

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

|                                                          |                                                                                   |                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                              |     |     |                      |      |      |      |
|----------------------------------------------------------|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|-----|-----|----------------------|------|------|------|
| Specifications                                           | Conforming to Standards                                                           |                                                                                                                      | EN60947-1, EN60947-5-1, VDE0660-200, UL508, CSA C22-2 No.14                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                              |     |     |                      |      |      |      |
|                                                          | Approvals                                                                         |                                                                                                                      | <div><div><br/>File No. E68961</div><div><br/>File No. LR92374</div><div><br/>Certificate No. 2005010305145656</div></div> <div><br/>TÜV Rheinland<br/>Registration No. R9551089 (E-stops)<br/>Registration No. J9551458 (all other switches)<br/>Registration No. J9650511 (Pilot Lights)</div> <div></div> <div><b>CSA:</b> pushbuttons and selector switches: A600<br/>pilot lights and illuminated pushbuttons, direct supply<br/>pilot lights and illuminated pushbuttons with integral transformer (100/110, 115, 120, 200/220, 230, 240, 380, 400/440, 480V)<br/><b>UL:</b> pushbuttons and selector switches: A600<br/>pilot lights and illuminated pushbuttons, direct supply<br/>pilot lights and illuminated pushbuttons with integral transformer (100/110, 115, 120, 200/220, 230, 240, 380, 400/440, 480V)<br/><b>TÜV:</b> pushbuttons and selector switches: A600=P600 (NO, NC)/Q600 (NO-EM, NC-LB)<br/>pilot lights and illuminated pushbuttons, direct supply<br/>pilot lights and illuminated pushbuttons with integral transformer (100/110, 115, 120, 200/220, 230, 240, 380, 400/440, 480V)</div> |                              |     |     |                      |      |      |      |
|                                                          | Operating Temperature                                                             |                                                                                                                      | Operation: -25 to +50°C (without freezing), Storage: -40 to +70°C (without freezing)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                              |     |     |                      |      |      |      |
|                                                          | Vibration Resistance                                                              |                                                                                                                      | 10 to 55Hz, 98m/sec <sup>2</sup> (10G) conforming to IEC6068-2-6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                              |     |     |                      |      |      |      |
|                                                          | Shock Resistance                                                                  |                                                                                                                      | 980m/sec <sup>2</sup> (100G) conforming to IEC6068-2-7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                              |     |     |                      |      |      |      |
|                                                          | Electric Shock Protection                                                         |                                                                                                                      | Class 0 conforming to IEC60536                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                              |     |     |                      |      |      |      |
|                                                          | Degree of Protection<br>(conforming to IEC60529)<br>(conforming to NEMA ICS6-110) |                                                                                                                      | IP65 (from front of the panel)<br>IP20 (Type HW-F contact block)<br>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)<br>DC-13: P600 or Ue = 125V, Ie = 1.1A (NO, NC)<br>DC-13: Q600 or Ue = 125V, Ie = 0.9A (NO-EM, NC-LB)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                              |     |     |                      |      |      |      |
|                                                          | Rated Insulation Voltage                                                          |                                                                                                                      | 600V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                              |     |     |                      |      |      |      |
|                                                          | Rated Switching Over-Voltage                                                      |                                                                                                                      | Less than 4kV, conforming to IEC60947-1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                              |     |     |                      |      |      |      |
|                                                          | Rated Impulse Withstanding Voltage                                                |                                                                                                                      | 4kV for contact circuit, 2.5kV for lamp circuit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                              |     |     |                      |      |      |      |
|                                                          | Rated Thermal Current                                                             |                                                                                                                      | 10 Amp                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                              |     |     |                      |      |      |      |
|                                                          | Minimum Switching Capacity                                                        |                                                                                                                      | 5 mA at 3V AC/DC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                              |     |     |                      |      |      |      |
|                                                          | Contact Operation                                                                 |                                                                                                                      | Slow break NC or NO, self-cleaning                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                              |     |     |                      |      |      |      |
|                                                          | Positive Action Operation<br>(Emergency Stops with NC contacts)                   |                                                                                                                      | 5.5mm to 10mm travel to latch<br>45N minimum force to latch<br>10mm maximum travel<br>1,800 operations per hour maximum for a Pushlock Turn Reset<br>900 operations per hour maximum for a Push-Pull                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                              |     |     |                      |      |      |      |
|                                                          | Operating Force                                                                   |                                                                                                                      | Flush and extended pushbuttons—with 1NO or 1NC contact: 6.2±2N (momentary), 7.0±2N (main-<br>tained)<br>Additional contacts—1NO or 1NC: +3.2N (momentary), + 3.3N (maintained)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                              |     |     |                      |      |      |      |
|                                                          | Terminal Referencing                                                              |                                                                                                                      | Conforming to CENELEC EN50005                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                              |     |     |                      |      |      |      |
|                                                          | Recommended Terminal Torque                                                       |                                                                                                                      | 0.8 N m (7.1 in lb.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                              |     |     |                      |      |      |      |
|                                                          | External Short-Circuit Protection                                                 |                                                                                                                      | 10A 250V fuse conforming to IEC60269-1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                              |     |     |                      |      |      |      |
|                                                          | Applicable Wire Size                                                              |                                                                                                                      | Minimum 1 x 22 AWG, max. 2 x 14 AWG or 1 x 12 AWG                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                              |     |     |                      |      |      |      |
|                                                          | Contact Resistance                                                                |                                                                                                                      | Initial contact resistance of 50mΩ or less                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                              |     |     |                      |      |      |      |
|                                                          | Contact Gap                                                                       |                                                                                                                      | 4mm (NO and NC), 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<br>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<br>Illuminated Pushbuttons<br>Selector Switches<br>Illuminated Selector Switches<br>Pushbutton Selectors |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Contact Block                |     |     | Type HW-C/HW-F /HW-G |      |      |      |
| Rated Insulation Voltage                                 |                                                                                   |                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 600V                         |     |     |                      |      |      |      |
| Rated Continuous Current                                 |                                                                                   |                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 10A                          |     |     |                      |      |      |      |
| Contact Ratings by Utilization Category<br>IEC 60947-5-1 |                                                                                   |                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | AC-15 (A600)<br>DC-13 (P600) |     |     |                      |      |      |      |
| Characteristics                                          | 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 | —    |



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                                                                                   |
| <b>Round Flush</b><br>                | 1NO<br>1NC<br>1NO-1NC<br>2NO<br>2NC<br>2NO-2NC | HW1B-M1F10-①<br>HW1B-M1F01-①<br>HW1B-M1F11-①<br>HW1B-M1F20-①<br>HW1B-M1F02-①<br>HW1B-M1F22-①       | HW1B-A1F10-①<br>HW1B-A1F01-①<br>HW1B-A1F11-①<br>HW1B-A1F20-①<br>HW1B-A1F02-①<br>HW1B-A1F22-① | HW4B-M1F10-①<br>HW4B-M1F01-①<br>HW4B-M1F11-①<br>HW4B-M1F20-①<br>HW4B-M1F02-①<br>HW4B-M1F22-① | HW4B-A1F10-①<br>HW4B-A1F01-①<br>HW4B-A1F11-①<br>HW4B-A1F20-①<br>HW4B-A1F02-①<br>HW4B-A1F22-① |
| <b>Round Extended</b><br>             | 1NO<br>1NC<br>1NO-1NC<br>2NO<br>2NC<br>2NO-2NC | HW1B-M2F10-①<br>HW1B-M2F01-①<br>HW1B-M2F11-①<br>HW1B-M2F20-①<br>HW1B-M2F02-①<br>HW1B-M2F22-①       | HW1B-A2F10-①<br>HW1B-A2F01-①<br>HW1B-A2F11-①<br>HW1B-A2F20-①<br>HW1B-A2F02-①<br>HW1B-A2F22-① | HW4B-M2F10-①<br>HW4B-M2F01-①<br>HW4B-M2F11-①<br>HW4B-M2F20-①<br>HW4B-M2F02-①<br>HW4B-M2F22-① | HW4B-A2F10-①<br>HW4B-A2F01-①<br>HW4B-A2F11-①<br>HW4B-A2F20-①<br>HW4B-A2F02-①<br>HW4B-A2F22-① |
| <b>29mm Mushroom Head</b><br>        | 1NO<br>1NC<br>1NO-1NC<br>2NO<br>2NC<br>2NO-2NC | HW1B-M3F10-①<br>HW1B-M3F01-①<br>HW1B-M3F11-①<br>HW1B-M3F20-①<br>HW1B-M3F02-①<br>HW1B-M3F22-①       | HW1B-A3F10-①<br>HW1B-A3F01-①<br>HW1B-A3F11-①<br>HW1B-A3F20-①<br>HW1B-A3F02-①<br>HW1B-A3F22-① | HW4B-M3F10-①<br>HW4B-M3F01-①<br>HW4B-M3F11-①<br>HW4B-M3F20-①<br>HW4B-M3F02-①<br>HW4B-M3F22-① | HW4B-A3F10-①<br>HW4B-A3F01-①<br>HW4B-A3F11-①<br>HW4B-A3F20-①<br>HW4B-A3F02-①<br>HW4B-A3F22-① |
| <b>40mm Mushroom Head</b><br>       | 1NO<br>1NC<br>1NO-1NC<br>2NO<br>2NC<br>2NO-2NC | HW1B-M4F10-①<br>HW1B-M4F01-①<br>HW1B-M4F11-①<br>HW1B-M4F20-①<br>HW1B-M4F02-①<br>HW1B-M4F22-①       | HW1B-A4F10-①<br>HW1B-A4F01-①<br>HW1B-A4F11-①<br>HW1B-A4F20-①<br>HW1B-A4F02-①<br>HW1B-A4F22-① | HW4B-M4F10-①<br>HW4B-M4F01-①<br>HW4B-M4F11-①<br>HW4B-M4F20-①<br>HW4B-M4F02-①<br>HW4B-M4F22-① | HW4B-A4F10-①<br>HW4B-A4F01-①<br>HW4B-A4F11-①<br>HW4B-A4F20-①<br>HW4B-A4F02-①<br>HW4B-A4F22-① |
| <b>60mm Jumbo Mushroom Head</b><br> | 1NO<br>1NC<br>1NO-1NC<br>2NO<br>2NC<br>2NO-2NC | HW1B-M5F10-①*<br>HW1B-M5F01-①*<br>HW1B-M5F11-①*<br>HW1B-M5F20-①*<br>HW1B-M5F02-①*<br>HW1B-M5F22-①* | —                                                                                            | —                                                                                            | —                                                                                            |
| <b>Square Flush</b><br>             | 1NO<br>1NC<br>1NO-1NC<br>2NO<br>2NC<br>2NO-2NC | HW2B-M1F10-①<br>HW2B-M1F01-①<br>HW2B-M1F11-①<br>HW2B-M1F20-①<br>HW2B-M1F02-①<br>HW2B-M1F22-①       | HW2B-A1F10-①<br>HW2B-A1F01-①<br>HW2B-A1F11-①<br>HW2B-A1F20-①<br>HW2B-A1F02-①<br>HW2B-A1F22-① | —                                                                                            | —                                                                                            |
| <b>Square Extended</b><br>          | 1NO<br>1NC<br>1NO-1NC<br>2NO<br>2NC<br>2NO-2NC | HW2B-M2F10-①<br>HW2B-M2F01-①<br>HW2B-M2F11-①<br>HW2B-M2F20-①<br>HW2B-M2F02-①<br>HW2B-M2F22-①       | HW2B-A2F10-①<br>HW2B-A2F01-①<br>HW2B-A2F11-①<br>HW2B-A2F20-①<br>HW2B-A2F02-①<br>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**



### Part Numbers: Operator Assemblies

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

| Style                                                                                                 |            | Plastic Bezel | Metal Bezel |
|-------------------------------------------------------------------------------------------------------|------------|---------------|-------------|
| Square Flush<br>    | Momentary  | HW2B-M1-①     | —           |
|                                                                                                       | Maintained | HW2B-A1-①     | —           |
| Square Extended<br> | Momentary  | HW2B-M2-①     | —           |
|                                                                                                       | Maintained | 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<br> | 1NO<br>1NC<br>1NO/1NC<br>2NO<br>2NC<br>2NO/2NC                                                                      | HW-CBF10<br>HW-CBF01<br>HW-CBF11<br>HW-CBF20<br>HW-CBF02<br>HW-CBF22 |
|                                                                                                                      | Spring Up Terminal Contacts<br> | 1NO<br>1NC<br>1NO/1NC<br>2NO<br>2NC<br>2NO/2NC                       |

### 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.

**A3**

**Switches & Pilot Devices**



\*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<br>Ø 40mm Mushroom | Momentary  | HW1B-M0L      | HW4B-M0L    |
|                                    | Maintained | HW1B-A0L      | HW4B-A0L    |
| Ø 60mm Jumbo Mushroom              | Momentary  | HW1B-M5-①*    | —           |
|                                    | Maintained | —             | —           |
| Square Flush Extended              | Momentary  | HW2B-M0       | —           |
|                                    | Maintained | HW2B-A0       | —           |

### Part Numbers: Contact Blocks

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

### 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   |



1. In place of ①, specify the Button Color Code from table below.
2. \*60mm mushroom operator includes non-removable button (available in red, black, green and yellow only).
3. For nameplates and accessories, see page A3-96.
4. 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 <sup>†</sup> |
| Blue  | S    |        |                |



1. HW1B-M5 available only in black, red green and yellow.
2. <sup>†</sup>Grey available for round flush only.



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

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

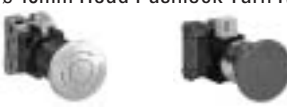


1. Used to mount contact blocks to operator (first pair only).
2. IDEC strongly recommends using the safety lever lock (included) to prevent heavy vibration or maintenance personnel from inadvertently unlocking contacts.



