

### Subminiature Multiple Limit Switch with 8-mm Pitch between Plungers

- Ideal for machine tools and sequential control.



## Ordering Information

### ■ List of Models

Number of gauged actuators	Bevel plunger
2	2SBD4-1
4	4SBD4-1
6	6SBD4-1

## Specifications

### ■ Ratings

Rated voltage	Non-inductive load				Inductive load				Inrush current	
	Resistive load		Lamp load		Inductive load		Motor load		NC	NO
	NC	NO	NC	NO	NC	NO	NC	NO		
125 VAC	5 A		0.7 A		4 A		1.3 A		24 A max.	12 A max.
250 VAC	5 A		0.5 A		4 A		0.8 A			
30 VDC	5 A		3 A		4 A		3 A			
125 VDC	0.4 A		0.05 A		0.4 A		0.05 A			
250 VDC	0.2 A		0.03 A		0.2 A		0.03 A			

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

## ■ Characteristics

Degree of protection	IP67
Life expectancy	Mechanical: 1,500,000 operations min. Electrical: 100,000 operations min. (Under constant conditions)
Operating speed	0.05 mm/s to 0.5 m/s
Operating frequency	Mechanical: 120 operations/min Electrical: 30 operations/min
Rated frequency	50/60 Hz
Insulation resistance	100 MΩ min. (at 500 VDC)
Contact resistance	100 mΩ max. (initial value)
Dielectric strength	600 VAC, 50/60 Hz for 1 min between terminals of same polarity 1,500 VAC, 50/60 Hz for 1 min between current-carrying metal parts and ground, and between each terminal and non-current-carrying metal part
Vibration resistance	Malfunction: 10 to 55 Hz, 1.5-mm double amplitude
Shock resistance	Destruction: 1,000 m/s <sup>2</sup> min. Malfunction: 200 m/s <sup>2</sup> min.
Ambient temperature	Operating: -10°C to 80°C (no icing)
Ambient humidity	Operating: 95% max.
Weight	Approx. 220 (two plunger type) to 360 g (six plunger type)

**Note:** 1. The above figures are initial values.

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

## ■ Operating Characteristics

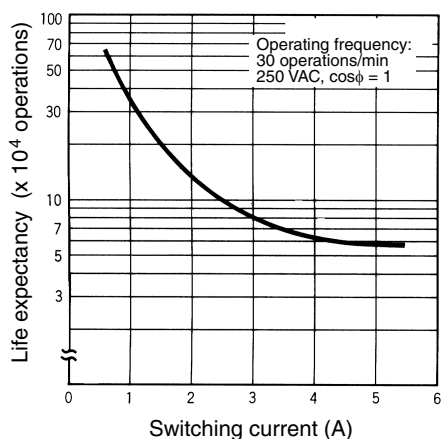
OF max.	9.81 N
RF min.	2.94 N
PT max.	1.5 mm
OT min.	2 mm
MD max.	0.2 mm
OP	16±0.4 mm

**Note:** The above operating characteristic data are applicable to only one plunger.

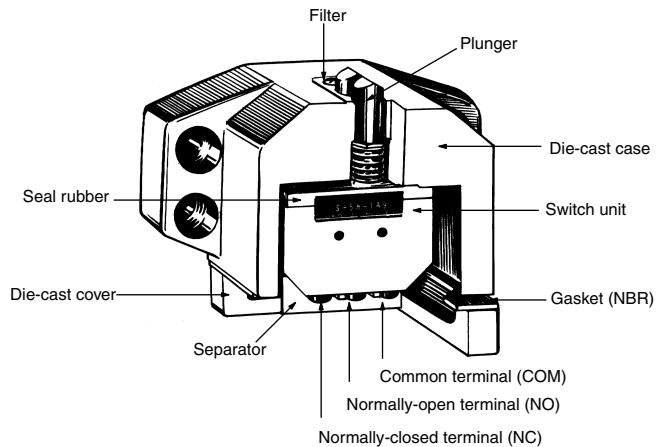
## Engineering Data

### Electrical Life Expectancy (with more than 100,000 Operations)

Operating temperature: 5°C to 35°C  
Operating humidity: 40% to 70%.

