. Nameplates are available for TW, 7/8" (22mm), HW 7/8" (22mm), and TWTD series, Ø1-13/64" (30mm). For prompt delivery, order standard legends. Custom engraving is also offered for an additional charge.

Installation and Operation

1. Use the appropriate lamp holder to remove or install LED or incandescent lamps. Using pliers will damage the lamp.
2. When mounting switches and pilot lights into a panel, use locking ring wrench. Using pliers or tightening excessively will damage the locking ring.
3. A series, 21/64" (8mm), can be mounted on a panel 0.019" (0.5mm) to 0.236" (6mm) thick.
4. TW, 7/8" (22mm) and TWTD series, Ø1-13/64" (30mm), feature an adjustment ring for mounting on a panel 0.038" (1mm) to 0.236" (6mm) thick. Using a nameplate or an anti-rotation ring adds 0.031" (0.8mm) to the panel thickness.
5. When applicable, solder terminals within 20W/5sec or 260°/3sec without exerting external force to the terminals. Use a non-corrosive resin liquid flux.
6. The operating voltage for LED units represents a complete DC value. When using a pulsing voltage, such a full-wave rectification, keep peak currents within the forward current I_f . Peak currents exceeding I_f may shorten the life of the LED lamp.
7. To avoid a short circuit, never connect NO and NC contacts to different voltages or power sources.
8. Optimum performance of TW and TWTD illuminated pushbuttons, selector switches, and pilot lights is obtained with IDEC LED and incandescent lamps.
9. For maximum life of incandescent lamps (approximately 2000 hours), use within the rated operating voltage. If it is necessary to use a higher voltage, keeping ambient temperature below 30°C (86°F) will help prolong the life of an incandescent lamp.

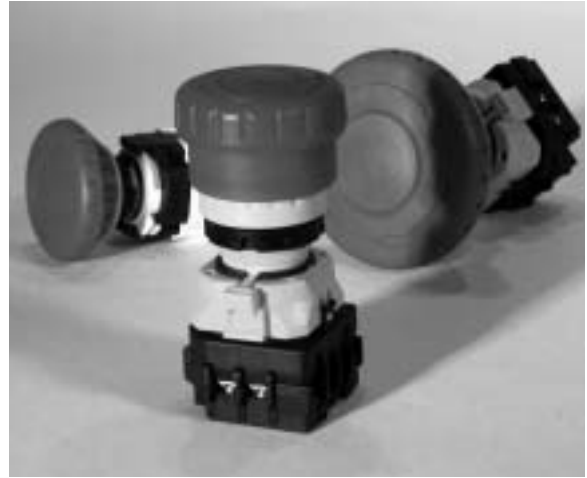


If excessive voltage is applied (over 50V), the lamp may blow and the lens holder may pop out.

16mm XA & 22mm XW E-Stops

Key features of the XA and XW E-Stops include:

- Lead-free (RoHS compliant)
- The depth behind the panel is only 48.7mm for 4 contacts (XW Series)
- IDEC's original "Safe Break Action" ensures the contacts open if the contact block is separated from the operator
- Pushlock Reset and Push-Pull in the same switch
- 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 IP65 (IEC60529)
- Screw terminal is finger-safe (IP20)
- Two button sizes: 40mm and 60mm (XW Series)
- Rated Insulation Voltage - 16mm 300V, 22mm 250V
- Rated Thermal Current 5A
- UL, c-UL Listed, CE marked (XA Series UL recognized)



A1
Switches & Pilot Devices



XA & XW Series, The Safe Break Action E-Stops!

If the E-Stop is installed incorrectly or shifts in shipment, the contacts and switch can separate, which cause the NC contacts to remain closed during an emergency and the machine to continue running!



OR





With IDEC's revolutionary "Safe Break Action," the NC contacts will automatically open when the contacts are removed from the operator. This feature places the machine in a non-operational state.


| | | XA | XW | |
|------------------------------------|--------------------------------------|---|--|--|
| Specifications | Conforming to Standards | IEC60947-5-1, EN60947-5-1, IEC60947-5-5, EN60947-5-5, JIS C8201-5-1, UL508, CSA C22.2 No.14 | | |
| | Standard Operating Conditions | Operating Temperature | Non-illuminated: -25 to +60°C Without Freezing Illuminated: -25 to +55°C Without Freezing | |
| | | Operating Humidity | 45 to 85%RH Without Condensing | |
| | | Storage Temperature | -45 to +80°C | |
| | Operating Force | Pushlock: 10.5N, Pull Reset: 10N, Turn Reset: 0.16N-m | Pushlock: 32N, Pull Reset: 21N, Turn Reset: 0.27N-m | |
| | Minimum Force to Latch | 60N | 80N | |
| | Maximum Travel to Latch | | 4.0mm | |
| | Maximum Travel | | 4.5mm | |
| | Shock Resistance | | Operating Extremes: 150m/s ² (15G) Damage Limits: 1000m/s ² (100 G) | |
| | Vibration Resistance | | 10 to 500Hz, Amplitude 0.35mm Acceleration 50m/s ² (5G) 10 to 500Hz, Amplitude 0.35mm Acceleration 50m/s ² (5G) | |
| | Life | Mechanical | 250,000 Minimum | |
| | | Electrical | 100,000 Minimum 250,000 or more (24V AC/DC 100mA) | |
| | Degree of Protection | | IP65 (IEC60529) | |
| | Short-Circuit Protection | | 250V/10A Fuse (Type aM IEC60269-1/IEC60269-2) | |
| Terminal Shape | | Solder Terminal, PCB Terminal | M3 Screw Terminal | |
| Applicable Wire Size | | Solder/PCB Terminal: 1.25mm ² Maximum (AWG 16 Maximum) | Screw Terminal: 0.75 to 1.25mm ² (AWG 18 to 16) | |
| Soldering | | 20W/5sec Maximum, 260°C/3sec Maximum | — | |
| Recommended Terminal Torque | | — | 0.6 to 1.0N-m | |
| Weight (Approx.) | | 40mm Button: 28 grams | 40mm Button: 72 grams, 60mm Button: 81 grams | |

XA & XW Series (assembled)

Part Numbers: 16mm XA Mushroom Button E-Stop

| Style | Terminal | Contacts | Part Number |
|--|------------------|-----------|---------------|
| 40mm Mushroom  | PCB Terminals | 1NO - 1NC | XA1E-BV411V-R |
| | | 2NC | XA1E-BV402V-R |
| | | 1NO-3NC | XA1E-BV413V-R |
| | | 4NC | XA1E-BV404V-R |
| 40mm Mushroom  | Solder Terminals | 1NO - 1NC | XA1E-BV411-R |
| | | 2NC | XA1E-BV402-R |
| | | 1NO-3NC | XA1E-BV413-R |
| | | 4NC | XA1E-BV404-R |


Part Numbers: 22mm XW LED Illuminated Mushroom Button E-Stop

| Style | Terminal | Contacts | Part Number |
|--|-----------------|-----------|-----------------|
| 40mm Mushroom  | Screw Terminals | 1NO - 1NC | XW1E-LV411Q4M-R |
| | | 2NC | XW1E-LV402Q4M-R |
| | | 1NO-3NC | XW1E-LV413Q4M-R |
| | | 4NC | XW1E-LV404Q4M-R |




Illumination is with built-in 24V AC/DC LED.

Part Numbers: 22mm XW Mushroom Button E-Stops

| Style | Terminal | Contacts | Part Number |
|--|-----------------|-----------|---------------|
| 40mm Mushroom  | Screw Terminals | 1NO - 1NC | XW1E-BV411M-R |
| | | 2NC | XW1E-BV402M-R |
| | | 1NO-3NC | XW1E-BV413M-R |
| | | 4NC | XW1E-BV404M-R |

Part Numbers: 22mm XW Jumbo Mushroom Button E-Stops



| Style | Terminal | Contacts | Part Number |
|--|-----------------|-----------|---------------|
| 60mm Mushroom  | Screw Terminals | 1NO - 1NC | XW1E-BV511M-R |
| | | 2NC | XW1E-BV502M-R |
| | | 1NO-3NC | XW1E-BV513M-R |
| | | 4NC | XW1E-BV504M-R |

A1

Switches & Pilot Devices

Accessories

Part Numbers: Nameplates

| HWAV-Yellow Plastic | | | | |
|---|-----------------------------|-----------|------|------|
|  | | | | |
|  | | | | |
| Style | Part Number | ID | OD | |
| XA | 16mm Blank ø60mm | HAAV4-0 | 16mm | 60mm |
| | 16mm "Emergency Stop" ø60mm | HAAV4-27* | 16mm | 60mm |
| XW 40mm | 22mm Blank ø60mm | HWAV-0 | 22mm | 60mm |
| | 22mm "Emergency Stop" ø60mm | HWAV-27* | 22mm | 60mm |
| XW 60mm | 22mm Blank ø80mm | HWAV5-0 | 22mm | 80mm |
| | 22mm "Emergency Stop" ø80mm | HWAV5-27* | 22mm | 80mm |



*Comes marked "Emergency Stop" as shown.

Part Numbers: 22mm E-Stop Shrouds

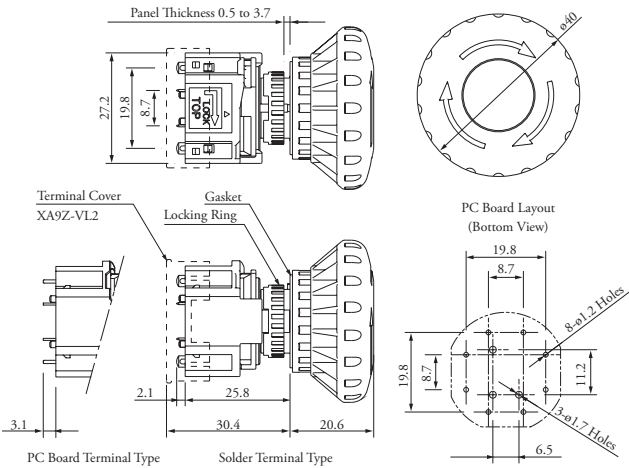
| Style | Part Number |
|---|-----------------|
|  | HW9Z-KG1-TK2120 |
|  | HW9Z-KG2-TK2120 |



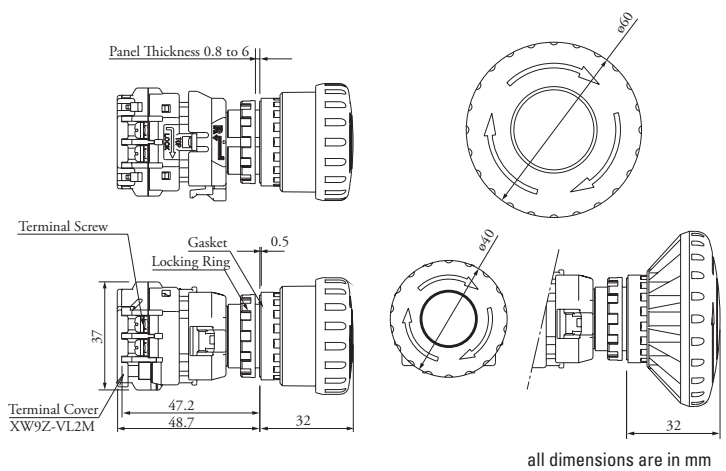
1. Not applicable for 60mm mushroom.
2. Applicable for XW (22mm) series only.

Dimensions

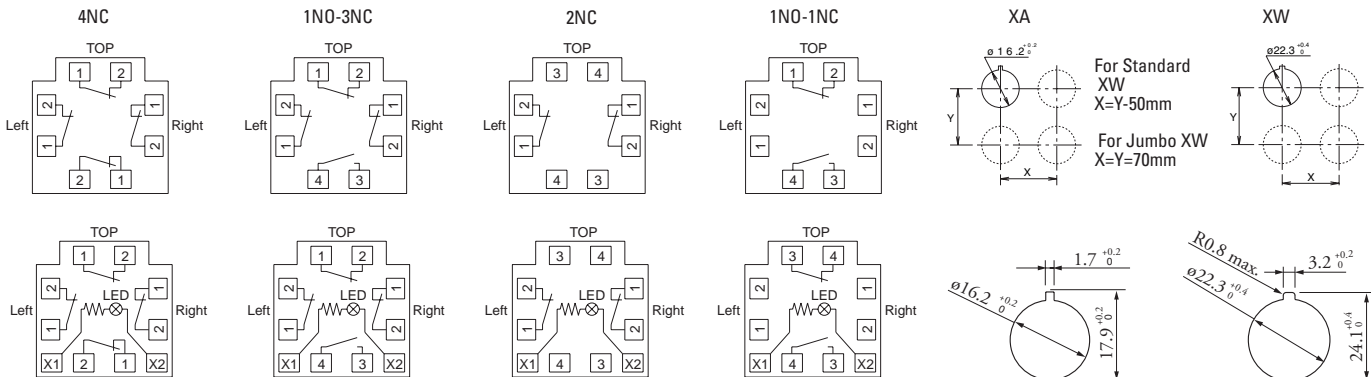
XA Dimensions



XW Dimensions



Connection Diagrams & Panel Cutouts



A6 Series — Miniature Switches and Pilot Devices: 16mm

Key features of the A6 series switches and pilot lights include:

- 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



A2

Switches & Pilot Devices



UL Recognized
File No. E55996



CSA Certified
File No. LR21451



Certificate No.
2030010305027380

| | | | | | |
|------------------------------|--|--|--|--------------------|--------------------|
| Specifications | Degree of Protection | IP40: Dustproof IP65 Waterproof/Oiltight/Corrosion Resistant | | | |
| | Contact Configuration | SPDT, DPDT | | | |
| | Maximum Voltage | 250V AC/DC | | | |
| | Thermal Current | 3A | | | |
| | Minimum Applicable Load | 5V AC/DC, 1mA (subject to operating conditions) | | | |
| | Contact Material | Gold-clad silver | | | |
| | Terminal Style | .110" Solder/ Quick Connect | | | |
| | Operating Temperature | LED Type: -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 ² (approx. 50G) Operating extremes: 200m/sec ² (approx. 20G) | | | |
| | Electrical Life | 100,000 operations minimum (at full rated load) | | | |
| Mechanical Life | Maintained: 100,000 operations minimum Momentary: 1,000,000 operations minimum Selector/Keylock: 250,000 operations minimum | | | | |
| Dielectric Strength | Switch Unit: 2,000VAC, 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. Illumination Unit: 2,000VAC, 1 min. between live part/ground | | | | |
| Soldering Temperature | 20W/5 seconds or 260°C/3 seconds | | | | |
| Contact Ratings | Operating Voltage | 24V | 120V | 240V | |
| | 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 | DC: A, R, W, Y: 6mA G, S: 5mA AC: A, R, W, Y: 8mA G, S: 7mA | DC: 8mA AC: 9mA | DC: 8mA AC: 9mA |







1. AC Inductive Load, PF = 0.6 – 0.7; DC Inductive Load, L/R = 7ms.
2. Minimum applicable load (reference value) is 5V AC/DC/1mA (applicable range is subject to the operating conditions and load).
3. LED lamp contains a built-in current-limiting resistor and a protection diode.
4. LED's don't "burn out." Luminance is reduced to 50% of initial intensity after being lit for 50,000 hours continuously.

A2

Switches & Pilot Devices

AB6 Non-Illuminated Pushbuttons (Assembled)

Part Numbers: Non-Illuminated Pushbuttons

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


① Button Color Code

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




- In place of ①, specify Button Color Code from the table at the right.
- To order as sub-assembled, see page A2-19.
- For accessories, see page A2-25.
- For dimensions, see page A2-27.

Part Numbers: AB6-V Pushlock Turn Reset

| Shape | Operation | Contact | Part Number | | Remarks |
|--|------------------------|--------------|------------------------|--------------------------|---|
| | | | Dustproof (IP40) | Oiltight (IP65) | |
| 23.5mm Round Mushroom  | Pushlock Turn Reset | SPDT DPDT | AB6M-V1-R AB6M-V2-R | AB6M-V1P-R AB6M-V2P-R | 1. Button available in red only. 2. Replacement button: order AB6M-V-R |


Part Numbers: Buzzer

| Style | Shape | Voltage | Part Number |
|---|--------------|---------|-------------|
|  | Round (18mm) | 12V DC | UZ6-11 |
| | | 24V DC | UZ6-12 |

AB6 Non-Illuminated Pushbuttons (Sub-Assembled)



Part Numbers: Operators

| Style | Contact | Operator | Part Number | | |
|--|---------|------------|-------------|-----------|-------------|
| | | | Round | Square | Rectangular |
| Non-Illuminated Pushbuttons  | 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 |

Part Numbers: Buttons/Lens

| Description | Part Number | |
|---|------------------|-----------------|
| | Button | |
| | Dustproof (IP40) | Oiltight (IP65) |
| Round  | AB6M-BK1-① | AB6M-BK2-① |
| Square  | AB6Q-BK1① | AB6Q-BK2-① |
| Rectangular  | AB6H-BK1-① | AB6H-BK2-① |
| Round Oversize  | – | AB6M-BK2-M① |
| Square Oversize  | – | AB6Q-BK2-Q① |
| Rectangular Oversize  | – | AB6Q-BK2-H① |

① Button Color Code

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









- In place of ①, specify Button Color Code from table on right.
- Buttons which are rated IP65 include a waterproof rubber gasket.
- For accessories, see page A2-25.

AL6 Illuminated Pushbuttons (Assembled)

Part Numbers: LED Illuminated Pushbuttons

A2

Switches & Pilot Devices

| Description | Style | Voltage | Contact | Part Numbers | | | |
|---------------|--|----------------|--------------|--------------------------|------------------------------|--------------------------|------------------------------|
| | | | | Momentary | | Maintained (Latching) | |
| | | | | Dustproof (IP40) | Oiltight (IP65) | Dustproof (IP40) | Oiltight (IP65) |
| Standard Lens | Round 18mm diameter  | 24V AC/DC ±10% | SPDT DPDT | AL6M-M14-② AL6M-M24-② | AL6M-M14P-② AL6M-M24P-② | AL6M-A14-② AL6M-A24-② | AL6M-A14P-② AL6M-A24P-② |
| | Square 18mm  | 24V AC/DC ±10% | SPDT DPDT | AL6Q-M14-② AL6Q-M24-② | AL6Q-M14P-② AL6Q-M24P-② | AL6Q-A14-② AL6Q-A24-② | AL6Q-A14P-② AL6Q-A24P-② |
| | Rectangular 18mm x 24mm  | 24V AC/DC ±10% | SPDT DPDT | AL6H-M14-② AL6H-M24-② | AL6H-M14P-② AL6H-M24P-② | AL6H-A14-② AL6H-A24-② | AL6H-A14P-② AL6H-A24P-② |
| Oversize Lens | Round 24mm diameter  | 24V AC/DC ±10% | SPDT DPDT | - | AL6M-M14P-M② AL6M-M24P-M② | - | AL6M-A14P-M② AL6M-A24P-M② |
| | Square 24 mm  | 24V AC/DC ±10% | SPDT DPDT | - | AL6Q-M14P-Q② AL6Q-M24P-Q② | - | AL6Q-A14P-Q② AL6Q-A24P-Q② |
| | Rectangular 18mm x 24mm  | 24V AC/DC ±10% | SPDT DPDT | - | AL6Q-M14P-H② AL6Q-M24P-H② | - | AL6Q-A14P-H② AL6Q-A24P-H② |



- In place of ②, specify Lens/LED Color Code from table below.
- Lamps also available in 5V DC, 6V AC/DC or 12 V AC/DC, change "4" using voltage/lamp codes (ie AL6M-M13-② uses 12V AC/DC LED).
- LED lamp is included in unit and contains a current-limiting resistor and a protection diode. (External resistor not required.)
- To order as sub-assembled, see page A2-21.
- For accessories, see page A2-25.
- For dimensions, see page A2-27.

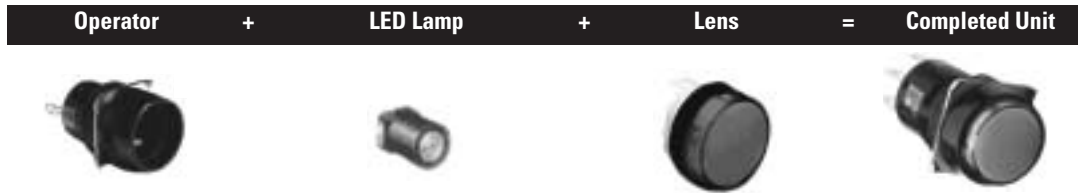
② Lens/LED Color Code

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


Voltage Code

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






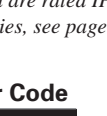


AL6 Illuminated Pushbuttons (Sub-Assembled)



Part Numbers: Operators

| Style | Contact | Operator | Part Number | | |
|--|---------|------------|-------------|-----------|-------------|
| | | | Round | Square | Rectangular |
| AL6 Illuminated Pushbuttons  | 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 |

Part Numbers: Lenses

| Unit | Part Number | | |
|----------------------|---|---|--|
| Degree of Protection | Dustproof (IP40) | Oiltight (IP65) | |
| Size | Standard | Standard | Oversize |
| Round | AL6M-LK1-②  | AL6M-LK2-②  | AL6M-LK2-M②  |
| | AL6Q-LK1-②  | AL6Q-LK2-②  | AL6Q-LK2-Q②  |
| Square | AL6M-LK1-②  | AL6M-LK2-②  | AL6Q-LK2-H②  |
| | AL6Q-LK1-②  | AL6Q-LK2-②  | AL6Q-LK2-Q②  |
| Rectangular | AL6M-LK1-②  | AL6M-LK2-②  | AL6Q-LK2-H②  |
| | AL6Q-LK1-②  | AL6Q-LK2-②  | AL6Q-LK2-Q②  |




- In place of ②, specify Lens Color Code from table below.
- Lenses which are rated IP65 include a waterproof rubber gasket.
- For accessories, see page A2-25.

②Lens/LED Color Code

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

Part Numbers: LED Lamps

| Appearance | Rated Voltage | Part Number |
|--|---------------|-------------|
|  | 5V DC | LATD-5② |
| | 6V AC/DC | LATD-6② |
| | 12V AC/DC | LATD-1② |
| | 24V AC/DC | LATD-2② |






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

AL6 Pilot Lights (Assembled)

Part Numbers: LED Pilot Lights

A2

Switches & Pilot Devices

| Description | Voltage | Part Number | |
|---|-----------|------------------|-----------------|
| | | Dustproof (IP40) | Oiltight (IP65) |
| Round (18mm Lens)  | 24V AC/DC | AL6M-P4-② | AL6M-P4P-② |
| Square (18mm Lens)  | 24V AC/DC | AL6Q-P4-② | AL6Q-P4P-② |
| Rectangular (18mm x 24mm Lens)  | 24V AC/DC | AL6H-P4-② | AL6H-P4P-② |

② Lens/LED Color Code

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

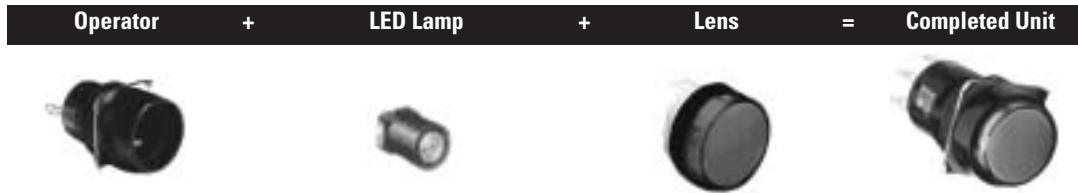


1. In place of ②, specify LED/Lens Color Code.
2. Lamps also available in 5V DC, 6V AC/DC or 12 V AC/DC, change "4" using voltage codes (ie AL6M-P3-② uses 12V AC/DC lamp).
3. LED Lamp is included and contains built-in current limiting resistor and reverse polarity protection diode. (no external resistor required)
4. To order sub-assembled, see page A2-23.
5. For accessories, see page A2-25.
6. For dimensions, see page A2-27.
7. For one piece pilot lights and/or dome lens pilot lights, see page A5-210.


Voltage Code

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







AL6 Pilot Lights (Sub-Assembled)



Part Numbers: Operators

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

Part Numbers: Lenses

| Unit | Pilot Lights | |
|-------------|---|---|
| | Dustproof IP40 | Oiltight IP65 |
| Round | AL6M-LK1-②  | AL6M-LK3-②  |
| Square | AL6Q-LK1-②  | AL6Q-LK3-②  |
| Rectangular | AL6H-LK1-②  | AL6H-LK3-②  |




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 A2-25.

②Lens/LED Color Code

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

Part Numbers: LED Lamps

























| Appearance | Rated Voltage | Part Number |
|--|---------------|-------------|
|  | 5V DC | LATD-5② |
| | 6V AC/DC | LATD-6② |
| | 12V AC/DC | LATD-1② |
| | 24V AC/DC | LATD-2② |





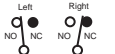


In place of ②, specify LED Color Code from table at left.

AS6 Selector and Keylock Switches (Assembled)

Part Numbers: AS6 Selector Switches and Keylock Switches (2- & 3- Position)

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

| Contacts | Operator Position and 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) |



- For more information on these options, contact your IDEC representative.
- Key cannot be removed in a spring return position.



- In place of ①, specify Key Retention Code. See table on right.
- All models are IP65 and DPDT.
- Available as assembled units only.
- For accessories, see page A2-25.
- For dimensions, see page A2-27.

Accessories — A Series: 16mm

| 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 rated. 90 degrees opening maintained | Round/Square | AL-K6 |
| | | | Rectangular | AL-KH6 |
| | | Prevents inadvertent switch operation. IP65 oiltight rated 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 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 terminal | All 5/8" (16mm) units | AL-C6 |
| | | Plug-on terminal adaptor with PCB terminal | | AL-C6V |
| Mounting Hole Plug | | Fills unused panel cutouts. Made of nitrile rubber. Push-in installation from front of panel. IP65 (oiltight) rated. | Rubber | AL-B6 |
| | | Fills unused panel cutouts. Made of aluminum. Screw-on locking ring from inside of panel. IP65 (oiltight) rated. | Aluminum | AL-BM6 |
| Replacement LED Lamps | | LED with built in current limiting resistor (with all illuminated assemblies). | 5V DC | LATD-5② |
| | | | 6V AC/DC | LATD-6② |
| | | | 12V AC/DC | LATD-1② |
| | | | 24V AC/DC | LATD-2② |
| 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). All key switches use same standard key. | All key selectors | AS6-SK |

A2
Switches & Pilot Devices



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

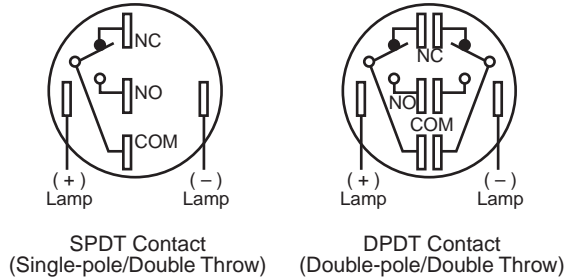
Schematics — A Series: 5/8" (16mm)

Switches & Pilot Devices

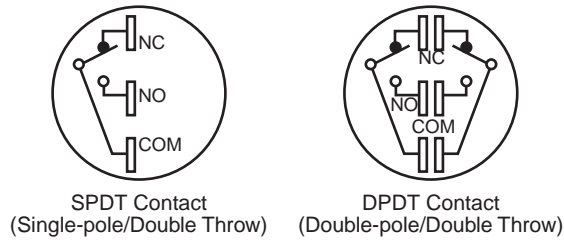
A2

Terminal Arrangement (Top View)

Illuminated Pushbuttons



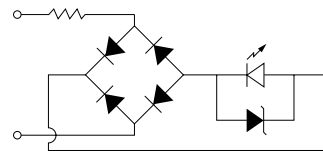
Non-illuminated Pushbuttons and Selector Switches



IDEC's Superbright LED

Internal Circuit

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

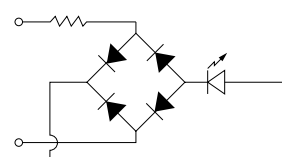


- LED Chip
- Protective Diode
- Zener Diode

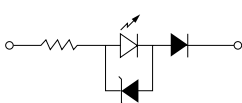
LATD-5 (ARWY)



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

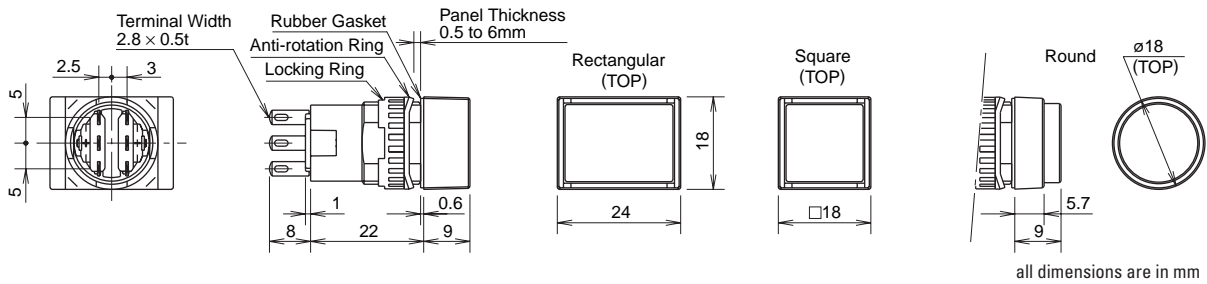


LATD-5 (GS)

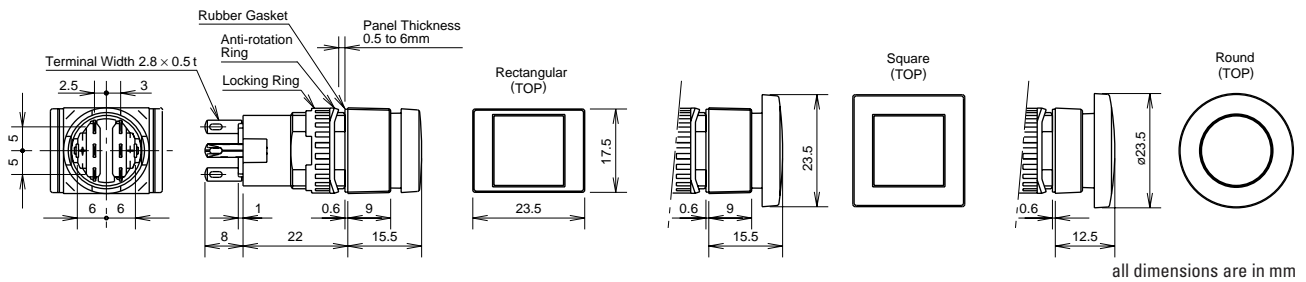


Dimensions — A Series: 5/8" (16mm)

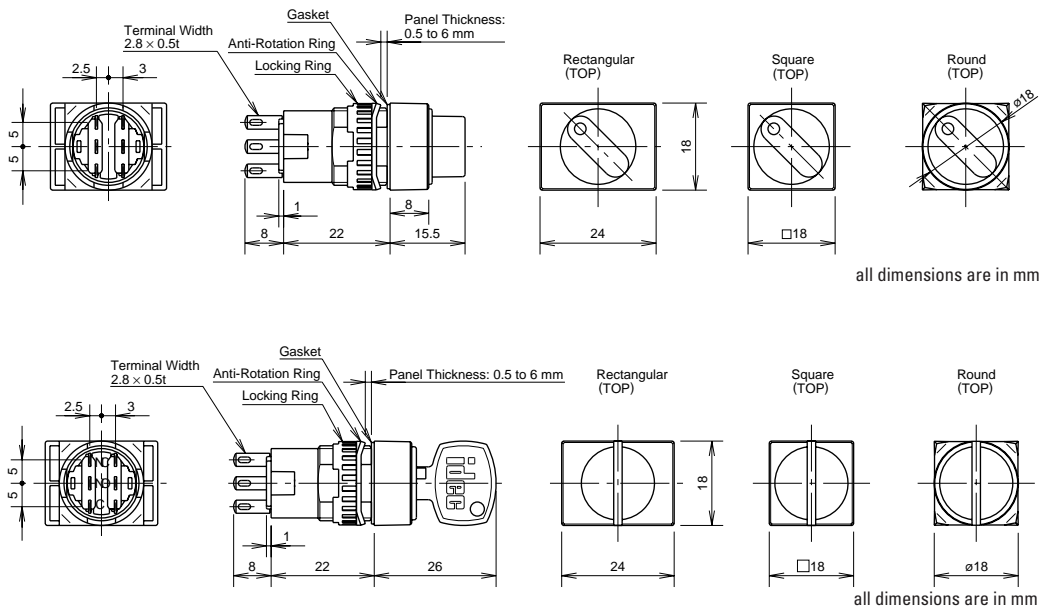
Pushbuttons, Ø 5/8" (16mm)



Large Size Lens

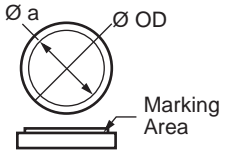
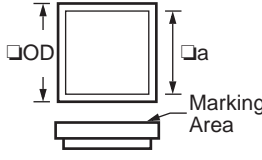
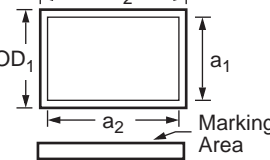


Selector Switches, Ø 5/8" (16mm)



Dimensions con't

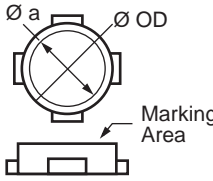
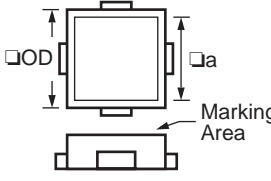
Marking Plates for Pushbuttons with Standard Size Lens

| Style | Round—AL6M-W | Square—AL6Q-W | Rectangular—AL6H-W |
|----------------------|---|---|--|
| Dimensions |  |  |  |
| Ø 5/8" (16mm) | | | |
| Outside (OD) | Ø 0.538" (13.8mm) | □0.538" (13.8mm) | 0.538" x 0.772" (13.8 x 19.8mm) |
| Marking Area (a) | Ø 0.468" (12mm) | □0.468" (12mm) | 0.468" x 0.702" (12 x 18mm) |



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

Marking Plates for Pushbutton 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 Lens 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.

Installation

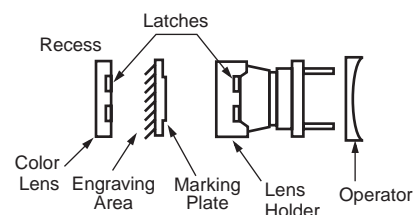
For illuminated and non-illuminated pushbuttons:

1. Insert marking plate inside lens in correct direction.
(For non-illuminated, install marking plate when replacing button).
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.

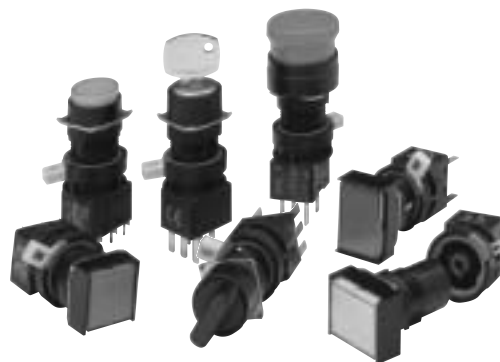
Ø 5/8" (16mm)



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



A2

Switches & Pilot Devices



UL Recognized
File No. E55996



CSA Certified
File No. LR21451











Registration No. R9551089 (E-stops)
Registration No. J9551458 (all other switches)
Registration No. J9650511 (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 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) Damage limit: 1000 m/sec ² (approximately 100G) | | | | | | |
| | Mechanical Life | Momentary pushbuttons 2,000,000 operations minimum 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 between terminals of different poles: 2500 volt AC, 1 minute between terminals of same pole: 1000 volt AC, 1 minute Illumination unit: between live part and ground: 2500 volt AC, 1 minute | | | | | | |
| | Insulation Resistance | 100 MΩ minimum (using 500V DC megger) | | | | | | |
| | Rated Insulation Voltage | 250 V AC/DC | | | | | | |
| | Rated Thermal Current | Gold Contacts (pcb): 3A Silver Contacts (solder): 5A | | | | | | |
| | Contact Resistance | 50 Ω maximum initial value | | | | | | |
| | Rated Operating Current | | Silver Contacts (Solder Terminals) | | | | Gold Clad Contacts (PCB terminals) | |
| | | | 30V | 125V | 250V | | 30V | 125V |
| | AC resistive | - | 3A | 2A | AC inductive | - | 0.1A | |
| | AC inductive | - | 2A | 1.5A | DC resistive | 0.1A | - | |
| | DC resistive | 2A | 0.4A | - | DC inductive | 1A | 0.2A | |
| | DC inductive | 1A | 0.2A | - | | | | |
| | Minimum Recommended Load (reference value for silver contacts) | 5 VAC/DC, 1mA | | | | | | |
| | Terminal Style | 0.110" Solder Tab /PCB | | | | | | |
| | Contact Form | Snap Action, Double Throw | | | | | | |
| | Contact Material | Solder Tab: Pure Silver /PCB thermal Gold Plated Silver | | | | | | |
| | Electrical Life (at full load) | Momentary pushbuttons: 100,000 operations minimum (1800 operations / hour) All others: 100,000 operations minimum (1200 operations / hour) | | | | | | |
| Lamp Ratings | Lamp Current Draw | 5V DC LED: 8mA 6V LED: 7mA 12V LED: 8mA 24V LED: 8mA 6V incandescent: 100 mA 12V incandescent: 50 mA 24V incandescent: 25 mA | | | | | | |
| | Lamp Life | Incandescent: 2000 hours./LED: 50,000 hours. (on pure DC, half-life intensity) | | | | | | |
| 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 AC: 20mA | | | | | | |
| | Life | 1000 hrs. minimum | | | | | | |
| | Insulation Voltage | 60V AC/DC | | | | | | |
| | Operating Temperature | -20 to 55 C (no freezing), 45 to 85% rh | | | | | | |

Non-Illuminated Pushbuttons (Assembled)

Part Numbers: Non-Illuminated Pushbuttons

| Style | Operation | Contact | Terminal Style | |
|---|------------|--------------|----------------------------|------------------------------|
| | | | Solder Tab | PCB |
| Round  | Momentary | SPDT DPDT | LA1B-M1C5-① LA1B-M1C6-① | LA1B-M1C1V-① LA1B-M1C2V-① |
| | Maintained | SPDT DPDT | LA1B-A1C5-① LA1B-A1C6-① | LA1B-A1C1V-① LA1B-A1C2V-① |
| Square  | Momentary | SPDT DPDT | LA2B-M1C5-① LA2B-M1C6-① | LA2B-M1C1V-① LA2B-M1C2V-① |
| | Maintained | SPDT DPDT | LA2B-A1C5-① LA2B-A1C6-① | LA2B-A1C1V-① LA2B-A1C2V-① |
| Rectangular  | Momentary | SPDT DPDT | LA3B-M1C5-① LA3B-M1C6-① | LA3B-M1C1V-① LA3B-M1C2V-① |
| | Maintained | SPDT DPDT | LA3B-A1C5-① LA3B-A1C6-① | LA3B-A1C1V-① LA3B-A1C2V-① |
| Oversize Round Flush  | Momentary | SPDT DPDT | HA1B-M1C5-① HA1B-M1C6-① | HA1B-M1C1V-① HA1B-M1C2V-① |
| | Maintained | SPDT DPDT | HA1B-A1C5-① HA1B-A1C6-① | HA1B-A1C1V-① HA1B-A1C2V-① |
| Oversize Round Extended  | Momentary | SPDT DPDT | HA1B-M2C5-① HA1B-M2C6-① | HA1B-M2C1V-① HA1B-M2C2V-① |
| | Maintained | SPDT DPDT | HA1B-A2C5-① HA1B-A2C6-① | HA1B-A2C1V-① HA1B-A2C2V-① |
| Oversize Square Flush  | Momentary | SPDT DPDT | HA2B-M1C5-① HA2B-M1C6-① | HA2B-M1C1V-① HA2B-M1C2V-① |
| | Maintained | SPDT DPDT | HA2B-A1C5-① HA2B-A1C6-① | HA2B-A1C1V-① HA2B-A1C2V-① |
| Oversize Square Extended  | Momentary | SPDT DPDT | HA2B-M2C5-① HA2B-M2C6-① | HA2B-M2C1V-① HA2B-M2C2V-① |
| | Maintained | SPDT DPDT | HA2B-A2C5-① HA2B-A2C6-① | HA2B-A2C1V-① HA2B-A2C2V-① |
| Mushroom  | Momentary | SPDT DPDT | HA1B-M3C5-① HA1B-M3C6-① | HA1B-M3C1V-① HA1B-M3C2V-① |
| | Maintained | SPDT DPDT | HA1B-A3C5-① HA1B-A3C6-① | HA1B-A3C1V-① HA1B-A3C2V-① |

Button Color Codes

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

A2

Switches & Pilot Devices



- In place of ① specify Button Color Code from table on right.
- 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.)
- 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




A2

Switches & Pilot Devices


Part Numbers: 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 |


Part Numbers: 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 |

Part Numbers: Contacts

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

Part Number: 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 |



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

HA1B/HA1E E-Stop

Miniature Switches and Pilot Devices: 5/8" (16mm)

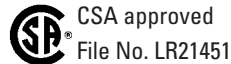
Key features of HA1B/HA1E Push lock Turn Reset include:

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



A2

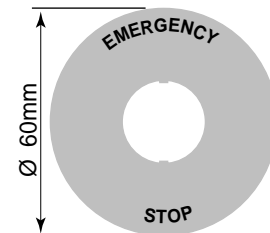
Switches & Pilot Devices



| | | |
|---|--|---|
| Specifications | Contact Ratings | 24VDC/2A |
| | | 120VAC/3A |
| | Contact Form | 1 or 2 form B (2-SPST-NC) |
| | Termination | PCB or Solder Terminal |
| | Contact Material | Silver |
| | Applicable Standards | EN60947-5-1, UL-508, CSA 22.2. No. 14 |
| | Rated Insulation Voltage | 250V |
| | Degree of Protection | IP65, when mounted in an enclosure |
| | Conditional Short-Circuit Current & Short-Circuit Protective Device | 50 A (at 250V) 10A 250V Fuse, operation class aM according to IEC269-1 and IEC269-2 |
| | Positive Opening Operation | Positive opening travel |
| 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 | |

Part Numbers: Nameplates

HAAV-Yellow Plastic



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

Part Numbers: 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) DPST-NC (2 form B) | HA1E-V2S1R HA1E-V2S2R | - |

Button is non-removable, available in red and as complete assembled unit only.

Part Number: 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 |

Frequency: 2kHz ± 500 Hz
Amplitude: 80db at 0.1m
Beeping: Adjustable from steady tone to 600 beeps per minute.

Pilot Lights (Assembled)

A2 Switches & Pilot Devices

Part Numbers: Pilot Lights (LED)

| Style | Voltage | Terminal Style | |
|--|---|----------------------------|------------------------------|
| | | Solder Tab | PCB |
| Round  | 24V AC/DC LED 24VAC/DC Incandescent | LA1P-1C04-② LA1P-1C07-② | LA1P-1C04V-② LA1P-1C07V-② |
| Square  | 24V AC/DC LED 24V AC/DC Incandescent | LA2P-1C04-② LA2P-1C07-② | LA2P-1C04V-② LA2P-1C07V-② |
| Rectangle  | 24V AC/DC LED 24V AC/DC Incandescent | LA3P-1C04-② LA3P-1C07-② | LA3P-1C04V-② LA3P-1C07V-② |
| Oversize Round  | 24V AC/DC LED 24V AC/DC Incandescent | HA1P-1C04-② HA1P-1C07-② | HA1P-1C04V-② HA1P-1C07V-② |
| Oversize Square  | 24V AC/DC LED 24V AC/DC Incandescent | HA2P-1C04-② HA2P-1C07-② | HA2P-1C04V-② HA2P-1C07V-② |
| Oversize Round Unibody  | 24V AC/DC LED 24V AC/DC Incandescent | HA1P-14-② HA1P-17-② | - |
| Oversize Square Unibody  | 24V AC/DC LED 24V AC/DC Incandescent | HA2P-14-② HA2P-17-② | - |

② Lens/LED Color Codes

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

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 |



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

Pilot Lights (Sub-Assembled)

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



A2

Switches & Pilot Devices

Part Numbers: 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 |

Part Numbers: 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.

Part Numbers: 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.

Part Numbers: Terminals

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

Not required for unibody models.

Part Number: Lamp Holder

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

Part Number: 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 |

Illuminated Pushbuttons (Assembled)

Part Numbers: Illuminated Pushbuttons

| Style | Operation | Lamp Voltage | Contact | Terminal Style | | |
|--|---|---------------|---------------|----------------|---------------|---------------|
| | | | | Solder Tab | PCB | |
|  Round | Momentary | 24V AC/DC LED | SPDT | LA1L-M1C54-② | LA1L-M1C14V-② | |
| | | Incandescent | DPDT | LA1L-M1C64-② | LA1L-M1C24V-② | |
| | Maintained | 24V AC/DC LED | SPDT | LA1L-A1C54-② | LA1L-A1C14V-② | |
| | | Incandescent | DPDT | LA1L-A1C64-② | LA1L-A1C24V-② | |
| |  Square | Momentary | 24V AC/DC LED | SPDT | LA2L-M1C54-② | LA2L-M1C14V-② |
| | | | Incandescent | DPDT | LA2L-M1C64-② | LA2L-M1C24V-② |
| Maintained | | 24V AC/DC LED | SPDT | LA2L-A1C54-② | LA2L-A1C14V-② | |
| | | Incandescent | DPDT | LA2L-A1C64-② | LA2L-A1C24V-② | |
|  Rectangular | | Momentary | 24V AC/DC LED | SPDT | LA3L-M1C54-② | LA3L-M1C14V-② |
| | | | Incandescent | DPDT | LA3L-M1C64-② | LA3L-M1C24V-② |
| | Maintained | 24V AC/DC LED | SPDT | LA3L-A1C54-② | LA3L-A1C14V-② | |
| | | Incandescent | DPDT | LA3L-A1C64-② | LA3L-A1C24V-② | |
| |  Oversize Round | Momentary | 24V AC/DC LED | SPDT | HA1L-M1C54-② | HA1L-M1C14V-② |
| | | | Incandescent | DPDT | HA1L-M1C64-② | HA1L-M1C24V-② |
| Maintained | | 24V AC/DC LED | SPDT | HA1L-A1C54-② | HA1L-A1C14V-② | |
| | | Incandescent | DPDT | HA1L-A1C64-② | HA1L-A1C24V-② | |
|  Oversize Square | | Momentary | 24V AC/DC LED | SPDT | HA2L-M1C54-② | HA2L-M1C14V-② |
| | | | Incandescent | DPDT | HA2L-M1C64-② | HA2L-M1C24V-② |
| | Maintained | 24V AC/DC LED | SPDT | HA2L-A1C54-② | HA2L-A1C14V-② | |
| | | Incandescent | DPDT | HA2L-A1C64-② | HA2L-A1C24V-② | |
| |  Mushroom | Momentary | 24V AC/DC LED | SPDT | HA1L-M3C54-② | HA1L-M3C14V-② |
| | | | Incandescent | DPDT | HA1L-M3C64-② | HA1L-M3C24V-② |
| Maintained | | 24V AC/DC LED | SPDT | HA1L-A3C54-② | HA1L-A3C14V-② | |
| | | Incandescent | DPDT | HA1L-A3C64-② | HA1L-A3C24V-② | |

② Lens Color Codes

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

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 color code from table at right.
- 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 LA1P-1C03-② uses 12V AC/DC LED).
- 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).

Illuminated Pushbuttons (Sub-Assembled)

A2

Switches & Pilot Devices

Contacts + Safety Lever Lock + Lamp Holder + Lamp + Operator + Lens = Completed Unit



Part Numbers: 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 |



Part Numbers: 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 from table.



Part Numbers: Lamps

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




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


Part Numbers: Contacts

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

Part Number: Lamp Holder

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

Part Number: 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)

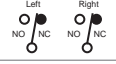
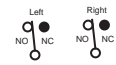
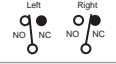
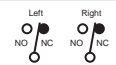
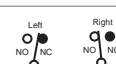
Part Numbers: Selector Switches

A2

Switches & Pilot Devices

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

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)

Contacts + Safety Lever Lock + Operator = Complete Part





A2

Switches & Pilot Devices

Part Numbers: Operators

| Style | Position | Function | Part Number |
|---|----------|---|---|
|  Round | 2 | Maintained Spring from right | LA1S-2Y LA1S-21Y |
| | 3 | Maintained Spring from right Spring from left Spring from both | LA1S-3Y LA1S-31Y LA1S-32Y LA1S-33Y |
|  Square | 2 | Maintained Spring from right | LA2S-2Y LA2S-21Y |
| | 3 | Maintained Spring from right Spring from left Spring from both | LA2S-3Y LA2S-31Y LA2S-32Y LA2S-33Y |
|  Rectangular | 2 | Maintained Spring from right | LA3S-2Y LA3S-21Y |
| | 3 | Maintained Spring from right Spring from left Spring from both | LA3S-3Y LA3S-31Y LA3S-32Y LA3S-33Y |
|  Oversize Round | 2 | Maintained Spring from right | HA1S-2Y HA1S-21Y |
| | 3 | Maintained Spring from right Spring from left Spring from both | HA1S-3Y HA1S-31Y HA1S-32Y HA1S-33Y |

Part Numbers: Contacts

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



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

Part Number: Safety Lever Lock

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

Key Switches (Assembled)

Part Numbers: Key Switches

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

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.



- In place of ③ specify Key Retention Code from next page.
- All assembled key switches 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 LA1K-2C2V③ becomes LA1K-2C6V③).

Switches & Pilot Devices

A2







Key Switches (Sub-Assembled)



A2

Switches & Pilot Devices

Part Numbers: Operators


| Style | Positions | Operation | Part Number |
|---|-----------|---|---|
|  Round | 2 | Maintained Spring from right | LA1K-2 ^③ LA1K-21B |
| | 3 | Maintained Spring from right Spring from left Spring from both | LA1K-3 ^③ LA1K-31 ^③ LA1K-32 ^③ LA1K-33D |
|  Square | 2 | Maintained Spring from right | LA2K-2 ^③ LA2K-21B |
| | 3 | Maintained Spring from right Spring from left Spring from both | LA2K-3 ^③ LA2K-31 ^③ LA2K-32 ^③ LA2K-33D |
|  Rectangular | 2 | Maintained Spring from right | LA3K-2 ^③ LA3K-21B |
| | 3 | Maintained Spring from right Spring from left Spring from both | LA3K-3 ^③ LA3K-31 ^③ LA3K-32 ^③ LA3K-33D |
|  Oversize Round | 2 | Maintained Spring from right | HA1K-2 ^③ HA1K-21B |
| | 3 | Maintained Spring from right Spring from left Spring from both | HA1K-3 ^③ HA1K-31 ^③ HA1K-32 ^③ HA1K-33D |



1. In place of ③ specify key removable code from table on right.

2. Operator includes two keys.

Part Numbers: Contacts

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



- All assembled selectors listed on previous page use DPDT contacts.
- SPDT contacts are for use on 2 position key switches only.

Part Number: 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

Part Numbers: Illuminated Selectors Switches

| Style | | | Contact | Voltage | Terminal Style | | |
|----------------|----------------|--------------------------|---------|---------|------------------------|------------------------------|--------------------------------|
| | | | | | Solder Tab | PCB | |
| Round | 90° 2-Position | Maintained | | DPDT | 24V LED 24V Incand. | LA1F-2C64-② LA1F-2C67-② | LA1F-2C24V-② LA1F-2C27V-② |
| | | Spring return from right | | DPDT | 24V LED 24V Incand. | LA1F-21C64-② LA1F-21C67-② | LA1F-21C24V-② LA1F-21C27V-② |
| | 45° 3-Position | Maintained | | DPDT | 24V LED 24V Incand. | LA1F-3C64-② LA1F-3C67-② | LA1F-3C24V-② LA1F-3C27V-② |
| | | Spring return from right | | DPDT | 24V LED 24V Incand. | LA1F-31C64-② LA1F-31C67-② | LA1F-31C24V-② LA1F-31C27V-② |
| | | Spring return from left | | DPDT | 24V LED 24V Incand. | LA1F-32C64-② LA1F-32C67-② | LA1F-32C24V-② LA1F-32C27V-② |
| | | 2-Way spring return | | DPDT | 24V LED 24V Incand. | LA1F-33C64-② LA1F-33C67-② | LA1F-33C24V-② LA1F-33C27V-② |
| Square | 90° 2-Position | Maintained | | DPDT | 24V LED 24V Incand. | LA2F-2C64-② LA2F-2C67-② | LA2F-2C24V-② LA2F-2C27V-② |
| | | Spring return from right | | DPDT | 24V LED 24V Incand. | LA2F-21C64-② LA2F-21C67-② | LA2F-21C24V-② LA2F-21C27V-② |
| | 45° 3-Position | Maintained | | DPDT | 24V LED 24V Incand. | LA2F-3C64-② LA2F-3C67-② | LA2F-3C24V-② LA2F-3C27V-② |
| | | Spring return from right | | DPDT | 24V LED 24V Incand. | LA2F-31C64-② LA2F-31C67-② | LA2F-31C24V-② LA2F-31C27V-② |
| | | Spring return from left | | DPDT | 24V LED 24V Incand. | LA2F-32C64-② LA2F-32C67-② | LA2F-32C24V-② LA2F-32C27V-② |
| | | 2-Way spring return | | DPDT | 24V LED 24V Incand. | LA2F-33C64-② LA2F-33C67-② | LA2F-33C24V-② LA2F-33C27V-② |
| Rectangular | 90° 2-Position | Maintained | | DPDT | 24V LED 24V Incand. | LA3F-2C64-② LA3F-2C67-② | LA3F-2C24V-② LA3F-2C27V-② |
| | | Spring return from right | | DPDT | 24V LED 24V Incand. | LA3F-21C64-② LA3F-21C67-② | LA3F-21C24V-② LA3F-21C27V-② |
| | 45° 3-Position | Maintained | | DPDT | 24V LED 24V Incand. | LA3F-3C64-② LA3F-3C67-② | LA3F-3C24V-② LA3F-3C27V-② |
| | | Spring return from right | | DPDT | 24V LED 24V Incand. | LA3F-31C64-② LA3F-31C67-② | LA3F-31C24V-② LA3F-31C27V-② |
| | | Spring return from left | | DPDT | 24V LED 24V Incand. | LA3F-32C64-② LA3F-32C67-② | LA3F-32C24V-② LA3F-32C27V-② |
| | | 2-Way spring return | | DPDT | 24V LED 24V Incand. | LA3F-33C64-② LA3F-33C67-② | LA3F-33C24V-② LA3F-33C27V-② |
| Oversize Round | 90° 2-Position | Maintained | | DPDT | 24V LED 24V Incand. | HA1F-2C64-② HA1F-2C67-② | HA1F-2C24V-② HA1F-2C27V-② |
| | | Spring return from right | | DPDT | 24V LED 24V Incand. | HA1F-21C64-② HA1F-21C67-② | HA1F-21C24V-② HA1F-21C27V-② |
| | 45° 3-Position | Maintained | | DPDT | 24V LED 24V Incand. | HA1F-3C64-② HA1F-3C67-② | HA1F-3C24V-② HA1F-3C27V-② |
| | | Spring return from right | | DPDT | 24V LED 24V Incand. | HA1F-31C64-② HA1F-31C67-② | HA1F-31C24V-② HA1F-31C27V-② |
| | | Spring return from left | | DPDT | 24V LED 24V Incand. | HA1F-32C64-② HA1F-32C67-② | HA1F-32C24V-② HA1F-32C27V-② |
| | | 2-Way spring return | | DPDT | 24V LED 24V Incand. | HA1F-33C64-② HA1F-33C67-② | HA1F-33C24V-② HA1F-33C27V-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 Code

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

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.
- Lamps also available in 5V DC, 6V AC/DC or 12 V AC/DC, change "4" or "7" using voltage/lamp codes (ie LA1F-2C63-② uses 12V AC/DC LED).
- 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).

Switches & Pilot Devices

A2



Illuminated Selector Switches (Sub-Assembled)




Contacts + Safety lever lock + Lamp Holder + Lamp + Operator + Lens/Handle = Completed Unit

A2



Switches & Pilot Devices




Part Numbers: Operators

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

Part Numbers: Lenses/Handles


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


 In place of ② specify Lens Color Code from table.

Part Number: Safety Lever Lock

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

Part Numbers: Contacts


| Appearance | Terminal Style | | |
|---|----------------------|------------------------|--------------------|
| | Contacts | Solder Tab | PCB |
|  | Gold SPDT DPDT | HA-C1 HA-C2 | HA-C10V HA-C20V |
| | | Silver SPDT DPDT | HA-C50 HA-C60 |

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



② LED/Lens Color Code


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

Part Number: Lamp Holder

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


Part Numbers: Lamps

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

 In place of ② specify LED Color Code from table.

Pushbutton Selectors (Assembled)

Part Numbers: 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 Code

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




- In place of ① specify Button Color Code.
- 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).

Contact Operation

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

Lever Switch (Assembled)

Part Numbers: Lever Switches

| Style | Operation | Contacts | Terminal Type | | |
|---|---------------------------|----------|---------------|-----------|------------|
| | | | Solder Tab | PCB | |
|  | 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 |



PCB terminal models also available with silver contacts (change "1" or "2" to "5" or "6" respectively, ie LA1T-2C2V becomes LA1T-2C6V).

Contact Operation

| Contacts | Operator Position & Contact Operation | Operator Position & Contact Operation | | |
|---------------|---------------------------------------|---------------------------------------|--------|----|
| | | 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.

