

## HW Series — 22mm IEC Style Global Pushbuttons

## Key features:

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



## HW: The Best Engineered Switch in the World

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

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

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

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



File No. E68961



File No. LR21451



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



Certificate No.  
2017010305987846

## Specifications

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

Switches & Pilot Devices

Signaling Lights

Relays & Sockets

Timers

Contactors

Terminal Blocks

Circuit Breakers

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



For dimensions, see page 682.  
Note 1. Except HW2B

LED Lamp Ratings (LSRD Type)

|                        |    |                                                                                                                                                                                                                                             |                |                |                     |                                 |
|------------------------|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------|---------------------|---------------------------------|
| Rated Voltage          |    | 6V AC/DC                                                                                                                                                                                                                                    | 12V AC/DC      | 24V AC/DC      | 100/120V AC/DC      | 200/240V AC (50/60Hz sine wave) |
| Voltage Range          |    | 6V AC/DC ±10%                                                                                                                                                                                                                               | 12V AC/DC ±10% | 24V AC/DC ±10% | 100/120V AC/DC ±10% | 200/240V AC ±10%                |
| Current Draw           | DC | 10mA                                                                                                                                                                                                                                        | 7mA            | 7mA            | 2mA                 | 2mA                             |
|                        | AC | 14mA                                                                                                                                                                                                                                        | 8mA            | 8mA            | 2mA                 | 2mA                             |
| Part No.               |    | LSRD-6                                                                                                                                                                                                                                      | LSRD-1         | LSRD-2         | LSRD-H2             | LSRD-M4                         |
| Life (reference value) |    | Approx. 50,000 hours (The luminance is reduced to 50% the initial intensity when used on complete DC at 25°C.)                                                                                                                              |                |                |                     |                                 |
| Internal Circuit       |    | <div><div>X1</div><div>X2</div><div>Limited current circuit<br/>Noise protection circuit<br/>Rectifier circuit<br/>Dimmer protection circuit</div></div> |                |                |                     |                                 |

## Non-Illuminated Round Pushbuttons (Assembled)



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

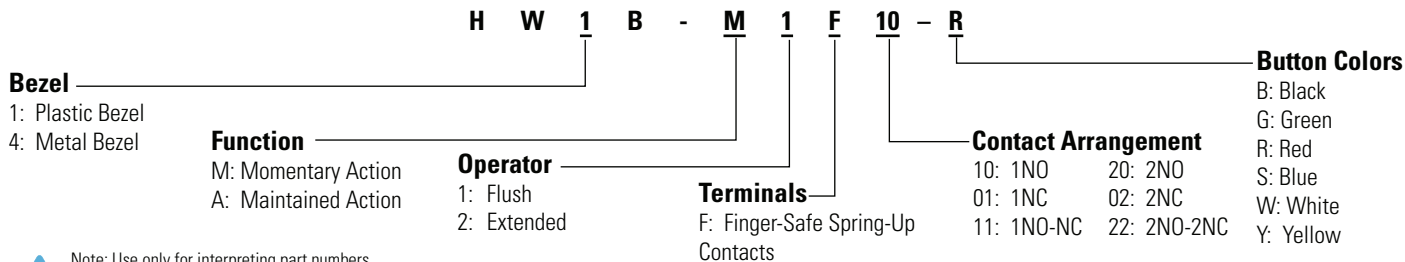
## ① Button Color Code

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



1. In place of ①, specify the Button Color Code from table below.
2. For nameplates and accessories, see page 677 and 680.
3. For dimensions, see page 682.
4. For contact assembly part numbers, see page 682.
5. All assembled part numbers in catalog include standard, Finger-Safe (HW-U...) contacts.
6. Operator only models include operator plus button.
7. Additional contact configurations available (up to 6 total contacts).

## Part Number Structure



## Non-Illuminated Round Pushbuttons (Replacement Parts)



### Contact Blocks

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

### Contact Block Mounting Adaptor

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

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

### Anti-Rotation Ring

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

Use with notched panel cutout to prevent unit rotation.

### Operators

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

### Safety Lever Lock

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

### Buttons

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

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

### ① Button Color Code

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