

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.
- Approved standards: EC/IEC, UL, CSA, CCC (Chinese standard).

Contact your OMRON representative for information on approved models.



Be sure to read *Safety Precautions* on page 39 to 42 and *Safety Precautions for All Limit Switches*.

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

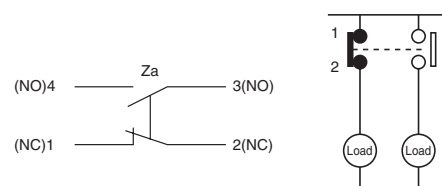
Mechanical Endurance of 30 Million Operations Long-life Models for High-frequency Applications

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.



Degree of Protection; IP67

O-rings, cover seals, and other measures provide a water-proof, 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*

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

* Operation indicators are provided on Indicator-equipped switches, Spatter-prevention Basic Switches, and Long-life Basic Switches.

Operation indicator

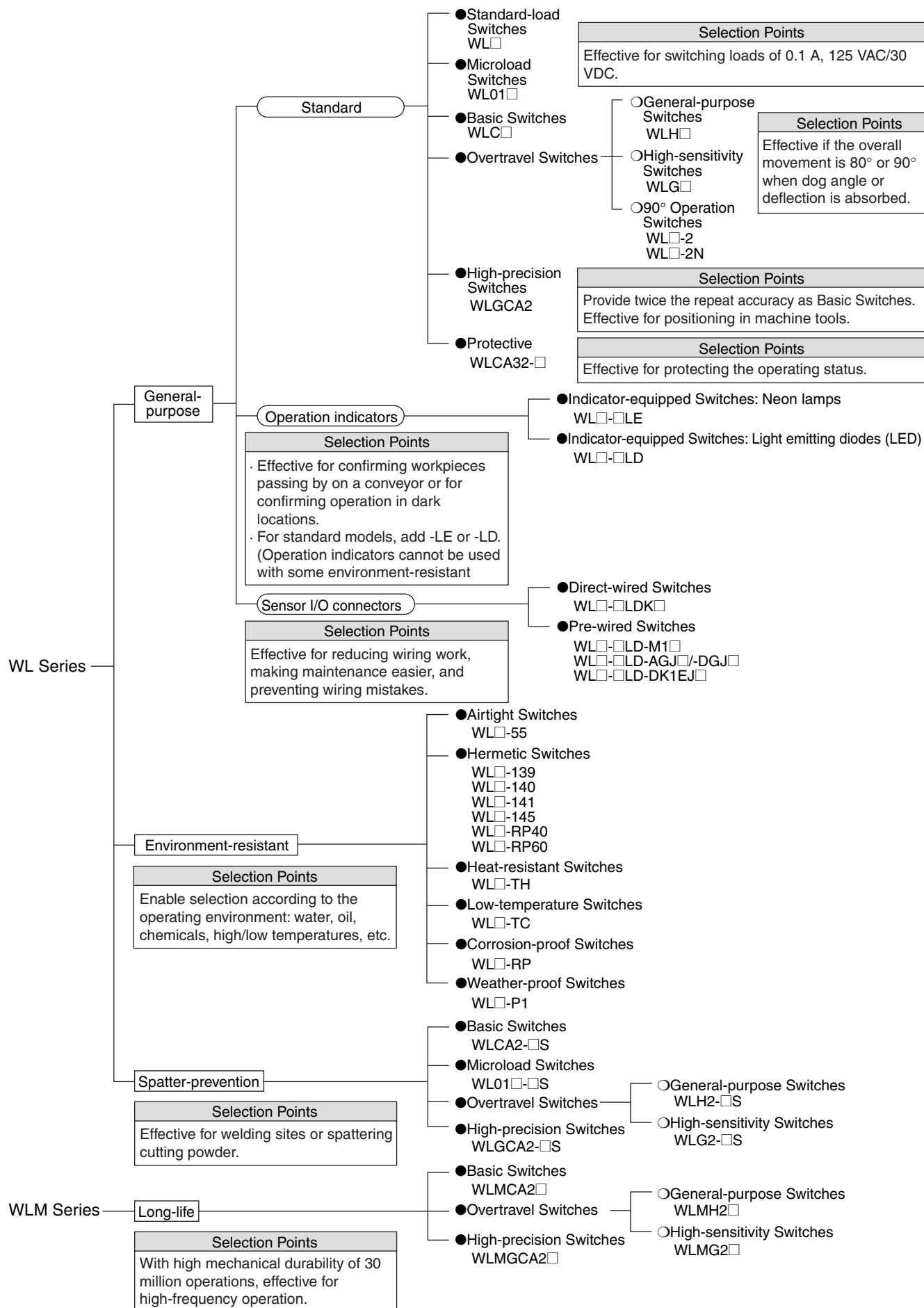


Models with Connectors to Reduce Wiring

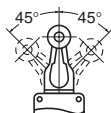
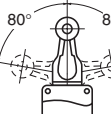
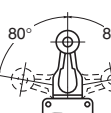
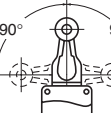
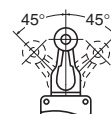
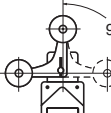
Reduce wiring with one-touch connection. Models with direct-wired and prewired connectors that make Switch replacement easier are also available.

Product Configuration

Selection by Purpose



Tables of Models
General-purpose Switches
Spatter-prevention Switches
Long-life Switches
Heads (Roller levers only)

| Type | General purpose | Features | Head specifications | | Spatter prevention | Long-life |
|-----------------------------|-----------------|--|---|------------------------|--------------------|-----------|
| | Model | Total travel (TT) | One-side operation | Head mounting | Model | Model |
| Basic | WLC□ | <ul style="list-style-type: none"> With a Roller Lever  | Possible *1 (Except for long-life models.) | Any of 4 directions | WLCA2-□S | WLMCA2□ |
| General-purpose Overtravel | WLH□ | <ul style="list-style-type: none"> Overtravel is large, making setting the dog easier. Mounting is compatible with WLH2.  | Not possible *2 | Any of 4 directions | WLH2-□S | WLH2□ |
| High-sensitivity Overtravel | WLG□ | <ul style="list-style-type: none"> Operation is highly sensitive with only 10° pretravel. Overtravel is large, making setting the dog easier. Mounting is compatible with WLG2.  | Not possible *2 | Any of 4 directions | WLG2-□S | WLMG2□ |
| Overtravel, 90° operation | WL□-2 | <ul style="list-style-type: none"> Overtravel is large, making setting the dog easier. Mounting is compatible with WLCA2-2.  | Not possible *2 | Any of 4 directions | — | — |
| | WL□-2N | | Possible *1 | Either of 2 directions | | |
| High-precision | WLGCA2 | <ul style="list-style-type: none"> Repeat accuracy is twice that basic models. Operation is highly sensitive with only 5° pretravel. Ideal for positioning, e.g.,  | Possible *1 | Any of 4 directions | WLGCA2-□S | WLMGCA2□ |
| Maintained | WLCA32-□ | <ul style="list-style-type: none"> 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.  | — | Any of 4 directions | — | — |

*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□ | • XS2H-series Pre-wired Connector built-in | WL□-□S-M1□J-1 WL□-□S-DGJS03 | WLM□-LD-M1J WLM□-LD-□GJ□ |
| | WL□-□LD-□GJ□ WL□-□LD-DK1EJ□ | | | |
| Conduit (screw terminal) | WL□-□ WL□-□G1□ WL□-□G□ WL□-□Y□ WL□-□TS□ | <ul style="list-style-type: none"> G1/2 with no ground terminal G1/2 with ground terminal Pg13.5 with ground terminal M20 with ground terminal 1/2 14NPT with ground terminal | — | WLM□-LD — — — — |

Environment-resistant Switches

| Type | Item 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. Note: Use the SC Connector for the conduit opening. | All models except the low-temperature and heat-resistant models Note: Models can be produced using standard actuators. |
| Hermetic seal (Molded terminals/ Anti-coolant) | WL□-139 | | Refer to page 25 for information on the environment-resistant construction of Switches with Hermetic Seals. | All models except the low-temperature and heat-resistant models Note: Models can be produced using standard actuators. Only the WLCA2, WLGA2, 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. | <ul style="list-style-type: none"> • 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). | <ul style="list-style-type: none"> • 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. | <ul style="list-style-type: none"> • 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. • The Head, box, and cover are yellow. | 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. | <ul style="list-style-type: none"> • 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 basic (WLCA2/CA12/CL), general-purpose overtravel (WLH2/H12/HL) and high-sensitivity overtravel (WLG2/G12/GL) models (excluding heat-resistant models). |

* Weather Resistance, Cold Resistance, and Heat Resistance




Silicon rubber is used to increase resistance to weather, cold, and heat. Silicon rubber, however, can generate silicon gas. (This can occur at room temperature, but the amount of silicon gas generated increases at higher temperatures.) Silicon gas will react as a result of arc energy and form silicon oxide (SiO₂). If silicon oxide accumulates on the contacts, contact interference can occur and can interfere with the device. Before using a Switch, test it under actual application conditions (including the environment and operating frequency) to confirm that no problems will occur in actual.

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  Water-resistant to IP67. | WL□ | General-purpose Switches |
| | High-temperature | +5°C ————— +120°C  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 *1 |
| | Low-temperature | -40°C ————— +40°C  To increase resistance to cold, silicon rubber and other measures are used. | WL□-TC | Low-temperature Switches *1 |
| Operating environment | Outdoors | 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. | WL□-P1 | Weather-proof Switches *1 |
| | 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 *1 |
| | Water drops and mist | Uses an airtight built-in switch. | WL□-55 | Airtight Switches *1 |
| | 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 *1, *2 |
| | | 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 *1, *2 |
| | | 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 *1, *2 |
| | 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.) The Head opening is protected from cutting powder. -141: The Head section is molded from epoxy resin; Head direction cannot be changed. -145: The Head section is molded from epoxy resin; Head can be in any of 4 directions. | WL□-141, -145 | Hermetic, Molded-terminal Switches *1, *2 (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, Molded-terminal Switches *1, *2 |
| | 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 |

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

*2. Refer to page 25 for information on the construction of Hermetic Switches.

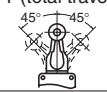
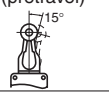
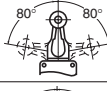
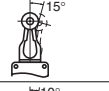
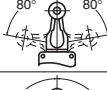
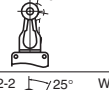
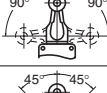
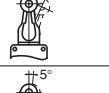
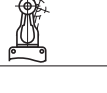
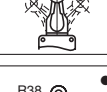
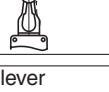













According to Application Conditions

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

According to Ease of Installation and Maintenance

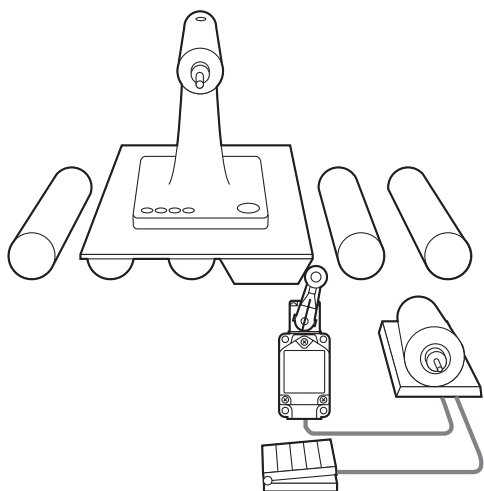
| | Conditions | Key specifications | Models | |
|----------------------|---|---|---|--|
| Operation indicator | Daily inspections and maintenance checks | Switching light-ON between operating/not operating. (Switching not possible for models with molded terminals.) Neon lamp 125 to 250 VAC | WL□-LE General-purpose, Indicator-equipped (Neon Lamp) Switches WL□-LES Spatter-prevention, Indicator-equipped (Neon Lamp) Switches | |
| | | Switching light-ON between operating/not operating. (Switching not possible for models with molded terminals.) LED 10 to 115 VAC/DC | WL□-LD General-purpose, Indicator-equipped (LED) Switches WL□-LDS Spatter-prevention, Indicator-equipped (LED) Switches | |
| Wiring specification | Screw tightening and installation | Screw terminals. No ground terminal. Conduit size: G1/2 | WL□ WLM□ | General-purpose Switches Long-life Switches |
| | | Screw terminals. Ground terminal. Conduit size: 4 sizes | WL□ | General-purpose Switches |
| | One-touch connector attachment | Direct-wired connector, 2-conductor. Greatly reduces wiring work. Water-proof to IP67. | WL□-□LDK13 General-purpose, Direct-wired Connector Switches WLM□-LDK13 Long-life, Direct-wired Connector Switches | |
| | | Direct-wired connector, 4-conductor. Greatly reduces wiring work. Water-proof to IP67. | WL□-□LDK43 General-purpose, Direct-wired Connector Switches WLM□-LDK43 Long-life, Direct-wired Connector Switches | |
| | Connector attachment in control and relay boxes | Pre-wired connector, 2-conductor. Greatly reduces wiring work. Water-proof to IP67. | WL□-□LD-M1J General-purpose, Pre-wired Connector Switches WL□-□S-M1J-1 Spatter-prevention, Pre-wired Connector Switches WLM□-LD-M1J Long-life, Pre-wired Connector Switches | |
| | | Pre-wired connector, 4-conductor. Greatly reduces wiring work. Water-proof to IP67. | WL□-□LD-□GJO3 General-purpose, Pre-wired Connector Switches WL□-□S-□GJSO3 Spatter-prevention, Pre-wired Connector Switches WLM□-LD-□GJO3 Long-life, Pre-wired Connector Switches | |

According to Form of Operation

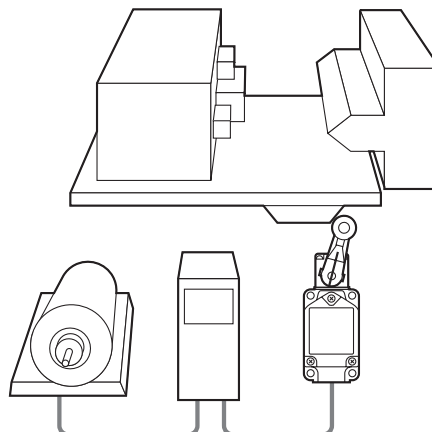
| Detection object | | Key specifications | | Models | | |
|------------------|---|--|--|--------------------------------|---|--|
| Operation angles | General | TT (total travel)  | PT (pretravel)  | WLCA2 WLCA2-□S WLMCA2 | General-purpose Switches Spatter-prevention Switches Long-life Switches | |
| | Passing dogs |  |  | WLH2 WLH2-□S WLMH2 | General-purpose Switches Spatter-prevention Switches Long-life Switches | |
| | Passing dogs, high sensitivity |  |  | WLG2 WLG2-□S WLMG2 | General-purpose Switches Spatter-prevention Switches Long-life Switches | |
| | Passing dogs |  | WLCA2-2  WLCA2-2N  | WLCA2-2 WLCA2-2N | General-purpose Switches General-purpose Switches | |
| | High precision |  |  | WLGCA2 WLGCA2-□S WLMGCA2 | General-purpose Switches Spatter-prevention Switches Long-life Switches | |
| Actuators | Dogs and workpieces (Mounts in any of 4 directions) |  R38 | ● Short lever ● One-Horizontal operation possible. (WLCA□ only) ● Head mounts in any of 4 directions. | | WL□2 WL□2-□S WLM□2 | Roller Lever Actuators Roller Lever Actuators Roller Lever Actuators |
| | |  R50 | ● Medium lever ● One-Horizontal operation possible. (WLCA□ only) ● Head mounts in any of 4 directions. | | WL□2-7 | Roller Lever Actuators |
| | |  R63 | ● Long lever ● One-Horizontal operation possible. (WLCA□ only) ● Head mounts in any of 4 directions. | | WL□2-8 | Roller Lever Actuators |
| | Adjustable between dog and lever |  R25 to 89 | ● One-Horizontal operation possible. (WLCA□ only) ● Head mounts in any of 4 directions. | | WL□12 | Adjustable Roller Lever Actuators |
| | Dogs or workpieces with large deflection |  25 to 140 | ● One-Horizontal operation possible. (WLCL only) ● Head mounts in any of 4 directions. | | WL□L | Adjustable Rod Lever Actuators |
| | |  350 to 380 | ● One-Horizontal operation not possible. ● Head mounts in any of 4 directions. | | WLHAL4 | Adjustable Rod Lever Actuator |
| | |  427.5 | ● One-Horizontal operation not possible. ● Head mounts in any of 4 directions. | | WLHAL5 | Rod Spring Lever Actuator |
| | Round-trip operation of passing dogs |  | ● Head mounts in any of 4 directions. | | WLCA32-41 | Fork Lever Lock Actuator |
| | |  | ● Head mounts in any of 4 directions. | | WLCA32-42 | Fork Lever Lock Actuator |
| | |  | ● Head mounts in any of 4 directions. | | WLCA32-43 | Fork Lever Lock Actuator |
| | |  | ● Head mounts in any of 4 directions. | | WLCA32-44 | Fork Lever Lock Actuator |
| | Cams or workpieces with vertical movement |  | | | WLD | Top Plunger Actuator |
| | |  | ● Head mounts in any of 4 directions. | | WLSD | Horizontal Plunger Actuator |
| | | | | | WLD3 | Top-ball Plunger Actuator |
| | | | ● Head mounts in any of 4 directions. | | WLSD3 | Horizontal-ball Plunger Actuator |
| | | | ● Available in sealed models. (WLD28□) | | WLD2 WLD28 | Top-roller Plunger Actuator Sealed Top-roller Plunger Actuator |
| | | | | | WLSD2 | Horizontal-roller Plunger Actuator |

Application Examples

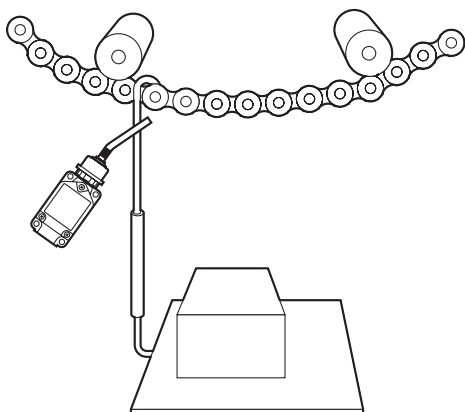
Positioning on Production Lines



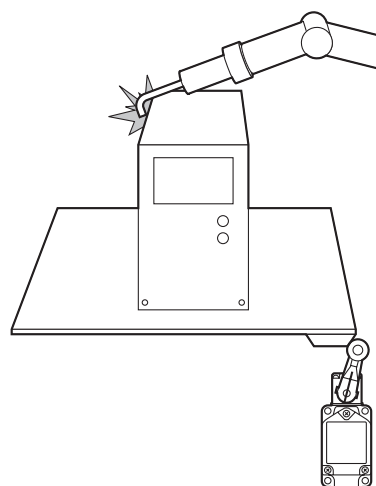
High-precision Positioning of Machine Tools



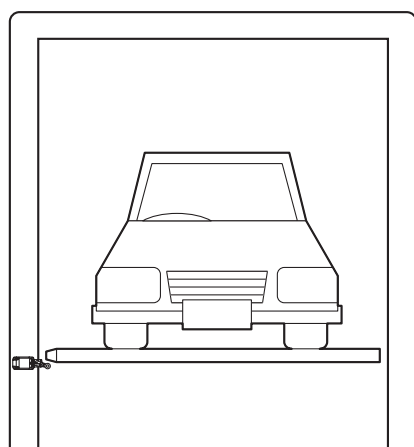
Positioning on Suspended Conveyors



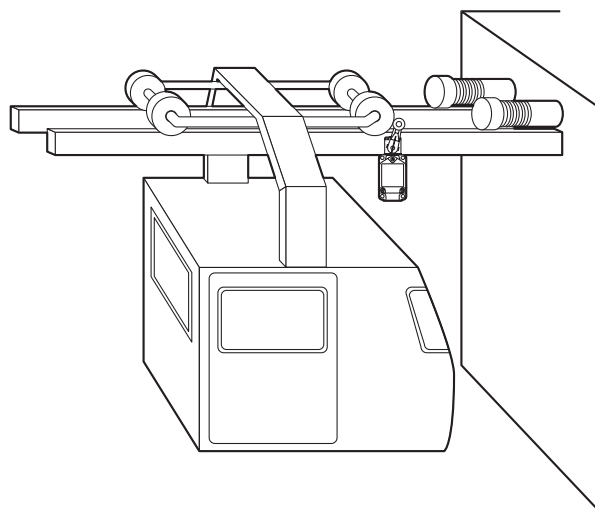
Pallet Detection in Arc Welding Lines



Multilevel Car Parking Towers



Limit Detection in Transport Systems



Model Number Structure

Model Number Legend (Not all combinations are possible. Ask your OMRON representative for details.)