Accessories

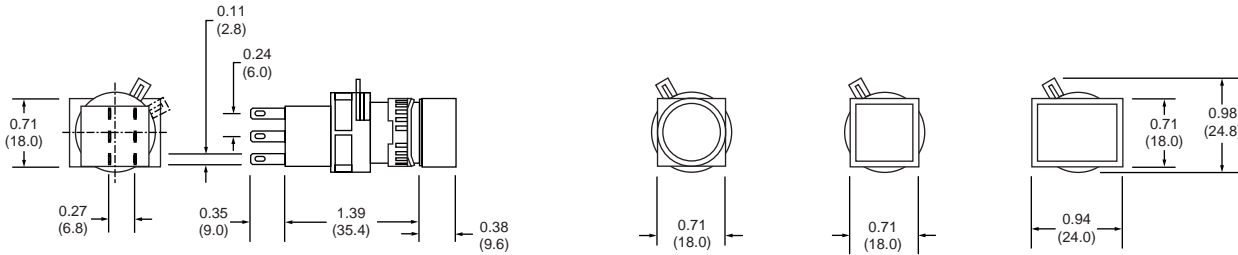
A2

Switches & Pilot Devices

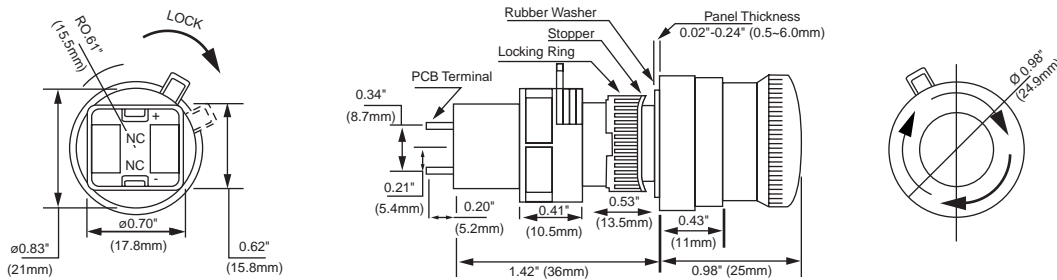
| Part | | Specifications | Part Number | Notes | |
|-----------------------------------|---|--|--|---|---|
| Ring Wrench |  | Made of metal | MT-001 | Used for tightening the plastic locking ring when installing the L6 series unit on a panel. Tightening torque should not exceed 9kgf cm when tightening a 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 6V AC/DC 12V AC/DC 24V AC/DC 120V AC | LFTD-5② LFTD-6② LFTD-1② LFTD-2② LFTD-H2② | T 1-3/4 miniature flange base. In place of ② specify LED Color Code (see page A2-43). | |
| Incandescent Lamp |  | 6V AC/DC 12V AC/DC 24V AC/DC | LH-06 LH-14 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 | |
| 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 (#132) | AS6-SK | Pair of keys. | |
| | | for HA1K (#231) | KG9Z-SK | | |
| Replacement Engraving Inserts |  | Round Square Rectangle Oversize Round Oversize Square Mushroom | AL6M-W AL6Q-W AL6H-W HA9Z-P1-W HA9Z-P2-W 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 ① = (G, R, S, W, Y) | |
| Replacement Safety Lever Lock |  | | HA9Z-LS | | |

Dimensions

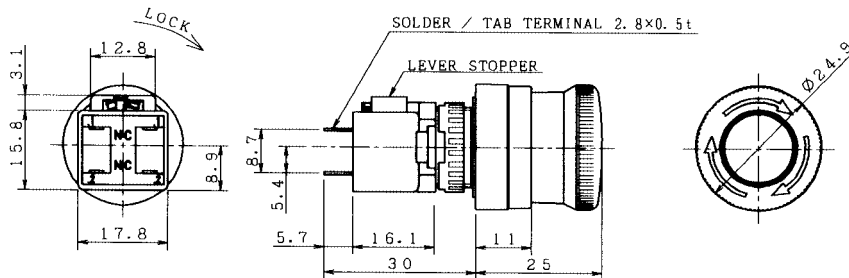
Non-Illuminated Pushbuttons (LA*B)



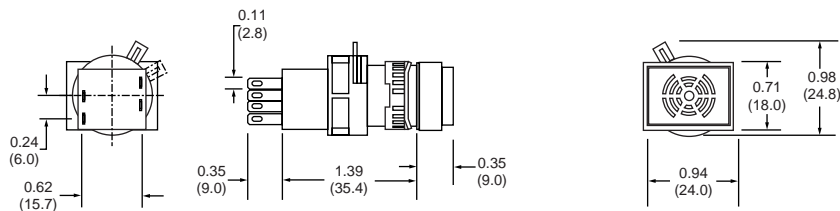
Emergency Stop Switch (HA1B)



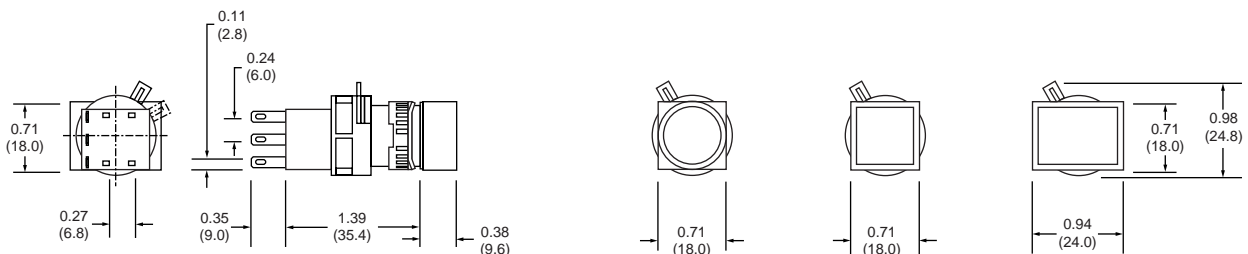
Emergency Stop Switch (HA1E) - Short Body Style



Buzzer (LA3Z)



Pilot Lights (LA*P)



Switches & Pilot Devices

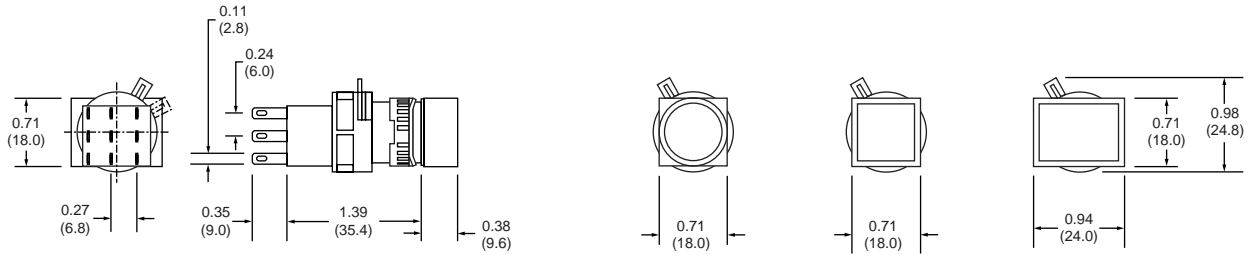
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Dimensions con't

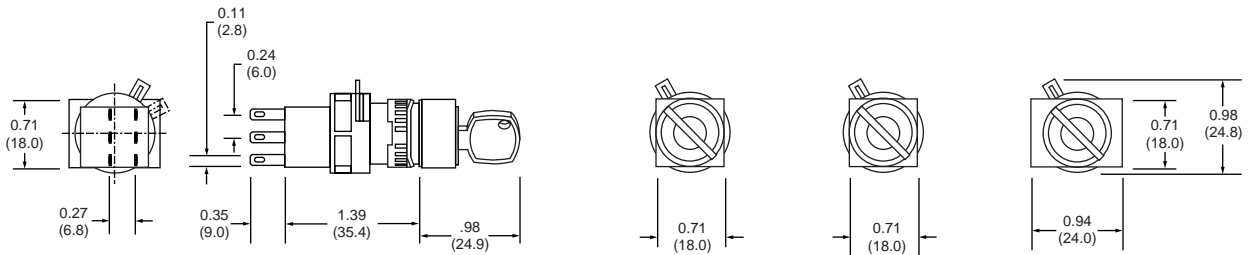
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Switches & Pilot Devices

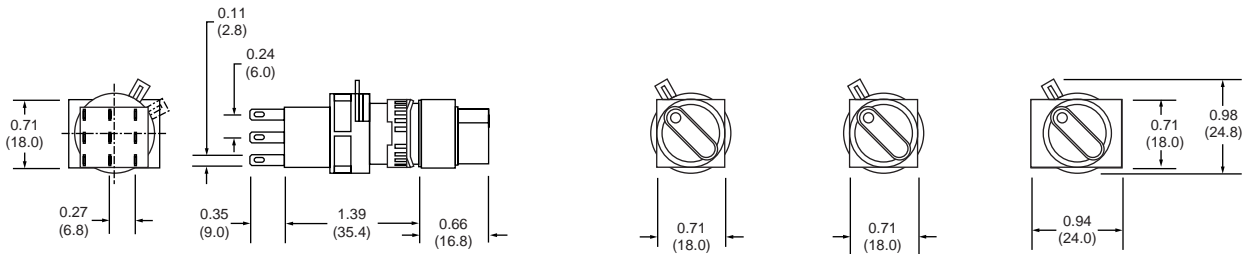
Illuminated Pushbuttons (LA*L)



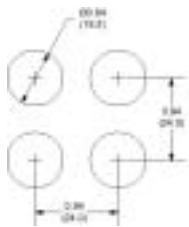
Key Switches (LA*K)



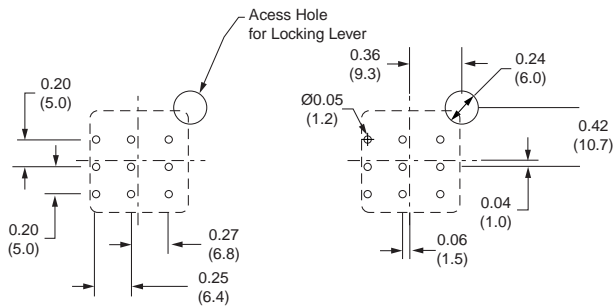
Selector Switches (LA*S)



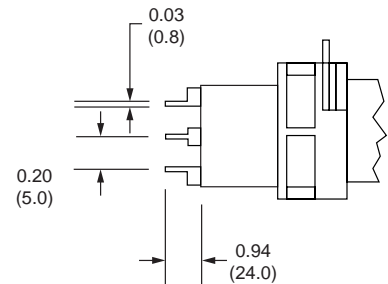
Panel Cut-Out



PCB Layout (except for Buzzer and E-Stop)

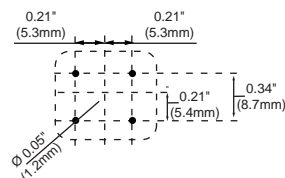


PCB Pins



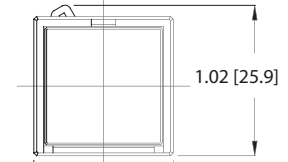
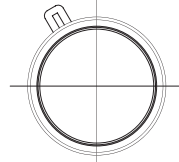
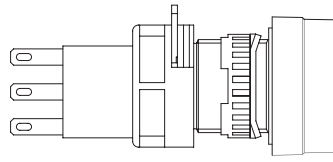
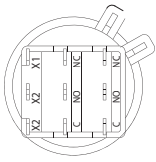
HA1B E-Stop

PCB Mounting Pattern



Dimensions con't

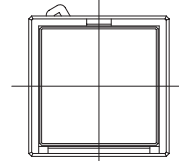
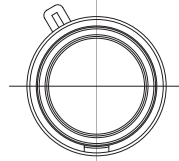
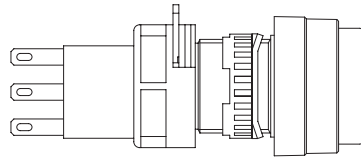
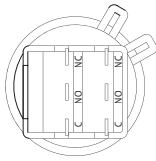
Oversize Flush Pushbutton and Pilot Lights



0.43 [11.0]

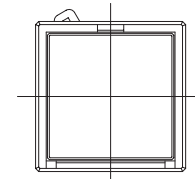
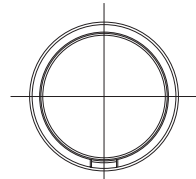
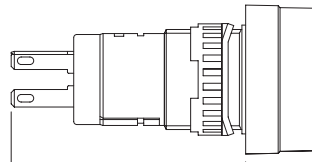
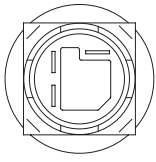
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Oversize Extended Non-Illuminated Pushbutton



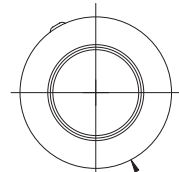
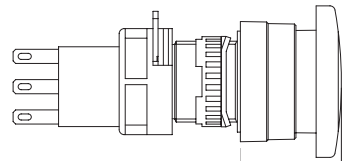
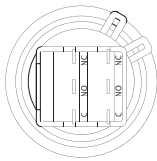
0.59 [15.1]

Oversize Unibody Pilot Lights



1.48 [37.5]

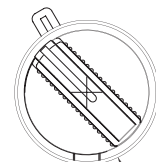
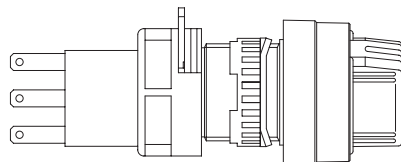
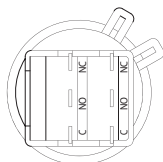
Mushroom Pushbuttons



0.79 [20.0]

1.18 [30.0]

Oversize Selector Switch



0.77 [19.5]

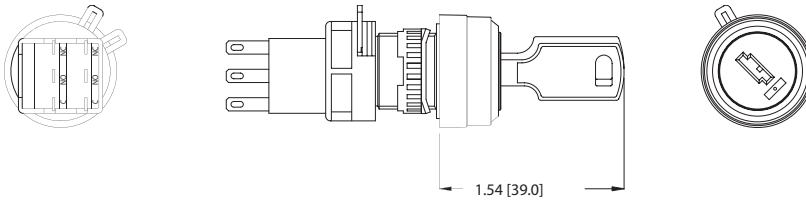
0.94 [23.8]

A2

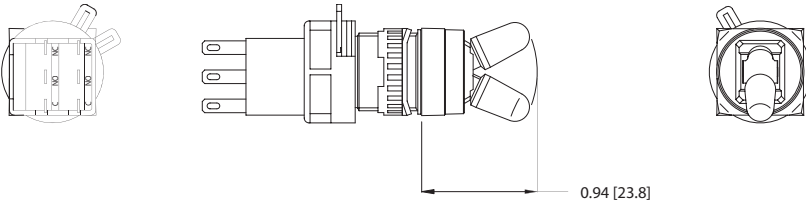
Switches & Pilot Devices

Dimensions con't

Oversize Key Switch

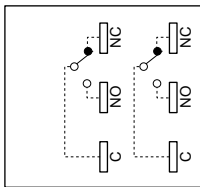


Lever Switch

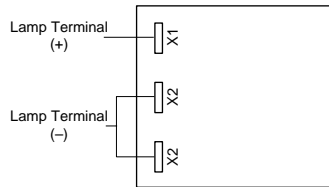


Terminal Configurations

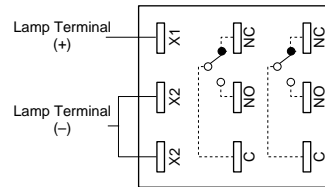
Non Illuminated Pushbutton



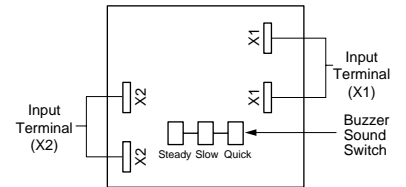
Pilot Lights



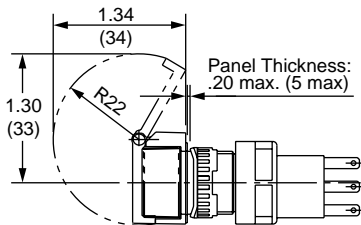
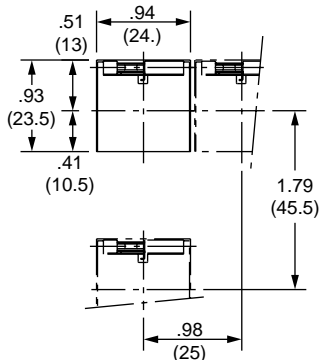
Illuminated Pushbuttons



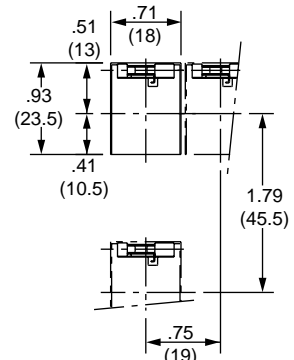
Buzzer



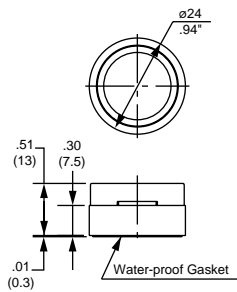
AL-KH6SP



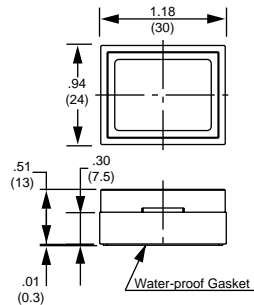
AL-K6SP



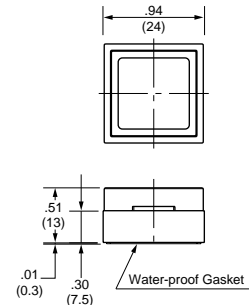
AL-D6



AL-DQ6

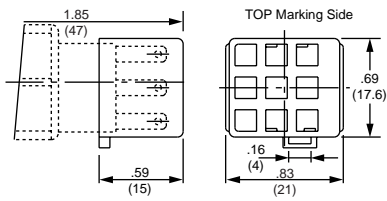


AL-DH6

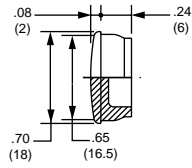


Dimensions con't

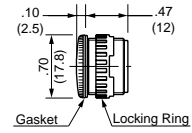
H6-VL2



AL-B6



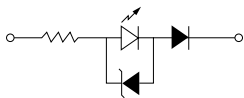
AL-BM6



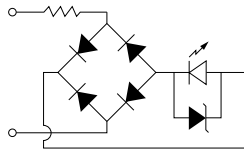
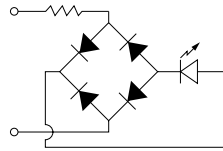
A2

Switches & Pilot Devices

LED Lamp



Internal Circuit



- LED Chip
- Protective Diode
- Zener Diode

General Instructions

Pushbutton Assembly

Lamp Installation

Lamps can be replaced in two ways:

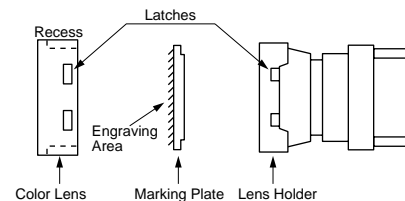
1. If contacts are accessible (or pushbutton not installed in a panel) then it is easiest to first remove the contacts from the operator. This will allow easy access to the lamp/lamp-holder assembly. Grab lamp, depress slightly, and turn counter clockwise. Lamp can then be removed by pushing it back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



A3

Switches & Pilot Devices



HW: The Best Engineered Switch in the World

Key features include:

- Locking lever removable contact blocks
- Finger-safe IP20 contacts as standard, other terminal styles available
- Tamperproof construction
- All E-stops meet EN418 and are compliant with SEMI S2 standards
- Worldwide approvals
- Easy to assemble
- Available assembled or as sub-components
- Choice of black plastic or metallic front bezels
- Incandescent or LED illumination
- Transformer or full voltage
- Slow make double break self cleaning contacts

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. LR92374



TÜV Rheinland

Registration No. R9551089 (E-stops)
 Registration No. R50054316 (Dual Pushbuttons)
 Registration No. J9650511 (Pilot Lights)
 Registration No. J9551458 (all other switches)



Certificate No.
 2005010305145656

| | | | | | | | | | |
|---|---|---|--|-----|------------------------------|------|------|------|----|
| Conforming to Standards | | EN60947-1, EN60947-5-1, VDE0660-200, UL508, CSA C22-2 No.14 | | | | | | | |
| Approvals | | <p>CSA: 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)</p> <p>UL: 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)</p> <p>TÜV: 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)</p> | | | | | | | |
|    <p>File No. E68961 File No. LR92374 Certificate No. 2005010305145656</p>   <p>TÜV Rheinland Registration No. R9551089 (E-stops) Registration No. J9551458 (all other switches) Registration No. J9650511 (Pilot Lights)</p> | | | | | | | | | |
| Operating Temperature | | Operation: -25 to +50°C (without freezing), Storage: -40 to +70°C (without freezing) | | | | | | | |
| Vibration Resistance | | 10 to 55Hz, 98m/sec ² (10G) conforming to IEC6068-2-6 | | | | | | | |
| Shock Resistance | | 980m/sec ² (100G) conforming to IEC6068-2-7 | | | | | | | |
| Electric Shock Protection | | Class 0 conforming to IEC60536 | | | | | | | |
| Degree of Protection (conforming to IEC60529) (conforming to NEMA ICS6-110) | | IP65 (from front of the panel) IP20 (Type HW-F contact block) NEMA 1, 2, 3, 3R, 3S, 4, 4X, 5, 12, 13 (from front of panel) | | | | | | | |
| Mechanical Life | | Momentary pushbuttons: 5,000,000 (900 operations per hour), All other switches: 500,000 | | | | | | | |
| Pollution Degree (conforming to IEC60947-1) | | 3 for switches not using a transformer, 2 for switches using a transformer | | | | | | | |
| Rated Operational Characteristics | | AC-15: A600 or Ue = 250V, Ie = 3A (NO, NC, NO-EM, NC-LB) DC-13: P600 or Ue = 125V, Ie = 1.1A (NO, NC) 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 NO, self-cleaning | | | | | | | |
| Positive Action Operation (Emergency Stops with NC contacts) | | 5.5mm to 10mm travel to latch 45N minimum force to latch 10mm maximum travel 1,800 operations per hour maximum for a Pushlock Turn Reset 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) 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), 2mm (NO-EM and NC-LB) | | | | | | | |
| Horsepower Rating | | Reference Value: 1/4 HP @ 120V (1ø non-reversing), 1HP @ 240V (3ø non-reversing) | | | | | | | |
| Electrical Reliability | | MTBF < 1 fault for 10 million operation cycles (3V DC, 5mA) | | | | | | | |
| Lamp Ratings | | Incandescent: 1 W LEDs: 6V/17mA max, 12V & 24V/11mA max, 120 & 240V/10mA max | | | | | | | |
| Maximum Inrush Current | | 40 A (40 ms) | | | | | | | |
| Contact Material | | Silver (gold plated contacts available - contact IDEC) | | | | | | | |
| Contact Ratings | Pushbuttons | | Contact Block | | Type HW-C/HW-F /HW-G | | | | |
| | Illuminated Pushbuttons | | Rated Insulation Voltage | | 600V | | | | |
| | Selector Switches | | Rated Continuous Current | | 10A | | | | |
| | Illuminated Selector Switches Pushbutton Selectors | | Contact Ratings by Utilization Category IEC 60947-5-1 | | AC-15 (A600) DC-13 (P600) | | | | |
| Characteristics | Operational Voltage | | 24V | 48V | 50V | 110V | 220V | 440V | |
| | 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 |
| | Operational Current | 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 | — | |



1. For dimensions, see page A3-100.
2. For life expectancy derating curves, see page A3-105.

Non-Illuminated Pushbuttons (Assembled)

Part Numbers: Non-Illuminated Pushbuttons

| Style | Contact | Plastic Bezel | | Metal Bezel | |
|-------------------------------------|---------|---------------|--------------|--------------|--------------|
| | | Momentary | Maintained | Momentary | Maintained |
| Round Flush | 1NO | HW1B-M1F10-① | HW1B-A1F10-① | HW4B-M1F10-① | HW4B-A1F10-① |
| | 1NC | HW1B-M1F01-① | HW1B-A1F01-① | HW4B-M1F01-① | HW4B-A1F01-① |
| | 1NO-1NC | HW1B-M1F11-① | HW1B-A1F11-① | HW4B-M1F11-① | HW4B-A1F11-① |
| | 2NO | HW1B-M1F20-① | HW1B-A1F20-① | HW4B-M1F20-① | HW4B-A1F20-① |
| | 2NC | HW1B-M1F02-① | HW1B-A1F02-① | HW4B-M1F02-① | HW4B-A1F02-① |
| | 2NO-2NC | HW1B-M1F22-① | HW1B-A1F22-① | HW4B-M1F22-① | HW4B-A1F22-① |
| Round Extended | 1NO | HW1B-M2F10-① | HW1B-A2F10-① | HW4B-M2F10-① | HW4B-A2F10-① |
| | 1NC | HW1B-M2F01-① | HW1B-A2F01-① | HW4B-M2F01-① | HW4B-A2F01-① |
| | 1NO-1NC | HW1B-M2F11-① | HW1B-A2F11-① | HW4B-M2F11-① | HW4B-A2F11-① |
| | 2NO | HW1B-M2F20-① | HW1B-A2F20-① | HW4B-M2F20-① | HW4B-A2F20-① |
| | 2NC | HW1B-M2F02-① | HW1B-A2F02-① | HW4B-M2F02-① | HW4B-A2F02-① |
| | 2NO-2NC | HW1B-M2F22-① | HW1B-A2F22-① | HW4B-M2F22-① | HW4B-A2F22-① |
| 29mm Mushroom Head | 1NO | HW1B-M3F10-① | HW1B-A3F10-① | HW4B-M3F10-① | HW4B-A3F10-① |
| | 1NC | HW1B-M3F01-① | HW1B-A3F01-① | HW4B-M3F01-① | HW4B-A3F01-① |
| | 1NO-1NC | HW1B-M3F11-① | HW1B-A3F11-① | HW4B-M3F11-① | HW4B-A3F11-① |
| | 2NO | HW1B-M3F20-① | HW1B-A3F20-① | HW4B-M3F20-① | HW4B-A3F20-① |
| | 2NC | HW1B-M3F02-① | HW1B-A3F02-① | HW4B-M3F02-① | HW4B-A3F02-① |
| | 2NO-2NC | HW1B-M3F22-① | HW1B-A3F22-① | HW4B-M3F22-① | HW4B-A3F22-① |
| 40mm Mushroom Head | 1NO | HW1B-M4F10-① | HW1B-A4F10-① | HW4B-M4F10-① | HW4B-A4F10-① |
| | 1NC | HW1B-M4F01-① | HW1B-A4F01-① | HW4B-M4F01-① | HW4B-A4F01-① |
| | 1NO-1NC | HW1B-M4F11-① | HW1B-A4F11-① | HW4B-M4F11-① | HW4B-A4F11-① |
| | 2NO | HW1B-M4F20-① | HW1B-A4F20-① | HW4B-M4F20-① | HW4B-A4F20-① |
| | 2NC | HW1B-M4F02-① | HW1B-A4F02-① | HW4B-M4F02-① | HW4B-A4F02-① |
| | 2NO-2NC | HW1B-M4F22-① | HW1B-A4F22-① | HW4B-M4F22-① | HW4B-A4F22-① |
| 60mm Jumbo Mushroom Head | 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* | — | — | — |
| Square Flush | 1NO | HW2B-M1F10-① | HW2B-A1F10-① | — | — |
| | 1NC | HW2B-M1F01-① | HW2B-A1F01-① | — | — |
| | 1NO-1NC | HW2B-M1F11-① | HW2B-A1F11-① | — | — |
| | 2NO | HW2B-M1F20-① | HW2B-A1F20-① | — | — |
| | 2NC | HW2B-M1F02-① | HW2B-A1F02-① | — | — |
| | 2NO-2NC | HW2B-M1F22-① | HW2B-A1F22-① | — | — |
| Square Extended | 1NO | HW2B-M2F10-① | HW2B-A2F10-① | — | — |
| | 1NC | HW2B-M2F01-① | HW2B-A2F01-① | — | — |
| | 1NO-1NC | HW2B-M2F11-① | HW2B-A2F11-① | — | — |
| | 2NO | HW2B-M2F20-① | HW2B-A2F20-① | — | — |
| | 2NC | HW2B-M2F02-① | HW2B-A2F02-① | — | — |
| | 2NO-2NC | HW2B-M2F22-① | HW2B-A2F22-① | — | — |

① Button Color Code

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

* Grey is available for Round Flush models only.



1. In place of ①, specify the Button Color Code.
2. * Jumbo mushroom available only in red, green, black, and yellow.
3. For nameplates and accessories, see page A3-96 and A3-98.
4. For dimensions, see page A3-100.
5. For sub-assembly part numbers, see page A3-56.

Non-Illuminated Pushbuttons (Partial-Assemblies)

Contact Assembly + Operator Assembly + Complete Switch



A3

Switches & Pilot Devices

Part Numbers: Operator Assemblies

| Style | | Plastic Bezel | Metal Bezel |
|--------------------|--|---------------|-------------|
| Round Flush | | HW1B-M1-① | HW4B-M1-① |
| | | HW1B-A1-① | HW4B-A1-① |
| Round Extended | | HW1B-M2-① | HW4B-M2-① |
| | | HW1B-A2-① | HW4B-A2-① |
| 29mm Mushroom Head | | HW1B-M3-① | HW4B-M3-① |
| | | HW1B-A3-① | HW4B-A3-① |
| 40mm Mushroom Head | | HW1B-M4-① | HW4B-M4-① |
| | | HW1B-A4-① | HW4B-A4-① |
| 60mm Mushroom Head | | HW1B-M5-①* | — |

| Style | | Plastic Bezel | Metal Bezel |
|-----------------|--|---------------|-------------|
| Square Flush | | HW2B-M1-① | — |
| | | HW2B-A1-① | — |
| Square Extended | | HW2B-M2-① | — |
| | | HW2B-A2-① | — |



1. In place of ①, specify the Button Color Code from table below.
2. For complete sub-assemblies, see page A3-56.

Part Numbers: Contact Assemblies

| Style | Contacts | Part Number |
|------------------------------|----------|-------------|
| Standard Fingersafe Contacts | 1NO | HW-CBF10 |
| | 1NC | HW-CBF01 |
| | 1NO/1NC | HW-CBF11 |
| | 2NO | HW-CBF20 |
| | 2NC | HW-CBF02 |
| Spring Up Terminal Contacts | 1NO | HW-CB10 |
| | 1NC | HW-CB01 |
| | 1NO/1NC | HW-CB11 |
| | 2NO | HW-CB20 |
| | 2NC | HW-CB02 |
| | 2NO/2NC | HW-CB22 |

① Button Color Code

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

*Grey is available for round flush only.



*60mm mushroom available in red, green, black and yellow only.

Non-Illuminated Pushbuttons (Sub-Assembled)

Contact Blocks + Adaptor & Safety Lever Lock + Anti-Rotation Ring + Operator + Button = Complete Part



A3

Switches & Pilot Devices

Part Numbers: Operators

| Style | | Plastic Bezel | Metal Bezel |
|------------------------------------|------------|---------------|-------------|
| Round Flush/Extended | Momentary | HW1B-M0 | HW4B-M0 |
| | Maintained | HW1B-A0 | HW4B-A0 |
| Ø 29mm Mushroom Ø 40mm Mushroom | Momentary | HW1B-M0L | HW4B-M0L |
| | Maintained | HW1B-A0L | HW4B-A0L |
| Ø 60mm Jumbo Mushroom | Momentary | HW1B-M5-①* | - |
| Square Flush Extended | Momentary | HW2B-M0 | - |
| | Maintained | HW2B-A0 | - |

- In place of ①, specify the Button Color Code from table below.
- *60mm mushroom operator includes non-removable button (available in red, black, green and yellow only).
- For nameplates and accessories, see page A3-96.
- For dimensions, see page A3-100.

① Button Color Code

| Color | Code | Color | Code |
|-------|------|--------|----------------|
| Black | B | White | W |
| Green | G | Yellow | Y |
| Red | R | Grey | N [†] |
| Blue | S | | |

- HW1B-M5 available only in black, red green and yellow.
- [†] Grey available for round flush only.

Part Numbers: Contact Blocks

| Style | 1NO | 1NC |
|-------------------------------------|--------------------------------|--------------------------------|
| Standard Fingersafe Contacts (IP20) | HW-F10 HW-F10R (early make) | HW-F01 HW-F01R (late break) |
| Spring-Up Terminal Contacts | HW-G10 HW-G10R (early make) | HW-G01 HW-G01R (late break) |
| Exposed Screw Terminal Contacts | HW-C10 HW-C10R (early make) | HW-C01 HW-C01R (late break) |
| Dummy Block | TW-DB | |



- All assembled part numbers in catalog include standard (HW-F...) contacts.
- Assembled units with spring-up terminals (HW-G...) can be ordered by removing an "F" from the part number (Ex. HW1B-M1F11-R becomes HW1B-M111-R).
- Units with exposed screw terminals (HW-C...) must be ordered as sub-components.
- All contacts (including non-fingersafe versions) are UL, CSA, and IEC compliant and carry the CE mark.

Part Numbers: Anti-Rotation Ring

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



Use with notched panel cutout to prevent unit rotation.

Part Numbers: Buttons

| Style | Part Number |
|---------------------|-------------|
| Round Flush | HW1A-B1-① |
| Round Extended | HW1A-B2-① |
| Ø 29mm Mushroom Cap | HW1A-B3-① |
| Ø 40mm Mushroom Cap | HW1A-B4-① |
| Square Flush | HW2A-B1-① |
| Square Extended | HW2A-B2-① |

Part Number: Contact Block Mounting Adaptor (safety lever lock included)







| 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.

Emergency Stop Pushbuttons (Assembled)

Part Numbers: Non-Illuminated Emergency Stop Pushbuttons

| Style | Contact | Plastic Bezel | Metal Bezel |
|--|-------------------------------------|--|--|
| ø 40mm Head Push-Pull  | 1NO 1NC 1NO-1NC 2NC 2NO | HW1B-Y2F10-①† HW1B-Y2F01-①† HW1B-Y2F11-①† HW1B-Y2F02-①† HW1B-Y2F20-①† | HW4B-Y2F10-①† HW4B-Y2F01-①† HW4B-Y2F11-①† HW4B-Y2F02-①† HW4B-Y2F20-①† |
| ø 29mm Head Pushlock Turn Reset  | 1NO 1NC 1NO-1NC 2NO 2NC | HW1B-V3F10-R* HW1B-V3F01-R* HW1B-V3F11-R* HW1B-V3F20-R* HW1B-V3F02-R* | HW4B-V3F10-R* HW4B-V3F01-R* HW4B-V3F11-R* HW4B-V3F20-R* HW4B-V3F02-R* |
| ø 40mm Head Pushlock Turn Reset  | 1NO 1NC 1NO-1NC 2NO 2NC | HW1B-V4F10-①† HW1B-V4F01-①† HW1B-V4F11-①† HW1B-V4F20-①† HW1B-V4F02-①† | HW4B-V4F10-①† HW4B-V4F01-①† HW4B-V4F11-①† HW4B-V4F20-①† HW4B-V4F02-①† |
| ø 40mm Head EMO Pushlock Turn Reset  | 1NO 1NC 1NO-1NC 2NO 2NC | HW1B-V4F10-R-EMO-2 HW1B-V4F01-R-EMO-2 HW1B-V4F11-R-EMO-2 HW1B-V4F20-R-EMO-2 HW1B-V4F02-R-EMO-2 | HW4B-V4F10-R-EMO-2 HW4B-V4F01-R-EMO-2 HW4B-V4F11-R-EMO-2 HW4B-V4F20-R-EMO-2 HW4B-V4F02-R-EMO-2 |
| ø 40mm Head Pushlock Key Reset  | 1NO 1NC 1NO-1NC 2NO 2NC | HW1B-X4F10-R* HW1B-X4F01-R* HW1B-X4F11-R* HW1B-X4F20-R* HW1B-X4F02-R* | HW4B-X4F10-R* HW4B-X4F01-R* HW4B-X4F11-R* HW4B-X4F20-R* HW4B-X4F02-R* |
| ø 60mm Head Pushlock Turn Reset  | 1NO 1NC 1NO-1NC 2NO 2NC | HW1B-V5F10-R* HW1B-V5F01-R* HW1B-V5F11-R* HW1B-V5F20-R* HW1B-V5F02-R* | - |
| ø 40mm Head Unibody Pushlock Turn Reset  | 1NO-1NC 2NC 1NO-2NC | HW1E-BV4F11-R* HW1E-BV4F02-R* HW1E-BV412R-TK2093-1** | - |

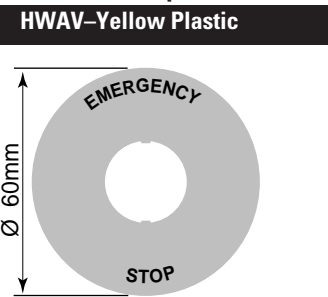
Part Numbers: Illuminated Emergency Stop Pushbuttons

| Style | Illumination Type | Contact | Part Number |
|---|-------------------|--|--|
|  | LED | 1NO-1NC 2NC 2NC (with active lamp circuit) 1NO-1NC (with active lamp circuit) | HW1E-LV4F11QD-R*-③ HW1E-LV4F02QD-R*-③ HW1E-TV4F02QD-R*-③ HW1E-TV4F11QD-R*-③ |
| | Incandescent | 1NO-1NC 2NC 1NO-1NC (with active lamp circuit) 2NC (with active lamp circuit) | HW1E-LV4F11Q-R*-③ HW1E-LV4F02Q-R*-③ HW1E-TV4F11Q-R*-③ HW1E-TV4F02Q-R*-③ |



- * Available in Red only.
- † Available in red or yellow (insert color code in place of ①)
- In place of ③, specify Full Voltage 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 active lamp circuit model).
- For nameplates and accessories, see page A3-96.
- For dimensions, see page A3-100.
- For sub-assembly part numbers, see next page.
- All HW series E-stops comply with EN418, 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.
- "Active Lamp Circuit" consists of a built-in Normally Open contact in series with the lamp. This allows the lamp to illuminate only when the button is pressed and eliminates the need for external jumpering.
- Replacement Lens is HWLV-LENSR.

Part Numbers: Nameplates



| Style | Part Number |
|---|-------------|
| 60mm Diameter "Emergency Stop" | HWAV-27† |
| 60mm Diameter Blank | HWAV-0 |
| 80mm Diameter "Emergency Stop" (for jumbo mushroom use) | HWAV5-27 |



† HWAV-27 comes marked "Emergency Stop" as shown in drawing.

Part Numbers: E-Stop Shrouds

| Style | Part Number |
|---|-----------------|
|  | HW9Z-KG1-TK2120 |
|  | HW9Z-KG2-TK2120 |



Not applicable for 60mm mushroom.

Terminal Numbering (Unibody only)

| Models | Terminal Number |
|------------------|--------------------------|
| 1NO-1NC | NO = .3/.4, NC = .1/.2 |
| 2NC | NC = 11/12, NC = 21/22 |
| HW1E-L HW1E-T | Lamp + = X2, Lamp - = X1 |

③ Full Voltage Code

| Voltage | Code |
|----------|------|
| 6VAC/DC | 6V |
| 12VAC/DC | 12V |
| 24VAC/DC | 24V |

Emergency Stop Pushbuttons (Partial-Assemblies)

Contact Assembly + Anti-Rotation Ring + Operator Assembly + Complete Switch



A3

Switches & Pilot Devices

Part Numbers: Operators

| Style | | Plastic Bezel | Metal Bezel |
|-------|--------|-----------------|-----------------|
| | | HW1B-V3R* | HW4B-V3R* |
| | red | HW1B-V4R | HW4B-V4R |
| | yellow | HW1B-V4Y | HW4B-V4Y |
| | | HW1B-V4R-EMO-2* | HW4B-V4R-EMO-2* |
| | red | HW1B-Y2R | HW4B-Y2R |
| | yellow | HW1B-Y2Y | HW4B-Y2Y |
| | | HW1B-X4R* | HW4B-X4R* |
| | | HW1B-V5R* | - |

Part Numbers: Anti-Rotation Ring

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



Use with notched panel cutout to prevent unit rotation.



- *Available in red only.
- All HW Series Emergency Stop operators include non-removable color caps.
- All HW Series Emergency Stop operators comply with EN418 "E-Stop Addendum to the Low Voltage Directive" (when used as part of a complete HW series Emergency Stop Pushbutton).
- All HW series Emergency Stop switches comply with SEMI S2 standards.

Part Numbers: Contact Assemblies

| Style | Contacts | Part Number |
|-------|--|--|
| | 1NO 1NC 1NO/1NC 2NO 2NC 2NO/2NC | HW-CBF10 HW-CBF01 HW-CBF11 HW-CBF20 HW-CBF02 HW-CBF22 |
| | 1NO 1NC 1NO/1NC 2NO 2NC 2NO/2NC | HW-CB10 HW-CB01 HW-CB11 HW-CB20 HW-CB02 HW-CB22 |



Gold contact option is available for spring-up terminals. Add suffix "MAU" to end of part number. For example, HW-CB20 becomes HW-CB20-MAU.

Emergency Stop Pushbuttons (Sub-Assembled)

Contact Blocks + Adaptor & Safety Lever Lock + Anti-Rotation Ring + Operator = Complete Part





A3


Switches & Pilot Devices



Part Numbers: Emergency Stop Operators

| Style | Plastic | Metal |
|---|-----------------|-----------------|
|  ø 29mm Head Pushlock Turn Reset | HW1B-V3R* | HW4B-V3R* |
|  ø 40mm Head Pushlock Turn Reset | red HW1B-V4R | HW4B-V4R |
| | yellow HW1B-V4Y | HW4B-V4Y |
|  ø 40mm Head EMO Pushlock Turn Reset | HW1B-V4R-EMO-2* | HW4B-V4R-EMO-2* |
|  ø 40mm Head Push-Pull | red HW1B-Y2R | HW4B-Y2R |
| | yellow HW1B-Y2Y | HW4B-Y2Y |
|  ø 40mm Head Pushlock Key Reset | HW1B-X4R* | HW4B-X4R* |
|  ø 60mm Head Pushlock Turn Reset | HW1B-V5R* | - |





-  1. *Available in red only.
-  2. All Emergency Stop Buttons are non-removable from the operator.





Part Number: Contact Block Mounting Adaptor (safety lever lock included)

| 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 (included) to prevent heavy vibration or maintenance personnel from unlocking contacts.

Part Numbers: Contact Blocks

| Description | Part Number | |
|---|--|--|
| | 1NO | 1NC |
|  Standard Fingersafe (IP20) | HW-F10 HW-F10R (early make) | HW-F01 HW-F01R (late break) |
|  Spring-Up Terminal Contacts | HW-G10 HW-G10R (early make) HW-G10-MAU (gold contacts) | HW-G01 HW-G01R (late break) HW-G01-MAU (gold contacts) |
|  Exposed Screw Terminal Contacts | HW-C10 HW-C10R (early make) | HW-C01 HW-C01R (late break) |
|  Dummy Block | TW-DB | |

-  1. All assembled part numbers in catalog include standard (HW-F..) contacts. (except unibody)
-  2. Assembled units with spring-up terminals (HW-G...) can be ordered by removing an "F" from the part number (Ex. HW1B-M1F11-R becomes HW1B-M111-R).
-  3. Units with exposed screw terminals (HW-C...) must be ordered as sub-components.
-  4. All contacts (including exposed screw) are UL, CSA, and IEC compliant and carry the CE mark.

Part Numbers: Anti-Rotation Ring


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

-  Use with notched panel cutout to prevent unit rotation.

Emergency Stop Stations

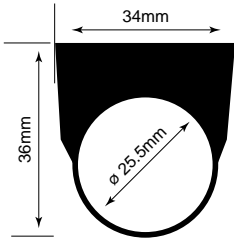
Part Numbers: Emergency Stop Stations


| Description | Contacts | Plastic Bezel | Metal Bezel |
|----------------------------|----------|---------------|---------------|
| Ø 40mm Pushlock Turn Reset | 1NO-1NC | HW1X-BV411-R* | HW4X-BV411-R* |
| | 2NC | HW1X-BV402-R* | HW4X-BV402-R* |
| Ø 29mm Pushlock Turn Reset | 1NO-1NC | HW1X-BV311-R* | HW4X-BV311-R* |
| | 2NC | HW1X-BV302-R* | HW4X-BV302-R* |
| Ø 40mm Push-Pull Reset | 1NO-1NC | HW1X-BY411-R* | HW4X-BY411-R* |
| | 2NC | HW1X-BY402-R* | HW4X-BY402-R* |
| Ø 40mm Pushlock Key Reset | 1NO-1NC | HW1X-BX411-R* | HW4X-BX411-R* |
| | 2NC | HW1X-BX402-R* | HW4X-BX402-R* |

-  1. * Available in Red only.
 2. Maximum of two contact blocks.
 3. Available as completed unit only.
 4. Box is supplied with yellow top and black bottom only.



Part Numbers: Nameplates for Emergency Stop Stations

| NSA-Aluminum | Color | Part Number | |
|--|-------|-------------|----------|
| | | Blank | Engraved |
|  | Black | NSA-0 | NSA-* |
| | Red | NSA-0R | NSA-*R |

-  1. In place of * please insert the word, letters, or numbers you would like engraved. For standard engravings, see page A3-96.
 2. For specifications on engravings, please consult factory.

Part Numbers: Base Mount Contact Blocks

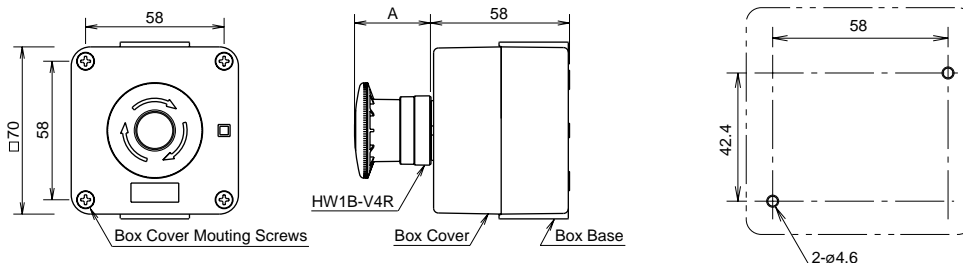
| Configuration | Part Number |
|---------------|-------------|
| 1NO | HW-S10 |
| 1NC | HW-S01 |



Part Numbers: Plug Adaptors





| Type | Part Number |
|------|-------------|
| G1/2 | HW9Z-G |
| PG16 | HW9Z-PG |

Panel Mount Dimensions



Pilot Lights (Assembled)

Part Numbers: Pilot Lights

| Style | | | Plastic Bezel | Metal Bezel |
|---|-----------------------------|-------------------------------|--|--|
| Round Flush  (Full Voltage type shown) | Full Voltage | | HW1P-1FQ④-②-③ | HW4P-1FQ④-②-③ |
| | Transformer | 120V AC 240V AC 480V AC | HW1P-1FH2④-② HW1P-1FM4④-② HW1P-1FT8④-② | HW4P-1FH2④-② HW4P-1FM4④-② HW4P-1FT8④-② |
| | DC-DC Converter* | 110V DC | HW1P-1D2④-② | - |
| Dome  (Full Voltage type shown) | Full Voltage | | HW1P-2FQ④-②-③ | HW4P-2FQ④-②-③ |
| | Transformer | 120V AC 240V AC 480V AC | HW1P-2FH2④-② HW1P-2FM4④-② HW1P-2FT8④-② | HW4P-2FH2④-② HW4P-2FM4④-② HW4P-2FT8④-② |
| | DC-DC Converter* | 110V DC | HW1P-2D2④-② | - |
| Square Flush  (Transformer type shown) | Full Voltage | | HW2P-1FQ④-②-③ | - |
| | Transformer | 120V AC 240V AC 480V AC | HW2P-1FH2④-② HW2P-1FM4④-② HW2P-1FT8④-② | - |
| | DC-DC Converter* | 110V DC | HW2P-1D2④-② | - |
| Jumbo Dome  | Full Voltage** 24V AC/DC | LED | HW1P-5Q4-② | - |
| | | Incandescent | HW1P-5Q7-② | |



- In place of ②, specify the Lens/LED Color Code.
- In place of ③ specify the Full Voltage Code from table below.
- In place of ④ specify Lamp Type Code.
- *DC-DC convertor voltage input from 90-140V DC, comes with spring up terminals only.
- **Available with spring up terminals and 24V only.
- For nameplates and accessories, see page A3-96.
- For dimensions, see page A3-100.

② Lens/LED Color Code

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

③ Full Voltage Code

| Voltage | Code |
|--------------------|------|
| 6V AC/DC | 6 |
| 12V AC/DC | 12 |
| 24V AC/DC | 24 |
| 120V AC (LED only) | 120 |
| 240VAC (LED only) | 240 |

④ Lamp Type Code

| Lamp | Code |
|--------------|-------|
| Incandescent | Blank |
| LED | D |

Pilot Lights (Partial-Assemblies)

Full Voltage Models

A3

Switches & Pilot Devices

Operator/Lens + Lamp = Complete Pilot Light



Part Numbers: Operator/Lens

| Style | Plastic Bezel | Metal Bezel |
|------------------|---------------|-------------|
| Round Flush | HW1P-1FQ0-② | HW4P-1FQ0-② |
| Dome | HW1P-2FQ0-② | HW4P-2FQ0-② |
| Square Flush | HW2P-1FQ0-② | - |

Part Numbers: Lamps

| Type | 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 | 6.3V AC/DC | IS-6 |
| | 12V AC/DC | IS-12 |
| | 24V AC/DC | IS-24 |
| | 30V AC/DC | IS-30 |

- 1. In place of ②, specify the LED Color Code from table on previous page.
- 2. The LED contains a current-limiting resistor and reverse polarity protection diodes.

- 1. In place of ②, specify the Lens Color Code from table on previous page.
- 2. Operator/Lens assembly for use with standard transformers only, not spring up terminal type.

Transformer Models

Transformer/Lamp + Operator/Lens = Complete



Part Numbers: Operator/Lens

| Style | Plastic Bezel | Metal Bezel |
|------------------|---------------|-------------|
| Round Flush | HW1P-1F0-② | HW4P-1F0-② |
| Dome | HW1P-2F0-② | HW4P-2F0-② |
| Square Flush | HW2P-1F0-② | - |

Part Numbers: Transformer/Lamp

| Item | Voltage | Part Number |
|------|---------------------------|-------------|
| | 120V AC with LED | HW-FH2-② |
| | 240V AC with LED | HW-FM4-② |
| | 480V AC with LED | HW-FT8-② |
| | 120V AC with Incandescent | HW-FH2 |
| | 240V AC with Incandescent | HW-FM4 |
| | 480V AC with Incandescent | HW-FT8 |

- 1. In place of ②, specify the LED Color Code from table on previous page.
- 2. All transformers have a 6V AC secondary voltage.
- 3. LED/Lamp supplied with transformer partial assembly.

- In place of ②, specify the Lens Color Code from table on previous page.

Pilot Lights (Sub-Assembled)

Transformer* + Lamp + Anti-Rotation Ring + Operator + Lens = Complete Part






* Not applicable to full voltage units.

Part Numbers: Operators

| Style | Type | Plastic Bezel | Metal Bezel |
|--|--------------|---------------------|-------------|
|  Round Flush | Full Voltage | Standard | HW1P-1FQ0 |
| | | Spring Up Terminals | HW1P-1Q0 |
| | Transformer | Standard | HW1P-10 |
| | | Spring Up Terminals | HW1P-100 |
|  Dome (HW1P-10 shown) | Full Voltage | Standard | HW1P-2FQ0 |
| | | Spring Up Terminals | HW1P-2Q0 |
| | Transformer | Standard | HW1P-20 |
| | | Spring Up Terminals | HW1P-200 |
|  Square Flush (HW2P-10 shown) | Full Voltage | Standard | HW2P-1FQ0 |
| | | Spring Up Terminals | HW2P-1Q0 |
| | Transformer | Standard | HW2P-10 |
| | | Spring Up Terminals | HW2P-100 |


- Transformer type requires separate transformer & lamp. Must select correct transformer bases on standard or spring up terminal type. Use 6V lamps or LEDs.
- Full voltage type only requires lamp.

Part Numbers: Lenses

| Style | Part Number |
|---|-------------|
|  Round/Flush | HW1A-P1-② |
|  Dome | HW1A-P2-② |
|  Square/Flush | HW2A-P1-② |



In place of ②, specify the Lens Color Code.

Part Numbers: Transformer Units

| Style | Voltage | Part Number |
|--|-----------|--|
|  LED/Incandescent (6V secondary voltage) | 120V AC | HW-FH20 HW-MH20 (with spring up terminals)* |
| | 240V AC | HW-FM40 HW-MM40 (with spring up terminals)* |
| | 480V AC | HW-FT80 HW-RT80 (with spring up terminals)* |
| | 110V DC** | HW-RD0 (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.

Part Numbers: Lamps

| Type | Voltage | Part Number | ② Lens/LED Color Code | |
|---|------------|-------------|-----------------------|------|
| | | | Color | Code |
|  LED | 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 |
|  Incandescent | 6.3V AC/DC | IS-6 | Yellow | Y |
| | 12V AC/DC | IS-12 | | |
| | 24V AC/DC | IS-24 | | |

- In place of ②, specify the LED Color Code.
- The LED contains a current-limiting resistor and reverse polarity protection diodes.

Part Numbers: Anti-Rotation Ring

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

Use with notched panel cutout to prevent unit rotation.

Jumbo Dome Pilot Light Replacement Parts

| Description | Item | Part Number |
|---|--------------------|-------------------------------------|
| Replacement Jumbo Dome Operator | LED Type | HW1P-5Q0 |
| | Incandescent Type* | HW1P-5Q7 |
| Replacement Jumbo Dome Lens | Polycarbonate Lens | HW1A-P5① ① = (A, G, R, S, W, Y) |
| Replacement LED Diffusing Lens | | HW9Z-PP5C |
| Replacement LED Lamps for HW Jumbo Dome | LED Lamp | LSTDDB-2① ① = (A, G, R, S, W, Y) |

*Operator comes with incandescent bulb.

Illuminated Pushbuttons (Assembled)

Part Numbers: Illuminated Pushbuttons

A3

Switches & Pilot Devices

| Style | Description | Contacts | Plastic Bezel | | Metal Bezel | |
|-------------------------------|--|----------------------------------|--|--|--|--|
| | | | Momentary | Maintained | Momentary | Maintained |
| Flush | Full Voltage | 1NO 1NC 1NO-1NC 2NO | HW1L-M1F10Q④-②-③ HW1L-M1F01Q④-②-③ HW1L-M1F11Q④-②-③ HW1L-M1F20Q④-②-③ | HW1L-A1F10Q④-②-③ HW1L-A1F01Q④-②-③ HW1L-A1F11Q④-②-③ HW1L-A1F20Q④-②-③ | HW4L-M1F10Q④-②-③ HW4L-M1F01Q④-②-③ HW4L-M1F11Q④-②-③ HW4L-M1F20Q④-②-③ | HW4L-A1F10Q④-②-③ HW4L-A1F01Q④-②-③ HW4L-A1F11Q④-②-③ HW4L-A1F20Q④-②-③ |
| | Transformer 120V AC 240V AC 240V AC | 1NO-1NC 2NO 1NO-1NC 2NO | HW1L-M1F11H2④-② HW1L-M1F20H2④-② HW1L-M1F11M4④-② HW1L-M1F20M4④-② | HW1L-A1F11H2④-② HW1L-A1F20H2④-② HW1L-A1F11M4④-② HW1L-A1F20M4④-② | HW4L-M1F11H2④-② HW4L-M1F20H2④-② HW4L-M1F11M4④-② HW4L-M1F20M4④-② | HW4L-A1F11H2④-② HW4L-A1F20H2④-② HW4L-A1F11M4④-② HW4L-A1F20M4④-② |
| Extended | Full Voltage | 1NO 1NC 1NO-1NC 2NO | HW1L-M2F10Q④-②-③ HW1L-M2F01Q④-②-③ HW1L-M2F11Q④-②-③ HW1L-M2F20Q④-②-③ | HW1L-A2F10Q④-②-③ HW1L-A2F01Q④-②-③ HW1L-A2F11Q④-②-③ HW1L-A2F20Q④-②-③ | HW4L-M2F10Q④-②-③ HW4L-M2F01Q④-②-③ HW4L-M2F11Q④-②-③ HW4L-M2F20Q④-②-③ | HW4L-A2F10Q④-②-③ HW4L-A2F01Q④-②-③ HW4L-A2F11Q④-②-③ HW4L-A2F20Q④-②-③ |
| | Transformer 120V AC 240V AC 240V AC | 1NO-1NC 2NO 1NO-1NC 2NO | HW1L-M2F11H2④-② HW1L-M2F20H2④-② HW1L-M2F11M4④-② HW1L-M2F20M4④-② | HW1L-A2F11H2④-② HW1L-A2F20H2④-② HW1L-A2F11M4④-② HW1L-A2F20M4④-② | HW4L-M2F11H2④-② HW4L-M2F20H2④-② HW4L-M2F11M4④-② HW4L-M2F20M4④-② | HW4L-A2F11H2④-② HW4L-A2F20H2④-② HW4L-A2F11M4④-② HW4L-A2F20M4④-② |
| Extended with Full Shroud | Full Voltage | 1NO 1NC 1NO-1NC 2NO | HW1L-MF2F10Q④-②-③ HW1L-MF2F01Q④-②-③ HW1L-MF2F11Q④-②-③ HW1L-MF2F20Q④-②-③ | HW1L-AF2F10Q④-①-③ HW1L-AF2F01Q④-①-③ HW1L-AF2F11Q④-①-③ HW1L-AF2F20Q④-①-③ | HW4L-MF2F10Q④-②-③ HW4L-MF2F01Q④-②-③ HW4L-MF2F11Q④-②-③ HW4L-MF2F20Q④-②-③ | HW4L-AF2F10Q④-①-③ HW4L-AF2F01Q④-①-③ HW4L-AF2F11Q④-①-③ HW4L-AF2F20Q④-①-③ |
| | Transformer 120V AC 240V AC 240V AC | 1NO-1NC 2NO 1NO-1NC 2NO | HW1L-MF2F11H2④-② HW1L-MF2F20H2④-② HW1L-MF2F11M4④-② HW1L-MF2F20M4④-② | HW1L-AF2F11H2④-② HW1L-AF2F20H2④-② HW1L-AF2F11M4④-② HW1L-AF2F20M4④-② | HW4L-MF2F11H2④-② HW4L-MF2F20H2④-② HW4L-MF2F11M4④-② HW4L-MF2F20M4④-② | HW4L-AF2F11H2④-② HW4L-AF2F20H2④-② HW4L-AF2F11M4④-② HW4L-AF2F20M4④-② |
| 40mm Mushroom Head | Full Voltage | 1NO 1NC 1NO-1NC 2NO | HW1L-M4F10Q④-②-③ HW1L-M4F01Q④-②-③ HW1L-M4F11Q④-②-③ HW1L-M4F20Q④-②-③ | HW1L-A4F10Q④-②-③ HW1L-A4F01Q④-②-③ HW1L-A4F11Q④-②-③ HW1L-A4F20Q④-②-③ | HW4L-M4F10Q④-②-③ HW4L-M4F01Q④-②-③ HW4L-M4F11Q④-②-③ HW4L-M4F20Q④-②-③ | HW4L-A4F10Q④-②-③ HW4L-A4F01Q④-②-③ HW4L-A4F11Q④-②-③ HW4L-A4F20Q④-②-③ |
| | Transformer 120V AC 240V AC 240V AC | 1NO-1NC 2NO 1NO-1NC 2NO | HW1L-M4F11H2④-② HW1L-M4F20H2④-② HW1L-M4F11M4④-② HW1L-M4F20M4④-② | HW1L-A4F11H2④-② HW1L-A4F20H2④-② HW1L-A4F11M4④-② HW1L-A4F20M4④-② | HW4L-M4F11H2④-② HW4L-M4F20H2④-② HW4L-M4F11M4④-② HW4L-M4F20M4④-② | HW4L-A4F11H2④-② HW4L-A4F20H2④-② HW4L-A4F11M4④-② HW4L-A4F20M4④-② |
| Square Flush | Full Voltage | 1NO 1NC 1NO-1NC 2NO | HW2L-M1F10Q④-②-③ HW2L-M1F01Q④-②-③ HW2L-M1F11Q④-②-③ HW2L-M1F20Q④-②-③ | HW2L-A1F10Q④-②-③ HW2L-A1F01Q④-②-③ HW2L-A1F11Q④-②-③ HW2L-A1F20Q④-②-③ | - | - |
| | Transformer 120V AC 240V AC 240V AC | 1NO-1NC 2NO 1NO-1NC 2NO | HW2L-M1F11H2④-② HW2L-M1F20H2④-② HW2L-M1F11M4④-② HW2L-M1F20M4④-② | HW2L-A1F11H2④-② HW2L-A1F20H2④-② HW2L-A1F11M4④-② HW2L-A1F20M4④-② | - | - |

- 1. In place of ② specify the Lens Color Code, in place of ③ specify the Full Voltage Code and in place of ④ specify Lamp Type Code.
- 2. For partial and sub-assembly part numbers, see pages A3-65 and A3-66.
- 3. For nameplates and accessories, see page A3-96.
- 4. For dimensions, see page A3-100.

④ Lamp Type Code

| Lamp | Code |
|--------------|-------|
| Incandescent | Blank |
| LED | D |

② Lens Color Code

| 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 (LED only) | 120V |
| 240VAC (LED only) | 240V |

*40mm mushroom lenses not available in yellow

Illuminated Pushbuttons (Partial-Assemblies)

Contact Assembly + Lamp* + Operator/Lens = Complete Switch



*Lamp is included in contact assembly for transformer models only.


Part Numbers: Operators/Lens

| Type | | Plastic Bezel | Metal Bezel |
|---|------------|---------------|-------------|
|  Flush | Momentary | HW1L-M1-② | HW4L-M1-② |
| | Maintained | HW1L-A1-② | HW4L-A1-② |
|  Extended | Momentary | HW1L-M2-② | HW4L-M2-② |
| | Maintained | HW1L-A2-② | HW4L-A2-② |
|  Extended/Full shroud | Momentary | HW1L-MF2-② | HW4L-MF2-② |
| | Maintained | HW1L-AF2-② | HW4L-AF2-② |
|  Mushroom* | Momentary | HW1L-M4-②* | HW4L-M4-②* |
| | Maintained | HW1L-A4-②* | HW4L-A4-②* |
|  Square | Momentary | HW2L-M1-② | - |
| | Maintained | HW2L-A1-② | |



1. In place of ②, specify the Lens Color Code.
2. *Mushroom Lens not available in yellow.


Part Numbers: Full Voltage Contact Assemblies (order lamp separately)

| Style | Contacts | Part Number |
|--|----------|-------------|
|  | 1NO | HW-FL10Q0 |
| | 2NO | HW-FL20Q0 |
| | 1NO/1NC | HW-FL11Q0 |
| | 1NC | HW-FL01Q0 |
| | 2NC | HW-FL02Q0 |





Order lamp separately.

Part Numbers: Transformer Contact Assemblies (lamp included)

| Style | Contacts | Part Number |
|--|----------|-------------|
|  120V AC with LED | 1NO | HW-FL10H2-② |
| | 2NO | HW-FL20H2-② |
| | 1NC | HW-FL01H2-② |
| | 1NO/1NC | HW-FL11H2-② |
| 240V AC with LED | 1NO | HW-FL10M4-② |
| | 2NO | HW-FL20M4-② |
| | 1NC | HW-FL01M4-② |
| | 1NO/1NC | HW-FL11M4-② |
| 480V AC with LED | 1NO | HW-FL10T8-② |
| | 2NO | HW-FL20T8-② |
| | 1NC | HW-FL01T8-② |
| | 1NO/1NC | HW-FL11T8-② |
| 120V AC with Incandescent | 1NO | HW-FL10H2 |
| | 2NO | HW-FL20H2 |
| | 1NC | HW-FL01H2 |
| 240V AC with Incandescent | 1NO | HW-FL10M4 |
| | 2NO | HW-FL20M4 |
| | 1NC | HW-FL01M4 |

Part Numbers: Lamps

| Type | 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 | 6.3V AC/DC | IS-6 |
| | 12V AC/DC | IS-12 |
| | 24V AC/DC | IS-24 |
| | 30V AC/DC | IS-30 |



1. In place of ②, specify the LED Color Code from table below.
2. The LED contains a current-limiting resistor and reverse polarity protection diodes.

② Lens/LED Color Code

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

A3

Switches & Pilot Devices

Illuminated Pushbuttons (Sub-Assembled)

Part Numbers: LED and Incandescent Illuminated Pushbuttons

Transformer* + Contact Blocks + Lead Holder + Adaptor† + Lamp + Anti-Rotation Ring + Operator + Lens = Complete Part

A3

Switches & Pilot Devices



- 1. *Transformer not needed with full voltage types.
- 2. † Adaptor includes safety lever lock.

Part Numbers: Lenses

| Style | Part Number |
|---|-------------|
|  Round Flush | HW1A-L1-② |
|  Round Extended | HW1A-L2-② |
|  ø 40mm Mushroom Cap | ALW4BLU-②* |
|  Square Flush | HW2A-L1-② |

- 1. In place of ②, specify the Lens Color Code.
- 2. *not available in yellow.

Part Numbers: Operators

| Style | | Part Number | |
|---|------------|---------------|-------------|
| | | Plastic Bezel | Metal Bezel |
|  Round Flush/Extended | Momentary | HW1L-M0 | HW4L-M0 |
| | Maintained | HW1L-A0 | HW4L-A0 |
|  Extended with Full Shroud | Momentary | HW1L-MF0 | HW4L-MF0 |
| | Maintained | HW1L-AF0 | HW4L-AF0 |
|  ø 40mm Mushroom Head | Momentary | HW1L-M0L | HW4L-M0L |
| | Maintained | HW1L-A0L | HW4L-A0L |
|  Square Flush | Momentary | HW2L-M0 | - |
| | Maintained | HW2L-A0 | |

② Lens/LED Color Code

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

- *ALW4BLU not available in yellow.

Illuminated Pushbuttons (Sub-Assembled) con't



Part Numbers: Anti-Rotation Ring

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



Use with notched panel cutout to prevent unit rotation

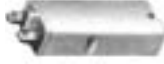



Part Numbers: Lamps

| Type | Voltage | Part Number |
|---|------------|-------------|
| LED  | 6V AC/DC | LSTD-6② |
| | 12V AC/DC | LSTD-1② |
| | 24V AC/DC | LSTD-2② |
| | 120V AC | LSTD-H2② |
| Incandescent  | 240V AC | LSTD-M4② |
| | 6.3V AC/DC | IS-6 |
| | 12V AC/DC | IS-12 |
| | 24V AC/DC | IS-24 |
| | 30V AC/DC | IS-30 |



- In place of ②, specify the LED Color Code from table on previous page.
- The LED contains a current-limiting resistor and reverse polarity protection diodes.




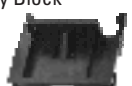
Part Numbers: Lamp Circuit Components

| 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. | Fingersafe | HW-DA1FB |
| | | Exposed | HW-DA1B |
| | | Spring Up | HW-GA1 |
| Full Voltage Adaptor  | For use with even number of contacts. | Fingersafe | TW-DA1FB |
| | | Exposed | TW-DA1B |
| Transformer Unit  | 120VAC 240VAC 480VAC | Fingersafe | TW-F126B TW-F246B TW-F486B |
| | 120V 240V 480V | Spring Up | HW-T126 HW-T246 HW-L486 |
| | (6V secondary voltage) | Exposed | TW-T126B TW-T246B TW-T486B |
| DC-DC Converter | 110VDC | | HW-L16D |



HW-GA1 "Dummy Block with full voltage adaptor" does not require the use of HW-LH3.


Part Numbers: Contact Blocks

| Description | Part Number | |
|---|--------------------------------|--------------------------------|
| | 1NO | 1NC |
| Standard Fingersafe (IP20)  | HW-F10 HW-F10R (early make) | HW-F01 HW-F01R (late break) |
| Spring-Up Terminal Contacts  | HW-G10 HW-G10R (early make) | HW-G01 HW-G01R (late break) |
| Exposed Screw Terminal Contacts  | HW-C10 HW-C10R (early make) | HW-C01 HW-C01R (late break) |
| Dummy Block  | TW-DB | |



- All assembled part numbers in catalog include standard (HW-F...) contacts.
- Assembled units with spring-up terminals (HW-G...) can be ordered by removing an "F" from the part number (Ex. HW1B-M1F11-R becomes HW1B-M111-R).
- Units with exposed screw terminals (HW-C...) must be ordered as sub-components.

