

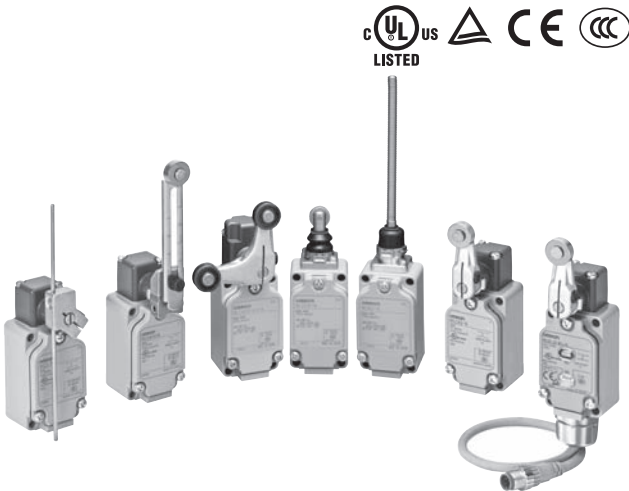
# Two-circuit Limit Switches

# WL-N/WLG


Two-circuit limit switches that can be selected to match the operating environment and application

**WL-N/Basic models,**  
**WLG/High-sensitivity and**  
**High-precision models**

- Wide variety of head shapes, including Roller Lever, Plunger, Flexible Rod, and Fork Lock Lever Switches (General-purpose Switches).
- You can select the optimum actuator shape for the workpiece shape and movement from a variety of actuators.
- In addition to general detection, we also have environment resistant models for harsh environments, sputter resistant models for welding processes, and long-life models for high-frequency use.
- Degree of Protection; IEC IP67



For the most recent information on models that have been certified for safety standards, refer to your OMRON website.

 Be sure to read *Safety Precautions* on pages 83 to 88 and *Safety Precautions for All Limit Switches*.

## Two-circuit Limit Switch

WL-N/WLG General-purpose Switches .....	page 7
WL-N/WLG Environment-resistant Switches .....	page 35
WL-N/WLG Spatter-prevention Switches.....	page 53
WL-N/WLG Long-life Switches.....	page 64













































































## Common Features

Safety Standards (Common).....	page 5
Common Accessories (Sold Separately) .....	page 75
Safety Precautions .....	page 83

## Model Number Structure





## List of Models




## Roller lever

					Actuator							
Type of Switches	Operating environment	Code	Indicator		Wiring Specifications	R38 	R50 	R63 	Adjustable Roller Lever (R25 to 89 mm) 	Page		
General-purpose Switches	Ambient operating temperature (-10 to 80°C)	---	Without operation indicator		Screw terminals					page 7		
			With operation indicator	LED								
				Neon lamp								
			With operation indicator	LED	Direct-wire connector							
			With operation indicator	LED	Pre-wired Connector							
Environment-resistant Switches	Ambient operating temperature (5 to 120°C)	TH	Without operation indicator		Screw terminals					page 35		
	Ambient operating temperature (-40 to 40°C)	TC										
	Chemicals and oil	RP										
	Outdoors	P1										
	Coolant drops and mist	RP60			Direct-wire cable							
	Mist (Improved sealing for conduit opening and cover)	139 RP40										
	Constant water drops and mist (Molded conduit opening and cover.)	140										
	Constant water drops or splattering cutting powder (Preventing intrusion of cutting powder through molded conduit opening, cover, and head seal, and a head cap)	141 145										
Spatter-prevention Switches	Spattering from welding		With operation indicator	LED	Screw terminals					page 53		
				Neon lamp								
				LED	Pre-wired connectors							
Long-life Switches	High-durability		With operation indicator	LED	Screw terminals					page 64		
				LED	Pre-wired connectors							

**Note:** ○ indicates features included in the ordered model.

## Plunger Actuators

Type	Operating environment	Code	Indicator	Wiring Specifications	Actuator	Sealed top-roller plunger 	Top-roller plunger 	Sealed top plunger 	Sealed top-ball plunger 	Page
General-purpose Switches	Ambient operating temperature (-10 to 80°C)	---	Without operation indicator	LED Neon lamp	Screw terminals	○*	○*	○	○	page 7
			With operation indicator			○*	○	○	○	
			With operation indicator	LED	Direct-wire connector	○*	---	---	---	
			With operation indicator	LED	Pre-wired connectors	○*	---	---	---	
Environment-resistant Switches	Ambient operating temperature (5 to 120°C)	TH	Without operation indicator	LED Neon lamp	Screw terminals	○	○	---	---	page 35
	Ambient operating temperature (-40 to 40°C)	TC				○	---	---	---	
	Chemicals and oil	RP				○	---	---	---	
	Outdoors	P1				---	---	---	---	
	Coolant drops and mist	RP60		LED Neon lamp	Direct-wire cable	○	---	---	---	
	Mist (Improved sealing for conduit opening and cover)	139 RP40				○	○	---	---	
	Constant water drops and mist (Molded conduit opening and cover.)	140				○	---	---	---	
	Constant water drops or splattering cutting powder (Preventing intrusion of cutting powder through molded conduit opening, cover, and head seal, and a head cap)	141 145				○	○	---	---	
Spatter-prevention Switches	Spattering from welding		With operation indicator	LED Neon lamp	Screw terminals	○	---	---	---	page 53
				LED	Pre-wired connectors	○	---	---	---	
				LED	Pre-wired connectors	○	---	---	---	

Type	Operating environment	Code	Indicator	Wiring Specifications	Actuator	Horizontal plunger 	Horizontal-roller plunger 	Horizontal-ball plunger 	Page
General-purpose Switches	Ambient operating temperature (-10 to 80°C)	---	Without operation indicator	LED Neon lamp	Screw terminals	○*	○*	○	page 7
			With operation indicator			○	○	○	
			With operation indicator	LED	Direct-wire connector	---	---	---	
			With operation indicator	LED	Pre-wired connectors	---	---	---	
Environment-resistant Switches	Ambient operating temperature (5 to 120°C)	TH	Without operation indicator	LED Neon lamp	Screw terminals	○	○	---	page 35
	Ambient operating temperature (-40 to 40°C)	TC				○	○	---	
	Chemicals and oil	RP				○	○	---	
	Outdoors	P1				---	---	---	
	Coolant drops and mist	RP60		LED Neon lamp	Direct-wire cable	○	○	---	
	Mist (Improved sealing for conduit opening and cover)	139 RP40				○	---	---	
	Constant water drops and mist (Molded conduit opening and cover.)	140				---	○	---	
	Constant water drops or splattering cutting powder (Preventing intrusion of cutting powder through molded conduit opening, cover, and head seal, and a head cap)	141 145				○	○	---	
Spatter-prevention Switches	Spattering from welding		With operation indicator	LED Neon lamp	Screw terminals	---	---	---	page 53
				LED	Pre-wired connectors	---	---	---	
				LED	Pre-wired connectors	---	---	---	

**Note:** ○ indicates features included in the ordered model.

General-purpose Switches

Environment-resistant Switches




Spatter-prevention Switches





Long-life Switches

Accessories

Safety Precautions





## Flexible Rod Actuators

					Actuator	Adjustable rod lever (25 to 140 mm)	Adjustable rod lever (350 to 380 mm)	Rod spring lever	Page
Type	Operating environment	Code	Indicator		Wiring Specifications				
General-purpose Switches	Ambient operating temperature (-10 to 80°C)	---	Without operation indicator		Screw terminals	○*	○	○	page 7
			With operation indicator	LED		○	---	---	
				Neon lamp		---	---	---	
			With operation indicator	LED	Direct-wire connector	○	○	○	
With operation indicator	LED	Pre-wired connectors	○	○	○				
Environment-resistant Switches	Ambient operating temperature (5 to 120°C)	TH	Without operation indicator		Screw terminals	○	---	---	page 35
	Ambient operating temperature (-40 to 40°C)	TC				○	---	---	
	Chemicals and oil	RP				○	---	---	
	Outdoors	P1				○	---	---	
	Coolant drops and mist	RP60			○	---	---		
	Mist (Improved sealing for conduit opening and cover)	139 RP40	○	---	---				
	Constant water drops and mist (Molded conduit opening and cover.)	140	○	---	---				

					Actuator	Coil spring (6.5 dia.) 	Coil spring (4.8 dia.) 	Resin rod (8 dia.) 	Steel wire (1 dia.) 	Page
Type	Operating environment	Code	Indicator		Wiring Specifications					
General-purpose Switches	Ambient operating temperature (-10 to 80°C)	---	Without operation indicator		Screw terminals	○*	○	○*	○	page 7
			With operation indicator	LED		○*	○	○*	○	
				Neon lamp		○*	○	○*	○	
			With operation indicator	LED	Direct-wire connector	---	---	---	---	
With operation indicator	LED	Pre-wired Connector	---	---	---	---				
Environment-resistant Switches	Ambient operating temperature (5 to 120°C)	TH	Without operation indicator		Screw terminals	○	---	---	---	page 35
	Ambient operating temperature (-40 to 40°C)	TC				○	---	---	---	
	Chemicals and oil	RP				○	---	○	---	
	Outdoors	P1				---	---	---	---	
	Coolant drops and mist	RP60	Direct-wire cable	○	---	○	---			
	Mist (Improved sealing for conduit opening and cover)	139 RP40		○	---	○	---			
	Constant water drops and mist (Molded conduit opening and cover.)	140		○	---	○	---			

**Note:** ○ indicates features included in the ordered model.

## Fork Lock Lever Actuators

Actuator					Fork Lock Lever A 	Fork Lock Lever B 	Fork Lock Lever C 	Fork Lock Lever D 	Page
Type	Operating environment	Indicator		Wiring Specifications					
General-purpose Switches	Ambient operating temperature (-10 to 80°C)	Without operation indicator		Screw terminals	○	○	○	○	page 7
		With operation indicator	LED		○	---	○	---	
			Neon lamp		○	○	○	---	
		With operation indicator	LED	Direct-wire connector	---	---	---	---	
		With operation indicator	LED	Pre-wired connectors	---	---	---	---	

**Note:** ○ indicates features included in the ordered model.

### Safety Standards (Common)

### Approved Standards

Agency	Standard	File No.	Approved models
UL	UL508	Contact your OMRON representative for information	Contact your OMRON representative for information
CSA cUL	CSA C22.2 No.14		
TÜV Rheinland	EN60947-5-1		
CCC (CQC)	GB/T14048.5		

### Approved Standard Ratings

UL/cUL, CSA (UL508, CSA C22.2 No.14)

Specifications			Approved Standards
Operation Indicator	Sensor I/O connectors	Item	
No indicator	No connector	Basic models	A600 1 A, 125 VDC
		High-sensitivity and High-precision models	B600 0.5 A, 125 VDC
	Pre-wired connector (AC)	Basic, High-sensitivity or High-precision models	C300 3 A, 250 VAC
	Pre-wired connector (DC) Direct-wire connector (DC)	Basic models	1 A, 125 VDC
Neon lamp	No connector	Basic models	A300 10 A, 250 VAC
		High-sensitivity and High-precision models	B300 0.5 A, 250 VAC
	Pre-wired connector (AC)	Basic, High-sensitivity or High-precision models	C300 3 A, 250 VAC
		High-sensitivity and High-precision models	0.5 A, 125 VDC
LED	No connector	Basic models	A150 10 A, 115 VAC 1 A, 115 VDC
		High-sensitivity and High-precision models	B150 5 A, 115 VAC 0.5 A, 115 VDC
	Pre-wired connector (AC)	Basic, High-sensitivity or High-precision models	C150 3 A, 115 VAC
	Pre-wired connector (DC) Direct-wire connector (DC)	Basic models	1 A, 115 VDC
	Pre-wired connector (DC) Direct-wire connector (DC)	High-sensitivity and High-precision models	0.5 A, 115 VDC
		High-sensitivity and High-precision models	0.5 A, 115 VDC

### A600 Authentication conditions

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

### C300 Authentication conditions

Rated voltage	Carrying current	Current (A)		Volt-ampere (VA)	
		Make	Break	Make	Break
120 VAC 240 VAC	2.5 A	15 7.5	1.5 0.75	1,800	180

### A300 Authentication conditions

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

### A150 Authentication conditions

Rated voltage	Carrying current	Current (A)		Volt-ampere (VA)	
		Make	Break	Make	Break
120 VAC	10 A	60	6	7,200	720

### C150 Authentication conditions

Rated voltage	Carrying current	Current (A)		Volt-ampere (VA)	
		Make	Break	Make	Break
120 VAC	2.5 A	15	1.5	1,800	180

### B600 Authentication conditions

Rated voltage	Carrying current	Current (A)		Volt-ampere (VA)	
		Make	Break	Make	Break
120 VAC 240 VAC 480 VAC 600 VAC	5 A	30 15 7.5 6	3 1.5 0.75 0.6	3,600	360

### B300 Authentication conditions

Rated voltage	Carrying current	Current (A)		Volt-ampere (VA)	
		Make	Break	Make	Break
120 VAC 240 VAC	5 A	30 15	3 1.5	3,600	360

### B150 Authentication conditions

Rated voltage	Carrying current	Current (A)		Volt-ampere (VA)	
		Make	Break	Make	Break
120 VAC	5 A	30	3	3,600	360

### TÜV (EN 60947-5-1)

Authentication conditions	Specifications					
	Direct-wire cable type					With Pre-wired DC connector model
	No indicator	Neon lamp	LED			
Working load category	AC-15	DC-12	AC-15	AC-15	DC-12	DC-12
Rated working voltage (Ue)	250 V	48 V	250 V	115 V	48 V	48 V
Rated working current (Ie)	2 A					
Conditional short-circuit current	100 A					
Short-circuit protective device (SCPD)	10 A, fuse type gG					
Rated insulation voltage (Ui)	250 V					48 V
Rated impulse dielectric strength (Uimp)	4 kV					800 V
Pollution degree	3					
Protection against electric shock	Class I					Class III

### CCC (GB/T14048.5)

Authentication conditions	Specifications						
	No indicator	Neon lamp	LED			With Pre-wired DC connector model	With Pre-wired AC connector model
Working load category	AC-15	DC-13	AC-15	AC-15	DC-13	DC-13	AC-15
Rated working voltage (Ue)	250 V	48 V	250 V	250 V	48 V	48 V	250 V
Rated working current (Ie)	2 A						
Conditional short-circuit current	1000 A						
Short-circuit protective device (SCPD)	10 A, fuse type gG						
Rated insulation voltage (Ui)	250 V						

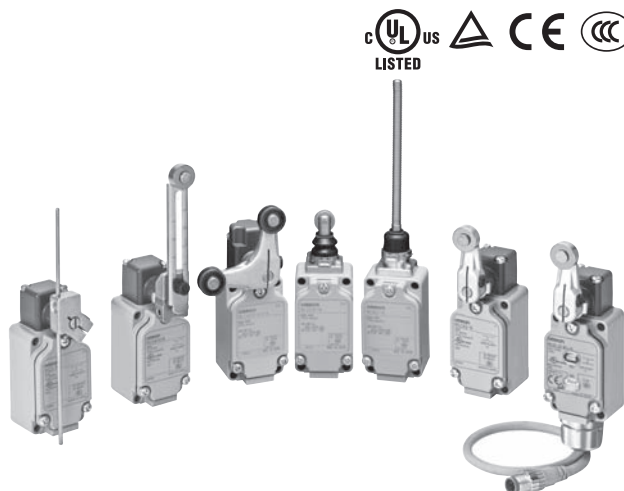
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# General-purpose Switches


## WL-N/WLG

### Wide variety of head shapes to match the operating environment and application

- Wide variety of head shapes, including Roller Lever, Plunger, Flexible Rod, and Fork Lock Lever Switches.
- Wide variety of head shapes for fork lock lever
- You can select the optimum actuator shape for the workpiece shape and movement from a variety of actuators. Enables selection of optimum shape
- Degree of Protection; IEC IP67
- Operation indicators (LED/neon lamps) for enabling simple daily inspection are available
- In addition to regular screw terminals, direct-wire and pre-wired connectors are also available based on the wiring specifications



For the most recent information on models that have been certified for safety standards, refer to the OMRON website.

 Be sure to read *Safety Precautions* on pages 83 to 88 and *Safety Precautions for All Limit Switches*.

### Features

#### A type with operation indicators for easily confirming operation is available

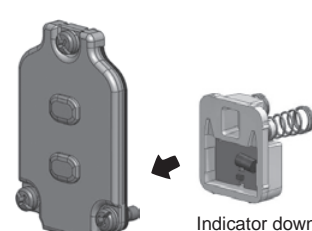
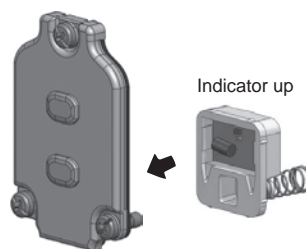
Indicates the operation status of the switches using LEDs and neon lamps.



The light-ON when operating status and the light-ON when not operating status can be easily switched by turning the lamp holder 180°.

Light-ON when Operating

Light-ON when Not Operating



#### Selectable based on wiring specifications



Screw terminals



Direct-wire connector



Pre-wired connector

Pre-wired connectors include Smartclick products that turn by only 1/8-turn when attaching and removing. This reduces the labor required for connections and maintenance.



 Smartclick

Smartclick is a trademark or registered trademark of OMRON Corporation in Japan and other countries.

## Model Number Structure

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





#### Basic models

WL□ - □□□□ -N  
(1) (2) (3) (4) (5)

#### (1) Actuator and Property Specifications

Code	Actuator		Pretravel (PT)
CA2	Roller Lever	Roller lever: R38 mm	15±5°
CA2-2			25±5°
CA2-2N			20° max.
CA2-7		Roller lever: R50 mm	15±5°
CA2-8		Roller lever: R63 mm	15±5°
CA12		Adjustable roller lever (R25 to 89 mm)	15±5°
CA12-2			25±5°
CA12-2N			20° max.
D28	Plunger Actuators	Sealed top-roller plunger	1.7 mm max.
D2		Top-roller plunger	1.7 mm max.
D18		Sealed top plunger	1.7 mm max.
D38		Sealed top-ball plunger	1.7 mm max.
SD		Horizontal plunger	2.8 mm max.
SD2		Horizontal-roller plunger	2.8 mm max.
SD3		Horizontal-ball plunger	2.8 mm max.
CL	Flexible Rod Actuators	Adjustable Rod Lever (25 to 140 mm)	15±5°
CL-2			25±5°
CL-2N			20° max.
CAL4		Adjustable Rod Lever (350 to 380 mm)	15±5°
CAL5			15±5°
NJ		Coil spring (6.5 dia.)	20±10 mm
NJ-30		Coil spring (4.8 dia.)	20±10 mm
NJ-2		Flexible rod: Resin rod (8 dia.)	40±20 mm
NJ-S2		Flexible rod: Steel wire (1 dia.)	40±20 mm
CA32-41	Fork Lock Lever *	A	55° max.
CA32-42		B	55° max.
CA32-43		C	55° max.
CA32-44		D	55° max.

\* The lever attachment method varies in A to D.

A	B	C	D
			

#### (2) Built-in Switch Specifications

Code	Specifications
None	Standard
55	Airtight built-in switch

#### (3) Conduit Size, Ground Terminal Specifications

Code	Specifications
-	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 *

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

#### (4) Indicator Specifications

Code	Specifications
None	No indicator
LD	LED (10 to 115 VAC/DC)
LE	Neon lamp (125 to 250 VAC)

#### (5) Wiring Specifications

Code	Terminal shape	Connector shape	Voltage	Wiring locations	Connector pin No.
None	Screw terminals (Conduit size: G½)	---	---	---	---
K13A	Direct-wire connector type	Threaded (M12)	AC	NO only	NO: ③ ④
K13			DC	NO only	NO: ③ ④
K43A			AC	NC+NO	NO: ③ ④ NC: ① ②
K43			DC	NC+NO	NO: ③ ④ NC: ① ②
-M1J	Pre-wired connector *	Threaded (M12)	DC	NO only	NO: ③ ④
-M1GJ				NO only	NO: ① ④
-M1JB				NC only	NC: ③ ②
-DGJ				NC+NO	NO: ③ ④ NC: ① ②
-DK1EJ	Pre-wired connector *	Smartclick	DC	NO only	NO: ③ ④ NC: ②
-DTGJ				NC+NO	NO: ③ ④ NC: ① ②
-DTK1EJ				NO only	NO: ③ ④ NC: ②

\* The standard cable length for a pre-wired connector is 0.3 m. Contact your OMRON representative for information on other cable lengths.



## High-sensitivity and High-precision Models

WL $\square$  -  $\square\square\square\square$   
 (1) (2) (3) (4) (5)

## (1) Actuator and Property Specifications

Code	Actuator		Pretravel (PT)
<b>2</b>	Roller lever	Roller lever: R38 mm High-sensitivity Models	10° <sup>+2°</sup> <sub>-1°</sub>
<b>CA2</b>	Roller lever	Roller lever: R38 mm High-precision Models	5° <sup>+2°</sup> <sub>0°</sub>
<b>12</b>	Roller lever	Adjustable roller lever (R25 to 89 mm) High-sensitivity Models	10° <sup>+2°</sup> <sub>-1°</sub>
<b>L</b>	Flexible rod	Adjustable Rod Lever (25 to 140 mm) High-sensitivity Models	10° <sup>+2°</sup> <sub>-1°</sub>

## (2) Built-in Switch Specifications

Code	Specifications
<b>None</b>	Standard built-in switch
<b>55</b>	Airtight built-in switch

## (3) Conduit Size, Ground Terminal Specifications

Code	Specifications
<b>-</b>	G1/2 without ground terminal
<b>G1</b>	G1/2 with ground terminal *
<b>G</b>	Pg13.5 with ground terminal *
<b>Y</b>	M20 with ground terminal *
<b>TS</b>	1/2-14NPT with ground terminal *

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

## (4) Indicator Specifications

Code	Specifications
<b>None</b>	No indicator
<b>LE</b>	Neon lamp (125 to 250 VAC) *
<b>LD</b>	LED (10 to 115 VAC/DC)

\* (5)Wiring Specifications: Screw terminals only

## (5) Wiring Specifications





Code	Terminal shape	Connector shape	Voltage	Wiring locations	Connector pin No.
<b>None</b>	Screw terminals (Conduit size: G½)	---	---	---	---
<b>K13</b>	Direct-wire connector type	Threaded (M12)	DC	NO only	NO: ③ ④
<b>K43</b>				NC+NO	NO: ③ ④ NC: ① ②
<b>-M1J</b>	Pre-wired connector type *	Threaded (M12)	DC	NO only	NO: ③ ④
<b>-M1GJ</b>				NO only	NO: ① ④
<b>-M1JB</b>				NC only	NC: ③ ②
<b>-DGJ03</b>				NC+NO	NO: ③ ④ NC: ① ②
<b>-DK1EJ03</b>				NO only	NO: ③ ④ NC: ②
<b>-M1TJ</b>	Pre-wired connectors type *	Smartclick	DC	NO only	NO: ③ ④
<b>-M1TGJ</b>				NO only	NO: ① ④
<b>-M1TJB</b>				NC only	NC: ③ ②
<b>-DTGJ03</b>				NC+NO	NO: ③ ④ NC: ① ②
<b>-DTK1EJ03</b>				NO only	NO: ③ ④ NC: ②

\* The standard cable length for a pre-wired connector is 0.3 m.  
Contact your OMRON representative for information on other cable lengths.



## Ordering Information

## Roller Lever

Standard built-in switch

Appearance	Actuator	Terminal shape	Pretravel (PT)	Without operation indicator	With operation indicator *	
					LED	Neon lamp
				Model	Model	Model
	Roller lever: R38 mm	Screw terminals (Conduit size: G½)	15±5°	WLCA2-N	WLCA2-LD-N	WLCA2-LE-N
			25±5°	WLCA2-2-N	WLCA2-2LD-N	WLCA2-2LE-N
			20° max.	WLCA2-2N-N	WLCA2-2NLD-N	WLCA2-2NLE-N
			10° <sup>+2°</sup> <sub>-1°</sub>	WLG2	WLG2-LD	WLG2-LE
			5° <sup>+2°</sup> <sub>0°</sub>	WLGCA2	WLGCA2-LD	WLGCA2-LE
	Roller lever: R50 mm		15±5°	WLCA2-7-N	WLCA2-7LD-N	WLCA2-7LE-N
			25±5°	---	---	---
			20° max.	---	---	---
	Roller lever: R63 mm		15±5°	WLCA2-8-N	WLCA2-8LD-N	WLCA2-8LE-N
			25±5°	---	---	---
			20° max.	---	---	---
	Adjustable roller lever (R25 to 89 mm)		15±5°	WLCA12-N	WLCA12-LD-N	WLCA12-LE-N
			25±5°	WLCA12-2-N	WLCA12-2LD-N	WLCA12-2LE-N
			20° max.	WLCA12-2N-N	WLCA12-2NLD-N	WLCA12-2NLE-N
			10° <sup>+2°</sup> <sub>-1°</sub>	WLG12	WLG12-LD	WLG12-LE



\* The default setting is light-ON when not operating (NO wiring). Turn the lamp holder by 180° to change the setting to light-ON when operating (NC wiring).

Appearance	Actuator	Terminal shape	Pretravel (PT)	Connector shape	Voltage	Wiring locations	Connector pin No.	Model
	Roller lever: R38 mm	Direct-wire connector	15±5°	Threaded (M12)	AC	NO only	NO: ③ ④	WLCA2-LDK13A-N
					DC	NO only	NO: ③ ④	WLCA2-LDK13-N
					AC	NC+NO	NO: ③ ④ NC: ① ②	WLCA2-LDK43A-N
			DC		NC+NO	NO: ③ ④ NC: ① ②	WLCA2-LDK43-N	
					NO only	NO: ③ ④	WLG2-LDK13	
					NC+NO	NO: ③ ④ NC: ① ②	WLG2-LDK43	
					NO only	NO: ③ ④	WLGCA2-LDK13	
					NC+NO	NO: ③ ④ NC: ① ②	WLGCA2-LDK43	
10° <sup>+2°</sup> <sub>-1°</sub>	5° <sup>+2°</sup> <sub>0°</sub>							
	Roller lever: R38 mm	Pre-wired connectors	15±5°	Threaded (M12)	DC	NO only	NO: ③ ④	WLCA2-LD-M1J-N
						NO only	NO: ③ ④	WLCA2-LD-M1GJ-N
						NC only	NC: ③ ②	WLCA2-LD-M1JB-N
						NC+NO	NO: ③ ④ NC: ① ②	WLCA2-LD-DGJ-N
				Smartclick		NO only	NO: ③ ④ NC: ②	WLCA2-LD-DK1EJ-N
						NC+NO	NO: ③ ④ NC: ① ②	WLCA2-LD-DTGJ-N
						NO only	NO: ③ ④ NC: ②	WLCA2-LD-DTK1EJ-N
						NO only	NO: ③ ④	WLG2-LD-M1J
			10° <sup>+2°</sup> <sub>-1°</sub>	Threaded (M12)		NO only	NO: ① ④	WLG2-LD-M1GJ
						NC only	NC: ③ ②	WLG2-LD-M1JB
						NC+NO	NO: ③ ④ NC: ① ②	WLG2-LD-DGJ03
						NO only	NO: ③ ④ NC: ②	WLG2-LD-DK1EJ03
				Smartclick		NO only	NO: ③ ④	WLG2-LD-M1TJ
						NO only	NO: ① ④	WLG2-LD-M1TGJ
						NC only	NC: ③ ②	WLG2-LD-M1TJB
						NC+NO	NO: ③ ④ NC: ① ②	WLG2-LD-DTGJ03
			5° <sup>+2°</sup> <sub>0°</sub>	Threaded (M12)		NO only	NO: ③ ④ NC: ②	WLG2-LD-DTK1EJ03
						NO only	NO: ③ ④	WLGCA2-LD-M1J
						NO only	NO: ① ④	WLGCA2-LD-M1GJ
						NC only	NC: ③ ②	WLGCA2-LD-M1JB
				Smartclick		NC+NO	NO: ③ ④ NC: ① ②	WLGCA2-LD-DGJ03
						NC+NO	NO: ③ ④ NC: ① ②	WLGCA2-LD-DTGJ03
						NO only	NO: ③ ④ NC: ②	WLGCA2-LD-DTK1EJ03
						NO only	NO: ③ ④ NC: ②	WLGCA2-LD-DTK1EJ03



**Note:** 1. The photo shows a typical model.

2. The default setting is light-ON when not operating (NO wiring). Turn the lamp holder by 180° to change the setting to light-ON when operating (NC wiring). (However, Three-core and Four-core Switches cannot be switched to light-ON when operating (NC wiring))

## Airtight Built-in Switch

Appearance	Actuator	Terminal shape	Pretravel (PT)	Without operation indicator	With operation indicator *	
				Model	LED	Neon lamp
					Model	Model
	Roller lever: R38 mm	Screw terminals (Conduit size: G $\frac{1}{2}$ )	15 $\pm$ 5°	WLCA2-55-N	WLCA2-55LD-N	WLCA2-55LE-N
			25 $\pm$ 5°	WLCA2-255-N	WLCA2-255LD-N	WLCA2-255LE-N
			20° max.	WLCA2-2N55-N	WLCA2-2N55LD-N	WLCA2-2N55LE-N
			10° $^{+2}_{-1}$ °	WLG2-55	WLG2-55LD	WLG2-55LE
			5° $^{+2}_{-0}$ °	WLGCA2-55	WLGCA2-55LD	WLGCA2-55LE
	Adjustable roller lever (R25 to 89 mm)	Screw terminals (Conduit size: G $\frac{1}{2}$ )	15 $\pm$ 5°	WLCA12-55-N	WLCA12-55LD-N	WLCA12-55LE-N
			25 $\pm$ 5°	---	---	---
			20° max.	---	---	---
			10° $^{+2}_{-1}$ °	---	---	---

\* The default setting is light-ON when not operating (NO wiring). Turn the lamp holder by 180° to change the setting to light-ON when operating (NC wiring).








Appearance	Actuator	Terminal shape	Pretravel (PT)	Connector shape	Voltage	Wiring locations	Connector pin No.	Model
	Roller lever: R38 mm	Direct-wire connector	15±5°	Threaded (M12)	DC	NO only	NO: ③ ④	WLCA2-55LDK13-N
			10° <sup>+2°</sup> <sub>-1°</sub>			NC+NO	NO: ③ ④ NC: ① ②	WLCA2-55LDK43-N
						NO only	NO: ③ ④	WLG2-55LDK13
						NC+NO	NO: ③ ④ NC: ① ②	WLG2-55LDK43
						NO only	NO: ③ ④	WLGCA2-55LDK13
						NC+NO	NO: ③ ④ NC: ① ②	WLGCA2-55LDK43
	Roller lever: R38 mm	Pre-wired connectors	15±5°	Threaded (M12)	DC	NO only	NO: ③ ④	WLCA2-55LD-M1J-N
						NO only	NO: ① ④	WLCA2-55LD-M1GJ-N
						NC only	NC: ③ ②	WLCA2-55LD-M1JB-N
						NC+NO	NO: ③ ④ NC: ① ②	WLCA2-55LD-DGJ-N
						NO only	NO: ③ ④ NC: ②	WLCA2-55LD-DK1EJ-N
						NC+NO	NO: ③ ④ NC: ① ②	WLCA2-55LD-DTGJ-N
			10° <sup>+2°</sup> <sub>-1°</sub>	Threaded (M12)		NO only	NO: ③ ④	WLD2-55LD-M1J
						NO only	NO: ① ④	WLG2-55LD-M1GJ
						NC only	NC: ③ ②	WLG2-55LD-M1JB
						NC+NO	NO: ③ ④ NC: ① ②	WLG2-55LD-DGJ03
				Smartclick		NO only	NO: ③ ④ NC: ②	WLG2-55LD-DK1EJ03
						NO only	NO: ① ④	WLG2-55LD-M1TGJ
						NC only	NC: ③ ②	WLG2-55LD-M1TJB
						NC+NO	NO: ③ ④ NC: ① ②	WLG2-55LD-DTGJ03

**Note:** 1. The photo shows a typical model.


2. The default setting is light-ON when not operating (NO wiring). Turn the lamp holder by 180° to change the setting to light-ON when operating (NC wiring). (However, Three-core and Four-core Switches cannot be switched to light-ON when operating (NC wiring))

## Plunger Actuators

### Standard built-in switch





Appearance	Actuator	Terminal shape	Pretravel (PT)	Without operation indicator	With operation indicator *	
				Model	LED	Neon lamp
					Model	Model
	Sealed top-roller plunger	Screw terminals (Conduit size: G½)	1.7 mm max.	WLD28-N	WLD28-LD-N	WLD28-LE-N
	Top-roller plunger			WLD2-N	WLD2-LD-N	WLD2-LE-N
	Sealed top plunger			WLD18-N	WLD18-LD-N	WLD18-LE-N
	Sealed top-ball plunger			WLD38-N	WLD38-LD-N	WLD38-LE-N
	Horizontal plunger		2.8 mm max.	WLSN-N	WLSN-LD-N	WLSN-LE-N
	Horizontal-roller plunger			WLSN2-N	WLSN2-LD-N	WLSN2-LE-N
	Horizontal-ball plunger			WLSN3-N	WLSN3-LD-N	WLSN3-LE-N

\* The default setting is light-ON when not operating (NO wiring). Turn the lamp holder by 180° to change the setting to light-ON when operating (NC wiring).


Appearance	Actuator	Terminal shape	Pretravel (PT)	Connector shape	Voltage	Wiring locations	Connector pin No.	Model
	Sealed top-roller plunger	Direct-wire connector type	1.7 mm max.	Threaded (M12)	DC	NO only	NO: ③ ④	WLD28-LDK13-N
		Pre-wired connector type				NC+NO	NO: ③ ④ NC: ① ②	WLD28-LDK43-N
						NO only	NO: ③ ④	WLD28-LD-M1J-N
						NO only	NO: ① ④	WLD28-LD-M1GJ-N
						NC+NO	NO: ③ ④ NC: ① ②	WLD28-LD-DGJ-N
						NO only	NO: ③ ④ NC: ②	WLD28-LD-DK1EJ-N

**Note:** The default setting is light-ON when not operating (NO wiring). Turn the lamp holder by 180° to change the setting to light-ON when operating (NC wiring). (However, Three-core and Four-core Switches cannot be switched to light-ON when operating (NC wiring))

### Airtight Built-in Switch

Appearance	Actuator	Terminal shape	Pretravel (PT)	Without operation indicator	With operation indicator *	
				Model	LED	Neon lamp
					Model	Model
	Sealed top-roller plunger	Screw terminals (Conduit size: G½)	1.7 mm max.	WLD28-55-N	WLD28-55LD-N	WLD28-55LE-N
	Top-roller plunger		1.7 mm max.	WLD2-55-N	WLD2-55LD-N	WLD2-55LE-N
	Horizontal plunger		2.8 mm max.	WLSN-55-N	WLSN-55LD-N	---
	Horizontal-roller plunger		2.8 mm max.	WLSN2-55-N	WLSN2-55LD-N	---








\* The default setting is light-ON when not operating (NO wiring). Turn the lamp holder by 180° to change the setting to light-ON when operating (NC wiring).

Appearance	Actuator	Terminal shape	Pretravel (PT)	Connector shape	Voltage	Wiring locations	Connector pin No.	Model
	Sealed top-roller plunger	Direct-wire connector type	1.7 mm max.	Threaded (M12)	DC	NO only	NO: ③ ④	WLD28-55LDK13-N
		Pre-wired connectors type				NC+NO	NO: ③ ④ NC: ① ②	WLD28-55LDK43-N
						NO only	NO: ③ ④	WLD28-55LD-M1J-N
						NO only	NO: ① ④	WLD28-55LD-M1GJ-N
						NC+NO	NO: ③ ④ NC: ① ②	WLD28-55LD-DGJ-N
						NO only	NO: ③ ④ NC: ②	WLD28-55LD-DK1EJ-N

**Note:** The default setting is light-ON when not operating (NO wiring). Turn the lamp holder by 180° to change the setting to light-ON when operating (NC wiring). (However, Three-core and Four-core Switches cannot be switched to light-ON when operating (NC wiring)).

## Flexible Rod

### Standard built-in switch

Appearance	Actuator	Terminal shape	Pretravel (PT)	Without operation indicator	With operation indicator *	
					LED	Neon lamp
				Model	Model	Model
	Adjustable rod lever: (25 to 140 mm)	Screw terminals (Conduit size: G½)	15±5°	WLCL-N	WLCL-LD-N	WLCL-LE-N
			25±5°	WLCL-2-N	WLCL-2LD-N	WLCL-2LE-N
			20° max.	WLCL-2N-N	WLCL-2NLD-N	WLCL-2NLE-N
			10° <sup>+2°</sup> <sub>-1°</sub>	WLGL	WLGL-LD	WLGL-LE
	Adjustable rod lever: (350 to 380 mm)		15±5°	WLCAL4-N	WLCAL4-LD-N	WLCAL4-LE-N
			25±5°	---	---	---
			20° max.	---	---	---
	Rod spring lever		15±5°	WLCAL5-N	WLCAL5-LD-N	WLCAL5-LE-N
			25±5°	---	---	---
			20° max.	---	---	---
	Coil spring (6.5 dia.)		20±10 mm	WLNJ-N	WLNJ-LD-N	WLNJ-LE-N
	Coil spring (4.8 dia.)		20±10 mm	WLNJ-30-N	WLNJ-30LD-N	WLNJ-30LE-N
	Flexible rod		40±20 mm	WLNJ-2-N	WLNJ-2LD-N	WLNJ-2LE-N
	Flexible rod: Steel wire (1 dia.)		40±20 mm	WLNJ-S2-N	WLNJ-S2LD-N	WLNJ-S2LE-N

\* The default setting is light-ON when not operating (NO wiring). Turn the lamp holder by 180° to change the setting to light-ON when operating (NC wiring).

