

## TW Series — 22mm NEMA Style Pushbuttons

**Key features:**

- TW NEMA Style Switches with snap-on contacts
- Corrosion resistant octagonal chrome plated locking bezel
- Snap-on 10A contact blocks
- LED illumination
- Slow make, double break, contacts
- Modular construction for maximum flexibility
- Type 4X and IP65 watertight/oiltight panel
- Available assembled or as sub-components
- Finger-Safe - Spring-Up
- Large M3.5 screw terminals with captive sems plate

IDEC has your 22mm switching needs covered.

Button styles include flush, extended, mushroom, or square and all bodies are crafted from fracture-resistant nylon.

All illuminated units feature two lens styles, one that maximizes light dispersion, the other accommodates direct lens engraving.

Contact mechanism allow for a wide current rating, 5mA to 10A, which reduces the need for various contact materials.

When looking for a 22mm switch that is durable, easy to use, and versatile, then IDEC's TW series is your solution.



UL Listed  
File No. E68961



TUV Rheinland



CSA Approved  
File No. LR21451



File No. DK95-01696

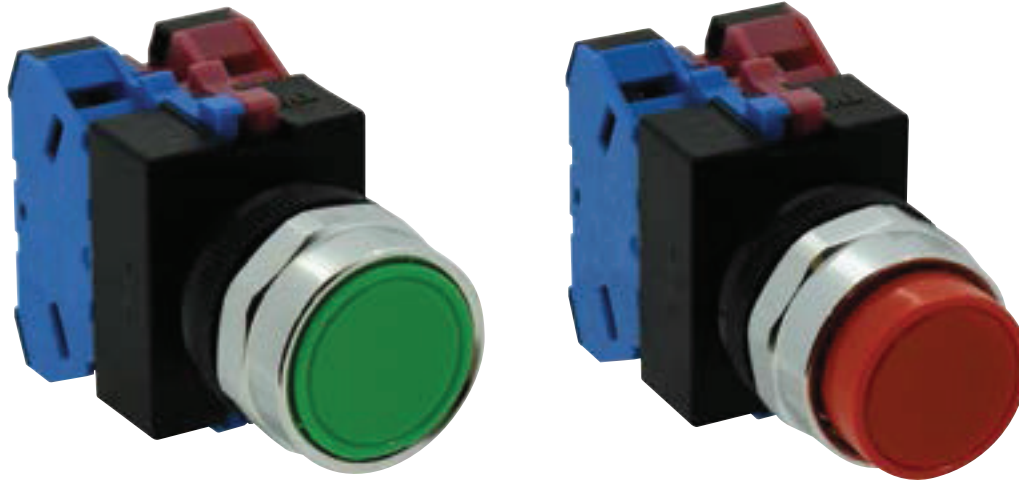


Certificate No.  
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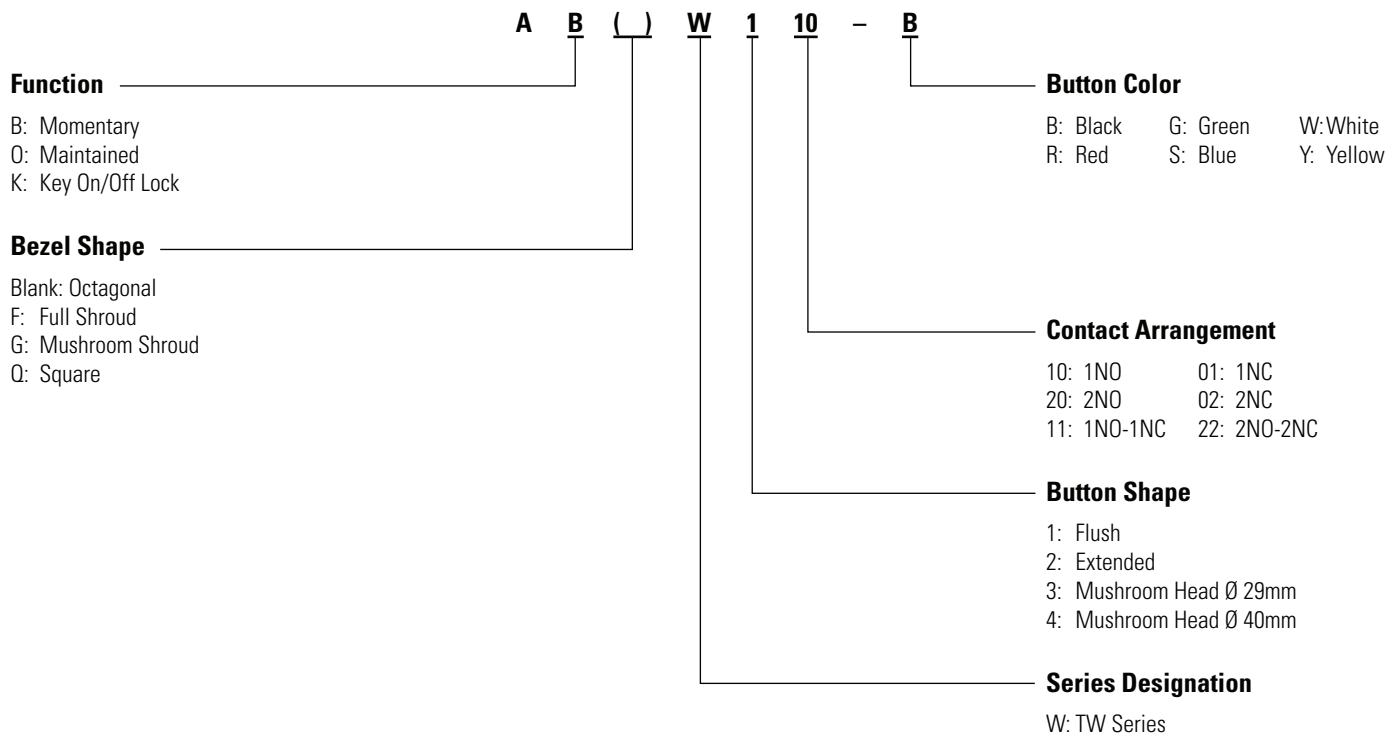


| Conforming to Standards           |                                                                                                                      |                                          | EN60947-1, EN60947-5-1, VDE0660-200, UL508, CSA C22-2 No. 14                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                              |            |      |      |      |             |                   |      |                   |                                    |                              |                    |                              |   |            |      |            |                              |   |            |                        |   |            |               |                                          |   |            |                                    |   |            |                       |                   |   |            |      |            |                              |               |                             |
|-----------------------------------|----------------------------------------------------------------------------------------------------------------------|------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|------------|------|------|------|-------------|-------------------|------|-------------------|------------------------------------|------------------------------|--------------------|------------------------------|---|------------|------|------------|------------------------------|---|------------|------------------------|---|------------|---------------|------------------------------------------|---|------------|------------------------------------|---|------------|-----------------------|-------------------|---|------------|------|------------|------------------------------|---------------|-----------------------------|
| Specifications                    | Approvals                                                                                                            |                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <div><div><br/>File No. E68961</div><div><br/>File No. LR21451</div><div><br/>Certificate No. 2030010305027380</div></div> <div><div><br/>TÜV Rheinland</div><div></div></div> <div>Registration No: J9551802 (E-Stops)<br/>Registration No: J9551803 (All other switches)<br/>Registration No: J9551804 (Pilot Lights)</div> <div><b>CSA:</b> pushbuttons and selector switches: A600 pilot lights and illuminated pushbuttons, direct supply pilot lights and illuminated pushbuttons with integral transformer (100/110, 115, 120, 200/220, 230, 240, 380, 400/440, 480V)<br/><b>UL:</b> pushbuttons and selector switches: A600 pilot lights and illuminated pushbuttons, direct supply pilot lights and illuminated pushbuttons with integral transformer (100/110, 115, 120, 200/220, 230, 240, 380, 400/440, 480V)<br/><b>TÜV:</b> pushbuttons and selector switches: A600=P600 (NO, NC)/Q600 (NO-EM, NC-LB) pilot lights and illuminated pushbuttons, direct supply pilot lights and illuminated pushbuttons with integral transformer (100/110, 115, 120, 200/220, 230, 240, 380, 400/440, 480V)</div> |                              |            |      |      |      |             |                   |      |                   |                                    |                              |                    |                              |   |            |      |            |                              |   |            |                        |   |            |               |                                          |   |            |                                    |   |            |                       |                   |   |            |      |            |                              |               |                             |
|                                   | Operating Temperature                                                                                                |                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Operation: −25 to +50°C (without freezing), Storage: −40 to +80°C (without freezing)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                              |            |      |      |      |             |                   |      |                   |                                    |                              |                    |                              |   |            |      |            |                              |   |            |                        |   |            |               |                                          |   |            |                                    |   |            |                       |                   |   |            |      |            |                              |               |                             |
|                                   | Vibration Resistance                                                                                                 |                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 5 to 55Hz, 100m/sec <sup>2</sup> (10g) conforming to IEC6068-2-6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                              |            |      |      |      |             |                   |      |                   |                                    |                              |                    |                              |   |            |      |            |                              |   |            |                        |   |            |               |                                          |   |            |                                    |   |            |                       |                   |   |            |      |            |                              |               |                             |
|                                   | Shock Resistance                                                                                                     |                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 1000m/sec <sup>2</sup> (100g) conforming to IEC6068-2-7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                              |            |      |      |      |             |                   |      |                   |                                    |                              |                    |                              |   |            |      |            |                              |   |            |                        |   |            |               |                                          |   |            |                                    |   |            |                       |                   |   |            |      |            |                              |               |                             |
|                                   | Electric Shock Protection                                                                                            |                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Class 2 conforming to IEC60664-7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                              |            |      |      |      |             |                   |      |                   |                                    |                              |                    |                              |   |            |      |            |                              |   |            |                        |   |            |               |                                          |   |            |                                    |   |            |                       |                   |   |            |      |            |                              |               |                             |
|                                   | Degree of Protection<br>(conforming to IEC60529)<br>(conforming to NEMA ICS6-110)                                    |                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | IP65 from front of the panel; (IP54 for key switches)<br>IP20 (Type HW-U contact block)<br>Type 1, 2, 3, 3R, 3S, 4, 4X, 5, 12, 13 (Type 1, 2, 3R, 5, 12, 13 for key switches)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                              |            |      |      |      |             |                   |      |                   |                                    |                              |                    |                              |   |            |      |            |                              |   |            |                        |   |            |               |                                          |   |            |                                    |   |            |                       |                   |   |            |      |            |                              |               |                             |
|                                   | Mechanical Life                                                                                                      |                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Momentary pushbuttons: 5,000,000 (1800 operations per hour)<br>All other switches: 500,000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                              |            |      |      |      |             |                   |      |                   |                                    |                              |                    |                              |   |            |      |            |                              |   |            |                        |   |            |               |                                          |   |            |                                    |   |            |                       |                   |   |            |      |            |                              |               |                             |
|                                   | Pollution Degree (conforming to IEC60947-1)                                                                          |                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                              |            |      |      |      |             |                   |      |                   |                                    |                              |                    |                              |   |            |      |            |                              |   |            |                        |   |            |               |                                          |   |            |                                    |   |            |                       |                   |   |            |      |            |                              |               |                             |
|                                   | Rated Operational Characteristics                                                                                    |                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | AC-15: A600 or Ue = 250V, Ie = 3A (NO, NC, NO-EM, NC-LB)<br>DC-13: P600 or Ue = 125V, Ie = 1.1A (NO, NC)<br>DC-13: Q600 or Ue = 125V, Ie = 0.9A (NO-EM, NC-LB)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                              |            |      |      |      |             |                   |      |                   |                                    |                              |                    |                              |   |            |      |            |                              |   |            |                        |   |            |               |                                          |   |            |                                    |   |            |                       |                   |   |            |      |            |                              |               |                             |
|                                   | Rated Insulation Voltage                                                                                             |                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 600V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                              |            |      |      |      |             |                   |      |                   |                                    |                              |                    |                              |   |            |      |            |                              |   |            |                        |   |            |               |                                          |   |            |                                    |   |            |                       |                   |   |            |      |            |                              |               |                             |
|                                   | Rated Switching Over-Voltage                                                                                         |                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Less than 4kV, conforming to IEC60947-1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                              |            |      |      |      |             |                   |      |                   |                                    |                              |                    |                              |   |            |      |            |                              |   |            |                        |   |            |               |                                          |   |            |                                    |   |            |                       |                   |   |            |      |            |                              |               |                             |
|                                   | Rated Impulse Withstanding Voltage                                                                                   |                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 4kV for contact circuit, 2.5kV for lamp circuit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                              |            |      |      |      |             |                   |      |                   |                                    |                              |                    |                              |   |            |      |            |                              |   |            |                        |   |            |               |                                          |   |            |                                    |   |            |                       |                   |   |            |      |            |                              |               |                             |
|                                   | Rated Thermal Current                                                                                                |                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 10 Amp                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                              |            |      |      |      |             |                   |      |                   |                                    |                              |                    |                              |   |            |      |            |                              |   |            |                        |   |            |               |                                          |   |            |                                    |   |            |                       |                   |   |            |      |            |                              |               |                             |
|                                   | Minimum Switching Capacity                                                                                           |                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 5 mA at 3V AC/DC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                              |            |      |      |      |             |                   |      |                   |                                    |                              |                    |                              |   |            |      |            |                              |   |            |                        |   |            |               |                                          |   |            |                                    |   |            |                       |                   |   |            |      |            |                              |               |                             |
|                                   | Contact Operation                                                                                                    |                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Slow break NC or slow make NO, self-cleaning                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                              |            |      |      |      |             |                   |      |                   |                                    |                              |                    |                              |   |            |      |            |                              |   |            |                        |   |            |               |                                          |   |            |                                    |   |            |                       |                   |   |            |      |            |                              |               |                             |
|                                   | Recommended Terminal Torque                                                                                          |                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <table><tr><th>Unit</th><th>Wire</th><th>Number of Wires</th><th>Recommended Tightening Torque (Nm)</th><th>Terminal Screw</th></tr><tr><td rowspan="5">HW-U Contact Block</td><td>Crimping Terminal</td><td>2</td><td>1.0 to 1.3</td><td rowspan="5">M3.5</td></tr><tr><td rowspan="2">Solid Wire</td><td>ø0.5 to 1.6 mm (AWG14 to 22)</td><td>2</td><td>1.0 to 1.3</td></tr><tr><td>ø1.7 to 2.0 mm (AWG12)</td><td>1</td><td>1.2 to 1.3</td></tr><tr><td rowspan="2">Stranded Wire</td><td>0.3 to 2.0 mm<sup>2</sup> (AWG14 to 22)</td><td>2</td><td>1.0 to 1.3</td></tr><tr><td>2.1 to 3.5 mm<sup>2</sup> (AWG12)</td><td>1</td><td>1.2 to 1.3</td></tr><tr><td rowspan="3">Illuminated Unit (*1)</td><td>Crimping Terminal</td><td rowspan="3">2</td><td rowspan="3">1.0 to 1.3</td><td rowspan="3">M3.5</td></tr><tr><td>Solid Wire</td><td>ø0.5 to 1.6 mm (AWG14 to 22)</td></tr><tr><td>Stranded Wire</td><td>0.3 to 2.0 mm (AWG14 to 22)</td></tr></table>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                              |            |      |      |      |             | Unit              | Wire | Number of Wires   | Recommended Tightening Torque (Nm) | Terminal Screw               | HW-U Contact Block | Crimping Terminal            | 2 | 1.0 to 1.3 | M3.5 | Solid Wire | ø0.5 to 1.6 mm (AWG14 to 22) | 2 | 1.0 to 1.3 | ø1.7 to 2.0 mm (AWG12) | 1 | 1.2 to 1.3 | Stranded Wire | 0.3 to 2.0 mm <sup>2</sup> (AWG14 to 22) | 2 | 1.0 to 1.3 | 2.1 to 3.5 mm <sup>2</sup> (AWG12) | 1 | 1.2 to 1.3 | Illuminated Unit (*1) | Crimping Terminal | 2 | 1.0 to 1.3 | M3.5 | Solid Wire | ø0.5 to 1.6 mm (AWG14 to 22) | Stranded Wire | 0.3 to 2.0 mm (AWG14 to 22) |
|                                   | Unit                                                                                                                 | Wire                                     | Number of Wires                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Recommended Tightening Torque (Nm)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Terminal Screw               |            |      |      |      |             |                   |      |                   |                                    |                              |                    |                              |   |            |      |            |                              |   |            |                        |   |            |               |                                          |   |            |                                    |   |            |                       |                   |   |            |      |            |                              |               |                             |
|                                   | HW-U Contact Block                                                                                                   | Crimping Terminal                        | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 1.0 to 1.3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | M3.5                         |            |      |      |      |             |                   |      |                   |                                    |                              |                    |                              |   |            |      |            |                              |   |            |                        |   |            |               |                                          |   |            |                                    |   |            |                       |                   |   |            |      |            |                              |               |                             |
|                                   |                                                                                                                      | Solid Wire                               | ø0.5 to 1.6 mm (AWG14 to 22)                                                                                                                                                                                                                                                                                                                                                                                                                                                | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                              | 1.0 to 1.3 |      |      |      |             |                   |      |                   |                                    |                              |                    |                              |   |            |      |            |                              |   |            |                        |   |            |               |                                          |   |            |                                    |   |            |                       |                   |   |            |      |            |                              |               |                             |
|                                   |                                                                                                                      |                                          | ø1.7 to 2.0 mm (AWG12)                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                              | 1.2 to 1.3 |      |      |      |             |                   |      |                   |                                    |                              |                    |                              |   |            |      |            |                              |   |            |                        |   |            |               |                                          |   |            |                                    |   |            |                       |                   |   |            |      |            |                              |               |                             |
| Stranded Wire                     |                                                                                                                      | 0.3 to 2.0 mm <sup>2</sup> (AWG14 to 22) | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 1.0 to 1.3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                              |            |      |      |      |             |                   |      |                   |                                    |                              |                    |                              |   |            |      |            |                              |   |            |                        |   |            |               |                                          |   |            |                                    |   |            |                       |                   |   |            |      |            |                              |               |                             |
|                                   |                                                                                                                      | 2.1 to 3.5 mm <sup>2</sup> (AWG12)       | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 1.2 to 1.3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                              |            |      |      |      |             |                   |      |                   |                                    |                              |                    |                              |   |            |      |            |                              |   |            |                        |   |            |               |                                          |   |            |                                    |   |            |                       |                   |   |            |      |            |                              |               |                             |
| Illuminated Unit (*1)             | Crimping Terminal                                                                                                    | 2                                        | 1.0 to 1.3                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | M3.5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                              |            |      |      |      |             |                   |      |                   |                                    |                              |                    |                              |   |            |      |            |                              |   |            |                        |   |            |               |                                          |   |            |                                    |   |            |                       |                   |   |            |      |            |                              |               |                             |
|                                   | Solid Wire                                                                                                           |                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | ø0.5 to 1.6 mm (AWG14 to 22) |            |      |      |      |             |                   |      |                   |                                    |                              |                    |                              |   |            |      |            |                              |   |            |                        |   |            |               |                                          |   |            |                                    |   |            |                       |                   |   |            |      |            |                              |               |                             |
|                                   | Stranded Wire                                                                                                        |                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 0.3 to 2.0 mm (AWG14 to 22)  |            |      |      |      |             |                   |      |                   |                                    |                              |                    |                              |   |            |      |            |                              |   |            |                        |   |            |               |                                          |   |            |                                    |   |            |                       |                   |   |            |      |            |                              |               |                             |
| Applicable Wire Size              |                                                                                                                      |                                          | <table><tr><td rowspan="3">Pilot Light</td><td>Crimping Terminal</td><td rowspan="3">2</td><td rowspan="3">0.6 to 1.0 (M3.0)</td></tr><tr><td>Solid Wire</td><td>ø0.5 to 1.6 mm (AWG14 to 22)</td></tr><tr><td>Stranded Wire</td><td>ø0.3 to 2.0 mm (AWG14 to 22)</td></tr></table> <div> 1. * refers to the lamp terminals of the illuminated push buttons and selector switches.</div> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                              |            |      |      |      | Pilot Light | Crimping Terminal | 2    | 0.6 to 1.0 (M3.0) | Solid Wire                         | ø0.5 to 1.6 mm (AWG14 to 22) | Stranded Wire      | ø0.3 to 2.0 mm (AWG14 to 22) |   |            |      |            |                              |   |            |                        |   |            |               |                                          |   |            |                                    |   |            |                       |                   |   |            |      |            |                              |               |                             |
| Pilot Light                       | Crimping Terminal                                                                                                    | 2                                        | 0.6 to 1.0 (M3.0)                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                              |            |      |      |      |             |                   |      |                   |                                    |                              |                    |                              |   |            |      |            |                              |   |            |                        |   |            |               |                                          |   |            |                                    |   |            |                       |                   |   |            |      |            |                              |               |                             |
|                                   | Solid Wire                                                                                                           |                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | ø0.5 to 1.6 mm (AWG14 to 22)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                              |            |      |      |      |             |                   |      |                   |                                    |                              |                    |                              |   |            |      |            |                              |   |            |                        |   |            |               |                                          |   |            |                                    |   |            |                       |                   |   |            |      |            |                              |               |                             |
|                                   | Stranded Wire                                                                                                        |                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | ø0.3 to 2.0 mm (AWG14 to 22)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                              |            |      |      |      |             |                   |      |                   |                                    |                              |                    |                              |   |            |      |            |                              |   |            |                        |   |            |               |                                          |   |            |                                    |   |            |                       |                   |   |            |      |            |                              |               |                             |
| External Short-Circuit Protection |                                                                                                                      |                                          | 10A 250V fuse conforming to IEC60269-1                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                              |            |      |      |      |             |                   |      |                   |                                    |                              |                    |                              |   |            |      |            |                              |   |            |                        |   |            |               |                                          |   |            |                                    |   |            |                       |                   |   |            |      |            |                              |               |                             |
| Applicable Wire Size              |                                                                                                                      |                                          | Minimum 1 x 22 AWG, max. 2 x 14 AWG or 1 x 12 AWG                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                              |            |      |      |      |             |                   |      |                   |                                    |                              |                    |                              |   |            |      |            |                              |   |            |                        |   |            |               |                                          |   |            |                                    |   |            |                       |                   |   |            |      |            |                              |               |                             |
| Contact Resistance                |                                                                                                                      |                                          | Initial contact resistance of 50mΩ or less                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                              |            |      |      |      |             |                   |      |                   |                                    |                              |                    |                              |   |            |      |            |                              |   |            |                        |   |            |               |                                          |   |            |                                    |   |            |                       |                   |   |            |      |            |                              |               |                             |
| Contact Gap                       |                                                                                                                      |                                          | 4mm (NO and NC), 2mm (NO-EM and NC-LB)                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                              |            |      |      |      |             |                   |      |                   |                                    |                              |                    |                              |   |            |      |            |                              |   |            |                        |   |            |               |                                          |   |            |                                    |   |            |                       |                   |   |            |      |            |                              |               |                             |
| Electrical Reliability            |                                                                                                                      |                                          | MTBF < 1 fault for 10 million operation cycles (3V DC, 5mA)                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                              |            |      |      |      |             |                   |      |                   |                                    |                              |                    |                              |   |            |      |            |                              |   |            |                        |   |            |               |                                          |   |            |                                    |   |            |                       |                   |   |            |      |            |                              |               |                             |
| Lamp Ratings                      |                                                                                                                      |                                          | LEDs: 6V: 17mA max, 12/24V: 11mA max, 120/240V: 10mA max                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                              |            |      |      |      |             |                   |      |                   |                                    |                              |                    |                              |   |            |      |            |                              |   |            |                        |   |            |               |                                          |   |            |                                    |   |            |                       |                   |   |            |      |            |                              |               |                             |
| Horsepower Rating                 |                                                                                                                      |                                          | 1/4 HP @ 120V (single-phase, non-reversing motor); 1 HP @ 240V (3 phase, non-reversing motor)                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                              |            |      |      |      |             |                   |      |                   |                                    |                              |                    |                              |   |            |      |            |                              |   |            |                        |   |            |               |                                          |   |            |                                    |   |            |                       |                   |   |            |      |            |                              |               |                             |
| Contact Material                  |                                                                                                                      |                                          | Silver                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                              |            |      |      |      |             |                   |      |                   |                                    |                              |                    |                              |   |            |      |            |                              |   |            |                        |   |            |               |                                          |   |            |                                    |   |            |                       |                   |   |            |      |            |                              |               |                             |
| Contact Ratings                   | Pushbuttons<br>Illuminated Pushbuttons<br>Selector Switches<br>Illuminated Selector Switches<br>Pushbutton Selectors |                                          | Contact Block                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Type HW-U                    |            |      |      |      |             |                   |      |                   |                                    |                              |                    |                              |   |            |      |            |                              |   |            |                        |   |            |               |                                          |   |            |                                    |   |            |                       |                   |   |            |      |            |                              |               |                             |
|                                   |                                                                                                                      |                                          | Rated Insulation Voltage                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 600V                         |            |      |      |      |             |                   |      |                   |                                    |                              |                    |                              |   |            |      |            |                              |   |            |                        |   |            |               |                                          |   |            |                                    |   |            |                       |                   |   |            |      |            |                              |               |                             |
|                                   |                                                                                                                      |                                          | Rated Continuous Current                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 10A                          |            |      |      |      |             |                   |      |                   |                                    |                              |                    |                              |   |            |      |            |                              |   |            |                        |   |            |               |                                          |   |            |                                    |   |            |                       |                   |   |            |      |            |                              |               |                             |
|                                   |                                                                                                                      |                                          | Contact Ratings by Utilization Category<br>IEC 60947-5-1                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | AC-15 (A600)<br>DC-13 (P600) |            |      |      |      |             |                   |      |                   |                                    |                              |                    |                              |   |            |      |            |                              |   |            |                        |   |            |               |                                          |   |            |                                    |   |            |                       |                   |   |            |      |            |                              |               |                             |
| Characteristics                   | Contact Ratings by Utilization Category                                                                              |                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                              |            |      |      |      |             |                   |      |                   |                                    |                              |                    |                              |   |            |      |            |                              |   |            |                        |   |            |               |                                          |   |            |                                    |   |            |                       |                   |   |            |      |            |                              |               |                             |
|                                   | Operational Voltage                                                                                                  |                                          | 24V                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 48V                          | 50V        | 110V | 220V | 440V |             |                   |      |                   |                                    |                              |                    |                              |   |            |      |            |                              |   |            |                        |   |            |               |                                          |   |            |                                    |   |            |                       |                   |   |            |      |            |                              |               |                             |
|                                   | Operational Current                                                                                                  | AC50/60Hz                                | AC-12 Control of resistive loads and solid state loads                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 10A                          | —          | 10A  | 10A  | 6A   | 2A          |                   |      |                   |                                    |                              |                    |                              |   |            |      |            |                              |   |            |                        |   |            |               |                                          |   |            |                                    |   |            |                       |                   |   |            |      |            |                              |               |                             |
|                                   |                                                                                                                      |                                          | AC-15 Control of electromagnetic loads (> 72VA)                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 10A                          | —          | 7A   | 5A   | 3A   | 1A          |                   |      |                   |                                    |                              |                    |                              |   |            |      |            |                              |   |            |                        |   |            |               |                                          |   |            |                                    |   |            |                       |                   |   |            |      |            |                              |               |                             |
|                                   |                                                                                                                      | DC                                       | DC-12 Control of resistive loads and solid state loads                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 10A                          | 5A         | —    | 2.2A | 1.1A | —           |                   |      |                   |                                    |                              |                    |                              |   |            |      |            |                              |   |            |                        |   |            |               |                                          |   |            |                                    |   |            |                       |                   |   |            |      |            |                              |               |                             |
| DC-13 Control of electromagnets   |                                                                                                                      |                                          | 5A                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 2A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | —                            | 1.1A       | 0.6A | —    |      |             |                   |      |                   |                                    |                              |                    |                              |   |            |      |            |                              |   |            |                        |   |            |               |                                          |   |            |                                    |   |            |                       |                   |   |            |      |            |                              |               |                             |