Part Numbers: Contact Block Mounting Adaptor (safety lever lock included)

| Style | Part Number |
|--|-------------|
|  | HW-CBL |



- Used to mount contact blocks to operator (first pair only). Lamp holder is built-in.
- IDEC strongly recommends using the safety lever lock (included) to prevent heavy vibration or maintenance personnel from unlocking contacts.

A3

Switches & Pilot Devices

Selector Switches (Assembled)

Part Numbers: 2-Position Selector Switches

| Contact | Mounting | Operator Position | | Handle | Maintained | Spring Return from Right |
|---------|----------|-------------------|--------|------------|--|--|
| | | L | R | | | |
| | | | | | Part Number | Part Number |
| 1NO | 1 | 0 | X | Knob Lever | HW ^⑤ S-2TF10 HW ^⑤ S-2LF10 | HW ^⑤ S-21TF10 HW ^⑤ S-21LF10 |
| 1NO-1NC | 1 2 | 0 X | X 0 | Knob Lever | HW ^⑤ S-2TF11 HW ^⑤ S-2LF11 | HW ^⑤ S-21TF11 HW ^⑤ S-21LF11 |
| 2NO | 1 2 | 0 0 | X X | Knob Lever | HW ^⑤ S-2TF20 HW ^⑤ S-2LF20 | HW ^⑤ S-21TF20 HW ^⑤ S-21LF20 |



Part Numbers: 3-Position Selector Switches

| Contact | Mounting | Operator Position | | | Handle | Maintained | Spring Return from Right | Spring Return from Left | Spring Return Two-Way |
|---------|------------------|-------------------|------------------|------------------|------------|--|--|--|--|
| | | L | C | R | | | | | |
| | | | | | | Part Number | Part Number | Part Number | Part Number |
| 1NO-1NC | 1 2 | 0 0 | X 0 | X X | Knob Lever | HW ^⑤ S-3TF11 HW ^⑤ S-3LF11 | HW ^⑤ S-31TF11 HW ^⑤ S-31LF11 | HW ^⑤ S-32TF11 HW ^⑤ S-32LF11 | HW ^⑤ S-33TF11 HW ^⑤ S-33LF11 |
| 2NO | 1 2 | X 0 | 0 0 | 0 X | Knob Lever | HW ^⑤ S-3TF20 HW ^⑤ S-3LF20 | HW ^⑤ S-31TF20 HW ^⑤ S-31LF20 | HW ^⑤ S-32TF20 HW ^⑤ S-32LF20 | HW ^⑤ S-33TF20 HW ^⑤ S-33LF20 |
| 2NO-1NC | 1 2 3 | X 0 0 | 0 0 X | 0 X 0 | Knob | HW ^⑤ S-3JTF21N1 | — | — | — |
| 2NO-2NC | 1 2 3 4 | X 0 0 X | 0 0 X X | 0 X X 0 | Knob | HW ^⑤ S-3TF22 | HW ^⑤ S-31TF22 | HW ^⑤ S-32TF22 | HW ^⑤ S-33TF22 |

⑤ Bezel Type

| Type | Code |
|---------|------|
| Plastic | 1 |
| Metal | 4 |

Part Numbers: 4-Position Selector Switch

| Contact | Mounting | Operator Position | | | | Handle | Maintained Part Number |
|------------|------------------|-------------------|------------------|------------------|------------------|------------|--|
| | | 1 | 2 | 3 | 4 | | |
| 1NO 3NC | 1 2 3 4 | 0 0 0 0 | X X 0 0 | X 0 X 0 | X 0 0 X | Knob Lever | HW ^⑤ S-4TF13N6 HW ^⑤ S-4LF13N6 |
| 2NO-2NC | 1 2 3 4 | X 0 0 0 | 0 X 0 0 | 0 0 X 0 | 0 0 0 X | Knob Lever | HW ^⑤ S-4TF22N3 HW ^⑤ S-4LF22N3 |

Part Numbers: 5-Position Selector Switch

| Contact | Mounting | Operator Position | | | | | Handle | Maintained Part Number |
|---------|------------------|-------------------|------------------|------------------|------------------|------------------|------------|--|
| | | 1 | 2 | 3 | 4 | 5 | | |
| 2NO-2NC | 1 2 3 4 | X 0 0 0 | 0 X 0 0 | 0 0 0 0 | 0 0 X 0 | 0 0 0 X | Knob Lever | HW ^⑤ S-5TF22N3 HW ^⑤ S-5LF22N3 |



1. In place of ⑤ enter 1 for plastic bezel or 4 for metal bezel.
2. Mounting refers to contact location on operator. See page A3-82.
3. For nameplates, see page A3-96.
4. Custom contact arrangements available. Contact IDEC for details.
5. Five position circuit cannot be made to make five independent contact closures.

Selector Switches (Partial-Assemblies)

Contact Assembly + Operator = Complete Part



A3

Switches & Pilot Devices

Part Numbers: Operators

| | No. of Positions | Description | Handle | Plastic Bezel | Metal Bezel | |
|--|------------------|---------------------------|--------------------------|---------------|-------------|----------|
| <p>Knob Operator (plastic bezel) Knob Operator (metal bezel)</p> <p>Lever Operator (plastic bezel)</p> | 2 | Maintained | Knob | HW1S-2T | HW4S-2T | |
| | | | Lever | HW1S-2L | HW4S-2L | |
| | | | Spring Return from Right | Knob | HW1S-21T | HW4S-21T |
| | | | | Lever | HW1S-21L | HW4S-21L |
| | 3 | Maintained (standard cam) | Knob | HW1S-3T* | HW4S-3T* | |
| | | | Lever | HW1S-3L | HW4S-3L | |
| | | Maintained (S cam) | Knob | HW1S-3ST* | HW4S-3ST* | |
| | | | Knob | HW1S-3JT* | HW4S-3JT* | |
| | | Spring Return from Right | Knob | HW1S-31T | HW4S-31T | |
| | | | Lever | HW1S-31L | HW4S-31L | |
| Spring Return from Left | Knob | HW1S-32T | HW4S-32T | | | |
| | Lever | HW1S-32L | HW4S-32L | | | |
| 2-Way Spring Return | Knob | HW1S-33T | HW4S-33T | | | |
| | Lever | HW1S-33L | HW4S-33L | | | |
| 4 | Maintained | Knob | HW1S-4T | HW4S-4T | | |
| | | Lever | HW1S-4L | HW4S-4L | | |
| 5 | Maintained | Lever | HW1S-5T | HW4S-5T | | |
| | | Lever | HW1S-5L | HW4S-5L | | |



- Knob operator includes knob.
- * Three position operator is available with three different cams.
- Operator cams are color coded (white=standard cam, red=S cam, black =J cam).
- For details of determining which cam to use, see page A3-79.

Part Numbers: Contact Assemblies

| Style | Contacts | Part Number |
|----------------------------------|--|--|
| Standard Fingersafe Contacts | 1NO 1NC 1NO/1NC 2NO 2NC 2NO/2NC | HW-CBF10 HW-CBF01 HW-CBF11 HW-CBF20 HW-CBF02 HW-CBF22 |
| Spring Up Terminal Contacts | 1NO 1NC 1NO/1NC 2NO 2NC 2NO/2NC | HW-CB10 HW-CB01 HW-CB11 HW-CB20 HW-CB02 HW-CB22 |

Selector Switches (Sub-Assembled)

Contact Blocks + Adaptor and Safety Lever Lock + Anti-Rotation Ring + Operator = Complete Part

A3

Switches & Pilot Devices



Part Numbers: Operators

| Style | # of Positions | Description | Handle | Plastic Bezel | Metal Bezel |
|----------------|---|---------------------------|----------|---------------|-------------|
| Knob Operator | 2 | 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 | |
| Lever Operator | 3 | Maintained (standard cam) | Knob | HW1S-3T* | HW4S-3T* |
| | | | Lever | HW1S-3* | HW4S-3* |
| | | Maintained (S cam) | Knob | HW1S-3ST* | HW4S-3ST* |
| | | Maintained (J cam) | 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 | |
| 4 | Maintained | Knob | HW1S-4T | HW4S-4T | |
| | | Lever | HW1S-4 | HW4S-4 | |
| 5 | Maintained | Knob | HW1S-5T | HW4S-5T | |
| | | Lever | HW1S-5 | HW4S-5 | |

Part Numbers: Contact Block Mounting Adaptor (safety lever lock included)

| Appearance | 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 unlocking contacts.

Part Numbers: Contact Blocks

| Description | Part Number | |
|---------------------------------|--------------------------------|--------------------------------|
| | 1NO | 1NC |
| Standard Fingersafe (IP20) | HW-F10 HW-F10R (early make) | HW-F01 HW-F01R (late break) |
| Spring-Up Terminal Contacts | HW-G10 HW-G10R (early make) | HW-G01 HW-G01R (late break) |
| Exposed Screw Terminal Contacts | HW-C10 HW-C10R (early make) | HW-C01 HW-C01R (late break) |
| Dummy Block | TW-DB | |

- All assembled part numbers in catalog include standard (HW-F...) contacts.
- Assembled units with spring-up terminals (HW-G...) can be ordered by removing an "F" from the part number (Ex. HW1B-M1F11-R becomes HW1B-M111-R).
- Units with exposed screw terminals (HW-C...) must be ordered as sub-components.

- Knob operator comes with handle.
- * Three position operator is available with three different cams.
- Operator cams are color coded (white=standard cam, red=S cam, black =J cam).
- For details of determining which cam to use, see page A3-79.
- To order colored handle type, knob/lever and inserts must be ordered separately, along with lever operator. See part numbers below.

Part Numbers: Levers and Inserts

| Style | Part Number |
|--------------------|-------------|
| Knob | ASWHHY-① |
| Lever | ASWHHL-① |
| Lever Color Insert | TW-HC1-① |

① Handle/Insert Color Code

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

* Lever color inserts not available in black.
† Knob and lever not available in white.

Part Numbers: Anti-Rotation Ring

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

- Use with notched panel cutout to prevent unit rotation.
- Not required when using HW series nameplates. See page A3-96.

Key Switches (Assembled)



A3

Switches & Pilot Devices

Part Numbers: 2-Position Key Switches

| Contact | Mounting | Operator Position | | Part Number | |
|---------|----------|-------------------|---|-------------------------|--------------------------|
| | | L | R | Maintained | Spring Return from Right |
| | | | | | |
| 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 | | |

Key Removable Option Codes

| Code | Description |
|------|--|
| A | Key retained in NO 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) |



For more information on these options, contact your IDEC representative.

Part Numbers: 3-Position Key Switches

| Contact | Mounting | Operator Position | | | Part Number | | | |
|---------|----------|-------------------|---|---|-------------------------|--------------------------|--------------------------|---------------------------------|
| | | L | C | R | Maintained | Spring Return from Right | Spring Return from Left | Spring Return from Left & Right |
| | | | | | | | | |
| 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 | | | | |
| 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 | | | | |

Ⓢ Bezel Type

| Type | Code |
|---------|------|
| Plastic | 1 |
| Metal | 4 |



- In place of [Ⓢ] enter 1 for plastic bezel or 4 for metal bezel (see table at right).
- 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 (contact IDEC for special keys).
- For nameplates, see page A3-96.
- Custom contact arrangements available, contact IDEC for details.
- Mounting refers to contact location on operator. See page A3-82.

Key Switches (Partial-Assemblies)



Contact Assembly + Operator = Complete Part



A3

Switches & Pilot Devices



Part Numbers: Operators

| | # of Positions | Description | Plastic Bezel | Metal Bezel |
|--|----------------|----------------------------------|---------------|-------------|
|  | 2 | Maintained | HW1K-2A | HW4K-2A |
| | | Maintained, key remove left only | HW1K-2B | HW4K-2B |
| | | Spring from Right | HW1K-21B | HW4K-21B |
|  | 3 | Maintained, Standard Cam | HW1K-3A | HW4K-3A |
| | | Maintained, Cam S | HW1K-3SA | HW4K-3SA |
| | | Maintained, Cam J | HW1K-3JA | HW4K-3JA |
| | | Spring Return from Right | HW1K-31B | HW4K-31B |
| | | Spring Return from Left | HW1K-32C | HW4K-32C |
| | | Two-Way Spring Return | HW1K-33D | HW4K-33D |



- Operator includes two keys.
- All standard operators are keyed alike (contact IDEC for special keys).
- Other key removable options available. See "Other Key Removable Option Codes" on next page.

Part Numbers: Contact Assemblies

| Style | Contacts | Part Number |
|---|--|--|
| Standard Fingersafe Contacts  | 1NO 1NC 1NO/1NC 2NO 2NC 2NO/2NC | HW-CBF10 HW-CBF01 HW-CBF11 HW-CBF20 HW-CBF02 HW-CBF22 |
| Spring Up Terminal Contacts  | 1NO 1NC 1NO/1NC 2NO 2NC 2NO/2NC | HW-CB10 HW-CB01 HW-CB11 HW-CB20 HW-CB02 HW-CB22 |

Key Removable Option Codes

| Code | Description |
|------|--|
| A | Key retained in NO 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) |



- For more information on these options, contact your IDEC representative.
- Key retained in all spring-return positions.

Key Switches (Sub-Assembled)

Contact Blocks + Adaptor & Safety Lever Lock + Anti-Rotation Ring + Operator = Complete Part



A3

Switches & Pilot Devices


Part Numbers: Operators

| # of Positions | Description | Plastic Bezel | Metal Bezel |
|----------------|----------------------------------|---------------|-------------|
| 2 | Maintained | HW1K-2A | HW4K-2A |
| | Maintained, key remove left only | HW1K-2B | HW4K-2B |
| | Spring from Right | HW1K-21B | HW4K-21B |
| 3 | Maintained, Standard Cam | HW1K-3A | HW4K-3A |
| | Maintained, Cam S | HW1K-3SA | HW4K-3SA |
| | Maintained, Cam J | HW1K-3JA | HW4K-3JA |
| | Spring Return from Right | HW1K-31B | HW4K-31B |
| | Spring Return from Left | HW1K-32C | HW4K-32C |
| | Two-Way Spring Return | HW1K-33D | HW4K-33D |



- Operator includes two keys.
- All standard operators are keyed alike (contact IDEC for special keys).
- Other key removable options available. See table below.

Part Numbers: Contact Block Mounting Adaptor (safety lever lock included)

| 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 unlocking contacts.





Key Removable Option Codes

| Code | Description |
|------|--|
| A | Key retained in NO 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) |



For more information on these options, contact your IDEC representative.

Part Numbers: Contact Blocks

| Description | Part Number | |
|---|--------------------------------|--------------------------------|
| | 1NO | 1NC |
| Standard Fingersafe (IP20)  | HW-F10 HW-F10R (early make) | HW-F01 HW-F01R (late break) |
| Spring-Up Terminal Contacts  | HW-G10 HW-G10R (early make) | HW-G01 HW-G01R (late break) |
| Exposed Screw Terminal Contacts  | HW-C10 HW-C10R (early make) | HW-C01 HW-C01R (late break) |
| Dummy Block  | TW-DB | |



- All assembled part numbers in catalog include standard (HW-F...) contacts.
- Assembled units with spring-up terminals (HW-G...) can be ordered by removing an "F" from the part number (Ex. HW1B-M1F11-R becomes HW1B-M111-R).
- Units with exposed screw terminals (HW-C...) must be ordered as sub-components.

Part Numbers: Anti-Rotation Ring

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



- Use with notched panel cutout to prevent unit rotation (not included with assembled units).
- Not required when using HW series nameplates. See page A3-96.





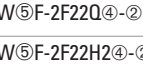
Illuminated Selector Switches (Assembled)

A3

Switches & Pilot Devices



Part Numbers: 2-Position LED/Incandescent Selector Switches

| Plastic Bezel | Operator Position | | | | Type | Part Number | | | |
|---|--|------------------|----------------|-----------------|-----------------|---|---|-----------------|-----------------|
| | Contact | Mounting | L | R | | Maintained | Spring Return From Right | | |
|  | 1NO-1NC | 1 2 | 0 | X | Full Voltage |  | | | |
| | | | X | 0 | | Transformer | 120V | HW⑤F-2F11H2④-② | HW⑤F-21F11H2④-② |
| | | | | | | | 240V | HW⑤F-2F11M4④-② | HW⑤F-21F11M4④-② |
| | | | 480V | HW⑤F-2F11T8④-② | HW⑤F-21F11T8④-② | | | | |
| |  | 2NO | 1 2 | 0 | X | Full Voltage |  | | |
| | | | | X | 0 | | Transformer | 120V | HW⑤F-2F20H2④-② |
| | | | | | 240V | | | HW⑤F-2F20M4④-② | HW⑤F-21F20M4④-② |
| | | | 480V | HW⑤F-2F20T8④-② | HW⑤F-21F20T8④-② | | | | |
| 2NO-2NC | | 1 2 3 4 | 0 | X | Full Voltage |  | | | |
| | | | X | 0 | | Transformer | 120V | HW⑤F-2F22H2④-② | HW⑤F-21F22H2④-② |
| | | | | 240V | | | HW⑤F-2F22M4④-② | HW⑤F-21F22M4④-② | |
| | | 480V | HW⑤F-2F22T8④-② | HW⑤F-21F22T8④-② | | | | | |

- 1. In place of ② specify the Lens/LED color code.
- 2. In place of ③ specify the Full Voltage code.
- 3. In place of ④ specify Lamp Type code.
- 4. In place of ⑤ enter 1 for plastic bezel or 4 for metal bezel (see table below).
- 5. For nameplates, see page A3-96.
- 6. For partial and sub-assembly part numbers, see pages A3-76 and A3-77.
- 7. Mounting refers to contact location on operator. See page A3-82.

② Lens/LED Color Code

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

③ Full Voltage Code

| Voltage | Code |
|--------------------|-------|
| 6V AC/DC | 6V |
| 12V AC/DC | 12V |
| 24V AC/DC | 24V |
| 120V AC (LED only) | 120 V |
| 240V AC (LED only) | 240 V |

④ Lamp Type Code

| Lamp | Code |
|--------------|-------|
| Incandescent | Blank |
| LED | D |

⑤ Bezel Type

| Type | Code |
|---------|------|
| Plastic | 1 |
| Metal | 4 |

Illuminated Selector Switches (Assembled) con't

Part Numbers: 3-Position LED/Incandescent Selector Switches

| Contact | Mounting | Operator Position | | | Type | Part Number | Part Number | Part Number | Part Number | | | | | | |
|---------|----------|-------------------|---|---|--------------|-----------------|------------------|------------------|------------------|-------------|----------------------|--|---|---|---|
| | | L | C | R | | | | | | | | | | | |
| 1NO-1NC | 1 | 0 | X | X | Full Voltage | HW5F-3F11Q4-2-3 | HW5F-31F11Q4-2-3 | HW5F-32F11Q4-2-3 | HW5F-33F11Q4-2-3 | | | | | | |
| | 2 | 0 | 0 | X | | | | | | Transformer | 120V 240V 480V | HW5F-3F11H24-2 HW5F-3F11M44-2 HW5F-3F11T84-2 | HW5F-31F11H24-2 HW5F-31F11M44-2 HW5F-31F11T84-2 | HW5F-32F11H24-2 HW5F-32F11M44-2 HW5F-32F11T84-2 | HW5F-33F11H24-2 HW5F-33F11M44-2 HW5F-33F11T84-2 |
| 2NO | 1 | X | 0 | 0 | Full Voltage | HW5F-3F20Q4-2-3 | HW5F-31F20Q4-2-3 | HW5F-32F20Q4-2-3 | HW5F-33F20Q4-2-3 | | | | | | |
| | 2 | 0 | 0 | X | | | | | | Transformer | 120V 240V 480V | HW5F-3F20H24-2 HW5F-3F20M44-2 HW5F-3F20T84-2 | HW5F-31F20H24-2 HW5F-31F20M44-2 HW5F-31F20T84-2 | HW5F-32F20H24-2 HW5F-32F20M44-2 HW5F-32F20T84-2 | HW5F-33F20H24-2 HW5F-33F20M44-2 HW5F-33F20T84-2 |
| 2NC | 1 | 0 | X | X | Full Voltage | HW5F-3F02Q4-2-3 | HW5F-31F02Q4-2-3 | HW5F-32F02Q4-2-3 | HW5F-33F02Q4-2-3 | | | | | | |
| | 2 | X | X | 0 | | | | | | Transformer | 120V 240V 480V | HW5F-3F02H24-2 HW5F-3F02M44-2 HW5F-3F02T84-2 | HW5F-31F02H24-2 HW5F-31F02M44-2 HW5F-31F02T84-2 | HW5F-32F02H24-2 HW5F-32F02M44-2 HW5F-32F02T84-2 | HW5F-33F02H24-2 HW5F-33F02M44-2 HW5F-33F02T84-2 |
| 2NO-2NC | 1 | X | 0 | 0 | Full Voltage | HW5F-3F22Q4-2-3 | HW5F-31F22Q4-2-3 | HW5F-32F22Q4-2-3 | HW5F-33F22Q4-2-3 | | | | | | |
| | 2 | 0 | 0 | X | | | | | | Transformer | 120V 240V 480V | HW5F-3F22H24-2 HW5F-3F22M44-2 HW5F-3F22T84-2 | HW5F-31F22H24-2 HW5F-31F22M44-2 HW5F-31F22T84-2 | HW5F-32F22H24-2 HW5F-32F22M44-2 HW5F-32F22T84-2 | HW5F-33F22H24-2 HW5F-33F22M44-2 HW5F-33F22T84-2 |
| | 3 | 0 | X | X | | | | | | | | 4 | X | X | 0 |
| 4NO | 1 | X | 0 | 0 | Full Voltage | HW5F-3F40Q4-2-3 | HW5F-31F40Q4-2-3 | HW5F-32F40Q4-2-3 | HW5F-33F40Q4-2-3 | | | | | | |
| | 2 | 0 | 0 | X | | | | | | Transformer | 120V 240V 480V | HW5F-3F40H24-2 HW5F-3F40M44-2 HW5F-3F40T84-2 | HW5F-31F40H24-2 HW5F-31F40M44-2 HW5F-31F40T84-2 | HW5F-32F40H24-2 HW5F-32F40M44-2 HW5F-32F40T84-2 | HW5F-33F40H24-2 HW5F-33F40M44-2 HW5F-33F40T84-2 |
| | 3 | X | 0 | 0 | | | | | | | | 4 | X | 0 | X |
| 4NC | 1 | 0 | X | X | Full Voltage | HW5F-3F04Q4-2-3 | HW5F-31F04Q4-2-3 | HW5F-32F04Q4-2-3 | HW5F-33F04Q4-2-3 | | | | | | |
| | 2 | X | X | 0 | | | | | | Transformer | 120V 240V 480V | HW5F-3F04H24-2 HW5F-3F04M44-2 HW5F-3F04T84-2 | HW5F-31F04H24-2 HW5F-31F04M44-2 HW5F-31F04T84-2 | HW5F-32F04H24-2 HW5F-32F04M44-2 HW5F-32F04T84-2 | HW5F-33F04H24-2 HW5F-33F04M44-2 HW5F-33F04T84-2 |
| | 3 | 0 | X | X | | | | | | | | 4 | X | 0 | X |

A3

Switches & Pilot Devices



- In place of ② specify the Lens/LED color code.
- In place of ③ specify the Full Voltage code.
- In place of ④ specify Lamp Type code.
- In place of ⑤ enter 1 for plastic bezel or 4 for metal bezel (see table below).
- For nameplates, see page A3-96.
- For partial and sub-assembly part numbers, see pages A3-76 and A3-77.
- Mounting refers to contact location on operator. See page A3-82.

② Lens/LED Color Code

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

③ Full Voltage Code

| Voltage | Code |
|--------------------|-------|
| 6V AC/DC | 6V |
| 12V AC/DC | 12V |
| 24V AC/DC | 24V |
| 120V AC (LED only) | 120 V |
| 240V AC (LED only) | 240 V |

④ Lamp Type Code

| Lamp | Code |
|--------------|-------|
| Incandescent | Blank |
| LED | D |

⑤ Bezel Type

| Type | Code |
|---------|------|
| Plastic | 1 |
| Metal | 4 |

Illuminated Selector Switches (Partial-Assemblies)

Contact Assembly + Lamp + Operator/Lens = Complete Part



A3

Switches & Pilot Devices

Full Voltage Models

Part Numbers: Operators/Lens

| | | Type | Plastic | Metal |
|--|--------|-------------------|----------|----------|
| | 2 pos. | Maintained | HW1F-2② | HW4F-2② |
| | | Spring from Right | HW1F-21② | HW4F-21② |
| | 3 pos. | Maintained | HW1F-3② | HW4F-3② |
| | | Spring from Right | HW1F-31② | HW4F-31② |
| | | Spring from Left | HW1F-32② | HW4F-32② |
| | | Spring from Both | HW1F-33② | HW4F-33② |

Part Numbers: Lamps

| Type | 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 |
| | 6.3V AC/DC | IS-6 |
| | 12V AC/DC | IS-12 |
| | 24V AC/DC | IS-24 |



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

Part Numbers: Contact Assemblies (order lamp separately)

| Style | Contacts | Part Number |
|-------|----------|-------------|
| | 1NO | HW-FL10Q0 |
| | 2NO | HW-FL20Q0 |
| | 1NO/1NC | HW-FL11Q0 |
| | 1NC | HW-FL01Q0 |
| | 2NC | HW-FL02Q0 |



Order lamp separately from table on right.



1. In place of ②, specify the LED Color Code from table below.

2. The LED contains a current-limiting resistor and reverse polarity protection diodes.

Transformer Models

Part Numbers: Contact Assemblies (lamp included)

| Style | Contacts | Part Number |
|-------|----------|-------------|
| | 1NO | HW-FL10H2-② |
| | 2NO | HW-FL20H2-② |
| | 1NC | HW-FL01H2-② |
| | 1NO/1NC | HW-FL11H2-② |
| | 1NO | HW-FL10M4-② |
| | 2NO | HW-FL20M4-② |
| | 1NC | HW-FL01M4-② |
| | 1NO/1NC | HW-FL11M4-② |
| | 1NO | HW-FL10T8-② |
| | 2NO | HW-FL20T8-② |
| | 1NC | HW-FL01T8-② |
| | 1NO/1NC | HW-FL11T8-② |
| | 1NO | HW-FL10H2 |
| | 2NO | HW-FL20H2 |
| | 1NC | HW-FL01H2 |
| | 1NO/1NC | HW-FL11H2 |
| | 1NO | HW-FL10M4 |
| | 2NO | HW-FL20M4 |
| | 1NC | HW-FL01M4 |
| | 1NO/1NC | HW-FL11M4 |



6V LED/Lamp included with transformer sub-assembly.

Part Numbers: Operators/Lens

| | | Type | Plastic | Metal |
|--|--------|-------------------|----------|----------|
| | 2 pos. | Maintained | HW1F-2② | HW4F-2② |
| | | Spring from Right | HW1F-21② | HW4F-21② |
| | 3 pos. | Maintained | HW1F-3② | HW4F-3② |
| | | Spring from Right | HW1F-31② | HW4F-31② |
| | | Spring from Left | HW1F-32② | HW4F-32② |
| | | Spring from Both | HW1F-33② | HW4F-33② |



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

② Lens/LED Color Code

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

Illuminated Selector Switches (Sub-Assembled)

Transformer * + Contact Blocks + Lead Holder + Adaptor + Lamp + Anti-Rotation + Operator + Illuminated Knob = Complete Part



* not applicable for full voltage units

Part Numbers: Operators

| Appearance | # of Positions | Description | Plastic Bezel | Metal Bezel |
|------------|----------------|--------------------------|---------------|-------------|
| | 2 | Maintained | HW1F-2 | HW4F-2 |
| | | Spring return from right | HW1F-21 | HW4F-21 |
| | 3 | Maintained | HW1F-3 | HW4F-3 |
| | | Spring return from right | HW1F-31 | HW4F-31 |
| | | Spring return from left | HW1F-32 | HW4F-32 |
| | | Two-way spring return | HW1F-33 | HW4F-33 |



Illuminated knobs must be ordered separately.

Part Numbers: Illuminated Knob

| Appearance | Description | Part Number |
|------------|-------------|-------------|
| | Amber | HW9Z-FDY-A |
| | Green | HW9Z-FDY-G |
| | Red | HW9Z-FDY-R |
| | Blue | HW9Z-FDY-S |
| | White | HW9Z-FDY-W |
| | Yellow | HW9Z-FDY-Y |

Part Numbers: Contact Block Mounting Adaptor (safety lever lock included)

| Style | Part Number |
|-------|-------------|
| | HW-CBL |



- Used to mount contact blocks to operator (first pair only). Lamp holder is built-in.
- IDEC strongly recommends using the safety lever lock (included) to prevent heavy vibration or maintenance personnel from unlocking contacts.

Part Numbers: Contact Blocks

| Description | Part Number | |
|-------------------------------------|--------------------------------|--------------------------------|
| | 1NO | 1NC |
| Standard Fingersafe (IP20) | HW-F10 HW-F10R (early make) | HW-F01 HW-F01R (late break) |
| Spring-Up Terminal Contacts | HW-G10 HW-G10R (early make) | HW-G01 HW-G01R (late break) |
| Exposed Screw Terminal Contacts | HW-C10 HW-C10R (early make) | HW-C01 HW-C01R (late break) |
| Dummy Block | TW-DB | |



- All assembled part numbers in catalog include standard (HW-F...) contacts.
- Assembled units with spring-up terminals (HW-G...) can be ordered by removing an "F" from the part number (Ex. HW1B-M1F11-R becomes HW1B-M111-R).
- Units with exposed screw terminals (HW-C...) must be ordered as sub-components.



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Switches & Pilot Devices

Illuminated Selector Switches (Sub- Assembled) con't




A3 Switches & Pilot Devices


Part Numbers: Lamps

| Type | 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 | 6.3V AC/DC | IS-6 |
| | 12V AC/DC | IS-12 |
| | 24V AC/DC | IS-24 |


-  1. In place of ②, specify the LED Color Code from table at right.
-  2. The LED contains a current-limiting resistor and reverse polarity protection diodes.



Part Numbers: 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. | Fingersafe | HW-DA1FB |
| | | Exposed | HW-DA1B |
| | | Spring Up | HW-GA1 |
|  Full Voltage Adaptor | For use with even number of contacts. | Fingersafe | TW-DA1FB |
| | | Exposed | TW-DA1B |

 HW-GA1 "Dummy Block with full voltage adaptor" does not require the use of HW-LH3.

Part Numbers: Transformer Unit

| Style | Voltage | Part Number |
|--|-------------------------------|-------------|
| Fingersafe | 120V AC | TW-F126B |
| | 240V AC | TW-F246B |
| | 480V AC | TW-F486B |
|  Spring Up | 120V AC 240V AC 480V AC | HW-T126 |
| | | HW-T246 |
| (6V secondary voltage) | | HW-L486 |
| DC-DC Converter | 110VDC | HW-L16D |



-  1. DC-DC convertor features spring-up terminals.
-  2. Applicable voltage range 90-140V DC.

② LED Color Code

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

Part Numbers: Anti-Rotation Ring

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

-  1. Use with notched panel cutout to prevent unit rotation.
-  2. Not required when using HW series nameplates See page A3-96.

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 |
| Contact | 1 | | | | | |
| | 2 | | | | | |
| | 3 | | | | | |
| | 4 | | | | | |
| | 5 | | | | | |
| | 6 | | | | | |

Step 4: If building a 2, 4, or 5 position selector, skip this step. (2, 4, 5 position selectors have only one cam)

If building a 3 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. Find one operator that contains all rows from above table.

Record the operator cam version.

Operator CAM Version
(blank, S, J for 3 position)

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.

Caution: Before putting any custom selector switch into use, it should be tested using an ohmmeter.



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 |
| HW-F10 (NO) | L | 0 | X |
| | R | 0 | X |
| HW-F01 (NC) | L | X | 0 |
| | R | X | 0 |
| HW-F10R NO-(EM) | L | 0 | X |
| | R | 0 | X |
| HW-F01R NC-(LB) | L | X | 0 |
| | R | 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 A3-73).

HW1S-2T
HW1K-2*
HW1F-2

3 Position Selector Switches

| Contact | Mounting Position | Operator Position | | |
|-----------------|-------------------|-------------------|--------|-------|
| | | Left | Center | Right |
| HW-F10 (NO) | L | X | 0 | 0 |
| | R | 0 | 0 | X |
| HW-F01 (NC) | L | 0 | X | X |
| | R | X | X | 0 |
| HW-F10R NO-(EM) | L | X | 0 | 0 |
| | R | 0 | 0 | X |
| HW-F01R NC-(LB) | L | 0 | X | X |
| | R | X | X | 0 |



1. HW1S-3T is identified by white plungers on the operator.
2. Mounting position indicates which side of operator each contact should be mounted (as viewed from the front of the panel).
3. * for key removable code (see page A3-73).

HW1S-3T
HW1K-3*
HW1F-3

| Contact | Mounting Position | Operator Position | | |
|-----------------|-------------------|-------------------|--------|-------|
| | | Left | Center | Right |
| HW-F10 (NO) | L | X | 0 | 0 |
| | R | 0 | 0 | X |
| HW-F01 (NC) | L | 0 | 0 | X |
| | R | X | 0 | 0 |
| HW-F10R NO-(EM) | L | X | X | 0 |
| | R | 0 | X | X |
| HW-F01R NC-(LB) | L | 0 | X | X |
| | R | X | X | 0 |



1. HW1S-3ST is identified by red plungers on the operator.
2. Mounting position indicates which side of operator each contact should be mounted (as viewed from the front of the panel).
3. * for key removable code (see page A3-73).

HW1S-3ST
HW1K-3S*

| Contact | Mounting Position | Operator Position | | |
|-----------------|-------------------|-------------------|--------|-------|
| | | Left | Center | Right |
| HW-F10 (NO) | L | X | 0 | 0 |
| | R | 0 | 0 | X |
| HW-F01 (NC) | L | 0 | X | 0 |
| | R | 0 | X | 0 |
| HW-F10R NO-(EM) | L | X | 0 | X |
| | R | X | 0 | X |
| HW-F01R NC-(LB) | L | 0 | X | X |
| | R | X | X | 0 |



1. HW1S-3JT is identified by black plungers on the operator.
2. Mounting position indicates which side of operator each contact should be mounted (as viewed from the front of the panel).
3. * for key removable code (see page A3-73).

HW1S-3JT
HW1K-3J*

A3 Switches & Pilot Devices

Operator Truth Tables con't

4 Position Selector Switches

| Contact | Mounting Position | Operator Position | | | |
|-----------------|-------------------|-------------------|---|---|---|
| | | 1 | 2 | 3 | 4 |
| HW-F10 (NO) | L | X | 0 | 0 | 0 |
| | R | 0 | 0 | 0 | X |
| HW-F01 (NC) | L | 0 | 0 | X | 0 |
| | R | 0 | X | 0 | 0 |
| HW-F10R NO-(EM) | L | X | X | 0 | X |
| | R | X | 0 | X | X |
| HW-F01R NC-(LB) | L | 0 | X | X | X |
| | R | X | X | X | 0 |

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Switches & Pilot Devices

5 Position Selector Switches

| Contact | Mounting Position | Operator Position | | | | |
|-----------------|-------------------|-------------------|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 |
| HW-F10 (NO) | L | X | 0 | 0 | 0 | 0 |
| | R | 0 | 0 | 0 | 0 | X |
| HW-F01 (NC) | L | 0 | 0 | 0 | X | 0 |
| | R | 0 | X | 0 | 0 | 0 |
| HW-F10R NO-(EM) | L | X | X | X | 0 | X |
| | R | X | 0 | X | X | X |
| HW-F01R NC-(LB) | L | 0 | X | X | X | X |
| | R | X | X | X | X | 0 |



Mounting position indicates which side of operator each contact should be mounted (as viewed from the front of the panel).

Custom Selector Switch Building Examples

Example 1: 3 Position, Maintained Selector Switch with 3 Contacts

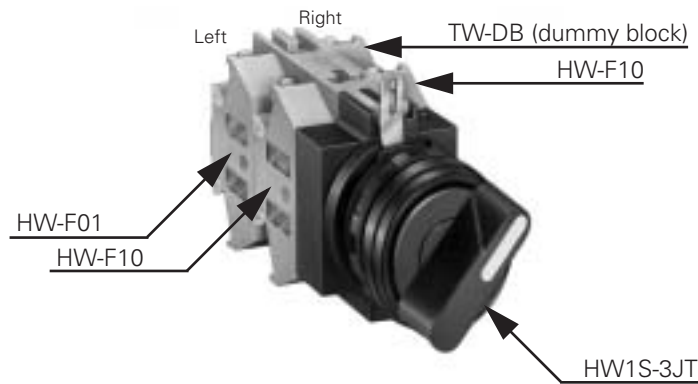
Determine which operator is capable of producing all the desired contact actions.

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Switches & Pilot Devices

| | Knob Position | | | Operator | | |
|------------------|---------------|--------|-------|---------------------------------------|---------------------------------------|---|
| | Left | Center | Right | HW1S-3T | HW1S-3ST | HW1S-3JT |
| Contact 1 | 0 | 0 | X | Possible with HW-F10 mounted on right | Possible with HW-F10 mounted on right | Possible with HW-F10 mounted on right |
| Contact 2 | 0 | X | 0 | Not possible | Not possible | Possible with HW-F01 mounted on left or right |
| Contact 3 | X | 0 | 0 | Possible with HW-F10 mounted on left | Possible with HW-F10 mounted on left | Possible with HW-F10 mounted on left |

The only operator in this example that will produce all the desired contact actions is HW1S-3JT. Assemble as follows:

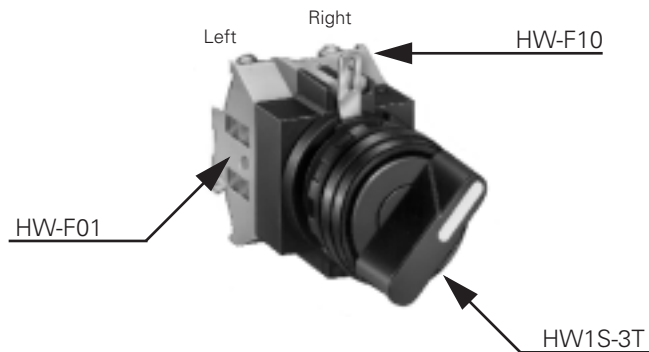


Example 2: 3 Position, Maintained Selector Switch with 2 Contacts

Determine which operator is capable of producing all the desired contact actions.

| | Knob Position | | | Operator | | |
|------------------|---------------|--------|-------|---------------------------------------|---|---------------------------------------|
| | Left | Center | Right | HW1S-3T | HW1S-3ST | HW1S-3JT |
| Contact 1 | 0 | 0 | X | Possible with HW-F10 mounted on right | Possible with HW-F10 mounted on right | Possible with HW-F10 mounted on right |
| Contact 2 | 0 | X | X | Possible with HW-F01 mounted on left | Possible with HW-F10R mounted on right or HW-F01R mounted on left | Not possible |

This arrangement is possible with either the HW1S-3T or HW1S-3ST operator. It is preferred to use the HW1S-3T as this requires only the standard contacts (HW-F10 and HW-F01 and not the early make (HW-F10R) or late break (HW-F01R) contacts). Assemble as follows:



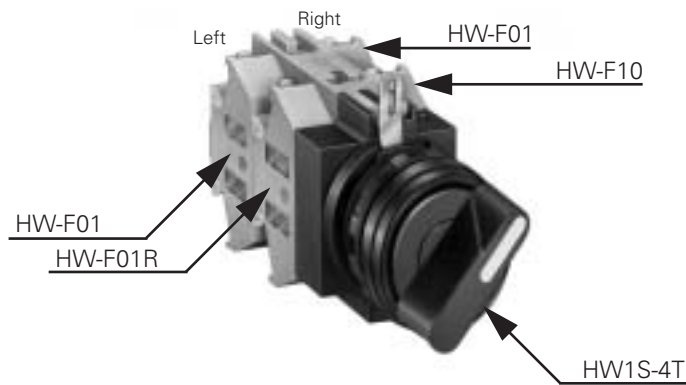
Custom Selector Switch Building Examples con't

Example 3: 4 Position Selector Switch with 4 Contacts

Determine where the contact will be mounted.

| | Knob Position | | | | Operator |
|------------------|---------------|---|---|---|-------------------------|
| | 1 | 2 | 3 | 4 | HW1S-4T |
| Contact 1 | 0 | X | 0 | 0 | HW-F01 mounted on right |
| Contact 2 | 0 | 0 | X | 0 | HW-F01 mounted on left |
| Contact 3 | 0 | 0 | 0 | X | HW-F10 mounted on right |
| Contact 4 | 0 | X | X | X | HW-F01R mounted on left |

Assemble as follows:

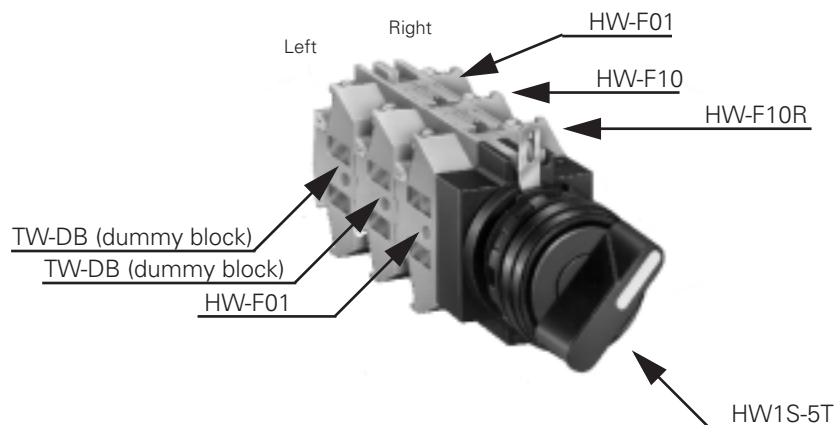


Example 4: 5 Position Selector Switch with 4 Contacts

Determine where the contact will be mounted.

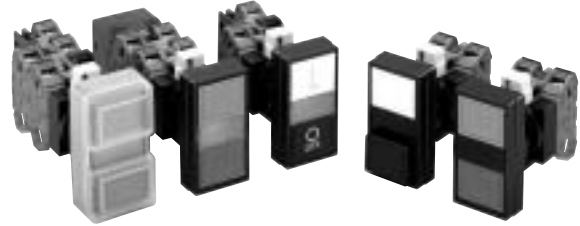
| | Knob Position | | | | | Operator |
|------------------|---------------|---|---|---|---|--------------------------|
| | 1 | 2 | 3 | 4 | 5 | HW1S-5T |
| Contact 1 | 0 | X | 0 | 0 | 0 | HW-F01 mounted on right |
| Contact 2 | 0 | 0 | 0 | X | 0 | HW-F01 mounted on left |
| Contact 3 | 0 | 0 | 0 | 0 | X | HW-F10 mounted on right |
| Contact 4 | X | 0 | X | X | X | HW-F10R mounted on right |

Assembled as follows:



Dual Pushbutton Switches

Two pushbuttons and a pilot light are integrated into one space-saving ø22 mm control unit.



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- 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 types illuminated with LED or incandescent lamps.
- IP40 protection, IP65 when using silicon cover.
- UL Listed, CSA approved, and EN compliant



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:



| Operation Type | Button Style | | Contact Arrangement | | Part Number | ④ Button Color Code | ⑤ Legend Code | |
|----------------|----------------------------------|---|---------------------|---------------|------------------|--|--|------------------|
| | | | Top Button | Bottom Button | | | | |
| Momentary | Flush (top) Flush (bottom) |  | 1NO | 1NC | HW7D-B11F1001-④⑤ | GR: Green (top) Red (bottom) WB: White (top) Black (bottom) | Blank:Without legend 1:I/ON (top) O/OFF (bottom) | |
| | | | 1NO | 1NO | HW7D-B11F1010-④⑤ | | | |
| | | | 1NO-1NC | 1NO-1NC | HW7D-B11F1111-④⑤ | | | |
| | | | 2NO | 2NC | HW7D-B11F2002-④⑤ | | | |
| | Flush (top) Extended (bottom) |  | | 2NO | 2NO | | | HW7D-B11F2020-④⑤ |
| | | | | 1NO | 1NC | | | HW7D-B12F1001-④⑤ |
| | | | | 1NO | 1NO | | | HW7D-B12F1010-④⑤ |
| | | | | 1NO-1NC | 1NO-1NC | | | HW7D-B12F1111-④⑤ |
| Interlock* | Flush (top) Flush (bottom) |  | 2NO | 2NC | HW7D-B12F2002-④⑤ | | | |
| | | | 2NO | 2NO | HW7D-B12F2020-④⑤ | | | |
| | | | 1NO | 1NC | HW7D-B21F1001-④⑤ | | | |
| | | | 1NO | 1NO | HW7D-B21F1010-④⑤ | | | |
| | Flush (top) Extended (bottom) |  | | 1NO-1NC | 1NO-1NC | HW7D-B21F1111-④⑤ | | |
| | | | | 2NO | 2NC | HW7D-B21F2002-④⑤ | | |
| | | | | 2NO | 2NO | HW7D-B21F2020-④⑤ | | |
| | | | | 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.

Part Numbers, con't

Part Numbers: With Center Pilot Light

| Operation Type | Button Style | Pilot Light Type | Top Button | Bottom Button | Part Number | | | |
|--|----------------------------------|----------------------------------|---|---------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
|  Flush (top) Flush (bottom) | Momentary | Flush (Top) Flush (Bottom) | Full Voltage | 1NO | 1NC | HW7D-L11F1001 ^{②③-④⑤} | | |
| | | | | 1NO | 1NO | HW7D-L11F1010 ^{②③-④⑤} | | |
| | | | | 1NO-1NC | 1NO-1NC | HW7D-L11F1111 ^{②③-④⑤} | | |
| | | | 2NO | 2NC | HW7D-L11F2002 ^{②③-④⑤} | | | |
| | | | 2NO | 2NO | HW7D-L11F2020 ^{②③-④⑤} | | | |
| | | | Transformer | 1NO | 1NC | HW7D-L11F1001 ^{②③-④⑤} | | |
| | | 1NO | | 1NO | HW7D-L11F1010 ^{②③④⑤} | | | |
| | | 1NO-1NC | | 1NO-1NC | HW7D-L11F1111 ^{②③-④⑤} | | | |
| | | 2NO | | 2NC | HW7D-L11F2002 ^{②③-④⑤} | | | |
| | | 2NO | | 2NO | HW7D-L11F2020 ^{②③-④⑤} | | | |
| | | Flush (Top) Extended (Bottom) | | Full Voltage | 1NO | 1NC | HW7D-L12F1001 ^{②③-④⑤} | |
| | | | 1NO | | 1NO | HW7D-L12F1010 ^{②③-④⑤} | | |
| | 1NO-1NC | | 1NO-1NC | | HW7D-L12F1111 ^{②③-④⑤} | | | |
| | 2NO | | 2NC | | HW7D-L12F2002 ^{②③-④⑤} | | | |
| | 2NO | | 2NO | | HW7D-L12F2020 ^{②③-④⑤} | | | |
| | Transformer | | 1NO | | 1NC | HW7D-L12F1001 ^{②③-④⑤} | | |
| | | | 1NO | 1NO | HW7D-L12F1010 ^{②③-④⑤} | | | |
| | | | 1NO-1NC | 1NO-1NC | HW7D-L12F1111 ^{②③-④⑤} | | | |
| | | | 2NO | 2NC | HW7D-L12F2002 ^{②③-④⑤} | | | |
| | | | 2NO | 2NO | HW7D-L12F2020 ^{②③-④⑤} | | | |
| | | |  Flush (top) Extended (bottom) | Interlock* | Flush (Top) Flush (Bottom) | Full Voltage | 1NO | 1NC |
| | 1NO | | | | | | 1NO | HW7D-L21F1010 ^{②③-④⑤} |
| | 1NO-1NC | 1NO-1NC | | | | | HW7D-L21F1111 ^{②③-④⑤} | |
| | 2NO | 2NC | | | | HW7D-L21F2002 ^{②③-④⑤} | | |
| 2NO | 2NO | HW7D-L21F2020 ^{②③-④⑤} | | | | | | |
| Transformer | 1NO | 1NC | | | | HW7D-L21F1001 ^{②③-④⑤} | | |
| | 1NO | 1NO | | | HW7D-L21F1010 ^{②③-④⑤} | | | |
| | 1NO-1NC | 1NO-1NC | | | HW7D-L21F1111 ^{②③-④⑤} | | | |
| | 2NO | 2NC | | | HW7D-L21F2002 ^{②③-④⑤} | | | |
| | 2NO | 2NO | | | HW7D-L21F2020 ^{②③-④⑤} | | | |
| | Flush (Top) Extended (Bottom) | Full Voltage | | | 1NO | 1NC | HW7D-L22F1001 ^{②③-④⑤} | |
| 1NO | | | | | 1NO | HW7D-L22F1010 ^{②③-④⑤} | | |
| 1NO-1NC | | | | 1NO-1NC | HW7D-L22F1111 ^{②③-④⑤} | | | |
| 2NO | | | | 2NC | HW7D-L22F2002 ^{②③-④⑤} | | | |
| 2NO | | | | 2NO | HW7D-L22F2020 ^{②③-④⑤} | | | |
| Transformer | | | | 1NO | 1NC | HW7D-L22F1001 ^{②③-④⑤} | | |
| | | 1NO | | 1NO | HW7D-L22F1010 ^{②③-④⑤} | | | |
| | | 1NO-1NC | | 1NO-1NC | HW7D-L22F1111 ^{②③-④⑤} | | | |
| | | 2NO | | 2NC | HW7D-L22F2002 ^{②③-④⑤} | | | |
| | | 2NO | | 2NO | HW7D-L22F2020 ^{②③-④⑤} | | | |



- *Interlock type prevents both top and bottom buttons from being pressed simultaneously.
- Clear silicon rubber cover part number HW9Z-D7D.

② Pilot Light Illumination Type and 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 |
| 6V AC/DC, Incandescent | Q5* |
| 12V AC/DC, Incandescent | Q6* |
| 24V AC/DC, Incandescent | Q7* |

| Step-Down Transformer (6V Secondary Lamp Voltage) | |
|--|------|
| Voltage | Code |
| 120V AC, LED | H22 |
| 240V AC, LED | M42 |
| 480V AC, LED | T82 |
| 120V AC, Incandescent | H25* |
| 240V AC, Incandescent | M45* |
| 480V AC, Incandescent | T85* |



* Only available for White Lens Pilot Lamp.

③ Pilot Lamp Color Code

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



* Only available for LED Type illumination.

④ Pushbutton Color Code

| Color | | Code |
|--------|-------|------|
| Top | Green | GR |
| Bottom | Red | |
| Top | White | WB |
| Bottom | Black | |

⑤ Engraving Codes

| Engraving | Code |
|--------------|--------|
| No Engraving | Blank |
| I/ON | Top |
| O/OFF | Bottom |
| | 1 |

Contact Arrangement Chart

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Switches & Pilot Devices

| 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 | NO | | | X | | |
| | | | 3 | NC | X | | | | |
| | | | 4 | Dummy | | | | | |
| 2NC | 1NO | 0210 | 1 | NC | X | | | | |
| | | | 2 | NO | | | | X | |
| | | | 3 | NC | X | | | | |
| | | | 4 | Dummy | | | | | |

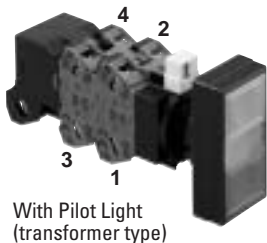


1. Transformers can have two or four contact blocks only.
 2. Contact blocks 1 and 3 are actuated by the top button. Contact blocks 2 and 4 are actuated by the bottom button.

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 | 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



A3

Switches & Pilot Devices

Dual Pushbutton Switches (Sub-Assembled)



Part Numbers: Operators

| | Style | Type | Button Style | Part Number |
|----------------|-------|-----------|----------------------------------|-------------|
| Flush Flush | | Momentary | Flush (top) Flush (bottom) | HW7D-011④-⑤ |
| | | | Flush (top) Extended (bottom) | HW7D-012④-⑤ |
| Flush Extended | | Interlock | Flush (top) Flush (bottom) | HW7D-021④-⑤ |
| | | | Flush (top) Extended (bottom) | HW7D-022④-⑤ |

④ Pushbutton Color Code

| Color | Code |
|---------------|------|
| Top: Green | GR |
| Bottom: Red | |
| Top: White | WB |
| Bottom: Black | |

⑤ Engraving Codes

| Engraving | Code |
|--------------|--------|
| No Engraving | Blank |
| I/ON | Top |
| O/OFF | Bottom |

1

Part Numbers: Contact Blocks

| Description | Part Number | |
|---------------------------------|--|--|
| | 1NO | 1NC |
| Standard Fingersafe (IP20) | HW-F10 HW-F10R (early make) | HW-F01 HW-F01R (late break) |
| Spring-Up Terminal Contacts | HW-G10 HW-G10R (early make) HW-G10-MAU (gold contacts) | HW-G01 HW-G01R (late break) HW-G01-MAU (gold contacts) |
| Exposed Screw Terminal Contacts | HW-C10 HW-C10R (early make) | HW-C01 HW-C01R (late break) |
| Dummy Block | TW-DB | |



- All assembled part numbers in catalog include standard (HW-F...) contacts. (except unibody)
- Assembled units with spring-up terminals (HW-G...) can be ordered by removing an "F" from the part number (Ex. HW1B-M1F11-R becomes HW1B-M111-R).
- Units with exposed screw terminals (HW-C...) must be ordered as sub-component
- All contacts (including exposed screw) are UL, CSA, and IEC compliant and carry the CE mark.

Part Numbers: Contact Block Mounting Adaptor (safety lever lock included)

| Appearance | Part Number |
|------------------------------------|-------------|
| Non-Illuminated | HW-CB2C |
| Illuminated (with Pilot Light) | HW-CBL |



- 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 unlocking contacts.

Part Numbers: Lamps/Lens

| | Type | Voltage | Part Number |
|-------|---------------------|------------|-------------|
| Lamps | 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 | 6.3V AC/DC | IS-6 |
| | 12V AC/DC | IS-12 | |
| | 24V AC/DC | IS-24 | |
| | 30V AC/DC | IS-30 | |
| Lens | Non-Illuminated | | HW9Z-B7B |
| | Illuminated | | HW9Z-L7W |



- In place of ②, specify the LED Color Code from table on right.
- The LED contains a current-limiting resistor and reverse polarity protection diodes.

Part Numbers: 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. | Fingersafe | HW-DA1FB |
| | | Exposed | HW-DA1B |
| Full Voltage Adaptor | For use with even number of contacts. | Fingersafe | TW-DA1FB |
| | | Exposed | TW-DA1B |
| Transformer Unit (6V secondary voltage) | 120VAC 240VAC 480VAC | Fingersafe | TW-F126B TW-F246B TW-F486B |
| | | Spring Up | HW-T126 HW-T246 HW-L486 |
| | | | Exposed |
| DC-DC Converter | 110VDC | | HW-L16D |



HW-GA1 "Dummy Block with full voltage adaptor" does not require the use of HW-LH3.

Part Numbers: Anti-Rotation Ring

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



Use with notched panel cut-out to prevent unit rotation.

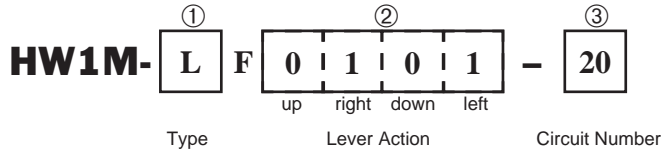
LED Color Code

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

Mono Lever Switches (Assembled)



Part Number Guide



| Description | Code | Remarks |
|------------------|--------------|----------------------------|
| ① Type | Standard | (blank) |
| | Interlocking | L |
| ② Lever Action | Maintained | 1 |
| | Spring | 2 |
| | Blocked | 0 |
| ③ Circuit Number | 20 | See Circuit Diagrams below |
| | 40 | |
| | 22N9 | |

Part Numbers: Mono Lever Switches

| Description | No. of Positions | Part Number |
|------------------------------|------------------|------------------|
| HW1M Standard Lever | 2 | HW1M-F1010-20 |
| | | HW1M-F2020-20 |
| | | HW1M-F0101-20 |
| | | HW1M-F0202-20 |
| | | HW1M-F0101-40 |
| | | HW1M-F0202-40 |
| HW1M-L Interlocking Lever | 2 | HW1M-LF1010-20 |
| | | HW1M-LF2020-20 |
| HW1M-L Interlocking Lever | 4 | HW1M-LF0101-20 |
| | | HW1M-LF0202-20 |
| | | HW1M-LF0101-40 |
| | | HW1M-LF0202-40 |
| | | HW1M-LF1111-22N9 |
| | | HW1M-LF2222-22N9 |

A3

Switches & Pilot Devices

Circuit Diagrams

2 Position Left/Right

| Circuit Number | Contact Mounting | | Position | | |
|----------------|------------------|--------|----------|--------|-------|
| | No. | | Left | Center | Right |
| 20 | 1 | HW-F10 | X | 0 | 0 |
| | 2 | HW-F10 | 0 | 0 | X |
| 40 | 1 | HW-F10 | X | 0 | 0 |
| | 2 | HW-F10 | 0 | 0 | X |
| | 3 | HW-F10 | X | 0 | 0 |
| | 4 | HW-F10 | 0 | 0 | X |

2 Position Up/Down

| Circuit Number | Contact Mounting | | Position | | |
|----------------|------------------|--------|----------|--------|----|
| | No. | | Down | Center | Up |
| 20 | 1 | HW-F10 | X | 0 | 0 |
| | 2 | HW-F10 | 0 | 0 | X |
| 40 | 1 | HW-F10 | X | 0 | 0 |
| | 2 | HW-F10 | 0 | 0 | X |
| | 3 | HW-F10 | X | 0 | 0 |
| | 4 | HW-F10 | 0 | 0 | X |

3 Position

| Circuit Number | Contact Mounting | | Position | | | | |
|----------------|------------------|--------|----------|------|--------|----|-------|
| | No. | | Down | Left | Center | Up | Right |
| 30 | 1 | HW-F01 | 0 | 0 | 0 | 0 | X |
| | 2 | HW-F01 | X | 0 | 0 | 0 | 0 |
| | 3 | HW-F10 | 0 | X | 0 | 0 | 0 |

4 Position

| Circuit Number | Contact Mounting | | Position | | | | |
|----------------|------------------|--------|----------|------|--------|----|-------|
| | No. | | Down | Left | Center | Up | Right |
| 22N9 | 1 | HW-F01 | 0 | 0 | 0 | 0 | X |
| | 2 | HW-F01 | X | 0 | 0 | 0 | 0 |
| | 3 | HW-F10 | 0 | X | 0 | 0 | 0 |
| | 4 | HW-F10 | 0 | 0 | 0 | X | 0 |



Other circuit arrangements available, contact IDEC for details.

Mono Lever Switches (Sub-Assembled)



Contact Blocks + Mounting Adaptor + Anti-Rotation Ring + Operator = Complete Part




A3

Switches & Pilot Devices

Part Numbers: Operators

| Appearance | # of Positions | Description | Part Number |
|---|----------------|---------------------------|-------------|
|  | 2 | Maintained Up/Down | HW1M-1010 |
| | | Spring return Up/Down | HW1M-2020 |
| | | Maintained Left/Right | HW1M-0101 |
| | | Spring return Left/Right | HW1M-0202 |
| | 4 | Maintained, 4 position | HW1M-1111 |
| | | Spring return, 4 position | HW1M-2222 |
|  | 2 | Maintained Up/Down | HW1M-L1010 |
| | | Spring return Up/Down | HW1M-L2020 |
| | | Maintained Left/Right | HW1M-L0101 |
| | | Spring return Left/Right | HW1M-L0202 |
| | 4 | Maintained, 4 position | HW1M-L1111 |
| | | Spring return, 4 position | HW1M-L2222 |

Part Numbers: Contact Block Mounting Adaptor (safety lever lock included)

| Appearance | 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 unlocking contacts.


Part Numbers: Anti-Rotation Ring

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







- Use with notched panel cutout to prevent unit rotation.
- Not required when using HW series nameplates. See page A3-96.

Part Numbers: Replacement Parts

| Item | Part Number |
|--|---|
| Black Cap  | HW9Z-CPM |
| Boot  | HW9Z-BLM (fits standard type operator only) |

Part Numbers: Contact Blocks

| Description | Part Number | |
|---|--------------------------------|--------------------------------|
| | 1NO | 1NC |
| Standard Fingersafe (IP20)  | HW-F10 HW-F10R (early make) | HW-F01 HW-F01R (late break) |
| Spring-Up Terminal Contacts  | HW-G10 HW-G10R (early make) | HW-G01 HW-G01R (late break) |
| Exposed Screw Terminal Contacts  | HW-C10 HW-C10R (early make) | HW-C01 HW-C01R (late break) |
| Dummy Block  | TW-DB | |



- All assembled part numbers in catalog include standard (HW-F...) contacts.
- Assembled units with spring-up terminals (HW-G...) can be ordered by removing an "F" from the part number (Ex. HW1B-M1F11-R becomes HW1B-M111-R).
- Units with exposed screw terminals (HW-C...) must be ordered as sub-components.

Pushbutton Selectors (Assembled)

Part Numbers: 2-Position Pushbutton Selectors

| Contacts | Mounting | | Operator Position | | | | Part Number |
|----------|----------|--------|-------------------|-----------|--------|-----------|----------------|
| | | | Left | | Right | | |
| | | | Normal | Depressed | Normal | Depressed | |
| 2NO | 1 | HW-F10 | 0 | X | 0 | 0 | HW1R-2DF20-① |
| | 2 | HW-F10 | 0 | 0 | 0 | X | |
| 2NO-2NC | 1 | HW-F10 | 0 | X | 0 | 0 | HW1R-2DF22N1-① |
| | 2 | HW-F10 | 0 | 0 | 0 | X | |
| | 3 | HW-F01 | X | 0 | X | X | |
| | 4 | HW-F01 | X | X | X | 0 | |
| 2NO-2NC | 1 | HW-F10 | 0 | X | 0 | 0 | HW1R-2EF22N1-① |
| | 2 | HW-F10 | 0 | 0 | 0 | X | |
| | 3 | HW-F01 | 0 | 0 | X | X | |
| | 4 | HW-F01 | X | X | 0 | 0 | |
| 2NO-2NC | 1 | HW-F10 | 0 | 0 | 0 | X | HW1R-2FF22N1-① |
| | 2 | HW-F10 | 0 | X | 0 | 0 | |
| | 3 | HW-F01 | 0 | 0 | X | 0 | |
| | 4 | HW-F01 | X | 0 | 0 | 0 | |



A3

Switches & Pilot Devices



1. Available only with momentary pushbutton and maintained selector.
2. In place of ①, specify the button color code from table below
3. Other contact arrangements available. Contact IDEC for details.
4. All assembled parts use flush buttons.
5. **Normal** position refers to the button flush with the selector ring.
6. **Depressed** position refers to the button being pushed in.

