NAiS

VERTICAL TYPE LIMIT SWITCHES

AZ5 Limit Switches

Vertical type limit switch (includes lamp type)

(Standard model) general use vertical limit switch. Available with either a neon AC powered lamp or an LED DC powered lamp for operation indication and convenient maintenance.



Standard model



With lamps

(Roller arm)

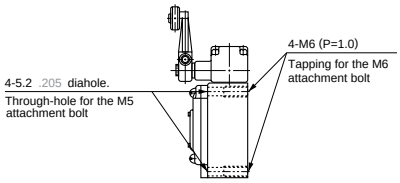
FEATURES

1. Can be mounting either front or back.

2. Lamp type switches can be used with a wide range of voltages

• Neon lamp

Comes in two types: 100V AC and 200V AC, sufficient luminosity is achieved through the diamond-cut lens. The lamp has a long lifespan of more than 20 thousand hours.



• LED lamp

Covers 6V to 48V DC and comes in three types, 6V DC, 12V DC, and 24 to 48V DC. Uses two highly luminescent LEDs and a diamond-cut lens.

3. Lamp connection can be either spring type or lead wire type

Spring type (wiring unnecessary) (With neon or LED lamp type)

Wiring is unnecessary because the lamp is directly connected to the terminals. By simply changing the direction of the lamp cover, it is possible to display both lights during operation (normally closed side) and no operation (normally open side.)

Lead wiring type <Current leakage 0> (LED type only)

Because the wiring can be made parallel to the load, current leakage from the lamp can be reduced to 0. Even with a slight leak, the electronic circuit incurring the leak can be used safely.

4. Dust-proof, water-proof, corrosion-proof, oil-resistant construction

The protective construction is corrosion-proof (conforms to IP67.) The lens and cover are formed simultaneously with the lamp type, and a nameplate is affixed to the upper surface.

TYPICAL APPLICATIONS

Conveyer equipment, conveyer belts, plant facilities, cranes, cleaning plants, etc. The LED lamp type is also compatible with both PC and computer direct current low voltage control circuits.

PRODUCT TYPE

1. Standard type

Actuator		Part No.
Push plunger		AZ5101
Roller plunger		AZ5102
Roller arm	Standard type	AZ5104
	O.T. amplified type	AZ5124
Yoke		AZ5105
Flexible		AZ5106
Adjustable rod	Standard type	AZ5107
	O.T. amplified type	AZ5127
Adjustable roller arm	Standard type	AZ5108
	O.T. amplified type	AZ5128

2. With Neon lamp

Lamp connection	Actuator		Lamp rating	
			100V AC	200V AC
			Part No.	
Spring type	Push plunger		AZ510141	AZ510142
	Roller plunger		AZ510241	AZ510242
	Roller arm	Standard type	AZ510441	AZ510442
		O.T. amplified type	AZ512441	AZ512442
	Yoke		AZ510541	AZ510542
	Flexible		AZ510641	AZ510642
	Adjustable rod	Standard type	AZ510741	AZ510742
		O.T. amplified type	AZ512741	AZ512742
	Adjustable roller arm	Standard type	AZ510841	AZ510842
		O.T. amplified type	AZ512841	AZ512842

3. With LED

Lamp connection	Actuator		Lamp rating	
			12V DC	24 to 48V DC
			Part No.	
Spring type	Push plunger		AZ5101161	AZ510116
	Roller plunger		AZ5102161	AZ510216
	Roller arm	Standard type	AZ5104161	AZ510416
		O.T. amplified type	AZ5124161	AZ512416
	Yoke		AZ5105161	AZ510516
	Flexible		AZ5106161	AZ510616
	Adjustable rod	Standard type	AZ5107161	AZ510716
		O.T. amplified type	AZ5127161	AZ512716
	Adjustable roller arm	Standard type	AZ5108161	AZ510816
		O.T. amplified type	AZ5128161	AZ512816
Lead wire type	Push plunger		AZ5101661	AZ510166
	Roller plunger		AZ5102661	AZ510266
	Roller arm	Standard type	AZ5104661	AZ510466
		O.T. amplified type	AZ5124661	AZ512466
	Yoke		AZ5105661	AZ510566
	Flexible		AZ5106661	AZ510666
	Adjustable rod	Standard type	AZ5107661	AZ510766
		O.T. amplified type	AZ5127661	AZ512766
	Adjustable roller arm	Standard type	AZ5108661	AZ510866
		O.T. amplified type	AZ5128661	AZ512866

Notes) 1) UL recognized type available. When ordering, add suffix 9 to the standard part No..
2) LED rating 6V DC type is available. When ordering, add suffix 162 (spring type) or 662 (lead wire type) to the standard part No..

