

A highly durable switch that withstands heat from direct sunlight and extreme air temperature changes in outdoor applications.

- Wide range of models.
- Wide range of actuators. Select the actuator to suit your particular work requirements and operating conditions.
- Mechanical life: 10 million operations.
- UL/CSA/GB (ccc marking) approved models.



## APPLICATIONS

- Automated mechanical parking garages
- Ski lifts
- Cherry pickers and other elevated work equipment
- Various other industrial machinery in harsh environments and cold places.

(Use the corrosion-proof type if switch will be splashed by strong acidic or alkaline liquids.)

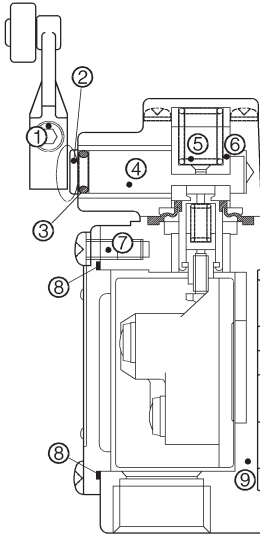
## ORDER GUIDE

Actuator		Operating characteristics			Basic catalog listing	Double seal catalog listing (S)
Name	Shape	Max. O.F. (operating force)	Max. P.T. (pretravel)	Min. T.T. (total travel)		
Roller lever		13.4 N	Standard switch 20°	Standard travel 50°	<b>1LS-J800</b>	<b>1LS-J800S</b>
		8.9 N	Standard switch 20°	High overtravel 80°	<b>1LS-J820</b>	<b>1LS-J820S</b>
			High sensitivity switch 10°	High overtravel 80°	—	<b>1LS-J830S</b>
Adjustable roller lever		8.9 N	Standard switch 20°	High overtravel 80°	<b>1LS-J823</b>	—
			High sensitivity switch 10°	High overtravel 80°	—	<b>1LS-J833S</b>
No lever	—	8.9 N	Standard switch 20°	High overtravel 80°	—	<b>1LS-J821S</b>

■ UL/CSA/GB(ccc marking) approved.

## OUTDOOR USE LIMIT SWITCHES

### 1LS-J800 Features



- ①The lever fixing bolt is made out of SUS and is fluorine-coated to improve removability.
- ②The gap between the lever body and head has been increased to improve corrosion resistance, dust resistance and freeze resistance performance.
- ③Lever return defects have been remedied by a head structure that prevents corrosion of the housing and by the use of SUS as the shaft material.
- ④Special hardening has been performed on shaft internal moving parts to improve wear and corrosion resistance performance.
- ⑤The lubricant on operating mechanisms has been changed to one that can be used in a wide operating temperature range (-60°C to +160°C) to improve temperature characteristics.
- ⑥Special coating has been added to the head's internal plunger to maintain smooth performance.
- ⑦SUS has been used for all external screws as a countermeasure against defects caused by rust.
- ⑧Silicone rubber is used for all of the seal rubber to improve low temperature characteristics.
- ⑨The body and head housing have undergone special corrosion resistance treatment.