① Button Color Code

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

Pushbutton Selectors (Partial-Assemblies)


Contact Assembly + Operator/Button = Complete Part



A3

Switches & Pilot Devices



Part Numbers: Operators

| Appearance | Description | Part Number |
|---|-------------|-------------|
|  | Cam D | HW1R-2D-① |
| | Cam E | HW1R-2E-① |
| | Cam F | HW1R-2F-① |



In place of ① specify Button Color Code.

Part Numbers: Contact Assemblies

| Style | Contacts | Part Number |
|---|--|--|
| Standard Fingersafe Contacts  | 1NO 1NC 1NO/1NC 2NO 2NC 2NO/2NC | HW-CBF10 HW-CBF01 HW-CBF11 HW-CBF20 HW-CBF02 HW-CBF22 |
| Spring Up Terminal Contacts  | 1NO 1NC 1NO/1NC 2NO 2NC 2NO/2NC | HW-CB10 HW-CB01 HW-CB11 HW-CB20 HW-CB02 HW-CB22 |

① Button Color Code

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

Pushbutton Selectors (Sub-Assembled)


A3

Switches & Pilot Devices

Contact Blocks + Contact Mounting Adaptor + Anti-Rotation Ring + Operator + Button = Complete Part



Part Numbers: Operators

| Appearance | Description | Part Number |
|---|-------------|-------------|
|  | Cam D | HW1R-2D |
| | Cam E | HW1R-2E |
| | Cam F | HW1R-2F |
| | Cam N | HW1R-2N |


Part Numbers: Buttons

| Description | Part Number |
|---|-------------|
| Round Flush  | HW1A-B1-① |



In place of ① specify Button Color Code.


Part Numbers: Anti-Rotation Ring

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



1. Use with notched panel cutout to prevent unit rotation.
2. Not required when using HW series name-plates See page A3-96.





Part Numbers: Contact Block Mounting Adaptor (safety lever lock included)

| Appearance | Part Number |
|---|-------------|
|  | HW-CB2C |



1. Used to mount contact blocks to operator (first pair only).
2. IDEC strongly recommends using the safety lever lock (included) to prevent heavy vibration or maintenance personnel from unlocking contacts.

Part Numbers: Contact Blocks

| Description | Part Number | |
|---|--------------------------------|--------------------------------|
| | 1NO | 1NC |
| Standard Fingersafe (IP20)  | HW-F10 HW-F10R (early make) | HW-F01 HW-F01R (late break) |
| Spring-Up Terminal Contacts  | HW-G10 HW-G10R (early make) | HW-G01 HW-G01R (late break) |
| Exposed Screw Terminal Contacts  | HW-C10 HW-C10R (early make) | HW-C01 HW-C01R (late break) |
| Dummy Block  | TW-DB | |



1. All assembled part numbers in catalog include standard (HW-F...) contacts.
2. Assembled units with spring-up terminals (HW-G...) can be ordered by removing an "F" from the part number (Ex. HW1B-M1F11-R becomes HW1B-M111-R).
3. Units with exposed screw terminals (HW-C...) must be ordered as sub-components.

① Button Color Code

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

Operator Truth Tables

HW Pushbutton Selector Switches - Cam D

A3

Switches & Pilot Devices

| | | Operator Position | | | |
|-----------------|-------------------|-------------------|----------------|--------------|----------------|
| Contact | Mounting Position | Left ↙ | | Right ↗ | |
| | | Button Free | Button Pressed | Button Free | Button Pressed |
| HW-F10 (NO) | Left | 0 | X | 0 | 0 |
| | Right | 0 | 0 | 0 | X |
| HW-F01 (NC) | Left | X | 0 | X | X |
| | Right | X | X | X | 0 |
| HW-F10R (NO-EM) | Left | 0 | X | 0 | 0 |
| | Right | 0 | 0 | 0 | X |
| HW-F01R (NC-LB) | Left | X | 0 | X | X |
| | Right | X | X | X | 0 |

HW Pushbutton Selector Switches - Cam E

| | | Operator Position | | | |
|-----------------|-------------------|-------------------|----------------|--------------|----------------|
| Contact | Mounting Position | Left ↙ | | Right ↗ | |
| | | Button Free | Button Pressed | Button Free | Button Pressed |
| HW-F10 (NO) | Left | 0 | X | 0 | 0 |
| | Right | 0 | 0 | 0 | X |
| HW-F01 (NC) | Left | 0 | 0 | X | X |
| | Right | X | X | 0 | 0 |
| HW-F10R (NO-EM) | Left | X | X | 0 | 0 |
| | Right | 0 | 0 | X | X |
| HW-F01R (NC-LB) | Left | X | 0 | X | X |
| | Right | X | X | X | 0 |

HW Pushbutton Selector Switches - Cam F



| | | Operator Position | | | |
|-----------------|-------------------|-------------------|----------------|--------------|----------------|
| Contact | Mounting Position | Left ↙ | | Right ↗ | |
| | | Button Free | Button Pressed | Button Free | Button Pressed |
| HW-F10 (NO) | Left | 0 | 0 | 0 | X |
| | Right | 0 | X | 0 | 0 |
| HW-F01 (NC) | Left | 0 | 0 | X | 0 |
| | Right | X | 0 | 0 | 0 |
| HW-F10R (NO-EM) | Left | X | X | 0 | X |
| | Right | 0 | X | X | X |
| HW-F01R (NC-LB) | Left | X | X | X | 0 |
| | Right | X | 0 | X | X |

HW Pushbutton Selector Switches - Cam N

| | | Operator Position | | | |
|-----------------|-------------------|-------------------|----------------|--------------|----------------|
| Contact | Mounting Position | Left ↙ | | Right ↗ | |
| | | Button Free | Button Pressed | Button Free | Button Pressed |
| HW-F10 (NO) | Left | 0 | X | 0 | X |
| | Right | 0 | X | 0 | X |
| HW-F01 (NC) | Left | 0 | 0 | X | 0 |
| | Right | X | 0 | 0 | 0 |
| HW-F10R (NO-EM) | Left | X | X | 0 | X |
| | Right | 0 | X | X | X |
| HW-F01R (NC-LB) | Left | X | 0 | X | 0 |
| | Right | X | 0 | X | 0 |

Contactor Reset Button

Part Numbers: Reset Buttons (Assembled)

| Appearance | Plastic Bezel | Metal Bezel |
|--|--------------------|--------------------|
|  (Blank) | HW1B-M1RS-①T | HW4B-M1RS-①T |
|  Engraved "R" | HW1B-M1RS-①T-ENG-R | HW4B-M1RS-①T-ENG-R |

① Button Color Code

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

A3

Switches & Pilot Devices




- In place of ① specify Button Color Code.
- 5.1" (130mm) overall length.
- 16mm flat base for easy alignment

Sub-Assemblies

Rod + Operator + Button = Complete Part



Part Numbers: Button

| Appearance | Part Number |
|---|-------------|
|  | HW1A-B1-① |



In place of ① specify Button Color Code from table.

Part Numbers: Rod

| Appearance | Part Number |
|--|----------------|
|  | HW9Z-RS-TK2141 |

① Button Color Code

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

Part Numbers: Operator

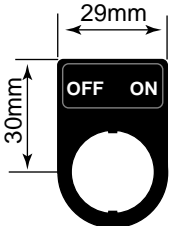
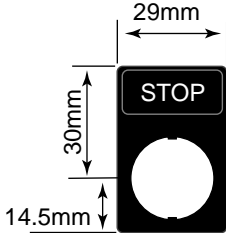
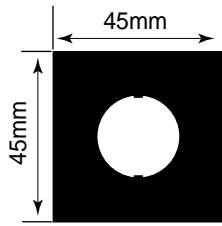
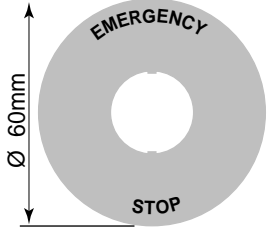
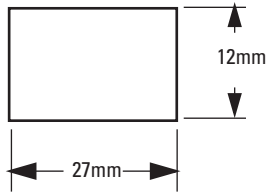
| Appearance | Plastic | Metal |
|---|---------|---------|
|  | HW1B-M0 | |
|  | | HW4B-M0 |

Nameplates — HW Series

Part Numbers: Nameplates

A3

Switches & Pilot Devices

| | HWAM—Black Plastic | HWAQ—Black Plastic | HWAS—Black Plastic | HWAV—Yellow Plastic |
|---|---|---|---|---|
| |  |  |  |  |
| | Part Number | Part Number | Part Number | Part Number |
| Nameplate (blank engraving plate included) | HWAM-0B | HWAQ-0B | HWAS-0B | HWAV-0 |
| Nameplate (engraved) | HWAM-① | HWAQ-① | HWAS-① | HWAV-27* HWAV5-27† |
| Additional Insert (blank) | HWNP-0 | HWNP-0 | HWNP Dimensions | |
| 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 for 80mm diameter jumbo mushroom comes engraved “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 | REV-FOR | 216 | DOWN-OFF-SLOW | 304 |
| FAST | 105 | REVERSE | 120 | FOR-REV | 205 | RUN-JOG | 217 | FAST-OFF-SLOW | 305 |
| FORWARD | 106 | RUN | 121 | HAND-AUTO | 206 | RUN-SAFE | 218 | FOR-OFF-REV | 306 |
| HAND | 107 | SLOW | 122 | HIGH-LOW | 207 | SAFE-RUN | 219 | LEFT-OFF-RIGHT | 307 |
| HIGH | 108 | START | 123 | JOG-RUN | 208 | SLOW-FAST | 220 | LOWER-OFF-RAISE | 308 |
| IN | 109 | STOP | 125 | LEFT-RIGHT | 209 | START-STOP | 221 | OFF-MAN-AUTO | 309 |
| INCH | 110 | TEST | 126 | LOWER-RAISE | 210 | STOP-START | 222 | OFF-SLOW-FAST | 310 |
| JOG | 111 | UP | 127 | MAN-AUTO | 211 | UP-DOWN | 223 | OFF-1-2 | 311 |
| LOW | 112 | I (Int'l On) | 150 | OFF-ON | 212 | O1 (Int'l OFF ON) | 250 | 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 |



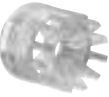


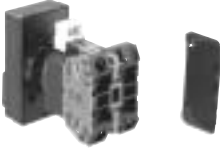
- 1. To order engraved nameplates, add legend code to nameplate part number.
- 2. Character height based on the number of characters and size of nameplate. Standard character size is 3/16".
- 3. Nameplates with standard legends are the same list price as blank nameplates.
- 4. Nameplates have built-in anti-rotation feature for use with notched panel cut-outs. Additional anti-rotation ring (HW9Z-RL) is not necessary.

A3

Switches & Pilot Devices

Accessories — HW Series

| | Appearance | Description/Usage | Part Number | |
|-----------------------------------|------------|---|--|----------|
| Locking Ring Wrench | | Metallic tool used to tighten the plastic locking ring when installing the HW series unit 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) | for notched panel cutout (standard) | HW9Z-RL |
| | | | for round panel cutout | LW9Z-L |
| Rubber 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 Degree of protection: IP66 | LW9Z-BM | |
| Barrier | | To prevent contact between adjacent lead wires when control units are tightly mounted | HW-VL1 | |
| Pushbutton Clear Boot | | Used to cover and protect pushbuttons Operating temperature: -50 to +60°C | Flush Pushbuttons | OC-31 |
| | | | Extended Pushbuttons | OC-32 |
| Padlock Cover | | Plastic hinged cover to protect pushbuttons or selector switches. (Not intended for E-Stops) Degree of protection: IP65 | HW9Z-KL1 | |
| Tab Terminal Adapter | | Tab #250 (6.35 x 0.8mm): Single tab | TW-FA1 | |
| Adaptor (22mm to 30mm) | | Used to mount round HW series control unit (except Jumbo Mushroom, unibody, and square units) into a 30mm panel cut-out. (includes both pieces) | HW9Z-A30 | |
| Replacement Safety Lever Lock | | Used to prevent contact mounting lever from moving due to heavy vibration or panel maintenance. (included with all Contact Block Mounting Adaptors) | HWLS-TK1971 | |
| Reset Rod for Contactors Overload | | 5" rod used with HW1B-M0. See Contactors Section D for more information. | 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) HW9Z-K11 (maintained cover) | |
| Replacement Keys | | Pair of Keys (#231) | HW9Z-SKP | |

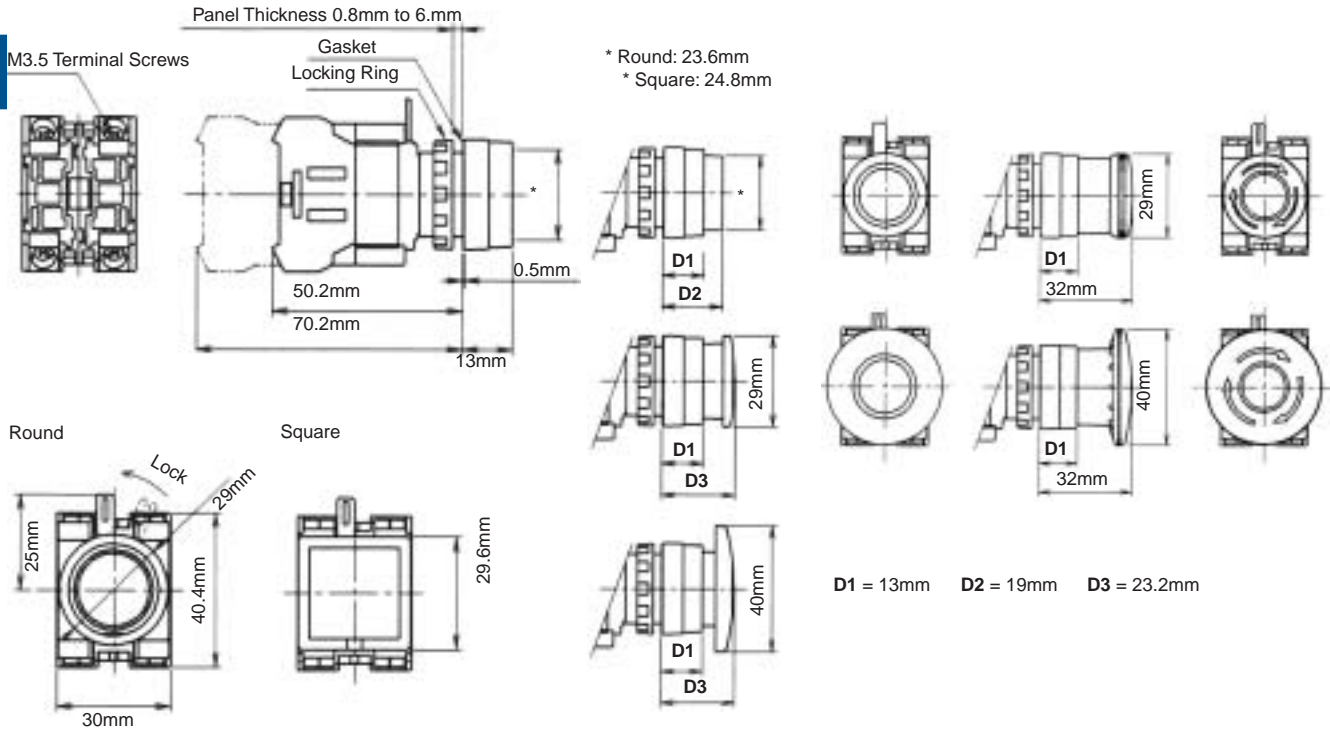
| | Appearance | Description/Usage | Part Number |
|---|---|---|------------------------------------|
| Replacement Lens |  | HW Illuminated Unibody Replacement Lens | HWLV-LENSR |
| Replacement Jumbo Dome Lens |  | Polycarbonate Replacement Lens | HW1A-P5① ① = (A, G, R, S, W, Y) |
| Replacement Jumbo Diffusing Lens |  | | HW9Z-PP5C |
| Replacement LED Lamps for HW Jumbo Dome |  | Replacement LED Lamp | LSTDB-2① ① = (A, G, R, S, W, Y) |
| 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-VG1 |

Dimensions — HW Series

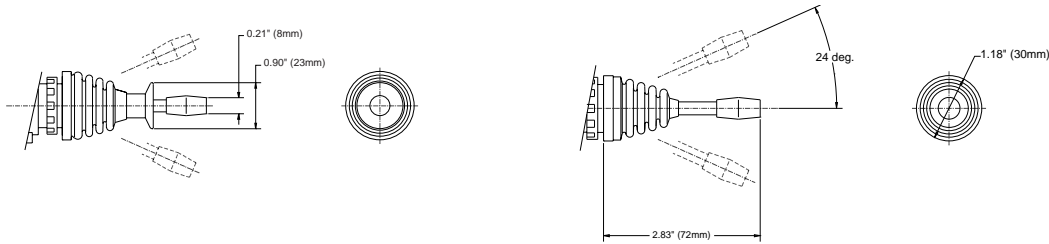
Non-Illuminated Pushbuttons

A3

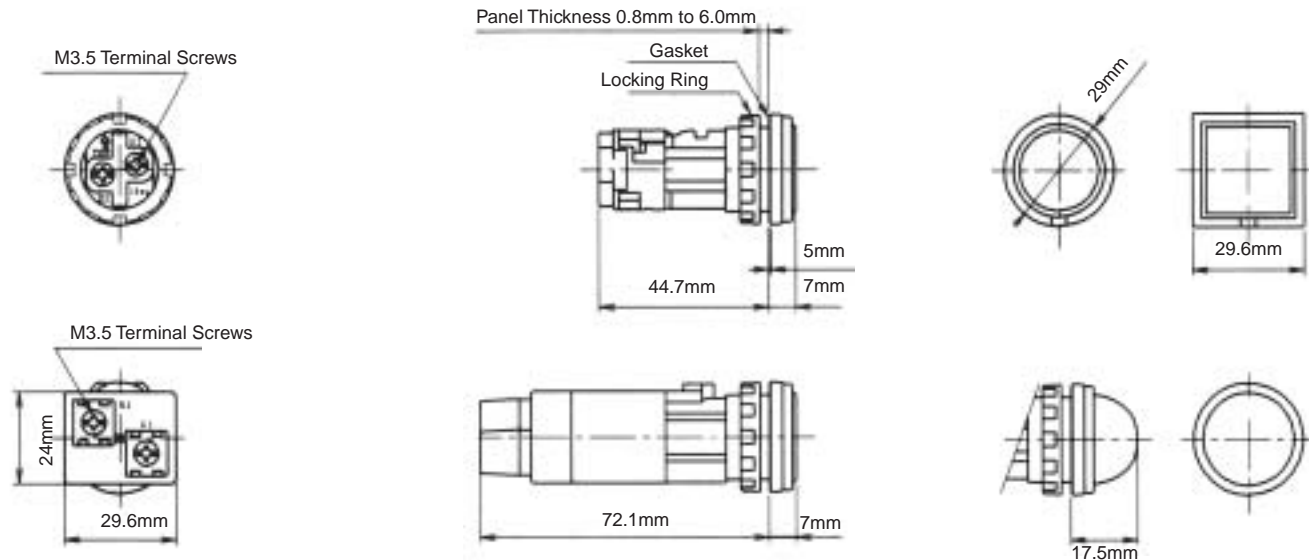
Switches & Pilot Devices



Monolever

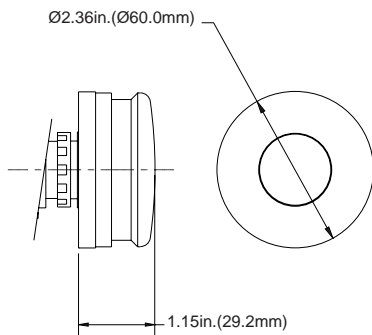


Pilot Lights

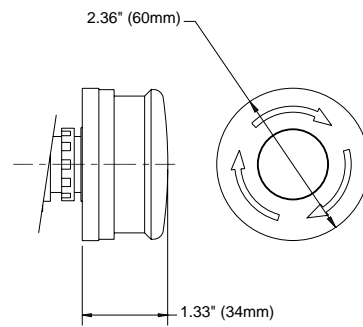


Dimensions con't

Jumbo Mushroom Pushbutton HW1B-M5

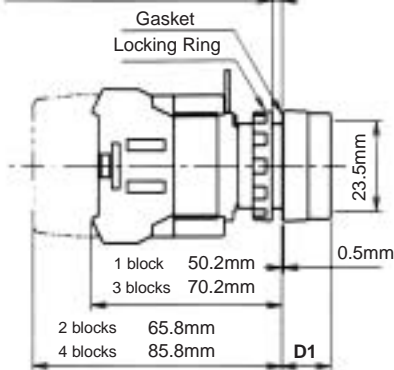


HW1B-V5

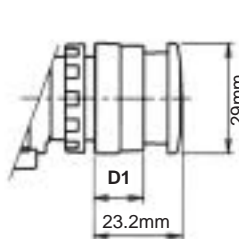


Illuminated Pushbuttons

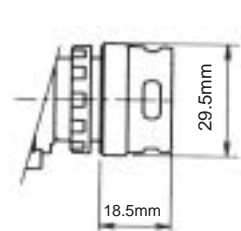
Panel Thickness: 0.8mm to 6.0mm



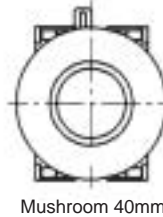
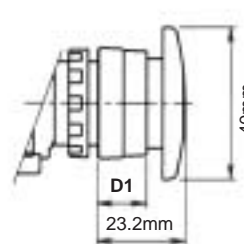
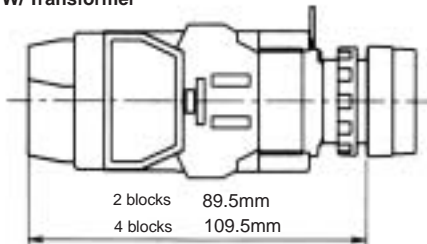
Mushroom



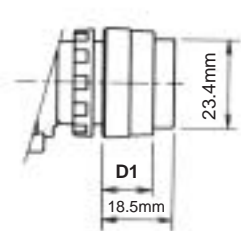
Extended with Full Shroud



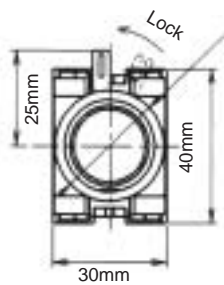
W/Transformer



Extended

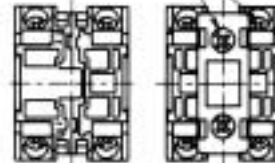


Round

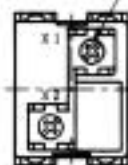


24V AC/DC

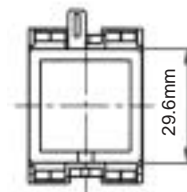
M3.5 Terminal Screws
W/ Dummy Block & Full Voltage Adaptor
W/ Full Voltage Adaptor



M3.5 Terminal Screws
W/Transformer



Square



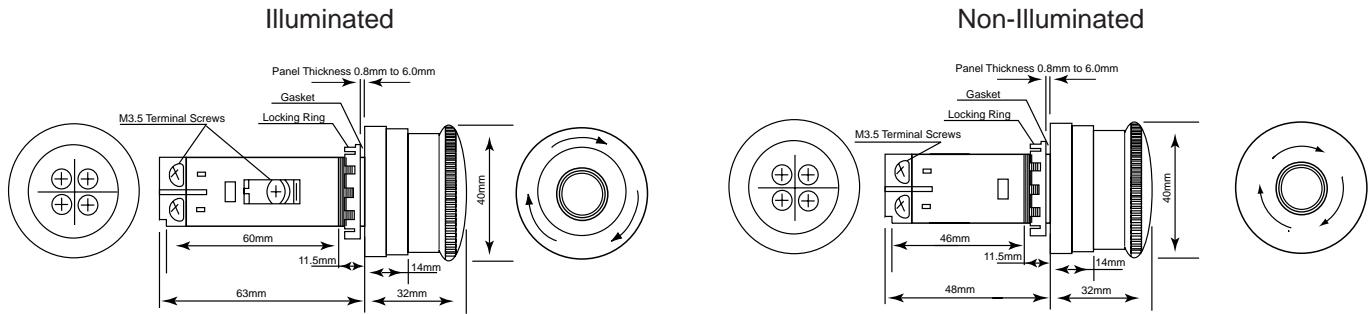
D1 = 0.51" 13mm

Dimensions con't

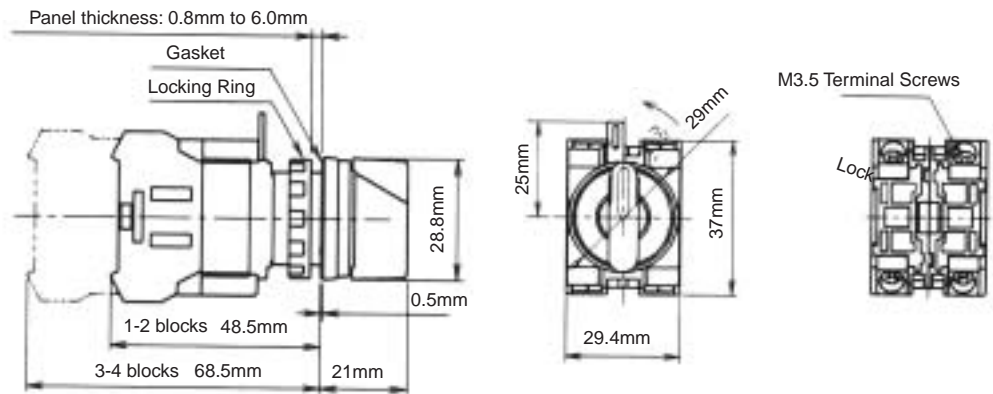
Unibody

A3

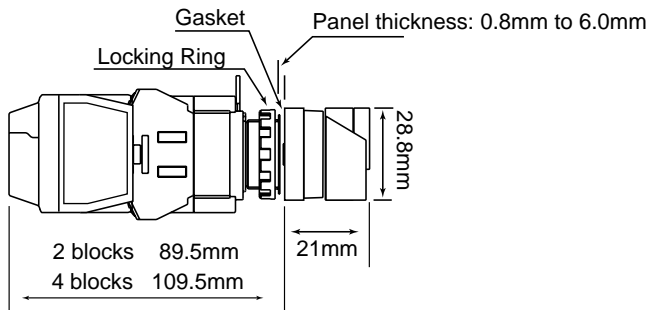
Switches & Pilot Devices



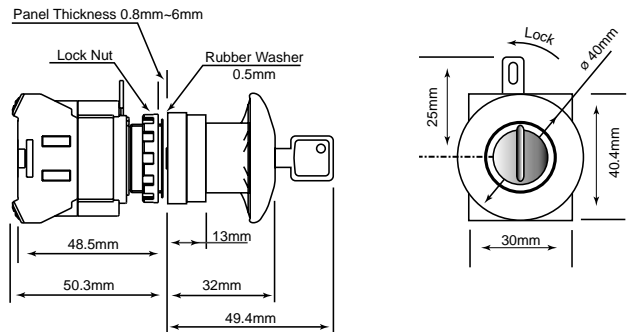
Selector Switches



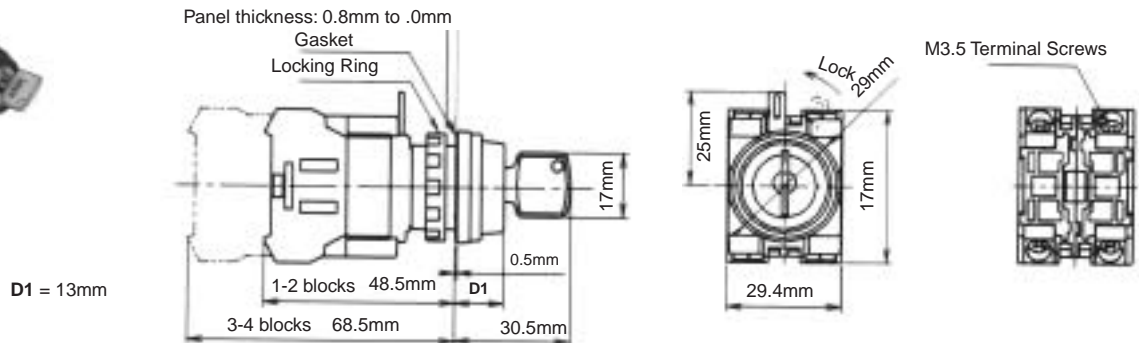
Illuminated Selector Switches



Pushlock Key Reset



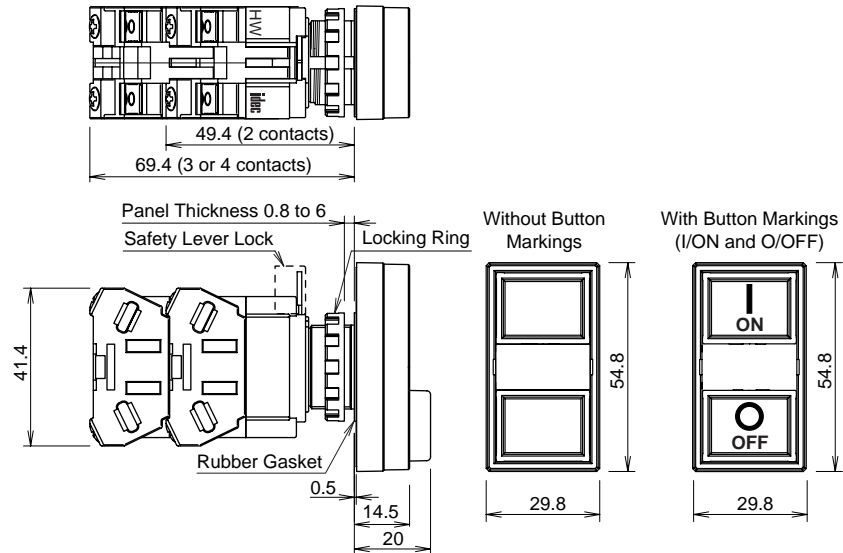
Key Switches



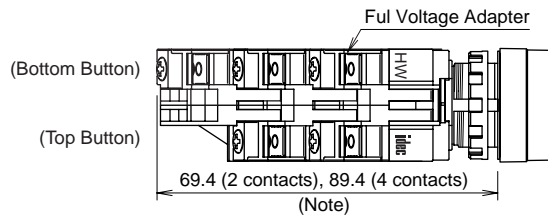
Dimensions con't

Dual Pushbutton Switches

Without Pilot Light



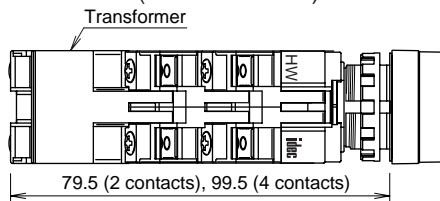
With Pilot Light
• Full Voltage



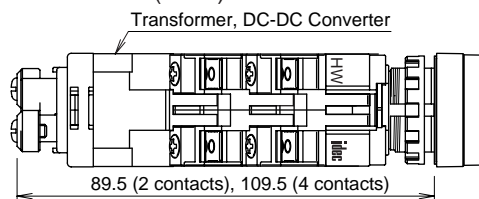
• The depth of 3-contact type depends on the combination of contact blocks at top and bottom pushbuttons.

| | | |
|---------------|------------------|------------------|
| Top Button | 1 contact block | 2 contact blocks |
| Bottom Button | 2 contact blocks | 1 contact block |
| Depth | 89.4 mm | 69.4 mm |

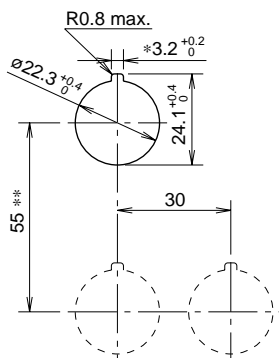
• Transformer (240V maximum)



• Transformer (480V)



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 in consideration of convenience for wiring.

All dimensions in mm.

A3

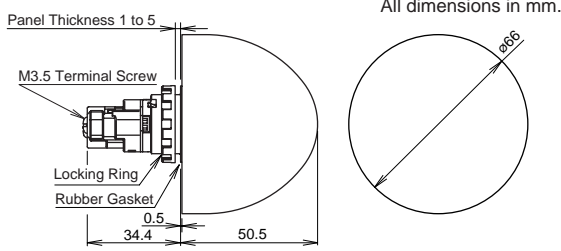
Switches & Pilot Devices

A3

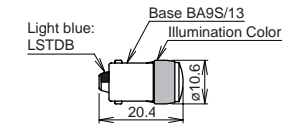
Switches & Pilot Devices

Jumbo Dome Pilot Lights

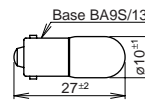
Dimensions



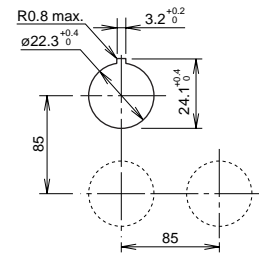
LED Lamp LSTDB



Incandescent Lamp LSB

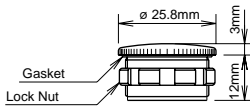


Mounting Hole Layout

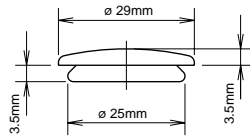


Accessory Dimensions

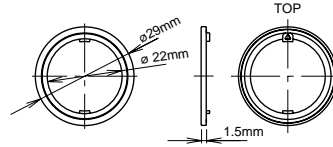
LW9Z-BM Metallic Mounting Hole Plug



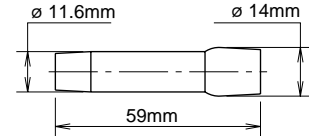
OB-31 Rubber Mounting Hole Plug



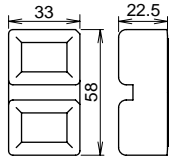
HW9Z-RL Anti-Rotation Ring



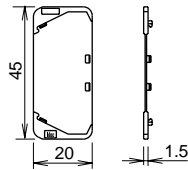
OR-55 Lamp/LED Removal Tool



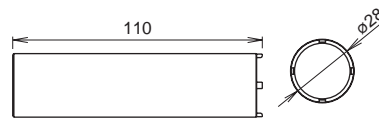
HW9Z-D7D Dual Pushbutton Rubber Cover



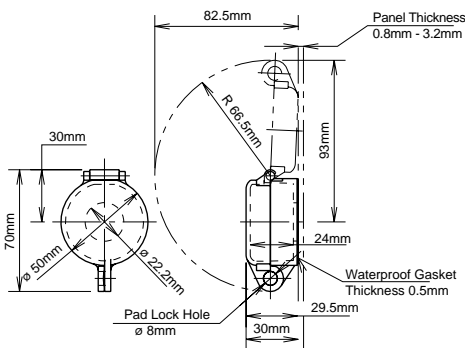
HW-VG1 Dual Pushbutton Barrier



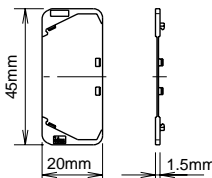
MW9Z-T1 Locking Ring Wrench



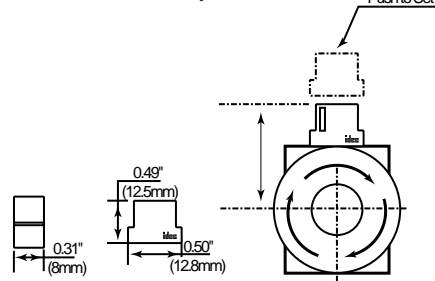
HW9Z-KL1 Padlock Cover



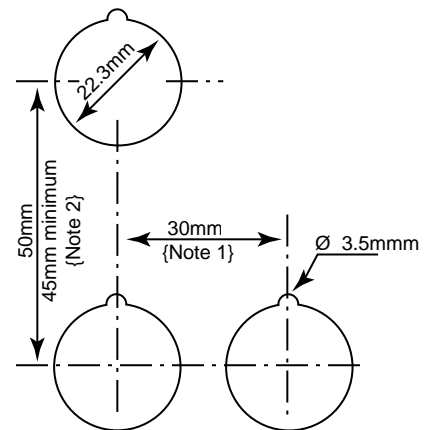
HW-VL1 Barrier



HWLS-TK1971 Safety Lever Lock



Mounting Hole Layout



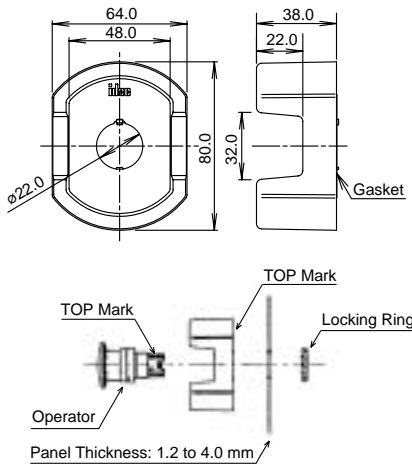
Note 1: Mushroom Button 40mm Type: 40mm or more

Note 2: Pilot Light: 30mm minimum

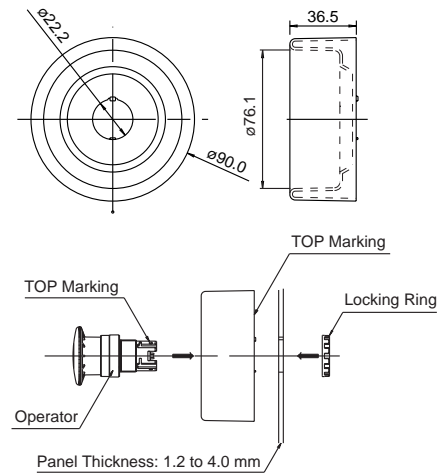
The values represent the minimum mounting centers when one stack of contact blocks is used. When two stacks or an illuminated unit is used, refer to the dimensions and considering accessibility to determine minimum mounting centers.

Accessory Dimensions con't

HW9Z-KG1-TK2120



HW9Z-KG2-TK2120



A3

Switches & Pilot Devices

Specification Charts — HW Series

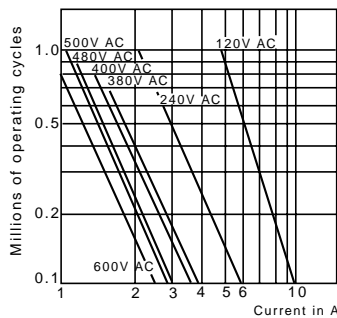
Rated Operational Power DC Voltage

Inductive

DC Voltages

| Voltage V | 24 | 48 | 110 |
|-----------|----|----|-----|
| Current A | 4 | 2 | 1.1 |

AC Voltages



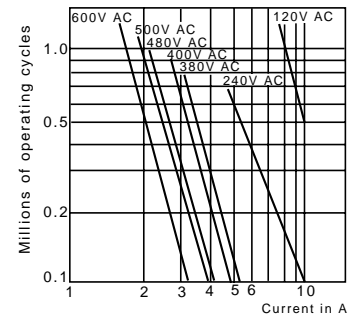
Conforming to IEC 947-5-1 Appendix C.
Utilization categories AC-15 and DC-13.
Operation rate: 1,800 op. hour
Load factor: 0.4 ± 0.05

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: 0.9 ± 0.05

HW Safety Precautions

HW Series 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. Tighten the M3.5 terminal screws to a tightening torque of 1.0 to 1.3 N-m. Failure to tighten terminal screws may cause overheating and fire.

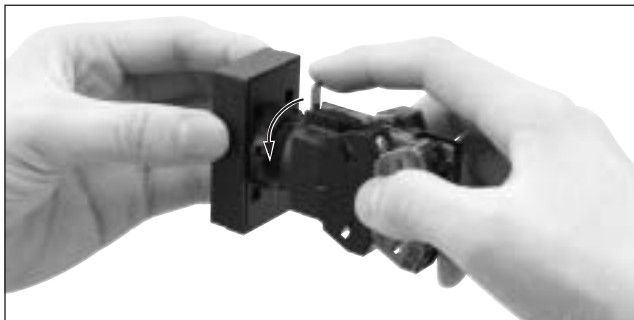
HW General Instructions

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.



Notes for Panel Mounting

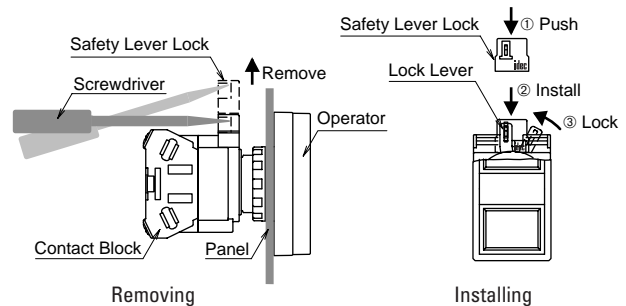
1. When mounting the operator onto a panel, use the optional locking ring wrench (MW9Z-T1) to tighten the locking ring. Tightening torque must not exceed 2.0 N-m. Do not use pliers. Excessive tightening will damage the locking ring.
2. For the contact blocks and transformers housing LED and incandescent lamps, make sure not to press the lamps too hard, otherwise the lamp socket may be damaged.

Safety Lever Lock

IDEC 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.

Removing and Installing the Safety Lever Lock



Dual Pushbutton Instructions

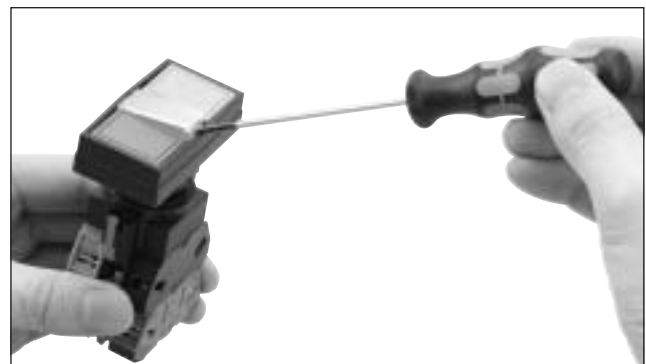
Replacement of Lens

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 con't

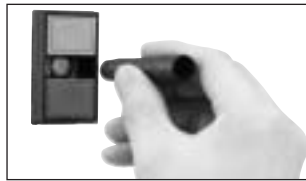
Replacement of Lamps

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

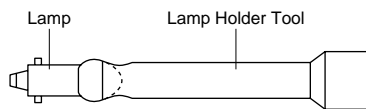
Removal

1. To remove, slip the lamp holder tool onto the lamp head lightly. Then push slightly, and turn the lamp holder tool counterclockwise.

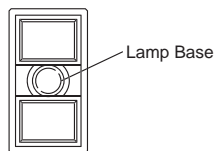


Installation

1. To install, insert the lamp head into the lamp holder tool, and hold the lamp as shown in the figure below.



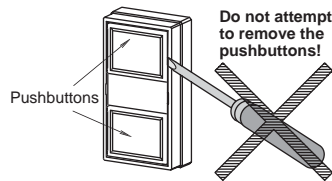
2. Place the pins on the lamp base to the grooves in the lamp socket. Insert the lamp and turn it clockwise.



About Pushbutton Switches

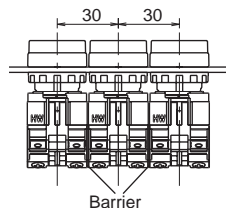
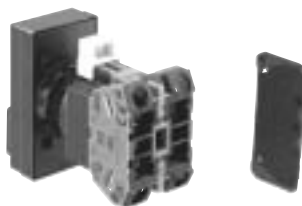
The pushbuttons cannot be removed or replaced!

Do not attempt to remove using a flat screwdriver or pincers, otherwise the pushbuttons may be damaged.

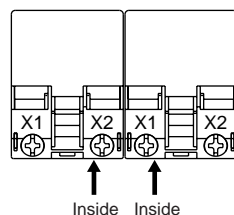


Narrow Mounting

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.



Tightening Torque for Terminal Screws

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

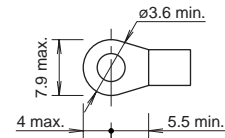
Installation of LED Illuminated Units

When using full voltage type LED illuminated units, provide protection against electrical noise, if necessary.

Applicable Wiring

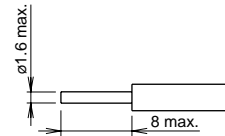
The applicable wire size is 2 mm² maximum. (solid wire ø1.6 mm maximum) One or two wires can be connected.

Applicable Crimping Terminal

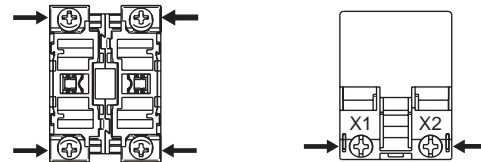


Be sure to use an insulation tube or cover on the crimping part of the terminal to prevent electrical shocks.

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.



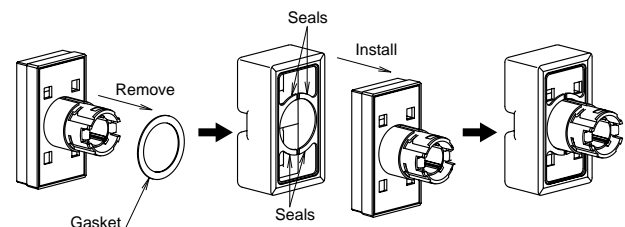
Installing the Rubber Cover

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 Cover

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.



A3

Switches & Pilot Devices



LW Series offer flexibility in space-saving package

Key features include:

- *PC board mount, solder or screw terminal*
- *Collective mounting saves space*
- *Non-reflective lens*
- *Highly visible marking plate*
- *Tamper proof construction*
- *Light touch reduces strain*
- *Gold or silver contacts*
- *Removable contacts simplify wiring and facilitate PCB applications*

LW Series switches and pilot lights can be mounted collectively on 1.0" centers. Combined with pcb terminals and locking lever removable contacts, this eases manufacture of pre-fab pushbutton arrays (as pictured). PC Board tracing/soldering of contacts can be done in tandem with panel cutting/operator installation.

All LW series units mount by means of a locking ring that comes on from the rear of the panel, as such they can not be removed from outside the panel and are relatively tamperproof.

Combining the snap action and tactile feel of miniature commercial pushbuttons with the size and ruggedness of industrial pushbuttons, LW pushbuttons are a unique solution to many applications.

Choose from standard silver contacts or low-level gold plated contacts. Terminals available in .110" solder tab, M3 screw, or pcb pins.

Specifications

| | | | |
|-----------------------|--|--|---|
| Specifications | Operating Temperature | -25 to +60°C (without freezing) LED illuminated type: -25 to +50°C | |
| | Storage Temperature | -40 to +80°C | |
| | Operating Humidity | 45 to 85% RH | |
| | Contact Resistance | 50mΩ maximum (initial value) | |
| | Insulation Resistance | 100MΩ minimum (500V DC megger) | |
| | Dielectric Strength | Switch Unit | Between live part and ground: 2,500V AC, 1 minute Between terminals of different poles: 2,500V AC, 1 minute Between terminals of the same pole: 1,000V AC, 1 minute |
| | | Illumination Unit | Between live part and ground: 2,500V AC, 1 minute |
| | Vibration Resistance | Operating extremes: 5 to 55Hz, Amplitude 1.0mm p-p | |
| | Shock Resistance | Damage limits: 1,000 m/sec ² (Approx. 100G) Operating extremes: 100 m/sec ² (Approx. 10G) | |
| | Mechanical Life | Momentary: 1,000,000 operations minimum Maintained: 500,000 operations minimum Selectors: 250,000 operations minimum | |
| | Electrical Life | Momentary: 100,000 operations minimum (at 1,800 operations/hour) Maintained/Selector: 100,000 operations minimum (at 900 operations/hour) | |
| | Degree of Protection | Watertight/oiltight IP65 (IEC Pub529) (except key selectors) | |
| | Insulation Voltage | 250VAC/DC | |
| | Materials | Lenses | polyarylate |
| Operators | | polyacetate | |
| Marking Plates | | acrylic resin | |
| Terminal Style | .110" Solder tab/quick connect PC board terminal (gold contacts only) Screw terminal (DPDT units only) | | |

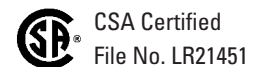
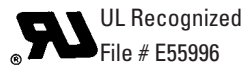
A3

Switches & Pilot Devices

| Contact Ratings | Contact Material | Thermal Current | Contact Rating | Remarks |
|---------------------------------|----------------------------|------------------------|-------------------------------|---|
| | Gold-clad cross-bar | 3A | 30VDC/0.1A resistive | Minimum applicable load (reference value): 5V, 1mA AC/DC. (Applicable range is subject to the operating condition and load.) AC inductive load: PF=0.6 to 0.7, DC inductive load: L/R=7ms maximum. |
| | | | 125VAC/0.1A resistive | |
| | Silver Contact | 5A | 30VDC/2A resistive | |
| | | | 30VDC/1A inductive | |
| | | | 125VAC/3A resistive(50/60Hz) | |
| | | | 125VAC/2A inductive (50/60Hz) | |
| | | | 125VDC/0.4A resistive | |
| | | | 125VDC/0.2A inductive | |
| | | | 250VAC/2A resistive(50/60Hz) | |
| 250VAC/1.5A inductive (50/60Hz) | | | | |

Lamp Ratings

| | Voltage | Current/Wattage |
|---------------------|----------------|------------------------|
| LED | 6V AC/DC ±10% | 17mA max |
| | 12V AC/DC ±10% | 11mA max |
| | 24V AC/DC ±10% | 11mA max |
| | 120V AC ±10% | 10mA max |
| | 240V AC ±10% | 10mA max |
| Incandescent | 6.3V AC/DC ±5% | 1W |
| | 12V AC/DC ±10% | 1W |
| | 24V AC/DC ±10% | 1W |








LED lamps contains a built-in current-limiting resistor and reverse polarity protection diode.

Non-Illuminated Pushbuttons (Assembled)


Part Numbers: LW1B/LW2B Pushbuttons

A3 Switches & Pilot Devices

| Style | Contact Material | Contact | Part Number | | | | | |
|--|------------------|---------|-------------|--------------|--------------|-----------------------|--------------|--------------|
| | | | Momentary | | | Maintained (Latching) | | |
| | | | Solder/Tab | PC Board | Screw | Solder/Tab | PC Board | Screw |
|  Round Flush | Gold | SPDT | LW1B-M1C1-① | LW1B-M1C1V-① | — | LW1B-A1C1-① | LW1B-A1C1V-① | — |
| | | DPDT | LW1B-M1C2-① | LW1B-M1C2V-① | LW1B-M1C2M-① | LW1B-A1C2-① | LW1B-A1C2V-① | LW1B-A1C2M-① |
| | | 3PDT | LW1B-M1C3-① | LW1B-M1C3V-① | — | LW1B-A1C3-① | LW1B-A1C3V-① | — |
| | Silver | SPDT | LW1B-M1C5-① | — | — | LW1B-A1C5-① | — | — |
| | | DPDT | LW1B-M1C6-① | — | LW1B-M1C6M-① | LW1B-A1C6-① | — | LW1B-A1C6M-① |
| | | 3PDT | LW1B-M1C7-① | — | — | LW1B-A1C7-① | — | — |
|  Square Flush | Gold | SPDT | LW2B-M1C1-① | LW2B-M1C1V-① | — | LW2B-A1C1-① | LW2B-A1C1V-① | — |
| | | DPDT | LW2B-M1C2-① | LW2B-M1C2V-① | LW2B-M1C2M-① | LW2B-A1C2-① | LW2B-A1C2V-① | LW2B-A1C2M-① |
| | | 3PDT | LW2B-M1C3-① | LW2B-M1C3V-① | — | LW2B-A1C3-① | LW2B-A1C3V-① | — |
| | Silver | SPDT | LW2B-M1C5-① | — | — | LW2B-A1C5-① | — | — |
| | | DPDT | LW2B-M1C6-① | — | LW2B-M1C6M-① | LW2B-A1C6-① | — | LW2B-A1C6M-① |
| | | 3PDT | LW2B-M1C7-① | — | — | LW2B-A1C7-① | — | — |
|  Round Extended | Gold | SPDT | LW1B-M2C1-① | LW1B-M2C1V-① | — | LW1B-A2C1-① | LW1B-A2C1V-① | — |
| | | DPDT | LW1B-M2C2-① | LW1B-M2C2V-① | LW1B-M2C2M-① | LW1B-A2C2-① | LW1B-A2C2V-① | LW1B-A2C2M-① |
| | | 3PDT | LW1B-M2C3-① | LW1B-M2C3V-① | — | LW1B-A2C3-① | LW1B-A2C3V-① | — |
| | Silver | SPDT | LW1B-M2C5-① | — | — | LW1B-A2C5-① | — | — |
| | | DPDT | LW1B-M2C6-① | — | LW1B-M2C6M-① | LW1B-A2C6-① | — | LW1B-A2C6M-① |
| | | 3PDT | LW1B-M2C7-① | — | — | LW1B-A2C7-① | — | — |
|  Square Extended | Gold | SPDT | LW2B-M2C1-① | LW2B-M2C1V-① | — | LW2B-A2C1-① | LW2B-A2C1V-① | — |
| | | DPDT | LW2B-M2C2-① | LW2B-M2C2V-① | LW2B-M2C2M-① | LW2B-A2C2-① | LW2B-A2C2V-① | LW2B-A2C2M-① |
| | | 3PDT | LW2B-M2C3-① | LW2B-M2C3V-① | — | LW2B-A2C3-① | LW2B-A2C3V-① | — |
| | Silver | SPDT | LW2B-M2C5-① | — | — | LW2B-A2C5-① | — | — |
| | | DPDT | LW2B-M2C6-① | — | LW2B-M2C6M-① | LW2B-A2C6-① | — | LW2B-A2C6M-① |
| | | 3PDT | LW2B-M2C7-① | — | — | LW2B-A2C7-① | — | — |
|  Mushroom | Gold | SPDT | LW1B-M3C1-① | LW1B-M3C1V-① | — | LW1B-A3C1-① | LW1B-A3C1V-① | — |
| | | DPDT | LW1B-M3C2-① | LW1B-M3C2V-① | LW1B-M3C2M-① | LW1B-A3C2-① | LW1B-A3C2V-① | LW1B-A3C2M-① |
| | | 3PDT | LW1B-M3C3-① | LW1B-M3C3V-① | — | LW1B-A3C3-① | LW1B-A3C3V-① | — |
| | Silver | SPDT | LW1B-M3C5-① | — | — | LW1B-A3C5-① | — | — |
| | | DPDT | LW1B-M3C6-① | — | LW1B-M3C6M-① | LW1B-A3C6-① | — | LW1B-A3C6M-① |
| | | 3PDT | LW1B-M3C7-① | — | — | LW1B-A3C7-① | — | — |


- In place of ①, specify Button Color Code from table below.
- For sub-assembly part numbers, see page A3-111.
- For dimensions, see page A3-120.
- For accessories, see page A3-119.

Part Numbers: Buzzers (IP20)

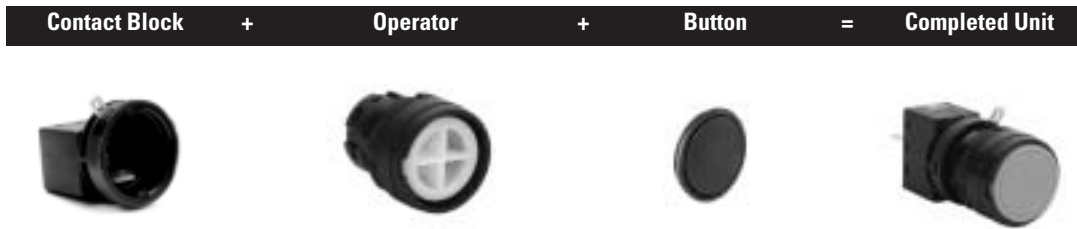
| Style | | Part Number | |
|---|----------|-------------|------------|
| | | Solder Tab | PCB |
|  | Basic | LW1Z-1X4 | LW1Z-1X4V |
| | With LED | LW1Z-1X4D | LW1Z-1X4DV |

① Button Color Code

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


 12-24V AC/DC +/- 10%
 80 dB (at 0.1m)
 7mA (DC), 20mA (AC)




Non-Illuminated Pushbuttons (Sub-Assembled)



Part Numbers: Operators

| Style | | Part Number | |
|----------|--|-------------|------------|
| | | Momentary | Maintained |
| Round |  | LW1B-M0 | LW1B-A0 |
| Square |  | LW2B-M0 | LW2B-A0 |
| Mushroom |  | LW1B-M0L | LW1B-A0L |

Part Numbers: Buttons

| Type | | Part Number | |
|----------|---|-------------|-----------|
| | | Flush | Extended |
| Round |  | LW1A-B1-① | LW1A-B2-① |
| Square |  | LW2A-B1-① | LW2A-B2-① |
| Mushroom |  | — | LW1A-B3-① |


① Button Color Code

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



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

Part Numbers: Contact Blocks




| Appearance | Contact Material | Contact | Part Number | | |
|---|------------------|---------|-------------|----------|--------|
| | | | Solder/Tab | PC Board | Screw |
|  | Gold | SPDT | LW-C1 | LW-C1V | — |
| | | DPDT | LW-C2 | LW-C2V | LW-C2M |
| | | 3PDT | LW-C3 | LW-C3V | — |
| | Silver | SPDT | LW-C5 | — | — |
| | | DPDT | LW-C6 | — | LW-C6M |
| | | 3PDT | LW-C7 | — | — |

LED and Incandescent Illuminated Pushbuttons (Assembled)

Part Numbers: LW1L/LW2L Illuminated Pushbuttons (LED and Incandescent)



A3

Switches & Pilot Devices

| Style | Contact Material | Contact | Part Number | | | | | |
|--|------------------|---------|--------------|---------------|---------------|-----------------------|---------------|---------------|
| | | | Momentary | | | Maintained (Latching) | | |
| | | | Solder/Tab | PC Board | Screw | Solder/Tab | PC Board | Screw |
|  Round | Gold | SPDT | LW1L-M1C10-② | LW1L-M1C10V-② | — | LW1L-A1C10-② | LW1L-A1C10V-② | — |
| | | DPDT | LW1L-M1C20-② | LW1L-M1C20V-② | LW1L-M1C20M-② | LW1L-A1C20-② | LW1L-A1C20V-② | LW1L-A1C20M-② |
| | | 3PDT | LW1L-M1C30-② | LW1L-M1C30V-② | — | LW1L-A1C30-② | LW1L-A1C30V-② | — |
| | Silver | SPDT | LW1L-M1C50-② | — | — | LW1L-A1C50-② | — | — |
| | | DPDT | LW1L-M1C60-② | — | LW1L-M1C60M-② | LW1L-A1C60-② | — | LW1L-A1C60M-② |
| | | 3PDT | LW1L-M1C70-② | — | — | LW1L-A1C70-② | — | — |
|  Square | Gold | SPDT | LW2L-M1C10-② | LW2L-M1C10V-② | — | LW2L-A1C10-② | LW2L-A1C10V-② | — |
| | | DPDT | LW2L-M1C20-② | LW2L-M1C20V-② | LW2L-M1C20M-② | LW2L-A1C20-② | LW2L-A1C20V-② | LW2L-A1C20M-② |
| | | 3PDT | LW2L-M1C30-② | LW2L-M1C30V-② | — | LW2L-A1C30-② | LW2L-A1C30V-② | — |
| | Silver | SPDT | LW2L-M1C50-② | — | — | LW2L-A1C50-② | — | — |
| | | DPDT | LW2L-M1C60-② | — | LW2L-M1C60M-② | LW2L-A1C60-② | — | LW2L-A1C60M-② |
| | | 3PDT | LW2L-M1C70-② | — | — | LW2L-A1C70-② | — | — |
|  Mushroom | Gold | SPDT | LW1L-M3C10-② | LW1L-M3C10V-② | — | LW1L-A3C10-② | LW1L-A3C10V-② | — |
| | | DPDT | LW1L-M3C20-② | LW1L-M3C20V-② | LW1L-M3C20M-② | LW1L-A3C20-② | LW1L-A3C20V-② | LW1L-A3C20M-② |
| | | 3PDT | LW1L-M3C30-② | LW1L-M3C30V-② | — | LW1L-A3C30-② | LW1L-A3C30V-② | — |
| | Silver | SPDT | LW1L-M3C50-② | — | — | LW1L-A3C50-② | — | — |
| | | DPDT | LW1L-M3C60-② | — | LW1L-M3C60M-② | LW1L-A3C60-② | — | LW1L-A3C60M-② |
| | | 3PDT | LW1L-M3C70-② | — | — | LW1L-A3C70-② | — | — |

- 1. In place of ②, specify the Lens Color Code from table below.
- 2. Lamps must be ordered separately for all illuminated pushbuttons.
- 3. For marking plate size and engraving area, see page A3-124.
- 4. For sub-assembly part numbers, see page A3-113.
- 5. For dimensions, see page A3-120.
- 5. For accessories, see page A3-119.

Part Numbers: Lamps (not included in assemblies)

| Type | Voltage | Part Number |
|---|---------------|-------------|
|  LED | 6V AC/DC±10% | LSTD-6② |
| | 12V AC/DC±10% | LSTD-1② |
| | 24V AC/DC±10% | LSTD-2② |
| | 120V AC±10% | LSTD-H2② |
| | 240V AC ±10% | LSTD-M4② |
|  Incandescent | 6.3V AC/DC | IS-6 |
| | 12V AC/DC | IS-12 |
| | 24V AC/DC | IS-24 |

- 1. In place of ②, specify the LED Color Code.
- 2. The LED contains a current-limiting resistor and reverse polarity protection diode.

② Lens/LED Color Code

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

LED and Incandescent Illuminated Pushbuttons (Sub-Assembled)

Contact Block + Operator + Lamp + Lens = Completed Unit






A3

Switches & Pilot Devices

Part Numbers: Operators

| Style | Part Number | |
|---|-------------|------------|
| | Momentary | Maintained |
| Round  | LW1L-M0 | LW1L-A0 |
| Square  | LW2L-M0 | LW2L-A0 |
| Mushroom  | LW1B-M0L | LW1B-A0L |


Part Numbers: Lenses

| Type | Part Number | |
|--|-------------|--|
| | Flush | |
| Round  | LW1A-L1-② | |
| Square  | LW2A-L1-② | |
| Mushroom  | LW1A-L3-② | |





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

Part Numbers: Contact Blocks

| Appearance | Contact Material | Contact | Part Number | | |
|---|------------------|---------|-------------|----------|---------|
| | | | Solder/Tab | PC Board | Screw |
|  | Gold | SPDT | LW-C10 | LW-C10V | — |
| | | DPDT | LW-C20 | LW-C20V | LW-C20M |
| | | 3PDT | LW-C30 | LW-C30V | — |
| | Silver | SPDT | LW-C50 | — | — |
| | | DPDT | LW-C60 | — | LW-C60M |
| | | 3PDT | LW-C70 | — | — |

Part Numbers: Lamps (not included in assemblies)

| Type | Voltage | Part Number |
|--|---------------|-------------|
| LED  | 6V AC/DC±10% | LSTD-6② |
| | 12V AC/DC±10% | LSTD-1② |
| | 24V AC/DC±10% | LSTD-2② |
| | 120V AC±10% | LSTD-H2② |
| | 240V AC ±10% | LSTD-M4② |
| Incandescent  | 6.3V AC/DC | IS-6 |
| | 12V AC/DC | IS-12 |
| | 24V AC/DC | IS-24 |

② LED/Lens Color Code

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



- In place of ②, specify the LED Color Code.
- The LED contains a current-limiting resistor and reverse polarity protection diode.

