

Outdoor Use Compact Limit Switches

LSP Series

Optimum for outdoor use, as in automated parking facilities



- Release force is approx. 1.5 times stronger than that of general-purpose limit switches, ensuring that there will be no lever return problem.
- Wide -30 to +80°C operating temperature range (no freezing allowed).
- Superior weather-resistant metals and resins are used.
- Mounting is compatible with Azbil's 14CE and LS switches.
- Standard M12 connector for easy installation at the work site.
- Lever can be reliably set on the shaft at 15° intervals due to the gear type lever fixing method.
- Rugged aluminum die-cast housing

CATALOG LISTING

Model	Contact material	Connector and cable	Catalog listing	
			LSP5-□A□0-PD□□ Operating force(O.F.) = 5 N	LSP5-2B□1-PD□□ Operating force (O.F.) = 4 N
Roller lever	Gold alloy	M12 connector	LSP5-1A10-PD	—
		M12 preleaded connector, 30 cm	LSP5-1A10-PD03	—
	Silver	M12 connector	LSP5-1A30-PD	—
		M12 preleaded connector, 30 cm	LSP5-1A30-PD03	—
Non-lever (*1)	Gold alloy	M12 connector	—	LSP5-2B11-PD
		M12 preleaded connector, 30 cm	—	LSP5-2B11-PD03
	Silver	M12 connector	—	LSP5-2B31-PD
		M12 preleaded connector, 30 cm	—	LSP5-2B31-PD03
Adjustable Roller lever	Gold alloy	M12 connector	LSP5-3A10-PD	—
		M12 preleaded connector, 30 cm	LSP5-3A10-PD03	—
	Silver	M12 connector	LSP5-3A30-PD	—
		M12 preleaded connector, 30 cm	LSP5-3A30-PD03	—

Note: The operating force (O.F.) value is for a lever length of 60 mm

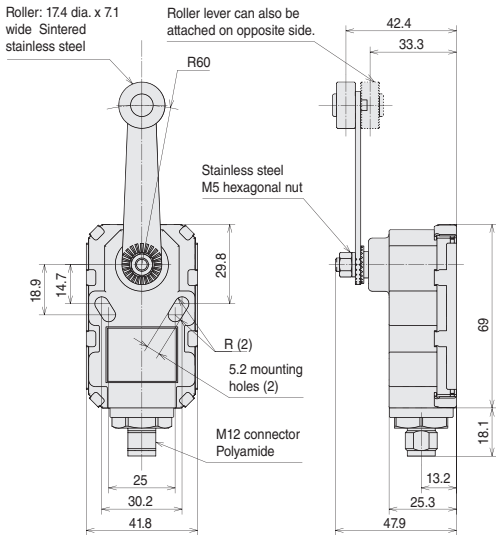
*1: Use in combination with general-purpose LS levers (6PA-J148, LS-6PA58, etc.).