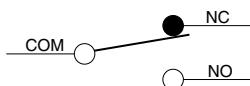


# Nomenclature



# Operation

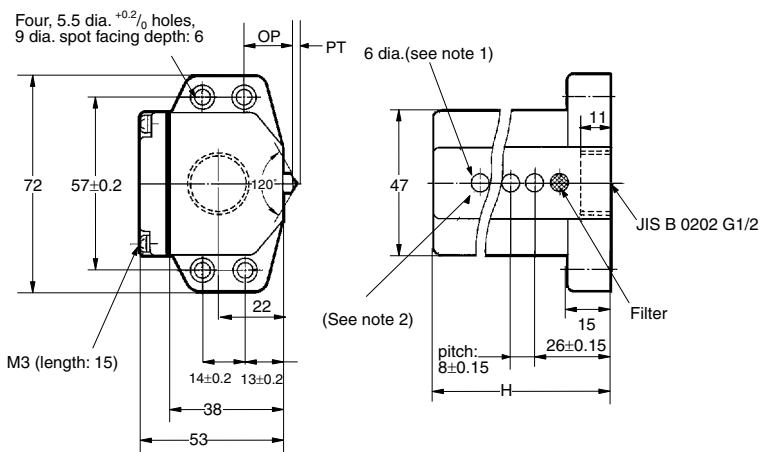
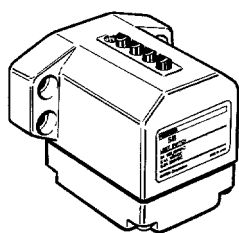
## ■ Contact Form



# Dimensions

- Note:**
1. All units are in millimeters unless otherwise indicated.
  2. Unless otherwise specified, a tolerance of  $\pm 0.4$  mm applies to all dimensions.
  3. All dimensions shown here are for reference only.

## Bevel Plunger □SBD4-1



- Note:**
1. Nitrogen-processed stainless steel plunger.
  2. For the Switch consisting of 3 to 5 ganged actuators, this plunger is removed.

Number of plungers	Dimension H
2	50 mm
4	66 mm
6	82 mm

# Precautions

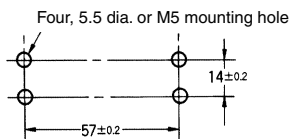
## ■ Correct Use

### Operation

Set the cam angle to 30° if the traveling speed of the cam is 0.05 to 250 mm/s and 20° if the traveling speed is 250 to 500 mm/s. The operating methods, cam and dog shapes, operating frequency, and overtravel (OT) have a significant effect on the life and accuracy of the SB. In order to protect the plunger from abrasion and prolong its service life, apply a small amount of molybdenum disulfide grease to the plunger and dog or cam that come into contact with the plunger.

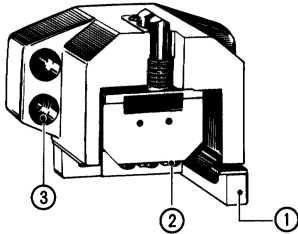
If the SB is left for a long time with the switch unit actuated, the contacts of the SB may stick to each other due to oil or water. In that case, try resetting and actuating the SB several times.

### Mounting Dimensions

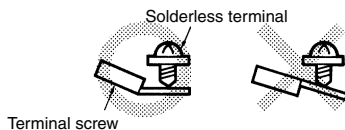


### Tightening Torque

1. Tighten each cover mounting screw to a torque of 0.49 to 0.59 N • m if the mounting screw is M3 in size.
2. Use solderless terminals to wire the SB. The solderless terminals are provided with the SB. Tighten each terminal screw to a torque of 0.20 to 0.49 N • m.

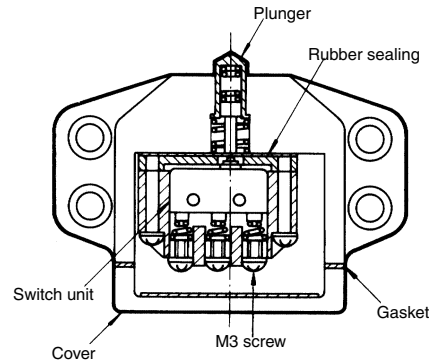


Be sure to tighten each terminal with a screw correctly as shown below.



3. Apply a torque of 4.90 to 5.88 N • m to tighten each mounting bolt of the casing if the mounting bolt is a Allen-head bolt that is M5 in size.

### Sealing



Although the SB satisfies IP67 requirements, do not use the SB in places where the SB is always exposed to sprayed oil or water.

The casing and cover of the SB are made of die-cast aluminum. The switch unit is mounted with the rubber sealing and gasket.

### Others

Do not remove the plate to which the switch unit is mounted.

Attach an appropriate cover to the SB to protect the outer surface of the plunger from metal dust or cuttings. No protective cover is, however, provided together with the SB.

Be sure to lay out the conduit and apply sealing tape to the conduit openings so that no foreign substances or cuttings will penetrate into the SB through the conduit openings.

Use the SC Connector. Refer to pages 27 through 29 for details.

Make sure that the position of the actuator that is traveling does not exceed the overtravel (OT) position.

Make sure that the operating stroke is 70% to 100% of the specified OT distance.

Do not operate the actuator beyond the OT distance, otherwise the SB may become damaged.

**ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.**

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.