LED and Incandescent Pilot Lights (Assembled)

Part Numbers: LW1P/LW2P Pilot Lights



A3

Switches & Pilot Devices

| Type | Style | Part Number | | |
|--------------------------------|--|-------------|--------------|------------|
| | | Solder/Tab | PC Board | Screw |
| Removable Terminal Pilot Light | Round  | — | LW1P-1C00V-② | — |
| | Square  | — | LW2P-1C00V-② | — |
| Unibody Pilot Light | Round  | LW1P-10-② | — | LW1P-10M-② |
| | Square  | LW2P-10-② | — | LW2P-10M-② |

- 1. In place of ②, specify the Lens Color Code from table below.
- 2. For marking plate size and engraving area, see page A3-124.
- 3. Lamps must be ordered separately, see table below.
- 4. For sub-assembly part numbers, see page A3-115.
- 5. For dimensions, see page A3-120.
- 6. For accessories, see page A3-119.

Part Numbers: Lamps (not included in assemblies)

| Type | Voltage | Part Number |
|---|---------------|-------------|
| LED  | 6V AC/DC±10% | LSTD-6② |
| | 12V AC/DC±10% | LSTD-1② |
| | 24V AC/DC±10% | LSTD-2② |
| | 120V AC±10% | LSTD-H2② |
| | 240V AC ±10% | LSTD-M4② |
| Incandescent  | 6.3V AC/DC | IS-6 |
| | 12V AC/DC | IS-12 |
| | 24V AC/DC | IS-24 |

② Lens/LED Color Code

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

- 1. In place of ②, specify the LED Color Code.
- 2. The LED contains a current-limiting resistor and reverse polarity protection diode.



LED and Incandescent Pilot Lights (Sub-Assembled)


Removable Terminal* + Operator + Lamp + Lens = Completed Unit




* Removable terminals are applicable for PCB terminated types only.


Part Numbers: Pilot Light Operators

| Style | Termination | | |
|---|-------------|----------|----------|
| | Solder | PC Board | Screw |
| Round  | LW1P-00 | LW1P-0 † | LW1P-00M |
| Square  | LW2P-00 | LW2P-0 † | LW2P-00M |



-  1. † Requires LW-C00V removable terminals in addition to operator.
2. Solder and screw terminals are unibody design (they do not use a removable terminal block).

Part Numbers: Lenses

| Type | Part Number |
|---|-------------|
| Round  | LW1A-P1-② |
| Square  | LW2A-P1-② |


-  In place of ②, specify Lens Color Code.

Part Numbers: Lamps (not included in assemblies)

| Type | Voltage | Part Number |
|---|---------------|-------------|
| LED  | 6V AC/DC±10% | LSTD-6② |
| | 12V AC/DC±10% | LSTD-1② |
| | 24V AC/DC±10% | LSTD-2② |
| | 120V AC±10% | LSTD-H2② |
| | 240V AC ±10% | LSTD-M4② |
| Incandescent  | 6.3V AC/DC | IS-6 |
| | 12V AC/DC | IS-12 |
| | 24V AC/DC | IS-24 |




② LED/Lens Color Code


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

-  1. In place of ②, specify the LED Color Code.
2. The LED contains a current-limiting resistor and reverse polarity protection diode.



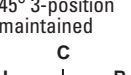
Selector and Keylock Switches (Assembled)


Part Numbers: LW1S Selector Switches

| Style | Position | Contact Material | Contact | Part Number | | |
|--|--|------------------|---------|-------------|-----------|-----------|
| | | | | Solder/Tab | PC Board | Screw |
| Round  | 90° 2-position maintained  | Gold | SPDT | LW1S-2C1 | LW1S-2C1V | — |
| | | | DPDT | LW1S-2C2 | LW1S-2C2V | LW1S-2C2M |
| | | | 3PDT | LW1S-2C3 | LW1S-2C3V | — |
| | | Silver | SPDT | LW1S-2C5 | — | — |
| | | | DPDT | LW1S-2C6 | — | LW1S-2C6M |
| | | | 3PDT | LW1S-2C7 | — | — |
| | 45° 3-position maintained  | Gold | DPDT | LW1S-3C2 | LW1S-3C2V | LW1S-3C2M |
| | | | 3PDT | LW1S-3C3 | LW1S-3C3V | — |
| | | Silver | DPDT | LW1S-3C6 | — | LW1S-3C6M |
| | | | 3PDT | LW1S-3C7 | — | — |



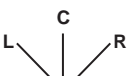
-  1. Knob color: Black; Directional Indication Color: White
 2. For contact operation, see next page.
 3. For sub-assembly part numbers, see page A3-118.


Part Numbers: LW1K Keylock Selector Switches

| Style | Position | Contact Material | Contact | Part Number | | |
|---|--|------------------|---------|-------------|------------|------------|
| | | | | Solder/Tab | PC Board | Screw |
| Round  | 90° 2-position maintained  | Gold | SPDT | LW1K-2C1A | LW1K-2C1VA | — |
| | | | DPDT | LW1K-2C2A | LW1K-2C2VA | LW1K-2C2MA |
| | | | 3PDT | LW1K-2C3A | LW1K-2C3VA | — |
| | | Silver | SPDT | LW1K-2C5A | — | — |
| | | | DPDT | LW1K-2C6A | — | LW1K-2C6MA |
| | | | 3PDT | LW1K-2C7A | — | — |
| | 45° 3-position maintained  | Gold | DPDT | LW1K-3C2A | LW1K-3C2VA | LW1K-3C2MA |
| | | | 3PDT | LW1K-3C3A | LW1K-3C3VA | — |
| | | Silver | DPDT | LW1K-3C6A | — | LW1K-3C6MA |
| | | | 3PDT | LW1K-3C7A | — | — |

-  1. Every key selector uses an identical key.
 2. The key is removable in all positions.
 3. If a different configuration is required, contact an IDEC representative for more information.
 4. For contact operation, see next page.
 5. For sub-assembly part numbers, see page A3-118.

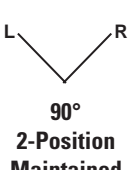
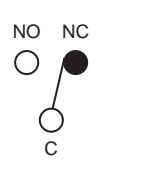
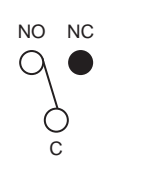
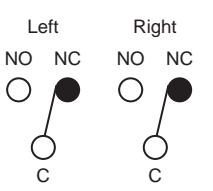
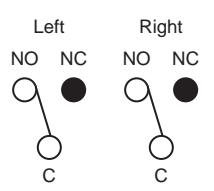
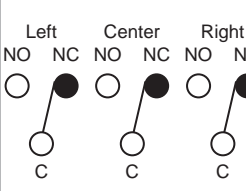
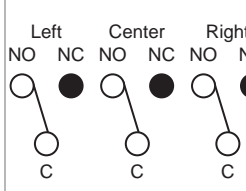
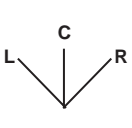
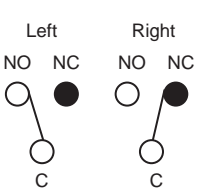
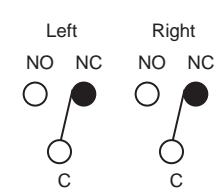
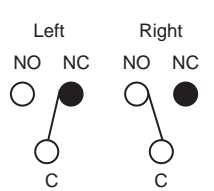
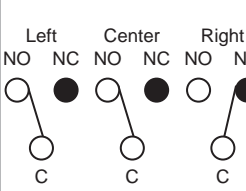
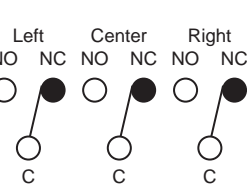
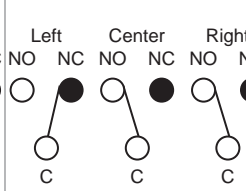
Part Numbers: LW1F LED and Incandescent Illuminated Selector Switches

| Style | Position | Contact Material | Contact | Part Numbers | | |
|--|--|------------------|---------|--------------|--------------|--------------|
| | | | | Solder/Tab | PC Board | Screw |
| Round  | 90° 2-position maintained  | Gold | SPDT | LW1F-2C10-② | LW1F-2C10V-② | — |
| | | | DPDT | LW1F-2C20-② | LW1F-2C20V-② | LW1F-2C20M-② |
| | | | 3PDT | LW1F-2C30-② | LW1F-2C30V-② | — |
| | | Silver | SPDT | LW1F-2C50-② | — | — |
| | | | DPDT | LW1F-2C60-② | — | LW1F-2C60M-② |
| | | | 3PDT | LW1F-2C70-② | — | — |
| | 45° 3-position maintained  | Gold | DPDT | LW1F-3C20-② | LW1F-3C20V-② | LW1F-3C20M-② |
| | | | 3PDT | LW1F-3C30-② | LW1F-3C30V-② | — |
| | | Silver | DPDT | LW1F-3C60-② | — | LW1F-3C60M-② |
| | | | 3PDT | LW1F-3C70-② | — | — |

-  1. In place of ②, specify color code. See previous page for color codes.
 2. Lamps must be ordered separately for all illuminated pushbuttons. See previous page.
 3. For contact operation, see next page.
 4. For sub-assembly part numbers, see page A3-118.

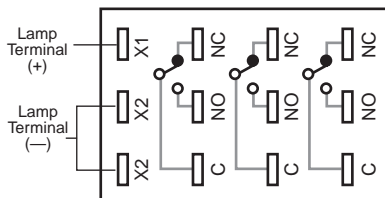
Contact Operations

Contact Operation: Selector and Keylock Switches

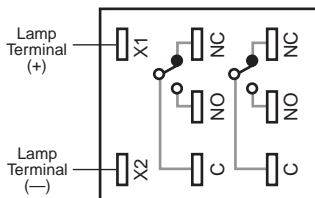
| Position | Contact | Operator Position and Contact Position (Top View) | | |
|--|---------|---|---|--|
| | | Left | Center | Right |
|  <p>90° 2-Position Maintained</p> | SPDT |  | - |  |
| | DPDT |  | - |  |
| | 3PDT |  | - |  |
|  <p>45° 3-Position Maintained</p> | DPDT |  |  |  |
| | 3PDT |  |  |  |

Terminal Arrangements (Bottom View): LW□L and LW□B Pushbuttons

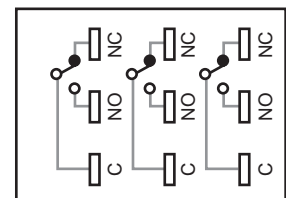
3 pole illuminated



2 pole illuminated



3 pole non-illuminated



SPDT has C, NO and NC only on the center. DPDT has C, NO, and NC only on the right and left.



SPDT has C, NO and NC only on the right. DPDT has C, NO, and NC only on the right and center.

Selectors and Key Switches (Sub-Assembled)

A3

Switches & Pilot Devices



*Lens for illuminated units only

Part Numbers: Operators

| Unit | Position | Part Number |
|---------------------------------|------------|-------------|
| Non-Illuminated Selector Switch | 2-position | LW1S-2Y |
| | 3-position | LW1S-3Y |
| Key Switch | 2-position | LW1K-2A |
| | 3-position | LW1K-3A |
| Illuminated Selector Switch | 2-position | LW1F-20* |
| | 3-position | LW1F-30* |

* Lens must be purchased separately for illuminated units.

Part Numbers: Knob (Lens)

| Style | Part Number |
|-------------------------------|-------------|
| Illuminated Selector Switches | LW1A-F-② |



In place of ②, specify LED/Lens Color Code from table below.

Part Numbers: Contact Blocks

| Appearance | Style | Contact Material | Contact | Part Number | | |
|-----------------------------------|-------|------------------|---------|-------------|----------|---------|
| | | | | Solder/Tab | PC Board | Screw |
| Illuminated Selector Switches | | Gold | SPDT | LW-C10 | LW-C10V | — |
| | | | DPDT | LW-C20 | LW-C20V | LW-C20M |
| | | | 3PDT | LW-C30 | LW-C30V | — |
| | | Silver | SPDT | LW-C50 | — | — |
| | | | DPDT | LW-C60 | — | LW-C60M |
| | | | 3PDT | LW-C70 | — | — |
| Non-Illuminated Selector Switches | | Gold | SPDT | LW-C1 | LW-C1V | — |
| | | | DPDT | LW-C2 | LW-C2V | LW-C2M |
| | | | 3PDT | LW-C3 | LW-C3V | — |
| | | Silver | SPDT | LW-C5 | — | — |
| | | | DPDT | LW-C6 | — | LW-C6M |
| | | | 3PDT | LW-C7 | — | — |

Part Numbers: Lamps (not included in assemblies)

| Type | Voltage | Part Number |
|--------------|---------------|-------------|
| LED | 6V AC/DC±10% | LSTD-6② |
| | 12V AC/DC±10% | LSTD-1② |
| | 24V AC/DC±10% | LSTD-2② |
| | 120V AC±10% | LSTD-H2② |
| | 240V AC ±10% | LSTD-M4② |
| Incandescent | 6.3V AC/DC | IS-6 |
| | 12V AC/DC | IS-12 |
| | 24V AC/DC | IS-24 |



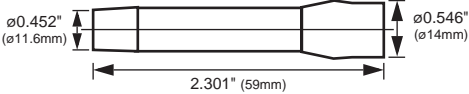





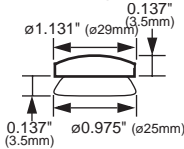

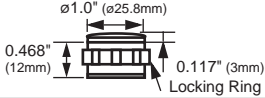




② LED/Lens Color Code

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



- In place of ②, specify the LED Color Code.
- The LED contains a current-limiting resistor and reverse polarity protection diode.

Accessories — LW Series

| Style | Description/Usage | Part Number |
|--|--|---|
| Ring Wrench (optional)  | 1. Metallic tool used for tightening the plastic locking ring when installing the LW series on a panel. 2. Tightening torque should not exceed 1.2N-m (12 kgf-cm) when tightening a locking ring. | LW9Z-T1 |
| Lamp Holder Tool (optional)  | Rubber tool used for replacing incandescent or LED lamps installed in illuminated switches and pilot lights and pilot lights  | OR-55 |
| Terminal Cover (for solder tab terminal)  | Nylon cover for pushbuttons and selectors with solder terminals snaps onto contact block. (Insert the lead wires through terminal cover holes before wiring.) | LW-VL2 |
| Terminal Cover (for screw terminal)  | Nylon cover for pushbuttons and selectors for screw terminals snaps onto contact block. (Insert the lead wires through terminal cover holes before wiring.) | LW-VL2M |
| Terminal Cover (for unibody pilot light with solder tab terminal)  | Nylon cover for unibody pilot lights with solder terminals. | LW-PVL |
| Terminal Cover (for unibody pilot light with screw terminal)  | Nylon cover for unibody pilot lights with screw terminals. | LW-PVLM |
| Rubber Mounting Hole Plug  | Black rubber plug fills unused 22mm panel cutouts.  | OB-31 |
| Metallic Mounting Hole Plug  | 1. Used for plugging unnecessary mounting holes in the panel. Tighten the attached locking ring to a torque of 1.2N-m (12kgf-cm) maximum 2. Degree of Protection: IP66  | LW9Z-BM |
| Replacement Marking Plates  | White plastic engraving plate for use on all illuminated units (included in each lens). May be used to capture printed mylar insert (not supplied by IDEC) under lens face. | LW9Z-P1-W (round) LW9Z-P2-W (square) ALW3B (mushroom) |
| Anti-Rotation Ring  | Prevents rotation of switches in panel. (included with all selector and key switches only) | LW9Z-L |
| Replacement Keys  | One pair of keys. (#231) | KG9Z-SK |
| Replacement Locking Ring  | Use to secure operator to panel. (included with all assembled switches and operators) | LW9Z-LN |

A3

Switches & Pilot Devices



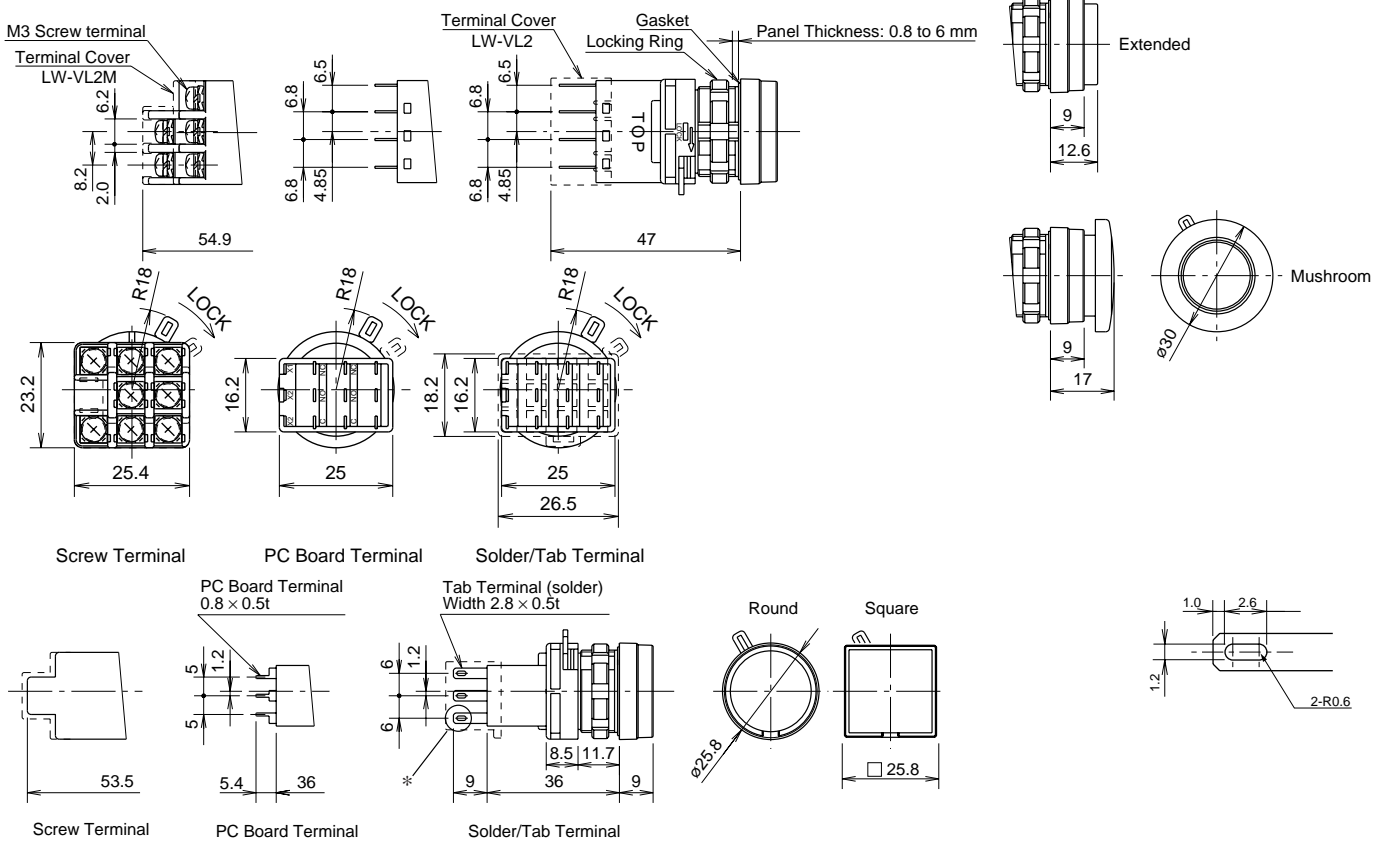
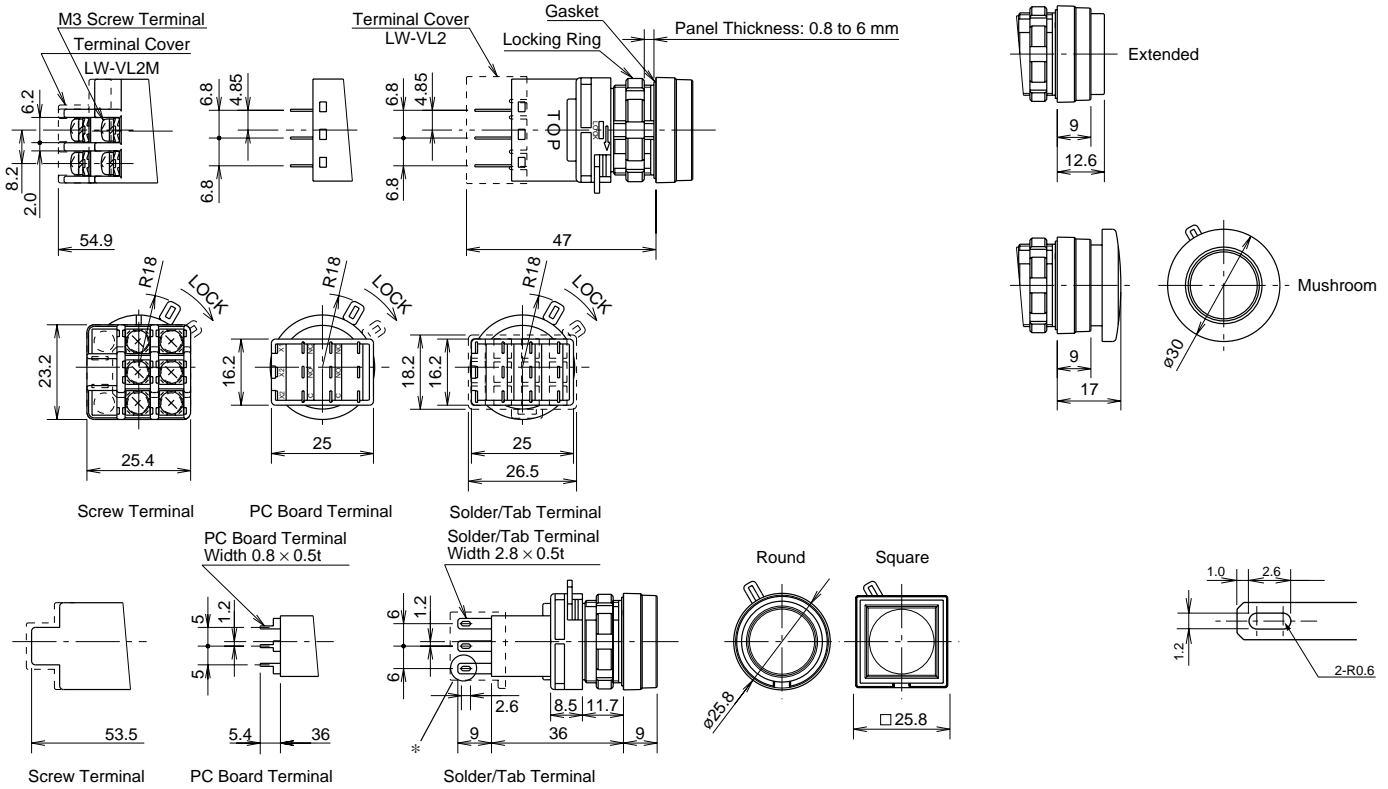
For replacement lamps, see previous page.

Dimensions: Pushbuttons

LW□L & LW□B: Illuminated & Non-Illuminated Pushbuttons

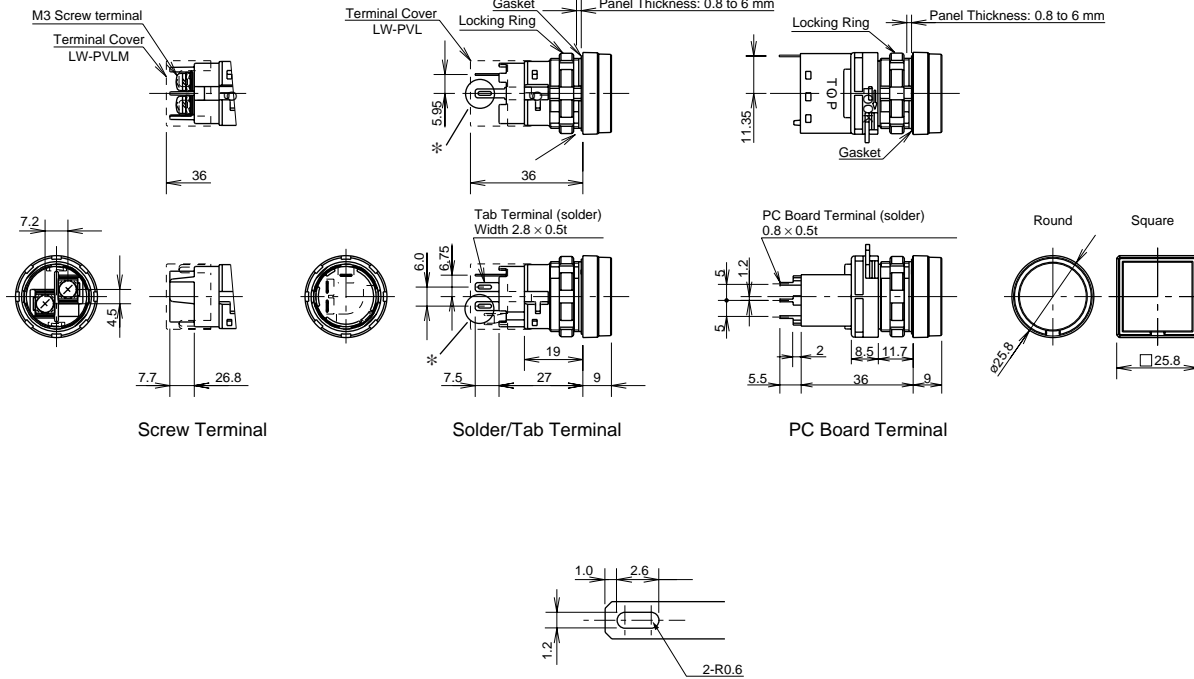
A3

Switches & Pilot Devices



Dimensions: Pilot Lights

LW1P/LW2P Pilot Lights

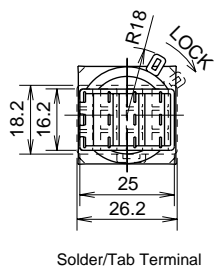
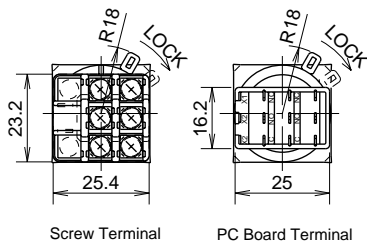
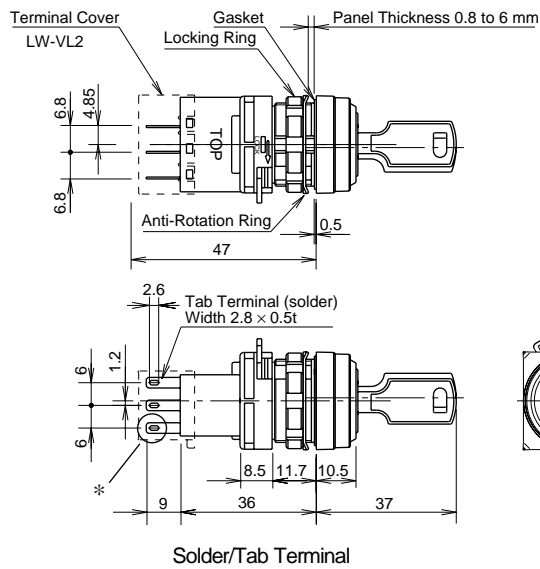
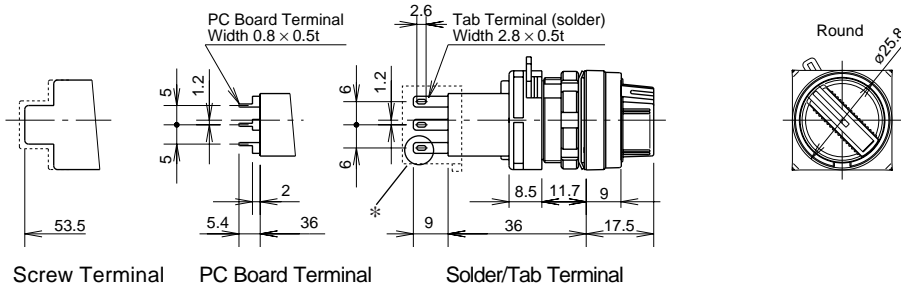
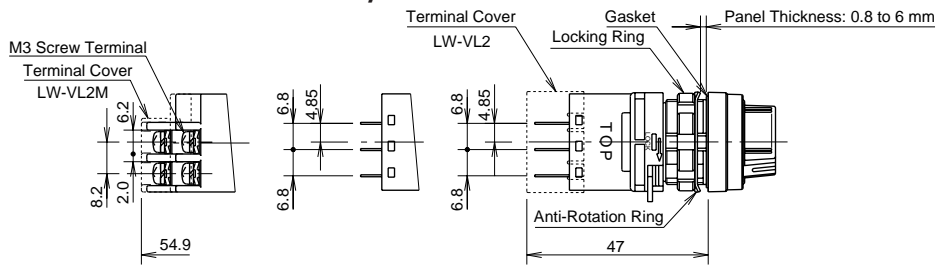


Dimensions: Selector and Keylock Switches

LW1S and LW1K Selector and Keylock Switches

A3

Switches & Pilot Devices



Replacement of Lens & Marking Plate

A3

Removing

1. Remove the operator (lens, marking plate, and lens holder) by inserting a screwdriver into the recess of the lens through the bezel.



2. Remove the marking plate by pushing the lens from the rear to disengage the latches between the lens and the lens holder, using the screwdriver as shown below.



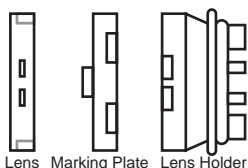
The translucent filter in the lens holder can not be removed because this filter is sealed to make the unit waterproof and oiltight.

Installing

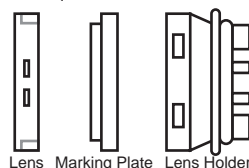
For round lens types, place the marking plate on the lens holder with the anti-rotation projection engaged and press the lens onto the lens holder to engage the latches. For square lens types, insert the marking plate into the lens, and press the lens onto the lens holder to engage the latches. Pay attention to the orientation of the marking plate.

Pay attention to the orientation of the marking plate.

For Round Lens



For Square Lens



Replacement of Lamps

Lamps can be replaced using the lamp holder tool (OR-55) from the front of the panel. Also by removing the contact block from the operator unit, the lamp can be replaced.

Replacement of Lamps from the Front of the Panel.

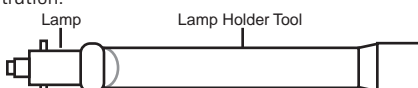
(How to Remove)

1. Push and turn the lamp counterclockwise using the side A of the lamp holder tool, and the lamp and the lamp holder can be removed.



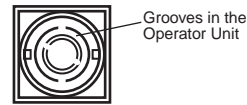
(How to Install)

1. Insert the lamp into the lamp holder tool and hold the lamp as in the following illustration.



2. Place the insertion guide of the lamp and the groove in the operator unit in

the same direction. Then push the lamp lightly and turn it clockwise.



Replacement of Lamps by Removing the Contact Block

The lamp can be replaced by removing the contact block without using the lamp holder tool.

Marking Plates & Films

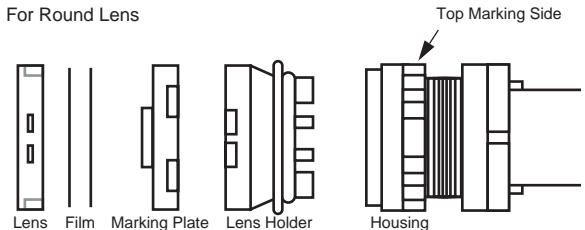
For LW series illuminated pushbuttons and pilot lights, legends and symbols can be engraved on marking plates, or printed mylar can be inserted under the lens for labelling purposes.

Marking Plate and Marking Film Size

| Lens Style | Round Lens | Square Lens |
|--------------------------------|--|-------------|
| Built-in Marking Plate | | |
| | Engraving must be made on the engraving area within 0.02" (0.5mm) deep. The marking plate is made of white acrylic resin. | |
| Applicable Marking Film | | |
| | Mylar for printing labels are not included and must be provided and printed by user. Two 0.004" (0.1mm)-thick films or one 0.008" (0.2mm)-thick film can be installed in the lens. Recommended marking film: Mylar | |

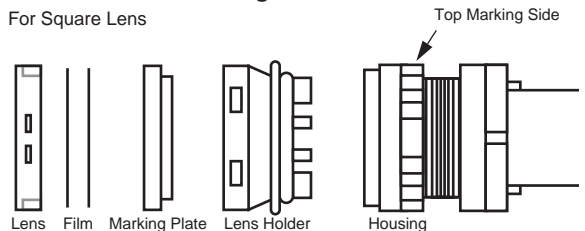
Insertion Order of Marking Plate & Film

For Round Lens



Insertion Order of Marking Plate & Film.

For Square Lens



1. Mylar is not included.

2. Pay attention to the orientation of marking plate.

Instructions con't

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.

Removing the Contact Block

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.

Installing the Contact Block

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.



Notes on Mounting

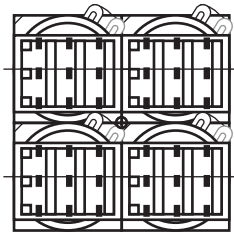
Use the optional Ring Wrench (LW9Z-T1) to mount the operator onto a panel. Tightening torque should not exceed 1.2N-m (12 kgf-cm). Do not use pliers. Excessive tightening will damage the locking ring.

Wiring

1. Solder the terminals within 20W/5 seconds or 260°C/3 seconds without exerting external force to the terminals. While soldering, do not touch the soldering iron to the housing. While wiring, prevent tension from being applied to the terminals. Do not bend or raise the terminals, nor exert excessive force to terminals.
2. Use a non-corrosive resin liquid flux.

Collective Mounting

As the locking lever can be turned easily from the rear of the units using a screwdriver, the contact blocks can be removed even when mounted collectively.



Notes for 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.



When wiring, insert the lead wires into the terminal cover holes before wiring.



Notes for Wiring

When installing a terminal cover onto the solder/tab terminal contact block, solder the inside of lamp terminal (toward the switch terminals) and wire.

(Screw Terminal Type)

Install a terminal cover to the control unit before wiring.



1. After wiring, terminal covers cannot be installed.
2. When terminal covers are used, round crimping terminals cannot be used.

Connection

Positive-lock connector and easy-lock connector are applicable to tab terminals.

Single Board Mounting

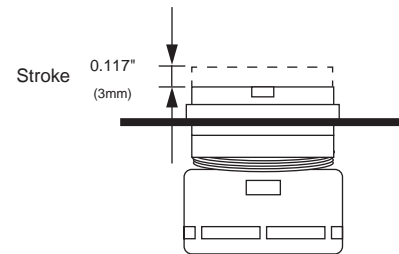
Mounting the switches and pilot lights on one PC board offers the following features.

1. Reduced installation labor, easy wiring, space saving, and standardization.
2. Since the contact blocks on the PC board can be removed easily using a locking lever, the LW series switches and pilot lights are easy to maintain.
3. Because the LW series switches and pilot lights require no studs for fastening the control unit to a PC board, special preparation of operation panel is not needed.

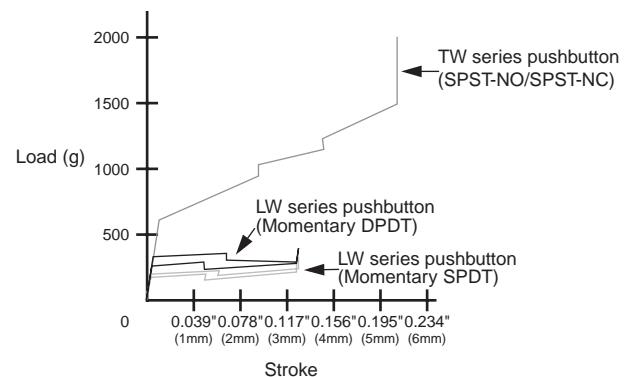
For details on one board mounting, contact IDEC.



Light Touch And High Reliability



Operating-force Snap Switching Mechanism



A3

Switches & Pilot Devices



TW NEMA Style Switches with snap-on contacts

Key features include:

- Corrosion resistant octagonal chrome plated locking bezel
- Snap-on 10A contact blocks
- Transformer or full voltage
- Incandescent or LED illumination
- Slow make, double break, self cleaning contacts
- Modular construction for maximum flexibility
- NEMA 4X and IP65 watertight/oiltight panel
- Available assembled or as sub-components
- 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 lense styles, one that maximizes light dispersion, the other accommodates direct lense engraving.

Self cleaning contact mechanisms 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. E70646



File No. 9561116E01








CSA Certified
File No. LR48366



File No. DK95-01696



Certificate No.
2030010305027380

| | | | | | | | | | |
|--|--|---|--|-----|-----|------------------------------|------|------|------|
| Conforming to Standards | | EN60947-1, EN60947-5-1, VDE0660-200, UL508, CSA C22-2 No.14 | | | | | | | |
| Approvals | | <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;">  File No. E68961 </div> <div style="text-align: center;">  File No. LR21451 </div> <div style="text-align: center;">  Certificate No. 2030010305027380 </div> </div> <div style="display: flex; justify-content: space-around; align-items: flex-start; margin-top: 10px;"> <div style="text-align: center;">  TÜV Rheinland Registration No: J9551802 (E-Stops) Registration No: J9551803 (All other switches) Registration No: J9551804 (Pilot Lights) </div> <div style="text-align: center;">  </div> </div> <div style="margin-top: 10px;"> <p>CSA: 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) UL: 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) TÜV: 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)</p> </div> | | | | | | | |
| Operating Temperature | | Operation: -25 to +50°C (without freezing) Storage: -40 to +80°C (without freezing) | | | | | | | |
| Vibration Resistance | | 5 to 55Hz, 100m/sec ² (10g) conforming to IEC6068-2-6 | | | | | | | |
| Shock Resistance | | 1000m/sec ² (100g) conforming to IEC6068-2-7 | | | | | | | |
| Electric Shock Protection | | Class 0 conforming to IEC60536 | | | | | | | |
| Degree of Protection (conforming to IEC60529) (conforming to NEMA ICS6-110) | | IP65 from front of the panel; (IP54 for key switches) IP20 (Type HW-F contact block) NEMA 1, 2, 3, 3R, 3S, 4, 4X, 5, 12, 13 (NEMA 1, 2, 3R, 5, 12, 13 for key switches) | | | | | | | |
| Mechanical Life | | Momentary pushbuttons: 5,000,000 (900 operations per hour) All other switches: 500,000 | | | | | | | |
| Pollution Degree (conforming to IEC60947-1) | | 3 for switches not using a transformer 2 for switches using a transformer | | | | | | | |
| Rated Operational Characteristics | | AC-15: A600 or Ue = 250V, Ie = 3A (NO, NC, NO-EM, NC-LB) DC-13: P600 or Ue = 125V, Ie = 1.1A (NO, NC) 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 | | 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) 2mm (NO-EM and NC-LB) | | | | | | | |
| Electrical Reliability | | MTBF < 1 fault for 10 million operation cycles (3V DC, 5mA) | | | | | | | |
| Lamp Ratings | | Incandescent: 1 W 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) | | | | | | | |
| Maximum Inrush Current | | 40 A (40 ms) | | | | | | | |
| Contact Material | | Silver | | | | | | | |
| Contact Ratings | Pushbuttons Illuminated Pushbuttons Selector Switches Illuminated Selector Switches Pushbutton Selectors | | Contact Block | | | Type HW-C/HW-F | | | |
| | | | Rated Insulation Voltage | | | 600V | | | |
| | | | Rated Continuous Current | | | 10A | | | |
| | | | Contact Ratings by Utilization Category IEC 60947-5-1 | | | AC-15 (A600) DC-13 (P600) | | | |
| Characteristics | Contact Ratings by Utilization Category | | | | | | | | |
| | Operational Voltage | | | 24V | 48V | 50V | 110V | 220V | 440V |
| | 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 | 8A | 5A | — | 2.2A | 1.1A | — |
| DC-13 Control of electromagnets | | | 5A | 2A | — | 1.1A | 0.6A | — | |

Non-Illuminated Pushbuttons (Assembled)

A3

Switches & Pilot Devices



Assembled Pushbuttons

A B () W 1 10 () - B

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

Terminal Style

- Blank: Standard
- N: Fingersafe (IP20)

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) con't

Part Numbers: Non-illuminated Pushbuttons

| Style | Contacts | Momentary Action | Maintained Action |
|---------------------------------------|-------------------------------------|---|---|
| Flush | 1NO 1NC 1NO-1NC 2NO 2NC | ABW110-① ABW101-① ABW111-① ABW120-① ABW102-① | AOW110-① AOW101-① AOW111-① AOW120-① AOW102-① |
| Extended | 1NO 1NC 1NO-1NC 2NO 2NC | ABW210-① ABW201-① ABW211-① ABW220-① ABW202-① | AOW210-① AOW201-① AOW211-① AOW220-① AOW202-① |
| Recessed | 1NO 1NC 1NO-1NC 2NO 2NC | ABFW110-① ABFW101-① ABFW111-① ABFW120-① ABFW102-① | AOFW110-① AOFW101-① AOFW111-① AOFW120-① AOFW102-① |
| Extended with Full Shroud | 1NO 1NC 1NO-1NC 2NO 2NC | ABFW210-① ABFW201-① ABFW211-① ABFW220-① ABFW202-① | AOFW210-① AOFW201-① AOFW211-① AOFW220-① AOFW202-① |
| Ø 29mm Mushroom Head | 1NO 1NC 1NO-1NC 2NO 2NC | ABW310-① ABW301-① ABW311-① ABW320-① ABW302-① | AOW310-① AOW301-① AOW311-① AOW320-① AOW302-① |
| Ø 40mm Mushroom Head | 1NO 1NC 1NO-1NC 2NO 2NC | ABW410-① ABW401-① ABW411-① ABW420-① ABW402-① | AOW410-① AOW401-① AOW411-① AOW420-① AOW402-① |
| Ø 40mm Mushroom Head with Full Shroud | 1NO 1NC 1NO-1NC 2NO 2NC | ABGW410-① ABGW401-① ABGW411-① ABGW420-① ABGW402-① | AOGW410-① AOGW401-① AOGW411-① AOGW420-① AOGW402-① |
| Square Flush | 1NO 1NC 1NO-1NC 2NO 2NC | ABQW110-① ABQW101-① ABQW111-① ABQW120-① ABQW102-① | AQQW110-① AQQW101-① AQQW111-① AQQW120-① AQQW102-① |
| Square Extended | 1NO 1NC 1NO-1NC 2NO 2NC | ABQW210-① ABQW201-① ABQW211-① ABQW220-① ABQW202-① | AQQW210-① AQQW201-① AQQW211-① AQQW220-① AQQW202-① |
| Keylock Push On/Off | 1NO 1NC 1NO-1NC 2NO 2NC | AKW210 AKW201 AKW211 AKW220 AKW202 | — |

① Button Color Code

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

A3

Switches & Pilot Devices



1. In place of ①, specify the Button Color Code from table.
2. For sub-assembled part numbers, see page A3-130.
3. For accessories, see page A3-156.
4. For dimensions, see page A3-158.
5. Keyed switches are supplied with two keys. All units are keyed alike. For custom keys, contact IDEC.

Non-Illuminated Pushbuttons (Sub-Assembled)

Contact Blocks + Operator + Button = Complete Part



A3


Switches & Pilot Devices

Part Numbers: Operators




| Style | Part Number | |
|--|-------------|------------|
| | Momentary | Maintained |
| Round Flush/Extended  | ABW-100 | AOW-100 |
| Round with Full Shroud  | 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 | |


Part Numbers: 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.

Part Numbers: Contact Blocks

| Description | Part Number | |
|--|--------------------------------|--------------------------------|
| | 1NO | 1NC |
| Standard Exposed Screw  | HW-C10 HW-C10R (early make) | HW-C01 HW-C01R (late break) |
| Fingersafe (IP20), CE marked  | HW-F10 HW-F10R (early make) | HW-F01 HW-F01R (late break) |
| Dummy Block  | TW-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 Code

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

E-Stops (Assembled)



A3

Switches & Pilot Devices

Assembled E-Stops

A V (L) W 4 (B) (99) 11 (D) (N) - R - (24V)

| | |
|--|--|
| <p>Function</p> <p>V: Pushlock Turn Reset Y: Push-Pull X: Pushlock Key Reset</p> <p>Illumination</p> <p>Blank: None L: Illuminated</p> <p>Series Designation</p> <p>W: TW Series</p> <p>Button/Lens Size</p> <p>3: 29mm Mushroom 4: 40mm Mushroom</p> <p>Lens Type (illuminated units only)</p> <p>Blank: Standard (ribbed) B: Engravable (smooth with insert)</p> <p>Illuminated Circuit (illuminated unit only)</p> <p>99: Full Voltage (lamp determines voltage) 126: 120V AC Step Down Transformer 246: 240V AC Step Down Transformer 486: 480V AC Step Down Transformer</p> | <p>Lamp Voltage (full voltage illuminated units only)</p> <p>6V: 6V AC/DC 12V: 12V AC/DC 24V: 24V AC/DC 120V: 120V AC (LED only) 240V: 240V AC (LED only)</p> <p>Button/Lens Color</p> <p>A: Amber R: Red W: White G: Green S: Blue Y: Yellow B: Black</p> <p>Contact Terminal Style</p> <p>Blank: Standard N: Fingersafe (IP20)</p> <p>Lamp Type (illuminated units only)</p> <p>Blank: Incandescent D: LED</p> <p>Contact Arrangement</p> <p>10: 1NO 01: 1NC 20: 2NO 02: 2NC 11: 1NO/1NC 22: 2NO/2NC</p> |
|--|--|



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

E-Stops (Assembled) con't

Part Numbers: Non-Illuminated E-Stops

| Style | Contacts | Part Number |
|---------------------------------|-------------------------------------|--|
| Ø 40mm Pushlock Turn Reset* | 1NO 1NC 1NO-1NC 2NO 2NC | AVW410-R* AVW401-R* AVW411-R* AVW420-R* AVW402-R* |
| Ø 29mm Pushlock Turn Reset* | 1NO 1NC 1NO-1NC 2NO 2NC | AVW310-R* AVW301-R* AVW311-R* AVW320-R* AVW302-R* |
| Ø 40mm Push-Pull | 1NO 1NC 1NO-1NC 2NO 2NC | AYW410-① AYW401-① AYW411-① AYW420-① AYW402-① |
| Ø 40mm Pushlock Key Reset * | 1NO 1NC 1NO-1NC 2NO 2NC | AXW410- R* AXW401- R* AXW411- R* AXW420- R* 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 page A3-130.
- 4. For accessories, see page A3-156.
- 5. For dimensions, see page A3-158.

Part Numbers: Illuminated E-Stops

| Style | Type | Contacts | Part Number |
|-------------------------------------|--------------|-----------------------|---|
| Ø 40mm Pushlock Turn Reset Type | Transformer | 1NO-1NC 2NO 2NC | AVLW4 ④ 11⑤-R* AVLW4 ④ 20⑤-R* AVLW4 ④ 02⑤-R* |
| | Full Voltage | 1NO-1NC 2NO 2NC | AVLW49911⑤-R*-③ AVLW49920⑤-R*-③ AVLW49902⑤-R*-③ |
| Ø 29mm Pushlock Turn Reset | Transformer | 1NO-1NC 2NO 2NC | AVLW3④11⑤-R* AVLW3④20⑤-R* AVLW3④02⑤-R* |
| | Full Voltage | 1NO-1NC 2NO 2NC | AVLW39911⑤-R*-③ AVLW39920⑤-R*-③ AVLW39902⑤-R*-③ |
| Ø 40mm Push-Pull | Transformer | 1NO-1NC 2NO 2NC | AYLW4 ④ 11⑤-② AYLW4 ④ 20⑤-② AYLW4 ④ 02⑤-② |
| | Full Voltage | 1NO-1NC 2NO 2NC | AYLW49911⑤-②-③ AYLW49920⑤-②-③ AYLW49902⑤-②-③ |

- 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. In place of ⑤, specify the Lamp Type Code from table above.
- 6. For sub-assembly part numbers, see page A3-134.
- 7. For accessories, see page A3-156.
- 8. For dimensions, see page A3-158.

① Button Color Code

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

② LED/Lens Color Code

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

③ Full Voltage Code

| Voltage | Code |
|-----------|-----------------|
| 6V AC/DC | 6V |
| 12V AC/DC | 12V |
| 24V AC/DC | 24V |
| 120V AC | 120V (LED only) |
| 240V AC | 240V (LED only) |

④ Transformer Voltage Codes

| Voltage | Code |
|---------|------|
| 120VAC | 126 |
| 240VAC | 246 |
| 480VAC | 486 |

⑤ Lamp Type Code

| Lamp | Code |
|--------------|-------|
| Incandescent | Blank |
| LED | D |

Transformers step down to 6V.

E-Stops (Sub-Assembled)

Transformer/ Adaptor* + Contacts + Lamp Holder + Operator + Lamp + Button or Lens = Complete Part





* Not applicable for full voltage units

Part Numbers: Operators

| Style | Part Number | |
|--|-----------------|-------------|
| | Non-illuminated | Illuminated |
| Ø 29/Ø 40mm Pushlock Turn Reset  | AVW-300 | AVLW3-0600 |
| Ø 40mm Push-Pull  | AYW-400 | AYLW4-0600 |
| Ø 40mm Pushlock Key Reset  | AXW-300 | — |

Part Numbers: Lamps

| Type | Voltage | Part Number |
|---|-----------|----------------------|
| LED  | 6V AC/DC | LSTD-6 ^② |
| | 12V AC/DC | LSTD-1 ^② |
| | 24V AC/DC | LSTD-2 ^② |
| | 120V AC | LSTD-H2 ^② |
| | 240V AC | LSTD-M4 ^② |
| Incandescent  | 6V AC/DC | IS-6 |
| | 12V AC/DC | IS-12 |
| | 24V AC/DC | IS-24 |



- In place of ^②, specify the LED color code.
- The LED contains a current-limiting resistor and a protection diode.

Part Numbers: Buttons

| Style | Part Number |
|---|---------------------|
| Ø 40mm Pushlock Turn Reset  | AVW4B-R* |
| Ø 29mm Pushlock Turn Reset  | AVW3B-R* |
| Ø 40mm Push-Pull  | AYW4B- ^① |
| Ø 40mm Pushlock Key Reset  | AXW4B-R* |



- *Available in Red only
- In place of ^①, specify the button color code from table below.

① Button Color Code


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

② LED/Lens Color Code

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

Illuminated E-Stops (Sub-Assembled) con't





Part Numbers: Lenses

| Style | Part Number | |
|--|-------------|-------------|
| | Standard | Engravable |
|  Ø 29mm Head Pushlock Turn Reset | AVLW3LU-R* | AVLW3BLU-R* |
|  Ø 40mm Head Pushlock Turn Reset | AVLW4LU-R* | AVLW4BLU-R* |
|  Ø 40mm Head Push Pull | AYLW4LU-② | AYLW4BLU-② |



1. In place of ②, specify the lens color code from table on the bottom right.
2. *Available only in red
3. Standard lenses have ribbed pattern, Engravable lenses are smooth and include an engravable insert.




Part Numbers: Transformers/Full Voltage Modules

| Style | Description | | Part Number |
|--|-------------|------------|-------------|
| | Standard | Fingersafe | |
|  Full Size Transformer | Standard | 120V AC | TW-T126B |
| | | 240V AC | TW-T246B |
| | | 480V AC | TW-T486B |
| | Fingersafe | 120V AC | TW-F126B |
| | | 240V AC | TW-F246B |
| | | 480V AC | TW-F486B |
|  Half Size Transformer | 120V AC | TW-T126SB | |
| | 240V AC | TW-T246SB | |
|  Full voltage model (use with even number of contacts) | Standard | TW-DA1B | |
| | Fingersafe | TW-DA1FB | |
|  Full voltage model (use with odd number of contacts) | Standard | HW-DA1B | |
| | Fingersafe | HW-DA1FB | |






All Transformers step down to 6V (use 6V lamp).

Part Numbers: Lamp Circuit Components

| Style | Application | Part Number |
|--|---|-------------|
|  Short Lamp Holder | Used with a Half-size Transformer and one contact block | TW-LH1 |
|  Long Lamp Holder | Used with Full-size Transformer and two contact blocks Used with Half-size Transformer and three contact blocks Used with Full Voltage Adaptor and two contact blocks | TW-LH2 |
|  Lead Holder | Used with TW-LH2 holder when using four contact blocks | HW-LH3 |

Part Numbers: Contact Blocks

| Description | Part Number | |
|---|----------------------|----------------------|
| | 1NO | 1NC |
|  Standard Exposed Screw | HW-C10 | HW-C01 |
| | HW-C10R (early make) | HW-C01R (late break) |
|  Fingersafe (IP20), CE marked | HW-F10 | HW-F01 |
| | HW-F10R (early make) | HW-F01R (late break) |
|  Dummy Block | TW-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)



A3

Switches & Pilot Devices

Assembled Pilot Lights

A P (Q) W 1 (B) 99 (D) - R - (24V)

| | |
|---|--|
| <p>Function _____</p> <p>P: Pilot Light</p> <p>Bezel Shape _____</p> <p>Blank: Octagonal (round lenses) Q: Square</p> <p>Series Designation _____</p> <p>W: TW Series</p> <p>Lens Shape _____</p> <p>1: Flat 2: Dome</p> <p>Lens Type _____</p> <p>Blank: Standard (ribbed) B: Engravable (smooth with insert included)</p> <p>Illumination Circuit _____</p> <p>99: Full Voltage (lamp determines voltage) 126:120V AC Step Down Transformer 246:240V AC Step Down Transformer 486:480V AC Step Down Transformer</p> | <p>Lamp Voltage (Full Voltage Units Only) 6V: 6V AC/DC 12V: 12V AC/DC 24V: 24V AC/DC 120V: 120V AC (LED only) 240V: 240V AC (LED only)</p> <p>Lens Color Code A: Amber G: Green R: Red S: Blue W: White Y: Yellow</p> <p>Lamp Type Blank: Incandescent D: LED</p> |
|---|--|






1. Use only when interpreting part numbers. Do not use for developing part numbers.
2. All transformers step down to 6V.


Pilot Lights (Assembled) con't

Part Numbers: Pilot Lights

A3

Switches & Pilot Devices

| Style | | Operating Voltage | Part Number |
|---|--------------|----------------------------|--|
|  Round Flat | Transformer | 120VAC 240VAC 480VAC | APW1126 ^{④-②} APW1246 ^{④-②} APW1486 ^{④-②} |
| | Full Voltage | — | APW199 ^{④-②-③} |
|  Dome | Transformer | 120VAC 240VAC 480VAC | APW2126 ^{④-②} APW2246 ^{④-②} APW2486 ^{④-②} |
| | Full Voltage | — | APW299 ^{④-②-③} |
|  Square Flat | Transformer | 120VAC 240VAC 480VAC | APQW1B126 ^{④-②} APQW1B246 ^{④-②} APQW1B486 ^{④-②} |
| | Full Voltage | — | APQW1B99 ^{④-②-③} |

-  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. In place of ④, specify the Lamp Type Code from table below.
 4. For accessories, see page A3-156.
 5. For dimensions, see page A3-158.
 6. For sub-assembly part numbers, see next page.

② Lens Color Code

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

③ Full Voltage Code

| Voltage | Code |
|-----------|-----------------|
| 6V AC/DC | 6V |
| 12V AC/DC | 12V |
| 24V AC/DC | 24V |
| 120V AC | 120V (LED only) |
| 240V AC | 240V (LED only) |

④ Lamp Type Code

| Lamp | Code |
|--------------|-------|
| Incandescent | Blank |
| LED | D |

Pilot Lights (Sub-Assembled)

A3



Switches & Pilot Devices

Transformer + Operator + Lamp + Lens = Complete Part



*Transformer not required for full voltage units.

Part Numbers: Operators

| Style | Part Number |
|--|-------------|
| Round Dome/Flat  | APW-199 |
| Square  | UPQW-199 |



Same operator is used for full voltage as for transformer completed units.

Part Numbers: 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 below.
2. Standard lenses have a ribbed lens to enhance light dispersion. Marking lenses are smooth and include an engravable insert.



② Lens/LED Color Code

| 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


Part Numbers: Lamps

| Type | 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 |
| | 30V AC/DC | IS-30 |



1. In place of ②, specify the LED Color Code from table below.
2. The LED contains a current-limiting resistor and diode bridge.

Part Numbers: Transformers

| Style | Description | Part Number | |
|--|-------------|-------------|----------|
|  | Standard | 120V AC | TW-T126B |
| | | 240V AC | TW-T246B |
| | | 480V AC | TW-T486B |
| | Fingersafe | 120V AC | TW-F126B |
| | | 240V AC | TW-F246B |
| | | 480V AC | TW-F486B |



All Transformers step down to 6V (use 6V lamp).

Illuminated Pushbuttons (Assembled)

A3

Switches & Pilot Devices



Assembled Illuminated Pushbuttons

A L (F) W 2 (B) 99 11 (D) (N) - R - (24V)

Function

- L: Momentary Action
- OL: Maintained Action

Bezel Shape

- Blank: Octagonal (round lenses)
- F: Full Shroud (round lenses)
- Q: Square

Series Designation

- W: TW series

Lens Shape/Size

- 2: Standard Extended (round or square)
- 3: 29mm Mushroom
- 4: 40mm Mushroom

Lens Type

- Blank: Standard (ribbed)
- B: Engravable (smooth with insert)

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 (LED only)
 - 240V: 240V AC (LED only)

Lens Code

- A: Amber
- G: Green
- R: Red
- S: Blue
- W: White
- Y: Yellow

Contact Terminal Style

- Blank: Standard
- N: Fingersafe

Lamp Type

- Blank: Incandescent Lamp
- D: LED Lamp

Contact Arrangement






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



1. Use only when interpreting part numbers. Do not use for developing part numbers.
2. Transformers step down to 6V.

Illuminated Pushbuttons (Assembled)

Part Numbers: Illuminated Pushbuttons

| Style | | Contacts | Part Number | |
|---|------------------|-----------------------|---|--|
| | | | Momentary | Maintained |
|  Extended Lens | Transformer Type | 1NO-1NC 2NO 2NC | ALW2 ④ 11⑤-② ALW2 ④ 20⑤-② ALW2 ④ 02⑤-② | AOLW2 ④ 11⑤-② AOLW2 ④ 20⑤-② AOLW2 ④ 02⑤-② |
| | Full Voltage | 1NO-1NC 2NO 2NC | ALW29911⑤-②-③ ALW29920⑤-②-③ ALW29902⑤-②-③ | AOLW29911⑤-②-③ AOLW29920⑤-②-③ AOLW29902⑤-②-③ |
|  Extended Lens with Full Shroud | Transformer Type | 1NO-1NC 2NO 2NC | ALFW2 ④ 11⑤-② ALFW2 ④ 20⑤-② ALFW2 ④ 02⑤-② | AOLFW2 ④ 11⑤-② AOLFW2 ④ 20⑤-② AOLFW2 ④ 02⑤-② |
| | Full Voltage | 1NO-1NC 2NO 2NC | ALFW29911⑤-②-③ ALFW29920⑤-②-③ ALFW29902⑤-②-③ | AOLFW29911⑤-②-③ AOLFW29920⑤-②-③ AOLFW29902⑤-②-③ |
|  Ø 29mm Mushroom Lens | Transformer Type | 1NO-1NC 2NO 2NC | ALW3 ④ 11⑤-② ALW3 ④ 20⑤-② ALW3 ④ 02⑤-② | AOLW3 ④ 11⑤-② AOLW3 ④ 20⑤-② AOLW3 ④ 02⑤-② |
| | Full Voltage | 1NO-1NC 2NO 2NC | ALW39911⑤-②-③ ALW39920⑤-②-③ ALW39902⑤-②-③ | AOLW39911⑤-②-③ AOLW39920⑤-②-③ AOLW39902⑤-②-③ |
|  Ø 40mm Mushroom Lens | Transformer Type | 1NO-1NC 2NO 2NC | ALW4 ④ 11⑤-② ALW4 ④ 20⑤-② ALW4 ④ 02⑤-② | AOLW4 ④ 11⑤-② AOLW4 ④ 20⑤-② AOLW4 ④ 02⑤-② |
| | Full Voltage | 1NO-1NC 2NO 2NC | ALW49911⑤-②-③ ALW49920⑤-②-③ ALW49902⑤-②-③ | AOLW49911⑤-②-③ AOLW49920⑤-②-③ AOLW49902⑤-②-③ |
|  Square Extended | Transformer Type | 1NO-1NC 2NO 2NC | ALQW2B ④ 11⑤-② ALQW2B ④ 20⑤-② ALQW2B ④ 02⑤-② | AOLQW2B ④ 11⑤-② AOLQW2B ④ 20⑤-② AOLQW2B ④ 02⑤-② |
| | Full Voltage | 1NO-1NC 2NO 2NC | ALQW2B9911⑤-②-③ ALQW2B9920⑤-②-③ ALQW2B9902⑤-②-③ | AOLQW2B9911⑤-②-③ AOLQW2B9920⑤-②-③ AOLQW2B9902⑤-②-③ |



- In place of ②, specify the Lens Color Code (see table above). Mushroom lenses not available in yellow.
- In place of ③, specify the Full Voltage Code (lamp voltage) (see table above).
- In place of ④, specify the Transformer Voltage Code (see table above).
- In place of ⑤, specify the Lamp Type Code from table above.
- For sub-assembly part numbers, see page A3-140.
- For accessories, see page A3-156.
- For dimensions, see page A3-158.

② Lens/LED Color Code

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

③ Full Voltage Code

| Voltage | Code |
|-----------|-----------------|
| 6V AC/DC | 6V |
| 12V AC/DC | 12V |
| 24V AC/DC | 24V |
| 120V AC | 120V (LED only) |
| 240V AC | 240V (LED only) |

④ Transformer Voltage Codes

| Voltage | Code |
|---------|------|
| 120VAC | 126 |
| 240VAC | 246 |
| 480VAC | 486 |

⑤ Lamp Type Code

| Lamp | Code |
|--------------|-------|
| Incandescent | Blank |
| LED | D |



Mushroom lenses not available in yellow.



Transformers step down to 6V (use 6V lamp).

Illuminated Pushbuttons (Sub-Assembled)

Transformer/ Adaptor* + Contacts + Lamp Holder + Operator + Lamp + Lens = Complete Part





* Not applicable for full voltage units

Part Numbers: 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 |



Part Numbers: 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 |



- In place of ②, specify the lens color code from table on the bottom right.
- * Mushroom lens not available in yellow.
- Standard lenses have ribbed pattern, Engravable lenses are smooth and include an engravable insert.




Part Numbers: Lamps

| Type | 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 |



- In place of ②, specify the LED Color Code.
- The LED contains a current-limiting resistor and a protection diode.

