Two-circuit Limit Switches
WL-N/WL

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

- 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 resistantmodels for welding processes, and long-life models for high-frequency use.
- Degree of Protection; 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 81 to 86 and *Safety Precautions for All Limit Switches*.

Two-circuit Limit Switch

Common Features

Model Number Structure

List of Models

Roller lever

Type of Switches	Operating environment	Indicator		Wiring Specifications	Actuator: R38	R50	R63	Adjustable Roller Lever (R25 to 89 mm)	Page
General-purpose Switches *1		Without operation indicator		Screw terminals	❍ *2	❍	❍	❍ *2	page 5
		With operation indicator	LED		❍ *2	❍	❍	❍ *2	
			Neon lamp		❍ *2	❍	❍	❍ *2	
		With operation indicator	LED	Direct-wire connector	❍ *2	---	---	---	
		With operation indicator	LED	Pre-wired Connector	❍ *2	---	---	---	
Environment-resistant Switches	Ambient operating temperature (5 to 120°C)	Without operation indicator		Screw terminals	❍	---	---	❍	page 33
	Ambient operating temperature (-40 to 40°C)				❍	---	---	❍	
	Chemicals and oil				❍	---	---	❍	
	Outdoors				❍	---	---	❍	
	Coolant drops and mist			Direct-wire cable	❍	---	---	❍	
	Mist (Improved sealing for conduit opening and cover)				❍	---	---	❍	
	Constant water drops and mist (Molded conduit opening and cover.)				❍	---	---	❍	
	Constant water drops or splattering cutting powder (Preventing intrusion of cutting powder through molded conduit opening, cover, and head seal, and a head cap)				❍	---	---	❍	
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.

*1. The operating environment temperature is -10°C to +80°C, and the protection rating is IP67.

*2. Models with airtight built-in switch specifications suitable for use in water drop or mist atmospheres are also available.

Plunger Actuators

Type	Operating environment	Indicator		Wiring Specifications	Actuator: Sealed top-roller plunger	Top-roller plunger	Sealed top plunger	Sealed top-ball plunger	Page
General-purpose Switches *1		Without operation indicator		Screw terminals	❍ *2	❍ *2	❍	❍	page 5
		With operation indicator	LED		❍ *2	❍	❍	❍	
			Neon lamp		❍ *2	❍	❍	❍	
		With operation indicator	LED	Direct-wire connector	❍ *2	---	---	---	
		With operation indicator	LED	Pre-wired connectors	❍ *2	---	---	---	
Environment-resistant Switches	Ambient operating temperature (5 to 120°C)	Without operation indicator		Screw terminals	❍	❍	---	---	page 33
	Ambient operating temperature (-40 to 40°C)				❍	---	---	---	
	Chemicals and oil				❍	---	---	---	
	Outdoors				---	---	---	---	
	Coolant drops and mist			Direct-wire cable	❍	---	---	---	
	Mist (Improved sealing for conduit opening and cover)				❍	❍	---	---	
	Constant water drops or splattering cutting powder (Preventing intrusion of cutting powder through molded conduit opening, cover, and head seal, and a head cap)				❍	❍	---	---	
Spatter-prevention Switches	Spattering from welding	With operation indicator	LED	Screw terminals	❍	---	---	---	page 53
			Neon lamp		❍	---	---	---	
			LED	Pre-wired connectors	❍	---	---	---	

Type	Operating environment	Indicator		Wiring Specifications	Actuator: Horizontal plunger	Horizontal-roller plunger	Horizontal-ball plunger	Page
General-purpose Switches *1		Without operation indicator		Screw terminals	❍ *2	❍ *2	❍	page 5
		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)	Without operation indicator		Screw terminals	❍	❍	---	page 33
	Ambient operating temperature (-40 to 40°C)				❍	❍	---	
	Chemicals and oil				❍	❍	---	
	Outdoors				---	---	---	
	Coolant drops and mist			Direct-wire cable	❍	❍	---	
	Mist (Improved sealing for conduit opening and cover)				❍	---	---	
	Constant water drops or splattering cutting powder (Preventing intrusion of cutting powder through molded conduit opening, cover, and head seal, and a head cap)				❍	❍	---	
Spatter-prevention Switches	Spattering from welding	With operation indicator	LED	Screw terminals	---	---	---	page 53
			Neon lamp		---	---	---	
			LED	Pre-wired connectors	---	---	---	

Note: ❍ indicates features included in the ordered model.

*1. The standard wiring specifications are screw terminals types. The operating environment temperature is -10°C to +80°C, and the protection rating is IP67.

*2. Models with airtight built-in switch specifications suitable for use in water drop or mist atmospheres are also available.

Flexible Rod Actuators

Type	Operating environment	Indicator		Wiring Specifications	Actuator: Adjustable rod lever (25 to 140 mm)	Adjustable rod lever (350 to 380 mm)	Rod spring lever	Page
General-purpose Switches *1		Without operation indicator		Screw terminals	❍ *2	❍	❍	page 5
		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)	Without operation indicator		Screw terminals	❍	---	---	page 33
	Ambient operating temperature (-40 to 40°C)				❍	---	---	
	Chemicals and oil				❍	---	---	
	Outdoors				❍	---	---	
	Coolant drops and mist			Direct-wire cable	❍	---	---	
	Mist (Improved sealing for conduit opening and cover)				❍	---	---	
	Constant water drops and mist (Molded conduit opening and cover.)				❍	---	---	

Type	Operating environment	Indicator		Wiring Specifications	Actuator: Coil spring (6.5 dia.)	Coil spring (4.8 dia.)	Resin rod (8 dia.)	Steel wire (1 dia.)	Page
General-purpose Switches *1		Without operation indicator		Screw terminals	❍ *2	❍	❍ *2	❍	page 5
		With operation indicator	LED		❍ *2	❍	❍ *2	❍	
			Neon lamp		❍ *2	❍	❍ *2	❍	
		With operation indicator	LED	Direct-wire connector	---	---	---	---	
		With operation indicator	LED	Pre-wired Connector	---	---	---	---	
Environment-resistant Switches	Ambient operating temperature (5 to 120°C)	Without operation indicator		Screw terminals	❍	---	---	---	page 33
	Ambient operating temperature (-40 to 40°C)				❍	---	---	---	
	Chemicals and oil				❍	---	---	---	
	Outdoors				---	---	❍	---	
	Coolant drops and mist			Direct-wire cable	❍	---	❍	---	
	Mist (Improved sealing for conduit opening and cover)				❍	---	❍	---	
	Constant water drops and mist (Molded conduit opening and cover.)				❍	---	❍	---	

Note: ❍ indicates features included in the ordered model.

*1. The standard wiring specifications are screw terminals types. The operating environment temperature is -10°C to +80°C, and the protection rating is IP67.

*2. Models with airtight built-in switch specifications suitable for use in water drop or mist atmospheres are also available.

Fork Lock Lever Actuators

Type	Operating environment	Indicator		Wiring Specifications	Actuator: Fork Lock Lever (1)	Fork Lock Lever (2)	Fork Lock Lever (3)	Fork Lock Lever (4)	Page
General-purpose Switches *1		Without operation indicator		Screw terminals	❍	❍	❍	❍	page 5
		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.

* The standard wiring specifications are screw terminals types. The operating environment temperature is -10°C to +80°C, and the protection rating is IP67.

General-purpose Switches
WL-N/WL

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; 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 81 to 86 and *Safety Precautions for All Limit Switches*.

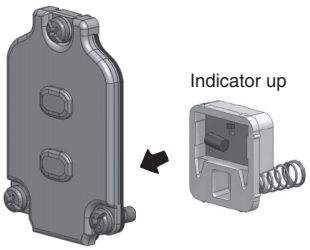
Features

A type with operation indicators for easily confirming operation is available

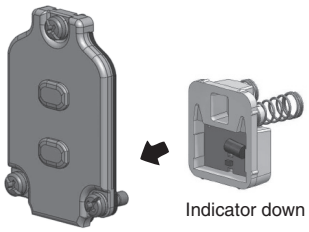
Indicates the operation status of the switches using LEDs and neon lamps.

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

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)

(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		Rod spring lever	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 *	(1)	55° max.
CA32-42		(2)	55° max.
CA32-43		(3)	55° max.
CA32-44		(4)	55° max.

* The lever attachment method varies in (1) to (4).

(1)	(2)	(3)	(4)
			

(2) Built-in Switch Specifications

Code	Specifications
None	Standard
55	Airtight built-in switch *

* (1) Actuator and Property Specifications: Roller levers (R38 mm) and sealed top-roller plungers only

(3) Indicator Specifications

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

* (1) Actuator: Excluding the symbols CA32-42 and CA32-44

(4) Wiring Specifications

Code	Terminal shape	Connector shape	Voltage	Wiring locations	Connector pin No.
None	Screw terminals (Conduit size: G½)	---	---	---	---
K13A	Direct-wire connector type *1 *2	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 *2	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				NO only	NO: ③ ④ NC: ②
-DTGJ	Pre-wired connector *1	Smartclick	DC	NC+NO	NO: ③ ④ NC: ① ②
-DTK1EJ				NO only	NO: ③ ④ NC: ②

*1. (1) Actuator and Property Specifications: Roller levers (R38 mm) only
*2. (1) Actuator and Property Specifications: Roller levers (R38 mm) and sealed top-roller plungers only

High-sensitivity and High-precision Models

WLG□ - □ □ □
(1) (2) (3) (4)

(1) Actuator and Property Specifications

Code	Actuator		Pretravel (PT)
2	Roller lever	Roller lever: R38 mm High-sensitivity Models	10°$^{+2°}_{-1°}$
CA2	Roller lever	Roller lever: R38 mm High-precision Models	5°$^{+2°}_{0°}$
12	Roller lever	Adjustable roller lever (R25 to 89 mm) High-sensitivity Models	10°$^{+2°}_{-1°}$
L	Flexible rod	Adjustable Rod Lever (25 to 140 mm) High-sensitivity Models	10°$^{+2°}_{-1°}$

(2) Built-in Switch Specifications

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

(3) Indicator Specifications

Code	Specifications
None	No indicator
LE	Neon lamp (125 to 250 VAC) *1
LD	LED (10 to 115 VAC/DC) *2

*1. (1) Actuator and Property Specifications Symbol:12, L
(4) Wiring Specifications: Screw terminals only
*2. (1) Actuator: Symbol 2
(4) Wiring Specifications: Direct-wire connector and pre-wired connector models only

(4) Wiring Specifications

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

* (1) Actuator: Roller levers (R38 mm) only

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
			$10^{\circ}{}^{+2^{\circ}}_{-1^{\circ}}$	WLG2	WLG2-LD	WLG2-LE
			$5^{\circ}{}^{+2^{\circ}}_{0^{\circ}}$	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
			$10^{\circ}{}^{+2^{\circ}}_{-1^{\circ}}$	WLG12	WLG12-LD	WLG12-LE

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
			$10^{\circ}{}^{+2^{\circ}}_{-1^{\circ}}$			NO only	NO: ③ ④	WLG2-LDK13
						NC+NO	NO: ③ ④ NC: ① ②	WLG2-LDK43
			$5^{\circ}{}^{+2^{\circ}}_{0^{\circ}}$			NO only	NO: ③ ④	WLGCA2-LDK13
						NC+NO	NO: ③ ④ NC: ① ②	WLGCA2-LDK43
	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+NO	NO: ③ ④ NC: ① ②	WLCA2-LD-DGJ-N
						NO only	NO: ③ ④ NC: ②	WLCA2-LD-DK1EJ-N
						NO only	NO: ③ ④ NC: ②	WLCA2-LD-DK1EJ-N
				Smartclick		NC+NO	NO: ③ ④ NC: ① ②	WLCA2-LD-DTGJ-N
						NO only	NO: ③ ④ NC: ②	WLCA2-LD-DTK1EJ-N
			$10^{\circ}{}^{+2^{\circ}}_{-1^{\circ}}$	Threaded (M12)		NO only	NO: ③ ④	WLG2-LD-M1J
						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
						NC only	NO: ③ ④ NC: ②	WLG2-LD-DK1EJ03
			$5^{\circ}{}^{+2^{\circ}}_{0^{\circ}}$			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
						NC only	NO: ③ ④ NC: ②	WLG2-LD-DTK1EJ03

Note: The photo shows a typical model.

Airtight 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°	WLCA2-55-N	WLCA2-55LD-N	WLCA2-55LE-N
			25±5°	WLCA2-255-N	WLCA2-255LD-N	WLCA2-255LE-N
			20° max.	WLCA2-2N55-N	WLCA2-2N55LD-N	WLCA2-2N55LE-N
			$10^{\circ}{}^{+2^{\circ}}_{-1^{\circ}}$	WLG2-55	WLG2-55LD	WLG2-55LE
			$5^{\circ}{}^{+2^{\circ}}_{0^{\circ}}$	WLGCA2-55	WLGCA2-55LD	WLGCA2-55LE
	Adjustable roller lever (R25 to 89 mm)	Screw terminals (Conduit size: G½)	15±5°	WLCA12-55-N	WLCA12-55LD-N	WLCA12-55LE-N
			25±5°	---	---	---
			20° max.	---	---	---
			$10^{\circ}{}^{+2^{\circ}}_{-1^{\circ}}$	---	---	---

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
						NC+NO	NO: ③ ④ NC: ① ②	WLCA2-55LDK43-N
			$10^{\circ}{}^{+2^{\circ}}_{-1^{\circ}}$			NO only	NO: ③ ④	WLG2-55LDK13
						NC+NO	NO: ③ ④ NC: ① ②	WLG2-55LDK43
			$5^{\circ}{}^{+2^{\circ}}_{0^{\circ}}$			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
				Smartclick	DC	NC+NO	NO: ③ ④ NC: ① ②	WLCA2-55LD-DTGJ-N
			$10^{\circ}{}^{+2^{\circ}}_{-1^{\circ}}$	Threaded (M12)	DC	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
						NC only	NO: ③ ④ NC: ②	WLG2-55LD-DK1EJ03
				Smartclick		NO only	NO: ③ ④	WLG2-55LD-M1TJ
						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
						NC only	NO: ③ ④ NC: ②	WLG2-55LD-DTK1EJ03

Note: The photo shows a typical model.

Plunger Actuators

Standard built-in switch

Appearance	Actuator	Terminal shape	Pretravel (PT)	Without operation indicator	With operation indicator	
					LED	Neon lamp
				Model	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.	WLSD-N	WLSD-LD-N	WLSD-LE-N
	Horizontal-roller plunger			WLSD2-N	WLSD2-LD-N	WLSD2-LE-N
	Horizontal-ball plunger			WLSD3-N	WLSD3-LD-N	WLSD3-LE-N

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
						NC+NO	NO: ③ ④ NC: ① ②	WLD28-LDK43-N
		Pre-wired connector type				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

Airtight Built-in Switch

Appearance	Actuator	Terminal shape	Pretravel (PT)	Without operation indicator	With operation indicator	
					LED	Neon lamp
				Model	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.	WLSD-55-N	WLSD-55LD-N	---
	Horizontal-roller plunger		2.8 mm max.	WLSD2-55-N	WLSD2-55LD-N	---

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
						NC+NO	NO: ③ ④ NC: ① ②	WLD28-55LDK43-N
		Pre-wired connectors type				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

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
			$10°^{+2°}_{-1°}$	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

Airtight Built-in Switch Specifications

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-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	---

Fork Lock Lever

Appearance	Actuator	Terminal shape	Pretravel (PT)	Without operation indicator	With operation indicator	
					LED	Neon lamp
				Model	Model	Model
	Fork Lock Lever 1	Screw terminals (Conduit size: G½)	55° max.	WLCA32-41-N	WLCA32-41LD-N	WLCA32-41LE-N
	Fork Lock Lever 2		55° max.	WLCA32-42-N	---	WLCA32-42LE-N
	Fork Lock Lever 3		55° max.	WLCA32-43-N	WLCA32-43LD-N	WLCA32-43LE-N
	Fork Lock Lever 4		55° max.	WLCA32-44-N	---	---

Specifications

Ratings

Screw terminals

Without Operation Indicator

Ratings		Non-inductive load (A)								Inductive load (A)							
		Basic models (WL-N)				High-sensitivity and High-precision models (WL)				Basic models (WL-N)				High-sensitivity and High-precision models (WL)			
		Resistive load		Lamp load		Resistive load		Lamp load		Inductive load		Motor load		Inductive load		Motor load	
Voltage (V)		NC	NO	NC	NO	NC	NO	NC	NO	NC	NO	NC	NO	NC	NO	NC	NO
AC	125	10		3	1.5	5		---		10		5	2.5	---		---	
	250	10		2	1	5		---		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	0.4		---		0.8		0.2		---		---	
	250	0.4		0.1	0.1	0.2		---		0.4		0.1		---		---	

With Operation Indicator (LED)

Ratings		Non-inductive load (A)								Inductive load (A)							
		Basic models (WL-N)				High-sensitivity and High-precision models (WL)				Basic models (WL-N)				High-sensitivity and High-precision models (WL)			
		Resistive load		Lamp load		Resistive load		Lamp load		Inductive load		Motor load		Inductive load		Motor load	
Voltage (V)		NC	NO	NC	NO	NC	NO	NC	NO	NC	NO	NC	NO	NC	NO	NC	NO
AC	115	10		3	1.5	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		0.4		---		0.8		0.1		---		---	

With Operation Indicators (Neon Lamps)

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

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 (WL)
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

Direct-wired connector and Pre-wired Connector Type

Connector DC Specifications: With Operation Indicators (LEDs)

Ratings		Non-inductive load (A)								Inductive load (A)							
		Basic models (WL-N)				High-sensitivity and High-precision models (WL)				Basic models (WL-N)				High-sensitivity and High-precision models (WL)			
		Resistive load		Lamp load		Resistive load		Lamp load		Inductive load		Motor load		Inductive load		Motor load	
Voltage (V)		NC	NO	NC	NO	NC	NO	NC	NO	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	0.4		---		0.8		0.2		---		---	

Connector AC Specifications: With Operation Indicators (LEDs)

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

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

Allowable Inrush Current/Minimum Applicable Load

Operating characteristics type		Basic models (WL-N)	High-sensitivity and High-precision models (WL)
Inrush current	NC	3 A max.	
	NO	3 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 (WL)
Permissible operating frequency	Mechanical	120 operations/minute	
	Electrical	30 operations/minute	
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	
Shock	Destruction	1,000 m/s² max.	
	Malfunction	300 m/s² max. *2	
Durability *1	Mechanical	15,000,000 operations min.	10,000,000 operations min.
	Electrical	750,000 operations min. (3 A at 250 VAC, resistive load), but for high-precision models:	500,000 operations min. (3 A at 115 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		IP67	
Weight		Approx. 255 g (in case of WLCA2-N)	Approx. 270 g (in case of WLGCA2)

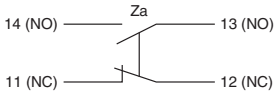
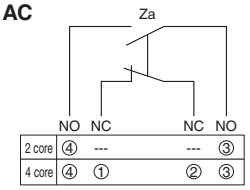
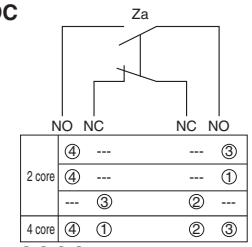
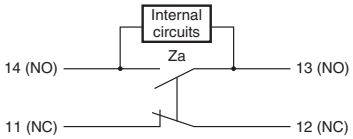
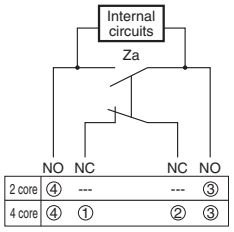
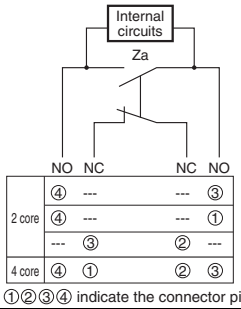
Note: The above figures are initial values.
*1. The values are calculated at an operating temperature of +5°C to +35°C, and an operating humidity of 40% to 70%RH. Contact your OMRON sales representative for more detailed information on other operating environments.
*2. Except Switches with Flexible Rod Actuators.

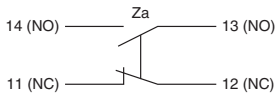
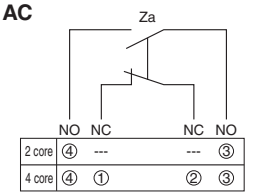
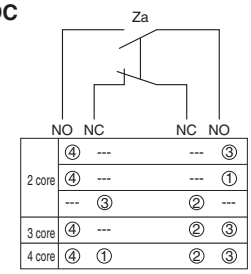
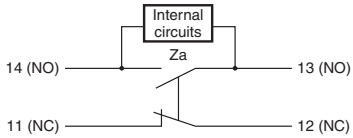
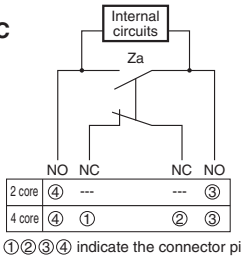
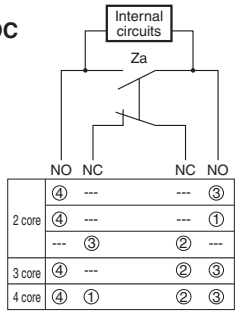
Operating characteristics type		Basic models (WL-N)		High-sensitivity and High-precision models (WL)	
Wiring Specifications		Screw terminals	Direct-wire connector/ Pre-wired Connector Models	Screw terminals	Direct-wire connector/ Pre-wired Connector Models
Dielectric strength	Between terminals of the 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 currentcarrying 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		**AC**  ①②③④ indicate the connector pin number. **DC**  ①②③④ indicate the connector pin number.
With operation indicator (Light-ON when not operating *)		**AC**  ①②③④ indicate the connector pin number. **DC**  ①②③④ indicate the connector pin number.

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

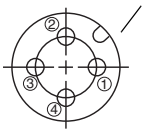
* Light-ON when not operating means the operation indicator is lit when the actuator is free and is not lit when the actuator rotates or is pushed down and the Switch contacts contact to NO.
The above shows details of the switch interior. External wires (external resistances) are not shown. For details, refer to *Operation* on page 18.

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.

Connector Pin Layout Diagram

AC Positioning piece *

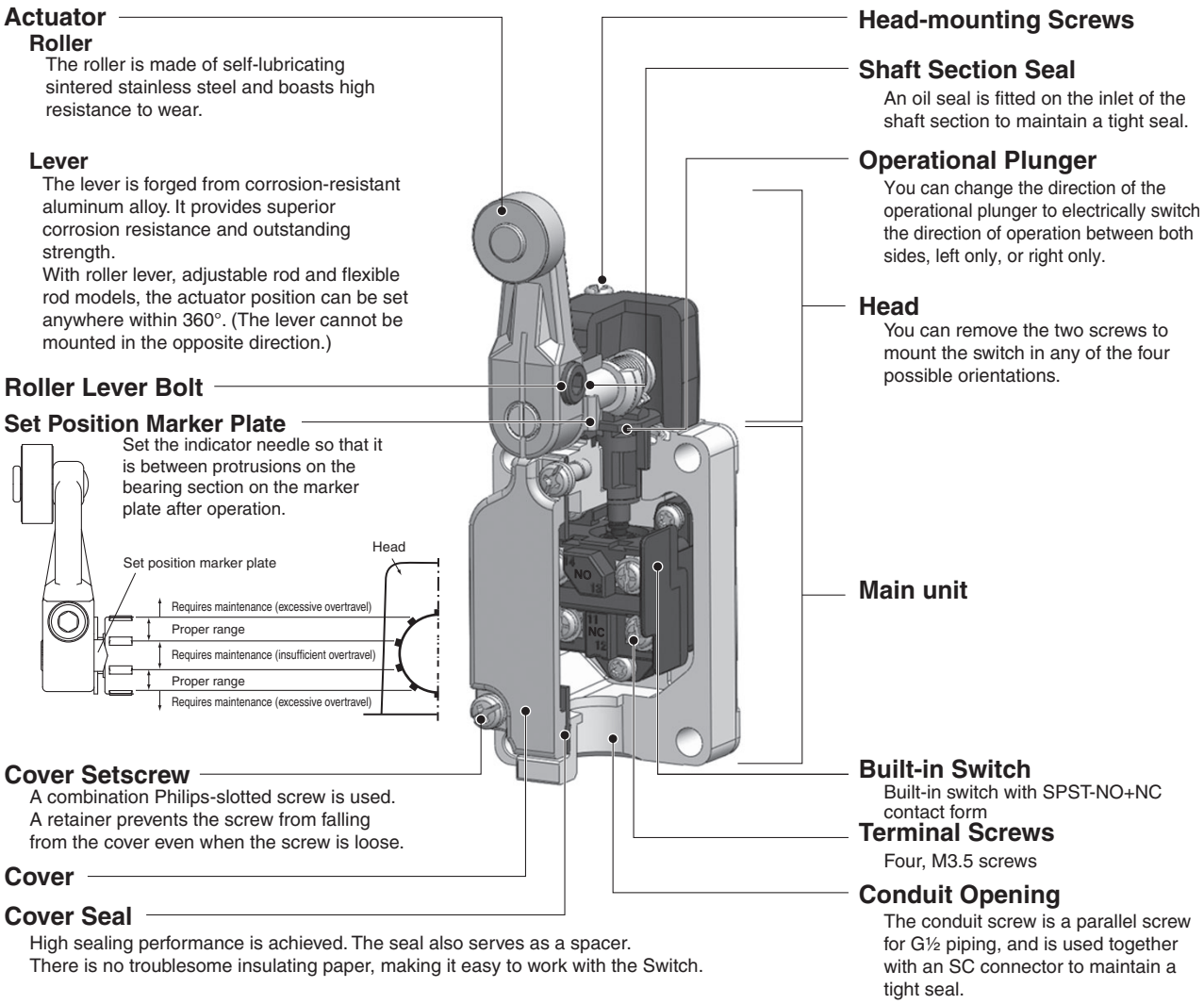
DC Positioning piece *



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

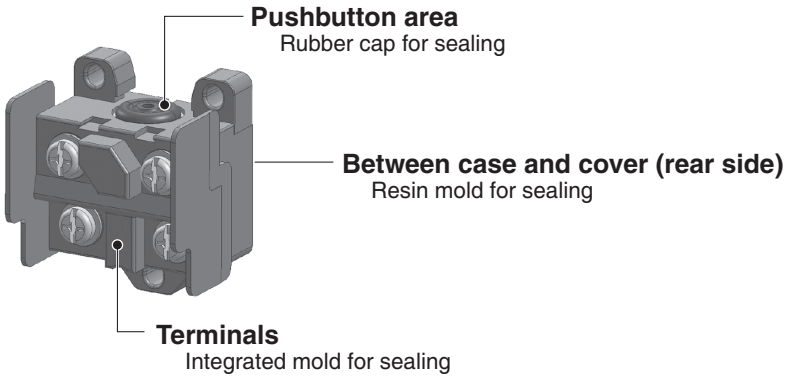
Structure and Nomenclature

WLCA2-N



Built-in switch

Airtight built-in switch (-55)



WLG2

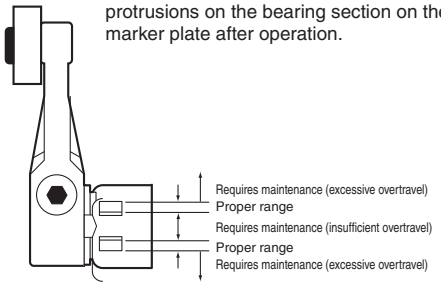
Actuator

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.)