### Airtight Built-in Switch Specifications

Appearance	Actuator	Terminal shape	Pretravel (PT)	Without operation indicator Model	With operation indicator *	
					LED Model	Neon lamp Model
	Adjustable rod lever: 25 to 140 mm	Screw terminals (Conduit size: G½)	15±5°	WLCL-55-N	WLCL-55LD-N	---
			25±5°	---	---	---
			20° max.	---	---	---
	Coil spring (6.5 dia.)		20±10 mm	WLNJ-55-N	WLNJ-55LD-N	---
	Flexible rod: Resin rod (8 dia.)		40±20 mm	WLNJ-255-N	WLNJ-255LD-N	---

\* The default setting is light-ON when not operating (NO wiring). Turn the lamp holder by 180° to change the setting to light-ON when operating (NC wiring).

## Fork Lock Lever

Appearance	Actuator	Terminal shape	Pretravel (PT)	Without operation indicator Model	With operation indicator *	
					LED Model	Neon lamp Model
	Fork Lock Lever A	Screw terminals (Conduit size: G½)	55° max.	WLCA32-41-N	WLCA32-41LD-N	WLCA32-41LE-N
	Fork Lock Lever B		55° max.	WLCA32-42-N	---	WLCA32-42LE-N
	Fork Lock Lever C		55° max.	WLCA32-43-N	WLCA32-43LD-N	WLCA32-43LE-N
	Fork Lock Lever D		55° max.	WLCA32-44-N	---	---

\* The default setting is light-ON when not operating (NO wiring). Turn the lamp holder by 180° to change the setting to light-ON when operating (NC wiring).

## Specifications

### Ratings

#### Screw terminals

#### Without Operation Indicator

##### Basic models (WL-N)

Ratings		Non-inductive load (A)				Inductive load (A)			
		Basic models (WL-N)				Basic models (WL-N)			
		Resistive load		Lamp load		Inductive load		Motor load	
Voltage (V)		NC	NO	NC	NO	NC	NO	NC	NO
AC	125	10	3	1.5	10	5	2.5		
	250	10	2	1	10	3	1.5		
	500	10	1.5	0.8	3	1.5	0.8		
DC	8	10	6	3	10	6			
	14	10	6	3	10	6			
	30	6	4	3	6	4			
	125	0.8	0.2	0.2	0.8	0.2			
	250	0.4	0.1	0.1	0.4	0.1			

##### High-sensitivity and High-precision models (WLG)

Ratings		Non-inductive load (A)	
		High-sensitivity and High-precision models (WLG) Horizontal plunger models (WLS□)	
		Resistive load	
Voltage (V)		NC	NO
AC	125	5	
	250	5	
DC	125	0.4	
	250	0.2	

#### With Operation Indicator (LED)

##### Basic models (WL-N)

Ratings		Non-inductive load (A)				Inductive load (A)			
		Basic models (WL-N)				Basic models (WL-N)			
		Resistive load		Lamp load		Inductive load		Motor load	
Voltage (V)		NC	NO	NC	NO	NC	NO	NC	NO
AC	115	10	3	1.5	10	5	2.5		
DC	12	10	6	3	10	6			
	24	6	4	3	6	4			
	48	3	2	1.5	3	0.2			
	115	0.8	0.2		0.8	0.1			

##### High-sensitivity and High-precision models (WLG)

Ratings		Non-inductive load (A)	
		High-sensitivity and High-precision models (WLG) Horizontal plunger models (WLS□)	
		Resistive load	
Voltage (V)		NC	NO
AC	115	5	
DC	115	0.4	

#### With Operation Indicators (Neon Lamps)

##### Basic models (WL-N)

Ratings		Non-inductive load (A)				Inductive load (A)			
		Basic models (WL-N)				Basic models (WL-N)			
		Resistive load		Lamp load		Inductive load		Motor load	
Voltage (V)		NC	NO	NC	NO	NC	NO	NC	NO
AC	125	10	3	1.5	10	5	2.5		
	250	10	2	1	10	3	1.5		

##### High-sensitivity and High-precision models (WLG)

Ratings		Non-inductive load (A)	
		High-sensitivity and High-precision models (WLG) Horizontal plunger models (WLS□)	
		Resistive load	
Voltage (V)		NC	NO
AC	125	5	
	250	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.

#### Allowable Inrush Current/Minimum Applicable Load

Operating characteristics type		Basic models (WL-N)	High-sensitivity and High-precision models (WLG) Horizontal plunger models (WLS□)
Inrush current	NC	30 A max.	15 A max.
	NO	20 A max.	10 A max.
Minimum applicable load		5 VDC 1 mA, resistive load, P level	5 VDC 1 mA, resistive load, P level

#### Operation Indicator

Operation indicator type	LED	Neon lamp
Rated voltage	10 to 115 VAC/DC	125 to 250 VAC
Leakage current (Reference value)	Approx. 0.4 mA at 10 VAC/DC Approx. 0.5 mA at 115 VAC/DC	Approx. 0.6 mA at 125 VAC Approx. 1.9 mA at 250 VAC

## Direct-wired connector and Pre-wired Connector Type

## Connector DC Specifications: With Operation Indicators (LEDs)

## Basic models (WL-N)

Ratings		Non-inductive load (A)				Inductive load (A)			
		Basic models (WL-N)				Basic models (WL-N)			
		Resistive load		Lamp load		Inductive load		Motor load	
Voltage (V)		NC	NO	NC	NO	NC	NO	NC	NO
DC	12	3		3		3		3	
	24	3		3		3		3	
	48	4		2	1.5	3		2	
	115	0.8		0.2	0.2	0.8		0.2	

## High-sensitivity and High-precision models (WLG)

Ratings		Non-inductive load (A)	
		High-sensitivity and High-precision models (WLG) Horizontal plunger models (WLS□)	
		Resistive load	
Voltage (V)		NC	NO
DC	115	0.4	

## Connector AC Specifications: With Operation Indicators (LEDs)

## Basic models (WL-N)

Ratings		Non-inductive load (A)				Inductive load (A)			
		Basic models (WL-N)				Basic models (WL-N)			
		Resistive load		Lamp load		Inductive load		Motor load	
Voltage (V)		NC	NO	NC	NO	NC	NO	NC	NO
AC	115	3		3	1.5	3		3	2.5

## High-sensitivity and High-precision models (WLG)

Ratings		Non-inductive load (A)	
		High-sensitivity and High-precision models (WLG) Horizontal plunger models (WLS□)	
		Resistive load	
Voltage (V)		NC	NO
AC	115	3	

**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.

## Minimum Applicable Load

Operating characteristics type	Basic models (WL-N)	High-sensitivity and High-precision models (WLG) Horizontal plunger models (WLS□)
Minimum applicable load	5 VDC 1 mA, resistive load, P level	5 VDC 1 mA, resistive load, P level

## Operation Indicator

Operation indicator type	LED	Neon lamp
Rated voltage	10 to 115 VAC/DC	125 to 250 VAC
Leakage current (Reference value)	Approx. 0.4 mA at 10 VAC/DC Approx. 0.5 mA at 115 VAC/DC	Approx. 0.6 mA at 125 VAC Approx. 1.9 mA at 250 VAC

## Characteristics

Operating characteristics type		Basic models (WL-N)	High-sensitivity and High-precision models (WLG)
Permissible operating frequency	Mechanical	120 operations/minute	
	Electrical	30 operations/minute	
Rated frequency		50/60 Hz	
Permissible operating speed		1 mm/s to 1 m/s (in case of WLCA2-N)	
Insulation resistance		100 MΩ min. (at 500 VDC)	
Contact resistance		25 mΩ max. (initial value for the built-in switch)	
Vibration resistance	Malfunction	10 to 55 Hz, 1.5-mm double amplitude	
	Destruction	1,000 m/s <sup>2</sup> max.	
Shock	Malfunction	300 m/s <sup>2</sup> max. *2	
	Destruction	1,000 m/s <sup>2</sup> max.	
Durability *1	Mechanical	15,000,000 operations min. (Flexible Rod models: 10,000,000 operations min.)	10,000,000 operations min.
	Electrical	750,000 operations min. (Screw terminals: without operation indicators, 3 A at 250 VAC, resistive load. Direct-wire connector/Pre-wired connector: with operation indicators, 0.8 A at 115 VDC, resistive load) *3	500,000 operations min. (3 A at 250 VAC, resistive load), but for high-precision models
Ambient operating temperature		-10 to +80°C (with no icing)	
Ambient operating humidity		35 to 95%RH	
Degree of protection *4		IP67 (EN60947-5-1)	
Weight		Approx. 255 g (in case of WLCA2-N)	Approx. 270 g (in case of WLGCA2)

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

\*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. Except Switches with Flexible Rod Actuators.

\*3. Horizontal plunger models: 500,000 operations min. (3 A at 250 VAC, resistive load)

\*4. The degree of protection is tested using the method specified by the standard (EN60947-5-1). Confirm that sealing properties are sufficient for the operating conditions and environment beforehand.

Operating characteristics type		Basic models (WL-N)		High-sensitivity and High-precision models (WLG)	
Wiring Specifications		Screw terminals	Direct-wire connector/ Pre-wired Connector Models	Screw terminals	Direct-wire connector/ Pre-wired Connector Models
Dielectric strength	Between terminals of the same polarity	1,000 VAC, 50/60 Hz for 1 min *	600 VAC, 50/60 Hz for 1 min *	600 VAC, 50/60 Hz for 1 min *	600 VAC, 50/60 Hz for 1 min *
	Between current-carrying metal part and ground	2,200 VAC, 50/60 Hz for 1 min	1,500 VAC, 50/60 Hz for 1 min	1,500 VAC, 50/60 Hz for 1 min	1,500 VAC, 50/60 Hz for 1 min
	Between each terminal and non-current-carrying metal part	2,200 VAC, 50/60 Hz for 1 min	1,500 VAC, 50/60 Hz for 1 min	1,500 VAC, 50/60 Hz for 1 min	1,500 VAC, 50/60 Hz for 1 min

\* Excluding those with operation indicators.

Circuit Configuration  
Terminal Connection Diagram

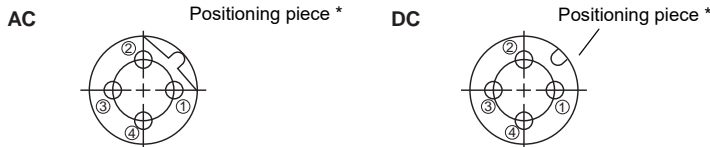
Operating characteristics type	Basic models (WL-N)	
Wiring Specifications	Screw terminals	Direct-wire connector and Pre-wired Connector Models
Without operation indicator		<div>AC<div></div><div>DC<div></div></div><div>①②③④ indicate the connector pin number.</div></div>
With operation indicator (Light-ON when not operating *)		<div>AC<div></div><div>DC<div></div></div><div>①②③④ indicate the connector pin number.</div></div>

Operating characteristics type	High-sensitivity and High-precision models (WLG)	
Wiring Specifications	Screw terminals	Direct-wire connector and Pre-wired Connector Models
Without operation indicator		<div>AC<div></div><div>DC<div></div></div><div>①②③④ indicate the connector pin number.</div></div>
With operation indicator (Light-ON when not operating *)		<div>AC<div></div><div>DC<div></div></div><div>①②③④ indicate the connector pin number.</div></div>

**Note:** Leakage current from indicator circuit may cause load malfunction (i.e., the load may remain ON). Make sure that the load operating current is higher than the leakage current.

For countermeasures, refer to technical support on your OMRON website.  
\* Light-ON when not operating means the operation indicator is lit when the actuator is free and is not lit when the actuator rotates or is pushed down and the Switch contacts contact to NO.  
The above shows details of the switch interior. External wires (external resistances) are not shown. For details, refer to *Operation* on page 19.

Connector Pin Layout Diagram



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



# Structure and Nomenclature

## WLCA2-N

### Actuator

#### Roller

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

#### Lever

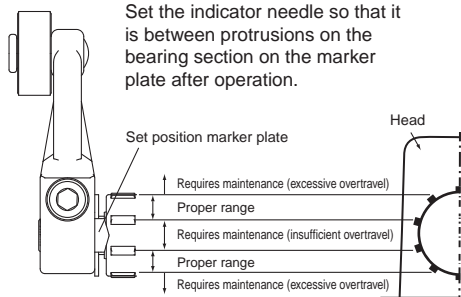
The lever is forged from corrosion-resistant aluminum alloy. It provides superior corrosion resistance and outstanding strength.

With roller lever, adjustable rod and flexible rod models, the actuator position can be set anywhere within 360°. (The lever cannot be mounted in the opposite direction.)

### Roller Lever Bolt

### Set Position Marker Plate

Set the indicator needle so that it is between protrusions on the bearing section on the marker plate after operation.



### Cover Setscrew

A combination Phillips-slotted screw is used. A retainer prevents the screw from falling from the cover even when the screw is loose.

### Cover

### Cover Seal

High sealing performance is achieved. The seal also serves as a spacer. There is no troublesome insulating paper, making it easy to work with the Switch.

### Head-mounting Screws

### Shaft Section Seal

An oil seal is fitted on the inlet of the shaft section to maintain a tight seal.

### Operational Plunger

You can change the direction of the operational plunger to electrically switch the direction of operation between both sides, left only, or right only. (Refer to page 87)

### Head

You can remove the two screws to mount the switch in any of the four possible orientations. If changing the direction of the head, pay attention to the orientation of the operation plunger. (Refer to page 87)

### Main unit

### Built-in Switch

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

### Terminal Screws

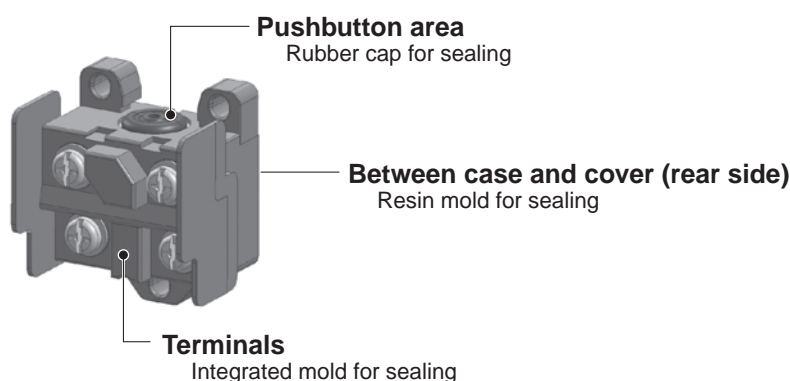
Four, M3.5 screws

### Conduit Opening

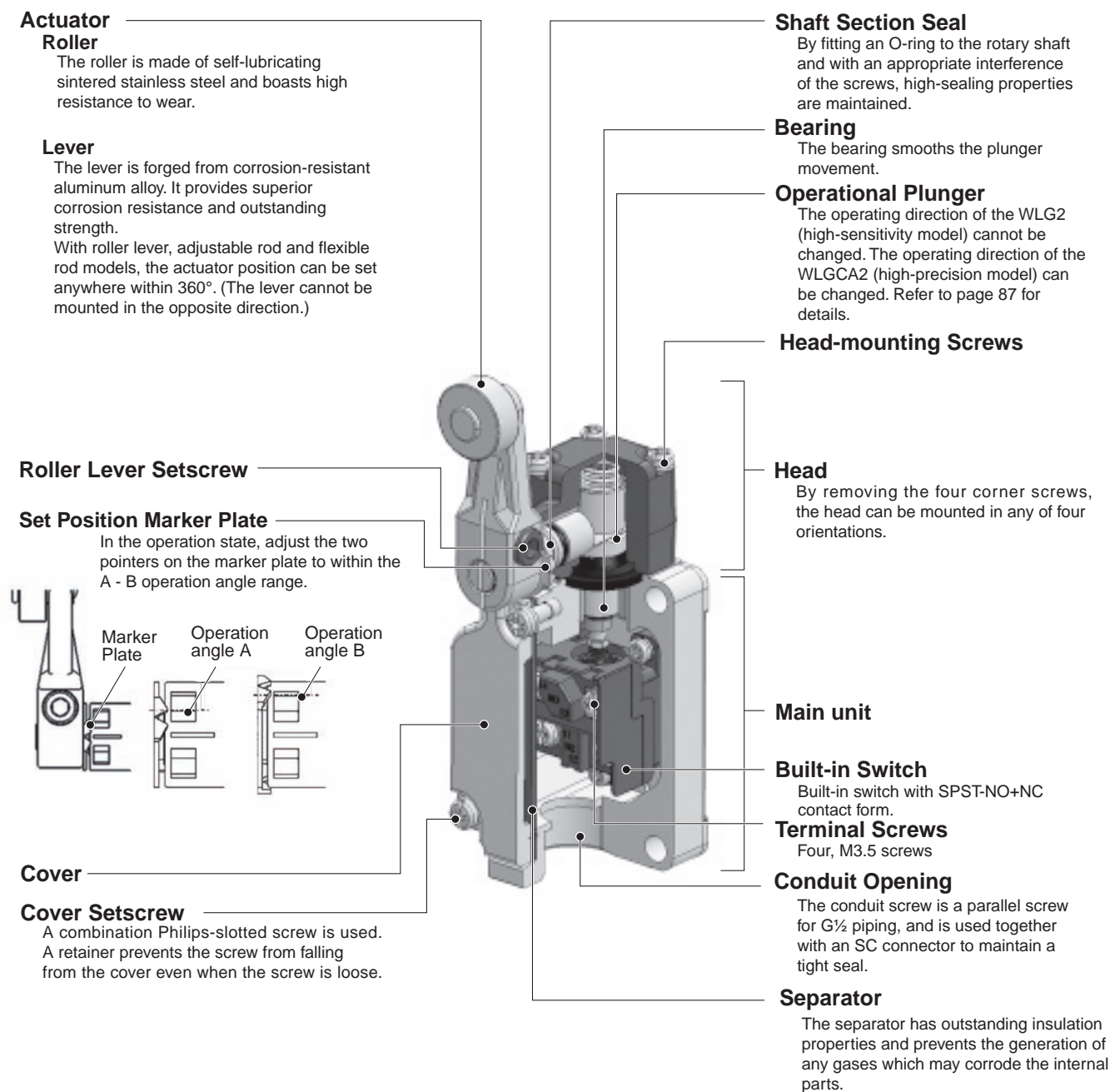
The conduit screw is a parallel screw for G½ piping, and is used together with an SC connector to maintain a tight seal.

## Built-in switch

### Airtight built-in switch (-55)



## WL G2



**Note:** The built-in switch structure and name of each part are the same as on page 17.

## Operation Indicator

### Indicator Covers

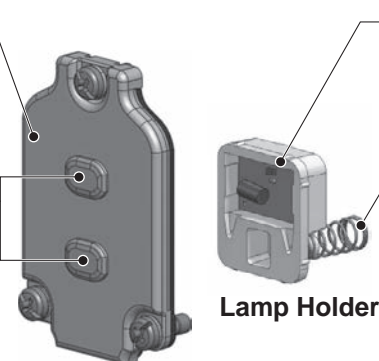
The indicator covered if outsert molded from diecast aluminum and has outstanding sealing properties.

### Indicator Windows

Operating status (i.e., light-ON when operating or light-ON when not operating) depends on whether a neon lamp or an 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°.




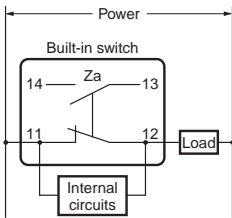
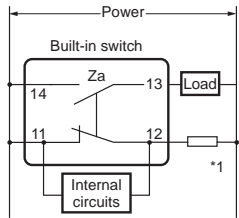
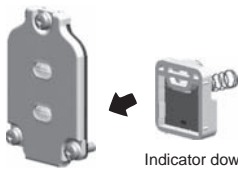
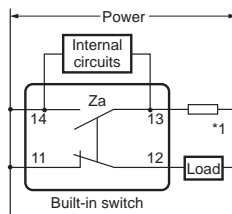
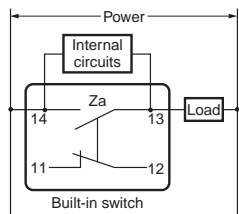
### Indicator

The indicator is either a neon lamp or an LED. Switches with LED indicators have a built-in rectifier stack, so there is no connection 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

Operation indicator type	Operation type	When load is connected to NC (11-12)	When load is connected to NO (13-14)
LED Neon lamp	<b>Light-ON when operating</b> 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. 		
	<b>Light-ON when not operating</b> 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. 		

**Note:** 1. Leakage current from indicator circuit may cause load malfunction (i.e., the load may remain ON). Make sure that the load operating current is higher than the leakage current. For countermeasures, refer to technical support on your OMRON website.

2. For details on accessories (sold separately), refer to page 79.

\*1. Be sure to connect a resistor for protection in order to prevent short-circuit current flow when the contacts are ON. For the resistance value or capacity of protection resistance, refer to the table below. The indicator may slightly dim by connecting to protection resistance.

### Reference: Example of Protection Resistance

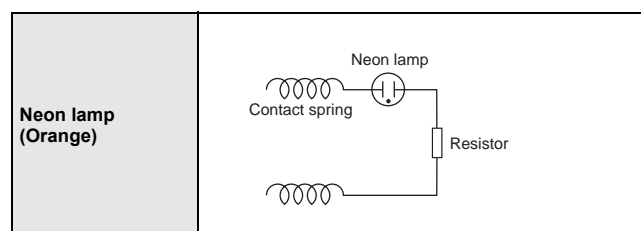
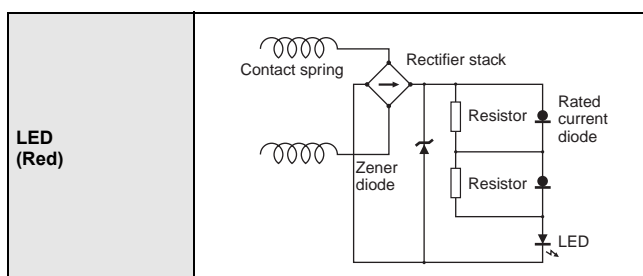
The capacity value is a numerical value that does not account for the margin. Select a resistor with sufficient capacity.

When calculating using the leakage current in this catalog, the display becomes slightly dim.

Use of a current that is at least around twice the leakage current is recommended.

Indicator		Voltage	Protection resistance (example)	
Type	Leakage current		Resistance	Capacity
LED	Approx. 0.5 mA	115 VAC/DC	Approx. 50 kΩ	0.27 W min.
	Approx. 0.4 mA	24 VAC/DC	Approx. 10 kΩ	0.06 W min.
		10 VAC/DC	Approx. 10 kΩ	0.01 W min.
Neon lamp	Approx. 1.9 mA	250 VAC	Approx. 100 kΩ	0.63 W min.
	Approx. 0.6 mA	125 VAC	Approx. 100 kΩ	0.16 W min.

## Internal Circuits

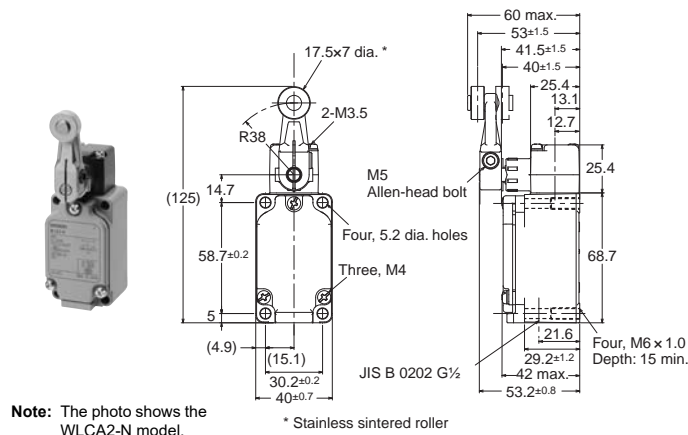


### Roller Lever

#### Screw terminals

##### Roller lever R38

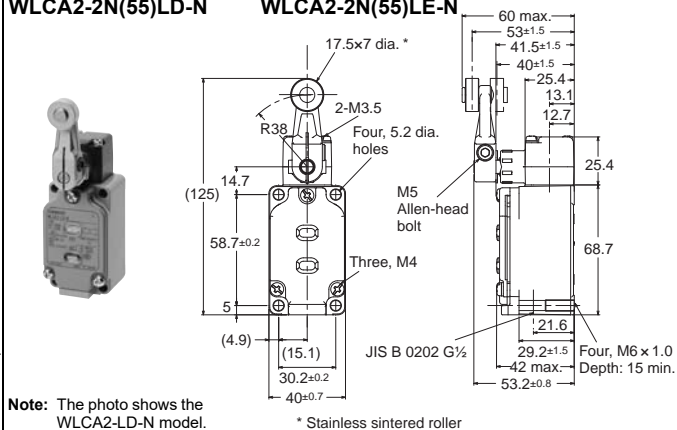
WLCA2(-55)-N  
WLCA2-2(55)-N  
WLCA2-2N(55)-N



##### Roller lever R38 With operation indicator

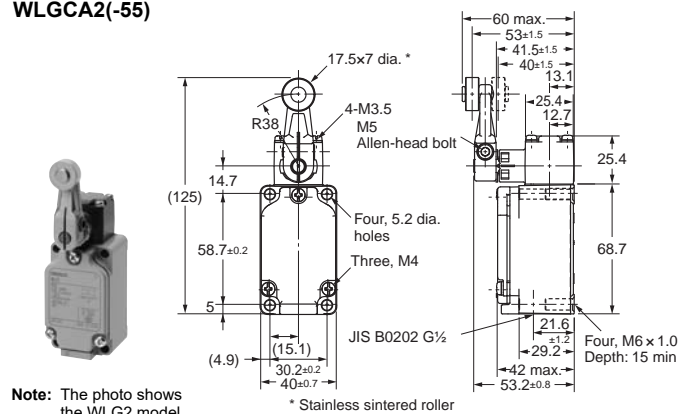
LED  
WLCA2(-55)LD-N  
WLCA2-2(55)LD-N  
WLCA2-2N(55)LD-N

Neon lamp  
WLCA2(-55)LE-N  
WLCA2-2(55)LE-N  
WLCA2-2N(55)LE-N



##### Roller lever R38

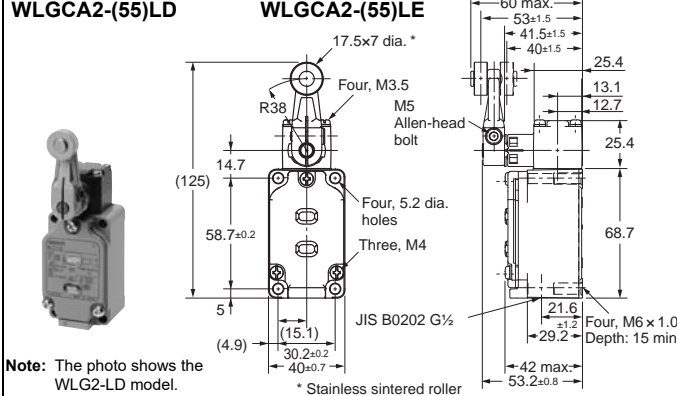
WLG2(-55)  
WLGCA2(-55)



##### Roller lever R38 With operation indicator

LED  
WLG2(-55)LD  
WLGCA2(-55)LD

Neon lamp  
WLG2(-55)LE  
WLGCA2(-55)LE



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

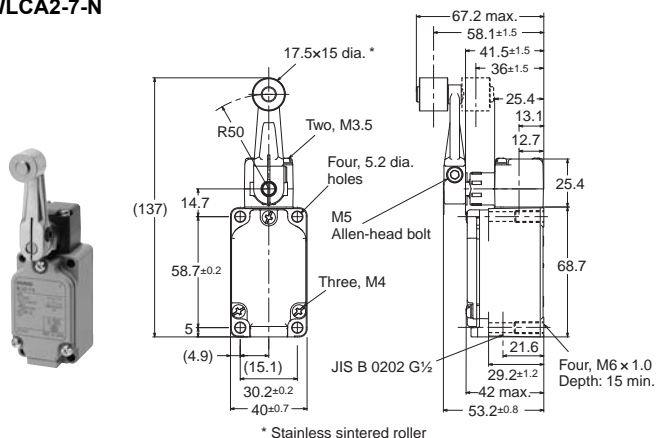
### Operating characteristics

	Model	WLCA2(-55)-N WLCA2(-55)LD-N WLCA2(-55)LE-N	WLCA2-2(-55)-N WLCA2-2(55)LD-N WLCA2-2(55)LE-N	WLCA2-2N(-55)-N WLCA2-2N(-55)LD-N WLCA2-2N(-55)LE-N	WLG2(-55) WLG2(-55)LD WLG2(-55)LE	WLGCA2(-55) WLGCA2(-55)LD WLGCA2(-55)LE
Operating force	OF max.	13.34 N	13.34 N	13.34 N	9.81 N	13.34 N
Release force	RF min.	1.18 N	1.18 N	1.18 N	0.98 N	1.47 N
Pretravel	PT	15±5°	25±5°	20° max.	10° <sup>12</sup>	5° <sup>0</sup>
Overtravel	OT min.	70°	60°	70°	65°	40°
Movement Differential	MD max.	12°	16°	10°	7°	3°

# Screw terminals

## Roller lever R50

WLCA2-7-N



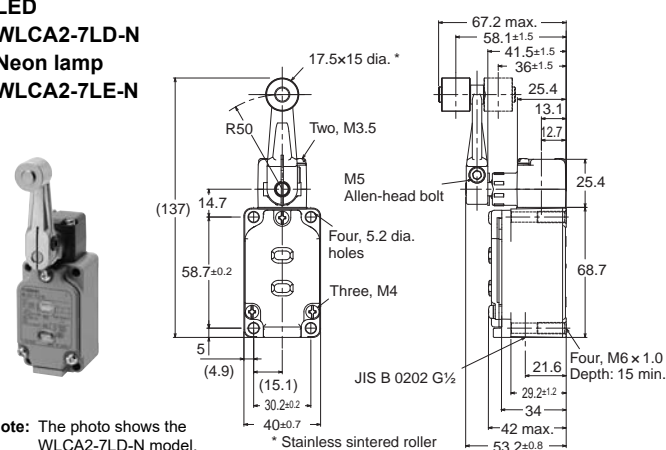
## Roller lever R50 With operation indicator

LED

WLCA2-7LD-N

Neon lamp

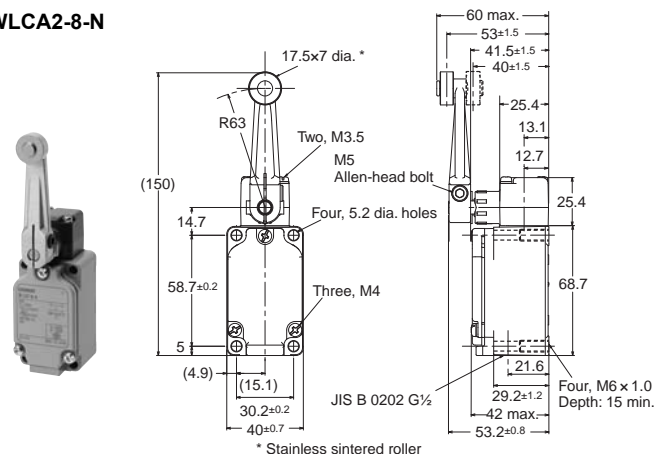
WLCA2-7LE-N



Note: The photo shows the WLCA2-7LD-N model.

## Roller lever R63

WLCA2-8-N



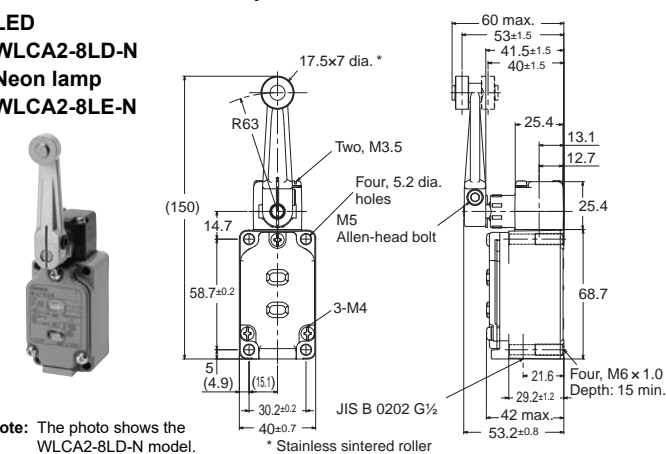
## Roller lever R63 With operation indicator

LED

WLCA2-8LD-N

Neon lamp

WLCA2-8LE-N



Note: The photo shows the WLCA2-8LD-N model.

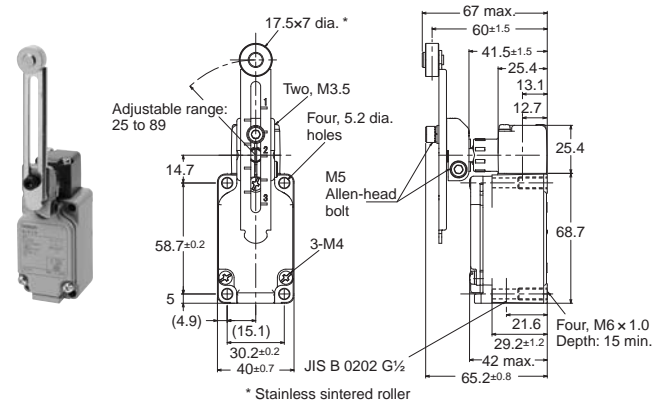
Note: Unless otherwise indicated, a tolerance of  $\pm 0.4$  mm applies to all dimensions.

Model			WLCA2-7-N WLCA2-7LD-N WLCA2-7LE-N	WLCA2-8-N WLCA2-8LD-N WLCA2-8LE-N
Operating force	OF	max.	10.2 N	8.04 N
Release force	RF	min.	0.9 N	0.71 N
Pretravel	PT		15 $\pm$ 5°	15 $\pm$ 5°
Overtravel	OT	min.	70°	70°
Movement Differential	MD	max.	12°	12°

Screw terminals

Adjustable Roller Lever (R25 to 89 mm)

WLCA12(-55)-N  
WLCA12-2-N  
WLCA12-2N-N

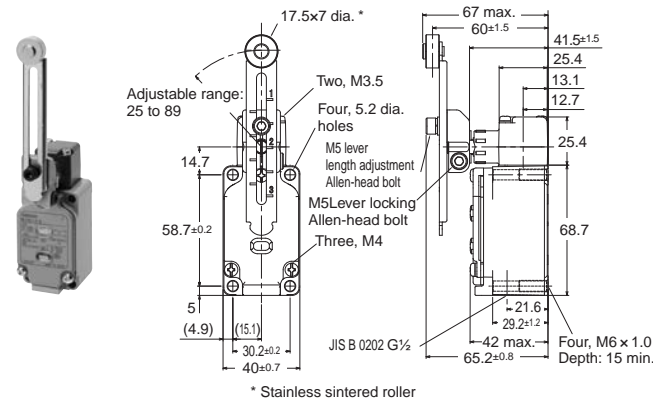


Note: The photo shows the WLCA12-N model.

Adjustable Roller Lever (R25 to 89 mm)

With operation indicator

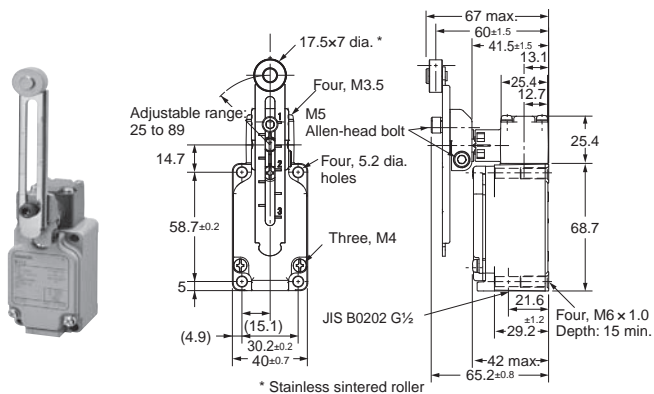
LED Neon lamp  
WLCA12(-55)LD-N WLCA12(-55)LE-N  
WLCA12-2LD-N WLCA12-2LE-N  
WLCA12-2NLD-N WLCA12-2NLE-N



Note: The photo shows the WLCA12-LD-N model.

Adjustable Roller Lever (R25 to 89 mm)

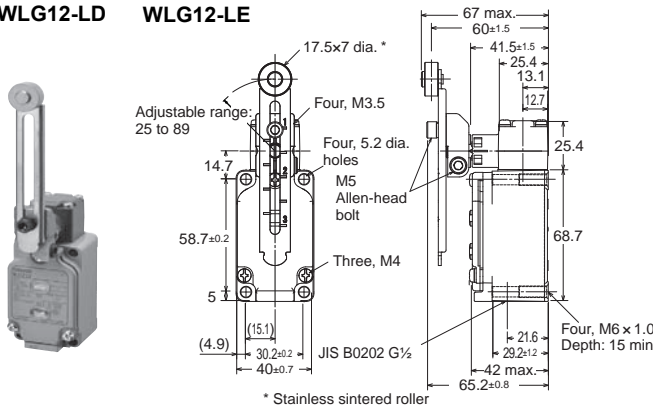
WLG12



Adjustable Roller Lever (R25 to 89 mm)

With operation indicator

LED Neon lamp  
WLG12-LD WLG12-LE



Note: The photo shows the WLG12-LD model.

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

Operating characteristics

Model		WLCA12 (-55) -N * WLCA12- (55) LD-N * WLCA12- (55) LE-N *	WLCA12-2-N * WLCA12-2LD-N * WLCA12-2LE-N *	WLCA12-2N-N * WLCA12-2NLD-N * WLCA12-2NLE-N *	WLG12 * WLG12-LD * WLG12-LE *
Operating force	OF max.	13.34 N	13.34 N	13.34 N	9.81 N
Release force	RF min.	1.18 N	1.18 N	1.18 N	0.98 N
Pretravel	PT	15 $\pm$ 5°	25 $\pm$ 5°	20° max.	10° $\pm$ 2° -1°
Overtravel	OT min.	70°	60°	70°	65°
Movement Differential	MD max.	12°	16°	10°	7°

\* The operating characteristics are measured at the lever length of 38 mm.

