

# Two-circuit Limit Switch/Long-life Two-circuit Limit Switch WL/WLM

## Wide Range of Two-circuit Switches; Select One for the Operating Environment/ Application

- A wide selection of models are available, including the overtravel models with greater OT, indicator-equipped models for checking operation, low-temperature models, heat-resistant models, and corrosion-proof models.
- Microload models are added to the product lineup.
- Meets EN/IEC standards (only Switches with ground terminals and prewired connectors with DC specifications).
- Switches with ground terminals and prewired connectors with DC specifications have the CE marking.



## Features

### Standard Models

#### Many Variations in Standard Limit Switches

##### A Wide Range of Models

The WL Series provides a complete range of Limit Switches with a long history of meeting user needs. Select environment-resistant specifications, actuators for essentially any workpiece, operating sensitivity matched to the workpiece, operation indicators to aid operation and maintenance, and various wiring specifications.

### Environment-resistant Models

#### Select from Six Types of Environment Resistance

The series includes Airtight Switches, Hermetic Switches, Heat-resistant Switches, Low-temperature Switches, Corrosion-proof switches, and Weather-proof Switches. Select the one required by the onsite environment.

### Spatter-prevention Models

#### Excellent Performance on Arc Welding Lines or Sites with Spattering Cutting Powder

##### Ideal for Welding Sites

Stainless steel and resins that resist adhesion of spatters are used to prevent troubles caused by zinc powder generated during welding.

### Long-life Models

#### Mechanical Endurance of 30 Million Operations

##### Long-life Models for High-frequency Applications

Long life has been achieved by increasing the resistance to friction and creating better sliding properties in the head mechanism. Greater visibility is provided when setting with a fluorescent display for setting the stroke.

### Features Common to All Models

#### DPDB Operation

The double-pole, double-break structure ensures circuit braking.

#### Waterproof to IP67

O-rings, cover seals, and other measures provide a waterproof, drip-proof structure (IP67).

#### Approved Standards to Aid Export Machines

Various WL/WLM switches are approved by UL, CSA, TÜV, EN/IEC, and CCC making them ideal for export machines.

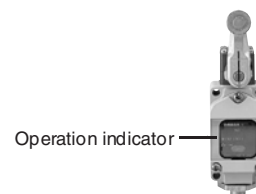
#### High-precision Models Available in All Switch Types; Ideal for Position Control

High-precision models achieve a very small movement to operation (approx. 5°) and a repeat accuracy that is twice that of basic models.

#### Operation Indicators for Easier Daily Inspections (See note.)

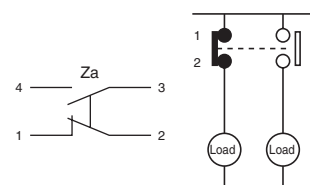
Confirm operation with a neon lamp or LED for easier startup confirmations and maintenance.

**Note:** Specify the type of operation indicator for general-purpose models. Provided on standard models for spatter-prevention and long-life models.



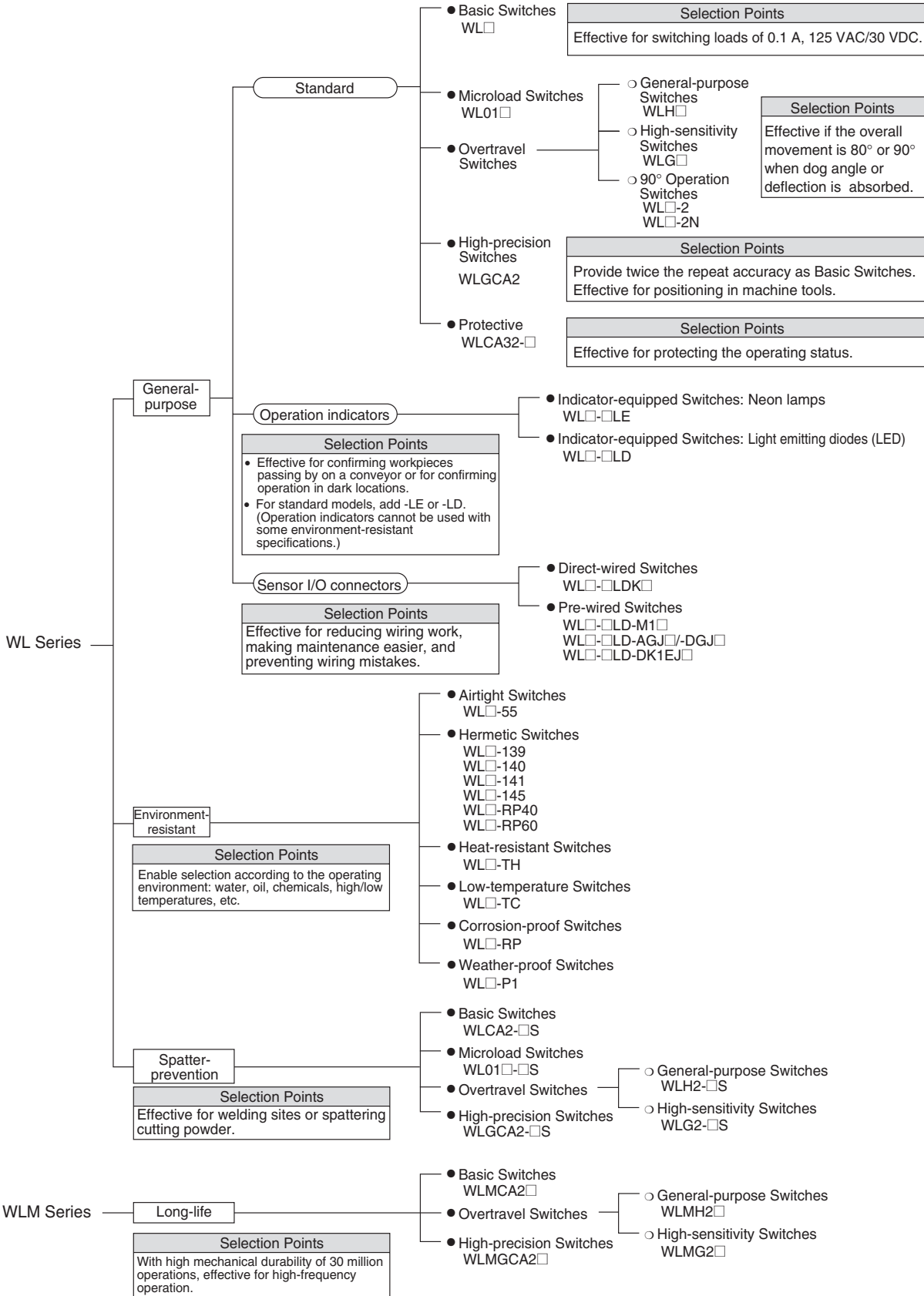
#### Models with Connectors Provided with All Switch Types

Reduced wiring with one-touch connection. Connectors that also make Switch replacement easier are provided with direct-wired and prewired models).



# Product Configuration

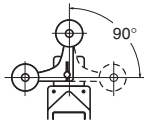
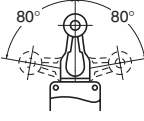
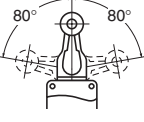
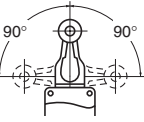
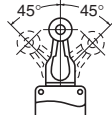
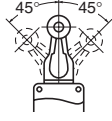
## ■ Selection by Purpose



## ■ Tables of Models

### General-purpose, Spatter-prevention, and Long-life Switches

#### Actuators/Heads

| Type                        | General-purpose | Actuators    |          |              | Features                                                                                                                                                                                                                                                                                                             | Head specifications                                   |                        | Spatter-prevention | Long-life |
|-----------------------------|-----------------|--------------|----------|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|------------------------|--------------------|-----------|
|                             | Model           | Roller lever | Plunger  | Flexible rod | Total travel (TT)                                                                                                                                                                                                                                                                                                    | One-side operation                                    | Head mounting          | Model              | Model     |
| Basic                       | WL□             | Possible     | Possible | Possible     | <ul style="list-style-type: none"> <li>With a Roller Lever</li> </ul>                                                                                                                                                               | Possible (See note 1.) (Except for long-life models.) | Any of 4 directions    | WLC A2-□S          | WLMCA2□   |
| General-purpose Overtravel  | WLH□            | Possible     | ---      | ---          | <ul style="list-style-type: none"> <li>Overtravel is large, making setting the dog easier.</li> <li>Mounting is compatible with basic models.</li> </ul>                                                                            | Not possible (See note 2.)                            | Any of 4 directions    | WLH2-□S            | WLH2□     |
| High-sensitivity Overtravel | WLG□            | Possible     | ---      | ---          | <ul style="list-style-type: none"> <li>Operation is highly sensitive with only 10° pretravel.</li> <li>Overtravel is large, making setting the dog easier.</li> <li>Mounting is compatible with basic models.</li> </ul>            | Not possible (See note 2.)                            | Any of 4 directions    | WLG2-□S            | WLMG2□    |
| Overtravel, 90° operation   | WL□-2           | Possible     | ---      | ---          | <ul style="list-style-type: none"> <li>Overtravel is large, making setting the dog easier.</li> <li>Mounting is compatible with basic models.</li> </ul>                                                                            | Not possible (See note 2.)                            | Any of 4 directions    | ---                | ---       |
|                             | WL□-2N          | Possible     | ---      | ---          |                                                                                                                                                                                                                                                                                                                      | Possible (See note 1.)                                | Either of 2 directions |                    |           |
| High-precision              | WLGCA2          | Possible     | ---      | ---          | <ul style="list-style-type: none"> <li>Repeat accuracy is twice that of basic models.</li> <li>Operation is highly sensitive with only 5° pretravel.</li> <li>Ideal for positioning, e.g., with machine tools.</li> </ul>          | Not possible (See note 2.)                            | Any of 4 directions    | WLGCA2-□S          | WLMGCA2□  |
| Protective                  | WLCA32-□        | Possible     | ---      | ---          | <ul style="list-style-type: none"> <li>When the dog throws the lever, the output is reversed and the reversed output is held even after the dog passed. The original status is returned to only after the dog passed.</li> </ul>  | ---                                                   | Any of 4 directions    | ---                | ---       |

**Note 1.** One-side operation means that three operational directions can be selected electrically, according to the change in direction of the operating plunger. The operating plunger is set for operation on both sides before delivery.

**2.** Those models for which one-side operation is impossible can only operate on both sides.

#### Connectors and Conduits

| Wiring type              | General-purpose                                     | Connector/conduit specifications                                                                                                                                                                                                 | Spatter-prevention             | Long-life                           |
|--------------------------|-----------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|-------------------------------------|
|                          | Model                                               |                                                                                                                                                                                                                                  | Model                          | Model                               |
| Direct-wired connector   | WL□-□LDK□                                           | • SC-2F/-4F Connector built-in                                                                                                                                                                                                   | ---                            | WLM□-LDK□                           |
| Pre-wired connector      | WL□-□LD-M1□<br>WL□-□LD-□GJ□<br>WL□-□LD-DK1EJ□       | • XS2H-series Pre-wired Connector built-in                                                                                                                                                                                       | WL□-□S-M1□J-1<br>WL□-□S-DGJS03 | WLM□-LD-M1J<br>WLM□-LD-□GJ□         |
| Conduit (screw terminal) | WL□-□<br>WL□-□G1□<br>WL□-□G□<br>WL□-□Y□<br>WL□-□TS□ | <ul style="list-style-type: none"> <li>G1/2 with no ground terminal</li> <li>G1/2 with ground terminal</li> <li>Pg13.5 with ground terminal</li> <li>M20 with ground terminal</li> <li>1/2 14NPT with ground terminal</li> </ul> | ---                            | WLM□-LD<br>---<br>---<br>---<br>--- |

## Environment-resistant Switches

| Type                                                 | Item<br>Model | Environment-resistant                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                               |
|------------------------------------------------------|---------------|---------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                      |               | Application                                                                                                   | Environment-resistant construction                                                                                                                                                                                                                                                                                                                                                       | Applicable models                                                                                                                                                                                             |
| Airtight seal                                        | WL□-55        | For uses in locations subject to cutting oil or water                                                         | Uses the W-10FB3-55 Airtight Built-in Switch.<br><b>Note:</b> Use the SC Connector for the conduit opening.                                                                                                                                                                                                                                                                              | All models except the low-temperature and heat-resistant models<br><b>Note:</b> Models can be produced using standard actuators.                                                                              |
| Hermetic seal<br>(Molded terminals/<br>Anti-coolant) | WL□-139       |                                                                                                               | Refer to page 57 for information on the environment-resistant construction of Switches with Hermetic Seals.                                                                                                                                                                                                                                                                              | All models except the low-temperature and heat-resistant models<br><b>Note:</b> Models can be produced using standard actuators. Only the WLCA2, WLGCA2, or WLH2 can be produced for the WL□-141 and WL□-145. |
|                                                      | WL□-140       |                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                               |
|                                                      | WL□-141       |                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                               |
|                                                      | WL□-145       |                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                               |
|                                                      | WL□-RP40      |                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                               |
|                                                      | WL□-RP60      |                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                               |
| Low-temperature                                      | WL□-TC        | Can be used at a temperature of –40°C (operating temperature range: –40 to 40°C), but cannot withstand icing. | Uses a general-purpose built-in switch. Silicone rubber is used for rubber parts such as the O-ring, gasket, etc.                                                                                                                                                                                                                                                                        | All models except airtight seal, hermetic seal, heat-resistant, corrosion-proof, and indicator-equipped models                                                                                                |
| Heat-resistant                                       | WL□-TH        | Can be used in temperatures of 120°C (operating temperature range: 5 to 120°C).                               | Uses a special built-in switch made from heat-resistant resin. Silicone rubber is used for rubber parts such as the O-ring, gasket etc.                                                                                                                                                                                                                                                  | All models except airtight seal, hermetic seal, heat-resistant, corrosion-proof, and indicator-equipped, nylon roller (WLCA2-26N), seal roller models, and resin rod (WLNJ-2) models                          |
| Corrosion-proof                                      | WL□-RP        | For use in locations subject to corrosive gases and chemicals.                                                | Diecast parts, such as the switch box, are made of corrosion-proof aluminum. Rubber sealing parts are made of fluorine rubber which aids in resisting oil, chemicals and adverse weather conditions. Exposed nuts and screws (except the actuator section) are made of stainless steel. Moving and rotary parts such as rollers are made of sintered stainless steel or stainless steel. | All models except overtravel (90° operation), fork lever lock (WLCA32-41 to -43), low-temperature, heat-resistant, and indicator-equipped models                                                              |
| Weather-proof                                        | WL□-P1        | For use in parking lots and other outdoor locations.                                                          | Rubber parts are made from silicone rubber, which has a high-tolerance to deterioration over time and changes in temperature. Rollers are made of stainless steel to improve corrosion resistance. Exposed nuts and screws are made of stainless steel.                                                                                                                                  | Only general-purpose overtravel (WLH2/12) and high-sensitivity overtravel (WLG2/12) models (excluding heat-resistant models).                                                                                 |

## ■ Selection Guide

With the WL Series, OMRON will combine the switch, Actuator, and wiring method required to build the ideal switch for your application.

The WL Series consists of four basic types: General-purpose, Environment-resistant, Spatter-prevention, and Long-life Switches.  
WLCA2 Switches can be used for the most common applications.

### According to Operating Environment

| Environment                   |                                                    | Key specifications                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Models        |                                                                                                            |
|-------------------------------|----------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|------------------------------------------------------------------------------------------------------------|
| Ambient operating temperature | Normal                                             | -10°C 80°C<br><br>Water-resistant to IP67.                                                                                                                                                                                                                                                                                                                                                                                                                         | WL□<br>WLM□   | General-purpose Switches<br>Long-life Switches                                                             |
|                               | High-temperature                                   | 5°C 120°C<br><br>To increase heat resistance, the rubber material (silicon rubber) and the material of the built-in switch have been changed.                                                                                                                                                                                                                                                                                                                      | WL□-TH        | Heat-resistant Switches (See note.)                                                                        |
|                               | Low-temperature                                    | -40°C 40°C<br><br>To increase resistance to cold, silicon rubber and other measures are used.                                                                                                                                                                                                                                                                                                                                                                      | WL□-TC        | Low-temperature Switches (See note.)                                                                       |
| Operating environment         | Outdoors                                           | Rubber parts are made from silicone rubber, which has a high-tolerance to deterioration over time and changes in temperature.<br>Rollers are made of stainless steel to improve corrosion resistance.<br>Exposed nuts and screws are made of stainless steel.                                                                                                                                                                                                      | WL□-P1        | Weather-proof Switches (See note.)                                                                         |
|                               | Chemicals and oil                                  | Corrosion-proof aluminum diecast has been used for the housing, fluorine rubber has been used for rubber parts, and stainless steel has been used for screws and nuts (except for actuator) to increase resistance to oils, chemicals, and weather.                                                                                                                                                                                                                | WL□-RP        | Corrosion-proof Switches (See note.)                                                                       |
|                               | Water drops and mist                               | Uses an airtight built-in switch.                                                                                                                                                                                                                                                                                                                                                                                                                                  | WL□-55        | Airtight Switches (See note.)                                                                              |
|                               | Constant water drops and mist                      | Cables attached. Uses a general-purpose built-in switch. The case cover and conduit opening are molded from epoxy resin to increase the seal. The cover cannot be removed.                                                                                                                                                                                                                                                                                         | WL□-139       | Hermetic, Molded-terminal Switches (See note.)                                                             |
|                               |                                                    | Cables attached. Uses an airtight built-in switch. The case cover and box interior are molded from epoxy resin to increase the seal. The cover cannot be removed. The SC connector can be removed, so it is possible to use flexible conduits for the cable.                                                                                                                                                                                                       | WL□-RP40      | Hermetic, Molded-terminal Switches (See note.)                                                             |
|                               |                                                    | Cables attached. Uses an airtight built-in switch. The cover screws, case cover, box interior, and conduit opening are molded from epoxy resin to increase the seal. (The cover cannot be removed.)                                                                                                                                                                                                                                                                | WL□-140       | Hermetic, Molded-terminal Switches (See note.)                                                             |
|                               | Constant water drops or splattering cutting powder | Cables attached. Uses an airtight built-in switch. The cover screws, case cover, box interior, conduit opening, box head, and head screws are molded from epoxy resin to increase the seal. (The cover cannot be removed.)<br>The Head opening is protected from cutting powder.<br>-141: The Head section is molded from epoxy resin; Head direction cannot be changed.<br>-145: The Head section is molded from epoxy resin; Head can be in any of 4 directions. | WL□-141, -145 | Hermetic, Molded-terminal Switches (See note.)<br>(Only the WLCA2, WLG2, WLGA2, and WLH2 can be produced.) |
|                               | Coolant                                            | Cables attached. Uses an airtight built-in switch. The case cover, box interior, conduit opening, and head screws are molded from epoxy resin to increase the seal. (The cover cannot be removed.) Rubber parts are made from fluorine rubber to increase resistance to coolant.                                                                                                                                                                                   | WL□-RP60      | Hermetic, Anti-coolant Switches (See note.)                                                                |
|                               | Spattering from welding                            | To prevent spatter during welding, a heat-resistant resin is used for the indicator cover and screws and rollers are all made from stainless steel.                                                                                                                                                                                                                                                                                                                | WL□-S         | Spatter-prevention Switches                                                                                |

**Note:** Not all functions can be combined with environment-resistant switches. Refer to the applicable models on the previous page.

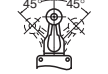
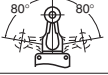
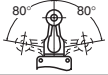
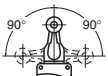
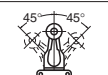
## According to Application Conditions

|            | Conditions               | Key specifications                                                                                                                                    | Models                                                                                                |
|------------|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|
| Load       | Switching standard loads | 10 A at 125,250, or 500 VAC<br>0.8 A at 125 VDC<br>0.4 A at 250 VDC                                                                                   | WL□<br>WL□-S<br>WLM□<br>General-purpose Switches<br>Spatter-prevention Switches<br>Long-life Switches |
|            | Switching microloads     | 0.1 A at 125 VAC, resistive load<br>0.1 A at 30 VDC, resistive load                                                                                   | WL01□<br>WL01□-S<br>General-purpose Microload Switches<br>Spatter-prevention Microload Switches       |
| Durability | Normal durability        | Mechanical: 15 million operation min.<br>(10 million operation min. for overtravel general-purpose or high-sensitivity models or flexible rod models) | WL□<br>WL□-S<br>General-purpose Switches<br>Spatter-prevention Switches                               |
|            | Long-life                | Mechanical: 30 million operation min.                                                                                                                 | WLM□<br>Long-life Switches                                                                            |

## According to Ease of Installation and Maintenance

|                      | Conditions                                      | Key specifications                                                                                                                              | Models                                                                                                                                                                                          |
|----------------------|-------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operation indicator  | Daily inspections and maintenance checks        | Switching light-ON between operating/not operating. (Switching not possible for models with molded terminals.)<br>Neon lamp<br>125 VAC, 250 VAC | WL□-LE<br>General-purpose, Indicator-equipped (Neon Lamp) Switches<br>WL□-LES<br>Spatter-prevention, Indicator-equipped (Neon Lamp) Switches                                                    |
|                      |                                                 | Switching light-ON between operating/not operating. (Switching not possible for models with molded terminals.)<br>LED<br>10 to 115 VAC/DC       | WL□-LD<br>General-purpose, Indicator-equipped (LED) Switches<br>WL□-LDS<br>Spatter-prevention, Indicator-equipped (LED) Switches                                                                |
| Wiring specification | Screw tightening and installation               | Screw terminals. No ground terminal.<br>Conduit size: G½                                                                                        | WL□<br>WLM□<br>General-purpose Switches<br>Long-life Switches                                                                                                                                   |
|                      |                                                 | Screw terminals. Ground terminal.<br>Conduit size: 4 sizes                                                                                      | WL□<br>General-purpose Switches                                                                                                                                                                 |
|                      | One-touch connector attachment                  | Direct-wired connector, 2-core.<br>Greatly reduces wiring work.<br>Waterproof to IP67.                                                          | WL□-□LDK13<br>General-purpose, Direct-wired Connector Switches<br>WLM□-LDK13<br>Long-life, Direct-wired Connector Switches                                                                      |
|                      |                                                 | Direct-wired connector, 4-core.<br>Greatly reduces wiring work.<br>Waterproof to IP67.                                                          | WL□-□LDK43<br>General-purpose, Direct-wired Connector Switches<br>WLM□-LDK43<br>Long-life, Direct-wired Connector Switches                                                                      |
|                      | Connector attachment in control and relay boxes | Pre-wired connector, 2-core.<br>Greatly reduces wiring work.<br>Waterproof to IP67.                                                             | WL□-□LD-M1J<br>General-purpose, Pre-wired Connector Switches<br>WL□-□S-M1J-1<br>Spatter-prevention, Pre-wired Connector Switches<br>WLM□-LD-M1J<br>Long-life, Pre-wired Connector Switches      |
|                      |                                                 | Pre-wired connector, 4-core.<br>Greatly reduces wiring work.<br>Waterproof to IP67.                                                             | WL□-□LD-□GJO3<br>General-purpose, Pre-wired Connector Switches<br>WL□-□S-□GJSO3<br>Spatter-prevention, Pre-wired Connector Switches<br>WLM□-LD-□GJO3<br>Long-life, Pre-wired Connector Switches |