## **Emergency Stop Pushbuttons (Assembled)**

### **Part Numbers: Non-Illuminated Emergency Stop Pushbuttons**

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

### **Part Numbers: Illuminated Emergency Stop Pushbuttons**

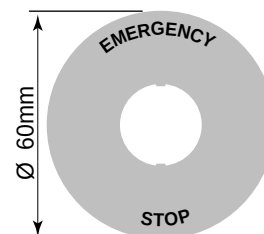
| Style                                                                               | Illumination Type | Contact                                                                                | Part Number                                                                          |
|-------------------------------------------------------------------------------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

#### **HWAV-Yellow Plastic**



| 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<br>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



### Part Numbers: Operators

| Style                               |        | Plastic Bezel   | Metal Bezel     |
|-------------------------------------|--------|-----------------|-----------------|
| 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*       | —               |

### 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                                                          |
|----------------------------------|------------------------------------------------|----------------------------------------------------------------------|
| Standard Fingersafe Contacts<br> | 1NO<br>1NC<br>1NO/1NC<br>2NO<br>2NC<br>2NO/2NC | HW-CBF10<br>HW-CBF01<br>HW-CBF11<br>HW-CBF20<br>HW-CBF02<br>HW-CBF22 |
| Spring Up Terminal Contacts<br>  | 1NO<br>1NC<br>1NO/1NC<br>2NO<br>2NC<br>2NO/2NC | HW-CB10<br>HW-CB01<br>HW-CB11<br>HW-CB20<br>HW-CB02<br>HW-CB22       |



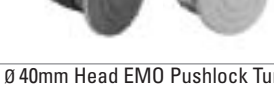
Gold contact option is available for spring-up terminals. Add suffix “MAU” to end of part number. For example, HW-CB20 becomes HW-CB20-MAU.

## **Emergency Stop Pushbuttons (Sub-Assembled)**

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



### **Part Numbers: Emergency Stop Operators**

| Style                                                                                                                     | Plastic         | Metal           |
|---------------------------------------------------------------------------------------------------------------------------|-----------------|-----------------|
| ø 29mm Head Pushlock Turn Reset<br>      | HW1B-V3R*       | HW4B-V3R*       |
| ø 40mm Head Pushlock Turn Reset<br>      | red HW1B-V4R    | HW4B-V4R        |
|                                          | yellow HW1B-V4Y | HW4B-V4Y        |
| ø 40mm Head EMO Pushlock Turn Reset<br> | HW1B-V4R-EMO-2* | HW4B-V4R-EMO-2* |
| ø 40mm Head Push-Pull<br>              | red HW1B-Y2R    | HW4B-Y2R        |
|                                        | yellow HW1B-Y2Y | HW4B-Y2Y        |
| ø 40mm Head Pushlock Key Reset<br>     | HW1B-X4R*       | HW4B-X4R*       |
| ø 60mm Head Pushlock Turn Reset<br>    | 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)<br>        | HW-F10<br>HW-F10R (early make)                               | HW-F01<br>HW-F01R (late break)                               |
| Spring-Up Terminal Contacts<br>      | HW-G10<br>HW-G10R (early make)<br>HW-G10-MAU (gold contacts) | HW-G01<br>HW-G01R (late break)<br>HW-G01-MAU (gold contacts) |
| Exposed Screw Terminal Contacts<br> | HW-C10<br>HW-C10R (early make)                               | HW-C01<br>HW-C01R (late break)                               |
| Dummy Block<br>                    | 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.

**A3**

Switches &amp; Pilot Devices



## 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

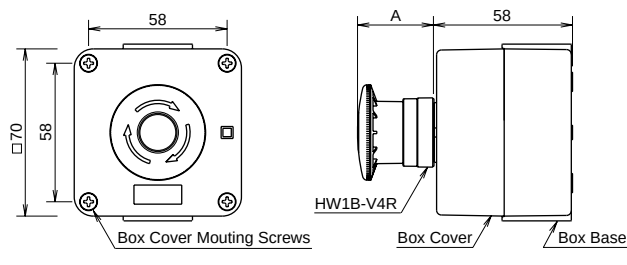
| Configuration | Part Number |
|---------------|-------------|
| 1NO           | HW-S10      |
| 1NC           | HW-S01      |

### 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<br><br>(Full Voltage type shown) | Full Voltage                |                               | HW1P-1FQ④-②-③                                |
|                                                                                                                               | Transformer                 | 120V AC<br>240V AC<br>480V AC | HW1P-1FH2④-②<br>HW1P-1FM4④-②<br>HW1P-1FT8④-② |
|                                                                                                                               | DC-DC Converter*            | 110V DC                       | HW1P-1D2④-②                                  |
| Dome<br><br>(Full Voltage type shown)        | Full Voltage                |                               | HW1P-2FQ④-②-③                                |
|                                                                                                                               | Transformer                 | 120V AC<br>240V AC<br>480V AC | HW1P-2FH2④-②<br>HW1P-2FM4④-②<br>HW1P-2FT8④-② |
|                                                                                                                               | DC-DC Converter*            | 110V DC                       | HW1P-2D2④-②                                  |
| Square Flush<br><br>(Transformer type shown) | Full Voltage                |                               | HW2P-1FQ④-②-③                                |
|                                                                                                                               | Transformer                 | 120V AC<br>240V AC<br>480V AC | HW2P-1FH2④-②<br>HW2P-1FM4④-②<br>HW2P-1FT8④-② |
|                                                                                                                               | DC-DC Converter*            | 110V DC                       | HW2P-1D2④-②                                  |
| Jumbo Dome<br>                               | Full Voltage**<br>24V AC/DC | LED                           | HW1P-5Q4-②                                   |
|                                                                                                                               |                             | Incandescent                  | HW1P-5Q7-②                                   |



1. In place of ②, specify the Lens/LED Color Code.
2. In place of ③specify the Full Voltage Code from table below.
3. In place of ④ specify Lamp Type Code.
4. \*DC-DC convertor voltage input from 90-140V DC, comes with spring up terminals only.
5. \*\*Available with spring up terminals and 24V only.
6. For nameplates and accessories, see page A3-96.
- 7 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 |
|-------------------------|--------------|---------------------|-------------|
| <b>Round Flush</b><br>  | Full Voltage | Standard            | HW1P-1FQ0   |
|                         |              | Spring Up Terminals | HW1P-1Q0    |
| <br>(HW1P-10 shown)     | Transformer  | Standard            | HW1P-10     |
|                         |              | Spring Up Terminals | HW1P-100    |
| <b>Dome</b><br>         | Full Voltage | Standard            | HW1P-2FQ0   |
|                         |              | Spring Up Terminals | HW1P-2Q0    |
| <br>(HW1P-20 shown)     | Transformer  | Standard            | HW1P-20     |
|                         |              | Spring Up Terminals | HW1P-200    |
| <b>Square Flush</b><br> | Full Voltage | Standard            | HW2P-1FQ0   |
|                         |              | Spring Up Terminals | HW2P-1Q0    |
| <br>(HW2P-10 shown)     | 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: Transformer Units**

| Style                                                 | Voltage   | Part Number                                    |
|-------------------------------------------------------|-----------|------------------------------------------------|
| <b>LED/Incandescent</b><br><br>(6V secondary voltage) | 120V AC   | HW-FH20<br>HW-MH20 (with spring up terminals)* |
|                                                       | 240V AC   | HW-FM40<br>HW-MM40 (with spring up terminals)* |
|                                                       | 480V AC   | HW-FT80<br>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 |
|-------------------------|------------|-------------|
| <b>LED</b><br>          | 6V AC/DC   | LSTD-6②     |
|                         | 12V AC/DC  | LSTD-1②     |
|                         | 24V AC/DC  | LSTD-2②     |
|                         | 120V AC    | LSTD-H2②    |
|                         | 240V AC    | LSTD-M4②    |
| <b>Incandescent</b><br> | 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    |



- 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.

### **Part Numbers: Lenses**

| Style                   | Part Number |
|-------------------------|-------------|
| <b>Round/Flush</b><br>  | HW1A-P1-②   |
| <b>Dome</b><br>         | HW1A-P2-②   |
| <b>Square/Flush</b><br> | HW2A-P1-②   |



In place of ②, specify the Lens Color Code.

### **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<br>① = (A, G, R, S, W, Y)  |
| Replacement LED Diffusing Lens          |                    | HW9Z-PP5C                           |
| Replacement LED Lamps for HW Jumbo Dome | LED Lamp           | LSTD-B-2①<br>① = (A, G, R, S, W, Y) |



\*Operator comes with incandescent bulb.

## Illuminated Pushbuttons (Assembled)

## Part Numbers: Illuminated Pushbuttons

| Style         | Description  |                                          | Contacts                         | Plastic Bezel                                                                    |                                                                                  | Metal Bezel                                                                      |                                                                                  |
|---------------|--------------|------------------------------------------|----------------------------------|----------------------------------------------------------------------------------|----------------------------------------------------------------------------------|----------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
|               |              |                                          |                                  | Momentary                                                                        | Maintained                                                                       | Momentary                                                                        | Maintained                                                                       |
| <b>A3</b><br> | Full Voltage |                                          | 1NO<br>1NC<br>1NO-1NC<br>2NO     | HW1L-M1F10Q④-②-③<br>HW1L-M1F01Q④-②-③<br>HW1L-M1F11Q④-②-③<br>HW1L-M1F20Q④-②-③     | HW1L-A1F10Q④-②-③<br>HW1L-A1F01Q④-②-③<br>HW1L-A1F11Q④-②-③<br>HW1L-A1F20Q④-②-③     | HW4L-M1F10Q④-②-③<br>HW4L-M1F01Q④-②-③<br>HW4L-M1F11Q④-②-③<br>HW4L-M1F20Q④-②-③     | HW4L-A1F10Q④-②-③<br>HW4L-A1F01Q④-②-③<br>HW4L-A1F11Q④-②-③<br>HW4L-A1F20Q④-②-③     |
|               | Transformer  | 120V AC<br>120V AC<br>240V AC<br>240V AC | 1NO-1NC<br>2NO<br>1NO-1NC<br>2NO | HW1L-M1F11H2④-②<br>HW1L-M1F20H2④-②<br>HW1L-M1F11M4④-②<br>HW1L-M1F20M4④-②         | HW1L-A1F11H2④-②<br>HW1L-A1F20H2④-②<br>HW1L-A1F11M4④-②<br>HW1L-A1F20M4④-②         | HW4L-M1F11H2④-②<br>HW4L-M1F20H2④-②<br>HW4L-M1F11M4④-②<br>HW4L-M1F20M4④-②         | HW4L-A1F11H2④-②<br>HW4L-A1F20H2④-②<br>HW4L-A1F11M4④-②<br>HW4L-A1F20M4④-②         |
|               | Full Voltage |                                          | 1NO<br>1NC<br>1NO-1NC<br>2NO     | HW1L-M2F10Q④-②-③<br>HW1L-M2F01Q④-②-③<br>HW1L-M2F11Q④-②-③<br>HW1L-M2F20Q④-②-③     | HW1L-A2F10Q④-②-③<br>HW1L-A2F01Q④-②-③<br>HW1L-A2F11Q④-②-③<br>HW1L-A2F20Q④-②-③     | HW4L-M2F10Q④-②-③<br>HW4L-M2F01Q④-②-③<br>HW4L-M2F11Q④-②-③<br>HW4L-M2F20Q④-②-③     | HW4L-A2F10Q④-②-③<br>HW4L-A2F01Q④-②-③<br>HW4L-A2F11Q④-②-③<br>HW4L-A2F20Q④-②-③     |
|               | Transformer  | 120V AC<br>120V AC<br>240V AC<br>240V AC | 1NO-1NC<br>2NO<br>1NO-1NC<br>2NO | HW1L-M2F11H2④-②<br>HW1L-M2F20H2④-②<br>HW1L-M2F11M4④-②<br>HW1L-M2F20M4④-②         | HW1L-A2F11H2④-②<br>HW1L-A2F20H2④-②<br>HW1L-A2F11M4④-②<br>HW1L-A2F20M4④-②         | HW4L-M2F11H2④-②<br>HW4L-M2F20H2④-②<br>HW4L-M2F11M4④-②<br>HW4L-M2F20M4④-②         | HW4L-A2F11H2④-②<br>HW4L-A2F20H2④-②<br>HW4L-A2F11M4④-②<br>HW4L-A2F20M4④-②         |
|               | Full Voltage |                                          | 1NO<br>1NC<br>1NO-1NC<br>2NO     | HW1L-MF2F10Q④-②-③<br>HW1L-MF2F01Q④-②-③<br>HW1L-MF2F11Q④-②-③<br>HW1L-MF2F20Q④-②-③ | HW1L-AF2F10Q④-①-③<br>HW1L-AF2F01Q④-①-③<br>HW1L-AF2F11Q④-①-③<br>HW1L-AF2F20Q④-①-③ | HW4L-MF2F10Q④-②-③<br>HW4L-MF2F01Q④-②-③<br>HW4L-MF2F11Q④-②-③<br>HW4L-MF2F20Q④-②-③ | HW4L-AF2F10Q④-①-③<br>HW4L-AF2F01Q④-①-③<br>HW4L-AF2F11Q④-①-③<br>HW4L-AF2F20Q④-①-③ |
|               | Transformer  | 120V AC<br>120V AC<br>240V AC<br>240V AC | 1NO-1NC<br>2NO<br>1NO-1NC<br>2NO | HW1L-MF2F11H2④-②<br>HW1L-MF2F20H2④-②<br>HW1L-MF2F11M4④-②<br>HW1L-MF2F20M4④-②     | HW1L-AF2F11H2④-②<br>HW1L-AF2F20H2④-②<br>HW1L-AF2F11M4④-②<br>HW1L-AF2F20M4④-②     | HW4L-MF2F11H2④-②<br>HW4L-MF2F20H2④-②<br>HW4L-MF2F11M4④-②<br>HW4L-MF2F20M4④-②     | HW4L-AF2F11H2④-②<br>HW4L-AF2F20H2④-②<br>HW4L-AF2F11M4④-②<br>HW4L-AF2F20M4④-②     |
|               | Full Voltage |                                          | 1NO<br>1NC<br>1NO-1NC<br>2NO     | HW1L-M4F10Q④-②-③<br>HW1L-M4F01Q④-②-③<br>HW1L-M4F11Q④-②-③<br>HW1L-M4F20Q④-②-③     | HW1L-A4F10Q④-②-③<br>HW1L-A4F01Q④-②-③<br>HW1L-A4F11Q④-②-③<br>HW1L-A4F20Q④-②-③     | HW4L-M4F10Q④-②-③<br>HW4L-M4F01Q④-②-③<br>HW4L-M4F11Q④-②-③<br>HW4L-M4F20Q④-②-③     | HW4L-A4F10Q④-②-③<br>HW4L-A4F01Q④-②-③<br>HW4L-A4F11Q④-②-③<br>HW4L-A4F20Q④-②-③     |
|               | Transformer  | 120V AC<br>120V AC<br>240V AC<br>240V AC | 1NO-1NC<br>2NO<br>1NO-1NC<br>2NO | HW1L-M4F11H2④-②<br>HW1L-M4F20H2④-②<br>HW1L-M4F11M4④-②<br>HW1L-M4F20M4④-②         | HW1L-A4F11H2④-②<br>HW1L-A4F20H2④-②<br>HW1L-A4F11M4④-②<br>HW1L-A4F20M4④-②         | HW4L-M4F11H2④-②<br>HW4L-M4F20H2④-②<br>HW4L-M4F11M4④-②<br>HW4L-M4F20M4④-②         | HW4L-A4F11H2④-②<br>HW4L-A4F20H2④-②<br>HW4L-A4F11M4④-②<br>HW4L-A4F20M4④-②         |
|               | Full Voltage |                                          | 1NO<br>1NC<br>1NO-1NC<br>2NO     | HW2L-M1F10Q④-②-③<br>HW2L-M1F01Q④-②-③<br>HW2L-M1F11Q④-②-③<br>HW2L-M1F20Q④-②-③     | HW2L-A1F10Q④-②-③<br>HW2L-A1F01Q④-②-③<br>HW2L-A1F11Q④-②-③<br>HW2L-A1F20Q④-②-③     | —                                                                                | —                                                                                |
|               | Transformer  | 120V AC<br>120V AC<br>240V AC<br>240V AC | 1NO-1NC<br>2NO<br>1NO-1NC<br>2NO | HW2L-M1F11H2④-②<br>HW2L-M1F20H2④-②<br>HW2L-M1F11M4④-②<br>HW2L-M1F20M4④-②         | HW2L-A1F11H2④-②<br>HW2L-A1F20H2④-②<br>HW2L-A1F11M4④-②<br>HW2L-A1F20M4④-②         | —                                                                                | —                                                                                |