## Non-Illuminated Pushbuttons (Assembled)



## Assembled Pushbuttons



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

Non-Illuminated Pushbuttons (Assembled) continued

Non-Illuminated Pushbuttons

① Button Color Codes

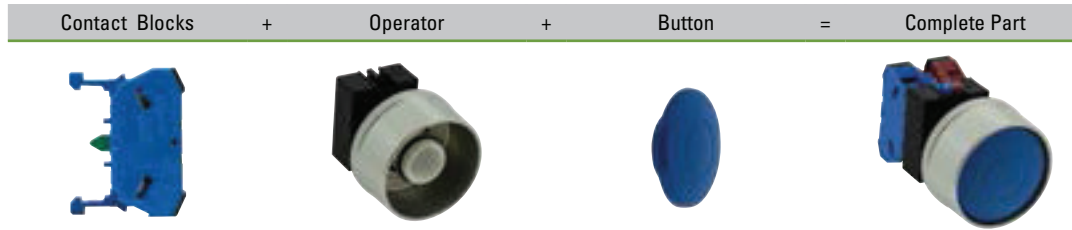
| Style                                       | Contacts                            | Momentary Action                                              | Maintained Action                                             |
|---------------------------------------------|-------------------------------------|---------------------------------------------------------------|---------------------------------------------------------------|
| Flush                                       | 1NO<br>1NC<br>1NO-1NC<br>2NO<br>2NC | ABW110-①<br>ABW101-①<br>ABW111-①<br>ABW120-①<br>ABW102-①      | AOW110-①<br>AOW101-①<br>AOW111-①<br>AOW120-①<br>AOW102-①      |
| Extended                                    | 1NO<br>1NC<br>1NO-1NC<br>2NO<br>2NC | ABW210-①<br>ABW201-①<br>ABW211-①<br>ABW220-①<br>ABW202-①      | AOW210-①<br>AOW201-①<br>AOW211-①<br>AOW220-①<br>AOW202-①      |
| Recessed                                    | 1NO<br>1NC<br>1NO-1NC<br>2NO<br>2NC | ABFW110-①<br>ABFW101-①<br>ABFW111-①<br>ABFW120-①<br>ABFW102-① | AOFW110-①<br>AOFW101-①<br>AOFW111-①<br>AOFW120-①<br>AOFW102-① |
| Extended with Full Shroud                   | 1NO<br>1NC<br>1NO-1NC<br>2NO<br>2NC | ABFW210-①<br>ABFW201-①<br>ABFW211-①<br>ABFW220-①<br>ABFW202-① | AOFW210-①<br>AOFW201-①<br>AOFW211-①<br>AOFW220-①<br>AOFW202-① |
| Ø 29mm<br>Mushroom Head                     | 1NO<br>1NC<br>1NO-1NC<br>2NO<br>2NC | ABW310-①<br>ABW301-①<br>ABW311-①<br>ABW320-①<br>ABW302-①      | AOW310-①<br>AOW301-①<br>AOW311-①<br>AOW320-①<br>AOW302-①      |
| Ø 40mm<br>Mushroom Head                     | 1NO<br>1NC<br>1NO-1NC<br>2NO<br>2NC | ABW410-①<br>ABW401-①<br>ABW411-①<br>ABW420-①<br>ABW402-①      | AOW410-①<br>AOW401-①<br>AOW411-①<br>AOW420-①<br>AOW402-①      |
| Ø 40mm<br>Mushroom Head<br>with Full Shroud | 1NO<br>1NC<br>1NO-1NC<br>2NO<br>2NC | ABGW410-①<br>ABGW401-①<br>ABGW411-①<br>ABGW420-①<br>ABGW402-① | AOGW410-①<br>AOGW401-①<br>AOGW411-①<br>AOGW420-①<br>AOGW402-① |
| Square Flush                                | 1NO<br>1NC<br>1NO-1NC<br>2NO<br>2NC | ABQW110-①<br>ABQW101-①<br>ABQW111-①<br>ABQW120-①<br>ABQW102-① | AQW110-①<br>AQW101-①<br>AQW111-①<br>AQW120-①<br>AQW102-①      |
| Square Extended                             | 1NO<br>1NC<br>1NO-1NC<br>2NO<br>2NC | ABQW210-①<br>ABQW201-①<br>ABQW211-①<br>ABQW220-①<br>ABQW202-① | AQW210-①<br>AQW201-①<br>AQW211-①<br>AQW220-①<br>AQW202-①      |
| Keylock Push On/<br>Off                     | 1NO<br>1NC<br>1NO-1NC<br>2NO<br>2NC | AKW210<br>AKW201<br>AKW211<br>AKW220<br>AKW202                | —                                                             |

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



1. In place of ①, specify the Button Color Code from table.
2. For sub-assembled part numbers, see next page.
3. For accessories, see page 703.
4. For dimensions, see page 705.
5. Keyed switches are supplied with two keys. All units are keyed alike.

## Non-Illuminated Pushbuttons (Sub-Assembled)



## Operators

| Style                                                                                                                           | Part Number |            |
|---------------------------------------------------------------------------------------------------------------------------------|-------------|------------|
|                                                                                                                                 | Momentary   | Maintained |
| Round Flush/Extended<br>                       | ABW-100     | AOW-100    |
| Round with Full Shroud/<br>Recessed<br>        | ABFW-200    | AOFW-200   |
| Ø 40mm, Ø 29mm<br>Mushroom Head<br>          | ABW-300     | AOW-300    |
| Ø 40mm Mushroom<br>Head with Full Shroud<br> | ABGW-400    | AOGW-400   |
| Square Flush/Extended<br>                    | ABQW-100    | AQW-100    |
| Keylock Push On/Off<br>                      | —           | AKW-200    |

## Buttons

| Style                                                                                                  | Part Number |
|--------------------------------------------------------------------------------------------------------|-------------|
| Round Flush<br>       | ABW1B-①     |
| Round Extended<br>    | ABW2B-①     |
| Ø 29mm Mushroom<br>  | ABW3B-①     |
| Ø 40mm Mushroom<br> | ABW4B-①     |
| Square Flush<br>    | ABQW1B-①    |
| Square Extended<br> | ABQW2B-①    |



In place of ① specify the button color code from table

## Contact Blocks

| Style                                                                                                                             | Part Number                       |                                   |
|-----------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|-----------------------------------|
|                                                                                                                                   | 1NO                               | 1NC                               |
| Finger-Safe<br>Spring-Up<br>Contact Blocks<br> | HW-U10<br>HW-U10R<br>(early make) | HW-U01<br>HW-U01R<br>(late break) |
| Dummy Block<br>                                | HW-DB                             |                                   |



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

## ① Button Color Codes

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

## Stop Switches (Assembled)



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

### Assembled Stop Switches

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

## Stop Switches (Assembled), continued

## Non-Illuminated Stop Switches

| Style                          |                                                                                   | Contacts | Part Number |
|--------------------------------|-----------------------------------------------------------------------------------|----------|-------------|
| Ø 40mm Pushlock<br>Turn Reset* |  | 1NO      | AVW410-R*   |
|                                |                                                                                   | 1NC      | AVW401-R*   |
|                                |                                                                                   | 1NO-1NC  | AVW411-R*   |
|                                |                                                                                   | 2NO      | AVW420-R*   |
|                                |                                                                                   | 2NC      | AVW402-R*   |
| Ø 29mm Pushlock<br>Turn Reset* |  | 1NO      | AVW310-R*   |
|                                |                                                                                   | 1NC      | AVW301-R*   |
|                                |                                                                                   | 1NO-1NC  | AVW311-R*   |
|                                |                                                                                   | 2NO      | AVW320-R*   |
|                                |                                                                                   | 2NC      | AVW302-R*   |
| Ø 40mm Push-Pull               |  | 1NO      | AYW410-①    |
|                                |                                                                                   | 1NC      | AYW401-①    |
|                                |                                                                                   | 1NO-1NC  | AYW411-①    |
|                                |                                                                                   | 2NO      | AYW420-①    |
|                                |                                                                                   | 2NC      | AYW402-①    |
| Ø 40mm Pushlock<br>Key Reset * |  | 1NO      | AXW410- R*  |
|                                |                                                                                   | 1NC      | AXW401- R*  |
|                                |                                                                                   | 1NO-1NC  | AXW411- R*  |
|                                |                                                                                   | 2NO      | AXW420- R*  |
|                                |                                                                                   | 2NC      | AXW402- R*  |

## ① Button Color Codes

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

## ② LED/Lens Color Codes

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

## ③ Full Voltage Codes

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

## ④ Transformer Voltage Codes

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



Transformers step down to 6V.