Part Numbers: Lamp Circuit Components




| Style | Application | Part Number |
|---|---|-------------|
| Short Lamp Holder  | Used with a Half-size Transformer and one contact block | TW-LH1 |
| Long Lamp Holder  | Used with Full-size Transformer and two contact blocks Used with Half-size Transformer and three contact blocks Used with Full Voltage Adaptor and two contact blocks | TW-LH2 |
| Lead Holder  | Used with TW-LH2 holder when using four contact blocks | HW-LH3 |

② LED/Lens Color Code

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

Illuminated Pushbuttons (Sub-Assembled) con't





Part Numbers: Contact Blocks

| Description | Part Number | |
|---|-----------------------------------|-----------------------------------|
| | 1NO | 1NC |
| Standard Exposed Screw  | HW-C10 HW-C10R (early make) | HW-C01 HW-C01R (late break) |
| Fingersafe (IP20)  | HW-F10 HW-F10R (early make) | HW-F01 HW-F01R (late break) |
| Dummy Block  | TW-DB | |



- Dummy blocks (no contacts) are used with an odd number of contact blocks.
- Use of early and late break contacts creates a make before break function.

Part Numbers: Transformers/Full Voltage Modules

| Style | Description | Part Number |
|--|-------------|------------------|
| Full Size Transformer  | Standard | 120V AC TW-T126B |
| | | 240V AC TW-T246B |
| | | 480V AC TW-T486B |
| | Fingersafe | 120V AC TW-F126B |
| | | 240V AC TW-F246B |
| | | 480V AC TW-F486B |
| Half Size Transformer  | 120V AC | TW-T126SB |
| | 240V AC | TW-T246SB |
| Full voltage model (use with even number of contacts)  | Standard | TW-DA1B |
| | Fingersafe | TW-DA1FB |
| Full voltage model (use with odd number of contacts)  | Standard | HW-DA1B |
| | Fingersafe | HW-DA1FB |



All Transformers step down to 6V (use 6V lamp).

Non-Illuminated Selector Switches (Assembled)

A3

Switches & Pilot Devices



Assembled Selector Switches

A S W 3 (1) (L) 20 (N) - 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 A3-150.)

Contacts Terminal Style

Blank: standard

N: Fingersafe (IP20)

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, contact IDEC for details.
3. Portions of part number inside () are optional.

Non-Illuminated Selector Switches (Assembled) con't

Part Numbers: 2-Position Selector Switches

| Contact | Mounting | Operator Position | | Key | Part Number | Part Number | Part Number |
|------------|------------------|-------------------|------------------|----------------------|--|---|---|
| | | L | R | | Maintained | Spring Return from Right | Spring Return from Left |
| 1NO | 1 2 | 0 0 | X 0 | Knob Lever Key | ASW210 ASW2L10 ASW2K10 | ASW2110 ASW21L10 ASW21K10 | ASW2210 ASW22L10 ASW22K10 |
| 1NC | 1 2 | X 0 | 0 0 | Knob Lever Key | ASW201-116 ASW2L01-116 ASW2K01-116 | ASW2101-116 ASW21L01-116 ASW21K01-116 | ASW2201-116 ASW22L01-116 ASW22K01-116 |
| 1NO 1NC | 1 2 | X 0 | 0 X | Knob Lever Key | ASW211 ASW2L11 ASW2K11 | ASW2111 ASW21L11 ASW21K11 | ASW2211 ASW22L11 ASW22K11 |
| 2NO | 1 2 | 0 0 | X X | Knob Lever Key | ASW220 ASW2L20 ASW2K20 | ASW2120 ASW21L20 ASW21K20 | ASW2220 ASW22L20 ASW22K20 |
| 2NC | 1 2 | X X | 0 0 | Knob Lever Key | ASW202-104 ASW2L02-104 ASW2K02-104 | ASW2102-104 ASW21L02-104 ASW21K02-104 | ASW2202-104 ASW22L02-104 ASW22K02-104 |
| 2NO 2NC | 1 2 3 4 | 0 X 0 X | X 0 X 0 | Knob Lever Key | ASW222 ASW2L22 ASW2K22 | ASW2122 ASW21L22 ASW21K22 | ASW2222 ASW22L22 ASW22K22 |
| 2NO 2NC | 1 2 3 4 | 0 X X X | X 0 0 0 | Knob Lever Key | ASW222-111 ASW2L22-111 ASW2K22-111 | ASW2122-111 ASW21L22-111 ASW21K22-111 | ASW2222-111 ASW22L22-111 ASW22K22-111 |



A3

Switches & Pilot Devices

Part Numbers: 3-Position Selector Switches

| Contact | Mounting | Operator Position | | | Key | Part Number | Part Number | Part Number | Part Number |
|------------|------------------|-------------------|------------------|------------------|----------------------|--|---|---|---|
| | | L | C | R | | Maintained | Spring Return from Right | Spring Return from Left | Spring Return Two-Way |
| 2NO | 1 2 | X 0 | 0 0 | 0 X | Knob Lever Key | ASW320 ASW3L20 ASW3K20 | ASW3120 ASW31L20 ASW31K20 | ASW3220 ASW32L20 ASW32K20 | ASW3320 ASW33L20 ASW33K20 |
| 2NC | 1 2 | 0 X | X X | X 0 | Knob Lever Key | ASW302 ASW3L02 ASW3K02 | ASW3102 ASW31L02 ASW31K02 | ASW3202 ASW32L02 ASW32K02 | ASW3302 ASW33L02 ASW33K02 |
| 2NO 2NC | 1 2 3 4 | X 0 0 X | 0 X X X | 0 X X 0 | Knob Lever Key | ASW322 ASW3L22 ASW3K22 | ASW3122 ASW31L22 ASW31K22 | ASW3222 ASW32L22 ASW32K22 | ASW3322 ASW33L22 ASW33K22 |
| 2NO 2NC | 1 2 3 4 | X X 0 0 | 0 X X 0 | X 0 0 X | Knob Lever Key | ASW322-309 ASW3L22-309 ASW3K22-309 | ASW3122-309 ASW31L22-309 ASW31K22-309 | ASW3222-309 ASW32L22-309 ASW32K22-309 | ASW3322-309 ASW33L22-309 ASW33K22-309 |
| 2NO 2NC | 1 2 3 4 | 0 0 0 0 | X 0 X 0 | 0 X 0 X | Knob Lever Key | ASW322-310 ASW3L22-310 ASW3K22-310 | ASW3122-310 ASW31L22-310 ASW31K22-310 | ASW3222-310 ASW32L22-310 ASW32K22-310 | ASW3322-310 ASW33L22-310 ASW33K22-310 |
| 4NO | 1 2 3 4 | X X X 0 | 0 0 0 0 | 0 X 0 X | Knob Lever Key | ASW340 ASW3L40 ASW3K40 | ASW3140 ASW31L40 ASW31K40 | ASW3240 ASW32L40 ASW32K40 | ASW3340 ASW33L40 ASW33K40 |
| 4NC | 1 2 3 4 | 0 X 0 X | X X X X | X 0 X 0 | Knob Lever Key | ASW304 ASW3L04 ASW3K04 | ASW3104 ASW31L04 ASW31K04 | ASW3204 ASW32L04 ASW32K04 | ASW3304 ASW33L04 ASW33K04 |



- 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 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. If a different configuration is required, contact an IDEC representative for more information.
- Custom contact configurations are available, see page A3-150 or contact IDEC for details.

Non-Illuminated Selector Switches (Assembled) con't

Part Numbers: 4-Position Selector Switch

| | | Operator Position | | | | | Maintained Part Number |
|---------|----------|-------------------|---|---|---|---------------|---------------------------|
| Contact | Mounting | 1 | 2 | 3 | 4 | | |
| | | | | | | | |
| 2NO | 1 | X | 0 | 0 | 0 | Knob Lever | ASW422-411 ASW4L22-411 |
| 2NC | 2 | 0 | X | 0 | 0 | | |
| | 3 | 0 | 0 | X | 0 | | |
| | 4 | 0 | 0 | 0 | X | | |

Part Numbers: 5-Position Selector Switch

| | | Operator Position | | | | | | Maintained Part Number |
|---------|----------|-------------------|---|---|---|---|---------------|---------------------------|
| Contact | Mounting | 1 | 2 | 3 | 4 | 5 | | |
| | | | | | | | | |
| 2NO | 1 | X | 0 | 0 | 0 | 0 | Knob Lever | ASW522-501 ASW5L22-501 |
| 2NC | 2 | 0 | X | 0 | 0 | 0 | | |
| | 3 | 0 | 0 | 0 | X | 0 | | |
| | 4 | 0 | 0 | 0 | 0 | X | | |

A3
Switches & Pilot Devices



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.

Part Numbers: Operators

| Style | Positions | Description | Part Number | |
|---|--|--|--|-------------------------------------|
| Knob/Lever  | 2 | Maintained | ASW200 | |
| | | Spring return from right | ASW2100 | |
| | | Spring return from left | ASW2200 | |
| | 3 | Maintained, Cam 1 Maintained, Cam 2 Maintained, Cam 3 | | ASW300-1 ASW300-2 ASW300-3 |
| | | | Spring return from right, Cam 1 Spring return from right, Cam 2 | ASW3100-1 ASW3100-2 |
| | | | Spring return from left, Cam 1 Spring return from left, Cam 2 | ASW3200-1 ASW3200-2 |
| | | Spring return from left/right, Cam 1 Spring return from left/right, Cam 2 | ASW3300-1 ASW3300-2 | |
| | | 4 | Maintained, Standard Cam Maintained, Cam 1 | ASW400 ASW400-1 |
| | | 5 | Maintained, Standard cam Maintained, Cam 1 | ASW500 ASW500-1 |
| | Key  | 2 | Maintained | ASW2K00 |
| Spring return from right | | | ASW21K00 | |
| Spring return from left | | | ASW22K00 | |
| 3 | | Maintained, Cam 1 Maintained, Cam 2 Maintained, Cam 3 | | ASW3K00-1 ASW3K00-2 ASW3K00-3 |
| | | | Spring return from right, Cam 1 Spring return from right, Cam 2 | ASW31K00-1 ASW31K00-2 |
| | | | Spring return from left, Cam 1 Spring return from left, Cam 2 | ASW32K00-1 ASW32K00-2 |
| | | Spring return from left/right, Cam 1 Spring return from left/right, Cam 2 | ASW33K00-1 ASW33K00-2 | |



- Two keys are supplied with every switch, all are keyed alike, and removable from any maintained position. For other configurations, consult your IDEC representative.
- Locking rings are included with all operators. Order knobs, levers, and color inserts separately.
- Different cams produce different contact actions. For details, see contact arrangement charts, page A3-150.

① Handle/Insert Color Code




| 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.

Part Numbers: Handles and Inserts

| Style | Part Number |
|--|-------------|
| Knob  | ASWHHY-① |
| Lever  | ASWHHL-① |
| Color Insert  | TW-HC1-① |

Part Numbers: Contact Blocks

| Style | Part Number | |
|---|--------------------------------|--------------------------------|
| | 1NO | 1NC |
| Standard  | HW-C10 HW-C10R (early make) | HW-C01 HW-C01R (late break) |
| Fingersafe (IP20)  | HW-F10 HW-F10R (early make) | HW-F01 HW-F01R (late break) |
| Dummy Block  | TW-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.

A3

Switches & Pilot Devices

Illuminated Selector Switches (Assembled)

A3

Switches & Pilot Devices



Assembled Illuminated Selector Switches

A SL W 2 (2) 99 11 (D) (N) - (202) - 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 & 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 (LED only)
- 240V: 240V AC (LED only)

Lens Color Code

- A: Amber
- G: Green
- R: Red
- S: Blue
- W: White
- Y: Yellow

Contact Circuit No.

Standard circuits are listed on the following pages and A3-150.

Contacts Terminal Style

- Blank: standard
- N: Fingersafe (IP20)

Lamp Type

- Blank: Incandescent
- D: LED

Contact Arrangement Code

- 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) con't

Part Numbers: 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 1NC | 1 | 0 | X | Transformer Full Voltage | ASLW2 ① 11④-② ASLW29911④-②-③ | ASLW21 ① 11④-② ASLW219911④-②-③ | ASLW22 ① 11④-② ASLW229911④-②-③ |
| | 2 | X | 0 | | | | |
| 2NO | 1 | 0 | X | Transformer Full Voltage | ASLW2 ① 20④-② ASLW29920④-②-③ | ASLW21 ① 20④-② ASLW219920④-②-③ | ASLW22 ① 20④-② ASLW229920④-②-③ |
| | 2 | 0 | X | | | | |
| 2NC | 1 | X | 0 | Transformer Full Voltage | ASLW2 ① 02④-104-② ASLW29902④-104-②-③ | ASLW21 ① 02④-104-② ASLW219902④-104-②-③ | ASLW22 ① 02④-104-② ASLW229902④-104-②-③ |
| | 2 | X | 0 | | | | |
| 2NO 2NC | 1 | 0 | X | Transformer Full Voltage | ASLW2 ① 22④-② ASLW29922④-②-③ | ASLW21 ① 22④-② ASLW219922④-②-③ | ASLW22 ① 22④-② ASLW229922④-②-③ |
| | 2 | X | 0 | | | | |
| | 3 | 0 | X | | | | |
| | 4 | X | 0 | | | | |

① Transformer Voltage Code

| Voltage | Code |
|---------|------|
| 120V AC | 126 |
| 240V AC | 246 |
| 480V AC | 486 |



Transformers step down to 6V (use 6V lamp).

② Lens Color Code

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

Part Numbers: Illuminated 3-Position Selector Switches Maintained and Spring Return from Right

| Style | | | | Part Number | | Part Number | | Part Number | | Part Number | |
|------------|----------|-------------------|---|-------------|--------------------------|---|---|---|---|-------------|--|
| Contact | Mounting | Operator Position | | | Lamp Circuit Type | Maintained | Spring Return From Right | Spring Return from Left | Spring Return Two-Way | | |
| | | L | C | R | | | | | | | |
| 2NO | 1 | X | 0 | 0 | Transformer Full Voltage | ASLW3 ① 20④-② ASLW39920④-②-③ | ASLW31 ① 20④-② ASLW319920④-②-③ | ASLW32 ① 20④-② ASLW329920④-②-③ | ASLW33 ① 20④-② ASLW339920④-②-③ | | |
| | 2 | 0 | 0 | X | | | | | | | |
| 2NC | 1 | 0 | X | X | Transformer Full Voltage | ASLW3 ① 02④-② ASLW39902④-②-③ | ASLW31 ① 02④-② ASLW319902④-②-③ | ASLW32 ① 02④-② ASLW329902④-②-③ | ASLW33 ① 02④-② ASLW339902④-②-③ | | |
| | 2 | X | X | 0 | | | | | | | |
| 2NO 2NC | 1 | X | 0 | 0 | Transformer Full Voltage | ASLW3 ① 22④-② ASLW39922④-②-③ | ASLW31 ① 22④-② ASLW319922④-②-③ | ASLW32 ① 22④-② ASLW329922④-②-③ | ASLW33 ① 22④-② ASLW339922④-②-③ | | |
| | 2 | 0 | 0 | X | | | | | | | |
| | 3 | 0 | X | X | | | | | | | |
| | 4 | X | X | 0 | | | | | | | |
| 2NO 2NC | 1 | X | 0 | X | Transformer Full Voltage | ASLW3 ① 22④-309-② ASLW39922④-309-②-③ | ASLW31 ① 22④-309-② ASLW319922④-309-②-③ | ASLW32 ① 22④-309-② ASLW329922④-309-②-③ | ASLW33 ① 22④-309-② ASLW339922④-309-②-③ | | |
| | 2 | X | X | 0 | | | | | | | |
| | 3 | 0 | X | 0 | | | | | | | |
| | 4 | 0 | 0 | X | | | | | | | |
| 2NO 2NC | 1 | 0 | X | 0 | Transformer Full Voltage | ASLW3 ① 22④-310-② ASLW39922④-310-②-③ | ASLW31 ① 22④-310-② ASLW319922④-310-②-③ | ASLW32 ① 22④-310-② ASLW329922④-310-②-③ | ASLW33 ① 22④-310-② ASLW339922④-310-②-③ | | |
| | 2 | 0 | 0 | X | | | | | | | |
| | 3 | 0 | X | 0 | | | | | | | |
| | 4 | 0 | 0 | X | | | | | | | |
| 4NO | 1 | X | 0 | 0 | Transformer Full Voltage | ASLW3 ① 40④-② ASLW39940④-②-③ | ASLW31 ① 40④-② ASLW319940④-②-③ | ASLW32 ① 40④-② ASLW329940④-②-③ | ASLW33 ① 40④-② ASLW339940④-②-③ | | |
| | 2 | 0 | 0 | X | | | | | | | |
| | 3 | X | 0 | 0 | | | | | | | |
| | 4 | 0 | 0 | X | | | | | | | |
| 4NC | 1 | 0 | X | X | Transformer Full Voltage | ASLW3 ① 04④-② ASLW39904④-②-③ | ASLW31 ① 04④-② ASLW319904④-②-③ | ASLW32 ① 04④-② ASLW329904④-②-③ | ASLW33 ① 04④-② ASLW339904④-②-③ | | |
| | 2 | X | X | 0 | | | | | | | |
| | 3 | 0 | X | X | | | | | | | |
| | 4 | X | X | 0 | | | | | | | |



- In place of ①, specify the Transformer Voltage Code.
- In place of ②, specify the Lens/LED Color Code.
- In place of ③, specify the Full Voltage Code.
- In place of ④ specify Lamp Type Code
- For custom contact configuration, see page A3-150. Contact IDEC for details.

③ Full Voltage Code

| Voltage | Code |
|-----------|-----------------|
| 6V AC/DC | 6V |
| 12V AC/DC | 12V |
| 24V AC/DC | 24V |
| 120V AC | 120V (LED only) |
| 240V AC | 240V (LED only) |

④ Lamp Type Code

| Lamp | Code |
|--------------|-------|
| Incandescent | Blank |
| LED | D |

Illuminated Selector Switches (Sub-Assembled)

Transformer* + Contact Block + Operator + Lamp/Lead Holder † + Lamp + Lens = Complete Part



A3

Switches & Pilot Devices



1. * Full voltage units use a full voltage adaptor (TW-DA1B) instead of a transformer.
2. † Lamp holder is not included with operators, order separately.
Lead holder is used when using 3 or more contact blocks. Order separately.

Part Numbers: Operators

| 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 |
| | Spring return from right, cam 1 | ASLW3100-1 |
| | Spring return from right, cam 2 | ASLW3100-2 |
| | 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, Contact Arrangements on page A3-150.

Part Numbers: Lamps (LED)

| Type | 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 |



1. In place of ②, specify the LED Color Code.
2. The LED contains a current-limiting resistor and a protection diodes.

Part Numbers: Lenses (Knobs)

| Description | Part Number |
|-------------|-------------|
| Knob | ASLWLU-② |






In place of ② specify Lens Color Code.

② LED/Lens Color Code

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

Illuminated Selector Switches (Sub-Assembled) con't




Part Numbers: Contact Blocks

| Description | Part Number | |
|--|-----------------------------------|-----------------------------------|
| | 1NO | 1NC |
| Standard  | HW-C10 HW-C10R (early make) | HW-C01 HW-C01R (late break) |
| Fingersafe (IP20)  | HW-F10 HW-F10R (early make) | HW-F01 HW-F01R (late break) |
| Dummy Block  | TW-DB | |







- Dummy blocks (no contacts) are used with an odd number of contact blocks.
- Use of early and late break contacts creates a make before break function

Part Numbers: Lamp Circuit Components

| Style | Application | Part Number |
|--|---|-------------|
| Short Lamp Holder  | Used with a Half-size Transformer and one contact block | TW-LH1 |
| Long Lamp Holder  | Used with a Full-size Transformer and two contact blocks Used w/Half-size Transformer and three contact blocks Used w/Full Voltage Adaptor and two contact blocks | TW-LH2 |
| Lead Holder  | Used w/TW-LH2 holder when using four contact blocks | HW-LH3 |

Part Numbers: Transformers/Full Voltage Modules

| Style | Description | Part Number | |
|---|-------------|-------------|----------|
| Full Size Transformer  | Standard | 120V AC | TW-T126B |
| | | 240V AC | TW-T246B |
| | | 480V AC | TW-T486B |
| | Fingersafe | 120V AC | TW-F126B |
| 240V AC | | TW-F246B | |
| 480V AC | | TW-F486B | |
| Half Size Transformer  | 120V AC | TW-T126SB | |
| | 240V AC | TW-T246SB | |
| Full voltage model (use with even number of contacts)  | Standard | TW-DA1B | |
| | Fingersafe | TW-DA1FB | |
| Full voltage model (use with odd number of contacts)  | Standard | HW-DA1B | |
| | Fingersafe | HW-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

Switches & Pilot Devices

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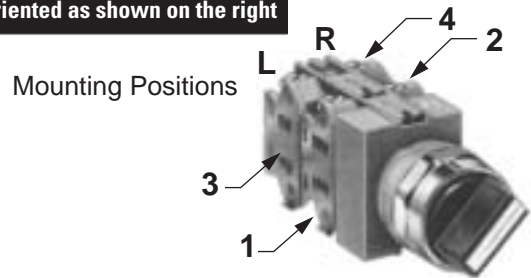
Contact Arrangement
Type and quantity of switch contacts

Circuit Number
* N/D = No designation required

Contact Block Mounting Position
Position or mounting contact blocks on operator

Operator Position
Truth table indicates the operating position of contact block when operator is switched to that position.

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: 2-Position Selector Switches

| Style | Contact | Circuit Number | Mounting Position | Operator Position | | Contact Block Part Number | Description | Operator Part Number | | |
|------------------|---------|----------------|-------------------|-------------------|---------|------------------------------------|------------------------------|---------------------------------|---------------------------------|----------------------|
| | | | | L | R | | | Maintained | Spring Ret. from Rt. | Spring Ret. from Lt. |
| | | | | L | R | | | | | |
| 1NO | N/D | 1 | 0 | X | HW-C10 | Knob/Lever Key | ASW200 | ASW2100 | ASW2200 | |
| | | | 2 | 0 | 0 | TW-DB | Illuminated Knob | ASW2K00 | ASW21K00 | ASW22K00 |
| 1NC | 116 | 1 | X | 0 | HW-C01 | Knob/Lever Key | ASW200 | ASW2100 | ASW2200 | |
| | | | 2 | 0 | 0 | TW-DB | Illuminated Knob | ASW2K00 | ASW21K00 | ASW22K00 |
| 1NO 1NC | N/D | 1 | 0 | X | HW-C10 | Knob/Lever Key | ASW200 | ASW2100 | ASW2200 | |
| | | | 2 | X | 0 | HW-C01 | Illuminated Knob | ASW2K00 | ASW21K00 | ASW22K00 |
| | 103 | 1 | X | 0 | HW-C01 | Knob/Lever Key | ASW200 | ASW2100 | ASW2200 | |
| | | 2 | 0 | X | HW-C10 | Illuminated Knob | ASW2K00 | ASW21K00 | ASW22K00 | |
| 1NO-EM 1NC-LB | 600 | 1 | 0 | X | HW-C10R | Knob/Lever Key | ASW200 | ASW2100 | ASW2200 | |
| | | | 2 | X | 0 | HW-C01R | Illuminated Knob | ASW2K00 | ASW21K00 | ASW22K00 |
| | 601 | 1 | X | 0 | HW-C01R | Knob/Lever Key | ASW200 | ASW2100 | ASW2200 | |
| | | 2 | 0 | X | HW-C10R | Illuminated Knob | ASW2K00 | ASW21K00 | ASW22K00 | |
| 2NO | N/D | 1 | 0 | X | HW-C10 | Knob/Lever Key | ASW200 | ASW2100 | ASW2200 | |
| | | | 2 | 0 | X | HW-C10 | Illuminated Knob | ASW2K00 | ASW21K00 | ASW22K00 |
| 2NC | 104 | 1 | X | 0 | HW-C01 | Knob/Lever Key | ASW200 | ASW2100 | ASW2200 | |
| | | | 2 | X | 0 | HW-C01 | Illuminated Knob | ASW2K00 | ASW21K00 | ASW22K00 |
| 2NO 2NC | N/D | 1 | 0 | X | HW-C10 | Knob/Lever Key Illuminated Knob | ASW200 ASW2K00 ASLW200 | ASW2100 ASW21K00 ASLW2100 | ASW2200 ASW22K00 ASLW2200 | |
| | | | 2 | X | 0 | | | | | HW-C01 |
| | | | 3 | 0 | X | | | | | HW-C10 |
| | | | 4 | X | 0 | | | | | HW-C01 |
| | 111 | 1 | 0 | X | HW-C10 | Knob/Lever Key Illuminated Knob | ASW200 ASW2K00 ASLW200 | ASW2100 ASW21K00 ASLW2100 | ASW2200 ASW22K00 ASLW2200 | |
| | | | 2 | 0 | X | | | | | HW-C10 |
| | | | 3 | X | 0 | | | | | HW-C01 |
| | | | 4 | X | 0 | | | | | HW-C01 |

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 Arrangement Chart: 3-Position Selector Switches

| Style | | Mounting Position | Operator Position | | | Contact Block Part Number | Description | Operator Part Number | | | | |
|------------|----------------|-------------------|-------------------|---|--------|---------------------------------|------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|
| Contact | Circuit Number | | L | C | R | | | Maintained | Spring Ret. from Rt. | Spring Ret. from Lt. | Two-Way | |
| | | | | | | | | | | | | |
| 1NO 1NC | 202 | 1 | X | 0 | 0 | HW-C10 | Knob/Lever Key Illuminated Knob | ASW300-1 ASW3K00-1 ASLW300-1 | ASW3100-1 ASW31K00-1 ASLW3100-1 | ASW3200-1 ASW32K00-1 ASLW3200-1 | ASW3300-1 ASW33K00-1 ASLW3200-1 | |
| | | 2 | X | X | 0 | HW-C01 | | ASW300-1 ASW3K00-1 ASLW300-1 | ASW3100-1 ASW31K00-1 ASLW3100-1 | ASW3200-1 ASW32K00-1 ASLW3200-1 | ASW3300-1 ASW33K00-1 ASLW3200-1 | |
| | 203 | 1 | 0 | X | X | HW-C01 | Knob/Lever Key Illuminated Knob | ASW300-1 ASW3K00-1 ASLW300-1 | ASW3100-1 ASW31K00-1 ASLW3100-1 | ASW3200-1 ASW32K00-1 ASLW3200-1 | ASW3300-1 ASW33K00-1 ASLW3200-1 | |
| | | 2 | 0 | 0 | X | HW-C10 | | ASW300-1 ASW3K00-1 ASLW300-1 | ASW3100-1 ASW31K00-1 ASLW3100-1 | ASW3200-1 ASW32K00-1 ASLW3200-1 | ASW3300-1 ASW33K00-1 ASLW3200-1 | |
| | 302 | 1 | X | 0 | X | HW-C10 | Knob/Lever Key Illuminated Knob | ASW300-2 ASW3K00-2 ASLW300-2 | ASW3100-2 ASW31K00-2 ASLW3100-2 | ASW3200-2 ASW32K00-2 ASLW3200-2 | ASW3300-2 ASW33K00-2 ASLW3200-2 | |
| | | 2 | X | X | 0 | HW-C01 | | ASW300-2 ASW3K00-2 ASLW300-2 | ASW3100-2 ASW31K00-2 ASLW3100-2 | ASW3200-2 ASW32K00-2 ASLW3200-2 | ASW3300-2 ASW33K00-2 ASLW3200-2 | |
| | 303 | 1 | 0 | X | 0 | HW-C01 | Knob/Lever Key Illuminated Knob | ASW300-2 ASW3K00-2 ASLW300-2 | ASW3100-2 ASW31K00-2 ASLW3100-2 | ASW3200-2 ASW32K00-2 ASLW3200-2 | ASW3300-2 ASW33K00-2 ASLW3200-2 | |
| | | 2 | 0 | 0 | X | HW-C10 | | ASW300-2 ASW3K00-2 ASLW300-2 | ASW3100-2 ASW31K00-2 ASLW3100-2 | ASW3200-2 ASW32K00-2 ASLW3200-2 | ASW3300-2 ASW33K00-2 ASLW3200-2 | |
| | 2NO | N/D | 1 | X | 0 | 0 | HW-C10 | Knob/Lever Key Illuminated Knob | ASW300-1 ASW3K00-1 ASLW300-1 | ASW3100-1 ASW31K00-1 ASLW3100-1 | ASW3200-1 ASW32K00-1 ASLW3200-1 | ASW3300-1 ASW33K00-1 ASLW3200-1 |
| | | | 2 | 0 | 0 | X | HW-C10 | | ASW300-1 ASW3K00-1 ASLW300-1 | ASW3100-1 ASW31K00-1 ASLW3100-1 | ASW3200-1 ASW32K00-1 ASLW3200-1 | ASW3300-1 ASW33K00-1 ASLW3200-1 |
| 301 | | 1 | X | 0 | X | HW-C10 | Knob/Lever Key Illuminated Knob | ASW300-2 ASW3K00-2 ASLW300-2 | ASW3100-2 ASW31K00-2 ASLW3100-2 | ASW3200-2 ASW32K00-2 ASLW3200-2 | ASW3300-2 ASW33K00-2 ASLW3200-2 | |
| | | 2 | 0 | 0 | X | HW-C10 | | ASW300-2 ASW3K00-2 ASLW300-2 | ASW3100-2 ASW31K00-2 ASLW3100-2 | ASW3200-2 ASW32K00-2 ASLW3200-2 | ASW3300-2 ASW33K00-2 ASLW3200-2 | |
| 2NC | 304 | 1 | 0 | X | 0 | HW-C01 | Knob/Lever Key Illuminated Knob | ASW300-2 ASW3K00-2 ASLW300-2 | ASW3100-2 ASW31K00-2 ASLW3100-2 | ASW3200-2 ASW32K00-2 ASLW3200-2 | ASW3300-2 ASW33K00-2 ASLW3200-2 | |
| | | 2 | X | X | 0 | HW-C01 | | ASW300-2 ASW3K00-2 ASLW300-2 | ASW3100-2 ASW31K00-2 ASLW3100-2 | ASW3200-2 ASW32K00-2 ASLW3200-2 | ASW3300-2 ASW33K00-2 ASLW3200-2 | |
| | N/D | 1 | 0 | X | X | HW-C01 | Knob/Lever Key Illuminated Knob | ASW300-1 ASW3K00-1 ASLW300-1 | ASW3100-1 ASW31K00-1 ASLW3100-1 | ASW3200-1 ASW32K00-1 ASLW3200-1 | ASW3300-1 ASW33K00-1 ASLW3200-1 | |
| | | 2 | X | X | 0 | HW-C01 | | ASW300-1 ASW3K00-1 ASLW300-1 | ASW3100-1 ASW31K00-1 ASLW3100-1 | ASW3200-1 ASW32K00-1 ASLW3200-1 | ASW3300-1 ASW33K00-1 ASLW3200-1 | |
| 2NO 2NC | N/D | 1 | X | 0 | 0 | HW-C10 | Knob/Lever Key Illuminated Knob | ASW300-1 ASW3K00-1 ASLW300-1 | ASW3100-1 ASW31K00-1 ASLW3100-1 | ASW3200-1 ASW32K00-1 ASLW3200-1 | ASW3300-1 ASW33K00-1 ASLW3200-1 | |
| | | 2 | 0 | 0 | X | HW-C10 | | | | | | |
| | | 3 | 0 | X | X | HW-C01 | | | | | | |
| | | 4 | X | X | 0 | HW-C01 | | | | | | |
| | 210 | 1 | 0 | X | X | HW-C01 | Knob/Lever Key Illuminated Knob | ASW300-1 ASW3K00-1 ASLW300-1 | ASW3100-1 ASW31K00-1 ASLW3100-1 | ASW3200-1 ASW32K00-1 ASLW3200-1 | ASW3300-1 ASW33K00-1 ASLW3200-1 | |
| | | 2 | 0 | 0 | X | HW-C10 | | | | | | |
| | | 3 | 0 | X | X | HW-C01 | | | | | | |
| | | 4 | 0 | 0 | X | HW-C10 | | | | | | |
| | 308 | 1 | X | 0 | X | HW-C10 | Knob/Lever Key Illuminated Knob | ASW300-2 ASW3K00-2 ASLW300-2 | ASW3100-2 ASW31K00-2 ASLW3100-2 | ASW3200-2 ASW32K00-2 ASLW3200-2 | ASW3300-2 ASW33K00-2 ASLW3200-2 | |
| | | 2 | X | X | 0 | HW-C01 | | | | | | |
| | | 3 | X | 0 | X | HW-C10 | | | | | | |
| | | 4 | X | X | 0 | HW-C01 | | | | | | |
| | 309 | 1 | X | 0 | X | HW-C10 | Knob/Lever Key Illuminated Knob | ASW300-2 ASW3K00-2 ASLW300-2 | ASW3100-2 ASW31K00-2 ASLW3100-2 | ASW3200-2 ASW32K00-2 ASLW3200-2 | ASW3300-2 ASW33K00-2 ASLW3200-2 | |
| | | 2 | X | X | 0 | HW-C01 | | | | | | |
| | | 3 | 0 | X | 0 | HW-C01 | | | | | | |
| | | 4 | 0 | 0 | X | HW-C10 | | | | | | |
| 310 | 1 | 0 | X | 0 | HW-C01 | Knob/Lever Key Illuminated Knob | ASW300-2 ASW3K00-2 ASLW300-2 | ASW3100-2 ASW31K00-2 ASLW3100-2 | ASW3200-2 ASW32K00-2 ASLW3200-2 | ASW3300-2 ASW33K00-2 ASLW3200-2 | | |
| | 2 | 0 | 0 | X | HW-C10 | | | | | | | |
| | 3 | 0 | X | 0 | HW-C01 | | | | | | | |
| | 4 | 0 | 0 | X | HW-C10 | | | | | | | |
| 4NO | N/D | 1 | X | 0 | 0 | HW-C10 | Knob/Lever Key Illuminated Knob | ASW300-1 ASW3K00-1 ASLW300-1 | ASW3100-1 ASW31K00-1 ASLW3100-1 | ASW3200-1 ASW32K00-1 ASLW3200-1 | ASW3300-1 ASW33K00-1 ASLW3200-1 | |
| | | 2 | 0 | 0 | X | HW-C10 | | | | | | |
| | | 3 | X | 0 | 0 | HW-C10 | | | | | | |
| | | 4 | 0 | 0 | X | HW-C10 | | | | | | |
| | 305 | 1 | X | 0 | X | HW-C10 | Knob/Lever Key Illuminated Knob | ASW300-2 ASW3K00-2 ASLW300-2 | ASW3100-2 ASW31K00-2 ASLW3100-2 | ASW3200-2 ASW32K00-2 ASLW3200-2 | ASW3300-2 ASW33K00-2 ASLW3200-2 | |
| | | 2 | 0 | 0 | X | HW-C10 | | | | | | |
| | | 3 | X | 0 | X | HW-C10 | | | | | | |
| | | 4 | 0 | 0 | X | HW-C10 | | | | | | |
| 4NC | N/D | 1 | 0 | X | X | HW-C01 | Knob/Lever Key Illuminated Knob | ASW300-1 ASW3K00-1 ASLW300-1 | ASW3100-1 ASW31K00-1 ASLW3100-1 | ASW3200-1 ASW32K00-1 ASLW3200-1 | ASW3300-1 ASW33K00-1 ASLW3200-1 | |
| | | 2 | X | X | 0 | HW-C01 | | | | | | |
| | | 3 | 0 | X | X | HW-C01 | | | | | | |
| | | 4 | X | X | 0 | HW-C01 | | | | | | |
| | 314 | 1 | 0 | X | 0 | HW-C01 | Knob/Lever Key Illuminated Knob | ASW300-2 ASW3K00-2 ASLW300-2 | ASW3100-2 ASW31K00-2 ASLW3100-2 | ASW3200-2 ASW32K00-2 ASLW3200-2 | ASW3300-2 ASW33K00-2 ASLW3200-2 | |
| | | 2 | X | X | 0 | HW-C01 | | | | | | |
| | | 3 | 0 | X | 0 | HW-C01 | | | | | | |
| | | 4 | X | X | 0 | HW-C01 | | | | | | |

A3

Switches & Pilot Devices



- 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.
- N/D = No circuit number designation required in assembled part number.
- X = On (closed contacts) O = Off (open contacts) X-X Overlapping contacts remain on (closed) when switch is moved between these two positions.

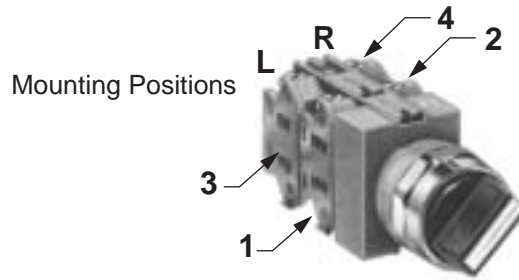
Custom Selector Switch Building Guide

To build a custom selector switch, follow these steps.

Step 1: How many positions of the switch are needed?

A3

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 |
| C o n t a c t s | 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.

Operator CAM Version
(-1, -2, -3 for 3 position)
("blank", -1 for 4 position)
("blank", -1 for 5 position)

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 A3-142 or A3-146). In place of the "Circuit Number" indicate the cam number and contact arrangement as such ASW322-3-OELCSS, where "3" is the cam number, and contact arrangement "OELCSS" 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.

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.
2. For examples of how to assemble selector switches, see A3-82.

Operator Truth Tables

Use the following tables to build custom selector switches.

2 Position Selector Switches

| Contact | Mounting Position | Operator Position | |
|-----------------|-------------------|-------------------|--------------|
| | | Left | Right |
| HW-C10 (NO) | L | 0 | X |
| | R | 0 | X |
| HW-C01 (NC) | L | X | 0 |
| | R | X | 0 |
| HW-C10R (NO-EM) | L | 0 | X |
| | R | 0 | X |
| HW-C01R (NC-LB) | L | X | 0 |
| | R | X | 0 |

**ASW200
ASLW200
ASW2K00**

4 Position Selector Switches

| Contact | Mounting Position | Operator Position | | | |
|-----------------|-------------------|-------------------|--------------|--------------|--------------|
| | | 1 | 2 | 3 | 4 |
| HW-C10 (NO) | L | X | 0 | 0 | 0 |
| | R | 0 | X | 0 | 0 |
| HW-C01 (NC) | L | 0 | X | X | X |
| | R | X | 0 | X | X |
| HW-C10R (NO-EM) | L | X | 0 | 0 | 0 |
| | R | 0 | X | 0 | 0 |
| HW-C01R (NC-LB) | L | 0 | X | X | X |
| | R | X | 0 | X | X |

ASW400

3 Position Selector Switches

| Contact | Mounting Position | Operator Position | | |
|-----------------|-------------------|-------------------|--------------|--------------|
| | | Left | Center | Right |
| HW-C10 (NO) | L | X | 0 | 0 |
| | R | 0 | 0 | X |
| HW-C01 (NC) | L | 0 | X | X |
| | R | X | X | 0 |
| HW-C10R (NO-EM) | L | X | 0 | 0 |
| | R | 0 | 0 | X |
| HW-C01R (NC-LB) | L | 0 | X | X |
| | R | X | X | 0 |

**ASW300-1
ASW3K00-1
ASLW300-1**

| Contact | Mounting Position | Operator Position | | | |
|-----------------|-------------------|-------------------|--------------|--------------|--------------|
| | | 1 | 2 | 3 | 4 |
| HW-C10 (NO) | L | X | 0 | 0 | 0 |
| | R | 0 | 0 | 0 | X |
| HW-C01 (NC) | L | 0 | 0 | X | 0 |
| | R | 0 | X | 0 | 0 |
| HW-C10R (NO-EM) | L | X | X | 0 | X |
| | R | X | 0 | X | X |
| HW-C01R (NC-LB) | L | 0 | X | X | X |
| | R | X | X | X | 0 |

ASW400-1

| Contact | Mounting Position | Operator Position | | |
|-----------------|-------------------|-------------------|--------------|--------------|
| | | Left | Center | Right |
| HW-C10 (NO) | L | X | 0 | X |
| | R | 0 | 0 | X |
| HW-C01 (NC) | L | 0 | X | 0 |
| | R | X | X | 0 |
| HW-C10R (NO-EM) | L | X | 0 | X |
| | R | 0 | 0 | X |
| HW-C01R (NC-LB) | L | 0 | X | 0 |
| | R | X | X | 0 |

**ASW300-2
ASW3K00-2
ASLW300-2**

5 Position Selector Switches

| Contact | Mounting Position | Operator Position | | | | |
|-----------------|-------------------|-------------------|--------------|--------------|--------------|--------------|
| | | 1 | 2 | 3 | 4 | 5 |
| HW-C10 (NO) | L | X | 0 | 0 | 0 | 0 |
| | R | 0 | X | 0 | 0 | 0 |
| HW-C01 (NC) | L | 0 | 0 | X | X | X |
| | R | 0 | 0 | 0 | X | X |
| HW-C10R (NO-EM) | L | X | 0 | 0 | 0 | 0 |
| | R | 0 | X | 0 | 0 | 0 |
| HW-C01R (NC-LB) | L | 0 | X | X | X | X |
| | R | X | 0 | X | X | X |

ASW500

| Contact | Mounting Position | Operator Position | | |
|-----------------|-------------------|-------------------|--------------|--------------|
| | | Left | Center | Right |
| HW-C10 (NO) | L | X | 0 | 0 |
| | R | 0 | 0 | X |
| HW-C01 (NC) | L | 0 | X | 0 |
| | R | 0 | X | 0 |
| HW-C10R (NO-EM) | L | X | 0 | X |
| | R | X | 0 | X |
| HW-C01R (NC-LB) | L | 0 | X | X |
| | R | X | X | 0 |

**ASW300-3
ASW3K00-3
ASLW300-3**

| Contact | Mounting Position | Operator Position | | | | |
|-----------------|-------------------|-------------------|--------------|--------------|--------------|--------------|
| | | 1 | 2 | 3 | 4 | 5 |
| HW-C10 (NO) | L | X | 0 | 0 | 0 | 0 |
| | R | 0 | 0 | 0 | 0 | X |
| HW-C01 (NC) | L | 0 | 0 | 0 | X | 0 |
| | R | 0 | X | 0 | 0 | 0 |
| HW-C10R (NO-EM) | L | X | X | X | 0 | X |
| | R | X | 0 | X | X | X |
| HW-C01R (NC-LB) | L | 0 | X | X | X | X |
| | R | X | X | X | X | 0 |

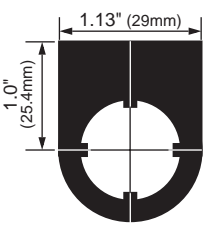
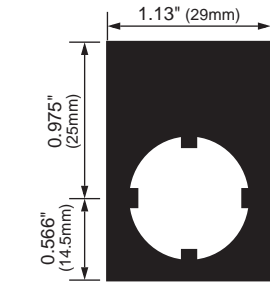
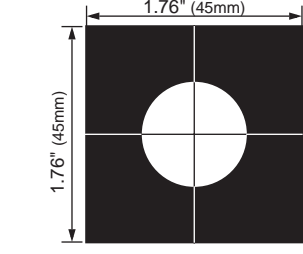
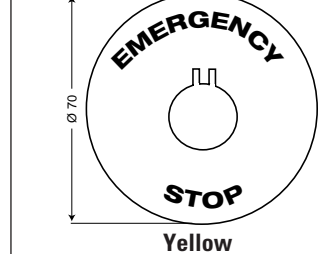
ASW500-1

Nameplates — TW Series

Part Numbers: Nameplates

A3

Switches & Pilot Devices

| | NWAL | NWAQL | NWAS | EMERGENCY STOP |
|-----------------------------|---|---|--|---|
| |  |  |  |  |
| | Part Number | Part Number | Part Number | Part Number |
| Nameplate (blank) | NWAL-OB (black) NWAL-OR (red) | NWAQL-OB (black) NWAQL-OR (red) | NWAS-OB | NWAR-0 |
| Nameplate (engraved) | NWAL-① | NWAQL-① | NWAS-① | NWAR-27 [†] |

- 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. 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.
- 3. * Available in red as standard.

Nameplate Order Form on next page.

Custom Engraved Nameplates Order Form — TW Series

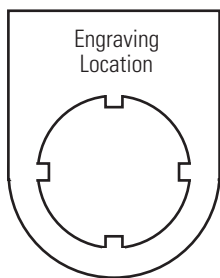
Copy this order form and use it to specify Letter Height, Custom Engravings, Location of Engraving on Nameplate, and Quantity Desired. To insure engraving accuracy, fax it to your IDEC representative, or Distributor.

| | |
|--------------------------|---|
| 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: _____ |

A3

Switches & Pilot Devices

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)

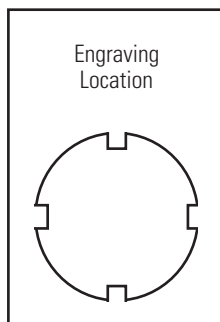
Step 2. Specify Quantity.
Enter the number of nameplates desired in the box on the right.

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)

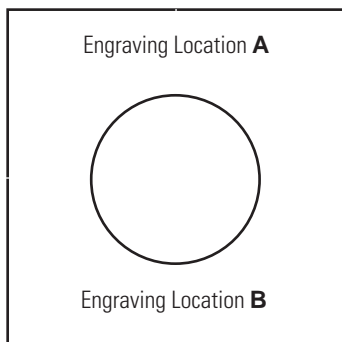
Step 2. Specify Quantity.
Enter the number of nameplates desired in the box on the right.

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 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 box on the right.

Qty

Step 3. Specify Location.
Enter the location of engraving (A or B), in 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 |

Accessories — TW Series

Part Numbers: TW Series Accessories




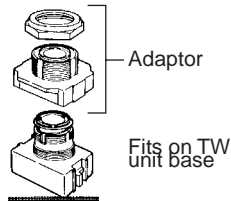

| | Appearance | Description/Usage | Part Number | |
|-----------------------------|------------|---|--|---------|
| A3 Lamp Removal Tool | | Rubber tool used to install LED's and incandescent lamps | OR-55 | |
| Contact Block Remover | | Used to remove contact blocks, transformers, lenses, and adaptors. 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 (chrome plated) 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 bezel with round hole (black plastic) | AW-H1B |
| | | | 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 (EPR) | OC-31 |
| | | | Clear boot for round extended units (EPR) | OC-32 |
| | | | *In place of asterisk, specify Rubber Boot color: B (black), G (green), R (red), Y (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 Degree of protection: IP66 | LW9Z-BM | |
| Replacement Keys | | Pair of keys (#0) | TW-SK | |



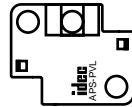
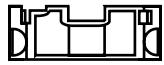
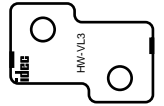
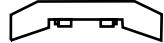


For information on replacement engraving inserts, see page A3-164.

Accessories con't

Part Numbers: TW Series Accessories

| Appearance | Description/Usage | | Part Number |
|---|---|----------------------------------|-------------|
|  <p>Metal Button Guard</p> | Used on flush buttons to prevent inadvertent actuation | | OLW-C |
|  <p>Terminal Tab Adaptor</p> | Quick- connect terminals | #250 (17/64" x 3/64") single tab | TW-FA1 |
|  <p>Lock-out Adaptor</p> | Used to provide lock-out protection for pushbuttons and knob selector switches: • Up to Ø 40mm mushroom head size (Padlock not included.) | | HW9Z-KL1 |
|  <p>TW to TWTD Adaptor</p> | Used to mount TW series control unit (except square units) Ø 7/8" (22mm) into a Ø 1-13/64" (30mm) panel cut-out. Includes 2 pieces shown on the right | | TWN-A1R8 |
|  <p>Replacement Marking Plates</p> | | Round Pushbutton (Ø14mm) | ALW2B |
| | | Round Pilot Light (Ø 14mm) | APW2B |
| | | Mushroom Pushbutton (Ø 14mm) | ALW3B |
| | | Square Pilot Light (□ 21mm) | APQW1B |
| | | Square Pushbutton (□ 21mm) | ALQW2B |

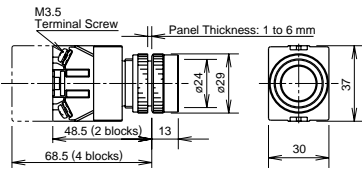
Part Numbers: Fingersafe Covers for TW Series

| Appearance | Description | Used with | Part Number |
|---|--|--|-------------|
|  | Fingersafe terminal cover, adds 6mm to overall depth | APW and UPQW full voltage pilot lights | APS-PVL |
|  | Fingersafe terminal cover, adds 3.5mm to overall depth. One required for each contact, only for rear- most terminals | Non-illuminated pushbuttons and selectors | HW-VL2 |
|  | Fingersafe terminal cover, adds 3mm to overall depth | APW and UPQW transformer pilot lights, and illuminated pushbuttons and illuminated selectors | HW-VL3 |
|  | Fingersafe terminal cover for contacts. | Full voltage illuminated pushbuttons and selectors | HW-VL4 |
|  | Fingersafe terminal cover for full voltage adaptor, adds 3 mm to depth | Full voltage illuminated pushbuttons and selectors | HW-VL5 |
|  | Fingersafe terminal cover for half size transformer adaptor, adds 3 mm to depth | Illuminated pushbuttons and selectors | HW-VL6 |

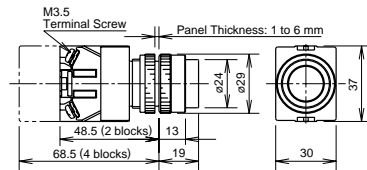
Dimensions — TW Series

Pushbuttons

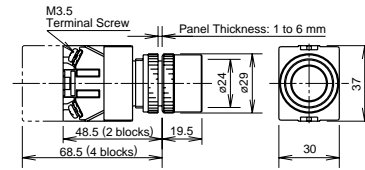
Flush



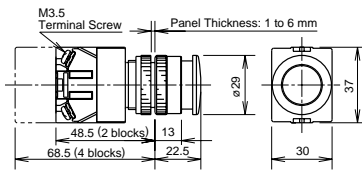
Extended



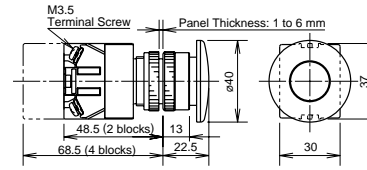
Extended with Full Shroud



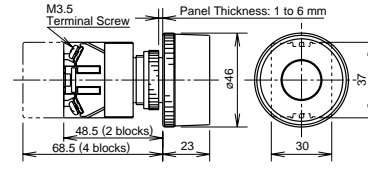
29mm Mushroom



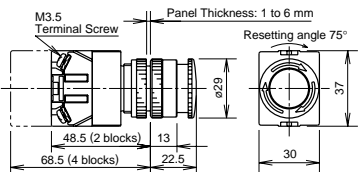
40mm Mushroom



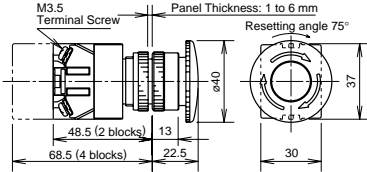
Mushroom with Full Shroud



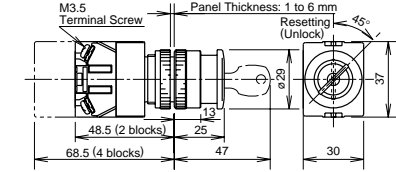
29mm Push-Lock-Turn-Reset



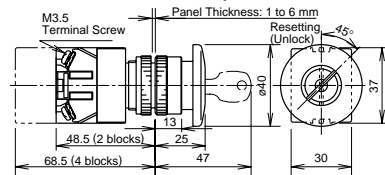
40mm Push-Lock-Turn-Reset



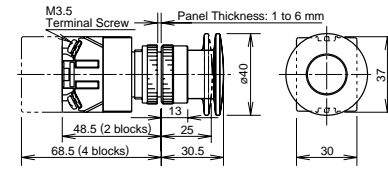
Keylock Push On/Off



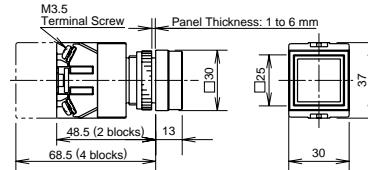
40mm Pushlock Key Reset



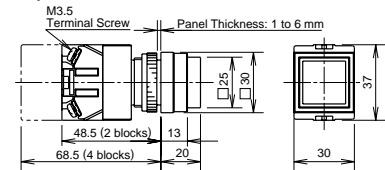
40mm Push-Pull



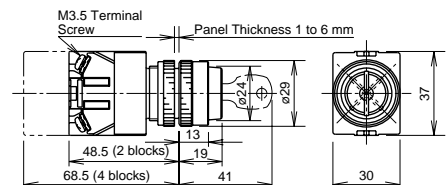
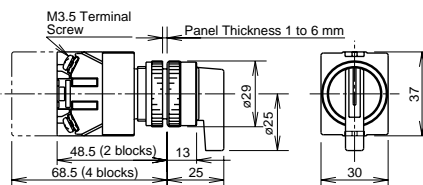
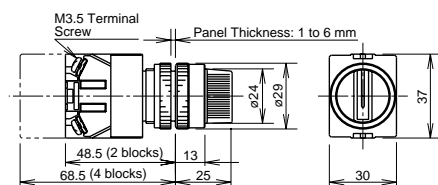
Square Flush



Square Extended



Selector Switches



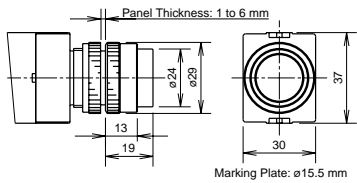
Switches & Pilot Devices

A3

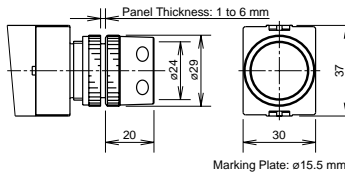
Dimensions con't

Illuminated Pushbuttons

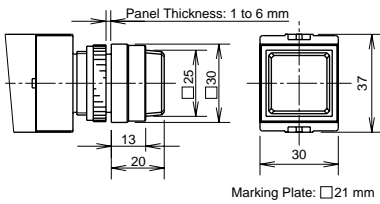
Extended



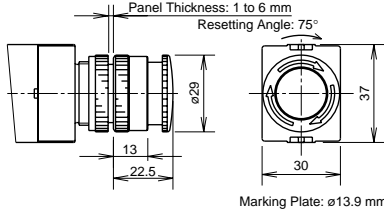
Extended with Full Shroud



Square Extended



29mm Push-Turn Reset

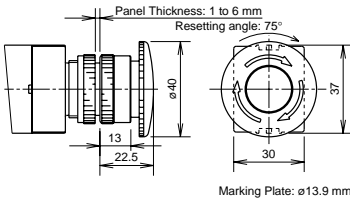


| Illuminated Pushbuttons | Dimension A | Dimension B |
|---|-----------------|------------------|
| Extended (Same for Square) w/Full Shroud | 0.741" (19mm) | Ø 0.936" (Ø24mm) |
| | 0.761" (19.5mm) | □0.975" (□25mm) |
| Ø 1.13" (29mm) | | |
| Mushroom | 0.858" (22mm) | Ø 1.13" (29mm) |
| Ø 1.56" (40mm) | 0.858" (22mm) | Ø 1.56" (40mm) |
| Mushroom, Pushlock Turn | *0.936" (24mm) | Ø 1.56" (40mm) |
| Reset, Push-Pull | † 0.975" (25mm) | Ø 1.56" (40mm) |

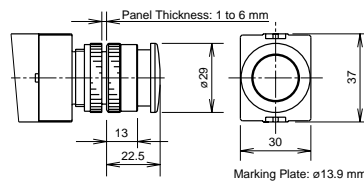


- * Dimension when operator is in reset position.
- † Dimension when operator is in pull position.

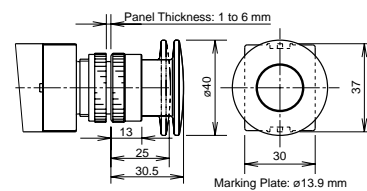
40mm Push-Turn Reset



Mushroom

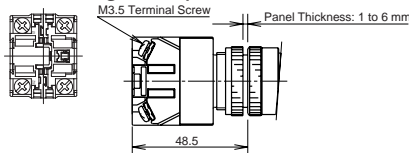


Push-Pull

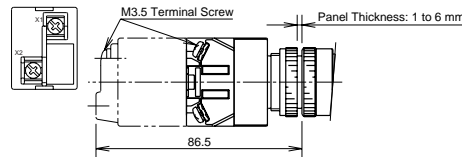


Illuminated Selector Switches

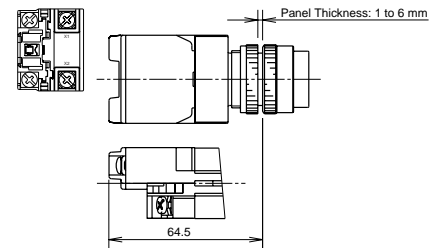
1 Contact Block with Full Voltage Adaptor



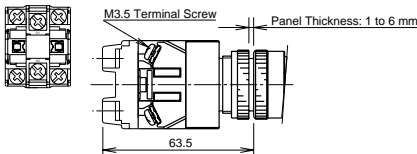
Transformer (2 blocks)



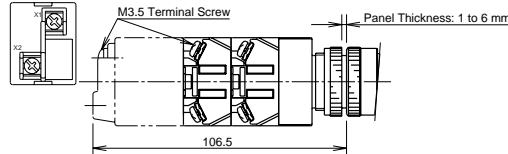
1 Contact Block with Half Size Transformer



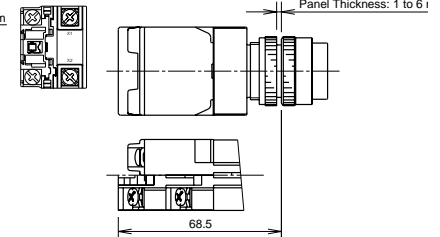
2 Contact Blocks with Full Voltage Adaptor



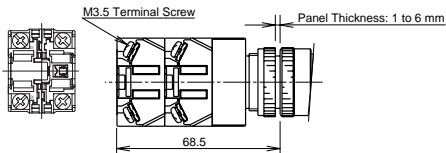
Transformer (4 blocks)



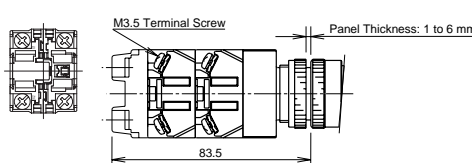
2 Contact Blocks with Half Size Transformer



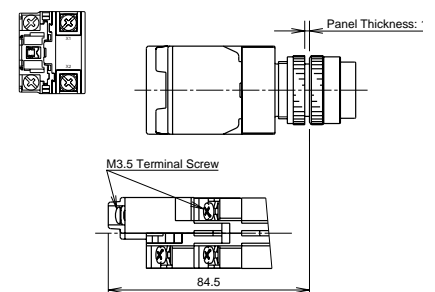
3 Contact Blocks with Full Voltage Adaptor



4 Contact Blocks with Full Voltage Adaptor



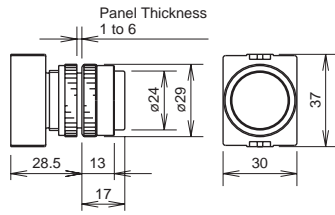
3 Contact Blocks with Half Size Transformer



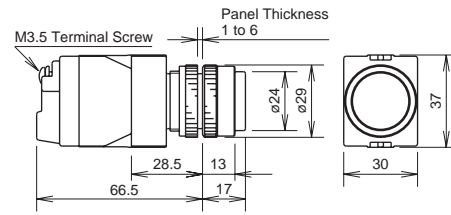
Dimensions con't

Pilot Lights

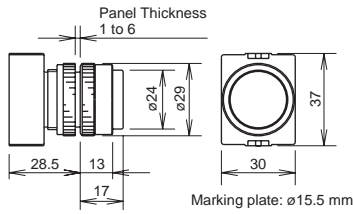
Round Flush APW1 Full Voltage



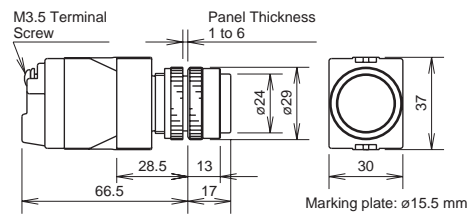
Round Flush APW1 Transformer



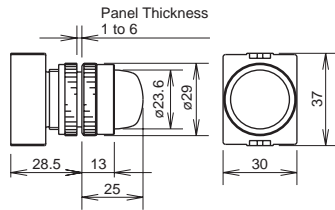
Round Flush Marking Type APW1B Full Voltage



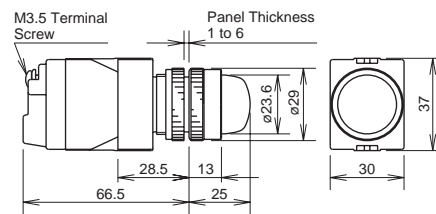
Round Flush Marking Type APW1B Transformer



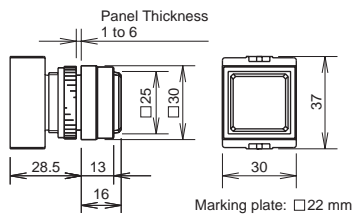
Dome APW2 Full Voltage



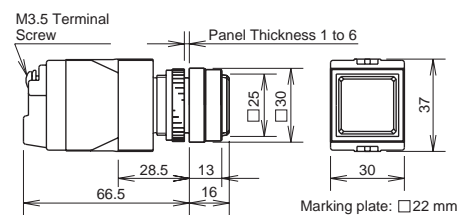
Dome APW2 Transformer



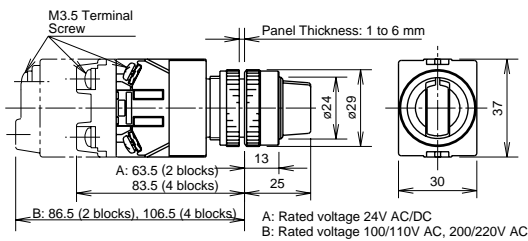
Square Flush Marking Type APQW1B Full Voltage



Square Flush Marking Type APQW1B Transformer



Illuminated Selector Switches



A3

Switches & Pilot Devices

Dimensions con't

Panel Cut-Out

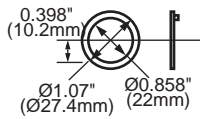
| Diagram | Part | Dimensions | | | |
|---------|-------------------------------|---------------------|--|----------------------|---|
| | | A | B | C | D |
| | Pushbuttons | Ø 0.137" (3.5mm) | 1.95" (50mm); 1.76" (45mm) minimum | Ø 0.878" (22.3mm) | 1.17" (30mm) Std. Octagonal > 1.56" (40mm) Large Mushroom |
| | Pilot Light | | | | |
| | Illuminated Pushbutton | | | | |
| | Selector Switches | | | | |
| | Illuminated Selector Switches | | | | 1.17" (30mm) *See note. |



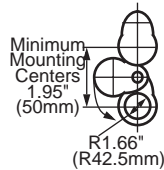
- The Ø 0.137" (Ø 3.5mm) recess is necessary when either the nameplate or anti-rotation ring is used.
- * >1.404" (36mm) for 2- or 3-position.
>1.95" (50mm) for 4- or 5-position.