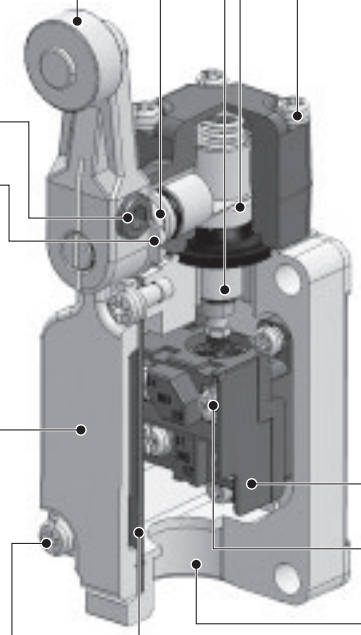
Roller Lever Setscrew

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

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.



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

Bearing
The bearing smooths the plunger movement.

Operational Plunger

Head-mounting Screws

Head
By removing the four corner screws, the head can be mounted in any of four orientations.

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.

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

Operation Indicator

Indicator Covers

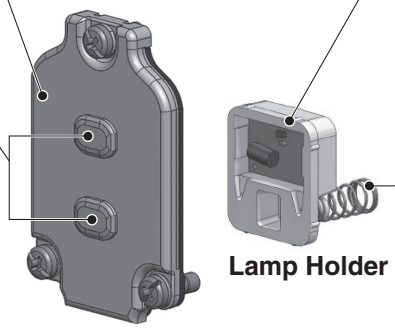
The indicator covered if outsert molded from diecast aluminum and has outstanding sealing properties.

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°.
(However, Direct-wire connector, Pre-wired Connector, Three-core, and Four-core Switches cannot be switched to light-ON when operating (NC wiring).)



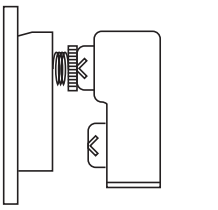
Lamp Holder

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.

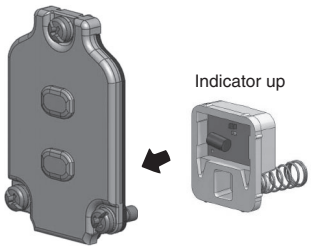
Contact Spring

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.

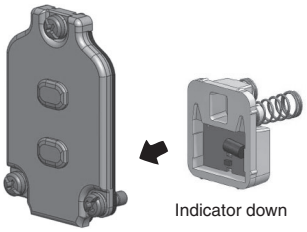


Light-ON when Not Operating

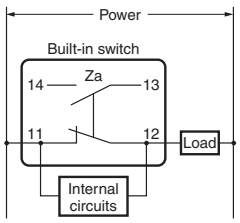
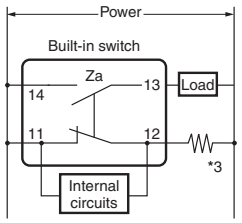
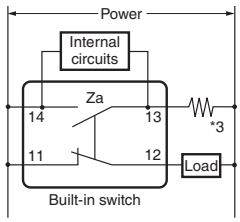
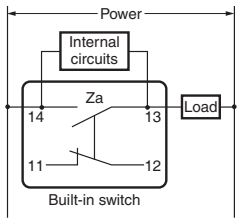
Light-ON when Operating



Light-ON when Not Operating



Operation

Operation indicator type	Operation type	When load is connected to NC (11-12)	When load is connected to NO (13-14)
LED (WL□-LD-N) Neon lamp (WL□-LE-N)	Light-ON when operating *1		
	Light-ON when not operating *2		

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

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

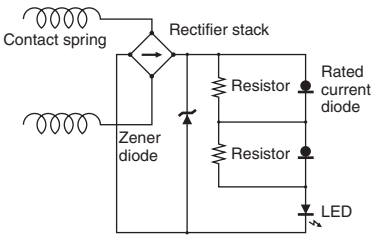
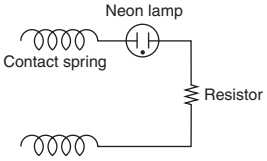
*3. The wiring varies depending on when the loads and indicator lamps are operating.
For contacts that include an internal circuit (indicator circuit), connect a resistor for protection.
To find the resistance value and capacity, calculate using the voltage, current, and power that is actually used.
· Resistance (Ω) = Voltage (V) ÷ Current (I)
· Power (W) = Current (A) × Voltage (V)
· Capacity (W) = Power (W) × Margin (approximately 2×)
Use the values below for reference.

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.

Model	Indicator		Voltage	Protection resistance (example)	
	Type	Leakage current		Resistance	Capacity
WL□LD□-N	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.
WL□LE□-N	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

LED (WL□-LD-N)	
Neon lamp (WL□-LE-N)	

Dimensions

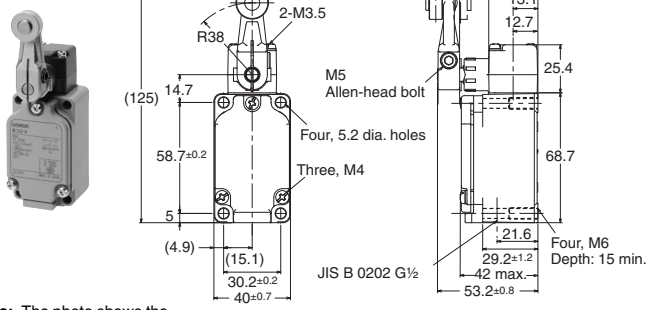
(Unit: mm)

Roller Lever

Screw terminals

Roller lever R38

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

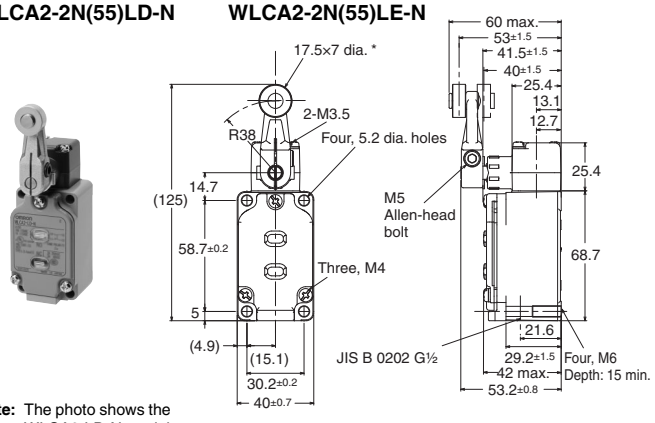


Note: The photo shows the WLCA2-N model.

* Stainless sintered roller

Roller lever R38 With operation indicator

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

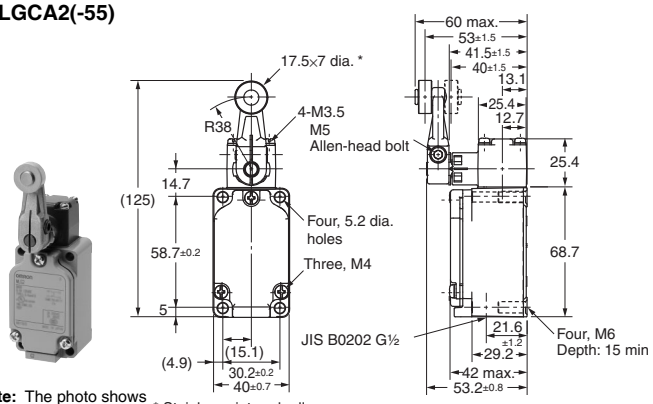


Note: The photo shows the WLCA2-LD-N model.

* Stainless sintered roller

Roller lever R38

WLG2(-55)
WLGCA2(-55)

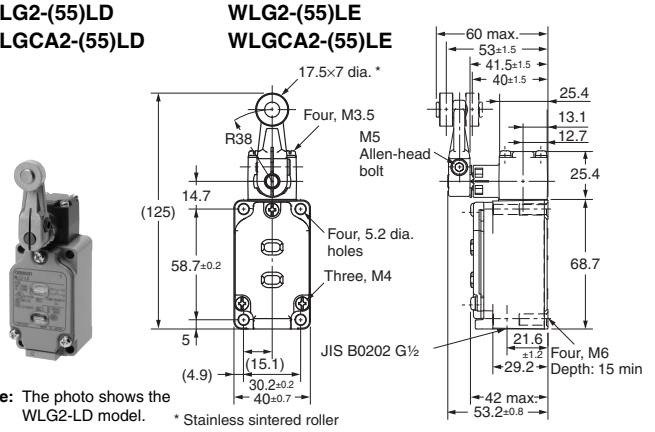


Note: The photo shows the WLG2 model.

* Stainless sintered roller

Roller lever R38 With operation indicator

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



Note: The photo shows the WLG2-LD model.

* Stainless sintered roller

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

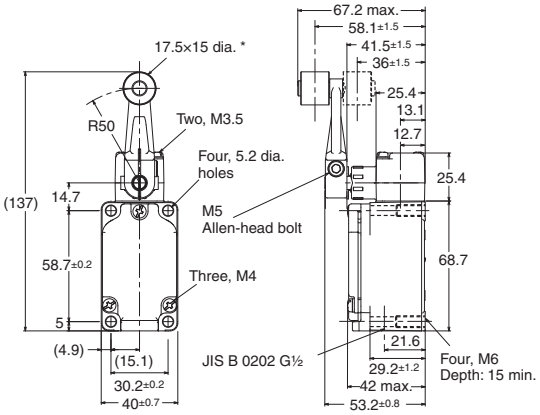
Operating characteristics

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.	$10^{\circ}{}^{+2^{\circ}}_{-1^{\circ}}$	$5^{\circ}{}^{+2^{\circ}}_{0^{\circ}}$
Overtravel	**OT**	**min.**	70°	60°	70°	65°	40°
Movement Differential	**MD**	**max.**	12°	16°	10°	7°	3°

Screw terminals

Roller lever R50

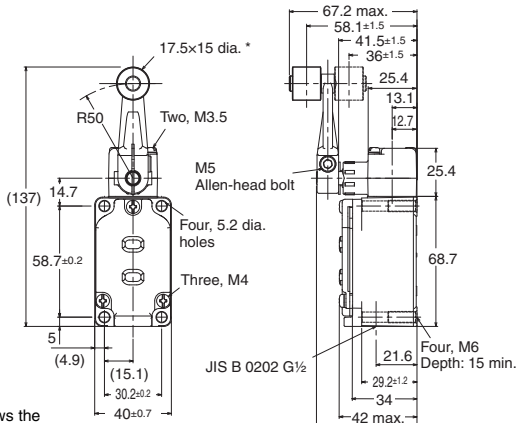
WLCA2-7-N



* Stainless sintered roller

Roller lever R50 With operation indicator

LED
WLCA2-7LD-N
Neon lamp
WLCA2-7LE-N

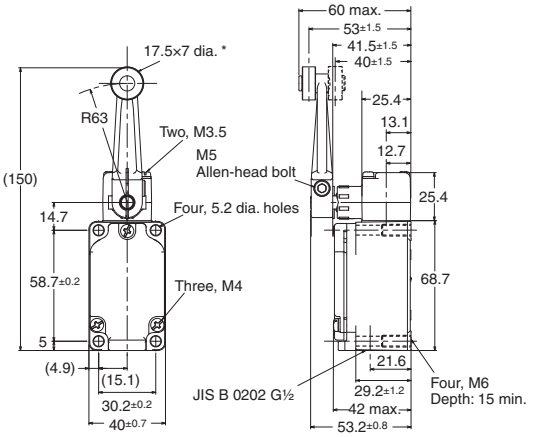


Note: The photo shows the WLCA2-7LD-N model.

* Stainless sintered roller

Roller lever R63

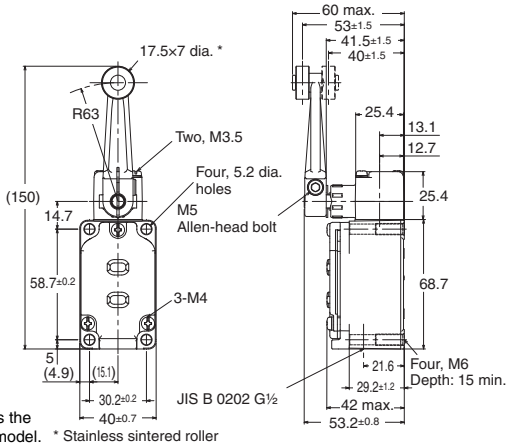
WLCA2-8-N



* Stainless sintered roller

Roller lever R63 With operation indicator

LED
WLCA2-8LD-N
Neon lamp
WLCA2-8LE-N



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

* Stainless sintered roller

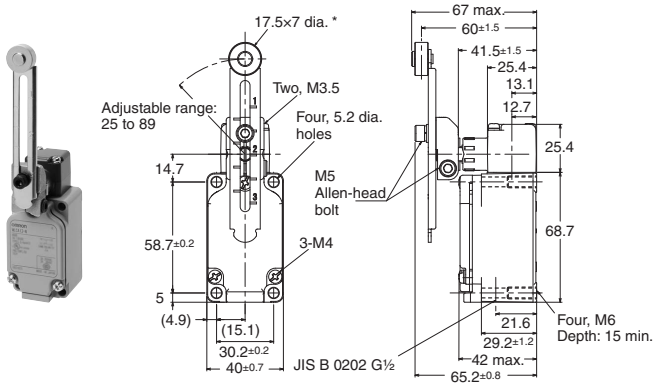
Note: Unless otherwise indicated, a tolerance of ±0.4 mm applies to all dimensions.

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±5°	15±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

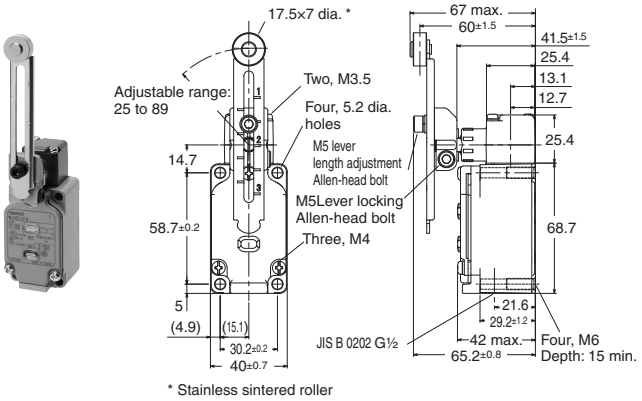


Note: The photo shows the WLCA12-N model.

Adjustable Roller Lever (R25 to 89 mm)

With operation indicator

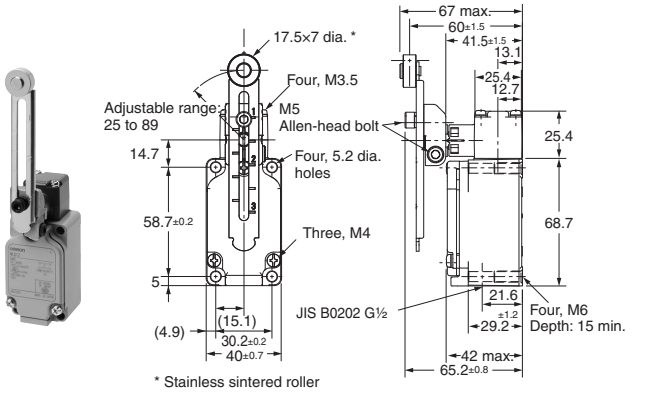
LED	Neon lamp
WLCA12-(55)LD-N	WLCA12-(55)LE-N
WLCA12-2LD-N	WLCA12-2LE-N
WLCA12-2NLD-N	WLCA12-2NLE-N



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

Adjustable Roller Lever (R25 to 89 mm)

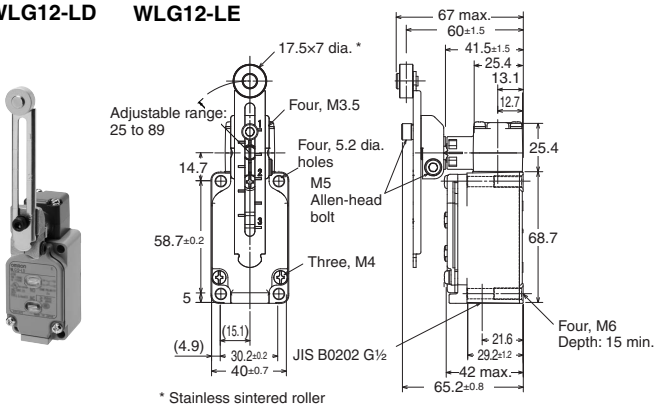
WLG12



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 ±0.4 mm applies to all dimensions.

Operating characteristics

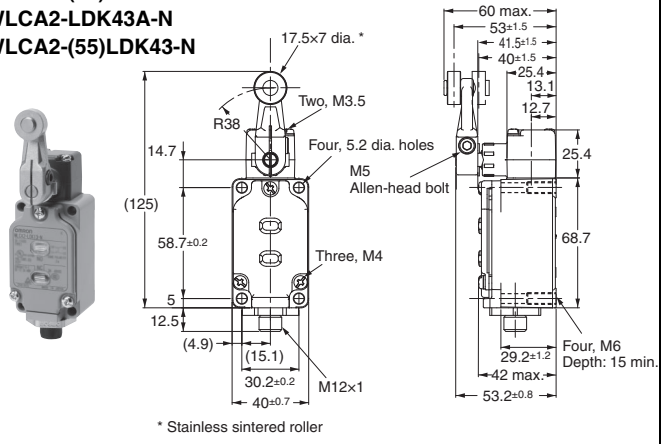
Model			WLCA12 (-55) -N * WLCA12- (55) LD-N * WLCA12- (55) LE-N *	WLCA12-2-N * WLCA12-2LD-N * WLCA12-2LE-N *	WLCA12-2N-N * WLCA12-2NLD-N * WLCA12-2NLE-N *	WLG12 * WLG12-LD * WLG12-LE *
Operating force	OF	max.	13.34 N	13.34 N	13.34 N	9.81 N
Release force	RF	min.	1.18 N	1.18 N	1.18 N	0.98 N
Pretravel	PT		15±5°	25±5°	20° max.	$10^{\circ}{}^{+2^{\circ}}_{-1^{\circ}}$
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

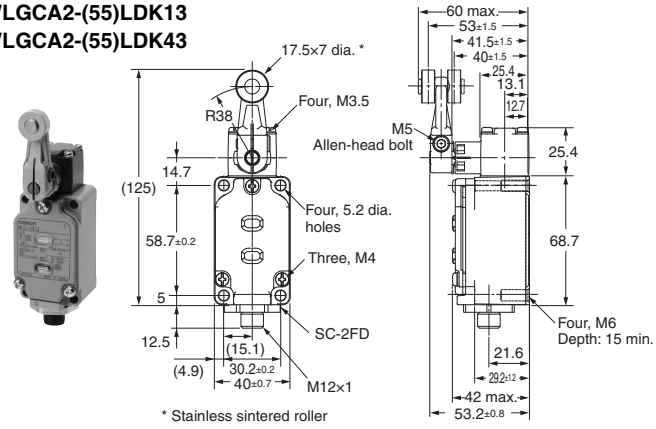
LED
WLCA2-LDK13A-N
WLCA2-(55)LDK13-N
WLCA2-LDK43A-N
WLCA2-(55)LDK43-N



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 ±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
Release force	**RF**	**min.**		1.18 N	0.98 N
Pretravel	**PT**			15±5°	$10^{\circ}{}^{+2^{\circ}}_{-1^{\circ}}$
Overtravel	**OT**	**min.**		70°	65°
Movement Differential	**MD**	**max.**		12°	7°

Pre-wired connectors

Roller lever R38 With operation indicator

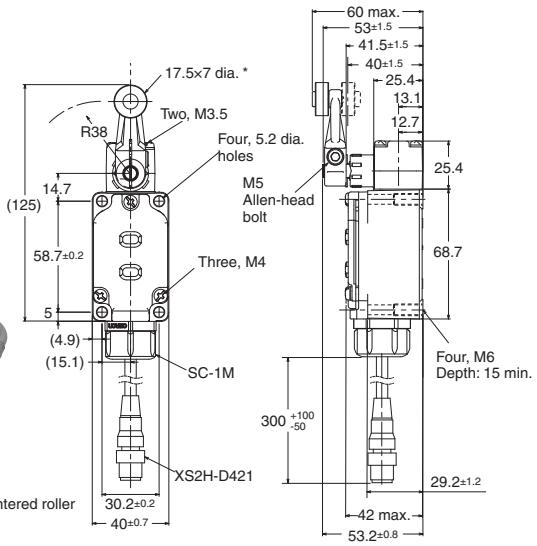
LED

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



* Stainless sintered roller

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

Roller lever R38 With operation indicator

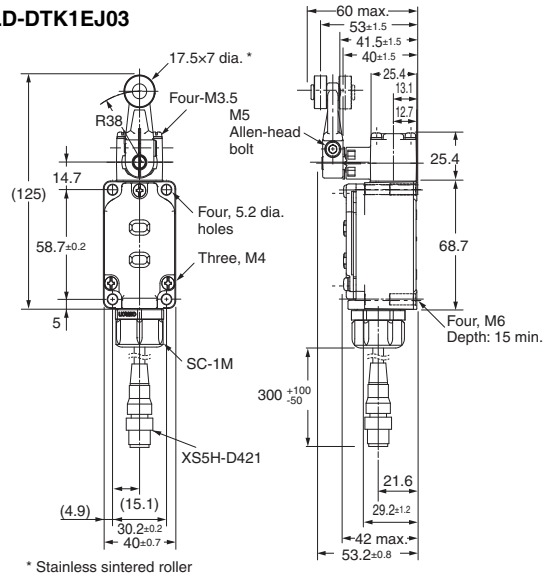
LED

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



* Stainless sintered roller

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

Operating characteristics

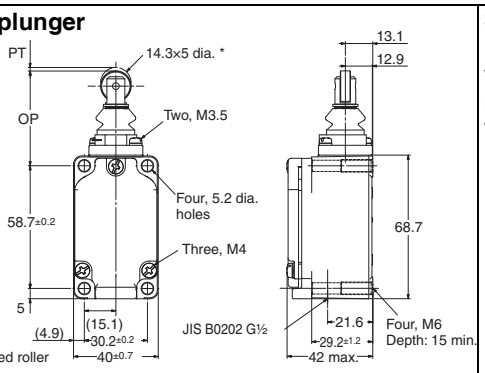
Model			WLCA2-(55)LD-M1J-N WLCA2-(55)LD-M1GJ-N WLCA2-(55)LD-M1JB-N WLCA2-(55)LD-DGJ-N WLCA2-(55)LD-DK1EJ-N WLCA2-(55)LD-DTGJ-N WLCA2-LD-DTK1EJ-N	WLG2-(55)LD-M1J WLG2-(55)LD-M1GJ WLG2-(55)LD-M1JB WLG2-(55)LD-DGJ03 WLG2-(55)LD-DK1EJ03 WLG2-(55)LD-M1TJ WLG2-(55)LD-M1TGJ WLG2-(55)LD-M1TJB WLG2-(55)LD-DTGJ03 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°	$10^{\circ}{}^{+2^{\circ}}_{-1^{\circ}}$
Overtravel	**OT**	**min.**	70°	65°
Movement Differential	**MD**	**max.**	12°	7°

Plunger Actuators

Screw terminals

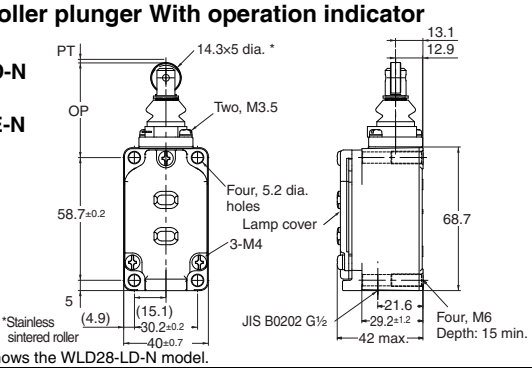
Sealed top-roller plunger

WLD28(-55)-N



Sealed top-roller plunger With operation indicator

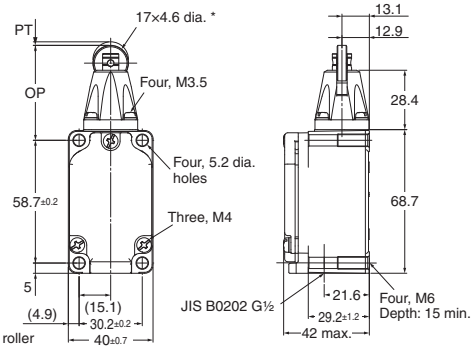
LED
WLD28-(55)LD-N
Neon lamp
WLD28-(55)LE-N



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

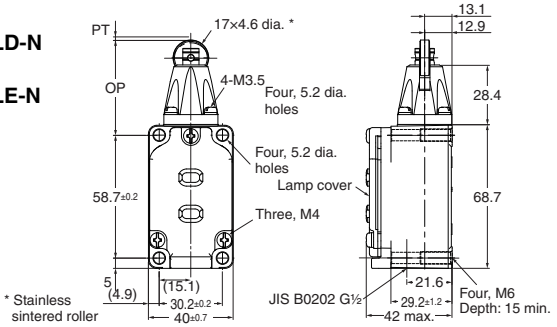
Top-roller plunger

WLD2(-55)-N



Sealed top-roller plunger With operation indicator

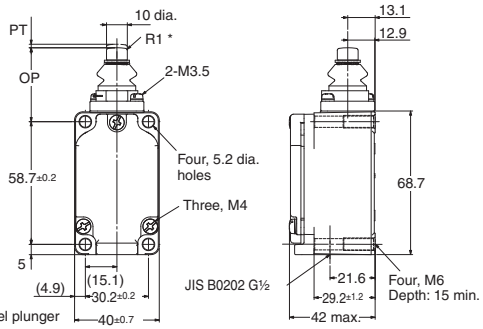
LED
WLD2-(55)LD-N
Neon lamp
WLD2-(55)LE-N



Note: The photo shows the WLD2-LE-N model.