- 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.
- For partial and sub-assembly part numbers, see pages A3-65 and A3-66.
- For nameplates and accessories, see page A3-96.
- 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*   |



\*40mm mushroom lenses not available in yellow

## 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 |



## **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 |
|-------------------------------------------------------------------------------------|------------|---------------|-------------|
|    | Momentary  | HW1L-M1-②     | HW4L-M1-②   |
|                                                                                     | Maintained | HW1L-A1-②     | HW4L-A1-②   |
|    | Momentary  | HW1L-M2-②     | HW4L-M2-②   |
|                                                                                     | Maintained | HW1L-A2-②     | HW4L-A2-②   |
|    | Momentary  | HW1L-MF2-②    | HW4L-MF2-②  |
|                                                                                     | Maintained | HW1L-AF2-②    | HW4L-AF2-②  |
|   | Momentary  | HW1L-M4-②*    | HW4L-M4-②*  |
|                                                                                     | Maintained | HW1L-A4-②*    | HW4L-A4-②*  |
|  | 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)

Transformer Contact Assembly

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

### **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       |
|                                                                                     | 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    |

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



- 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. n 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 |
|---------------------------------------------------------------------------------------------------|------------|-------------|
| <br>LED          | 6V AC/DC   | LSTD-6②     |
|                                                                                                   | 12V AC/DC  | LSTD-1②     |
|                                                                                                   | 24V AC/DC  | LSTD-2②     |
|                                                                                                   | 120V AC    | LSTD-H2②    |
|                                                                                                   | 240V AC    | LSTD-M4②    |
| <br>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.

### **Part Numbers: Lamp Circuit Components**

| Style                                                                                                                        | Description                                                                                             | Terminals  | Part Number                      |
|------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|------------|----------------------------------|
| <br>Lead Holder                           | For use with HW-CBL on all illuminated pushbutton units. One required for each deck (pair) of contacts. |            | HW-LH3                           |
| <br>Dummy Block with Full Voltage Adaptor | For use with odd number of contacts.                                                                    | Fingersafe | HW-DA1FB                         |
|                                                                                                                              |                                                                                                         | Exposed    | HW-DA1B                          |
|                                                                                                                              |                                                                                                         | Spring Up  | HW-GA1                           |
| <br>Full Voltage Adaptor                  | For use with even number of contacts.                                                                   | Fingersafe | TW-DA1FB                         |
|                                                                                                                              |                                                                                                         | Exposed    | TW-DA1B                          |
| <br>Transformer Unit                      | 120VAC<br>240VAC<br>480VAC                                                                              | Fingersafe | TW-F126B<br>TW-F246B<br>TW-F486B |
|                                                                                                                              | 120V<br>240V<br>480V                                                                                    | Spring Up  | HW-T126<br>HW-T246<br>HW-L486    |
|                                                                                                                              | 120V<br>240V<br>480V<br>(6V secondary voltage)                                                          | Exposed    | TW-T126B<br>TW-T246B<br>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                            |
| <br>Standard Fingersafe (IP20)      | HW-F10<br>HW-F10R (early make) | HW-F01<br>HW-F01R (late break) |
| <br>Spring-Up Terminal Contacts     | HW-G10<br>HW-G10R (early make) | HW-G01<br>HW-G01R (late break) |
| <br>Exposed Screw Terminal Contacts | HW-C10<br>HW-C10R (early make) | HW-C01<br>HW-C01R (late break) |
| <br>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.

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

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



1. Used to mount contact blocks to operator (first pair only). Lamp holder is built-in.
2. 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

| Operator Position |          |        |        | Handle     | Maintained               | Spring Return from Right   |
|-------------------|----------|--------|--------|------------|--------------------------|----------------------------|
| Contact           | Mounting | L      | R      |            |                          |                            |
|                   |          |        |        |            |                          |                            |
|                   |          |        |        |            | Part Number              | Part Number                |
| 1NO               | 1        | 0      | X      | Knob Lever | HW⑤S-2TF10<br>HW⑤S-2LF10 | HW⑤S-21TF10<br>HW⑤S-21LF10 |
| 1NO-1NC           | 1<br>2   | 0<br>X | X<br>0 | Knob Lever | HW⑤S-2TF11<br>HW⑤S-2LF11 | HW⑤S-21TF11<br>HW⑤S-21LF11 |
| 2NO               | 1<br>2   | 0<br>0 | X<br>X | Knob Lever | HW⑤S-2TF20<br>HW⑤S-2LF20 | HW⑤S-21TF20<br>HW⑤S-21LF20 |



### Part Numbers: 3-Position Selector Switches

| Operator Position |                  |                  |                  |                  | Handle     | Maintained               | Spring Return from Right   | Spring Return from Left    | Spring Return Two-Way      |
|-------------------|------------------|------------------|------------------|------------------|------------|--------------------------|----------------------------|----------------------------|----------------------------|
| Contact           | Mounting         | L                | C                | R                |            |                          |                            |                            |                            |
|                   |                  |                  |                  |                  |            |                          |                            |                            |                            |
|                   |                  |                  |                  |                  |            | Part Number              | Part Number                | Part Number                | Part Number                |
| 1NO-1NC           | 1<br>2           | 0<br>0           | X<br>0           | X<br>X           | Knob Lever | HW⑤S-3TF11<br>HW⑤S-3LF11 | HW⑤S-31TF11<br>HW⑤S-31LF11 | HW⑤S-32TF11<br>HW⑤S-32LF11 | HW⑤S-33TF11<br>HW⑤S-33LF11 |
| 2NO               | 1<br>2           | X<br>0           | 0<br>0           | 0<br>X           | Knob Lever | HW⑤S-3TF20<br>HW⑤S-3LF20 | HW⑤S-31TF20<br>HW⑤S-31LF20 | HW⑤S-32TF20<br>HW⑤S-32LF20 | HW⑤S-33TF20<br>HW⑤S-33LF20 |
| 2NO-1NC           | 1<br>2<br>3      | X<br>0<br>0      | 0<br>0<br>X      | 0<br>X<br>0      | Knob       | HW⑤S-3JTF21N1            | —                          | —                          | —                          |
| 2NO-2NC           | 1<br>2<br>3<br>4 | X<br>0<br>0<br>X | 0<br>0<br>X<br>X | 0<br>X<br>X<br>0 | Knob       | HW⑤S-3TF22               | HW⑤S-31TF22                | HW⑤S-32TF22                | HW⑤S-33TF22                |

#### ⑤ Bezel Type

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

### Part Numbers: 4-Position Selector Switch

| Operator Position |                  |                  |                  |                  | Handle           | Maintained Part Number                     |
|-------------------|------------------|------------------|------------------|------------------|------------------|--------------------------------------------|
| Contact           | Mounting         | 1                | 2                | 3                | 4                |                                            |
|                   |                  |                  |                  |                  |                  |                                            |
| 1NO-3NC           | 1<br>2<br>3<br>4 | 0<br>0<br>0<br>0 | X<br>X<br>0<br>0 | X<br>0<br>X<br>0 | X<br>0<br>0<br>X | Knob Lever<br>HW⑤S-4TF13N6<br>HW⑤S-4LF13N6 |
| 2NO-2NC           | 1<br>2<br>3<br>4 | X<br>0<br>0<br>0 | 0<br>X<br>0<br>0 | 0<br>0<br>X<br>0 | 0<br>0<br>0<br>X | Knob Lever<br>HW⑤S-4TF22N3<br>HW⑤S-4LF22N3 |

### Part Numbers: 5-Position Selector Switch

| Operator Position |                  |                  |                  |                  |                  | Handle           | Maintained Part Number                     |
|-------------------|------------------|------------------|------------------|------------------|------------------|------------------|--------------------------------------------|
| Contact           | Mounting         | 1                | 2                | 3                | 4                | 5                |                                            |
|                   |                  |                  |                  |                  |                  |                  |                                            |
| 2NO-2NC           | 1<br>2<br>3<br>4 | X<br>0<br>0<br>0 | 0<br>X<br>0<br>0 | 0<br>0<br>0<br>0 | 0<br>0<br>X<br>0 | 0<br>0<br>0<br>X | Knob Lever<br>HW⑤S-5TF22N3<br>HW⑤S-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**



### **Part Numbers: Operators**

|                                                                                                               | No. of Positions | Description               | Handle | Plastic Bezel | Metal Bezel |
|---------------------------------------------------------------------------------------------------------------|------------------|---------------------------|--------|---------------|-------------|
| <p>Knob Operator (plastic bezel)</p> <p>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*   |
|                                                                                                               |                  | Maintained (J cam)        | 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    |
|                                                                                                               | 4                | Maintained                | Knob   | HW1S-4T       | HW4S-4T     |
|                                                                                                               |                  |                           | Lever  | HW1S-4L       | HW4S-4L     |
|                                                                                                               | 5                | Maintained                | Lever  | HW1S-5T       | HW4S-5T     |
|                                                                                                               |                  |                           | Lever  | HW1S-5L       | HW4S-5L     |



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

### **Part Numbers: Contact Assemblies**

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



## Selector Switches (Sub-Assembled)

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

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Switches &amp; 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<br>HW-F10R (early make) | HW-F01<br>HW-F01R (late break) |
| Spring-Up Terminal Contacts     | HW-G10<br>HW-G10R (early make) | HW-G01<br>HW-G01R (late break) |
| Exposed Screw Terminal Contacts | HW-C10<br>HW-C10R (early make) | HW-C01<br>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)**


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Switches &amp; Pilot Devices

### **Part Numbers: 2-Position Key Switches**

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

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



1. In place of Ⓢ enter 1 for plastic bezel or 4 for metal bezel (see table at right).
2. Key is removable in all maintained positions. Other key removable options available.
3. Two keys are supplied with all switches.
4. All standard operators are keyed alike (contact IDEC for special keys).
5. For nameplates, see page A3-96.
6. Custom contact arrangements available, contact IDEC for details.
7. Mounting refers to contact location on operator. See page A3-82.