# Direct-wire connector

## Roller lever R38 With operation indicator

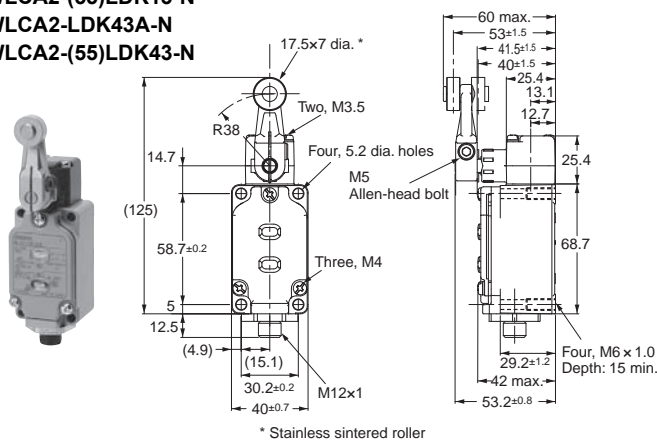
LED

WLCA2-LDK13A-N

WLCA2-(55)LDK13-N

WLCA2-LDK43A-N

WLCA2-(55)LDK43-N



Note: The photo shows the WLCA2-LDK13-N model.

## Roller lever R38 With operation indicator

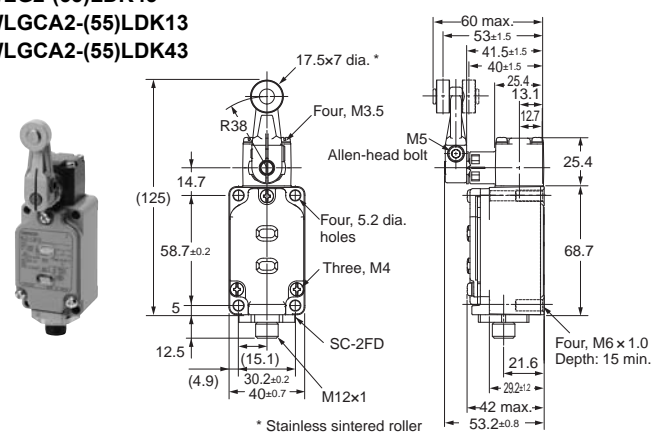
LED

WLG2-(55)LDK13

WLG2-(55)LDK43

WLGCA2-(55)LDK13

WLGCA2-(55)LDK43



Note: The photo shows the WLG2-LDK13 model.

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

## Operating characteristics

Model			WLCA2-LDK13A-N WLCA2-(55)LDK13-N WLCA2-LDK43A-N WLCA2-(55)LDK43-N	WLG2-(55)LDK13 WLG2-(55)LDK43	WLCA2-(55)LDK13 WLCA2-(55)LDK43
Operating force	OF	max.	13.34 N	9.81 N	13.34 N
Release force	RF	min.	1.18 N	0.98 N	1.47 N
Pretravel	PT		15 $\pm$ 5°	10 $\pm$ 2° -1°	5 $\pm$ 2° 0°
Overtravel	OT	min.	70°	65°	40°
Movement Differential	MD	max.	12°	7°	3°

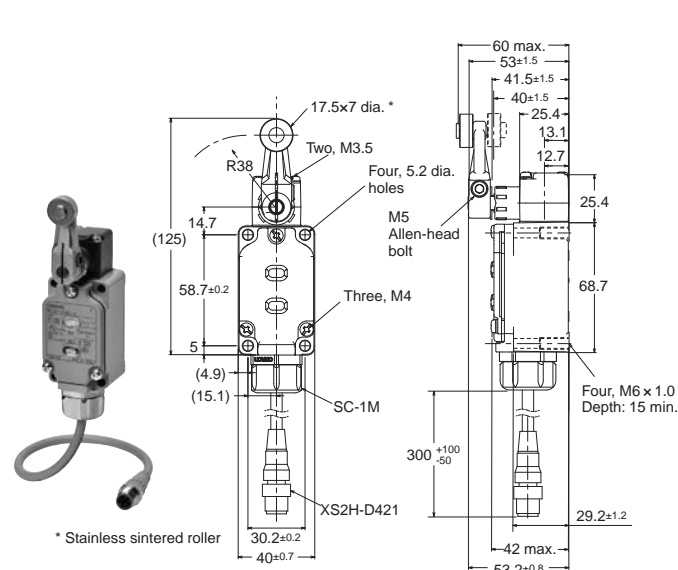


Pre-wired connectors

Roller lever R38 With operation indicator

- LED  
Threaded (M12)  
WLCA2-(55)LD-M1J-N  
WLCA2-(55)LD-M1GJ-N  
WLCA2-(55)LD-DGJ-N  
WLCA2-(55)LD-DK1EJ-N

- Smartclick  
WLCA2(55)LD-DTGJ-N  
WLCA2-LD-DTK1EJ-N

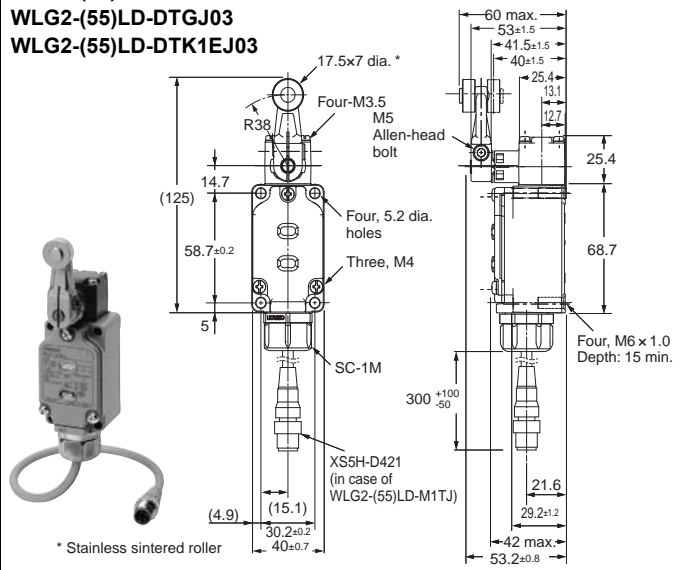


Note: The photo shows the WLCA2-LD-M1J-N model.

Roller lever R38 With operation indicator

- LED  
Threaded (M12)  
WLG2-(55)LD-M1J  
WLG2-(55)LD-M1GJ  
WLG2-(55)LD-M1JB  
WLG2-(55)LD-DGJ03  
WLG2-(55)LD-DK1EJ03

- Smartclick  
WLG2-(55)LD-M1TJ  
WLG2-(55)LD-M1TGJ  
WLG2-(55)LD-M1TJB  
WLG2-(55)LD-DTGJ03  
WLG2-(55)LD-DTK1EJ03



Note: The photo shows the WLG2-LD-M1J model.

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

Operating characteristics

Model		WLCA2-(55)LD-M1J-N WLCA2-(55)LD-M1GJ-N WLCA2-(55)LD-M1JB-N WLCA2-(55)LD-DGJ-N WLCA2-(55)LD-DK1EJ-N WLCA2-(55)LD-DTGJ-N WLCA2-LD-DTK1EJ-N	WLG2-(55)LD-M1J WLG2-(55)LD-M1GJ WLG2-(55)LD-M1JB WLG2-(55)LD-DGJ03 WLG2-(55)LD-DK1EJ03 WLG2-(55)LD-M1TJ WLG2-(55)LD-M1TGJ WLG2-(55)LD-M1TJB WLG2-(55)LD-DTGJ03 WLG2-(55)LD-DTK1EJ03
Operating force	OF max.	13.34 N	9.81 N
Release force	RF min.	1.18 N	0.98 N
Pretravel	PT	15±5°	10° <sup>+2° -1°</sup>
Overtravel	OT min.	70°	65°
Movement Differential	MD max.	12°	7°

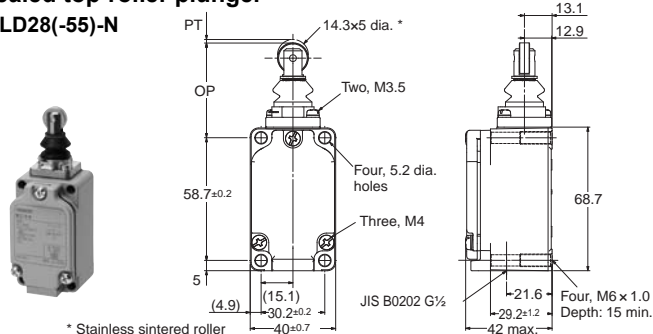


## Plunger Actuators

### Screw terminals

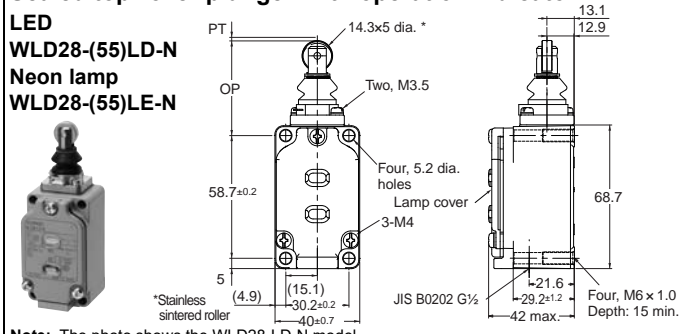
#### Sealed top-roller plunger

WLD28(-55)-N



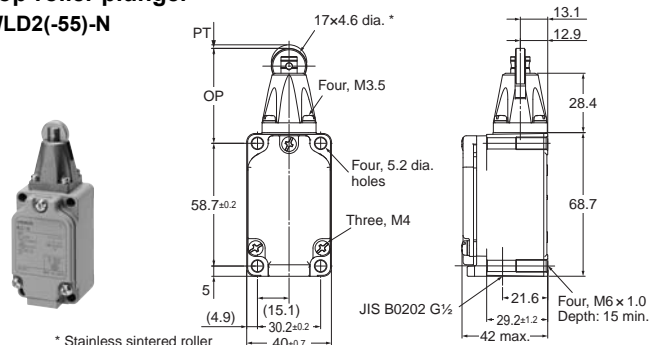
#### Sealed top-roller plunger With operation indicator

LED  
WLD28(-55)LD-N  
Neon lamp  
WLD28(-55)LE-N



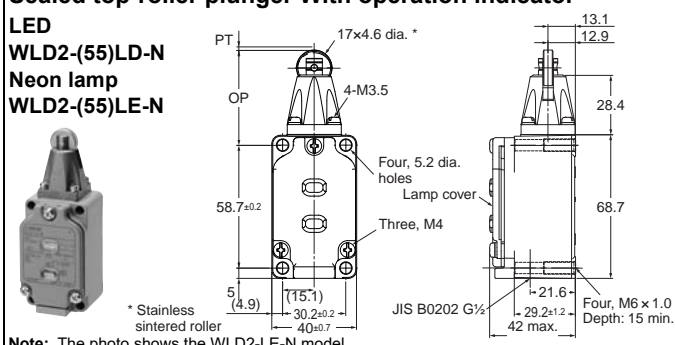
#### Top-roller plunger

WLD2(-55)-N



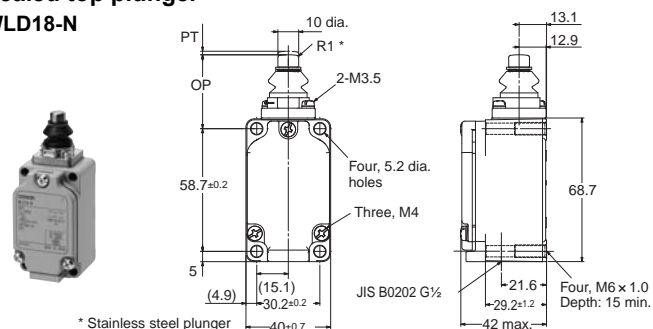
#### Sealed top-roller plunger With operation indicator

LED  
WLD2(-55)LD-N  
Neon lamp  
WLD2(-55)LE-N



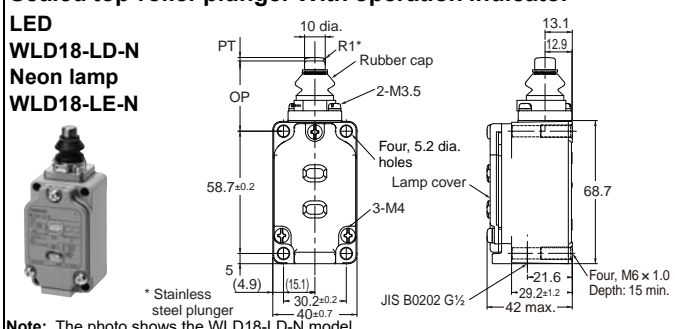
#### Sealed top plunger

WLD18-N



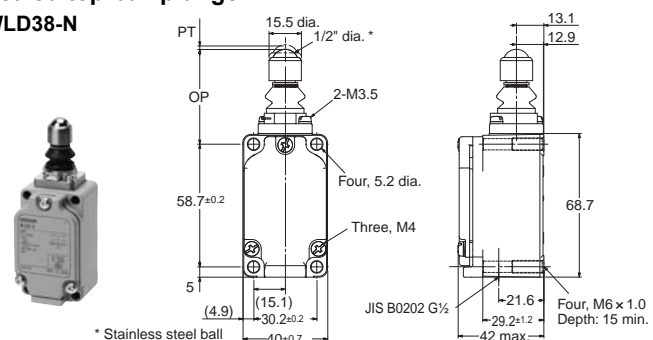
#### Sealed top-roller plunger With operation indicator

LED  
WLD18-LD-N  
Neon lamp  
WLD18-LE-N



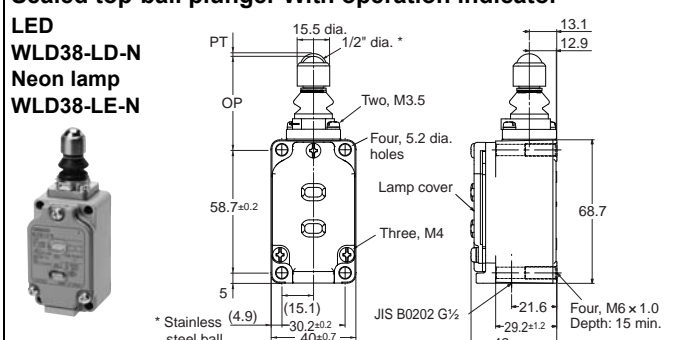
#### Sealed top-ball plunger

WLD38-N



#### Sealed top-ball plunger With operation indicator

LED  
WLD38-LD-N  
Neon lamp  
WLD38-LE-N

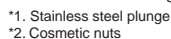


**Note:** Unless otherwise indicated, a tolerance of  $\pm 0.4$  mm applies to all dimensions.

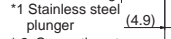
### Operating characteristics

Model			WLD28(-55)-N WLD28(-55)LD-N WLD28(-55)LE-N	WLD2(-55)-N WLD2(-55)LD-N WLD2(-55)LE-N	WLD18-N WLD18-LD-N WLD18-LE-N	WLD38-N WLD38-LD-N WLD38-LE-N
Operating force	OF	max.	16.67 N	26.67 N	26.67 N	16.67 N
Release force	RF	min.	4.41 N	8.92 N	8.92 N	4.41 N
Pretravel	PT	max.	1.7 mm	1.7 mm	1.7 mm	1.7 mm
Overtravel	OT	min.	5.6 mm	5.6 mm	6.4 mm	5.6 mm
Movement Differential	MD	max.	1 mm	1 mm	1 mm	1 mm
Operating position	OP		44±0.8 mm	44±0.8 mm	34±0.8 mm	44.5±0.8 mm
Total travel position	TTP	max.	39.5 mm	39.5 mm	29.5 mm	41 mm

**WLSD(-55)-N**

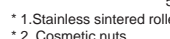


Neon lamp  
WLSD-LE-N

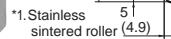


**Note:** The photo shows the WLSD-LD-N model.

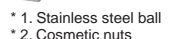
**WLSD2(-55)-N**



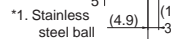
Neon lamp  
WLSD2-LE-N



**Note:** The photo shows the WLSD2-LD-N model

**WLS3D-N**

Neon lamp  
WLSD3-LE-N



**Note:** The photo shows the WLSD3-LD-N model.

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

Model			WLS D(-55)-N WLS D(-55)LD-N WLS D-LE-N	WLS D2(-55)-N WLS D2(-55)LD-N WLS D2-LE-N	WLS D3-N WLS D3-LD-N WLS D3-LE-N
Operating force	OF	max.	40.03 N	40.03 N	40.03 N
Release force	RF	min.	8.89 N	8.89 N	8.89 N
Pretravel	PT	max.	2.8 mm	2.8 mm	2.8 mm
Overtravel	OT	min.	5.6 mm	5.6 mm	4 mm
Movement Differential	MD	max.	1 mm	1 mm	1 mm
Operating position	OP		40.6±0.8 mm	54.2±0.8 mm	54.1±0.8 mm

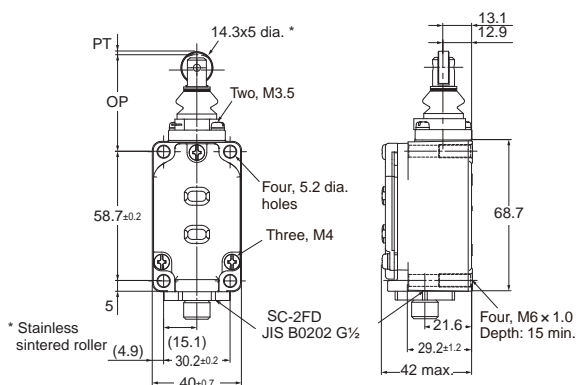
## Direct-wire connector

### Sealed top-roller plunger With operation indicator

LED

WLD28-(55)LDK13-N

WLD28-(55)LDK43-N



**Note:** The photo shows the WLD28-LDK13-N model.

## Pre-wired connectors

### Sealed top-roller plunger With operation indicator

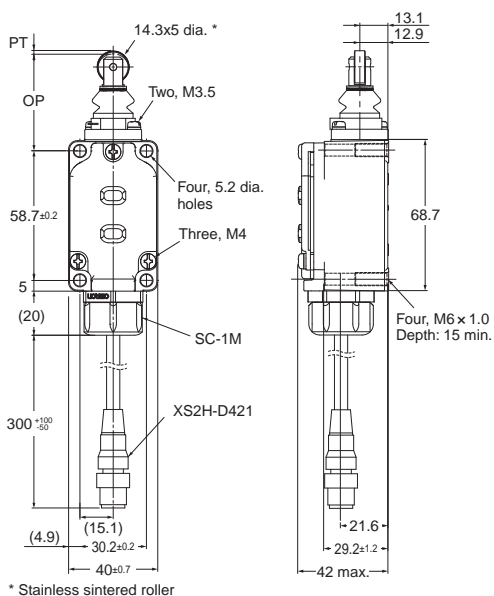
Threaded (M12)

LED

WLD28-(55)LD-M1J-N

WLD28-(55)LD-M1GJ-N

WLD28-(55)LD-DGJ-N



**Note:** The photo shows the WLD28-LD-M1J-N model.

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

## Operating characteristics

Model			WLD28-(55)LDK13-N WLD28-(55)LDK43-N WLD28-(55)LD-M1J-N WLD28-(55)LD-M1GJ-N WLD28-(55)LD-DGJ-N WLD28-(55)LD-DK1EJ-N
Operating force	OF	max.	16.67 N
Release force	RF	min.	4.41 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

## Flexible Rod

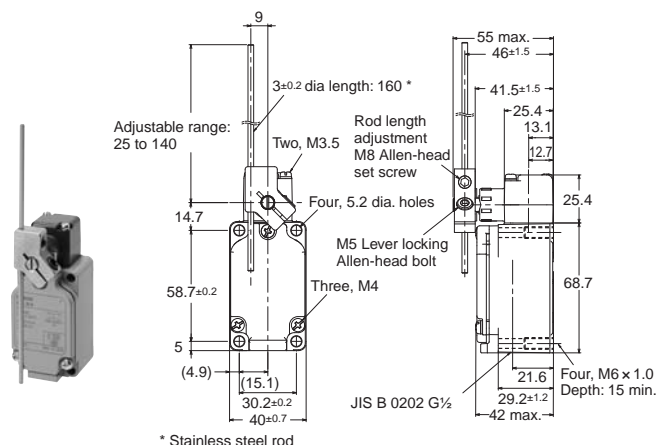
### Screw terminals

#### Adjustable rod lever (25 to 140 mm)

WLCL(-55)-N

WLCL-2-N

WLCL-2N-N



\* Stainless steel rod

Note: The photo shows the WLCL-2N-N model.

#### Adjustable rod lever (25 to 140 mm)

With operation indicator

LED

WLCL(-55)LD-N

WLCL-2LD-N

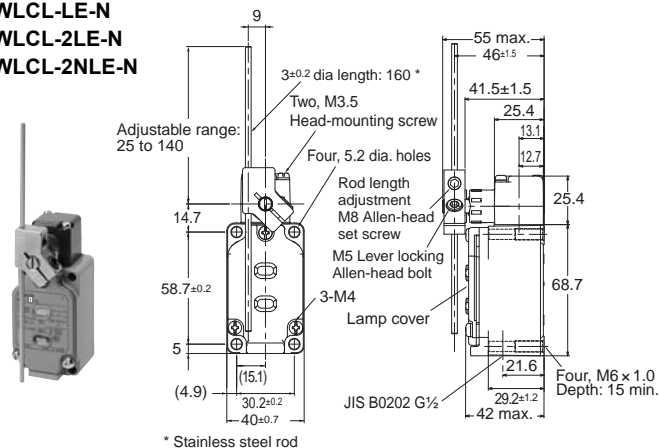
WLCL-2NLD-N

Neon lamp

WLCL-LE-N

WLCL-2LE-N

WLCL-2NLE-N

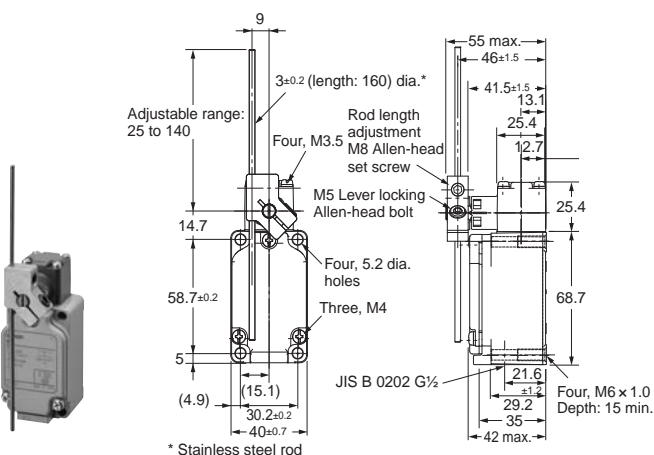


\* Stainless steel rod

Note: The photo shows the WLCL-2LD-N model.

#### Adjustable rod lever (25 to 140 mm)

WLGL



\* Stainless steel rod

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

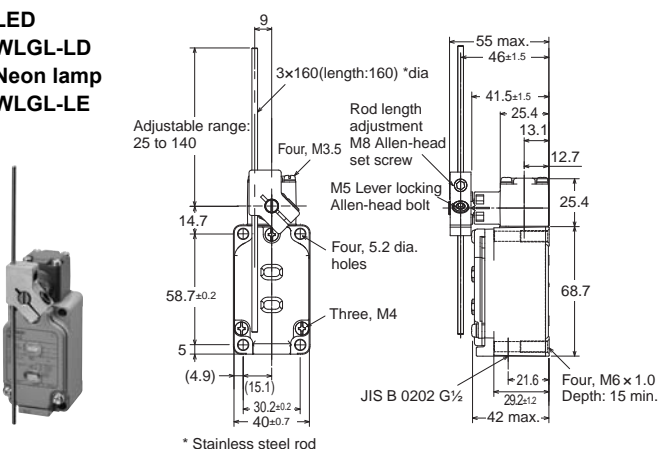
With operation indicator

LED

WLGL-LD

Neon lamp

WLGL-LE



\* Stainless steel rod

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

### Operating characteristics

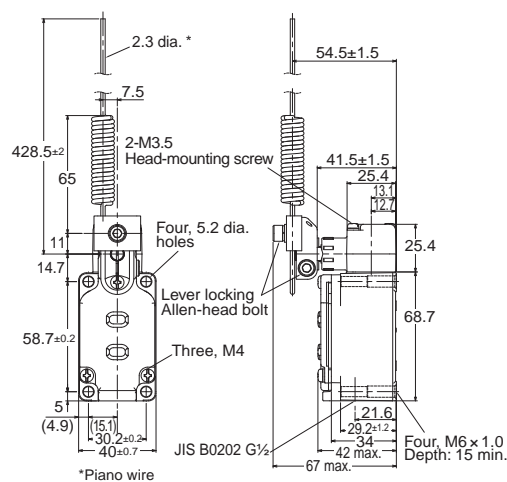
Model			WLCL(-55)-N *	WLCL-2-N *	WLCL-2N-N *	WLGL *
			WLCL-LD-N *	WLCL-2LD-N *	WLCL-2NLD-N *	WLGL-LD *
			WLCL-LE-N *	WLCL-2LE-N *	WLCL-2NLE-N *	WLGL-LE *
Operating force	OF	max.	1.39 N	1.39 N	1.39 N	2.84 N
Release force	RF	min.	0.27 N	0.27 N	0.27 N	0.25 N
Pretravel	PT		15±5°	25±5°	20° max.	10° <sup>+2°</sup> <sub>-1°</sub>
Overtravel	OT	min.	70°	60°	70°	65°
Movement Differential	MD	max.	12°	16°	10°	7°

\* This is the value when the rod length is 140 mm.



### Rod spring lever With operation indicator

LED  
WLCAL5-LD-N  
Neon lamp  
WLCAL5-LE-N



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

		Model	WLCAL5-N * WLCAL5-LD-N * WLCAL5-LE-N *
Operating force	OF	max.	0.9 N
Release force	RF	min.	0.09 N
Pretravel	PT		15±5°
Overtravel	OT	min.	70°
Movement Differential	MD	max.	12°

**Note:** With WLCAL5-N, WLCAL5-LD-N, and WLCAL5-LE-N, 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.

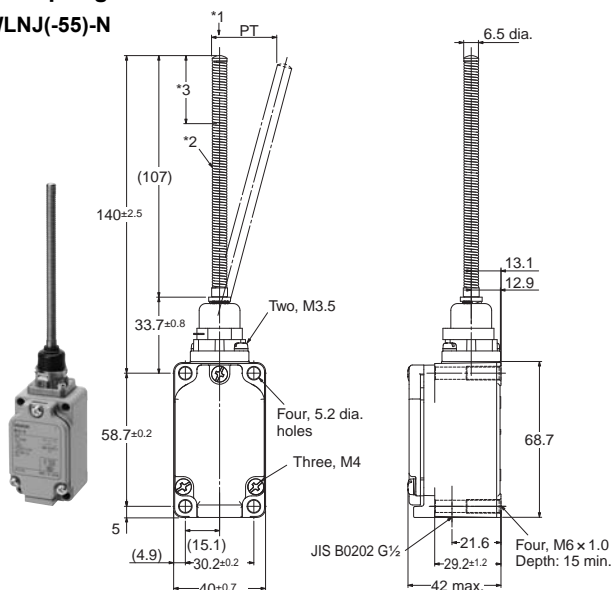
\* This is the value when the rod length is 380 mm.

## Flexible Rod

### Screw terminals

#### Coil spring

WLNJ(-55)-N



- \*1. Do not operate the Switch in the direction of the axial center.
- \*2. Stainless steel coil spring.
- \*3. The range for operation is 1/3rd of the overall spring length from the end of the spring.

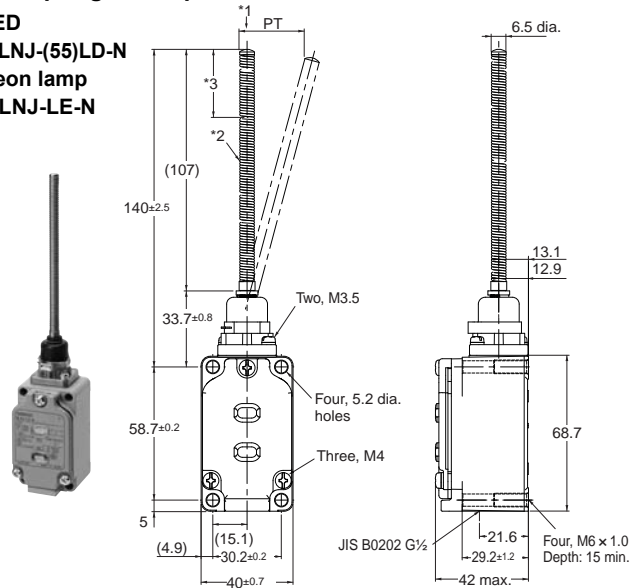
#### Coil spring With operation indicator

LED

WLNJ-(55)LD-N

Neon lamp

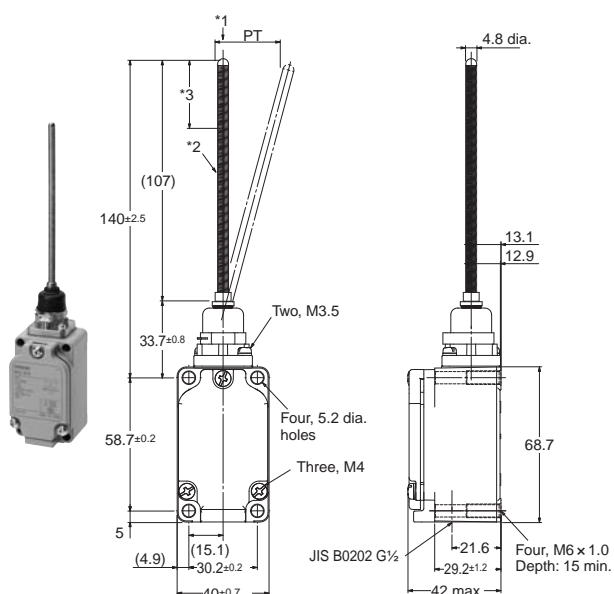
WLNJ-LE-N



- Note:** The photo shows the WLNJ-LD-N model.
- \*1. Do not operate the Switch in the direction of the axial center.
  - \*2. Stainless steel coil spring.
  - \*3. The range for operation is 1/3rd of the overall spring length from the end of the spring.

#### Coil Spring (Multi-wire)

WLNJ-30-N



- \*1. Do not operate the Switch in the direction of the axial center.
- \*2. Piano wire coil spring.
- \*3. The range for operation is 1/3rd of the overall spring length from the end of the spring.

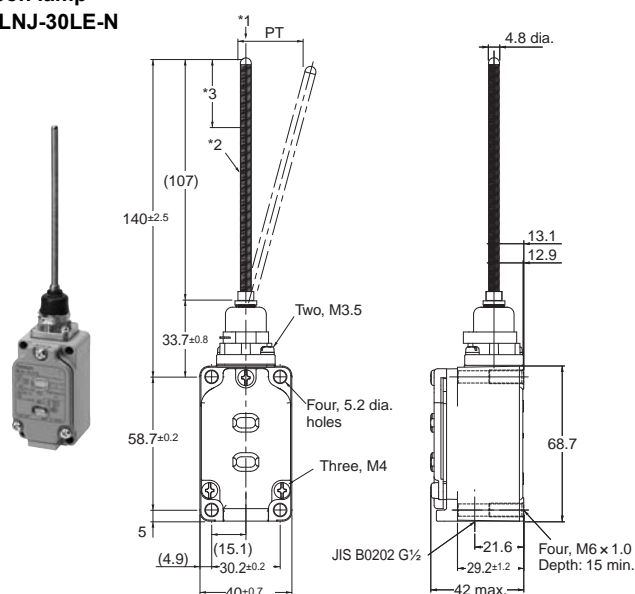
#### Coil Spring (Multi-wire) With operation indicator

LED

WLNJ-30LD-N

Neon lamp

WLNJ-30LE-N



- Note:** The photo shows the WLNJ-30LD-N model.
- \*1. Do not operate the Switch in the direction of the axial center.
  - \*2. Piano wire coil spring.
  - \*3. The range for operation is 1/3rd of the overall spring length from the end of the spring.

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

#### Operating characteristics

Model		WLNJ(-55)-N * WLNJ-(55)LD-N * WLNJ-LE-N *	WLNJ-30-N * WLNJ-30LD-N * WLNJ-30LE-N *
Operating force	OF	1.47 N	1.47 N
Pretravel	PT	20±10 mm	20±10 mm

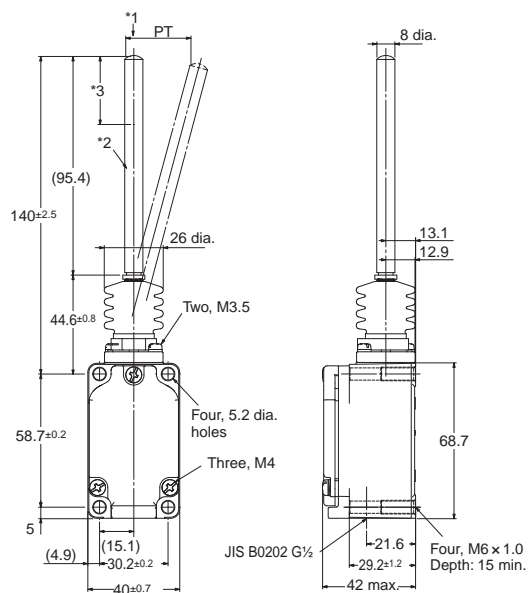
\* These values are for the top end of the spring, rod, or wire.



## Flexible Rod

### Screw terminals

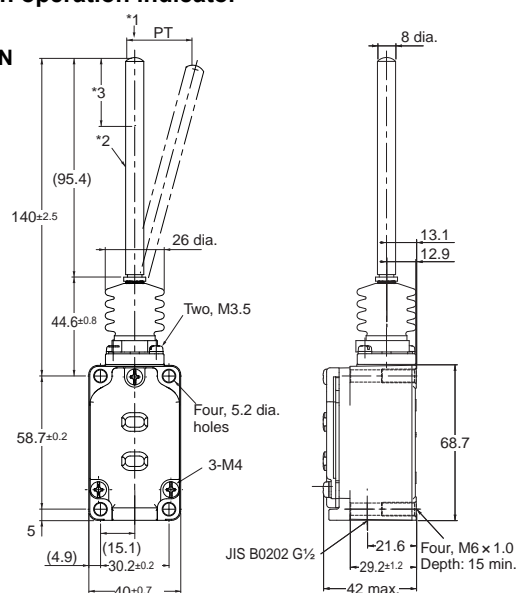
**Resin rod**  
**WLNJ-2(55)-N**



- \*1. Do not operate the Switch in the direction of the axial center.
- \*2. Polyamide Resin Rod.
- \*3. The range for operation is 1/3rd of the overall rod length from the end of the rod.

**Resin rod With operation indicator**

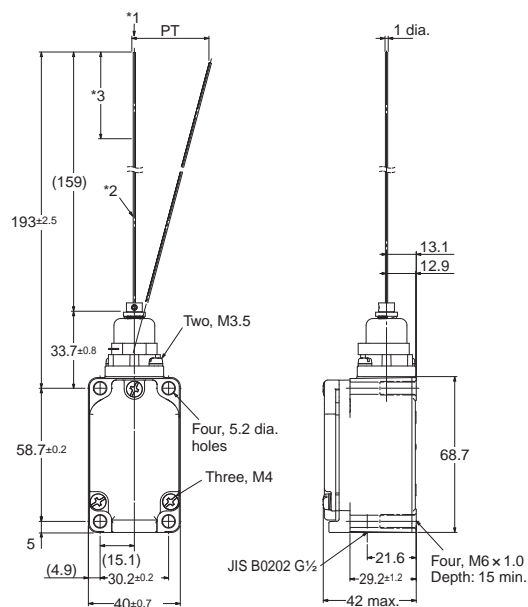
LED  
WLNJ-2(55)LD-N  
Neon lamp  
WLNJ-2LE-N



**Note:** The photo shows the WLNJ-2LD-N model.

- \*1. Do not operate the Switch in the direction of the axial center.
- \*2. Polyamide Resin Rod.
- \*3. The range for operation is 1/3rd of the overall rod length from the end of the rod.

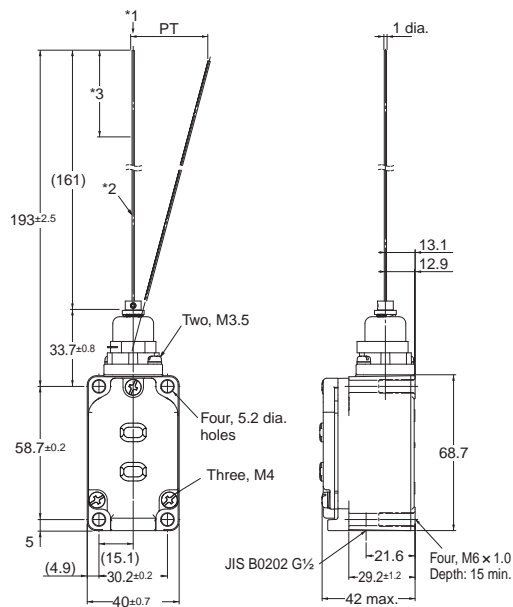
**Steel wire**  
**WLNJ-S2-N**



- \*1. Do not operate the Switch in the direction of the axial center.
- \*2. Stainless steel wire.
- \*3. The range for operation is 1/3rd of the overall wire length from the end of the wire.

Steel wire With operation indicator
-------------------------------------

LED  
WLNJ-S2LD-N  
Neon lamp  
WLNJ-S2LE-N



**Note:** The photo shows the WLNJ-S2LD-N model.

- \*1. Do not operate the Switch in the direction of the axial center.
- \*2. Stainless steel coil spring.
- \*3. The range for operation is 1/3rd of the overall spring length from the end of the spring.