General-purpose and Environment-resistant Switches

WL -
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10)

(1) Electrical Rating

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

Note: Dimensions are the same as the standard models.

(3) Environment-resistant Model Specifications

| Blank | Standard |
|-------|--------------------|
| RP | Corrosion-proof *1 |
| P1 | Weather-proof *1 |

Note: Dimensions are the same as the standard models.

*1. Refer to page 4 for applicable models.

(4) Built-in Switch Type

| Blank | Standard |
|-------|------------------------|
| 55 | Hermetically sealed *1 |

Note: Dimensions are the same as the standard models.

*1. Refer to page 4 for applicable models.

(5) Temperature Specifications

| Blank | Standard: -10°C to +80°C |
|-------|------------------------------------|
| TH | Heat-resistant: +5°C to +120°C *1 |
| TC | Low-temperature: -40°C to +40°C *1 |

Note: Dimensions are the same as the standard models.

*1. Refer to page 4 for applicable models.

(7) Conduit Size, Ground Terminal Specifications *2

| Blank | G1/2 without ground terminal |
|-------|--------------------------------|
| G1 | G1/2 with ground terminal |
| G | Pg13.5 with ground terminal |
| Y | M20 with ground terminal |
| TS | 1/2-14NPT with ground terminal |

Note: Dimensions are the same as the standard models.

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

(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). * |
| 140 | Airtight built-in switch with cables attached and molded conduit opening, cover, and box interior cover screws (cover cannot be removed). * |
| 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. * |
| 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. * |
| 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. * |
| 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). * |

* Refer to page 4 for applicable models.

(2) Actuator and Head Specifications

| Symbol | Actuator type | Switch without lever |
|---------|--|----------------------|
| CA2 | Roller lever: Standard model R38 | WLCA2 |
| CA2-7 | Roller lever: Standard model R50 | WLCA2 |
| CA2-8 | Roller lever: Standard model R63 | WLCA2 |
| H2 | Roller lever: General-purpose overtravel model, 80° | WLRH2 |
| G2 | Roller lever: High-sensitivity overtravel, 80° | WLRG2 |
| CA2-2 | Roller lever: Overtravel, 90° | WLCA2-2 |
| CA2-2N | Roller lever: Overtravel, 90° | WLCA2-2N |
| GCA2 | Roller lever: High-precision R38 | WLRGCA2 |
| CA12 | Adjustable roller lever: Standard | WLCA2 |
| 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° | WLCA2-2 |
| CA12-2N | Adjustable roller lever: Overtravel, 90° | WLCA2-2N |
| CL | Adjustable rod lever: Standard, 25 to 140 mm | WLRCL |
| 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 | WLCA2-2 |
| CL-2N | Adjustable rod lever: Overtravel, 90°, 25 to 140 mm | WLCA2-2N |
| HAL5 | Rod spring lever: General-purpose overtravel model, 80° | WLRH2 |
| CA32-41 | Fork lever lock: Maintained, WL-5A100 | WLCA32 |
| CA32-42 | Fork lever lock: Maintained, WL-5A102 | WLCA32 |
| CA32-43 | Fork lever lock: Maintained, WL-5A104 | WLCA32 |
| 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 | 115 VAC/VDC | Approx. 0.5 mA |
| | | 10 to 24 VAC/VDC | Approx. 0.4 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 Switches

Sensor I/O Connector Switches

WL ☐☐☐-☐☐ LD ☐
(1) (2) (3) (4) (5)

(1) Electrical Rating

| | |
|-------|---------------|
| Blank | Standard load |
| 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 over-travel model |
| 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.

Spatter-prevention Switches

WL ☐☐☐-☐☐ S ☐
(1) (2) (3) (4) (5)

(1) Electrical Rating

| | |
|-------|---------------|
| Blank | Standard load |
| 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 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

| | |
|------------|---|
| Blank | Screw terminal: G1/2 conduit |
| -M1J-1 *1 | Pre-wired Connector *2 (2-conductor: DC, NO wiring, connector pins No. 3, 4) |
| -M1GJ-1 *1 | Pre-wired Connector *2 (2-conductor: DC, NO wiring, connector pins No. 1, 4) |
| -DGJS03 *1 | Pre-wired Connector *2 (4-conductor: DC) |

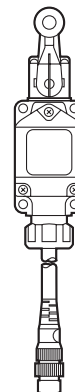
*1. Models with pre-wired connectors and DC specifications are approved by EN/IEC (CE marking) except for LE Models (Neon Lamp Models).

*2. With 0.3-m cable attached.

Direct-wired Connector



Pre-wired Connector



(4) Indicator Type

| | |
|----|-----------------------|
| LD | LED, 10 to 115 VAC/DC |
|----|-----------------------|

(5) Wiring Specifications

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

*1. Models with pre-wired connectors and DC specifications have EN/IEC approval (CE marking).

*2. 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, 10 to 115 VAC/DC |
|----|-----------------------|

(3) Wiring Specifications

| | |
|--------|---|
| Blank | Screw terminal: G1/2 conduit |
| K13A | Direct-wired Connector: 2-conductor, AC |
| K13 | Direct-wired Connector: 2-conductor, DC |
| K43A | Direct-wired Connector: 4-conductor, AC |
| K43 | Direct-wired Connector: 4-conductor, DC |
| -M1J | Pre-wired Connector: 2-conductor, DC * |
| -AGJ03 | Pre-wired Connector: 4-conductor, AC * |
| -DGJ03 | Pre-wired Connector: 4-conductor, DC * |

* With 0.3-m cable attached.




Ordering Information





General-purpose Switches





Standard Switches

Note: Models are also available with ground terminals.





Lever




| Item | | Actuator | 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 | — | — |

| Item | | Actuator | Adjustable roller lever  | Adjustable rod lever 25 to 140mm  | Adjustable rod lever 350 to 380mm  | Rod spring lever  |
|------------|------------------|---------------|---|---|---|--|
| | | | Model | Model | Model | Model |
| Basic | | Standard load | WLCA12 | WLCL | — | — |
| | | Microload | WL01CA12 | WL01CL | — | — |
| Overtravel | General-purpose | Standard load | WLH12 | WLHL | WLHAL4 | WLHAL5 |
| | | Microload | WL01H12 | WL01HL | — | — |
| | High-sensitivity | Standard load | WLG12 | WLGL | — | — |
| | | Microload | WL01G12 | WL01GL | — | — |
| | 90° operation | Standard load | WLCA12-2 | WLCL-2 | — | — |
| | | Microload | WL01CA12-2 | — | — | — |
| | | Standard load | WLCA12-2N | WLCL-2N | — | — |
| | | Microload | WL01CA12-2N | WL01CL-2N | — | — |





| Item | | Actuator | 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)  | Fork lever lock (with WL-5A104 plastic roller lever)  |
|------------|---------------|----------|--|---|--|--|
| | | | Model | Model | Model | Model |
| Maintained | Standard load | | WLCA32-41 | WLCA32-42 | WLCA32-43 | WLCA32-44 |
| | Microload | | WL01CA32-41 | — | WL01CA32-43 | WL01CA32-44 |

Plunger

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

| Item | | Actuator | Horizontal plunger  | Horizontal-roller plunger  | Horizontal-ball plunger  |
|--------------|---------------|----------|--|--|---|
| | | | Model | Model | Model |
| Side plunger | Standard load | | WLSD | WLSD2 | WLSD3 |
| | Microload | | WL01SD | WL01SD2 | WL01SD3 |





Flexible Rod




| Item | | Actuator | Coil spring (spring diameter: 6.5)  | Coil spring (spring diameter: 4.8)  | Coil spring (resin rod diameter: 8)  | Steel wire (wire diameter: 1)  |
|--------------|---------------|----------|--|---|---|---|
| | | | Model | Model | Model | Model |
| Flexible rod | Standard load | | WLNJ | WLNJ-30 | WLNJ-2 | WLNJ-S2 |
| | Microload | | WL01NJ | WL01NJ-30 | WL01NJ-2 | WL01NJ-S2 |




General-purpose Switches

Indicator-equipped Switches





Lever




| Actuator | | 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 | — | — | WLH12-LE |
| | | LED | — | — | WLH12-LD |
| | High-sensitivity | Neon lamp | — | — | WLG12-LE |
| | | LED | — | — | WLG12-LD |
| | 90° operation | Neon lamp | — | — | WLCA12-2LE |
| | | LED | — | — | WLCA12-2LD |
| | | Neon lamp | — | — | WLCA12-2NLE |
| | | LED | — | — | WLCA12-2NLD |
| High-precision | Neon lamp | WLGCA2-LE | — | — | — |
| | LED | WLGCA2-LD | — | — | — |

| Actuator | | 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 | WLHAL5-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 | — |





| Actuator | | 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 |
| Maintained | Neon lamp | WLCA32-41LE | WLCA32-42LE | WLCA32-43LE |
| | LED | WLCA32-41LD | — | WLCA32-43LD |

Plunger

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

| Actuator | | Horizontal plunger  | Horizontal-roller plunger  | Horizontal-ball plunger  |
|--------------|-----------|--|---|---|
| Item | | Model | Model | Model |
| Side plunger | Neon lamp | WLSD-LE | WLSD2-LE | WLSD3-LE |
| | LED | WLSD-LD | WLSD2-LD | WLSD3-LD |



Flexible Rod

| Actuator | | Coil spring (spring diameter: 6.5)  | Coil spring (spring diameter: 4.8)  | Coil spring (resin rod diameter: 8)  | Steel wire (wire diameter: 1)  |
|--------------|-----------|--|--|---|---|
| Item | | Model | Model | Model | Model |
| Flexible rod | Neon lamp | WLNJ-LE | WLNJ-30LE | WLNJ-2LE | WLNJ-S2LE |
| | LED | WLNJ-LD | WLNJ-30LD | WLNJ-2LD | WLNJ-S2LD |



General-purpose Switches

Sensor I/O Connector Switches

Direct-wired Connectors


| Actuator | Item | | | | | Basic | Overtravel | | High-precision |
|---|-------------|----|----|-------------------------|-------------------------------|---------------|------------------|--------------|----------------|
| | | | | | General-purpose | | High-sensitivity | | |
| | Wiring | | | | Built-in switch specification | Model | Model | Model | Model |
| <div>Roller lever</div>  | 2-conductor | DC | NO | connector pins No. 3, 4 | Standard | WLCA2-LDK13 | WLH2-LDK13 | WLG2-LDK13 | WLGA2-LDK13 |
| | | | | | Airtight seal | WLCA2-55LDK13 | WLH2-55LDK13 | WLG2-55LDK13 | WLGA2-55LDK13 |
| | 4-conductor | DC | | | Standard | WLCA2-LDK43 | WLH2-LDK43 | WLG2-LDK43 | WLGA2-LDK43 |
| | | | | | Airtight seal | WLCA2-55LDK43 | WLH2-55LDK43 | WLG2-55LDK43 | WLGA2-55LDK43 |
| <div>Top-roller plunger</div>  | 2-conductor | DC | NO | connector pins No. 3, 4 | Standard | WLD2-LDK13 | — | — | — |
| | | | | | Airtight seal | WLD2-55LDK13 | — | — | — |
| | 4-conductor | DC | | | Standard | WLD2-LDK43 | — | — | — |
| | | | | | Airtight seal | WLD2-55LDK43 | — | — | — |


Pre-wired Connectors


| | | | | | Item | Basic | Overtravel | | High-precision | | | | |
|---|-------------------------|----------------|---------------|---|-------------------------------|------------------|-------------------|----------------------------|-------------------|-----------------|---|---|---|
| | | | | | | | General-purpose | High-sensitivity | | | | | |
| Actuator | Wiring | | | | Built-in switch specification | Model | Model | Model | Model | | | | |
| <div>Roller lever</div>  | 2-conductor | DC | NO | connector pins No. 3, 4 | Standard | WLCA2-LD-M1J | WLH2-LD-M1J | WLG2-LD-M1J | WLGCA2-LD-M1J | | | | |
| | | | | Airtight seal | WLCA2-55LD-M1J | — | — | WLGCA2-55LD-M1J | | | | | |
| | | | NC | connector pins No. 1, 4 | Standard | WLCA2-LD-M1GJ | WLH2-LD-M1GJ | WLG2-LD-M1GJ | WLGCA2-LD-M1GJ | | | | |
| | | | | Airtight seal | WLCA2-55LD-M1GJ | — | WLG2-55LD-M1GJ | — | | | | | |
| | | 4-conductor | DC | | Standard | WLCA2-LD-DGJ03 | WLH2-LD-DGJ03 | WLG2-LD-DGJ03 | — | | | | |
| | | | | | Airtight seal | WLCA2-55LD-DGJ03 | — | WLG2-55LD-DGJ03 | WLGCA2-55LD-DGJ03 | | | | |
| | 3-conductor | DC | | connector pins No. 2, 3, 4 | Standard | WLCA2-LD-DK1EJ03 | — | WLG2-LD-DK1EJ03 | — | | | | |
| | | | | Airtight seal | WLCA2-55LD-DK1EJ03 | — | WLG2-55LD-DK1EJ03 | — | | | | | |
| | | | | <div>Top-roller plunger</div>  | 2-conductor | DC | NO | connector pins No. 3, 4 | Standard | WLD2-LD-M1J | — | — | — |
| | | | | | | | | Airtight seal | WLD2-55LD-M1J | — | — | — | |
| NC | connector pins No. 1, 4 | Standard | WLD2-LD-M1GJ | | | | — | — | — | | | | |
| | Airtight seal | WLD2-55LD-M1GJ | — | | | | — | — | | | | | |
| 4-conductor | DC | | Standard | | | WLD2-LD-DGJ03 | — | — | — | | | | |
| | | | Airtight seal | | | — | — | — | — | | | | |
| | | | 3-conductor | | | DC | | connector pins No. 2, 3, 4 | Standard | WLD2-LD-DK1EJ03 | — | — | — |
| | | | | | | | | Airtight seal | WLD2-55LD-DK1EJ03 | — | — | — | |


Environment-resistant Switches


Note: Models are also available with ground terminals.


| Item | | | | Actuator | | Roller lever R38  | | |
|-----------------|------------------|------|--------------|--------------|---------------|--|--------------|-----------|
| | | | | | | Basic | Overtravel | |
| | | | | 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 | |
| | Anti-coolant | -141 | No indicator | | WLCA2-141 | WLH2-141 | WLG2-141 | |
| | | | Indicator | NC wiring | WLCA2-141LD2 | — | WLG2-141LD2 | |
| | | | | NO wiring | WLCA2-141LD3 | WLH2-141LD3 | WLG2-141LD3 | |
| | | | 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 | |
| Low-temperature | | | | | WLCA2-TC | WLH2-TC | WLG2-TC | |
| Corrosion-proof | | | | | WLCA2-RP | WLH2-RP | WLG2-RP | |
| Weather-proof | | | | | WLCA2-P1 | WLH2-P1 | WLG2-P1 | |




| Item | | | | Actuator | | Roller lever R38  | | | | | |
|-----------------|------------------|------|--------------|--------------|----------------|--|-------------|-----------------|----------------|-------------|--|
| | | | | | | Overtravel | | | High-precision | | |
| | | | | | | 90° (-2 model) | | 90° (-2N model) | | | |
| | | | | | | Model | | Model | | Model | |
| Airtight seal | | | | No indicator | | WLCA2-255 | | WLCA2-2N55 | | WLGCA2-55 | |
| | | | | Indicator | LED | WLCA2-255LD | | WLCA2-2N55LD | | WLGCA2-55LD | |
| | | | | | Neon | WLCA2-255LE | | WLCA2-2N55LE | | WLGCA2-55LE | |
| Hermetic seal | Molded terminals | -139 | No indicator | | WLCA2-2139 | | WLCA2-2N139 | | WLGCA2-139 | | |
| | | | Indicator | NC wiring | WLCA2-2139LD2 | | — | | WLGCA2-139LD2 | | |
| | | | | NO wiring | WLCA2-2139LD3 | | — | | WLGCA2-139LD3 | | |
| | | -140 | No indicator | | — | | WLCA2-2N140 | | WLGCA2-140 | | |
| | | | Indicator | NC wiring | — | | — | | WLGCA2-140LD2 | | |
| | | | | NO wiring | — | | — | | WLGCA2-140LD3 | | |
| | Anti-coolant | -141 | No indicator | | — | | — | | WLGCA2-141 | | |
| | | | Indicator | NC wiring | — | | — | | — | | |
| | | | | NO wiring | — | | — | | WLGCA2-141LD3 | | |
| | | | No indicator | | WLCA2-2RP60 | | — | | WLGCA2-RP60 | | |
| | | | Indicator | NC wiring | WLCA2-2RP60LD2 | | — | | WLGCA2-RP60LD2 | | |
| | | | | NO wiring | WLCA2-2RP60LD3 | | — | | WLGCA2-RP60LD3 | | |
| Heat-resistant | | | | No indicator | | WLCA2-2TH | | WLCA2-2NTH | | WLGCA2-TH | |
| Low-temperature | | | | | | WLCA2-2TC | | WLCA2-2NTC | | WLGCA2-TC | |
| Corrosion-proof | | | | | | — | | — | | WLGCA2-RP | |

| Actuator | | | | Adjustable roller lever  | | | |
|-----------------|------------------|------|--------------|---|-----------------|------------------|----------|
| | | | | Basic | Overtravel | | |
| | | | | | General-purpose | High-sensitivity | |
| Item | | | | Model | Model | Model | |
| Airtight seal | | | No indicator | | WLCA12-55 | — | — |
| | | | Indicator | LED | WLCA12-55LD | — | — |
| | | | | Neon | WLCA12-55LE | — | — |
| Hermetic seal | Molded terminals | -139 | No indicator | WLCA12-139 | — | — | |
| | | -140 | | WLCA12-140 | — | — | |
| | | -141 | | WLCA12-141 | — | — | |
| | Anti-coolant | | | WLCA12-RP60 | — | — | |
| Heat-resistant | | | | No indicator | WLCA12-TH | WLH12-TH | WLG12-TH |
| Low-temperature | | | | | WLCA12-TC | WLH12-TC | WLG12-TC |
| Corrosion-proof | | | | | WLCA12-RP | WLH12-RP | WLG12-RP |
| Weather-proof | | | | | WLCA12-P1 | WLH12-P1 | WLG12-P1 |