## PERFORMANCE

Catalog listing		1LS-J80□	1LS-J82□	1LS-J83□
Standards	Compliance	NECA C 4508/JIS C 8201-5-1		
	Certification	UL/CSA/GB		
Structure	Contact form	2-circuit double break		
	Terminal type	M4 screw (switch terminal screw)		
	Contact type	Silver rivet		
	Protective structure	IP67 (IEC 60529, JIS C 0920)		
Electrical performance	Electrical rating	See Table 1.		
	Dielectric strength	Between non-continuous terminals	1,000 Vac, 50/60 Hz for 1 minute	
		Between each terminal and non-live metal part	2,000 Vac, 50/60 Hz for 1 minute	
	Insulation resistance	Min. 100 MΩ(by 500 Vdc megger)		
	Initial contact resistance	Silver: Max. 50 mΩ(6 to 8 Vdc, thermal current 1A, voltage drop method) Gold-plated: Max. 100 mΩ(6 to 8 Vdc, thermal current 0.1A, voltage drop method)		
Recommended min. contact operating voltage/current	24V 10 mA, 12V 20 mA			
Mechanical performance	Actuator strength	Withstands load 5 times O.F. (operating direction for 1 minute)		
	Terminal strength	Withstands tightening force of 1.5 N·m for 1 minute		
	Impact resistance	Contacts open for 1 ms max. at 300 m/s <sup>2</sup> in free position and total travel position		
	Vibration resistance	1.5 mm peak-to-peak amplitude, frequency 10 to 55 Hz, for 2 continuous hours Contacts open for 1 ms max. in free position and total travel position.		
	Allowable operating speed	1.7 mm/s to 0.5 m/s		
	Operating frequency	Max. 60 operations/minute		
Life	Mechanical	Min. 10 million operations		
	Electrical	See Table 2.		
Ambient operating conditions	Temperature	-10 to +70°C(freezing not allowed) -5 to +70°C for double seal type (S type)		
	Humidity	Max. 98% RH		
Recommended tightening torque	Body	5 to 6 N·m (M5 hexagon socket head bolt)		
	Cover	1.3 to 1.7 N·m (M4 screw)		
	Head	0.8 to 1.2 N·m (M3.5 screw)		
	Lever	4 to 5.2 N·m (M5 hexagon socket head bolt)		
	Terminal screw	1.0 to 1.4 N·m (M4 binding head machine screw)		

● Table 1. Electrical rating

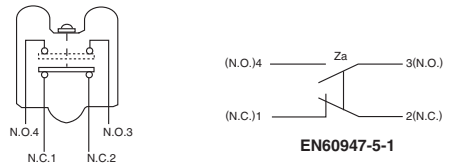
Internal switch Type	Standard type		Double seal type	
	Catalog listing	Electrical rating	Catalog listing	Electrical rating
Standard	1LS-J80□ 1LS-J82□	125, 250, 480 Vac 10A 125 Vac 1/2HP 250 Vac 1HP 125 Vdc 0.8A 250 Vdc 0.4A	1LS-J80□S 1LS-J82□S	125, 250, 480 Vac 5A 125 Vac 1/8HP 250 Vac 1/4HP 125 Vdc 0.8A 250 Vdc 0.4A
High sensitivity	1LS-J83□	125, 250, 480 Vac 10A 125 Vac 1/2HP 250 Vac 1HP 125 Vdc 0.8A 250 Vdc 0.4A	1LS-J83□S	125, 250, 480 Vac 5A 125 Vac 1/8HP 250 Vac 1/4HP

● Table 2. Electrical life

Internal switch	Load	Life
Standard load	Rated load	Min. 500,000 operations
Standard load, double seal	Rated load	Min. 200,000 operations
Low current load	Rated load	Min. 2 million operations

※Assumes operating frequency of 20 operations/minute.

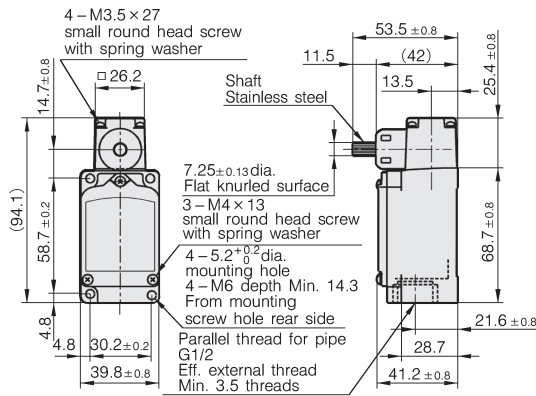
● Circuit diagram



## EXTERNAL DIMENSIONS

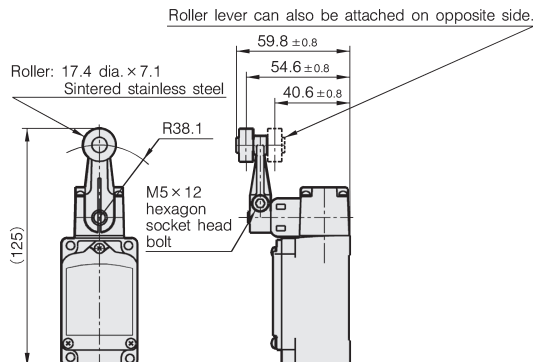
(unit: mm)