# According to Form of Operation

| Detection object |                                                     | Key specifications                                                                                     |                                                                                                                                                                                            | Models                         |                                                                               |
|------------------|-----------------------------------------------------|--------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|-------------------------------------------------------------------------------|
| Operation angles | General                                             | TT (total travel)<br> | PT (pretravel)<br>                                                                                        | WLCA2<br>WLCA2-□S<br>WLMCA2    | General-purpose Switches<br>Spatter-prevention Switches<br>Long-life Switches |
|                  | Passing dogs                                        |                       |                                                                                                           | WLH2<br>WLH2-□S<br>WLMH2       | General-purpose Switches<br>Spatter-prevention Switches<br>Long-life Switches |
|                  | Passing dogs, high sensitivity                      |                       |                                                                                                           | WLG2<br>WLG2-□S<br>WLMG2       | General-purpose Switches<br>Spatter-prevention Switches<br>Long-life Switches |
|                  | Passing dogs                                        |                       | WLCA2-2<br> WLCA2-2N<br> | WLCA2-2<br>WLCA2-2N            | General-purpose Switches<br>General-purpose Switches                          |
|                  | High precision                                      |                       |                                                                                                           | WLGCA2<br>WLGCA2-□S<br>WLMGCA2 | General-purpose Switches<br>Spatter-prevention Switches<br>Long-life Switches |
| Actuators        | Dogs and workpieces (Mounts in any of 4 directions) | R38<br>               | <ul style="list-style-type: none"> <li>Short lever</li> <li>One-Horizontal operation possible. (WLCA□ only)</li> <li>Head mounts in any of 4 directions.</li> </ul>                        | WL□2<br>WL□2-□S<br>WLM□2       | Roller Lever Actuators<br>Roller Lever Actuators<br>Roller Lever Actuators    |
|                  |                                                     | R50<br>               | <ul style="list-style-type: none"> <li>Medium lever</li> <li>One-Horizontal operation possible. (WLCA□ only)</li> <li>Head mounts in any of 4 directions.</li> </ul>                       | WL□2-7                         | Roller Lever Actuators                                                        |
|                  |                                                     | R63<br>               | <ul style="list-style-type: none"> <li>Long lever</li> <li>One-Horizontal operation possible. (WLCA□ only)</li> <li>Head mounts in any of 4 directions.</li> </ul>                         | WL□2-8                         | Roller Lever Actuators                                                        |
|                  | Adjustable between dog and lever                    | R25 to 89<br>        | <ul style="list-style-type: none"> <li>One-Horizontal operation possible. (WLCA□ only)</li> <li>Head mounts in any of 4 directions.</li> </ul>                                             | WL□12                          | Adjustable Roller Lever Actuators                                             |
|                  | Dogs or workpieces with large deflection            | 25 to 140<br>       | <ul style="list-style-type: none"> <li>One-Horizontal operation possible. (WLCL only)</li> <li>Head mounts in any of 4 directions.</li> </ul>                                              | WL□L                           | Adjustable Rod Lever Actuators                                                |
|                  |                                                     | 350 to 380<br>      | <ul style="list-style-type: none"> <li>One-Horizontal operation not possible.</li> <li>Head mounts in any of 4 directions.</li> </ul>                                                      | WLHAL4                         | Adjustable Rod Lever Actuator                                                 |
|                  |                                                     | 427.5<br>           | <ul style="list-style-type: none"> <li>One-Horizontal operation not possible.</li> <li>Head mounts in any of 4 directions.</li> </ul>                                                      | WLHAL5                         | Rod Spring Lever Actuator                                                     |
|                  | Round-trip operation of passing dogs                |                     | <ul style="list-style-type: none"> <li>Head mounts in any of 4 directions.</li> </ul>                                                                                                      | WLCA32-41                      | Fork Lever Lock Actuator                                                      |
|                  |                                                     |                     | <ul style="list-style-type: none"> <li>Head mounts in any of 4 directions.</li> </ul>                                                                                                      | WLCA32-42                      | Fork Lever Lock Actuator                                                      |
|                  |                                                     |                     | <ul style="list-style-type: none"> <li>Head mounts in any of 4 directions.</li> </ul>                                                                                                      | WLCA32-43                      | Fork Lever Lock Actuator                                                      |
|                  |                                                     |                     | <ul style="list-style-type: none"> <li>Head mounts in any of 4 directions.</li> </ul>                                                                                                      | WLCA32-44                      | Fork Lever Lock Actuator                                                      |
|                  | Cams or workpieces with vertical movement           |                     |                                                                                                                                                                                            | WLD                            | Top Plunger Actuator                                                          |
|                  |                                                     |                     | <ul style="list-style-type: none"> <li>Head mounts in any of 4 directions.</li> </ul>                                                                                                      | WLSD                           | Horizontal Plunger Actuator                                                   |
|                  |                                                     |                     |                                                                                                                                                                                            | WLD3                           | Top-ball Plunger Actuator                                                     |
|                  |                                                     |                     | <ul style="list-style-type: none"> <li>Head mounts in any of 4 directions.</li> </ul>                                                                                                      | WLSD3                          | Horizontal-ball Plunger Actuator                                              |
|                  |                                                     |                     | <ul style="list-style-type: none"> <li>Available in sealed models. (WLD28□)</li> </ul>                                                                                                     | WLD2<br>WLD28                  | Top-roller Plunger Actuator<br>Sealed Top-roller Plunger Actuator             |
|                  |                                                     |                     |                                                                                                                                                                                            | WLSD2                          | Horizontal-roller Plunger Actuator                                            |

# Model Number Structure

## ■ Model Number Legend

### General-purpose and Environment-resistant Switches

WL□□-□□□□□□□□  
1 2 3 4 5 6 7 8 9 10

#### 1. Electrical Rating

|       |           |
|-------|-----------|
| Blank | Standard  |
| 01    | Microload |

**Note:** Dimensions are the same as the standard models.

#### 3. Environment-resistant Model Specifications

|       |                               |
|-------|-------------------------------|
| Blank | Standard                      |
| RP    | Corrosion-proof (See note 2.) |
| P1    | Weather-proof (See note 2.)   |

**Note 1:** Dimensions are the same as the standard environment-resistance models.

**2:** Refer to page 39 for applicable models.

#### 4. Built-in Switch Type

|       |                     |
|-------|---------------------|
| Blank | Standard            |
| 55    | Hermetically sealed |

**Note:** Dimensions are the same as the standard built-in switch models.

#### 5. Temperature Specifications

|       |                                              |
|-------|----------------------------------------------|
| Blank | Standard: -10°C to 80°C                      |
| TH    | Heat-resistant: 5°C to 120°C (See note 2.)   |
| TC    | Low-temperature: -40°C to 40°C (See note 2.) |

**Note 1:** Dimensions are the same as the standard models.

**2:** Refer to page 39 for applicable models.

#### 7. Conduit Size, Ground Terminal Specifications (See note 1.)

|       |                                           |
|-------|-------------------------------------------|
| Blank | G $\frac{1}{2}$ without ground terminal   |
| G1    | G $\frac{1}{2}$ with ground terminal      |
| G     | Pg13.5 with ground terminal               |
| Y     | M20 with ground terminal                  |
| TS    | $\frac{1}{2}$ -14NPT with ground terminal |

**Note 1:** Models with ground terminals are approved by EN/IEC (CE marking).

**2:** Dimensions are the same as the standard models.

#### 6. Hermetic Model Specifications

|       |                                                                                                                                                                                                                                                                            |
|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Blank | No cables or molding                                                                                                                                                                                                                                                       |
| 139   | General-purpose built-in switch with cables attached and molded conduit opening and cover (cover cannot be removed). (See note.)                                                                                                                                           |
| 140   | Airtight built-in switch with cables attached and molded conduit opening, cover, and box interior cover screws (cover cannot be removed). (See note.)                                                                                                                      |
| 141   | Airtight built-in switch with cables attached and molded conduit opening, cover, head, box interior, cover screws, and head screws (cover cannot be removed, Head direction cannot be changed). The Head opening is created to protect it from cutting powder. (See note.) |
| 145   | Airtight built-in switch with cables attached and molded conduit opening, cover, box interior, and cover screws (cover cannot be removed, Head can be mounted in any of 4 directions). The Head opening is created to protect it from cutting powder. (See note.)          |
| RP40  | Airtight built-in switch with cables attached and molded cover and box interior (cover cannot be removed, Head direction can be changed). SC Connector can be removed, so it is possible to use flexible conduits for the cable. (See note.)                               |
| RP60  | Airtight built-in switch with cables attached, fluorine rubber used, and molded conduit opening, cover, and box interior (cover cannot be removed, Head direction cannot be changed). (See note.)                                                                          |

**Note:** Refer to page 39 for applicable models.

#### 2. Actuator and Head Specifications

| Symbol  | Actuator type                                                              | Switch without lever |
|---------|----------------------------------------------------------------------------|----------------------|
| CA      | Roller lever: Standard model R38                                           | WLRC A2              |
| CA2-7   | Roller lever: Standard model R50                                           | WLRC A2              |
| CA2-8   | Roller lever: Standard model R63                                           | WLRC A2              |
| H2      | Roller lever: General-purpose overtravel model, 80°                        | WLRH2                |
| G2      | Roller lever: High-sensitivity overtravel, 80°                             | WLRG2                |
| CA2-2   | Roller lever: Overtravel, 90°                                              | WLRC A-2-2           |
| CA2-2N  | Roller lever: Overtravel, 90°                                              | WLRC A2-2N           |
| GCA2    | Roller lever: High-precision R38                                           | WLRGCA2              |
| CA12    | Adjustable roller lever: Standard                                          | WLRC A2              |
| H12     | Adjustable roller lever: General-purpose overtravel model, 80°             | WLRH2                |
| G12     | Adjustable roller lever: High-sensitivity overtravel, 80°                  | WLRG2                |
| CA12-2  | Adjustable roller lever: Overtravel, 90°                                   | WLRC A-2-2           |
| CA12-2N | Adjustable roller lever: Overtravel, 90°                                   | WLRC A2-2N           |
| CL      | Adjustable rod lever: Standard, 25 to 140                                  | WLRC L               |
| HL      | Adjustable rod lever: General-purpose overtravel model, 80°, 25 to 140 mm  | WLRH2                |
| HAL4    | Adjustable rod lever: General-purpose overtravel model, 80°, 350 to 380 mm | WLRH2                |
| GL      | Adjustable rod lever: High-sensitivity overtravel, 80°, 25 to 140 mm       | WLRG2                |
| CL-2    | Adjustable rod lever: Overtravel, 90°, 25 to 140 mm                        | WLRC A-2-2           |
| CL-2N   | Adjustable rod lever: Overtravel, 90°, 25 to 140 mm                        | WLRC A2-2N           |
| HAL5    | Rod spring lever: General-purpose overtravel model, 80°                    | WLRH2                |
| CA32-41 | Fork lever lock: Protective, WL-5A100                                      | WLRC A32             |
| CA32-42 | Fork lever lock: Protective, WL-5A102                                      | WLRC A32             |
| CA32-43 | Fork lever lock: Protective, WL-5A104                                      | WLRC A32             |
| D       | Plunger: Top plunger                                                       | ---                  |
| D2      | Plunger: Top-roller plunger                                                | ---                  |
| D28     | Plunger: Sealed top-roller plunger                                         | ---                  |
| D3      | Plunger: Top-ball plunger                                                  | ---                  |
| SD      | Plunger: Horizontal plunger                                                | ---                  |
| SD2     | Plunger: Horizontal-roller plunger                                         | ---                  |
| SD3     | Plunger: Horizontal-ball plunger                                           | ---                  |
| NJ      | Flexible rod: Coil spring                                                  | ---                  |
| NJ-30   | Flexible rod: Coil spring, multi-wire                                      | ---                  |
| NJ-2    | Flexible rod: Coil spring, resin rod                                       | ---                  |
| NJ-S2   | Flexible rod: Steel wire                                                   | ---                  |

#### 8. Indicator Type

| Symbol | Element      | Voltage          | Leakage current       |
|--------|--------------|------------------|-----------------------|
| Blank  | No indicator |                  |                       |
| LE     | Neon lamp    | 125 to 250 VAC   | Approx. 0.6 to 1.9 mA |
| LD     | LED          | 10 to 115 VAC/DC | Approx. 0.5 mA        |

**Note:** Dimensions are the same for both LE and LD models.

#### 9. Indicator Wiring

|   |                                            |
|---|--------------------------------------------|
| 2 | NC connection: Light-ON when operating     |
| 3 | NO connection: Light-ON when not operating |

**Note:** Include the indicator wiring specification only when a (6) hermetic seal and (8) operation indicator have been selected.

#### 10. Lever Type

|       |                  |
|-------|------------------|
| Blank | Standard lever   |
| A     | Double nut lever |

## General-purpose Sensor I/O Connector Switches

WL□□-□LD□  
1 2 3 4 5

Direct-wired Connector

Pre-wired Connector



### 1. Electrical Rating

|       |           |
|-------|-----------|
| Blank | Standard  |
| 01    | Microload |

**Note:** Dimensions are the same as the standard models.

### 2. Actuator Type

|      |                                                |
|------|------------------------------------------------|
| CA2  | Roller lever: Standard model                   |
| GCA2 | Roller lever: High-precision model             |
| H2   | Roller lever: General-purpose overtravel model |
| G2   | Roller lever: High-sensitivity overtravel      |
| D2   | Top-roller plunger                             |
| D28  | Sealed top-roller plunger                      |

### 3. Built-in Switch Type

|       |                     |
|-------|---------------------|
| Blank | Standard            |
| 55    | Hermetically sealed |

**Note:** Dimensions are the same as the standard models.

### 4. Indicator Type

|    |                          |
|----|--------------------------|
| LD | LED, AC/DC (10 to 115 V) |
|----|--------------------------|

### 5. Wiring Specifications

|                           |                                                                                          |
|---------------------------|------------------------------------------------------------------------------------------|
| K13A                      | Direct-wired Connector (2-core: AC, NO wiring, connector pins No. 3, 4)                  |
| K13                       | Direct-wired Connector (2-core: DC, NO wiring, connector pins No. 3, 4)                  |
| K43A                      | Direct-wired Connector (4-core: AC)                                                      |
| K43                       | Direct-wired Connector (4-core: DC)                                                      |
| -M1J<br>(See note 1.)     | Pre-wired Connector (See note 2.)<br>(2-core: DC, NO wiring, connector pins No. 3, 4)    |
| -M1GJ<br>(See note 1.)    | Pre-wired Connector (See note 2.)<br>(2-core: DC, NO wiring, connector pins No. 1, 4)    |
| -M1JB                     | Pre-wired Connector (See note 2.)<br>(2-core: DC, NC wiring, connector pins No. 3, 2)    |
| -AGJ03                    | Pre-wired Connector (See note 2.) (4-core, AC)                                           |
| -DGJ03<br>(See note 1.)   | Pre-wired Connector (See note 2.) (4-core, DC)                                           |
| -DK1EJ03<br>(See note 1.) | Pre-wired Connector (See note 2.)<br>(3-core: DC, NO wiring, connector pins No. 2, 3, 4) |

**Note** 1: Models with pre-wired connectors and DC specifications have EN/IEC approval (CE marking).  
2: With 0.3-m cable attached.

## Spatter-prevention Switches

WL□□-□□S□  
1 2 3 4 5

### 1. Electrical Rating

|       |           |
|-------|-----------|
| Blank | Standard  |
| 01    | Microload |

**Note:** Dimensions are the same as the standard models.

### 2. Actuator Type

|      |                                                 |
|------|-------------------------------------------------|
| CA2  | Roller lever: Standard model                    |
| GCA2 | Roller lever: High-precision model              |
| H2   | Roller lever: General-purpose Overtravel model  |
| G2   | Roller lever: High-sensitivity Overtravel model |
| D28  | Sealed top-roller plunger                       |

### 3. Built-in Switch Type

|       |                     |
|-------|---------------------|
| Blank | Standard            |
| 55    | Hermetically sealed |

**Note:** Dimensions are the same as the standard built-in switch models.

### 4. Indicator Type

|    |            |
|----|------------|
| LD | LED, AC/DC |
| LE | Neon lamp  |

**Note:** Dimensions are the same for both LE and LD models.

### 5. Wiring Specifications

|         |                                                                                     |
|---------|-------------------------------------------------------------------------------------|
| -M1J-1  | Pre-wired Connector (See note.)<br>(2-core: DC, NO wiring, connector pins No. 3, 4) |
| -M1GJ-1 | Pre-wired Connector (See note.)<br>(2-core: DC, NO wiring, connector pins No. 1, 4) |
| -DGJS03 | Pre-wired Connector (See note.)<br>(4-core: DC)                                     |

**Note:** With 0.3-m cable attached.

## Long-life Switches

WLM□-LD□  
1 2 3

### 1. Actuator

|      |                                                 |
|------|-------------------------------------------------|
| CA2  | Roller lever: Standard model                    |
| GCA2 | Roller lever: High-precision model              |
| H2   | Roller lever: General-purpose overtravel model  |
| G2   | Roller lever: High-sensitivity overtravel model |

### 2. Indicator Type

|    |                          |
|----|--------------------------|
| LD | LED, AC/DC (10 to 115 V) |
|----|--------------------------|

### 3. Wiring Specifications

|        |                                             |
|--------|---------------------------------------------|
| Blank  | Screw terminal: G1/2 conduit                |
| K13A   | Direct-wired Connector: 2-core, AC          |
| K13    | Direct-wired Connector: 2-core, DC          |
| K43A   | Direct-wired Connector: 4-core, AC          |
| K43    | Direct-wired Connector: 4-core, DC          |
| -M1J   | Pre-wired Connector: 2-core, DC (See note.) |
| -AGJ03 | Pre-wired Connector: 4-core, AC (See note.) |
| -DGJ03 | Pre-wired Connector: 4-core, DC (See note.) |

**Note:** With 0.3-m cable attached.

# Ordering Information

## List of Models

### General-purpose Switches

#### Standard Switches

Note: Models are also available with ground terminals.

| Lever type     |                  | Roller lever R38 |            | Roller lever R50 |  | Roller lever R63 |  |
|----------------|------------------|------------------|------------|------------------|--|------------------|--|
|                |                  | Model            |            | Model            |  | Model            |  |
| Basic          |                  | Standard load    | WLCA2      | WLCA2-7          |  | WLCA2-8          |  |
|                |                  | Microload        | WL01CA2    | WL01CA2-7        |  | WL01CA2-8        |  |
| Overtravel     | General-purpose  | Standard load    | WLH2       | ---              |  | ---              |  |
|                |                  | Microload        | WL01H2     | ---              |  | ---              |  |
|                | High-sensitivity | Standard load    | WLG2       | ---              |  | ---              |  |
|                |                  | Microload        | WL01G2     | ---              |  | ---              |  |
|                | 90° operation    | Standard load    | WLCA2-2    | ---              |  | ---              |  |
|                |                  | Microload        | WL01CA2-2  | ---              |  | ---              |  |
|                |                  | Standard load    | WLCA2-2N   | ---              |  | ---              |  |
|                |                  | Microload        | WL01CA2-2N | ---              |  | ---              |  |
| High-precision |                  | Standard load    | WLGCA2     | ---              |  | ---              |  |
|                |                  | Microload        | WL01GCA2   | ---              |  | ---              |  |

| Lever type |                  | Adjustable roller lever  | Adjustable rod lever 25 to 140mm  | Adjustable rod lever 350 to 380mm  | Rod spring lever  |
|------------|------------------|-----------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|
| Item       |                  | Model                                                                                                     | Model                                                                                                                | Model                                                                                                                 | Model                                                                                                |
| Basic      | Standard load    | WLCA12                                                                                                    | WLCL                                                                                                                 | ---                                                                                                                   | ---                                                                                                  |
|            | Microload        | WL01CA12                                                                                                  | WL01CL                                                                                                               | ---                                                                                                                   | ---                                                                                                  |
| Overtravel | General-purpose  | Standard load                                                                                             | WLH12                                                                                                                | WLHL                                                                                                                  | WLHAL4                                                                                               |
|            |                  | Microload                                                                                                 | WL01H12                                                                                                              | WL01HL                                                                                                                | ---                                                                                                  |
|            | High-sensitivity | Standard load                                                                                             | WLG12                                                                                                                | WLGL                                                                                                                  | ---                                                                                                  |
|            |                  | Microload                                                                                                 | WL01G12                                                                                                              | WL01GL                                                                                                                | ---                                                                                                  |
|            | 90° operation    | Standard load                                                                                             | WLCA12-2                                                                                                             | WLCL-2                                                                                                                | ---                                                                                                  |
|            |                  | Microload                                                                                                 | WL01CA12-2                                                                                                           | WL01CL-2                                                                                                              | ---                                                                                                  |
|            |                  | Standard load                                                                                             | WLCA12-2N                                                                                                            | WLCL-2N                                                                                                               | ---                                                                                                  |
|            |                  | Microload                                                                                                 | WL01CA12-2N                                                                                                          | WL01CL-2N                                                                                                             | ---                                                                                                  |

| Lever type |               | Fork lever lock (with WL-5A100 Plastic Roller Lever)  | Fork lever lock (with WL-5A102 Plastic Roller Lever)  | Fork lever lock (with WL-5A104 Plastic Roller Lever)  |
|------------|---------------|------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| Item       |               | Model                                                                                                                                    | Model                                                                                                                                     | Model                                                                                                                                      |
| Protective | Standard load | WLCA32-41                                                                                                                                | WLCA32-42                                                                                                                                 | WLCA32-43                                                                                                                                  |
|            | Microload     | WL01CA32-41                                                                                                                              | WL01CA32-42                                                                                                                               | WL01CA32-43                                                                                                                                |

| Lever type |               | Top plunger  | Top-roller plunger  | Sealed top-roller plunger  | Top-ball plunger  |
|------------|---------------|-------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|
| Item       |               | Model                                                                                           | Model                                                                                                   | Model                                                                                                           | Model                                                                                                  |
| Basic      | Standard load | WLD                                                                                             | WLD2                                                                                                    | WLD28                                                                                                           | WLD3                                                                                                   |
|            | Microload     | WL01D                                                                                           | WL01D2                                                                                                  | WL01D28                                                                                                         | WL01D3                                                                                                 |

| Lever type |               | Horizontal plunger  | Horizontal-roller plunger  | Horizontal-ball plunger  |
|------------|---------------|--------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|
| Item       |               | Model                                                                                                  | Model                                                                                                          | Model                                                                                                         |
| Basic      | Standard load | WLSD                                                                                                   | WLSD2                                                                                                          | WLSD3                                                                                                         |
|            | Microload     | WL01SD                                                                                                 | WL01SD2                                                                                                        | WL01SD3                                                                                                       |

| Lever type |               | Coil spring (spring diameter: 6.5)  | Coil spring (spring diameter: 4.8)  | Coil spring (spring diameter: 8)  | Steel wire (wire diameter: 1)  |
|------------|---------------|------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|
| Item       |               | Model                                                                                                                  | Model                                                                                                                   | Model                                                                                                                  | Model                                                                                                               |
| Basic      | Standard load | WLNJ                                                                                                                   | WLNJ-30                                                                                                                 | WLNJ-2                                                                                                                 | WLNJ-S2                                                                                                             |
|            | Microload     | WL01NJ                                                                                                                 | WL01NJ-30                                                                                                               | WL01NJ-2                                                                                                               | WL01NJ-S2                                                                                                           |