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

### Operating characteristics

			<b>Model</b> WLNJ-2(55)-N * WLNJ-2(55)LD-N * WLNJ-2LE-N *	WLNJ-S2-N * WLNJ-S2LD-N * WLNJ-S2LE-N *
Operating force Pretravel	OF PT	max.	1.47 N 40±20 mm	0.28 N 40±20 mm

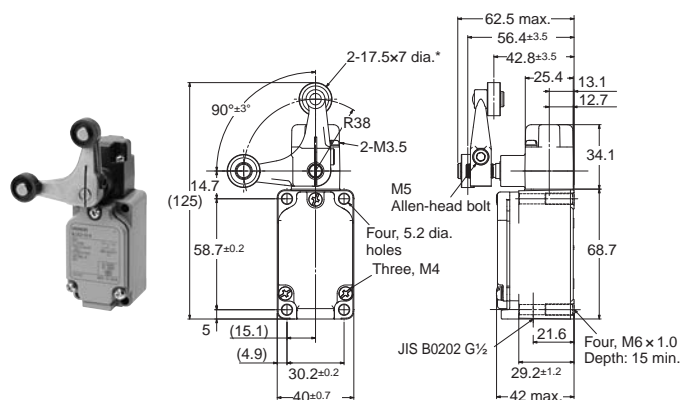
\* These values are for the top end of the spring, rod, or wire.



# Fork Lock Lever Screw terminals

WLCA32-41-N  
WLCA32-42-N  
WLCA32-43-N  
WLCA32-44-N

The WLCA32-41-N is shown in the following diagram.



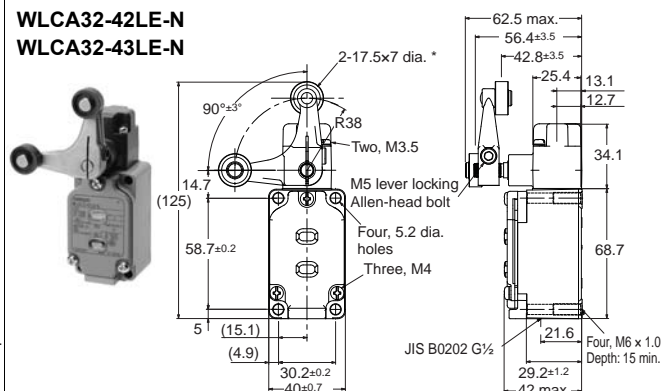
\*Plastic Roller  
(The WLCA32-041-N to WLCA32-044-N have stainless sintered rollers.)

**Note:** The photo shows the WLCA32-43-N model.

With operation indicator  
LED

WLCA32-41LD-N  
WLCA32-43LD-N  
Neon lamp  
WLCA32-41LE-N  
WLCA32-42LE-N  
WLCA32-43LE-N

The WLCA32-41LD-N is shown in the following diagram.



\*Plastic Roller  
(The WLCA32-041LD-N to WLCA32-044LD-N have stainless sintered rollers.)

**Note:** The photo shows the WLCA32-43LD-N model.

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

## Operating characteristics

	Model	WLCA32-41 to WLCA32-44-N
Force necessary to reverse the direction of the lever	max.	11.77 N
Movement until the lever reverses		$50 \pm 5^\circ$
Movement until switch operation	max.	$55^\circ$
Movement after switch operation	min.	$35^\circ$

[illegible]

# Environment-resistant Limit Switches

## WL-N/WLG

### Wide range of available models to match your onsite environment

- Variety of head shapes, including Roller Lever, Plunger, and Flexible Rod Switches
- Select the optimum actuator model for the ambient operating temperature and operating environment for use in a wide range of applications
- Wiring specifications are available in Direct-wire cable types in addition to standard screw terminals types



For the most recent information on models that have been certified for safety standards, refer to your OMRON website.

**⚠** Be sure to read *Safety Precautions* on pages 83 to 88 and *Safety Precautions for All Limit Switches*.

### Features

Select based on the operating temperature

- Ambient operating temperature of 5°C to 120°C: Heat-resistant type (WL□-TH-N/WL□-TH)
- Ambient operating temperature of -40°C to 40°C: Cold-resistant type (WL□-TC-N/WL□-TC)

Select based on the operating environment

- Outdoor use: Weather-resistant type (WL□-P1-N/WL□-P1)
- Chemicals and oils: Corrosion-resistant type (WL□-RP-N/WL□-RP)
- Coolant drops and mist: Coolant-resistant type (WL□-RP60-N/WL-RP60)
- Mist —
  - Molded terminal 139 type (WL□-139-N/WL□-139)
  - The SC connector can be removed, so it is possible to use flexible conduit for the cable. (WL□-RP40-N/WL-RP40)
- Constant water drops and mist Molded terminal 140 type (WL□-140-N/WL□-140)
- Constant water drops or splattering cutting powder —
  - Molded terminal 141 type (WL□-141-N/WL□-141)
  - Molded terminal 145 type (WL□-145-N/WL□-145)

## Model Number Structure

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

#### Basic models

WL□ - □□□□□□ -N  
(1) (2) (3) (4) (5) (6) (7)

#### (1) Actuator and Property Specifications

Code	Actuator		Pretravel (PT)
CA2	Roller lever	Roller lever: (R38 mm)	15±5°
CA2-2			25±5°
CA2-2N			20° max.
CA12		Adjustable Roller Lever (R25 to 89 mm)	15±5°
CA12-2			25±5°
CA12-2N			20° max.
D28	Plunger Actuators	Sealed top-roller plunger	1.7 mm max.
D2		Top-roller plunger	1.7 mm max.
SD		Horizontal plunger	2.8 mm max.
SD2		Horizontal-roller plunger	2.8 mm max.
CL	Flexible Rod Actuators	Adjustable rod lever (25 to 140mm)	15±5°
CL-2			25±5°
CL-2N			20° max.
NJ		Coil spring (6.5 dia.)	20±10mm
NJ-2		Flexible rod: Resin rod (8 dia.)	40±20mm

#### (2) Environment-resistant Specifications

Code	Specifications
None	Standard built-in switch
RP	Corrosion-resistant type
P1	Weather-resistant type

#### (3) Built-in Switch Specifications

Code	Specifications
None	Standard built-in switch
55	Airtight built-in switch

#### (4) Temperature Specifications

Code	Specifications
None	Ambient operating temperature (-10 to +80°C)
TH	Ambient operating temperature (5 to 120°C) (Heat-resistant type) *
TC	Ambient operating temperature (-40 to +40°C) (Cold-resistant type) *

\* (2) Environment-resistant Specifications Cannot be combined with symbols RP or P1.

#### (5) Wiring and Built-in Switch Specifications

Code	Terminal shape	Internal switch Specifications	Mold specifications
None	Screw terminals (Conduit size: G <sup>1</sup> / <sub>2</sub> )	Refer to (3) Built-in Switch Specifications	None
139	Direct-wire cable	Standard	Molded conduit opening and cover. (The cover cannot be removed.)
140		Airtight built-in switch	Molded conduit opening, cover, and cover mounting screws. (The cover cannot be removed.)
141			Molded conduit opening, cover, cover mounting screws, and head. (The cover cannot be removed, and head direction cannot be changed.)
145			Molded conduit opening, cover, and cover mounting screws. (The cover cannot be removed.)
RP40			Molded conduit opening and cover. (The cover cannot be removed.) SC Connector can be removed, so it is possible to use flexible conduits for the cable.
RP60			Molded conduit opening, cover, and head mounting screws. (The cover cannot be removed, and head direction cannot be changed.)

Note: The standard cable length is 5 m.

#### (6) Indicator Specifications

Code	Specifications
None	No indicator
LD	LED (10 to 115 V AC/DC) *
LE	Neon lamp (125 to 250 VAC) *

\* (2) Environment-resistant Specifications Cannot be combined with symbols RP or P1.

(4) Temperature Specifications Cannot be combined with symbols TH or TC.

#### (7) Lamp Wiring

Code	Specifications
None	No indicator
2	NC wiring (Lit when operating)
3	NO wiring (Lit when not operating)

## High-sensitivity and High-precision Models

WLG□ - □□□□□□

(1) (2) (3) (4) (5) (6) (7)

## (1) Actuator and Property Specifications

Code	Actuator		Pretravel (PT)
2	Roller lever	Roller lever: R38 mm High-sensitivity Models	10° <sup>+2°</sup> <sub>-1°</sub>
CA2		Roller lever: R38 mm High-precision Models	5° <sup>+2°</sup> <sub>0°</sub>
12		Adjustable Roller Lever (R25 to 89 mm) high-sensitivity model	10° <sup>+2°</sup> <sub>-1°</sub>
L	Flexible rod	Adjustable rod lever (25 to 140 mm) high-sensitivity model	10° <sup>+2°</sup> <sub>-1°</sub>

## (2) Environment-resistant Specifications

Code	Specifications
None	Standard Built-in Switch
RP	Corrosion-resistant type
P1	Weather-resistant type

## (3) Built-in Switch Specifications

Code	Specifications
None	Standard Built-in Switch
55	Airtight built-in switch

## (4) Temperature Specifications

Code	Specifications
None	Ambient operating temperature -10 to +80°C
TH	Ambient operating temperature (5 to 120°C) (Heat-resistant type) *
TC	Ambient operating temperature (-40 to +40°C) (Cold-resistant type) *

\* (2) Environment-resistant Specifications Cannot be combined with symbols RP or P1.

## (5) Wiring and Built-in Switch Specifications

Code	Terminal shape	Built-in switch specification	Mold specifications
None	Screw terminals (Conduit size: G <sup>1</sup> / <sub>2</sub> )	Refer to (3) Built-in Switch Specifications	None
139	Direct-wire cable	Standard	Molded conduit opening and cover. (The cover cannot be removed.)
140		Airtight built-in switch	Molded conduit opening, cover, and cover mounting screws. (The cover cannot be removed.)
141			Molded conduit opening, cover, cover mounting screws, and head. (The cover cannot be removed, and head direction cannot be changed.)
RP60			Molded conduit opening, cover, and head mounting screws. (The cover cannot be removed, and head direction cannot be changed.)

Note: The standard cable length is 5 m.

## (6) Indicator Specifications

Code	Specifications
None	No indicator
LD	LED (10 to 115 V AC/DC) *
LE	Neon lamp (125 to 250 V AC) *


\* (2) Environment-resistant Specifications Symbols: RP, P1  
 (4) Temperature Specifications Cannot be combined with symbols TH or TC.

## (7) Lamp Wiring


Code	Specifications
None	No indicator
2	NC wiring (Lit when operating)
3	NO wiring (Lit when not operating)

# Ordering Information





## Roller Lever

Apperance	Actuator	Terminal shape	Built-in switch specification/ Temperature Specifications	Pretravel (PT)	Without operation indicator	With operation indicator	
					Model	Indicator Wiring Specifications	LED Model
	Roller lever: R38 mm	Screw terminals (Conduit size: G1/2)	Heat-resistant type	15±5°	WLCA2-TH-N	---	---
				25±5°	WLCA2-2TH-N	---	---
				20° max.	WLCA2-2NTH-N	---	---
				10 <sup>0+2°</sup> <sub>-1°</sub>	WLG2-TH	---	---
				5 <sup>0+2°</sup> <sub>0°</sub>	WLGCA2-TH	---	---
			Cold-resistant type	15±5°	WLCA2-TC-N	---	---
				25±5°	WLCA2-2TC-N	---	---
				20° max.	WLCA2-2NTC-N	---	---
				10 <sup>0+2°</sup> <sub>-1°</sub>	WLG2-TC	---	---
				5 <sup>0+2°</sup> <sub>0°</sub>	WLGCA2-TC	---	---
			Corrosion-resistant type	15±5°	WLCA2-RP-N	---	---
				10 <sup>0+2°</sup> <sub>-1°</sub>	WLG2-RP	---	---
				5 <sup>0+2°</sup> <sub>0°</sub>	WLGCA2-RP	---	---
			Weather-resistant type	15±5°	WLCA2-P1-N	---	---
				10 <sup>0+2°</sup> <sub>-1°</sub>	WLG2-P1	---	---
		Direct-wire cable	Coolant-resistant type	15±5°	WLCA2-RP60-N	NC wiring	WLCA2-RP60LD2-N
						NO wiring	WLCA2-RP60LD3-N
				25±5°	WLCA2-2RP60-N	NC wiring	WLCA2-2RP60LD2-N
						NO wiring	WLCA2-2RP60LD3-N
				10 <sup>0+2°</sup> <sub>-1°</sub>	WLG2-RP60	NC wiring	WLG2-RP60LD2
						NO wiring	WLG2-RP60LD3
				5 <sup>0+2°</sup> <sub>0°</sub>	WLGCA2-RP60	NC wiring	WLGCA2-RP60LD2
						NO wiring	WLGCA2-RP60LD3
			Molded terminal -RP40	15±5°	WLCA2-RP40-N	---	---
			Molded terminal -139	15±5°	WLCA2-139-N	NC wiring	WLCA2-139LD2-N
						NO wiring	WLCA2-139LD3-N
				25±5°	WLCA2-2139-N	NC wiring	WLCA2-2139LD2-N
						NO wiring	WLCA2-2139LD3-N
				20° max.	WLCA2-2N139-N	---	---
				10 <sup>0+2°</sup> <sub>-1°</sub>	WLG2-139	NO wiring	WLG2-139LD3
			Molded terminal -140	5 <sup>0+2°</sup> <sub>0°</sub>	WLGCA2-139	NC wiring	WLGCA2-139LD2
						NO wiring	WLGCA2-139LD3
				15±5°	WLCA2-140-N	---	---
				20° max.	WLCA2-2N140-N	---	---
			Molded terminal -141	10 <sup>0+2°</sup> <sub>-1°</sub>	WLG2-140	NC wiring	WLG2-140LD2 *
						NO wiring	WLG2-140LD3 *
				15±5°	WLCA2-141-N	NC wiring	WLCA2-141LD2-N
						NO wiring	WLCA2-141LD3-N
				10 <sup>0+2°</sup> <sub>-1°</sub>	WLG2-141	NC wiring	WLG2-141LD2
						NO wiring	WLG2-141LD3
				5 <sup>0+2°</sup> <sub>0°</sub>	WLGCA2-141	NO wiring	WLGCA2-141LD3




\* Ask your OMRON representative for details on Two-core switches.

Apperance	Actuator	Terminal shape	Built-in switch specification/ Temperature Specifications	Pretravel (PT)	Without operation indicator
					Model
	Adjustable roller lever (R25 to 89 mm)	Screw terminals (Conduit size: G <sup>1</sup> / <sub>2</sub> )	Heat-resistant type	15±5°	WLCA12-TH-N
				25±5°	WLCA12-2TH-N
				20° max.	WLCA12-2NTH-N
				10 <sup>°+2°</sup> <sub>-1°</sub>	WLG12-TH
			Cold-resistant type	15±5°	WLCA12-TC-N
				25±5°	WLCA12-2TC-N
				20° max.	WLCA12-2NTC-N
				10 <sup>°+2°</sup> <sub>-1°</sub>	WLG12-TC
			Corrosion-resistant type	15±5°	WLCA12-RP-N
				10 <sup>°+2°</sup> <sub>-1°</sub>	WLG12-RP
			Weather-resistant type	15±5°	WLCA12-P1-N
				10 <sup>°+2°</sup> <sub>-1°</sub>	WLG12-P1
		Direct-wire cable	Coolant-resistant type	15±5°	WLCA12-RP60-N
			Molded terminal -139	15±5°	WLCA12-139-N
			Molded terminal -140	15±5°	WLCA12-140-N

## Plunger

Apperance	Actuator	Terminal shape	Built-in switch specification/ Temperature Specifications	Pretravel (PT)	Without operation indicator
					Model
	Sealed top-roller plunger	Screw terminals (Conduit size: G <sup>1</sup> / <sub>2</sub> )	Heat-resistant type	1.7 mm max.	WLD28-TH-N
			Cold-resistant type		WLD28-TC-N
			Corrosion-resistant type		WLD28-RP-N
		Direct-wire cable	Coolant-resistant type		WLD28-RP60-N
			Molded terminal -139		WLD28-139-N
			Molded terminal -140		WLD28-140-N
	Top-roller plunger	Screw terminals (Conduit size: G <sup>1</sup> / <sub>2</sub> )	Heat-resistant type	1.7 mm max.	WLD2-TH-N
		Direct-wire cable	Coolant-resistant type		WLD2-RP60-N
			Molded terminal -139		WLD2-139-N
	Horizontal plunger	Screw terminals (Conduit size: G <sup>1</sup> / <sub>2</sub> )	Heat-resistant type	2.8 mm max.	WLSD-TH-N
			Cold-resistant type		WLSD-TC-N
			Corrosion-resistant type		WLSD-RP-N
		Direct-wire cable	Coolant-resistant type		WLSD-RP60-N
			Molded terminal -139		WLSD-139-N
	Horizontal-roller plunger	Screw terminals (Conduit size: G <sup>1</sup> / <sub>2</sub> )	Heat-resistant type	2.8 mm max.	WLSD2-TH-N
			Cold-resistant type		WLSD2-TC-N
			Corrosion-resistant type		WLSD2-RP-N
		Direct-wire cable	Coolant-resistant type		WLSD2-RP60-N
			Molded terminal -139		WLSD2-139-N
			Molded terminal -140		WLSD2-140-N

## Flexible Rod

Apperance	Actuator	Terminal shape	Built-in switch specification/ Temperature Specifications	Pretravel (PT)	Without operation indicator
					Model
	Coil spring (6.5 dia.)	Screw terminals (Conduit size: G <sup>1</sup> / <sub>2</sub> )	Heat-resistant type	20±10 mm	WLNJ-TH-N
			Cold-resistant type		WLNJ-TC-N
			Corrosion-resistant type		WLNJ-RP-N
		Direct-wire cable	Coolant-resistant type		WLNJ-RP60-N
			Molded terminal -139		WLNJ-139-N
			Molded terminal -140		WLNJ-140-N
	Resin rod (8 dia.)	Screw terminals (Conduit size: G <sup>1</sup> / <sub>2</sub> )	Corrosion-resistant type	40±20 mm	WLNJ-2RP-N
		Direct-wire cable	Coolant-resistant type	40±20 mm	WLNJ-2RP60-N
			Molded terminal -139		WLNJ-2139-N
			Molded terminal -140		WLNJ-2140-N
	Adjustable rod lever (25 to 140 mm)	Screw terminals (Conduit size: G <sup>1</sup> / <sub>2</sub> )	Heat-resistant type	15±5°	WLCL-TH-N
				25±5°	WLCL-2TH-N
				20° max.	WLCL-2NTH-N
				10° <sup>+2°</sup> <sub>-1°</sub>	WLGL-TH
			Cold-resistant type	15±5°	WLCL-TC-N
				25±5°	WLCL-2TC-N
				20° max.	WLCL-2NTC-N
				10° <sup>+2°</sup> <sub>-1°</sub>	WLGL-TC
			Corrosion-resistant type	15±5°	WLCL-RP-N
				10° <sup>+2°</sup> <sub>-1°</sub>	WLGL-RP
			Weather-resistant type	15±5°	WLCL-P1-N
				10° <sup>+2°</sup> <sub>-1°</sub>	WLGL-P1
		Direct-wire cable	Coolant-resistant type	15±5°	WLCL-RP60-N
			Molded terminal -139	15±5°	WLCL-139-N
			Molded terminal -140	15±5°	WLCL-140-N



## Specifications

### Ratings

Screw terminals/Direct-wire cable

Without Operation Indicator

Basic models (WL-N)

Ratings		Non-inductive load (A)				Inductive load (A)			
		Basic models (WL-N)				Basic models (WL-N)			
		Resistive load		Lamp load		Inductive load		Motor load	
Voltage (V)		NC	NO	NC	NO	NC	NO	NC	NO
AC	125	10		3	1.5	10		5	2.5
	250	10		2	1	10		3	1.5
	500	10		1.5	0.8	3		1.5	0.8
DC	8	10		6	3	10		6	
	14	10		6	3	10		6	
	30	6		4	3	6		4	
	125	0.8		0.2	0.2	0.8		0.2	
	250	0.4		0.1	0.1	0.4		0.1	

High-sensitivity and High-precision models (WLG)

Ratings		Non-inductive load (A)	
		High-sensitivity and High-precision models (WLG)	
		Resistive load	
Voltage (V)		NC	NO
AC	125	5	
	250	5	
DC	125	0.4	
	250	0.2	

With Operation Indicator (LED)

Basic models (WL-N)

Ratings		Non-inductive load (A)				Inductive load (A)			
		Basic models (WL-N)				Basic models (WL-N)			
		Resistive load		Lamp load		Inductive load		Motor load	
Voltage (V)		NC	NO	NC	NO	NC	NO	NC	NO
AC	115	10		3	1.5	10		5	2.5
DC	12	10		6	3	10		6	
	24	6		4	3	6		4	
	48	3		2	1.5	3		0.2	
	115	0.8		0.2		0.8		0.1	

High-sensitivity and High-precision models (WLG)

Ratings		Non-inductive load (A)	
		High-sensitivity and High-precision models (WLG)	
		Resistive load	
Voltage (V)		NC	NO
AC	115	5	
DC	115	0.4	

With Operation Indicators (Neon Lamps)

Basic models (WL-N)

Ratings		Non-inductive load (A)				Inductive load (A)			
		Basic models (WL-N)				Basic models (WL-N)			
		Resistive load		Lamp load		Inductive load		Motor load	
Voltage (V)		NC	NO	NC	NO	NC	NO	NC	NO
AC	125	10		3	1.5	10		5	2.5
	250	10		2	1	10		3	1.5

High-sensitivity and High-precision models (WLG)

Ratings		Non-inductive load (A)	
		High-sensitivity and High-precision models (WLG)	
		Resistive load	
Voltage (V)		NC	NO
AC	125	5	
	250	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.

**Allowable Inrush Current/ Minimum applicable load**

Operating characteristics type		Basic models (WL-N)	High-sensitivity and High-precision models (WLG)
Inrush current	NC	30 A max.	15 A max.
	NO	20 A max.	10 A max.
Minimum applicable load		5 VDC 1 mA, resistive load, P level	5 VDC 1 mA, resistive load, P level

**Operation Indicator**

Operation indicator type	LED	Neon lamp
Rated voltage	10 to 115 VAC/DC	125 to 250 VAC
Leakage current (Reference value)	Approx. 0.4 mA at 10 VAC/DC Approx. 0.5 mA at 115 VAC/DC	Approx. 0.6 mA at 125 VAC Approx. 1.9 mA at 250 VAC

## Characteristics

Operating characteristics type		Basic models (WL-N)	High-sensitivity and High-precision models (WLG)
Permissible operating frequency	Mechanical	120 operations/minute	
	Electrical	30 operations/minute	
Rated frequency		50/60 Hz	
Permissible operating speed		1 mm/s to 1 m/s (in case of WLCA2-N)	
Insulation resistance		100 MΩ min. (at 500 VDC)	
Contact resistance		25 mΩ or less (default value, built-in switch only)	
Vibration resistance		10 to 55 Hz, 1.5-mm double amplitude *2	
Shock	Destruction	1,000 m/s <sup>2</sup> max.	
	Malfunction	300m/s <sup>2</sup> max. *2	
Durability *1	Mechanical	15,000,000 operations min.	10,000,000 operations min. *3
	Electrical	750,000 operations min. (3 A at 250 VAC, resistive load) *4	500,000 operations min. (3 A at 250 VAC, resistive load) *4
Ambient operating temperature		-10 to +80°C (with no icing) *5	
Ambient operating humidity		35 to 95%RH	
Degree of protection *6		IP67 (EN60947-5-1)	
Weight		Approx. 250 g (for WLCL-TH-N)	Approx. 250 g (for WLCL-TH-N)

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

- \*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. Except Switches with Flexible Rod Actuators.
- \*3. 500,000 operations min. for Weather-resistant models.
- \*4. In case of models without operation indicators.
- \*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. The degree of protection is tested using the method specified by the standard (EN60947-5-1). Confirm that sealing properties are sufficient for the operating conditions and environment beforehand.

Operating characteristics type		Basic models (WL-N)	High-sensitivity and High-precision models (WLG)
Wiring Specifications		Screw terminals/Direct-wire cable models	Screw terminals/Direct-wire cable models
Dielectric strength	Between terminals of the same polarity	1,000 VAC, 50/60 Hz for 1 min *	600 VAC, 50/60 Hz for 1 min *
	Between current-carrying metal part and ground	2,200 VAC, 50/60 Hz for 1 min	1,500 VAC, 50/60 Hz for 1 min
	Between each terminal and non-current-carrying metal part	2,200 VAC, 50/60 Hz for 1 min	1,500 VAC, 50/60 Hz for 1 min

\* Except models with operation indicators.

## Circuit Configuration/Terminal Connection Diagram

Operating characteristics type	Basic models (WL-N)/High-sensitivity and high-precision models (WLG)	
Wiring Specifications	Screw terminals	Direct-wire cable
Without operation indicator		
Operation indicator (Light-ON when Not Operating *)		

**Note:** Leakage current from indicator circuit may cause load malfunction (i.e., the load may remain ON). Make sure that the load operating current is higher than the leakage current.

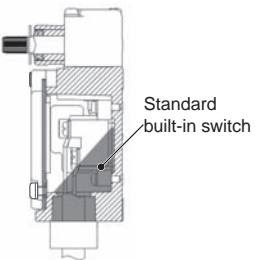
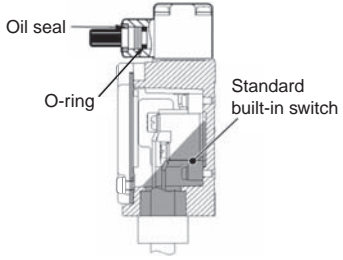
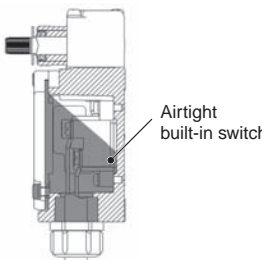
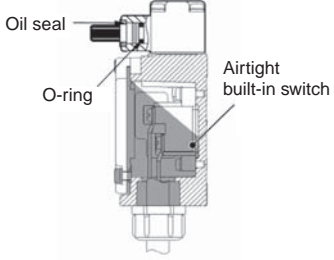
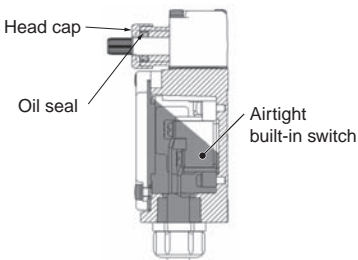
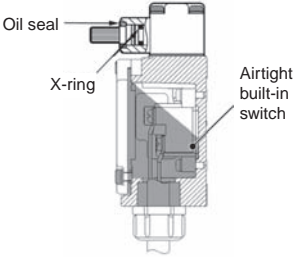
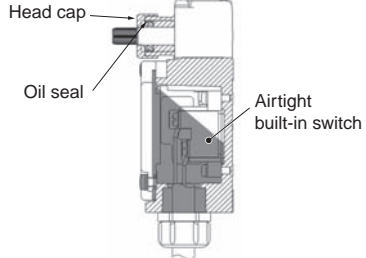
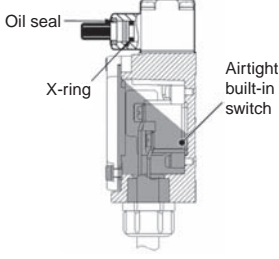
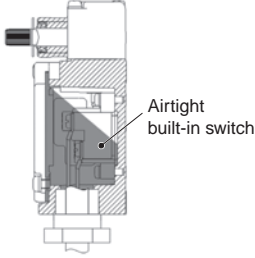
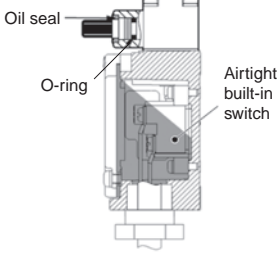
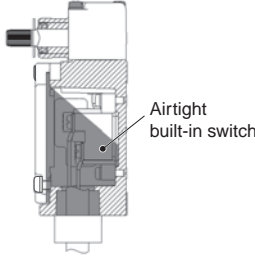
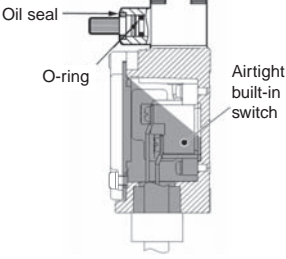
For countermeasures, refer to technical support on your OMRON website.

\* Light-ON when not operating means the operation indicator is lit when the actuator is free and is not lit when the actuator rotates or is pushed down, and the Switch contacts contact to NO.

The above shows details of the switch interior. External wires (external resistances) are not shown. For details, refer to *Operation* on page 19.

# Structure and Nomenclature

## Mold Specifications : Molded parts

<p><b>Prevent entry of foreign objects from conduit</b> <b>WL□-139-N</b></p>  <p>Standard built-in switch</p> <p><b>WLG□-139</b></p>  <p>Oil seal O-ring Standard built-in switch</p>	<p><b>Prevent entry of foreign objects from conduit cover</b> <b>WL□-140-N</b></p>  <p>Airtight built-in switch</p> <p><b>WLG□-140</b></p>  <p>Oil seal O-ring Airtight built-in switch</p>	<p><b>Prevent entry of foreign objects from head and conduit cover</b> <b>WL□-141-N</b></p>  <p>Head cap Oil seal Airtight built-in switch</p> <p><b>WLG□-141</b></p>  <p>Oil seal X-ring Airtight built-in switch</p>
<p><b>Prevent entry of metal powder from head and conduit</b> <b>WL□-145-N</b></p>  <p>Head cap Oil seal Airtight built-in switch</p> <p><b>WLG□-145</b></p>  <p>Oil seal X-ring Airtight built-in switch</p>	<p><b>Prevent entry of metal powder from conduit cover</b> <b>WL□-RP40-N</b></p>  <p>Airtight built-in switch</p> <p><b>WLG□-RP40</b></p>  <p>Oil seal O-ring Airtight built-in switch</p>	<p><b>Prevent entry of metal powder from head and conduit cover</b> <b>WL□-RP60-N</b></p>  <p>Airtight built-in switch</p> <p><b>WLG□-RP60</b></p>  <p>Oil seal O-ring Airtight built-in switch</p>

Model	Cable specifications	Connector specifications
WL□-139-N WLG□-139	Standard 5-m VCT cable. Finished outer diameter: 11.5 mm, 4 conductors.	Resin cap
WL□-140-N WLG□-140 WL□-141-N WLG□-141 WL□-145-N WLG□-145	Standard 5-m VCT cable, with high flexibility and good anti-oil properties attached. Finished outer diameter: 11.5 mm, 4 conductors.	Metal connector
WL□-RP40-N WLG□-RP40		Resin connector *1
WL□-RP60-N WLG□-RP60		Resin cap

\*1. The connector can be removed, so it is possible to use flexible conduit for the cable.

WL-N/WLG

Dimensions

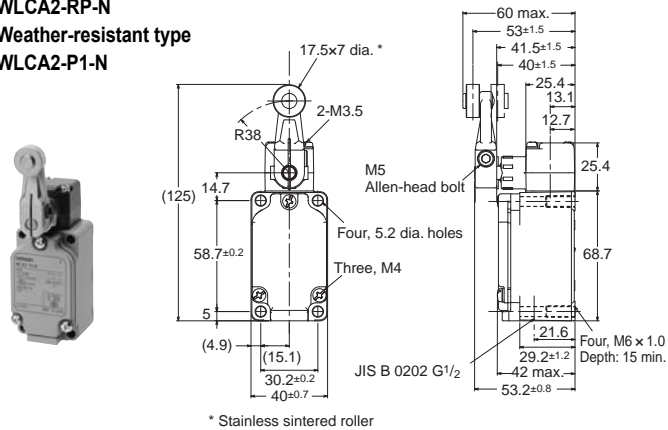
(Unit: mm)

Roller Lever

Screw terminals

Roller lever R38

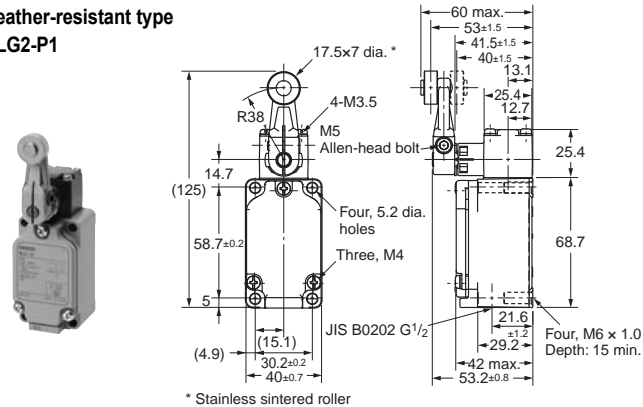
Heat-resistant type  
WLCA2-TH-N  
WLCA2-2TH-N  
WLCA2-2NTH-N  
Cold-resistant type  
WLCA2-TC-N  
WLCA2-2TC-N  
WLCA2-2NTC-N  
Corrosion-resistant type  
WLCA2-RP-N  
Weather-resistant type  
WLCA2-P1-N



Note: The photo shows the WLCA2-TH-N model.

Roller lever R38

Heat-resistant type  
WLG2-TH  
WLGCA2-TH  
Cold-resistant type  
WLG2-TC  
WLGCA2-TC  
Corrosion-resistant type  
WLG2-RP  
WLGCA2-RP  
Weather-resistant type  
WLG2-P1



Note: The photo shows the WLG2-TH model.

Operating characteristics

Model		WLCA2-TH-N WLCA2-TC-N WLCA2-RP-N WLCA2-P1-N	WLCA2-2TH-N WLCA2-2TC-N	WLCA2-2NTH-N WLCA2-2NTC-N	WLG2-TH WLG2-TC WLG2-RP WLG2-P1	WLGCA2-TH WLGCA2-TC WLGCA2-RP
Operating force	OF max.	13.34 N	13.34 N	13.34 N	9.81 N	13.34 N
Release force	RF min.	1.18 N	1.18 N	1.18 N	0.98 N	1.47 N
Pretravel	PT	15±5°	25±5°	20° max.	10° <sup>+2°</sup> <sub>-1°</sub>	5° <sup>+2°</sup> <sub>0°</sub>
Overtravel	OT min.	70°	60°	70°	65°	40°
Movement Differential	MD max.	12°	16°	10°	7°	3°

## Direct-wire cable

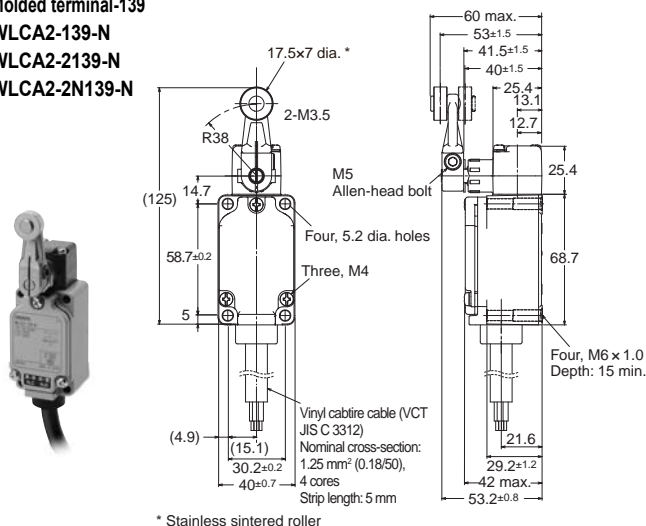
### Roller lever R38

#### Coolant-resistant type

WLCA2-RP60-N  
WLCA2-2RP60-N

#### Molded terminal-139

WLCA2-139-N  
WLCA2-2139-N  
WLCA2-2N139-N



\* Stainless sintered roller

Note: The photo shows the WLCA2-139-N model.

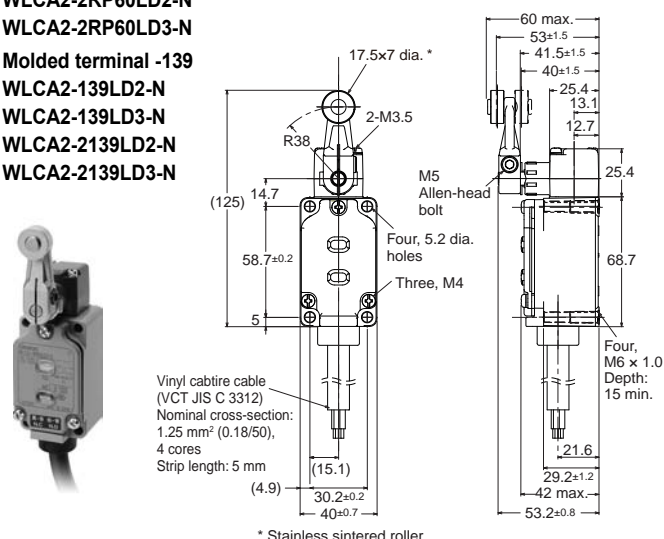
### Roller lever R38 With operation indicator

#### Coolant-resistant specifications

WLCA2-RP60LD2-N  
WLCA2-RP60LD3-N  
WLCA2-2RP60LD2-N  
WLCA2-2RP60LD3-N

#### Molded terminal -139

WLCA2-139LD2-N  
WLCA2-139LD3-N  
WLCA2-2139LD2-N  
WLCA2-2139LD3-N



\* Stainless sintered roller

Note: The photo shows the WLCA2-RP60LD3-N model.