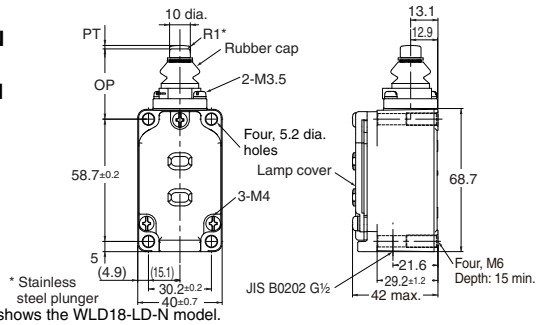
Sealed top plunger

WLD18-N



Sealed top-roller plunger With operation indicator

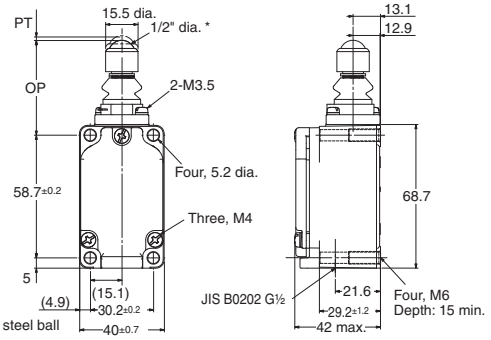
LED
WLD18-LD-N
Neon lamp
WLD18-LE-N



Note: The photo shows the WLD18-LD-N model.

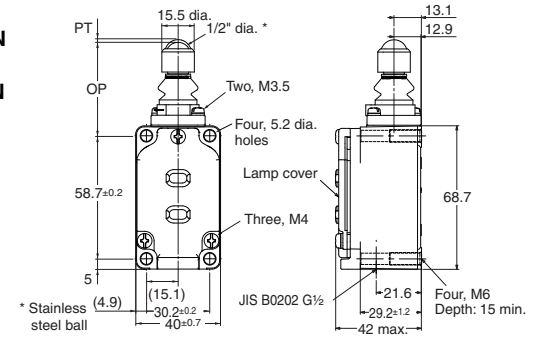
Sealed top-ball plunger

WLD38-N



Sealed top-ball plunger With operation indicator

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



Note: The photo shows the WLD38-LD-N model.

Note: Unless otherwise indicated, a tolerance of ±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

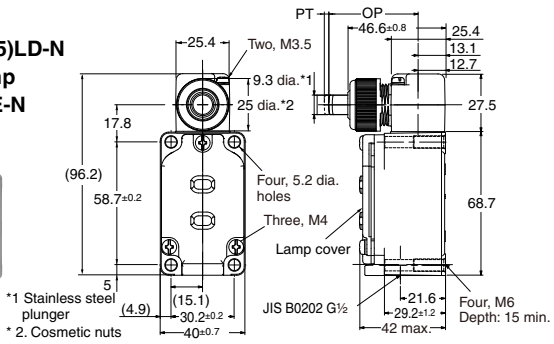
Screw terminals

Horizontal plunger

WLSD(-55)-N

Horizontal plunger With operation indicator

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



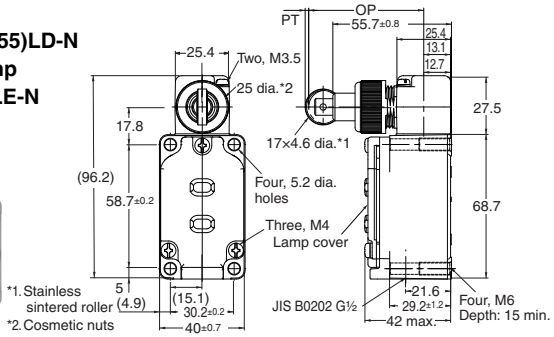
Note: The photo shows the WLSD-LD-N model.

Horizontal-roller plunger

WLSD2(-55)-N

Horizontal-roller plunger With operation indicator

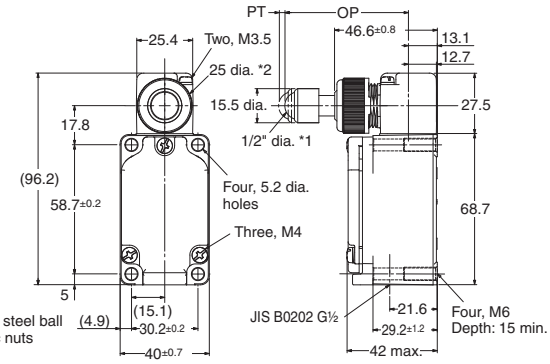
LED
WLSD2-(55)LD-N
Neon lamp
WLSD2-LE-N



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

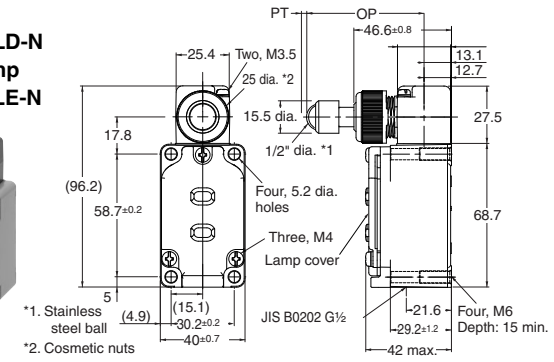
Horizontal-ball plunger

WLSD3-N



Horizontal-ball plunger With operation indicator

LED
WLSD3-LD-N
Neon lamp
WLSD3-LE-N



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

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

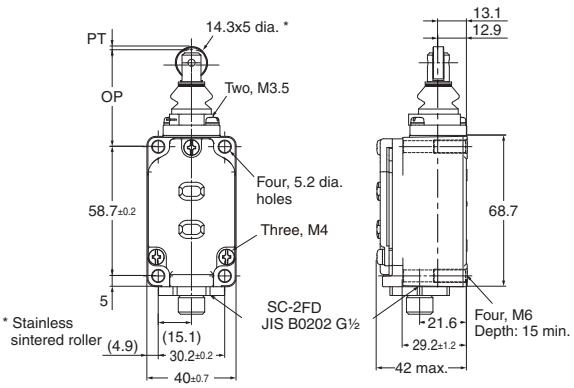
Operating characteristics

			Model	WLSD(-55)-N WLSD-(55)LD-N WLSD-LE-N	WLSD2(-55)-N WLSD2-(55)LD-N WLSD2-LE-N	WLSD3-N WLSD3-LD-N WLSD3-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
Total travel position	TTP	max.		---	---	---

Direct-wire connector

Sealed top-roller plunger With operation indicator

LED
WLD28-(55)LDK13-N
WLD28-(55)LDK43-N



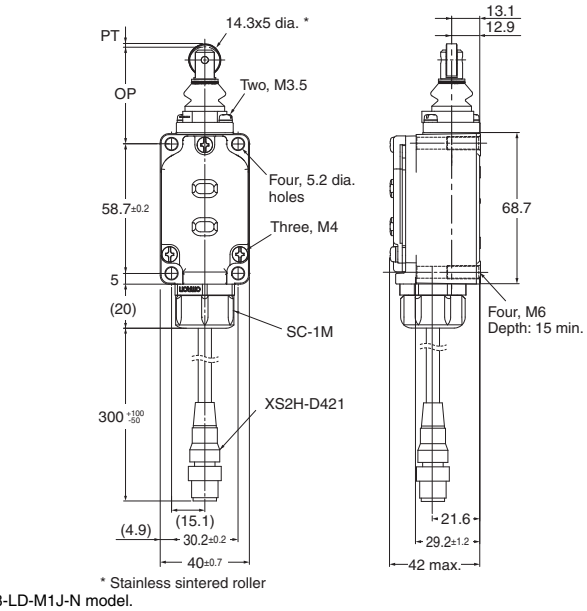
Note: The photo shows the WLD28-LDK13-N model.

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 ±0.4 mm applies to all dimensions.

Operating characteristics

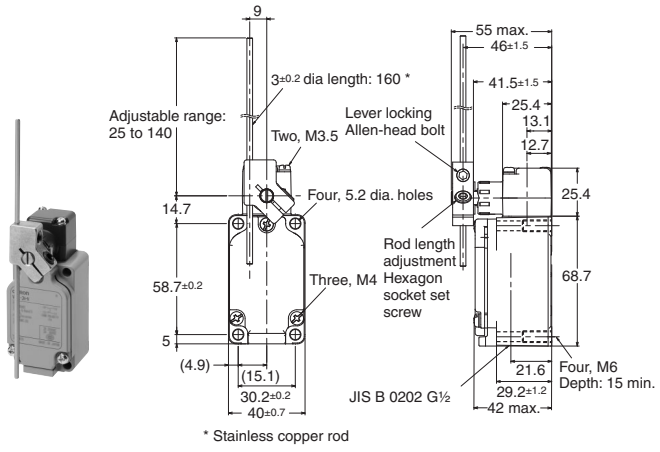
			Model
			WLD28-(55)LDK13-N WLD28-(55)LDK43-N WLD28-(55)LD-M1J-N WLD28-(55)LD-M1GJ-N WLD28-(55)LD-DGJ-N WLD28-(55)LD-DK1EJ-N
Operating force	**OF**	**max.**	16.67 N
Release force	**RF**	**min.**	4.41 N
Pretravel	**PT**	**max.**	1.7 mm
Overtravel	**OT**	**min.**	5.6 mm
Movement Differential	**MD**	**max.**	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

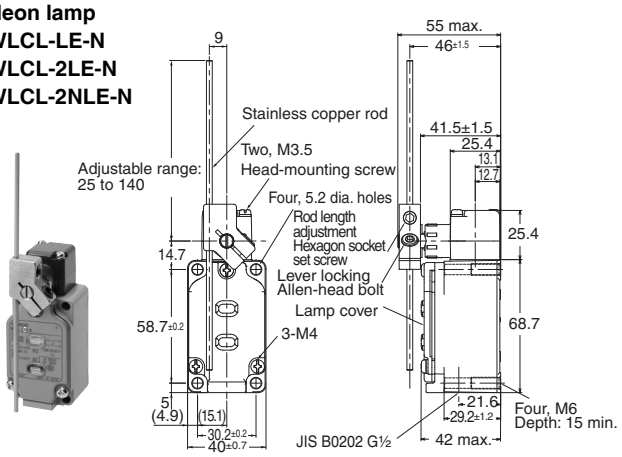


Note: The photo shows the WLCL-2N-N model.

Adjustable rod lever (25 to 140 mm)

With operation indicator

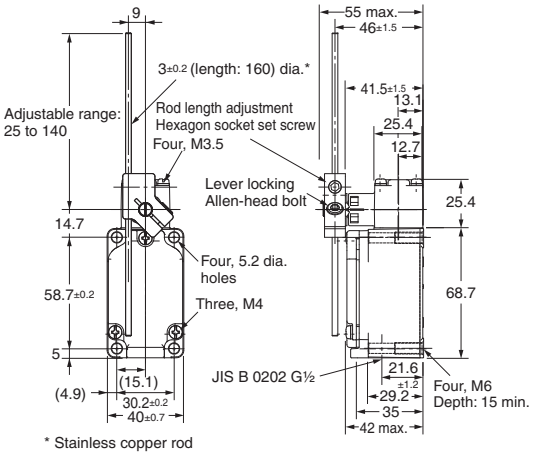
LED
WLCL-(55)LD-N
WLCL-2LD-N
WLCL-2NLD-N
Neon lamp
WLCL-LE-N
WLCL-2LE-N
WLCL-2NLE-N



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

Adjustable rod lever (25 to 140 mm)

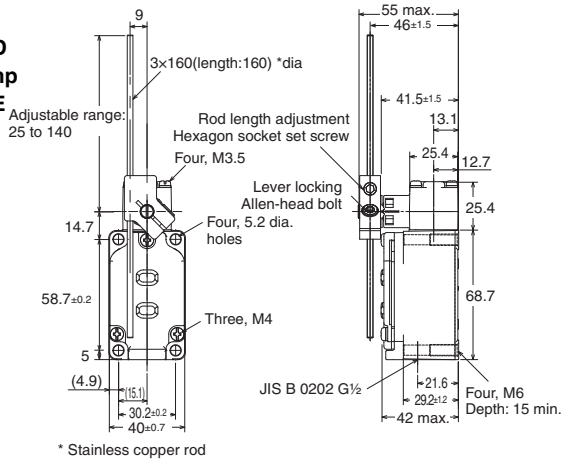
WLGL



Adjustable Roller Lever (25 to 140 mm)

With operation indicator

LED
WLGL-LD
Neon lamp
WLGL-LE



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

Operating characteristics

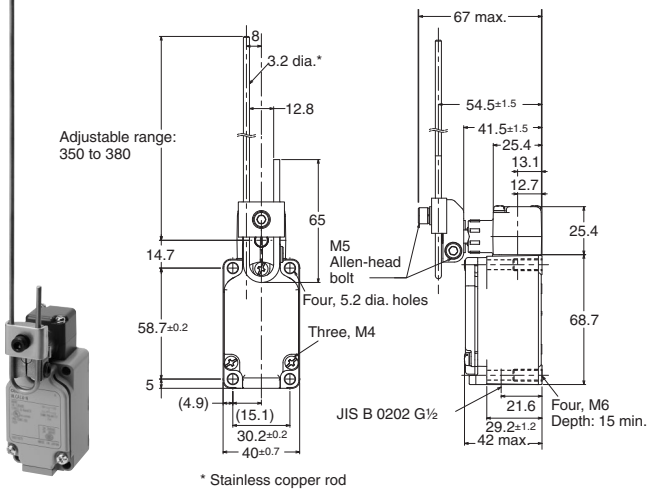
Model			WLCL(-55)-N *1 WLCL-LD-N *1 WLCL-LE-N *1	WLCL-2-N *1 WLCL-2LD-N *1 WLCL-2LE-N *1	WLCL-2N-N *1 WLCL-2NLD-N *1 WLCL-2NLE-N *1	WLGL *2 WLGL-LD *2 WLGL-LE *2
Operating force	OF	max.	1.39 N	1.39 N	1.39 N	2.84 N
Release force	RF	min.	0.27 N	0.27 N	0.27 N	0.25 N
Pretravel	PT		15±5°	25±5°	20° max.	$10^{\circ}{}^{+2^{\circ}}_{-1^{\circ}}$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

*1. The operating characteristics are measured at the lever length of 140 mm.
*2. This is the value when the rod length is 140 mm.

Screw terminals

Adjustable rod lever (350 to 380 mm)

WLCAL4-N

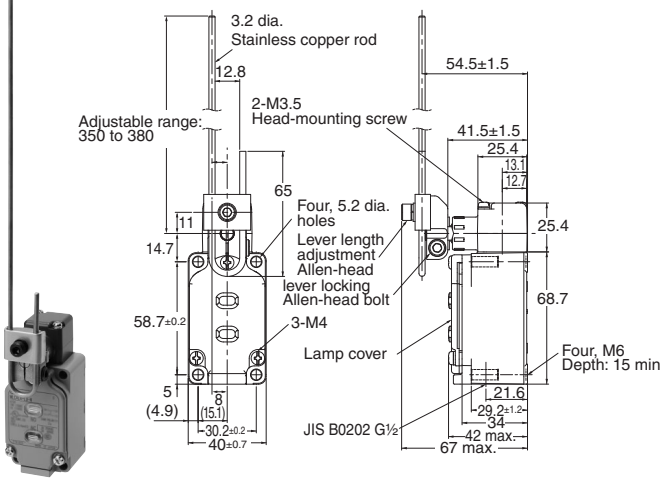


* Stainless copper rod

Adjustable Roller Lever (350 to 380 mm)

With operation indicator

LED
WLCAL4-LD-N
Neon lamp
WLCAL4-LE-N



Note: The photo shows the WLCAL4-LD-N model.

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

Operating characteristics

			Model	WLCAL4-N WLCAL4-LD-N WLCAL4-LE-N
Operating force	**OF**	**max.**		0.98 N
Release force	**RF**	**min.**		0.15 N
Pretravel	**PT**			15±5°
Overtravel	**OT**	**min.**		70°
Movement Differential	**MD**	**max.**		12°

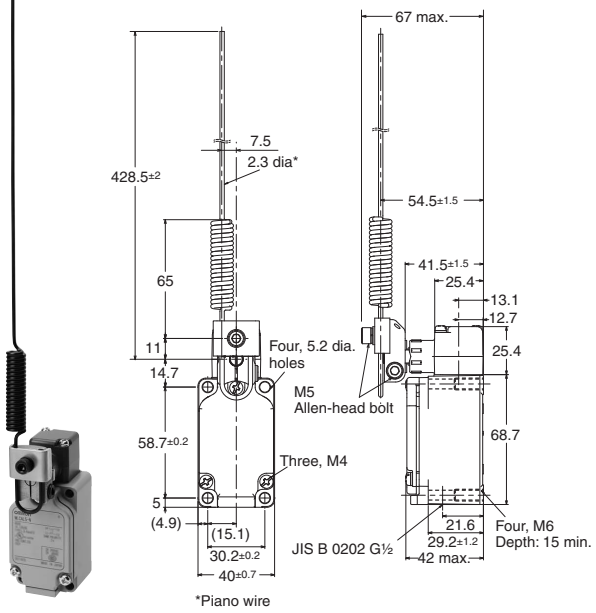
Note: 1. With WLCAL4-LD-N, WLCAL4-LE-N, WLCAL5-LD-N, and WLCAL5-LE-N, the actuator's tare is large, so depending on the installation direction, they may not be properly reset. Always install so that the actuator is facing downwards.

2. This is the value when the rod length is 380 mm.

Screw terminals

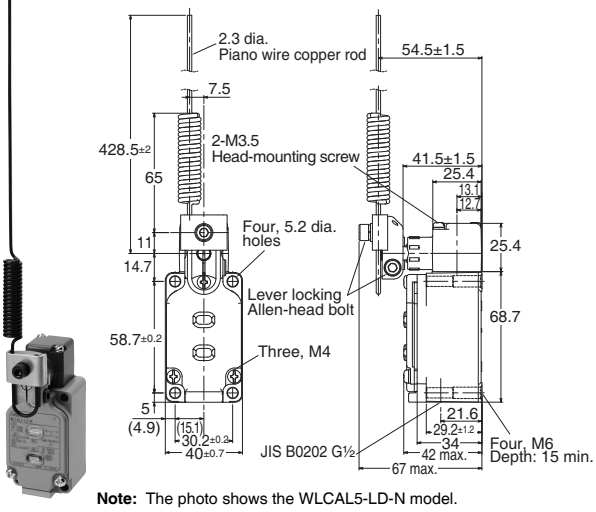
Rod spring lever

WLCAL5-N



Rod spring lever With operation indicator

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



Note: The photo shows the WLCAL5-LD-N model.

Note: Unless otherwise indicated, a tolerance of ±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: 1. With WLCAL4-LD-N, WLCAL4-LE-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.

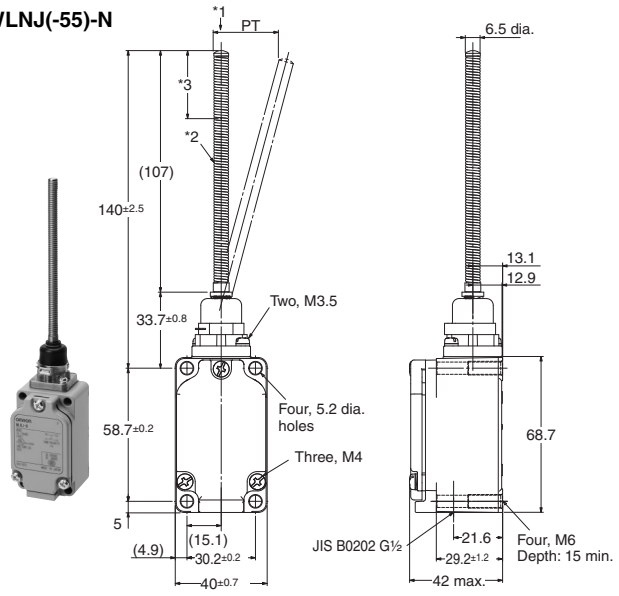
2. This is the value when the rod length is 380 mm.

Flexible Rod

Screw terminals

Coil spring

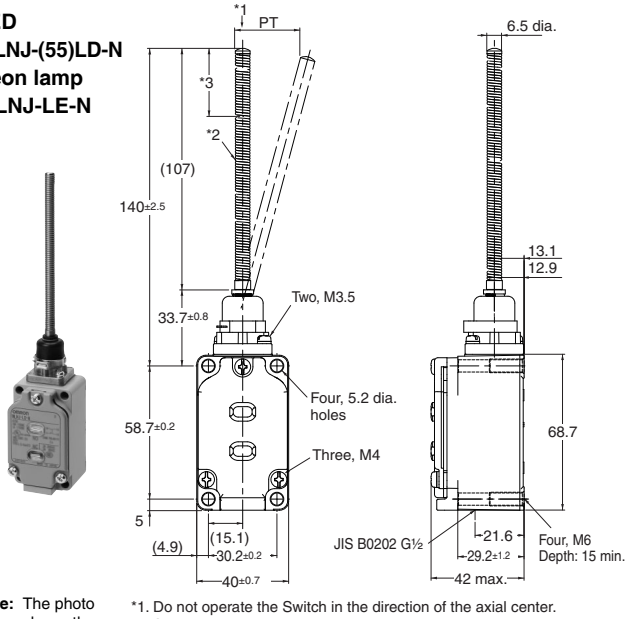
WLNJ(-55)-N



*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

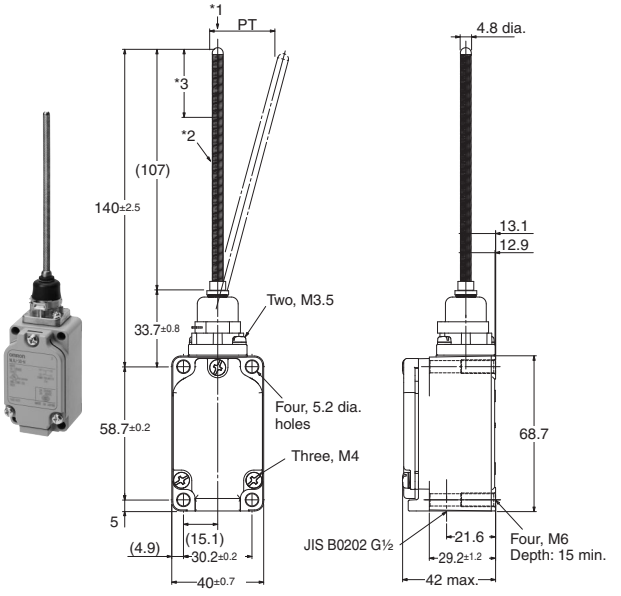


Note: The photo shows the WLNJ-LD-N model.

*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)

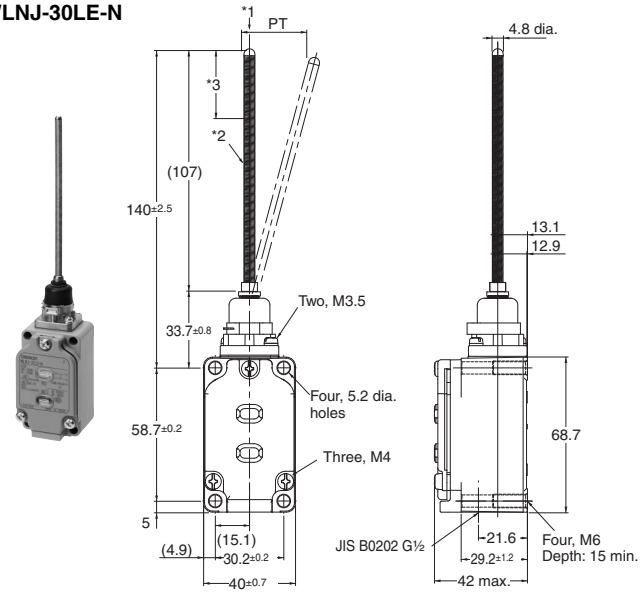
WLNJ-30-N



*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



*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: The photo shows the WLNJ-30LD-N model.

Note: Unless otherwise indicated, a tolerance of ±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 max.**	1.47 N	1.47 N
Pretravel	**PT**	20±10 mm	20±10 mm

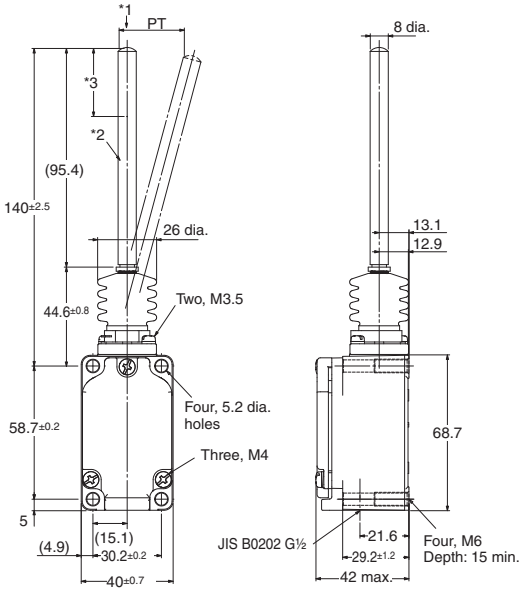
Note: These values are for the top end of the spring, rod, or wire.

Flexible Rod

Screw terminals

Resin rod

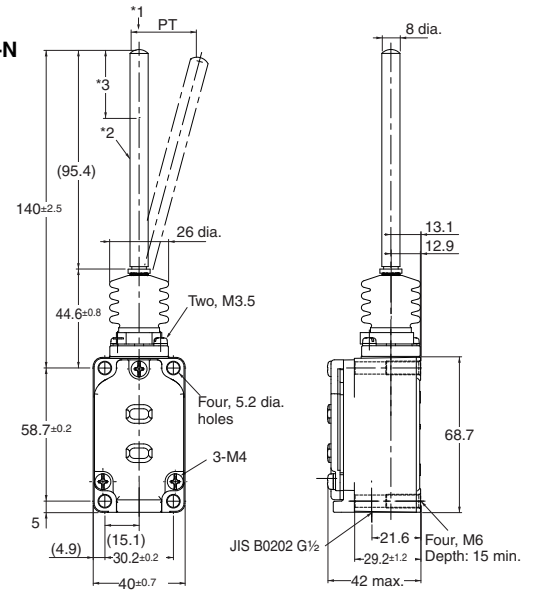
WLNJ-2(55)-N



*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

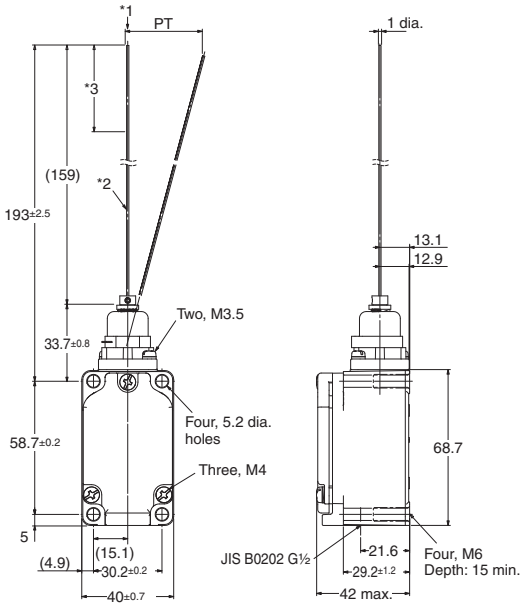


Note: The photo shows the WLNJ-2LD-N model.

