

**New Products**

**Contact** No. 342

**NKK**  
SWITCHES  
*Innovation Driving Quality*

# Dual Seal Waterproof Toggle



**S Series**  
**IP68 Rated Toggle Switch**

**NKK SWITCHES CO., LTD.**

## *Dual seal waterproof construction provides improved waterproofing reliability* (Design registered)

### **Highly Reliable Dual Seal Waterproof Construction**

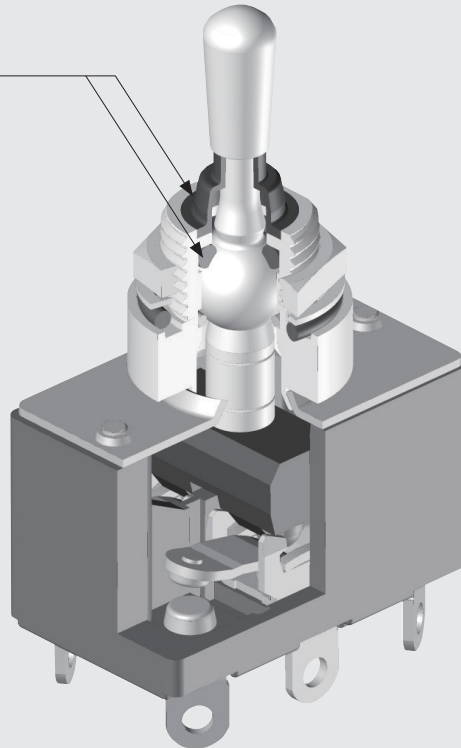
Uses a dual seal waterproof construction consisting of waterproof rubber on the outside of the lever and an O-ring on the inside for increased waterproofing reliability.

### **Stylish Design**

Integrating the waterproof rubber with the bottom part of the metal lever creates a stylish design that also delivers the waterproof function.

### **Sure Operation Feel**

Integrated design eliminates the sensation of the waterproof rubber, achieving the same sure operation feel and operability of a standard metal lever.



### **Panel Seal Mechanism**

This panel seal mechanism complies with IP68 under IEC 60529.

### **Dust-resistant Construction**

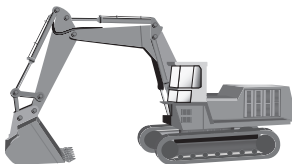
Foreign matter does not collect in the moveable parts on the surface of the panel, resulting in unobstructed operation of the levers.

### **Simple Installation**

Integrated waterproof construction with the switch unit enables simple installation to the panel.

## ► Main Applications

Construction machinery, machine tools, transportation equipment, food processing equipment, kitchen equipment, medical equipment, etc.