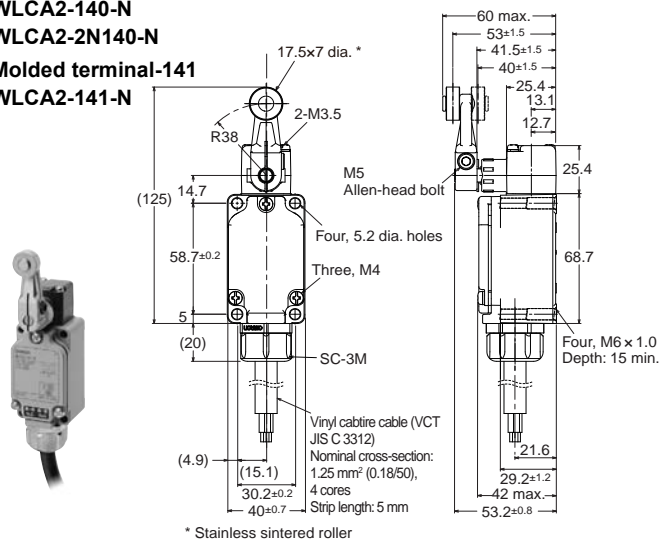
### Roller lever R38

#### Molded terminal-140

WLCA2-140-N  
WLCA2-2N140-N

#### Molded terminal-141

WLCA2-141-N



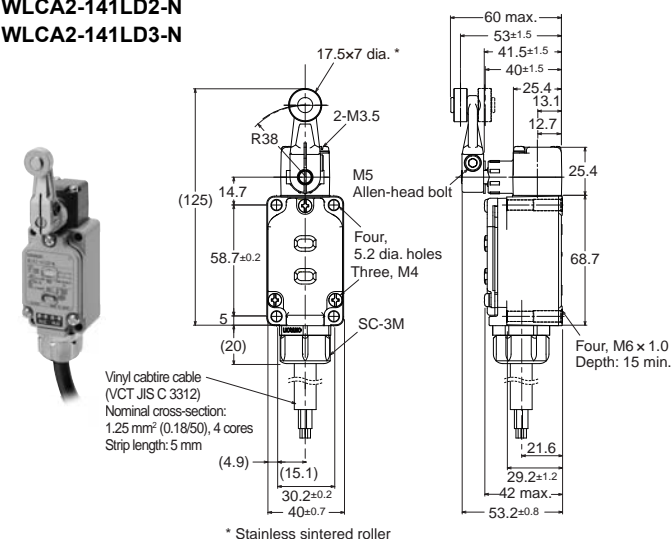
\* Stainless sintered roller

Note: The photo shows the WLCA2-141-N model.

### Roller lever R38 With operation indicator

#### Molded terminal -141

WLCA2-141LD2-N  
WLCA2-141LD3-N



\* Stainless sintered roller

Note: The photo shows the WLCA2-141LD2-N model.

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

## Operating characteristics

Model		WLCA2-RP60-N WLCA2-RP60LD2-N WLCA2-RP60LD3-N WLCA2-139-N WLCA2-139LD2-N WLCA2-139LD3-N WLCA2-140-N WLCA2-141-N WLCA2-141LD2-N WLCA2-141LD3-N	WLCA2-2N139-N WLCA2-2N140-N	WLCA2-2RP60-N WLCA2-2RP60LD2-N WLCA2-2RP60LD3-N WLCA2-2139-N WLCA2-2139LD2-N WLCA2-2139LD3-N
Operating force	OF max.	13.34 N	13.34 N	13.34 N
Release force	RF min.	1.18 N	1.18 N	1.18 N
Pretravel	PT	15±5°	20° max.	25±5°
Overtravel	OT min.	70°	70°	60°
Movement Differential	MD max.	12°	10°	16°

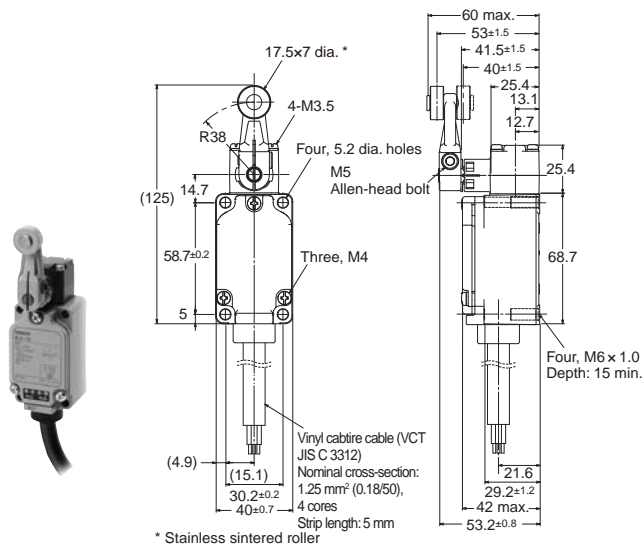
## Roller lever R38

Coolant-resistant type

WLG2-RP60

Molded terminal -139

WLG2-139



\* Stainless sintered roller

Note: The photo shows the WLG2-139 model.

## Roller lever R38 With operation indicator

Coolant-resistant specifications

WLG2-RP60LD2

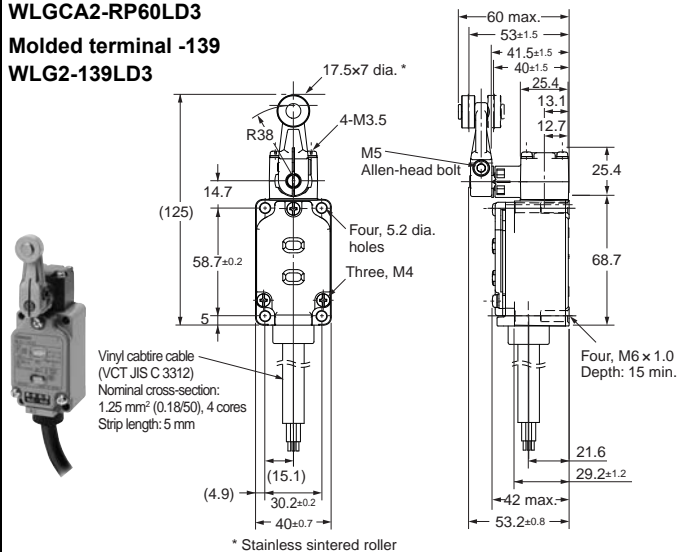
WLG2-RP60LD3

WLGCA2-RP60LD2

WLGCA2-RP60LD3

Molded terminal -139

WLG2-139LD3



\* Stainless sintered roller

Note: The photo shows the WLG2-139LD3 model.

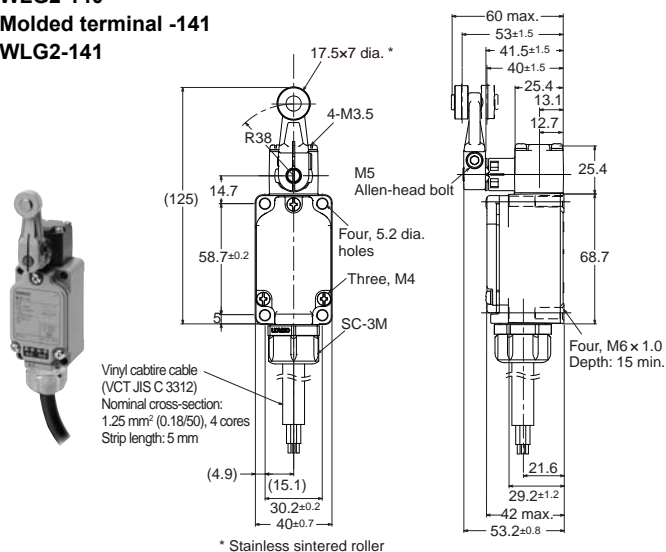
## Roller lever R38

Molded terminal -140

WLG2-140

Molded terminal -141

WLG2-141



\* Stainless sintered roller

Note: The photo shows the WLG2-141 model.

## Roller lever R38 With operation indicator

Molded terminal -140

WLG2-140LD2

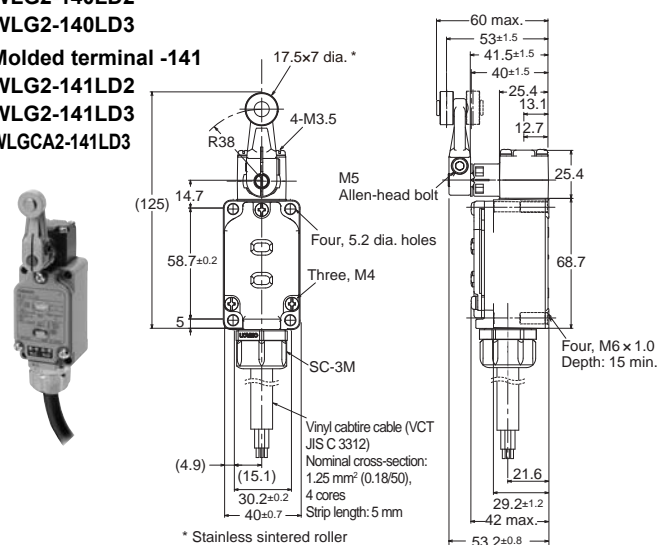
WLG2-140LD3

Molded terminal -141

WLG2-141LD2

WLG2-141LD3

WLGCA2-141LD3



\* Stainless sintered roller

Note: The photo shows the WLG2-141LD2 model.

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

## Operating characteristics

Model	WLG2-139 WLG2-140 WLG2-141 WLG2-RP60 WLG2-RP60LD2 WLG2-RP60LD3 WLG2-139LD3 WLG2-140LD2 WLG2-140LD3 WLG2-141LD2 WLG2-141LD3	WLGCA2-RP60LD2 WLGCA2-RP60LD3 WLGCA2-141LD3
Operating force	OF max.	9.81 N
Release force	RF min.	0.98 N
Pretravel	PT	10° <sup>+2°</sup> <sub>-1°</sub>
Overtravel	OT min.	65°
Movement Differential	MD max.	7°

# Screw terminals

## Adjustable Roller Lever (R25 to 89 mm)

Heat-resistant type

WLCA12-TH-N

WLCA12-2TH-N

WLCA12-2NTH-N

Cold-resistant type

WLCA12-TC-N

WLCA12-2TC-N

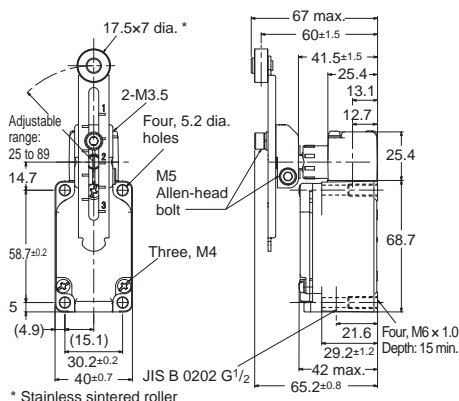
WLCA12-2NTC-N

Weather-resistant type

WLCA12-P1-N

Corrosion-resistant type

WLCA12-RP-N



**Note:** The photo shows the WLCA12-TH-N model.

## Adjustable Roller Lever (R25 to 89 mm)

Heat-resistant type

WLG12-TH

Cold-resistant type

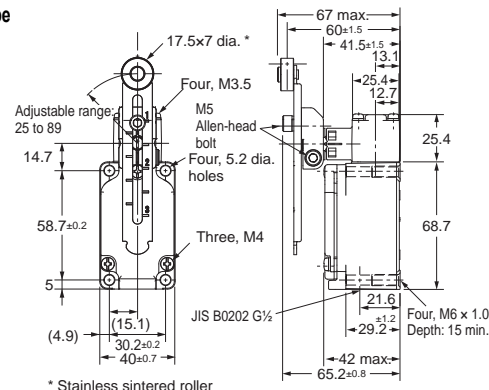
WLG12-TC

Weather-resistant type

WLG12-P1

Corrosion-resistant type

WLG12-RP



**Note:** The photo shows the WLG12-TH model.

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

## Operating characteristics

Model		WLCA12-TH-N WLCA12-TC-N WLCA12-P1-N WLCA12-RP-N	WLCA12-2TH-N WLCA12-2TC-N	WLCA12-2NTH-N WLCA12-2NTC-N	WLG12-TH WLG12-TC WLG12-P1 WLG12-RP
Operating force	OF max.	13.34 N	13.34 N	13.34 N	9.81 N
Release force	RF min.	1.18 N	1.18 N	1.18 N	0.98 N
Pretravel	PT	15±5°	25±5°	20° max.	10° <sup>+2°</sup> <sub>-1°</sub>
Overtravel	OT min.	70°	60°	70°	65°
Movement Differential	MD max.	12°	16°	10°	7°

**Note:** The operating characteristics are measured at the lever length of 38 mm.

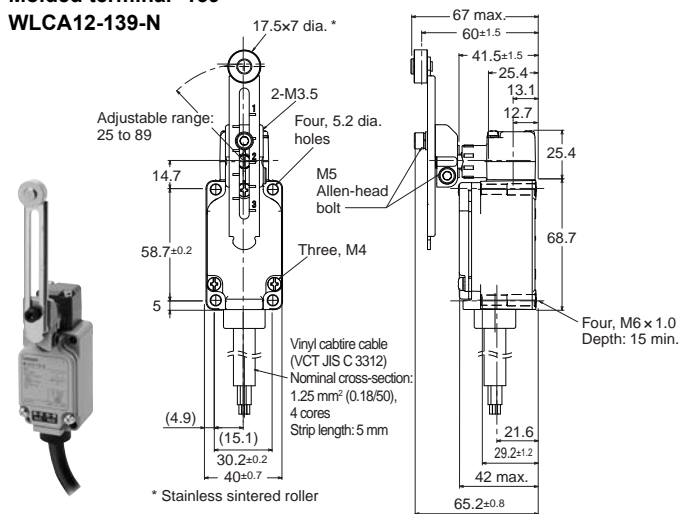


Direct-wire cable

Adjustable Roller Lever (R25 to 89 mm)

Coolant-resistant specifications  
WLCA12-RP60-N

Molded terminal -139  
WLCA12-139-N

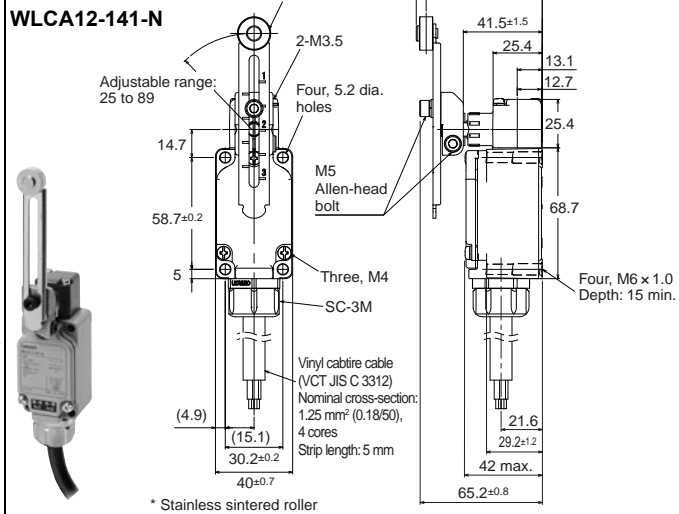


Note: The photo shows the WLCA12-139-N model.

Adjustable Roller Lever (R25 to 89 mm)

Molded terminal -140  
WLCA12-140-N

Molded terminal -141  
WLCA12-141-N



Note: The photo shows the WLCA12-141-N model.

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

Operating characteristics

Model		WLCA12-RP60-N WLCA12-139-N WLCA12-140-N WLCA12-141-N
Operating force	OF max.	13.34 N
Release force	RF min.	1.18 N
Pretravel	PT	15±5°
Overtravel	OT min.	70°
Movement Differential	MD max.	12°

Note: The operating characteristics are measured at the lever length of 38 mm.

## Plunger Actuators

### Screw terminals

#### Sealed top-roller plunger

##### Heat-resistant specifications

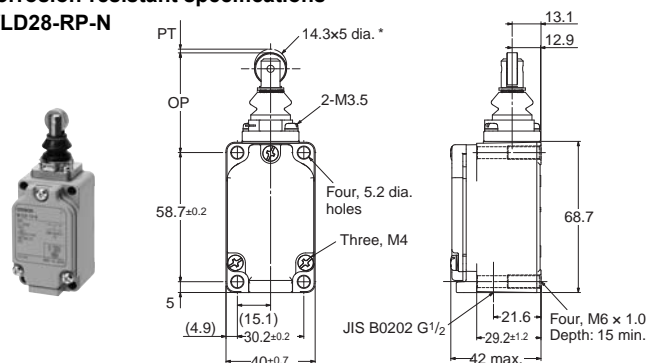
WLD28-TH-N

##### Cold-resistant specifications

WLD28-TC-N

##### Corrosion-resistant specifications

WLD28-RP-N



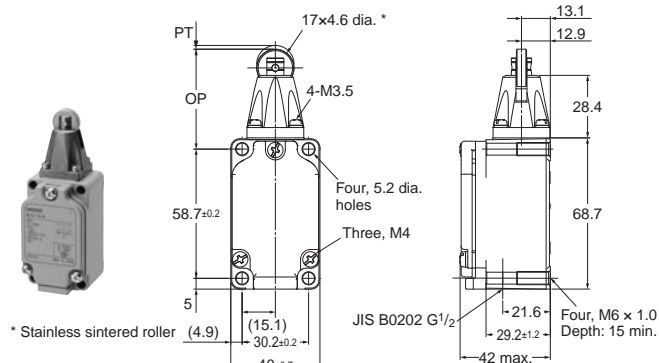
\* Stainless sintered roller

**Note:** The photo shows the WLD28-TH-N model.

#### Top-roller plunger

##### Heat-resistant specifications

WLD2-TH-N



\* Stainless sintered roller

#### Horizontal plunger

##### Heat-resistant specifications

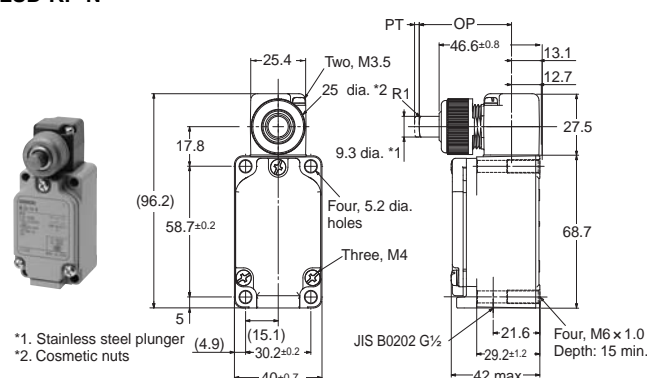
WLS2-TH-N

##### Cold-resistant specifications

WLS2-TC-N

##### Corrosion-resistant specifications

WLS2-RP-N



\*1. Stainless steel plunger  
\*2. Cosmetic nuts

**Note:** The photo shows the WLS2-TH-N model.

#### Horizontal-roller plunger

##### Heat-resistant specifications

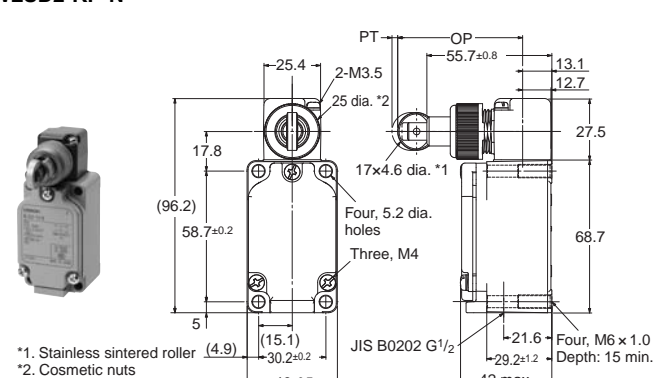
WLS2-TH-N

##### Cold-resistant specifications

WLS2-TC-N

##### Corrosion-resistant specifications

WLS2-RP-N



\*1. Stainless sintered roller  
\*2. Cosmetic nuts

**Note:** The photo shows the WLS2-TH-N model.

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

### Operating characteristics

Model			WLD28-TH-N WLD28-TC-N WLD28-RP-N	WLD2-TH-N	WLS2-TH-N WLS2-TC-N WLS2-RP-N	WLS2-TH-N WLS2-TC-N WLS2-RP-N
Operating force	OF	max.	16.67 N	26.67 N	40.03 N	40.03 N
Release force	RF	min.	4.41 N	8.92 N	8.89 N	8.89 N
Pretravel	PT	max.	1.7 mm	1.7 mm	2.8 mm	2.8 mm
Overtravel	OT	min.	5.6 mm	5.6 mm	5.6 mm	5.6 mm
Movement Differential	MD	max.	1 mm	1 mm	1 mm	1 mm
Operating position	OP		44±0.8 mm	44±0.8 mm	40.6±0.8 mm	54.2±0.8 mm
Total travel position	TTP	max.	39.5 mm	39.5 mm	---	---

## Direct-wire cable

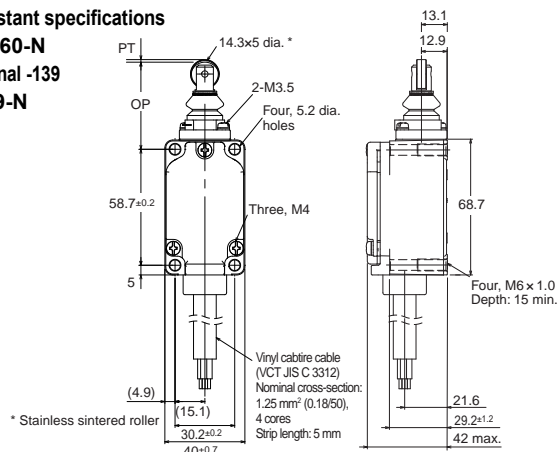
### Sealed top-roller plunger

#### Coolant-resistant specifications

**WLD28-RP60-N**

**Molded terminal -139**

**WLD28-139-N**



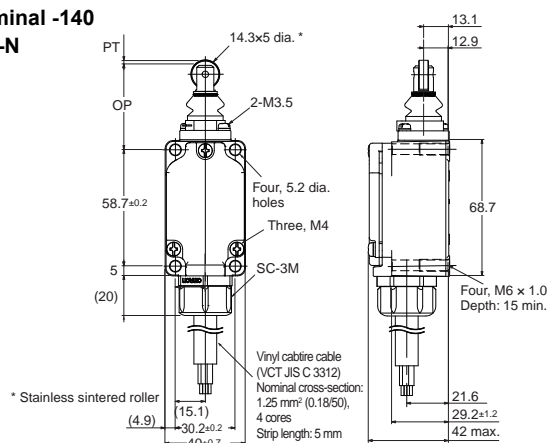
\* Stainless sintered roller

Note: The photo shows the WLD28-139-N model.

### Sealed top-roller plunger

#### Molded terminal -140

**WLD28-140-N**

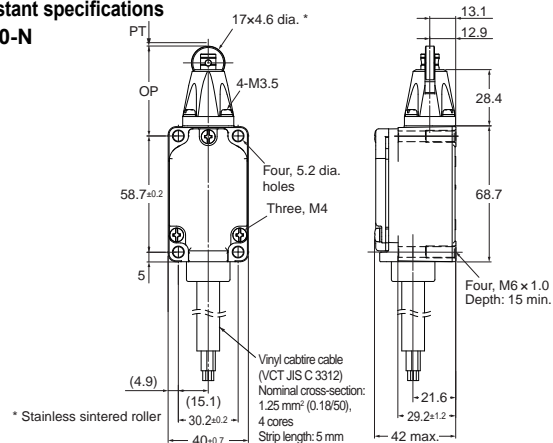


\* Stainless sintered roller

### Top-roller plunger

#### Coolant-resistant specifications

**WLD2-RP60-N**

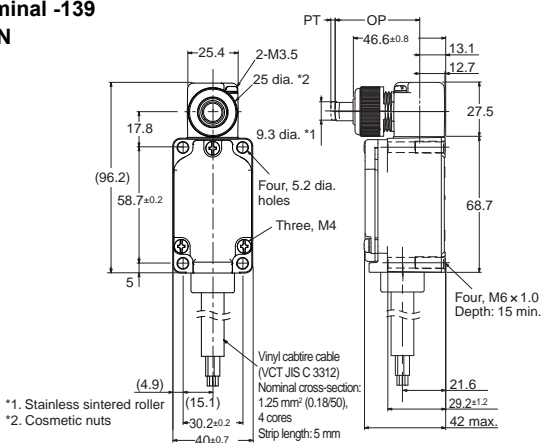


\* Stainless sintered roller

### Horizontal plunger

#### Molded terminal -139

**WLSD-139-N**



\*1. Stainless sintered roller

\*2. Cosmetic nuts

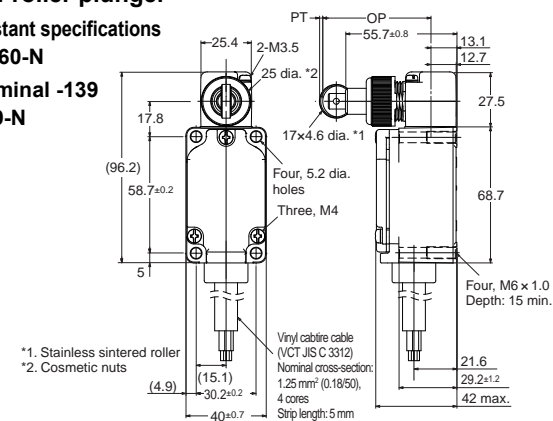
### Horizontal-roller plunger

#### Coolant-resistant specifications

**WLSD2-RP60-N**

**Molded terminal -139**

**WLSD2-139-N**



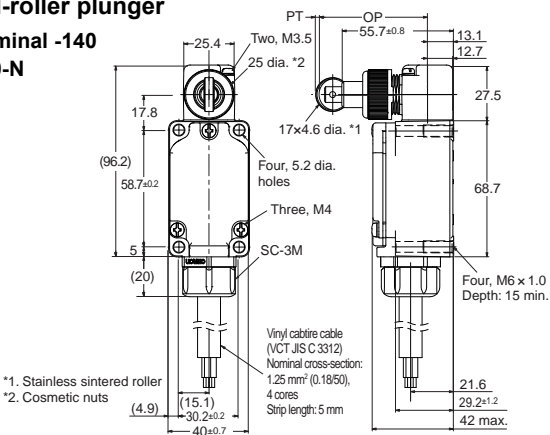
\*1. Stainless sintered roller

\*2. Cosmetic nuts

### Horizontal-roller plunger

#### Molded terminal -140

**WLSD2-140-N**



\*1. Stainless sintered roller

\*2. Cosmetic nuts

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

## Operating characteristics

			Model	WLD28-RP60-N WLD28-139-N WLD28-140-N	WLD2-RP60-N	WLSD-139-N	WLSD2-RP60-N WLSD2-139-N WLSD2-140-N
Operating force	OF	max.		16.67 N	26.67 N	40.03 N	40.03 N
Release force	RF	min.		4.41 N	8.92 N	8.89 N	8.89 N
Pretravel	PT	max.		1.7 mm	1.7 mm	2.8 mm	2.8 mm
Overtravel	OT	min.		5.6 mm	5.6 mm	5.6 mm	5.6 mm
Movement Differential	MD	max.		1 mm	1 mm	1 mm	1 mm
Operating position	OP			44±0.8 mm	44±0.8 mm	40.6±0.8 mm	54.2±0.8 mm
Total travel position	TTP	max.		39.5 mm	39.5 mm	---	---



## Direct-wire cable

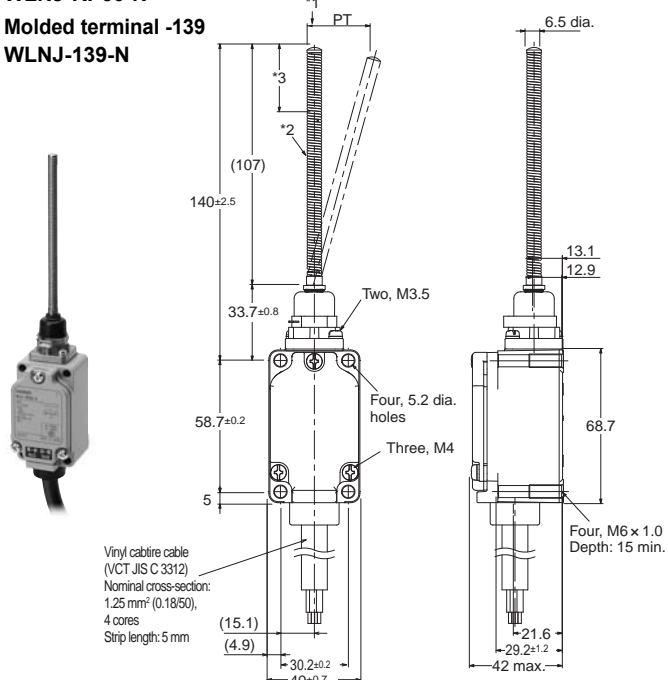
### Coil spring

#### Coolant-resistant specifications

WLNJ-RP60-N

Molded terminal -139

WLNJ-139-N



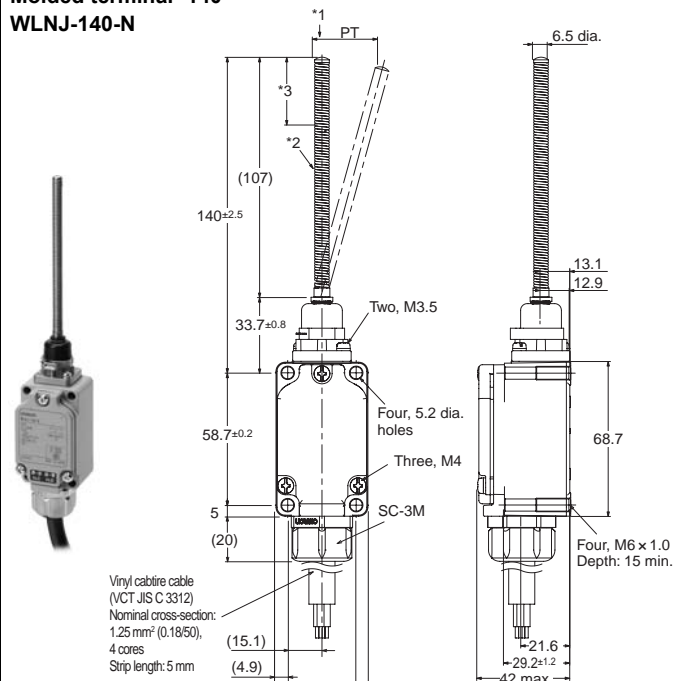
**Note:** The photo shows the WLNJ-RP60-N model.

\*1. Do not operate the Switch in the direction of the axial center.  
 \*2. Stainless steel coil spring.  
 \*3. The range for operation is 1/3rd of the overall spring length from the end of the spring.

### Coil spring

#### Molded terminal -140

WLNJ-140-N



\*1. Do not operate the Switch in the direction of the axial center.  
 \*2. Stainless steel coil spring.  
 \*3. The range for operation is 1/3rd of the overall spring length from the end of the spring.

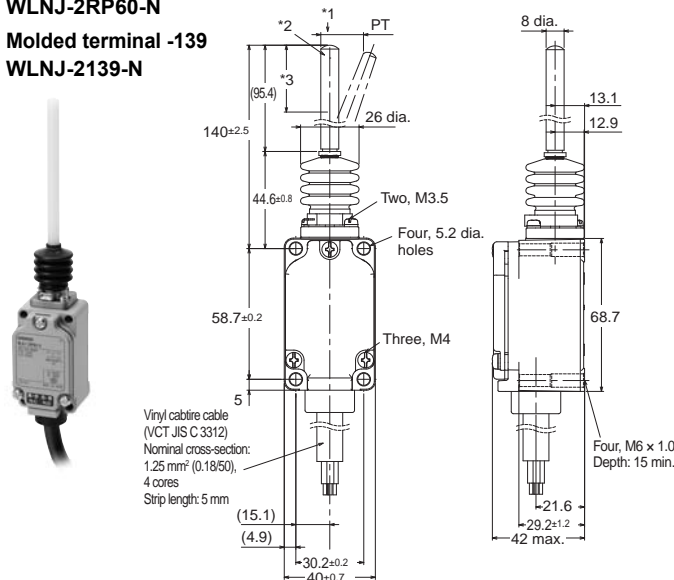
### Resin rod

#### Coolant-resistant specifications

WLNJ-2RP60-N

Molded terminal -139

WLNJ-2139-N



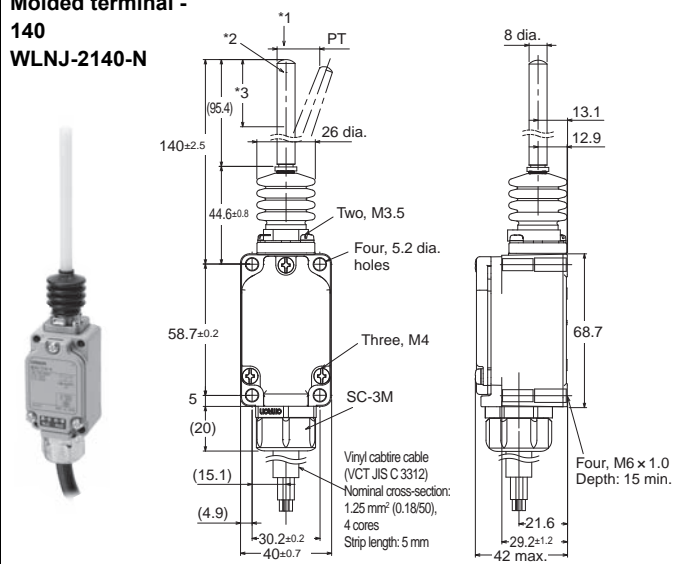
**Note:** The photo shows the WLNJ-2RP60-N model.

\*1. Do not operate the Switch in the direction of the axial center.  
 \*2. Stainless steel coil spring.  
 \*3. The range for operation is 1/3rd of the overall spring length from the end of the spring.

### Resin rod

#### Molded terminal -140

WLNJ-2140-N



\*1. Do not operate the Switch in the direction of the axial center.  
 \*2. Stainless steel coil spring.  
 \*3. The range for operation is 1/3rd of the overall spring length from the end of the spring.

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

## Operating characteristics

Model			WLNJ-RP60-N *	WLNJ-2RP60-N *
			WLNJ-139-N *	WLNJ-2139-N *
			WLNJ-140-N *	WLNJ-2140-N *
Operating force	OF	max.	1.47 N	1.47 N
Pretravel	PT		20 $\pm$ 10 mm	40 $\pm$ 20 mm

\* These values are for the top end of the spring, rod, or wire.

# Spatter-prevention Switches

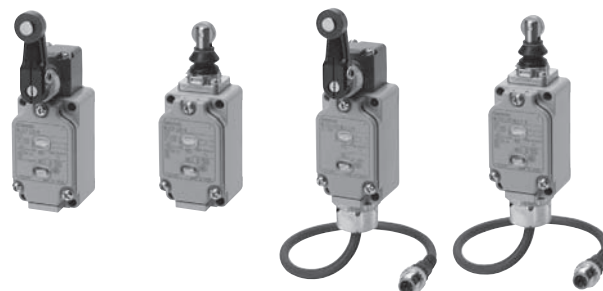
## WL-N/WLG

Uses stainless steel and plastic materials that prevent the adhesion of spatter, helping reduce problems caused by zinc power generated during welding.

- Excellent Performance on Arc Welding Lines or Sites with Spattering Cutting Powder
- In addition to screw terminals types, Pre-wired connector types are available.
- Standard configuration includes operation indicators
- Includes baking finish for easy peeling of any spatter adhering to lever
- Stainless steel materials are used for the screws, rollers, and other parts for reducing spatter adhesion during welding process
- Degree of Protection; IEC IP67



Be sure to read *Safety Precautions* on pages 83 to 88 and *Safety Precautions for All Limit Switches*.



For the most recent information on models that have been certified for safety standards, refer to your OMRON website.

## Features

Structure designed for use in spattering environments from welding  
(Typical model: WLCA2-LDS-N)

### Actuator

#### Roller, Roller Axis

Using stainless steel prevents spatter from adhering.

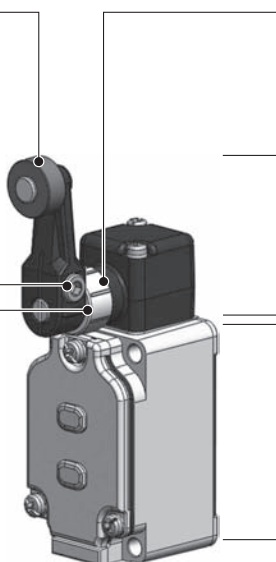
#### Operating Lever

A baking finish is applied to the surface so that any adhering spatter is easily removed.

#### Roller Lever Bolt

Stainless steel construction to prevent spatter adherence. Double nut models are also available.

The lack of gap prevents spatter powder from clogging.



### Head Cap

Using fluororesin prevents spatter \* from adhering.

\* Spatter means the zinc powder produced when welding. Adhering spatter to the Limit Switch may cause malfunction of lever or lamp cover.

### Head

### Main unit

### Screws

Externally visible screws on the head and cover are made of stainless steel to prevent spatter adherence.

## Model Number Structure

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

#### Basic models

WL□ - □□□ S□ -N  
(1) (2) (3) (4) (5)

#### (1) Actuator and Property Specifications

Code	Actuator		Pretravel (PT)
CA2	Roller lever	Roller lever: R38 mm	15±5°
D28	Plunger Actuators	Sealed top-roller plunger	1.7 mm max.

#### (2) Built-in Switch Specifications

Code	Specifications
None	Standard built-in switch

#### (3) Indicator Specifications

Code	Specifications
LD	LED (10 to 115 VAC/DC)
LE	Neon lamp (125 to 250 VAC) *

\* (5)Wiring Specifications Cannot be combined with the pre-wired connector type.

#### High-sensitivity and High-precision Models

WLG□ - □□□ S□  
(1) (2) (3) (4) (5)

#### (1) Actuator and Property Specifications

Code	Actuator		Pretravel (PT)
2	Roller lever	Roller lever: R38 mm High-sensitivity Models	10° <sup>+2°</sup> <sub>-1°</sub>
CA2	Roller lever	Roller lever: R38 mm High-precision Models	5° <sup>+2°</sup> <sub>0°</sub>

#### (2) Built-in Switch Specifications

Code	Specifications
None	Standard built-in switch
55	Airtight built-in switch

#### (3) Indicator Specifications

Code	Specifications
LD	LED (10 to 115 VAC/DC)
LE	Neon lamp (125 to 250 VAC) *

\* (5) Wiring Specifications Cannot be combined with pre-wired connector type.