*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

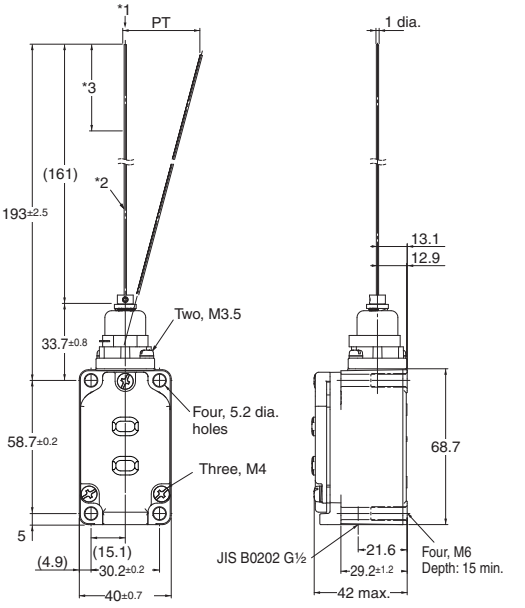
WLNJ-S2-N



*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 ±0.4 mm applies to all dimensions.

Operating characteristics

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

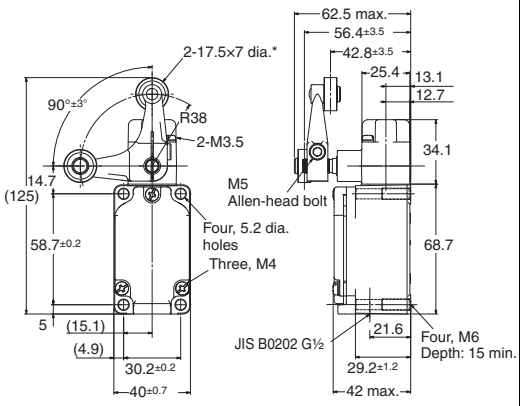
Note: These values are for the top end of the spring, rod, or wire.

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.

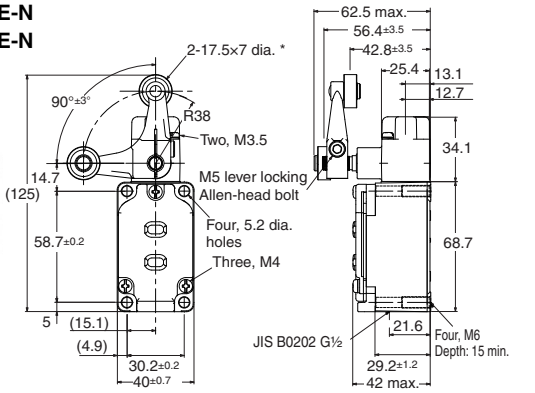


*Plastic Roller
(The WLCA32-041-N to WLCA32-044-N have stainless steel rollers.)

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 WLCA32-41L□-N is shown in the following diagram.



*Plastic Roller
(The WLCA32-041L□-N to WLCA32-044L□-N have stainless steel rollers.)

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

Note: Unless otherwise indicated, a tolerance of ±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±5°
Movement until switch operation	**max.**	55°
Movement after switch operation	**min.**	35°

Environment-resistant Limit Switches
WL-N/WL

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 81 to 86 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)
- 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)

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.
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-12			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) Housing/Sealed Rubber Specifications

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

(3) 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) Housing/Sealed Rubber Specifications Cannot be combined with symbols RP or P1.

(4) Wiring and Built-in Switch Specifications

Code	Terminal shape	Internal switch Specifications	Mold specifications
None	Screw terminals (Conduit size: G1/2)	Standard	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.)
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, cover mounting screws, and head mounting screws. (The cover cannot be removed, and head direction cannot be changed.) Fluorine rubber is used for all rubber parts.

(5) Indicator Specifications

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

* (2) Housing/Sealed Rubber Specifications Cannot be combined with symbols RP or P1.
(3) Temperature Specifications Cannot be combined with symbols TH or TC.

High-sensitivity and High-precision Models

WLG□ - □ □ □ □
(1) (2) (3) (4) (5)

(1) Actuator and Property Specifications

Code	Actuator		Pretravel (PT)
2	Roller lever	Roller lever: R38 mm High-sensitivity Models	$10^{\circ}{}^{+2^{\circ}}_{-1^{\circ}}$
CA2		Roller lever: R38 mm High-precision Models	$5^{\circ}{}^{-2^{\circ}}_{0^{\circ}}$
12		Adjustable Roller Lever (R25 to 89 mm) high-sensitivity model	$10^{\circ}{}^{+2^{\circ}}_{-1^{\circ}}$
L	Flexible rod	Adjustable rod lever (25 to 140 mm) high-sensitivity model	$10^{\circ}{}^{+2^{\circ}}_{-1^{\circ}}$

(2) Built-in Switch/Housing/Sealed Rubber

Code	Specifications
None	Standard Built-in Switch
55	Airtight built-in switch
RP	Corrosion-resistant type
P1	Weather-resistant type

(3) 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) Built-in Switch/Housing/Sealed Rubber Specifications Cannot be combined with symbols RP or P1.

(4) Wiring and Built-in Switch Specifications

Code	Terminal shape	Built-in switch specification	Mold specifications
None	Screw terminals (Conduit size: G1/2)	Standard	None
139	Direct-wire cable		Molded conduit opening and cover. (The cover cannot be removed.)
140	Direct-wire cable	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, cover mounting screws, and head mounting screws. (The cover cannot be removed, and head direction cannot be changed.) Fluorine rubber is used for all rubber parts.

(5) Indicator Specifications

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

* (2) Built-in Switch/Housing/Sealed Rubber Specifications
Symbols: RP, P1
(3) Temperature Specifications Cannot be combined with symbols TH or TC.

Ordering Information

Roller Lever

Apperance	Actuator	Terminal shape	Built-in switch specification/ Temperature Specifications	Pretravel (PT)	Without operation indicator	With operation indicator	
						Indicator *	LED
					Model	Wiring Specifications	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°$^{+2°}_{-1}$	WLG2-TH	---	---
				5°$^{+2°}_{0°}$	WLGCA2-TH	---	---
			Cold-resistant type	15±5°	WLCA2-TC-N	---	---
				25±5°	WLCA2-2TC-N	---	---
				20° max.	WLCA2-2NTC-N	---	---
				10°$^{+2°}_{-1°}$	WLG2-TC	---	---
				5°$^{+2°}_{0°}$	WLGCA2-TC	---	---
			Corrosion-resistant type	15±5°	WLCA2-RP-N	---	---
				10°$^{+2°}_{-1°}$	WLG2-RP	---	---
				5°$^{+2°}_{0°}$	WLGCA2-RP	---	---
			Weather-resistant type	15±5°	WLCA2-P1-N	---	---
				10°$^{+2°}_{-1°}$	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°$^{+2°}_{-1}$	WLG2-RP60	NC wiring	WLG2-RP60LD2
						NO wiring	WLG2-RP60LD3
				5°$^{+2°}_{0}$	WLGCA2-RP60	NC wiring	WLGCA2-RP60LD2
						NO wiring	WLGCA2-RP60LD3
			Corrosion-resistant type	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°$^{+2°}_{-1°}$	WLG2-139	NO wiring	WLG2-139LD3
				5°$^{+2°}_{0}$	WLGCA2-139	NC wiring	WLGCA2-139LD2
						NO wiring	WLGCA2-139LD3
			Molded terminal -140	15±5°	WLCA2-140-N	---	---
				20° max.	WLCA2-2N140-N	---	---
				10°$^{+2°}_{-1°}$	WLG2-140	NC wiring	WLG2-140LD2
						NO wiring	WLG2-140LD3
			Molded terminal -141	15±5°	WLCA2-141-N	NC wiring	WLCA2-141LD2-N
						NO wiring	WLCA2-141LD3-N
				10°$^{+2°}_{-1°}$	WLG2-141	NC wiring	WLG2-141LD2
						NO wiring	WLG2-141LD3
				5°$^{+2°}_{0}$	WLGCA2-141	NO wiring	WLGCA2-141LD3

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: G1/2)	Heat-resistant type	15±5°	WLCA12-TH-N
				25±5°	WLCA12-2TH-N
				20° max.	WLCA12-2NTH-N
				10°$^{+2°}_{-1°}$	WLG12-TH
			Cold-resistant type	15±5°	WLCA12-TC-N
				25±5°	WLCA12-2TC-N
				20° max.	WLCA12-2NTC-N
				10°$^{+2°}_{-1°}$	WLG12-TC
			Corrosion-resistant type	15±5°	WLCA12-RP-N
				10°$^{+2°}_{-1°}$	WLG12-RP
			Weather-resistant type	15±5°	WLCA12-P1-N
				10°$^{+2°}_{-1°}$	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
			Molded terminal -141	15±5°	WLCA12-141-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: G1/2)	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: G1/2)	Heat-resistant type		WLD2-TH-N
		Direct-wire cable	Coolant-resistant type		WLD2-RP60-N
			Molded terminal -139		WLD2-139-N
	Horizontal plunger	Screw terminals (Conduit size: G1/2)	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: G1/2)	Heat-resistant type		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

* 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).

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: G1/2)	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: G1/2)	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: G1/2)	Heat-resistant type	15±5°	WLCL-TH-N
				25±5°	WLCL-2TH-N
				20° max.	WLCL-2NTH-N
				$10^{\circ}{}^{+2^{\circ}}_{-1^{\circ}}$	WLGL-TH
			Cold-resistant type	15±5°	WLCL-TC-N
				25±5°	WLCL-2TC-N
				20° max.	WLCL-2NTC-N
				$10^{\circ}{}^{+2^{\circ}}_{-1^{\circ}}$	WLGL-TC
			Corrosion-resistant type	15±5°	WLCL-RP-N
				$10^{\circ}{}^{+2^{\circ}}_{-1^{\circ}}$	WLGL-RP
			Weather-resistant type	15±5°	WLCL-P1-N
				$10^{\circ}{}^{+2^{\circ}}_{-1^{\circ}}$	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

* 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

Ratings		Non-inductive load (A)								Inductive load (A)							
		Basic models (WL-N)				High-sensitivity and High-precision models (WL)				Basic models (WL-N)				High-sensitivity and High-precision models (WL)			
		Resistive load		Lamp load		Resistive load		Lamp load		Inductive load		Motor load		Inductive load		Motor load	
Voltage (V)		NC	NO	NC	NO	NC	NO	NC	NO	NC	NO	NC	NO	NC	NO	NC	NO
AC	125	10		3	1.5	5		---		10		5	2.5	---		---	
	250	10		2	1	5		---		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	0.4		---		0.8		0.2		---		---	
	250	0.4		0.1	0.1	0.2		---		0.4		0.1		---		---	

With Operation Indicator (LED)

Ratings		Non-inductive load (A)								Inductive load (A)							
		Basic models (WL-N)				High-sensitivity and High-precision models (WL)				Basic models (WL-N)				High-sensitivity and High-precision models (WL)			
		Resistive load		Lamp load		Resistive load		Lamp load		Inductive load		Motor load		Inductive load		Motor load	
Voltage (V)		NC	NO	NC	NO	NC	NO	NC	NO	NC	NO	NC	NO	NC	NO	NC	NO
AC	115	10		3	1.5	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		0.4		---		0.8		0.1		---		---	

With Operation Indicators (Neon Lamps)

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

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 (WL)
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

Direct-wire cable

Connector DC Specifications: With Operation Indicators (LEDs)

Ratings		Non-inductive load (A)								Inductive load (A)							
		Basic models (WL-N)				High-sensitivity and High-precision models (WL)				Basic models (WL-N)				High-sensitivity and High-precision models (WL)			
		Resistive load		Lamp load		Resistive load		Lamp load		Inductive load		Motor load		Inductive load		Motor load	
Voltage (V)		NC	NO	NC	NO	NC	NO	NC	NO	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	0.4		---		0.8		0.2		---		---	

Connector AC Specifications: With Operation Indicators (LEDs)

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

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

Allowable Inrush Current/ Minimum applicable load

Operating characteristics type		Basic models (WL-N)	High-sensitivity and High-precision models (WL)
Inrush current	NC	3 A max.	
	NO	3 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
Model	WL-LD-N WL-LW-N WL-LD	WL-LE-N WL-LE
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

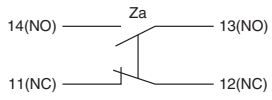
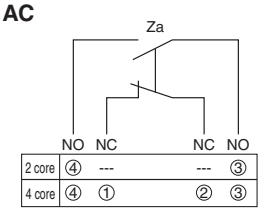
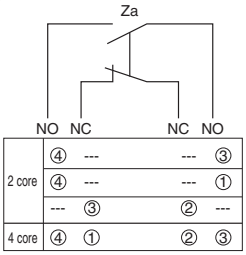
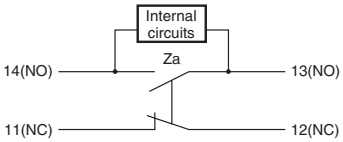
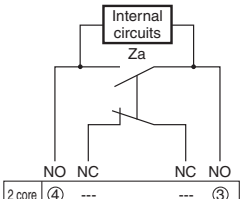
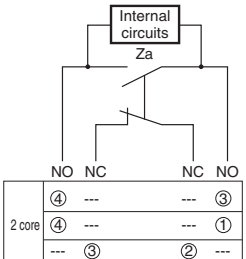
Operating characteristics type		Basic models (WL-N)	High-sensitivity and High-precision models (WL)
Permissible operating frequency	Mechanical	120 operations/minute	
	Electrical	30 operations/minute	
Permissible operating speed		1 mm/s to 1 m/s (in case of WLCA2-N)	
Insulation resistance		100 MΩ min. (at 500 VDC)	
Contact resistance		25 mΩ or less (default value, built-in switch only) *2	
Vibration resistance	Malfunction	10 to 55 Hz, 1.5-mm double amplitude *3	
Shock	Destruction	1,000 m/s² max.	
	Malfunction	300m/s² max. *3	
Durability *1	Mechanical	15,000,000 operations min.	10,000,000 operations min. *4
	Electrical	750,000 operations min. (3 A at 250 VAC, resistive load)	500,000 operations min. (3 A at 250 VAC, resistive load)
Ambient operating temperature		-10 to +80°C (with no icing) *5	
Ambient operating humidity		35 to 95%RH	
Degree of protection		IP67	
Weight		Approx. 250 g (for WLCL-TH-N)	Approx. 250 g (for WLCL-TH-N)

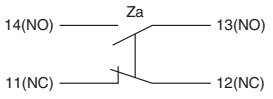
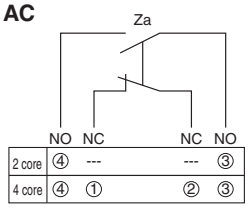
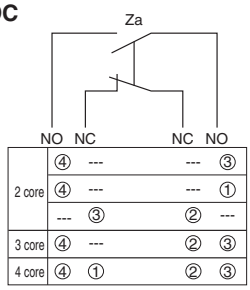
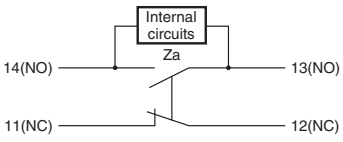
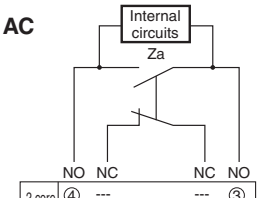
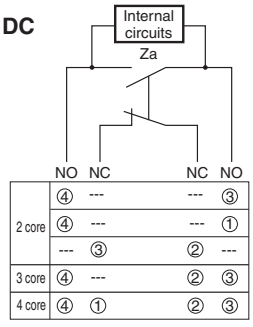
Note: The above figures are initial values.

*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. Weather-proof models is 50 mΩ or less (default value, built-in switch only).
*3. Except Switches with Flexible Rod Actuators.
*4. 500,000 operations min. for Weather-resistant models.
*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.

Operating characteristics type		Basic models (WL-N)		High-sensitivity and High-precision models (WL)	
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 currentcarrying 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

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		**AC**  ①②③④ indicate the connector pin number. **DC**  ①②③④ indicate the connector pin number.
Operation indicator (Light-ON when Not Operating *)		**AC**  ①②③④ indicate the connector pin number. **DC**  ①②③④ indicate the connector pin number.

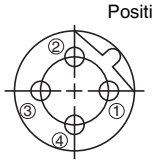
Operating characteristics type	High-sensitivity and High-precision models (WL)	
Wiring Specifications	Screw terminals	Direct-wire connector and Pre-wired Connector Models
Without operation indicator		**AC**  ①②③④ indicate the connector pin number. **DC**  ①②③④ indicate the connector pin number.
Operation indicator (Light-ON when Not Operating *)		**AC**  ①②③④ indicate the connector pin number. **DC**  ①②③④ indicate the connector pin number.

* 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 18.

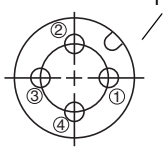
Note: Leakage current from indicator circuit may cause load malfunction (i.e., the load may remain ON). Make sure that the load operating current is higher than the leakage current.
For countermeasures, refer to technical support on your OMRON website.

Connector Pin Layout Diagram

AC



DC



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

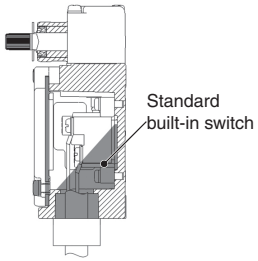
Structure and Nomenclature

Mold Specifications

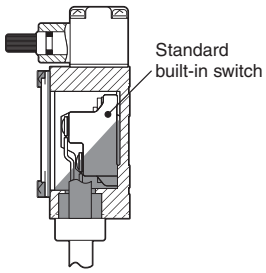
: Molded parts

Prevent entry of foreign objects from conduit

WL□-139-N

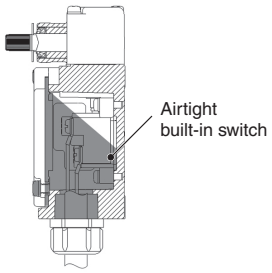


WLG□-139

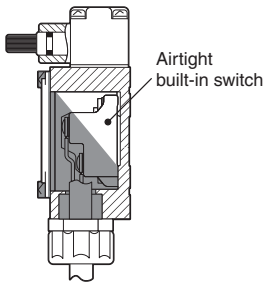


Prevent entry of foreign objects from conduit cover

WL□-140-N

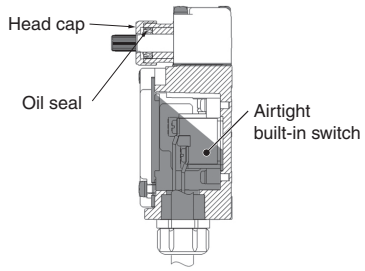


WLG□-140

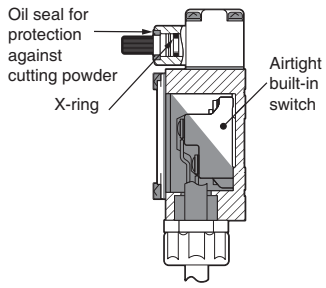


Prevent entry of foreign objects from head and conduit cover

WL□-141-N

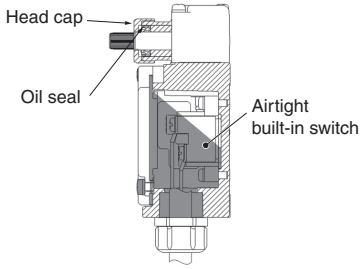


WLG□-141

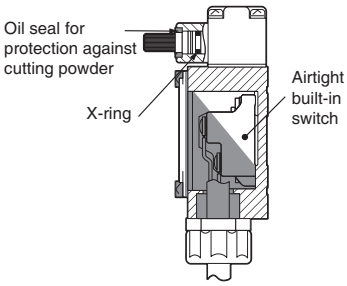


Prevent entry of metal powder from head and conduit

WL□-145-N

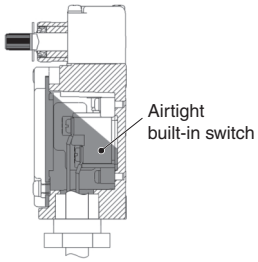


WLG□-145

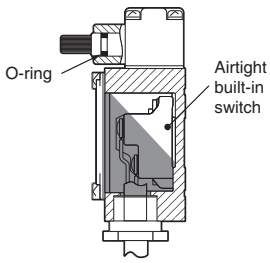


Prevent entry of metal powder from conduit cover

WL□-RP40-N

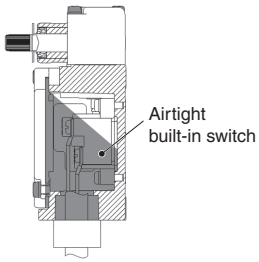


WLG□-RP40

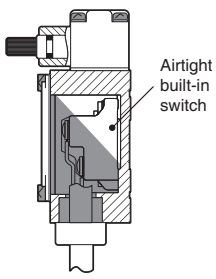


Prevent entry of metal powder from head and conduit cover

WL□-RP60-N *1



WLG□-RP60 *1



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 *2
WL□-RP60-N WLG□-RP60		Resin cap

*1. Fluorine rubber is used for all rubber parts.
*2. The connector can be removed, so it is possible to use flexible conduit for the cable.

Dimensions

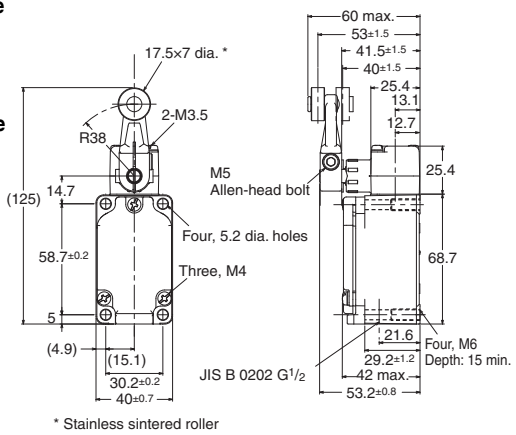
(Unit: mm)

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



* Stainless sintered roller

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

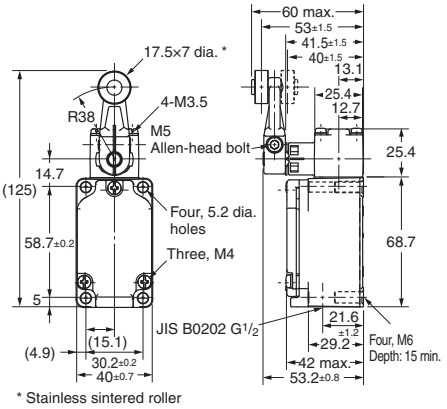
Corrosion-resistant type
WLCA2-RP-N

Note: The body color is yellow.

Weather-resistant type
WLCA2-P1-N

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



* Stainless sintered roller

Note: 1. The body color is yellow.
2. The photo shows the WLGCA2-RP model.

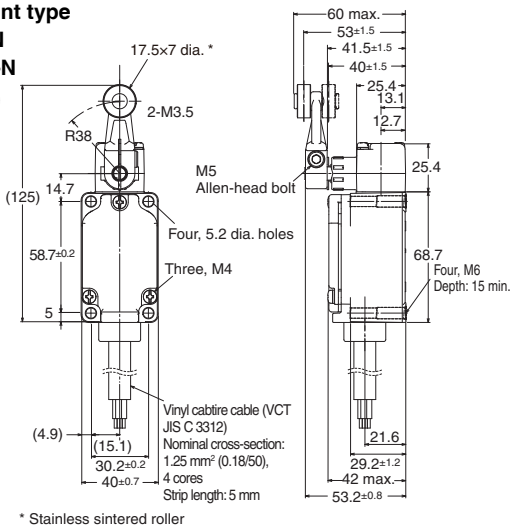
Operating characteristics

	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.	$10^{\circ}{}^{+2^{\circ}}_{-1^{\circ}}$	$5^{\circ}{}^{+2^{\circ}}_{0^{\circ}}$
Overtravel	**OT min.**	70°	60°	70°	65°	40°
Movement Differential	**MD max.**	12°	16°	10°	7°	3°

Direct-wire cable

Roller lever R38

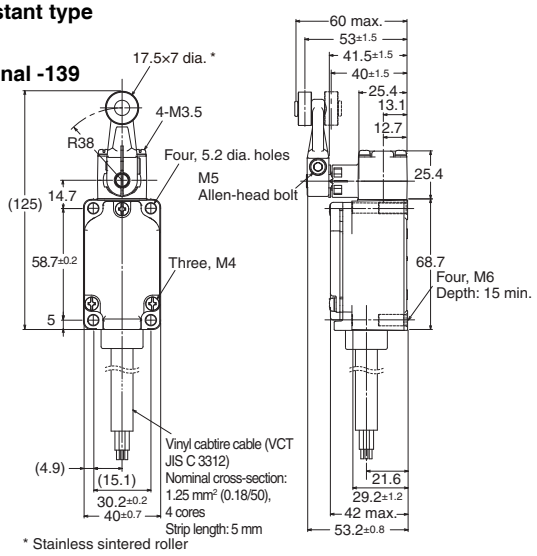
Coolant-resistant type
WLCA2-RP60-N
WLCA2-2RP60-N
Molded terminal-139
WLCA2-139-N
WLCA2-2139-N
WLCA2-2N139-N



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

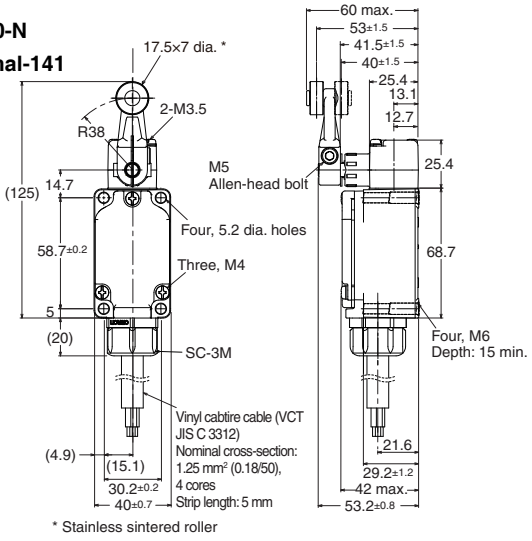
Roller lever R38

Coolant-resistant type
WLG2-RP60
Molded terminal -139
WLG2-139



Roller lever R38

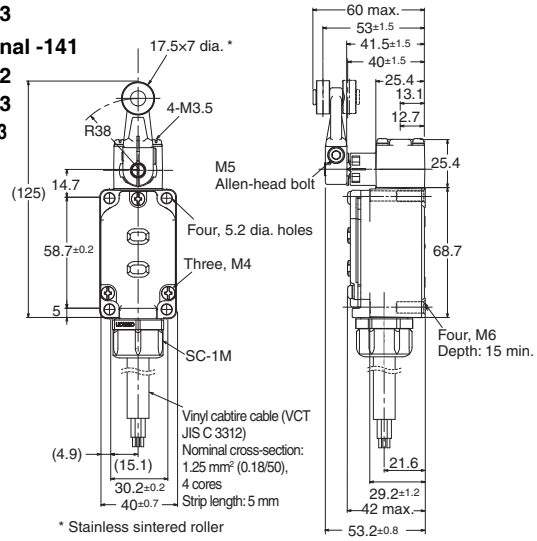
Molded terminal-140
WLCA2-140-N
WLCA2-2N140-N
Molded terminal-141
WLCA2-141-N



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

Roller lever R38 With operation indicator

Molded terminal -140
WLG2-140LD2
WLG2-140LD3
Molded terminal -141
WLG2-141LD2
WLG2-141LD3
WLGCA2-141LD3



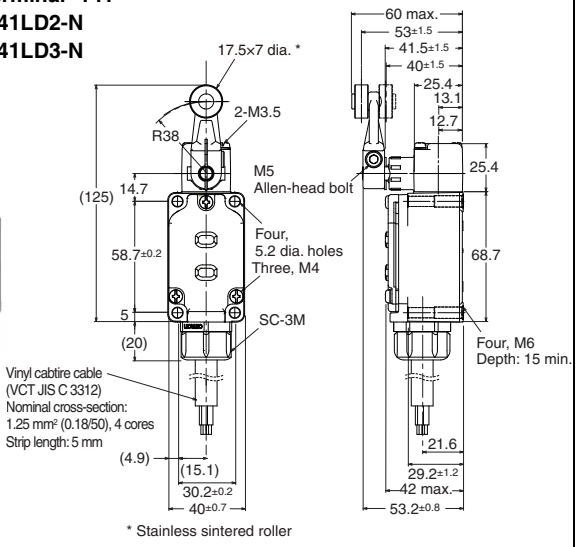
Note: Unless otherwise indicated, a tolerance of ±0.4 mm applies to all dimensions.

