

Contact No. 270

NIKK
SWITCHES
Innovation Driving Quality

Dual Seal Waterproof Toggle



M Series
Large Bushing Toggle Switch

NIKK SWITCHES CO., LTD.

Dual seal waterproof construction provides improved waterproofing reliability

(Design registered)

Highly Reliable Dual Seal Waterproof Construction

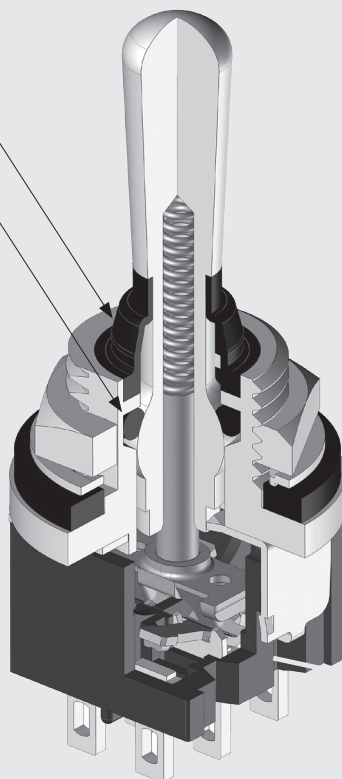
Uses a dual seal waterproof construction consisting of waterproof rubber on the outside of the lever and an O-ring on the inside for increased waterproofing reliability.

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 IP67 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.

Common Specification

Common Specifications (Silver plated terminal/Contact point)	
Current capacity	6A 125V AC and 3A 250V AC 4A 30V DC (for On-None-On) 3A 30V DC (for all other circuits) Recommended lower limit voltage/ current 2V 0.1A AC/DC Minimum Input Out-off Voltage 1V 10mA AC/DC (initial value)
Contact resistance	10mΩ maximum (at DC2 - 4V 100mA)
Insulation resistance	1,000 MΩ minimum@DC500V
Voltage capacity	1,000V AC minimum between contacts for 1 minute minimum; 1,500V AC minimum between contacts and case for 1 minute minimum
Mechanical open/ close durability	50,000 operations minimum
Electrical open/ close durability	50,000 operations minimum (3A 125V AC) 25,000 operations minimum (6A 125V AC)
Operation temperature range	-30 through +85°C
Lever inclination angle	25±4°
Solder heat resistance	▶When soldering iron is used M2013XXX, M2018XXX Not exceeding 390°C, within 4s M2012XXX Not exceeding 350°C, within 3s

▶Solder the center position of the lever using M2013XXX, M2018XXX solder.

Switch for fine current Common specifications (Gold-plated terminal/Gold-plated contact)	
Current capacity Common for AC/DC	0.4VA MAX. 28V MAX. (Applicable voltage range: 20mV to 28V) (Applicable ampere range: 0.1mA to 0.1A)
Contact resistance	20mΩ maximum (at 20mV 10mA)
Insulation resistance	1,000 MΩ minimum@DC500V
Voltage capacity	1,000V AC minimum between contacts for 1 minute minimum; 1,000V AC minimum between contacts and case for 1 minute minimum
Mechanical open/ close durability	50,000 operations minimum
Electrical open/ close durability	50,000 operations minimum
Operation temperature range	-30 through +85°C
Solder heat resistance	▶When soldering iron is used Not exceeding 390°C, within 4s

⚠ Each rated value/performance value is obtained through independent testing. Therefore, the same results are not guaranteed under complex conditions. Please refer to General Specifications page in General Catalog "Switch Guide" on specific models, ratings and ordering instructions.

► Typical Switch Ordering Example

M2012WBG01

Poles

1

2

SPDT

DPDT

Circuits

2

3

8

ON

ON

(ON)

NONE

OFF

OFF

ON

ON

(ON)

() = momentary

Actuator

WB

0.787" (20.0 mm)
bat with waterproof boot

Contact materials

W

G

Silver

Gold

Terminals

01

Solder Lug

► Precautions

● About Rubber

The waterproof rubber is made from silicone rubber, and the rubber washer and O-rings 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.D-4) 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

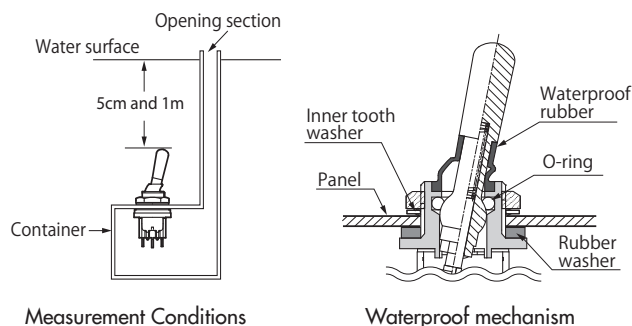
Install so that the inner tooth washer is at the upper side of the panel, and the rubber washer is at the lower side.

Be sure to install the inner tooth washer and rubber washer.

● About Waterproofing Performance (IP67 Compatible)

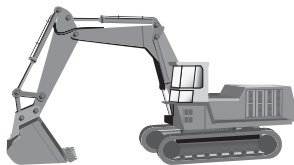
This product is designed as a panel seal, and is not to be used in water.

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 1m 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.



► Main Applications

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



Construction machinery



Transportation equipment

► Sale Start Date

March 2, 2016

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