1. \*Available in Red only.
2. In place of ①, specify the Button Color Code from table.
3. For sub-assembled part numbers, see next page.
4. For accessories, see page 703.
5. For dimensions, see page 705.

## Illuminated Stop Switches

| Style                              | Type         | Contacts | Part Number     |
|------------------------------------|--------------|----------|-----------------|
| Ø 40mm Pushlock<br>Turn Reset Type | Transformer  | 1NO-1NC  | AVLW4 ④ 11D-R*  |
|                                    |              | 2NO      | AVLW4 ④ 20D-R*  |
|                                    |              | 2NC      | AVLW4 ④ 02D-R*  |
| Ø 29mm Pushlock<br>Turn Reset      | Transformer  | 1NO-1NC  | AVLW49911D-R*-③ |
|                                    |              | 2NO      | AVLW49920D-R*-③ |
|                                    |              | 2NC      | AVLW49902D-R*-③ |
| Ø 40mm Push-Pull                   | Transformer  | 1NO-1NC  | AYLW3④11D-R*    |
|                                    |              | 2NO      | AYLW3④20D-R*    |
|                                    |              | 2NC      | AYLW3④02D-R*    |
| Ø 40mm Push-Pull                   | Full Voltage | 1NO-1NC  | AVLW39911D-R*-③ |
|                                    |              | 2NO      | AVLW39920D-R*-③ |
|                                    |              | 2NC      | AVLW39902D-R*-③ |
| Ø 40mm Push-Pull                   | Transformer  | 1NO-1NC  | AYLW4 ④ 11D-②   |
|                                    |              | 2NO      | AYLW4 ④ 20D-②   |
|                                    |              | 2NC      | AYLW4 ④ 02D-②   |
| Ø 40mm Push-Pull                   | Full Voltage | 1NO-1NC  | AYLW49911D-②-③  |
|                                    |              | 2NO      | AYLW49920D-②-③  |
|                                    |              | 2NC      | AYLW49902D-②-③  |

1. \*Available in red only.
2. In place of ②, specify the Lens Color Code (see table above).
3. In place of ③, specify the Full Voltage Code (lamp voltage) (see table above).
4. In place of ④, specify the Transformer Voltage Code (see table above).
5. For sub-assembly part numbers, see next page.
6. For accessories, see page 703.
7. For dimensions, see page 705.

## Stop Switches (Sub-Assembled)

|                          |   |          |   |             |   |          |   |      |   |                |   |               |
|--------------------------|---|----------|---|-------------|---|----------|---|------|---|----------------|---|---------------|
| Transformer/<br>Adaptor* | + | Contacts | + | Lamp Holder | + | Operator | + | Lamp | + | Button or Lens | = | Complete Part |
|--------------------------|---|----------|---|-------------|---|----------|---|------|---|----------------|---|---------------|



\*Not applicable for full voltage units

### Operators

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

### Buttons

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



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

### Lamps

| Style                                                                                      | Voltage   | Part Number |
|--------------------------------------------------------------------------------------------|-----------|-------------|
| LED<br> | 6V AC/DC  | LSTD-6②     |
|                                                                                            | 12V AC/DC | LSTD-1②     |
|                                                                                            | 24V AC/DC | LSTD-2②     |
|                                                                                            | 120V AC   | LSTD-H2②    |
|                                                                                            | 240V AC   | LSTD-M4②    |



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

### ① Button Color Codes

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

### ② LED/Lens Color Codes

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

## Illuminated Stop Switches (Sub-Assembled) continued

## Lenses

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

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

## Lamp Circuit Components

| Style                                                                               | Application                                                                          | Part Number |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|-------------|
| Short Lamp Holder                                                                   | <b>Used with</b> full voltage adaptor. <b>Always installed directly to operator.</b> | TW-LH1      |
|  |                                                                                      |             |
| Long Lamp Holder                                                                    | <b>Used with</b> Full-size Transformer and two contact blocks                        | TW-LH2      |
|  |                                                                                      |             |
| Lead Holder                                                                         | <b>Used with</b> TW-LH2 holder when using four contact blocks and transformer        | HW-LH3      |
|  |                                                                                      |             |

## Transformers/Full Voltage Modules

| Style                                                                              | Description           | Part Number |
|------------------------------------------------------------------------------------|-----------------------|-------------|
|  | Full Size Transformer |             |
|                                                                                    | 120V AC               | HW-T126     |
|                                                                                    | 240V AC               | HW-T246     |
|  | Spring-up Terminals   |             |
|                                                                                    | 480V AC               | HW-L486     |
| Finger-Safe                                                                        |                       | HW-GA1N     |

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

## Contact Blocks

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

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

Pilot Lights (Assembled)



Assembled Pilot Lights

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

Function

P: Pilot Light

Bezel Shape

Blank: Octagonal (round lenses)  
Q: Square

Series Designation

W: TW Series

Lens Shape

1: Flat  
2: Dome

Lens Type

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

Illumination Circuit

- 99: Full Voltage (lamp determines voltage)
- 126: 120V AC Step Down Transformer
- 246: 240V AC Step Down Transformer
- 486: 480V AC Step Down Transformer

Lamp Voltage

(Full Voltage Units Only)

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

Lens Color Code

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

Lamp

D: LED



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

## Pilot Lights (Assembled) continued

## Assembled Pilot Lights

| Style       | Type         | Voltage                    | Part Number                                  |
|-------------|--------------|----------------------------|----------------------------------------------|
| Round Flat  | Transformer  | 120VAC<br>240VAC<br>480VAC | APW1126D-②<br>APW1246D-②<br>APW1486D-②       |
|             | Full Voltage | —                          | APW199D-②-③                                  |
| Dome        | Transformer  | 120VAC<br>240VAC<br>480VAC | APW2126D-②<br>APW2246D-②<br>APW2486D-②       |
|             | Full Voltage | —                          | APW299D-②-③                                  |
| Square Flat | Transformer  | 120VAC<br>240VAC<br>480VAC | APQW1B126D-②<br>APQW1B246D-②<br>APQW1B486D-② |
|             | Full Voltage | —                          | APQW1B99D-②-③                                |

## ② Lens Color Codes

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

## ③ Full Voltage Codes

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



1. In place of ②, specify the Lens Color Code from table below.
2. In place of ③, specify the Full Voltage Code from table below.
3. For accessories, see page 703.
4. For dimensions, see page 705.
5. For sub-assembly part numbers, see next page.
6. Yellow pilot light comes with white LED.

Pilot Lights (Sub-Assembled)



 \* Transformer not required for full voltage units.

Operators

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

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

Lenses

| Style                                                                               | Part Number |            |
|-------------------------------------------------------------------------------------|-------------|------------|
|                                                                                     | Standard    | Engravable |
| Dome                                                                                | APW2LU-②    | —          |
|  |             |            |
| Round Flat                                                                          | APW1LU-②    | APW1BLU-②  |
|  |             |            |
| Square Flat                                                                         | —           | APQW1BLU-② |
|  |             |            |

 1. In place of ②, specify the Lens Color Code from table.  
2. Standard lenses have a ribbed lens to enhance light dispersion. Marking lenses are smooth and include an engravable insert.

Lamps

| Style                                                                             | Voltage   | Part Number |
|-----------------------------------------------------------------------------------|-----------|-------------|
|  | 6V AC/DC  | LSTD-6②     |
|                                                                                   | 12V AC/DC | LSTD-1②     |
|                                                                                   | 24V AC/DC | LSTD-2②     |
|                                                                                   | 120V AC   | LSTD-H2②    |
|                                                                                   | 240V AC   | LSTD-M4②    |

 1. In place of ②, specify the LED color code.  
2. The LED contains a current-limiting resistor and a protection diode.  
3. Yellow LED not available. Use white LED.

② LED/Lens Color Codes

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

 If clear lens is desired, use white marking lens and remove engraving insert

Transformers

| Style                                                                               | Description         | Part Number |
|-------------------------------------------------------------------------------------|---------------------|-------------|
|  | 120V AC             | HW-T126     |
|                                                                                     | Finger-Safe 240V AC | HW-T246     |
|                                                                                     | 480V AC             | HW-T486     |

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

## Illuminated Pushbuttons (Assembled)



## Assembled Illuminated Pushbuttons

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

**Function**

L: Momentary Action  
OL: Maintained Action

**Bezel Shape**

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

**Series Designation**

W: TW series

**Lens Shape/Size**

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

**Lens Type**

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

**Illumination Circuit**

99: Full Voltage (lamp determines voltage)  
126: 120V AC Step Down Transformer  
246: 240V AC Step Down Transformer  
486: 480V AC Step Down Transformer

**Lamp Voltage**

(Full Voltage Units Only)

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

**Lens Code**

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

**Lamp Type**

D: LED Lamp

**Contact Arrangement**

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



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

## Illuminated Pushbuttons (Assembled)

### Illuminated Pushbuttons

| Style                                                                               | Contacts     | Part Number           |                                                                                                                   |
|-------------------------------------------------------------------------------------|--------------|-----------------------|-------------------------------------------------------------------------------------------------------------------|
|                                                                                     |              | Momentary             | Maintained                                                                                                        |
|    | Transformer  | 1NO-1NC<br>2NO<br>2NC | ALW2 ④ 11D-②<br>ALW2 ④ 20D-②<br>ALW2 ④ 02D-②<br>AOLW2 ④ 11D-②<br>AOLW2 ④ 20D-②<br>AOLW2 ④ 02D-②                   |
|                                                                                     | Full Voltage | 1NO-1NC<br>2NO<br>2NC | ALW29911D-②-③<br>ALW29920D-②-③<br>ALW29902D-②-③<br>AOLW29911D-②-③<br>AOLW29920D-②-③<br>AOLW29902D-②-③             |
|    | Transformer  | 1NO-1NC<br>2NO<br>2NC | ALFW2 ④ 11D-②<br>ALFW2 ④ 20D-②<br>ALFW2 ④ 02D-②<br>AOLFW2 ④ 11D-②<br>AOLFW2 ④ 20D-②<br>AOLFW2 ④ 02D-②             |
|                                                                                     | Full Voltage | 1NO-1NC<br>2NO<br>2NC | ALFW29911D-②-③<br>ALFW29920D-②-③<br>ALFW29902D-②-③<br>AOLFW29911D-②-③<br>AOLFW29920D-②-③<br>AOLFW29902D-②-③       |
|   | Transformer  | 1NO-1NC<br>2NO<br>2NC | ALW3 ④ 11D-②<br>ALW3 ④ 20D-②<br>ALW3 ④ 02D-②<br>AOLW3 ④ 11D-②<br>AOLW3 ④ 20D-②<br>AOLW3 ④ 02D-②                   |
|                                                                                     | Full Voltage | 1NO-1NC<br>2NO<br>2NC | ALW39911D-②-③<br>ALW39920D-②-③<br>ALW39902D-②-③<br>AOLW39911D-②-③<br>AOLW39920D-②-③<br>AOLW39902D-②-③             |
|  | Transformer  | 1NO-1NC<br>2NO<br>2NC | ALW4 ④ 11D-②<br>ALW4 ④ 20D-②<br>ALW4 ④ 02D-②<br>AOLW4 ④ 11D-②<br>AOLW4 ④ 20D-②<br>AOLW4 ④ 02D-②                   |
|                                                                                     | Full Voltage | 1NO-1NC<br>2NO<br>2NC | ALW49911D-②-③<br>ALW49920D-②-③<br>ALW49902D-②-③<br>AOLW49911D-②-③<br>AOLW49920D-②-③<br>AOLW49902D-②-③             |
|  | Transformer  | 1NO-1NC<br>2NO<br>2NC | ALQW2B ④ 11D-②<br>ALQW2B ④ 20D-②<br>ALQW2B ④ 02D-②<br>AOLQW2B ④ 11D-②<br>AOLQW2B ④ 20D-②<br>AOLQW2B ④ 02D-②       |
|                                                                                     | Full Voltage | 1NO-1NC<br>2NO<br>2NC | ALQW2B9911D-②-③<br>ALQW2B9920D-②-③<br>ALQW2B9902D-②-③<br>AOLQW2B9911D-②-③<br>AOLQW2B9920D-②-③<br>AOLQW2B9902D-②-③ |

### ② LED/Lens Color Codes

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

1. Mushroom lenses not available in yellow.  
2. Yellow pushbutton comes with white LED.

### ③ Full Voltage Codes

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

### ④ Transformer Voltage Codes

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

- Transformers step down to 6V (use 6V LED).

1. In place of ②, specify the Lens Color Code (see table). Mushroom lenses not available in yellow.  
2. In place of ③, specify the Full Voltage Code (lamp voltage) (see table).  
3. In place of ④, specify the Transformer Voltage Code (see table).  
4. For sub-assembly part numbers, see next page.  
5. For accessories, see page 703.  
6. For dimensions, see page 705.  
7. Light is independent of switch position.  
8. Yellow pushbutton comes with white LED.

## Illuminated Pushbuttons (Sub-Assembled)

|                                                                                   |   |                                                                                   |   |                                                                                   |   |                                                                                   |   |                                                                                    |   |                                                                                     |   |                                                                                     |
|-----------------------------------------------------------------------------------|---|-----------------------------------------------------------------------------------|---|-----------------------------------------------------------------------------------|---|-----------------------------------------------------------------------------------|---|------------------------------------------------------------------------------------|---|-------------------------------------------------------------------------------------|---|-------------------------------------------------------------------------------------|
| Transformer/<br>Adaptor*                                                          | + | Contacts                                                                          | + | Lamp Holder                                                                       | + | Operator                                                                          | + | Lamp                                                                               | + | Lens                                                                                | = | Complete Part                                                                       |
|  |   |  |   |  |   |  |   |  |   |  |   |  |

\*Not applicable for full voltage units

## Operators

| Style                     |                                                                                     | Part Number |              |
|---------------------------|-------------------------------------------------------------------------------------|-------------|--------------|
|                           |                                                                                     | Momentary   | Maintained   |
| Extended                  |    | ALW-0600    | AOLW-0600    |
| Extended with Full Shroud |    | ALFW-0600   | AOLFW-0600   |
| ø29mm/ø40mm Mushroom      |    | ALW3-0600   | AOLW3-0600   |
| Square/Extended           |  | ALQW-2B0600 | AOLQW-2B0600 |

## Lenses

| Style                 |                                                                                     | Part Number |            |
|-----------------------|-------------------------------------------------------------------------------------|-------------|------------|
|                       |                                                                                     | Standard    | Engravable |
| Round Extended        |  | ALW2LU-②    | ALW2BLU-②  |
| ø 29mm Mushroom Head* |  | ALW3LU-②    | ALW3BLU-②  |
| ø 40mm Mushroom Head* |  | ALW4LU-②    | ALW4BLU-②  |
| Square Extended       |  | —           | ALQW2BLU-② |

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

## Lamps

| Style                                                                             | Voltage   | Part Number |
|-----------------------------------------------------------------------------------|-----------|-------------|
|  | 6V AC/DC  | LSTD-6②     |
|                                                                                   | 12V AC/DC | LSTD-1②     |
|                                                                                   | 24V AC/DC | LSTD-2②     |
|                                                                                   | 120V AC   | LSTD-H2②    |
|                                                                                   | 240V AC   | LSTD-M4②    |

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

## Lamp Circuit Components

| Style                                                                                                    | Application                                                                        | Part Number |
|----------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------|
| Short Lamp Holder<br>  | <b>Used with</b> full voltage adaptor. <b>Always mounted directly to operator.</b> | TW-LH1      |
| Long Lamp Holder<br> | <b>Used with</b> Full-size Transformer and two contact blocks                      | TW-LH2      |
| Lead Holder<br>       | <b>Used with</b> TW-LH2 holder when using four contact blocks and transformer      | HW-LH3      |

## ② LED/Lens Color Codes

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

Yellow LED not available. Use white LED.

Switches & Pilot Devices

Signaling Lights

Relays & Sockets

Timers

Contactors

Terminal Blocks

Circuit Breakers

Illuminated Pushbuttons (Sub-Assembled) continued

Contact Blocks

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

- 
1. Dummy blocks (no contacts) are used with an odd number of contact blocks.

2. Use of early and late break contacts creates a make before break function

Transformers/Full Voltage Modules

| Style                                                                              | Description                                                      | Part Number |
|------------------------------------------------------------------------------------|------------------------------------------------------------------|-------------|
|   | Full Size Transformer                                            |             |
|                                                                                    | 120V AC                                                          | HW-T126     |
|                                                                                    | 240V AC                                                          | HW-T246     |
|  | 480V AC                                                          | HW-T486     |
|                                                                                    | Full voltage model (to be mounted to operator on the first deck) |             |
|                                                                                    | Spring-Up Terminals                                              | HW-GA1N     |

- 
- All Transformers step down to 6V (use 6V LED).

## Non-Illuminated Selector Switches (Assembled)



## Assembled Selector Switches

**A S W 3 (1) (L) 20 - 304**

**Function**

S: Selector Switch

**Series Designation**

W: TW Series

**Number of Positions**

2: 2-Position  
3: 3-Position  
4: 4-Position  
5: 5-Position

**Spring Return Action**

Blank: Maintained

1: Spring return from Right (2 or 3 position)  
2: Spring return from Left (2 or 3 position)  
3: 2-Way spring return from Left and Right  
(3 position only)

**Circuit Number**

(Standard circuits shown on following pages and 695.)

**Contact Arrangement Code**

10: 1NO      01: 1NC  
20: 2NO      02: 2NC  
40: 4NO      04: 4NC  
11: 1NO-1NC 22: 2NO-2NC

**Operator Style Code**

Blank:      Knob Operator  
L:      Lever Operator  
K:      Key Operator



1. Use only when interpreting part numbers. Do not use for developing part numbers.
2. Custom contact configurations available.
3. Custom key removable codes available.
4. Portions of part number inside ( ) are optional.

Non-Illuminated Selector Switches (Assembled) continued

2-Position Selector Switches

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



## Non-Illuminated Selector Switches (Assembled) continued

## 3-Position Selector Switches

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



- The truth table indicates the operating position of contact block when the operator is switched to that position.  
X = On (closed contacts)  
0 = Off (open contacts)  
X—X = Overlapping Contacts: Remain on (closed contacts) when switch is moved between these two positions.
- All knob and lever selector switches come in black. Other colors are available by ordering the knob or lever separately.
- Every key selector switch uses an identical key. The key is removable in any maintained position.
- Custom contact configurations are available, see page 695.