# General-purpose Switches

## Indicator-equipped Switches

| Lever type     |                  | Roller lever R38                                                                  | Roller lever R50                                                                  | Roller lever R63                                                                    | Adjustable roller lever                                                             |             |
|----------------|------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------|
|                |                  |  |  |  |  |             |
| Item           |                  | Model                                                                             | Model                                                                             | Model                                                                               | Model                                                                               |             |
| Basic          |                  | Neon lamp                                                                         | WLCA2-LE                                                                          | WLCA2-7LE                                                                           | WLCA2-8LE                                                                           | WLCA12-LE   |
|                |                  | LED                                                                               | WLCA2-LD                                                                          | WLCA2-7LD                                                                           | WLCA2-8LD                                                                           | WLCA12-LD   |
| Overtravel     | General-purpose  | Neon lamp                                                                         | WLH2-LE                                                                           | ---                                                                                 | ---                                                                                 | WLH12-LE    |
|                |                  | LED                                                                               | WLH2-LD                                                                           | ---                                                                                 | ---                                                                                 | WLH12-LD    |
|                | High-sensitivity | Neon lamp                                                                         | WLG2-LE                                                                           | ---                                                                                 | ---                                                                                 | WLG12-LE    |
|                |                  | LED                                                                               | WLG2-LD                                                                           | ---                                                                                 | ---                                                                                 | WLG12-LD    |
|                | 90° operation    | Neon lamp                                                                         | WLCA2-2LE                                                                         | ---                                                                                 | ---                                                                                 | WLCA12-2LE  |
|                |                  | LED                                                                               | WLCA2-2LD                                                                         | ---                                                                                 | ---                                                                                 | WLCA12-2LD  |
|                |                  | Neon lamp                                                                         | WLCA2-2NLE                                                                        | ---                                                                                 | ---                                                                                 | WLCA12-2NLE |
|                |                  | LED                                                                               | WLCA2-2NLD                                                                        | ---                                                                                 | ---                                                                                 | WLCA12-2NLD |
| High-precision |                  | Neon lamp                                                                         | WLGCA2-LE                                                                         | ---                                                                                 | ---                                                                                 |             |
|                |                  | LED                                                                               | WLGCA2-LD                                                                         | ---                                                                                 | ---                                                                                 |             |

| Lever type |                  | Adjustable rod lever 25 to 140 mm  | Adjustable rod lever 350 to 380 mm  | Rod spring lever  |
|------------|------------------|---------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|
| Item       |                  | Model                                                                                                               | Model                                                                                                                | Model                                                                                                |
| Basic      | Neon lamp        | WLCL-LE                                                                                                             | ---                                                                                                                  | ---                                                                                                  |
|            | LED              | WLCL-LD                                                                                                             | ---                                                                                                                  | ---                                                                                                  |
| Overtravel | General-purpose  | Neon lamp                                                                                                           | WLHL-LE                                                                                                              | WLHAL4-LE                                                                                            |
|            |                  | LED                                                                                                                 | WLHL-LD                                                                                                              | WLHAL5-LD                                                                                            |
|            | High-sensitivity | Neon lamp                                                                                                           | WLGL-LE                                                                                                              | ---                                                                                                  |
|            |                  | LED                                                                                                                 | WLGL-LD                                                                                                              | ---                                                                                                  |
|            | 90° operation    | Neon lamp                                                                                                           | WLCL-2LE                                                                                                             | ---                                                                                                  |
|            |                  | LED                                                                                                                 | WLCL-2LD                                                                                                             | ---                                                                                                  |
|            |                  | Neon lamp                                                                                                           | WLCL-2NLE                                                                                                            | ---                                                                                                  |
|            |                  | LED                                                                                                                 | WLCL-2NLD                                                                                                            | ---                                                                                                  |

| Lever type |           | Fork lever lock (with WL-5A100 Plastic Roller Lever)  | Fork lever lock (with WL-5A102 Plastic Roller Lever)  | Fork lever lock (with WL-5A104 Plastic Roller Lever)  |
|------------|-----------|------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| Item       |           | Model                                                                                                                                    | Model                                                                                                                                    | Model                                                                                                                                      |
| Protective | Neon lamp | WLCA32-41LE                                                                                                                              | WLCA32-42LE                                                                                                                              | WLCA32-43LE                                                                                                                                |
|            | LED       | WLCA32-41LD                                                                                                                              | WLCA32-42LD                                                                                                                              | WLCA32-43LD                                                                                                                                |

| Lever type |           | Top plunger  | Top-roller plunger  | Sealed top-roller plunger  | Top-ball plunger  |
|------------|-----------|-------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|
| Item       |           | Model                                                                                           | Model                                                                                                  | Model                                                                                                           | Model                                                                                                  |
| Basic      | Neon lamp | WLD-LE                                                                                          | WLD2-LE                                                                                                | WLD28-LE                                                                                                        | WLD3-LE                                                                                                |
|            | LED       | WLD-LD                                                                                          | WLD2-LD                                                                                                | WLD28-LD                                                                                                        | WLD3-LD                                                                                                |

| Lever type |           | Horizontal plunger  | Horizontal-roller plunger  | Horizontal-ball Plunger  | Coil spring (spring diameter: 6.5)  |
|------------|-----------|--------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|
| Item       |           | Model                                                                                                  | Model                                                                                                         | Model                                                                                                         | Model                                                                                                                    |
| Basic      | Neon lamp | WLSD-LE                                                                                                | WLSD2-LE                                                                                                      | WLSD3-LE                                                                                                      | WLNJ-LE                                                                                                                  |
|            | LED       | WLSD-LD                                                                                                | WLSD2-LD                                                                                                      | WLSD3-LD                                                                                                      | WLNJ-LD                                                                                                                  |

| Lever type |           | Coil spring (spring diameter: 4.8)  | Coil spring (spring diameter: 8)  | Steel wire (wire diameter: 1)  |
|------------|-----------|------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|
| Item       |           | Model                                                                                                                  | Model                                                                                                                | Model                                                                                                               |
| Basic      | Neon lamp | WLNJ-30LE                                                                                                              | WLNJ-2LE                                                                                                             | WLNJ-S2LE                                                                                                           |
|            | LED       | WLNJ-30LD                                                                                                              | WLNJ-2LD                                                                                                             | WLNJ-S2LD                                                                                                           |

## Covers with Operation Indicators

| Lever type |  | Cover only with indicator  |
|------------|--|---------------------------------------------------------------------------------------------------------------|
| Item       |  | Model                                                                                                         |
| Neon lamp  |  | WL-LE                                                                                                         |
| LED        |  | WL-LD                                                                                                         |

Note: The default setting is "light-ON when not operating." Turn the lamp holder by 180° to change the setting to "light-ON when operating."

## General-purpose Switches

### Sensor I/O Connector Switches

#### ● Direct-wired Connectors

| Lever type                                                                                                     | Wiring |    | Item                          | Basic         | Overtravel      |                  | High-precision |
|----------------------------------------------------------------------------------------------------------------|--------|----|-------------------------------|---------------|-----------------|------------------|----------------|
|                                                                                                                |        |    |                               |               | General-purpose | High-sensitivity |                |
|                                                                                                                |        |    | Built-in switch specification | Model         | Model           | Model            | Model          |
| Roller lever<br>              | 2-core | DC | Standard                      | WLCA2-LDK13   | WLH2-LDK13      | WLG2-LDK13       | WLGCA2-LDK13   |
|                                                                                                                |        |    | Airtight seal                 | WLCA2-55LDK13 | WLH2-55LDK13    | WLG2-55LDK13     | WLGCA2-55LDK13 |
|                                                                                                                | 4-core | DC | Standard                      | WLCA2-LDK43   | WLH2-LDK43      | WLG2-LDK43       | WLGCA2-LDK43   |
|                                                                                                                |        |    | Airtight seal                 | WLCA2-55LDK43 | WLH2-55LDK43    | WLG2-55LDK43     | WLGCA2-55LDK43 |
| Top-roller plunger<br>        | 2-core | DC | Standard                      | WLD2-LDK13    | ---             | ---              | ---            |
|                                                                                                                |        |    | Airtight seal                 | WLD2-55LDK13  | ---             | ---              | ---            |
|                                                                                                                | 4-core | DC | Standard                      | WLD2-LDK43    | ---             | ---              | ---            |
|                                                                                                                |        |    | Airtight seal                 | WLD2-55LDK43  | ---             | ---              | ---            |
| Sealed top-roller plunger<br> | 2-core | DC | Standard                      | WLD28-LDK13   | ---             | ---              | ---            |
|                                                                                                                |        |    | Airtight seal                 | ---           | ---             | ---              | ---            |
|                                                                                                                | 4-core | DC | Standard                      | ---           | ---             | ---              | ---            |
|                                                                                                                |        |    | Airtight seal                 | ---           | ---             | ---              | ---            |

#### ● Pre-wired Connectors

| Lever type                                                                                                       | Wiring |    | Item                          | Basic         | Overtravel         |                   | High-precision    |
|------------------------------------------------------------------------------------------------------------------|--------|----|-------------------------------|---------------|--------------------|-------------------|-------------------|
|                                                                                                                  |        |    |                               |               | General-purpose    | High-sensitivity  |                   |
|                                                                                                                  |        |    | Built-in switch specification | Model         | Model              | Model             | Model             |
| Roller lever<br>               | 2-core | DC | NO. 3, 4                      | Standard      | WLCA2-LD-M1J       | WLH2-LD-M1J       | WLG2-LD-M1J       |
|                                                                                                                  |        |    |                               | Airtight seal | WLCA2-55LD-M1J     | ---               | ---               |
|                                                                                                                  |        |    | NO. 1, 4                      | Standard      | WLCA2-LD-M1GJ      | WLH2-LD-M1GJ      | WLG2-LD-M1GJ      |
|                                                                                                                  |        |    |                               | Airtight seal | WLCA2-55LD-M1GJ    | ---               | ---               |
|                                                                                                                  |        |    | NC                            | Standard      | ---                | ---               | ---               |
|                                                                                                                  |        |    |                               | Airtight seal | WLCA2-55LD-M1JB    | ---               | ---               |
|                                                                                                                  | 4-core | DC | ---                           | Standard      | WLCA2-LD-DGJ03     | WLH2-LD-DGJ03     | WLG2-LD-DGJ03     |
|                                                                                                                  |        |    |                               | Airtight seal | WLCA2-55LD-DGJ03   | WLH2-55LD-DGJ03   | WLG2-55LD-DGJ03   |
|                                                                                                                  | 3-core | DC | No. 2, 3, 4                   | Standard      | WLCA2-LD-DK1EJ03   | WLH2-LD-DK1EJ03   | WLG2-LD-DK1EJ03   |
|                                                                                                                  |        |    |                               | Airtight seal | WLCA2-55LD-DK1EJ03 | WLH2-55LD-DK1EJ03 | WLG2-55LD-DK1EJ03 |
| Top-roller plunger<br>        | 2-core | DC | NO. 3, 4                      | Standard      | WLD2-LD-M1J        | ---               | ---               |
|                                                                                                                  |        |    |                               | Airtight seal | WLD2-55LD-M1J      | ---               | ---               |
|                                                                                                                  |        |    | NO. 1, 4                      | Standard      | WLD2-LD-M1GJ       | ---               | ---               |
|                                                                                                                  |        |    |                               | Airtight seal | WLD2-55LD-M1GJ     | ---               | ---               |
|                                                                                                                  |        |    | NC                            | Standard      | ---                | ---               | ---               |
|                                                                                                                  |        |    |                               | Airtight seal | WLD2-55LD-M1JB     | ---               | ---               |
|                                                                                                                  | 4-core | DC | ---                           | Standard      | WLD2-LD-DGJ03      | ---               | ---               |
|                                                                                                                  |        |    |                               | Airtight seal | ---                | ---               | ---               |
|                                                                                                                  | 3-core | DC | No. 2, 3, 4                   | Standard      | WLD2-LD-DK1EJ03    | ---               | ---               |
|                                                                                                                  |        |    |                               | Airtight seal | WLD2-55LD-DK1EJ03  | ---               | ---               |
| Sealed top-roller plunger<br> | 2-core | DC | NO. 3, 4                      | Standard      | ---                | ---               | ---               |
|                                                                                                                  |        |    |                               | Airtight seal | ---                | ---               | ---               |
|                                                                                                                  |        |    | NO. 1, 4                      | Standard      | ---                | ---               | ---               |
|                                                                                                                  |        |    |                               | Airtight seal | ---                | ---               | ---               |
|                                                                                                                  |        |    | NC                            | Standard      | ---                | ---               | ---               |
|                                                                                                                  |        |    |                               | Airtight seal | ---                | ---               | ---               |
|                                                                                                                  | 4-core | DC | ---                           | Standard      | WLD28-LD-DGJ03     | ---               | ---               |
|                                                                                                                  |        |    |                               | Airtight seal | WLD28-55LD-DGJ03   | ---               | ---               |
|                                                                                                                  | 3-core | DC | No. 2, 3, 4                   | Standard      | WLD28-LD-DK1EJ03   | ---               | ---               |
|                                                                                                                  |        |    |                               | Airtight seal | ---                | ---               | ---               |

# Environment-resistant Switches

Note: Models are also available with ground terminals.

| Item            |  |  |  | Lever type       |      | Roller lever R38                                                                    |                  |              |             |               |              |              |
|-----------------|--|--|--|------------------|------|-------------------------------------------------------------------------------------|------------------|--------------|-------------|---------------|--------------|--------------|
|                 |  |  |  |                  |      |  |                  |              |             |               |              |              |
|                 |  |  |  | Basic            |      | Overtravel                                                                          |                  |              |             |               |              |              |
|                 |  |  |  |                  |      | General-purpose                                                                     | High-sensitivity |              |             |               |              |              |
|                 |  |  |  | Model            |      | Model                                                                               | Model            |              |             |               |              |              |
| Airtight seal   |  |  |  | No indicator     |      | WLCA2-55                                                                            | WLH2-55          | WLG2-55      |             |               |              |              |
|                 |  |  |  | Indicator        | LED  | WLCA2-55LD                                                                          | WLH2-55LD        | WLG2-55LD    |             |               |              |              |
|                 |  |  |  |                  | Neon | WLCA2-55LE                                                                          | WLH2-55LE        | WLG2-55LE    |             |               |              |              |
| Hermetic seal   |  |  |  | Molded terminals |      | -139                                                                                |                  | No indicator |             | WLCA2-139     | WLH2-139     | WLG2-139     |
|                 |  |  |  |                  |      |                                                                                     |                  | Indicator    | NC wiring   | WLCA2-139LD2  | ---          | ---          |
|                 |  |  |  |                  |      |                                                                                     |                  |              | NO wiring   | WLCA2-139LD3  | ---          | WLG2-139LD3  |
|                 |  |  |  | -140             |      | No indicator                                                                        |                  | WLCA2-140    | WLH2-140    | WLG2-140      |              |              |
|                 |  |  |  |                  |      | Indicator                                                                           | NC wiring        | WLCA2-140LD2 | ---         | WLG2-140LD2   |              |              |
|                 |  |  |  |                  |      |                                                                                     | NO wiring        | WLCA2-140LD3 | ---         | WLG2-140LD3   |              |              |
|                 |  |  |  | -141             |      | No indicator                                                                        |                  | WLCA2-141    | WLH2-141    | WLG2-141      |              |              |
|                 |  |  |  |                  |      | Indicator                                                                           | NC wiring        | WLCA2-141LD2 | ---         | WLG2-141LD2   |              |              |
|                 |  |  |  |                  |      |                                                                                     | NO wiring        | WLCA2-141LD3 | WLH2-141LD3 | WLG2-141LD3   |              |              |
|                 |  |  |  | Anti-coolant     |      |                                                                                     |                  | No indicator |             | WLCA2-RP60    | WLH2-RP60    | WLG2-RP60    |
|                 |  |  |  |                  |      |                                                                                     |                  | Indicator    | NC wiring   | WLCA2-RP60LD2 | ---          | WLG2-RP60LD2 |
|                 |  |  |  |                  |      |                                                                                     |                  |              | NO wiring   | WLCA2-RP60LD3 | WLH2-RP60LD3 | WLG2-RP60LD3 |
| Heat-resistant  |  |  |  | No indicator     |      | WLCA2-TH                                                                            | WLH2-TH          | WLG2-TH      |             |               |              |              |
|                 |  |  |  | Indicator        |      | ---                                                                                 | ---              | ---          |             |               |              |              |
| Low-temperature |  |  |  | No indicator     |      | WLCA2-TC                                                                            | WLH2-TC          | WLG2-TC      |             |               |              |              |
|                 |  |  |  | Indicator        |      | ---                                                                                 | ---              | ---          |             |               |              |              |
| Corrosion-proof |  |  |  | No indicator     |      | WLCA2-RP                                                                            | WLH2-RP          | WLG2-RP      |             |               |              |              |
|                 |  |  |  | Indicator        |      | ---                                                                                 | ---              | ---          |             |               |              |              |
| Weather-proof   |  |  |  | No indicator     |      | ---                                                                                 | WLH2-P1          | WLG2-P1      |             |               |              |              |
|                 |  |  |  | Indicator        |      | ---                                                                                 | ---              | ---          |             |               |              |              |

| Item            |                  |             |              | Lever type   | Adjustable roller lever                                                            | Adjustable rod lever 25 to 140 mm                                                    |           |
|-----------------|------------------|-------------|--------------|--------------|------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|-----------|
|                 |                  |             |              |              |  |  |           |
|                 |                  |             |              | Basic        | Basic                                                                              |                                                                                      |           |
|                 |                  |             |              | Model        | Model                                                                              |                                                                                      |           |
| Airtight seal   |                  |             |              | No indicator |                                                                                    | WLCA12-55                                                                            | WLCL-55   |
|                 |                  |             |              | Indicator    | LED                                                                                | WLCA12-55LD                                                                          | WLCL-55LD |
|                 |                  |             |              |              | Neon                                                                               | WLCA12-55LE                                                                          | ---       |
| Hermetic seal   | Molded terminals | -139        | No indicator |              | WLCA12-139                                                                         | WLCL-139                                                                             |           |
|                 |                  | -140        |              |              | WLCA12-140                                                                         | WLCL-140                                                                             |           |
|                 |                  | -141        |              |              | WLCA12-141                                                                         | ---                                                                                  |           |
|                 |                  | WLCA12-RP60 |              |              | WLCL-RP60                                                                          |                                                                                      |           |
|                 | Anti-coolant     |             |              |              | ---                                                                                |                                                                                      |           |
| Heat-resistant  |                  |             |              | No indicator |                                                                                    | WLCA12-TH                                                                            | WLCL-TH   |
|                 |                  |             |              | Indicator    |                                                                                    | ---                                                                                  | ---       |
| Low-temperature |                  |             |              | No indicator |                                                                                    | WLCA12-TC                                                                            | WLCL-TC   |
|                 |                  |             |              | Indicator    |                                                                                    | ---                                                                                  | ---       |
| Corrosion-proof |                  |             |              | No indicator |                                                                                    | WLCA12-RP                                                                            | WLCL-RP   |
|                 |                  |             |              | Indicator    |                                                                                    | ---                                                                                  | ---       |
| Weather-proof   |                  |             |              | No indicator |                                                                                    | WLCA12-P1                                                                            | ---       |
|                 |                  |             |              | Indicator    |                                                                                    | ---                                                                                  | ---       |

| Item            |                  |      |              | Lever type   | Top-roller plunger  | Sealed top-roller plunger  | Coil spring (spring diameter: 6.5)  |           |
|-----------------|------------------|------|--------------|--------------|--------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|-----------|
|                 |                  |      |              |              |                                                                                                        | Model                                                                                                           | Model                                                                                                                    | Model     |
| Airtight seal   |                  |      |              | No indicator |                                                                                                        | WLD2-55                                                                                                         | WLD28-55                                                                                                                 | WLNJ-55   |
|                 |                  |      |              | Indicator    | LED                                                                                                    | WLD2-55LD                                                                                                       | WLD28-55LD                                                                                                               | WLNJ-55LD |
|                 |                  |      |              |              | Neon                                                                                                   | WLD2-55LE                                                                                                       | WLD28-55LE                                                                                                               |           |
| Hermetic seal   | Molded terminals | -139 | No indicator |              | WLD2-139                                                                                               | WLD28-139                                                                                                       | WLNJ-139                                                                                                                 |           |
|                 |                  | -140 |              |              |                                                                                                        | WLD28-140                                                                                                       | WLNJ-140                                                                                                                 |           |
|                 | Anti-coolant     |      |              |              | WLD2-RP60                                                                                              | WLD28-RP60                                                                                                      | WLNJ-RP60                                                                                                                |           |
|                 |                  |      |              |              |                                                                                                        |                                                                                                                 |                                                                                                                          |           |
| Heat-resistant  |                  |      |              | No indicator |                                                                                                        | WLD2-TH                                                                                                         | WLD28-TH                                                                                                                 | WLNJ-TH   |
|                 |                  |      |              | Indicator    |                                                                                                        |                                                                                                                 |                                                                                                                          |           |
| Low-temperature |                  |      |              | No indicator |                                                                                                        | WLD2-TC                                                                                                         | WLD28-TC                                                                                                                 | WLNJ-TC   |
|                 |                  |      |              | Indicator    |                                                                                                        |                                                                                                                 |                                                                                                                          |           |
| Corrosion-proof |                  |      |              | No indicator |                                                                                                        | WLD2-RP                                                                                                         | WLD28-RP                                                                                                                 | WLNJ-RP   |
|                 |                  |      |              | Indicator    |                                                                                                        |                                                                                                                 |                                                                                                                          |           |