| Item | | Actuator | Adjustable roller lever  | |
|-----------------|--------------|------------|---|-----------------|
| | | | Overtravel | |
| | | | 90° (-2 model) | 90° (-2N model) |
| | | | Model | Model |
| Heat-resistant | No indicator | WLCA12-2TH | WLCA12-2NTH | |
| Low-temperature | | WLCA12-2TC | WLCA12-2NTC | |

| Item | | | | Actuator | | Adjustable rod lever 25 to 140 mm  | | |
|-----------------|------------------|------|--------------|--------------|-----------------|--|------------------|---|
| | | | | Basic | Overtravel | | | |
| | | | | | General-purpose | | High-sensitivity | |
| | | | | | Model | Model | Model | |
| Airtight seal | | | | No indicator | | WLCL-55 | — | — |
| | | | | Indicator | LED | WLCL-55LD | — | — |
| | | | | | Neon | — | — | — |
| Hermetic seal | Molded terminals | -139 | No indicator | WLCL-139 | — | — | | |
| | | -140 | | WLCL-140 | — | — | | |
| | | -141 | | — | — | — | | |
| | Anti-coolant | | | WLCL-RP60 | — | — | | |
| Heat-resistant | | | | No indicator | WLCL-TH | WLHL-TH | WLGL-TH | |
| Low-temperature | | | | | WLCL-TC | WLHL-TC | WLGL-TC | |
| Corrosion-proof | | | | | WLCL-RP | WLHL-RP | WLGL-RP | |
| Weather-proof | | | | | WLCL-P1 | WLHL-P1 | WLGL-P1 | |

| Item | | Actuator | Adjustable rod lever 25 to 140 mm  | |
|-----------------|--------------|----------|---|-----------------|
| | | | Overtravel | |
| | | | 90° (-2 model) | 90° (-2N model) |
| | | | Model | Model |
| Heat-resistant | No indicator | WLCL-2TH | WLCL-2NTH | |
| Low-temperature | | WLCL-2TC | WLCL-2NTC | |
| Corrosion-proof | | WLCL-2RP | — | |





| Actuator | | | | Top-roller plunger  | Sealed top-roller plunger  | Horizontal plunger  | |
|-----------------|------------------|------|--------------|--|---|--|-----------|
| Item | | | | Model | Model | Model | |
| Airtight seal | | | No indicator | | WLD2-55 | WLD28-55 | WLSD-55 |
| | | | Indicator | LED | WLD2-55LD | WLD28-55LD | WLSD-55LD |
| | | | | Neon | WLD2-55LE | WLD28-55LE | — |
| Hermetic seal | Molded terminals | -139 | No indicator | WLD2-139 | WLD28-139 | WLSD-139 | |
| | | -140 | | — | WLD28-140 | — | |
| | Anti-coolant | | | WLD2-RP60 | WLD28-RP60 | WLSD-RP60 | |
| Heat-resistant | | | No indicator | WLD2-TH | WLD28-TH | WLSD-TH | |
| Low-temperature | | | | WLD2-TC | — | WLSD-TC | |
| Corrosion-proof | | | | WLD2-RP | WLD28-RP | WLSD-RP | |

Note: The standard cable length for models with airtight seals is 5 m.

| Actuator | | | | Horizontal-roller plunger  | Coil spring (spring diameter: 6.5)  | Coil spring (resin rod diameter: 8)  | |
|-----------------|------------------|------|--------------|---|--|---|------------|
| Item | | | | Model | Model | Model | |
| Airtight seal | | | No indicator | | WLSD2-55 | WLNJ-55 | WLNJ-255 |
| | | | Indicator | LED | WLSD2-55LD | WLNJ-55LD | WLNJ-255LD |
| | | | | Neon | — | — | — |
| Hermetic seal | Molded terminals | -139 | No indicator | WLSD2-139 | WLNJ-139 | — | |
| | | -140 | | WLSD2-140 | WLNJ-140 | WLNJ-2140 | |
| | Anti-coolant | | | WLSD2-RP60 | WLNJ-RP60 | WLNJ-2RP60 | |
| Heat-resistant | | | No indicator | WLSD2-TH | WLNJ-TH | — | |
| Low-temperature | | | | WLSD2-TC | WLNJ-TC | WLNJ-2TC | |
| Corrosion-proof | | | | WLSD2-RP | WLNJ-RP | WLNJ-2RP | |




Note: The standard cable length for models with airtight seals is 5 m.

Spatter-prevention Switches

| Actuator | | | 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 *1 | | | |
|--|-------------|----|----------------------------|-----------------|------------------|----------------|
| | | | Basic | Overtravel | | High-precision |
| | | | | General-purpose | High-sensitivity | |
| Actuator | | | Model | Model | Model | Model |
|  Roller lever, screw terminal | | | WLMCA2-LD | WLMH2-LD | WLMG2-LD | WLMGCA2-LD |
|  Roller lever, direct-wired connector | 2-conductor | AC | WLMCA2-LDK13A | WLMH2-LDK13A | WLMG2-LDK13A | WLMGCA2-LDK13A |
| | | DC | WLMCA2-LDK13 | WLMH2-LDK13 | WLMG2-LDK13 | WLMGCA2-LDK13 |
| | 4-conductor | AC | WLMCA2-LDK43A | WLMH2-LDK43A | WLMG2-LDK43A | WLMGCA2-LDK43A |
| | | DC | WLMCA2-LDK43 | WLMH2-LDK43 | WLMG2-LDK43 | WLMGCA2-LDK43 |
|  Roller lever, pre-wired connector *2 | 2-conductor | DC | WLMCA2-LD-M1J | WLMH2-LD-M1J | WLMG2-LD-M1J | WLMGCA2-LD-M1J |
| | 4-conductor | DC | WLMCA2-LD-DGJ03 | WLMH2-LD-DGJ03 | WLMG2-LD-DGJ03 | — |

*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-conductor models.)

*2. With 0.3-m cable attached.

Connecting Cables




Straight Cable







| Voltage specification | Number of conductors | Cable length | Model |
|-----------------------|----------------------|--------------|-----------------|
| AC | 2 | 2 m | XS2F-A421-DB0-A |
| | | 5 m | XS2F-A421-GB0-A |
| | 4 | 2 m | XS2F-A421-D90-A |
| | | 5 m | XS2F-A421-G90-A |
| DC | 2 | 2 m | XS2F-D421-DD0-A |
| | | 5 m | XS2F-D421-GD0-A |
| | 4 | 2 m | XS2F-D421-D80-A |
| | | 5 m | XS2F-D421-G80-A |

Individual Parts

Heads

| Actuator type | Set model | Head model (with Actuator) |
|---|-----------|----------------------------|
| Roller lever  | WLCA2 | WL-1H1100 |
| | WLG2 | WL-2H1100 |
| | WLH2 | WL-2H1100-1 * |
| | WLCA2-2 | WL-3H1100 |
| | WLCA2-2N | WL-6H1100 |
| Adjustable roller lever  | WLCA12 | WL-1H2100 |
| | WLG12 | WL-2H2100 |
| | WLH12 | WL-2H2100-1 * |
| | WLCA12-2 | WL-3H2100 |
| | WLCA12-2N | WL-6H2100 |
| 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) |
|--|-----------|----------------------------|
| Top plunger  | WLD | WL-7H100 |
| | WLD2 | WL-7H200 |
| | WLD3 | WL-7H300 |
| | WLD28 | WL-7H400 |
| Horizontal plunger  | WLS2 | WL-8H100 |
| | WLS2D | WL-8H200 |
| | WLS2S | WL-8H300 |
| Fork lever lock  | WLCA32-41 | WL-5H5100 |
| | WLCA32-42 | WL-5H5102 |
| | WLCA32-43 | WL-5H5104 |
| | WLCA32-44 | WL-5H5104 |
| Coil spring  | WLNJ | WL-9H100 |
| | WLNJ-30 | WL-9H200 |
| | WLNJ-2 | WL-9H300 |
| | WLNJ-S2 | WL-9H400 |









* 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 WLGCA2 becomes WL-1H-1 for the Heads without levers.

Other Heads are also available. Ask your OMRON representative.

Switches without levers

| Actuator type | | Switches without levers  |
|---|--|---|
| | | Model |
| Switches for roller levers  | Basic R38 | WLRCA2 |
| | High-precision R38 | WLRGCA2 |
| | High-sensitivity overtravel, 80° | WLRG2 |
| | General-purpose overtravel, 80° | WLRH2 |
| | Overtravel, 90° operation | WLRCA2-2 |
| | Overtravel, 90° operation | WLRCA2-2N |
| Switches for adjustable roller levers  | Basic | WLRCA2 |
| | High-sensitivity overtravel, 80° | WLRG2 |
| | General-purpose overtravel, 80° | WLRH2 |
| | Overtravel, 90° operation | WLRCA2-2 |
| | Overtravel, 90° operation | WLRCA2-2N |
| Switches for adjustable rod lever  | Basic, 25 to 140 mm | WLRCL |
| | High-sensitivity overtravel, 80°, 25 to 140 mm | WLRG2 |
| | Overtravel, 90° operation, 25 to 140 mm | WLRCA2-2 |
| | Overtravel, 90° operation, 25 to 140 mm | WLRCA2-2N |
| Switches for top plungers  | — | — |
| Switches for horizontal plungers  | — | — |
| Switches for fork lever locks  | Maintained, WL-5A100 Maintained, WL-5A102 Maintained, WL-5A104 | WLRCA32 |
| Switches for coil springs  | — | — |

Covers with Operation Indicators

| Cover | 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."

Spatter-prevention Products Head (with actuator)

| Complete Heads with allen-head levers | Double Nut Lever |
|---|--|
| Model | Model |
| WL-1H1100S (for WLCA2-□ or WLGCA2-□) | WL-2H1100S (for WLH2-□ or WLG2-□) |

Lever

| Allen-head Lever | Double Nut Lever |
|----------------------------------|----------------------------------|
| Model | Model |
| WL-1A103S Roller lever | WL-1A105S Roller Lever |

Cover with indicator Switches without Levers

| Cover with Indicator | Switches without levers |
|----------------------------|--|
| Model | Model |
| Neon lamp WL-LES | WLCA2-LDS |
| LED (LED) WL-LDS | WLRH2-LES WLRH2-LDS WLRG2-LDS WLRGCA2-LES |

WL Head Replacement

Heads can be replaced within the same model group. They cannot be replaced between different model groups.

| Group No. | Set model number | Head model number (with Actuator) |
|-----------|------------------|-----------------------------------|
| 1 | WLCA2 | WL-1H1100 |
| | WLCA2-7 | WL-1H1200 |
| | WLCA2-8 | WL-1H1300 |
| | WLCA12 | WL-1H2100 |
| 2 | WLCL | WL-4H4100 * |
| 3 | WLH2 | WL-2H1100-1 |
| | WLH12 | WL-2H2100-1 |
| | WLHL | WL-2H4100 |
| | WLHAL4 | WL-2H4106 |
| | WLHAL5 | WL-2H4107 |
| 4 | WLCA2-2N | WL-6H1100 |
| | WLCA12-2N | WL-6H2100 |
| | WLCL-2N | WL-6H4100 |
| 5 | WLCA2-2 | WL-3H1100 |
| | WLCA12-2 | WL-3H2100 |
| | WLCL-2 | WL-3H4100 |
| 6 | WLG2 | WL-2H1100 |
| | WLG12 | WL-2H2100 |
| | WGLL | WL-2H4100 |
| 7 | WLCA32-41 | WL-5H5100 |
| | WLCA32-42 | WL-5H5102 |
| | WLCA32-43 | WL-5H5104 |
| | WLCA32-44 | WL-5H5104 |
| 8 | WLD | WL-7H100 |
| | WLD2 | WL-7H200 |
| | WLD3 | WL-7H300 |
| 9 | WLD28 | WL-7H400 * |
| 10 | WLSL | WL-8H100 |
| | WLSL2 | WL-8H200 |
| | WLSL3 | WL-8H300 |
| 11 | WLNJ | WL-9H100 |
| | WLNJ-30 | WL-9H200 |
| 12 | WLNJ-2 | WL-9H300 * |
| 13 | WLNJ-S2 | WL-9H400 * |

* This Heads are special and must be used. Do not use any other Head.

Specifications

Approved Standards

| Agency | Standard | File No. | Approved models |
|---------------|-----------------|-------------------------------------|---|
| UL | UL508 | E76675 | Contact your OMRON representative for information on approved models. |
| CSA | CSA C22.2 No.14 | LR45746 | |
| TÜV Rheinland | EN60947-5-1 | J50022353, J9950023, J9950959 | |
| CCC (CQC) | GB14048.5 | 2004010305128675 | |

General-purpose/Weather-proof Switches

Ratings

Standard-load Switches

| Item 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 |
| Basic models, overtravel models (except for high-sensitivity models), and high-precision models | 125 VAC | 10 | 3 | 1.5 | 10 | 5 | 2.5 | | |
| | 250 VAC | 10 | 2 | 1 | 10 | 3 | 1.5 | | |
| | 500 VAC | 10 | 1.5 | 0.8 | 3 | 1.5 | 0.8 | | |
| | 8 VDC | 10 | 6 | 3 | 10 | 6 | | | |
| | 14 VDC | 10 | 6 | 3 | 10 | 6 | | | |
| | 30 VDC | 6 | 4 | 3 | 6 | 4 | | | |
| High-sensitivity overtravel models | 125 VDC | 0.8 | 0.2 | 0.2 | 0.8 | 0.2 | | | |
| | 250 VDC | 0.4 | 0.1 | 0.1 | 0.4 | 0.1 | | | |
| | 125 VAC | 5 | — | — | — | — | | | |
| | 250 VAC | 5 | — | — | — | — | | | |
| High-sensitivity overtravel models | 125 VDC | 0.4 | — | — | — | — | | | |
| | 250 VDC | 0.2 | — | — | — | — | | | |

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

* For high-sensitivity overtravel models.

| | |
|-------------------------|--------------|
| Minimum applicable load | 5 VDC 160 mA |
|-------------------------|--------------|

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 | | |

Microload Switches

0.1 A 125 VAC, 0.1 A 30 VDC

TÜV (EN60947-5-1) (Only models with ground terminals are approved.)

| Model | Application category and ratings | Thermal current (I _{the}) | Indicator |
|----------|---|-------------------------------------|-----------|
| WL□ | AC-15: 2 A/250 V DC-12: 2 A/48 V | 10 A | — |
| WL01□ | AC-14: 0.1 A/125 V 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 DC-12: 2 A/48 V | 10 A | LED |
| WL01□-LD | AC-14: 0.1 A/115 V 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 (I _e) | 2A |
| Rated operating voltage (U _e) | 250V |

Indicator-equipped Switches

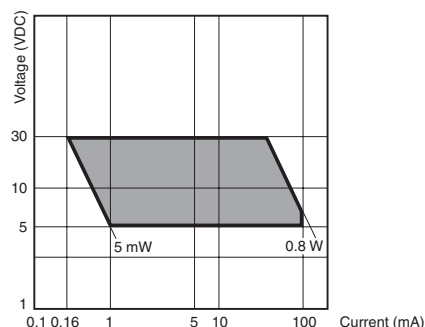
| Model | Item | Max. rated voltage (V) | Leakage current (mA) |
|-------|-----------|------------------------|----------------------|
| WL-LE | Neon lamp | 125 AC | Approx. 0.6 |
| | | 250 AC | Approx. 1.9 |
| WL-LD | LED | 115 AC/DC | Approx. 0.5 |
| | | 10 to 24 AC/DC | Approx. 0.4 |

Microload Switches (Refer to these ratings before using the product.)

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

Operation in the following ranges will produce optimum performance.

| | |
|------------------------|------------------------------|
| Recommended load range | 5 to 30 VDC 0.5 to 100 mA |
|------------------------|------------------------------|



| | |
|------------------------|------------|
| Recommended load range | 5 VDC 1 mA |
|------------------------|------------|

Characteristics

| | | |
|---|---|---|
| Degree of protection | IP67 | |
| Durability *1 | Mechanical | 15,000,000 operations min. *2 |
| | Electrical | 750,000 operations min. *3 |
| Operating speed | 1 mm/s to 1 m/s (in case of WLCA2) | |
| Operating frequency | Mechanical | 120 operations/minute min. |
| | 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 for the built-in switch when tested alone) *6 | |
| Dielectric strength | Between terminals of the same polarity | 1,000 VAC (600 VAC), 50/60 Hz for 1 min |
| | Between current-carrying metal part and ground | 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 | 2,200 VAC (1,500 VAC), 50/60 Hz for 1 min/Uimp 2.5 kV |
| Rated insulation voltage (U _i) | 250 V (EN60947-5-1) | |
| Pollution degree (operating environment) | 3 (EN60947-5-1) | |
| Short-circuit protective device (SCPD) | 10 A, fuse type gG or gI (IEC60269) | |
| Conditional short-circuit current | 100 A (EN60947-5-1) | |
| Conventional enclosed thermal current (I _{the}) | 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 *4 |
| Shock resistance | Destruction | 1,000 m/s ² min. |
| | Malfunction | 300 m/s ² min. *4 |
| Ambient operating temperature | -10°C to +80°C (with no icing) *5 | |
| Ambient operating humidity | 35% to 95% RH | |
| Weight | Approx. 275 g (in case of WLCA2) | |

Note: 1. The above figures are initial values.

2. The figures in parentheses for dielectric strength are those for the high-sensitivity overtravel models.

*1. The values are calculated at an operating temperature of +5°C to +35°C and an operating humidity of 40% to 70%RH. Contact your OMRON sales representative for more detailed information on other operating environments.

*2. Durability is 10,000,000 operations min. for general-purpose or high-sensitivity overtravel models, and for flexible rod models. 500,000 operations min. for weather-proof models.

*3. Durability is 500,000 operations min. for high-sensitivity models. All microload models are 1,000,000 operations min. 500,000 operations min. for weather-proof models.

*4. Except flexible rod models. The shock resistance (malfunction) for microload models is 200 m/s² min.

*5. For low-temperature models this is -40°C to +40°C (with no icing). For heat-resistant models the range is +5°C to +120°C.

*6. For microload models, the contact resistance is 50 mΩ max. (initial value for built-in switch).