SPECIFICATIONS

1. Contact Rating

1) Standard type

Types of load / Rated load	Resistive load (cos $\phi \fallingdotseq 1$)	Inductive load (cos $\phi \fallingdotseq 0.4$)	Motor or lamp load	
			N.C. contact	N.O. contact
125V AC	10A	6A	4A	2A
250V AC	6A	4A	2.5A	1.2A
500V AC	2A	1.2A	0.75A	0.5A
125V DC	0.8A	0.1A	–	–

2) Type with indicator

	Rated control voltage	Resistive load (cos $\phi \fallingdotseq 1$)	Inductive load (cos $\phi \fallingdotseq 0.4$)
With Neon lamp	125V AC	10A	6A
	240V AC	6A	4A
With LED	24V DC	6A	–

2. Contact Characteristics

Contact arrangement		1 Form Z
Initial contact resistance, max.		15mΩ (By voltage drop 6 to 8V DC 1A)
Contact material		Silver
Initial insulation resistance (At 500V DC)		Min. 100MΩ
Initial breakdown voltage		1,000Vrms for 1 min Between non-consective terminals 2,000Vrms for 1 min Between dead metal parts and each terminal 2,000Vrms for 1 min Between ground and each terminal
Shock resistance		294m/s^2 {30G}
Vibration resistance		Standard type: Max. 55Hz Type with indicator: 10 to 50 Hz, double amplitude of 1.5mm
Expected life (Min. operations)	Mechanical	10^7 (at 60 cpm)
	Electrical	5×10^5 (at 20 cpm, rated load)
Ambient temperature		Standard type: –5 to +80°C +23 to +176°F With indicator: –5 to +60°C +23 to +140°F
Ambient humidity		Max. 95%R.H.
Max. operating speed		120 cpm

3. Operating characteristics

Actuator \ Characteristics		O.F. (N {gf}) max.	R.F. (N {gf}) min.	Pretravel (P.T.), max. mm inch	Movement Differential (M.D.), max. mm inch	Overtravel (O.T.), min. mm inch	Totaltravel (T.T.), min.	Repeat Accuracy of Operating Position, max. mm inch*1
Push plunger		26.67 {2,720}	8.92 {910}	1.7 .067	1.0 .039	6.4 .252	–	0.1 .004
Roller plunger		26.67 {2,720}	8.92 {910}	1.7 .067	1.0 .039	5.6 .220	–	0.1 .004
Roller arm	Standard type	13.34 {1,360}	2.23 {227}	15°±5°	12°	–	45°	1°
	O.T. amplified type	8.83 {900}	0.49 {50}	25°±5°	15°	–	90°	1°
Yoke		8.90 {908}	8.90 {908}	50°±5°	–	–	90°±10°	–
Flexible*2		1.39 {142}	–	20±10 .787±.394	–	–	–	–
Adjustable rod*3	Standard type	1.39 {142}	0.27 {28}	15°±5°	12°	–	45°	1°
	O.T. amplified type	2.39 {244}	0.14 {14}	25°±5°	15°	–	90°	1°
Adjustable roller arm*4	Standard type	13.34 {1,360}	2.23 {227}	15°±5°	12°	–	45°	1°
	O.T. amplified type	8.83 {900}	0.49 {50}	25°±5°	15°	–	90°	1°

*1) Value between max. and min. value in the operating position at 20 cpm, no-load
*2) Measured at the position within 5mm from the top of actuator.
*3) O.F., R.F.: measured at the center distance of 135mm 5.315inch.
*4) O.F., R.F.: measured at the center distance of 38mm 1.496inch.
*5) For the operating characteristics, refer to the TECHNICAL INFORMATION.