SPECIFICATIONS

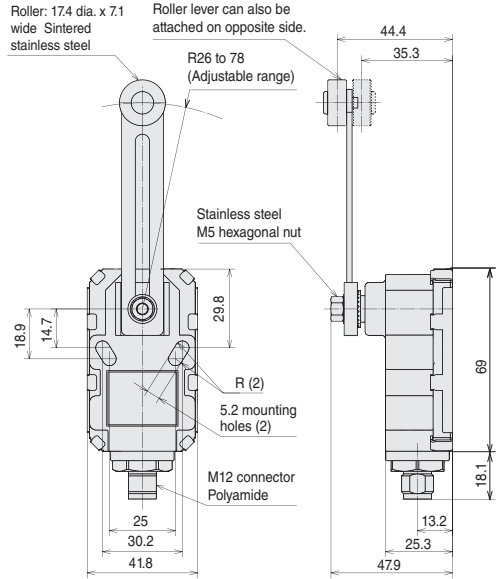
Catalog listing		LSP5-□A10-PD□□ LSP5-2B11-PD□□	LSP5-□A30-PD□□ LSP5-2B31-PD□□
Type		Gold alloy contacts	Silver contacts
Standards	Certification	—	
	Compliance	NECA C 8201-5-1	
Structure	Contact type	C(SPDT)	
	Contact shape	Gold alloy crossbar	Silver rivet
	Protective structure	IP67(IEC 60529, JIS C 0920)	
Electrical performance	Electrical rating	AC—12 125 Vac 0.1A DC—12 30 Vdc 0.1A	AC—15 250 Vac 1A AC—12 250 Vac 3A DC—12 30 Vdc 1A
	Dielectric strength	•Between non-continuous terminals: 600 Vac at 50/60 Hz for 1 minute •Between each terminal and ground: 2,000 Vac at 50/60 Hz for 1 minute •Between each terminal and non-live metal part: 2,000 Vac at 50/60 Hz for 1 minute	
	Insulation resistance	Max. 100 MΩ (by 500 Vdc megger)	
	Initial contact resistance	Switch: 100 mΩ max. Connector: 40 mΩ max.	Switch: 50 mΩ max. Connector: 40 mΩ max.
	Recommended minimum voltage and current	5 Vdc 5 mA	24 Vdc 10 mA, or 12 Vdc 20 mA
Mechanical performance	Actuator strength	Withstands 25 N load in operating direction for 1 minute.	
	Impact resistance	300 m/s ² . Contact release in 1 ms max. in free position and operating limit position.	
	Vibration resistance	Frequency 10 to 55 Hz, 1.5 mm peak-to-peak amplitude for 2 continuous hours. Contact release in 1 ms max. in free position and operating limit position.	
	Allowable operating speed	1 mm/s to 0.5 m/s Min. speed: unstable state at 0.1 s or less Max. speed: actuator not damaged	
	Operating frequency	Max. 60 operations/minute	
	Connector inserting/pulling force	0.4 to 4.0 N (per pin)	
	Inserting/pulling cycle endurance	50 times min.	
Life	Tightening strength of coupling	0.8 N·m	
	Mechanical	LSP5-□A0-PD□□(5 N operating force type): min. 100,000 cycles LSP5-2B□1-PD□□(4 N operating force type): min. 1 million cycles For both, overtravel is 70% to 100% of standard value.	
Ambient conditions	Electrical	100,000 operations or more Rated load: 6A 30 Vdc Operating cycles: 20/min	
	Operating temperature	-30 to +80°C (no freezing allowed)	
Recommended tightening torque	Operating humidity	95% RH max.	
	Body	5 to 6 N·m (M5 hexagon socket head bolt)	
	Lever	4 to 5.2 N·m (M5 hexagonal nut)	
Connector	0.4 to 0.6 N·m (M12 x 1)		

Connector type

● **Roller lever type (LSP5-1A0□PD)**



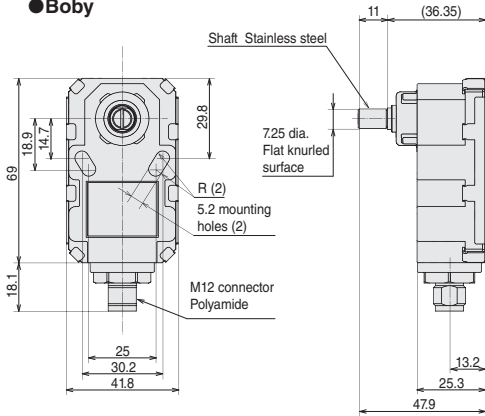
● **Adjustable roller lever type (LSP5-3A□0-PD)**



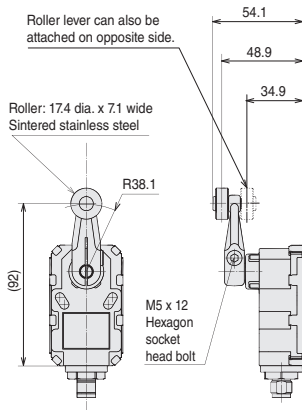
*Dimensional tolerance is ±0.4 unless otherwise specified.

● **Non-lever type (LSP5-2B□1-PD)**

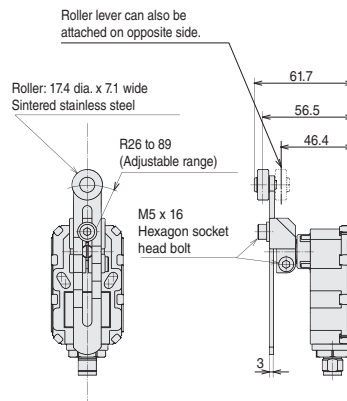
● **Boby**



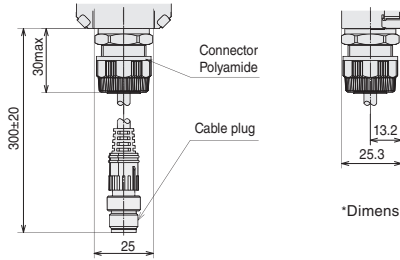
● **With 6PA-J148**



● **With LS-6PA58**



● **Preloaded connector type (Dimensions of body are same as for connector-type switch)**



*Dimensional tolerance is ±0.4 unless otherwise specified.