## Spatter-prevention Switches

| Lever type                    |                |                  | Roller lever     |                                                                                                      | Sealed top-roller plunger  |
|-------------------------------|----------------|------------------|----------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|
|                               |                |                  | Double nut lever  | Allen-head lever  |                                                                                                               |
| Item                          |                |                  | Model                                                                                              | Model                                                                                                | Model                                                                                                         |
| Neon lamp operation indicator | Basic          |                  | WLCA2-LEAS                                                                                         | WLCA2-LES                                                                                            | WLD28-LES                                                                                                     |
|                               | Overtravel     | General-purpose  | WLH2-LEAS                                                                                          | WLH2-LES                                                                                             | ---                                                                                                           |
|                               |                | High-sensitivity | WLG2-LEAS                                                                                          | WLG2-LES                                                                                             | ---                                                                                                           |
|                               | High-precision |                  | ---                                                                                                | WLGCA2-LES                                                                                           | ---                                                                                                           |
| LED operation indicator       | Basic          |                  | WLCA2-LDAS                                                                                         | WLCA2-LDS                                                                                            | WLD28-LDS                                                                                                     |
|                               | Overtravel     | General-purpose  | WLH2-LDAS                                                                                          | WLH2-LDS                                                                                             | ---                                                                                                           |
|                               |                | High-sensitivity | WLG2-LDAS                                                                                          | WLG2-LDS                                                                                             | ---                                                                                                           |
|                               | High-precision |                  | ---                                                                                                | WLGCA2-LDS                                                                                           | ---                                                                                                           |

**Note:** Ask your OMRON representative about WL01□-□S Microload Switches.

## Long-life Switches

| Item                                                                                                                                |        |    | LED operation indicator (See note 1.) |                 |                  |                  |
|-------------------------------------------------------------------------------------------------------------------------------------|--------|----|---------------------------------------|-----------------|------------------|------------------|
|                                                                                                                                     |        |    | Basic                                 | Overtravel      |                  | High-precision   |
|                                                                                                                                     |        |    |                                       | General-purpose | High-sensitivity |                  |
| Lever type                                                                                                                          |        |    | Model                                 | Model           | Model            | Model            |
|  Roller lever, screw terminal                     |        |    | WLMCA2-LD                             | WLMH2-LD        | WLMG2-LD         | WLMGCA2-LD       |
|                                                                                                                                     |        |    |                                       |                 |                  |                  |
|  Roller lever, direct-wired connector            | 2-core | AC | WLMCA2-LDK13A                         | WLMH2-LDK13A    | WLMG2-LDK13A     | WLMGCA2-LDK13A   |
|                                                                                                                                     |        | DC | WLMCA2-LDK13                          | WLMH2-LDK13     | WLMG2-LDK13      | WLMGCA2-LDK13    |
|                                                                                                                                     | 4-core | AC | WLMCA2-LDK43A                         | WLMH2-LDK43A    | WLMG2-LDK43A     | WLMGCA2-LDK43A   |
|                                                                                                                                     |        | DC | WLMCA2-LDK43                          | WLMH2-LDK43     | WLMG2-LDK43      | WLMGCA2-LDK43    |
|  Roller lever, pre-wired connector (See note 2.) | 2-core | DC | WLMCA2-LD-M1J                         | WLMH2-LD-M1J    | WLMG2-LD-M1J     | WLMGCA2-LD-M1J   |
|                                                                                                                                     | 4-core | AC | WLMCA2-LD-AGJ03                       | WLMH2-LD-AGJ03  | WLMG2-LD-AGJ03   | WLMGCA2-LD-AGJ03 |
|                                                                                                                                     |        | DC | WLMCA2-LD-DGJ03                       | WLMH2-LD-DGJ03  | WLMG2-LD-DGJ03   | WLMGCA2-LD-DGJ03 |

**Note 1.** The default setting is "light-ON when not operating." Turn the lamp holder by 180° to change the setting to "light-ON when operating". (Ask your OMRON representative about 2-core models.)

**2.** With 0.3-m cable attached.

# Individual Parts

## Heads

| Actuator type                                                                                                | Set model | Head model (with Actuator) |
|--------------------------------------------------------------------------------------------------------------|-----------|----------------------------|
| <br>Roller lever            | WLCA2     | WL-1H1100                  |
|                                                                                                              | WLG2      | WL-2H1100                  |
|                                                                                                              | WLH2      | WL-2H1100-1 (See note.)    |
|                                                                                                              | WLCA2-2   | WL-3H1100                  |
|                                                                                                              | WLCA2-2N  | WL-6H1100                  |
| <br>Adjustable roller lever | WLCA12    | WL-1H2100                  |
|                                                                                                              | WLG12     | WL-2H2100                  |
|                                                                                                              | WLH12     | WL-2H2100-1 (See note.)    |
|                                                                                                              | WLCA12-2  | WL-3H2100                  |
|                                                                                                              | WLCA12-2N | WL-6H2100                  |
| <br>Adjustable rod lever    | WLCL      | WL-4H4100                  |
|                                                                                                              | WLGL      | WL-2H4100                  |
|                                                                                                              | WLCL-2    | WL-3H4100                  |
|                                                                                                              | WLCL-2N   | WL-6H4100                  |

| Actuator type                                                                                           | Set model | Head model (with Actuator) |
|---------------------------------------------------------------------------------------------------------|-----------|----------------------------|
| <br>Top plunger        | WLD       | WL-7H100                   |
|                                                                                                         | WLD2      | WL-7H200                   |
|                                                                                                         | WLD3      | WL-7H300                   |
|                                                                                                         | WLD28     | WL-7H400                   |
| <br>Horizontal plunger | WLSD      | WL-8H100                   |
|                                                                                                         | WLSD2     | WL-8H200                   |
|                                                                                                         | WLSD3     | WL-8H300                   |
| <br>Fork lever lock    | WLCA32-41 | WL-5H5100                  |
|                                                                                                         | WLCA32-42 | WL-5H5102                  |
|                                                                                                         | WLCA32-43 | WL-5H5104                  |
|                                                                                                         | WLCA32-44 | WL-5H5104                  |
| <br>Coil spring        | WLNJ      | WL-9H100                   |
|                                                                                                         | WLNJ-30   | WL-9H200                   |
|                                                                                                         | WLNJ-2    | WL-9H300                   |
|                                                                                                         | WLNJ-S2   | WL-9H400                   |

**Note:** The model number of Heads without levers are same as those of Heads with levers without the numbers at the end.  
 Example: WL-1H1100 becomes WL-1H without the lever.  
 However, the WLH2 and WLH12 become WL-2H-1 and the WLCA2 becomes WL-1H-1 for the Heads without levers.  
 Other Heads are also available. Ask your OMRON representative.

## Switches without Levers

| Switches without levers                                                                                                      |                                                                      |            |
|------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|------------|
|                                             |                                                                      |            |
| Actuator type                                                                                                                | Switch model                                                         |            |
| <br>Switches for roller levers             | Basic R38                                                            | WLRC A2    |
|                                                                                                                              | High-precision R38                                                   | WLRGCA2    |
|                                                                                                                              | High-sensitivity overtravel, 80°                                     | WLRG2      |
|                                                                                                                              | General-purpose overtravel, 80°                                      | WLRH2      |
|                                                                                                                              | Overtravel, 90° operation                                            | WLRC A2-2  |
|                                                                                                                              | Overtravel, 90° operation                                            | WLRC A2-2N |
| <br>Switches for adjustable roller levers | Basic                                                                | WLRC A2    |
|                                                                                                                              | High-sensitivity overtravel, 80°                                     | WLRG2      |
|                                                                                                                              | General-purpose overtravel, 80°                                      | WLRH2      |
|                                                                                                                              | Overtravel, 90° operation                                            | WLRC A2-2  |
|                                                                                                                              | Overtravel, 90° operation                                            | WLRC A2-2N |
|                                                                                                                              | Overtravel, 90° operation                                            | WLRC A2-2N |
| <br>Switches for adjustable rod lever     | Basic, 25 to 140 mm                                                  | WLRC L     |
|                                                                                                                              | High-sensitivity overtravel, 80°, 25 to 140 mm                       | WLRG2      |
|                                                                                                                              | Overtravel, 90° operation, 25 to 140 mm                              | WLRC A2-2  |
|                                                                                                                              | Overtravel, 90° operation, 25 to 140 mm                              | WLRC A2-2N |
| Switches for top plungers                                                                                                    | ---                                                                  | ---        |
| Switches for horizontal plungers                                                                                             | ---                                                                  | ---        |
| Switches for fork lever locks                                                                                                | Protective, WL-5A100<br>Protective, WL-5A102<br>Protective, WL-5A104 | WLRC A32   |
| Switches for coil springs                                                                                                    | ---                                                                  | ---        |

## Spatter-prevention Products

### Levers and Covers with Indicators

| Complete Heads with allen-head levers                                                                                                                            | Double Nut Lever                                                                                                                           | Allen-head Lever                                                                                                                            | Cover with Indicator                                                                                                        |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| <br>WL-1H1100S (for WLCA2-□ or WLGCA2-□)<br>WL-2H1100S (for WLH2-□ or WLG2-□) | <br>WL-1A105S Roller Lever (forward and backward lever) | <br>EWL-1A103S Roller lever (forward and backward lever) | <br>Neon lamp WL-LES<br>LED (LED) WL-LDS |

### Switches without Levers

| Switches without levers                                                                                                                                                 |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br>WLRC A2-LDS<br>WLRH2-LES<br>WLRH2-LDS<br>WLRG2-LES<br>WLRG2-LDS<br>WLRGCA2-LES |

# Specifications, Ratings, and Characteristics

## General-purpose Switches

### ■ Approved Standards

| Agency        | Standard         | File No.         | Approved models                                                                                      |
|---------------|------------------|------------------|------------------------------------------------------------------------------------------------------|
| UL            | UL508            | E76675           | All modes with direct-wired connectors or pre-wired connectors except for hermetically sealed models |
| CSA           | CSA C22.2 No. 14 | LR45746          |                                                                                                      |
| TÜV Rheinland | EN60947-5-1      | R9551016         | Only models with ground terminals                                                                    |
|               |                  | J9950959         | Only models with pre-wired connectors and DC specifications                                          |
| CCC (CQC)     | GB14048.5        | 2003010305032365 | Contact your OMRON representative for information on approved models.                                |

**Note:** Contact your OMRON representative for more information on approved models.

### ■ Approved Standard Ratings

#### UL/CSA

Standard-load Switches: A600, NEMA

| Rated voltage | Carry current | Current (A) |       | Volt-amperes (VA) |       |
|---------------|---------------|-------------|-------|-------------------|-------|
|               |               | Make        | Break | Make              | Break |
| 120 VAC       | 10 A          | 60          | 6     | 7,200             | 720   |
| 240 VAC       |               | 30          | 3     |                   |       |
| 480 VAC       |               | 15          | 1.5   |                   |       |
| 600 VAC       |               | 12          | 1.2   |                   |       |

#### Switches without Indicators

LE Switches (Neon lamp): A300

| Rated voltage | Carry current | Current (A) |       | Volt-amperes (VA) |       |
|---------------|---------------|-------------|-------|-------------------|-------|
|               |               | Make        | Break | Make              | Break |
| 120 VAC       | 10 A          | 60          | 6     | 7,200             | 720   |
| 240 VAC       |               | 30          | 3     |                   |       |

#### LD Switches (LED)

| Rated voltage | Carry current |
|---------------|---------------|
| 115 VAC       | 10 A          |
| 115 VDC       | 0.8 A         |

#### Microload Switches

0.1 A at 125 VAC, 0.1 A at 30 VDC

#### TÜV (EN60947-5-1) (Only models with ground terminals are approved.), CCC (GB14048.5)

| Model    | Application category and ratings        | Thermal current ( $I_{the}$ ) | Indicator |
|----------|-----------------------------------------|-------------------------------|-----------|
| WL□      | AC-15: 2 A/250 V<br>DC-12: 2 A/48 V     | 10 A                          | ---       |
| WL01□    | AC-14: 0.1 A/125V<br>DC-12: 0.1 A/48 V  | 0.5 A                         | ---       |
| WL□-LE   | AC-15: 2 A/250 V                        | 10 A                          | Neon lamp |
| WL01□-LE | AC-14: 0.1 A/125 V                      | 0.5 A                         | Neon lamp |
| WL□-LD   | AC-15: 2 A/115 V<br>DC-12: 2 A/48 V     | 10 A                          | LED       |
| WL01□-LD | AC-14: 0.1 A/115 V<br>DC-12: 0.1 A/48 V | 0.5 A                         | LED       |

**Note:** As an example, AC-15: 2 A/250 V means the following:

|                              |       |
|------------------------------|-------|
| Application category         | AC-15 |
| Rated operating current (Ie) | 2 A   |
| Rated operating voltage (Ue) | 250 V |

### ■ General Ratings

#### Standard-load Switches

| Item                                                                                            | Rated voltage (V) | Non-inductive load (A) |    |           |     | Inductive load (A) |    |            |     |
|-------------------------------------------------------------------------------------------------|-------------------|------------------------|----|-----------|-----|--------------------|----|------------|-----|
|                                                                                                 |                   | Resistive load         |    | Lamp load |     | Inductive load     |    | Motor load |     |
|                                                                                                 |                   | NC                     | NO | NC        | NO  | NC                 | NO | NC         | NO  |
| Basic models, overtravel models (except for high-sensitivity models), and high-precision models | AC 125            | 10                     |    | 3         | 1.5 | 10                 |    | 5          | 2.5 |
|                                                                                                 | 250               | 10                     |    | 2         | 1   | 10                 |    | 3          | 1.5 |
|                                                                                                 | 500               | 10                     |    | 1.5       | 0.8 | 3                  |    | 1.5        | 0.8 |
|                                                                                                 | DC 8              | 10                     |    | 6         | 3   | 10                 |    | 6          |     |
|                                                                                                 | 14                | 10                     |    | 6         | 3   | 10                 |    | 6          |     |
|                                                                                                 | 30                | 6                      |    | 4         | 3   | 6                  |    | 4          |     |
| High-sensitivity overtravel models                                                              | 125               | 0.8                    |    | 0.2       | 0.2 | 0.8                |    | 0.2        |     |
|                                                                                                 | 250               | 0.4                    |    | 0.1       | 0.1 | 0.4                |    | 0.1        |     |
|                                                                                                 | AC 125            | 5                      |    | ---       |     | ---                |    | ---        |     |
|                                                                                                 | 250               | 5                      |    | ---       |     | ---                |    | ---        |     |
|                                                                                                 | DC 125            | 0.4                    |    | ---       |     | ---                |    | ---        |     |
|                                                                                                 | 250               | 0.2                    |    | ---       |     | ---                |    | ---        |     |

| Inrush current | NC | 30 A max. (15 A max. (See note.)) |
|----------------|----|-----------------------------------|
|                | NO | 20 A max. (10 A max. (See note.)) |

**Note:** For high-sensitivity overtravel models.

- Note**
- 1: The above figures are for steady-state currents.
  - 2: Inductive loads have a power factor of 0.4 min. (AC) and a time constant of 7 ms max. (DC).
  - 3: A lamp load has an inrush current of 10 times the steady-state current.
  - 4: A motor load has an inrush current of 6 times the steady-state current.
  - 5: For PC loads, use the microload models.

#### Indicator-equipped Switches

| Model | Item      | Max. rated voltage (V) | Leakage current (mA) |
|-------|-----------|------------------------|----------------------|
| WL-LE | Neon lamp | 125 AC                 | Approx. 0.6          |
|       |           | 250 AC                 | Approx. 1.9          |
| WL-LD | LED       | 10 to 115 AC/DC        | Approx. 0.5          |

## ■ Characteristics

|                                                                |                                                                                                                                                                                                                                                                                                           |
|----------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Degree of protection</b>                                    | IP67                                                                                                                                                                                                                                                                                                      |
| <b>Durability (See note 3.)</b>                                | Mechanical: 15,000,000 operations min. (See note 4.)<br>Electrical: 750,000 operations min. (See note 5.)                                                                                                                                                                                                 |
| <b>Operating speed</b>                                         | 1 mm to 1 m/s (for WLCA2)                                                                                                                                                                                                                                                                                 |
| <b>Operating frequency</b>                                     | Mechanical: 120 operations/minute min.<br>Electrical: 30 operations/minute min.                                                                                                                                                                                                                           |
| <b>Rated frequency</b>                                         | 50/60 Hz                                                                                                                                                                                                                                                                                                  |
| <b>Insulation resistance</b>                                   | 100 MΩ min. (at 500 VDC)                                                                                                                                                                                                                                                                                  |
| <b>Contact resistance</b>                                      | 25 mΩ max. (initial value)                                                                                                                                                                                                                                                                                |
| <b>Dielectric strength</b>                                     | 1,000 VAC (600 VAC), 50/60 Hz for 1 min between terminals of the same polarity<br>2,200 VAC (1,500 VAC), 50/60 Hz for 1 min/Uimp 2.5 kV between current-carrying metal part and ground<br>2,200 VAC (1,500 VAC), 50/60 Hz for 1 min/Uimp 2.5 kV between each terminal and non-current-carrying metal part |
| <b>Rated insulation voltage (U<sub>i</sub>)</b>                | 250 V (EN60947-5-1)                                                                                                                                                                                                                                                                                       |
| <b>Switching overvoltage</b>                                   | 1,000 V max. (EN60947-5-1)                                                                                                                                                                                                                                                                                |
| <b>Pollution degree (operating environment)</b>                | Level 3 (EN60947-5-1)                                                                                                                                                                                                                                                                                     |
| <b>Short-circuit protective device (SCPD)</b>                  | 10 A, fuse type gG or gI (IEC269)                                                                                                                                                                                                                                                                         |
| <b>Conditional short-circuit current</b>                       | 100 A (EN60947-5-1)                                                                                                                                                                                                                                                                                       |
| <b>Conventional enclosed thermal current (I<sub>the</sub>)</b> | 10 A, 0.5 A (EN60947-5-1)                                                                                                                                                                                                                                                                                 |
| <b>Protection against electric shock</b>                       | Class I                                                                                                                                                                                                                                                                                                   |
| <b>Vibration resistance</b>                                    | Malfunction: 10 to 55 Hz, 1.5-mm double amplitude (See note 6.)                                                                                                                                                                                                                                           |
| <b>Shock resistance</b>                                        | Destruction: 1,000 m/s <sup>2</sup> min.<br>Malfunction: 300 m/s <sup>2</sup> min. (See note 6.)                                                                                                                                                                                                          |
| <b>Ambient temperature</b>                                     | Operating: -10°C to 80°C (with no icing) (See note 7.)                                                                                                                                                                                                                                                    |
| <b>Ambient humidity</b>                                        | Operating: 95% max.                                                                                                                                                                                                                                                                                       |
| <b>Weight</b>                                                  | Approx. 275 g (in the case of WLCA2)                                                                                                                                                                                                                                                                      |

**Note 1:** The above figures are initial values.

- The figures in parentheses for dielectric strength are those for the high-sensitivity overtravel models.
- The values are calculated at an operating temperature of 5°C to 35°C and an operating humidity of 40% to 70%. Contact your OMRON sales representative for more detailed information on other operating environments.
- Durability is 10,000,000 operations min. for general-purpose or high-sensitivity overtravel models, and for flexible rod models.
- Durability is 500,000 operations min. for high-sensitivity models. All microload models however, are 1,000,000 operations min.
- Except flexible rod models. The shock resistance (malfunction) for microload models is 200 m/s<sup>2</sup> min.
- For low-temperature models this is -40°C to 40°C (no icing). For heat-resistant models the range is 5°C to 120°C.

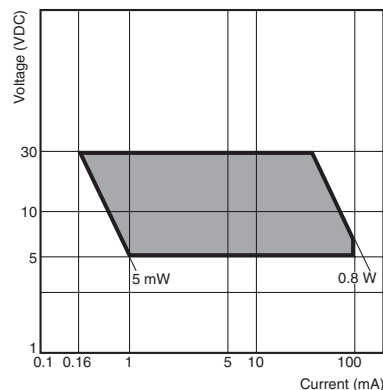
## Microload Switches

Refer to these ratings before using the product.

| Rated voltage (V) | Resistive load (A) |
|-------------------|--------------------|
| AC 125            | 0.1                |
| DC 30             |                    |

Operation in the following ranges will produce optimum performance.

|                               |                              |
|-------------------------------|------------------------------|
| <b>Recommended load range</b> | 5 to 30 VDC<br>0.5 to 100 mA |
|-------------------------------|------------------------------|



## Spatter-prevention Switches

### Approved Standards

| Agency        | Standard         | File No.         | Approved models                                                                                      |
|---------------|------------------|------------------|------------------------------------------------------------------------------------------------------|
| UL            | UL508            | E76675           | All modes with direct-wired connectors or pre-wired connectors except for hermetically sealed models |
| CSA           | CSA C22.2 No. 14 | LR45746          |                                                                                                      |
| TÜV Rheinland | EN60947-5-1      | R9551016         | Only models with ground terminals                                                                    |
|               |                  | J9950959         | Only models with pre-wired connectors and DC specifications                                          |
| CCC (CQC)     | GB14048.5        | 2003010305032365 | Contact your OMRON representative for information on approved models.                                |

**Note:** Contact your OMRON representative for more information on approved models.

### Approved Standard Ratings

#### UL/CSA

LE Switches (Neon lamp): A300

| Rated voltage | Carry current | Current (A) |       | Volt-amperes (VA) |       |
|---------------|---------------|-------------|-------|-------------------|-------|
|               |               | Make        | Break | Make              | Break |
| 120 VAC       | 10 A          | 60          | 6     | 7,200             | 720   |
| 240 VAC       |               | 30          | 3     |                   |       |

LD Switches (LED)

| Rated voltage | Carry current |
|---------------|---------------|
| 115 VAC       | 10 A          |
| 115 VDC       | 0.8 A         |

### General Ratings

| Item    | Rated voltage (V) | Non-inductive load (A) |    |           |     | Inductive load (A) |    |            |     |
|---------|-------------------|------------------------|----|-----------|-----|--------------------|----|------------|-----|
|         |                   | Resistive load         |    | Lamp load |     | Inductive load     |    | Motor load |     |
|         |                   | NC                     | NO | NC        | NO  | NC                 | NO | NC         | NO  |
| WL□-LES | AC 125            | 10                     |    | 3         | 1.5 | 10                 |    | 5          | 2.5 |
|         | 250               | 10                     |    | 2         | 1   | 10                 |    | 3          | 1.5 |
| WL□-LDS | AC 115            | 10                     |    | 3         | 1.5 | 10                 |    | 5          | 2.5 |
|         | DC 12             | 10                     |    | 6         | 3   | 10                 |    | 6          |     |
|         | 24                | 6                      |    | 4         | 3   | 6                  |    | 4          |     |
|         | 48                | 3                      |    | 2         | 1.5 | 3                  |    | 2          |     |

|                       |                               |           |
|-----------------------|-------------------------------|-----------|
| Inrush current        | NC                            | 30 A max. |
|                       | NO                            | 20 A max. |
| Operating temperature | -10°C to 80°C (with no icing) |           |
| Operating humidity    | 95% max.                      |           |

**Note 1:** The above figures are for steady-state currents.

- Inductive loads have a power factor of 0.4 min. (AC) and a time constant of 7 ms max. (DC).
- A lamp load has an inrush current of 10 times the steady-state current.
- A motor load has an inrush current of 6 times the steady-state current.