## 4-Position Selector Switch

| Style   |          |                                                                                     |                                                                                     |                                                                                     |                                                                                     | Maintained    |                                                                                     |
|---------|----------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------|-------------------------------------------------------------------------------------|
| Contact | Mounting | Operator Position                                                                   |                                                                                     |                                                                                     |                                                                                     |               |                                                                                     |
|         |          | 1                                                                                   | 2                                                                                   | 3                                                                                   | 4                                                                                   |               |                                                                                     |
|         |          |  |  |  |  |               |                                                                                     |
| 2NO     | 1        | X                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | Knob<br>Lever |  |
|         | 2        | 0                                                                                   | X                                                                                   | 0                                                                                   | 0                                                                                   |               |  |
| 2NC     | 3        | 0                                                                                   | 0                                                                                   | X                                                                                   | 0                                                                                   |               |  |
|         | 4        | 0                                                                                   | 0                                                                                   | 0                                                                                   | X                                                                                   |               |  |
|         |          |                                                                                     |                                                                                     |                                                                                     |                                                                                     | ASW422-411    |                                                                                     |
|         |          |                                                                                     |                                                                                     |                                                                                     |                                                                                     | ASW4L22-411   |                                                                                     |

## 5-Position Selector Switch

| Style      |          |                                                                                      |                                                                                       |                                                                                       |                                                                                       |                                                                                       | Maintained    |                                                                                       |
|------------|----------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------|---------------------------------------------------------------------------------------|
| Contact    | Mounting | Operator Position                                                                    |                                                                                       |                                                                                       |                                                                                       |                                                                                       |               |                                                                                       |
|            |          |  |  |  |  |  |               |                                                                                       |
| 2NO<br>2NC | 1        | X                                                                                    | 0                                                                                     | 0                                                                                     | 0                                                                                     | 0                                                                                     | Knob<br>Lever |  |
|            | 2        | 0                                                                                    | X                                                                                     | 0                                                                                     | 0                                                                                     | 0                                                                                     |               |                                                                                       |
|            | 3        | 0                                                                                    | 0                                                                                     | 0                                                                                     | X                                                                                     | 0                                                                                     |               |                                                                                       |
|            | 4        | 0                                                                                    | 0                                                                                     | 0                                                                                     | 0                                                                                     | X                                                                                     |               |                                                                                       |

## Non-Illuminated Selector Switches (Sub-Assembled)

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



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

### Operators

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



- Two keys are supplied with every key switch, all are keyed alike, and removable from any maintained position.
- Locking rings are included with all operators. Order knobs, levers, and color inserts separately.
- Different cams produce different contact actions. For details, see page 695.
- Key switch operator supplied with black sleeve.

### ① Handle/Insert Color Codes

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



- \*Color inserts not available in black.  
†Knob and lever not available in white.

### Replacement Parts

|                         |         |
|-------------------------|---------|
| Key Switch Black Sleeve | AKW2B-B |
|-------------------------|---------|

### Handles and Inserts

| Style                                                                                                | Part Number |
|------------------------------------------------------------------------------------------------------|-------------|
| Knob<br>          | ASWHHY-①    |
| Lever<br>         | ASWHHL-①    |
| Color Insert<br> | TW-HC1-②    |

### Contact Blocks

| Style                                                                                                                    | Part Number                    |                                |
|--------------------------------------------------------------------------------------------------------------------------|--------------------------------|--------------------------------|
|                                                                                                                          | 1NO                            | 1NC                            |
| Finger-Safe Spring-Up Terminals<br> | HW-U10<br>HW-U10R (early make) | HW-U01<br>HW-U01R (late break) |
| Dummy Block<br>                     | HW-DB                          |                                |



- Push rod color code:  
Green = NO contact block  
Red = NC contact block.
- Dummy blocks (no contacts) are used with an odd number of contact blocks.

Illuminated Selector Switches (Assembled)



Assembled Illuminated Selector Switches

A SL W 2 (2) 99 11 (D) - (103) - R - (24V)

Function

SL:Illuminated Selector Switch

Series Designation

W: TW series

Number of Positions

2: 2-Position  
3: 3-Position

Spring Return Action

Blank: Maintained  
1: Spring return from Right  
2: Spring return from Left  
3: Two-Way spring return from Left and Right

Illumination Circuit

99: Full Voltage (lamp determines voltage)  
126: 120V AC Step Down Transformer  
246: 240V AC Step Down Transformer  
486: 480V AC Step Down Transformer

Lamp Voltage

(Full Voltage Units Only)

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

Lens Color Code

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

Contact Circuit Number

Standard circuits are listed on the following pages and 695.

Lamp Type

D: LED Lamp

Contact Arrangement

10: 1NO      01: 1NC  
20: 2NO      02: 2NC  
40: 4NO      04: 4NC  
11: 1NO-1NC    22: 2NO-2NC



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

## Illuminated Selector Switches(Assembled) continued

## Illuminated 2-Position Selector Switches

| Style      |                  |                   |                  |                             | Part Number                             |                                           |                                           |
|------------|------------------|-------------------|------------------|-----------------------------|-----------------------------------------|-------------------------------------------|-------------------------------------------|
| Contact    | Mounting         | Operator Position |                  | Lamp Circuit Type           | Maintained                              | Spring Return from Right                  | Spring Return from Left                   |
|            |                  | L                 | R                |                             |                                         |                                           |                                           |
| 1NO<br>1NC | 1<br>2           | 0<br>X            | X<br>0           | Transformer<br>Full Voltage | ASLW2 ① 11D-②<br>ASLW29911D-②-③         | ASLW21 ① 11D-②<br>ASLW219911D-②-③         | ASLW22 ① 11D-②<br>ASLW229911D-②-③         |
| 2NO<br>2NC | 1<br>2           | 0<br>0            | X<br>X           | Transformer<br>Full Voltage | ASLW2 ① 20D-②<br>ASLW29920D-②-③         | ASLW21 ① 20D-②<br>ASLW219920D-②-③         | ASLW22 ① 20D-②<br>ASLW229920D-②-③         |
| 2NC        | 1<br>2           | X<br>X            | 0<br>0           | Transformer<br>Full Voltage | ASLW2 ① 02D-104-②<br>ASLW29902D-104-②-③ | ASLW21 ① 02D-104-②<br>ASLW219902D-104-②-③ | ASLW22 ① 02D-104-②<br>ASLW229902D-104-②-③ |
| 2NO<br>2NC | 1<br>2<br>3<br>4 | 0<br>X<br>0<br>X  | X<br>0<br>X<br>0 | Transformer<br>Full Voltage | ASLW2 ① 22D-②<br>ASLW29922D-②-③         | ASLW21 ① 22D-②<br>ASLW219922D-②-③         | ASLW22 ① 22D-②<br>ASLW229922D-②-③         |

## ① Transformer Voltage Codes

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



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

## ② LED/Lens Color Codes

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

## Illuminated 3-Position Selector Switches, Maintained and Spring Return from Right

| Style      |                  |                   |                  |                  | Part Number                 |                                         |                                           |                                           |
|------------|------------------|-------------------|------------------|------------------|-----------------------------|-----------------------------------------|-------------------------------------------|-------------------------------------------|
| Contact    | Mounting         | Operator Position |                  |                  | Lamp Circuit Type           | Maintained                              | Spring Return From Right                  | Spring Return from Left                   |
|            |                  | L                 | C                | R                |                             |                                         |                                           |                                           |
| 2NO<br>2NC | 1<br>2           | X<br>0            | 0<br>0           | 0<br>X           | Transformer<br>Full Voltage | ASLW3 ① 20D-②<br>ASLW39920D-②-③         | ASLW31 ① 20D-②<br>ASLW319920D-②-③         | ASLW32 ① 20D-②<br>ASLW329920D-②-③         |
| 2NC        | 1<br>2           | 0<br>X            | X<br>X           | X<br>0           | Transformer<br>Full Voltage | ASLW3 ① 02D-②<br>ASLW39902D-②-③         | ASLW31 ① 02D-②<br>ASLW319902D-②-③         | ASLW32 ① 02D-②<br>ASLW329902D-②-③         |
| 2NO<br>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 | Transformer<br>Full Voltage | ASLW3 ① 22D-②<br>ASLW39922D-②-③         | ASLW31 ① 22D-②<br>ASLW319922D-②-③         | ASLW32 ① 22D-②<br>ASLW329922D-②-③         |
| 2NO<br>2NC | 1<br>2<br>3<br>4 | X<br>X<br>0<br>0  | 0<br>X<br>X<br>0 | X<br>0<br>0<br>X | Transformer<br>Full Voltage | ASLW3 ① 22D-309-②<br>ASLW39922D-309-②-③ | ASLW31 ① 22D-309-②<br>ASLW319922D-309-②-③ | ASLW32 ① 22D-309-②<br>ASLW329922D-309-②-③ |
| 2NO<br>2NC | 1<br>2<br>3<br>4 | 0<br>0<br>0<br>0  | X<br>0<br>X<br>0 | 0<br>X<br>0<br>X | Transformer<br>Full Voltage | ASLW3 ① 22D-310-②<br>ASLW39922D-310-②-③ | ASLW31 ① 22D-310-②<br>ASLW319922D-310-②-③ | ASLW32 ① 22D-310-②<br>ASLW329922D-310-②-③ |
| 4NO        | 1<br>2<br>3<br>4 | X<br>0<br>X<br>0  | 0<br>0<br>0<br>0 | 0<br>X<br>0<br>X | Transformer<br>Full Voltage | ASLW3 ① 40D-②<br>ASLW39940D-②-③         | ASLW31 ① 40D-②<br>ASLW319940D-②-③         | ASLW32 ① 40D-②<br>ASLW329940D-②-③         |
| 4NC        | 1<br>2<br>3<br>4 | 0<br>X<br>0<br>X  | X<br>X<br>X<br>X | X<br>0<br>X<br>0 | Transformer<br>Full Voltage | ASLW3 ① 04D-②<br>ASLW39904D-②-③         | ASLW31 ① 04D-②<br>ASLW319904D-②-③         | ASLW32 ① 04D-②<br>ASLW329904D-②-③         |

## ③ Full Voltage Codes

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



1. In place of ①, specify the Transformer Voltage Code.
2. In place of ②, specify the Lens/LED Color Code.
3. In place of ③, specify the Full Voltage Code.
4. For custom contact configurations, see page 695.
5. Light is independent of switch position.
6. Yellow selector switch comes with white LED.

## Illuminated Selector Switches (Sub-Assembled)



\*Full voltage units use a full voltage adaptor (HW-GA1N) instead of a transformer.

†Lamp holder is not included with operators, order separately.

## Operators

| Style                                                                              | Positions | Description                          | Part Number |
|------------------------------------------------------------------------------------|-----------|--------------------------------------|-------------|
|   | 2         | Maintained                           | ASLW200     |
|                                                                                    |           | Spring return from right             | ASLW2100    |
|                                                                                    |           | Spring return from left              | ASLW2200    |
|  | 3         | Maintained, cam 1                    | ASLW300-1   |
|                                                                                    |           | Maintained, cam 2                    | ASLW300-2   |
|                                                                                    |           | Maintained, cam 3                    | ASLW300-3   |
|                                                                                    | 3         | Spring return from right, cam 1      | ASLW3100-1  |
|                                                                                    |           | Spring return from right, cam 2      | ASLW3100-2  |
|                                                                                    | 3         | Spring return from left, cam 1       | ASLW3200-1  |
|                                                                                    |           | Spring return from left, cam 2       | ASLW3200-2  |
|                                                                                    | 3         | Spring return from left/right, cam 1 | ASLW3300-1  |
|                                                                                    |           | Spring return from left/right, cam 2 | ASLW3300-2  |



Different cams produce different contact action. For details, see Contact Arrangements on page 695.

## Lenses (Knobs)

| Style                                                                                                                                                                        | Part Number |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| Knob   | ASLWLU-②    |



In place of ②, specify the lens color code from table.

## Lamps

| Style                                                                               | Voltage   | Part Number |
|-------------------------------------------------------------------------------------|-----------|-------------|
|  | 6V AC/DC  | LSTD-6②     |
|                                                                                     | 12V AC/DC | LSTD-1②     |
|                                                                                     | 24V AC/DC | LSTD-2②     |
|                                                                                     | 120V AC   | LSTD-H2②    |
|                                                                                     | 240V AC   | LSTD-M4②    |



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

## ② LED/Lens Color Codes

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



Yellow LED not available. Use white LED

Switches & Pilot Devices

Signaling Lights

Relays & Sockets

Timers

Contactors

Terminal Blocks

Circuit Breakers

Illuminated Selector Switches (Sub-Assembled) continued

Contact Blocks

| Style                                                                             | Part Number             |                         |
|-----------------------------------------------------------------------------------|-------------------------|-------------------------|
|                                                                                   | 1NO                     | 1NC                     |
| Finger-Safe Spring-Up                                                             | HW-U10                  | HW-U01                  |
|  | HW-U10R<br>(early make) | HW-U01R<br>(late break) |
| Dummy Block                                                                       | HW-DB                   |                         |
|  |                         |                         |

- 
1. Dummy blocks (no contacts) are used with an odd number of contact blocks.

2. Use of early and late break contacts creates a make before break function

Lamp Circuit Components

| Style                                                                               | Application                                                                      | Part Number |
|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|-------------|
| Short Lamp Holder                                                                   | Used with full voltage adaptor                                                   | TW-LH1      |
|    |                                                                                  |             |
| Long Lamp Holder                                                                    | Used with Full-size Transformer and two contact blocks                           | TW-LH2      |
|  |                                                                                  |             |
| Lead Holder                                                                         | Used with TW-LH2 holder when using four contact blocks and full size transformer | HW-LH3      |
|  |                                                                                  |             |

Transformers/Full Voltage Modules

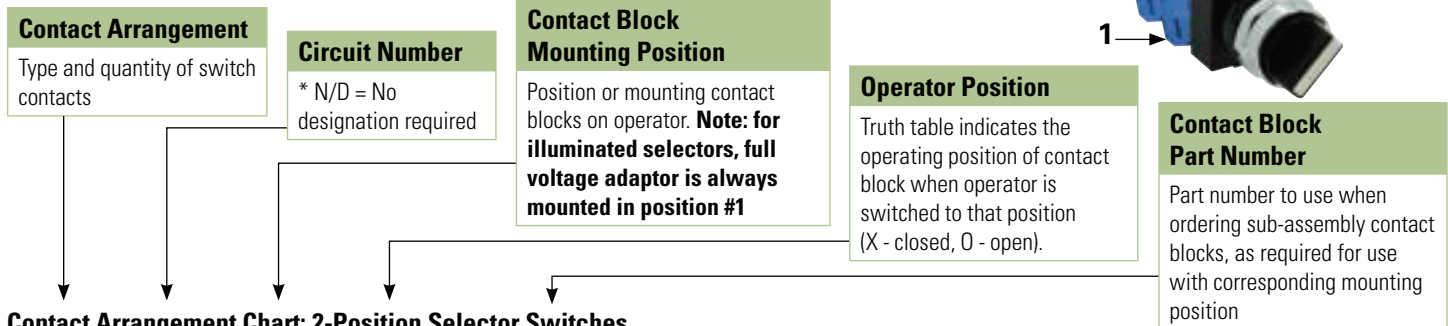
| Style                                                                              | Description       | Part Number |
|------------------------------------------------------------------------------------|-------------------|-------------|
| Full Size Transformer                                                              | 120V AC           | HW-T126     |
|                                                                                    | Spring-Up 240V AC | HW-T246     |
|                                                                                    | 480V AC           | HW-L486     |
| Full voltage model (to be mounted directly to the operator on the first deck)      | Spring-Up         | HW-GA1N     |
|  |                   |             |

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

## Contact Arrangement Charts

## How to Read Contact Arrangement Charts

To determine contact block mounting position, first make sure the selector switch is oriented as shown on the right