## Key Switches (Partial-Assemblies)

Contact Assembly + Operator = Complete Part



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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    |



1. Operator includes two keys.
2. All standard operators are keyed alike (contact IDEC for special keys).
3. 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<br> | 1NO<br>1NC<br>1NO/1NC<br>2NO<br>2NC<br>2NO/2NC | HW-CBF10<br>HW-CBF01<br>HW-CBF11<br>HW-CBF20<br>HW-CBF02<br>HW-CBF22 |
| Spring Up Terminal Contacts<br>  | 1NO<br>1NC<br>1NO/1NC<br>2NO<br>2NC<br>2NO/2NC | HW-CB10<br>HW-CB01<br>HW-CB11<br>HW-CB20<br>HW-CB02<br>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)           |



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

## **Key Switches (Sub-Assembled)**

**Contact Blocks**

+

**Adaptor & Safety Lever Lock**

 + **Anti-Rotation Ring**

+

**Operator**

=

**Complete Part**


### **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    |



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

### **Part Numbers: 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.

### **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)<br>        | HW-F10<br>HW-F10R (early make) | HW-F01<br>HW-F01R (late break) |
| Spring-Up Terminal Contacts<br>       | HW-G10<br>HW-G10R (early make) | HW-G01<br>HW-G01R (late break) |
| Exposed Screw Terminal Contacts<br> | HW-C10<br>HW-C10R (early make) | HW-C01<br>HW-C01R (late break) |
| Dummy Block<br>                     | 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.

### **Part Numbers: Anti-Rotation Ring**

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



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

**A3**
**Switches & Pilot Devices**

## Illuminated Selector Switches (Assembled)

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Switches &amp; 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<br>2           | 0<br>X                                                                            | X<br>0                                                                            | Full Voltage | HW⑤F-2F11Q④-②-③                                                                   | HW⑤F-21F11Q④-②-③                                                                    |
|                                                                                   |                   |                  |                                                                                   |                                                                                   | Transformer  | 120V HW⑤F-2F11H2④-②<br>240V HW⑤F-2F11M4④-②<br>480V HW⑤F-2F11T8④-②                 | HW⑤F-21F11H2④-②<br>HW⑤F-21F11M4④-②<br>HW⑤F-21F11T8④-②                               |
|                                                                                   |                   |                  |                                                                                   |                                                                                   |              |                                                                                   |                                                                                     |
|  | 2NO               | 1<br>2           | 0<br>0                                                                            | X<br>X                                                                            | Full Voltage | HW⑤F-2F20Q④-②-③                                                                   | HW⑤F-21F20Q④-②-③                                                                    |
|                                                                                   |                   |                  |                                                                                   |                                                                                   | Transformer  | 120V HW⑤F-2F20H2④-②<br>240V HW⑤F-2F20M4④-②<br>480V HW⑤F-2F20T8④-②                 | HW⑤F-21F20H2④-②<br>HW⑤F-21F20M4④-②<br>HW⑤F-21F20T8④-②                               |
|                                                                                   |                   |                  |                                                                                   |                                                                                   |              |                                                                                   |                                                                                     |
|                                                                                   | 2NO-2NC           | 1<br>2<br>3<br>4 | 0<br>X<br>0<br>X                                                                  | X<br>0<br>X<br>0                                                                  | Full Voltage | HW⑤F-2F22Q④-②-③                                                                   | HW⑤F-21F22Q④-②-③                                                                    |
|                                                                                   |                   |                  |                                                                                   |                                                                                   | Transformer  | 120V HW⑤F-2F22H2④-②<br>240V HW⑤F-2F22M4④-②<br>480V HW⑤F-2F22T8④-②                 | HW⑤F-21F22H2④-②<br>HW⑤F-21F22M4④-②<br>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

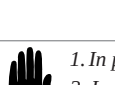
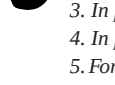
| Lamp         | Code  |
|--------------|-------|
| Incandescent | Blank |
| LED          | D     |

## 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<br>240V<br>480V                                                              | HW5F-3F11H24-2<br>HW5F-3F11M44-2<br>HW5F-3F11T84-2                                 | HW5F-31F11H24-2<br>HW5F-31F11M44-2<br>HW5F-31F11T84-2                               | HW5F-32F11H24-2<br>HW5F-32F11M44-2<br>HW5F-32F11T84-2                               |
|    | 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<br>240V<br>480V                                                              | HW5F-3F20H24-2<br>HW5F-3F20M44-2<br>HW5F-3F20T84-2                                 | HW5F-31F20H24-2<br>HW5F-31F20M44-2<br>HW5F-31F20T84-2                               | HW5F-32F20H24-2<br>HW5F-32F20M44-2<br>HW5F-32F20T84-2                               |
|    | 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<br>240V<br>480V                                                              | HW5F-3F02H24-2<br>HW5F-3F02M44-2<br>HW5F-3F02T84-2                                 | HW5F-31F02H24-2<br>HW5F-31F02M44-2<br>HW5F-31F02T84-2                               | HW5F-32F02H24-2<br>HW5F-32F02M44-2<br>HW5F-32F02T84-2                               |
|    | 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<br>240V<br>480V                                                              | HW5F-3F22H24-2<br>HW5F-3F22M44-2<br>HW5F-3F22T84-2                                 | HW5F-31F22H24-2<br>HW5F-31F22M44-2<br>HW5F-31F22T84-2                               | HW5F-32F22H24-2<br>HW5F-32F22M44-2<br>HW5F-32F22T84-2                               |
|   | 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<br>240V<br>480V                                                              | HW5F-3F40H24-2<br>HW5F-3F40M44-2<br>HW5F-3F40T84-2                                 | HW5F-31F40H24-2<br>HW5F-31F40M44-2<br>HW5F-31F40T84-2                               | HW5F-32F40H24-2<br>HW5F-32F40M44-2<br>HW5F-32F40T84-2                               |
|  | 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<br>240V<br>480V                                                              | HW5F-3F04H24-2<br>HW5F-3F04M44-2<br>HW5F-3F04T84-2                                 | HW5F-31F04H24-2<br>HW5F-31F04M44-2<br>HW5F-31F04T84-2                               | HW5F-32F04H24-2<br>HW5F-32F04M44-2<br>HW5F-32F04T84-2                               |

**A3**
**Switches & Pilot Devices**


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 (Partial-Assemblies)

Contact Assembly + Lamp + Operator/Lens = Complete Part



A3

Switches & Pilot Devices

### Full Voltage Models

#### Part Numbers: Operators/Lens

|                                                                                   | Type              | Plastic  | Metal    |
|-----------------------------------------------------------------------------------|-------------------|----------|----------|
|  | Maintained        | HW1F-2②  | HW4F-2②  |
|                                                                                   | Spring from Right | HW1F-21② | HW4F-21② |
|  | 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.

#### 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.

#### 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       |



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 |
| 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   |
|                                                                                     | 1NO/1NC  | HW-FL11H2   |
| 240V AC with Incandescent                                                           | 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    |
|-------------------------------------------------------------------------------------|-------------------|----------|----------|
|  | Maintained        | HW1F-2②  | HW4F-2②  |
|                                                                                     | Spring from Right | HW1F-21② | HW4F-21② |
|  | 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      |



1. Used to mount contact blocks to operator (first pair only). Lamp holder is built-in.
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)<br>      | HW-F10<br>HW-F10R (early make) | HW-F01<br>HW-F01R (late break) |
| Spring-Up Terminal Contacts<br>     | HW-G10<br>HW-G10R (early make) | HW-G01<br>HW-G01R (late break) |
| Exposed Screw Terminal Contacts<br> | HW-C10<br>HW-C10R (early make) | HW-C01<br>HW-C01R (late break) |
| Dummy Block<br>                     | 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.

**A3**

Switches &amp; Pilot Devices

## Illuminated Selector Switches (Sub- Assembled) con't

### Part Numbers: Lamps

| Type                                                                                              | Voltage    | Part Number |
|---------------------------------------------------------------------------------------------------|------------|-------------|
| <br>LED          | 6V AC/DC   | LSTD-6②     |
|                                                                                                   | 12V AC/DC  | LSTD-1②     |
|                                                                                                   | 24V AC/DC  | LSTD-2②     |
|                                                                                                   | 120V AC    | LSTD-H2②    |
|                                                                                                   | 240V AC    | LSTD-M4②    |
| <br>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 |
|------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|------------|-------------|
| <br>Lead Holder                            | For use with HW-CBL on all illuminated pushbutton units. One required for each deck (pair) of contacts. |            | HW-LH3      |
| <br>Dummy Block with Full Voltage Adaptor | For use with odd number of contacts.                                                                    | Fingersafe | HW-DA1FB    |
|                                                                                                                              |                                                                                                         | Exposed    | HW-DA1B     |
|                                                                                                                              |                                                                                                         | Spring Up  | HW-GA1      |
| <br>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<br>240V AC<br>480V AC                                                                                      | TW-F126B<br>TW-F246B<br>TW-F486B |
| Spring Up              | <br>120V AC<br>240V AC<br>480V AC | HW-T126<br>HW-T246<br>HW-L486    |
| (6V secondary voltage) |                                                                                                                    |                                  |
| 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.

**Step1: 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 |
| C<br>o<br>n<br>t<br>a<br>c<br>t<br>s | 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).

### 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).

| 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).

| 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).

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Switches & Pilot Devices

**Operator Truth Tables con't**
**4 Position Selector Switches**

| HW1S-4T | 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 |

**5 Position Selector Switches**

| HW1S-5T | 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).

**A3**
**Switches & Pilot Devices**



Custom Selector Switch Building Examples

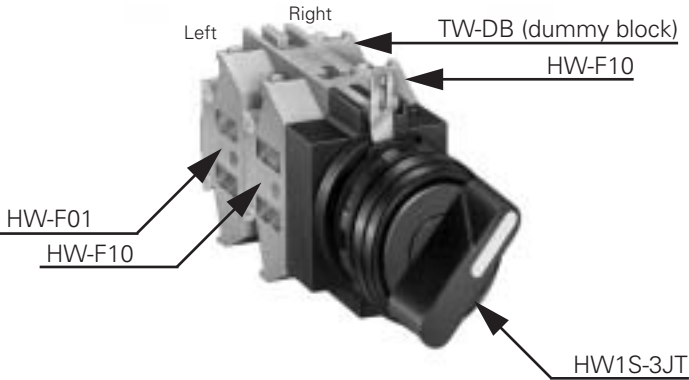
Example 1: 3 Position, Maintained Selector Switch with 3 Contacts

A3

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      | 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:

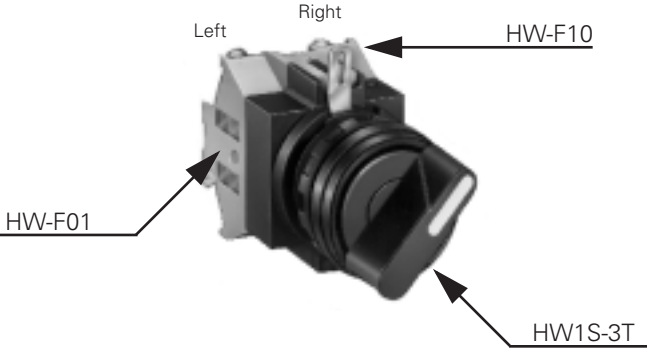


Example 2: 3 Position, Maintained Selector Switch with 2 Contacts

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:



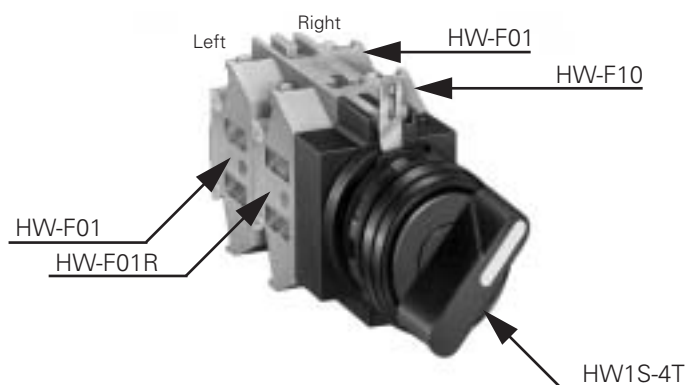
## Custom Selector Switch Building Examples con't

### 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                 |
| <b>Contact 1</b> | 0             | X | 0 | 0 | HW-F01 mounted on right |
| <b>Contact 2</b> | 0             | 0 | X | 0 | HW-F01 mounted on left  |
| <b>Contact 3</b> | 0             | 0 | 0 | X | HW-F10 mounted on right |
| <b>Contact 4</b> | 0             | X | X | X | HW-F01R mounted on left |

Assemble as follows:

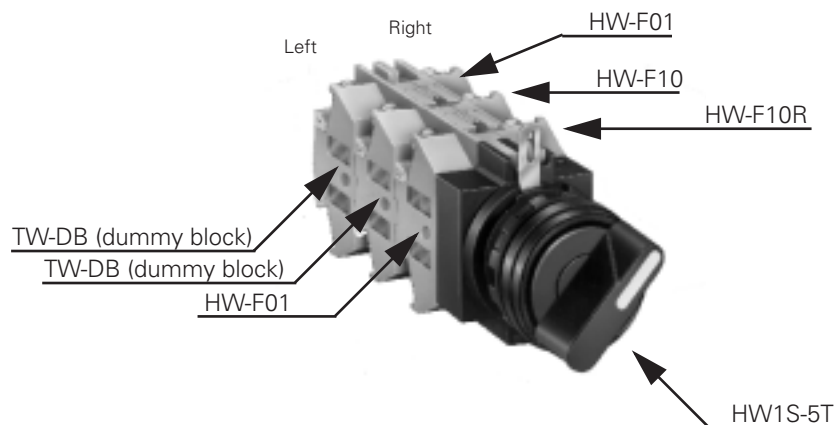


### Example 4: 5 Position Selector Switch with 4 Contacts

Determine where the contact will be mounted.