Operating characteristics

			Model	WLCA2-RP60-N WLCA2-2RP60-N WLCA2-139-N WLCA2-2139-N WLCA2-2N139-N WLCA2-140-N WLCA2-141-N	WLG2-RP60 WLG2-139 WLG2-140LD2 WLG2-140LD3 WLG2-141LD2 WLG2-141LD3	WLCA2-2N140-N	WLGCA2-141LD3
Operating force	**OF**	**max.**	13.34 N	9.81 N	13.34 N	13.34 N
Release force	**RF**	**min.**	1.18 N	0.98 N	1.18 N	1.47 N
Pretravel	**PT**		15±5°	$10^{\circ}{}^{+2^{\circ}}_{-1^{\circ}}$	20° max.	$5^{\circ}{}^{+2^{\circ}}_{0^{\circ}}$
Overtravel	**OT**	**min.**	70°	65°	70°	40°
Movement Differential	**MD**	**max.**	12°	7°	10°	3°

Roller lever R38 With operation indicator

Molded terminal -141
WLCA2-141LD2-N
WLCA2-141LD3-N

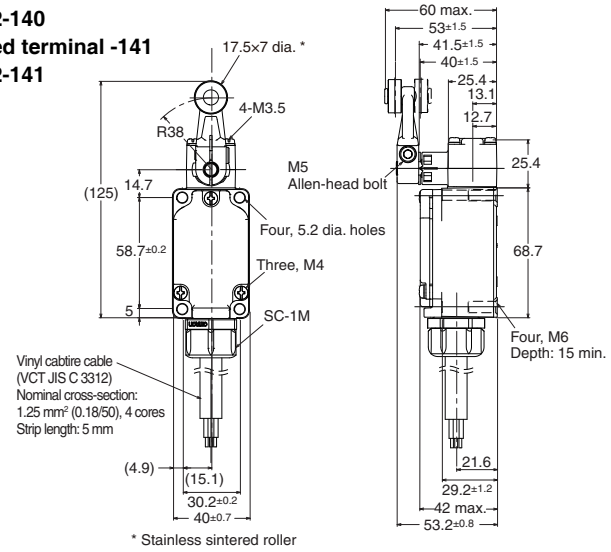


* Stainless sintered roller

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

Roller lever R38

Molded terminal -140
WLG2-140
Molded terminal -141
WLG2-141

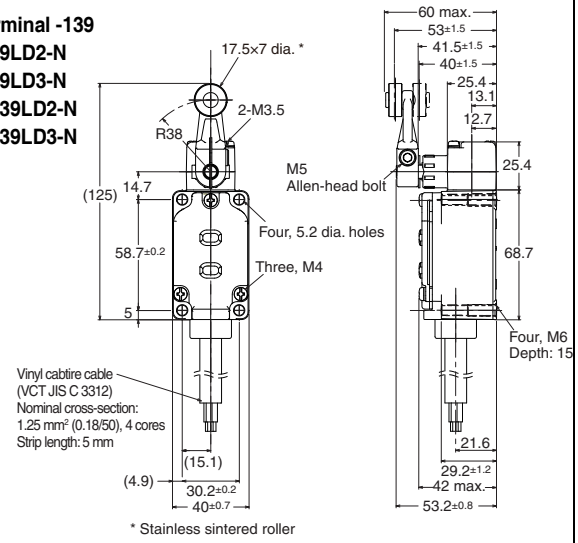


* Stainless sintered roller

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



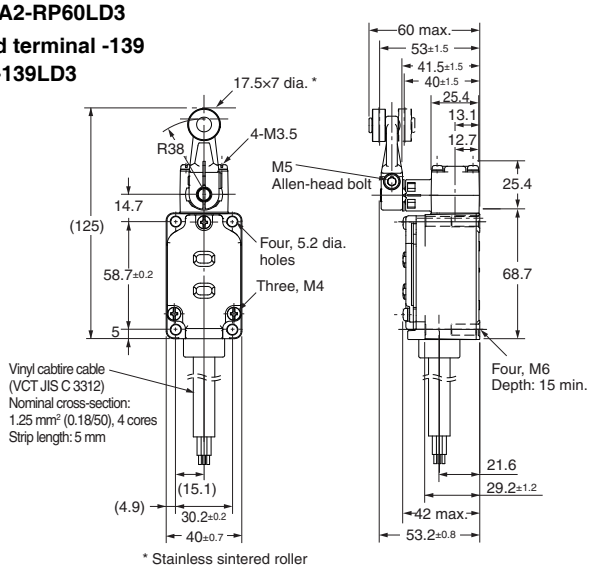
* Stainless sintered roller

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

Roller lever R38 With operation indicator

Coolant-resistant specifications
WLG2-RP60LD2
WLG2-RP60LD3
WLGCA2-RP60LD2
WLGCA2-RP60LD3

Molded terminal -139
WLG2-139LD3



* Stainless sintered roller

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

Operating characteristics

Model			WLCA2-141LD2-N WLCA2-141LD3-N WLCA2-139LD2-N WLCA2-139LD3-N	WLG2-139 WLG2-140 WLG2-141 WLG2-RP60LD2 WLG2-RP60LD3 WLG2-139LD3	WLCA2-RP60LD2-N WLCA2-RP60LD3-N	WLCA2-2RP60LD2-N WLCA2-2RP60LD3-N WLCA2-2139LD2-N WLCA2-2139LD3-N	WLGCA2-RP60LD2 WLGCA2-RP60LD3
Operating force	**OF**	**max.**	13.34 N	9.81 N	13.34 N	13.34 N	13.34 N
Release force	**RF**	**min.**	1.18 N	0.98 N	1.18 N	1.18 N	1.47 N
Pretravel	**PT**		15±5°	10°$^{+2°}_{-1°}$	15±5°	25±5°	5°$^{+2°}_{0°}$
Overtravel	**OT**	**min.**	70°	65°	70°	60°	40°
Movement Differential	**MD**	**max.**	12°	7°	12°	16°	3°

Screw terminals

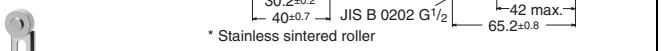
Adjustable Roller Lever (R25 to 89 mm)

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.

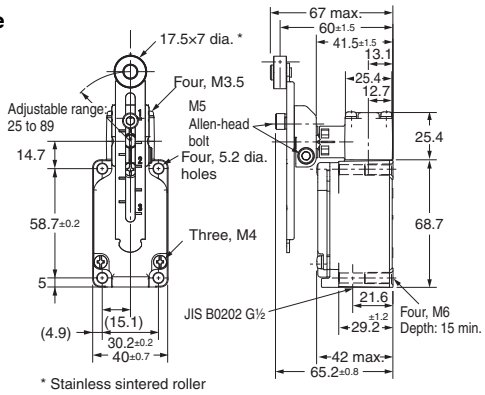
Adjustable Roller Lever (R25 to 89 mm)

Heat-resistant type
WLG12-TH

Cold-resistant type
WLG12-TC

Weather-resistant type
WLG12-P1

Corrosion-resistant type
WLG12-RP



Note: Unless otherwise indicated, a tolerance of ±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.	$10^{\circ}{}^{+2^{\circ}}_{-1^{\circ}}$
Overtravel	**OT**	**min.**	70°	60°	70°	65°
Movement Differential	**MD**	**max.**	12°	16°	10°	7°

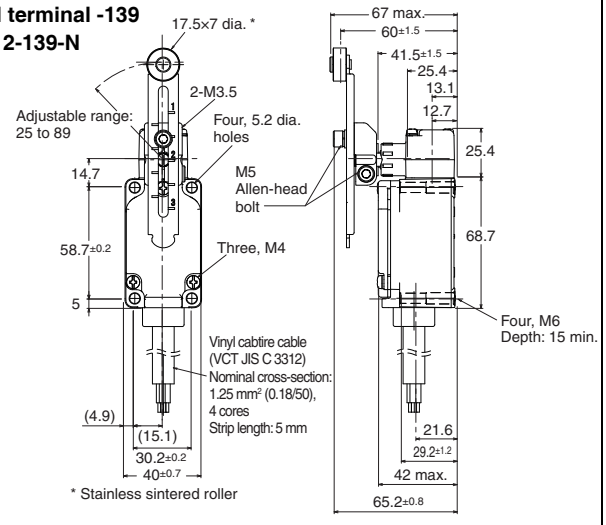
Note: The operating characteristics are measured at the lever length of 38 mm.

Direct-wire cable

Adjustable Roller Lever (R25 to 89 mm)

Coolant-resistant specifications
WLCA12-RP60-N

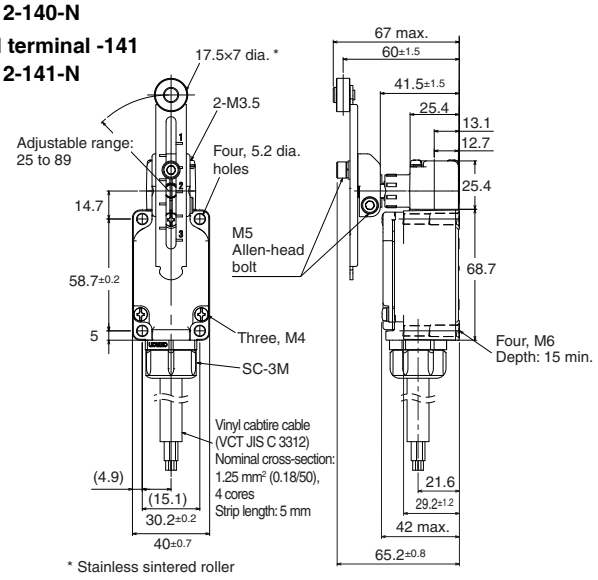
Molded terminal -139
WLCA12-139-N



Adjustable Roller Lever (R25 to 89 mm)

Molded terminal -140
WLCA12-140-N

Molded terminal -141
WLCA12-141-N



Note: Unless otherwise indicated, a tolerance of ±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

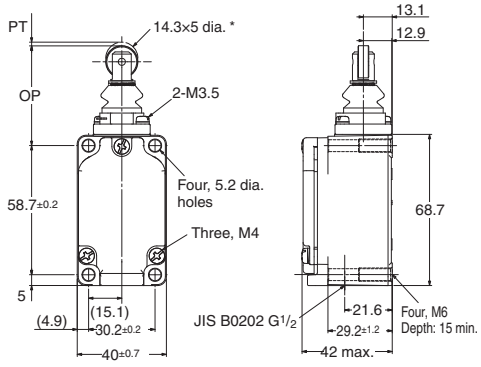
Screw terminals

Sealed top-roller plunger

Heat-resistant specifications
WLD28-TH-N

Cold-resistant specifications
WLD28-TC-N

Corrosion-resistant specifications
WLD28-RP-N

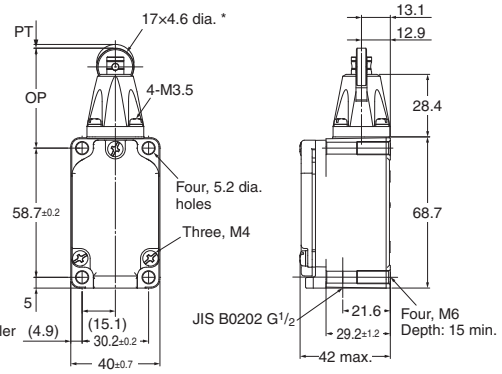


* Stainless sintered roller

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

Top-roller plunger

Heat-resistant specifications
WLD2-TH-N



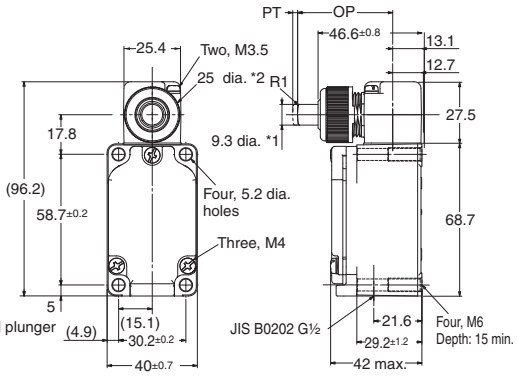
* Stainless sintered roller

Horizontal plunger

Heat-resistant specifications
WLSD-TH-N

Cold-resistant specifications
WLSD-TC-N

Corrosion-resistant specifications
WLSD-RP-N



*1. Stainless steel plunger
*2. Cosmetic nuts

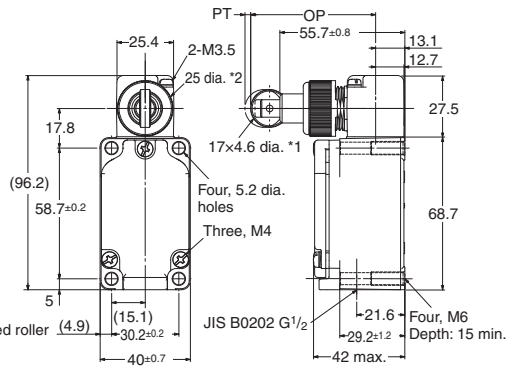
Note: The photo shows the WLSD-TH-N model.

Horizontal-roller plunger

Heat-resistant specifications
WLSD2-TH-N

Cold-resistant specifications
WLSD2-TC-N

Corrosion-resistant specifications
WLSD2-RP-N



*1. Stainless sintered roller
*2. Cosmetic nuts

Note: The photo shows the WLSD2-TH-N model.

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

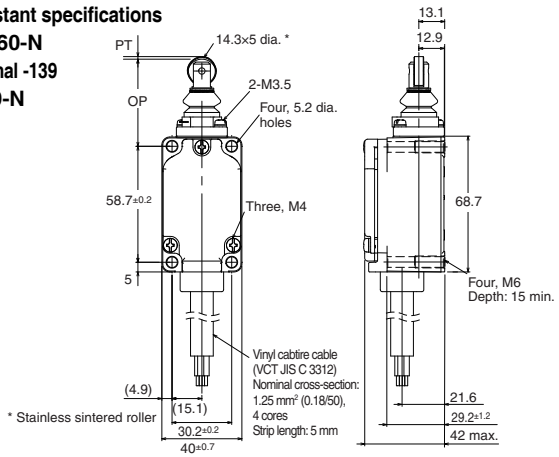
Operating characteristics

		Model	WLD28-TH-N WLD28-TC-N WLD28-RP-N	WLD2-TH-N	WLSD-TH-N WLSD-TC-N WLSD-RP-N	WLSD2-TH-N WLSD2-TC-N WLSD2-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

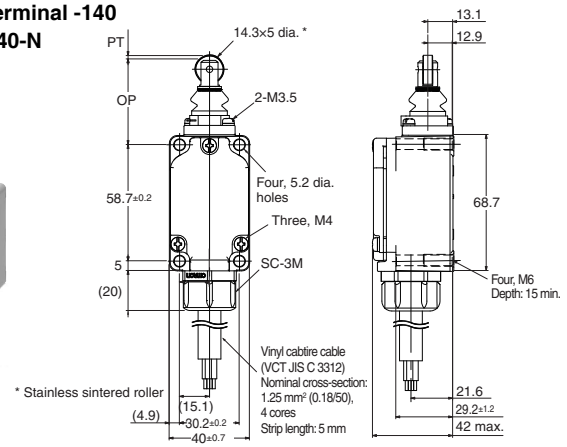
Coolant-resistant specifications
WLD28-RP60-N
Molded terminal -139
WLD28-139-N



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

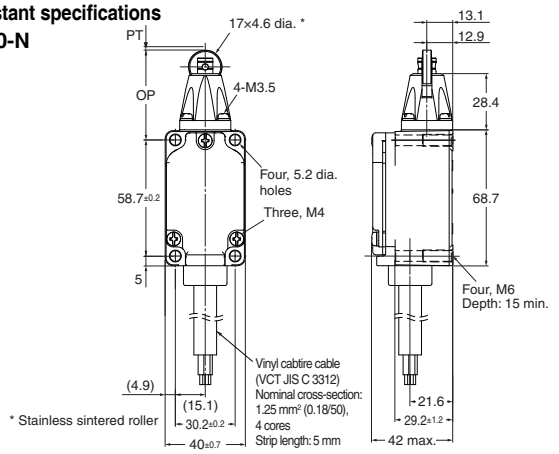
Sealed top-roller plunger

Molded terminal -140
WLD28-140-N



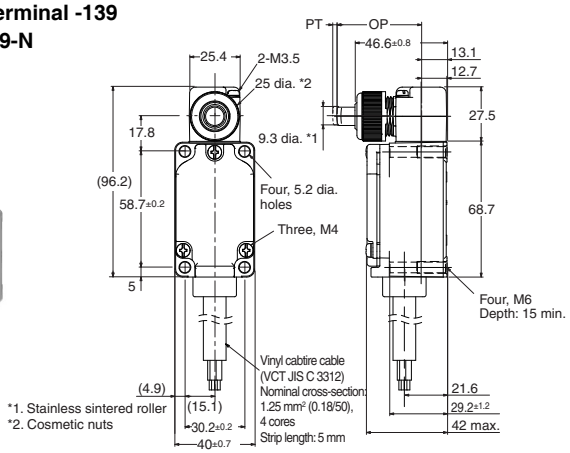
Top-roller plunger

Coolant-resistant specifications
WLD2-RP60-N



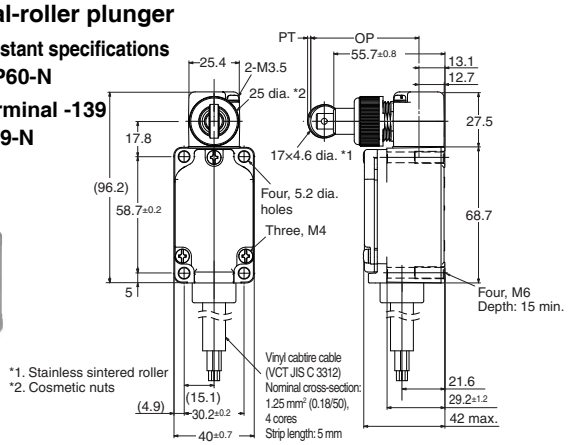
Horizontal plunger

Molded terminal -139
WLSD-139-N



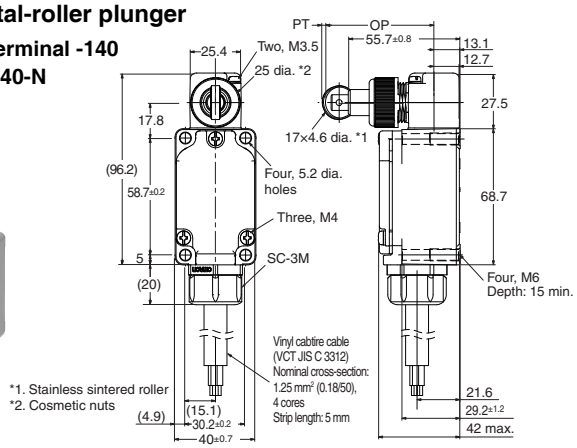
Horizontal-roller plunger

Coolant-resistant specifications
WLSD2-RP60-N
Molded terminal -139
WLSD2-139-N



Horizontal-roller plunger

Molded terminal -140
WLSD2-140-N



Note: Unless otherwise indicated, a tolerance of ±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	1mm
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	---	---

Flexible Rod

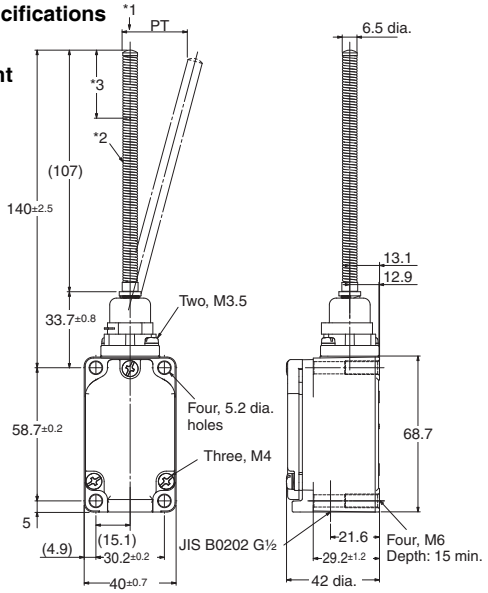
Screw terminals

Coil spring

Heat-resistant specifications
WLNJ-TH-N

Cold-resistant specifications
WLNJ-TC-N

Corrosion-resistant specifications
WLNJ-RP-N

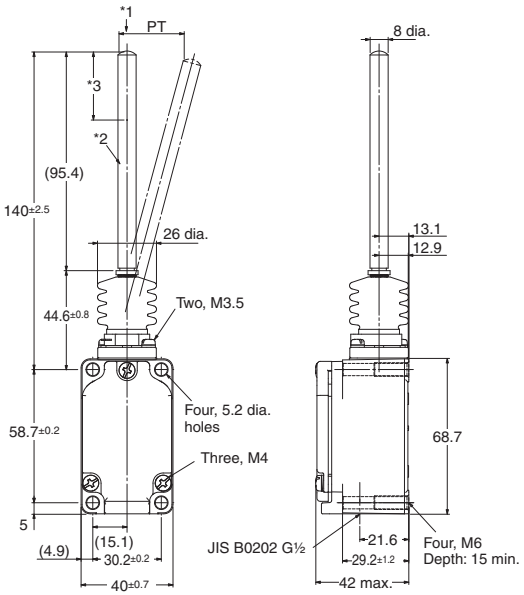


Note: The photo shows the WLNJ-TH-N model.

*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

Corrosion-resistant specifications
WLNJ-2RP-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 ±0.4 mm applies to all dimensions.

Operating characteristics

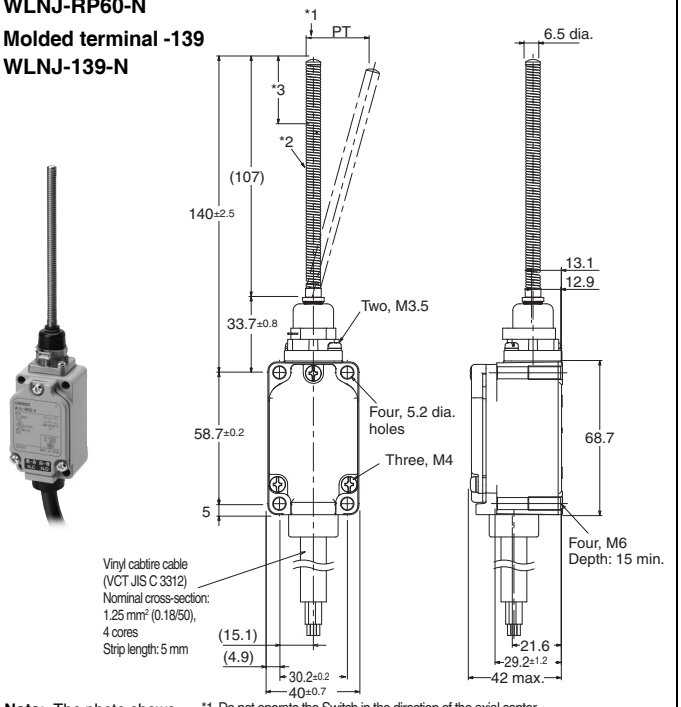
Model			WLNJ-TH-N WLNJ-TC-N WLNJ-RP-N	WLNJ-2RP-N
Operating force	OF	max.	1.47 N	1.47 N
Pretravel	PT		20±10 mm	40±20 mm

Note: These values are for the top end of the spring, rod, or wire.

Direct-wire cable

Coil spring

Coolant-resistant specifications
WLNJ-RP60-N
Molded terminal -139
WLNJ-139-N

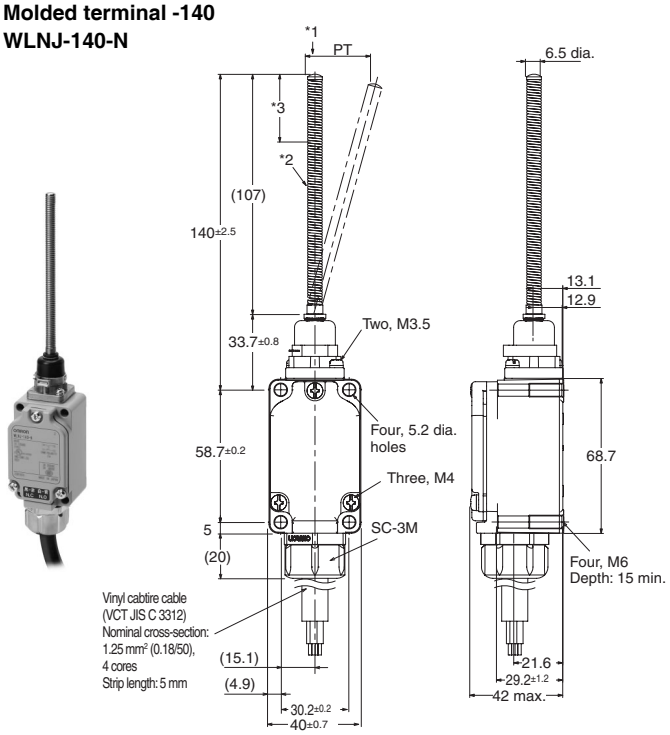


Note: The photo shows the WLNJ-RP60-N model.