### ● Basic dimensions

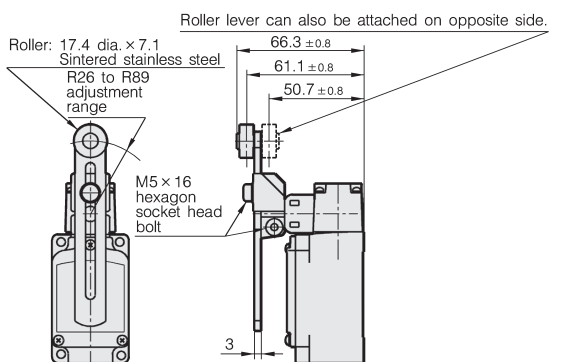


### ● Actuator mounting dimensions

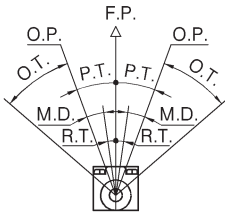
#### Roller lever type



#### Adjustable roller lever type



## OPERATING CHARACTERISTICS



Catalog listing		1LS-J80□□□	1LS-J82□□□	1LS-J83□□□
Characteristics	O.F. (Max. N)	13.4	8.9	8.9
	R.F. (Min. N)	2.2	0.98	0.98
	P.T. (°)	20°	20°	10° <sup>+2°</sup>
	M.D. (°)	12°	12°	05°
	O.T. (°)	30°	55°	62°
	R.T. (°)	05°	5°	—

## PRECAUTIONS FOR USE

### 1. Protective structure

- IP67 protection does not assure complete waterproofing. Switch should not be in constant contact with water.
- Avoid use where external force is applied at all times on the connecting section of the connector.
- Do not use the body as a step or place heavy objects on top of it.

### 2. Ensuring a good seal

- When general-purpose limit switches are used in locations subject to splashing by water, oil, dirt and dust, or chips, water or oil sometimes enters the switch from the conduit due to capillary action. For this reason, be sure to use a sealed connector compatible with the cable.
- When the screws in the head or covers are loosened to change the operating direction of the switch, or the relationship between switch operation and the indicator lamp (lamp ON during switch standby / during switch operation), tighten the screws to the recommended tightening torque to ensure a good seal.

<Recommended tightening torque>

Cover: 1.3 to 1.7 N·m (M4 screw)

Head: 0.8 to 1.2 N·m (M3.5 screw)

### 3. Attaching switches

- Tighten each of the parts on the limit switch according to the appropriate tightening torques listed in the performance tables. Overtightening damages screws and other parts. On the other hand, insufficient tightening of screws lowers the effectiveness of the seal and reduces various performance characteristics.
- Do not leave or use covers and conduit parts open. Water, dirt, or dust may enter, which causing malfunction.
- Prevent impact to the lever body and head. Failure to do so might deform the actuator or cause defective switch return.
- Do not use silicone rubber electrical lead insulation, silicone adhesive or grease containing silicone. Doing so might result in defective electrical conductivity.

### 4. Wiring

- Do not perform wiring with the power ON. Doing so might cause electric shock, or the machine may start unexpectedly, causing an accident.
- Use crimp-type terminal lugs with covered insulation for electrical leads to prevent contact with covers and housings. If a crimp-type terminal lug contacts a cover, the cover may no longer shut or a ground fault may occur.  
Use sealed connectors (PA1 Series, etc. sold separately) or flexible tubing (PA3 Series) with IP67 or equivalent seal for conduits.
- Firmly tighten covers and conduits. If covers and conduits are not sufficiently tightened, the seal will be impaired and switch performance will no longer be assured.

### 5. Adjusting switches

- Do not apply excessive force (5 times O.F.) to the actuator beyond the total travel position. Doing so might damage the switch.
- Keep overtravel between 1/3 to 2/3 of the rated value. Small overtravel might cause the contacts to rattle due to vibration and impact, or may result in defective contact.

### 6. Environment

- Do not use the switch in an environment where strong acid or alkali is directly splashed onto it.

Before use, thoroughly read the "Precautions for use" and "Precautions for handling" in the Technical Guide on pages D-111 to D-122 as well as the instruction manual and product specification for this switch.