## Contact Arrangement Chart: 2-Position Selector Switches

| Style            |                | Mounting Position | Operator Position                                                                      |                                                                                        | Contact Block Part Number | Description                        | Operator Part Number                                                              |                                                                                   |                                                                                   |
|------------------|----------------|-------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|---------------------------|------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Contact          | Circuit Number |                   | L<br> | R<br> |                           |                                    | Maintained                                                                        | Spring Ret. from Rt.                                                              | Spring Ret. from Lt.                                                              |
|                  |                |                   |                                                                                        |                                                                                        |                           |                                    |  |  |  |
| 1NO              | N/D            | 1                 | O                                                                                      | X                                                                                      | HW-U10                    | Knob/Lever Key<br>Illuminated Knob | ASW200<br>ASW2K00<br>ASLW200                                                      | ASW2100<br>ASW21K00<br>ASLW2100                                                   | ASW2200<br>ASW22K00<br>ASLW2200                                                   |
|                  |                | 2                 | O                                                                                      | O                                                                                      | HW-DB                     |                                    |                                                                                   |                                                                                   |                                                                                   |
| 1NC              | 116            | 1                 | X                                                                                      | O                                                                                      | HW-U01                    | Knob/Lever Key<br>Illuminated Knob | ASW200<br>ASW2K00<br>ASLW200                                                      | ASW2100<br>ASW21K00<br>ASLW2100                                                   | ASW2200<br>ASW22K00<br>ASLW2200                                                   |
|                  |                | 2                 | O                                                                                      | O                                                                                      | HW-DB                     |                                    |                                                                                   |                                                                                   |                                                                                   |
| 1NO<br>1NC       | N/D            | 1                 | O                                                                                      | X                                                                                      | HW-U10                    | Knob/Lever Key<br>Illuminated Knob | ASW200<br>ASW2K00<br>ASLW200                                                      | ASW2100<br>ASW21K00<br>ASLW2100                                                   | ASW2200<br>ASW22K00<br>ASLW2200                                                   |
|                  |                | 2                 | X                                                                                      | O                                                                                      | HW-U01                    |                                    |                                                                                   |                                                                                   |                                                                                   |
|                  | 103            | 1                 | X                                                                                      | O                                                                                      | HW-U01                    | Knob/Lever Key<br>Illuminated Knob | ASW200<br>ASW2K00<br>ASLW200                                                      | ASW2100<br>ASW21K00<br>ASLW2100                                                   | ASW2200<br>ASW22K00<br>ASLW2200                                                   |
|                  |                | 2                 | O                                                                                      | X                                                                                      | HW-U10                    |                                    |                                                                                   |                                                                                   |                                                                                   |
| 1NO-EM<br>1NC-LB | 600            | 1                 | O                                                                                      | X                                                                                      | HW-U10R                   | Knob/Lever Key<br>Illuminated Knob | ASW200<br>ASW2K00<br>ASLW200                                                      | ASW2100<br>ASW21K00<br>ASLW2100                                                   | ASW2200<br>ASW22K00<br>ASLW2200                                                   |
|                  |                | 2                 | X                                                                                      | O                                                                                      | HW-U01R                   |                                    |                                                                                   |                                                                                   |                                                                                   |
|                  | 601            | 1                 | X                                                                                      | O                                                                                      | HW-U01R                   | Knob/Lever Key<br>Illuminated Knob | ASW200<br>ASW2K00<br>ASLW200                                                      | ASW2100<br>ASW21K00<br>ASLW2100                                                   | ASW2200<br>ASW22K00<br>ASLW2200                                                   |
|                  |                | 2                 | O                                                                                      | X                                                                                      | HW-U10R                   |                                    |                                                                                   |                                                                                   |                                                                                   |
| 2NO              | N/D            | 1                 | O                                                                                      | X                                                                                      | HW-U10                    | Knob/Lever Key<br>Illuminated Knob | ASW200<br>ASW2K00<br>ASLW200                                                      | ASW2100<br>ASW21K00<br>ASLW2100                                                   | ASW2200<br>ASW22K00<br>ASLW2200                                                   |
|                  |                | 2                 | O                                                                                      | X                                                                                      | HW-U10                    |                                    |                                                                                   |                                                                                   |                                                                                   |
| 2NC              | 104            | 1                 | X                                                                                      | O                                                                                      | HW-U01                    | Knob/Lever Key<br>Illuminated Knob | ASW200<br>ASW2K00<br>ASLW200                                                      | ASW2100<br>ASW21K00<br>ASLW2100                                                   | ASW2200<br>ASW22K00<br>ASLW2200                                                   |
|                  |                | 2                 | X                                                                                      | O                                                                                      | HW-U01                    |                                    |                                                                                   |                                                                                   |                                                                                   |
| 2NO<br>2NC       | N/D            | 1                 | O                                                                                      | X                                                                                      | HW-U10                    | Knob/Lever Key<br>Illuminated Knob | ASW200<br>ASW2K00<br>ASLW200                                                      | ASW2100<br>ASW21K00<br>ASLW2100                                                   | ASW2200<br>ASW22K00<br>ASLW2200                                                   |
|                  |                | 2                 | X                                                                                      | O                                                                                      | HW-U01                    |                                    |                                                                                   |                                                                                   |                                                                                   |
|                  |                | 3                 | O                                                                                      | X                                                                                      | HW-U10                    |                                    |                                                                                   |                                                                                   |                                                                                   |
|                  |                | 4                 | X                                                                                      | O                                                                                      | HW-U01                    |                                    |                                                                                   |                                                                                   |                                                                                   |
|                  | 111            | 1                 | O                                                                                      | X                                                                                      | HW-U10                    | Knob/Lever Key<br>Illuminated Knob | ASW200<br>ASW2K00<br>ASLW200                                                      | ASW2100<br>ASW21K00<br>ASLW2100                                                   | ASW2200<br>ASW22K00<br>ASLW2200                                                   |
|                  |                | 2                 | O                                                                                      | X                                                                                      | HW-U10                    |                                    |                                                                                   |                                                                                   |                                                                                   |
|                  |                | 3                 | X                                                                                      | O                                                                                      | HW-U01                    |                                    |                                                                                   |                                                                                   |                                                                                   |
|                  |                | 4                 | X                                                                                      | O                                                                                      | HW-U01                    |                                    |                                                                                   |                                                                                   |                                                                                   |



1. NO-EM, NC-LB = Early Make, Late Break.  
N/D = No circuit number designation required in assembled selector switch part number.  
2. X = On (closed contacts) O = Off (Open contacts)

**Contact Arrangement Chart: 3-Position Selector Switches**

| Style      |                | Mounting Position | Operator Position                                                                 |                                                                                   |                                                                                   | Contact Block Part Number | Description                        | Operator Part Number                                                              |                                                                                   |                                                                                   |                                                                                   |
|------------|----------------|-------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---------------------------|------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Contact    | Circuit Number |                   |  |  |  |                           |                                    | Maintained                                                                        | Spring Return from Right                                                          | Spring Return from Left                                                           | Two-Way                                                                           |
|            |                |                   |                                                                                   |                                                                                   |                                                                                   |                           |                                    |  |  |  |  |
| 1NO<br>1NC | 202            | 1                 | X                                                                                 | 0                                                                                 | 0                                                                                 | HW-U10                    | Knob/Lever Key                     | ASW300-1<br>ASW3K00-1<br>ASLW300-1                                                | ASW3100-1<br>ASW31K00-1<br>ASLW3100-1                                             | ASW3200-1<br>ASW32K00-1<br>ASLW3200-1                                             | ASW3300-1<br>ASW33K00-1<br>ASLW3300-1                                             |
|            |                | 2                 | X                                                                                 | X                                                                                 | 0                                                                                 | HW-U01                    | Illuminated Knob                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|            | 203            | 1                 | 0                                                                                 | X                                                                                 | X                                                                                 | HW-U01                    | Knob/Lever Key                     | ASW300-1<br>ASW3K00-1<br>ASLW300-1                                                | ASW3100-1<br>ASW31K00-1<br>ASLW3100-1                                             | ASW3200-1<br>ASW32K00-1<br>ASLW3200-1                                             | ASW3300-1<br>ASW33K00-1<br>ASLW3300-1                                             |
|            |                | 2                 | 0                                                                                 | 0                                                                                 | X                                                                                 | HW-U10                    | Illuminated Knob                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|            | 302            | 1                 | X                                                                                 | 0                                                                                 | X                                                                                 | HW-U10                    | Knob/Lever Key                     | ASW300-2<br>ASW3K00-2<br>ASLW300-2                                                | ASW3100-2<br>ASW31K00-2<br>ASLW3100-2                                             | ASW3200-2<br>ASW32K00-2<br>ASLW3200-2                                             | ASW3300-2<br>ASW33K00-2<br>ASLW3300-2                                             |
|            |                | 2                 | X                                                                                 | X                                                                                 | 0                                                                                 | HW-U01                    | Illuminated Knob                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|            | 303            | 1                 | 0                                                                                 | X                                                                                 | 0                                                                                 | HW-U01                    | Knob/Lever Key                     | ASW300-2<br>ASW3K00-2<br>ASLW300-2                                                | ASW3100-2<br>ASW31K00-2<br>ASLW3100-2                                             | ASW3200-2<br>ASW32K00-2<br>ASLW3200-2                                             | ASW3300-2<br>ASW33K00-2<br>ASLW3300-2                                             |
|            |                | 2                 | 0                                                                                 | 0                                                                                 | X                                                                                 | HW-U10                    | Illuminated Knob                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| 2NO        | N/D            | 1                 | X                                                                                 | 0                                                                                 | 0                                                                                 | HW-U10                    | Knob/Lever Key                     | ASW300-1<br>ASW3K00-1<br>ASLW300-1                                                | ASW3100-1<br>ASW31K00-1<br>ASLW3100-1                                             | ASW3200-1<br>ASW32K00-1<br>ASLW3200-1                                             | ASW3300-1<br>ASW33K00-1<br>ASLW3300-1                                             |
|            |                | 2                 | 0                                                                                 | 0                                                                                 | X                                                                                 | HW-U10                    | Illuminated Knob                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|            | 301            | 1                 | X                                                                                 | 0                                                                                 | X                                                                                 | HW-U10                    | Knob/Lever Key                     | ASW300-2<br>ASW3K00-2<br>ASLW300-2                                                | ASW3100-2<br>ASW31K00-2<br>ASLW3100-2                                             | ASW3200-2<br>ASW32K00-2<br>ASLW3200-2                                             | ASW3300-2<br>ASW33K00-2<br>ASLW3300-2                                             |
|            |                | 2                 | 0                                                                                 | 0                                                                                 | X                                                                                 | HW-U10                    | Illuminated Knob                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| 2NC        | 304            | 1                 | 0                                                                                 | X                                                                                 | 0                                                                                 | HW-U01                    | Knob/Lever Key                     | ASW300-2<br>ASW3K00-2<br>ASLW300-2                                                | ASW3100-2<br>ASW31K00-2<br>ASLW3100-2                                             | ASW3200-2<br>ASW32K00-2<br>ASLW3200-2                                             | ASW3300-2<br>ASW33K00-2<br>ASLW3300-2                                             |
|            |                | 2                 | X                                                                                 | X                                                                                 | 0                                                                                 | HW-U01                    | Illuminated Knob                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|            | N/D            | 1                 | 0                                                                                 | X                                                                                 | X                                                                                 | HW-U01                    | Knob/Lever Key                     | ASW300-1<br>ASW3K00-1<br>ASLW300-1                                                | ASW3100-1<br>ASW31K00-1<br>ASLW3100-1                                             | ASW3200-1<br>ASW32K00-1<br>ASLW3200-1                                             | ASW3300-1<br>ASW33K00-1<br>ASLW3300-1                                             |
|            |                | 2                 | X                                                                                 | X                                                                                 | 0                                                                                 | HW-U01                    | Illuminated Knob                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| 2NO<br>2NC | N/D            | 1                 | X                                                                                 | 0                                                                                 | 0                                                                                 | HW-U10                    | Knob/Lever Key<br>Illuminated Knob | ASW300-1<br>ASW3K00-1<br>ASLW300-1                                                | ASW3100-1<br>ASW31K00-1<br>ASLW3100-1                                             | ASW3200-1<br>ASW32K00-1<br>ASLW3200-1                                             | ASW3300-1<br>ASW33K00-1<br>ASLW3300-1                                             |
|            |                | 2                 | 0                                                                                 | 0                                                                                 | X                                                                                 | HW-U10                    |                                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|            |                | 3                 | 0                                                                                 | X                                                                                 | X                                                                                 | HW-U01                    |                                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|            |                | 4                 | X                                                                                 | X                                                                                 | 0                                                                                 | HW-U01                    |                                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|            | 210            | 1                 | 0                                                                                 | X                                                                                 | X                                                                                 | HW-U01                    | Knob/Lever Key<br>Illuminated Knob | ASW300-1<br>ASW3K00-1<br>ASLW300-1                                                | ASW3100-1<br>ASW31K00-1<br>ASLW3100-1                                             | ASW3200-1<br>ASW32K00-1<br>ASLW3200-1                                             | ASW3300-1<br>ASW33K00-1<br>ASLW3300-1                                             |
|            |                | 2                 | 0                                                                                 | 0                                                                                 | X                                                                                 | HW-U10                    |                                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|            |                | 3                 | 0                                                                                 | X                                                                                 | X                                                                                 | HW-U01                    |                                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|            |                | 4                 | 0                                                                                 | 0                                                                                 | X                                                                                 | HW-U10                    |                                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|            | 308            | 1                 | X                                                                                 | 0                                                                                 | X                                                                                 | HW-U10                    | Knob/Lever Key<br>Illuminated Knob | ASW300-2<br>ASW3K00-2<br>ASLW300-2                                                | ASW3100-2<br>ASW31K00-2<br>ASLW3100-2                                             | ASW3200-2<br>ASW32K00-2<br>ASLW3200-2                                             | ASW3300-2<br>ASW33K00-2<br>ASLW3300-2                                             |
|            |                | 2                 | X                                                                                 | X                                                                                 | 0                                                                                 | HW-U01                    |                                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|            |                | 3                 | X                                                                                 | 0                                                                                 | X                                                                                 | HW-U10                    |                                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|            |                | 4                 | X                                                                                 | X                                                                                 | 0                                                                                 | HW-U01                    |                                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|            | 309            | 1                 | X                                                                                 | 0                                                                                 | X                                                                                 | HW-U10                    | Knob/Lever Key<br>Illuminated Knob | ASW300-2<br>ASW3K00-2<br>ASLW300-2                                                | ASW3100-2<br>ASW31K00-2<br>ASLW3100-2                                             | ASW3200-2<br>ASW32K00-2<br>ASLW3200-2                                             | ASW3300-2<br>ASW33K00-2<br>ASLW3300-2                                             |
|            |                | 2                 | X                                                                                 | X                                                                                 | 0                                                                                 | HW-U01                    |                                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|            |                | 3                 | 0                                                                                 | X                                                                                 | 0                                                                                 | HW-U01                    |                                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|            |                | 4                 | 0                                                                                 | 0                                                                                 | X                                                                                 | HW-U10                    |                                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|            | 310            | 1                 | 0                                                                                 | X                                                                                 | 0                                                                                 | HW-U01                    | Knob/Lever Key<br>Illuminated Knob | ASW300-2<br>ASW3K00-2<br>ASLW300-2                                                | ASW3100-2<br>ASW31K00-2<br>ASLW3100-2                                             | ASW3200-2<br>ASW32K00-2<br>ASLW3200-2                                             | ASW3300-2<br>ASW33K00-2<br>ASLW3300-2                                             |
|            |                | 2                 | 0                                                                                 | 0                                                                                 | X                                                                                 | HW-U10                    |                                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|            |                | 3                 | 0                                                                                 | X                                                                                 | 0                                                                                 | HW-U01                    |                                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|            |                | 4                 | 0                                                                                 | 0                                                                                 | X                                                                                 | HW-U10                    |                                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |

1. Each operator sub-assembly is available as a "-1" and a "-2" for 3-position selector switches. The internal cam of a "-1" is different from that of a "-2". This results in designated combinations of open and closed contacts in the various operator positions.
2. N/D = No circuit number designation required in assembled part number.
3. X = On (closed contacts) 0 = Off (open contacts). X-X Overlapping contacts remain on (closed) when switch is moved between these two positions.

## Contact Arrangement Chart: 3-Position Selector Switches

| Style   |                | Mounting Position | Operator Position                                                                 |                                                                                   |                                                                                   | Contact Block Part Number | Description                     | Operator Part Number                                                               |                                                                                     |                                                                                     |                                                                                     |
|---------|----------------|-------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---------------------------|---------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Contact | Circuit Number |                   |  |  |  |                           |                                 | Maintained                                                                         | Spring Return from Right                                                            | Spring Return from Left                                                             | Two-Way                                                                             |
|         |                |                   |                                                                                   |                                                                                   |                                                                                   |                           |                                 |  |  |  |  |
| 4NO     | N/D            | 1                 | X                                                                                 | 0                                                                                 | 0                                                                                 | HW-U10                    | Knob/Lever Key Illuminated Knob | ASW300-1<br>ASW3K00-1<br>ASLW300-1                                                 | ASW3100-1<br>ASW31K00-1<br>ASLW3100-1                                               | ASW3200-1<br>ASW32K00-1<br>ASLW3200-1                                               | ASW3300-1<br>ASW33K00-1<br>ASLW3300-1                                               |
|         |                | 2                 | 0                                                                                 | 0                                                                                 | X                                                                                 | HW-U10                    |                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
|         |                | 3                 | X                                                                                 | 0                                                                                 | 0                                                                                 | HW-U10                    |                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
|         |                | 4                 | 0                                                                                 | 0                                                                                 | X                                                                                 | HW-U10                    |                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
|         | 305            | 1                 | X                                                                                 | 0                                                                                 | X                                                                                 | HW-U10                    | Knob/Lever Key Illuminated Knob | ASW300-2<br>ASW3K00-2<br>ASLW300-2                                                 | ASW3100-2<br>ASW31K00-2<br>ASLW3100-2                                               | ASW3200-2<br>ASW32K00-2<br>ASLW3200-2                                               | ASW3300-2<br>ASW33K00-2<br>ASLW3300-2                                               |
|         |                | 2                 | 0                                                                                 | 0                                                                                 | X                                                                                 | HW-U10                    |                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
|         |                | 3                 | X                                                                                 | 0                                                                                 | X                                                                                 | HW-U10                    |                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
|         |                | 4                 | 0                                                                                 | 0                                                                                 | X                                                                                 | HW-U10                    |                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| 4NC     | N/D            | 1                 | 0                                                                                 | X                                                                                 | X                                                                                 | HW-U01                    | Knob/Lever Key Illuminated Knob | ASW300-1<br>ASW3K00-1<br>ASLW300-1                                                 | ASW3100-1<br>ASW31K00-1<br>ASLW3100-1                                               | ASW3200-1<br>ASW32K00-1<br>ASLW3200-1                                               | ASW3300-1<br>ASW33K00-1<br>ASLW3300-1                                               |
|         |                | 2                 | X                                                                                 | X                                                                                 | 0                                                                                 | HW-U01                    |                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
|         |                | 3                 | 0                                                                                 | X                                                                                 | X                                                                                 | HW-U01                    |                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
|         |                | 4                 | X                                                                                 | X                                                                                 | 0                                                                                 | HW-U01                    |                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
|         | 314            | 1                 | 0                                                                                 | X                                                                                 | 0                                                                                 | HW-U01                    | Knob/Lever Key Illuminated Knob | ASW300-2<br>ASW3K00-2<br>ASLW300-2                                                 | ASW3100-2<br>ASW31K00-2<br>ASLW3100-2                                               | ASW3200-2<br>ASW32K00-2<br>ASLW3200-2                                               | ASW3300-2<br>ASW33K00-2<br>ASLW3300-2                                               |
|         |                | 2                 | X                                                                                 | X                                                                                 | 0                                                                                 | HW-U01                    |                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
|         |                | 3                 | 0                                                                                 | X                                                                                 | 0                                                                                 | HW-U01                    |                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
|         |                | 4                 | X                                                                                 | X                                                                                 | 0                                                                                 | HW-U01                    |                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |

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Custom Selector Switch Building Guide

To build a custom selector switch, follow these steps.

Step 1

How many positions of the switch are needed?

# of positions  
(2, 3, 4, 5)

Step 2

How many contacts should there be?

# of isolated contacts  
(maximum 6)

Step 3

Fill in the Truth Table  
(X = closed, 0 = open)

|          |   | Knob Position |   |   |   |   |
|----------|---|---------------|---|---|---|---|
|          |   | 1             | 2 | 3 | 4 | 5 |
| Contacts | 1 |               |   |   |   |   |
|          | 2 |               |   |   |   |   |
|          | 3 |               |   |   |   |   |
|          | 4 |               |   |   |   |   |
|          | 5 |               |   |   |   |   |
|          | 6 |               |   |   |   |   |

Step 4

- If building a 2 position selector, skip this step. (2 position selectors have only one cam)
- If building a 3, 4, or 5 position selector, determine appropriate cam as follows:
- Look at Row 1 from above table and locate an identical row in the operator truth tables (See next page).
  - Repeat for all rows. The user must find one operator that contains all rows from above table.
  - Record the operator cam version.