Spatter-prevention Switches

Ratings

Screw terminals

| 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 | 125 VAC | 10 | 3 | 1.5 | 10 | 5 | 2.5 | | |
| | 250 VAC | 10 | 2 | 1 | 10 | 3 | 1.5 | | |
| WL□-LDS | 115 VAC | 10 | 3 | 1.5 | 10 | 5 | 2.5 | | |
| | 12 VDC | 10 | 6 | 3 | 10 | 6 | | | |
| | 24 VDC | 6 | 4 | 3 | 6 | 4 | | | |
| | 48 VDC | 3 | 2 | 1.5 | 3 | 2 | | | |

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.

| | | |
|-----------------------|--------------------------------|-----------|
| Inrush current | NC | 30 A max. |
| | NO | 20 A max. |
| Operating temperature | -10°C to +80°C (with no icing) | |
| Operating humidity | 35% to 95%RH max. | |

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 |

CCC (GB14048.5)

| Model | Application category and ratings |
|----------|---|
| WL□ | AC-15: 2 A/250 V DC-12: 2 A/48 V |
| WL01□ | AC-14: 0.1 A/125 V DC-12: 0.1 A/48 V |
| WL□-LE | AC-15: 2 A/250 V |
| WL01□-LE | AC-14: 0.1 A/125 V |
| WL□-LD | AC-15: 2 A/115 V DC-12: 2 A/48 V |
| WL01□-LD | AC-14: 0.1 A/115 V DC-12: 0.1 A/48 V |

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 |

Characteristics

| | | |
|--|---|--|
| Degree of protection | | IP67 |
| Durability *1 | Mechanical | 15,000,000 operations min. *2 |
| | Electrical | 750,000 operations min. *3 |
| Operating speed | | 1 mm/s to 1 m/s (in case of WLCA2) |
| Operating frequency | Mechanical | 120 operations/minute min. |
| | 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 for the built-in switch when tested alone) |
| Dielectric strength | Between terminals of the same polarity | 1,000 VAC (600 VAC), 50/60 Hz for 1 min |
| | Between current-carrying metal part and ground | 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 | 2,200 VAC (1,500 VAC), 50/60 Hz for 1 min/Uimp 2.5 kV |
| Rated insulation voltage (Ui) | | 250 V (EN60947-5-1) |
| Pollution degree (operating environment) | | 3 (EN60947-5-1) |
| Short-circuit protective device (SCPD) | | 10 A, fuse type gG or gI (IEC60269) |
| Conditional short-circuit current | | 100 A (EN60947-5-1) |
| Conventional enclosed thermal current (Ithe) | | 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/s² min. |
| | Malfunction | 300 m/s² min. |
| Ambient operating temperature | | -10°C to +80°C (with no icing) |
| Ambient operating humidity | | 35% to 95%RH |
| Weight | | Approx. 275 g (in case of WLCA2) |

Note: 1. The above figures are initial values.

2. The figures in parentheses for dielectric strength are those for the high-sensitivity overtravel models.

*1. The values are calculated at an operating temperature of +5°C to +35°C and an operating humidity of 40% to 70%RH. Contact your OMRON sales representative for more detailed information on other operating environments.

*2. Durability is 10,000,000 operations min. for general-purpose or high-sensitivity overtravel models.

*3. Durability is 500,000 operations min. for high-precision models. All microload models however, are 1,000,000 operations min.

Long-life Switches

Ratings

General Ratings (Refer to these ratings before using the product.)

Screw Terminal Switches

| Item 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 |
| Basic models, overtravel models, (except for high-sensitivity models), and high-precision models | 115 AC | 10 | 3 | 1.5 | 10 | 5 | 2.5 | | |
| | 12 DC | 10 | 6 | 3 | 10 | 6 | | | |
| | 24 DC | 6 | 4 | 3 | 6 | 4 | | | |
| | 48 DC | 3 | 2 | 1.5 | 3 | 2 | | | |
| | 115 DC | 0.8 | 0.2 | 0.2 | 0.8 | 0.2 | | | |
| High-sensitivity overtravel models | 115 AC | 5 | — | — | — | — | | | |
| | 115 DC | 0.4 | — | — | — | — | | | |

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

* 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 * | Mechanical | 30,000,000 operations min. |
| | Electrical | 30,000,000 operations min. (10 mA at 24 VDC, resistive load) 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/s to 1 m/s (in case of WLCA2) |
| Operating frequency | Mechanical | 120 operations/minute |
| | Electrical | 30 operations/minute |
| Rated frequency | | 50/60 Hz |
| Insulation resistance | | 100 MΩ min. (at 500 VDC) |
| Contact resistance | | 25 mΩ max. (initial value for the built-in switch when tested alone) |
| Dielectric strength (50/60 Hz for 1 min) | Between terminals of the same polarity | 1,000 VAC (except connector models) |
| | Between current-carrying metal part and ground | 2,200 VAC (1,500 V) |
| | Between each terminal and non-current-carrying metal part | 2,200 VAC (1,500 V) |
| Vibration resistance | Malfunction | 10 to 55 Hz, 1.5-mm double amplitude |
| Shock resistance | Destruction | 1,000 m/s ² min. |
| | Malfunction | 300 m/s ² min. |
| Ambient operating temperature | | −10°C to +80°C (with no icing) |
| Ambient operating humidity | | 35% to 95%RH |
| Weight | | Approx. 275 g (in case of WLCA2) |

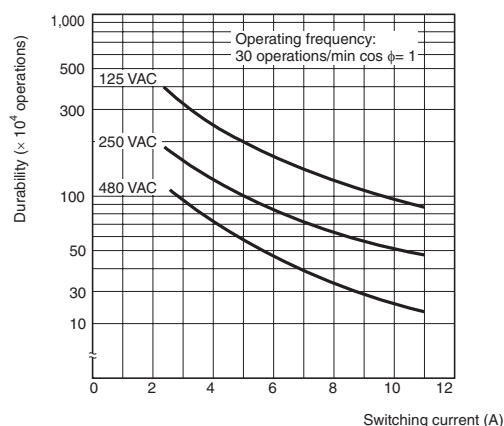
Note: The figures in parentheses for dielectric strength, are those for overtravel (high-sensitivity) or connector models.

* The values are calculated at an operating temperature of +5°C to +35°C, and an operating humidity of 40% to 70%RH. Contact your OMRON sales representative for more detailed information on other operating environments.

Engineering Data

Electrical Durability: $\cos\phi=1$

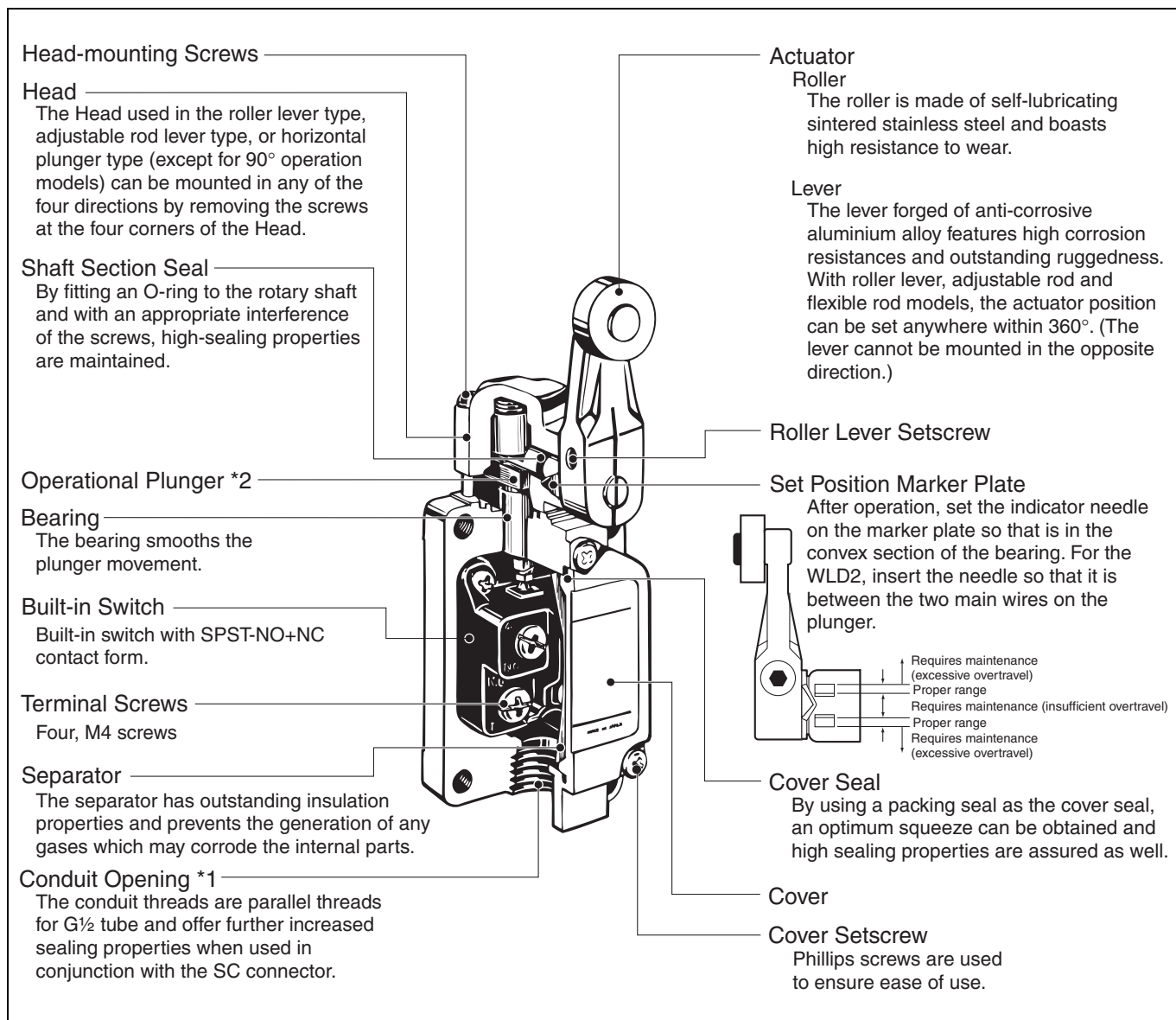
(Operating temperature: +5°C to +35°C, operating humidity: 40% to 70%RH)



Structure and Nomenclature

Structure

General-purpose Switches: WLCA2



*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, any one of the three operational directions (both sides, left, or right) can be selected electrically.

Indicators

Indicator Covers

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

Indicator Windows

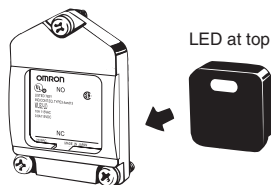
Operation (i.e., light-ON when operating or light-ON when not operating) depends on whether a neon lamp or LED is used.

Light-ON when Operating/Not Operating

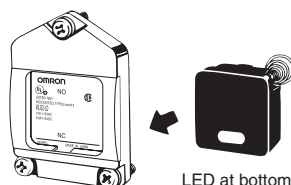
Indicators can be switched from light-ON when operating and light-ON when not operating, by simply rotating the indicator holder by 180°.

(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

| | | |
|----------------|--------------------------------|--|
| WL-LE WL-LD | Light-ON when operating *1 | |
| | Light-ON when not operating *2 | |

Internal Circuits

| | |
|-------|--|
| WL-LE | |
| WL-LD | |

Note: 1. The indicator cover cannot be replaced on the molded terminals. In all cases the indicator does not light when the load is ON.

2. Leakage current from indicator circuit may cause load's malfunction. Please check the load's OFF current before use the indicator-equipped switch.

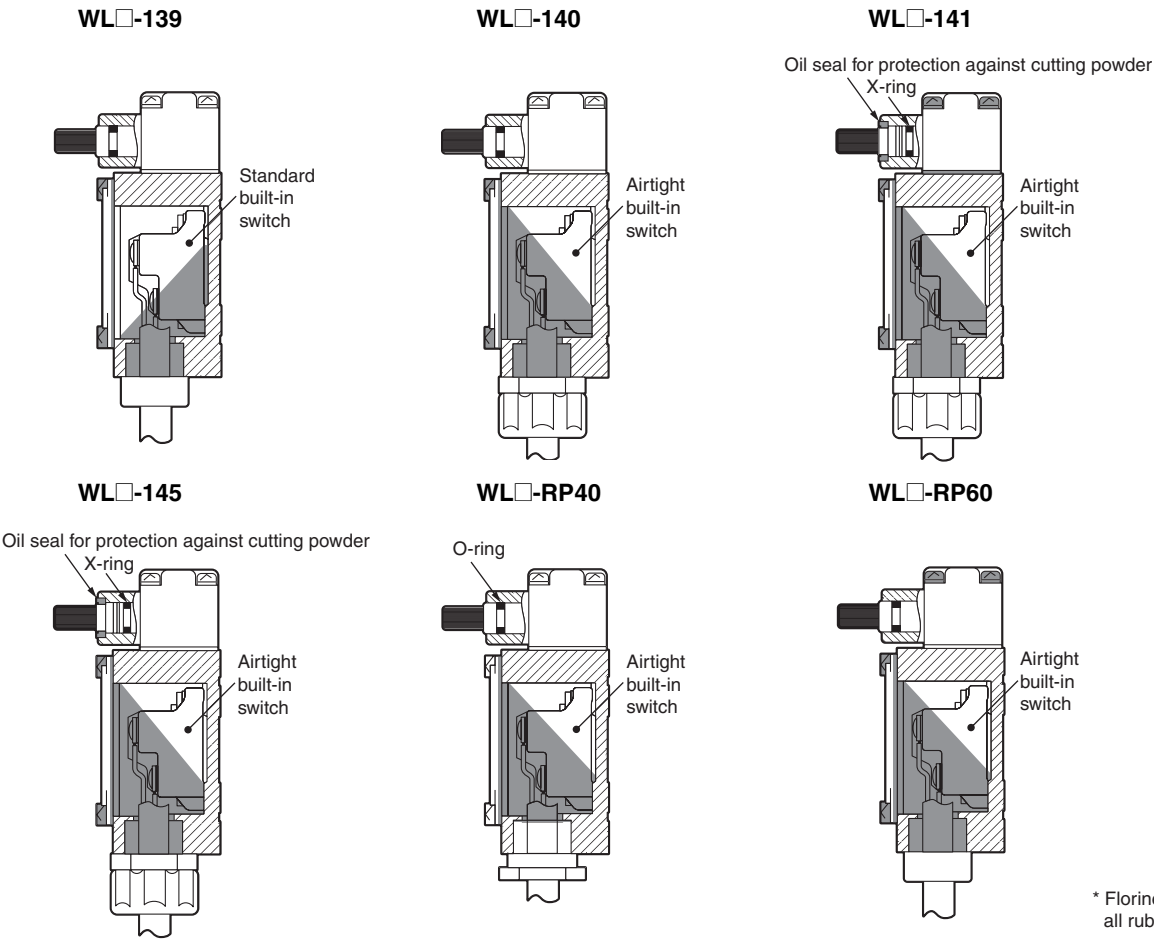
*1. Light-ON when operating means that the lamp lights when the Limit Switch contacts (NC) release, or when the actuator rotates or is pushed down.

*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.

Environment-resistant Switches

Mold Specifications for Hermetic Seal Switches

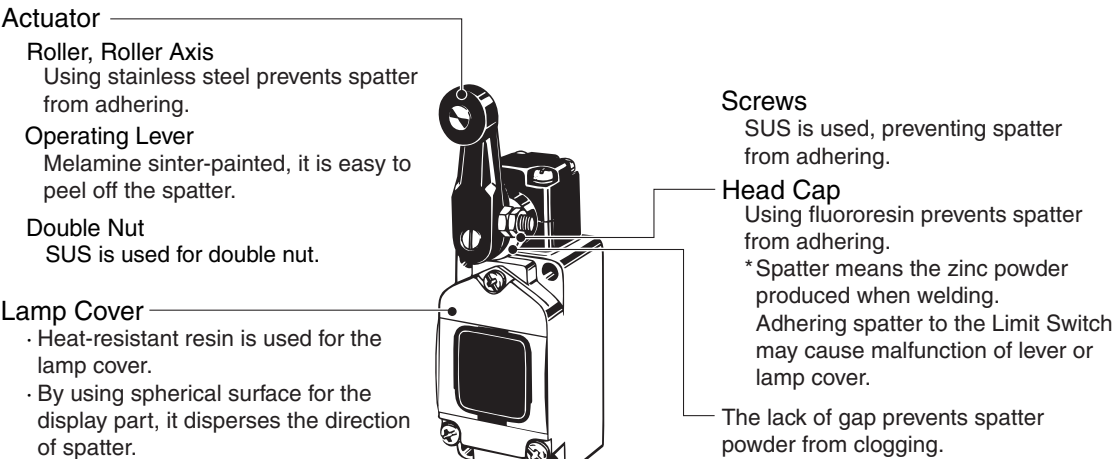
■ : Molded parts



* Florine 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-conductor. |
| WL□-140 | Standard 5-m VCT cable, with high flexibility and good anti-oil properties attached. Finished diameter: 11.5 mm, 4-conductor. |
| WL□-141 | |
| WL□-145 | |
| WL□RP40 | |
| WL□RP60 | |

Spatter-prevention Switches: WLCA2-LEAS



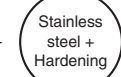
Long-life Switches: WLMGCA2-LD

Release Plunger

Hardening method changed for greater abrasion resistance.

Standard Model

Long-life Model



Head

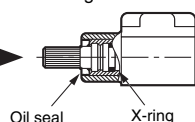
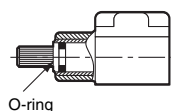
The Head can be mounted in any of the four directions by removing the screws at the four corners of the Head.

Shaft Section Seal

By fitting a double seal consisting of an oil seal and an X-ring to the rotary shaft, even greater sealing properties are achieved.

Standard Model

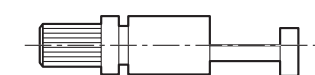
Long-life Model



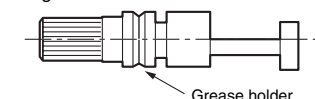
Smoother Movement

A grease holder is provided on the shaft to prevent the grease from running out.

Standard Model



Long-life Model



Smooth movement is achieved using olefin grease. (Standard models use molybdenum disulfide grease.)

Bearing

The bearing smooths the plunger movement.

Built-in Switch

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

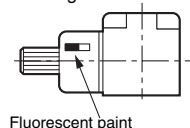
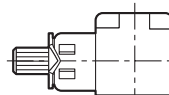
Set Position Marker Plate

The set position is easy to view.

The stroke is indicated in fluorescent color that is visible from the slit in the rubber cap.

Standard Model

Long-life Model



Fluorescent paint

Requires maintenance (excessive overtravel)

Proper range

Requires maintenance (insufficient overtravel)

Proper range

Requires maintenance (excessive overtravel)

Actuator

Roller

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

Lever

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

Operational Plunger *

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 Mounting Screw

Phillips screws are used to ensure ease of use.

Head Mounting Screws

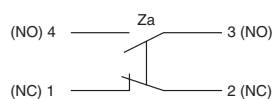
Conduit Opening

In addition to level screws which use G $\frac{1}{2}$ tube, direct-wired and pre-wired connectors have been added to the Series.

* By changing the direction of the operational plunger, any one of the three operational directions (both sides, left, or right) can be selected.