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

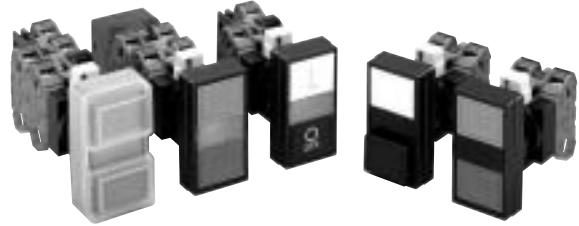
Assembled as follows:



## Dual Pushbutton Switches

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

- 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)<br>Flush (bottom)    |  | 1NO                 | 1NC           | HW7D-B11F1001-④⑤ | GR:<br>Green (top)<br>Red (bottom)<br><br>WB:<br>White (top)<br>Black (bottom) | Blank: Without legend<br><br>1: I/ON (top)<br>O/OFF (bottom) |
|                |                                  |  | 1NO                 | 1NO           | HW7D-B11F1010-④⑤ |                                                                                |                                                              |
|                |                                  |  | 1NO-1NC             | 1NO-1NC       | HW7D-B11F1111-④⑤ |                                                                                |                                                              |
|                |                                  |  | 2NO                 | 2NC           | HW7D-B11F2002-④⑤ |                                                                                |                                                              |
|                |                                  |  | 2NO                 | 2NO           | HW7D-B11F2020-④⑤ |                                                                                |                                                              |
|                | Flush (top)<br>Extended (bottom) |  | 1NO                 | 1NC           | HW7D-B12F1001-④⑤ |                                                                                |                                                              |
|                |                                  |  | 1NO                 | 1NO           | HW7D-B12F1010-④⑤ |                                                                                |                                                              |
|                |                                  |  | 1NO-1NC             | 1NO-1NC       | HW7D-B12F1111-④⑤ |                                                                                |                                                              |
|                |                                  |  | 2NO                 | 2NC           | HW7D-B12F2002-④⑤ |                                                                                |                                                              |
|                |                                  |  | 2NO                 | 2NO           | HW7D-B12F2020-④⑤ |                                                                                |                                                              |
| Interlock*     | Flush (top)<br>Flush (bottom)    |  | 1NO                 | 1NC           | HW7D-B21F1001-④⑤ |                                                                                |                                                              |
|                |                                  |  | 1NO                 | 1NO           | HW7D-B21F1010-④⑤ |                                                                                |                                                              |
|                |                                  |  | 1NO-1NC             | 1NO-1NC       | HW7D-B21F1111-④⑤ |                                                                                |                                                              |
|                |                                  |  | 2NO                 | 2NC           | HW7D-B21F2002-④⑤ |                                                                                |                                                              |
|                |                                  |  | 2NO                 | 2NO           | HW7D-B21F2020-④⑤ |                                                                                |                                                              |
|                | Flush (top)<br>Extended (bottom) |  | 1NO                 | 1NC           | HW7D-B22F1001-④⑤ |                                                                                |                                                              |
|                |                                  |  | 1NO                 | 1NO           | HW7D-B22F1010-④⑤ |                                                                                |                                                              |
|                |                                  |  | 1NO-1NC             | 1NO-1NC       | HW7D-B22F1111-④⑤ |                                                                                |                                                              |
|                |                                  |  | 2NO                 | 2NC           | HW7D-B22F2002-④⑤ |                                                                                |                                                              |
|                |                                  |  | 2NO                 | 2NO           | HW7D-B22F2020-④⑤ |                                                                                |                                                              |



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

### Part Numbers: With Center Pilot Light

| Operation Type                                                                                                                                                                                                                                                                        |                                  | Button Style                  | Pilot Light Type | Top Button | Bottom Button      | Part Number        |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|-------------------------------|------------------|------------|--------------------|--------------------|
| <div></div> <div>Flush (top)<br/>Flush (bottom)</div><br><div></div> <div>Flush (top)<br/>Extended (bottom)</div> | Momentary                        | Flush (Top)<br>Flush (Bottom) | Full Voltage     | 1NO        | 1NC                | HW7D-L11F1001②③-④⑤ |
|                                                                                                                                                                                                                                                                                       |                                  |                               |                  | 1NO        | 1NO                | HW7D-L11F1010②③-④⑤ |
|                                                                                                                                                                                                                                                                                       |                                  |                               |                  | 1NO-1NC    | 1NO-1NC            | HW7D-L11F1111②③-④⑤ |
|                                                                                                                                                                                                                                                                                       |                                  |                               |                  | 2NO        | 2NC                | HW7D-L11F2002②③-④⑤ |
|                                                                                                                                                                                                                                                                                       |                                  |                               |                  | 2NO        | 2NO                | HW7D-L11F2020②③-④⑤ |
|                                                                                                                                                                                                                                                                                       |                                  |                               | Transformer      | 1NO        | 1NC                | HW7D-L11F1001②③-④⑤ |
|                                                                                                                                                                                                                                                                                       |                                  |                               |                  | 1NO        | 1NO                | HW7D-L11F1010②③④⑤  |
|                                                                                                                                                                                                                                                                                       |                                  |                               |                  | 1NO-1NC    | 1NO-1NC            | HW7D-L11F1111②③-④⑤ |
|                                                                                                                                                                                                                                                                                       |                                  |                               |                  | 2NO        | 2NC                | HW7D-L11F2002②③-④⑤ |
|                                                                                                                                                                                                                                                                                       |                                  |                               |                  | 2NO        | 2NO                | HW7D-L11F2020②③-④⑤ |
|                                                                                                                                                                                                                                                                                       | Interlock*                       | Flush (Top)<br>Flush (Bottom) | Full Voltage     | 1NO        | 1NC                | HW7D-L12F1001②③-④⑤ |
|                                                                                                                                                                                                                                                                                       |                                  |                               |                  | 1NO        | 1NO                | HW7D-L12F1010②③-④⑤ |
|                                                                                                                                                                                                                                                                                       |                                  |                               |                  | 1NO-1NC    | 1NO-1NC            | HW7D-L12F1111②③-④⑤ |
|                                                                                                                                                                                                                                                                                       |                                  |                               |                  | 2NO        | 2NC                | HW7D-L12F2002②③-④⑤ |
|                                                                                                                                                                                                                                                                                       |                                  |                               |                  | 2NO        | 2NO                | HW7D-L12F2020②③-④⑤ |
|                                                                                                                                                                                                                                                                                       |                                  |                               | Transformer      | 1NO        | 1NC                | HW7D-L12F1001②③-④⑤ |
|                                                                                                                                                                                                                                                                                       |                                  |                               |                  | 1NO        | 1NO                | HW7D-L12F1010②③-④⑤ |
|                                                                                                                                                                                                                                                                                       |                                  |                               |                  | 1NO-1NC    | 1NO-1NC            | HW7D-L12F1111②③-④⑤ |
|                                                                                                                                                                                                                                                                                       |                                  |                               |                  | 2NO        | 2NC                | HW7D-L12F2002②③-④⑤ |
|                                                                                                                                                                                                                                                                                       |                                  |                               |                  | 2NO        | 2NO                | HW7D-L12F2020②③-④⑤ |
| Interlock*                                                                                                                                                                                                                                                                            | Flush (Top)<br>Extended (Bottom) | Full Voltage                  | 1NO              | 1NC        | HW7D-L21F1001②③-④⑤ |                    |
|                                                                                                                                                                                                                                                                                       |                                  |                               | 1NO              | 1NO        | HW7D-L21F1010②③-④⑤ |                    |
|                                                                                                                                                                                                                                                                                       |                                  |                               | 1NO-1NC          | 1NO-1NC    | HW7D-L21F1111②③-④⑤ |                    |
|                                                                                                                                                                                                                                                                                       |                                  |                               | 2NO              | 2NC        | HW7D-L21F2002②③-④⑤ |                    |
|                                                                                                                                                                                                                                                                                       |                                  |                               | 2NO              | 2NO        | HW7D-L21F2020②③-④⑤ |                    |
|                                                                                                                                                                                                                                                                                       |                                  | Transformer                   | 1NO              | 1NC        | HW7D-L21F1001②③-④⑤ |                    |
|                                                                                                                                                                                                                                                                                       |                                  |                               | 1NO              | 1NO        | HW7D-L21F1010②③-④⑤ |                    |
|                                                                                                                                                                                                                                                                                       |                                  |                               | 1NO-1NC          | 1NO-1NC    | HW7D-L21F1111②③-④⑤ |                    |
|                                                                                                                                                                                                                                                                                       |                                  |                               | 2NO              | 2NC        | HW7D-L21F2002②③-④⑤ |                    |
|                                                                                                                                                                                                                                                                                       |                                  |                               | 2NO              | 2NO        | HW7D-L21F2020②③-④⑤ |                    |
| Interlock*                                                                                                                                                                                                                                                                            | Flush (Top)<br>Extended (Bottom) | Full Voltage                  | 1NO              | 1NC        | HW7D-L22F1001②③-④⑤ |                    |
|                                                                                                                                                                                                                                                                                       |                                  |                               | 1NO              | 1NO        | HW7D-L22F1010②③-④⑤ |                    |
|                                                                                                                                                                                                                                                                                       |                                  |                               | 1NO-1NC          | 1NO-1NC    | HW7D-L22F1111②③-④⑤ |                    |
|                                                                                                                                                                                                                                                                                       |                                  |                               | 2NO              | 2NC        | HW7D-L22F2002②③-④⑤ |                    |
|                                                                                                                                                                                                                                                                                       |                                  |                               | 2NO              | 2NO        | HW7D-L22F2020②③-④⑤ |                    |
|                                                                                                                                                                                                                                                                                       |                                  | Transformer                   | 1NO              | 1NC        | HW7D-L22F1001②③-④⑤ |                    |
|                                                                                                                                                                                                                                                                                       |                                  |                               | 1NO              | 1NO        | HW7D-L22F1010②③-④⑤ |                    |
|                                                                                                                                                                                                                                                                                       |                                  |                               | 1NO-1NC          | 1NO-1NC    | HW7D-L22F1111②③-④⑤ |                    |
|                                                                                                                                                                                                                                                                                       |                                  |                               | 2NO              | 2NC        | HW7D-L22F2002②③-④⑤ |                    |
|                                                                                                                                                                                                                                                                                       |                                  |                               | 2NO              | 2NO        | HW7D-L22F2020②③-④⑤ |                    |



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

| 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*  |

| 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.

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



\* Only available for LED Type illumination.

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

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

## 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 |            |      |               |      |

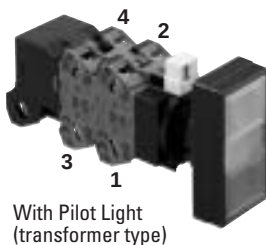


1. Transformers can have two or four contact blocks only.

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**




## Dual Pushbutton Switches (Sub-Assembled)

Contact Blocks + Mounting Adaptor + Operator + Lens = Complete Part



A3

Switches &amp; Pilot Devices

## Part Numbers: Operators

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

## ④ Pushbutton Color Code

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

## ⑤ Engraving Codes

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

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

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



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: Lamps/Lens

|       | Type                | Voltage    | Part Number |
|-------|---------------------|------------|-------------|
| Lamps |                     | 6V AC/DC   | LSTD-6②     |
|       |                     | 12V AC/DC  | LSTD-1②     |
|       |                     | 24V AC/DC  | LSTD-2②     |
|       |                     | 120V AC    | LSTD-H2②    |
|       |                     | 240V AC    | LSTD-M4②    |
|       | Incandescent<br>    | 6.3V AC/DC | IS-6        |
|       |                     | 12V AC/DC  | IS-12       |
|       |                     | 24V AC/DC  | IS-24       |
|       |                     | 30V AC/DC  | IS-30       |
| Lens  | Non-Illuminated<br> |            | HW9Z-B7B    |
|       | Illuminated<br>     |            | HW9Z-L7W    |



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

## Part Numbers: Contact Blocks

| Description                     | Part Number                                                  |                                                              |
|---------------------------------|--------------------------------------------------------------|--------------------------------------------------------------|
|                                 | 1NO                                                          | 1NC                                                          |
|                                 |                                                              |                                                              |
| Standard Fingersafe (IP20)      | HW-F10<br>HW-F10R (early make)                               | HW-F01<br>HW-F01R (late break)                               |
| Spring-Up Terminal Contacts     | HW-G10<br>HW-G10R (early make)<br>HW-G10-MAU (gold contacts) | HW-G01<br>HW-G01R (late break)<br>HW-G01-MAU (gold contacts) |
| Exposed Screw Terminal Contacts | HW-C10<br>HW-C10R (early make)                               | HW-C01<br>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-component
4. All contacts (including exposed screw) are UL, CSA, and IEC compliant and carry the CE mark.