*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

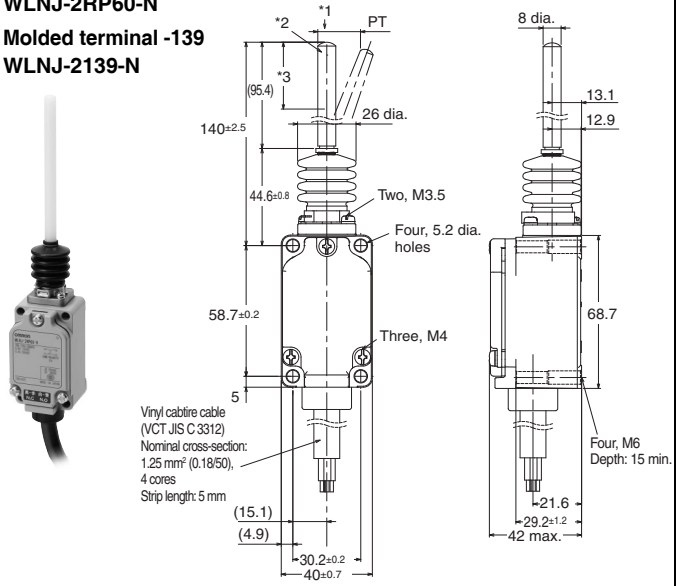
Molded terminal -140
WLNJ-140-N



*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

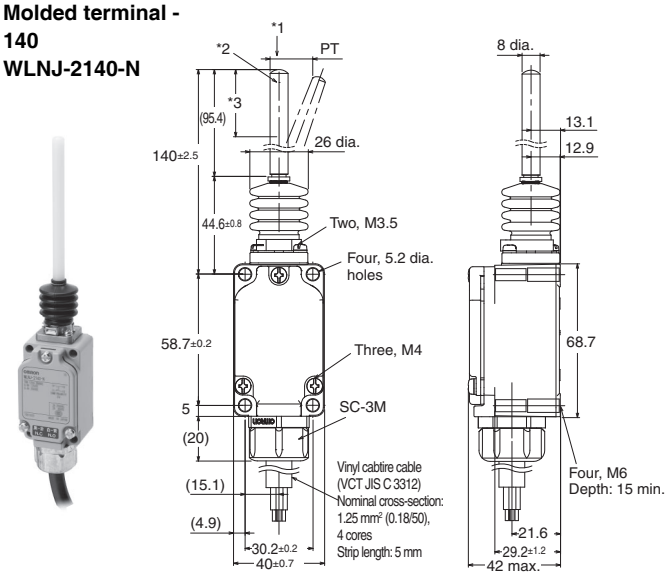


Note: The photo shows the WLNJ-2RP60-N model.

*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 ±0.4 mm applies to all dimensions.

Operating characteristics

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

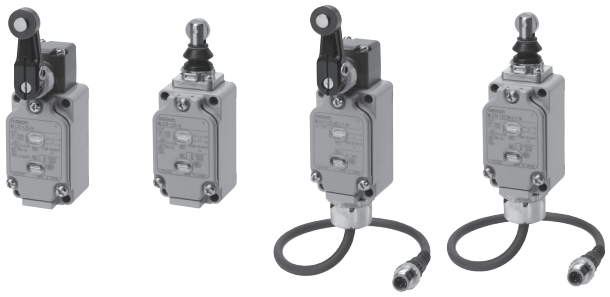
Note: These values are for the top end of the spring, rod, or wire.

Spatter-prevention Switches
WL-N/WL

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; IP67

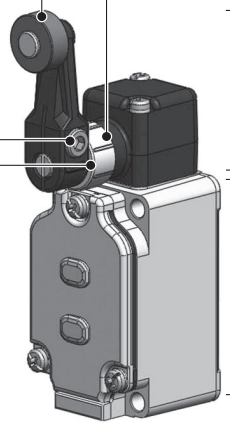
⚠ Be sure to read *Safety Precautions* on pages 81 to 86 and *Safety Precautions for All Limit Switches*.



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	Type		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) *

* Cannot be combined with the 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	Specifications	Lever type			
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	NC: ① ② NO: ③ ④
-DTGJS		Smartclick	DC	NC+NO	NC: ① ② NO: ③ ④

High-sensitivity and High-precision Models

WLG□ - □ □ □ S □
(1) (2) (3) (4) (5)

(1) Actuator and Property Specifications

Code		Type	Pretravel (PT)
2	Roller lever	Roller lever: R38 mm High-sensitivity Models	$10^{\circ}{}^{+2^{\circ}}_{-1^{\circ}}$
CA2	Roller lever	Roller lever: R38 mm High-precision Models	$5^{\circ}{}^{+2^{\circ}}_{0^{\circ}}$

(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
-DGJS03			DC	NC+NO	NC: ① ② NO: ③ ④
-M1TGJ		Smartclick	DC	NO only	NO: ① ④
-DTGJS03			DC	NC+NO	NC: ① ② NO: ③ ④

Ordering Information

Roller Lever

Standard built-in switch

Screw terminals

Appearance	Actuator	Pretravel (PT)	Lever type	With operation indicator		
				Indicator *	LED	Neon lamp
				Wiring Specifications	Model	Model
	Roller lever: R38 mm	15±5°	Double nut Lever	NO wiring	**WLCA2-LDAS-N**	**WLCA2-LEAS-N**
			Allen-head Lever		**WLCA2-LDS-N**	**WLCA2-LES-N**
		$10^{\circ}{}^{+2^{\circ}}_{-1^{\circ}}$	Double nut Lever		**WLG2-LDAS**	**WLG2-LEAS**
			Allen-head Lever		**WLG2-LDS**	**WLG2-LES**
		$5^{\circ}{}^{+2^{\circ}}_{0^{\circ}}$			**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
								Indicator *	Wiring Specifications
	Roller lever: R38 mm	15±5°	Allen-head Lever	Threaded (M12)	DC	NO only	NO: ③ ④	NO wiring	**WLCA2-LDS-M1J-1-N**
						NC+NO	NO: ③ ④ NC: ① ②		**WLCA2-LDS-DGJS-N**
		$10^{\circ}{}^{+2^{\circ}}_{-1^{\circ}}$					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**
		$5^{\circ}{}^{+2^{\circ}}_{0^{\circ}}$					NO: ③ ④		**WLGCA2-LDS-M1J-1**
							NO: ① ④		**WLGCA2-LDS-M1GJ-1**
		15±5°		Smartclick		NC+NO	NO: ③ ④ NC: ① ②		**WLCA2-LDS-DTGJS-N**
		$10^{\circ}{}^{+2^{\circ}}_{-1^{\circ}}$				NO only	NO: ① ④		**WLG2-LDS-DTGJS03**

* 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

Pre-wired Connector types

Appearance	Actuator	Pretravel (PT)	Lever type	Connector shape	Usage Voltage	Wiring locations	Connector pin No.	With operation indicator	
								Indicator *	LED
								Wiring Specifications	Model
	Roller lever: R38 mm	$10^{\circ}{}^{+2^{\circ}}_{-1^{\circ}}$	Allen-head Lever	Threaded (M12)	DC	NO only	NO: ③ ④	NO wiring	**WLG2-55LDS-M1J-1**
							NO: ① ④		**WLG2-55LDS-M1GJ-1**
						NC+NO	NO: ③ ④ NC: ① ②		**WLG2-55LDS-DGJS03**
				Smartclick			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).

Plunger Actuators

Standard built-in switch

Screw terminals

Appearance	Actuator	Pretravel (PT)	With operation indicator		
			Indicator *	LED	Neon lamp
			Wiring Specifications	Model	Model
	Sealed top-roller plunger	1.7 mm max.	NO wiring	**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	
							Indicator *	LED
							Wiring Specifications	Model
	Sealed top-roller plunger	1.7 mm max.	Threaded (M12)	DC	NO only	NO: ③ ④	NO wiring	**WLD28-LDS-M1J-1-N**
				DC	NO only	NO: ① ④	NO wiring	**WLD28-LDS-M1GJ-1-N**
				DC	NC+NO	NO: ③ ④ NC: ① ②	NO wiring	**WLD28-LDS-DGJS-N**
			Smartclick	DC	NC+NO	NO: ③ ④ NC: ① ②	NO wiring	**WLD28-LDS-DTGJS-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). (However, Three-core and Four-core Switches cannot be switched to light-ON when operating (NC wiring).)

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

Specifications

Ratings

Screw terminals

With Operation Indicator

Ratings		Non-inductive load (A)								Inductive load (A)							
		Basic models (WL-N)				High-sensitivity and High-precision models (WL)				Basic models (WL-N)				High-sensitivity and High-precision models (WL)			
		Resistive load		Lamp load		Resistive load		Lamp load		Inductive load		Motor load		Inductive load		Motor load	
Voltage (V)		NC	NO	NC	NO	NC	NO	NC	NO	NC	NO	NC	NO	NC	NO	NC	NO
AC	115	10		3	1.5	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		0.4		---		0.8		0.1		---		---	

With Operation Indicators (Neon Lamps)

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

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 (WL)
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

Pre-wired connectors

Connector DC Specifications: With Operation Indicators (LEDs)

Ratings		Non-inductive load (A)								Inductive load (A)							
		Basic models (WL-N)				High-sensitivity and High-precision models (WL)				Basic models (WL-N)				High-sensitivity and High-precision models (WL)			
		Resistive load		Lamp load		Resistive load		Lamp load		Inductive load		Motor load		Inductive load		Motor load	
Voltage (V)		NC	NO	NC	NO	NC	NO	NC	NO	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	0.4		---		0.8		0.2		---		---	

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

Allowable Inrush Current/Minimum Applicable Load

Operating characteristics type		Basic models (WL-N)	High-sensitivity and High-precision Switches (WL)
Inrush current	NC	3 A max.	
	NO	3 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 (WL)
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/s² max.	
	Malfunction	300 m/s² max.	
Durability *	Mechanical	15,000,000 operations min.	10,000,000 operations min.
	Electrical	750,000 operations min. (3 A at 250 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		IP67	
Weight		Approx. 255 g (in case of WLCA2-LDS-N)	Approx. 270 g (in case of WLGCA2-LDS)

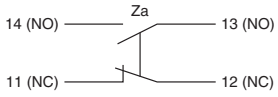
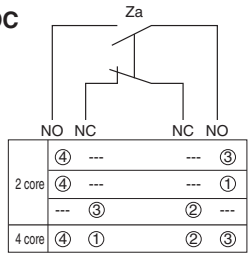
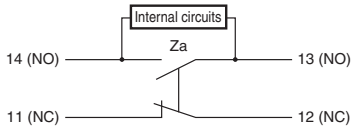
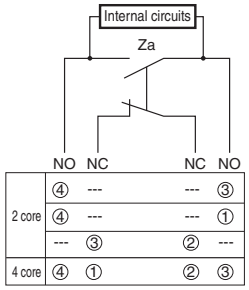
Note: The above figures are initial values.

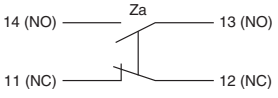
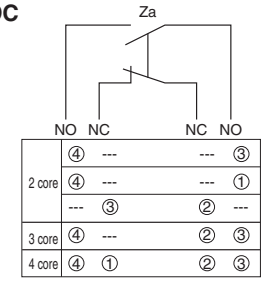
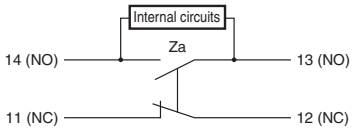
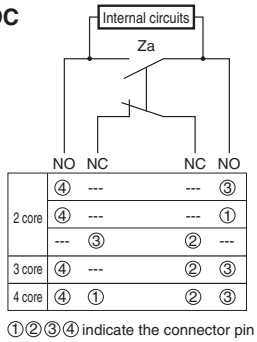
* The values are calculated at an operating temperature of +5°C to +35°C, and an operating humidity of 40% to 70%RH. Contact your OMRON sales representative for more detailed information on other operating environments.

Operating characteristics type		Basic models (WL-N)		High-sensitivity and High-precision Switches (WL)	
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		**DC**  ①②③④ indicate the connector pin number.
With Operation Indicator (Light-ON When Not Operating *)		**DC**  ①②③④ indicate the connector pin number.

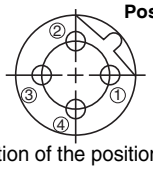
Operating characteristics type	High-sensitivity and High-precision Switches (WL)	
Wiring Specifications	**Screw terminals**	**Direct-wire connector and Pre-wired Connector Models**
Without operation indicator		**DC**  ①②③④ indicate the connector pin number.
With Operation indicator (Light-ON when Not Operating *)		**DC**  ①②③④ indicate the connector pin number.

* 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 18.

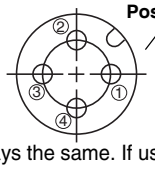
Note: Leakage current from indicator circuit may cause load malfunction (i.e., the load may remain ON). Make sure that the load operating current is higher than the leakage current.
For countermeasures, refer to technical support on your OMRON website.

Connector Pin Layout Diagram

AC



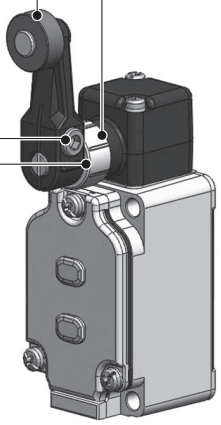
DC



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

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.

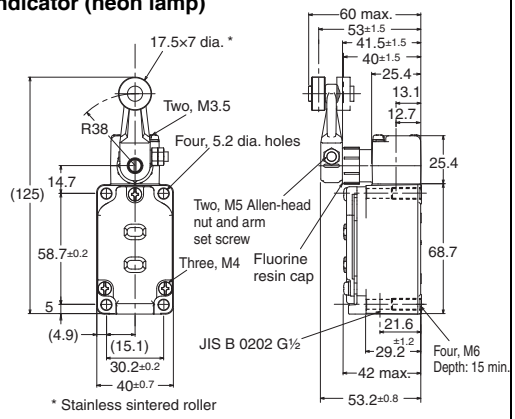
Dimensions

(Unit: mm)

Roller Lever

Roller lever R38

Double nut lever
With operation indicator (LED)
WLCA2-LDAS-N
With operation indicator (neon lamp)
WLCA2-LEAS-N

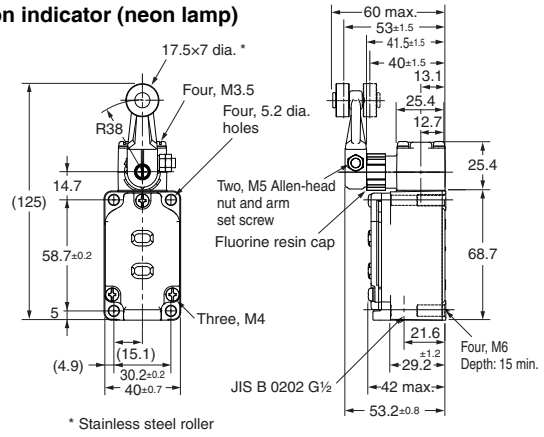


* Stainless sintered roller

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

Roller lever R38

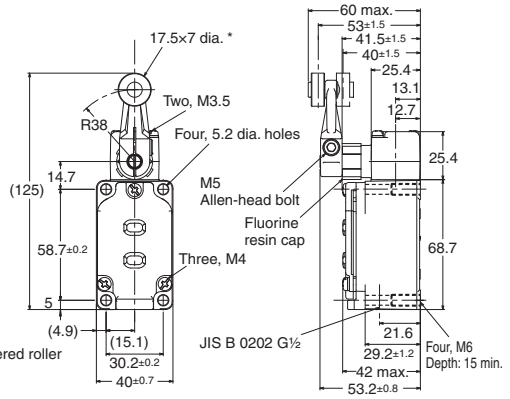
Double nut lever
With operation indicator (LED)
WLG2-LDAS
With operation indicator (neon lamp)
WLG2-LEAS



* Stainless steel roller

Roller lever R38

Allen-head lever
With operation indicator (LED)
WLCA2-LDS-N
With operation indicator (neon lamp)
WLCA2-LES-N

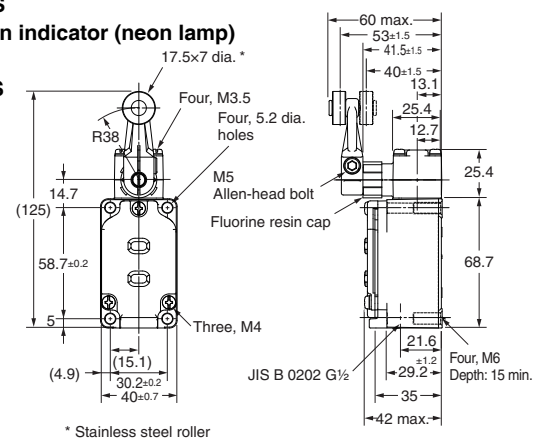


* Stainless sintered roller

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

Roller lever R38

Allen-head lever
With operation indicator (LED)
WLG2-LDS
WLGCA2-LDS
With operation indicator (neon lamp)
WLG2-LES
WLGCA2-LES



* Stainless steel roller

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

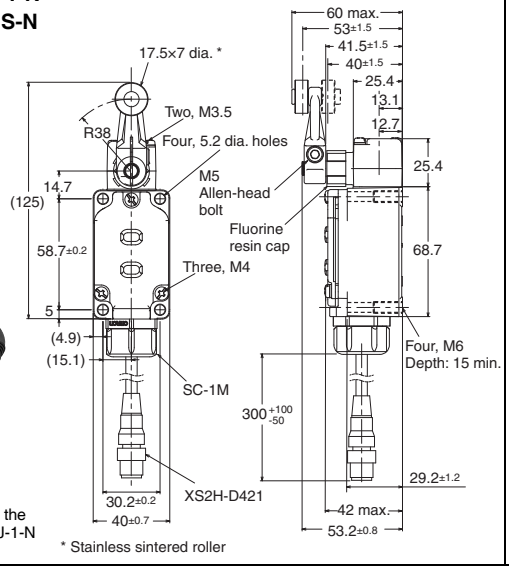
Operating characteristics

Model	WLCA2-LDAS-N WLCA2-LEAS-N WLCA2-LDS-N WLCA2-LES-N	WLG2-LDAS WLG2-LDS WLG2-LEAS WLG2-LES	WLGCA2-LDS WLGCA2-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°	$10^{\circ}{}^{+2^{\circ}}_{-1^{\circ}}$	$5^{\circ}{}^{+2^{\circ}}_{0^{\circ}}$
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



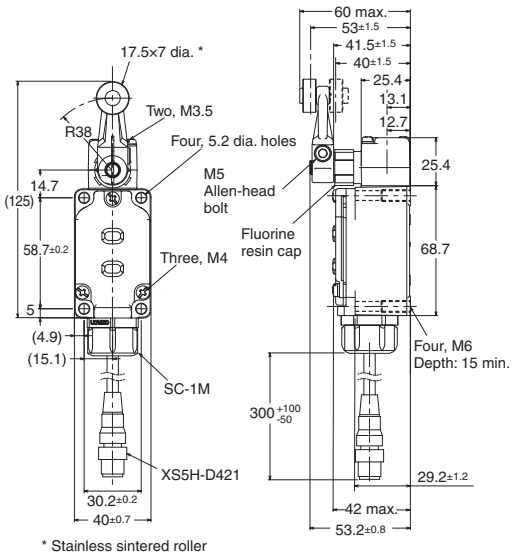
Note: The photo shows the WLCA2-LDS-M1J-1-N model.

* Stainless sintered roller

Pre-wired connector type (Smartclick)

Roller lever R38

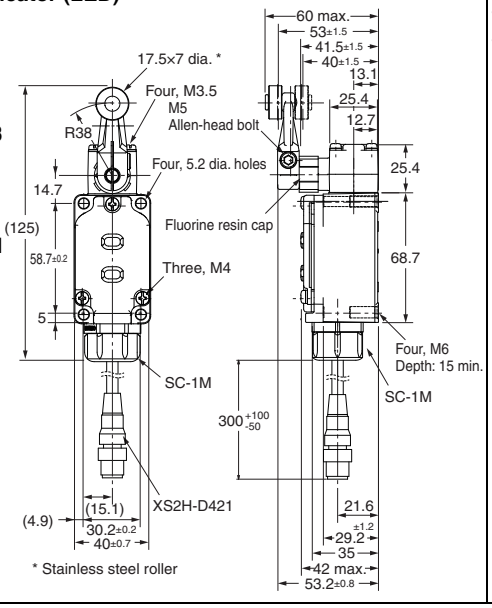
Allen-head lever
With operation indicator (LED)
WLCA2-LDS-DTGJS-N



* Stainless sintered roller

Roller lever R38

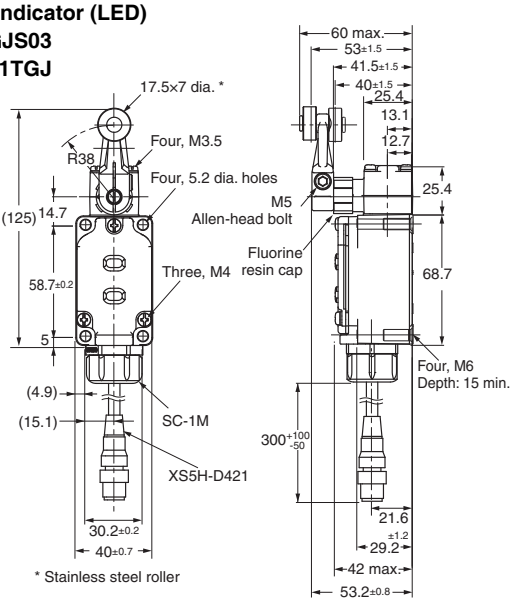
Allen-head lever
Threaded (M12)
With operation indicator (LED)
WLG2-LDS-DGJS03
WLG2-LDS-DK1EJ03
WLG2-55LDS-M1J-1
WLG2-55LDS-M1GJ-1
WLG2-55LDS-DGJS03
WLG2-LDS-M1J-1
WLG2-LDS-M1GJ-1
WLGCA2-LDS-M1J-1
WLGCA2-LDS-M1GJ-1



* Stainless steel roller

Roller lever R38

Allen-head lever
Smartclick
With operation indicator (LED)
WLG2-LDS-DTGJS03
WLG2-55LDS-M1TGJ



* Stainless steel roller

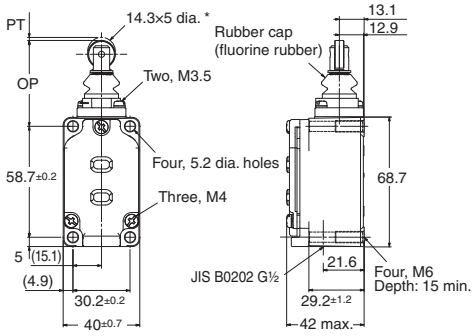
Note: Unless otherwise indicated, a tolerance of ±0.4 mm applies to all dimensions.

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°	$10^{+2°}_{-1°}$	$5^{+2°}_{0°}$
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



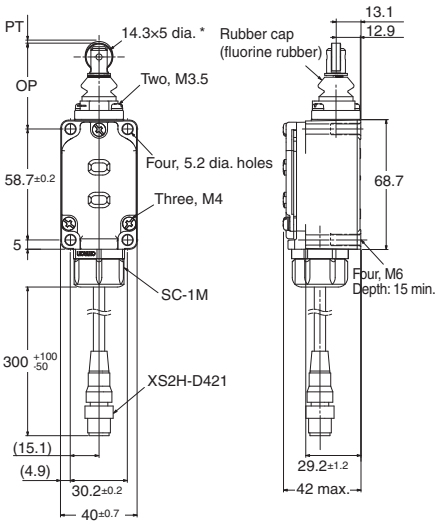
* Stainless sintered roller

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



* Stainless sintered roller

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

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

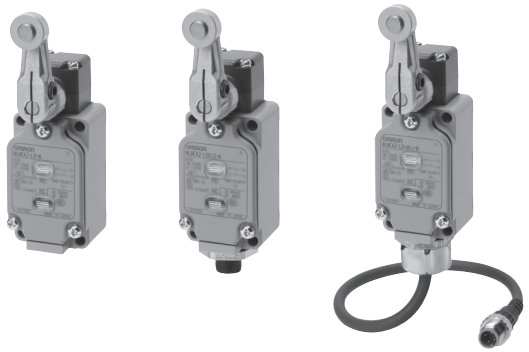
Operating characteristics

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±0.8 mm
Total travel Position TTP max.	39.5 mm

Long-life Switches
WL-N/WL

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.



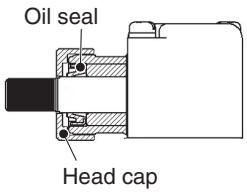
For the most recent information on models that have been certified for safety standards, refer to your OMRON website.

⚠ Be sure to read *Safety Precautions* on pages 81 to 86 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.



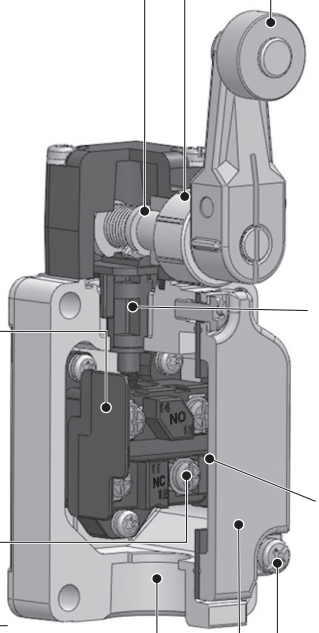
Head
You can remove the two screws to mount the head in any of the four possible directions.

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 G½ 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	Type		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. *1
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	NC: ① ② NO: ③ ④
K43			DC	NC+NO	NC: ① ② NO: ③ ④
-M1J	Pre-wired connectors *2	Threaded (M12)	DC	NO only	NO: ③ ④
-AGJ			AC	NC+NO	NC: ① ② NO: ③ ④
-DGJ			DC	NC+NO	NC: ① ② NO: ③ ④
-DTGJ		Smartclick	DC	NC+NO	NC: ① ② NO: ③ ④

*1. Refer to *Connector Pin Layout Diagram* on pages 69 for details on connector pin numbers.
*2. The standard cable length for a pre-wired connector is 0.3 m.

High-sensitivity and High-precision Switches

WLMG□ - LD□
(1) (2) (3)

(1) Actuator and Property Specifications

Code		Type	Pretravel (PT)
2	Roller lever	Roller lever: R38 mm High-sensitivity Models	10° $^{+2°}_{-1°}$
CA2	Roller lever	Roller lever: R38 mm High-precision Models	5° $^{+2°}_{0°}$

(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. *1
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	NC: ① ② NO: ③ ④
K43			DC	NC+NO	NC: ① ② NO: ③ ④
-M1J	Pre-wired connectors *2	Threaded (M12)	DC	NO only	NO: ③ ④
-DGJ03			DC	NC+NO	NC: ① ② NO: ③ ④
-DTGJ03		Smartclick	DC	NC+NO	NC: ① ② NO: ③ ④

*1. Refer to *Connector Pin Layout Diagram* on pages 69 for details on connector pin numbers.
*2. The standard cable length for a pre-wired connector is 0.3 m.