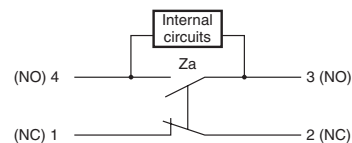
Contact Forms

Screw Terminal Switches



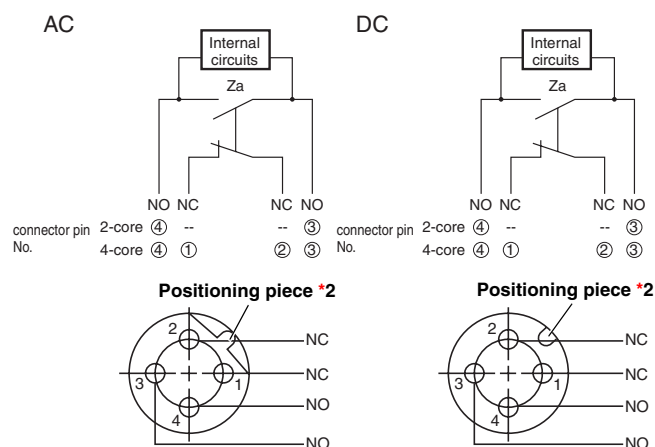
Screw Terminal Switches

Indicator-equipped (Light-ON when Not Operating) Switches *1



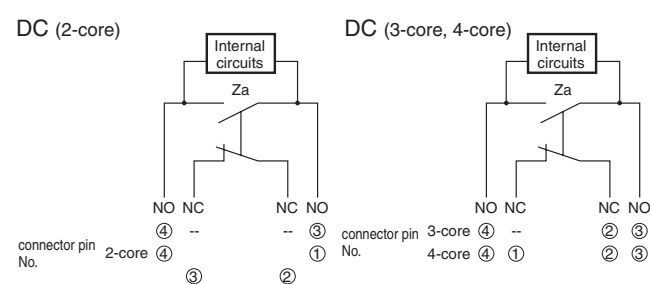
Direct-wired Connector Switches

Indicator-equipped (Light-ON when Not Operating) Switches *1



Pre-wired Connector Switches

Indicator-equipped (Light-ON when Not Operating) Switches *1



Note: Leakage current from indicator circuit may cause load's malfunction. Please check the load's OFF current before use the indicator-equipped switch.

*1. 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.

*2. The position of the positioning piece is not always the same. If using an L-shaped connector causes problems in application, use a straight connector.

Dimensions and Operating Characteristics

(Unit: mm)

General-purpose Models

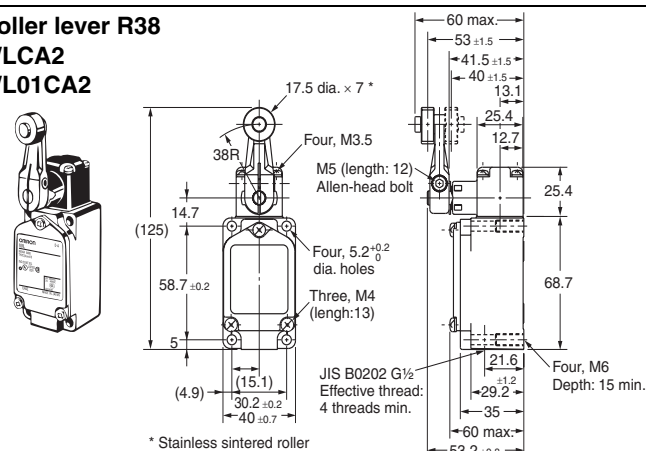
Standard Models

Basic

Rotating Lever For all models WL□ indicates a standard-load model and WL01□ indicates a microload model.

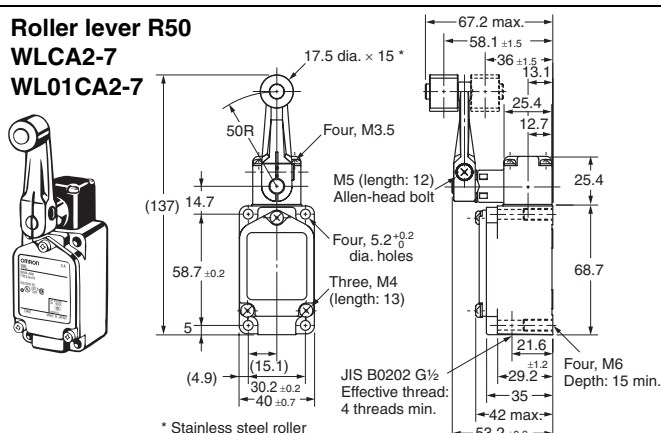
Roller lever R38

WLCA2
WL01CA2



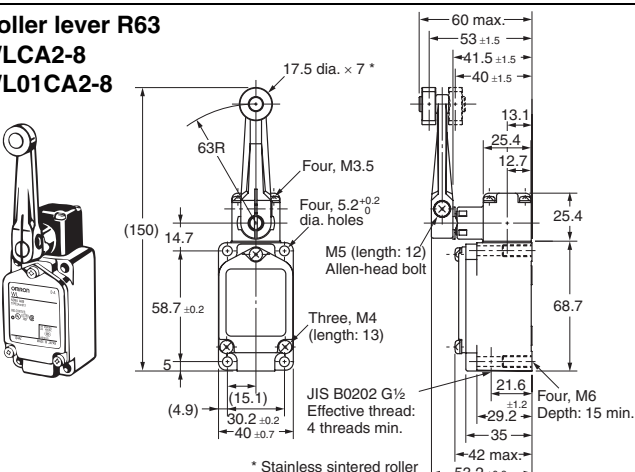
Roller lever R50

WLCA2-7
WL01CA2-7



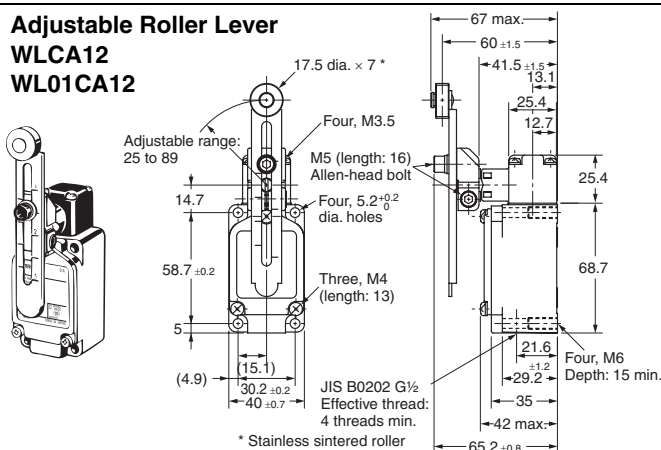
Roller lever R63

WLCA2-8
WL01CA2-8



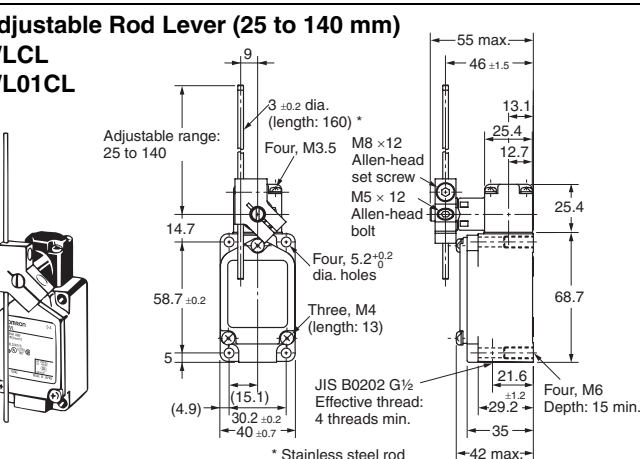
Adjustable Roller Lever

WLCA12
WL01CA12



Adjustable Rod Lever (25 to 140 mm)

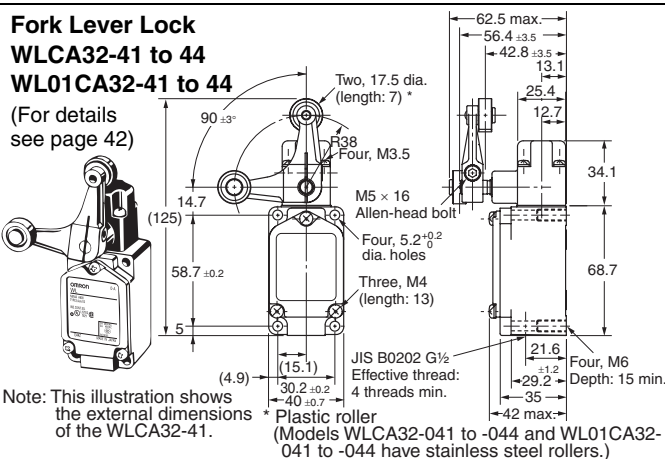
WLCL
WL01CL



Fork Lever Lock

WLCA32-41 to 44
WL01CA32-41 to 44

(For details see page 42)



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

| Operating characteristics | Model | WLCA2 | WLCA2-7 | WLCA2-8 | WLCA12 *1 | WLCL *2 |
|---------------------------|---------|--------------|--------------|--------------|--------------|--------------|
| | | WL01CA2 | WL01CA2-7 | WL01CA2-8 | WL01CA12 *1 | WL01CL *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° \pm 5° | 15° \pm 5° | 15° \pm 5° | 15° \pm 5° | 15° \pm 5° |
| Overtravel | OT min. | 30° | 30° | 30° | 30° | 30° |
| Movement Differential | MD max. | 12° | 12° | 12° | 12° | 12° |

*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 | Model | WLCA32-41 to 44 *1 | WL01CA32-41 to 44 *1 |
|---|-------|--------------------|----------------------|
| Force necessary to reverse the direction of the lever: Max. | | 11.77 N | |
| Movement until the lever reverses | | 50° \pm 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.

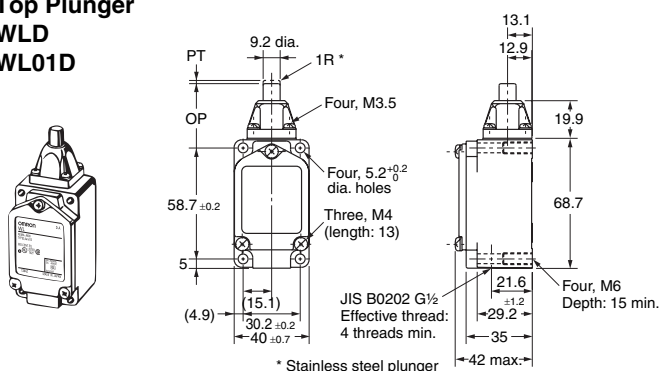
| | WLCA12, WL01CA12 |
|----|------------------|
| OF | 5.68 N |
| RF | 0.95 N |

Basic

Plunger For all models WL□ indicates a standard-load model and WL01□ indicates a microload model.

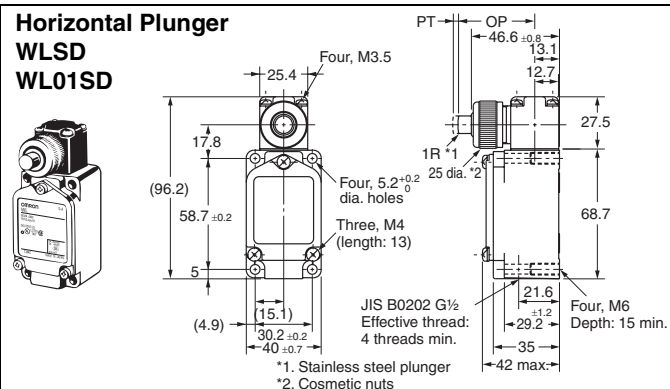
Top Plunger

**WLD
WL01D**



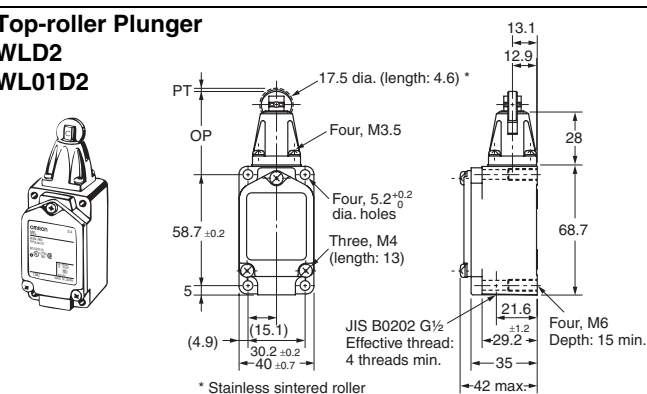
Horizontal Plunger

**WLS
WL01SD**



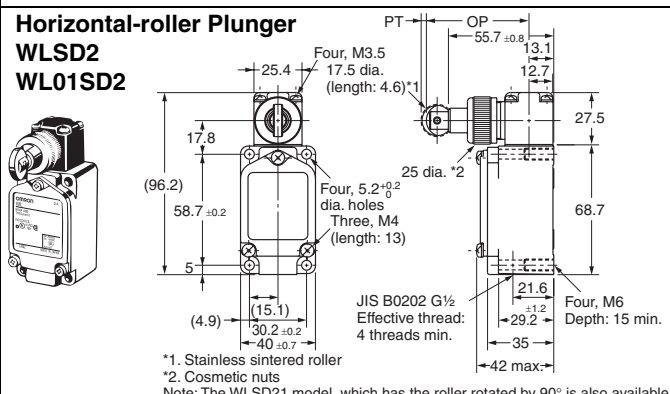
Top-roller Plunger

**WLD2
WL01D2**



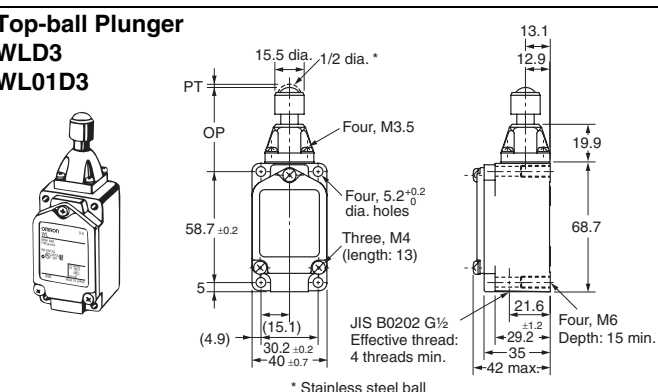
Horizontal-roller Plunger

**WLS2
WL01SD2**



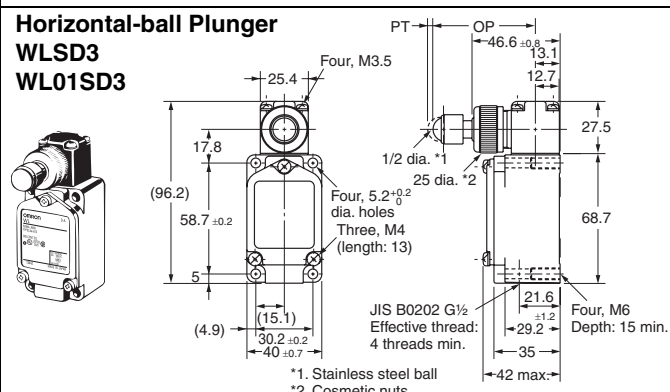
Top-ball Plunger

**WLD3
WL01D3**



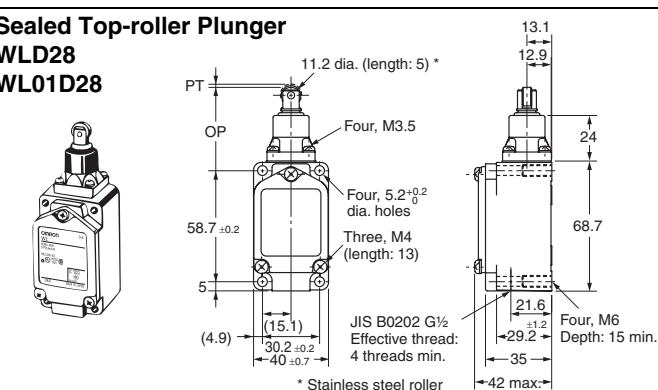
Horizontal-ball Plunger

**WLS3
WL01SD3**



Sealed Top-roller Plunger

**WLD28
WL01D28**



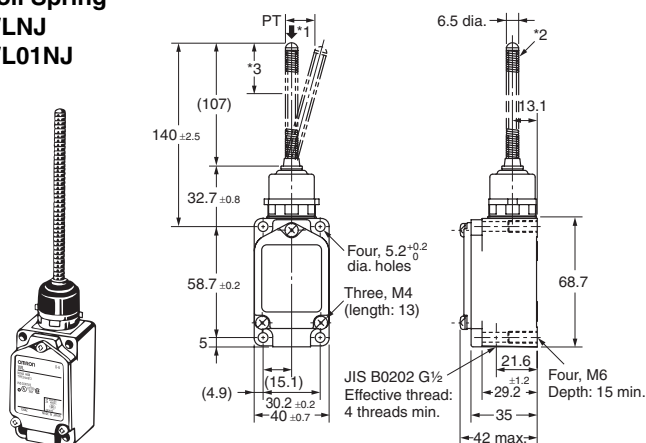
Note: Unless otherwise indicated, a tolerance of ±0.4 mm applies to all dimensions.

| Operating characteristics | Model | WLD WL01D | WLD2 WL01D2 | WLD3 WL01D3 | WLD28 WL01D28 | WLS2 WL01SD2 | WLS3 WL01SD3 | WLS WL01SD |
|---------------------------|----------|--------------|----------------|----------------|------------------|-----------------|-----------------|---------------|
| 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 ±0.8 mm | 44 ±0.8 mm | 44.5 ±0.8 mm | 44 ±0.8 mm | 54.2 ±0.8 mm | 54.1 ±0.8 mm | 40.6 ±0.8 mm |
| Total travel Position | TTP max. | 29.5 mm | 39.5 mm | 41 mm | 39.5 mm | — | — | — |

Basic

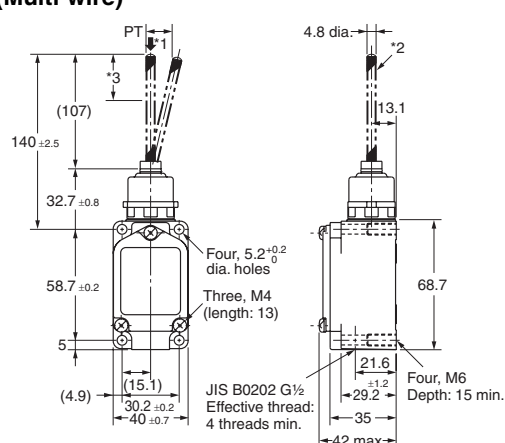
Flexible Rod For all models WL□ indicates a standard-load model and WL01□ indicates a microload model.

Coil Spring WLNJ WL01NJ



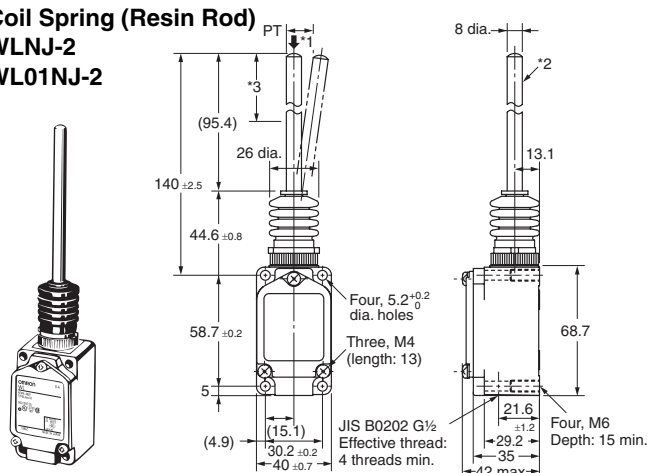
- *1. The coil spring may be operated from any direction except the axial direction (↓).
- *2. Stainless steel coil spring
- *3. Optimum operating range of the coil spring is within 1/3 of the entire length from the top end.