## 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<br>Exposed<br>Spring Up | HW-DA1FB<br>HW-DA1B<br>HW-GA1    |
| Full Voltage Adaptor                    |  | For use with even number of contacts.                                                                   | Fingersafe<br>Exposed              | TW-DA1FB<br>TW-DA1B              |
| Transformer Unit (6V secondary voltage) |  | 120VAC<br>240VAC<br>480VAC                                                                              | Fingersafe                         | TW-F126B<br>TW-F246B<br>TW-F486B |
|                                         |  | 120V<br>240V<br>480V                                                                                    | Spring Up                          | HW-T126<br>HW-T246<br>HW-L486    |
|                                         |  | 120V<br>240V<br>480V                                                                                    | Exposed                            | TW-T126B<br>TW-T246B<br>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: Anti-Rotation Ring

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



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

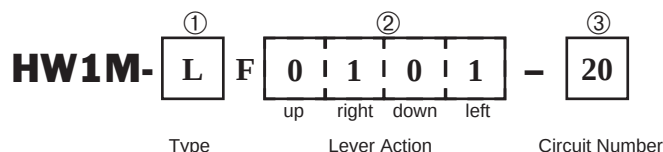
## LED Color Code

| 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 mechanism prevents inadvertent activation          |
|                  | Interlocking | L       |                                                                 |
| ② Lever Action   | Maintained   | 1       | Fill in desired action for each position:<br>Up/Right/Down/Left |
|                  | 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<br>Standard Lever        | 2                | HW1M-F1010-20    |
|                               |                  | HW1M-F2020-20    |
|                               |                  | HW1M-F0101-20    |
|                               |                  | HW1M-F0202-20    |
|                               |                  | HW1M-F0101-40    |
|                               |                  | HW1M-F0202-40    |
| HW1M-L<br>Interlocking Lever  | 4                | HW1M-F1111-22N9  |
|                               |                  | HW1M-F2222-22N9  |
|                               | 2                | HW1M-LF1010-20   |
|                               |                  | HW1M-LF2020-20   |
|                               |                  | HW1M-LF0101-20   |
|                               |                  | HW1M-LF0202-20   |
|                               | 4                | HW1M-LF0101-40   |
|                               |                  | HW1M-LF0202-40   |
| HW1M-LF<br>Interlocking Lever | 4                | HW1M-LF1111-22N9 |
|                               |                  | HW1M-LF2222-22N9 |
|                               | 2                | HW1M-LF1010-20   |
|                               |                  | HW1M-LF2020-20   |
|                               |                  | HW1M-LF0101-20   |
|                               |                  | HW1M-LF0202-20   |
|                               | 4                | HW1M-LF0101-40   |
|                               |                  | HW1M-LF0202-40   |

## **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     |

### **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     |

### **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  |

### **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



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Switches &amp; 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     |



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: 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.

## Part Numbers: Replacement Parts

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

## Part Numbers: Contact Blocks

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

### Part Numbers: 2-Position Pushbutton Selectors

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



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    |



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## Switches & Pilot Devices

Pushbutton Selectors (Partial-Assemblies)

Contact Assembly + Operator/Button = Complete Part

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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<br> | 1NO<br>1NC<br>1NO/1NC<br>2NO<br>2NC<br>2NO/2NC | HW-CBF10<br>HW-CBF01<br>HW-CBF11<br>HW-CBF20<br>HW-CBF02<br>HW-CBF22 |
| Spring Up Terminal Contacts<br>  | 1NO<br>1NC<br>1NO/1NC<br>2NO<br>2NC<br>2NO/2NC | HW-CB10<br>HW-CB01<br>HW-CB11<br>HW-CB20<br>HW-CB02<br>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 &amp; 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<br> | 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)<br>        | HW-F10<br>HW-F10R (early make) | HW-F01<br>HW-F01R (late break) |
| Spring-Up Terminal Contacts<br>      | HW-G10<br>HW-G10R (early make) | HW-G01<br>HW-G01R (late break) |
| Exposed Screw Terminal Contacts<br> | HW-C10<br>HW-C10R (early make) | HW-C01<br>HW-C01R (late break) |
| Dummy Block<br>                     | 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

| Contact         | Mounting Position | Operator 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              | <del>X</del>      | 0              | <del>X</del> | <del>X</del>   |
|                 | Right             | <del>X</del>      | <del>X</del>   | <del>X</del> | 0              |
| HW-F10R (NO-EM) | Left              | 0                 | <del>X</del>   | 0            | 0              |
|                 | Right             | 0                 | 0              | 0            | X              |
| HW-F01R (NC-LB) | Left              | <del>X</del>      | 0              | <del>X</del> | <del>X</del>   |
|                 | Right             | <del>X</del>      | <del>X</del>   | <del>X</del> | 0              |

### HW Pushbutton Selector Switches - Cam E

| Contact         | Mounting Position | Operator 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              | <del>X</del> | <del>X</del>   |
|                 | Right             | <del>X</del>      | <del>X</del>   | 0            | 0              |
| HW-F10R (NO-EM) | Left              | <del>X</del>      | <del>X</del>   | 0            | 0              |
|                 | Right             | 0                 | 0              | <del>X</del> | <del>X</del>   |
| HW-F01R (NC-LB) | Left              | <del>X</del>      | 0              | <del>X</del> | <del>X</del>   |
|                 | Right             | <del>X</del>      | <del>X</del>   | <del>X</del> | 0              |

### HW Pushbutton Selector Switches - Cam F

| Contact         | Mounting Position | Operator 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              | <del>X</del>      | <del>X</del>   | 0            | X              |
|                 | Right             | 0                 | X              | <del>X</del> | <del>X</del>   |
| HW-F01R (NC-LB) | Left              | <del>X</del>      | <del>X</del>   | <del>X</del> | 0              |
|                 | Right             | <del>X</del>      | 0              | <del>X</del> | <del>X</del>   |

### HW Pushbutton Selector Switches - Cam N

| Contact         | Mounting Position | Operator 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              | <del>X</del>      | <del>X</del>   | 0            | X              |
|                 | Right             | 0                 | X              | <del>X</del> | <del>X</del>   |
| HW-F01R (NC-LB) | Left              | <del>X</del>      | 0              | <del>X</del> | 0              |
|                 | Right             | <del>X</del>      | 0              | <del>X</del> | 0              |



### Part Numbers: Reset Buttons (Assembled)

### ① Button Color Code

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

1. In place of ① specify Button Color Code.
2. 5.1" (130mm) overall length.
3. 16mm flat base for easy alignment

## Complete Part



## Part Number



*In place of ① specify Button Color Code from table.*

## Part Number



### ① Button Color Code

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

## Metal



## Nameplates — HW Series

## Part Numbers: Nameplates

A3

Switches &amp; 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*<br>HWAV5-27† |
| Additional Insert (blank)                  | HWNP-0             | HWNP-0             | HWNP Dimensions<br> |                       |
| Additional Insert (engraved)               | HWNP-①             | HWNP-①             |                     |                       |



1. In place of ①, insert either the standard legend code from table below or custom engraving delimited by “ ”.

2. Standard engravings are available at no charge.

3. \* HWAV-27 comes engraved “Emergency Stop” as shown in drawing.

4. † HWAV5-27 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  | OI (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.

## **Nameplates Order Form — HW Series**

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

Your Company:

Name:

Telephone:

Fax & Email

IDEC Rep/Distributor Contact:

PO number (if known):

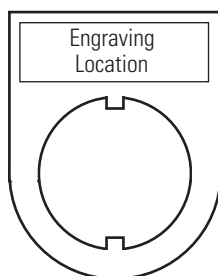
IDEC Rep/Distributor Phone:

IDEC Rep/Distributor Fax & Email

**A3**

**Switches & Pilot Devices**

### **HWAM Nameplate**



#### **Step 1.**

#### **Choose Letter Size - 7/64" or 1/8".**

Check the box for the letter size you want. Then write your lettering in box below 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**

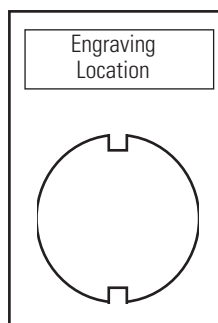
|   |   |   |   |   |   |   |   |   |    |    |
|---|---|---|---|---|---|---|---|---|----|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|----|----|

#### **Sample Letter Sizes**

7/64" Letters: A B C D

1/8" Letters: A B C D

### **HWAQ Nameplate**



#### **Step 1.**

#### **Choose Letter Size - 7/64" or 1/8".**

Check the box for the letter size you want. Then write your lettering in box below 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**

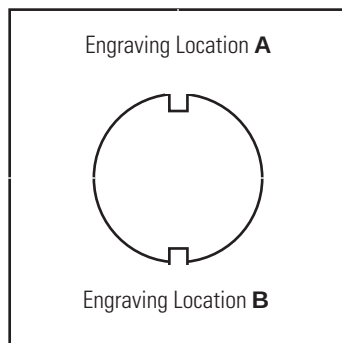
|   |   |   |   |   |   |   |   |   |    |    |
|---|---|---|---|---|---|---|---|---|----|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|----|----|

#### **Sample Letter Sizes**

7/64" Letters: A B C D

1/8" Letters: A B C D

### **HWAS Nameplate**



#### **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**

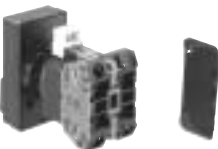
#### **Sample Letter Sizes**

3/32" Letters: A B C D

1/8" Letters: A B C D

## 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<br><br>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                                                                                                                 | Flush Pushbuttons                                      | OC-31    |
|                                   |                                                                                     | Operating temperature: -50 to +60°C                                                                                                                   | Extended Pushbuttons                                   | OC-32    |
| Padlock Cover                     |  | Plastic hinged cover to protect pushbuttons or selector switches. (Not intended for E-Stops)<br><br>Degree of protection: IP65                        | HW9Z-KL1                                               |          |
| Tab Terminal Adapter              |  | Tab #250 (6.35 x 0.8mm): Single tab                                                                                                                   | TW-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)<br>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<br>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<br>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

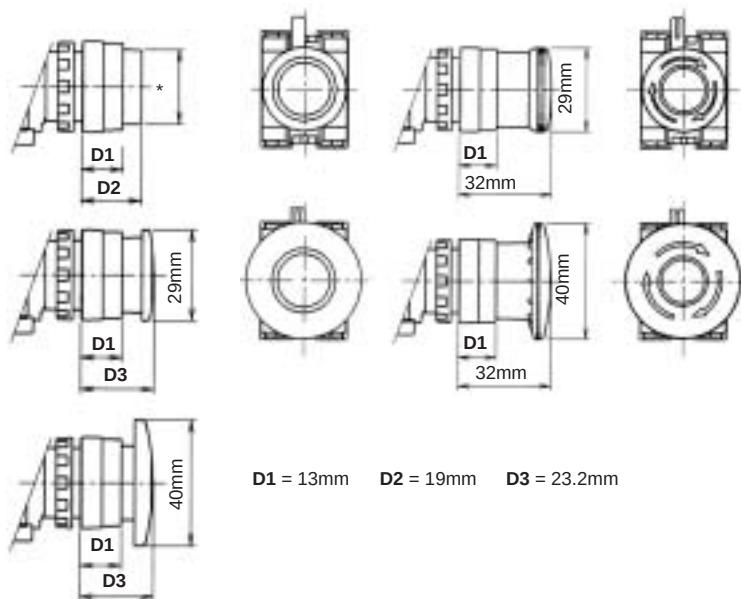
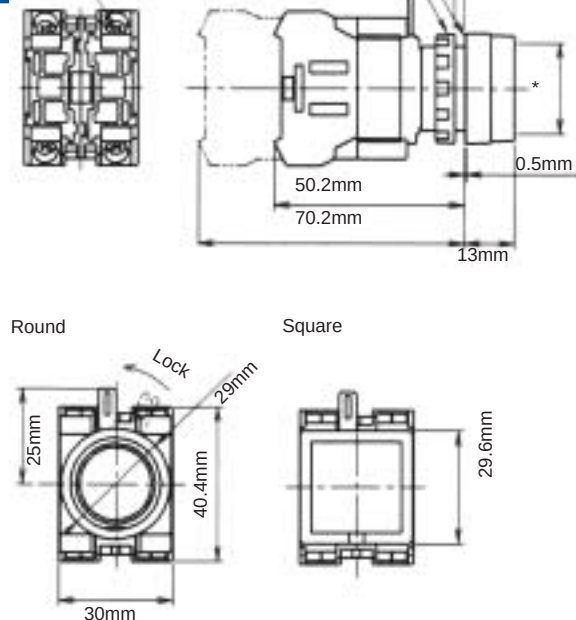
### Non-Illuminated Pushbuttons