Ordering Information

Roller Lever

Screw terminals

Appearance	Actuator	Pretravel (PT)	With operation indicator	
			Indicator *1	LED
			Wiring Specifications	Model
	Roller lever: R38 mm	15±5°	NO wiring	WLMCA2-LD-N
		10° $^{+2°}_{-1°}$		WLMG2-LD
		5° $^{+2°}_{0°}$		WLMGCA2-LD

Direct-wire connector

Appearance	Actuator	Pretravel (PT)	Voltage	Wiring locations	Connector pin No.	With operation indicator	
						Indicator *1	LED
						Wiring Specifications	Model
	Roller lever: R38 mm	15±5°	AC	NO only	NO: ③ ④	NO wiring	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° $^{+2°}_{-1°}$	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° $^{+2°}_{0°}$	AC	NO only	NO: ③ ④		WLMGCA2-LDK13A
				NC+NO	NO: ③ ④ NC: ① ②		WLMGCA2-LDK43A
			DC	NO only	NO: ③ ④		WLMGCA2-LDK13
				NC+NO	NO: ③ ④ NC: ① ②		WLMGCA2-LDK43

Pre-wired connectors

Appearance	Actuator	Pretravel (PT)	Voltage	Connector shape	Wiring locations	Connector pin No.	With operation indicator	
							Indicator *1	LED
							Wiring Specifications	Model
	Roller lever: R38 mm	15±5°	AC	Threaded (M12)	NO only	NO: ③ ④	NO wiring	WLMCA2-LD-M1J-N
					NC+NO	NO: ③ ④ NC: ① ②		WLMCA2-LD-AGJ-N
			DC			NO: ③ ④ NC: ① ②		WLMCA2-LD-DGJ-N
				Smartclick	NC+NO	NO: ③ ④ NC: ① ②		WLMCA2-LD-DTGJ-N
		10° $^{+2°}_{-1°}$		Threaded (M12)	NO only	NO: ③ ④		WLMG2-LD-M1J
					NC+NO	NO: ③ ④ NC: ① ②		WLMG2-LD-DGJ03
				Smartclick		NO: ③ ④ NC: ① ②		WLMG2-LD-DTGJ03
		5° $^{+2°}_{0°}$		Threaded (M12)	NO only	NO: ③ ④		WLMGCA2-LD-M1J
				Smartclick	NC+NO	NO: ③ ④ NC: ① ②		WLMGCA2-LD-DTGJ03

*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. (However, Four-core Switches cannot be switched to light-ON when operating (NC wiring).
*2. The standard cable length for a pre-wired connector is 0.3 m. Contact your OMRON representative for information on other cable lengths.

Specifications

Ratings

Screw terminals

With Operation Indicator

Ratings		Non-inductive load (A)								Inductive load (A)							
		Basic models (WL-N)				High-sensitivity and High-precision models (WL)				Basic models (WL-N)				High-sensitivity and High-precision models (WL)			
		Resistive load		Lamp load		Resistive load		Lamp load		Inductive load		Motor load		Inductive load		Motor load	
Voltage (V)		NC	NO	NC	NO	NC	NO	NC	NO	NC	NO	NC	NO	NC	NO	NC	NO
AC	115	10		3	1.5	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		0.4		---		0.8		0.1		---		---	

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 models (WL)	High-precision models (WL)
Inrush current	NC	30 A max.	15 A max.	15 A max.
	NO	20 A max.	10 A max.	10 A max.
Minimum applicable load		5 VDC 1 mA, resistive load, P level	5 VDC 1 mA, resistive load, P level	5 VDC 160 mA, resistive load, N level reference value

Direct-wire connector and Pre-wired Connector Models Type

DC Connector: With Operation Indicators (LEDs)

Ratings		Non-inductive load (A)								Inductive load (A)							
		Basic models (WL-N)				High-sensitivity and High-precision models (WL)				Basic models (WL-N)				High-sensitivity and High-precision models (WL)			
		Resistive load		Lamp load		Resistive load		Lamp load		Inductive load		Motor load		Inductive load		Motor load	
Voltage (V)		NC	NO	NC	NO	NC	NO	NC	NO	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	0.4		---		0.8		0.2		---		---	

AC Connector: With Operation Indicators (LEDs)

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

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

Allowable Inrush Current/Minimum Applicable Load

Operating characteristics type		Basic models (WL-N)	High-sensitivity models (WL)	High-precision models (WL)
Inrush current	NC	3 A max.		
	NO	3 A max.		
Minimum applicable load		5 VDC 1 mA, resistive load, P level	5 VDC 1 mA, resistive load, P level	5 VDC 160 mA, resistive load, N level, reference value

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 (WL)
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/s² max.	
	Malfunction	300 m/s² max.	
Durability *	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		IP67	
Weight		Approx. 255 g (in case of WLMCA2-LD-N)	Approx. 270 g (in case of WLMGCA2-LD)

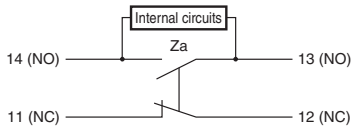
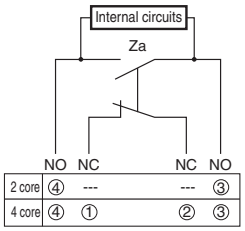
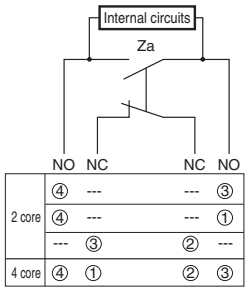
* The values are calculated at an operating temperature of +5°C to +35°C, and an operating humidity of 40% to 70%RH. Contact your OMRON sales representative for more detailed information on other operating environments.

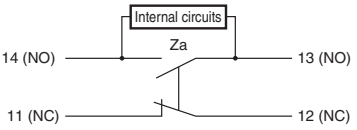
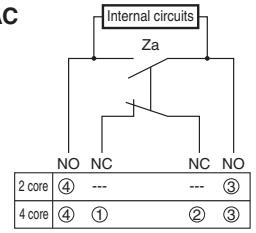
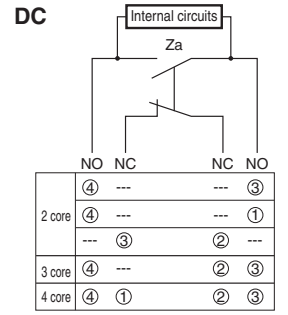
Note: The above figures are initial values.

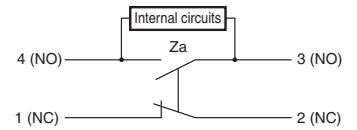
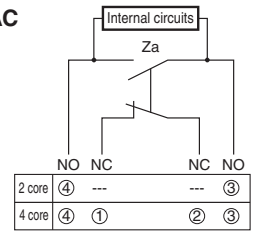
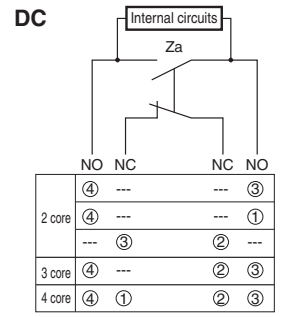
Operating characteristics type		Basic models (WL-N)		High-sensitivity and High-precision Switches (WL)	
Wiring Specifications		Screw terminals	Direct-wire connector and Pre-wired Connector Models	Screw terminals	Direct-wire connector and Pre-wired Connector Models
Dielectric strength	Between terminals 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 *)		**AC**  ①②③④ indicate the connector pin number. **DC**  ①②③④ indicate the connector pin number.

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

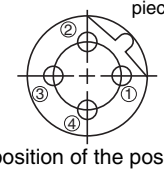
Operating characteristics type	High-precision models (WL)	
Wiring Specifications	Screw terminals	Direct-wire connector and Pre-wired Connector Models
Operation indicator (Light-ON when Not Operating *)		**AC**  ①②③④ indicate the connector pin number. **DC**  ①②③④ indicate the connector pin number.

* 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 18.

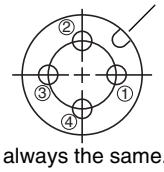
Note: Leakage current from indicator circuit may cause load malfunction (i.e., the load may remain ON). Make sure that the load operating current is higher than the leakage current. For countermeasures, refer to technical support on your OMRON website.

Connector Pin Layout Diagram

AC



DC

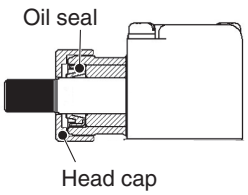


* The position of the positioning piece is not always the same. If using an L-shaped connector causes problems in application, use a straight connector.

Structure and Nomenclature

WLMCA2-N

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



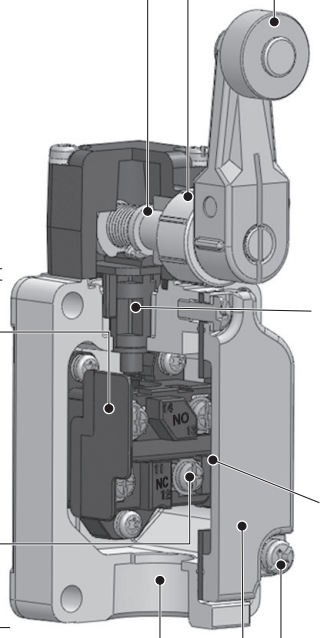
Head
You can remove the two screws to mount the head in any of the four possible directions.

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 G½ tubing, direct-wired and pre-wired connector types are available.



Cover

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.

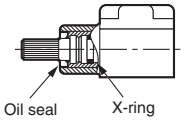
WLMGCA2

Release Plunger
Hardening method changed for greater abrasion resistance.

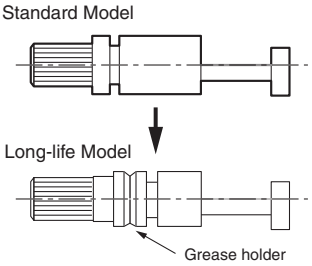
Standard Model: Sintered alloy → Long-life Model: Stainless steel + Hardening

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

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



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

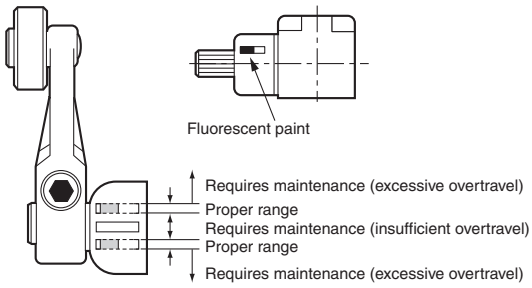


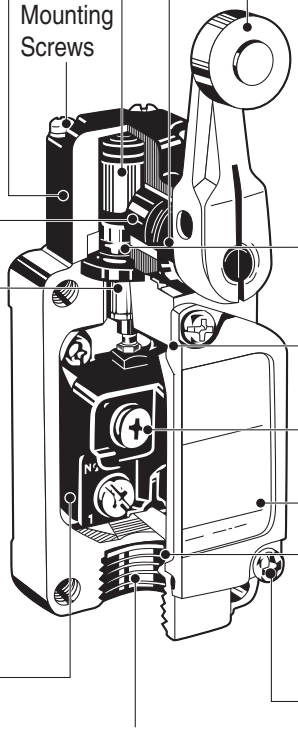
Smooth movement is achieved using olefin grease. (Standard models use molybdenum disulfide grease.)

Bearing
The bearing smooths the plunger movement.

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

Set Position Marker Plate
The set position is easy to view.
The stroke is indicated in fluorescent color that is visible from the slit in the rubber cap.





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

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

Operational Plunger

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

Terminal Screws
Four, M4 screws

Cover

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

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

Conduit Opening
In addition to parallel threads for G½ tubing, direct-wired and pre-wired connector types are available.

Dimensions

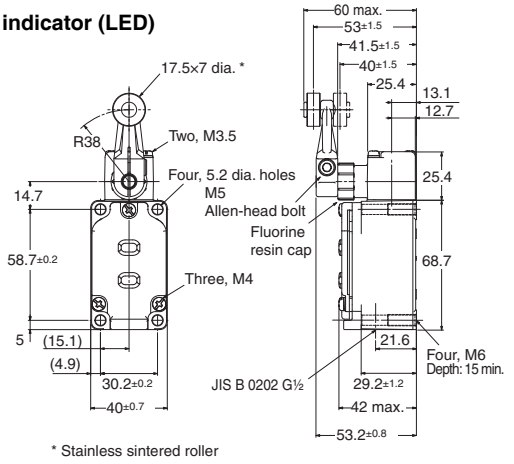
(Unit: mm)

Roller Lever

Screw terminals

Roller lever R38

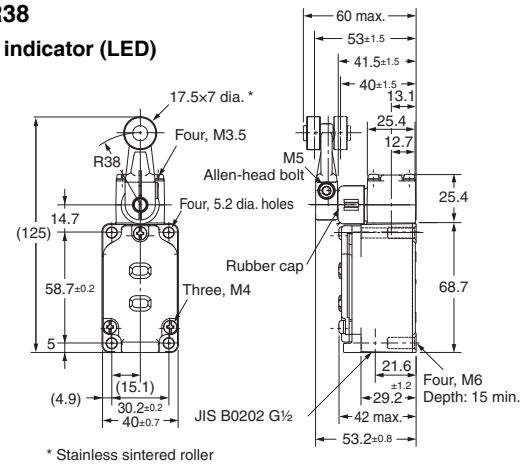
With operation indicator (LED)
WLMCA2-LD-N



* Stainless sintered roller

Roller lever R38

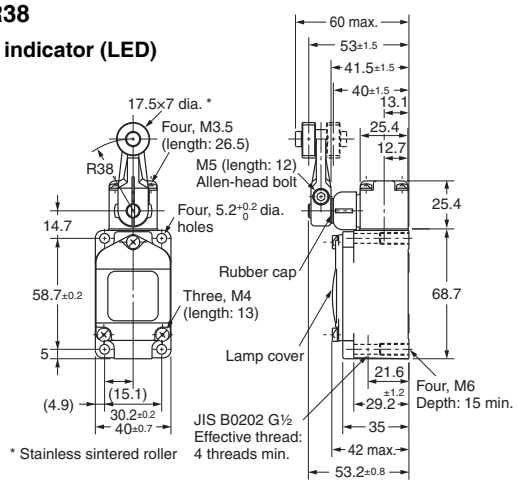
With operation indicator (LED)
WLMG2-LD



* 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.

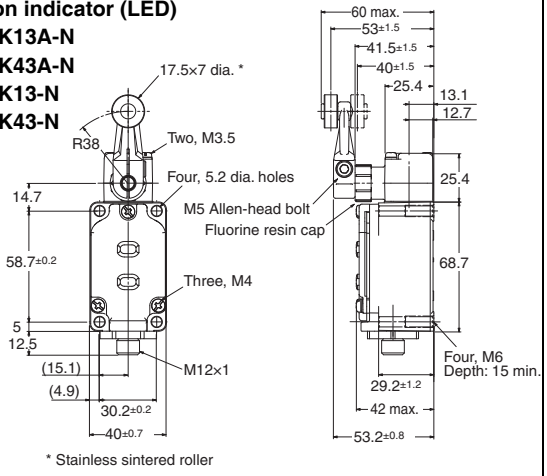
Operating characteristics

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

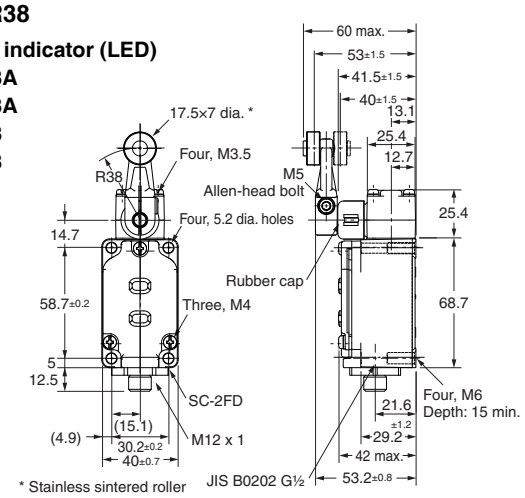


* Stainless sintered roller

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

Roller lever R38

With operation indicator (LED)
WLMG2-LDK13A
WLMG2-LDK43A
WLMG2-LDK13
WLMG2-LDK43

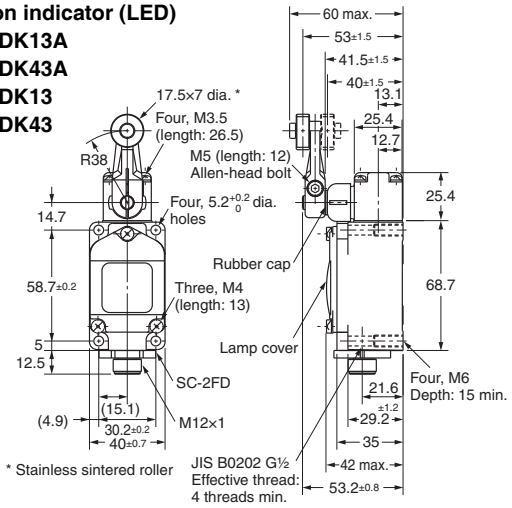


* Stainless sintered roller

JIS B0202 G½

Roller lever R38

With operation indicator (LED)
WLMGCA2-LDK13A
WLMGCA2-LDK43A
WLMGCA2-LDK13
WLMGCA2-LDK43



* Stainless sintered roller

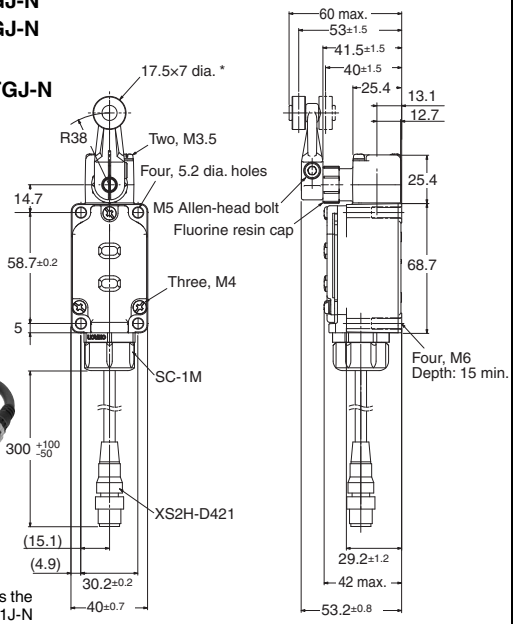
Note: Unless otherwise indicated, a tolerance of ±0.4 mm applies to all dimensions.

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-LDK43A 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°

Pre-wired connectors

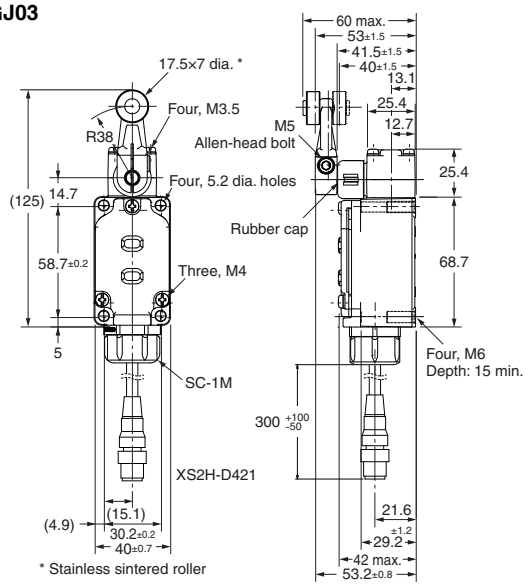
Roller lever R38
With operation indicator (LED)
Threaded (M12)
WLMCA2-LD-M1J-N
WLMCA2-LD-AGJ-N
WLMCA2-LD-DGJ-N
Smartclick
WLMCA2-LD-DTGJ-N



Note: The photo shows the WLMCA2-LD-M1J-N model.

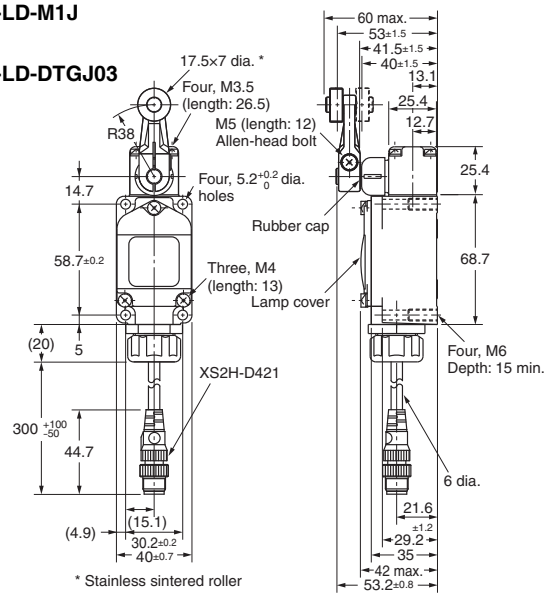
* Stainless sintered roller

Roller lever R38
With operation indicator (LED)
Threaded (M12)
WLMG2-LD-M1J
WLMG2-LD-DGJ03



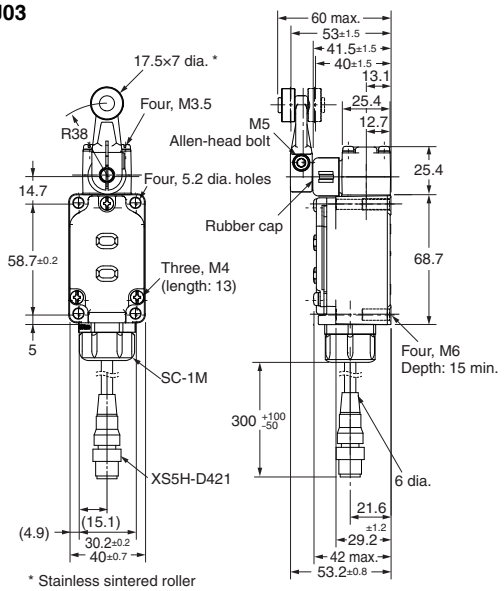
* Stainless sintered roller

Roller lever R38
With operation indicator (LED)
Threaded (M12)
WLMGCA2-LD-M1J
Smartclick
WLMGCA2-LD-DTGJ03



* Stainless sintered roller

Roller lever R38
With operation indicator (LED)
Smartclick
WLMG2-LD-DTGJ03



* Stainless sintered roller

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

Operating characteristics

Model			WLMCA2-LD-M1J-N WLMCA2-LD-AGJ-N WLMCA2-LD-DGJ-N WLMCA2-LD-DTGJ-N	WLMG2-LD-M1J WLMG2-LD-DGJ03 WLMG2-LD-DTGJ03	WLMGCA2-LD-M1J WLMGCA2-LD-DTGJ03
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 Specifications

Specifications

General-purpose/Environment-resistant/Spatter-prevention/Long-life Switches

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)	GB14048.5		

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	A600
	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
		High-sensitivity and High-precision models	0.8 A, 125 VDC
Neon lamp	No connector	Basic models	A300 10 A, 250 VAC
		High-sensitivity and High-precision models	
	Pre-wired connector (AC)	Basic, High-sensitivity or High-precision models	C300 3 A, 250 VAC
LED	No connector	Basic models	A150 10 A, 115 VAC 1 A, 115 VDC
		High-sensitivity and High-precision models	A150 10 A, 115 VAC 0.8 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
		High-sensitivity and High-precision models	0.8 A, 115 VDC

TÜV (EN 60947-5-1)

(Certification only for Direct-wire cable type switches and Pre-wired DC switches with connectors)

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

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

CCC (GB14048.5)

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						

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

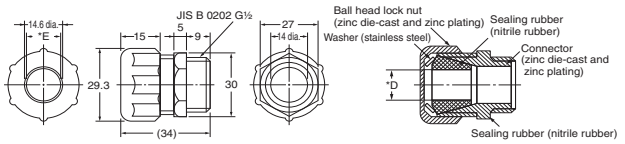
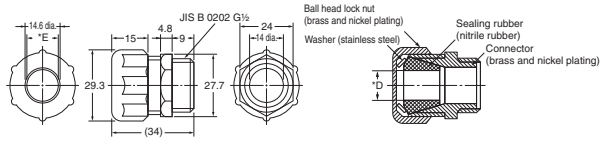
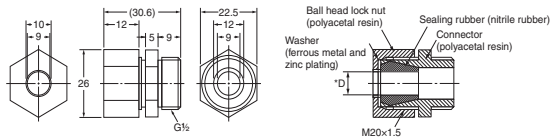
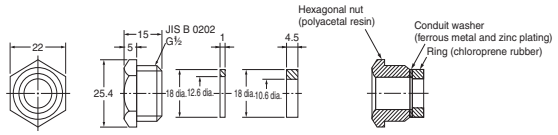
Actuator	Pretravel (PT)	Set Model Numbers	Switches without levers	Heads (with Actuators)	Actuator *
			Model	Model	Model
Roller lever: R38 mm	15±5°	WLCA2-N	WLRCA2-N	WL-1H1100-N	WL-1A100
	25±5°	WLCA2-2-N	WLRCA2-2-N	WL-3H1100-N	
	20° max.	WLCA2-2N-N	WLRCA2-2N-N	WL-1H1100-N	
	$10°^{+2°}_{-1°}$	WLG2	---	WL-2H1100	
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	
	$10°^{+2°}_{-1°}$	WLG12	WLRG2	WL-2H2100	
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	
	$10°^{+2°}_{-1°}$	WLGL	WLRG2	WL-2H4100	
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 (1)	55° max.	WLCA32-41-N	WLRCA32-N	WL-5H5100-N	WL-5A100
Fork Lock Lever (2)	55° max.	WLCA32-42-N		WL-5H5102-N	WL-5A102
Fork Lock Lever (3)	55° max.	WLCA32-43-N		WL-5H5104-N	WL-5A104
Fork Lock Lever (4)	55° max.	WLCA32-44-N		WL-5H5104-N	WL-5A104

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 (Conduit size: JIS B0202G1/2)

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 WLG□ 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**	

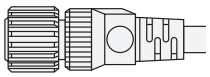
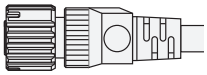
Note: 1. Please use sealling tape with SC Connectors. SC-1M to SC-5M, however, are provided with an O-ring (NBR) and therefore sealing tape is not necessary to ensure a proper seal. The SC-6 and SC-P2 models are made of resin. If higher sealing performance is required, use one of SC-1M to SC-5M, which 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, -1PT	7 dia.	10.4 dia.	5.5 dia. to 7.5 dia.
SC-22, -2M, -2PT	9 dia.	13.2 dia.	7.5 dia. to 9.5 dia.
SC-23, -3M, -3PT	12.5 dia.	14.6 dia.	11 dia. to 13 dia.
SC-24, -4M, -4PT	14 dia.	14.6 dia.	12 dia. to 14 dia.
SC-25, -5M, -5PT	11 dia.	13.2 dia.	9 dia. to 11 dia.
SC-6	9 dia.	10 dia.	7.5 dia. to 9 dia.