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



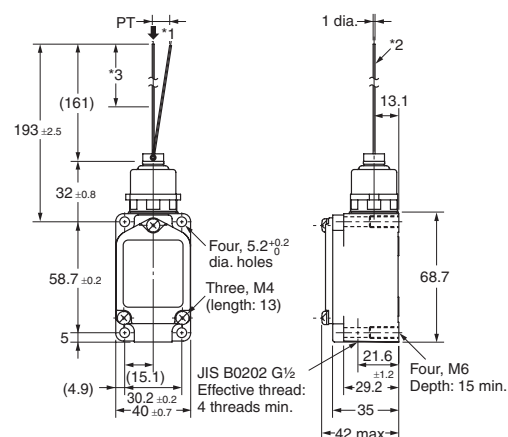
- *1. The coil spring may be operated from any direction except the axial direction (↓).
- *2. Piano wire coil
- *3. Optimum operating range of the coil spring is within 1/3 of the entire length from the top end.

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



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

Steel Wire WLNJ-S2 WL01NJ-S2



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

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

| Model | WLNJ * | WLNJ-30 * | WLNJ-2 * | WLNJ-S2 * |
|---------------------------|----------------|----------------|----------------|----------------|
| Operating characteristics | WL01NJ * | WL01NJ-30 * | WL01NJ-2 * | WL01NJ-S2 * |
| Operating force | 1.47 N | 1.47 N | 1.47 N | 0.28 N |
| Pretravel | 20 \pm 10 mm | 20 \pm 10 mm | 40 \pm 20 mm | 40 \pm 20 mm |

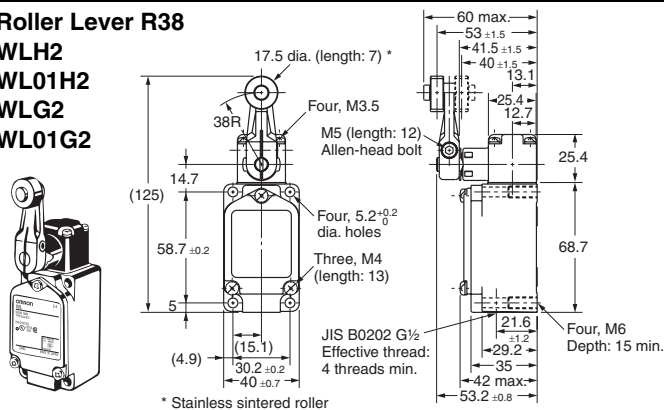
* These values are taken from the top end of the wire or spring.

Overtravel

General-purpose/High-sensitivity Models For all models WL□ indicates a standard-load model and WL01□ indicates a microload model.

Roller Lever R38

WLH2
WL01H2
WLG2
WL01G2

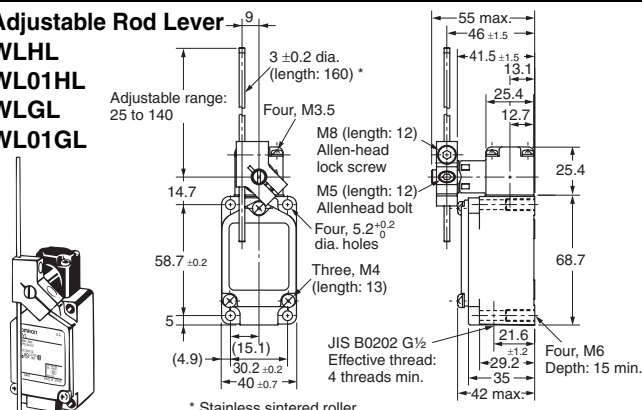


* Stainless sintered roller

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

Adjustable Rod Lever

WLHL
WL01HL
WLGL
WL01GL

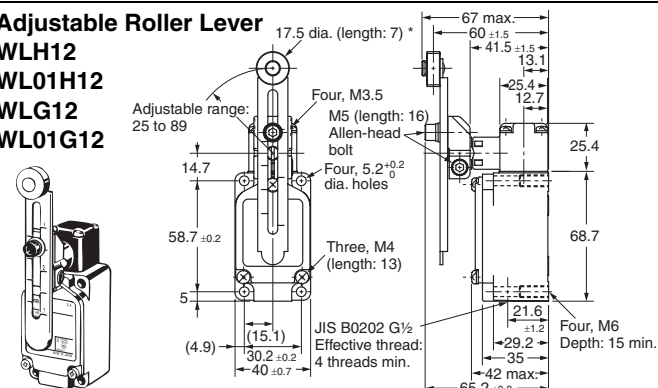


* Stainless sintered roller

- 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 Roller Lever

WLH12
WL01H12
WLG12
WL01G12

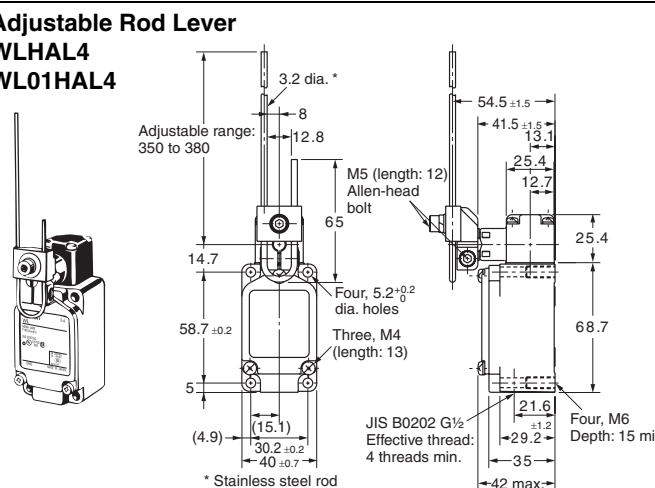


* Stainless sintered roller

- Note: 1. WL□G12 is identical to other models except in the shape of the set position marker plate.
2. The built-in switch for WLH12 is W-10FB3.
3. The built-in switch for WLG12 is W-10FB3-8.

Adjustable Rod Lever

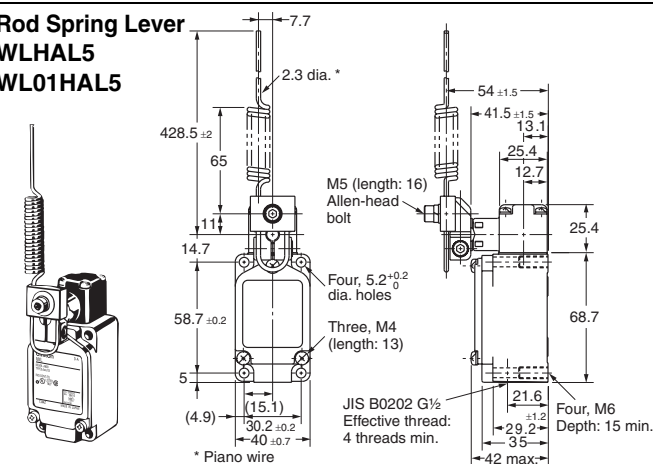
WLHAL4
WL01HAL4



* Stainless steel rod

Rod Spring Lever

WLHAL5
WL01HAL5



* Piano wire

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

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

| | WLH12, WLA01H12 | WLG12, WL01G12 |
|----|-----------------|----------------|
| OF | 4.18 N | 4.18 N |
| RF | 0.42 N | 0.42 N |

| Model | WLH2 | WLG2 | WLH12 *1 | WLG12 *1 | WLHL *1 | WLGL *2 | WLHAL4 *3 | WLHAL5 |
|---------------------------|---------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Operating characteristics | WL01H2 | WL01G2 | WL01H12 *1 | WL01G12 *1 | WL01HL *1 | WL01GL *2 | WL01HAL4 *3 | WL01HAL5 |
| Operating force | OF max. | 9.81 N | 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 | 0.98 N | 0.25 N | 0.25 N | 0.15 N | 0.09 N |
| Pretravel | PT | 15° $\pm 5^\circ$ | 10° $\pm 2^\circ$ | 15° $\pm 5^\circ$ | 10° $\pm 2^\circ$ | 15° $\pm 5^\circ$ | 15° $\pm 5^\circ$ | 15° $\pm 5^\circ$ |
| Overtravel | OT min. | 55° | 65° | 55° | 65° | 55° | 55° | 55° |
| Movement Differential | MD max. | 12° | 7° | 12° | 7° | 12° | 12° | 12° |

Note: 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.

*1. The operating characteristics of WLH12, WL01H12, WLG12, and WL01G12 are measured at the lever length of 38 mm.

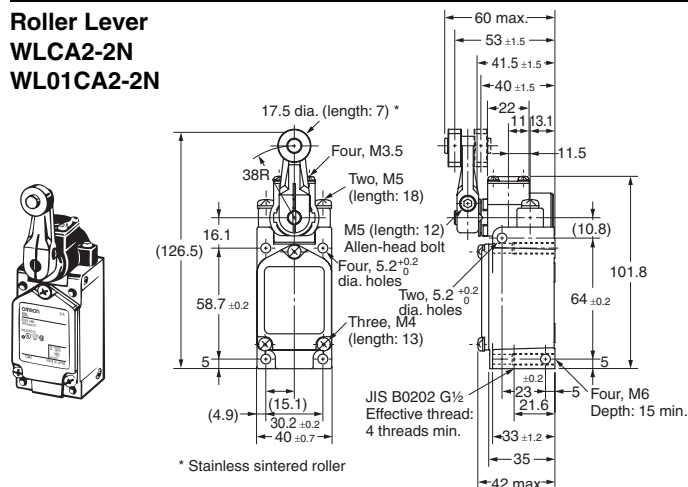
*2. The operating characteristics of WLHL, WL01HL, WLGL, and WL01GL are measured at the rod length of 140 mm.

*3. The operating characteristics of WLHAL4, and WL01HAL4 are measured at the rod length of 380 mm.

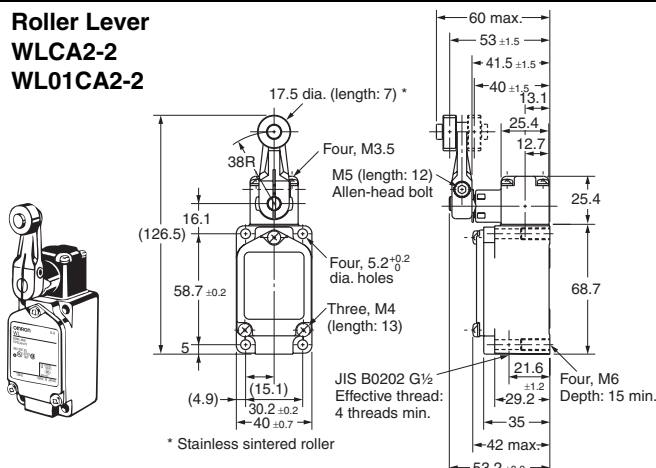
Overtravel

Side-installation Models ... For all models WL□ indicates a standard-load model and WL01□ indicates a microload model.

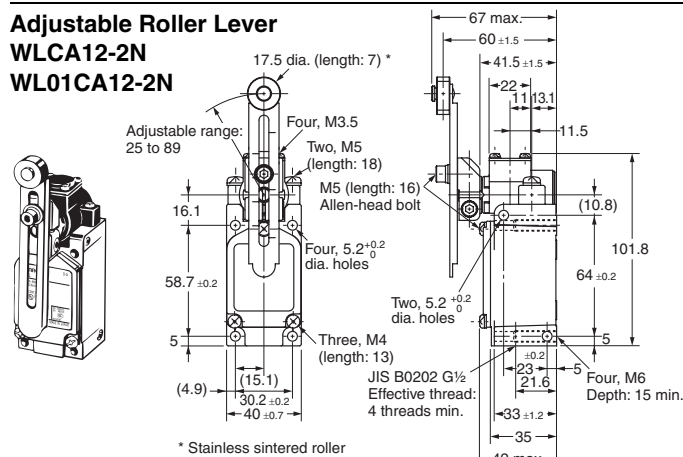
Roller Lever WLCA2-2N WL01CA2-2N



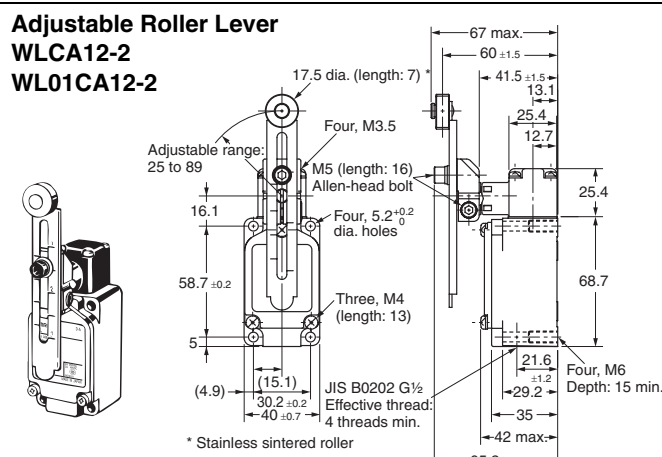
Roller Lever WLCA2-2 WL01CA2-2



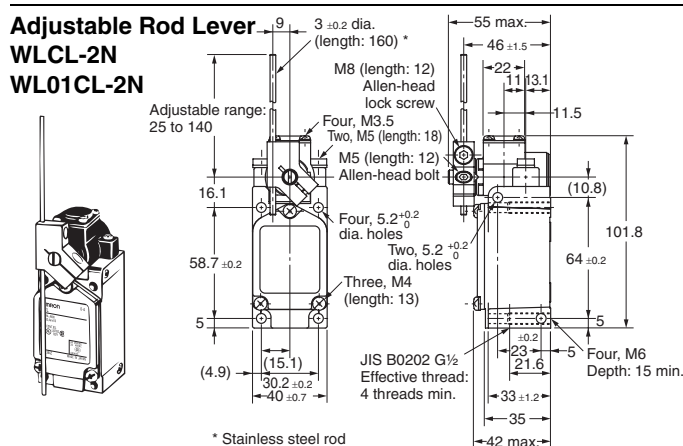
Adjustable Roller Lever WLCA12-2N WL01CA12-2N



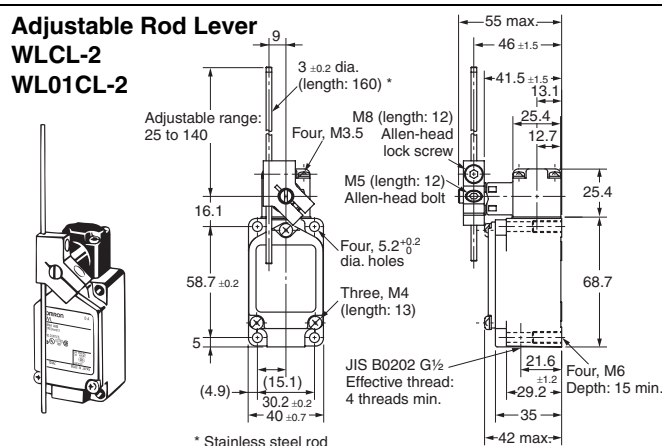
Adjustable Roller Lever WLCA12-2 WL01CA12-2



Adjustable Rod Lever WLCL-2N WL01CL-2N



Adjustable Rod Lever WLCL-2 WL01CL-2



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

| Model | WLCA2-2N | WLCA12-2N*1 | WLCL-2N*2 | WLCA2-2 | WLCA12-2*1 | WLCL-2*2 |
|---------------------------|------------|---------------|-------------|-----------|-------------------|-------------------|
| Operating characteristics | WL01CA2-2N | WL01CA12-2N*1 | WL01CL-2N*2 | WL01CA2-2 | WL01CA12-2*1 | WL01CL-2*2 |
| Operating force | OF max. | 9.61 N | 9.61 N | 2.84 N | 8.83 N | 2.55 N |
| Release force | RF min. | 1.18 N | 1.18 N | 0.25 N | 0.49 N | 0.1 N |
| Pretravel | PT | 20° max. | 20° max. | 20° max. | 25° $\pm 5^\circ$ | 25° $\pm 5^\circ$ |
| Overtravel | OT min. | 70° | 70° | 70° | 60° | 60° |
| Movement Differential | MD max. | 10° | 10° | 10° | 16° | 16° |

*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.

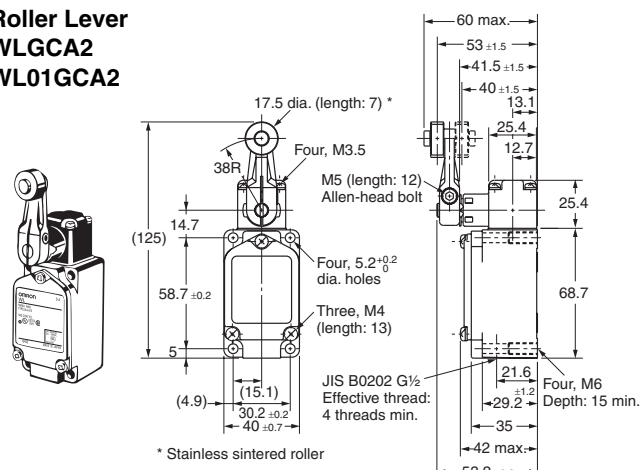
OF and RF for WLCA12-2N and WL01CA12-2N, with a lever length of 89 mm.

| | WLCA12-2N, WL01CA12-2N |
|----|------------------------|
| OF | 4.10 N |
| RF | 0.50 N |

High-precision Models

WL□ are Standard Models and WL01□ are Microload Models.

Roller Lever WLGCA2 WL01GCA2



| Model | | WLGCA2 WL01GCA2 |
|---------------------------|---------|---------------------------------|
| Operating characteristics | | |
| Operating force | OF max. | 13.34 N |
| Release force | RF min. | 1.47 N |
| Pretravel | PT | 5° ^{+2°} _{0°} |
| Overtravel | OT min. | 40° |
| Movement Differential | MD max. | 3° |

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

Sensor I/O Connector Switches

Direct-wired Connector/Pre-wired Connector Models

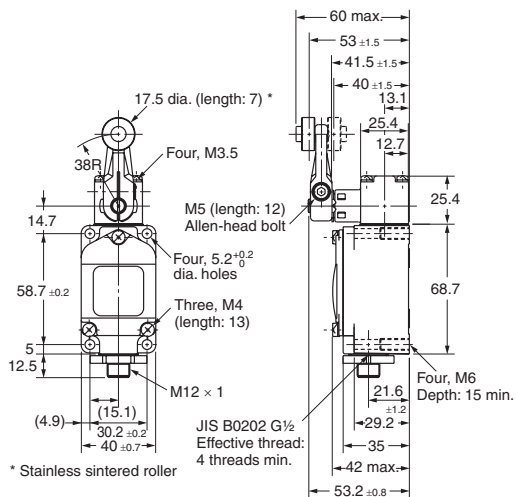
Refer to page 17 for the connecting cable.

Roller Lever Plungers.....WL□ are Standard Models and WL01□ are Microload Models.