#### (4) Lever Type \*

Code	Specifications	Lever type
None	Roller lever: R38 mm	Allen-head lever
A	Roller lever: R38 mm	Double nut lever

\* (5) Wiring Specifications Cannot be combined with pre-wired connector type.

#### (5) Wiring Specifications

Code	Terminal shape	Connector shape	Voltage	Wiring locations	Connector pin No.
None	Screw terminals (Conduit size: G½)	---	---	---	---
-M1J-1	Pre-wired connectors *	Threaded (M12)	DC	NO only	NO: ③ ④
-M1GJ-1			DC	NO only	NO: ① ④
-DGJS			DC	NC+NO	NO: ③ ④ NC: ① ②
-DTGJS		Smartclick	DC	NC+NO	NO: ③ ④ NC: ① ②

\* The standard cable length for a pre-wired connector is 0.3 m. Contact your OMRON representative for information on other cable lengths.

#### (4) Lever Type \*

Code	Specifications	Lever type
None	Roller lever: R38 mm	Allen-head lever
A	Roller lever: R38 mm	Double nut lever

\* (5) Wiring Specifications Cannot be combined with pre-wired connector type.

#### (5) Wiring Specifications

Code	Terminal shape	Connector shape	Voltage	Wiring locations	Connector pin No.
None	Screw terminals (Conduit size: G½)	---	---	---	---
-M1J-1	Pre-wired connectors *	Threaded (M12)	DC	NO only	NO: ③ ④
-M1GJ-1			DC	NO only	NO: ① ④
-DGJS03			DC	NC+NO	NO: ③ ④ NC: ① ②
-DK1EJ03			DC	NO only	NO: ③ ④ NC: ②
-M1TGJ		Smartclick	DC	NO only	NO: ① ④
-DTGJS03			DC	NC+NO	NO: ③ ④ NC: ① ②

\* The standard cable length for a pre-wired connector is 0.3 m. Contact your OMRON representative for information on other cable lengths.




## Ordering Information

### Roller Lever


Standard built-in switch

Screw terminals

Appearance	Actuator	Pretravel (PT)	Lever type	With operation indicator *	
				LED	Neon lamp
				Model	Model
	Roller lever: R38 mm	15±5°	Double nut Lever	WLCA2-LDAS-N	WLCA2-LEAS-N
			Allen-head Lever	WLCA2-LDS-N	WLCA2-LES-N
		10° <sup>+2°</sup> <sub>-1°</sub>	Double nut Lever	WLG2-LDAS	WLG2-LEAS
			Allen-head Lever	WLG2-LDS	WLG2-LES
		5° <sup>+2°</sup> <sub>0°</sub>		WLGCA2-LDS	WLGCA2-LES

\* The default setting is light-ON when not operating (NO wiring). Turn the lamp holder by 180° to change the setting to light-ON when operating (NC wiring).


### Pre-wired Connectors

Appearance	Actuator	Pretravel (PT)	Lever type	Connector shape	Usage Voltage	Wiring locations	Connector pin No.	With operation indicator *
								LED
								Model
	Roller lever: R38 mm	15±5°	Allen-head Lever	Threaded (M12)	DC	NO only	NO: ③ ④	WLCA2-LDS-M1J-1-N
		NC+NO				NO: ③ ④ NC: ① ②	WLCA2-LDS-DGJS-N	
						NO: ③ ④ NC: ① ②	WLG2-LDS-DGJS03	
		NO only				NO: ③ ④ NC: ②	WLG2-LDS-DK1EJ03	
						NO: ③ ④	WLG2-LDS-M1J-1	
						NO: ① ④	WLG2-LDS-M1GJ-1	
						NO: ③ ④	WLGCA2-LDS-M1J-1	
						NO: ① ④	WLGCA2-LDS-M1GJ-1	
		5°+2° 0°		Smartclick		NC+NO	NO: ③ ④ NC: ① ②	WLCA2-LDS-DTGJS-N
		15±5°				NO only	NO: ① ④	WLG2-LDS-DTGJS03
		10°+2° -1°						

\* The default setting is light-ON when not operating (NO wiring). Turn the lamp holder by 180° to change the setting to light-ON when operating (NC wiring). (However, Three-core and Four-core Switches cannot be switched to light-ON when operating (NC wiring).)

### Airtight Built-in Switch

#### Pre-wired Connector types

Appearance	Actuator	Pretravel (PT)	Lever type	Connector shape	Usage Voltage	Wiring locations	Connector pin No.	With operation indicator *
								LED
								Model
	Roller lever: R38 mm	10° <sup>+2°</sup> <sub>-1°</sub>	Allen-head Lever	Threaded (M12)	DC	NO only	NO: ③ ④	WLG2-55LDS-M1J-1
				NO: ① ④			WLG2-55LDS-M1GJ-1	
				Smartclick		NC+NO	NO: ③ ④ NC: ① ②	WLG2-55LDS-DGJS03
							NO: ③ ④ NC: ① ②	WLG2-55LDS-M1TGJ


\* The default setting is light-ON when not operating (NO wiring). Turn the lamp holder by 180° to change the setting to light-ON when operating (NC wiring). (However, Three-core and Four-core Switches cannot be switched to light-ON when operating (NC wiring).)



## Plunger Actuators


Standard built-in switch

Screw terminals

Appearance	Actuator	Pretravel (PT)	With operation indicator *	
			LED	Neon lamp
			Model	Model
	Sealed top-roller plunger	1.7 mm max.	WLD28-LDS-N	WLD28-LES-N

\* The default setting is light-ON when not operating (NO wiring). Turn the lamp holder by 180° to change the setting to light-ON when operating (NC wiring).

## Pre-wired Connectors

Appearance	Actuator	Pretravel (PT)	Connector shape	Voltage	Wiring locations	Connector pin No.	With operation indicator *
							LED
							Model
	Sealed top-roller plunger	1.7 mm max.	Threaded (M12)	DC	NO only	NO: ③ ④	WLD28-LDS-M1J-1-N
				DC	NO only	NO: ① ④	WLD28-LDS-M1GJ-1-N
				DC	NC+NO	NO: ③ ④ NC: ① ②	WLD28-LDS-DGJS-N
			Smartclick	DC	NC+NO	NO: ③ ④ NC: ① ②	WLD28-LDS-DTGJS-N

**Note:** The standard cable length for a pre-wired connector is 0.3 m. Contact your OMRON representative for information on other cable lengths.

\* The default setting is light-ON when not operating (NO wiring). Turn the lamp holder by 180° to change the setting to light-ON when operating (NC wiring). (However, Three-core and Four-core Switches cannot be switched to light-ON when operating (NC wiring).)

## Specifications

### Ratings

#### Screw terminals

#### With Operation Indicator

##### Basic models (WL-N)

Ratings		Non-inductive load (A)				Inductive load (A)			
		Basic models (WL-N)				Basic models (WL-N)			
		Resistive load		Lamp load		Inductive load		Motor load	
Voltage (V)		NC	NO	NC	NO	NC	NO	NC	NO
AC	115	10		3	1.5	10		5	2.5
DC	12	10		6	3	10		6	
	24	6		4	3	6		4	
	48	3		2	1.5	3		0.2	
	115	0.8		0.2		0.8		0.1	

#### With Operation Indicators (Neon Lamps)

##### Basic models (WL-N)

Ratings		Non-inductive load (A)			Inductive load (A)				
		Basic models (WL-N)			Basic models (WL-N)				
		Resistive load		Lamp load	Inductive load		Motor load		
Voltage (V)		NC	NO	NC	NO	NC	NO	NC	NO
AC	125	10		3	1.5	10		5	2.5
	250	10		6	1	10		3	1.5

#### High-sensitivity and High-precision models (WLG)

Ratings		Non-inductive load (A)	
		High-sensitivity and High-precision models (WLG)	
		Resistive load	
Voltage (V)		NC	NO
AC	115	5	
DC	115	0.4	

#### High-sensitivity and High-precision models (WLG)

Ratings		Non-inductive load (A)	
		High-sensitivity and High-precision models (WLG)	
		Resistive load	
Voltage (V)		NC	NO
AC	125	5	
	250	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.

#### Allowable Inrush Current/Minimum Applicable Load

Operating characteristics type		Basic models (WL-N)	High-sensitivity and High-precision models (WLG)
Inrush current	NC	30 A max.	15 A max.
	NO	20 A max.	10 A max.
Minimum applicable load		5 VDC 1 mA, resistive load, P level	5 VDC 1 mA, resistive load, P level

#### Operation Indicator

Operation indicator type	LED	Neon lamp
Rated voltage	10 to 115 VAC/DC	125 to 250 VAC
Leakage current (Reference value)	Approx. 0.4 mA at 10 VAC/DC Approx. 0.5 mA at 115 VAC/DC	Approx. 0.6 mA at 125 VAC Approx. 1.9 mA at 250 VAC

## Pre-wired connectors

### Connector DC Specifications: With Operation Indicators (LEDs) Basic models (WL-N)

Ratings		Non-inductive load (A)				Inductive load (A)			
		Basic models (WL-N)				Basic models (WL-N)			
		Resistive load		Lamp load		Inductive load		Motor load	
Voltage (V)		NC	NO	NC	NO	NC	NO	NC	NO
DC	12	3		3		3		3	
	24	3		3		3		3	
	48	4		2	1.5	3		2	
	115	0.8		0.2	0.2	0.8		0.2	

### High-sensitivity and High-precision models (WLG)

Ratings		Non-inductive load (A)	
		High-sensitivity and High-precision models (WLG)	
		Resistive load	
Voltage (V)		NC	NO
DC	115	0.4	

- 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.

### Minimum Applicable Load

Operating characteristics type	Basic models (WL-N)	High-sensitivity and High-precision Switches (WLG)
Minimum applicable load	5 VDC 1 mA, resistive load, P level	5 VDC 1 mA, resistive load, P level

### Operation Indicator

Operation indicator type	LED	Neon lamp
Rated voltage	10 to 115 VAC/DC	125 to 250 VAC
Leakage current (Reference value)	Approx. 0.4 mA at 10 VAC/DC; Approx. 0.5 mA at 115 VAC/DC	Approx. 0.6 mA at 125 VAC; Approx. 1.9 mA at 250 VAC

## Characteristics

Operating characteristics type		Basic models (WL-N)	High-sensitivity and High-precision models (WLG)
Permissible operating frequency	Mechanical	120 operations/minute	
	Electrical	30 operations/minute	
Rated frequency		50/60 Hz	
Permissible operating speed		1 mm/s to 1 m/s (for WLCA2-LDS-N)	
Insulation resistance		100 MΩ min. (at 500 VDC)	
Contact resistance		25 mΩ max. (initial value for the built-in switch)	
Vibration resistance	Malfunction	10 to 55 Hz, 1.5-mm double amplitude	
Shock	Destruction	1,000 m/s <sup>2</sup> max.	
	Malfunction	300 m/s <sup>2</sup> max.	
Durability *1	Mechanical	15,000,000 operations min.	10,000,000 operations min.
	Electrical	750,000 operations min. (3 A at 115 VAC, resistive load) *2	500,000 operations min. (3 A at 115 VAC, resistive load) *2
Ambient operating temperature		-10 to +80°C (with no icing)	
Ambient operating humidity		35 to 95%RH	
Degree of protection *3		IP67 (EN60947-5-1)	
Weight		Approx. 255 g (in case of WLCA2-LDS-N)	Approx. 270 g (in case of WLGCA2-LDS)

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

\*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. In case of models with operation indicators (LEDs).

\*3. The degree of protection is tested using the method specified by the standard (EN60947-5-1). Confirm that sealing properties are sufficient for the operating conditions and environment beforehand.

Operating characteristics type		Basic models (WL-N)		High-sensitivity and High-precision Switches (WLG)	
Wiring Specifications		Screw terminals	Direct-wire connector and Pre-wired Connector Models	Screw terminals	Direct-wire connector and Pre-wired Connector Models
Dielectric strength	Between terminals of the same polarity	1,000 VAC, 50/60 Hz for 1 min *	600 VAC, 50/60 Hz for 1 min *	600 VAC, 50/60 Hz for 1 min *	600 VAC, 50/60 Hz for 1 min *
	Between current carrying metal part and ground	2,200 VAC, 50/60 Hz for 1 min	1,500 VAC, 50/60 Hz for 1 min	1,500 VAC, 50/60 Hz for 1 min	1,500 VAC, 50/60 Hz for 1 min
	Between each terminal and non-current carrying metal part	2,200 VAC, 50/60 Hz for 1 min	1,500 VAC, 50/60 Hz for 1 min	1,500 VAC, 50/60 Hz for 1 min	1,500 VAC, 50/60 Hz for 1 min

\* Excluding those with operation indicators.

## Terminal Connection Diagram

Operating characteristics type	Basic models (WL-N)	
Wiring Specifications	Screw terminals	Direct-wire connector and Pre-wired Connector Models
Without operation indicator		<p>DC</p>
With Operation Indicator (Light-ON When Not Operating *)		<p>DC</p>

Operating characteristics type	High-sensitivity and High-precision Switches (WLG)	
Wiring Specifications	Screw terminals	Direct-wire connector and Pre-wired Connector Models
Without operation indicator		<p>DC</p>
With Operation indicator (Light-ON when Not Operating *)		<p>DC</p>

**Note:** Leakage current from indicator circuit may cause load malfunction (i.e., the load may remain ON). Make sure that the load operating current is higher than the leakage current.

For countermeasures, refer to technical support on your OMRON website.

\* Light-ON when not operating means the operation indicator is lit when the actuator is free and is not lit when the actuator rotates or is pushed down, the Switch contacts contact NO.

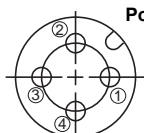
The above shows details of the switch interior. External wires (external resistances) are not shown. For details, refer to *Operation* on page 19.

## Connector Pin Layout Diagram

AC



Positioning piece \* DC



Positioning piece \*

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

## Structure and Nomenclature

### Spatter-prevention Models (WLCA2-LES-N)

#### Actuator

##### Roller, Roller Axis

Using stainless steel prevents spatter from adhering.

##### Operating Lever

A baking finish is applied to the surface so that any adhering spatter is easily removed.

#### Roller Lever Bolt

Stainless steel construction to prevent spatter adherence. Double nut models are also available.

The lack of gap prevents spatter powder from clogging.

#### Head Cap

Using fluororesin prevents spatter \* from adhering.

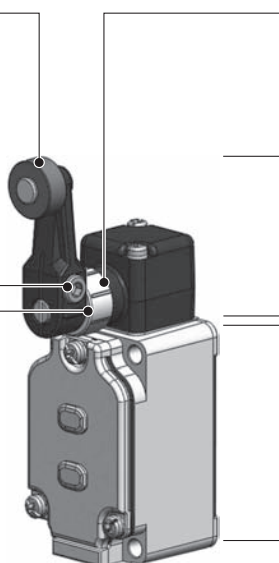
\* Spatter means the zinc powder produced when welding. Adhering spatter to the Limit Switch may cause malfunction of lever or lamp cover.

#### Head

#### Main unit

#### Screws

Externally visible screws on the head and cover are made of stainless steel to prevent spatter adherence.



# Dimensions

## Roller Lever

### Roller lever R38

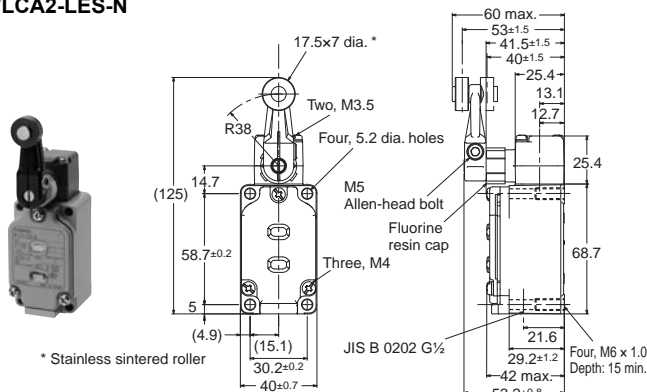
Allen-head lever

With operation indicator (LED)

WLCA2-LDS-N

With operation indicator (neon lamp)

WLCA2-LES-N



Note: The photo shows the WLCA2-LDS-N model.

### Roller lever R38

Allen-head lever

With operation indicator (LED)

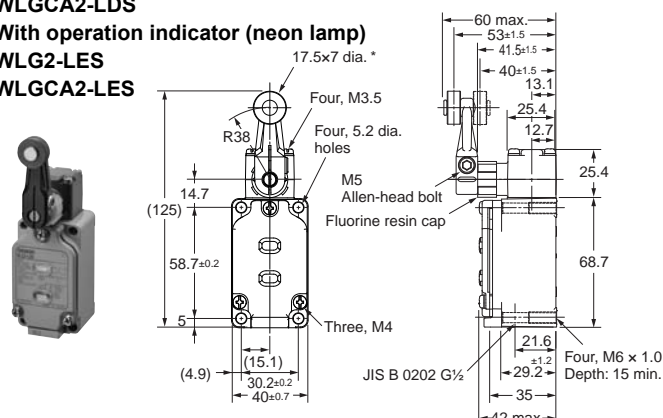
WLG2-LDS

WLGA2-LDS

With operation indicator (neon lamp)

WLG2-LES

WLGA2-LES



Note: The photo shows the WLG2-LDS model.

### Roller lever R38

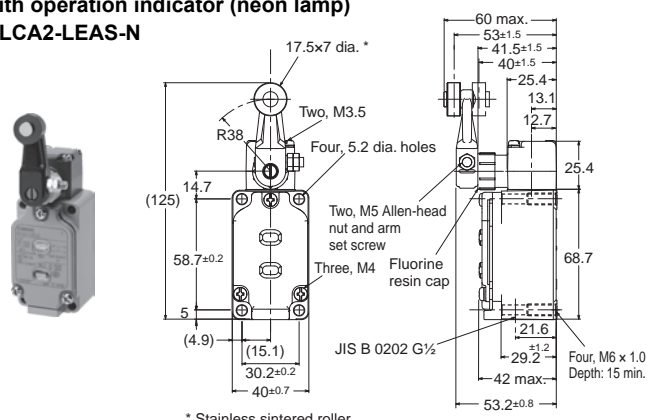
Double nut lever

With operation indicator (LED)

WLCA2-LDAS-N

With operation indicator (neon lamp)

WLCA2-LEAS-N



Note: The photo shows the WLCA2-LDAS-N model.

### Roller lever R38

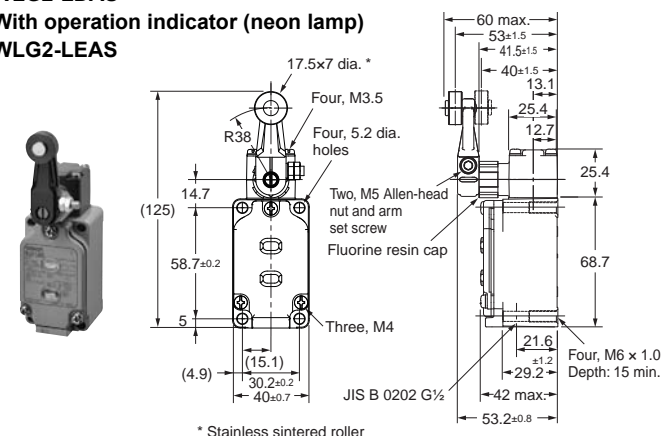
Double nut lever

With operation indicator (LED)

WLG2-LDAS

With operation indicator (neon lamp)

WLG2-LEAS



Note: The photo shows the WLG2-LDAS model.

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

## Operating characteristics

	Model	WLCA2-LDAS-N WLCA2-LEAS-N WLCA2-LDS-N WLCA2-LES-N	WLG2-LDAS WLG2-LDS WLG2-LEAS WLG2-LES	WLGA2-LDS WLGA2-LES
Operating force	OF max.	13.34 N	9.81 N	13.34 N
Release force	RF min.	1.18 N	0.98 N	1.47 N
Pretravel	PT	15±5°	10° <sup>+2°</sup> <sub>-1°</sub>	5° <sup>+2°</sup> <sub>-0°</sub>
Overtravel	OT min.	70°	65°	40°
Movement Differential	MD max.	12°	7°	3°

## Pre-wired connector (threaded)

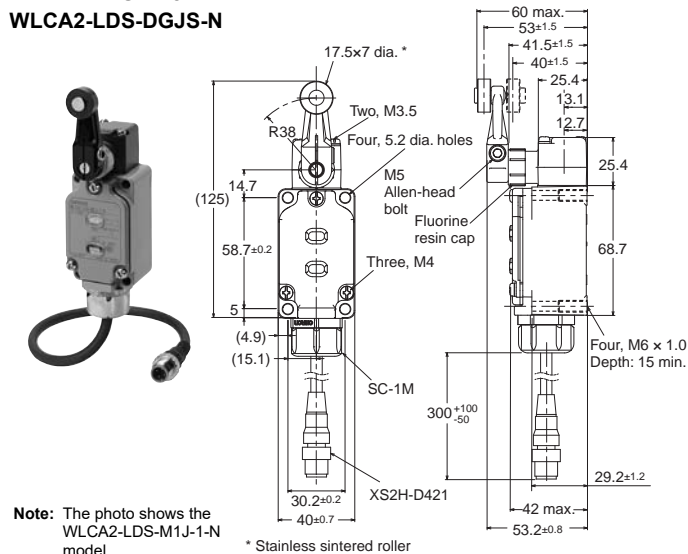
### Roller lever R38

#### Allen-head lever

#### With operation indicator (LED)

WLCA2-LDS-M1J-1-N

WLCA2-LDS-DGJS-N



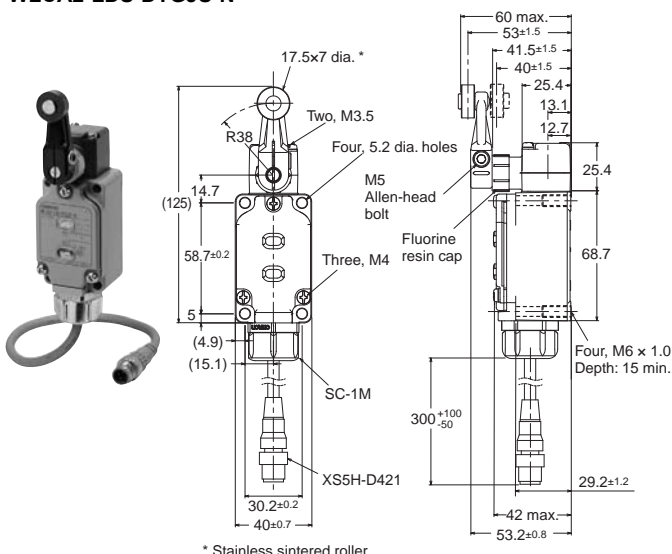
## Pre-wired connector type (Smartclick)

### Roller lever R38

#### Allen-head lever

#### With operation indicator (LED)

WLCA2-LDS-DTGJS-N



### Roller lever R38

#### Allen-head lever

#### Threaded (M12)

#### With operation indicator (LED)

WLG2-LDS-DGJS03

WLG2-LDS-DK1EJ03

WLG2-55LDS-M1J-1

WLG2-55LDS-M1GJ-1

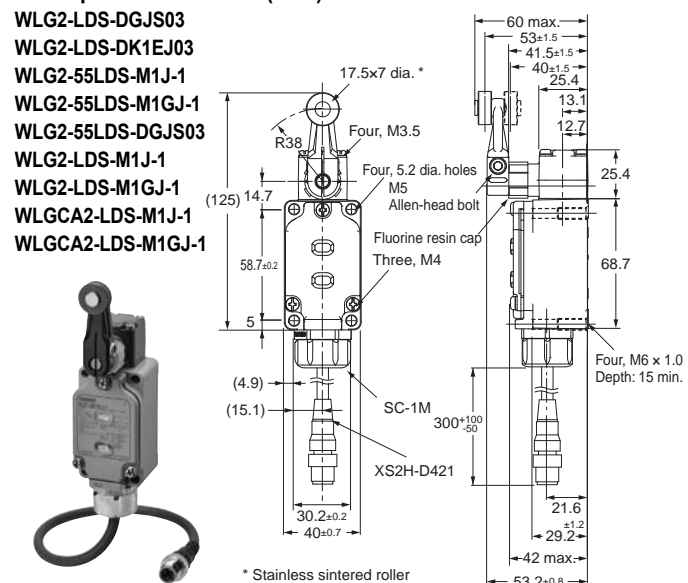
WLG2-55LDS-DGJS03

WLG2-LDS-M1J-1

WLG2-LDS-M1GJ-1

WLGCA2-LDS-M1J-1

WLGCA2-LDS-M1GJ-1



Note: The photo shows the WLG2-LDS-M1J-1 model.

### Roller lever R38

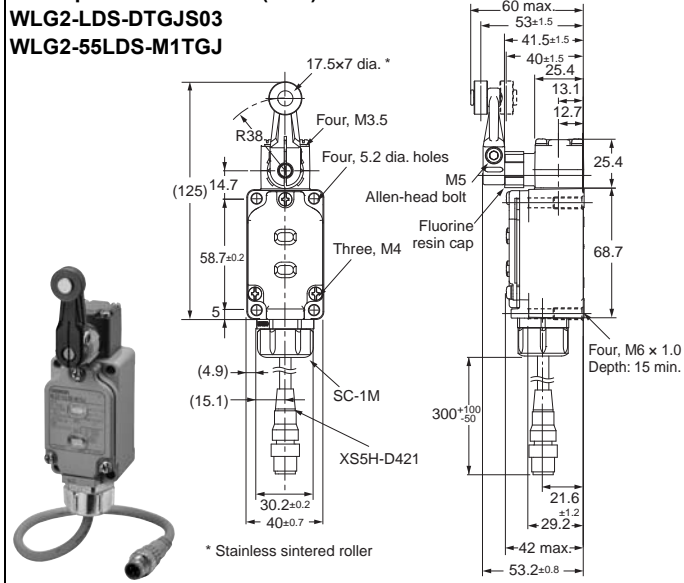
#### Allen-head lever

#### Smartclick

#### With operation indicator (LED)

WLG2-LDS-DTGJS03

WLG2-55LDS-M1TGJ



Note: The photo shows the WLG2-55LDS-M1TGJ model.

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

## Operating characteristics

Model		WLCA2-LDS-M1J-1-N WLCA2-LDS-DGJS-N WLCA2-LDS-DTGJS-N	WLG2-LDS-DGJS03 WLG2-LDS-DK1EJ03 WLG2-55LDS-M1J-1 WLG2-55LDS-M1GJ-1 WLG2-55LDS-DGJS03 WLG2-LDS-M1J-1 WLG2-LDS-M1GJ-1 WLG2-LDS-DTGJS03 WLG2-55LDS-M1TGJ	WLGCA2-LDS-M1J-1 WLGCA2-LDS-M1GJ-1
Operating force	OF max.	13.34 N	9.81 N	13.34 N
Release force	RF min.	1.18 N	0.98 N	1.47 N
Pretravel	PT	15±5°	10° <sup>+2° -1°</sup>	5° <sup>+2° 0°</sup>
Overtravel	OT min.	70°	65°	40°
Movement Differential	MD max.	12°	7°	3°

## Sealed top-roller plunger

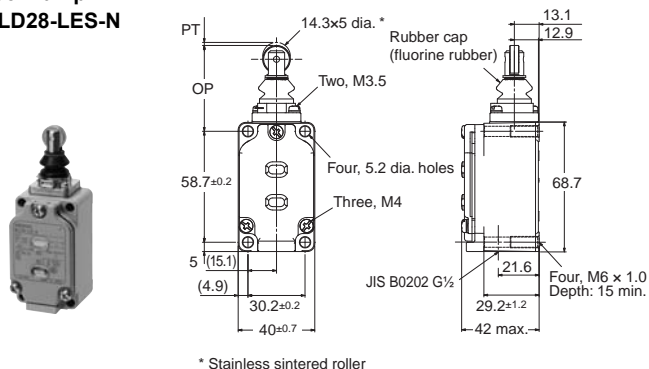
With operation indicator

LED

WLD28-LDS-N

Neon lamp

WLD28-LES-N



**Note:** The photo shows the WLD28-LDS-N model.

## Sealed top-roller plunger

Threaded (M12)

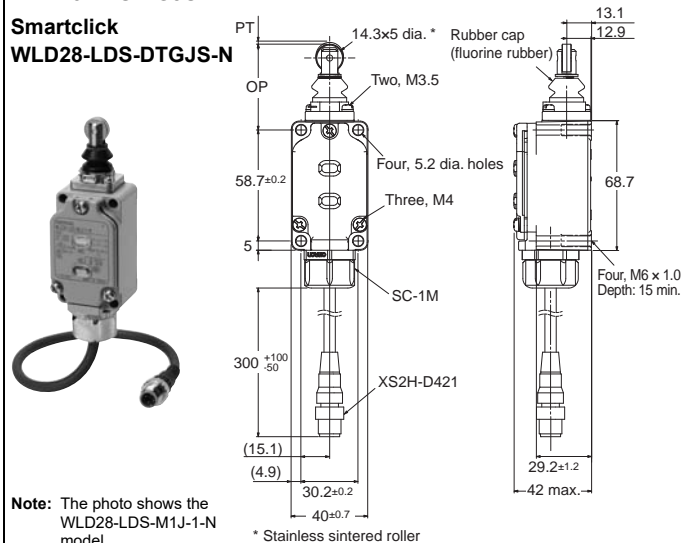
WLD28-LDS-M1J-1-N

WLD28-LDS-M1GJ-1-N

WLD28-LDS-DGJS-N

Smartclick

WLD28-LDS-DTGJS-N



**Note:** The photo shows the WLD28-LDS-M1J-1-N model.

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

## Operating characteristics

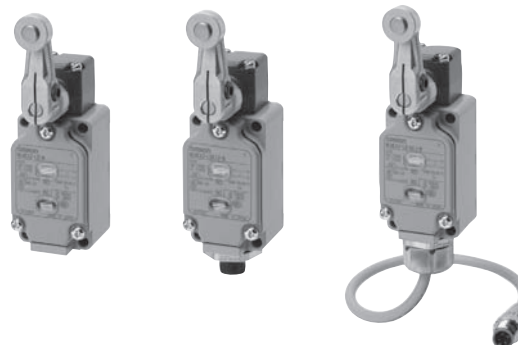
Model		WLD28-LDS-N WLD28-LES-N WLD28-LDS-M1J-1-N WLD28-LDS-M1GJ-1-N WLD28-LDS-DGJS-N WLD28-LDS-DTGJS-N
Operating force	OF max.	16.67 N
Release force	RF min.	4.41 N
Pretravel	PT max.	1.7 mm
Overtravel	OT min.	5.6 mm
Movement Differential	MD max.	1 mm
Operating Position	OP	44.5 $\pm$ 0.8 mm
Total travel Position	TTP max.	39.5 mm




# Long-life Switches WL-N/WLG

## A mechanical durability of over 30 Million Operations

- Long life has been achieved by increasing the resistance to friction and creating better sliding properties in the head mechanism
- Direct-wire Connector and Pre-wired Connector Models in the lineup
- Operation indicators (LED) installed in all the Long-life Switches.



For the most recent information on models that have been certified for safety standards, refer to your OMRON website.

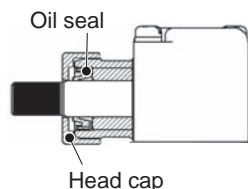
 Be sure to read *Safety Precautions* on pages 83 to 88 and *Safety Precautions for All Limit Switches*.

## Features

### Mechanical structure featuring mechanical durability of more than 30 million operations (WLMCA2-N)

#### Shield Structure

A head cap and oil seal form a double-seal structure. Excellent durability and reliability are ensured.



#### Head

You can remove the two screws to mount the head in any of the four possible directions.

#### Built-in Switch

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

#### Main unit

#### Terminal Screws

Four, M3.5 screws.

#### Conduit Opening

In addition to parallel threads for G $\frac{1}{2}$  tubing, direct-wired and pre-wired connector types are available.

#### Head Cap

The head cap helps prevent the entry of cutting chips. You can use the protrusion on the cap to confirm the set position.

#### Actuator Roller

The roller is made of self-lubricating sintered stainless steel. It provides superior resistance to wear.

#### Lever

The lever is forged from anti-corrosive aluminum alloy. It provides superior corrosion resistance and outstanding strength. With a roller lever actuator, the actuator position can be set anywhere within 360°. (The lever cannot be mounted in the opposite direction.)

#### Operating Plunger

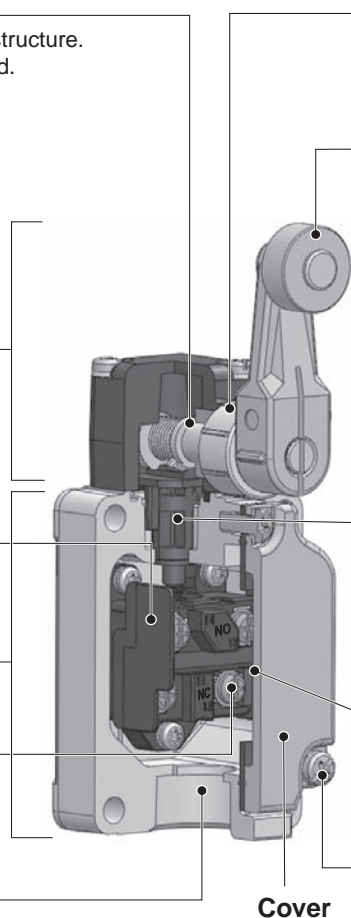
PEEK resin is used. It provides superior resistance to wear. You can change the mounting direction to use any one of the three operating directions (both sides, left side, or right side).

#### Cover Seal

High sealing performance is achieved. The seal also serves as a spacer. There is no troublesome insulating paper, making it easy to work with the Switch.

#### Cover Setscrew

A combination Philips-slotted screw is used. A retainer prevents the screw from falling from the cover even when the screw is loose.



## Model Number Structure

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

#### Basic models

**WLM□ - LD□ -N**  
(1) (2) (3)

#### (1) Actuator and Property Specifications

Code	Actuator		Pretravel (PT)
CA2	Roller lever	Roller lever: R38 mm	15±5°

#### (2) Indicator Specifications

Code	Specifications
LD	LED (10 to 115 VAC/DC)

#### (3) Wiring Specifications

Code	Terminal shape	Connector shape	Voltage	Wiring locations	Connector pin No.
None	Screw terminals (Conduit size: G½)	---	---	---	---
K13A	Direct-wire connector	Threaded (M12)	AC	NO only	NO: ③ ④
K13			DC	NO only	NO: ③ ④
K43A			AC	NC+NO	NO: ③ ④ NC: ① ②
K43			DC	NC+NO	NO: ③ ④ NC: ① ②
-M1J	Pre-wired connectors *	Threaded (M12)	DC	NO only	NO: ③ ④
-AGJ			AC	NC+NO	NO: ③ ④ NC: ① ②
-DGJ			DC	NC+NO	NO: ③ ④ NC: ① ②
-DTGJ		Smartclick	DC	NC+NO	NO: ③ ④ NC: ① ②

\* The standard cable length for a pre-wired connector is 0.3 m. Contact your OMRON representative for information on other cable lengths.

#### High-sensitivity and High-precision Switches

**WLMG□ - LD□**  
(1) (2) (3)

#### (1) Actuator and Property Specifications

Code	Actuator		Pretravel (PT)
2	Roller lever	Roller lever: R38 mm High-sensitivity Models	10° <sup>+2°</sup> <sub>-1°</sub>
CA2	Roller lever	Roller lever: R38 mm High-precision Models	5° <sup>+2°</sup> <sub>0°</sub>

#### (2) Indicator Specifications

Code	Specifications
LD	LED (10 to 115 VAC/DC)

#### (3) Wiring Specifications




Code	Terminal shape	Connector shape	Voltage	Wiring locations	Connector pin No.
None	Screw terminals (Conduit size: G½)	---	---	---	---
K13A	Direct-wire connector	Threaded (M12)	AC	NO only	NO: ③ ④
K13			DC	NO only	NO: ③ ④
K43A			AC	NC+NO	NO: ③ ④ NC: ① ②
K43			DC	NC+NO	NO: ③ ④ NC: ① ②
-M1J	Pre-wired connectors *	Threaded (M12)	DC	NO only	NO: ③ ④
-DGJ03			DC	NC+NO	NO: ③ ④ NC: ① ②
-DTGJ03			DC	NC+NO	NO: ③ ④ NC: ① ②
		Smartclick	DC	NC+NO	NO: ③ ④ NC: ① ②

\* The standard cable length for a pre-wired connector is 0.3 m. Contact your OMRON representative for information on other cable lengths.

## Ordering Information













## Roller Lever

## Screw terminals

Appearance	Actuator	Pretravel (PT)	With operation indicator *
			LED
			Model
	Roller lever: R38 mm	15±5°	WLMCA2-LD-N
		10° <sup>+2°</sup> <sub>-.1°</sub>	WLMG2-LD
		5° <sup>+2°</sup> <sub>0°</sub>	WLMGCA2-LD



\* The default setting is light-ON when not operating (NO wiring). Turn the lamp holder by 180° to change the setting to light-ON when operating (NC wiring).