### Characteristics

|                                                           |                                                                                                                                                                                                                                                                                                           |
|-----------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Degree of protection                                      | IP67                                                                                                                                                                                                                                                                                                      |
| Durability (See note 3.)                                  | Mechanical: 15,000,000 operations min. (See note 4.)                                                                                                                                                                                                                                                      |
|                                                           | Electrical: 750,000 operations min. (See note 5.)                                                                                                                                                                                                                                                         |
| Operating speed                                           | 1 mm to 1 m/s (for WLCA2)                                                                                                                                                                                                                                                                                 |
| Operating frequency                                       | Mechanical: 120 operations/minute min.<br>Electrical: 30 operations/minute min.                                                                                                                                                                                                                           |
| Rated frequency                                           | 50/60 Hz                                                                                                                                                                                                                                                                                                  |
| Insulation resistance                                     | 100 MΩ min. (at 500 VDC)                                                                                                                                                                                                                                                                                  |
| Contact resistance                                        | 25 mΩ max. (initial value)                                                                                                                                                                                                                                                                                |
| Dielectric strength                                       | 1,000 VAC (600 VAC), 50/60 Hz for 1 min between terminals of the same polarity<br>2,200 VAC (1,500 VAC), 50/60 Hz for 1 min/Uimp 2.5 kV between current-carrying metal part and ground<br>2,200 VAC (1,500 VAC), 50/60 Hz for 1 min Uimp 2.5 kV between each terminal and non-current-carrying metal part |
| Rated insulation voltage (U <sub>i</sub> )                | 250 V (EN60947-5-1)                                                                                                                                                                                                                                                                                       |
| Switching overvoltage                                     | 1,000 V max. (EN60947-5-1)                                                                                                                                                                                                                                                                                |
| Pollution degree (operating environment)                  | Level 3 (EN60947-5-1)                                                                                                                                                                                                                                                                                     |
| Short-circuit protective device (SCPD)                    | 10 A, fuse type gG or gl (IEC269)                                                                                                                                                                                                                                                                         |
| Conditional short-circuit current                         | 100 A (EN60947-5-1)                                                                                                                                                                                                                                                                                       |
| Conventional enclosed thermal current (I <sub>the</sub> ) | 10 A, 0.5 A (EN60947-5-1)                                                                                                                                                                                                                                                                                 |
| Protection against electric shock                         | Class I                                                                                                                                                                                                                                                                                                   |
| Vibration resistance                                      | Malfunction: 10 to 55 Hz, 1.5-mm double amplitude                                                                                                                                                                                                                                                         |
| Shock resistance                                          | Destruction: 1,000 m/s <sup>2</sup> min.<br>Malfunction: 300 m/s <sup>2</sup> min.                                                                                                                                                                                                                        |
| Ambient temperature                                       | Operating: -10°C to 80°C (with no icing)                                                                                                                                                                                                                                                                  |
| Ambient humidity                                          | Operating: 95% max.                                                                                                                                                                                                                                                                                       |
| Weight                                                    | Approx. 275 g (in the case of WLCA2)                                                                                                                                                                                                                                                                      |

**Note 1:** The above figures are initial values.

- The figures in parentheses for dielectric strength are those for the high-sensitivity overtravel models.
- The values are calculated at an operating temperature of 5°C to 35°C and an operating humidity of 40% to 70%. Contact your OMRON sales representative for more detailed information on other operating environments.
- Durability is 10,000,000 operations min. for general-purpose or high-sensitivity overtravel models.
- Durability is 500,000 operations min. for high-precision models. All microload models however, are 1,000,000 operations min.

## Long-life Switches

### Approved Standards

| Agency        | Standard         | File No.         | Approved models                                                                                      |
|---------------|------------------|------------------|------------------------------------------------------------------------------------------------------|
| UL            | UL508            | E76675           | All modes with direct-wired connectors or pre-wired connectors except for hermetically sealed models |
| CSA           | CSA C22.2 No. 14 | LR45746          |                                                                                                      |
| TÜV Rheinland | EN60947-5-1      | R9551016         | Only models with ground terminals                                                                    |
|               |                  | J9950959         | Only models with pre-wired connectors and DC specifications                                          |
| CCC (CQC)     | GB14048.5        | 2003010305032365 | Contact your OMRON representative for information on approved models.                                |

**Note:** Contact your OMRON representative for more information on approved models.

### Approved Standard Ratings

#### UL/CSA

##### LE Switches (Neon lamp): A300

| Rated voltage      | Carry current | Current (A) |        | Volt-amperes (VA) |       |
|--------------------|---------------|-------------|--------|-------------------|-------|
|                    |               | Make        | Break  | Make              | Break |
| 120 VAC<br>240 VAC | 10 A          | 60<br>30    | 6<br>3 | 7,200             | 720   |

##### LD Switches (LED)

| Rated voltage | Carry current |
|---------------|---------------|
| 115 VAC       | 10 A          |
| 115 VDC       | 0.8 A         |

#### TÜV (EN60947-5-1) (Only models with ground terminals are approved.), CCC (GB14048.5)

| Model    | Application category and ratings        | Thermal current ( $I_{the}$ ) | Indicator |
|----------|-----------------------------------------|-------------------------------|-----------|
| WL□      | AC-15: 2 A/250 V<br>DC-12: 2 A/48 V     | 10 A                          | ---       |
| WL01□    | AC-14: 0.1 A/125 V<br>DC-12: 0.1 A/48 V | 0.5 A                         | ---       |
| WL□-LE   | AC-15: 2 A/250 V                        | 10 A                          | Neon lamp |
| WL01□-LE | AC-14: 0.1 A/125 V                      | 0.5 A                         | Neon lamp |
| WL□-LD   | AC-15: 2 A/115 V<br>DC-12: 2 A/48 V     | 10 A                          | LED       |
| WL01□-LD | AC-14: 0.1 A/115 V<br>DC-12: 0.1 A/48 V | 0.5 A                         | LED       |

### General Ratings

Refer to these ratings before using the product.

#### Screw Terminal Switches

| Model                                                                                            | Item   | Rated voltage (V) | Non-inductive load (A) |     |           |     | Inductive load (A) |     |            |    |
|--------------------------------------------------------------------------------------------------|--------|-------------------|------------------------|-----|-----------|-----|--------------------|-----|------------|----|
|                                                                                                  |        |                   | Resistive load         |     | Lamp load |     | Inductive load     |     | Motor load |    |
|                                                                                                  |        |                   | NC                     | NO  | NC        | NO  | NC                 | NO  | NC         | NO |
| Basic models, overtravel models, (except for high-sensitivity models), and high-precision models | 115 AC | 10                | 10                     | 3   | 1.5       | 10  | 5                  | 2.5 |            |    |
|                                                                                                  |        | 12 DC             | 10                     | 6   | 3         | 10  | 6                  | 4   |            |    |
|                                                                                                  |        | 24 DC             | 6                      | 4   | 3         | 6   | 4                  | 2   |            |    |
|                                                                                                  |        | 48 DC             | 3                      | 2   | 1.5       | 3   | 2                  | 0.2 |            |    |
| High-sensitivity overtravel models                                                               | 115 AC | 5                 | ---                    | --- | ---       | --- | ---                | --- |            |    |
|                                                                                                  |        | 115 DC            | 0.4                    | --- | ---       | --- | ---                | --- |            |    |

| Inrush current | NC | 30 A max. (15 A max. (See note.)) |
|----------------|----|-----------------------------------|
|                | NO | 20 A max. (10 A max. (See note.)) |

**Note:** For high-sensitivity overtravel models.

#### Direct-wired Connector and Pre-wired Connector Switches

| Model | Rated voltage (V) | Non-inductive load (A) |     |           |     | Inductive load (A) |     |            |     |
|-------|-------------------|------------------------|-----|-----------|-----|--------------------|-----|------------|-----|
|       |                   | Resistive load         |     | Lamp load |     | Inductive load     |     | Motor load |     |
|       |                   | NC                     | NO  | NC        | NO  | NC                 | NO  | NC         | NO  |
| DC    | 12 DC             | 3                      | 3   | 3         | 3   | 3                  | 3   | 3          | 3   |
|       | 24 DC             | 3                      | 3   | 3         | 3   | 3                  | 3   | 3          | 3   |
|       | 48 DC             | 3                      | 3   | 3         | 3   | 3                  | 3   | 3          | 3   |
|       | 115 DC            | 0.8                    | 0.8 | 0.2       | 0.2 | 0.8                | 0.8 | 0.2        | 0.2 |
| AC    | 115 AC            | 3                      | 3   | 3         | 1.5 | 3                  | 3   | 3          | 2.5 |

**Note** 1: The above figures are for steady-state currents.  
2: Inductive loads have a power factor of 0.4 min. (AC) and a time constant of 7 ms max. (DC).  
3: A lamp load has an inrush current of 10 times the steady-state current.  
4: A motor load has an inrush current of 6 times the steady-state current.

### Characteristics

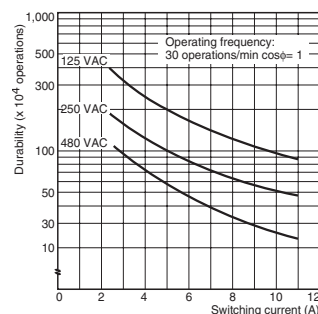
|                          |                                                                                                                                                                                                                                                                                                   |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Degree of protection     | IP67                                                                                                                                                                                                                                                                                              |
| Durability (See note 2.) | Mechanical: 30,000,000 operations min. (10 mA at 24 VDC, resistive load)<br>Electrical: 750,000 operations min. (10 A at 115 VAC, resistive load), but for high-precision models: 500,000 operations min. (10 A at 115 VAC, resistive load)                                                       |
| Operating speed          | 1 mm to 1 m/s (for WLCA2)                                                                                                                                                                                                                                                                         |
| Operating frequency      | Mechanical: 120 operations/minute<br>Electrical: 30 operations/minute                                                                                                                                                                                                                             |
| Rated frequency          | 50/60 Hz                                                                                                                                                                                                                                                                                          |
| Insulation resistance    | 100 MΩ min. (at 500 VDC)                                                                                                                                                                                                                                                                          |
| Contact resistance       | 25 mΩ max. (initial value)                                                                                                                                                                                                                                                                        |
| Dielectric strength      | 1,000 VAC, 50/60 Hz for 1 min between terminals of the same polarity. (Except connector models.)<br>2,200 VAC (1,500 V), 50/60 Hz for 1 min between current-carrying metal part and ground.<br>2,200 VAC (1,500 V), 50/60 Hz for 1 min between each terminal and non-current-carrying metal part. |
| Vibration resistance     | 10 to 55 Hz, 1.5-mm double amplitude                                                                                                                                                                                                                                                              |
| Shock resistance         | Destruction: 1,000 m/s <sup>2</sup> min.<br>Malfunction: 300 m/s <sup>2</sup> min.                                                                                                                                                                                                                |
| Ambient temperature      | Operating: -10°C to 80°C (with no icing)                                                                                                                                                                                                                                                          |
| Ambient humidity         | Operating: 95% max.                                                                                                                                                                                                                                                                               |
| Weight                   | Approx. 275 g (for WLCA2)                                                                                                                                                                                                                                                                         |

**Note** 1: The figures in parentheses for dielectric strength, are those for overtravel (high-sensitivity) or connector models.  
2: The values are calculated at an operating temperature of 5°C to 35°C, and an operating humidity of 40% to 70%. Contact your OMRON sales representative for more detailed information on other operating environments.

### Engineering Data

#### Electrical Durability: $\cos\phi=1$

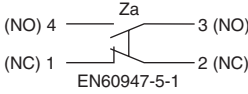
(Operating temperature: 5°C to 35°C, operating humidity: 40% to 70%)



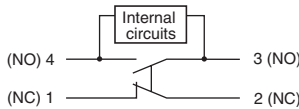
# Connections

## Contact Forms

### Screw Terminal Switches

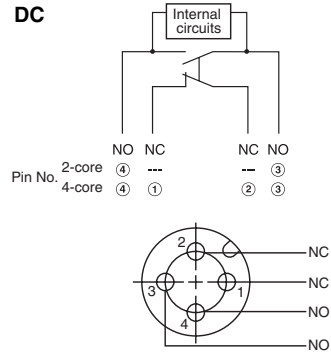
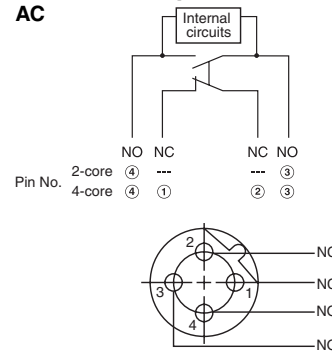


### Screw Terminal and Indicator-equipped (Light-ON when Not Operating) Switches (See note.)



**Note:** Light-ON when not operating means the indicator is lit when the actuator is free and is not light when the Switch contacts (NO) close when the actuator rotates or is pushed down.

### Direct-wired Connector, Pre-wired Connector, and Indicator-equipped (Light-ON when Not Operating) Switches (See note.)



## Indicators

### Indicator Covers

The indicator covered if outsert molded from diecast aluminum and has outstanding sealing properties.

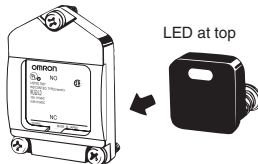
### Indicator Windows

Operation (i.e., light-ON when operating or light-ON when not operating) depends on whether a neon lamp or LED is used.

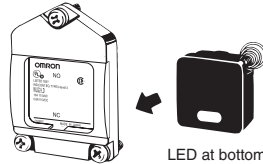
### Light-ON when Operating/Not Operating

Indicators can be switched from light-ON when operating and light-ON when not operating, by simply rotating the indicator holder by 180°. (Molded terminals cannot be switched in this way.)

### Light-ON when Operating



### Light-ON when Not Operating

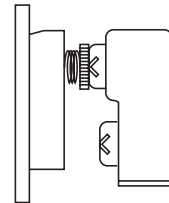


### Indicator

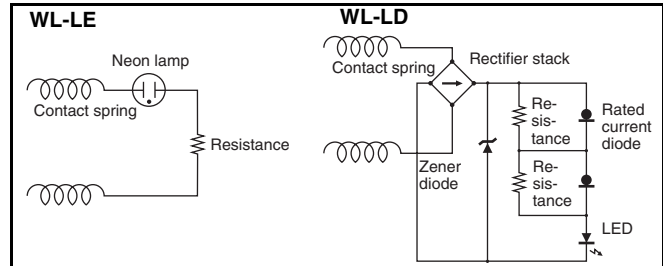
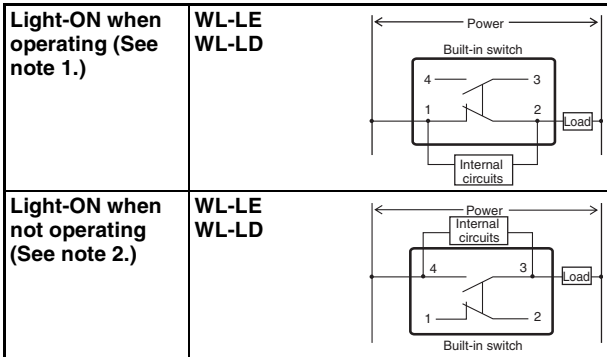
The indicator is either a neon lamp or an LED. Models with LED indicators have a built-in rectifier stack, so it is not necessary to change the polarity.

### Contact Spring

The built-in switch's terminal screws are used to connect the indicator terminal. Since the connection spring (coil spring) is used for this connection, it will not be necessary to connect the indicator terminal. When a ground terminal is provided however, a lead wire must be used.



### Operation



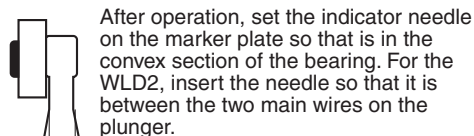
**Note:** The indicator cover cannot be replaced on the molded terminals. In all cases the indicator does not light when the load is ON.

- Note** 1. Light-ON when operating means that the lamp lights when the Limit Switch contacts (NC) release, or when the actuator rotates or is pushed down.  
2. Light-ON when not operating means the lamp remains lit when the actuator is free, or when the Limit Switch contacts (NO) close when the actuator rotates or is pushed down.

# Nomenclature

## General-purpose Switches

### Set Position Marker Plate



Requires maintenance (excessive overtravel)  
Proper range  
Requires maintenance (insufficient overtravel)  
Proper range  
Requires maintenance (excessive overtravel)

### Head

The Head used in the roller lever type, adjustable rod lever type, or horizontal plunger type (except for 90° operation models) can be mounted in any of the four directions by removing the screws at the four corners of the Head.

### Shaft Section Seal

By fitting an O-ring to the rotary shaft and with an appropriate interference of the screws, high-sealing properties are maintained.

### Bearing

The bearing smooths the plunger movement.

### Built-in Switch

Built-in switch with SPST-NO+NC contact form.

### Actuator

#### Roller

The roller is made of self-lubricating sintered stainless steel and boasts high resistance to wear.

#### Lever

The lever forged of anti-corrosive aluminium alloy features high corrosion resistances and outstanding ruggedness. With roller lever, adjustable rod and flexible rod models, the actuator position can be set anywhere within 360°. (The lever cannot be mounted in the opposite direction.)

### Head-mounting Screws

### Roller Lever Setscrew

### Operational Plunger (See note 2.)

### Cover Seal

By using a packing seal as the cover seal, an optimum squeeze can be obtained and high sealing properties are assured as well.

### Terminal Screws

Four, M4 screws

### Cover

### Separator

The separator has outstanding insulation properties and prevents the generation of any gases which may corrode the internal parts.

### Cover Setscrew

Phillips screws are used to ensure ease of use.

### Conduit Opening (See note 1.)

The conduit threads are parallel threads for G 1/2 tube and offer further increased sealing properties when used in conjunction with the SC connector.

**Note 1.** The display for conduit threads has changed from PF $\frac{1}{2}$  to G $\frac{1}{2}$  according to revisions of JIS B 0202. This is only a change in the display, so the thread size and pitch have not changed. (Conduit threads Pg 13.5 and  $\frac{1}{2}$ -14NPT are also available.)

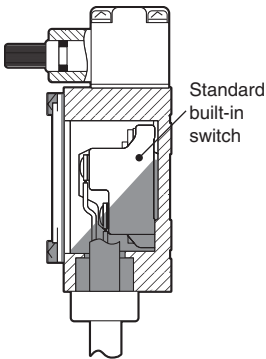
**2.** By changing the orientation of the operational plunger, three operational directions can be selected electrically. (This is possible only with standard roller lever, adjustable roller lever, and adjustable rod lever models. For the overtravel models, only 90° operation models have this function.)

# Environment-resistant Switches

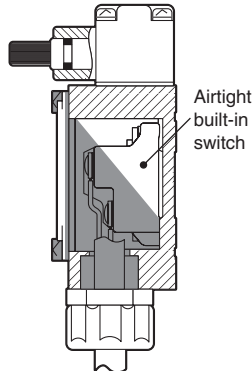
Mold Specifications for Hermetic Seal Switches