4. Protective characteristics

Protective construction	Vertical type limit switches	Vertical type limit switches (With lamp)
IEC		
IP60	○	○
IP64	○	○
IP67	○	○

5. Indicator rating

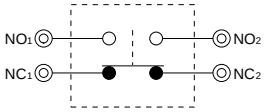
Types	Rated operating voltage	Operating voltage range	Internal resistance
Neon lamp	100V AC	80 to 120V AC	120kΩ
	200V AC	160 to 240V AC	240kΩ
LED lamp	6V AC/DC	5 to 15V AC/DC	2.4kΩ
	12V AC/DC	9 to 28V AC/DC	4.7kΩ
	24 to 48V AC/DC	20 to 55V AC/DC	15kΩ

STANDARD

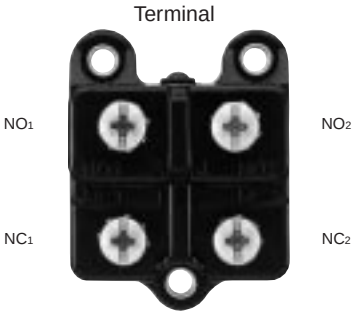
Standard	Applicable product	Part No.	Notes
UL recognized product	File No. : E99838 Ratings : 10A, 1/2HP, 125V AC 6A, 1/2HP, 250V AC Product type : standard model only	Add “9” to the end of the standard part No.	Please ask about the price. Comes fitted with an earth pin.