Construction machinery







Transportation equipment

## ► Sale Start Date

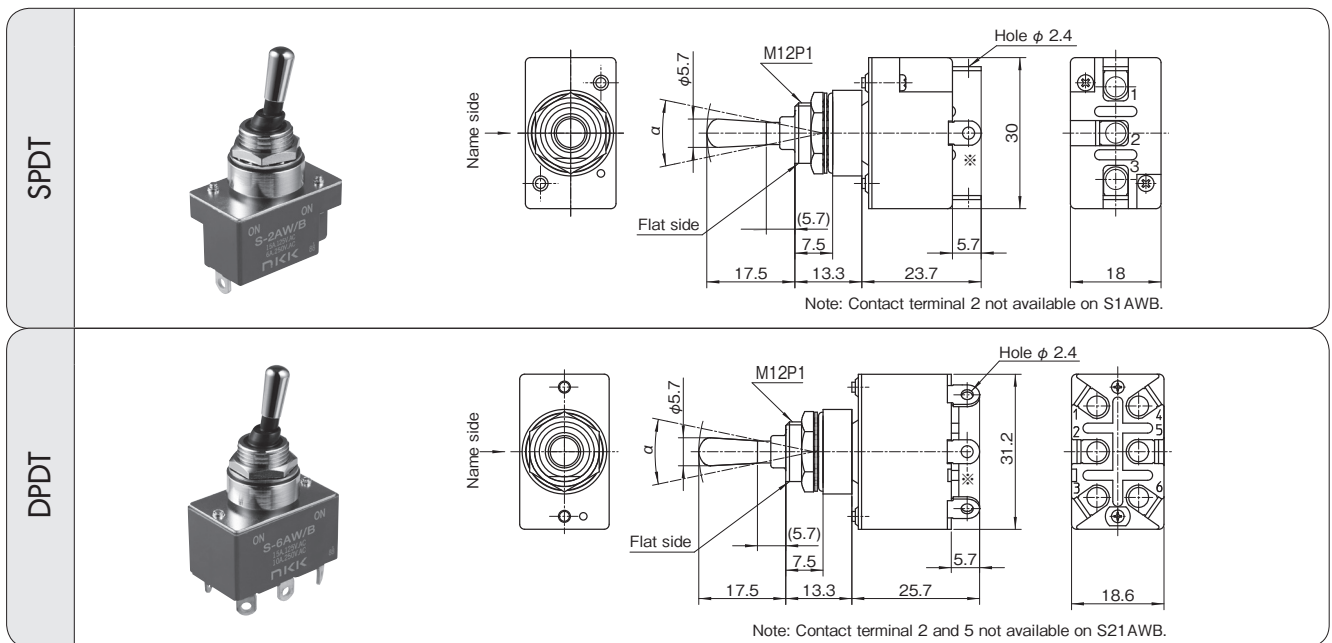
October 31, 2018

## ► Common Specifications, Poles & Curcuits

Model Name	Circuit	Ter- minal	Toggle Position and Contact Terminal Number					Current Capacity			Lever	Common Specification
			< > = Momentary					Resistive Load			Inclination Angle ( $\alpha$ )	
			Left 	Center 	Right 	Flat 			125V AC	250V AC		
S1AWB	SPST	Solder	ON	1-3	—	—	OFF	15A	6A	20A	24 $\pm$ 4°	<p>► Contact Resistance: 10m<math>\Omega</math> maximum (at DC5V 1A)</p> <p>► Insulation Resistance: 1,000M<math>\Omega</math> minimum @DC500V</p> <p>► Voltage Capacity: 2,000V AC for 1 minute minimum</p> <p>► Mechanical Open/Close Durability: 50,000 operations minimum</p> <div><div>( S1AWB, 2AWB S3AWB, 21AWB S6AWB, 7AWB )</div><p>30,000 operations minimum</p><div>( S5AWB, 8AWB S25AWB, 28AWB )</div></div> <p>► Electrical Open/Close Durability: 25,000 operations minimum</p> <p>► Operation Temperature range: -30 through +70°C</p> <p>► Solder Heat Resistance When soldering iron is used: Rank A Not exceeding 390°C, within 4s</p>
S2AWB	SPDT	Solder	ON	2-3	—	1-2	ON	15A	6A	20A	24 $\pm$ 4°	
S3AWB	SPDT	Solder	ON	2-3	OFF	1-2	ON	15A	6A	20A	24 $\pm$ 4°	
S5AWB	SPDT	Solder	ON	2-3	—	1-2	(ON)	15A	6A	20A	20 $\pm$ 4°	
S8AWB	SPDT	Solder	(ON)	2-3	OFF	1-2	(ON)	15A	6A	20A	24°	
S21AWB	DPST	Solder	ON	1-3 4-6	—	—	OFF	15A	15A	15A	24 $\pm$ 4°	
S6AWB	DPDT	Solder	ON	2-3 5-6	—	1-2 4-5	ON	15A	10A	20A	24 $\pm$ 4°	
S7AWB	DPDT	Solder	ON	2-3 5-6	OFF	1-2 4-5	ON	15A	10A	20A	24 $\pm$ 4°	
S25AWB	DPDT	Solder	ON	2-3 5-6	—	1-2 4-5	(ON)	15A	6A	20A	20 $\pm$ 4°	
S28AWB	DPDT	Solder	(ON)	2-3 5-6	OFF	1-2 4-5	(ON)	15A	6A	20A	24 $\pm$ 4°	

⚠ Each rated value/performance value is obtained through independent testing. Therefore, the same results are not guaranteed under complex conditions. Please refer to page Z27 for test conditions and criteria.

## ► Switch Exterior Diagram



Standard Hardware		
O-ring (AT537)	Lockwasher	Hex Face Nut (AT503)
<p>Color: Black</p> <p>Dia 12.5</p> <p>Material: NBR</p>	<p>Dia 12.1</p> <p>t 0.5</p> <p>Dia 15.8</p> <p>Chromate plating</p>	<p>M12P1</p> <p>t 2.4</p> <p>Dia 14.0</p> <p>Tin alloy (chromium color) plating</p>
For details, see "Precautions" on the next page.		