Step 5

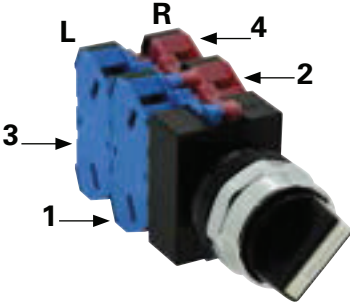
Build by placing appropriate contact in appropriate mounting position for each desired row on operator cam truth table. "L" and "R" refer to mounting on left or right side of operator as viewed from the front of the panel.

Step 6

Develop an assembly part number (if necessary) as follows: follow standard numbering nomenclature for selector switches (see pages 687 or 691. In place of the "Circuit Number" indicate the cam number and contact arrangement as such ASW322-3-OELCSS, where "3" is the cam number, and contact arrangement "OELCXX" calls out individual contact mounting locations in order (see diagram above). O=NO, C=NC, E=NO-EM, L=NC-LB, X= no contact. Part number must designate all 6 possible mounting locations.

 Caution: Before putting any custom selector switch into use, the user should use an ohmmeter to test for desired performance.  
1. For Operator Truth Tables, see next page.

Mounting Positions



## Operator Truth Tables

Use the following tables to build custom selector switches.

## 2 Position Selector Switches

|                              | Contact         | Mounting Position | Operator Position |              |
|------------------------------|-----------------|-------------------|-------------------|--------------|
|                              |                 |                   | Left              | Right        |
| ASW200<br>ASLW200<br>ASW2K00 | HW-U10 (NO)     | L                 | 0                 | X            |
|                              |                 | R                 | 0                 | X            |
|                              | HW-U01 (NC)     | L                 | X                 | 0            |
|                              |                 | R                 | X                 | 0            |
|                              | HW-U10R (NO-EM) | L                 | 0                 | <del>X</del> |
|                              |                 | R                 | 0                 | <del>X</del> |
|                              | HW-U01R (NC-LB) | L                 | <del>X</del>      | 0            |
|                              |                 | R                 | <del>X</del>      | 0            |

## 3 Position Selector Switches

|                                    | Contact         | Mounting Position | Operator Position |              |              |
|------------------------------------|-----------------|-------------------|-------------------|--------------|--------------|
|                                    |                 |                   | Left              | Center       | Right        |
| ASW300-1<br>ASW3K00-1<br>ASLW300-1 | HW-U10 (NO)     | L                 | X                 | 0            | 0            |
|                                    |                 | R                 | 0                 | 0            | X            |
|                                    | HW-U01 (NC)     | L                 | 0                 | <del>X</del> | <del>X</del> |
|                                    |                 | R                 | <del>X</del>      | <del>X</del> | 0            |
|                                    | HW-U10R (NO-EM) | L                 | <del>X</del>      | 0            | 0            |
|                                    |                 | R                 | 0                 | 0            | <del>X</del> |
|                                    | HW-U01R (NC-LB) | L                 | 0                 | <del>X</del> | <del>X</del> |
|                                    |                 | R                 | <del>X</del>      | <del>X</del> | 0            |

|                                    | Contact         | Mounting Position | Operator Position |              |              |
|------------------------------------|-----------------|-------------------|-------------------|--------------|--------------|
|                                    |                 |                   | Left              | Center       | Right        |
| ASW300-2<br>ASW3K00-2<br>ASLW300-2 | HW-U10 (NO)     | L                 | X                 | 0            | X            |
|                                    |                 | R                 | 0                 | 0            | X            |
|                                    | HW-U01 (NC)     | L                 | 0                 | X            | 0            |
|                                    |                 | R                 | <del>X</del>      | <del>X</del> | 0            |
|                                    | HW-U10R (NO-EM) | L                 | <del>X</del>      | 0            | <del>X</del> |
|                                    |                 | R                 | 0                 | 0            | <del>X</del> |
|                                    | HW-U01R (NC-LB) | L                 | 0                 | <del>X</del> | 0            |
|                                    |                 | R                 | <del>X</del>      | <del>X</del> | 0            |

|                                    | Contact         | Mounting Position | Operator Position |              |              |
|------------------------------------|-----------------|-------------------|-------------------|--------------|--------------|
|                                    |                 |                   | Left              | Center       | Right        |
| ASW300-3<br>ASW3K00-3<br>ASLW300-3 | HW-U10 (NO)     | L                 | X                 | 0            | 0            |
|                                    |                 | R                 | 0                 | 0            | X            |
|                                    | HW-U01 (NC)     | L                 | 0                 | X            | 0            |
|                                    |                 | R                 | 0                 | X            | 0            |
|                                    | HW-U10R (NO-EM) | L                 | X                 | 0            | X            |
|                                    |                 | R                 | X                 | 0            | X            |
|                                    | HW-U01R (NC-LB) | L                 | 0                 | <del>X</del> | <del>X</del> |
|                                    |                 | R                 | <del>X</del>      | <del>X</del> | 0            |

## 4 Position Selector Switches

|        | Contact         | Mounting Position | Operator Position |              |              |              |
|--------|-----------------|-------------------|-------------------|--------------|--------------|--------------|
|        |                 |                   | 1                 | 2            | 3            | 4            |
| ASW400 | HW-U10 (NO)     | L                 | X                 | 0            | 0            | 0            |
|        |                 | R                 | 0                 | X            | 0            | 0            |
|        | HW-U01 (NC)     | L                 | 0                 | <del>X</del> | <del>X</del> | <del>X</del> |
|        |                 | R                 | X                 | 0            | <del>X</del> | <del>X</del> |
|        | HW-U10R (NO-EM) | L                 | <del>X</del>      | 0            | 0            | 0            |
|        |                 | R                 | 0                 | <del>X</del> | 0            | 0            |
|        | HW-U01R (NC-LB) | L                 | 0                 | <del>X</del> | <del>X</del> | <del>X</del> |
|        |                 | R                 | <del>X</del>      | 0            | <del>X</del> | <del>X</del> |

|          | Contact         | Mounting Position | Operator Position |              |              |              |
|----------|-----------------|-------------------|-------------------|--------------|--------------|--------------|
|          |                 |                   | 1                 | 2            | 3            | 4            |
| ASW400-1 | HW-U10 (NO)     | L                 | X                 | 0            | 0            | 0            |
|          |                 | R                 | 0                 | 0            | 0            | X            |
|          | HW-U01 (NC)     | L                 | 0                 | 0            | X            | 0            |
|          |                 | R                 | 0                 | X            | 0            | 0            |
|          | HW-U10R (NO-EM) | L                 | X                 | X            | 0            | X            |
|          |                 | R                 | X                 | 0            | X            | X            |
|          | HW-U01R (NC-LB) | L                 | 0                 | <del>X</del> | <del>X</del> | <del>X</del> |
|          |                 | R                 | <del>X</del>      | <del>X</del> | <del>X</del> | 0            |

## 5 Position Selector Switches

|        | Contact         | Mounting Position | Operator Position |              |              |              |              |
|--------|-----------------|-------------------|-------------------|--------------|--------------|--------------|--------------|
|        |                 |                   | 1                 | 2            | 3            | 4            | 5            |
| ASW500 | HW-U10 (NO)     | L                 | X                 | 0            | 0            | 0            | 0            |
|        |                 | R                 | 0                 | X            | 0            | 0            | 0            |
|        | HW-U01 (NC)     | L                 | 0                 | 0            | X            | X            | X            |
|        |                 | R                 | 0                 | 0            | 0            | X            | X            |
|        | HW-U10R (NO-EM) | L                 | <del>X</del>      | 0            | 0            | 0            | 0            |
|        |                 | R                 | 0                 | <del>X</del> | 0            | 0            | 0            |
|        | HW-U01R (NC-LB) | L                 | 0                 | <del>X</del> | <del>X</del> | <del>X</del> | <del>X</del> |
|        |                 | R                 | <del>X</del>      | 0            | <del>X</del> | <del>X</del> | <del>X</del> |

|          | Contact         | Mounting Position | Operator Position |              |              |              |              |
|----------|-----------------|-------------------|-------------------|--------------|--------------|--------------|--------------|
|          |                 |                   | 1                 | 2            | 3            | 4            | 5            |
| ASW500-1 | HW-U10 (NO)     | L                 | X                 | 0            | 0            | 0            | 0            |
|          |                 | R                 | 0                 | 0            | 0            | 0            | X            |
|          | HW-U01 (NC)     | L                 | 0                 | 0            | 0            | X            | 0            |
|          |                 | R                 | 0                 | X            | 0            | 0            | 0            |
|          | HW-U10R (NO-EM) | L                 | <del>X</del>      | <del>X</del> | <del>X</del> | 0            | X            |
|          |                 | R                 | X                 | 0            | <del>X</del> | <del>X</del> | <del>X</del> |
|          | HW-U01R (NC-LB) | L                 | 0                 | <del>X</del> | <del>X</del> | <del>X</del> | <del>X</del> |
|          |                 | R                 | <del>X</del>      | <del>X</del> | <del>X</del> | <del>X</del> | 0            |

Switches &amp; Pilot Devices

Signaling Lights

Relays &amp; Sockets

Timers

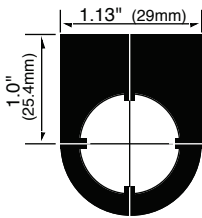
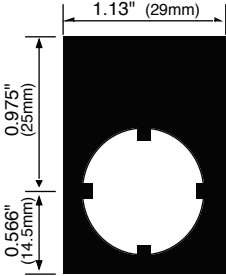
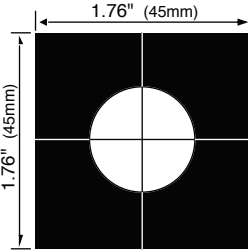
Contactors

Terminal Blocks

Circuit Breakers

Nameplates — TW Series

Faceplates

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

- 
1.

In place of ①, insert either the Standard Legend Code from table below or custom engraving delimited by " ".
2.

Standard engravings are available at no charge.
3.

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

Standard Legend Codes

| Pushbuttons |      |               |      | Pushbuttons/Selector Switches |      |                                                                                                |                                                      | Selector Switches |      |
|-------------|------|---------------|------|-------------------------------|------|------------------------------------------------------------------------------------------------|------------------------------------------------------|-------------------|------|
| Legend      | Code | Legend        | Code | Legend                        | Code | Legend                                                                                         | Code                                                 | Legend            | Code |
| AUTO        | 101  | OPEN          | 116  | AUTO-MAN                      | 201  | REV-FOR<br>RUN-JOG<br>RUN-SAFE<br>SAFE-RUN<br>SLOW-FAST<br>START-STOP<br>STOP-START<br>UP-DOWN | 216<br>217<br>218<br>219<br>220<br>221<br>222<br>223 | AUTO-MAN-OFF      | 301  |
| CLOSE       | 102  | OUT           | 117  | CLOSE-OPEN                    | 202  |                                                                                                |                                                      | AUTO-OFF-MAN      | 302  |
| DOWN        | 103  | RAISE         | 118  | DOWN-UP                       | 203  |                                                                                                |                                                      | CLOSE-OFF-OPEN    | 303  |
| EMERG.STOP  | 104  | RESET         | 119  | FAST-SLOW                     | 204  |                                                                                                |                                                      | DOWN-OFF-SLOW     | 304  |
| FAST        | 105  | REVERSE       | 120  | FOR-REV                       | 205  |                                                                                                |                                                      | FAST-OFF-SLOW     | 305  |
| FORWARD     | 106  | RUN           | 121  | HAND-AUTO                     | 206  |                                                                                                |                                                      | FOR-OFF-REV       | 306  |
| HAND        | 107  | SLOW          | 122  | HIGH-LOW                      | 207  |                                                                                                |                                                      | LEFT-OFF-RIGHT    | 307  |
| HIGH        | 108  | START         | 123  | JOG-RUN                       | 208  |                                                                                                |                                                      | LOWER-OFF-RAISE   | 308  |
| IN          | 109  | STOP          | 124  | LEFT-RIGHT                    | 209  |                                                                                                |                                                      | OFF-MAN-AUTO      | 309  |
| INCH        | 110  | STOP          | 125  | LOWER-RAISE                   | 210  |                                                                                                |                                                      | OFF-SLOW-FAST     | 310  |
| JOG         | 111  | TEST          | 126  | MAN-AUTO                      | 211  |                                                                                                |                                                      | OFF-1-2           | 311  |
| LOW         | 112  | UP            | 127  | OFF-ON                        | 212  |                                                                                                |                                                      | OPEN-OFF-CLOSE    | 312  |
| LOWER       | 113  | I (Int'l On)  | 150  | ON-OFF                        | 213  |                                                                                                |                                                      | SLOW-OFF-FAST     | 313  |
| OFF         | 114  | O (Int'l Off) | 151  | OPEN-CLOSE                    | 214  |                                                                                                |                                                      | SUMMER-OFF-WINTER | 314  |
| ON          | 115  | EMO           | 152  | RAISE-LOWER                   | 215  |                                                                                                |                                                      | UP-OFF-DOWN       | 315  |
|             |      |               |      |                               |      |                                                                                                |                                                      | 1-OFF-2           | 316  |
|             |      |               |      |                               |      |                                                                                                |                                                      | HAND-OFF-AUTO     | 317  |

- 
1.

To order engraved nameplates, add legend code to nameplate part number.  
Character height based on the number of characters and size of nameplate. Standard character size is 3/16".
2.

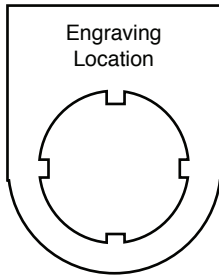
Nameplates with standard legends are the same list price as blank nameplates.

Nameplate Order Form on next page.

## Custom Engraved Nameplates Order Form — TW Series

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

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

**NWAL****Step 1.**

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

Check the box for the letter size you want. Then write your lettering in box below checkboxes. Note: 1/8" size letters cannot exceed 9 characters.

**7/64"**  
Letter Size

☐

11 characters max  
(for 7/64" size letters)

**1/8"**  
Letter Size

☐

9 characters max  
(for 1/8" size letters)

**Step 2.**

Specify Quantity.

Enter the number of nameplates desired in the box on the right.

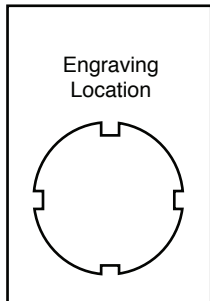
**Qty**

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

**Sample Letter Sizes**

7/64" Letters: A B C D

1/8" Letters: A B C D

**NWAQL****Step 1.**

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

Check the box for the letter size you want. Then write your lettering in box below checkboxes. Note: 1/8" size letters cannot exceed 9 characters.

**7/64"**  
Letter Size

☐

11 characters max  
(for 7/64" size letters)

**1/8"**  
Letter Size

☐

9 characters max  
(for 1/8" size letters)

**Step 2.**

Specify Quantity.

Enter the number of nameplates desired in the box on the right.

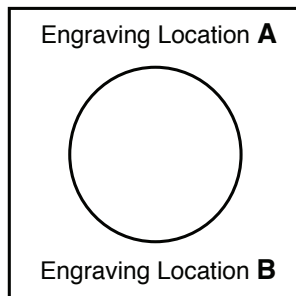
**Qty**

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

**Sample Letter Sizes**

7/64" Letters: A B C D

1/8" Letters: A B C D

**NWAS****Step 1.**

Choose Letter Size - 1/8" or 3/32".

Check the box for the letter size you want. Then write your lettering in box below checkboxes. Note: 1/8" size letters cannot exceed 14 characters.

**3/32"**  
Letter Size

☐

20 characters max  
(for 3/32" size letters)

**1/8"**  
Letter Size

☐

14 characters max  
(for 1/8" size letters)

|   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |
|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|

**Step 2.**

Specify Quantity.

Enter the number of nameplates desired in the box on the right.

**Qty**

**Step 3.**

Specify Location.

Enter the location of engraving (A or B), in the box on the right.

**Location**

**Sample Letter Sizes**

3/32" Letters: A B C D

1/8" Letters: A B C D

## Switch Engraving Order Form – TW Series

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

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

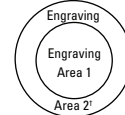
Your Company: \_\_\_\_\_  
 Name: \_\_\_\_\_  
 Address: \_\_\_\_\_  
 PO: \_\_\_\_\_

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

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



ø29mm, ø40mm Mushroom Head



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

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

|                          |                  | # of Lines | Letter Height | Max. Characters Per Line |
|--------------------------|------------------|------------|---------------|--------------------------|
| <input type="checkbox"/> | Engraving Area 1 | 1          | 5/32          | 5                        |
| <input type="checkbox"/> |                  |            | 1/8           | 5                        |
| <input type="checkbox"/> | Engraving Area 2 | 1          | 5/32          | 7                        |
| <input type="checkbox"/> |                  |            | 1/8           | 7                        |



- Above mentioned specifications hold true for standard size pushbuttons (round and square).
- 'Engraving Area 2' can be engraved for 40mm mushroom Head non-Illuminated push button only.
- Engraving is done on the button itself for non-Illuminated push buttons and on marking plate for illuminated push buttons and pilot lights.
- Please enter text exactly how you want it engraved, take care to emphasize capital or small letters.