■ : Molded parts

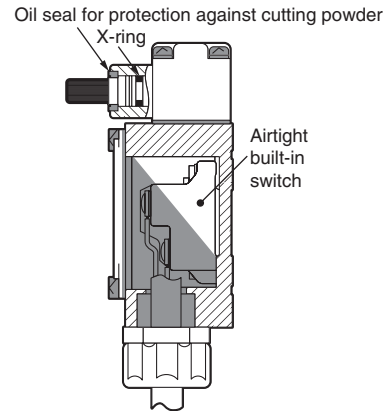
WL□-139



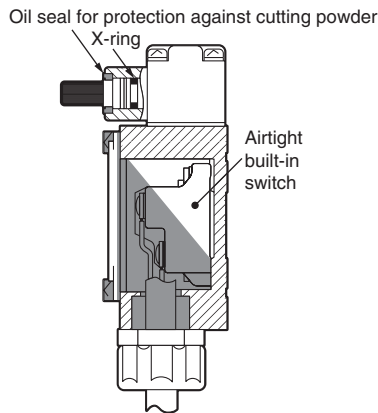
WL□-140



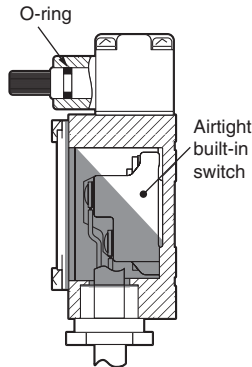
WL□-141



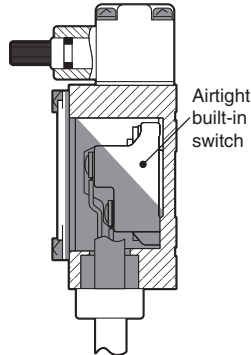
WL□-145



WL□-RP40



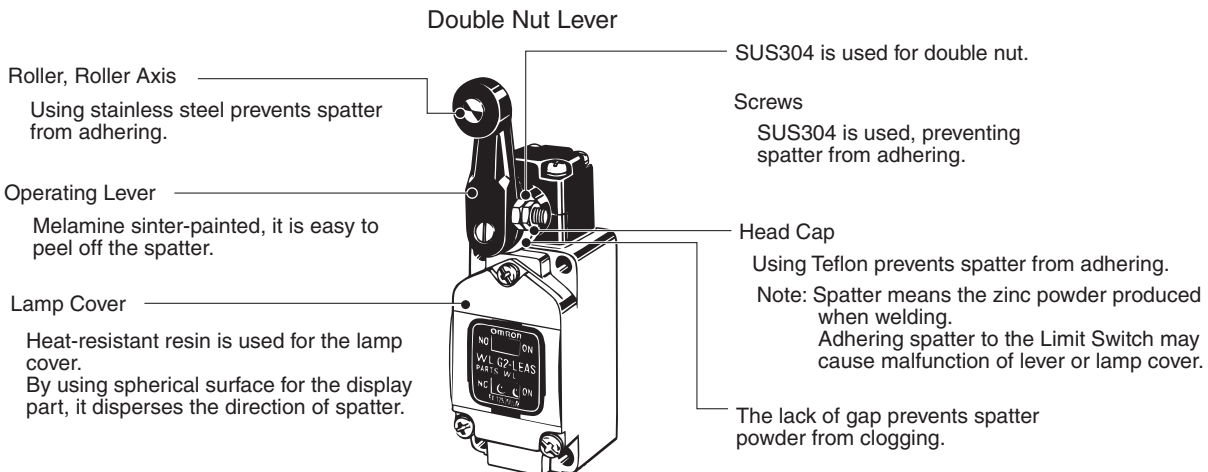
WL□-RP60



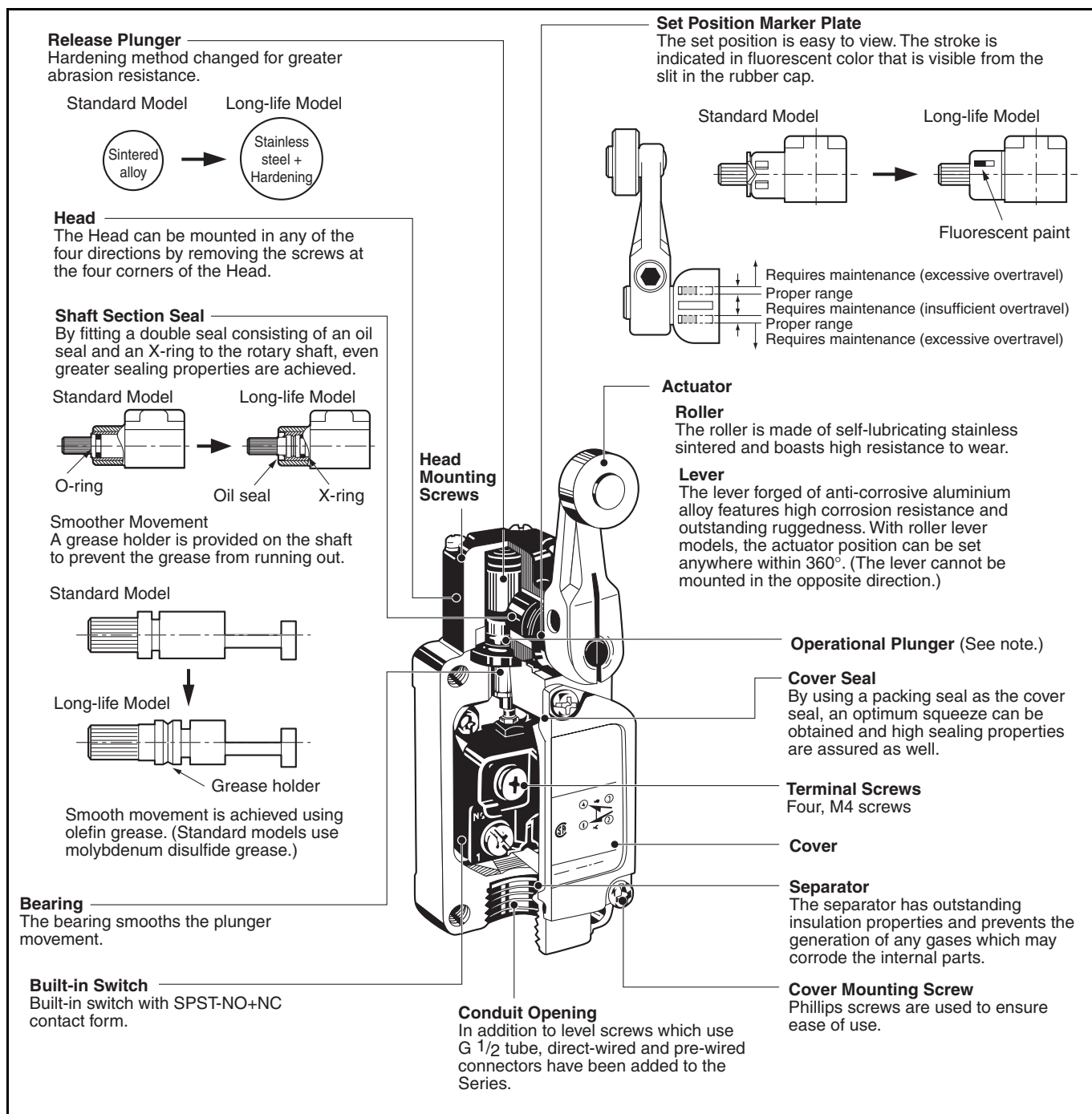
**Note:** Fluorine rubber is used for all rubber parts.

| Model                                                 | Cable specifications                                                                                                     |
|-------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|
| WL□-139                                               | Standard 5-m VCT (vinyl cabtire cable) cable attached. Finished diameter: 11.5 mm, 4-core.                               |
| WL□-140<br>WL□-141<br>WL□-145<br>WL□-RP40<br>WL□-RP60 | Standard 5-m VCT cable, with high flexibility and good anti-oil properties attached. Finished diameter: 11.5 mm, 4-core. |

# Spatter-prevention Switches



# Long-life Switches



**Note:** By changing the direction of the operational plunger, any one of the three operational directions (both sides, left, or right) can be selected. (Applicable only to the WLMGA2-□.)

## Dimensions

## General-purpose Models

## ■ Standard Models

## Basic

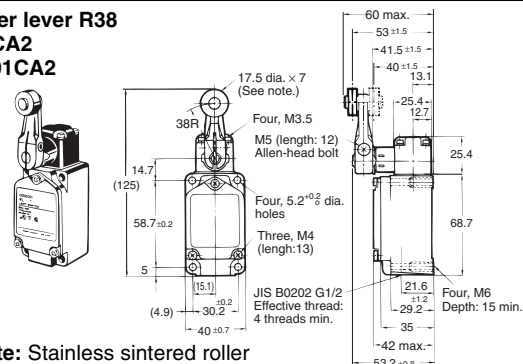
## Rotating Lever

**Note 1.** Rotating Lever Models: For all models WL□ indicates a standard-load model and WL01□ indicates a microload model.

2. Unless otherwise indicated, a tolerance of  $\pm 0.4$  mm applies to all dimensions.

### Roller lever R38

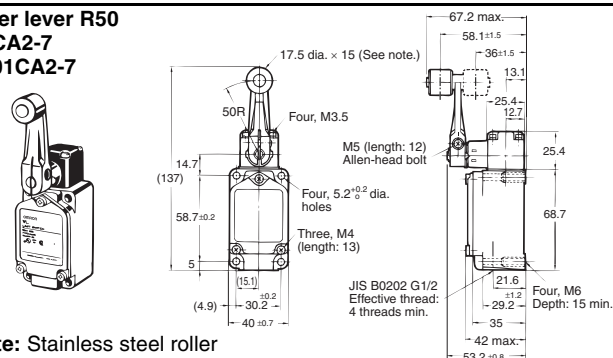
WLCA2  
WL01CA2



**Note:** Stainless sintered roller

## Roller lever R50

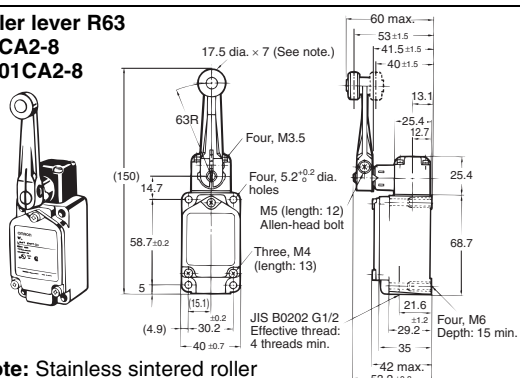
WLCA2-7  
WL01CA2-7



**Note:** Stainless steel roller

### Roller lever R63

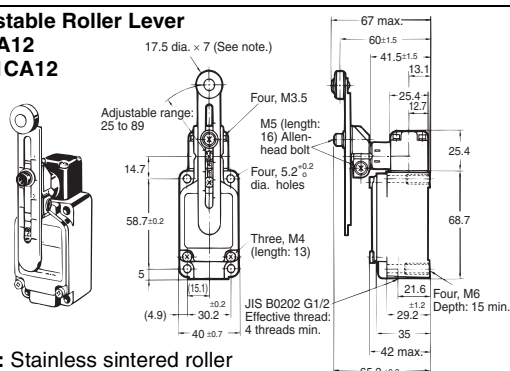
WLCA2-8  
WL01CA2-8



**Note:** Stainless sintered roller

### Adjustable Roller Lever

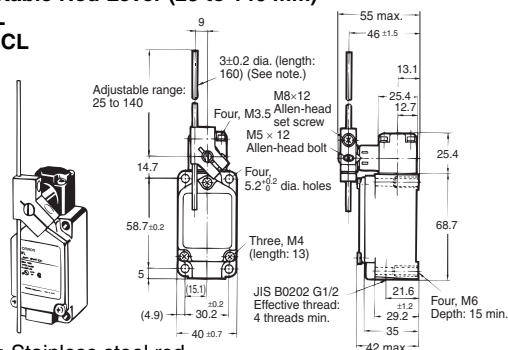
WLCA12  
WL01CA12



**Note:** Stainless sintered roller

### Adjustable Rod Lever (25 to 140 mm)

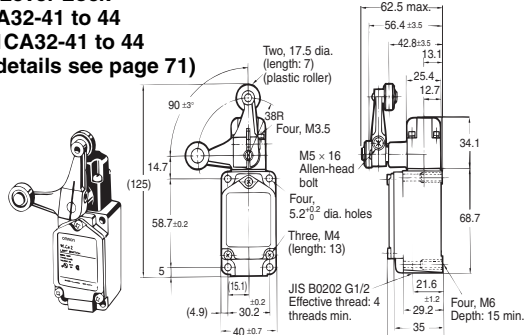
WLCL  
WL01CL



**Note:** Stainless steel rod

### Fork Lever Lock

**WLCA32-41 to 44**  
**WL01CA32-41 to 44**  
**(For details see page 71)**



**Note:** This illustration shows the external dimensions of the WLCA32-41. (Models WLCA32-041 to -044 and WL01CA32-041 to -044 have stainless steel rollers.)

| Operating characteristics      | WLCA2<br>WL01CA2 | WLCA2-7<br>WL01CA2-7 | WLCA2-8<br>WL01CA2-8 | WLCA12<br>WL01CA12<br>(See note 1.) | WLCL,<br>WL01CL<br>(See note 2.) |
|--------------------------------|------------------|----------------------|----------------------|-------------------------------------|----------------------------------|
| Operating force: OF max.       | 13.34 N          | 10.2 N               | 8.04 N               | 13.34 N                             | 1.39 N                           |
| Release force: RF min.         | 2.23 N           | 1.67 N               | 1.34 N               | 2.23 N                              | 0.27 N                           |
| Pretravel: PT                  | 15±5°            | 15±5°                | 15±5°                | 15±5°                               | 15±5°                            |
| Overtravel: OT min.            | 30°              | 30°                  | 30°                  | 30°                                 | 30°                              |
| Movement differential: MD max. | 12°              | 12°                  | 12°                  | 12°                                 | 12°                              |

**Note 1:** The operating characteristics for WLCA12 and WL01CA12 are measured at the lever length of 38 mm.

2. The operating characteristics for WLCL and WL01CL are measured at the rod length of 140 mm.

|                                                             |                                    |
|-------------------------------------------------------------|------------------------------------|
| Operating characteristics                                   | WLCA32-41 to 44, WL01CA32-41 to 44 |
| Force necessary to reverse the direction of the lever: Max. | 11.77 N                            |
| Movement until the lever reverses                           | 50±5°                              |
| Movement until switch operation: Min.                       | 55°                                |
| Movement after switch operation: Max.                       | 35°                                |

OF and RF for WLCA12, with a lever length of 89 mm.

| Operating characteristics | WLCA12, WL01CA12 |
|---------------------------|------------------|
| OF                        | 5.68 N           |
| RF                        | 0.95 N           |

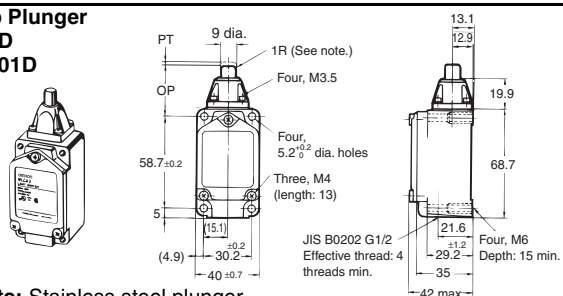
# ■ Standard Models

## Basic

## Plunger

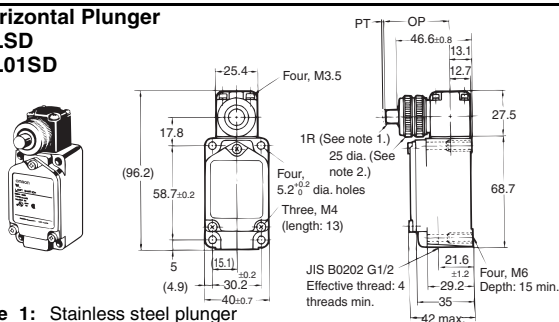
- Note 1.** For all models WL□ indicates a standard-load model and WL01□ indicates a microload model.  
**2.** Unless otherwise indicated, a tolerance of  $\pm 0.4$  mm applies to all dimensions.

### Top Plunger WLD WL01D



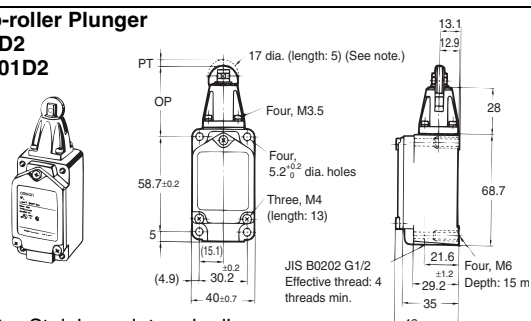
**Note:** Stainless steel plunger

### Horizontal Plunger WLS WL01SD



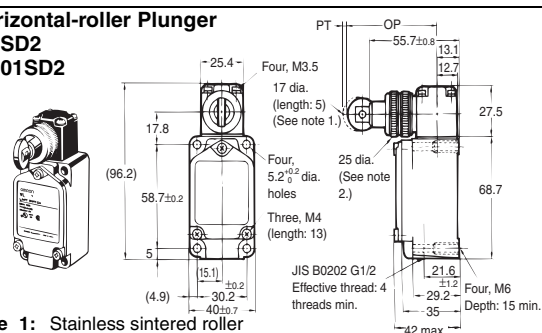
- Note 1:** Stainless steel plunger  
**2:** Cosmetic nuts

### Top-roller Plunger WLD2 WL01D2



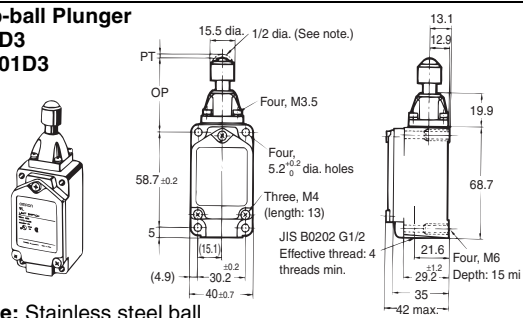
**Note:** Stainless sintered roller

### Horizontal-roller Plunger WLS2 WL01SD2



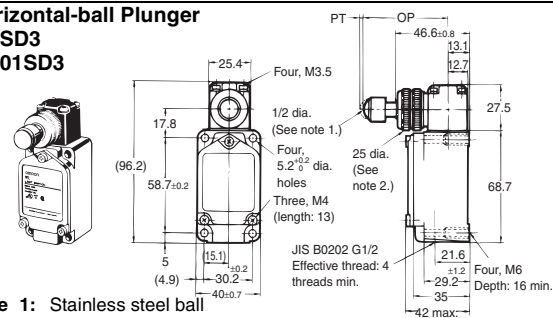
- Note 1:** Stainless sintered roller  
**2:** Cosmetic nuts  
**3:** The WLS2D1 model, which has the roller rotated by 90° is also available.

### Top-ball Plunger WLD3 WL01D3



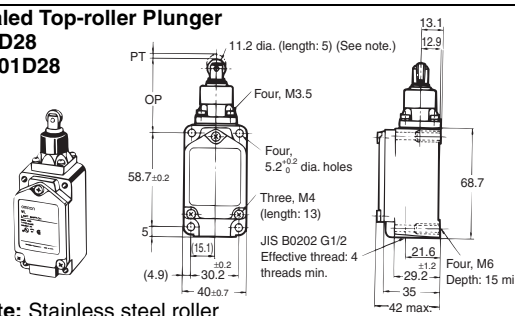
**Note:** Stainless steel ball

### Horizontal-ball Plunger WLS3 WL01SD3



- Note 1:** Stainless steel ball  
**2:** Cosmetic nuts

### Sealed Top-roller Plunger WLD28 WL01D28



**Note:** Stainless steel roller

| Operating characteristics       | WLD<br>WL01D    | WLD2<br>WL01D2  | WLD3<br>WL01D3    | WLD28<br>WL01D28 | WLS2<br>WL01SD2   | WLS3<br>WL01SD3   | WLS28<br>WL01SD28 |
|---------------------------------|-----------------|-----------------|-------------------|------------------|-------------------|-------------------|-------------------|
| Operating force: OF max.        | 26.67 N         | 26.67 N         | 26.67 N           | 16.67 N          | 40.03 N           | 40.03 N           | 40.03 N           |
| Release force: RF min.          | 8.92 N          | 8.92 N          | 8.92 N            | 4.41 N           | 8.89 N            | 8.89 N            | 8.89 N            |
| Pretravel: PT max.              | 1.7 mm          | 1.7 mm          | 1.7 mm            | 1.7 mm           | 2.8 mm            | 2.8 mm            | 2.8 mm            |
| Overtravel: OT min.             | 6.4 mm          | 5.6 mm          | 4 mm              | 5.6 mm           | 5.6 mm            | 4 mm              | 6.4 mm            |
| Movement differential: MD max.  | 1 mm            | 1 mm            | 1 mm              | 1 mm             | 1 mm              | 1 mm              | 1 mm              |
| Operating position: OP          | 34 $\pm 0.8$ mm | 44 $\pm 0.8$ mm | 44.5 $\pm 0.8$ mm | 44 $\pm 0.8$ mm  | 54.2 $\pm 0.8$ mm | 54.1 $\pm 0.8$ mm | 40.6 $\pm 0.8$ mm |
| Total travel position: TTP max. | 29.5 mm         | 39.5 mm         | 41 mm             | 39.5 mm          | ---               | ---               | ---               |

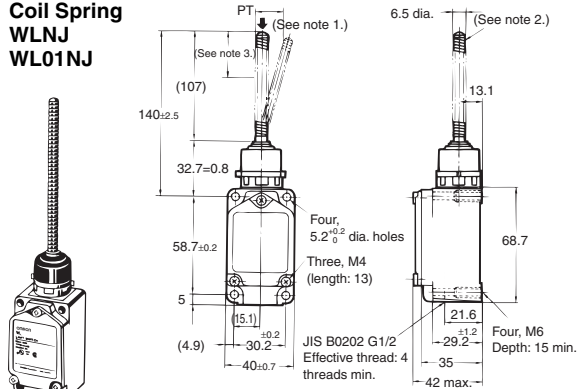
# ■ Standard Models

## Basic

### Flexible Rod

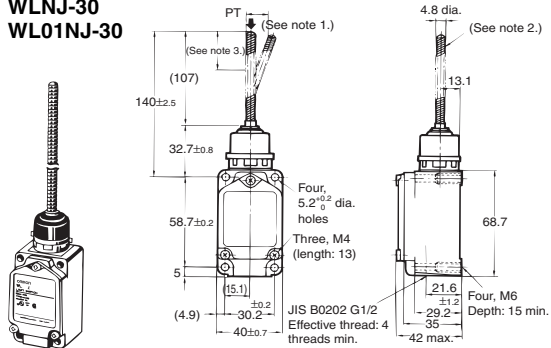
- Note 1.** For all models WL□ indicates a standard-load model and WL01□ indicates a microload model.  
**2.** Unless otherwise indicated, a tolerance of  $\pm 0.4$  mm applies to all dimensions.

#### Coil Spring WLNJ WL01NJ



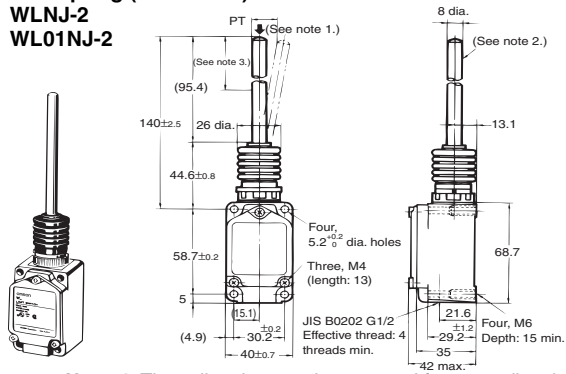
- Note: 1.** The coil spring may be operated from any direction except the axial direction (↓).  
**2.** Stainless steel coil spring  
**3.** Optimum operating range of the coil spring is within 1/3 of the entire length from the top end.

#### Coil Spring (Multi-wire) WLNJ-30 WL01NJ-30



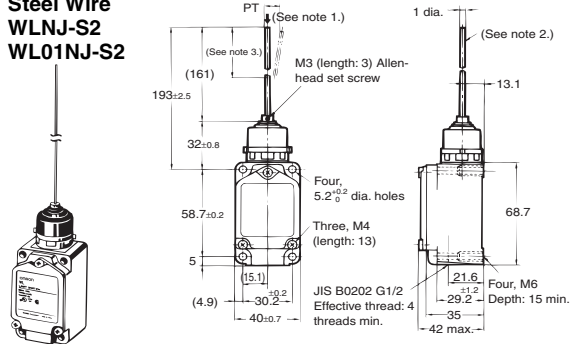
- Note: 1.** The coil spring may be operated from any direction except the axial direction (↓).  
**2.** Piano wire coil  
**3.** Optimum operating range of the coil spring is within 1/3 of the entire length from the top end.

#### Coil Spring (Resin Rod) WLNJ-2 WL01NJ-2



- Note: 1.** The coil spring may be operated from any direction except the axial direction (↓).  
**2.** Polyamide resin rod  
**3.** Optimum operating range of the rod is within 1/3 of the entire length from the top end.