Panel Cutout	
<p>Dia12.2</p> <p>11.2</p>	<p>Dia12.5</p> <p>(No rotation stop function)</p>
Maximum Effective Panel Thickness	
4.0mm	

## ► Precautions

### ● About Rubber

The waterproof rubber is made from silicone rubber, and the O-rings (washers) are made from NBR.

Silicone rubber has excellent heat resistance, cold resistance and weather resistance general properties, but has inferior durability and oil resistance properties.

NBR has excellent oil resistance, chemical resistance and durability general properties, but has inferior weather resistance and ozone resistance properties.

The same effects may not be achieved depending on the environment and methods of use. Therefore, please thoroughly evaluate the product in your usage environment.

For details, see "Handling Instructions/Considerations for Rubber Parts" (p.Z7) of the Comprehensive Switch Catalog.

◎: Excellent, ○: Good, △: Acceptable, X: Unacceptable

Abbreviation	NBR	Si	EPR (EPM, EPDM, EPT)	CR
Name	Nitrile rubber	Silicone rubber	Ethylene Polypropylene rubber	Chloroprene rubber
Heat resistance	△	◎	○	△
Cold resistance	△	◎	○	○
Fatigue resistance	○	X - △	○	○
Durability	○ - ◎	X	○	◎
Weather resistance	X - △	○ - ◎	◎	◎
Ozone resistance	X - △	○	◎	○
Oil resistance*	Fuel oil	○ - ◎	X	X
	Lubricating oil	○ - ◎	△ - ○	△ - ○

\*Oil resistance is dependent on the type of oil.

### ● Panel Installation

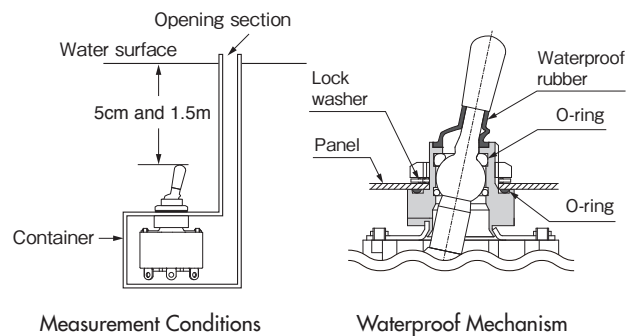
Install so that the inner tooth washer is at the upper side of the panel, and the O-ring (washer) is at the lower side.

Be sure to install the inner tooth washer and rubber O-ring (washer).

### ● About Waterproofing Performance (IP68 Compatible)

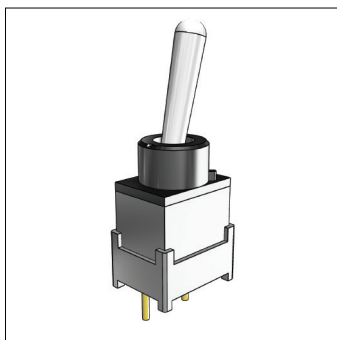
This product is designed as a panel seal, and is not to be used in water.

Waterproofing is measured as shown in the diagram by submersing the product 5cm from the surface of the water, and opening and closing 50 times at a frequency of 50 to 60 times per minute. The product is then submersed 1.5m from the surface and left in this position for 30 minutes, after which it is opened and closed again under the same conditions as before. The insulation resistance and voltage capacity are each within the rated values, and water has not entered inside the switch and installation panel.



## 3D CAD Models

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## NKK SWITCHES CO., LTD.

715-1, Unane, Takatsu-ku, Kawasaki-shi, 213-8553 Japan  
Tel: +81 44-813-8001 / Fax: +81 44 813 8031  
<https://www.nkkswitches.co.jp> E-mail: [nkkswitches@nkkswitches.co.jp](mailto:nkkswitches@nkkswitches.co.jp)

EMEA: NKK Switches Co., Ltd. (Frankfurt, Germany)  
Americas: NKK Switches of America, Inc. (Scottsdale, AZ, USA)  
Asia: NKK Switches Hong Kong Co., Ltd. (Hong Kong, China)  
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