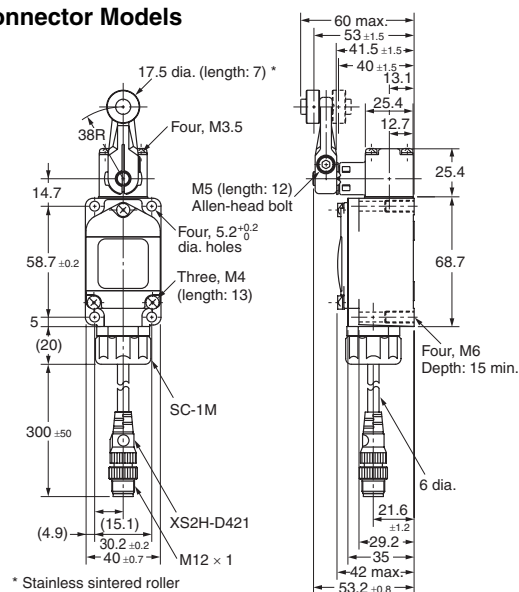
Standard Models (WLGCA2), High-precision Models (WLGCA2),

Overtravel General-purpose Models (WLH2), Overtravel High-sensitivity Models (WLG2)

Connector Models



Pre-wired Connector Models

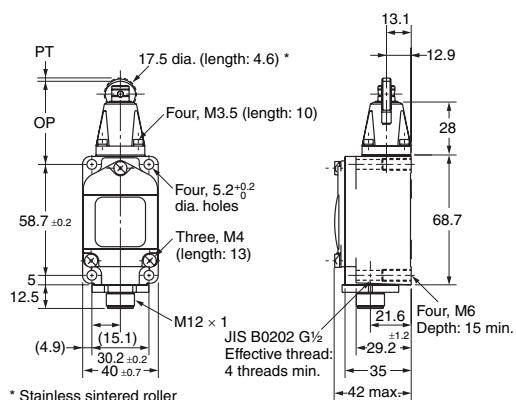


Note: 1. Only the dimension of the set position marker plate is different for WLG2 Models.
2. Unless otherwise indicated, a tolerance of ± 0.4 mm applies to all dimensions.
3. The models with operation indicators are shown in the above diagrams.

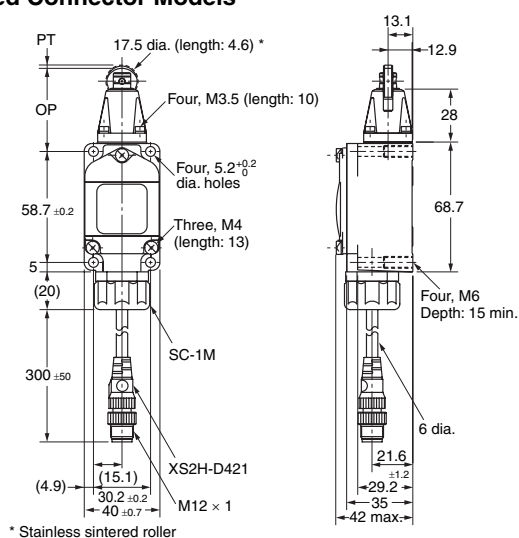
| Actuator | | Standard roller lever actuator | High-precision roller lever actuator | Overdrive general-purpose actuator | Overdrive high-sensitivity actuator |
|---------------------------|---------|--------------------------------|--------------------------------------|------------------------------------|-------------------------------------|
| Operating characteristics | | | | | |
| Operating force | OF max. | 13.34 N | 13.34 N | 9.81 N | 9.81 N |
| Release force | RF min. | 2.23 N | 1.47 N | 0.98 N | 0.98 N |
| Pretravel | PT | 15° \pm 5° | 5° ^{+2°} _{0°} | 15° \pm 5° | 10° ^{+2°} _{0°} |
| Overtravel | OT min. | 30° | 40° | 55° | 65° |
| Movement Differential | MD max. | 12° | 3° | 12° | 7° |

Top-roller Plunger (WLD2)

Direct-wired Connector Models



Pre-wired Connector Models

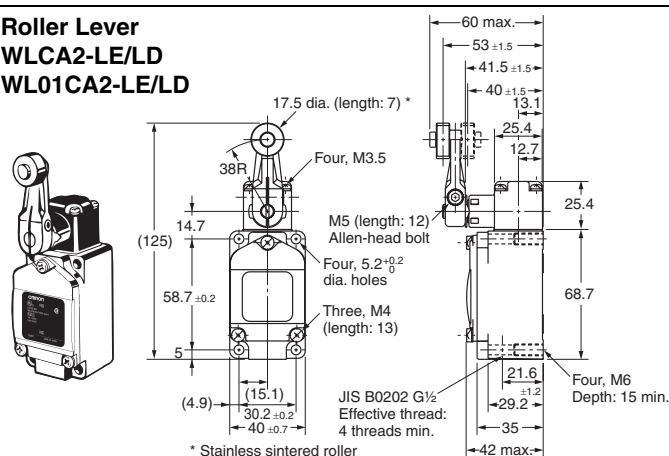


Note: 1. Unless otherwise indicated, a tolerance of ± 0.4 mm applies to all dimensions.
2. The following diagrams are for a indicator-equipped models.

| Actuator | | Top-roller plunger |
|---------------------------|----------|--------------------|
| Operating characteristics | | |
| Operating force | OF max. | 26.67 N |
| Release force | RF min. | 8.92 N |
| Pretravel | PT max. | 1.7 mm |
| Overtravel | OT min. | 5.6 mm |
| Movement Differential | MD max. | 1 mm |
| Operating Position | OP | 44 ± 0.8 mm |
| Total travel Position | TTP max. | 39.5 mm |

Indicator-equipped Models

Roller Lever WLCA2-LE/LD WL01CA2-LE/LD



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

| Actuator | | WLCA2-LE/LD WL01CA2-LE/LD |
|---------------------------|---------|------------------------------|
| Operating characteristics | | |
| Operating force | OF max. | 13.34 N |
| Release force | RF min. | 2.23 N |
| Pretravel | PT | $15^\circ \pm 5^\circ$ |
| Overtravel | OT min. | 30° |
| Movement Differential | MD max. | 12° |

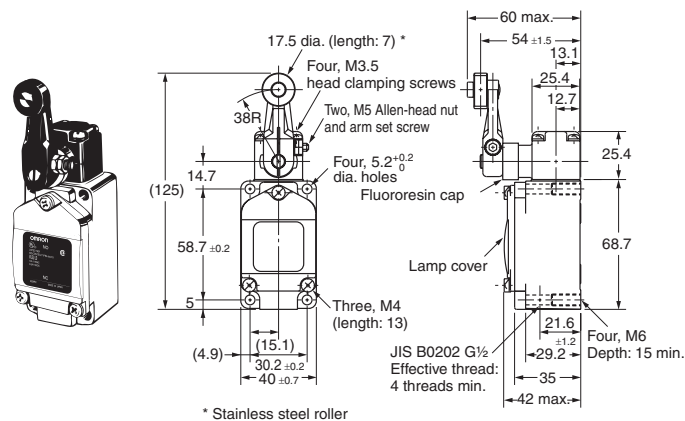
Spatter-prevention Models

Roller Lever (Screw Terminals)

WLCA2-□S/WL01□-□S

WLH2-□S/WLG2-□S

WLGCA2-□S



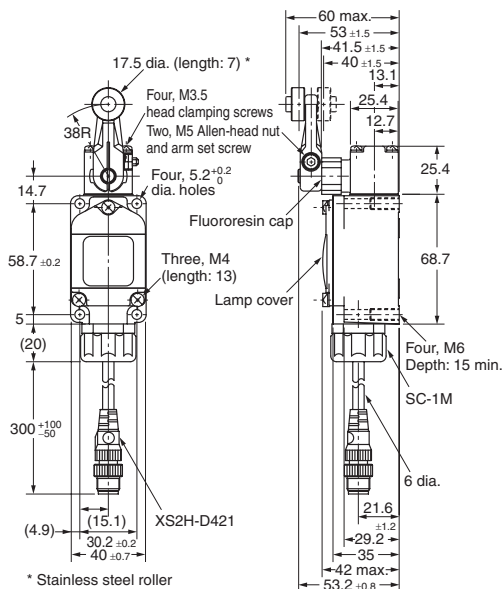
Roller Lever (Pre-wired connectors)

WLCA2-□S-M1J*/WL01□-□S-M1J*

WLH2-□S-M1J*/WLG2-□S-M1J*

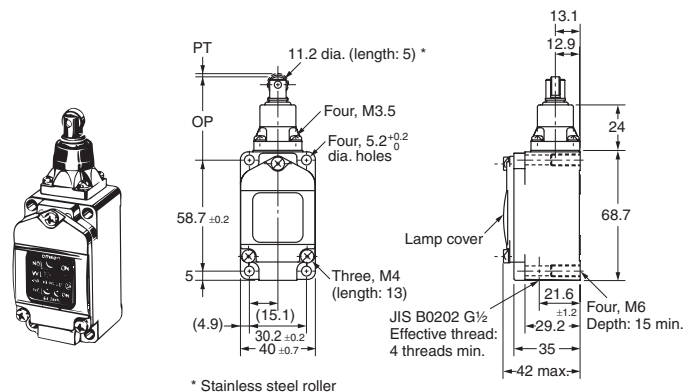
WLGCA2-□S-M1J*

* External dimensions are the same even for different core wires.



Sealed Top-roller Plunger (Screw Terminals)

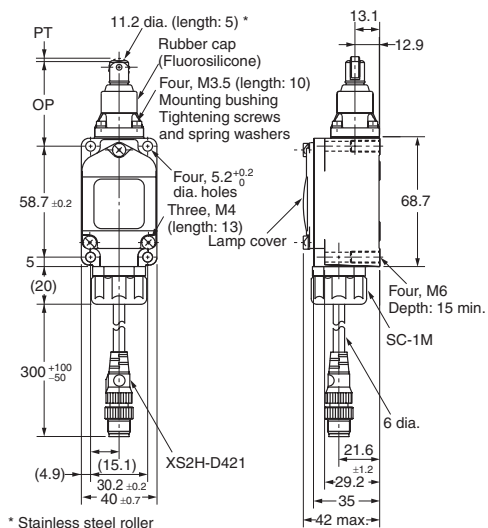
WLD28-□S



Sealed Top-roller Plunger (Pre-wired connectors)

WLD28-□S-M1J*

* External dimensions are the same even for different core wires.



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

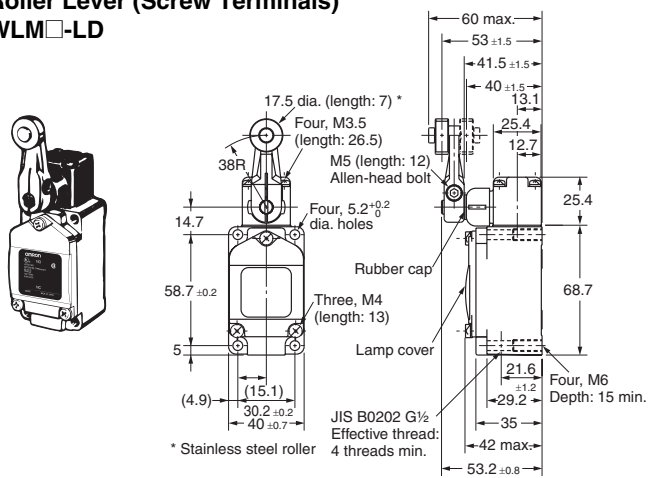
| Actuator | | Roller Lever | | | | Sealed Top-roller Plunger |
|-----------------------|----------|--------------|-------------------|------------------|----------------|---------------------------|
| | | Basic | Overtravel models | | High-precision | |
| | | | General-purpose | High-sensitivity | | |
| 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° ±2° -1° | 5° ±2° 0° | 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 | — | — | — | — | 44 ±0.8 mm |
| Total travel Position | TTP max. | — | — | — | — | 39.5 mm |

Long-life Models

Rotating Lever Models

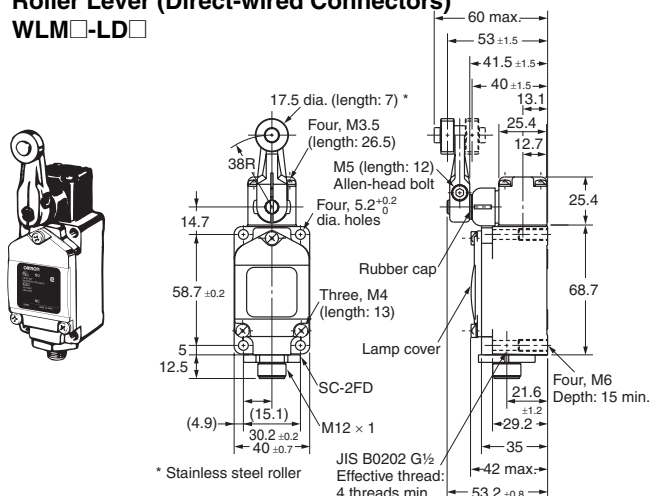
Roller Lever (Screw Terminals)

WLM□-LD



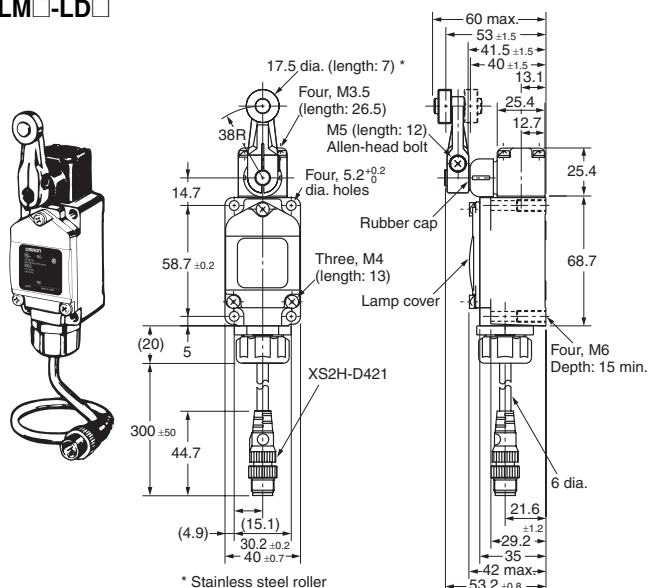
Roller Lever (Direct-wired Connectors)

WLM□-LD□



Roller Lever (Pre-wired Connectors)

WLM□-LD□



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

| Model | | WLMCA2-LD□ Basic models | WLMH2-LD□ General-purpose overtravel models | WLMG2-LD□ High-sensitivity overtravel models | WLMGCA2-LD□ High-precision models |
|---------------------------|---------|----------------------------|---|--|--------------------------------------|
| Operating characteristics | | | | | |
| 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 | 15° $\pm 5^\circ$ | 15° $\pm 5^\circ$ | 10° $^{+2^\circ}_{-1^\circ}$ | 5° $^{+2^\circ}_{-0^\circ}$ |
| Overtravel | OT min. | 30° | 55° | 65° | 40° |
| Movement Differential | MD max. | 12° | 12° | 7° | 3° |

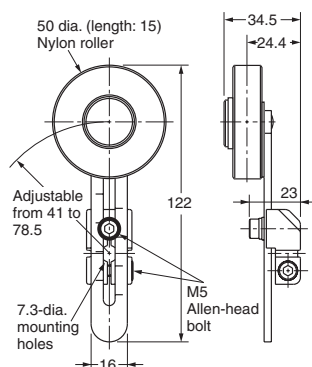
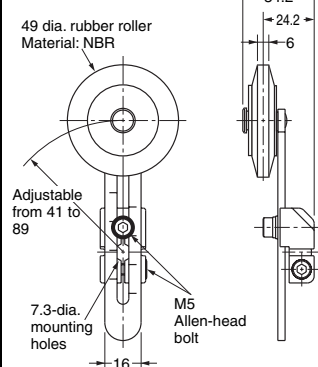
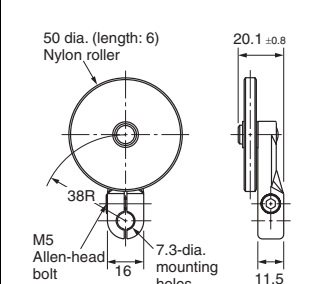
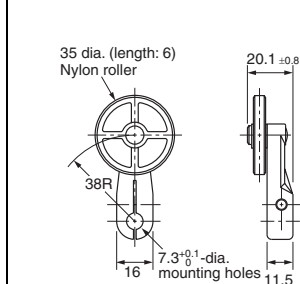
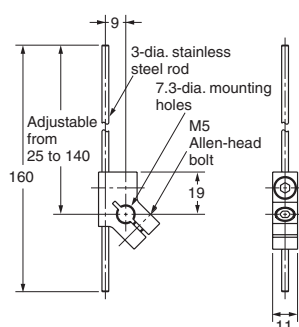
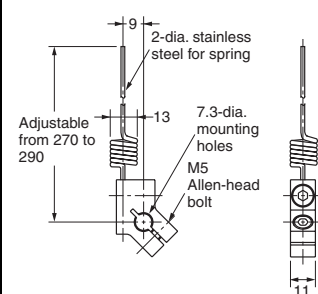
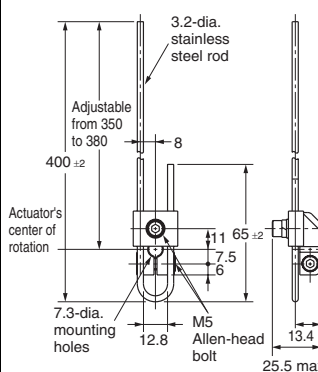
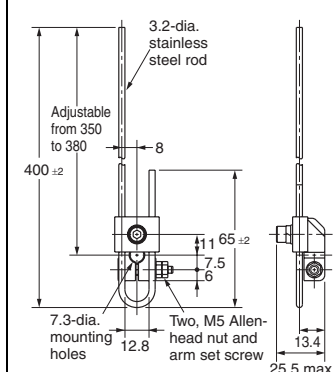
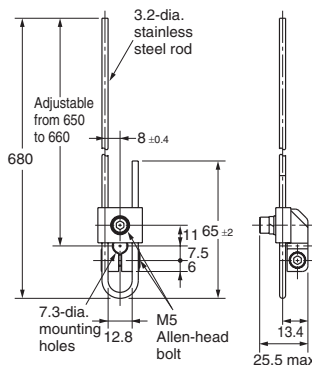
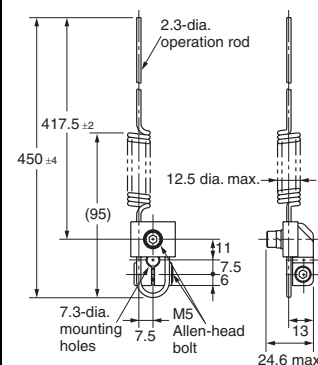
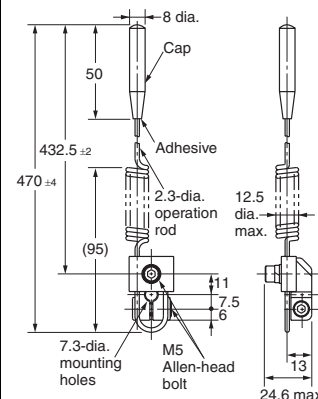
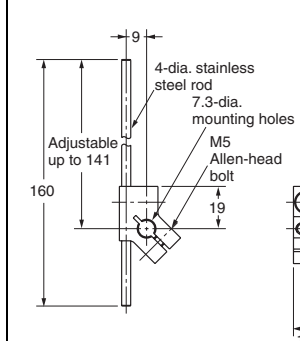
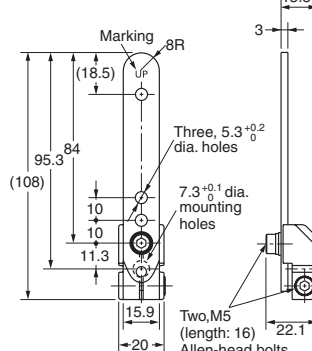
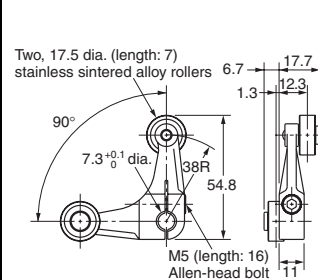
Actuators (Levers Only)

Lever: Only rotating lever models are illustrated.