OPERATING CHARACTERISTICS

● **LSP5-□A□□0-PD□□ (Operating force 5N type)**

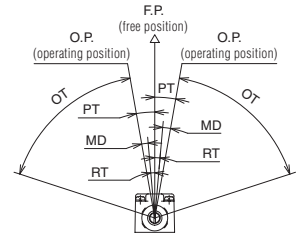
O.F. (operating force)	5.0N	max
R.F. (release force)	1.1N	min
P.T. (pretravel)	30°	max
M.D.(movement differential)	5°	max
O.T. (overtravel)	40°	min
R.T. (release travel)	-	min

Note: O.F. and R.F. values are for a lever length of 60 mm.

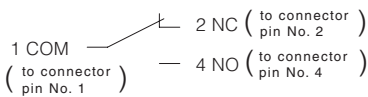
● **LSP5-2B□□1-PD□□ (Operating force 4N type)**

O.F. (operating force)	6.3N	max
R.F. (release force)	1.1N	min
P.T. (pretravel)	30°	max
M.D.(movement differential)	5°	max
O.T. (overtravel)	40°	min
R.T. (release travel)	-	min

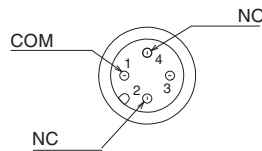
Note: O.F. and R.F. values are for a lever length of 38.1 mm.



CIRCUIT DIAGRAM



CONNECTOR PIN LAYOUT



NOTES FOR USE OF LSP SERIES

1. Limit switch

1.1 Installing the switch

- Tighten each part of the limit switch to the appropriate tightening torque as described in the product specification. Overtightening will damage the threads or other parts. Insufficient tightening degrades the seal and other characteristics.
- Do not let the activating object strike the lever arm or the switch head. If it does, the actuator may be bent and the switch may not be able to return properly.
- Do not use leads with silicone rubber insulation, or silicone filler, or grease or oil containing silicone. They can cause contacts to fail to conduct electricity.

1.2 Adjusting the switch

- Do not apply excessive force (25 N or more) to the actuator beyond the travel limit position. Doing so may damage the switch.
- With a small overtravel (O.T.), vibration or shock may cause the contacts to rattle or to make poor contact.

2. Connector part (when used with PA5 series connector)

2.1 Precautions for connection

- As the connector housing of connector-type limit switches is equipped with an air hole, wire the switch immediately after removing it from the packaging. Do not leave the switch unattended or allow it get wet after unpacking. Water may enter the inside.

2.2 Tightening the coupling

- Tighten the coupling as tight as possible by hand (0.4 to 0.6 N•m). The use of a tool such as pliers will damage it.
- Insufficient tightening may not satisfy ingress protection level IP67 or may allow the coupling to loosen.
- Do not apply excessive force (10 N or more) to the PA5 coupling part after tightening. Doing so may damage it. (See Figure A.)

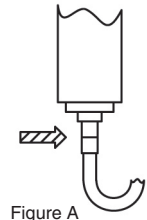


Figure A

2.3 Plugging/unplugging the cable plug

- Be sure to turn off the power before plugging in or unplugging a cable plug. Do not pull on the cable to remove the plug.

2.4 Other

- The limit switch should not be used while there is an external force continuously applied to the joint of the connector. Also, do not use the limit switch as a step, place a heavy object on it, or hang objects from it.
- An IP67 protective structure is not intended for underwater use. Do not use the limit switch when it is submerged in water.
- Do not loosen the connector

3. Other

3.1 Operation environment

- This limit switch is for outdoor use only.
- Do not apply lubricants such as oil or grease to the sliding parts, including the actuator and shaft. Using the wrong oil or grease may cause a decrease in sliding performance and in the effectiveness of the seal.
- Remove any dust from sliding parts.
- Do not use the limit switch in a location where it may come into direct contact with a strong acid or alkali.

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.