Panel Thickness 0.8mm to 6.0mm

M3.5 Terminal Screws

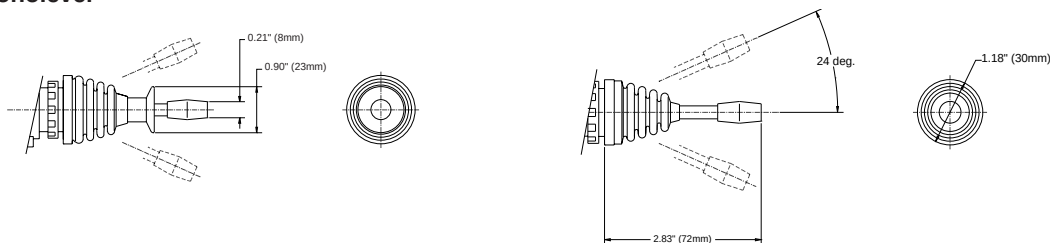
Gasket  
Locking Ring

\* Round: 23.6mm  
\* Square: 24.8mm



D1 = 13mm    D2 = 19mm    D3 = 23.2mm

### Monolever



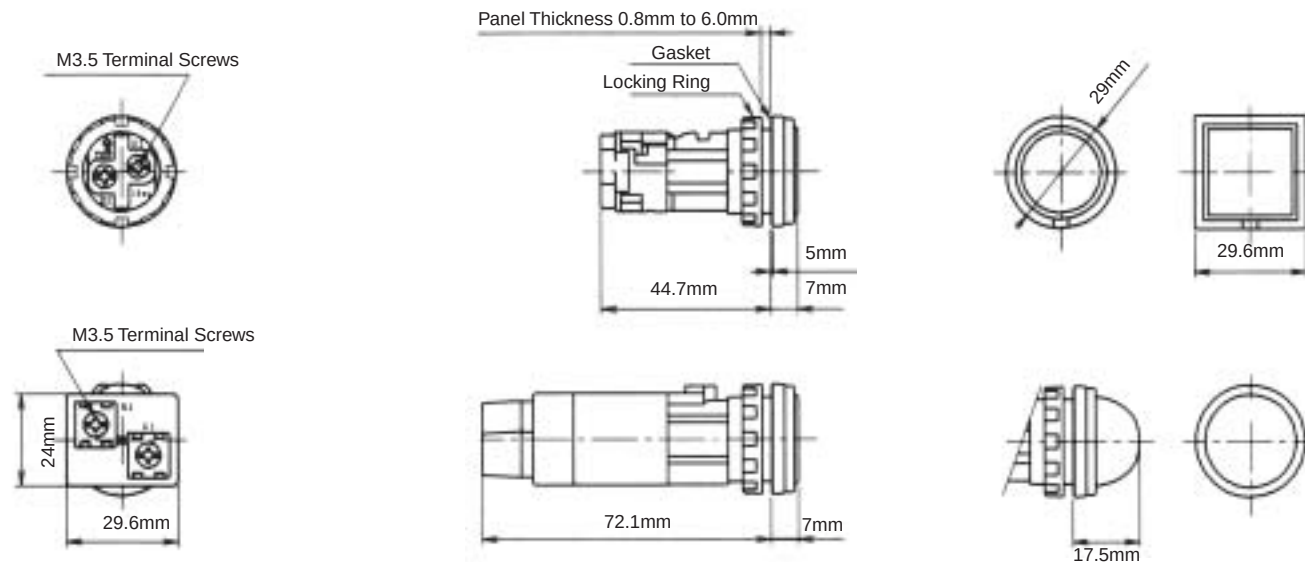
### Pilot Lights

M3.5 Terminal Screws

Panel Thickness 0.8mm to 6.0mm

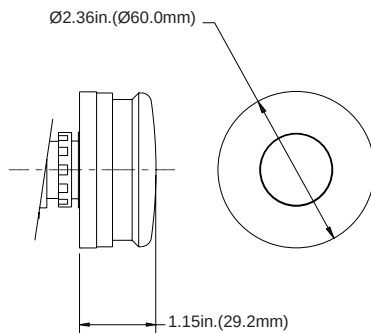
Gasket  
Locking Ring

M3.5 Terminal Screws

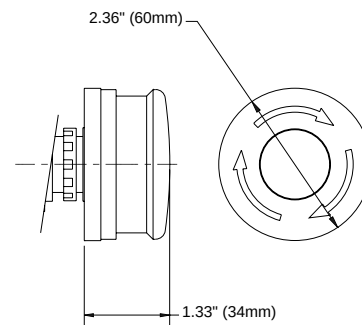


## Dimensions con't

### Jumbo Mushroom Pushbutton HW1B-M5

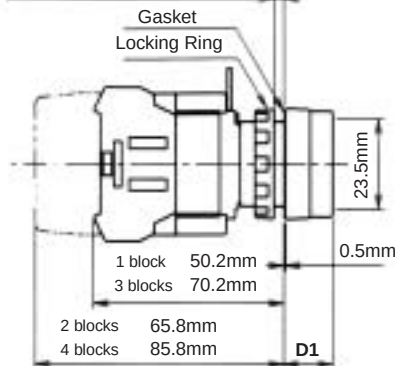


### HW1B-V5

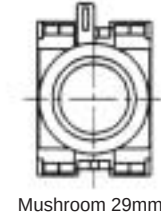
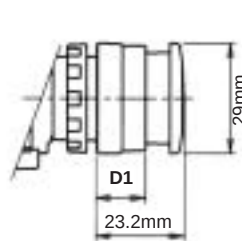


### Illuminated Pushbuttons

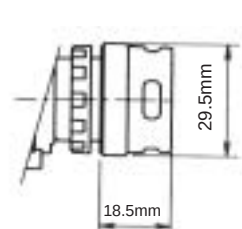
Panel Thickness: 0.8mm to 6.0mm



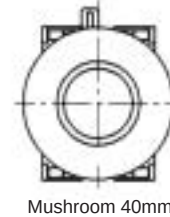
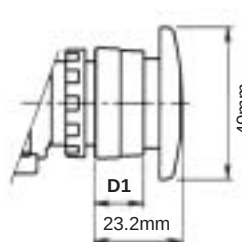
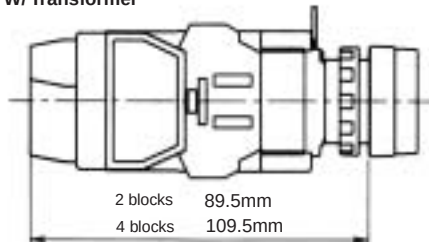
#### Mushroom



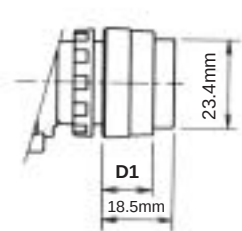
#### Extended with Full Shroud



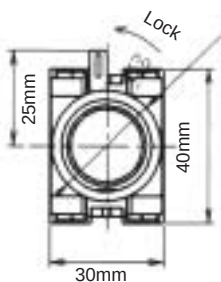
#### W/ Transformer



#### Extended

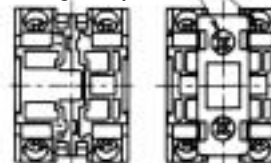


#### Round

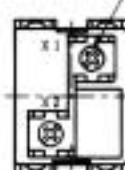


#### 24V AC/DC

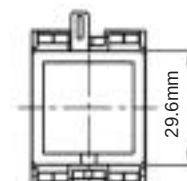
M3.5 Terminal Screws  
 W/ Dummy Block & Full Voltage Adaptor  
 W/ Full Voltage Adaptor



M3.5 Terminal Screws  
 W/ Transformer



#### Square



D1 = 0.51" 13mm



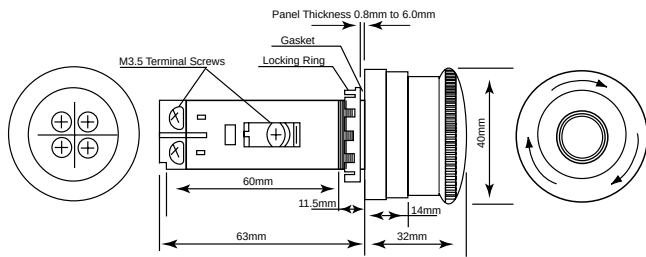
Dimensions can't

## Unibody

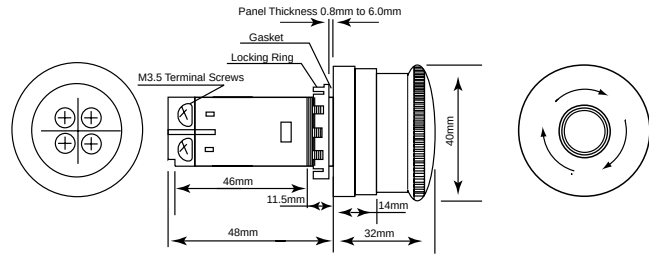
A3

Switches & Pilot Devices

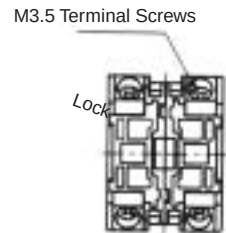
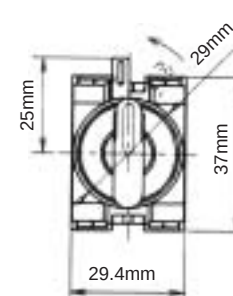
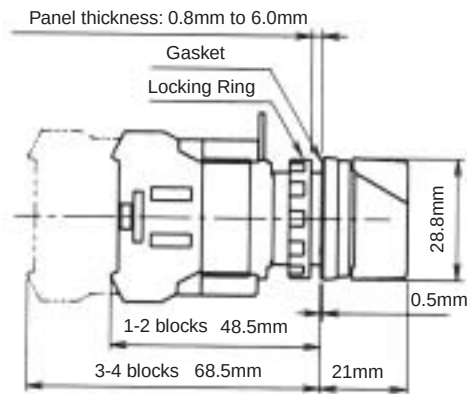
### Illuminated



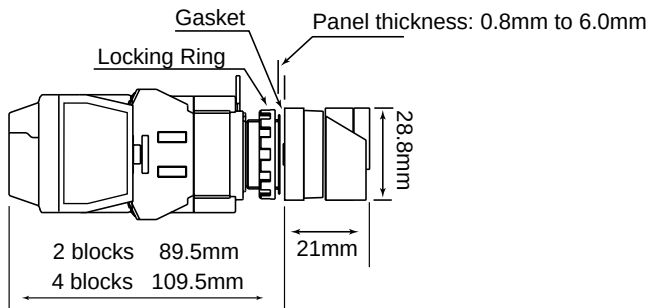
### Non-Illuminated



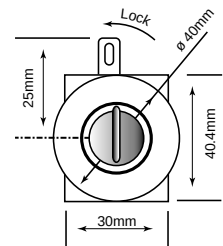
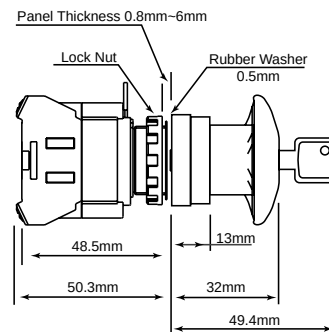
## Selector Switches



## Illuminated Selector Switches



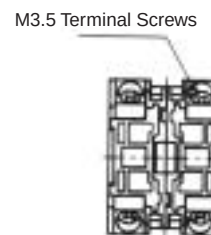
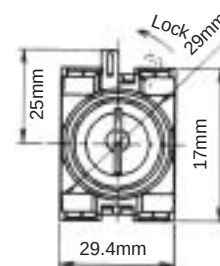
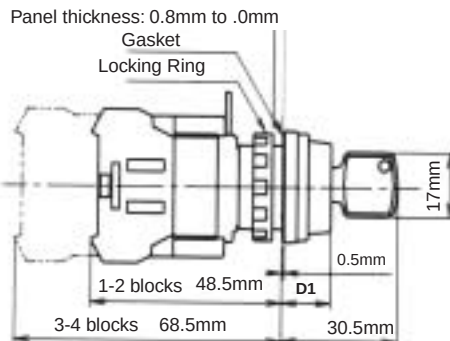
## Pushlock Key Reset



## Key Switches



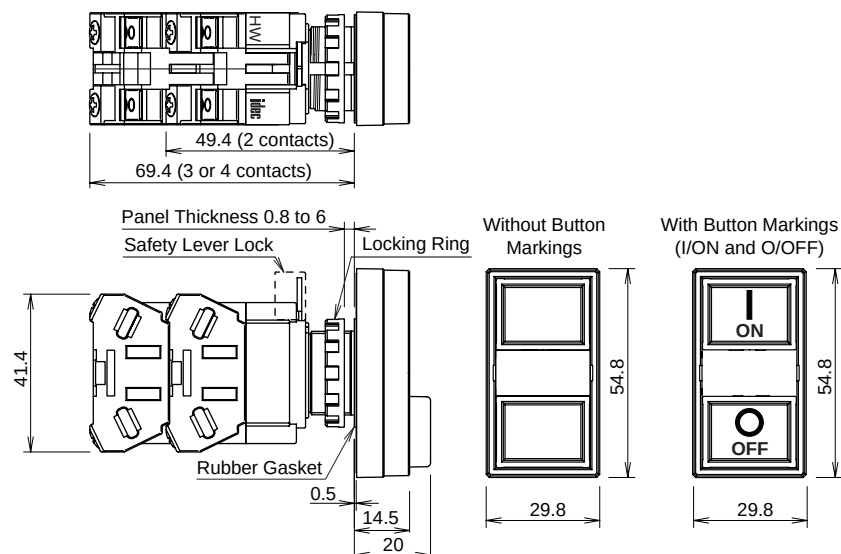
D1 = 13mm



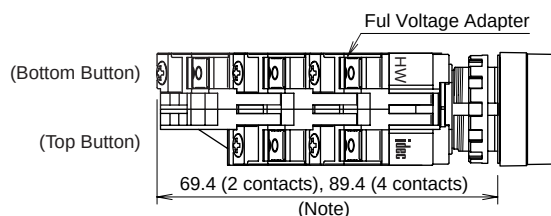
## **Dimensions con't**

### **Dual Pushbutton Switches**

Without Pilot Light



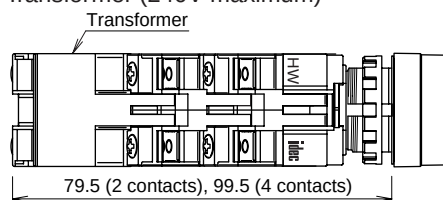
With Pilot Light  
• Full Voltage



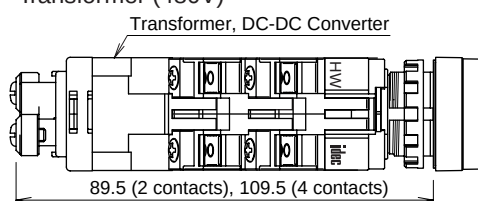
• The depth of 3-contact type depends on the combination of contact blocks at top and bottom pushbuttons.