#### Steel Wire WLNJ-S2 WL01NJ-S2



- Note: 1.** The coil spring may be operated from any direction except the axial direction (↓).  
**2.** Stainless steel wire  
**3.** Optimum operating range of the wire is within 1/3 of the entire length from the top end.

| Operating characteristics                 | WLNJ<br>WL01NJ<br>(See note.) | WLNJ30<br>WL01NJ30<br>(See note.) | WLNJ-2<br>WL01NJ-2<br>(See note.) | WLNJ-S2<br>WL01NJ-S2<br>(See note.) |
|-------------------------------------------|-------------------------------|-----------------------------------|-----------------------------------|-------------------------------------|
| Operating force: OF max.<br>Pretravel: PT | 1.47 N<br>20±10 mm            | 1.47 N<br>20±10 mm                | 1.47 N<br>40±20 mm                | 0.28 N<br>40±20 mm                  |

**Note:** These values are taken from the top end of the wire or spring.

# Standard Models

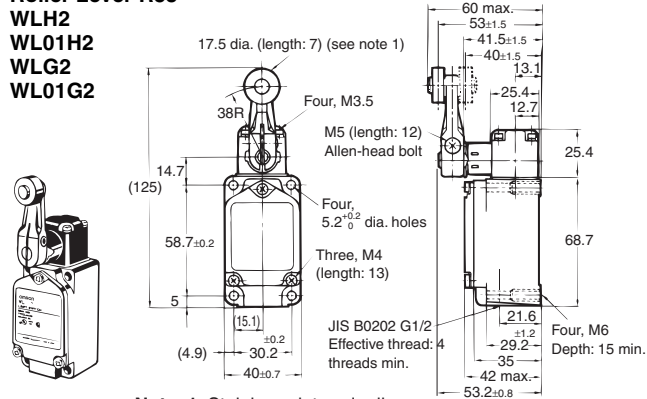
## Overtravel

### General-purpose/High-sensitivity Models

- Note 1.** For all models WL□ indicates a standard-load model and WL01□ indicates a microload model.
- 2.** One-side operation is not possible with the general-purpose and high-sensitivity models.
- 3.** Unless otherwise indicated, a tolerance of  $\pm 0.4$  mm applies to all dimensions.

#### Roller Lever R38

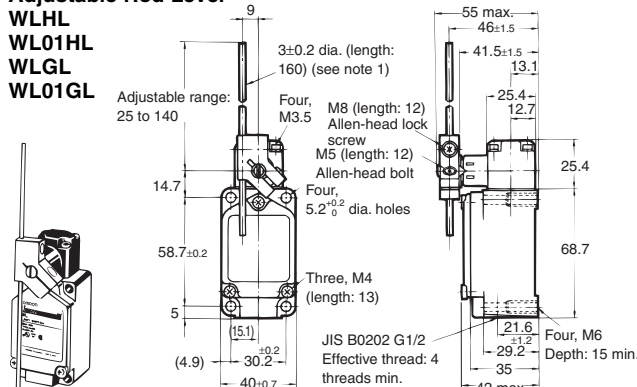
WLH2  
WL01H2  
WLG2  
WL01G2



- Note: 1.** Stainless sintered roller
- 2.** WL□G2 is identical to other models except in the shape of the set position marker plate.
- 3.** The built-in switch for WLH2 is W-10FB3.
- 4.** The built-in switch for WLG2 is W-10FB3-8.

#### Adjustable Rod Lever

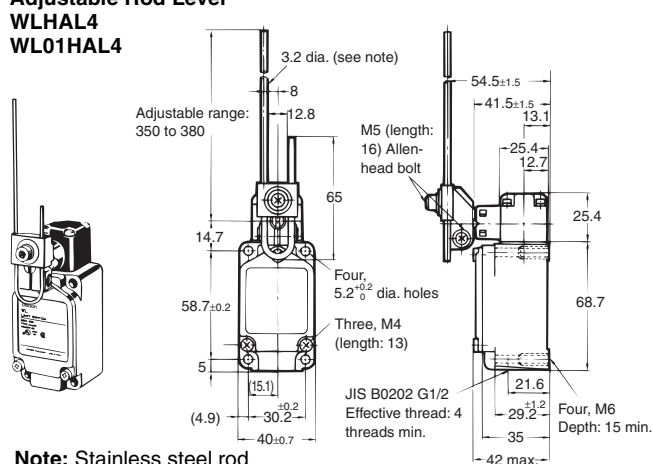
WLHL  
WL01HL  
WLGL  
WL01GL



- Note: 1.** WL□GL is identical to other models except in the shape of the set position marker plate.
- 2.** The built-in switch for WLHL is W-10FB3.
- 3.** The built-in switch for WLGL is W-10FB3-8.

#### Adjustable Rod Lever

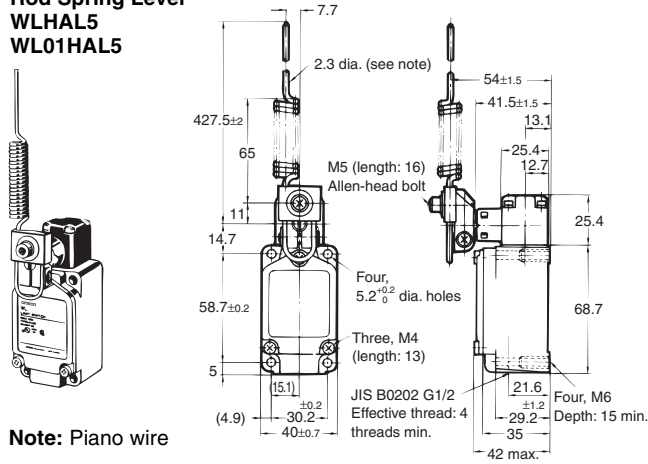
WLHAL4  
WL01HAL4



**Note:** Stainless steel rod

#### Rod Spring Lever

WLHAL5  
WL01HAL5



**Note:** Piano wire

OF and RF for WLH12 and WL01H12, with a lever length of 89 mm.

| Operating characteristics | WLH12,<br>WL01H12 | WLG12,<br>WL01G12 |
|---------------------------|-------------------|-------------------|
| OF                        | 4.18 N            | 4.18 N            |
| RF                        | 0.42 N            | 0.42 N            |

| Operating characteristics      | WLH2<br>WL01H2 | WLG2<br>WL01G2 | WLHL<br>WL01HL<br>(See note 3.) | WLGL<br>WL01GL<br>(See note 3.) | WLHAL4<br>WL01HAL4<br>(See note 4.) | WLHAL5<br>WL01HAL5 |
|--------------------------------|----------------|----------------|---------------------------------|---------------------------------|-------------------------------------|--------------------|
| Operating force: OF max.       | 9.81 N         | 9.81 N         | 2.84 N                          | 2.84 N                          | 0.98 N                              | 0.90 N             |
| Release force: RF min.         | 0.98 N         | 0.98 N         | 0.25 N                          | 0.25 N                          | 0.15 N                              | 0.09 N             |
| Pretravel: PT                  | 15±5°          | 10°+2°/-1°     | 15±5°                           | 10°+2°/-1°                      | 15±5°                               | 15±5°              |
| Overtravel: OT min.            | 55°            | 65°            | 55°                             | 65°                             | 55°                                 | 55°                |
| Movement differential: MD max. | 12°            | 7°             | 12°                             | 7°                              | 12°                                 | 12°                |

- Note 1.** With WLHAL4, WL01HAL4, WLHAL5, and WL01HAL5, the actuator's tare is large, so depending on the installation direction, they may not be properly reset. Always install so that the actuator is facing downwards.
- 2.** The operating characteristics of WLH12, WL01HL12, WLG12, and WL01G12 are measured at the lever length of 38 mm.
- 3.** The operating characteristics of WLHL, WL01HL, WLGL, and WL01GL are measured at the rod length of 140 mm.
- 4.** The operating characteristics of WLHAL4, and WL01HAL4 are measured at the rod length of 380 mm.

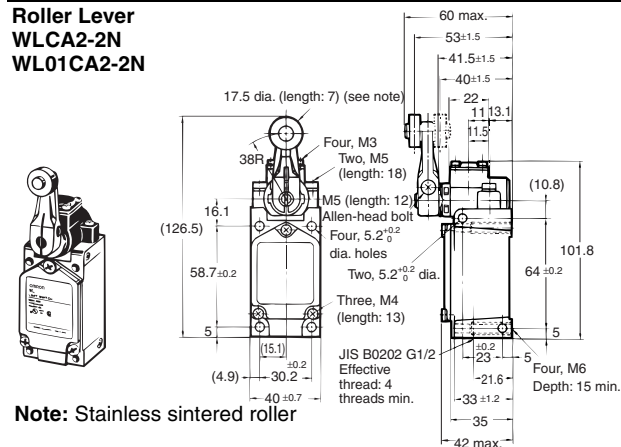
# ■ Standard Models

## Overtravel

## Side-installation Models

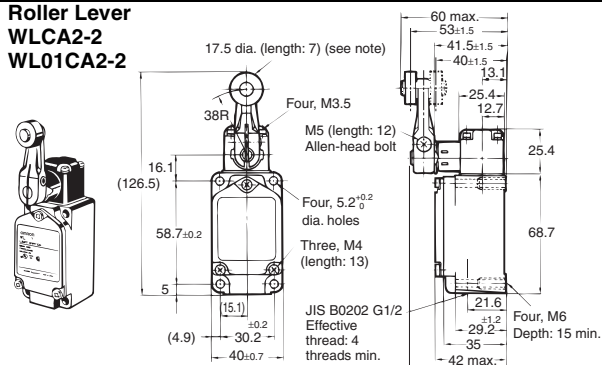
- Note 1.** For all models WL□ indicates a standard-load model and WL01□ indicates a microload model.
- 2.** With the side-installation models, 90° operation on one side is possible by simply changing the direction of the cam.
- 3.** Unless otherwise indicated, a tolerance of  $\pm 0.4$  mm applies to all dimensions.

### Roller Lever WLCA2-2N WL01CA2-2N



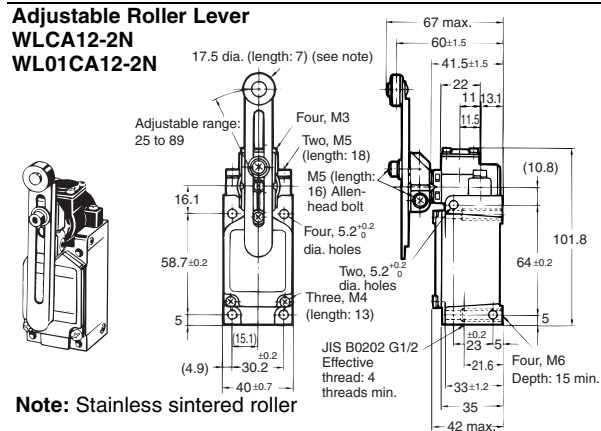
**Note:** Stainless sintered roller

### Roller Lever WLCA2-2 WL01CA2-2



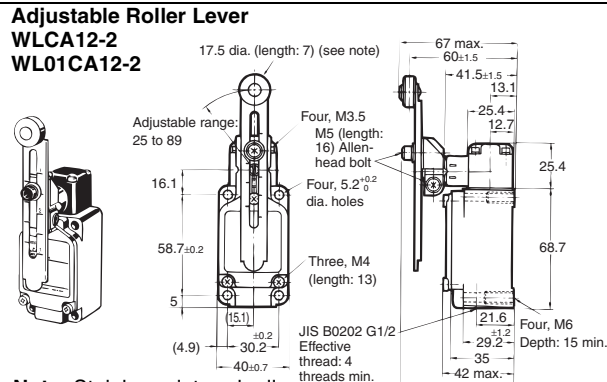
**Note:** Stainless sintered roller

### Adjustable Roller Lever WLCA12-2N WL01CA12-2N



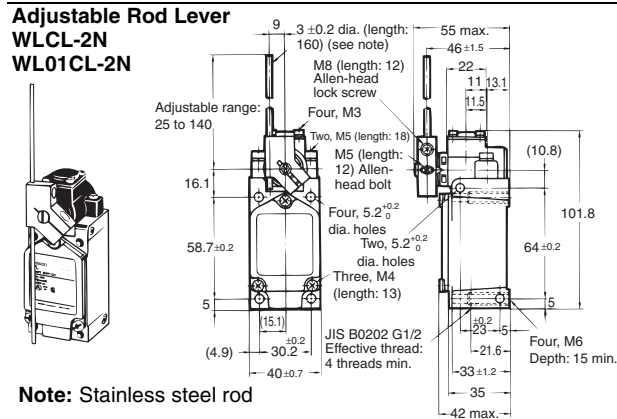
**Note:** Stainless sintered roller

### Adjustable Roller Lever WLCA12-2 WL01CA12-2



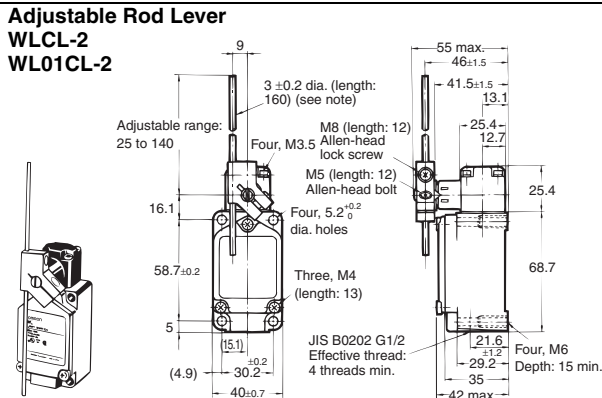
**Note:** Stainless sintered roller

### Adjustable Rod Lever WLCL-2N WL01CL-2N



**Note:** Stainless steel rod

### Adjustable Rod Lever WLCL-2 WL01CL-2



| Operating characteristics      | WLCA2-2N<br>WL01CA2-2N | WLCA12-2N<br>WL01CA12-2N<br>(See note 1.) | WLCL-2N<br>WL01CL-2N<br>(See note 2.) | WLCA2-2<br>WL01CA2-2 | WLCA12-2<br>WL01CA12-2<br>(See note 1.) | WLCL-2<br>WL01CL-2<br>(See note 2.) |
|--------------------------------|------------------------|-------------------------------------------|---------------------------------------|----------------------|-----------------------------------------|-------------------------------------|
| Operating force: OF max.       | 9.61 N                 | 9.61 N                                    | 2.84 N                                | 8.83 N               | 8.83 N                                  | 2.55 N                              |
| Release force: RF min.         | 1.18 N                 | 1.18 N                                    | 0.25 N                                | 0.49 N               | 0.49 N                                  | 0.1 N                               |
| Pretravel: PT                  | 20°                    | 20°                                       | 20°                                   | 25°±5°               | 25°±5°                                  | 25°±5°                              |
| Overtravel: OT min.            | 70°                    | 70°                                       | 70°                                   | 60°                  | 60°                                     | 60°                                 |
| Movement differential: MD max. | 10°                    | 10°                                       | 10°                                   | 16°                  | 16°                                     | 16°                                 |

OF and RF for WLCA12-2N and WL01CA12-2N, with a lever length of 89 mm.

| Operating characteristics | WLCA12-2N,<br>WL01CA12-2N |
|---------------------------|---------------------------|
| OF                        | 4.10 N                    |
| RF                        | 0.50 N                    |

- Note 1.** The operating characteristics of WLCA12-2N and WL01CA12-2N are measured at the lever length of 38 mm.
- 2.** The operating characteristics of WLCL-2N and WL01CL-2N are measured at the rod length of 140 mm.

# ■ Sensor I/O Connector Switches

## Direct-wired Connector/Prewired Connector Models

**Note:** Refer to page 186 for applicable Cables.

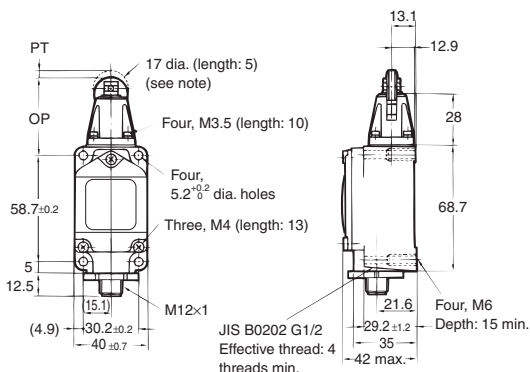
### Top-roller Plunger

WLD2

**Note 1.** Unless otherwise indicated, a tolerance of  $\pm 0.4$  mm applies to all dimensions.

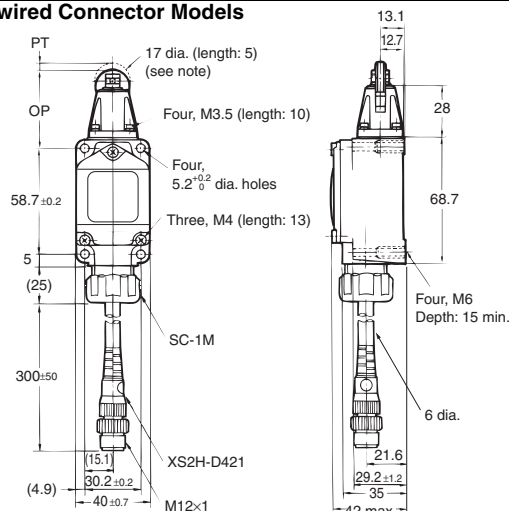
**2.** The following diagrams are for a indicator-equipped models.

#### Direct-wired Connector Models



**Note:** Stainless sintered roller

#### Pre-wired Connector Models



**Note:** Stainless sintered roller

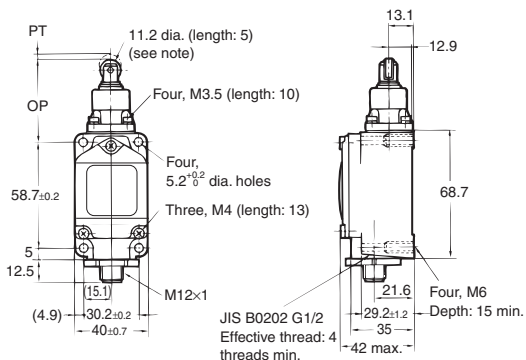
### Sealed Top-roller Plunger

WLD28

**Note 1.** Unless otherwise indicated, a tolerance of  $\pm 0.4$  mm applies to all dimensions.

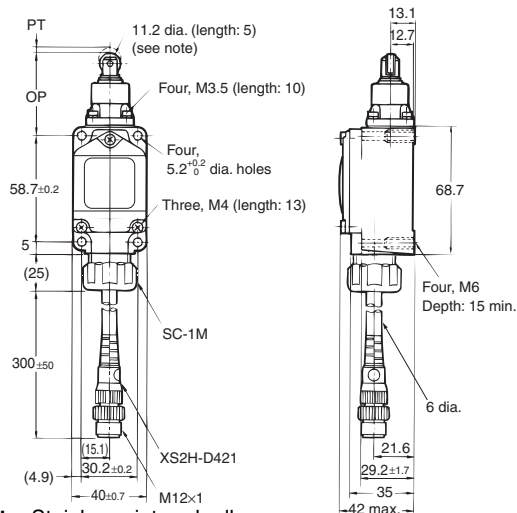
**2.** The following diagrams are for a indicator-equipped model.

#### Direct-wired Connector Models



**Note:** Stainless sintered roller

#### Pre-wired Connector Models



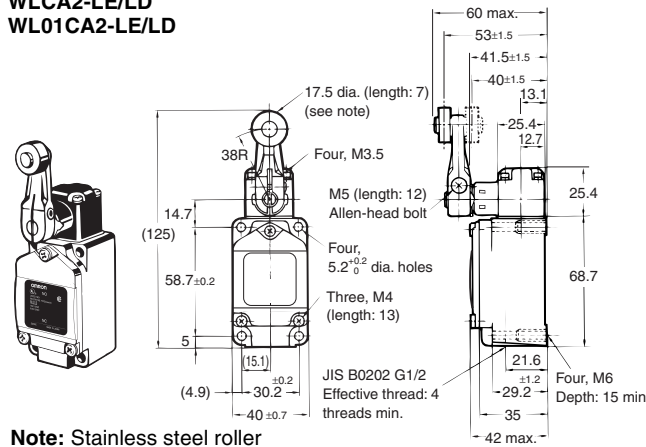
**Note:** Stainless sintered roller

| Operating characteristics       | Top-roller plunger actuator | Sealed top-roller plunger actuator |
|---------------------------------|-----------------------------|------------------------------------|
| Operating force: OF max.        | 26.67 N                     | 16.67 N                            |
| Release force: RF min.          | 8.92 N                      | 4.41 N                             |
| Pretravel: PT max.              | 1.7 mm                      | 1.7 mm                             |
| Overtravel: OT min.             | 5.6 mm                      | 5.6 mm                             |
| Movement differential: MD max.  | 1 mm                        | 1 mm                               |
| Operating position: OP          | 44±0.8 mm                   | 44±0.8 mm                          |
| Total travel position: TTP max. | 39.5 mm                     | 39.5 mm                            |

# Indicator-equipped Models

## Roller Lever

WLCA2-LE/LD  
WL01CA2-LE/LD



Note: Stainless steel roller

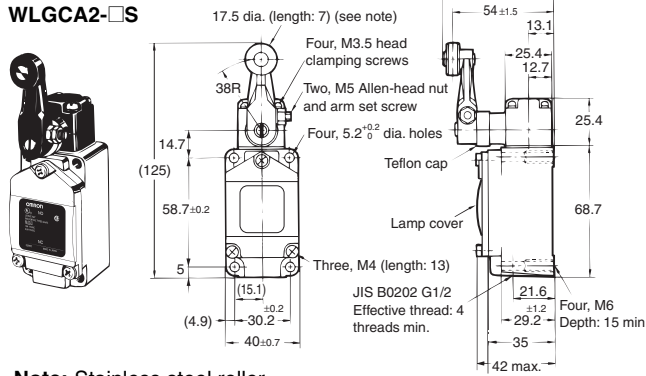
Note: Unless otherwise indicated, a tolerance of  $\pm 0.4$  mm applies to all dimensions.

| Operating characteristics | WLCA2-LE/LD<br>WL01CA2-LE/LD |
|---------------------------|------------------------------|
| OF max.                   | 13.34 N                      |
| RF min.                   | 2.23 N                       |
| PT                        | 15 $\pm$ 5°                  |
| OT min.                   | 30°                          |
| MD max.                   | 12°                          |

## Spatter-prevention Models

### Roller Lever (Screw Terminals)

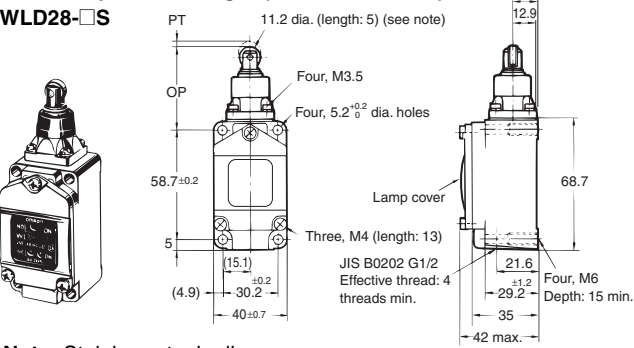
WLCA2-□S/WL01□□S  
WLH2-□S/WLG2-□S  
WLGCA2-□S