Enter text to be engraved:

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

### Sample Letter Sizes

1/8 Letters: **OPEN**

5/32 Letters: **OPEN**

For IDEC Internal Use Only:

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

## Accessories

## TW Series Accessories

| Item                                   | Appearance                                                                          | Description/Usage                                                                                                                                 |                                                                                                                                                  | Part Number |
|----------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| Lamp Removal Tool                      |    | Rubber tool used to install or remove LED's                                                                                                       |                                                                                                                                                  | OR-55       |
| Contact Block Remover                  |    | Used to remove contact blocks, transformers, lenses, and adaptors. Can also be used to determine panel thickness adjustment.                      |                                                                                                                                                  | TW-KC1      |
| Nut Locking Wrench                     |    | Used in OR-14 locking wrench to tighten locking nuts inside square bezel                                                                          |                                                                                                                                                  | TW-KQ2      |
| Metal Bezel                            |    | Chrome plated bezels tighten onto operator (replacement for damaged bezels)                                                                       | Standard octagonal units (chrome-pl.)                                                                                                            | AW-R8       |
|                                        |                                                                                     |                                                                                                                                                   | Full shroud octagonal units (chrome-pl.)                                                                                                         | AW-RF8      |
|                                        |                                                                                     |                                                                                                                                                   | Full shroud mushroom head units Ø 40mm                                                                                                           | AW-G4       |
| Plastic Bezel                          |    | Black plastic bezels for square buttons (replacement for damaged bezels)                                                                          | Round flush units (black plastic)                                                                                                                | AW-RP1B     |
|                                        |                                                                                     |                                                                                                                                                   | Round extended units (black plastic)                                                                                                             | AW-FP1B     |
|                                        |                                                                                     |                                                                                                                                                   | Square units (black plastic)                                                                                                                     | AW-Q1B      |
|                                        |                                                                                     |                                                                                                                                                   | Square units with full shroud (black plastic)                                                                                                    | AW-QF1B     |
| Boot/Cover                             |   | Used to cover and protect pushbuttons                                                                                                             | Waterproof lens cover for square pilot lights                                                                                                    | APW00LN     |
|                                        |                                                                                     |                                                                                                                                                   | Waterproof lens cover for square illuminated buttons                                                                                             | APW00L      |
|                                        |                                                                                     |                                                                                                                                                   | Clear boot for round flush units                                                                                                                 | OC-31       |
|                                        |                                                                                     |                                                                                                                                                   | Clear boot for round extended units                                                                                                              | OC-32       |
|                                        |                                                                                     |                                                                                                                                                   | *In place of asterisk, specify <b>Rubber Boot</b> color: <b>B</b> (black), <b>G</b> (green), <b>R</b> (red), <b>Y</b> (yellow) - (nitril rubber) | OCW-11*     |
| Anti-Rotation Ring                     |  | Ring to prevent operator base from rotating in the mounting hole. Used when nameplate is not used                                                 |                                                                                                                                                  | OGL-31      |
| Mounting Hole Plug                     |  | Black rubber plug fills unused mounting holes in panel.                                                                                           |                                                                                                                                                  | OB-31       |
| Metallic Mounting Hole Plug            |  | For plugging unused mounting holes in the panel. Tighten the attached locking ring to a torque of 12 kfg-cm maximum<br>Degree of protection: IP66 |                                                                                                                                                  | LW9Z-BM     |
| Replacement Keys                       |  | Replacement keys (#0)                                                                                                                             |                                                                                                                                                  | TW-SK       |
| Replacement Black Sleeve for Keyswitch |  |                                                                                                                                                   |                                                                                                                                                  | AKW2B-B     |
| Metal Button Guard                     |  | Used on flush buttons to prevent inadvertent actuation                                                                                            |                                                                                                                                                  | OLW-C       |

Switches & Pilot Devices

Signaling Lights

Relays & Sockets

Timers

Contactors

Terminal Blocks

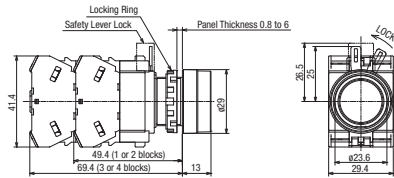
Circuit Breakers

| Item                 | Appearance                                                                        | Description/Usage                                                                                                                                                              |                                  | Part Number |
|----------------------|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|-------------|
| Terminal Tab Adaptor |  | Quick- connect terminals                                                                                                                                                       | #250 (17/64" x 3/64") single tab | TW-FA4      |
| Lock-out Adaptor     |  | Used to provide lock-out protection for pushbuttons and knob selector switches:<br>• Up to Ø 40mm mushroom head size<br>(Padlock not included.)<br>Not applicable for e-stops. |                                  | HW9Z-KL1    |
| 22mm to 30mm Adaptor |  | Used to mount TW series control unit (except square units) Ø 7/8" (22mm) into a Ø 1-13/64" (30mm) panel cut-out.                                                               |                                  | TWN-A1R8    |

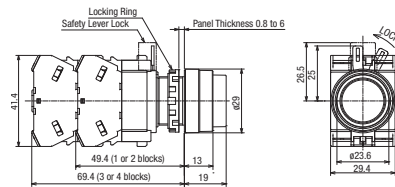
## Dimensions

## Pushbuttons

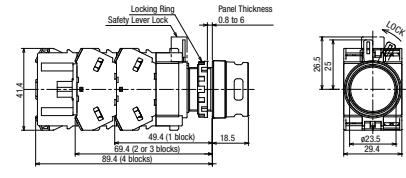
## Flush



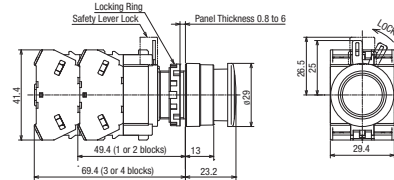
## Extended



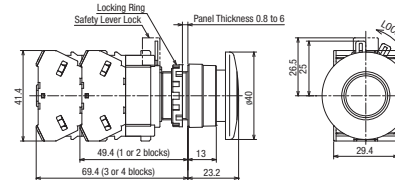
## Extended with Full Shroud



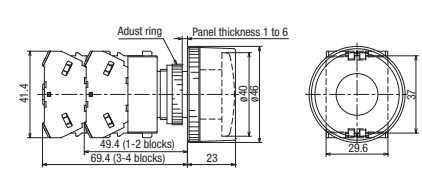
## 29mm Mushroom



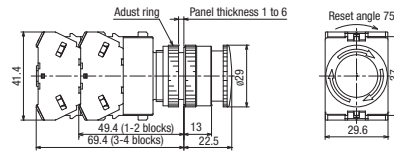
## 40mm Mushroom



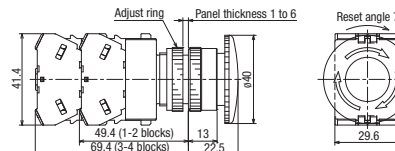
## Mushroom with Full Shroud



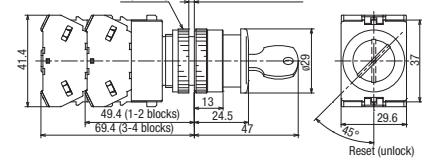
## 29mm Push-Lock-Turn-Reset



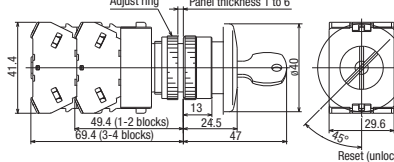
## 40mm Push-Lock-Turn-Reset



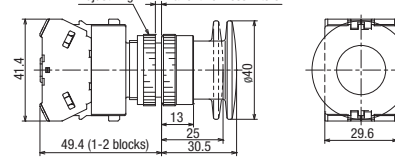
## Keylock Push On/Off



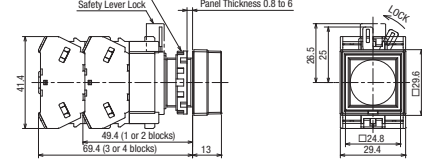
## 40mm Pushlock Key reset



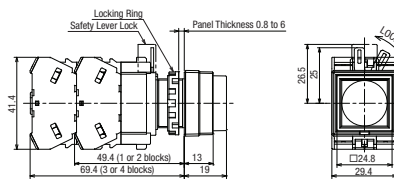
## 40mm Push-Pull



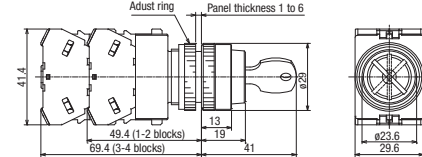
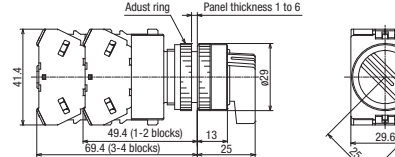
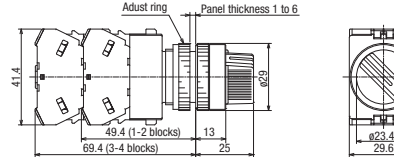
## Square Flush



## Square Extended



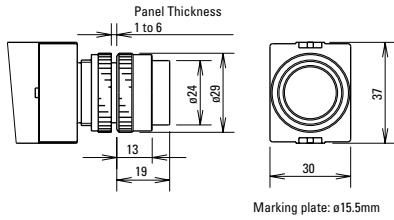
## Selector Switches



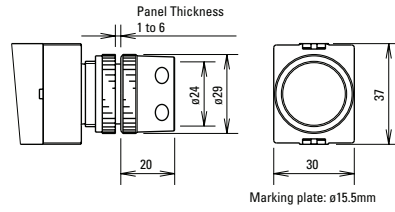
Dimensions continued

Illuminated Pushbuttons

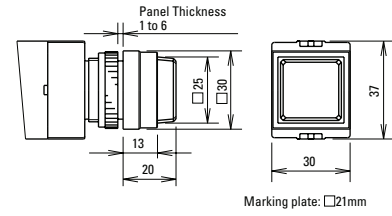
Extended



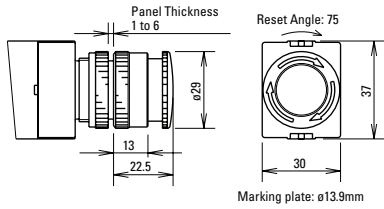
Extended with Full Shroud



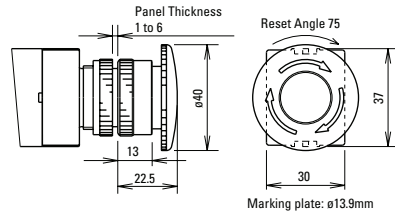
Square Extended



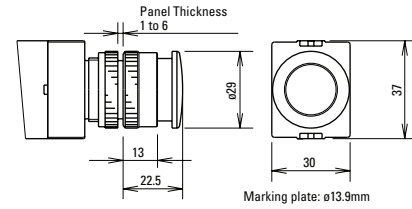
29mm Push-Turn-Reset



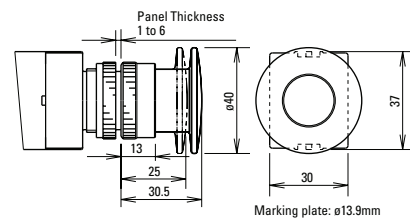
40mm Push-Turn-Reset



Mushroom

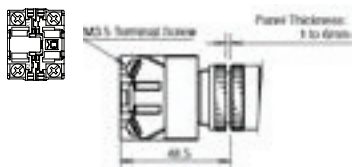


Push-Pull

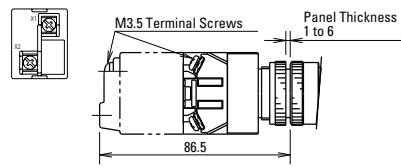


Illuminated Selector Switches

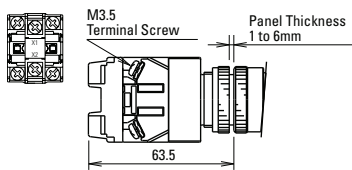
1 Contact Block with Full Voltage Adaptor



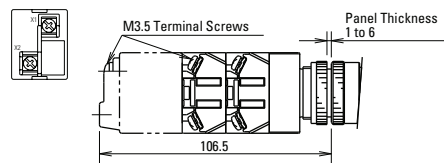
Transformer (2 blocks)



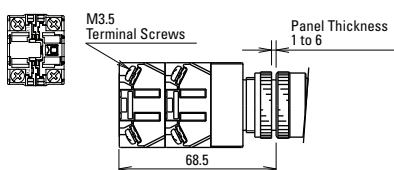
2 Contact Blocks with Full Voltage Adaptor



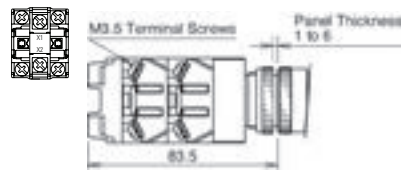
Transformer (4 blocks)



3 Contact Blocks with Full Voltage Adaptor



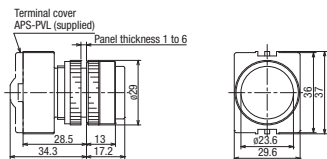
4 Contact Blocks with Full Voltage Adaptor



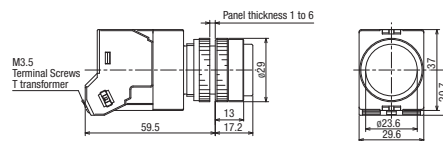
## Dimensions continued

## Pilot Lights

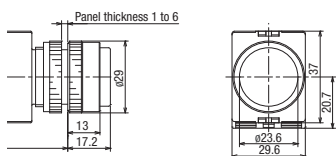
## Round Flush APW1 Full Voltage



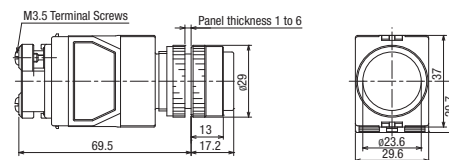
## Round Flush APW1 Transformer



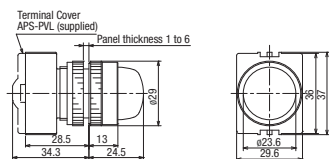
## Round Flush Marking Type APW1B Full Voltage



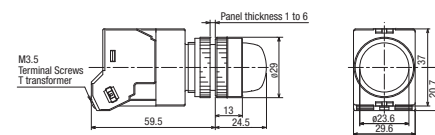
## Round Flush Marking Type APW1B Transformer



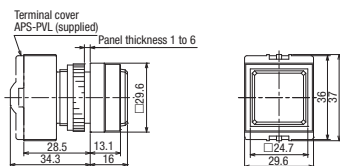
## Dome APW2 Full Voltage



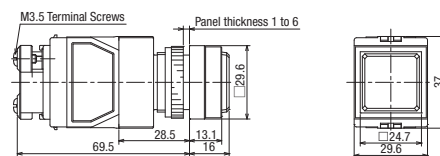
## Dome APW2 Transformer



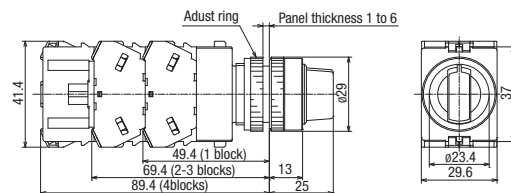
## Square Flush Marking Type APQW1B Full Voltage



## Square Flush Marking Type APQW1B Transformer



## Illuminated Selector Switches



### Dimensions continued

### Panel Cut-Out

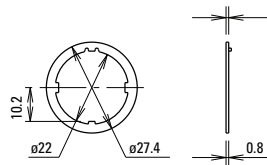
| Diagram | Part                          | Dimension                                                                                                                                                                                                                                                                                                 |
|---------|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|         | Pushbuttons                   | <ul style="list-style-type: none"> <li>The minimum mounting centers are applicable to switches with one layer of contact blocks (one to two contact blocks). When two layers of contact blocks are mounted, determine the minimum mounting centers in consideration of convenience for wiring.</li> </ul> |
|         | Pilot Light                   | <ul style="list-style-type: none"> <li>1*) <math>\phi 40</math> mm mushroom button type: 40 mm minimum</li> </ul>                                                                                                                                                                                         |
|         | Illuminated Pushbuttons       | <ul style="list-style-type: none"> <li>1*) 2-position, 3-position lever selector switch: 39 mm minimum</li> <li>1*) 4-position, 5-position lever selector switch: 50 mm minimum</li> </ul>                                                                                                                |
|         | Selector Switches             | <ul style="list-style-type: none"> <li>When high temperature is expected, take necessary measures such as securing sufficient mounting centers or using a cooling fan.</li> </ul>                                                                                                                         |
|         | Illuminated Selector Switches | <ul style="list-style-type: none"> <li>The <math>\star 3.2^{+0.2}_0</math> mm recess is for preventing rotation and is not necessary when the nameplate or anti-rotation ring is not used.</li> </ul>                                                                                                     |
|         |                               | All dimensions in mm.                                                                                                                                                                                                                                                                                     |



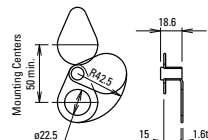
1. The  $\varnothing 0.137"$  ( $\varnothing 3.5\text{mm}$ ) recess is necessary when either the nameplate or anti-rotation ring is used.
2. \* $>1.404"$  (36mm) for 2- or 3-position.  
     $>1.95"$  (50mm) for 4- or 5-position.