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

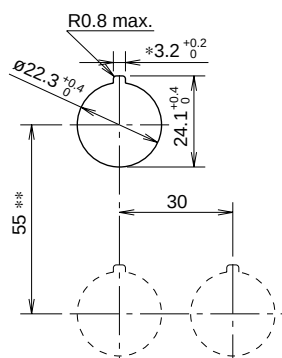
• Transformer (240V maximum)



• 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.

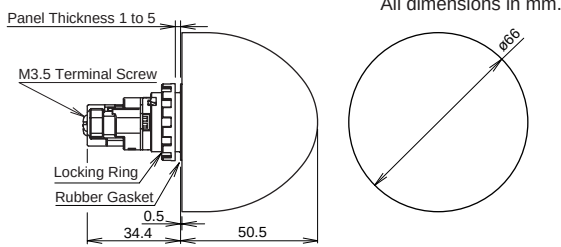
**A3**

**Switches & Pilot Devices**

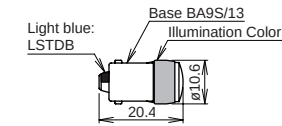
## Dimensions can't

### Jumbo Dome Pilot Lights

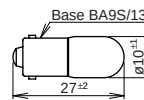
#### Dimensions



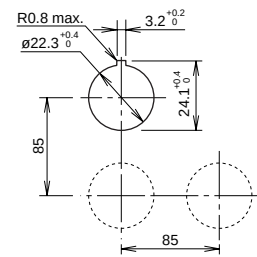
#### LED Lamp LSTDB



#### Incandescent Lamp LSB

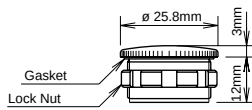


#### Mounting Hole Layout

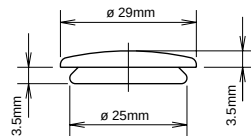


## Accessory Dimensions

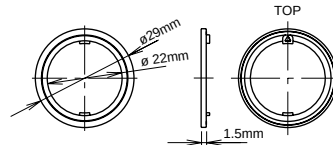
#### LW9Z-BM Metallic Mounting Hole Plug



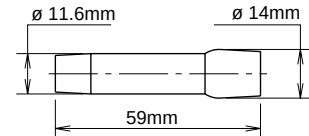
#### OB-31 Rubber Mounting Hole Plug



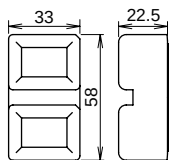
#### HW9Z-RL Anti-Rotation Ring



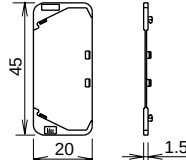
#### OR-55 Lamp/LED Removal Tool



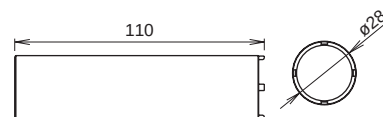
#### HW9Z-D7D Dual Pushbutton Rubber Cover



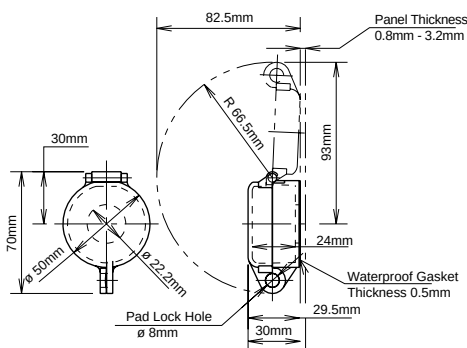
#### HW-VG1 Dual Pushbutton Barrier



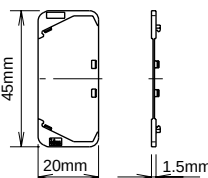
#### MW9Z-T1 Locking Ring Wrench



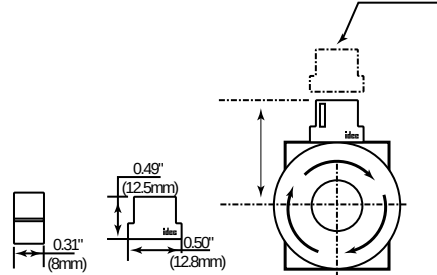
#### HW9Z-KL1 Padlock Cover



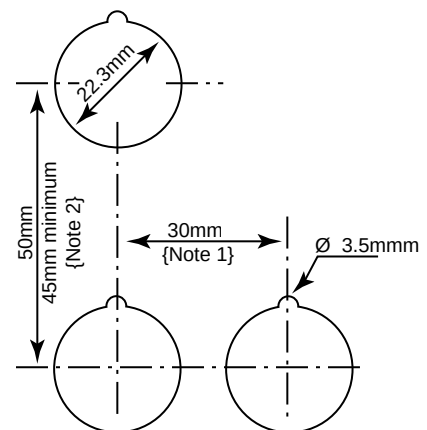
#### HW-VL1 Barrier



#### HWLS-TK1971 Safety Lever Lock



#### Mounting Hole Layout



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

**Note 2:** Pilot Light: 30mm minimum

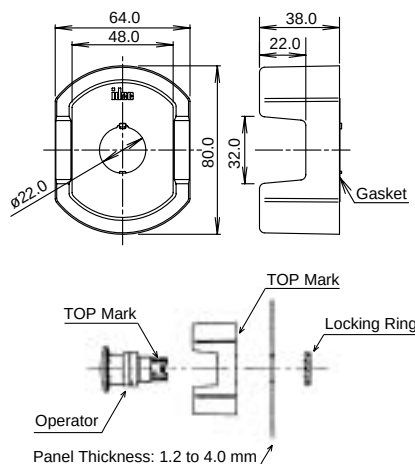
The values represent the minimum mounting centers when one stack of contact blocks is used. When two stacks or an illuminated unit is used, refer to the dimensions and considering accessibility to determine minimum mounting centers.

## Accessory Dimensions con't

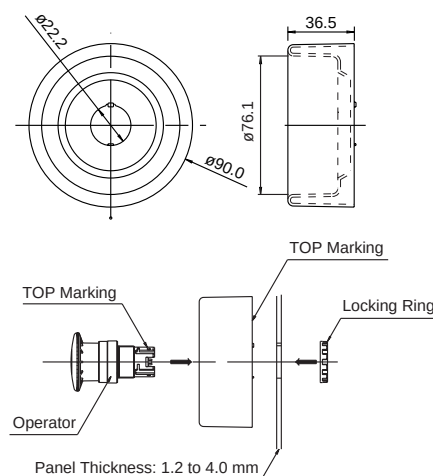
**A3**

**Switches & Pilot Devices**

HW9Z-KG1-TK2120



HW9Z-KG2-TK2120



## Specification Charts — HW Series

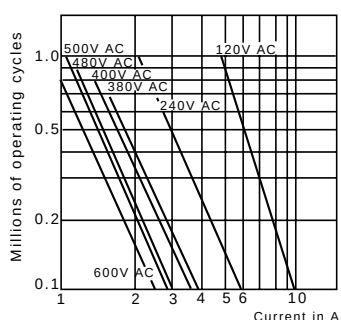
### Rated Operational Power DC Voltage

Inductive

DC Voltages

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

AC Voltages



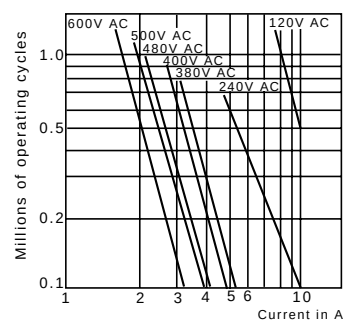
Conforming to IEC 947-5-1 Appendix C.  
Utilization categories AC-15 and DC-13.  
Operation rate: 1,800 op. hour  
Load factor: 0.4 ± 0.05

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.

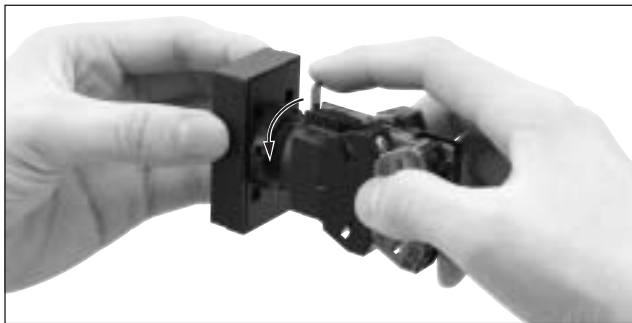
## HW General Instructions

### 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

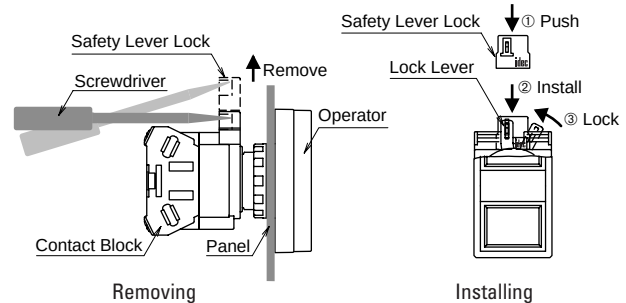
1. When mounting the operator onto a panel, use the optional locking ring wrench (MW9Z-T1) to tighten the locking ring. Tightening torque must not exceed 2.0 N·m. Do not use pliers. Excessive tightening will damage the locking ring.
2. For the contact blocks and transformers housing LED and incandescent 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

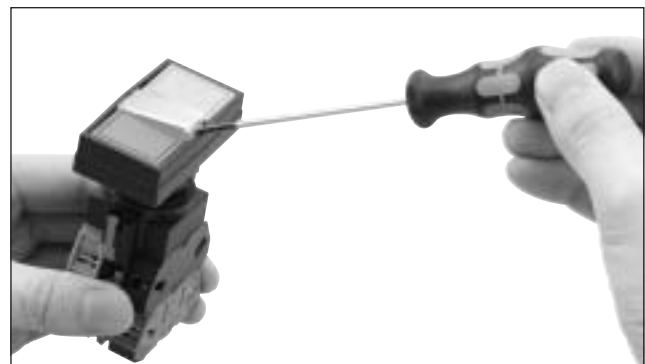
### Replacement of Lens

#### 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**

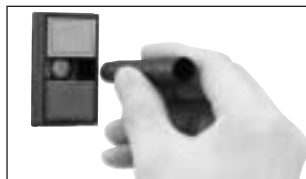
### **Replacement of Lamps**

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**

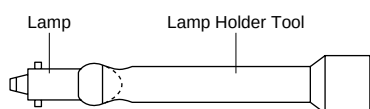
#### **Removal**

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

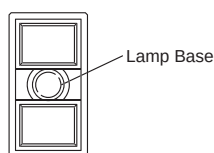


#### **Installation**

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



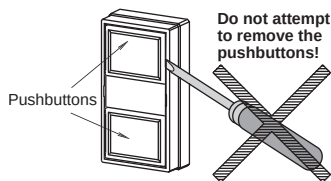
2. Place the pins on the lamp base to the grooves in the lamp socket. Insert the lamp and turn it clockwise.



### **About Pushbutton Switches**

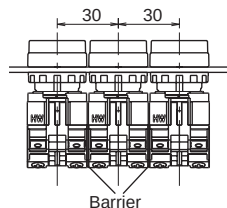
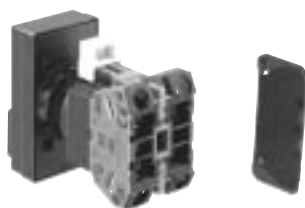
The pushbuttons cannot be removed or replaced!

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

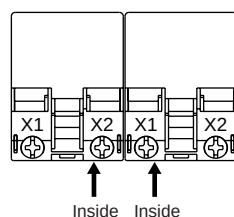


### **Narrow Mounting**

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.

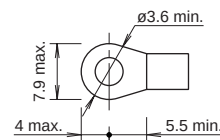
### **Installation of LED Illuminated Units**

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

### **Applicable Wiring**

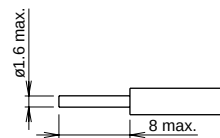
The applicable wire size is 2 mm<sup>2</sup> maximum. (solid wire ø1.6 mm maximum) One or two wires can be connected.

### **Applicable Crimping Terminal**

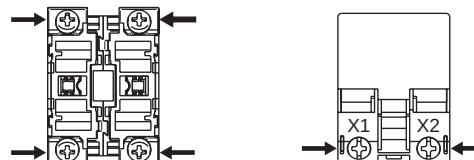


Be sure to use an insulation tube or cover on the crimping part of the terminal to prevent electrical shocks.

### **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.