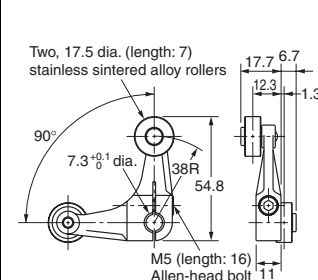
| | | | |
|---|--|--|--|
| <p>WL-1A100 Standard Lever</p> | <p>WL-1A115 Resin Roller</p> | <p>WL-1A400 Bearing Roller</p> | <p>WL-1A118 Nylon Roller: Roller Width: 30 mm</p> |
| <p>WL-1A105 Double Nuts</p> | <p>WL-1A103S Spatter Prevention</p> | <p>WL-1A200 Lever Length: 50 Roller Width: 15</p> | <p>WL-1A300 Lever Length: 63</p> |
| <p>WL-2A100</p> | <p>WL-2A111 Resin Roller</p> | <p>WL-2A107 Double Nuts</p> | <p>WL-2A108 Resin Roller</p> |
| <p>WL-2A122</p> | <p>WL-2A106</p> | <p>WL-2A130</p> | <p>WL-2A104</p> |

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

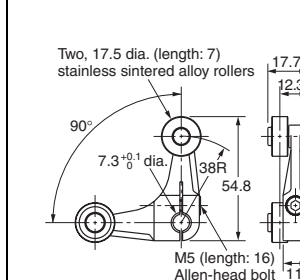
Lever: Only rotating lever models are illustrated.

WL-2A110

WL-2A105

WL-1A106

WL-1A110

WL-4A100

WL-4A201

WL-3A100

**WL-3A106
Double Nut**

WL-3A108

WL-3A200

WL-3A203

WL-4A112

WL-2A129

WL-5A101


WL-5A100 has a plastic roller

WL-5A103


WL-5A102 has a plastic roller

WL-5A105


WL-5A104 has a plastic roller

Note: 1. Unless otherwise indicated, a tolerance of ± 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.

Safety Precautions

Refer to **Safety Precautions for All Limit Switches**.

Precautions for Safe Use

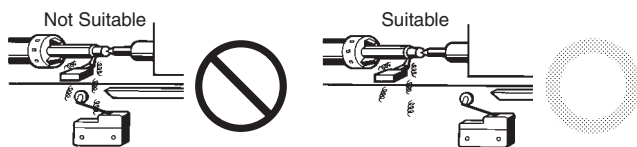
- When a rod or wired-type actuator is used, do not touch the top end of the actuator. Doing so may result in injury.
(Applicable models)
WLHAL5 and WL01HAL5 Rod Spring Levers and WLNJ-S2 and WL01NJ-S2 Steel-wire Actuators.
- A short-circuit may cause damage to the Switch, so insert a circuit breaker 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 IEC60269, 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.

Operating Environment

- Seal material may deteriorate if a Switch is used outdoor or where subject to special cutting oils, solvents, or chemicals. Always appraise performance under actual application conditions and set suitable maintenance and replacement periods.
- Install Switches where they will not be directly subject to cutting chips, dust, or dirt. The Actuator and Switch must also be protected from the accumulation of cutting chips or sludge.

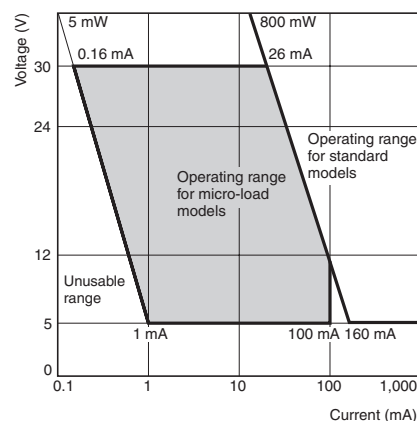


- Constantly subjecting a Switch to vibration or shock can result in wear, which can lead to contact interference with contacts, operation failure, reduced durability, and other problems. Excessive vibration or shock can lead to false contact operation or damage. Install Switches in locations not subject to shock and vibration and in orientations that will not produce resonance.
- The Switches have physical contacts. Using them in environments containing silicon gas will result in the formation of silicon oxide (SiO_2) due to arc energy. If silicon oxide accumulates on the contacts, contact interference can occur. If silicon oil, silicon filling agents, silicon cables, or other silicon products are present near the Switch, suppress arcing with contact protective circuits (surge killers) or remove the source of silicon gas.

Using Switches for Micro Loads

Contact faults may occur if a Switch for a general-load is used to switch a micro load circuit. Use switches in the ranges shown in the diagram below. However, even when using micro load models within the operating range shown here, if inrush current occurs when the contact is opened or closed, it may increase contact wear and so decrease durability. Therefore, insert a contact protection circuit where necessary. The minimum applicable load is the N-level reference value. This value indicates the malfunction reference level for the reliability level of 60% (λ_{60}).

The equation, $\lambda_{60} = 0.5 \times 10^{-6}/\text{operations}$ indicates that the estimated malfunction rate is less than 1/2,000,000 operations with a reliability level of 60%.



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 | Appropriate tightening 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 |

Installing the Switch

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

Mounting

| WL | Mounting locations |
|--|--------------------|
| <p>Front Mountig/ Rear Mountig</p> <p>Front Mountig : Four, $5.2^{+0.2}_0$ dia. holes or M5 tapped holes</p> <p>Rear Mountig : Four, $6.2^{+0.2}_0$ dia. holes</p> | |
| In case of side mounting for overtravel, 90° WL□-□□2N | Mounting locations |
| <p>Side Mountig</p> <p>Two, $5.2^{+0.2}_0$ dia. holes</p> | |

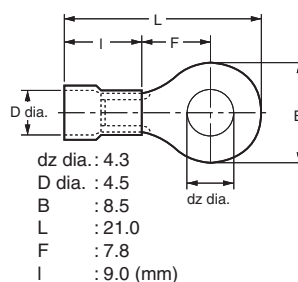
Connectors

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. Refer to *Limit Switch Connectors* for details on SC Connectors.

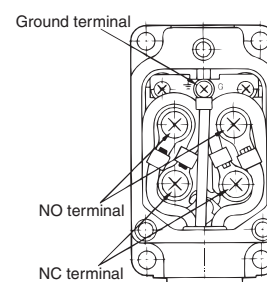
Wiring

- Use 1.25-mm² lead wires and M4-insulation covered crimp terminals for wiring.

Crimp Terminal External Dimensions



Wiring Method Switch Box Section



- The ground terminal is only installed on models with ground terminals.

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

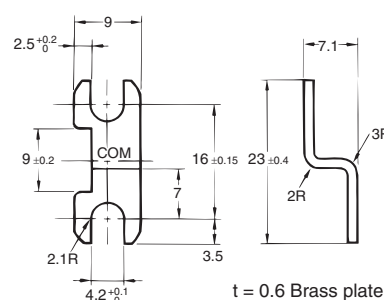
All rotating lever models, except the fork lever lock models, have a set position marker plate. (See page 23.) After operation, set the indicator needle on the marker plate so that is in the convex section of the bearing.

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

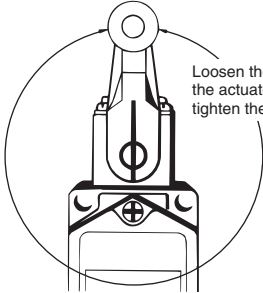
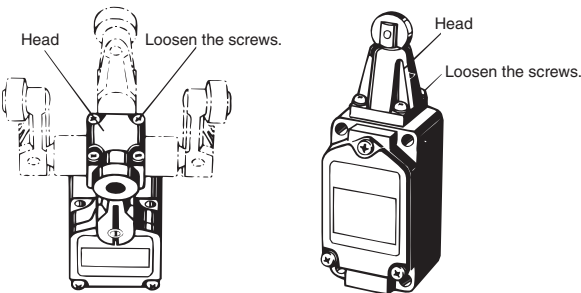
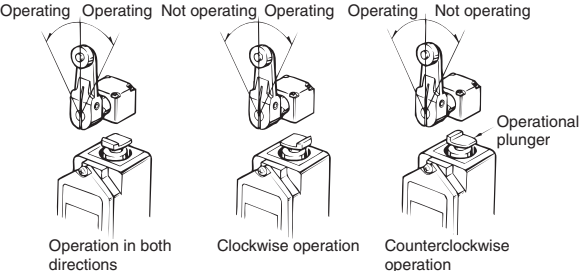
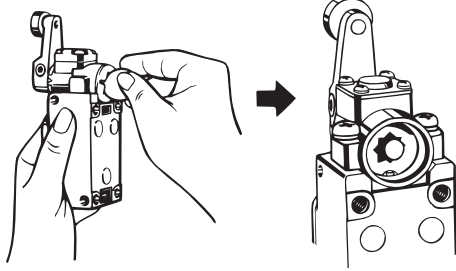
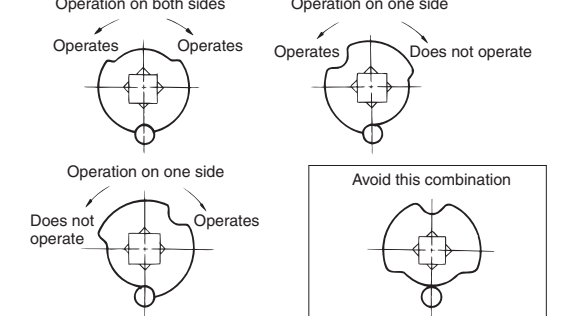
By using a short circuit plate, as shown in the following diagram, the Switch can be fabricated into a single-polarity double-break switch. When ordering, specify WL Terminal Plate (product code: WL-9662F).

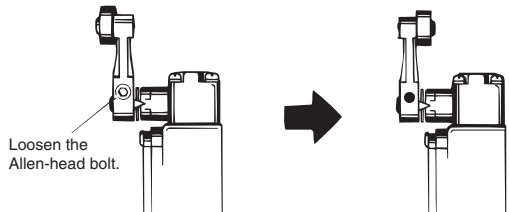
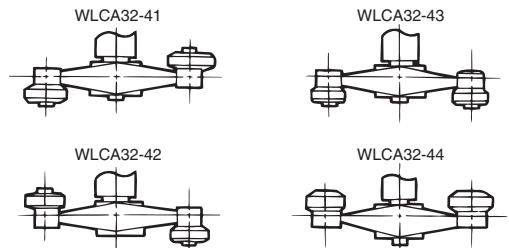
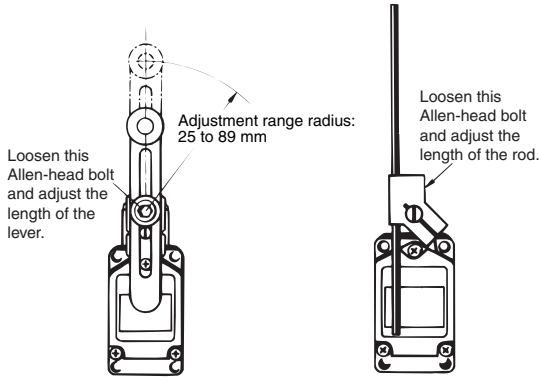


Indicator

Indicator-equipped switch has contacts and indicator in parallel. When contacts are open, leakage current flows through the indicator circuit and may cause load's malfunction. Please check the load's OFF current before use the indicator-equipped switch.

Using the Switches

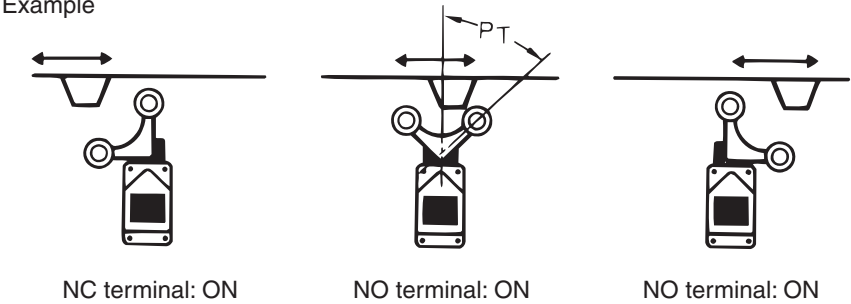
| Item | Applicable models and Actuators | Details |
|---|---|--|
| Changing the Installation Position of the Actuator By loosening the Allen-head bolt on the actuator lever, the position of the actuator can be set anywhere within the 360°. With Indicator-equipped Switches, the actuator lever comes in 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□ Adjustable Roller Levers: WLCA12, WL01CA12, WLCA12-2, WL01CA12-2, WLH12, WL01H12, WLG12, WL01G12, Adjustable Rod Levers: WLCL, WL01CL, WLCL-2, WL01CL-2, WLHL, WL01HL, WLGL, WL01GL |  |
| Changing the Orientation of the Head 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□, WLH□, WL01H□, WLG□, WL01G□, WLMCA2□, WLMH2□, WLMG2□, WLMGCA2□ Adjustable Rod Levers: WLCL, WL01CL, WLCL-2, WL01CL-2 Horizontal Plungers: WLSD□, WL01SD□ Top-roller Plungers: WLD2, WL01D2 Sealed Top-roller Plungers: WLD28, WL01D28 Does not include -RP60 Series or -141 Series. |  |
| Changing the Operating Direction 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□ Adjustable Roller Levers: WLCA12, WL01CA12 Adjustable Rod Levers: WLCL, WL01CL Overtravel Models: WLCA□-2N, WL01CA□-2N | <p>One-side Operation for General-purpose and High-precision Switches</p> <p>The output of the Switch will be changed, regardless of which direction the lever is pushed. The output of the Switch will only be changed when the lever is pushed in one direction.</p> <p>Operating Operating Not operating Operating Operating Not operating</p>  <p>Cam Direction Changing Procedure for Overtravel, 90° Operation Switches</p> <p>Loosen the cam holder with a coin or screwdriver. Take out the cam from the Switch. Change the direction of the cam as required by your intended operation and then reinstall the cam.</p>  <p>Relationship of cam to operation as observed from the rear of Switch</p> <p>Operation on both sides Operation on one side</p>  |

| Item | Applicable models and Actuators | Details |
|--|--|--|
| Installing the Roller on the Inside 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. Fork Lever Locks: WLCA32-4□, WL01CA32-4□ |  Loosen the Allen-head bolt. |
| Selecting the Roller Position There are four types of fork lever lock for use depending on the roller position. | Fork Lever Locks: WLCA32-4□, WL01CA32-4□ |  Note: An explanation of the operation of fork lever locks is provided after this table. |
| Adjusting the Length of the Rod or Lever The length of the rod or lever can be adjusted by loosening the Allen-head bolt. | Adjustable Roller Levers: WLCA12, WL01CA12 etc. Adjustable Rod Levers: WLCL, WL01CL, etc. | WLCA12 etc.  Adjustment range radius: 25 to 89 mm Loosen this Allen-head bolt and adjust the length of the lever. Loosen this Allen-head bolt and adjust the length of the rod. |

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



Read and Understand This Catalog

Please read and understand this catalog before purchasing the products. Please consult your OMRON representative if you have any questions or comments.

Warranty and Limitations of Liability

WARRANTY

OMRON's exclusive warranty is that the products are free from defects in materials and workmanship for a period of one year (or other period if specified) from date of sale by OMRON.

OMRON MAKES NO WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, REGARDING NON-INFRINGEMENT, MERCHANTABILITY, OR FITNESS FOR PARTICULAR PURPOSE OF THE PRODUCTS. ANY BUYER OR USER ACKNOWLEDGES THAT THE BUYER OR USER ALONE HAS DETERMINED THAT THE PRODUCTS WILL SUITABLY MEET THE REQUIREMENTS OF THEIR INTENDED USE. OMRON DISCLAIMS ALL OTHER WARRANTIES, EXPRESS OR IMPLIED.

LIMITATIONS OF LIABILITY

OMRON SHALL NOT BE RESPONSIBLE FOR SPECIAL, INDIRECT, OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS OR COMMERCIAL LOSS IN ANY WAY CONNECTED WITH THE PRODUCTS, WHETHER SUCH CLAIM IS BASED ON CONTRACT, WARRANTY, NEGLIGENCE, OR STRICT LIABILITY.

In no event shall the responsibility of OMRON for any act exceed the individual price of the product on which liability is asserted.

IN NO EVENT SHALL OMRON BE RESPONSIBLE FOR WARRANTY, REPAIR, OR OTHER CLAIMS REGARDING THE PRODUCTS UNLESS OMRON'S ANALYSIS CONFIRMS THAT THE PRODUCTS WERE PROPERLY HANDLED, STORED, INSTALLED, AND MAINTAINED AND NOT SUBJECT TO CONTAMINATION, ABUSE, MISUSE, OR INAPPROPRIATE MODIFICATION OR REPAIR.

Application Considerations

SUITABILITY FOR USE

OMRON shall not be responsible for conformity with any standards, codes, or regulations that apply to the combination of products in the customer's application or use of the products.

At the customer's request, OMRON will provide applicable third party certification documents identifying ratings and limitations of use that apply to the products. This information by itself is not sufficient for a complete determination of the suitability of the products in combination with the end product, machine, system, or other application or use.

The following are some examples of applications for which particular attention must be given. This is not intended to be an exhaustive list of all possible uses of the products, nor is it intended to imply that the uses listed may be suitable for the products:

- Outdoor use, uses involving potential chemical contamination or electrical interference, or conditions or uses not described in this catalog.
- Nuclear energy control systems, combustion systems, railroad systems, aviation systems, medical equipment, amusement machines, vehicles, safety equipment, and installations subject to separate industry or government regulations.
- Systems, machines, and equipment that could present a risk to life or property.

Please know and observe all prohibitions of use applicable to the products.

NEVER USE THE PRODUCTS FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON PRODUCTS ARE PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.

PROGRAMMABLE PRODUCTS

OMRON shall not be responsible for the user's programming of a programmable product, or any consequence thereof.

Disclaimers

CHANGE IN SPECIFICATIONS

Product specifications and accessories may be changed at any time based on improvements and other reasons.

It is our practice to change model numbers when published ratings or features are changed, or when significant construction changes are made. However, some specifications of the products may be changed without any notice. When in doubt, special model numbers may be assigned to fix or establish key specifications for your application on your request. Please consult with your OMRON representative at any time to confirm actual specifications of purchased products.

DIMENSIONS AND WEIGHTS

Dimensions and weights are nominal and are not to be used for manufacturing purposes, even when tolerances are shown.

PERFORMANCE DATA

Performance data given in this catalog is provided as a guide for the user in determining suitability and does not constitute a warranty. It may represent the result of OMRON's test conditions, and the users must correlate it to actual application requirements. Actual performance is subject to the OMRON Warranty and Limitations of Liability.

ERRORS AND OMISSIONS

The information in this document has been carefully checked and is believed to be accurate; however, no responsibility is assumed for clerical, typographical, or proofreading errors, or omissions.