Accessory Dimensions

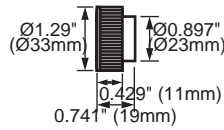
OGL-31
Anti-Rotation Ring



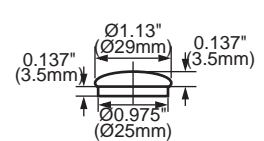
OLW-C
Metal Button Guard



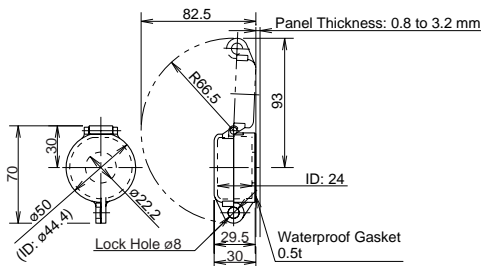
OCW-11
Pushbutton Rubber Boot



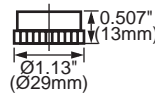
OB-31
Mounting Hole Rubber Plug



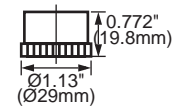
HW9Z-KL1 (TW)
Lock-out Adaptor



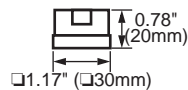
AW-RP1B
Round Plastic Bezel



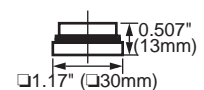
AW-FP1B
Round Plastic w/Full Shroud



AW-QF1B
Square Full Shroud



AW-H1B
Square Bezel w/ Round Hole

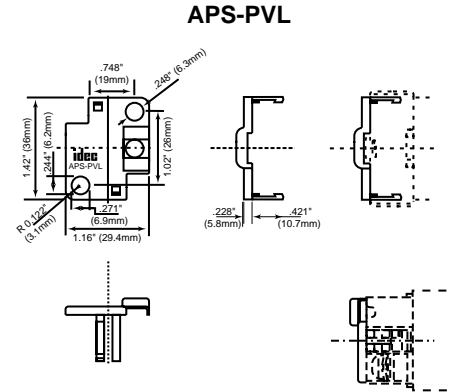
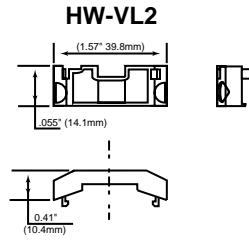
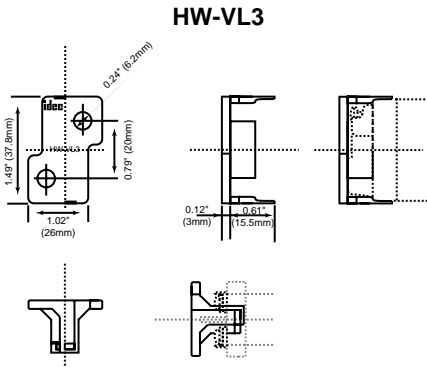
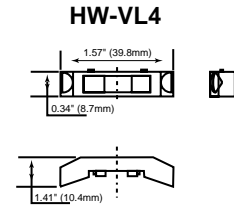
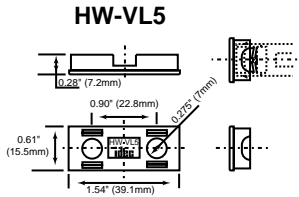
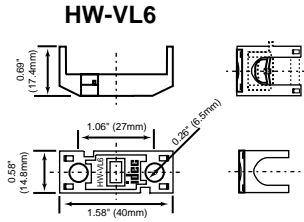


Dimensions con't

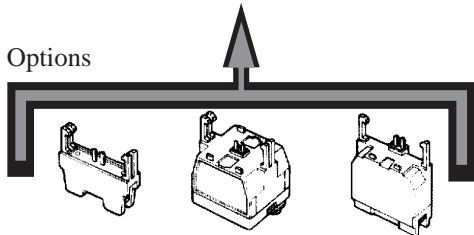
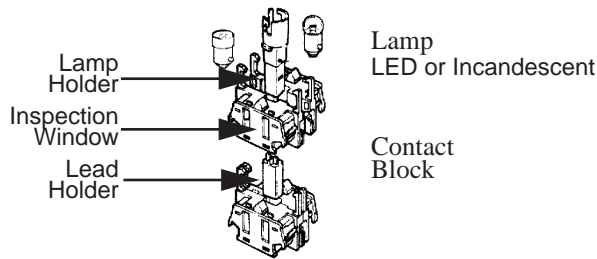
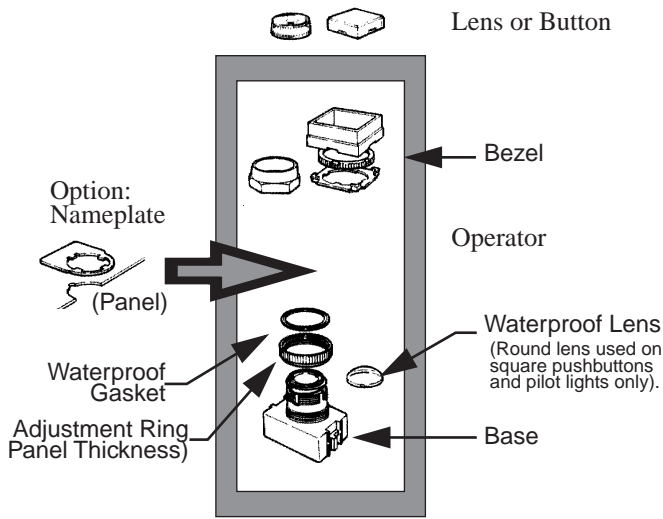
Finger-Safe Cover Dimensions

A3

Switches & Pilot Devices



Component Construction & Instructions — TW Series



Full Voltage Adaptor:
Used with full voltage LED or incandescent.

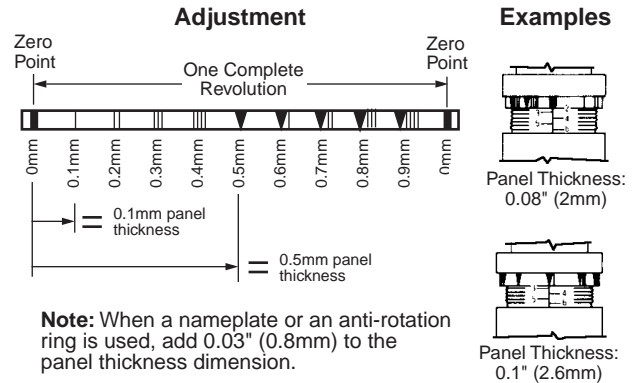
Full-Size Transformer:
Used with incandescent/LED – even number of contact blocks.

Half-Size Transformer:
Used with incandescent – odd number of contact blocks.

Instructions for Switches and Pilot Devices

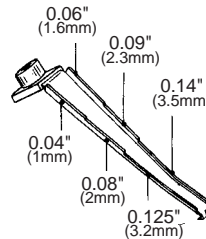
TW Series: Adjustment for Panel Thickness

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 con't

Pilot Lights and Pushbuttons

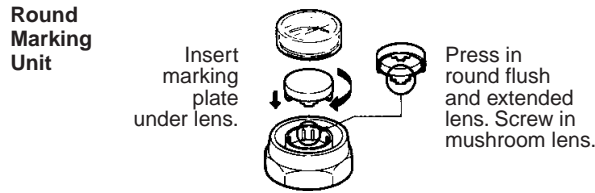
IMPORTANT: Install the body of the TW control unit with the panel thickness scale facing up.

A3

Octagonal and Round Bezels

Octagonal and round bezels screw into the operator. Use the 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.

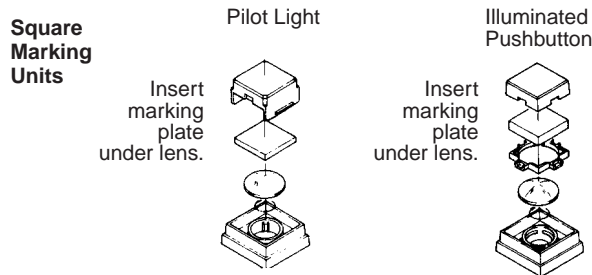
Every round lens can be used with or without legend markings. Engraving can be done on a white translucent plate which is placed in the lens, or clear mylar can be printed and placed in the lens.



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.



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

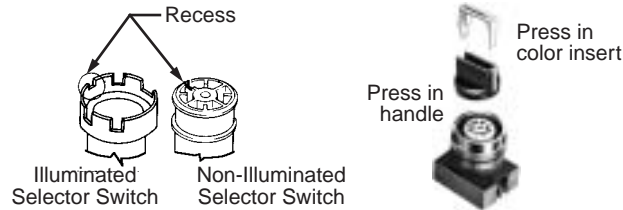
| Shape | Engraving Area | Used With | Part Number |
|----------|----------------|--------------------------------|-------------|
| Round | Ø 0.55" (14mm) | Illuminated pushbuttons | ALW2B |
| | Ø 0.55" (14mm) | Pilot lights | APW2B |
| Mushroom | Ø 0.55" (14mm) | Illuminated mushroom | ALW3B |
| Square | □ 0.83" (21mm) | Square pilot lights | APQW1B |
| Square | □ 0.83" (21mm) | Square illuminated pushbuttons | ALQW2B |

Switches & Pilot Devices

Instructions con't

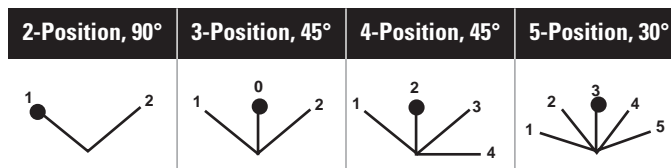
Selector Switches

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.



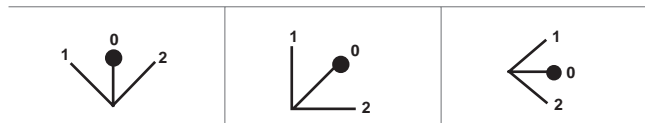
Remove color insert before pulling out the handle.

Standard Operating Positions

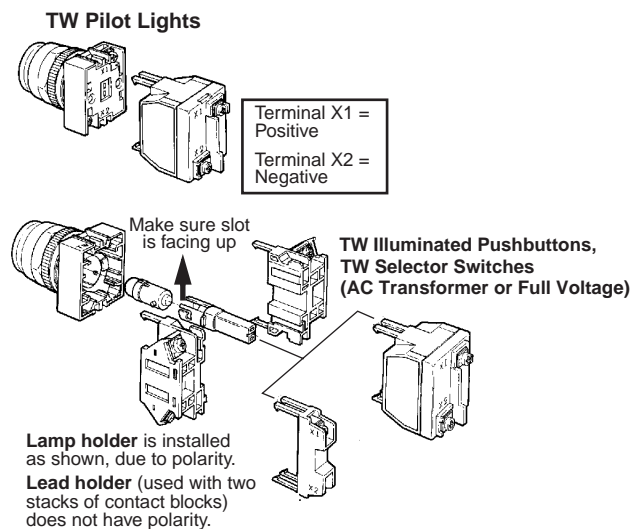


Positions:

Non-illuminated 3-Position Operators



Installation



Installation of LED Illuminated Units

AC 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.)



Make sure that LED illuminated units are installed with correct polarity, as indicated at the terminals.

A4

Switches & Pilot Devices



TWTD Series: Heavy duty switches built to last

Key features include:

- 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 cleaning contacts
- Modular construction for maximum flexibility
- Double nickel plated terminal screws
- Available assembled or as sub-components
- NEMA 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 TWTD's 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. E70646







SA® File No. LR48366



D Ref. No. 117617MC



Certificate No.
2005010305145658

| | | |
|---|--|---|
| Specifications | Conforming to Standards | EN60947-1, EN60947-5-1, VDE0660-200, UL508, CSA C22-2 No.14 |
| | Approvals |   UL Listed File No. E70646 File No. LR48366   Ref. No. 117617MC |
| | Operating Temperature | Operation: -25 to +50°C (without freezing) Storage: -40 to +70°C (without freezing) |
| | Vibration Resistance | 10 to 55Hz, 98m/sec ² (10g) conforming to IEC6068-2-6 |
| | Shock Resistance | 980m/sec ² (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) IP54 (key switches) NEMA 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) All other switches: 500,000 |
| | Pollution Degree (conforming to IEC60947-1) | 3 for switches not using a transformer 2 for switches using a transformer |
| | Mechanical-Electrical Specifications | Rated Operational Characteristics |
| 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 NO, self-cleaning |
| Operating Force | | Flush and extended pushbuttons—with 1NO or 1NC contact: 6.2±2N (momentary), 7.0±2N (maintained) 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) 2mm (NO-EM and NC-LB) |
| Lamp Ratings | | Incandescent: 1 W LEDs: 6, 12, 24V: 20mA / 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)

A4

Switches & Pilot Devices



Assembled Pushbuttons

A B () D 1 10 N - B

| | |
|--|---|
| <p>Function _____</p> <p>B: Momentary O: Maintained V: Pushlock Turn Reset Y: Push-Pull</p> <p>Bezel Shape _____</p> <p>Blank: Octagonal F: Full Shroud G: Mushroom Shroud P: Neoprene Boot</p> <p>Series Designation _____</p> <p>D: TWTD Series</p> | <p>Button Color</p> <p>B: Black G: Green R: Red S: Blue W: White Y: Yellow</p> <p>Contact Arrangement</p> <p>10: 1NO 01: 1NC 20: 2NO 02: 2NC 11: 1NO-1NC 22: 2NO-2NC</p> <p>Button Shape</p> <p>1: Flush 2: Extended 3: Mushroom Ø 40mm 4: Jumbo Mushroom Ø 65mm</p> |
|--|---|

- 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) con't

Part Numbers: Non-Illuminated Pushbuttons

| Style | Contacts | Part Number | |
|--|-------------------------------------|--|--|
| | | Momentary | Maintained |
| Flush | 1NO 1NC 1NO-1NC 2NO 2NC | ABD110N-① ABD101N-① ABD111N-① ABD120N-① ABD102N-① | AOD110N-① AOD101N-① AOD111N-① AOD120N-① AOD102N-① |
| Extended | 1NO 1NC 1NO-1NC 2NO 2NC | ABD210N-① ABD201N-① ABD211N-① ABD220N-① ABD202N-① | AOD210N-① AOD201N-① AOD211N-① AOD220N-① AOD202N-① |
| Extended with Neoprene Boot | 1NO 1NC 1NO-1NC 2NO 2NC | ABPD210N-① ABPD201N-① ABPD211N-① ABPD220N-① ABPD202N-① | AOPD210N-① AOPD201N-① AOPD211N-① AOPD220N-① AOPD202N-① |
| Recessed | 1NO 1NC 1NO-1NC 2NO 2NC | ABFD110N-① ABFD101N-① ABFD111N-① ABFD120N-① ABFD102N-① | AOFD110N-① AOFD101N-① AOFD111N-① AOFD120N-① AOFD102N-① |
| Extended with Full Shroud | 1NO 1NC 1NO-1NC 2NO 2NC | ABFD210N-① ABFD201N-① ABFD211N-① ABFD220N-① ABFD202N-① | AOFD210N-① AOFD201N-① AOFD211N-① AOFD220N-① AOFD202N-① |
| Ø 40mm Mushroom Head | 1NO 1NC 1NO-1NC 2NO 2NC | ABD310N-① ABD301N-① ABD311N-① ABD320N-① ABD302N-① | AOD310N-① AOD301N-① AOD311N-① AOD320N-① AOD302N-① |
| Ø 40mm Mushroom Head with Full Shroud | 1NO 1NC 1NO-1NC 2NO 2NC | ABGD310N-① ABGD301N-① ABGD311N-① ABGD320N-① ABGD302N-① | AOGD310N-① AOGD301N-① AOGD311N-① AOGD320N-① AOGD302N-① |
| Ø 65mm Jumbo Mushroom Head | 1NO 1NC 1NO-1NC 2NO 2NC | ABD410N-① ABD401N-① ABD411N-① ABD420N-① ABD402N-① | AOD410N-① AOD401N-① AOD411N-① AOD420N-① AOD402N-① |
| Ø 65mm Jumbo Mushroom Head with Shallow Shroud | 1NO 1NC 1NO-1NC 2NO 2NC | ABGD410N-① ABGD401N-① ABGD411N-① ABGD420N-① ABGD402N-① | AOGD410N-① AOGD401N-① AOGD411N-① AOGD420N-① AOGD402N-① |
| Ø 65mm Jumbo Mushroom Head With Deep Shroud | 1NO 1NC 1NO-1NC 2NO 2NC | ABFD410N-① ABFD401N-① ABFD411N-① ABFD420N-① ABFD402N-① | AOFD410N-① AOFD401N-① AOFD411N-① AOFD420N-① AOFD402N-① |



1. In place of ①, specify the Button Color Code.
2. For sub-assembly part numbers, see next page.
3. For accessories, see page A4-188.
4. † Neoprene boot available only in Black (B), Green (G), Red (R) and Yellow (Y).

① Button Color Code

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



1. 65mm Jumbo mushroom not available in white.
2. Neoprene boot is not available in blue or white.







Non-Illuminated Pushbuttons (Sub-Assembled)







A4

Switches & Pilot Devices

Part Numbers: 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 |


Part Numbers: 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)

Part Numbers: Contact Blocks

| Description | Part Number | |
|--|-------------------------------------|-------------------------------------|
| | 1NO | 1NC |
|  | BST-010 BST-010S (early make) | BST-001 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.

E-Stops (Assembled)



A4

Switches & Pilot Devices

Assembled E-Stops

A V (L) D 3 (99) 11 (D) N - R - (24V)

Function

V: Pushlock Turn Reset
Y: Push-Pull

Illumination

Blank: None
L: Illuminated

Series Designation

D: TWTD Series

Button/Lens Size

3: 40mm Mushroom

Illuminated Circuit (illuminated unit only)

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 illuminated units only)

6V: 6V AC/DC
12V: 12V AC/DC
24V: 24V AC/DC
120V: 120V AC/DC
240V: 240V AC/DC

Button/Lens Color

A: Amber R: Red W: White
G: Green S: Blue Y: Yellow

Lamp Type (illuminated units only)

Blank: Incandescent
D: LED

Contact Arrangement

10: 1NO 01: 1NC
20: 2NO 02: 2NC
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.

E-Stops (Assembled)

Part Numbers: E-Stop Switches

| Style | Contacts | Part Number |
|---|-------------------------------------|--|
| A4 Ø 40mm Pushlock Turn Reset | 1NO 1NC 1NO-1NC 2NO 2NC | AVD310N-R* AVD301N-R* AVD311N-R* AVD320N-R* AVD302N-R* |
| Ø 40mm Illuminated Pushlock Turn Reset | 1NO-1NC 2NO 2NC | AVLD39911⑤N-R-③* AVLD39920⑤N-R-③* AVLD39902⑤N-R-③* |
| Ø 40mm Push-Pull | 1NO 1NC 1NO-1NC 2NO 2NC | AYD310N-① AYD301N-① AYD311N-① AYD320N-① AYD302N-① |
| Ø 40mm Push-Pull | 1NO-1NC 2NO 2NC | AYLD39911⑤N-②-③** AYLD39920⑤N-②-③** AYLD39902⑤N-②-③** |
| Ø 40mm Momentary Push-Pull (3-position) | 1NO-1NC 1NC-1LB† | AYLD229911⑤N-②-③-TK962 AYLD229902S⑤N-②-③-TK962 |
| | 1NO-1NC 1NC-1LB† | AYLD22 ④ 11⑤N-②-TK962 AYLD22 ④ 02S⑤N-②-TK962 |

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 |



- 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.
- *Available in red only.
- 3 position push-pull available in spring return to center only.
- † The most common configuration for motor starting applications.
- For accessories, see page A4-188.
- For dimensions, see page A4-192.

① Button Color Code

| 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 |

③ Full Voltage Code

| 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 Code

| Lamp | Code |
|--------------|-------|
| Incandescent | Blank |
| LED | D |

Part Numbers: Unibody E-Stops

| Style | Contacts | Part Number |
|--|----------------|--|
| Ø 40mm Pushlock Turn Reset (available in Red only) | 1NO-1NC 2NC | HN1E-BV4F11-R* HN1E-BV4F02-R* |
| Illuminated Ø 40mm Pushlock Turn Reset (available in Red only) | 1NO-1NC 2NC | HN1E-LV4F11Q⑤-R-③ HN1E-LV4F02Q⑤-R-③ |



- * Available in Red only.
- **Not available in blue.
- In place of ③, specify Full Voltage 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.
- For nameplates and accessories, see page A3-96.
- For dimensions, see page A3-100.
- For sub-assembly part numbers, see next page.
- HN1E series E-stops comply with EN418, 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.

E-Stops (Sub-Assembled)

Transformer* + Operator + Lamp + Button/Lens = Complete Part



*Not required for full voltage units (full voltage clips used instead).

Part Numbers: Operators

| | Style | Part Number |
|--|-------|------------------------|
| Ø 40mm Pushlock Turn Reset | | AVD-300 |
| Illuminated Ø 40mm Pushlock Turn Reset | | AVLD3-0600N |
| Ø 40mm Push-Pull | | AYD-3100 |
| Illuminated Ø 40mm Push-Pull | | 2 pos AYLD-0600 |
| | | 3 pos AYLD22TK962-0B01 |

Part Numbers: Buttons and Lenses

| | Style | Part No. |
|--|-------|-----------------|
| Button for Pushlock Turn Reset E-Stop (Ø 40mm, red only) | | AVN3B-R |
| Lens for Illuminated Pushlock Turn Reset E-Stop (Ø 40mm, red only) | | AVLN3LU-R |
| Button for Push-Pull E-Stop (Ø 40mm) | | AYD3BN-① |
| Lens for Illuminated Push-Pull E-Stop (Ø 40mm) | | 2 pos* AYLD3L-② |
| | | 3 pos AYLD2L-② |

- In place of ①, specify the Button Color Code. (See table below)
- In place of ②, specify the LED Color Code.
- *Not available in blue.

Part Numbers: Lamps

| Type | 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 |
| | 120VAC | L-120L |



- In place of ②, specify the LED color code.
- The LED contains a current-limiting resistor and a protection diode.

① Button Color Code

| 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 |

Part Numbers: Contact Blocks

| Description | Part Number | |
|-------------------|-----------------------|-----------------------|
| | 1N0 | 1NC |
| All Control Units | | |
| | BST-010 | BST-001 |
| | BST-010S (early make) | BST-001S (late break) |
| | Dummy Blocks | 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).

Part Numbers: Full Voltage Clips

| Primary Voltage (50/60Hz) | Part Number |
|--|-------------|
| Full Voltage Clips (2 req'd for each unit) | APD-F |



Part Numbers: Transformers

| Description | Primary Voltage (50/60Hz) | Part Number |
|-------------|---------------------------|-------------|
| | 120V AC | TWD-0126 |
| | 240V AC | TWD-0246 |
| | 480V AC | TWD-0486 |



6V secondary voltage (uses 6V lamp).

A4

Switches & Pilot Devices

Pilot Lights (Assembled)

A4

Switches & Pilot Devices



Assembled Pilot Lights

A P D 1 126 D N - R - ()

| | |
|--|--|
| <p>Function P: Pilot Light</p> <p>Series Designation D: TWTD Series</p> <p>Lens Shape 1: Dome</p> <p>Rated Operational Voltage (Primary) Transformer Type 126:120V AC 246:240V AC 486:480V AC</p> <p>Full Voltage Type 99:Full Voltage</p> | <p>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)</p> <p>Lens Color Code A: Amber G: Green R: Red S: Blue W: White Y: Yellow</p> <p>Lamp Type Blank: Incandescent Lamp D: LED Lamp</p> |
|--|--|

Use only when interpreting part numbers. Do not use for developing part numbers.

Part Numbers: LED and Incandescent Pilot Lights

| Style | Operating Voltage | Part Number | |
|-------------------|-------------------------------|---|--|
| | | LED | Incandescent |
| Transformer Dome | 120V AC 240V AC 480V AC | APD1126DN-② APD1246DN-② APD1486DN-② | APD1126N-② APD1246N-② APD1486N-② |
| Full Voltage Dome | — | APD199DN-②-③ | APD199N-②-③ |

② Lens Color Code

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

③ Full Voltage Code

| Voltage | Code |
|--------------------|------|
| 6V AC/DC | 6V |
| 12V AC/DC | 12V |
| 24V AC/DC | 24V |
| 120V AC | 120V |
| 240V AC (LED only) | 240V |

1. In place of ②, specify the Lens/LED Color Code.
 2. In place of ③, specify the Full Voltage Code (lamp voltage).



Pilot Lights (Sub-Assembled)


Transformer* + Operator + Lamp + Lens = Complete Part




Note: Not required for full voltage units (full voltage clips used instead).


Part Numbers: Operators

| Style | Part Number |
|---|-------------|
| Full Voltage  | APD-199 |
| AC Adaptor/Transformer  | APD-006 |



 The lens, lamp, and transformer/adaptor or the full voltage clips must be ordered separately.


Part Numbers: Lenses

| Style | Part Number |
|--|-------------|
| Dome Lens  | APN106L-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.


Part Numbers: Lamps

| Type | 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  | 6.3V AC/DC | IS-6 |
| | 12V AC/DC | IS-12 |
| | 24V AC/DC | IS-24 |
| | 120VAC, 1-8W | L-120L |


 1. In place of ②, specify the LED color code.
2. The LED contains a current-limiting resistor and a protection diode.


Part Numbers: Full Voltage Clips

| Primary Voltage (50/60Hz) | Part Number |
|--|-------------|
|  | APD-F |

 Required for all full voltage models. Two pieces each.

Part Numbers: Transformers

| Description | Primary Voltage (50/60Hz) | Part Number |
|---|---------------------------|-------------|
| Transformers  | 120V AC | TWD-0126 |
| | 240V AC | TWD-0246 |
| | 480V AC | TWD-0486 |

 6V secondary voltage (use 6V lamp).

② Lens/LED Color Code

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

A4

Switches & Pilot Devices

Illuminated Pushbuttons (Assembled)



A4

Switches & Pilot Devices

Assembled Illuminated Pushbuttons

A L () D 2 126 11 (D) N - R - ()




| | | |
|--|--|---|
| <p>Function</p> <p>L: Momentary Action OL: Alternate Action</p> <p>Bezel Shape</p> <p>Blank: Octagonal F: Full Shroud</p> <p>Series Designation</p> <p>D: TWTD Series</p> <p>Lens Shape</p> <p>2: Extended 3: Mushroom Ø 40mm</p> <p>Rated Operational Voltage (Primary)</p> <p>Transformer 126:120V AC 246:240V AC 486:480V AC</p> | <p>Full Voltage Type 99:Full Voltage</p> | <p>Lamp Voltage (Full Voltage Only)</p> <p>6V: 6V AC/DC 12V: 12V AC/DC 24V: 24V AC/DC 120V:120V AC 240V: 240V AC (LED only)</p> <p>Lens Color Code</p> <p>A: Amber G: Green R: Red S: Blue W: White Y: Yellow</p> <p>Lamp Type</p> <p>Blank: Incandescent Lamp D: LED</p> <p>Contact Arrangement</p> <p>20: 2NO 02: 2NC 11: 1NO-1NC</p> |
|--|--|---|



1. Use only when interpreting part numbers. Do not use for developing part numbers.
2. All transformers and AC Adaptors step down to 6V.

Illuminated Pushbuttons (Assembled) con't

Part numbers: Illuminated Pushbuttons

| Style | | Contacts | Part Number | |
|---|--------------|-----------------------|---|--|
| | | | Momentary | Maintained |
| Extended Lens  | Full Voltage | 1NO-1NC 2NO 2NC | ALD29911⑤N-②-③ ALD29920⑤N-②-③ ALD29902⑤N-②-③ | AOLD29911⑤N-②-③ AOLD29920⑤N-②-③ AOLD29902⑤N-②-③ |
| | Transformer | 1NO-1NC 2NO 2NC | ALD2 ④ 11⑤N-② ALD2 ④ 20⑤N-② ALD2 ④ 02⑤N-② | AOLD2 ④ 11⑤N-② AOLD2 ④ 20⑤N-② AOLD2 ④ 02⑤N-② |
| Extended Lens with Full Shroud  | Full Voltage | 1NO-1NC 2NO 2NC | ALFD29911⑤N-②-③ ALFD29920⑤N-②-③ ALFD29902⑤N-②-③ | AOLFD29911⑤N-②-③ AOLFD29920⑤N-②-③ AOLFD29902⑤N-②-③ |
| | Transformer | 1NO-1NC 2NO 2NC | ALFD2 ④ 11⑤N-② ALFD2 ④ 20⑤N-② ALFD2 ④ 02⑤N-② | AOLFD2 ④ 11⑤N-② AOLFD2 ④ 20⑤N-② AOLFD2 ④ 02⑤N-② |
| Ø 40mm Mushroom Lens  | Full Voltage | 1NO-1NC 2NO 2NC | ALD39911⑤N-②-③ ALD39920⑤N-②-③ ALD39902⑤N-②-③ | AOLD39911⑤N-②-③ AOLD39920⑤N-②-③ AOLD39902⑤N-②-③ |
| | Transformer | 1NO-1NC 2NO 2NC | ALD3 ④ 11⑤N-② ALD3 ④ 20⑤N-② ALD3 ④ 02⑤N-② | AOLD3 ④ 11⑤N-② AOLD3 ④ 20⑤N-② AOLD3 ④ 02⑤N-② |



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.

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 (LED only) | 240V |

④ Transformer Voltage Codes

| Voltage | Code |
|---------|------|
| 120VAC | 126 |
| 240VAC | 246 |
| 480VAC | 486 |



6V secondary voltage
(uses 6V lamp).

⑤ Lamp Type Code

| Lamp | Code |
|--------------|-------|
| Incandescent | Blank |
| LED | D |

Illuminated Pushbuttons (Sub-Assembled)

Transformer* + Contact Block + Operator + Lamp + Lens = Complete Part

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Switches & Pilot Devices





* Not required for full voltage types (full voltage types use APD-F full voltage clips).

Part Numbers: 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 |

Part Numbers: Lamps

| Type | Voltage | Part Number |
|---|-----------|----------------------|
| LED  | 6V AC/DC | LSTD-6 ^② |
| | 12V AC/DC | LSTD-1 ^② |
| | 24V AC/DC | LSTD-2 ^② |
| | 120V AC | LSTD-H2 ^② |
| | 240V AC | LSTD-M4 ^② |
| Incandescent  | 6V AC/DC | IS-6 |
| | 12V AC/DC | IS-12 |
| | 24V AC/DC | IS-24 |
| | 120VAC | L-120L |



② Lens/LED Color Codes

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

Mushroom lens not available in yellow.


1. In place of ②, specify the LED Color code.
2. The LED contains a current-limiting resistor and a protection diode.

Part Numbers: Lenses

| Style | Part No. |
|--|-----------------------|
| Extended  | ALN06LU- ^② |
| Ø 40mm Mushroom  | ALN3LU- ^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.

Part Numbers: Contact Blocks

| Description | Part Number | |
|--|----------------------------------|----------------------------------|
| | 1N0 | 1NC |
| All Control Units  | BST-010 BST-010S (early make) | BST-001 BST-001S (late break) |
| Dummy Blocks | 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).

Part Numbers: Full Voltage Clips

| Primary Voltage (50/60Hz) | Part Number |
|---|-------------|
| Full Voltage Clips (2 req'd for each unit)  | APD-F |

Required for all full voltage models.

Part Numbers: Transformers

| Description | Primary Voltage (50/60Hz) | Part Number |
|---|---------------------------|-------------|
| Transformers  | 120V AC | TWD-0126 |
| | 240V AC | TWD-0246 |
| | 480V AC | TWD-0486 |

6V secondary voltage (uses 6V lamp).

Non-Illuminated Selector Switches (Assembled)



**Knob Selector
(Non-illuminated)**



**Key Selector
(Non-illuminated)**



**Lever Selector
(Non-illuminated)**

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Switches & Pilot Devices

Assembled Selector Switches
A S D 2 () () 11 N - ()

| | |
|--|---|
| <p>Function _____</p> <p>S: Selector Switch</p> <p>Series Designation _____</p> <p>D: TWTD Series</p> <p>Number of Positions _____</p> <p>2: 2-Position 3: 3-Position</p> <p>Spring Return Action _____</p> <p>Blank: Maintained 1: Spring return from Right 2: Spring return from Left 3: 2-Way spring return from Left and Right</p> | <p>Circuit Number _____</p> <p>(See Circuit # column of Selector Switch Contact Arrangement Chart on beginning on A4-185.)</p> <p>Contact Arrangement Code</p> <p>10: 1NO 01: 1NC 20: 2NO 02: 2NC 40: 4NO 04: 4NC 11: 1NO-1NC 22: 2NO-2NC</p> <p>Operator Style Code</p> <p>Blank: Knob Operator L: Lever Operator K: Key Operator</p> |
|--|---|

Use only when interpreting part numbers. Do not use for developing part numbers.

Non-Illuminated Selector Switches (Assembled) con't

Part numbers: Non-Illuminated 2-Position Selector Switches

| Style | Contact | Mounting | Operator Position | | | Part Number | Part Number | Part Number |
|-------|---------|----------|-------------------|---|-------|--------------|--------------------------|-------------------------|
| | | | L | R | | Maintained | Spring Return from Right | Spring Return from Left |
| | | | | | | | | |
| 1NO | 1 | 2 | 0 | X | Knob | ASD210N | ASD2110N | ASD2210N |
| | 2 | | 0 | 0 | Lever | ASD2L10N | ASD21L10N | ASD22L10N |
| | | | | | Key | ASD2K10N | ASD21K10N | ASD22K10N |
| 1NC | 1 | 2 | X | 0 | Knob | ASD201N-116 | ASD2101N-116 | ASD2201N-116 |
| | 2 | | 0 | 0 | Lever | ASD2L01N-116 | ASD21L01N-116 | ASD22L01N-116 |
| | | | | | Key | ASD2K01N-116 | ASD21K01N-116 | ASD22K01N-116 |
| 1NO | 1 | 2 | 0 | X | Knob | ASD211N | ASD2111N | ASD2211N |
| 1NC | 2 | | X | 0 | Lever | ASD2L11N | ASD21L11N | ASD22L11N |
| | | | | | Key | ASD2K11N | ASD21K11N | ASD22K11N |
| 2NO | 1 | 2 | 0 | X | Knob | ASD220N | ASD2120N | ASD2220N |
| | 2 | | 0 | X | Lever | ASD2L20N | ASD21L20N | ASD22L20N |
| | | | | | Key | ASD2K20N | ASD21K20N | ASD22K20N |
| 2NC | 1 | 2 | X | 0 | Knob | ASD202N-104 | ASD2102N-104 | ASD2202N-104 |
| | 2 | | X | 0 | Lever | ASD2L02N-104 | ASD21L02N-104 | ASD22L02N-104 |
| | | | | | Key | ASD2K02N-104 | ASD21K02N-104 | ASD22K02N-104 |
| 2NO | 1 | 2 | 0 | X | Knob | ASD222N | ASD2122N | ASD2222N |
| 2NC | 2 | 3 | X | 0 | Lever | ASD2L22N | ASD21L22N | ASD22L22N |
| | 3 | 4 | 0 | X | Key | ASD2K22N | ASD21K22N | ASD22K22N |
| 2NO | 1 | 2 | 0 | X | Knob | ASD222N-111 | ASD2122N-111 | ASD2222N-111 |
| 2NC | 2 | 3 | 0 | X | Lever | ASD2L22N-111 | ASD21L22N-111 | ASD22L22N-111 |
| | 3 | 4 | X | 0 | Key | ASD2K22N-111 | ASD21K22N-111 | ASD22K22N-111 |

Part Numbers: Non-Illuminated 3-Position Selector Switches

| Style | Contact | Mounting | Operator Position | | | | Part Number | Part Number | Part Number | Part Number |
|-------|---------|----------|-------------------|---|---|-------|--------------|--------------------------|-------------------------|-----------------------|
| | | | L | C | R | | Maintained | Spring Return from Right | Spring Return From Left | Spring Return Two-Way |
| | | | | | | | | | | |
| 2NO | 1 | 2 | X | 0 | 0 | Knob | ASD320N | ASD3120N | ASD3220N | ASD3320N |
| | 2 | | 0 | 0 | X | Lever | ASD3L20N | ASD31L20N | ASD32L20N | ASD33L20N |
| | | | | | | Key | ASD3K20N | ASD31K20N | ASD32K20N | ASD33K20N |
| 2NC | 1 | 2 | 0 | X | X | Knob | ASD302N | ASD3102N | ASD3202N | ASD3302N |
| | 2 | | X | X | 0 | Lever | ASD3L02N | ASD31L02N | ASD32L02N | ASD33L02N |
| | | | | | | Key | ASD3K02N | ASD31K02N | ASD32K02N | ASD33K02N |
| 2NO | 1 | 2 | X | 0 | 0 | Knob | ASD322N | ASD3122N | ASD3222N | ASD3322N |
| 2NC | 2 | 3 | 0 | 0 | X | Lever | ASD3L22N | ASD31L22N | ASD32L22N | ASD33L22N |
| | 3 | 4 | 0 | X | X | Key | ASD3K22N | ASD31K22N | ASD32K22N | ASD33K22N |
| 2NO | 1 | 2 | X | 0 | X | Knob | ASD322N-309 | ASD3122N-309 | ASD3222N-309 | ASD3322N-309 |
| 2NC | 2 | 3 | X | X | 0 | Lever | ASD3L22N-309 | ASD31L22N-309 | ASD32L22N-309 | ASD33L22N-309 |
| | 3 | 4 | 0 | 0 | X | Key | ASD3K22N-309 | ASD31K22N-309 | ASD32K22N-309 | ASD33K22N-309 |
| 2NO | 1 | 2 | 0 | 0 | X | Knob | ASD322N-310 | ASD3122N-310 | ASD3222N-310 | ASD3322N-310 |
| 2NC | 2 | 3 | 0 | 0 | X | Lever | ASD3L22N-310 | ASD31L22N-310 | ASD32L22N-310 | ASD33L22N-310 |
| | 3 | 4 | 0 | X | X | Key | ASD3K22N-310 | ASD31K22N-310 | ASD32K22N-310 | ASD33K22N-310 |
| 4NO | 1 | 2 | X | 0 | 0 | Knob | ASD340N | ASD3140N | ASD3240N | ASD3340N |
| | 2 | 3 | 0 | 0 | X | Lever | ASD3L40N | ASD31L40N | ASD32L40N | ASD33L40N |
| | 3 | 4 | X | 0 | 0 | Key | ASD3K40N | ASD31K40N | ASD32K40N | ASD33K40N |
| 4NC | 1 | 2 | 0 | X | X | Knob | ASD304N | ASD3104N | ASD3204N | ASD3304N |
| | 2 | 3 | X | X | 0 | Lever | ASD3L04N | ASD31L04N | ASD32L04N | ASD33L04N |
| | 3 | 4 | 0 | X | X | Key | ASD3K04N | ASD31K04N | ASD32K04N | ASD33K04N |



1. 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 two positions.

2. All knob and lever selector switches come in black. Other colors are available by ordering the knob or lever separately.

3. Custom contact arrangements available, see page A4-185 or call IDEC for details.

Switches & Pilot Devices

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Non-Illuminated Selector Switches (Sub-Assembled)

Contact Blocks + Operator + Knob or Lever* + Color Insert* = Complete Part †



- 1. * Not needed with key type switches.
- 2. † Knob type shown.

Part Numbers: Operators

| Appearance/ Position | Description | Part Number |
|---|---|----------------------------------|
| Knob & Lever  | 2 Maintained | ASD200 |
| | 2 Spring-Ret. from Right | ASD2100 |
| | 2 Spring-Ret. from Left | ASD2200 |
| | 3 Maintained, Cam 1 Maintained, Cam 2 | ASD300-1 ASD300-2 |
| | 3 Spring-Ret. from Right, Cam1 Spring-Ret. from Right, Cam 2 | ASD3100-1 ASD3100-2 |
| | 3 Spring-Ret. from Left, Cam 1 Spring-Ret. from Left, Cam 2 | ASD3200-1 ASD3200-2 |
| Key  | 2 Maintained | ASD2K00-RA |
| | 2 Spring-Ret. from Right | ASD21K00-RL |
| | 2 Spring-Ret. from Left | ASD22K00 |
| | 3 Maintained, Cam 1 Maintained, Cam 2 | ASD3K00-1-RA ASD3K00-2-RA |
| | 3 Spring-Ret. from Right, Cam1 Spring-Ret. from Right, Cam 2 | ASD31K00-1-RLC ASD31K00-2-RLC |
| | 3 Spring-Ret. from Left, Cam 1 Spring-Ret. from Left, Cam 2 | ASD32K00-1-RLC ASD32K00-2-RLC |
| 3 Spring-Ret. from L/R, Cam 1 Spring-Ret. from L/R, Cam 2 | ASD33K00-1-RC ASD33K00-2-RC | |

- 1. Order knobs, levers, color inserts separately (see below).
- 2. For key switches, keys are removable in all maintained positions. Other options available, contact IDEC for details.
- 3. See page A4-187 "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 |


- 1. Knob/Lever not available in white.
- 2. Color inserts not available in Black.

Part Numbers: 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.

Part Numbers: Contact Blocks

| Style | Part Number | |
|--|----------------------------------|----------------------------------|
| | 1NO | 1NC |
|  | BST-010 BST-010S (early make) | BST-001 BST-001S (late break) |
| Dummy Blocks | 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).

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Switches & Pilot Devices

Illuminated Selector Switches (Assembled)

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Switches & Pilot Devices



Assembled Illuminated Selector Switches

A SL D 2 (2) 126 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: 2-Way spring return from Left and Right

Rated Operational Voltage (Primary)

| | |
|-------------|-------------------|
| Transformer | Full Voltage Type |
| 126:120V AC | 99: Full Voltage |
| 246:240V AC | |
| 486:480V AC | |

Contact Arrangement

| | |
|-------------|-------------|
| 20: 2NO | 02: 2NC |
| 40: 4NO | 04: 4NC |
| 11: 1NO-1NC | 22: 2NO-2NC |

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

Circuit Code Number

See Circuit # column of Selector Switch Contact Arrangement Charts on page A4-185.

Lamp Type

Blank: Incandescent
D: LED



Use only when interpreting part numbers. Do not use for developing part numbers.

Illuminated Selector Switches (Assembled) con't

Part Numbers: Illuminated 2-Position Selector Switches

| Contact | Style | | | | Operator Position | Maintained | Spring Return From Right | Spring Return From Left |
|------------|----------|-------------------|---|--------------------------|--|--|--|-----------------------------|
| | Mounting | Operator Position | | Transformer Full Voltage | | | | |
| | | L | R | | | | | |
| 1NO 1NC | 1 | 0 | X | transformer full voltage | ASLD2 ④11⑤N-② ASLD29911⑤N-②-③ | ASLD21 ④11⑤N-② ASLD219911⑤N-②-③ | ASLD22 ④11⑤N-② ASLD229911⑤N-②-③ | |
| | 2 | X | 0 | | | | | |
| 2NO | 1 | 0 | X | transformer full voltage | ASLD2 ④20⑤N-② ASLD29920⑤N-②-③ | ASLD21 ④20⑤N-② ASLD219920⑤N-②-③ | ASLD22 ④20⑤N-② ASLD229920⑤N-②-③ | |
| | 2 | 0 | X | | | | | |
| 2NC | 1 | X | 0 | transformer full voltage | ASLD2 ④02⑤N-104-② ASLD29902⑤N-104-②-③ | ASLD21 ④02⑤N-104-② ASLD219902⑤N-104-②-③ | ASLD22 ④02⑤N-104-② ASLD229902⑤N-104-②-③ | |
| | 2 | X | 0 | | | | | |
| 2NO 2NC | 1 | 0 | X | transformer full voltage | ASLD2 ④22⑤N-② ASLD29922⑤N-②-③ | ASLD21 ④22⑤N-② ASLD219922⑤N-②-③ | ASLD22 ④22⑤N-② ASLD229922⑤N-②-③ | |
| | 2 | X | 0 | | | | | |
| | 3 | 0 | X | | | | | |
| | 4 | X | 0 | | | | | |
| 2NO 2NC | 1 | 0 | X | transformer full voltage | ASLD2 ④22⑤N-11-② ASLD29922⑤N-11-②-③ | ASLD21 ④22⑤N-11-② ASLD219922⑤N-11-②-③ | ASLD22 ④22⑤N-11-② ASLD229922⑤N-11-②-③ | |
| | 2 | 0 | X | | | | | |
| | 3 | X | 0 | | | | | |
| | 4 | X | 0 | | | | | |

② Lens/LED 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 (LED only) | 240V |

④ Transformer Voltage Codes

| Voltage | Code |
|---------|------|
| 120VAC | 126 |
| 240VAC | 246 |
| 480VAC | 486 |

⑤ Lamp Type Code

| Lamp | Code |
|--------------|-------|
| Incandescent | Blank |
| LED | D |



6V secondary voltage (uses 6V lamps).

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Switches & Pilot Devices

Part Numbers: Illuminated 3-Position Selector Switches

| Contact | Style | | | | Operator Position | Maintained | Spring Return From Right | Spring Return From Left | Spring Return Two-Way |
|------------|----------|-------------------|---|---|--------------------------|---|---|---|---|
| | Mounting | Operator Position | | | | | | | |
| | | L | C | R | | | | | |
| 2NO | 1 | X | 0 | 0 | transformer full voltage | ASLD3 ④ 20⑤N-② ASLD39920⑤N-②-③ | ASLD31 ④ 20⑤N-② ASLD319920⑤N-②-③ | ASLD32 ④ 20D⑤N-② ASLD329920D⑤N-②-③ | ASLD33 ④ 20D⑤N-② ASLD339920D⑤N-②-③ |
| | 2 | 0 | 0 | X | | | | | |
| 2NC | 1 | 0 | X | X | transformer full voltage | ASLD3 ④ 02⑤N-② ASLD39902⑤N-②-③ | ASLD31 ④ 02⑤N-② ASLD319902⑤N-②-③ | ASLD32 ④ 02D⑤N-② ASLD329902D⑤N-②-③ | ASLD33 ④ 02D⑤N-② ASLD339902D⑤N-②-③ |
| | 2 | X | X | 0 | | | | | |
| 2NO 2NC | 1 | X | 0 | 0 | transformer full voltage | ASLD3 ④ 22⑤N-② ASLD39922⑤N-②-③ | ASLD31 ④ 22⑤N-② ASLD319922⑤N-②-③ | ASLD32 ④ 22D⑤N-② ASLD329922D⑤N-②-③ | ASLD33 ④ 22D⑤N-② ASLD339922D⑤N-②-③ |
| | 2 | 0 | 0 | X | | | | | |
| | 3 | 0 | X | X | | | | | |
| | 4 | X | X | 0 | | | | | |
| 2NO 2NC | 1 | X | 0 | X | transformer full voltage | ASLD3 ④ 22⑤N-309-② ASLD39922⑤N-309-②-③ | ASLD31 ④ 22⑤N-309-② ASLD319922⑤N-309-②-③ | ASLD32 ④ 22D⑤N-309-② ASLD329922D⑤N-309-②-③ | ASLD33 ④ 22D⑤N-309-② ASLD339922D⑤N-309-②-③ |
| | 2 | X | X | 0 | | | | | |
| | 3 | 0 | X | 0 | | | | | |
| | 4 | 0 | 0 | X | | | | | |
| 2NO 2NC | 1 | 0 | X | 0 | transformer full voltage | ASLD3 ④ 22⑤N-310-② ASLD39922⑤N-310-②-③ | ASLD31 ④ 22⑤N-310-② ASLD319922⑤N-310-②-③ | ASLD32 ④ 22D⑤N-310-② ASLD329922D⑤N-310-②-③ | ASLD33 ④ 22D⑤N-310-② ASLD339922D⑤N-310-②-③ |
| | 2 | 0 | 0 | X | | | | | |
| | 3 | 0 | X | 0 | | | | | |
| | 4 | 0 | 0 | X | | | | | |
| 4NO | 1 | X | 0 | 0 | transformer full voltage | ASLD3 ④ 40⑤N-② ASLD39940⑤N-②-③ | ASLD31 ④ 40⑤N-② ASLD319940⑤N-②-③ | ASLD32 ④ 40⑤N-② ASLD329940⑤N-②-③ | ASLD33 ④ 40⑤N-② ASLD339940⑤N-②-③ |
| | 2 | 0 | 0 | X | | | | | |
| | 3 | X | 0 | 0 | | | | | |
| | 4 | 0 | 0 | X | | | | | |
| 4NC | 1 | 0 | X | X | transformer full voltage | ASLD3 ④ 04⑤N-② ASLD39904⑤N-②-③ | ASLD31 ④ 04⑤N-② ASLD319904⑤N-②-③ | ASLD32 ④ 04⑤N-② ASLD329904⑤N-②-③ | ASLD33 ④ 04⑤N-② ASLD339904⑤N-②-③ |
| | 2 | X | X | 0 | | | | | |
| | 3 | 0 | X | X | | | | | |
| | 4 | X | X | 0 | | | | | |



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

Illuminated Selector Switches (Sub-Assembled)

Transformer* + Contact Block + Operator + Lamp + Lense = Complete Part



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Switches & Pilot Devices

*Not required for full voltage units (use APD-F full voltage clips instead).

Part Numbers: Operators

| Appearance/ Positions | Description | Part Number |
|-------------------------------|---------------------------------|-------------|
| | 2 Maintained | ASLD200 |
| | 3 Maintained, Cam 1 | ASLD300-1 |
| | 3 Maintained, Cam 2 | ASLD300-2 |
| | 2 Spring-Ret. from Right | ASLD2100 |
| | 2 Spring-Ret. from Left | ASLD2200 |
| | 3 Spring-Ret. from Right, Cam 1 | ASLD3100-1 |
| | 3 Spring-Ret. from Right, Cam 2 | ASLD3100-2 |
| | 3 Spring-Ret. from Left, Cam 1 | ASLD3200-1 |
| | 3 Spring-Ret. from Left, Cam 2 | ASLD3200-2 |
| | 3 Spring-Ret. from L/R, Cam 1 | ASLD3300-1 |
| 3 Spring-Ret. from L/R, Cam 2 | ASLD3300-2 | |

Part Numbers: Lenses

| Style | Part Number |
|-------|-------------|
| Knob | ASLNHU - ① |

Part Numbers: Lamps

| Type | 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 |
| | 6.3V AC/DC | IS-6 |
| | 12V AC/DC | IS-12 |
| | 24V AC/DC | IS-24 |
| | 120VAC | 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 Blocks

| Description | Part Number | |
|-------------|-----------------------|-----------------------|
| | 1NO | 1NC |
| | BST-010 | BST-001 |
| | BST-010S (early make) | BST-001S (late break) |
| | Dummy Blocks | 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 (make before break).

Part Numbers: Full Voltage Clips

| Primary Voltage (50/60Hz) | Part Number |
|--|-------------|
| Full Voltage Clips (2 req'd for each unit) | APD-F |

Part Numbers: Transformers

| Description | Primary Voltage (50/60Hz) | Part Number |
|-------------|---------------------------|-------------|
| | 120V AC | TWD-0126 |
| | 240V AC | TWD-0246 |
| | 480V AC | TWD-0486 |

6V secondary voltage

② Lens/LED Color Codes

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

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

Type and quantity of switch contacts

Circuit Number

* N/D = No designation

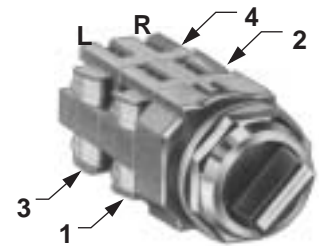
Contact Block Mounting

Position or mounting contact blocks on operator

Operator Position

Truth table indicates the operating position of contact block when operator is switched to that position.

X = On (Closed Contacts)
O = Off (Open Contacts)
X-X = Overlapping Contacts: Remain on (closed) when switch is moved between these two positions



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: 2-position Selector Switches

| Style | | Mounting Position | Operator Position | | Contact Block Part Number | Description | Operator Part Number | | |
|------------------|----------------|-------------------|-------------------|---|---------------------------|------------------------------------|----------------------|----------------------|----------------------|
| Contact | Circuit Number | | L | R | | | Maintained | Spring Ret. from Rt. | Spring Ret. from Lt. |
| | | | L | R | | | | | |
| | | | ↙ | ↗ | | L↘R | L↘R | L↘R | |
| 1NO | N/D | 1 | O | X | BST-010 | Knob/Lever Key | ASD200 | ASD2100 | ASD2200 |
| | | 2 | O | O | BST-D | Illuminated Knob | ASD2K00 | ASD21K00 | ASD22K00 |
| 1NC | 116 | 1 | X | O | BST-001 | Knob/Lever Key | ASD200 | ASD2100 | ASD2200 |
| | | 2 | O | O | BST-D | Illuminated Knob | ASD2K00 | ASD21K00 | ASD22K00 |
| 1NO 1NC | N/D | 1 | O | X | BST-010 | Knob/Lever Key | ASD200 | ASD2100 | ASD2200 |
| | | 2 | X | O | BST-001 | Illuminated Knob | ASD2K00 | ASD21K00 | ASD22K00 |
| 1NO 1NC | 103 | 1 | X | O | BST-001 | Knob/Lever Key | ASD200 | ASD2100 | ASD2200 |
| | | 2 | O | X | BST-010 | Illuminated Knob | ASD2K00 | ASD21K00 | ASD22K00 |
| 1NO-EM 1NC-LB | 600 | 1 | O | X | BST-010S | Knob/Lever Key | ASD200 | ASD2100 | ASD2200 |
| | | 2 | X | O | BST-001S | Illuminated Knob | ASD2K00 | ASD21K00 | ASD22K00 |
| 1NO-EM 1NC-LB | 601 | 1 | X | O | BST-001S | Knob/Lever Key | ASD200 | ASD2100 | ASD2200 |
| | | 2 | O | X | BST-010S | Illuminated Knob | ASD2K00 | ASD21K00 | ASD22K00 |
| 2NO | N/D | 1 | O | X | BST-010 | Knob/Lever Key | ASD200 | ASD2100 | ASD2200 |
| | | 2 | O | X | BST-010 | Illuminated Knob | ASD2K00 | ASD21K00 | ASD22K00 |
| 2NC | 104 | 1 | X | O | BST-001 | Knob/Lever Key | ASD200 | ASD2100 | ASD2200 |
| | | 2 | X | O | BST-001 | Illuminated Knob | ASD2K00 | ASD21K00 | ASD22K00 |
| 2NO 2NC | N/D | 1 | O | X | BST-010 | Knob/Lever Key Illuminated Knob | ASD200 | ASD2100 | ASD2200 |
| | | 2 | X | O | BST-001 | | ASD2K00 | ASD21K00 | ASD22K00 |
| | | 3 | O | X | BST-010 | | ASLD200 | ASLD2100 | ASLD2200 |
| | | 4 | X | O | BST-001 | | | | |
| | 110 | 1 | X | O | BST-001 | Knob/Lever Key Illuminated Knob | ASD200 | ASD2100 | ASD2200 |
| | | 2 | O | X | BST-010 | | ASD2K00 | ASD21K00 | ASD22K00 |
| | | 3 | X | O | BST-001 | | ASLD200 | ASLD2100 | ASLD2200 |
| | | 4 | O | X | BST-010 | | | | |
| | 111 | 1 | O | X | BST-010 | Knob/Lever Key Illuminated Knob | ASD200 | ASD2100 | ASD2200 |
| | | 2 | O | X | BST-010 | | ASD2K00 | ASD21K00 | ASD22K00 |
| | | 3 | X | O | BST-001 | | ASLD200 | ASLD2100 | ASLD2200 |
| | | 4 | X | O | BST-001 | | | | |
| 4NO | N/D | 1 | O | X | BST-010 | Knob/Lever Key Illuminated Knob | ASD200 | ASD2100 | ASD2200 |
| | | 2 | O | X | BST-010 | | ASD2K00 | ASD21K00 | ASD22K00 |
| | | 3 | O | X | BST-010 | | ASLD200 | ASLD2100 | ASLD2200 |
| | | 4 | O | X | BST-010 | | | | |

A4

Switches & Pilot Devices

Contact Arrangement Chart: 3-Position Selector Switches

| Style | | Mounting Position | Operator Position | | | Contact Block Part Number | Description | Operator Part Number | | | | |
|--------------------------------|----------------|-------------------|-------------------|---|---------|---------------------------------|------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|
| Contact | Circuit Number | | L | C | R | | | Maintained | Spring Ret. from Rt. | Spring Ret. from Lt. | Two-Way | |
| | | | | | | | | | | | | |
| A4 Switches & Pilot Devices | 1NO 1NC | 202 | 1 | X | 0 | 0 | BST-010 | Knob/Lever Key Illuminated Knob | ASD300-1 ASD3K00-1 ASLD300-1 | ASD3100-1 ASD31K00-1 ASLD3100-1 | ASD3200-1 ASD32K00-1 ASLD3200-1 | ASD3300-1 ASD33K00-1 ASLD3300-1 |
| | | | 2 | X | X | 0 | BST-001 | | ASD300-1 ASD3K00-1 ASLD300-1 | ASD3100-1 ASD31K00-1 ASLD3100-1 | ASD3200-1 ASD32K00-1 ASLD3200-1 | ASD3300-1 ASD33K00-1 ASLD3300-1 |
| | | 203 | 1 | 0 | X | X | BST-001 | Knob/Lever Key Illuminated Knob | ASD300-1 ASD3K00-1 ASLD300-1 | ASD3100-1 ASD31K00-1 ASLD3100-1 | ASD3200-1 ASD32K00-1 ASLD3200-1 | ASD3300-1 ASD33K00-1 ASLD3300-1 |
| | | | 2 | 0 | 0 | X | BST-010 | | ASD300-2 ASD3K00-2 ASLD300-2 | ASD3100-2 ASD31K00-2 ASLD3100-2 | ASD3200-2 ASD32K00-2 ASLD3200-2 | ASD3300-2 ASD33K00-2 ASLD3300-2 |
| | | 302 | 1 | X | 0 | X | BST-010 | Knob/Lever Key Illuminated Knob | ASD300-2 ASD3K00-2 ASLD300-2 | ASD3100-2 ASD31K00-2 ASLD3100-2 | ASD3200-2 ASD32K00-2 ASLD3200-2 | ASD3300-2 ASD33K00-2 ASLD3300-2 |
| | | | 2 | X | X | 0 | BST-001 | | ASD300-2 ASD3K00-2 ASLD300-2 | ASD3100-2 ASD31K00-2 ASLD3100-2 | ASD3200-2 ASD32K00-2 ASLD3200-2 | ASD3300-2 ASD33K00-2 ASLD3300-2 |
| | 303 | 1 | 0 | X | 0 | BST-001 | Knob/Lever Key Illuminated Knob | ASD300-2 ASD3K00-2 ASLD300-2 | ASD3100-2 ASD31K00-2 ASLD3100-2 | ASD3200-2 ASD32K00-2 ASLD3200-2 | ASD3300-2 ASD33K00-2 ASLD3300-2 | |
| | | 2 | 0 | 0 | X | BST-010 | | ASD300-1 ASD3K00-1 ASLD300-1 | ASD3100-1 ASD31K00-1 ASLD3100-1 | ASD3200-1 ASD32K00-1 ASLD3200-1 | ASD3300-1 ASD33K00-1 ASLD3300-1 | |
| | 2NO | N/D | 1 | X | 0 | 0 | BST-010 | Knob/Lever Key Illuminated Knob | ASD300-1 ASD3K00-1 ASLD300-1 | ASD3100-1 ASD31K00-1 ASLD3100-1 | ASD3200-1 ASD32K00-1 ASLD3200-1 | ASD3300-1 ASD33K00-1 ASLD3300-1 |
| | | | 2 | 0 | 0 | X | BST-010 | | ASD300-2 ASD3K00-2 ASLD300-2 | ASD3100-2 ASD31K00-2 ASLD3100-2 | ASD3200-2 ASD32K00-2 ASLD3200-2 | ASD3300-2 ASD33K00-2 ASLD3300-2 |
| | | 301 | 1 | X | 0 | X | BST-010 | Knob/Lever Key Illuminated Knob | ASD300-2 ASD3K00-2 ASLD300-2 | ASD3100-2 ASD31K00-2 ASLD3100-2 | ASD3200-2 ASD32K00-2 ASLD3200-2 | ASD3300-2 ASD33K00-2 ASLD3300-2 |
| | | | 2 | 0 | 0 | X | BST-010 | | ASD300-1 ASD3K00-1 ASLD300-1 | ASD3100-1 ASD31K00-1 ASLD3100-1 | ASD3200-1 ASD32K00-1 ASLD3200-1 | ASD3300-1 ASD33K00-1 ASLD3300-1 |
| 2NC | 304 | 1 | 0 | X | 0 | BST-001 | Knob/Lever Key Illuminated Knob | ASD300-2 ASD3K00-2 ASLD300-2 | ASD3100-2 ASD31K00-2 ASLD3100-2 | ASD3200-2 ASD32K00-2 ASLD3200-2 | ASD3300-2 ASD33K00-2 ASLD3300-2 | |
| | | 2 | X | X | 0 | BST-001 | | ASD300-1 ASD3K00-1 ASLD300-1 | ASD3100-1 ASD31K00-1 ASLD3100-1 | ASD3200-1 ASD32K00-1 ASLD3200-1 | ASD3300-1 ASD33K00-1 ASLD3300-1 | |
| | N/D | 1 | 0 | X | X | BST-001 | Knob/Lever Key Illuminated Knob | ASD300-1 ASD3K00-1 ASLD300-1 | ASD3100-1 ASD31K00-1 ASLD3100-1 | ASD3200-1 ASD32K00-1 ASLD3200-1 | ASD3300-1 ASD33K00-1 ASLD3300-1 | |
| | | 2 | X | X | 0 | BST-001 | | ASD300-1 ASD3K00-1 ASLD300-1 | ASD3100-1 ASD31K00-1 ASLD3100-1 | ASD3200-1 ASD32K00-1 ASLD3200-1 | ASD3300-1 ASD33K00-1 ASLD3300-1 | |
| 2NO 2NC | N/D | 1 | X | 0 | 0 | BST-010 | Knob/Lever Key Illuminated Knob | ASD300-1 ASD3K00-1 ASLD300-1 | ASD3100-1 ASD31K00-1 ASLD3100-1 | ASD3200-1 ASD32K00-1 ASLD3200-1 | ASD3300-1 ASD33K00-1 ASLD3300-1 | |
| | | 2 | 0 | 0 | X | BST-010 | | | | | | |
| | | 3 | 0 | X | X | BST-001 | | | | | | |
| | | 4 | X | X | 0 | BST-001 | | | | | | |
| | 210 | 1 | 0 | X | X | BST-001 | Knob/Lever Key Illuminated Knob | ASD300-1 ASD3K00-1 ASLD300-1 | ASD3100-1 ASD31K00-1 ASLD3100-1 | ASD3200-1 ASD32K00-1 ASLD3200-1 | ASD3300-1 ASD33K00-1 ASLD3300-1 | |
| | | 2 | 0 | 0 | X | BST-010 | | | | | | |
| | | 3 | 0 | X | X | BST-001 | | | | | | |
| | | 4 | 0 | 0 | X | BST-010 | | | | | | |
| | 308 | 1 | X | 0 | X | BST-010 | Knob/Lever Key Illuminated Knob | ASD300-2 ASD3K00-2 ASLD300-2 | ASD3100-2 ASD31K00-2 ASLD3100-2 | ASD3200-2 ASD32K00-2 ASLD3200-2 | ASD3300-2 ASD33K00-2 ASLD3300-2 | |
| | | 2 | X | X | 0 | BST-001 | | | | | | |
| | | 3 | X | 0 | X | BST-010 | | | | | | |
| | | 4 | X | X | 0 | BST-001 | | | | | | |
| | 309 | 1 | X | 0 | X | BST-010 | Knob/Lever Key Illuminated Knob | ASD300-2 ASD3K00-2 ASLD300-2 | ASD3100-2 ASD31K00-2 ASLD3100-2 | ASD3200-2 ASD32K00-2 ASLD3200-2 | ASD3300-2 ASD33K00-2 ASLD3300-2 | |
| | | 2 | X | X | 0 | BST-001 | | | | | | |
| | | 3 | 0 | X | 0 | BST-001 | | | | | | |
| | | 4 | 0 | 0 | X | BST-010 | | | | | | |
| 310 | 1 | 0 | X | 0 | BST-001 | Knob/Lever Key Illuminated Knob | ASD300-2 ASD3K00-2 ASLD300-2 | ASD3100-2 ASD31K00-2 ASLD3100-2 | ASD3200-2 ASD32K00-2 ASLD3200-2 | ASD3300-2 ASD33K00-2 ASLD3300-2 | | |
| | 2 | 0 | 0 | X | BST-010 | | | | | | | |
| | 3 | 0 | X | 0 | BST-001 | | | | | | | |
| | 4 | 0 | 0 | X | BST-010 | | | | | | | |
| 4NO | N/D | 1 | X | 0 | 0 | BST-010 | Knob/Lever Key Illuminated Knob | ASD300-1 ASD3K00-1 ASLD300-1 | ASD3100-1 ASD31K00-1 ASLD3100-1 | ASD3200-1 ASD32K00-1 ASLD3200-1 | ASD3300-1 ASD33K00-1 ASLD3300-1 | |
| | | 2 | 0 | 0 | X | BST-010 | | | | | | |
| | | 3 | X | 0 | 0 | BST-010 | | | | | | |
| | | 4 | 0 | 0 | X | BST-010 | | | | | | |
| | 305 | 1 | X | 0 | X | BST-010 | Knob/Lever Key Illuminated Knob | ASD300-2 ASD3K00-2 ASLD300-2 | ASD3100-2 ASD31K00-2 ASLD3100-2 | ASD3200-2 ASD32K00-2 ASLD3200-2 | ASD3300-2 ASD33K00-2 ASLD3300-2 | |
| | | 2 | 0 | 0 | X | BST-010 | | | | | | |
| | | 3 | X | 0 | X | BST-010 | | | | | | |
| | | 4 | 0 | 0 | X | BST-010 | | | | | | |
| 4NC | N/D | 1 | 0 | X | X | BST-001 | Knob/Lever Key Illuminated Knob | ASD300-1 ASD3K00-1 ASLD300-1 | ASD3100-1 ASD31K00-1 ASLD3100-1 | ASD3200-1 ASD32K00-1 ASLD3200-1 | ASD3300-1 ASD33K00-1 ASLD3300-1 | |
| | | 2 | X | X | 0 | BST-001 | | | | | | |
| | | 3 | 0 | X | X | BST-001 | | | | | | |
| | | 4 | X | X | 0 | BST-001 | | | | | | |
| | 314 | 1 | 0 | X | 0 | BST-001 | Knob/Lever Key Illuminated Knob | ASD300-2 ASD3K00-2 ASLD300-2 | ASD3100-2 ASD31K00-2 ASLD3100-2 | ASD3200-2 ASD32K00-2 ASLD3200-2 | ASD3300-2 ASD33K00-2 ASLD3300-2 | |
| | | 2 | X | X | 0 | BST-001 | | | | | | |
| | | 3 | 0 | X | 0 | BST-001 | | | | | | |
| | | 4 | X | X | 0 | BST-001 | | | | | | |

- 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.
- N/D = No circuit number designation required in assembled part number.
- 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 | 0 | X |
| | | R | 0 | X |
| | BST-001 (NC) | L | X | 0 |
| | | R | X | 0 |
| | BST-010S (NO-EM) | L | 0 | X |
| | | R | 0 | X |
| | BST-001S (NC-LB) | L | X | 0 |
| | | R | X | 0 |

3 Position Selector Switches

| | Contact | Mounting Position | Operator Position | | |
|---|------------------|-------------------|-------------------|--------------|--------------|
| | | | Left | Center | Right |
| ASD300-1 ASLD300-1 ASD3K00-1 | BST-010 (NO) | L | X | 0 | 0 |
| | | R | 0 | 0 | X |
| | BST-001 (NC) | L | 0 | X | X |
| | | R | X | X | 0 |
| | BST-010S (NO-EM) | L | X | 0 | 0 |
| | | R | 0 | 0 | X |
| | BST-001S (NC-LB) | L | 0 | X | X |
| | | R | X | X | 0 |

| | Contact | Mounting Position | Operator Position | | |
|---|------------------|-------------------|-------------------|--------------|--------------|
| | | | Left | Center | Right |
| ASD300-2 ASLD300-2 ASD3K00-2 | BST-010 (NO) | L | X | 0 | X |
| | | R | 0 | 0 | X |
| | BST-001 (NC) | L | 0 | X | 0 |
| | | R | X | X | 0 |
| | BST-010S (NO-EM) | L | X | 0 | X |
| | | R | 0 | 0 | X |
| | BST-001S (NC-LB) | L | 0 | X | 0 |
| | | R | X | X | 0 |












1. For Operator Truth Tables, see next page.
2. For examples of how to assemble selector switches, see A3-82.

3 Position Push/Pull Switches

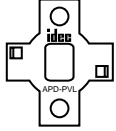
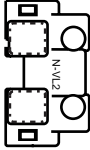
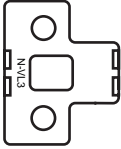

| | Contact | Operator Position | | |
|---------------|------------------|-------------------|--------|------|
| | | Pull | Normal | Push |
| AYLD22 | BST-010 (NO) | 0 | 0 | X |
| | BST-001 (NC) | X | 0 | 0 |
| | BST-010S (NO-EM) | 0 | X | X |
| | BST-001S (NC-LB) | X | X | 0 |

Accessories — TWTD Series

| | | | |
|----------------------|---|--|--|
| Lamp Removal Tool |  | Tool used to install 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 push-buttons. | In place of ①, specify neoprene Rubber Boot color: B (black), G (green), R (red), Y (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 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. 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. Ø 1-13/64" (30mm) | OL-KL1 |
| Replacement Keys |  | Pair of Keys (#0) | TW-SK |

Accessories con't

Part Numbers: Fingersafe Covers for TWTD Series

| Appearance | 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 |

A4

Switches & Pilot Devices



Dimensions on page A4-192.