## Direct-wire connector

Appearance	Actuator	Pretravel (PT)	Voltage	Wiring locations	Connector pin No.	With operation indicator *
						LED
						Model
	Roller lever: R38 mm	15±5°	AC	NO only	NO: ③ ④	WLMCA2-LDK13A-N
				NC+NO	NO: ③ ④ NC: ① ②	WLMCA2-LDK43A-N
			DC	NO only	NO: ③ ④	WLMCA2-LDK13-N
				NC+NO	NO: ③ ④ NC: ① ②	WLMCA2-LDK43-N
		10° <sup>+2°</sup> <sub>-.1°</sub>	AC	NO only	NO: ③ ④	WLMG2-LDK13A
				NC+NO	NO: ③ ④ NC: ① ②	WLMG2-LDK43A
			DC	NO only	NO: ③ ④	WLMG2-LDK13
				NC+NO	NO: ③ ④ NC: ① ②	WLMG2-LDK43
		5° <sup>+2°</sup> <sub>0°</sub>	AC	NO only	NO: ③ ④	WLMGCA2-LDK13A
				NC+NO	NO: ③ ④ NC: ① ②	WLMGCA2-LDK13
			DC	NO only	NO: ③ ④	WLMGCA2-LDK13
				NC+NO	NO: ③ ④ NC: ① ②	WLMGCA2-LDK43

\* The default setting is light-ON when not operating (NO wiring). Turn the lamp holder by 180° to change the setting to light-ON when operating (NC wiring). (However, Three-core and Four-core Switches cannot be switched to light-ON when operating (NC wiring).)

## Pre-wired connectors

Appearance	Actuator	Pretravel (PT)	Voltage	Connector shape	Wiring locations	Connector pin No.	With operation indicator *
							LED
							Model
	Roller lever: R38 mm	15±5°	AC	Threaded (M12)	NO only	NO: ③ ④	WLMCA2-LD-M1J-N
					NC+NO	NO: ③ ④ NC: ① ②	WLMCA2-LD-AGJ-N
			DC			Smartclick	NC+NO
Threaded (M12)		NO only		NO: ③ ④	WLMG2-LD-M1J		
		Smartclick		NC+NO	NO: ③ ④ NC: ① ②	WLMG2-LD-DGJ03	
Threaded (M12)					NO only	NO: ③ ④	WLMGCA2-LD-M1J
		10° <sup>+2°</sup> -1°		5° <sup>+2°</sup> 0°	DC	Threaded (M12)	NO only

**Note:** The standard cable length for a pre-wired connector is 0.3 m. Contact your OMRON representative for information on other cable lengths.

\* The default setting is for light-ON when not operating. Turn the lamp holder by 180° to change the setting to light-ON when operating. (However, Four-core Switches cannot be switched to light-ON when operating (NC wiring).)

## Specifications

### Ratings

Screw terminals

With Operation Indicator

Basic models (WL-N)

Ratings		Non-inductive load (A)				Inductive load (A)			
		Basic models (WL-N)				Basic models (WL-N)			
		Resistive load		Lamp load		Inductive load		Motor load	
Voltage (V)		NC	NO	NC	NO	NC	NO	NC	NO
AC	115	10		3	1.5	10		5	2.5
DC	12	10		6	3	10		6	
	24	6		4	3	6		4	
	48	3		2	1.5	3		0.2	
	115	0.8		0.2		0.8		0.1	

High-sensitivity and High-precision models (WLG)

Ratings		Non-inductive load (A)	
		High-sensitivity and High-precision models (WLG)	
		Resistive load	
Voltage (V)		NC	NO
AC	115	5	
DC	115	0.4	

- 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.

Allowable Inrush Current/Minimum Applicable Load

Operating characteristics type		Basic models (WL-N)	High-sensitivity/ High-precision models (WLG)
Inrush current	NC	30 A max.	15 A max.
	NO	20 A max.	10 A max.
Minimum applicable load		5 VDC 1 mA, resistive load, P level	5 VDC 1 mA, resistive load, P level

Operation Indicator

Operation indicator type		LED	Neon lamp
Rated voltage		10 to 115 VAC/DC	125 to 250 VAC
Leakage current (Reference value)		Approx. 0.4 mA at 10 VAC/DC; Approx. 0.5 mA at 115 VAC/DC	Approx. 0.6 mA at 125 VAC; Approx. 1.9 mA at 250 VAC

Direct-wire connector and Pre-wired Connector Models Type

DC Connector: With Operation Indicators (LEDs)

Basic models (WL-N)

Ratings		Non-inductive load (A)				Inductive load (A)			
		Basic models (WL-N)				Basic models (WL-N)			
		Resistive load		Lamp load		Inductive load		Motor load	
Voltage (V)		NC	NO	NC	NO	NC	NO	NC	NO
DC	12	3		3		3		3	
	24	3		3		3		3	
	48	4		2	1.5	3		2	
	115	0.8		0.2	0.2	0.8		0.2	

High-sensitivity and High-precision models (WLG)

Ratings		Non-inductive load (A)	
		High-sensitivity and High-precision models (WLG)	
		Resistive load	
Voltage (V)		NC	NO
DC	115	0.4	

AC Connector: With Operation Indicators (LEDs)

Basic models (WL-N)

Ratings		Non-inductive load (A)				Inductive load (A)			
		Basic models (WL-N)				Basic models (WL-N)			
		Resistive load		Lamp load		Inductive load		Motor load	
Voltage (V)		NC	NO	NC	NO	NC	NO	NC	NO
AC	115	3		3	1.5	3		3	2.5

High-sensitivity and High-precision models (WLG)

Ratings		Non-inductive load (A)	
		High-sensitivity and High-precision models (WLG)	
		Resistive load	
Voltage (V)		NC	NO
AC	115	3	

- 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.

Minimum Applicable Load

Operating characteristics type		Basic models (WL-N)	High-sensitivity and High-precision models (WLG)
Minimum applicable load		5 VDC 1 mA, resistive load, P level	5 VDC 1 mA, resistive load, P level

Operation Indicator

Operation indicator type		LED
Rated voltage		10 to 115 VAC/DC
Leakage current (Reference value)		Approx. 0.4 mA at 10 VAC/DC; Approx. 0.5 mA at 115 VAC/DC

## Characteristics

Operating characteristics type		Basic models (WL-N)	High-sensitivity and High-precision models (WLG)
Permissible operating frequency	Mechanical	120 operations/minute	
	Electrical	30 operations/minute	
Rated frequency		50/60 Hz	
Permissible operating speed		1 mm/sec to 1 m/sec	
Insulation resistance		100 MΩ min. (at 500 VDC)	
Contact resistance		25 mΩ max. (initial value for the built-in switch)	
Vibration resistance	Malfunction	10 to 55 Hz, 1.5-mm double amplitude	
Shock	Destruction	1,000 m/s <sup>2</sup> max.	
	Malfunction	300 m/s <sup>2</sup> max.	
Durability *1	Mechanical	30,000,000 operations min.	
	Electrical	30,000,000 operations min. (10 mA at 24 VAC, resistive load) 750,000 operations min. (3 A at 115 VAC, resistive load)	500,000 operations min. (3 A at 115 VAC, resistive load)
Ambient operating temperature		-10 to +80°C (with no icing)	
Ambient operating humidity		35 to 95%RH	
Degree of protection *2		IP67 (EN60947-5-1)	
Weight		Approx. 255 g (in case of WLMCA2-LD-N)	Approx. 270 g (in case of WLMGCA2-LD)

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

\*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. The degree of protection is tested using the method specified by the standard (EN60947-5-1). Confirm that sealing properties are sufficient for the operating conditions and environment beforehand.

Operating characteristics type		Basic models (WL-N)		High-sensitivity and High-precision Switches (WLG)	
Wiring Specifications		Screw terminals	Direct-wire connector and Pre-wired Connector Models	Screw terminals	Direct-wire connector and Pre-wired Connector Models
Dielectric strength	Between terminals of the same polarity	1,000 VAC, 50/60 Hz for 1 min *	600 VAC, 50/60 Hz for 1 min *	600 VAC, 50/60 Hz for 1 min *	600 VAC, 50/60 Hz for 1 min *
	Between current-carrying metal part and ground	2,200 VAC, 50/60 Hz for 1 min	1,500 VAC, 50/60 Hz for 1 min	1,500 VAC, 50/60 Hz for 1 min	1,500 VAC, 50/60 Hz for 1 min
	Between each terminal and non-current-carrying metal part	2,200 VAC, 50/60 Hz for 1 min	1,500 VAC, 50/60 Hz for 1 min	1,500 VAC, 50/60 Hz for 1 min	1,500 VAC, 50/60 Hz for 1 min

\* Excluding those with operation indicators.

## Terminal Connection Diagram

Operating characteristics type	Basic models (WL-N)	
Wiring Specifications	Screw terminals	Direct-wire connector and Pre-wired Connector Models
Operation indicator (Light-ON when Not Operating *)		<div> <div> <b>AC</b> </div> <div> <b>DC</b> </div> </div> <p>①②③④ indicate the connector pin number.</p>

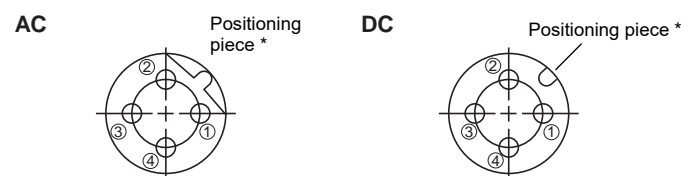
  

Operating characteristics type	High-sensitivity and High-precision models (WLG)	
Wiring Specifications	Screw terminals	Direct-wire connector and Pre-wired Connector Models
Operation indicator (Light-ON when Not Operating *)		<div> <div> <b>AC</b> </div> <div> <b>DC</b> </div> </div> <p>①②③④ indicate the connector pin number.</p>

**Note:** Leakage current from indicator circuit may cause load malfunction (i.e., the load may remain ON). Make sure that the load operating current is higher than the leakage current. For countermeasures, refer to technical support on your OMRON website.

\* Light-ON when not operating means the operation 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. The above shows details of the switch interior. External wires (external resistances) are not shown. For details, refer to *Operation* on pages 19.

## Connector Pin Layout Diagram



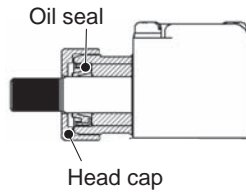
\* The position of the positioning piece is not always the same. If using an L-shaped connector causes problems in mounting, use a straight connector.

## Structure and Nomenclature

### WLMCA2-N

#### Shield Structure

A head cap and oil seal form a double-seal structure. Excellent durability and reliability are ensured.



#### Head

You can remove the two screws to mount the head in any of the four possible directions.

#### Built-in Switch

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

#### Main unit

#### Terminal Screws

Four, M3.5 screws.

#### Conduit Opening

In addition to parallel threads for G $\frac{1}{2}$  tubing, direct-wired and pre-wired connector types are available.

#### Head Cap

The head cap helps prevent the entry of cutting chips. You can use the protrusion on the cap to confirm the set position.

#### Actuator Roller

The roller is made of self-lubricating sintered stainless steel. It provides superior resistance to wear.

#### Lever

The lever is forged from anti-corrosive aluminum alloy. It provides superior corrosion resistance and outstanding strength. With a roller lever actuator, the actuator position can be set anywhere within 360°. (The lever cannot be mounted in the opposite direction.)

#### Operating Plunger

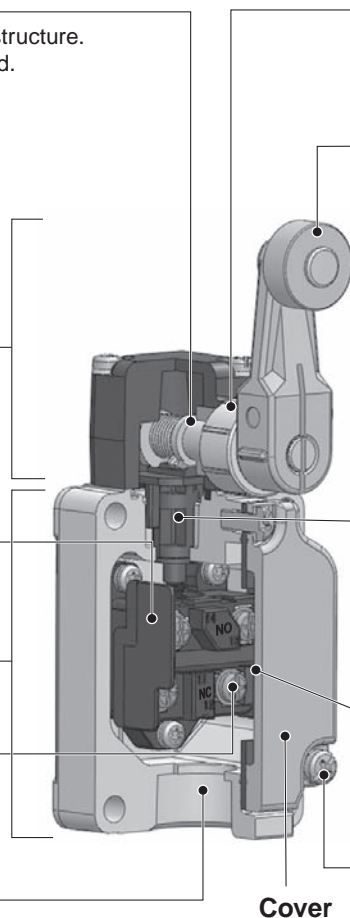
PEEK resin is used. It provides superior resistance to wear. You can change the mounting direction to use any one of the three operating directions (both sides, left side, or right side).

#### Cover Seal

High sealing performance is achieved. The seal also serves as a spacer. There is no troublesome insulating paper, making it easy to work with the Switch.

#### Cover Setscrew

A combination Philips-slotted screw is used. A retainer prevents the screw from falling from the cover even when the screw is loose.





## WLMG2

## Actuator

## Roller

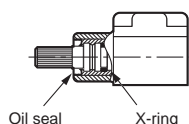
The roller is made of self-lubricating stainless sintered and boasts high resistance to wear.

## 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.)

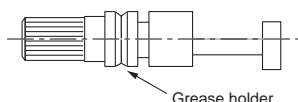
## Shaft Section Seal

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



## Smoother Movement

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



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

## Cover

## Cover Mounting Screw

A combination Phillips-slotted screws are used to ensure ease of use.

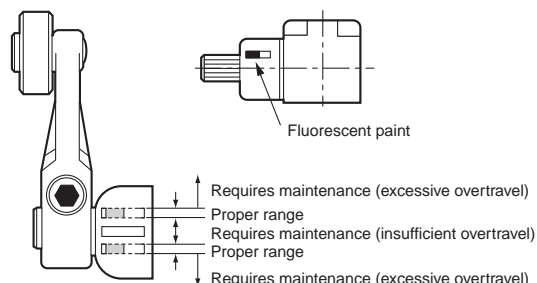
## Cover Seal

High sealing performance is achieved. The seal also serves as a spacer. There is no troublesome insulating paper, making it easy to work with the Switch.

## 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.

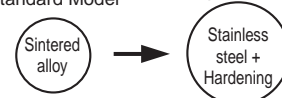


## Release Plunger

Hardening method changed for greater abrasion resistance.

Standard Model

Long-life Model



## Head Mounting Screws

## Operational Plunger

## Head

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

## Bearing

The bearing smooths the plunger movement.

## Terminal Screws

Four, M3.5 screws

## Built-in Switch

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

## Conduit Opening

In addition to parallel threads for G $\frac{1}{2}$  tubing, direct-wired and pre-wired connector types are available.

General-purpose Switches

Environment-resistant Switches

Spatter-prevention Switches

Long-life Switches

Accessories

Safety Precautions

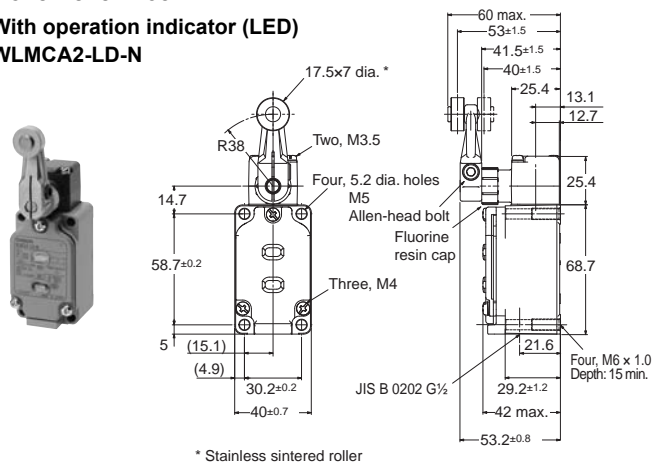


Roller Lever

Screw terminals

Roller lever R38

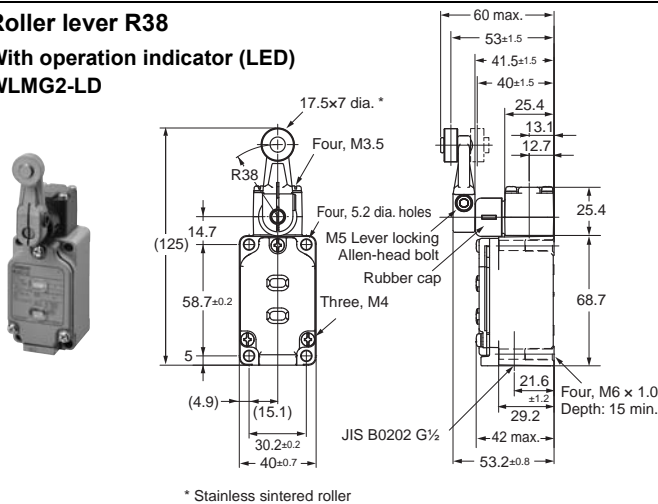
With operation indicator (LED)  
WLMCA2-LD-N



\* Stainless sintered roller

Roller lever R38

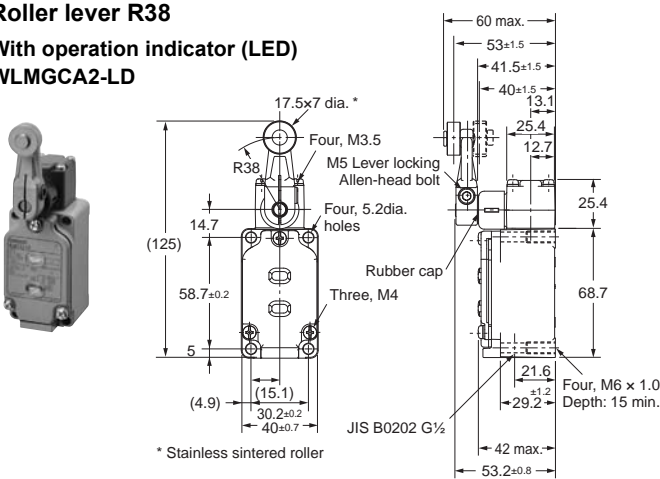
With operation indicator (LED)  
WLMG2-LD



\* Stainless sintered roller

Roller lever R38

With operation indicator (LED)  
WLMGCA2-LD



\* Stainless sintered roller

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

Operating characteristics

	Model	WLMCA2-LD-N	WLMG2-LD	WLMGCA2-LD
Operating force	OF max.	13.34 N	9.81 N	13.34 N
Release force	RF min.	1.18 N	0.98 N	1.47 N
Pretravel	PT	15±5°	10° +2° -1°	5° +2° 0°
Overtravel	OT min.	70°	65°	40°
Movement Differential	MD max.	12°	7°	3°

# Direct-wire connector

## Roller lever R38

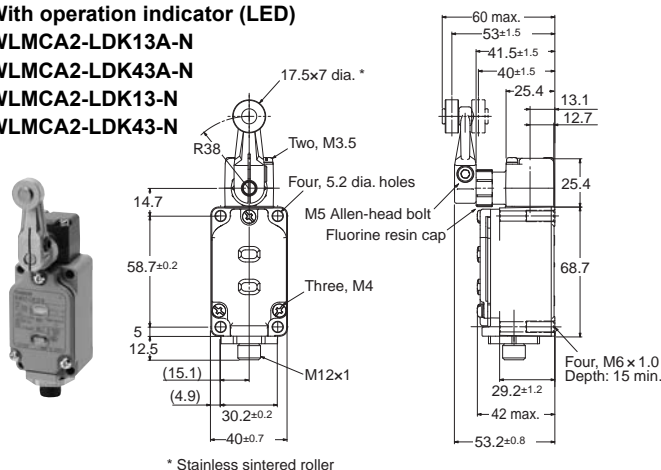
With operation indicator (LED)

WLMCA2-LDK13A-N

WLMCA2-LDK43A-N

WLMCA2-LDK13-N

WLMCA2-LDK43-N



\* Stainless sintered roller

Note: The photo shows the WLMCA2-LDK13-N model.

## Roller lever R38

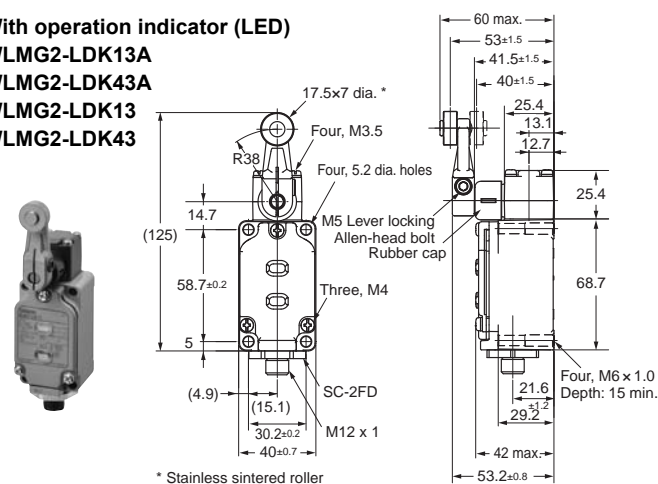
With operation indicator (LED)

WLMG2-LDK13A

WLMG2-LDK43A

WLMG2-LDK13

WLMG2-LDK43



\* Stainless sintered roller

Note: The photo shows the WLMG2-LDK13 model.

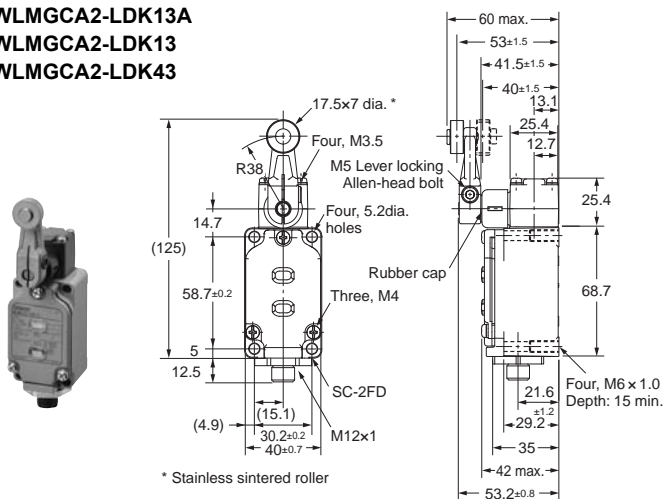
## Roller lever R38

With operation indicator (LED)

WLMGCA2-LDK13A

WLMGCA2-LDK13

WLMGCA2-LDK43



\* Stainless sintered roller

Note: The photo shows the WLMGCA2-LDK13 model.

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

## Operating characteristics

Model		WLMCA2-LDK13A-N WLMCA2-LDK43A-N WLMCA2-LDK13-N WLMCA2-LDK43-N	WLMG2-LDK13A WLMG2-LDK43A WLMG2-LDK13 WLMG2-LDK43	WLMGCA2-LDK13A WLMGCA2-LDK13 WLMGCA2-LDK43
Operating force	OF max.	13.34 N	9.81 N	13.34 N
Release force	RF min.	1.18 N	0.98 N	1.47 N
Pretravel	PT	15±5°	10° +2° -1°	5° +2° -0°
Overtravel	OT min.	70°	65°	40°
Movement Differential	MD max.	12°	7°	3°



## Common Accessories (Sold Separately)

## Ordering Information

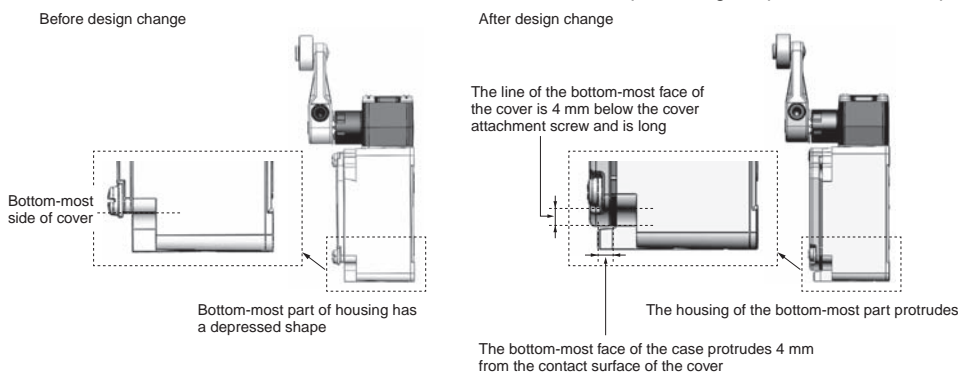
## Single-item ordering models

..... Switches without levers, heads, and actuators can be ordered separately. Use by combining with models that are not available as a set. You can also use them as maintenance parts for inventory management.

## General-purpose Models

Actuator	Pretravel (PT)	Set Model Numbers	Switches without levers	Heads (with Actuators)	Actuator *
			Model	Model	Model
Roller lever: R38 mm	15±5°	WLCA2-N	WLRCA2-N	WL-1H1100-N	WL-1A100
	25±5°	WLCA2-2-N	WLRCA2-2-N	WL-3H1100-N	
	20° max.	WLCA2-2N-N	WLRCA2-2N-N	WL-1H1100-N	
	10° <sup>+2°</sup> <sub>-1°</sub>	WLG2	WLRG2	WL-2H1100-K *	
Adjustable roller lever (R25 to 89 mm)	15±5°	WLCA12-N	WLRCA2-N	WL-1H2100-N	WL-2A100
	25±5°	WLCA12-2-N	WLRCA2-2-N	WL-3H2100-N	
	20° max.	WLCA12-2N-N	WLRCA2-2N-N	WL-1H2100-N	
	10° <sup>+2°</sup> <sub>-1°</sub>	WLG12	WLRG2	WL-2H2100-K *	
Adjustable rod lever: (25 to 140mm)	15±5°	WLCL-N	WLRCL-N	WL-4H4100-N	WL-4A100
	25±5°	WLCL-2-N	WLRCA2-2-N	WL-3H4100-N	
	20° max.	WLCL-2N-N	WLRCA2-2N-N	WL-1H4100-N	
	10° <sup>+2°</sup> <sub>-1°</sub>	WLGL	WLRG2	WL-2H4100-K *	
Sealed top plunger	1.7 mm max.	WLD18-N	---	WL-7H100-N	---
Sealed top-roller plunger	1.7 mm max.	WLD28-N	---	WL-7H400-N	---
Sealed top-ball plunger	1.7 mm max.	WLD38-N	---	WL-7H300-N	---
Horizontal plunger	2.8 mm max.	WLSD-N	---	WL-8H100-N	---
Horizontal-roller plunger	2.8 mm max.	WLSD2-N	---	WL-8H200-N	---
Horizontal-ball plunger	2.8 mm max.	WLSD3-N	---	WL-8H300-N	---
Coil spring (6.5 dia.)	20±10 mm	WLNJ-N	---	WL-9H100-N	---
Coil spring (4.8 dia.)	20±10 mm	WLNJ-30-N	---	WL-9H200-N	---
Flexible rod: Resin rod (8 dia.)	40±20 mm	WLNJ-2-N	---	WL-9H300-N	---
Flexible rod: Steel wire (1 dia.)	40±20 mm	WLNJ-S2-N	---	WL-9H400-N	---
Fork Lock Lever A	55° max.	WLCA32-41-N	WLRCA32-N	WL-5H5100-N	WL-5A100
Fork Lock Lever B	55° max.	WLCA32-42-N		WL-5H5102-N	WL-5A102
Fork Lock Lever C	55° max.	WLCA32-43-N		WL-5H5104-N	WL-5A104
Fork Lock Lever D	55° max.	WLCA32-44-N		WL-5H5104-N	WL-5A104

\* The WL-2H1100-K, WL-2H2100-K, and WL-2H4100-K correspond with each set model WLG□, the design of which was changed in April 2019. Please inquire if you desire a single-item head manufactured before the design change. On products that underwent the design change in April 2019, the front of the switch box cover at the bottom front has a protruding shape, and on earlier products has a depressed shape.


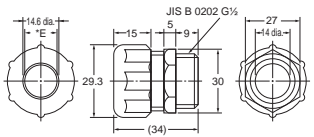

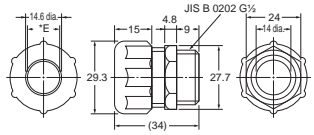

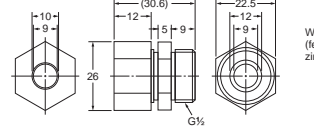

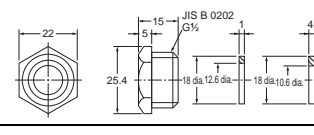


## Spatter-prevention Models

Actuator	Lever type	Indicator	Pretravel (PT)	Set Model Numbers	Switches without levers	Actuator *
					Model	Model
Roller lever: R38 mm	Double nut lever	LED	15±5°	WLCA2-LDAS-N	WLRCA2-LDS-N	WL-1A105S
		Neon lamp		WLCA2-LEAS-N	WLRCA2-LES-N	
		LED	10°+2° -1°	WLG2-LDAS	WLRG2-LDS	
	Allen-head lever	LED	15±5°	WLCA2-LDS-N	WLRCA2-LDS-N	WL-1A103S
		Neon lamp		WLCA2-LES-N	WLRCA2-LES-N	
		LED	10°+2° -1°	WLG2-LDS	WLRG2-LDS	

\* The actuator is identical for the WL and WL-N models.

## Connector for cabtire cable (Conduit size: JIS B0202G<sup>1/2</sup>)

Appearance	Dimensions (Unless otherwise indicated, a tolerance of ±0.4 mm applies to all dimensions.)	Application/ Specifications	Inner diameter (D) of seal rubber	External diameter of cable		Model	Applicable limit switch models
				min.	max.		
		Cabtire cable (Metal, with O-ring)	7 dia.	5.5 dia.	7.5 dia.	SC-1M	WL□-N WL□ Wiring Specifications: Screw terminals
			9 dia.	7.5 dia.	9.5 dia.	SC-2M	
			12.5 dia.	11 dia.	13 dia.	SC-3M	
			14 dia.	12 dia.	14 dia.	SC-4M	
			11 dia.	9 dia.	11 dia.	SC-5M	
		Cabtire cable (Metal)	7 dia.	5.5 dia.	7.5 dia.	SC-21	
			9 dia.	7.5 dia.	9.5 dia.	SC-22	
			12.5 dia.	11 dia.	13 dia.	SC-23	
			14 dia.	12 dia.	14 dia.	SC-24	
			11 dia.	9 dia.	11 dia.	SC-25	
		Cabtire cable (Resin)	9 dia.	7.5 dia.	9 dia.	SC-6	
			10.6 dia.	8.5 dia.	10.5 dia.	SC-P2	

**Note:** 1. Please use sealling tape with SC Connectors. SC-1M to SC-5M, however, are provided with an O-ring (NBR) and therefore sealling tape is not necessary to ensure a proper seal. The SC-6 and SC-P2 models are made of resin. If higher sealing performance is required, use one of SC-1M to SC-5M, which have metal connectors.  
2. Unless otherwise indicated, a tolerance of ±0.4 mm applies to all dimensions.

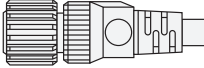
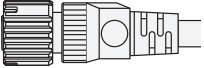
\* mark dimensional table

Model	Inner diameter (D) of sealed rubber	Internal diameter (E) of washer	Applicable cable
SC-21, -1M	7 dia.	10.4 dia.	5.5 dia. to 7.5 dia.
SC-22, -2M	9 dia.	13.2 dia.	7.5 dia. to 9.5 dia.
SC-23, -3M	12.5 dia.	14.6 dia.	11 dia. to 13 dia.
SC-24, -4M	14 dia.	14.6 dia.	12 dia. to 14 dia.
SC-25, -5M	11 dia.	13.2 dia.	9 dia. to 11 dia.
SC-6	9 dia.	10 dia.	7.5 dia. to 9 dia.

## FA Connectors

Model	Number of conductors	Voltage specification	Size of conduit	Size of crimp terminal	Applicable model
SC-2F	2	125 VDC	JIS B0202G1/2	M4	WL-N, WL□
SC-2FAD	2	250 VAC			
SC-4F4D	4	125 VDC			
SC-4F4AD	4	250 VAC			

## Sensor I/O connectors

Appearance	AC/DC type	Number of cable cores	Cable length (m)	Cable model	Compatible model
<b>M12 Screw (Straight)</b> 	for AC	2	2	XS2F-A421-DB0-F	WL□-□K13A-N WLG□-□K13A
			5	XS2F-A421-GB0-F	
		4	2	XS2F-A421-D90-F	WL□-□K43A-N WL□-□-AGJ-N WLG□-□K43A WLG□-□-AGJ03
			5	XS2F-A421-G90-F	
	for DC	2	2	XS2F-D421-DD0	WL□-□K13-N WL□-□-M1J-N WLG□-□K13 WLG□-□-M1J
			5	XS2F-D421-GD0	
			2	XS2F-D421-DA0-F	WL□-□-M1GJ□-N WLG□-□-M1GJ□
			5	XS2F-D421-GA0-F	
		4	2	XS2F-D421-D80-F	WL□-□K43-N WL□-□-M1JB-N WL□-□-DGJ-N WL□-□-DK1EJ-N WLG□-□K43 WLG□-□-M1JB WLG□-□-DGJ03 WLG□-□-DK1EJ03
			5	XS2F-D421-G80-F	
<b>M12 Smartclick (Straight)</b> 	for DC	4	2	XS5F-D421-D80-F	WL□-□-M1TJ-N WL□-□-M1TGJ-N WL□-□-M1TJB-N WL□-□-DTGJ-N WL□-□-DTK1EJ-N WLG□-□-M1TJ WLG□-□-M1TGJ WLG□-□-M1TJB WLG□-□-DTGJ03 WLG□-□-DTK1EJ03
			5	XS5F-D421-G80-F	

**Note:** For details, refer to the data sheet for XS2 Round Water-resistant Connectors (M12 Threads) or XS5 Round Water-resistant Connectors (M12 Smartclick).

Type	Compatible model		Remarks			Model
Cover with indicator lamps *1	WL-N	General-purpose models Long-life models (Basic models, High-sensitivity Switches)	Indicator *1	LED	Color: Red	WL-LD-N
				Neon lamp	Color: Orange	WL-LE-N
		Spatter Prevention models		LED	Color: Red	WL-LDS-N
				Neon lamp	Color: Orange	WL-LES-N
	WLG	General-purpose models	Indicator	LED	Color: Red	WL-LD-K *2
		Long-life models		Neon lamp	Color: Orange	WL-LE-K *2
		Spatter Prevention models		LED	Color: Red	WL-LDS-K *2
				Neon lamp	Color: Orange	WL-LES-K *2
Terminal Plate	WL□-N		Change from bipolar to monopolar (contact C).			WL-N TERMINAL PLATE
Side mounting plate	WL□-2N-N		---			WLN-P001

\*1. The default setting is for light-ON when not operating. Turn the lamp holder by 180° to change the setting to light-ON when operating.

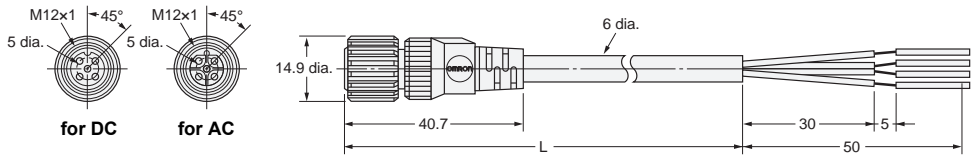
\*2. The WL-LD-K, WL-LE-K, WL-LDS-K, and WL-LES-K correspond with each set model WLG□, the design of which was changed in April 2019. Refer to the notes on page 75 for details.

Sensor I/O connectors

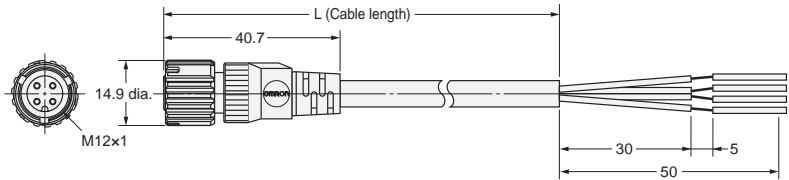
XS2F-A421-□□0-F

XS2F-D421-□D0

XS2F-D421-□□0-F



XS5F-D421-□80-F



Wiring Diagram

XS2F

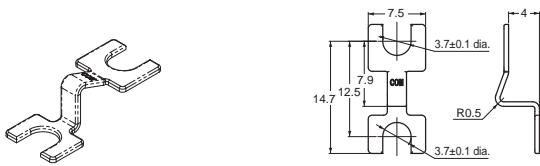
AC/DC Type	Two-core model		Four-core model	
	Model	Wiring Diagram	Model	Wiring Diagram
AC	XS2F-A421-DB0-F XS2F-A421-GB0-F		XS2F-A421-D90-F XS2F-A421-G90-F	
DC	XS2F-D421-DD0 XS2F-D421-GD0		XS2F-D421-D80-F XS2F-D421-G80-F	
	XS2F-D421-DA0-F XS2F-D421-GA0-F			

XS5F

AC/DC Type	Model	Wiring Diagram
DC	XS5F-D421-D80-F XS5F-D421-G80-F	

Terminal Plate

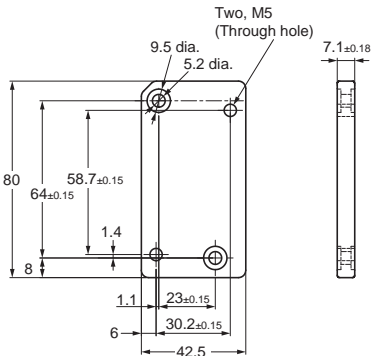
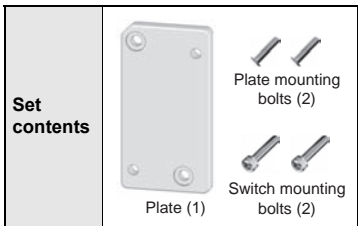
WL-N TERMINAL PLATE



When attaching the Terminal Plate to the built-in switch terminal, the SPST-NO+NC contact can be converted to an SPDT contact.  
For details on use, refer to *Terminal Plate* on page 85.

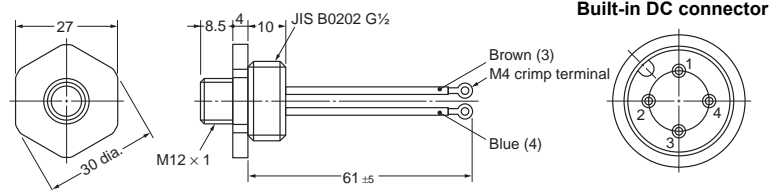
Side mounting plate

WLN-P001

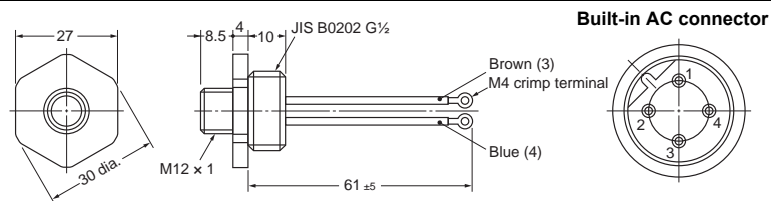


The Side mounting plate allows the actuator to be installed in the same position as the side mounting of the WL□-2N series.  
For details on use, refer to *To customers using the WL□-2N series model in a side-mounted configuration* on page 85.