Note: Stainless steel roller

### Sealed Top-roller Plunger (Screw Terminals)

WLD28-□S



Note: Stainless steel roller

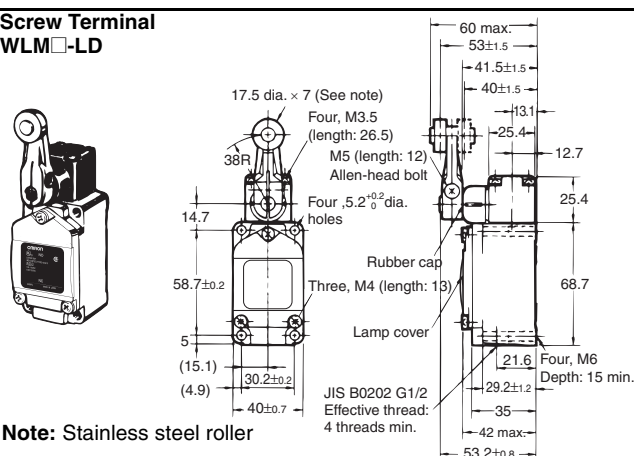
Note: Unless otherwise indicated, a tolerance of  $\pm 0.4$  mm applies to all dimensions.

| Operating characteristics       | Roller Lever |                   |                                   |                                   | Sealed Top-roller Plunger |
|---------------------------------|--------------|-------------------|-----------------------------------|-----------------------------------|---------------------------|
|                                 | Basic        | Overtravel models |                                   | High-precision                    |                           |
|                                 |              | General-purpose   | High-sensitivity                  |                                   |                           |
| Operating force: OF max.        | 13.34 N      | 9.81 N            | 9.81 N                            | 13.34 N                           | 16.67 N                   |
| Release force: RF min.          | 2.23 N       | 0.98 N            | 0.98 N                            | 1.47 N                            | 4.41 N                    |
| Pretravel: PT                   | 15°±5°       | 15°±5°            | 10° <sup>+2°</sup> <sub>-1°</sub> | 10° <sup>+2°</sup> <sub>-1°</sub> | 1.7 mm max.               |
| Overtravel: OT min.             | 30°          | 55°               | 65°                               | 40°                               | 5.6 mm                    |
| Movement differential: MD max.  | 12°          | 12°               | 7°                                | 3°                                | 1 mm                      |
| Operating position: OP          | ---          | ---               | ---                               | ---                               | 4±0.8 mm                  |
| Total travel position: TTP max. | ---          | ---               | ---                               | ---                               | 39.5 mm                   |

# Long-life Models

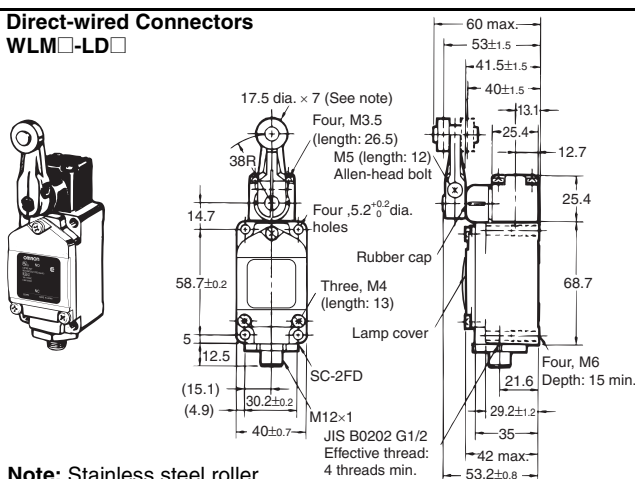
## Rotating Lever Models

### Screw Terminal WLM□-LD



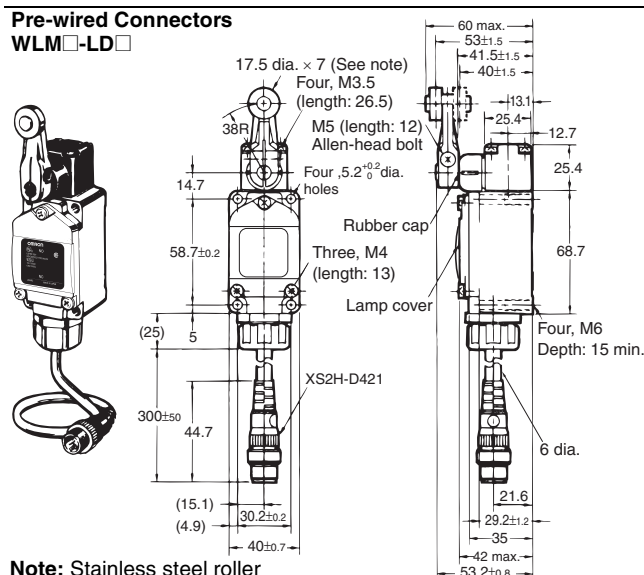
Note: Stainless steel roller

### Direct-wired Connectors WLM□-LD□



Note: Stainless steel roller

### Pre-wired Connectors WLM□-LD□



Note: Stainless steel roller

Note: Unless otherwise indicated, a tolerance of  $\pm 0.4$  mm applies to all dimensions.

| Operating characteristics      | WLMCA2-LD□<br>Basic models | WLMH2-LD□<br>General-purpose<br>overtravel models | WLMG2-LD□<br>High-sensitivity<br>overtravel models | WLMGCA2-LD□<br>High-precision models |
|--------------------------------|----------------------------|---------------------------------------------------|----------------------------------------------------|--------------------------------------|
| Operating force: OF max.       | 9.81 N                     | 9.81 N                                            | 9.81 N                                             | 13.34 N                              |
| Release force: RF min.         | 0.98 N                     | 0.98 N                                            | 0.98 N                                             | 1.47 N                               |
| Pretravel: PT max.             | 15±5°                      | 15±5°                                             | 10° <sup>+2°</sup> <sub>-1°</sub>                  | 5° <sup>+2°</sup> <sub>0°</sub>      |
| Overtravel: OT min.            | 30°                        | 55°                                               | 65°                                                | 40°                                  |
| Movement differential: MD max. | 12°                        | 12°                                               | 7°                                                 | 3°                                   |

# Actuators (Levers Only)

**Note 1.** Lever: Only rotating lever models are illustrated.

**2.** Unless otherwise indicated, a tolerance of  $\pm 0.4$  mm applies to all dimensions.

**3.** When using the adjustable roller (rod) lever, make sure that the lever is facing downwards. Use caution, as telegraphing (the Switch turns ON and OFF repeatedly due to inertia) may occur.

|                                                  |                                                                               |                                                                         |                                                                         |
|--------------------------------------------------|-------------------------------------------------------------------------------|-------------------------------------------------------------------------|-------------------------------------------------------------------------|
| <p><b>WL-1A100</b><br/><b>Standard Lever</b></p> | <p><b>WL-1A115</b><br/><b>Resin Roller</b></p>                                | <p><b>WL-1A400</b><br/><b>Bearing Roller</b></p>                        | <p><b>WL-1A118</b><br/><b>Nylon Roller:<br/>Roller Width: 30 mm</b></p> |
| <p><b>WL-1A105</b><br/><b>Double Nut</b></p>     | <p><b>WL-1A103S</b><br/><b>Spatter Prevention</b></p>                         | <p><b>WL-1A200</b><br/><b>Lever Length: 50<br/>Roller Width: 15</b></p> | <p><b>WL-1A300</b><br/><b>Lever Length: 63</b></p>                      |
| <p><b>WL-2A100</b></p>                           | <p><b>WL-2A111</b><br/><b>Resin Roller</b></p>                                | <p><b>WL-2A107</b><br/><b>Double Nut</b></p>                            | <p><b>WL-2A108</b><br/><b>Resin Roller</b></p>                          |
| <p><b>WL-2A122</b></p>                           | <p><b>WL-2A106</b></p> <p><b>Note:</b> Can be installed on the rear side.</p> | <p><b>WL-2A130</b></p>                                                  | <p><b>WL-2A104</b></p>                                                  |

# Actuators (Levers Only)

**Note 1.** Unless otherwise indicated, a tolerance of  $\pm 0.4$  mm applies to all dimensions.

**2.** When using the adjustable roller (rod) lever, make sure that the lever is facing downwards. Use caution, as telegraphing (the Switch turns ON and OFF repeatedly due to inertia) may occur.

|                        |                        |                        |                                   |
|------------------------|------------------------|------------------------|-----------------------------------|
| <p><b>WL-2A110</b></p> | <p><b>WL-2A105</b></p> | <p><b>WL-1A106</b></p> | <p><b>WL-1A110</b></p>            |
| <p><b>WL-4A100</b></p> | <p><b>WL-4A201</b></p> | <p><b>WL-3A100</b></p> | <p><b>WL-3A106 Double Nut</b></p> |
| <p><b>WL-3A108</b></p> | <p><b>WL-3A200</b></p> | <p><b>WL-3A203</b></p> | <p><b>WL-4A112</b></p>            |
| <p><b>WL-2A129</b></p> | <p><b>WL-5A101</b></p> | <p><b>WL-5A103</b></p> | <p><b>WL-5A105</b></p>            |

# Precautions

Refer to the "Precautions for All Switches" on page 17 and "Precautions for General-purpose Limit Switches (Including Multiple Limit Switches, Mechanical Touch Switches, High-precision Switches, Touch Switches, On-site Flexible Switches; Not Including Safety Switches)" on page 23.

## Correct Use

When a rod or wired-type actuator is used, do not touch the top end of the actuator. Doing so may result in injury.

Applicable models: WLHAL5 and WL01HAL5 Rod Spring Levers and WLNJ-S2 and WL01NJ-S2 Steel-wire Actuators.

A short-circuit may cause damage to the Switch, so insert a circuit breaker fuse, of 1.5 to 2 times the rated current, in series with the Switch.

In order to meet EN approval ratings, use a 10-A fuse that corresponds to IEC269, either a gI or gG for general-purpose types and spatter-prevention models only.

## Precautions for Correct Use

When wiring terminal screws, use M4 round crimp terminals and tighten screws to the recommended torque. Wiring with bare wires, or incorrect crimp terminals, or not tightening screws to the recommended torque can lead to short-circuits, leakage current, and fire.

When performing internal wiring there is a chance of short-circuit, leakage current, or fire, so be sure to protect the inside of the Switch from splashes of oil or water, corrosive gases, and cutting powder.

Using an inappropriate connector or assembling Switches incorrectly (assembly, tightening torque) can result in malfunction, leakage current, or fire, so be sure to read the instruction manual thoroughly beforehand.

Even when the connector is assembled and set correctly, the end of the cable and the inside of the Switch may come in contact. This can lead to malfunction, leakage current, or fire, so be sure to protect the end of the cable from splashes of oil or water and corrosive gases.

## Environmental Precautions

When the Switch is used in locations subject to splashes of water or oil, the material of the seal, which ensures the sealing properties of the Switch, may undergo changes in shape and quality. This is due to deterioration (including expansion and contraction), and may result in reduced performance, ineffective return, and ineffective sealing (leading to ineffective contact, insulation, leakage current, and fire). Confirm the possible effects of the operating environment on the Switch before use.

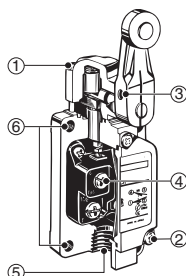
## Built-in Switch

Do not remove or replace the built-in switch. If the position of the built-in switch moves, it can cause reduced performance, and if the insulation sheet moves (separator), the insulation may become ineffective.

## Tightening Torque

If screws are too loose they can lead to an early malfunction of the Switch, so ensure that all screws are tightened using the correct torque.

In particular, when changing the direction of the Head, make sure that all screws are tightened again to the correct torque. Do not allow foreign objects to fall into the Switch.



| No. | Type                                     | Torque           |
|-----|------------------------------------------|------------------|
| ①   | Head mounting screw                      | 0.78 to 0.88 N·m |
| ②   | Cover mounting screw                     | 1.18 to 1.37 N·m |
| ③   | Allen-head bolt (for securing the lever) | 4.90 to 5.88 N·m |
| ④   | Terminal screw                           | 0.59 to 0.78 N·m |
| ⑤   | Connector                                | 1.77 to 2.16 N·m |
| ⑥   | Main Unit screws                         | 4.90 to 5.88 N·m |

## Installing the Switch

To install the Switch, make a mounting panel, as shown in the following diagram, and tighten screws using the correct torque.

| General-purpose Models, Spatter-prevention Models, and Long-life Models    | Side installation for 90° Operation Models                     |
|----------------------------------------------------------------------------|----------------------------------------------------------------|
| <p>Four, 5.2<sup>+0.2</sup><sub>0</sub> dia. mounting holes or M5 taps</p> | <p>Two, 5.2<sup>+0.2</sup><sub>0</sub> dia. mounting holes</p> |

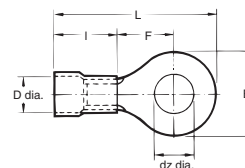
## Connectors

Either the easy-to-use Allen-head nut or the SC Connector can be used as connectors. To ensure high-sealing properties, use the SC Connector. Consult your OMRON representative for details.

## Wiring

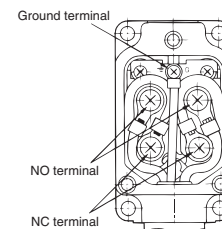
Use 1.25-mm lead wires and M4-insulation covered crimp terminals for wiring.

### Crimp Terminal External Dimensions



|          |          |
|----------|----------|
| dz dia.: | 4.3      |
| D dia.:  | 4.5      |
| B:       | 8.5      |
| L:       | 21.0     |
| F:       | 7.8      |
| ℓ:       | 9.0 (mm) |

### Wiring Method Switch Box Section



**Note:** The ground terminal is only installed on models with ground terminals.

## Rotating Lever Set Position (General-purpose or Spatter-prevention Switches Only)

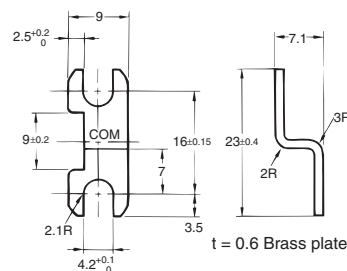
All rotating lever models, except the fork lever lock models, have a set position marker plate. (See page 56.) After operation, set the indicator needle on the marker plate so that is in the convex section of the bearing.

## Operation Set Position (Long-life Switches Only)

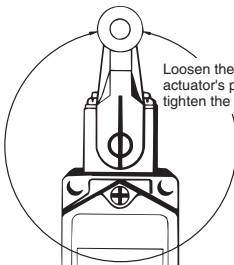
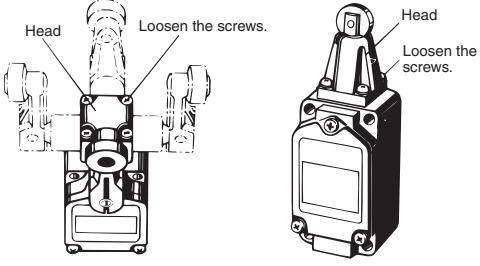
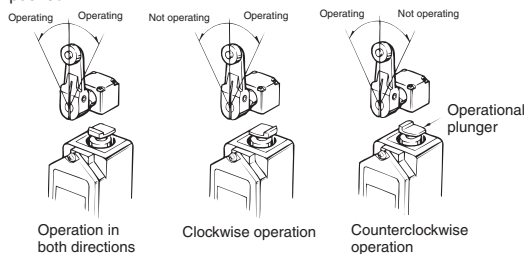
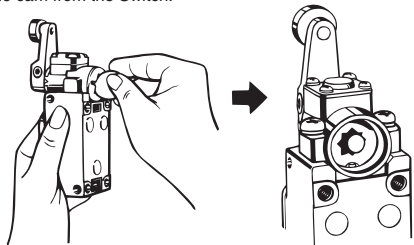
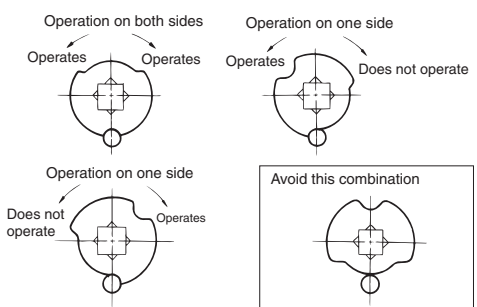
For all Long-life Switching, there is a set position marker slit on the rubber cap of the head. After operation, set the slit on the rubber cap so that the fluorescent color on the shaft section can be seen.

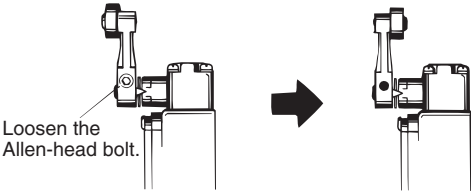
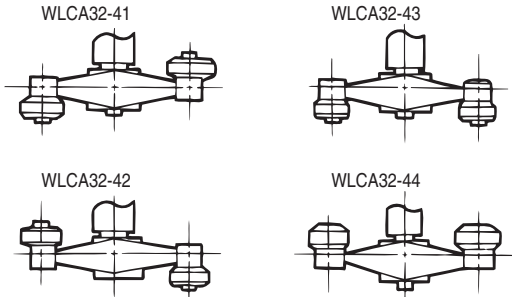
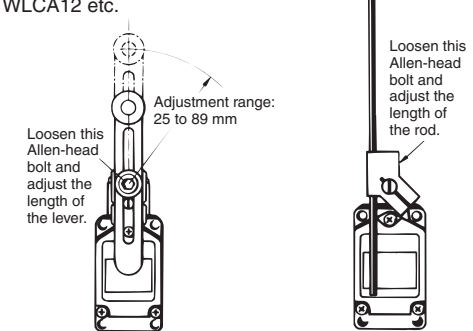
## Terminal Plate

By using a short circuit plate, as shown in the following diagram, the Switch can be fabricated into a single-polarity double-break switch. When ordering, specify WL Terminal Plate (product code: WL-9662F).



# Installation

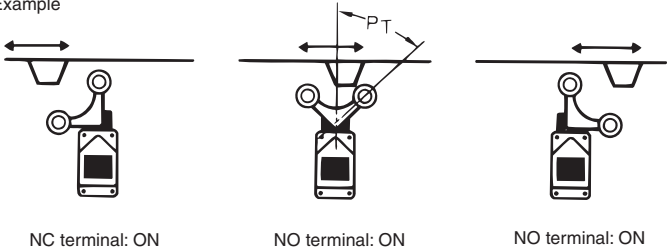
| Item                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Applicable models and Actuators                                                                                                                                                                                                                                                                                                              | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Changing the Installation Position of the Actuator</b><br>By loosening the Allen-head bolt on the actuator lever, the position of the actuator can be set anywhere within the 360°. With Indicator-equipped Switches, the actuator lever comes in contact with the top of the indicator cover, so use caution when rotating and setting the lever. When the lever only moves forwards and backwards, it will not contact the lamp cover (except for long-life models).                                                           | Roller Levers: WLCA2, WL01CA2, WLCA2-2, WL01CA2-2, WLH2, WL01H2, WLG2, WL01G2, WLMCA2□, WLMH2□, WLMG2□, WLMGCA2□<br>Adjustable Roller Levers: WLCA12, WL01CA12, WLCA12-2, WL01CA12-2, WLH12, WL01H12, WLG12, WL01G12,<br>Adjustable Rod Levers: WLCL, WL01CL, WLCL-2, WL01CL-2, WLHL, WL01HL, WLGL, WL01GL                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Changing the Orientation of the Head</b><br>By removing the screws in the four corners of the Head, the Head can be set in any of the four directions. Be sure to change the plunger for internal operations at the same time. (The operational plunger does not need to be changed on general-purpose and high-sensitivity overtravel models.) The roller plunger can be set in either two positions at 90°. WLCA2-2N and WL01CA2-2N can be set only in either the forward or backward direction.                               | Roller Levers: WLCA□, WL01CA□, WLCA□-2, WL01CA□-2, WLGCA□, WLMCA2□, WLMH2□, WLMG2□, WLMGCA2□<br>Adjustable Rod Levers: WLCL, WL01CL, WLCL-2, WL01CL-2<br>Horizontal Plungers: WLS□, WL01SD□<br>Top-roller Plungers: WLD2, WL01D2<br>Sealed Top-roller Plungers: WLD28, WL01D28<br><b>Note:</b> Does not include -RP60 Series or -141 Series. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Changing the Operating Direction</b><br>By removing the Head on models which can operate on one-side only, and then changing the direction of the operational plunger, one of three operating directions can be selected. For overtravel 90° operation models, one of three operating directions can be selected by loosening the rubber holder using either a coin or a flat-blade screwdriver and changing the direction of the internal rubber section. The tightening torque for the screws on the Head is 0.78 to 0.88 N·m. | Roller Levers: WLCA2, WL01CA2, WLGCA2, WLMGCA2□<br>Adjustable Roller Levers: WLCA12, WL01CA12<br>Adjustable Rod Levers: WLCL, WL01CL<br>Overtravel Models: WLCA□-2N, WL01CA□-2N                                                                                                                                                              | <p><b>One-side Operation for General-purpose and High-precision Switches</b></p> <p>The output of the Switch will be changed, regardless of which direction the lever is pushed.</p> <p>The output of the Switch will only be changed when the lever is pushed in one direction.</p>  <p><b>Cam Direction Changing Procedure for Overtravel, 90° Operation Switches</b></p> <p>Loosen the cam holder with a coin or screwdriver. Take out the cam from the Switch.</p> <p>Change the direction of the cam as required by your intended operation and then reinstall the cam.</p>  <p><b>Relationship of cam to operation as observed from the rear of Switch</b></p>  |

| Item                                                                                                                                                                                                                   | Applicable models and Actuators                                                                                                                                                        | Details                                                                                                                                                                                                                                                                                 |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Installing the Roller on the Inside</b><br>By installing the roller lever in the opposite direction, the roller can be installed on the inside. (Set so that operation can be completed within a 180° level range.) | Roller Levers: WLCA□, WL01CA□, WLH□, WLCA□-2, WL01CA□-2, WLMCA2□, WLMH2□, WLMG2□, WLMGCA2□, WLG□, except for the adjustable roller levers.<br>Fork Lever Locks: WLCA32-4□, WL01CA32-4□ |  <p>Loosen the Allen-head bolt.</p>                                                                                                                                                                   |
| <b>Selecting the Roller Position</b><br>There are four types of fork lever lock for use depending on the roller position.                                                                                              | Fork Lever Locks: WLCA32-4□, WL01CA32-4□                                                                                                                                               |  <p><b>Note:</b> An explanation of the operation of fork lever locks is provided after this table.</p>                                                                                                |
| <b>Adjusting the Length of the Rod or Lever</b><br>The length of the rod or lever can be adjusted by loosening the Allen-head bolt.                                                                                    | Adjustable Roller Levers: WLCA12, WL01CA12 etc.<br>Adjustable Rod Levers: WLCL, WL01CL, etc.                                                                                           |  <p>WLCA12 etc.</p> <p>Loosen this Allen-head bolt and adjust the length of the lever.</p> <p>Adjustment range: 25 to 89 mm</p> <p>Loosen this Allen-head bolt and adjust the length of the rod.</p> |

## ■ Operation of Fork Lever Locks

The fork lever lock is configured so that the dog pushes the lever to reverse the output and this reversed state is maintained even after the dog continues on. If the dog then pushes the lever from the opposite direction, the lever will return to its original position.

Example



ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.  
 To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.