WIRING DIAGRAM

Output circuit



Terminal



DIMENSIONS

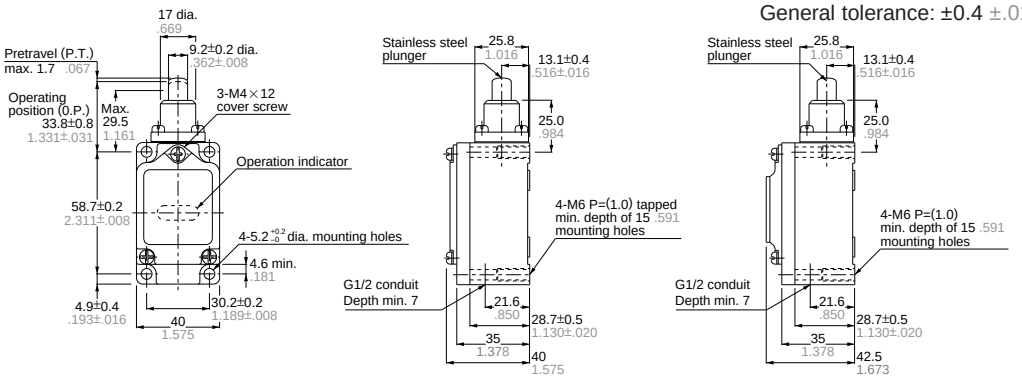
mm inch

General tolerance: ±0.4 ±.016

• Push plunger type



AZ5101



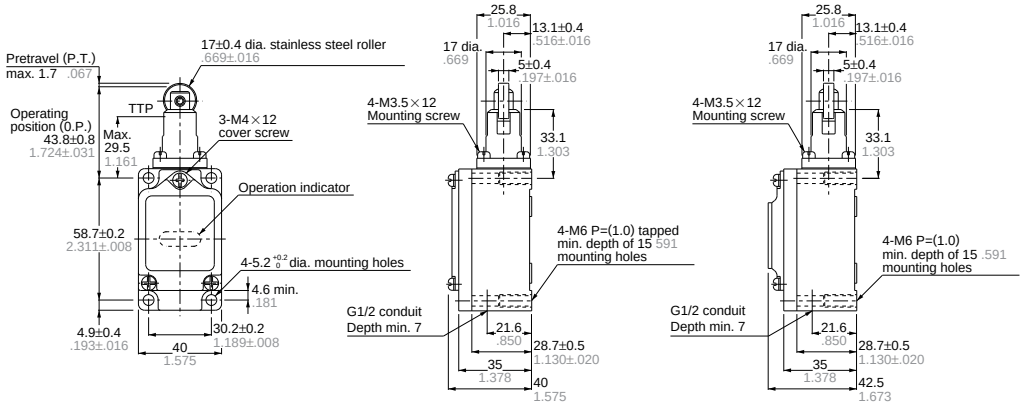
Standard With indicator

• Roller plunger type

General tolerance: ±0.4 ±.016



AZ5102



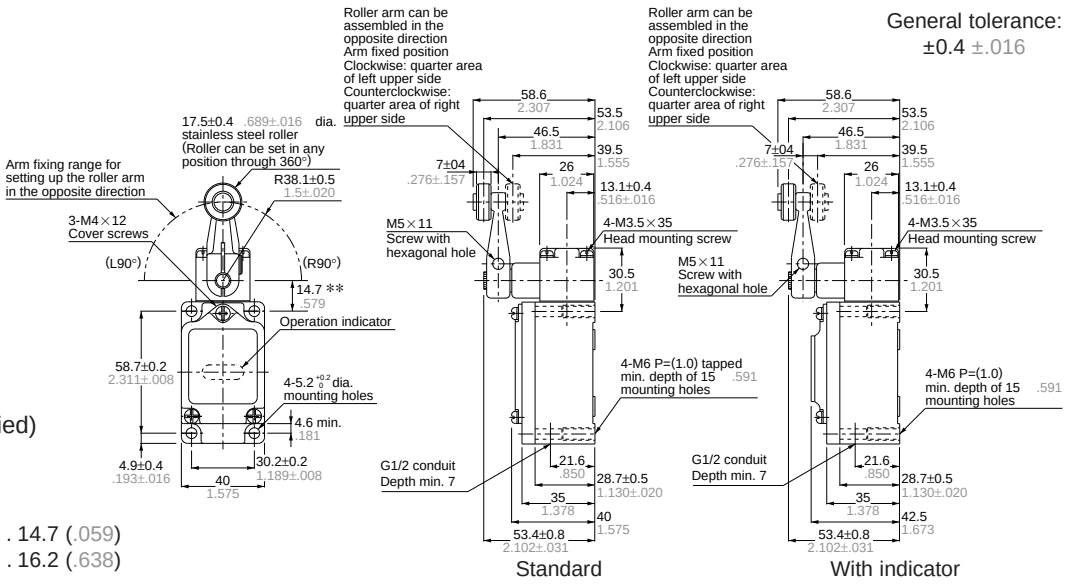
Standard With indicator

• Roller arm type

General tolerance: ±0.4 ±.016



AZ5104
AZ5124 (O.T. amplified)



Standard With indicator

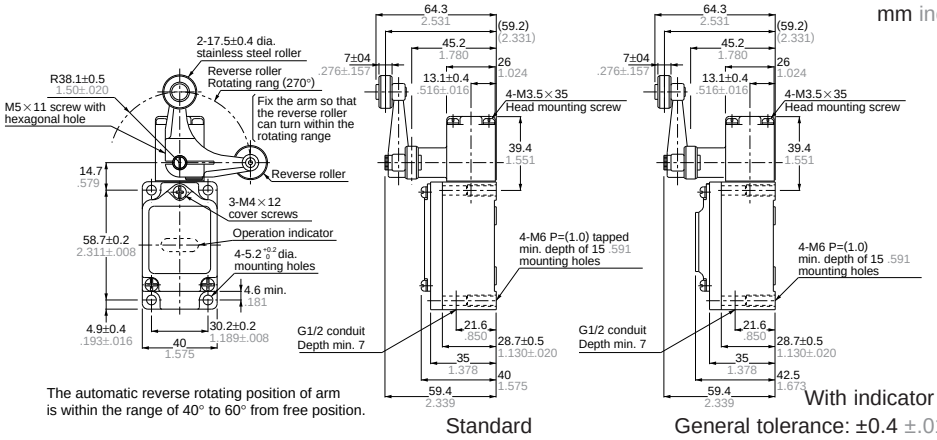
*Dimension: AZ5104xx . . . 14.7 (.059)
AZ5124xx . . . 16.2 (.638)

• Yoke type

mm inch



AZ5105

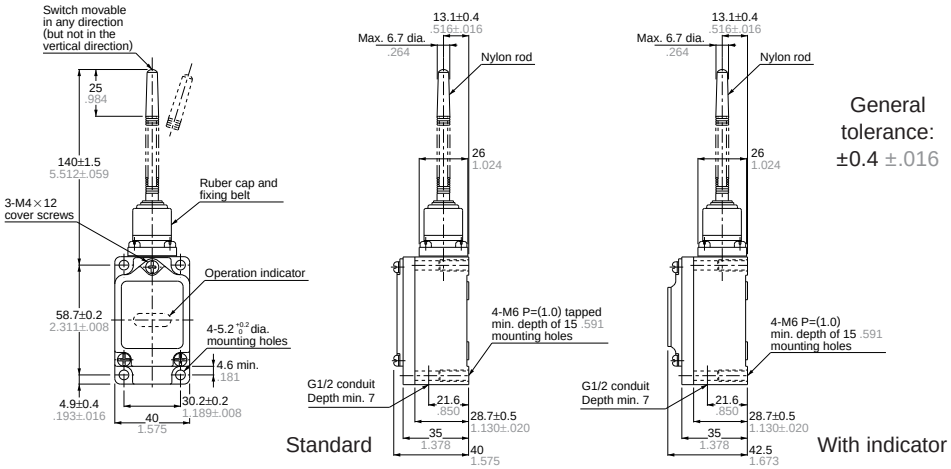


The automatic reverse rotating position of arm is within the range of 40° to 60° from free position.