Sensor I/O connectors

Appearance	AC/DC type	Number of cable cores	Cable length (m)	Cable model	Compatible model
M12 Screw (Straight) 	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	
M12 Smartclick (Straight) 	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/WLG	General-purpose models Long-life models (Basic models, High-sensitivity Switches)	Indicator *1	LED	Color: Red	WL-LD-N
					Color: Yellow	WL-LW-N *2
				Neon lamp	Color: Orange	WL-LE-N *2
		Spatter Prevention models		LED	Color: Red	WL-LDS-N
				Neon lamp	Color: Orange	WL-LES-N
		Long-life models (High-precision Switches)		LED	Color: Red	WL-LD
				Neon lamp	Color: Orange	WL-LE
Terminal Plate	WL□-N		Change from bipolar to monopolar (contact C). Use in basic and high-sensitivity switches that are general-purpose, environment-resistant, spatter-prevention, and long-life.			WL-N TERMINAL PLATE
	WL		Change from bipolar to monopolar (contact C). Use in long-life high-sensitivity switches.			WL TERMINAL PLATE
Side mounting plate	WL□-2N-N		---			WLN-P001

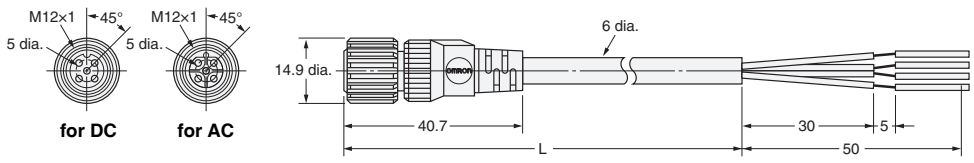
*1. The default setting is for light-ON when not operating. Turn the lamp holder by 180° to change the setting to light-ON when operating.
*2. The Color Universal Design structure is certified by an NPO. Certification conditions: Ambient illumination of 500 lx max. (JIS Z 9110)

Color Universal Design was developed in consideration of people with various types of color vision to allow information to be accurately conveyed to as many individuals as possible.

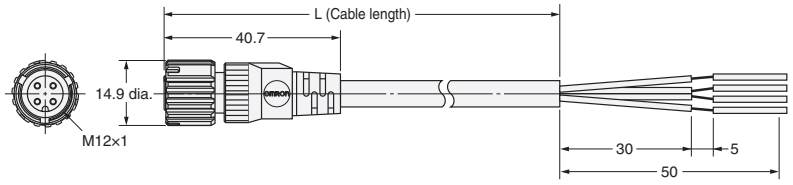
Dimensions

(Unit: mm)

Sensor I/O connectors
XS2F-A421-□□0-F
XS2F-D421-□D0
XS2F-D421-□□0-F

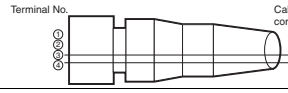
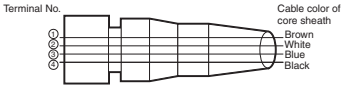
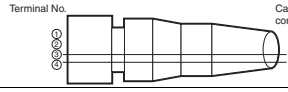
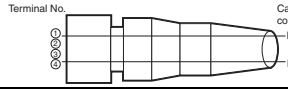


XS5F-D421-□80-F

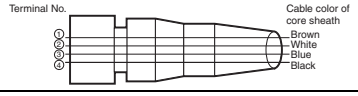


Wiring Diagram

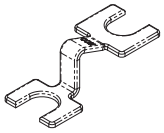
XF2F

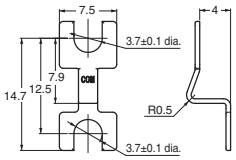
AC/DC Type	Two-core model		Four-core model	
	Model	Wiring Diagram	Model	Wiring Diagram
AC	XS2F-A421-DB0-F XS2F-A421-GB0-F		XS2F-A421-D90-F XS2F-A421-G90-F	
DC	XS2F-D421-DD0 XS2F-D421-GD0		XS2F-D421-D80-F XS2F-D421-G80-F	
	XS2F-D421-DA0-F XS2F-D421-GA0-F			

XF5F

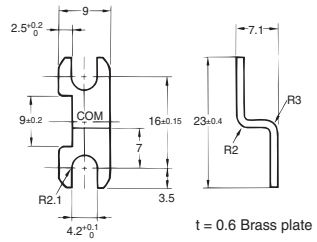
AC/DC Type	Four-core model	
	Model	Wiring Diagram
DC	XS5F-D421-D80-F XS5F-D421-G80-F	

Terminal Plate
WL-N TERMINAL PLATE

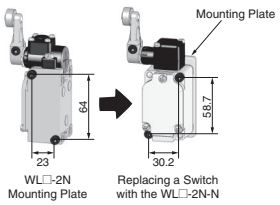


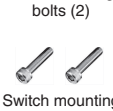


Terminal Plate
WL Terminal Plate



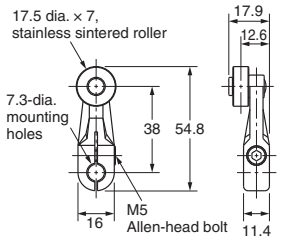
Side mounting plate
WLN-P001



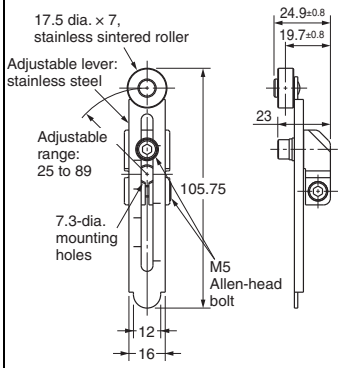
Set contents		
	 Plate (1)	 Plate mounting bolts (2) Switch mounting bolts (2)

Actuator
General-purpose Models

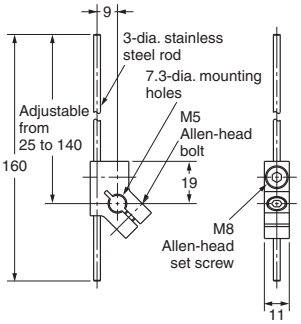
WL-1A100



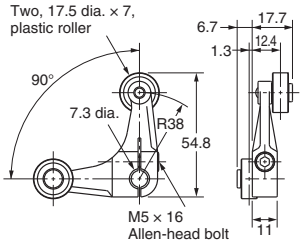
WL-2A100



WL-4A100

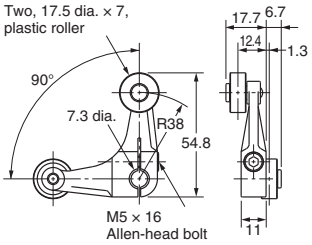


WL-5A100



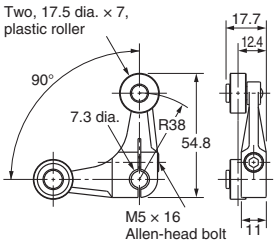
WL-5A100 has a plastic roller

WL-5A102



WL-5A102 has a plastic roller

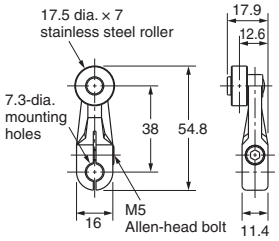
WL-5A104



WL-5A104 has a plastic roller

Actuator
Spatter-prevention Models

WL-1A103S



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

Safety Precautions

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

Meanings of Warning Signal Text

Precautions for Safe Use	Indicates an action that must be performed or avoided for safe use of this product.
Precautions for Correct Use	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.

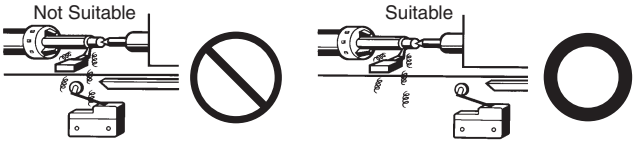
Precautions for Safe Use

- 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 (H_2S or SO_2), ammonium gas (NH_3), nitric gas (HNO_3), or chlorine gas (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

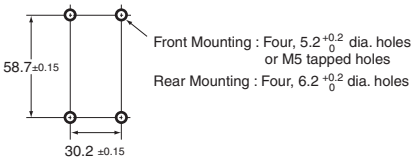
- This switch is only for indoor use. If it is used in outdoor, it may be cause of switch failure.
- Take special care to use where there is fine powder, mud and/or foreign materials stacking. And check the condition with actual using condition before using. Then use without a performance problem.
- 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.
- The Switches have physical contacts. Using them in environments containing silicon gas will result in the formation of silicon oxide (SiO_2) due to arc energy. If silicon oxide accumulates on the contacts, contact interference can occur. If silicon oil, silicon filling agents, silicon cables, or other silicon products are present near the Switch, suppress arcing with contact protective circuits (surge suppressor) or remove the source of silicon gas.

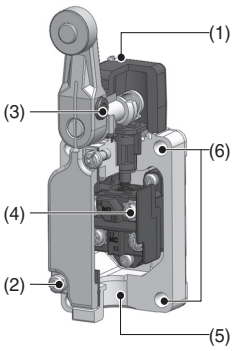
Installing the Switch

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



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 (WL-N model), M4 screw (WL model)
(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.

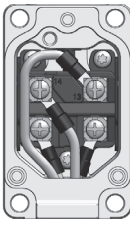
Note: The P level indicates the standard malfunction level at a reliability level of 60% (λ_{60}). (JISC5003) $\lambda_{60} = 0.1 \times 10^{-6}$/ operations indicates that the estimated malfunction rate is less than 1/10,000,000 operations with a reliability level of 60%.

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^2).
- 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

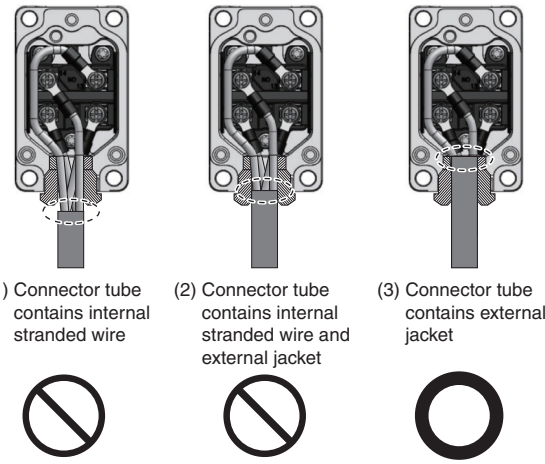
- Do not remove or replace the built-in switch. Risk of malfunctioning.

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 15, 16). 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 (Conduit size: JIS B0202G1/2)* on page 77.
- 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, WL 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.

Operaition indicator

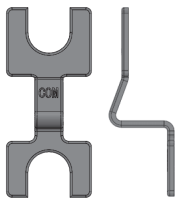
Indicator-equipped switch has contacts and indicator in parallel. When contacts are open, leakage current flows through the indicator circuit and may cause load's malfunction. Leakage current may cause load malfunction (i.e., the load may remain ON). Make sure that the load operating current is higher than the leakage current. For countermeasures, refer to technical support on your OMRON website.

Terminal Plate

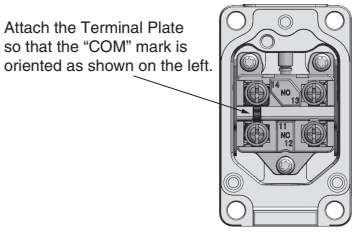
By using the Terminal Plate (sold separately), as shown in the following diagram, the Switch can be used as a single-polarity double-break switch.

Use in basic and high-sensitivity switches that are general-purpose, environment-resistant, spatter-prevention, and long-life

WL-N TERMINAL PLATE



Terminal Plate



Terminal Plate Mounting Diagram (with Two Terminal Screws Removed)

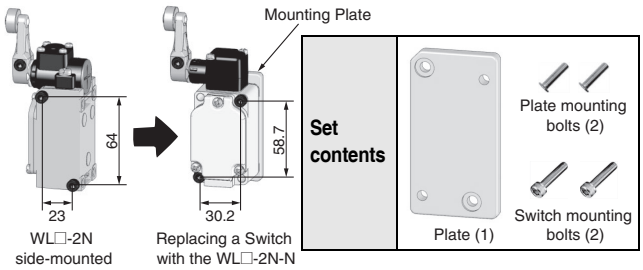
Use in long-life high-sensitivity switches

WL Terminal Plate

For details, refer to page 79.

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

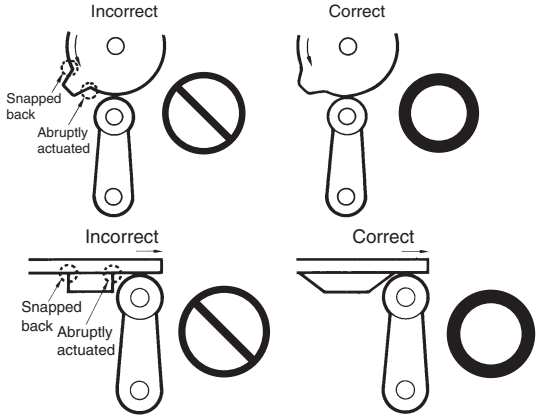
We provide a special mounting plate (sold separately) that features mounting compatibility when replacing with the WL□-2N-N series. If you use the Mounting Plate, the Switch mounting holes and actuator position will be compatible. Note: The position of the dog remains unchanged.



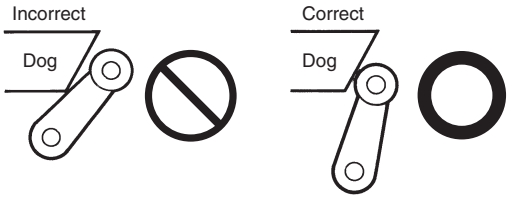
Operation Procedures

Operation

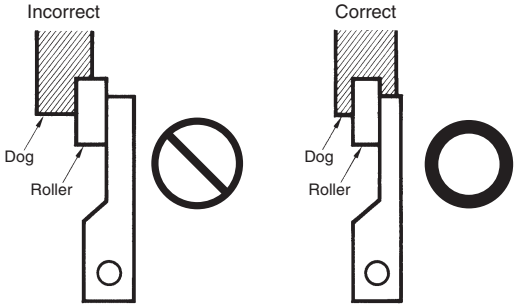
- Carefully determine the position and shape of the dog or cam so that the actuator will not abruptly snap back, thus causing shock. In order to operate the Limit Switch at a comparatively high speed, use a dog or cam that keeps the Limit Switch turned ON for a sufficient time so that the relay or valve 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.

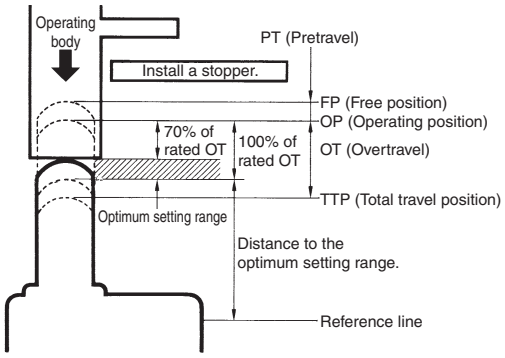


- Unbalanced force must not be imposed on the actuator. Otherwise, wear and tear on the actuator may result.

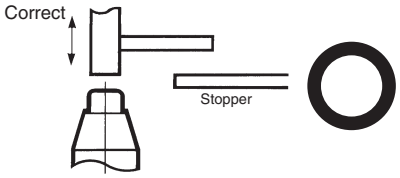


- With a roller actuator, the dog must touch the actuator at a right angle. The actuator or shaft may deform or break if the dog touches the actuator (roller) at an oblique angle.

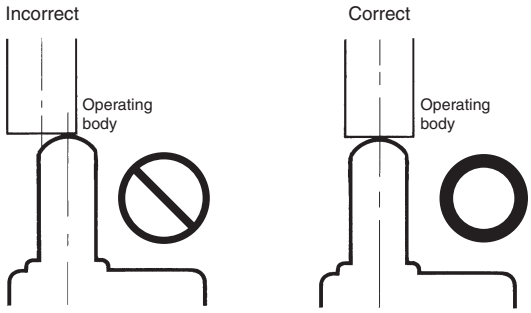
- Mount so that the actuator travel after operation (OT) is not exceeded. If the travel after operation (OT) exceeds the limit, switch failure could result. When mounting the Limit Switch, be sure to adjust the Limit Switch carefully while considering the whole movement of the actuator.



- 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.



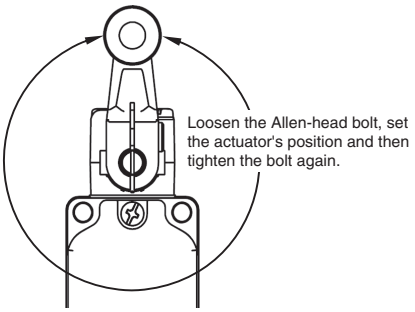
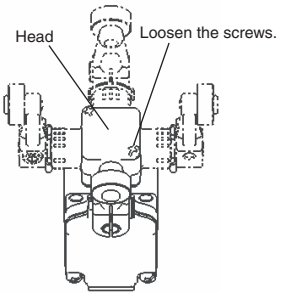
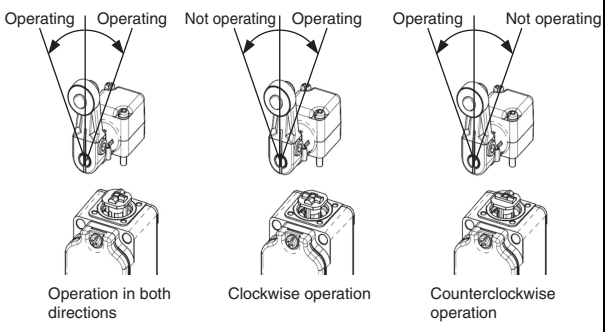
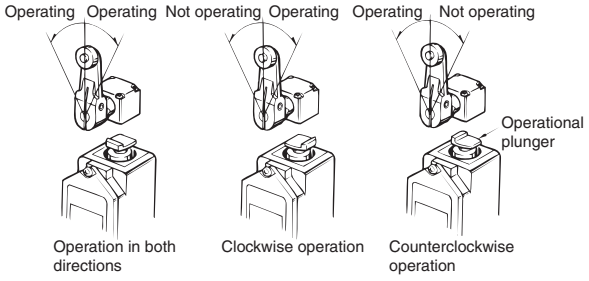
- When using a pin-plunger actuator, make sure that the stroke of the actuator and the movement of the dog are located along a single straight line.

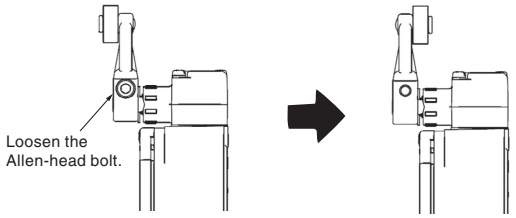
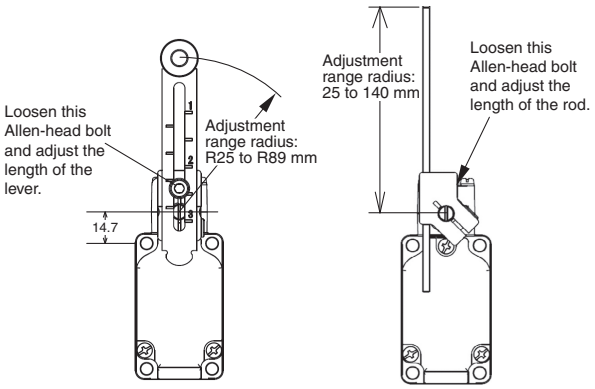
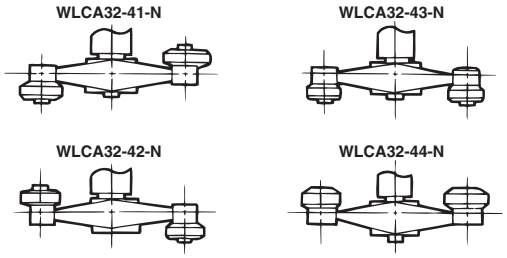


Others

- 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 about 60% to 80% of the entire motion (TT).
- Conduct periodic inspection on a regular schedule.

Using the Switches

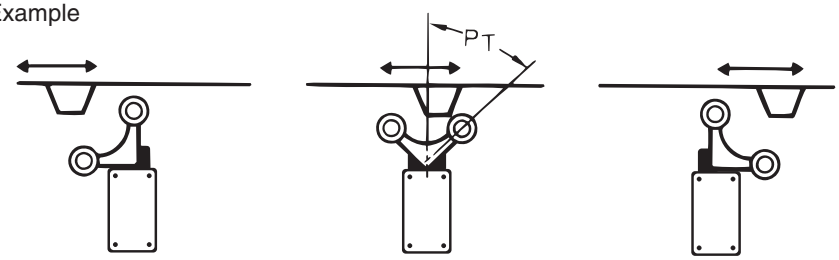
Item	Applicable models and Actuators	Details
Changing the Installation Position of the Actuator By loosening the Allen-head bolt on the actuator lever, the position of the actuator can be set anywhere within the 360°. With Operation Indicator-equipped Switches, the actuator lever comes in contact with 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)	
Changing the Orientation of the Head 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. 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 (WLSD□-N) Top-roller plunger (WLD2-N) Sealed top-roller plunger (WLD28-N) Fork lock lever (WLCA32-4□-N) **Note:** Does not include -RP60 Series or -141 Series	
Changing the Operating Direction By removing the Head on models which can operate on one-side only, and then changing the direction of the operational plunger, one of three operating directions can be selected. The tightening torque for the screws on the Head is 0.78 to 0.88 N·m.	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)	**One-side Operation for General Models** 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)	**One-side Operation for High-precision Switches** 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
Installing the Roller on the Inside By installing the roller lever in the opposite direction, the roller can be installed on the inside. (Set so that operation can be completed within a 180° level range.)	Roller 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)	
Adjusting the Length of the Rod or Lever The length of the rod or lever can be adjusted by loosening the Allen-head bolt.	Adjustable roller lever (WLCA12-N, WLCA12-2-N, WLCA12-2N-N, WLG12) Adjustable rod lever (WLCL-N, WLCL-2-N, WLCL-2N-N, WLGL, WLCAL4-N)	 **Adjustable Roller Levers:** **Adjustable Rod Levers:**
Selecting the Roller Position There are four types of Switches with Fork Lock Levers for use depending on the roller position.	Fork lock lever: (WLCA32-4□-N)	 An explanation of the operation of fork lock levers is provided after this table.

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



NC terminal: ON NO terminal: ON NO terminal: ON

Terms and Conditions Agreement

Read and understand this catalog.

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

Warranties.

(a) Exclusive Warranty. Omron's exclusive warranty is that the Products will be free from defects in materials and workmanship for a period of twelve months from the date of sale by Omron (or such other period expressed in writing by Omron). Omron disclaims all other warranties, express or implied.

(b) Limitations. OMRON MAKES NO WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, ABOUT NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OF THE PRODUCTS. BUYER ACKNOWLEDGES THAT IT ALONE HAS DETERMINED THAT THE PRODUCTS WILL SUITABLY MEET THE REQUIREMENTS OF THEIR INTENDED USE.

Omron further disclaims all warranties and responsibility of any type for claims or expenses based on infringement by the Products or otherwise of any intellectual property right. (c) Buyer Remedy. Omron's sole obligation hereunder shall be, at Omron's election, to (i) replace (in the form originally shipped with Buyer responsible for labor charges for removal or replacement thereof) the non-complying Product, (ii) repair the non-complying Product, or (iii) repay or credit Buyer an amount equal to the purchase price of the non-complying Product; provided that in no event shall Omron be responsible for warranty, repair, indemnity or any other claims or expenses regarding the Products unless Omron's analysis confirms that the Products were properly handled, stored, installed and maintained and not subject to contamination, abuse, misuse or inappropriate modification. Return of any Products by Buyer must be approved in writing by Omron before shipment. Omron Companies shall not be liable for the suitability or unsuitability or the results from the use of Products in combination with any electrical or electronic components, circuits, system assemblies or any other materials or substances or environments. Any advice, recommendations or information given orally or in writing, are not to be construed as an amendment or addition to the above warranty.

See http://www.omron.com/global/ or contact your Omron representative for published information.

Limitation on Liability; Etc.

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

Further, in no event shall liability of Omron Companies exceed the individual price of the Product on which liability is asserted.

Suitability of Use.

Omron Companies shall not be responsible for conformity with any standards, codes or regulations which apply to the combination of the Product in the Buyer's application or use of the Product. At Buyer's request, Omron will provide applicable third party certification documents identifying ratings and limitations of use which apply to the Product. This information by itself is not sufficient for a complete determination of the suitability of the Product in combination with the end product, machine, system, or other application or use. Buyer shall be solely responsible for determining appropriateness of the particular Product with respect to Buyer's application, product or system. Buyer shall take application responsibility in all cases.

NEVER USE THE PRODUCT FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY OR IN LARGE QUANTITIES WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON PRODUCT(S) IS PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.

Programmable Products.

Omron Companies shall not be responsible for the user's programming of a programmable Product, or any consequence thereof.

Performance Data.

Data presented in Omron Company websites, catalogs and other materials is provided as a guide for the user in determining suitability and does not constitute a warranty. It may represent the result of Omron's test conditions, and the user must correlate it to actual application requirements. Actual performance is subject to the Omron's Warranty and Limitations of Liability.

Change in Specifications.

Product specifications and accessories may be changed at any time based on improvements and other reasons. It is our practice to change part numbers when published ratings or features are changed, or when significant construction changes are made. However, some specifications of the Product may be changed without any notice. When in doubt, special part numbers may be assigned to fix or establish key specifications for your application. Please consult with your Omron's representative at any time to confirm actual specifications of purchased Product.

Errors and Omissions.

Information presented by Omron Companies has been checked and is believed to be accurate; however, no responsibility is assumed for clerical, typographical or proofreading errors or omissions.

OMRON Corporation **Industrial Automation Company**
Kyoto, JAPAN
Contact: www.ia.omron.com

Regional Headquarters
OMRON EUROPE B.V.
Wegalaan 67-69, 2132 JD Hoofddorp
The Netherlands
Tel: (31)2356-81-300/Fax: (31)2356-81-388

OMRON ELECTRONICS LLC
2895 Greenspoint Parkway, Suite 200
Hoffman Estates, IL 60169 U.S.A.
Tel: (1) 847-843-7900/Fax: (1) 847-843-7787

OMRON ASIA PACIFIC PTE. LTD.
No. 438A Alexandra Road # 05-05/08 (Lobby 2),
Alexandra Technopark,
Singapore 119967
Tel: (65) 6835-3011/Fax: (65) 6835-2711

OMRON (CHINA) CO., LTD.
Room 2211, Bank of China Tower,
200 Yin Cheng Zhong Road,
PuDong New Area, Shanghai, 200120, China
Tel: (86) 21-5037-2222/Fax: (86) 21-5037-2200

Authorized Distributor:

CSM_1_15_1019
Cat. No. C151-E1-03 0319 (1217)