### Accessory Dimensions

## **OGL-31** **Anti-Rotation Ring**

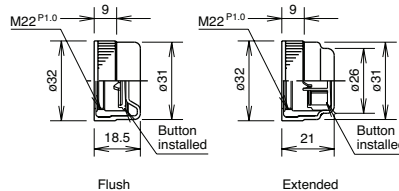


**OLW-C**  
**Metal Button Guard**



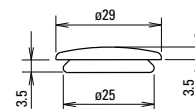
## OCW-11

### Pushbutton Rubber Boot

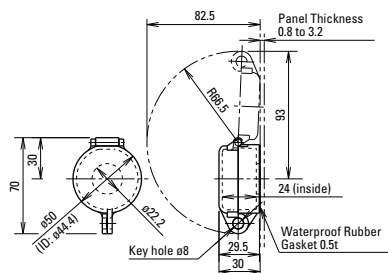


### OB-31

#### Mounting Hole Rubber Plug



## HW9Z-KL1 Lock-out Adaptor



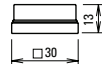
**AW-RP1B**  
**Round Plastic Bezel**



**AW-FP1B**  
**Round Plastic w/Full Shroud**

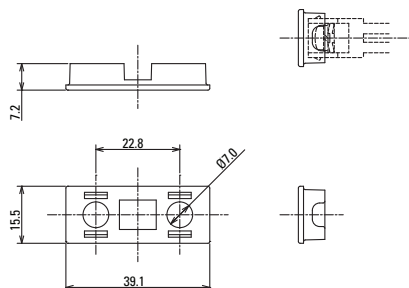


**AW-QF1B**  
**Square Full Shroud**

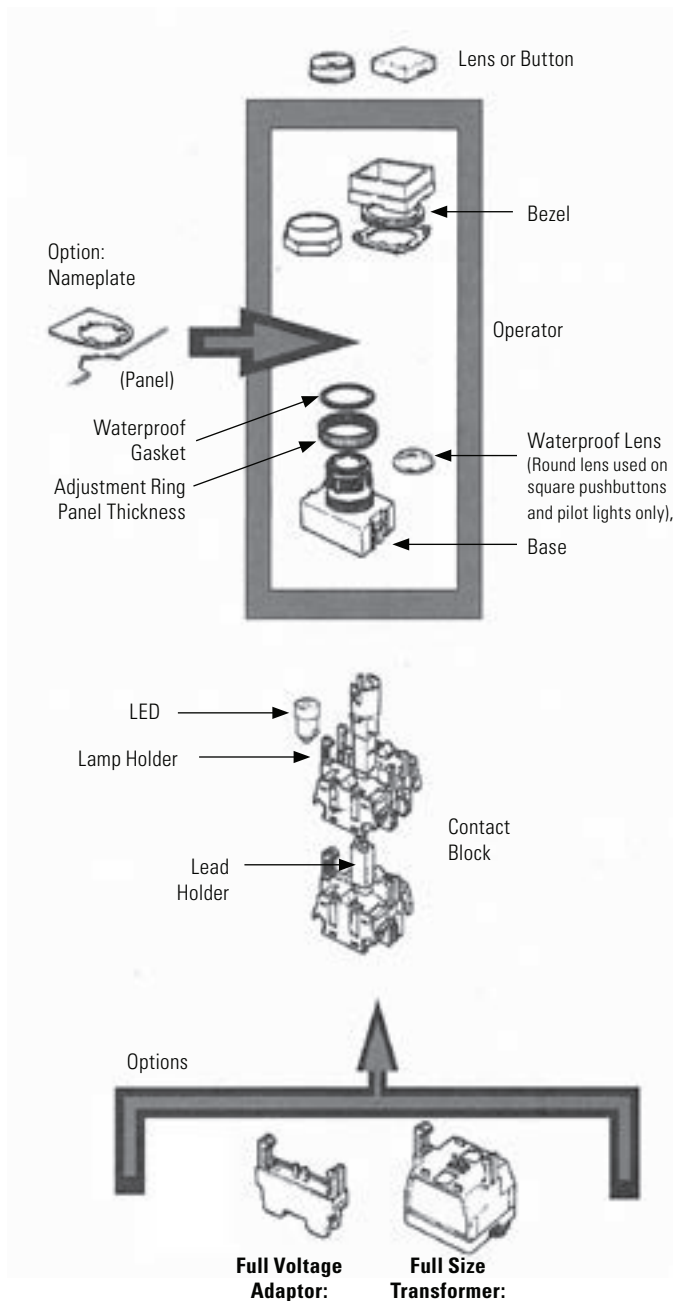


### Finger-Safe Cover Dimensions

## APS-PVL



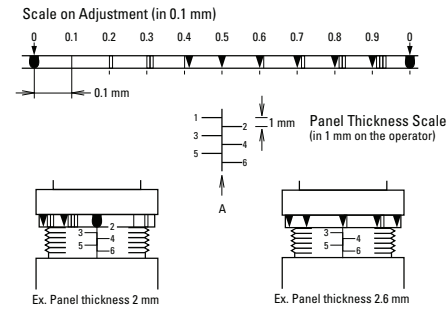
## Component Construction and General Instructions — TW Series



## Instructions for Switches and Pilot Devices

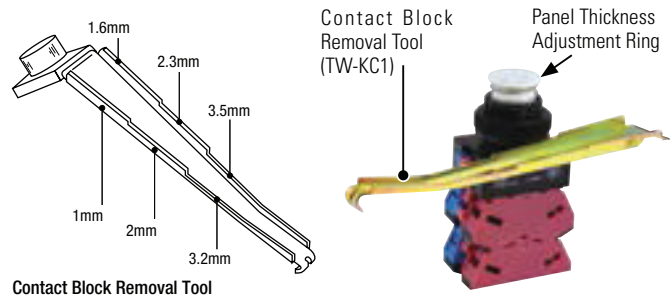
## TW Series: Adjustment for Panel Thickness

The panel thickness ring provides adjustment from 0.04" to 0.24" (1 to 6mm) in 0.004" (0.1mm) increments. Rotate the ring until the markings around the periphery are aligned for the desired thickness, as shown below.



**Note:** When a nameplate or an anti-rotation ring is used, add 0.03" (0.8mm) to the panel thickness dimension.

An adjustment for panel thicknesses shown below can be made quickly by using the contact block remover tool.



Switches & Pilot Devices

Signaling Lights

Relays & Sockets

Timers

Contactors

Terminal Blocks

Circuit Breakers

Instructions continued

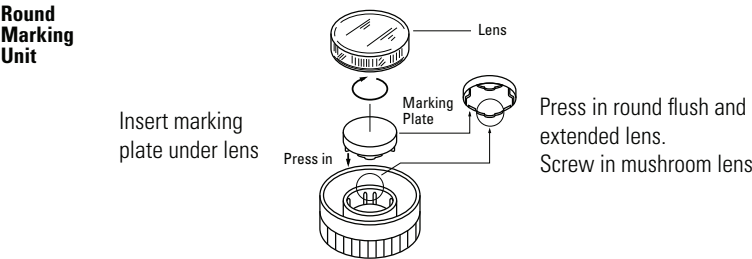
Pilot Lights and Pushbuttons

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

Octagonal and Round Bezels

Octagonal and round bezels screw into the operator. Use a locking ring wrench (optional) for secure tightening and easy removal. Round flush and extended buttons snap onto the operator base. Mushroom buttons screw onto the operator base.

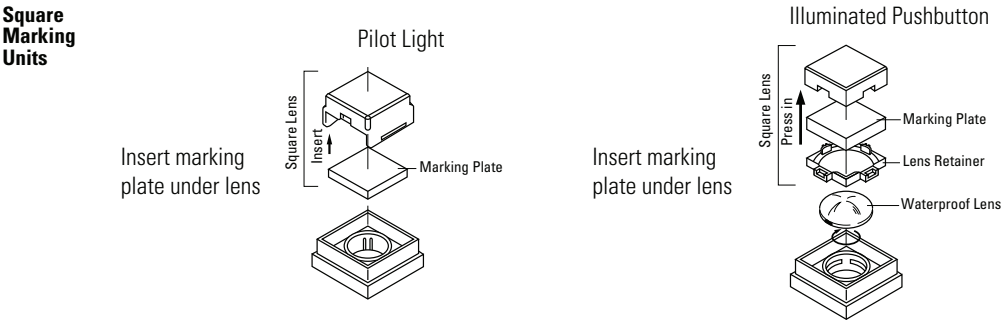
Every round lens can be used with or without legend markings. Engraving can be done on a white translucent plate which is placed in the lens, or clear mylar can be printed and placed in the lens.



Square Bezels

Square bezels are installed in a 3-step procedure. First install the base plate from the front. Then install the lock nut using the nut locking wrench (optional). Finally, install the square bezel, which snap-fits onto the base plate. Square buttons also snap onto the operator base.

Every square lens can be used with or without legend markings. Engraving can be done on a white translucent plate which is placed in the lens, or clear mylar can be printed and placed in the lens. Square units include a round waterproof lens which screws into the operator. The square outer lens snaps on.



To remove square lens from operator, place a screwdriver under the indentation on the side of the lens. To remove the marking plate, place a screwdriver under the indentation and lift out the plate. The lens retainer can be removed by pressing a 3/16" screwdriver into one of the recesses.



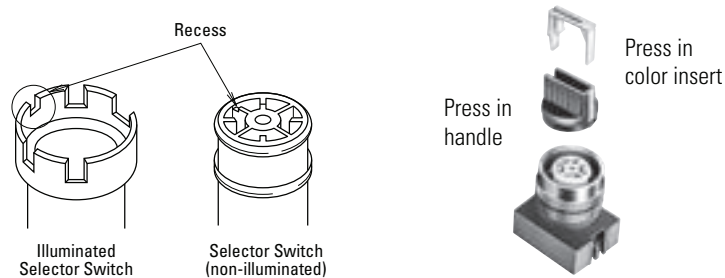
Marking Plate Engraving Area

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

## Instructions, continued

## Selector Switches

The operator shaft of each unit has a recess to identify in which direction to install the handle. Align the handle with the recess. Press color insert (TW-HC1) into the handle and then press handle into the operator, as shown below.



Remove color insert before pulling out the handle.

## Standard Operating Positions

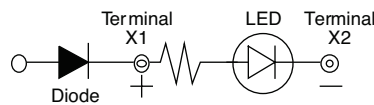
| 2-Position, 90° | 3-Position, 45° | 4-Position, 45° | 5-Position, 30° |
|-----------------|-----------------|-----------------|-----------------|
|                 |                 |                 |                 |

## Positions: Non-Illuminated 3-Position Operators

|  |  |  |
|--|--|--|
|  |  |  |
|--|--|--|

## Installation of LED Illuminated Units

Transformers are recommended for use in areas subjected to inductive noise. When using full voltage types, install a protection diode as shown below. (Diode with DC power supply to protect against surges and noise.)



## Enclosures for XW, HW & TW 22mm Switches and Pilot Devices

### Key features:

- Three compact sizes (mm): 76 x 76, 140 x 76 and 200 x 76
- Available in 1, 2, 3, 4 or 5 mounting hole configurations
- Easy installation: panel, wall or frame mountable
- Polycarbonate enclosure cover and base, stainless steel screws
- UL Listed, RoHS Compliant
- IP65 and Type 4X rated (when installed with IP65 or Type 4X unit)
- Class II electric shock protection (when installed with applicable unit)
- Ideal for high temperatures (-25 to +60°C) and corrosive environments



### Specifications

|                                       |                                                                                                                              |                               |
|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------|-------------------------------|
| Operating Conditions                  | Ambient temperature                                                                                                          | -25 to +60°C (no freezing)    |
|                                       | Relative humidity                                                                                                            | 45 to 85%RH (no condensation) |
|                                       | Storage temperature                                                                                                          | -40 to +80°C (no freezing)    |
|                                       | Degree of pollution                                                                                                          | 3                             |
| Degree of Protection                  | IP65 (when IP65 switches and pilot devices are installed)<br>Type 4X (when Type 4X switches and pilot devices are installed) |                               |
| Electric Shock Protection             | Class II (when class II switches and pilot devices are installed)                                                            |                               |
| Material                              | Cover and base                                                                                                               | Polycarbonate                 |
|                                       | Cover mounting screws                                                                                                        | Stainless steel               |
| Applicable Switches and Pilot Devices | HW, TW and XW series switches, pilot devices and accessories (see note below)                                                |                               |
| Weight (approx.)                      | 76mm type:                                                                                                                   | 125g (FB1W-111Z)              |
|                                       | 140mm type:                                                                                                                  | 184g (FB2W-211Z)              |
|                                       | 200mm type:                                                                                                                  | 243g (FB3W-311Z)              |



Choose switches, pilot devices and accessories that match the mounting hole centers, effective depth behind the cover, and the thickness of the cover where switches and pilot devices are installed (3 mm). Enclosures with 30 or 36mm mounting hole centers may limit the knob orientation of selector switches because the contact blocks can be mounted in one direction only on these mounting centers.

### Enclosure Part Numbers

| Size (mm)       | Description              | Part Number | Distance Between Hole Centers (mm) |
|-----------------|--------------------------|-------------|------------------------------------|
| 76 x 76 x 59.5  | Enclosure 1 hole, Yellow | FB1W-111Y   | —                                  |
|                 | Enclosure 1 hole, Beige  | FB1W-111Z   | —                                  |
| 140 x 76 x 59.5 | Enclosure 2 hole, Beige  | FB2W-211Z   | 50                                 |
|                 | Enclosure 3 hole, Beige  | FB2W-312Z   | 30                                 |
| 200 x 76 x 59.5 | Enclosure 3 hole, Beige  | FB3W-311Z   | 50                                 |
|                 | Enclosure 4 hole, Beige  | FB3W-413Z   | 36                                 |
|                 | Enclosure 5 hole, Beige  | FB3W-512Z   | 30                                 |

### Accessories

| Description         | Part Number |
|---------------------|-------------|
| Plug Adaptor 13.5mm | HW9Z-PG135  |
| Mounting Bracket    | FB9Z-PK1    |

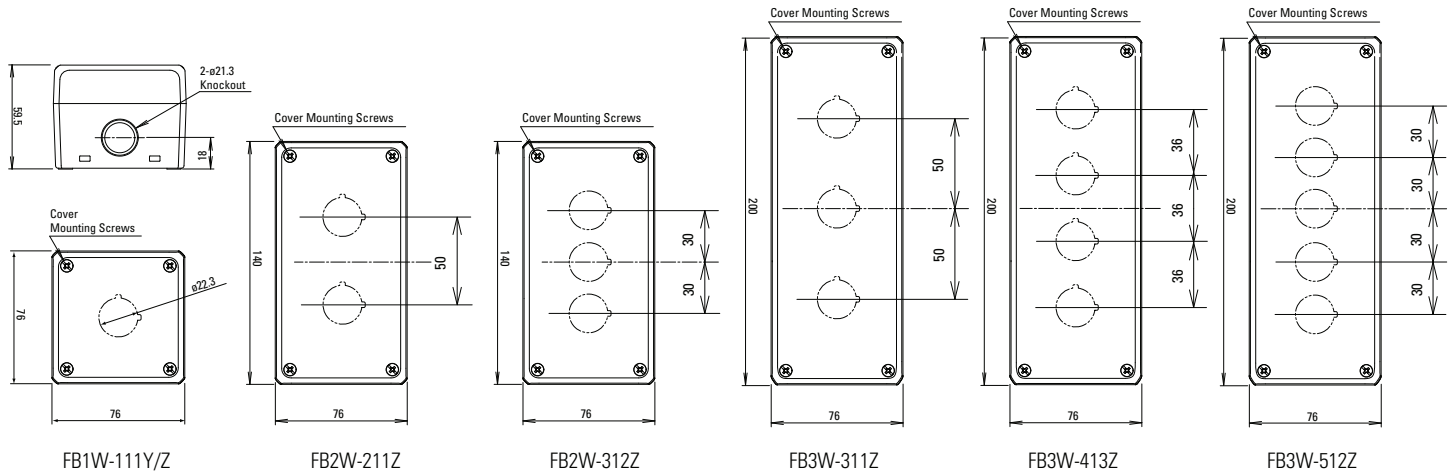


Connectors and nuts are not supplied with accessories.

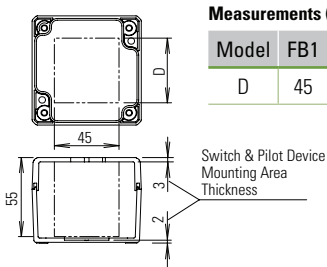
### Switch and Pilot Device Accessories

| Series            | Description                 | Part Number                                 |
|-------------------|-----------------------------|---------------------------------------------|
| HW Series         | Nameplate                   | HWAM, HWAQ, HWAS, HWAV                      |
|                   | Marking plate for nameplate | HWNP                                        |
|                   | Anti-rotation ring          | HW9Z-RL                                     |
|                   | EMO switch guard            | HW9Z-KG1, HW9Z-KG2, HW9Z-KG3, HW9Z-KG4      |
|                   | Switch cover                | HW9Z-K1, HW9Z-K11                           |
|                   | Pushbutton clear boot       | OC-31, OC-32                                |
|                   | Padlock cover               | HW9Z-KL1                                    |
| XW Series E-Stops | Nameplate                   | HWAV                                        |
|                   | EMO switch guard            | HW9Z-KG1, HW9Z-KG2, HW9Z-KG3, HW9Z-KG4      |
|                   | Anti-rotation ring          | HW9Z-RL                                     |
| TW Series         | Nameplate                   | NWA, NWAQ, NWA-S-0, NWA-L-0, NWAQL-0, NWA-V |
|                   | Anti-rotation ring          | OGL-31                                      |
|                   | Metal button guard          | OLW-C                                       |
|                   | Pushbutton clear boot       | OC-31, OC-32                                |
|                   | Button cover                | OCW-11                                      |
|                   | Padlock cover               | HW9Z-KL1                                    |

## External Dimensions (mm)



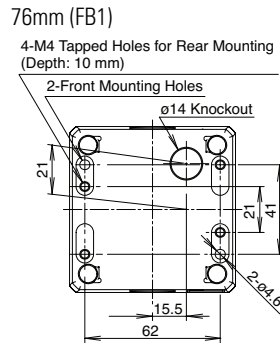
## Internal Dimensions (mm)



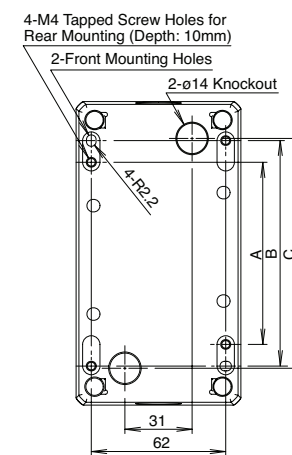
## Measurements (mm)

| Model | FB1 | FB2 | FB3 |
|-------|-----|-----|-----|
| D     | 45  | 92  | 150 |

## External Back Dimensions (mm)



## 140 and 200mm (FB2/FB3)

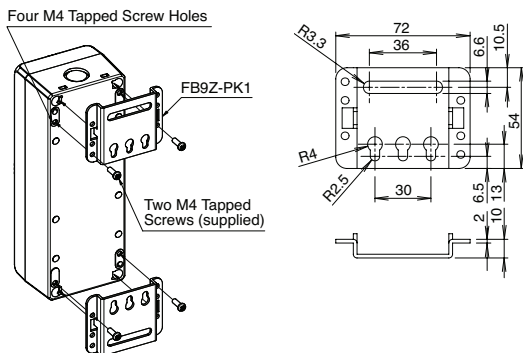


## Measurements (mm)

| Model | FB2 | FB3 |
|-------|-----|-----|
| A     | 84  | 144 |
| B     | 104 | 164 |
| C     | 106 | 166 |

## Mounting

## FB9Z-PK1 Frame Mounting Adapter



## Mounting Hole Dimensions

| Model | FB1 | FB2                   | FB3                      | FB2/FB3               |
|-------|-----|-----------------------|--------------------------|-----------------------|
|       |     | 50mm Mounting Centers | 36/50mm Mounting Centers | 30mm Mounting Centers |
| Shape |     |                       |                          |                       |

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