• Flexible rod type



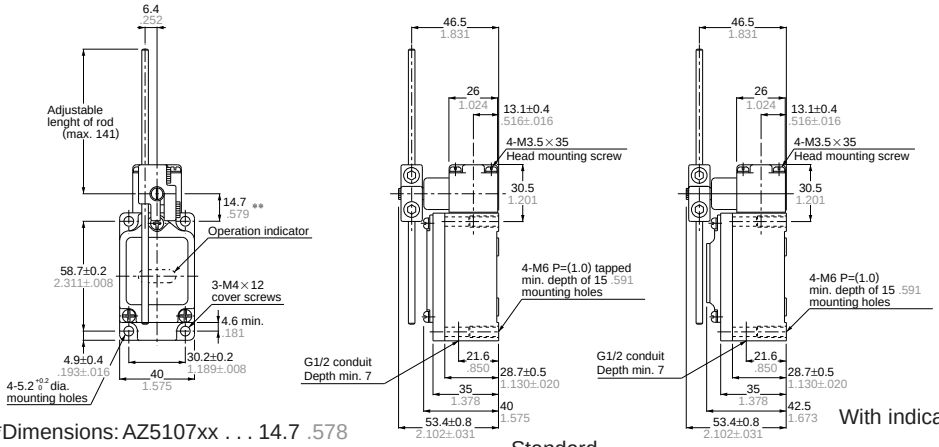
AZ5106



• Adjustable rod type

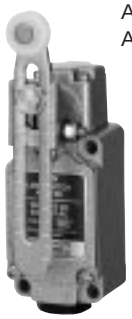


AZ5107
AZ5127 (O.T. amplified)

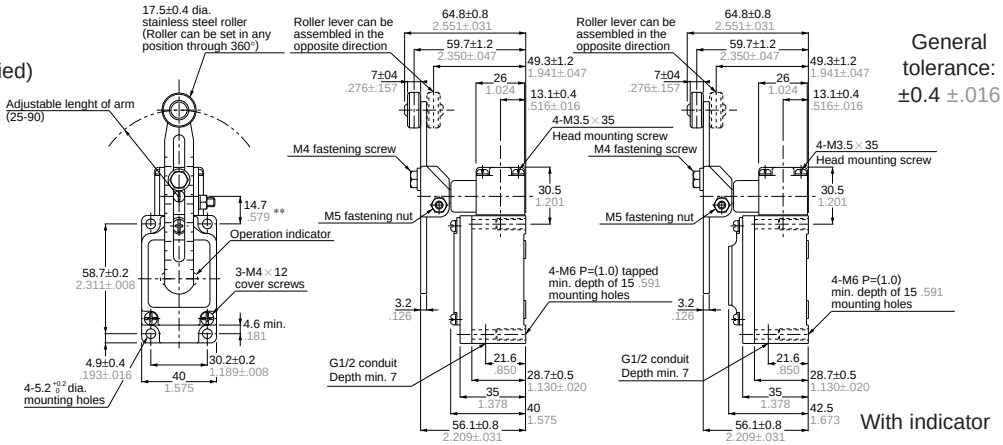


*Dimensions: AZ5107xx . . . 14.7 .578
AZ5127xx . . . 16.2 .638

• Adjustable roller arm type



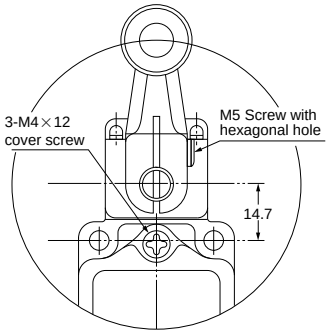
AZ5108
AZ5128 (O.T. amplified)