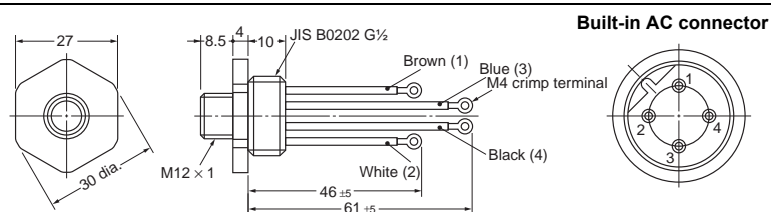
SC-2F



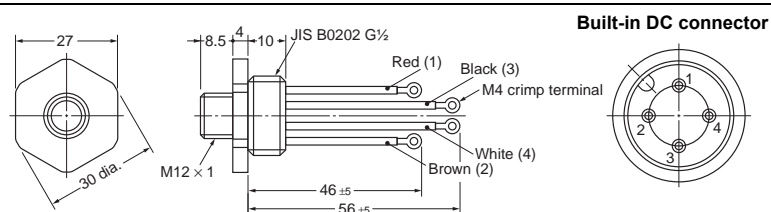
SC-2FAD



SC-4F4AD



SC-4F4D

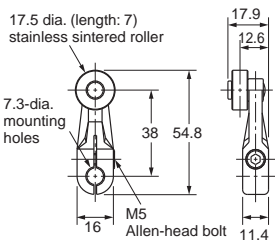


Note: 1. Each dimension has a tolerance of  $\pm 0.4$  mm unless otherwise specified.  
2. Figures in parentheses are connector pin numbers.

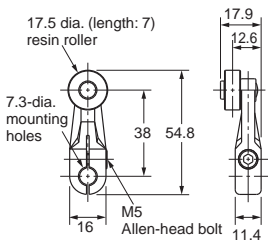


Actuators

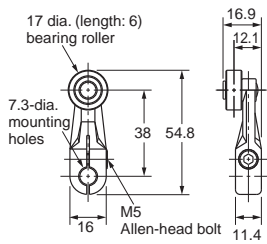
WL-1A100  
Standard Lever



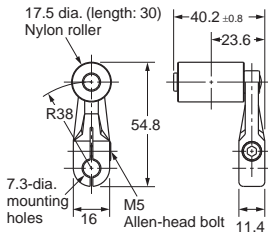
WL-1A115  
Resin Roller



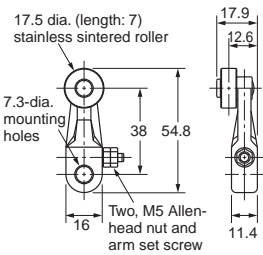
WL-1A400  
Bearing Roller



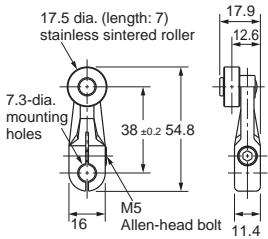
WL-1A118  
Nylon Roller:  
Roller Width: 30 mm



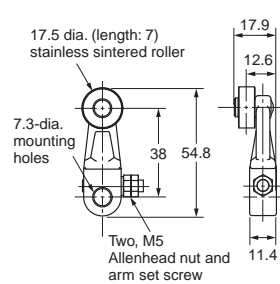
WL-1A105  
Double Nuts



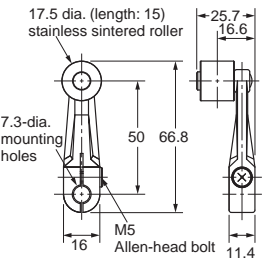
WL-1A103S  
Spatter Prevention



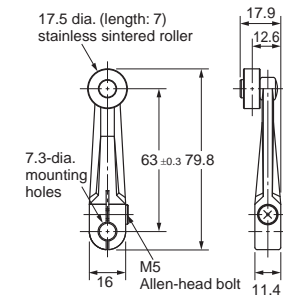
WL-105S  
Spatter Prevention



WL-1A200  
Lever Length: 50  
Roller Width: 15

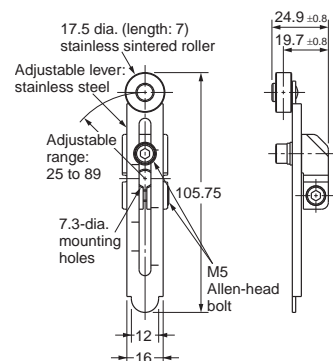


WL-1A300  
Lever Length: 63

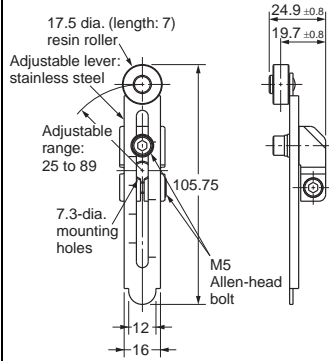


Note: Unless otherwise indicated, a tolerance of  $\pm 0.4$  mm applies to all dimensions.

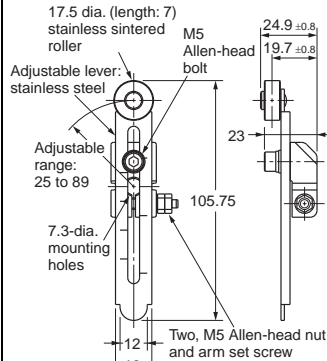
### WL-2A100



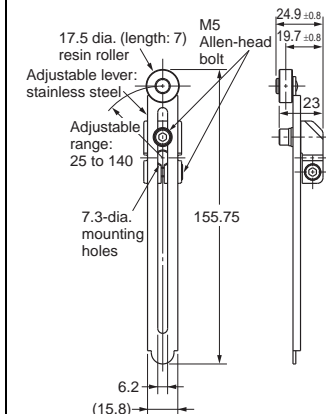
### WL-2A111 Resin Roller



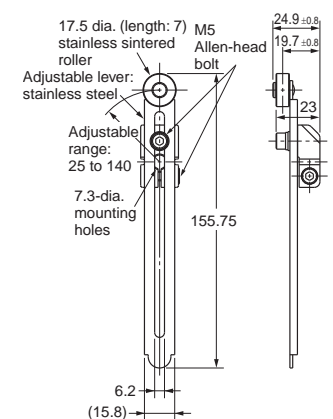
### WL-2A107 Double Nuts



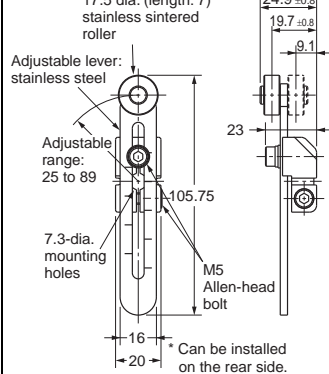
### WL-2A108 Resin Roller



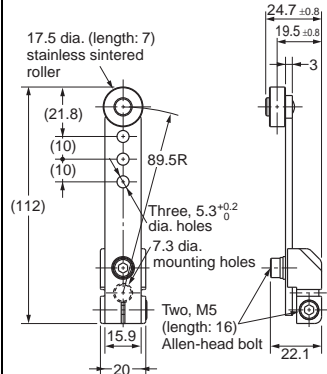
### WL-2A122



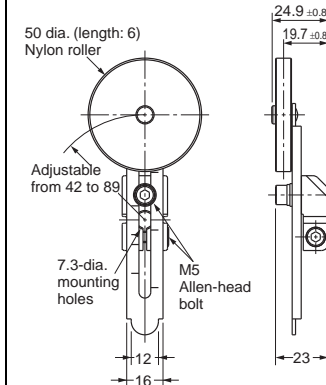
### WL-2A106



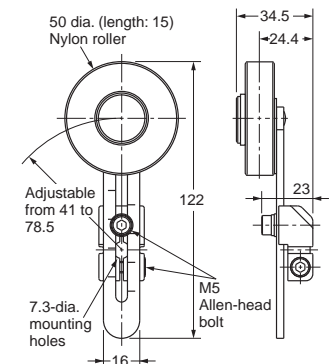
### WL-2A130



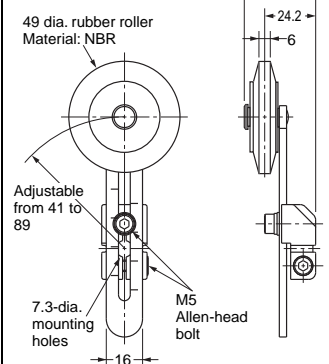
### WL-2A104



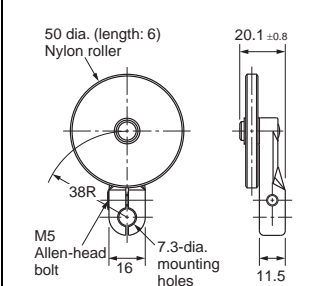
### WL-2A110



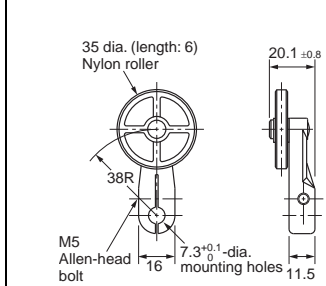
### WL-2A105



### WL-1A106

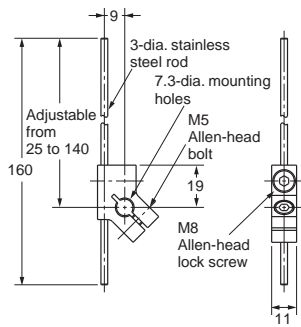


### WL-1A110

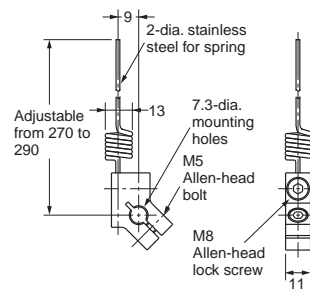


Note: Unless otherwise indicated, a tolerance of ±0.4 mm applies to all dimensions.

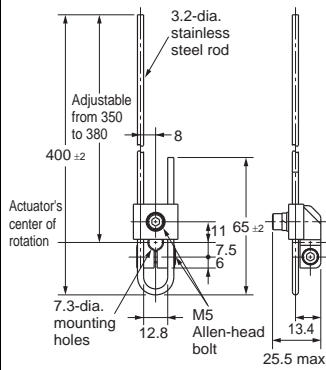
## WL-4A100



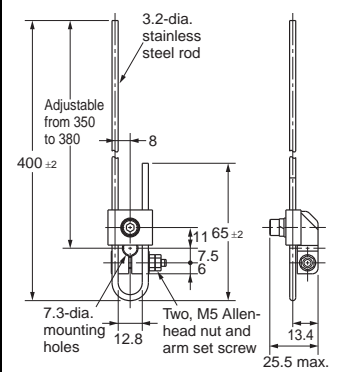
## WL-4A201



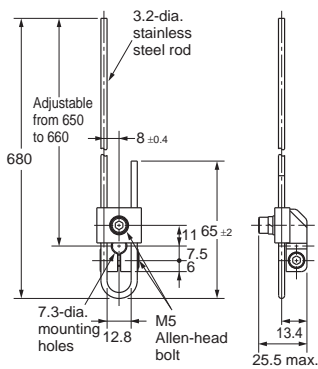
## WL-3A100



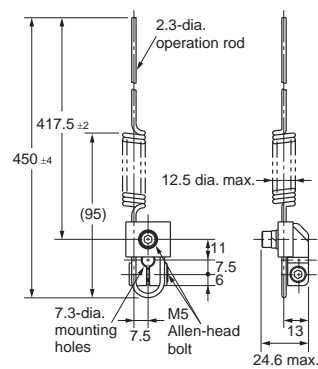
## WL-3A106 Double Nut



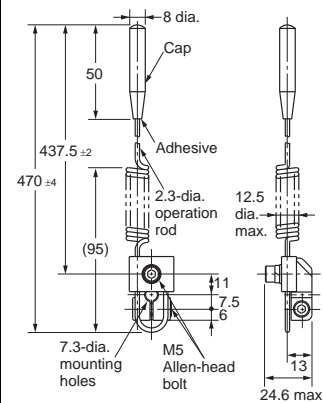
## WL-3A108



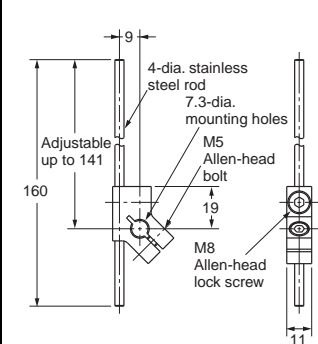
## WL-3A200



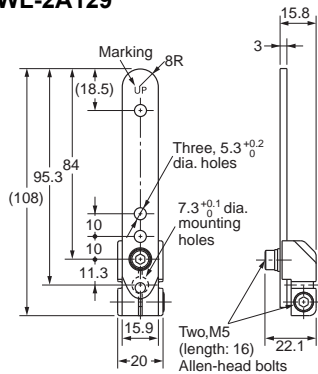
## WL-3A203



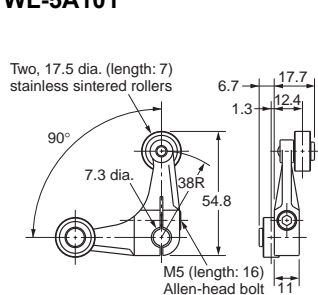
## WL-4A112



## WL-2A129

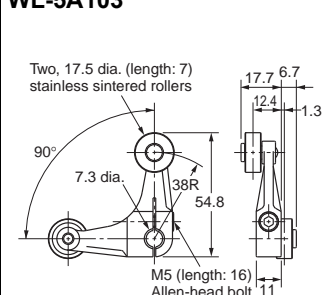


## WL-5A101



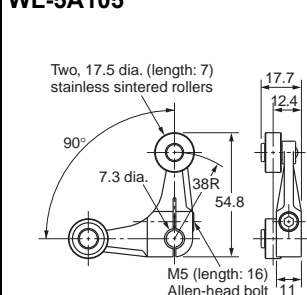
WL-5A100 has a plastic roller

## WL-5A103



WL-5A102 has a plastic roller

## WL-5A105



WL-5A104 has a plastic roller

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

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

## Safety Precautions

**For the Safety Precautions for All Limit Switches, refer to the OMRON website.**

### Meanings of Warning Signal Text

<b>Precautions for Safe Use</b>	Indicates an action that must be performed or avoided for safe use of this product.
<b>Precautions for Correct Use</b>	Indicates an action that must be performed or avoided for preventing operation failure or malfunction of the product or adverse impact on performance or functionality.

### Precautions for Safe Use

- Be sure to ground. Otherwise electric shock may result.
- Do not touch charged switch terminals while the switch has carry current. Otherwise electric shock may result.
- Do not disassemble the limit switch or touch inside of it under supplying power. Otherwise electric shock may result.
- Do not disassemble or touch the inside while the power is turned on. Otherwise electric shock may result.
- Do not touch the wire or rod type actuator in order to prevent injury. Doing so may result in injury.
- Connect a fuse which has 1.5 to 2 times higher breaking current than the switch rated current to the switch in series in order to prevent the switch from short-circuit damage.
- On the occasion when using the switch with EN/IEC/GB ratings, use a 10 A fuse that complies IEC60269, either type gG.
- The durability of switch is depends on the operating condition Be sure to check the condition with actual using condition before using, and use with the number of times of operating without a performance problem.
- Otherwise, there is the possibility of spoiling the normal operation. Do not drop the switch.
- Do not connect a Single Limit Switch to two power supplies that are different in polarity or type. Risk of interference.
- Be sure to keep the load current less than the rated value. Otherwise, there is the possibility that the switch may be damage and/or burnout.
- Do not use the Switch by itself in atmospheres containing flammable or explosive gases. Arcs and heating resulting from switching may cause fire or explosion.
- Be sure to prevent the foreign materials such like a scrapped cable intrusion in to the switch when wiring. Otherwise, there is the possibility of spoiling the normal operation.
- Never wire to the wrong terminals.
- Using the Switch in a pressed-in state for an extended period of time can accelerate part deterioration and also lead to failure to return to the original position. Check the Switch beforehand, and perform periodic inspection and replacement.
- Do not store or use the switch with following place.  
Where the temperature fluctuates greatly.  
Where the humidity is very high and condensation may occur.  
Where the vibration is too much.  
Where receiving direct sunshine.  
Where receiving salty wind.  
Where exposed to cutting powder, machining chips, oil, and chemicals inside the protective doors.  
Where exposed to cleansers, thinners, and other solvents
- Do not use or store the Switch in locations with corrosive gas, such as sulfuric gas ( $\text{H}_2\text{S}$  or  $\text{SO}_2$ ), ammonium gas ( $\text{NH}_3$ ), nitric gas ( $\text{HNO}_3$ ), or chlorine gas ( $\text{Cl}_2$ ), or high temperature and humidity. Otherwise, contact failure or corrosion damage may result.
- Do not disassemble and/or modify the switch at anytime.
- Otherwise, there is the possibility of spoiling the normal operation. Do not apply the force such like deformation and/or degeneration to the switch.
- If the Switch will not be switched ON or OFF for an extended period of time, contact reliability may degrade due to oxidation of the contact points, resulting in inadequate conductivity, which could lead to an accident.

### Precautions for Correct Use

#### Operating Environment

- This switch is only for indoor use. If it is used in outdoor, it may be cause of switch failure.
- Take special care to use where there is fine powder, mud and/or foreign materials stacking. And check the condition with actual using condition before using. Then use without a performance problem.
- 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.
- If there are materials that contain silicon components or phosphorus components in the vicinity of where the Switch is being used, these components may be converted into gas due to the type of the material or the operating temperature or humidity, resulting in inadequate conductivity. Examples of sources of silicon and phosphorous gas are shown below. Refer to these examples and implement countermeasures.

#### Examples of silicon gas sources

##### Sources

Silicon-based coating agents, silicon-based adhesives, silicon rubber, silicon oil/grease, silicon-based mold release agents, silicon filling agents, silicone power cables

##### Countermeasure details:

When a source of silicon gas exists, you are asked to suppress arcing with contact protective circuits, to remove this source from the vicinity of the Switch, or to change to a different material. Also, if you cannot avoid using the Switch in an environment where a source of silicon gas is present, check the Switch in the actual environment where it will be used and periodically inspect and replace the Switch.

#### Examples of phosphorus compound gas sources

##### Sources

Heat-shrinking tubes, lead wires, connectors, resin materials including red phosphorus, oil, industrial waste, decaying materials (garbage), seawater, insecticides, smoking materials, chemicals

##### Countermeasure details:

When a source of phosphorus compound gas exists, you are asked to remove this source from the vicinity of the Switch or to change to a different material. Also, if you cannot avoid using the Switch in an environment where a material including phosphorus (ammonium dihydrogen phosphate-based) components is present, check the Switch in the actual environment where it will be used and periodically inspect and replace the Switch.

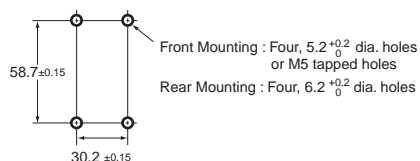
Examples of material changes:

- (1) Use M3.5-nylon insulation covered crimp terminals (round type) for wiring.
- (2) When using heat-shrinking tubes, select those that do not use phosphorous or that use water-resistant red phosphorus. You can make it difficult for the phosphorus reaction to progress and thereby suppress the generation of gas by using heat-shrinking tubes that have undergone surface (waterproofing) treatment.
- (3) Use OMRON SC Series connectors.

\* The above examples do not guarantee the performance of the Switch. Handle situations as they arise according to your own judgment and evaluation of the actual device during use.

## Installing the Switch

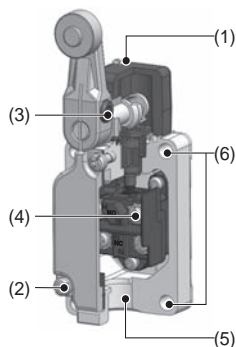
- To install the Switch, make a mounting panel, as shown in the following diagram, and tighten screws using the appropriate tightening torque.



\* If the conduit size and ground terminal specifications are "with TS 1/2-14NPT ground terminal", the back mounting hole is 4-6.2 dia. <sup>+0.2</sup><sub>0</sub>.

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



No.	Item	Torque	Screw type
(1)	Head mounting screw	0.78 to 0.88 N·m	M3.5 screw
(2)	Cover mounting screw	1.18 to 1.37 N·m	M4 screw
(3)	Allen-head bolt (for securing the roller lever)	4.90 to 5.88 N·m	M5 Allen-head bolt
(3)	Allen-head bolt (for securing the roller lever)	0.88 to 1.08 N·m	M8 hexagon socket set screw
(4)	Terminal screw	0.59 to 0.78 N·m	M3.5 screw
(5)	Connectors	1.77 to 2.16 N·m	G1/2 or Pg13.5 or M20 or 1/2-14NPT
(6)	Unit mounting screw	4.90 to 5.88 N·m	M5 screw
	Back mounting screws	4.90 to 5.88 N·m	M6 screw

## Using Switches for Micro Loads

- The switch contacts can be used both for standard loads and microloads, but once a contact has been used to open and close a load it can no longer be used for lower loads. Doing so will damage the contact surface and reduce contact reliability.
- If an inrush current or other sudden load occurs during a switch operation, the switch will begin to degrade severely which can result in reduced durability. Use a contact protection circuit if required.

For the WL-N, the P level is at the min. operating load of 5 VDC and 1 mA resistive load.

**Note:** The P level indicates the standard malfunction level at a reliability level of 60% ( $\lambda_{60}$ ). (JISC5003)  $\lambda_{60} = 0.1 \times 10^{-6}$ /operations indicates that the estimated malfunction rate is less than 1/10,000,000 operations with a reliability level of 60%.

## Wiring

### In the case of mounting screw

#### Basic models

- Use M3.5-nylon insulation covered crimp terminals (round type) for wiring. Ex.) N1.25-M3.5 (RAP1.25-3.5) (J.S.T. Mfg. Co., Ltd.)
- Appropriate wire size is AWG16 (1.25 mm<sup>2</sup>).
- Do not supply electric power when wiring. Otherwise electric shock may result.
- Do not pull out the wires with excessive force. It may cause of coming off the wire.
- Avoid connecting the wires directly to the terminal. Instead, attach using a crimp terminal.
- In the case of indicator unit, to avoid interference between lump unit and crimp terminals, wire according to right wiring figure.
- Attach the indicator unit spring to terminal screw certainly, otherwise it's possible to be destroyed or shorted.
- The ground terminal is only installed on models with ground terminals.



### In the case of prewired connector and direct connector

- Holding the connector certainly when pulling connector.
- Don't pull the cable holding it.

## How to handle

### Changing direction of the head

- By removing two head screws or four head screws, mounting in any of four orientations is possible. Be sure to change the plunger for internal operations at the same time.

### Built-in Switch

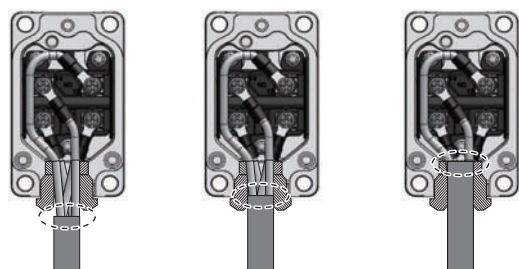
- Do not remove or replace the built-in switch. Risk of malfunctioning.

### Overtravel Markers

- All Switches with Roller Lever Actuators except for Switches with Fork Lock Levers and Low-temperature Switches have a set position marker plate.
- To allow the roller lever type actuator to travel properly, set the roller lever according to the dog or cam stroke so that the arrowhead of the lever is positioned within the overtravel markers (pages 17, 18). This enables usage in the optimum state.

## Conduit opening preparation

- The connector must be tightened at a suitable tightening torque (1.77 to 2.16 N). Tightening with excessive torque could damage the case.
- Select the connector based on the sealed rubber inner diameter for matching the cable outer diameter. For details, refer to Accessories (Sold Separately) - *Connector for cable* (Conduit size: JIS B0202G1/2) on page 76.
- When mounting the connector, use seal tape (not needed if the connector includes an O-ring) on the threaded section of the connector to ensure sealing performance.
- To ensure compliance of this Switch with the CSA standards, use of a waterproof connector compliant with the CSA is recommended.
- 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 connector 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.
- The following wiring is recommended for preventing the entry of fluids from the conduit opening.



(1) Connector tube contains internal stranded wire

(2) Connector tube contains internal stranded wire and external jacket

(3) Connector tube contains external jacket

## Microload Applications

- The WL-N basic model, WLG high-sensitivity model, and high-precision model contacts can be used both for standard loads and microloads, but once a contact has been used to open and close a load, it can no longer be used for lower loads. Doing so will damage the contact surface and reduce contact reliability.
- If an inrush current or other sudden load occurs during a switch operation, the switch will begin to degrade severely which can result in reduced durability. Use a contact protection circuit if required.

## Operation 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. Leakage current may cause load malfunction (i.e., the load may remain ON). Make sure that the load operating current is higher than the leakage current. For countermeasures, refer to technical support on your OMRON website.

## Terminal Plate

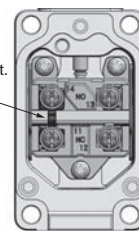
By using the Terminal Plate (sold separately), as shown in the following diagram, the Switch can be used as a single-polarity double-break switch.

### WL-N TERMINAL PLATE



Terminal Plate

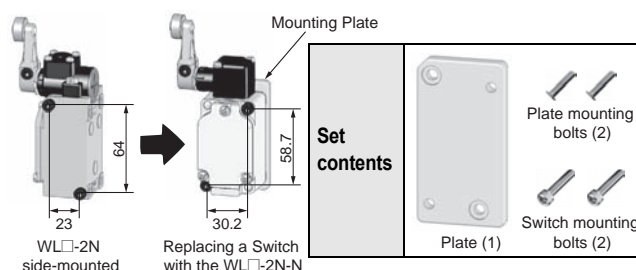
Attach the Terminal Plate so that the "COM" mark is oriented as shown on the left.



Terminal Plate Mounting Diagram

## To customers using the WL□-2N series model in a side-mounted configuration

We provide a special mounting plate (sold separately) that features mounting compatibility when replacing with the WL□-2N-N series. If you use the Mounting Plate, the Switch mounting holes and actuator position will be compatible. Note: The position of the dog remains unchanged.

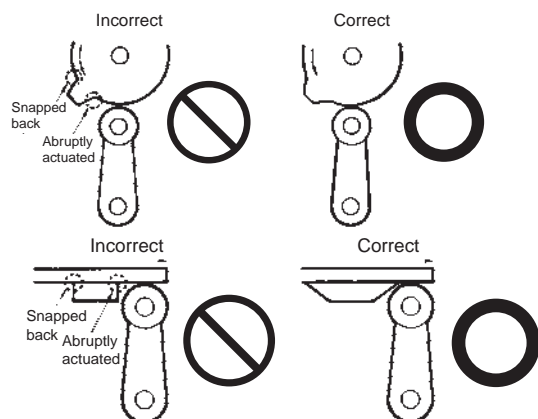




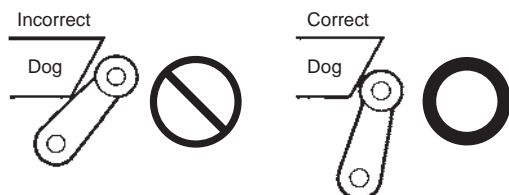
## Operation Procedures

### Operation

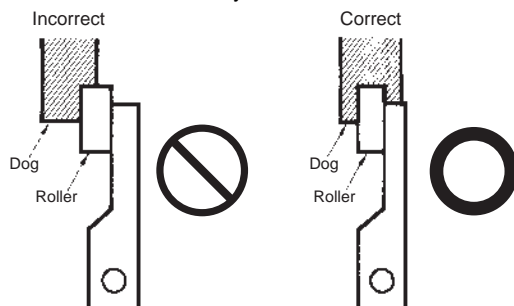
- Carefully determine the position and shape of the dog or cam so that the actuator will not abruptly snap back, thus causing shock. In order to operate the Limit Switch at a comparatively high speed, use a dog or cam that keeps the Limit Switch turned ON for a sufficient time so that the relay or valve will be sufficiently energized.
- The method of operation, the shape of the cam or dog, the operating frequency, and the travel after operation have a large influence on the durability and operating accuracy of the Limit Switch. The cam or dog must be smooth in shape.



- Appropriate force must be imposed on the actuator by the cam or dog in both rotary operation and linear operation. If the dog touches the lever as shown below, the operating position will not be stable.



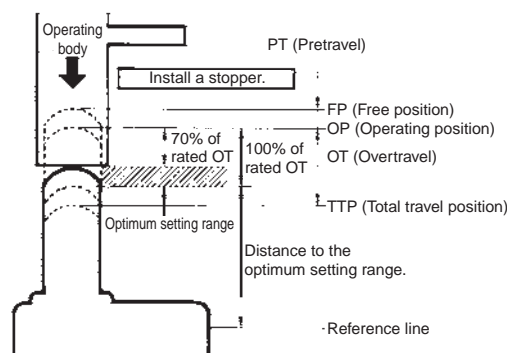
- Unbalanced force must not be imposed on the actuator. Otherwise, wear and tear on the actuator may result.



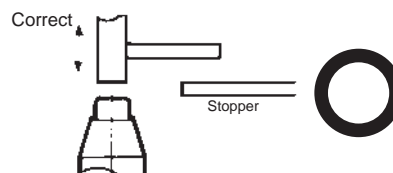
- With a roller actuator, the dog must touch the actuator at a right angle. The actuator or shaft may deform or break if the dog touches the actuator (roller) at an oblique angle.



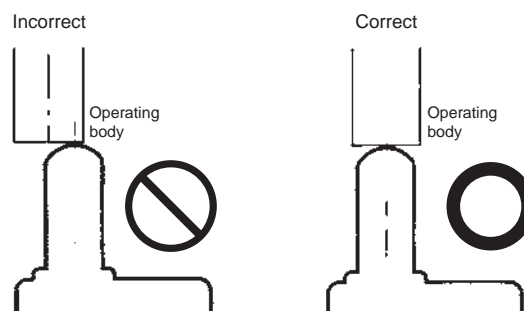
- Mount so that the actuator travel after operation (OT) is not exceeded. If the travel after operation (OT) exceeds the limit, switch failure could result. When mounting the Limit Switch, be sure to adjust the Limit Switch carefully while considering the whole movement of the actuator.



- The Limit Switch may soon malfunction if the OT is excessive. Therefore, adjustments and careful consideration of the position of the Limit Switch and the expected OT of the operating body are necessary when mounting the Limit Switch.



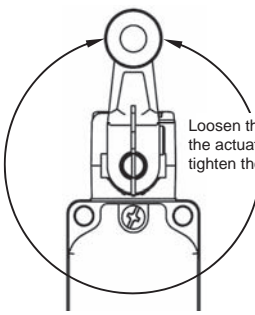
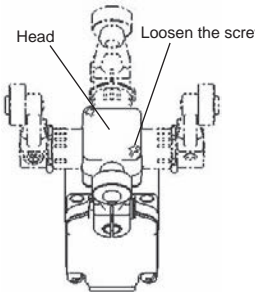
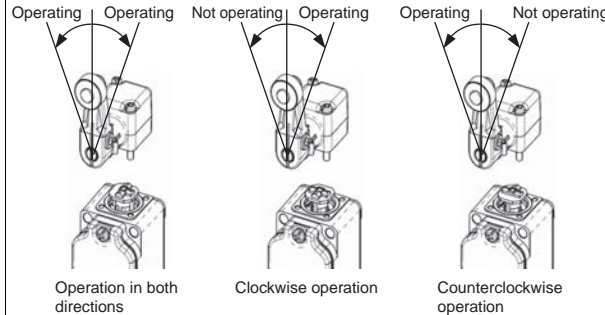
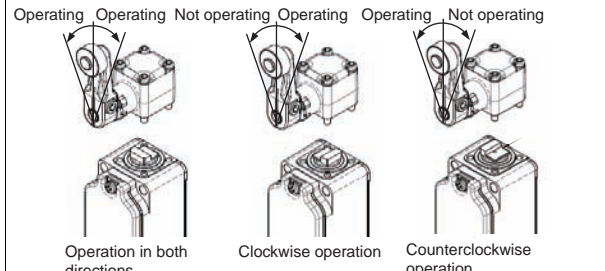
- When using a pin-plunger actuator, make sure that the stroke of the actuator and the movement of the dog are located along a single straight line.



### Others

- If the Switch will be left in a location outside the storage environment conditions, if condensation has formed, or after long-term storage exceeding one year, at the minimum, check the operating characteristics, contact resistance, insulation resistance, and dielectric strength, and conduct a check under the operating conditions.
- If using normal open (NO), be sure to fully press in the actuator. The proper press-in depth is 70 to 100% of rated OT.
- Conduct periodic inspection on a regular schedule.

## Using the Switches

Item	Applicable models and Actuators	Details
<b>Changing the Installation Position of the Actuator</b> By loosening the Allen-head bolt on the actuator lever, the position of the actuator can be set anywhere within the 360°. With Operation 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. (This does not apply to Long-life Models.)	Roller lever: (WLCA2-N, WLCA2-2-N, WLCA2-2N-N, WLG2, WLCA2-7-N, WLCA2-8-N, WLGCA2, WLMCA2-N, WLMG2, WLMGCA2) Adjustable roller lever (WLCA12-N, WLCA12-2-N, WLCA12-2N-N, WLG12) Adjustable rod lever (WLCL-N, WLCL-2-N, WLCL-2N-N, WLGL, WLCAL4-N, WLCAL5-N)	
<b>Changing the Orientation of the Head</b> By removing the head screws (two or four screws), mounting in any of four orientations is possible. Be sure to change the plunger for internal operations at the same time. Note that this does not apply to the WLG2, WLMG2, WLG12, or WLGL. The roller plunger can be set in either of two positions at 90°.	Roller lever: (WLCA2-N, WLCA2-2-N, WLCA2-2N-N, WLG2, WLCA2-7-N, WLCA2-8-N, WLGCA2, WLMCA2-N, WLMG2, WLMGCA2) Adjustable roller lever (WLCA12-N, WLCA12-2-N, WLCA12-2N-N, WLG12) Adjustable rod lever (WLCL-N, WLCL-2-N, WLCL-2N-N, WLGL, WLCAL4-N, WLCAL5-N) Horizontal plunger (WLS□-N) Top-roller plunger (WLD2-N) Sealed top-roller plunger (WLD28-N) Fork lock lever (WLCA32-4□-N) <b>Note:</b> Does not include -RP60 Series or -141 Series	
<b>Changing the Operating Direction</b> 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. The tightening torque for the screws on the Head is 0.78 to 0.88 N·m. (The operating direction of the WLG2 (high-sensitivity model) cannot be changed.)	Roller lever: (WLCA2-N, WLCA2-2-N, WLCA2-2N-N, WLCA2-7-N, WLCA2-8-N, WLMCA2-N) Adjustable roller lever (WLCA12-N, WLCA12-2-N, WLCA12-2N-N) Adjustable rod lever (WLCL-N, WLCL-2-N, WLCL-2N-N, WLCAL4-N, WLCAL5-N)	<b>Setting One-side Operation for Basic Models</b> 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. 
	Roller lever: (WLGCA2, WLMGCA2)	<b>Setting One-side Operation for High-precision Models</b> 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. 

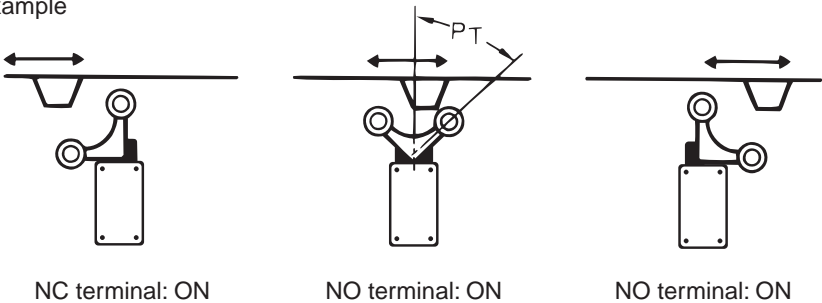


Item	Applicable models and Actuators	Details
<p><b>Installing the Roller on the Inside</b> By installing the roller lever in the opposite direction, the roller can be installed on the inside. (Set so that operation can be completed within a 180° level range.)</p>	<p>Roller lever: (WLCA2-N, WLCA2-2-N, WLCA2-2N-N, WLG2, WLCA2-7-N, WLCA2-8-N, WLGCA2, WLMCA2-N, WLMG2, WLMGCA2) Fork lock lever (WLCA32-4□-N)</p>	
<p><b>Adjusting the Length of the Rod or Lever</b> The length of the rod or lever can be adjusted by loosening the Allen-head bolt.</p>	<p>Adjustable roller lever (WLCA12-N, WLCA12-2-N, WLCA12-2N-N, WLG12) Adjustable rod lever (WLCL-N, WLCL-2-N, WLCL-2N-N, WLGL, WLCAL4-N)</p>	
<p><b>Selecting the Roller Position</b> There are four types of Switches with Fork Lock Levers for use depending on the roller position.</p>	<p>Fork lock lever: (WLCA32-4□-N)</p>	

Operation of Fork Lock Levers

A Switch with a Fork Lock Lever is constructed so that the dog pushes the lever to invert the output and this inverted state is maintained even after the dog moves on. If the dog then pushes the lever from the opposite direction, the lever will return to its original position.

Example



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