Nameplates — TWTD Series

Part Numbers: Nameplates

| | | NALD | NAKD | NAQD | HNAV |
|-----------------------------|-------|-------------|-------------|-------------|--------------------------|
| Dimensions | | | | | |
| Description | | Part Number | Part Number | Part Number | Part Number |
| Nameplate (blank) | Black | NALD-B | NAKD-B | NAQD-B | HNAV-0 |
| | Red | NALD-R | NAKD-R | NAQD-R | |
| 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 | 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.

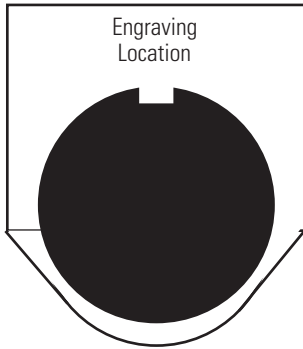
Nameplates Order Form — TWTD Series

Copy this order form and use it to specify Letter Height, Custom Engravings, Location of Engraving on Nameplate, and Quantity Desired. To insure engraving accuracy, fax it to your IDEC representative or Distributor.

| | |
|---------------------|--|
| Your Company: _____ | IDEC Rep/Distributor Contact: _____ |
| Name: _____ | PO number (if known): _____ |
| Telephone: _____ | IDEC Rep/Distributor Phone: _____ |
| Fax & Email _____ | IDEC Rep/Distributor Fax & Email _____ |

A4

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)

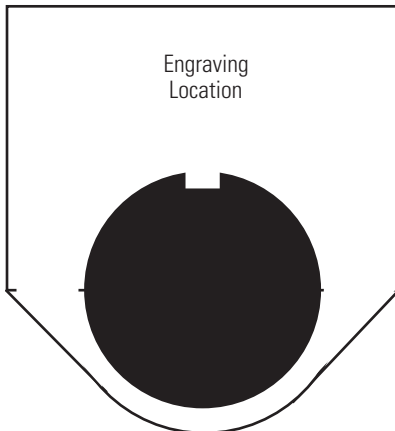
Step 2. Specify Quantity.
Enter the number of nameplates desired in the box on the right.

Qty

12345678910111213141516

Switches & Pilot Devices

NAKD Nameplate



Step 1. 1/8" Letter Size Only Specify Lettering
Write your lettering in box to the right. Maximum 17 characters per line, maximum 4 lines.

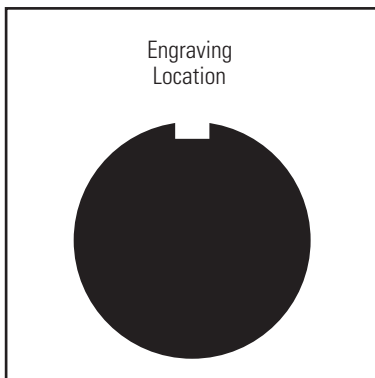
1234567891011121314151617

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

Qty

Sample Letter Size
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)

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

Qty

1234567891011121314151617181920

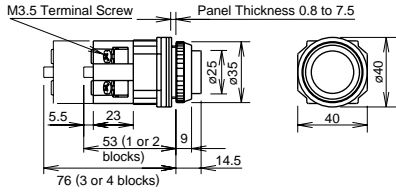
Sample Letter Sizes
7/64" Letters: A B C D
1/8" Letters: A B C D

Dimensions — TWTD Series

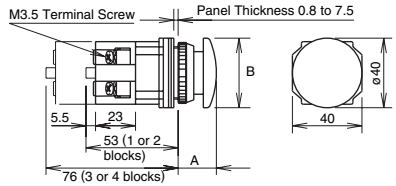
A4

Switches & Pilot Devices

Pushbutton



Mushroom Pushbutton w/Full Shroud

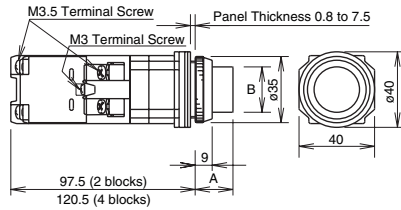


| Pushbuttons | Dimension A | Dimension B |
|--|-----------------------------------|----------------------------------|
| Flush | 0.351" (9mm) | Ø 0.975" (25mm) |
| Extended | 0.566" (14.5mm) | Ø 0.975" (25mm) |
| Extended w/Full Shroud | 0.663" (17mm) | Ø 1.11" (28.5mm) |
| Mushroom | 0.858" (22mm) | 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) **0.975" (25mm) | Ø 1.56" (40mm) Ø 1.56" (40mm) |

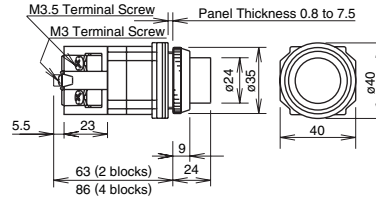
Note: *Dimension when operator is in reset position.
**Dimension when operator is in pull position.

Illuminated Pushbuttons

w/AC Adapter w/Transformer



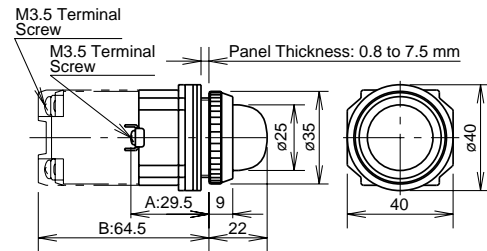
Full Voltage



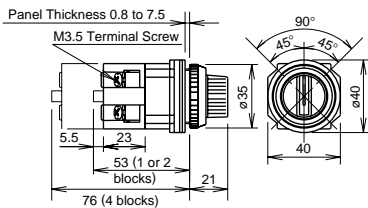
| Illuminated Pushbuttons | Dimension A | Dimension B |
|---|-----------------------------------|------------------------------------|
| Flush w/Full Shroud | 0.975" (25mm) 0.995" (25.5mm) | Ø 0.936" (24mm) Ø 0.936" (24mm) |
| Extended w/Full Shroud | 0.741" (19mm) 0.761" (19.5mm) | Ø 0.936" (24mm) Ø 0.936" (24mm) |
| Ø 1.56" (40mm) Mushroom Pushlock Turn Reset, Push-Pull | *0.975" (25mm) **0.975" (25mm) | Ø 1.56" (40mm) Ø 1.56" (40mm) |

Note: *Dimension when operator is in reset position.
**Dimension when operator is in pull position.

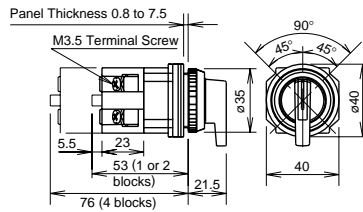
Pilot Lights



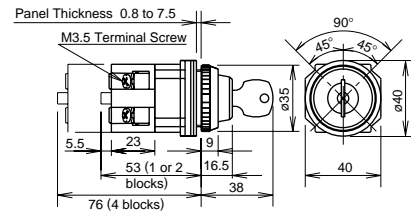
Selector Switches Knob



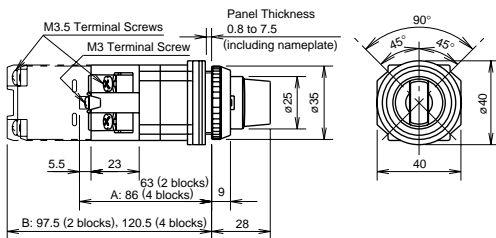
Lever



Key



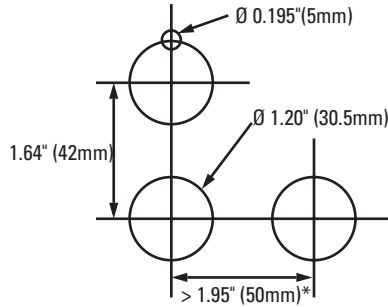
Illuminated Knob



All measurements in mm.

Dimensions — TWTD Series con't

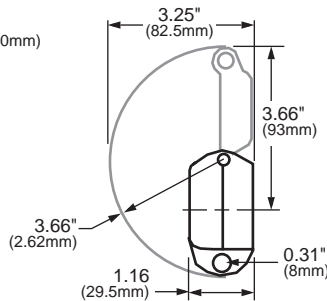
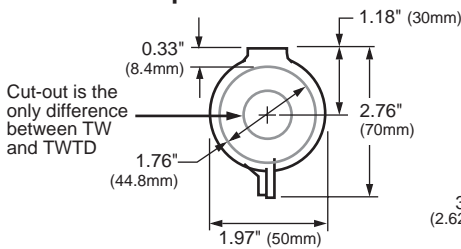
Selector Switches Panel Cut-Out



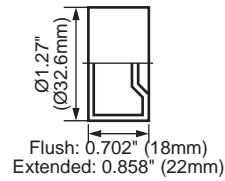
1. *Jumbo Mushroom < 2.61" (66mm)
2. Minimum mounting centers are applicable to switches with one stack of contact blocks. When mounting two stacks of contact blocks, minimum centers should allow for access to wiring.
3. The Ø 0.195" (Ø 5mm) recess is necessary when either the nameplate or anti-rotation ring is used.

Accessory Dimensions

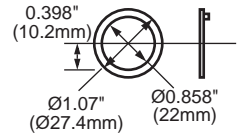
OL-KL1 Lock-Out Adaptor



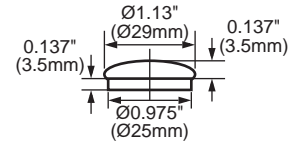
OC-31 Pushbutton Clear Boot



OGL-31 Anti-Rotation Ring

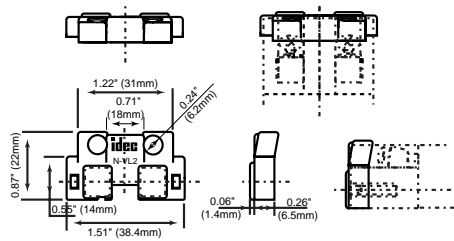


OB-31 Mounting Hole Rubber Plug

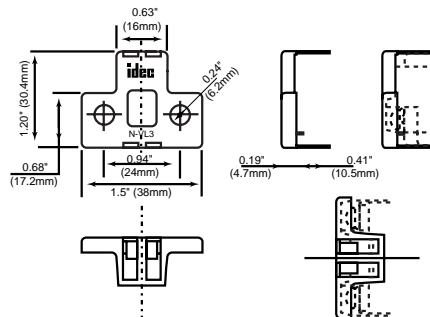


Finger-Safe Cover

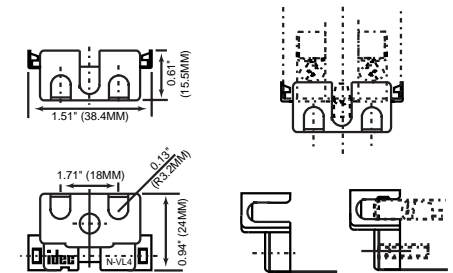
N-VL2



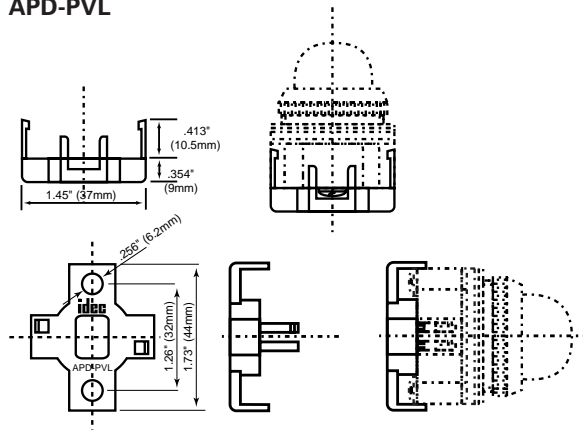
N-VL3



N-VL4



APD-PVL



Instructions — TWTD Series

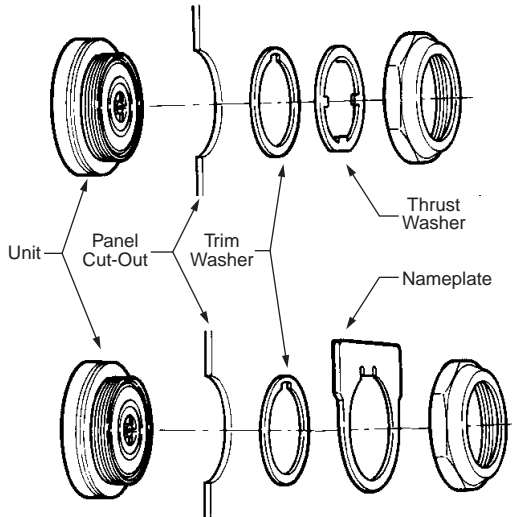
A4

Switches & Pilot Devices

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

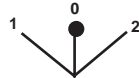
The operator shaft of each unit has a recess to identify in which direction to install the handle. Align the handle with the recess. Press color insert (TW-HC1) into the Standard Operating Positions.

Standard operation positions

2-Position, 90°



3-Position, 45°

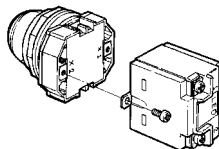


Non-Illuminated 3-Position Operators

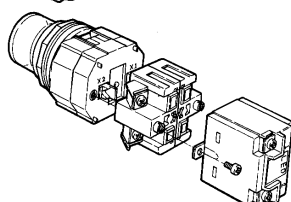


Installation of TWTD Series Units

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 AC power supply to protect against reverse polarity. Use with DC power supply to protect against surges and noise.

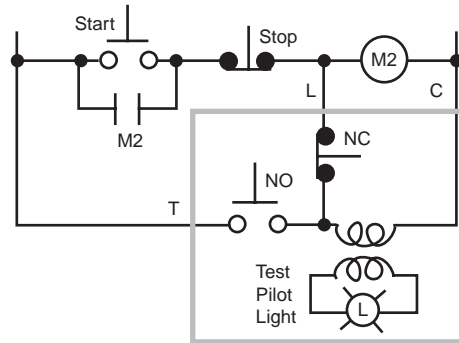


Make sure that LED illuminated units are installed with correct polarity, as indicated at the terminals.

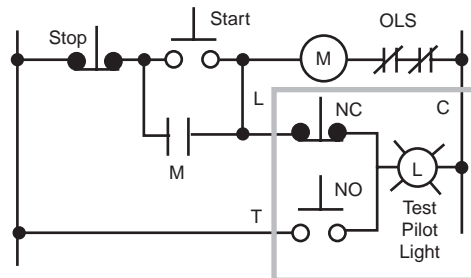
Application Example For Push-To-Test Pilot Light

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



CS Series — Heavy Duty Cam Switches

Key features of the CS Series include:

- 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
- NEMA 4, 13



UL Listed
File No. E68961



CSA Certified
File No. LR48366



A4

Switches & Pilot Devices

| | | | | | | | |
|------------------------|------------------------------|------------------------|---|----------------------|-----------|------------|------------|
| Contact Ratings | Rated Thermal Current | | 10A | | | | |
| | AC | Break Current | 120V/5A | 240V/3A | 480V/2A | 600V/1A | |
| | DC | Resistive | Break Current | 24V/8A | 110V/8A | 220V/1A | 440V/0.45A |
| | | | Break Current | 24V/5A | 110V/1.2A | 220V/0.45A | 440V/0.20A |
| | | Inductive | 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 | Appearance | Cam Angle | Position | Maximum Contacts To Be Mounted | Handle Styles |
| ACSNO | | 30° | Up to 12 | 1 to 10 decks; Up to 20 contacts | YB, SB, PB, FB |
| | | 45° | Up to 8 | | |
| | | 60° | Up to 6 | | |
| | | 90° | Up to 4 | | |
| | | 45° | 2 or 3 | | |
| ACSNK | | 30° | Up to 12 | 1 to 10 decks; Up to 20 contacts | HB or standard key |
| | | 45° | Up to 8 | | |
| | | 60° | Up to 6 | | |
| | | 90° | Up to 4 | | |
| | | 45° | 2 or 3 | | |
| UCSQO | | 30° | Up to 12 | 1 to 10 decks; Up to 20 contacts | YB, SB, PB, FB |
| | | 45° | Up to 8 | | |
| | | 60° | Up to 6 | | |
| | | 90° | Up to 4 | | |
| | | 45° | 2 or 3 | | |
| UCSQM | | 45° Spring return | Only 3 | 1 to 3 decks; Up to 6 contacts | YB, SB, PB, FB |



1. It is recommended to use spring return (SR) for a maximum of six contacts.
2. Two identical keys come with ACSNK unit. Specify "H" for handle key option.
3. For handle styles, see page A4-200.

CS Series – Heavy Duty Cam Switches

A4

Switches & Pilot Devices



Assembled Oiltight Cam Switches
ACSNO – 3 6 6 – () S B – C3013

Series

- ACSNO = Standard Cam Switch (30mm)
- ACSNK = Key Cam Switch (30mm)
- UCSQO = Cam Switch (5 hole mounting)
- UCSQM = 3 Position Spring Return Cam Switch (5 hole mounting)

Number of Levels (Decks)

1 through 10
Note: One level contains two independent contacts.*

Number of Positions

2 through 12

Angle

- 3 = 30° (12 position max)
- 4 = 45° (8 position max)
- 6 = 60° (6 position max)
- 9 = 90° (4 position max)

Contact Arrangement

1. For standard contact arrangements, use designations on pages A4-197 and A4-198.
2. For custom contact arrangements, omit contact arrangement designation and complete the blank order form on the next page.

Handle

- YB** = Knob, Small
- SB** = Lever, Small
- PB** = Lever, Large
- FB** = Knob, Large
- HB** = Handle Key (ACSNK only)
- Blank** = Standard Key (ACSNK only)

Spring Return Action

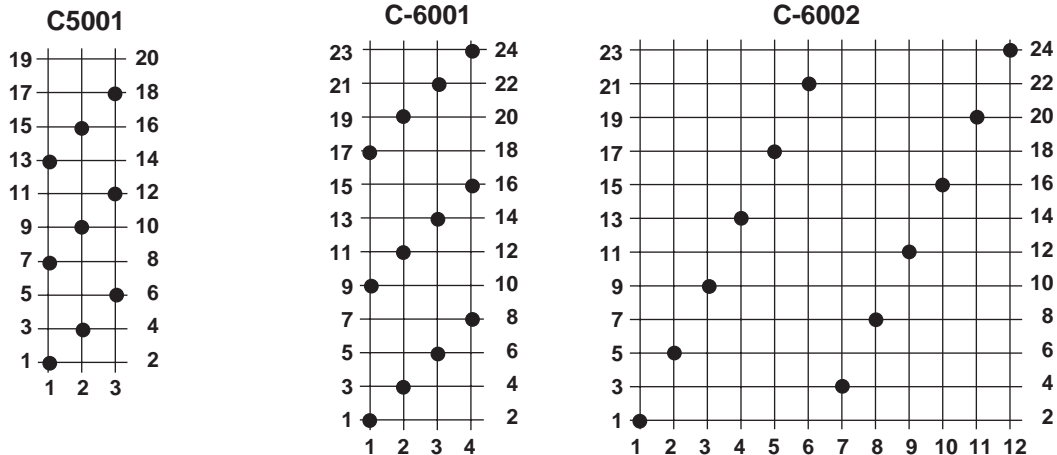
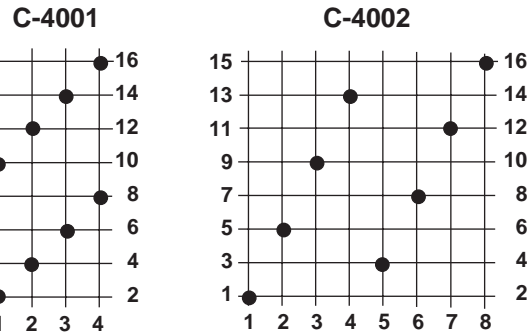
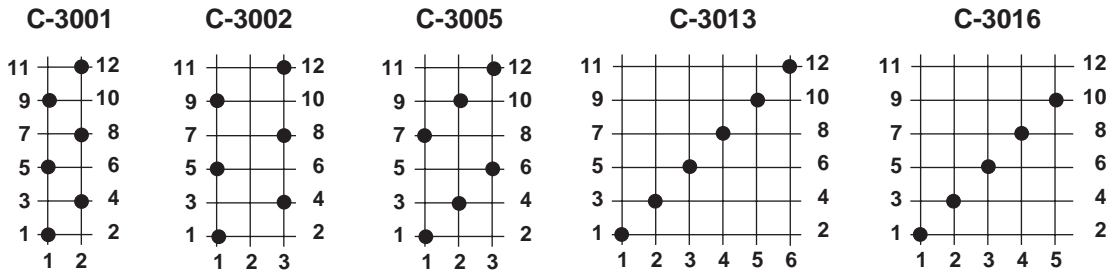
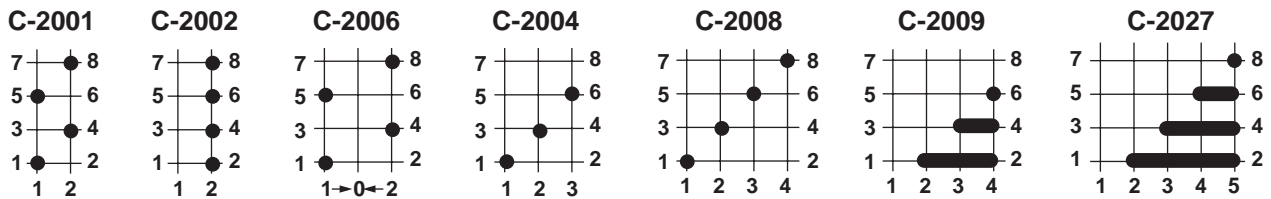
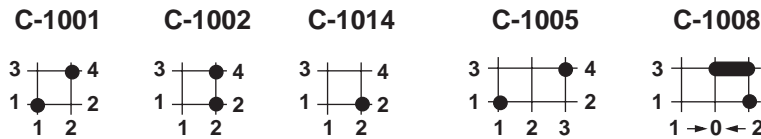
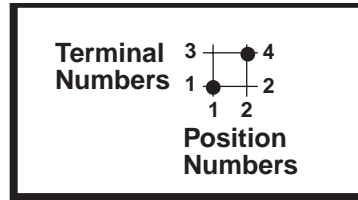
- Blank: Maintained
- RO** = Spring return from left (2, 3 or 4 position, 45° only)
- OR** = Spring return from right (2, 3 or 4 position, 45° only)
- RR** = Return from right and left (3 pos, 45° only)



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. Contact IDEC for details.
4. Key removable in every 45° position (45, 90, 180, 225, 270, 315, 360).

Contact Arrangements

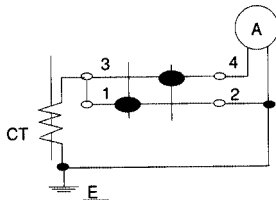
Standard Arrangements



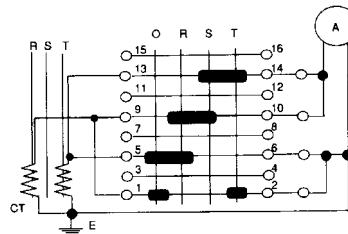
Contact Arrangements con't

Ammeter Switching

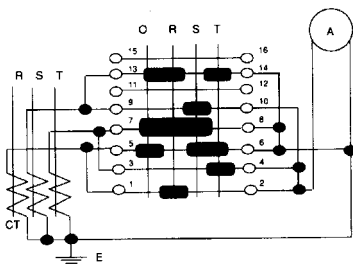
C-1012



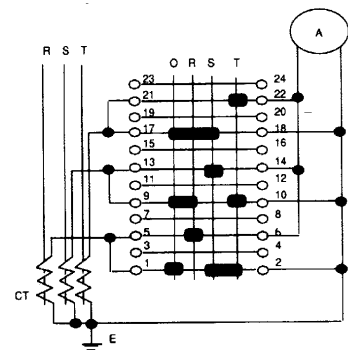
C-4007



C-4003

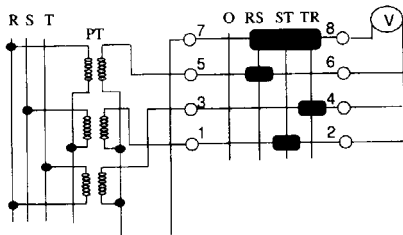


C-6003

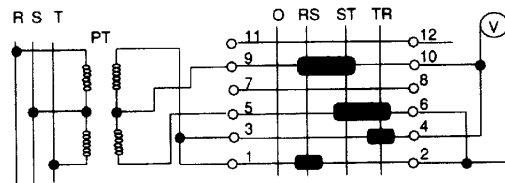


Voltmeter Switching

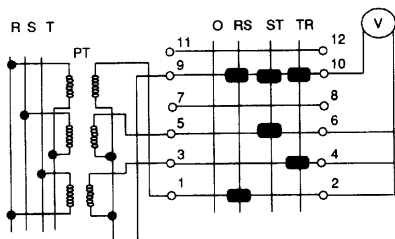
C-2022



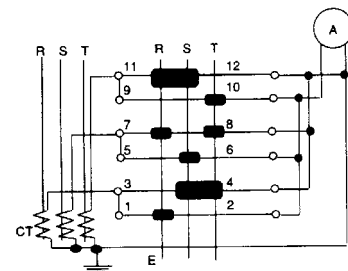
C-3008



C-3009

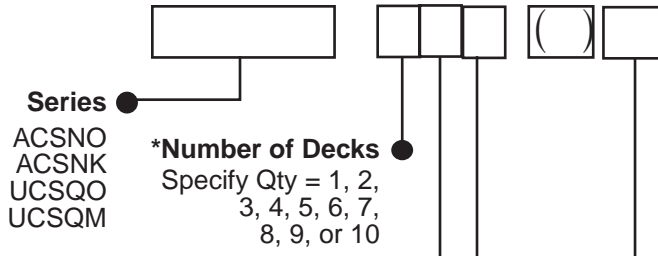


C-3007



A4
Switches & Pilot Devices

Order Form (Custom Contact Arrangement)



Series
 ACSNO
 ACSNK
 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 | 30° only | 9, 10, 11, 12 |
| | 30° or 45° only | 7 or 8 |
| ACSNK* | 30°, 45° or 60° | 5 or 6 |
| UCSQO | 30°, 45°, 60°, 90° | 2, 3, or 4 |
| | 45° only | 3 only |

* ACSNK keys only remove at 45°.



Spring Return

Blank = Maintained
 RO = Spring return from left
 (3 or 4 position, 45° only)
 OR = Spring return from right
 (3 or 4 position, 45° only)
 RR = Return from right and left
 (3 position, 45° only)

UCSQM is available in spring-return version only.

ACSNO, UCSQO, UCSQM:

YB = Knob, Small
 SB = Lever, Small
 PB = Lever, Large
 FB = Knob, Large

ACSNK:

HB = Handle Key (option)
 Blank = Standard Key



For handle styles, see page A4-200.

Contact Arrangement Table

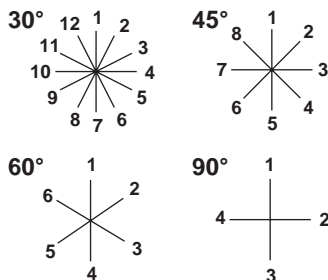
| Cams | Terminal No. | Position | | | | | | | | | | | |
|---------|--------------|----------|---|---|---|---|---|---|---|---|----|----|----|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Deck 1 | 1 and 2 | | | | | | | | | | | | |
| | 3 and 4 | | | | | | | | | | | | |
| Deck 2 | 5 and 6 | | | | | | | | | | | | |
| | 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~~ = 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.

- 7 _____
- 8 _____
- 9 _____
- 10 _____
- 11 _____
- 12 _____

Accessories — CS Series




Replacement Handles


A4

Switches & Pilot Devices



| | | | | | |
|--------------------------|---|---|---|---|---|
| |  |  |  |  |  |
| 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 |

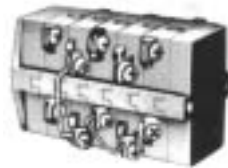
Replacement Nameplates

| | | | |
|---|---|---|---|
| Size & Shape □ 2.52" (64mm) Black Aluminum |  |  |  |
| Part Number | CQ | CQM | CQN |
| Applicable Models | UCSQO | UCSQM | ACSNO, ACSNK |


-  1. Extra cost for engraving, 3/16" min. letter height. For legends with more than ten characters, consult IDEC.
2. Blank nameplates are supplied with all cam switches (they need not be ordered separately).

Wiring Clips

| Part Number | Contact Block Jumpers |
|---|-----------------------|
| CJ-1  | Between cams |
| CJ-2  | Same cam |

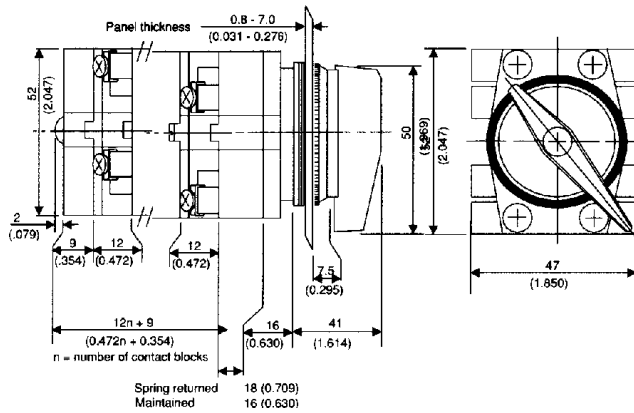


Replacement Keys

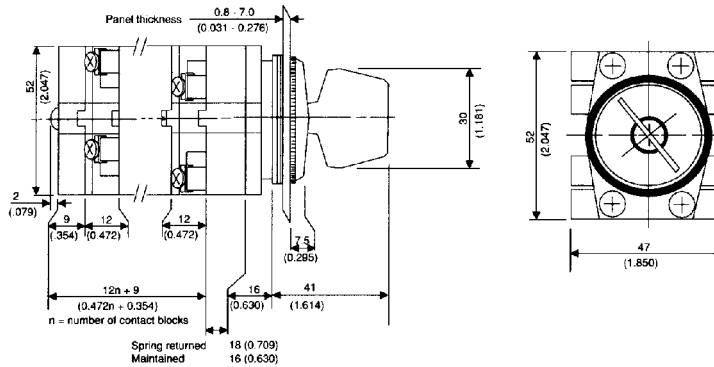
| | |
|---|---------------------|
| Part Number | |
| K301  | Pair of keys (#301) |

Dimensions/Terminal Arrangements/Mounting Holes

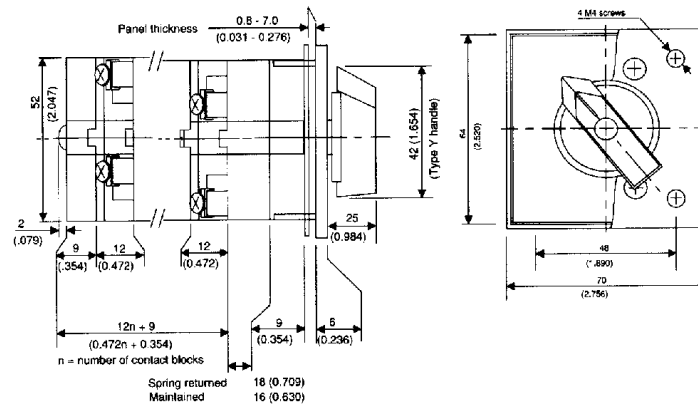
ACSNO



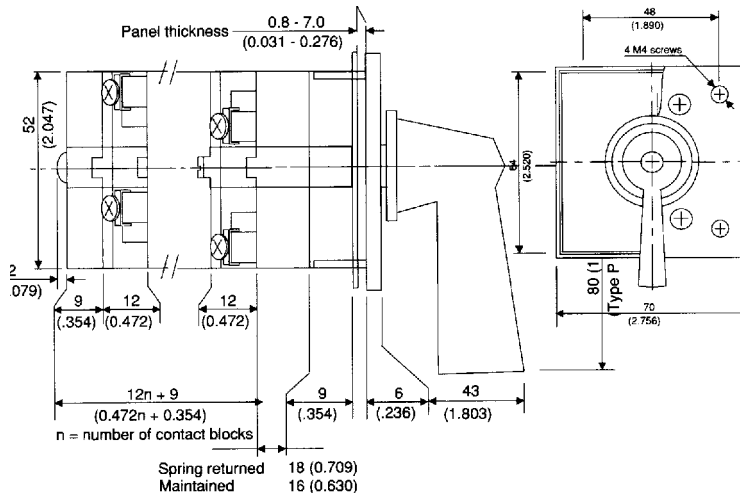
ACS NK



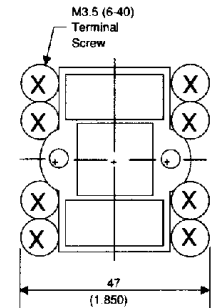
UCSQO



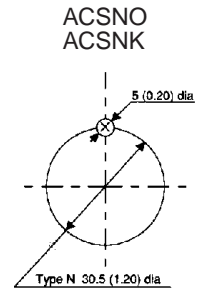
UCSQM



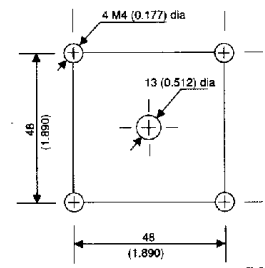
Terminal Arrangement



Mounting Holes



UCSQO
UCSQM



ARN Series — Mono-Lever Switches

**Mono-Lever Switches Ø 1-13/64" (30mm)
Contact Blocks Rated for 600V, 10A**

A4 Switches & Pilot Devices

Key features of the ARN Series include:

- Available in 2-, 3-, and 4-positions.
- Maintained and spring-return modes available.
- Models available with interlock mechanism to prevent inadvertent actuation.



| | | | |
|-----------------------|------------------------------|---------------------------------|---|
| 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 600VAC: 1A |
| | | Insulation Voltage | 600V AC/DC |
| | | Rated Thermal Current | 10A |
| | | Electrical Life | Over 500,000 operations |

Part Numbering Guide (Assembled)

Part Numbering Guide: Assembled Mono-Levers

Example: Part Number ARN4-1012-10.00.02.11-B

ARN **4** - **1012** - **10.00.02.11**




- ① Type ② No. of Contact Blocks ③ Lever Action ④ Contact Arrangement

| | Description | Code | Remarks | | |
|-------------------------|-----------------------|------------------|---|---|--|
| ① Type | Standard Lever | ARN | Interlocking lever prevents inadvertent operation. | | |
| | Short Lever | ARNS | | | |
| | Interlocking Lever | ARNL | | | |
| ② No. of Contact Blocks | — | 1 2 3 4 | Each contact block contains two independent contacts. | | |
| | ③ Lever Action | Blocked | | 0 | Specify in this order: 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: Up.Right.Down.Left | | |
| | 1 NO contact | 10 | | | |
| | 1 NC contact | 01 | | | |
| | 1 NO and 1 NC contact | 11 | | | |
| | 2 NO contacts | 20 | | | |

Mono-Lever Switches (Sub-Assembled)



Part Numbers: Standard Mono-Lever Operators

| Operator Type | Lever Operation Mode | Part Number |
|--|--|--|
|  | 2-Position manual return 3-Position manual return 4-Position manual return | ARN0-1010-B ARN0-1110-B ARN0-1111-B |
| | 2-Position spring return 3-Position spring return 4-Position spring return | ARN0-2020-B ARN0-2220-B ARN0-2222-B |
|  | 2-Position manual return 3-Position manual return 4-Position manual return | ARNS0-1010-B ARNS0-1110-B ARNS0-1111-B |
| | 2-Position spring return 3-Position spring return 4-Position spring return | ARNS0-2020-B ARNS0-2220-B ARNS0-2222-B |
|  | 2-Position manual return 3-Position manual return 4-Position manual return | ARNL0-1010-B ARNL0-1110-B ARNL0-1111-B |
| | 2-Position spring return 3-Position spring return 4-Position spring return | ARNL0-2020-B ARNL0-2220-B ARNL0-2222-B |



Part Numbers: Contact Blocks

| Contact Arrangement | Part Number |
|------------------------|-------------|
| 2NO contacts | BR-1E |
| 1NO & 1NC contact | BR-2E |
| 2NC contacts | BR-3E |
| 1NO early make contact | 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.

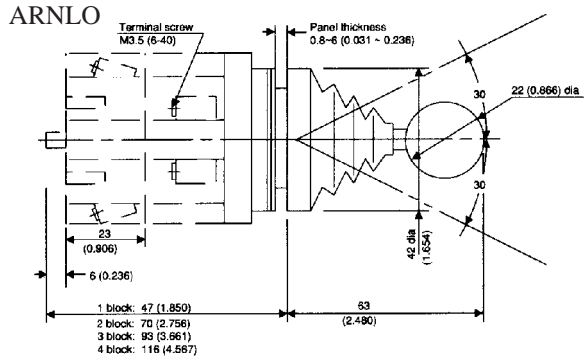
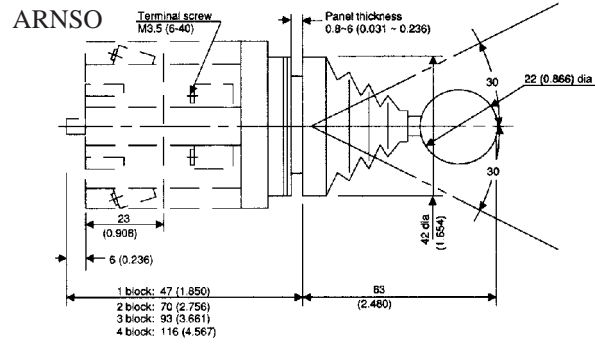
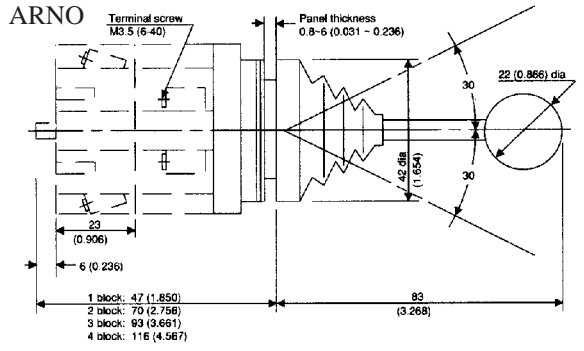
Replacement Parts

| Item | Part Number |
|---|---|
|  | ARN0, ARNS0 (standard & short lever) ARN-BL |
| | ARNL0 (Interlocking) ARNL-BL (comes in 2 pieces) |
|  | All Models Knob (ball) ARNB-B |

Dimensions — ARN Series

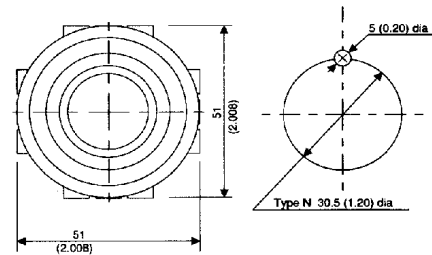
A4

Switches & Pilot Devices



Mounting Hole

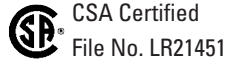
ARNO
ARNSO
ARNLO



A8 Series — Miniature Switches and Pilot Devices: 8mm

Key features of the 21/64" (8mm) A8 series Switches and Pilot Devices include:

- 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



A5

Switches & Pilot Devices




| | | | | | |
|------------------------|------------------------------|--|-------------|-------------|------|
| 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 (500V DC megger) | | | |
| | Vibration Resistance | 5 to 55Hz, 0.75mm amplitude | | | |
| | Shock Resistance | Damage limits: 500m/sec ² (approx. 50G) Operating extremes: 200m/sec ² (approx. 20G) | | | |
| | Electrical Life | 100,000 operations minimum | | | |
| | Mechanical Life | Maintained: 100,000 (1200 operations/hour) Momentary: 200,000 minimum | | | |
| Contact Ratings | 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. Illumination Unit: 2,000V AC, 1 min. between live part/ground | | | |
| | Operating Voltage | 24V | 120V | 240V | |
| | AC | 50/60Hz | Resistive | — | 1.0A |
| 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)

Part Numbers: 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 |

A5

Switches & Pilot Devices






1. In place of ①, specify button color code from the table below.
2. For accessories, see page A5-208.
3. For dimensions, see page A5-209.

① Button Color Code

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

AL8 Illuminated Pushbuttons and Pilot Lights (Assembled)

Part Numbers: LED Illuminated Pushbuttons and Pilot Lights

| Style | Contact | Pushbutton Part Number | | Pilot Light 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 Lens/LED Color Code

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



- In place of ②, specify lens color code from table on the right.
- A replaceable LED lamp is included with the operator.
- Because the LED lamp does not contain an internal current limiting resistor, an external resistor must be added. For recommended values, see table below.
- For accessories, see page A5-208.
- For dimensions, see page A5-209.

Part Numbers: 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 |



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

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 |

LED Lamp Ratings

| LED Specifications | LED Lamp | Forward Current I _f | Forward Voltage (Nominal) V _f | Reverse Voltage V _r | Operating Voltage & External Current Limiting Resistor (Recommended Value) |
|--------------------|----------|--------------------------------|--|--------------------------------|--|
| | Amber | 20mA | 2.2V | 4V | 5V DC: 150Ω, 1/2w |
| | Green | 20mA | 2.1V | 4V | 6V DC: 200Ω, 1/2w |
| | Red | 20mA | 1.7V | 4V | 12V DC: 510Ω, 3/4w |
| | Yellow | 20mA | 2.2V | 4V | 24V DC: 1.1kΩ, 3/4w |



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 — A8 Series: 21/64" (8mm)

A5
Switches & Pilot Devices

| 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 | All units | MT-004 | |
|  Lens Removal Tool | Made of metal. Used for removing lens or button from the housing | Illuminated pushbuttons and pilot lights | MT-101 | |
|  Lamp Holder Tool | Made of rubber. Used for removing and replacing LED lamps in illuminated units | Illuminated pushbuttons and pilot lights | OR-66 | |
|  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 | |
|  Terminal Cover | Made of translucent nylon. Fits over and shields the terminals | All units | AL-V8 | |
|  Adaptor Socket | 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 | |
|  Mounting Hole Plug | Made of rubber. Fills unused mounting holes to provide IP65 protection | Extra panel cutouts | AL-B8 | |
|  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) | |
|  Replacement Engraving Inserts | | Illuminated pushbuttons & pilot lights | Round | AL8M-W |
| | | | Square | AL8Q-W |
| | | | Rectangular | AL8H-W |
|  Replacement Lenses | | Illuminated pushbuttons & pilot lights | Round | AL8M-LK1-② |
| | | | Square | AL8Q-LK1-② |
| | | | Rectangular | AL8H-LK1-② |
|  Replacement Buttons | | Non-Illuminated buttons | Round | AB8M-BK1-① |
| | | | Square | AB8Q-BK1-① |
| | | | Rectangular | AB8H-BK1-① |



- In place of ①, specify Button Color Code from the table on the right.
- In place of ②, specify Lens/LED Color Code from table on the right.

① **Button Color Code**

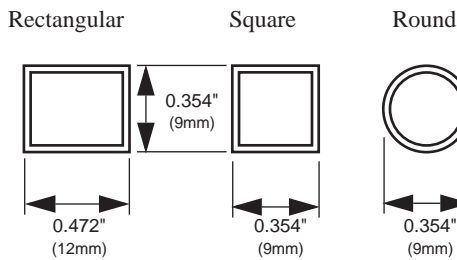
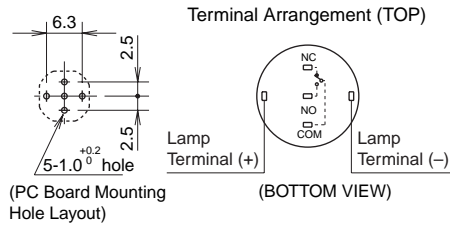
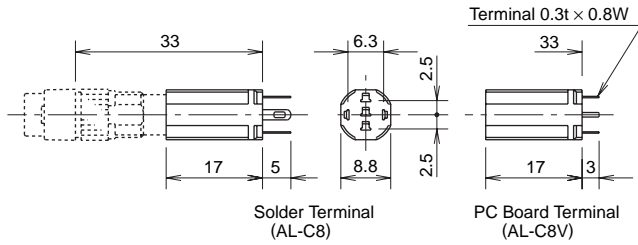
| Color | Code | Color | Code |
|-------|------|--------|------|
| Black | B | Blue | S |
| Green | G | White | W |
| Red | R | Yellow | Y |

② **Lens/LED Color Code**

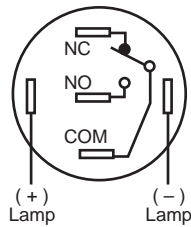
| Color | Code |
|--------|------|
| Amber | A |
| Green | G |
| Red | R |
| White | W |
| Yellow | Y |

Dimensions — A8 Series: 21/64" (8mm)

AΔ8 Pushbuttons

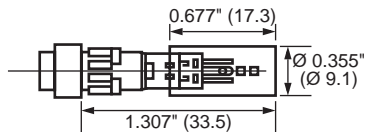


Terminal Arrangement (Bottom View)



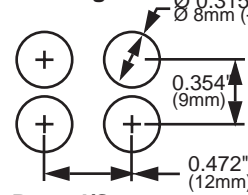
Terminal Cover

AL-V8, ø 21/64" (8mm)

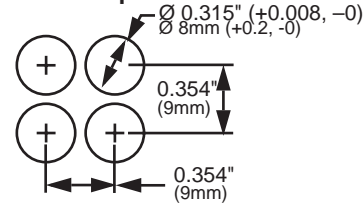


Panel Cut-Out (not drawn to scale)

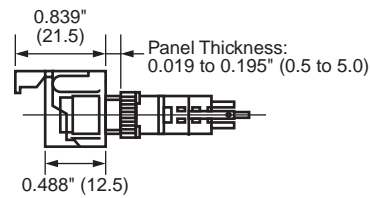
Rectangular



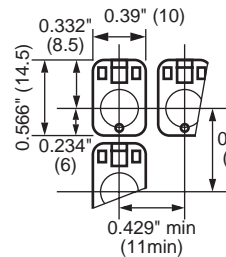
Round/Square



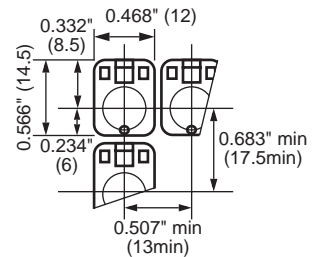
Switch Guard, ø 21/64" (8mm)



AL-K8, ø 21/64" (8mm) Round and Square

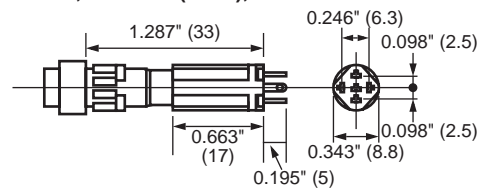


AL-KH8, ø 21/64" (8mm) Rectangular

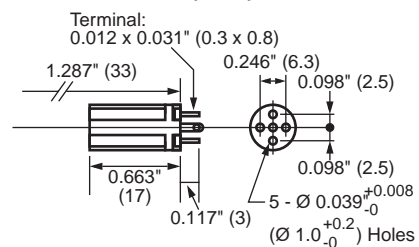


Terminal Sockets

AL-C8, ø 21/64" (8mm), Solder



AL-C8V, ø 21/64" (8mm), PCB



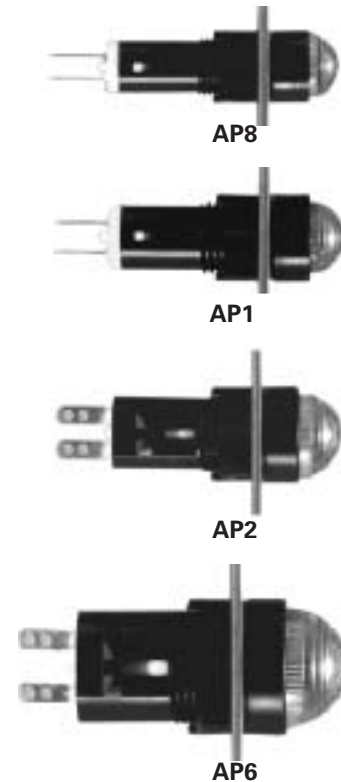
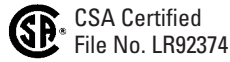
PC Board Drilling Layout Bottom View

AP Series — Miniature Pilot Lights

Miniature Pilot Lights with Super Bright LEDs

Key features of AP series include:

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



Switches & Pilot Devices

A5

| | | |
|-----------------------|-------------------------------|--|
| Specifications | Lamp | Built-in LED with current limiting resistor |
| | Operational Voltage | 6, 12, 24VDC (full voltage), 110/120, 220/240VAC, (transformer) 110VDC (with converter) |
| | Current Ratings | AP8: 6VDC/18mA, 12VDC/18mA, 24VDC/12mA AP1: 6VDC/18mA, 12VDC/18mA, 24VDC/12mA AP2: 6VDC/33mA, 12VDC/22mA, 24VDC/11mA AP6: 6VDC/33mA, 12VDC/22mA, 24VDC/11mA |
| | Operating Temp. | -20°C to +55°C |
| | Operating Humidity | 45 to 85% RH |
| | Insul. Resistance | 100MΩ min. (500V DC megger) Between live and dead parts |
| | Rev. Withstand Voltage | AP2/AP6: 100V AP1/AP8: 200V |
| | Solder Terminal | Soldering 260°C maximum (5 sec.) |
| | Degree of Protection | AP8: IP40 (dustproof) Other Series: IP65 (oiltight) |





| Optional Adaptors/Converters | | AC Adaptor | DC-DC Converter |
|-------------------------------------|------------------------------|--|--|
| | Applicable Units | AP2 & AP6 (with 6V LED only) | |
| | Operating Voltage | 110/120VAC 50/60 Hz 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 2,000V AC, 1 minute Between terminals | 2,000V AC, 1 minute Between live/dead parts 1,500V AC, 1 minute Between terminals |



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


Miniature Pilot Lights (Assembled)

Part Numbers: AP Miniature Pilot Lights


| Appearance | Lens Style | Operating Voltage | Part Numbers |
|--|------------|--|-------------------------------------|
| AP8 Series - ø 8mm  | Dome | 6V DC +/- 5% 12V DC +/- 10% 24V DC +/- 10% | AP8M266-② AP8M211-② AP8M222-② |
| | Flat | 6V DC +/- 5% 12V DC +/- 10% 24V DC +/- 10% | AP8M166-② AP8M111-② AP8M122-② |
| AP1 Series - ø 10mm  | Dome | 6V DC +/- 5% 12V DC +/- 10% 24V DC +/- 10% | AP1M266-② AP1M211-② AP1M222-② |
| | Flat | 6V DC +/- 5% 12V DC +/- 10% 24V DC +/- 10% | AP1M166-② AP1M111-② AP1M122-② |
| AP2 Series - ø 12mm  | Dome | 6V DC +/- 5% 12V DC +/- 10% 24V DC +/- 10% | AP2M266-② AP2M211-② AP2M222-② |
| | Flat | 6V DC +/- 5% 12V DC +/- 10% 24V DC +/- 10% | AP2M166-② AP2M111-② AP2M122-② |
| AP6 Series - ø 16mm  | Dome | 6V DC +/- 5% 12V DC +/- 10% 24V DC +/- 10% | AP6M266-② AP6M211-② AP6M222-② |
| | Flat | 6V DC +/- 5% 12V DC +/- 10% 24V DC +/- 10% | AP6M166-② AP6M111-② AP6M122-② |


② Color Code

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

-  1. In place of ②, specify the color code.
2. For dimensions, see page A5-212
3. For accessories, see page A5-212.

Part Numbers: Optional AC Adaptors and DC-DC Converters (for AP2 and AP6 only)





| Appearance | Style | Voltage | Part Numbers | |
|---|-----------------|----------------------------|------------------------|------------------------|
| | | | Used with AP2 Series | Used with AP6 Series |
|  Secondary Voltage = 6V | AC Adaptor | 110/120V AC 220/240V AC | AP2-0126D AP2-0246D | AP6-0126D AP6-0246D |
| | DC-DC Converter | 110V DC (90-140V DC) | AP2-016DD | AP6-016DD |


-  1. Optional AC adaptors and DC-DC converters snap onto the back of AP2 or AP6 pilot lights.
2. AC Adaptors and DC-DC Converters step down to 6V.
3. For dimensions, see page A5-213.

Accessories — AP Series

A5

Switches & Pilot Devices

| 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 | | AP2 & AP6 snap on transformer & 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 |
| Replacement Engraving Inserts  | Allow legends under flat lenses (included with all flat lens models). | AP1M Flat | AP1M-P1-W |
| | | AP2M Flat | AP2M-P1-W |
| | | AP6M Flat | AP6M-P1-W |

 In place of ②, specify the Lens Color Code.

② Lens Color Code

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

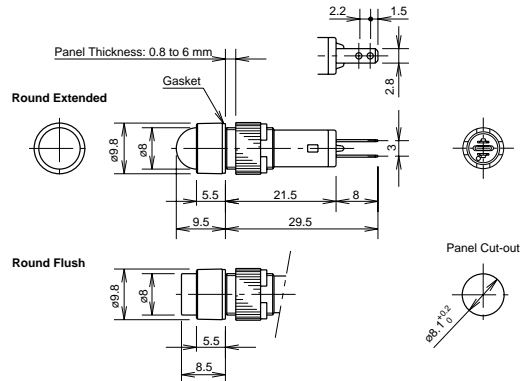
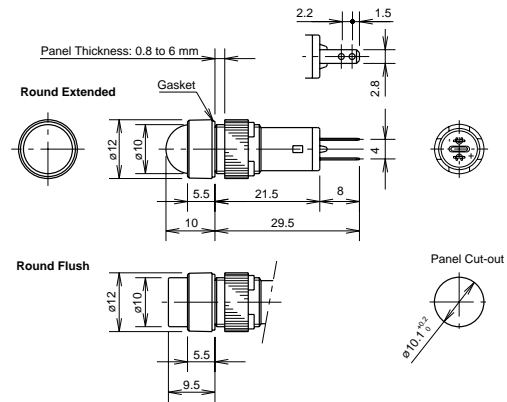
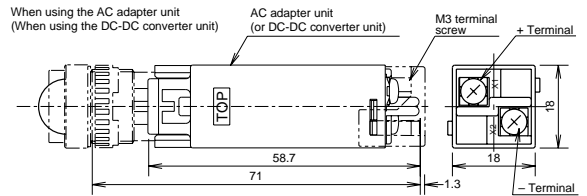
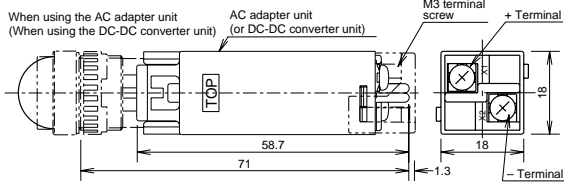
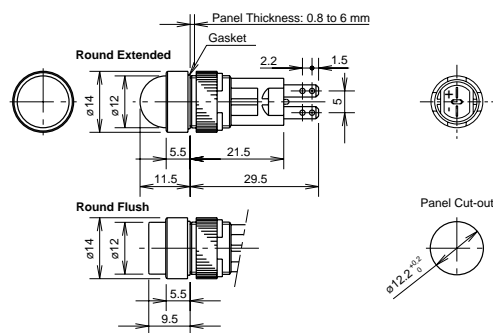
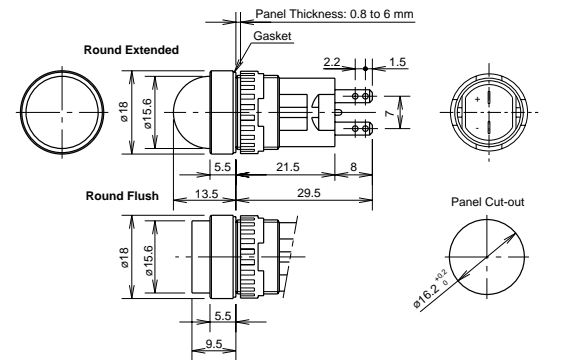
Dimensions — AP Series

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) 8.1mm (+0.3, -0) | | Ø 0.398" (+0.0118, -0) 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) |

A5

Switches & Pilot Devices



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