*Dimensions: AZ5108xx . . . 14.7 .579
AZ5128xx . . . 16.2 .638

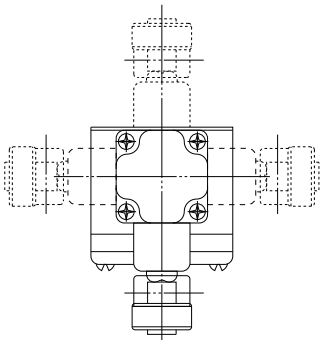
Arm Setting Position

The roller arm of the arm types (AZ5104, AZ5105, AZ5107, AZ5108, AZ5124, AZ5127, AZ5128 and each type with lamp) can be set in any position through 360°.
Loosen the arm fastening hex. nut, reposition the arm, and retighten the

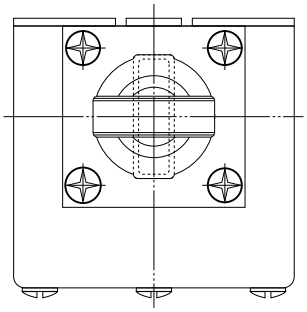


Head Direction

1) The head of the arm types (AZ5104, AZ5105, AZ5107, AZ5108, AZ5124, AZ5127, AZ5128 and each type with lamp) can be set in any of four directions.
Loosen four screws on the head, and set the head in a desired direction.

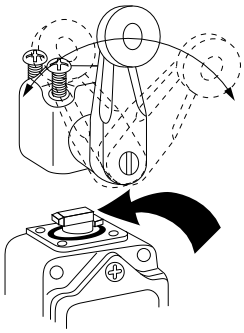


2) The head of the roller plunger type (AZ5102) can be set in two directions.
Remove the four bushing screws, and set the head in a desired direction.



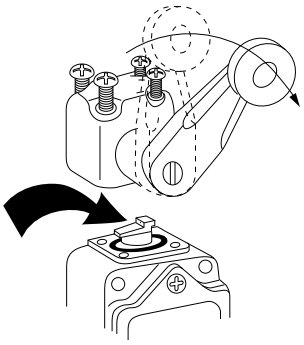
Operating Direction

1) Both direction
The arm of AZ5104, AZ5107, AZ5108 and each type with lamp can be set to operate in either both directions or only to the right or the left.

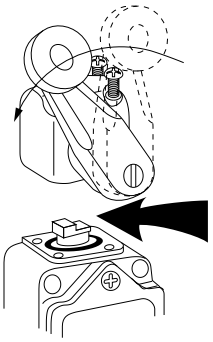


*O.T. amplified types:
only both directions

2) Clockwise
Remove the head block, turn the notch of a operating plunger 90° counterclockwise and retighten the head block.

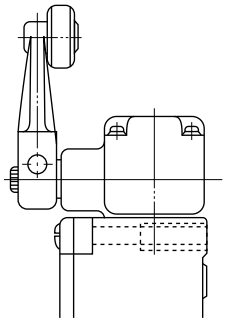


3) Counterclockwise
Remove the head block, turn the notch of a operating plunger 90° clockwise and retighten the head block.



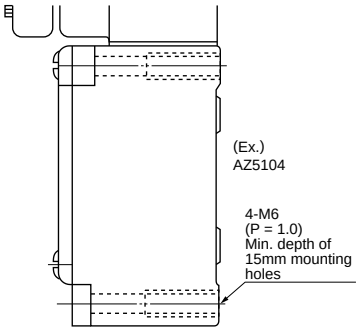
Roller Direction

The roller of the arm types (AZ5104, AZ5108, AZ5124, AZ5128) can be mounted on the front and rear side.
To set the roller on the rear side, remove the arm fastening hex. nut, and reinsert the arm so as to face the roller in the rear direction.
Then, retighten the hex. nut.



REVERSE MOUNTING

When a switch is mounted from the reverse side of a panel, use the mounting holes in the body.



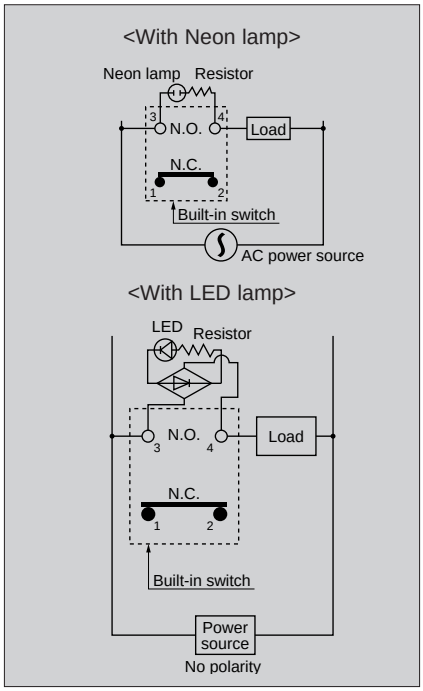
INDICATOR LIGHTING CIRCUIT

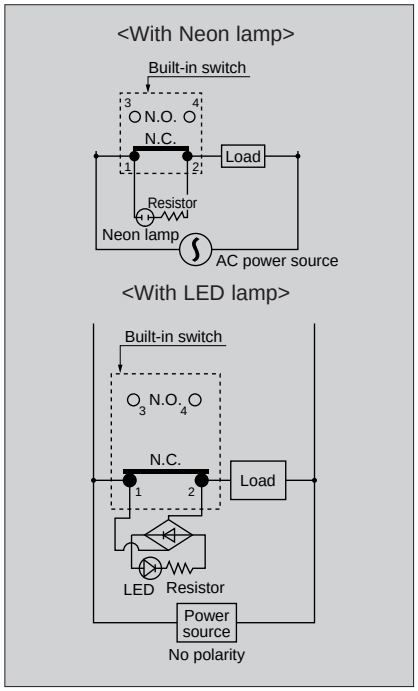
1. Spring type

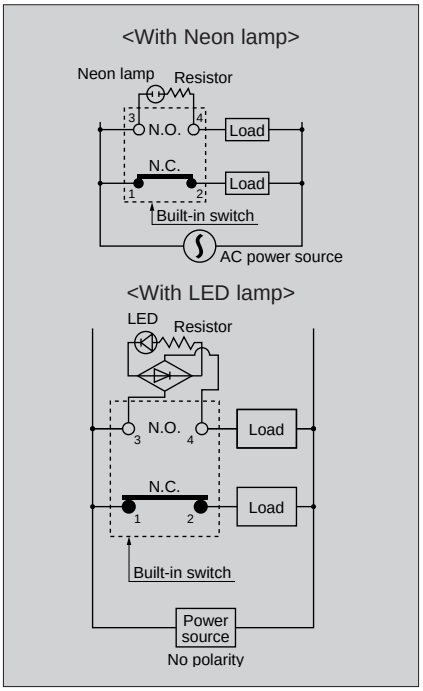
1) When connecting a load to the N.O. side:
When the switch is in the free position, the indicator is lit. When the switch operates, the indicator turns off.
(With the indicator holder in the same position as shipped from the factory.)

2) When connecting a load to the N.C. side:
When the switch is in the free position, the indicator is off. When the switch operates, the indicator turns on.
(With the indicator holder position changed by 180° from the factory set position.)

3) When connecting loads to both N.O. and N.C. sides:
Same as in 1).
(With the indicator holder in the same position as shipped from the factory. In this case, the holder position cannot be changed.)



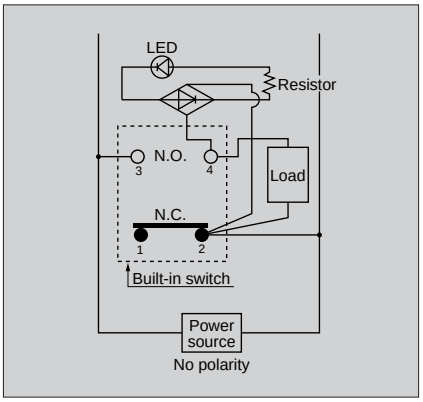




2. Lead wire type
(only for switches with LED)

1) When giving indication on N.O. side or N.C. side, operation is the same as for the spring type. However, when the load is connected to both the N.O. side and N.C. side, indication can be given on both N.C. side and N.O. side.

2) When the indication circuit is connected with load in parallel:
Load performs the same operation as the indication circuit does.
(When load operates, the lamp is lit, and when load is turned off, the lamp goes out.)
• More loads than for one circuit connot be controlled.
• There is no leakage current.



CAUTIONS

(for type with indicator)

1. Nylon is used for a indicator cover. Avoid using in the atmospheres containing acid substance.
2. Remove the indicator holder with a flathead screwdriver, and insert it in the opposite direction.

